Repair Manual

Arteon 2018 ➤
Passat 2015 ➤
Passat Variant 2015 ➤

Suspension, Wheels, Steering

Edition 06.2018

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.

Contents

00 – General, Technical Data

1 Safety Precautions

(Edition 06.2018)

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

WARNING

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

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

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

1.2 Safety Precautions when Working on the High-Voltage System

DANGER

High voltage is extremely dangerous.

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

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

– Have the high-voltage system de-energized by a qualified person.

WARNING

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

On electric and hybrid vehicles an active ready mode is difficult to identify. Parts of the body can be pinched or pulled.

– Switch off the ignition.

– Place the ignition key outside of the vehicle interior.

CAUTION

Risk of damaging the high-voltage cables.

Misuse can damage the insulation of high-voltage cables or high-voltage connectors.

- Never support objects on the high-voltage cables and the high-voltage connectors.
- Never support tools on the high-voltage cables and the high-voltage connectors.
- Never sharply bend or kink the high-voltage cables.
- When connecting pay attention to the coding of the high-voltage connectors.

1.3 Safety Precautions when Working near High-Voltage Components

DANGER

High voltage is extremely dangerous.

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

- Perform a visual inspection of the high-voltage components and the high-voltage cables.
- Never use tools that are for cutting, deformed, or sharp edged.
- Never weld, solder or use thermal adhesive or hot air.

1.4 Safety Precautions when Working on Subframe

- Welding and alignment work on supporting and wheel carrying suspension components is not permitted.
- Always replace corroded bolts/nuts.
- Bonded rubber bushings have a limited range of rotation. Therefore, only tighten the threaded connections on the components with bonded rubber bushings when the wheel bearing housing is lifted (curb weight position). Refer to ⇒ “2.8.1 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Front Axle, Passat and Passat Wagon”, page 6 .

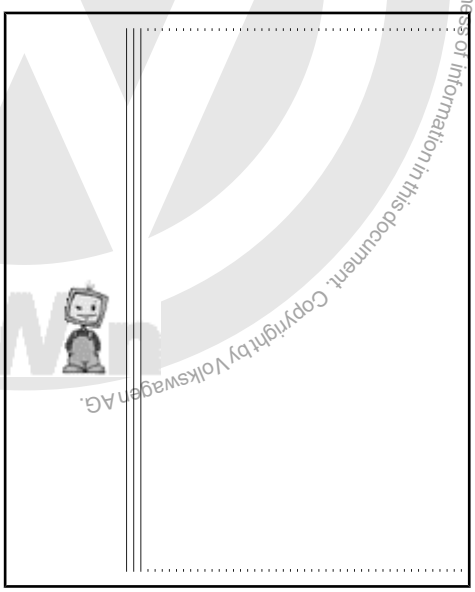
2 Repair Information

2.1 Shock Absorber Leaks

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

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

- 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-



2.2 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. 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 with the customer.

Note

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

2.3 Shock Absorbers, Checking when Removed

Defective shock absorbers are noticeable when driving due to loud rumbling noises - a result of wheel hopping - especially on poor stretches of road. Moreover, they can be recognized by a large loss of oil.

Note

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

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

– Push the shock absorber together by hand.

• The piston rod must move with even resistance throughout the entire stroke and without jerking.

– Release the piston rod.

• For shock absorbers with sufficient gas pressure, the piston rod returns automatically to its starting position.

Note

♦ *If this is not the case, the shock absorber does not necessarily need to be replaced. As long as there is not a large loss of oil, the effectiveness corresponds to that of a standard shock absorber.*

♦ *The damping function is also completely available without gas pressure, as long as there is no large loss of oil. However, this can increase the noise level.*

2.4 Steering Gear

Extreme caution, cleanliness, and properly functioning tools are an essential requirement in performing a faultless and successful steering gear repair. The general safety precautions also always apply to repair work.

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 to this repair manual.

For a complete description of the structure and function of the electro-mechanical power steering system. Refer to the Self-Study Program No. 317 The Electro-Mechanical Power Steering Design and Function.

♦ Thoroughly clean connecting points and their surrounding areas before loosening.

♦ When installing the steering gear, make sure the alignment sleeves are correctly positioned between the bracket and steering gear.

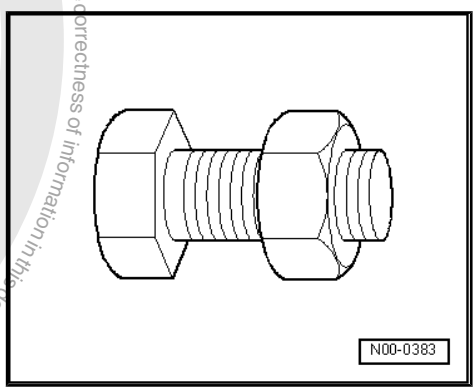
- Place the removed parts on a clean surface and cover them so that are not contaminated. Use foil and paper. Only use lint-free cloths.
- Only install clean parts: remove the replacement parts from their packaging just before installing them.
- Only use lubricants and sealants marked with part numbers.
- Carefully cover or seal opened components if the repair is not performed immediately.

2.5 Seals and Gaskets

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

2.6 Bolts and Nuts

- Loosen and tighten the bolts and nuts 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.



2.7 Electrical Components

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

– Touch a grounded object, for example, a water pipe or a vehicle hoist, before working on electrical components. Do not touch the connector terminals.

2.8 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring

⇒ “2.8.1 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Front Axle, Passat and Passat Wagon”, page 6

⇒ “2.8.2 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Front Axle, Arteon”, page 7

⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9

⇒ “2.8.4 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Arteon”, page 10

2.8.1 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Front Axle, Passat and Passat Wagon

Special tools and workshop equipment required

- ♦ Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-
- ♦ Tensioning Strap - T10038-
- ♦ Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-

> ⚠ Caution
>
> *All bolts on suspension components with bonded rubber bushings must always be tightened in curb weight position (unloaded condition).*
>
> *Bonded rubber bushings have a limited range of rotation.*
>
> *Axle components with bonded rubber bushings must be brought into the position they will be in when driving before they are tightened (curb weight position).*
>
> *Otherwise, the bonded rubber bushing will have tension, which will reduce the service life.*

By raising the suspension using the -VAS6931- or -VAG1383A- and the -T10149- , this position can be simulated on the hoist.

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

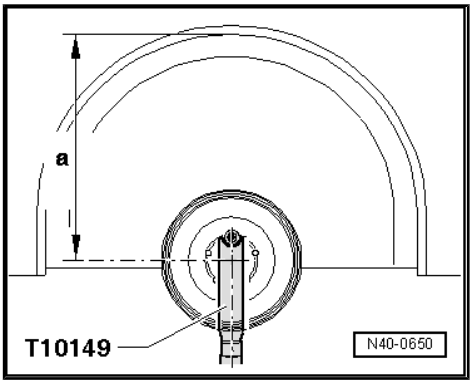
> ⚠ WARNING
>
> *There is a risk that the vehicle could fall off the hoist if it is not secured.*

– Turn the wheel hub until one of the holes for the wheel bolts is on top.

– Install the -T10149- with a wheel bolt on the wheel hub.

The bolts/nuts must only be tightened once dimension -a- between the center of the wheel hub and the lower edge of the wheel housing has been reached.

The dimension -a- is dependent on the height of the installed suspension:



Chassis [1]	PR numbers	Standing height -a- in mm
Basic	G01	394 ± 10 mm
Sport	G02	379 ± 10 mm
Raised	G03	409 ± 10 mm
DCC	G04	384 ± 10 mm
Raised special purpose vehicles / DCC	UC7, UC9	409 ± 10 mm
Nivomat special purpose vehicles	1JI	394 ± 10 mm

[1] The type of vehicle suspension is indicated on the vehicle data label. The suspension is indicated by a PR number. Allocation of the PR number according to the suspension. Refer to ⇒ “1.7 Vehicle Data Label”, page 285 .

– Lift the wheel bearing housing using the -VAS6931- or -VAG1383A- until dimension -a- is reached.

WARNING

- ***Do not lift or lower the vehicle when the engine and gearbox jack is under the vehicle.***
- ***Do not leave the -VAS6931- or -VAG1383A- under the vehicle longer than necessary.***

– Tighten the applicable bolts and nuts.

– Lower the wheel bearing housing.

– Pull the -VAS6931- or -VAG1383A- out from under the vehicle.

– Remove the -T10149- .

2.8.2 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Front Axle, Arteon

Special tools and workshop equipment required

- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-
- Tensioning Strap - T10038-
- Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-

> **Caution**
>
> *All bolts on suspension components with bonded rubber bushings must always be tightened in curb weight position (unloaded condition).*
>
> *Bonded rubber bushings have a limited range of rotation.*
>
> *Axle components with bonded rubber bushings must be brought into the position they will be in when driving before they are tightened (curb weight position).*
>
> *Otherwise, the bonded rubber bushing will have tension, which will reduce the service life.*

By raising the suspension using the -VAS6931- or -VAG1383A- and the -T10149- , this position can be simulated on the hoist.

Before the Applicable Suspension Is Raised, the Vehicle Must Be Secured to the Hoist Lifting Arms Using -T10038- .

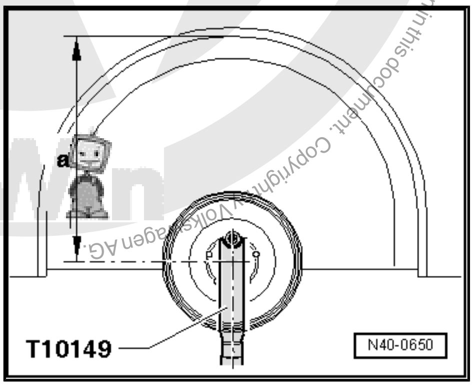
> **WARNING**
>
> *There is a risk that the vehicle could fall off the hoist if it is not secured.*

– Turn the wheel hub until one of the holes for the wheel bolts is on top.

– Install the -T10149- with a wheel bolt on the wheel hub.

The Bolts/Nuts Must Only Be Tightened Once Dimension -a- between the Center of the Wheel Hub and the Lower Edge of the Wheel Housing Has Been Reached.

The dimension -a- is dependent on the height of the installed suspension:



Chassis [1]	PR Numbers	Standing Height -a- in mm
Basic/DCC	G02/G12	391 ± 10 mm
Raised	G14	406 ± 10 mm
DCC Sport	G15	386 ± 10 mm

[1] The type of vehicle suspension is indicated on the vehicle data label. The suspension is indicated by a PR number. Allocation of the PR number according to the suspension. Refer to ⇒ “1.7 Vehicle Data Label”, page 285 .

– Lift the wheel bearing housing using the -VAS6931- or -VAG1383A- until dimension -a- is reached.

WARNING

- *Do not lift or lower the vehicle when the engine and gearbox jack is under the vehicle.*
- *Do not leave the -VAS6931- or -VAG1383A- under the vehicle longer than necessary.*

– Tighten the applicable bolts and nuts.

– Lower the wheel bearing housing.

– Pull the -VAS6931- or -VAG1383A- out from under the vehicle.

– Remove the -T10149- .

2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon

Special tools and workshop equipment required

- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-
- Tensioning Strap - T10038-
- Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-

Caution

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

Bonded rubber bushings have a limited range of rotation.

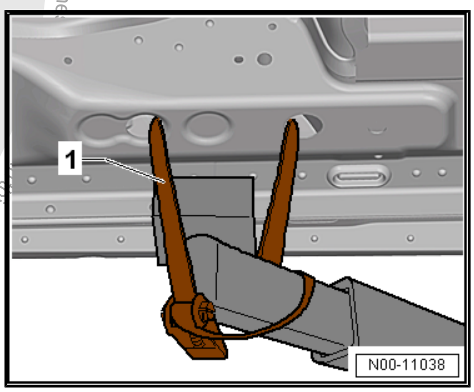
Axle components with bonded rubber bushings must be brought into the position they will be in when driving before they are tightened (curb weight position).

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

By raising the axle on one side using the -VAS6931- or -VAG1383A- and the -T10149- , this position can be simulated on the hoist.

Before Lifting the Axle on One Side, the Vehicle Must Be Secured on Both Sides to the Hoist Lifting Arms using the -T10038- .

1 - -T10038-



WARNING

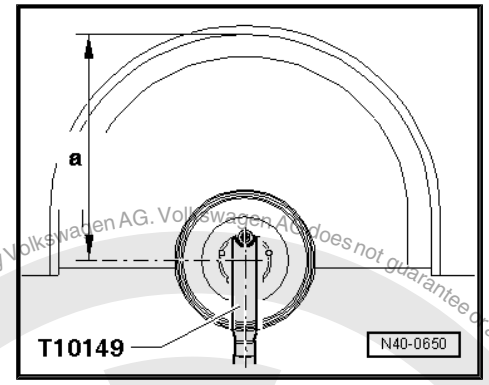
There is a risk that the vehicle could fall off the hoist if it is not secured.

– Turn the wheel hub until one of the holes for the wheel bolts is on top.

– Install the -T10149- with the wheel bolt.

The Bolts/Nuts Must Only Be Tightened Once Dimension -a- between the Center of the Wheel Hub and the Lower Edge of the Wheel Housing Has Been Reached.

The dimension -a- is dependent on the height of the installed suspension:



Chassis 1)	PR Numbers	Standing Height -a- in mm
Basic	G01	391 ± 10 mm
Sport	G02	376 ± 10 mm
Raised	G03	406 ± 10 mm
DCC	G04	381 ± 10 mm
Raised special purpose vehicles / DCC	UC7, UC9	406 ± 10 mm
Nivomat special purpose vehicles	1JI	391 ± 10 mm

1) The type of vehicle suspension is indicated on the vehicle data label. The suspension is indicated by a PR number. Allocation of the PR number according to the suspension. Refer to ⇒ “1.7 Vehicle Data Label”, page 285 .

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

WARNING

- *Do not lift or lower the vehicle when the engine and gearbox jack is under the vehicle.*
- *Do not leave the engine and gearbox jack under the vehicle any longer than necessary.*

– Tighten the applicable bolts and nuts.

– Lower the wheel bearing housing.

– Pull the -VAS6931- or -VAG1383A- out from under the vehicle.

– Remove the -T10149-

2.8.4 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Arteon

Special tools and workshop equipment required

- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-
- Tensioning Strap - T10038-
- Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-

Caution

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

Bonded rubber bushings have a limited range of rotation.

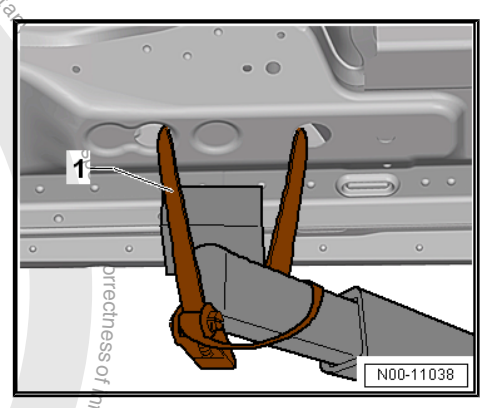
Axle components with bonded rubber bushings must be brought into the position they will be in when driving before they are tightened (curb weight position).

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

By raising the axle on one side using the -VAS6931- or -VAG1383A- and the -T10149- , this position can be simulated on the hoist.

Before Lifting the Axle on One Side, the Vehicle Must Be Secured on Both Sides to the Hoist Lifting Arms using the -T10038- .

1 - -T10038-



WARNING

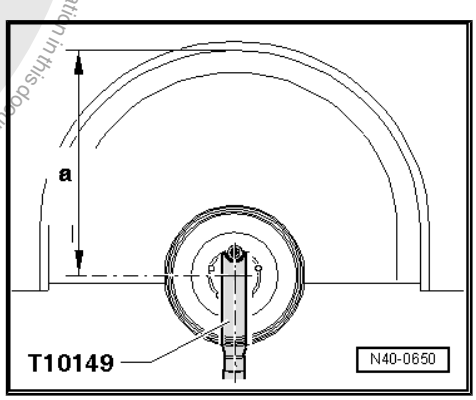
There is a risk that the vehicle could fall off the hoist if it is not secured.

– Turn the wheel hub until one of the holes for the wheel bolts is on top.

– Install the -T10149- with the wheel bolt.

The Bolts/Nuts Must Only Be Tightened Once Dimension -a- between the Center of the Wheel Hub and the Lower Edge of the Wheel Housing Has Been Reached.

The dimension -a- is dependent on the height of the installed suspension:



Chassis [1]	PR Numbers	Standing Height -a- in mm
Basic/DCC	G02/G12	396 ± 10 mm
Raised	G14	411 ± 10 mm
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[1] The type of vehicle suspension is indicated on the vehicle data label. The suspension is indicated by a PR number. Allocation of the PR number according to the suspension. Refer to ⇒ “1.7 Vehicle Data Label”, page 285 .

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

WARNING

- *Do not lift or lower the vehicle when the engine and gearbox jack is under the vehicle.*
- *Do not leave the engine and gearbox jack under the vehicle any longer than necessary.*

– Tighten the applicable bolts and nuts.
– Lower the wheel bearing housing.
– Pull the -VAS6931- or -VAG1383A- out from under the vehicle.
– Remove the -T10149-

3 Vehicles Involved in Collisions, Evaluating

⇒ “3.1 Collision Vehicle Evaluation Checklist”, page 13

3.1 Collision Vehicle Evaluation Checklist

When servicing load-bearing or wheel-supporting components on vehicles involved in a collision, damages on the suspension could remain undiscovered. These undiscovered damages may lead to severe damage 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 Inspection and Function Check of the Steering System

- ♦ Visual inspection for deformations and cracks
- ♦ Check for play in tie rod joints and steering gear
- ♦ Visual inspection for faulty bellows and grease boots
- ♦ Check electric and hydraulic lines and hoses for chafe marks, cuts and kinks.
- ♦ Check hydraulic lines, threaded connections and steering gear for leaks
- ♦ Make sure the steering gear and lines are securely fastened.
- ♦ Check for correct function over the entire steering angle by turning the steering wheel from stop to stop. Steering wheel must be able to rotate an even force without getting caught.

Visual and Function Test for the Suspension

- The sequence of the following test steps must be maintained.
- ♦ Check all components shown in the overviews for deformation, cracks and other damage.
- ♦ Replace the damaged components
- ♦ Perform a vehicle alignment on a Volkswagen AG approved alignment rack.

Visual and Function Test for Wheels, Tires

- ♦ Check for run-out and imbalance.
- ♦ Check tires for cuts and impact damage in the tread and on the sides. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Tires, Evaluating .
- ♦ Check the tire pressure; for the correct tire pressure, refer to the tire pressure label on the driver side B-pillar or on the fuel filler door.

Replace the tire if the rim and/or the tire are damaged. This also applies when the crash details and damage to the vehicle point to possible non-visible damages.

Another deciding factor 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.

This test is for checking the chassis on a vehicle, that has been in a collision. The test does not cover the entire vehicle.

Electronic Vehicle Systems

Safety-related systems, such as: ABS/EDS; Airbag; electronically controlled suspension systems; electro-mechanical; electro-hydraulic steering and other driver assist systems, must be checked for possible stored fault messages. Refer to Vehicle Diagnostic Tester . If faults were stored in the DTC memory for the system mentioned, then these systems must be serviced according to the specifications in the repair manual/ELSA. After performing repairs, check the DTC memory of the affected system again, to make sure that proper function can be ensured again.

4 Disposal

⇒ “4.1 Front Gas-Filled Shock Absorbers, Venting and Draining”, page 15

⇒ “4.2 Rear Gas-Filled Shock Absorbers, Venting and Draining”, page 16

4.1 Front Gas-Filled Shock Absorbers, Venting and Draining

⇒ “4.1.1 Front Shock Absorbers, Venting and Emptying, Standard Shock Absorber”, page 15

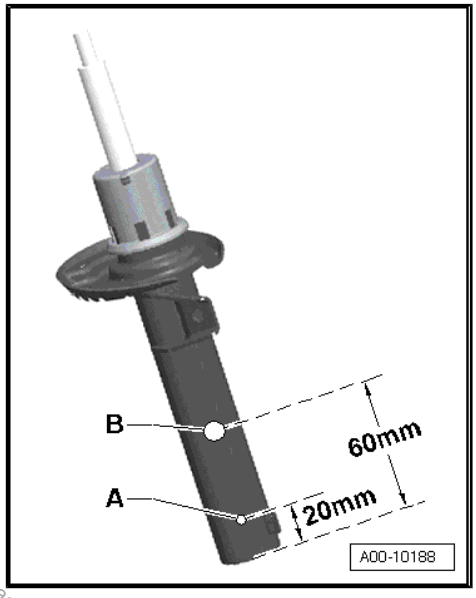
⇒ “4.1.2 Front Shock Absorbers, Venting and Emptying, DCC Shock Absorber”, page 16

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.

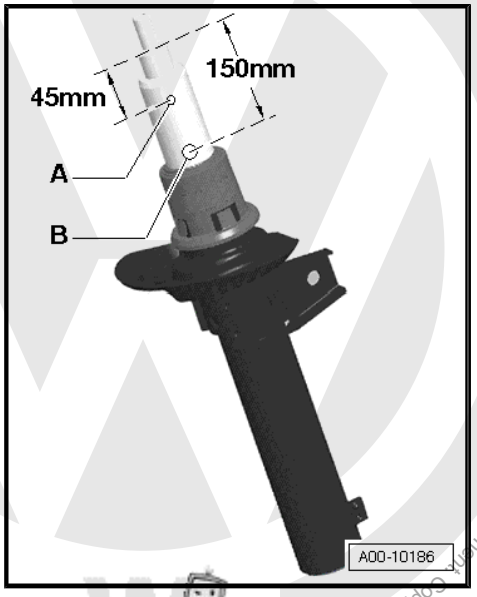
– Continue drilling until the tube inside is drilled through (approximately 25 mm deep).
– Drill a second 6 mm hole -B- through the outer and inner shock absorber tubes.
– Hold the shock absorber over an appropriate container for catching oil. Move the piston rod repeatedly through the entire stroke 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.



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– 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. Move the piston rod repeatedly through the entire stroke until no more oil flows out.

4.2 Rear Gas-Filled Shock Absorbers, Venting and Draining

⇒ “4.2.1 Rear Shock Absorbers, Venting and Emptying, Standard Shock Absorber”, page 16

⇒ “4.2.2 Rear Shock Absorbers, Venting and Emptying, DCC Shock Absorber”, page 17

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

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

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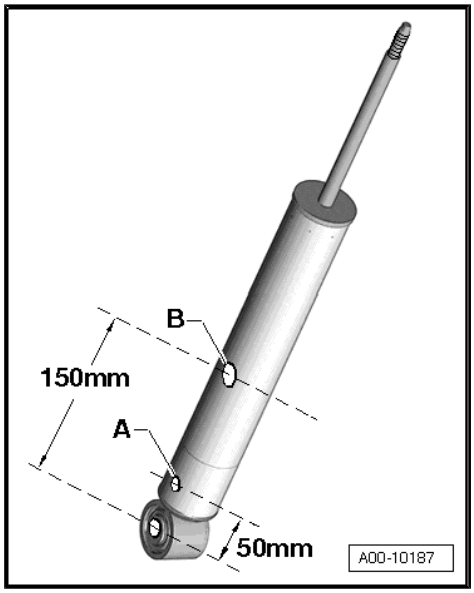

– Drill a 3 mm hole -A- through the shock absorber outer tube.

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Gas escapes when drilling.

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– 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. 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.

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Gas escapes when drilling.

– Continue drilling until the tube inside is drilled through (approximately 25 mm deep).
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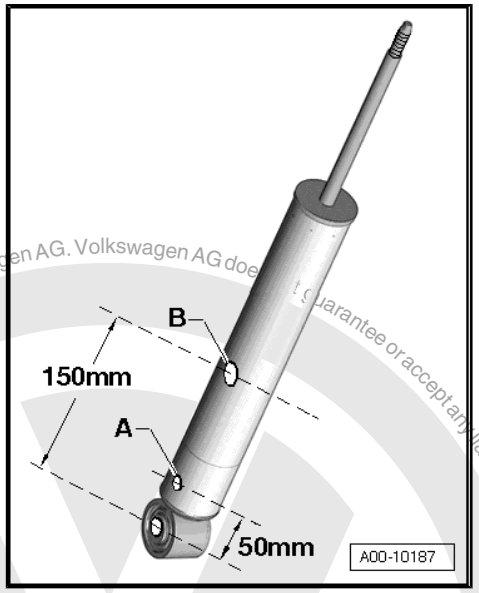
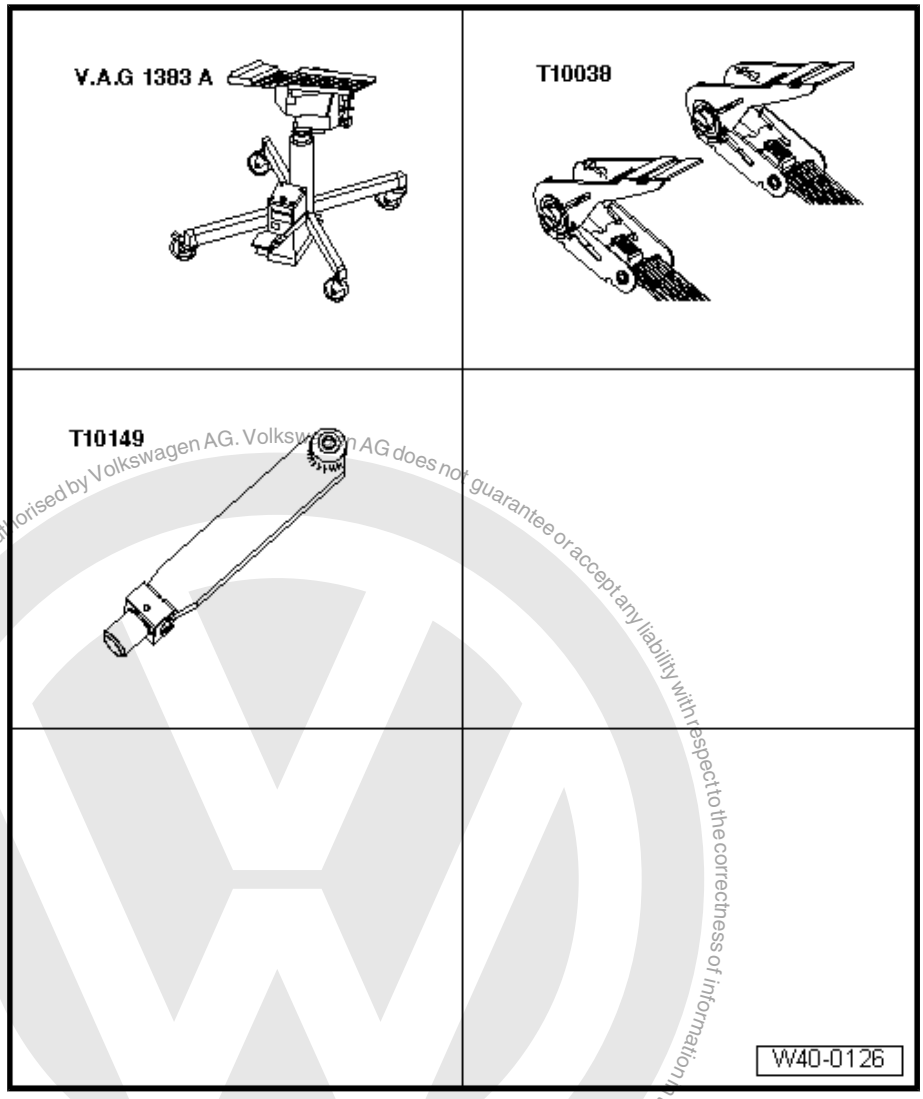


5 Special Tools

Special tools and workshop equipment required



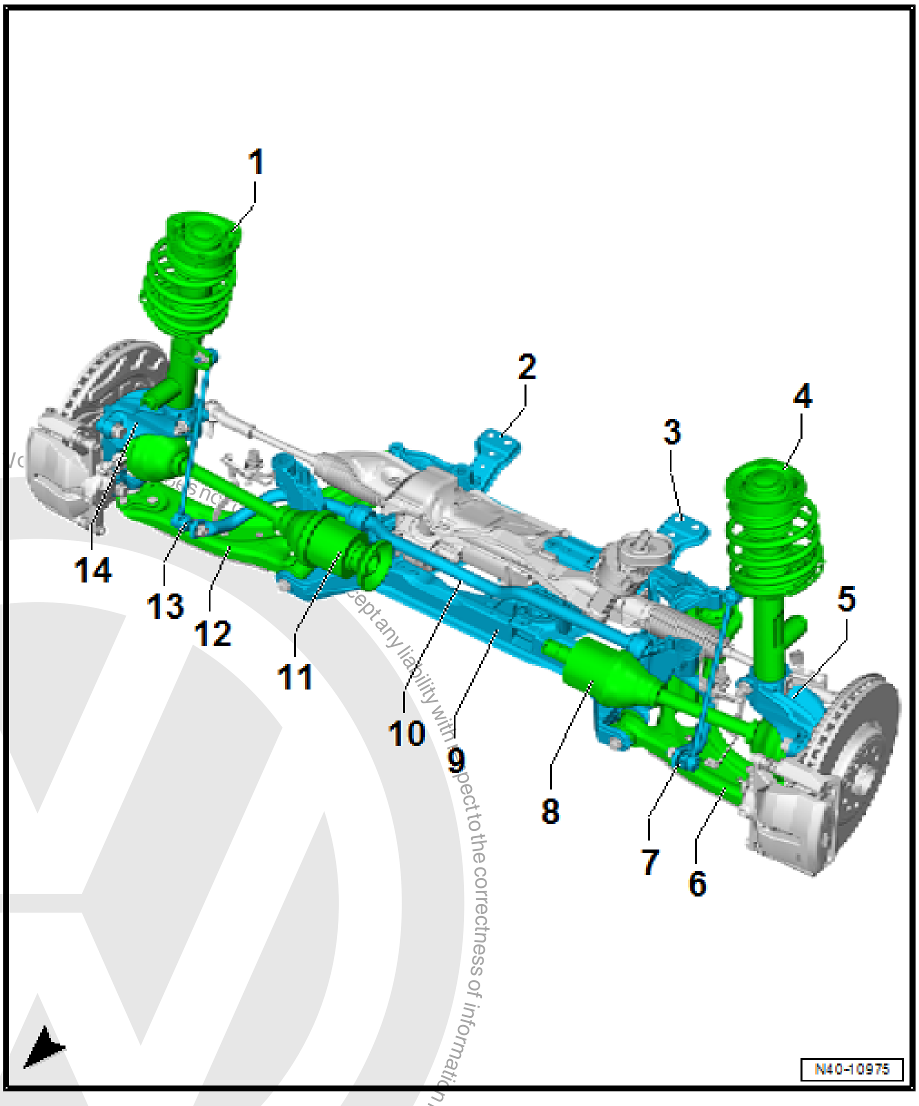
- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-
- Tensioning Strap - T10038-
- Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-

40 – Front Suspension

1 Front Axle

⇒ “1.1 Component Location Overview - Front Axle”, page 19

1.1 Component Location Overview - Front Axle



1 - Suspension Strut
- ❑ Right
- ❑ Overview. Refer to ⇒ “4.1 Overview - Suspension Strut and Upper Control Arm”, page 51 .
- ❑ Removing and installing. Refer to ⇒ “4.2 Suspension Strut, Removing and Installing”, page 52 .

2 - Support
- ❑ Right

3 - Support
- ❑ Left

4 - Suspension Strut
- ❑ Left
- ❑ Overview. Refer to ⇒ “4.1 Overview - Suspension Strut and Upper Control Arm”, page 51 .
- ❑ Removing and installing. Refer to ⇒ “4.2 Suspension Strut, Removing and Installing”, page 52 .

5 - Wheel Bearing
- ❑ Left
- ❑ Overview. Refer to ⇒ “6.1 Overview - Wheel Bearing”, page 82 .
- ❑ Wheel Bearing Housing, Removing and installing. Refer to ⇒ “6.2 Wheel Bearing Housing, Removing and Installing”, page 82 .
- ❑ Wheel Bearing Unit, Removing and installing. Refer to ⇒ “6.3 Wheel Bearing Unit, Removing and Installing”, page 86 .

6 - Lower Control Arm
- ❑ Left
- ❑ Overview. Refer to ⇒ “5.1 Overview - Lower Control Arm and Ball Joint”, page 61 .
- ❑ Removing and installing. Refer to ⇒ “5.2 Lower Control Arm, Removing and Installing”, page 62 .

7 - Coupling Rod
- ❑ Left
- ❑ Removing and installing. Refer to ⇒ “3.3 Coupling Rod, Removing and Installing”, page 50 .

8 - Drive Axle

- ❑ Left
- ❑ Overview. Refer to ⇒ “7.2 Overview - Drive Axle”, page 91 .
- ❑ Removing and installing. Refer to ⇒ “7.3 Drive Axle, Removing and Installing”, page 96 .

9 - Subframe

- ❑ Overview. Refer to ⇒ “2.1 Overview - Subframe”, page 21 .
- ❑ Subframe, Removing and Installing, without Steering Gear. Refer to ⇒ “2.2 Subframe without Steering Gear, Removing and Installing”, page 22 .
- ❑ Subframe, Removing and Installing, with Steering Gear. Refer to ⇒ “2.3 Subframe with Steering Gear, Removing and Installing”, page 26 .
- ❑ Stabilizer bar with rubber bushing, removing and installing. Refer to ⇒ “3.2 Stabilizer Bar, Removing and Installing”, page 46 .

10 - Stabilizer Bar

- ❑ Overview. Refer to ⇒ “3.1 Overview - Stabilizer Bar”, page 45 .
- ❑ Removing and installing. Refer to ⇒ “3.2 Stabilizer Bar, Removing and Installing”, page 46 .

11 - Drive Axle

- ❑ Right
- ❑ Overview. Refer to ⇒ “7.2 Overview - Drive Axle”, page 91 .
- ❑ Removing and installing. Refer to ⇒ “7.3 Drive Axle, Removing and Installing”, page 96 .

12 - Lower Control Arm

- ❑ Right
- ❑ Overview. Refer to ⇒ “5.1 Overview - Lower Control Arm and Ball Joint”, page 61 .
- ❑ Removing and installing. Refer to ⇒ “5.2 Lower Control Arm, Removing and Installing”, page 62 .

13 - Coupling Rod

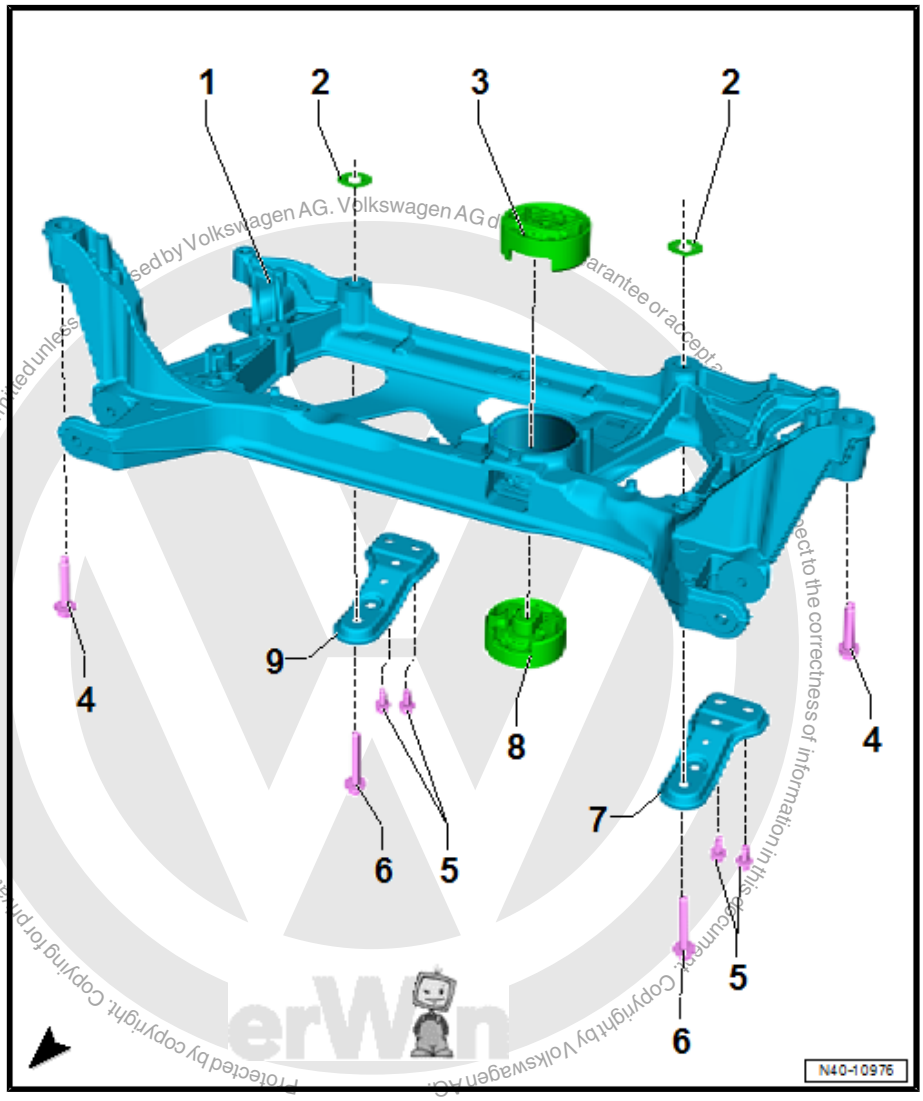
- ❑ Right
- ❑ Removing and installing. Refer to ⇒ “3.3 Coupling Rod, Removing and Installing”, page 50 .

14 - Wheel Bearing

- ❑ Right
- ❑ Overview. Refer to ⇒ “6.1 Overview - Wheel Bearing”, page 82 .
- ❑ Wheel Bearing Housing, Removing and installing. Refer to ⇒ “6.2 Wheel Bearing Housing, Removing and Installing”, page 82 .
- ❑ Wheel Bearing Unit, Removing and installing. Refer to ⇒ “6.3 Wheel Bearing Unit, Removing and Installing”, page 86 .

2 Subframe

2.1 Overview - Subframe



1 - Subframe

- ❑ Securing. Refer to ⇒ “2.6 Subframe, Securing”, page 38 .
- ❑ Lowering. Refer to ⇒ “2.7 Subframe, Lowering”, page 41 .
- ❑ Removing and Installing, without Steering Gear. Refer to ⇒ “2.2 Subframe without Steering Gear, Removing and Installing”, page 22 .
- ❑ Removing and Installing, with Steering Gear. Refer to ⇒ “2.3 Subframe with Steering Gear, Removing and Installing”, page 26 .

2 - Intermediate Plate

- ❑ Always insert between the subframe and the body

3 - Upper Bonded Rubber Bushing for Pendulum Support

- ❑ Replacing. Refer to ⇒ “2.4 Subframe, Servicing”, page 31 .

4 - Bolt

- ❑ 70 Nm + 180°
- ❑ Replace after removing.

5 - Bolt

- ❑ 50 Nm + 90°
- ❑ Replace after removing.

6 - Bolt

- ❑ 70 Nm + 180°
- ❑ Replace after removing.

7 - Left Support

8 - Lower Bonded Rubber Bushing for Pendulum Support

❑ Replacing. Refer to ⇒ “2.4 Subframe, Servicing”, page 31 .

9 - Right Support

2.2 Subframe without Steering Gear, Removing and Installing

Special tools and workshop equipment required

- Torque Wrench 1332 40-200Nm - VAG1332-
- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-

Removing

Note

Subframe is removed together with the control arms.

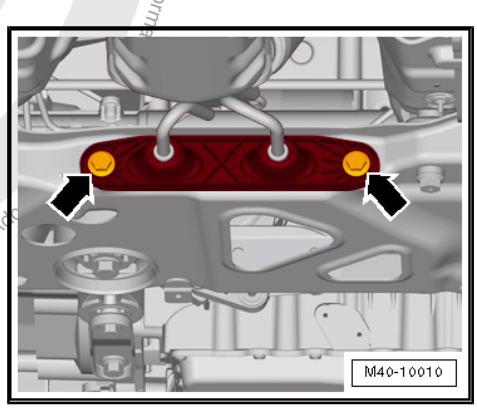
– Loosen the wheel bolts.

– Raise the vehicle.

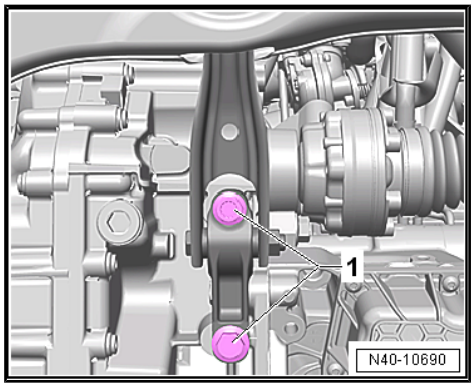
– Remove the wheels.

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

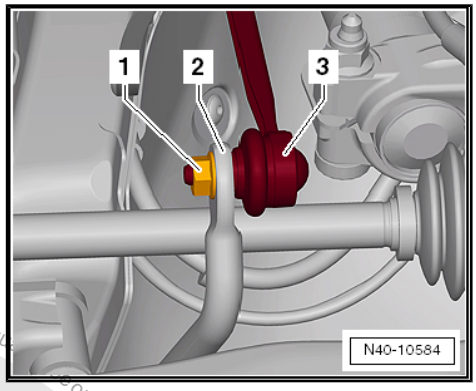
– Remove the exhaust system bracket from the subframe -arrows-.



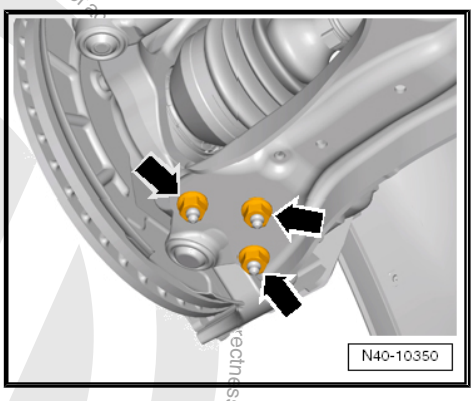
– Remove the pendulum support bolts -1-.



– 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.

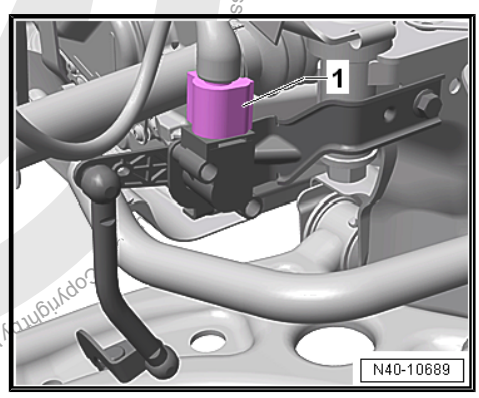


– Remove the nuts -arrows- on the left and right side of the vehicle.



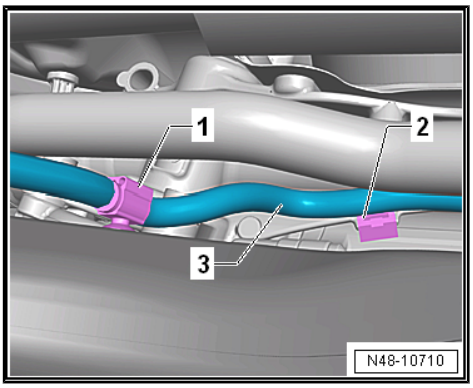
Vehicles with Level Control System Sensor

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

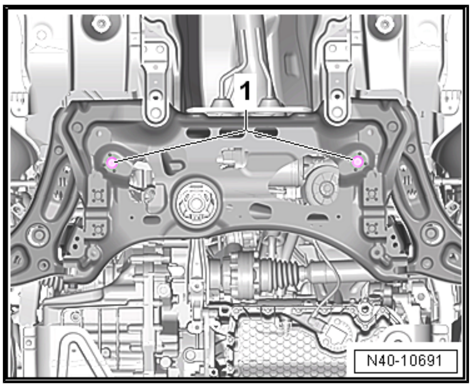


Continuation for All Vehicles

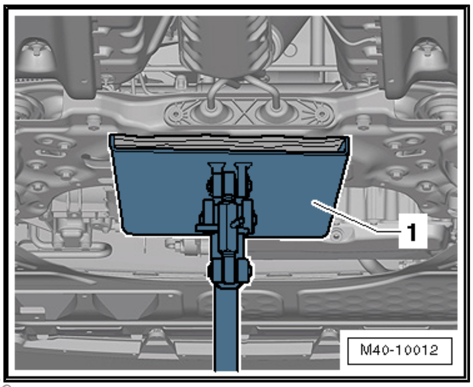
– Remove the clips -1 and 2- for the wiring harness -3- from the subframe and the steering gear.



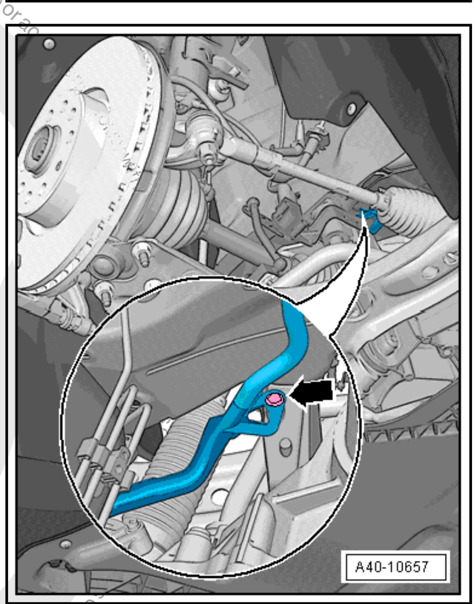
- Remove the steering gear bolts -1-.
- Pry the steering gear out of the subframe alignment sleeves.



- Place the -VAS6931- or -VAG1383A- -1- under the subframe.
- Secure the subframe (refer to ⇒ “2.6 Subframe, Securing”, page 38) and lower it approximately 10 cm.



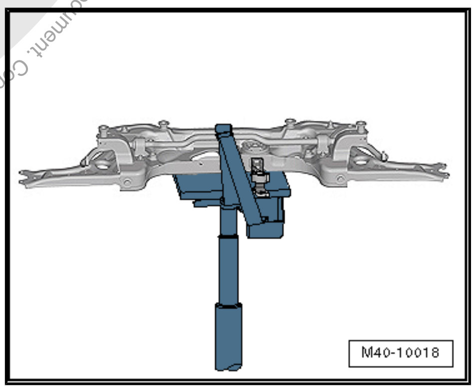
- Remove the expanding clip -arrow-.
- Lower the subframe using the -VAS6931- or -VAG1383A- .



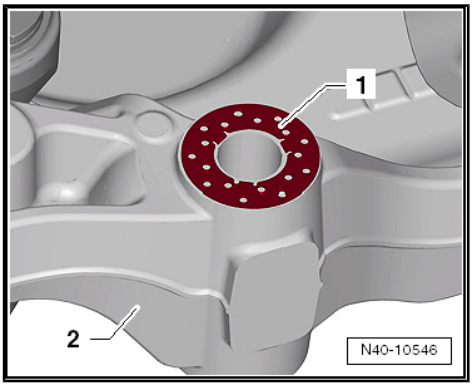
- Secure the subframe on the -VAS6931- or -VAG1383A- .
- Secure the steering gear on the body.

Installing

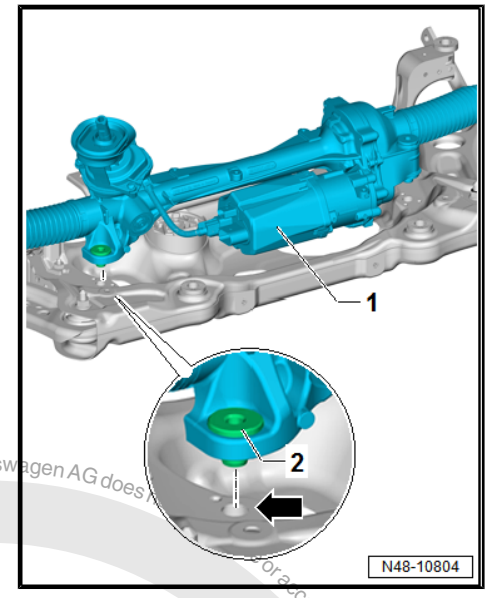
Install in reverse order of removal while noting the following:



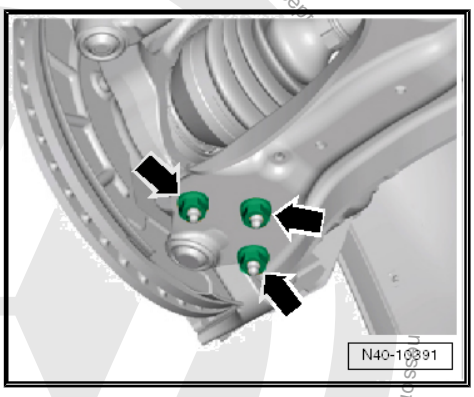
– Always make sure the intermediate plate -1- is installed between the subframe -2- and the body.



– Position the steering gear -1- on the subframe.
– Insert the steering gear threaded sleeves -2- in the subframe holes -arrow-.



– Tighten the nuts -arrows-.
– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .



Tightening Specifications

- Refer to ⇒ “2.1 Overview - Subframe”, page 21
- Refer to ⇒ “3.1 Overview - Steering Gear”, page 324
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Pendulum support bolts. Refer to ⇒ Rep. Gr. 10 ; Assembly Mounts; Overview - Assembly Mounts .
- 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 .
- Driver side instrument panel cover. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments/Covers; Driver Side Instrument Panel Cover, Removing and Installing .

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.

2.3 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.

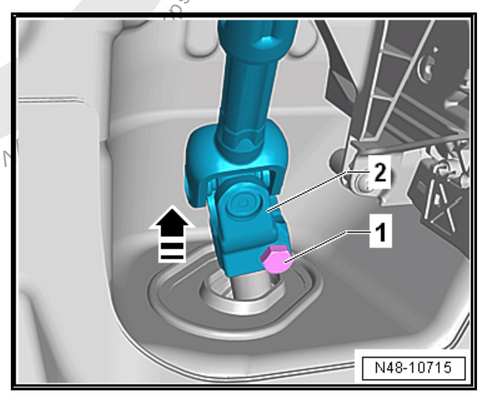
– Disconnect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Disconnecting and Connecting .

Continuation for All Vehicles

– Remove the driver side instrument panel cover. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Driver Side Instrument Panel Cover, Removing and Installing .

– Fold back the carpet.

– 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.*

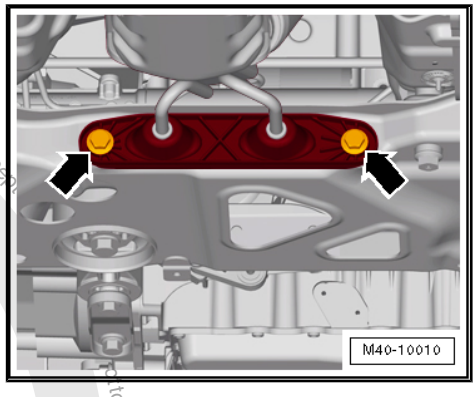
– Loosen the wheel bolts.

– Raise the vehicle.

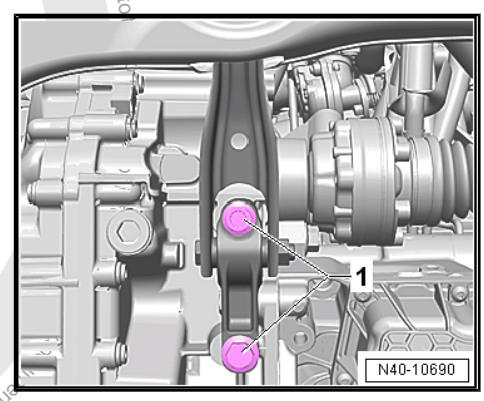
– Remove the wheels.

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

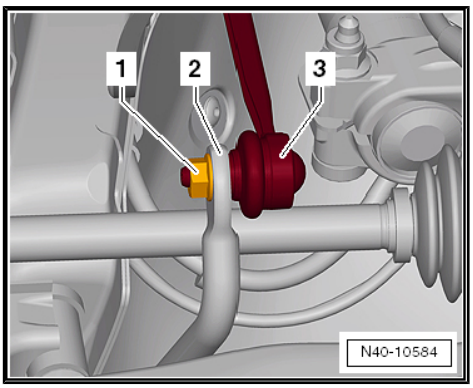
– Remove the exhaust system bracket from the subframe -arrows-.



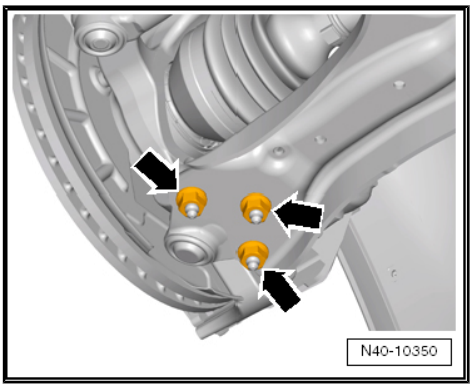
– Remove the pendulum support bolts -1-.



– 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.



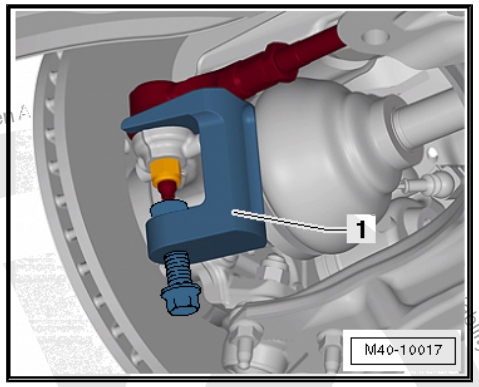
– Loosen the nut from the tie rod end, but do not remove it yet.

Caution

To protect the thread, screw the nut on the pin several turns.

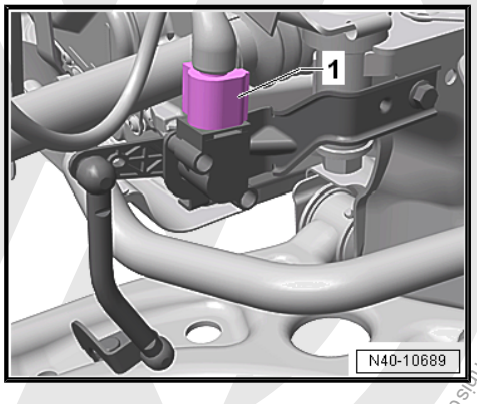
– Remove the tie rod end from the wheel bearing housing and remove the nut.

1 - -T10187-



Vehicles with Level Control System Sensor

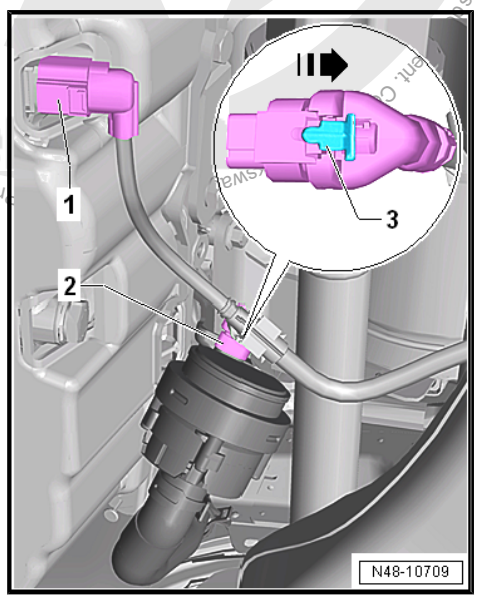
– Disconnect the connector -1- from the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- .



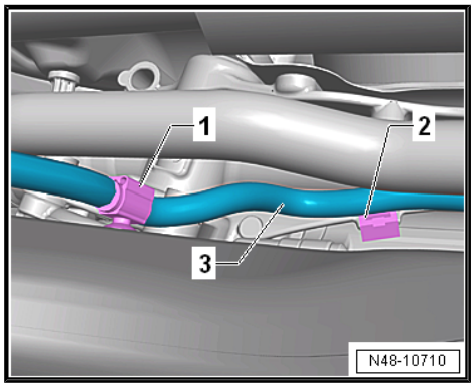
Continuation for All Vehicles

– Disconnect the connector -1- for the Oil Level Thermal Sensor - G266- .

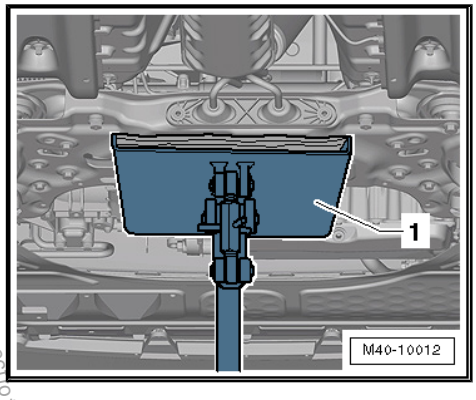
– If equipped, disconnect the connector -2- from the After-Run Coolant Pump - V51- . To do so, open the catch -3- in the direction of -arrow- and release the connector.



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



– Place the -VAS6931- or -VAG1383A- -1- under the subframe.



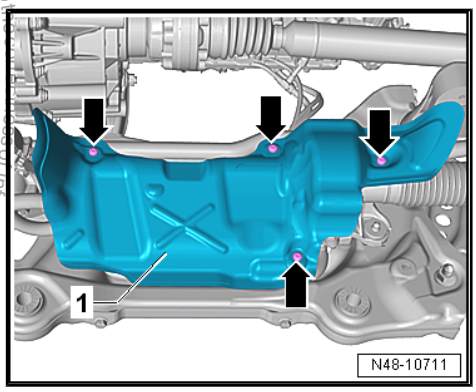
– Secure the subframe (refer to ⇒ “2.6 Subframe, Securing”, page 38) and lower it approximately 10 cm.

Vehicles with long shield

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

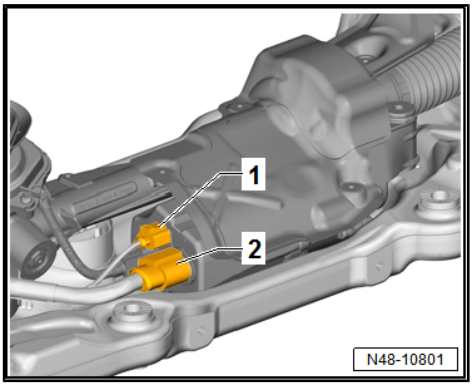
Note

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.

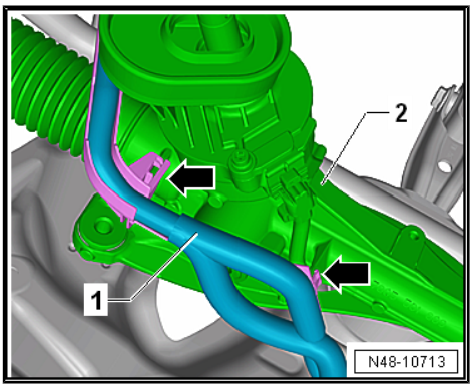


Continuation for All Vehicles

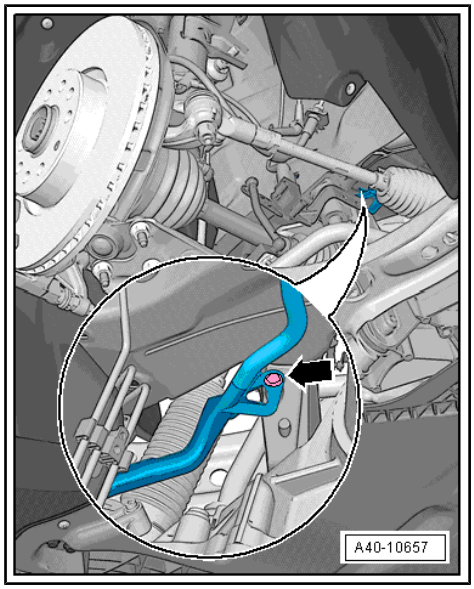
– Disconnect the connectors -1 and 2- from the steering gear.



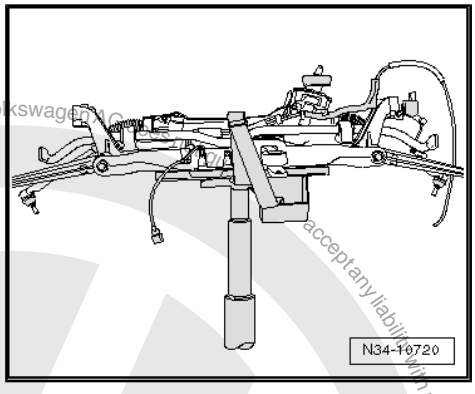
– Unclip the wiring harness -1- from the steering gear -2- -arrows-.



– Remove the expanding clip -arrow-.
– Lower the subframe using the -VAS6931- or -VAG1383A- .



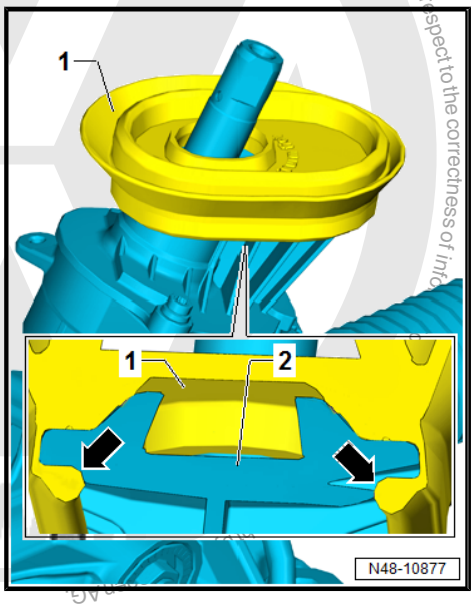
– Secure the subframe on the -VAS6931- or -VAG1383A- with the belt for this.



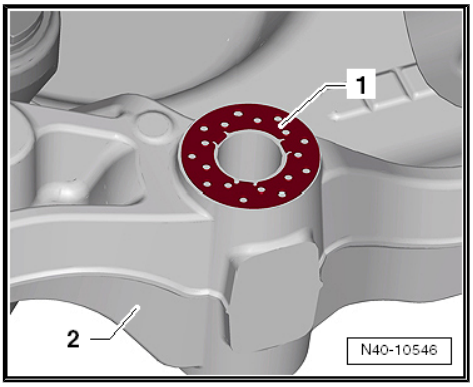
Installing

Install in reverse order of removal. Note the following:

– Replacing the seal -1-.
– Fold up the seal -1- over the collar of the steering gear -2- so that the rubber lip encloses the collar all around -arrows-.
– Check the seal -1- for secure fit.
– Coat the seal from above with lubricant for example soft soap.



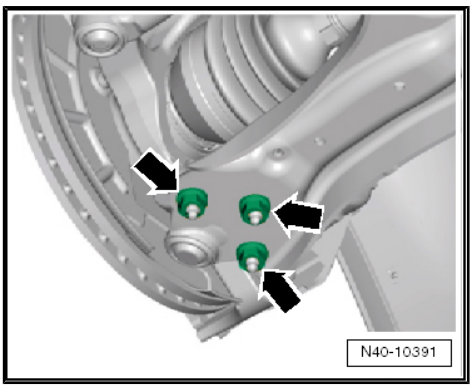
– Always make sure the intermediate plate -1- is installed between the subframe -2- and the body.



Note

- *After attaching the steering gear to the universal joint, make sure that seal on steering gear is positioned on the mounting plate without any kinks and is sealed correctly. The opening to the footwell must be sealed correctly. Water leak and/or noises may be the result.*
- *Make sure sealing surfaces are clean.*

– Tighten the nuts -arrows-.



– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “2.1 Overview - Subframe”, page 21
- Refer to ⇒ “5.1 Overview - Lower Control Arm and Ball Joint”, page 61
- Refer to ⇒ “6.1 Overview - Wheel Bearing”, page 82
- Refer to ⇒ “3.1 Overview - Steering Gear”, page 324
- Refer to ⇒ “2.1 Overview - Steering Column”, page 312
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Pendulum support bolts. Refer to ⇒ Rep. Gr. 10 ; Assembly Mounts; Overview - Assembly Mounts .
- 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 bracket to subframe. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Mufflers .
- Driver side instrument panel cover. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments/Covers; Driver Side Instrument Panel Cover, Removing and Installing .

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.

2.4 Subframe, Servicing

Special tools and workshop equipment required

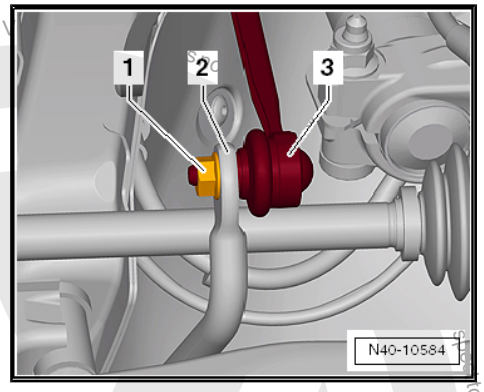
- Bearing Installer - Wheel Hub/Bearing Kit - T10205-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Hydraulic Press - VAS6178-
- Pneumatic/Hydraulic Foot Pump - VAS6179-
- Rubber Bushing Assembly Device Kit - VAS6779A-
- Press Plate - VW401-
- Press Piece - Multiple Use - VW412-

Replacing the Bonded Rubber Bushing for the Pendulum Support.

– 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-.

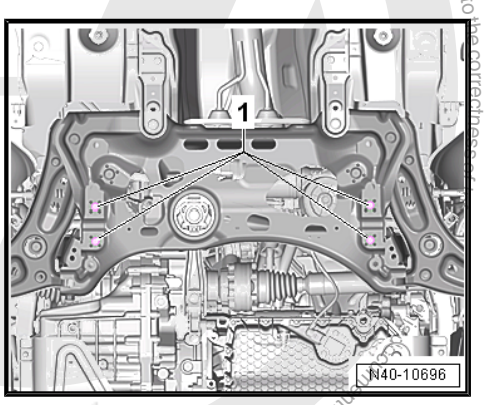
– Remove the coupling rod -3- from the stabilizer bar -2- on the left and right sides.



– Remove the stabilizer bar bolts -1-.

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

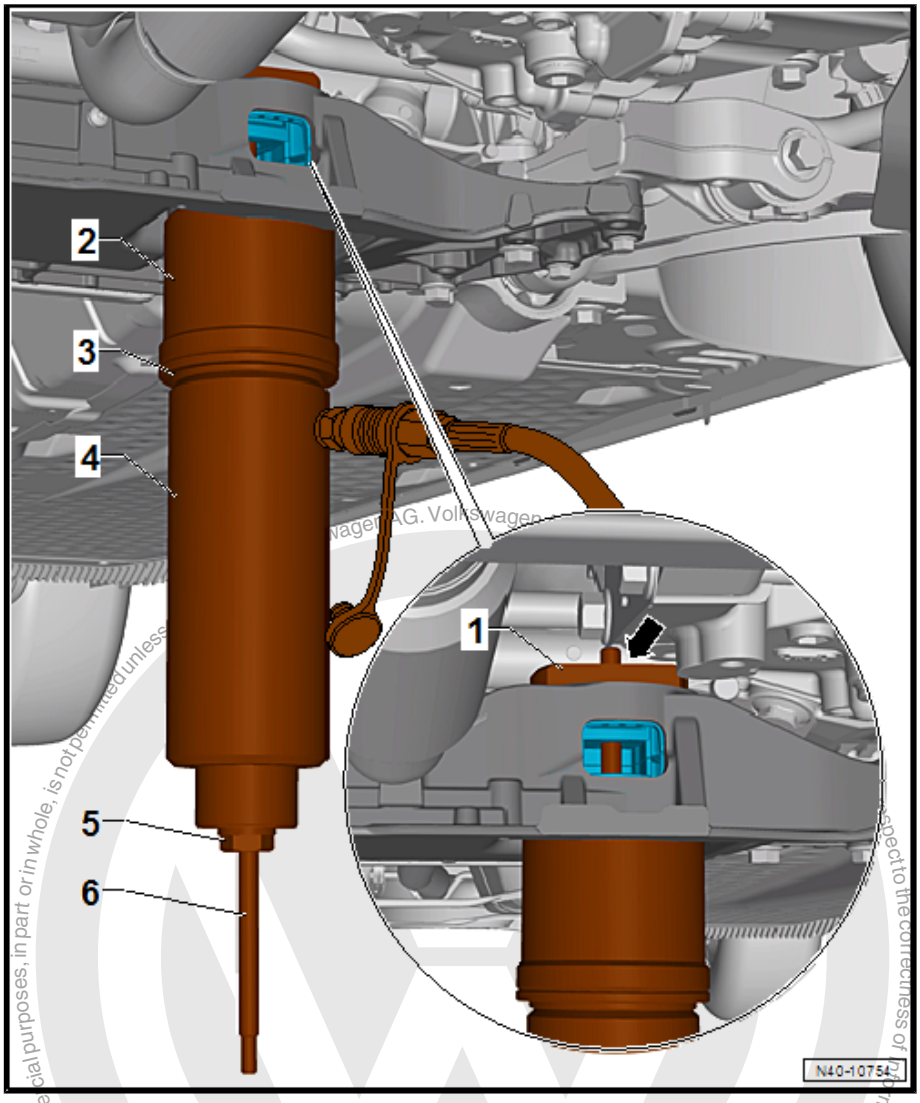
– Remove the pendulum support. Refer to ⇒ Rep. Gr. 10 ; Assembly Mounts; Pendulum Support, Removing and Installing .



Bonded Rubber Bushing, Pressing Out

– Install the -VAS6779A- on the subframe as shown.

– Position the -VAS6779/1- -1- with the flat side -arrow- on the bonded rubber bushing in the direction of travel.



1 - -VAS6779/1-

2 - -VAS6779/4- , with the small outer diameter toward the sub-frame

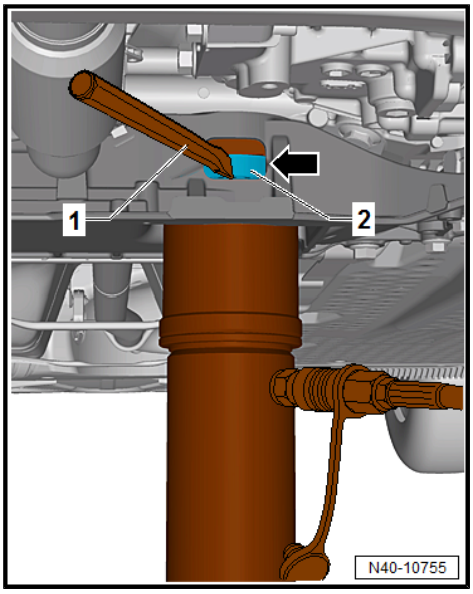
3 - -VAS6779/5-

4- -VAS6178- with -T10205/13-

5 - -VAS6779/3-

6 - -VAS6779/2-

– Press out both bonded rubber bushings until the upper bonded rubber bushing -2- is visible in the pendulum support opening -arrow- in the subframe.
– Perform a visual inspection of the upper bonded rubber bushing outer race -2-.
• If the upper bonded rubber bushing outer race -2- is deformed, it must be destroyed through the opening for the pendulum support -arrow- in the subframe.
– Using a chisel or similar tool -1-, make a break in the upper bonded rubber bushing outer race -2-.



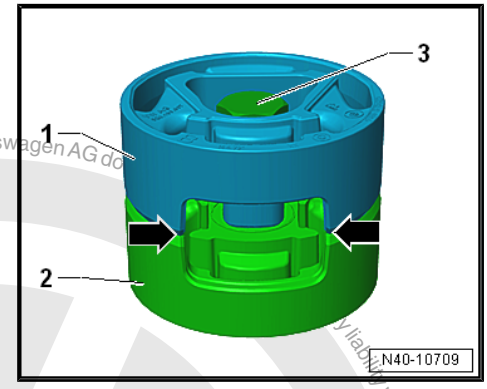
Note

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.

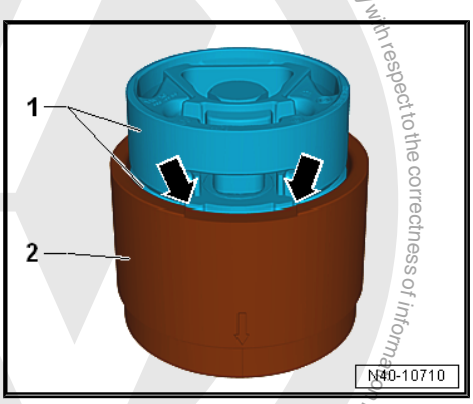
– Completely press out both bonded rubber bushings at the same time.

Preparing Bonded Rubber Bushings before Pressing in

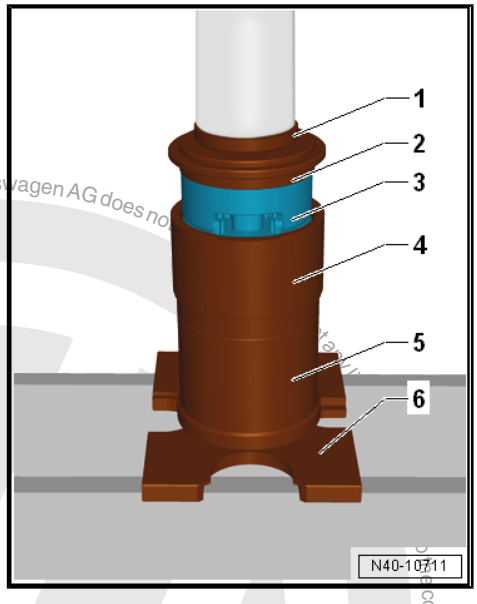
– Place the bonded rubber bushings -1 and 2- on top of each other so the openings -arrows- lay directly over each other.
– Tighten the bonded rubber bushings -1 and 2- using the original bolt -3- hand tight.



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



– Press the bonded rubber bushing -3- in the -VAS6779/6- until it stops as shown.



1 - -VW412-

2 - -VAS6779/5- , the side with the letter »A« points upward

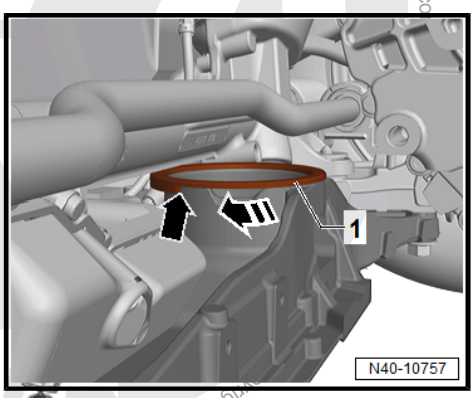
3 - Bonded Rubber Bushing

4 - -VAS6779/6-

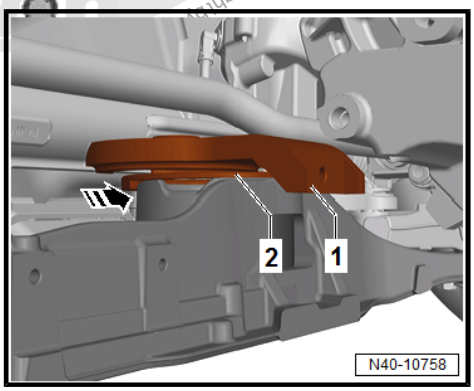
5 - -VAS6779/4-

6 - -VW401-

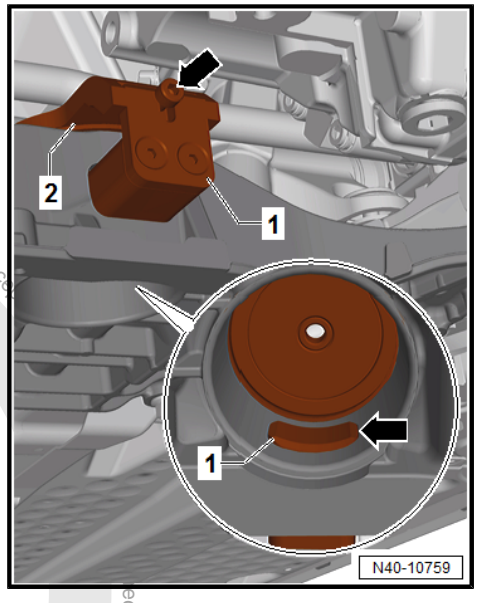
– Turn the -VAS6779/11- -1- in the direction of -arrow- so that the tab -arrow- points to the rear.



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

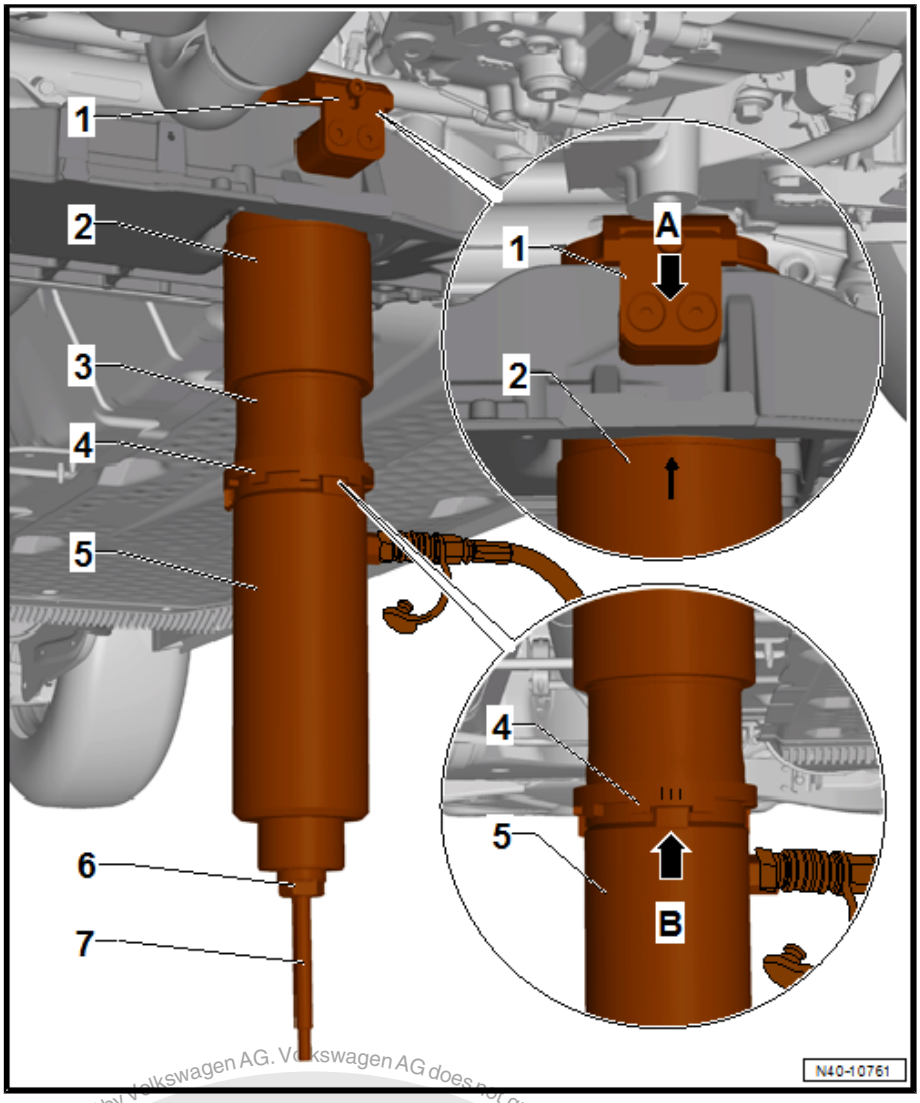


– Insert the -VAS6779/7-1A- -1- into the pendulum support opening in the subframe.
– Install the -VAS6779/7-1A- on the -VAS6779/7- -2- with the bolt -arrow-.
– Make sure that the -VAS6779/7-1A- -1- is seated correctly in the subframe opening -arrow-.



Bonded Rubber Bushing, Pressing In

– Screw the -VAS6779/2- -7- into the -VAS6779/7- -1-.
– Attach the -VAS6779A- to the subframe as shown.



1 - -VAS6779/7-

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

3 - -VAS6779/9-

4 - -VAS6779/8- , the marking -III- on the Incremental Ring must point toward the cam -arrow B- on the -VAS6779/9- .

5 - -VAS6178- with -T10205/13- .

6 - -VAS6779/3-

7 - -VAS6779/2-

– Press in both bonded rubber bushings at the same time.

– Remove the -VAS6779- from the subframe and check the position of the pressed in bonded rubber bushing.

– Fasten the stabilizer bar with the subframe and the coupling rod.

– Install the pendulum support. Refer to ⇒ Rep. Gr. 10 ; Assembly Mounts; 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 21
- Pendulum support bolts. Refer to ⇒ Rep. Gr. 10 ; Assembly Mounts; Overview - Assembly Mounts .
- Noise insulation bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .

2.5 Thread in Longitudinal Member, Servicing

It is possible under certain circumstances to service the threads in the weld nuts in the longitudinal member. Refer to ⇒ Body Repair; Rep. Gr. 50 .

2.6 Subframe, Securing

Special tools and workshop equipment required

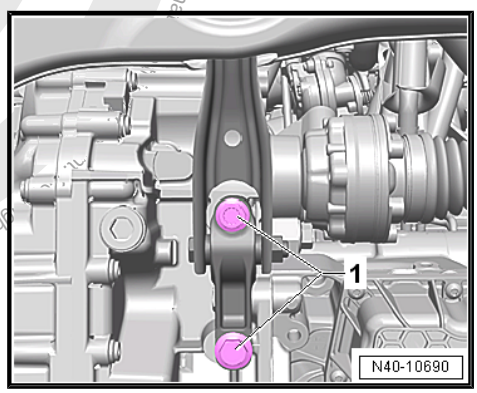
- Assembly Tool, Sub-frame Alignment - T10486A-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-

Note

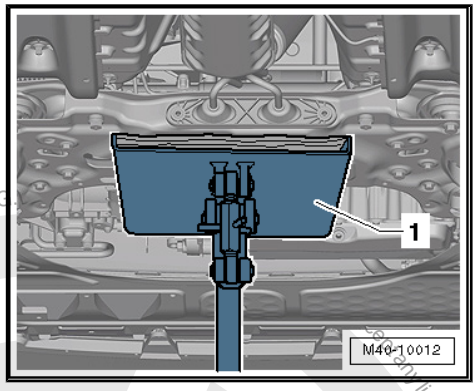
- *For certain assemblies on the vehicle, subframe or complete front axle must be removed.*
- *The original position of the subframe to the body is ensured by using four -T10486/1- .*
- *-T10486/1- (quantity 2) are part of the -T10486- . If the -T10486- is already in the service operation, then only the supplement from the -T10486/1- (quantity 2) are required.*
- *If the -T10486- is not already in the service operation, then the -T0486A- is used. This has four -T10486/1- and two -T10486/2- The -T10486/2- are not necessary for the following steps.*

– 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 -VAS6931- or -VAG1383A- -1- under the subframe.
– If necessary, clean the threads of the -T10486/1- .

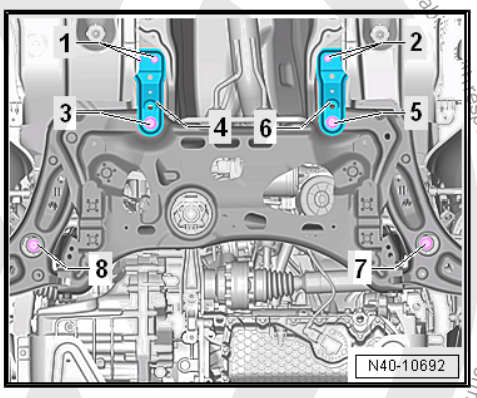


• To secure the subframe, the -T10486/1- must be installed at the positions -3, 5, 7 and 8- one after the other.

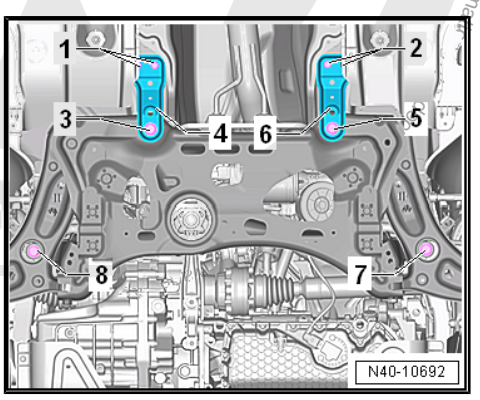
Note

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

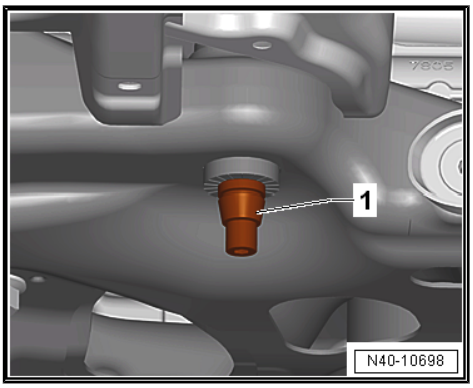
Rear Subframe, Securing



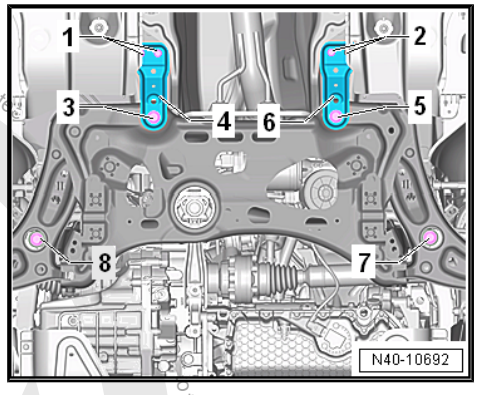
– Remove the bolts -1-.
– Remove the bolt -3- and the support -4-.



– Insert the -T10486/1- -1- and tighten to 20 Nm.

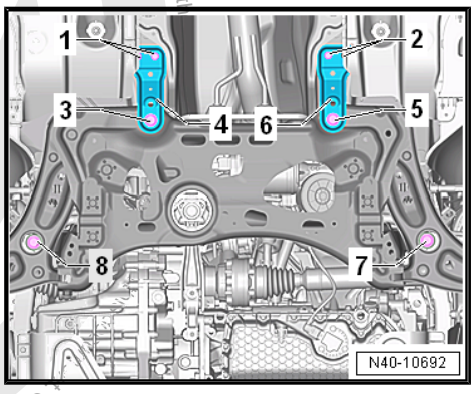


– Remove the bolts -2-.
– Remove the bolt -5- and the support -6-.
– Insert the -T10486/1- and tighten to 20 Nm.

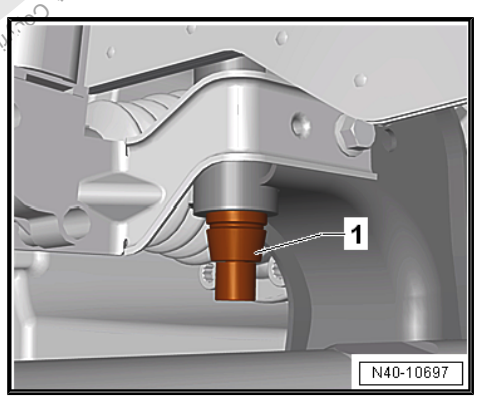


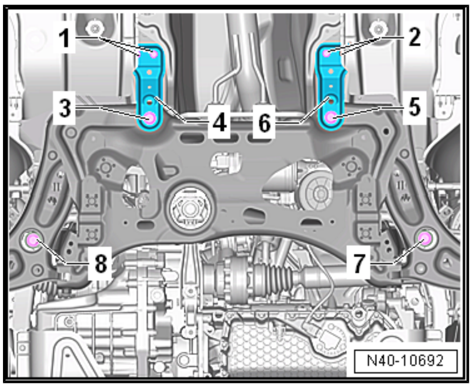
Front Subframe, Securing

– Remove the bolt -8-.



– Insert the -T10486/1- -1- and tighten to 20 Nm.





– Remove the bolt -7-.

– Insert the -T10486/1- and tighten to 20 Nm.

• Securing the subframe is completed when all above mentioned bolts are replaced with -T10486/1- one after the other.

• The subframe position is now secured.

-T10486/1- , Removing

The removal is reverse of installation, noting the following:

– Always only remove one locating pin and replace it with a new bolt.

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

♦ Refer to ⇒ “2.1 Overview - Subframe”, page 21

♦ Pendulum support bolts. Refer to ⇒ Rep. Gr. 10 ; Assembly Mounts; Overview - Assembly Mounts .

♦ 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.

2.7 Subframe, Lowering

Special tools and workshop equipment required

♦ Torque Wrench 1332 40-200Nm - VAG1332-

♦ Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-

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

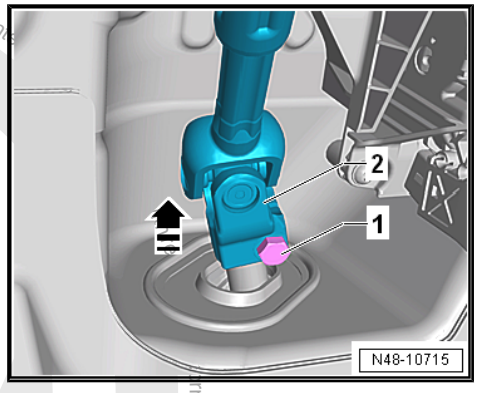
– Switch the ignition off and open the driver door so the steering wheel lock engages.

– Disconnect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Disconnecting and Connecting .

– Remove the driver side instrument panel cover. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Driver Side Instrument Panel Cover, Removing and Installing .

– Fold back the carpet.

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



Caution

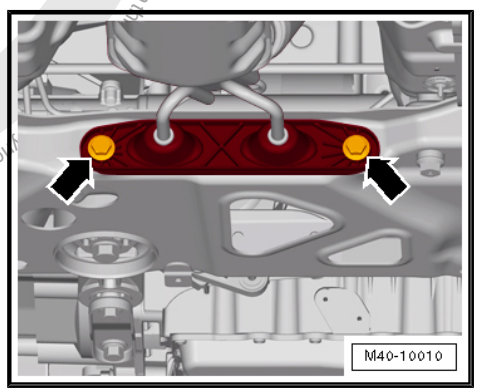
If the universal joint is separated from the steering gear, the following work cannot be performed:

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

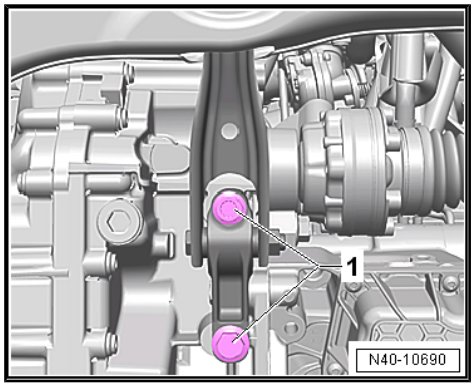
These points must be observed since performing these actions could cause irreparable damage.

– 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-.

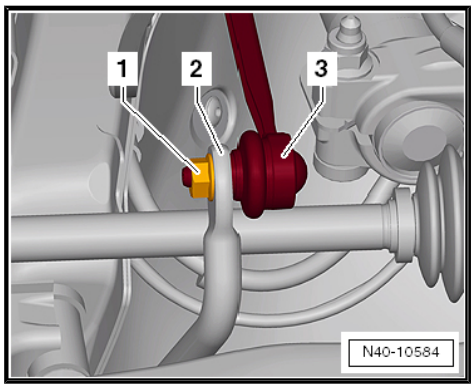


– Remove the pendulum support bolts -1-.



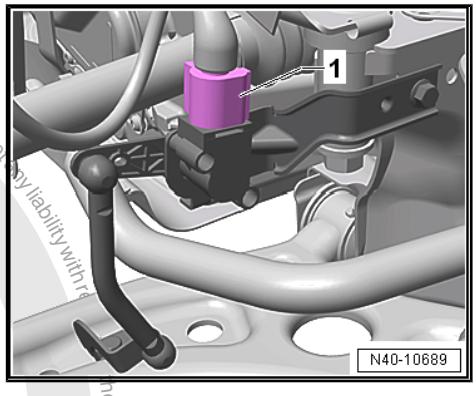
– Remove the hex nut -1- from the right and left coupling rod -3-.

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



Vehicles with Level Control System Sensor

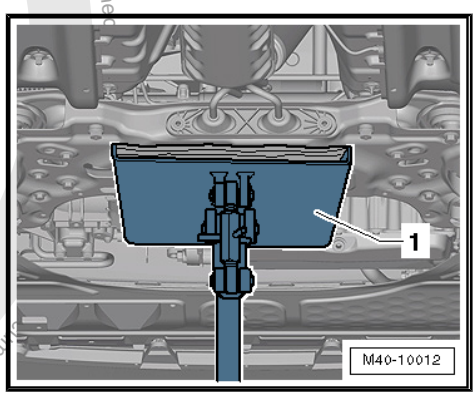
– Disconnect the connector -1- from the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- .



Continuation for All Vehicles

– Place the -VAS6931- or -VAG1383A- -1- under the subframe.

– Secure the subframe (refer to ⇒ “2.6 Subframe, Securing”, page 38) and lower it approximately 10 cm.



Note

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

Installing

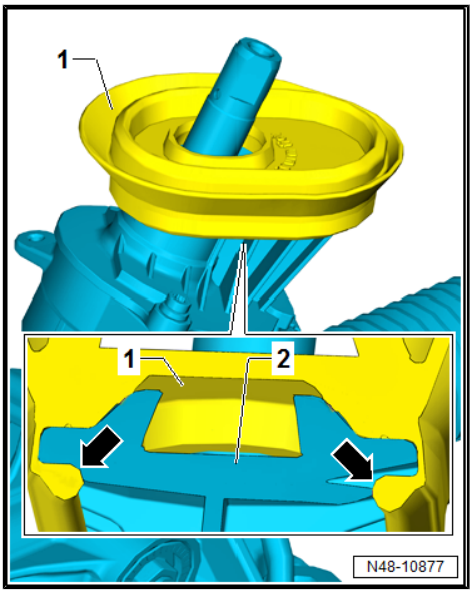
Install in reverse order of removal while noting the following:

– Replacing the seal -1-.

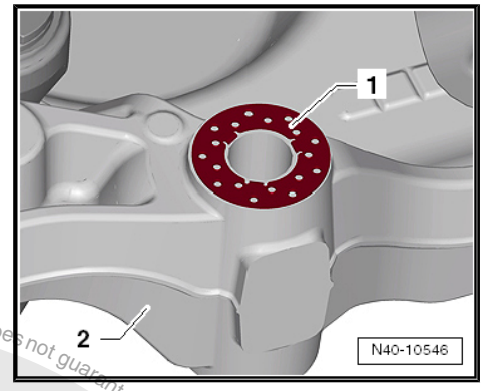
– Fold up the seal -1- over the collar of the steering gear -2- so that the rubber lip encloses the collar all around -arrows-.

– Check the seal -1- for secure fit.

– Coat the seal from above with lubricant for example soft soap.



– Always make sure the intermediate plate -1- is installed between the subframe -2- and the body.



Note

- *After attaching the steering gear to the universal joint, make sure that seal on steering gear is positioned on the mounting plate without any kinks and is sealed correctly. The opening to the footwell must seal correctly. Water leak and/or noises may be the result.*
- *Make sure sealing surfaces are clean.*

– Remove the -T10486/1- . Refer to ⇒ page 41 .

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

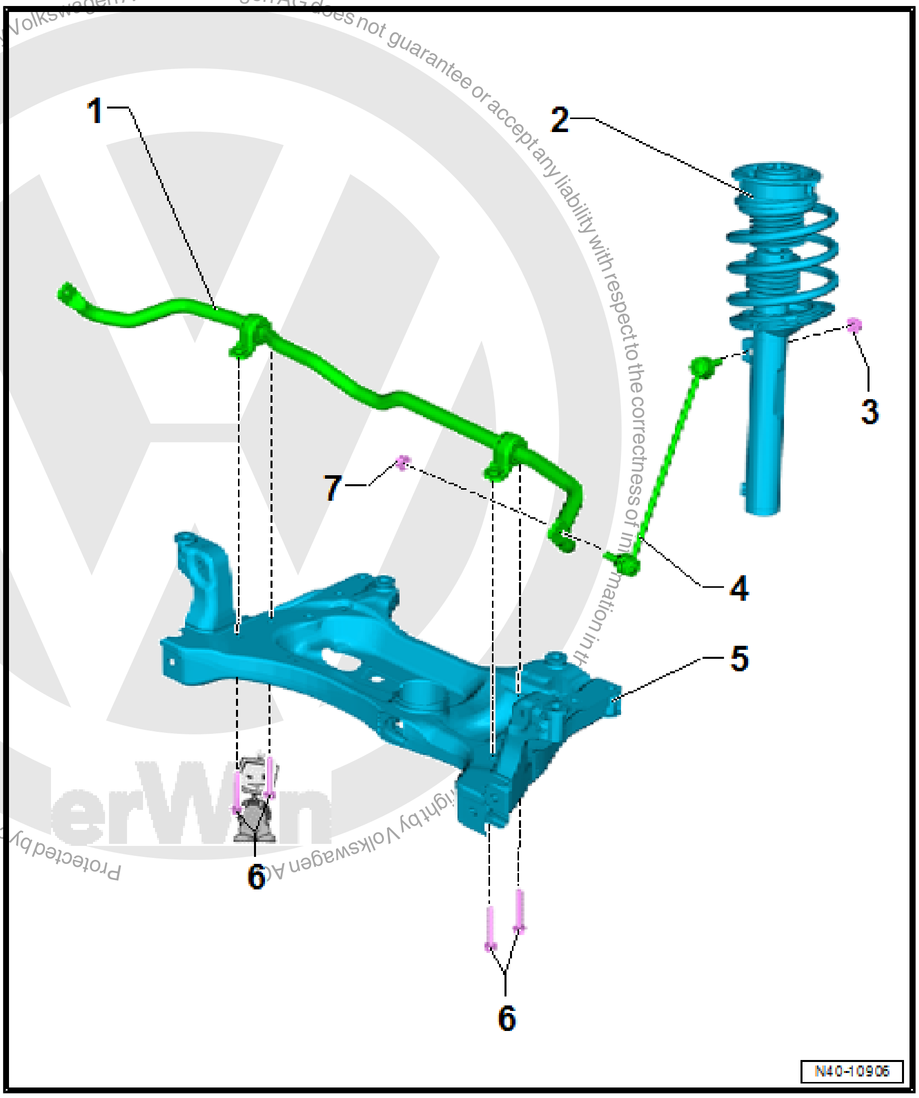
- Refer to ⇒ “2.1 Overview - Subframe”, page 21
- Refer to ⇒ “3.1 Overview - Steering Gear”, page 324
- Refer to ⇒ “2.1 Overview - Steering Column”, page 312
- Pendulum support bolts. Refer to ⇒ Rep. Gr. 10 ; Assembly Mounts; Overview - Assembly Mounts .
- Noise insulation bolts. Refer to ⇒ Body Exterior; 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.

3 Stabilizer Bar

⇒ “3.1 Overview - Stabilizer Bar”, page 45
⇒ “3.2 Stabilizer Bar, Removing and Installing”, page 46
⇒ “3.3 Coupling Rod, Removing and Installing”, page 50

3.1 Overview - Stabilizer Bar



1 - Stabilizer Bar

- ❑ With rubber bushing
- ❑ Removing and installing. Refer to ⇒ “3.2 Stabilizer Bar, Removing and Installing”, page 46 .

2 - Suspension Strut

3 - Nut

- ❑ 65 Nm
- ❑ Replace after removing.
- ❑ Counterhold at socket head of the joint pin when tightening

4 - Coupling Rod

- ❑ Removing and installing. Refer to ⇒ “3.3 Coupling Rod, Removing and Installing”, page 50 .

5 - Subframe

- ❑ Securing. Refer to ⇒ “2.6 Subframe, Securing”, page 38 .
- ❑ Lowering. Refer to ⇒ “2.7 Subframe, Lowering”, page 41 .
- ❑ Removing and Installing, without Steering Gear. Refer to ⇒ “2.2 Subframe without Steering Gear, Removing and Installing”, page 22 .
- ❑ Removing and Installing, with Steering Gear. Refer to ⇒ “2.3 Subframe with Steering Gear, Removing and Installing”, page 26 .

6 - Bolt

- ❑ 20 Nm +180°
- ❑ Replace after removing.

7 - Nut

- ❑ 65 Nm
- ❑ Replace after removing.
- ❑ Counterhold at socket head of the joint pin when tightening

3.2 Stabilizer Bar, Removing and Installing

Special tools and workshop equipment required

- Torque Wrench 1332 40-200Nm - VAG1332-
- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-

Removing

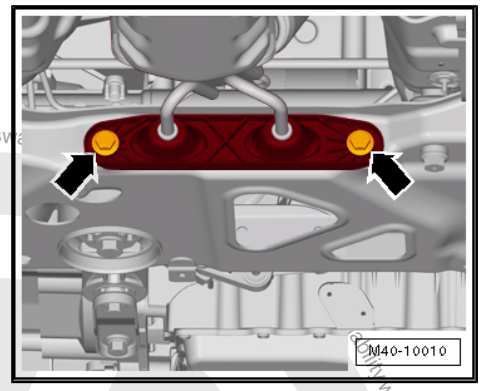
– Loosen the wheel bolts.

– Raise the vehicle.

– Remove the wheels.

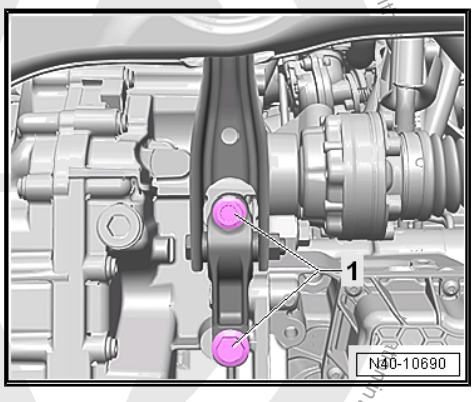
– Remove the lower noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .

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



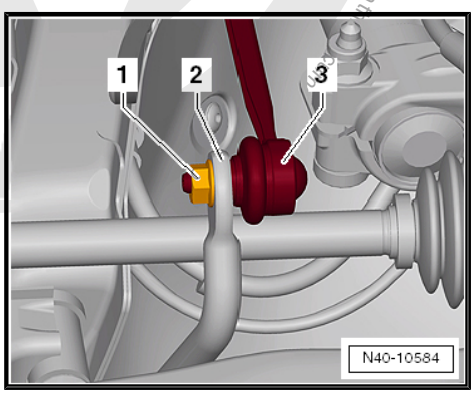
Continuation for All Vehicles

– Remove the pendulum support bolts -1-.

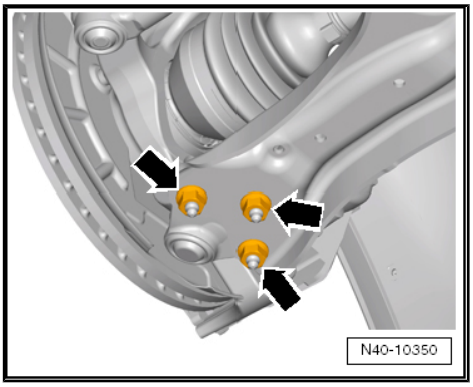


– Remove the hex nut -1- from the right and left coupling rod -3-.

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

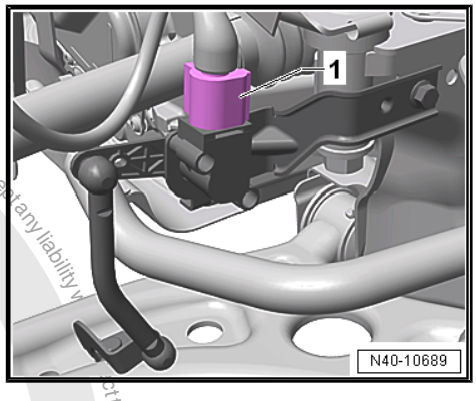


– Remove the nuts -arrows- on the left and right side of the vehicle.



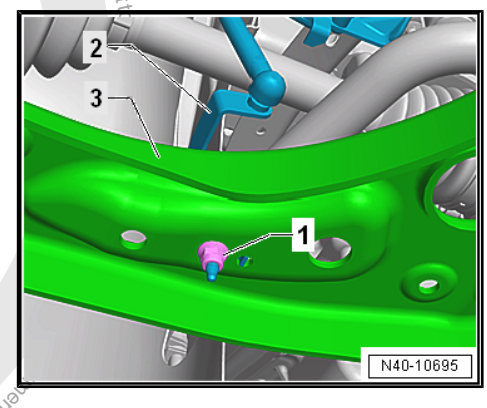
Vehicles with Level Control System Sensor

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



– Remove the nut -1-.

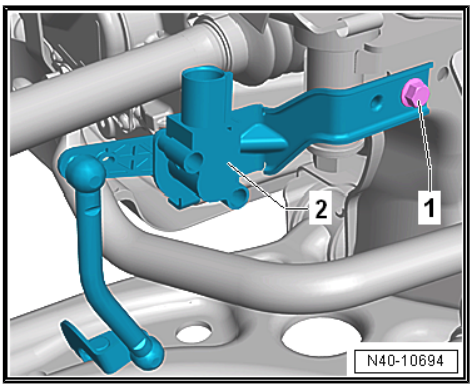
– Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.



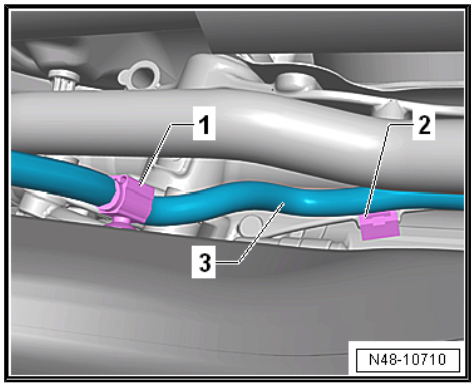
– Remove the bolt -1-.

– Remove the Left Front Level Control System Sensor - G78- -2- or Right Front Level Control Sensor - G289-

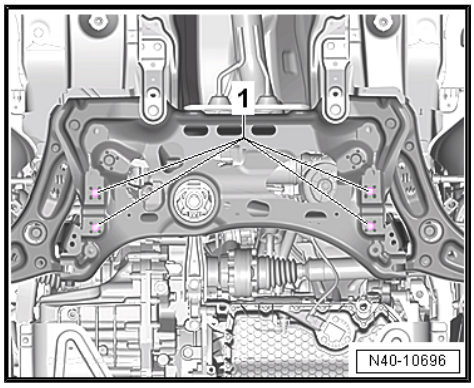
Continuation for All Vehicles



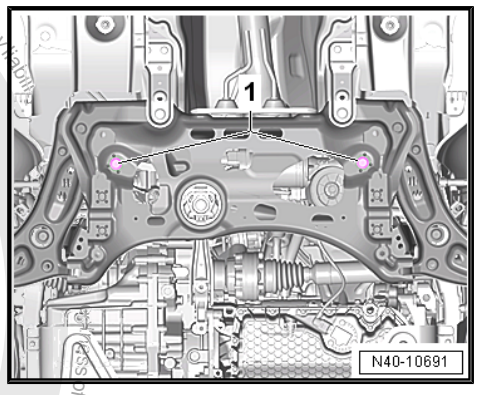
– Remove the clips -1 and 2- for the wiring harness -3- from the subframe and the steering gear.



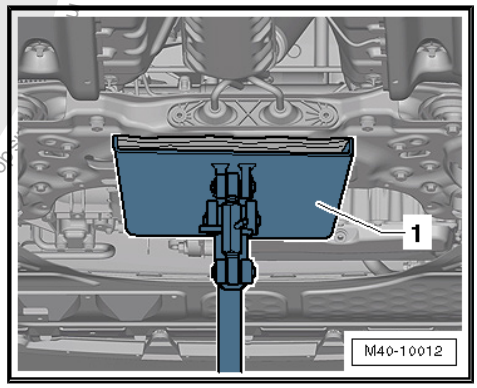
– Remove the stabilizer bar bolts -1-.



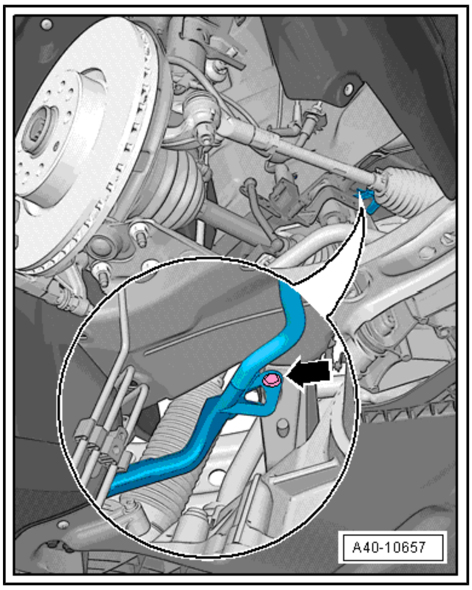
– Remove the steering gear bolts -1-.
– Pry the steering gear out of the subframe alignment sleeves.



– Place the -VAS6931- or -VAG1383A- -1- under the subframe.
– Secure the subframe (refer to ⇒ “2.6 Subframe, Securing”, page 38) and lower it approximately 10 cm.



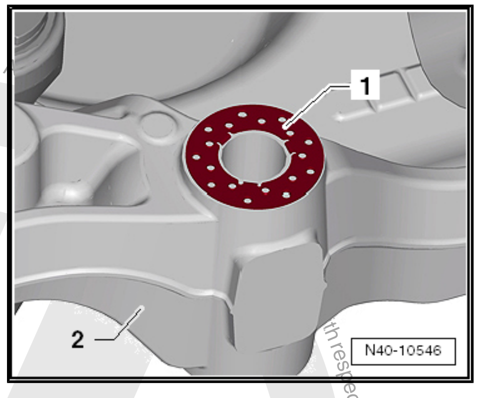
– Remove the expanding clip -arrow-.
– Lower the subframe with the -VAS6931- or the -VAG1383A- until the stabilizer bar can be removed toward the rear.



Installing

Install in reverse order of removal while noting the following:

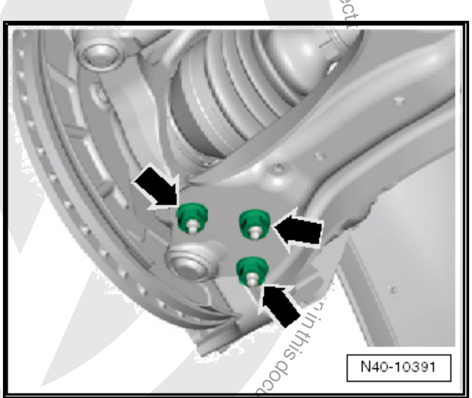
– Always make sure the intermediate plate -1- is installed between the subframe -2- and the body.



Note

- *The level control system sensor lever must point toward vehicle exterior.*
- *The thread on the level control system sensor must be installed into the exterior hole in the control arm. The retaining tab on the level control system sensor must engage into the inner hole in order to assure a correct installation position.*

– Tighten the nuts -arrows-.
– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .



Tightening Specifications

- Refer to ⇒ “2.1 Overview - Subframe”, page 21
- Refer to ⇒ “3.1 Overview - Stabilizer Bar”, page 45
- Refer to ⇒ “2.1 Overview - Steering Column”, page 312
- Refer to ⇒ “2.1 Overview - Front Level Control System Sensor”, page 271
- Pendulum support bolts. Refer to ⇒ Rep. Gr. 10 ; Assembly Mounts; Overview - Assembly Mounts .
- 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 .
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .

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 Coupling Rod, Removing and Installing

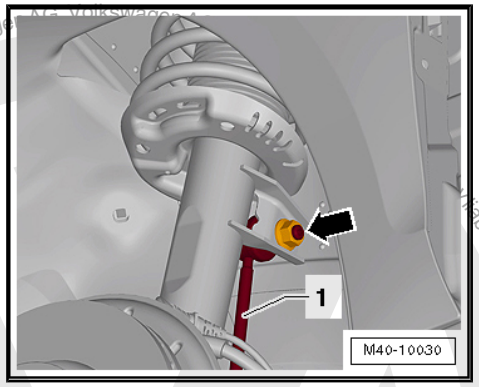
Special tools and workshop equipment required

- Torque Wrench 1332 40-200Nm - VAG1332-

Removing

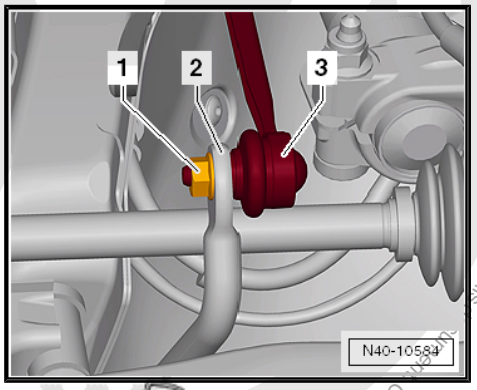
– Raise the vehicle.

– Remove the nut -arrow- and the 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 while noting the following:

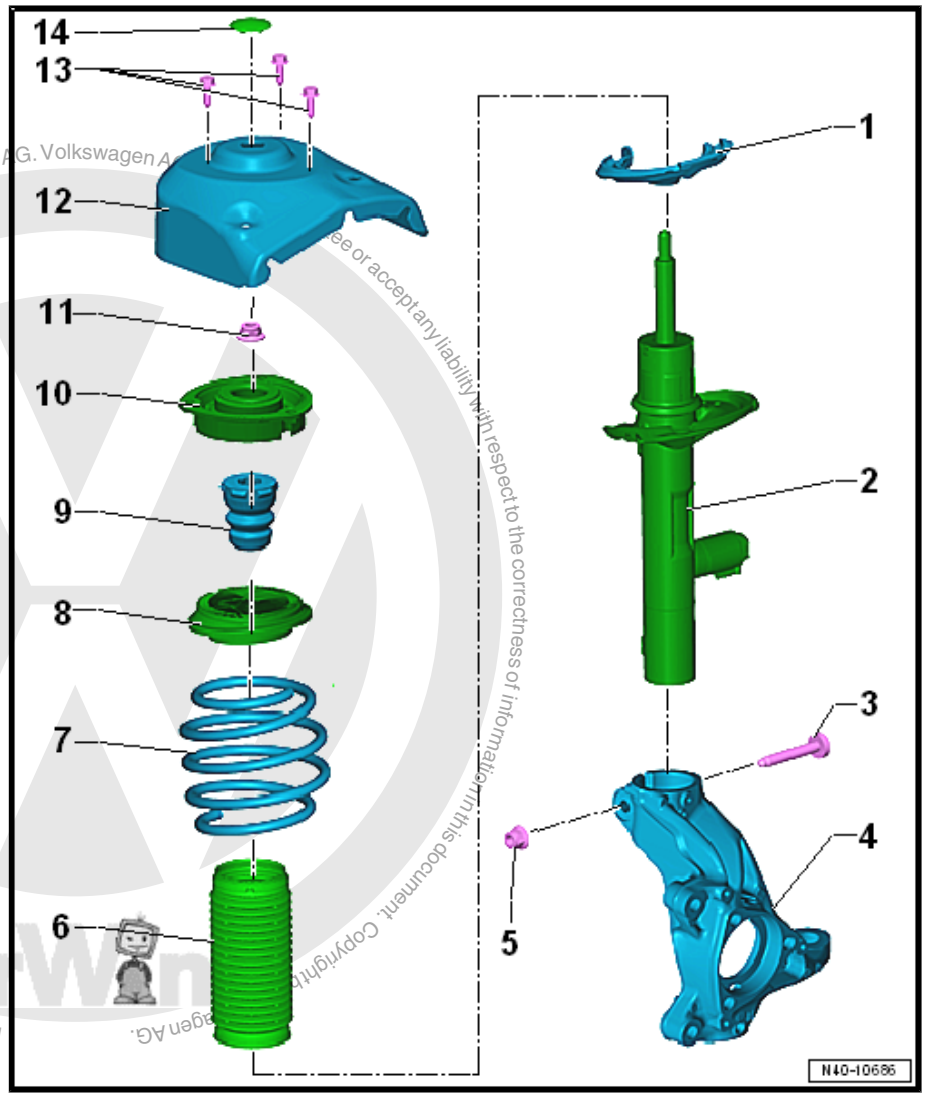
- Tighten the coupling rod nuts on the suspension strut or stabilizer bar, counterholding on the multi-point socket head if necessary.

Tightening Specifications

- Refer to ⇒ “3.1 Overview - Stabilizer Bar”, page 45

4 Suspension Strut and Upper Control Arm

4.1 Overview - Suspension Strut and Upper Control Arm



1 - Spring Support

- ❑ Note the installation position

2 - Shock Absorber

- ❑ Different versions. Refer to Parts Catalog.

3 - Bolt

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

4 - Wheel Bearing Housing

- ❑ Different versions. Refer to Parts Catalog.

5 - Nut

- ❑ Replace after removing.

6 - Protective Cover

- ❑ Different versions. Refer to Parts Catalog.

7 - Coil Spring

- ❑ Removing and installing. Refer to ⇒ “4.3 Suspension Strut, Servicing”, page 58 .
- ❑ Surface of spring coil may not be damaged.
- ❑ Different versions. Refer to Parts Catalog.

8 - Deep-Groove Ball Bearing

9 - Stop Buffer

- ❑ Different versions. Refer to Parts Catalog.

10 - Strut Mount

- ❑ Note the installation position. Refer to ⇒ page 56 .

11 - Nut

- ❑ 60 Nm
- ❑ Replace after removing.

12 - Body Front

13 - Bolt

- ❑ 15 Nm +90°

❑ Replace after removing.

14 - Cover

4.2 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- or Engine and Gearbox Jack - VAG1383A-
- Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-
- Drive Shaft Remover - T10520-

Removing

– Loosen drive axle bolt on the wheel hub. Refer to ⇒ “7.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 113 .

Caution

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

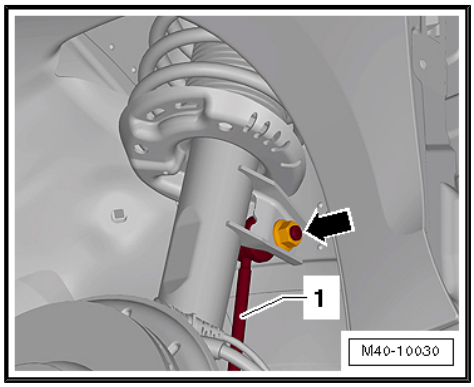
If the wheel bearings are under the load of the vehicle weight, the wheel bearing will be damaged. This reduces the service life of the wheel bearings.

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.*

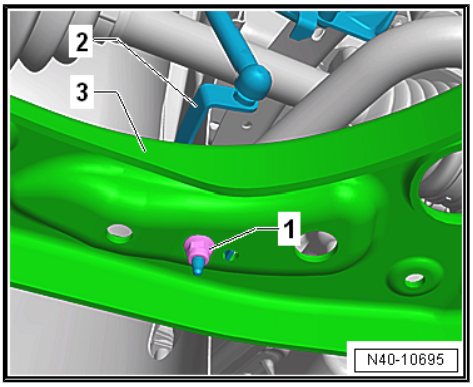
– Loosen the wheel bolts.
– Raise the vehicle.
– Remove the wheel.
– Remove the nut -arrow- and the coupling rod -1- from the suspension strut.
– Disengage the wire for the ABS speed sensor from the suspension strut.



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-.

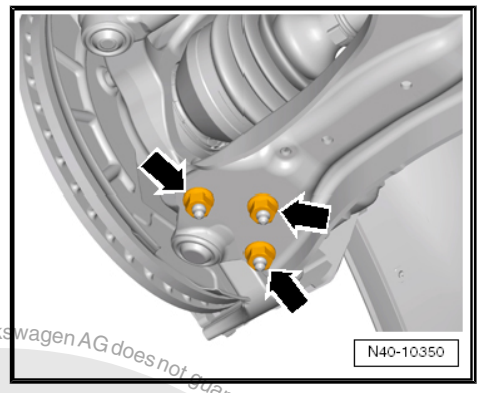


Continuation for All Vehicles

– Remove the nuts -arrows-.

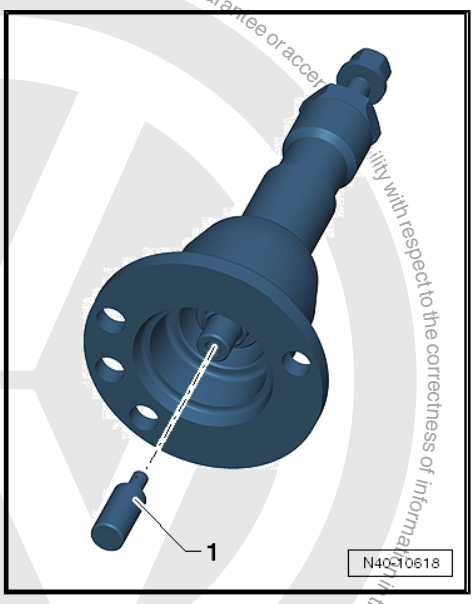
– Remove the wheel bearing housing with the ball joint from the control arm.

– Remove the drive axle outer joint from the wheel hub.



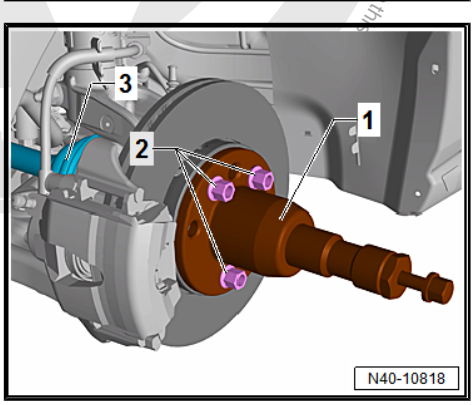
If the drive axle cannot be pulled out of the wheel bearing, then the drive axle can be pushed out of the wheel bearing using the -T10520- .

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



Using the -T10520- :

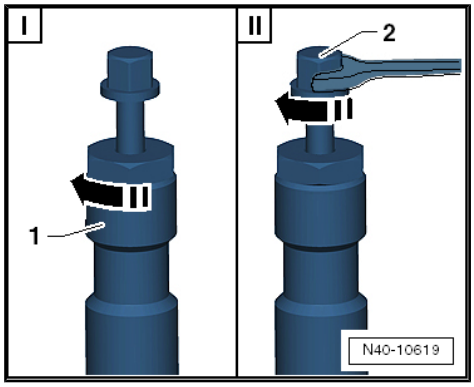
– Secure the -T10520- -1- with three wheel bolts -2- on the wheel hub, so that the drive axle -3- can be pressed out.



– 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.

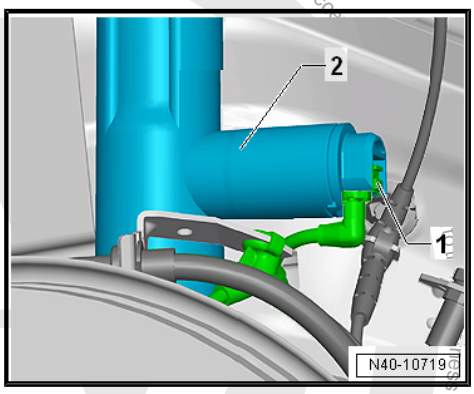
– Secure the drive axle to the body using a wire.

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-.



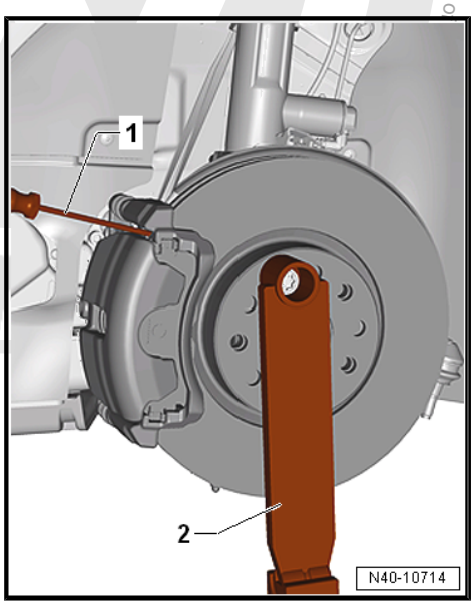
Note

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.

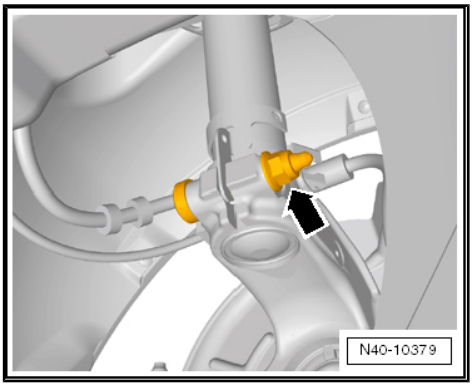
– Secure the -VAS6931- or the -VAG1383A- -2- on the wheel hub with a wheel bolt.



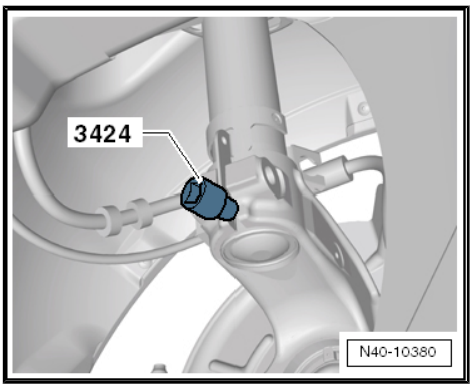
WARNING

- ***Do not lift or lower the vehicle when the -VAS6931- or -VAG1383A- is under the vehicle. The vehicle could slip off the hoist.***
- ***Do not leave the -VAS6931- or -VAG1383A- under the vehicle longer than necessary.***

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



– Insert -3424- into the wheel bearing housing.



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.

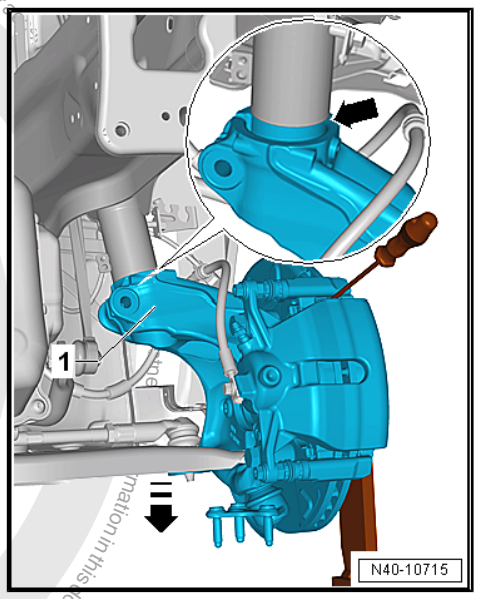
Otherwise the shock absorber tube could tilt in the wheel bearing housing hole.

– Lower the wheel bearing housing -1- using an -VAS6931- or -VAG1383A- in the direction of -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- or -VAG1383A-



WARNING

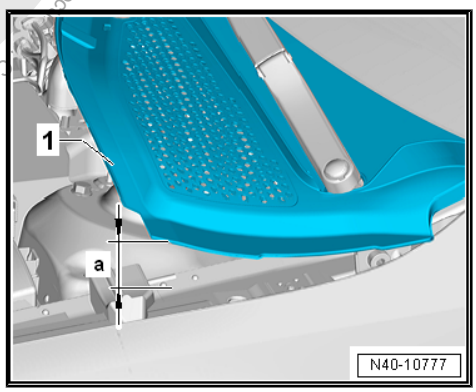
- ***Do not leave the -VAS6931- or -VAG1383A- under the vehicle longer than necessary.***

– Remove the seal from the entire length of the plenum chamber cover.

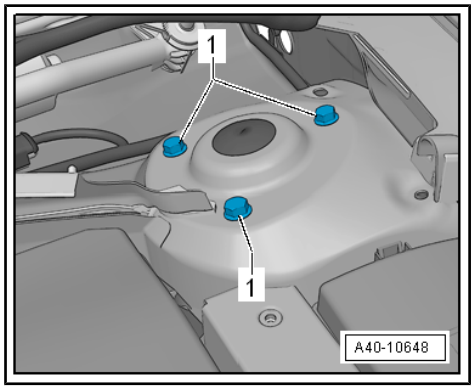
– Remove the clips.

– Lift the plenum chamber cover -1- to maximum 60 mm.

a - 60 mm



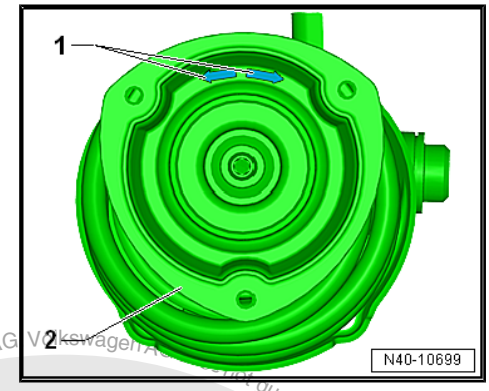
– Remove the bolts -1- for upper shock absorber mount and remove the suspension strut.



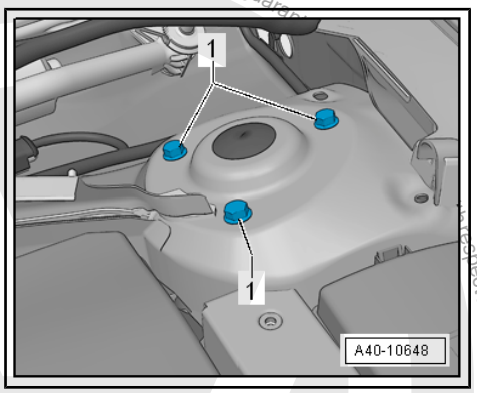
Installing

– 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.

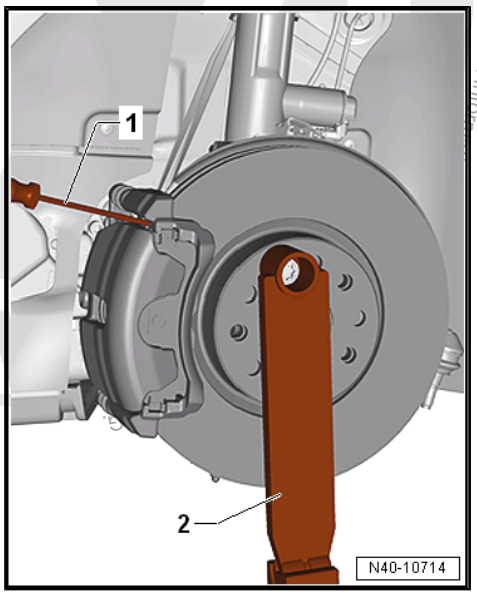


– Insert the suspension strut and fasten the bolts -1- to the body.

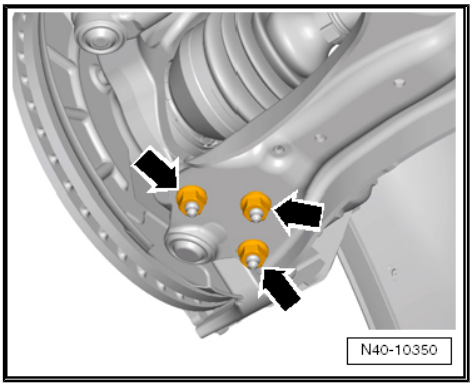


– Position the -VAS6931- or -VAG1383A- under the -T10149- and secure the wheel bearing housing.

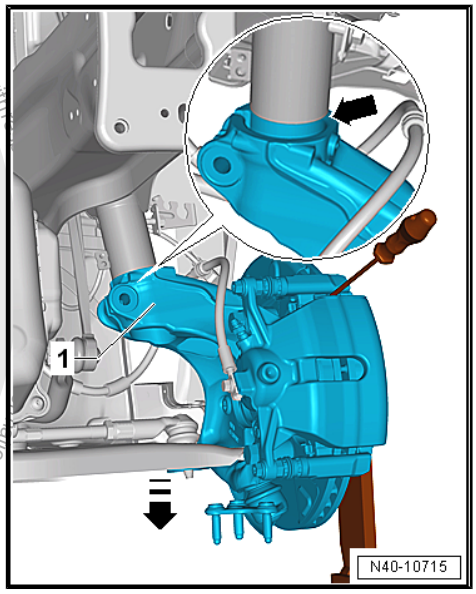
– Untie the wheel bearing housing from the subframe.



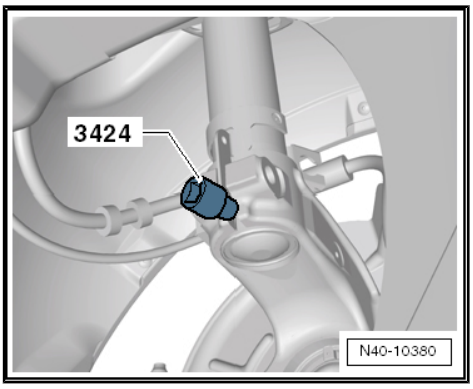
– Remove the nuts -arrows-.
– Remove the wheel bearing housing with the ball joint from the control arm.



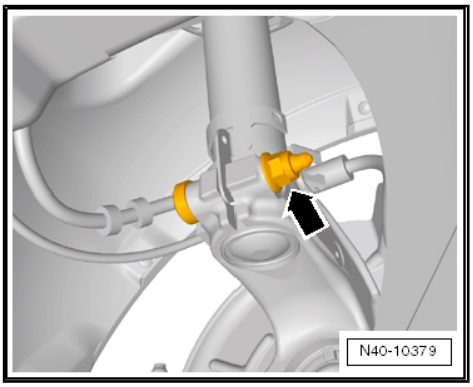
– Lower the wheel bearing housing -1- using an -VAS6931- or -VAG1383A- in the direction of -arrow-.
– Push the wheel bearing housing with the -VAS6931- or -VAG1383A- upward and install it on the suspension strut at the same time.
– Insert the outer joint of the drive axle as far as possible into the gearing in the wheel hub.
– 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.



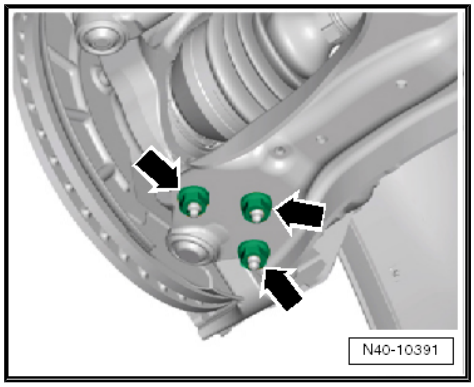
– Remove the -3424- .



– 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.



– Tighten the nuts -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 level control system sensor must be installed into the exterior hole in the control arm. The retaining tab on the level control system sensor must engage into the inner hole in order to assure a correct installation position.*

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “4.1 Overview - Suspension Strut and Upper Control Arm”, page 51
- Refer to ⇒ “5.1 Overview - Lower Control Arm and Ball Joint”, page 61
- Refer to ⇒ “2.1 Overview - Subframe”, page 21
- Refer to ⇒ “2.1 Overview - Front Level Control System Sensor”, page 271
- Refer to ⇒ “7.2 Overview - Drive Axle”, page 91
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .

4.3 Suspension Strut, Servicing

Special tools and workshop equipment required

- Shock Absorber Set - T10001-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Torque Wrench 1332 Insert - Ring Wrench - 21mm - VAG1332/7-
- Spring Compressor Kit - VAG1752-
- Spring Compressor Kit - Spring Tensioner - VAG1752/1-
- Spring Compressor Kit - Strut Clamping Block - VAG1752/20-
- Commercially Available Ratchet

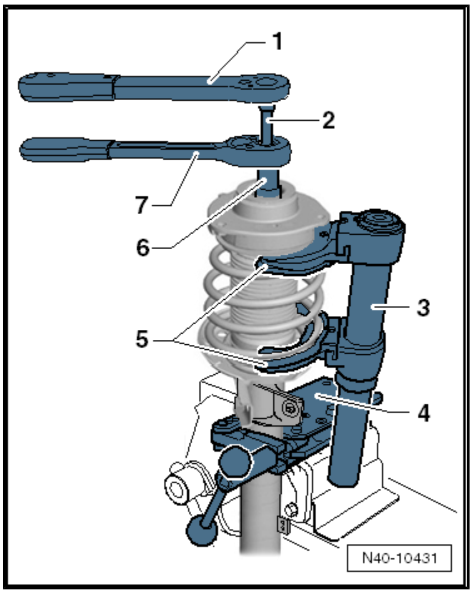
– Remove the suspension strut. Refer to ⇒ page 52 .

Removing Spring

– Clamp the -VAG1752/20- -4- in a vise.

– Tighten the suspension strut in the -VAG1752/20- -4-.

– Pretension the coil spring using the -VAG1752/1- until the upper deep-groove ball bearing is free.



1 - -VAG1332-

2 - -T10001/8-

3 - -VAG1752/1-

4 - -VAG1752/20-

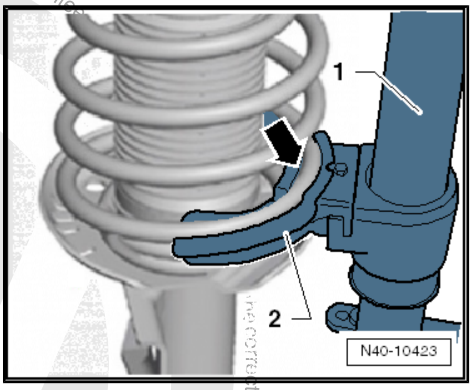
5 - -VAG1752/4-

6 - -T10001/5-

7 - -T10001/11-

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

– Make sure the coil spring fits correctly inside the -VAG1752/4- -arrow-.



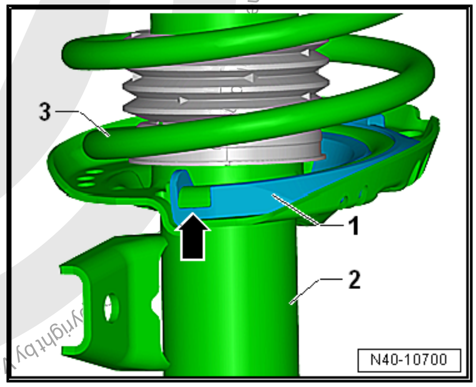
Spring, Installing

– Place the spring support -1- in the shock absorber -2-.

– Place the coil spring -3- with the -VAG1752/1- on the lower spring support.

The end of the spring coil must rest against the stop -arrow-.

– Assemble all additional parts and tighten the new nut on the piston rod.



> **Caution**
>
> *There can be noises from an uneven assembly of the strut mount to the deep-groove ball bearing.*
>
> ♦ *Pay attention to the installation position of the strut mount to the deep-groove ball bearing when assembling.*

– Align the strut mount -1- to the deep-groove ball bearing -2-.

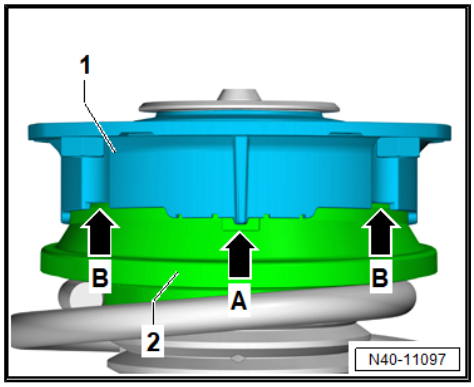
- The tab of the strut mount -1- must be located in the cut-out -arrow A- of the deep-groove ball bearing -2-.
- The edge of the strut mount -1- must be folded around the collar of the deep-groove ball bearing -2- -B arrows-.

– Secure the nut in the piston rod.

– Relieve the tension on the -VAG1752/1- and remove it from the coil spring.

– Remove the suspension strut from the -VAG1752/20- .

– Install the suspension strut. Refer to
⇒ “4.2 Suspension Strut, Removing and Installing”, page 52 .

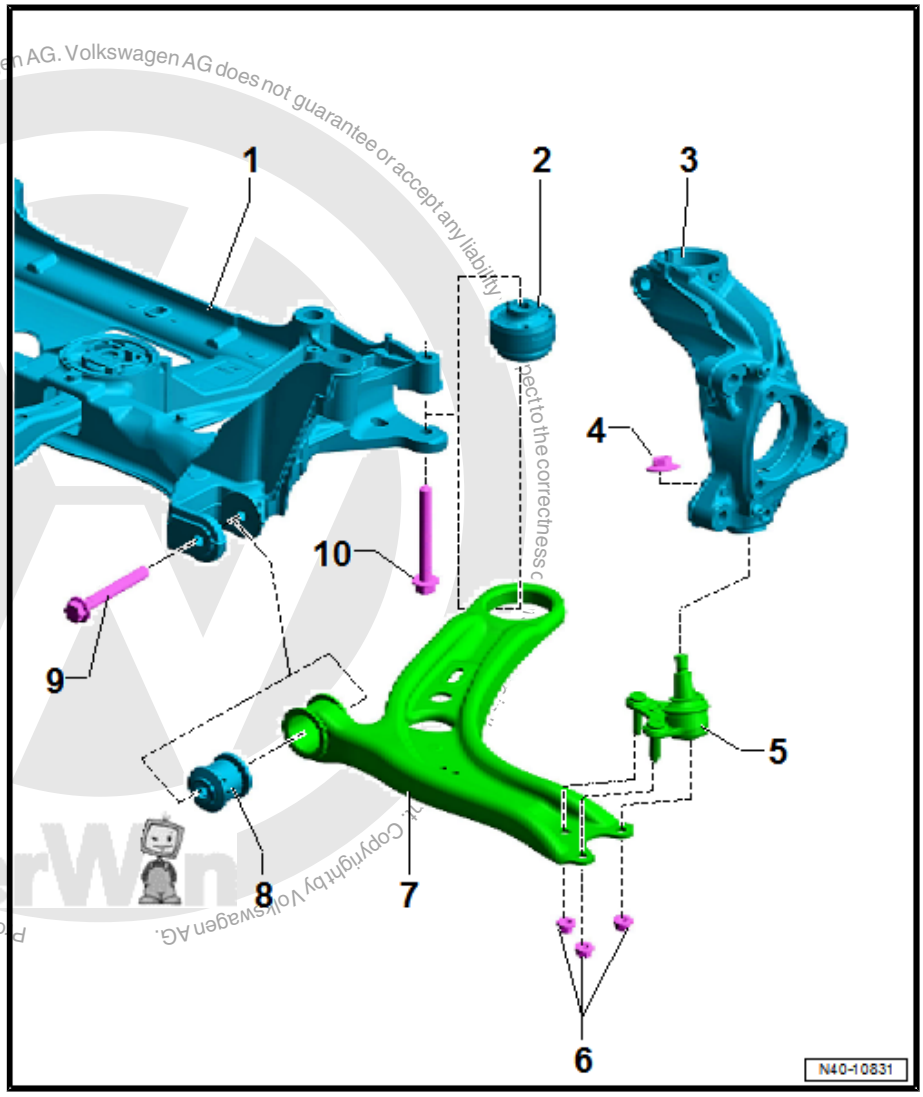


Tightening Specifications

◆ Refer to
⇒ “4.1 Overview - Suspension Strut and Upper Control Arm”, page 51

5 Lower Control Arm and Ball Joint

5.1 Overview - Lower Control Arm and Ball Joint



1 - Subframe

2 - Rear Bonded Rubber Bushing

- ❑ Replacing. Refer to ⇒ “5.6 Lower Control Arm Rear Bonded Rubber Bushing, Replacing”, page 79 .

3 - Wheel Bearing Housing

- ❑ Different versions. Refer to Parts Catalog.
- ❑ Removing and installing. Refer to ⇒ “6.2 Wheel Bearing Housing, Removing and Installing”, page 82 .

4 - Nut

- ❑ 20 Nm +90°
- ❑ Replace after removing.

5 - Ball Joint

- ❑ Removing and installing. Refer to ⇒ “5.4 Ball Joint, Removing and Installing”, page 73 .

6 - Nut

- ❑ 40 Nm +45°
- ❑ Replace after removing.

7 - Lower Control Arm

- ❑ Removing and installing. Refer to ⇒ “5.2 Lower Control Arm, Removing and Installing”, page 62 .

8 - Front Bonded Rubber Bushing

- ❑ Replacing. Refer to ⇒ “5.5 Front Lower Control Arm Bonded Rubber Bushing, Replacing”, page 77 .

9 - Bolt

- ❑ 70 Nm + 180°
- ❑ Replace after removing.

- ❑ Tighten in the curb weight position. Refer to ⇒ “2.8.1 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Front Axle, Passat and Passat Wagon”, page 6 .

10 - Bolt

- ❑ 70 Nm + 180°
- ❑ Replace after removing.

5.2 Lower Control Arm, Removing and Installing

⇒ “5.2.1 Lower Control Arm, Removing and Installing, Vehicles with Manual Transmission, DSG® Transmission 0CW”, page 62

⇒ “5.2.2 Lower Control Arm, Removing and Installing, Vehicles with DSG® Transmission 0D9, 0DD, excluding Passat GTE”, page 64

⇒ “5.2.3 Lower Control Arm, Removing and Installing, Vehicles with DSG® Transmission 0DL and Passat GTE”, page 68

5.2.1 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-

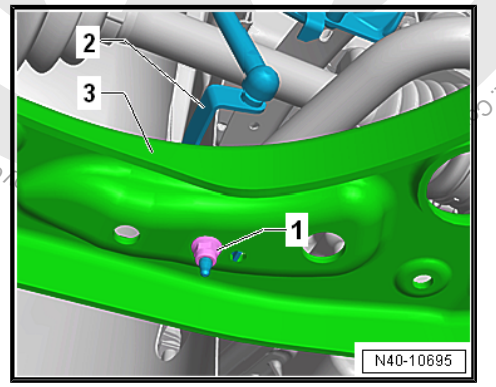
Removing

- – 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

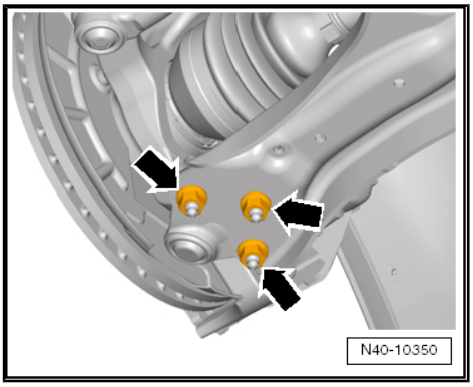
- – Remove the nut -1-.
- – Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.

Continuation for All Vehicles

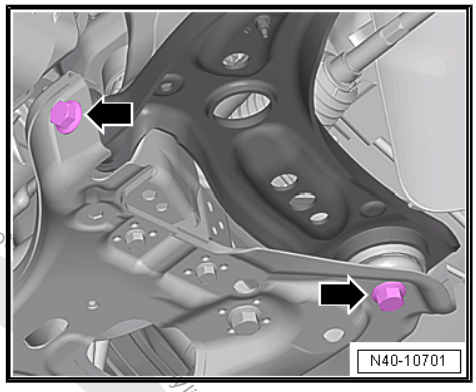


– Remove the nuts -arrows-.

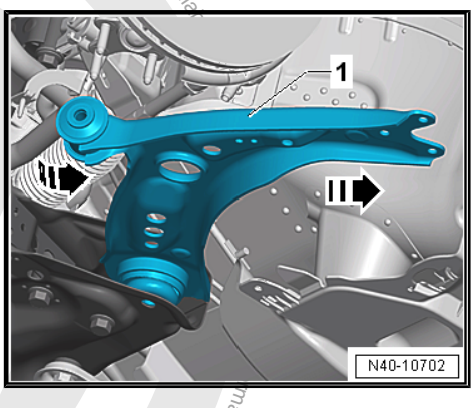
– Remove the control arm from the ball joint and then turn the wheel bearing housing toward the outside to take the load off the control arm.



– Remove the bolts -arrows-.



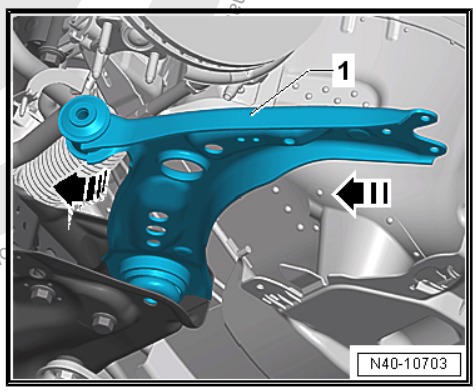
– Swivel the control arm -1- toward the rear and then remove it from the subframe in direction of -arrow-.



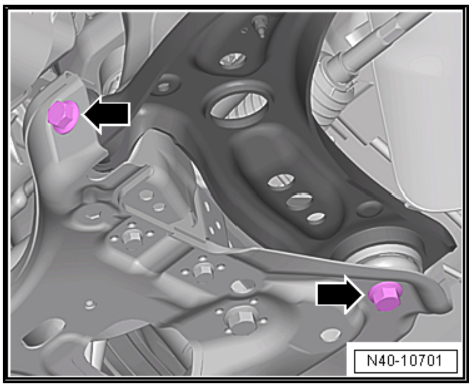
Installing

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 bolts -arrows-.



Note

Tighten the bolts -arrows- and nuts in curb weight position. Refer to *⇒ “2.8.1 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Front Axle, Passat and Passat Wagon”, page 6* .

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 level control system sensor must be installed into the exterior hole in the control arm. The retaining tab on the level control system sensor must engage into the inner hole in order to assure a correct installation position.*

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “5.1 Overview - Lower Control Arm and Ball Joint”, page 61
- Refer to ⇒ “2.1 Overview - Front Level Control System Sensor”, page 271
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Noise insulation bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .

5.2.2 Lower Control Arm, Removing and Installing, Vehicles with DSG® Transmission 0D9, 0DD, excluding Passat GTE

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.

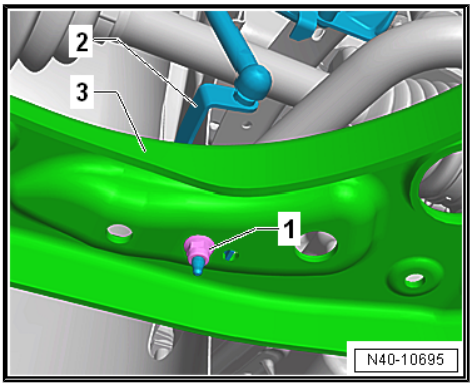
– Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .

– 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-.



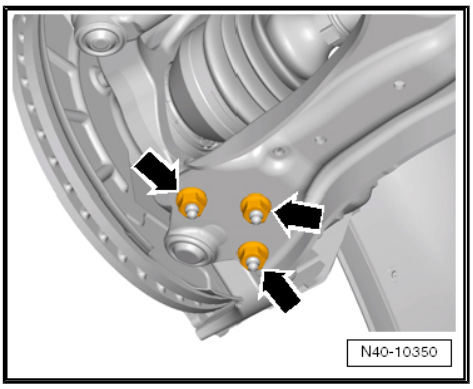
Continuation for All Vehicles

– 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 ; Assembly Mounts; Pendulum Support, Removing and Installing .

– Loosen the exhaust system double clamp. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .



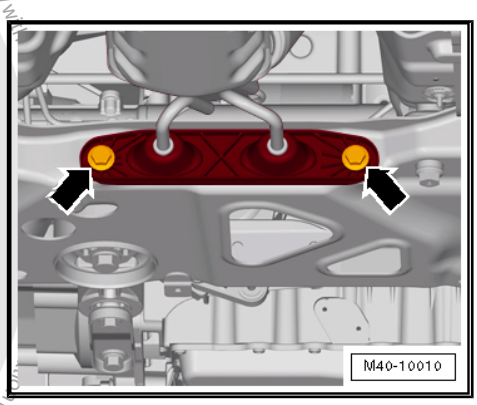
AWD Vehicles

– Remove the driveshaft from the bevel box and secure it. Refer to ⇒ Rep. Gr. 39 ; Driveshaft; Overview - Driveshaft .

Continuation for All Vehicles

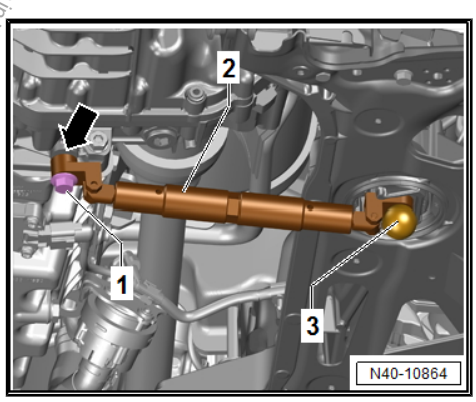
– Remove the exhaust system bracket from the subframe -arrows-.

– Completely assemble the -T10533- to reach the shortest length.



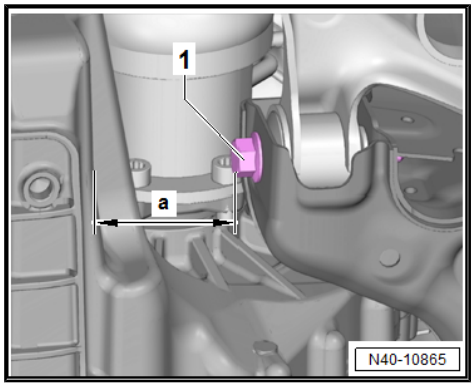
– Install the -T10533- -2- with the highest angle -arrow- on the transmission. To do so use the shortest bolt of the pendulum support thread -1-.

– 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.

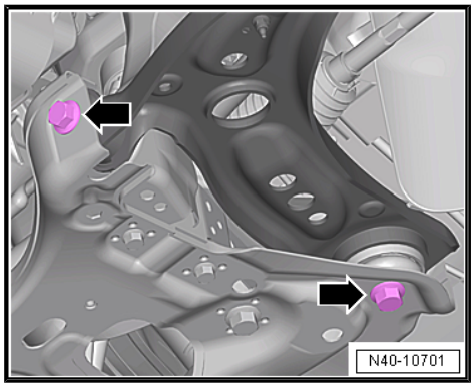
  a = 95 mm



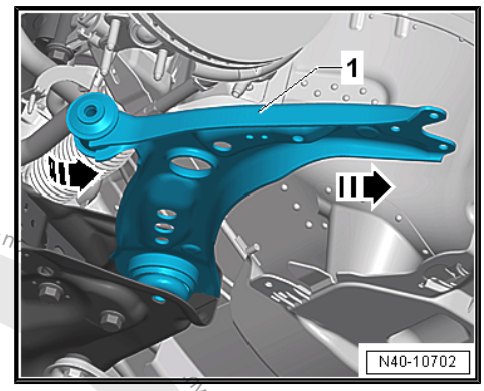
Note

If the is room between the transmission and the fan shroud is not enough, then remove the fan shroud. Refer to ⇒ Rep. Gr. 19 ; Radiator and Radiator Fan; Fan Shroud, Removing and Installing .

– Remove the bolts -arrows-.



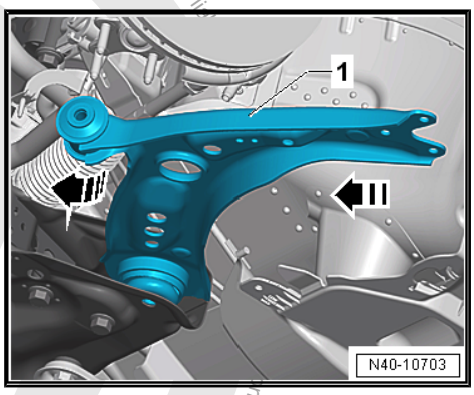
– Swivel the control arm -1- toward the rear and then remove it from the subframe in direction of -arrow-.



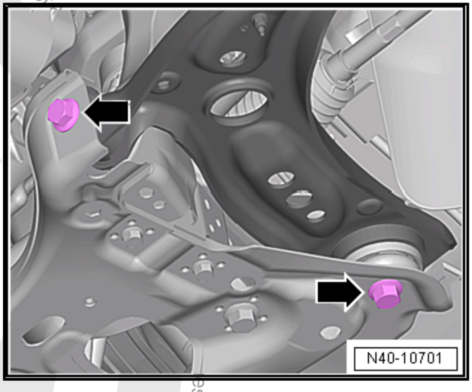
Installing

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.



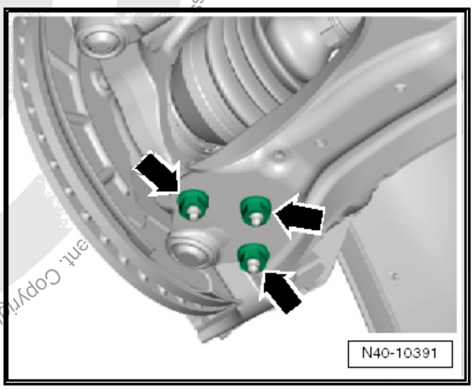
– Tighten the bolts -arrows-.



Note

Tighten the bolts -arrows- and nuts in curb weight position. Refer to
⇒ “2.8.1 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Front Axle, Passat and Passat Wagon”, page 6 .

– Tighten the nuts -arrows-.

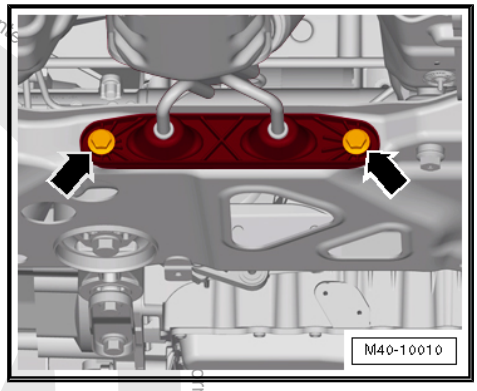


– Remove the -T10533- .

– 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 ; Assembly Mounts; 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 level control system sensor must be installed into the exterior hole in the control arm. The retaining tab on the level control system sensor must engage into the inner hole in order to assure a correct installation position.*

– For vehicles with a level control system sensor, perform the basic setting using. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “5.1 Overview - Lower Control Arm and Ball Joint”, page 61
- Refer to ⇒ “2.1 Overview - Front Level Control System Sensor”, page 271
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Pendulum support bolts. Refer to ⇒ Rep. Gr. 10 ; Assembly Mounts; Overview - Assembly Mounts .
- 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 .
- Driveshaft. Refer to ⇒ Rep. Gr. 39 ; Driveshaft; Overview - Driveshaft .

5.2.3 Lower Control Arm, Removing and Installing, Vehicles with DSG® Transmission 0DL and Passat GTE

Special tools and workshop equipment required

- Torque Wrench 1332 40-200Nm - VAG1332-

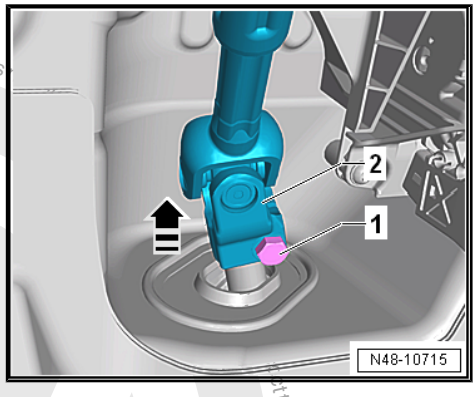
Removing

– Turn the steering wheel in the straight position.

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

– Fold back the carpet.

– 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.

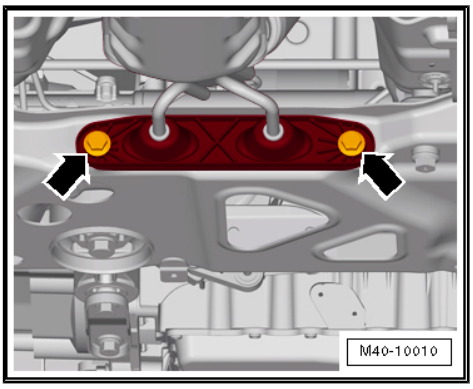
– Remove the wheels.

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

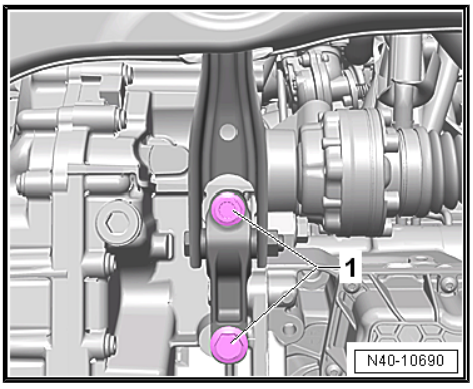
– Remove the rear noise insulation from the subframe. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .

– If equipped, remove the center underbody trim panel. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Underbody Trim Panel; Underbody Trim Panels, Removing and Installing .

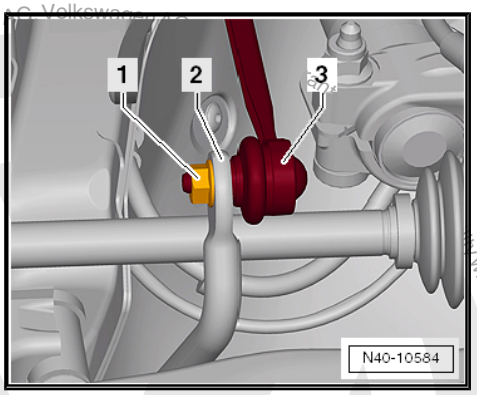
– Remove the exhaust system bracket from the subframe -arrows-.



– Remove the pendulum support bolts -1-.

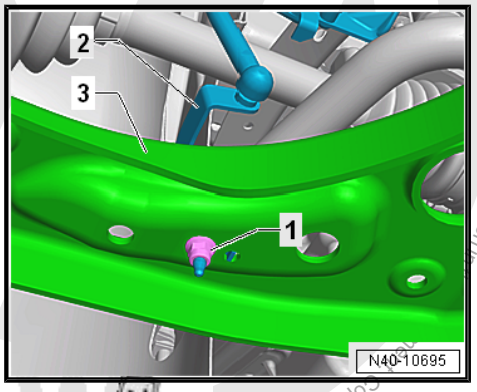


– Remove the hex nut -1- from the right and left coupling rod -3-.
– Remove the coupling rod -3- from the stabilizer bar -2- on the left and right sides.
– Loosen the wheel housing liner in the rear area and fold forward.



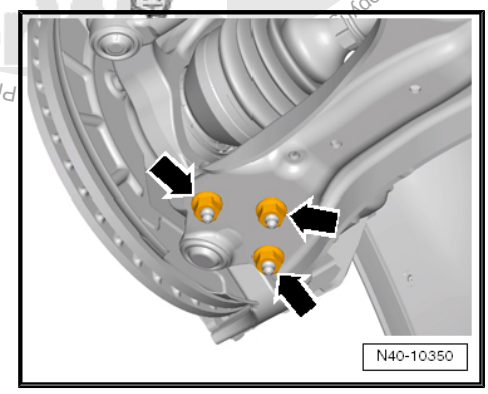
Vehicles with Level Control System Sensor

– 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-.

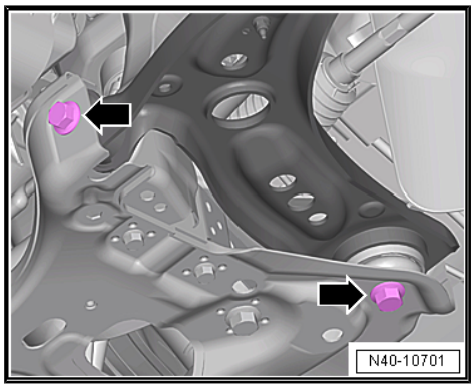


Continuation for All Vehicles

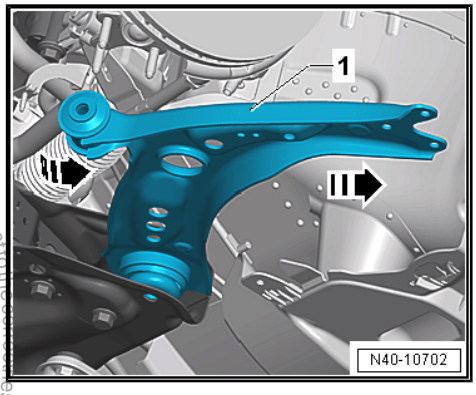
– Remove the nuts -arrows-.
– Remove the control arm from the ball joint and then turn the wheel bearing housing toward the outside to take the load off the control arm.
– Secure the subframe (refer to ⇒ “2.6 Subframe, Securing”, page 38) and lower it approximately 10 cm.



– Remove the bolts -arrows-.



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



Installing

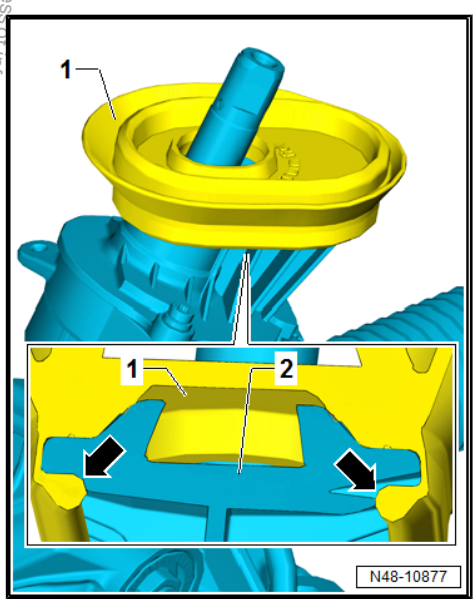
Install in reverse order of removal. Note the following:

– Replacing the seal -1-.

– Fold up the seal -1- over the collar of the steering gear -2- so that the rubber lip encloses the collar all around -arrows-.

– Check the seal -1- for secure fit.

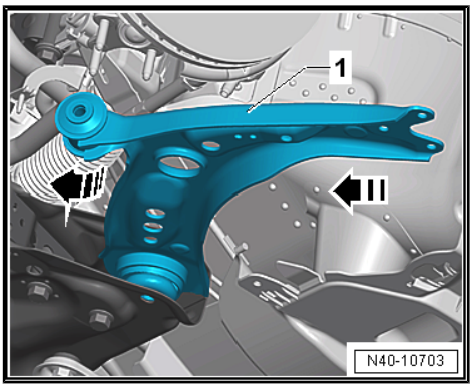
– Coat the seal from above with lubricant for example soft soap.



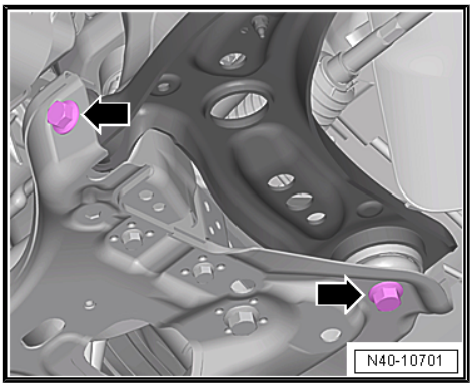
Note

- *After attaching the steering gear to the universal joint, make sure that seal on steering gear is positioned on the mounting plate without any kinks and is sealed correctly. The opening to the footwell must be sealed correctly. Water leak and/or noises may be the result.*
- *Make sure sealing surfaces are clean.*

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



– Tighten the bolts -arrows-.

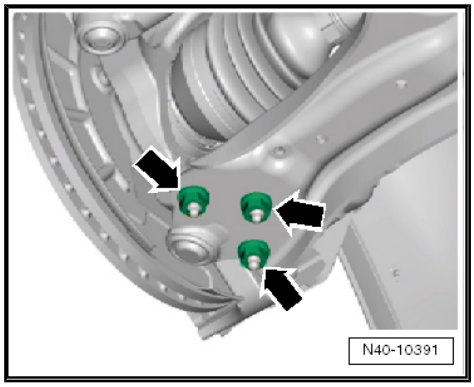


Note

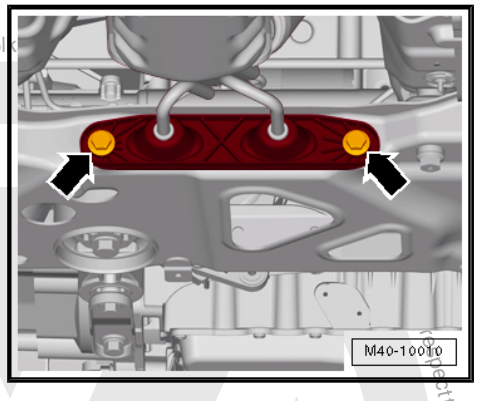
Tighten the bolts -arrows- and nuts in curb weight position. Refer to
⇒ “2.8.1 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Front Axle, Passat and Passat Wagon”, page 6 .

– Install the subframe on the body.

– Tighten the nuts -arrows-.



– 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 level control system sensor must be installed into the exterior hole in the control arm. The retaining tab on the level control system sensor must engage into the inner hole in order to assure a correct installation position.*

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

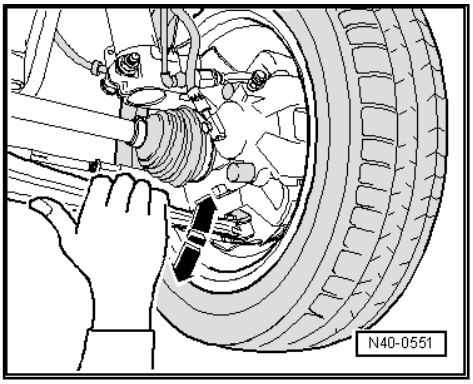
Tightening Specifications

- Refer to ⇒ “2.1 Overview - Subframe”, page 21
- Refer to ⇒ “5.1 Overview - Lower Control Arm and Ball Joint”, page 61
- Refer to ⇒ “2.1 Overview - Front Level Control System Sensor”, page 271
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Pendulum support bolts. Refer to ⇒ Rep. Gr. 10 ; Assembly Mounts; Overview - Assembly Mounts .
- Noise insulation bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- Underbody trim panel bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Underbody Trim Panel; Component Location Overview - Underbody Trim Panels .
- Exhaust system to subframe. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .

5.3 Ball Joint, Checking

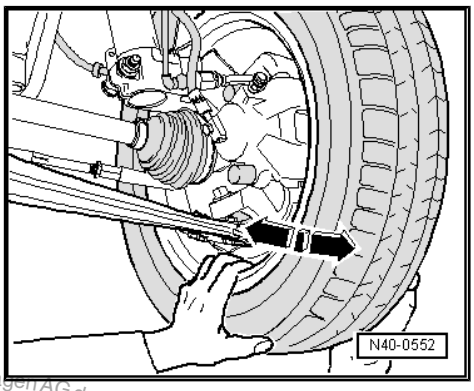
Axial Play, Checking

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



Radial Clearance, Checking

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



Note

- *There should not be any noticeable or visible “play” in either of the two checks.*
- *Pay attention to the ball joint while performing checks.*
- *Make allowance for any wheel bearing play or “play” in the upper strut mount*
- *Check the rubber boot for damage and replace the lower ball joint, if necessary.*

5.4 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-

Removing

– Loosen drive axle bolt on the wheel hub. Refer to ⇒ “7.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 113 .

Caution

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

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

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.

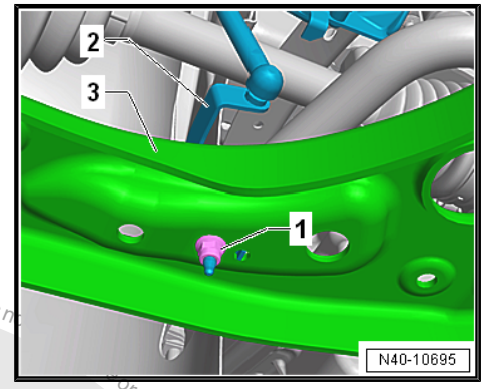
– Raise the vehicle.

– Remove the wheel.

Vehicles with Level Control System Sensor

– Remove the nut -1-.

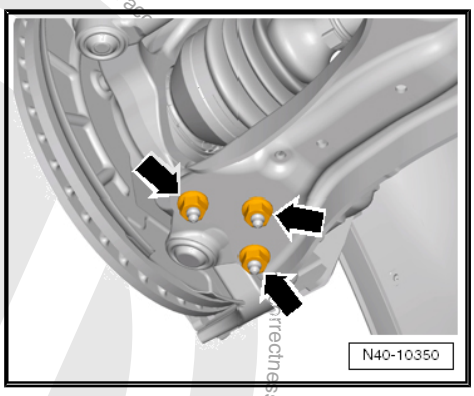
– Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.



Continuation for All Vehicles

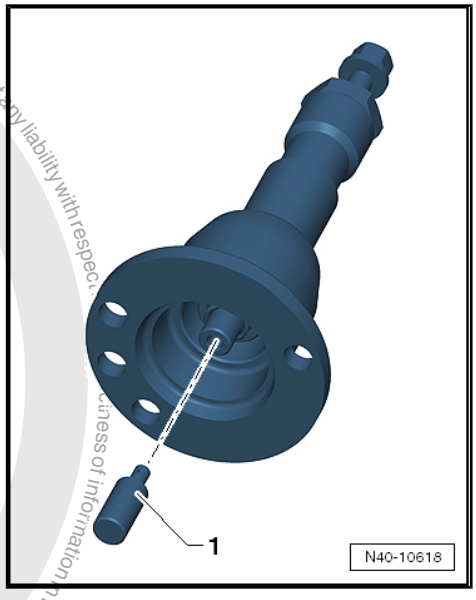
– Remove the nuts -arrows-.

– Pull the drive axle slightly off the wheel hub.



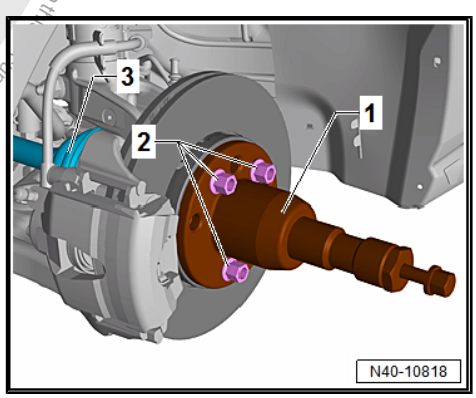
If the Drive Axle Cannot Be Pulled out of the Wheel Bearing, Then the Drive Axle Can Be Pushed out of the Wheel Bearing Using the -T10520- .

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



Using the -T10520- :

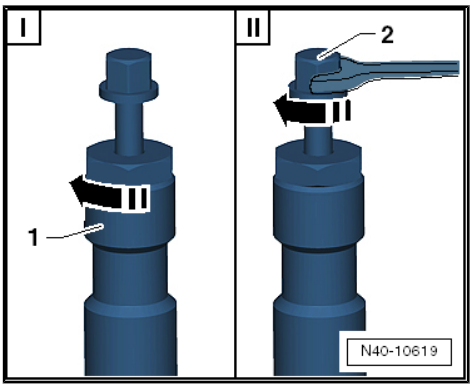
– Secure the -T10520- -1- with three wheel bolts -2- on the wheel hub, so that the drive axle -3- can be pressed out.



– 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- .



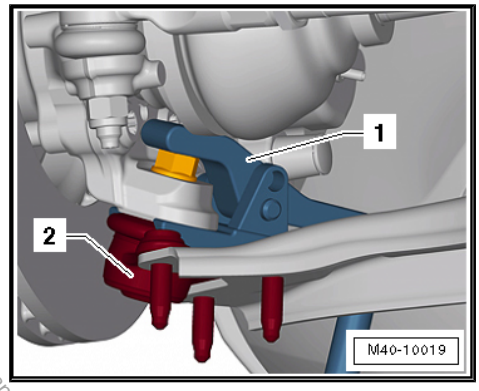
Note

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 several turns.

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

1 - -3287A-

Installing

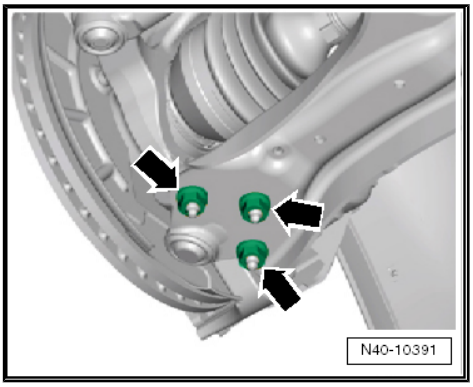
Install in reverse order of removal while noting the following:

– Insert the ball joint into wheel bearing housing.

– Install the drive axle in wheel hub.

– Install the new self-locking nut while counterholding using Internal Torx Bit - T40- from the TORX® Torx Key Socket Set - VAG1603A- .

– Tighten the nuts -arrows-.



Note

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

Note

- *The level control system sensor lever must point toward vehicle exterior.*
- *The thread on the level control system sensor must be installed into the exterior hole in the control arm. The retaining tab on the level control system sensor must engage into the inner hole in order to assure a correct installation position.*

– Install the wheel and tighten.

– Tighten the drive axle bolt onto the wheel hub. Refer to ⇒ “7.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 113 .

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. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “5.1 Overview - Lower Control Arm and Ball Joint”, page 61
- Refer to ⇒ “2.1 Overview - Front Level Control System Sensor”, page 271
- Refer to ⇒ “7.2 Overview - Drive Axle”, page 91
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .

5.5 Front Lower Control Arm Bonded Rubber Bushing, Replacing

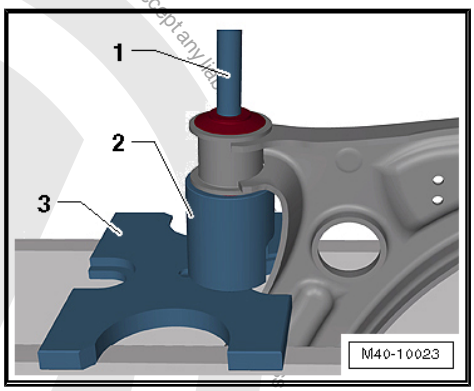
Special tools and workshop equipment required

- Wishbone Rubber Mount Assembly Tool - T10219-
- Press Plate - VW402-
- Press Piece - Rod - VW411-
- Press Piece - Multiple Use - VW412-

– Remove the lower control arm. Refer to ⇒ “5.2 Lower Control Arm, Removing and Installing”, page 62 .

Bonded Rubber Bushing, Pressing Out

– Press out the bonded rubber bushings as shown.



1 - -VW411-

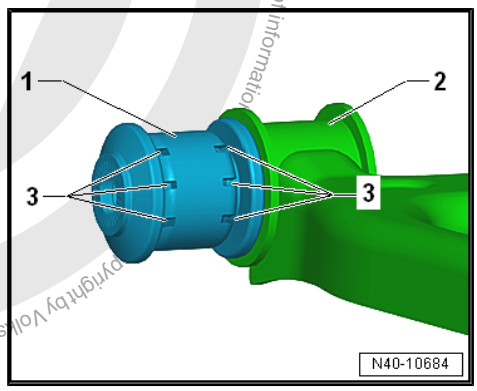
2 - -T10219/1- (the opening must face the control arm)

3 - -VW402-

Bonded Rubber Bushing, Pressing In

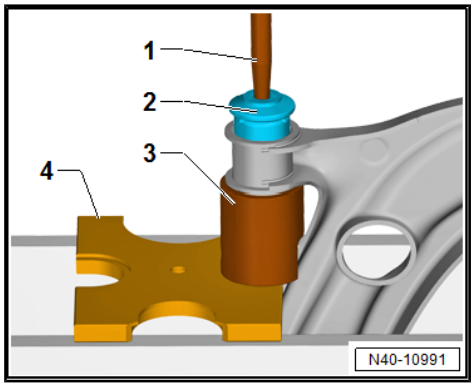
– Align the bonded rubber bushing -1- with the control arm -2-.

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 shown.



1 - -T10219/2-

2 - Bonded Rubber Bushing

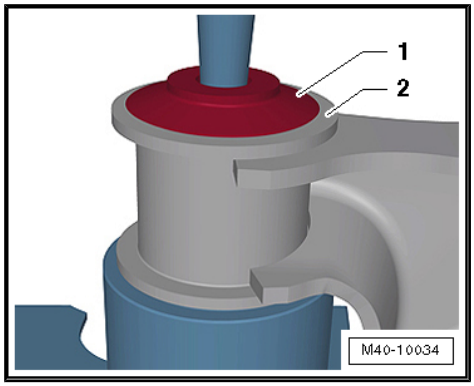
3 - -T10219/1- (the opening must face the control arm)

4 - -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 control arm hole -2- are at the same height.

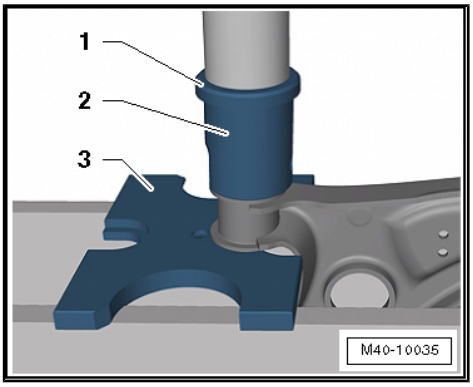


– Press the bearing back slightly in the control arm.

1 - -VW412-

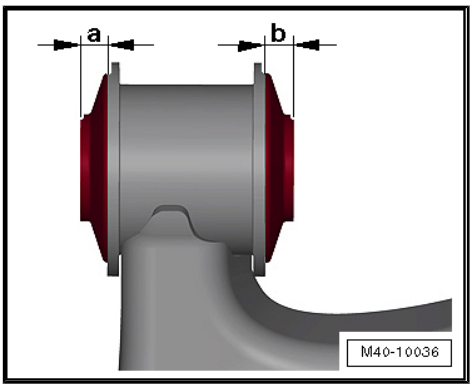
2 - -T10219/1-

3 - -VW402-



Dimensions -a and b- must be identical.

– Install the lower control arm. Refer to ⇒ “5.2 Lower Control Arm, Removing and Installing”, page 62 .



5.6 Lower Control Arm Rear Bonded Rubber Bushing, Replacing

Special tools and workshop equipment required

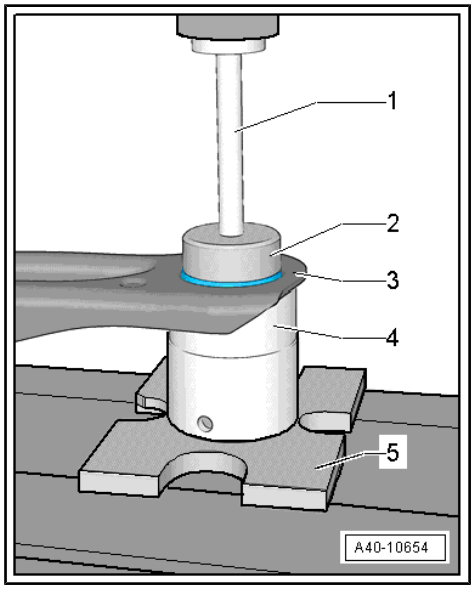
- Bearing Installer - Wheel Bearing - 3345-
- Bearing Installer - Multiple Use - 3348-
- Press Plate - VW401-
- Press Piece - Rod - VW411-
- Press Piece - Multiple Use - VW412-
- Bearing Installer - Ball Joint/Bushing/Bearing - VW459-

– Remove the control arm.

- Vehicles with Manual Transmission, DSG® Transmission 0CW. Refer to ⇒ “5.2.1 Lower Control Arm, Removing and Installing, Vehicles with Manual Transmission, DSG® Transmission 0CW”, page 62 .
- Vehicles with DSG® Transmission 0D9. Refer to ⇒ “5.2.2 Lower Control Arm, Removing and Installing, Vehicles with DSG® Transmission 0D9, 0DD, excluding Passat GTE”, page 64 .

Bonded Rubber Bushing, Pressing Out

– Press out the bonded rubber bushings as shown.



1 - -VW411-

2 - -3348-

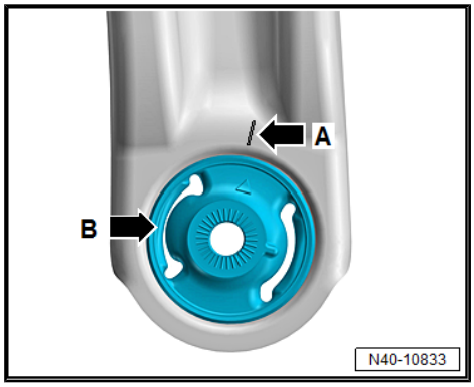
3 - Control Arm

4 - -3345-

5 - -VW401-

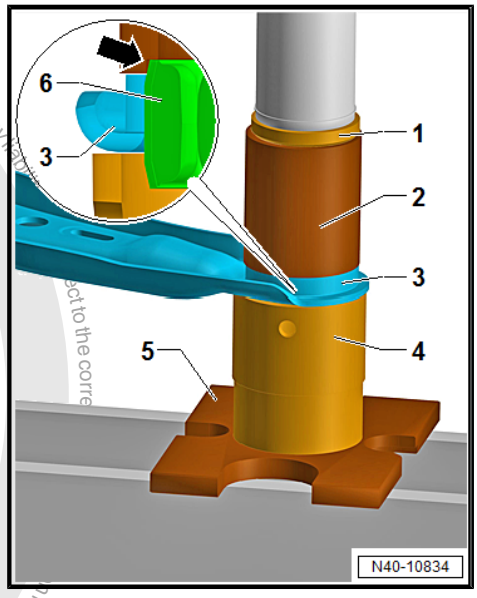
Bonded Rubber Bushing Installed Position

- The stamped arrow points to the marking -A arrows- 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-

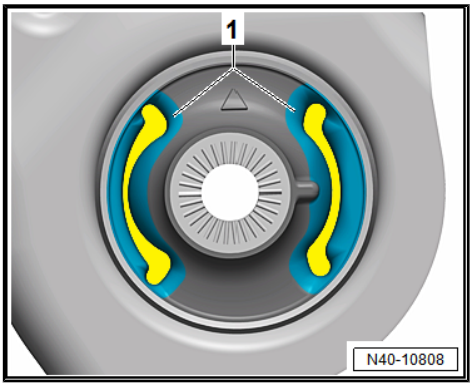
5 - -VW401-

6 - Bonded Rubber Bushing

Note

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

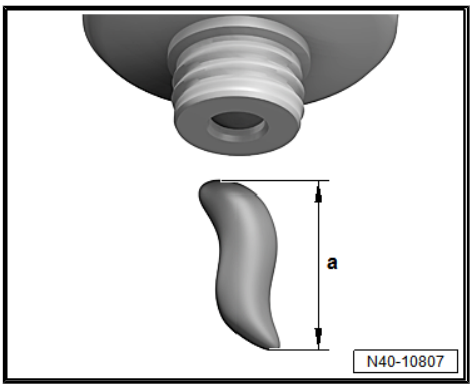
Bonded Rubber Bushing, Lubricating:



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 -G 052 150 A2- .



– 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. Refer to ⇒ “5.2 Lower Control Arm, Removing and Installing”, page 62 .

◆ Vehicles with Manual Transmission, DSG® Transmission 0CW. Refer to ⇒ page 63 .

◆ Vehicles with DSG® Transmission 0D9, 0DD. Refer to ⇒ page 66 .

◆ Vehicles with DSG® Transmission 0DL. Refer to ⇒ page 71 .

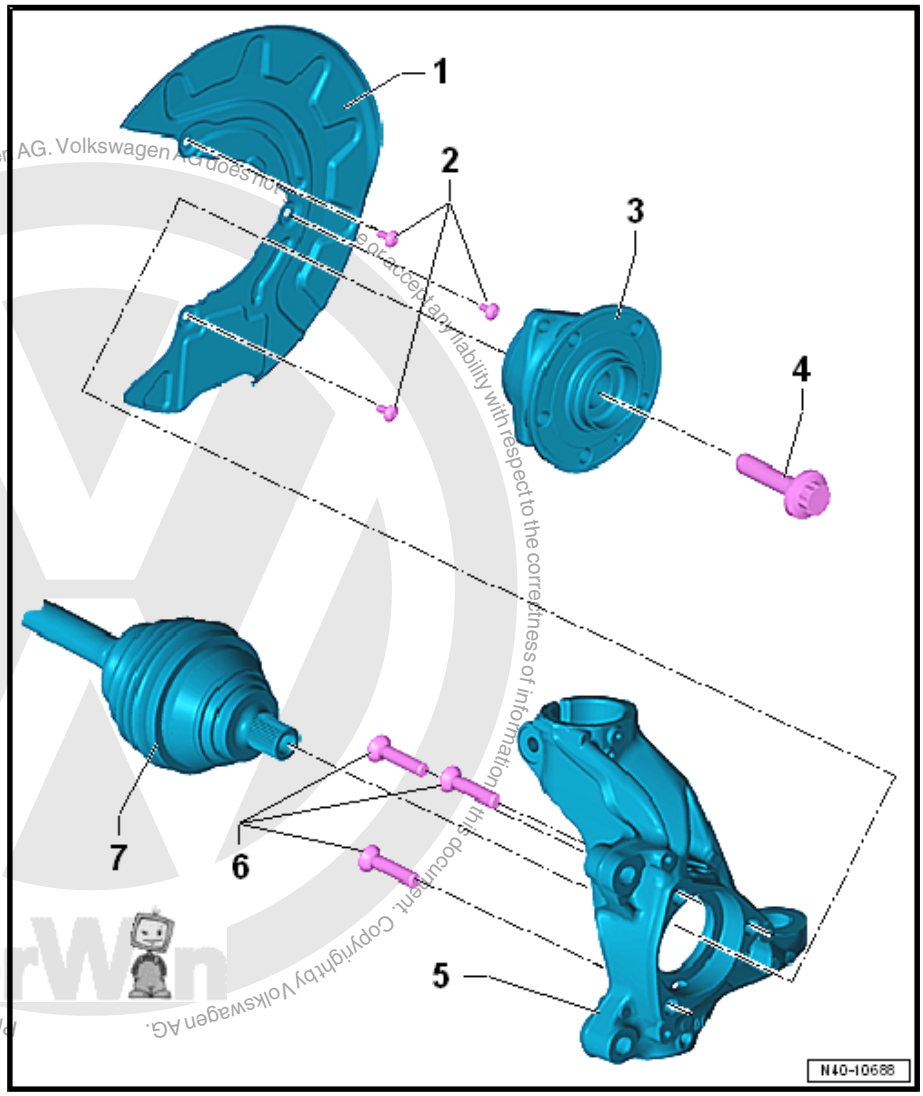
6 Wheel Bearing

⇒ “6.1 Overview - Wheel Bearing”, page 82

⇒ “6.2 Wheel Bearing Housing, Removing and Installing”, page 82

⇒ “6.3 Wheel Bearing Unit, Removing and Installing”, page 86

6.1 Overview - Wheel Bearing



1 - Cover Plate

2 - Bolt

- ❑ 12 Nm

3 - Wheel Bearing Unit

- ❑ Removing and installing. Refer to ⇒ “6.3 Wheel Bearing Unit, Removing and Installing”, page 86 .
- ❑ Cannot be serviced

4 - Bolt

- ❑ 200 Nm + 180°
- ❑ Replace after removing.
- ❑ Loosening and tightening. Refer to ⇒ “7.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 113 .
- ❑ Before installing, clean the threads in the CV joint with a thread tap.

5 - Wheel Bearing Housing

- ❑ There are different versions. Refer to the Parts Catalog.
- ❑ Removing and installing. Refer to ⇒ “6.2 Wheel Bearing Housing, Removing and Installing”, page 82 .

6 - Bolt

- ❑ 70 Nm +90°
- ❑ Replace after removing.

7 - Drive Axle

- ❑ Do not let the drive axle hang down during assembly work, since the inner joint could be damaged if it is bent too far.

6.2 Wheel Bearing Housing, Removing and Installing

Special tools and workshop equipment required

- ♦ Puller - Ball Joint - 3287A-
- ♦ Spreader Tool - 3424-

- Puller - Ball Joint - T10187-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-
- Digital Torque Wrench - VAG1756A-
- Drive Shaft Remover - T10520-

Removing

– Remove the drive axle bolt. Refer to ⇒ “7.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 113 .

Caution

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

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

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.

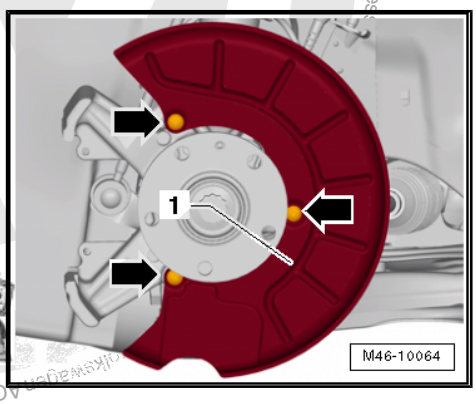
– Remove the brake caliper and tie it to the vehicle body with wire. Refer to ⇒ Brake System; Rep. Gr. 46 ; Front Brakes; Overview - Front Brakes .

– Remove the ABS speed sensor. Refer to ⇒ Brake System; Rep. Gr. 45 ; Sensors; Right and Left Front ABS Wheel Speed Sensor -G45- / -G47- , Removing and Installing .

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

– Remove and free up the brake line bracket and wires from the wheel bearing housing.

– Remove the cover plate -1- from the wheel bearing housing -arrow-.



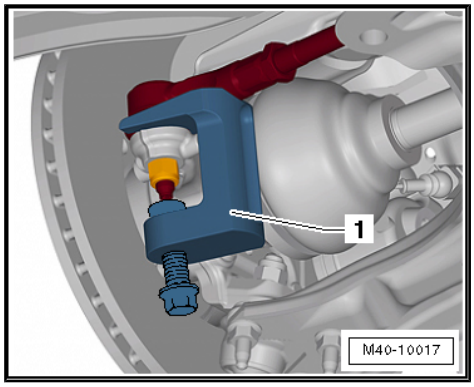
– Loosen the nut from the tie rod end, but do not remove it yet.

Caution

To protect the thread, screw the nut on the pin several turns.

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

1 - -T10187-

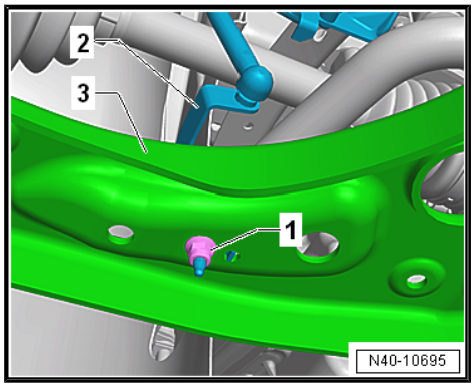


Vehicles with Level Control System Sensor

– Remove the nut -1-.

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

Continuation for All Vehicles

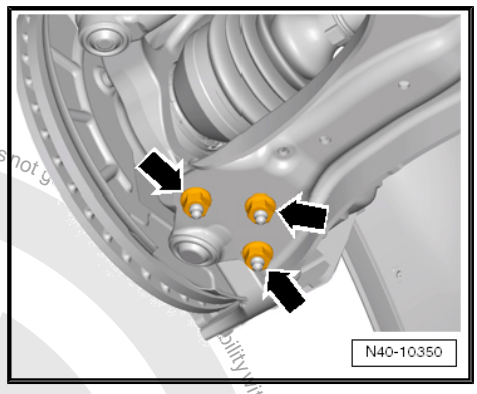


– Loosen the nuts -arrows-.

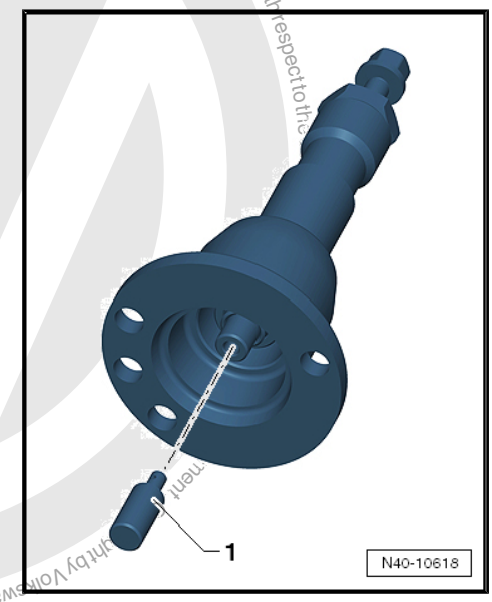
– Remove the control arm from the ball joint.

– 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- .

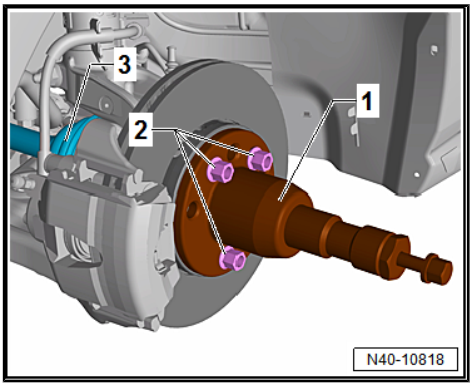


Before using the -T10520- , make sure that the thrust piece -1- is installed.



Using the -T10520- :

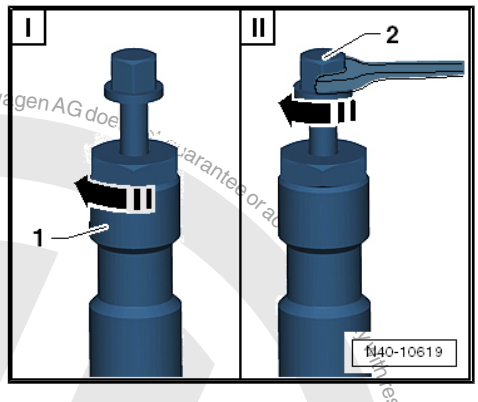
– Secure the -T10520- -1- with three wheel bolts -2- on the wheel hub, so that the drive axle -3- can be pressed out.



– 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- .



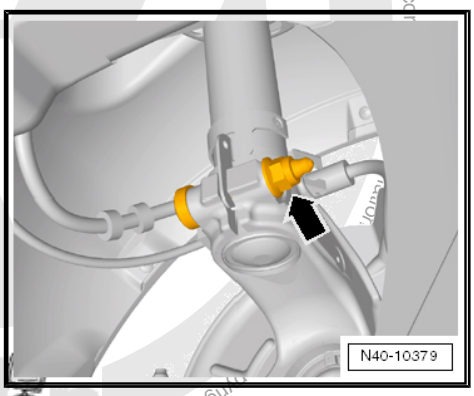
Note

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.

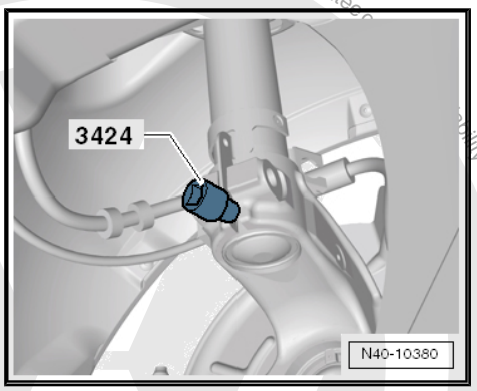
– Secure the drive axle to the body using a wire.

– Place the - VAS6931- or -VAG1383A- under the wheel bearing housing.

– Remove the threaded connection on the wheel bearing housing/suspension strut -arrow-.



– Insert -3424- into the wheel bearing housing.



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.

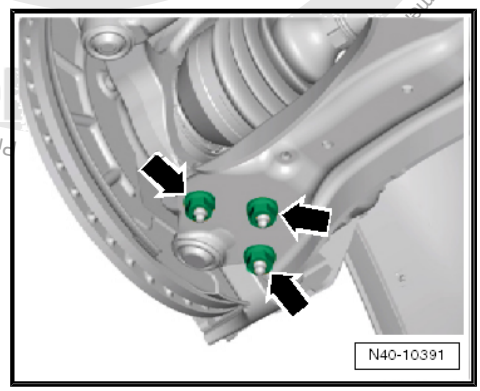
Note

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 the nuts -arrows-.



Note

- *The level control system sensor lever must point toward vehicle exterior.*
- *The thread on the level control system sensor must be installed into the exterior hole in the control arm. The retaining tab on the level control system sensor must engage into the inner hole in order to assure a correct installation position.*

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “6.1 Overview - Wheel Bearing”, page 82
- Refer to ⇒ “5.1 Overview - Lower Control Arm and Ball Joint”, page 61
- Refer to ⇒ “4.1 Overview - Suspension Strut and Upper Control Arm”, page 51
- Refer to ⇒ “2.1 Overview - Front Level Control System Sensor”, page 271
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- 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 .

6.3 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 ⇒ "7.4 Drive Axle Threaded Connection, Loosening and Tightening", page 113 .

Caution

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

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

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.

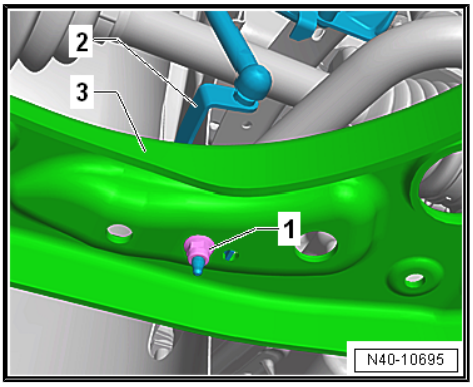
– Remove the brake caliper and tie it to the vehicle body with wire. Refer to ⇒ Brake System; Rep. Gr. 46 ; Front Brakes; Overview - Front Brakes .

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

Vehicles with Level Control System Sensor

– Remove the nut -1-.

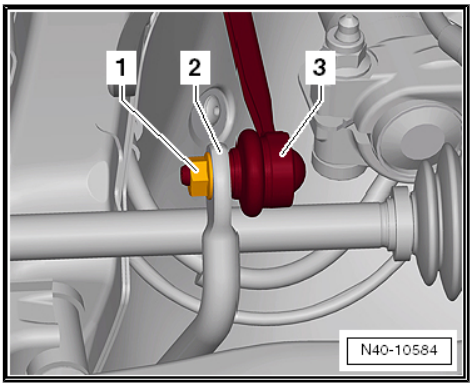
– Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.



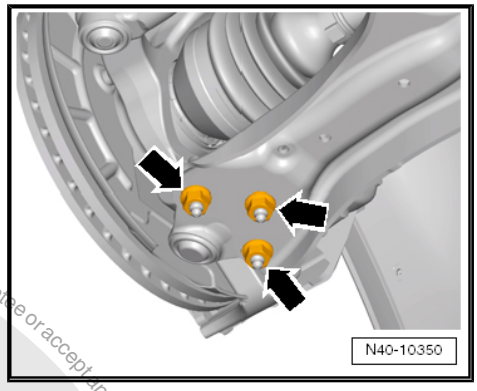
Continuation for All Vehicles

– Remove the hex nut -1- from the coupling rod -3-.

– Remove the coupling rod -3- from the stabilizer bar -2-.



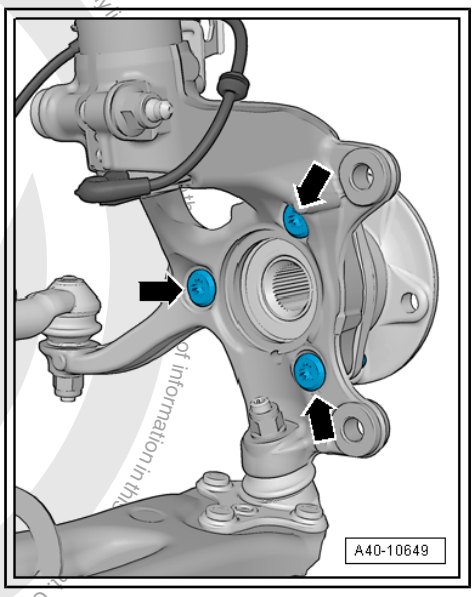
– Remove the nuts -arrows-.
– Remove the control arm from the ball joint.
– Remove the drive axle outer joint from the wheel hub.
– Secure the drive axle to the body using a wire.
– Attach the ball joint to the control arm again -arrows-.

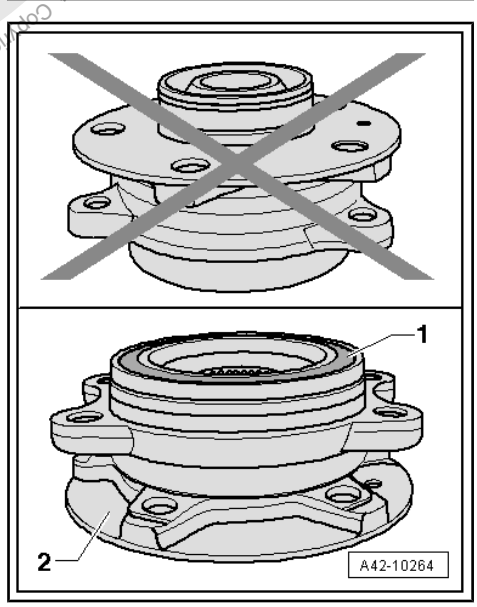


– Remove the bolts -arrows-.
– Remove the wheel bearing unit from wheel bearing housing.

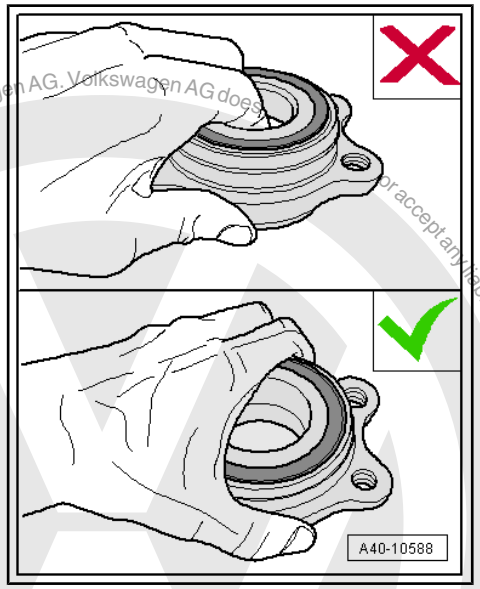
Caution

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





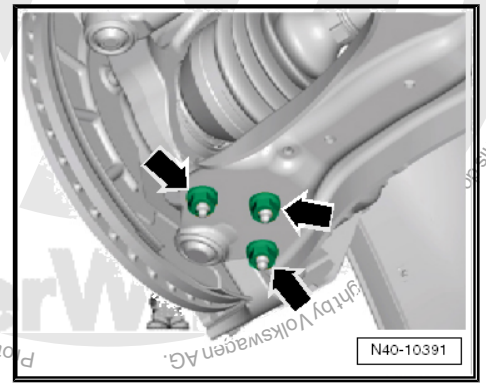
- The wheel bearing -1- must face up in order to remove the wheel bearing unit.
- Always set the wheel bearing unit down on the wheel hub -2-.
- Never reach inside when lifting the wheel bearing.
- Hold the wheel bearing only on the outside.



Installing

Install in reverse order of removal. Note the following:

– Tighten the nuts -arrows-.



Note

- *The level control system sensor lever must point toward vehicle exterior.*
- *The thread on the level control system sensor must be installed into the exterior hole in the control arm. The retaining tab on the level control system sensor must engage into the inner hole in order to assure a correct installation position.*

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “6.1 Overview - Wheel Bearing”, page 82
- Refer to ⇒ “2.1 Overview - Subframe”, page 21
- Refer to ⇒ “5.1 Overview - Lower Control Arm and Ball Joint”, page 61
- Refer to ⇒ “2.1 Overview - Front Level Control System Sensor”, page 271
- Brake rotor bolt. Refer to ⇒ Brake System; Rep. Gr. 46 ; Front Brakes; Overview - Front Brakes .

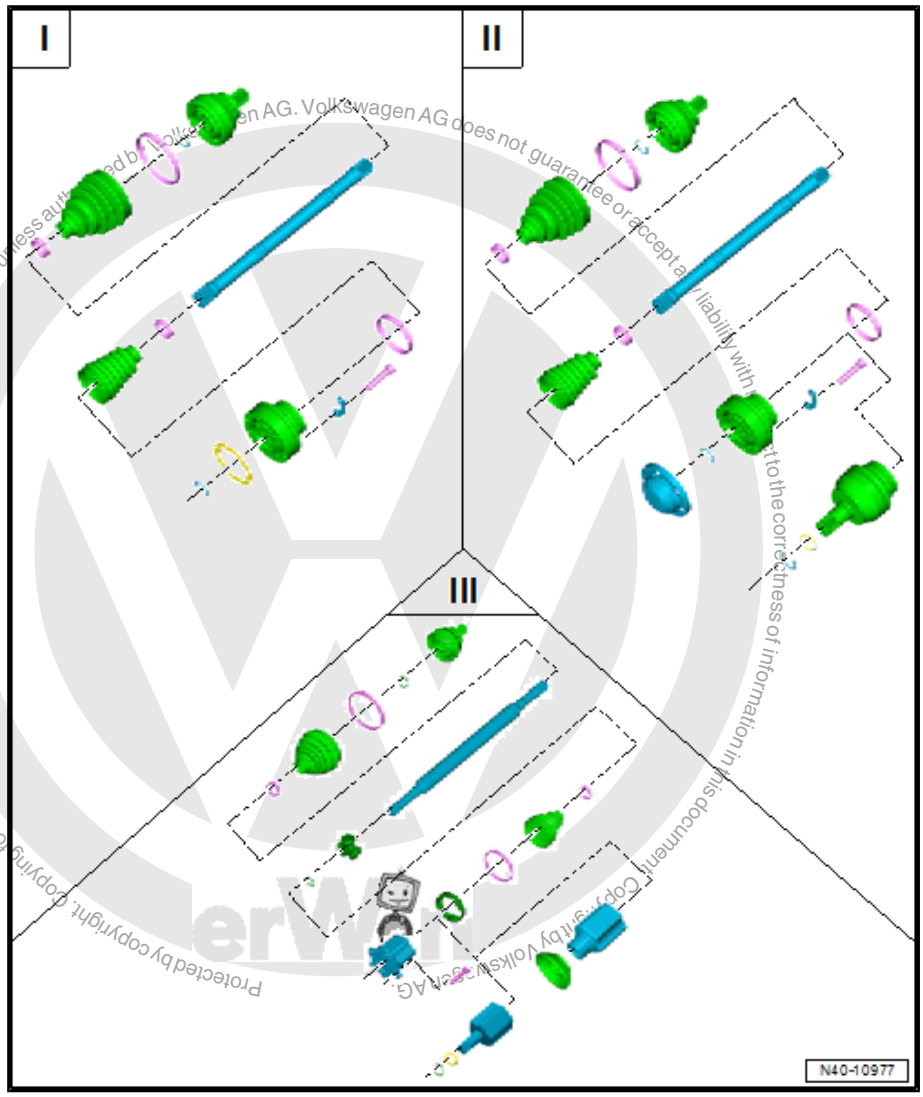
7 Drive Axle

7.1 Overview - Drive Axle

I - Refer to
⇒ “7.2.1 Overview - Drive Axle, CV Joint VL 100”, page 91

II - Refer to
⇒ “7.2.2 Overview - Drive Axle, CV Joint VL 107”, page 93

III - Refer to
⇒ “7.2.3 Overview - Drive Axle, Triple Roller Joint AAR3300i” page 95



Drive Axles, Differentiating when Installed

	VL100	VL107	AAR3300i Attached	AAR3300i Bolted
Diameter of inner joint in mm	100	107	-	-

	VL100	VL107	AAR3300i Attached	AAR3300i Bolted
Cover between inner joint and flange shaft	-	X	-	-
Inner joint inserted into transmission (automatic transmission only)	-	-	X	-
Inner joint attached to flange shaft (4MOTION only)	-	-	X	-

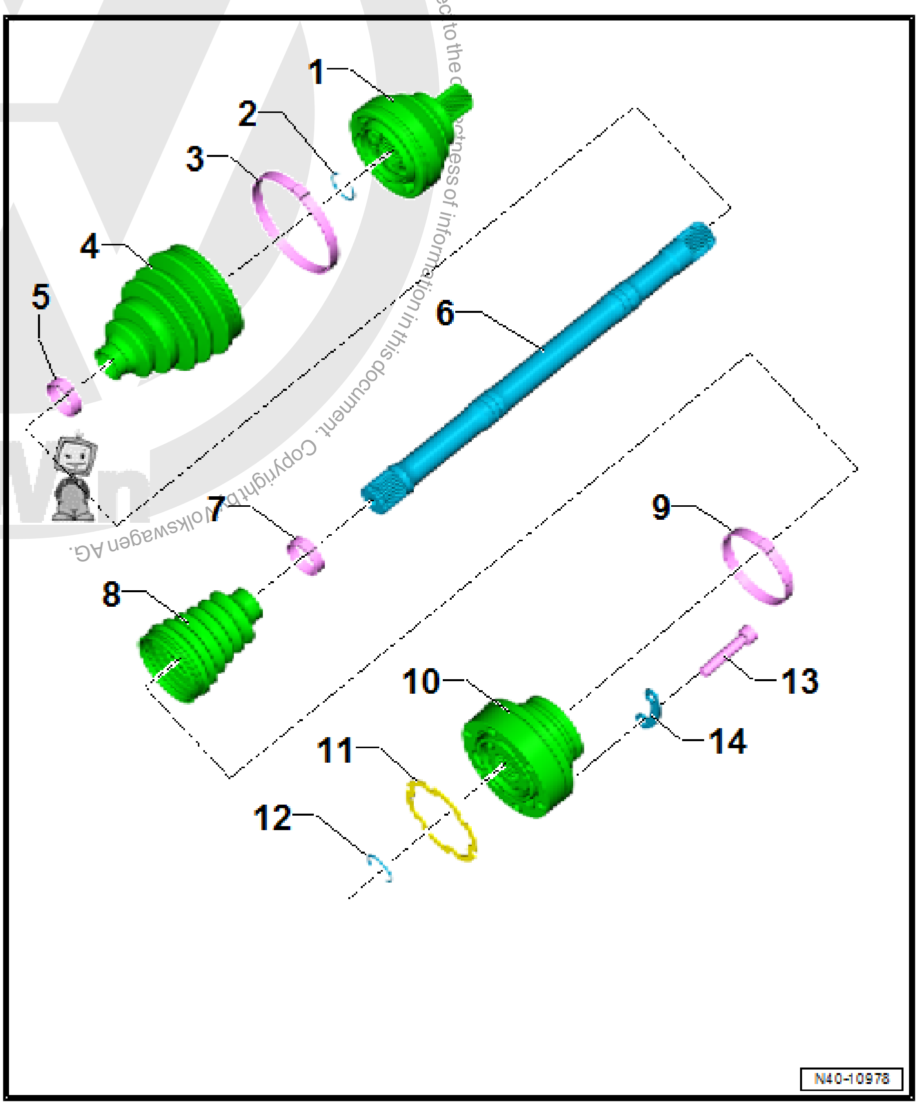
7.2 Overview - Drive Axle

⇒ “7.2.1 Overview - Drive Axle, CV Joint VL 100”, page 91

⇒ “7.2.2 Overview - Drive Axle, CV Joint VL 107”, page 93

⇒ “7.2.3 Overview - Drive Axle, Triple Roller Joint AAR3300i”, page 95

7.2.1 Overview - Drive Axle, CV Joint VL 100



1 - Outer CV Joint
- ❑ Only replace completely
- ❑ Removing. Refer to ⇒ page 115 .
- ❑ Installing: using a plastic hammer, drive onto the shaft as far as the stop
- ❑ Checking. Refer to ⇒ “7.7 Outer CV Joint, Checking”, page 126 .

2 - Circlip
- ❑ Replace after removing.
- ❑ Insert in shaft groove

3 - Clamp
- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ““Tightening Clamp on the Outer Joint”“ , page 123 .

4 - CV Boot
- ❑ Check for tears and scuffing

5 - Clamp
- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ““Tension the Clamp on the Small Diameter”“ , page 117 .

6 - Drive Axle

7 - Clamp
- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ““Tension the Clamp on the Small Diameter”“ , page 117 .

8 - CV Joint CV Boot

- ❑ Check for tears and scuffing
- ❑ Drive off CV joint using a drift
- ❑ Coat the sealing surface with -D 454 300 A2- before installing it on the CV joint

9 - Clamp

- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ""Tightening Clamp on the Outer Joint"" , page 123 .

10 - Inner CV Joint

- ❑ Only replace completely
- ❑ Removing. Refer to ⇒ Fig. ""Inner CV Joint, Removing"" , page 116 .
- ❑ Installing. Refer to ⇒ Fig. ""Inner CV Joint, Pressing On"" , page 116 .
- ❑ Checking. Refer to ⇒ "7.8 Inner CV Joint, Checking", page 127 .

11 - Seal

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

12 - Circlip

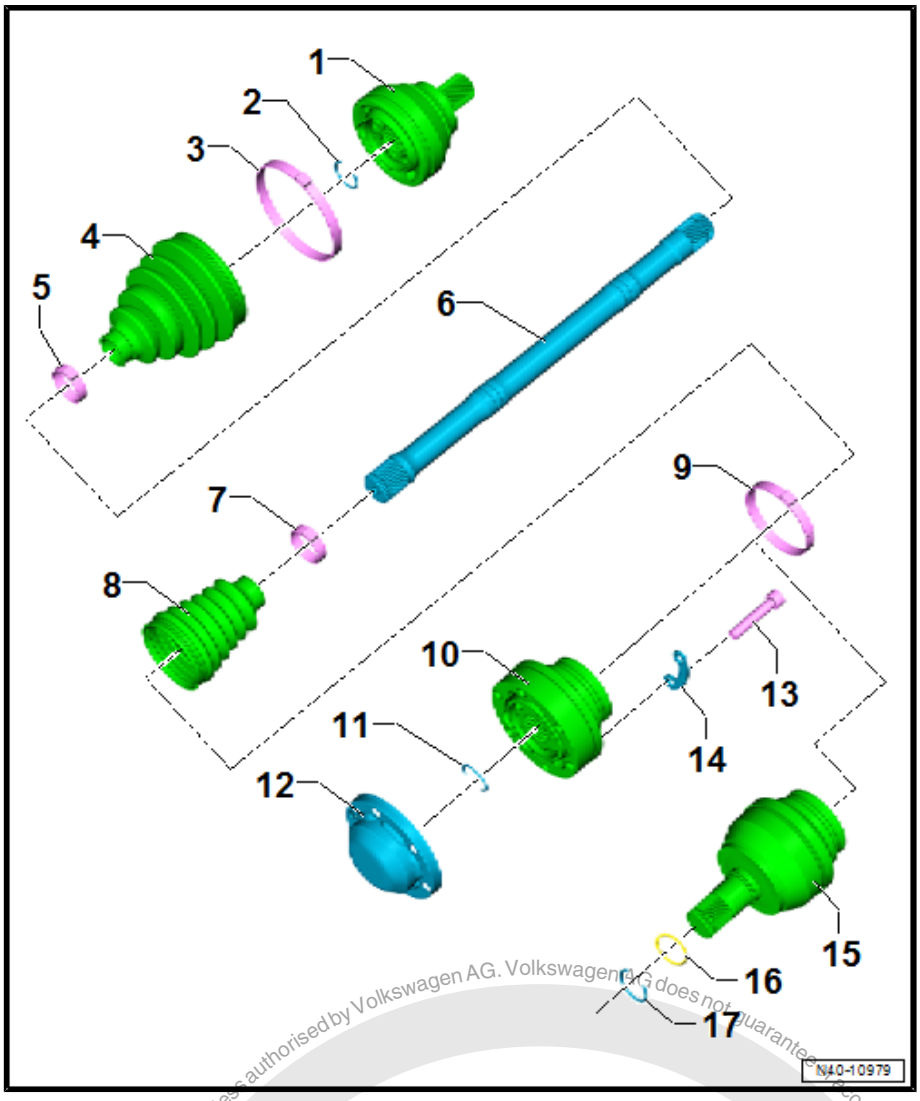
- ❑ Remove and install using Circlip Pliers - VW161A-

13 - Internal Multi-Point Bolt

- ❑ First tighten diagonally to 10 Nm, then tighten diagonally again to the tightening specification
- ❑ 40 Nm
- ❑ Replace after removing.
- ❑ M8 x 48

14 - Backing Plate

7.2.2 Overview - Drive Axle, CV Joint VL 107



1 - Outer CV Joint

- ❑ Only replace completely
- ❑ Removing. Refer to ⇒ page 117 .
- ❑ Installing: using a plastic hammer, drive onto the shaft as far as the stop
- ❑ Checking. Refer to ⇒ “7.7 Outer CV Joint, Checking”, page 126 .

2 - Circlip

- ❑ Replace after removing.
- ❑ Insert in shaft groove

3 - Clamp

- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ““Tightening Clamp on the Outer Joint”“ , page 119 .

4 - CV Boot

- ❑ Check for tears and scuffing

5 - Clamp

- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ““Tension the Clamp on the Small Diameter”“ , page 120 .

6 - Drive Axle

7 - Clamp

- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ““Tension the Clamp on the Small Diameter”“ , page 120 .

8 - CV Joint CV Boot

- ❑ Check for tears and scuffing
- ❑ Drive off CV joint using a drift
- ❑ Coat the sealing surface with -D 454 300 A2- before installing it on the CV joint

9 - Clamp

- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ““Tightening Clamp on the Outer Joint”“ , page 119 .

10 - Inner CV Joint

- ❑ Only replace completely
- ❑ Bolted to the transmission
- ❑ Removing. Refer to ⇒ Fig. ““Inner CV Joint, Removing”“ , page 118 .
- ❑ Checking. Refer to ⇒ “7.8 Inner CV Joint, Checking”, page 127 .

11 - Circlip

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

12 - Cap

- ❑ Replace after removing.

- ❑ Carefully drive off using a drift. Refer to ⇒ Fig. ““Cover for Inner Joint, Removing, Only for CV Joint with Cover”“ , page 118

13 - Internal Multi-Point Bolt

- ❑ First tighten diagonally to 10 Nm, then tighten diagonally again to the tightening specification
- ❑ 70 Nm
- ❑ Replace after removing.
- ❑ M10 x 52

14 - Backing Plate

15 - Inner CV Joint

- ❑ Attached in the transmission
- ❑ Only replace completely
- ❑ Removing. Refer to ⇒ Fig. ““Inner CV Joint, Removing”“ , page 118 .
- ❑ Checking. Refer to ⇒ “7.8 Inner CV Joint, Checking”, page 127 .

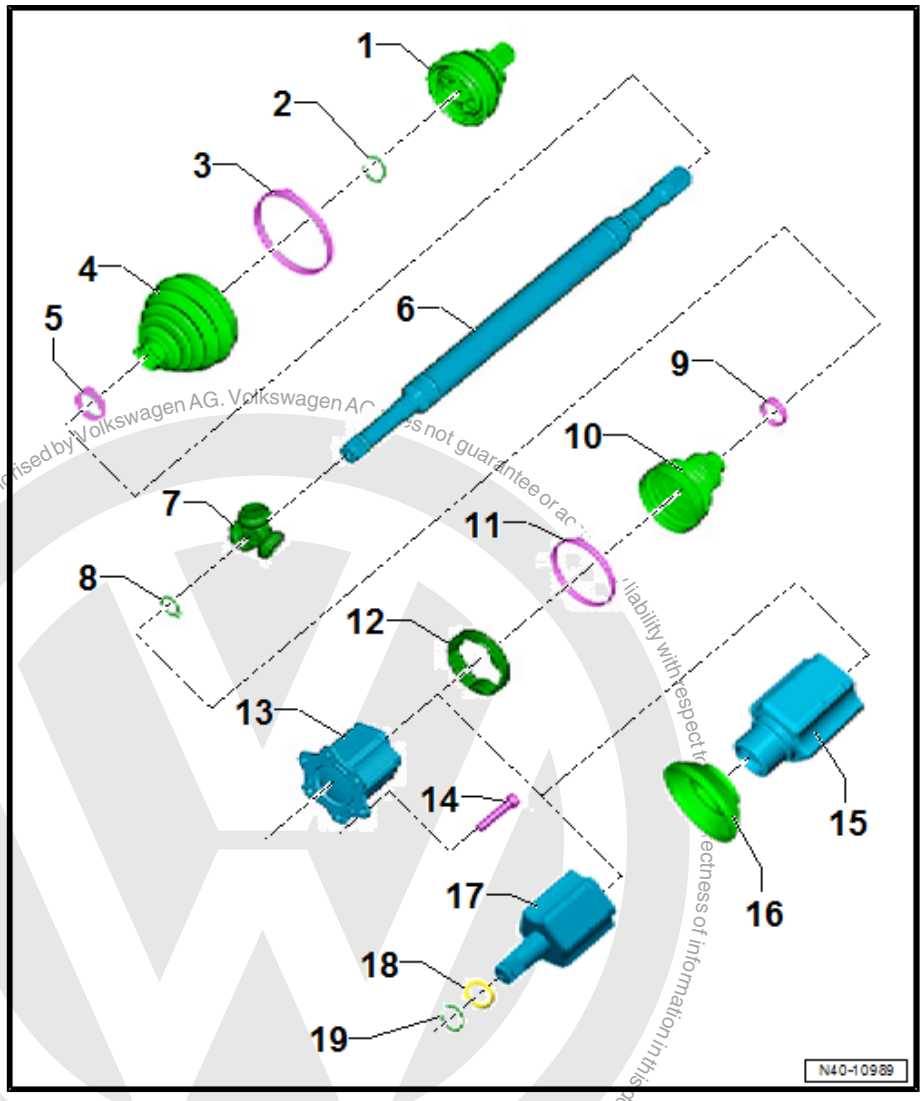
16 - O-Ring

- ❑ Replace after removing.
- ❑ Insert in shaft groove

17 - Circlip

- ❑ Replace after removing.
- ❑ Insert in shaft groove

7.2.3 Overview - Drive Axle, Triple Roller Joint AAR3300i



1 - Outer CV Joint

- ❑ Only replace completely
- ❑ Removing. Refer to ⇒ page 120 .
- ❑ Installing: Drive onto shaft with a plastic mallet until compressed circlip rebounds.
- ❑ Checking. Refer to ⇒ “7.7 Outer CV Joint, Checking”, page 126 .

2 - Circlip

- ❑ Replace after removing.
- ❑ Insert in shaft groove

3 - Clamp

- ❑ Replace after removing.

4 - CV Joint CV Boot

- ❑ Check for tears and scuffing

5 - Clamp

- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ““Tightening the Tensioning Clamp on the Smaller Diameter on the Inner/Outer Joint”“ , page 123 .

6 - Drive Axle

7 - Triple Roller Star with Rollers

The bevel faces the drive axle splines.

- ❑ Removing. Refer to ⇒ page 121 .

8 - Circlip

- ❑ Replace after removing.
- ❑ Insert in shaft groove

9 - Clamp

- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ““Tightening the Tensioning Clamp on the Smaller Diameter on the Inner/Outer Joint”“ , page 123 .

10 - CV Boot for Triple Roller Joint

- ❑ Check for tears and scuffing

11 - Clamp

- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ““Tightening the Tensioning Clamps on the Larger Diameter on the Inner Joint”“ , page 123 .

12 - Adapter

13 - Joint

- ❑ Bolted to the transmission
- ❑ Removing. Refer to ⇒ page 121 .

14 - Internal Multi-Point Bolt

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

15 - Joint

- ❑ Attached to the transmission flange shaft
- ❑ Removing. Refer to ⇒ page 124 .

16 - Cap

- ❑ Removing. Refer to ⇒ Fig. ""Removing the Cap from the Triple Roller Joint"" , page 126 .
- ❑ Installing. Refer to ⇒ Fig. ""Mounting the Cap onto the Triple Roller Joint"" , page 126 .

17 - Joint

- ❑ Attached in the transmission
- ❑ Removing. Refer to ⇒ page 121 .

18 - O-Ring

- ❑ Replace after removing.
- ❑ Insert in shaft groove

19 - Circlip

- ❑ Replace after removing.
- ❑ Insert in shaft groove

7.3 Drive Axle, Removing and Installing

⇒ "7.3.1 Drive Axle, Removing and Installing, CV Joint VL 100 and VL 107", page 96

⇒ "7.3.2 Drive Axle, Removing and Installing, Triple Roller Joint AAR3300i, Attached in Transmission", page 101

⇒ "7.3.3 Drive Axle, Removing and Installing, Triple Roller Joint AAR3300i, Attached on Transmission Flange Shaft", page 105

⇒ "7.3.4 Drive Axle, Removing and Installing, Triple Roller Joint AAR3300i Bolted", page 109

7.3.1 Drive Axle, Removing and Installing, CV Joint VL 100 and VL 107

Special tools and workshop equipment required

- ♦ Drive Axle Wedge Tool - T10161-
- ♦ 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
⇒ “7.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 113 .

> **Caution**
>
> *Do not load the wheel bearing if the wheel-side drive axle threaded connection is loose.*
>
> *If the wheel bearings are under the load of the vehicle weight, the wheel bearing will be damaged. This reduces the service life of the wheel bearings.*
>
> *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.

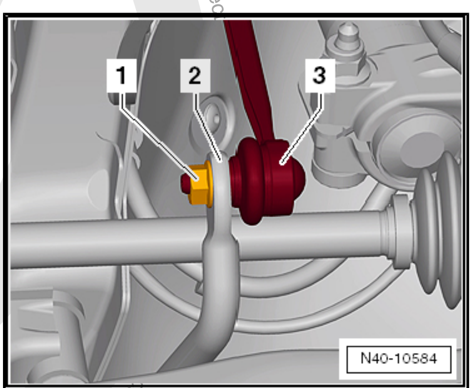
– Raise the vehicle.

– 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 coupling rod -3-.

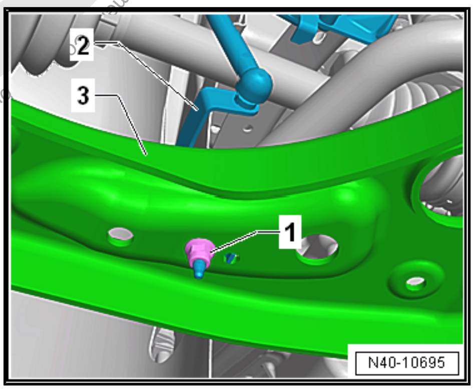
– Remove the coupling rod -3- from the stabilizer bar -2-.



Vehicles with Level Control System Sensor

– Remove the nut -1-.

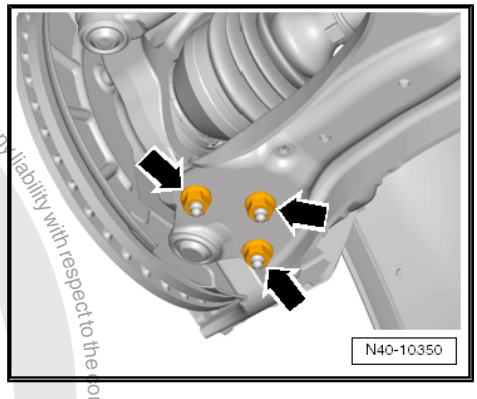
– Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.



Continuation for All Vehicles

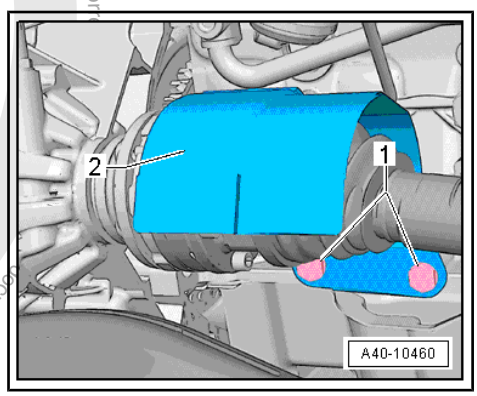
– Remove the nuts -arrows- from the ball joint.

– Disengage the control arm from the ball joint.



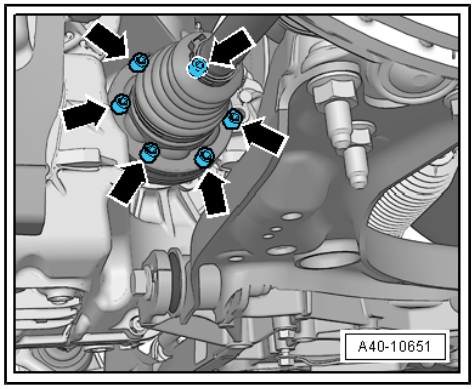
Only for Right Drive Axle

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



Only for Bolted Drive Axles

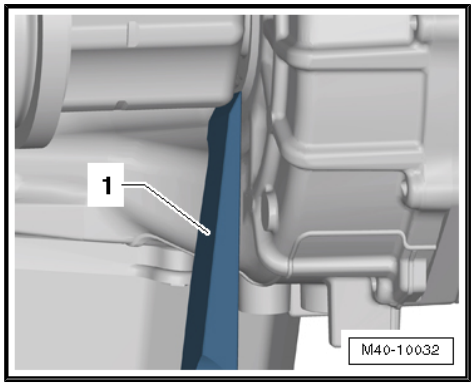
– Remove the drive axle from the flange shaft/transmission -arrows-.



Only for Attached Drive Axles

– 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.



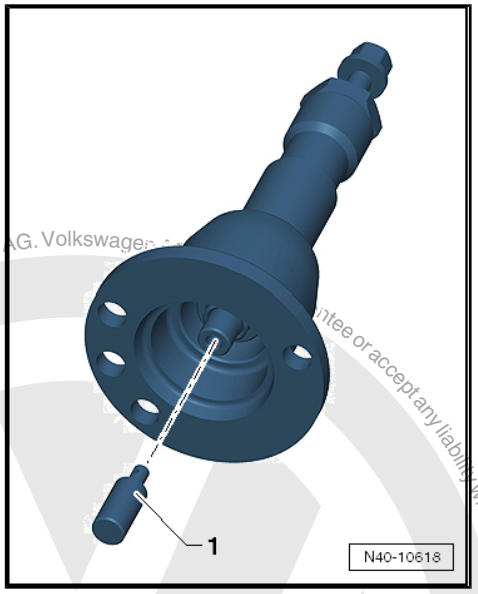
Continuation for All Drive Axles

– Push the wheel bearing housing to the left.

– Pull the drive axle out of the wheel hub.

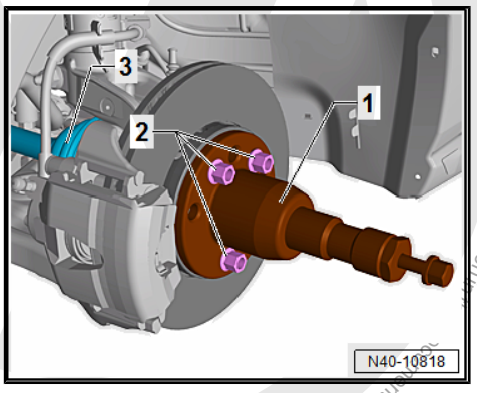
If the Drive Axle Cannot Be Pulled out of the Wheel Bearing, Then the Drive Axle Can Be Pushed out of the Wheel Bearing Using the -T10520- .

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



Using the -T10520- :

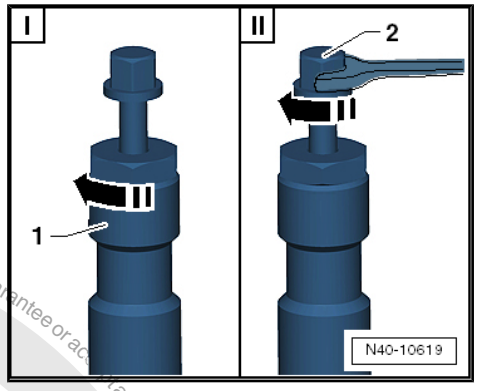
– Secure the -T10520- -1- with three wheel bolts -2- on the wheel hub, so that the drive axle -3- can be pressed out.



– 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:

Only for Attached Drive Axles

– Install, a 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 all the way into the joint.
– 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 striking tool!

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

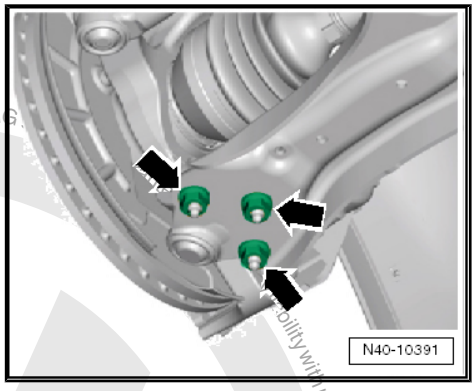
Caution

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

Continuation for all drive axles

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

– Tighten the nuts -arrows-.



Note

- *The level control system sensor lever must point toward vehicle exterior.*
- *The thread on the level control system sensor must be installed into the exterior hole in the control arm. The retaining tab on the level control system sensor must engage into the inner hole in order to assure a correct installation position.*

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “6.1 Overview - Wheel Bearing”, page 82
- Refer to ⇒ “7.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 113
- Refer to ⇒ “2.1 Overview - Front Level Control System Sensor”, page 271
- Refer to ⇒ “2.1 Overview - Subframe”, page 21
- Refer to ⇒ “5.1 Overview - Lower Control Arm and Ball Joint”, page 61
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Noise insulation bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .

7.3.2 Drive Axle, Removing and Installing, Triple Roller Joint AAR3300i, Attached in Transmission

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 ⇒ “7.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 113 .

Caution

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

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

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.

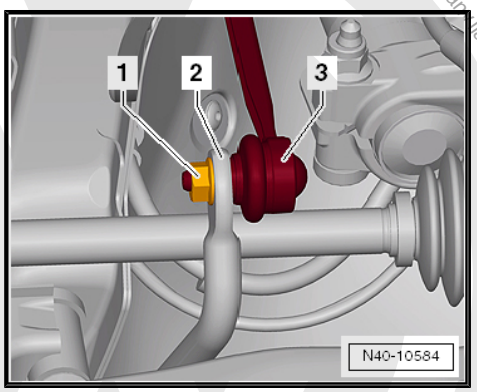
– Raise the vehicle.

– 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 coupling rod -3-.

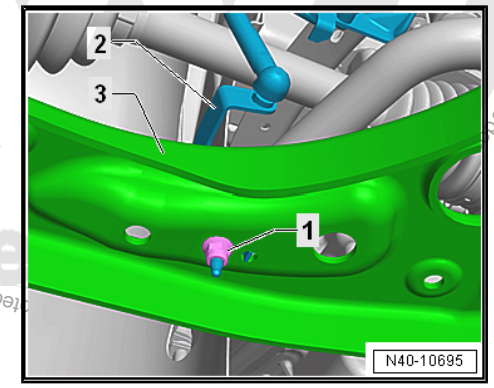
– Remove the coupling rod -3- from the stabilizer bar -2-.



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-.

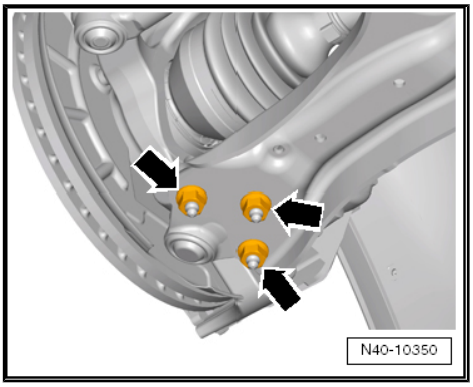


Continuation for All Vehicles

– Remove the nuts -arrows-.

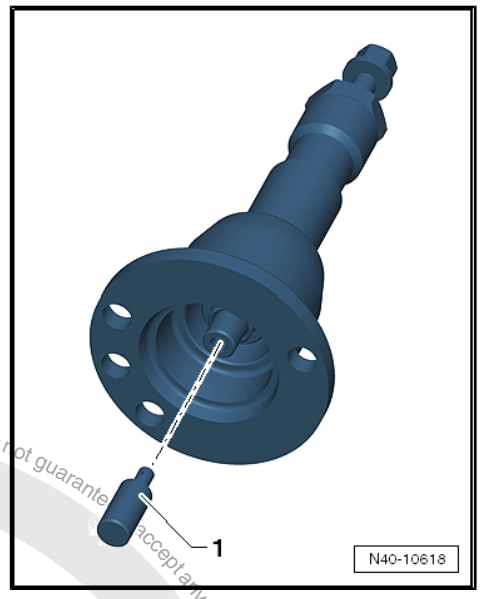
– Remove the wheel bearing housing with the ball joint from the control arm.

– Pull the drive axle out of the wheel hub and tie it securely to the body.



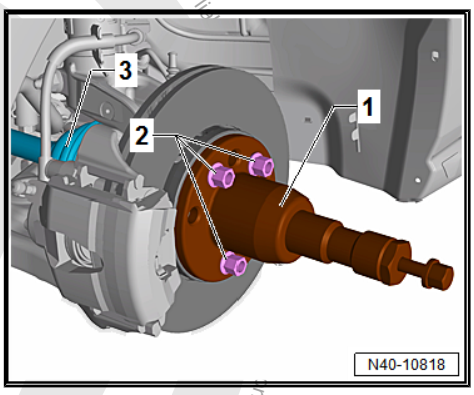
If the Drive Axle Cannot Be Pulled out of the Wheel Bearing, Then the Drive Axle Can Be Pushed out of the Wheel Bearing Using the -T10520- .

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



Using the -T10520- :

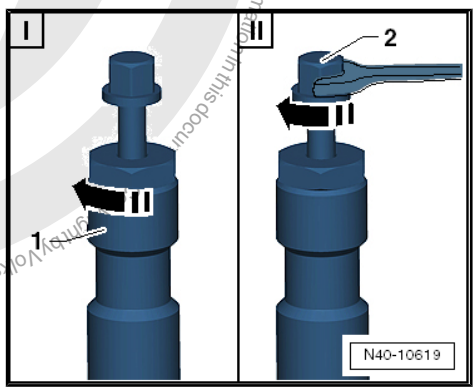
– Secure the -T10520- -1- with three wheel bolts -2- on the wheel hub, so that the drive axle -3- can be pressed out.



– Follow the specified sequence exactly.

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

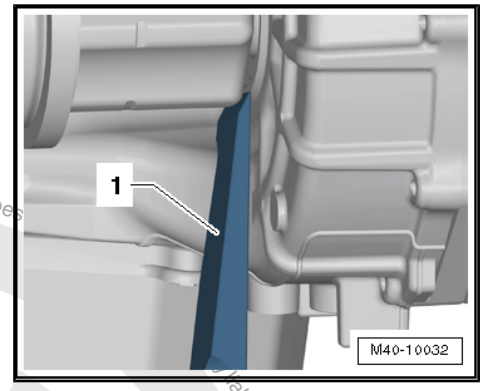
II - Only turn the bolt -2- using a wrench and press out the drive axle using the -T10520- .



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, a 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 all the way into the joint.
– 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 striking tool!

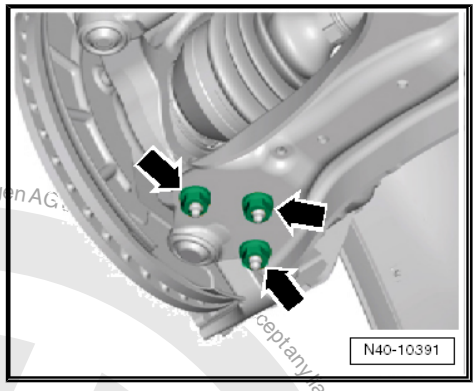
– Make sure the drive axle fits securely inside the transmission. The joint pulls against the resistance of the circlip.

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 .

– Tighten the nuts -arrows-.



Note

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

Note

- *The level control system sensor lever must point toward vehicle exterior.*
- *The thread on the level control system sensor must be installed into the exterior hole in the control arm. The retaining tab on the level control system sensor must engage into the inner hole in order to assure a correct installation position.*

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “6.1 Overview - Wheel Bearing”, page 82
- Refer to ⇒ “7.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 113
- Refer to ⇒ “2.1 Overview - Front Level Control System Sensor”, page 271
- Refer to ⇒ “2.1 Overview - Subframe”, page 21
- Refer to ⇒ “5.1 Overview - Lower Control Arm and Ball Joint”, page 61
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Noise insulation bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .

7.3.3 Drive Axle, Removing and Installing, Triple Roller Joint AAR3300i, Attached on Transmission Flange Shaft

Special tools and workshop equipment required

- 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 ⇒ “7.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 113 .

Caution

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

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

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.

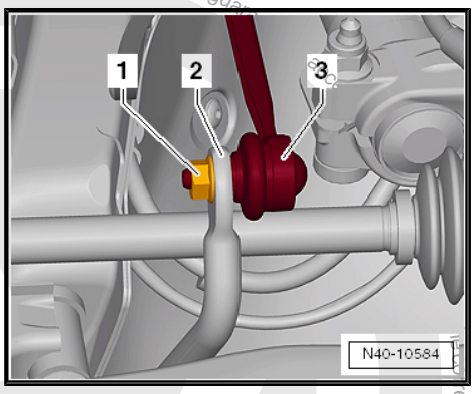
– Raise the vehicle.

– 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 coupling rod -3-.

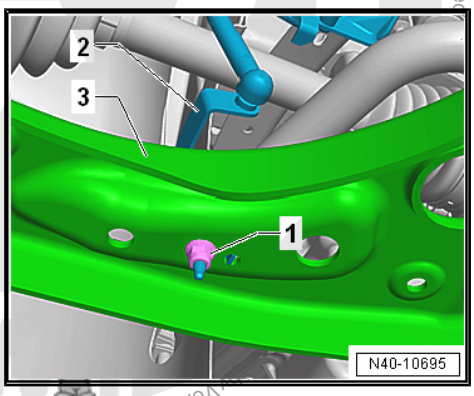
– Remove the coupling rod -3- from the stabilizer bar -2-.



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-.

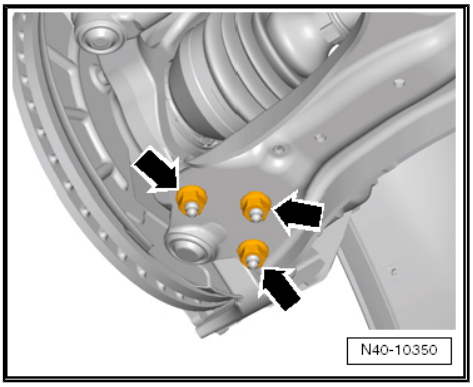


Continuation for All Vehicles

– Remove the nuts -arrows-.

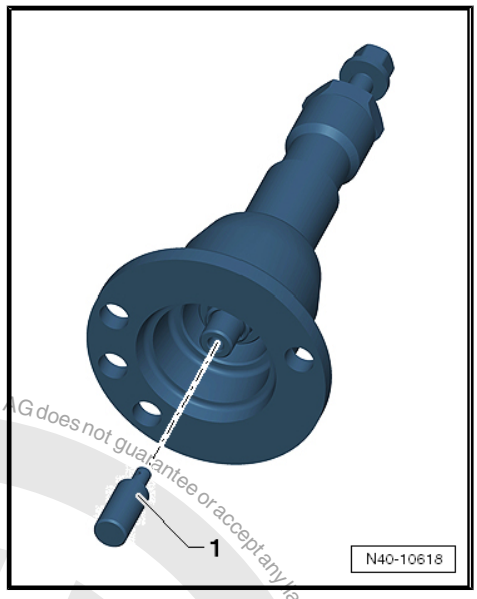
– Remove the wheel bearing housing with the ball joint from the control arm.

– Pull the drive axle out of the wheel hub and tie it securely to the body.



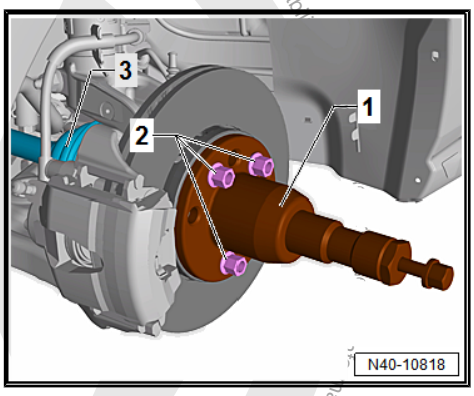
If the Drive Axle Cannot Be Pulled out of the Wheel Bearing, Then the Drive Axle Can Be Pushed out of the Wheel Bearing Using the -T10520- .

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



Using the -T10520- :

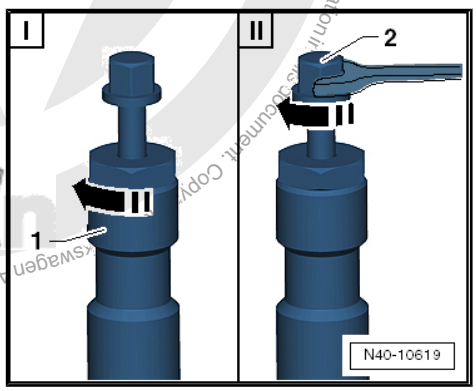
– Secure the -T10520- -1- with three wheel bolts -2- on the wheel hub, so that the drive axle -3- can be pressed out.



– Follow the specified sequence exactly.

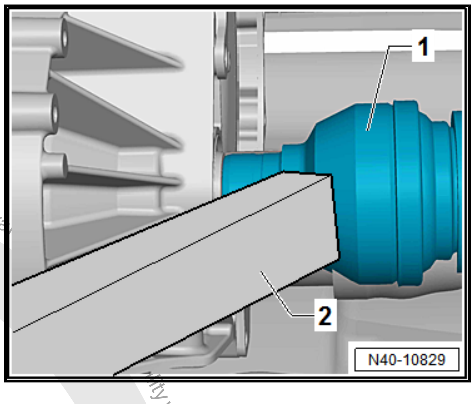
I - Tighten the knurled nut -1- hand-tight.

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.



– Drive off the drive axle -1- from the transmission stub shaft using a suitable tool for example a wooden block -2-.

– Remove the drive axle from the vehicle.

Installing

Install in reverse order of removal. Note the following:

– Install, a 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 all the way into the joint.

– 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 striking tool!*

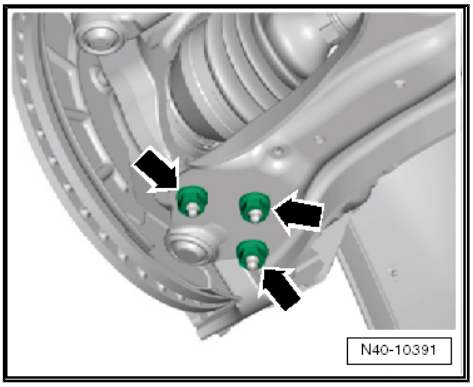
– Make sure the drive axle fits securely inside the transmission. The joint pulls against the resistance of the circlip.

> ⚠ **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 .

– Tighten the nuts -arrows-.



Note

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

Note

- *The level control system sensor lever must point toward vehicle exterior.*
- *The thread on the level control system sensor must be installed into the exterior hole in the control arm. The retaining tab on the level control system sensor must engage into the inner hole in order to assure a correct installation position.*

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “6.1 Overview - Wheel Bearing”, page 82
- Refer to ⇒ “7.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 113
- Refer to ⇒ “2.1 Overview - Front Level Control System Sensor”, page 271
- Refer to ⇒ “2.1 Overview - Subframe”, page 21
- Refer to ⇒ “5.1 Overview - Lower Control Arm and Ball Joint”, page 61
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Noise insulation bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .

7.3.4 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 ⇒ “7.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 113 .

Caution

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

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

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.

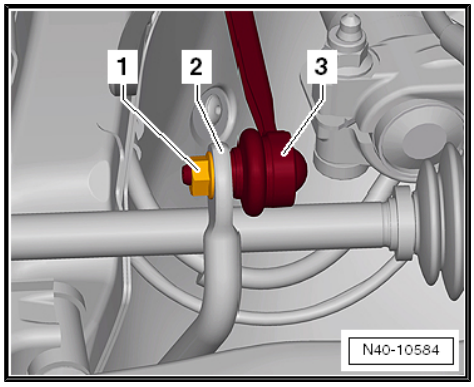
– Raise the vehicle.

– 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 coupling rod -3-.

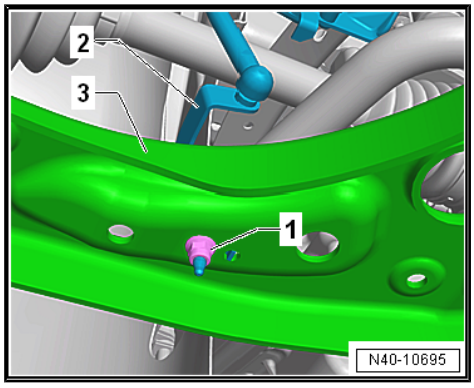
– Remove the coupling rod -3- from the stabilizer bar -2-.



Vehicles with Level Control System Sensor

– Remove the nut -1-.

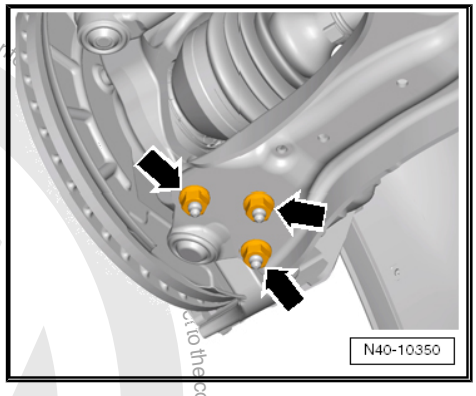
– Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.



Continuation for All Vehicles

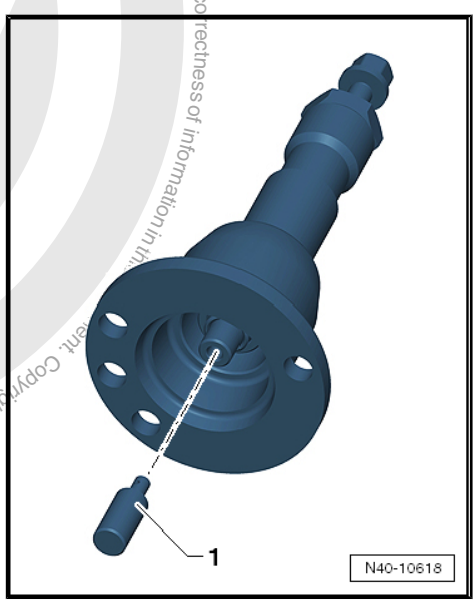
– Remove the drive axle from the flange shaft/transmission.

– 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.



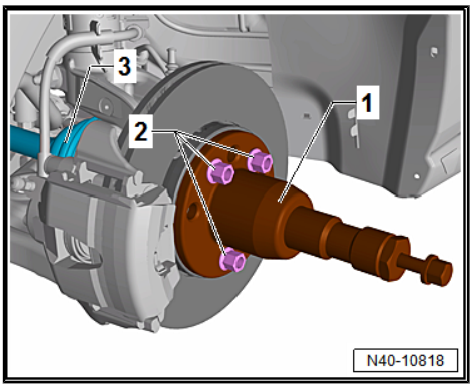
If the Drive Axle Cannot Be Pulled out of the Wheel Bearing, Then the Drive Axle Can Be Pushed out of the Wheel Bearing Using the -T10520- .

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



Using the -T10520- :

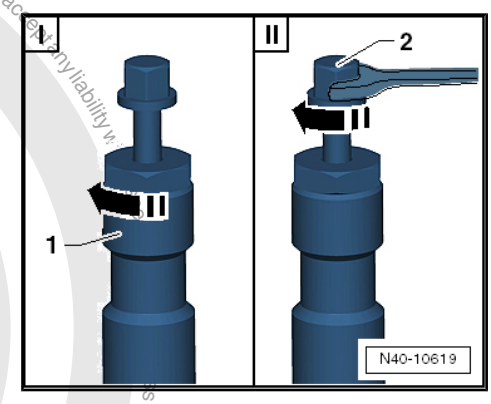
– Secure the -T10520- -1- with three wheel bolts -2- on the wheel hub, so that the drive axle -3- can be pressed out.



– 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.

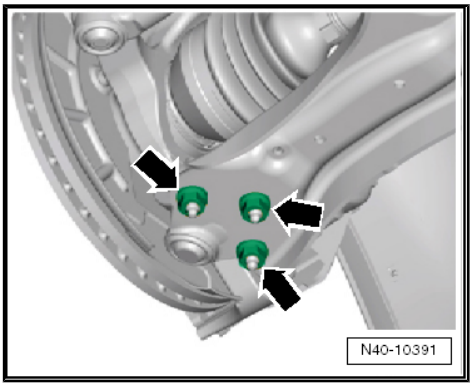
Installing

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 the nuts -arrows-.



Note

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 level control system sensor must be installed into the exterior hole in the control arm. The retaining tab on the level control system sensor must engage into the inner hole in order to assure a correct installation position.*

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

– Install the lower noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .

– Tighten the drive axle bolt onto the wheel hub. Refer to ⇒ "7.4 Drive Axle Threaded Connection, Loosening and Tightening", page 113 .

Tightening Specifications

- Refer to ⇒ "6.1 Overview - Wheel Bearing", page 82
- Refer to ⇒ "7.4 Drive Axle Threaded Connection, Loosening and Tightening", page 113
- Refer to ⇒ "2.1 Overview - Front Level Control System Sensor", page 271
- Refer to ⇒ "2.1 Overview - Subframe", page 21
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Noise insulation bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .

7.4 Drive Axle Threaded Connection, Loosening and Tightening

Special tools and workshop equipment required

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

Caution

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

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

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.***

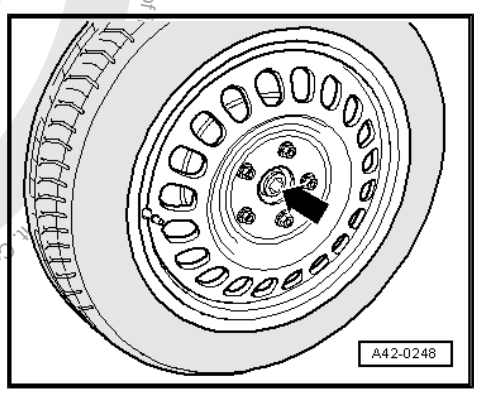
Twelve-Point Bolt, Loosening

– With vehicle still resting on wheels, loosen the twelve-point bolt with -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, Installing

– Replace the twelve-point bolt.

Note

The wheels must not be touching the ground when tightening the drive axle. Otherwise, wheel bearing may be pre-damaged.

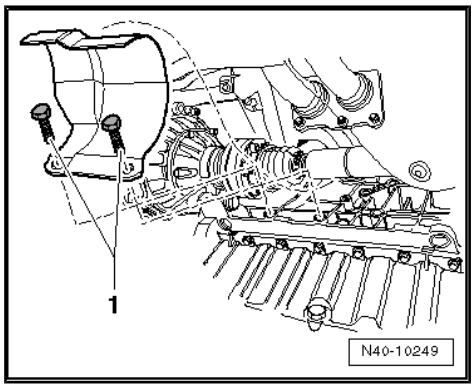
– Press the brake pedal. A second technician will be needed.

– Tighten the twelve-point bolt to 200 Nm.

– Set the vehicle on its wheels.

– Turn the twelve-point bolt an additional 180°.

7.5 Drive Axle Heat Shield, Removing and Installing

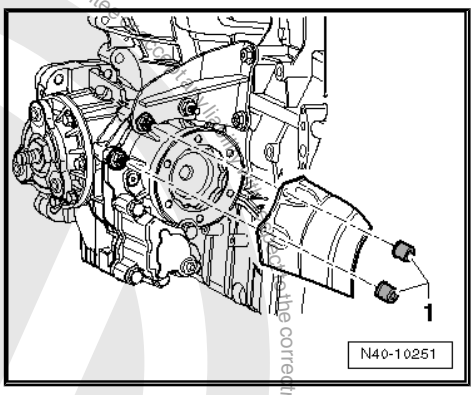


FWD:

Component	Tightening Specification
Bolts -1-	25 Nm

AWD:

Component	Tightening Specification
Nuts -1-	20 Nm



7.6 Drive Axle, Disassembling and Assembling

⇒ “7.6.1 Drive Axle, Disassembling and Assembling, CV Joint VL100”, page 115

⇒ “7.6.2 Drive Axle, Disassembling and Assembling, CV Joint VL107”, page 117

⇒ “7.6.3 Drive Axle, Disassembling and Assembling, Triple Roller Joint AAR3300i Mounted and Bolted in Transmission”, page 120

⇒ “7.6.4 Drive Axle, Disassembling and Assembling, Triple Roller Joint AAR3300i Attached on Transmission Flange Shaft, Disassembling and Assembling”, page 123

7.6.1 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 - Drive Axle - T10382-

Outer CV Joint, Removing

– Clamp the drive axle in a vise with jaw protectors.

– Fold back the boot.

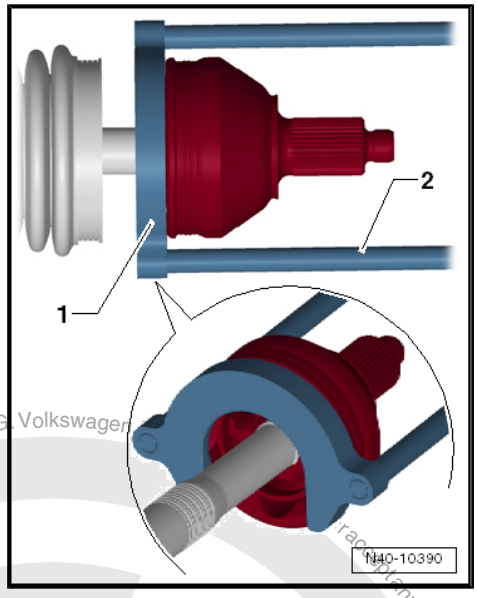
– Align the -T10382- so that the flat side of the -T10382/1- faces the -T10382/2- .

– Attach the -T10382- to the -VW771- .

– Remove the CV joint from the drive axle using the -T10382- and -VW771- .

1 - -T10382/1-

2 - -T10382/2-



Outer CV joint, Installing

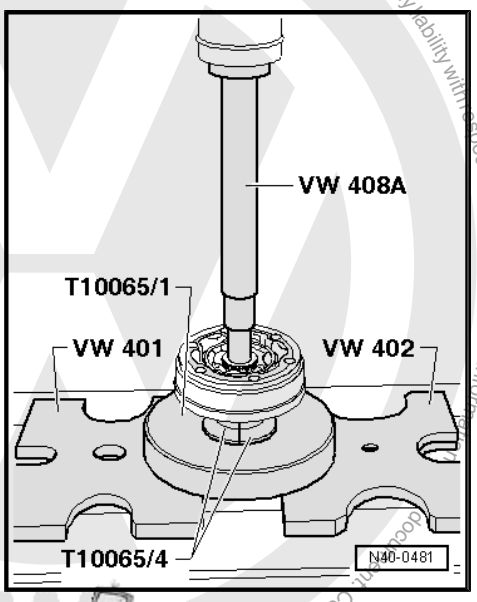
– Install the new circlips.

– Slide the new CV boot onto the drive axle if necessary.

– Use a plastic mallet to install it on the shaft until the circlip engages.

Inner CV Joint, Removing

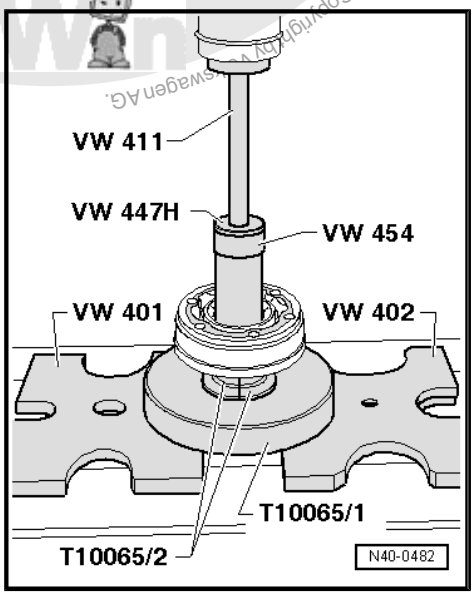
Assembling



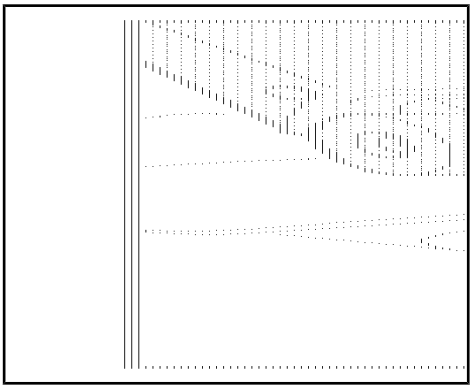
Inner CV Joint, Pressing On

Note

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



Tightening Clamp on the Outer Joint



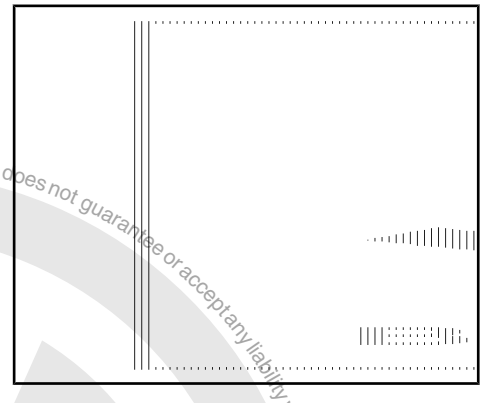
– Attach the -VAG1682A- as shown. When doing this, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.

– Tension the clamp by turning spindle with a torque wrench (without tilting the pliers).

Note

- *The hard material of the CV boot (compared to rubber) makes it necessary to use a stainless steel hose clamp. It is only possible to tighten the clamp using -VAG1682A- .*
- *Tightening specification: 25 Nm.*
- *Use the torque wrench -C- with adjustment range 5 to 50 Nm (for example, -VAG1331-).*
- *Make sure the spindle threads -A- on the pliers move easily. Lubricate with MOS 2 grease, if necessary.*
- *If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.*

Tension the Clamp on the Small Diameter



7.6.2 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-
- Slide Hammer Set - VW771-
- Puller - Drive Axle - T10382-
- Torque Wrench 1331 5-50Nm - VAG1331-

Outer CV Joint, Removing

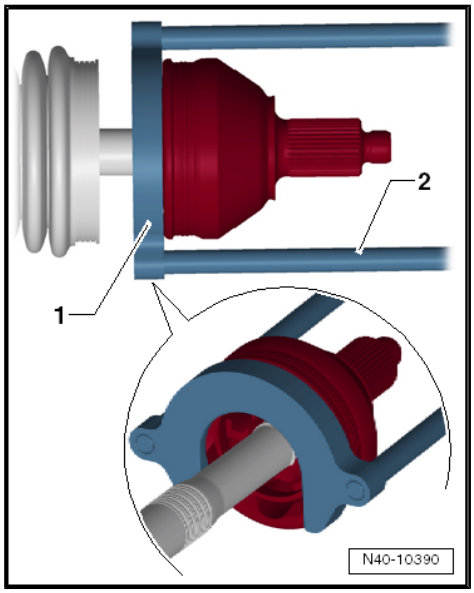
– Clamp the drive axle in a vise with jaw protectors.

– Fold back the boot.

– Align the -T10382- so that the flat side of the -T10382/1- faces the -T10382/2- .
– Attach the -T10382- to the -VW771- .
– Remove the CV joint from the drive axle using the -T10382- and -VW771- .

1 - -T10382/1-

2 - -T10382/2-

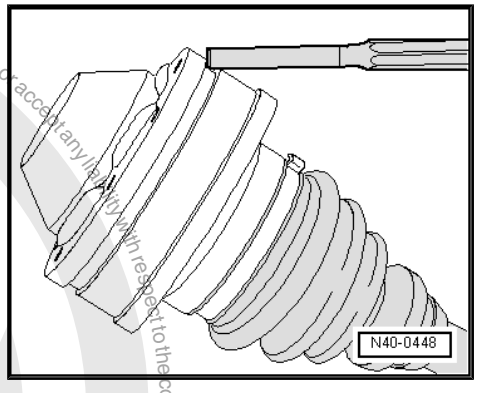


Outer CV Joint, Installing

– Install the new circlips.
– Slide the new CV boot onto the drive axle if necessary.
– Use a plastic mallet to install it on the shaft until the circlip engages.

Cover for Inner Joint, Removing, Only for CV Joint with Cover

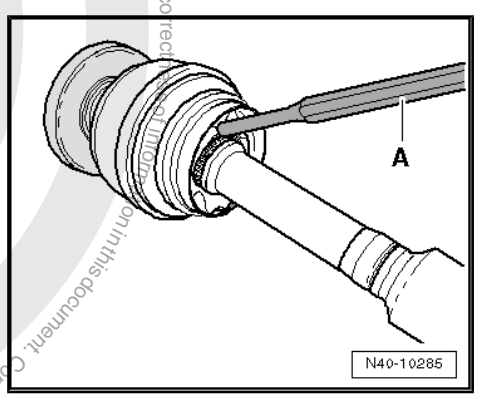
– Remove the circlip.
– Remove both clamps, and push the CV boot toward outer joint.
– Drive off the CV boot with a drift.



Inner CV Joint, Removing

– Clamp the drive axle in a vise with jaw protectors.
– Fold back the boot.
– Drive out the CV joint from the drive axle using a drift -A-.

Drift must be installed exactly on the triple roller star of the CV joint.



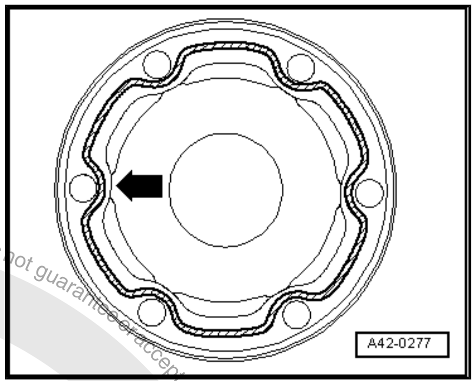
Joint, Installing

– Use a plastic mallet to install it on the shaft until the circlip engages.

Only for CV Joint with Cover

– 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.

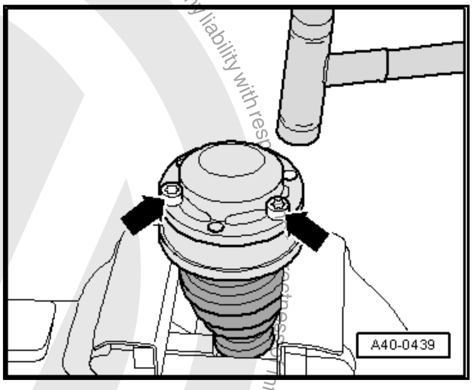


– Align the new cover with screws -arrows- to screw holes.

It Must Be Aligned Exactly Because It Cannot Be Aligned after Installing.

– Drive cover on with a plastic mallet.

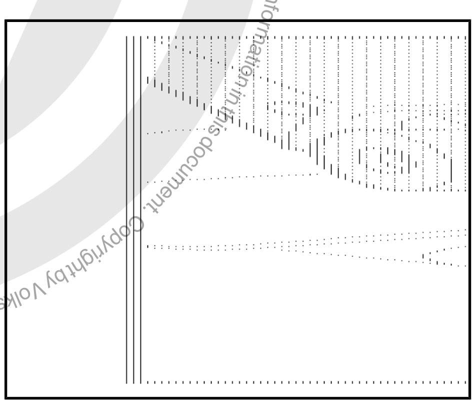
– Wipe away any sealant leaking out.



Tightening Clamp on the Outer Joint

– Attach -VAG1682A- as shown in illustration. When doing this, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.

– Tension the clamp by turning spindle with a torque wrench (without tilting the pliers).



Note

♦ *The hard material of the CV boot (compared to rubber) makes it necessary to use a stainless steel hose clamp. It is only possible to tighten the clamp using -VAG1682A- .*

♦ *Tightening specification: 25 Nm.*

♦ *Use the torque wrench -C- with adjustment range 5 to 50 Nm (for example, -VAG1331-).*

♦ *Make sure the spindle threads -A- on the pliers move easily. Lubricate with MOS 2 grease, if necessary.*

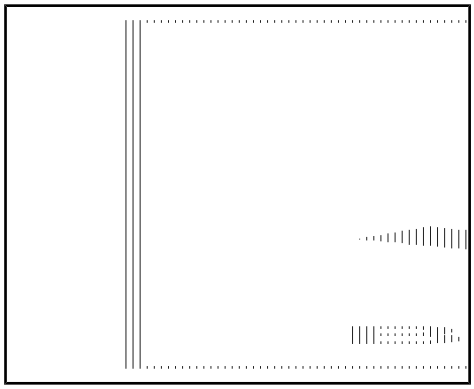
♦ *If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.*

Tension the Clamp on the Small Diameter

Outer CV Joint, Checking. Refer to
⇒ “7.7 Outer CV Joint, Checking”, page 126 .

Inner CV Joint, Checking. Refer to
⇒ “7.8 Inner CV Joint, Checking”, page 127 .

CV joint, Checking Function. Refer to ⇒ page 129 .



7.6.3 Drive Axle, Disassembling and Assembling, Triple Roller Joint AAR3300i Mounted and Bolted in Transmission

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-
- Hose Clip Pliers - VAG1275A-
- Torque Wrench 1331 5-50Nm - VAG1331-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Clamping Pliers - VAG1682A-
- Tripod Joint Tool - T10065-
- Slide Hammer Set - VW771-
- Puller - Drive Axle - T10382-

Outer CV Joint, Removing

– Clamp the drive axle in a vise with jaw protectors.

– Fold back the boot.

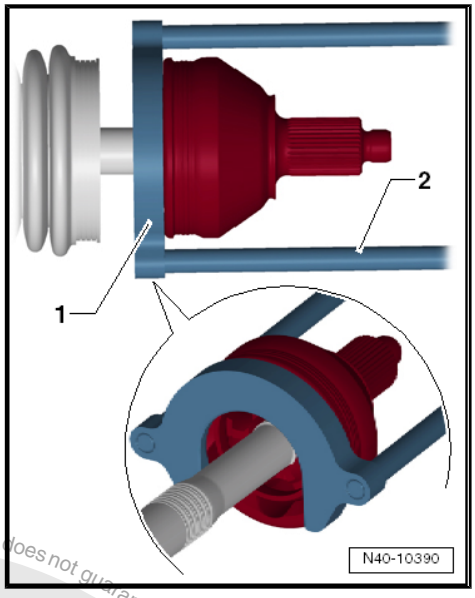
– Align the -T10382- so that the flat side of the -T10382/1- faces the -T10382/2- .

– Attach the -T10382- to the -VW771-.

– Remove the CV joint from the drive axle using the -T10382- and -VW771- .

1 - -T10382/1-

2 - -T10382/2-



Outer CV joint, Installing

– Install the new circlips.

– Slide the new CV boot onto the drive axle if necessary.

– Use a plastic mallet to install it on the shaft until the circlip engages.

Triple Roller Joint, Disassembling

– Clamp the drive axle in a vise with jaw protectors.

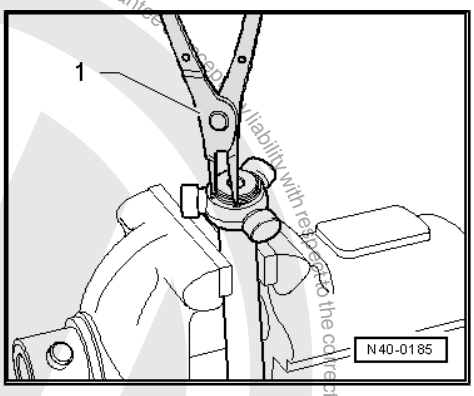
– Open both clamps at the inner joint and slide back the CV boot.

– Remove the joint from the drive axle.

– Remove the circlip.

1 - Pliers (Commercially Available)

- or Circlip Pliers -VW161A-



– Insert the drive axle into the press.

– Press the triple roller star off the drive axle.

– Pull off CV boot from shaft.

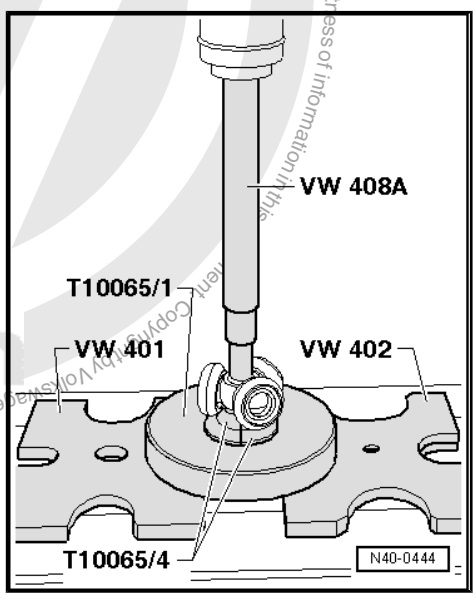
– Clean the shaft, joint and groove for the seal.

Triple Roller Joint, Assembling

– Slide the small clamp for the CV boot onto the shaft.

– Slide the CV boot onto the shaft.

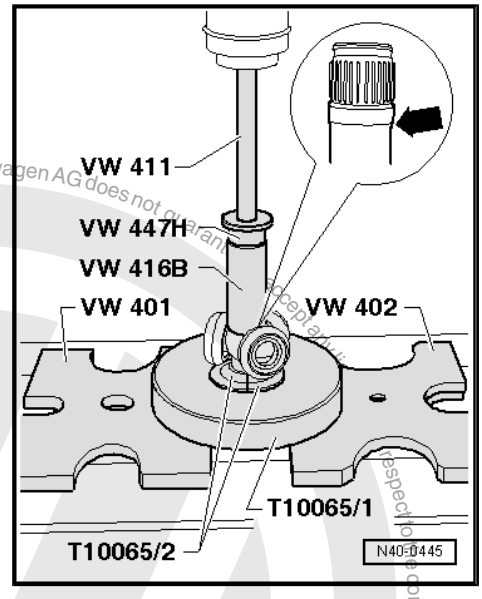
Triple Roller Star, Installing



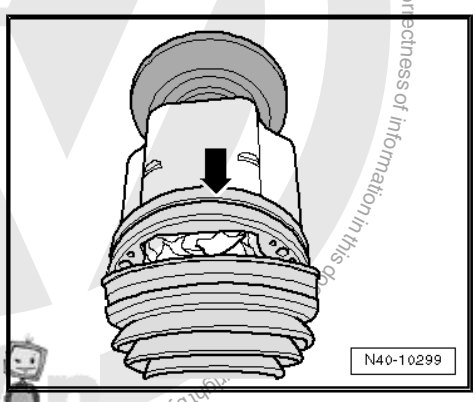
Note

- *There are different versions of the triple roller star.*
- *Check if there is a bevel on the triple roller star.*
- *The bevel on the triple roller star faces the drive axle.*
- *This bevel is used as an assembly aid.*

– Install the triple roller star all the way onto the shaft.
– Make sure the pressure does not increase above 3.0 t.
– If necessary, coat the splines of the drive axle and triple roller star with Grease - G 052 142 A2- .
– Insert the circlip while making sure it is seated correctly.
– 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 the 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.



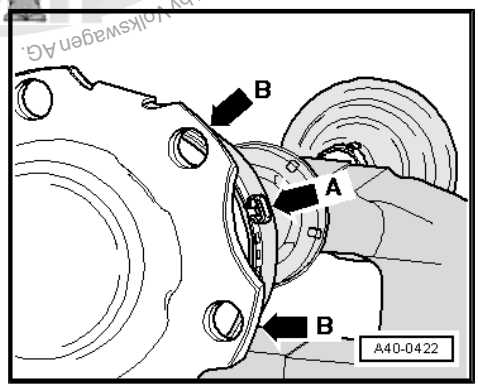
– Slide the CV boot onto the boot adapter and make sure the CV boot engages correctly in the groove on the adapter -arrow-.



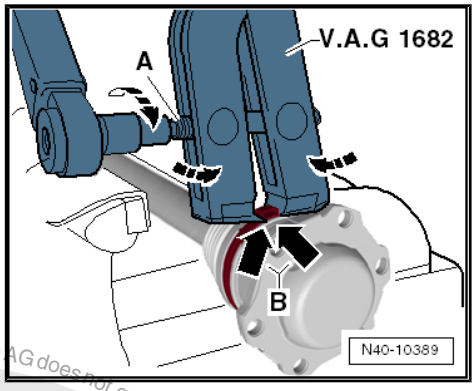
– Install the clamping sleeve.

Note

The clamping tab of clamp -arrow A- must be between the securing flange of the joint -B arrows-. Only this way can it be ensured that the internal multi-point bolts can be correctly installed when installing the drive axle.



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



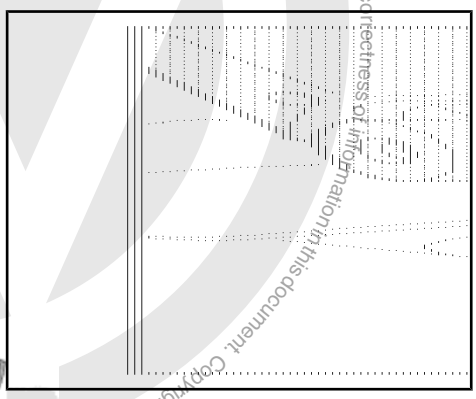
– Attach the -VAG1682A- as shown. When doing this, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.

– Tension the clamp by turning spindle with a torque wrench (without tilting the pliers).

Note

- *The hard material of the CV boot (compared to rubber) makes it necessary to use a stainless steel hose clamp. It is only possible to tighten the clamp using -VAG1682A- .*
- *Tightening specification: 25 Nm.*
- *Use the torque wrench -C- with adjustment range 5 to 50 Nm (for example, -VAG1331-).*
- *Make sure the spindle threads -A- on the pliers move easily. Lubricate with MOS 2 grease, if necessary.*
- *If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.*

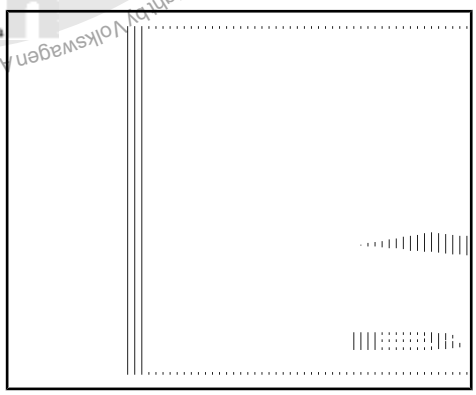
Tightening Clamp on the Outer Joint



– Attach the -VAG1682A- as shown. When doing this, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.

– Tension the clamp by turning spindle with a torque wrench (without tilting the pliers).

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



7.6.4 Drive Axle, Disassembling and Assembling, Triple Roller Joint AAR3300i Attached on Transmission Flange Shaft, 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-
- Hose Clip Pliers - VAG1275A-
- Torque Wrench 1331 5-50Nm - VAG1331-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Clamping Pliers - VAG1682A-
- Tripod Joint Tool - T10065-
- Slide Hammer Set - VW771-
- Puller - Drive Axle - T10382-

Outer CV Joint, Removing

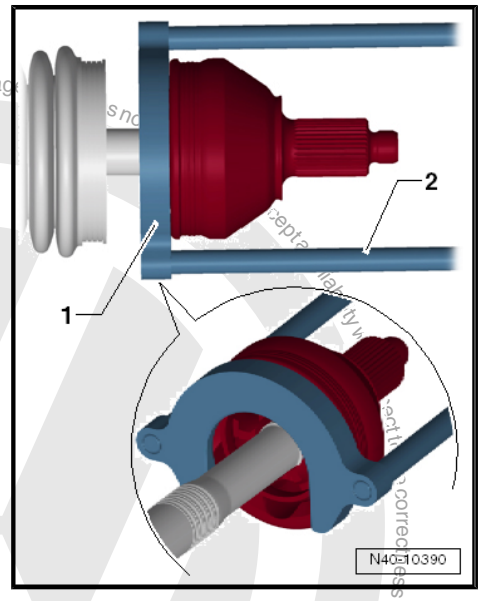
– Clamp the drive axle in a vise with jaw protectors.

– Fold back the boot.

– Align the -T10382- so that the flat side of the -T10382/1- faces the -T10382/2- .

– Attach the -T10382- to the -VW771- .

– Remove the CV joint from the drive axle using the -T10382- and -VW771- .



1 - -T10382/1-

2 - -T10382/2-

Outer CV joint, Installing

– Install the new circlips.

– Slide the new CV boot onto the drive axle if necessary.

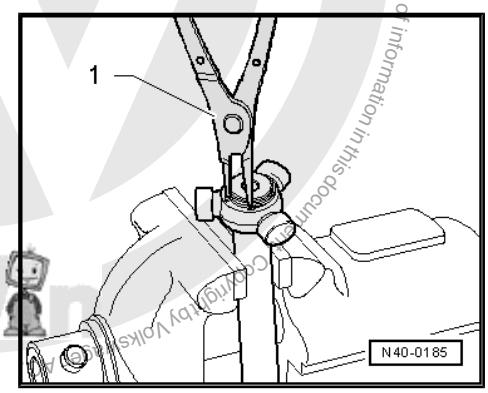
– Use a plastic mallet to install it on the shaft until the circlip engages.

Disassembling

– Open the clamp on the inner joint and slide protective boot back from adapter.

– Remove the joint from the drive axle.

– Remove the circlip.



1 - Pliers (Commercially Available)

– Insert the drive axle into the press.

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

Assembling

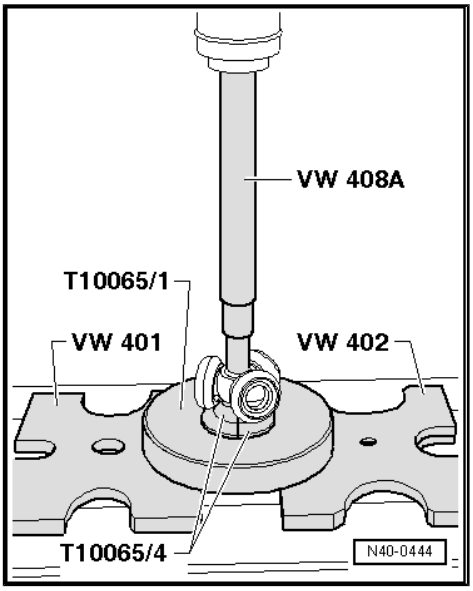
– Slide the small clamp for the CV boot onto the shaft.
– Slide the CV boot onto the shaft.
– Slide the joint piece onto the shaft.

Triple Roller Star, Mounting

Conical-Type Drive Axle -arrow-

Note

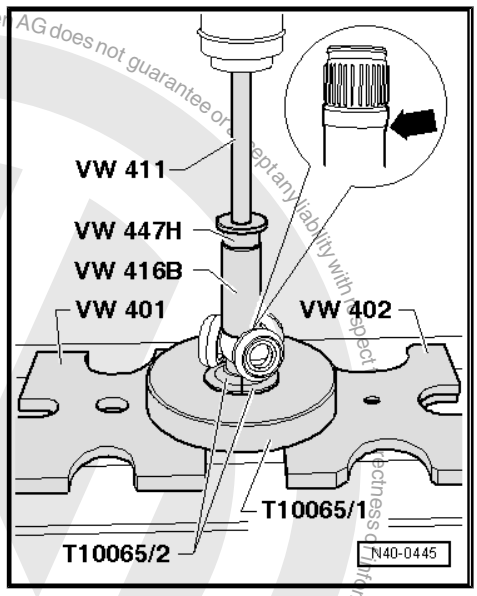
- *The bevel on the triple roller star faces the drive axle.*
- *This bevel is used as an assembly aid.*



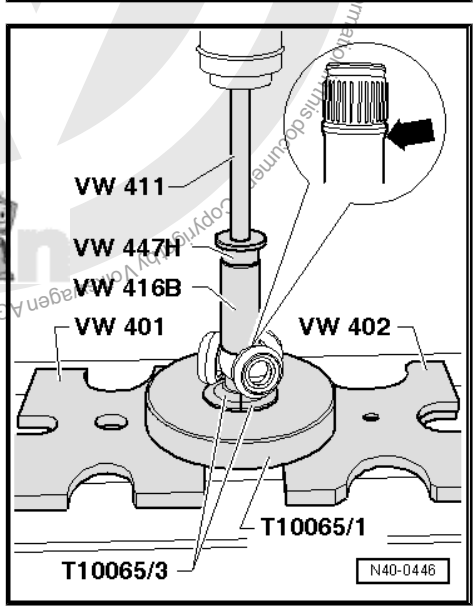
– Install the triple roller star all the way onto the shaft.
– Make sure the pressure does not increase above 3.0 t.
– If necessary, coat the splines on the drive axle and triple roller star with Lubricant - G 052 142 A2- .
– Insert the circlip while making sure it is seated correctly.
– Press half of the drive axle grease from the repair set into the triple roller joint.
– Slide the joint piece over rollers and secure.
– Press the remaining half of the drive axle grease from the repair kit into the rear side of the triple roller joint.
– Install the CV boot.

Triple Roller Star, Mounting

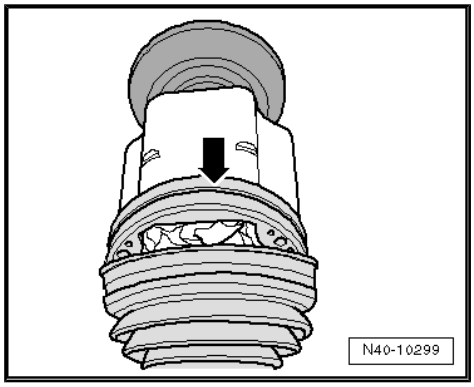
Cylindrical Drive Axle Version -arrow-



– Install the triple roller star all the way onto the shaft.
– Make sure the pressure does not increase above 3.0 t.
– If necessary, coat the splines on the drive axle and triple roller star with Lubricant - G 052 142 A2- .
– Insert the circlip while making sure it is seated correctly.
– Press half of the drive axle grease from the repair set into the triple roller joint.
– Slide the joint piece over rollers and secure.
– Press the remaining half of the drive axle grease from the repair kit into the rear side of the triple roller joint.

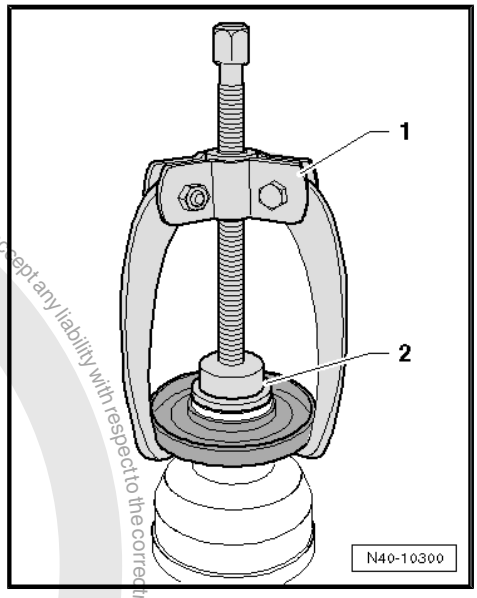


– Slide the CV boot onto the adapter and ensure the boot engages correctly in the groove on the adapter -arrow-.
– Mount and tension the clamp until a proper seal is guaranteed. Refer to
⇒ Fig. ""Tightening the Tensioning Clamps on the Larger Diameter on the Inner Joint"" , page 123 .



Removing the Cap from the Triple Roller Joint

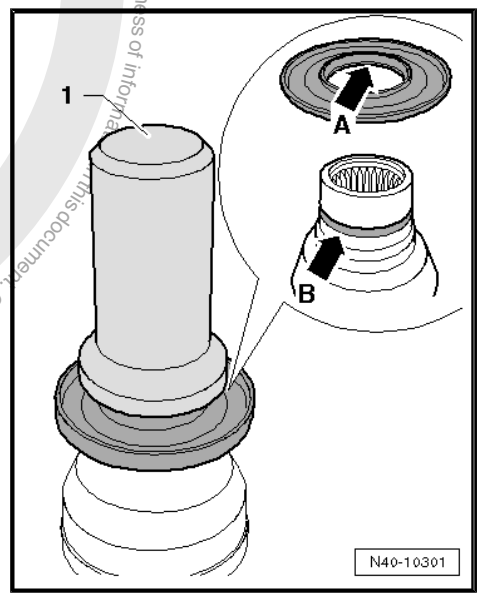
1 - Three Arm Extractor, for example Kukko 45-2
2 - -VW447H-



Mounting the Cap onto the Triple Roller Joint

1 - -T10243-

Mount the cap far enough onto the joint until the ridge -arrow A- fits into the groove -arrow B-.



7.7 Outer CV Joint, Checking

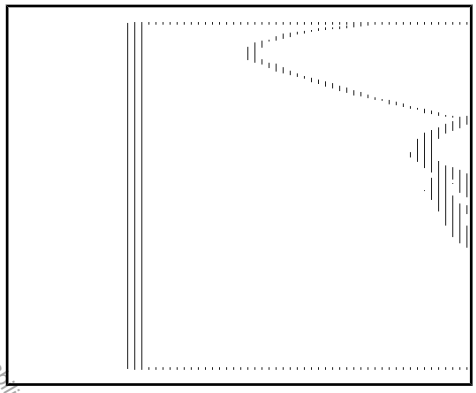
It is necessary to disassemble the joint whenever replacing the grease or if the ball surfaces show wear or damage.

Removing

– Mark the position of ball hub to ball cage and to housing before disassembling, using an electric engraver or grindstone.

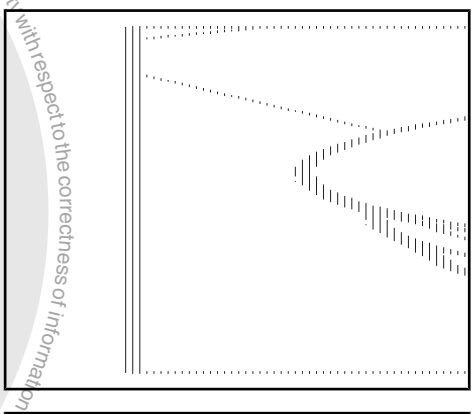
– Tilt the ball hub and ball cage.

– Remove the balls one after the other.



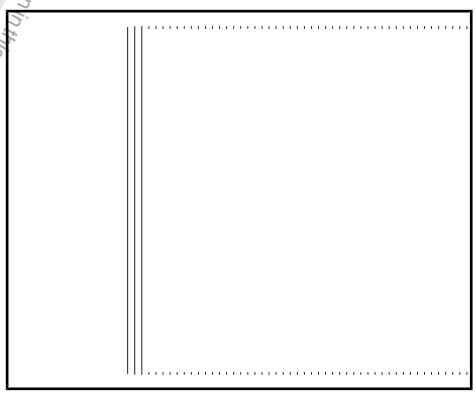
– Turn cage until the two rectangular windows -arrow- are aligned with the joint housing.

– Lift out cage with hub.



– Swing segment of hub into rectangular window of cage.

– Fold hub out from cage.



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

Installing

– Press in half of the total grease amount (40 grams) into joint body.

– Insert cage with hub into joint body.

– Press in the opposite facing balls one after the other, and the old ball hub position to the ball cage and to the joint housing must be replicated.

– Install the new circlip into the hub.

– Distribute the remaining grease in the joint boot.

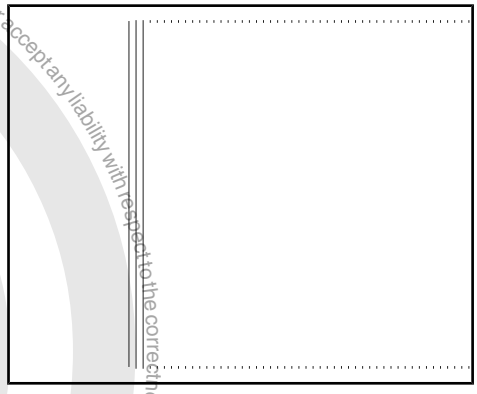
7.8 Inner CV Joint, Checking

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

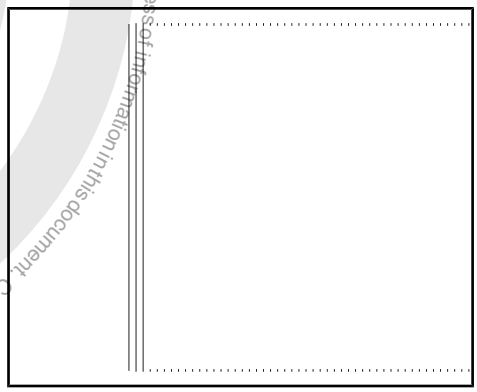
– Tilt the ball hub and ball cage.
– Remove the joint in the direction of the -arrow-.
– Remove the balls from the cage.



Note

Ball hub and joint piece are paired. Do not interchange.

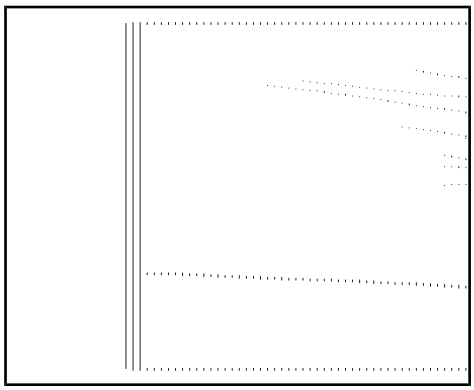
– Flip out ball hub from ball cage via the ball race -arrows-.
– Check the joint, ball hub, ball cage and balls for small broken off depressions (pitting) and chafing.



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

Installing

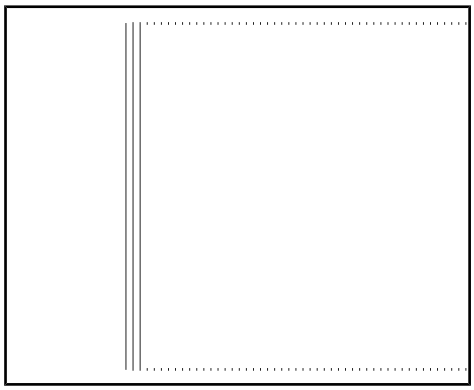
– Insert the ball hub into the ball cage via two chamfers. The installation position is arbitrary. Press balls into cage.



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

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

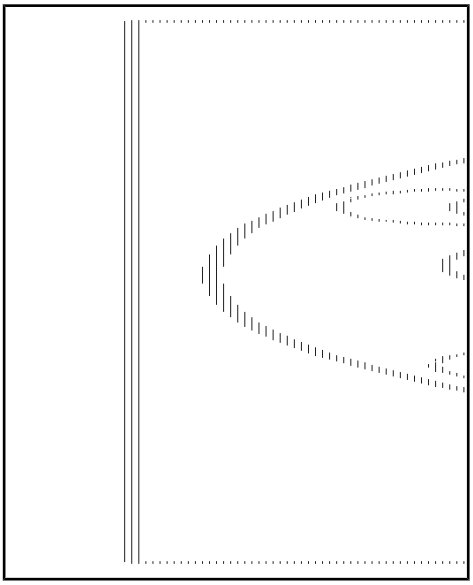
When inserting, make sure that in each case the wide gap -a- at joint piece contacts narrow gap -b- at hub after swinging in.



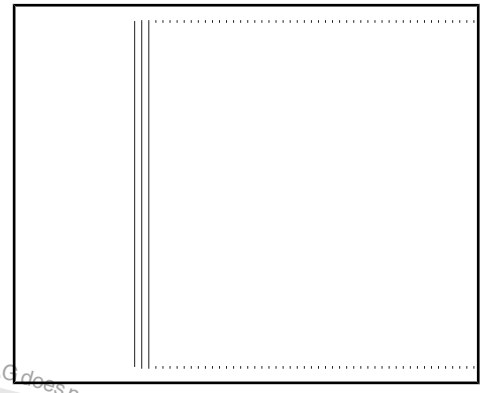
Chamfer on inner diameter of ball hub (splines) must face large diameter of joint piece.

– Pay attention to the bevel on the inner diameter of the ball hub. It must be visible.

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



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

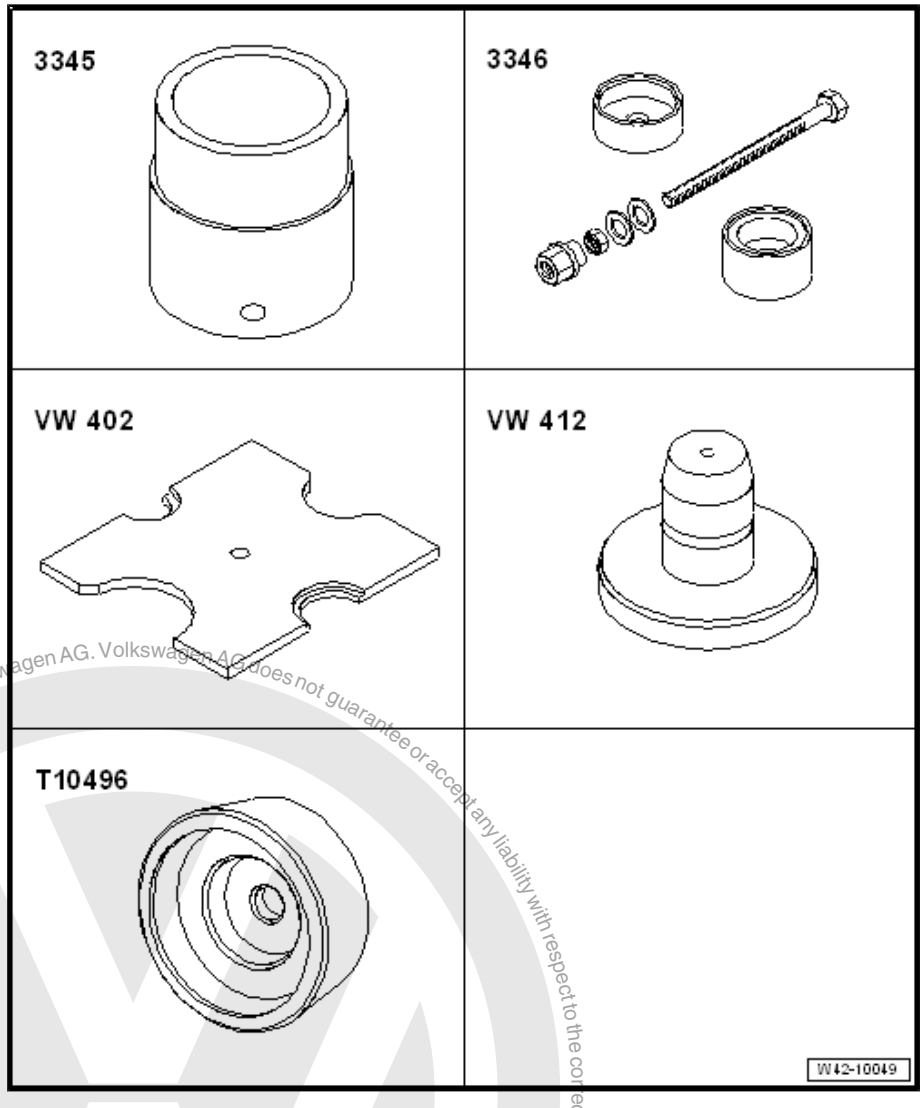


CV Joint, Checking for Function

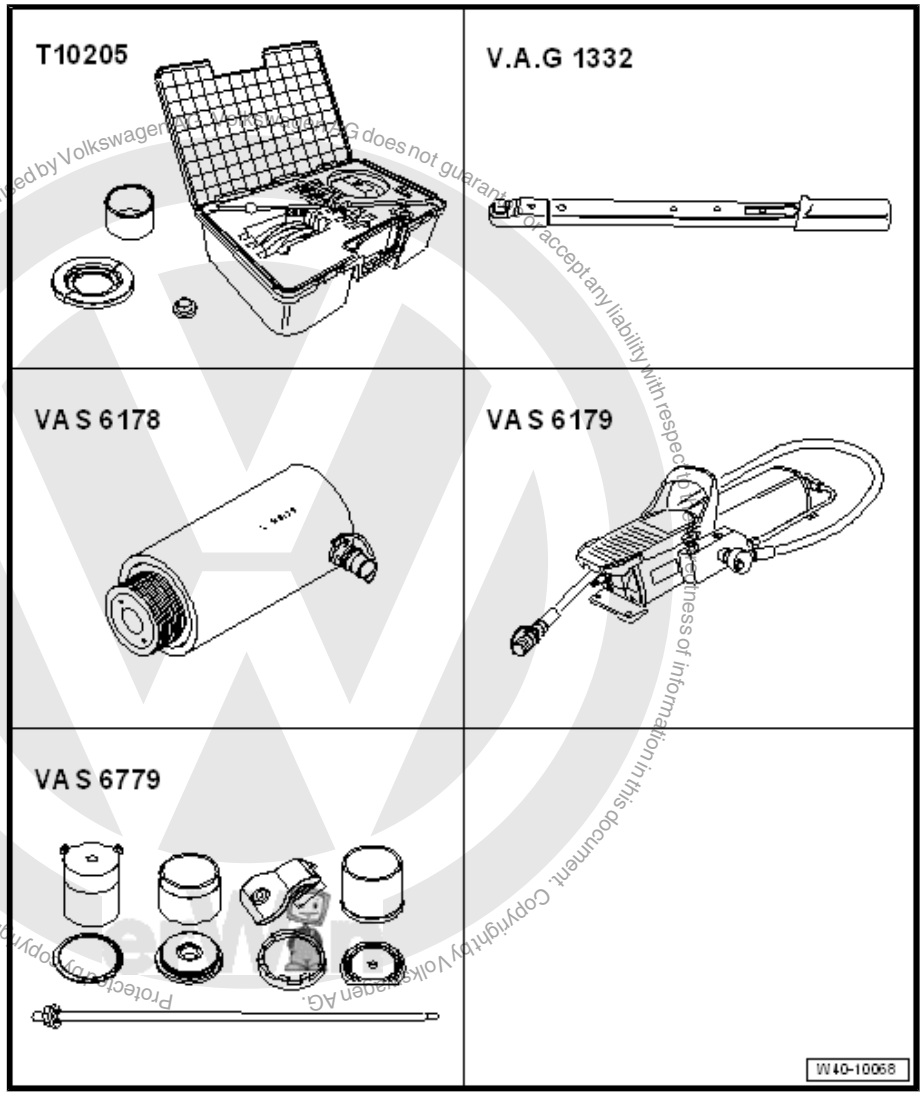
The CV joint is properly assembled, if the ball hub can be slid back and forth by hand over the entire length adjustment.

8 Special Tools

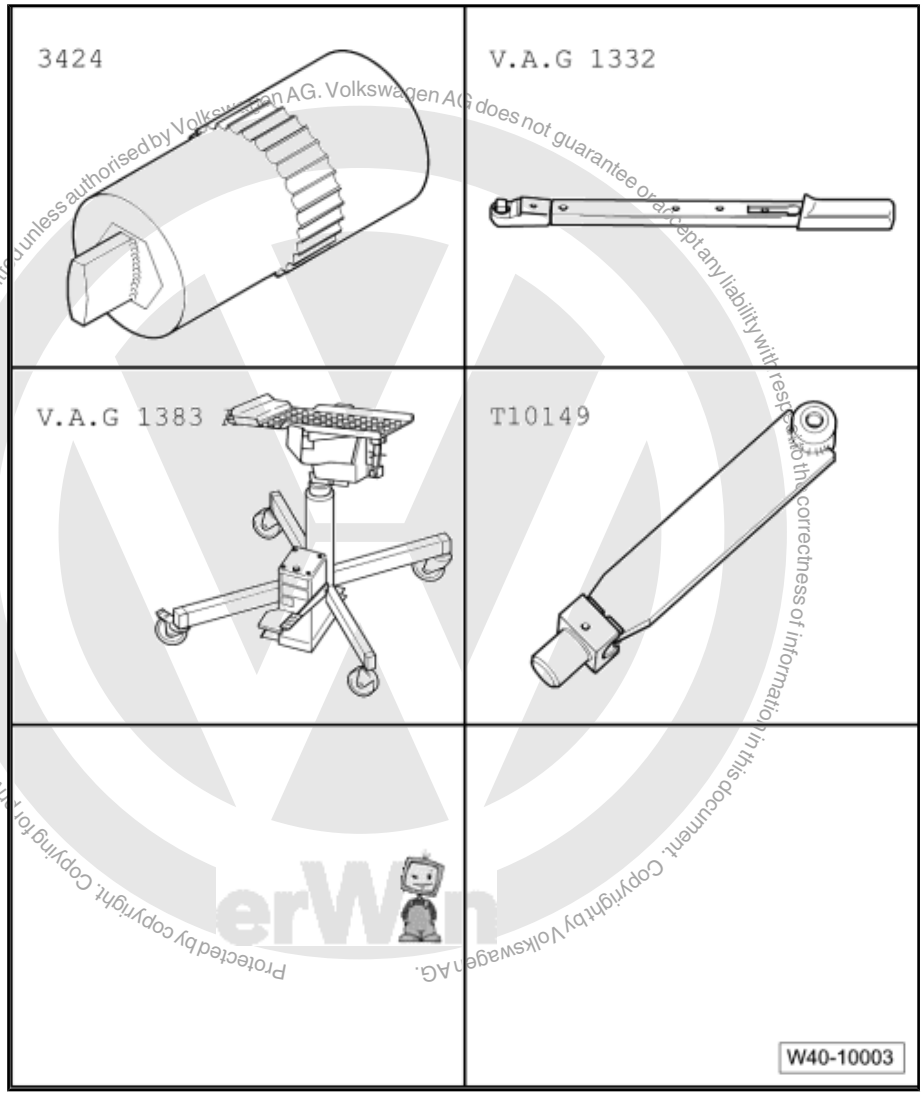
Special tools and workshop equipment required



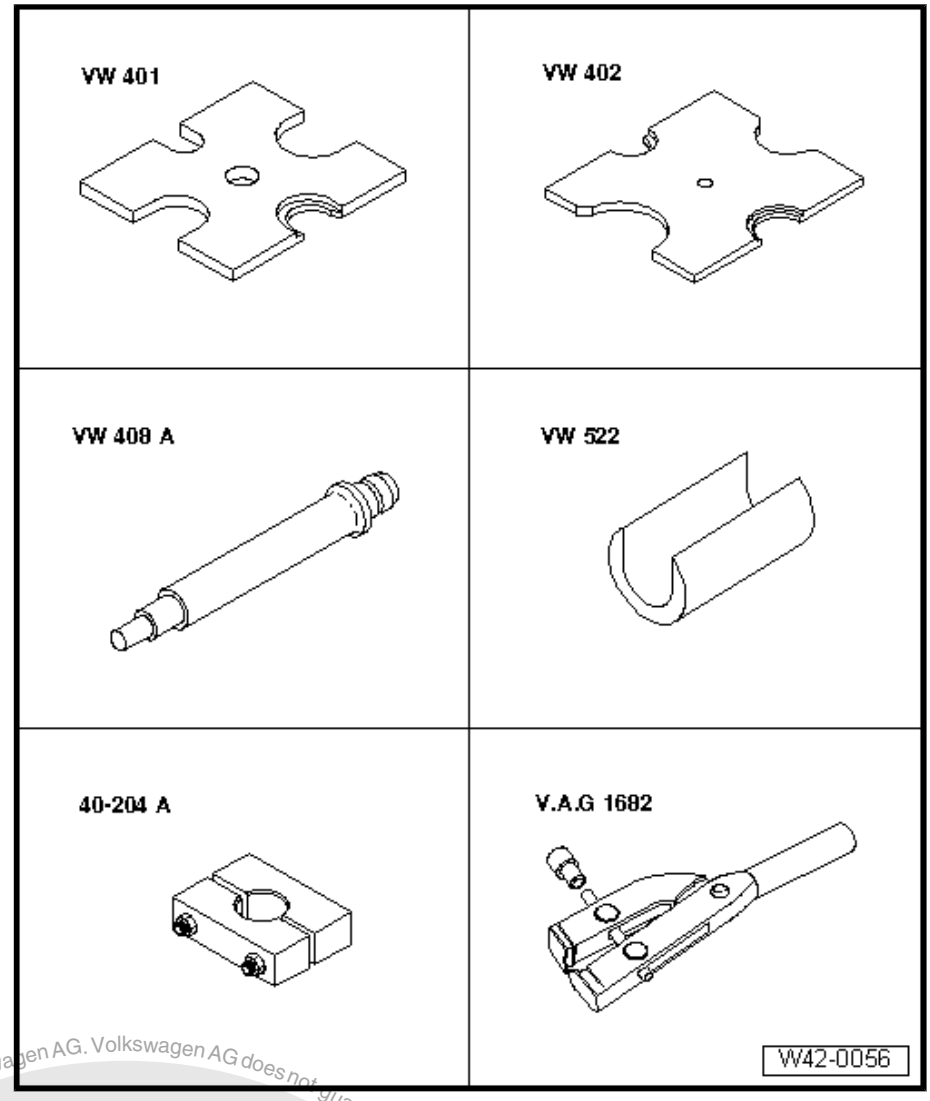
- Bearing Installer - Wheel Bearing - 3345-
- Bearing Installer - Control Arm - 3346-
- Press Plate - VW402-
- Press Piece - Multiple Use - VW412-
- Press Piece - Trailing Arm Bushing - T10496-



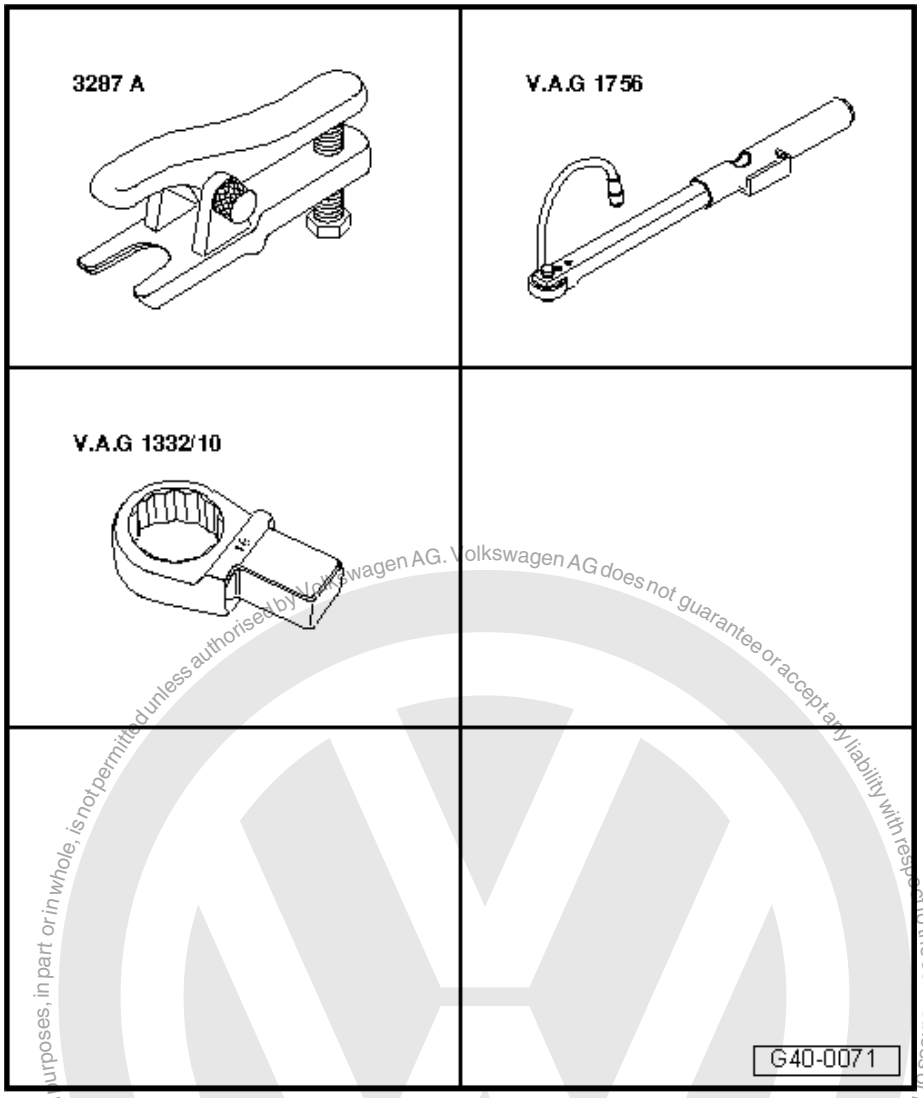
- Bearing Installer - Wheel Hub/Bearing Kit - T10205-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Hydraulic Press - VAS6178-
- Pneumatic/Hydraulic Foot Pump - VAS6179-
- Rubber Bushing Assembly Device Kit - VAS6779A-



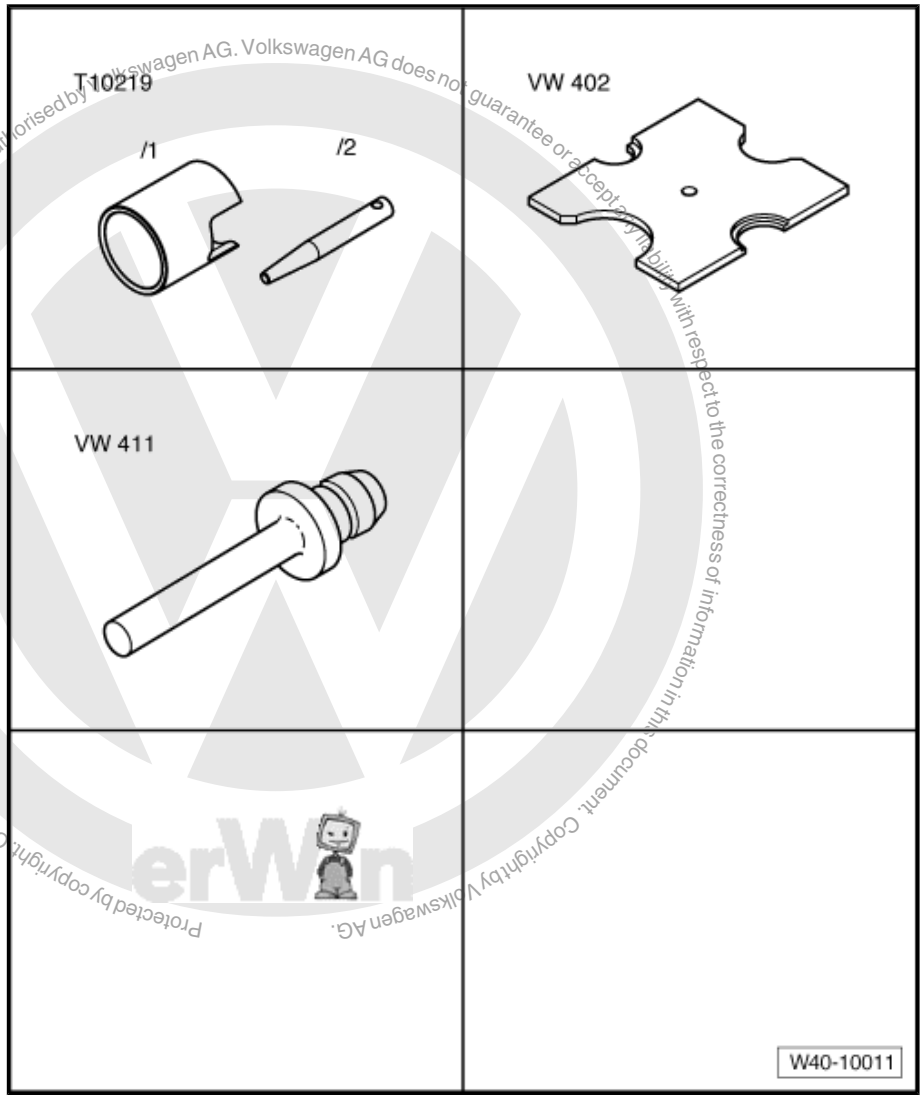
- Torque Wrench 1332 40-200Nm - VAG1332-
- Spreader Tool - 3424-
- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-
- Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-



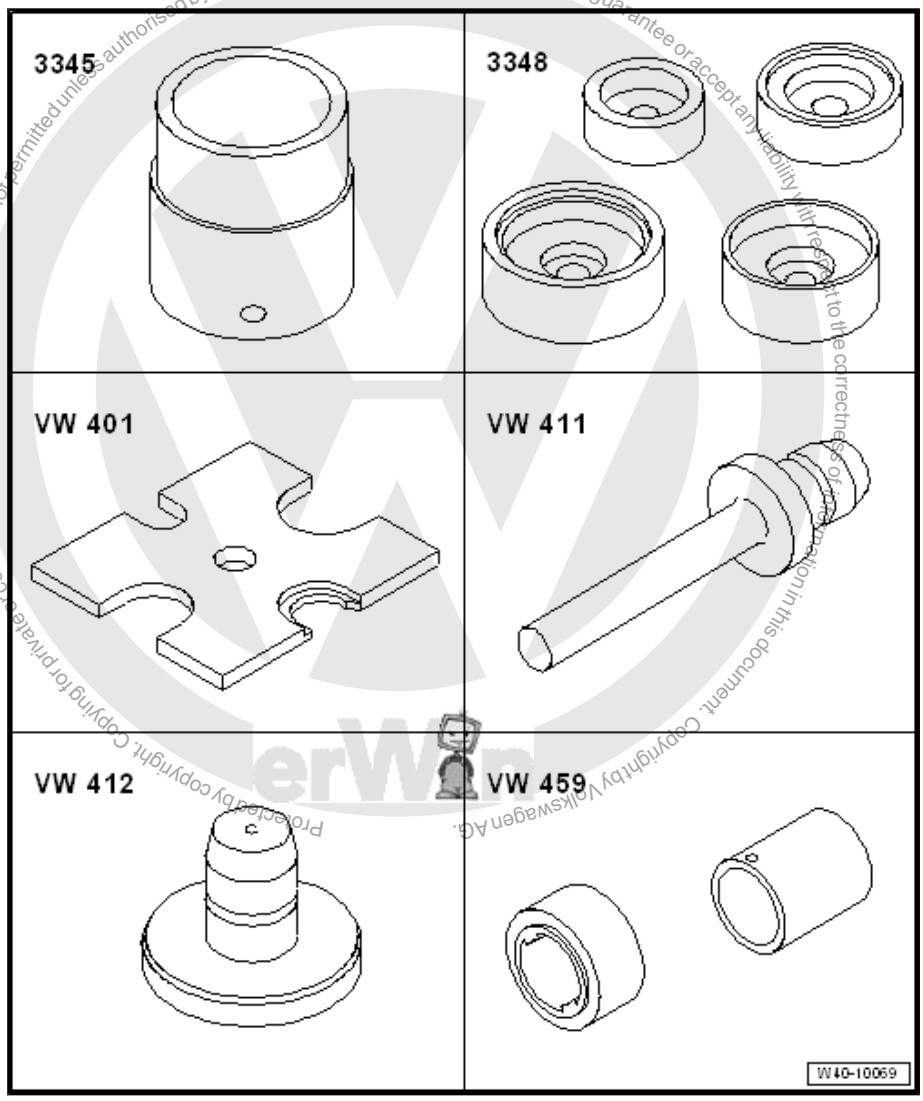
- Press Plate - VW401-
- Press Plate - VW402-
- Press Piece - Rod - VW408A-
- CV Joint Press Sleeve - VW522-
- Press Block - 40-204A-
- Clamping Pliers - VAG1682A-



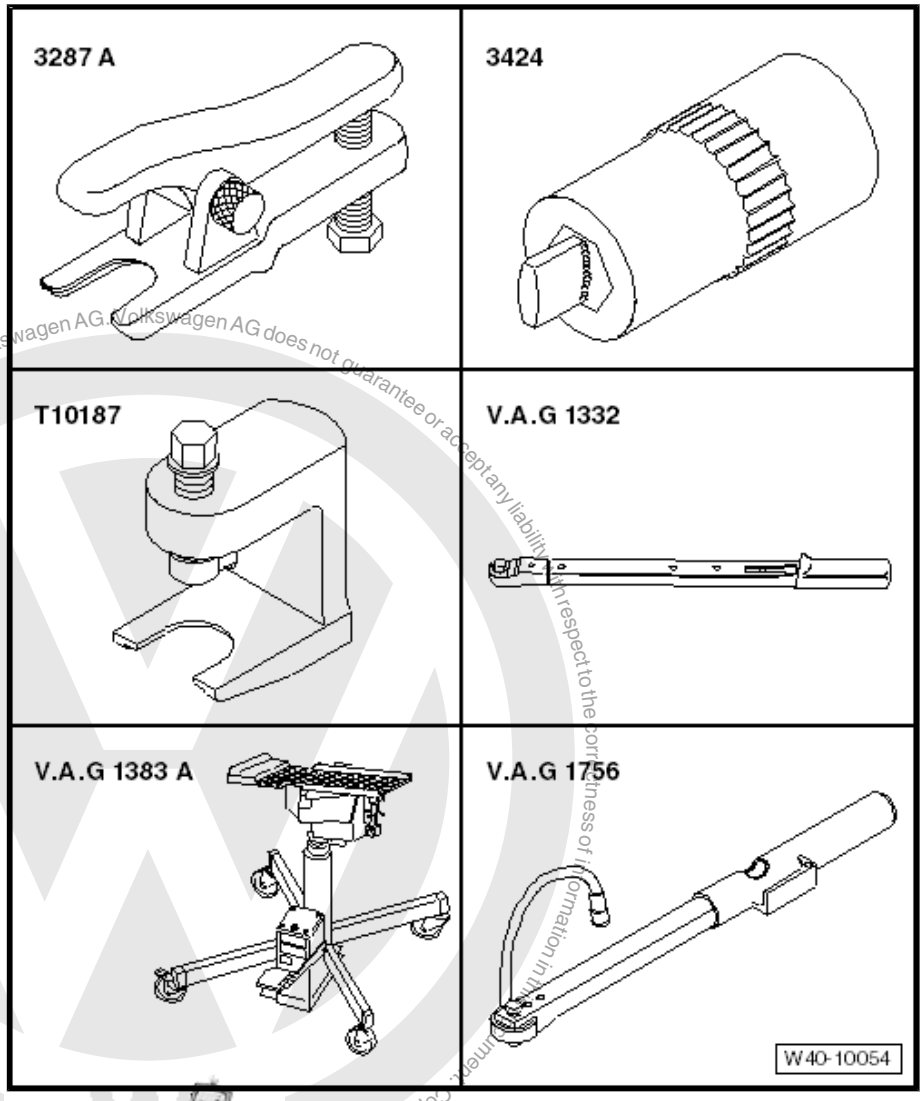
- Puller - Ball Joint - 3287A-
- Digital Torque Wrench - VAG1756A-
- Torque Wrench 1332 Insert - Ring Wrench - 18mm - VAG1332/10-



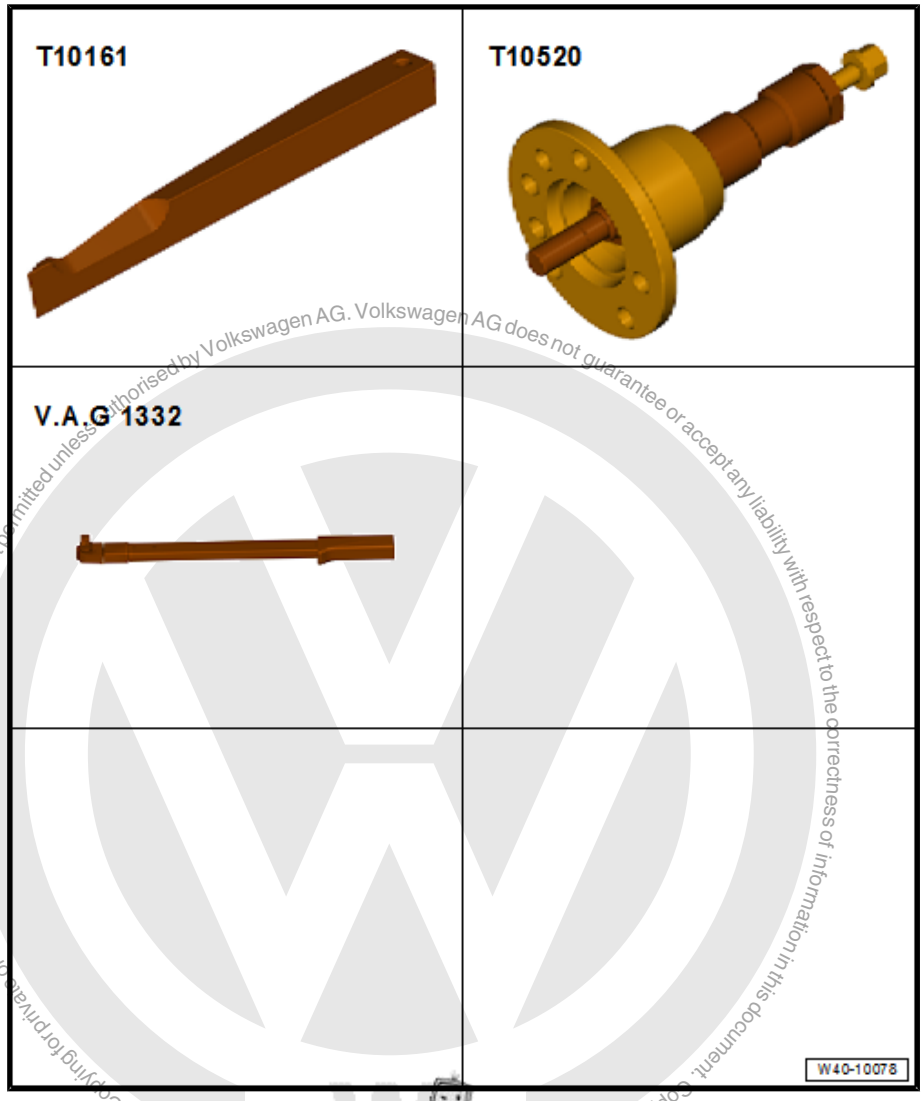
- Wishbone Rubber Mount Assembly Tool - T10219-
- Press Plate - VW402-
- Press Piece - Rod - VW411-



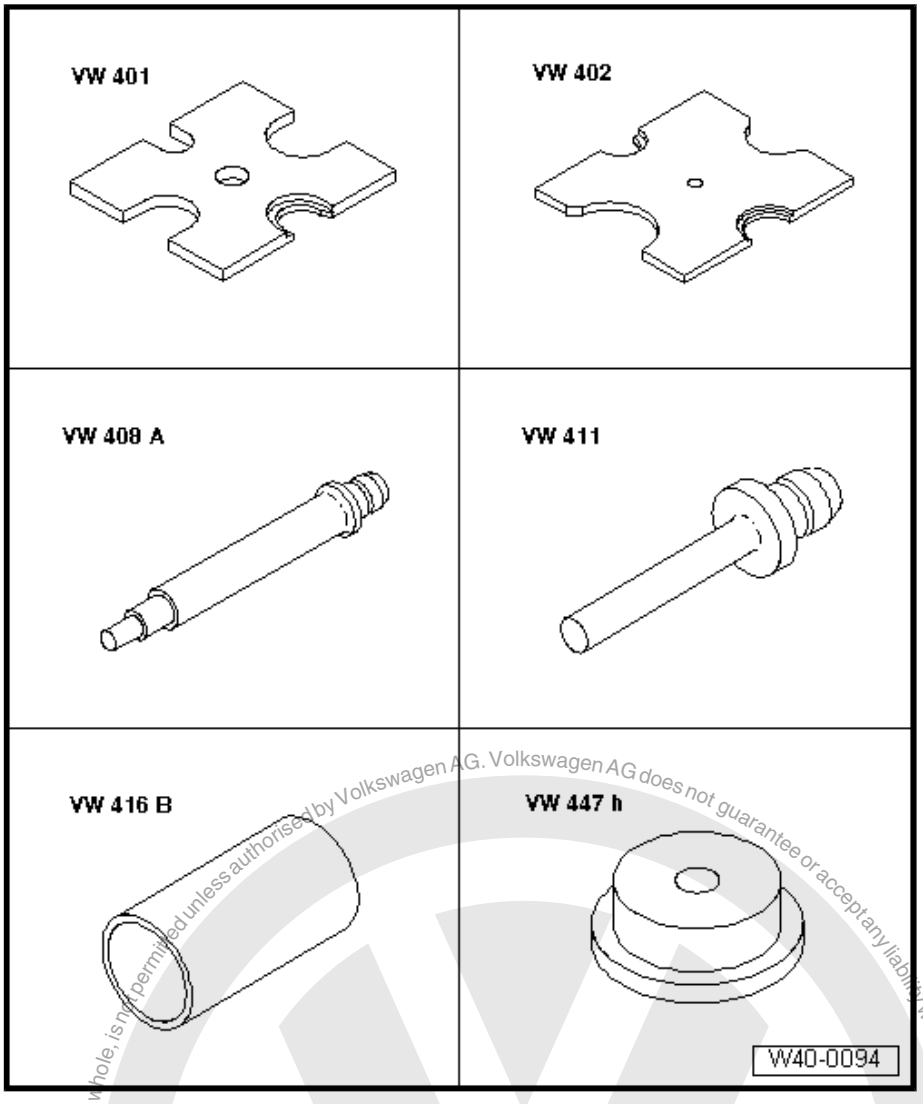
- Bearing Installer - Wheel Bearing - 3345-
- Bearing Installer - Multiple Use - 3348-
- Press Plate - VW401-
- Press Piece - Rod - VW411-
- Press Piece - Multiple Use - VW412-
- Bearing Installer - Ball Joint/Bushing/Bearing - VW459-



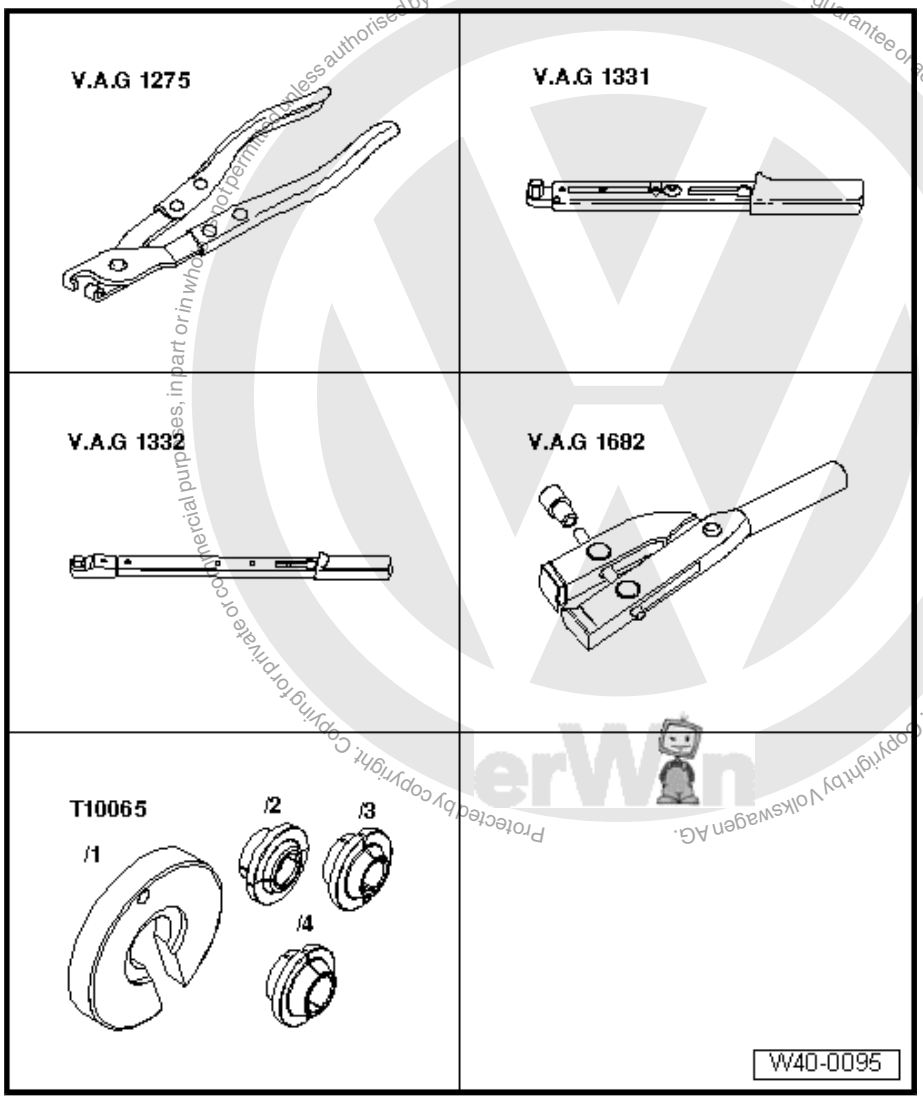
- Puller - Ball Joint - 3287A-
- Spreader Tool - 3424-
- Puller - Ball Joint - T10187-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-
- Digital Torque Wrench - VAG1756A-



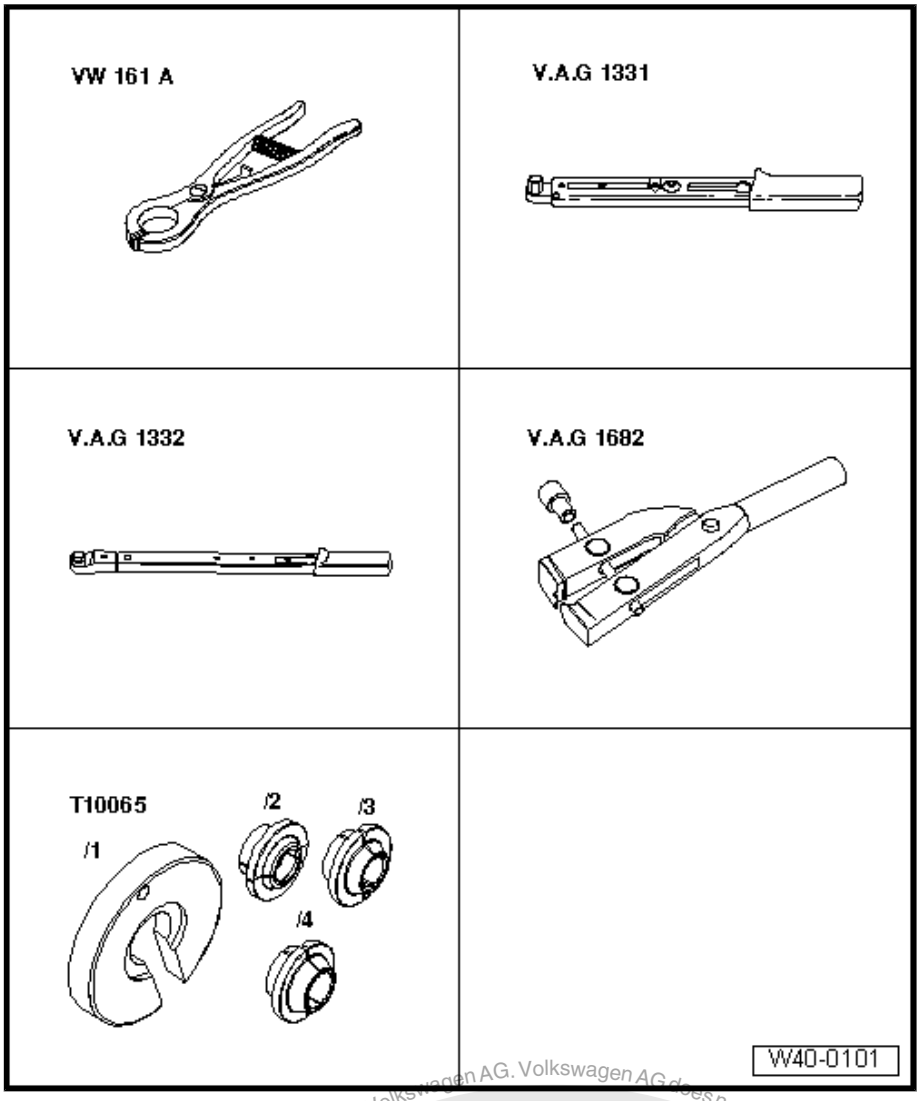
- Drive Axle Wedge Tool - T10161-
- Drive Shaft Remover - T10520-
- Torque Wrench 1332 40-200Nm - VAG1332-



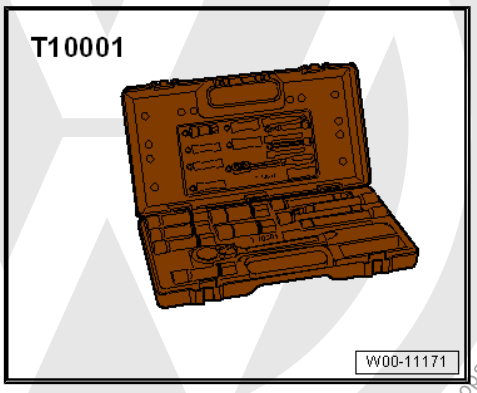
- Press Plate - VW401-
- Press Plate - VW402-
- Press Piece - Rod - VW408A-
- Press Piece - Rod - VW411-
- Press Piece - 37mm - VW416B-
- Press Piece - Multiple Use - VW447H-



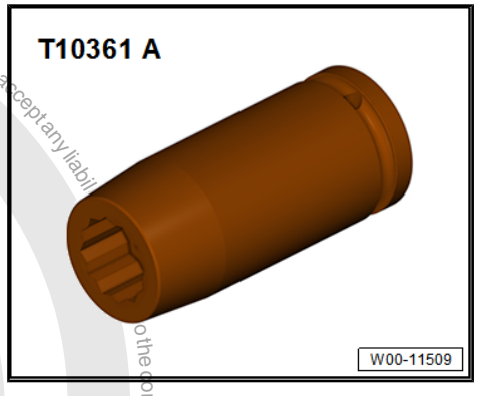
- Hose Clip Pliers - VAG1275A-
- Torque Wrench 1331 5-50Nm - VAG1331-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Clamping Pliers - VAG1682A-
- Tripod Joint Tool - T10065-



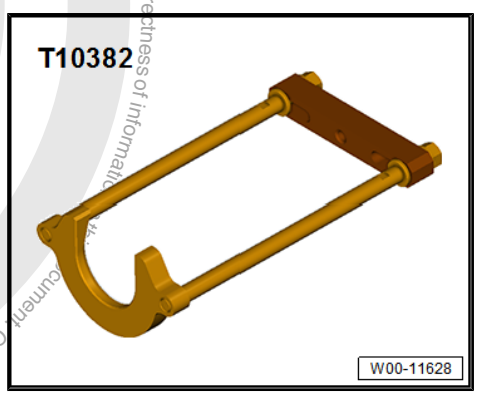
- Circlip Pliers - VW161A-
- Torque Wrench 1331 5-50Nm - VAG1331-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Clamping Pliers - VAG1682A-
- Tripod Joint Tool - T10065-
- Shock Absorber Set - T10001-



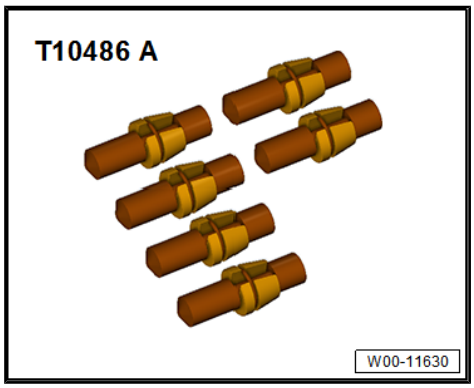
- Socket AF 24 mm - T10361A-



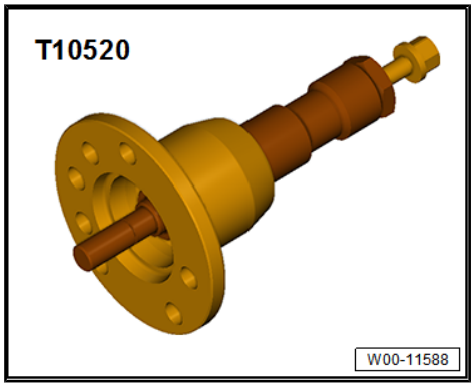
- Puller - Drive Axle - T10382-



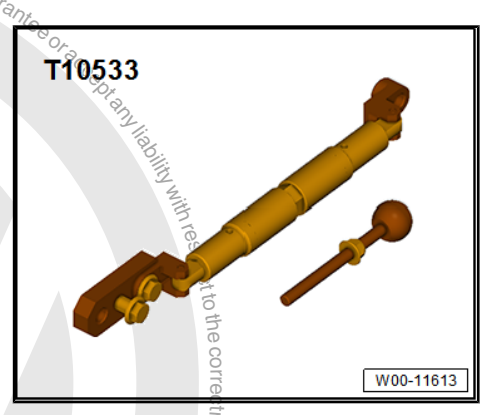
- Assembly Tool, Sub-frame Alignment - T10486A-



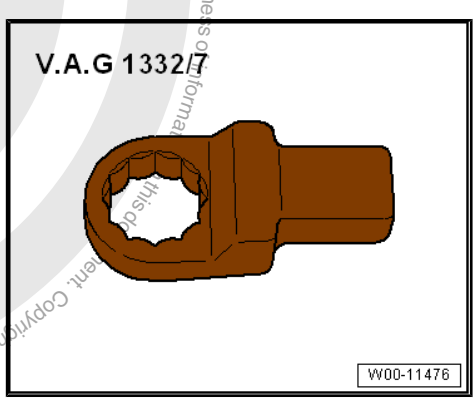
- Drive Shaft Remover - T10520-



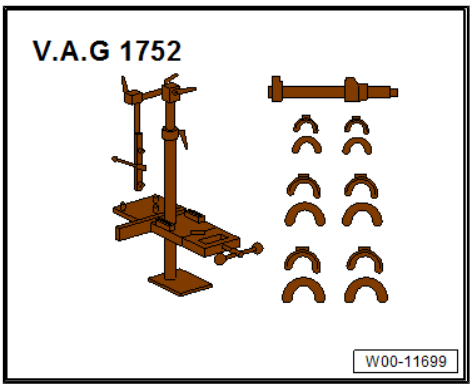
- Engine Support - T10533-



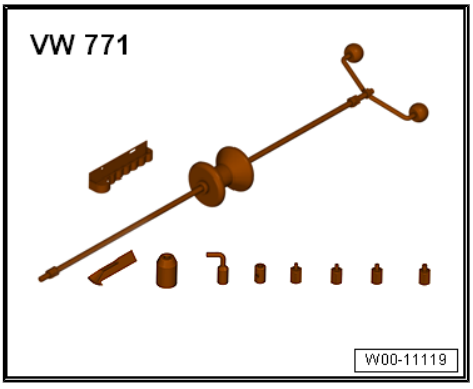
- Torque Wrench 1332 Insert - Ring Wrench - 21mm - VAG1332/7-



- Spring Compressor Kit - VAG1752-



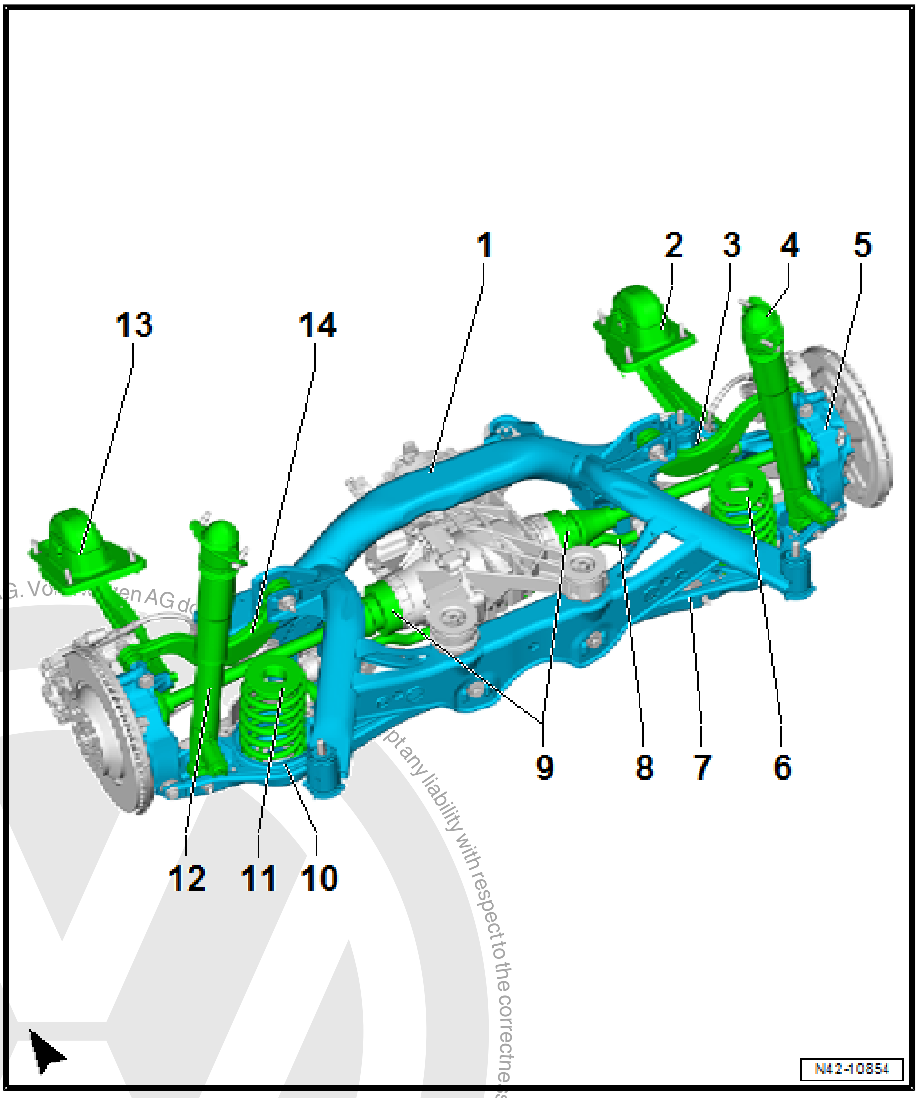
- Slide Hammer Set - VW771-



42 – Rear Suspension

1 Rear Axle

1.1 Overview - Rear Axle



1 - Subframe

- ❑ Overview. Refer to ⇒ “2.1 Overview - Subframe”, page 163 .
- ❑ Subframe with Attachments, Removing and installing. Refer to ⇒ “1.3.1 Rear Axle, Removing and Installing, FWD, excluding Passat GTE”, page 152 .

2 - Trailing Arm

- ❑ Right
- ❑ Overview. Refer to ⇒ “6.2 Overview - Trailing Arm”, page 211 .
- ❑ Removing and installing. Refer to ⇒ “6.6 Trailing Arm with Mounting Bracket, Removing and Installing”, page 228 .

3 - Upper Transverse Link

- ❑ Right
- ❑ Overview. Refer to ⇒ “4.1 Overview - Transverse Link”, page 191 .
- ❑ Removing and installing. Refer to ⇒ “4.3 Upper Transverse Link, Removing and Installing”, page 196 .

4 - Shock Absorber

- ❑ Right
- ❑ Overview. Refer to ⇒ “5.1 Overview - Suspension Strut, Shock Absorber, Spring”, page 200 .
- ❑ Removing and installing. Refer to ⇒ “5.2 Shock Absorber, Removing and Installing”, page 201 .

5 - Wheel Bearing Housing

- ❑ Right
- ❑ Overview. Refer to ⇒ “6.1 Overview - Wheel Bearing”, page 209 .
- ❑ Removing and installing. Refer to ⇒ “6.3 Wheel Bearing Housing, Removing and Installing”, page 212 .

6 - Spring
- ❑ Right
- ❑ Overview. Refer to ⇒ “5.1 Overview - Suspension Strut, Shock Absorber, Spring”, page 200 .
- ❑ Removing and installing. Refer to ⇒ “5.4 Spring, Removing and Installing”, page 205 .

7 - Lower Transverse Link
- ❑ Right
- ❑ Overview. Refer to ⇒ “4.1 Overview - Transverse Link”, page 191 .
- ❑ Removing and installing. Refer to ⇒ “4.4 Lower Transverse Link, Removing and Installing”, page 197 .

8 - Stabilizer Bar
- ❑ Overview. Refer to ⇒ “3.1 Overview - Stabilizer Bar”, page 187 .
- ❑ Removing and installing. Refer to ⇒ “3.2 Stabilizer Bar, Removing and Installing”, page 188 .

9 - Drive Axles
- ❑ Overview. Refer to ⇒ “7.1 Overview - Drive Axle”, page 234 .
- ❑ Removing and installing. Refer to ⇒ “7.3 Drive Axle, Removing and Installing”, page 238 .
- ❑ Only for AWD

10 - Lower Transverse Link
- ❑ Left
- ❑ Overview. Refer to ⇒ “4.1 Overview - Transverse Link”, page 191 .
- ❑ Removing and installing. Refer to ⇒ “4.4 Lower Transverse Link, Removing and Installing”, page 197 .

11 - Spring
- ❑ Left
- ❑ Overview. Refer to ⇒ “5.1 Overview - Suspension Strut, Shock Absorber, Spring”, page 200 .
- ❑ Removing and installing. Refer to ⇒ “5.4 Spring, Removing and Installing”, page 205 .

12 - Shock Absorber
- ❑ Left
- ❑ Overview. Refer to ⇒ “5.1 Overview - Suspension Strut, Shock Absorber, Spring”, page 200 .
- ❑ Removing and installing. Refer to ⇒ “5.2 Shock Absorber, Removing and Installing”, page 201 .

13 - Trailing Arm
- ❑ Left
- ❑ Overview. Refer to ⇒ “6.2 Overview - Trailing Arm”, page 211 .
- ❑ Removing and installing. Refer to ⇒ “6.6 Trailing Arm with Mounting Bracket, Removing and Installing”, page 228 .

14 - Upper Transverse Link
- ❑ Left
- ❑ Overview. Refer to ⇒ “4.1 Overview - Transverse Link”, page 191 .
- ❑ Removing and installing. Refer to ⇒ “4.3 Upper Transverse Link, Removing and Installing”, page 196 .

1.2 Rear Axle, Lowering

⇒ “1.2.1 Rear Axle, Lowering, FWD excluding Passat GTE”, page 145

⇒ “1.2.2 Rear Axle, Lowering, FWD, Passat GTE Only”, page 147

⇒ “1.2.3 Lower Rear Axle, AWD”, page 150

1.2.1 Rear Axle, Lowering, FWD excluding Passat GTE

Special tools and workshop equipment required

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

Lower the Subframe with Attachments.

– Loosen the wheel bolts.

– Raise the vehicle.

– Remove the wheels.

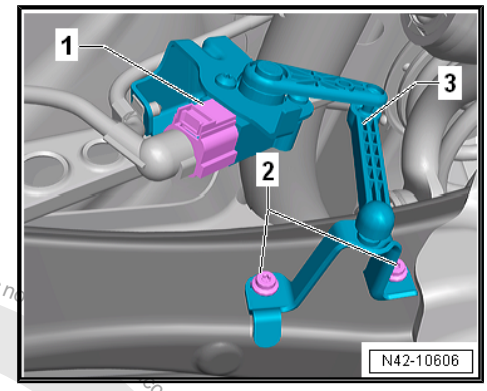
– Remove the brake calipers on both sides of the vehicle and hang on the body.

– Remove the springs. Refer to ⇒ “5.4 Spring, Removing and Installing”, page 205 .

– If necessary, remove the rear muffler from the exhaust system. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .

Vehicles with Level Control System Sensor

– Disconnect the connector -1-.

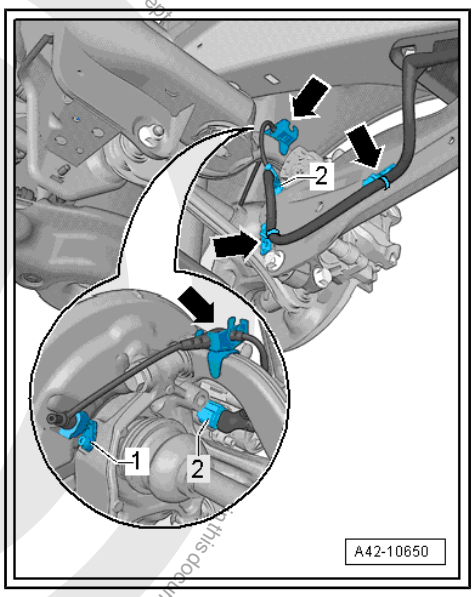


Continuation for All Vehicles

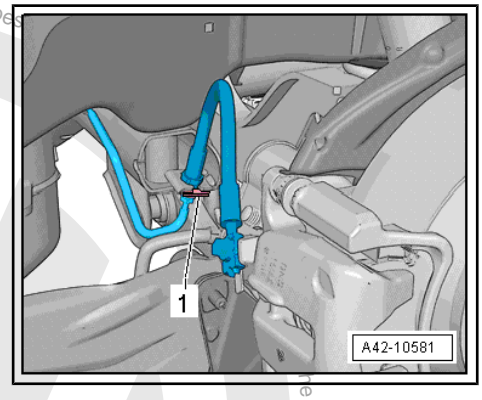
– Disconnect and free up the right and left connector -1- from the ABS speed sensor.

– Disconnect the right and left electromechanical parking brake connector -2- from the brake caliper.

– Remove and free up the wiring harness from the retainers -arrows-.



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

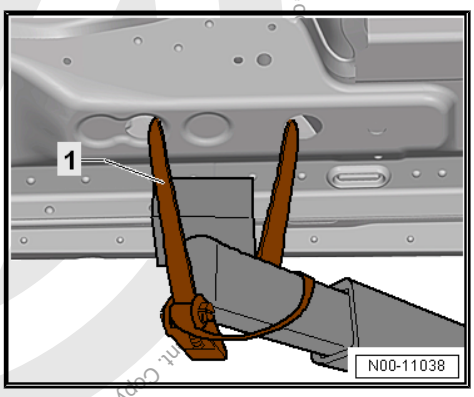


Note

Do not disconnect the brake line.

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

1 - -T10038-



WARNING

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

– If equipped, remove the underbody trim panel on the trailing arm mounting bracket. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Underbody Trim Panel; Component Location Overview - Underbody Trim Panels .
– Secure the subframe. Refer to ⇒ “2.3.1 Subframe, Securing, FWD, excluding Passat GTE”, page 165 .
– Carefully lower the subframe with its attachments approximately 20 mm.

Subframe with Attachments, Installing

Install in reverse order of removal. Note the following:

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “2 Subframe”, page 163
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Double clamp for exhaust pipes. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .

– Evaluate if an axle alignment is needed. Refer to ⇒ “1.6 Need for Axle Alignment, Evaluating”, page 284 .

1.2.2 Rear Axle, Lowering, FWD, Passat GTE Only

Special tools and workshop equipment required

- Tensioning Strap - T10523-
- Engine Support Bridge - Special Hook (2 pc.) - 10-222A/20-
- Tensioning Strap - T10038-
- Torque Wrench 1332 40-200Nm - VAG1332-

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.

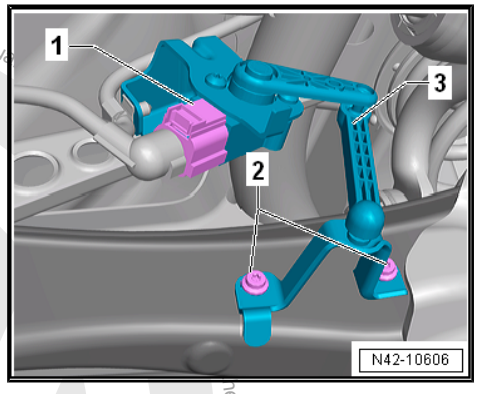
– Remove the springs. Refer to ⇒ “5.4 Spring, Removing and Installing”, page 205 .

– If necessary, remove the rear muffler from the exhaust system. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .

Vehicles with Level Control System Sensor

– Disconnect the connector -1-.

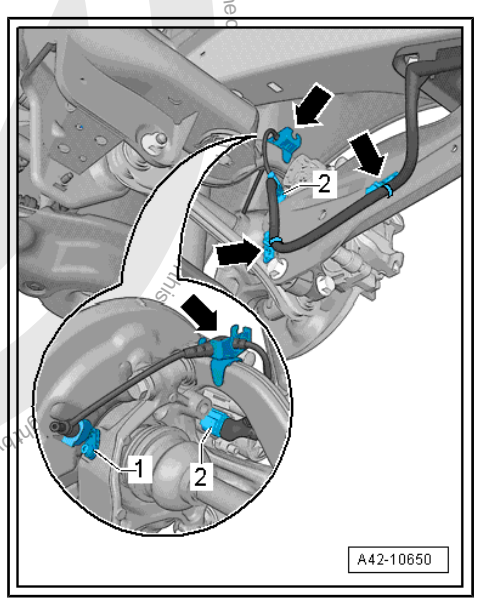
Continuation for All Vehicles



– Disconnect and free up the right and left connector -1- from the ABS speed sensor.

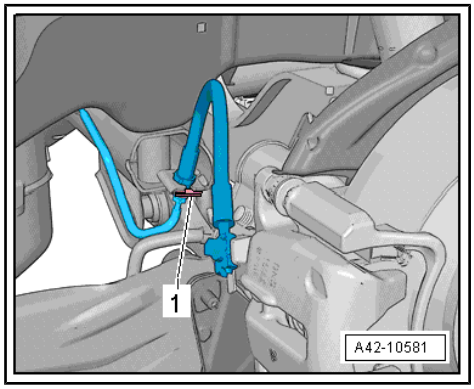
– Disconnect the right and left electromechanical parking brake connector -2- from the brake caliper.

– Remove and free up the wiring harness from the retainers -arrows-.



– Remove the clamps -1- on both sides of the vehicle.

– Free up the brake lines from the bracket.

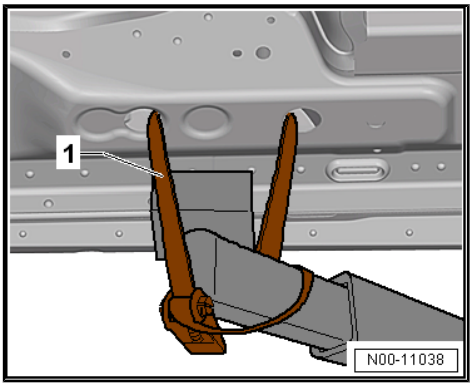


Note

Do not disconnect the brake line.

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

1 - -T10038-

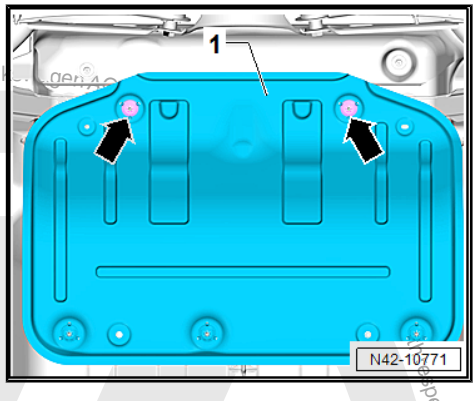


WARNING

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

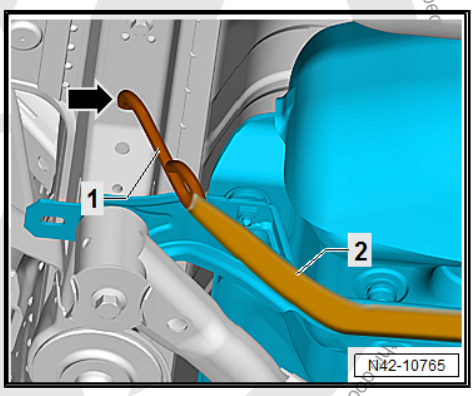
– If equipped, remove the underbody trim panel on the trailing arm mounting bracket. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Underbody Trim Panel; Component Location Overview - Underbody Trim Panels .

– Loosen the nuts -arrows- and lower the heat shield -1-.



– On both sides of the vehicle, insert the -10-222A/20- -1- into the opening in the longitudinal member -arrow-.

– Pull the -T10523- -2- through a hook.

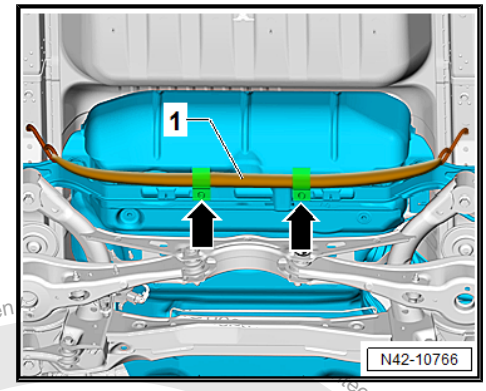


– Guide the -T10523- -1- through behind the braces -arrows-.

– Pull the -T10523- through the second hook and secure the fuel tank.

– Secure the subframe. Refer to ⇒ “2.3.2 Subframe, Securing, FWD, Passat GTE Only”, page 169 .

– Carefully lower the subframe with its attachments approximately 20 mm.



Subframe with Attachments, Installing

Install in reverse order of removal. Note the following:

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

♦ Refer to ⇒ “2 Subframe”, page 163

♦ Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .

♦ Double clamp for exhaust pipes. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .

– Evaluate if an axle alignment is needed. Refer to ⇒ “1.6 Need for Axle Alignment, Evaluating”, page 284 .

1.2.3 Lower Rear Axle, AWD

Special tools and workshop equipment required

♦ Tensioning Strap - T10038-

♦ Torque Wrench 1332 40-200Nm - VAG1332-

Lower the Subframe with Attachments.

– Loosen the wheel bolts.

– Raise the vehicle.

– Remove the wheels.

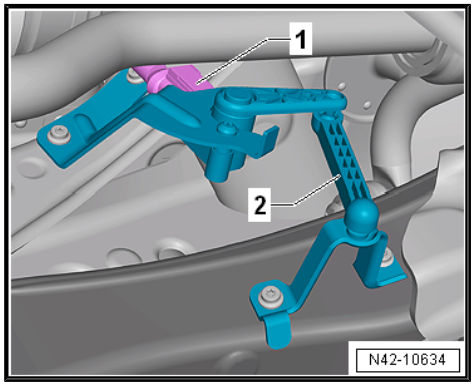
– Remove the brake calipers on both sides of the vehicle and hang on the body.

– Remove the springs. Refer to ⇒ “5.4 Spring, Removing and Installing”, page 205 .

– Remove the rear muffler from the exhaust system. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .

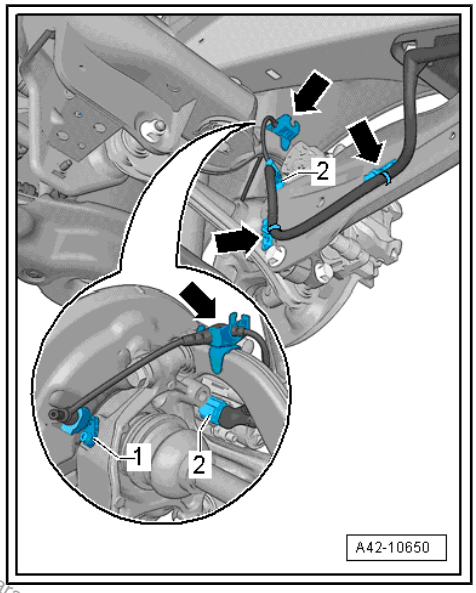
Vehicles with Level Control System Sensor

– Disconnect the connector -1- from the level control system sensor -2-.

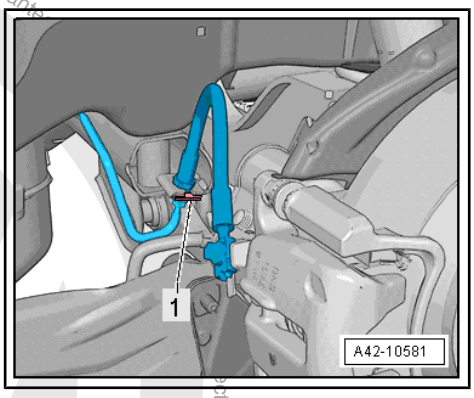


Continuation for All Vehicles

– Disconnect and free up the right and left connector -1- from the ABS speed sensor.
– Disconnect the right and left electromechanical parking brake connector -2- from the brake caliper.
– Remove and free up the wiring harness from the retainers -arrows-.



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



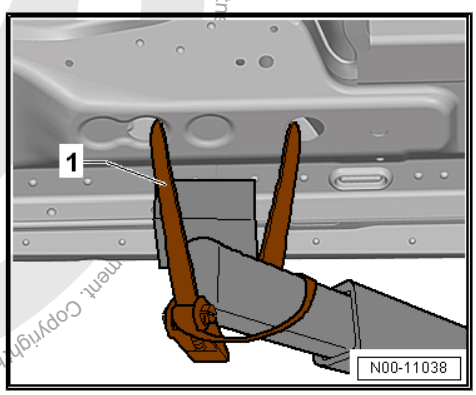
Note

Do not disconnect the brake line.

– Remove the driveshaft from the rear final drive and secure. Refer to ⇒ Rep. Gr. 39 ; Driveshaft; Overview - Driveshaft .

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

1 - -T10038-

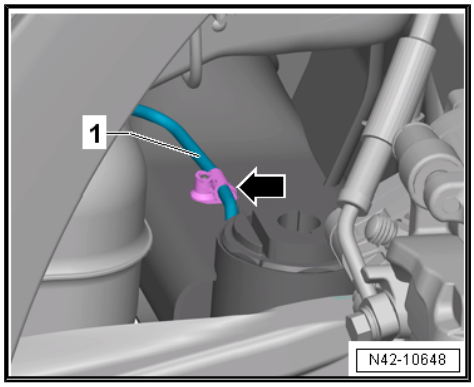


WARNING

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

– If equipped, remove the underbody trim panel on the trailing arm mounting bracket. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Underbody Trim Panel; Component Location Overview - Underbody Trim Panels .
– Secure the subframe. Refer to ⇒ “2.3.3 Subframe, Securing, AWD”, page 172 .
– Carefully lower the subframe with its attachments approximately 20 mm.
– Disconnect the connector from the all wheel drive 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

Install in reverse order of removal. Note the following:

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “2.1.2 Overview - Subframe, Multi-Link Suspension, AWD”, page 164
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Double clamp for exhaust pipes. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .
- Driveshaft. Refer to ⇒ Rep. Gr. 39 ; Driveshaft; Overview - Driveshaft .

– Evaluate if an axle alignment is needed. Refer to ⇒ “1.6 Need for Axle Alignment, Evaluating”, page 284 .

1.3 Rear Axle, Removing and Installing

⇒ “1.3.1 Rear Axle, Removing and Installing, FWD, excluding Passat GTE”, page 152

⇒ “1.3.2 Rear Axle, Removing and Installing, FWD, Passat GTE Only”, page 155

⇒ “1.3.3 Rear Axle, Removing and Installing, AWD”, page 159

1.3.1 Rear Axle, Removing and Installing, FWD, excluding Passat GTE

Special tools and workshop equipment required

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

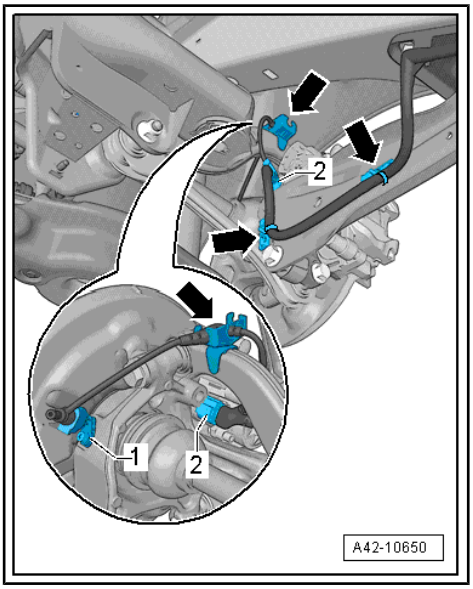
Removing the Subframe and its Attachments

– Loosen the wheel bolts.

– Raise the vehicle.

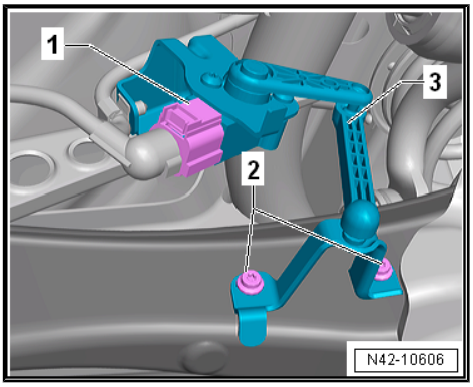
– Remove the wheels.

– 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

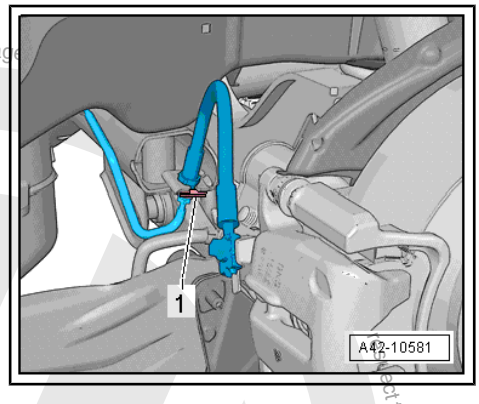
– Disconnect the connector -1- and unclip the wire from the bracket.
– Remove the bolts -2-.
– Remove the Left Rear Level Control System Sensor - G76- -3- from the transverse link.



Continuation for All Vehicles

– Remove the springs. Refer to ⇒ “5.4 Spring, Removing and Installing”, page 205 .

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



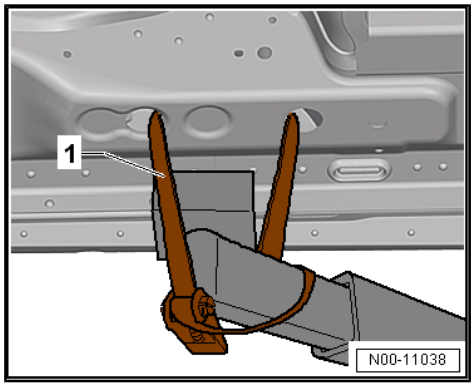
Note

Do not disconnect the brake line.

– Remove the left and right brake caliper and with the brake lines attached secure to the body. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .
– Remove the rear muffler from the exhaust system. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .
– If equipped, remove the underbody trim panel on the trailing arm mounting bracket. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Underbody Trim Panel; Component Location Overview - Underbody Trim Panels .

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

1 - -T10038-



WARNING

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

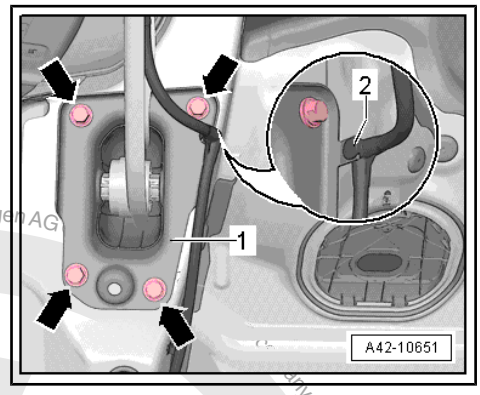
– Secure the subframe. Refer to ⇒ “2.3.1 Subframe, Securing, FWD, excluding Passat GTE”, page 165 .

– Unclip and free up the wire -2- on the mounting bracket -1-.

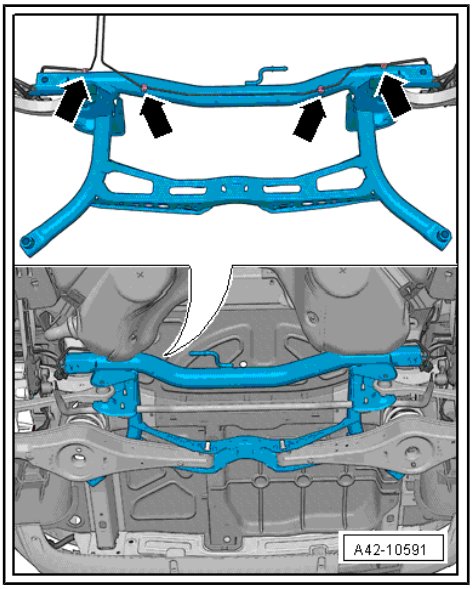
– Mark the installation position of the mounting bracket -1- on the body.

– 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.*
- *The number of clips may vary.*

– Lower the subframe with attachments.

Note

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

Subframe with Attachments, Installing

Install in reverse order of removal. Note the following:

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “2 Subframe”, page 163
- Refer to ⇒ “6.2 Overview - Trailing Arm”, page 211
- Refer to ⇒ “5.1 Overview - Suspension Strut, Shock Absorber, Spring”, page 200
- Refer to ⇒ “2.2.1 Overview - Rear Level Control System Sensor, Multi-Link Suspension, FWD”, page 272
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Bolts for brake caliper and brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .
- Double clamp for exhaust pipes. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .

– Evaluate if an axle alignment is needed. Refer to ⇒ “1.6 Need for Axle Alignment, Evaluating”, page 284 .

1.3.2 Rear Axle, Removing and Installing, FWD, Passat GTE Only

Special tools and workshop equipment required

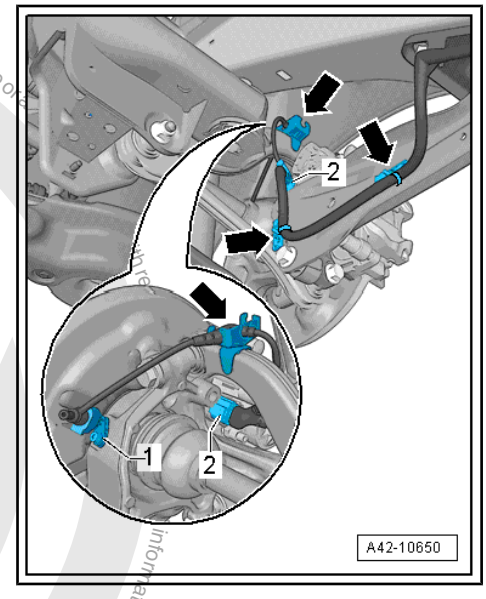
- Tensioning Strap - T10523-
- Engine Support Bridge - Special Hook (2 pc.) - 10-222A/20-
- Tensioning Strap - T10038-
- Torque Wrench 1332 40-200Nm - VAG1332-

Removing the Subframe and its Attachments

– Loosen the wheel bolts.

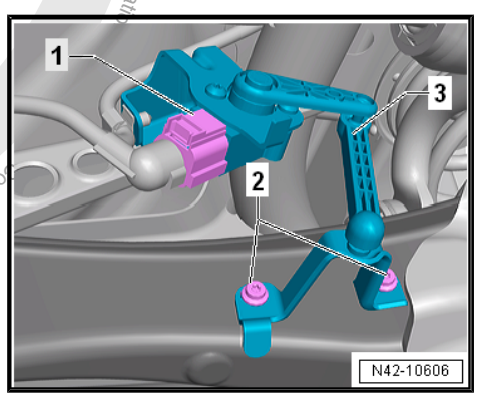
– Raise the vehicle.

– 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

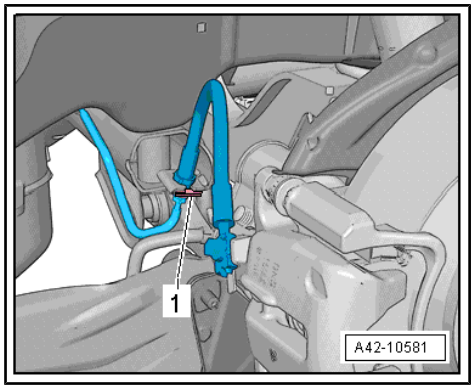
– Disconnect the connector -1- and unclip the wire from the bracket.
– Remove the bolts -2-.
– Remove the Left Rear Level Control System Sensor - G76- -3- from the transverse link.



Continuation for All Vehicles

– Remove the springs. Refer to ⇒ “5.4 Spring, Removing and Installing”, page 205 .

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



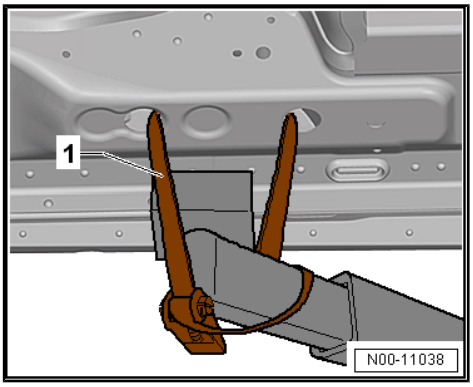
Note

Do not disconnect the brake line.

– Remove the left and right brake caliper and with the brake lines attached secure to the body. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .
– Remove the rear muffler from the exhaust system. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .
– If equipped, remove the underbody trim panel on the trailing arm mounting bracket. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Underbody Trim Panel; Component Location Overview - Underbody Trim Panels .

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

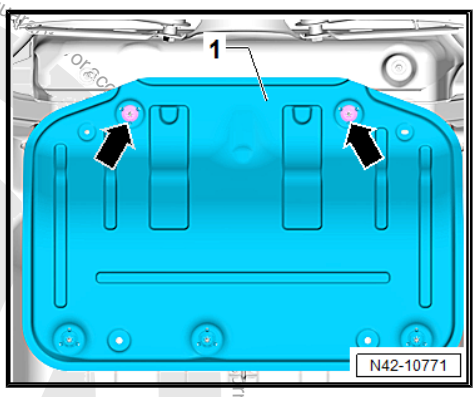
1 - -T10038-



WARNING

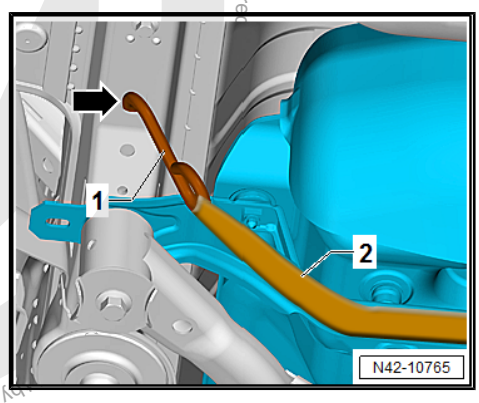
The vehicle could slide off the hoist if it is not secured.

– Loosen the nuts -arrows- and lower the heat shield -1-.



– On both sides of the vehicle, insert the -10-222A/20- -1- into the opening in the longitudinal member -arrow-.

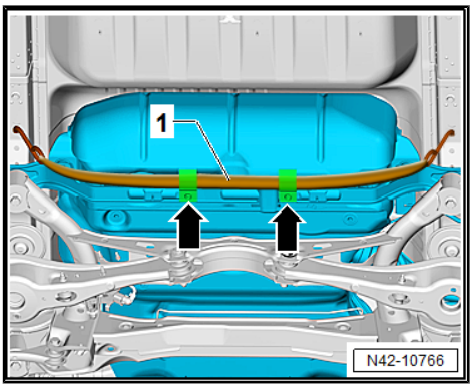
– Pull the -T10523- -2- through a hook.



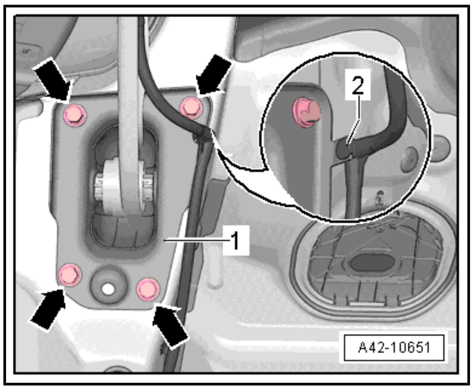
– Guide the -T10523- -1- through behind the braces -arrows-.

– Pull the -T10523- through the second hook and secure the fuel tank.

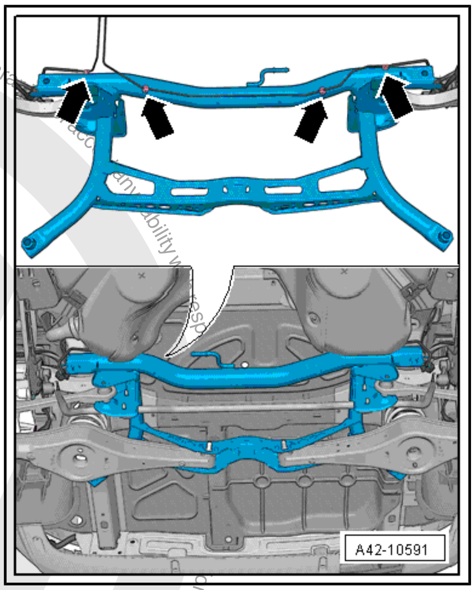
– Secure the subframe. Refer to ⇒ “2.3.2 Subframe, Securing, FWD, Passat GTE Only”, page 169 .



– Unclip and free up the wire -2- on the mounting bracket -1-.
– Mark the installation position of the mounting bracket -1- 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.*
- *The number of clips may vary.*

– Lower the subframe with attachments.

Note

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

Subframe with Attachments, Installing

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Install in reverse order of removal. Note the following:

Tightening Specifications

- Refer to ⇒ “2 Subframe”, page 163
- Refer to ⇒ “6.2 Overview - Trailing Arm”, page 211
- Refer to ⇒ “5.1 Overview - Suspension Strut, Shock Absorber, Spring”, page 200
- Refer to ⇒ “2.2.1 Overview - Rear Level Control System Sensor, Multi-Link Suspension, FWD”, page 272
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Bolts for brake caliper and brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .
- Double clamp for exhaust pipes. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .

– Evaluate if an axle alignment is needed. Refer to ⇒ “1.6 Need for Axle Alignment, Evaluating”, page 284 .

1.3.3 Rear Axle, Removing and Installing, AWD

Special tools and workshop equipment required

- Torque Wrench 1331 5-50Nm - VAG1331-
- Tensioning Strap - T10038-
- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-
- Torque Wrench 1332 40-200Nm - VAG1332-

Removing the Subframe and its Attachments

– Loosen the wheel bolts.

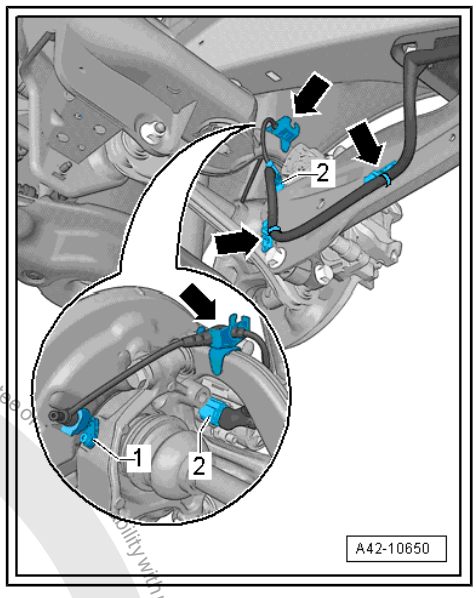
– Raise the vehicle.

– 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-.

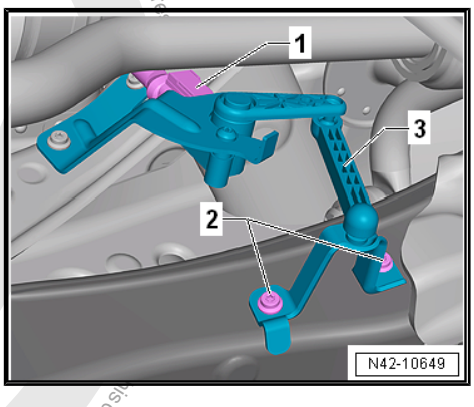


Vehicles with Level Control System Sensor

– Disconnect the connector -1-.

– Remove the bolts -2-.

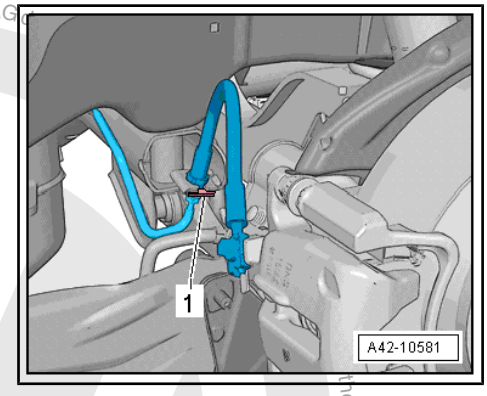
– Remove the Left Rear Level Control System Sensor - G76- -3- from the transverse link.



Continuation for All Vehicles

– Remove the springs. Refer to ⇒ “5.4 Spring, Removing and Installing”, page 205 .

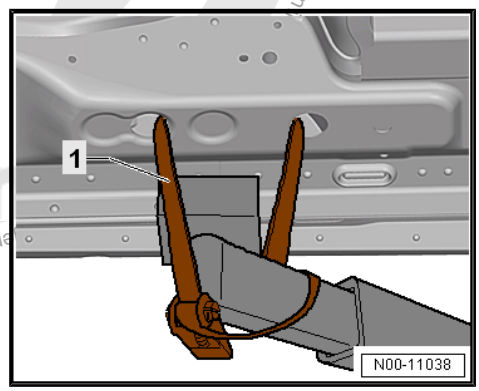
– Remove the clamps -1- on both sides of the vehicle.
– Free up the brake lines from the bracket.



Note

Do not disconnect the brake line.

– Remove the driveshaft from the rear final drive and secure. Refer to ⇒ Rep. Gr. 39 ; Driveshaft; Overview - Driveshaft .
– Remove the left and right brake caliper and with the brake lines attached secure to the body. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .
– Remove the rear muffler from the exhaust system. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .
– If equipped, remove the underbody trim panel on the trailing arm mounting bracket. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Underbody Trim Panel; Component Location Overview - Underbody Trim Panels .
– Secure both sides of the vehicle on the hoist lifting arms using the -T10038- .

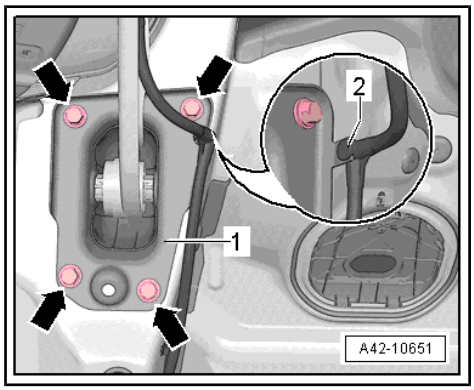


1 - -T10038-

WARNING

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

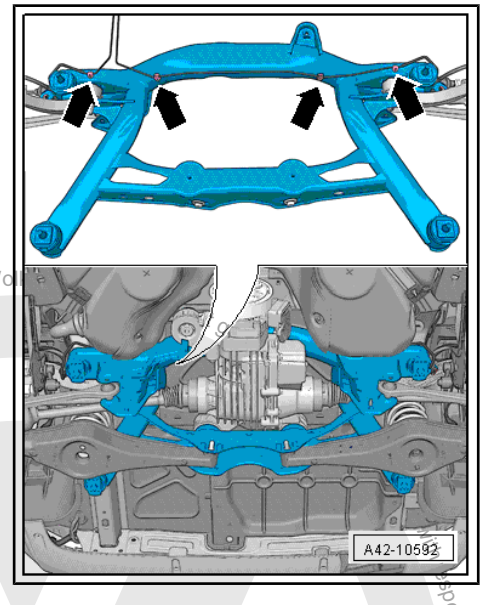
– Secure the subframe. Refer to ⇒ “2.3.1 Subframe, Securing, FWD, excluding Passat GTE”, page 165 .
– Unclip and free up the wire -2- on the mounting bracket -1-.
– Mark the installation position of the mounting bracket -1- on the body.
– Remove the bolts -arrows-.
– Carefully lower the subframe with its attachments approximately 20 mm.
– Disconnect the connector from the All Wheel Drive 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, wires and centering pins to the driveshaft.

– 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.*
- *The number of clips may vary.*

– Carefully lower subframe with components.

Note

Make sure there is enough clearance for brake lines, wires and the driveshaft centering pin when lowering.

Subframe with Attachments, Installing

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Install in reverse order of removal. Note the following:

Tightening Specifications

- Refer to ⇒ “2.1.2 Overview - Subframe, Multi-Link Suspension, AWD”, page 164
- Refer to ⇒ “6.2 Overview - Trailing Arm”, page 211
- Refer to ⇒ “5.1 Overview - Suspension Strut, Shock Absorber, Spring”, page 200
- Refer to ⇒ “2.2.1 Overview - Rear Level Control System Sensor, Multi-Link Suspension, FWD”, page 272
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Driveshaft. Refer to ⇒ Rep. Gr. 39 ; Driveshaft; Overview - Driveshaft .
- Bolts for brake caliper and brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .
- Double clamp for exhaust pipes. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .

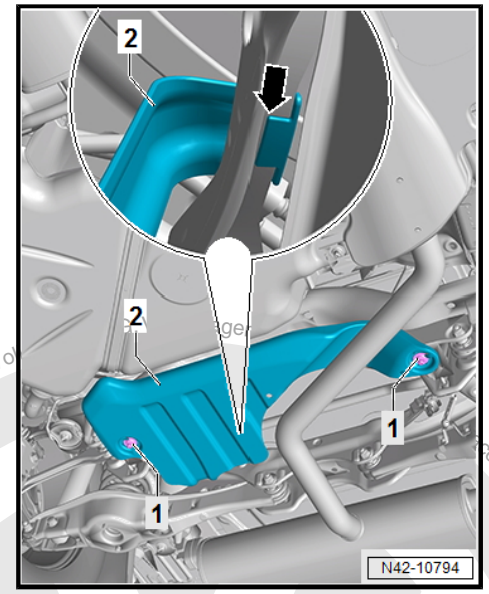
– Evaluate if an axle alignment is needed. Refer to ⇒ “1.6 Need for Axle Alignment, Evaluating”, page 284 .

1.4 Rear Axle Trim Panel, Removing and Installing

Removing

– Remove the nuts -1-.

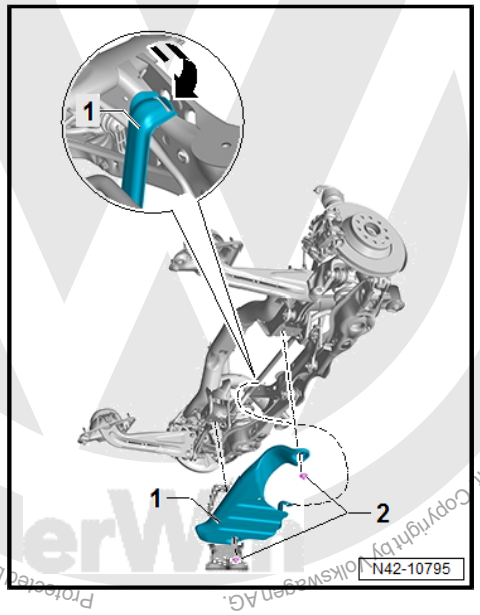
– Remove the trim panel -2- downward from the subframe while disengaging it on top of the subframe -arrow-.



Installing

– Pivot the trim panel -1- in the direction of -arrow-, so that it engages on the top of the subframe.

– Tighten the nuts -2-.



Note

After installing the heat shield, make sure the tabs on the trim panel -2- are properly engaged in the subframe -arrow-.

Tightening Specifications

♦ Refer to ⇒ “2.2 Overview - Subframe Attachment”, page 165

2 Subframe

2.1 Overview - Subframe

2.1.1 Overview - Subframe, Multi-Link Suspension, FWD

1 - Subframe

- ❑ Subframe with Attachments, Removing and installing. Refer to ⇒ “1.3.1 Rear Axle, Removing and Installing, FWD, excluding Passat GTE”, page 152 .

2 - Rear Bonded Rubber Bushing

- ❑ Replacing. Refer to ⇒ “2.4.2 Rear Bonded Rubber Bushing, Replacing”, page 181 .

3 - Front Bonded Rubber Bushing

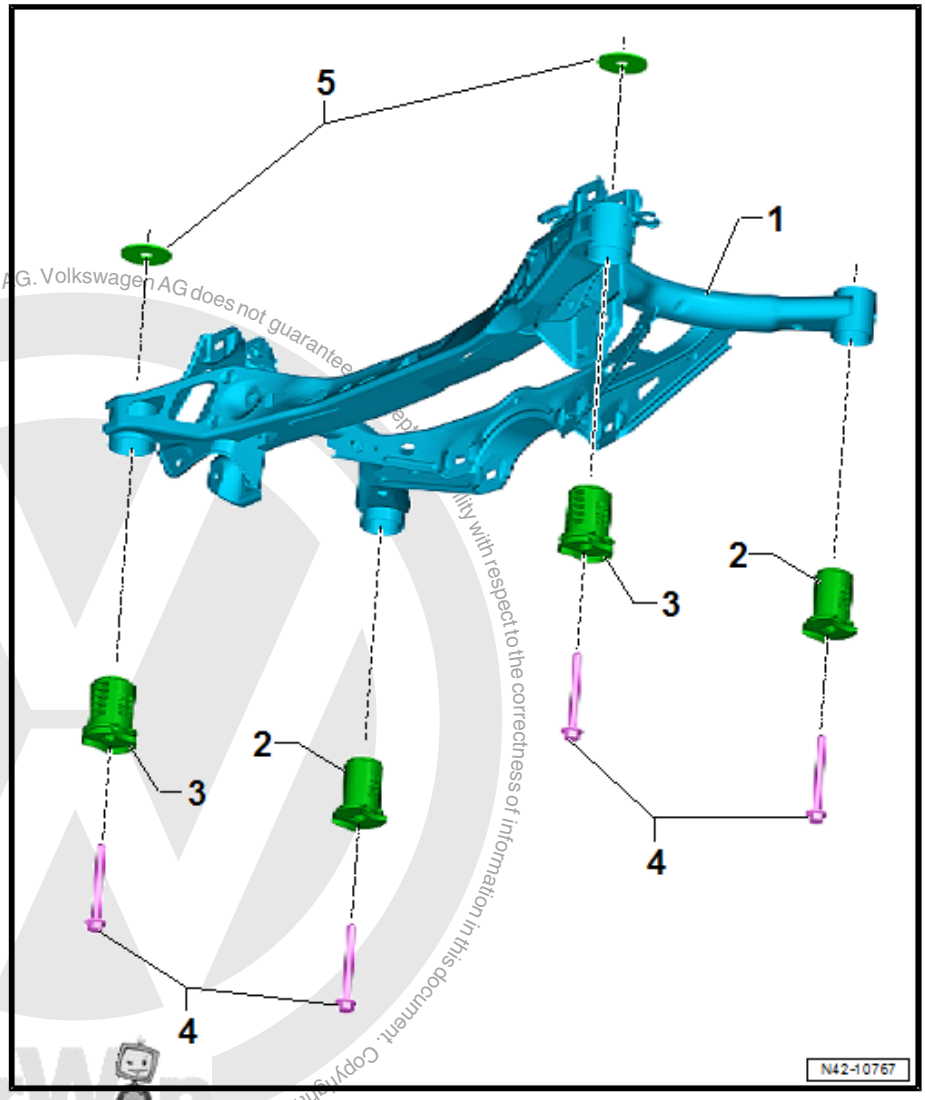
- ❑ Replacing. Refer to ⇒ “2.4.1 Front Bonded Rubber Bushing, Replacing”, page 176 .

4 - Bolt

- ❑ 70 Nm + 180°
- ❑ Replace after removing.

5 - Washer

- ❑ Only for Passat GTE



2.1.2 Overview - Subframe, Multi-Link Suspension, AWD

1 - Subframe

- ❑ Subframe with Attachments, Removing and installing. Refer to ⇒ “1.3.3 Rear Axle, Removing and Installing, AWD”, page 159 .

2 - Rear Bonded Rubber Bushing

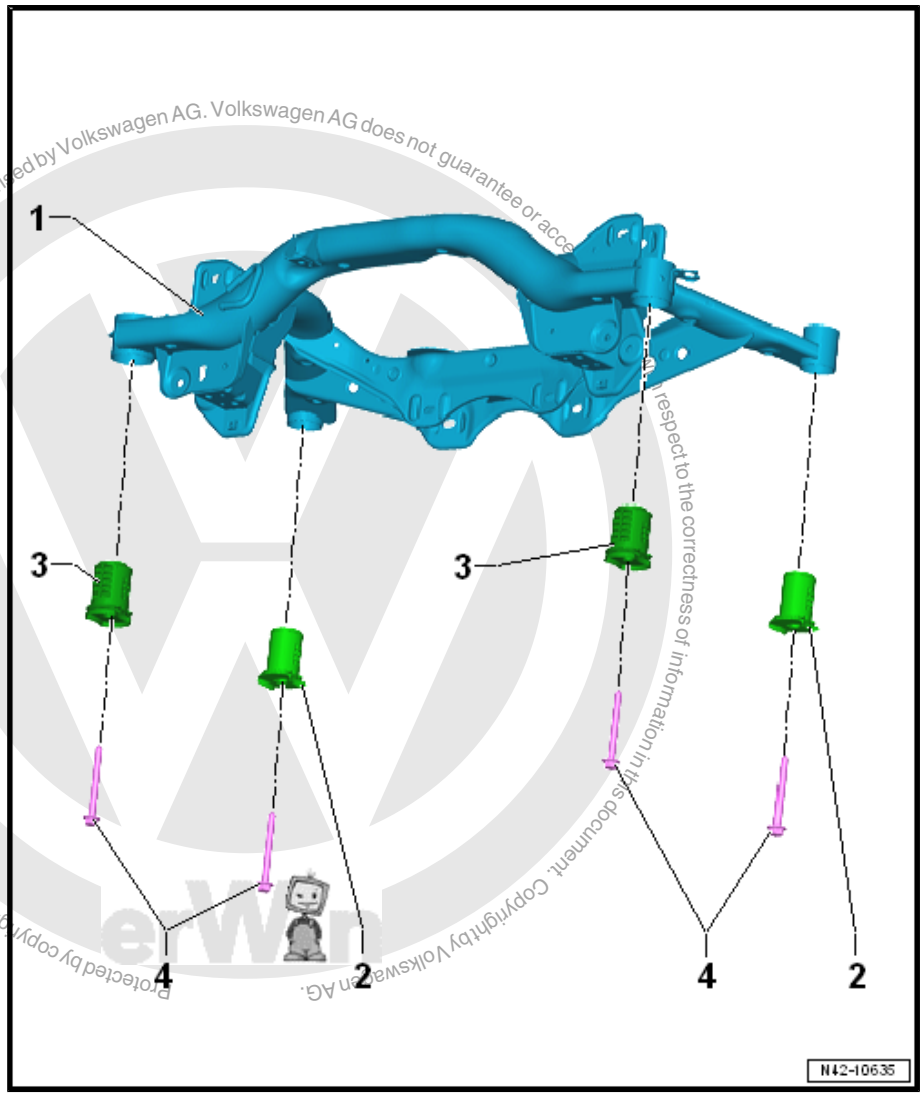
- ❑ Replacing. Refer to ⇒ “2.4.2 Rear Bonded Rubber Bushing, Replacing”, page 181 .

3 - Front Bonded Rubber Bushing

- ❑ Replacing. Refer to ⇒ “2.4.1 Front Bonded Rubber Bushing, Replacing”, page 176 .

4 - Bolt

- ❑ 70 Nm + 180°
- ❑ Replace after removing.



2.2 Overview - Subframe Attachment

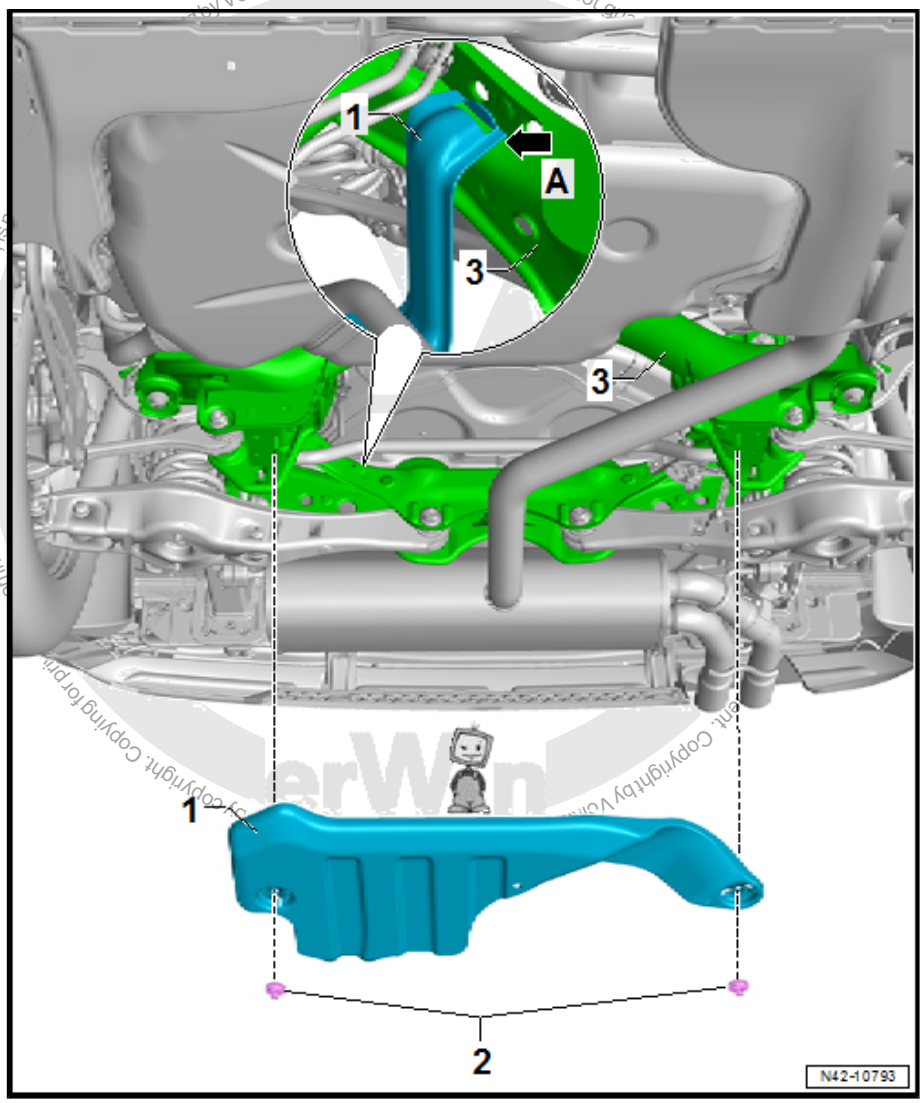
1 - Trim Panel

- ❑ Removing and installing. Refer to ⇒ “1.4 Rear Axle Trim Panel, Removing and Installing”, page 162 .
- ❑ The trim panel must be engaged -arrow A- from below on the subframe -item 3- ⇒ Item 3 (page 165) .

2 - Nut

- ❑ 2 Nm

3 - Subframe



2.3 Subframe, Securing

⇒ “2.3.1 Subframe, Securing, FWD, excluding Passat GTE”, page 165

⇒ “2.3.2 Subframe, Securing, FWD, Passat GTE Only”, page 169

⇒ “2.3.3 Subframe, Securing, AWD”, page 172

2.3.1 Subframe, Securing, FWD, excluding Passat GTE

Special tools and workshop equipment required

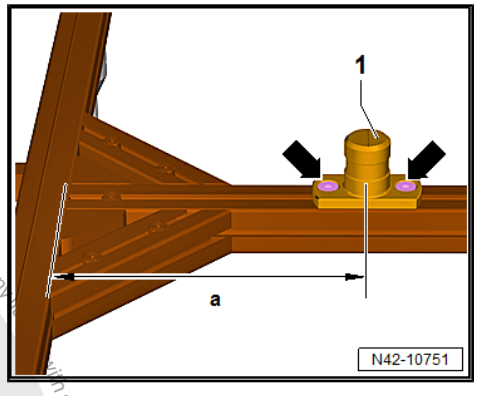
- ♦ Locating Pins - T10096-
- ♦ Rear Axle Support - T10552-
- ♦ Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-
- ♦ Torque Wrench 1332 40-200Nm - VAG1332-

-T10552- , Preparing

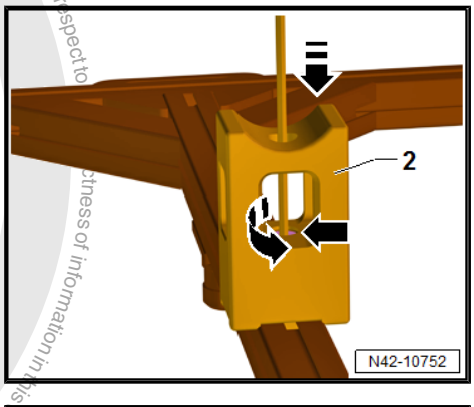
– Loosen the bolts -arrows- and adjust the dimension -a-.

a - 250 mm

Tighten the bolts -arrows-.



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

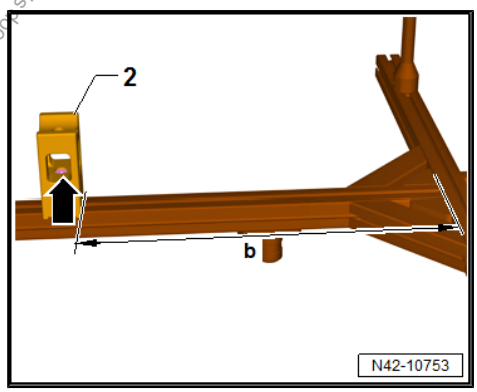


– Turn the -T10552/2- -2- so that the profile is in the direction of travel.

– Adjust the dimension -b-.

b - 280 mm

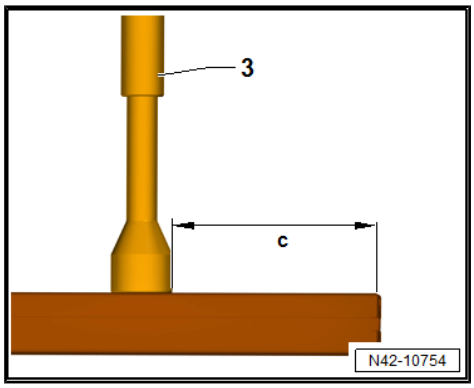
Tighten the bolt -arrow- to 30 Nm.



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

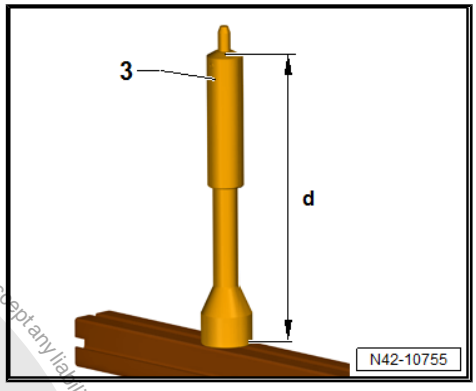
– Adjust the dimension -c-.

c - 47 mm

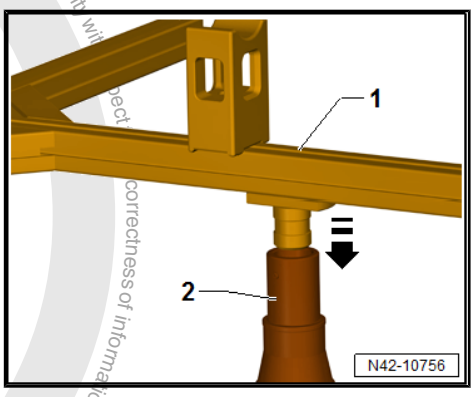


– Turn the -T10552/1- -3- on both sides until the dimension -d- is set.

d - 200 mm



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

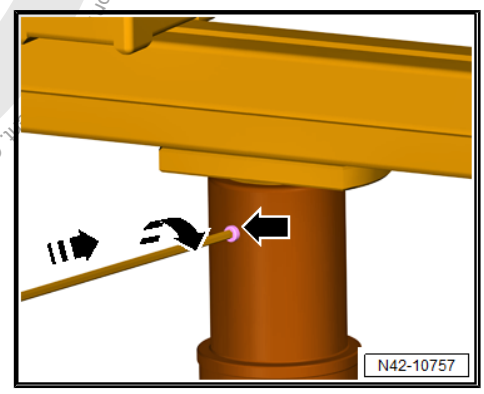


– Tighten the bolt -arrow- to 30 Nm.

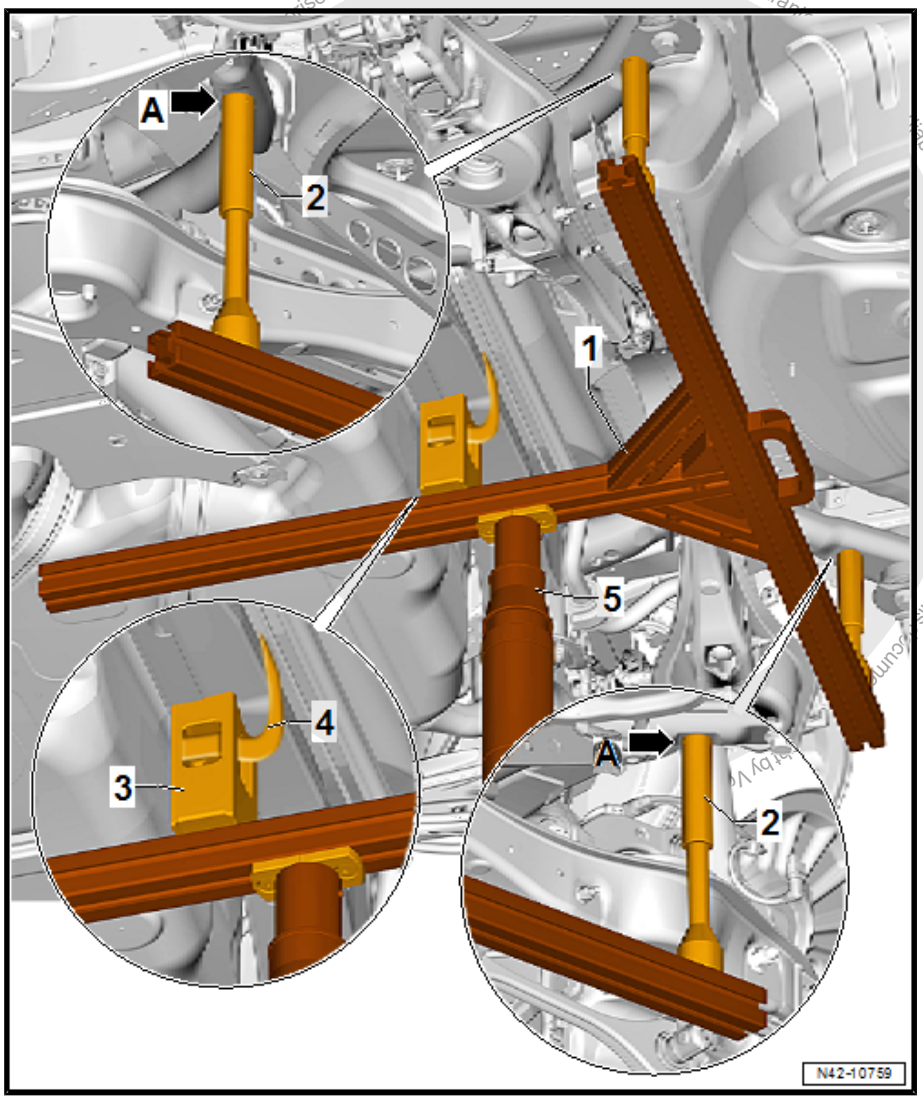
Vehicles with Rear Axle Trim Panel

– Remove the rear axle trim panel. Refer to ⇒ “1.4 Rear Axle Trim Panel, Removing and Installing”, page 162 .

Continuation for All Vehicles



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

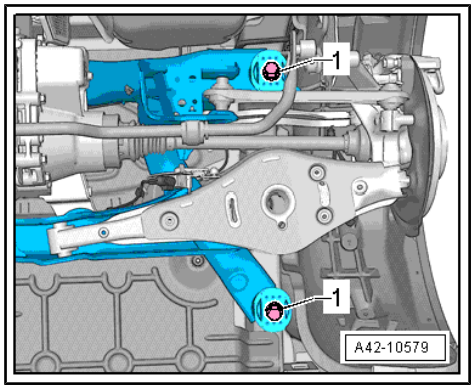


– Insert the -T10552/1- -2- into the holes on the rear axle -A arrows-.
– Secure the -T10552/2- -3- to the rear axle using a Tensioning Strap -4-.

-T10096- , Installing

To secure the subframe, the -T10096- must be installed at the positions -1- one after the other on both sides of the vehicle.

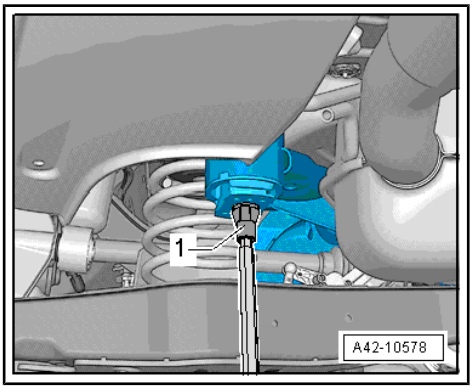
– Remove a hex bolt -1- from both sides.



Note

For clarity only the left side of the vehicle is shown.

– Install the -T10096- -1-.



Note

-T10096- may only be tightened to a maximum of 20 Nm, otherwise the threads on 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.

2.3.2 Subframe, Securing, FWD, Passat GTE Only

Special tools and workshop equipment required

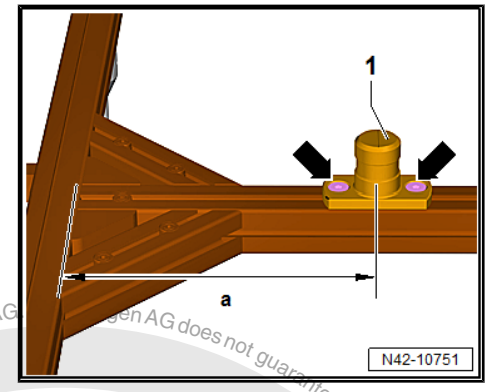
- Rear Axle Support - T10552-
- Locating Pins - T10559-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-

-T10552- , Preparing

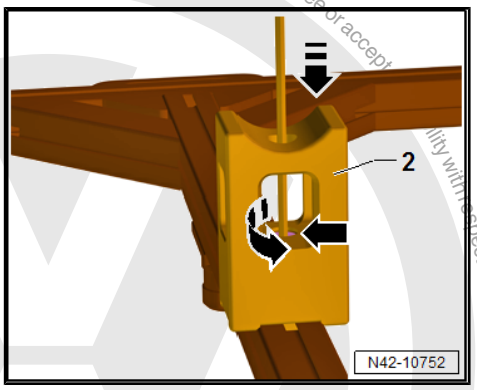
– Loosen the bolts -arrows- and adjust the dimension -a-.

a - 250 mm

Tighten the bolts -arrows-.



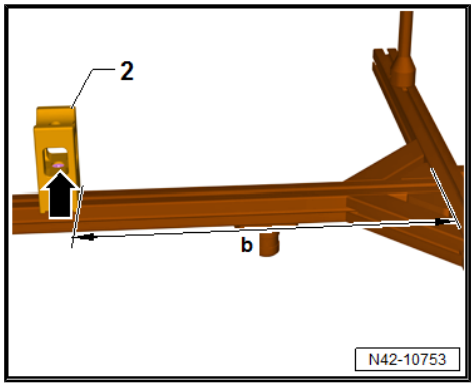
– Loosen the bolt -arrow- for the -T10552/2- -2-.



– Turn the -T10552/2- -2- so that the profile is in the direction of travel.
– Adjust the dimension -b-.

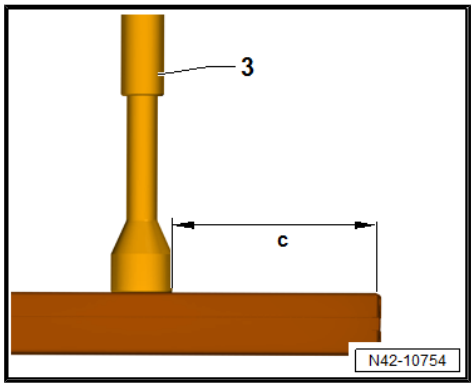
b - 280 mm

Tighten the bolt -arrow- to 30 Nm.



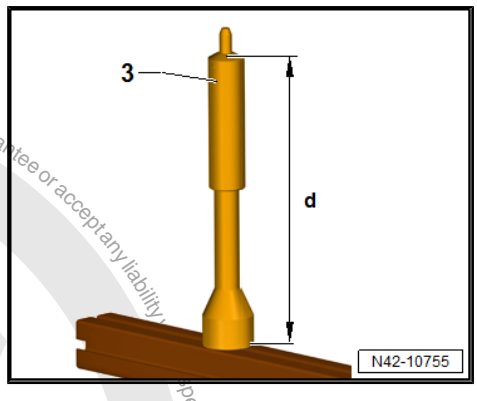
– Loosen the -T10552/1- -3- on both sides at the bottom.
– Adjust the dimension -c-.

c - 47 mm

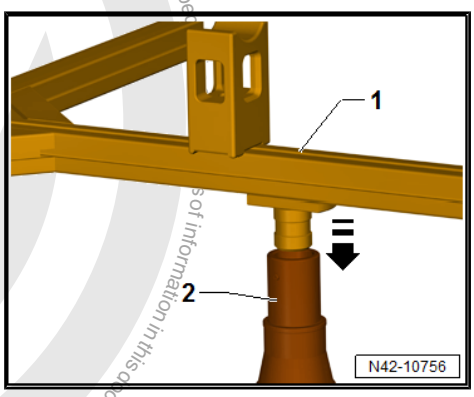


– Turn the -T10552/1- -3- on both sides until the dimension -d- is set.

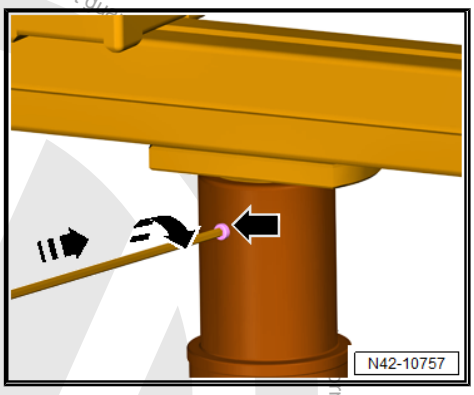
d - 200 mm



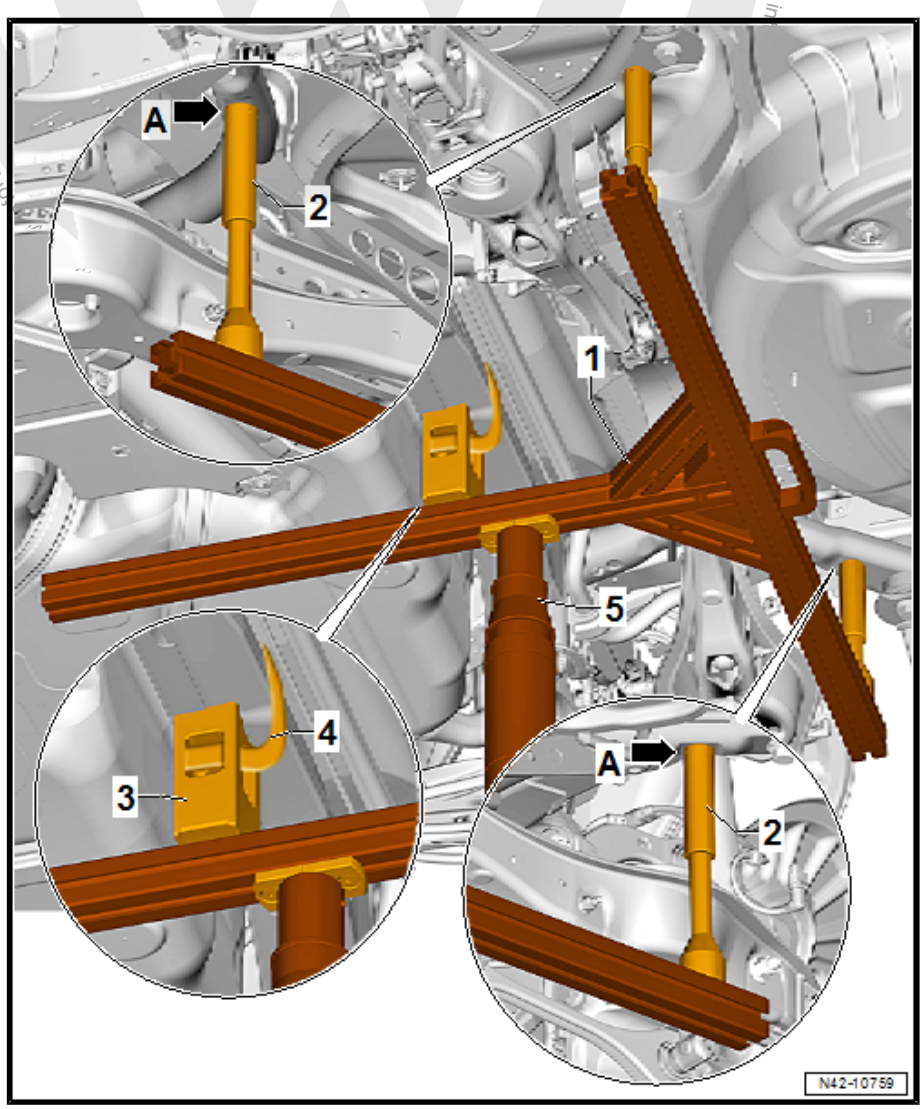
– Place the -T10552- -1- on the -VAS6931- or -VAG1383A- .



– Tighten the bolt -arrow- to 30 Nm.



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

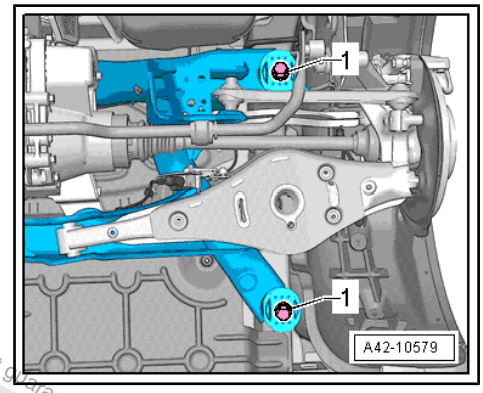


– Insert the -T10552/1- -2- into the holes on the rear axle -A arrows-.

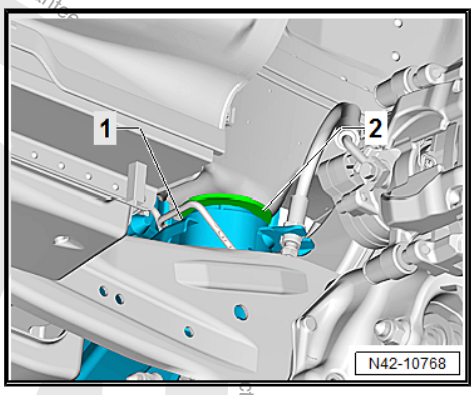
– Secure the -T10552/2- -3- to the rear axle using the Tensioning Strap -4-.

To secure the subframe, the -T10559- must be installed at the positions -1- one after the other on both sides of the vehicle.

– Remove the hex bolt -1- from the subframe on the left front side.



– Insert the -T10559- into the subframe bearing -1-. While doing so, make sure that the shim -2- always moves easily.



Note

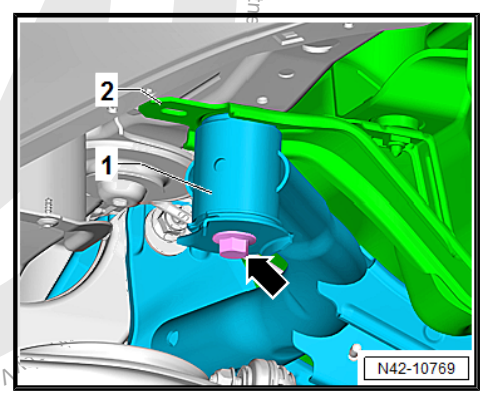
The -T10559- must contact the body.

– Tighten the -T10096- to 20 Nm.

– Repeat the same procedure on the right side.

– Remove the hex bolt -arrow- on the left side.

– Insert the -T10559- into the subframe bearing -1-. While doing so, make sure that the bracket -2- always moves easily.



Note

The -T10559- must contact the body.

– Tighten the -T10096- to 20 Nm.

– Repeat the same procedure on the right side.

The subframe position is now secured.

2.3.3 Subframe, Securing, AWD

Special tools and workshop equipment required

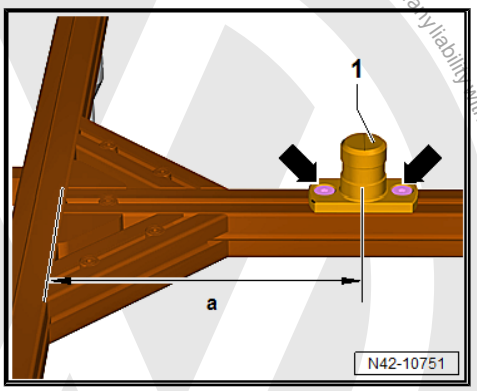
- Locating Pins - T10096-
- Rear Axle Support - T10552-
- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-
- Torque Wrench 1332 40-200Nm - VAG1332-

-T10552- , Preparing

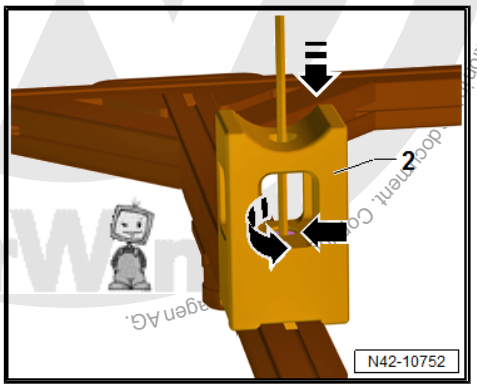
– Loosen the bolts -arrows- and adjust the dimension -a-.

a - 250 mm

Tighten the bolts -arrows-.



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

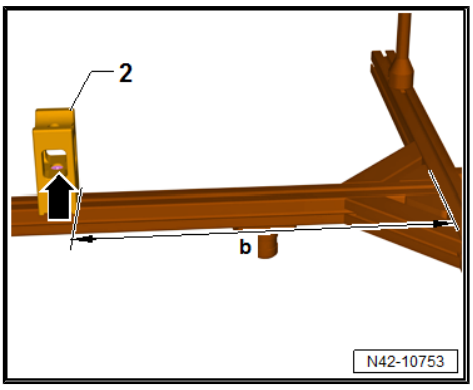


– Turn the -T10552/2- -2- so that the profile is in the direction of travel.

– Adjust the dimension -b-.

b - 410 mm

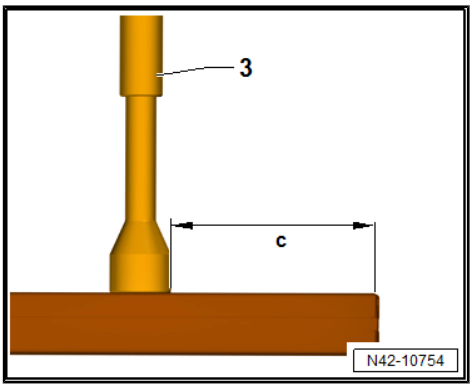
Tighten the bolt -arrow- to 30 Nm.



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

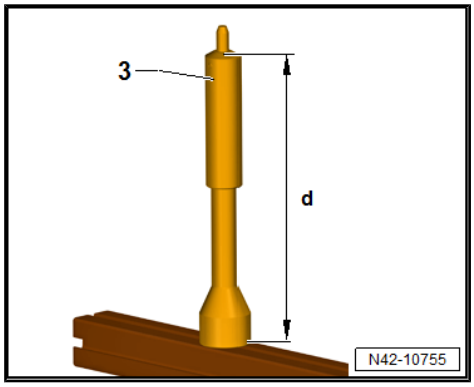
– Adjust the dimension -c-.

c - 47 mm

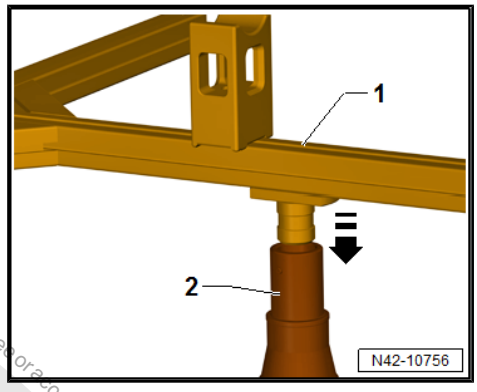


– Turn the -T10552/1- -3- on both sides until the dimension -d- is set.

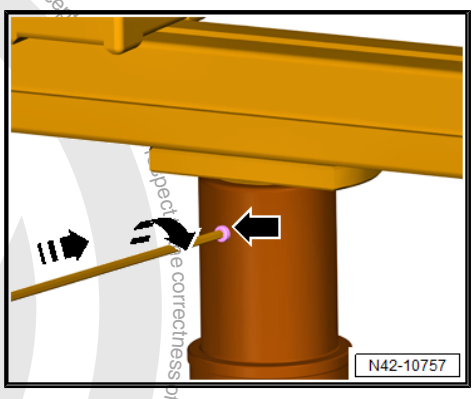
d - 215 mm



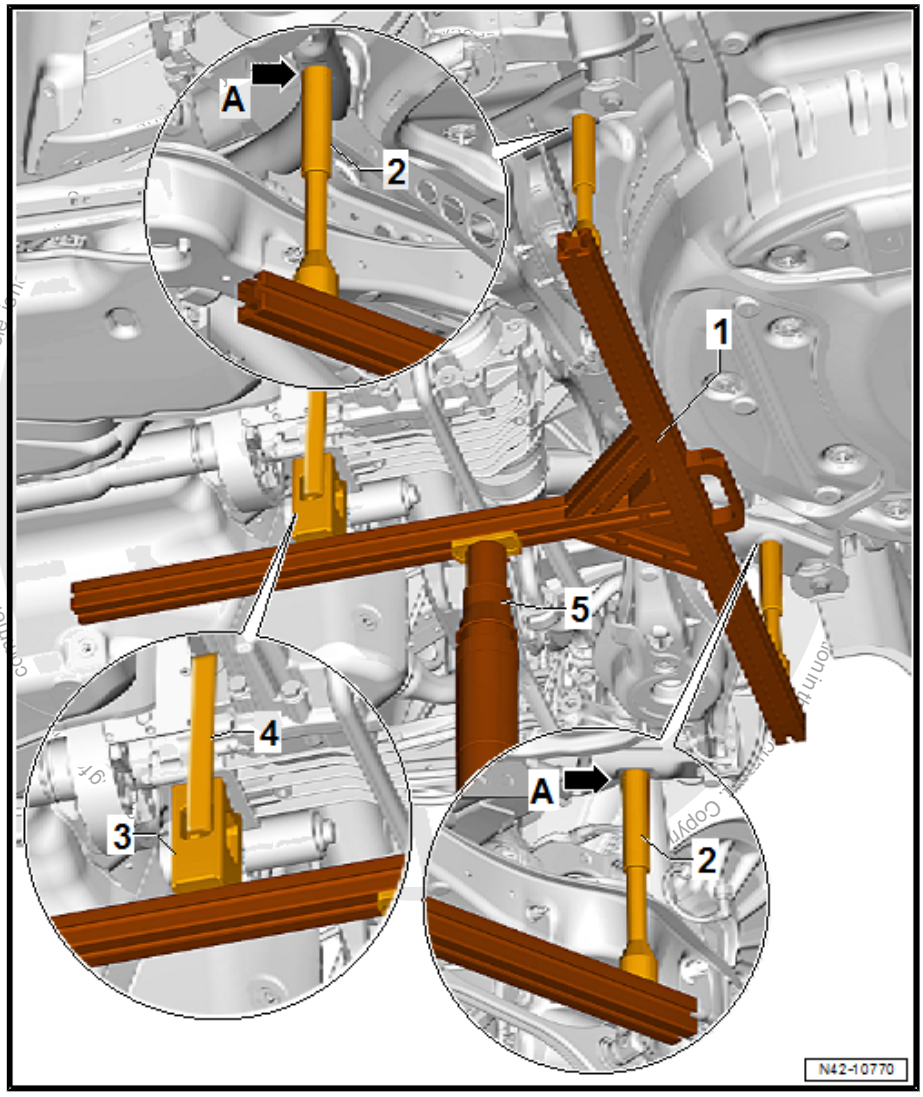
– Place the -T10552- -1- on the -VAS6931- or -VAG1383A- .



– Tighten the bolt -arrow- to 30 Nm.



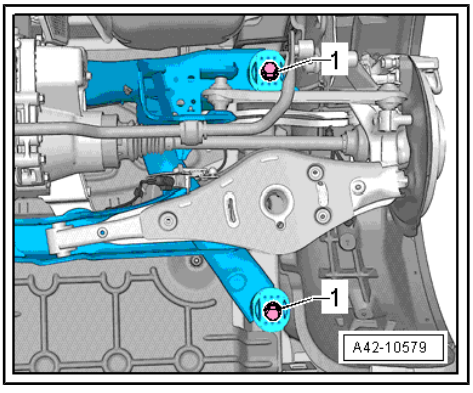
– Position the -T10552- -1- with the -VAS6931- or -VAG1383A- -5- under the rear axle and move it upward.



– 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

To secure the subframe, the -T10096- must be installed at the positions -1- one after the other on both sides of the vehicle.

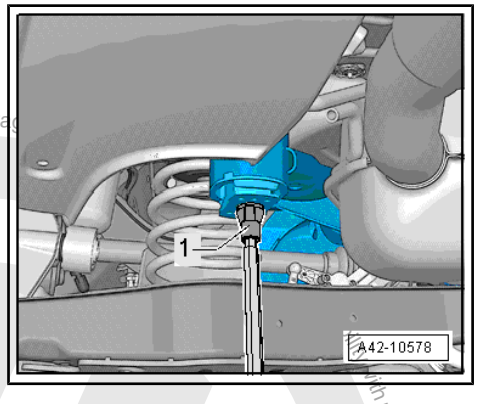


– Remove a hex bolt -1- from both sides.

Note

For clarity only the left side of the vehicle is shown.

– Install the -T10096- -1-.



Note

-T10096- may only be tightened to a maximum of 20 Nm, otherwise the threads on 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.

2.4 Subframe, Servicing

⇒ “2.4.1 Front Bonded Rubber Bushing, Replacing”, page 176

⇒ “2.4.2 Rear Bonded Rubber Bushing, Replacing”, page 181

2.4.1 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- or Engine and Gearbox Jack - VAG1383A-
- Hydraulic Press - VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit- Adapter 13 - T10205/13-
- Pneumatic/Hydraulic Foot Pump - VAS6179-
- Bearing Installer - Wheel Hub/Bearing Kit - T10205-

Note

- *If a bonded rubber bushing is faulty, then the bonded rubber bushing on the opposite side must also be replaced. Refer to the Parts Catalog for the allocation.*
- *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 bonded rubber bushing, the subframe must be lowered either at the front or at the rear. It is not necessary to remove the subframe.*
- *Identify the installation position to the subframe before removing the bonded rubber bushing.*

Pressing Out Bonded Rubber Bushing, Front

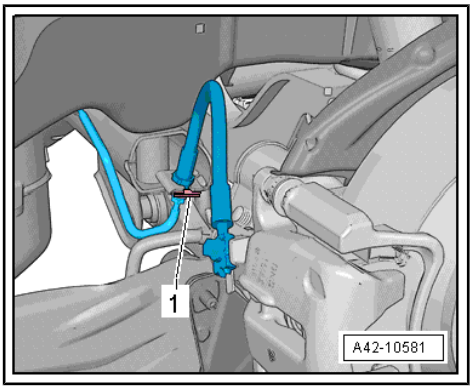
– Loosen the wheel bolts.

– Raise the vehicle.

– Remove the wheels.

– Remove the spring. Refer to ⇒ “5.4 Spring, Removing and Installing”, page 205 .

– Remove the rear muffler from the exhaust system. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .
– Remove the bolt for the tie rod on the wheel bearing housing.
– Push the tie rod downward and install the bolt again.
– Push the tie rod as far as possible toward the rear.
– Remove the clamps -1- on both sides of the vehicle.



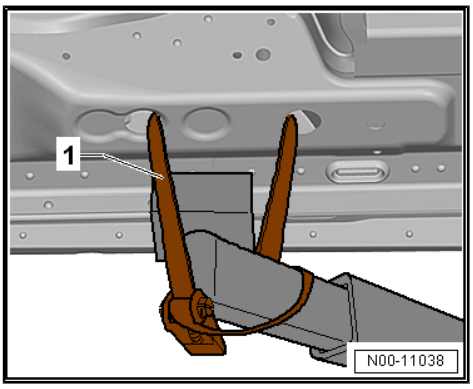
Note

Do not disconnect the brake line.

– If equipped, remove the underbody trim panel on the trailing arm mounting bracket. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Underbody Trim Panel; Component Location Overview - Underbody Trim Panels .

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

1 - -T10038-

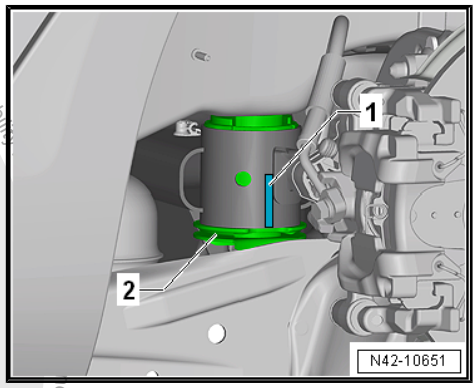


WARNING

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

– Secure the subframe. Refer to ⇒ “2.3 Subframe, Securing”, page 165 .

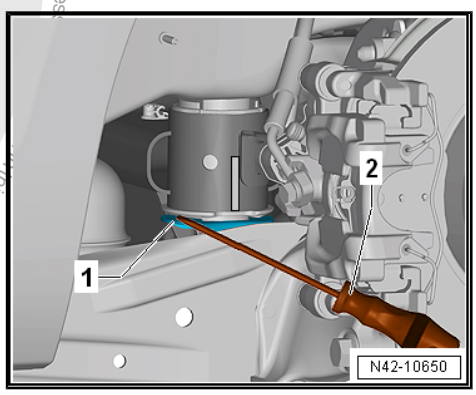
– Mark the installation location of the bonded rubber bushing on the subframe with a felt-tip pen -1-.



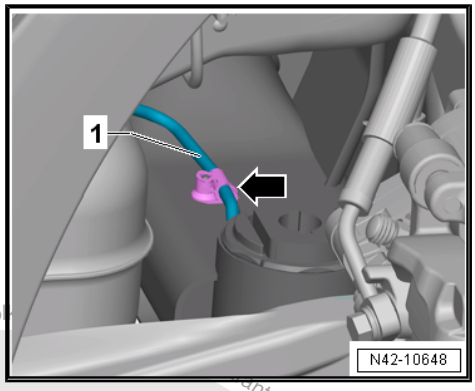
Note

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 retaining tabs.
– Lower the subframe using the -VAS6931- or -VAG1383A- approximately 100 mm.



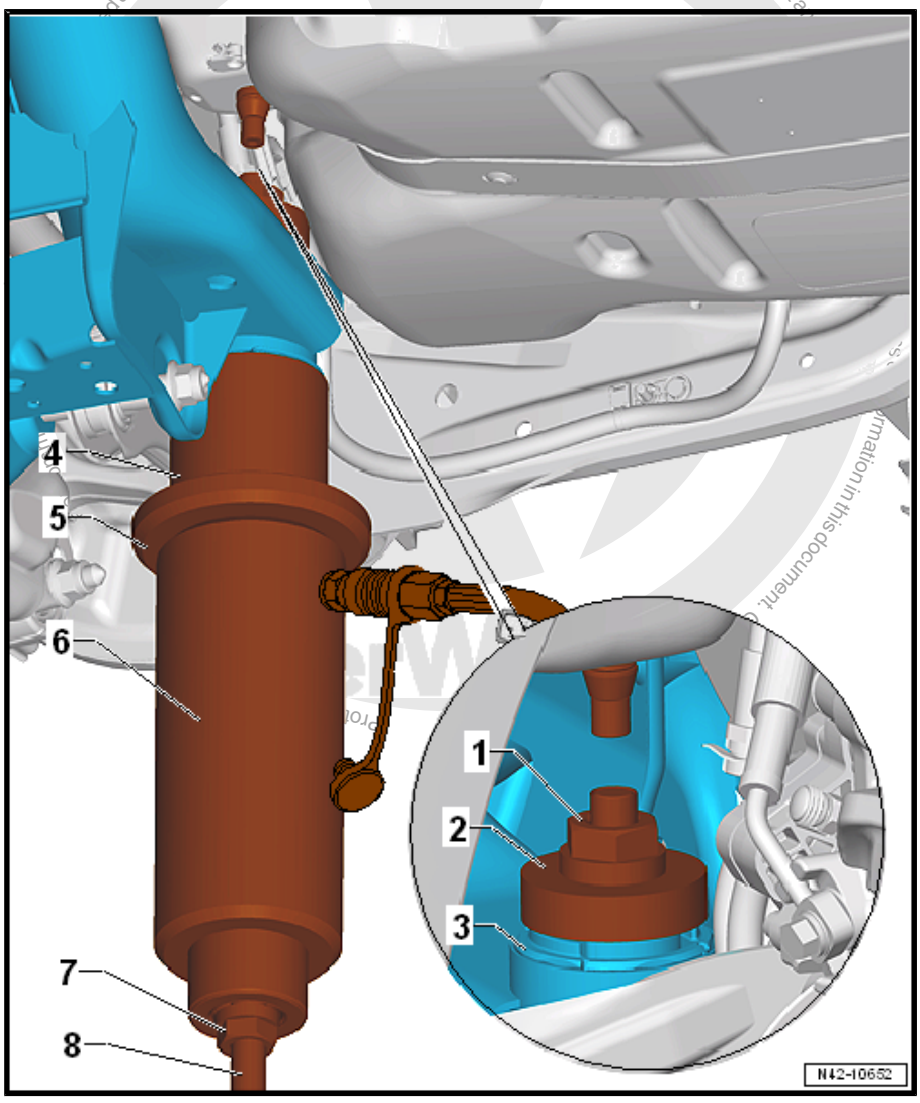
– Unclip the brake line -1- from the clip -arrow- on the left side.



Note

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

– Use the special tools as shown.



1 - -T10263/5-

2 - -T10356/1-

3 - Subframe

4 - -T10356/2- , side with shoulder points to subframe

5 - -T10205/1-

6 - -VAS6178- with -T10205/13-

7 - -T10263/5-

8 - -T10263/4-

– Pretension the special tools.

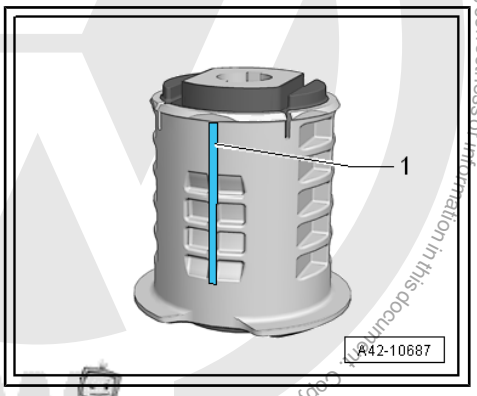
– Press out the bonded rubber bushing.

Note

- *When removing the bonded rubber bushing, the outer race collar on the bushing is sheared off. There is a loud crack when this happens.*
- *After removing the bonded rubber bushing, it must be removed from the -T10356/2- by tapping lightly with a hammer.*

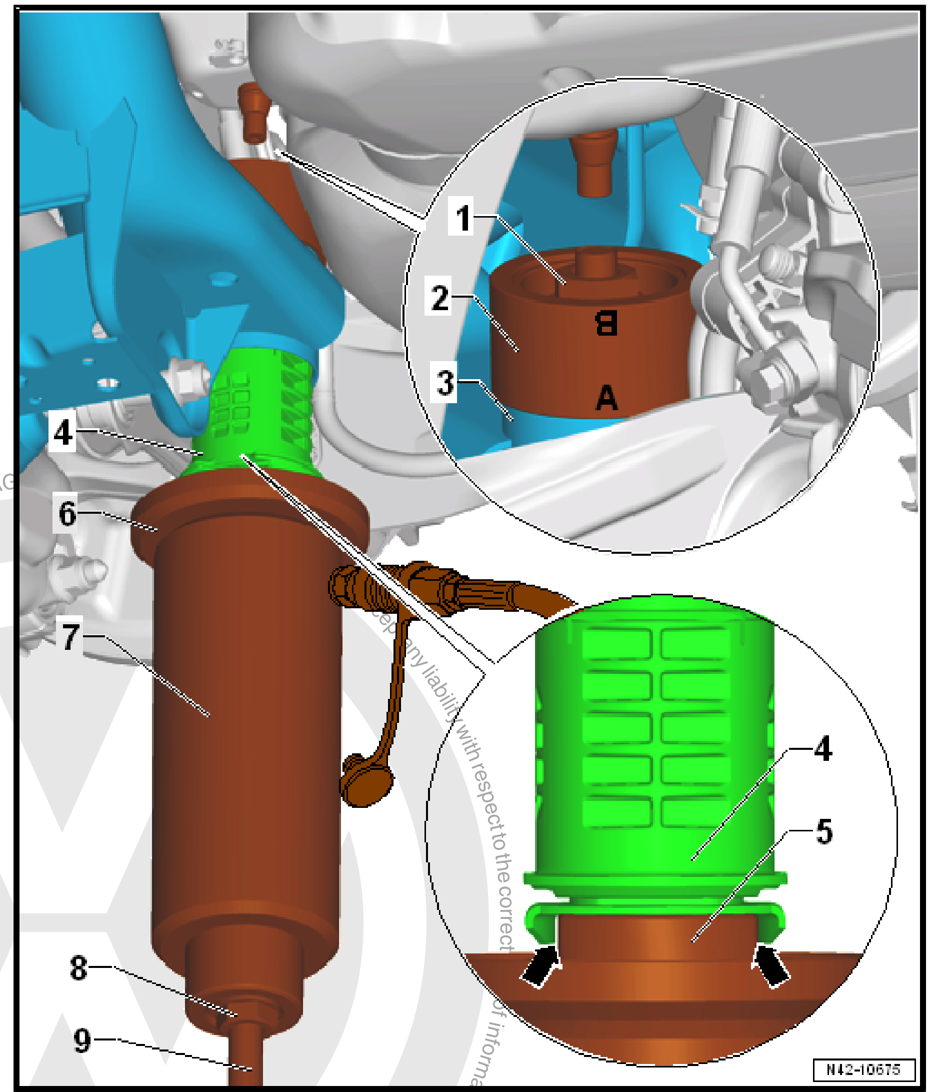
Press in on the Front Bonded Rubber Bushing

– 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 the special tools with bonded rubber bushing into the subframe as shown.



1 - -T10263/5-

2 - -T10356/7- - the mark -A- points to the subframe

3 - Subframe

4 - Adjust the bonded rubber bushing to the marks made previously (the marks need to align)

5 - -T10356/8- - the flattened sides need to fit into the cover of the bonded rubber bushing -arrows-.

6 - -T10205/1-

7 - -VAS6178- with -T10205/13-

8 - -T10263/5-

9 - -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 -VAS6178- to the -VAS6179- runs between the trailing arm and the fuel tank when installed.*
- *Make sure that the bonded rubber bushing is not bent when installing. Otherwise the outer ring could become damaged.*

– Operate the pump to press in the bonded rubber bushing until the collar is positioned on the subframe »without play«.

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

Tightening Specifications

- Refer to ⇒ “2.1.2 Overview - Subframe, Multi-Link Suspension, AWD”, page 164
- Refer to ⇒ “4.2 Overview - Tie Rod”, page 195
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Exhaust system. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/ Mufflers; Overview - Muffler .

2.4.2 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- or Engine and Gearbox Jack - VAG1383A-
- Hydraulic Press - VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit- Adapter 13 - T10205/13-
- Pneumatic/Hydraulic Foot Pump - VAS6179-
- Bearing Installer - Wheel Hub/Bearing Kit - T10205-

Note

- *If a bonded rubber bushing is faulty, then the bonded rubber bushing on the opposite side must also be replaced. Refer to the Parts Catalog for the allocation.*
- *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 bonded rubber bushing, the subframe must be lowered either at the front or at the rear. It is not necessary to remove the subframe.*
- *Identify the installation position to the subframe before removing the bonded rubber bushing.*

Pressing out Rear Bonded Rubber Bushing

– Loosen the wheel bolts.

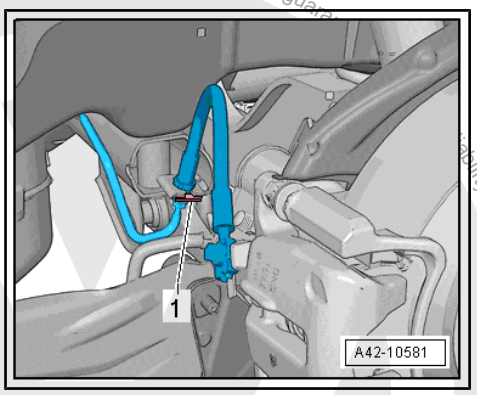
– Raise the vehicle.

– Remove the wheels.

– Remove the spring. Refer to ⇒ “5.4 Spring, Removing and Installing”, page 205 .

– Remove the rear muffler from the exhaust system. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .

– Remove the clamps -1- on both sides of the vehicle.



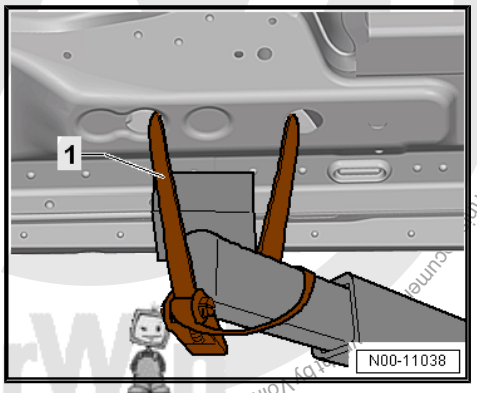
Note

Do not disconnect the brake line.

– If equipped, remove the underbody trim panel on the trailing arm mounting bracket. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Underbody Trim Panel; Component Location Overview - Underbody Trim Panels .

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

1 - -T10038-

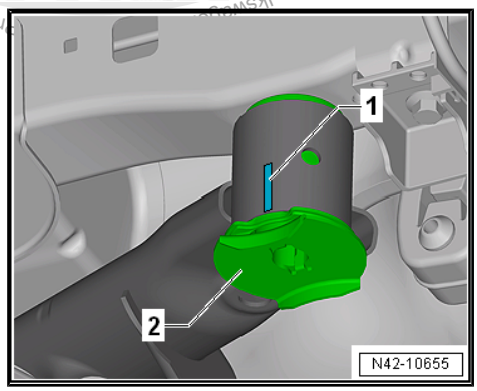


WARNING

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

– Secure the subframe. Refer to ⇒ “2.3 Subframe, Securing”, page 165 .

– Mark the installation location of the bonded rubber bushing on the subframe with a felt-tip pen -1-.

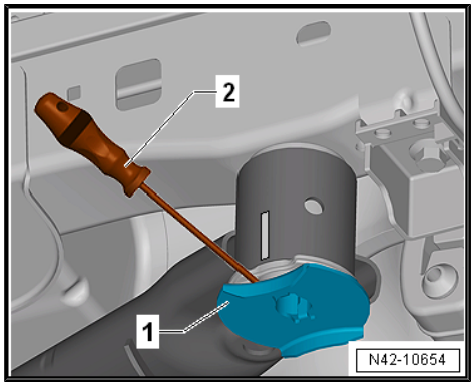


Note

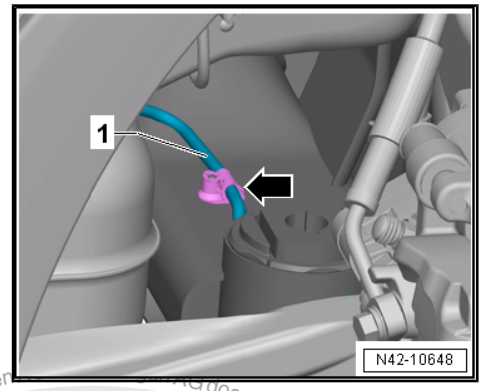
Apply the mark -1- on the subframe in the middle of the recess on the bonded rubber mounting -2-.

– Use a screwdriver -2- to pry off the anti-twist mechanism -1- near the bonded rubber bushing retaining tabs.

– Lower the subframe using the -VAS6931- or -VAG1383A- approximately 100 mm.



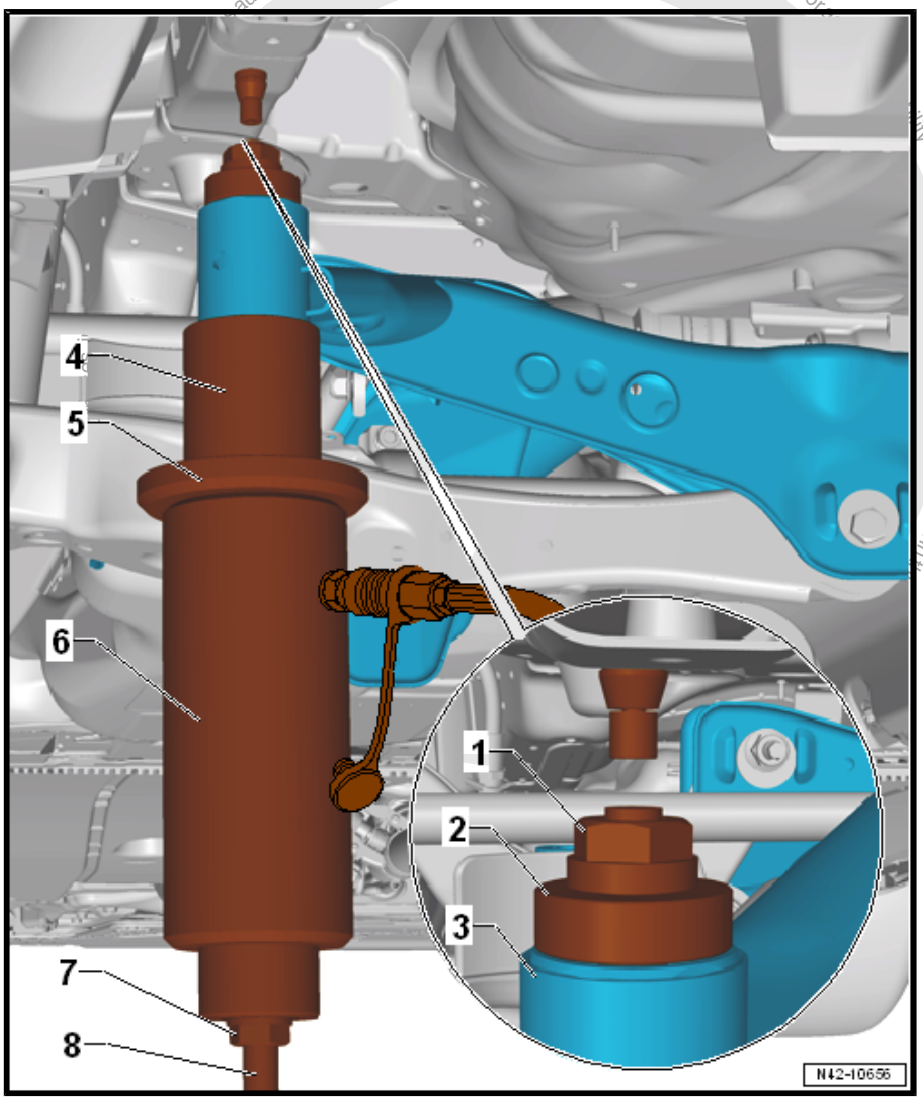
– Unclip the brake line -1- from the clip -arrow- on the left side.



Note

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

– Use the special tools as shown.



1 - -T10263/5-

2 - -T10356/5-

3 - Subframe

4 - -T10356/6- , side with offset points to subframe

5 - -T10205/1-

6 - -VAS6178- with -T10205/13-

7 - -T10263/5-

8 - -T10263/4-

– Pretension the special tools.

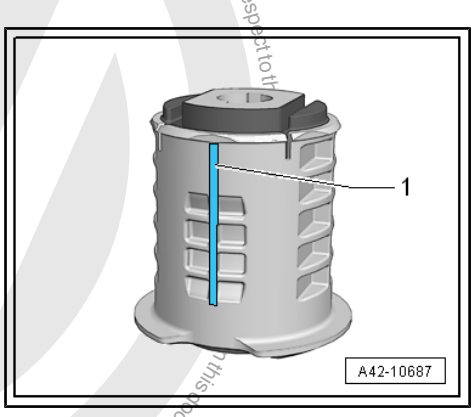
– Press out the bonded rubber bushing.

Note

- *When removing the bonded rubber bushing, the outer race collar on the bushing is sheared off. There is a loud crack when this happens.*
- *After removing the bonded rubber bushing, it must be removed from the -T10356/6- by tapping lightly with a hammer.*

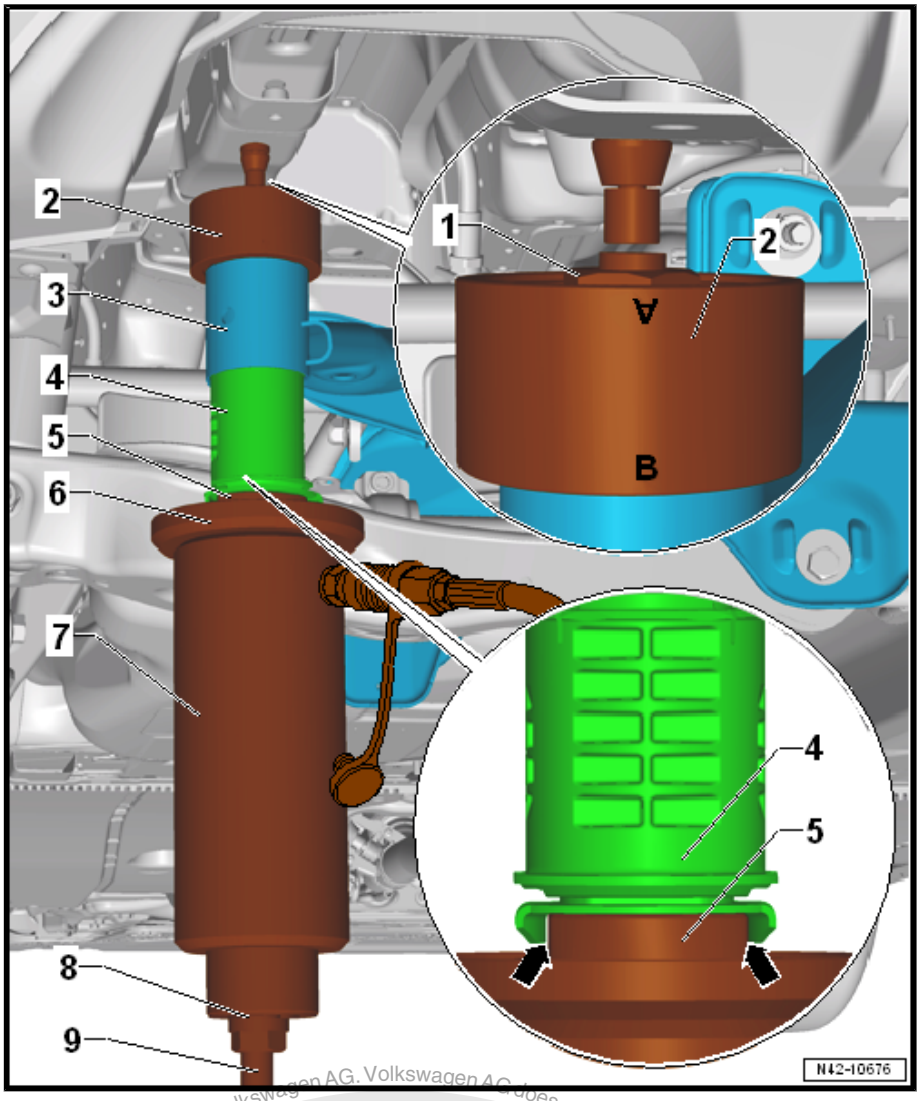
Press in the Rear Bonded Rubber Bushing

– 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 the special tools with bonded rubber bushing into the subframe as shown.



1 - -T10263/5-

2 - -T10356/7- - the marking -B- points to the subframe

3 - Subframe

4 - Adjust the bonded rubber bushing to the marks made previously (the marks need to align)

5 - -T10356/8- - the flattened sides need to fit into the cover of the bonded rubber bushing -arrows-.

6 - -T10205/1-

7 - -VAS6178- with -T10205/13-

8 - -T10263/5-

9 - -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 bonded rubber bushing is not bent when installing. Otherwise the outer ring could become damaged.

– Operate the pump to press in the bonded rubber bushing until the collar is positioned on the subframe »without play«.

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

Tightening Specifications

- Refer to ⇒ “2.1.2 Overview - Subframe, Multi-Link Suspension, AWD”, page 164
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Exhaust system. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/ Mufflers; Overview - Muffler .

3 Stabilizer Bar

3.1 Overview - Stabilizer Bar

3.1.1 Overview - Stabilizer Bar, Multi-Link Suspension, FWD

1 - Subframe

2 - Stabilizer Bar

- ❑ With rubber bushings
- ❑ Removing and installing. Refer to ⇒ “3.2 Stabilizer Bar, Removing and Installing”, page 188 .

3 - Lower Transverse Link

4 - Nut

- ❑ 20 Nm +180°
- ❑ Replace after removing.

5 - Coupling Rod

- ❑ Removing and installing. Refer to ⇒ “3.3 Coupling Rod, Removing and Installing”, page 189 .

6 - Bolt

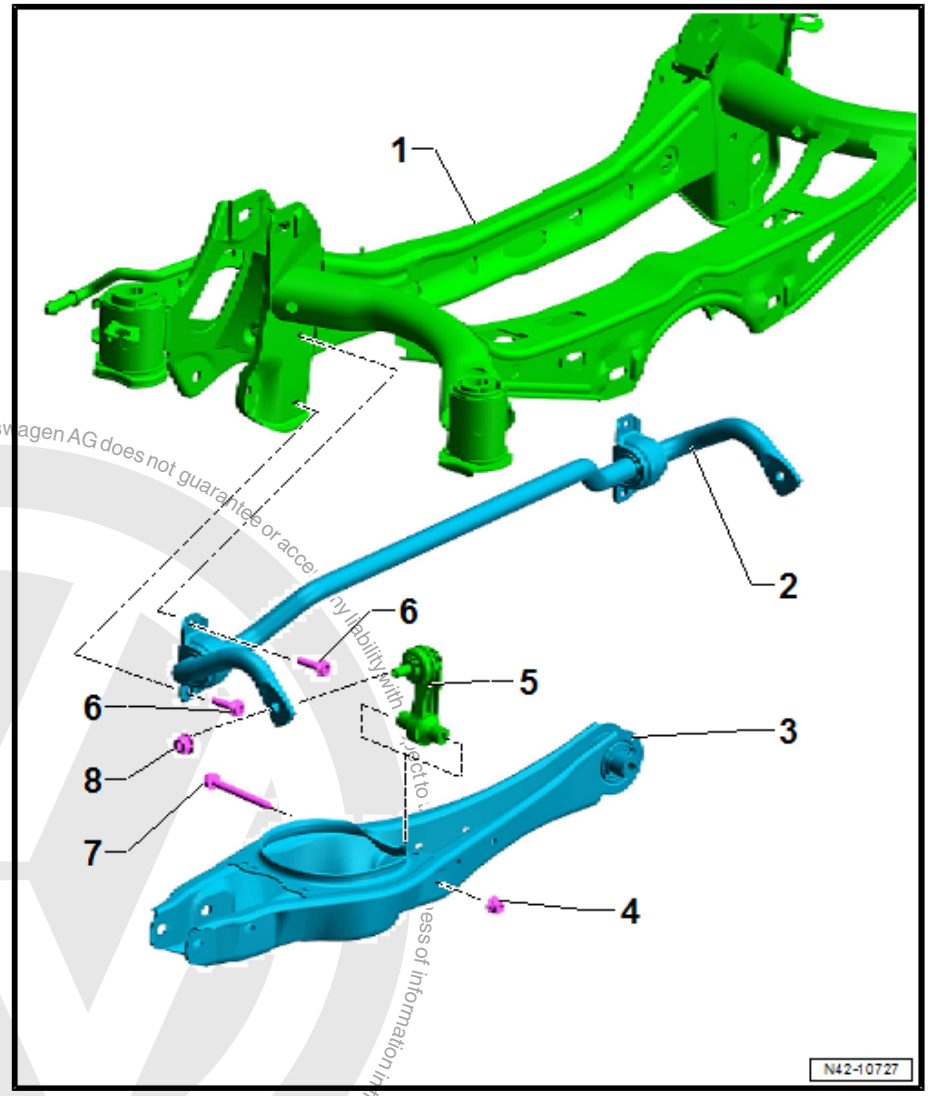
- ❑ 20 Nm +90°
- ❑ Replace after removing.
- ❑ Install evenly

7 - Bolt

- ❑ Replace after removing.

8 - Nut

- ❑ 55 Nm
- ❑ Counterhold at connecting link socket head when tightening



3.1.2 Overview - Stabilizer Bar, Multi-Link Suspension, AWD

1 - Lower Transverse Link

2 - Nut

- ❑ 20 Nm +180°
- ❑ Replace after removing.

3 - Coupling Rod

- ❑ Removing and installing. Refer to ⇒ “3.3 Coupling Rod, Removing and Installing”, page 189 .

4 - Bolt

- ❑ 20 Nm +90°
- ❑ Replace after removing.
- ❑ Install evenly

5 - Bolt

- ❑ Replace after removing.

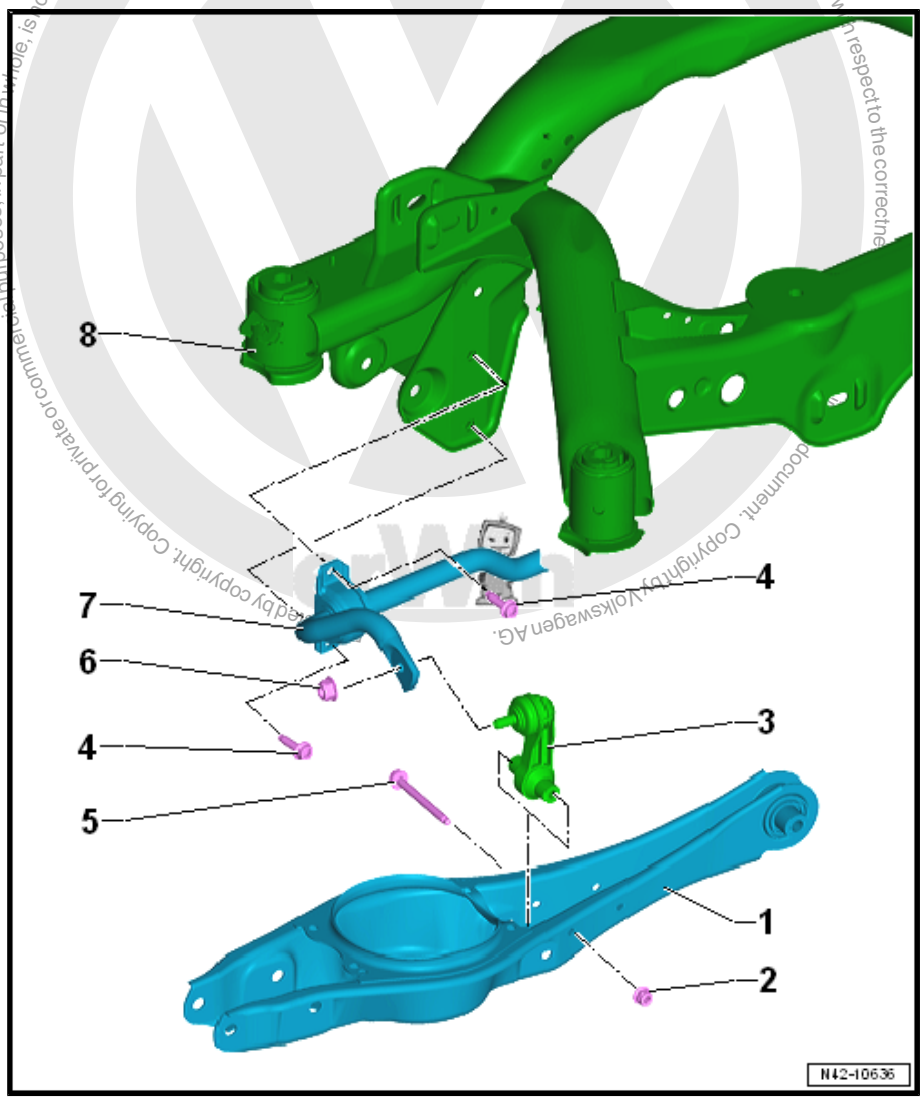
6 - Nut

- ❑ 55 Nm
- ❑ Counterhold at connecting link socket head when tightening

7 - Stabilizer Bar

- ❑ With rubber bushings
- ❑ Removing and installing. Refer to ⇒ “3.2 Stabilizer Bar, Removing and Installing”, page 188 .

8 - Subframe



3.2 Stabilizer Bar, Removing and Installing

Special tools and workshop equipment required

♦ Torque Wrench 1331 5-50Nm - VAG1331-

Removing

Note

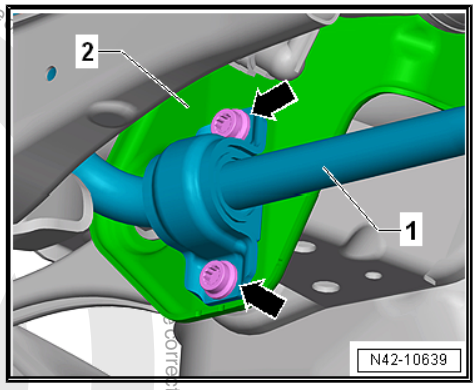
The following work steps are described for the left side of the vehicle. These work steps also apply At the same time for right side of vehicle.

Vehicles with Rear Axle Trim Panel

– Remove the rear axle trim panel. Refer to ⇒ “1.4 Rear Axle Trim Panel, Removing and Installing”, page 162 .

Continuation for All Vehicles

– Remove the bolts -arrows- for the stabilizer bar -1-



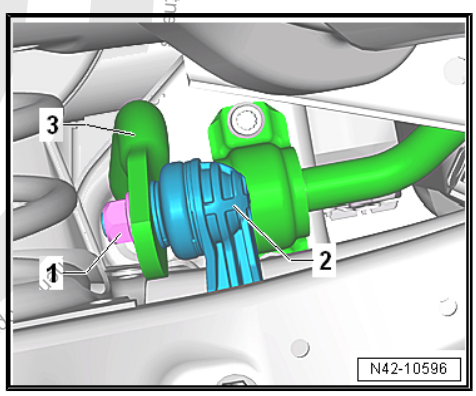
– Remove the nut -1- from the coupling rod -2-.
– Remove the coupling rod -2- from the stabilizer bar -3-.
– Remove the stabilizer bar -3- from the subframe.

AWD Vehicles

– Guide out the stabilizer bar over the exhaust system.

Installing

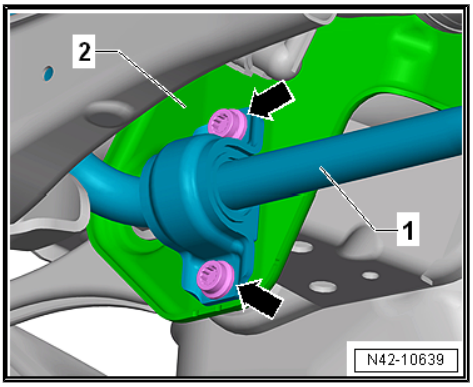
Install in reverse order of removal while noting the following:



– Evenly tighten the bolts -arrows- for the stabilizer bar -1- to the subframe -2-.

Tightening Specifications

- Refer to ⇒ “3.1 Overview - Stabilizer Bar”, page 187
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .



3.3 Coupling Rod, Removing and Installing

Special tools and workshop equipment required

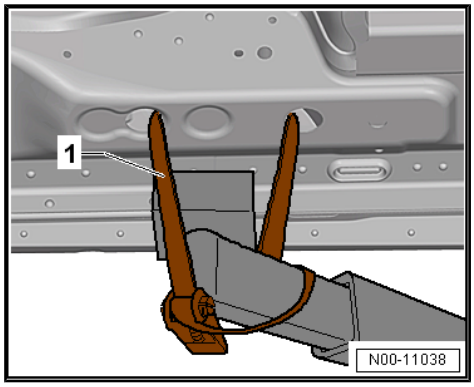
- Torque Wrench 1331 5-50Nm - VAG1331-
- Tensioning Strap - T10038-
- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-

Removing

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

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

1 - -T10038-



WARNING

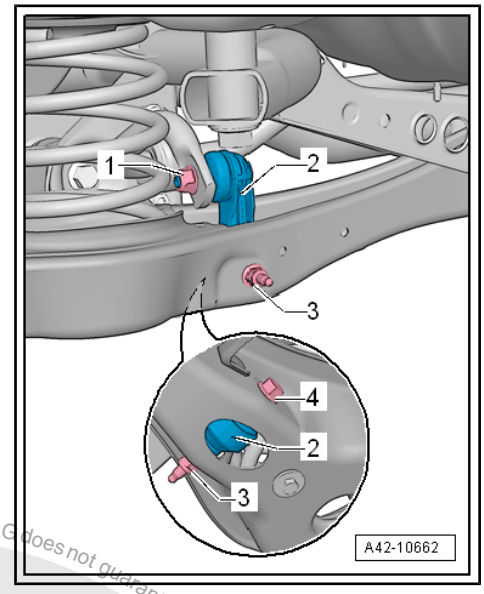
The vehicle could slide off the hoist if it is not secured.

– Position the - VAS6931- or -VAG1383A- under the transverse link upward.

– Slightly push the lower transverse link upward.

– Remove the nuts -1 and 3- and the bolt -4-.

– Remove the coupling rod -2- from the stabilizer bar and trailing arm.

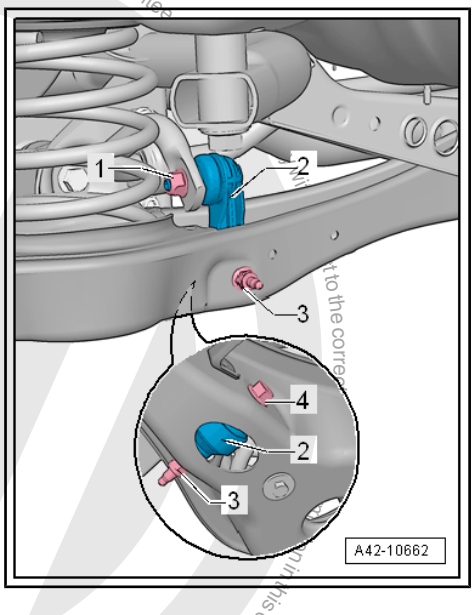


Installing

Install in reverse order of removal while noting the following:

– Insert the coupling rod -2-, install the nuts -1 and 3- and tighten in curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

– When tightening the nut -1-, counterhold at the inner multi-point fitting of the bolt.



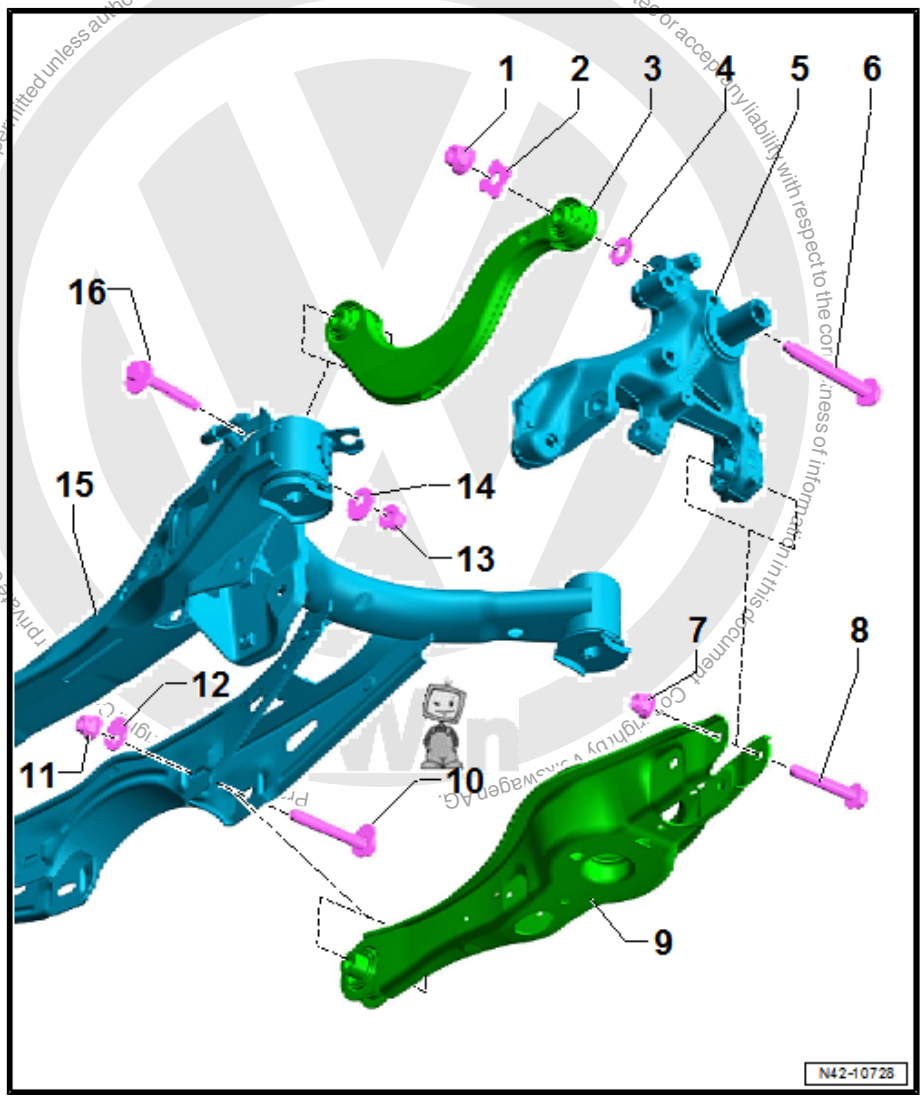
Tightening Specifications

- Refer to ⇒ “3.1 Overview - Stabilizer Bar”, page 187
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .

4 Control Arm, Tie Rod

4.1 Overview - Transverse Link

4.1.1 Overview - Transverse Link, Multi-Link Suspension, FWD



1 - Nut

- ❑ Replace after removing.

2 - Washer

3 - Upper Transverse Link

- ❑ Removing and installing. Refer to ⇒ “4.3 Upper Transverse Link, Removing and Installing”, page 196 .

4 - Washer

5 - Wheel Bearing Housing

6 - Bolt

- ❑ 130 Nm + 180°
- ❑ Replace after removing.
- ❑ Always tighten the threaded connections in curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

7 - Nut

- ❑ Replace after removing.

8 - Bolt

- ❑ 70 Nm + 180°
- ❑ Replace after removing.
- ❑ Always tighten the threaded connections in curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

9 - Lower Transverse Link

- ❑ Removing and installing. Refer to ⇒ “4.4 Lower Transverse Link, Removing and Installing”, page 197 .

10 - Eccentric Screw

- ❑ Perform a vehicle alignment after loosening. Refer to ⇒ “1 Axle Alignment”, page 278 .
- ❑ Do not turn more than 90° right or left (that is smallest to largest possible adjustment)

11 - Nut

- ❑ 95 Nm
- ❑ Replace after removing.
- ❑ Always tighten the threaded connections in curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

12 - Eccentric Washer

- ❑ Inner hole with tab

13 - Nut

- ❑ 95 Nm
- ❑ Replace after removing.
- ❑ Always tighten the threaded connections in curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

14 - Eccentric Washer

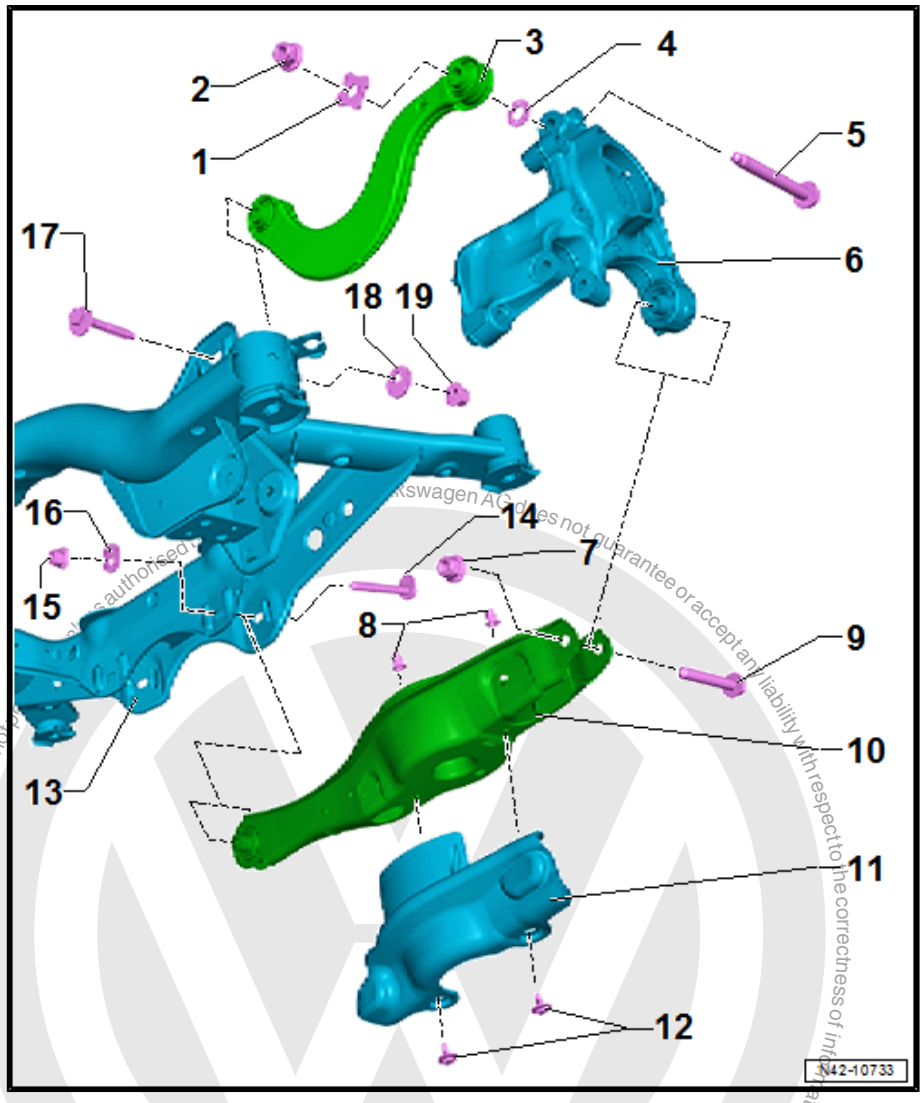
- ❑ Inner hole with tab

15 - Subframe

16 - Eccentric Screw

- ❑ Perform a vehicle alignment after loosening. Refer to ⇒ “1 Axle Alignment”, page 278 .
- ❑ Do not turn more than 90° right or left (that is smallest to largest possible adjustment)

4.1.2 Overview - Transverse Link, Multi-Link Suspension, AWD



1 - Washer

2 - Nut

- ❑ Replace after removing.

3 - Upper Transverse Link

- ❑ Removing and installing. Refer to ⇒ “4.3 Upper Transverse Link, Removing and Installing”, page 196 .

4 - Washer

5 - Bolt

- ❑ 130 Nm + 180°
- ❑ Replace after removing.
- ❑ Always tighten the threaded connections in curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

6 - Wheel Bearing Housing

7 - Nut

- ❑ Replace after removing.

8 - Expanding Rivet

9 - Bolt

- ❑ 70 Nm + 180°
- ❑ Replace after removing.
- ❑ Always tighten the threaded connections in curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

10 - Lower Transverse Link

- ❑ Removing and installing. Refer to ⇒ “4.4 Lower Transverse Link, Removing and Installing”, page 197 .

11 - Stone Chip Protection

12 - Bolt

- ❑ 8 Nm

13 - Subframe

14 - Eccentric Screw

- ❑ Perform a vehicle alignment after loosening. Refer to ⇒ “1 Axle Alignment”, page 278 .
- ❑ Do not turn more than 90° right or left (that is smallest to largest possible adjustment)

15 - Nut

- ❑ 95 Nm
- ❑ Replace after removing.
- ❑ Always tighten the threaded connections in curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

16 - Eccentric Washer

- ❑ Inner hole with tab

17 - Eccentric Screw

- ❑ Perform a vehicle alignment after loosening. Refer to ⇒ “1 Axle Alignment”, page 278 .
- ❑ Do not turn more than 90° right or left (that is smallest to largest possible adjustment)

18 - Eccentric Washer

- ❑ Inner hole with tab

19 - Nut

- ❑ 95 Nm
- ❑ Replace after removing.
- ❑ Always tighten the threaded connections in curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

4.2 Overview - Tie Rod

⇒ “4.2.1 Overview - Tie Rod, Multi-Link Suspension, FWD”, page 195

⇒ “4.2.2 Overview - Tie Rod, Multi-Link Suspension, AWD”, page 196

4.2.1 Overview - Tie Rod, Multi-Link Suspension, FWD

1 - Subframe

2 - Bolt

- ❑ 70 Nm + 180°
- ❑ Replace after removing.

3 - Wheel Bearing Housing

4 - Tie Rod

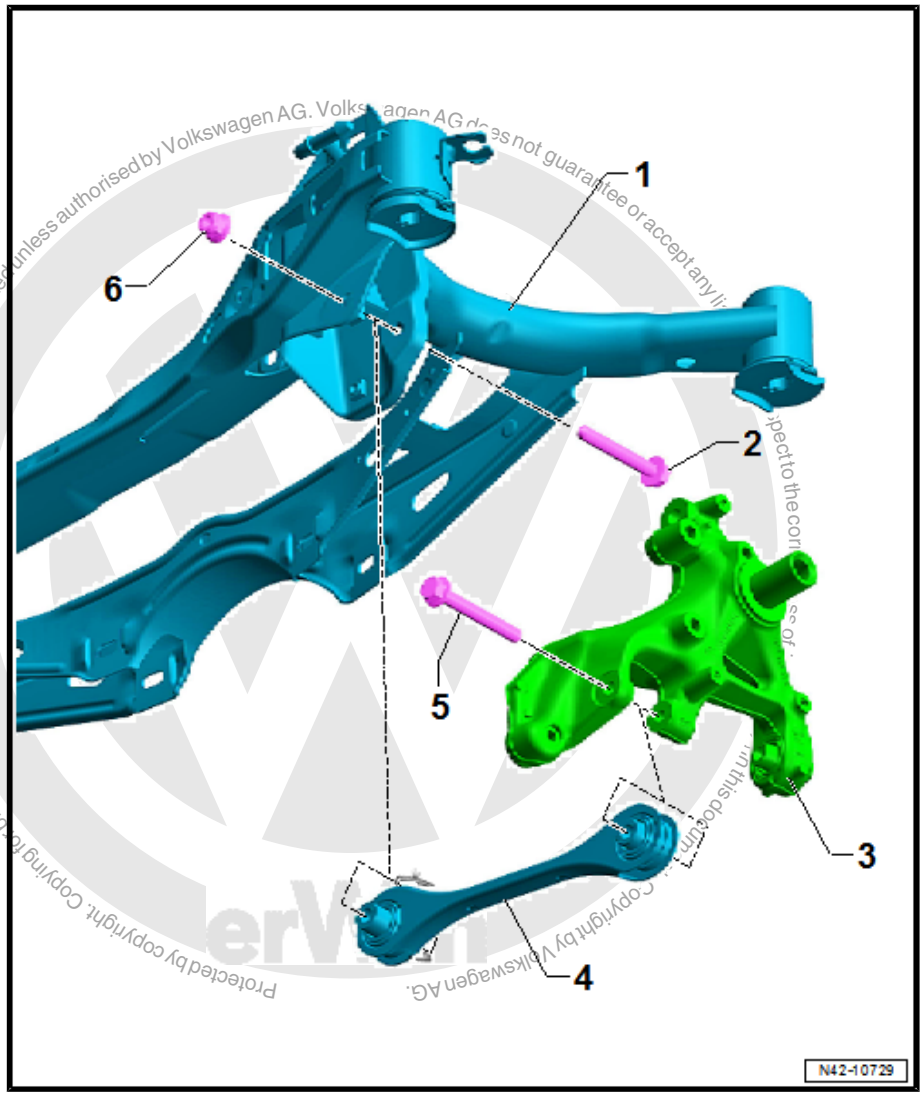
- ❑ Removing and installing. Refer to ⇒ “4.5 Tie Rod, Removing and Installing”, page 198 .

5 - Bolt

- ❑ 70 Nm + 180°
- ❑ Replace after removing.
- ❑ Always tighten the threaded connections in curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

6 - Nut

- ❑ Replace after removing.



4.2.2 Overview - Tie Rod, Multi-Link Suspension, AWD

1 - Subframe

2 - Bolt

- ❑ Replace after removing.

3 - Wheel Bearing Housing

4 - Tie Rod

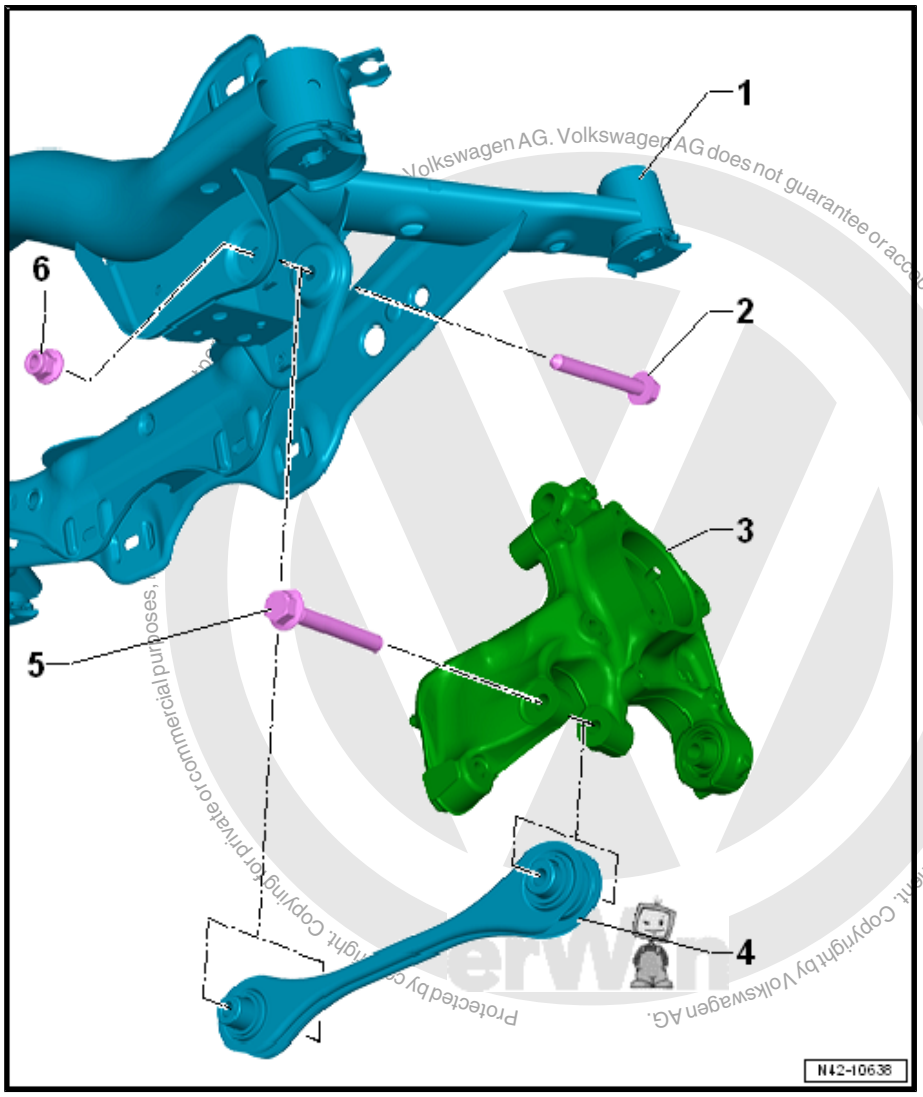
- ❑ Removing and installing. Refer to ⇒ “4.5 Tie Rod, Removing and Installing”, page 198 .

5 - Bolt

- ❑ 70 Nm + 180°
- ❑ Replace after removing.
- ❑ Always tighten the threaded connections in curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

6 - Nut

- ❑ 70 Nm + 180°
- ❑ Replace after removing.



4.3 Upper Transverse Link, Removing and Installing

Special tools and workshop equipment required

♦ Torque Wrench 1332 40-200Nm - VAG1332-

Removing

– Loosen the wheel bolts.

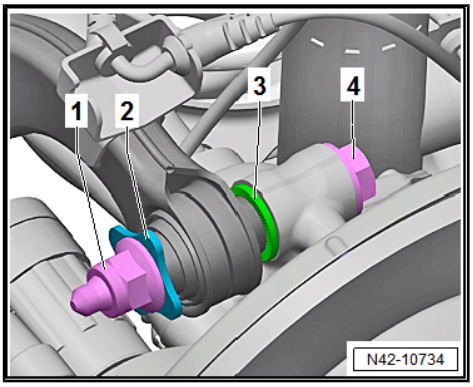
– Raise the vehicle.

– Remove the wheels.

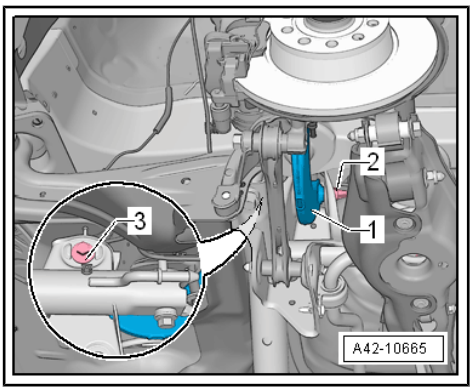
– Remove the spring. Refer to ⇒ “5.4 Spring, Removing and Installing”, page 205 .

– If equipped, disengage the line from the bracket on the transverse link.

– Unscrew the nut -1- and remove the washer -2-.
– Remove the bolt -4-.
– Remove the washer -3-.



– Mark the position of eccentric screw -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 while noting the following:

- Only fasten the control arm in the curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

Tightening Specifications

♦ Refer to ⇒ “4.1 Overview - Transverse Link”, page 191
♦ Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
– Perform an axle alignment. Refer to ⇒ “1.6 Need for Axle Alignment, Evaluating”, page 284 .

4.4 Lower Transverse Link, Removing and Installing

Special tools and workshop equipment required

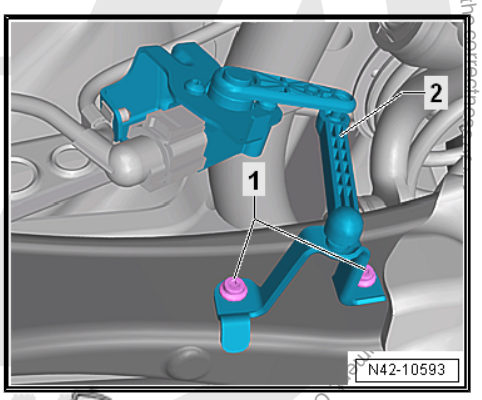
♦ Torque Wrench 1332 40-200Nm - VAG1332-

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 - G76- -2- bracket.



Vehicles with Stone Chip Protection

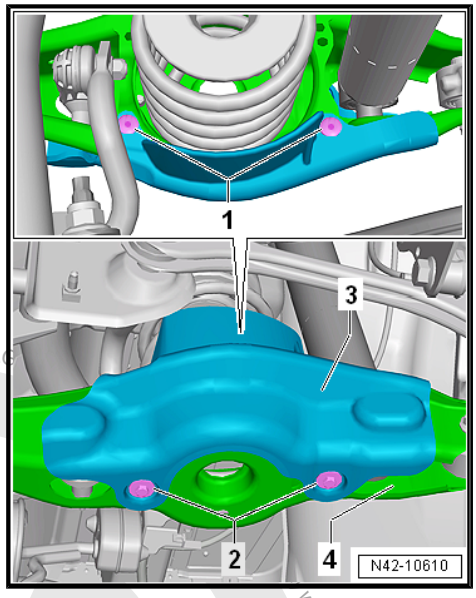
– Remove the expanding rivets -1-.

– Remove the bolts -2- for the stone chip protection -3-.

Continuation for All Vehicles

– Remove the spring. Refer to ⇒ “5.4 Spring, Removing and Installing”, page 205 .

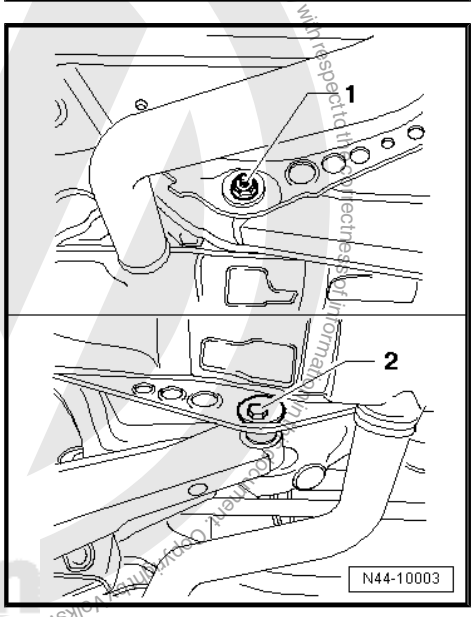
– Disengage the rear exhaust system and lower it. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .



– 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 the lower transverse link.



Installing

Install in reverse order of removal while noting the following:

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

♦ Refer to ⇒ “4.1 Overview - Transverse Link”, page 191

♦ Refer to ⇒ “2.2.1 Overview - Rear Level Control System Sensor, Multi-Link Suspension, FWD”, page 272

♦ Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .

♦ 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. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

– Perform an axle alignment. Refer to ⇒ “1.6 Need for Axle Alignment, Evaluating”, page 284 .

4.5 Tie Rod, Removing and Installing

Special tools and workshop equipment required

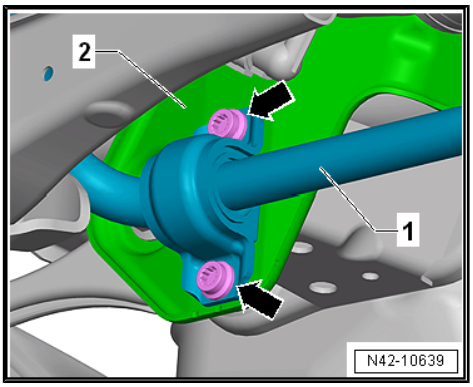
♦ Torque Wrench 1331 5-50Nm - VAG1331-

♦ Torque Wrench 1332 40-200Nm - VAG1332-

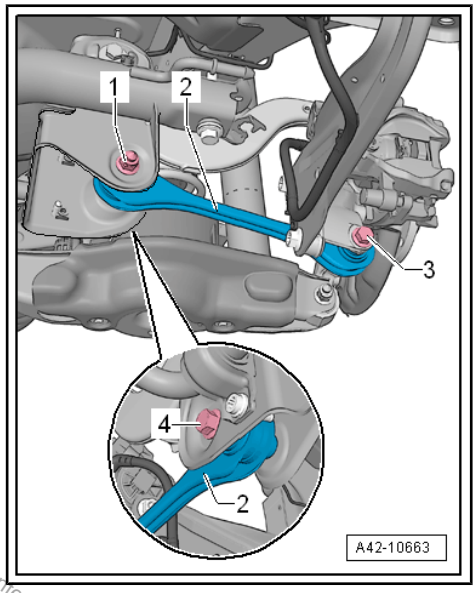
Removing

– 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 remove the bolt -4- toward the rear while pressing the stabilizer bar upward.
– Remove the tie rod -2-.



Installing

Install in reverse order of removal while noting the following:

Tightening Specifications

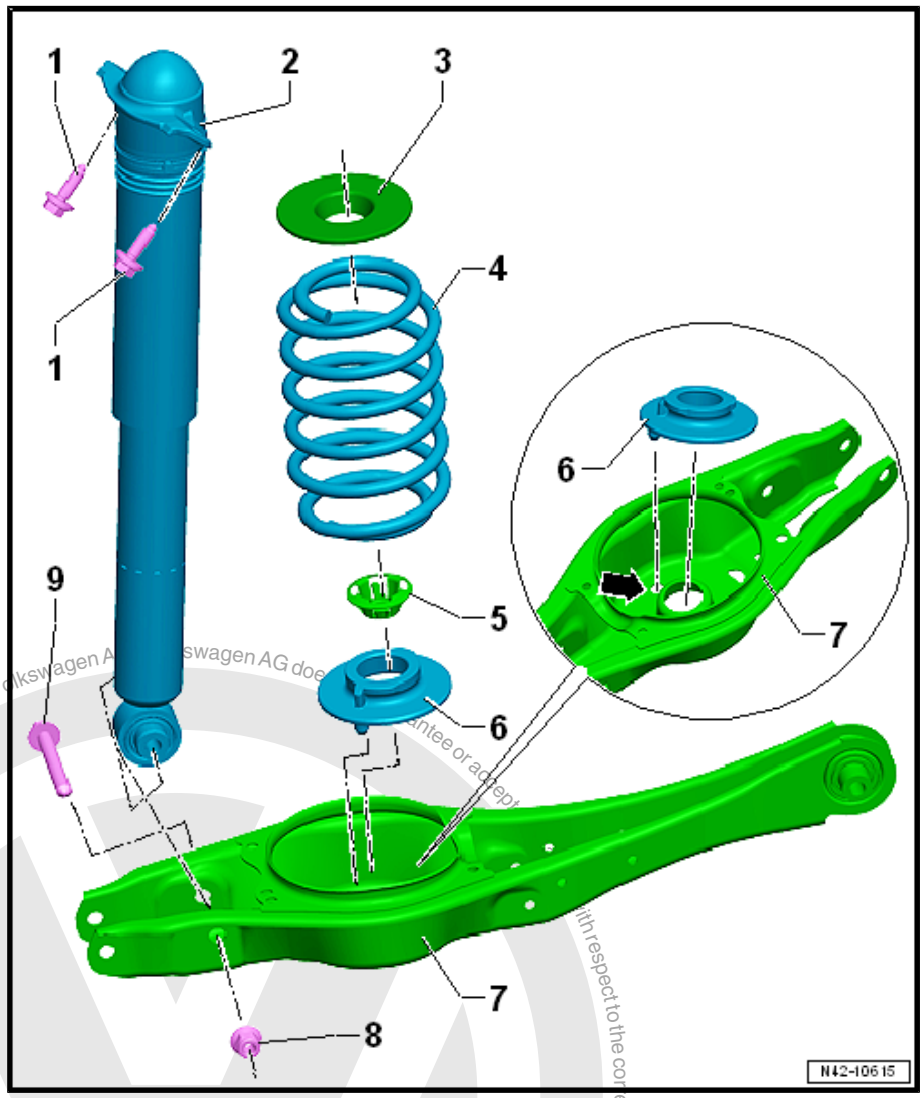
- Refer to ⇒ “4.2 Overview - Tie Rod”, page 195
- Refer to ⇒ “3.1 Overview - Stabilizer Bar”, page 187
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .

• The tie rod may only be fastened when the dimension measured before assembly between the center of the wheel hub and the wheel housing lower edge is achieved. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

– Perform an axle alignment. Refer to ⇒ “1.6 Need for Axle Alignment, Evaluating”, page 284 .

5 Suspension Strut, Shock Absorber, Spring

5.1 Overview - Suspension Strut, Shock Absorber, Spring



1 - Bolt

- ❑ 50 Nm +45°
- ❑ Replace after removing.

2 - Shock Absorber

- ❑ Removing and installing. Refer to ⇒ “5.2 Shock Absorber, Removing and Installing”, page 201 .
- ❑ Observe the installation position of the cable tie closure
- ❑ Always vent and drain faulty shock absorbers before disposal. Refer to ⇒ “4.2 Rear Gas-Filled Shock Absorbers, Venting and Draining”, page 16 .

3 - Upper Spring Support

- ❑ Place on body “tab”.

4 - Spring

- ❑ Removing and installing. Refer to ⇒ “5.4 Spring, Removing and Installing”, page 205 .

5 - Clip

- ❑ No replacement part

6 - Lower 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 removing.
- ❑ Always tighten threaded connection in curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

9 - Bolt

❑ Replace after removing.

5.2 Shock Absorber, Removing and Installing

Special tools and workshop equipment required

- Tensioning Strap - T10038-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Torque Wrench - VAG1410-
- 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 lifting arms using the -T10038- .

1 - -T10038-

WARNING

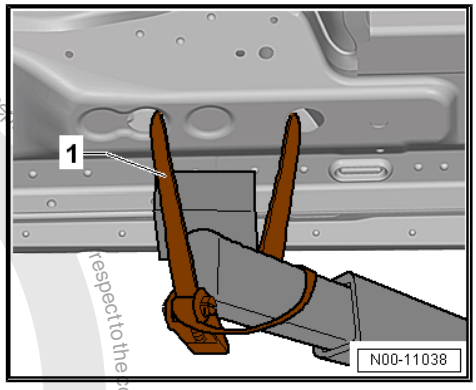
The vehicle could slide off the hoist if it is not secured.

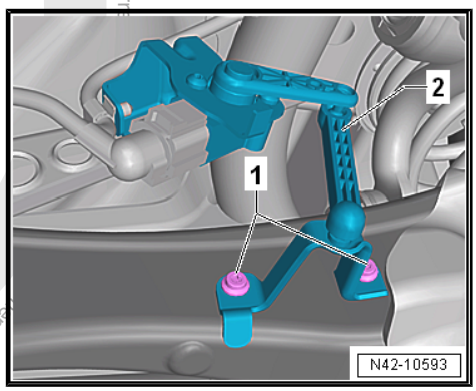
– Remove the rear wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Wheel Housing Liner; Rear Wheel Housing Liner, Removing and Installing .

Vehicles with Level Control System Sensor

– Remove the bolts -1-.

– Remove the Left Rear Level Control System Sensor - G76- -2- bracket.

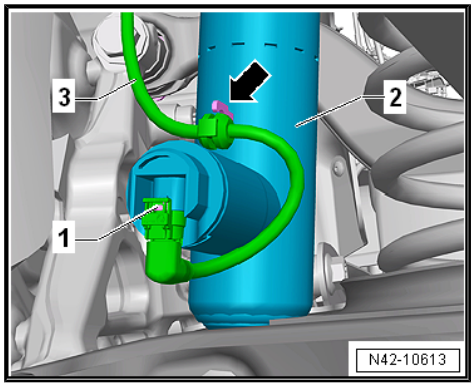




Vehicles with Adaptive Chassis DCC

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

– Remove the wire -3- from the shock absorber -2- -arrow-.



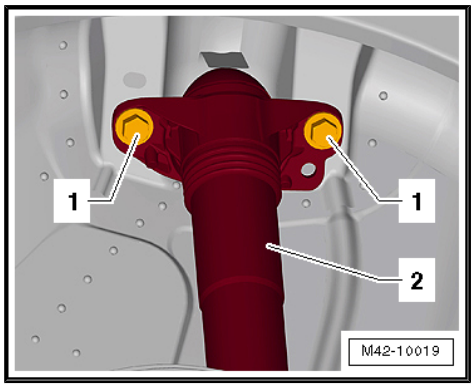
Note

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

Continuation for All Vehicles

– Position the - VAS6931- or -VAG1383A- under the transverse link and push lightly upward.

– Remove the bolts -1- from the shock absorber -2-.



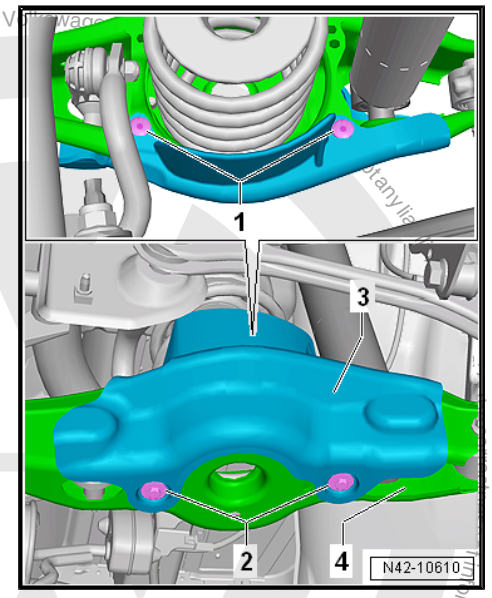
Vehicles with Stone Chip Protection

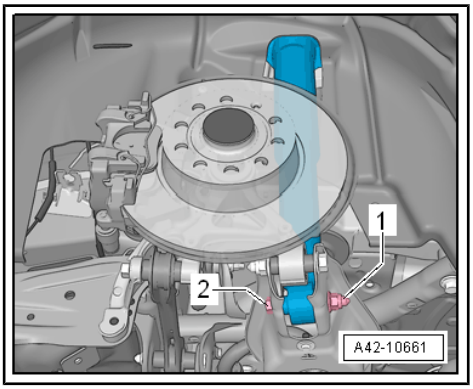
– Remove the expanding rivets -1-.

– 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

Install in reverse order of removal. Note the following:

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “5.1 Overview - Suspension Strut, Shock Absorber, Spring”, page 200
- Refer to ⇒ “4.1 Overview - Transverse Link”, page 191
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Wheel Housing Liner; Rear Wheel Housing Liner, Removing and Installing .
- Only fasten the shock absorber with the lower transverse link in the curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

5.3 Shock Absorber, Servicing

Special tools and workshop equipment required

- Torque Wrench 1331 5-50Nm - VAG1331-
- Shock Absorber Set - T10001-
- Commercially available ring socket wrench, such as »Hazet 6630c-21«

1 - Shock Absorber

- ❑ Removing and installing. Refer to ⇒ “5.2 Shock Absorber, Removing and Installing”, page 201 .
- ❑ Always vent and drain faulty shock absorbers before disposal. Refer to ⇒ “4 Disposal”, page 15 .
- ❑ Shock Absorber, Checking. Refer to ⇒ “2 Repair Information”, page 3 .

2 - Protective Pipe

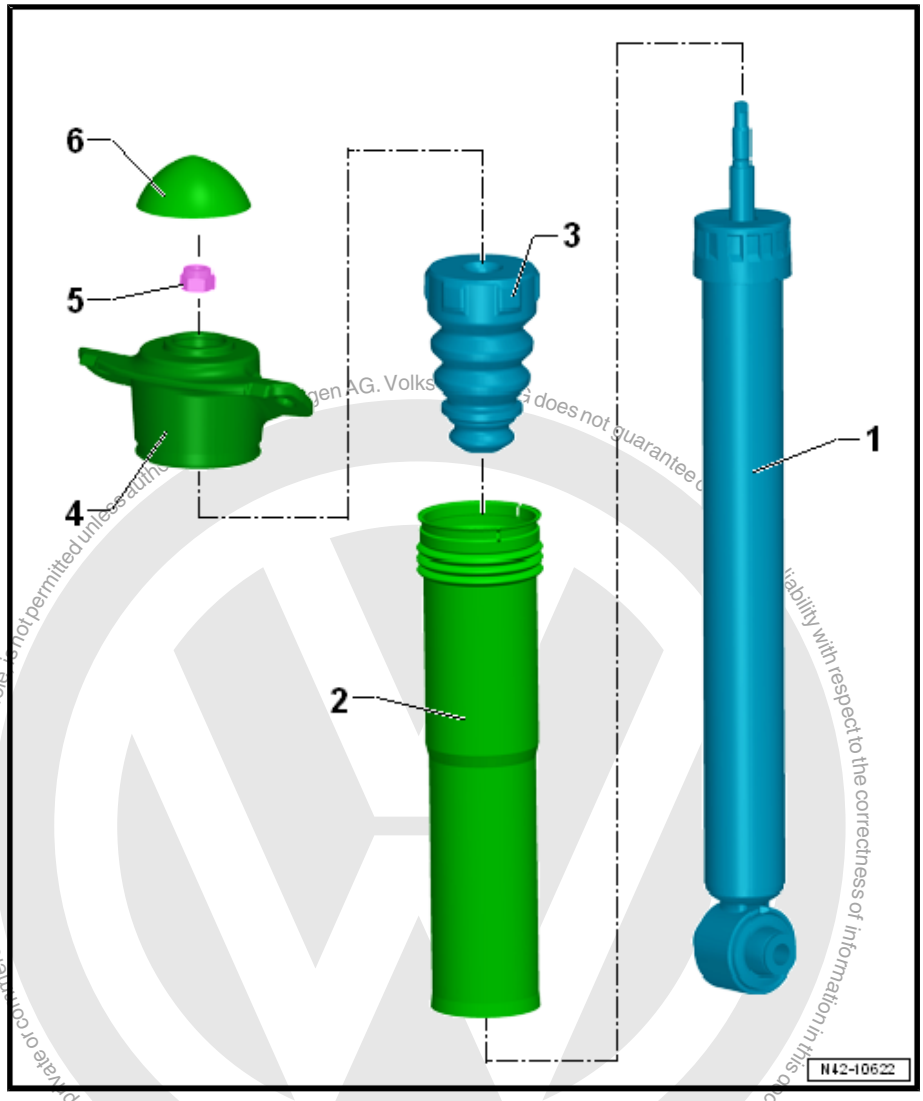
3 - Stop Buffer

4 - Shock Absorber Mount

5 - Nut

- ❑ 25 Nm
- ❑ Replace after removing.
- ❑ Loosening and tightening. Refer to ⇒ Fig. ““Shock Absorber Mount Threaded Connection, Loosening and Tightening”“ , page 204 .

6 - Cover



Shock Absorber Mount Threaded Connection, Loosening and Tightening

1 - Commercially available ring socket wrench, such as »Hazet 6630c-21«

2 - -T10001/9-

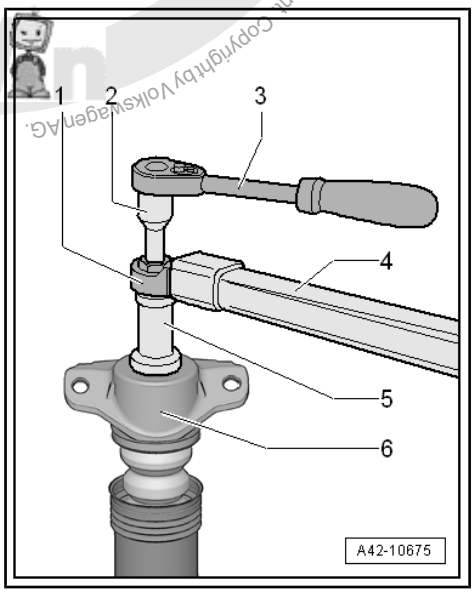
3 - Commercially Available Ratchet

4 - -VAG1331-

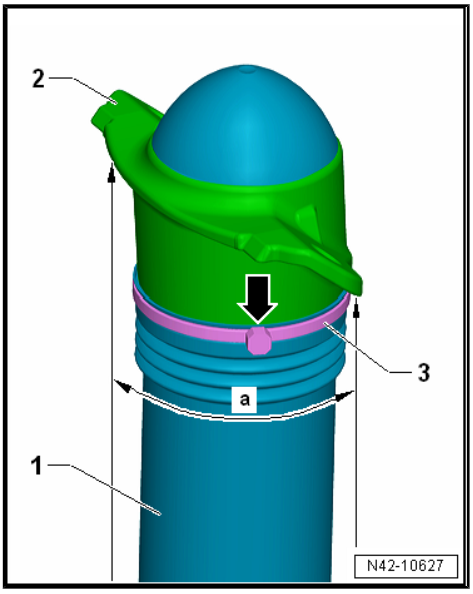
5 - -T10001/1-

6 - Shock Absorber Mount

Install in reverse order of removal. Note 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 ⇒ “5.3 Shock Absorber, Servicing”, page 203

5.4 Spring, Removing and Installing

Special tools and workshop equipment required

♦ Tensioning Strap - T10038-
♦ Torque Wrench 1332 40-200Nm - VAG1332-
♦ Torque Wrench - VAG1410-
♦ Spring Compressor Kit - VAG1752-
♦ Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-

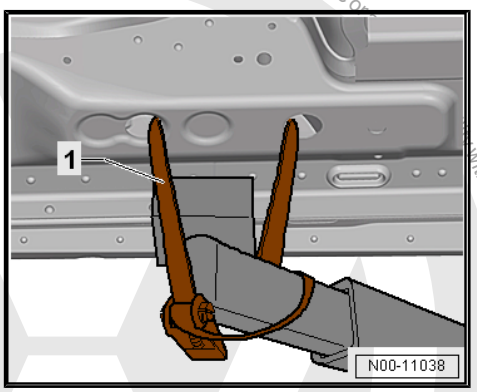
Removing

– Loosen the wheel bolts.
– Raise the vehicle.
– Remove the wheel.
– Secure both sides of the vehicle on the hoist lifting arms using the -T10038- .

1 - -T10038-

WARNING

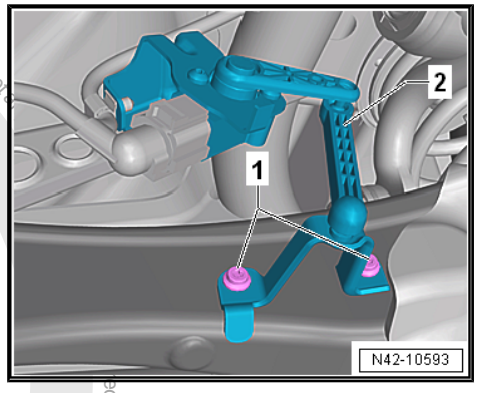
The vehicle could slide off the hoist if it is not secured.



Vehicles with Level Control System Sensor

– Remove the bolts -1-.

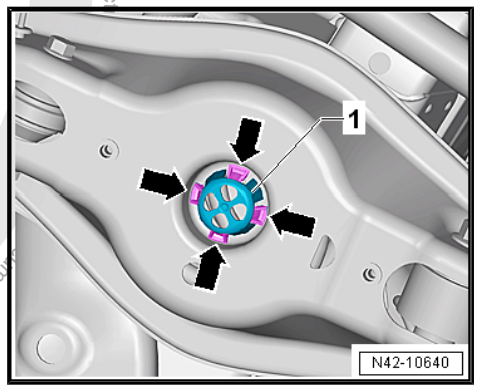
– Remove the Left Rear Level Control System Sensor - G76- -2- bracket.



Continuation for All Vehicles

– Press the tabs -arrows- on the assembly aid -1- inward.

– Remove the assembly aid -1- upward.



Note

The assembly aid -1- is destroyed during removal. It does not have to be reinstalled.

– Position the -VAS6931- or -VAG1383A- under the transverse link and push lightly upward.

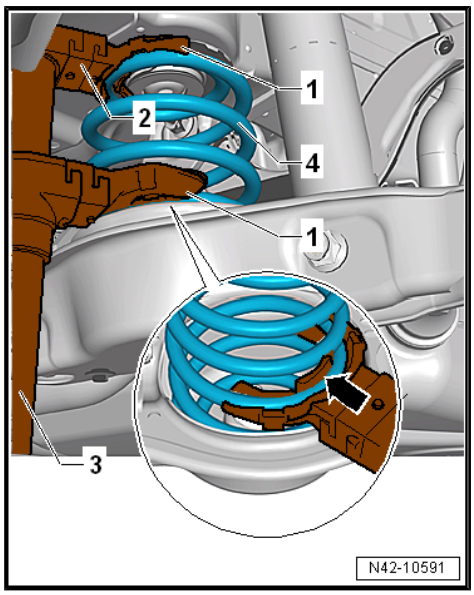
– Insert the Spring Compressor -3-.

1 - -VAG1752/3A-

2 - -VAG1752/9-

3 - -VAG1752/1-

4 - Spring



WARNING

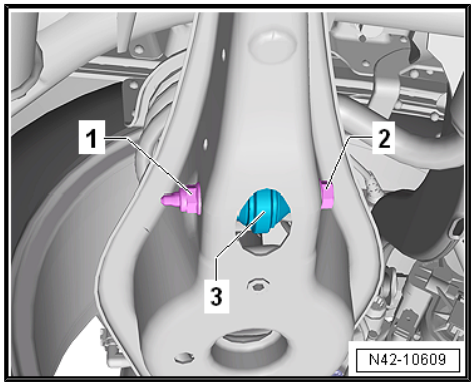
Make sure the coil spring is seated correctly in the -VAG1752/3A- -arrow- (danger of accident).

Note

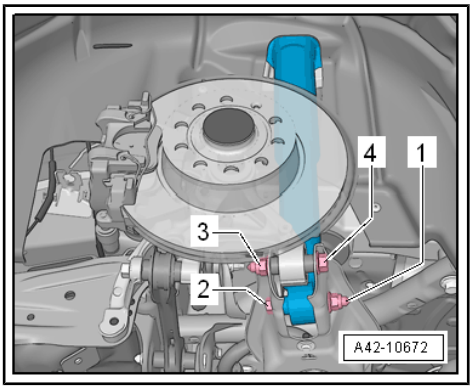
Use a wrench or a reversible ratchet to tighten the spring compressor.

– 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).

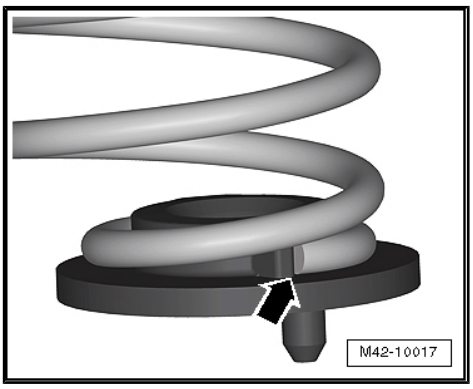
– Slowly lower the -VAS6931- or -VAG1383A- under the lower transverse link, until the -VAG1752/1- with the tensioned spring can be removed.

Installing

Install in reverse order of removal. Note the following:

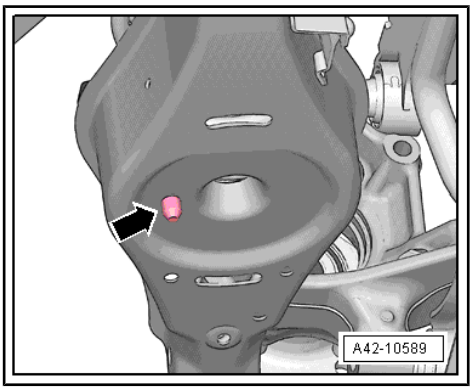
– Make sure the washer is not damaged.
– Replace the washer if necessary.
– Install the washer on the coil spring.

The spring start -arrow- must touch the stop of lower spring support.

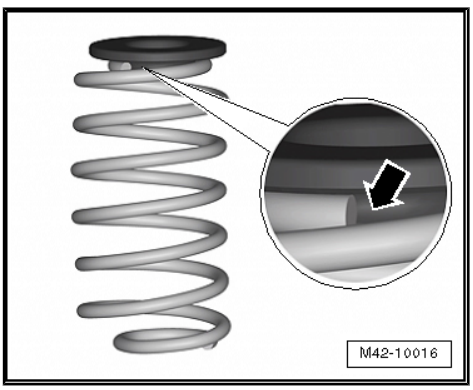


– Install the spring and the spring support.
– The lower spring support has a pin.

– 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.

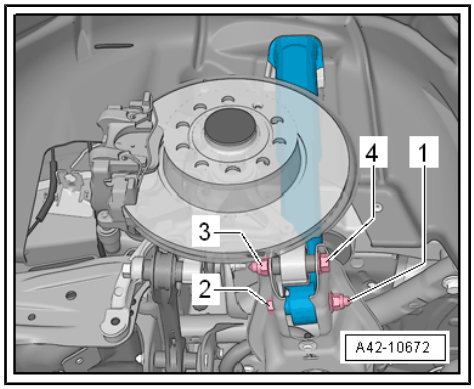


WARNING

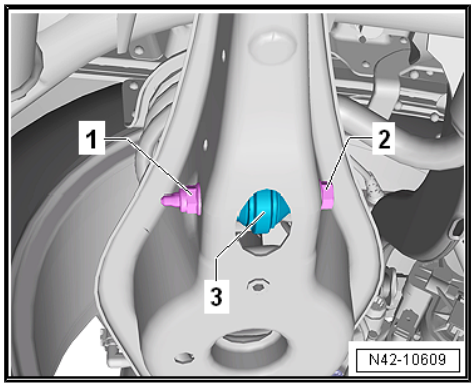
Hold the -VAG1752/1- with the spring tensioned (risk of accident).

– 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-.

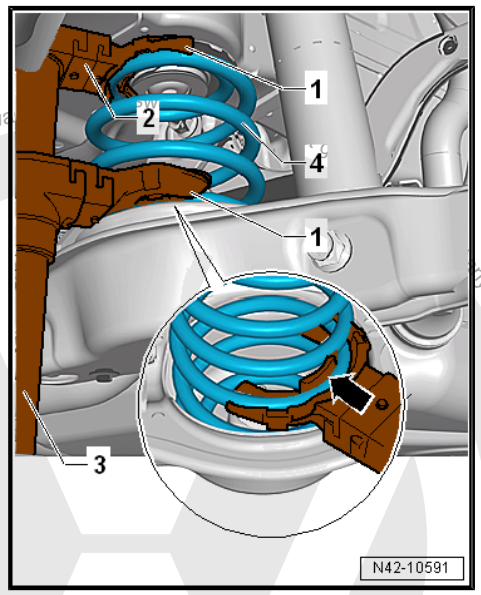


– Insert the bolt -2- for the coupling rod -3- and tighten the nut -1-.



– 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



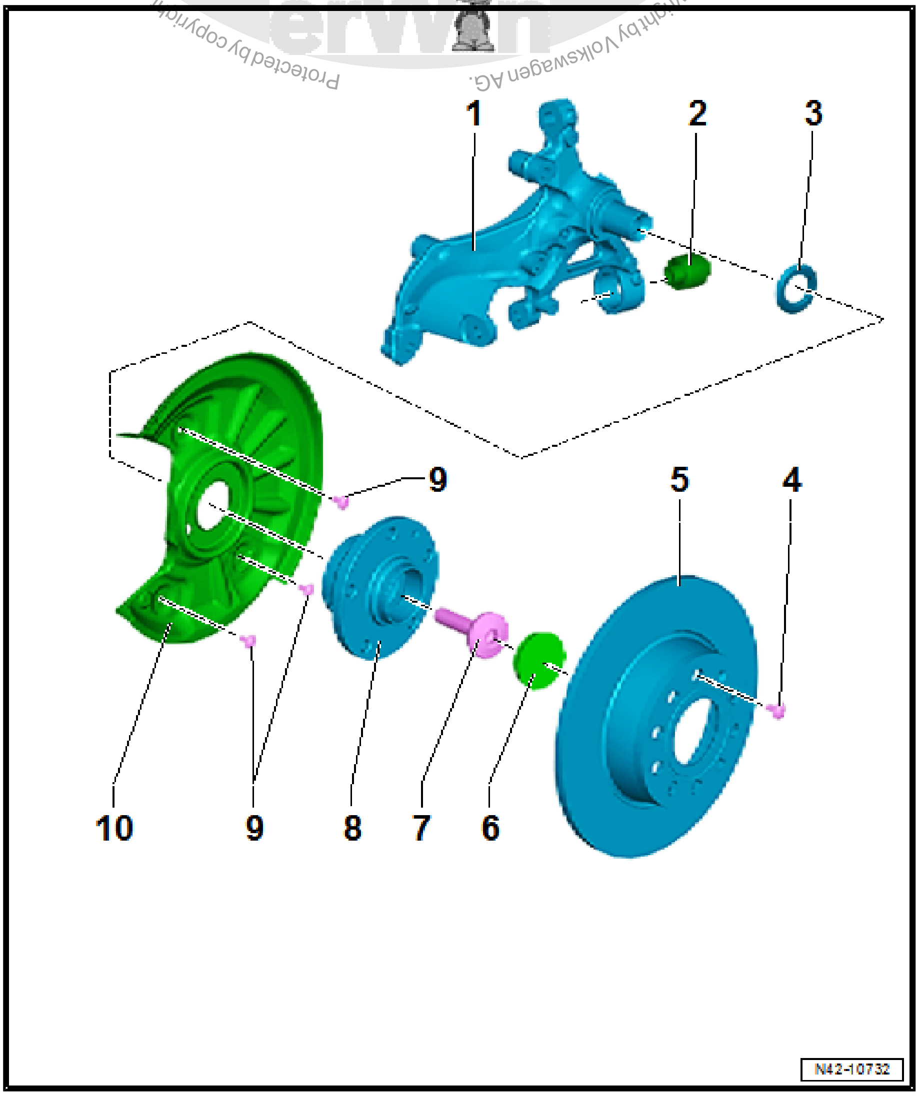
Tightening Specifications

- Refer to ⇒ “3.1 Overview - Stabilizer Bar”, page 187
- Refer to ⇒ “4.1 Overview - Transverse Link”, page 191
- Refer to ⇒ “5.1 Overview - Suspension Strut, Shock Absorber, Spring”, page 200
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .

6 Wheel Bearing and Trailing Arm

6.1 Overview - Wheel Bearing

6.1.1 Overview - Wheel Bearing, Multi-Link Suspension, FWD



1 - Wheel Bearing Housing

- ❑ Removing and installing. Refer to ⇒ “6.3 Wheel Bearing Housing, Removing and Installing”, page 212 .

2 - Bonded Rubber Bushing

- ❑ Replacing. Refer to ⇒ “6.5 Wheel Bearing Housing Bonded Rubber Bushing, Replacing”, page 225 .

3 - Washer

- ❑ The washer chamfer must face outward

4 - Bolt

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

5 - Brake Rotor

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

6 - Dust Cap

- ❑ Replace after removing.
- ❑ Removing and installing. Refer to ⇒ “6.4 Wheel Bearing Unit, Removing and Installing”, page 220 .

- ❑ A perfect seal is only achieved using a new dust cap.

7 - Bolt

- ❑ 200 Nm +90°
- ❑ Replace after removing.
- ❑ Clean the threads in the stub axle with a thread tap first.

8 - Wheel Bearing Unit

- ❑ Removing and installing. Refer to ⇒ “6.4 Wheel Bearing Unit, Removing and Installing”, page 220 .
- ❑ The wheel bearing and wheel hub are installed together in a housing.
- ❑ The wheel bearing unit is maintenance free and has zero play. Adjusting as well as repair work is not possible!
- ❑ Different versions - plastic or rubber encoder ring. Refer to the Parts Catalog.
- ❑ Always install the supplied wheel bearing unit - mixed installation is permitted

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 .

6.1.2 Overview - Wheel Bearing, Multi-Link Suspension, AWD

1 - Drive Axle

2 - Bolt

- ❑ 90 Nm + 90°
- ❑ Replace after removing.

3 - Wheel Bearing Housing

- ❑ Removing and installing. Refer to ⇒ “6.3.2 Wheel Bearing Housing, Removing and Installing, Multi-Link Suspension, AWD”, page 216 .

4 - Bonded Rubber Bushing

- ❑ Replacing. Refer to ⇒ “6.5 Wheel Bearing Housing Bonded Rubber Bushing, Replacing”, page 225 .

5 - Brake Rotor

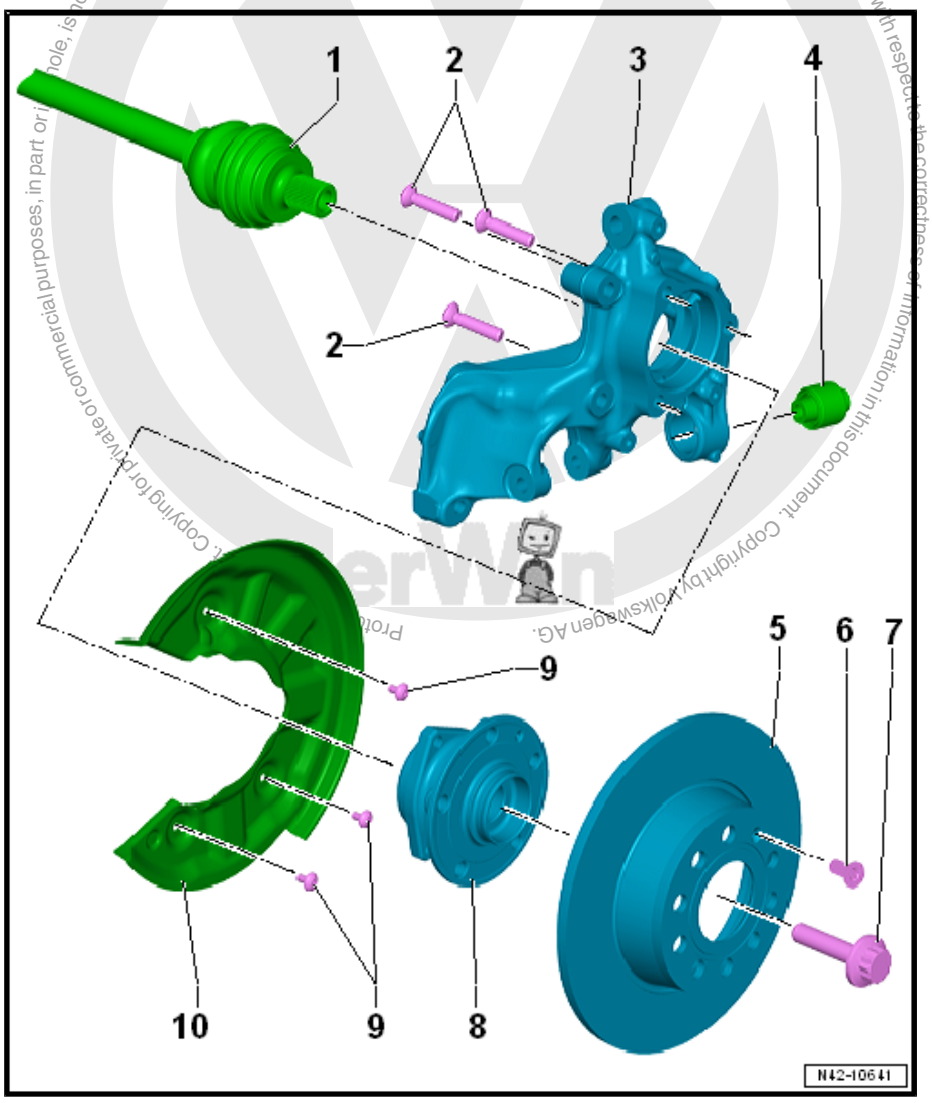
- ❑ Removing and installing. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .

6 - Bolt

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

7 - Bolt

- ❑ 200 Nm + 180°
- ❑ Replace after removing.



- ❑ Loosening and tightening. Refer to ⇒ “7.2 Drive Axle Threaded Connection, Loosening and Tightening”, page 237 .
- ❑ Clean the threads in the stub axle with a thread tap first.

8 - Wheel Bearing Unit

- ❑ Removing and installing. Refer to ⇒ “6.4.2 Wheel Bearing Unit, Removing and Installing, Multi-Link Suspension, AWD”, page 223 .
- ❑ The wheel bearing and wheel hub are installed together in a housing.
- ❑ The wheel bearing unit is maintenance free and has zero play. Adjusting as well as repair work is not possible!

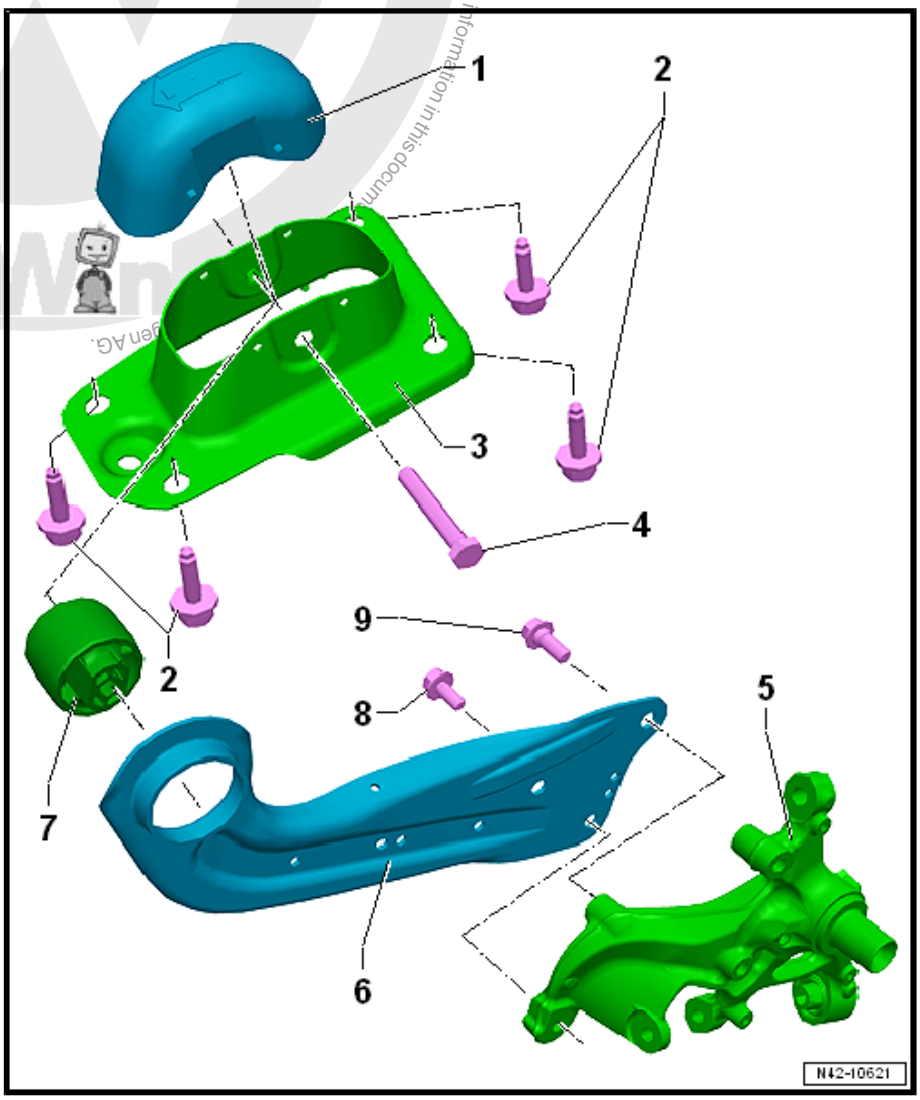
9 - Bolt

- ❑ 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 .

6.2 Overview - Trailing Arm



1 - Cover

2 - Bolt

- ❑ 50 Nm +45°
- ❑ Replace after removing.

3 - Mounting Bracket

4 - Bolt

- ❑ 90 Nm + 90°
- ❑ Replace after removing.

5 - Wheel Bearing Housing

- ❑ There are different versions. Refer to the Parts Catalog.

6 - Trailing Arm

- ❑ Removing and installing. Refer to ⇒ “6.6 Trailing Arm with Mounting Bracket, Removing and Installing”, page 228 .

7 - Bonded Rubber Bushing

- ❑ Note the installation position
- ❑ Replacing. Refer to ⇒ “6.7 Trailing Arm, Servicing”, page 231 .

8 - Bolt

- ❑ 70 Nm +90°
- ❑ Replace after removing.
- ❑ M12 x 1.5

9 - Bolt

- ❑ 70 Nm +90°
- ❑ Replace after removing.
- ❑ M14 x 1.5

6.3 Wheel Bearing Housing, Removing and Installing

⇒ “6.3.1 Wheel Bearing Housing, Removing and Installing, Multi-Link Suspension, FWD”, page 212

⇒ “6.3.2 Wheel Bearing Housing, Removing and Installing, Multi-Link Suspension, AWD”, page 216

6.3.1 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- or Engine and Gearbox Jack - VAG1383A-

Removing

– Loosen the wheel bolts.

– Raise the vehicle.

– Remove the wheel.

– Remove the wheel bearing unit. Refer to ⇒ “6.4 Wheel Bearing Unit, Removing and Installing”, page 220 .

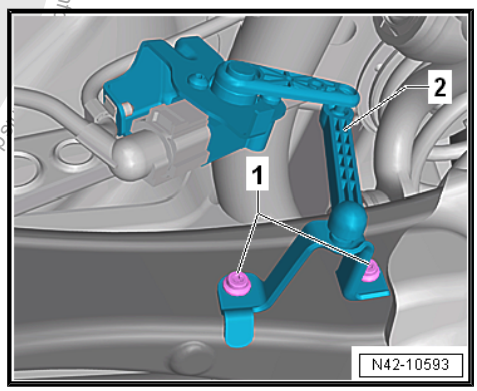
– Remove the heat shield. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .

– Remove the spring. Refer to ⇒ “5.4 Spring, Removing and Installing”, page 205 .

Vehicles with Level Control System Sensor

– Remove the bolts -1-.

– Remove the Left Rear Level Control System Sensor - G76- -2- bracket.



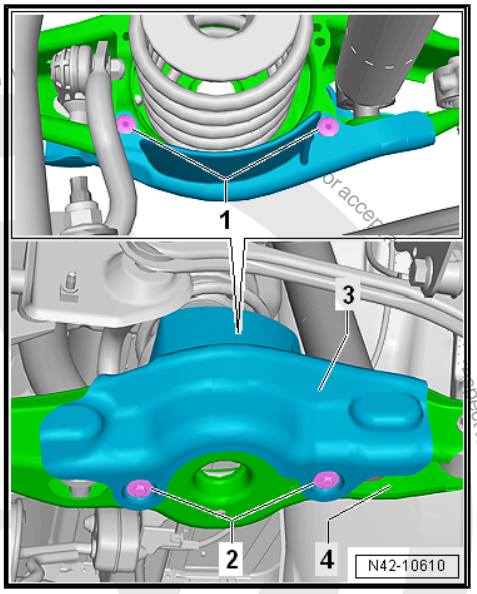
Vehicles with Stone Chip Protection

– Remove the expanding rivets -1-.

– Remove the bolts -2- for the stone chip protection -3-.

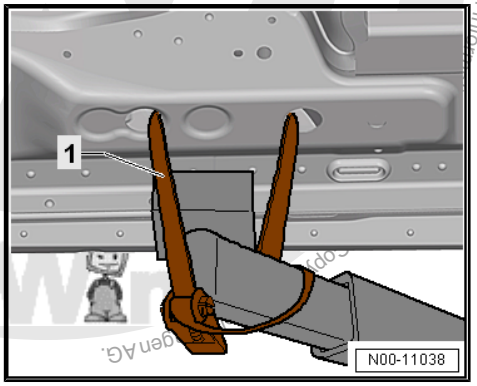
Continuation for All Vehicles

– Disconnect the connector from the ABS speed sensor and the electro-mechanical parking brake parking brake motor.



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

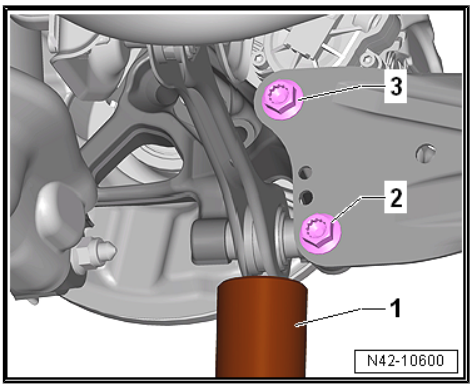
1 - -T10038-



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

– Position the -VAS6931- or -VAG1383A- -1- under the tie rod and push slightly upward.

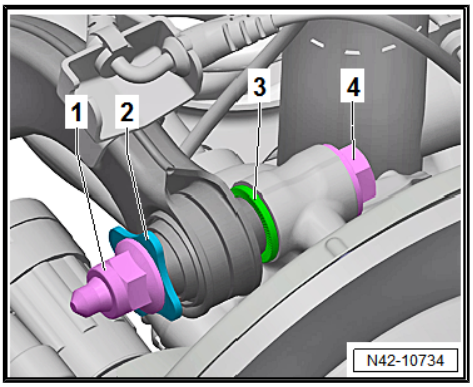
– Remove the bolts -2 and 3- one after the other.

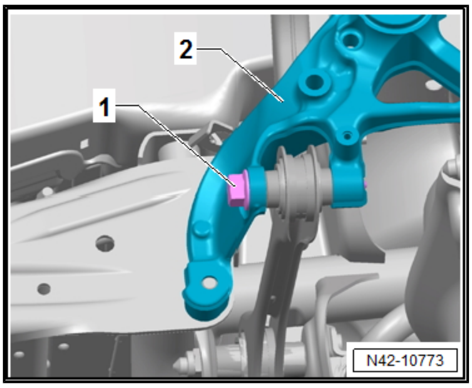


– Unscrew the nut -1- and remove the washer -2-.

– Remove the bolt -4-.

– Remove the washer -3-.



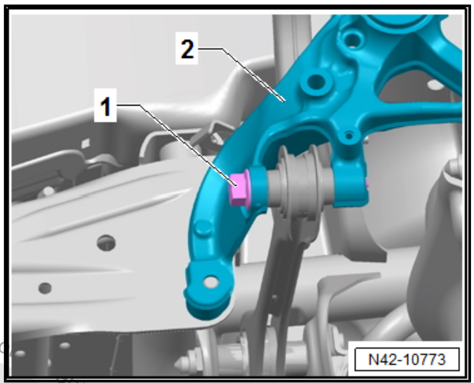


– Remove the bolt -1-.
– Remove the wheel bearing housing -2-.

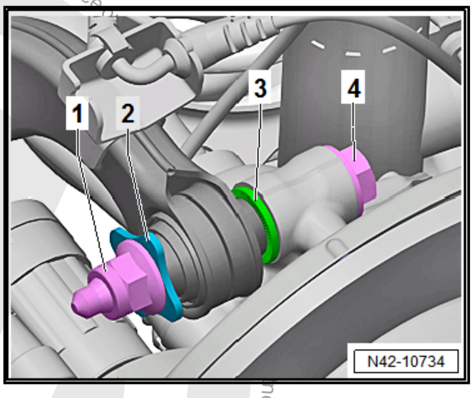
Installing

Install in reverse order of removal while noting the following:

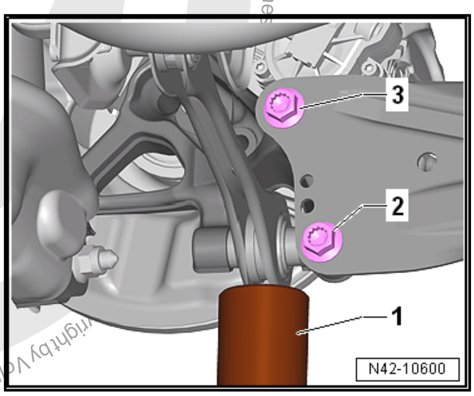
Complete the Following Steps in the Exact Order Specified.



– Insert the wheel bearing housing -2-.
– Insert the bolt -1- and tighten hand-tight.



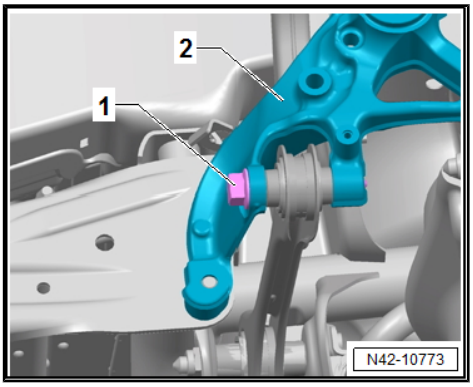
– Insert the bolt -4- with the washer -3-.
– Slide on the washer -2-.
– Tighten the nut -1- hand-tight.



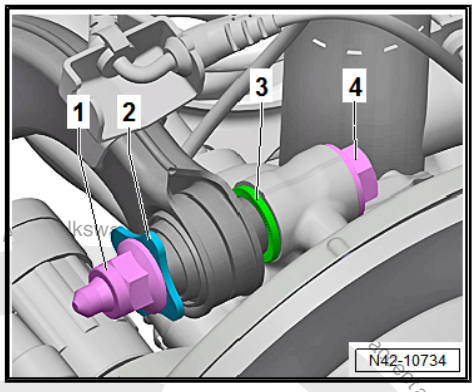
– Position the -VAS6931- or -VAG1383A- -1- under the tie rod and push slightly upward.
– Install the bolts -2 and 3- by hand.
– Remove the -VAS6931- or -VAG1383A- -1- from under the tie rod.
– Install the heat shield. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .
– Install the wheel bearing unit. Refer to ⇒ “6.4 Wheel Bearing Unit, Removing and Installing”, page 220 .

Only fasten the threaded connections on the wheel bearing housing in the curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

– Tighten the bolt -1-.

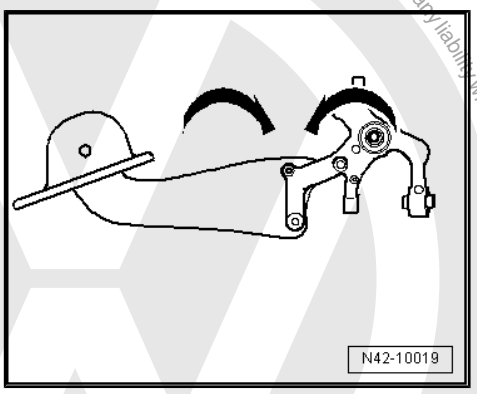


– Tighten the nut -1-.
– Secure the -VAS6931- or the -VAG1383A- with the -T10149- and remove from the wheel hub.

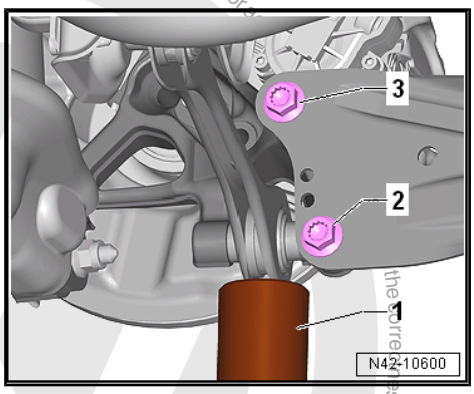


Threaded connection of trailing link/wheel bearing housing must only be tightened when all other components (spring and shock absorber always) of the respective wheel suspension have been already assembled. To tighten, suspension must be unloaded. Only now do the trailing arm and wheel bearing housing move into the position required -arrows-.

– Install the spring. Refer to
⇒ “5.4 Spring, Removing and Installing”, page 205 .



– Tighten the bolts -2 and 3-.



Install in reverse order of removal, note the following:

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “6.1.1 Overview - Wheel Bearing, Multi-Link Suspension, FWD”, page 209
- Refer to ⇒ “5.1 Overview - Suspension Strut, Shock Absorber, Spring”, page 200
- Refer to ⇒ “6.2 Overview - Trailing Arm”, page 211
- Refer to ⇒ “4.2 Overview - Tie Rod”, page 195
- Refer to ⇒ “2.2.1 Overview - Rear Level Control System Sensor, Multi-Link Suspension, FWD”, page 272
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Bolts for heat shield, brake caliper and brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .

6.3.2 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- or Engine and Gearbox Jack - VAG1383A-

Removing

– Loosen the outer drive axle threaded connection. Refer to ⇒ “7.2 Drive Axle Threaded Connection, Loosening and Tightening”, page 237 .

Caution

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

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

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.*

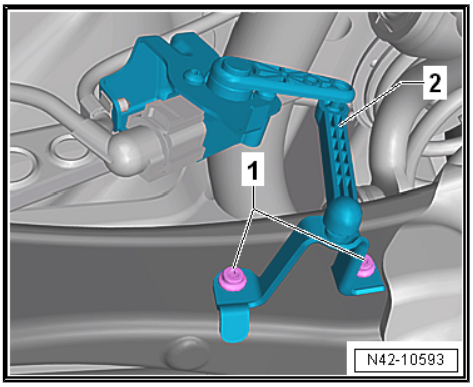
– Loosen the wheel bolts.

– Raise the vehicle.

– Remove the wheel.
– Remove the wheel bearing unit. Refer to ⇒ “6.4 Wheel Bearing Unit, Removing and Installing”, page 220 .
– Remove the heat shield. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .
– Remove the spring. Refer to ⇒ “5.4 Spring, Removing and Installing”, page 205 .

Vehicles with Level Control System Sensor

– Remove the bolts -1-.
– Remove the Left Rear Level Control System Sensor - G76- -2- bracket.

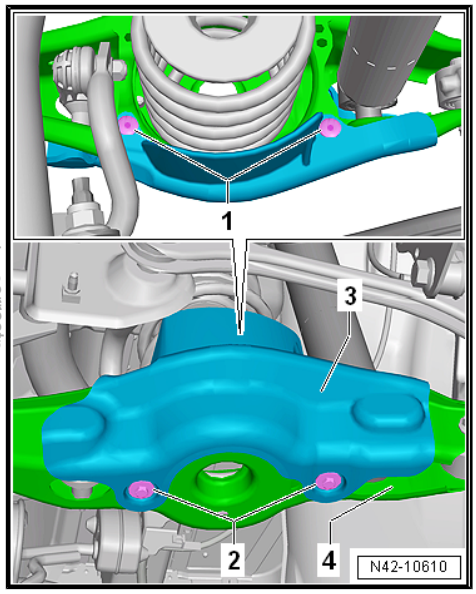


Vehicles with Stone Chip Protection

– 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 and the electro-mechanical parking brake parking brake motor.

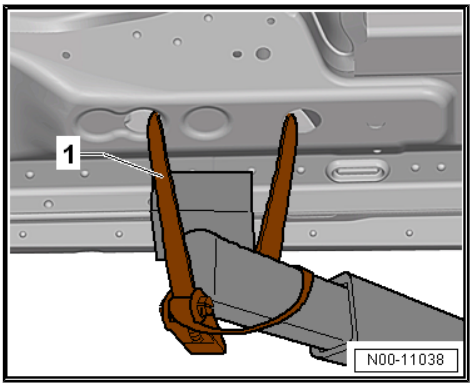


– Secure both sides of the vehicle on the hoist lifting arms using the -T10038- .

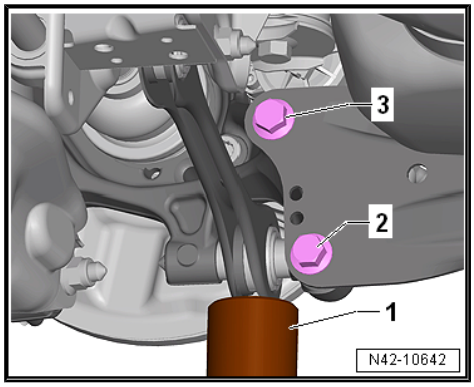
1 - -T10038-

WARNING

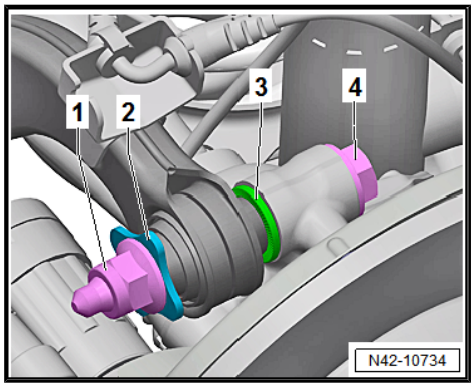
The vehicle could slide off the hoist if it is not secured.



– Position the -VAS6931- or -VAG1383A- -1- under the tie rod and push slightly upward.
– Remove the bolts -2 and 3- one after the other.
– Remove the -VAS6931- or -VAG1383A- -1- from under the tie rod.



– Unscrew the nut -1- and remove the washer -2-.
– Remove the bolt -4-.
– Remove the washer -3-.

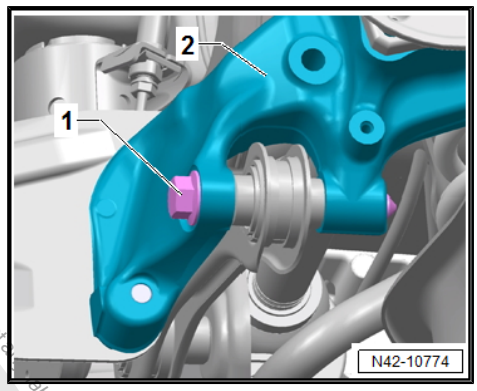


– Remove the bolt -1-.
– Remove the wheel bearing housing -2-.

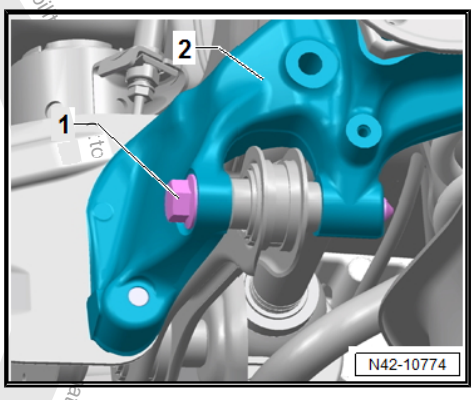
Installing

Install in reverse order of removal while noting the following:

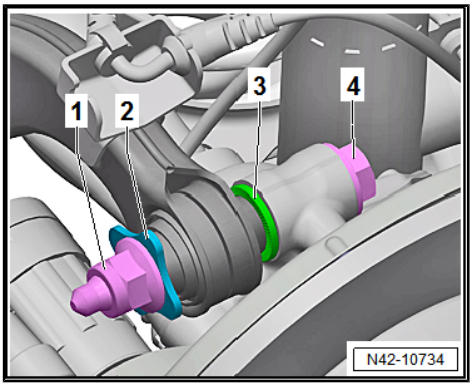
Complete the Following Steps in the Exact Order Specified.



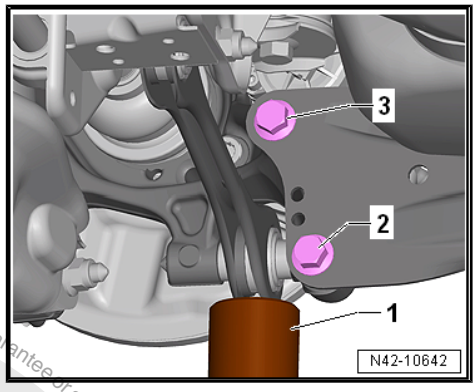
– Insert the wheel bearing housing -2-.
– Insert the bolt -1- and tighten hand-tight.



– Insert the bolt -4- with the washer -3-.
– Slide on the washer -2-.
– Tighten the nut -1- hand-tight.

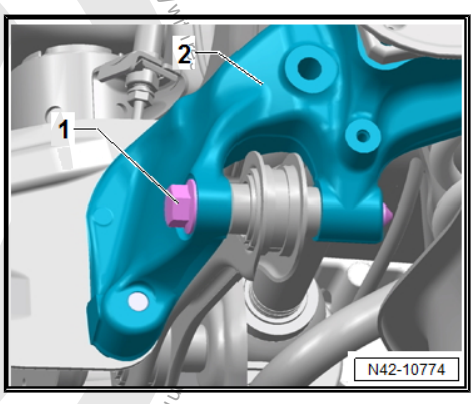


– Position the -VAS6931- or -VAG1383A- -1- under the tie rod and push slightly upward.
– Install the bolts -2 and 3- by hand.
– Remove the -VAS6931- or -VAG1383A- -1- from under the tie rod.
– Install the wheel bearing unit. Refer to ⇒ “6.4 Wheel Bearing Unit, Removing and Installing”, page 220 .
– Install the heat shield. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .

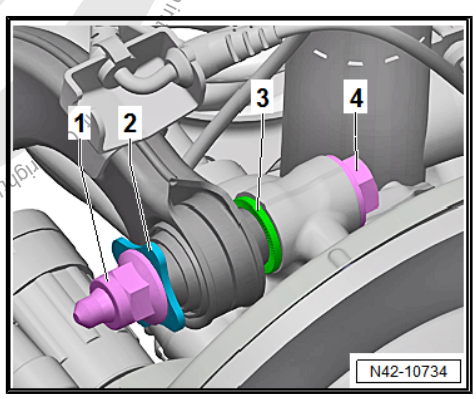


Only fasten the threaded connections on the wheel bearing housing in the curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

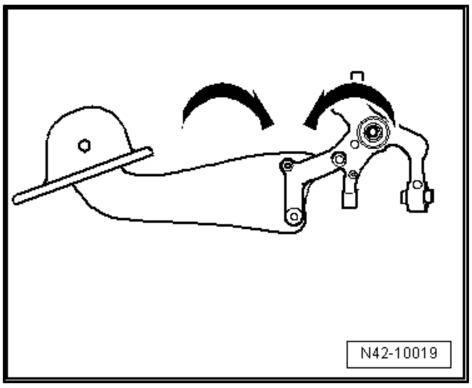
– Tighten the bolt -1-.



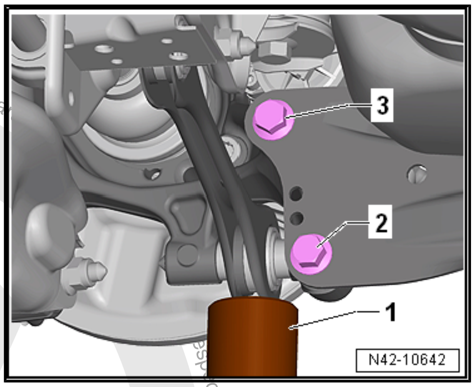
– Tighten the nut -1-.
– Remove the -VAS6931- or -VAG1383A- from the wheel hub.



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 ⇒ "5.4 Spring, Removing and Installing", page 205 .



– Tighten the bolts -2 and 3-.

Install in reverse order of removal, note the following:

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ "6.1.2 Overview - Wheel Bearing, Multi-Link Suspension, AWD", page 210
- Refer to ⇒ "5.1 Overview - Suspension Strut, Shock Absorber, Spring", page 200
- Refer to ⇒ "6.2 Overview - Trailing Arm", page 211
- Refer to ⇒ "4.2 Overview - Tie Rod", page 195
- Refer to ⇒ "2.2.1 Overview - Rear Level Control System Sensor, Multi-Link Suspension, FWD", page 272
- Refer to ⇒ "7.2 Drive Axle Threaded Connection, Loosening and Tightening", page 237
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Bolts for heat shield, brake caliper and brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .

6.4 Wheel Bearing Unit, Removing and Installing

⇒ "6.4.1 Wheel Bearing Unit, Removing and Installing, Multi-Link Suspension, FWD", page 220

⇒ "6.4.2 Wheel Bearing Unit, Removing and Installing, Multi-Link Suspension, AWD", page 223

6.4.1 Wheel Bearing Unit, Removing and Installing, Multi-Link Suspension, FWD

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 - VAG1410-

Removing

Note

♦ *There are different versions of the wheel bearing unit - plastic or rubber encoder ring. Refer to the Parts Catalog.*

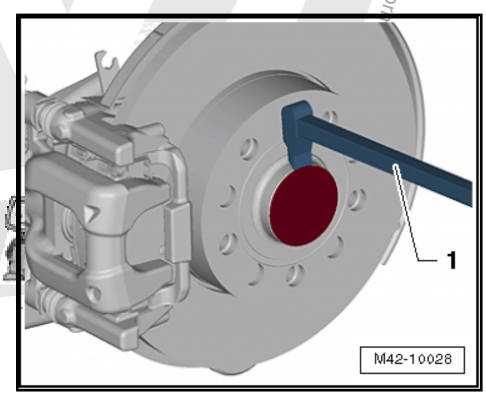
♦ *Always install the supplied wheel bearing unit - a mixed installation is permitted*

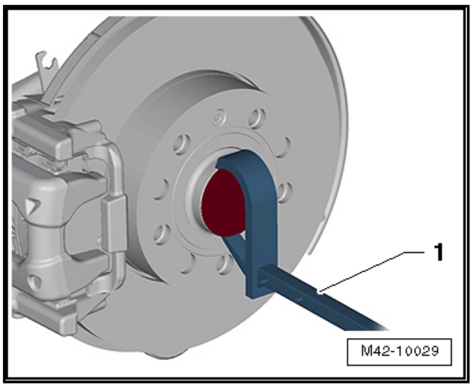
– Loosen the wheel bolts.

– Raise the vehicle.

– Remove the wheel.

– Loosen the dust cap from seat by tapping lightly on claw of -VW637/2- -1-.





– Press off the dust cap.

1 - -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 the brake caliper from body.

– Remove the brake rotor bolt and the brake rotor.

– Remove the bolt -1- using -T10162A- -2-.

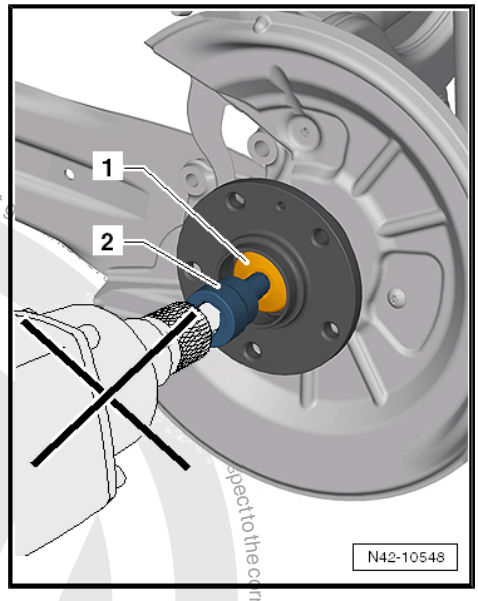
Caution

Never use an impact wrench when removing the bolt -1- using the -T10162A- -2-.

– Remove the wheel bearing unit from the axle stub.

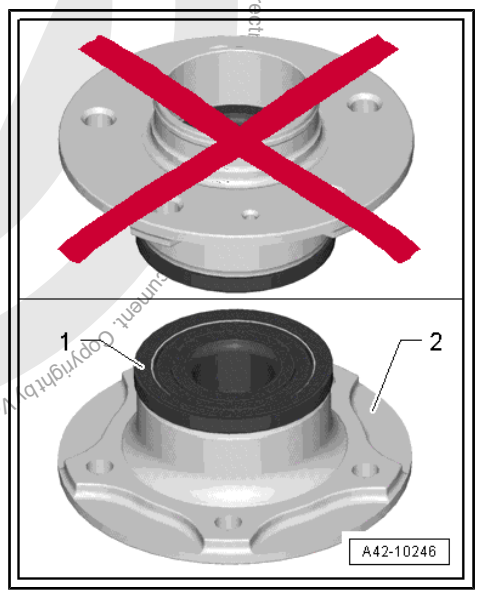
Caution

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



The wheel bearing -1- must always face upward.

– Always set the wheel bearing unit down on the wheel hub -2-.



Installing

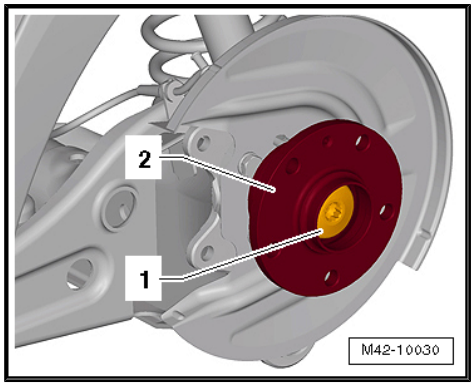
Install in reverse order of removal while noting the following:

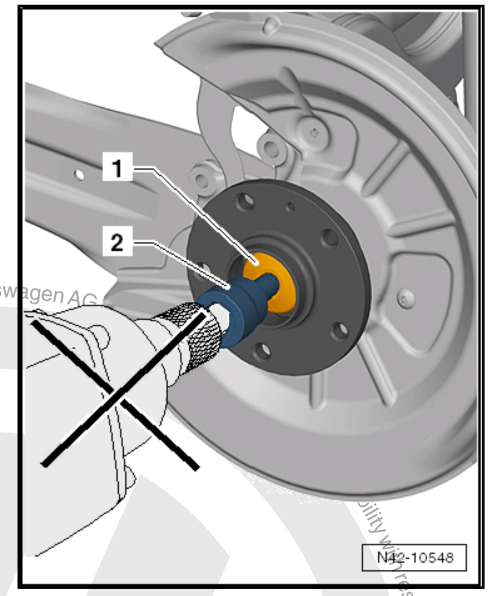
– Carefully install the wheel hub/wheel bearing unit -2- onto the stub axle.

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.



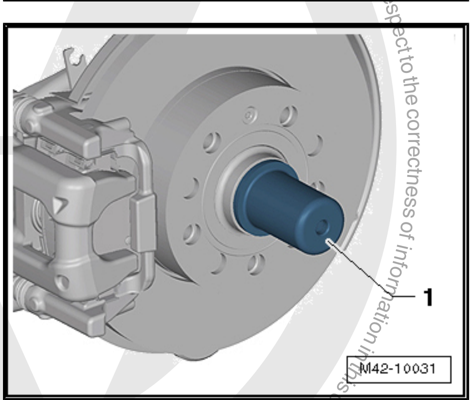


Note

- *First tighten the bolt to the specification using the torque wrench.*
- *Use a rigid wrench when tightening additionally.*

Caution

Never use an impact wrench when tightening the bolt -1- using the -T10162A- -2-.



– Install a new dust cap.

1 - -3241/4-

Always replace dust caps.

Damaged dust caps allow moisture to enter. Therefore, always use the tool shown.

Tightening Specifications

- Refer to ⇒ "6.1.1 Overview - Wheel Bearing, Multi-Link Suspension, FWD", page 209
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Bolts for heat shield, brake caliper and brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .

6.4.2 Wheel Bearing Unit, Removing and Installing, Multi-Link Suspension, AWD

Special tools and workshop equipment required

- Torque Wrench 1332 40-200Nm - VAG1332-
- Torque Wrench - VAG1410-

Removing

– Loosen the outer drive axle threaded connection. Refer to ⇒ "7.2 Drive Axle Threaded Connection, Loosening and Tightening", page 237 .

– Remove the coil spring. Refer to ⇒ "5.4 Spring, Removing and Installing", page 205 .

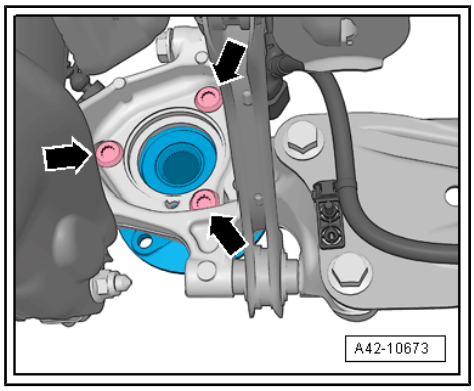
– Remove the drive axle. Refer to ⇒ "7.3 Drive Axle, Removing and Installing", page 238 .

– 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.

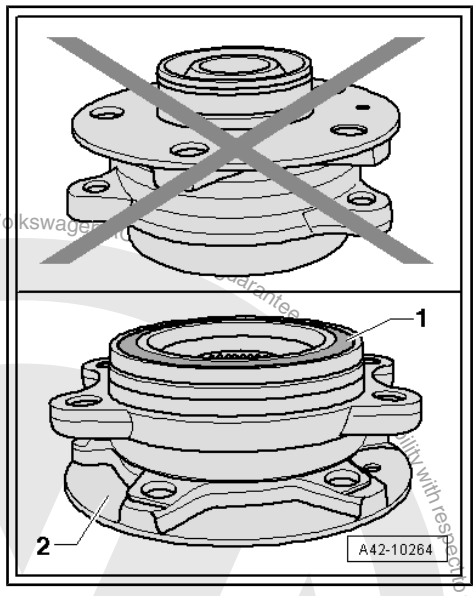
– Remove the brake rotor bolt and the brake rotor.
– Remove the bolts -arrows-.
– Remove the wheel bearing unit from the wheel bearing housing.



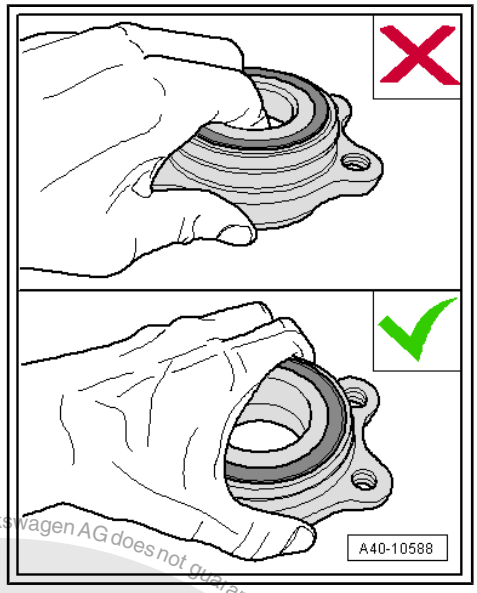
Caution

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

- The wheel bearing -1- must always face upward.
- 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.



The same procedure also applies to the wheel bearing without a wheel hub.

Installing

Install in reverse order of removal while noting the following:

- Only fasten the threaded connections on the wheel bearing housing in the curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

Tightening Specifications

- ♦ Refer to ⇒ “6.1.2 Overview - Wheel Bearing, Multi-Link Suspension, AWD”, page 210
- ♦ Refer to ⇒ “7.2 Drive Axle Threaded Connection, Loosening and Tightening”, page 237
- ♦ Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- ♦ Bolts for heat shield, brake caliper and brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .
- – Evaluate if an axle alignment is needed. Refer to ⇒ “1.6 Need for Axle Alignment, Evaluating”, page 284 .

6.5 Wheel Bearing Housing Bonded Rubber Bushing, Replacing

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-

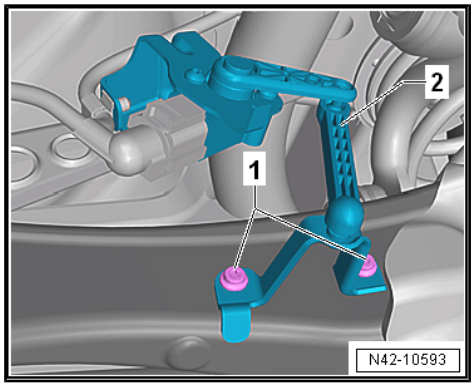
Removing

- – 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 - G76- -2- bracket.



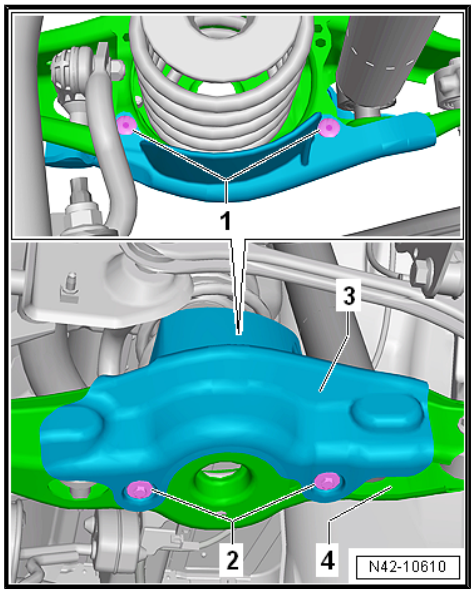
Vehicles with Stone Chip Protection

– Remove the expanding rivets -1-.

– Remove the bolts -2- for the stone chip protection -3-.

Continuation for All Vehicles

– Remove the spring. Refer to
⇒ “5.4 Spring, Removing and Installing”, page 205 .



Pressing out the Bonded Rubber Bushing

1 - -3346/3-

2 - Thrust Piece from the -3301-

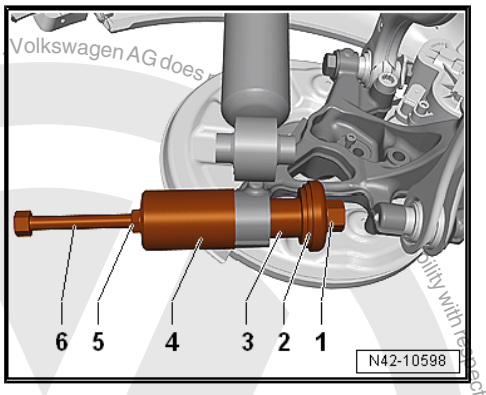
3 - -3390-

4 - Sleeve from -3350-

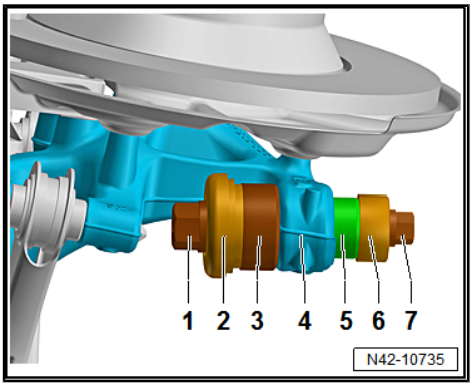
5 - Nut

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



Note

- *When installing pay attention that the tip of the -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 -3301-

2 - Thrust Piece from the -3301-

3 - Thrust piece from the -3346- , with the open side to the wheel bearing housing

4 - Wheel Bearing Housing

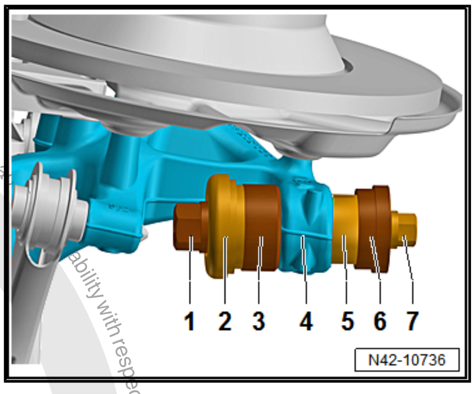
5 - Bonded Rubber Bushing

6 - -3367/2-

7 - -3301/1-

– By turning the -3301- -1- pull the bonded rubber bushing until it is just in front of the wheel bearing housing. While doing so counterhold on the -3301/1- -7-.

– Remove the tools as shown and install again.



1 - Nut from -3301-

2 - Thrust Piece from the -3301-

3 - Thrust piece from the -3346- , with the open side to the wheel bearing housing

4 - Wheel Bearing Housing

5 - -3367/2-

6 - -3301/2-

7 - -3301/1-

– Install the bonded rubber bushing until it stops by turning the -3301- -1-. While doing so counterhold on the -3301/1- -7-.

Installing

Install in reverse order of removal, note the following:

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

♦ Refer to ⇒ “6.1 Overview - Wheel Bearing”, page 209

♦ Refer to ⇒ “5.1 Overview - Suspension Strut, Shock Absorber, Spring”, page 200

♦ Refer to ⇒ “3.1.1 Overview - Stabilizer Bar, Multi-Link Suspension, FWD”, page 187

♦ Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .

• Only fasten the threaded connections to the lower transverse link in the curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

6.6 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- or Engine and Gearbox Jack - VAG1383A-

Removing

– Loosen the wheel bolts.

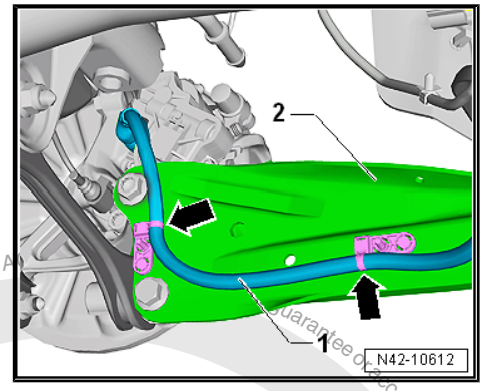
– Raise the vehicle.

– Remove the wheel.

– Remove the spring. Refer to ⇒ “5.4 Spring, Removing and Installing”, page 205 .

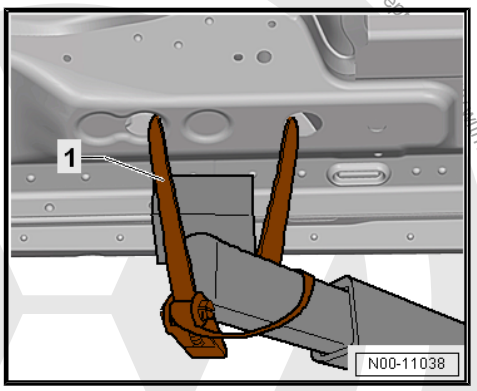
– If equipped, remove the underbody trim panel on the trailing arm mounting bracket. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Underbody Trim Panel; Component Location Overview - Underbody Trim Panels .

– Remove the line -1- from the trailing arm -2-. To do this push out the inner pins from the bracket -arrows-.



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

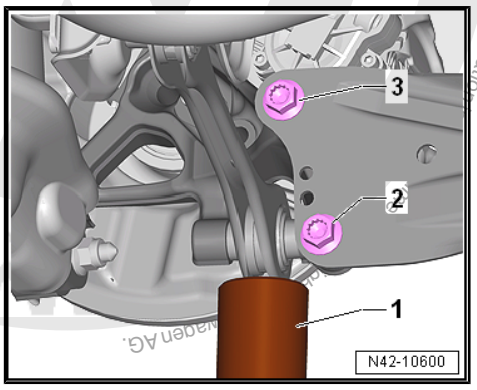
1 - -T10038-



WARNING

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

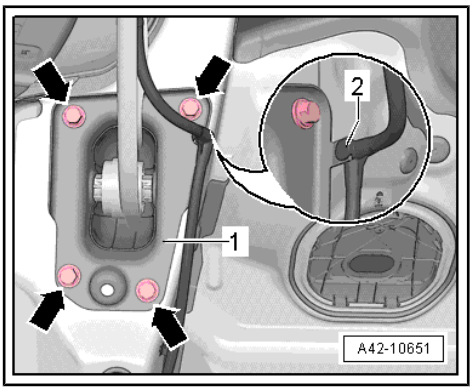
– Position the -VAS6931- or -VAG1383A- -1- under the tie rod and push slightly upward.
– Remove the bolts -2 and 3- one after the other.
– Remove the -VAS6931- or -VAG1383A- -1- from under the tie rod.



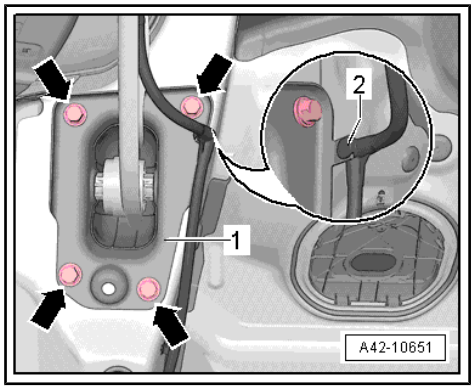
– Remove the line -2- from the mounting bracket -1-.
– Mark the installation position of the mounting bracket -1- on the body.
– Remove the bolts -arrows-.
– Remove the trailing arm with mounting bracket.

Installing

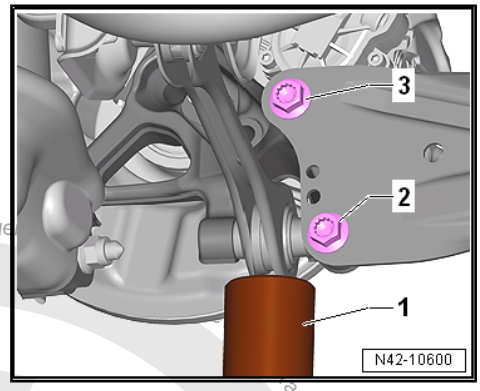
Install in reverse order of removal while noting the following:



– Tighten the bolts -arrows- onto the old impression or the marking applied previously.
– Secure the line -2- to the mounting bracket -1-.

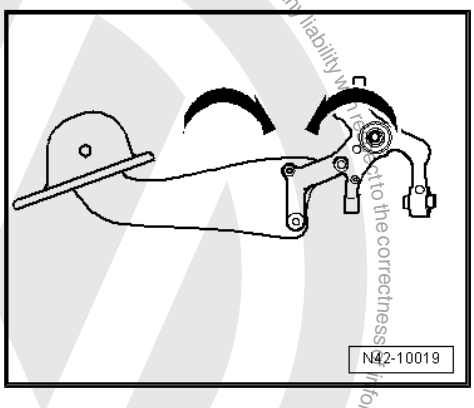


– Position the -VAS6931- or -VAG1383A- -1- under the tie rod and push slightly upward.
– Install the bolts -2 and 3- by hand.
– Remove the -VAS6931- or -VAG1383A- -1- from under the tie rod.

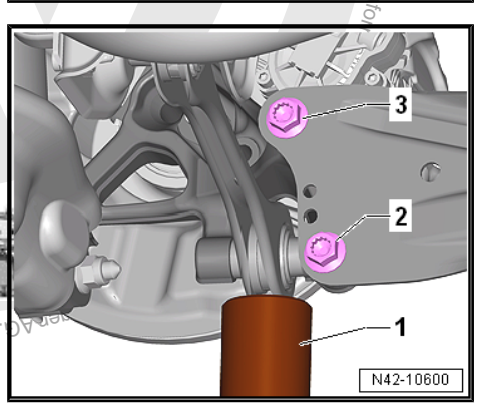


Threaded connection of trailing link/wheel bearing housing must only be tightened when all other components (spring and shock absorber always) of the respective wheel suspension have been already assembled. To tighten, suspension must be unloaded. Only now do the trailing arm and wheel bearing housing move into the position required -arrows-.

– Install the spring. Refer to ⇒ “5.1 Overview - Suspension Strut, Shock Absorber, Spring”, page 200 .

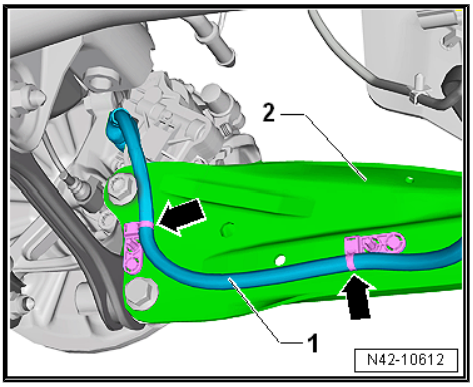


– Tighten the bolts -2 and 3-.



– Remove the brackets -arrows- and the line -1- from the trailing arm -2-. To do so push in the rivet inner pins.

– If equipped, attach the underbody trim panel on the trailing arm mounting bracket. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Underbody Trim Panel; Component Location Overview - Underbody Trim Panels .



Tightening Specifications

- Refer to ⇒ "6.2 Overview - Trailing Arm", page 211
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .

After Installation, the Axle Alignment Must Be Checked on Alignment Stand. Refer to
⇒ "1.6 Need for Axle Alignment, Evaluating", page 284 .

6.7 Trailing Arm, Servicing

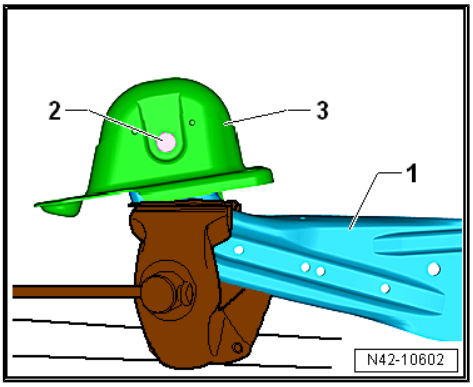
Special tools and workshop equipment required

- Bearing Installer - Wheel Bearing - 3345-
- Bearing Installer - Control Arm - 3346-
- Press Plate - VW402-
- Press Piece - Multiple Use - VW412-
- Press Piece - Trailing Arm Bushing - T10496-

– Remove the trailing arm with the mounting bracket. Refer to ⇒ "6.6 Trailing Arm with Mounting Bracket, Removing and Installing", page 228 .

– 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.



Bonded Rubber Bushing, Pressing Out

– Mount the tools as shown.

1 - -VW412-

2 - -3346/1- from the Bearing Installer - Control Arm - 3346- (the deep recess points to the bonded rubber bushing)

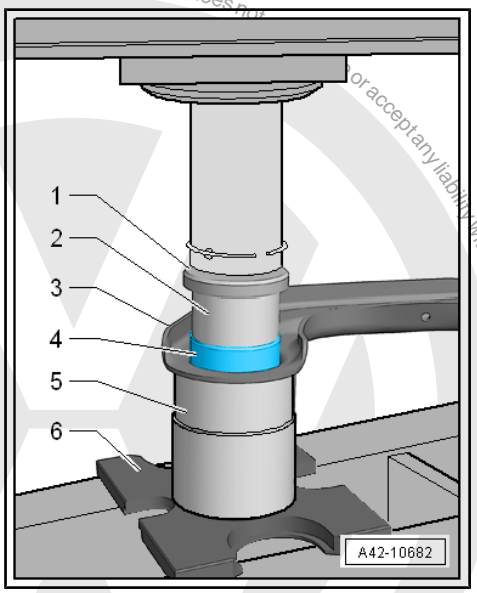
3 - Trailing Arm

4 - Bonded Rubber Bushing

5 - -3345-

6 - -VW402-

– Press out the bonded rubber bushing.



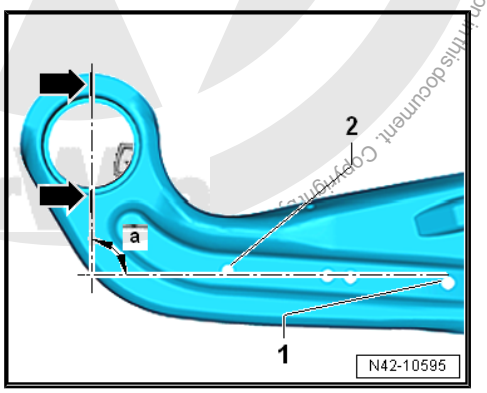
Bonded Rubber Bushing, Pressing In

– Mark the position of the bonded rubber bushing on the trailing arm with a right angle.

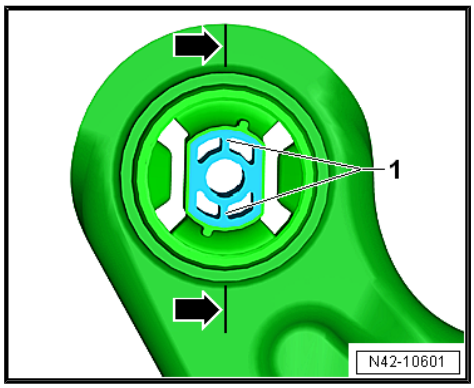
– Place the outer edge of the right angle on the upper -1- and lower radius -2- of the hole.

– 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 shown.

1 - -VW412-

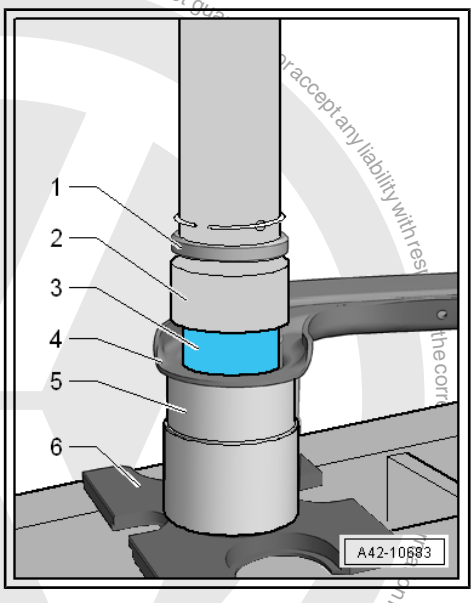
2 - -T10496-

3 - Bonded Rubber Bushing

4 - Trailing Arm

5 - -3345-

6 - -VW402-



– Install the bonded rubber bushing.

Determining Installation Position of Mounting Bracket Relative to Trailing Arm

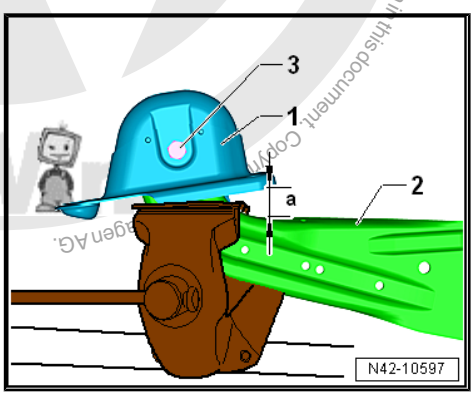
– Clamp the trailing arm -2- in the vise with jaw protectors.

– 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-.

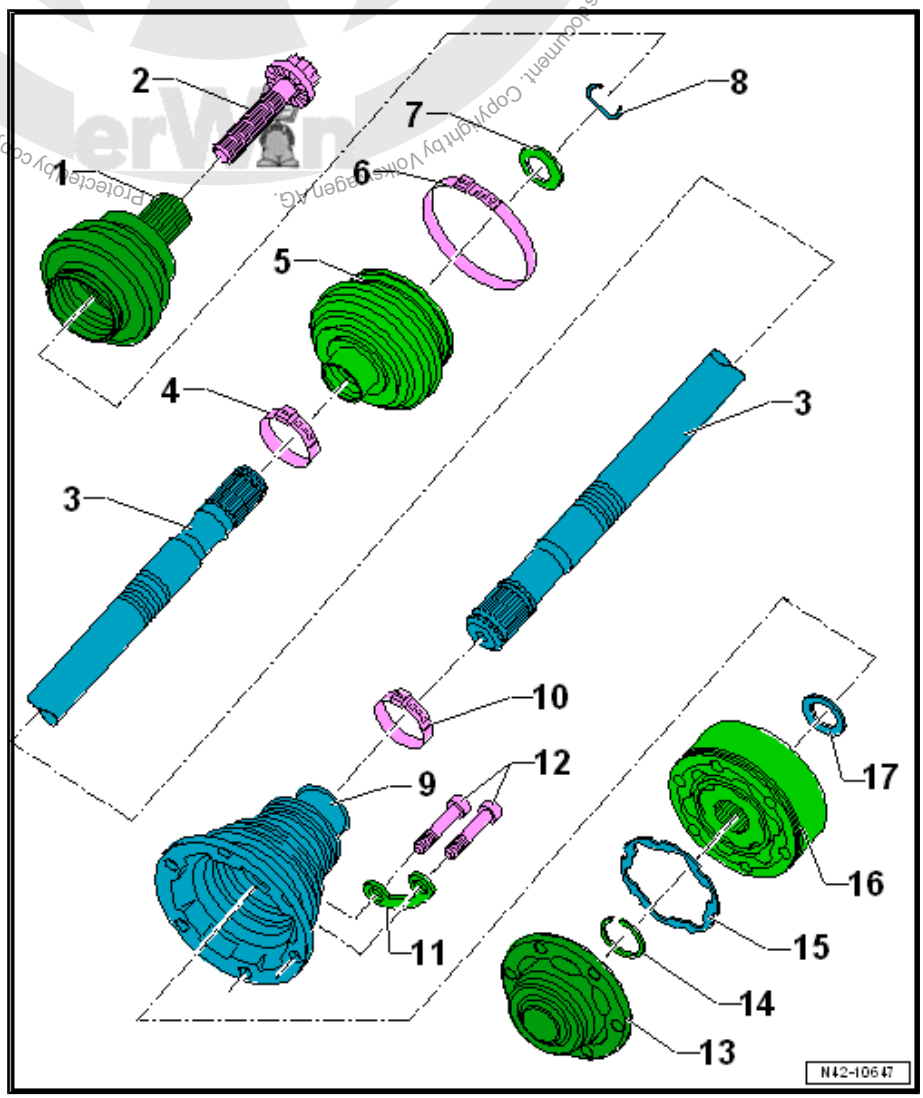
– Install the trailing arm with mounting bracket. Refer to ⇒ “6.6 Trailing Arm with Mounting Bracket, Removing and Installing”, page 228 .



7 Drive Axle

7.1 Overview - Drive Axle

7.1.1 Overview - Drive Axle, CV Joint VL90



1 - Outer CV Joint

- ❑ Only replace completely
- ❑ Removing. Refer to ⇒ Fig. ““Outer CV Joint, Pressing Off”“ , page 244 .
- ❑ Installing: using a plastic hammer, drive onto the shaft as far as the stop
- ❑ Divide the grease evenly in the joint
- ❑ Checking. Refer to ⇒ “7.5 Outer CV Joint, Checking”, page 246 .

2 - Bolt

- ❑ 200 Nm +180°. Refer to ⇒ “7.2 Drive Axle Threaded Connection, Loosening and Tightening”, page 237 .
- ❑ Replace after removing.
- ❑ Before installing, clean the threads in the CV joint with a thread tap.

3 - Drive Axle

- ❑ Allocation. Refer to the Parts Catalog.

4 - Clamp

- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ““Tension the Clamp on the Small Diameter”“ , page 246 .

5 - CV Boot

- ❑ Check for tears and scuffing
- ❑ Material: Hytrel polyelastomer

6 - Clamp

- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ""Tightening Clamp on the Outer Joint"" , page 246 .

7 - Plate Spring

- ❑ With inner spline
- ❑ Installation position. Refer to ⇒ Fig. ""Installed Position, Plate Spring on the Outer Joint"" , page 244 .

8 - Circlip

- ❑ Replace after removing.
- ❑ Insert in shaft groove

9 - CV Joint CV Boot

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

10 - Clamp

- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ""Tension the Clamp on the Small Diameter"" , page 246 .

11 - Backing Plate

12 - Internal Multi-Point Bolt

- ❑ First tighten diagonally to 10 Nm, then tighten diagonally again to the tightening specification
- ❑ 40 Nm
- ❑ Replace after removing.

13 - Cap

- ❑ Replace after removing.
- ❑ Removing. Refer to ⇒ Fig. ""Drive off Cover for Inner Joint"" , page 244 .

14 - Circlip

- ❑ Replace after removing.
- ❑ Remove and install using Circlip Pliers - VW161A- .

15 - Seal

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

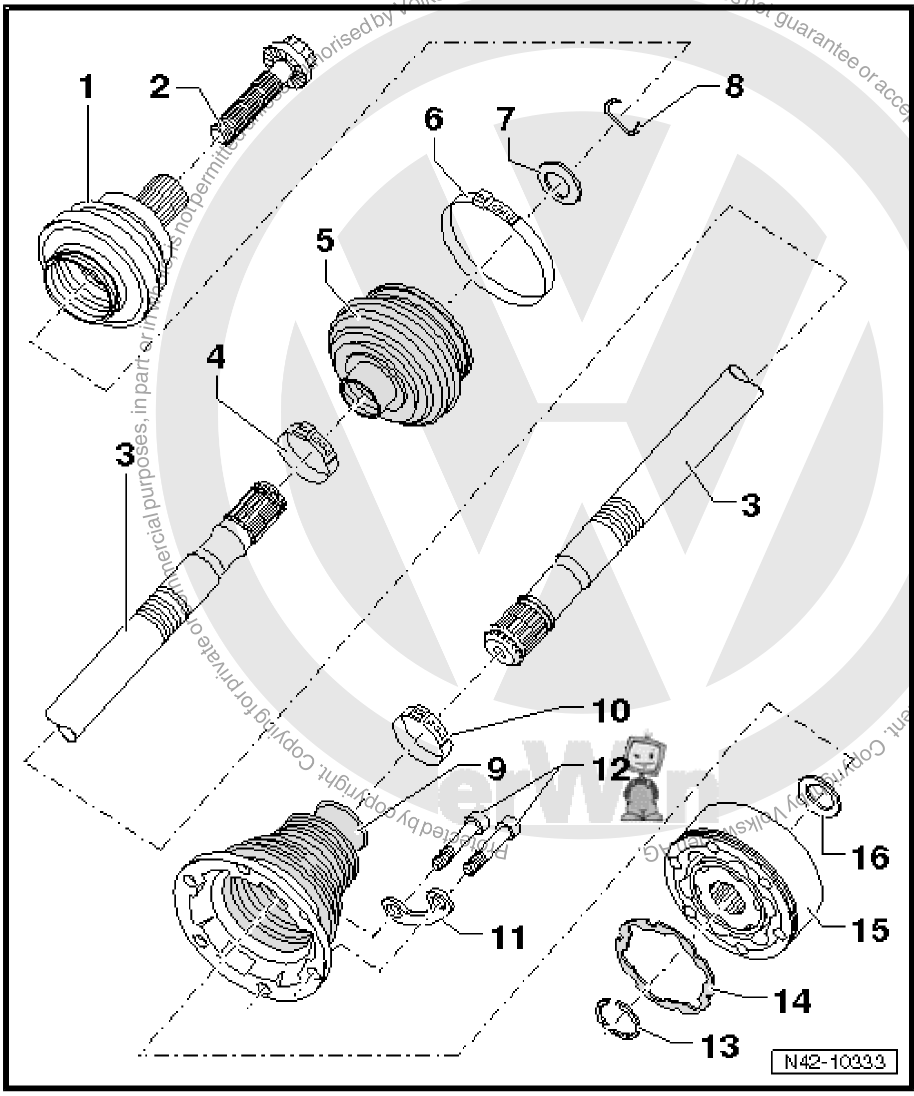
16 - Inner CV Joint

- ❑ Only replace completely
- ❑ Divide the grease evenly in the joint
- ❑ Removing. Refer to ⇒ Fig. ""Inner CV Joint, Removing"" , page 245 .
- ❑ Installing. Refer to ⇒ Fig. ""Inner CV Joint, Pressing On"" , page 245 .
- ❑ Checking. Refer to ⇒ "7.6 Inner CV Joint, Checking", page 248 .

17 - Plate Spring

- ❑ With inner spline
- ❑ Installation position. Refer to ⇒ Fig. ""Installation Position of the Plate Spring on Inner Joint"" , page 245 .

7.1.2 Overview - Drive Axle, CV Joint VL100i



1 - Outer CV Joint

- ❑ Only replace completely
- ❑ Removing. Refer to ⇒ Fig. ""Outer CV Joint, Pressing Off"" , page 244 .
- ❑ Installing: using a plastic hammer, drive onto the shaft as far as the stop
- ❑ Divide the grease evenly in the joint
- ❑ Checking. Refer to ⇒ "7.5 Outer CV Joint, Checking", page 246 .

2 - Bolt

- ❑ 200 Nm +180°. Refer to ⇒ "7.2 Drive Axle Threaded Connection, Loosening and Tightening", page 237 .
- ❑ Replace after removing.
- ❑ Before installing, clean the threads in the CV joint with a thread tap.

3 - Drive Axle

- ❑ Allocation. Refer to the Parts Catalog.

4 - Clamp

- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ""Tension the Clamp on the Small Diameter"" , page 246 .

5 - CV Boot

- ❑ Check for tears and scuffing
- ❑ Material: Hytrel polyelastomer

6 - Clamp

- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ""Tightening Clamp on the Outer Joint"" , page 246 .

7 - Plate Spring

- ❑ With inner spline
- ❑ Installation position. Refer to ⇒ Fig. ""Installed Position, Plate Spring on the Outer Joint"" , page 244 .

8 - Circlip

- ❑ Replace after removing.
- ❑ Insert in shaft groove

9 - CV Joint CV Boot

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

10 - Clamp

- ❑ Replace after removing.
- ❑ Tensioning. Refer to ⇒ Fig. ""Tension the Clamp on the Small Diameter"" , page 246 .

11 - Backing Plate

12 - Internal Multi-Point Bolt

- ❑ First tighten diagonally to 10 Nm, then tighten diagonally again to the tightening specification
- ❑ 40 Nm
- ❑ Replace after removing.

13 - Circlip

- ❑ Replace after removing.
- ❑ Remove and install using Circlip Pliers - VW161A- .

14 - Seal

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

15 - Inner CV Joint

- ❑ Only replace completely
- ❑ Divide the grease evenly in the joint
- ❑ Removing. Refer to ⇒ Fig. ""Inner CV Joint, Removing"" , page 245 .
- ❑ Installing. Refer to ⇒ Fig. ""Inner CV Joint, Pressing On"" , page 245 .
- ❑ Checking. Refer to ⇒ "7.6 Inner CV Joint, Checking", page 248 .

16 - Plate Spring

- ❑ With inner spline
- ❑ Installation position. Refer to ⇒ Fig. ""Installation Position of the Plate Spring on Inner Joint"" , page 245 .

7.2 Drive Axle Threaded Connection, Loosening and Tightening

Special tools and workshop equipment required

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

Caution

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

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

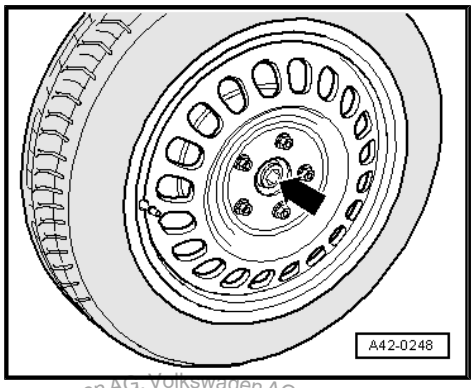
The drive axle bolt may be loosened maximum 90° when the vehicle is standing on its wheels.

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.***

Twelve-Point Bolt, Loosening

– With vehicle still resting on wheels, loosen the twelve-point bolt with -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, Installing

– Replace the twelve-point bolt.

Note

The wheels must not be touching the ground when tightening the drive axle. Otherwise, wheel bearing may be pre-damaged.

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

7.3 Drive Axle, Removing and Installing

Special tools and workshop equipment required

- Torque Wrench 1332 40-200Nm - VAG1332-
- Drive Shaft Remover - T10520-
- Spring Compressor Kit - VAG1752-

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

– Loosen the outer drive axle threaded connection. Refer to ⇒ “7.2 Drive Axle Threaded Connection, Loosening and Tightening”, page 237 .

Caution

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

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

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.

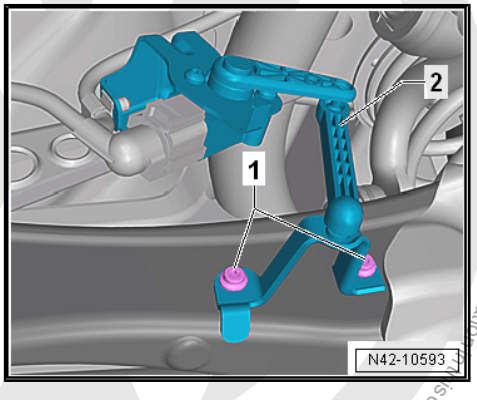
– Raise the vehicle.

– Remove the wheel.

Vehicles with Level Control System Sensor

– Remove the bolts -1-.

– Remove the Left Rear Level Control System Sensor - G76- -2- bracket.



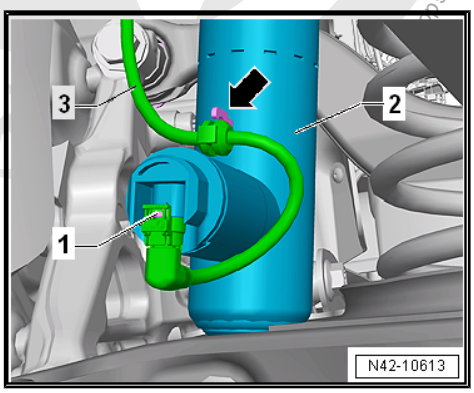
Vehicles with Adaptive Chassis DCC

– 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 connectors.

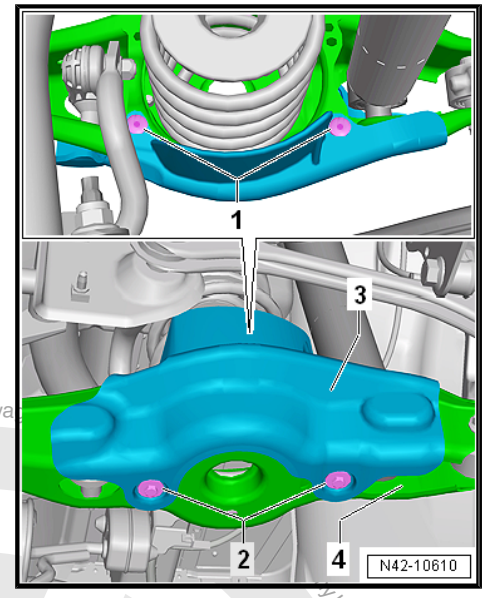


Vehicles with Stone Chip Protection

– Remove the expanding rivets -1-.

– Remove the bolts -2- for the stone chip protection -3-.

Continuation for All Vehicles



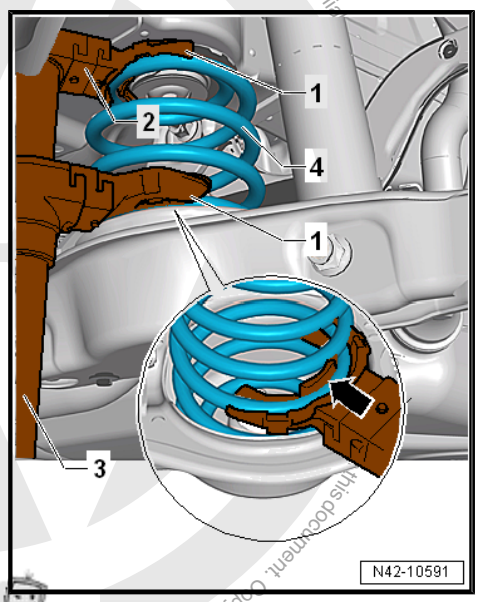
– Insert the Spring Compressor -3-.

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-

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.

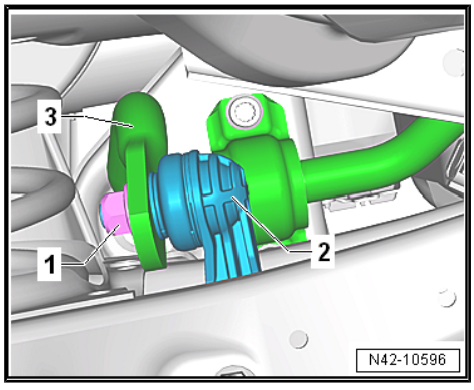
– Tension the coil spring.

Note

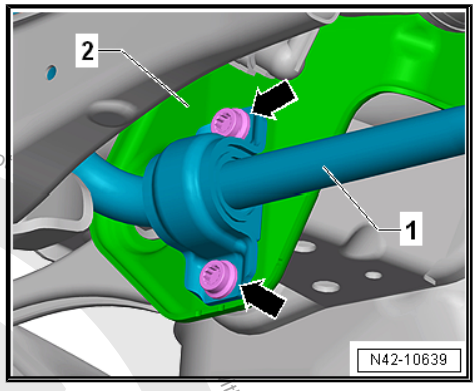
The Spring Compressor remains with the spring in the vehicle.

– Remove the nut -1- from the coupling rod -2-.

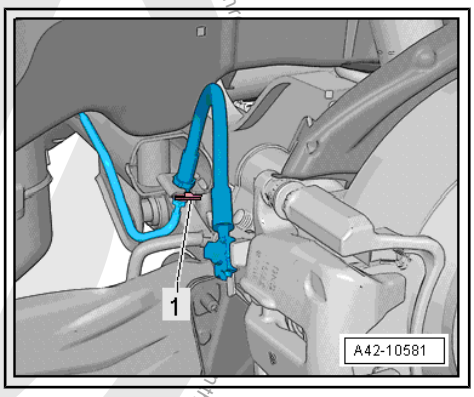
– Remove the coupling rod -2- from the stabilizer bar -3-.



– Remove the bolts -arrows- for the stabilizer bar -1-
– Remove the stabilizer bar -1- from the subframe -2- and pivot downward.



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



Note

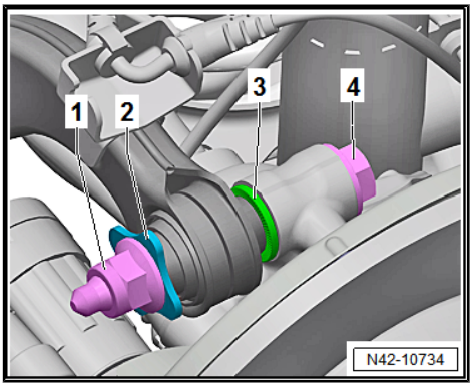
Do not disconnect the brake line.

Only Right Drive Axle.

– Remove the right rear muffler.

Continuation for Both Sides

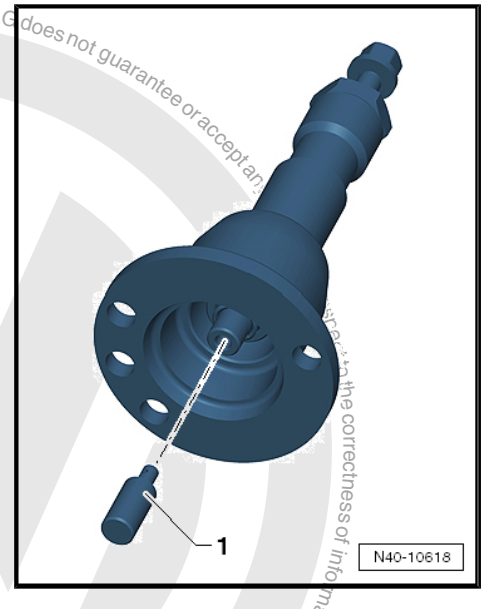
– Remove the drive axle from the transmission flange.
– Disconnect the connector from the ABS speed sensor and the electro-mechanical parking brake parking brake motor.
– If equipped, disengage the line from the bracket on the transverse link.



– Unscrew the nut -1- and remove the washer -2-.
– Remove the bolt -4-.
– Remove the washer -3-.
– Tilt the wheel bearing housing outward and remove the drive axle from the transmission flange.
– Pivot the drive axle downward and remove it from the wheel bearing.

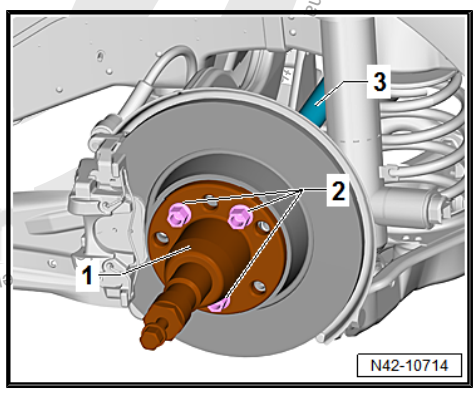
If the Drive Axle Cannot Be Pulled out of the Wheel Bearing, Then the Drive Axle Can Be Pushed out of the Wheel Bearing Using the -T10520- .

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



Using the -T10520- :

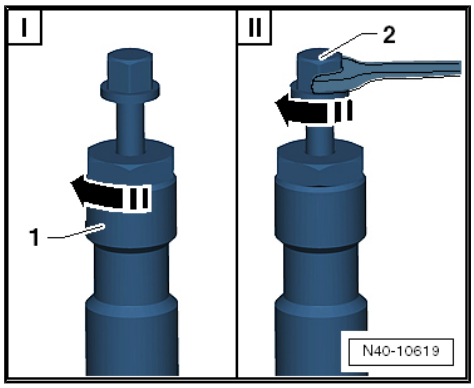
– Secure the -T10520- -1- with three wheel bolts -2- on the wheel hub, so that the drive axle -3- can be pressed out.



– 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

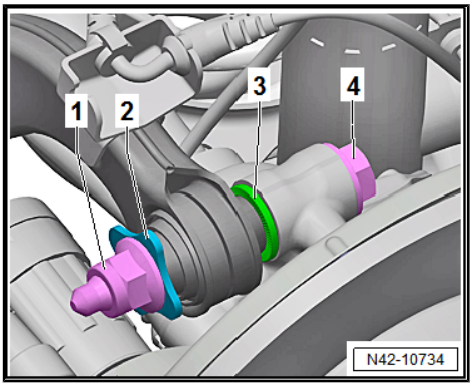
At the end of the tasks or to set back, the spindles must be brought back into the original position so that the hydraulic operation can be used.

– Remove the drive axle.

Installing

Install in reverse order of removal while noting the following:

– Insert the bolt -4- with the washer -3-.
– Slide on the washer -2-.
– Tighten the nut -1-.



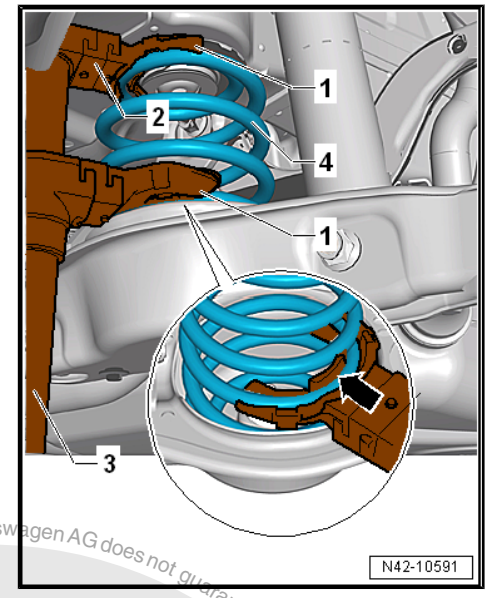
– Release the tension of the spring -4- and at the same time pay attention that the upper spring is seated on the body tab.
– Remove the Spring Tensioner -3-.

1 - Spring Compressor Kit - Spring Retainer with Inserts - VAG1752/3A-

2 - Spring Compressor Kit - Adapter Blocks - VAG1752/9-

3 - Spring Compressor Kit - Spring Tensioner - VAG1752/1-

4 - Spring



- Only fasten the threaded connections on the wheel bearing housing in the curb weight position. Refer to ⇒ “2.8.3 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring, Rear Axle, Passat and Passat Wagon”, page 9 .

– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “7.1 Overview - Drive Axle”, page 234
- Refer to ⇒ “4.1.2 Overview - Transverse Link, Multi-Link Suspension, AWD”, page 193
- Refer to ⇒ “2.2 Overview - Rear Level Control System Sensor”, page 272
- Refer to ⇒ “7.2 Drive Axle Threaded Connection, Loosening and Tightening”, page 237
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Rear muffler to body. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/ Mufflers; Overview - Muffler .

7.4 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-

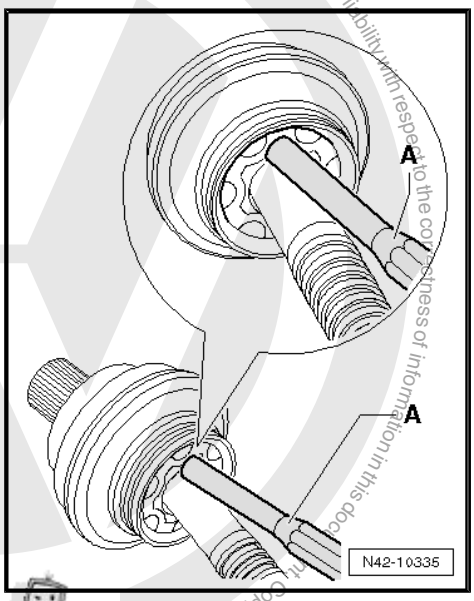
- Press Piece - Multiple Use - VW447H-
- Circlip Pliers - VW161A-
- Torque Wrench 1331 5-50Nm - VAG1331-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Clamping Pliers - VAG1682A-
- Tripod Joint Tool - T10065-

Disassembling

Outer CV Joint, Pressing Off

– Clamp the drive axle in a vise with jaw protectors.
– Remove the clamp.
– Fold back the boot.
– Push the CV joint off of the drive axle using a drift -A-.

The drift must be precisely positioned on the CV joint ball hub.

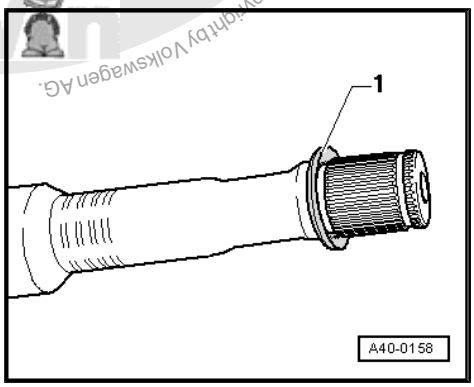


Joint, Installing

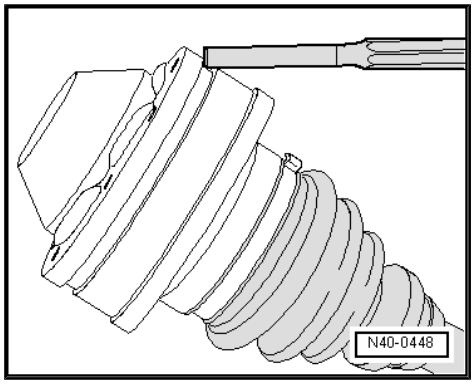
Installed Position, Plate Spring on the Outer Joint

1 - Plate Spring

– Insert a new circlip.
– Drive the joint onto the shaft using a plastic hammer until the circlip locks into place.



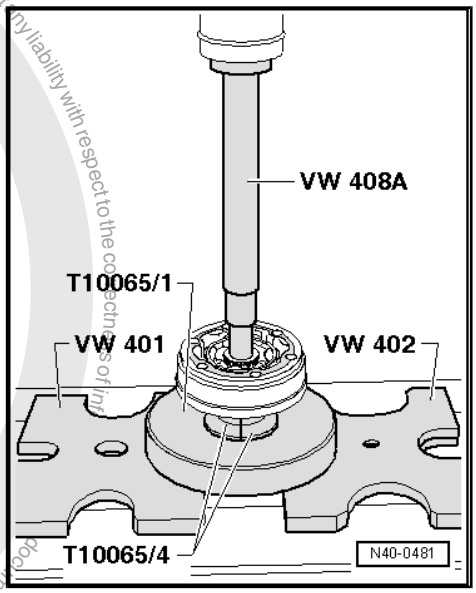
Drive off Cover for Inner Joint



Inner CV Joint, Removing

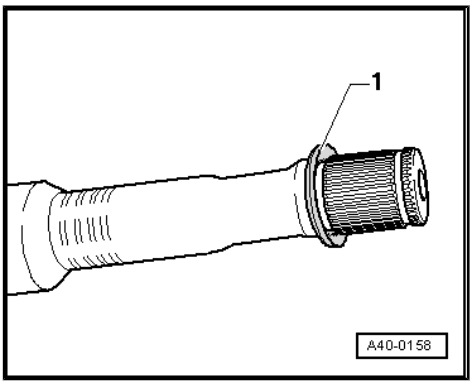
– Press off the CV boot from joint using drift.
– Remove the circlip.
– Remove both clamps, and push the CV boot toward outer joint.

Assembling



Installation Position of the Plate Spring on Inner Joint

1 - Plate Spring

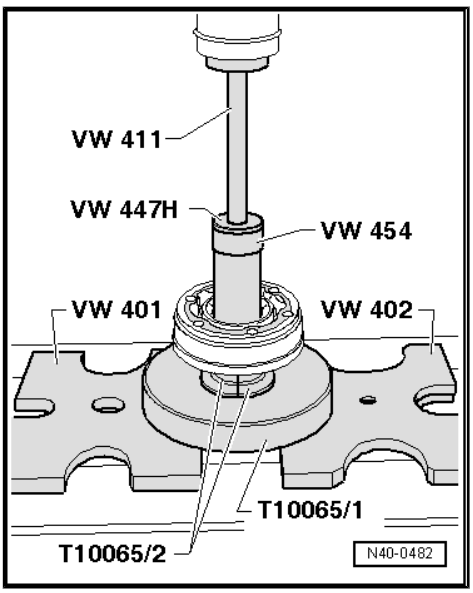


Inner CV Joint, Pressing On

Note

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

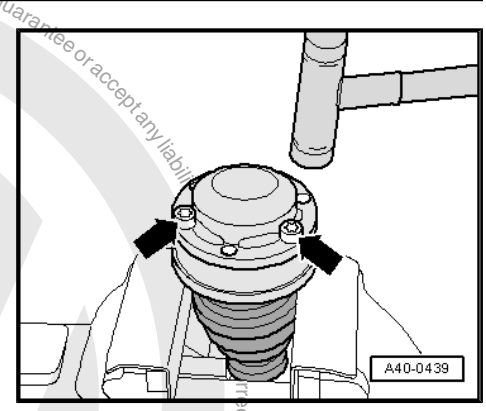
– Press on joint until it stops.
– Install the circlip.



– Align the new cover with screws -arrows- to screw holes.

It Must Be Aligned Exactly Because It Cannot Be Aligned after Installing.

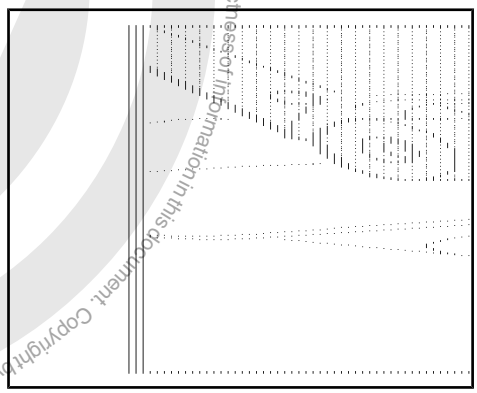
– Drive cover on with a plastic mallet.



Tightening Clamp on the Outer Joint

– Attach the -VAG1682A- as shown. When doing this, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.

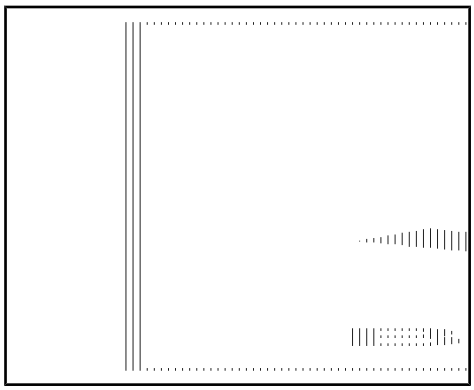
– Tension the clamp by turning spindle with a torque wrench (without tilting the pliers).



Note

- *The hard material of the CV boot (compared to rubber) makes it necessary to use a stainless steel hose clamp. It is only possible to tighten the clamp using -VAG1682A- .*
- *Tightening specification: 25 Nm.*
- *Use the torque wrench -C- with adjustment range 5 to 50 Nm (for example, -VAG1331-).*
- *Make sure the spindle threads -A- on the pliers move easily. Lubricate with MOS 2 grease, if necessary.*
- *If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.*

Tension the Clamp on the Small Diameter



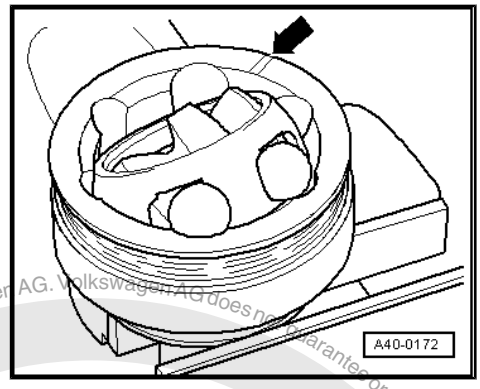
7.5 Outer CV Joint, Checking

The joint is to be disassembled if badly contaminated to replace the grease, or when the ball contact surfaces show wear or damage.

Removing

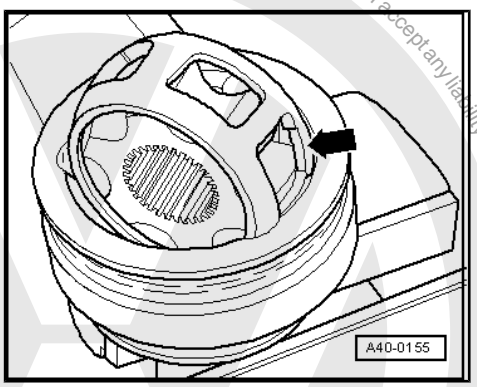
– Before disassembling, mark the ball hub position in relation to the ball cage and housing with an electric engraver or sharpening stone -arrow-.

– Tilt the ball hub and the ball cage and remove the balls one after another.



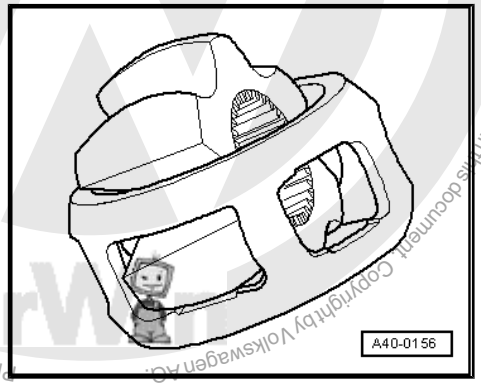
– Turn cage until the two rectangular windows -arrow- are aligned with the joint housing.

– Lift out cage with hub.



– Swing a hub segment in a cage window.

– Fold hub out from cage.



Note

- *The six balls for each joint belong to a tolerance group. Check the axle stub, hub, cage and balls for small depressions (pitting build-up) and chafing.*
- *Excessive backlash in the joint is noticeable by a thump during load alternations. The joint should be replaced in these cases.*
- *Flattening and running marks on the balls are no reason to replace a joint.*

Installing

Install in reverse order of removal while noting the following:

– Press half of the grease amount from the repair kit into the joint housing.

– Insert cage with hub into joint body.

Note

Cage must be inserted on the correct side.

– Press in the opposite facing balls one after the other, and the old ball hub position to the ball cage and to the joint housing must be replicated.

– Install the new circlip in the shaft.

– Distribute the remaining grease in the joint boot.

7.6 Inner CV Joint, Checking

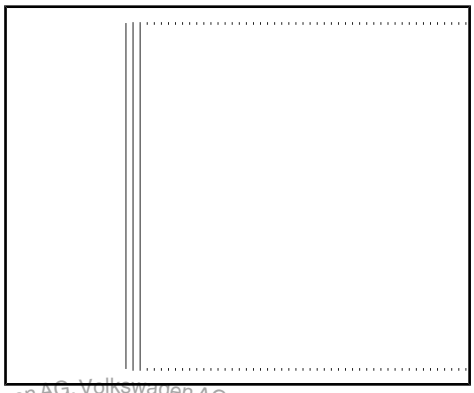
The joint is to be disassembled if badly contaminated to replace the grease, or when the ball contact surfaces show wear or damage.

Note

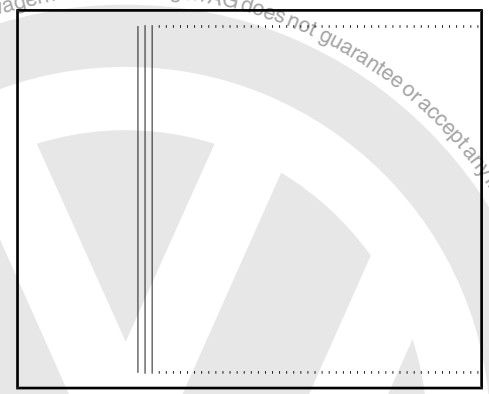
Ball hub and joint piece are paired. Before removing, mark in relation to each other using a waterproof felt-tip pen.

Removing

- Tilt the ball hub and ball cage.
- Remove the joint in the direction of the arrow.
- Remove the balls from the cage.



- Flip out ball hub from ball cage via the ball race -arrows-.
- Check the joint, ball hub, ball cage and balls for small broken off depressions (pitting) and chafing.



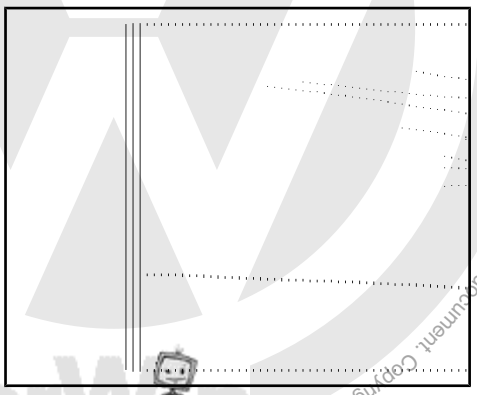
Note

Excessive backlash in joint will be noticed as a knock during load changes. Joint must be replaced in such cases. Flattening and running marks on the balls are no reason to replace the joint.

Installing

Install in reverse order of removal while noting the following:

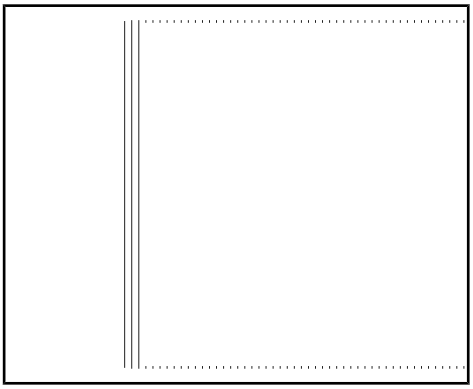
- Insert the ball hub into the ball cage via two chamfers. The installation position is arbitrary. Press balls into cage.
- Insert hub with cage and balls upright into joint piece.



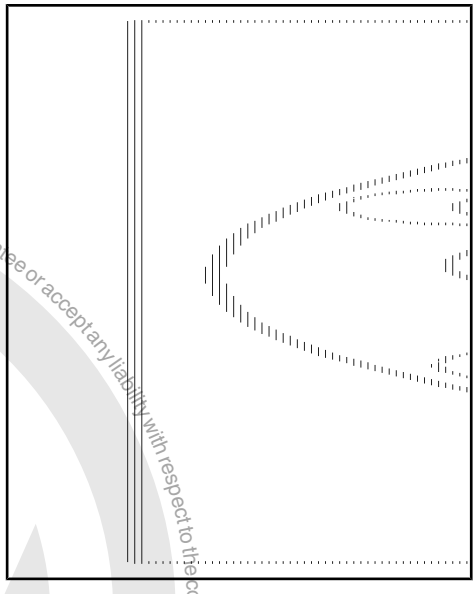
When inserting, make sure that in each case the wide gap -a- at joint piece contacts narrow gap -b- at hub after swinging in.

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

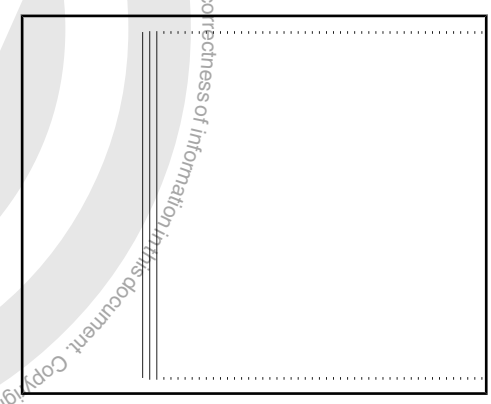
– Pay attention to the bevel on the inner diameter of the ball hub. It must be visible.



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



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

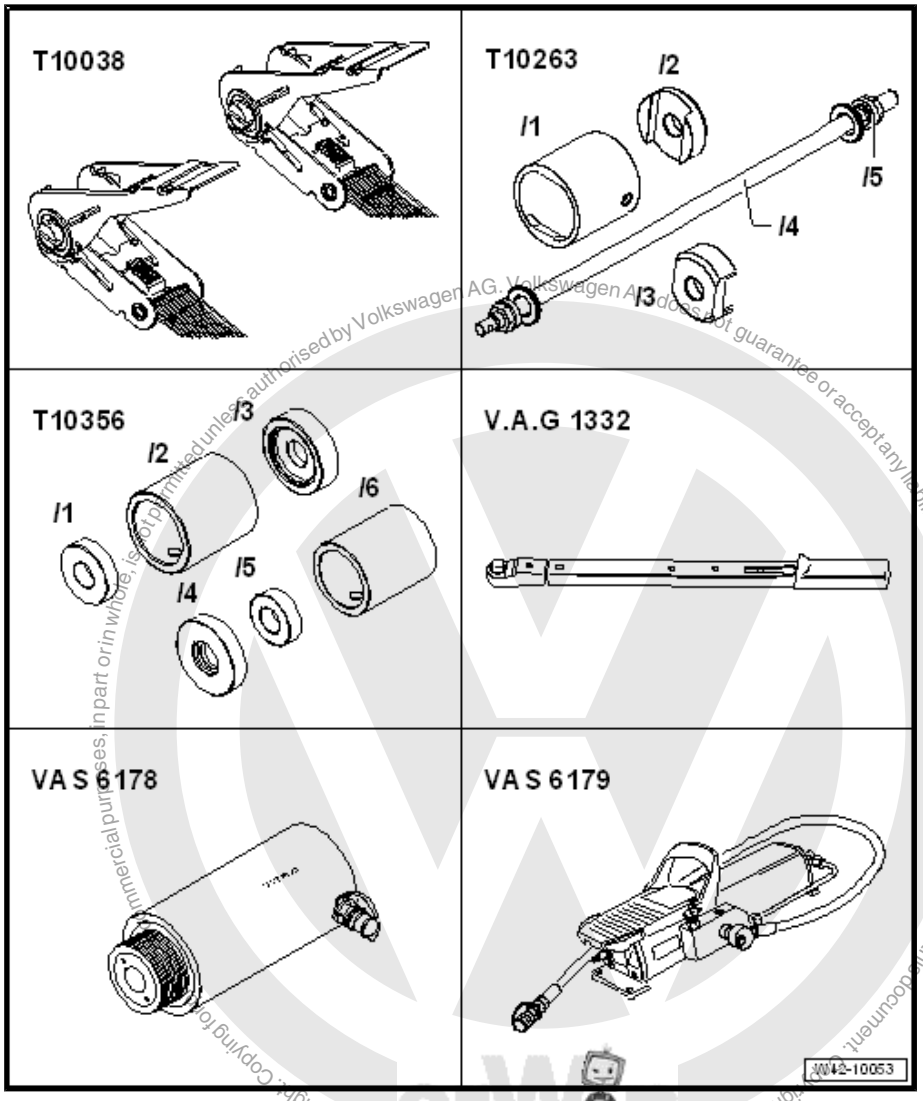


CV joint, checking for function:

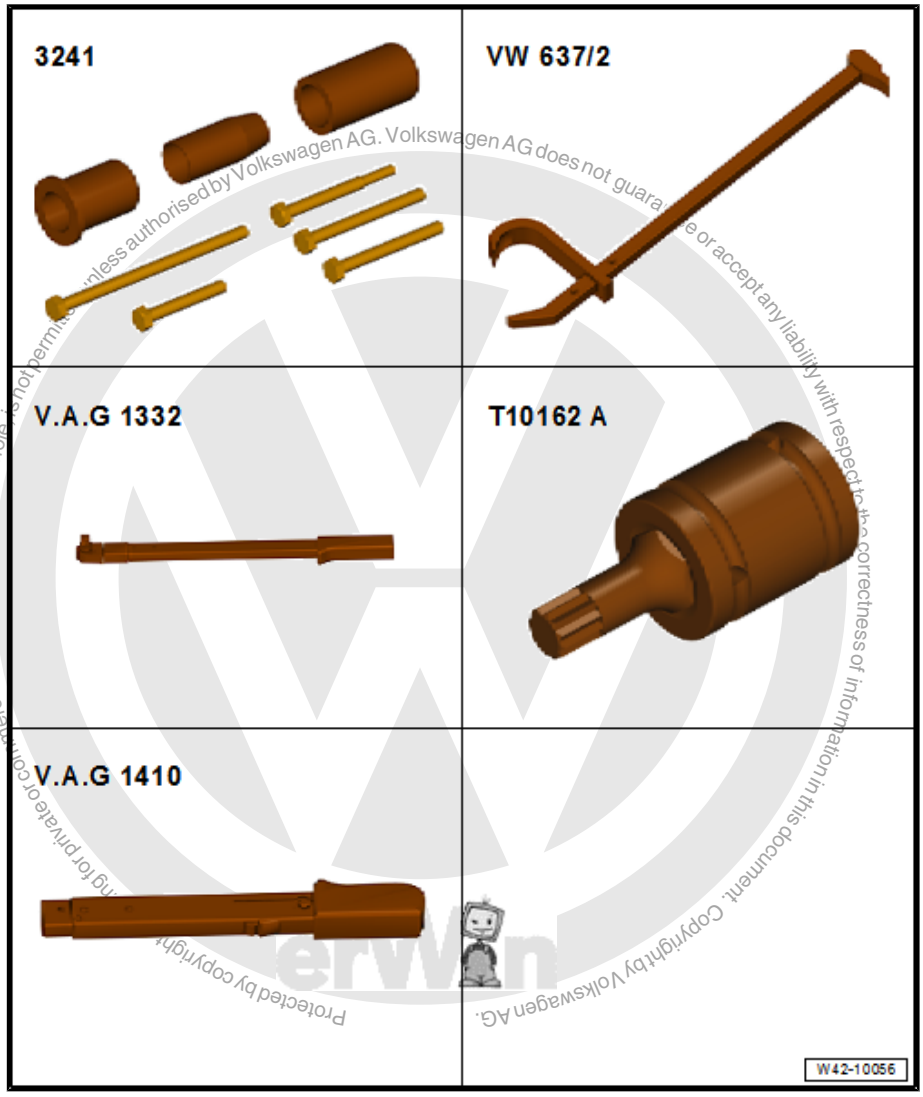
The CV joint is properly assembled, if the ball hub can be slid back and forth by hand over the entire length adjustment.

8 Special Tools

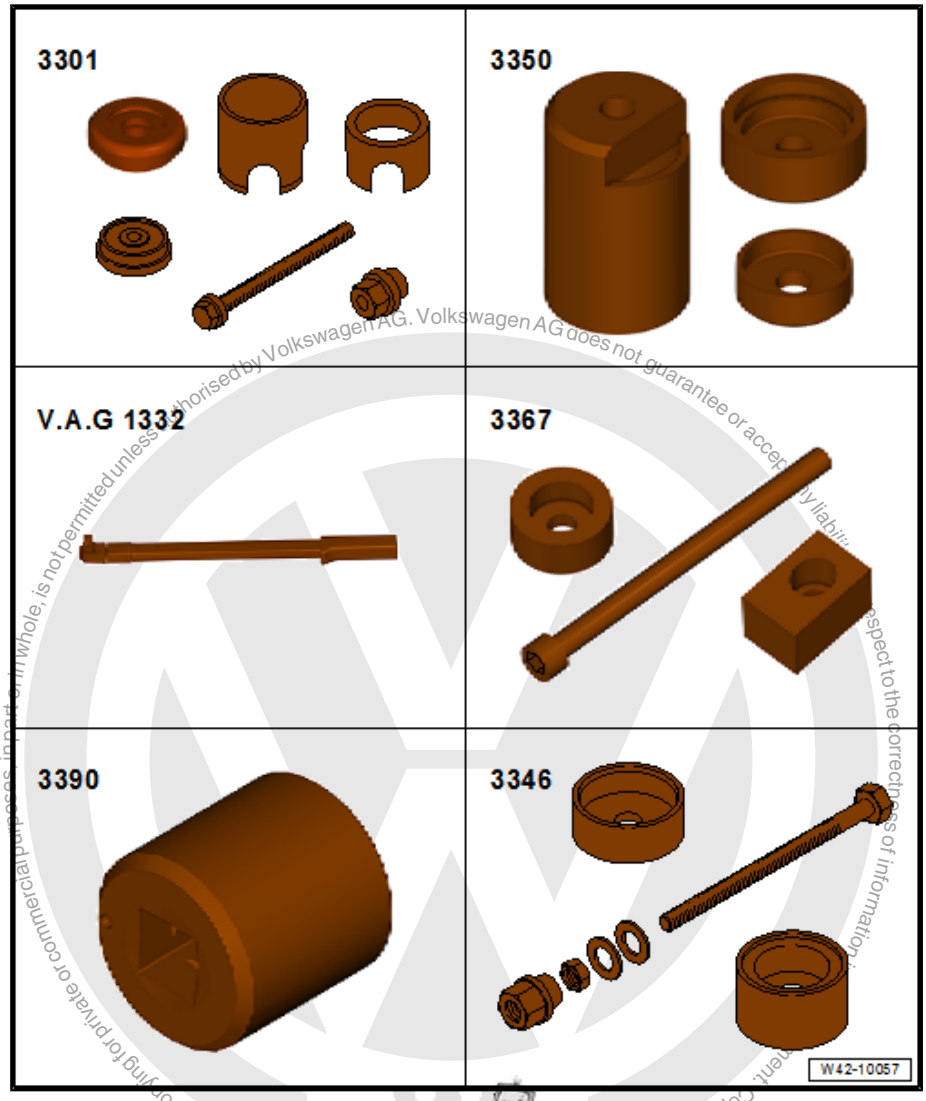
Special tools and workshop equipment required



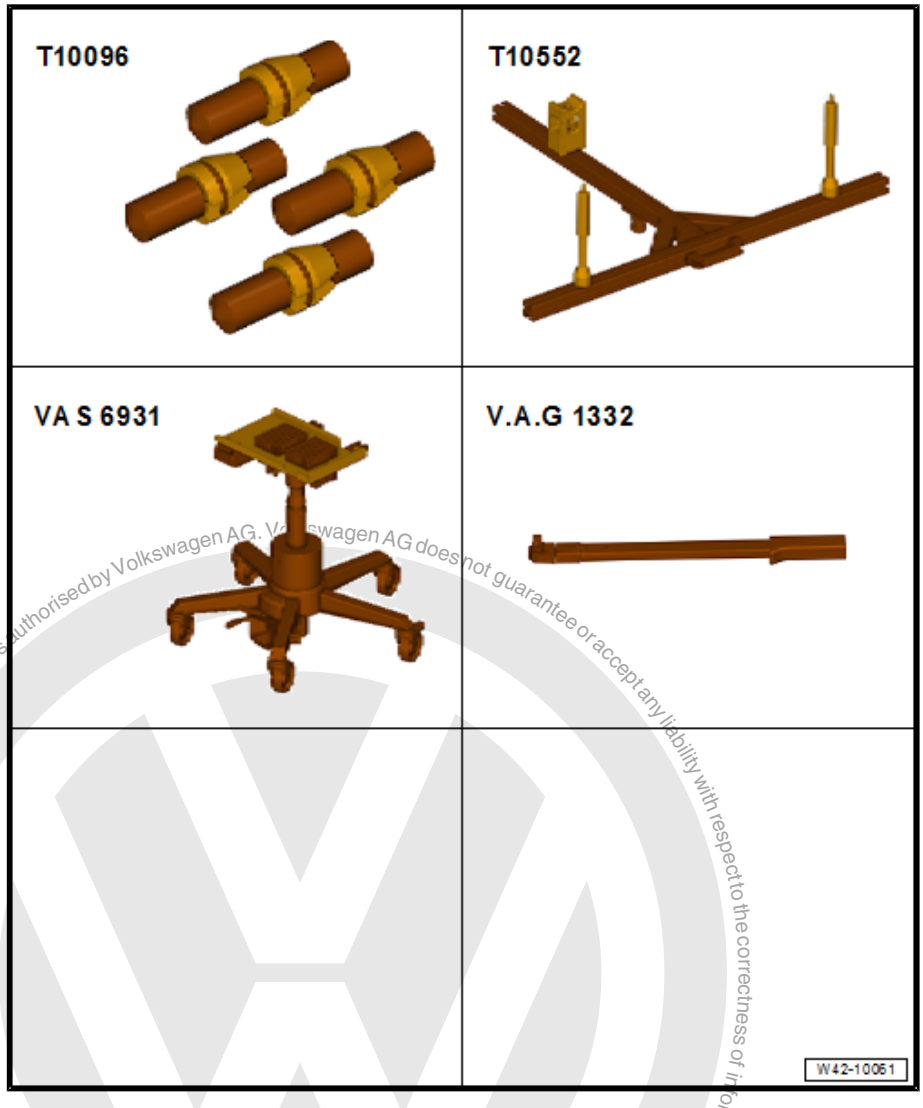
- Tensioning Strap - T10038-
- Hydraulic Press - Rear Subframe Bushing Tool Kit - T10263-
- Subframe Bushing Assembly Tool Kit - T10356-
- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-
- Hydraulic Press - VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit- Adapter 13 - T10205/13-
- Pneumatic/Hydraulic Foot Pump - VAS6179-



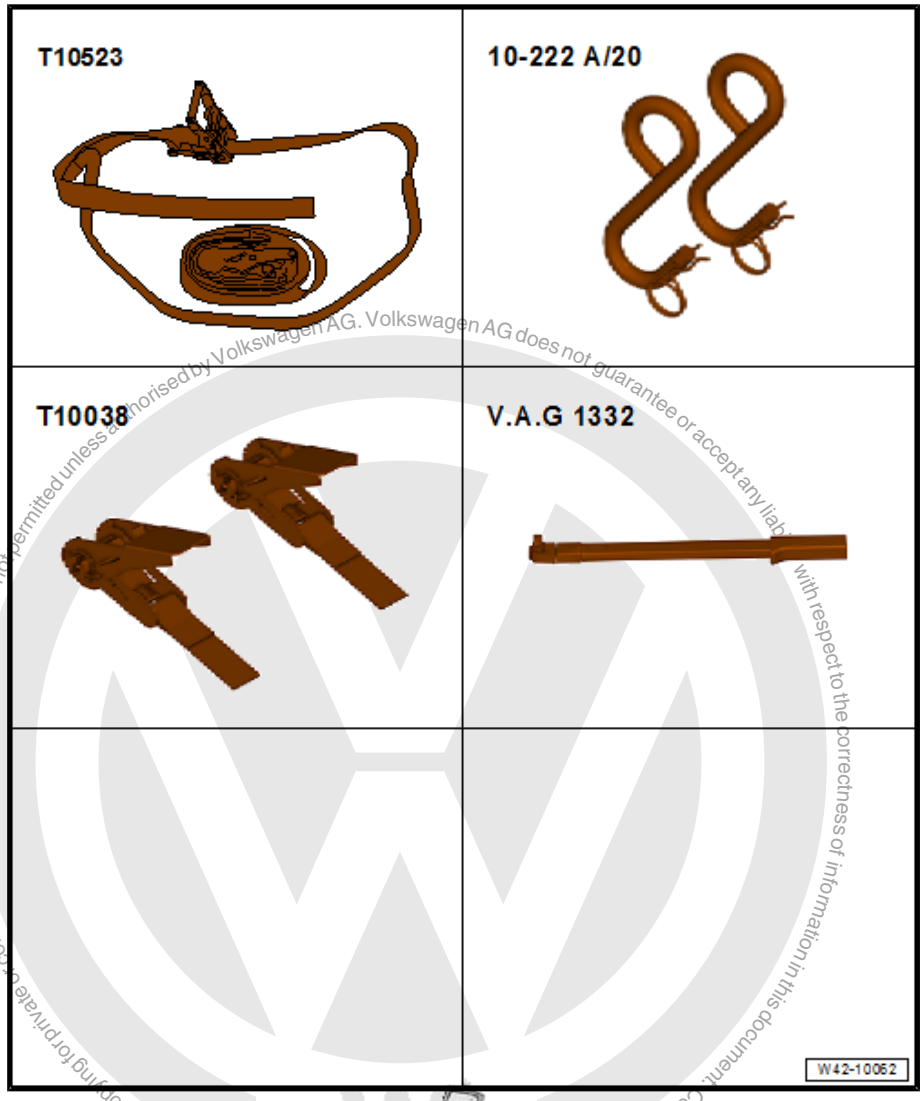
- Seal Installer - Camshaft Installer Kit - Sleeve - 3241/4-
- Puller - Grease Cap - VW637/2-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Socket - XZN 18mm - T10162A-
- Torque Wrench - VAG1410-



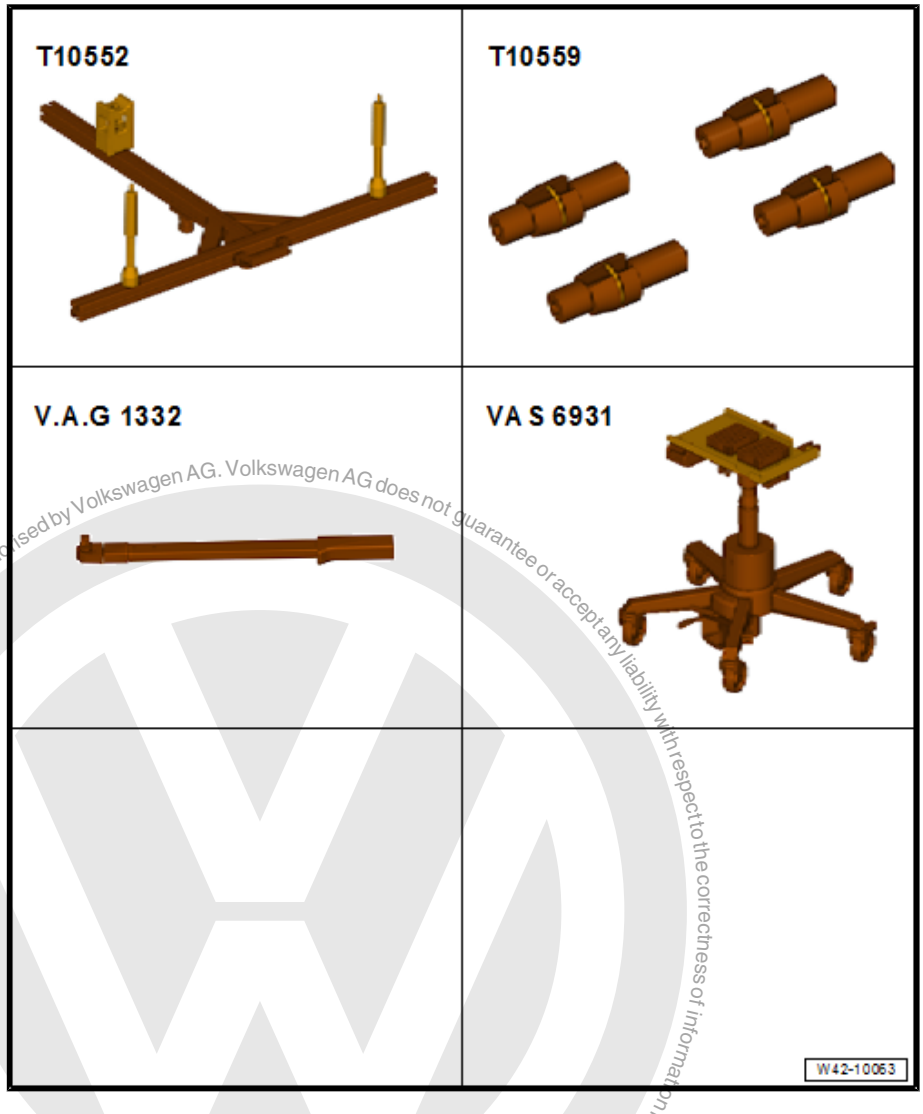
- Subframe Bushing Tool Kit - 3301-
- Bearing Installer - Carrier Bearing - 3350-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Press Tool For Viscous Fan - 3367-
- Torque Adapter - 3390-
- Bearing Installer - Control Arm - 3346-



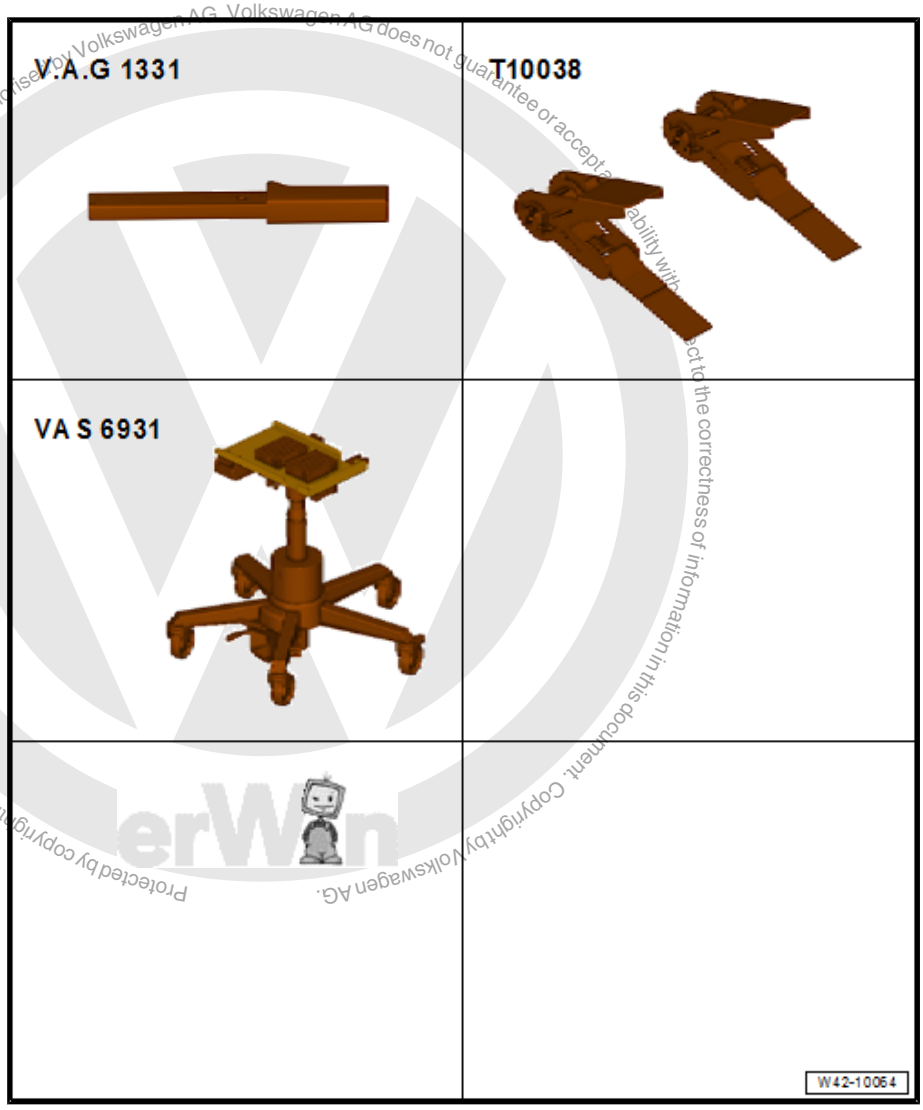
- Locating Pins - T10096-
- Rear Axle Support - T10552-
- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-
- Torque Wrench 1332 40-200Nm - VAG1332-



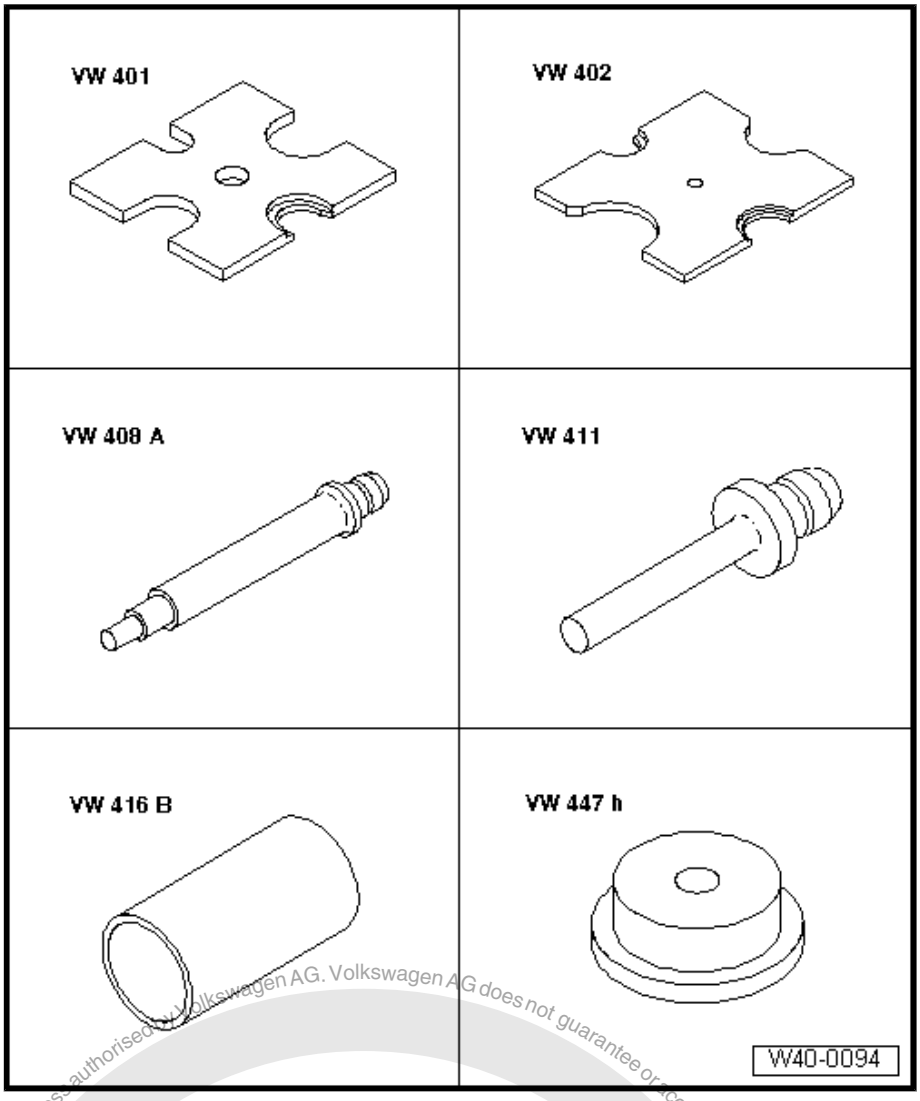
- Tensioning Strap - T10523-
- Engine Support Bridge - Special Hook (2 pc.) - 10-222A/20-
- Tensioning Strap - T10038-
- Torque Wrench 1332 40-200Nm - VAG1332-



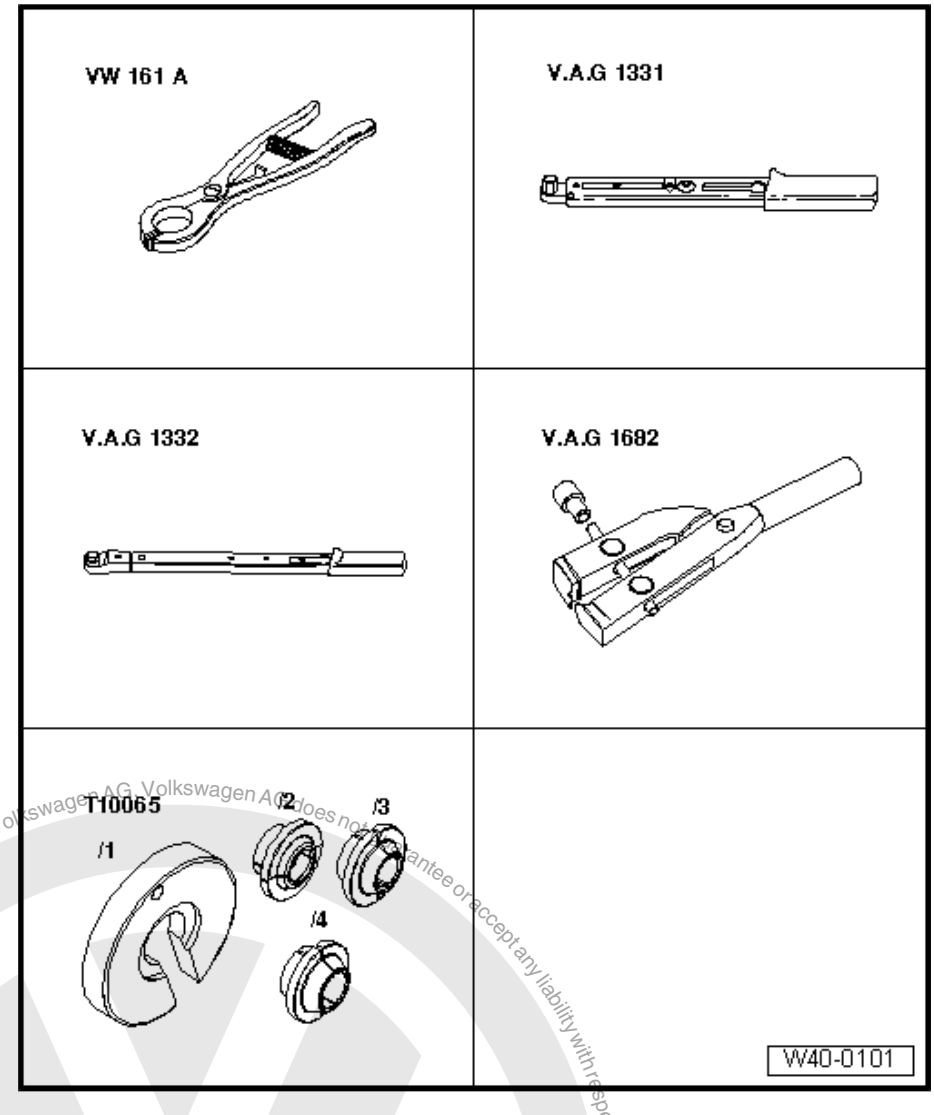
- Rear Axle Support - T10552-
- Locating Pins - T10559-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-



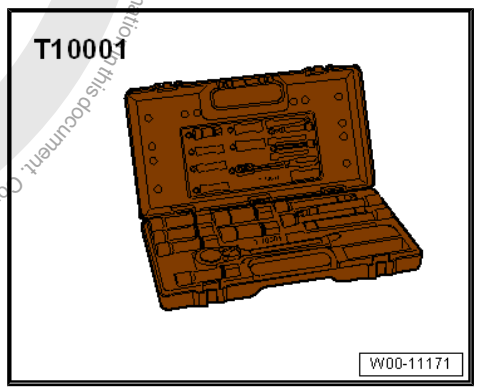
- Torque Wrench 1331 5-50Nm - VAG1331-
- Tensioning Strap - T10038-
- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-



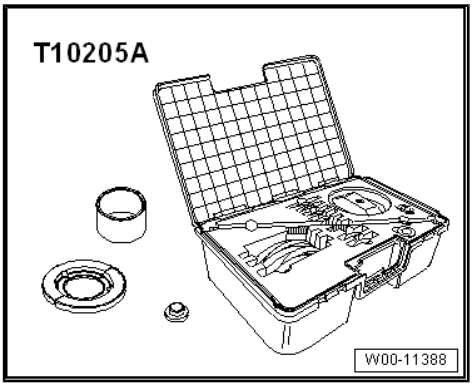
- Press Plate - VW401-
- Press Plate - VW402-
- Press Piece - Rod - VW408A-
- Press Piece - Rod - VW411-
- Press Piece - 37mm - VW416B-
- Press Piece - Multiple Use - VW447H-



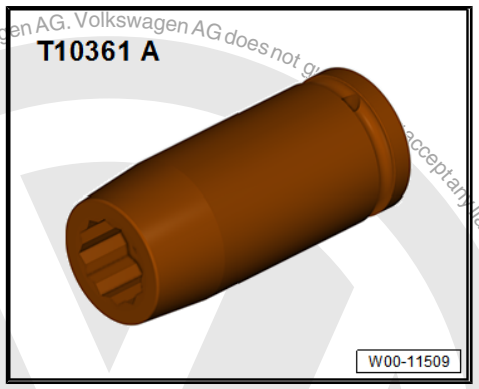
- Circlip Pliers - VW161A-
- Torque Wrench 1331 5-50Nm - VAG1331-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Clamping Pliers - VAG1682A-
- Tripod Joint Tool - T10065-
- Shock Absorber Set - T10001-



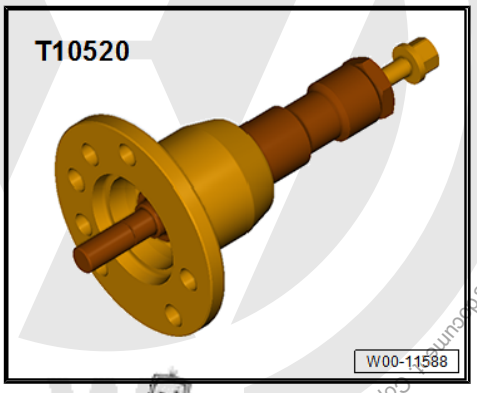
- Bearing Installer - Wheel Hub/Bearing Kit - T10205-



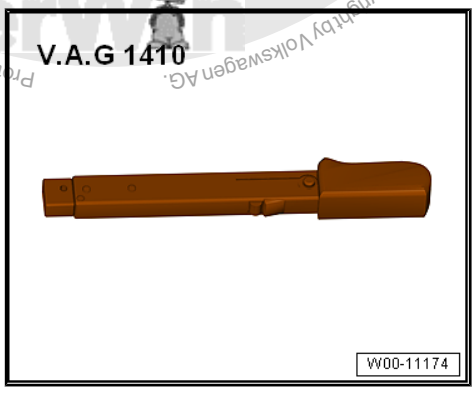
- Socket AF 24 mm - T10361A-



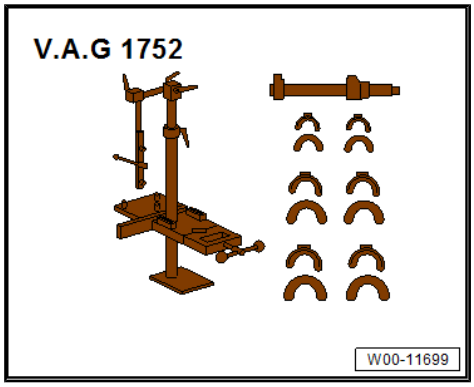
- Drive Shaft Remover - T10520-



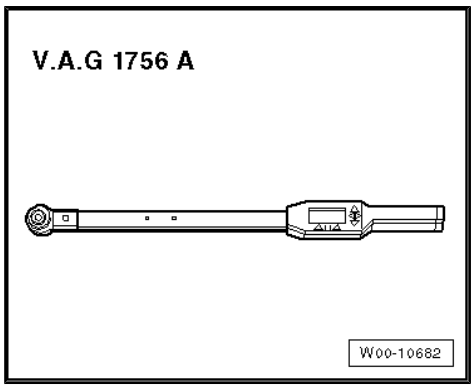
- Torque Wrench - VAG1410-



- Spring Compressor Kit - VAG1752-



- Digital Torque Wrench - VAG1756A-



43 – Self-Leveling Suspension

1 Electronic Damping

⇒ “1.1 Component Location Overview - Electronic Damping”, page 261

⇒ “1.2 Electronic Damping Control Module J250 , Removing and Installing”, page 262

⇒ “1.3 Left and Right Front Body Acceleration Sensor G341 / G342 , Removing and Installing”, page 265

⇒ “1.4 Left Rear Body Acceleration Sensor G699 , Removing and Installing”, page 267

1.1 Component Location Overview - Electronic Damping

1 - Shock Absorber with Right Front Damping Adjustment Valve - N337-

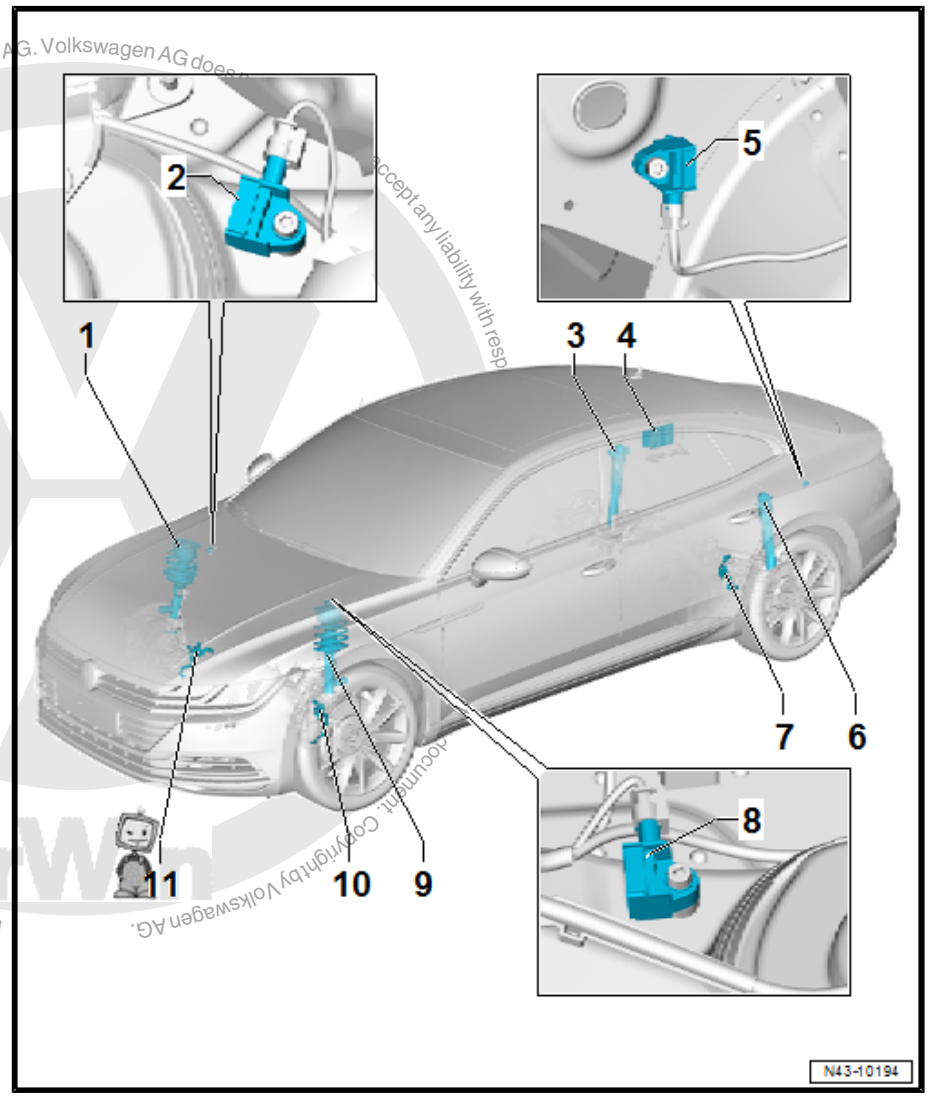
- ❑ Suspension strut, removing and installing. Refer to ⇒ “4.2 Suspension Strut, Removing and Installing”, page 52 .
- ❑ Service the suspension strut. Refer to ⇒ “4.3 Suspension Strut, Servicing”, page 58 .

2 - Right Front Body Acceleration Sensor - G342-

- ❑ Bolt: 8 Nm
- ❑ Removing and installing. Refer to ⇒ “1.3 Left and Right Front Body Acceleration Sensor G341 / G342 , Removing and Installing”, page 265 .

3 - Shock Absorber with Right Rear Damping Adjustment Valve - N339-

- ❑ Shock absorber, removing and installing. Refer to ⇒ “5.2 Shock Absorber, Removing and Installing”, page 201 .
- ❑ Shock absorber, servicing. Refer to ⇒ “5.3 Shock Absorber, Servicing”, page 203 .



4 - Electronic Damping Control Module - J250-

- ❑ Removing and installing. Refer to ⇒ “1.2 Electronic Damping Control Module J250 , Removing and Installing”, page 262 .
- ❑ Component location: the Electronic Damping Control Module - J250- is installed in the luggage compartment behind the right side trim panel.

- ❑ If the Electronic Damping Control Module - J250- is being replaced, the `Replace control module` function must be performed. Refer to 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 ⇒ “3.1 Driver Assistance Systems Front Camera, Calibrating”, page 300 .

5 - Left Rear Body Acceleration Sensor - G699-

- ❑ Bolt: 8 Nm
- ❑ Passat component location: in the luggage compartment on the left shock absorber tower behind the left side trim panel
- ❑ Arteon component location: in the luggage compartment on the sidewall behind the left side trim panel
- ❑ Removing and installing. Refer to ⇒ “1.4 Left Rear Body Acceleration Sensor G699 , Removing and Installing”, page 267 .

6 - Shock Absorber with Left Rear Damping Adjustment Valve - N338-

- ❑ Shock absorber, removing and installing. Refer to ⇒ “5.2 Shock Absorber, Removing and Installing”, page 201 .
- ❑ Shock absorber, servicing. Refer to ⇒ “5.3 Shock Absorber, Servicing”, page 203 .

7 - Left Rear Level Control System Sensor - G76-

- ❑ Removing and installing, FWD. Refer to ⇒ “2.4.1 Left Rear Level Control System Sensors G76 , Removing and Installing, Multi-Link Suspension, FWD”, page 275 .
- ❑ Removing and installing, AWD. Refer to ⇒ “2.4.2 Left Rear Level Control System Sensors G76 , Removing and Installing, Multi-Link Suspension, AWD”, page 275 .

8 - Left Front Body Acceleration Sensor - G341-

- ❑ Bolt: 8 Nm
- ❑ Removing and installing. Refer to ⇒ “1.3 Left and Right Front Body Acceleration Sensor G341 / G342 , Removing and Installing”, page 265 .

9 - Shock Absorber with Left Front Damping Adjustment Valve - N336-

- ❑ Suspension strut, removing and installing. Refer to ⇒ “4.2 Suspension Strut, Removing and Installing”, page 52 .
- ❑ Service the suspension strut. Refer to ⇒ “4.3 Suspension Strut, Servicing”, page 58 .

10 - 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 273 .

11 - Right Front Level Control System Sensor - G289-

- ❑ Removing and installing. Refer to ⇒ “2.3 Left/Right Front Level Control System Sensor G78 / G289 , Removing and Installing”, page 273 .

1.2 Electronic Damping Control Module - J250- , Removing and Installing

⇒ “1.2.1 Electronic Damping Control Module J250 , Removing and Installing, Passat Sedan”, page 262

⇒ “1.2.2 Electronic Damping Control Module J250 , Removing and Installing, Passat Wagon, Arteon”, page 264

1.2.1 Electronic Damping Control Module - J250- , Removing and Installing, Passat Sedan

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 right side trim panel.

– Disconnect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Disconnecting and Connecting

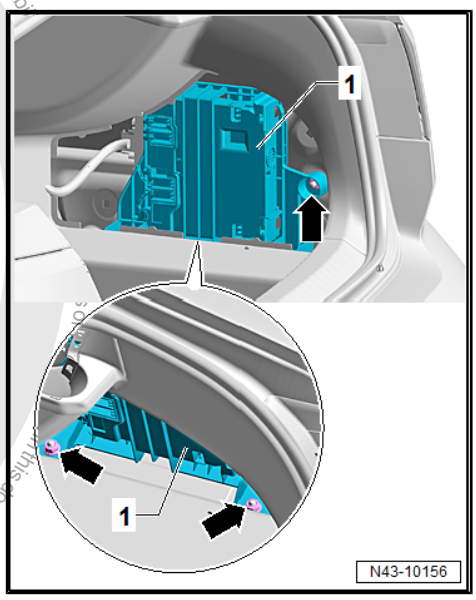
– Switch the ignition off and open the driver door so the steering wheel lock engages.

– Open the access cover for the right luggage compartment side trim panel.

– If equipped, disconnect the connectors for the Digital TV Tuner - R171- .

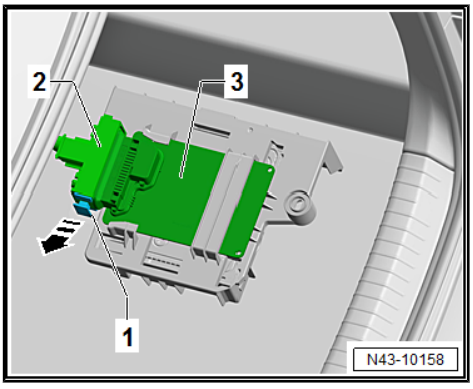
– Remove the nuts -arrows-.

– Remove the bracket -1- with the Electronic Damping Control Module - J250- from the stud bolts and place it in the passenger compartment.



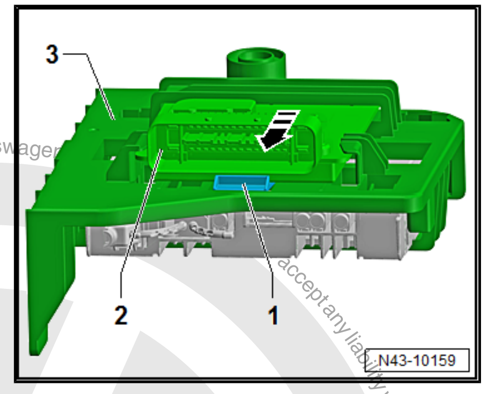
– Release the release lever -1- in the direction of -arrow-.

– Disconnect the connector -2- from the Electronic Damping Control Module - J250- -3-.



– Push the tab -1- in the direction of -arrow-.

– Remove the Electronic Damping Control Module - J250- -2- from the bracket -3-.



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. Refer to 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 ⇒ “3.1 Driver Assistance Systems Front Camera, Calibrating”, page 300 .

Tightening Specifications

- Bracket to body. Refer to ⇒ Communication; Rep. Gr. 91 ; TV System; Component Location Overview - TV System .

1.2.2 Electronic Damping Control Module - J250- , Removing and Installing, Passat Wagon, Arteon

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 right side trim panel.

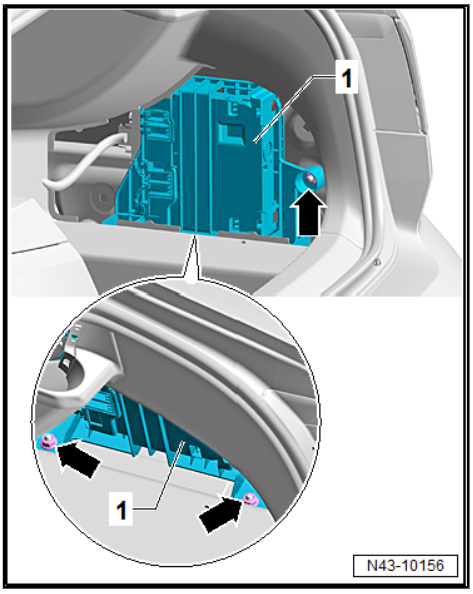
– Disconnect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Disconnecting and Connecting .

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

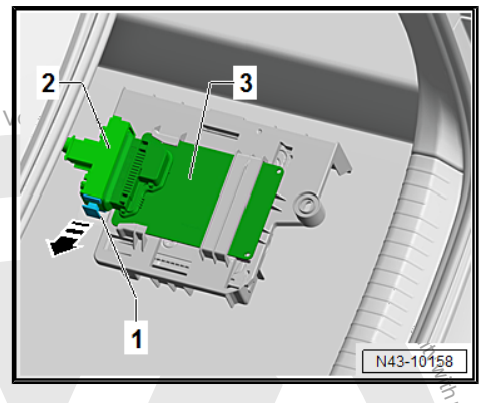
– Remove the right luggage compartment side trim panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Luggage Compartment Trim Panels; Luggage Compartment Side Trim Panel, Removing and Installing .

– If equipped, disconnect the connectors for the Digital TV Tuner - R171- .

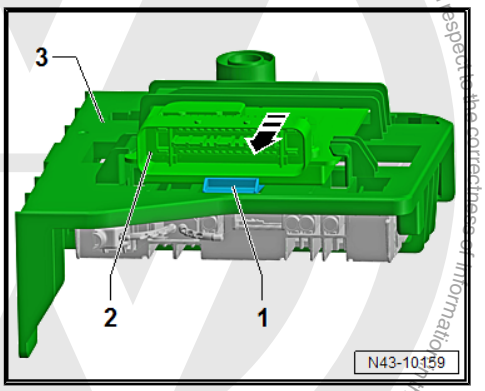
– Remove the nuts -arrows-.
– Remove the bracket -1- with the Electronic Damping Control Module - J250- from the stud bolts and place it in the passenger compartment.



– Release the release lever -1- in the direction of -arrow-.
– Disconnect the connector -2- from the Electronic Damping Control Module - J250- -3-.



– Push the tab -1- in the direction of the arrow.
– Remove the Electronic Damping Control Module - J250- -2- from the bracket -3-.



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. Refer to 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 ⇒ “3.1 Driver Assistance Systems Front Camera, Calibrating”, page 300 .

Tightening Specifications

♦ Bracket to body. Refer to ⇒ Communication; Rep. Gr. 91 ; TV System; Component Location Overview - TV System .

1.3 Left and Right Front Body Acceleration Sensor -G341- / -G342- , Removing and Installing

Special tools and workshop equipment required

♦ Torque Wrench - VAG1410-

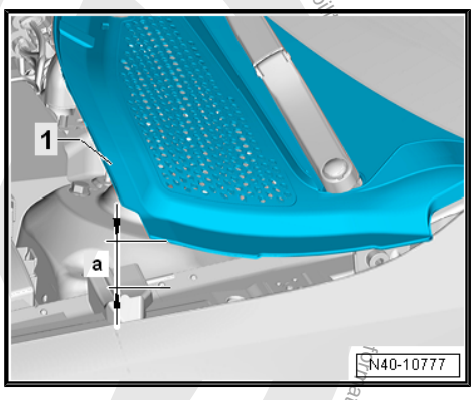
Removing

– 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.

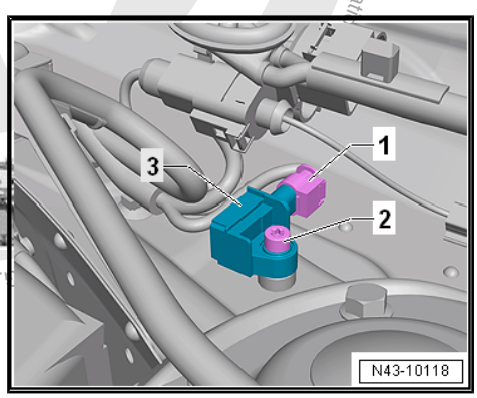
a - 60 mm



– Release and disconnect the connector -1-.

– Remove the bolt -2-.

– Remove the Front Body Acceleration Sensor .

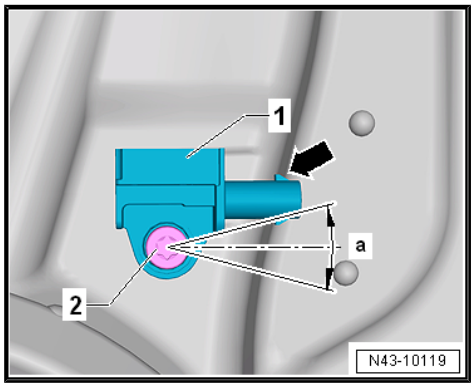


Installing

Install in reverse order of removal. Note 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 ±10°. 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. Use the Vehicle Diagnostic Tester .

Tightening Specifications

♦ Refer to
⇒ “1.1 Component Location Overview - Electronic Damping”, page 261

1.4 Left Rear Body Acceleration Sensor - G699- , Removing and Installing

⇒ "1.4.1 Left Rear Body Acceleration Sensor G699 , Removing and Installing, Passat Sedan", page 267

⇒ "1.4.2 Left Rear Body Acceleration Sensor G699 , Removing and Installing, Passat Wagon", page 268

⇒ "1.4.3 Left Rear Body Acceleration Sensor G699 , Removing and Installing, Arteon", page 269

1.4.1 Left Rear Body Acceleration Sensor - G699- , Removing and Installing, Passat Sedan

Special tools and workshop equipment required

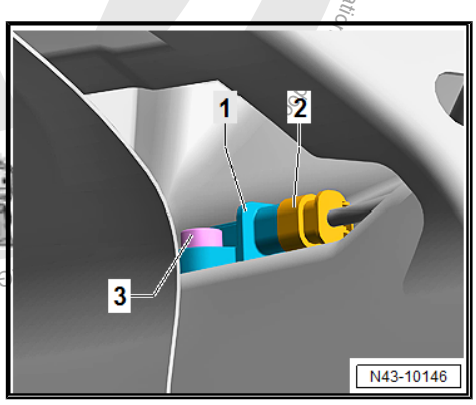
- Torque Wrench - VAG1410-

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 -2-.

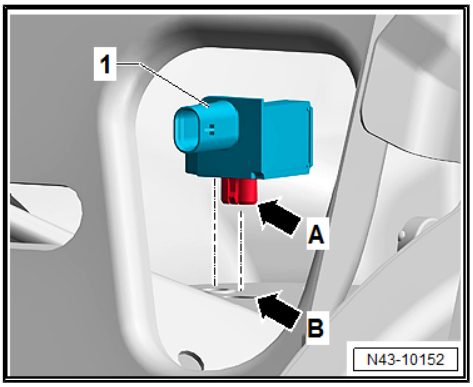
– Remove the bolt -3- and then remove the Rear Body Acceleration Sensor - G343- -1-.



Installing

Install in reverse order of removal. Note the following:

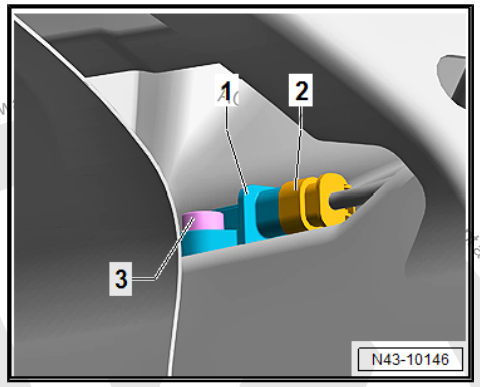
– Insert the Rear Body Acceleration Sensor - G343- -1- so that the tab -arrow A- engages in the hole -arrow B-.



– Install the Rear Body Acceleration Sensor - G343- -1- with the bolt -3-.
– Connect the connector -2- to the Rear Body Acceleration Sensor - G343- -1-.
– Perform the basic setting for the wheel damping electronics. Use the Vehicle Diagnostic Tester .

Tightening Specifications

◆ Refer to
⇒ “1.1 Component Location Overview - Electronic Damping”, page 261



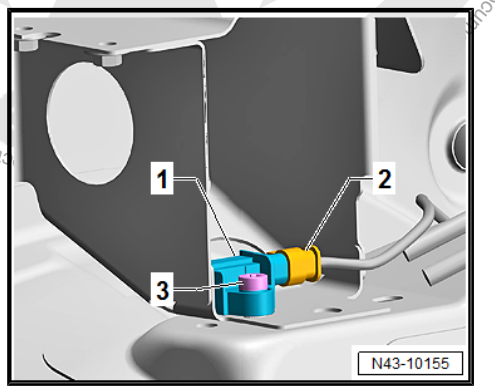
1.4.2 Left Rear Body Acceleration Sensor - G699- , Removing and Installing, Passat Wagon

Special tools and workshop equipment required

◆ Torque Wrench - VAG1410-

Removing

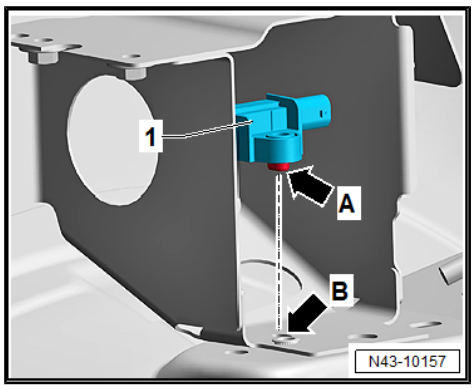
– Remove the left luggage compartment side trim panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Luggage Compartment Trim Panels; Luggage Compartment Side Trim Panel, Removing and Installing
– Release and disconnect the connector -2-.
– Remove the bolt -3- and then remove the Rear Body Acceleration Sensor - G343- -1-.



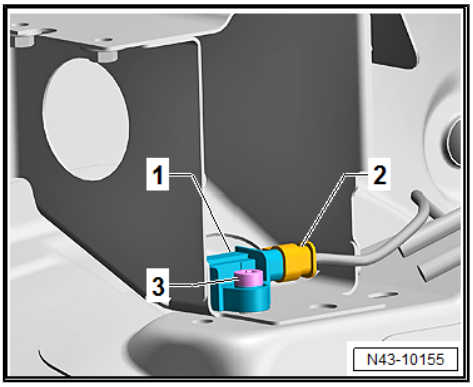
Installing

Install in reverse order of removal. Note the following:

– Insert the Rear Body Acceleration Sensor - G343- -1- so that the tab -arrow A- engages in the hole -arrow B-.



– Install the Rear Body Acceleration Sensor - G343- -1- with the bolt -3-.
– Connect the connector -2- to the Rear Body Acceleration Sensor - G343- -1-.
– Perform the basic setting for the wheel damping electronics. Use the Vehicle Diagnostic Tester .



Tightening Specifications

♦ Refer to
⇒ “1.1 Component Location Overview - Electronic Damping”, page 261

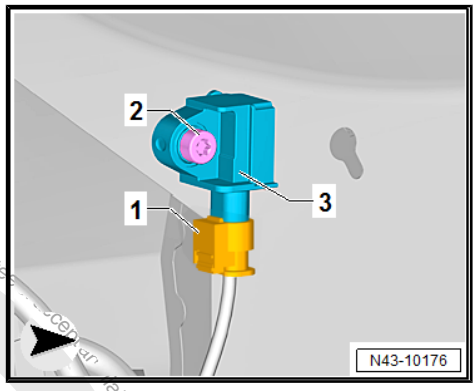
1.4.3 Left Rear Body Acceleration Sensor - G699- , Removing and Installing, Arteon

Special tools and workshop equipment required

♦ Torque Wrench - VAG1410-

Removing

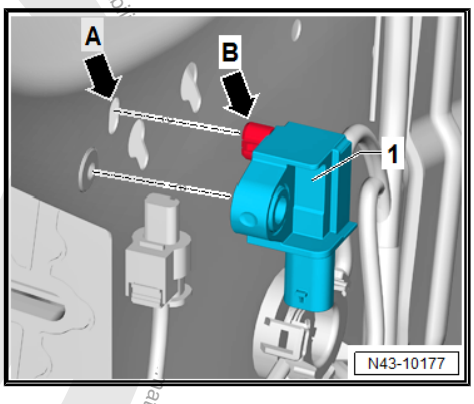
– Remove the left luggage compartment side trim panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Luggage Compartment Trim Panels; Luggage Compartment Side Trim Panel, Removing and Installing
– Release and disconnect the connector -1-.
– Remove the bolt -2- and then remove the Rear Body Acceleration Sensor - G343- -3-.



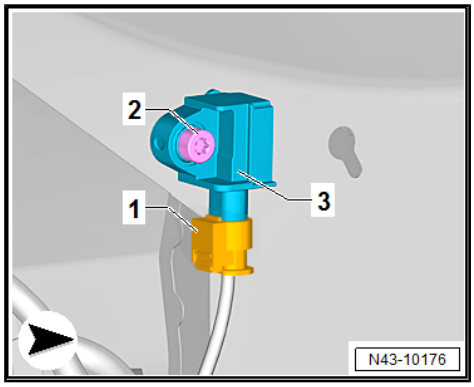
Installing

Install in reverse order of removal. Note the following:

– Insert the Rear Body Acceleration Sensor - G343- -1- so that the tab -arrow B- engages in the hole -arrow A-.



– Tighten the Rear Body Acceleration Sensor - G343- -3- with the bolt -2-.
– Connect the connector -1- until it clicks into place.
– Perform the basic setting for the wheel damping electronics. Use the Vehicle Diagnostic Tester .



Tightening Specifications

◆ Refer to
⇒ “1.1 Component Location Overview - Electronic Damping”, page 261

2 Level Control System Sensor

⇒ “2.1 Overview - Front Level Control System Sensor”, page 271

⇒ “2.2 Overview - Rear Level Control System Sensor”, page 272

⇒ “2.3 Left/Right Front Level Control System Sensor G78 / G289 , Removing and Installing”, page 273

⇒ “2.4 Left/Right Rear Level Control System Sensor G76 / G77 , Removing and Installing”, page 275

2.1 Overview - Front Level Control System Sensor

Note

A replacement Front Left and Right Level Control System Sensor - G78/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-

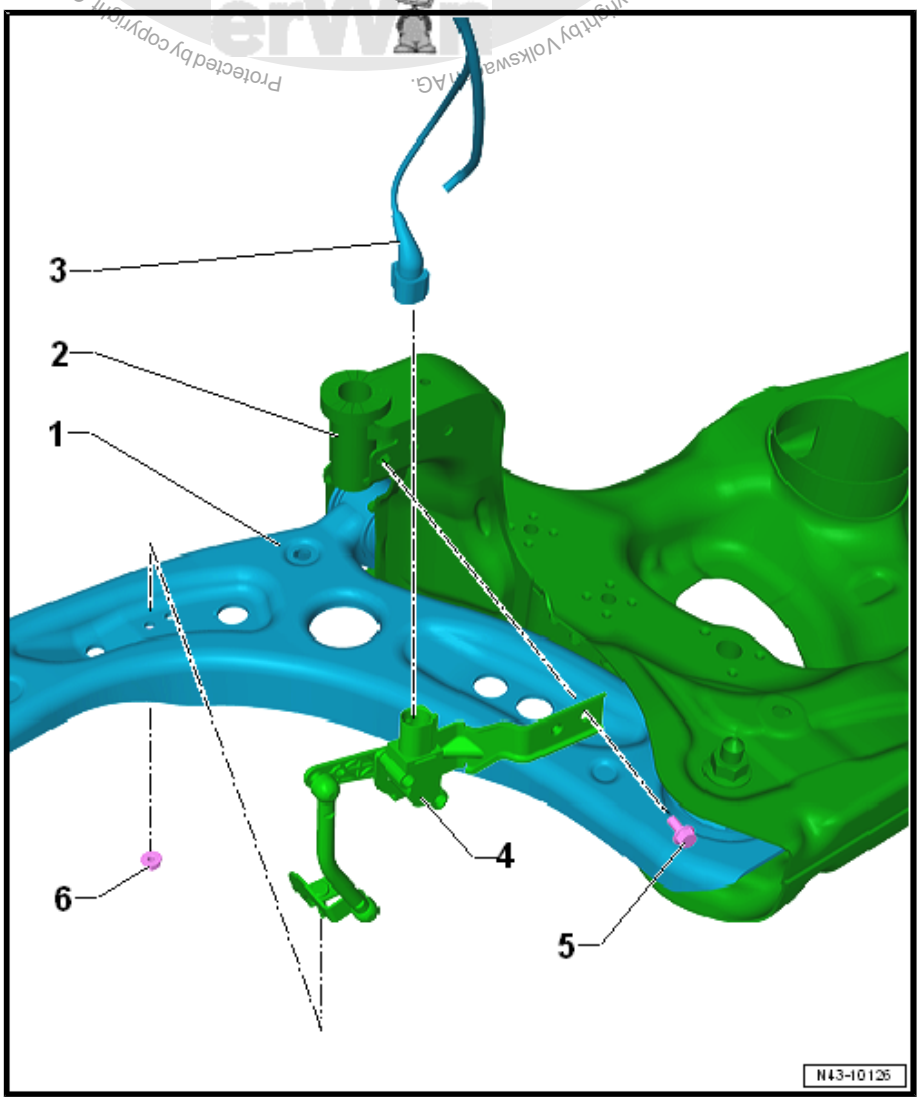
- ❑ Complete with attachments
- ❑ The lever must face toward outside of vehicle
- ❑ Removing and installing. Refer to ⇒ “2.3 Left/Right Front Level Control System Sensor G78 / G289 , Removing and Installing”, page 273 .
- ❑ Perform a basic setting using the Vehicle Diagnostic Tester .

5 - Bolt

- ❑ 8 Nm

6 - Nut

- ❑ 8 Nm
- ❑ Replace after removing.



2.2 Overview - Rear Level Control System Sensor

⇒ “2.2.1 Overview - Rear Level Control System Sensor, Multi-Link Suspension, FWD”, page 272

⇒ “2.2.2 Overview - Rear Level Control System Sensor, Multi-Link Suspension, AWD”, page 273

2.2.1 Overview - Rear Level Control System Sensor, Multi-Link Suspension, FWD

Note

The level control system sensor is only available as a replacement part together with the coupling rod and upper and lower retaining plates.

1 - Bolt

- ❑ 5 Nm

2 - Rear Level Control System Sensor - G77-

- ❑ Complete with attachments
- ❑ 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 275 .
- ❑ Perform a basic setting using the Vehicle Diagnostic Tester .

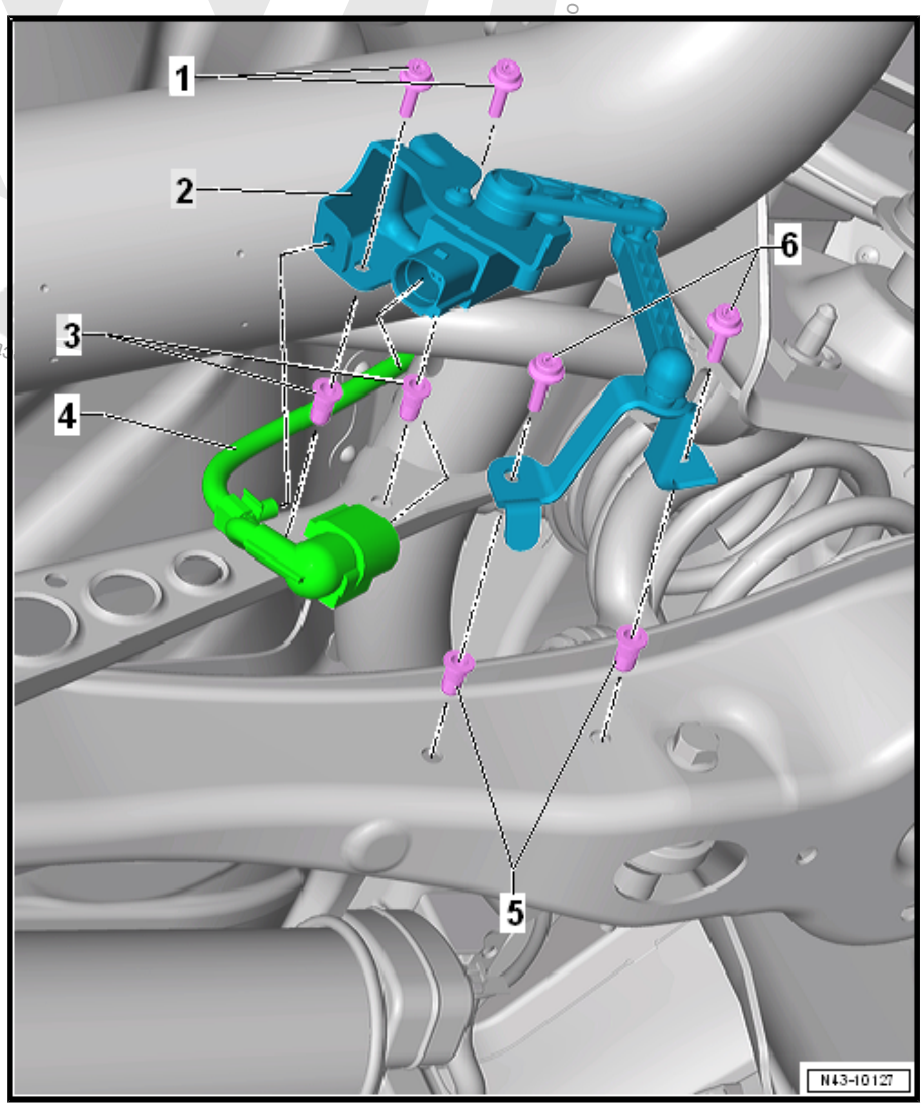
3 - Pop Rivet Nut

4 - Connector

5 - Pop Rivet Nut

6 - Bolt

- ❑ 5 Nm



2.2.2 Overview - Rear Level Control System Sensor, Multi-Link Suspension, AWD

Note

The level control system sensor is only available as a replacement part together with the coupling rod and upper and lower retaining plates.

1 - Pop Rivet Nut

2 - Connector

3 - Pop Rivet Nut

4 - Bolt

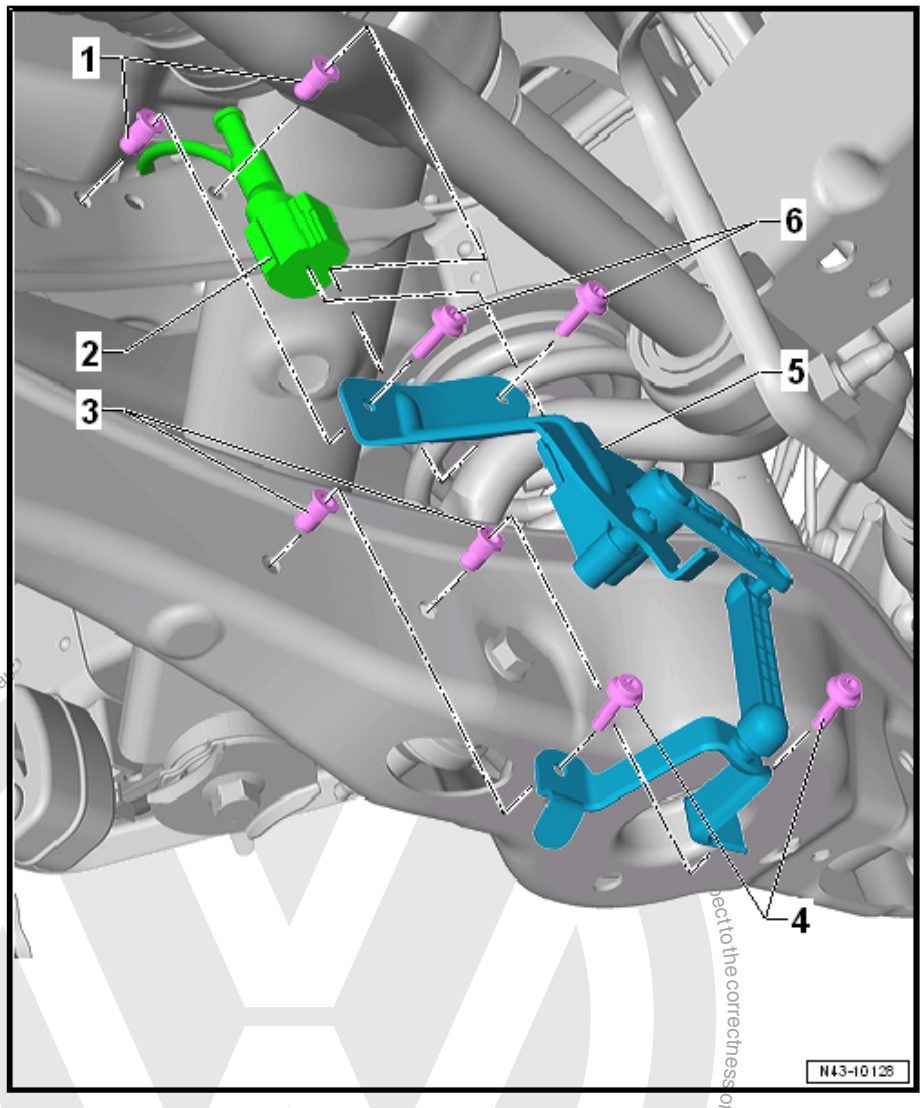
- ❑ 5 Nm

5 - Rear Level Control System Sensor

- ❑ Complete with attachments
- ❑ 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 275 .
- ❑ Perform a basic setting using the Vehicle Diagnostic Tester .

6 - Bolt

- ❑ 5 Nm



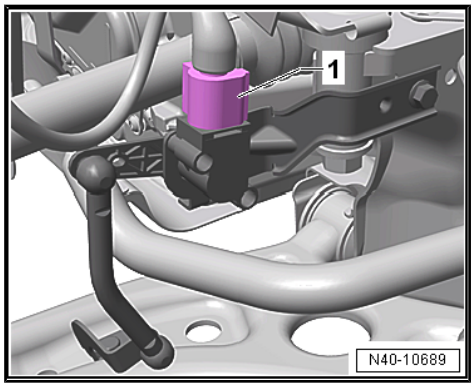
2.3 Left/Right Front Level Control System Sensor -G78- / -G289- , Removing and Installing

Special tools and workshop equipment required

- ♦ Torque Wrench - VAG1410-

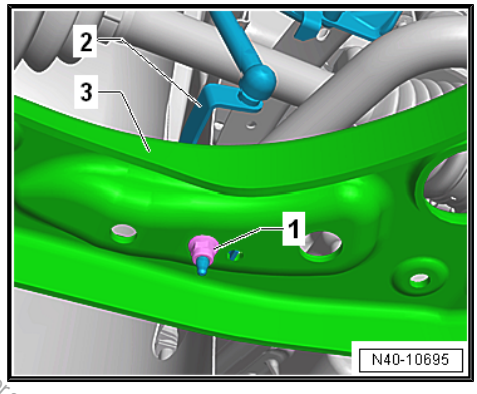
Removing

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



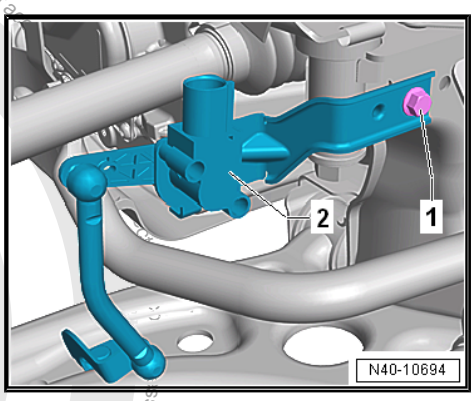
– Remove the nut -1-.

– 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- or Right Front Level Control System Sensor - G289- .



Installing

Install in reverse order of removal. Note the following:

Note

- *The level control system sensor lever must point toward vehicle exterior.*
- *The thread on the level control system sensor must be installed into the exterior hole in the control arm. The retaining tab on the level control system sensor must engage into the inner hole in order to assure a correct installation position.*

– For vehicles with a level control system sensor, perform the basic setting 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 ⇒ “3.1 Driver Assistance Systems Front Camera, Calibrating”, page 300 .

Tightening Specifications

- Refer to ⇒ “2.1 Overview - Front Level Control System Sensor”, page 271

2.4 Left/Right Rear Level Control System Sensor -G76- / -G77- , Removing and Installing

⇒ “2.4.1 Left Rear Level Control System Sensors G76 , Removing and Installing, Multi-Link Suspension, FWD”, page 275

⇒ “2.4.2 Left Rear Level Control System Sensors G76 , Removing and Installing, Multi-Link Suspension, AWD”, page 275

2.4.1 Left Rear Level Control System Sensors - G76- , Removing and Installing, Multi-Link Suspension, FWD

Special tools and workshop equipment required

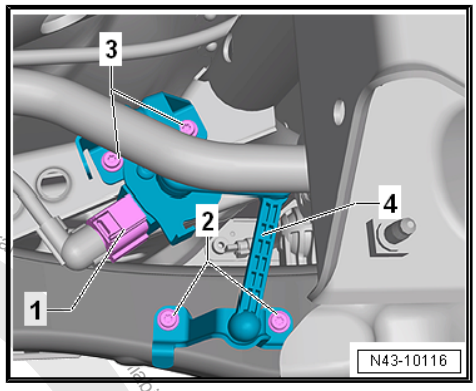
- Torque Wrench - VAG1410-

Removing

– Disconnect the connector -1-.

– Remove the bolts -2 and 3-.

– Remove the Left Rear Level Control System Sensor - G76- -4-.



Installing

Install in reverse order of removal. Note the following:

The level control system sensor lever must point toward vehicle exterior.

– Perform a basic setting using the Vehicle Diagnostic Tester .

Tightening Specifications

- Refer to ⇒ “2.2.1 Overview - Rear Level Control System Sensor, Multi-Link Suspension, FWD”, page 272

2.4.2 Left Rear Level Control System Sensors - G76- , Removing and Installing, Multi-Link Suspension, AWD

Special tools and workshop equipment required

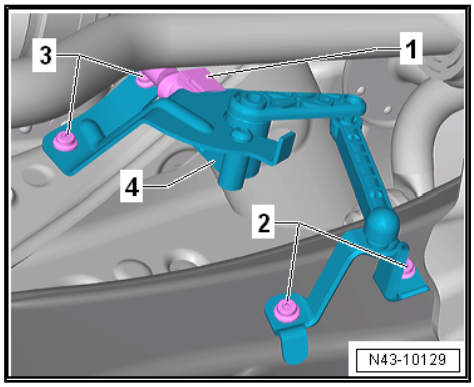
- Torque Wrench - VAG1410-

Removing

– Disconnect the connector -1-.

– Remove the bolts -2 and 3-.

– Remove the Left Rear Level Control System Sensor - G76- -4-.



Installing

Install in reverse order of removal. Note the following:

The level control system sensor lever must point toward vehicle exterior.

– Perform a basic setting using the Vehicle Diagnostic Tester .

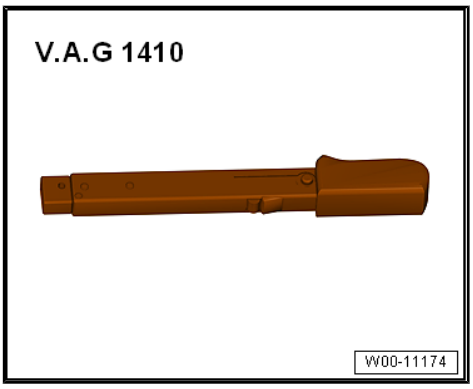
Tightening Specifications

♦ Refer to
⇒ “2.2.1 Overview - Rear Level Control System Sensor, Multi-Link Suspension, FWD”, page 272

3 Special Tools

Special tools and workshop equipment required

- Torque Wrench - VAG1410-



44 – Wheels, Tires, Wheel Alignment

1 Axle Alignment

1.1 Axle Alignment Information

Wheel alignment must only performed using VW/Audi-approved 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, 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”, the center position of steering rack must always be checked.

Note. Refer to
⇒ “1.4 Safety Precautions when Working on Subframe”, page 2 .

1.2 Test Requirements

- 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 plate and turntable are not touching the end stop during the measurement.

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.

1.3 Measurement Preparations

⇒ “1.3.1 Measurement Preparations, Axle Alignment without Driver Assistance Systems”, page 279

⇒ “1.3.2 Measurement Preparations, Axle Alignment with Driver Assistance Systems”, page 280

1.3.1 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 balanced (compensated for). Otherwise, the measurement result will be false.

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.

– Insert the -VAG1869/2- .

– Actuate the brake pedal using brake pedal actuator.

1.3.2 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 calibration device. The distance between the calibration device and the vehicle must be: 120 cm ± 2.5 cm.
- If there is not enough space, back the vehicle onto the wheel alignment platform. A corresponding surface can also be used.
- Check the DTC memory and correct any malfunctions before beginning the calibration.
- Vehicle accurately aligned, suspension bounced and rocked several times
- Make sure that the sliding 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 the Vehicle Diagnostic Tester to the vehicle and guide the diagnostic cable through the open window.
- The vehicle exterior lamps are off.
- All the vehicle doors are closed.
- Using the screen, turn on the calibration on the wheel alignment computer.

1.4 Axle Alignment Specified Values

⇒ “1.4.1 Axle Alignment Specified Values, Passat and Passat Wagon”, page 280

⇒ “1.4.2 Axle Alignment Specified Values, Arteon”, page 282

1.4.1 Axle Alignment Specified Values, Passat and Passat Wagon

Specified values valid for all engine versions.

PR Number Explanations. Refer to ⇒ “1.7 Vehicle Data Label”, page 285 .

Front Axle	Basic Suspension	Sport Suspension	Raised Suspension	DCC Suspension
PR numbers	G01/G10	G02/G08	G03/G05/G06/ G09	G04/G11
Total toe (wheels not pressed)	10′ ± 10′	10′ ± 10′	10′ ± 10′	10′ ± 10′
Camber (wheels in straight-ahead position). Refer to [1].	-32′ ± 30′	-41′ ± 30′	-20′ ± 30′	-39′ ± 30′
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° 18′ ± 20′	1° 30′ ± 20′	1° 08′ ± 20′	1° 26′ ± 20′
Caster	7° 23′ ± 30′	7° 45′ ± 30′	7° 04′ ± 30′	7° 38′ ± 30′
Maximum permissible difference between both sides	maximum 30′	maximum 30′	maximum 30′	maximum 30′

Front Axle	Basic Suspension	Sport Suspension	Raised Suspension	DCC Suspension
PR numbers	**G01/G10**	**G02/G08**	**G03/G05/G06/ G09**	**G04/G11**
Height. Refer to [3].	394 ± 10 mm	379 ± 10 mm	409 ± 10 mm	384 ± 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.

3) Height, Measuring. Refer to ⇒ page 284 .

Specified values valid for all engine versions.

PR Number Explanations. Refer to
⇒ "1.7 Vehicle Data Label", page 285 **.**

Front Axle	Special Purpose Vehicle Basic Suspension	Special Purpose Vehicles Raised Suspension / DCC	Special Purpose Vehicles Nivomat	
PR numbers	**1JA**	**UC7, UC9**	**1JI**	
Total toe (wheels not pressed)	10′ ± 10′	10′ ± 10′	10′ ± 10′	
Camber (wheels in straight-ahead position). Refer to [4]. Maximum permissible difference between both sides	-32′ ± 30′ maximum 30′	-20′ ± 30′ maximum 30′	-32′ ± 30′ maximum 30′	
Toe differential angle at 20° steering angle. Refer to [5].	1° 18′ ± 20′	1° 08′ ± 20′	1° 18′ ± 20′	
Caster Maximum permissible difference between both sides	7° 23′ ± 30′ maximum 30′	7° 04′ ± 30′ maximum 30′	7° 23′ ± 30′ maximum 30′	
Height. Refer to [6].	394 ± 10 mm	409 ± 10 mm	394 ± 10 mm	

4) Camber corrections are not possible. It can only be slightly corrected by pushing the subframe.

5) The toe angle difference can also be indicated negatively in alignment computer, depending on manufacturer.

6) Height, Measuring. Refer to ⇒ page 284 .

Specified values valid for all engine versions.

PR Number Explanations. Refer to
⇒ "1.7 Vehicle Data Label", page 285 **.**

Rear Axle	Basic Suspension	Sport Suspension	Raised Suspension	DCC Suspension
PR numbers	**G01/G10**	**G02/G08**	**G03/G05/G06/ G09**	**G04/G11**
Camber Maximum permissible difference between both sides	-1°20′ ± 30′ maximum 30′	-1°20′ ± 30′ maximum 30′	-1°20′ ± 30′ maximum 30′	-1°20′ ± 30′ maximum 30′
Total toe Maximum permissible deviation from the driving axle	+10′ ± 10′ maximum 20′	+10′ ± 10′ maximum 20′	+10′ ± 10′ maximum 20′	+10′ ± 10′ maximum 20′
Height. Refer to [7].	391 ± 10 mm	376 ± 10 mm	406 ± 10 mm	381 ± 10 mm

7) Height, Measuring. Refer to ⇒ page 284 .

Rear Axle	Special purpose vehicle basic suspension	Special purpose vehicles raised suspension / DCC	Special purpose vehicles Nivomat	
Camber	-1° 20′ ± 30′	-1° 20′ ± 30′	-1° 35′ ± 30′	
Maximum permissible difference between both sides	maximum 30′	maximum 30′	maximum 30′	
Total toe (at specified camber)	10′ ± 10′	10′ ± 10′	10′ ± 10′	
Maximum permissible deviation from the running direction	maximum 20′	maximum 20′	maximum 20′	
Height. Refer to [8].	391 ± 10 mm	406 ± 10 mm	391 ± 10 mm	

8) Height, Measuring. Refer to ⇒ page 284 .

1.4.2 Axle Alignment Specified Values, Arteon

Specified values valid for all engine versions.

PR number explanations. Refer to
⇒ “1.7 Vehicle Data Label”, page 285 .

Front Axle	Basic Suspension DCC Suspension	Raised Suspension	DCC Sport Suspension	
PR Numbers	**G02/G12**	**G14**	**G15**	
Total toe (wheels not pressed)	10′ ± 10′	10′ ± 10′	10′ ± 10′	
Camber (wheels in straight-ahead position). Refer to [9]. Maximum permissible difference between both sides	-41′ ± 30′ maximum 30′	-32′ ± 30′ maximum 30′	-29′ ± 30′ maximum 30′	
Toe differential angle at 20° steering angle. Refer to [10].	1° 30′ ± 20′	1° 18′ ± 20′	1° 14′ ± 20′	
Caster Maximum permissible difference between both sides	7° 45′ ± 30′ maximum 30′	7° 23′ ± 30′ maximum 30′	7° 16′ ± 30′ maximum 30′	
Height. Refer to [11].	391 ± 10 mm	406 ± 10 mm	386 ± 10 mm	

9) Camber corrections are not possible. It can only be slightly corrected by pushing the subframe.

10) The toe angle difference can also be indicated negatively in alignment computer, depending on manufacturer.

11) Height, Measuring. Refer to ⇒ page 284 .

Specified values valid for all engine versions.

PR Number Explanations. Refer to
⇒ “1.7 Vehicle Data Label”, page 285 .

Rear Axle	Basic Suspension DCC Suspension	Raised Suspension	DCC Sport Suspension	
PR numbers	**G02/G12**	**G14**	**G15**	
Camber Maximum permissible difference between both sides	-1°20′ ± 30′ maximum 30′	-1°20′ ± 30′ maximum 30′	-1°20′ ± 30′ maximum 30′	
Total toe Maximum permissible deviation from the driving axle	+10′ ± 10′ maximum 20′	+10′ ± 10′ maximum 20′	+10′ ± 10′ maximum 20′	

Rear Axle	Basic Suspension DCC Suspension	Raised Suspension	DCC Sport Suspension	
PR numbers	**G02/G12**	**G14**	**G15**	
Height. Refer to [12].	396 ± 10 mm	411 ± 10 mm	391 ± 10 mm	

12) Height, Measuring. Refer to ⇒ page 284 .

1.5 Axle Alignment Procedure

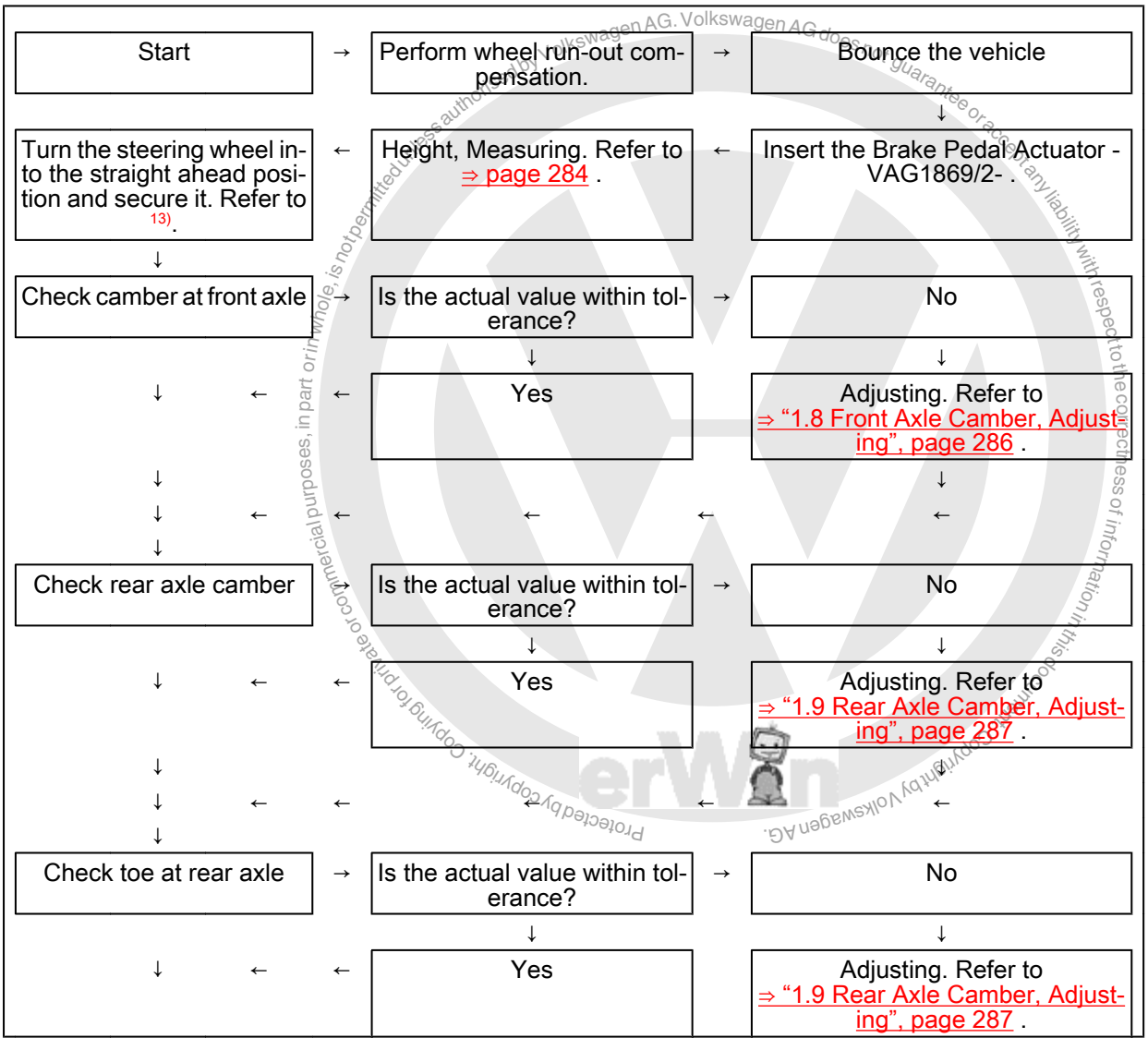
The following sequence of procedure steps must be observed.

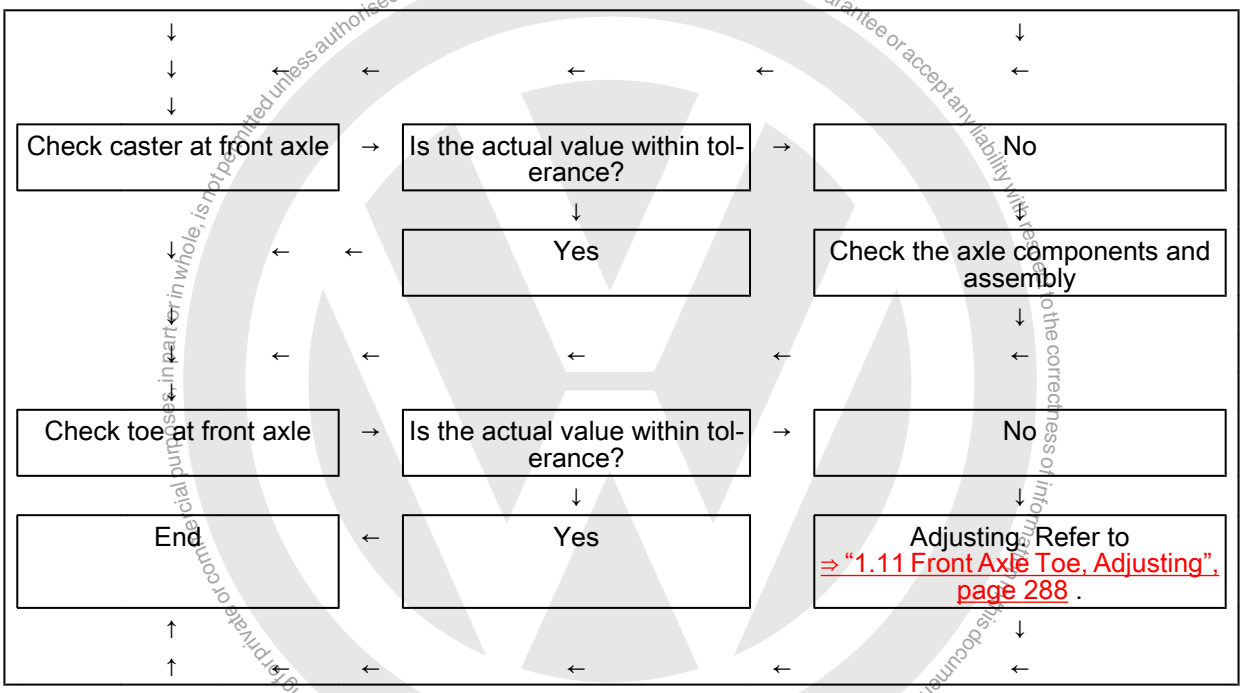
Note

The vehicle must only be measured at curb weight position. Refer to
⇒ "2.8 Wheel Bearing, Lifting to Curb Weight Position, Vehicles with Coil Spring", page 6 .

– Note the information in the alignment equipment.

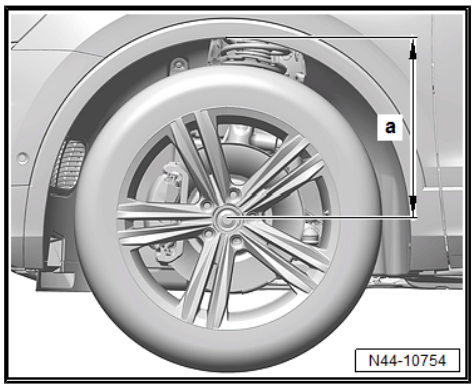
Measuring procedure





13) If steering wheel is crooked at end of alignment procedure, it must be straightened. Perform a basic setting on the Steering Angle Sensor - G85- using the Vehicle Diagnostic Tester .

Height, Measuring



– The dimension -a- between the center of the wheel hub and the lower edge of the wheel housing defines the height of the vehicle.

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. Refer to Vehicle Diagnostic Tester .*
- *If the rear axle setting was changed, the following driver assistance systems must be calibrated:*
- *Lane Assist. Refer to ⇒ "3.1 Driver Assistance Systems Front Camera, Calibrating", page 300 ,*
- *Adaptive cruise control (ACC). Refer to ⇒ "2.1.1 Adaptive Cruise Control (ACC), Calibrating, Passat and Passat Wagon", page 291 .*

1.6 Need for Axle Alignment, Evaluating

A Wheel Alignment is Necessary if:

- Vehicle shows handling problems.
- There is 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	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 (refer to 14))	Stabilizer Bar		X
			Trailing Arm	X	

14) Prerequisite: the subframe was secured prior to removal. Refer to ⇒ “2.6 Subframe, Securing”, page 38 .

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 (refer to 15))	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 (refer to 15))	Subframe	X	
Suspension Strut		X	Coil Spring		X
Stabilizer Bar		X (refer to 15))	Shock Absorber		X
			Stabilizer Bar		X
			Trailing Arm	X	

15) Prerequisite: the subframe was secured prior to removal. Refer to ⇒ “2.6 Subframe, Securing”, page 38 .

1.7 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.

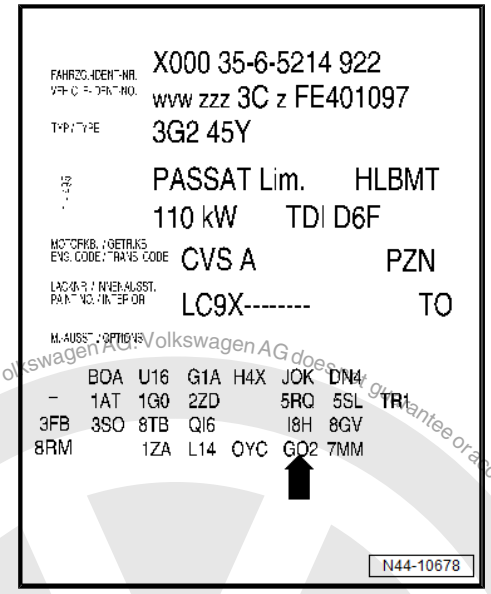
The PR numbers are needed for the allocation of vehicle specified values.

Which suspension version is installed in the 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 the maintenance schedule.

Sample Vehicle Data Label

In this example, the vehicle is equipped with the Sport suspension G02 -arrow-.



1.8 Front Axle Camber, Adjusting

Special tools and workshop equipment required

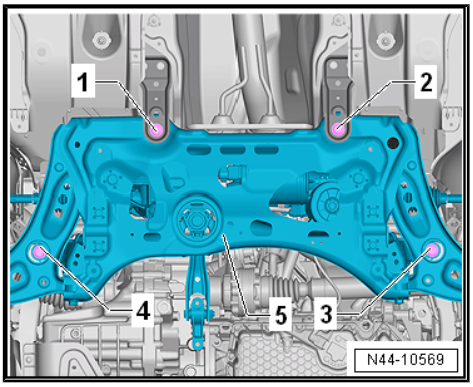
- Torque Wrench 1332 40-200Nm - VAG1332-

Note

- *Correct the camber according to Body Collision only. Camber corrections are not possible. Moving the subframe can also adjust it.*
- *Slide the 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.



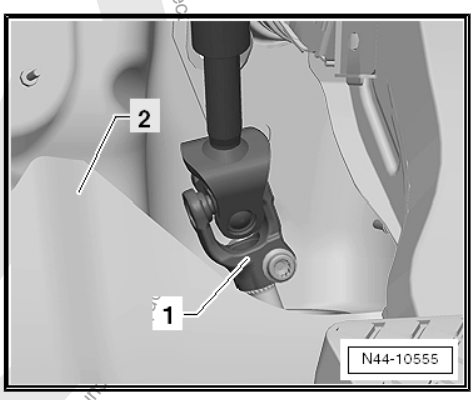
Adjusting the camber is limited by the subframe hole tolerances. If the specified value is not reached by moving the subframe, the subframe and the assembly must be checked. Refer to ⇒ “3.1 Collision Vehicle Evaluation Checklist”, page 13 .

– 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 ⇒ “1.4 Axle Alignment Specified Values”, page 280 .
– Tighten the subframe bolts -1 through 4-.

After moving the subframe, check the clearance between the steering column universal joint and the cutout in the plenum chamber bulkhead.

– Install the driver side instrument panel cover. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments/Covers; Driver Side Instrument Panel Cover, Removing and Installing .
– Fold back the carpet.

There must be at least 5 mm of free space all around between universal joint -1- and cutout of bulkhead -2-.



Tightening Specifications

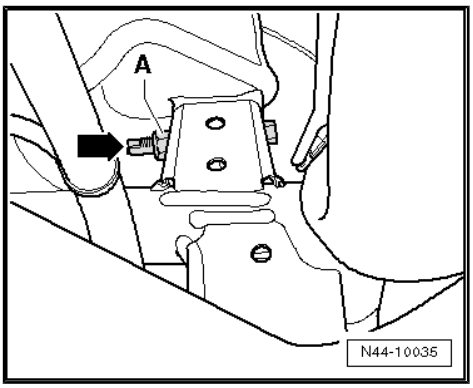
- Refer to ⇒ “2.1 Overview - Subframe”, page 21
- Noise insulation bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- Driver side instrument panel cover. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments/Covers; Driver Side Instrument Panel Cover, Removing and Installing .

1.9 Rear Axle Camber, Adjusting

Special tools and workshop equipment required

- Torque Wrench 1332 40-200Nm - VAG1332-
- Insert Tool - 18mm - T10179-

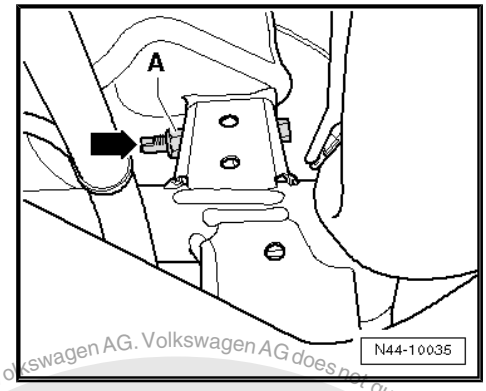
– Loosen the nut -A- of the threaded connection on the upper transverse link at subframe.
– Adjust the camber by turning the hex fitting of the eccentric screw -arrow-.



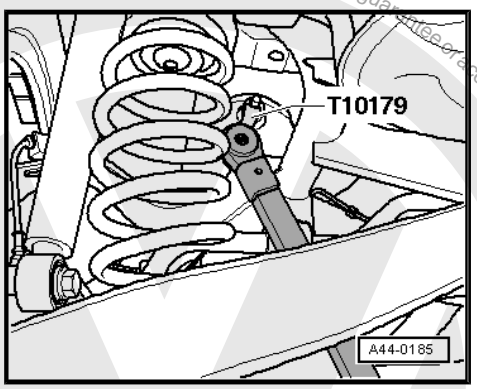
Note

The maximum adjustment range is 90° to left or right of center position.

– Tighten the nut -A-.



– Use the -T10179- for this.



Tighten the nut to 80 Nm using the -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 ⇒ “1.4 Axle Alignment Specified Values”, page 280 .

Tightening Specifications

♦ Refer to ⇒ “4.1 Overview - Transverse Link”, page 191

1.10 Rear Axle Toe, Adjusting

Special tools and workshop equipment required

♦ Torque Wrench 1332 40-200Nm - VAG1332-

– Loosen the nut -1-.

– Turn the eccentric screw -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 again. Refer to ⇒ “1.4 Axle Alignment Specified Values”, page 280 .

Tightening Specifications

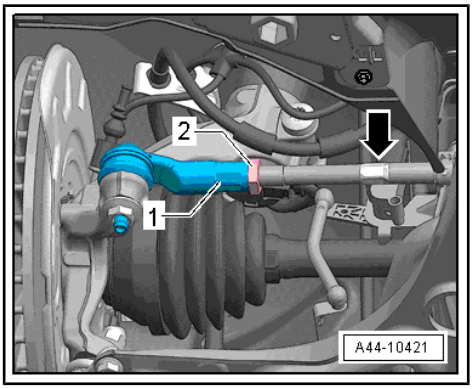
♦ Refer to ⇒ “4.1 Overview - Transverse Link”, page 191

1.11 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 wheels at the hex fitting -arrow-.

Note

- *Make sure that boot on steering gear is not damaged or twisted. Twisted boots wear out quickly.*
- *Only tighten the lock nuts when the vehicle is resting on the ground - the tie rod end must be parallel to the suspension strut steering lever.*

– Tighten the lock nut -2- and check the toe-in value again.

After tightening the lock nut -2-, it is possible that the value deviates slightly.

If the measured toe nevertheless lies within the tolerance, the adjustment is correct. Refer to
⇒ “1.4 Axle Alignment Specified Values”, page 280 .

Tightening Specifications

- Refer to
⇒ “3.1.3 Overview - Steering Gear, Tie Rods”, page 327

1.12 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 balanced (compensated for). Otherwise, the measurement result will be false.

The permitted axial run-out of the rims can exceed the specified toe setting tolerance. If compensation for wheel run-out is not performed, it will not be possible to obtain a correct toe-in adjustment.

Follow the operating instructions provided by the manufacturer of the alignment equipment.

1.13 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:

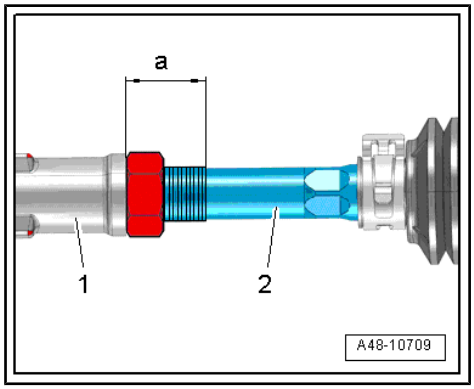
- Check the steering components for damage and distortion. If necessary, the damaged parts are to be replaced.
- Check the suspension components for damage and distortion. If necessary, the damaged parts are to be replaced.
- Check the tie rod symmetry as well.

– Measure the dimension -a- on the “shorter” tie rod end. Shorten the “longer” tie rod head to the same dimension. To do this, install the tie rod head -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 less than 2.5 mm.

– When returning the steering to its center position, let the steering wheel “come to its center” using even movements.



2 Adaptive Cruise Control (ACC)

⇒ “2.1 Adaptive Cruise Control (ACC), Calibrating”, page 291

2.1 Adaptive Cruise Control (ACC), Calibrating

⇒ “2.1.1 Adaptive Cruise Control (ACC), Calibrating, Passat and Passat Wagon”, page 291

⇒ “2.1.2 Adaptive Cruise Control (ACC), Calibrating, Arteon”, page 296

2.1.1 Adaptive Cruise Control (ACC), Calibrating, Passat and Passat Wagon

Special tools and workshop equipment required

- ACC Adjuster - VAS6190/2-
- Setting Device - Basic Set - VAS6430/1- or Setting Device - Basic Set - VAS6430/1A-
- ACC Reflector Mirror - Audi - VAS6430/3-
- Wheel Alignment Computer

Before adjusting the adaptive cruise control (ACC), check the sensor and its mounts and attachments for damage, external influences and secure fit. Repair any damaged components.

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 Control Module for Adaptive Cruise Control - 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 outside of the tolerance. Perform a tolerance check using the Vehicle Diagnostic Tester.*
- *The vehicle was moved to the service position.*
- *Changes were made to the suspension that affect the height.*

Note

- *Before driving the vehicle onto the alignment stand, make sure there is enough space between the vehicle and the Setting Device - Basic Set - VAS6430/1A- . The distance between the ACC Reflector Mirror - Audi - VAS6430/3- and the sensor must be 120 cm ± 2.5 cm.*
- *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 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 cm ± 2.5 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 Control Module for Adaptive Cruise Control - 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 wheel alignment computer.

– Follow the test requirements for an axle alignment. Refer to ⇒ “1.2 Test Requirements”, page 279 .

– Drive the vehicle onto the vehicle alignment platform.

– Connect the battery charger. Refer to ⇒ Electrical Equipment General Information; Rep. Gr. 27 ; Battery, Charging .

– Connect the 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.

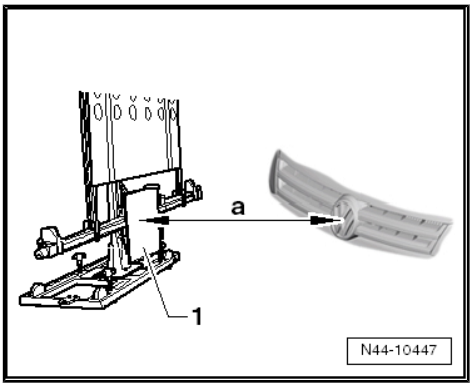
– Install the measurement sensor on the rear wheels.

– Perform a wheel run-out compensation on the rear wheels.

Calibration procedure with or without previous axle alignment

– Position the Setting Device Basic Set - VAS6430/1- at a distance -a- from the centrally positioned ACC Reflector Mirror - Audi - VAS6430/3- to the VW emblem in the radiator grille.

a - 120 cm ± 2.5 cm



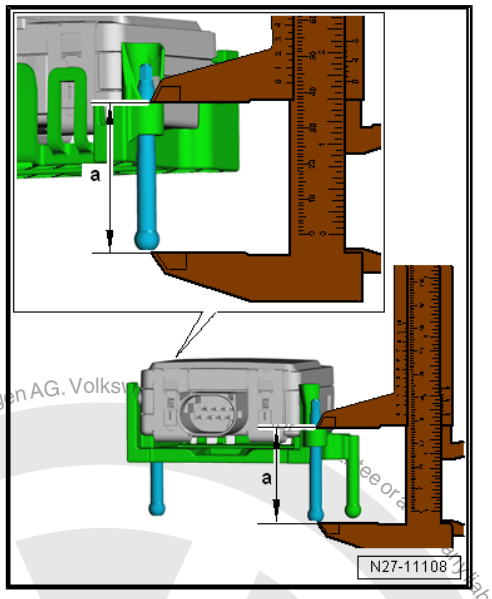
– Remove the VW emblem. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Name Badge and Emblem; Front Emblem, Removing and Installing .

– Remove any dirt that may be on the sensor lens.

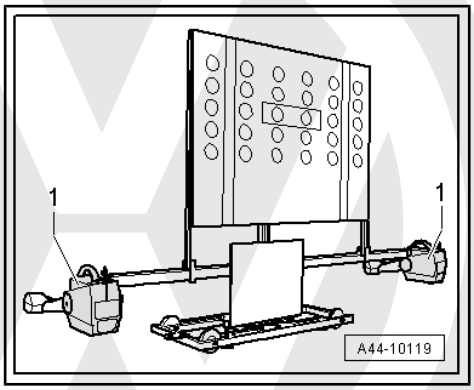
Note

The Setting Device Basic Set - VAS6430/1- must not be moved on the calibration beam.

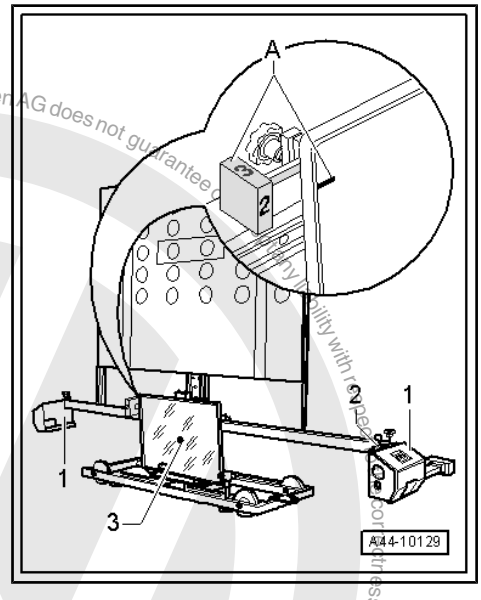
– Adjust the adjusting bolt. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Adaptive Cruise Control; Adaptive Cruise Control (ACC) Control Module, Removing and Installing .



– Position the front wheel measuring sensors -1- on the calibration beam.

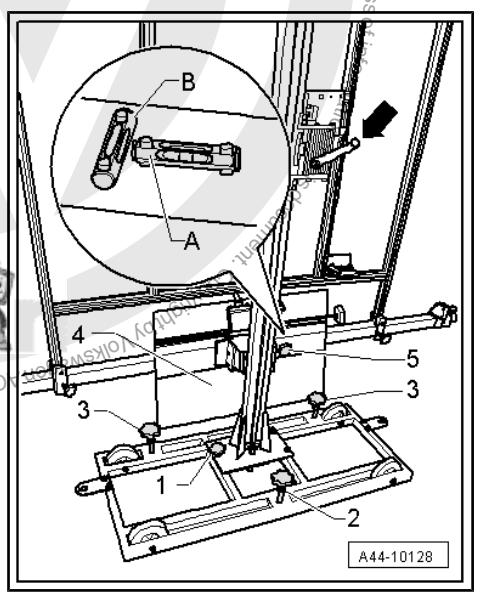


– In area -A-, bring item -2- on the rotary knob into alignment with the marking on the mirror (number 2 on the rotary knob must face the vehicle).

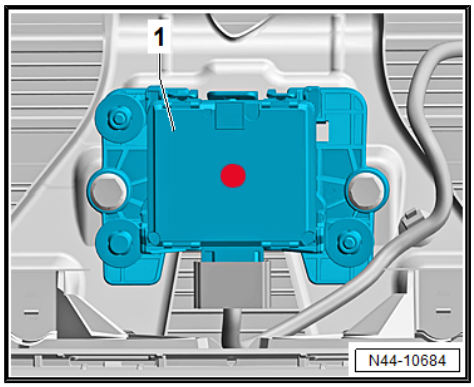


– Level the bubble levels -A and B- on the ACC Reflector Mirror - Audi - VAS6430/3- using the adjusting screws -1, 2 and 3-.

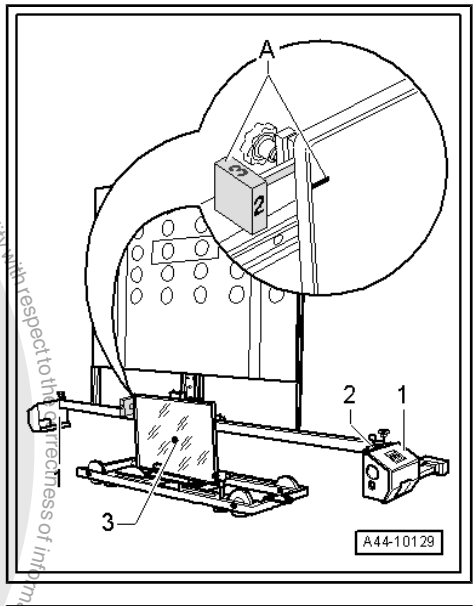
– Adjust the mirror -4- via the crank -arrow- so that the laser beam is in the center of the sensor lens.



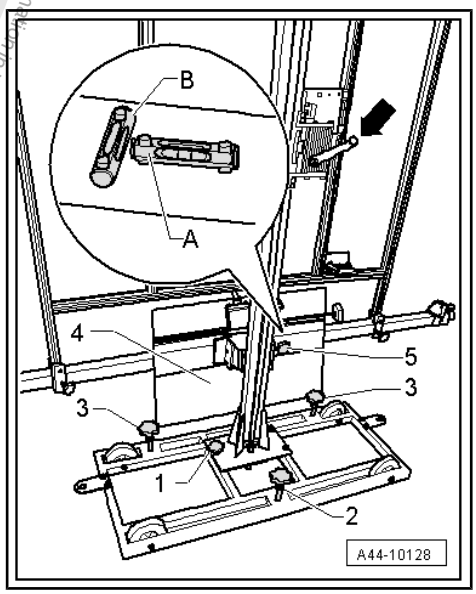
– Position the mirror on the side of the calibration beam so that the laser beam is in the center of the sensor lens -1-.



– Level the bubble levels -2- of the sensor -1-.

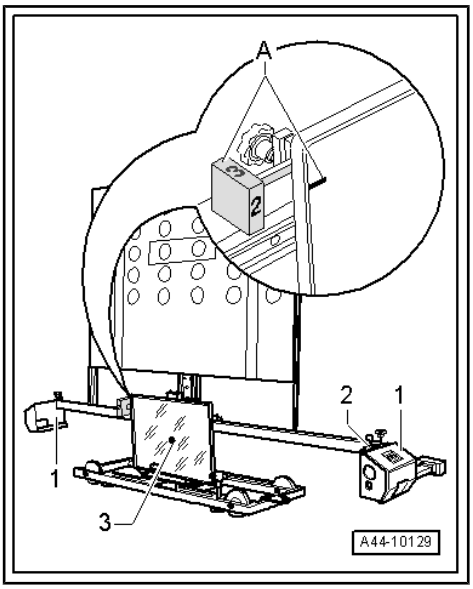


– Turn the precision adjustment screw -5- until the display on the wheel alignment computer is located within the tolerance range.



– Level the bubble levels -2- of the 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.

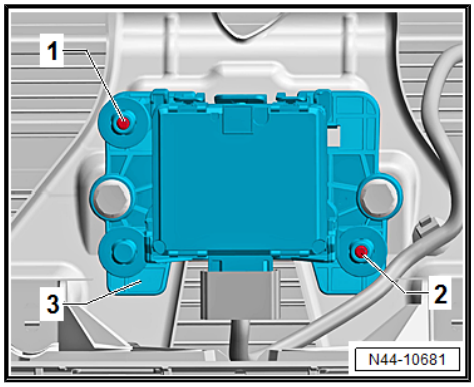
– On the Vehicle Diagnostic Tester , press GO TO and select the function Function/component selection.

Follow the instructions on the screen to perform the adjustment.

Designation of the Control Module for Adaptive Cruise Control - J428- -3- Adjusting Screws

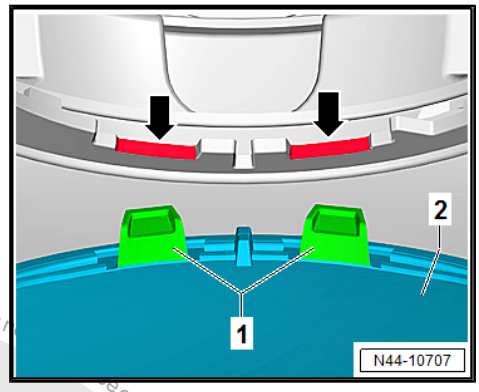
1 - Adjusting Screw 1

2 - Adjusting Screw 2

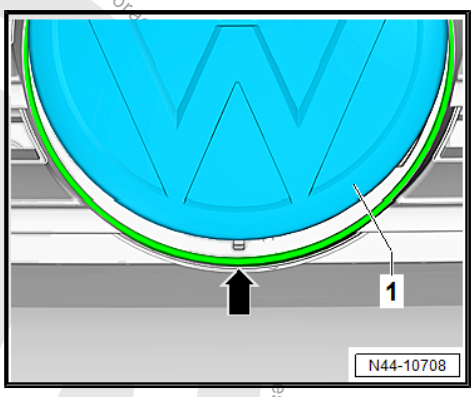


VW Emblem Installing

– Inset the tabs -1- of the VW emblem in the radiator grille depressions -arrows-.

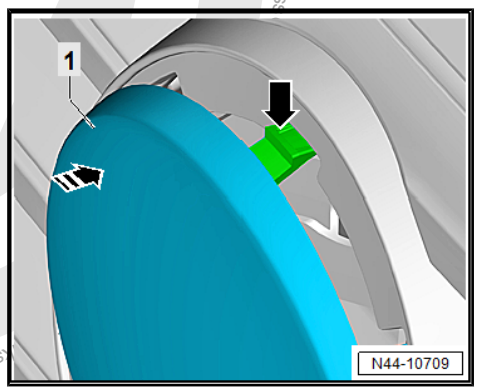


– Tilt the VW emblem -1- upward and push in the radiator grille all the way downward on the edge -arrow-.



– Push the uppermost tab -arrow- of the VW emblem downward.

– Push the VW emblem -1- in the direction of -arrow- until the tabs audibly engage.



2.1.2 Adaptive Cruise Control (ACC), Calibrating, Arteon

Special tools and workshop equipment required

- Setting Device - Basic Set - VAS6430/1- or Setting Device - Basic Set - VAS6430/1A-
- ACC Reflector Mirror - VAS6430/10-

- ♦ Wheel Alignment Computer

Before adjusting the adaptive cruise control (ACC), check the sensor and its mounts and attachments for damage, external influences and secure fit. Repair any damaged components.

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.

– Under the following conditions the Control Module for Adaptive Cruise Control - J428- must be calibrated:

- ♦ Control Module for Adaptive Cruise Control - J428- was replaced
- ♦ The lock carrier service position was performed
- ♦ The lock carrier was removed and installed.
- ♦ The lock carrier was replaced
- ♦ The adjustment angle is outside of the tolerance. Perform a tolerance check using the Vehicle Diagnostic Tester.
- ♦ The rear axle toe were replaced.
- ♦ Changes were made to the suspension that affect the height.

Note

- ♦ *Before driving the vehicle onto the alignment stand, make sure there is enough space between the vehicle and the Setting Device - Basic Set - VAS6430/1A- . The distance between the Setting Device - Basic Set - VAS6430/1A- and the sensor must be 120 cm ± 2.5 cm.*
- ♦ *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 - VAS6430/10- is repositioned on the calibration beam during the adjustment, the Setting Device - Basic Set - VAS6430/1A- setting must always be checked (for example, bubble levels, individual toe settings at the calibration beam, etc.).*

- Before beginning the adjustment, check the 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 cm ± 2.5 cm between the centrally positioned ACC Reflector Mirror - VAS6430/10- and the sensor in the air grille,

2 - Attach the ACC Reflector Mirror - VAS6430/10- 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 wheel alignment computer.
- Follow the test requirements for an axle alignment. Refer to ⇒ "1.2 Test Requirements", page 279 .
- Drive the vehicle onto the vehicle alignment platform.
- Connect the battery charger. Refer to ⇒ Electrical Equipment General Information; Rep. Gr. 27 ; Battery, Charging .
- Connect the Vehicle Diagnostic Tester . (Guide the diagnostic cable through the open window.)

Note

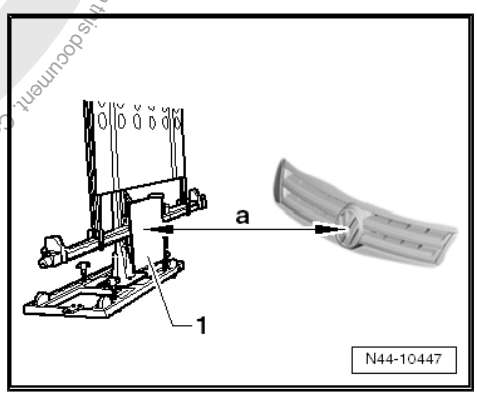
During the adjustment procedure, make sure all the vehicle doors remain closed and the vehicle exterior lamps are switched off.

- 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 on the rear wheels.

Calibration procedure with or without previous axle alignment

- Position the Setting Device - Basic Set - VAS6430/1A- at a distance -a- from the centrally positioned ACC Reflector Mirror - VAS6430/10- to the VW emblem in the radiator grille.

a - 120 cm ± 2.5 cm

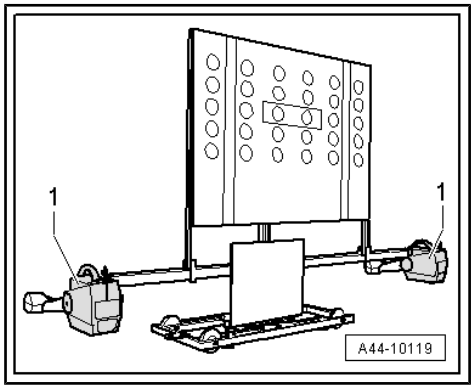


- If necessary remove debris from the VW emblem.

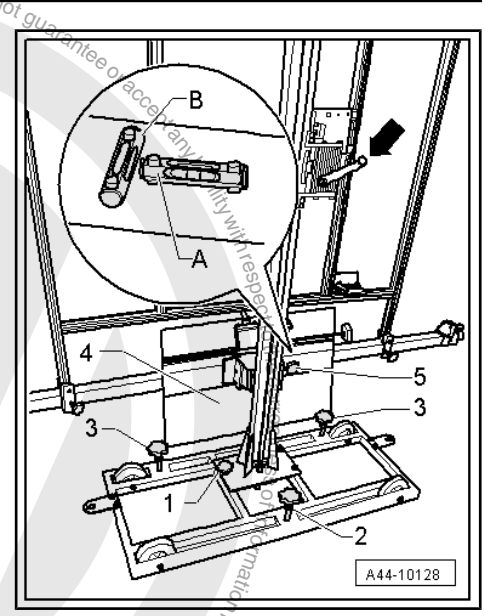
Note

The Setting Device Basic Set - VAS6430/1- must not be moved on the calibration beam.

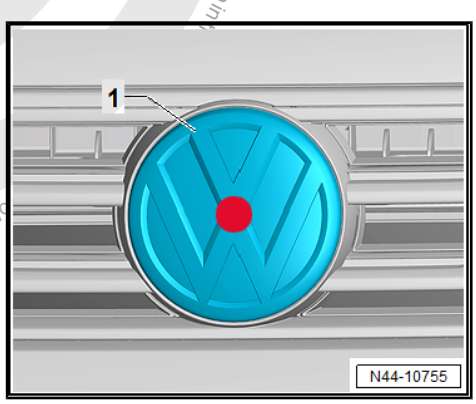
- Position the front wheel measuring sensors -1- on the calibration beam.



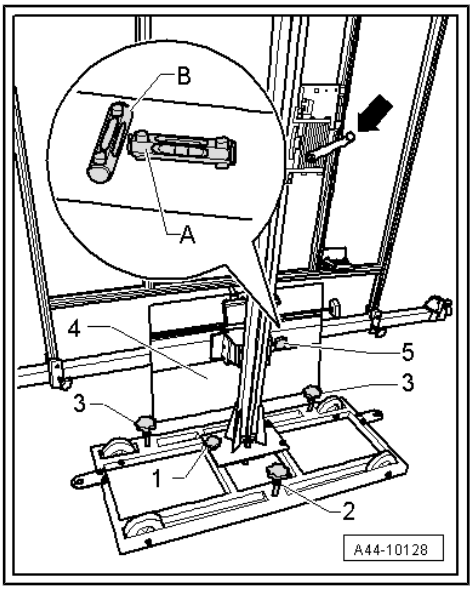
– Level the bubble levels -A and B- on the ACC Reflector Mirror -VAS6430/10- using the adjusting screws -1-, -2 and 3-.
– Adjust the mirror -4- via the crank -arrow- so that the laser beam is in the center of the sensor lens.



– Position the mirror on the side of the calibration beam so that the laser beam is in the center of the VW emblem -1-.
– Level the bubble levels of the measurement sensor.



– Turn the precision adjustment screw -5- until the display on the wheel alignment computer is located within the tolerance range.
– Level the bubble levels of the measurement sensor.
– Using the laser beam on the ACC Reflector Mirror -VAS6430/10- , 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 - VAS6430/10- must be realigned.

– Select “Individual test plan” on the Vehicle Diagnostic Tester .
– Press the following buttons one after another on the screen:

♦ Diagnostic-Capable Systems
♦ 0013 – Distance control
♦ 0013 - Distance control, functions
♦ 0013 - Calibrating

Follow the instructions on the screen to perform the adjustment.

3 Driver Assistance Systems Front Camera

⇒ “3.1 Driver Assistance Systems Front Camera, Calibrating”, page 300

3.1 Driver Assistance Systems Front Camera, Calibrating

Special tools and workshop equipment required

- Setting Device - Basic Set - VAS6430/1A-
- 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 field of view is dirty or icy. If that is the problem, it should be corrected.
- The camera view field is fogged over.

If the camera lens is obstructed by a lot of dirt on the inside, then lens must be cleaned by hand. To do this, remove the control module and the lens, and clean the windshield using Cleaning Solution. Remove the control module and the lens. Refer to ⇒ Electrical Equipment; Rep. Gr. 96 ; Driver Assistance Systems Front Camera .

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 level control system sensor was readapted on vehicles with damping regulation.

Note

- *Before calibrating the driver assistance systems front camera, check the 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 bracket.*
- *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 ± 25 mm.*
- *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.*
- *Check the DTC memory before calibrating. Erase any entries if necessary.*

– Follow the test requirements for an axle alignment. Refer to ⇒ “1.2 Test Requirements”, page 279 .

– Drive the vehicle onto the vehicle alignment platform.

– Connect the battery charger. Refer to ⇒ Electrical Equipment General Information; Rep. Gr. 27 ; Battery, Charging .

– Connect the 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.

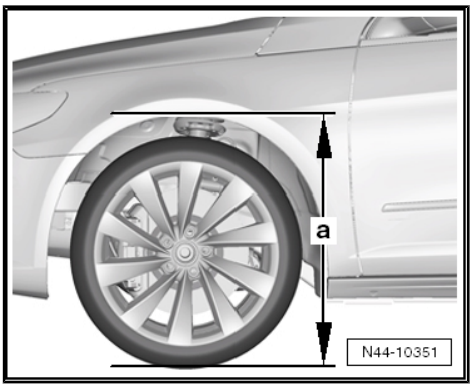
– Install the quick-action clamps on all four wheels.

– Install the measuring sensors on the wheels.

– Perform a wheel run-out compensation on the rear wheels.

– Bounce the vehicle.

– Measure and record the height at all four wheels.



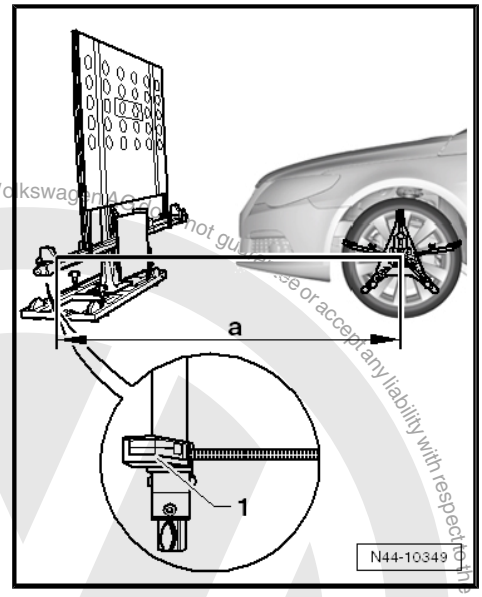
Note

- *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 device -1-.

1 - Distance Measuring Device with Roller Tape Measure and Stud Bolt

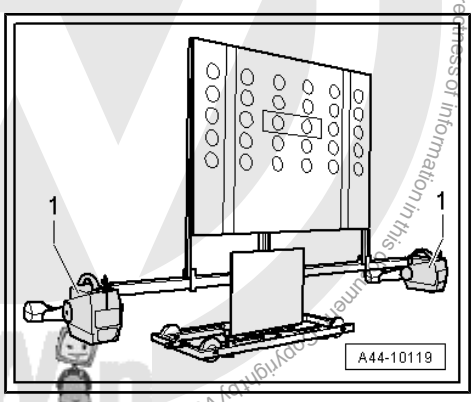
– Position the Setting Device Basic Set - VAS6430/1- at a distance -a- of 1500 mm ± 25 mm from the center of the wheel hub on the front wheels to the beam on the Setting Device Basic Set - VAS6430/1- .



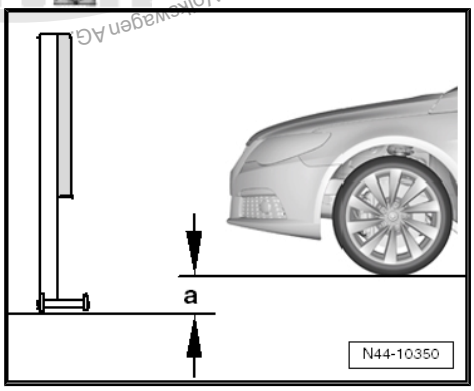
Caution

- *Distance -a- 1,500 mm ± 25 mm 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.*

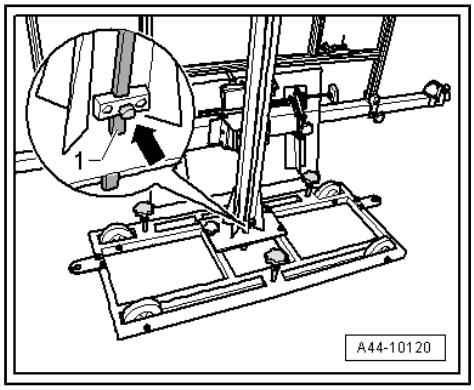
– Mount the front wheel measuring sensors -1- to the Setting Device Basic Set - VAS6430/1- .



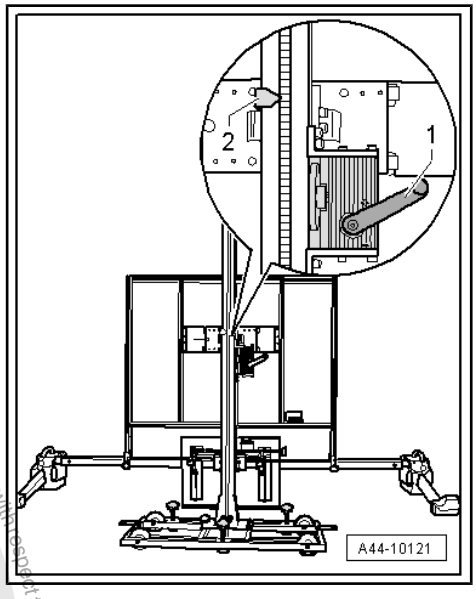
– Determine the height value -a- between the Setting Device Basic Set - VAS6430/1- contact surface and the wheel contact surface on the vehicle alignment platform. Enter the determined value in the wheel alignment computer.



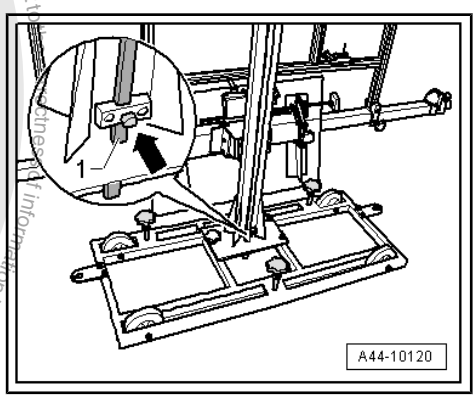
– Loosen the clamping bolt -arrow- and place the measuring bar -1- on the floor.



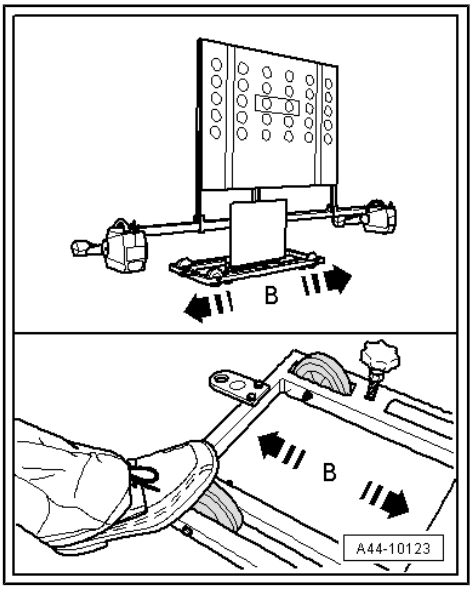
– Turn the crank -1- to adjust the Calibration Board For Lane Guard System - VAS 6430/4- to the height specification -2- and then make a note of it.



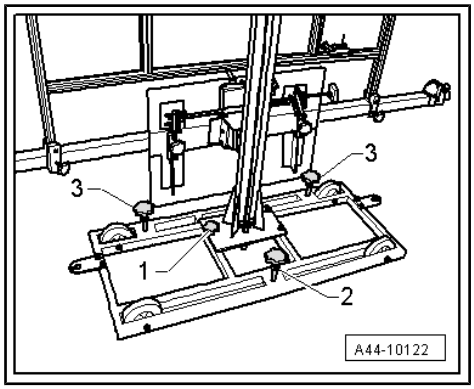
If the specified height was reached, then the measuring bar -1- must be pushed slightly forward and secured with the locking bolt -arrow-.



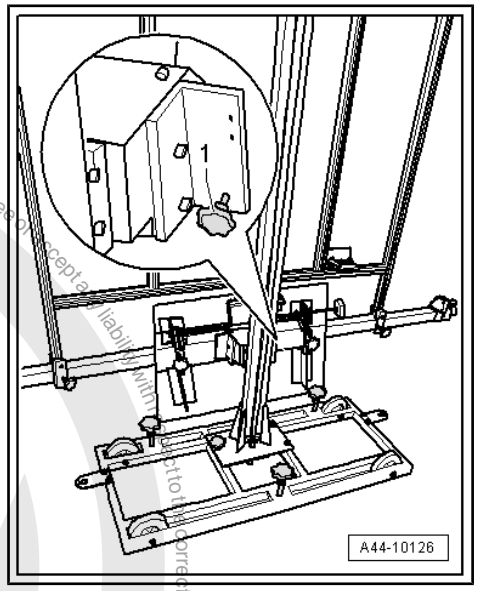
– Slide the Setting Device Basic Set - VAS6430/1- to the side -arrows B- until the display in the wheel alignment computer is in the tolerance range.



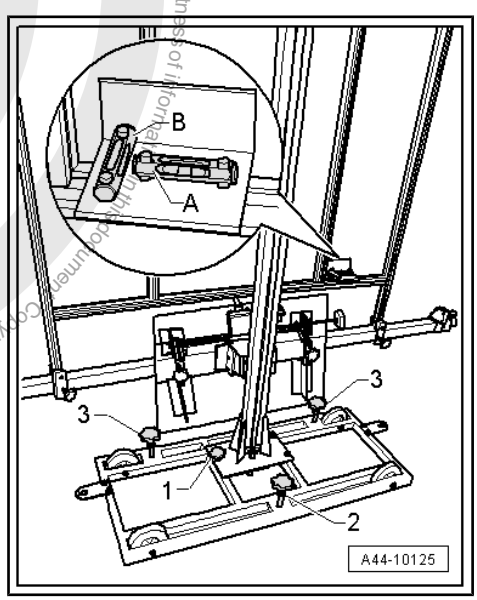
– Gently turn the adjustment screws -2 and 3- to secure the Setting Device Basic Set - VAS6430/1- from rolling away.



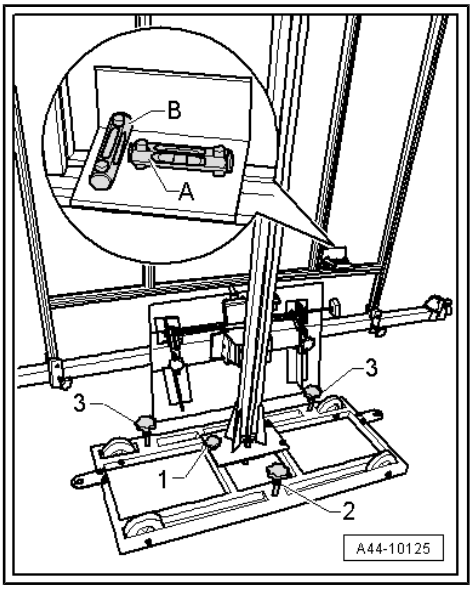
– Turn the fine adjustment screw -1- until the display on the wheel alignment computer is within the tolerance range.



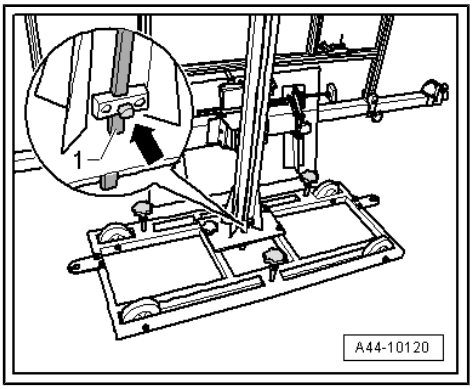
– Level the bubble level -A- using the adjusting screw -1-.



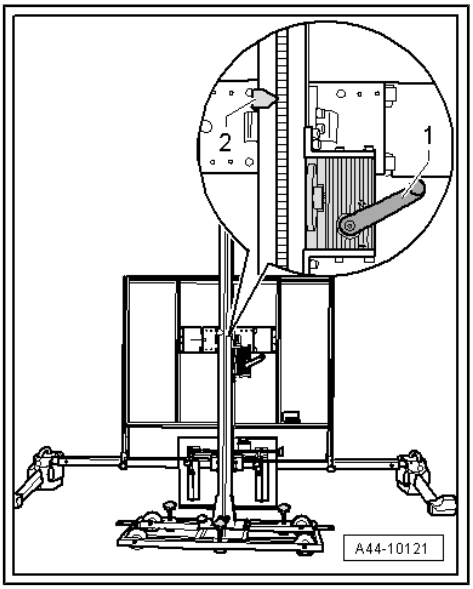
– Level the bubble level -B- using the adjusting screws -2 and 3-.



– Loosen the clamping bolt -arrow- and place the measuring bar -1- on the floor.



– Check the specified height -2- one more time and adjust if necessary.



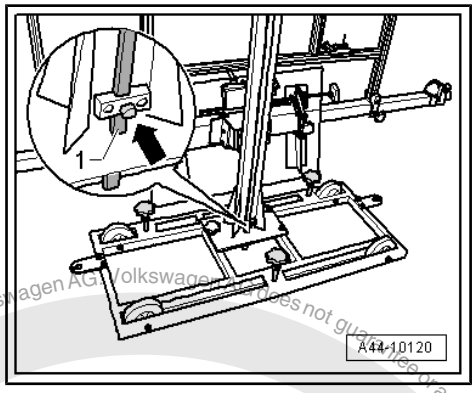
If the specified height was reached, then the measuring bar -1- must be pushed slightly forward and secured with the locking bolt -arrow-.

Perform any subsequent work using the Vehicle Diagnostic Tester .

– Switch the ignition on.

– Select “Guided Fault Finding” on the Vehicle Diagnostic Tester .

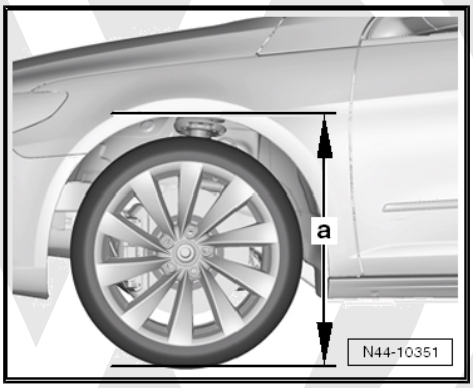
Follow the instructions on the screen to perform the calibration.



Note

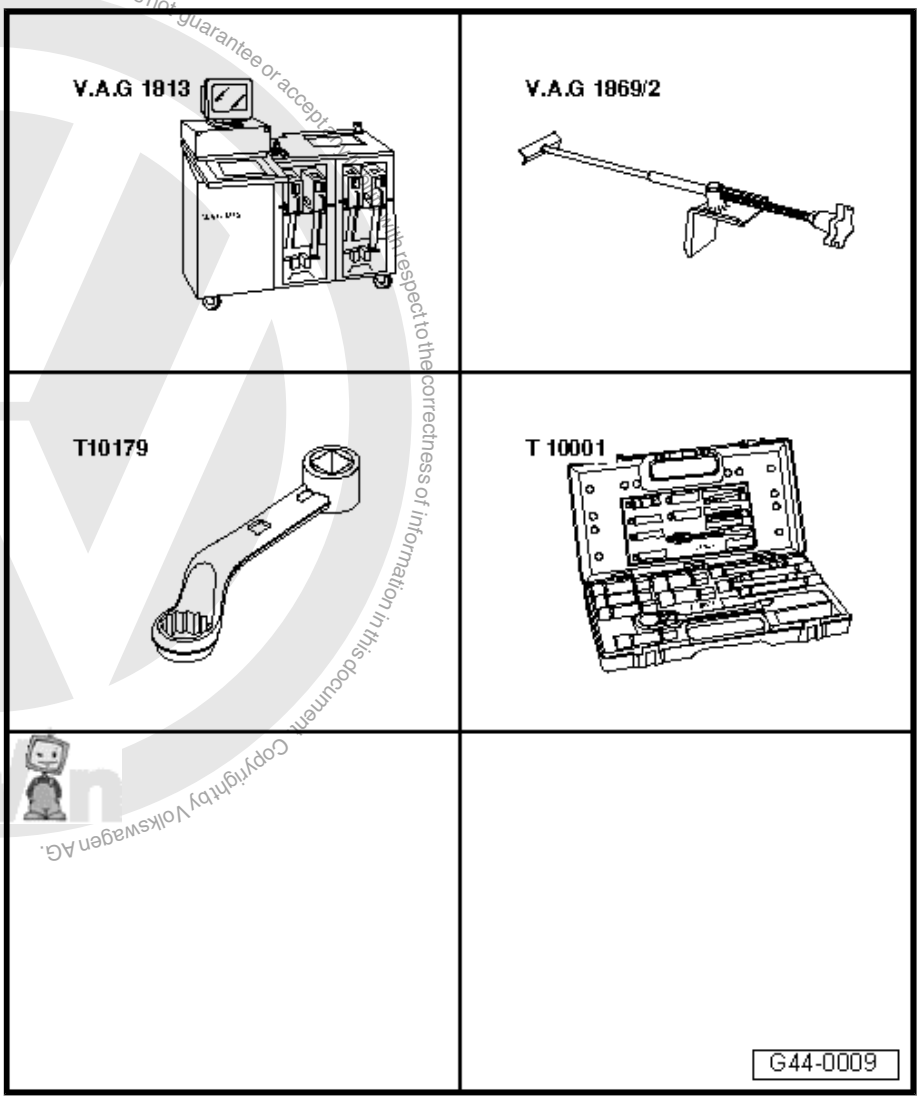
Next, in guided fault finding, determine the height of the body.

– Enter the recorded ride heights.



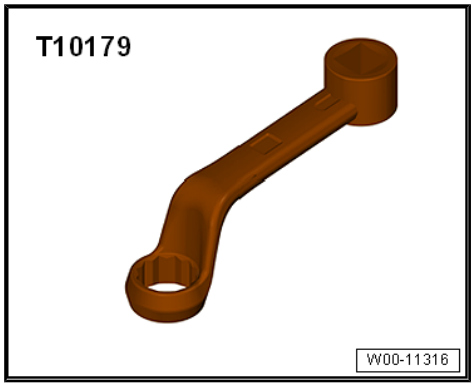
4 Special Tools

Special tools and workshop equipment required



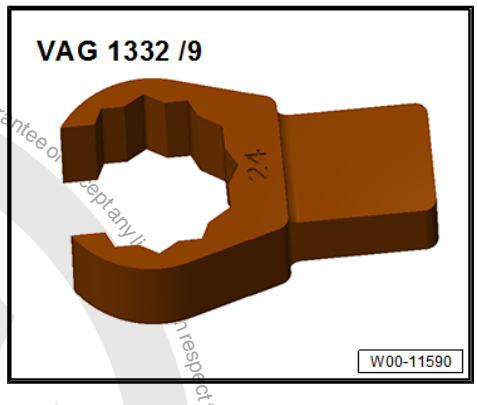
- Wheel Alignment Computer - VAG1813F- or VW/Audi approved wheel alignment devices
- Brake Pedal Actuator - VAG1869/2- .
- Insert Tool - 18mm - T10179-
- Shock Absorber Set - T10001-

- Insert Tool - 18mm - T10179-

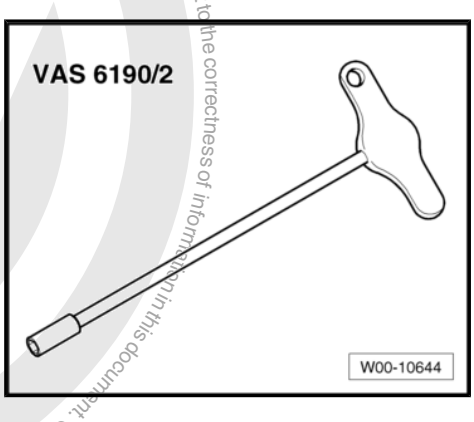


- Torque Wrench 1332 40-200Nm - VAG1332-

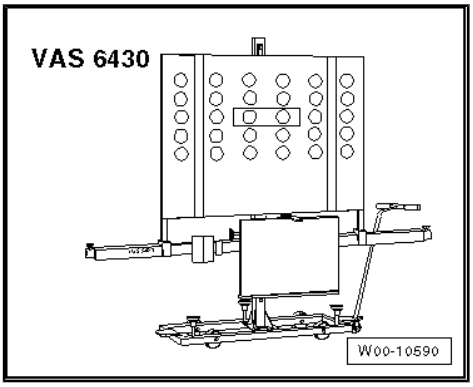
- Torque Wrench 1332 Insert - Open Ring Wrench - 24mm - VAG1332/9-



- ACC Adjuster - VAS6190/2-



- Setting Device - Basic Set - VAS6430/1- or Setting Device - Basic Set - VAS6430/1A-



- ACC Reflector Mirror - Audi - VAS6430/3-
- ACC Reflector Mirror - VAS6430/10-
- Wheel Alignment Computer

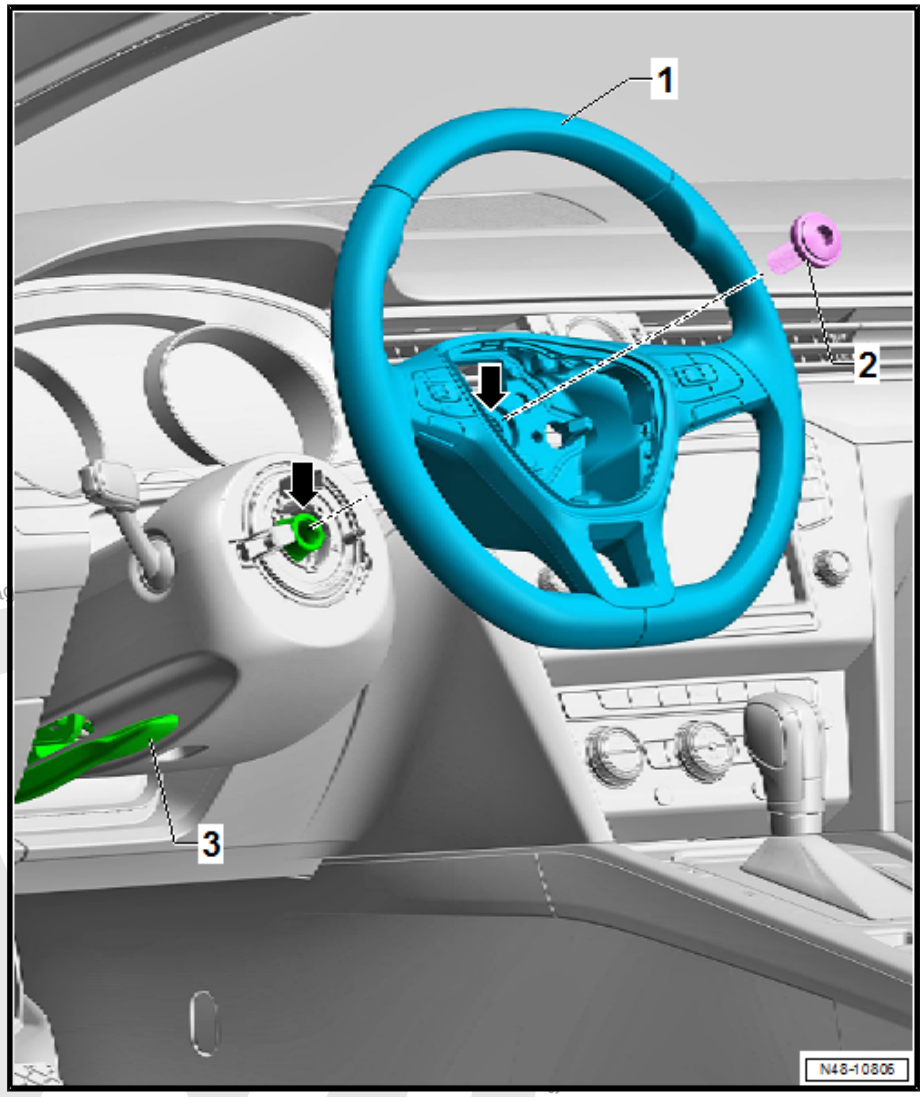
48 – Steering

1 Steering Wheel

⇒ “1.1 Overview - Steering Wheel”, page 310

⇒ “1.2 Steering Wheel, Removing and Installing”, page 310

1.1 Overview - Steering Wheel



1 - Steering Wheel

- ❑ Removing and installing. Refer to ⇒ “1.2 Steering Wheel, Removing and Installing”, page 310 .
- ❑ There are different versions. Refer to the Parts Catalog for the allocation.
- ❑ 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 310 .

2 - Bolt

- ❑ 30 Nm + 90°
- ❑ Replace after removing.

3 - Steering Column

- ❑ Removing and installing. Refer to ⇒ “2.4 Steering Column, Removing and Installing”, page 314 .
- ❑ 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 310 .

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 ; Driver Side Airbag; 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).

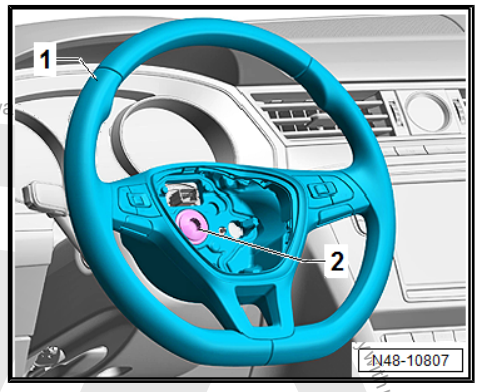
– If equipped, disconnect the steering wheel heating connector.

– Remove the bolt -2-.

– 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 -1- 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 the steering wheel.

– If equipped, connect the steering wheel heating connector.

– Install the airbag unit. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Driver Side Airbag; Overview - Driver Side Airbag .

– Perform a road test.

– If the steering wheel is crooked, remove it again and rotate it on steering column splines.

Tightening Specifications

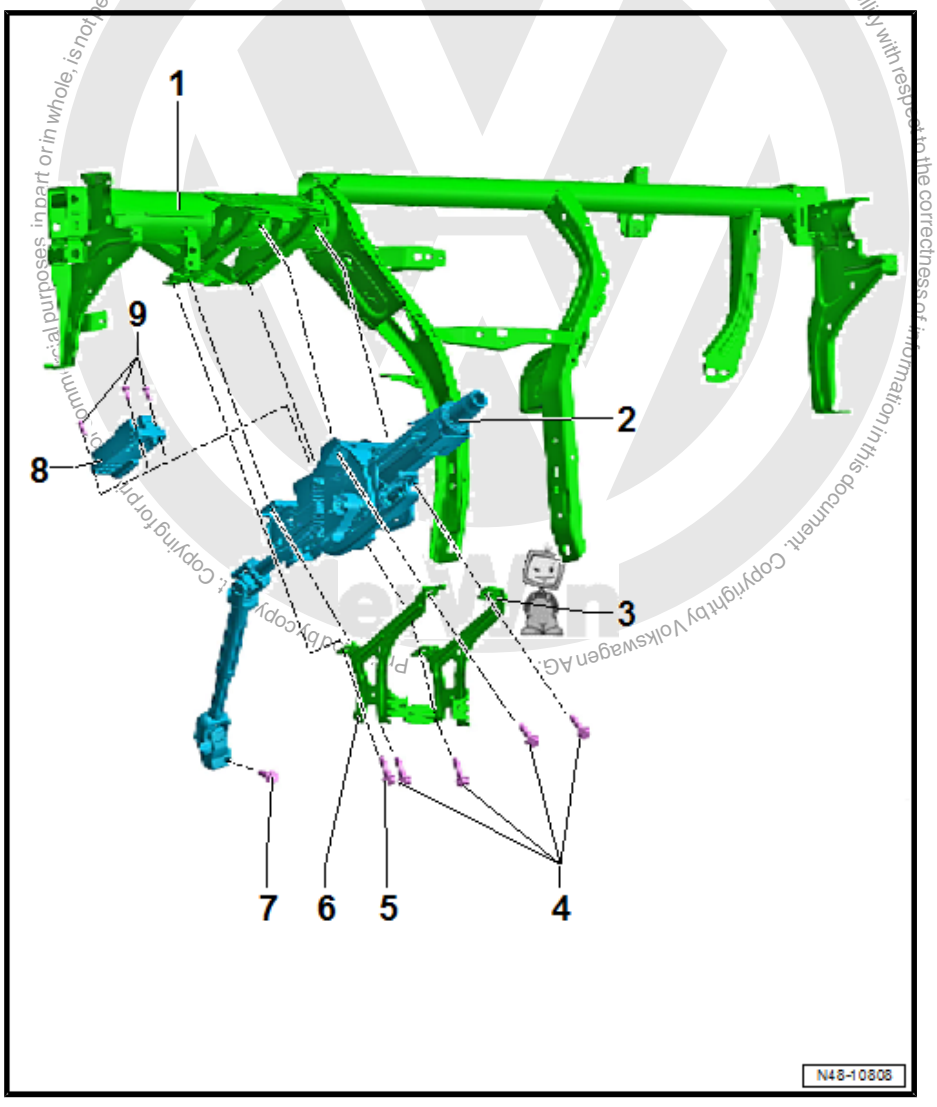
♦ Refer to ⇒ “1.1 Overview - Steering Wheel”, page 310

2 Steering Column

2.1 Overview - Steering Column

Note

- *Always replace self-locking nuts.*
- *Always replace corroded bolts/nuts.*
- *Always replace the bolts and nuts, which are tightened with an additional turn.*



1 - Instrument Panel Central Tube

2 - Steering Column

- ❑ Removing and installing. Refer to ⇒ “2.4 Steering Column, Removing and Installing”, page 314 .
- ❑ The steering column must be engaged on the instrument panel central tube mounting bracket when installing (assembly aid).
- ❑ There are different versions. Refer to the Parts Catalog.

3 - Right Bracket

- ❑ For the knee airbag

4 - Bolt

- ❑ 20 Nm
- ❑ Replace after removing.
- ❑ Note the tightening sequence

5 - Bolt

- ❑ 20 Nm
- ❑ Replace after removing.

6 - Left Bracket

- ❑ For the knee airbag

7 - Bolt

- ❑ 20 Nm +90°
- ❑ Replace after removing.

8 - 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 321 .

9 - Bolt

❑ 6 Nm
❑ Quantity: 3

2.2 Steering Column, Checking for Damage

Visual check

– Check whether steering column parts show signs of damage.

Function Test

– Check that the steering column turns easily without jerking.
– Check whether steering column can be easily adjusted laterally and vertically.

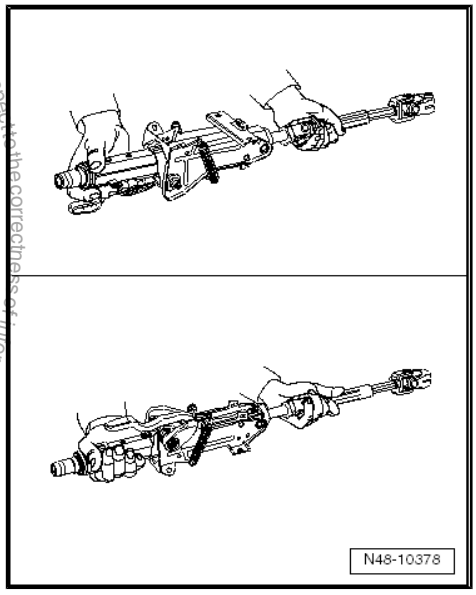
2.3 Steering Column, Handling and Transporting

WARNING

- *The steering column must always be handled correctly.*
- *Incorrect handling of steering column may cause damage to steering column and therefore lead to a safety risk.*

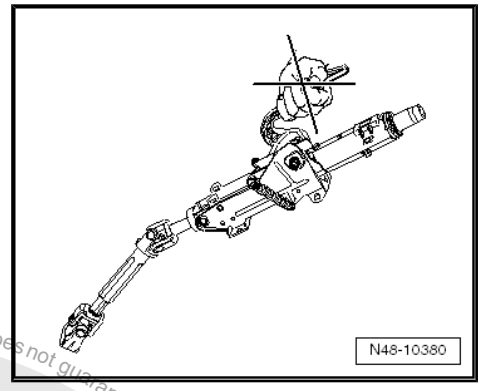
Correct Handling and Transport of Steering Column

- 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

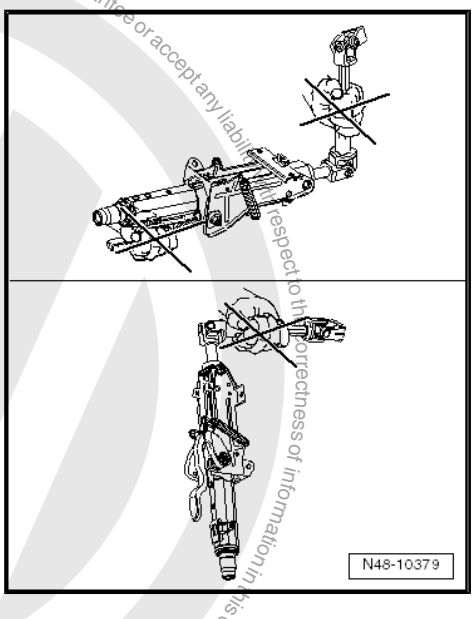
Transporting at the clamping lever leads to damage to the steering column.



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 of 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-

Removing

The steering column is delivered only as a complete replacement part. Servicing is not possible.

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 321 .

WARNING

Before starting work on electrical equipment and removing the steering wheel, the following conditions must be fulfilled:

- *The technician must discharge themselves of static electricity. This is done by touching grounded metal parts, for example, water lines, heater pipes, metal supports or a workshop hoist. Refer to ⇒ "2.7 Electrical Components", page 5 .*

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 in the straight position.*

The airbag system may fail during future operation if these warnings are not followed!

– Bring wheels in the straight position.

– Pull the lever on the side of the steering column downward.

– Push the steering column as far down as possible and remove it.

– Push the lever on the side of the steering column upward again.

– Remove the 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 310 .

– Remove the upper steering column trim panel. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments/Covers; Upper Steering Column Trim Panel, Removing and Installing

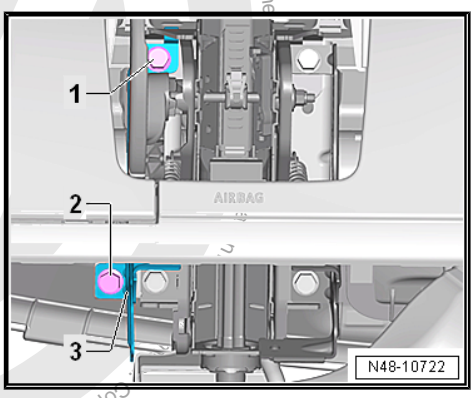
– Remove the lower steering column trim panel. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments/Covers; Lower Steering Column Trim Panel, Removing and Installing .

– Remove the steering column switch module. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Steering Column Switch Module; Steering Column Switch Module, Removing and Installing .

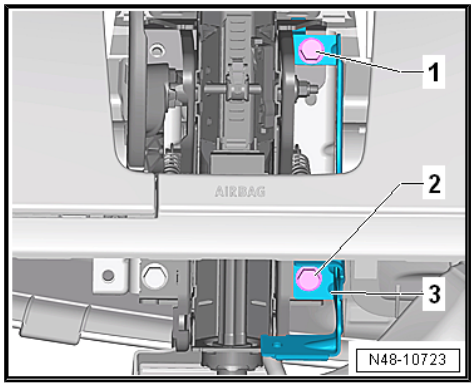
– Remove the knee airbag. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Knee Airbags; Overview - Knee Airbag

– Remove the bolts -1 and 2-.

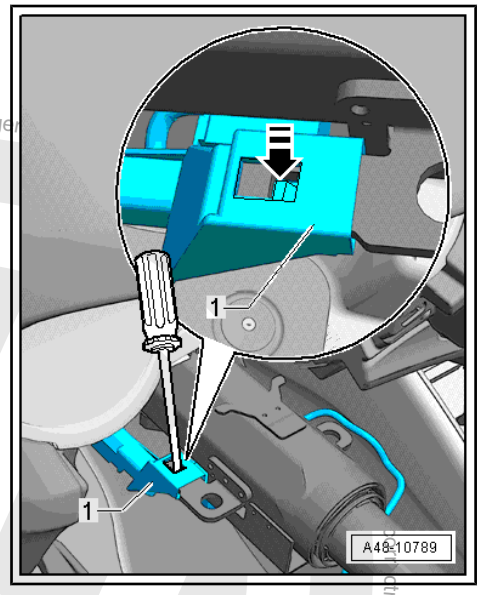
– Remove the left bracket for the knee airbag -3-.



– Remove the bolts -1 and 2-.
– Remove the right bracket for the knee airbag -3-.



– Release the tab in direction of -arrow- using a small screwdriver.
– Remove the cable guide -1- forward from the metal tab.

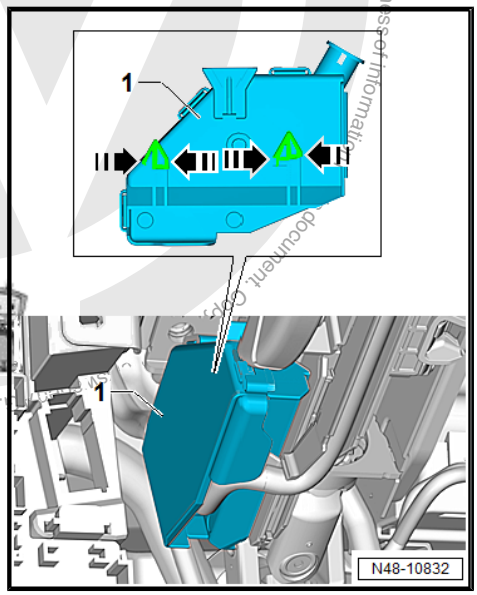


– Release the lower cable bracket -1- at the tabs in the direction of -arrow-.

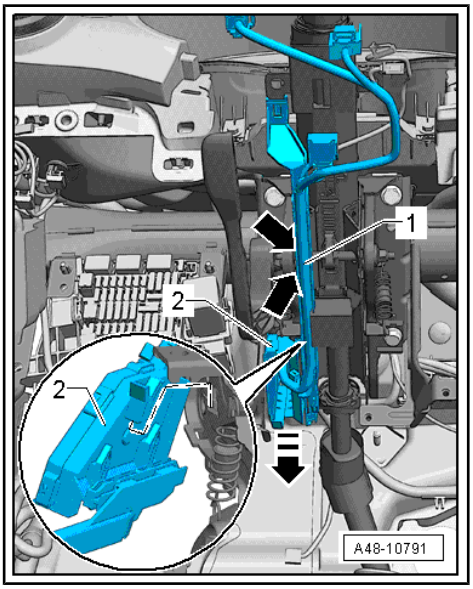
Note

The tabs are directly anchored in the steering column and are located between the bracket -1- and the steering column.

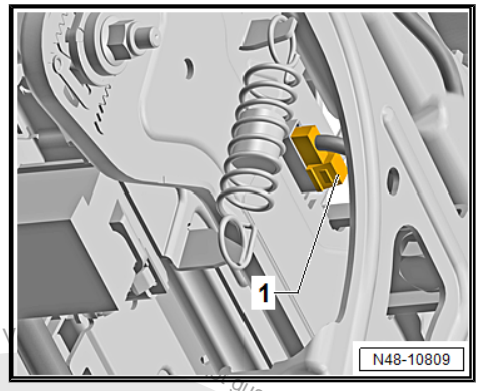
– Remove the cable bracket -1- downward.



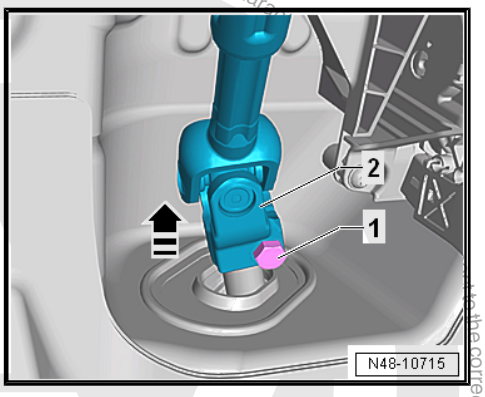
– Release the tabs -arrows- on the cable guide -1- with a small screwdriver.
– Remove the cable guide -1- downward from the steering column.
– Release the lower cable bracket -2- and remove it downward.
– Set the wire for the steering column aside.



– Disconnect the connector -1- from the Electronic Steering Column Lock Control Module - J764- .
– Remove the cable from the steering column.
– Remove the driver side instrument panel cover. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Driver Side Instrument Panel Cover, Removing and Installing .
– Fold back the carpet.



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



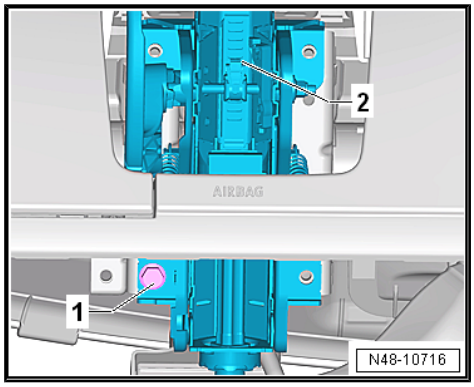
Caution

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.

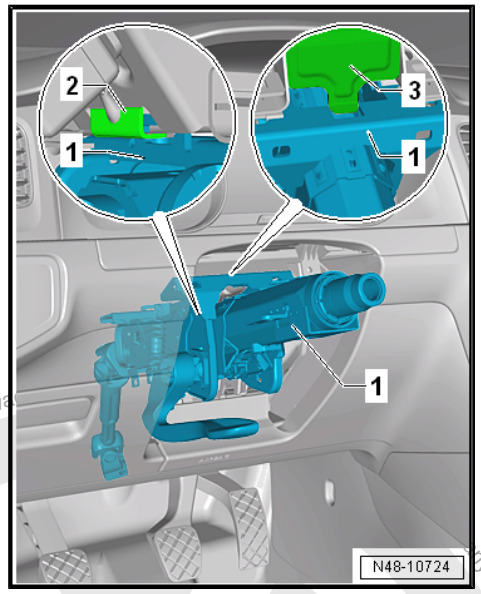
– Remove the bolt -1- and hold the steering column -2-.



– Disengage the steering column -1- upward from the tabs -2- and -3- on the mounting bracket and remove it.

Caution

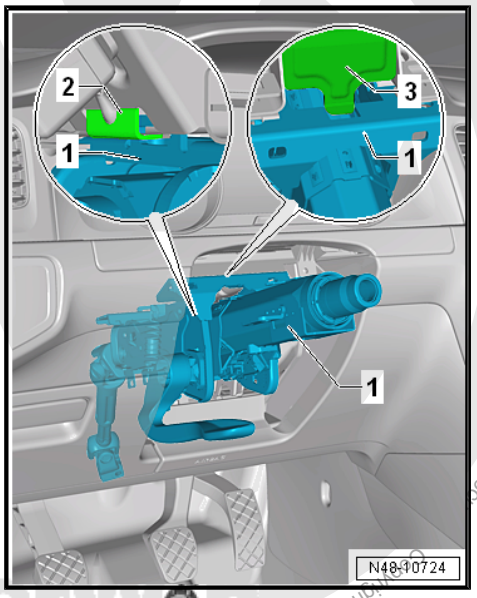
Refer to ⇒ "2.3 Steering Column, Handling and Transporting", page 313 for the correct handling and transport of steering column.



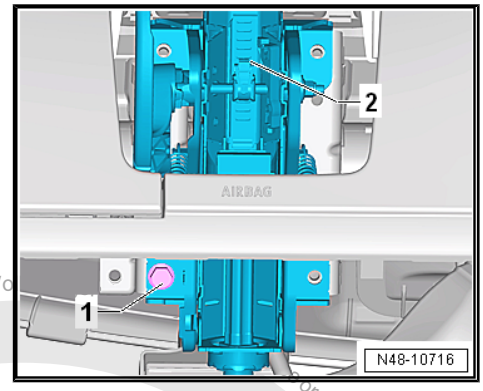
Installing

Install in reverse order of removal while noting the following:

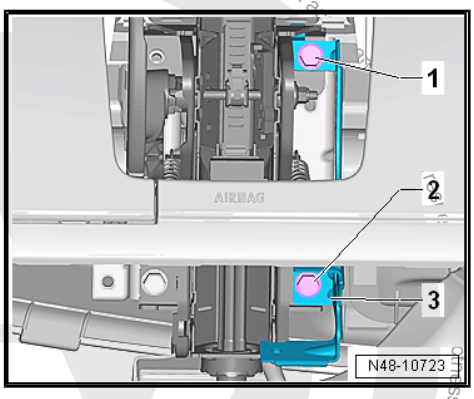
– Engage the steering column -1- in the assembly aids on the mounting bracket at the bottom -2- and at the top -3-.



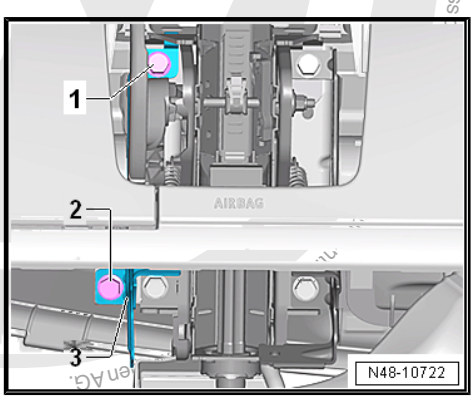
– Align the steering column -2- to the mounting bracket. Install the bolt -1- hand-tight.



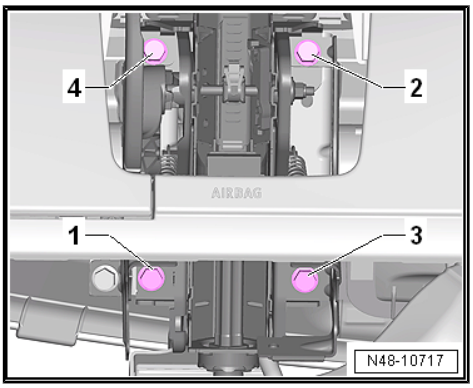
– Install the right bracket for the knee airbag -3-.
– Install the bolts -1 and 2- hand-tight.



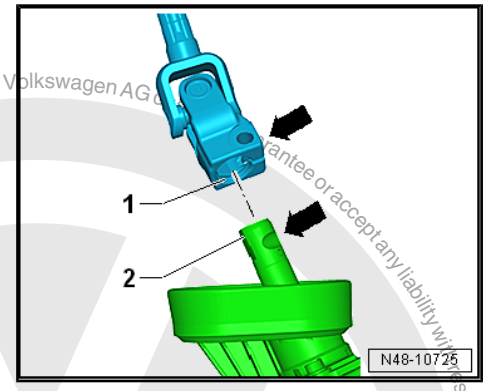
– Install the left bracket for the knee airbag -3-.
– Install the bolts -1 and 2- hand-tight.



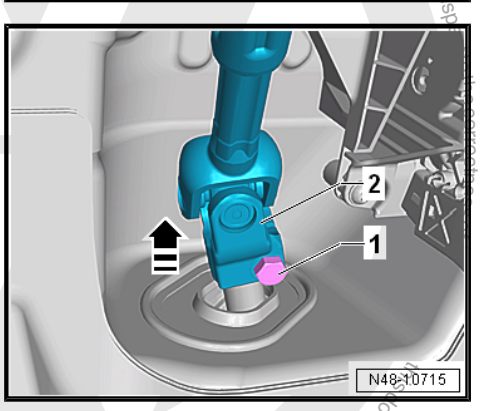
– Tighten the bolts -1, 2, 3, and 4- one after the other to the tightening specification.



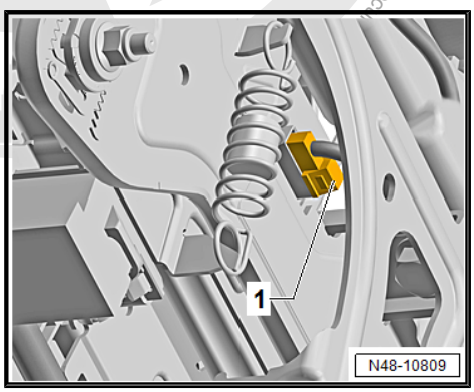
– The flat side of the steering column -1- must be positioned on the flat side of the steering gear -2-. At the same time, the opening on the steering gear must align precisely with the hole for the bolt -arrows-.

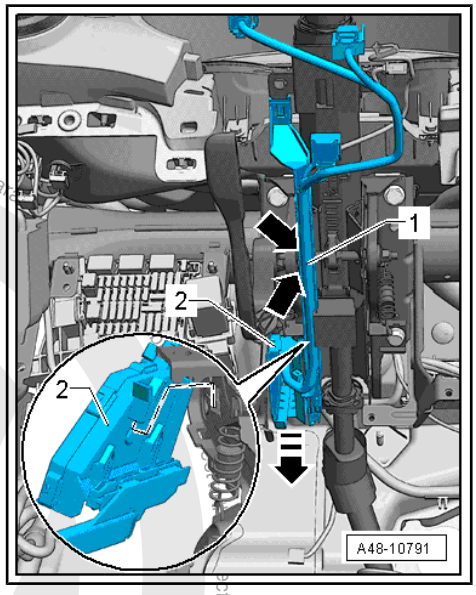


– Install the universal joint -2- on the steering pinion in the opposite direction of -arrow-.
– Install and tighten the new hex bolt -1-.
– Install the driver side instrument panel cover. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments/Covers; Driver Side Instrument Panel Cover, Removing and Installing .



– Connect the connector -1- to the Electronic Steering Column Lock Control Module - J764- .
– 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 in the guide engage on the steering column.
– Insert the cable guide -1-. The tabs -arrows- must engage in the steering column.
– Install the knee airbag. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Knee Airbags; Overview - Knee Airbags
– Install the lower steering column trim panel. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments/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/Covers; Upper Steering Column Trim Panel, Removing and Installing .
– Install the steering wheel. Refer to ⇒ “1.2 Steering Wheel, Removing and Installing”, page 310 .
– 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 312
♦ Steering column switch module. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Steering Column Switch Module; Steering Column Switch Module, Removing and Installing .
♦ Knee Airbag. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Knee Airbags; Overview - Knee Airbag
♦ Driver side airbag. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Driver Side Airbag; Overview - Driver Side Airbag .
♦ Lower steering column trim panel. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments/Covers; Lower Steering Column Trim Panel, Removing and Installing .
♦ Upper steering column trim panel. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments/Covers; Upper Steering Column Trim Panel, Removing and Installing .
♦ Driver side instrument panel cover. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments/Covers; Driver Side Instrument Panel Cover, Removing and Installing .

2.5 Electronic Steering Column Lock Control Module - J764- , Removing and Installing

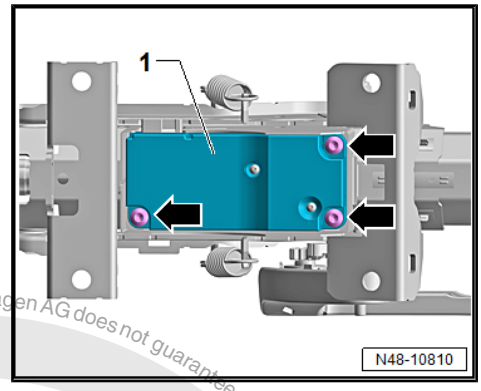
Special tools and workshop equipment required

♦ Torque Wrench 1783 - 2-10Nm - VAG1783-

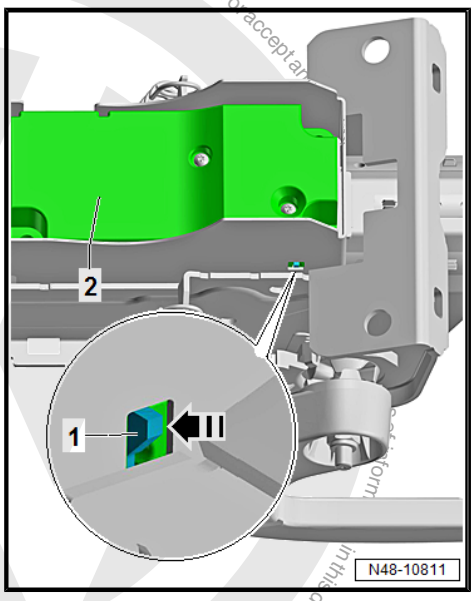
Removing

– Remove the steering column. Refer to ⇒ “2.4 Steering Column, Removing and Installing”, page 314 .

– Remove the bolts -arrows- from the Electronic Steering Column Lock Control Module - J764- .



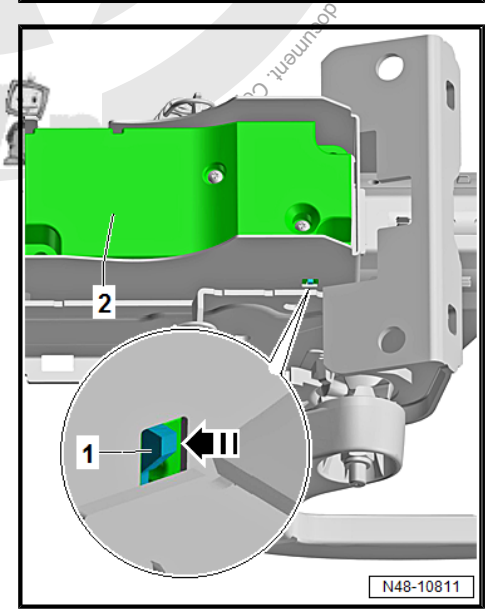
– Push the tab -1- in the direction of -arrow- and remove the Electronic Steering Column Lock Control Module - J764- -2-.



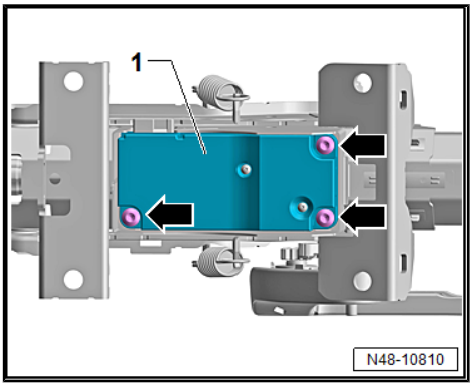
Installing

Install in reverse order of removal and note the following:

– Insert the Electronic Steering Column Lock Control Module - J764- -2- and make sure that the tab -1- engages.



– Secure the Electronic Steering Column Lock Control Module - J764- -1- with bolts -arrows-.



– Install the steering column. Refer to ⇒ “2.4 Steering Column, Removing and Installing”, page 314 .

– Perform the operation using the Vehicle Diagnostic Tester .

Tightening Specifications

♦ Refer to ⇒ “2.1 Overview - Steering Column”, page 312

3 Steering Gear

3.1 Overview - Steering Gear

3.1.1 Overview - Steering Gear

Overview - Steering Gear, Tie Rods APA. Refer to ⇒ page 327 .

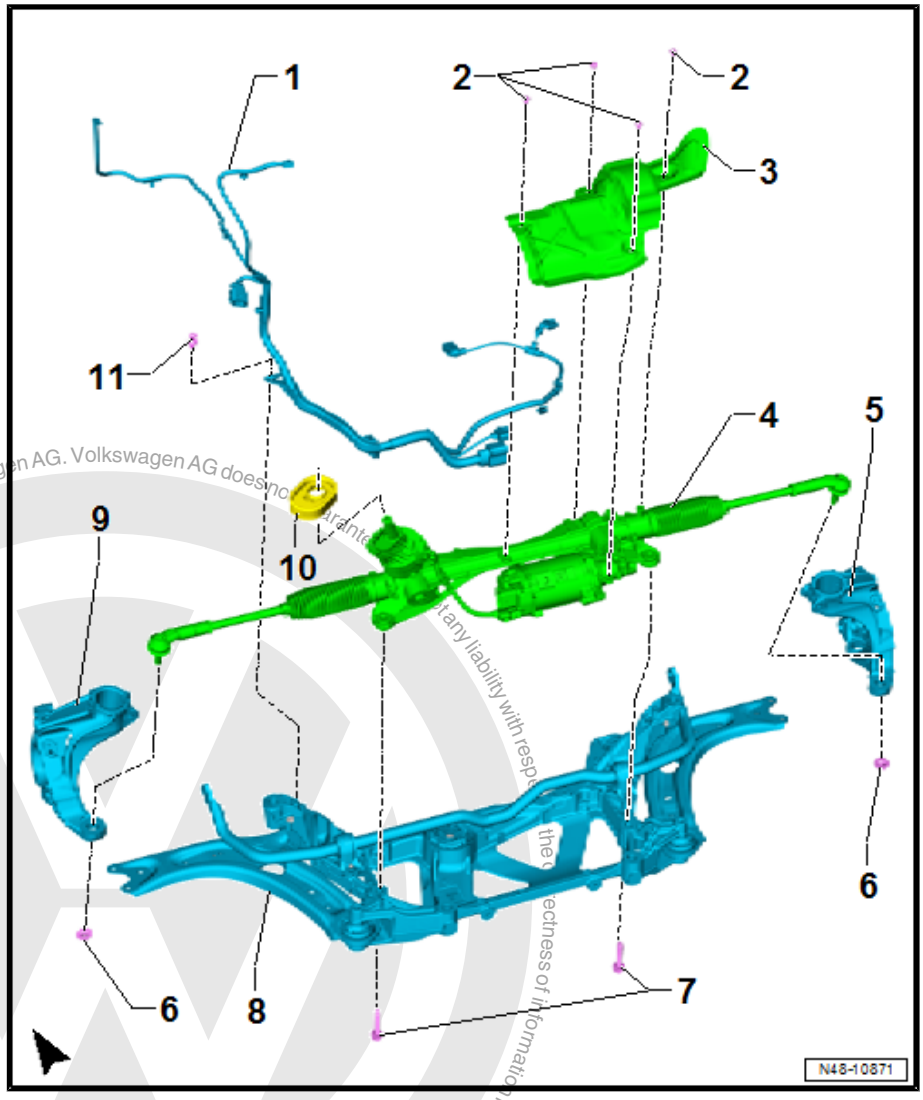
Overview - Steering Gear, Tie Rods, ZF. Refer to ⇒ page 328 .

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.



1 - Wire

- ❑ There are different versions. Refer to the Parts Catalog.

2 - Bolt

- ❑ 8 Nm
- ❑ Depending on the engine installed, three or four are installed. Refer to the Parts Catalog.

3 - Heat Shield

- ❑ Depending on the engine installed, there are different versions. Refer to the Parts Catalog.

4 - Steering Gear

- ❑ Overview APA. Refer to ⇒ page 327 .
- ❑ Overview ZF. Refer to ⇒ page 328 .
- ❑ Removing and installing. Refer to ⇒ “3.2 Steering Gear, Removing and Installing”, page 329 .
- ❑ There are different versions. Refer to the Parts Catalog.
- ❑ With Power Steering Control Module - J500-
- ❑ Can be checked in “Guided Fault Finding”. Refer to Vehicle Diagnostic Tester .

5 - Right Wheel Bearing Housing

6 - Nut

- ❑ 20 Nm +90°
- ❑ Replace after removing.

7 - Bolt

- ❑ 70 Nm +90°
- ❑ Replace after removing.

8 - Subframe

9 - Left Wheel Bearing Housing

10 - Seal

- ❑ Replace after removing the steering gear.

11 - Expanding Clip

3.1.2 Overview - Steering Gear, RHD

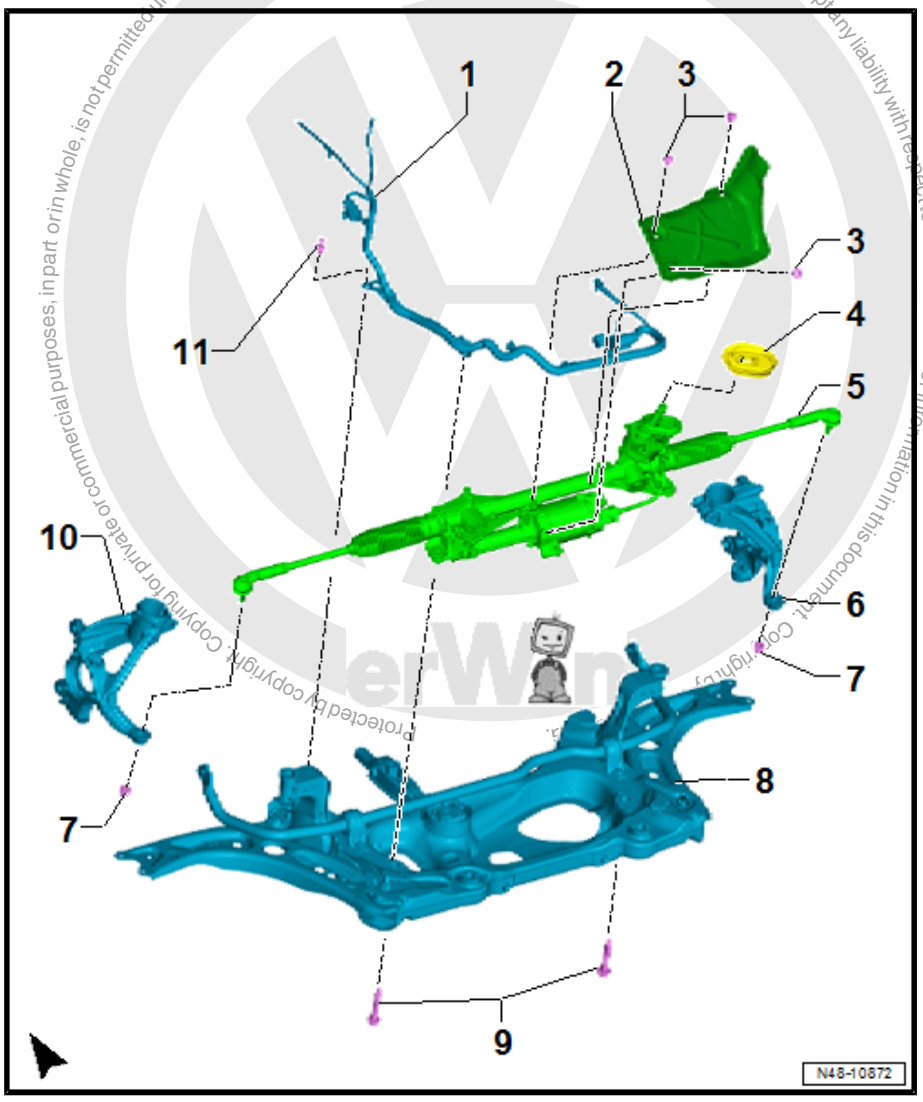
Overview - Steering Gear, Tie Rods, ZF. Refer to ⇒ page 328 .

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.



1 - Wire

2 - Heat Shield

- ❑ Depending on the engine installed, there are different versions. Refer to the Parts Catalog.

3 - Bolt

- ❑ Depending on the engine installed, three or four are installed. Refer to the Parts Catalog.
- ❑ 8 Nm

4 - Seal

- ❑ Replace after removing the steering gear.

5 - Steering Gear

- ❑ Removing and installing. Refer to ⇒ "3.2 Steering Gear, Removing and Installing", page 329 .
- ❑ Overview. Refer to ⇒ page 328 .
- ❑ There are different versions. Refer to the Parts Catalog.
- ❑ With Power Steering Control Module - J500-
- ❑ Can be checked in "Guided Fault Finding". Refer to Vehicle Diagnostic Tester .

6 - Right Wheel Bearing Housing

7 - Nut

- ❑ Replace after removing.
- ❑ 20 Nm +90°

8 - Subframe

9 - Bolt

- ❑ Replace after removing.
- ❑ 70 Nm +90°

10 - Left Wheel Bearing Housing

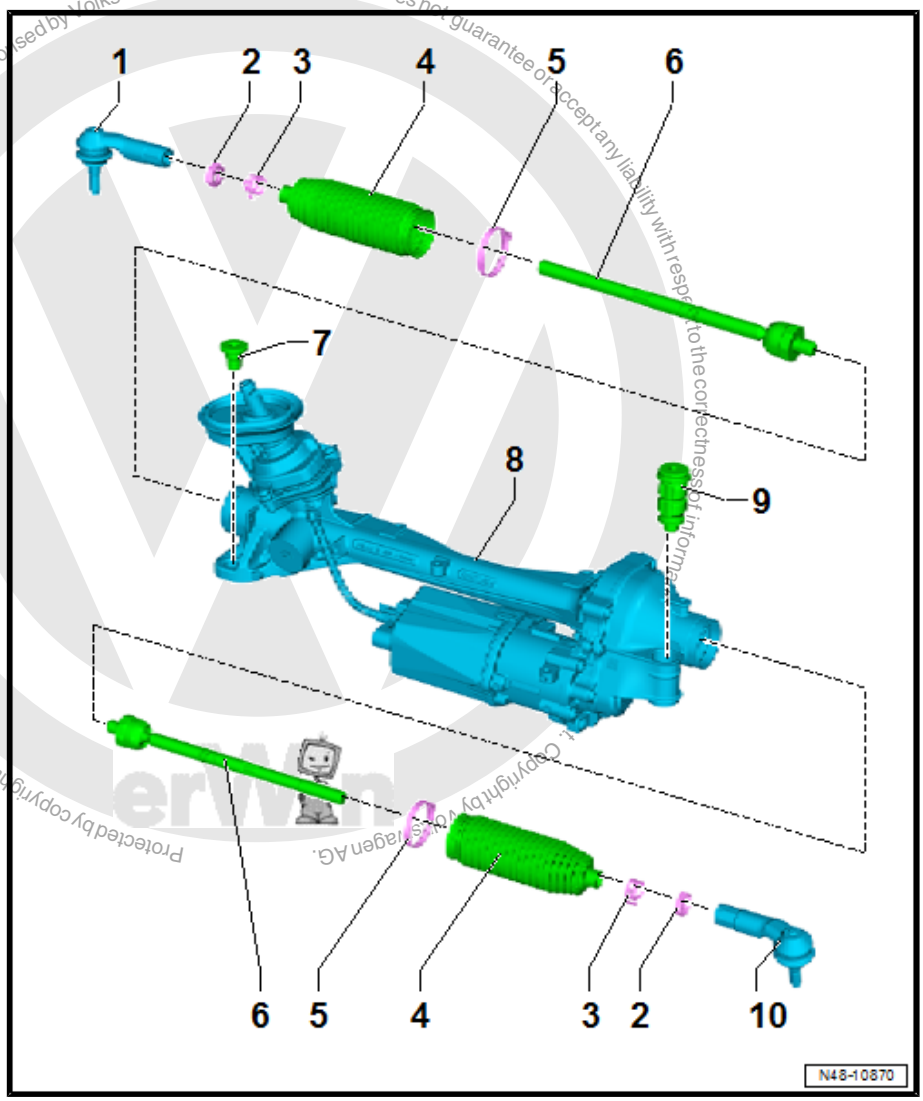
11 - Expanding Clip

3.1.3 Overview - Steering Gear, Tie Rods

Overview - Steering Gear, Tie Rods APA. Refer to ⇒ page 327 .

Overview - Steering Gear, Tie Rods, ZF. Refer to ⇒ page 328 .

Overview - Steering Gear, Tie Rods APA



1 - Left Tie Rod End

- ❑ Installation position. Refer to ⇒ page 338 .
- ❑ Removing and installing. Refer to ⇒ “3.5 Tie Rod End, Removing and Installing”, page 339 .
- ❑ Installation position. Refer to ⇒ page 338 .
- ❑ Allocation. Refer to the Parts Catalog.

2 - Nut

- ❑ 70 Nm
- ❑ The nut must be counterheld on the 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 335 .

5 - Clamp

- ❑ Replace
- ❑ Tensioning. Refer to ⇒ page 337 .

6 - Tie Rod

- ❑ 100 Nm
- ❑ Removing and installing. Refer to ⇒ “3.4 Tie Rod, Removing and Installing”, page 337 .

7 - Threaded Bushing

- ❑ Removing and installing. Refer to ⇒ “3.6.1 Threaded Bushing, Removing and Installing”, page 340 .

8 - Steering Gear

- ❑ Allocation. Refer to the Parts Catalog.

- ❑ Removing and installing. Refer to ⇒ “3.2 Steering Gear, Removing and Installing”, page 329 .

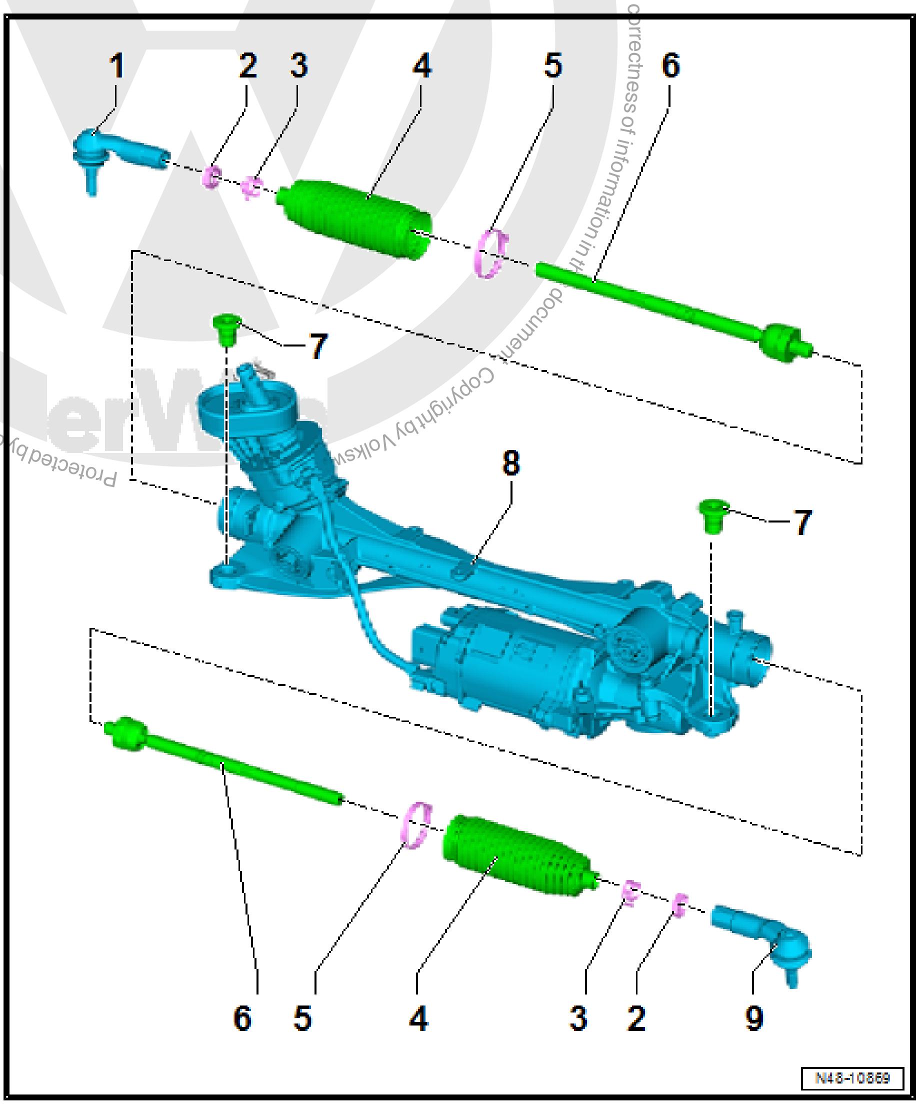
9 - Bonded Rubber Bushing

- ❑ No replacement part

10 - Right Tie Rod End

- ❑ Installation position. Refer to ⇒ page 338 .
- ❑ Removing and installing. Refer to ⇒ “3.5 Tie Rod End, Removing and Installing”, page 339 .
- ❑ Installation position. Refer to ⇒ page 338 .
- ❑ Allocation. Refer to the Parts Catalog.

Overview - Steering Gear, Tie Rods, ZF



1 - Left Tie Rod End

- ❑ Installation position. Refer to ⇒ page 338 .
- ❑ Removing and installing. Refer to ⇒ “3.5 Tie Rod End, Removing and Installing”, page 339 .
- ❑ Installation position. Refer to ⇒ page 338 .
- ❑ Allocation. Refer to the Parts Catalog.

2 - Nut

- ❑ 70 Nm
- ❑ The nut must be counterheld on the 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 335 .

5 - Clamp

- ❑ Always replace
- ❑ Tensioning. Refer to ⇒ page 337 .

6 - Tie Rod

- ❑ 100 Nm
- ❑ Removing and installing. Refer to ⇒ “3.4 Tie Rod, Removing and Installing”, page 337 .

7 - Threaded Bushing

- ❑ Removing and installing. Refer to ⇒ “3.6.1 Threaded Bushing, Removing and Installing”, page 340 .

8 - Steering Gear

- ❑ Allocation. Refer to the Parts Catalog.
- ❑ Removing and installing. Refer to ⇒ “3.2 Steering Gear, Removing and Installing”, page 329 .

9 - Right Tie Rod End

- ❑ Installation position. Refer to ⇒ page 338 .
- ❑ Removing and installing. Refer to ⇒ “3.5 Tie Rod End, Removing and Installing”, page 339 .
- ❑ Installation position. Refer to ⇒ page 338 .
- ❑ Allocation. Refer to the Parts Catalog.

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- or Engine and Gearbox Jack - VAG1383A-

Removing

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

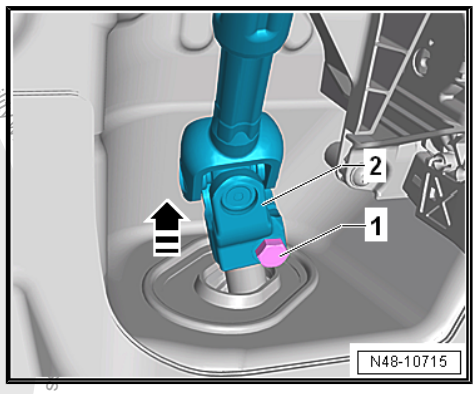
– Switch the ignition off and open the driver door so the steering wheel lock engages.

– Disconnect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Disconnecting and Connecting .

– Remove the driver side instrument panel cover. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Driver Side Instrument Panel Cover, Removing and Installing .

– Fold back the carpet.

– Remove the bolt -1- from the universal joint -2-, and then remove the universal joint in the 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.

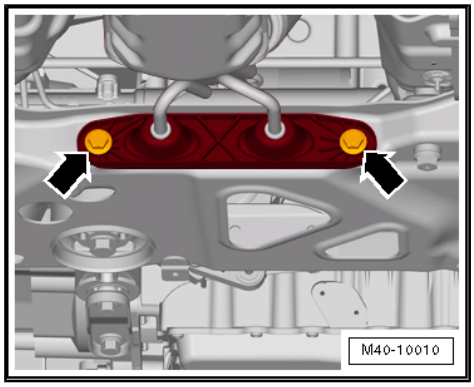
– Loosen the wheel bolts.

– Raise the vehicle.

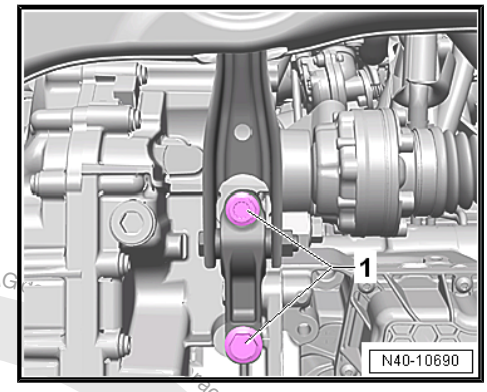
– Remove the wheels.

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

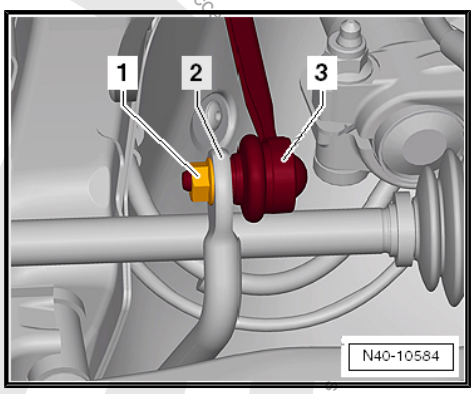
– Remove the exhaust system bracket from the subframe -arrows-.



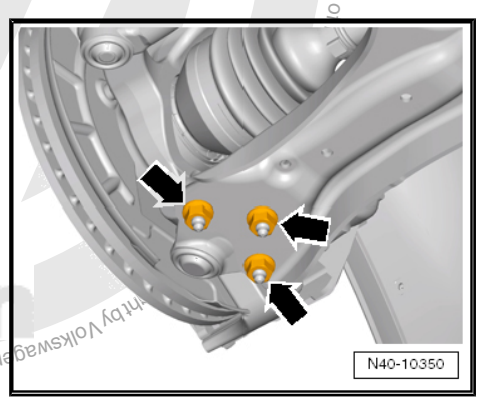
– Remove the pendulum support bolts -1-.



– 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.



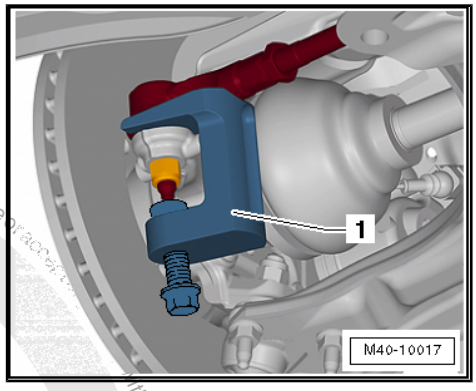
– Loosen the nut from the tie rod end, but do not remove it yet.

Caution

To protect the thread, screw the nut on the pin several turns.

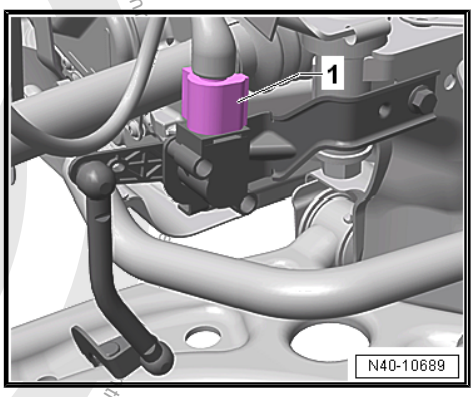
– Remove the tie rod end from the wheel bearing housing and remove the nut.

1 - -T10187-



Vehicles with Level Control System Sensor

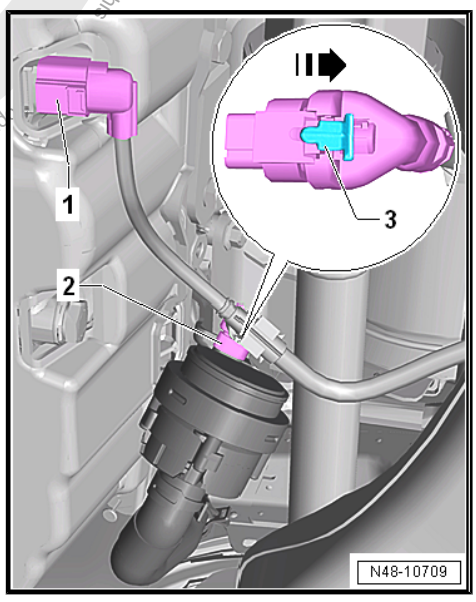
– Disconnect the connector -1- from the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- .



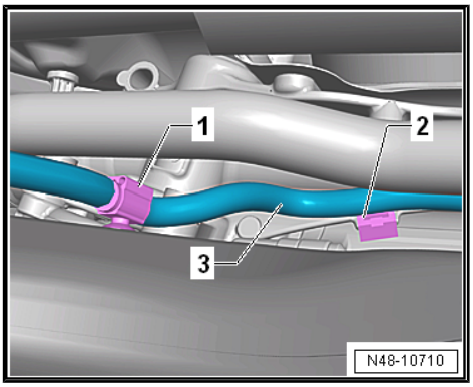
Continuation for All Vehicles

– If equipped, disconnect the connector -1- for the Oil Level Thermal Sensor - G266- .

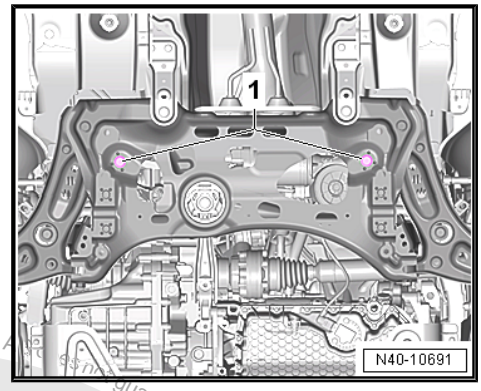
– If equipped, disconnect the connector -2- from the After-Run Coolant Pump - V51- . To do so, open the catch -3- in the direction of -arrow- and release the connector.



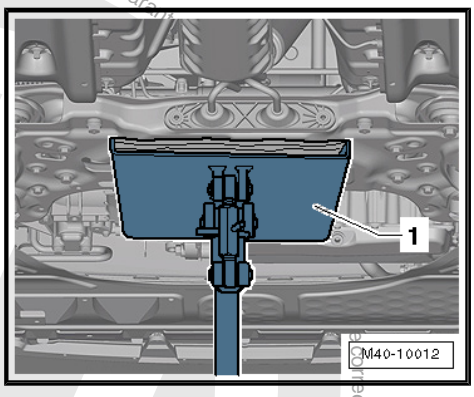
– Remove the clips -1 and 2- for the wiring harness -3- from the subframe and the steering gear.



– Remove the steering gear bolts -1-.



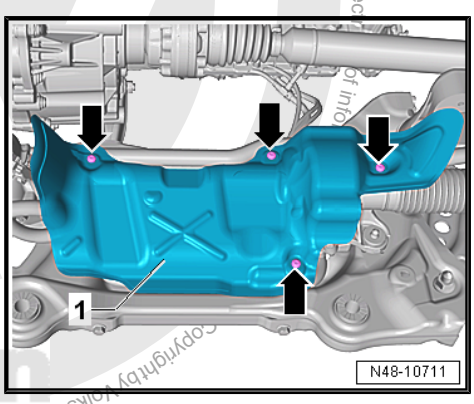
– Place the -VAS6931- or -VAG1383A- -1- under the subframe.



– Secure the subframe (refer to ⇒ “2.6 Subframe, Securing”, page 38) and lower it approximately 10 cm.

Vehicles with Long Shield

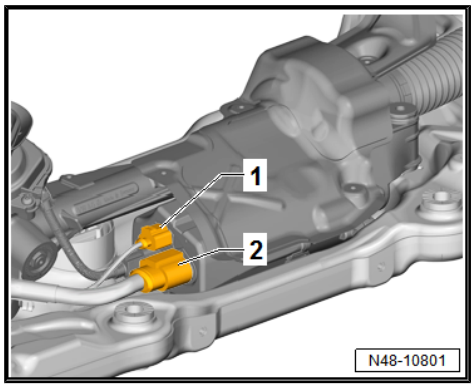
– Remove the bolts -arrows- and remove the heat shield -1- from the steering gear.



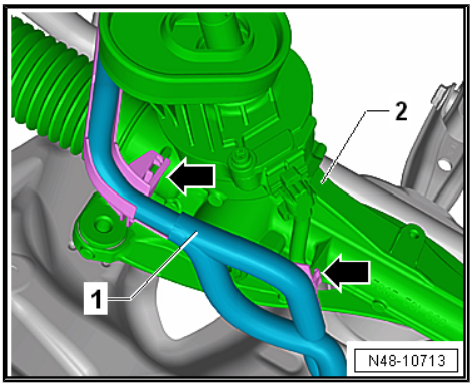
Note

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.

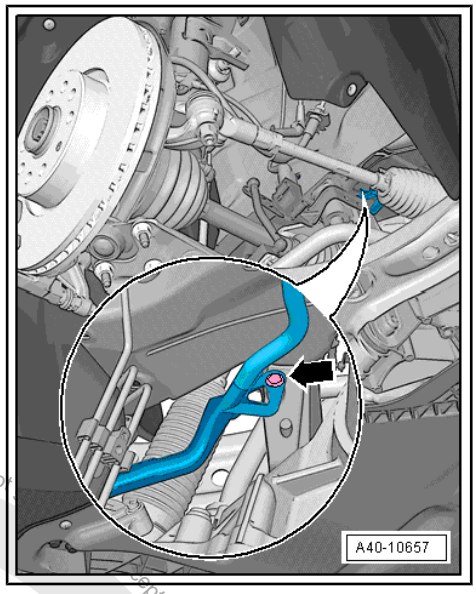
– Disconnect the connectors -1 and 2- from the steering gear.



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

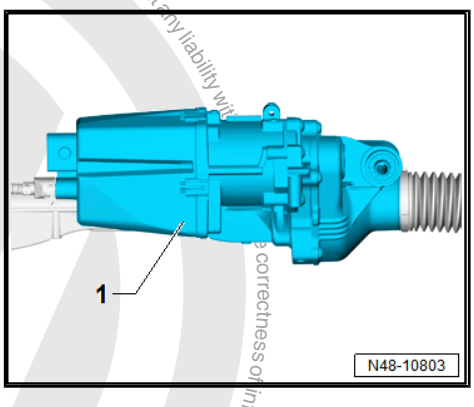


– Remove the expanding clip -arrow-.
– Lower the subframe using the -VAS6931- or -VAG1383A- .



– 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 shown.

Avoid damage to the control module -1-.

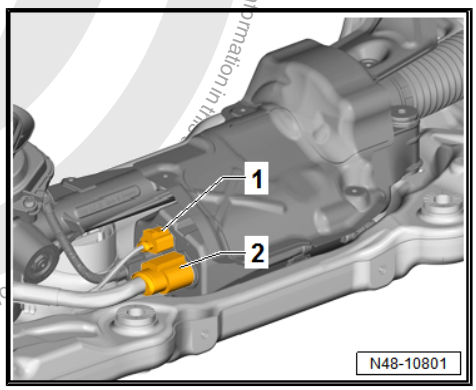


Installing

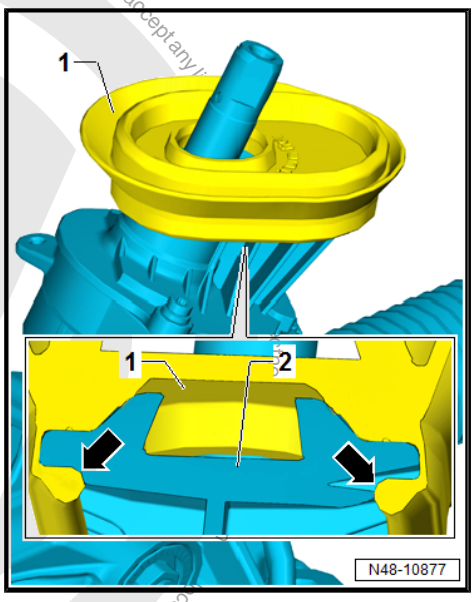
Install in reverse order of removal. Note the following:

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.



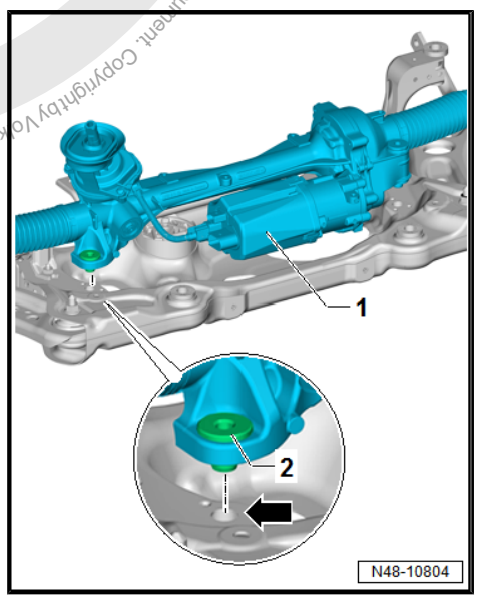
– Replacing the seal -1-.
– Fold up the seal -1- over the collar of the steering gear -2- so that the rubber lip encloses the collar all around -arrows-.
– Check the seal -1- for secure fit.
– Coat the seal from above with lubricant for example soft soap.



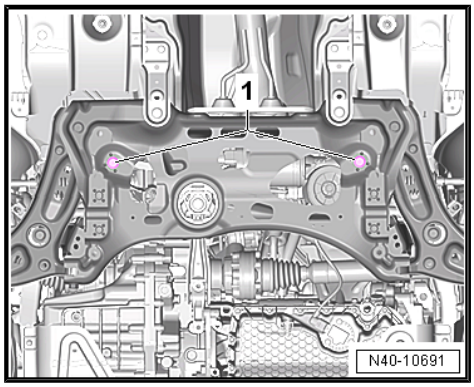
Note

- *After attaching steering gear to drive axle, make sure that seal on steering gear is positioned on the mounting plate without any kinks and is sealed correctly. The opening to the footwell must sealed correctly. Water leak and/or noises may be the result.*
- *Make sure sealing surfaces are clean.*

– Position the steering gear -1- on the subframe.
– Insert the steering gear threaded sleeves -2- in the subframe holes -arrow-.



– Insert the steering gear bolt -1- and tighten.

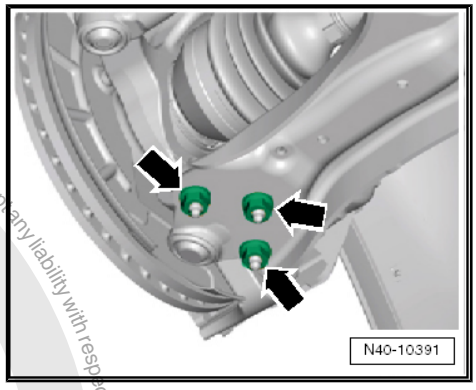


Note

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 .

– Tighten the nuts -arrows-.



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. Refer to Vehicle Diagnostic Tester .

It is necessary to adapt the electro-mechanical power steering. Refer to Vehicle Diagnostic Tester if new steering gear was installed.

Tightening Specifications

- Refer to ⇒ “5.1 Overview - Lower Control Arm and Ball Joint”, page 61
- Refer to ⇒ “2.1 Overview - Subframe”, page 21
- Refer to ⇒ “3.1 Overview - Steering Gear”, page 324
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Pendulum support bolts. Refer to ⇒ Rep. Gr. 10 ; Assembly Mounts; Overview - Assembly Mounts .
- 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 .
- Driver side instrument panel cover. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments/Covers; Driver Side Instrument Panel Cover, Removing and Installing .

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-
- Torque Wrench 1332 Insert - Open Ring Wrench - 24mm - VAG1332/11-
- Locking Pliers - VAS6199-

Removing

Note

- *If the boot is faulty, moisture and dirt will penetrate into the steering gear. There must be a noticeable lubricating film present on the steering rack near the splines. If the lubricating film is not present, then the steering gear must be replaced.*
- *Replace the steering gear:*
- *If there is corrosion.*
- *If it is damaged.*
- *If it is worn.*
- *If there is dirt on the steering rack.*

– Turn the 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 339 .
– Clean outside of steering gear in area of the 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, the complete steering gear must be replaced.*
- *If no grease film is visible on the steering rack, steering gear must also be replaced completely.*

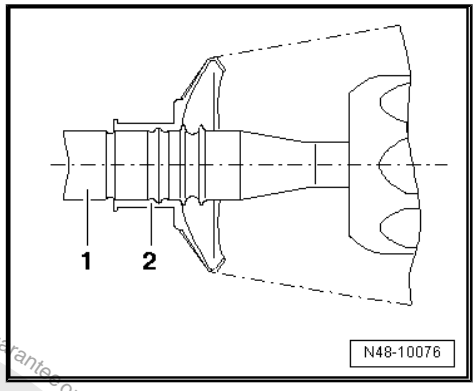
Installing

Caution

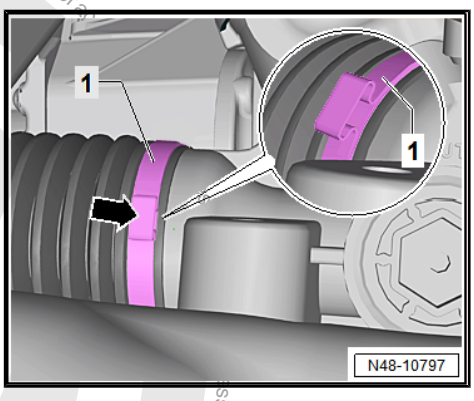
Do not lubricate the steering rack.

– Turn the steering wheel into straight ahead position.
– Guide new clamp and boot onto the 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 shown.
– Secure the spring clamp on the boot using -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.



– Clamp the new clamp -1- using the -VAS6199- .
– Clamp the ear of the clamp -arrow- until it is as shown.
– 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 339 .
– Install the front wheel and tighten.
– Perform a vehicle alignment. Refer to ⇒ “1.5 Axle Alignment Procedure”, page 283 .
– If both tie rods were replaced, then the basic setting for the Steering Angle Sensor - G85- must be performed. Refer to Vehicle Diagnostic Tester .
– Then perform the basic setting for the steering. Refer to Vehicle Diagnostic Tester .



Tightening Specifications

♦ Refer to ⇒ “3.1 Overview - Steering Gear”, page 324
♦ Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .

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-

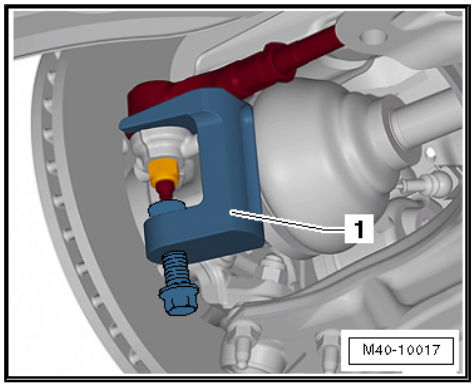
Removing

– Turn the steering wheel into straight ahead position.
– Loosen the wheel bolts.
– Raise the vehicle.
– Remove the wheel.
– Clean outside of steering gear in area of the boot.

– Loosen the nut from the tie rod end, but do not remove it yet.

Caution

To protect the thread, screw the nut on the pin several turns.



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

1 - -T10187-

– Open the clamps and push back boot.

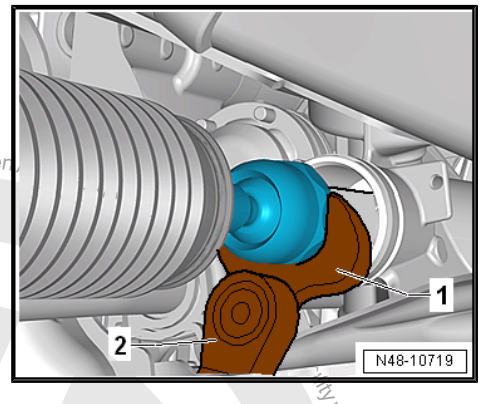
– Turn the steering as follows:

- For the left tie rod, turn the steering to the right until stop
- For the right tie rod, turn the steering to the left until stop

– Remove the tie rod.

1 - -VAG1923-

2 - -VAG1332-



Note

- *If corrosion, damage, wear-out or first signs of soiling on steering rack can be seen, the complete steering gear must be replaced.*
- *If no grease film is visible on the steering rack, steering gear must also be replaced completely.*

Installing the Tie Rod

Install in reverse order of removal. Note the following:

Caution

Do not lubricate the steering rack.

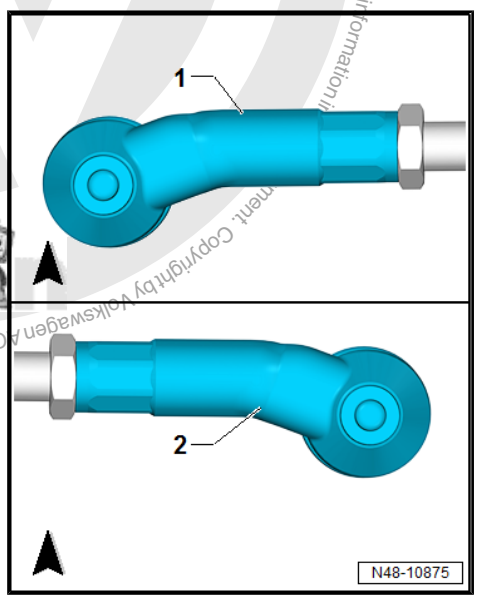
– Make sure the correct tie rod end is installed on each side.

1 - Left Tie Rod End

2 - Right Tie Rod End

– Turn the steering wheel into straight ahead position.

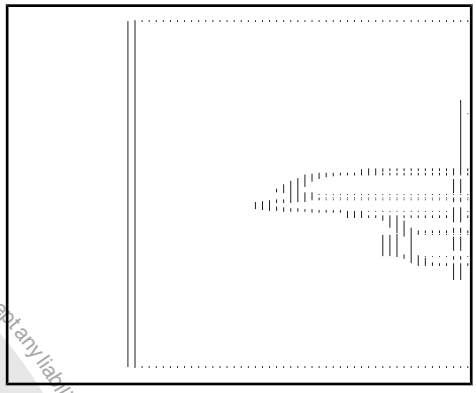
– Guide new clamp and boot onto the tie rod.



– Twist tie rod far enough into tie rod end until dimension -a- is obtained.

Passat: Dimension -a- = 373 ± 1 mm

Arteon: Dimension -a- = 388 ± 1 mm

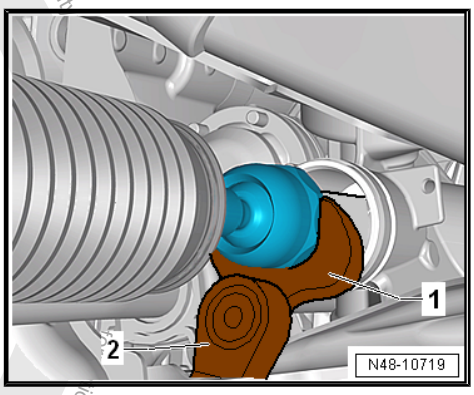


– Tighten the tie rod.

1 - -VAG1923-

2 - -VAG1332-

– Lightly grease the sealing surface of the boot to the tie rod with grease from the repair kit.

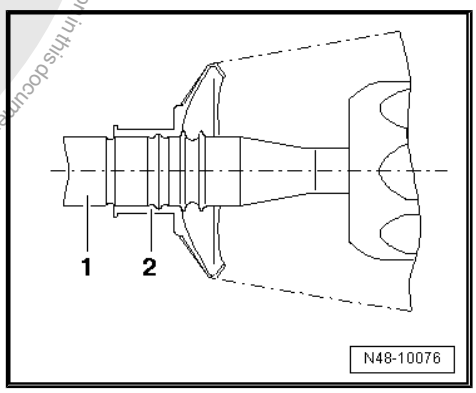


– Slide the boot -2- onto the tie rod -1-, pay attention to correct position when doing this.

– Secure the spring clamp on the boot using -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.



– Clamp the new clamp -1- using the -VAS6199- .

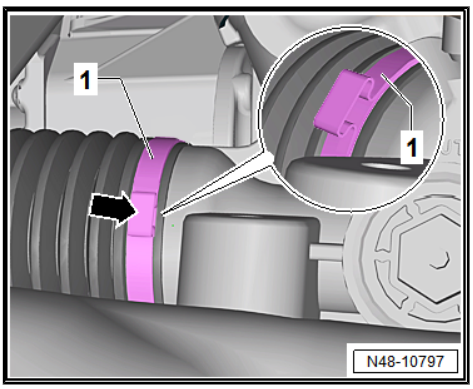
– Clamp the ear of the clamp -arrow- until it is as shown.

– Install the wheel and tighten.

– Perform a vehicle alignment. Refer to ⇒ “1.5 Axle Alignment Procedure”, page 283 .

– If both tie rods were replaced, then the basic setting for the Steering Angle Sensor - G85- must be performed. Refer to Vehicle Diagnostic Tester .

– Then perform the basic setting for the steering. Refer to Vehicle Diagnostic Tester .



Tightening Specifications

- Refer to ⇒ “3.1 Overview - Steering Gear”, page 324
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .

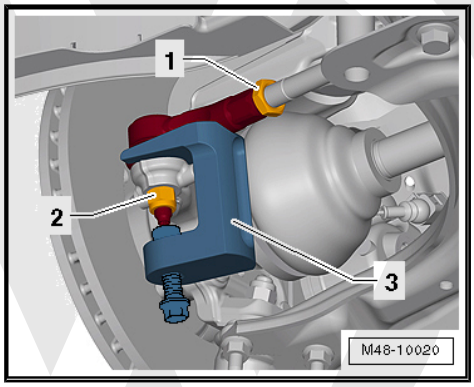
3.5 Tie Rod End, Removing and Installing

Special tools and workshop equipment required

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

Removing

– Loosen the wheel bolts.
– Raise the vehicle.
– Remove the wheel.
– Loosen the 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 the thread, screw the nut on the pin several turns.

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

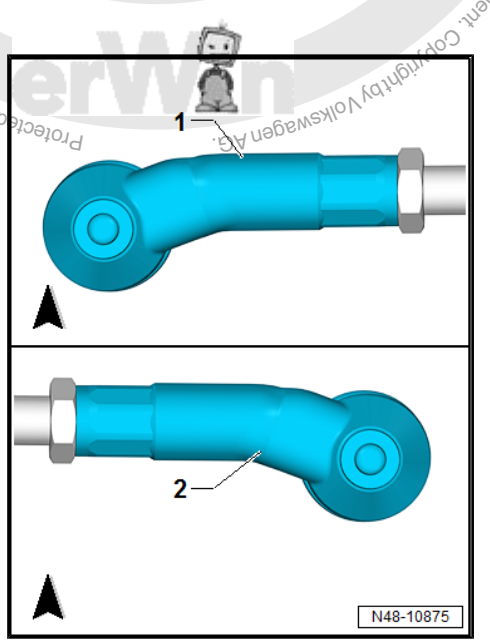
1 - -T10187-

– Remove the tie rod end from the tie rod.

Installing

Install in reverse order of removal. Note the following:

– Make sure the correct tie rod end is installed on each side.



1 - Left Tie Rod End
2 - Right Tie Rod End

– 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 the wheel and tighten.
– Perform a vehicle alignment. Refer to ⇒ “1.5 Axle Alignment Procedure”, page 283 .

Tightening Specifications

- Refer to ⇒ “3.1 Overview - Steering Gear”, page 324
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .

3.6 Steering Gear, Servicing

⇒ “3.6.1 Threaded Bushing, Removing and Installing”, page 340

3.6.1 Threaded Bushing, Removing and Installing

Special tools and workshop equipment required

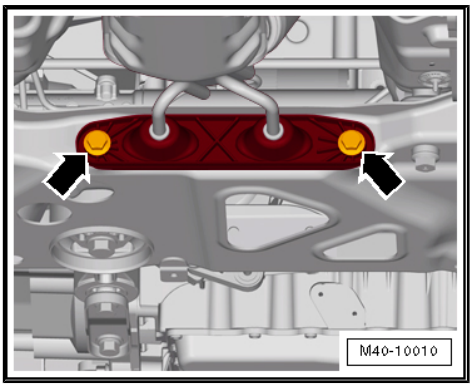
- Torque Wrench 1332 40-200Nm - VAG1332-
- Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-

Removing

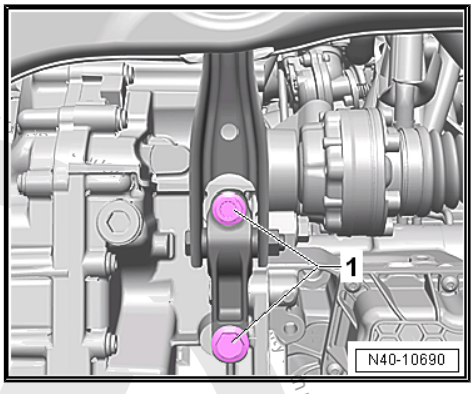
– Raise the vehicle.

– 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-.

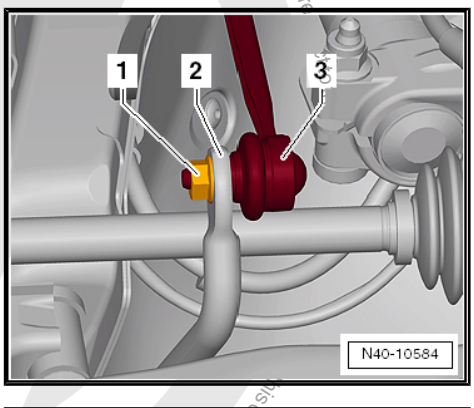


– Remove the pendulum support bolts -1-.



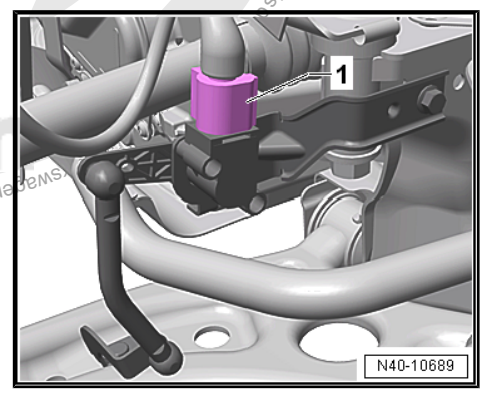
– Remove the hex nut -1- from the right and left coupling rod -3-.

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



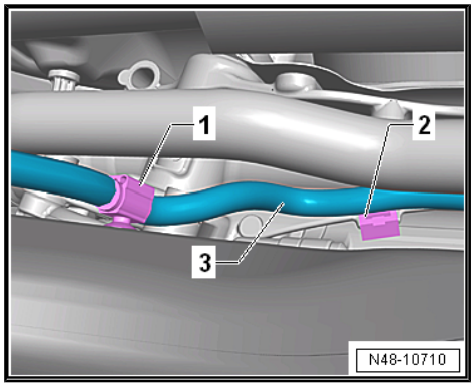
Vehicles with Level Control System Sensor

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

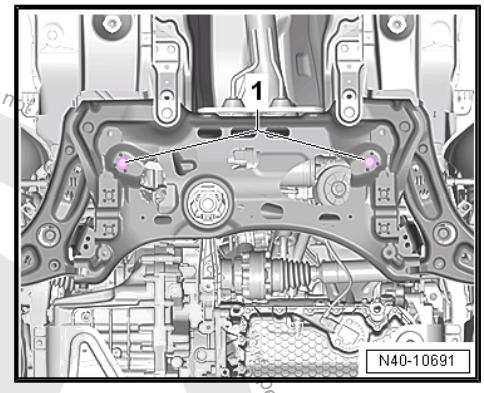


Continuation for All Vehicles

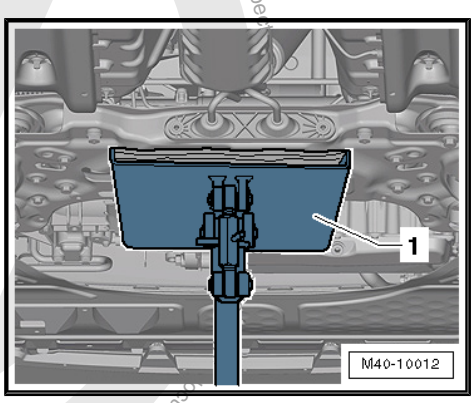
– Remove the clips -1 and 2- for the wiring harness -3- from the subframe and the steering gear.



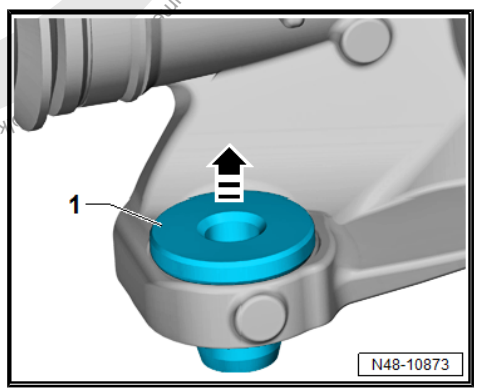
– Remove the steering gear bolts -1-.
– Pry the steering gear out of the subframe alignment sleeves.



– Place the -VAS6931- or -VAG1383A- -1- under the subframe.
– Secure the subframe (refer to ⇒ “2.6 Subframe, Securing”, page 38) and lower it approximately 10 cm.



– Drive out the threaded bushing -1- in the direction of -arrow-.



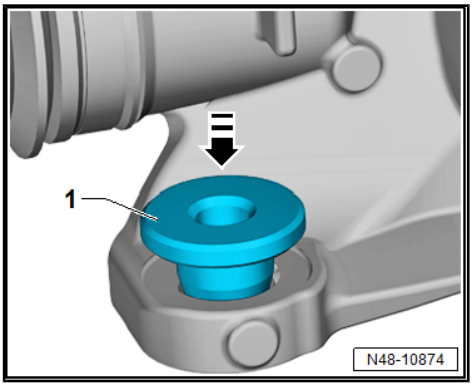
Installing

Install in reverse order of removal while noting the following:

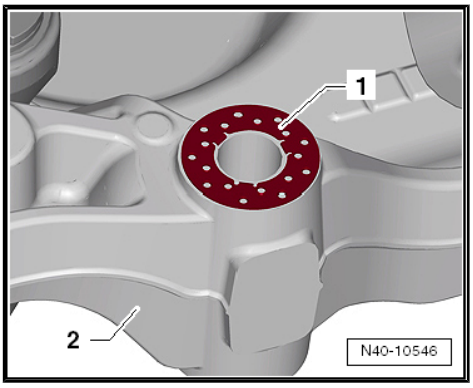
Note

Always drive out the threaded bushing from above in the direction of the steering shaft.

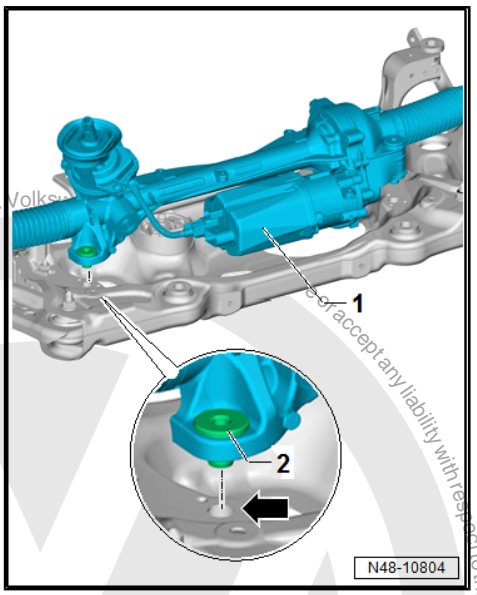
– Insert the threaded bushing in straight.
– Drive in the threaded bushing until stop.



– Always make sure the intermediate plate -1- is installed between the subframe -2- and the body.



– Position the steering gear -1- on the subframe.
– Insert the steering gear threaded sleeves -2- in the subframe holes -arrow-.
– For vehicles with a level control system sensor, perform the basic setting. Refer to Vehicle Diagnostic Tester .



Tightening Specifications

- Refer to ⇒ “2.1 Overview - Subframe”, page 21
- Refer to ⇒ “3.1 Overview - Steering Gear”, page 324
- Wheel Bolts. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; Wheels, Tires; Wheel Bolt Tightening Specifications .
- Pendulum support bolts. Refer to ⇒ Rep. Gr. 10 ; Assembly Mounts; Overview - Assembly Mounts .
- 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.

4 Sensors

⇒ “4.1 Steering Angle Sensor G85 , Removing and Installing”, page 344

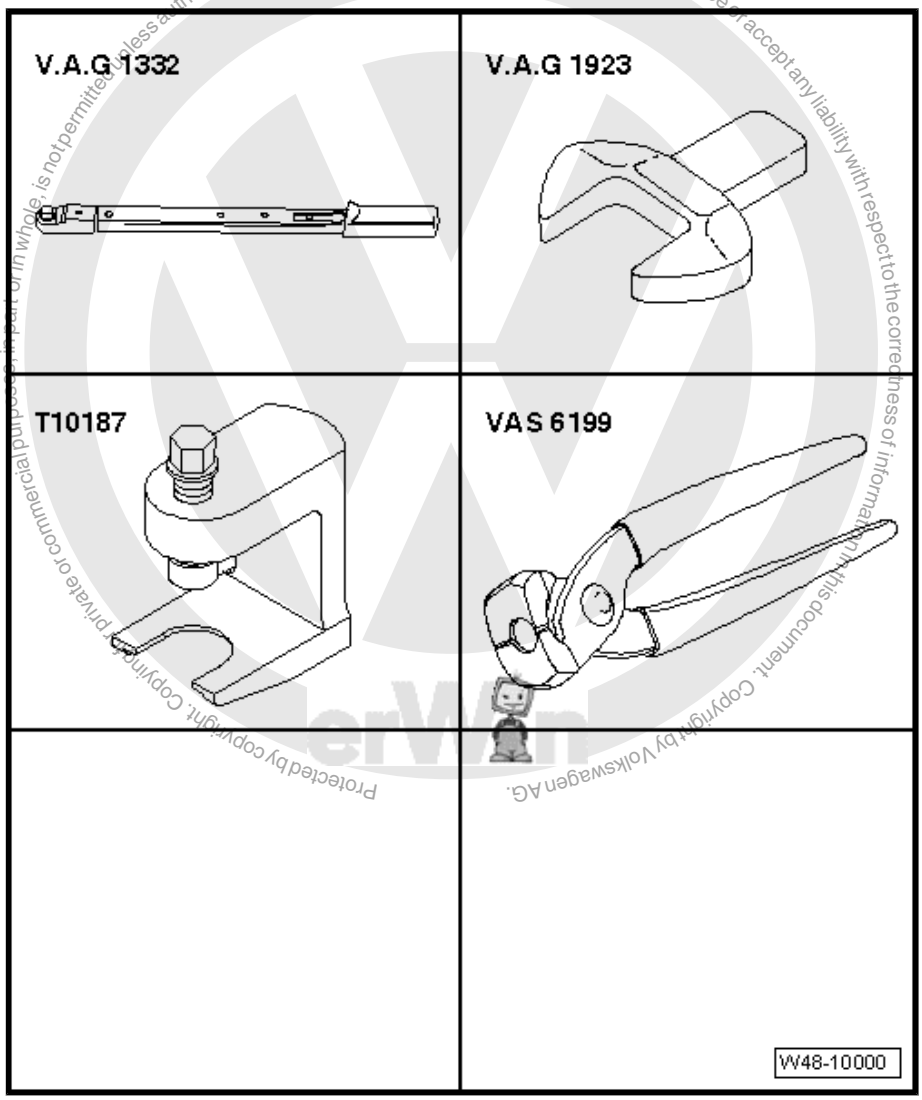
4.1 Steering Angle Sensor - G85- , Removing and Installing

Note

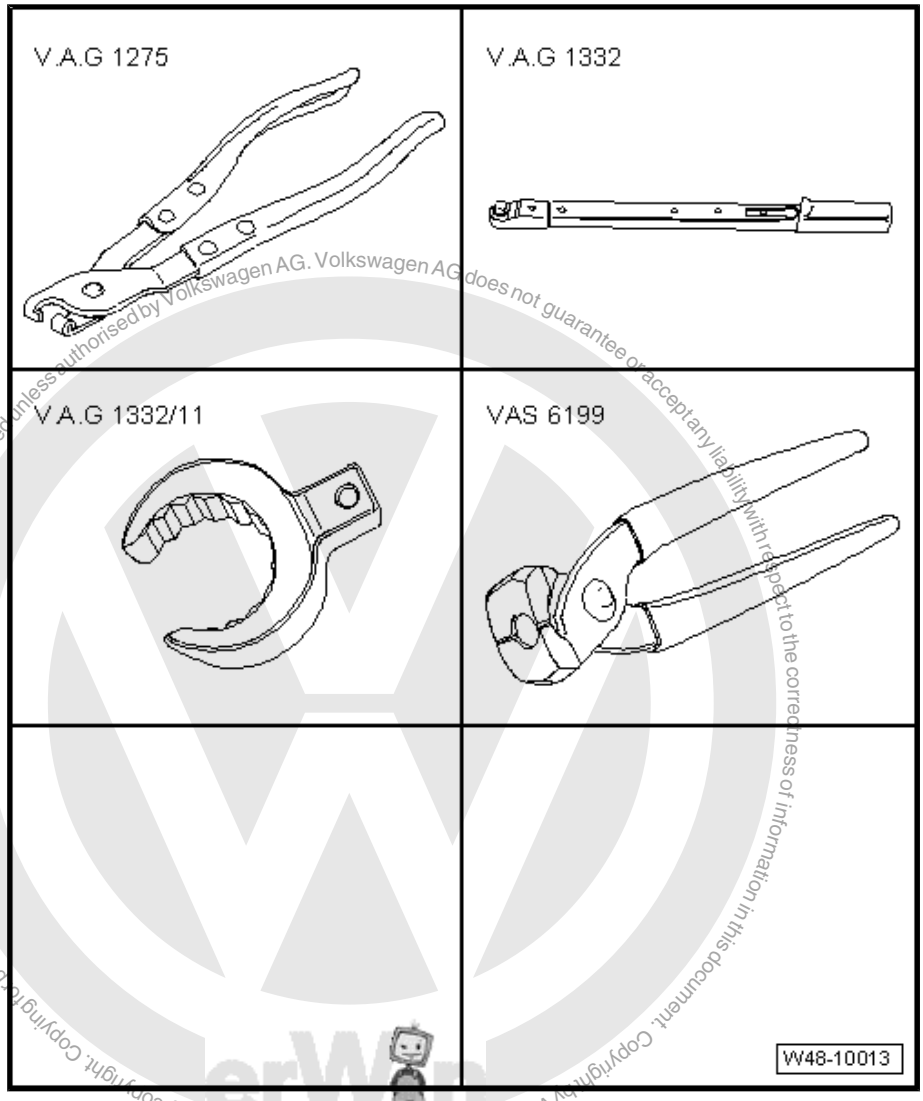
- *The Steering Angle Sensor - G85- is a component of the steering gear.*
- *It cannot be replaced separately.*
- *The steering gear must be replaced if the Steering Angle Sensor - G85- is faulty. Refer to ⇒ “3.2 Steering Gear, Removing and Installing”, page 329 .*

5 Special Tools

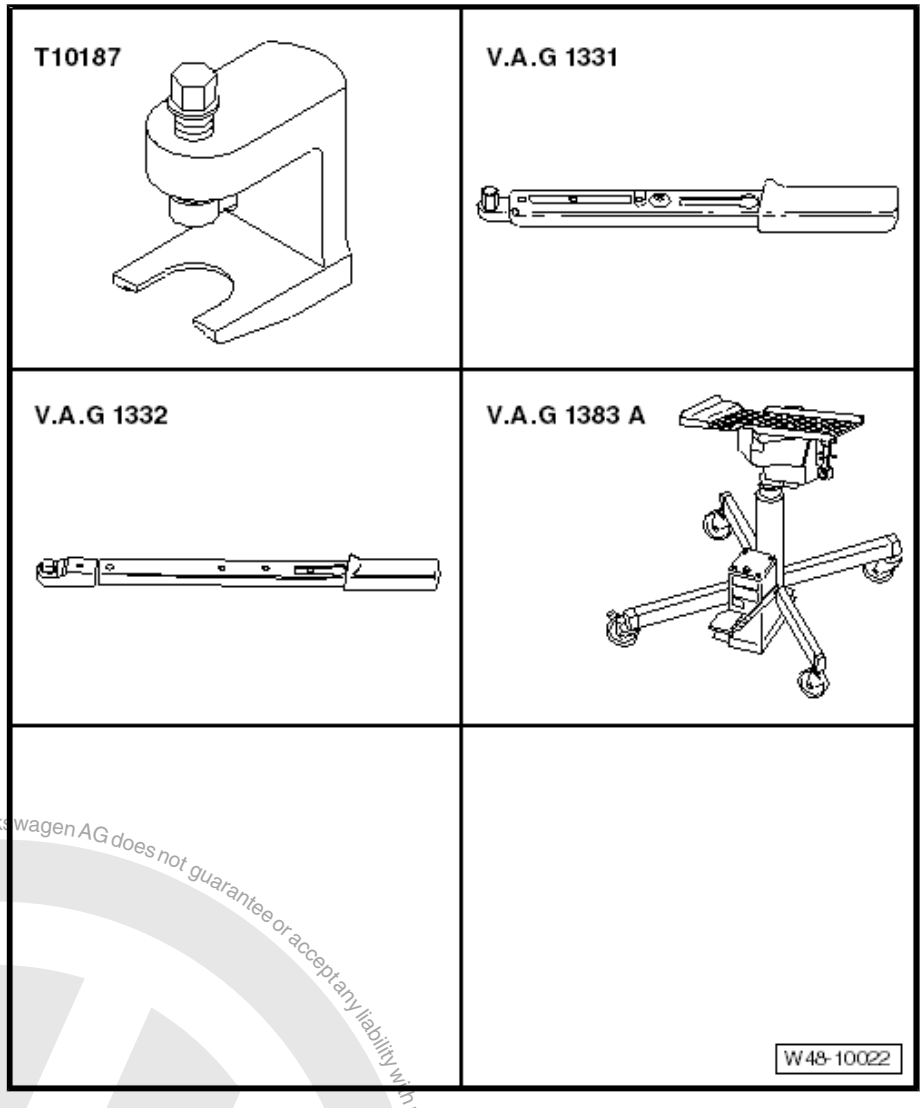
Special tools and workshop equipment required



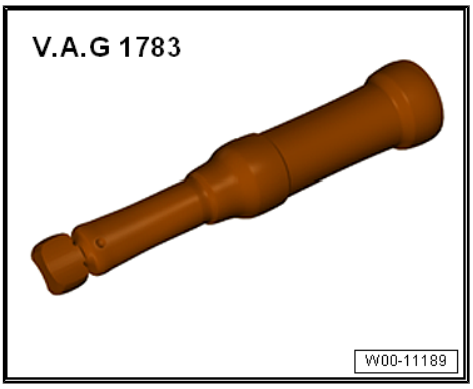
- Torque Wrench 1332 40-200Nm - VAG1332-
- Torque Wrench Insert - Open Jaw - VAG1923-
- Puller - Ball Joint - T10187-
- Locking Pliers - VAS6199-



- Hose Clip Pliers - VAG1275A-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Torque Wrench 1332 Insert - 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- or Engine and Gearbox Jack - VAG1383A-
- Torque Wrench 1783 - 2-10Nm - VAG1783-



6 Revision History

DRUCK NUMBER: K0059271821

Factory Edition	Edit Edition	Job Type	Feedback	Notes	Quality Checked By
06.2018	07/26/2018	Factory Update	N/A		Eric P.
03.2018	05/24/2018	Factory New	N/A		Eric P.

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 Scan Tool (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.

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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.

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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.

back OK

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