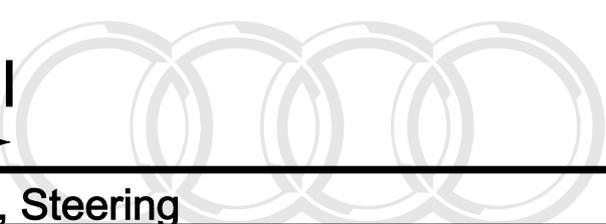


Repair Manual Audi TT 2007 >

Suspension, Wheels, Steering

Edition 03.2011



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List of Workshop Manual Repair Groups

Repair Group

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



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

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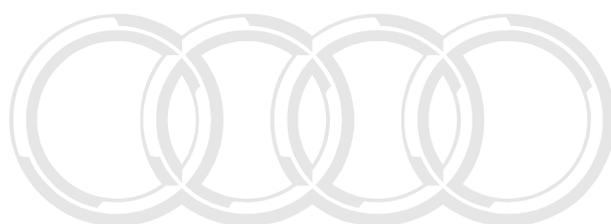
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00 – General, Technical Data

1 General Information

⇒ [“1.1 Wheels and Tires”, page 1](#)

⇒ [“1.2 Front Gas-Filled Strut, Venting”, page 1](#)

⇒ [“1.3 Rear Gas-Filled Strut, Venting”, page 2](#)

⇒ [“1.4 Audi Magnetic Ride \(AMR\) Front Shock Absorbers, Venting”, page 2](#)

⇒ [“1.5 Audi Magnetic Ride \(AMR\) Rear Shock Absorbers, Venting”, page 3](#)

⇒ [“1.6 Shock Absorbers, Leaking”, page 3](#)

1.1 Wheels and Tires

General information on wheel/tire combinations, winter tires, snow chain and recommended tire manufacturers, refer to [Wheel and Tire Guide, Rep. Gr. 44, General Information](#).

1.2 Front Gas-Filled Strut, Venting

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



WARNING

Wear protective eyewear while drilling.

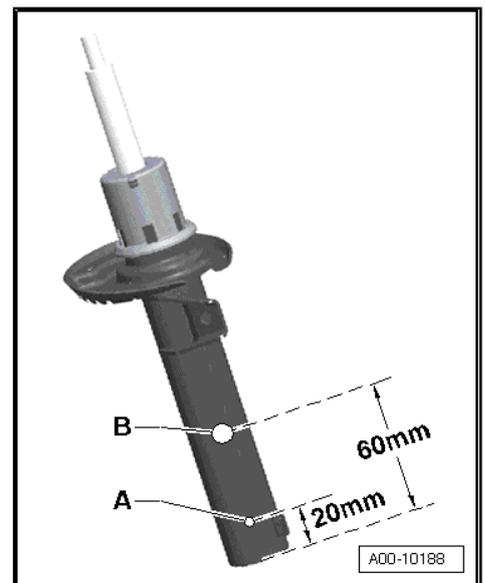
- Drill a 3 mm hole -arrow A- through outer tube of shock absorber.



Note

Gas escapes when drilling.

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



1.3 Rear Gas-Filled Strut, Venting

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



WARNING

Wear protective eyewear while drilling.

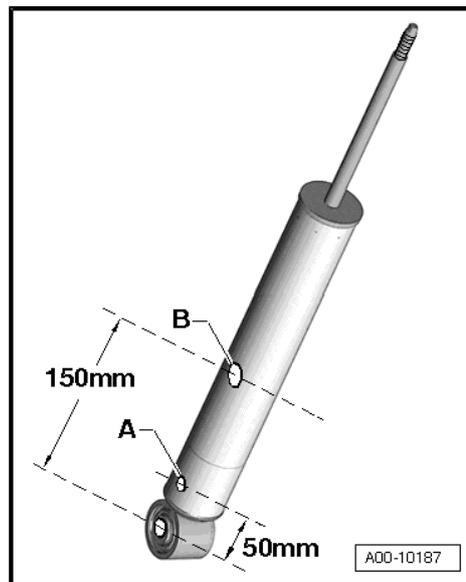
- Drill a 3 mm hole -arrow A- through outer tube of shock absorber.



Note

Gas escapes when drilling.

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



1.4 Audi Magnetic Ride (AMR) Front Shock Absorbers, Venting

- Clamp magnetic ride shock absorber vertically in vise.



WARNING

Wear protective eyewear while drilling.

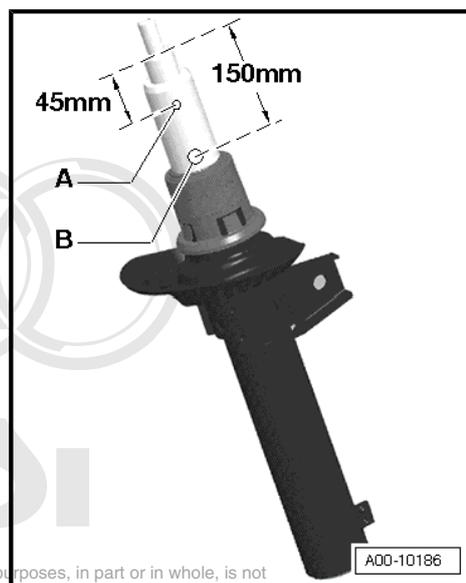
- Drill a 3 mm hole -arrow A- through outer tube of shock absorber.



Note

Gas escapes when drilling.

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



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1.5 Audi Magnetic Ride (AMR) Rear Shock Absorbers, Venting

- Clamp magnetic ride shock absorber vertically in vise with piston rod facing down.



WARNING

Wear protective eyewear while drilling.

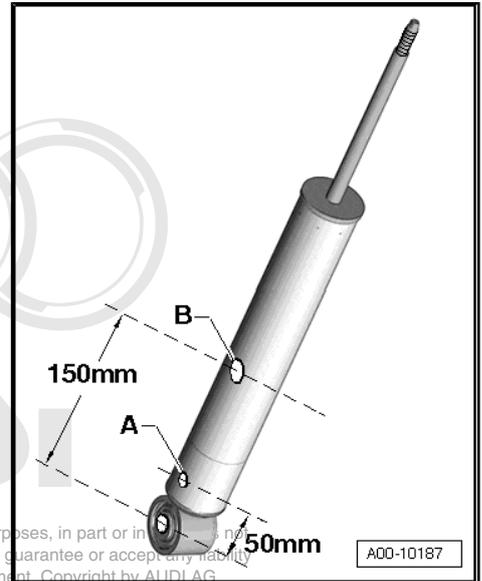
- Drill a 3 mm hole -arrow A- through outer tube of shock absorber.



Note

Gas escapes when drilling.

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

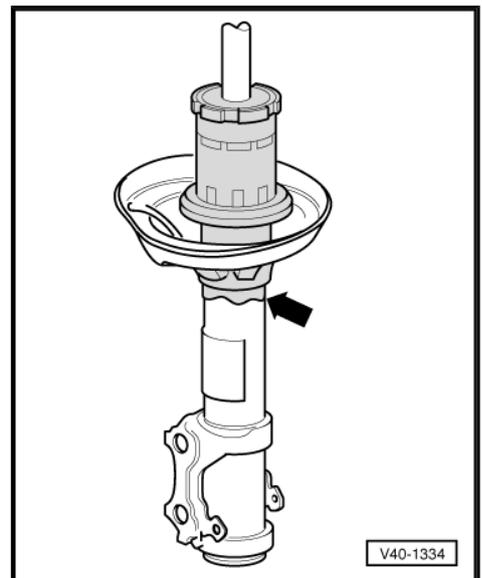


1.6 Shock Absorbers, Leaking

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

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

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





2 Specifications

⇒ "2.1 Chassis", page 4

⇒ "2.2 Steering", page 4

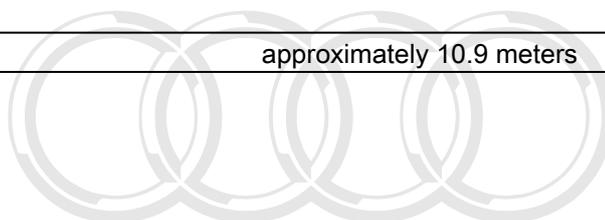
2.1 Chassis

Front and All Wheel Drive		
Front Suspension	McPherson struts with lower transverse link subframe stabilizer bar	
Rear Suspension	Four-link suspension with separate spring-shock absorber configuration tubular stabilizer	
Wheelbase	mm	2467
Front/rear track width ¹⁾	mm	1572 / 1558

1) Front/rear track width only applicable with 225/55/R16 tires on 7.5Jx16 ET 45 rims.

2.2 Steering

Front and All Wheel Drive	
Steering Gear	Electro-mechanically assisted, maintenance-free rack-and-pinion steering
Maximum steering lock angle on inside wheel	36° 48'
Turning diameter	approximately 10.9 meters



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3 Diagnosis and Testing

⇒ [“3.1 Shock Absorbers, Removed, Checking”, page 5](#)

⇒ [“3.2 Shock Absorbers, Checking on Shock Tester”, page 5](#)

3.1 Shock Absorbers, Removed, Checking

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



Note

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

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

- Press shock absorber together by hand.
- ◆ Piston rods must move smoothly and with uniform difficulty over the entire range.
- Release piston rods.
- ◆ On shock absorbers with sufficient gas pressure, piston rods return to initial position by themselves.



Note

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

3.2 Shock Absorbers, Checking on Shock Tester

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

Special tools and workshop equipment required

- ◆ Boge shock tester or
- ◆ Sachs shock tester -V.A.G 1975- or
- ◆ Maha shock absorber tester -VAS 1990-



Note

- ◆ *Temperature +10 to +40 °C.*
- ◆ *Driver in vehicle.*
- ◆ *The vehicle is stationary.*
- ◆ *Tire pressure must be OK.*
- ◆ *Drive vehicle straight onto center of wheel contact plates.*
- ◆ *Front wheels in straight position.*
- ◆ *Parking not engaged, foot brake not activated.*
- ◆ *The ignition is switched on.*
- ◆ *On vehicles with Audi magnetic ride (AMR) - electronically controlled damping, test mode is active.*

Activating Test Mode for Audi Magnetic Ride (AMR) - Electronically Controlled Damping

- Press the damping adjustment button -E387- ⇒ [page 20](#) inside the center console or instrument panel for 5 seconds. The indicator lamp inside the damping adjustment button will start blinking to confirm that the test mode is working.
- Press the dampening adjustment button again, switch the ignition or drive at least 10 km/h to end test mode.

Threshold

Shock absorber condition can only be judged as follows:

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



Note

- ◆ *Intermediate values for reduced damping performance cannot be read out.*
- ◆ *A prognosis on service life is not permitted.*
- ◆ *Measured values that come about from involvement of suspension travel end stops are incorrect.*

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



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Example:

Threshold = 70

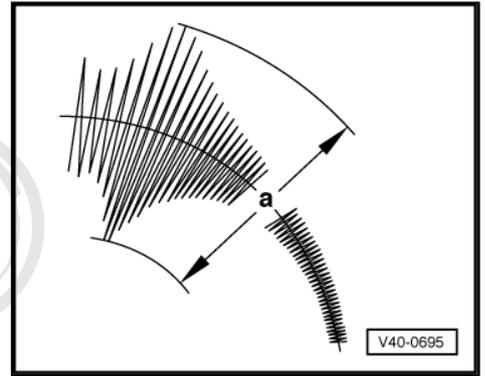
- ◆ -a- = greater than 70: Insufficient damping effect
- ◆ -a- = less than 70: Sufficient damping effect

Threshold "a" in mm



Note

- ◆ If the readout value is greater than the limit value "a" (table value): Damping effect insufficient → Replace shock absorber.
- ◆ If the readout value is less than the limit value "a" (table value): Damping effect sufficient → Shock absorber does not need to be replaced.



Front Suspension	Damping Effect	
	Insufficient	Sufficient
Standard suspension (1BA)	-a- = greater than 60	-a- = less than 60
Sport suspension (1BV)	-a- = greater than 60	-a- = less than 60
Sport suspension (1BD)	-a- = greater than 60	-a- = less than 60

Rear Suspension	Damping Effect	
	Insufficient	Sufficient
Standard suspension (1BA)	-a- = greater than 60	-a- = less than 60
Sport suspension (1BV)	-a- = greater than 60	-a- = less than 60
Sport suspension (1BD)	-a- = greater than 60	-a- = greater than 60

Vehicles with Audi Magnetic Ride (AMR) - Electronically-Controlled Damping



Note

These values only apply when test mode is active. Refer to [page 6](#). The indicator lamp in the dampening adjustment button -E387- blinks to indicate when test mode is active.

Front Suspension	Damping Effect	
	Insufficient	Sufficient
Sport suspension (1BL)	-a- = greater than 50	-a- = less than 50
Sport suspension (1BQ)	-a- = greater than 50	-a- = less than 50

Rear Suspension	Damping Effect	
	Insufficient	Sufficient
Sport suspension (1BL)	-a- = greater than 50	-a- = less than 50
Sport suspension (1BQ)	-a- = greater than 50	-a- = less than 50

40 – Front Suspension

1 General Information

⇒ [“1.1 General Repair Information”, page 8](#)

⇒ [“1.2 Contact Corrosion”, page 9](#)

⇒ [“1.3 Longitudinal Member Threads, Repairing”, page 9](#)

⇒ [“1.4 Drive Axle”, page 10](#)

1.1 General Repair Information

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

Torque specifications for unlubricated bolts and nuts are given.

Always replace self-locking nuts and bolts.

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

Welding or straightening operations are not permitted on load-bearing or wheel-controlling components.

Always avoid the following actions with coil springs: Striking with a hammer, welding beads, applying color identification later.

Do not perform any welding or grinding (separating work) in coil spring or suspension strut area! Cover coil spring or suspension struts if necessary.

When loosening, removing or installing hydraulic, pneumatic or electrical line, always make a sketch or take a picture. Doing so records the original installation locations.

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

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

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

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

- Install an outer joint in place of the drive axle.
- Tighten the outer joint to 120 Nm (twelve-point bolt) or 200 Nm (hex bolt).

Bonded rubber bushings can only be turned to a limited extent. Only tighten threaded connections at control arms if vehicle is in curb weight position or control position.

- ◆ Wheel bearing, lifting to curb weight position on vehicles with coil springs, refer to [“2.1 Wheel Bearing, Lifting to Curb Weight Position”, page 11](#).

 **Note**

If the vehicle must still be aligned, every bolt and nut that must be loosened for adjustment is only tightened to torque specification. Tighten the bolts and nuts to the specified additional tightening angle after the alignment/adjustment is complete.



WARNING

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

Note the following when working on a vehicle with the Start/Stop System:



WARNING

Danger of personal injury caused by the engine starting automatically on vehicles with the Start/Stop System.

- ◆ *When the Start/Stop System is on (recognizable by a message in the instrument cluster), the engine may start automatically.*
- ◆ *Make sure the Start/Stop System is off whenever working on the vehicle. Turn off the ignition and turn it back on only when necessary.*

1.2 Contact Corrosion

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

For this reason, only fastening elements with a special surface coating are installed.

In addition, rubber or plastic parts and adhesive are made of non-conductive materials.

If there are doubts as to whether parts should be installed, install new parts according to the parts catalog.

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 **Note**

- ◆ *We recommend only using original replacement parts, they have been tested and are compatible with aluminum.*
- ◆ *We recommend using Audi accessories.*
- ◆ *Damage due to contract corrosion is not covered under warranty!*

1.3 Longitudinal Member Threads, Repairing

It is possible to service the threads of the weld nuts in the longitudinal member depending on certain conditions.

- ◆ Servicing work may only be performed once per thread.
- ◆ If servicing is necessary after this, the nuts must be replaced.

**WARNING**

Wear protective eyewear when drilling.

- ◆ Have the thread repair checked by the responsible foreman or next person in charge.
- ◆ Thread insert must be same length as thread in body.
- ◆ Correct any damage to the underbody protection. Refer to
⇒ Body Repair; Rep. Gr. 00 ; Corrosion protection measures .

1.4 Drive Axle

Wheel bearings must not be burdened when drive axle connection is loose.

If the bearings are loaded by the vehicle's own weight the wheel bearing will be damaged. This reduces the service life of the wheel bearings.

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

- Install an outer joint in place of the drive axle.
- Tighten the outer joint to 120 Nm (twelve-point bolt) or 200 Nm (hex bolt).

Loosening the connection between the drive axle and wheel hub:

- ◆ Refer to
⇒ [“2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening”, page 22](#) .
- ◆ Refer to
⇒ [“2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening”, page 22](#) .
- ◆ Refer to
⇒ [“2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening”, page 23](#) .

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

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

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

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

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Always replace self-locking nuts and bolts.

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

2 Description and Operation

⇒ [“2.1 Wheel Bearing, Lifting to Curb Weight Position”, page 11](#)

⇒ [“2.2 Front Suspension Overview”, page 13](#)

⇒ [“2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview”, page 14](#)

⇒ [“2.4 Subframe, Securing”, page 16](#)

⇒ [“2.5 Wheel Bearing Housing and Wheel Bearing Unit Assembly Overview”, page 18](#)

⇒ [“2.6 Audi Magnetic Ride \(AMR\) Electronically-Controlled Damping Assembly Overview”, page 20](#)

⇒ [“2.7 Suspension Strut Assembly Overview”, page 21](#)

⇒ [“2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening”, page 22](#)

⇒ [“2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening”, page 22](#)

⇒ [“2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening”, page 23](#)

2.1 Wheel Bearing, Lifting to Curb Weight Position

Special tools and workshop equipment required

- ◆ Engine/transmission jack -V.A.G 1383 A-
- ◆ Tensioning strap -T10038-
- ◆ Wheel hub support -T10149-



Note

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

Bonded rubber bushings can only be turned to a limited extent.

Parts with bonded rubber bushings must therefore be brought into a position that corresponds to the position in driving mode before being tightened (curb weight position).

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

By raising appropriate suspension using -V.A.G 1383 A- and -T10149-, this position can be simulated on the hoist.

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- Before starting work, take measurement -a-, e.g. with tape measure, from center of wheel to lower edge of wheelhouse.



Note

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

- Note measured value. It will be required for tightening bolts/nuts.



Caution

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

If a vehicle is not secured, there is danger that the vehicle could slip off the lift!

- Turn wheel hub far enough until one of the holes for wheel bolts is on top.
- Install -T10149- with wheel bolt on wheel hub.
- Using -V.A.G 1383 A- , lift wheel bearing housing until dimension -a- is reached.

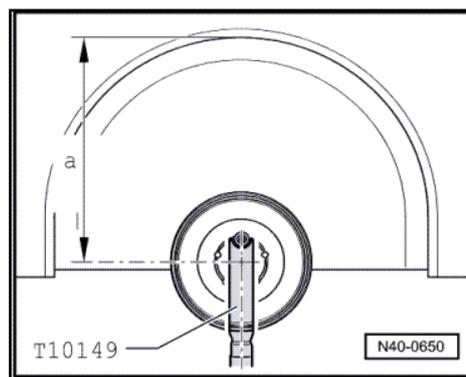
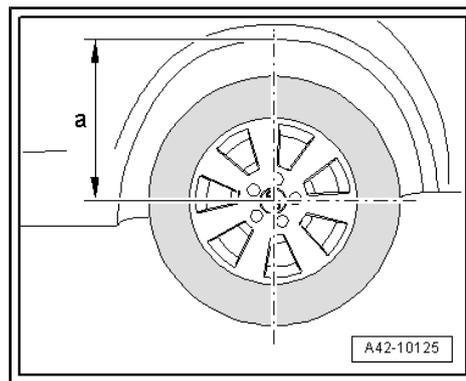
Tightening of the respective bolts/nuts must then only occur after dimension -a-, which was measured before installation between the wheel hub center and the lower edge of wheel housing, has been attained.



WARNING

- ◆ *Do not lift or lower vehicle with -V.A.G 1383 A- below vehicle.*
- ◆ *Do not leave -V.A.G 1383 A- below vehicle any longer than necessary.*

- Tighten respective bolts/nuts.
- Lower wheel bearing housing.
- Move -V.A.G 1383 A- away from under vehicle.
- Remove -T10149- .



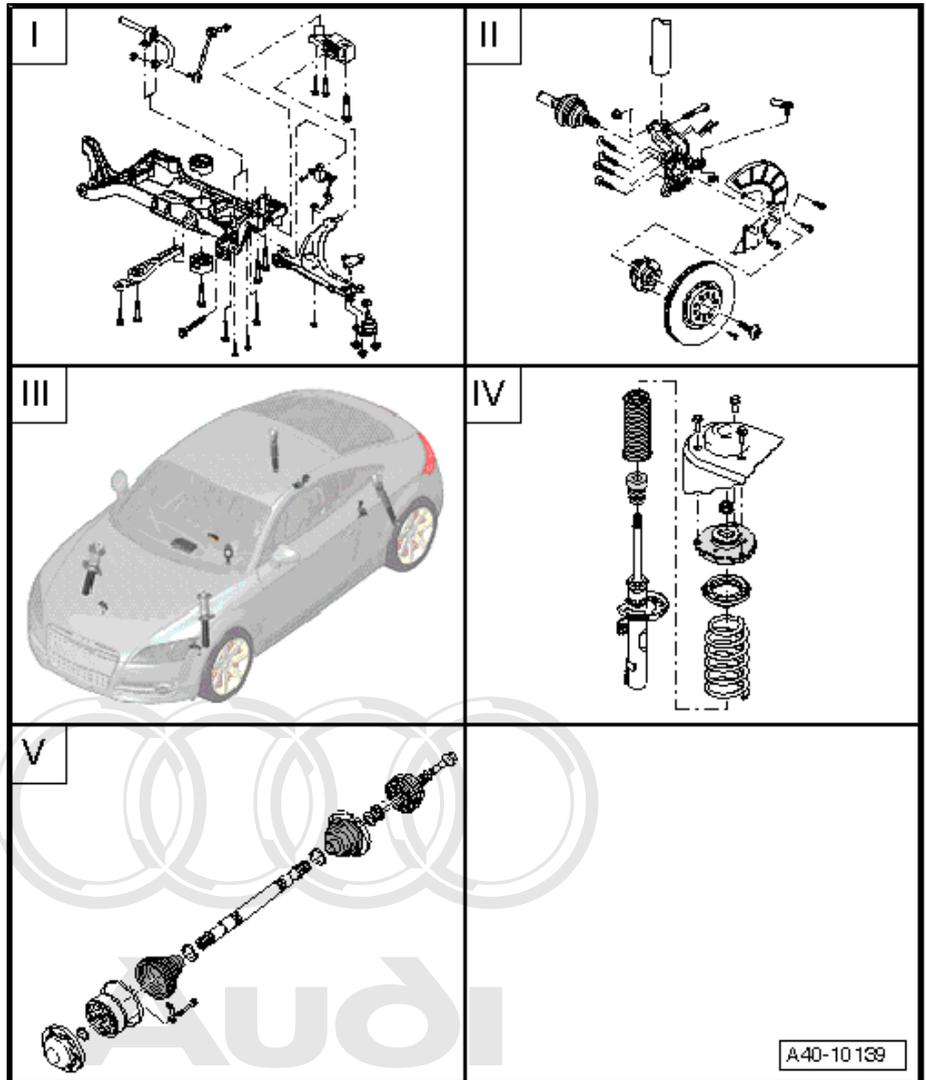
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2.2 Front Suspension Overview

- I - Refer to
 ⇒ [“2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview”, page 14](#) .
- II - Refer to
 ⇒ [“2.5 Wheel Bearing Housing and Wheel Bearing Unit Assembly Overview”, page 18](#) .
- III - Refer to
 ⇒ [“2.6 Audi Magnetic Ride \(AMR\) Electronically-Controlled Damping Assembly Overview”, page 20](#) .
- IV - Refer to
 ⇒ [“2.7 Suspension Strut Assembly Overview”, page 21](#) .
- V - Refer to
 ⇒ [“6.2 Drive Axle with 100 mm Inner CV Joint”, page 69](#) ,
 ⇒ [“6.3 Drive Axle with 108 mm Inner CV Joint”, page 76](#) ,
 ⇒ [“6.4 Drive Axle with 100 mm Diameter Inner CV Joint”, page 82](#) ,
 ⇒ [“6.5 Drive Axle with Triple Roller Joint AAR 2600i”, page 87](#) ,
 ⇒ [“6.6 Drive Axle with Triple Roller Joint AAR 2600i, Disassembling and Assembling”, page 91](#) ,
 ⇒ [“6.7 Drive Axle with Triple Roller Joint AAR 3300i, Installed in Transmission”, page 95](#) or
 ⇒ [“6.8 Drive Axle with Triple Roller Joint AAR 3300i, Mounted on Transmission Stub Shaft”, page 99](#) .



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2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview

1 - Nut

- 65 Nm
- Counterhold at socket head of joint bolt when tightening.
- Always replace if removed.

2 - Stabilizer Bar

- Removing and installing, refer to [⇒ "5.3 Stabilizer Bar", page 37](#)
- Different versions. Allocation, refer to the Electronic Parts Catalog (ETKA).

3 - Coupling Rod

- Linking stabilizer to suspension strut.

4 - Nut

- 65 Nm
- Counterhold at socket head of joint bolt when tightening.
- Always replace if removed.

5 - Mounting Bracket

- Locating, refer to the [⇒ page 17](#).
- With bonded rubber bushing.
- Transverse link mounting bracket, replacing, refer to [⇒ "5.6 Transverse Link Mounting Bracket", page 42](#).

6 - Bolt

- 50 Nm + 90° turn
- Always replace if removed.

7 - Bolt

- 70 Nm + 90° turn
- Always replace if removed.

8 - Bolt

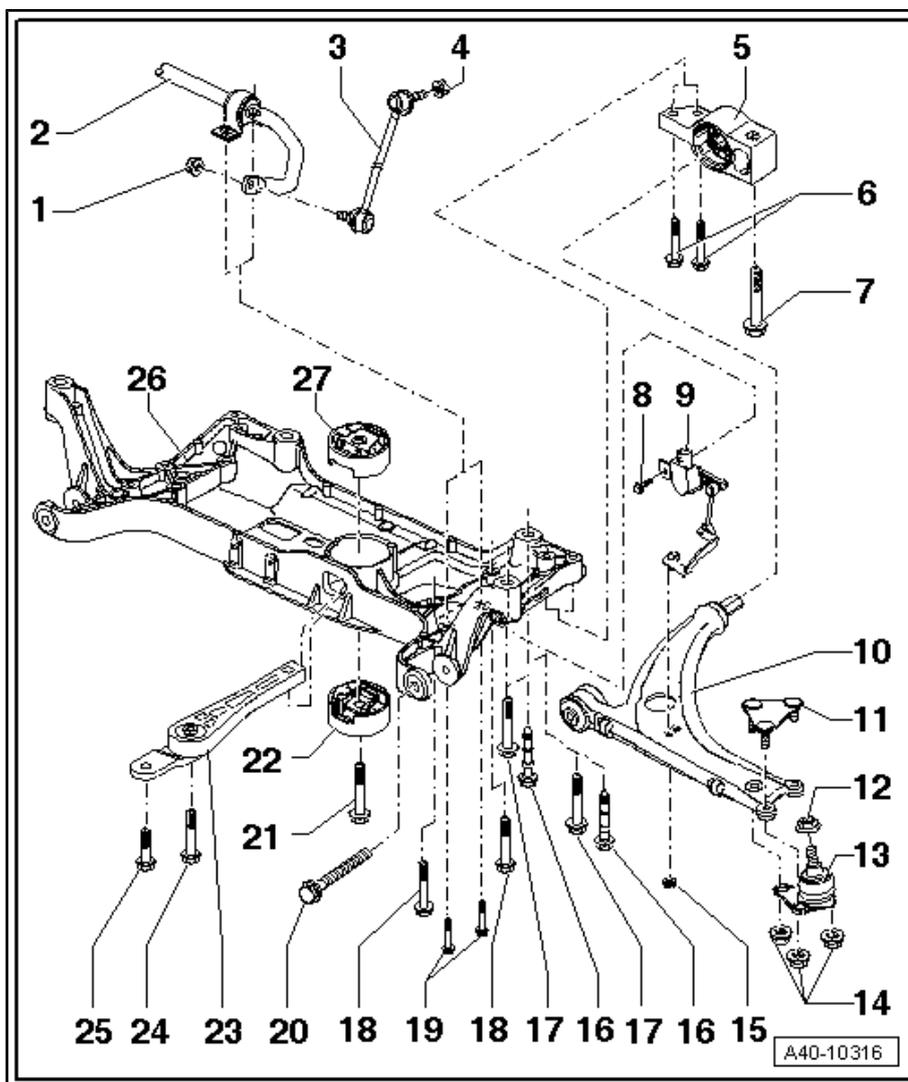
- 9 Nm

9 - Left Front Level Control System Sensor -G78- and Right Front Level Control Sensor -G289-

- Removing and installing, refer to [⇒ "5.8 Level Control System Sensor", page 45](#).

10 - Transverse Link

- Transverse link with mounting bracket, removing and installing, refer to [⇒ "5.4 Transverse Link with Mounting Bracket", page 38](#).
- Transverse link bonded rubber bushing, replacing, refer to [⇒ "5.5 Transverse Link Bonded Rubber Bushing", page 40](#).



- Transverse link mounting bracket, replacing, refer to
 ⇒ [“5.6 Transverse Link Mounting Bracket”, page 42](#) .

11 - Locking Element

- Always replace if removed.

12 - Nut

- 20 Nm + 90° turn
- Always replace if removed.

13 - Ball joint

- Removing and installing, refer to ⇒ [“5.7 Ball Joint”, page 43](#) .
- Checking, refer to ⇒ [“4.1 Ball Joint, Checking”, page 26](#) .

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14 - Nut

- 40 Nm + 45° turn
- Always replace if removed.

15 - Nut

- 9 Nm

16 - Bolt

- 70 Nm + 90° turn
- There are different versions depending on the country. Allocation, refer to the Electronic Parts Catalog (ETKA).
- Note the different bolt lengths.
- Positioned with the indentation on the bolt head at the rear bolting point on the underbody.
- Always replace if removed.

17 - Bolt

- 70 Nm + 90° turn
- There are different versions depending on the country. Allocation, refer to the Electronic Parts Catalog (ETKA).
- Always replace if removed.

18 - Bolt

- 50 Nm + 90° turn
- Threaded connection on steering gear.
- Always replace if removed.

19 - Bolt

- 20 Nm + 90° turn
- Threaded connection on stabilizer bar.
- Always replace if removed.

20 - Bolt

- 70 Nm + 180° turn
- Always replace if removed.
- Tighten only in curb weight position. Refer to
 ⇒ [“2.1 Wheel Bearing, Lifting to Curb Weight Position”, page 11](#) .

21 - Bolt

- 100 Nm + 90° turn
- Only tighten when pendulum support is bolted to transmission.
- Always replace if removed.

22 - Lower Bonded Rubber Bushing for Pendulum Support

- Ejecting and pressing in. Refer to ⇒ [“5.2 Subframe Bonded Rubber Bushing”, page 34](#) .

23 - Pendulum Support

- Bolt first to transmission, then to subframe.

- ❑ Different versions. Allocation, refer to the Electronic Parts Catalog (ETKA).

24 - Bolt

- ❑ Manual transmission, tightening specifications, refer to ⇒ Manual Transmission; Rep. Gr. 34 ; Description and Operation .
- ❑ Automatic transmission, tightening specifications, refer to ⇒ Automatic Transmission; Rep. Gr. 37 ; Description and Operation .

25 - Bolt

- ❑ Manual transmission, tightening specifications, refer to ⇒ Manual Transmission; Rep. Gr. 34 ; Description and Operation .
- ❑ Automatic transmission, tightening specifications, refer to ⇒ Automatic Transmission; Rep. Gr. 37 ; Description and Operation .

26 - Subframe

- ❑ Removing and installing, refer to ⇒ ["5.1 Subframe", page 31](#) .
- ❑ Subframe, servicing, refer to ⇒ ["5.2 Subframe Bonded Rubber Bushing", page 34](#) .
- ❑ Subframe, securing, refer to ⇒ ["2.4 Subframe, Securing", page 16](#) .
- ❑ Different versions. Allocation, refer to the Electronic Parts Catalog (ETKA).

27 - Upper Bonded Rubber Bushing for Pendulum Support

- ❑ Ejecting and pressing in, refer to ⇒ ["5.2 Subframe Bonded Rubber Bushing", page 34](#) .

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2.4 Subframe, Securing

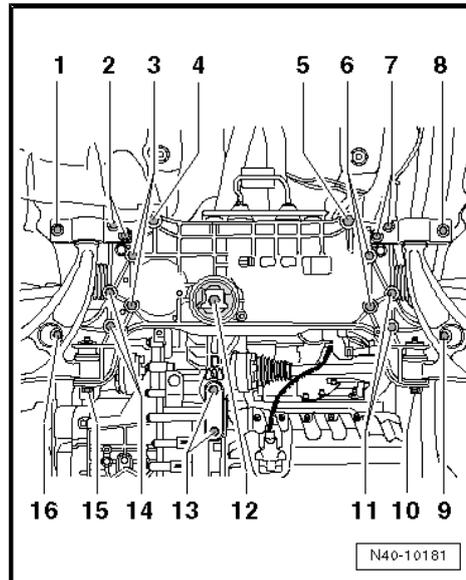
Special tools and workshop equipment required

- ◆ Locating pins -T10096-
- ◆ Torque wrench -V.A.G 1331-

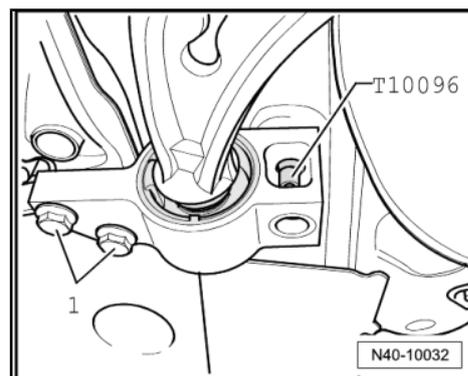
Installing -T10096-

To secure subframe with transverse links, -T10096- must be bolted to items -1-, -8-, -9- and -16-, one after the other.

- Replace bolts with -T10096- and tighten to 20 Nm.



Securing Mounting Bracket



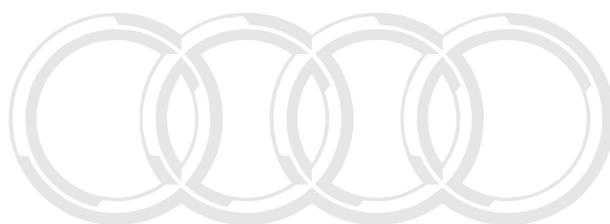
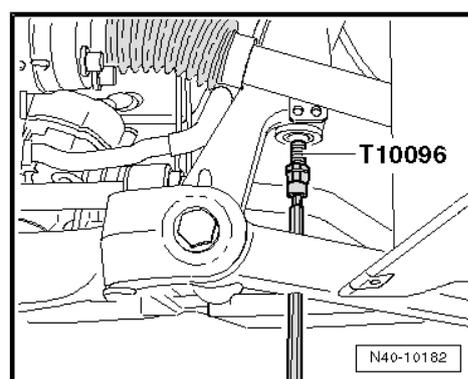
Subframe, Securing

Position of front axle is now secured.

Removing -T10096-

Install in reverse order of removal. Make sure that the -T10096- are replaced one after the other with new bolts.

Tightening specifications, refer to
⇒ ["2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview", page 14](#) .



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2.5 Wheel Bearing Housing and Wheel Bearing Unit Assembly Overview

1 - Suspension Strut

2 - Tie Rod End

3 - Bolt

- 70 Nm + 90° turn
- Always replace if removed.
- Bolt point must face in direction of travel.

4 - Bolt

- 8 Nm

5 - Left Front ABS Wheel Speed Sensor -G47- / Right Front ABS Wheel Speed Sensor -G45-

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

6 - Cover Plate

7 - Nut

- 20 Nm + 90° turn
- Always replace if removed.

8 - Bolt

- 10 Nm

9 - Brake Disc

10 - Bolt

- Always replace if removed.

- Different versions. Allocation, refer to the Electronic Parts Catalog (ETKA).

- Twelve-point bolt characteristics, refer to ⇒ [page 19](#) .

- Hex bolt: 200 Nm + 180° turn. Refer to ⇒ ["2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening"](#), [page 22](#) .

- Twelve-point bolt with ribs: 70 Nm +90° turn. Refer to ⇒ ["2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening"](#), [page 22](#) .

- Twelve-point bolt without ribs: 200 Nm +180° turn. Refer to ⇒ ["2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening"](#), [page 23](#) .

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

11 - Bolt

- 4 Nm

12 - Wheel Hub with Wheel Bearing

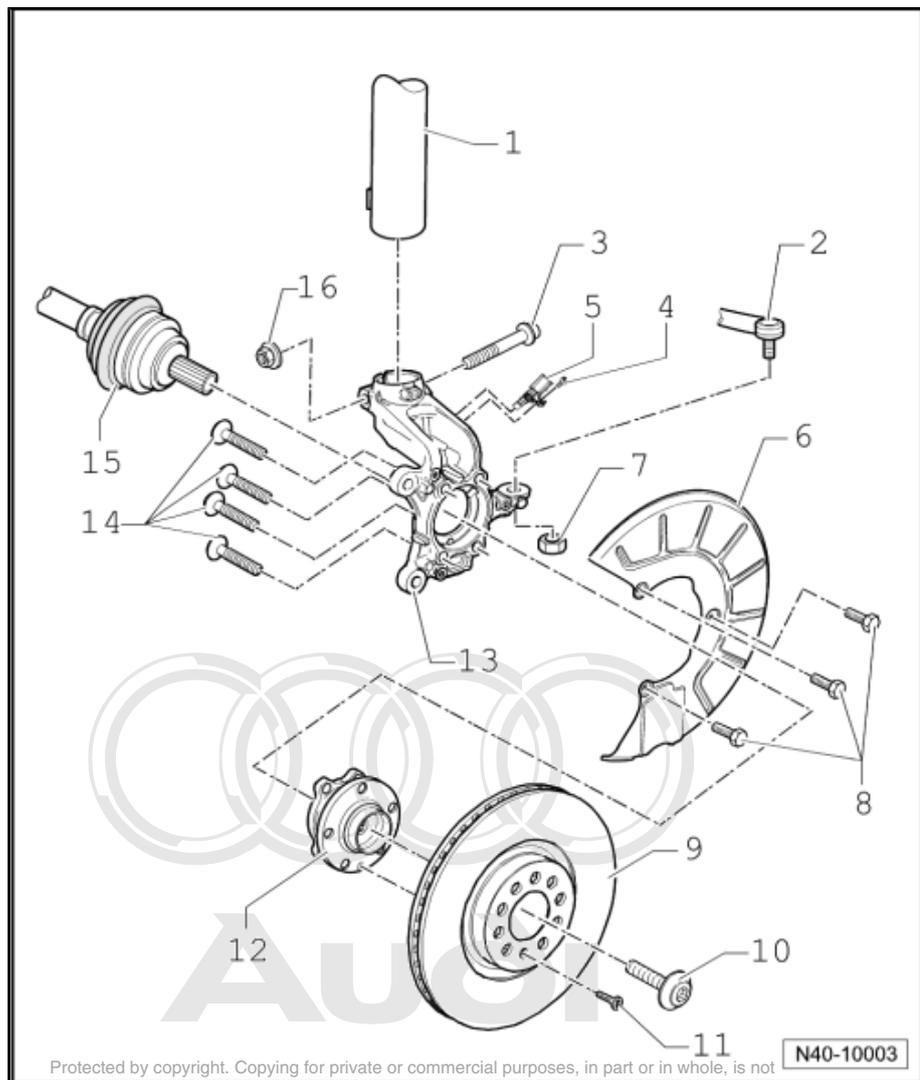
- Removing and installing, refer to ⇒ ["5.10 Wheel Bearing Unit"](#), [page 48](#) .

- Sensor ring for ABS is installed in wheel hub.

- Different versions. Allocation, refer to the Electronic Parts Catalog (ETKA).

13 - Wheel Bearing Housing

- Removing and installing, refer to ⇒ ["5.9 Wheel Bearing Housing"](#), [page 46](#) .



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N40-10003

- ❑ Allocation, refer to the Electronic Parts Catalog (ETKA).

14 - Bolt

- ❑ 70 Nm + 90° turn
- ❑ Always replace if removed.

15 - Drive Axle

16 - Nut

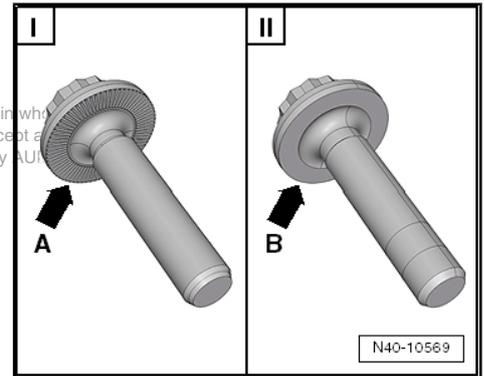
- ❑ Always replace if removed.

Characteristics Between a Twelve-Point Bolt with Ribs and a Twelve-Point Bolt without Ribs

The contact surfaces -arrow A- and -arrow B- are different on the two-point bolts.

I - twelve-point bolt with ribs -arrow A-

II - twelve-point bolt without ribs -arrow B-



2.6 Audi Magnetic Ride (AMR) Electronically-Controlled Damping Assembly Overview

1 - Shock Absorber with Right Front Dampening Adjustment Valve -N337-

- ❑ Suspension strut, removal and installation, refer to ⇒ [“5.12 Suspension Strut”, page 50](#) .
- ❑ Suspension strut, servicing, refer to ⇒ [“6.1 Suspension Strut”, page 68](#) .

2 - Right Front Level Control Sensor -G289-

- ❑ Removing and installing, refer to ⇒ [“5.8 Level Control System Sensor”, page 45](#) .

3 - Electronic Damping Control Module -J250-

- ❑ Removing and installing, refer to ⇒ [“5.11 Electronic Damping Control Module”, page 50](#) .
- ❑ If the module is replaced, the control position must be reprogrammed.
- ❑ Component location: The module is installed under the passenger's seat.

4 - Damping Adjustment Button - E387-

- ❑ Component location: The dampening adjustment button is installed in the center console switch strip.

5 - Shock Absorber with Right Rear Dampening Adjustment Valve -N339-

- ❑ FWD, removing and installing, refer to ⇒ [“5.1.13 Shock Absorber”, page 168](#) .
- ❑ FWD, servicing, refer to ⇒ [“6.1 Shock Absorber, FWD”, page 205](#) .
- ❑ AWD, removing and installing, refer to ⇒ [“5.2.14 Shock Absorber”, page 198](#) .
- ❑ AWD, servicing, refer to ⇒ [“6.2 Shock Absorber, AWD”, page 207](#) .

6 - Right Rear Level Control System Sensor -G77-

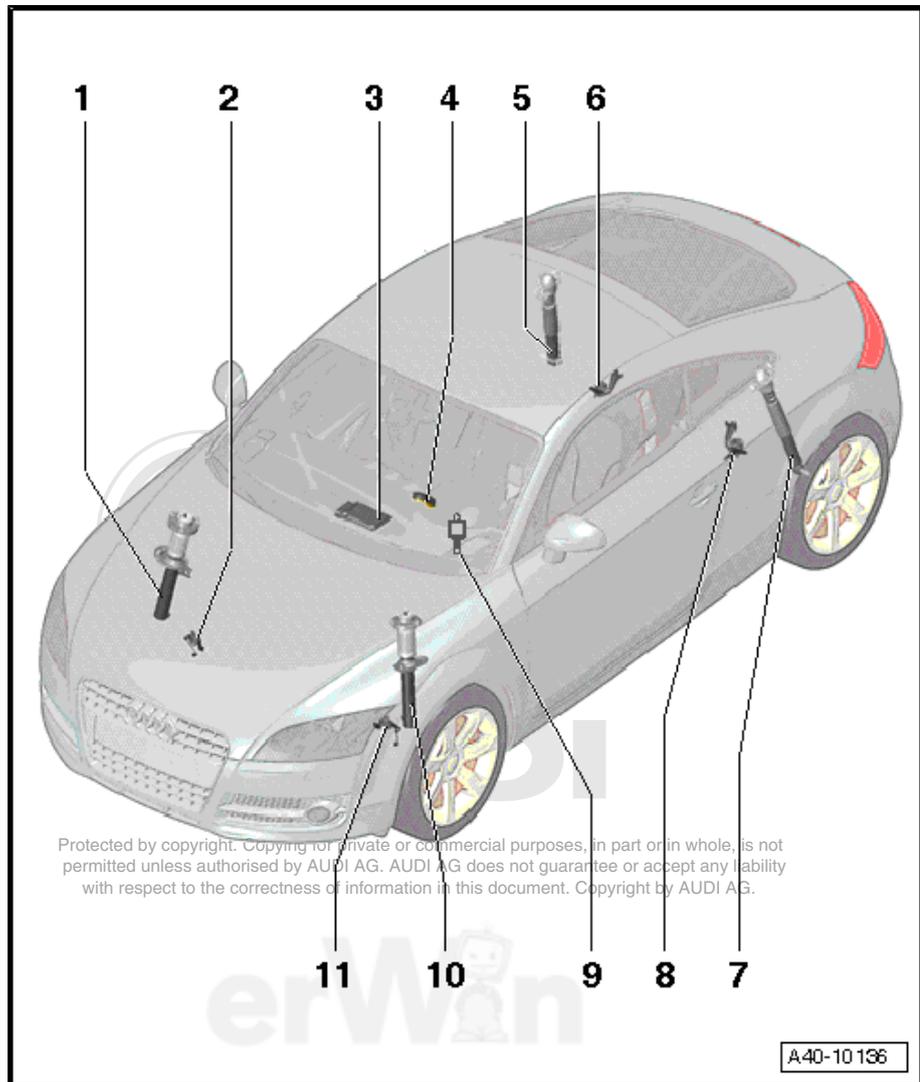
- ❑ Removing and installing, refer to ⇒ [“5.2.6 Level Control System Sensors”, page 184](#) .

7 - Shock Absorber with Left Rear Dampening Adjustment Valve -N338-

- ❑ FWD, removing and installing, refer to ⇒ [“5.1.13 Shock Absorber”, page 168](#) .
- ❑ FWD, servicing, refer to ⇒ [“6.1 Shock Absorber, FWD”, page 205](#) .
- ❑ AWD, removing and installing, refer to ⇒ [“5.2.14 Shock Absorber”, page 198](#) .
- ❑ AWD, servicing, refer to ⇒ [“6.2 Shock Absorber, AWD”, page 207](#) .

8 - Left Rear Level Control System Sensor -G76-

- ❑ Removing and installing, refer to ⇒ [“5.2.6 Level Control System Sensors”, page 184](#) .



9 - Dampening Adjustment Indicator Lamp -K189-

- ❑ The instrument cluster indicator light comes on if there is a malfunction.

10 - Shock Absorber with Left Front Dampening Adjustment Valve -N336-

- ❑ Suspension strut, removal and installation, refer to ⇒ ["5.12 Suspension Strut", page 50](#) .
- ❑ Suspension strut, servicing, refer to ⇒ ["6.1 Suspension Strut", page 68](#) .

11 - Left Front Level Control System Sensor -G78-

- ❑ Removing and installing, refer to ⇒ ["5.8 Level Control System Sensor", page 45](#) .

2.7 Suspension Strut Assembly Overview

1 - Shock Absorber

- ❑ Suspension strut, removal and installation, refer to ⇒ ["5.12 Suspension Strut", page 50](#) .
- ❑ Individually replaceable.
- ❑ For the correct allocation, refer to the Electronic Parts Catalog (ETKA).
- ❑ On vehicles with electronically-controlled damping (Audi magnetic ride), the control position must be reprogrammed each time a shock absorber is replaced using the Vehicle diagnosis, testing and information system -VAS 5051-

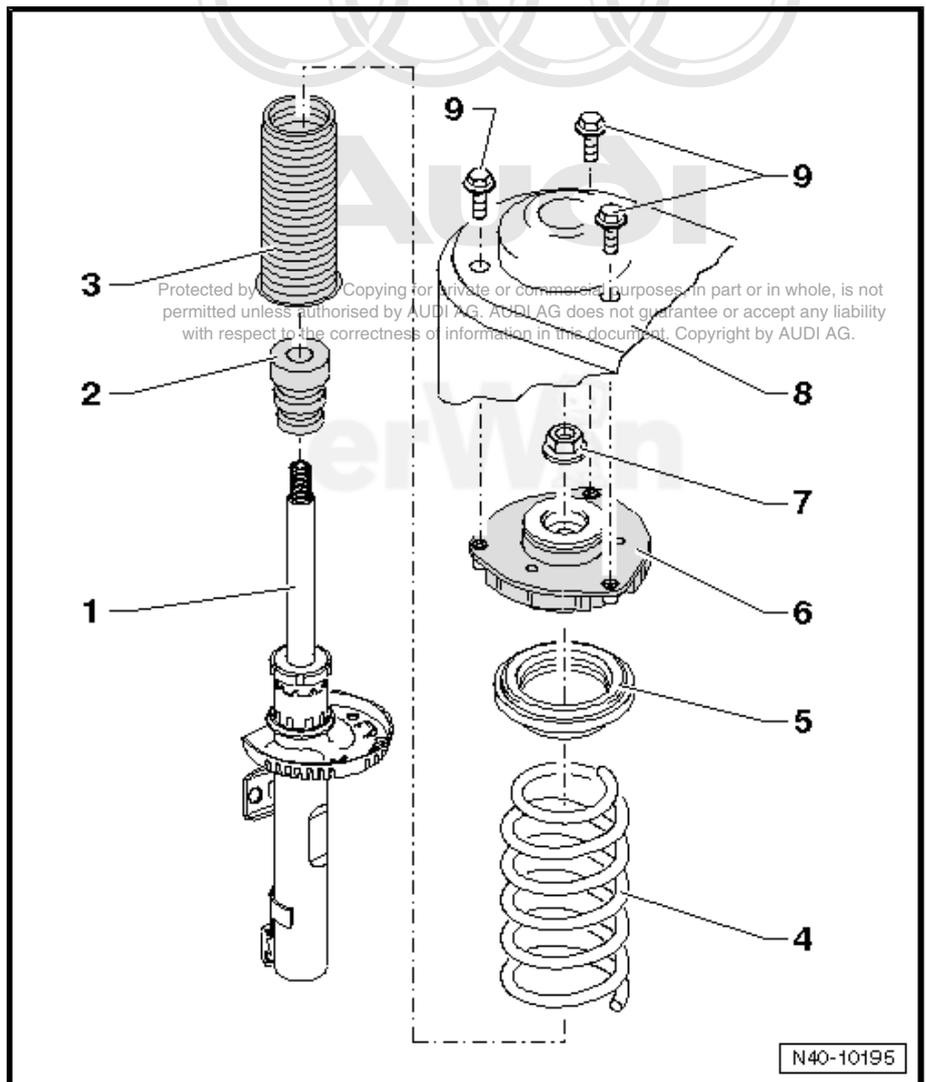
2 - Buffer Stop

- ❑ Not installed on vehicles with electronically controlled damping (Audi magnetic ride).

3 - Protective Sleeve

4 - Coil Spring

- ❑ Removing and installing, refer to ⇒ ["6.1 Suspension Strut", page 68](#) .
- ❑ Note color code.
- ❑ For the correct allocation, refer to the Electronic Parts Catalog (ETKA).



Spring allocation via PR No.

These numbers can be found on vehicle data plate.

- ❑ Surface of spring coil may not be damaged.

5 - Axial Groove Ball Bearing

6 - Suspension Strut Bearing

- ❑ Note installation direction.

7 - Nut

- 60 Nm
- Always replace if removed.

8 - Suspension Strut Dome

9 - Bolt

- 15 Nm + 90° turn
- Always replace if removed.

2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening

Special tools and workshop equipment required

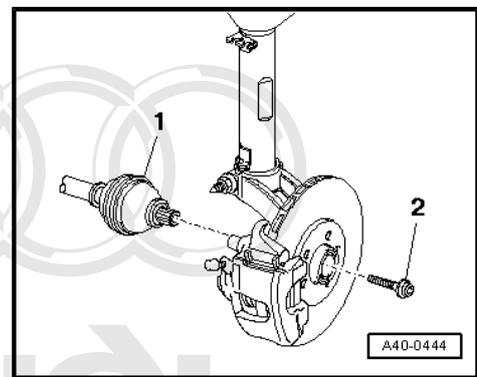
- ◆ Angle wrench -V.A.G 1756-

Loosening

- With vehicle still standing on its wheels, loosen bolt a maximum of 90°, otherwise wheel bearing will be pre-damaged.
- Raise vehicle enough that wheels hang freely.
- Operate brake (second mechanic required).
- Remove bolt -2-.

Tightening

- Replace bolt -2-.



Note

- ◆ *Before installing, clean the threads in the CV joint with a tap.*
- ◆ *Wheels must not yet touch the ground to tighten the drive axle, wheel bearing may otherwise be damaged.*
- Operate brake (second mechanic required).
- Tighten bolt to 200 Nm.
- Lower the vehicle onto its wheels.
- Tighten bolt an additional 180°.

2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening

Special tools and workshop equipment required

- ◆ Socket XZN 24 -T10361-
- ◆ Angle wrench -V.A.G 1756-

Characteristics Between a Twelve-Point Bolt with Ribs and a Twelve-Point Bolt without Ribs

The contact surfaces -arrow A- and -arrow B- are different on the two-point bolts.

I - twelve-point bolt with ribs -arrow A-

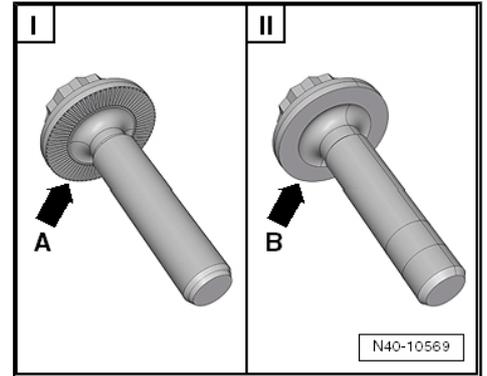
II - twelve-point bolt without ribs -arrow B-

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

If the bearings are loaded by the vehicle's own weight the wheel bearing will be damaged. This reduces the service life of the wheel bearings. Therefore, observe the following:

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

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

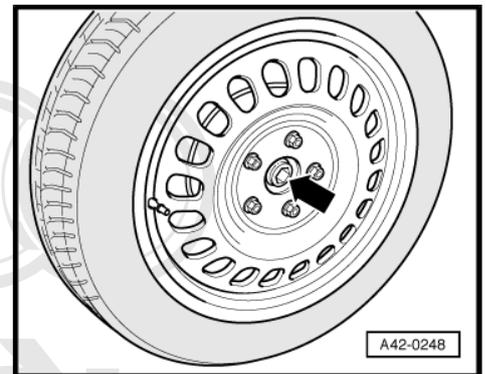


Loosening

- With vehicle still resting on wheels, loosen 12-point bolt with -T10361- maximum 90°, otherwise, wheel bearing will be damaged.
- Raise vehicle enough that wheels hang freely.
- Operate brake (second mechanic required).
- Remove 12-point bolt -arrow-.

Note

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



Tightening

- Replace 12-point bolt.

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Note

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

- Operate brake (second mechanic required).
- Tighten 12-point bolt to 70 Nm.
- Lower the vehicle onto its wheels.
- Tighten 12-point bolt an additional 90°.

2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening

Special tools and workshop equipment required

- ◆ Socket XZN 24 -T10361-
- ◆ Angle wrench -V.A.G 1756-



Characteristics Between a Twelve-Point Bolt with Ribs and a Twelve-Point Bolt without Ribs

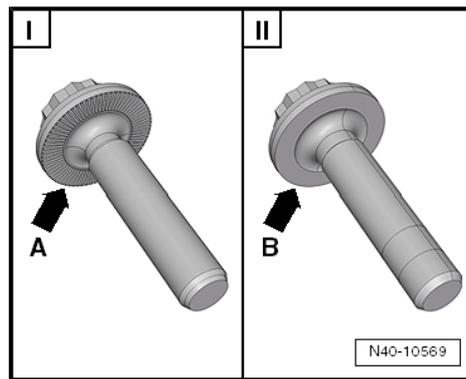
The contact surfaces -arrow A- and -arrow B- are different on the two-point bolts.

I - twelve-point bolt with ribs -arrow A-

II - twelve-point bolt without ribs -arrow B-

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

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

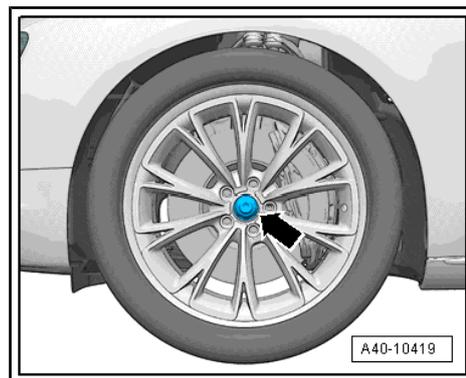


Loosening

- With the vehicle resting on its wheels, loosen the twelve-point bolt -arrow- maximum 90° otherwise the wheel bearing will get damaged.
- Lift the vehicle just enough so that the wheels are hanging free.
- Apply the brakes (a second technician required).
- Remove 12-point bolt -arrow-.

Note

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



Tightening

- Replace 12-point bolt.

Note

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

- Apply the brakes (a second technician required). Tighten 12-point bolt to 200 Nm.
- Lower the vehicle onto its wheels.
- Tighten 12-point bolt an additional 180°.



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3 Specifications

⇒ **“3.1 Fastener Tightening Specifications”, page 25**

3.1 Fastener Tightening Specifications

Component	Fastener Size	Nm
ABS Wheel Speed Sensor to Wheel Bearing Housing Bolt	-	8
Ball Joint to Transverse Link Nut ¹	-	40 + 45° turn
Ball Joint to Wheel Bearing Housing Nut ¹	-	20 + 90° turn
Brake Disc to Wheel Hub Bolt	-	4
Coupling Rod to Stabilizer Bar Nut ¹	-	65
Coupling Rod to Suspension Strut Nut ¹	-	65
Cover Plate to Wheel Bearing Housing Bolt	-	10
Drive Axle to Transmission Bolt ^{1, 5, 6}	M8	40
	M10	70
Drive Axle to Wheel Hub Bolt ¹		
- Hex Bolt	-	200 + 180° turn
- 12-Point Bolt with Ribs	-	70 + 90° turn
- 12-Point Bolt without Ribs	-	200 + 180° turn
Level Control System Sensor to Subframe Bolt	-	9
Level Control System Sensor to Transverse Link Nut	-	9
Lower Bonded Rubber Bushing for Pendulum Support to Subframe Bolt ^{1, 3}	-	100 + 90° turn
Shock Absorber to Suspension Strut Bearing Nut ¹	-	60
Stabilizer Bar to Subframe Bolt ¹	-	20 + 90° turn
Subframe to Body Bolt ¹	-	70 + 90° turn
Suspension Strut to Suspension Strut Dome Bolt ¹	-	15 + 90° turn
Suspension Strut to Wheel Bearing Housing Bolt ^{1, 4}	-	70 + 90° turn
Tie Rod End to Wheel Bearing Housing Nut ¹	-	20 + 90° turn
Transverse Link Mounting Bracket to Body Bolt ¹	-	70 + 90° turn
Transverse Link Mounting Bracket to Subframe Bolt ¹	-	50 + 90° turn
Transverse Link to Subframe Bolt ^{1, 2}	-	70 + 180° turn
Wheel Hub to Wheel Bearing Housing Bolt ¹	-	70 + 90° turn

- ¹ Always replace after removal.
- ² Tighten only in curb weight position. Refer to [⇒ “2.1 Wheel Bearing, Lifting to Curb Weight Position”, page 11](#) .
- ³ Only tighten when pendulum support is bolted to transmission.
- ⁴ Bolt point must face in direction of travel.
- ⁵ Pre-tighten diagonally to 10 Nm.
- ⁶ Tighten diagonally.

4 Diagnosis and Testing

⇒ "4.1 Ball Joint, Checking", page 26

⇒ "4.2 Control Position Entry, Reprogramming with Vehicle Diagnosis, Testing and Information System", page 26

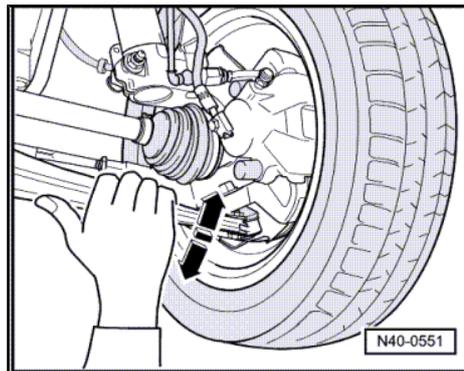
⇒ "4.3 Outer CV Joint, Checking", page 27

⇒ "4.4 Inner CV Joint, Checking", page 28

4.1 Ball Joint, Checking

Axial Play, Checking

- Pull transverse link down and press up again.



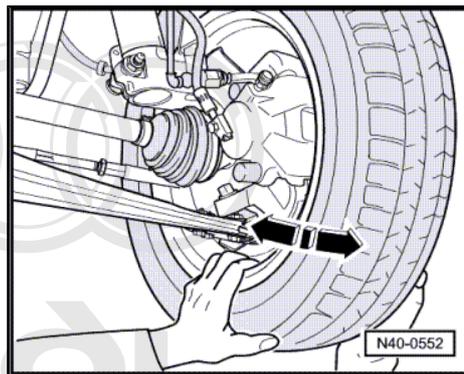
Radial Clearance, Checking

- Press wheel firmly in and out at bottom.



Note

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



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4.2 Control Position Entry, Reprogramming with Vehicle Diagnosis, Testing and Information System

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic, Testing and Information System -VAS 5051B- with corresponding diagnostic cable.



WARNING

- ◆ During a test drive, the testing and measuring equipment must always be secured on the back seat.
- ◆ These devices may be operated only by a passenger during a test drive.

- Connect -VAS 5051B- with corresponding diagnostic cable to vehicle.
- Switch -VAS 5051B- on.

-VAS 5051B- is ready to operate when it displays operating modes in button fields.

- Switch on ignition.

 **Note**

If control modules or electric/electronic components were replaced, component adaptation should be carried out in "Guided Functions".

- Touch **Guided Functions** and the screen.

Then:

- "Chassis (Repair group 01; 40 - 49)"
- "14 - Wheel damping electronics"
- Select the corresponding program in "Guided Functions".
- 14 - Code control module (repair group 40)
- or
- 14 - Replace control module (repair group 40)
- or
- 14 - Reprogram control position (repair group 40)
- Follow the prompts on the screen.

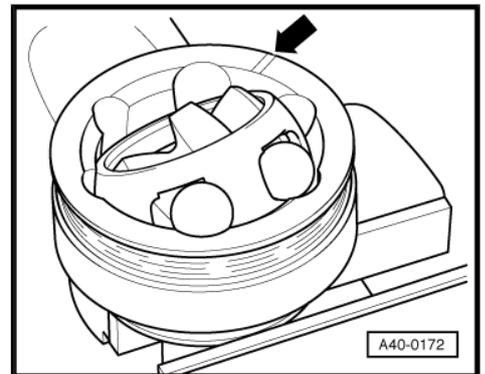
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4.3 Outer CV Joint, Checking

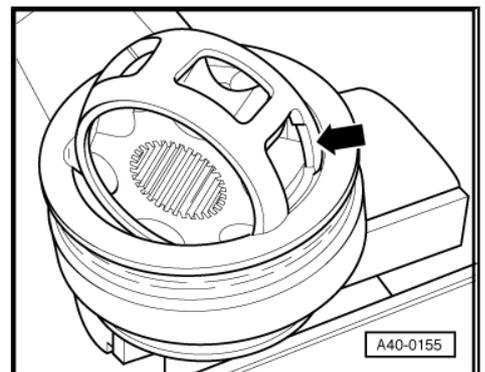
It is necessary to disassemble the joint whenever replacing the grease or if the ball surfaces show wear or damage.

Removing

- Before disassembling mark ball hub position in relation to the ball cage and housing with an electric scribe or oil stone -arrow-.
- Tilt ball hub and ball cage and remove balls one after another.



- Turn cage until two cage windows -arrow- rest on joint body.
- Lift out cage with hub.

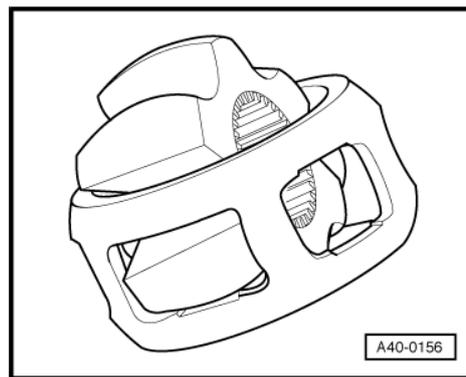




- Swing a hub segment in a cage window.
- Fold hub out from cage.

**Note**

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

**Installing**

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

- Press quantity of grease specified in table into joint body.
- ◆ 90 mm diameter outer joint, grease quantities, refer to [⇒ page 69](#).
- ◆ 98 mm diameter outer joint, grease quantities, refer to [⇒ page 76](#).
- Insert cage with hub into joint body.

**Note**

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Cage must be installed laterally correct.

- Press in opposing balls in sequence, during this, previous position of ball hub to ball cage and to joint body must be established again.
- Install new circlip in shaft.
- Distribute remaining grease in the joint boot.

4.4 Inner CV Joint, Checking

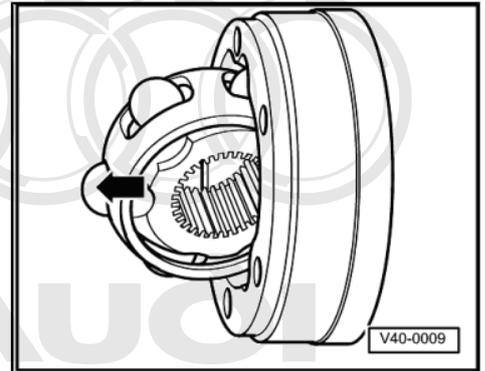
It is necessary to disassemble the joint whenever replacing the grease or if the ball surfaces show wear or damage.

**Note**

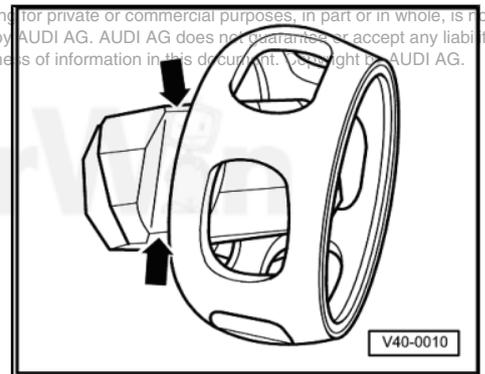
Ball hub and joint piece are paired. Before removing, mark in relation to each other using a waterproof felt-tip pen.

Removing

- Swing ball hub and ball cage.
- Press out ball joint housing in -direction of arrow-.
- Press balls out of cage.



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



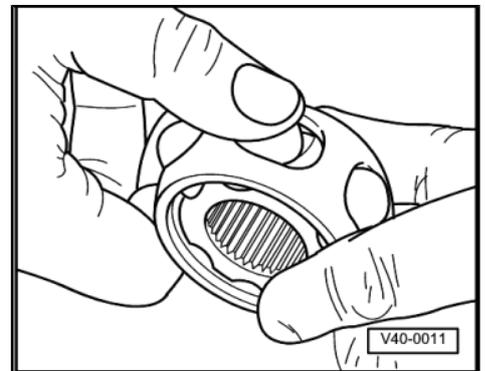
i Note

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

Installing

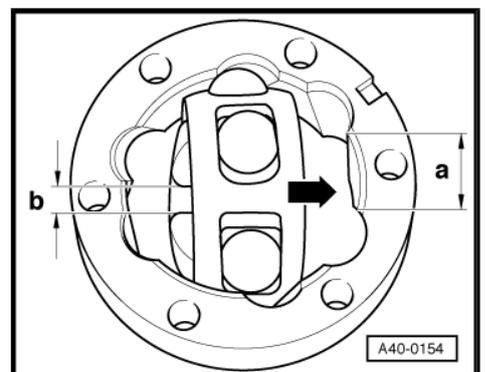
Installation is the reverse of removal, with special attention to the following:

- Insert ball hub into ball cage via two chamfers. The installation position is at random. Press balls into cage.
- Insert hub with cage and balls upright into joint piece.



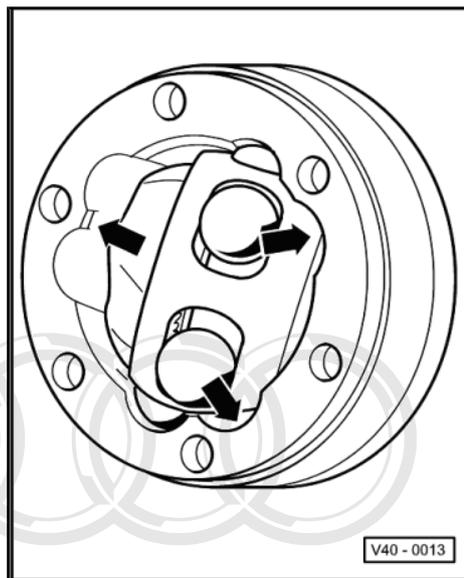
i Note

- ◆ *When inserting, make sure that in each case the wide gap -a- at joint piece contacts narrow gap -b- at hub after swinging in.*
- ◆ *Chamfer on inner diameter of ball hub (splines) must face large diameter of joint piece.*
- ◆ *Use the felt-tip pen markings made during removal to help with installation.*





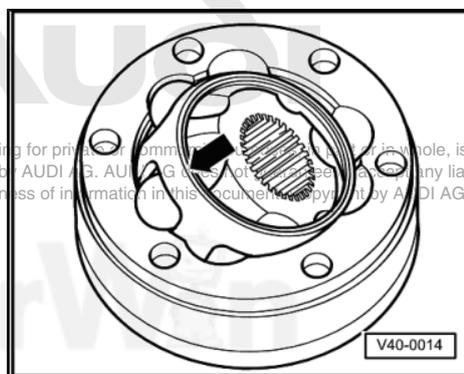
- Swing in ball hub, to do so swing out hub far enough from cage -arrows- so that the balls have the distance of the running paths.



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

CV Joint, Checking for Function

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



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5 Removal and Installation

⇒ ["5.1 Subframe", page 31](#)

⇒ ["5.2 Subframe Bonded Rubber Bushing", page 34](#)

⇒ ["5.3 Stabilizer Bar", page 37](#)

⇒ ["5.4 Transverse Link with Mounting Bracket", page 38](#)

⇒ ["5.5 Transverse Link Bonded Rubber Bushing", page 40](#)

⇒ ["5.6 Transverse Link Mounting Bracket", page 42](#)

⇒ ["5.7 Ball Joint", page 43](#)

⇒ ["5.8 Level Control System Sensor", page 45](#)

⇒ ["5.9 Wheel Bearing Housing", page 46](#)

⇒ ["5.10 Wheel Bearing Unit", page 48](#)

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⇒ ["5.11 Electronic Damping Control Module", page 50](#)

⇒ ["5.12 Suspension Strut", page 50](#)

⇒ ["5.13 Drive Axle with Bolted Inner Joint", page 53](#)

⇒ ["5.14 Drive Axle with CV Joint, Inserted Inner Joint", page 55](#)

⇒ ["5.15 Drive Axle with Triple Roller Joint AAR 3300i, Mounted on Transmission Stub Shaft", page 60](#)

⇒ ["5.16 Drive Axle with Triple Roller Joint AAR 3300i, Installed in Transmission", page 64](#)

5.1 Subframe

Special tools and workshop equipment required

- ◆ Locating pins -T10096-
- ◆ Engine/transmission jack -V.A.G 1383 A-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Vehicle Diagnostic, Testing and Information System -VAS 5051B-

Removing

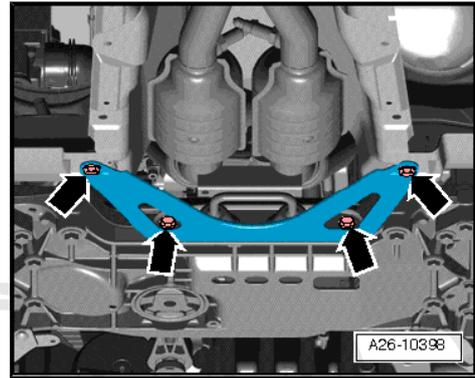


Note

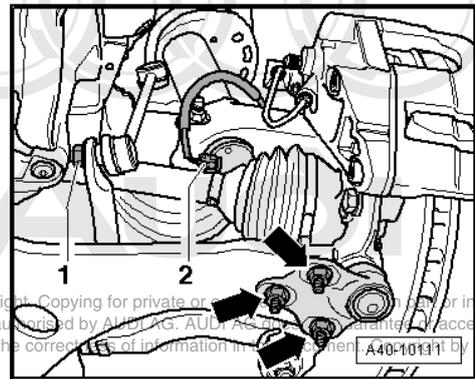
The subframe is removed together with the stabilizer bar and transverse links.

- Remove wheels.
- Lower noise insulation, removing, refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- Noise insulation frame, removing, refer to ⇒ Body Exterior; Rep. Gr. 50 ; Removal and Installation .

- Remove exhaust system bracket bolts -arrows-.

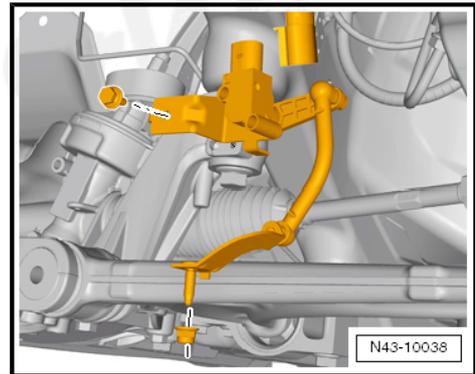


- Remove nut -1-.

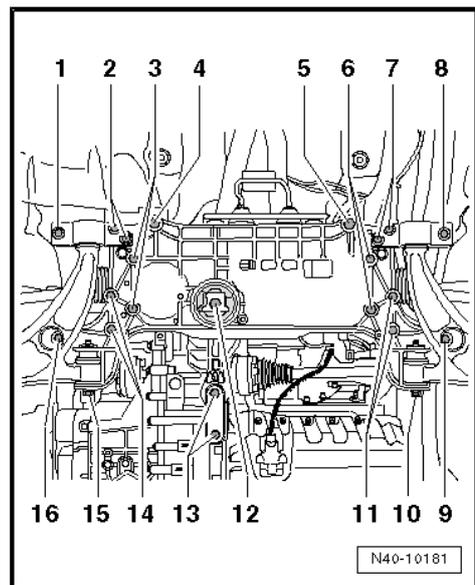


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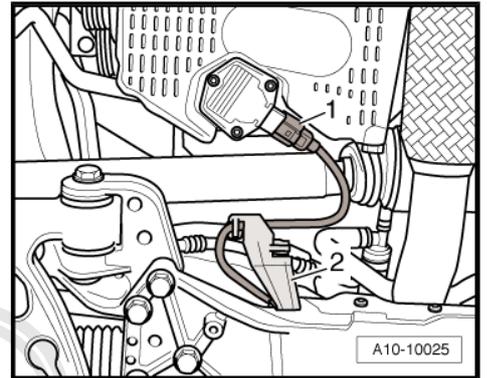
- On vehicles with a level control system sensor, disconnect the connector and remove the nut from the linkage on the transverse link.



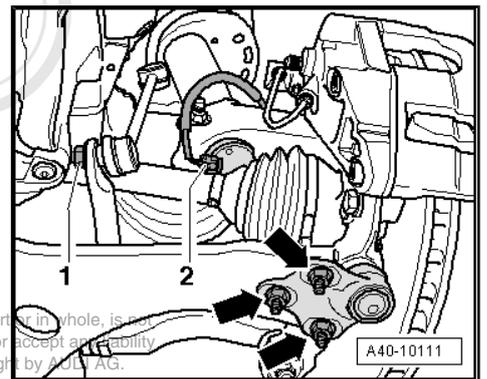
- Remove pendulum support from transmission, unscrew bolts -13- to do so.



- Disconnect Oil Level Thermal Sensor -G266- connector -1- and unclip electrical wire from bracket -2-.

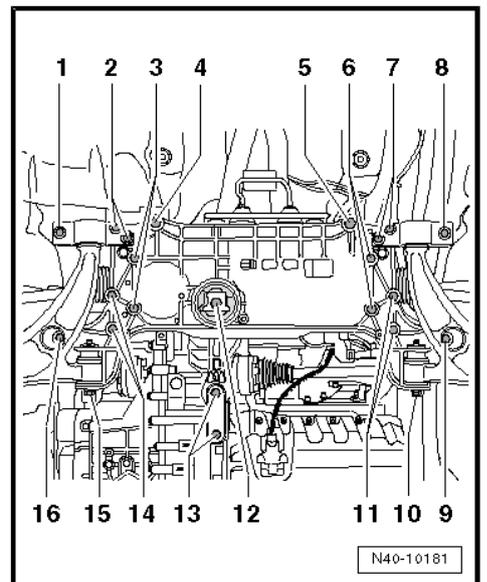


- Mark location of nuts -arrows- on left and right sides of vehicle using a felt-tip pen.
- Remove the nuts -arrows- on left and right side of vehicle.
- Remove transverse link from ball joint.
- Subframe, locating, refer to [⇒ "2.4 Subframe, Securing", page 16](#).

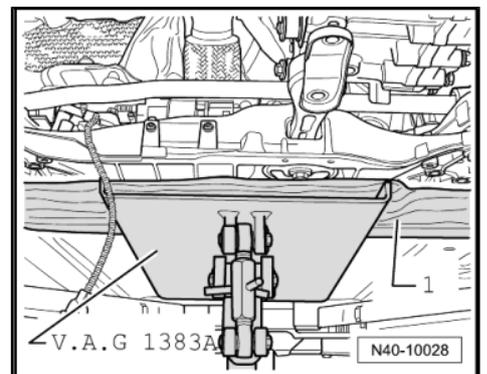


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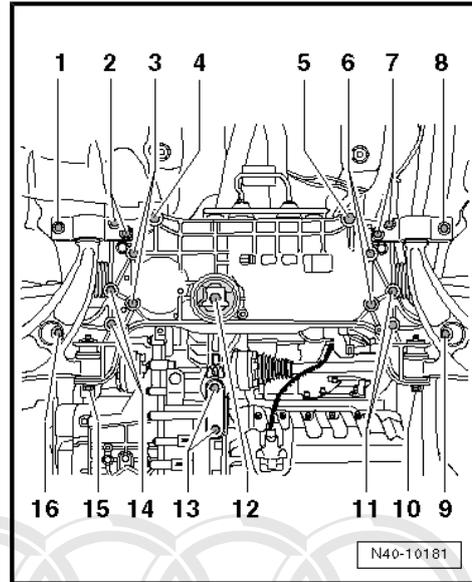
- Remove steering gear bolts -3- and -6-.



- Place -V.A.G 1383 A- with wood blocks -1- under subframe and apply slight counterpressure.



- Remove bolts -4- and -5-.
- Lower subframe with attachments approximately 30 mm and pry steering gear threaded sleeves out of holes in subframe.
- Secure steering gear on body.



- Remove cable guide from subframe -arrow-.
- Lower subframe with attachments.

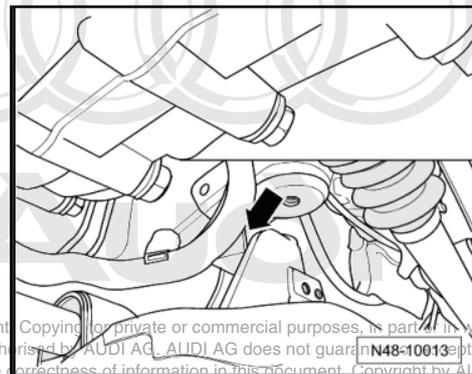
Installing

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

Tightening specifications, refer to ⇒ ["2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview", page 14](#) .

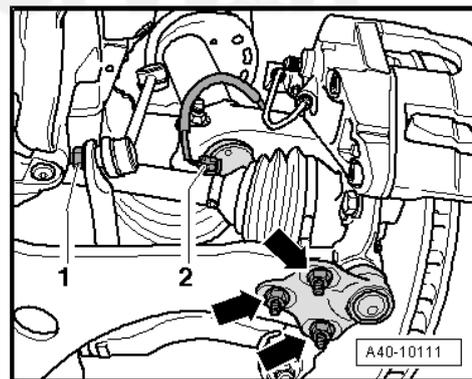
Tightening specifications, refer to ⇒ ["2.4 Steering Gear Assembly Overview", page 254](#) .

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The steering gear threaded sleeves must be seated in the subframe holes.

- Replace locking element after each removal.
- Align nuts -arrows- according to markings made earlier and tighten.
- Install noise insulation frame. Refer to ⇒ Body Exterior; Rep. Gr. 50 ; Removal and Installation .
- Install noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position using the -VAS 5051B-
- On vehicles with automatic headlamp range control, perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Description and Operation .
- Vehicle alignment required, see table. Refer to ⇒ ["1.5 Wheel Alignment", page 230](#) .



5.2 Subframe Bonded Rubber Bushing

Special tools and workshop equipment required

- ◆ Installation device -3372-
- ◆ Thrust plate -VW 401-
- ◆ Punch -VW 407-

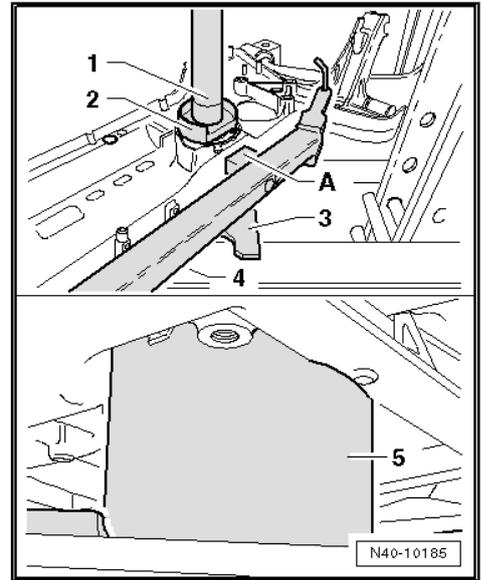
- ◆ Thrust piece -VW 432-
- ◆ Assembly tool -T10214-
- ◆ Assembly tool -T10267-
- ◆ Tube from assembly tool -T10244/3-
- Remove subframe. Refer to ⇒ ["5.1 Subframe", page 31](#) .
- Remove pendulum support from subframe.

Pressing Out the Bonded Rubber Mount

- Install -T10267- -4- on subframe. Secure safety bolts using securing pins.
- 1 - -VW 407-
- 2 - Thrust piece -3372/1-
- 3 - -VW 401-
- 4 - -T10267-
- 5 - -T10244/3-
- Press out both bonded rubber bushings at the same time as depicted in the illustration.

Note

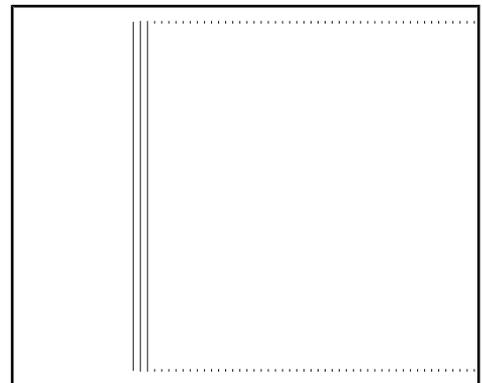
- ◆ Flat side of -3372/1- must face insert -A- on -T10267-, otherwise insert may be damaged.
- ◆ -T10244/3- has a larger and a smaller inner diameter. Subframe must contact larger inner diameter of -T10244/3- .



Pressing In the Bonded Rubber Mount

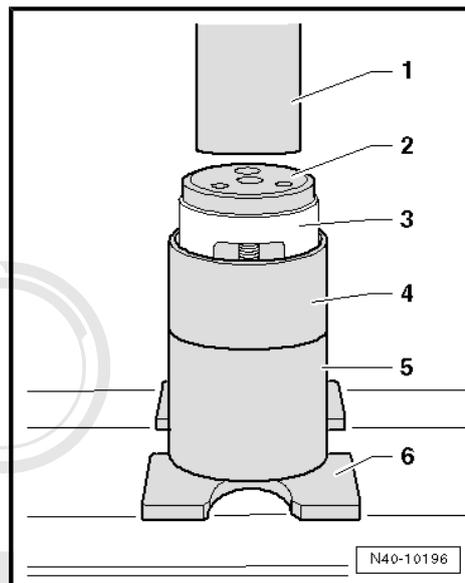
- Bolt both bonded rubber bushings with original bolt, cutouts -arrows- must align when doing this.

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- Insert bolted bonded rubber bushings, with bolt head downward, into large diameter of -T10214/2- .

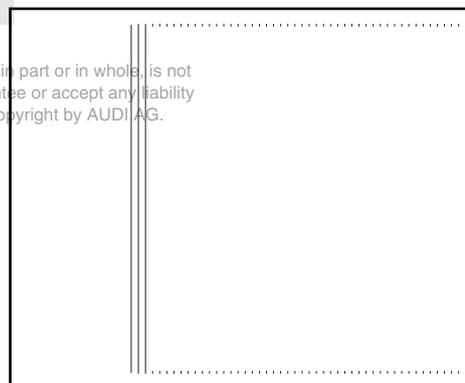
- 1 - -VW 432-
- 2 - Thrust piece -T10214/3- without bolts
- 3 - Bonded rubber mount
- 4 - Tube -T10214/2-
- 5 - Tube -T10214/1-
- 6 - -VW 401-



- Press bonded rubber bushing -1- in until dimension -a- has been obtained.

Dimension -a- = 2 - 3 mm.

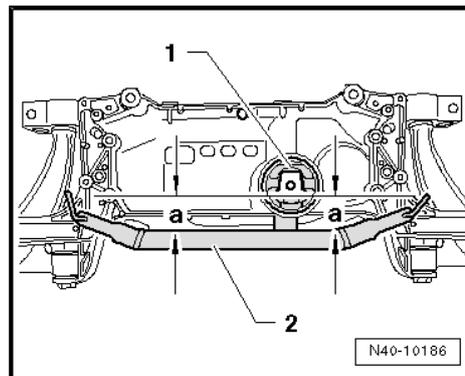
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- Align -T10214/2- on subframe with pressed in bonded rubber bushings. Edges of bonded rubber bushing inner core -1- must run on imaginary line parallel to edge of -T10267- -2-.

Distance -a- must be identical at left and right to guarantee parallelism.

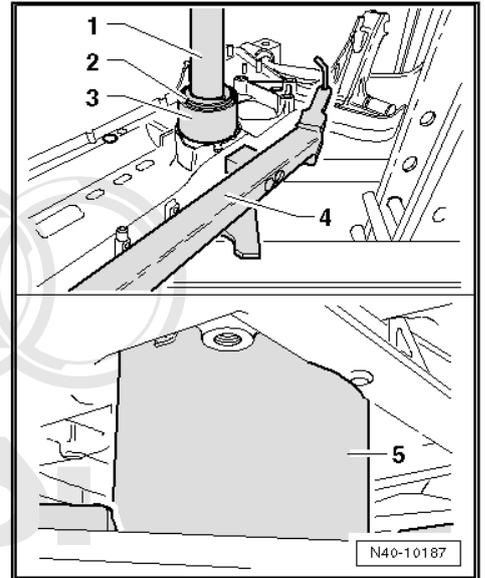
- Subframe makes contact on smaller inner diameter of -T10244/3- .



– Press in bearing on stop and until a pressing force of 20 kN has been obtained.

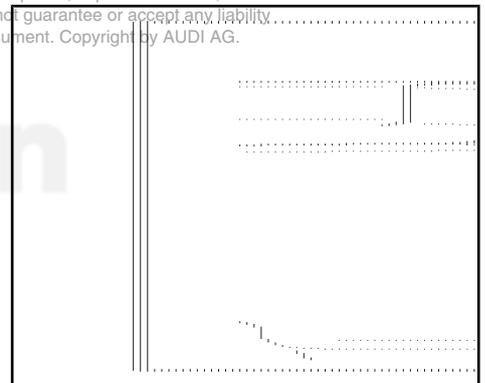
- 1 - -VW 407-
- 2 - -T10214/3-
- 3 - -T10214/2-
- 4 - -T10267-
- 5 - Tube -T10244/3-

– Remove -T10267- from subframe and check seating of the pressed in bonded rubber bushing.



- The outer diameter -1- of both bonded rubber bushings must project up to 2 mm beyond edge in area of opening for pendulum support.
 - Cutouts of bonded rubber bushings must lie at center in opening of subframe.
 - Gap -arrow- between bonded rubber bushings is permissible.
- Install subframe. Refer to ⇒ [“5.1 Subframe”, page 31](#) .

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5.3 Stabilizer Bar

Special tools and workshop equipment required

- ◆ Locating pins -T10096-
- ◆ Engine/transmission jack -V.A.G 1383 A-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-

Removing

- Remove subframe. Refer to ⇒ ["5.1 Subframe", page 31](#) .
- Remove stabilizer bar from subframe -11 and 14-.
- Remove the stabilizer bar.

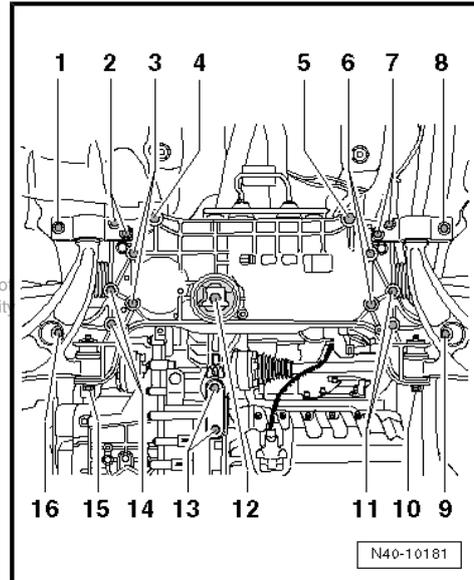
Installing

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

Tightening specifications, refer to ⇒ ["2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview", page 14](#) .

Tightening specifications, refer to ⇒ ["2.4 Steering Gear Assembly Overview", page 254](#) .

- Install subframe, refer to ⇒ ["5.1 Subframe", page 31](#) .
- Replace locking element after each removal.



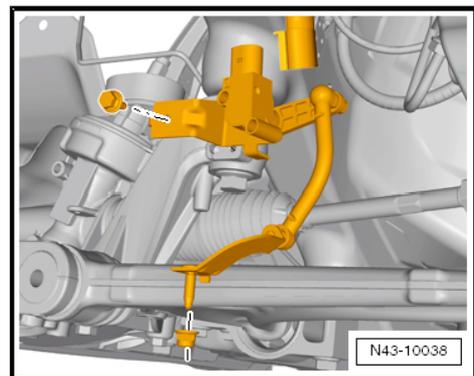
5.4 Transverse Link with Mounting Bracket

Special tools and workshop equipment required

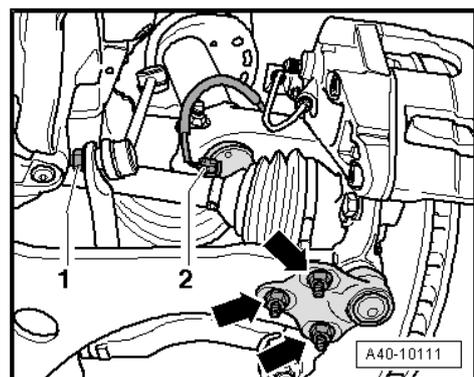
- ◆ Locating pins -T10096-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Vehicle Diagnostic, Testing and Information System -VAS 5051B-

Removing

- Remove the wheel.
- Lower noise insulation, removing, refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- On vehicles with a level control system sensor, remove the nut from the linkage on the transverse link.



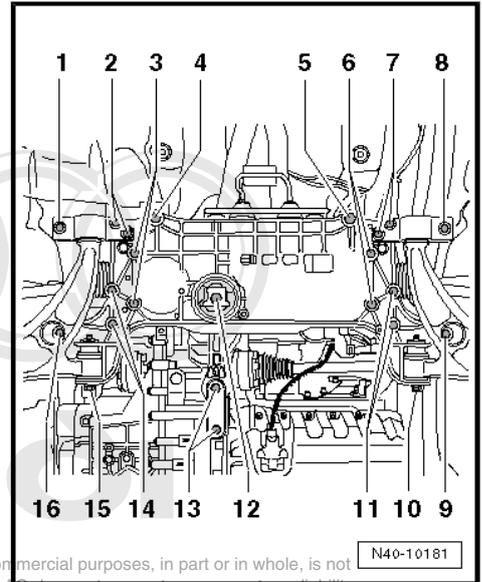
- Mark location of nuts -arrows- with felt-tip pen.
- Remove the nuts -arrows-.
- Pull wheel bearing housing with ball joint out of transverse link.



- Replace bolt -1- for left side, -8- for right side using -T10096- and tighten locating pins to 20 Nm.

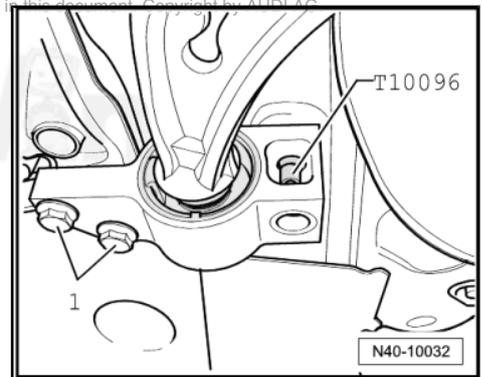
Caution

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



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- Remove bolts -1-.

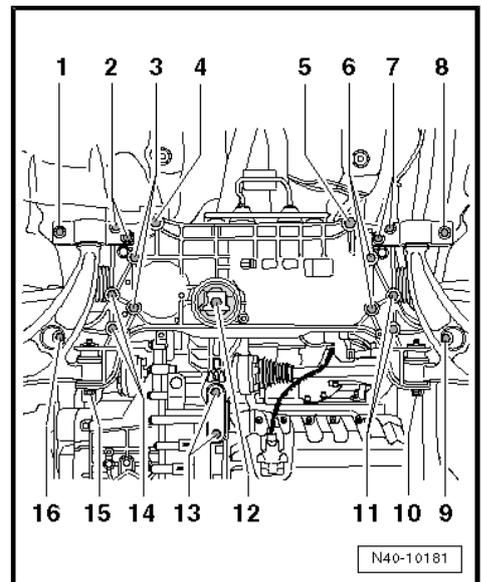


- Remove left side bolt -15- or right side bolt -10-.

Note

On vehicles where bolt -15- or -10- is not to be removed, subframe must be removed. Refer to => "5.1 Subframe", page 31.

- Remove transverse link.





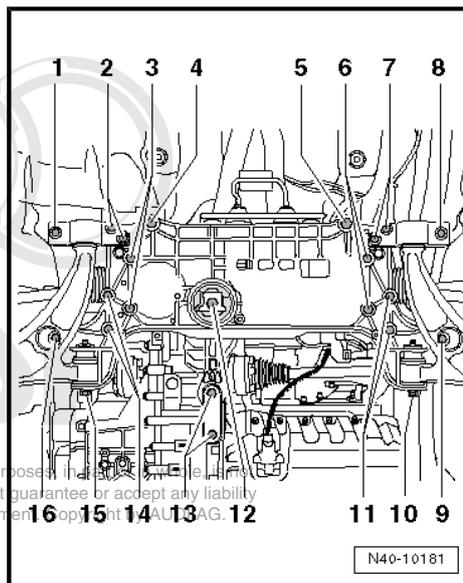
Installing

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

Tightening specifications, refer to ⇒ ["2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview"](#), page 14 .

- Install left side bolt -15- or right side bolt -10- and tighten by hand.
- Replace locking element after each removal.

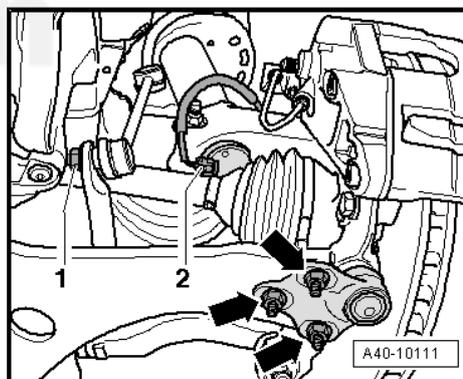
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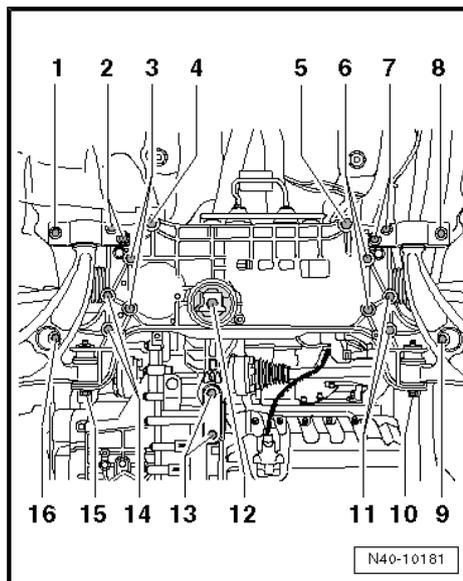
- Align nuts -arrows- according to markings made earlier and tighten.

Note

- ◆ *Bonded rubber bushings can only be turned to a limited extent. Only tighten suspension screws when vehicle is in curb weight or control position.*
- ◆ *Wheel bearing, lifting to curb weight position on vehicles with coil springs, refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 11 .*



- Tighten left side bolt -15- or right side bolt -10- in curb weight position. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 11 .
- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position using the -VAS 5051B- .
- On vehicles with automatic headlamp range control, perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .
- Vehicle alignment required, see table. Refer to ⇒ ["1.5 Wheel Alignment"](#), page 230 .



5.5 Transverse Link Bonded Rubber Bushing

Special tools and workshop equipment required

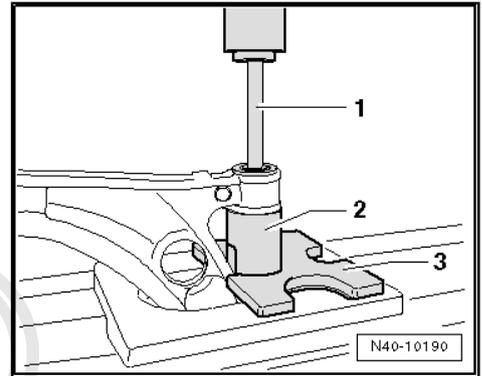
- ◆ Assembly tool -T10219-
- ◆ Thrust plate -VW 402-

◆ Punch -VW 411-

Pressing Out

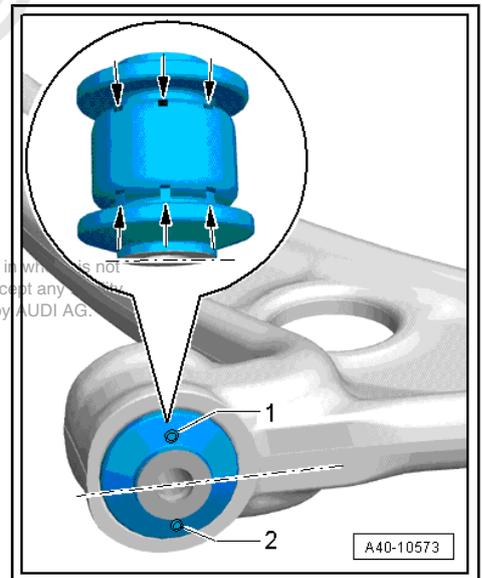
– Press out bonded rubber bushings as depicted in the illustration.

- 1 - -VW 411-
- 2 - Tube -T10219/1-
- 3 - -VW 402-



Pressing In

Bonded rubber bushing installed position: the notches -arrows- are symmetrical to the transverse link axle.

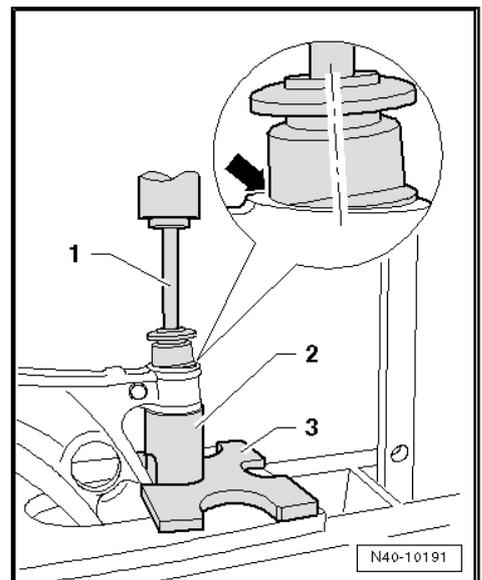


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The “knobs” -1 and 2- face forward as illustrated.

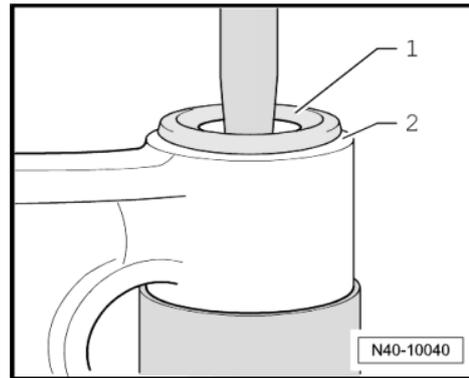
- Bonded rubber bushing must be installed at an angle to prevent damaging it when pressing in. The bonded rubber bushing will straighten itself out while it is being installed.
- Coat the outside of the bonded rubber bushing with installation lubricant (thinned with water in ration 1:20). Allocation, refer to the Electronic Parts Catalog (ETKA).
- Place bonded rubber bushing on at an angle (in direction of transverse link), when doing this the lip -arrow- must slip into hole as shown in the illustration.

- 1 - -T10219/2-
- 2 - -T10219/1-
- 3 - -VW 402-





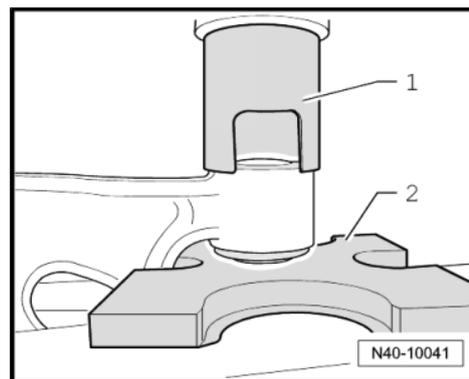
- Press in bonded rubber bushings as far until core -1- and transverse link hole -2- are at the same height.



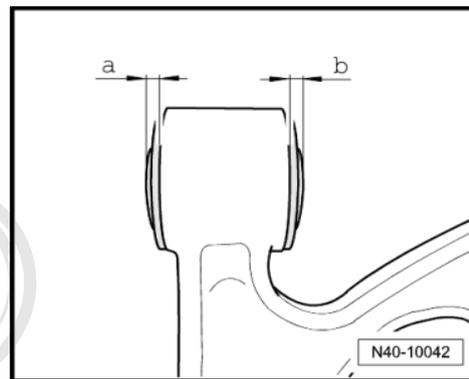
- Press bearing in transverse link back slightly.

1 - -T10219/1-

2 - -VW 402-



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



5.6 Transverse Link Mounting Bracket

Special tools and workshop equipment required

◆ Punch -VW 411-

◆ Thrust plate -VW 401-

◆ Thrust plate -VW 402-

◆ Sleeve -VW 426-

◆ Punch -VW 412-

◆ Assembly tool -T10219-

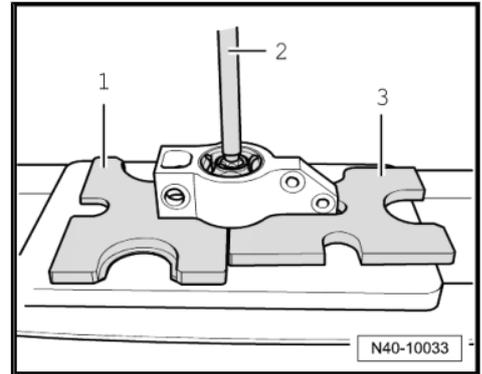
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Mounting Bracket, Pressing Off Transverse Link

i Note

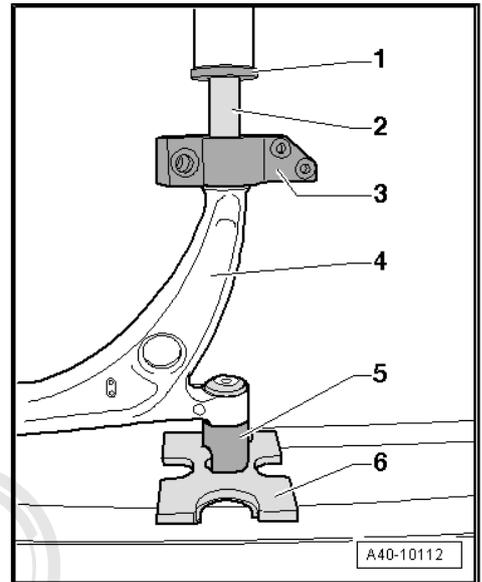
Hold transverse link firmly while pressing off.

- 1 - -VW 401-
- 2 - -VW 411-
- 3 - -VW 402-
- Press mounting bracket with bonded rubber bushing off transverse link.



Mounting Bracket, Pressing onto Transverse Link

- Coat the hex on the transverse link with installation lubricant . Allocation, refer to the Electronic Parts Catalog (ETKA) (thinned down with water to a ratio of 1:20).
- Carefully press bearing onto transverse link as far as stop.
- 1 - -VW 412-
- 2 - -VW 426-
- 3 - Mounting bracket with bonded rubber bushing
- 4 - Transverse Link
- 5 - Tube -T10219/1- from -T10219-
- 6 - -VW 401-



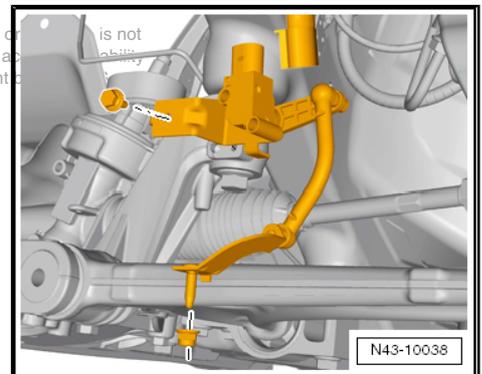
5.7 Ball Joint

Special tools and workshop equipment required

- ◆ Ball joint puller -3287 A-
- ◆ Angle wrench -V.A.G 1756-
- ◆ Ring Spanner Insert -V.A.G 1332/10-

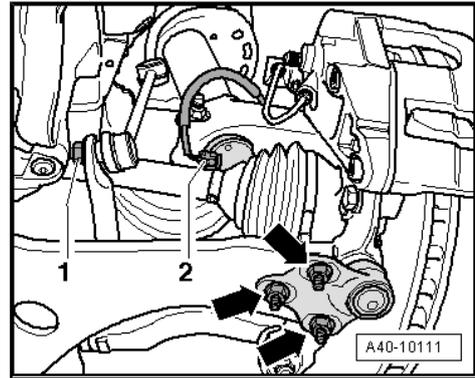
Removing

- Remove the wheel.
- On vehicles with a level control system sensor, remove the nut from the linkage on the transverse link.



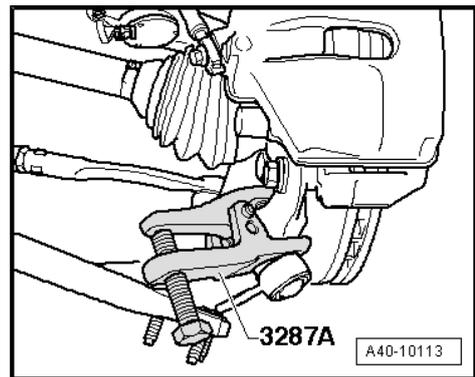


- Mark location of nuts -arrows- with felt-tip pen.
- Remove the nuts -arrows-.
- Disengage the transverse link from the ball joint.



- Position -3287 A- on ball joint as shown in the illustration.
- Press ball joint out of wheel bearing housing.

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

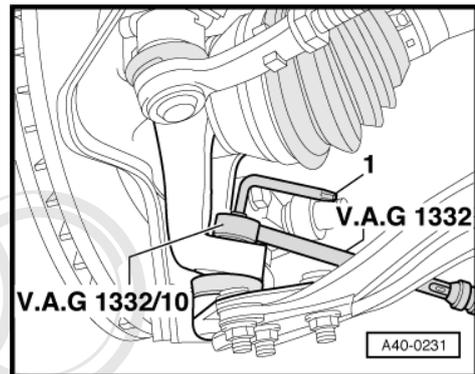


Installing

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

Tightening specifications, refer to [⇒ "2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview", page 14](#) .

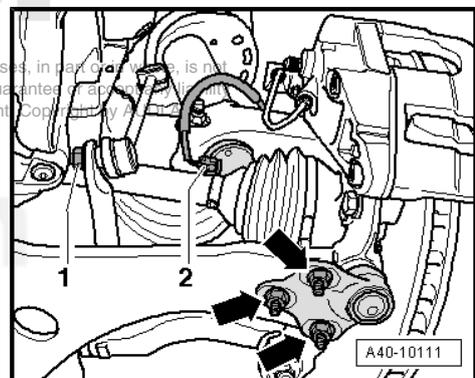
- Install new self-locking nut, and counter-hold using Internal Torx Bit -T40- .



i Note

Standard ring spanner inserts (AF 18 mm) can also be used instead of the -V.A.G 1332/10- .

- Replace locking element after each removal.
- Align nuts -arrows- according to markings made earlier and tighten.
- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position using the -VAS 5051B- .
- On vehicles with automatic headlamp range control, perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .
- Vehicle alignment required, see table. Refer to [⇒ "1.5 Wheel Alignment", page 230](#)



5.8 Level Control System Sensor

General Information

Vehicles with electronically-controlled damping (Audi magnetic ride) and/or gas discharge lamps have an automatic headlamp range control system as standard equipment. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; General Information .

In order to function, the electronically-controlled damping (Audi magnetic ride) and automatic headlamp range control require information about the compression or rebound travel at the front and rear axles.

For this, the position of the left/right track transverse link in relation to the body is transferred via a coupling rod to Left Front Level Control System Sensor -G78- and Right Front Level Control System Sensor -G289- . These transmit electrical signals to the Electronic Damping Control Module -J250- and/or Left/Right High-intensity Gas Discharge Lamp Control Module -J343/344- .

Left/right high-intensity gas discharge lamp control module, servicing, refer to the ⇒ Electrical Equipment; Rep. Gr. 94 ; Removal and Installation .

At the rear axle, these signals are transmitted from the Left Rear Level Control System Sensor -G76- and Right Rear Level Control System Sensor -G77- to the electronic damping control module and/or the left/right high-intensity gas discharge lamp control module.

These signals are required for determining vehicle level.

The automatic headlamp range control reacts independently to changes in vehicle level.

The vehicle level can change in the following situations:

- ◆ Trailer Mode.
- ◆ Different load conditions; vehicle empty, vehicle partially or fully loaded.

Vehicle level sensor is available as replacement part only complete with coupling rod and upper and lower retaining plates.



Note

Program the control position on vehicles with electronically-controlled damping (Audi magnetic ride) and check the headlamp adjustment if:

- ◆ Assembly work was performed on level control system sensor.
- ◆ The transverse link was removed and installed.
- ◆ The threaded connections -2- or -5- were loosened.

Removing

- Disconnect the connector.
- Remove nut -5-.
- Remove bolt -2-.
- Remove level control system sensor -3-.

Installing

Install in reverse order of removal. Observe the following when doing so:

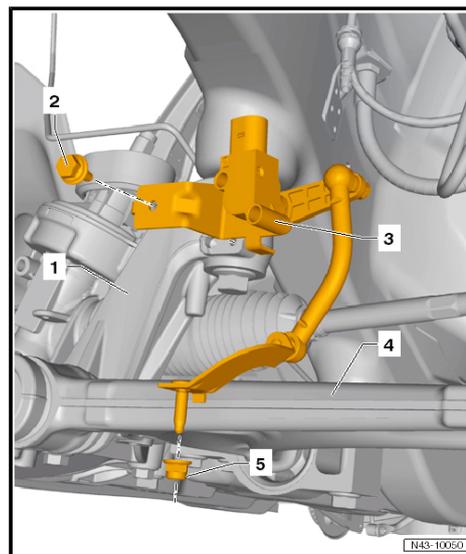
The hooks on the coupling rod must be guided onto the transverse link.

Sensor lever must point outward.

Tightening specifications, refer to

⇒ ["2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview", page 14](#) .

- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position using the Vehicle Diagnostic, Testing and Information System -VAS 5051B- .
- Perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .



5.9 Wheel Bearing Housing

Special tools and workshop equipment required

- ◆ Ball joint puller -3287A-
- ◆ Torque wrench -V.A.G 1332- Copyright © 2011 Audi AG. All rights reserved. Use or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability for errors or omissions. Copyright by AUDI AG.
- ◆ Engine/transmission jack -V.A.G 1383 A-
- ◆ Angle wrench -V.A.G 1756-
- ◆ Spreader -3424-
- ◆ Vehicle Diagnostic, Testing and Information System -VAS 5051B-

Removing

- Loosen the drive axle threaded connection on the wheel side.

Refer to

⇒ ["2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .

Refer to

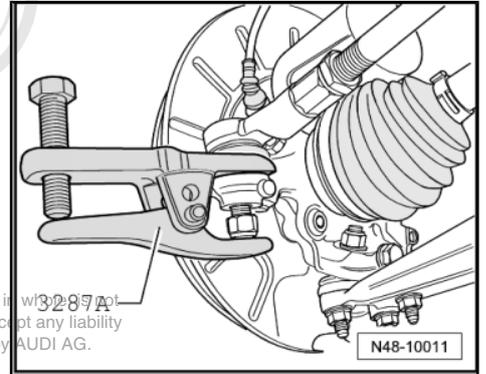
⇒ ["2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .

Refer to

⇒ ["2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 23](#) .

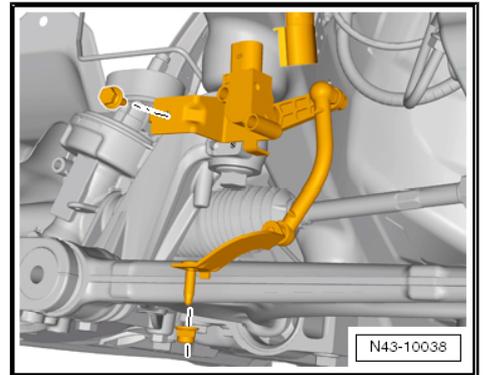
- Remove the wheel.
- Remove the brake caliper and secure it to the body using wire. Refer to ⇒ Brake System; Rep. Gr. 46 ; Removal and Installation .

- Remove brake line and electrical line bracket from wheel bearing housing.
- Remove the ABS speed sensor. Refer to ⇒ Brake System; Rep. Gr. 45 ; Removal and Installation .
- Remove disc brake.
- Remove cover plate from wheel bearing housing.
- Loosen tie rod end nut, but do not remove yet.
- Press off track rod ball joint from wheel bearing housing using -3287A- and now unscrew nut.



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- On vehicles with a level control system sensor, remove the nut from the linkage on the transverse link.

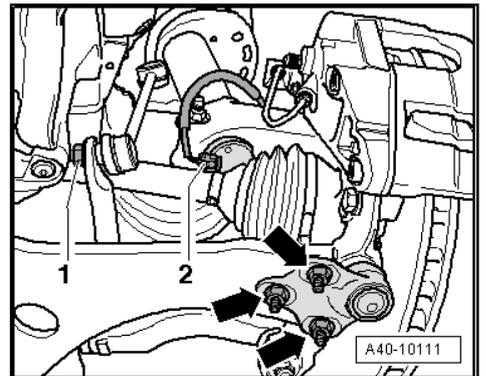


- On vehicles with electronically-controlled damping (Audi magnetic ride), disconnect connector -2-.

 **Note**

Remove the connector -2- with both hands. Use one hand to open the retainer and use the other hand to press it off. Do not use tools.

- Mark location of nuts -arrows- with felt-tip pen.
- Remove the nuts -arrows-.
- Guide transverse link out of wheel bearing housing with ball joint.
- Remove wheel bearing housing from drive axle splines.

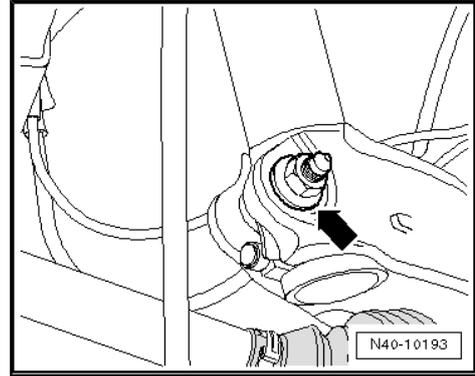


 **Note**

- ◆ *The drive axle must not hang down, otherwise the inner joint will be damaged by overflexing.*
- ◆ *Secure drive axle to body using wire.*



- Separate wheel bearing housing/suspension strut threaded connection -arrow-



- Insert -3424- into slot of wheel bearing housing.
- Using a ratchet and the -3424-, open the wheel bearing housing slot.
- Pull wheel bearing housing with ball joint down from shock absorber tube and remove.

Installing

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

Tightening specifications, refer to
⇒ ["2.5 Wheel Bearing Housing and Wheel Bearing Unit Assembly Overview", page 18](#) .

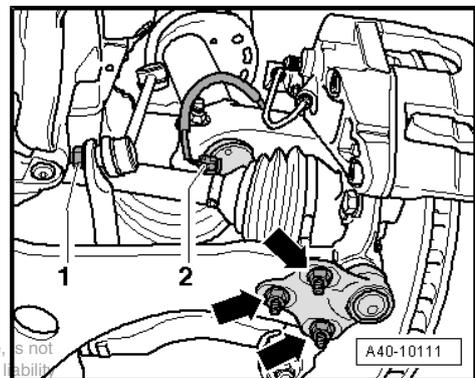
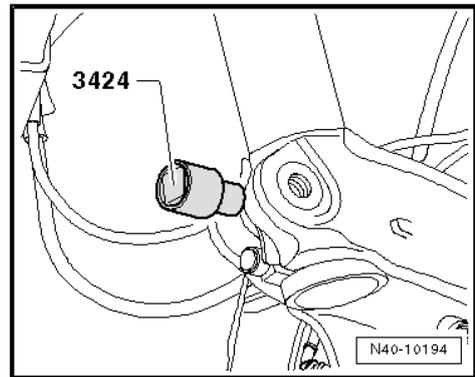
Tightening specifications, refer to
⇒ ["2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview", page 14](#) .

- Replace locking element after each removal.
- Align nuts -arrows- according to markings made earlier and tighten.
- Tighten drive axle to wheel hub threaded connection.

Refer to
⇒ ["2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .

Refer to
⇒ ["2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .

Refer to
⇒ ["2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 23](#) .



- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position using the -VAS 5051B-
- On vehicles with automatic headlamp range control, perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .
- Vehicle alignment required, see table. Refer to ⇒ ["1.5 Wheel Alignment", page 230](#)

5.10 Wheel Bearing Unit

Special tools and workshop equipment required

- ◆ Angle wrench -V.A.G 1756-
- ◆ Torque wrench -V.A.G 1332-

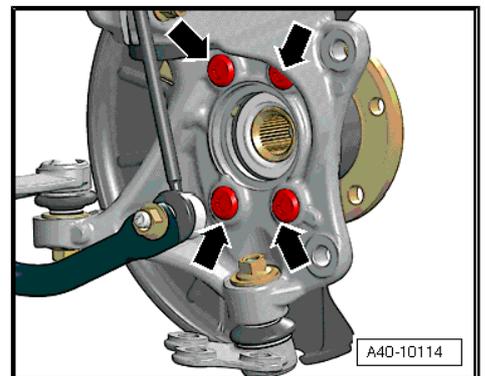
Removing

- Remove drive axle. Refer to
 ⇒ ["5.13 Drive Axle with Bolted Inner Joint", page 53](#) ,
 ⇒ ["5.14 Drive Axle with CV Joint, Inserted Inner Joint", page 55](#) ,
 ⇒ ["5.15 Drive Axle with Triple Roller Joint AAR 3300i, Mounted on Transmission Stub Shaft", page 60](#) or
 ⇒ ["5.16 Drive Axle with Triple Roller Joint AAR 3300i, Installed in Transmission", page 64](#) .
- Remove the brake caliper and secure it to the body using wire. Refer to ⇒ Brake System; Rep. Gr. 46 ; Removal and Installation .
- Remove the ABS speed sensor. Refer to ⇒ Brake System; Rep. Gr. 45 ; Removal and Installation .
- Remove disc brake.
- Remove the bolts -arrows-.
- Remove wheel bearing unit from wheel bearing housing.



Caution

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



The wheel bearing -1- must always face up.

- Always set the wheel bearing unit down on the wheel hub -2-.

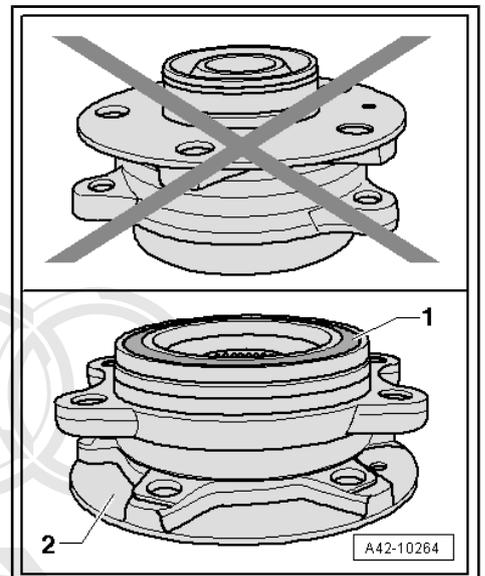
Installing

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

Tightening specifications, refer to
 ⇒ ["2.5 Wheel Bearing Housing and Wheel Bearing Unit Assembly Overview", page 18](#) .

Tightening specifications, refer to
 ⇒ ["2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview", page 14](#) .

- Replace locking element after each removal.



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- Align nuts -arrows- according to markings made earlier and tighten.
- Tighten drive axle to wheel hub threaded connection.

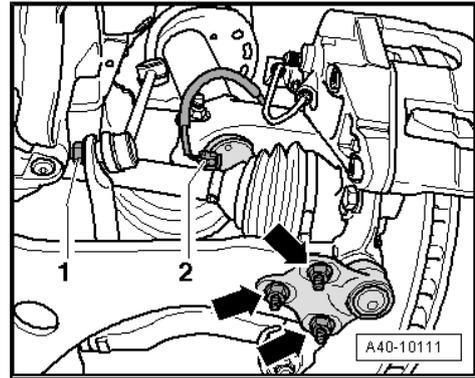
Refer to

⇒ ["2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .

Refer to

⇒ ["2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .

- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position using the -VAS 5051B-
- On vehicles with automatic headlamp range control, perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .
- Vehicle alignment required, see table. Refer to ⇒ ["1.5 Wheel Alignment", page 230](#) .



5.11 Electronic Damping Control Module

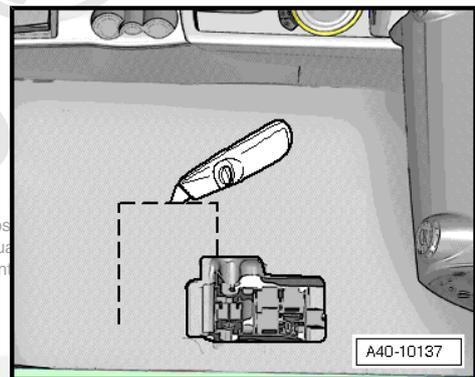
Removing



Note

The electronic damping control module -J250- is installed under the right front seat.

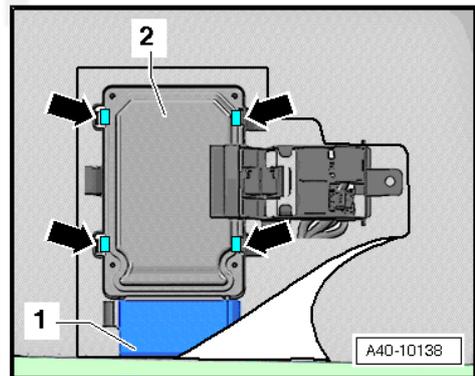
- Remove the right front seat. Refer to ⇒ [Body Interior; Rep. Gr. 72 ; Removal and Installation](#) .
- Cut carpet at markings as shown using a standard carpet knife.
- Fold carpet up and unclip control module -2- -arrows-.
- Disconnect electrical connector -1- and remove control module -2-.



Installing

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

- If the Electronic Damping Control Module -J250- is replaced, the control position must be reprogrammed.
- Insert control module access carpet frame. Refer to ⇒ [Body Interior; Rep. Gr. 70 ; Removal and Installation](#) .
- Reprogram control position using the Vehicle Diagnostic, Testing and Information System -VAS 5051B- .



5.12 Suspension Strut

Special tools and workshop equipment required

- ◆ Angle wrench -V.A.G 1756-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Ball joint puller -3287 A-
- ◆ Spreader -3424-
- ◆ Vehicle Diagnostic, Testing and Information System -VAS 5051B-

Removing

- Loosen the drive axle threaded connection on the wheel side.

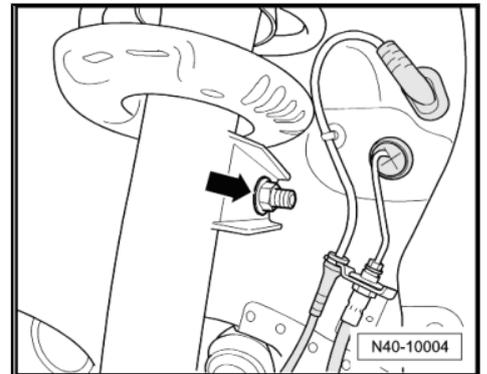
Refer to

⇒ [“2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening”, page 22](#) .

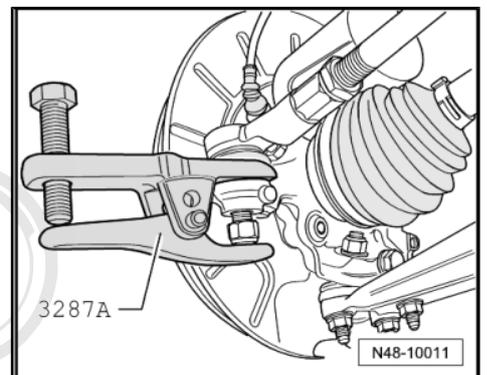
Refer to

⇒ [“2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening”, page 22](#) .

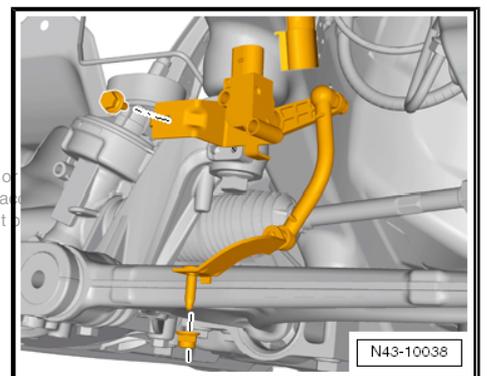
- Remove the wheel.
- Remove the brake caliper and secure it to the body using wire. Refer to ⇒ Brake System; Rep. Gr. 46 ; Removal and Installation .
- Remove brake line and electrical line bracket from wheel bearing housing.
- Remove the ABS speed sensor. Refer to ⇒ Brake System; Rep. Gr. 45 ; Removal and Installation .
- Remove coupling rod upper hex nut -arrow- from suspension strut.



- Loosen nut of track rod ball joint, but do not unscrew yet.
- Press off track rod ball joint from wheel bearing housing using -3287A- and now unscrew nut.



- On vehicles with a level control system sensor, remove the nut from the linkage on the transverse link.



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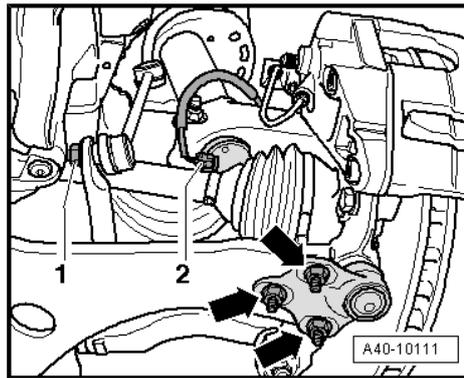
- On vehicles with electronically-controlled damping (Audi magnetic ride), disconnect connector -2-.



Note

Remove the connector -2- with both hands. Use one hand to open the retainer and use the other hand to press it off. Do not use tools.

- Mark location of nuts -arrows- with felt-tip pen.
- Remove the nuts -arrows-.
- Guide transverse link out of ball joint and remove wheel bearing housing from drive axle splines.

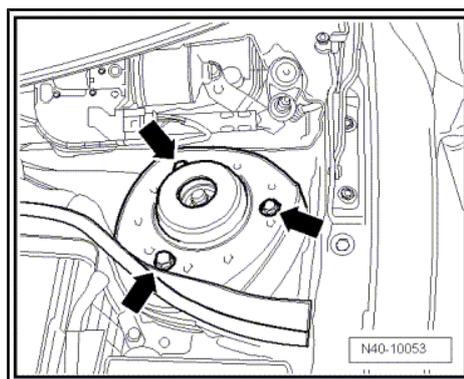


Note

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

◆ Secure drive axle to body using wire.

- Remove the plenum chamber cover. Refer to => Body Exterior; Rep. Gr. 50 ; Removal and Installation .
- Remove upper shock absorber mount hex bolts -arrows-.
- Remove suspension strut.
- Disconnect suspension strut to wheel bearing housing connection.



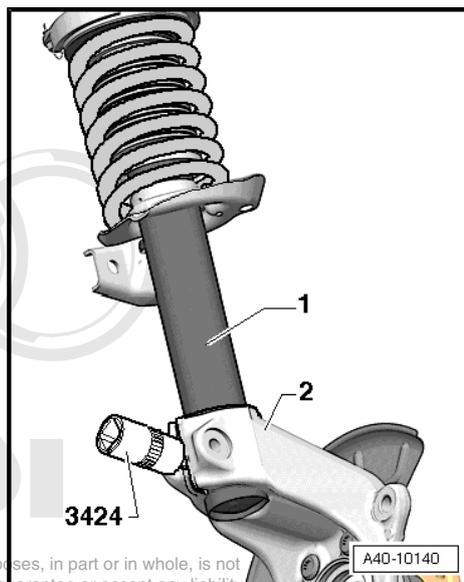
- Insert -3424- into slot of wheel bearing housing.
- Using a ratchet and the -3424- , open the wheel bearing housing slot.
- Remove suspension strut -1- from wheel bearing housing -2-.

Installing

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

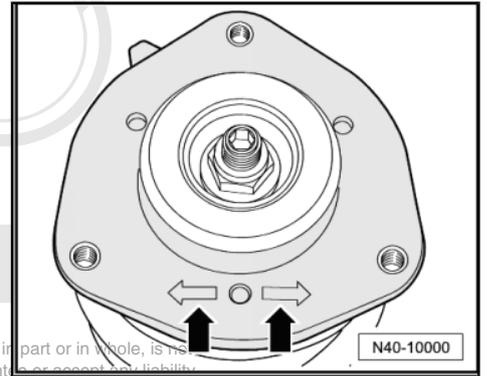
Tightening specifications, refer to => ["2.5 Wheel Bearing Housing and Wheel Bearing Unit Assembly Overview", page 18](#) .

Tightening specifications, refer to => ["2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview", page 14](#) .



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- Insert suspension strut, one of the two markings -arrows- must point in direction of travel when doing this.
- Replace locking element after each removal.



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- Align nuts -arrows- according to markings made earlier and tighten.
- Tighten drive axle to wheel hub threaded connection.

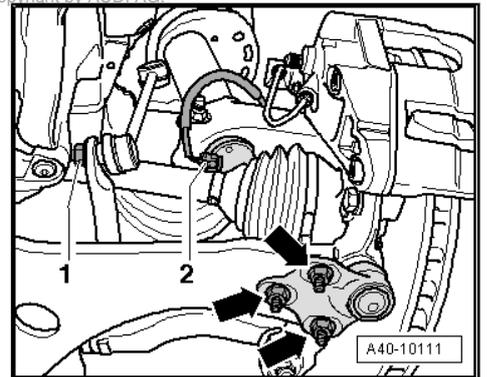
Refer to

⇒ [“2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening”, page 22](#) .

Refer to

⇒ [“2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening”, page 22](#) .

- Install plenum chamber cover. Refer to ⇒ Body Exterior; Rep. Gr. 50 ; Removal and Installation .
- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram the control position using the -VAS 5051B- .
- On vehicles with automatic headlamp range control system, perform a basic setting on the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .
- Vehicle alignment is required, see the table. Refer to ⇒ [“1.5 Wheel Alignment”, page 230](#) .



5.13 Drive Axle with Bolted Inner Joint

Removing

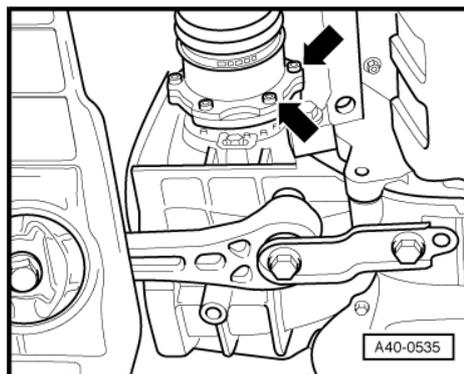
- Remove noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- Loosen wheel side drive shaft threaded connection.

Loosening the connection between the drive axle and wheel hub:

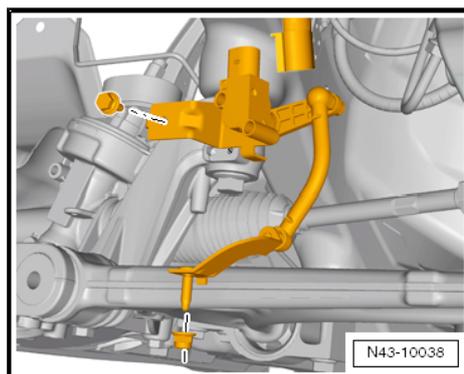
- ◆ Refer to ⇒ [“2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening”, page 22](#) .
- ◆ Refer to ⇒ [“2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening”, page 22](#) .
- ◆ Refer to ⇒ [“2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening”, page 23](#) .
- Remove the wheel.



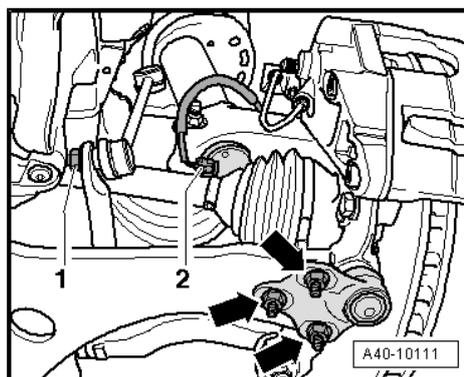
- Remove drive axle from transmission flange, see -arrows-.



- On vehicles with a level control system sensor, remove the nut from the linkage on the transverse link.



- Mark location of nuts -arrows- with felt-tip pen.
- Remove the nuts -arrows-.
- Guide transverse link out of wheel bearing housing with ball joint.
- Tip suspension strut outward while pressing drive shaft out of wheel bearing unit with a brass drive (possibly tapping lightly)
- Remove drive axle.



Installing

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

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

Tightening specifications, refer to [⇒ "2.5 Wheel Bearing Housing and Wheel Bearing Unit Assembly Overview", page 18](#) .

Tightening specifications, refer to [⇒ "2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview", page 14](#) .

Tightening specifications, refer to [⇒ "6.2 Drive Axle with 100 mm Inner CV Joint", page 69](#) .

Tightening specifications, refer to [⇒ "6.3 Drive Axle with 108 mm Inner CV Joint", page 76](#) .

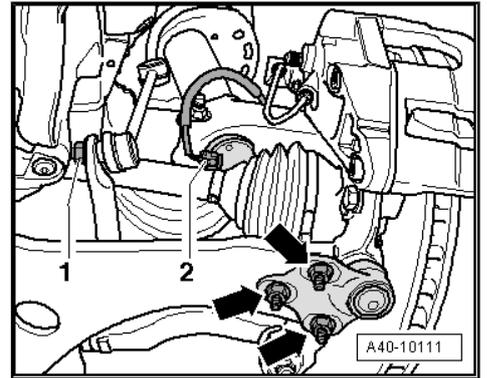
- Replace locking element after each removal.

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- Align nuts -arrows- according to markings made earlier and tighten.
- Tighten drive axle to wheel hub threaded connection.

Tightening the connection between the drive axle and wheel hub:

- ◆ Refer to
 ⇒ ["2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- ◆ Refer to
 ⇒ ["2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- ◆ Refer to
 ⇒ ["2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 23](#) .
- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram the control position using the Vehicle Diagnostic, Testing and Information System -VAS 5051B- .
- On vehicles with automatic headlamp range control system, perform a basic setting on the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .
- Vehicle alignment is required, see the table. Refer to ⇒ ["1.5 Wheel Alignment", page 230](#) .



5.14 Drive Axle with CV Joint, Inserted Inner Joint

Special tools and workshop equipment required

- ◆ Slide hammer - complete set -VW 771-
- ◆ Tensioning strap -T10038-
- ◆ Puller -T10382-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Angle wrench -V.A.G 1756-
- ◆ Vehicle Diagnostic, Testing and Information System -VAS 5051B-

Removing

- Loosen wheel side drive shaft threaded connection.

Loosening the connection between the drive axle and wheel hub:

- ◆ Refer to
 ⇒ ["2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- ◆ Refer to
 ⇒ ["2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- ◆ Refer to
 ⇒ ["2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 23](#) .
- Remove the wheel.
- Remove noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- Remove the wheel housing liner lower section when removing the drive axle. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .

- Remove the level control system sensor, if applicable. Refer to ⇒ ["5.8 Level Control System Sensor"](#), page 45 .
- Mark location of nuts -arrows- with felt-tip pen.
- Remove the nuts -arrows-.
- Guide transverse link out of wheel bearing housing with ball joint.
- Remove the coupling rod from the stabilizer bar on both sides.
- Slide outer joint out of wheel hub by hand.
- Secure the drive axle to keep it from falling down.

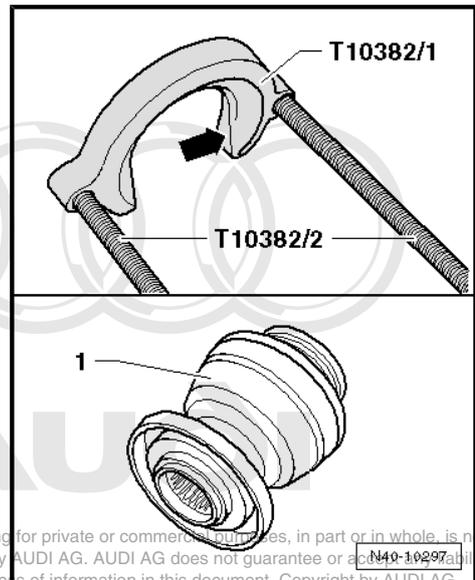
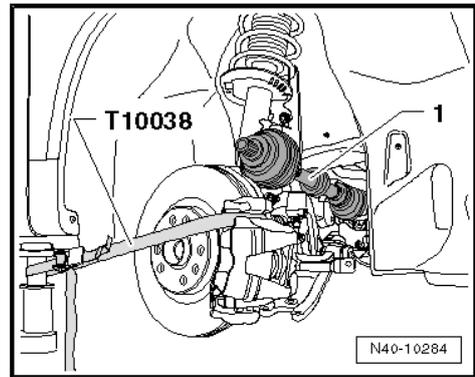
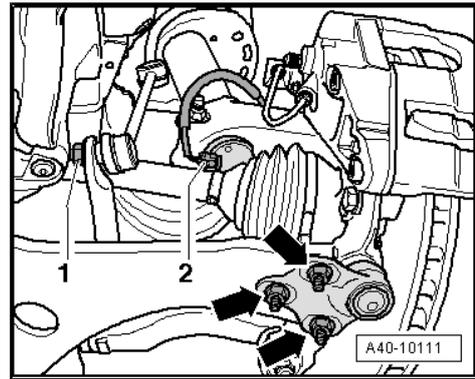
**Note**

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

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

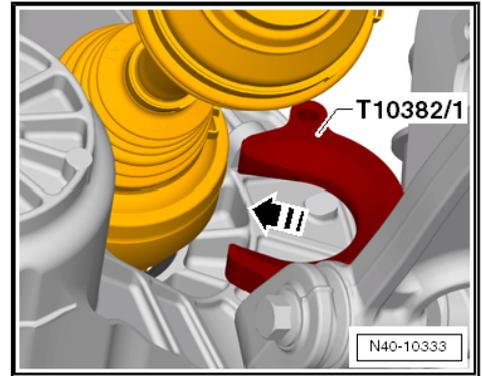
Install the -T10382- .

For the CV joint -1-, the opening -arrow- in the removing plate -T10382/1- must face the spindles -T10382/2- .

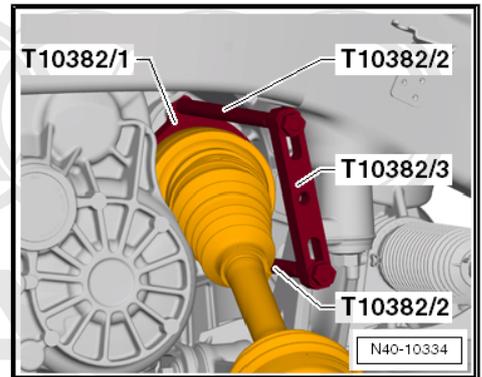


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- Place the -T10382/1- behind the CV joint -1-.
- The opening -arrow- in the -T10382/1- must face the CV joint-1-.



- Attach the -T10382/2- and the traverse -T10382/3- to the -T10382/1- .
- Attach the -VW 771- to the -T10382/3- .



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- Remove the drive axle with a few hits on the -VW 771- .



Note

Make sure there is enough clearance to the heat shield when removing the right drive axle. Adjust the position of the -T10382- if necessary.

- Remove the drive axle from the vehicle.

Installing

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

Tightening specifications, refer to

⇒ ["2.5 Wheel Bearing Housing and Wheel Bearing Unit Assembly Overview", page 18](#) .

Tightening specifications, refer to

⇒ ["2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview", page 14](#) .

All Wheel Drive

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



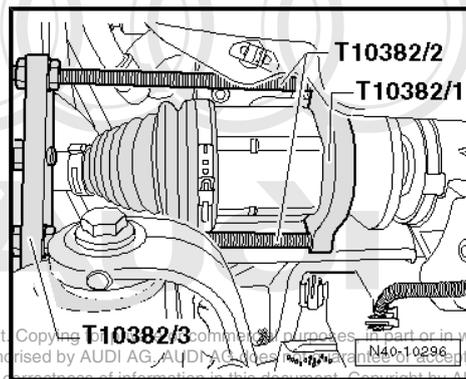
Caution

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

Applies to All

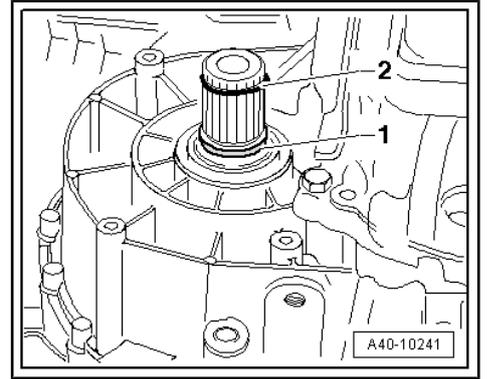
- Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub. Allocation, refer to the Electronic Parts Catalog (ETKA).

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



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- Install a new seal -1- and locking ring -2- into the groove on the stub shaft on the transmission.
- Apply approximately 2 g of grease around the splines on the transmission. Allocation, refer to the Electronic Parts Catalog (ETKA).
- Bring outer and inner splines of the transmission and CV joint into engagement.
- Grab drive axle by hand and push it into the CV joint up to the stop.
- Now push the CV joint with one »jerk« onto the transmission stub shaft.



 **Note**

- ◆ *If it is difficult to install the drive axle even though the splines are positioned correctly, then slide it in the slip joint.*
- ◆ *Do not use a hammer or a knocking tool under any circumstances!*
- Make sure the CV joint is securely fitted by pulling the CV joint against the circlip resistance.



Caution

For this check, do not pull on the drive axle, but rather only on the CV joint.

- Remove the -T10038- .
- Install the outer joint as far as possible into the wheel hub splines.
- Replace locking element after each removal.



- Align nuts -arrows- according to markings made earlier and tighten.

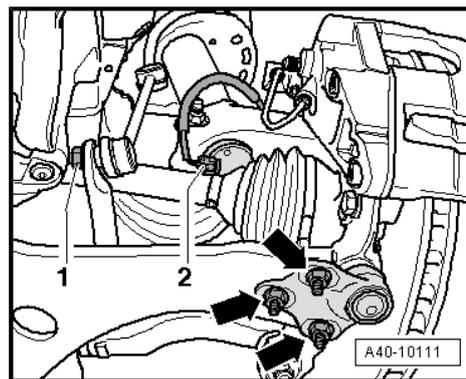
**Note**

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

- Install the lower noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- Install the wheel housing liner lower section when installing the drive axle. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- Install the level control system sensor, if applicable. Refer to ⇒ ["5.8 Level Control System Sensor", page 45](#) .
- Tighten drive axle to wheel hub threaded connection.

Tightening the connection between the drive axle and wheel hub:

- ◆ Refer to ⇒ ["2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- ◆ Refer to ⇒ ["2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- ◆ Refer to ⇒ ["2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 23](#) .
- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram the control position using the VAS 5051B.
- On vehicles with automatic headlamp range control, perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .
- Axle alignment is required, see Table. Refer to ⇒ ["1.5 Wheel Alignment", page 230](#) .



5.15 Drive Axle with Triple Roller Joint AAR 3300i, Mounted on Transmission Stub Shaft

Special tools and workshop equipment required

- ◆ Slide hammer - complete set -VW 771-
- ◆ Tensioning strap -T10038-
- ◆ Puller -T10382-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Angle wrench -V.A.G 1756-
- ◆ Vehicle Diagnostic, Testing and Information System -VAS 5051B-

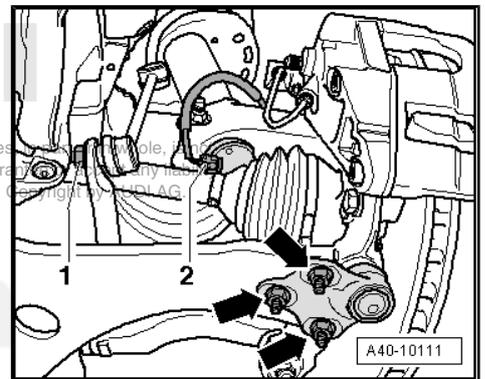
Removing

- Loosen wheel side drive axle threaded connection.

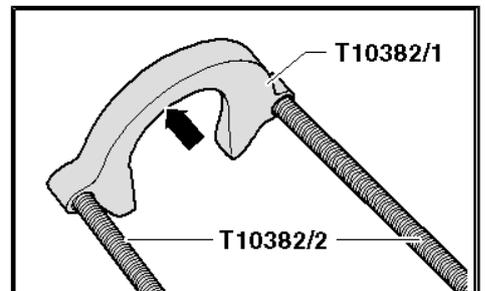
Loosening the connection between the drive axle and wheel hub:

- ◆ Refer to ⇒ ["2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .

- ◆ Refer to
 ⇒ [“2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening”, page 22](#) .
- ◆ Refer to
 ⇒ [“2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening”, page 23](#) .
- Remove the wheel.
- Remove the lower noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 50 ; Removal and Installation .
- Remove the wheel housing liner lower section when removing the drive axle. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- Remove the level control system sensor, if applicable. Refer to ⇒ [“5.8 Level Control System Sensor”, page 45](#) .
- Mark location of nuts -arrows- with felt-tip pen.
- Mark location of nuts -arrows- with felt-tip pen.
- Remove the nuts -arrows-.
- Guide transverse link out of wheel bearing housing with ball joint.
- Remove the coupling rod from the stabilizer bar on both sides.
- Slide outer joint out of wheel hub by hand.
- Secure the drive axle to keep it from falling down.

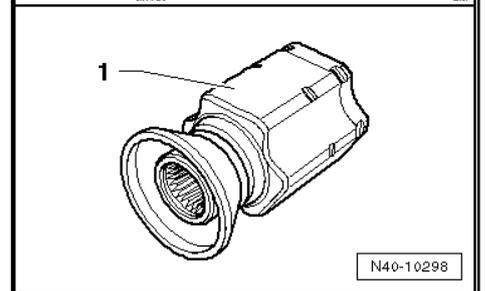


- Install the -T10382- .
- For the CV joint -1-, the surface -arrow- in the removing plate - T10382/1- must face the spindles -T10382/2- .
- Attach the -T10382- to the -VW 771- .

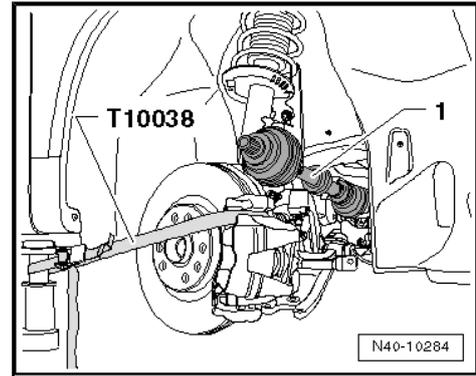


i Note

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



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



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

**Note**

Make sure there is enough clearance to the heat shield when removing the right drive axle. Adjust the position of the -T10382- if necessary.

- Remove the drive axle from the vehicle.

Installing

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

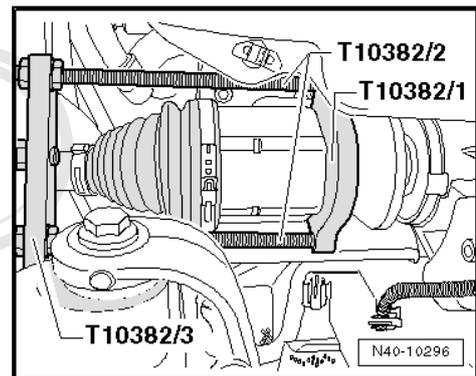
Tightening specifications, refer to

⇒ ["2.5 Wheel Bearing Housing and Wheel Bearing Unit Assembly Overview", page 18](#) . with respect to the correctness of information in this document. Copyright by AUDI AG.

Tightening specifications, refer to

⇒ ["2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview", page 14](#) .

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

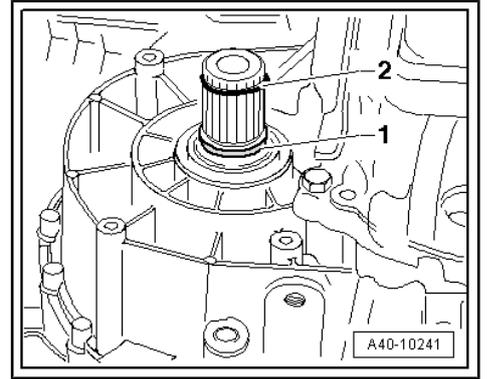
**Caution**

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

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

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

- Install a new seal -1- and locking ring -2- into the groove on the stub shaft on the transmission.
- Apply approximately 2 g of grease around the splines on the transmission. Allocation, refer to the Electronic Parts Catalog (ETKA).
- Bring outer and inner splines of the transmission and CV joint into engagement.
- Grab drive axle by hand and push it into the CV joint up to the stop.
- Now push the CV joint with one »jerk« onto the transmission stub shaft. Slide path in joint piece can be used for this »tug«. When doing this, do not pull the drive axle too far out of the joint.



 **Note**

Do not use a hammer or a knocking tool under any circumstances!

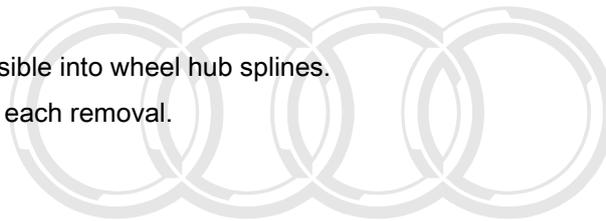
- Make sure the ball joint is securely fitted by pulling the ball joint against the circlip resistance.



Caution

For this check, do not pull on the drive axle, but rather only on the joint.

- Remove the -T10038-
- Insert outer joint as far as possible into wheel hub splines.
- Replace locking element after each removal.



Audi

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- Align nuts -arrows- according to markings made earlier and tighten.

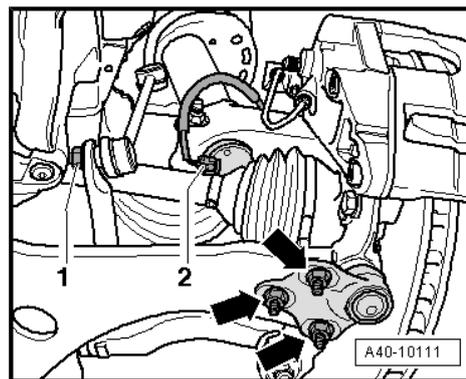
**Note**

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

- Install the lower noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- Install the wheel housing liner lower section when installing the drive axle. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- Install the level control system sensor, if applicable. Refer to ⇒ ["5.8 Level Control System Sensor", page 45](#) .
- Tighten drive axle to wheel hub threaded connection.

Tightening the connection between the drive axle and wheel hub:

- ◆ Refer to ⇒ ["2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- ◆ Refer to ⇒ ["2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- ◆ Refer to ⇒ ["2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 23](#) .
- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram the control position using the -VAS 5051B- .
- On vehicles with automatic headlamp range control, perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .
- Axle alignment is required, see Table. Refer to ⇒ ["1.5 Wheel Alignment", page 230](#) .



5.16 Drive Axle with Triple Roller Joint AAR 3300i, Installed in Transmission

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-
- ◆ Wedge -T10161-
- ◆ Tensioning strap -T10038-
- ◆ Vehicle Diagnostic, Testing and Information System -VAS 5051B-
- ◆ Puller -T10382-

Removing

- Loosen wheel side drive shaft threaded connection.

Loosening the connection between the drive axle and wheel hub:

- ◆ Refer to ⇒ ["2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .

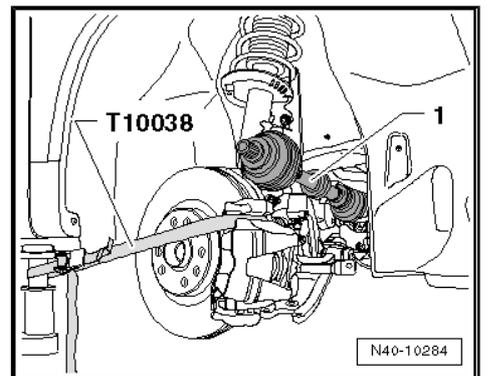
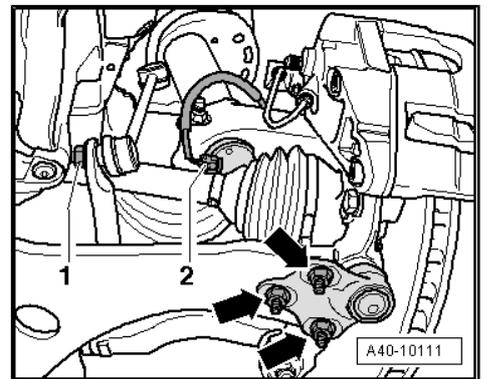
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- ◆ Refer to
 ⇒ [“2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening”, page 22](#) .
- ◆ Refer to
 ⇒ [“2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening”, page 23](#) .
- Remove the wheel.
- Remove noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- Remove the wheel housing liner lower section when removing the drive axle. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- Remove the level control system sensor, if applicable. Refer to ⇒ [“5.8 Level Control System Sensor”, page 45](#) .
- Mark location of nuts -arrows- with felt-tip pen.
- Remove the nuts -arrows-.
- Guide transverse link out of wheel bearing housing with ball joint.
- Remove the coupling rod from the stabilizer bar on both sides.
- **Slide outer joint out of wheel hub by hand.**
- **Secure the drive axle to keep it from falling down.**

 **Note**

In order to remove the drive axle from the transmission using the -T1038-, the suspension strut and all its components must be pulled to the back. Be careful not to damage any parts, for example, brake hose, ABS line.

- Pull the suspension strut and its components using the -T10038- as far as possible to the back, for example on the workshop hoist arm, until the -T1038- can be installed parallel to the drive axle.

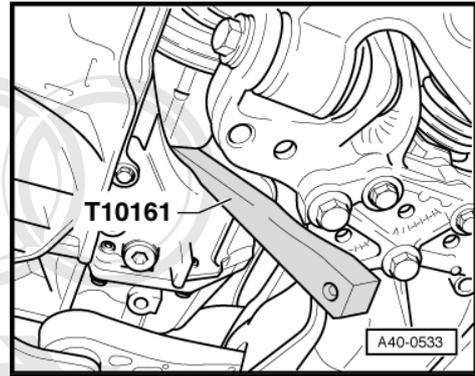


- Attach -T10161- between transmission housing and triple roller joint.
- Press inner joint out of transmission via a hammer blow on the -T10161- .
- Remove drive axle.

Installing

- Insert new securing ring into groove of joint piece pin.
- Bring outer and inner splines of joint piece and transmission into engagement.
- Grab drive axle by hand and push it into the joint up to the stop.
- Now slide joint piece into transmission with a »tug«.

Slide path in joint piece can be used for this »tug«. When doing this, do not pull the drive axle too far out of the joint.



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Note

Do not use a hammer or a knocking tool under any circumstances!

- Check drive axle for secure fitting in transmission by pulling joint piece against resistance of the securing ring.



Caution

For this check, do not pull on the drive axle, but rather only on the joint.

- Remove the -T10038- .
- Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub. Allocation, refer to the Electronic Parts Catalog (ETKA).

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

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

- Align nuts -arrows- according to markings made earlier and tighten.

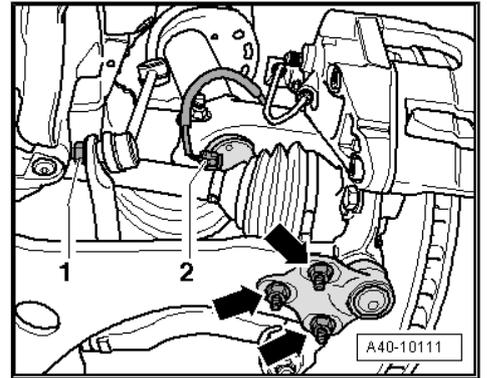
 **Note**

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

- Install the lower noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- Install the wheel housing liner lower section when installing the drive axle. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- Install the level control system sensor, if applicable. Refer to ⇒ ["5.8 Level Control System Sensor", page 45](#) .
- Tighten drive axle to wheel hub threaded connection.

Tightening the connection between the drive axle and wheel hub:

- ◆ Refer to ⇒ ["2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- ◆ Refer to ⇒ ["2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- ◆ Refer to ⇒ ["2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 23](#) .
- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram the control position using the -VAS 5051B- .
- On vehicles with automatic headlamp range control, perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .
- Axle alignment is required, see Table. Refer to ⇒ ["1.5 Wheel Alignment", page 230](#) .



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6 Disassembly and Assembly

⇒ [“6.1 Suspension Strut”, page 68](#)

⇒ [“6.2 Drive Axle with 100 mm Inner CV Joint”, page 69](#)

⇒ [“6.3 Drive Axle with 108 mm Inner CV Joint”, page 76](#)

⇒ [“6.4 Drive Axle with 100 mm Diameter Inner CV Joint”, page 82](#)

⇒ [“6.5 Drive Axle with Triple Roller Joint AAR 2600i”, page 87](#)

⇒ [“6.6 Drive Axle with Triple Roller Joint AAR 2600i, Disassembling and Assembling”, page 91](#)

⇒ [“6.7 Drive Axle with Triple Roller Joint AAR 3300i, Installed in Transmission”, page 95](#)

⇒ [“6.8 Drive Axle with Triple Roller Joint AAR 3300i, Mounted on Transmission Stub Shaft”, page 99](#)

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6.1 Suspension Strut

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-
- ◆ Spring compressor -V.A.G 1752/1-
- ◆ Spring holder -V.A.G 1752/4-
- ◆ Shock absorber set -T10001-
- ◆ Ratchet (commercially available)

Coil Spring, Removing

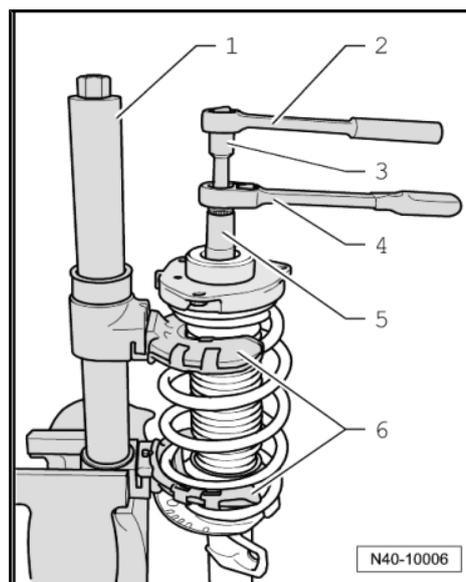
- Remove suspension strut but do not disconnect from wheel bearing housing. Refer to [“5.12 Suspension Strut”, page 50](#) .
- Pretension coil spring using -V.A.G 1752/1- until upper axial groove ball bearing is free.
- Remove hex nut from piston rod.
- Remove individual components of suspension strut and coil spring with -V.A.G 1752/1- .

- 1 - -V.A.G 1752/1-
- 2 - -V.A.G 1332-
- 3 - Ring spanner insert AF 21 -T10001/8-
- 4 - Ratchet -T10001/11-
- 5 - Ring spanner insert AF 21 -T10001/5-
- 6 - -V.A.G 1752/4-



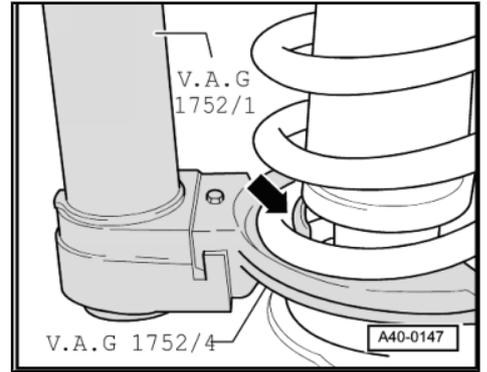
WARNING

First load spring far enough so that tension is relieved on upper spring retainer!



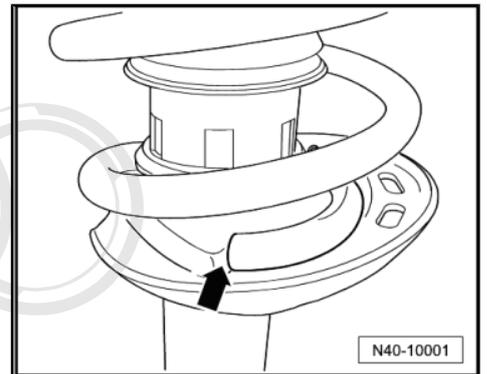
N40-10006

- Make sure the coil spring is properly seated in the -V.A.G 1752/4- see -arrow-.



Coil Spring, Installing

- Place coil spring with -V.A.G 1752/1- on lower spring plate. End of spring coil must rest against stop -arrow-.
- Tighten new hex nut on piston rod. Refer to [⇒ "2.7 Suspension Strut Assembly Overview", page 21](#) .
- Relieve the tension on the -V.A.G 1752/1- and remove from the coil spring.
- Install suspension strut. Refer to [⇒ "5.12 Suspension Strut", page 50](#) .



6.2 Drive Axle with 100 mm Inner CV Joint

Filling the Joints with Grease

Grease	Outer Joint Diameter	Inner Joint Diameter
	90 mm	100 mm
Total quantity	120 g	110 g
in joint	80 g	50 g
in protective joint boot	40 g	60 g

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Note

Grease joint again when replacing protective joint boot.

1 - Outer CV Joint

- Replace only as complete unit.
- Checking, refer to ⇒ ["4.3 Outer CV Joint, Checking", page 27](#) .
- Removing, refer to ⇒ [page 72](#) .
- Grease, refer to ⇒ [page 69](#) .
- Installing, refer to ⇒ [page 72](#) .
- When installing joint on axle shaft, splines on axle shaft must be lightly coated with grease used in joint.

2 - Bolt

- Hex bolt: 200 Nm + 180° turn. Refer to ⇒ ["2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- Twelve-point bolt with ribs: 70 Nm + 90° turn. Refer to ⇒ ["2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- Twelve-point bolt without ribs: 200 Nm + 180° turn. Refer to ⇒ ["2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 23](#) .

- Different versions. Allocation, refer to the Electronic Parts Catalog (ETKA).
- Always replace if removed.
- Before installing, clean the threads in the CV joint with a tap.

3 - Profile Shaft

4 - Clamp

- Replace.
- Tensioning, refer to ⇒ [page 75](#) or ⇒ [page 76](#) .

5 - CV Boot for Outer CV Joint

- Without ventilation bore.
- Check for tears and scuffing.

6 - Clamp

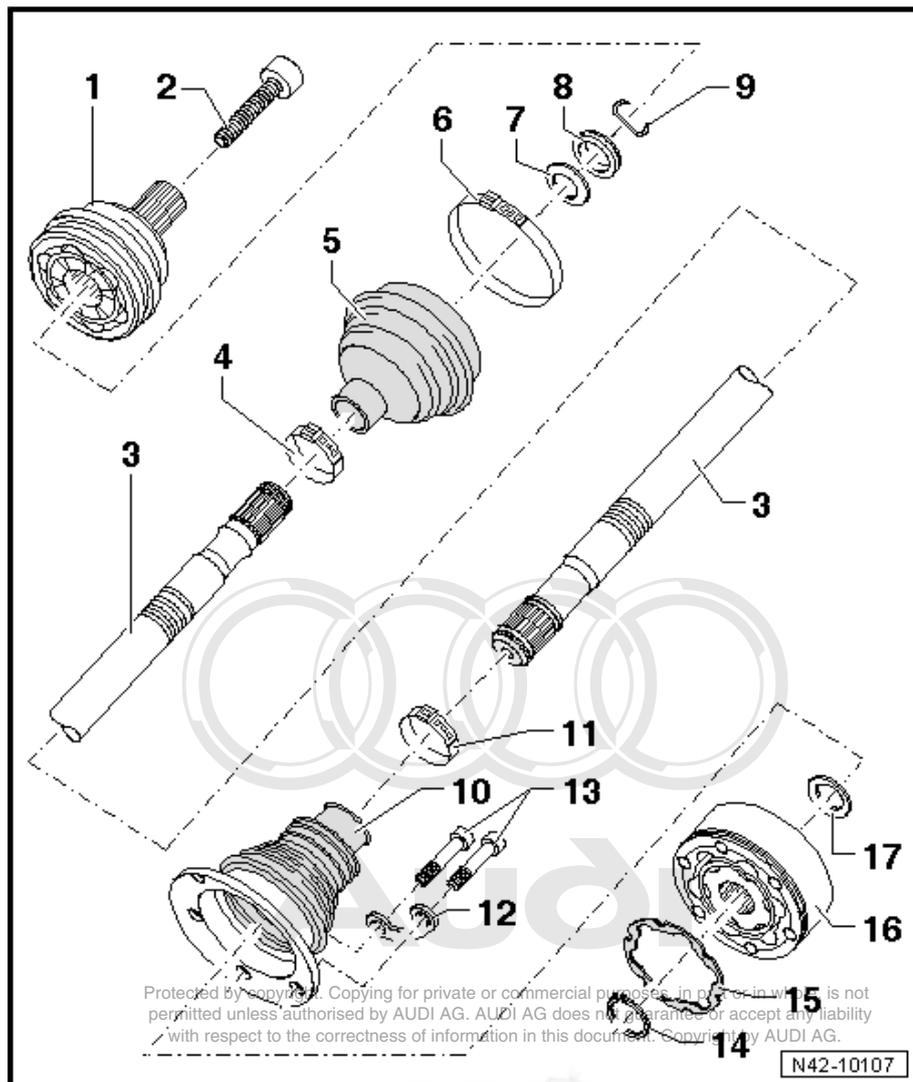
- Replace.
- Tensioning, refer to ⇒ [page 75](#) or ⇒ [page 76](#) .

7 - Dished Washer

- Installed position, refer to ⇒ [page 72](#) .

8 - Spacer Ring (Plastic)

- Installed position, refer to ⇒ [page 72](#) .



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N42-10107

9 - Securing Ring

- Replace.
- Insert in shaft groove.

10 - Protective Boot for Inner CV Joint

- Without ventilation bore.
- Check for tears and scuffing.
- Drive off CV joint using drift.
- Coat the sealing surface of the CV joint with sealant before installing. Allocation, refer to the Electronic Parts Catalog (ETKA).

11 - Clamp

- Replace.
- Tensioning, refer to ⇒ [page 75](#) or ⇒ [page 76](#) .

12 - Backing Plate

13 - Bolt

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

14 - Securing Ring

- Replace.
- Removing and installing using -VW 161 A- , refer to ⇒ [page 73](#) .

15 - Gasket

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

16 - Inner CV Joint

- Replace only as complete unit.
- Checking, refer to ⇒ ["4.4 Inner CV Joint, Checking, page 28"](#)
- Pressing off, refer to ⇒ [page 74](#) .
- Grease, refer to ⇒ [page 69](#) .
- Pressing on, refer to ⇒ [page 74](#) .
- When installing joint on axle shaft, splines on axle shaft must be lightly coated with grease used in joint.

17 - Dished Washer

- Installed position, refer to ⇒ [page 73](#) .

Disassembling and Assembling

Special tools and workshop equipment required

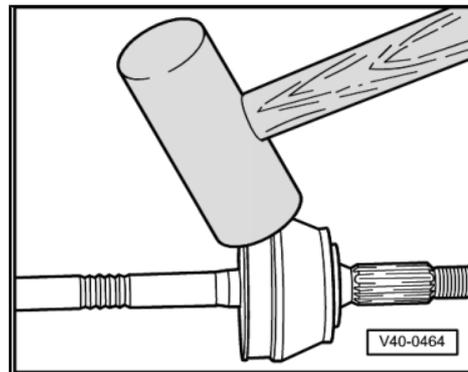
- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Punch -VW 408 A-
- ◆ Punch -VW 411-
- ◆ Sleeve -VW 416 B-
- ◆ Thrust pad -VW 447 H-
- ◆ Circlip pliers -VW 161 A-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ CV joint boot clamp tool -V.A.G 1682-



- ◆ Assembly tool -T10065-

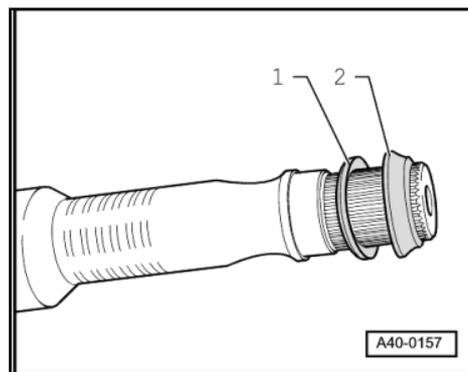
Disassembling Outer CV Joint

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



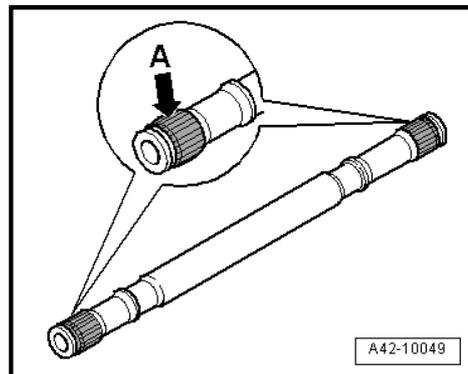
Installed Location of Spring Washer and Thrust Washer on Outer Joint

- 1 - Dished washer
- 2 - Thrust washer



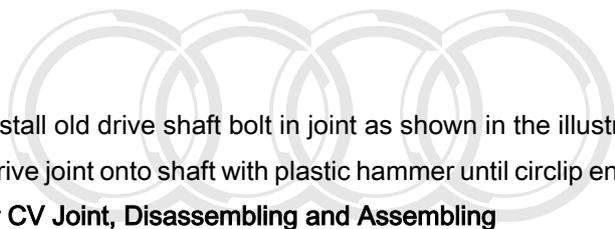
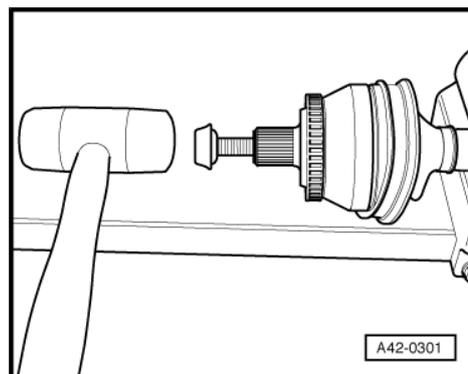
Outer CV Joint, Installing

- Before installing CV joint or triple roller star, splines -A- must be lightly coated with grease used in joint.



- Install old drive shaft bolt in joint as shown in the illustration.
- Drive joint onto shaft with plastic hammer until circlip engages.

Inner CV Joint, Disassembling and Assembling

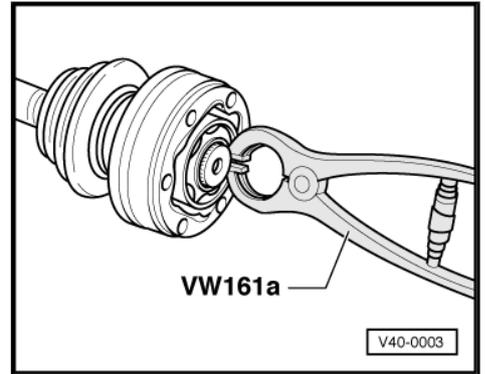


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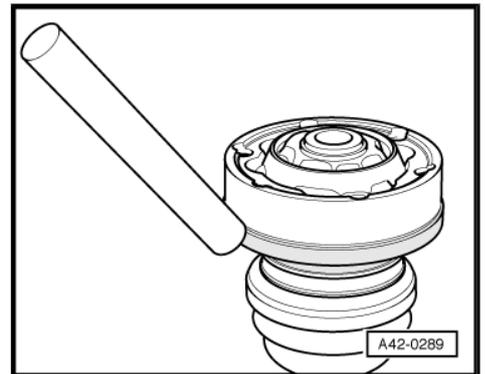
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Removing Securing Ring



Drive protective joint boot cap under with a brass or copper drift.



Removing the Inner CV Joint

Assembling the CV Joint

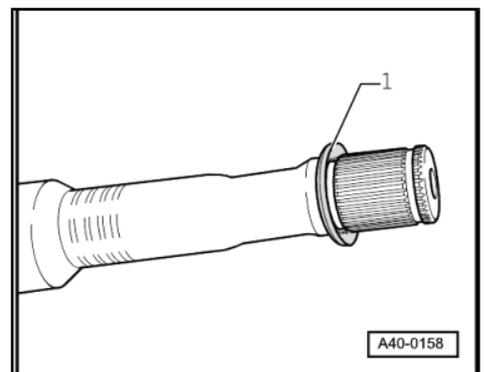
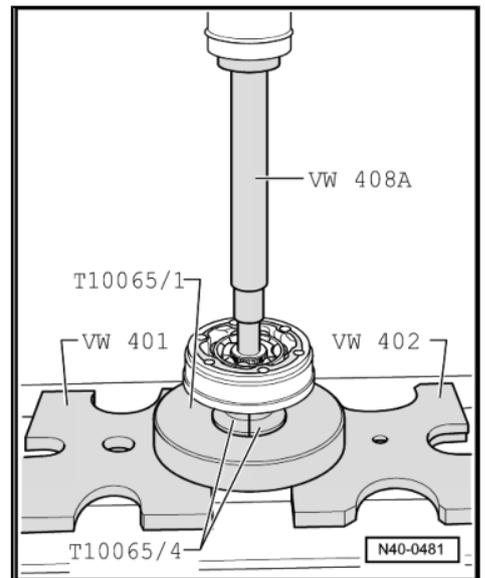


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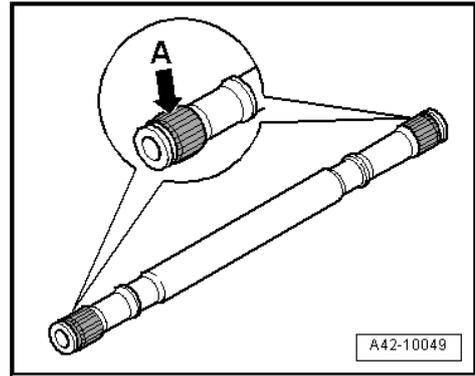
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Installed Location of Spring Washer on Inner Joint

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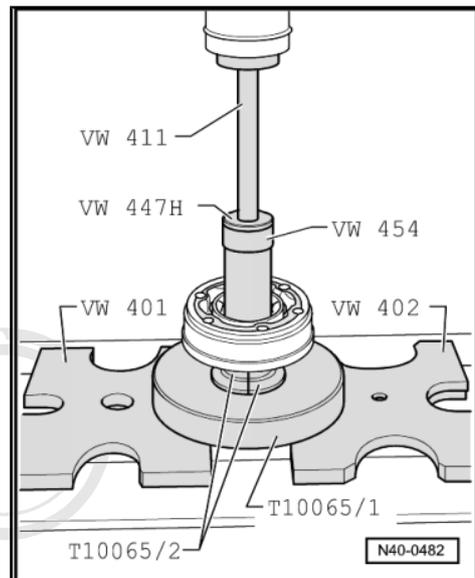
Pressing On Inner CV Joint



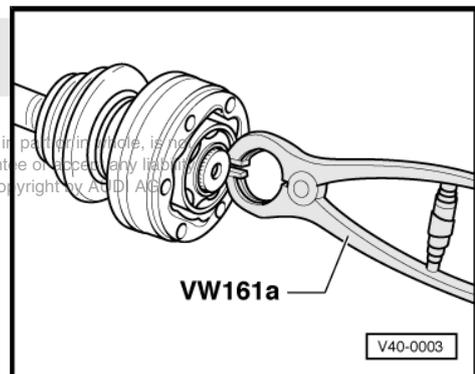
- Before installing CV joint or triple roller star, splines -A- must be lightly coated with grease used in joint.

 **Note**

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



- Install circlip



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- Apply sealant on the -hatched surface- on the clean surface on the inside of the cap. Allocation, refer to the Electronic Parts Catalog (ETKA). Sealant bead: unbroken, 2 to 3 mm diameter Skirt area around inner holes -arrow-.
- Use sealant . Allocation, refer to the Electronic Parts Catalog (ETKA).
- Slide joint protective boot onto drive axle.

 **Note**

- ◆ *Drive axle, protective joint boot and cap contact surfaces must be free of grease.*
- ◆ *Make sure you do not damage the sealant bead.*

- Using bolts -arrows-, align protective boot and cap with screw holes.

 **Note**

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

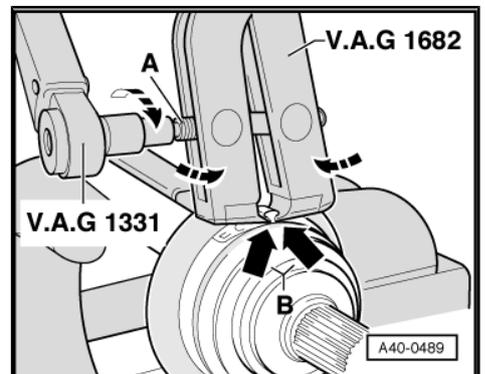
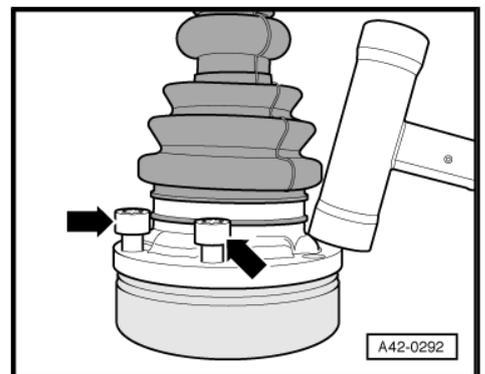
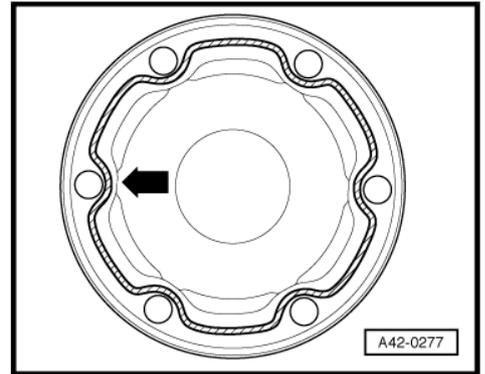
- Drive off protective boot with cap using plastic hammer.
- Clear away leaking sealing immediately.

Stainless Steel Clamps for Hytrex Protective Joint Boots, Tensioning

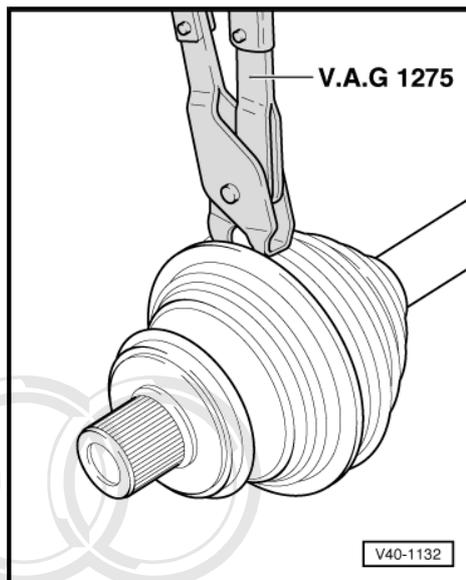
- Position -V A G 1682- as shown in illustration. Be sure that edges of clamping pliers are seated in corners -arrows B- of hose clamp.
- Tighten hose clamp by turning spindle -A- using a torque wrench (do not tilt clamping pliers).
- ◆ Tightening specifications: 20 Nm

 **Note**

- ◆ *Be sure thread of spindle in clamping pliers moves freely. Grease with MOS₂ grease, if necessary.*
- ◆ *If it does not move freely, e.g. due to dirt in thread, the required clamp tension will not be achieved at the specified torque.*



Clamps for Rubber Protective Joint boots, Tensioning



6.3 Drive Axle with 108 mm Inner CV Joint

Filling the Joints with Grease

Grease	Outer Joint Diameter	Inner Joint Diameter
	98 mm	108 mm
Total quantity	120 g	130 g
in joint	80 g	60 g
in protective joint boot	40 g	70 g

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 **Note**

Grease joint again when replacing protective joint boot.

1 - Bolt

- Always replace if removed
- Different versions. Allocation, refer to the Electronic Parts Catalog (ETKA).
- Hex bolt: 200 Nm + 180° turn. Refer to ⇒ ["2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- Twelve-point bolt with ribs: 70 Nm + 90° turn. Refer to ⇒ ["2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- Twelve-point bolt without ribs: 200 Nm + 180° turn. Refer to ⇒ ["2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 23](#) .
- Before installing, clean the threads in the CV joint with a tap.

2 - Outer CV Joint

- Replace only as complete unit.
- Checking, refer to ⇒ ["4.3 Outer CV Joint, Checking", page 27](#) .
- Removing, refer to ⇒ [page 78](#) .
- Grease, refer to ⇒ [page 76](#) .
- Installing, refer to ⇒ [page 79](#) .
- When installing joint on axle shaft, splines on axle shaft must be lightly coated with grease used in joint.

3 - Securing ring

- Replace.
- Insert in shaft groove.

4 - Spacer Ring (Plastic)

- Installed position, refer to ⇒ [page 79](#) .

5 - Dished washer

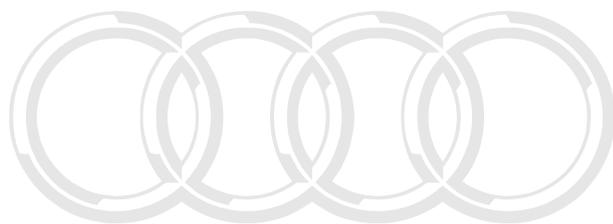
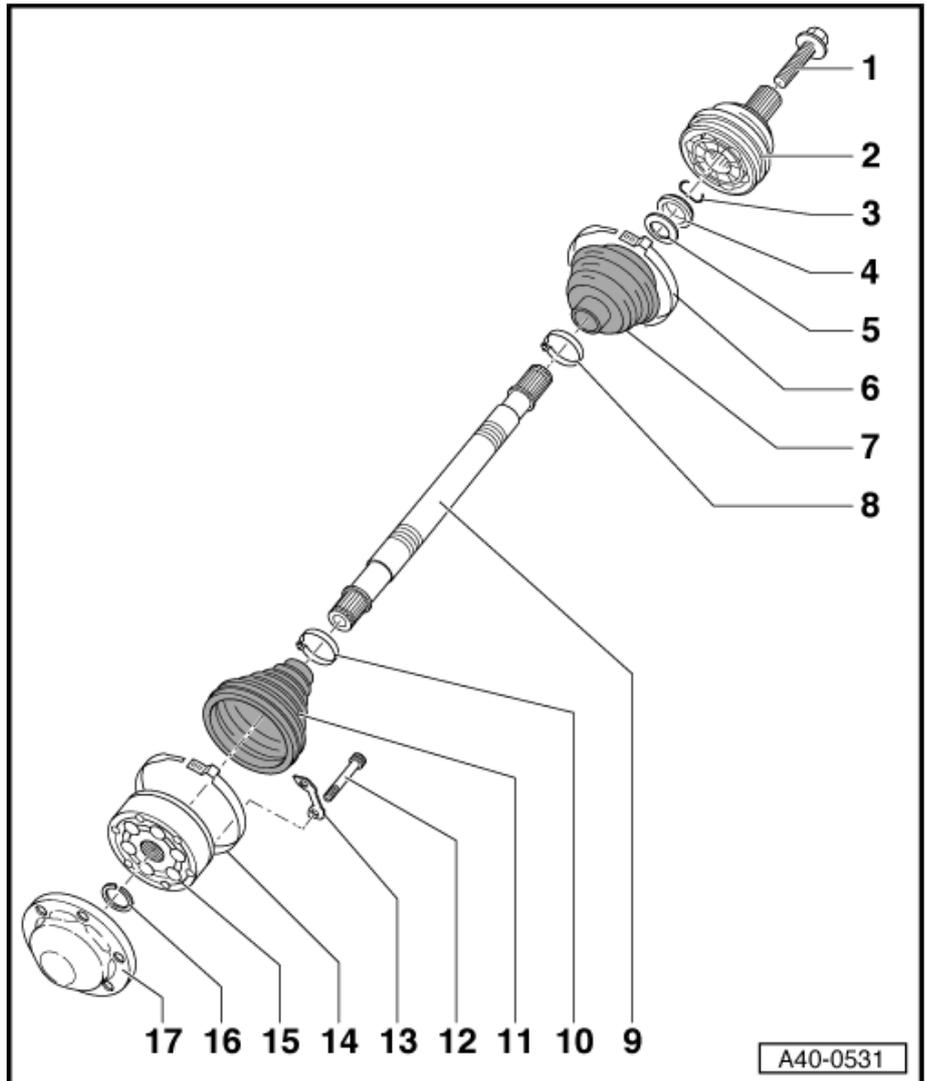
- Installed position, refer to ⇒ [page 79](#) .

6 - Clamp

- Replace.
- Tensioning, refer to ⇒ [page 81](#) or ⇒ [page 82](#) .

7 - CV Boot for Outer CV Joint

- Without ventilation bore.
- Check for tears and scuffing.



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8 - Clamp

- Replace.
- Tensioning, refer to ⇒ [page 81](#) or ⇒ [page 82](#) .

9 - Profile Shaft

10 - Clamp

- Replace
- Tensioning, refer to ⇒ [page 81](#) or ⇒ [page 82](#) .

11 - Protective Boot for Inner CV Joint

- Check for tears and scuffing.

12 - Bolt

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

13 - Backing Plate

14 - Clamp

- Replace.
- Tensioning, refer to ⇒ [page 81](#) or ⇒ [page 82](#) .

15 - Inner CV Joint

- Replace only as complete unit.
- Checking, refer to ⇒ ["4.4 Inner CV Joint, Checking", page 28](#) .
- Pressing off, refer to ⇒ [page 80](#) .
- Grease, refer to ⇒ [page 76](#) .
- Pressing on, refer to ⇒ [page 80](#) .
- When installing joint on axle shaft, splines on axle shaft must be lightly coated with grease used in joint.

16 - Securing Ring

- Replace. Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability for the use of this information. In this regard, AUDI AG.
- Removing and installing using [VW 161 A](#) refer to ⇒ [page 80](#) .

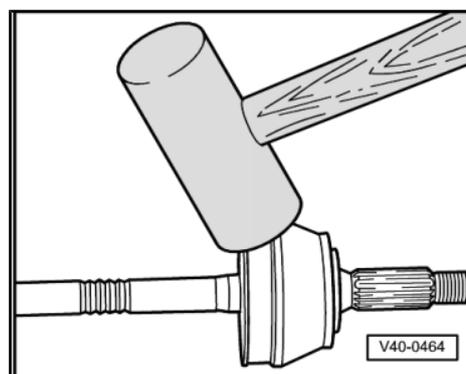
17 - Cover

- Replace.
- Drive off CV joint using drift.
- Apply sealant between the joint and the cover. Allocation, refer to the Electronic Parts Catalog (ETKA). Refer to ⇒ [page 81](#) .

Disassembling and Assembling

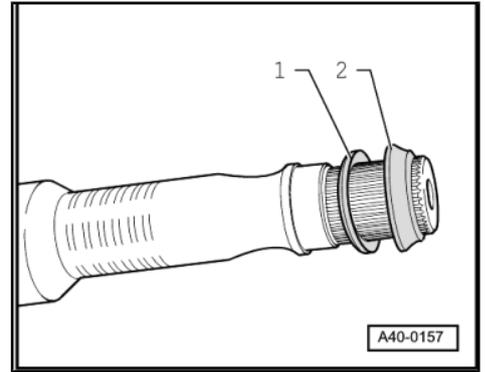
Disassembling Outer CV Joint

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



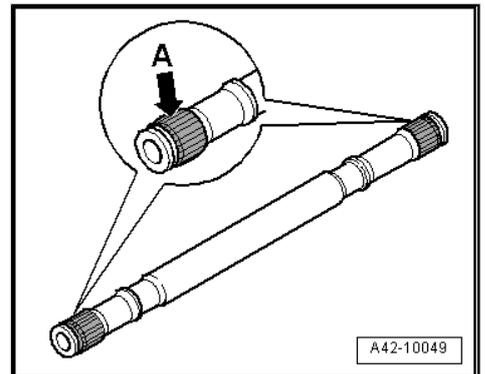
Location of Spacer Ring and Spring Washer on Outer Joint

- 1 - Dished washer
- 2 - Spacer ring (Plastic)



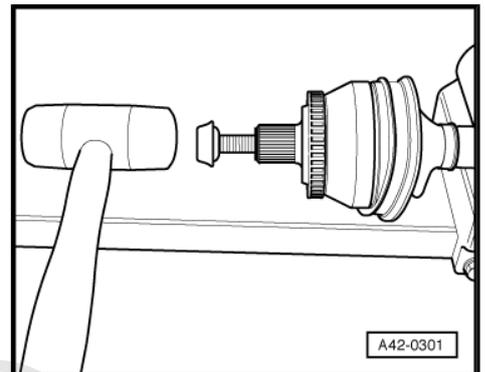
Outer CV Joint, Installing

- Before installing CV joint or triple roller star, splines -A- must be lightly coated with grease used in joint.



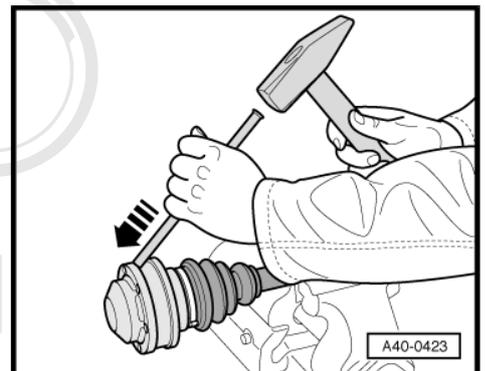
- Install old drive shaft bolt in joint as shown in the illustration.
- Drive joint onto shaft with plastic hammer until circlip engages.

Inner CV Joint, Disassembling and Assembling



Cover, Removing

- Drive cover down with copper or brass drift.



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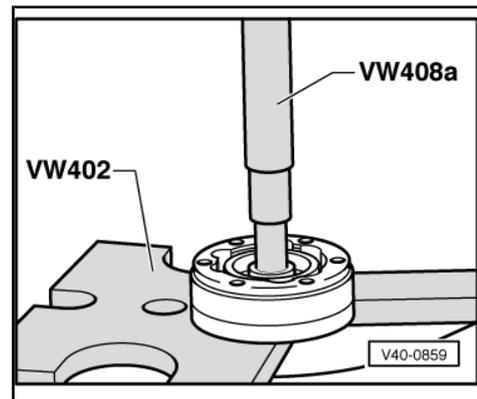
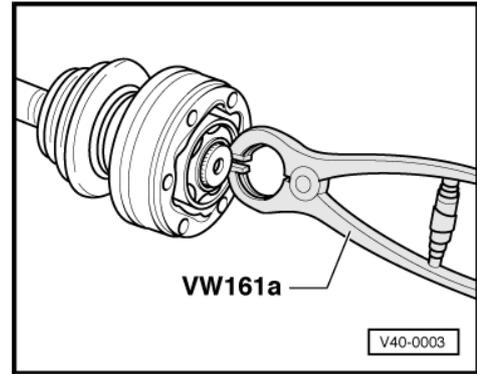
Circlip, Removing and Installing



Removing the Inner CV Joint

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

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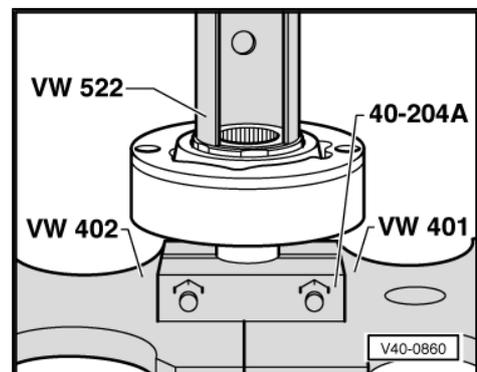
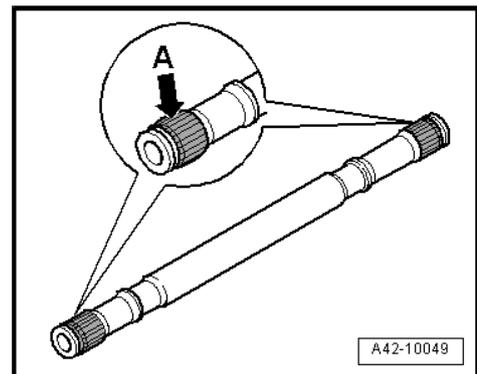
Pressing On Inner CV Joint

- Before installing CV joint or triple roller star, splines -A- must be lightly coated with grease used in joint.
- Press on joint until stop.
- Install circlip.



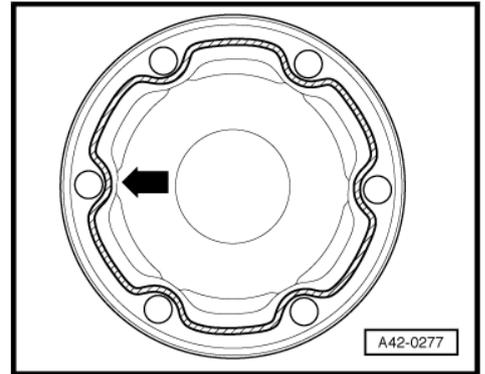
Note

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



Coat the sealing surface on the cover with sealant and then install it.

- Apply sealant -hatched area- to clean cover surface.
- ◆ Sealant bead: unbroken, 2 to 3 mm diameter Guide past inner hole area -arrow-.

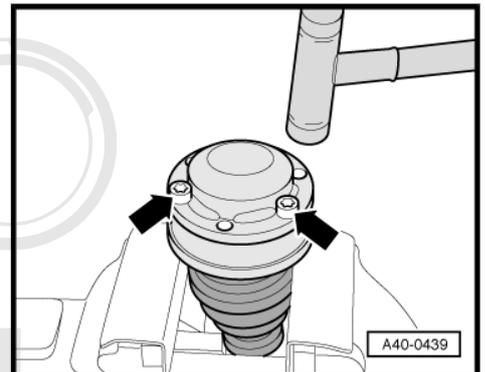


- Align new cover with bolts -arrows- to bolt holes.

i Note

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

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

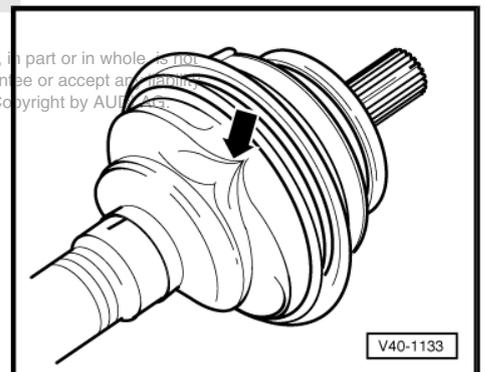


Rubber Protective Joint Boot, Ventilating

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

Therefore, observe the following:

- Before clamping the clamping sleeves, balance pressure by raising protective joint boot.

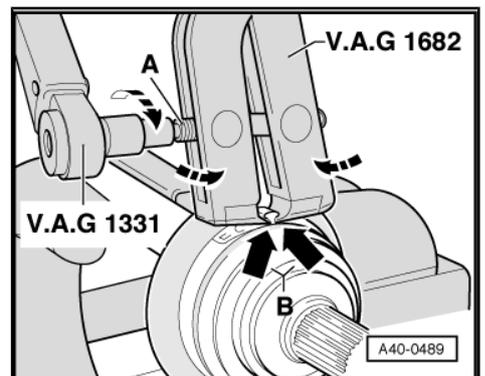


Stainless Steel Clamps for Hytrel Protective Joint Boots, Tensioning

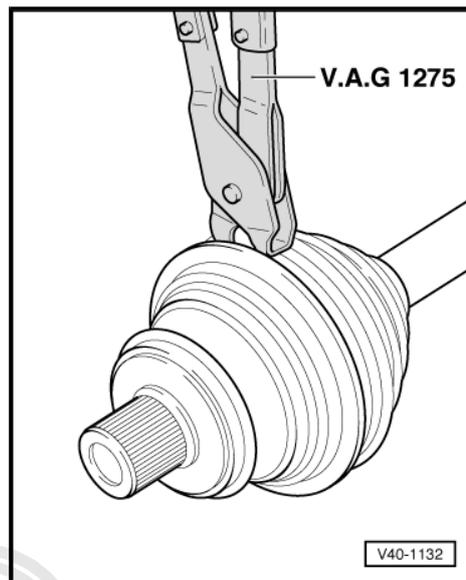
- Position CV joint boot clamp tool -V.A.G 1682- as shown in illustration. Be sure that edges of clamping pliers are seated in corners -arrows B- of hose clamp.
- Tighten hose clamp by turning spindle -A- using a torque wrench (do not tilt clamping pliers).
- ◆ Tightening specifications: 20 Nm

i Note

- ◆ *Be sure thread of spindle in clamping pliers moves freely. Grease with MOS₂ grease, if necessary.*
- ◆ *If it does not move freely, e.g. due to dirt in thread, the required clamp tension will not be achieved at the specified torque.*



Clamps for Rubber Protective Joint Boots, Tensioning



6.4 Drive Axle with 100 mm Diameter Inner CV Joint

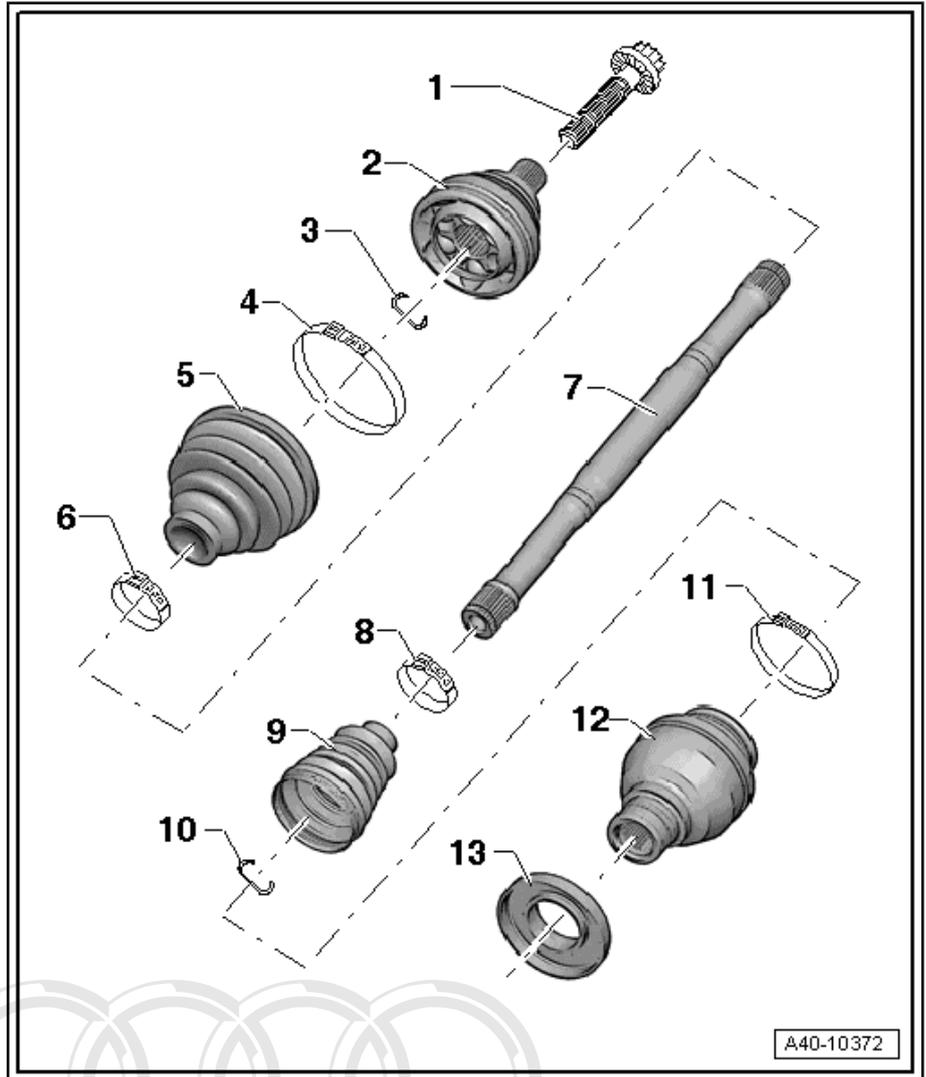
Filling Joints with Grease

Grease	Outer Joint	Inner Joint
Total quantity	140 g	140 g

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1 - Bolt

- Always replace if removed.
- Different versions. Allocation, refer to the Electronic Parts Catalog (ETKA).
- Hex bolt: 200 Nm + 180° turn. Refer to ⇒ ["2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- Twelve-point bolt with ribs: 70 Nm + 90° turn. Refer to ⇒ ["2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- Twelve-point bolt without ribs: 200 Nm + 180° turn. Refer to ⇒ ["2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 23](#) .
- Before installing, clean the threads in the CV joint with a tap.



2 - Outer CV Joint

- Replace only as complete unit.
- Removing, refer to ⇒ [page 84](#) .
- Divide the grease between the ball paths, refer to ⇒ [page 82](#) .
- Installing: Drive onto shaft until impact using plastic hammer.
- Checking, refer to ⇒ ["4.3 Outer CV Joint, Checking", page 27](#) .

3 - Securing Ring

- Always replace if removed.
- Insert in shaft groove.

4 - Clamp

- Always replace if removed.
- Tensioning, refer to ⇒ [page 86](#) .

5 - Protective Boot

- Check for tears and scuffing.
- Material: Hytrel (Polyelastomer).

6 - Clamp

- Always replace if removed.
- Tensioning, refer to ⇒ [page 86](#) .

7 - Drive Axle

8 - Clamp

- Always replace if removed.

- Tensioning, refer to ⇒ [page 86](#) .

9 - CV Joint Protective Boot

- Material: Hytrel (Polyelastomer)
- Check for tears and scuffing.

10 - Securing Ring

- Always replace if removed.
- Insert in shaft groove.

11 - Clamp

- Always replace if removed.
- Tensioning, refer to ⇒ [page 86](#) .

12 - CV Joint

- Replace only as complete unit.
- Removing, refer to ⇒ [page 86](#) .
- Divide the grease between the ball paths. Refer to ⇒ [page 82](#) .
- Installing: Drive onto shaft until impact using plastic hammer.

13 - Protective Cap

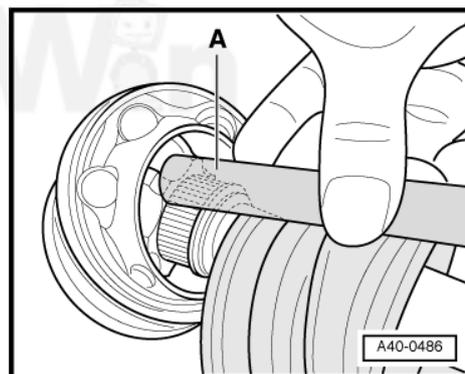
- Removing, refer to ⇒ [page 86](#) .
- Installing, refer to ⇒ [page 87](#) .



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Outer CV Joint, Removing

- Secure the drive axle with protective covers in a vise clamp.
- Open both clamping sleeves and remove protective joint boot from outer joint.
- Strike a copper or brass drift -A- on CV joint inner race with a hammer.
- Remove joint and protective joint boot.



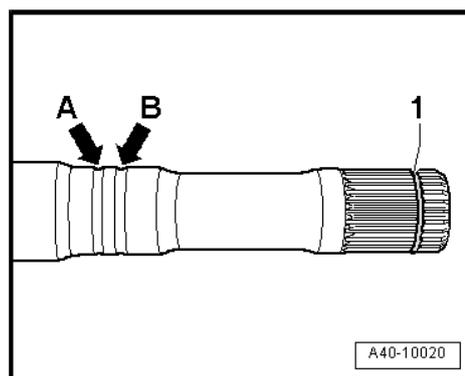
Installing the Outer Joint



Note

Joints and protective joint boots must be free of grease.

- Replace the circlip -1-.
- Slide on the small clamp with the protective boot and position the protective boot on the drive axle.



- Position CV boot in outer groove -arrow B-

 **Note**

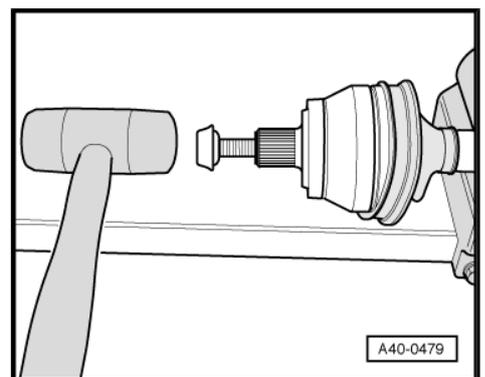
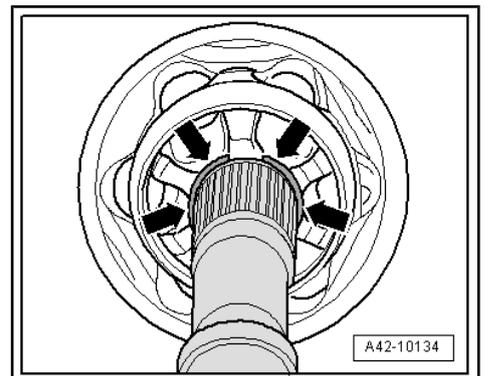
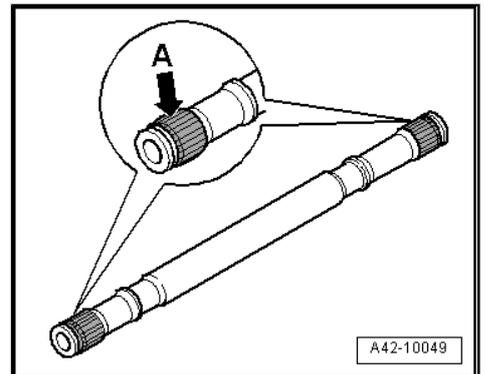
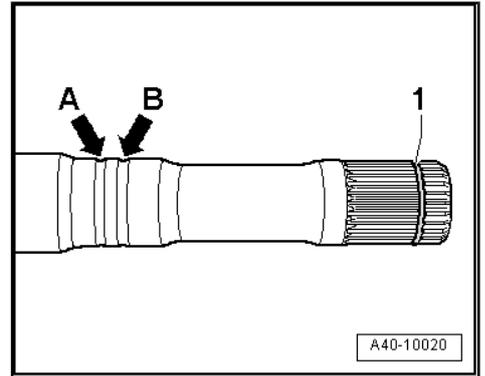
Inner groove -arrow A- must remain visible "identification groove" (for correct installation of CV boot).

- Add approximately 70% of the grease to the inner joint. See the table. Refer to ⇒ [page 82](#) .

- Before installing joint piece, splines -A- must be lightly coated with grease used in joint.

- Slide on CV joint up to sealing ring.
- Align sealing ring at center with opening upward -see arrows-

- Screw old drive axle bolt into joint as shown in the illustration.
- Drive joint onto drive axle with plastic hammer until circlip engages.
- Add the rest of the grease into the joint on the boot side.
- Slide the protective boot onto the joint.
- Bleed protective joint boot.
- Make sure the protective boot is seated on the joint correctly.
- Protective joint boot must fit in groove and on joint contour.
- Tension clamps on outer joint. Refer to ⇒ [page 86](#) .



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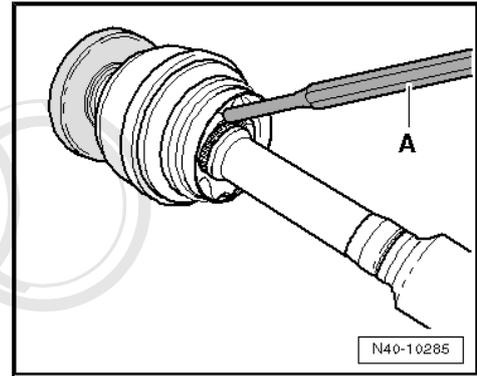
Removing the Inner CV Joint

- Secure the drive axle with protective covers in a vise clamp.
- Fold back boot.
- Remove the CV joint from the drive axle using a drift -A-.

Drive must be applied exactly on star of CV joint.

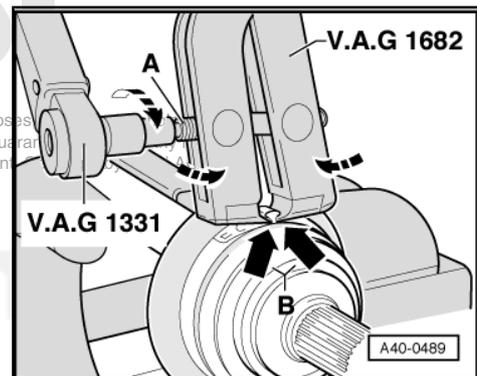
Installing the Inner CV Joint

- Drive onto shaft with plastic hammer until securing ring engages.



Mount and tension stainless steel clamp using clamping device - V.A.G 1682- as illustrated.

- Attach -V.A.G 1682- as shown in illustration. Be sure that edges of clamping pliers are seated in corners -arrows B- of hose clamp.
- Tension clamp by turning spindle with a torque wrench (do not tilt clamp tool).

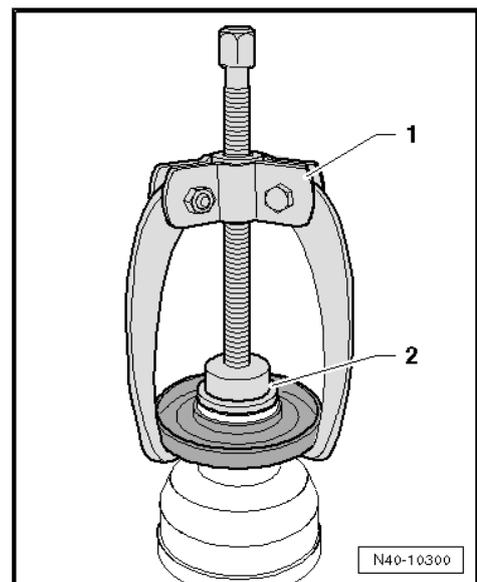


Note

- ◆ A stainless steel clamp must be used due to the hardness of the CV boot material (compared to rubber). This clamp can only be tensioned using the -V.A.G 1682-.
- ◆ Tightening specifications: 25 Nm.
- ◆ Use torque wrench -C- with adjustment range 5...50 Nm (e.g. torque wrench -V.A.G 1331-).
- ◆ Be sure thread of spindle -A- of clamp tool moves freely. Grease with MOS 2 grease if necessary.
- ◆ If the thread is tight e.g. dirty, the required tensioning force for the hose clamp will not be achieved in spite of correct torque specification settings.

Removing the Cap from the CV Joint

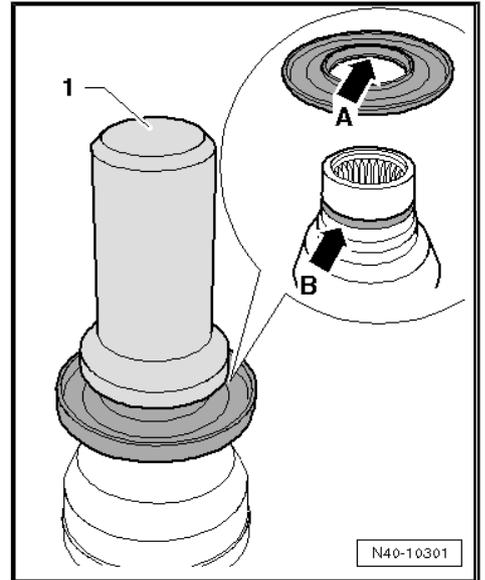
- 1 - Three arm extractor, for example Kukko 45-2
- 2 - Thrust pad -VW 447 H-



Mounting the Cap onto the CV Joint

1 - Thrust piece -T10243-

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



6.5 Drive Axle with Triple Roller Joint AAR 2600i

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Filling the Joints with Grease

	Outer Joint
Total quantity	120 g
in joint	80 g
in protective joint boot	40 g
	Tripod joint
Total quantity	140 g
in joint	70 g
in protective joint boot	70 g



Note

Grease joint again when replacing protective joint boot.

1 - Bolt

- Always replace if removed.
- Different versions. Allocation, refer to the Electronic Parts Catalog (ETKA).
- Hex bolt: 200 Nm + 180° turn. Refer to ⇒ ["2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- Twelve-point bolt with ribs: 70 Nm + 90° turn. Refer to ⇒ ["2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#) .
- Twelve-point bolt without ribs: 200 Nm + 180° turn. Refer to ⇒ ["2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 23](#) .
- Before installing, clean the threads in the CV joint with a tap.

2 - Clamp

- Replace.
- Tensioning, refer to ⇒ [page 90](#) or ⇒ [page 91](#) .

3 - CV Boot

- Check for tears and scuffing.

4 - Clamp

- Replace.
- Tensioning, refer to ⇒ [page 90](#) or ⇒ [page 91](#) .

5 - Profile Shaft

6 - Clamp

- Replace.
- Tensioning, refer to ⇒ [page 90](#) or ⇒ [page 91](#) .

7 - Protective Joint Boot for Triple Roller Joint

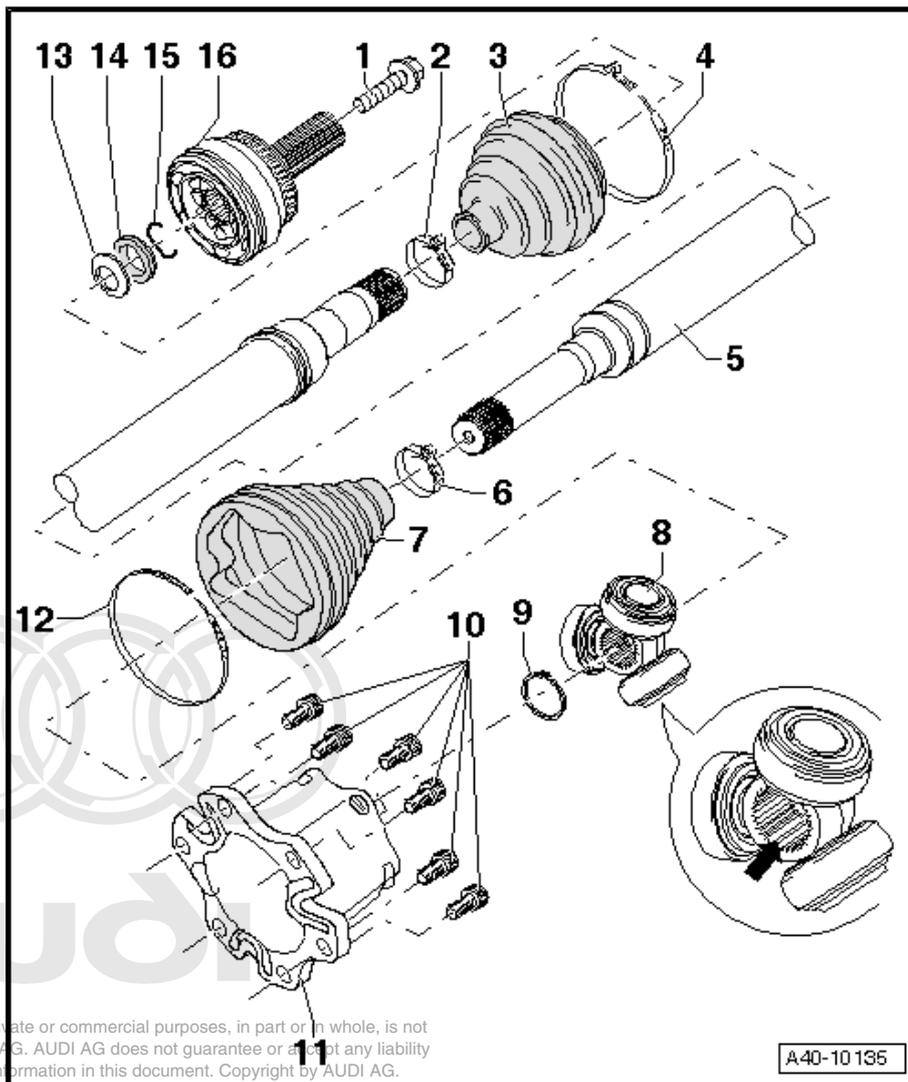
- Check for tears and scuffing.

8 - Triple Roller Star with Rollers

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

9 - Securing Ring

- Replace.



10 - Bolt

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

11 - Bolted Joint

12 - Clamp

- Replace.
- Tensioning, refer to ⇒ [page 90](#) or ⇒ [page 91](#) .

13 - Dished Washer

- Installed position, refer to ⇒ [page 89](#) .

14 - Spacer Ring (Plastic)

- Installed position, refer to ⇒ [page 89](#) .

15 - Securing Ring

- Replace.
- Insert in shaft groove.

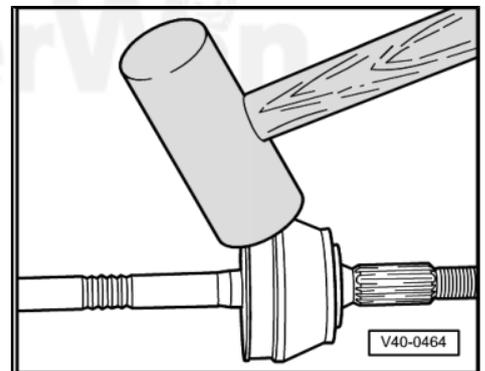
16 - Outer CV Joint

- Replace only as complete unit.
- Removing, refer to ⇒ [page 89](#) .
- Installing, refer to ⇒ [page 90](#) .
- Checking, refer to ⇒ [“4.3 Outer CV Joint, Checking”, page 27](#) .
- Grease, refer to ⇒ [page 87](#) .
- When installing joint on axle shaft, splines on axle shaft must be lightly coated with grease used in joint.

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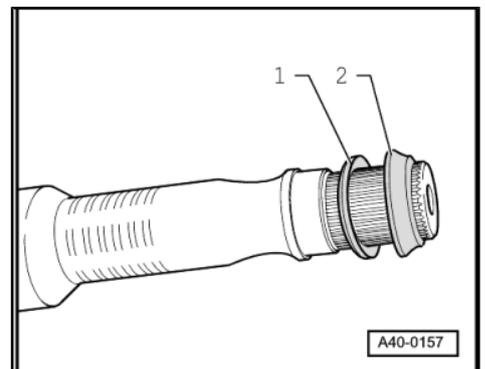
Removing the Outer CV Joint

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



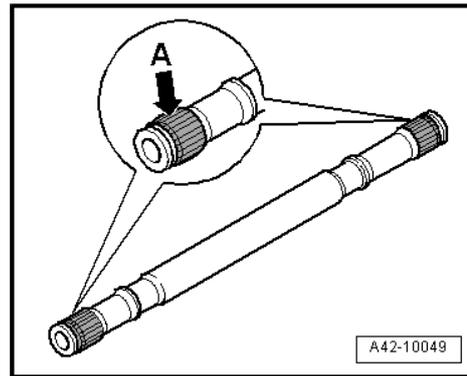
Location of Spacer Ring and Plate Spring

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

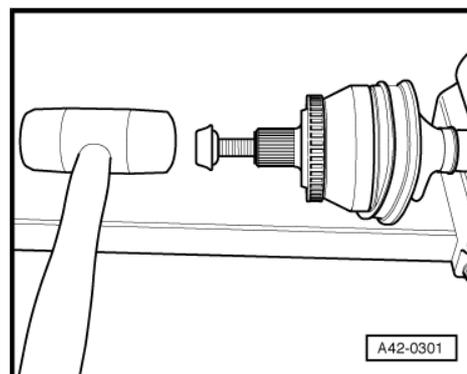


Outer CV Joint, Installing

- Before installing CV joint or triple roller star, splines -A- must be lightly coated with grease used in joint.



- Install old drive shaft bolt in joint as shown in the illustration.
- Drive joint onto shaft with plastic hammer until circlip engages.

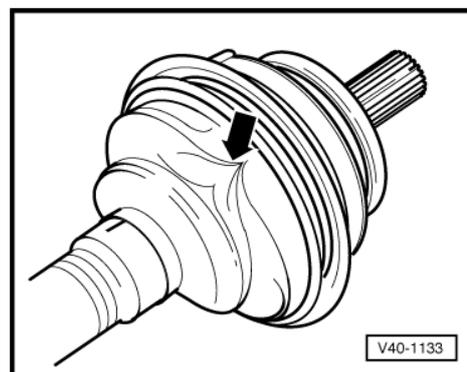


Rubber Protective Joint Boot, Ventilating

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

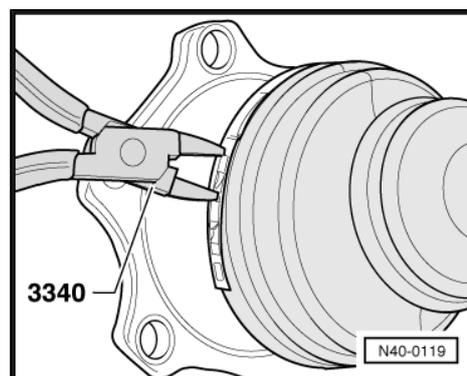
Therefore, observe the following:

- Before clamping the clamping sleeves, balance pressure by raising protective joint boot.



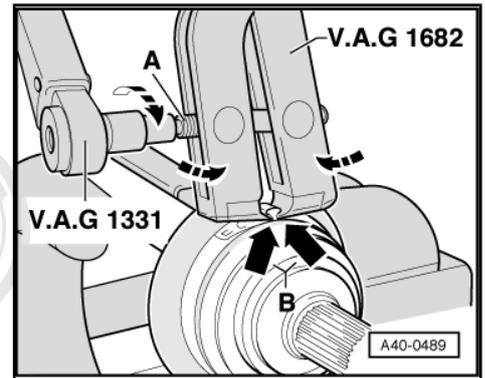
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Large Clamps for Rubber Protective Joint Boots, Tensioning



Stainless Steel Clamps for Hyrel Protective Joint Boots, Tensioning

- Position CV joint boot clamp tool -V.A.G 1682- as shown in illustration. Be sure that edges of clamping pliers are seated in corners -arrows B- of hose clamp.
- Tighten hose clamp by turning spindle -A- using a torque wrench (do not tilt clamping pliers).
- ◆ Tightening specifications: 20 Nm

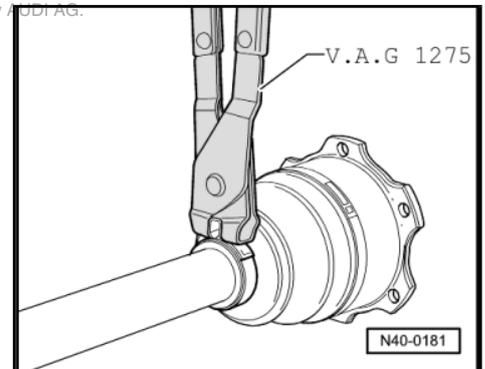


Note

- ◆ *Be sure thread of spindle in clamping pliers moves freely. Grease with MOS₂ grease, if necessary.*
- ◆ *If it does not move freely, e.g. due to dirt in thread, the required clamp tension will not be achieved at the specified torque.*

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Small Clamps for Rubber Protective Joint Boots, Tensioning



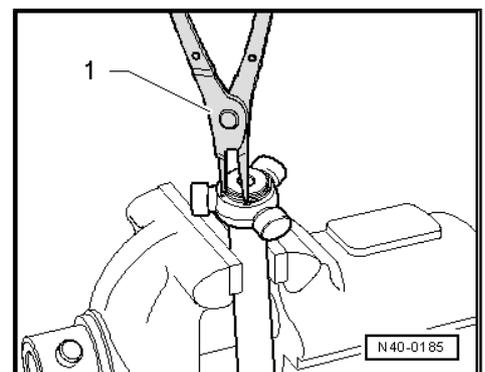
6.6 Drive Axle with Triple Roller Joint AAR 2600i, Disassembling and Assembling

Special tools and workshop equipment required

- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Punch -VW 408 A-
- ◆ Punch -VW 411-
- ◆ Sleeve -VW 416 B-
- ◆ Thrust pad -VW 447 H-
- ◆ Assembly tool -T10065-

Disassembling

- Open clamp at shaft and slide back CV boot.
- Pull off joint piece from drive axle.
- Remove securing ring.
- 1 - Pliers (commercially available) or -VW 161 A-
- Insert drive axle in vise.



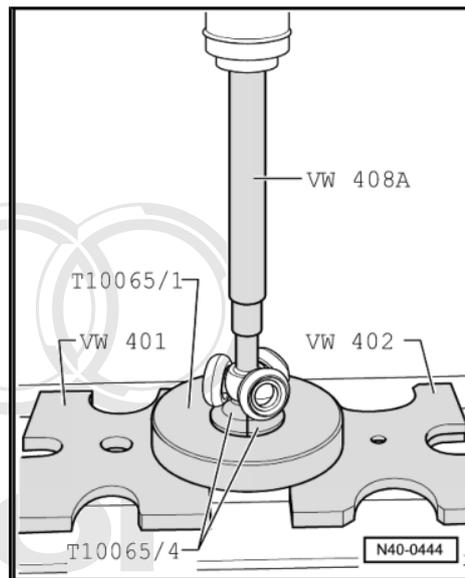
- Press triple roller star off drive axle.
- Pull off CV boot from shaft.
- Clean shaft, joint and groove for oil seal.

Assembling

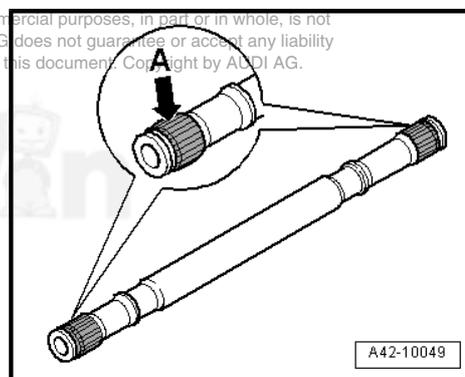
- Slide small clamp for joint protective boot onto shaft.
- Slide CV boot onto shaft.
- Slide joint piece onto shaft.

Triple Roller Star, Conical Drive Axle, Installing

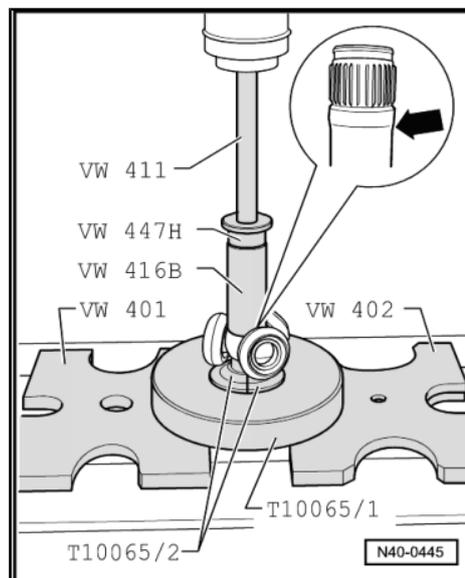
- ◆ The chamfer on star faces toward shaft, this is used as an assembly aid.



- Before installing CV joint or triple roller star, splines -A- must be lightly coated with grease used in joint.



- Connect triple roller star on shaft and press on up to stop.
- Make sure that pressure does not increase above 3.0 t!
- If necessary coat drive axle splines and triple roller star with polycarbamide grease G 052 142 A2.
- Insert securing ring, be sure to fit properly.
- Slide joint piece over rollers and secure.
- Press 70 g drive shaft grease from repair kit into triple roller joint.
- Press 70 g drive shaft grease from repair kit into protective joint boot.
- Install CV boot.
- Install clamp.

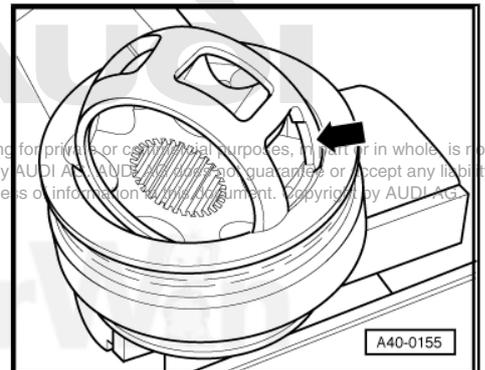
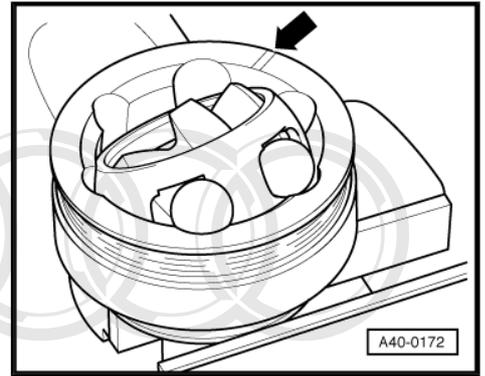


Outer CV Joint, Checking

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

Removing

- Before disassembling mark ball hub position in relation to the ball cage and housing with an electric scribe or oil stone -arrow-.
- Tilt ball hub and ball cage and remove balls one after another.
- Turn cage until two cage windows -arrow- rest on joint body.
- Lift out cage with hub.



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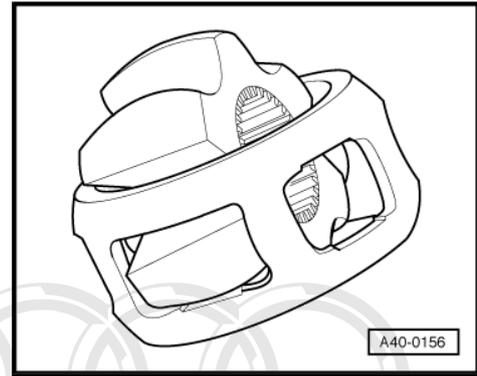


- Swing a hub segment in a cage window.
- Fold hub out from cage.



Note

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



Installing

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

- Press quantity of grease specified in table into joint body.
- ◆ 90 mm diameter outer joint, grease quantities, refer to [page 69](#).
- ◆ 98 mm diameter outer joint, grease quantities, refer to [page 76](#).
- Insert cage with hub into joint body.

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Note

Cage must be installed laterally correct.

- Press in opposing balls in sequence, during this, previous position of ball hub to ball cage and to joint body must be established again.
- Install new circlip in shaft.
- Distribute remaining grease in the joint boot.

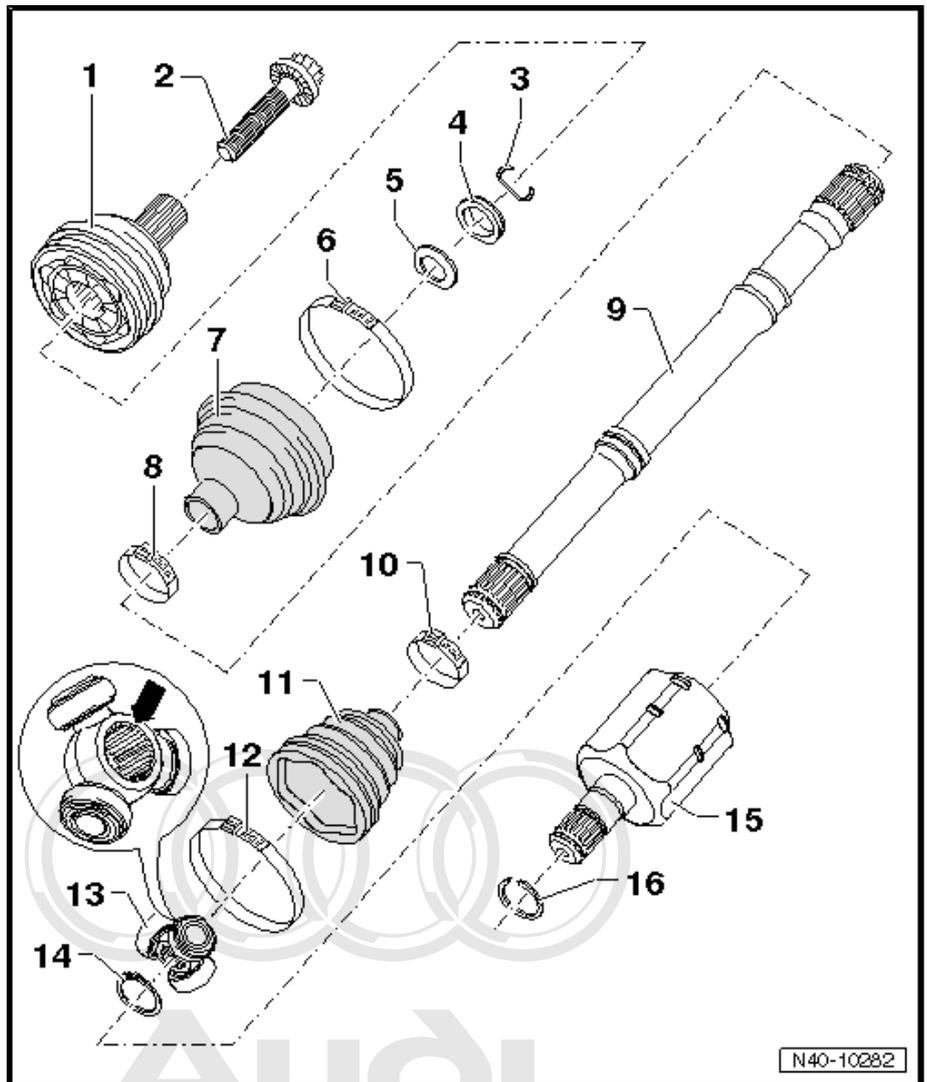
6.7 Drive Axle with Triple Roller Joint AAR 3300i, Installed in Transmission

1 - Outer CV Joint

- Replace only as complete unit.
- Removing, refer to [⇒ page 96](#).
- Installing: Drive onto shaft using plastic hammer until compressed circlip seats.
- Checking, refer to [⇒ "4.3 Outer CV Joint, Checking", page 27](#).

2 - Bolt

- Hex bolt: 200 Nm + 180° turn. Refer to [⇒ "2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#).
- Twelve-point bolt with ribs: 70 Nm + 90° turn. Refer to [⇒ "2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 22](#).
- Twelve-point bolt without ribs: 200 Nm + 180° turn. Refer to [⇒ "2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 23](#).
- Always replace if removed.



3 - Securing Ring

- Always replace if removed.
- Insert in shaft groove.

4 - Thrust Washer

- Installed position, refer to [⇒ page 97](#).

5 - Dished Washer

- Installed position, refer to [⇒ page 97](#).

6 - Clamp

- Always replace if removed.
- Tensioning, refer to [⇒ page 86](#).

7 - CV Boot

- Check for tears and scuffing.
- Material: Hytrel (Polyelastomer).

8 - Clamp

- Always replace if removed.
- Tensioning, refer to [⇒ page 86](#).

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**9 - Drive Axle****10 - Clamp**

- Always replace if removed.
- Tensioning, refer to ⇒ [page 86](#) .

11 - Protective Joint Boot for Triple Roller Joint

- Check for tears and scuffing.

12 - Clamp

- Always replace if removed.
- Tensioning, refer to ⇒ [page 86](#) .

13 - Triple Roller Star with Rollers

The chamfer -arrow- points to drive axle splines.

14 - Securing Ring

- Always replace if removed.
- Insert in shaft groove.

15 - Joint Piece**16 - Securing ring**

- Always replace if removed



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Disassembling**Special tools and workshop equipment required**

- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Punch -VW 408 A-
- ◆ Punch -VW 411-
- ◆ Sleeve -VW 416 B-
- ◆ Thrust pad -VW 447 H-
- ◆ Hose clamp pliers -V.A.G 1275-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ CV joint boot clamp tool -V.A.G 1682-
- ◆ Assembly tool -T10065-
- ◆ Slide hammer - complete set -VW 771-
- ◆ Puller -T10382-

Removing the Outer CV Joint

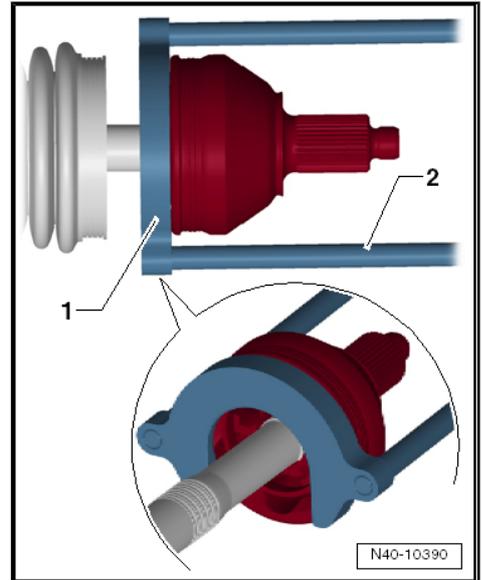
- Secure the drive axle with protective covers in a vise clamp.
- Fold back boot.
- Align the -T10382- so that the flat side of the plate -T10382/1- faces the spindles -T10382/2- .
- Attach the -T10382- to the -VW 771- .

- Remove the CV joint from the drive axle using the -T10382- and -VW 771- .

1 - -T10382/1-

2 - -T10382/2-

Driving on Outer CV Joint

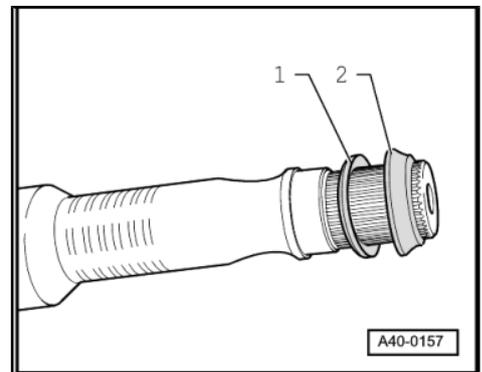


Installed Location: Spring Washer and Thrust Washer on Outer Joint

1 - Dished washer

2 - Thrust washer

- Install the new circlips.
- Slide new CV boot onto drive axle if necessary.
- Install the outer joint on the shaft using a plastic hammer until the locking ring locks into place.



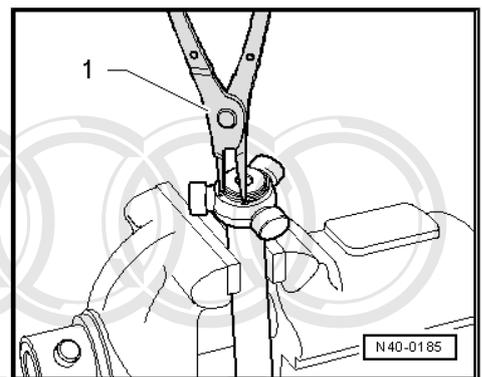
Disassembling

- Open both clamps at inner joint and slide back CV boot.
- Remove joint from drive axle.

- Remove securing ring.

1 - Pliers (commercially available)

- Insert drive axle in vise.



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

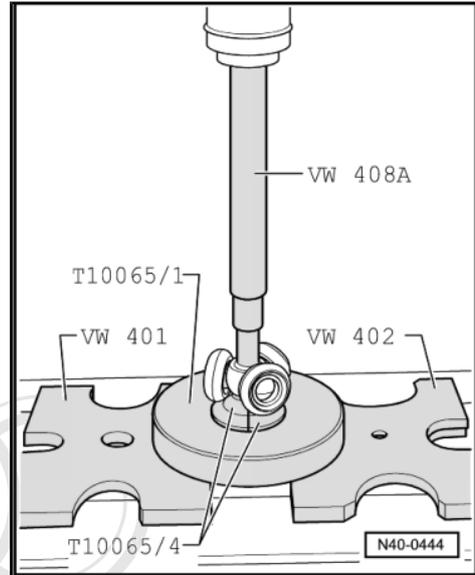
Assembling

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

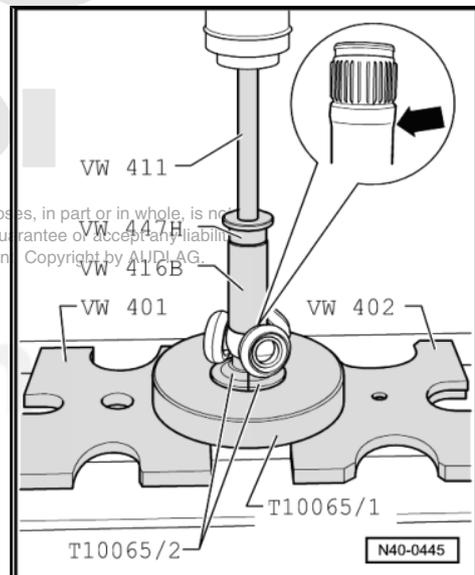
Mount Triple Roller Star

Conical-Type Drive Axle

The chamfer on star faces toward shaft, this is used as an assembly aid.



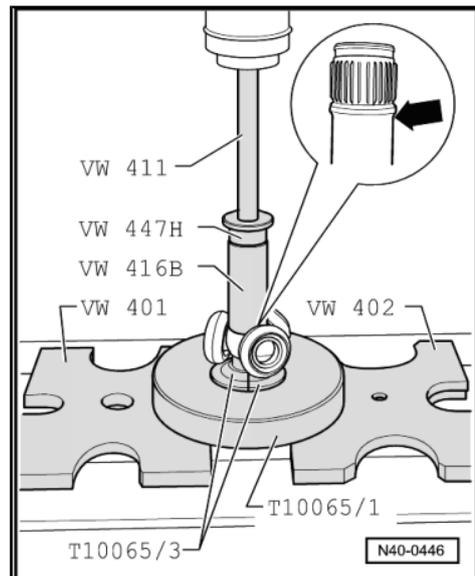
- Connect triple roller star on shaft and press on up to stop.
- Make sure the pressure does not increase above 3.0 t.
- If necessary, coat the drive shaft splines and triple roller star with lubricating paste -G 052 142 A2- .
- Insert securing ring, be sure to fit properly.
- Press half of the joint grease from the repair set into the triple roller joint.
- Slide 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 CV boot.



Mount Triple Roller Star

Cylindrical-Type Drive Axle

- Connect triple roller star on shaft and press on up to stop.
- Make sure the pressure does not increase above 3.0 t.
- If necessary, coat the drive shaft splines and triple roller star with lubricating paste -G 052 142 A2- .
- Insert securing ring, be sure to fit properly.
- Press half of the joint grease from the repair set into the triple roller joint.
- Slide 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 CV boot.
- Push the protective boot onto the joint and mount the clamp. Refer to => [page 86](#) .



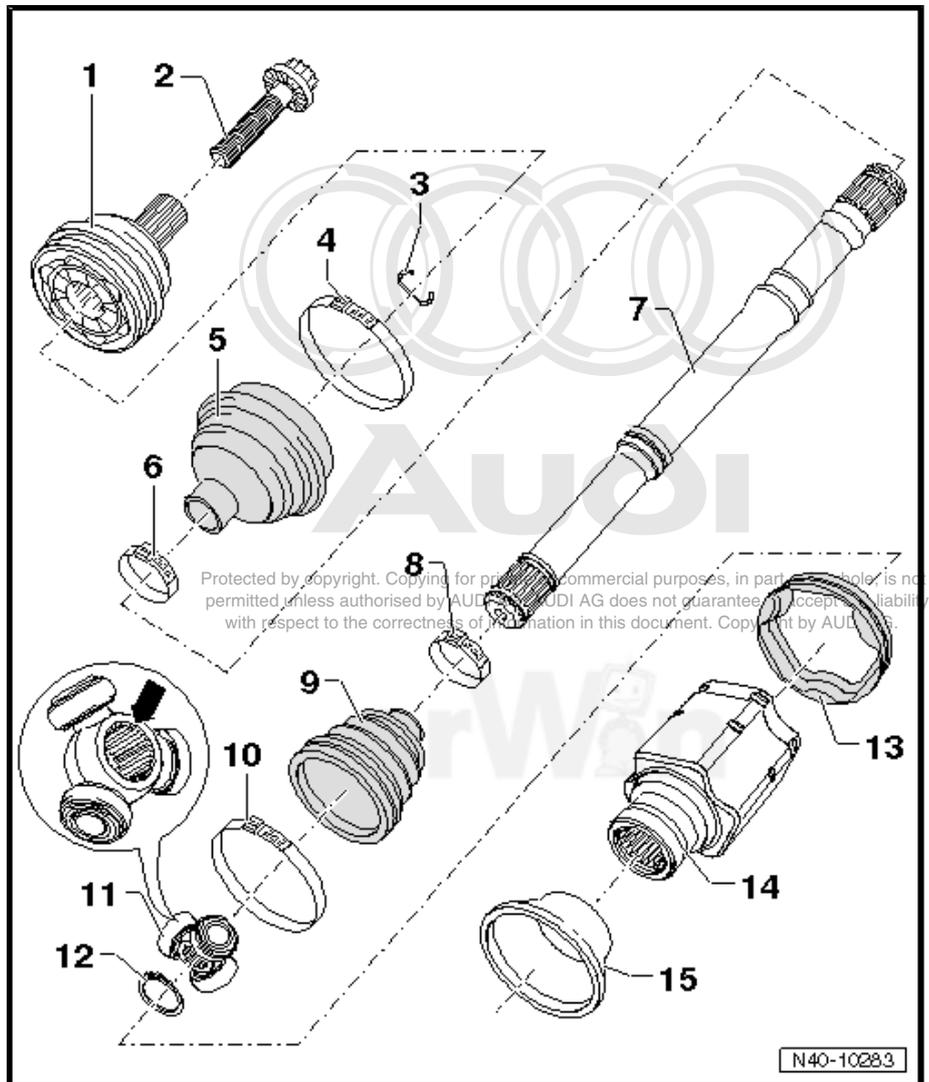
6.8 Drive Axle with Triple Roller Joint AAR 3300i, Mounted on Transmission Stub Shaft

1 - Outer CV Joint

- Replace only as complete unit.
- Removing, refer to ⇒ [page 100](#) .
- Installing: Drive onto shaft using plastic hammer until compressed circlip seats.
- Checking, refer to ⇒ [“4.3 Outer CV Joint, Checking”, page 27](#) .

2 - Bolt

- Always replace if removed.
- Hex bolt: 200 Nm + 180° turn. Refer to ⇒ [“2.8 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening”, page 22](#) .
- Twelve-point bolt with ribs: 70 Nm + 90° turn. Refer to ⇒ [“2.9 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening”, page 22](#) .
- Twelve-point bolt without ribs: 200 Nm + 180° turn. Refer to ⇒ [“2.10 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening”, page 23](#) .



Note

3 - Securing Ring

- Always replace if removed.
- Insert in shaft groove.

4 - Clamp

- Always replace if removed.
- Tensioning, refer to ⇒ [page 86](#) .

5 - CV Boot

- Check for tears and scuffing.
- Material: Hytrel (Polyelastomer).

6 - Clamp

- Always replace if removed.
- Tensioning, refer to ⇒ [page 86](#) .



7 - Drive Axle

8 - Clamp

- Always replace if removed.
- Tensioning, refer to ⇒ [page 86](#) .

9 - Protective Joint Boot for Triple Roller Joint

- Check for tears and scuffing.

10 - Clamp

- Always replace if removed.
- Tensioning, refer to ⇒ [page 86](#) .

11 - Triple Roller Star with Rollers

The chamfer -arrow- points to drive axle splines.

12 - Securing Ring

- Always replace if removed.
- Insert in shaft groove.

13 - Adapter

14 - Joint Piece

15 - Cap

- Removing, refer to ⇒ [page 103](#) .
- Installing, refer to ⇒ [page 103](#) .

Disassembling

Special tools and workshop equipment required

- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Punch -VW 408 A-
- ◆ Punch -VW 411-
- ◆ Sleeve -VW 416 B-
- ◆ Thrust pad -VW 447 H-
- ◆ Hose clamp pliers -V.A.G 1275-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ CV joint boot clamp tool -V.A.G 1682-
- ◆ Assembly tool -T10065-
- ◆ Slide hammer -VW 771-
- ◆ Puller -T10382-

Removing the Outer CV Joint

- Secure the drive axle with protective covers in a vise clamp.
- Fold back boot.
- Align the -T10382- so that the flat side of the plate -T10382/1- faces the spindles -T10382/2- .
- Attach the -T10382- to the -VW 771- .

- Remove the CV joint from the drive axle using the -T10382- and -VW 771- .

1 - -T10382/1-

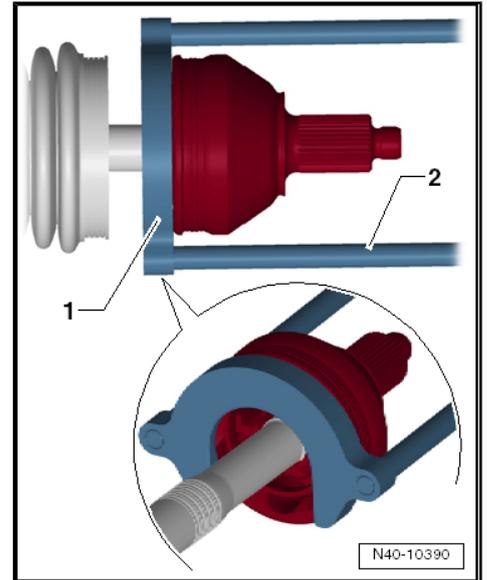
2 - -T10382/2-

Driving on Outer CV Joint

- Install the new circlips.
- Slide new CV boot onto drive axle if necessary.
- Drive it onto shaft with plastic hammer until securing ring engages.

Disassembling

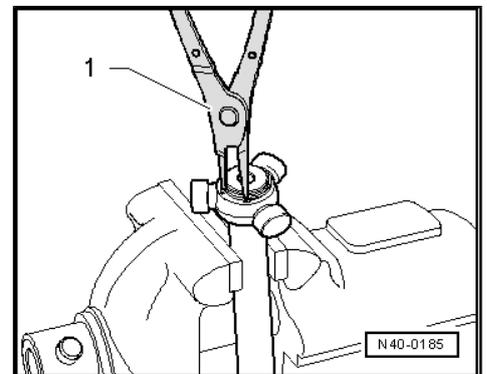
- Open clamping sleeve on inner joint and slide protective boot back from adapter.
- Pull off joint piece from drive axle.



- Remove securing ring.

1 - Pliers (commercially available)

- Insert drive axle in vise.



- Press the triple roller star off the drive axle.

- Pull off CV boot from shaft.

- Clean shaft, joint and groove for oil seal.

Assembling

- Slide small clamp for joint protective boot onto shaft.

- Slide CV boot onto shaft.

- Slide joint piece onto shaft.

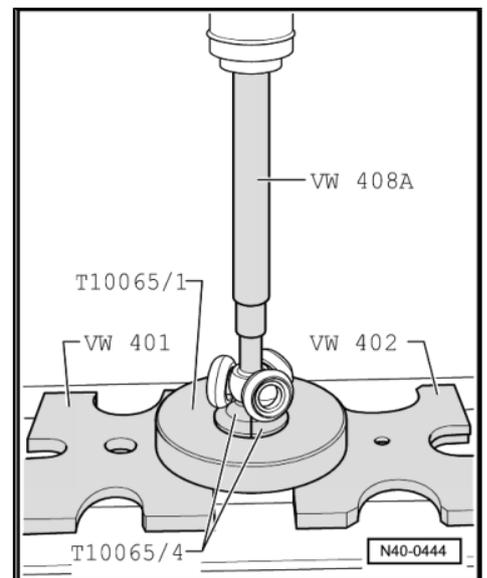
Mount Triple Roller Star

Conical-Type Drive Axle



Note

The chamfer on star faces toward axle, this is used as an assembly aid.



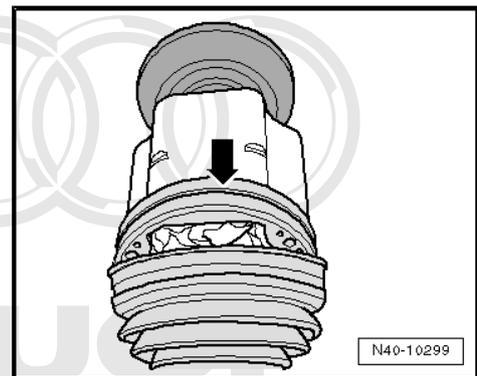
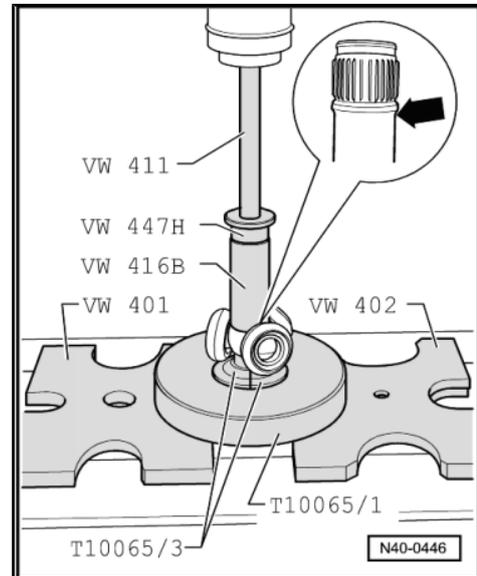
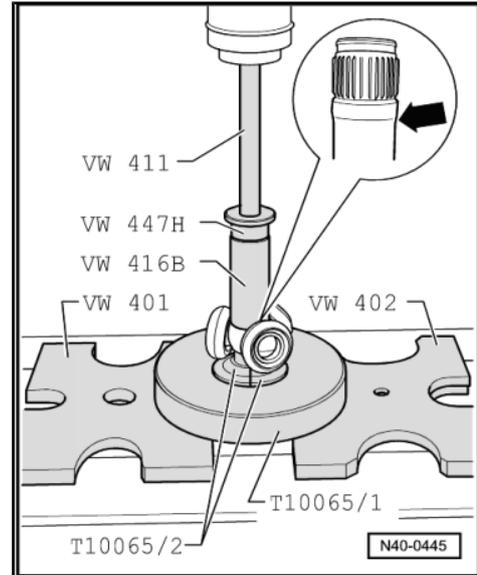
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- Connect triple roller star on shaft and press on up to stop.
- Make sure the pressure does not increase above 3.0 t.
- If necessary, coat the drive shaft splines and triple roller star with lubricating paste -G 052 142 A2- .
- Insert securing ring, be sure to fit properly.
- Press half of the joint grease from the repair set into the triple roller joint.
- Slide 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 CV boot.

Mount Triple Roller Star
Cylindrical-Type Drive Axle

- Connect triple roller star on shaft and press on up to stop.
- Make sure the pressure does not increase above 3.0 t.
- If necessary, coat the drive shaft splines and triple roller star with lubricating paste -G 052 142 A2- .
- Insert securing ring, be sure to fit properly.
- Press half of the joint grease from the repair set into the triple roller joint.
- Slide 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 protective 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.

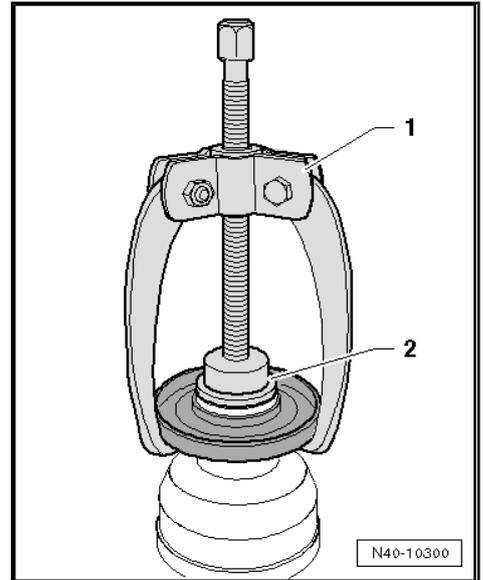


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Removing the Cap from the Triple Roller Joint

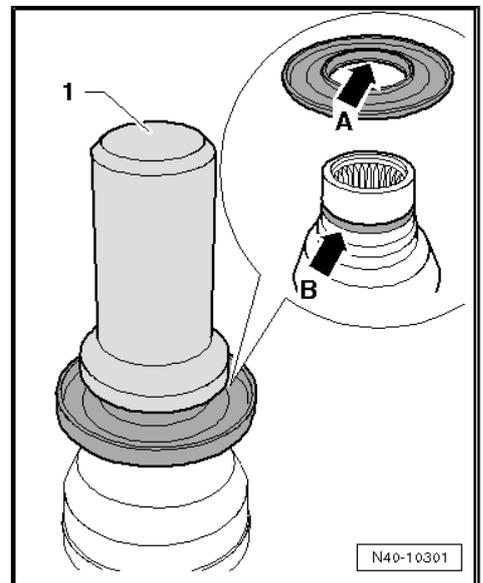
- 1 - Three arm extractor, for example Kukko 45-2
- 2 - Thrust pad -VW 447 H-



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-.



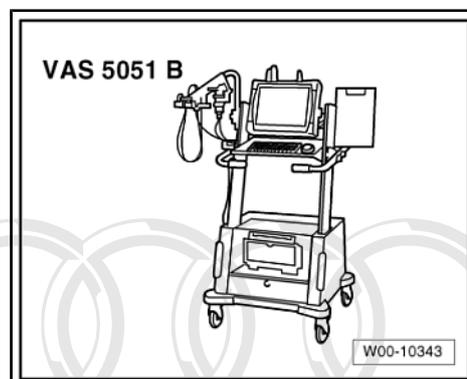
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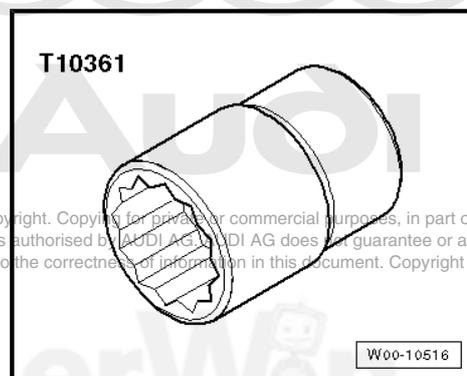
7 Special Tools

Special tools and workshop equipment required

- ◆ Wheel hub support -T10149-
- ◆ Hose clamp pliers -V.A.G 1275-
- ◆ Vehicle Diagnostic, Testing and Information System -VAS 5051B- with corresponding diagnostic cable.

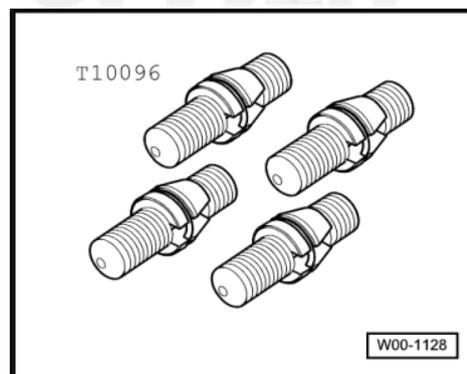


- ◆ Socket XZN 24 -T10361-

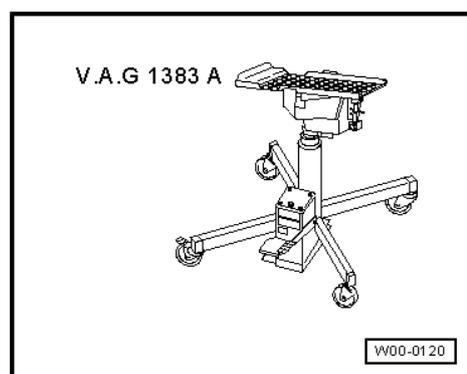


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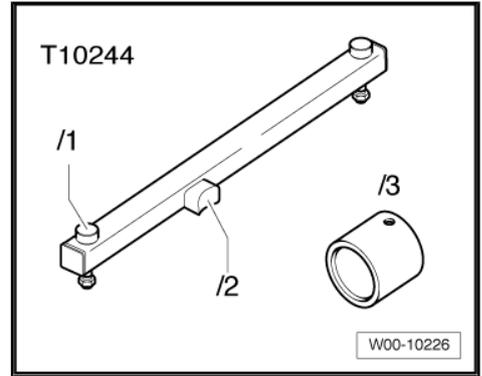
- ◆ Locating pins -T10096-



- ◆ Engine/transmission jack -V.A.G 1383 A-



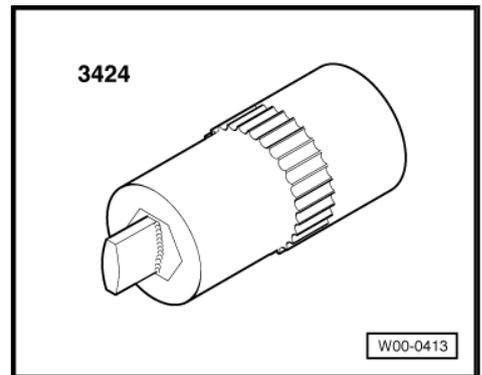
◆ Tube from assembly tool -T10244/3-



◆ Spreader -3424-



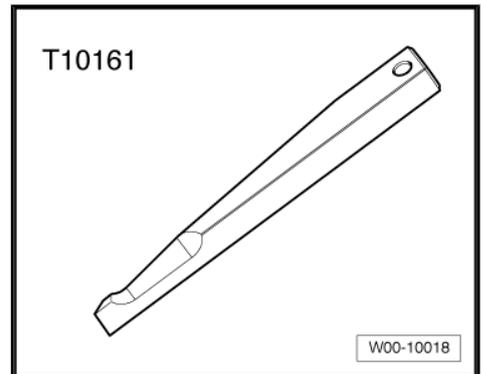
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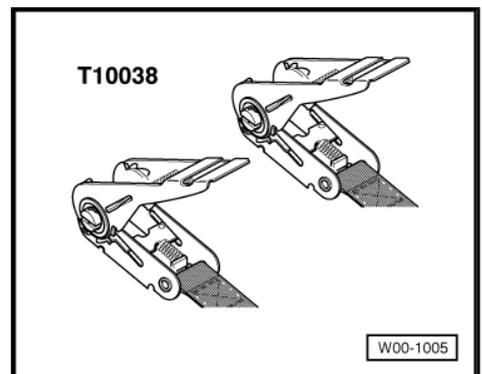
◆ Wedge -T10161-

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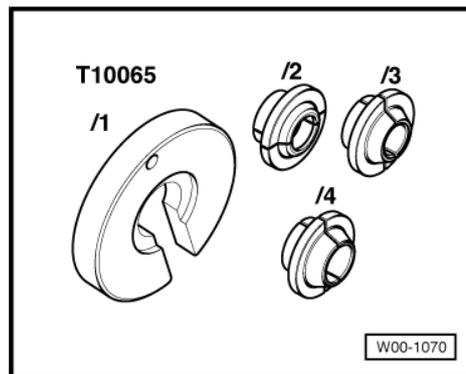
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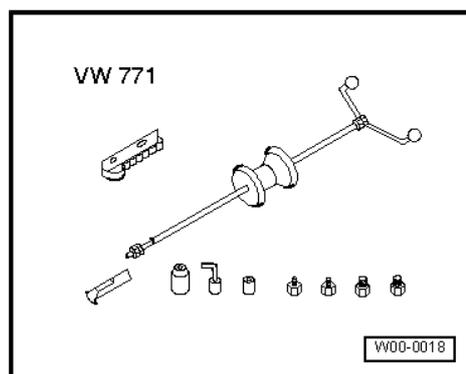
◆ Tensioning strap -T10038-



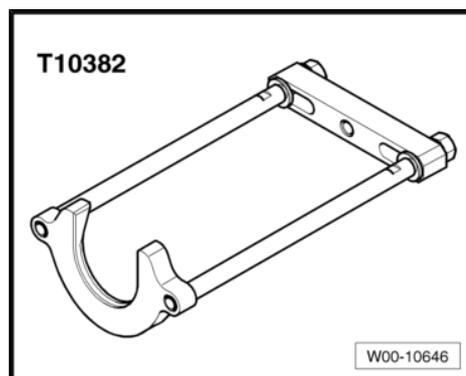
◆ Assembly tool -T10065-



◆ Slide hammer - complete set -VW 771-



◆ Puller -T10382-



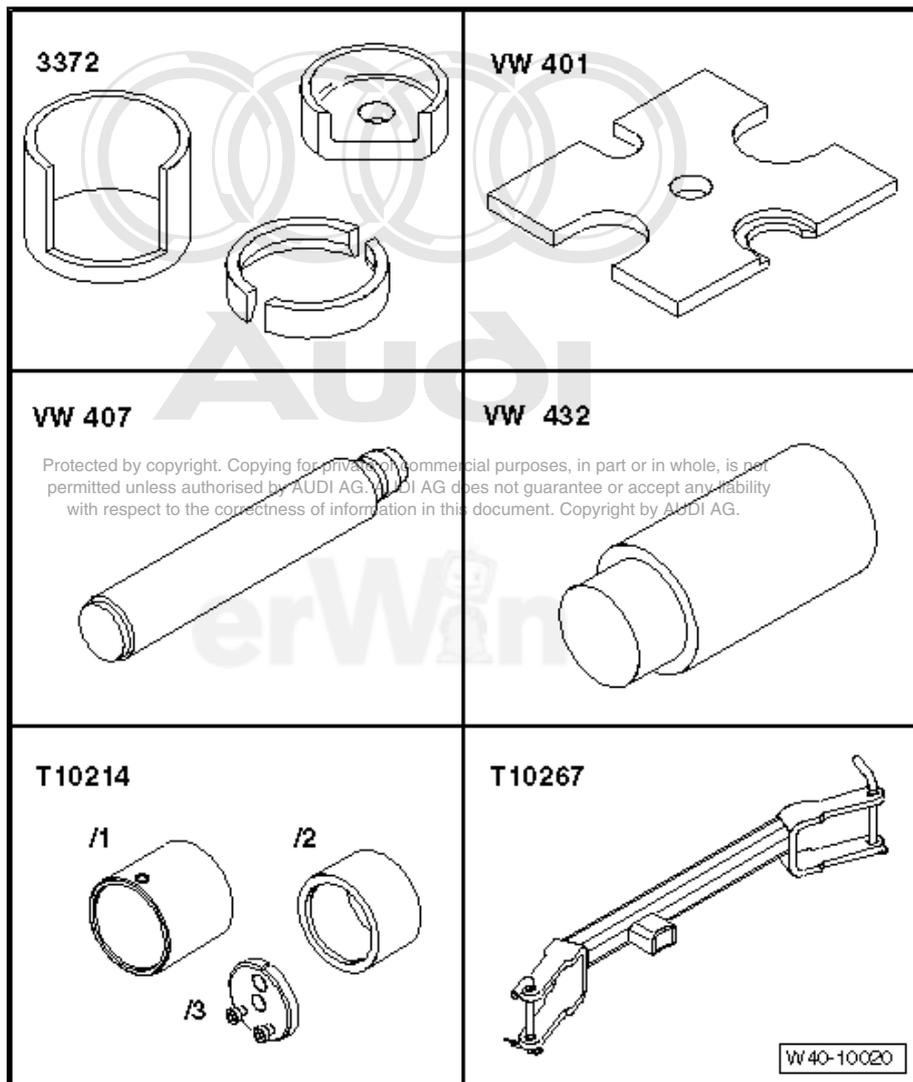
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Special tools and workshop equipment required

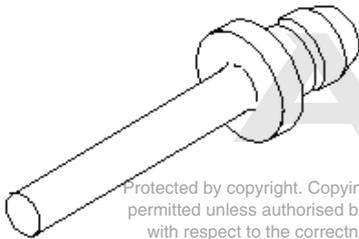
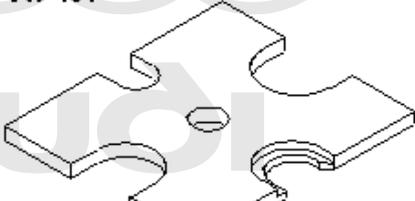
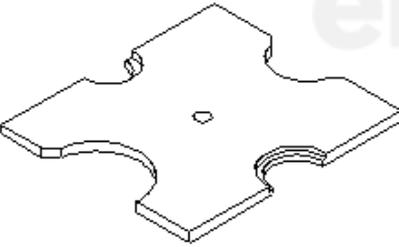
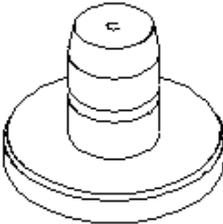
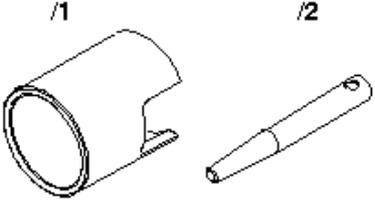
- ◆ Installation device -3372-
- ◆ Thrust plate -VW 401-
- ◆ Punch -VW 407-
- ◆ Thrust piece -VW 432-
- ◆ Assembly tool -T10214-
- ◆ Assembly tool -T10267-





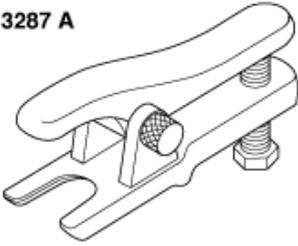
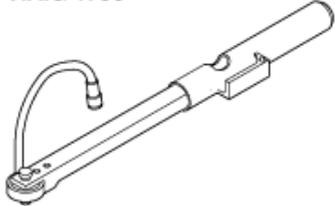
Special tools and workshop equipment required

- ◆ Punch -VW 411-
- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Sleeve -VW 426-
- ◆ Punch -VW 412-
- ◆ Assembly tool -T10219-

<p>VW 411</p> 	<p>VW 401</p>  <p>Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.</p>
<p>VW 402</p> 	<p>VW 426</p> 
<p>VW 412</p> 	<p>T10219</p>  <p>G40-10013</p>

Special tools and workshop equipment required

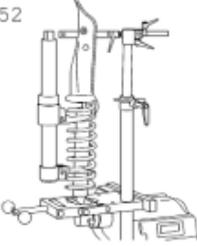
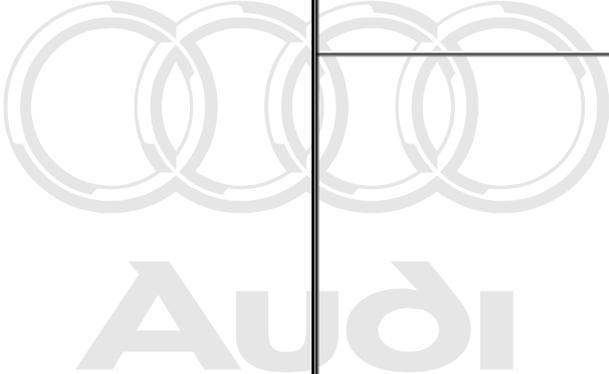
- ◆ Ball joint puller -3287 A-
- ◆ Angle wrench -V.A.G 1756-
- ◆ Ring Spanner Insert VAG 1332/10 -V.A.G 1332/10-

<p>3287 A</p> 	<p>V.A.G 1756</p> 
<p>V.A.G 1332/10</p> 	
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Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-
- ◆ Spring compressor -V.A.G 1752/1-
- ◆ Spring holder -V.A.G 1752/4-
- ◆ Shock absorber set - T10001-

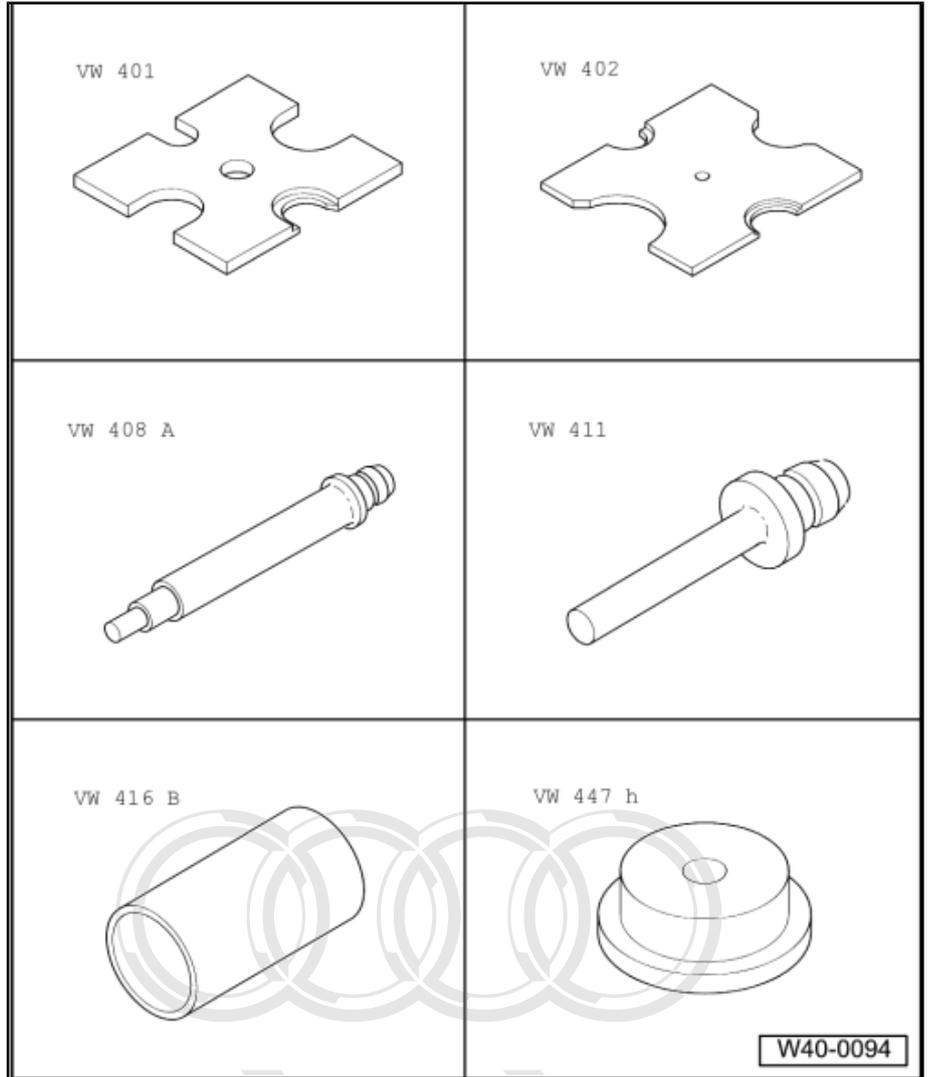
<p>V.A.G 1332</p> 	<p>V.A.G 1752</p> 
<p>T 10001</p> 	
	<p>W40-0119</p>

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Special tools and workshop equipment required

- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Punch -VW 408 A-
- ◆ Punch -VW 411-
- ◆ Sleeve -VW 416 B-
- ◆ Thrust pad -VW 447 H-

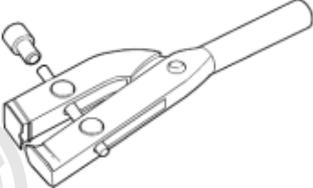
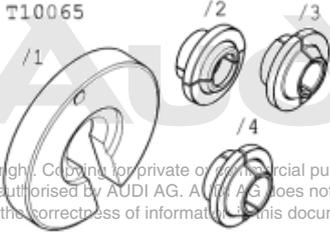


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- ◆ Circlip pliers -VW 161 A-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ CV joint boot clamp tool - V.A.G 1682-
- ◆ Assembly tool -T10065-

<p>VW 161 A</p> 	<p>V.A.G 1331</p> 
<p>V.A.G 1332</p> 	<p>V.A.G 1682</p> 
<p>T10065</p>  <p>Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.</p> <div style="text-align: right; border: 1px solid black; padding: 2px;">W40-0101</div>	

42 – Rear Suspension

1 General Information

⇒ [“1.1 General Repair Information”, page 113](#)

⇒ [“1.2 Contact Corrosion”, page 114](#)

⇒ [“1.3 Longitudinal Member Threads, Repairing”, page 114](#)

⇒ [“1.4 Drive Axle”, page 115](#)

1.1 General Repair Information

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

Torque specifications for unlubricated bolts and nuts are given.

Always replace self-locking nuts and bolts.

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

Welding or straightening operations are not permitted on load-bearing or wheel-controlling components.

Always avoid the following actions with coil springs: Striking with a hammer, welding beads, applying color identification later.

Do not perform any welding or grinding (separating work) in coil spring or suspension strut area! Cover coil spring or suspension struts if necessary.

When loosening, removing or installing hydraulic, pneumatic or electrical line, always make a sketch or take a picture. Doing so records the original installation locations.

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

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

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

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

- Install an outer joint in place of the drive axle.
- Tighten the outer joint to 120 Nm (twelve-point bolt) or 200 Nm (hex bolt).

Bonded rubber bushings can only be turned to a limited extent. Only tighten the threaded connections on the components with bonded rubber bushings when the wheel bearing housing is lifted (curb weight position). Refer to

⇒ [“2.1 Wheel Bearing, Lifting to Curb Weight Position”, page 116](#).

Always replace bonded rubber bushings on both sides of vehicle.

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**Note**

If the vehicle must still be aligned, every bolt and nut that must be loosened for adjustment is only tightened to torque specification. Tighten the bolts and nuts to the specified additional tightening angle after the alignment/adjustment is complete.

**WARNING**

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

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Note the following when working on a vehicle with the Start/Stop System:

**WARNING**

Danger of personal injury caused by the engine starting automatically on vehicles with the Start/Stop System.

- ◆ ***When the Start/Stop System is on (recognizable by a message in the instrument cluster), the engine may start automatically.***
- ◆ ***Make sure the Start/Stop System is off whenever working on the vehicle. Turn off the ignition and turn it back on only when necessary.***

1.2 Contact Corrosion

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

For this reason, only fastening elements with a special surface coating are installed.

In addition, rubber or plastic parts and adhesive are made of non-conductive materials.

If there are doubts as to whether parts should be installed, install new parts according to the parts catalog.

**Note**

- ◆ ***We recommend only using original replacement parts, they have been tested and are compatible with aluminum.***
- ◆ ***We recommend using Audi accessories.***
- ◆ ***Damage due to contact corrosion is not covered under warranty!***

1.3 Longitudinal Member Threads, Repairing

It is possible to service the threads of the weld nuts in the longitudinal member depending on certain conditions.

- ◆ Servicing work may only be performed once per thread.
- ◆ If servicing is necessary after this, the nuts must be replaced.

- ◆ Have the thread repair checked by the responsible foreman or next person in charge.
- ◆ Thread insert must be same length as thread in body.
- ◆ Repair any damage to the underbody sealant. Refer to General Information; Body Repairs, Body Collision Repair.

1.4 Drive Axle

Wheel bearings must not be burdened when drive axle connection is loose.

If the bearings are loaded by the vehicle's own weight the wheel bearing will be damaged. This reduces the service life of the wheel bearings.

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

- Install an outer joint in place of the drive axle.
- Tighten the outer joint to 120 Nm (twelve-point bolt) or 200 Nm (hex bolt).

Loosening the connection between the drive axle and wheel hub:

- ◆ Refer to [⇒ "2.3.7 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 135](#) .
- ◆ Refer to [⇒ "2.3.8 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 136](#) .
- ◆ Refer to [⇒ "2.3.9 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 137](#) .

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

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

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

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

Always replace self-locking nuts and bolts.

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



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2 Description and Operation

⇒ "2.1 Wheel Bearing, Lifting to Curb Weight Position",
page 116

⇒ "2.2 Front Wheel Drive (FWD)", page 118

⇒ "2.3 All Wheel Drive (AWD)", page 125

2.1 Wheel Bearing, Lifting to Curb Weight Position

Special tools and workshop equipment required

- ◆ Engine/transmission jack -V.A.G 1383 A-
- ◆ Tensioning strap -T10038-
- ◆ Wheel hub support -T10149-



Note

All chassis component bolts with bonded rubber mountings must be tightened with the suspension in the curb weight position (unladen).

Bonded rubber bushings can only be turned to a limited extent.

Parts with bonded rubber bushings must therefore be brought into a position that corresponds to the position in driving mode before being tightened (curb weight position).

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

By raising axle on one side using -V.A.G 1383 A- and -T10149-, this position can be simulated on the hoist.

- Measure dimension -a- from wheel center to lower edge of wheel housing using, for example, a tape measure.

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Note

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

- Note measured value. It will be required for tightening bolts/nuts.

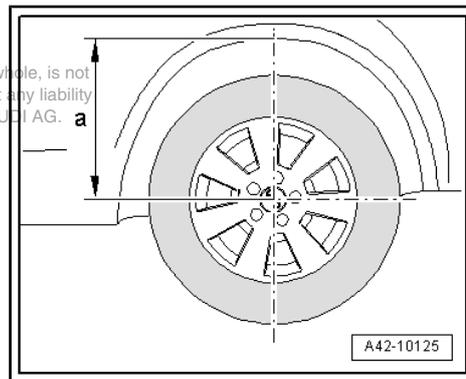


Caution

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

If a vehicle is not secured, there is danger that the vehicle could slip off the lift!

- Turn wheel hub far enough until one of the holes for wheel bolts is on top.
- Install -T10149- with wheel bolt.



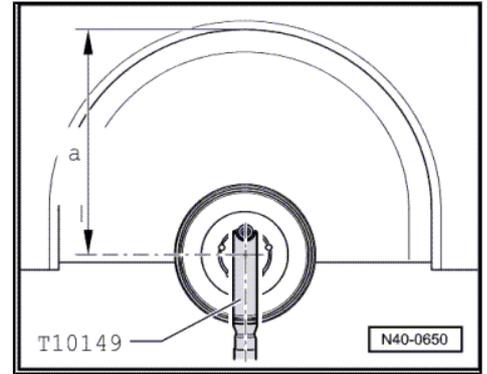
- Using -V.A.G 1383 A- , lift wheel bearing housing until dimension -a- is reached.

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



WARNING

- ◆ *Do not lift or lower vehicle with -V.A.G 1383 A- below vehicle.*
- ◆ *Do not leave -V.A.G 1383 A- below vehicle any longer than necessary.*



- Tighten respective bolts/nuts.
- Lower wheel bearing housing.
- Move -V.A.G 1383 A- away from under vehicle.
- Remove -T10149- .



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2.2 Front Wheel Drive (FWD)

⇒ [“2.2.1 Rear Suspension Overview”, page 118](#)

⇒ [“2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview”, page 119](#)

⇒ [“2.2.3 Wheel Bearing Housing, Wheel Bearing Unit, Trailing Arm with Mounting Bracket and Stone Deflector Assembly Overview”, page 121](#)

⇒ [“2.2.4 Shock Absorber and Coil Spring Assembly Overview”, page 123](#)

⇒ [“2.2.5 Stabilizer Bar Assembly Overview”, page 124](#)

2.2.1 Rear Suspension Overview

I - Refer to

⇒ [“2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview”, page 119](#).

II - Refer to

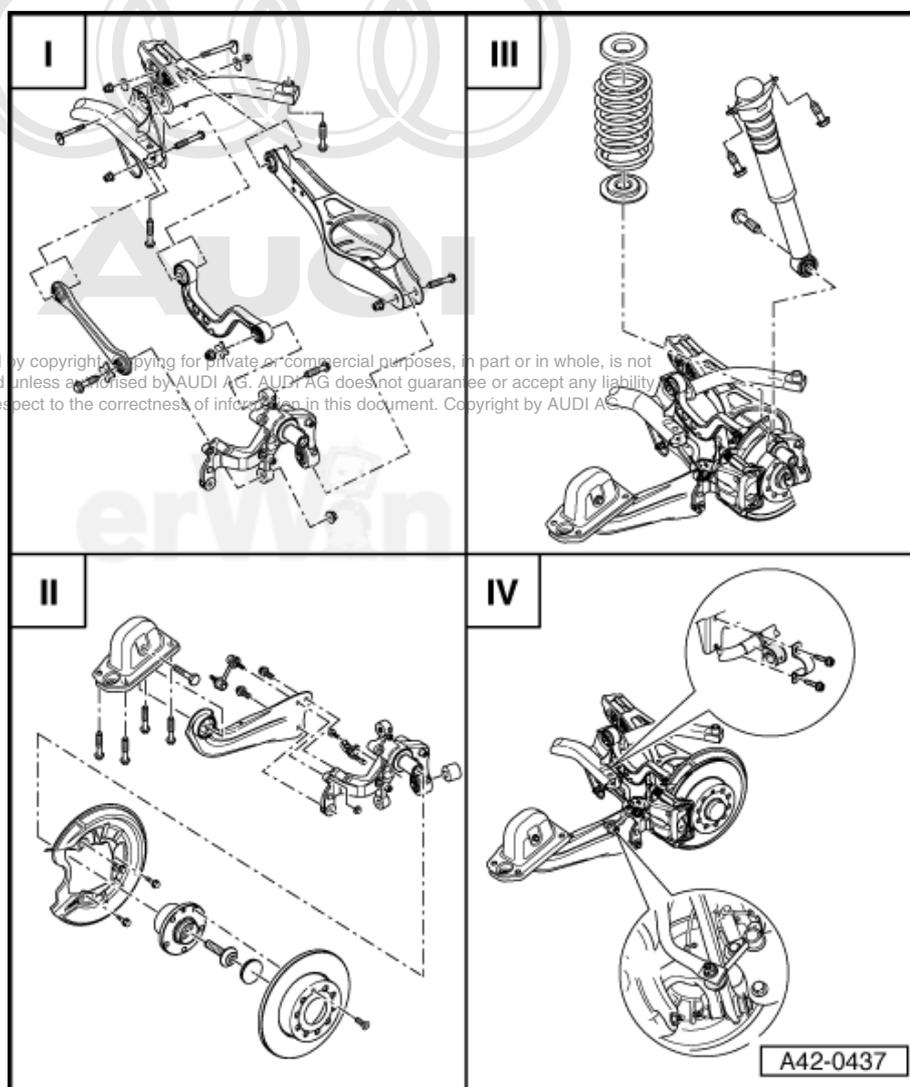
⇒ [“2.2.3 Wheel Bearing Housing, Wheel Bearing Unit, Trailing Arm with Mounting Bracket and Stone Deflector Assembly Overview”, page 121](#).

III - Refer to

⇒ [“2.2.4 Shock Absorber and Coil Spring Assembly Overview”, page 123](#).

IV - Refer to

⇒ [“2.2.5 Stabilizer Bar Assembly Overview”, page 124](#).



2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview

1 - Eccentric Bolt

- After loosening, perform vehicle alignment. Refer to [⇒ "1.5 Wheel Alignment", page 230](#).
- Do not turn more than 90° left or right (that is, smallest to largest possible adjustment).

2 - Nut

- 95 Nm
- Always replace if removed.
- Always tighten threaded connections in curb weight position. Refer to [⇒ "2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#).

3 - Eccentric Washer

- Inner bore with tab.

4 - Eccentric Bolt

- After loosening, perform vehicle alignment. Refer to [⇒ "1.5 Wheel Alignment", page 230](#).
- Do not turn more than 90° left or right (that is, smallest to largest possible adjustment).

5 - Eccentric Washer

- Inner bore with tab.

6 - Nut

- 95 Nm
- Always replace if removed.
- Always tighten threaded connections in curb weight position. Refer to [⇒ "2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#).



Note

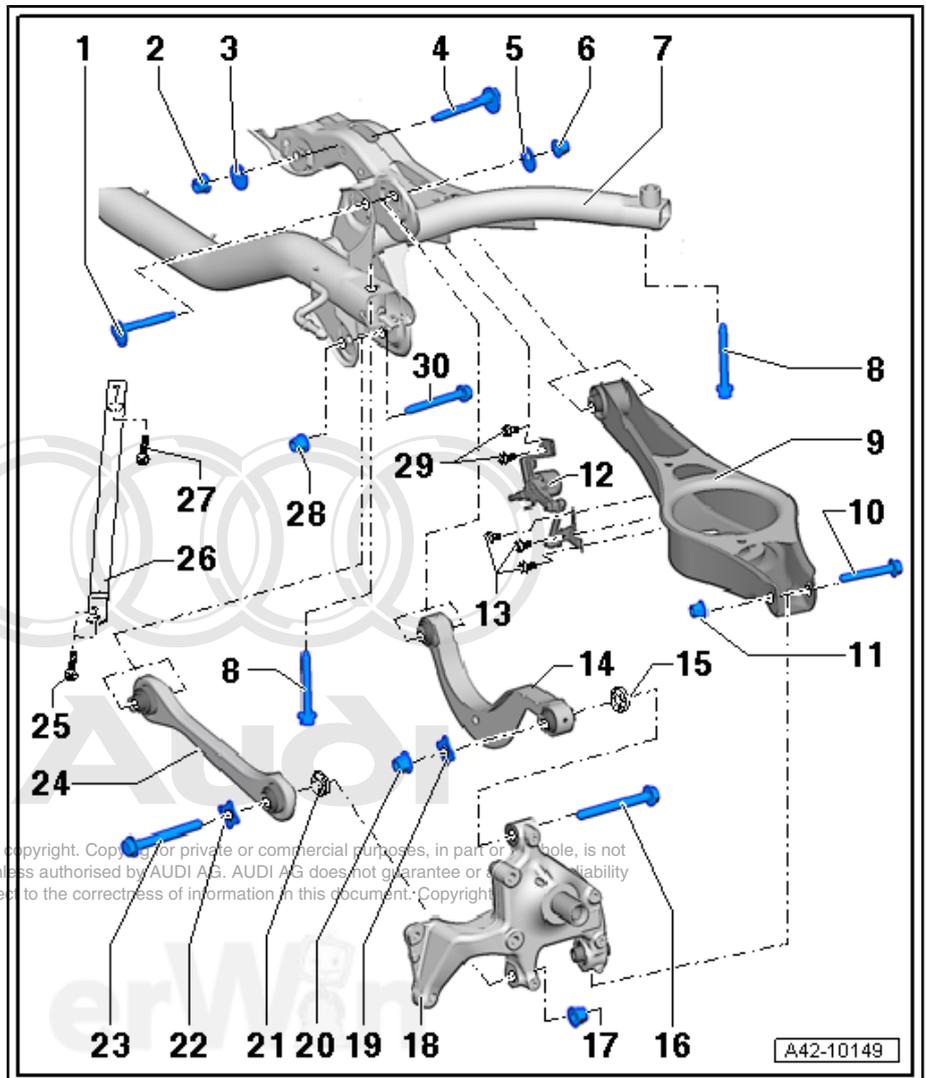
- ◆ *Adjust Torque wrench -V.A.G 1332- to 80 Nm when tightening nut.*
- ◆ *This torque specification applies only in conjunction with Insert tool 18 mm -T10179-.*

7 - Subframe

- Removing and Installing, refer to [⇒ "5.1.1 Subframe with Attachments", page 145](#).

8 - Bolt

- 90 Nm + 90° turn





- Always replace if removed.

9 - Lower Transverse Link

- Removing and installing, refer to ⇒ [“5.1.3 Lower Transverse Link“, page 149](#) .

10 - Bolt

- Always replace if removed.

11 - Nut

- 90 Nm + 90° turn
- Always replace if removed.
- Always tighten threaded connections in curb weight position. Refer to ⇒ [“2.1 Wheel Bearing, Lifting to Curb Weight Position“, page 116](#) .

12 - Left Rear Level Control System Sensor -G76- and Right Rear Level Control System Sensor -G77-

- Removing and Installing; refer to ⇒ [“5.1.6 Level Control System Sensors“, page 153](#)

13 - Bolt

- 5 Nm

14 - Upper Transverse Link

- Removing and installing, refer to ⇒ [“5.1.4 Upper Transverse Link“, page 150](#) .

15 - Washer**16 - Bolt**

- 130 Nm + 90° turn
- Always replace if removed.
- Always tighten threaded connections in curb weight position. Refer to ⇒ [“2.1 Wheel Bearing, Lifting to Curb Weight Position“, page 116](#) .

17 - Nut

- Always replace if removed.

18 - Wheel Bearing Housing

- Removing and installing, refer to ⇒ [“5.1.7 Wheel Bearing Housing“, page 154](#)

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19 - Washer**20 - Nut**

- Always replace if removed.

21 - Washer**22 - Washer****23 - Bolt**

- 130 Nm + 90° turn
- Always replace if removed.
- Always tighten threaded connections in curb weight position. Refer to ⇒ [“2.1 Wheel Bearing, Lifting to Curb Weight Position“, page 116](#) .

24 - Tie Rod

- Removing and installing, refer to ⇒ [“5.1.5 Tie Rod“, page 152](#) .
- Closed in direction of travel.

25 - Bolt

- 40 Nm + 45° turn
- For Roadster only.

26 - Diagonal Brace

- For Roadster only.
- Removing and installing, refer to ⇒ [“5.1.2 Diagonal Braces“, page 148](#) .

27 - Bolt

- 90 Nm + 45° turn

- For Roadster only.

28 - Nut

- 90 Nm + 90° turn
- Always replace if removed.
- Always tighten threaded connections in curb weight position. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116 .

29 - Bolt

- 5 Nm

30 - Bolt

- Always replace if removed.

2.2.3 Wheel Bearing Housing, Wheel Bearing Unit, Trailing Arm with Mounting Bracket and Stone Deflector Assembly Overview

1 - Expanding Rivet

2 - Stone Guard

- Removing and installing, refer to ⇒ ["5.1.12 Stone Guard"](#), page 167 .

3 - Coupling Rod

4 - Bolt

- 90 Nm + 45° turn
- Always replace if removed.

5 - Trailing Arm

- Removing and installing, refer to ⇒ ["5.1.10 Trailing Arm with Mounting Bracket"](#), page 162 .
- Servicing, refer to ⇒ ["5.1.11 Trailing Arm Bonded Rubber Bushing"](#), page 165 .

6 - Bolt

- 8 Nm

7 - Wheel Speed Sensor

8 - Wheel Bearing Housing

- Removing and Installing, refer to ⇒ ["5.1.7 Wheel Bearing Housing"](#), page 154 .

9 - Bonded Rubber Bushing

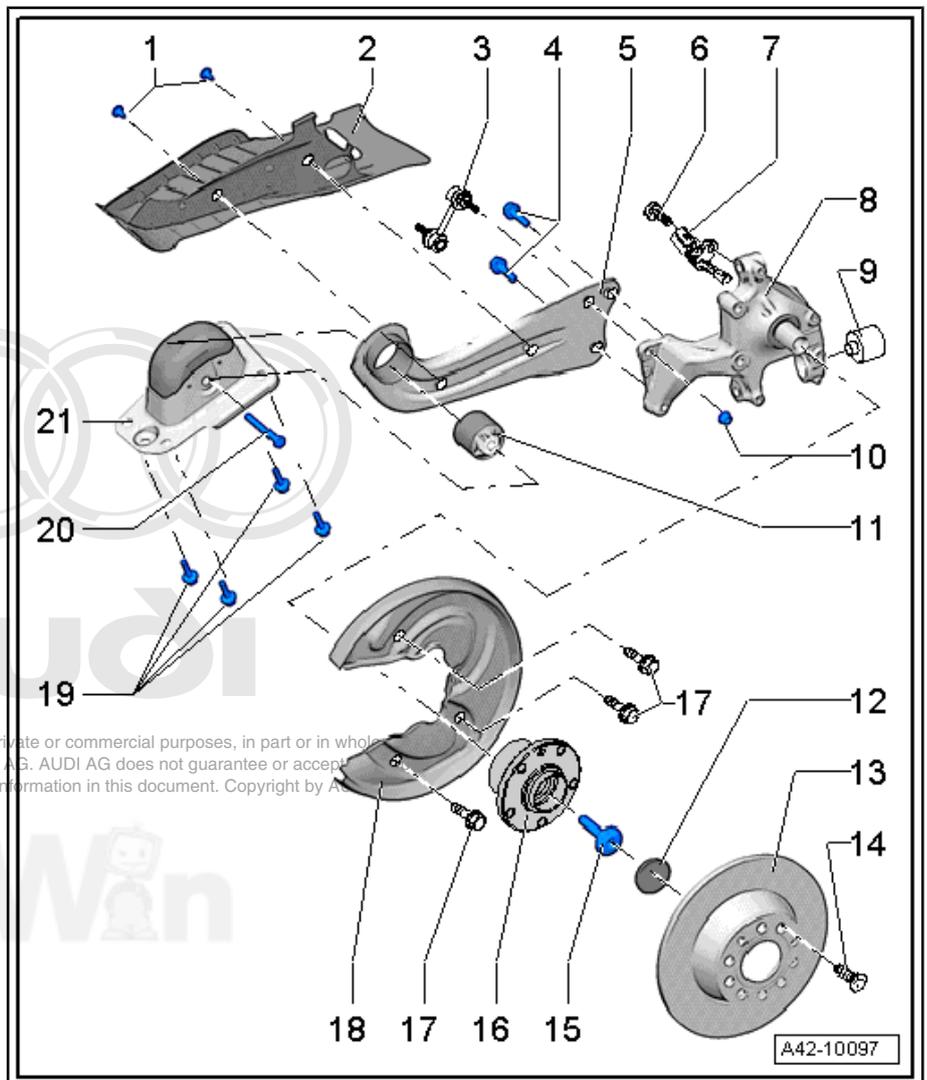
- Replacing, refer to ⇒ ["5.1.8 Wheel Bearing Housing Bonded Rubber Bushing"](#), page 158 .

10 - Nut

- 25 Nm

11 - Bonded Rubber Bushing

- Replacing, refer to ⇒ ["5.1.11 Trailing Arm Bonded Rubber Bushing"](#), page 165 .



12 - Dust Cap

- Always replace if removed.
- Removing and installing, refer to ⇒ [“5.1.9 Wheel Bearing Unit”, page 160](#) .

**Note**

An appropriate seal can only be achieved with a new dust cap.

13 - Brake Disc**14 - Bolt**

- 4 Nm

15 - Bolt

- 200 Nm + 180° turn
- Always replace if removed.
- Before installing, clean the threads in the wheel bearing housing with a tap.
- Loosen and tighten with the socket M18 multi-point socket -T10162- .
- Wheel hub to stub axle threaded connection, loosening and tightening (same procedure as on all wheel drive vehicles), refer to ⇒ [“2.3.7 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening”, page 135](#) .

16 - Wheel Bearing Unit

- The ABS sensor ring is installed in the wheel bearing unit.
- Removing and Installing; refer to ⇒ [“5.1.9 Wheel Bearing Unit”, page 160](#) .

**Note**

The wheel bearing unit is maintenance free and has zero play. Adjusting or servicing is not possible!

17 - Bolt

- 10 Nm

18 - Cover Plate**19 - Bolt**

- 50 Nm + 45° turn
- Always replace if removed.

20 - Bolt

- 90 Nm + 90° turn
- Always replace if removed.

21 - Mounting Bracket

2.2.4 Shock Absorber and Coil Spring Assembly Overview

1 - Upper Spring Support

2 - Coil Spring

- Be aware of the various suspension versions.
- Note the following when assembling. Refer to [⇒ page 169](#).
- Removing and installing, refer to [⇒ "5.1.14 Coil Spring", page 169](#).

3 - Lower Spring Support

- Spring end rotated up to stop.
- There are two different versions: one is pure rubber and the other is galvanized rubber.
- Allocation, refer to the Electronic Parts Catalog (ETKA).



Note

Whenever replacing a part or performing a repair near the rear coil springs, the rubber spring support with a galvanized contact surface must be replaced with a new rubber spring support. If a rubber spring support is already installed, do not replace it.

4 - Bolt

- 180 Nm

5 - Bolt

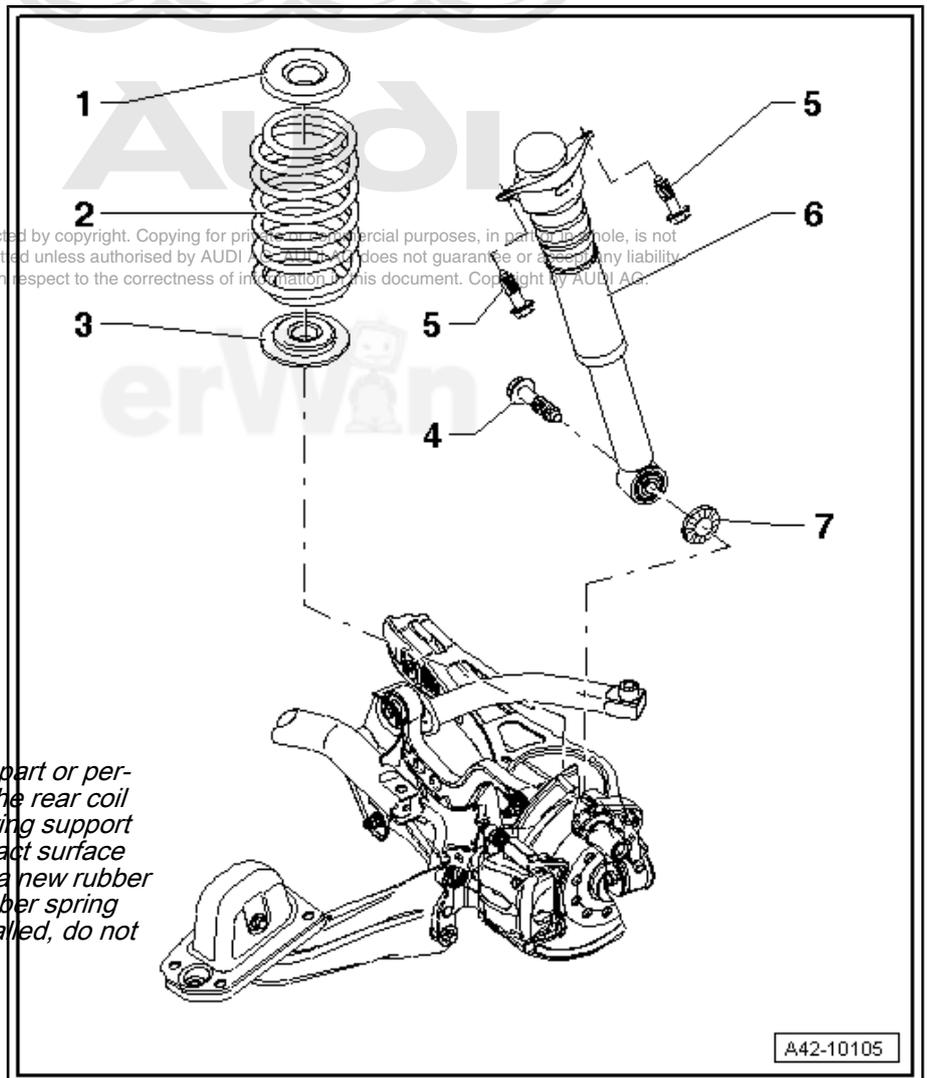
- 50 Nm + 45° turn
- Always replace if removed.

6 - Shock Absorbers

- Only shock absorbers with the same part number may be installed on the left and right.
- Removing and installing, refer to [⇒ "5.2.14 Shock Absorber", page 198](#).
- Be aware of the various suspension versions. Refer to [⇒ "1.6 PR Number Explanations", page 232](#).
- Faulty shock absorbers must be vented and emptied before disposal. Refer to [⇒ "1.3 Rear Gas-Filled Strut, Venting", page 2](#).
- Check removed shock absorber. Refer to [⇒ "3.1 Shock Absorbers, Removed, Checking", page 5](#).
- On vehicles with electronically-controlled damping (Audi magnetic ride), the control position must be reprogrammed each time a shock absorber is replaced using the vehicle diagnosis, testing and information system -VAS 5051-.

7 - Washer

- Serves as corrosion protection.
- Always install.



2.2.5 Stabilizer Bar Assembly Overview

1 - Stabilizer Bar

- Be aware of the various suspension versions. Refer to ["1.6 PR Number Explanations", page 232](#).
- Removing and installing, refer to ["5.1.15 Stabilizer Bar", page 170](#).

2 - Clamp

3 - Bolt

- 25 Nm + 90° turn
- Always replace if removed.

4 - Rubber Mount

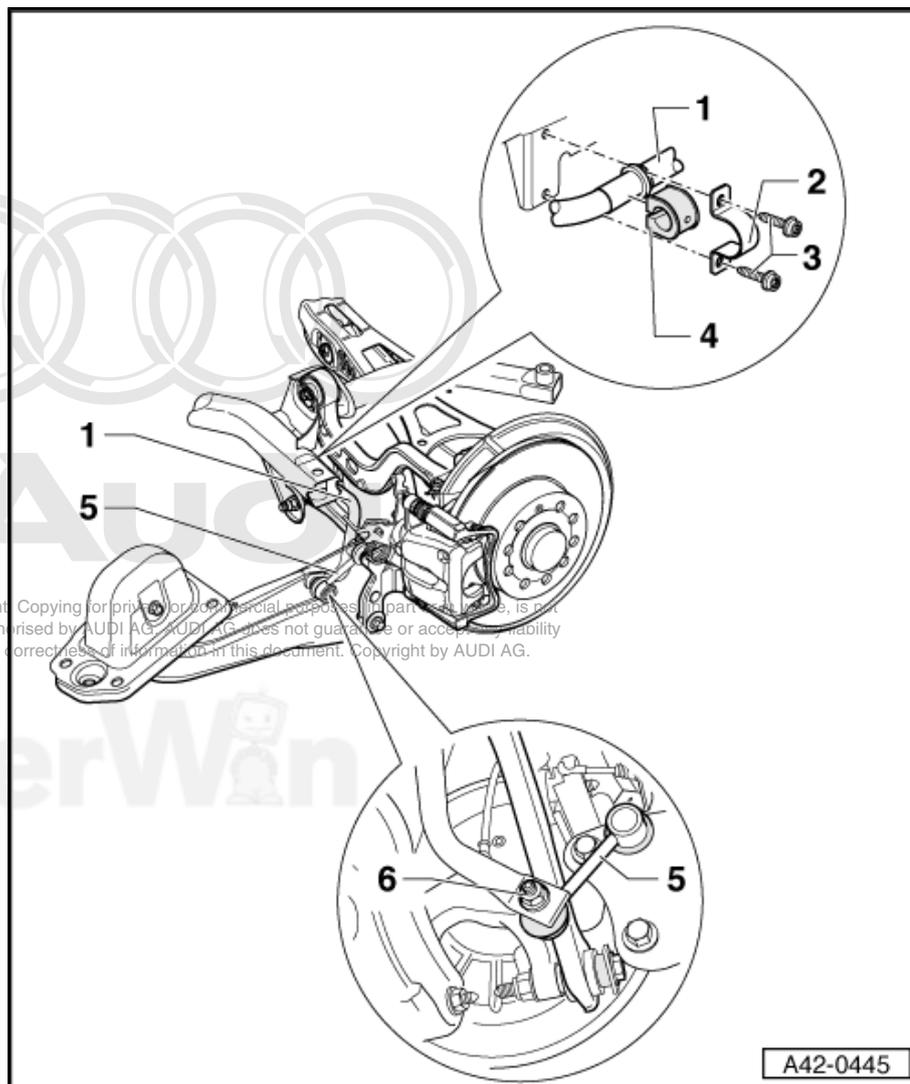
- Replace mounts always on both sides of vehicle.

5 - Coupling Rod

- Connects stabilizer to trailing link/wheel bearing housing.

6 - Nut

- 40 Nm



2.3 All Wheel Drive (AWD)

⇒ [“2.3.1 Rear Suspension Overview”, page 125](#)

⇒ [“2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe”, page 127](#)

⇒ [“2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster”, page 129](#)

⇒ [“2.3.4 Wheel Bearing Housing, Wheel Bearing Unit and Trailing Arm with Mounting Bracket Assembly Overview”, page 132](#)

⇒ [“2.3.5 Shock Absorber and Coil Spring Assembly Overview”, page 134](#)

⇒ [“2.3.6 Stabilizer Bar Assembly Overview”, page 135](#)

⇒ [“2.3.7 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening”, page 135](#)

⇒ [“2.3.8 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening”, page 136](#)

⇒ [“2.3.9 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening”, page 137](#)

2.3.1 Rear Suspension Overview

I - Refer to

⇒ [“2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe”, page 127](#).

II - Refer to

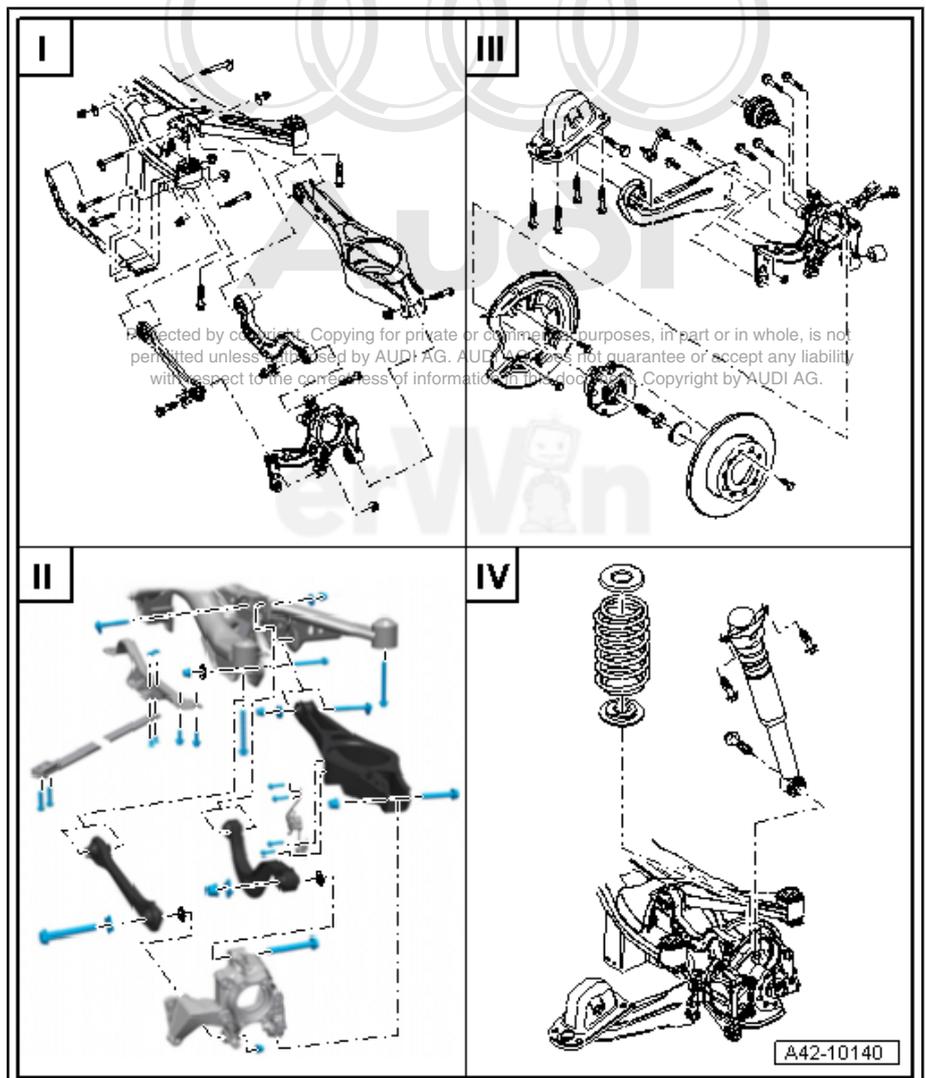
⇒ [“2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster”, page 129](#).

III - Refer to

⇒ [“2.3.4 Wheel Bearing Housing, Wheel Bearing Unit and Trailing Arm with Mounting Bracket Assembly Overview”, page 132](#).

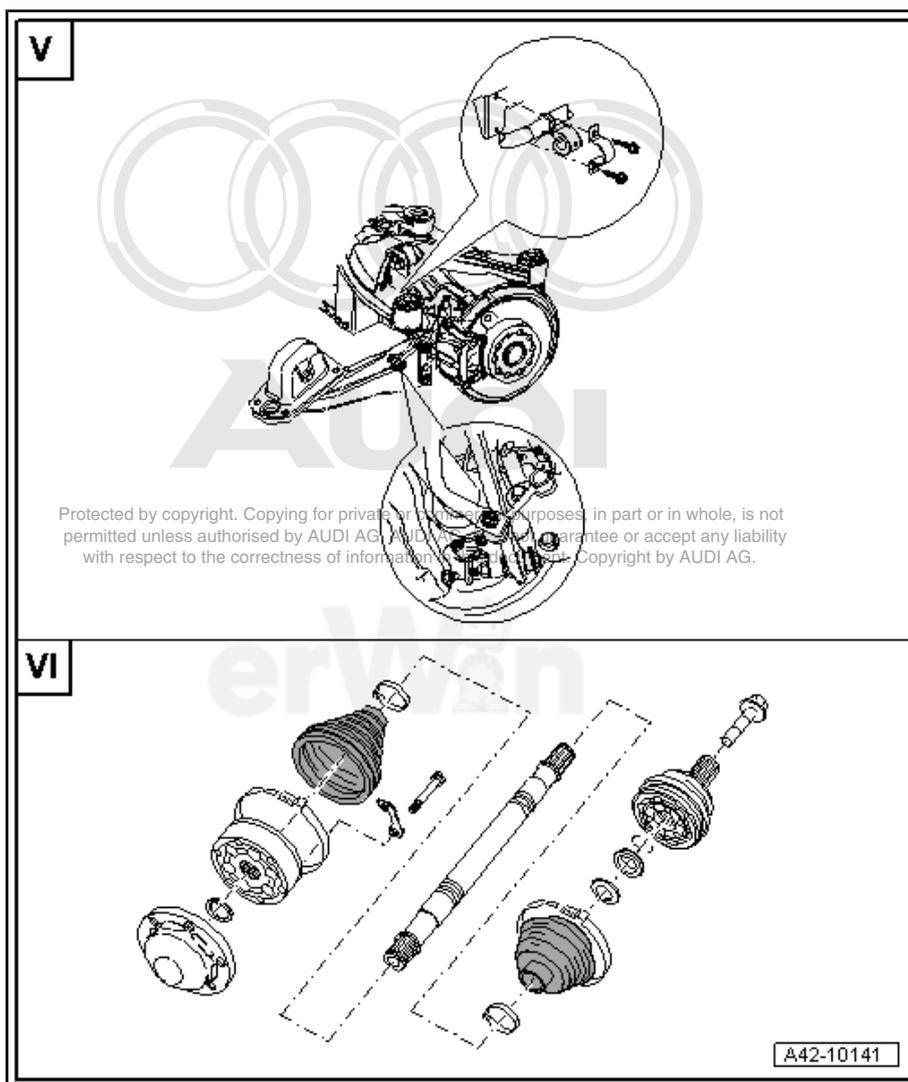
IV - Refer to

⇒ [“2.3.5 Shock Absorber and Coil Spring Assembly Overview”, page 134](#).



V - Refer to
⇒ [“2.3.6 Stabilizer Bar Assembly Overview”, page 135](#) .

VI - Refer to
⇒ [“6.3 Drive Axle with 90 mm Outer CV Joint”, page 210](#) or
⇒ [“6.4 Drive Axle with 82 mm Outer CV Joint”, page 216](#) .



2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe

1 - Eccentric Bolt

- After loosening, perform vehicle alignment. Refer to [⇒ "1.5 Wheel Alignment", page 230](#).
- Do not turn more than 90° left or right (that is, smallest to largest possible adjustment).

2 - Nut

- 95 Nm
- Always replace if removed.
- Always tighten threaded connections in curb weight position. Refer to [⇒ "2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#).

3 - Eccentric Washer

- Inner bore with tab.

4 - Eccentric Bolt

- After loosening, perform vehicle alignment. Refer to [⇒ "1.5 Wheel Alignment", page 230](#).
- Do not turn more than 90° left or right (that is, smallest to largest possible adjustment).

5 - Eccentric Washer

- Inner bore with tab.

6 - Nut

- 95 Nm
- Always replace if removed.
- Always tighten threaded connections in curb weight position. Refer to [⇒ "2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#).

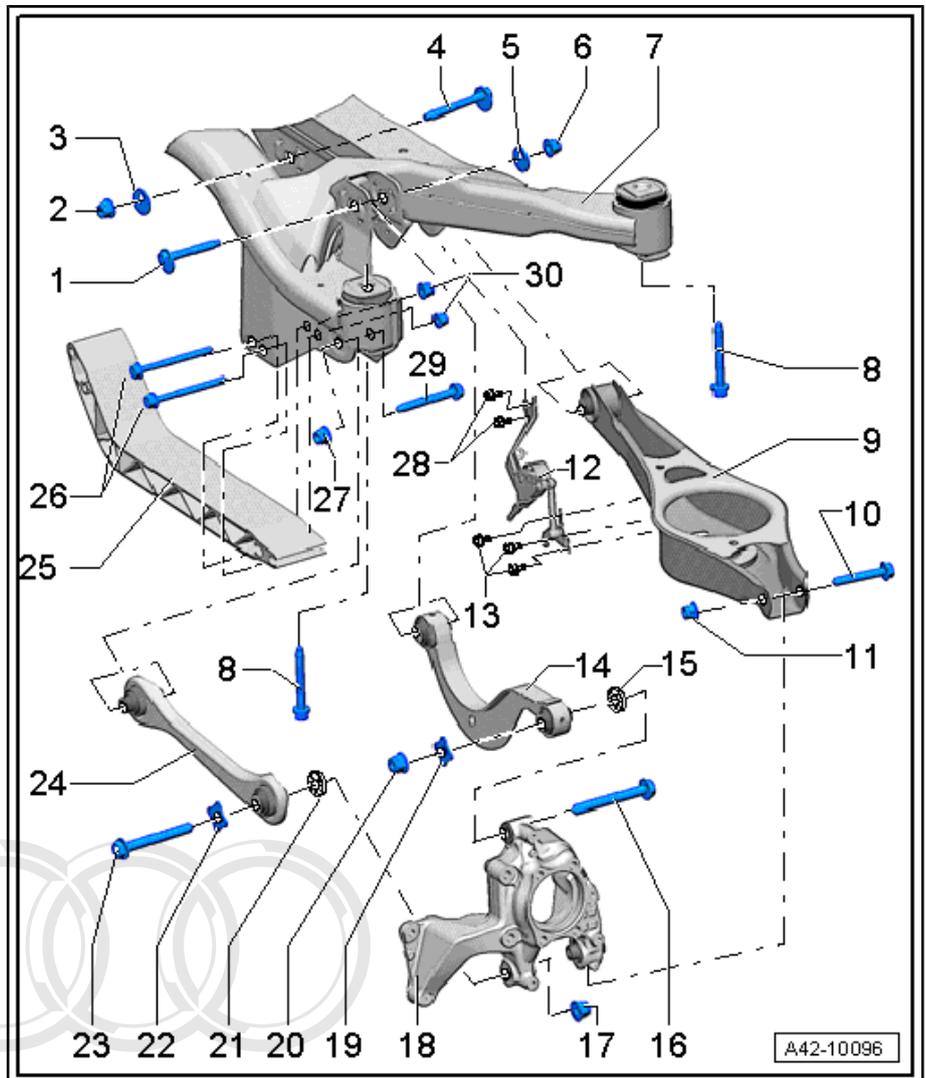


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- ◆ Adjust torque wrench - V.A.G 1332- to 80 Nm when tightening nut.
- ◆ This torque specification applies only in conjunction with Insert Tool - T10179-.

7 - Subframe

- Subframe mount, removing and installing, refer to [⇒ "5.2.2 Subframe Bonded Rubber Bushing", page 177](#).





8 - Bolt

- 90 Nm + 90° turn
- Always replace if removed.

9 - Lower Transverse Link

- Removing and installing, refer to ⇒ ["5.2.3 Lower Transverse Link", page 180](#) .

10 - Bolt

- Always replace if removed.

11 - Nut

- 90 Nm + 90° turn
- Always replace if removed.
- Always tighten threaded connections in curb weight position. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#) .

12 - Left Rear Level Control System Sensor -G76- and Right Rear Level Control System Sensor -G77-

- Removing and installing, refer to ⇒ ["5.1.6 Level Control System Sensors", page 153](#) .

13 - Bolt

- 5 Nm

14 - Upper Transverse Link

- Removing and installing, refer to ⇒ ["5.2.4 Upper Transverse Link", page 181](#) .

15 - Washer

16 - Bolt

- 130 Nm + 90° turn
- Always replace if removed.
- Always tighten threaded connections in curb weight position. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#) .

17 - Nut

- Always replace if removed.

18 - Wheel Bearing Housing

- Removing and installing, refer to ⇒ ["5.2.9 Wheel Bearing Housing", page 187](#) .

19 - Washer

20 - Nut

- Always replace if removed.

21 - Washer

22 - Washer

23 - Bolt

- 130 Nm + 90° turn
- Always replace if removed.
- Always tighten threaded connections in curb weight position. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#) .

24 - Tie Rod

- Removing and installing, refer to ⇒ ["5.2.5 Tie Rod", page 183](#) .
- Closed in direction of travel.

25 - Crossmember

26 - Bolt

27 - Nut

- 90 Nm + 90° turn
- Always replace if removed.

- ❑ Always tighten threaded connections in curb weight position. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116 .

28 - Bolt

- ❑ 5 Nm

29 - Bolt

- ❑ Always replace if removed.

30 - Nut

- ❑ 50 Nm + 180° turn
- ❑ Always replace if removed.

2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster

1 - Subframe

- ❑ Removing and installing, refer to ⇒ ["5.2.1 Subframe with Attachments"](#), page 172 .

2 - Nut

- ❑ 95 Nm
- ❑ Always replace if removed.
- ❑ Always tighten threaded connections in curb weight position. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116 .



Note

- ◆ Adjust torque wrench V.A.G 1332- to 80 Nm when tightening nut.
- ◆ This torque specification applies only in conjunction with Insert Tool -T10179- .

3 - Eccentric Washer

- ❑ Inner bore with tab.

4 - Rubber Mount

- ❑ Is only replaced in conjunction with subframe.

5 - Bolt

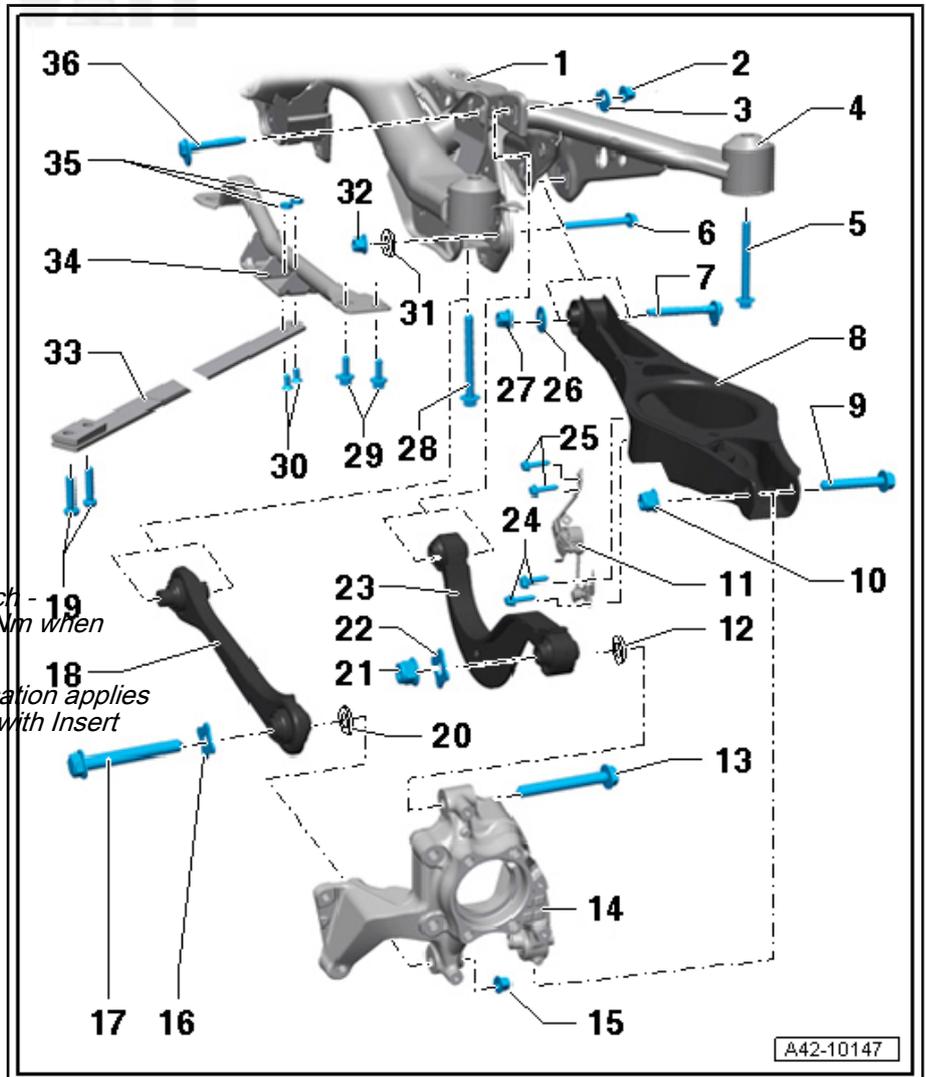
- ❑ 90 Nm + 90° turn
- ❑ Always replace if removed.

6 - Bolt

- ❑ Always replace if removed.

7 - Eccentric Bolt

- ❑ After loosening, perform vehicle alignment. Refer to ⇒ ["1.5 Wheel Alignment"](#), page 230 .





- Do not turn more than 90° left or right (that is, smallest to largest possible adjustment).

8 - Lower Transverse Link

- Removing and installing, refer to ⇒ [“5.2.3 Lower Transverse Link”, page 180](#) .

9 - Bolt

- Always replace if removed.

10 - Nut

- 90 Nm + 90° turn
- Always replace if removed.
- Always tighten threaded connections in curb weight position. Refer to ⇒ [“2.1 Wheel Bearing, Lifting to Curb Weight Position”, page 116](#) .

11 - Left Rear Level Control System Sensor -G76- and Right Rear Level Control System Sensor -G77-

- Removing and installing, refer to ⇒ [“5.2.6 Level Control System Sensors”, page 184](#) .

12 - Washer

- Serves as corrosion protection.
- Always install.

13 - Bolt

- 130 Nm + 90° turn
- Always replace if removed.
- Always tighten threaded connections in curb weight position. Refer to ⇒ [“2.1 Wheel Bearing, Lifting to Curb Weight Position”, page 116](#) .

14 - Wheel Bearing Housing

- Removing and installing, refer to ⇒ [“5.2.9 Wheel Bearing Housing”, page 187](#) .

15 - Nut

- Always replace if removed.

16 - Washer

17 - Bolt

- 130 Nm + 90° turn
- Always replace if removed.
- Always tighten threaded connections in curb weight position. Refer to ⇒ [“2.1 Wheel Bearing, Lifting to Curb Weight Position”, page 116](#) .

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18 - Tie Rod

- Removing and installing, refer to ⇒ [“5.2.5 Tie Rod”, page 183](#) .
- Closed in direction of travel.

19 - Bolt

- 40 Nm + 45° turn
- Always replace if removed.

20 - Washer

- Serves as corrosion protection.
- Always install.

21 - Nut

- Always replace if removed.

22 - Washer

23 - Upper Transverse Link

- Removing and installing, refer to ⇒ [“5.2.4 Upper Transverse Link”, page 181](#) .

24 - Bolt

- 5 Nm

25 - Bolt

- 5 Nm

26 - Eccentric Washer

- Inner bore with tab.

27 - Nut

- 95 Nm
- Always replace if removed.
- Always tighten threaded connections in curb weight position. Refer to [⇒ "2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#) .

28 - Bolt

- 90 Nm + 90° turn
- Always replace if removed.

29 - Bolt

- 40 Nm

30 - Bolt

- 40 Nm + 45° turn
- Always replace if removed.

31 - Washer

32 - Nut

- 90 Nm + 90° turn
- Always replace if removed.
- Always tighten threaded connections in curb weight position. Refer to [⇒ "2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#) .

33 - Diagonal Brace

- Removing and installing, refer to [⇒ "5.2.7 Diagonal Braces, Roadster", page 186](#) .

34 - Crossmember

- Removing and installing, refer to [⇒ "5.2.8 Crossmember Braces, Roadster", page 186](#) .

35 - Nut

- Always replace if removed.

36 - Eccentric Bolt

- After loosening, perform vehicle alignment. Refer to [⇒ "1.5 Wheel Alignment", page 230](#) .
- Do not turn more than 90° left or right (that is, smallest to largest possible adjustment).

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2.3.4 Wheel Bearing Housing, Wheel Bearing Unit and Trailing Arm with Mounting Bracket Assembly Overview

1 - Bolts

- 50 Nm + 45° turn
- Always replace if removed.

2 - Mounting Bracket

3 - Bolt

- 90 Nm + 90° turn
- Always replace if removed.

4 - Coupling Rod

5 - Bolt

- 90 Nm + 45° turn
- Always replace if removed.

6 - Trailing Arm

- Removing and installing, refer to ⇒ [“5.2.12 Trailing Arm with Mounting Bracket”, page 194](#).
- Servicing, refer to ⇒ [“5.2.13 Trailing Arm Bonded Rubber Bushing”, page 197](#).

7 - Drive Axle

- Transmission side tightening specification ⇒ [Item 13 \(page 211\)](#)

8 - Bolt

- 70 Nm + 90° turn
- Always replace if removed.

9 - Wheel Bearing Housing

- Removing and installing, refer to ⇒ [“5.2.9 Wheel Bearing Housing”, page 187](#).

10 - Wheel Speed Sensor

11 - Bolt

- 8 Nm

12 - Bonded Rubber Mount

- Replacing, refer to ⇒ [“5.2.10 Wheel Bearing Housing Bonded Rubber Bushing”, page 190](#).

13 - Nut

- 25 Nm

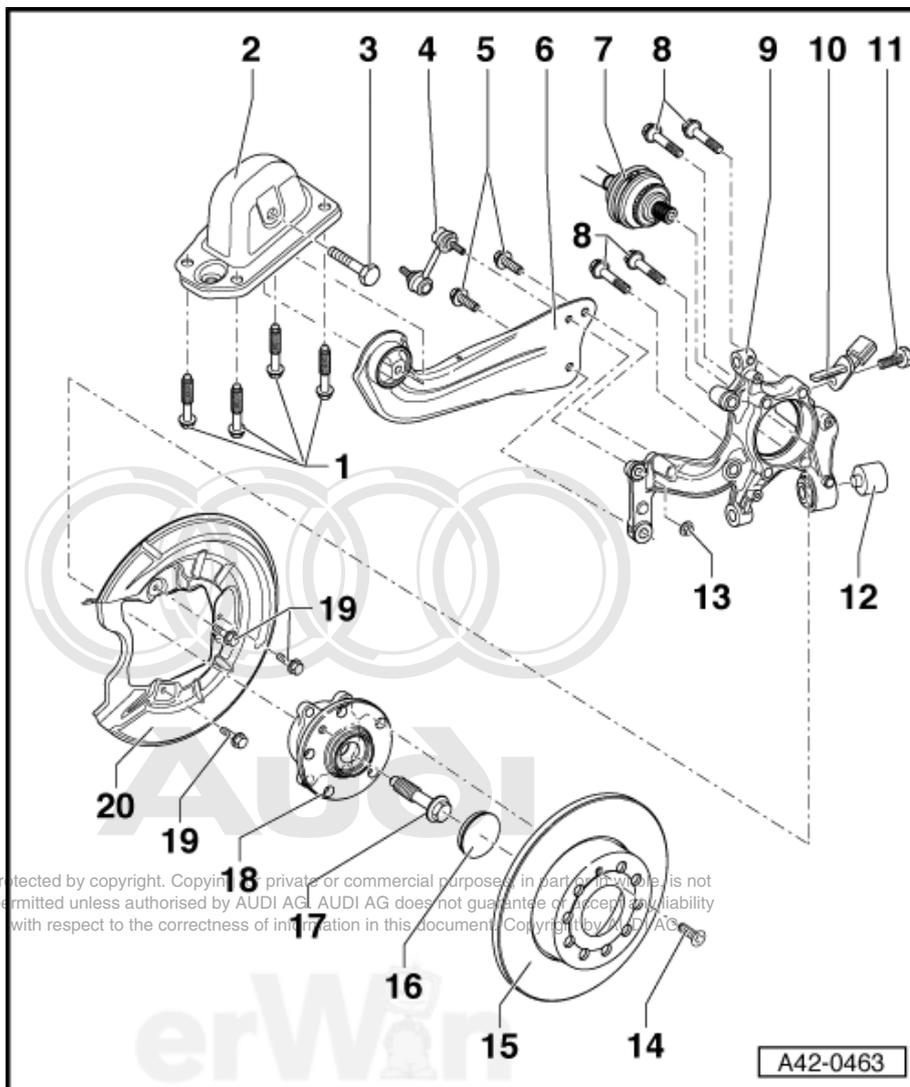
14 - Bolt

- 4 Nm

15 - Brake Disc

16 - Dust Cap

- Not installed on all wheel drive vehicles.



17 - Bolt

- Always replace if removed.
- Different versions. Allocation, refer to the Electronic Parts Catalog (ETKA).
- Twelve-point bolt characteristics, refer to ⇒ [page 133](#) .
- Hex bolt: 200 Nm + 180° turn. Refer to ⇒ ["2.3.7 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening"](#), [page 135](#) .
- Twelve-point bolt with ribs: 70 Nm + 90° turn. Refer to ⇒ ["2.3.8 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening"](#), [page 136](#) .
- Twelve-point bolt without ribs: 200 Nm + 180° turn. Refer to ⇒ ["2.3.9 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening"](#), [page 137](#) .
- Before installing, clean the threads in the CV joint with a tap.

18 - Wheel Bearing Unit

- The ABS sensor ring is installed in the wheel bearing unit.
- Removing and installing, refer to ⇒ ["5.2.11 Wheel Bearing Unit"](#), [page 193](#) .



Note

The wheel bearing unit is maintenance free and has zero play. Adjusting or servicing is not possible!

19 - Bolt

- 10 Nm

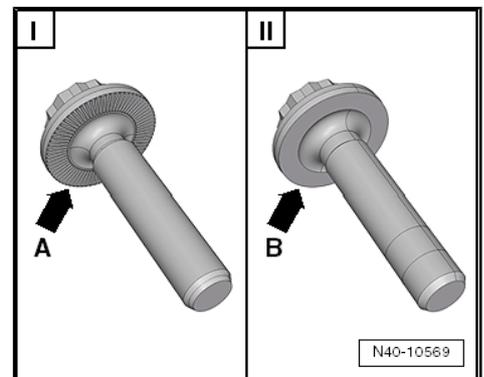
20 - Cover Plate

Characteristics Between a Twelve-Point Bolt with Ribs and a Twelve-Point Bolt without Ribs

The contact surfaces -arrow A- and -arrow B- are different on the two-point bolts.

I - twelve-point bolt with ribs -arrow A-

II - twelve-point bolt without ribs -arrow B-



2.3.5 Shock Absorber and Coil Spring Assembly Overview

1 - Upper Spring Support

2 - Coil Spring

- Be aware of the various suspension versions.
- Note the following when assembling. Refer to [page 200](#).
- Removing and installing, refer to ["5.2.15 Coil Spring", page 200](#).

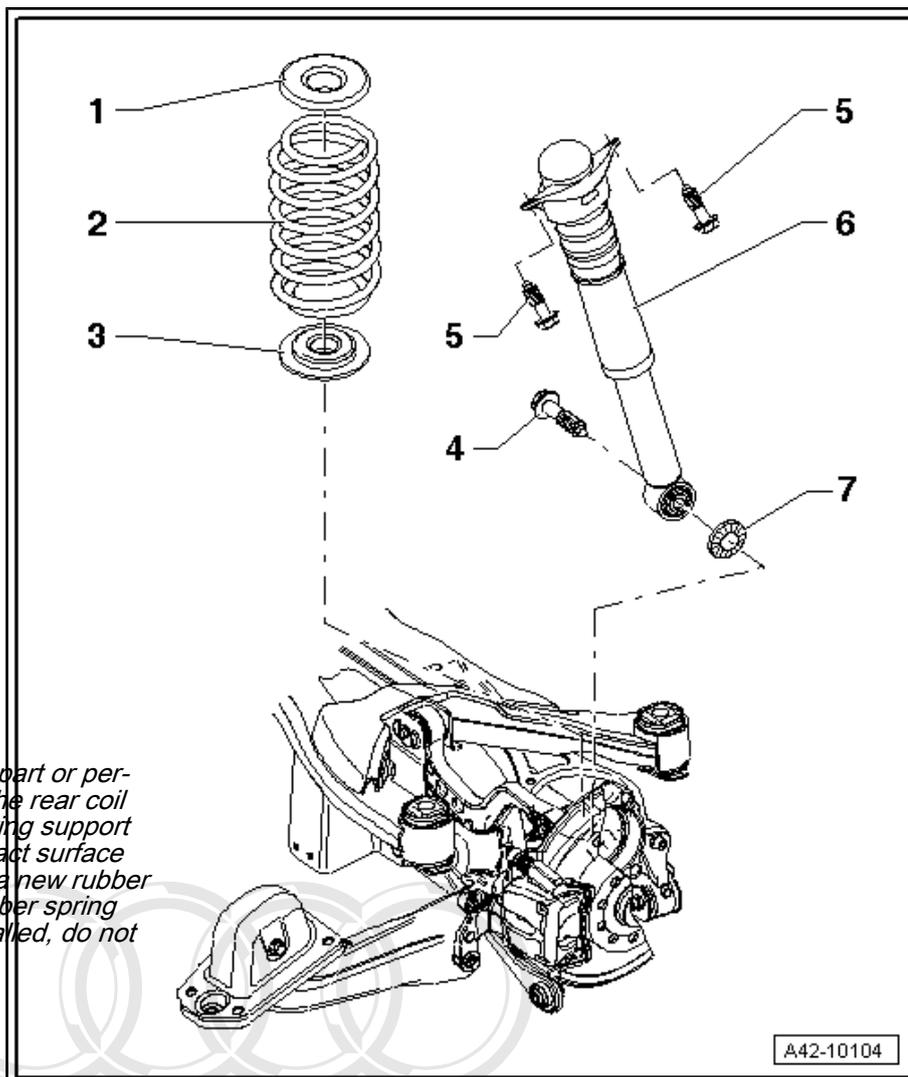
3 - Lower Spring Support

- Spring end rotated up to stop.
- There are two different versions: one is pure rubber and the other is galvanized rubber.
- Allocation, refer to the Electronic Parts Catalog (ETKA).



Note

Whenever replacing a part or performing a repair near the rear coil springs, the rubber spring support with a galvanized contact surface must be replaced with a new rubber spring support. If a rubber spring support is already installed, do not replace it.



4 - Bolt

- 180 Nm

5 - Bolt

- 50 Nm + 45° turn
- Always replace if removed.

6 - Shock Absorbers

- Only shock absorbers with the same part number may be installed on the left and right.
- Removing and installing, refer to ["5.2.14 Shock Absorber", page 198](#).
- Be aware of the various suspension versions. Refer to ["1.6 PR Number Explanations", page 232](#).
- Faulty shock absorbers must be vented and emptied before disposal. Refer to ["1.3 Rear Gas-Filled Strut, Venting", page 2](#).
- Check removed shock absorber. Refer to ["3.1 Shock Absorbers, Removed, Checking", page 5](#).
- On vehicles with electronically-controlled damping (Audi magnetic ride), the control position must be reprogrammed each time a shock absorber is replaced using the vehicle diagnosis, testing and information system -VAS 5051-.

7 - Washer

- Serves as corrosion protection.
- Always install.

2.3.6 Stabilizer Bar Assembly Overview

1 - Stabilizer Bar

- ❑ Be aware of the various suspension versions. Refer to [⇒ "1.6 PR Number Explanations", page 232](#).
- ❑ Removing and installing, refer to [⇒ "5.2.16 Stabilizer Bar", page 201](#).

2 - Clamp

3 - Bolt

- ❑ 25 Nm + 90° turn
- ❑ Always replace if removed.

4 - Rubber Mount

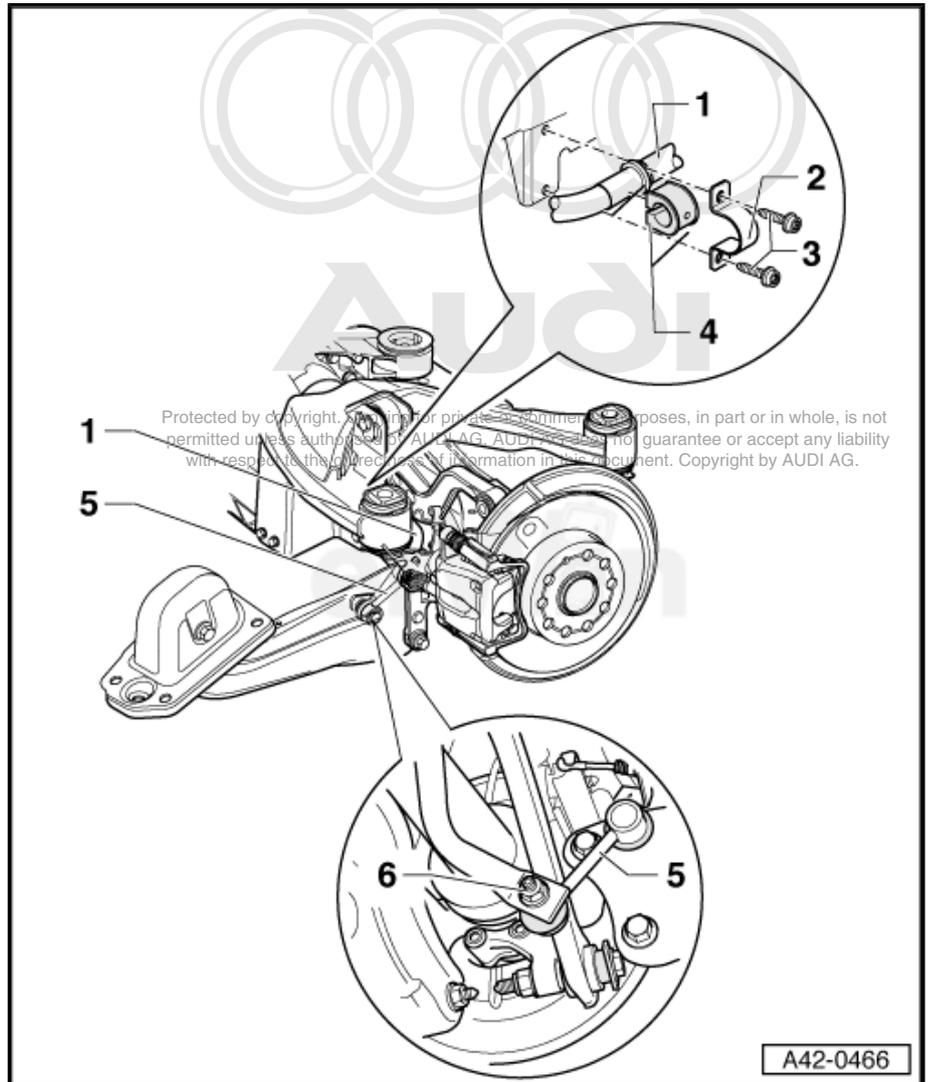
- ❑ Replace mounts always on both sides of vehicle.

5 - Coupling Rod

- ❑ Connects stabilizer to trailing link/wheel bearing housing.

6 - Nut

- ❑ 40 Nm



2.3.7 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening

Special tools and workshop equipment required

- ◆ Angle wrench -V.A.G 1756-

Loosening

- Only loosen drive axle to wheel hub threaded connection a maximum of 90° when vehicle is resting on its wheels, otherwise wheel bearing will be damaged.
- Raise vehicle enough that wheels hang freely.
- Operate brake (second mechanic required).



- Remove bolt -arrow-.

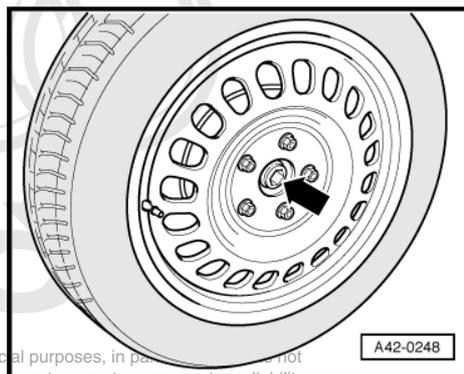
Tightening

- Replace bolt -arrow-.



Note

- ◆ Before installing, threads in CV joint should be cleaned with a tap.
- ◆ Wheels must not yet touch the ground to tighten the drive axle, wheel bearing may otherwise be damaged.



- Operate brake (second mechanic required).
- Tighten bolt to 200 Nm.
- Lower the vehicle onto its wheels.
- Tighten bolt an additional 180°.

2.3.8 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening

Special tools and workshop equipment required

- ◆ Socket XZN 24 -T10361-
- ◆ Angle wrench -V.A.G 1756-

Characteristics Between a Twelve-Point Bolt with Ribs and a Twelve-Point Bolt without Ribs

The contact surfaces -arrow A- and -arrow B- are different on the two-point bolts.

I - twelve-point bolt with ribs -arrow A-.

II - twelve-point bolt without ribs -arrow B-.

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

If the bearings are loaded by the vehicle's own weight the wheel bearing will be damaged. This reduces the service life of the wheel bearings. Therefore, observe the following:

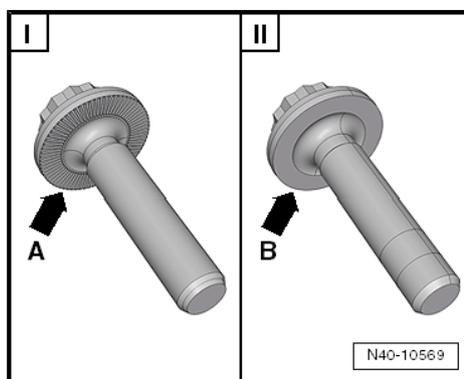
- ◆ Procedure for loosening 12-point bolt.

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

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

Loosening

- With vehicle still resting on wheels, loosen 12-point bolt with -T10361- maximum 90°, otherwise, wheel bearing will be damaged.
- Raise vehicle enough that wheels hang freely.
- Operate brake (second mechanic required).



- Remove 12-point bolt -arrow-.

 **Note**

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

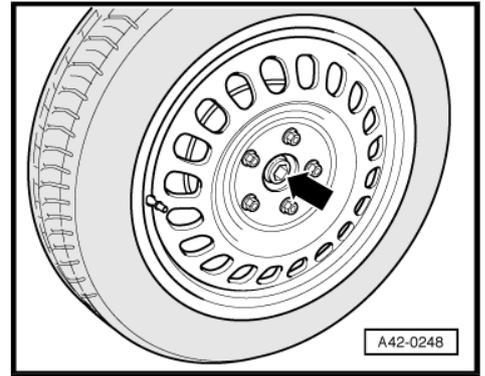
Tightening

- Replace 12-point bolt.

 **Note**

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

- Operate brake (second mechanic required).
- Tighten 12-point bolt to 70 Nm.
- Lower the vehicle onto its wheels.
- Tighten 12-point bolt an additional 90°.



2.3.9 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening

Special tools and workshop equipment required

- ◆ Socket XZN 24 -T10361-
- ◆ Angle wrench -V.A.G 1756-

Characteristics Between a Twelve-Point Bolt with Ribs and a Twelve-Point Bolt without Ribs

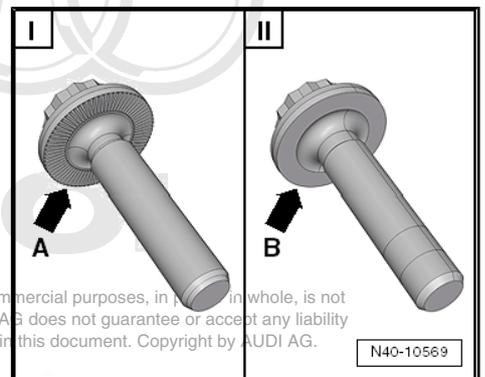
The contact surfaces -arrow A- and -arrow B- are different on the two-point bolts.

I - twelve-point bolt with ribs -arrow A-.

II - twelve-point bolt without ribs -arrow B-.

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

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



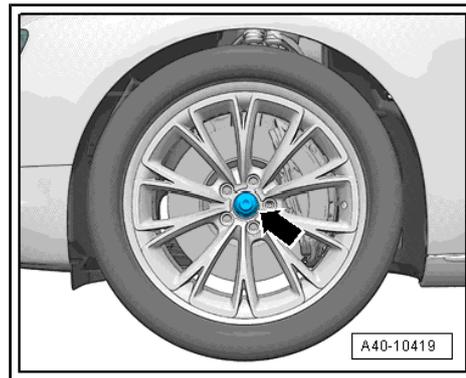
Loosening

- With the vehicle resting on its wheels, loosen the twelve-point bolt -arrow- maximum 90° otherwise the wheel bearing will get damaged.
- Lift the vehicle just enough so that the wheels are hanging free.
- Apply the brakes (a second technician required).
- Remove 12-point bolt -arrow-.



Note

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



Tightening

- Replace 12-point bolt.



Note

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

- Apply the brakes (a second technician required). Tighten 12-point bolt to 200 Nm.
- Lower the vehicle onto its wheels.
- Tighten 12-point bolt an additional 180°.



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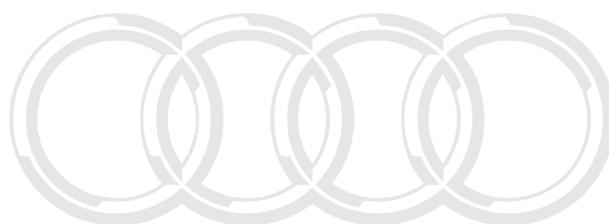
3 Specifications

⇒ ["3.1 Fastener Tightening Specifications", page 139](#)

3.1 Fastener Tightening Specifications

Component	Fastener Size	Nm
Brake Disc to Wheel Hub Bolt	-	4
Coupling Rod to Stabilizer Bar Nut	-	40
Coupling Rod to Wheel Bearing Housing Nut	-	25
Cover Plate to Wheel Bearing Housing Bolt	-	10
Crossmember Brace Bolt, Roadster, AWD	-	40
Crossmember to Subframe Nut, Coupe, AWD	-	50 + 180° turn
Drive Axle to Rear Final Drive Bolt ^{1, 3}	M8	40
	M10	70
Drive Axle to Wheel Hub Bolt, AWD ¹		
- Hex Bolt	-	200 + 180° turn
- 12-Point Bolt with Ribs	-	70 + 90° turn
- 12-Point Bolt without Ribs	-	200 + 180° turn
Diagonal Brace Bolt, Roadster, AWD ¹	-	40 + 45° turn
Diagonal Brace Bolt, Roadster, FWD ¹	-	40 + 45° turn
	-	90 + 45° turn
Level Control System Sensor Bolt	-	5
Lower Transverse Link to Subframe Nut ^{1, 2}	-	95
Lower Transverse Link to Wheel Bearing Housing Nut ^{1, 2}	-	90 + 90° turn
Shock Absorber to Body Bolt ¹	-	50 + 45° turn
Shock Absorber to Shock Absorber Mounting Nut ¹	-	25
Shock Absorber to Wheel Bearing Housing Bolt	-	180
Stabilizer Bar to Body Bolt ¹	-	25 + 90° turn
Subframe to Body Bolt ¹	-	90 + 90° turn
Tie Rod to Subframe Nut ^{1, 2}	-	90 + 90° turn
Tie Rod to Wheel Bearing Housing Bolt ^{1, 2}	-	130 + 90° turn
Trailing Arm Mounting Bracket to Body Bolt ¹	-	50 + 45° turn
Trailing Arm to Mounting Bracket Bolt ¹	-	90 + 90° turn
Trailing Arm to Wheel Bearing Housing Bolt ¹	-	90 + 45° turn
Upper Transverse Link to Subframe Nut ^{1, 2}	-	95
Upper Transverse Link to Wheel Bearing Housing Bolt ^{1, 2}	-	130 + 90° turn
Wheel Bearing Unit to Wheel Bearing Housing Bolt ¹	-	70 + 90° turn
Wheel Hub to Wheel Bearing Housing Bolt, FWD ¹	-	200 + 180° turn
Wheel Speed Sensor to Wheel Bearing Housing Bolt	-	8

- ¹ Always replace after removal.
- ² Always tighten threaded connections in curb weight position. Refer to
 ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#).
- ³ Pre-tighten diagonally to 10 Nm, then tighten diagonally again to the tightening specification.



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4 Diagnosis and Testing

⇒ ["4.1 Outer CV Joint, Checking", page 141](#)

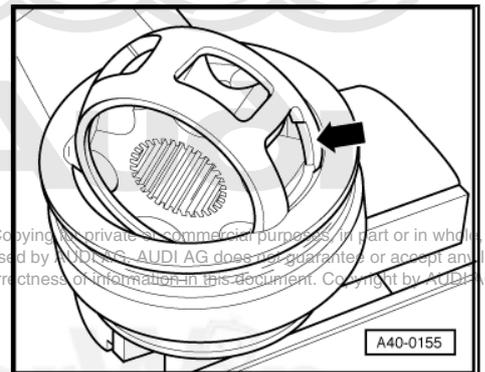
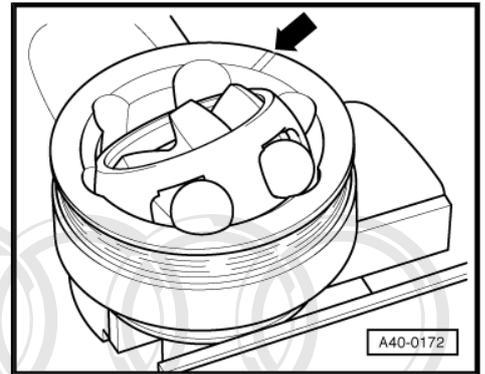
⇒ ["4.2 Inner CV Joint, Checking", page 142](#)

4.1 Outer CV Joint, Checking

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

Removing

- Before disassembling mark ball hub position in relation to the ball cage and housing with an electric scribe or oil stone -arrow-.
- Tilt ball hub and ball cage and remove balls one after another.
- Turn cage until two cage windows -arrow- rest on joint body.
- Lift out cage with hub.



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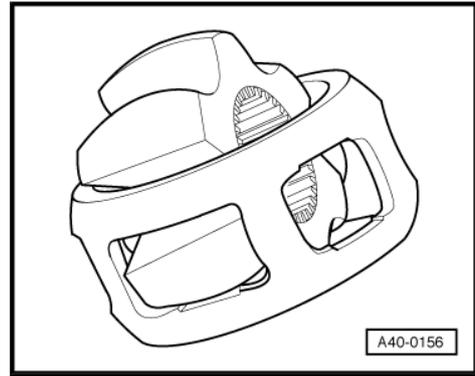


- Swing a hub segment in a cage window.
- Fold hub out from cage.



Note

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



Installing

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

- Press quantity of grease specified in table into joint body. Refer to ⇒ [page 210](#).
- Insert cage with hub into joint body.



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Note

Cage must be installed laterally correct.

- Press in opposing balls in sequence, during this, previous position of ball hub to ball cage and to joint body must be established again.
- Install new circlip in shaft.
- Distribute remaining grease in the joint boot.

4.2 Inner CV Joint, Checking

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

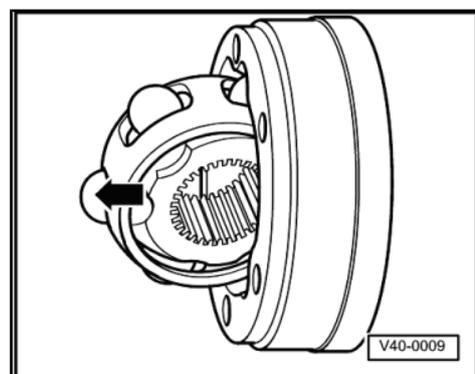


Note

Ball hub and joint piece are paired. Before removing, mark in relation to each other using a waterproof felt-tip pen.

Removing

- Swing ball hub and ball cage.
- Press out ball joint housing in -direction of arrow-.
- Press balls out of cage.



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

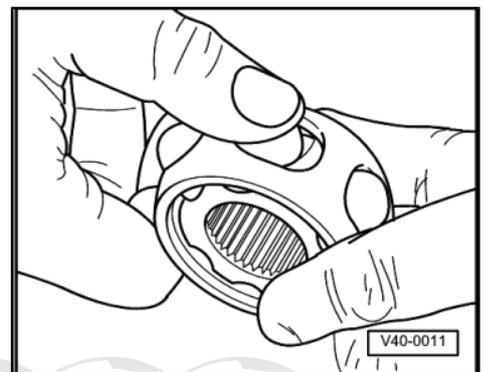
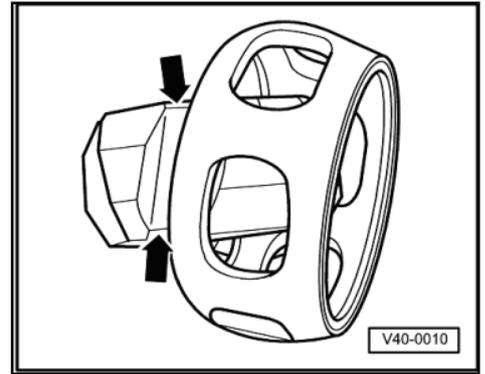
 **Note**

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

Installing

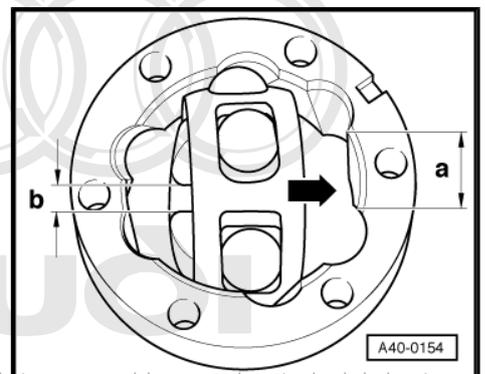
Installation is the reverse of removal, with special attention to the following:

- Insert ball hub into ball cage via two chamfers. The installation position is at random. Press balls into cage.
- Insert hub with cage and balls upright into joint piece.



 **Note**

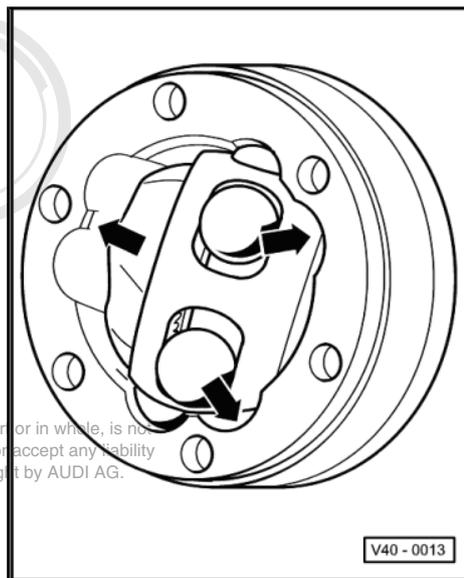
- ◆ *When inserting, make sure that in each case the wide gap -a- at joint piece contacts narrow gap -b- at hub after swinging in.*
- ◆ *Chamfer on inner diameter of ball hub (splines) must face large diameter of joint piece.*
- ◆ *Use the felt-tip pen markings made during removal to help with installation.*



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

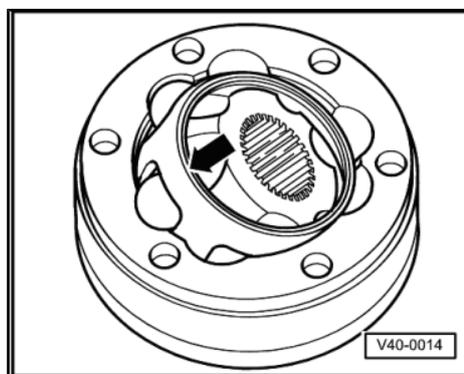


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- Swing in hub with balls by pressing forcefully onto cage -arrow-.

CV Joint, Checking for Function

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



5 Removal and Installation

⇒ [“5.1 Front Wheel Drive \(FWD\)”, page 145](#)

⇒ [“5.2 All Wheel Drive \(AWD\)”, page 172](#)

5.1 Front Wheel Drive (FWD)

⇒ [“5.1.1 Subframe with Attachments”, page 145](#)

⇒ [“5.1.2 Diagonal Braces”, page 148](#)

⇒ [“5.1.3 Lower Transverse Link”, page 149](#)

⇒ [“5.1.4 Upper Transverse Link”, page 150](#)

⇒ [“5.1.5 Tie Rod”, page 152](#)

⇒ [“5.1.6 Level Control System Sensors”, page 153](#)

⇒ [“5.1.7 Wheel Bearing Housing”, page 154](#)

⇒ [“5.1.8 Wheel Bearing Housing Bonded Rubber Bushing”, page 158](#)

⇒ [“5.1.9 Wheel Bearing Unit”, page 160](#)

⇒ [“5.1.10 Trailing Arm with Mounting Bracket”, page 162](#)

⇒ [“5.1.11 Trailing Arm Bonded Rubber Bushing”, page 165](#)

⇒ [“5.1.12 Stone Guard”, page 167](#)

⇒ [“5.1.13 Shock Absorber”, page 168](#)

⇒ [“5.1.14 Coil Spring”, page 169](#)

⇒ [“5.1.15 Stabilizer Bar”, page 170](#)

5.1.1 Subframe with Attachments

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-
- ◆ Engine-/transmission jack -V.A.G 1383 A- with universal transmission support -V.A.G 1359/2-
- ◆ Tensioning strap -T10038-
- ◆ Vehicle diagnosis, testing and information system -VAS 5051-

Removing

- Remove wheels.

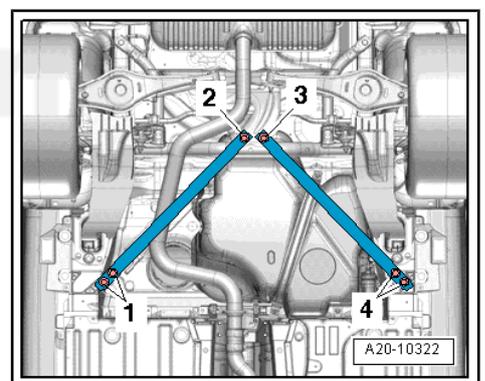
Affects Roadster Vehicles

- Remove bolts -1- through -4- and remove diagonal braces.

Affects All Vehicles

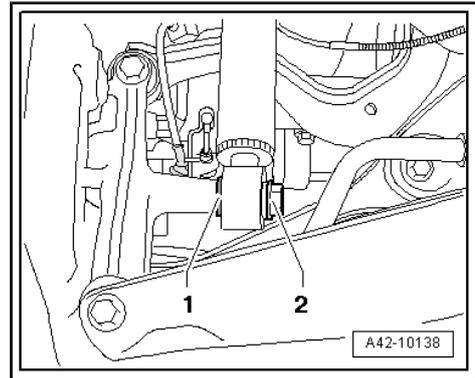
- Remove stone deflector from trailing arm. Refer to ⇒ [“5.1.12 Stone Guard”, page 167](#) .
- Remove coil springs. Refer to ⇒ [“5.1.14 Coil Spring”, page 169](#) .
- Remove exhaust system rear muffler. Refer to ⇒ Engine Mechanical; Rep. Gr. 26 ; Removal and Installation .
- Disconnect electrical wires from ABS speed sensor and, on vehicles with level control system sensor, connectors and unclip.

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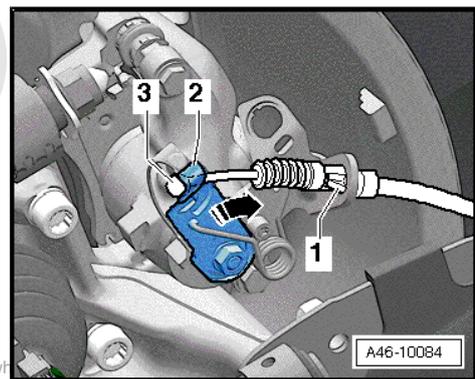




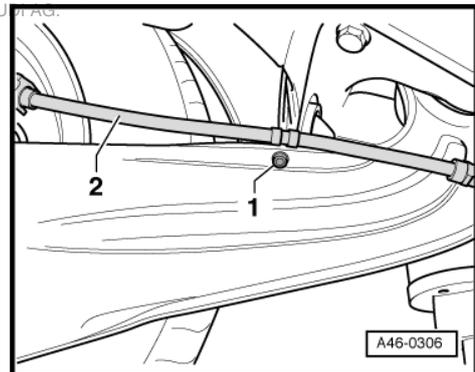
- Remove the bolt -2- and washer -1-.



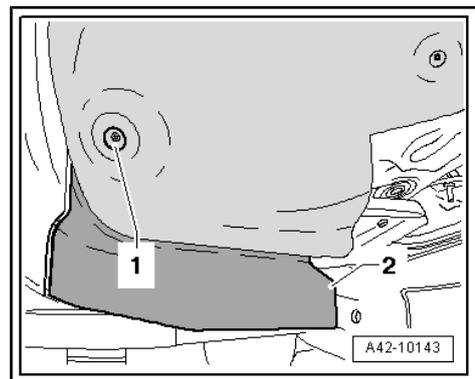
- Press brake lever -2- in direction of arrow and unhook parking brake cable -3-.
- Press retaining tabs -1- together and remove parking brake cable.



- Remove bolt -1- and remove parking brake cable -2- from bracket of brake cable.
- Remove brake caliper. Refer to => Brake System; Rep. Gr. 46 ; Removal and Installation .
- Secure the brake caliper to the body so that the weight of the caliper does not stress or damage the brake hose or brake line.



- Remove bolt -1- and remove wind deflector -2-. Refer to => Body Exterior; Rep. Gr. 66 ; Removal and Installation .

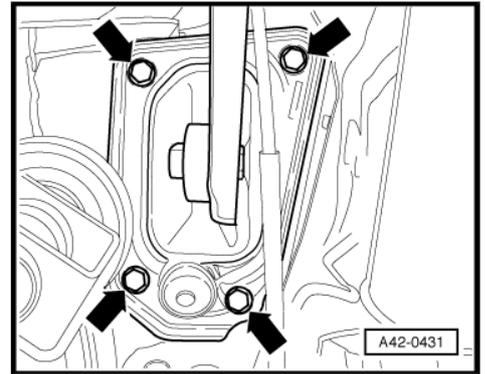


- Mark installation position of mounting bracket on body.
- Remove the bolts -arrows-.

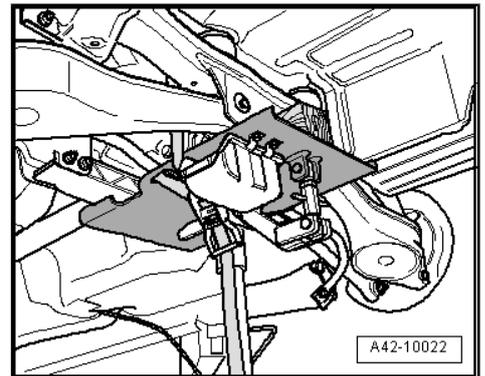


WARNING

Before -LOOSENING- subframe bolts, secure vehicle against tipping over (e.g. load luggage compartment with approximately 50 kg).



- Place -V.A.G 1383 A- with -V.A.G 1359/2- and a suitable wood block under the subframe.
- Secure subframe with tensioning straps.



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- Remove bolts -1- and -2-.

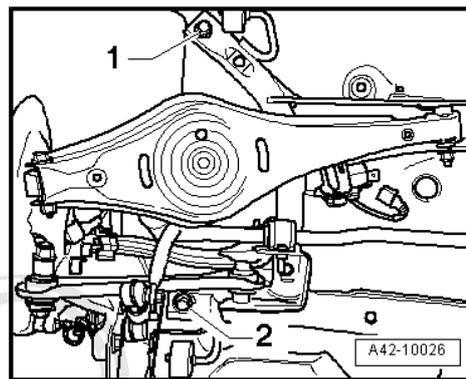
**Note**

For the sake of a better illustration, only the left side of the vehicle is shown.

- Carefully lower subframe with components.

**Note**

When lowering, ensure there is enough clearance between the brake lines, electrical lines and centering points to driveshaft.

**Installing**

Install in reverse order of removal. Observe the following when doing so:

- The center of the subframe holes must be aligned to the bolting points on the body.

Tightening specifications, refer to

⇒ ["2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview"](#), page 119 .

Tightening specifications, refer to

⇒ ["2.2.3 Wheel Bearing Housing, Wheel Bearing Unit, Trailing Arm with Mounting Bracket and Stone Deflector Assembly Overview"](#), page 121 .

Tightening specifications, refer to

⇒ ["2.2.4 Shock Absorber and Coil Spring Assembly Overview"](#), page 123 .

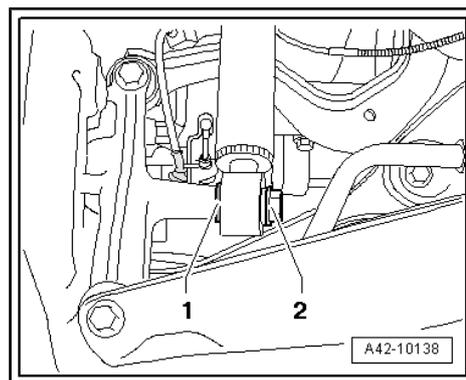
Tightening specifications, refer to

⇒ ["2.2.5 Stabilizer Bar Assembly Overview"](#), page 124 .

- Install bolt -2- with washer -1-.
- On vehicles with automatic headlamp range control, perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .
- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position using the vehicle diagnosis, testing and information system -VAS 5051- .
- Vehicle alignment required, see table. Refer to ⇒ ["1.5 Wheel Alignment"](#), page 230 .

**Note**

Checking and aligning front/rear axle must take place on a VW/Audi recommended alignment stand.



5.1.2 Diagonal Braces

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-

Removing

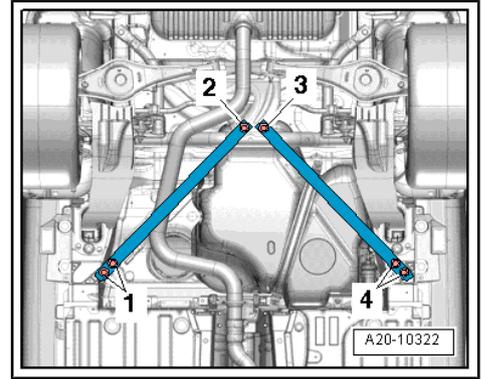
- Remove bolts -1- through -4- and remove diagonal braces.

Installing

Install in reverse order of removal. Note the following:

Tightening specifications, refer to

⇒ ["2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview"](#), page 119 .



5.1.3 Lower Transverse Link.

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-
- ◆ Vehicle diagnosis, testing and information system -VAS 5051-

Removing

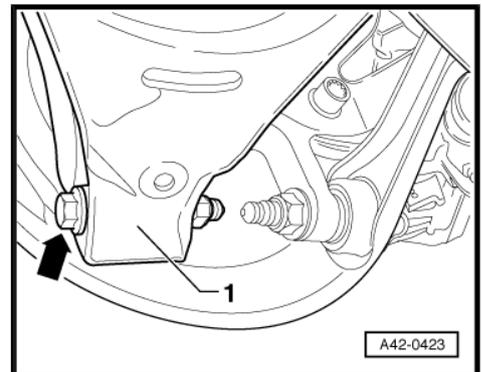
- Measure dimension from center of wheel to lower edge of wheel housing. Refer to

⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116

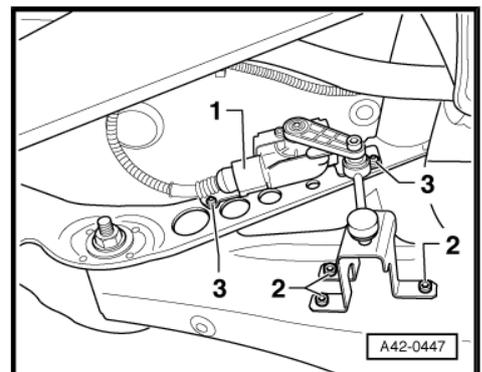
- Remove the wheel.

- Remove coil spring. Refer to
 ⇒ ["5.1.14 Coil Spring"](#), page 169 .

- Remove bolt -arrow- for lower transverse link -1-.



- Remove bolts -2- on vehicles with level control system sensor.





- Mark, e.g. using a felt-tip marker, position of eccentric bolt -arrow B- to subframe.
- Disengage rear exhaust system and lower.
- Remove bolt -arrow B-.
- Remove lower transverse link.

Installing

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

Tightening specifications, refer to
 ⇒ ["2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview"](#), page 119 .

Tightening specifications, refer to
 ⇒ ["2.2.3 Wheel Bearing Housing, Wheel Bearing Unit, Trailing Arm with Mounting Bracket and Stone Deflector Assembly Overview"](#), page 121 .

Tightening specifications, refer to
 ⇒ ["2.2.4 Shock Absorber and Coil Spring Assembly Overview"](#), page 123 .

Tightening specifications, refer to
 ⇒ ["2.2.5 Stabilizer Bar Assembly Overview"](#), page 124 .

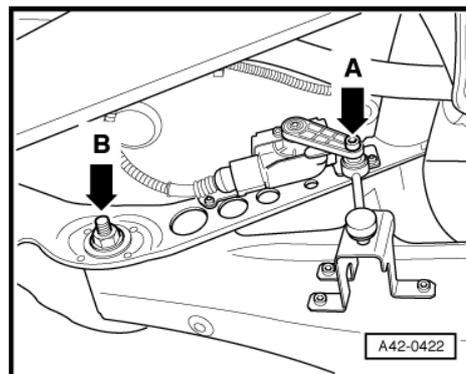
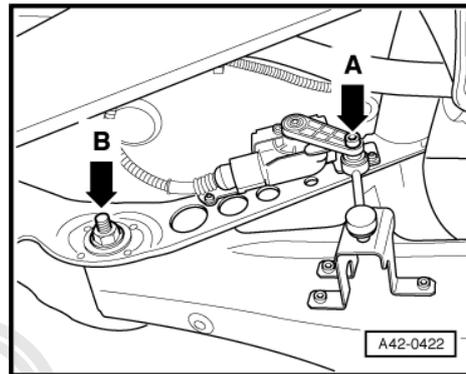
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Note

Transverse link connections may only be carried out if dimension between wheel hub center and lower edge of wheel housing, measured before assembly, is achieved. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116 .

- Note applied marking of eccentric bolt -arrow B- to subframe.
- On vehicles with automatic headlamp range control, perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .
- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position using the -VAS 5051- .
- Vehicle alignment required, see table. Refer to ⇒ ["1.5 Wheel Alignment"](#), page 230



5.1.4 Upper Transverse Link

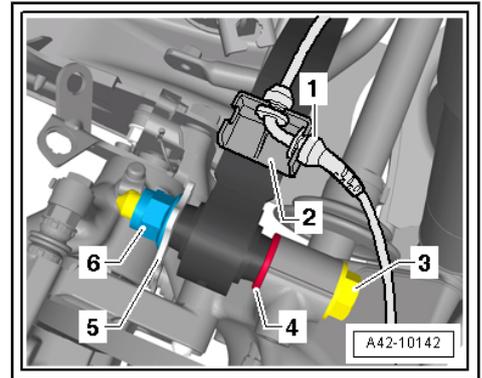
Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-

Removing

- Measure dimension from center of wheel to lower edge of wheel housing. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116 .
- Remove the wheel.
- Remove coil spring. Refer to ⇒ ["5.1.14 Coil Spring"](#), page 169 .

- Completely disengage wire -1- from bracket -2-.
- Remove nut -6- and washer -5-.
- Remove bolt -3- and washer -4-.



- Mark, e.g. using a felt-tip marker, position of eccentric bolt -arrow- to subframe.
- Remove bolt -arrow-.
- Remove upper transverse link.

Installing

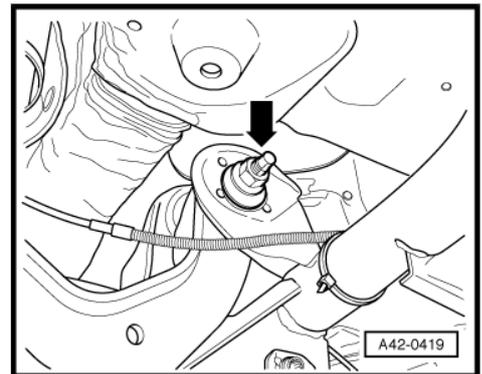
Installation is the reverse of removal, with special attention to the following:

Tightening specifications, refer to
 ⇒ ["2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview"](#), page 119 .

Tightening specifications, refer to
 ⇒ ["2.2.3 Wheel Bearing Housing, Wheel Bearing Unit, Trailing Arm with Mounting Bracket and Stone Deflector Assembly Overview"](#), page 121 .

Tightening specifications, refer to
 ⇒ ["2.2.4 Shock Absorber and Coil Spring Assembly Overview"](#), page 123 .

Tightening specifications, refer to
 ⇒ ["2.2.5 Stabilizer Bar Assembly Overview"](#), page 124 .

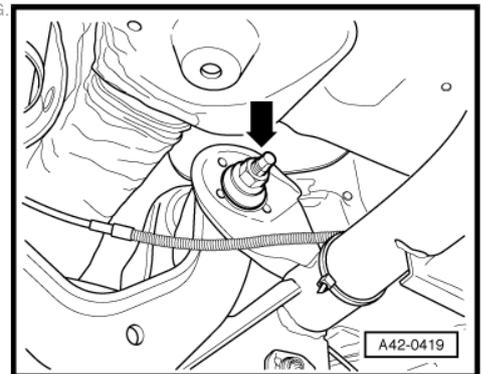


Note

*Transverse link connections may only be carried out if dimension between wheel hub center and lower edge of wheel housing, measured before assembly, is achieved. Refer to
 ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116 .*

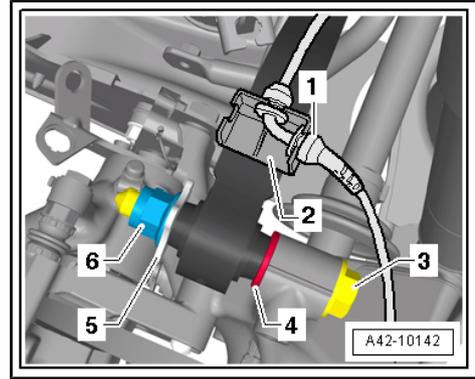
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- Note applied marking of eccentric bolt -arrow- to subframe.





- Install bolt -3- with washer -4-.
- Vehicle alignment required, see table. Refer to => ["1.5 Wheel Alignment", page 230](#) .



5.1.5 Tie Rod

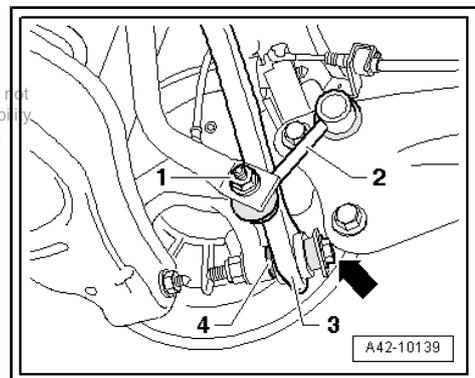
Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-

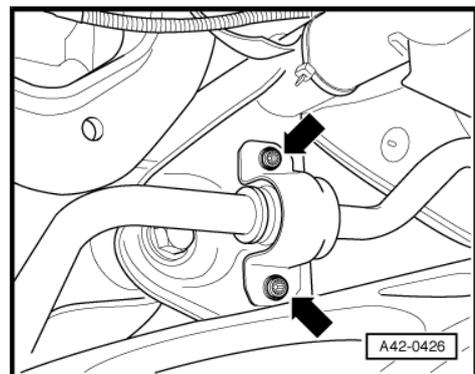
Removing

- Measure dimension from center of wheel to lower edge of wheel housing. Refer to => ["2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#) .
- Remove the wheel.
- Remove stone deflector from trailing arm. Refer to => ["5.1.12 Stone Guard", page 167](#) .
- Remove coil spring. Refer to => ["5.1.14 Coil Spring", page 169](#) .
- Remove the nut -1- and pull coupling rod -2- out of stabilizer.
- Remove bolt -arrow- for tie rod -3- and remove washer -4-.

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- Remove bolts -arrows- for stabilizer clamp.



- Remove nut -arrow- and remove bolt toward rear.
- Remove tie rod.

Installing

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

Tightening specifications, refer to
 ⇒ ["2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview"](#), page 119 .

Tightening specifications, refer to
 ⇒ ["2.2.3 Wheel Bearing Housing, Wheel Bearing Unit, Trailing Arm with Mounting Bracket and Stone Deflector Assembly Overview"](#), page 121 .

Tightening specifications, refer to
 ⇒ ["2.2.4 Shock Absorber and Coil Spring Assembly Overview"](#), page 123 .

Tightening specifications, refer to
 ⇒ ["2.2.5 Stabilizer Bar Assembly Overview"](#), page 124 .

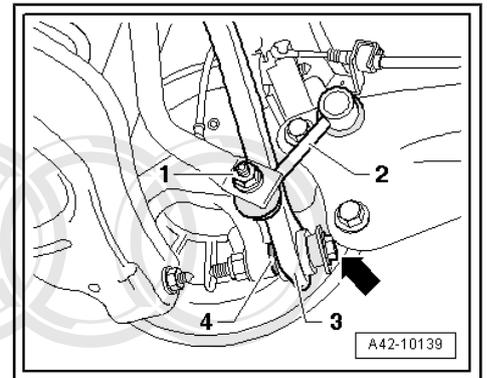
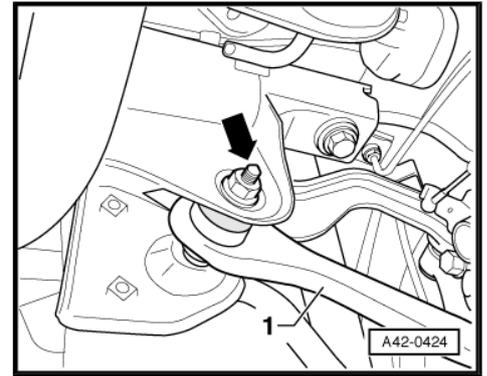
- Install bolt -arrow- for tie rod -3- with washer -4-.
- Insert tie rod into vehicle and tighten the bolts by hand.



Note

Tie rod connections may only be carried out if dimension between wheel hub center and lower edge of wheel housing, measured before assembly, is achieved. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116 .

- Vehicle alignment required, see table. Refer to ⇒ ["1.5 Wheel Alignment"](#), page 230 .



5.1.6 Level Control System Sensors

General Information

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Vehicles with electronically-controlled damping (Audi magnetic ride) and/or gas discharge lamps have an automatic headlamp range control system as standard equipment. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; General Information .

In order to function, the electronically-controlled damping (Audi magnetic ride) and automatic headlamp range control require information about the compression or rebound travel at the front and rear axles.

For this, the position of the left/right transverse link in relation to the body is transferred via a coupling rod to Left Rear Level Control System Sensor -G76- and Right Rear Level Control System Sensor -G77- . These transmit electrical signals to the Electronic Damping Control Module -J250- and/or Left/Right High-intensity Gas Discharge Lamp Control Module -J343/344- .

Left/right high-intensity gas discharge lamp control module, servicing, refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Removal and Installation .

At the front axle, these signals are transmitted from the Left Front Level Control System Sensor -G78- and Right Front Level Control System Sensor -G289- to the electronic damping control module and/or the left/right high-intensity gas discharge lamp control module.

These signals are required for determining vehicle level.

The automatic headlamp range control reacts independently to changes in vehicle level.

The vehicle level can change in the following situations:

- ◆ Trailer Mode.
- ◆ Different load conditions; vehicle empty, vehicle partially or fully loaded.



Note

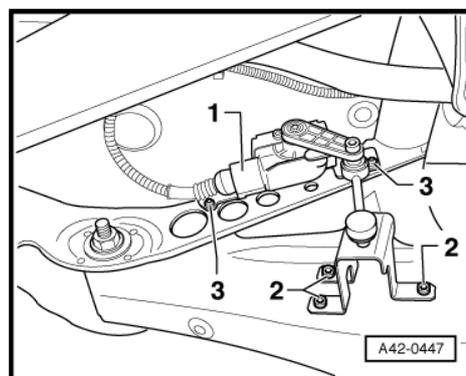
Program the control position on vehicles with electronically-controlled damping (Audi magnetic ride) and check the headlamp adjustment if:

- ◆ Assembly work was performed on level control system sensor
- ◆ the lower transverse link was removed and installed,
- ◆ Threaded connections -2- or -3- were loosened.

Vehicle level sensor is available as replacement part only complete with coupling rod and upper and lower retaining plates.

- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position ⇒ Vehicle diagnosis, testing and information system VAS 5051

Headlamp basic setting ⇒ Electrical Equipment; Rep. Gr. 94 ; General Information .



Removing

- Disconnect the harness connector -1-.
- Remove the bolts -2- and -3-.
- Remove sensor.

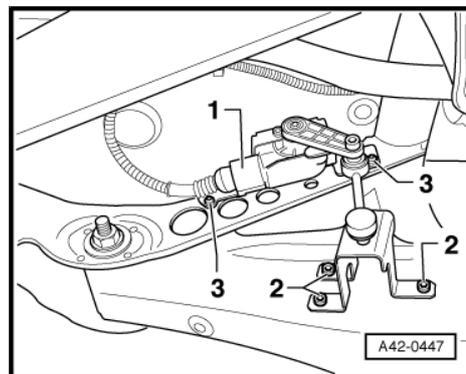
Installing

Install in reverse order of removal. Note the following:

Tightening specifications, refer to ⇒ ["2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview"](#), page 119 .

The sensor lever must face toward the outside of the vehicle.

- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position using the vehicle diagnosis, testing and information system -VAS 5051-
- Perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .



5.1.7 Wheel Bearing Housing

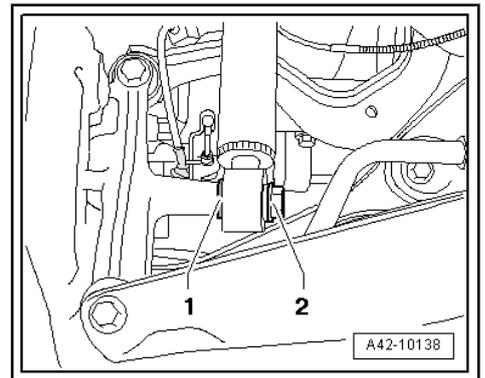
Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-

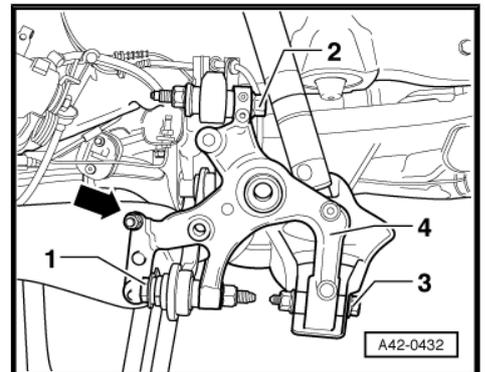
Removing

- Measure dimension from center of wheel to lower edge of wheel housing. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116 .

- Remove the wheel.
- Remove stone deflector from trailing arm. Refer to [⇒ "5.1.12 Stone Guard", page 167](#) .
- Remove coil spring ⇒ ["5.1.14 Coil Spring", page 169](#) .
- Remove brake caliper/brake carrier and suspend from body with wire. Refer to ⇒ Brake System; Rep. Gr. 46 ; Removal and Installation .
- Remove ABS speed sensor from wheel bearing housing.
- Wheel bearing unit, removing, refer to [⇒ "5.1.9 Wheel Bearing Unit", page 160](#) .
- Remove cover plate.
- Remove the bolt -2- and washer -1-.



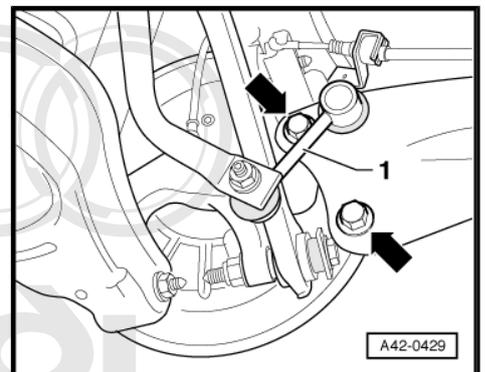
- Remove bolt for tie rod -1-, upper transverse link -2- and lower transverse link -3- from wheel bearing housing -4-.
- Remove connecting link -1- from trailing arm.



- Hold wheel bearing housing tightly and remove the bolts -arrows-.
- Pull coupling rod -1- out of trailing link.
- Remove wheel bearing housing.

Installing

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

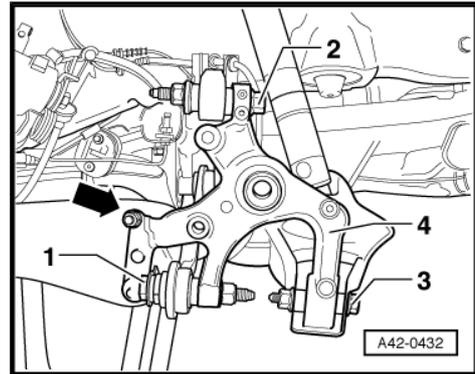


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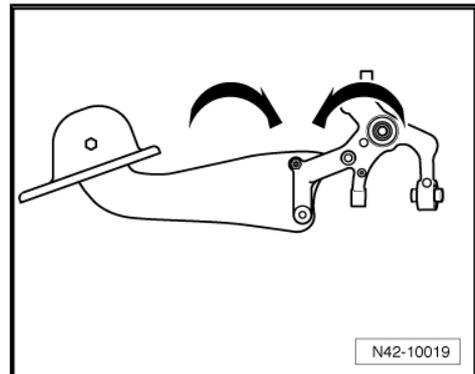


- Install bolt for tie rod -1-, upper transverse link -2- and lower transverse link -3- and tighten by hand.
- Tighten the connecting link -arrow- to the trailing arm by hand.

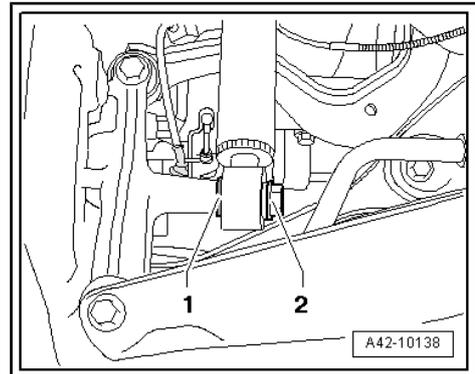


Threaded connection of trailing link/wheel bearing housing must only be tightened when all other components (spring and strut always) of the respective wheel suspension have been already assembled. To tighten, suspension must be unloaded. Only now do the trailing link and wheel bearing housing move into the position required -arrows-.

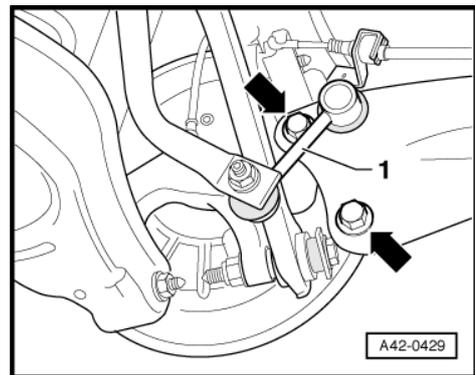
Always perform the following work in the sequence given!



- Install bolt -2- with washer -1- and tighten.



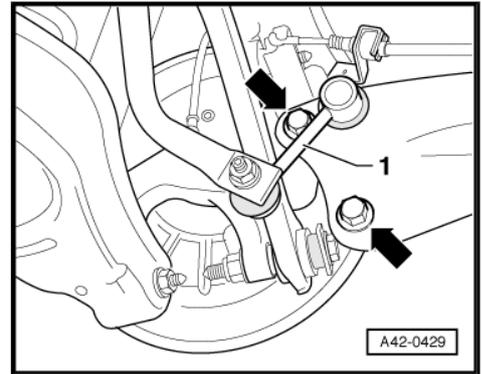
- Place trailing arm on wheel bearing housing with bolts -arrows- but do not tighten yet.
- Install coil spring. Refer to => ["5.2.15 Coil Spring", page 200](#).



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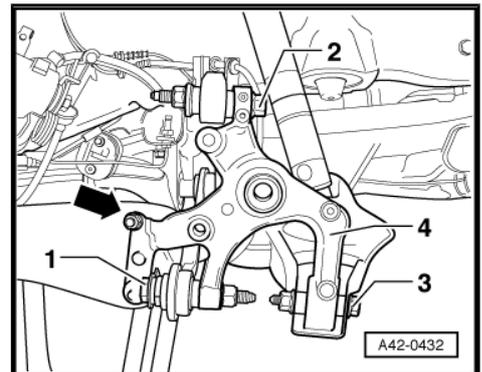
- Tighten bolts -arrows-.



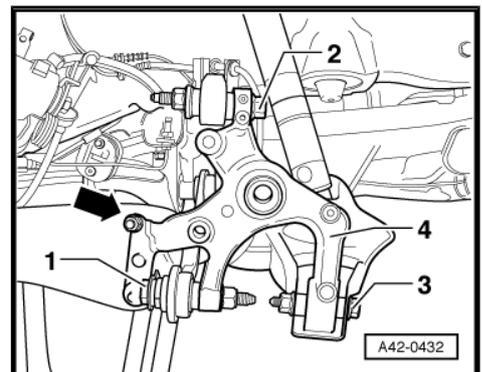
- Tighten coupling rod -arrow- on trailing arm.
- Install cover plate.

 **Note**

Bolting at wheel bearing housing may occur only when dimension "a" has been obtained. Refer to ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116 !



- Tighten bolt for tie rod -1-.
- Tighten lower transverse link bolt -3-.



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- Install bolt -3- with washer -4- and tighten.
- Install ABS wheel speed sensor in wheel bearing housing.
- Install brake disc.
- Install brake carrier with brake caliper. Refer to ⇒ Brake System; Rep. Gr. 46 ; Removal and Installation .

Tightening specifications, refer to ⇒ ["2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview"](#), page 119 .

Tightening specifications, refer to ⇒ ["2.2.3 Wheel Bearing Housing, Wheel Bearing Unit, Trailing Arm with Mounting Bracket and Stone Deflector Assembly Overview"](#), page 121 .

Tightening specifications, refer to ⇒ ["2.2.4 Shock Absorber and Coil Spring Assembly Overview"](#), page 123 .

Tightening specifications, refer to ⇒ ["2.2.5 Stabilizer Bar Assembly Overview"](#), page 124 .

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- ~~Install wheel and tighten.~~
 - Vehicle alignment required, see table. Refer to ⇒ ["1.5 Wheel Alignment"](#), page 230 .

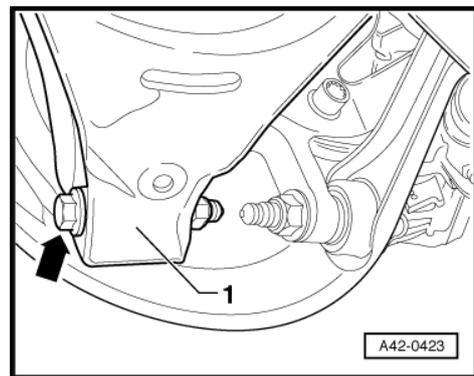
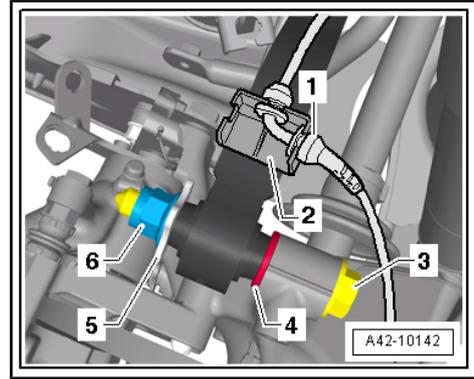
5.1.8 Wheel Bearing Housing Bonded Rubber Bushing

Special tools and workshop equipment required

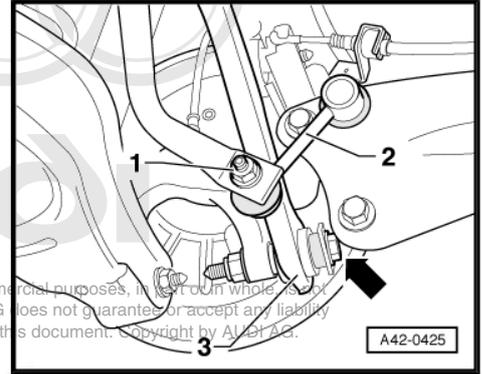
- ◆ Assembly tool -3346-
- ◆ Assembly tool -3350-
- ◆ Fitting sleeve -3378-
- ◆ Tappet -3390-
- ◆ Torque wrench -V.A.G 1332-

Removing

- Measure dimension from center of wheel to lower edge of wheel housing. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116 .
- Remove the wheel.
- Remove coil spring. Refer to ⇒ ["5.1.14 Coil Spring"](#), page 169 .
- Remove bolt -arrow- for lower transverse link -1-.



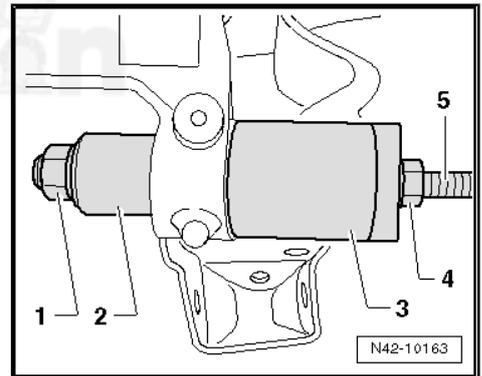
- Remove bolt -arrow- for tie rod -3-.



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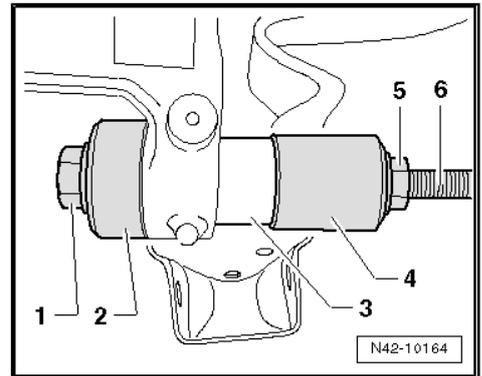
Pressing Out Bonded Rubber Bushing

- Install tools as shown in illustration.
- 1 - Nut -3346/3-
- 2 - -3390-
- 3 - -3350-
- 4 - Nut, commercially available
- 5 - Spindle -3346/2-
- Remove bonded rubber bushing by turning spindle.



Pulling In Bonded Rubber Bushing

- Install tools as shown in illustration.
- 1 - Nut -3346/3-
- 2 - -3346-
- 3 - Bonded rubber mount
- 4 - -3378-
- 5 - Nut, commercially available
- 6 - Spindle -3346/2-
- Install bonded rubber bushing by turning support arm bearing installation tool.



Note

- ◆ *Do not use lubricant!*
- ◆ *Insert bearing with care so it is not canted.*

- Check the installed position after installing the bonded rubber bushing.
- Dimensions -A- and -B- must be the same (each measured, if applicable, at a spot where there is no seam/burr).
- Install the bonded rubber bushing again if dimensions -A- and -B- are different.

Use a commercially available 27 mm socket wrench in place of the -3378- to install the bonded rubber bushing.

Installing

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

Tightening specifications, refer to

⇒ ["2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview"](#), page 119 .

Tightening specifications, refer to

⇒ ["2.2.3 Wheel Bearing Housing, Wheel Bearing Unit, Trailing Arm with Mounting Bracket and Stone Deflector Assembly Overview"](#), page 121 .

Tightening specifications, refer to

⇒ ["2.2.4 Shock Absorber and Coil Spring Assembly Overview"](#), page 123 .

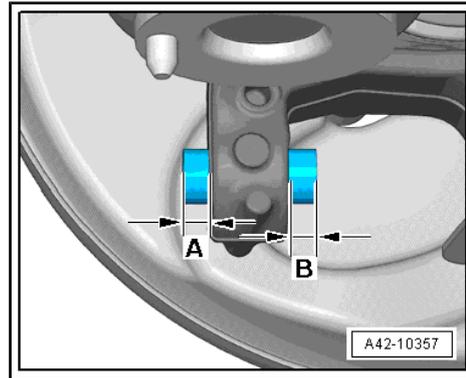
Tightening specifications, refer to

⇒ ["2.2.5 Stabilizer Bar Assembly Overview"](#), page 124 .



Note

Connections to wheel bearing housing may only be carried out if dimension between wheel hub center and lower edge of wheel housing, measured before assembly, is achieved. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116 .



5.1.9 Wheel Bearing Unit

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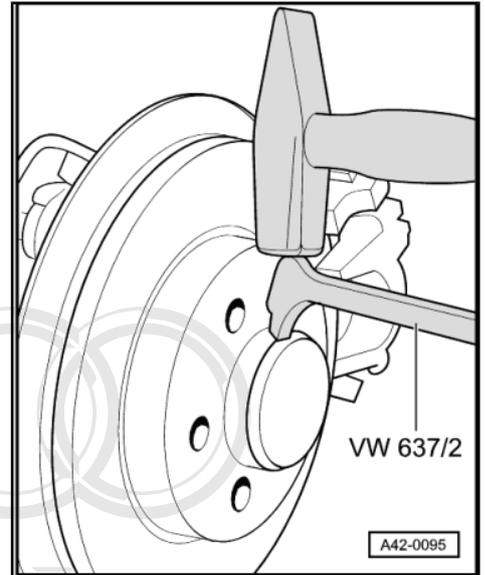
Special tools and workshop equipment required

- ◆ Grease cap puller -VW 637/2-
- ◆ Press tube -3241/4-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Torque wrench -V.A.G 1410-
- ◆ Bit M 18 -T10162-

Removing

- Raise vehicle and remove wheel.

Loosen dust cap from seat by tapping lightly on claw of -VW 637/2-



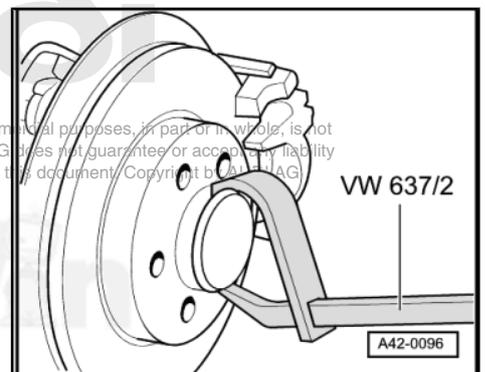
- Press off dust cap.
- Remove brake caliper/brake carrier and suspend from body with wire. Refer to ⇒ Brake System; Rep. Gr. 46 ; Removal and Installation .

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 **Note**

Do not allow brake caliper to hang from brake line.

- Remove the bolt and then remove the brake disc.
- Remove multi-point socket head bolt with Bit M 18 -T10162- .
- Remove wheel bearing unit from stub axle.



Caution

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



The wheel bearing -1- must always face up.

- Always set the wheel bearing unit down on the wheel hub -2-.

Installing

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

Tightening specifications, refer to [⇒ "2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview", page 119](#) .

Tightening specifications, refer to [⇒ "2.2.3 Wheel Bearing Housing, Wheel Bearing Unit, Trailing Arm with Mounting Bracket and Stone Deflector Assembly Overview", page 121](#) .

Tightening specifications, refer to [⇒ "2.2.4 Shock Absorber and Coil Spring Assembly Overview", page 123](#) .

Tightening specifications, refer to [⇒ "2.2.5 Stabilizer Bar Assembly Overview", page 124](#) .

- Carefully slide wheel hub/wheel bearing unit onto stub axle.

Note

Make sure that wheel hubs/wheel bearing unit do not cant!

- Tighten using a new multi-point socket head bolt.

Note

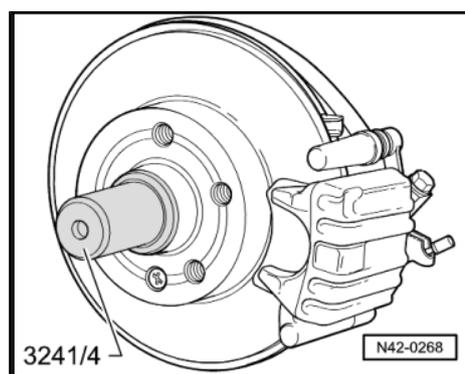
- ◆ *First tighten the bolt to the given torque specification using the torque wrench.*
- ◆ *Use solid wrench for additional torque angle.*

- Drive in dust cap.

Note

- ◆ *Always replace dust caps.*
- ◆ *Damaged dust caps allow moisture to enter. Therefore, always use the tool shown.*

Rest of installation is the reverse of removal.



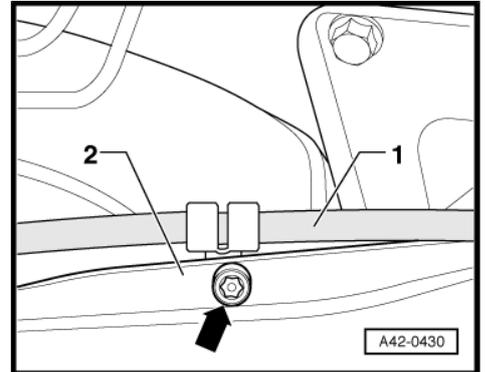
5.1.10 Trailing Arm with Mounting Bracket

Special tools and workshop equipment required

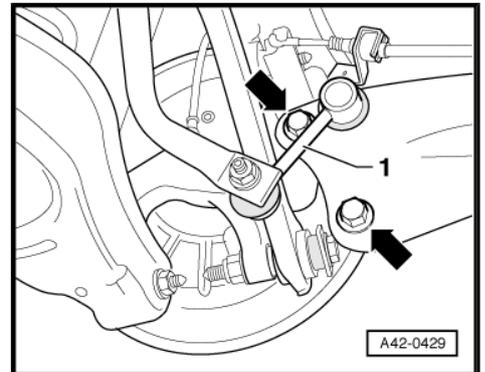
- ◆ Torque wrench -V.A.G 1332-
- ◆ Engine/transmission jack -V.A.G 1383 A-
- ◆ Wheel hub support -T10149-

Removing

- Remove the wheel.
- Remove stone deflector from trailing arm. Refer to [⇒ "5.1.12 Stone Guard", page 167](#) .
- Remove coil spring. Refer to [⇒ "5.1.14 Coil Spring", page 169](#) .
- Remove the bolt -arrow- for parking brake cable -1- from trailing link -2-.



- Remove the coupling rod -1- from trailing link.
- Remove bolts -Arrows-.
- Mark installation position of mounting bracket on body.

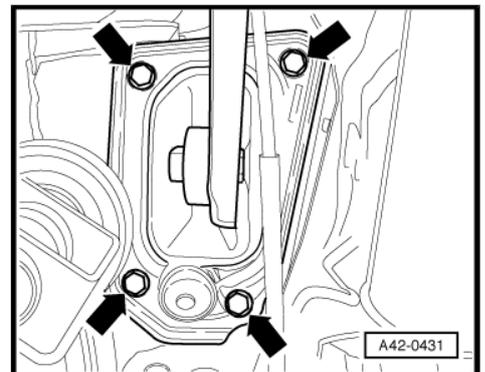


- Remove the screws -arrows-.
- Remove trailing link with mounting bracket.

If longitudinal control arm is being replaced, mounting bracket must be removed from trailing arm.

Installation position of mounting bracket to longitudinal control arm must then be adjusted.

Determining Installation Position of Mounting Bracket Relative to Trailing Arm



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Dimension -a- is 34 mm.

1 - Mounting bracket

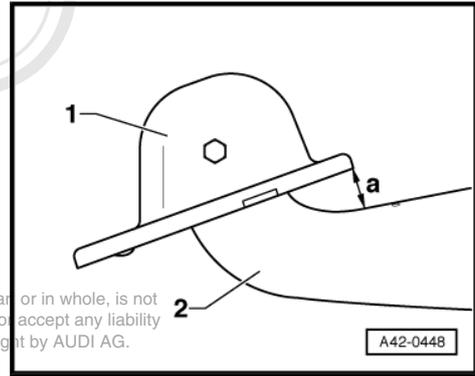
2 - Trailing arm

- When dimension -a- has been adjusted, tighten bolt.

Installing

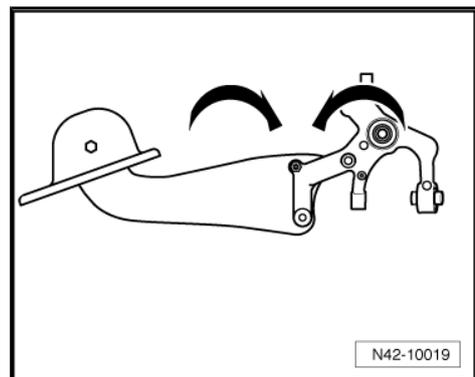
Installation is the reverse of removal, with special attention to the following:

Threaded connection of trailing link/wheel bearing housing must only be tightened when all other components (spring and strut always) of the respective wheel suspension have been already assembled. To tighten, suspension must be unloaded. Only now do the trailing link and wheel bearing housing move into the position required -arrows-.

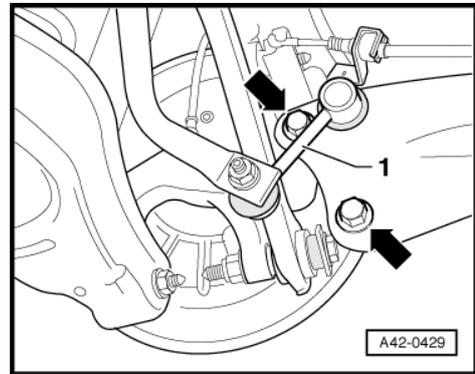


Position: Threaded Connection of Trailing Arm/Wheel Bearing Housing

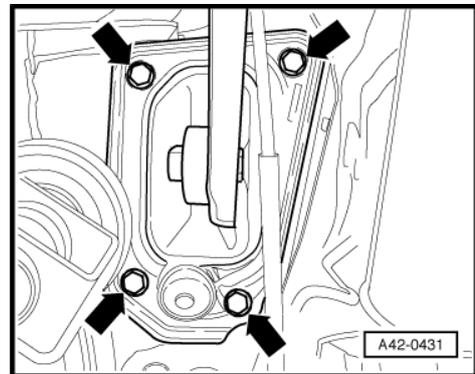
Always perform the following work in the sequence given!



- Install trailing link and mounting bracket with bolts -arrows- on wheel bearing housing but do not yet tighten.
- Insert coupling rod -1- in trailing link, do not tighten nut yet.
- Raise wheel suspension using -V.A.G 1383 A- and -T10149- until mounting bracket makes contact on body.



- Tighten bolts -arrows- on old impression.
- Let down wheel suspension again using -V.A.G 1383 A- and remove -T10149- from wheel hub.
- Install coil spring. Refer to => "5.2.15 Coil Spring", page 200 .



- Tighten bolts -arrows- for longitudinal control arm to tightening specification, observe required position of components while doing so. Refer to ⇒ [page 164](#) .
- Tighten coupling rod nut -1- on trailing arm.

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- Screw parking brake cable -1- on trailing arm -2- -arrow-.
- Install wheel and tighten.

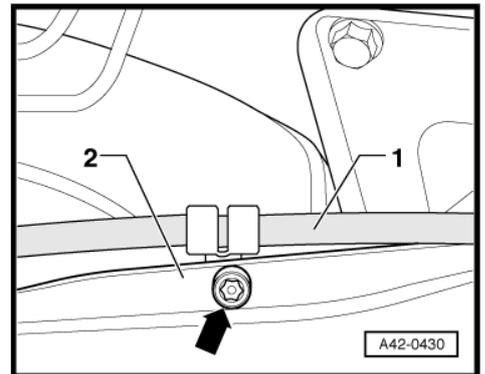
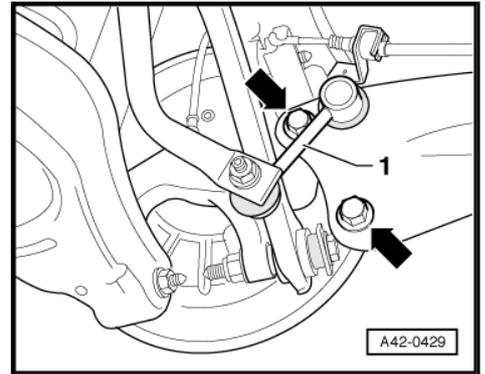
Tightening specifications, refer to ⇒ [“2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview”, page 119](#) .

Tightening specifications, refer to ⇒ [“2.2.3 Wheel Bearing Housing, Wheel Bearing Unit, Trailing Arm with Mounting Bracket and Stone Deflector Assembly Overview”, page 121](#) .

Tightening specifications, refer to ⇒ [“2.2.4 Shock Absorber and Coil Spring Assembly Overview”, page 123](#) .

Tightening specifications, refer to ⇒ [“2.2.5 Stabilizer Bar Assembly Overview”, page 124](#) .

- Vehicle alignment required, see table. Refer to ⇒ [“1.5 Wheel Alignment”, page 230](#) .



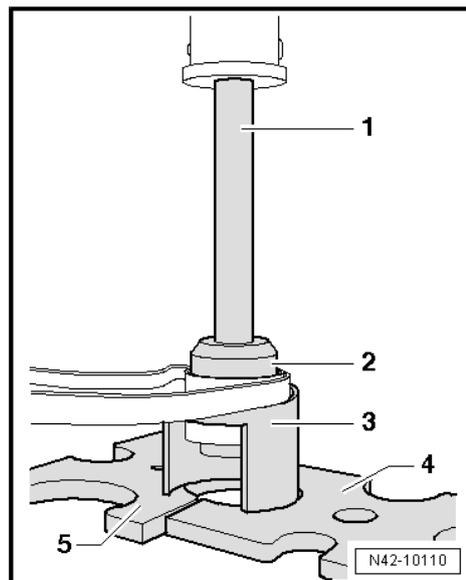
5.1.11 Trailing Arm Bonded Rubber Bushing

Special tools and workshop equipment required

- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Installation device -3372-
- ◆ Assembly tool -T10230-

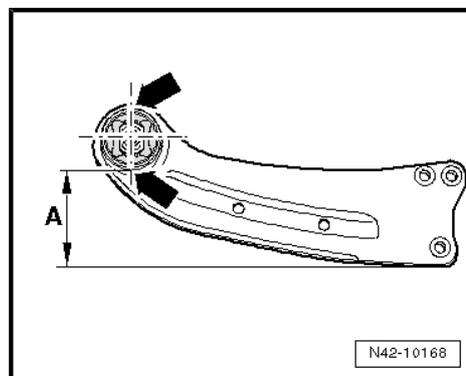
Pressing Out

- Remove trailing arm with mounting bracket. Refer to [⇒ "5.1.10 Trailing Arm with Mounting Bracket", page 162](#).
 - Install tools as shown in the illustration.
- 1 - Tube -T10230/3-
 - 2 - Thrust piece -T10230/10-
 - 3 - -3372-
 - 4 - -VW 401-
 - 5 - -VW 402-
- Press out the bonded rubber mount.



Pressing In

- Place trailing arm on level surface so that dimension -A- = 114 mm.
- Mark a vertical line onto bushing of trailing link -arrows-.

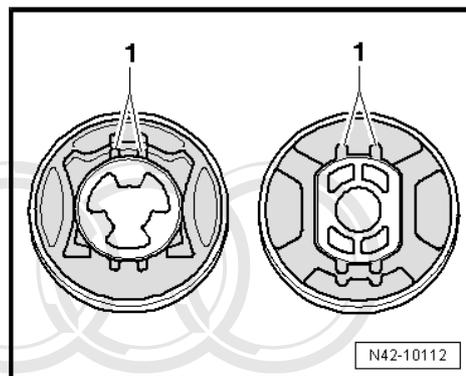


There are 2 different bonded rubber bushings. For both, the marked line must lie between raised points -1- after pressing in.



Note

Always make sure that bonded rubber bushings are in correct installation position to bushing of trailing arm.

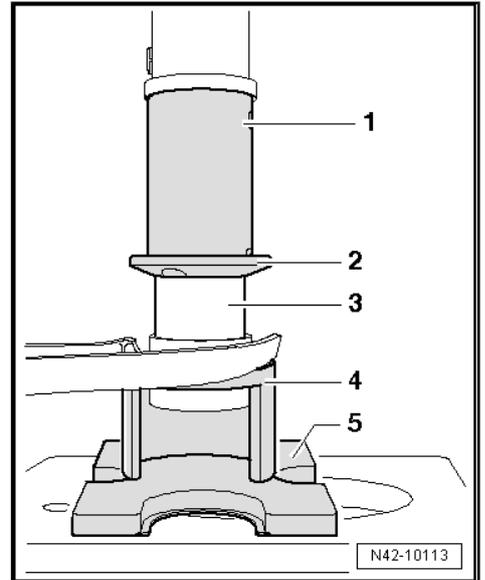


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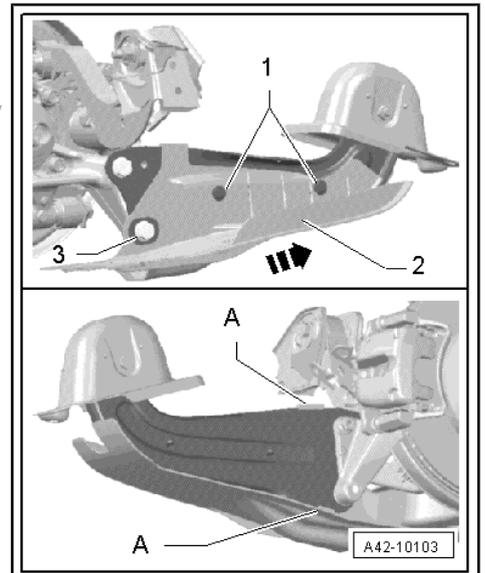
- Install tools as shown in the illustration.
- 1- Tube -T10230/5-
- 2- Thrust plate -T10230/12- , chamfer must point to bonded rubber bushing
- 3- Bonded rubber mount
- 4- -3372-
- 5- -VW 402-
- Press bonded rubber bushing in flush.
- Install mounting bracket on trailing arm. Refer to [=> page 163](#) .
- Install trailing arm with mounting bracket. Refer to [=> "5.1.10 Trailing Arm with Mounting Bracket", page 162](#) .



5.1.12 Stone Guard

Removing

- Remove expanding rivet -1-
- Slide stone deflector -2- in direction of arrow, until it makes contact with this bolt -3-.
- Unclip retaining tabs -A- and remove stone deflector -2-.



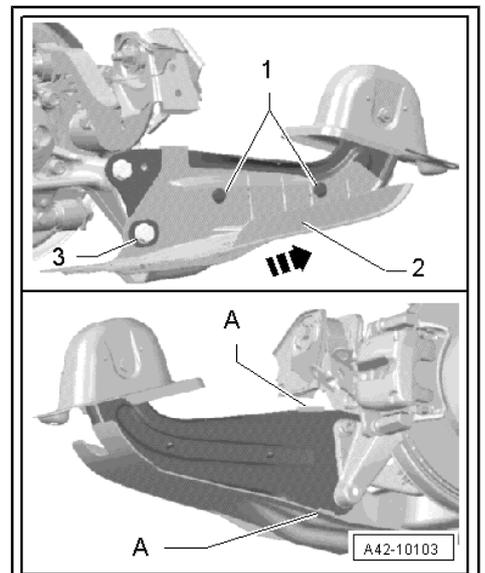
Installing

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



Caution

- ◆ *Retaining tabs -A- must not be damaged when removing and installing.*
- ◆ *The component must be replaced if damaged.*



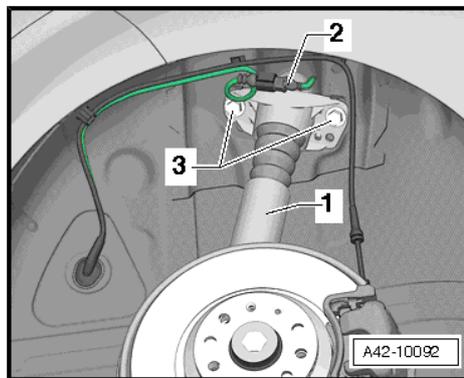
5.1.13 Shock Absorber

Special tools and workshop equipment required

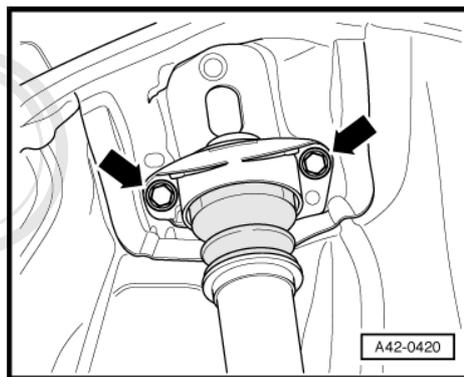
- ◆ Torque wrench -V.A.G 1332-
- ◆ Vehicle diagnosis, testing and information system -VAS 5051-

Removing

- Measure dimension from center of wheel to lower edge of wheel housing. Refer to [⇒ "2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#).
- Remove the wheel.
- Remove wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation
- Remove coil spring. Refer to [⇒ "5.1.14 Coil Spring", page 169](#).
- On vehicles with electronically-controlled damping (Audi magnetic ride), disconnect connector -2-.



- Remove the bolts -arrows-.

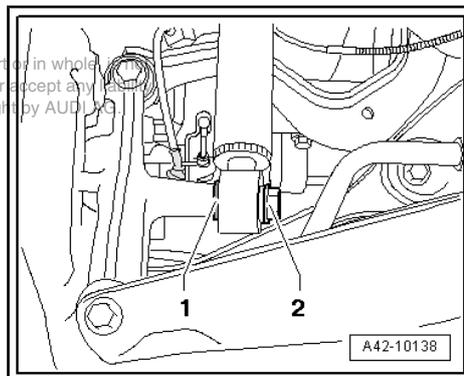


- Remove the bolt -2- and washer -1-.

- Remove shock absorber.

Installing

Install in reverse order of removal. Note the following:



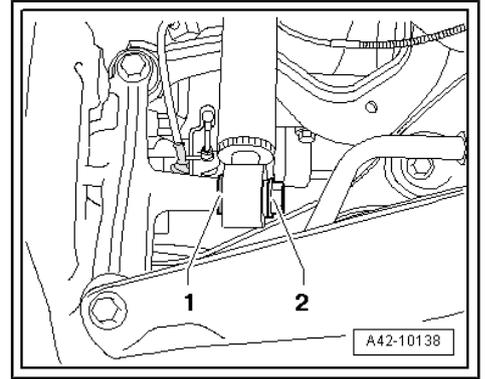
- Install bolt -2- with washer -1-.

Tightening specifications, refer to
 ⇒ [“2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview”, page 119](#) .

Tightening specifications, refer to
 ⇒ [“2.2.3 Wheel Bearing Housing, Wheel Bearing Unit, Trailing Arm with Mounting Bracket and Stone Deflector Assembly Overview”, page 121](#) .

Tightening specifications, refer to
 ⇒ [“2.2.4 Shock Absorber and Coil Spring Assembly Overview”, page 123](#) .

Tightening specifications, refer to
 ⇒ [“2.2.5 Stabilizer Bar Assembly Overview”, page 124](#) .



 **Note**

Bolting bumper to wheel bearing housing must only occur after dimension measured before installation between the wheel hub center and the lower edge of wheel housing has been attained. Refer to
 ⇒ [“2.1 Wheel Bearing, Lifting to Curb Weight Position”, page 116](#) .

On vehicles with electronically-controlled damping (Audi magnetic ride), the control position must be reprogrammed each time a shock absorber is replaced using the -VAS 5051- .

5.1.14 Coil Spring

Whenever replacing a part or performing a repair near the rear coil springs, the rubber spring support with a galvanized contact surface must be replaced with a new rubber spring support. If a rubber spring support is already installed, do not replace it. Allocation, refer to the Electronic Parts Catalog (ETKA). Make sure the repainted area is facing upward when installing the coil spring. It is matte and somewhat thicker in contrast to the rest of the spring. There is often a sag or drop on the second coil.

Special tools and workshop equipment required

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

Removing

- Remove the wheel.



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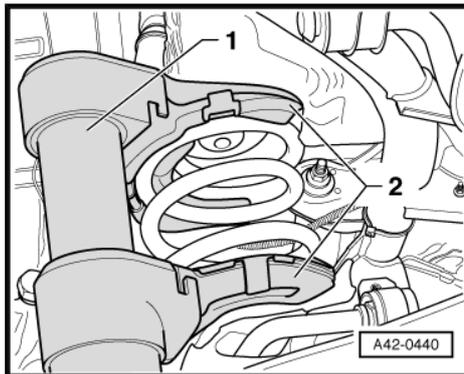


- Insert spring compressor -1-



WARNING

Make sure the coil spring is seated correctly in the -V.A.G 1752/3A-.



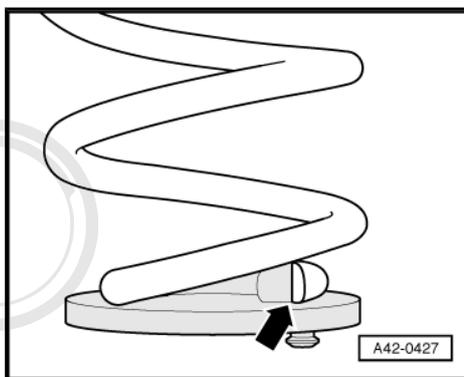
- Compress coil spring far enough until it can be removed.
 - Remove spring.
- 1 - -V.A.G 1752/1-
2 - -V.A.G 1752/3A-

Installing

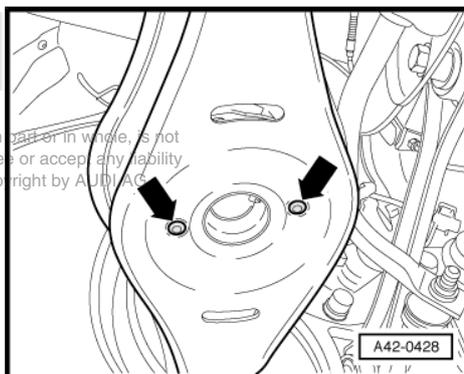
Installation is the reverse of removal, with special attention to the following. Refer to => [page 169](#) .

End of spring -arrow- must rest against stop of lower spring support.

- Install spring together with spring seat.
- Spring seat has two pins on bottom.



- These pins are inserted into holes on lower transverse link -arrows-.
- Then insert spring seat at top into upper spring end.
- Tension spring. **To do this, place upper end of spring on body** with respect to the correctness of information in this document. Copyright by Audi AG
- Install the wheel and tighten the wheel bolts. Refer to => Wheel and Tire Guide; Rep. Gr. 44 ; General Information .



5.1.15 Stabilizer Bar

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-

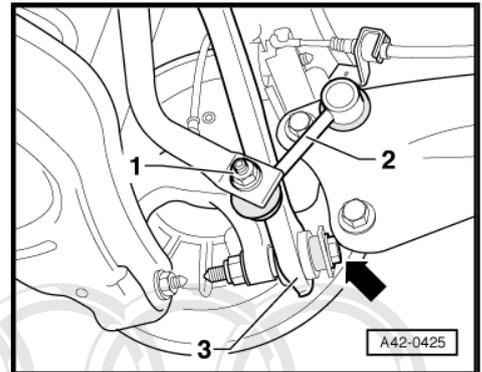
Removing

- Remove rear wheels.
- Remove stone deflector from trailing arm. Refer to => ["5.1.12 Stone Guard", page 167](#) .

 **Note**

The following work steps are described for the left side of the vehicle. These work steps also apply simultaneously for right side of vehicle.

- Remove the nut -1- and pull coupling rod -2- out of stabilizer.



- Remove bolts -arrows- for stabilizer clamp.
- Remove the stabilizer bar.

Installing

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

Tightening specifications, refer to

⇒ [“2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview”, page 119](#) .

Tightening specifications, refer to

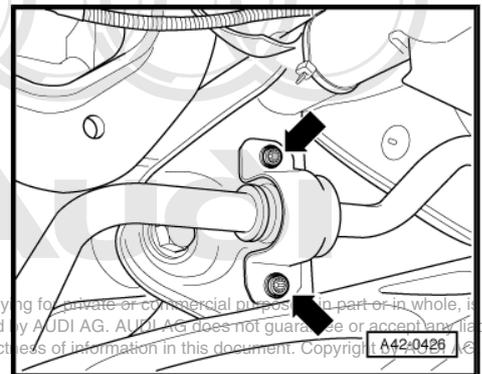
⇒ [“2.2.3 Wheel Bearing Housing, Wheel Bearing Unit, Trailing Arm with Mounting Bracket and Stone Deflector Assembly Overview”, page 121](#) .

Tightening specifications, refer to

⇒ [“2.2.4 Shock Absorber and Coil Spring Assembly Overview”, page 123](#) .

Tightening specifications, refer to

⇒ [“2.2.5 Stabilizer Bar Assembly Overview”, page 124](#) .



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5.2 All Wheel Drive (AWD)

- ⇒ [“5.2.1 Subframe with Attachments”, page 172](#)
- ⇒ [“5.2.2 Subframe Bonded Rubber Bushing”, page 177](#)
- ⇒ [“5.2.3 Lower Transverse Link”, page 180](#)
- ⇒ [“5.2.4 Upper Transverse Link”, page 181](#)
- ⇒ [“5.2.5 Tie Rod”, page 183](#)
- ⇒ [“5.2.6 Level Control System Sensors”, page 184](#)
- ⇒ [“5.2.7 Diagonal Braces, Roadster”, page 186](#)
- ⇒ [“5.2.8 Crossmember Braces, Roadster”, page 186](#)
- ⇒ [“5.2.9 Wheel Bearing Housing”, page 187](#)
- ⇒ [“5.2.10 Wheel Bearing Housing Bonded Rubber Bushing”, page 190](#)
- ⇒ [“5.2.11 Wheel Bearing Unit”, page 193](#)
- ⇒ [“5.2.12 Trailing Arm with Mounting Bracket”, page 194](#)
- ⇒ [“5.2.13 Trailing Arm Bonded Rubber Bushing”, page 197](#)
- ⇒ [“5.2.14 Shock Absorber”, page 198](#)
- ⇒ [“5.2.15 Coil Spring”, page 200](#)
- ⇒ [“5.2.16 Stabilizer Bar”, page 201](#)
- ⇒ [“5.2.17 Drive Axle”, page 202](#)

5.2.1 Subframe with Attachments

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-
- ◆ Engine-/transmission jack -V.A.G 1383 A- with universal transmission support -V.A.G 1359/2-
- ◆ Tensioning strap -T10038-
- ◆ Vehicle diagnosis, testing and information system -VAS 5051-

Removing



Note

For later reassembly work where the drive axle to wheel hub threaded connection must be loosened, note that it must not be done while the vehicle is resting on its wheels. Drive axle to wheel hub threaded connection, loosening, refer to
⇒ [“2.3.7 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening”, page 135](#).

- Remove wheels.
- Remove coil springs. Refer to
⇒ [“5.2.15 Coil Spring”, page 200](#).



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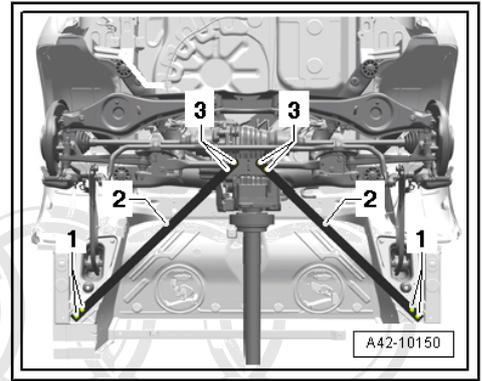
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Affects Roadster Vehicles

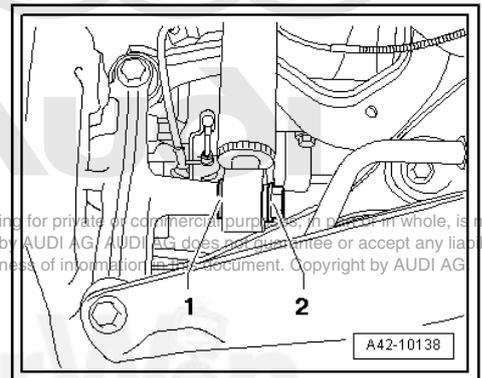
- Remove bolts -1- and -3- and remove diagonal braces -2-.

Affects All Vehicles

- Remove exhaust system rear muffler. Refer to ⇒ Engine Mechanical; Rep. Gr. 26 ; Removal and Installation .
- Disconnect electrical wires to Haldex clutch, ABS speed sensor and, on vehicles with level control system sensor, connectors and unclip.

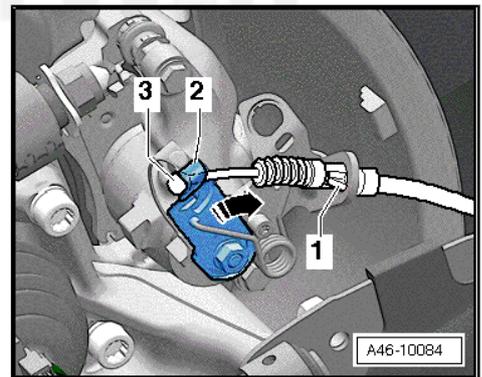


- Remove the bolt -2- and washer -1-.

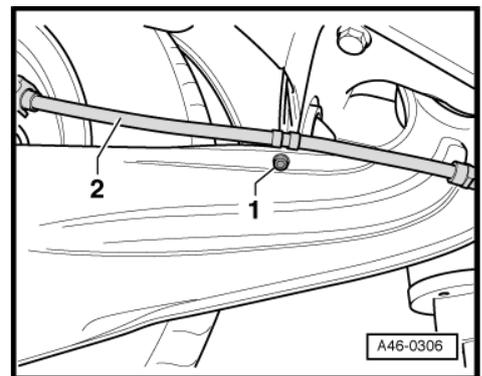


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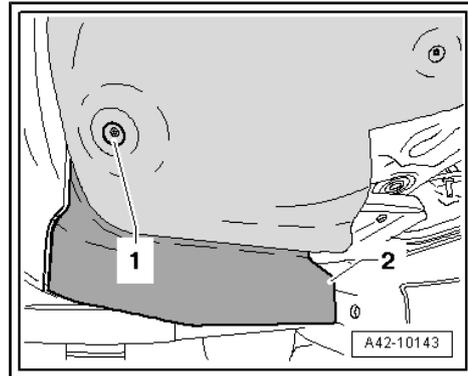
- Press brake lever -2- in direction of arrow and unhook parking brake cable -3-.
- Press retaining tabs -1- together and remove parking brake cable.



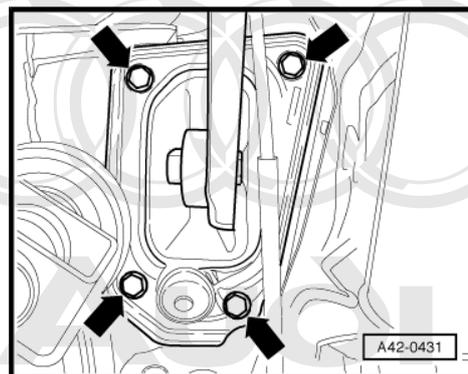
- Remove bolt -1- and remove parking brake cable -2- from bracket of brake cable.
- Remove brake caliper. Refer to ⇒ Brake System; Rep. Gr. 46 ; Removal and Installation .
- Secure the brake caliper to the body so that the weight of the caliper does not stress or damage the brake hose or brake line.



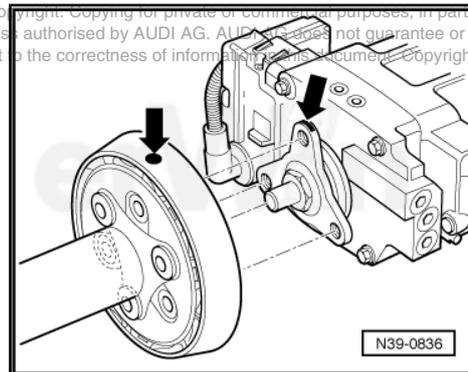
- Remove bolt -1- and remove wind deflector -2-. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .



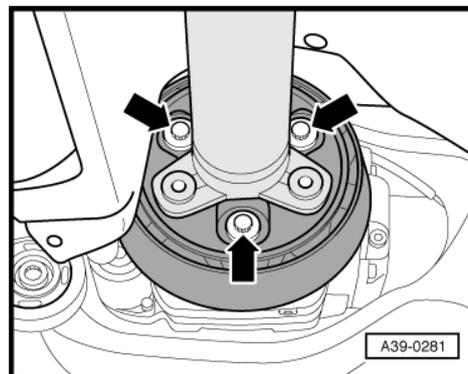
- Mark installation position of mounting bracket on body.
- Remove the bolts -arrows-.



- Check for a factory-applied marking (colored dot) on the joint washer and Haldex clutch flange -arrows-. If there is not one mark location of joint washer and Haldex clutch flange to each other -arrows-.



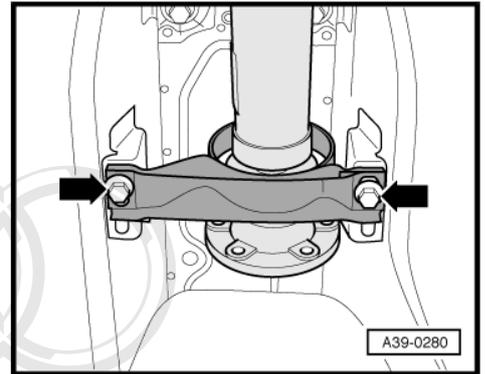
- Remove rear driveshaft tube from rear final drive with joint washer and vibration damper -arrows-.



- Remove the center bracket bolts -arrows- two turns.

 **Note**

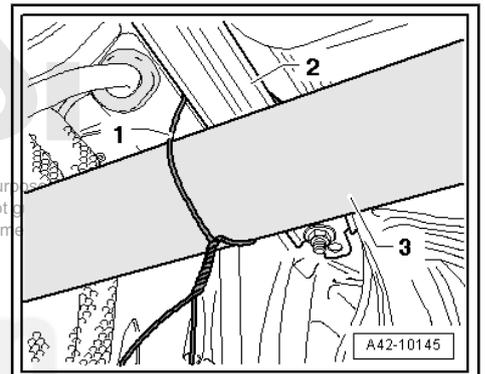
The illustration shows the center bearing with heat shield removed.



- Secure driveshaft -3- to exhaust system bracket -2- with a wire -1-.
- Move rear driveshaft tube as far as possible in direction of transmission.

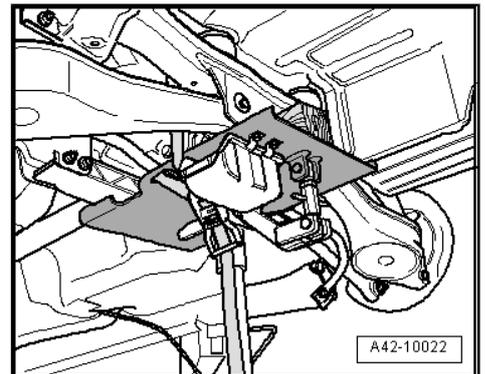
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Before -LOOSENING- subframe bolts, secure vehicle against tipping over (e.g. load luggage compartment with approximately 50 kg).



Affects Coupe Vehicles

- Place -V.A.G 1383 A- with -V.A.G 1359/2- under subframe and secure with -T10038- .

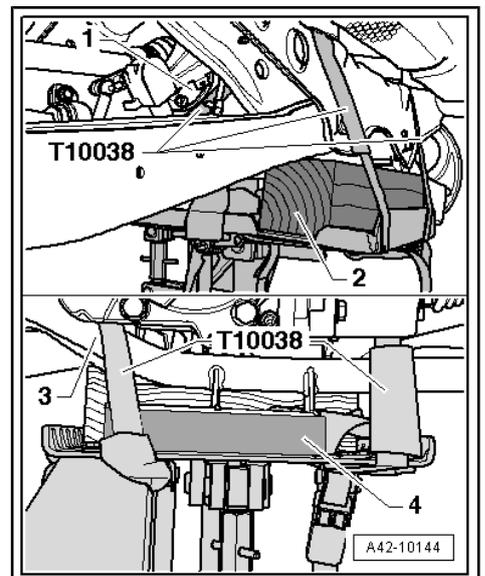


Affects Roadster Vehicles

- Place -V.A.G 1383 A- with -V.A.G 1359/2- under subframe and secure with -T10038- .
- Support rear of subframe with a suitable wood block -2-.
- Support front of subframe with a suitable wood block -4- under crossmember -3-.
- Route -T10038- over subframe and under rear final drive -1-.

 **Caution**

- Do not route -T10038- under drive axle flange.



- Route -T10038- under -V.A.G 1359/2- and tighten.

**Affects All Vehicles**

- Remove hex bolts -1- and -2-.

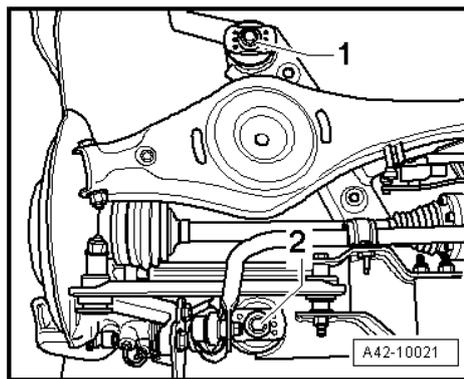
**Note**

For the sake of a better illustration, only the left side of the vehicle is shown.

- Carefully lower subframe with components.

**Note**

When lowering, ensure there is enough clearance between the brake lines, electrical lines and centering pints to driveshaft.

**Installing**

Install in reverse order of removal. Note the following:

Driveshaft, attaching to rear final drive, refer to ⇒ [Rear Final Drive 02D, 0AV, 0BR and 0BY; Rep. Gr. 39; Removal and Installation](#) .

- The center of the subframe mount holes must be aligned to the bolting points on the body.

- Install bolt -2- with washer -1-.

Tightening specifications, refer to

⇒ ["2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe"](#), page 127 .

Tightening specifications, refer to

⇒ ["2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster"](#), page 129 .

Tightening specifications, refer to

⇒ ["2.3.4 Wheel Bearing Housing, Wheel Bearing Unit and Trailing Arm with Mounting Bracket Assembly Overview"](#), page 132 .

Tightening specifications, refer to

⇒ ["2.3.5 Shock Absorber and Coil Spring Assembly Overview"](#), page 134 .

Tightening specifications, refer to

⇒ ["2.3.6 Stabilizer Bar Assembly Overview"](#), page 135 .

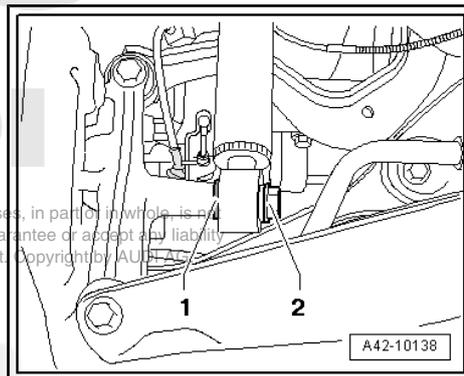
- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position using the -VAS 5051- .

- On vehicles with automatic headlamp range control, perform headlamp basic setting. Refer to ⇒ [Electrical Equipment; Rep. Gr. 94; Diagnosis and Testing](#) .

- Vehicle alignment required, see table. Refer to ⇒ ["1.5 Wheel Alignment"](#), page 230 .

**Note**

Checking and aligning front/rear axle must take place on a VW/Audi recommended alignment stand.



5.2.2 Subframe Bonded Rubber Bushing

Special tools and workshop equipment required

- ◆ Pneumatic/hydraulic foot pump -VAS 6179-
- ◆ Hydraulic cylinder -VAS 6178-
- ◆ Engine-/transmission jack -V.A.G 1383 A- with universal transmission support -V.A.G 1359/2-
- ◆ Assembly tool -T10263-
- ◆ Assembly tool -T10205/13-
- ◆ Vehicle diagnosis, testing and information system -VAS 5051-

Removing

- Remove rear wheels.
- Remove coil springs. Refer to [⇒ "5.2.15 Coil Spring", page 200](#) .
- Remove the rear muffler. Refer to ⇒ Engine Mechanical; Rep. Gr. 26 ; Removal and Installation .
- Disconnect electrical lines to Haldex clutch and, on vehicles with level control sensor, connectors.
- Remove stabilizer bar. Refer to [⇒ "5.2.16 Stabilizer Bar", page 201](#) .
- Remove tie rods. Refer to [⇒ "5.2.5 Tie Rod", page 183](#) .
- Unclip electrical lines to upper transverse links.

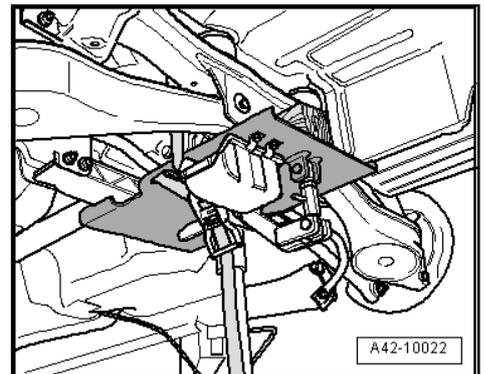


WARNING

Before -LOOSENING- subframe bolts, secure vehicle against tipping over (e.g. load luggage compartment with approximately 50 kg).

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- Place -V.A.G 1383 A- with -V.A.G 1359/2- below subframe and secure with strap.



- Remove bolts -1- and -2-.

**Note**

For the sake of a better illustration, only the left side of the vehicle is shown.

- Lower subframe 10 cm using -V.A.G 1383 A- .
- Mark the locations of the bonded rubber bushings to the subframe, e.g. with a felt-tip pen.
- Install -T10205/13- in -VAS 6178- .

- Install special tools as shown in illustration.

1 - Nut -T10263/5-

2 - Washer

3 - Subframe

4 - Tube -T10263/1-

5 - -VAS 6178-

6 - Washer

7 - Nut -T10263/5-

8 - Spindle -T10263/4-

- Pretension special tools.

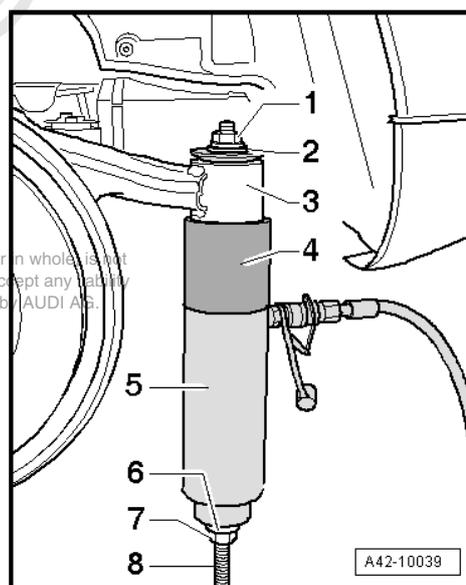
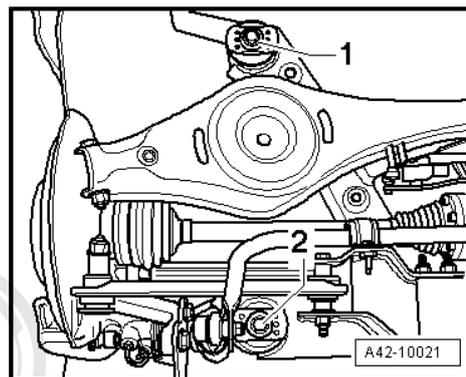
- Pull out bonded rubber bushing by operating pump.

Installing

Install in reverse order of removal. Observe the following when doing so:

The front and rear bonded rubber bushings have slightly different installation heights. Make sure that correct allocation when installing. Allocation, refer to the Electronic Parts Catalog (ETKA).

Bonded rubber bushing must be installed in the correct direction, note marking on subframe.

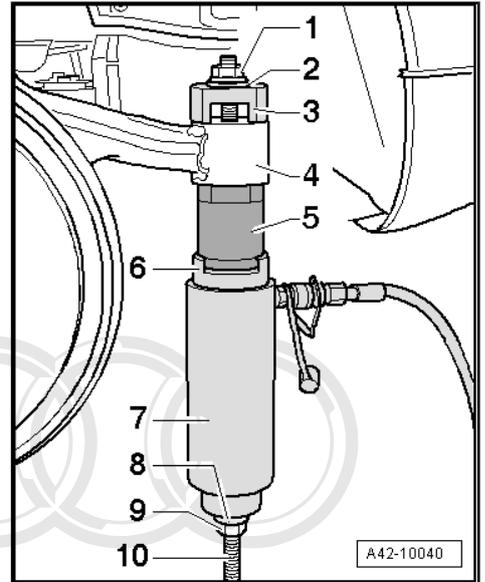


- Insert special tools with bonded rubber bushing into subframe as illustrated.



WARNING

Thrust piece -T10263/3- must be positioned so that locking tabs on bonded rubber bushing align with opening on -T10263/3-.



- 1 - -T10263/5-
- 2 - Washer
- 3 - -T10263/3-
- 4 - Subframe
- 5 - Bonded rubber mount
- 6 - -T10263/2-
- 7 - -VAS 6178-
- 8 - Washer
- 9 - -T10263/5-
- 10 - -T10263/4-

- Pretension special tool with bonded rubber bushing
- Pull in bonded rubber bushing until stop by operating pump.



Note

When pulling it in, make sure the bonded rubber bushing only rests lightly against the subframe.

Tightening specifications, refer to
 ⇒ ["2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe", page 127](#) .

Tightening specifications, refer to
 ⇒ ["2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster", page 129](#) .

Tightening specifications, refer to
 ⇒ ["2.3.4 Wheel Bearing Housing, Wheel Bearing Unit and Trailing Arm with Mounting Bracket Assembly Overview", page 132](#) .

Tightening specifications, refer to
 ⇒ ["2.3.5 Shock Absorber and Coil Spring Assembly Overview", page 134](#) .

Tightening specifications, refer to
 ⇒ ["2.3.6 Stabilizer Bar Assembly Overview", page 135](#) .

- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position using the -VAS 5051- .
- On vehicles with automatic headlamp range control, perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .
- Vehicle alignment required, see table. Refer to ⇒ ["1.5 Wheel Alignment", page 230](#) .

**Note**

Checking and aligning front/rear axle must take place on a VW/Audi recommended alignment stand.

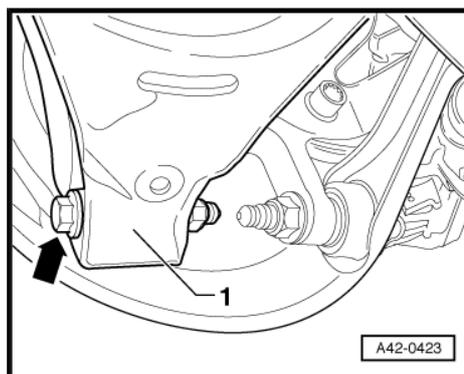
5.2.3 Lower Transverse Link

Special tools and workshop equipment required

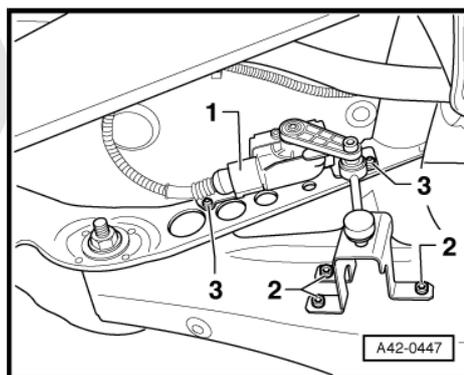
- ◆ Torque wrench -V.A.G 1332-
- ◆ Vehicle diagnosis, testing and information system -VAS 5051-

Removing

- Measure dimension from center of wheel to lower edge of wheel housing. Refer to ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116 .
- Remove the wheel.
- Remove coil spring. Refer to ["5.2.15 Coil Spring"](#), page 200 .
- Remove bolt -arrow- for lower transverse link -1-.



- Remove bolts -2- on vehicles with level control system sensor.



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- Mark, e.g. using a felt-tip marker, position of eccentric bolt -arrow B- to subframe.
- Disengage rear exhaust system and lower.
- Remove bolt -arrow B-.
- Remove lower transverse link.

Installing

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

Tightening specifications, refer to

⇒ ["2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe", page 127](#) .

Tightening specifications, refer to

⇒ ["2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster", page 129](#) .

Tightening specifications, refer to

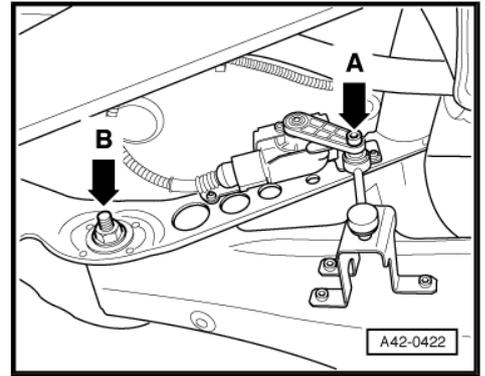
⇒ ["2.3.4 Wheel Bearing Housing, Wheel Bearing Unit and Trailing Arm with Mounting Bracket Assembly Overview", page 132](#)

Tightening specifications, refer to

⇒ ["2.3.5 Shock Absorber and Coil Spring Assembly Overview", page 134](#) .

Tightening specifications, refer to

⇒ ["2.3.6 Stabilizer Bar Assembly Overview", page 135](#)



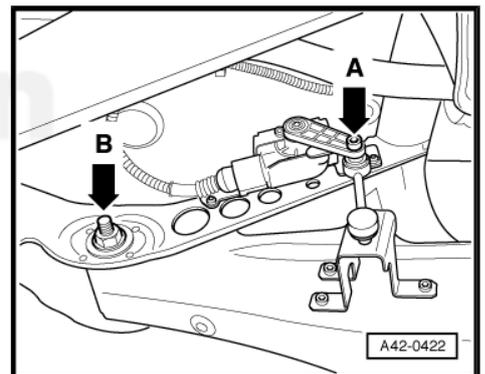
Note

Transverse link connections may only be carried out if dimension between wheel hub center and lower edge of wheel housing, measured before assembly, is achieved. Refer to

⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#) .

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- Note applied marking of eccentric bolt -arrow B- to subframe.
- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position using the -VAS 5051-
- On vehicles with automatic headlamp range control, perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .
- Vehicle alignment required, see table. Refer to ⇒ ["1.5 Wheel Alignment", page 230](#) .



5.2.4 Upper Transverse Link

Special tools and workshop equipment required

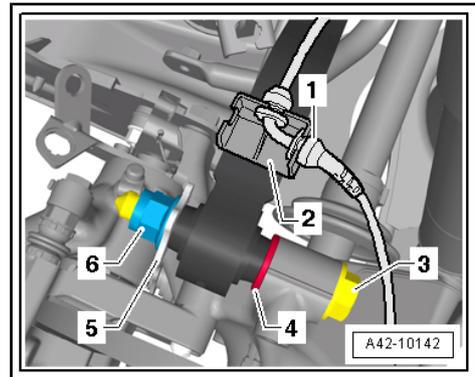
- ◆ Torque wrench -V.A.G 1332-

Removing

- Measure dimension from center of wheel to lower edge of wheel housing. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#) .



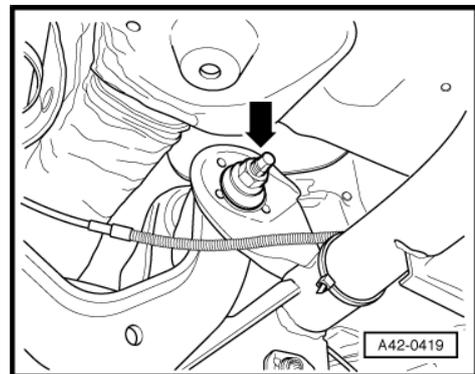
- Remove the wheel.
- Remove coil spring. Refer to [⇒ "5.2.15 Coil Spring", page 200](#).
- Completely disengage wire -1- from bracket -2-.
- Remove nut -6- and washer -5-.
- Remove the bolt -3- and washer -4-.



- Mark, e.g. using a felt-tip marker, position of eccentric bolt -arrow- to subframe.
- Remove bolt -arrow-.
- Remove upper transverse link.

Installing

Install in reverse order of removal. Note the following:

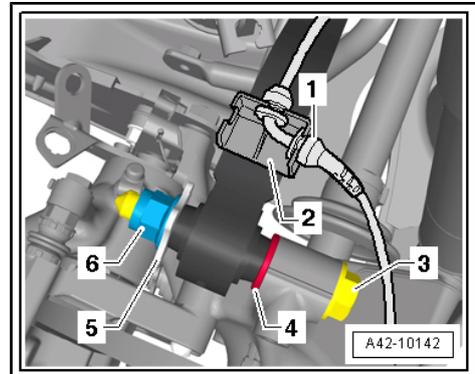


- Install bolt -3- with washer -4-.



Note

Transverse link connections may only be carried out if dimension between wheel hub center and lower edge of wheel housing, measured before assembly, is achieved. Refer to [⇒ "2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#).



Audi

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- Note applied marking of eccentric bolt -arrow- to subframe.

Tightening specifications, refer to
 => ["2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe"](#), page 127 .

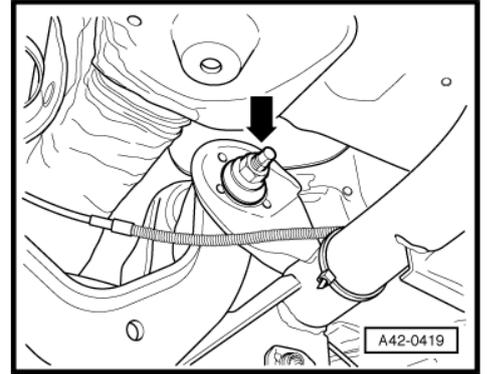
Tightening specifications, refer to
 => ["2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster"](#), page 129 .

Tightening specifications, refer to
 => ["2.3.4 Wheel Bearing Housing, Wheel Bearing Unit and Trailing Arm with Mounting Bracket Assembly Overview"](#), page 132 .

Tightening specifications, refer to
 => ["2.3.5 Shock Absorber and Coil Spring Assembly Overview"](#), page 134 .

Tightening specifications, refer to
 => ["2.3.6 Stabilizer Bar Assembly Overview"](#), page 135 .

- Vehicle alignment required, see table. Refer to
 => ["1.5 Wheel Alignment"](#), page 230 .



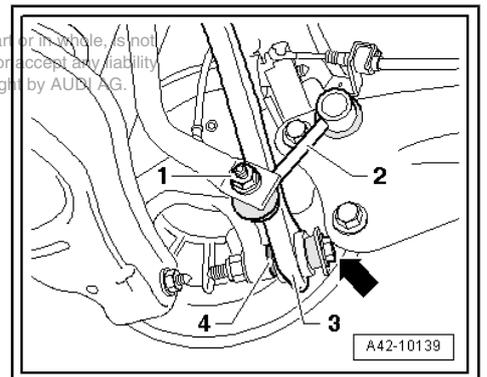
5.2.5 Tie Rod

Special tools and workshop equipment required

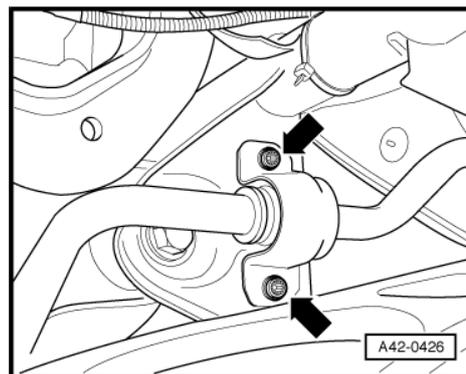
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-

Removing

- Measure dimension from center of wheel to lower edge of wheel housing. Refer to
 => ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116 .
- Remove the wheel.
- Remove coil spring. Refer to
 => ["5.2.15 Coil Spring"](#), page 200 .
- Remove the nut -1- and pull coupling rod -2- out of stabilizer.
- Remove bolt -arrow- for tie rod -3- and remove washer -4-.



- Remove bolts -arrows- for stabilizer clamp.

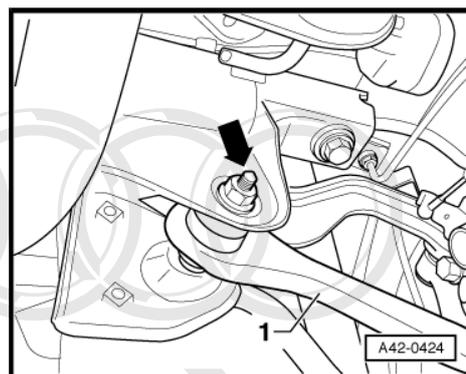


- Remove nut -arrow- and remove bolt toward rear.
- Remove tie rod.

Installing

Install in reverse order of removal. Note the following:

- Insert tie rod into vehicle and tighten the bolts by hand.

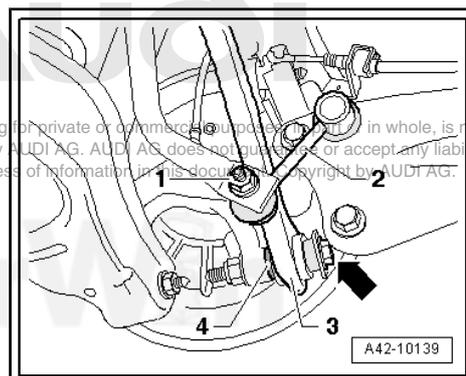


- Install bolt -arrow- for tie rod -3- with washer -4-.

Note

Tie rod connections may only be carried out of dimension between wheel hub center and lower edge of wheel housing, measured before assembly, is achieved. Refer to ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116.

- Vehicle alignment required, see table. Refer to ["1.5 Wheel Alignment"](#), page 230



Tightening specifications, refer to ["2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe"](#), page 127.

Tightening specifications, refer to ["2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster"](#), page 129.

Tightening specifications, refer to ["2.3.4 Wheel Bearing Housing, Wheel Bearing Unit and Trailing Arm with Mounting Bracket Assembly Overview"](#), page 132.

Tightening specifications, refer to ["2.3.5 Shock Absorber and Coil Spring Assembly Overview"](#), page 134.

Tightening specifications, refer to ["2.3.6 Stabilizer Bar Assembly Overview"](#), page 135.

5.2.6 Level Control System Sensors

General Information

Vehicles with electronically-controlled damping (Audi magnetic ride) and/or gas discharge lamps have an automatic headlamp

range control system as standard equipment. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; General Information .

In order to function, the electronically-controlled damping (Audi magnetic ride) and automatic headlamp range control require information about the compression or rebound travel at the front and rear axles.

For this, the position of the left/right transverse link in relation to the body is transferred via a coupling rod to Left Rear Level Control System Sensor -G76- and Right Rear Level Control System Sensor -G77- . These transmit electrical signals to the Electronic Damping Control Module -J250- and/or Left/Right High-intensity Gas Discharge Lamp Control Module -J343/344- .

Left/right high-intensity gas discharge lamp control module, servicing, refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Removal and Installation .

At the front axle, these signals are transmitted from the Left Front Level Control System Sensor -G78- and Right Front Level Control System Sensor -G289- to the Electronic Damping Control Module -J250- and/or the left/right high-intensity gas discharge lamp control module.

These signals are required for determining vehicle level.

The automatic headlamp range control reacts independently to changes in vehicle level.

The vehicle level can change in the following situations:

- ◆ Trailer Mode.
- ◆ Different load conditions; vehicle empty, vehicle partially or fully loaded.

 **Note**

Program the control position on vehicles with electronically-controlled damping (Audi magnetic ride) and check the headlamp adjustment if:

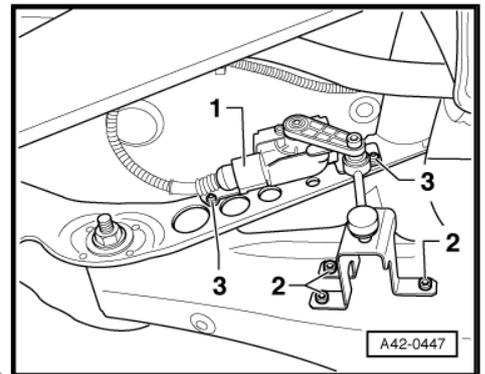
- ◆ Assembly work was performed on level control system sensor
- ◆ the lower transverse link was removed and installed,
- ◆ Threaded connections -2- or -3- were loosened.

Vehicle level sensor is available as replacement part only complete with coupling rod and upper and lower retaining plates.

- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position using the vehicle diagnosis, testing and information system -VAS 5051-

Headlamp basic setting, refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; **Diagnosis and Testing**

Removal and Installation
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- Disconnect the harness connector -1-.
- Remove the screws -2- and -3-.
- Remove sensor.

Installing

Install in reverse order of removal. Note the following:

Tightening specifications, refer to

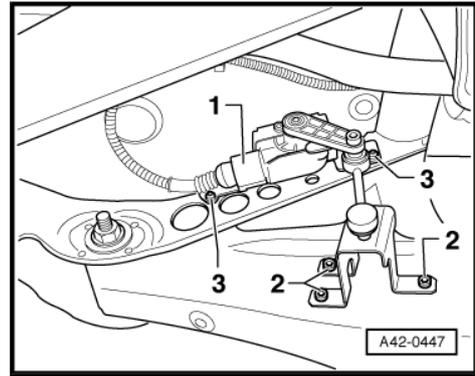
⇒ ["2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe", page 127](#) .

Tightening specifications, refer to

⇒ ["2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster", page 129](#) .

Sensor left must face toward outside of vehicle.

- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position using the vehicle diagnosis, testing and information system -VAS 5051- .
- Perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .



5.2.7 Diagonal Braces, Roadster

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-

Removing

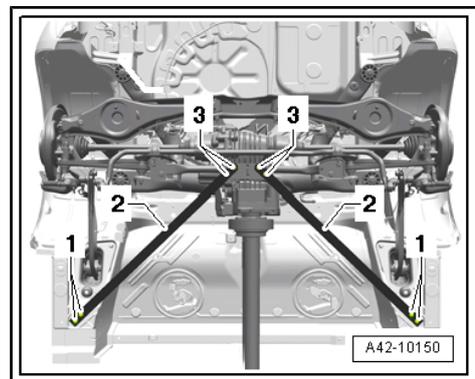
- Remove bolts -1- and -3- and remove diagonal braces -2-.

Installing

Install in reverse order of removal. Note the following:

Tightening specifications, refer to

⇒ ["2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster", page 129](#) .



5.2.8 Crossmember Braces, Roadster

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-

Removing

- Remove diagonal braces. Refer to [⇒ "5.2.7 Diagonal Braces, Roadster", page 186](#) .
- Remove lower stabilizer bar clamp bolts -1- so bolts -2- can be removed next.
- Remove crossmember -3-.

Installing

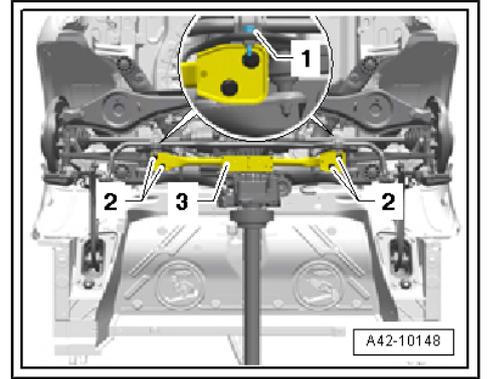
Install in reverse order of removal. Note the following:

Tightening specifications, refer to

⇒ ["2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster, page 129](#) .

Tightening specifications, refer to

⇒ ["2.3.6 Stabilizer Bar Assembly Overview", page 135](#) .



5.2.9 Wheel Bearing Housing

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-

Removing

- Measure dimension from center of wheel to lower edge of wheel housing. Refer to [⇒ "2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#) .
- Loosen the outer drive axle threaded connection.

Loosening the connection between the drive axle and wheel hub:

- ◆ Refer to [⇒ "2.3.7 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 135](#) .
- ◆ Refer to [⇒ "2.3.8 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 136](#) .
- ◆ Refer to [⇒ "2.3.9 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 137](#) .

- Remove the wheel.
- Remove coil spring, refer to [⇒ "5.2.15 Coil Spring", page 200](#) .
- Remove brake caliper/brake carrier and suspend from body with wire. Refer to ⇒ Brake System; Rep. Gr. 46 ; Removal and Installation .



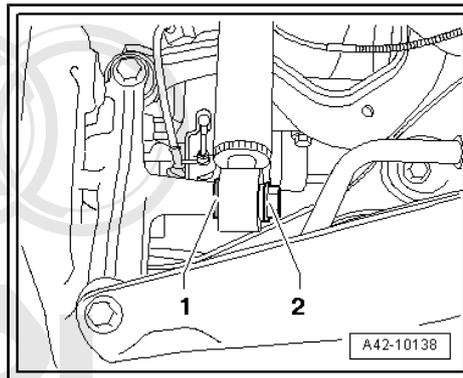
Note

Do not allow brake caliper to hang from brake line.

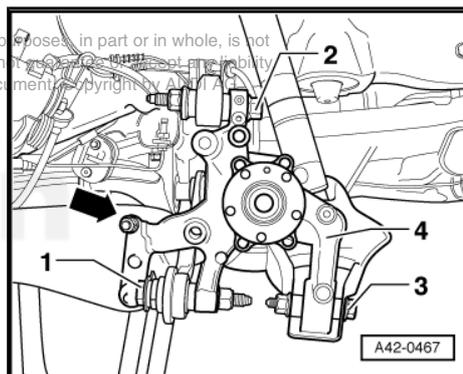
- Remove cover plate.
- Remove ABS speed sensor from wheel bearing housing.



- Remove the bolt -2- and washer -1-.



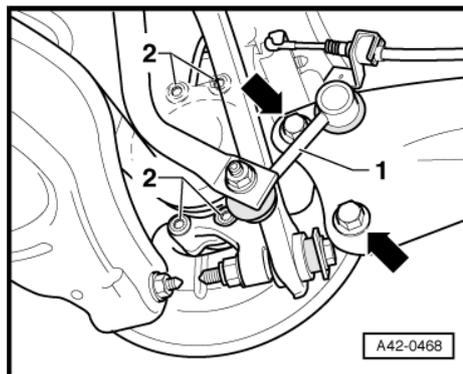
- Remove bolt for tie rod -1-, upper transverse link -2- and lower transverse link -3- from wheel bearing housing -4-.
- Remove connecting link -arrow- from trailing arm.



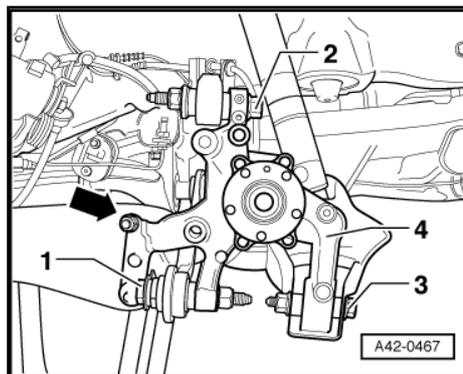
- Hold wheel bearing housing and remove bolts -arrows-.
- Pull coupling rod -1- out of trailing link.
- Remove wheel bearing housing.

Installing

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

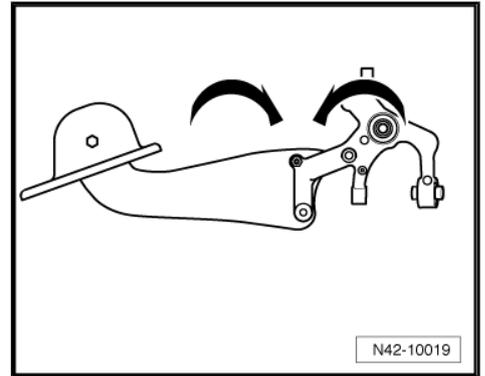


- Install tie rod screw -1-, upper transverse link -2- and lower transverse link -3-.
- Tighten the connecting link -arrow- to the trailing arm by hand.

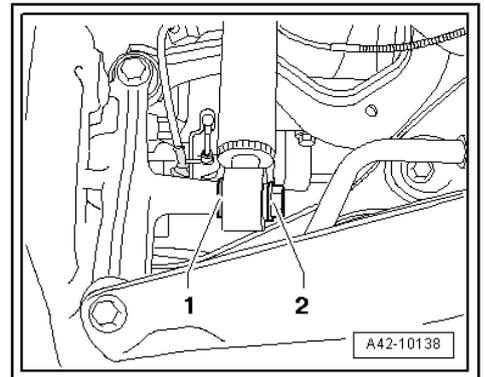


Threaded connection of trailing link/wheel bearing housing must only be tightened when all other components (spring and strut always) of the respective wheel suspension have been already assembled. To tighten, suspension must be unloaded. Only now do the trailing link and wheel bearing housing move into the position required -arrows-.

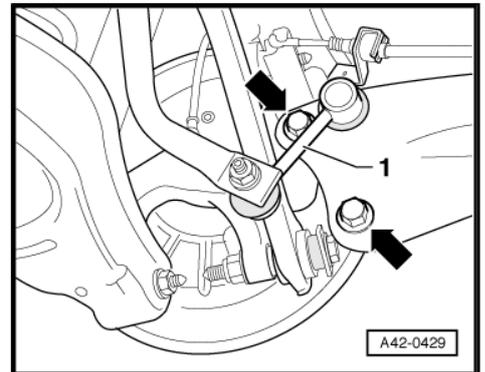
Always perform the following work in the sequence given!



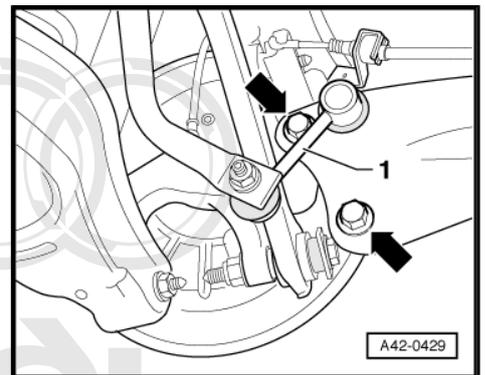
- Install bolt -2- with washer -1- and tighten.



- Place trailing arm on wheel bearing housing with bolts -arrows- but do not tighten yet.
- Install coil spring. Refer to ⇒ ["5.2.15 Coil Spring", page 200](#) .



- Tighten bolts -arrows-.



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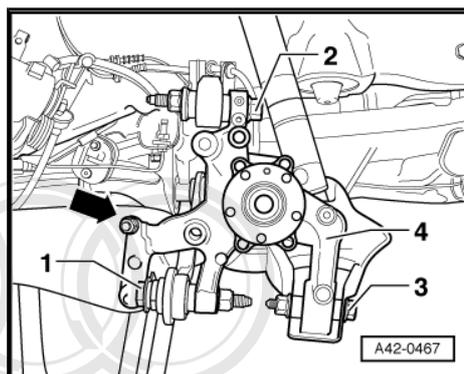
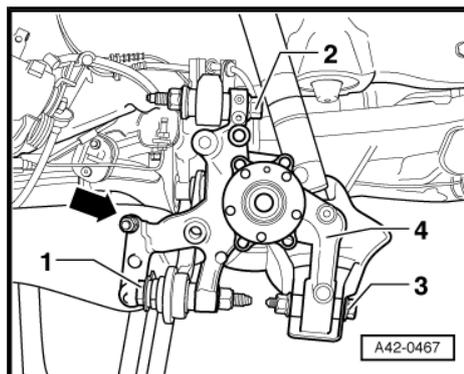


- Tighten coupling rod -arrow- on trailing arm.
- Install cover plate.

**Note**

Bolting at wheel bearing housing may occur only when dimension "a" has been obtained! Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116 .

- Tighten bolt for tie rod -1-.
- Tighten lower transverse link bolt -3-.



- Install bolt -3- with washer -4- and tighten.
- Install ABS wheel speed sensor in wheel bearing housing.
- Install brake disc.
- Install brake carrier with brake caliper. Refer to ⇒ [Brake System; Rep. Gr. 46 ; Removal and Installation](#)

Tightening specifications, refer to ⇒ ["2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe"](#), page 127 .

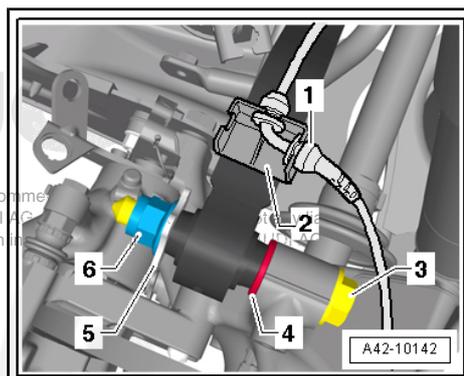
Tightening specifications, refer to ⇒ ["2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster"](#), page 129 .

Tightening specifications, refer to ⇒ ["2.3.4 Wheel Bearing Housing, Wheel Bearing Unit and Trailing Arm with Mounting Bracket Assembly Overview"](#), page 132 .

Tightening specifications, refer to ⇒ ["2.3.5 Shock Absorber and Coil Spring Assembly Overview"](#), page 134 .

Tightening specifications, refer to ⇒ ["2.3.6 Stabilizer Bar Assembly Overview"](#), page 135 .

- Install the wheel and tighten the wheel bolts. Refer to ⇒ [Wheel and Tire Guide; Rep. Gr. 44 ; General Information](#) .
- Vehicle alignment required, see table. Refer to ⇒ ["1.5 Wheel Alignment"](#), page 230 .



5.2.10 Wheel Bearing Housing Bonded Rubber Bushing

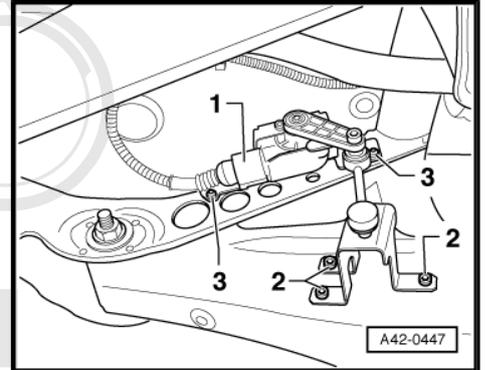
Special tools and workshop equipment required

- ◆ Assembly tool -3346-

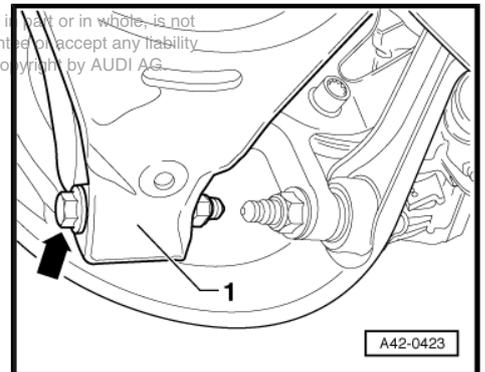
- ◆ Assembly tool -3350-
- ◆ Fitting sleeve -3378-
- ◆ Tappet -3390-
- ◆ Torque wrench -V.A.G 1332-

Removing

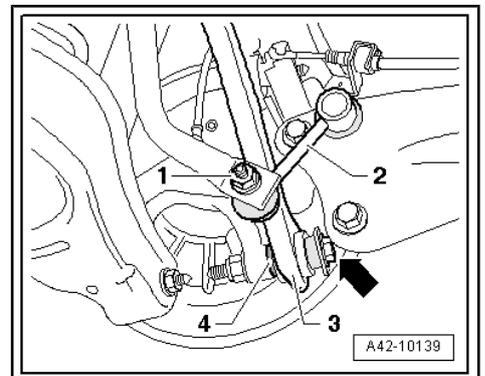
- Measure dimension from center of wheel to lower edge of wheel housing. Refer to ["2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#).
- Remove the wheel.
- Remove coil spring. Refer to ["5.1.14 Coil Spring", page 169](#).
- Remove bolts -2- on vehicles with level control system sensor.



- Remove bolt -arrow- for lower transverse link -1-.

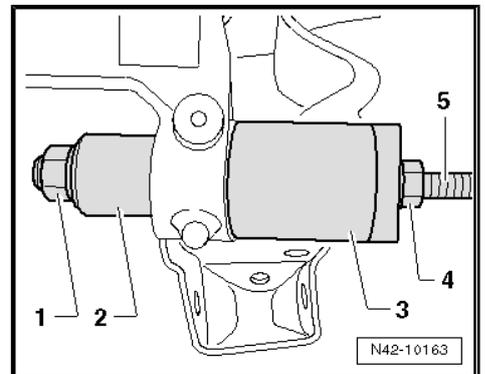


- Remove bolt -arrow- for tie rod -3- and remove washer -4-.



Pressing Out

- Install tools as shown in illustration.
- 1 - Nut -3346/3-
- 2 - -3390-
- 3 - -3350-
- 4 - Nut, commercially available
- 5 - Spindle -3346/2-
- Remove bonded rubber bushing by turning spindle.



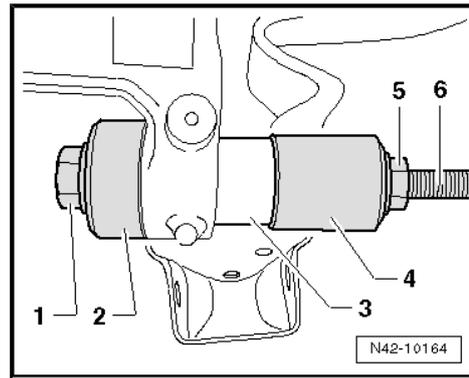


Pulling In

– Install tools as shown in illustration.

- 1 - Nut -3346/3-
- 2 - -3346-
- 3 - Bonded rubber mount
- 4 - -3378-
- 5 - Nut, commercially available
- 6 - Spindle -3346/2-

– Install bonded rubber bushing by turning support arm bearing installation tool.

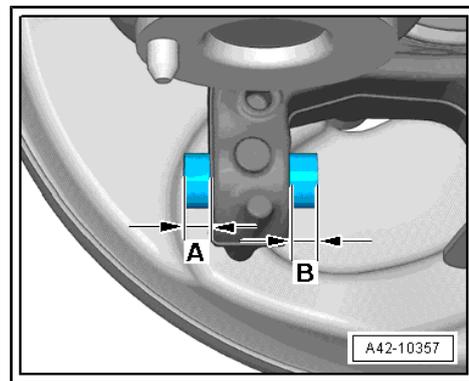


Note

- ◆ *Do not use lubricant!*
- ◆ *Insert bearing with care so it is not canted.*

- Check the installed position after installing the bonded rubber bushing.
- Dimensions -A- and -B- must be the same (each measured, if applicable, at a spot where there is no seam/burr).
- Install the bonded rubber bushing again if dimensions -A- and -B- are different.

Use a commercially available 27 mm socket wrench in place of the -3378- to install the bonded rubber bushing.



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Installing

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

- Install bolt -arrow- for tie rod -3- with washer -4-.

Tightening specifications, refer to

⇒ ["2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe"](#), page 127 .

Tightening specifications, refer to

⇒ ["2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster"](#), page 129 .

Tightening specifications, refer to

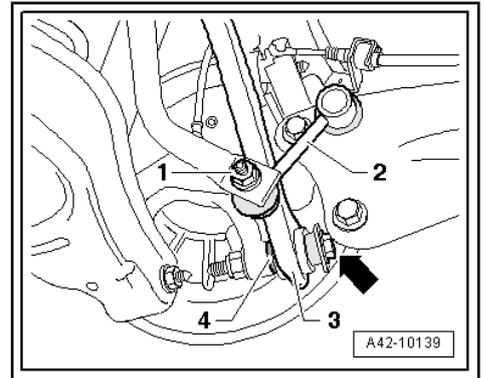
⇒ ["2.3.4 Wheel Bearing Housing, Wheel Bearing Unit and Trailing Arm with Mounting Bracket Assembly Overview"](#), page 132 .

Tightening specifications, refer to

⇒ ["2.3.5 Shock Absorber and Coil Spring Assembly Overview"](#), page 134 .

Tightening specifications, refer to

⇒ ["2.3.6 Stabilizer Bar Assembly Overview"](#), page 135 .



Note

Connections to wheel bearing housing may only be carried out if dimension between wheel hub center and lower edge of wheel housing, measured before assembly, is achieved. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116 .

5.2.11 Wheel Bearing Unit

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-
- ◆ Torque wrench -V.A.G 1410-

Removing

- Measure dimension from center of wheel to lower edge of wheel housing. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116 .
- Remove coil spring. Refer to ⇒ ["5.2.15 Coil Spring"](#), page 200 .
- Remove drive axle. Refer to ⇒ ["5.2.17 Drive Axle"](#), page 202 .
- Remove brake caliper/brake carrier and suspend from body with wire. Refer to ⇒ Brake System; Rep. Gr. 46 ; Removal and Installation .



Note

Do not allow brake caliper to hang from brake line.

- Remove the bolt and then remove the brake disc.

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- Remove screws -2-.
- Remove wheel bearing unit from wheel bearing housing.

Installing

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

Tightening specifications, refer to
⇒ ["2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe"](#), page 127 .

Tightening specifications, refer to
⇒ ["2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster"](#), page 129 .

Tightening specifications, refer to
⇒ ["2.3.4 Wheel Bearing Housing, Wheel Bearing Unit and Trailing Arm with Mounting Bracket Assembly Overview"](#), page 132 .

Tightening specifications, refer to
⇒ ["2.3.5 Shock Absorber and Coil Spring Assembly Overview"](#), page 134 .

Tightening specifications, refer to
⇒ ["2.3.6 Stabilizer Bar Assembly Overview"](#), page 135 .

- Tighten the new bolt .



Note

- ◆ *First tighten the bolt to the given torque specification using the torque wrench.*
- ◆ *Use solid wrench for additional torque angle.*

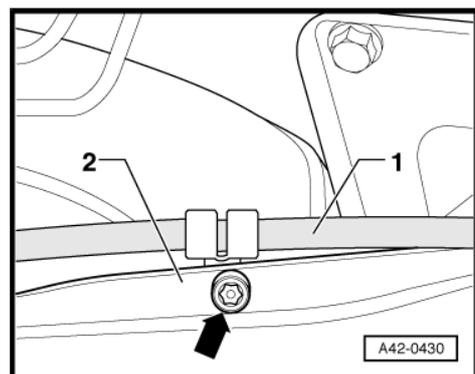
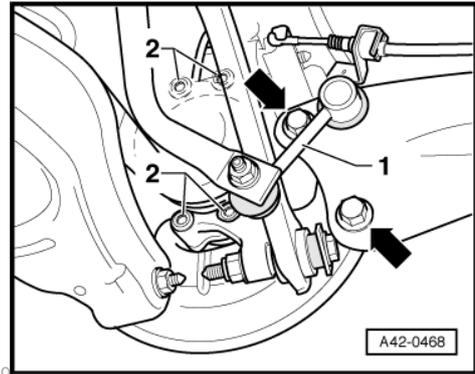
5.2.12 Trailing Arm with Mounting Bracket

Special tools and workshop equipment required

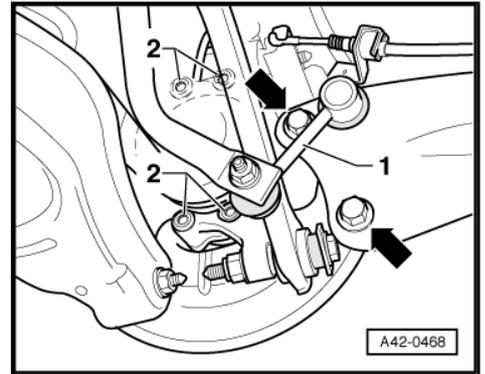
- ◆ Torque wrench -V.A.G 1332-
- ◆ Engine/transmission jack -V.A.G 1383 A-
- ◆ Wheel hub support -T10149-

Removing

- Remove the wheel.
- Remove coil spring. Refer to
⇒ ["5.2.15 Coil Spring"](#), page 200 .
- Remove the bolt -arrow- for parking brake cable -1- from trailing link -2-.



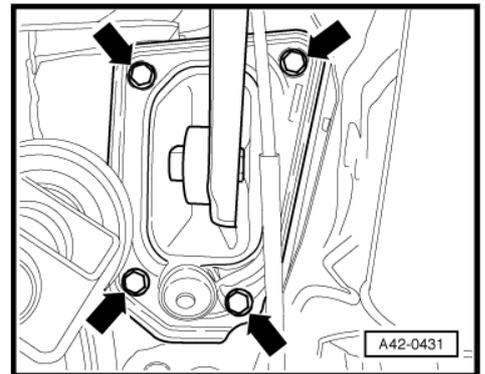
- Remove the coupling rod -1- from trailing arm.
- Remove bolts -Arrows-.
- Mark installation position of mounting bracket on body.



- Remove the bolts -arrows-.
- Remove trailing link with mounting bracket.

i Note

- ◆ *If longitudinal control arm is being replaced, mounting bracket must be removed from trailing arm.*
- ◆ *Installation position of mounting bracket to longitudinal control arm must then be adjusted.*



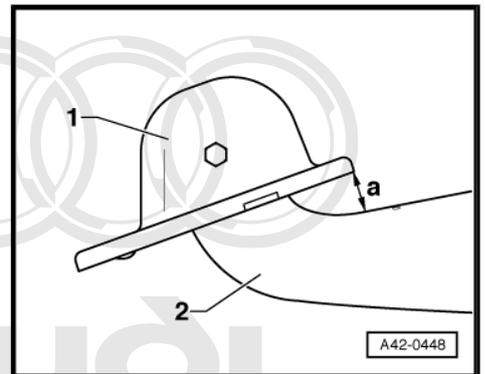
Determining Installation Position of Mounting Bracket Relative to Trailing Arm

Dimension -a- is 34 mm.

1 - Mounting bracket

2 - Trailing link

- When dimension -a- has been adjusted, tighten bolt.



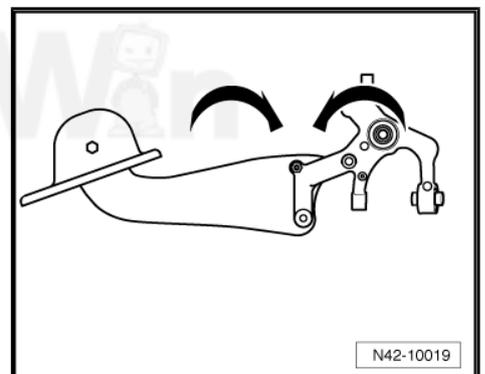
Installing

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

Threaded connection of trailing link/wheel bearing housing must only be tightened when all other components (spring and strut always) of the respective wheel suspension have been already assembled. To tighten, suspension must be unloaded. Only now do the trailing link and wheel bearing housing move into the position required -arrows-.

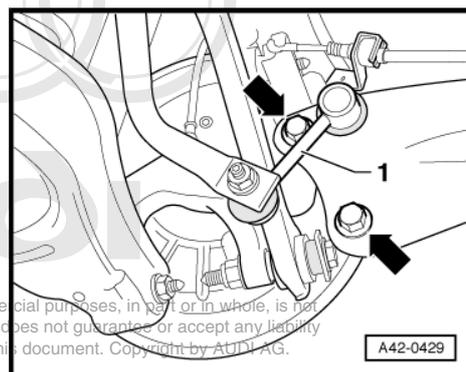
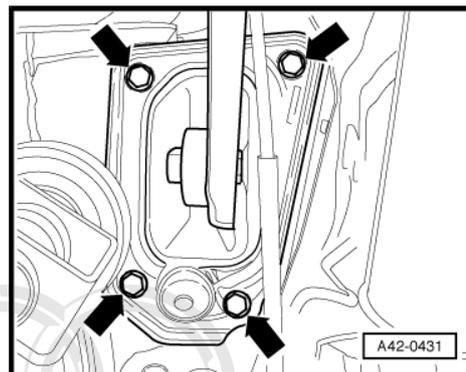
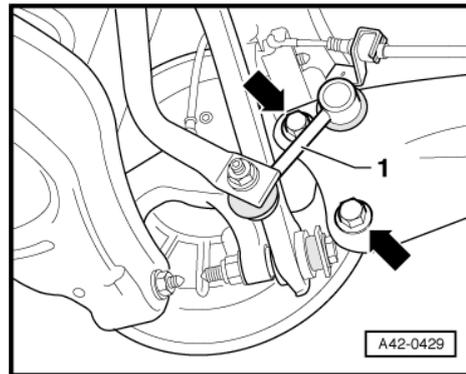
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Position: Threaded Connection of Trailing Arm/Wheel Bearing Housing



Always perform the following work in the sequence given!

- Install trailing arm and mounting bracket with bolts -arrows- on wheel bearing housing but do not yet tighten.
- Insert coupling rod -1- in trailing arm, do not tighten nut yet.
- Raise wheel suspension using -V.A.G 1383 A- and -T10149- until mounting bracket makes contact on body.
- Tighten bolts -arrows- on old impression.
- Let down wheel suspension again using -V.A.G 1383 A- and remove -T10149- from wheel hub.
- Install coil spring. Refer to ⇒ ["5.2.15 Coil Spring", page 200](#) .
- Tighten bolts -arrows- for longitudinal control arm to tightening specification, observe required position of components while doing so. Refer to ⇒ [page 195](#) .
- Tighten coupling rod nut -1- on trailing arm.



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- Screw parking brake cable -1- on trailing arm -2- -arrow-.
- Install wheel and tighten.

Tightening specifications, refer to
 ⇒ [“2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe”, page 127](#) .

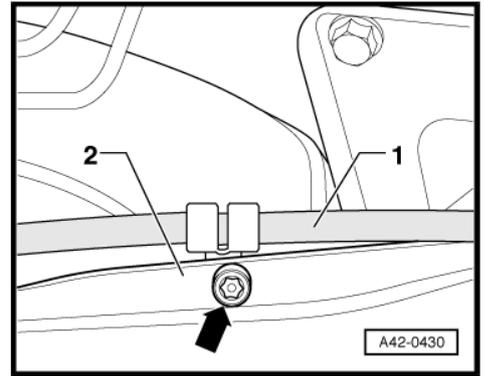
Tightening specifications, refer to
 ⇒ [“2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster”, page 129](#) .

Tightening specifications, refer to
 ⇒ [“2.3.4 Wheel Bearing Housing, Wheel Bearing Unit and Trailing Arm with Mounting Bracket Assembly Overview”, page 132](#) .

Tightening specifications, refer to
 ⇒ [“2.3.5 Shock Absorber and Coil Spring Assembly Overview”, page 134](#) .

Tightening specifications, refer to
 ⇒ [“2.3.6 Stabilizer Bar Assembly Overview”, page 135](#) .

- Vehicle alignment required, see table. Refer to
 ⇒ [“1.5 Wheel Alignment”, page 230](#) .



5.2.13 Trailing Arm Bonded Rubber Bushing

Special tools and workshop equipment required

- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Installation device -3372-
- ◆ Assembly tool -T10230-

Pressing Out

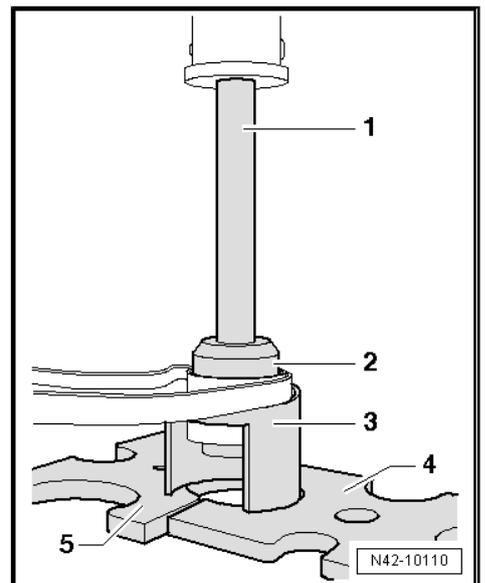
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- Remove trailing arm with mounting bracket. Refer to
 ⇒ [“5.2.12 Trailing Arm with Mounting Bracket”, page 194](#) .

- Install tools as shown in the illustration.

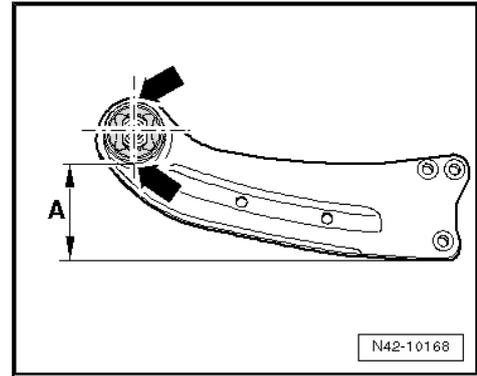
- 1- Tube -T10230/3-
- 2- Thrust piece -T10230/10-
- 3- -3372-
- 4- -VW 401-
- 5- -VW 402-

- Press out the bonded rubber mount.



Pressing In

- Place trailing link on level surface so that dimension -A- = 114 mm.
- Mark a vertical line onto bushing of trailing link -arrows-.

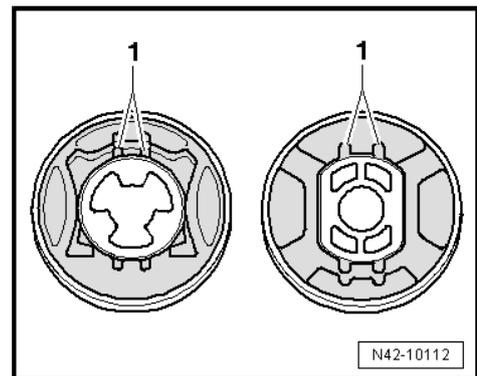


There are 2 different bonded rubber bushings. For both, the marked line must lie between raised points -1- after pressing in.



Note

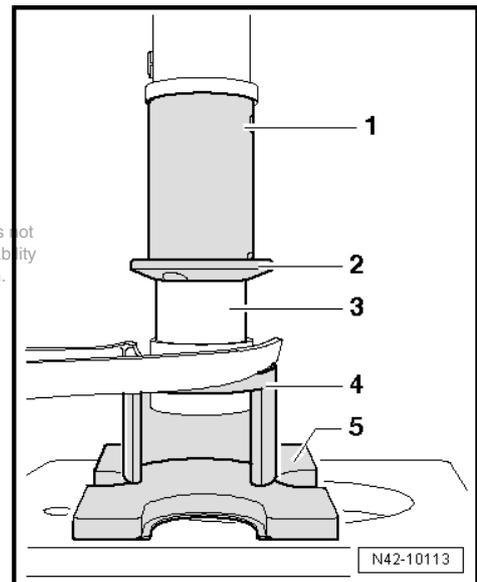
Always make sure that bonded rubber bushings are in correct installation position to bushing of trailing link.



- Install tools as shown in the illustration.

- 1 - Tube -T10230/5-
- 2 - Thrust plate -T10230/12- , chamfer must point to bonded rubber bushing
- 3 - Bonded rubber mount
- 4 - -3372-
- 5 - -VW 402-

- Press bonded rubber bushing in flush.
- Install mounting bracket on trailing arm. Refer to [⇒ page 195](#) .
- Install trailing arm with mounting bracket. Refer to [⇒ "5.2.12 Trailing Arm with Mounting Bracket", page 194](#) .



5.2.14 Shock Absorber

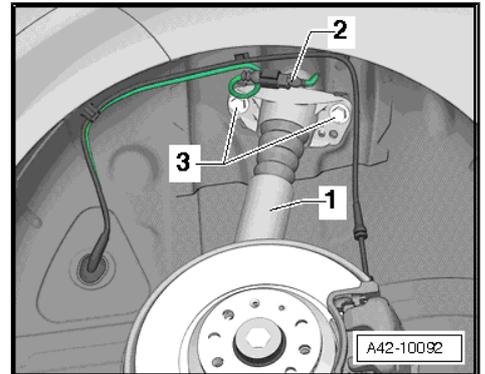
Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-
- ◆ Vehicle diagnosis, testing and information system -VAS 5051-

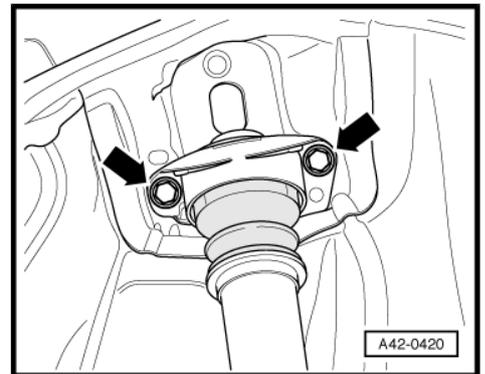
Removing

- Measure dimension from center of wheel to lower edge of wheel housing. Refer to [⇒ "2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#) .
- Remove the wheel.

- Remove wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- Remove coil spring. Refer to ⇒ ["5.2.15 Coil Spring", page 200](#) .
- On vehicles with electronically-controlled damping (Audi magnetic ride), disconnect connector -2-.



- Remove the bolts -arrows-.



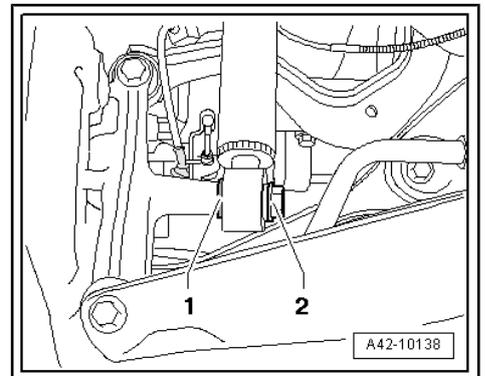
- Remove the bolt -2- and washer -1-.
- Remove shock absorber.

Installing

Install in reverse order of removal. Note the following:



Bolting bumper to wheel bearing housing must only occur after dimension measured before installation between the wheel hub center and the lower edge of wheel housing has been attained. Refer to ⇒ ["2.1 Wheel Bearing, Lifting to Curb Weight Position", page 116](#) .



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- Install bolt -2- with washer -1- and tighten.

Tightening specifications, refer to
⇒ ["2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe", page 127](#) .

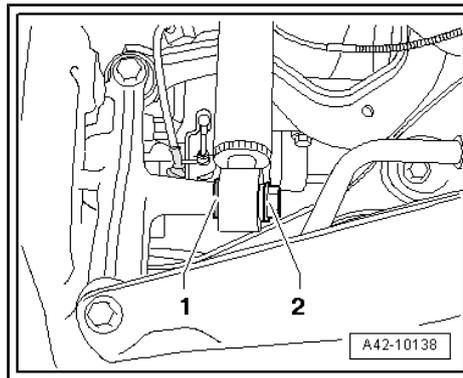
Tightening specifications, refer to
⇒ ["2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster", page 129](#) .

Tightening specifications, refer to
⇒ ["2.3.4 Wheel Bearing Housing, Wheel Bearing Unit and Trailing Arm with Mounting Bracket Assembly Overview", page 132](#) .

Tightening specifications, refer to
⇒ ["2.3.5 Shock Absorber and Coil Spring Assembly Overview", page 134](#) .

Tightening specifications, refer to
⇒ ["2.3.6 Stabilizer Bar Assembly Overview", page 135](#) .

On vehicles with electronically-controlled damping (Audi magnetic ride), the control position must be reprogrammed each time a shock absorber is replaced using the -VAS 5051-



5.2.15 Coil Spring

Whenever replacing a part or performing a repair near the rear coil springs, the rubber spring support with a galvanized contact surface must be replaced with a new rubber spring support. If a rubber spring support is already installed, do not replace it. Allocation, refer to the Electronic Parts Catalog (ETKA). Make sure the repainted area if facing upward when installing the coil spring. It is matte and somewhat thicker in contrast to the rest of the spring. There is often a sag or drop on the second coil.

Special tools and workshop equipment required

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

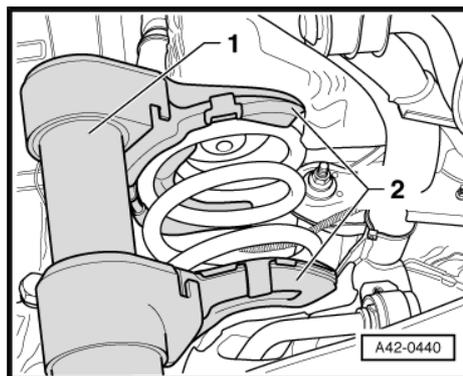
Removing

- Remove the wheel.
- Insert spring compressor -1-.



WARNING

Make sure the coil spring is seated correctly in the -V.A.G 1752/3A- .



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

1 - -V.A.G 1752/1-

2 - -V.A.G 1752/3A-

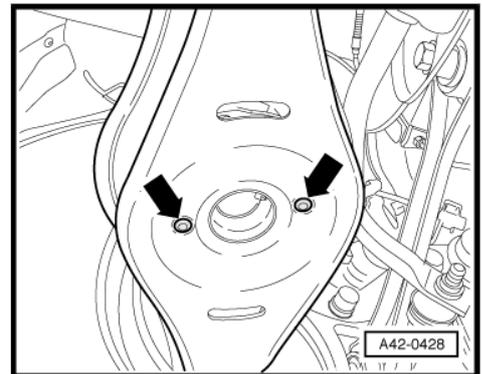
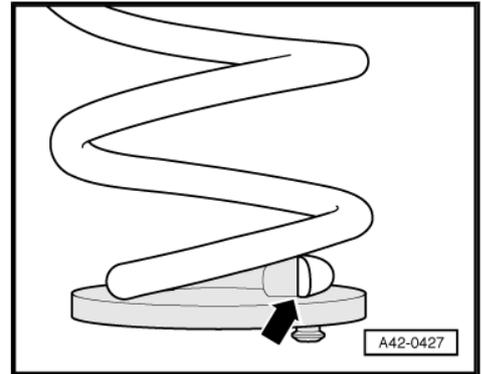
Installing

Installation is the reverse of removal, with special attention to the following. Refer to [page 200](#).

End of spring -arrow- must rest against stop of lower spring support

- Install spring together with spring seat.
- Spring seat has two pins on bottom.

- These pins are inserted into holes on lower transverse link -arrows-.
- Then insert spring seat at top into upper spring end.
- Tension spring. To do this, place upper end of spring on body tab.



5.2.16 Stabilizer Bar

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-

Removing

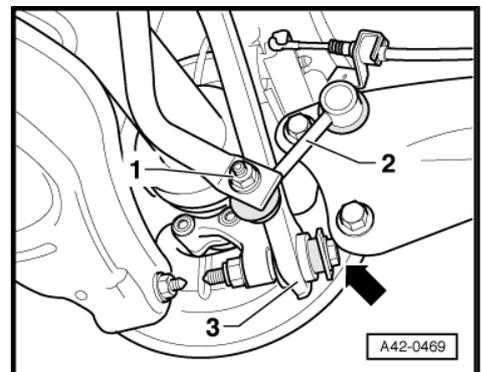
- Remove rear wheels.



Note

The following work steps are described for the left side of the vehicle. These work steps also apply simultaneously for right side of vehicle.

- Remove the nut -1- and pull coupling rod -2- out of stabilizer.



- Remove bolts -arrows- for stabilizer clamp.
- Remove the stabilizer bar.

Installing

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

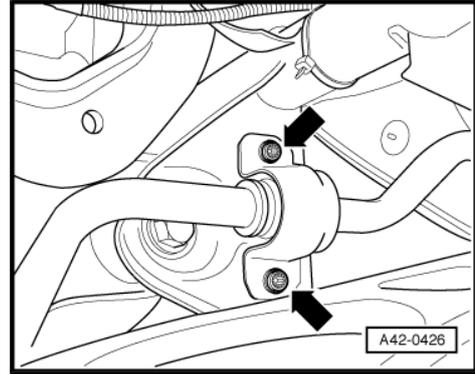
Tightening specifications, refer to
⇒ ["2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe", page 127](#) .

Tightening specifications, refer to
⇒ ["2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster", page 129](#) .

Tightening specifications, refer to
⇒ ["2.3.4 Wheel Bearing Housing, Wheel Bearing Unit and Trailing Arm with Mounting Bracket Assembly Overview", page 132](#) .

Tightening specifications, refer to
⇒ ["2.3.5 Shock Absorber and Coil Spring Assembly Overview", page 134](#) .

Tightening specifications, refer to
⇒ ["2.3.6 Stabilizer Bar Assembly Overview", page 135](#) .



5.2.17 Drive Axle

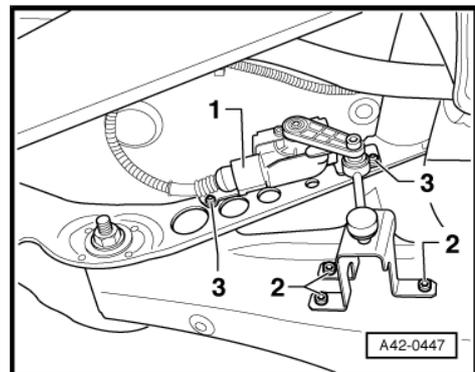
Removing

- Loosen wheel side drive axle threaded connection.

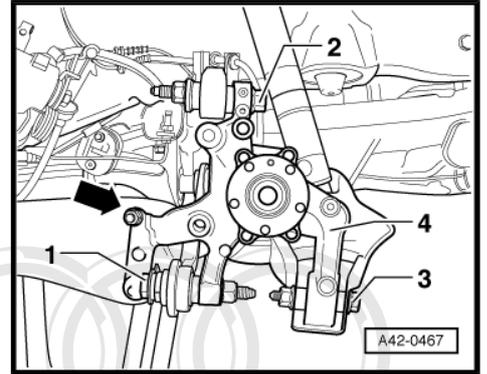
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Loosening the connection between the drive axle and wheel hub:

- ◆ Refer to
⇒ ["2.3.7 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 135](#) .
- ◆ Refer to
⇒ ["2.3.8 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 136](#) .
- ◆ Refer to
⇒ ["2.3.9 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 137](#) .
- Remove wheel.
- Remove coil spring. Refer to
⇒ ["5.2.15 Coil Spring", page 200](#) .
- Remove bolts -2- on vehicles with level control system sensor.



- Remove bolts for tie rod -1- and lower transverse link -3- from wheel bearing housing -4-.

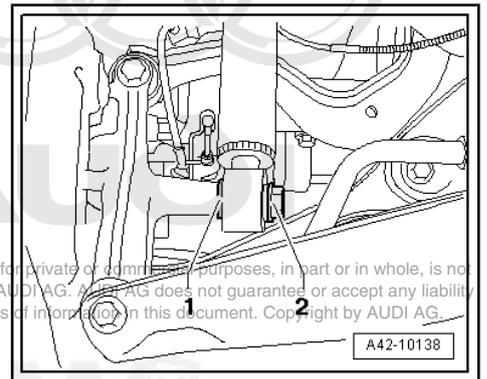


- Remove the bolt -2- and washer -1-.
- Loosen the drive axle on the transmission side.
- Swing wheel bearing housing upward and remove drive shaft from wheel bearing splines.
- Remove drive axle.

Installing

Install in reverse order of removal. Note the following:

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



 **Note**

Connections to wheel bearing housing may only be carried out if dimension between wheel hub center and lower edge of wheel housing, measured before assembly, is achieved. Refer to ["2.1 Wheel Bearing, Lifting to Curb Weight Position"](#), page 116.

- Install bolt -2- with washer -1- and tighten.

Tightening specifications, refer to
⇒ ["2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe"](#), page 127 .

Tightening specifications, refer to
⇒ ["2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster"](#), page 129 .

Tightening specifications, refer to
⇒ ["2.3.4 Wheel Bearing Housing, Wheel Bearing Unit and Trailing Arm with Mounting Bracket Assembly Overview"](#), page 132 .

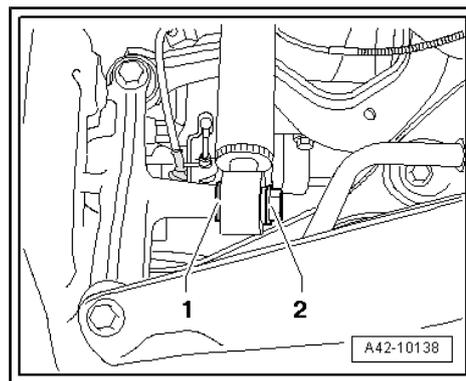
Tightening specifications, refer to
⇒ ["2.3.5 Shock Absorber and Coil Spring Assembly Overview"](#), page 134 .

Tightening specifications, refer to
⇒ ["2.3.6 Stabilizer Bar Assembly Overview"](#), page 135 .

Tightening specification, refer to
⇒ ["6.4 Drive Axle with 82 mm Outer CV Joint"](#), page 216 .

Tightening specification, refer to
⇒ ["6.3 Drive Axle with 90 mm Outer CV Joint"](#), page 210 .

- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position using the vehicle diagnosis, testing and information system -VAS 5051-
- On vehicles with automatic headlamp range control, perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .



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6 Disassembly and Assembly

⇒ ["6.1 Shock Absorber, FWD", page 205](#)

⇒ ["6.2 Shock Absorber, AWD", page 207](#)

⇒ ["6.3 Drive Axle with 90 mm Outer CV Joint", page 210](#)

⇒ ["6.4 Drive Axle with 82 mm Outer CV Joint", page 216](#)

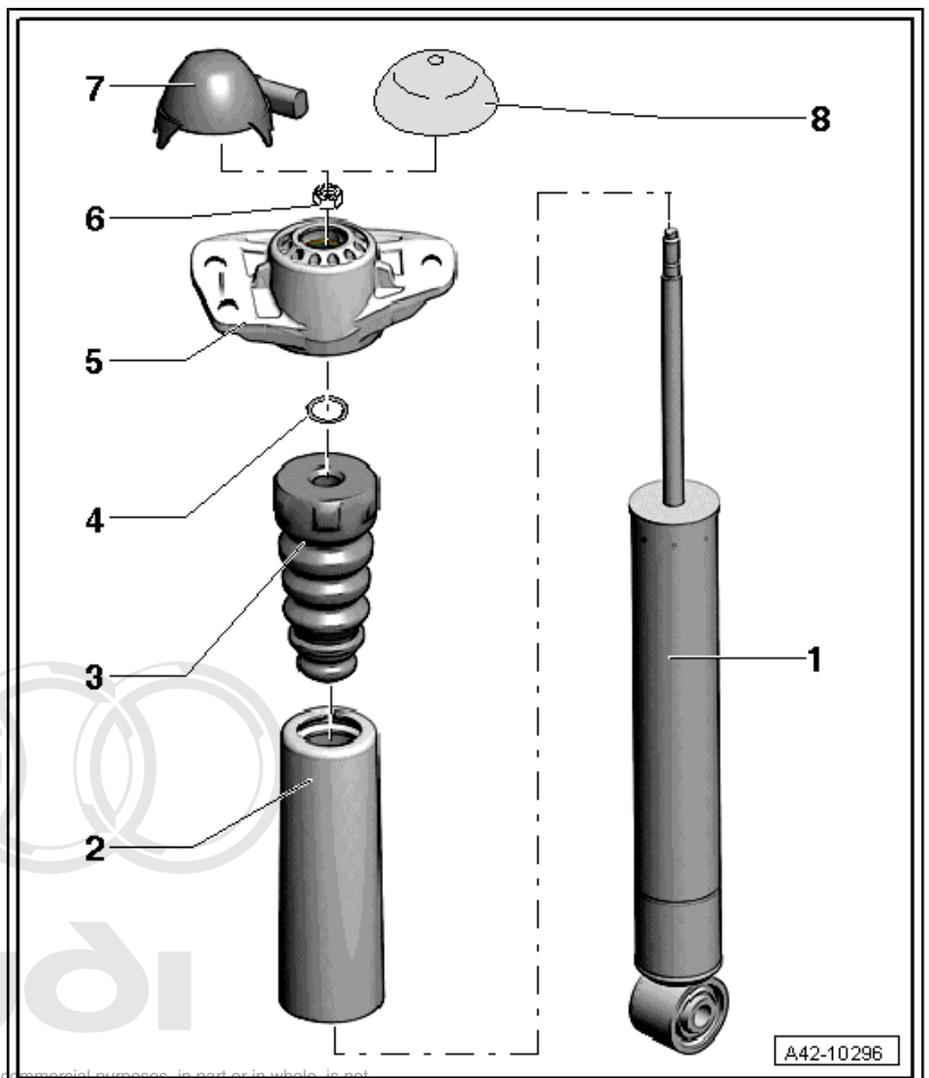
6.1 Shock Absorber, FWD

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-
- ◆ Shock absorber set -T10001-
- ◆ Magnetic ride Shock Absorber Prism -T40129-

1 - Shock Absorbers

- Only shock absorbers with the same part number may be installed on the left and right.
- Removing and installing, refer to ⇒ ["5.1.13 Shock Absorber", page 168](#).
- Be aware of the various suspension versions. Refer to ⇒ ["1.6 PR Number Explanations", page 232](#).
- Faulty shock absorbers must be vented and emptied before disposal. Refer to ⇒ ["1.3 Rear Gas-Filled Strut, Venting", page 2](#).
- Checking removed shock absorber, refer to ⇒ ["3.1 Shock Absorbers, Removed, Checking", page 5](#).
- On vehicles with electronically-controlled damping (Audi magnetic ride), the control position must be reprogrammed each time a shock absorber is replaced using the vehicle diagnosis, testing and information system -VAS 5051-.



2 - Protective Tube

3 - Buffer Stop

4 - Washer

- Installed on vehicles with electronically controlled damping (Audi magnetic ride).

5 - Shock Absorber Mounting

6 - Nut

- 25 Nm

- ❑ Always replace if removed.

7 - Magnetic Ride Shock Absorber Cover

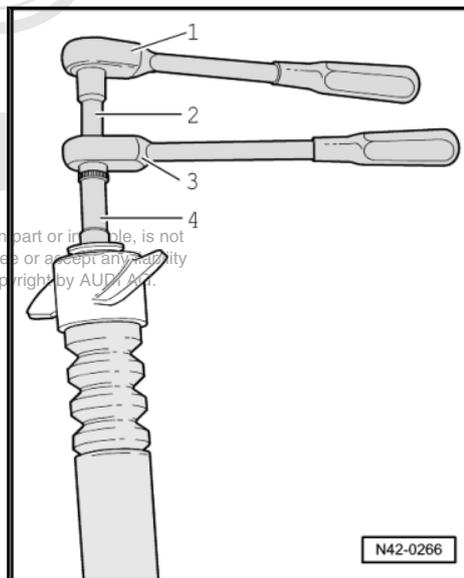
- ❑ Always replace if removed.
- ❑ It is not possible to remove without destroying.

8 - Standard Shock Absorber Cover

Standard Shock Absorber

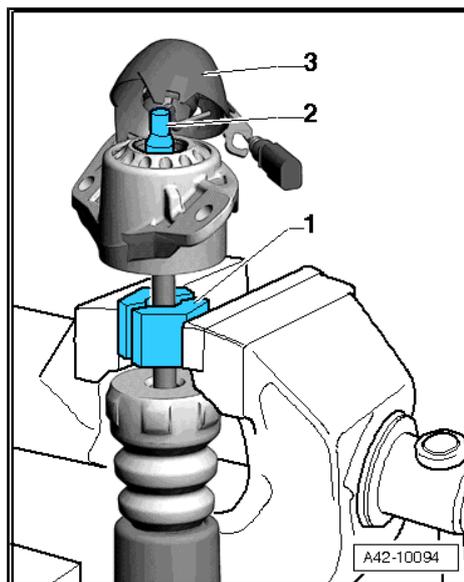
- 1 - Ratchet (commercially available)
- 2 - Socket wrench 21 mm -T10001/9-
- 3 - Ratchet -T10001/11-
- 4 - Socket wrench 21 mm -T10001/1-

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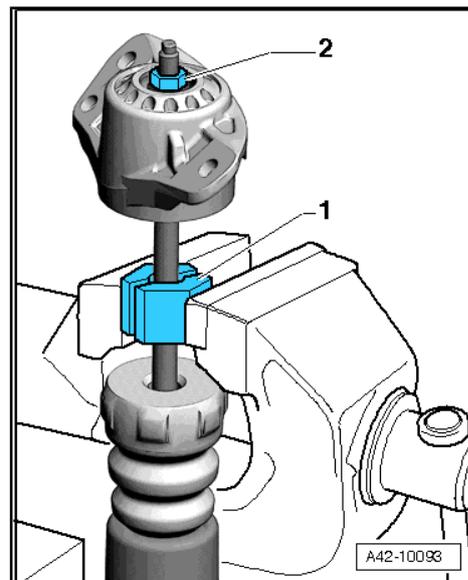


Magnetic Ride Shock Absorber

- Tighten piston rod in vise as shown in the illustration using - T40129- -1-.
- Remove cover -3- upward and disconnect connector -2- from piston rod. (it is not possible to remove without destroying)



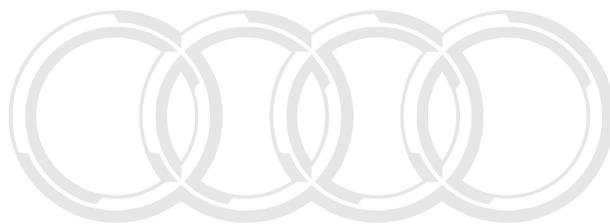
- Remove nut -2-.



6.2 Shock Absorber, AWD

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-
- ◆ Shock absorber set -T10001-
- ◆ Magnetic Ride Shock Absorber Prism -T40129-



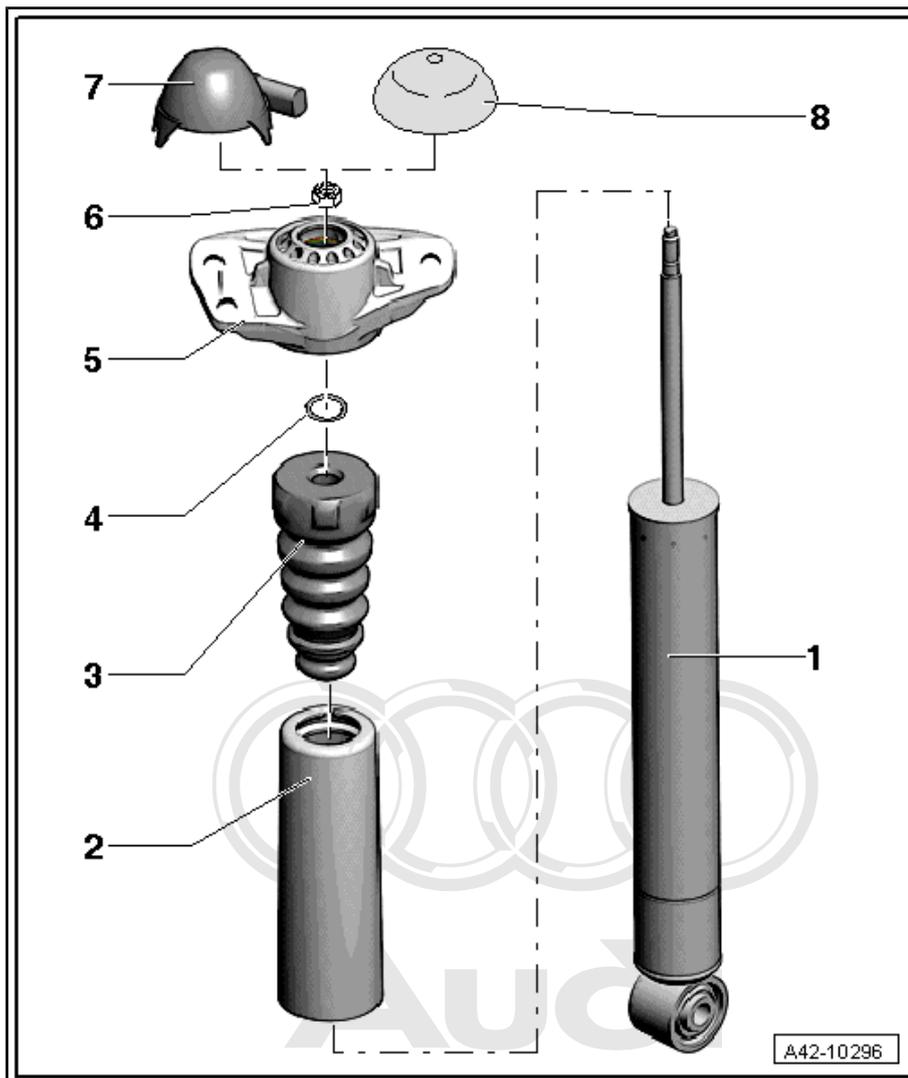
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**1 - Shock Absorbers**

- Only shock absorbers with the same part number may be installed on the left and right.
- Removing and installing, refer to ["5.1.13 Shock Absorber", page 168](#).
- Be aware of the various suspension versions. Refer to ["1.6 PR Number Explanations", page 232](#).
- Faulty shock absorbers must be vented and emptied before disposal. Refer to ["1.3 Rear Gas-Filled Strut, Venting", page 2](#).
- Checking removed shock absorber, refer to ["3.1 Shock Absorbers, Removed, Checking", page 5](#).
- On vehicles with electronically-controlled damping (Audi magnetic ride), the control position must be reprogrammed each time a shock absorber is replaced vehicle diagnosis, testing and information system -VAS 5051-.



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2 - Protective Cap**3 - Buffer Stop****4 - Washer**

- Installed on vehicles with electronically controlled damping (Audi magnetic ride).

5 - Shock Absorber Mounting**6 - Nut**

- 25 Nm
- Always replace if removed.

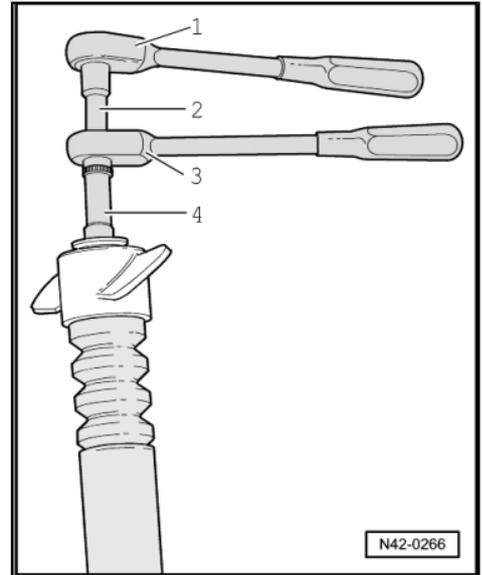
7 - Magnetic Ride Shock Absorber Cover

- Always replace if removed.
- It is not possible to remove without destroying.

8 - Standard Shock Absorber Cover

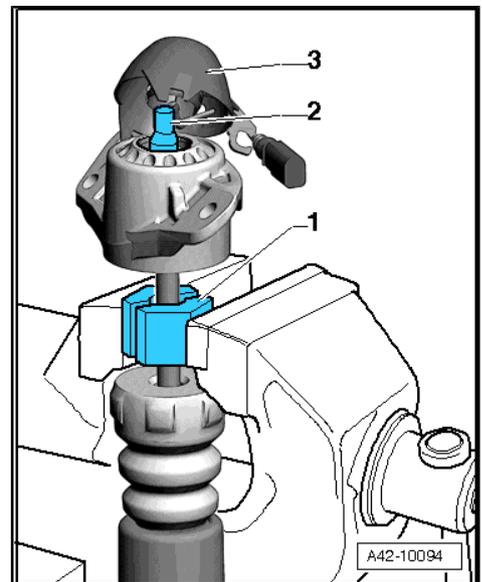
Standard Shock Absorber

- 1 - Ratchet (commercially available)
- 2 - Socket wrench 21 mm -T10001/9-
- 3 - Ratchet -T10001/11-
- 4 - Socket wrench 21 mm -T10001/1-

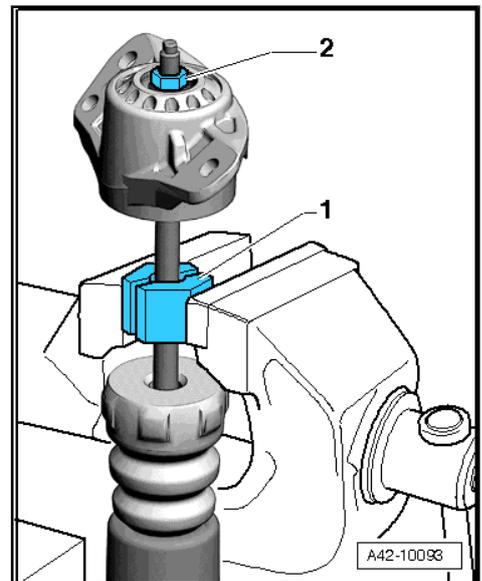


Magnetic Ride Shock Absorber

- Tighten piston rod in vise as shown in the illustration using - T40129- -1-.
- Remove cover -3- upward and disconnect connector -2- at piston rod. (it is not possible to remove without destroying)



- Remove nut -2-.



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6.3 Drive Axle with 90 mm Outer CV Joint

Filling the Joints with Grease

Grease	Outer joint diameter	Inner joint diameter
	90 mm	100 mm
Total quantity	120 g	110 g
in joint	80 g	50 g
in protective joint boot	40 g	60 g



Note

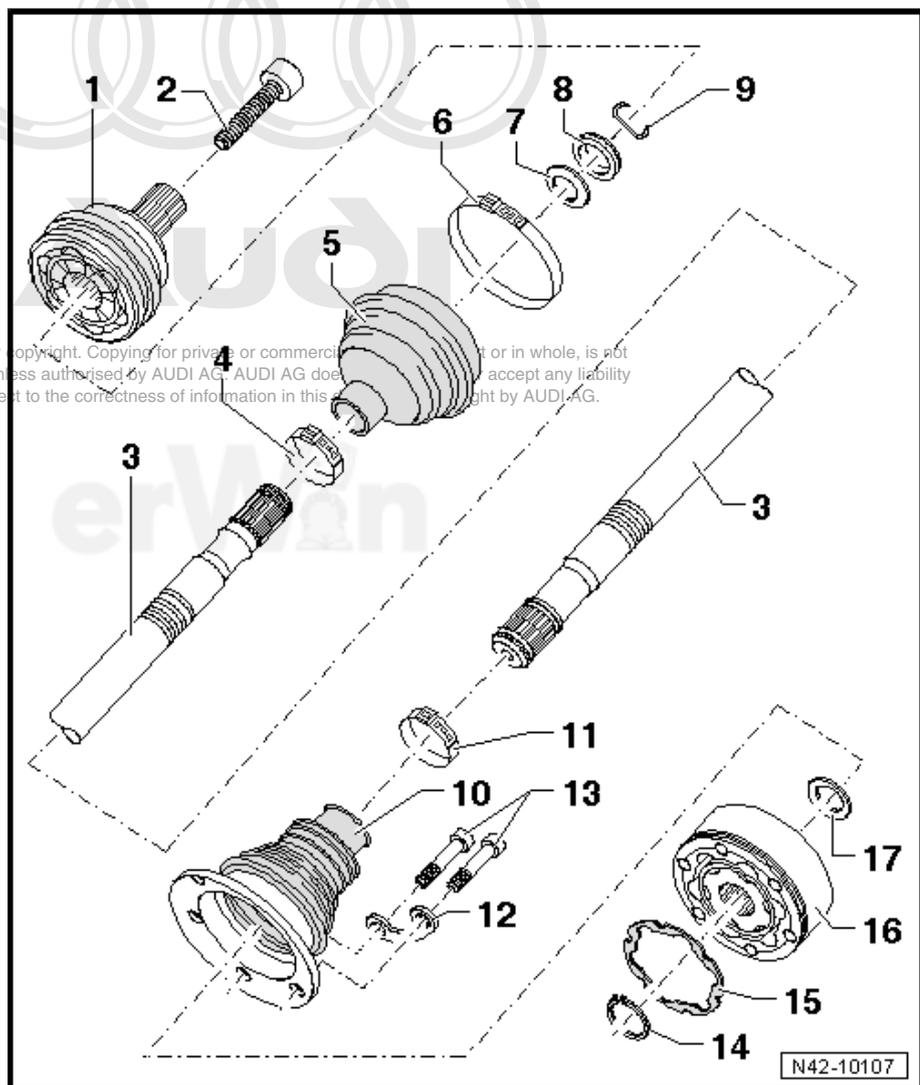
Grease joint again when replacing protective joint boot.

1 - Outer CV Joint

- Replace only as complete unit.
- Checking, refer to ["4.1 Outer CV Joint, Checking", page 141](#).
- Removing, refer to [page 212](#).
- Grease, refer to [page 210](#).
- Installing, refer to [page 212](#).
- When installing joint on axle shaft, splines on axle shaft must be lightly coated with grease used in joint.

2 - Bolt

- Hex bolt: 200 Nm + 180° turn. Refer to ["2.3.7 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 135](#).
- Twelve-point bolt with ribs: 70 Nm + 90° turn. Refer to ["2.3.8 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 136](#).
- Twelve-point bolt without ribs, refer to ["2.3.9 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 137](#).
- Different versions. Allocation, refer to the Electronic Parts Catalog (ETKA).
- Always replace if removed.
- Before installing, clean the threads in the CV joint with a tap.



3 - Profile Shaft

4 - Clamp

- Replace.
- Tensioning, refer to [⇒ page 215](#) or [⇒ page 216](#) .

5 - CV Boot for outer CV joint

- Without ventilation bore.
- Check for tears and scuffing.

6 - Clamp

- Replace.
- Tensioning, refer to [⇒ page 215](#) or [⇒ page 216](#) .

7 - Dished Washer

- Installed position, refer to [⇒ page 212](#) .

8 - Spacer Ring (Plastic)

- Installed position, refer to [⇒ page 212](#) .

9 - Securing Ring

- Replace
- Insert in shaft groove.

10 - Protective Boot for Inner CV Joint

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

11 - Clamp

- Replace.
- Tensioning, refer to [⇒ page 215](#) or [⇒ page 216](#) .

12 - Backing Plate

13 - Bolt

- First tighten diagonally to 10 Nm, then tighten diagonally again to the tightening specification.
- Tightening specification M8: 40 Nm and diagonally.
- Tightening specification M10: 70 Nm and diagonally.
- Always replace if removed.

14 - Securing Ring

- Replace.
- Removing and installing using -VW 161 A- . Refer to [⇒ page 213](#) .

15 - Gasket

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

16 - Inner CV Joint

- Replace only as complete unit.
- Checking, refer to [⇒ "4.2 Inner CV Joint, Checking", page 142](#) .
- Pressing off, refer to [⇒ page 213](#) .
- Grease, refer to [⇒ page 210](#) .
- Pressing on, refer to [⇒ page 214](#) .
- When installing joint on axle shaft, splines on axle shaft must be lightly coated with grease used in joint.

17 - Dished Washer

- Installed position, refer to [⇒ page 214](#) .



Disassembling and Assembling

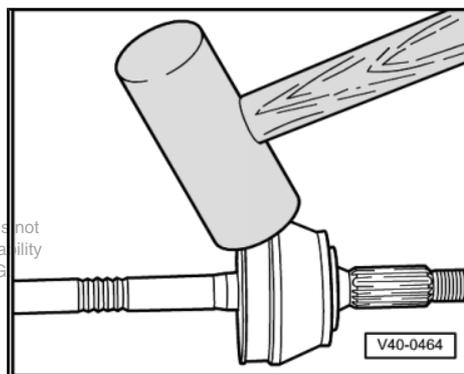
Special tools and workshop equipment required

- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Punch -VW 408 A-
- ◆ Punch -VW 411-
- ◆ Sleeve -VW 416 B-
- ◆ Thrust pad -VW 447 H-
- ◆ Circlip pliers -VW 161 A-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ CV joint boot clamp tool -V.A.G 1682-
- ◆ Assembly tool -T10065-

Outer CV Joint, Disassembling and Assembling

Disassembling Outer CV Joint

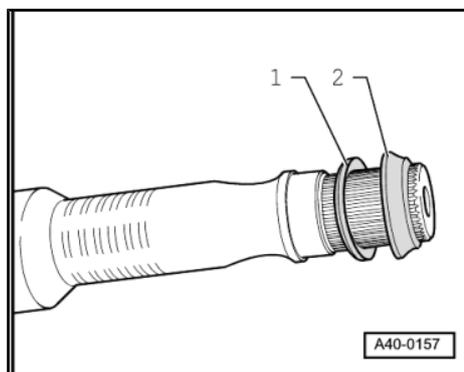
- Remove the CV joint from the drive axle by hitting it with a light alloy hammer.



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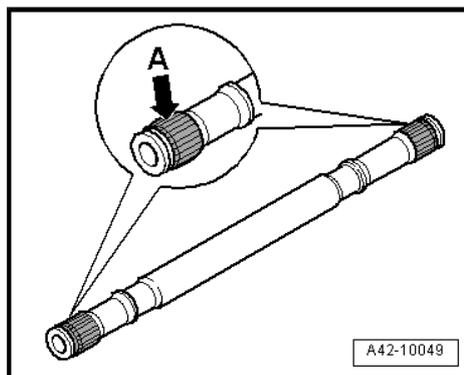
Installed Location of Spring Washer and Thrust Washer on Outer Joint

- 1 - Dished washer
- 2 - Thrust washer



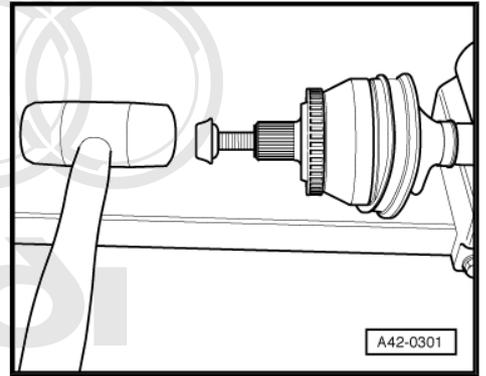
Outer CV Joint, Installing

- Before installing CV joint or triple roller star, splines -A- must be lightly coated with grease used in joint.



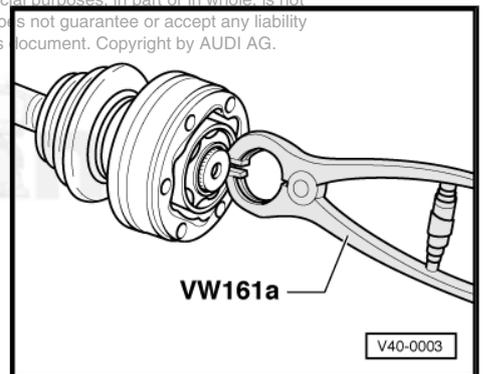
- Install old drive shaft bolt in joint as shown in the illustration.
- Drive joint onto shaft with plastic hammer until circlip engages.

Inner CV Joint, Disassembling and Assembling

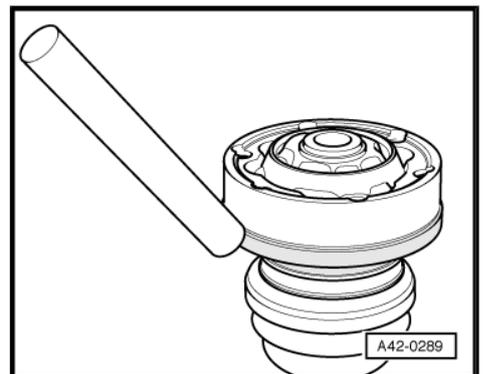


Removing Securing Ring

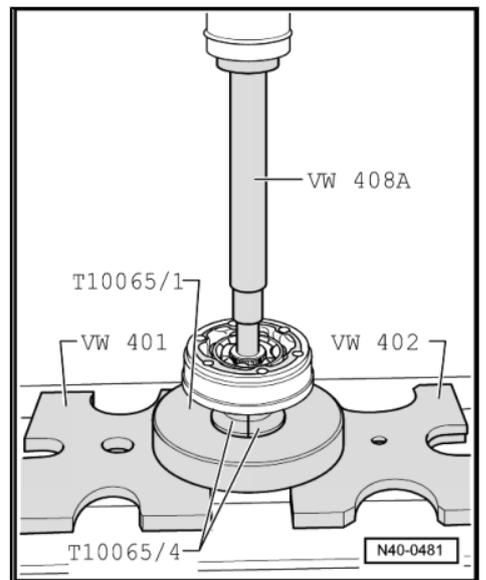
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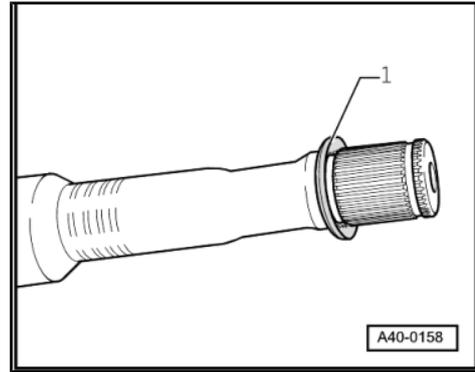
Drive Protective Joint Boot Cap Under with a Brass or Copper Drift



**Removing the Inner CV Joint
 Assembling the CV Joint**

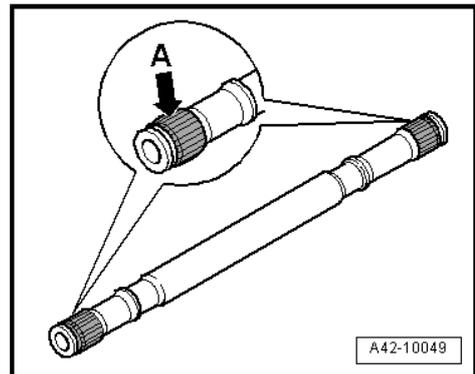


Installed Location of Spring Washer On Inner Joint



Pressing On Inner CV Joint

- Before installing CV joint or triple roller star, splines -A- must be lightly coated with grease used in joint.

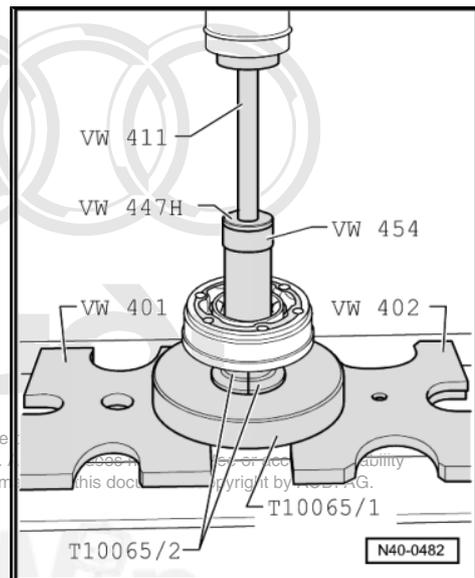


- Pressing on inner CV joint



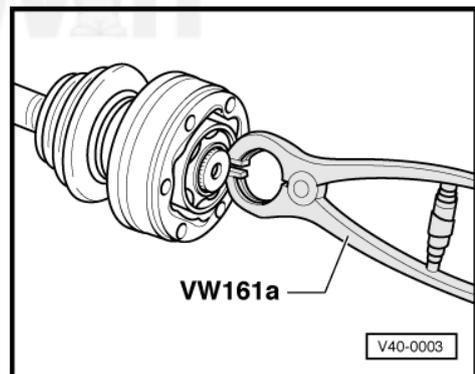
Note

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



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- Install circlip



- Apply sealant on the -hatched surface- on the clean surface on the inside of the cap. Allocation, refer to the Electronic Parts Catalog (ETKA). Sealant bead: unbroken, 2 to 3 mm diameter Skirt area around inner holes -arrow-.
- Use sealant . Allocation, refer to the Electronic Parts Catalog (ETKA).
- Slide joint protective boot onto drive shaft.

Drive axle, protective joint boot and cap contact surfaces must be free of grease.

Make sure you do not damage the sealant bead.

- Using bolts -arrows-, align protective boot and cap with bolt holes.



Note

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

- Drive off protective boot with cap using plastic hammer.
- Clear away leaking sealing immediately.

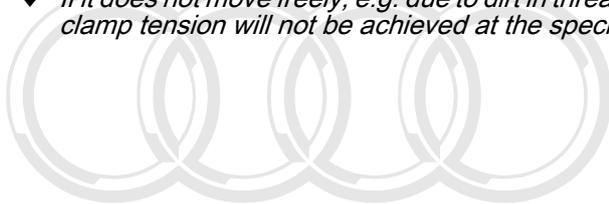
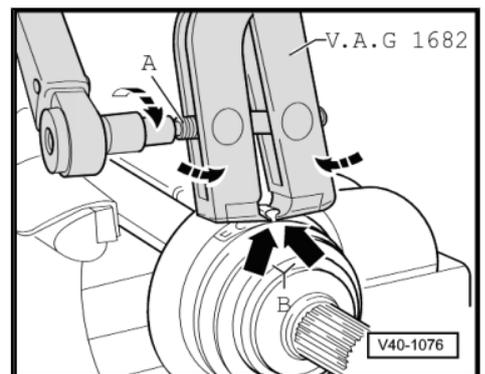
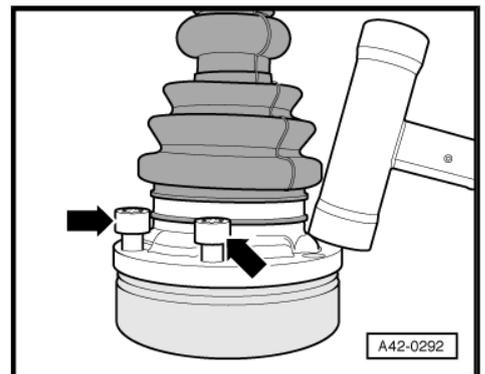
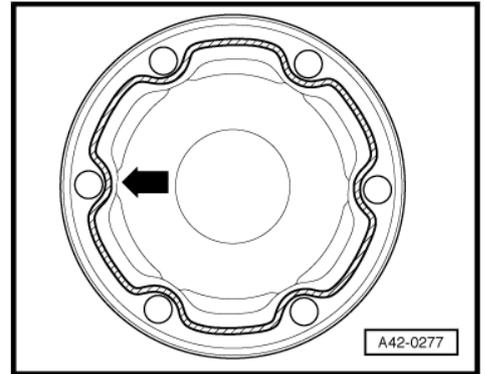
Stainless Steel Clamps for Hytrel Protective Joint Boots, Tensioning

- Position -V.A.G 1682- as shown in illustration. Be sure that edges of clamping pliers are seated in corners -arrows B- of hose clamp.
- Tighten hose clamp by turning spindle -A- using a torque wrench (do not tilt clamping pliers).
- ◆ Tightening specifications: 20 Nm



Note

- ◆ *Be sure thread of spindle in clamping pliers moves freely. Grease with MOS₂ grease, if necessary.*
- ◆ *If it does not move freely, e.g. due to dirt in thread, the required clamp tension will not be achieved at the specified torque.*

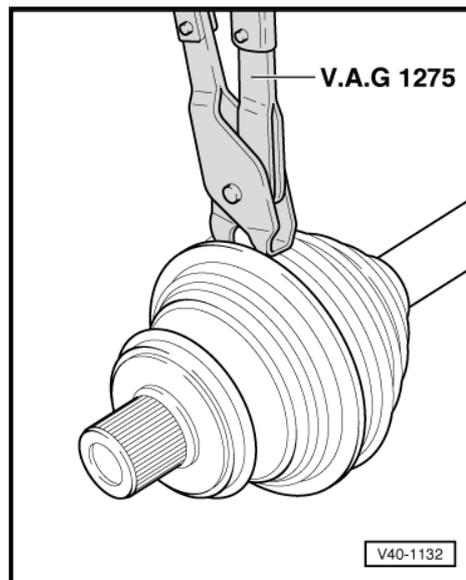


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Clamps for Rubber Protective Joint Boots, Tensioning



6.4 Drive Axle with 82 mm Outer CV Joint

Grease	Outer joint diameter	Inner joint diameter
	82 mm	101 mm
Total quantity	45 g	110 g



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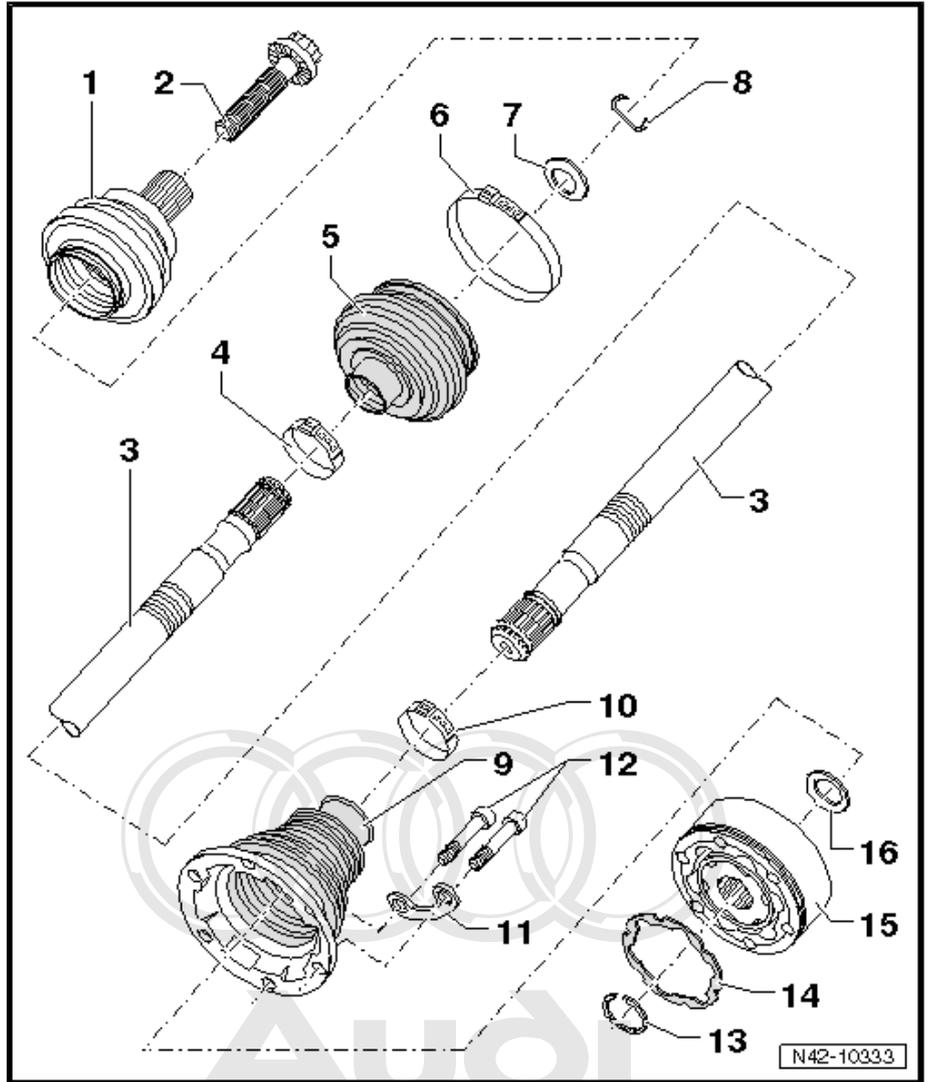


1 - Outer CV Joint

- Replace only as complete unit.
- Removing, refer to [⇒ page 219](#).
- Installing: Drive onto shaft until impact using plastic hammer.
- Divide the grease evenly in the joint.
- Checking, refer to [⇒ "4.1 Outer CV Joint, Checking", page 141](#).

2 - Bolt

- Always replace if removed.
- Different versions. Allocation, refer to the Electronic Parts Catalog (ETKA).
- Hex bolt: 200 Nm + 180° turn. Refer to [⇒ "2.3.7 Hex Bolt between Drive Axle and Wheel Hub, Loosening and Tightening", page 135](#).
- Twelve-point bolt with ribs: 70 Nm + 90° turn. Refer to [⇒ "2.3.8 Twelve-Point Bolt with Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 136](#).
- Twelve-point bolt without ribs, refer to [⇒ "2.3.9 Twelve-Point Bolt without Ribs between Drive Axle and Wheel Hub, Loosening and Tightening", page 137](#).
- Before installing, clean the threads in the CV joint with a tap.



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3 - Drive Axle

- For the correct allocation, refer to the Electronic Parts Catalog (ETKA).

4 - Clamp

- Always replace if removed.
- Tensioning, refer to [⇒ page 220](#).

5 - Protective Boot

- Check for tears and scuffing.
- Material: Hytrel (Polyelastomer).

6 - Clamp

- Always replace if removed.
- Tensioning, refer to [⇒ page 220](#).

7 - Dished Washer

- With inner splines.
- Installed position, refer to [⇒ page 219](#).

8 - Securing Ring

- Always replace if removed.



- Insert in shaft groove.

9 - CV Boot

- Material: Hytrel (Polyelastomer).
- Without ventilation bore.
- Check for tears and scuffing.
- Drive off CV joint using drift.
- Before mounting onto CV joint, coat sealing surface using -D 454 300 A2- .

10 - Clamp

- Always replace if removed.
- Tensioning, refer to [⇒ page 220](#) .

11 - Backing Plate

12 - Bolt

- First tighten diagonally to 10 Nm, then tighten diagonally again to the tightening specification.
- Tightening specification M8: 40 Nm and diagonally.
- Tightening specification M10: 70 Nm and diagonally.
- Always replace bolts after disassembly.

13 - Securing Ring

- Always replace if removed.
- Remove and install using snap ring pliers -VW 161 A- .

14 - Gasket

- Always replace if removed.
- Bonding surface on CV joint must be free of grease and oil!

15 - Inner CV Joint

- Replace only as complete unit.
- Divide the grease evenly in the joint.
- Pressing off, refer to [⇒ page 219](#) .
- Pressing on, refer to [⇒ page 220](#) .
- Checking, refer to [⇒ "4.2 Inner CV Joint, Checking", page 142](#) .

16 - Dished Washer

- With inner splines.
- Installed position, refer to [⇒ page 219](#) .

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Disassembling and Assembling

Special tools and workshop equipment required

- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Punch -VW 408 A-
- ◆ Punch -VW 411-
- ◆ Sleeve -VW 416 B-
- ◆ Thrust pad -VW 447 H-
- ◆ Circlip pliers -VW 161 A-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ CV joint boot clamp tool -V.A.G 1682-
- ◆ Assembly tool -T10065-

Disassembling

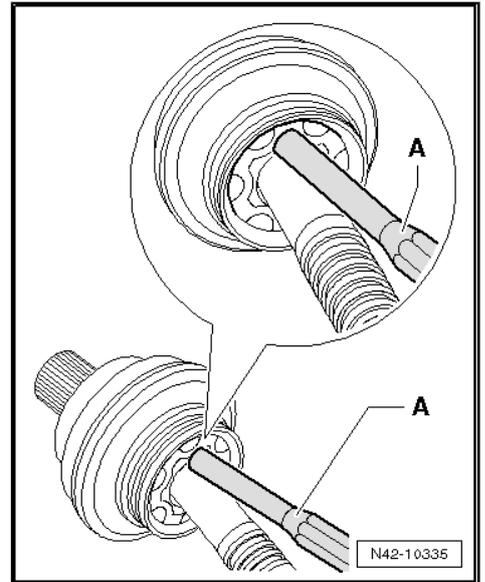
Outer CV Joint, Pressing Off

- Secure the drive axle with protective covers in a vise clamp.
- Fold back boot.
- Drive CV joint from drive axle using a drift -A-.

Drift must be placed precisely on star of CV joint.

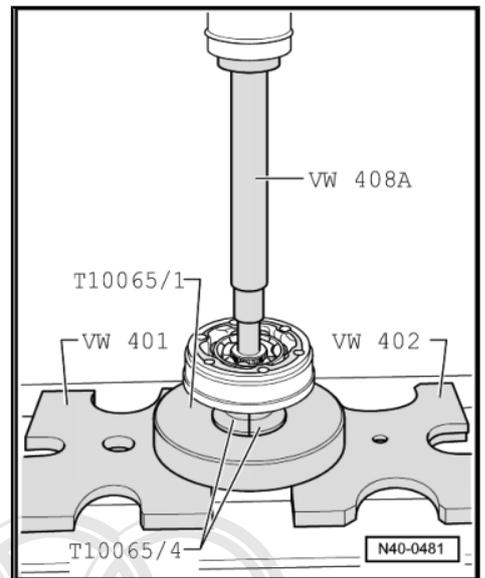
Driving Joint On

- Drive onto shaft with plastic hammer until securing ring engages.



Removing the Inner CV Joint

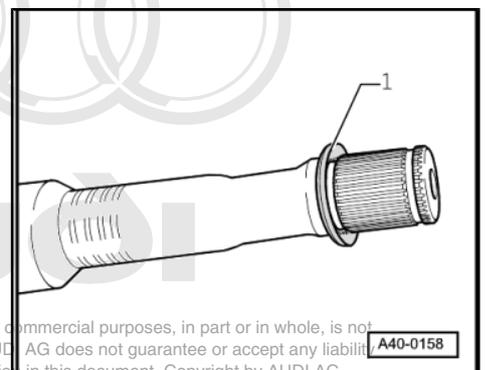
- Press off CV from joint using drift.
- Remove securing ring.
- Remove both clamps, and push joint boot toward outer joint.



Assembling

Dished washer installation position, inner and outer joint.

- 1 - Dished washer
- Press on joint until stop.
 - Install lock ring.



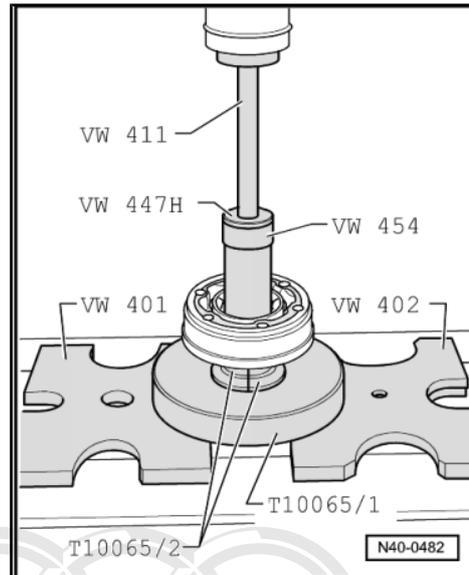
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Pressing on Inner CV Joint



Note

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



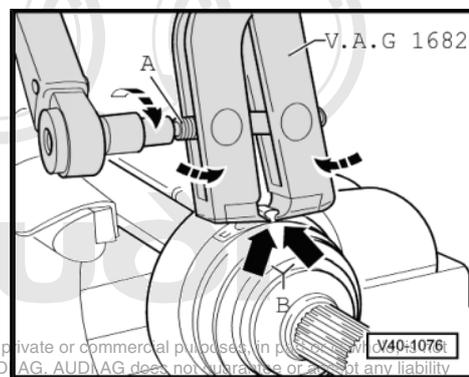
Tightening Hose Clamp on Outer Joint

- Attach -V.A.G 1682- as shown in illustration. Be sure that edges of clamping pliers are seated in corners -arrows B- of hose clamp.
- Tension clamp by turning spindle with a torque wrench (do not tilt clamp tool).

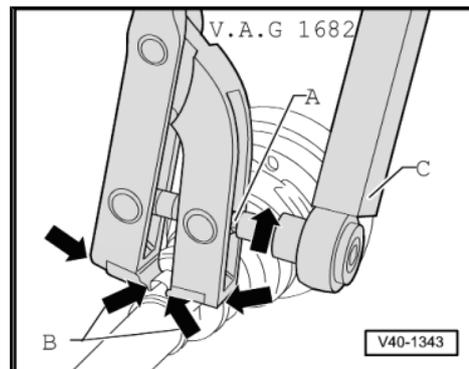


Note

- ◆ A stainless steel clamp must be used due to hardness of CV boot material (compared to rubber). This clamp can only be tensioned using -V.A.G 1682-.
- ◆ Torque specification: 25 Nm.
- ◆ Use torque wrench -C- with adjustment range 5 to 50 Nm (e.g. -V.A.G 1331-).
- ◆ Be sure thread of spindle -A- of clamp tool moves freely. Grease with MOS 2 grease if necessary.
- ◆ If it does not move freely, e.g. due to dirt in thread, the required clamp tension will not be achieved at the specified torque.



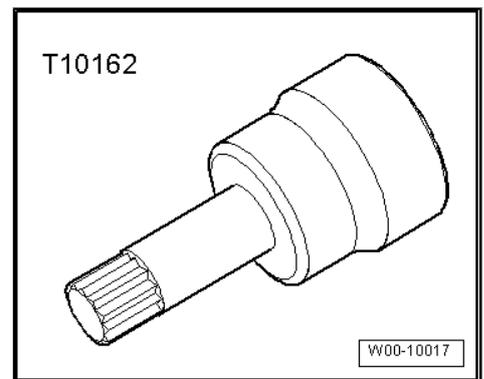
Tensioning Clamp on Small Diameter



7 Special Tools

Special tools and workshop equipment required

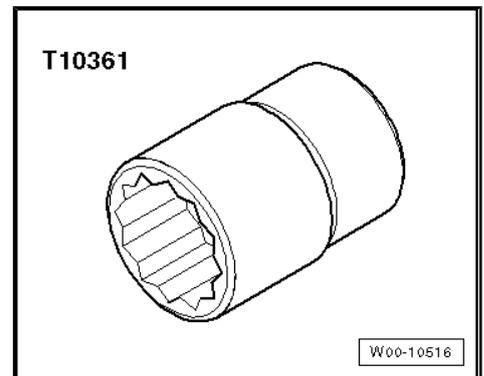
- ◆ Vehicle diagnosis, testing and information system -VAS 5051-
- ◆ Spring compressor -V.A.G 1752/1-
- ◆ Spring holder -V.A.G 1752/3A-
- ◆ Magnetic Ride Shock Absorber Prism -T40129-
- ◆ Installation device -3372-
- ◆ Assembly tool -T10230-
- ◆ Pneumatic/hydraulic foot pump -VAS 6179-
- ◆ Hydraulic cylinder -VAS 6178-
- ◆ Bit M 18 -T10162-



- ◆ Socket XZN 24 -T10361-



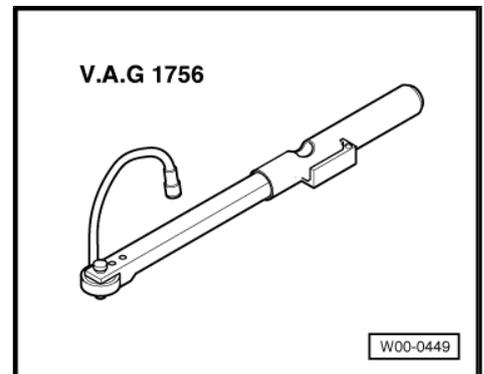
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- ◆ Angle wrench -V.A.G 1756-

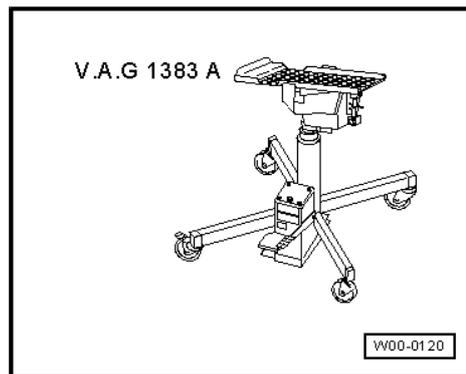
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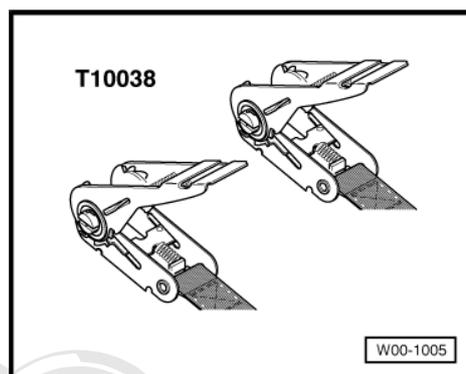




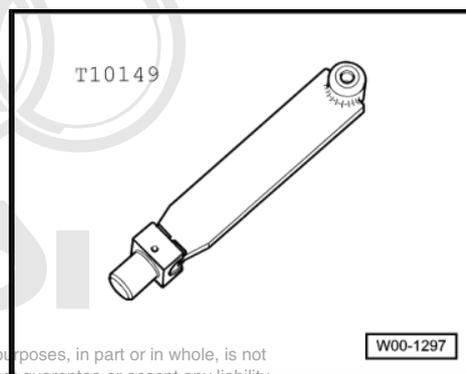
- ◆ Engine-/transmission jack -V.A.G 1383 A- with universal transmission support -V.A.G 1359/2-



- ◆ Tensioning strap -T10038-

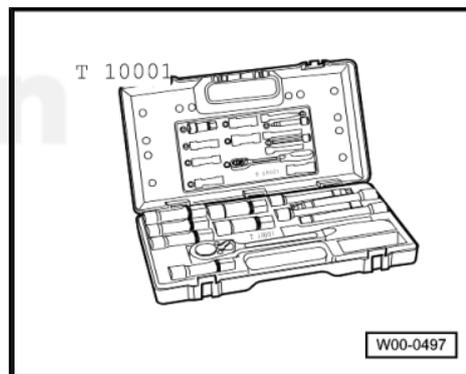


- ◆ Wheel hub support -T10149-



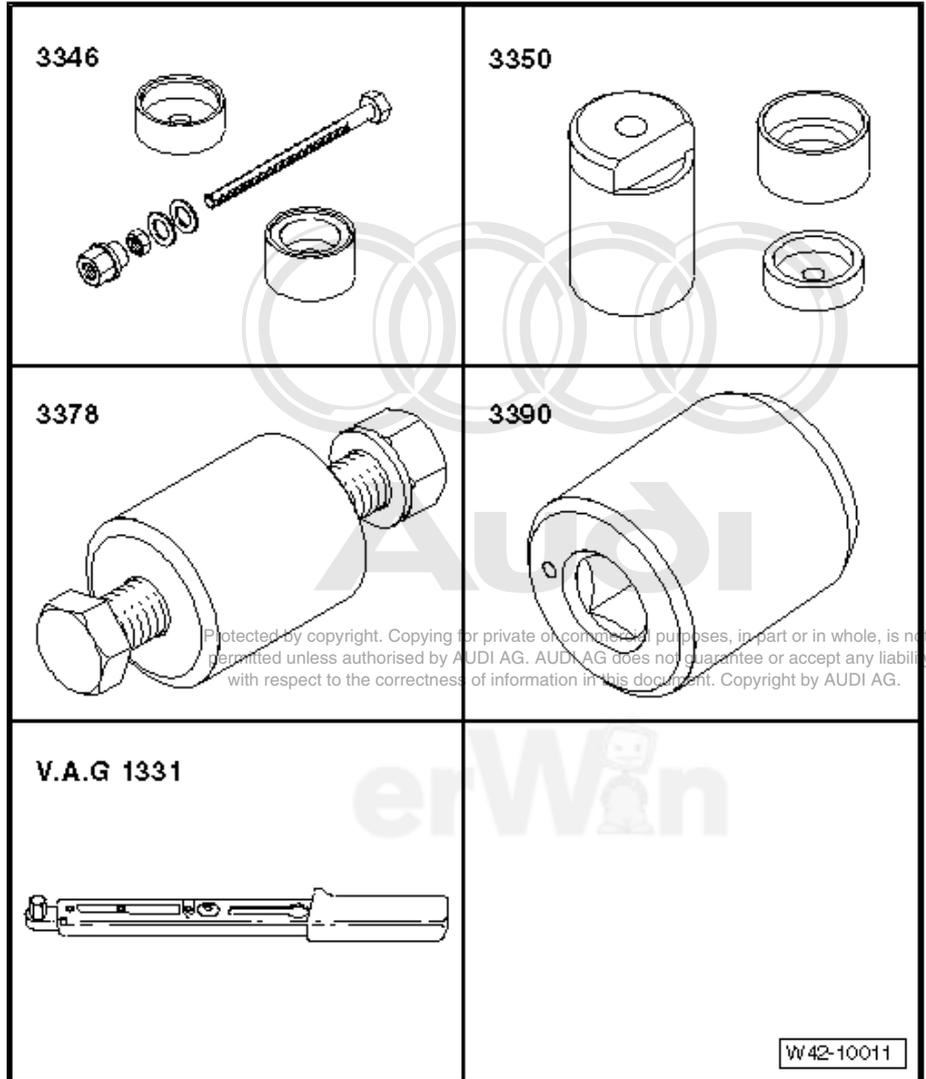
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- ◆ Shock absorber set -T10001-



Special tools and workshop equipment required

- ◆ Assembly tool -3346-
- ◆ Assembly tool -3350-
- ◆ Fitting sleeve -3378-
- ◆ Tappet -3390-
- ◆ Torque wrench -V.A.G 1332-

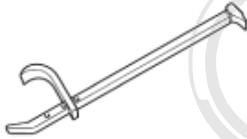
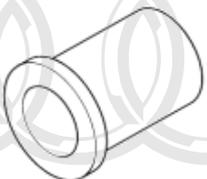


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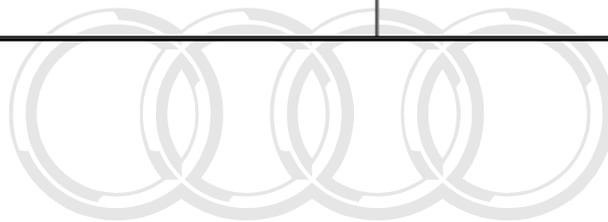
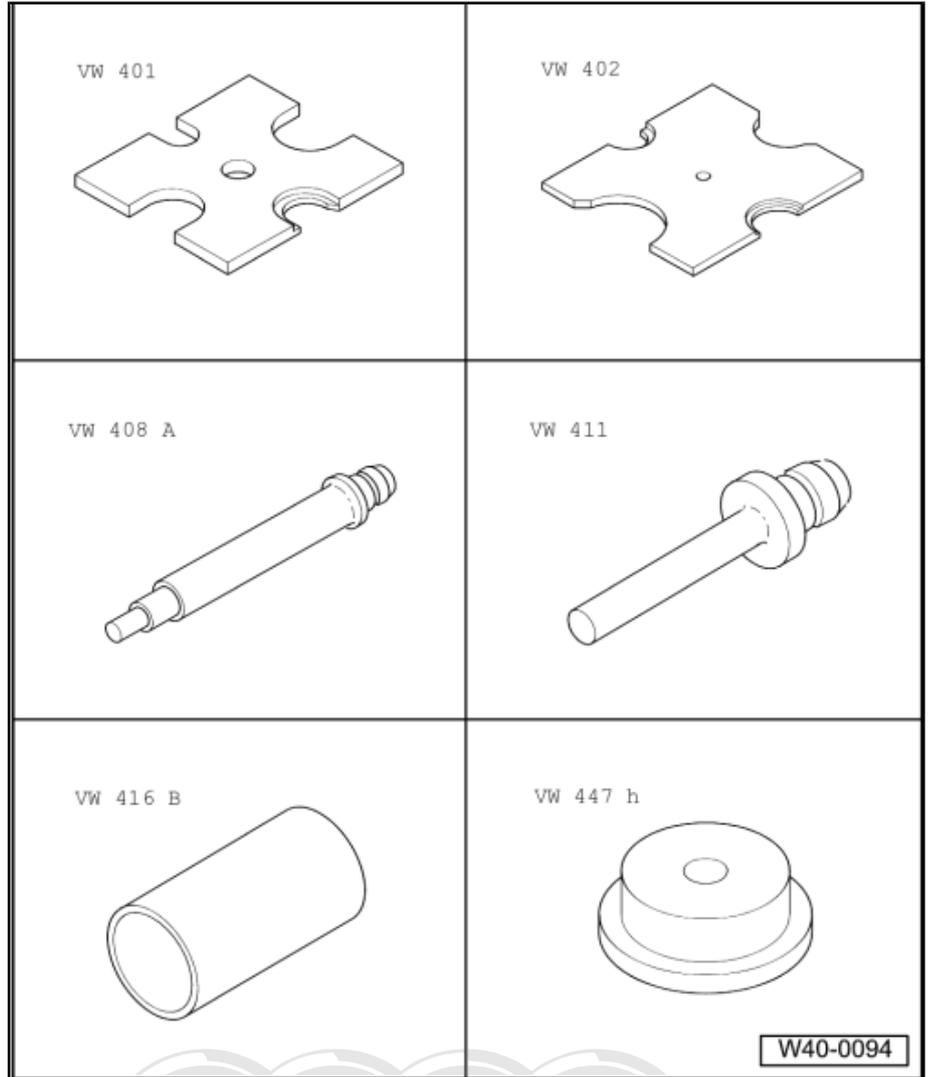
Special tools and workshop equipment required

- ◆ Grease cap puller - VW 637/2-
- ◆ Press tube -3241/4-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Torque wrench - V.A.G 1410-

<p>VW 637/2</p> 	<p>3241/4</p> 
<p>V.A.G 1332</p> 	<p>V.A.G 1410</p> 
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Special tools and workshop equipment required

- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Punch -VW 408 A-
- ◆ Punch -VW 411-
- ◆ Sleeve -VW 416 B-
- ◆ Thrust pad -VW 447 H-



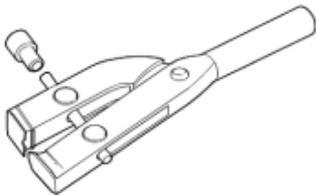
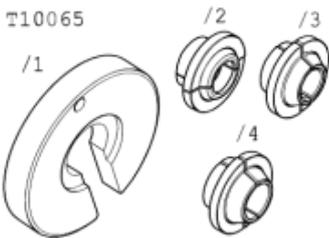
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erWin 



- ◆ Circlip pliers -VW 161 A-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ CV joint boot clamp tool - V.A.G 1682-
- ◆ Assembly tool -T10065-

<p>VW 161 A</p> 	<p>V.A.G 1331</p> 
<p>V.A.G 1332</p> 	<p>V.A.G 1682</p> 
<p>T10065</p> 	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-left: auto;">W40-0101</div>



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44 – Wheels, Tires, Wheel Alignment

1 General Information

⇒ [“1.1 Wheels and Tires”, page 227](#)

⇒ [“1.2 Tire Pressure Monitoring System, Indirect System”, page 227](#)

⇒ [“1.3 Tire Pressure Monitoring System, Direct System”, page 228](#)

⇒ [“1.4 Tire Pressure Monitoring System Usage, Direct System”, page 228](#)

⇒ [“1.5 Wheel Alignment”, page 230](#)

⇒ [“1.6 PR Number Explanations”, page 232](#)

1.1 Wheels and Tires

Refer to the ⇒ Wheel and Tire Guide; Rep. Gr. 44 ; General Information .

1.2 Tire Pressure Monitoring System, Indirect System

Tire pressure monitoring is a system that detects slow to moderate reductions in tire pressure at a wheel position. With the help of the ABS sensors, the TPMS compares the speed and rolling circumference of the individual wheels. If the rolling circumference changes, the tire pressure monitoring indicator in the instrument cluster lights up and a warning tone is heard. On vehicles with a center instrument cluster display, the location of the tire is given.

After changing from run-flat tires (SST) to non-run-flat tires or vice versa the control module must be re-coded.

Rolling circumference of tire may be change if:

- ◆ The tire pressure is too low.
- ◆ The tire has structural damage.
- ◆ The vehicle is loaded on one side.
- ◆ The tires on one axle are loaded more heavily (e.g. when towing a trailer or driving up and down inclines).
- ◆ The spare tire is installed.
- ◆ One wheel per axle was changed. (also if exchanging the tires from front to rear or vice versa).

System Malfunction in TPMS

A system malfunction is stored in the Tire Pressure Monitoring Control Module 2 -J793- and indicated by the constant yellow TPMS lamp in the instrument cluster. The TPMS lamp cannot be turned off by pressing the TPMS button. If there is a DTC memory entry, connect vehicle diagnosis, testing and information system -VAS 5051- and select “Guided Fault Finding” using the -VAS 5051- .

Perform Calibration (Readapt Tire Pressure)

After each change to the tires, the tire pressure monitoring system button in the center console must be pressed while the ignition is switched on and the vehicle is still until the TPMS lamp in the instrument cluster blinks several times. Blinking several times

confirms the calibration procedure and the readapting of the tire pressures.

1.3 Tire Pressure Monitoring System, Direct System

Observe notes about usage in your Owner's Manual.

The tire pressure monitoring system monitors the pressure of the four tires while driving.

Damaged tire pressure sensors should be replaced for safety reasons.

Do not clean tire pressure sensors with steam blasting or strong compressed air.

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For safety reasons, the tire pressure monitoring sensor should be replaced and the rim cleaned after using tire sealant.

The tire pressure monitoring system consists of a control module, a central antenna integrated in the control module and one tire pressure sensor in each of the four wheels.

If wheel positions on the vehicle are changed, tires are changed, tire pressure sensors are replaced or pressures are changed, control module must be readapted.



Note

When changing a tire with tire pressure monitoring sensors (summer/winter tires), tire pressure must be checked and the sensor readapted to the control module.

A fault may be saved in the DTC memory if:

There is a system malfunction.

When installing less than four wheels with tire pressure sensors.

When installing winter tires or incorrect tire pressure sensors. (If this is the case, the yellow warning lamp in instrument cluster "system malfunction diagram" is set and cannot be deactivated by the system.)

The system has detected new sensors but the tire pressure monitoring button -E226- has not been pressed yet to confirm the current pressures. (In this case, the system malfunction is erased by pressing the button.)

1.4 Tire Pressure Monitoring System Usage, Direct System

Function

The tire pressure monitoring system is controlled by the Tire Pressure Monitoring Button -E226-, which is installed in the center console switch strip.

The system monitors the tire pressure you have set and entered for monitoring.

- Tire pressures must first be checked, corrected and saved using the tire pressure monitoring button.
- Then check and correct the tire pressure for the tires on the vehicle (including spare tire) according to the specifications on the sticker on the fuel filler flap/B-pillar.

Tire Pressure Monitoring Active

If the TPMS detects a loss of pressure in one or more tires, it notifies the driver by switching the TPMS warning lamp in the instrument cluster on continuously. A tire pressure warning symbol with the text "Check tire pressure" also appears in the instrument cluster driver information system. In this case, the tire pressures must be checked (according to the specifications on the label on the fuel tank door/B-pillar). If the tire pressure is very different in one or more tires, check that tire for damage or foreign objects. Replace the tire if necessary. Refer to
 ⇒ "5.4 Tires, with Tire Pressure Monitoring System", page 244 .

System Malfunction in Tire Pressure Monitoring System

A system malfunction is stored in the Tire Pressure Monitoring Control Module -J502-. If a malfunction occurs or there is already one present, this is indicated when the "ignition is on" by the yellow malfunction lamp in the instrument cluster blinking for 1 minute and then staying on continuously. The yellow malfunction lamp cannot be switched off by pressing the tire pressure monitoring button in the center console switch strip. A "tire pressure warning symbol" with the text "Check tire pressure" also appears in the instrument cluster driver information system. If there is a DTC memory entry, connect vehicle diagnosis, testing and information system -VAS 5051 A- and select "Guided Fault Finding".

Coding Tire Pressure Monitoring Control Module

If the module is replaced, new control module must be coded. To do this, proceed as follows.

- Connect -VAS 5051 A- perform vehicle-specific entry into Guided Fault Finding and select GO TO button "function/component selection".

Then

- "Chassis (Repair group 01; 40 - 49)"
- "Tire pressure monitoring (Repair group 01; 44)"
- "01 - On Board Diagnostic (OBD) capable systems"
- "65 - Tire pressure monitoring J502"
- "J502 - Tire Pressure Monitoring Control Module, functions"
- "65 - Replacing control module (repair group 44)"

Tire pressure saving must be initiated after every desired change to the specified pressures.

Save Tire Pressures

The correct saving of the specified values in the basic requirement for dependable tire pressure monitoring.

After each change to the tires, the tire pressure monitoring button in the center console must be pressed for approximately 5 seconds with ignition switched on and vehicle still until a signal tone is heard and the yellow "system malfunction diagram" in the instrument cluster blinks several times. Blinking several times confirms the calibration procedure and the readapting of the tire pressures.

The procedure for saving the tire pressures must be initiated each time the tire specified pressures are changed. The procedure takes place while driving.

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Changing a Tire or Replacing a Tire Pressure Sensor

Adapting the tire pressure sensors is a basic requirement for the tire pressure monitoring system to function properly.



Each time a tire is changed or a tire pressure sensor is replaced, the tire pressure monitoring button in the center console must be pressed for approximately 5 seconds with the ignition switched on and vehicle still under a signal tone is heard and the yellow "system malfunction diagram" in the instrument cluster blinks several times.

If the tire pressure monitoring button is not pressed, the system learns the new sensors but still activates the malfunction lamp to request active operation.

The vehicle must now stand for 20 minutes and then be driven on a 3-minute adaptation drive at speeds greater than 25 km/h.

If the standing time is not followed, control module is not in learning mode so system recognizes a malfunction and can only automatically learn wheel electronics after standing 20 minutes.

1.5 Wheel Alignment

Wheel alignment must only performed using VW/Audi-approved wheel alignment equipment!

Each time wheels are aligned, both front and rear wheels must be aligned.

Otherwise, proper vehicle driveability cannot be ensured.



Note

- ◆ *Wheels should not be aligned 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.*
- ◆ *Vehicle instability can also be caused by the wheels having a residual imbalance and/or radial runout which is too great.*



WARNING

After making adjustments on the suspension on vehicles with ESP or ABS, the steering angle sensor -G85- must be calibrated and steering must be readapted after vehicle alignment using the vehicle diagnosis, testing and information system - VAS 5051 A- in "Guided Functions".

Then:

- 03-Brake electronics J104
- 03-Steering Angle Sensor -G85- calibration

If the installed position of the rear axle and thereby the direction of travel of the vehicle are not considered, a crooked steering wheel may result.

Steering wheel and steering column are marked.

These positions must not be changed!

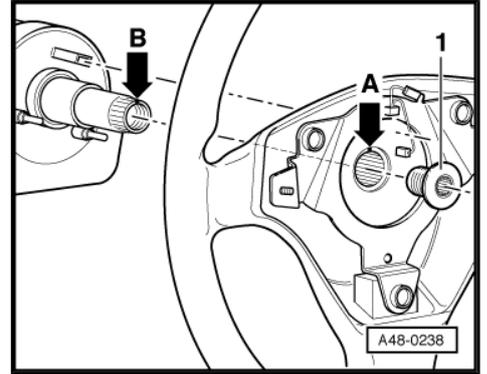
A - Marked line on steering wheel

B - Punch mark on steering column

Otherwise centering of toothed shaft cannot be guaranteed!

Steering columns supplied as a spare part do not have a center punch mark.

If the steering column or steering wheel is replaced, marking should be remade after alignment and road test.



Tightening Specification

Component		Nm
Steering wheel to steering column	Socket head bolt	50 ²⁾

2) Replace bolt

When Vehicle Alignment is Necessary

- ◆ Involved in an accident.
- ◆ Vehicle shows handling problems.
- ◆ Tire wear patterns are uneven.
- ◆ Axle components were removed.

A component on the front/rear suspension was replaced:

A component on the front suspension was replaced:	Wheel Alignment Check Required		A component on the rear suspension was replaced:	Wheel Alignment Check Required	
	Yes	No		Yes	No
Suspension Strut		X ²⁾	Shock Absorbers		X
Transverse link/bonded rubber bushing	X		Coil spring		X
Ball joint	X		Wheel Bearing Housing	X	
Wheel Bearing Housing	X		Subframe/bonded rubber bushing	X	
Tie rod end	X		Lower transverse link	X	
Steering Gear	X		Upper control arm	X	
Subframe	X		Tie Rod	X	
Stabilizer Bar		X ¹⁾	Trailing link	X	
			Stabilizer Bar		X

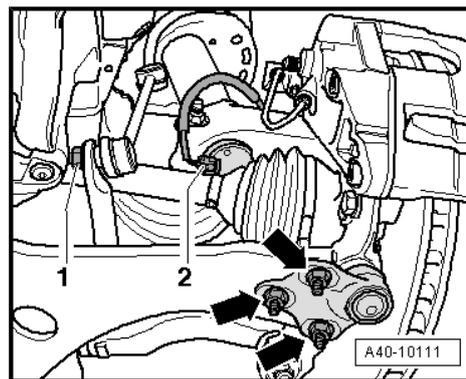
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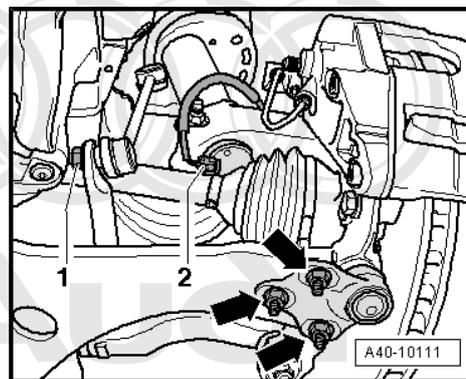
- 1) if subframe was secured with Locating Pins -T10096- , axle alignment is not necessary.
- 2)- if the location of the nuts -arrows- was marked, an axle alignment is not necessary.

A component on the front/rear suspension was removed and re-installed:

A component on the front suspension was removed and reinstalled:	Wheel Alignment Check Required		A component on the rear suspension was removed and re-installed:	Wheel Alignment Check Required	
	Yes	No		Yes	No
Suspension Strut		X ²⁾	Shock Absorbers		X
Transverse link/bonded rubber bushing	X		Coil spring		X
Ball joint		X ²⁾	Wheel Bearing Housing	X	
Wheel Bearing Housing		X ²⁾	Subframe/bonded rubber bushing	X	
Tie rod end	X		Lower transverse link	X	
Steering Gear	X		Upper control arm	X	
Subframe		X ¹⁾	Tie Rod	X	
Stabilizer Bar		X ¹⁾	Trailing link	X	
			Stabilizer Bar		X



- 1) if subframe was secured with Locating Pins -T10096- , axle alignment is not necessary.
- 2)- if the location of the nuts -arrows- was marked, an axle alignment is not necessary.



1.6 PR Number Explanations

The vehicle data plate documents which front/rear axle is installed using the corresponding PR numbers.

The vehicle data label can be found in the spare wheel well as well as in the Maintenance booklet.

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Front/Rear Suspension

The front/rear suspension PR No. is in illustration -A- and -B-

- Front suspension PR no. is item -A-.
- Rear suspension PR no. is item -B-.

Using the PR number, you can find the correct damper combination in the replacement parts catalog.

TRUZZZ **8J6** **71000237**

8J3 02C 1878064

TTC 2.0 R4
147 KW M6S 11 / 05

LY7W/LY7W N2J/JN

X9X BOA C8G GOK HDO JOR
D2L Q1D 0JG 1AT 1GO 2PV
5RU /5SL T59 0YK
4UF OG4 8UD 8GU 8RY 1KZ
1LJ 3FA 1BA

D A C B

1355 11.1 11.1 11.1 111

A44-10084

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Suspension Versions

The suspension version PR No. is in illustration -arrow-

In this example the vehicle has standard suspension 1BA installed.

1BA = Standard suspension.

1BL = Sport suspension Audi magnetic ride (AMR) - electronically-controlled damping.

1BV = Sport suspension S Line.

1BQ = Sport suspension Audi magnetic ride (AMR) - electronically-controlled damping.

1BD = Sport suspension quattro GmbH (TT RS).

TRUZZZ **8J6** **71000237**

8J3 02C 1878064

TTC 2.0 R4
147 KW M6S 11 / 05

LY7W/LY7W N2J/JN

X9X BOA C8G GOK HDO JOR
D2L Q1D 0JG 1AT 1GO 2PV
5RU /5SL T59 0YK
4UF OG4 8UD 8GU 8RY 1KZ
1LJ 3FA 1BA

D A C B

1355 11.1 11.1 11.1 111

A44-10084

2 Description and Operation

⇒ [“2.1 Tire Pressure Monitoring System Components, Direct System”, page 234](#)

⇒ [“2.2 Tire Pressure Monitoring Sensor Assembly Overview”, page 235](#)

⇒ [“2.3 Wheel Alignment Test Prerequisites”, page 235](#)

⇒ [“2.4 Wheel Alignment Measurement Procedure”, page 236](#)

2.1 Tire Pressure Monitoring System Components, Direct System

1 - Tire Pressure Monitoring Button -E226-

- ❑ Component location:
The button is installed in the center console switch strip.

2 - Display in Instrument Cluster

- ❑ See vehicle diagnostic, test and information system -VAS 5051 A- .

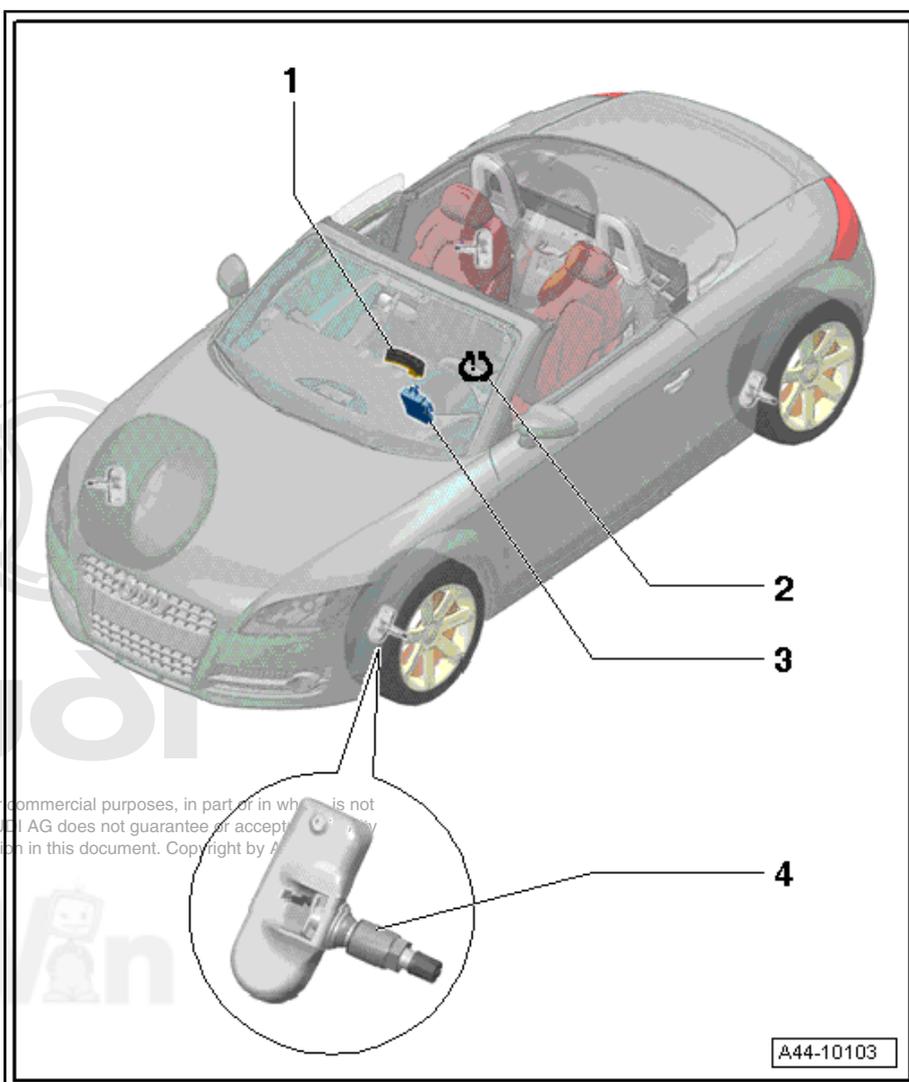
3 - Tire Pressure Monitoring Control Module -J502-

- ❑ If module is replaced, system must be coded. Refer to
⇒ [“1.4 Tire Pressure Monitoring System Usage, Direct System”, page 228](#) .

4 - Left Front Tire Pressure Monitoring Sensor -G222-, Right Front Tire Pressure Monitoring Sensor -G223-, Rear Left Tire Pressure Monitoring Sensor -G224- and Rear Right Tire Pressure Monitoring Sensor -G225-

- ❑ Removing and installing, refer to
⇒ [“5.3 Tire Pressure Sensor”, page 243](#) .
- ❑ If wheel positions on the vehicle are changed, tires are changed, tire pressure sensors are replaced or pressures are changed, control module must be re-coded or readapted. Refer to

⇒ [“1.4 Tire Pressure Monitoring System Usage, Direct System”, page 228](#) .



2.2 Tire Pressure Monitoring Sensor Assembly Overview

1 - Left Front Tire Pressure Monitoring Sensor -G222- , Right Front Tire Pressure Monitoring Sensor -G223- , Rear Left Tire Pressure Monitoring Sensor -G224- and Rear Right Tire Pressure Monitoring Sensor -G225-

- Temperature and pressure can be read via diagnosis with vehicle diagnostic, test and information system -VAS 5051 A- .
- Replace the valve insert each time a tire is changed. Allocation, refer to the Electronic Parts Catalog (ETKA).
- When using used tire pressure monitoring sensors , replace the union nut, valve insert, gasket, sealing washer and valve cap. Allocation, refer to the Electronic Parts Catalog (ETKA).
- Removing and installing, refer to [⇒ "5.3 Tire Pressure Sensor", page 243](#) .

2 - Valve Core

3 - Sealing Washer

4 - Seal

5 - Rim

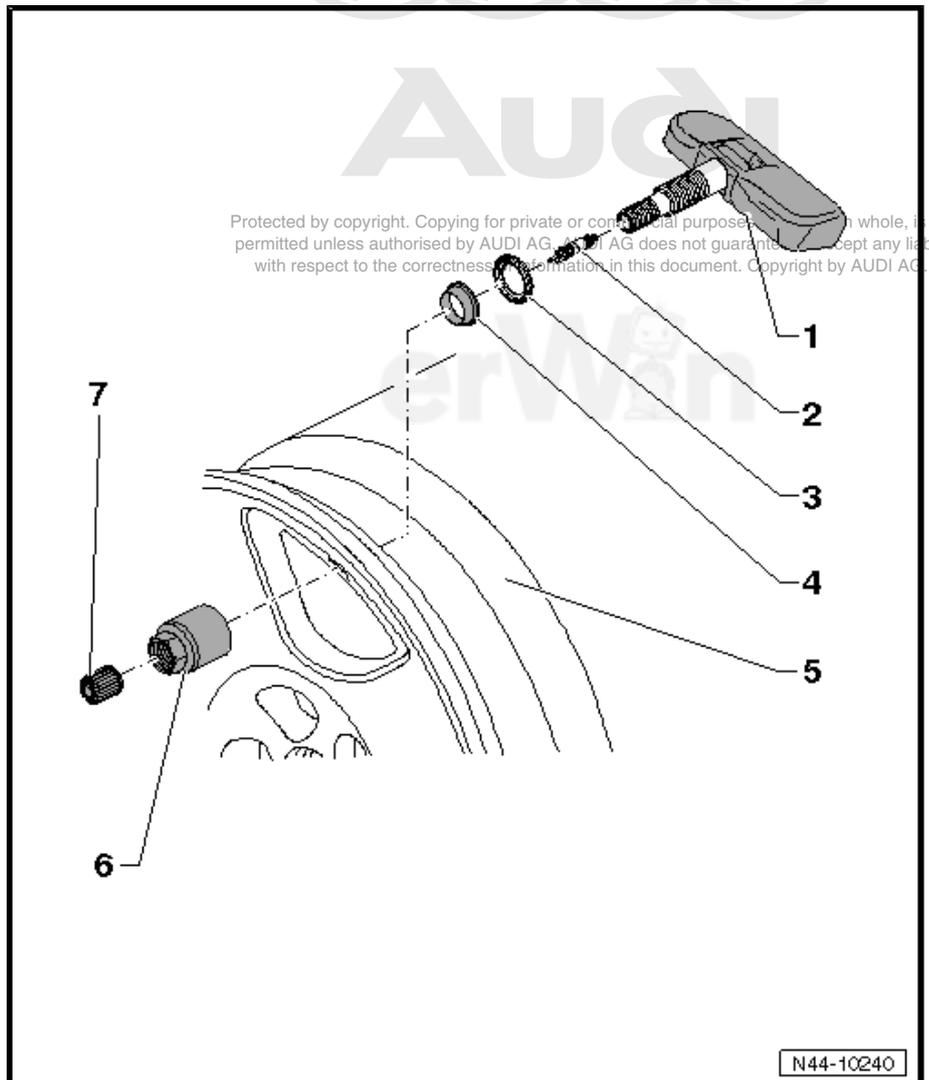
- Tires, mounting and dismounting, refer to [⇒ "5.4 Tires, with Tire Pressure Monitoring System", page 244](#) .

6 - Union Nut

- 8 Nm

7 - Valve Cap

- Use only original valve caps from the repair set. Allocation, refer to the Electronic Parts Catalog (ETKA).
- Do not use Comfort valve caps and metal caps.



2.3 Wheel Alignment Test Prerequisites

- Check suspension, steering and steering linkage for excessive play and damage.
- Tread depth difference may be no more than 2 mm on an axle.
- Prescribed pressure of tires.
- Vehicle accurately aligned, suspension bounced and rocked several times.



- The measurement sensor must be properly adjusted and attached to the vehicle; observe device manufacturer's operating instructions.
- Vehicle empty weight³⁾

3) Empty weight means: Weight of the vehicle ready for the road (fuel tank completely filled, spare wheel, vehicle tools and vehicle jack).

- Vehicle alignment platforms and vehicle alignment units/vehicle alignment computers can lose their calibration over a period of time.
- Alignment platforms and alignment units/alignment computers should be calibrated at least once a year during maintenance.
- Treat these highly sensitive units carefully and conscientiously.
- If necessary, contact the manufacturer for familiarization with the proper use of the equipment.
- Be sure that sliding plates and turn tables are not touching end stop when checking wheel alignment.
- Perform wheel run-out compensation: Permissible axial run-out of the wheel rims can exceed the specified toe setting tolerance. If compensation for wheel run-out is not performed, it will not be possible to obtain a correct toe-in adjustment.

2.4 Wheel Alignment Measurement Procedure

Special tools and workshop equipment required

- ◆ Alignment Computer -V.A.G 1813- or VW-/Audi-approved alignment unit
- ◆ Brake pedal actuator -V.A.G 1869/2-
- ◆ Insert tool -T10179-
- ◆ Shock absorber set -T10001-
- ◆ Vehicle Diagnosis, Testing and Information System -VAS 5051B-

Overview



Note

Vehicle must only be measured at empty weight ⇒ [page 236](#) .

Observe the following work sequence!

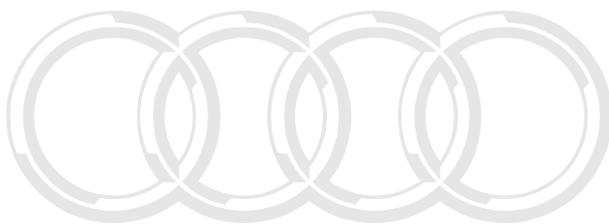
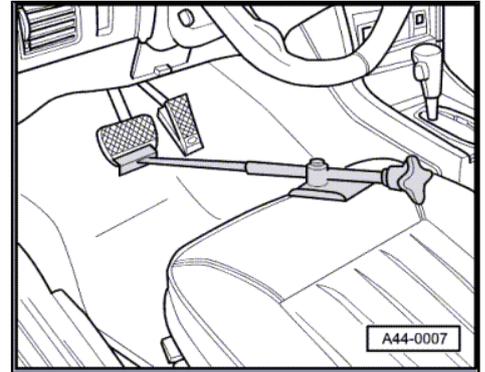
- 1 - Check front axle camber and adjust if necessary. Refer to ⇒ ["4.1 Front Axle Camber, Adjusting", page 239](#) .
- 2 - Check rear axle camber and adjust if necessary. Refer to ⇒ ["4.2 Rear Axle Camber, Adjusting", page 239](#) .
- 3 - Check rear axle toe and adjust if necessary. Refer to ⇒ ["4.3 Rear Axle Toe, Adjusting", page 241](#) .
- 4 - Check front axle toe and adjust if necessary. Refer to ⇒ ["4.4 Front Axle Toe, Adjusting", page 241](#) .
- 5 - If adjustments were made at the suspension during vehicle alignment on vehicles with ESP or ABS, calibrate the steering angle sensor -G85- and reprogram the steering. Refer to ⇒ ["1.5 Wheel Alignment", page 230](#) .

6 - On vehicles with level control sensor, headlamp range control basic setting must be performed after a vehicle alignment. Refer to ⇒ ["5.1.6 Level Control System Sensors"](#), page 153 .

 **Note**

Use -VAS 5051B- in "Guided Fault Finding" function for this.

- Insert -V.A.G 1869/2- .



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3 Specifications

⇒ "3.1 Fastener Tightening Specifications", page 238

⇒ "3.2 Wheel Alignment Specified Values", page 238

3.1 Fastener Tightening Specifications

Component	Fastener Size	Nm
Tire Pressure Monitoring Sensor Union Nut	-	8

3.2 Wheel Alignment Specified Values

Front Suspension	Standard Suspension 1BA	Sport Suspension Audi Magnetic Ride (AMR) 1BL	Sport Suspension 1BV/1BD	Sport Suspension Audi Magnetic Ride (AMR) 1BQ
Individual toe	5' ± 5'	5' ± 5'	5' ± 5'	5' ± 5'
Total toe	10' ± 10'	10' ± 10'	10' ± 10'	10' ± 10'
Camber Maximum permissible difference between both sides	-41' ± 30' maximum 30'	-41' ± 30' maximum 30'	-41' ± 30' maximum 30'	-41' ± 30' maximum 30'
Toe differential angle at 20° steering angle ⁴⁾	1° 18' ± 20'	1° 18' ± 20'	1° 20' ± 20'	1° 20' ± 20'
Maximum steering angle at inner wheel	36° 48'	36° 48'	36° 48'	36° 48'

4) Wheel stop on outer wheel is reduced by this amount. It can also be indicated negatively in alignment computer, depending on manufacturer.

Rear Suspension	Standard Suspension 1BA	Sport Suspension Audi Magnetic Ride (AMR) 1BL	Sport Suspension 1BV/1BD	Sport Suspension Audi Magnetic Ride (AMR) 1BQ
Total toe	25' ± 10'	25' ± 10'	25' ± 10'	25' ± 10'
Individual toe	12,5' ± 5'	12,5' ± 5'	12,5' ± 5'	12,5' ± 5'
Maximum permissible deviation from direction of rotation	maximum 10'	maximum 10'	maximum 10'	maximum 10'
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'

4 Diagnosis and Testing

⇒ ["4.1 Front Axle Camber, Adjusting", page 239](#)

⇒ ["4.2 Rear Axle Camber, Adjusting", page 239](#)

⇒ ["4.3 Rear Axle Toe, Adjusting", page 241](#)

⇒ ["4.4 Front Axle Toe, Adjusting", page 241](#)

4.1 Front Axle Camber, Adjusting



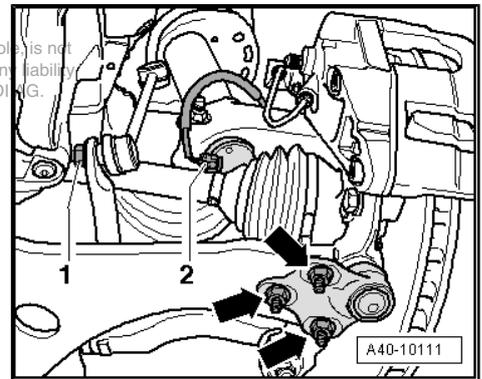
Note

Only adjust camber if measured value is outside the specified value tolerance of +/- 30'.

- Loosen nuts -arrows-
- Adjust camber using elongated holes in ball joint
- Tighten nuts -arrows-

Tightening specifications, refer to

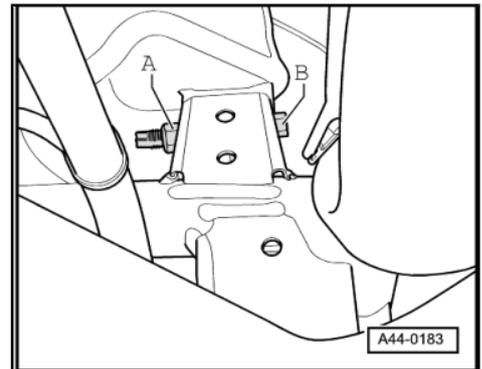
⇒ ["2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview", page 14](#) .



4.2 Rear Axle Camber, Adjusting

Special tools and workshop equipment required

- ◆ Shock Absorber Set -T10001-
- ◆ Insert Tool -T10179-
- Remove upper transverse link to subframe connection nut -A- and loosely install new nut.



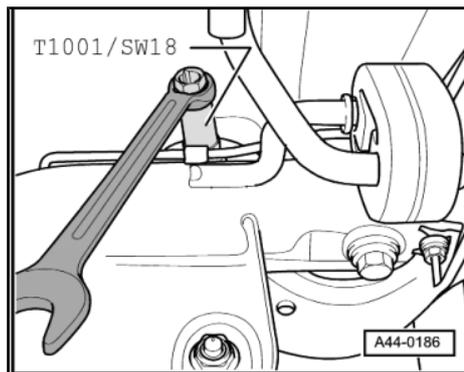


- Adjust camber by turning eccentric bolt with AF 18 nut from -T10001- .

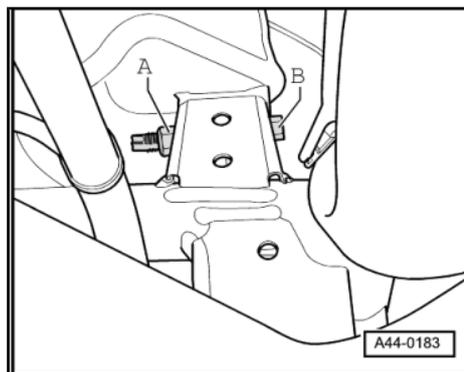


Note

The maximum adjustment range is 90° to left or right of center position.



- Tighten nut -A- with -T10179- .
- Tightening specifications, refer to [⇒ "2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview", page 119](#) .

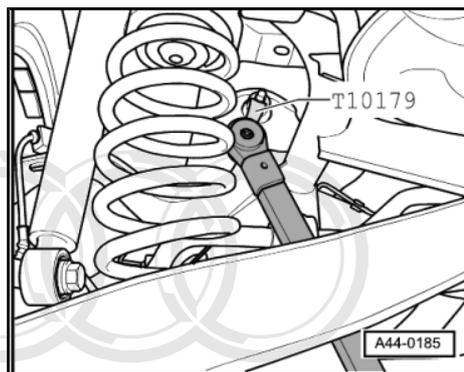


- Use special tool as follows.
- After tightening nut -A-, check camber value once more. Refer to [⇒ "3.2 Wheel Alignment Specified Values", page 238](#) .

Tightening specifications, refer to [⇒ "2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview", page 119](#) .

Tightening specifications, refer to [⇒ "2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe", page 127](#) .

Tightening specifications, refer to [⇒ "2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster", page 129](#) .



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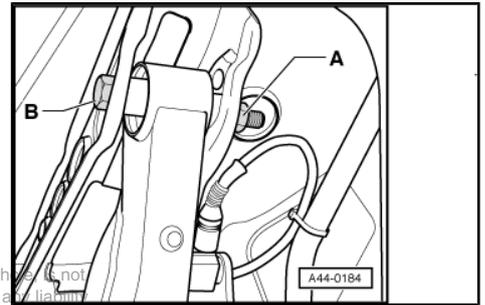
4.3 Rear Axle Toe, Adjusting

- Remove lower transverse link to subframe connection nut -A- and loosely install new nut.
- Adjust toe by turning eccentric screw -B-.

i Note

The maximum adjustment range is 90° to left or right of center position.

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- Tighten nut -A-.
- Tightening specifications, refer to ⇒ ["2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview"](#), page 119 .
- After tightening nut -A-, check toe value once more. Refer to ⇒ ["3.2 Wheel Alignment Specified Values"](#), page 238 .

Tightening specifications, refer to ⇒ ["2.2.2 Subframe, Diagonal Brace, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview"](#), page 119 .

Tightening specifications, refer to ⇒ ["2.3.2 Subframe, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Coupe"](#), page 127 .

Tightening specifications, refer to ⇒ ["2.3.3 Subframe, Diagonal Braces, Crossmember, Lower Transverse Link, Upper Transverse Link, Tie Rod and Level Control System Sensor Assembly Overview, Roadster"](#), page 129 .

4.4 Front Axle Toe, Adjusting

- To loosen or tighten lock nut -B-, counterhold at tie rod end -A- with a wrench.
- Loosen lock nut -B-.
- Adjust toe on left and right-hand wheels with hex -C-.

i Note

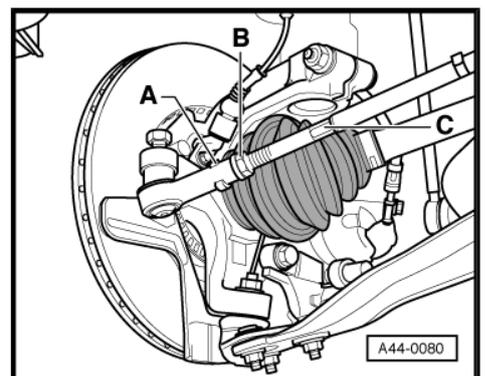
- ◆ *Make sure that boot on steering gear is not damaged or twisted. Twisted boots wear out quickly.*
- ◆ *Only tighten lock nuts when vehicle is resting on ground - tie rod end must be parallel to suspension strut steering lever.*

- Tighten lock nut -B- and check toe-in value again.

After tightening lock nut -B- it is possible that the value deviates slightly.

If the measured toe nevertheless lies within the tolerance, the adjustment is correct.

Tightening specifications, refer to ⇒ ["6.1 Steering Gear"](#), page 291 .



5 Removal and Installation

⇒ [“5.1 Tire Pressure Monitoring Control Module”, page 242](#)

⇒ [“5.2 Tire Pressure Monitoring Control Module 2”, page 242](#)

⇒ [“5.3 Tire Pressure Sensor”, page 243](#)

⇒ [“5.4 Tires, with Tire Pressure Monitoring System”, page 244](#)

5.1 Tire Pressure Monitoring Control Module

Removing



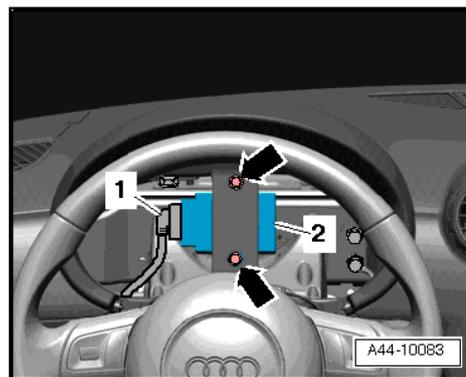
Note

- ◆ *The Tire Pressure Monitoring Control Module -J502- is located under the instrument cluster.*
- ◆ *Before removing control module, read out code using Guided Fault Finding in “Replace control module” function.*
- Remove instrument cluster. Refer to ⇒ Electrical Equipment; Rep. Gr. 90 ; Removal and Installation .
- Remove bolts -arrows-
- Remove the tire pressure monitoring control module -2- and disconnect the connector -1-.

Installing

Install in reverse order of removal.

- If tire pressure monitoring control module is replaced, system must be coded. Refer to ⇒ [“1.4 Tire Pressure Monitoring System Usage, Direct System”, page 228](#) .



5.2 Tire Pressure Monitoring Control Module 2

Special tools and workshop equipment required

- ◆ Vehicle diagnosis, testing and information system -VAS 5051 A-

Removing



Note

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- ◆ *The Tire Pressure Monitoring Control Module 2 -J793- is located under the instrument cluster.*
- ◆ *Before removing control module, read out code using Guided Fault Finding in “Replace control module” function.*
- Remove instrument cluster. Refer to ⇒ Electrical Equipment; Rep. Gr. 90 ; Removal and Installation .

- Remove bolts -arrows-.
- Remove tire pressure monitoring control module 2 -2- and disconnect the connector -1-.

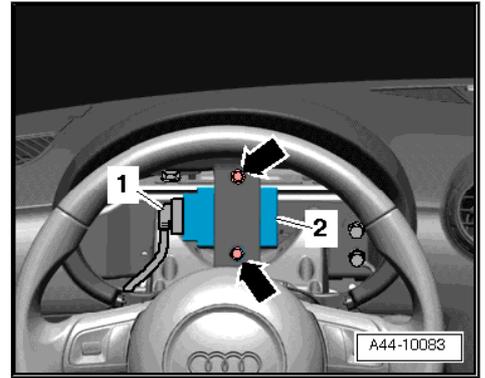
Installing

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

- If tire pressure monitoring control module 2 is replaced, system must be coded.
- Connect -VAS 5051 A- and select "Guided Functions".

Then:

- 4C Tire pressure monitoring II J793
- Replacing 4C control module (repair group 44)



5.3 Tire Pressure Sensor

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1410-

Removing

- Remove the union nut -1-.
- Remove tire pressure sensor -2- from rim well.

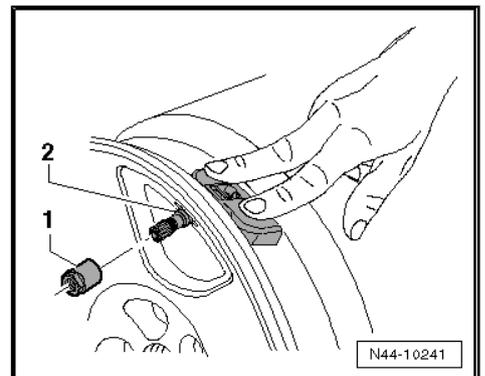
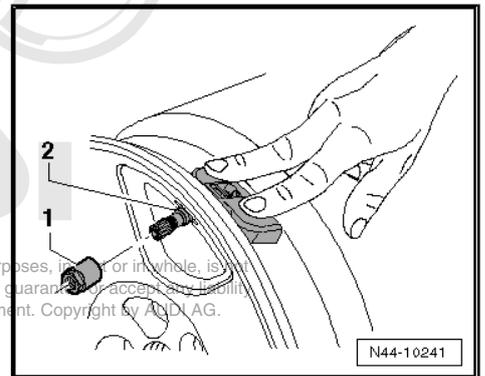
Installing



Note

- ◆ **Damaged sensors must be replaced.**
- ◆ *When using used wheel electronics, make sure the connection between the wheel electronics and valve is not damaged.*
- ◆ *After using tire sealant, wipe off the wheel electronics while they are still installed and make sure the hole in the pressure sensor is not plugged. If the hole is plugged, replace the wheel electronics to prevent incorrect measurements.*
- ◆ *Do not clean the wheel electronics with steam blasting or strong compressed air.*
- ◆ *When sliding on a new gasket and sealing washer, counterhold the valve body to prevent the antenna connection from being damaged.*

- Insert the tire pressure sensor with the new seal and sealing washer through the rim from the inside and press the seal into the valve bore. Allocation, refer to the Electronic Parts Catalog (ETKA).
- Install union nut -1- on tire pressure sensor -2-.

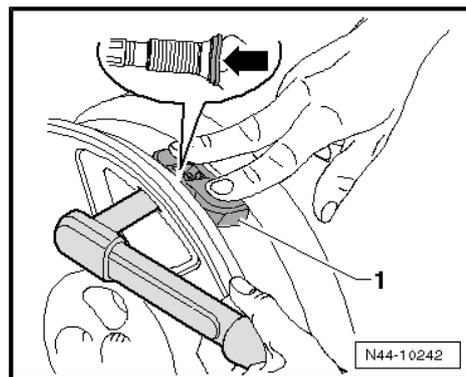




- Press tire pressure sensor -1- onto rim well and tighten union nut. Refer to ["2.2 Tire Pressure Monitoring Sensor Assembly Overview"](#), page 235 .

**Note**

- ◆ After installing, tire pressure sensor must lie firmly in its bed.
- ◆ Sealing washer -arrow- becomes slightly deformed when doing this.



5.4 Tires, with Tire Pressure Monitoring System

**Note**

- ◆ Nickel-plated valve insert must be replaced with every tire change.
- ◆ The tire pressure sensor can be reused.
- Let air out of tire by removing nickel-plated valve insert.
- Tires, dismounting, refer to [page 244](#) .
- When reusing used tire pressure sensors, inspect connection between sensor and metal valve visually for damage.

**Note**

Damaged sensors must be replaced.

- Install tires. Refer to [page 245](#) .
- Install new nickel-plated valve insert.
- Fill tires.
- Balance tires.

Dismounting Tire

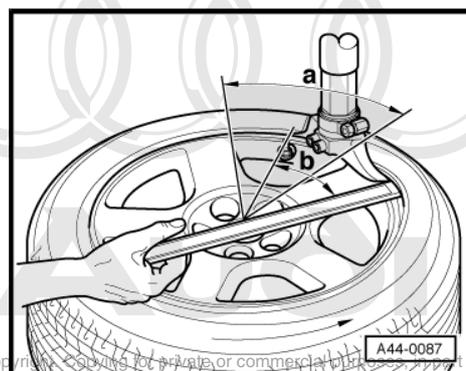
Roll or press tires off.

When using pressure paddles, first separate tires from side opposite of valve.

**Note**

Do not use pressure paddles in hatched area -a-.

- Position mounting head near valve so that so that tire iron can be put on approximately 30° -b- next to tire valve.
- Then remove tire in valve area first.



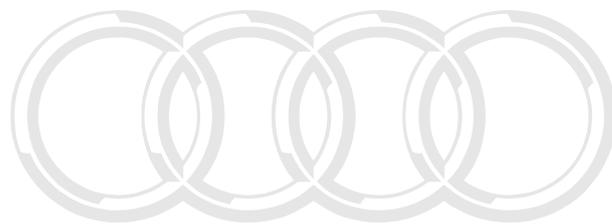
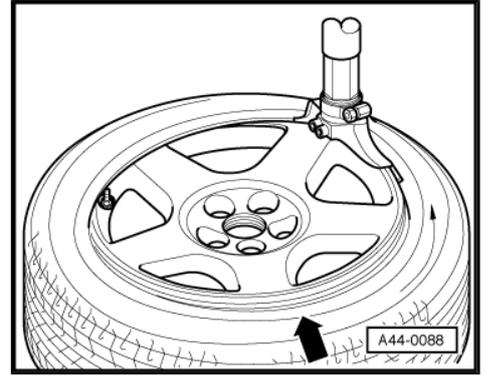
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Mounting Tire

 **Note**

Do not use pressure paddles in valve area.

- Position tire pressure sensor approximately 180° opposite the mounting head.
- Press tire in bed approximately 90° in front of mounting head -arrow-.
- Mount tire.



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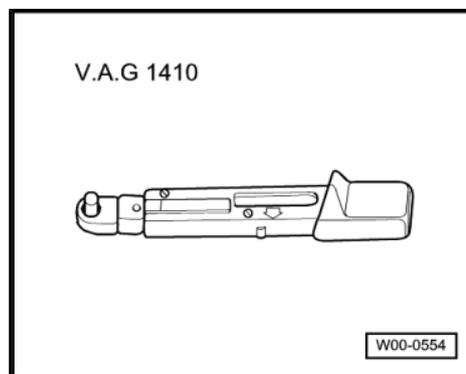
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erWin

6 Special Tools

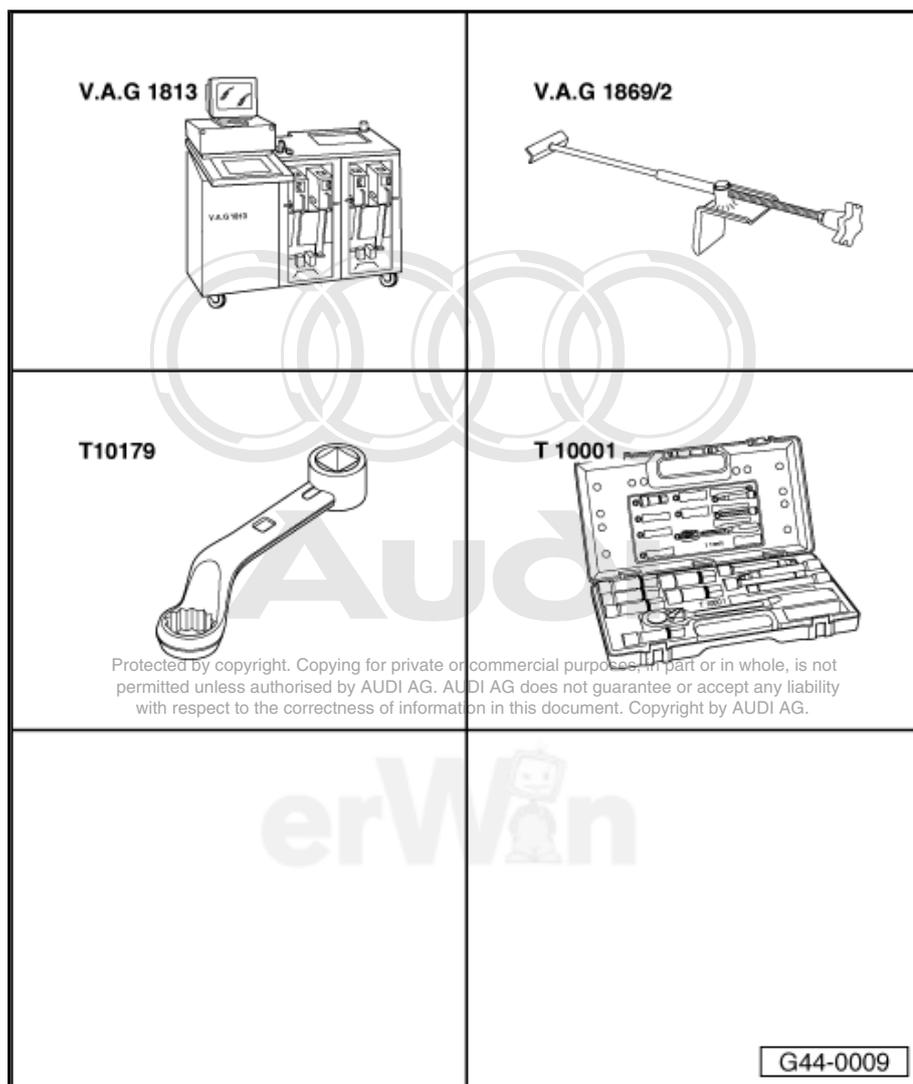
Special tools and workshop equipment required

- ◆ Vehicle diagnosis, testing and information system -VAS 5051 A-
- ◆ Locating Pins -T10096-
- ◆ Torque wrench -V.A.G 1410-



Special tools and workshop equipment required

- ◆ Alignment Computer - V.A.G 1813- or VW-/Audi-approved alignment unit
- ◆ Brake pedal actuator - V.A.G 1869/2-
- ◆ Insert tool -T10179-
- ◆ Shock absorber set - T10001-



48 – Steering

1 General Information

⇒ [“1.1 General Repair Information”, page 247](#)

⇒ [“1.2 Generation II and III Steering Gear Differences”, page 248](#)

1.1 General Repair Information

The maximum possible care, cleanliness and proper tools are essential to ensure satisfactory and successful steering gear repairs. Understandably, general safety guidelines apply when performing repairs.

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

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Steering Gear

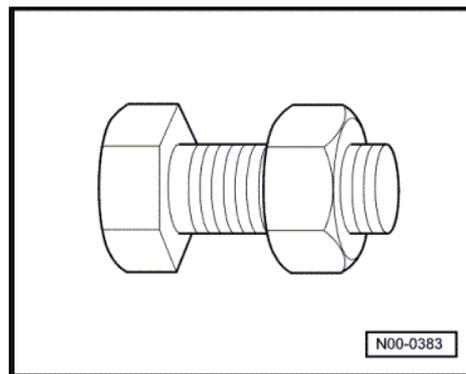
- ◆ Thoroughly clean connecting points and their surrounding areas before loosening.
- ◆ When installing steering gear, make sure centering sleeves are correctly seated between console and steering gear.
- ◆ Place removed parts on a clean surface and cover to prevent contamination. Use foils and paper. Only use lint-free cloths!
- ◆ Only install clean components: Only unpack replacement parts immediately prior to installation.
- ◆ Use exclusively lubricants and sealants marked with part numbers.
- ◆ Carefully cover or seal open components, if repairs are not carried out immediately.
- ◆ Two different steering gear versions were implemented in MY 2008. For information on the differences, refer to [“1.2 Generation II and III Steering Gear Differences”, page 248](#).

Gaskets and Seals

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

Bolts and Nuts

- ◆ Loosen and tighten the bolts and nuts of covers and housings in a diagonal sequence.
- ◆ Do not cant but loosen and tighten especially sensitive parts in diagonal manner in stages, e.g. servo motor with control module.
- ◆ Torque specifications for unlubricated bolts and nuts are given.
- ◆ Always replace self-locking nuts and bolts.
- ◆ Always replace the bolts and nuts, which are tightened with an additional tightening angle.



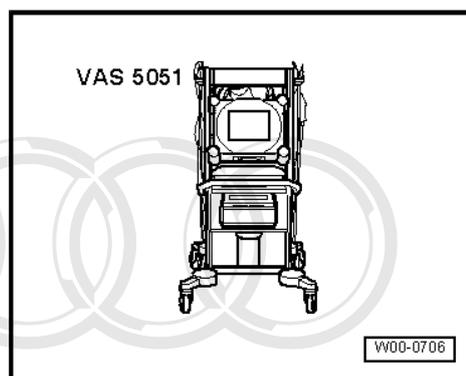
Electrical Components

Surely everyone has been shocked at one time or another when coming into contact with a metal object. The reason for this is the build-up of static electricity in the human body. This charge can lead to functional problems by touching the electrical components of steering gear.

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

Guided Fault Finding, OBD and Test Instruments

- ◆ Before performing repairs on electromechanical steering, the malfunction cause must be determined as exactly as possible using Vehicle Diagnostic, Testing and Information System - VAS 5051B- in operating modes "Guided Fault Finding", "Vehicle Self-Diagnosis" and "Test Instruments".



1.2 Generation II and III Steering Gear Differences

Generation II steering gear has been installed in the Audi TT from MY 07 since the start of production. This was replaced in model year 2008 with Generation III steering gear. Allocation, refer to the Electronic Parts Catalog (ETKA).

Vehicles equipped with Generation II steering gear can be converted to Generation III.

When converting from Generation II steering gear to Generation III, the electrical wire must also be replaced. Refer to [page 254](#)

The steering gear can be identified when installed by the number of bolts.

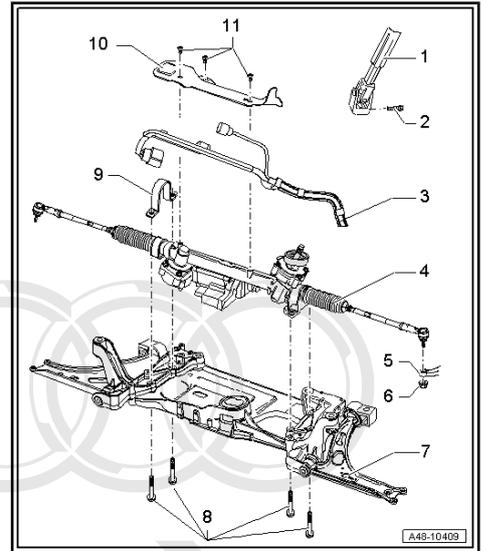
- Raise the vehicle.

 **Note**

The illustration shows the Generation II steering gear.

The Generation II steering gear is secured to the subframe with four bolts -8-.

The Generation III steering gear is secured to the subframe with three bolts -8-. The clamp -9- with the bracket is also not used.



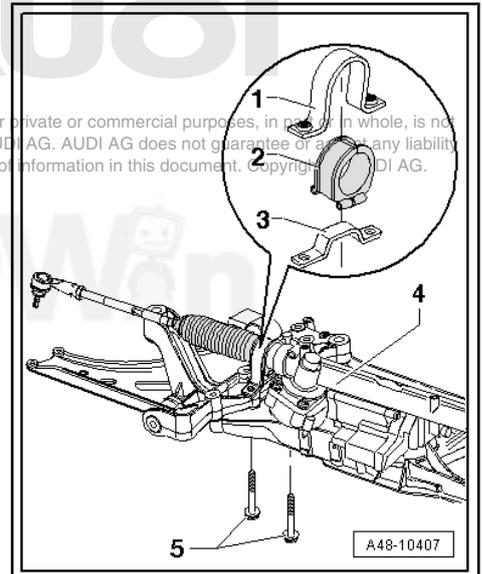
The generation III steering gear is only secured to the right of the subframe with one bolt -5-. The clamp -1-, rubber bushing -2- and bracket -3- are also not used. With Generation III steering gear, the right side of the steering gear housing is equipped with threads for the bolt instead of fasteners -1-, -2- and -3-.

 **Note**

The illustration shows the Generation II steering gear fasteners.

The Generation III steering gear is repaired and serviced the same way as the Generation II steering gear.

For additional information on Generation II and III steering gear, refer to ⇒ ["2.4 Steering Gear Assembly Overview", page 254](#) .



2 Description and Operation

⇒ ["2.1 Steering Column, Handling and Transporting", page 250](#)

⇒ ["2.2 Steering Wheel with Airbag Assembly Overview", page 252](#)

⇒ ["2.3 Steering Column and Mounting Bracket with Frequency Damper Assembly Overview", page 253](#)

⇒ ["2.4 Steering Gear Assembly Overview", page 254](#)

2.1 Steering Column, Handling and Transporting

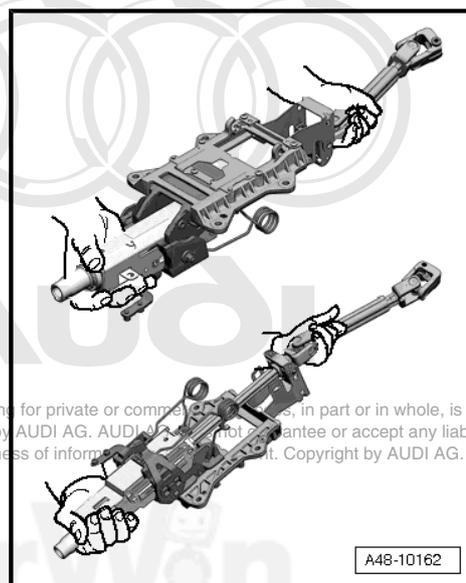


WARNING

- ◆ *The correct handling of the steering column must always be observed.*
- ◆ *Incorrect handling of steering column may cause damage to steering column and therefore lead to a safety risk.*

Correct Handling and Transport of Steering Column

- ◆ Transport steering column with two hands.
- ◆ Hold steering column at upper steering rod tube and in area of upper universal joint.



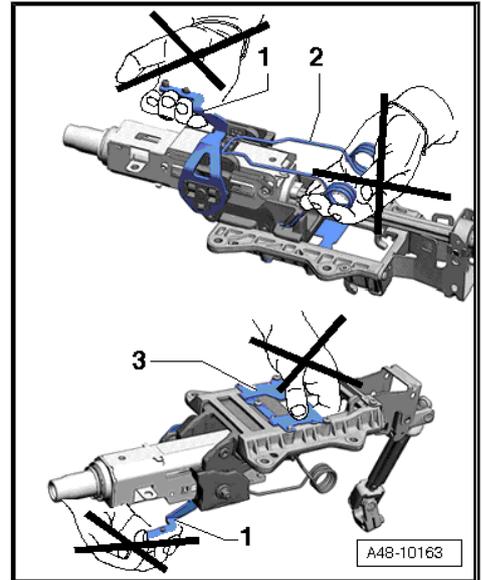
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Incorrect Handling of Steering Column

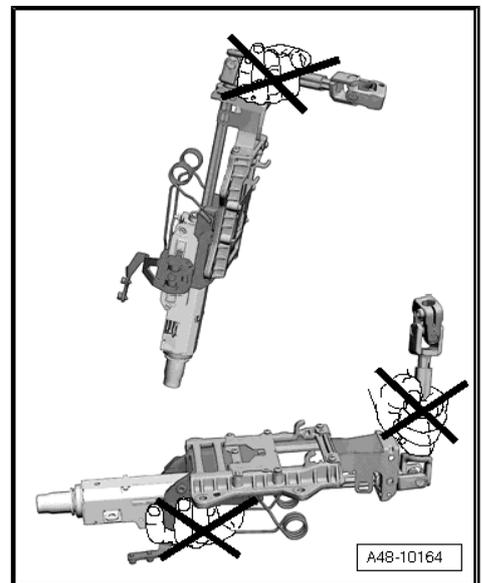
Transporting at the following components leads to pre-damage to steering column:

- 1 - Clamping lever.
- 2 - Weight compensation springs.
- 3 - Deformation element.



Damage to universal joint bushings on lower steering column bushing due to:

- ◆ Holding and carrying the steering column with a hand on the connecting shaft.
- ◆ Bending joints more than 90°.



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2.2 Steering Wheel with Airbag Assembly Overview

1 - Airbag Spiral Spring/Return Spring With Slip Ring -F138-

- ❑ Removing and installing, refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Removal and Installation .

2 - Steering Wheel with Airbag

- ❑ Removing and installing, refer to ⇒ ["5.1 Steering Wheel with Airbag", page 258](#) .
- ❑ Various versions. Allocation, refer to the Electronic Parts Catalog (ETKA).

3 - Bolt

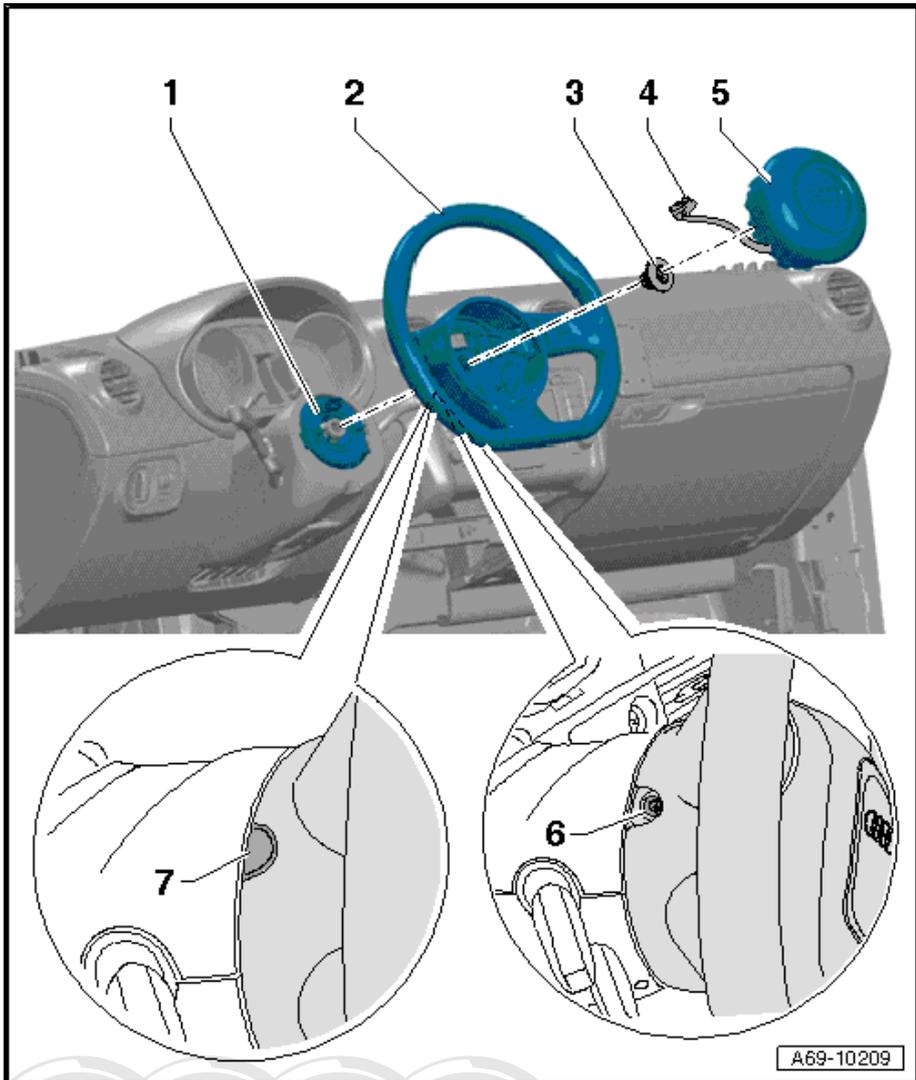
- ❑ 50 Nm
- ❑ Always replace if removed.

4 - Harness Connector

- ❑ For airbag spiral spring/return spring with slip ring.
- ❑ Replacing, refer to ⇒ Body Interior; Rep. Gr. 69 ; Removal and Installation .

5 - Airbag Unit

- ❑ With Driver's Airbag Igniter -N95- and Driver's Airbag Igniter 2 -N250- .



A69-10209



WARNING

Follow safety precautions when working on airbag ⇒ Body Interior; Rep. Gr. 69 ; General Information .

- ❑ Removing and installing, refer to ⇒ Body Interior; Rep. Gr. 69 ; Removal and Installation .

6 - Bolt

- ❑ Tightening specifications, refer to ⇒ Body Interior; Rep. Gr. 69 ; Description and Operation .

7 - Sealing Cap

- ❑ Quantity: 2
- ❑ For airbag unit bolt.

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2.3 Steering Column and Mounting Bracket with Frequency Damper Assembly Overview

1 - Central Tube

2 - Mounting Bracket

- Removing and installing, refer to ⇒ ["5.3 Mounting Bracket with Frequency Damper"](#), page 262 .

3 - Bolt

- Tightening specifications, refer to ⇒ Body Interior; Rep. Gr. 70 ; Description and Operation .

4 - Bolt

- Tightening specifications, refer to ⇒ Body Interior; Rep. Gr. 70 ; Description and Operation .

5 - Steering Column

- Removing and installing, refer to ⇒ ["5.2 Steering Column"](#), page 259 .

6 - Bolt

- 20 Nm
- Always replace if removed.

7 - Bolt

- 20 Nm

8 - Bolt

- 20 Nm
- Always replace if removed.

9 - Support

- Installed on vehicles with knee airbags.

10 - Support

- Installed on vehicles with knee airbags.

11 - Bolt

- 20 Nm + 90° turn
- Always replace if removed.

12 - Brace

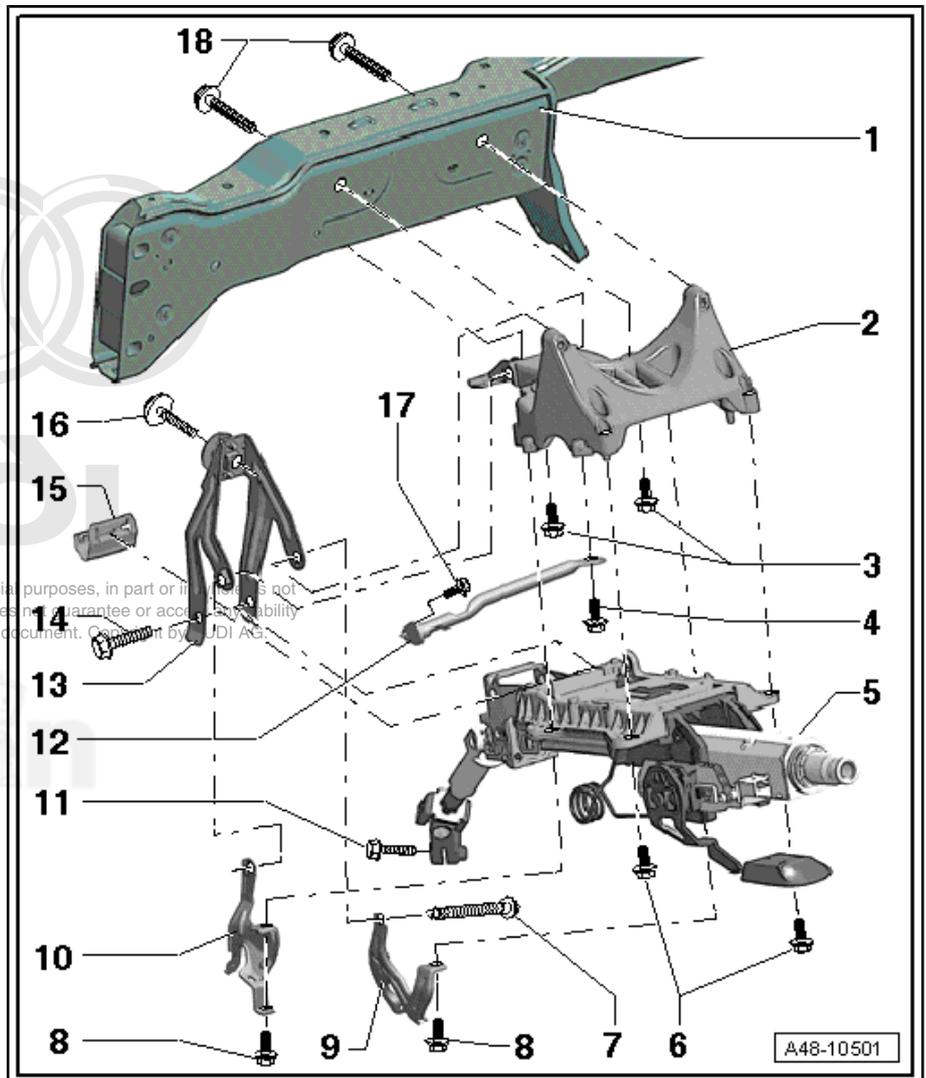
- Installed on the Roadster.

13 - Strut

- Removing and installing, refer to ⇒ ["5.3 Mounting Bracket with Frequency Damper"](#), page 262 .

14 - Bolt

- 9 Nm
- Clip the support -15- onto the steering column before installing.



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15 - Support

- Clip onto the steering column.

16 - Bolt

- Tightening specifications, refer to => Body Interior; Rep. Gr. 70 ; Description and Operation .

17 - Bolt

- Tightening specifications, refer to => Body Interior; Rep. Gr. 70 ; Description and Operation .

18 - Bolt

- Tightening specifications, refer to => Body Interior; Rep. Gr. 70 ; Description and Operation .

2.4 Steering Gear Assembly Overview

1 - Universal Joint

2 - Bolt

- 20 Nm + 90° turn
- Always replace if removed.

3 - Electrical Wiring

4 - Steering Gear

- Removing and installing, refer to => ["5.4 Steering Gear", page 263](#) .
- Various versions. Allocation, refer to the Electronic Parts Catalog (ETKA).
- When converting from Generation II steering gear to Generation II, the electrical wire -3- must also be replaced.
- With power steering control module -J500- .
- Can be tested in "Guided Fault Finding" using the Vehicle Diagnosis, Testing and Information system -VAS 5051B- .

5 - Wheel Bearing Housing

6 - Nut

- 20 Nm + 90° turn
- Always replace if removed.

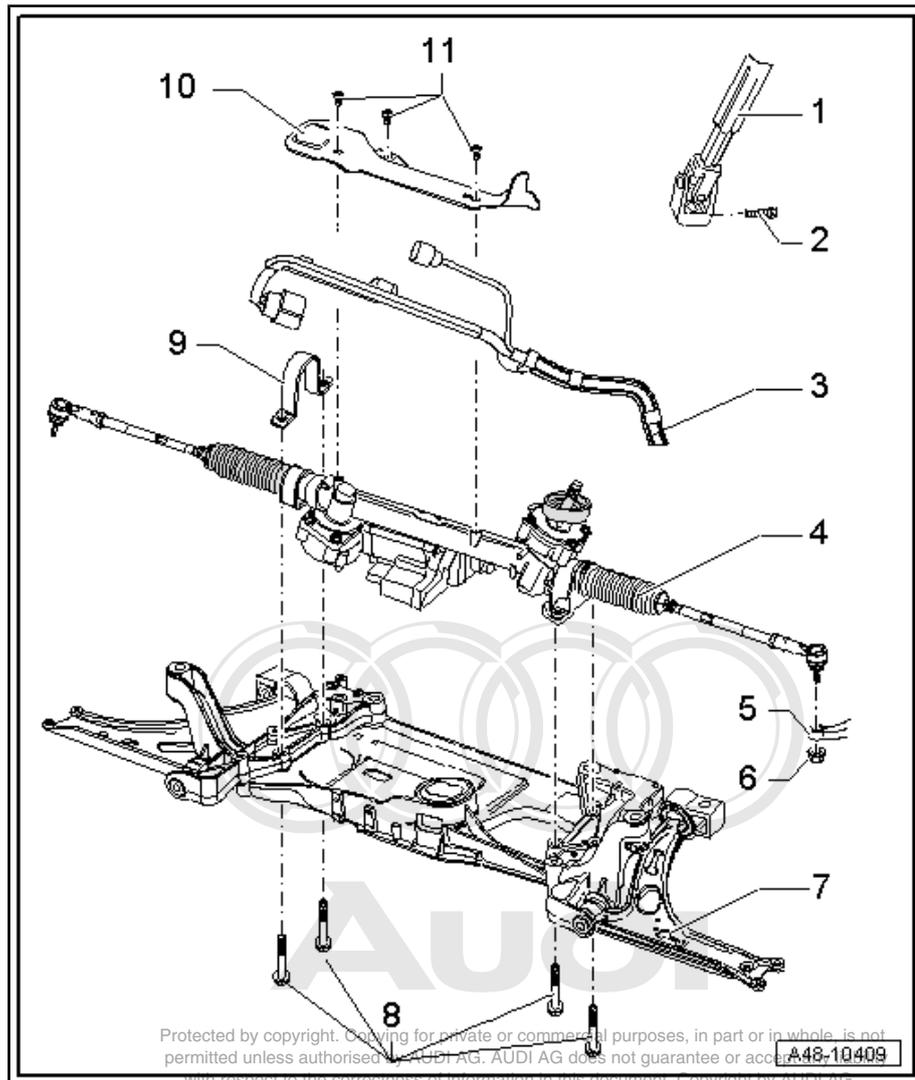
7 - Subframe with Brackets

8 - Bolt

- 50 Nm + 90° turn
- Always replace if removed.
- Three bolts installed with the Generation III steering gear.

9 - Clamp with Nuts

- Removing and installing, refer to => ["5.7 Generation II Steering Gear Bonded Rubber Bushing", page 273](#) .



- Always replace if removed.
- Only installed with Generation II steering gear.

10 - Shield

11 - Bolt

- 6 Nm



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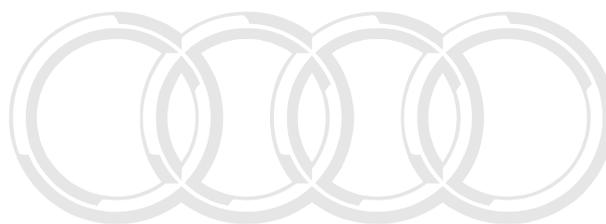
3 Specifications

⇒ "3.1 Fastener Tightening Specifications", page 256

3.1 Fastener Tightening Specifications

Component	Fastener Size	Nm
Shield to Steering Gear Bolt	-	6
Steering Column to Mounting Bracket Bolt	-	20
Steering Column to Steering Gear Bolt ¹	-	20 + 90° turn
Steering Gear to Subframe Bolt ¹	-	50 + 90° turn
Steering Wheel to Steering Column Bolt ¹	-	50
Strut to Steering Column Bolt	-	9
Tie Rod to Steering Gear	-	100
Tie Rod End to Tie Rod Nut	-	50
Tie Rod End to Wheel Bearing Housing Nut ¹	-	20 + 90° turn

- ¹ Always replace after removal.



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4 Diagnosis and Testing

⇒ **“4.1 Steering Column, Checking for Damage”, page 257**

4.1 Steering Column, Checking for Damage

Visual Check

- Check whether parts of steering column indicate damage.

Functional Check

- ~~Check whether steering column can be turned without catching or difficulty of movement.~~
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- Check that the steering column can be adjusted with respect to height and reach.

5 Removal and Installation

⇒ [“5.1 Steering Wheel with Airbag”, page 258](#)

⇒ [“5.2 Steering Column”, page 259](#)

⇒ [“5.3 Mounting Bracket with Frequency Damper”, page 262](#)

⇒ [“5.4 Steering Gear”, page 263](#)

⇒ [“5.5 Boot”, page 268](#)

⇒ [“5.6 Tie Rod”, page 270](#)

⇒ [“5.7 Generation II Steering Gear Bonded Rubber Bushing”, page 273](#)

⇒ [“5.8 Sensor Wire”, page 274](#)

⇒ [“5.9 Hydraulic Thrust Piece, Removing, Installing and Replacing”, page 278](#)

⇒ [“5.10 Thrust Piece, Steering Pinion Side, Removing, Installing and Adjusting”, page 282](#)

⇒ [“5.11 Steering Pinion with Steering Torque Sensor”, page 287](#)

5.1 Steering Wheel with Airbag

Removing

- Set the wheels to the straight ahead position.
- Position steering wheel as far back as possible. Use entire steering column adjustment range to do this.
- Remove airbag unit. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Removal and Installation .



Note

Removal and installation of steering wheel must take place in center position (wheels in straight-ahead position).

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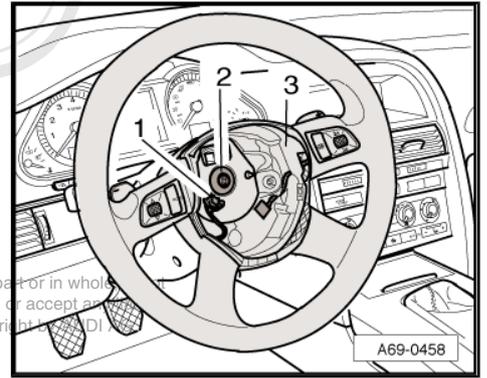
- Remove bolt -2-.
- Mark position of steering wheel/column with a felt-tip pen.
- Remove steering wheel -3- from steering column.

Installing

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

Before positioning steering wheel, make sure wheels are in straight position.

- When installing removed steering wheel: Make sure that markings on steering column/wheel align.
- When installing a new steering wheel (without marking): Steering wheel must be position in center position (steering wheel spoke must be horizontal and wheels in straight-ahead position).
- Install steering wheel.
- Install airbag unit. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Removal and Installation .
- Perform road test.
- If steering wheel is crooked, remove it again and rotate it on steering column splines.



5.2 Steering Column

Removing

The steering column is delivered only as a complete replacement part. Service is not possible.

The steering lock housing can be transferred. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Removal and Installation .

 **WARNING**

Before starting work on electrical equipment and removing steering wheel, the following conditions must be fulfilled:

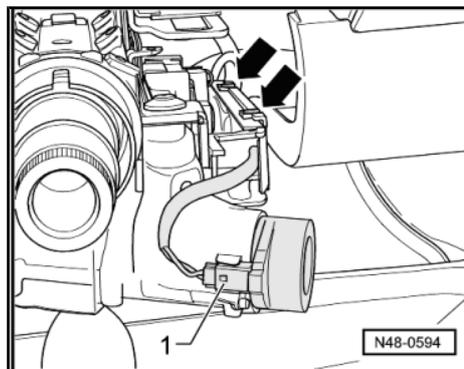
- ◆ *Disconnect the battery ground cable. Refer to ⇒ Rep. Gr. 27 .*
- ◆ *The wheels must be in the straight-ahead position.*

If these notes are not observed, the airbag system may not function properly during vehicle operation!

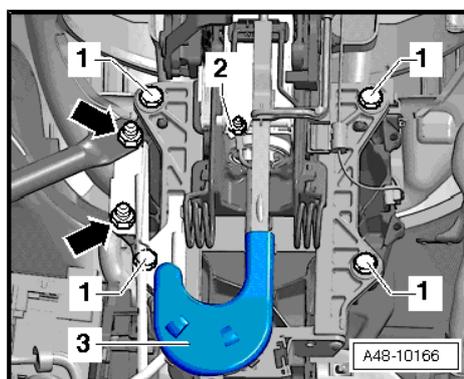
- Set the wheels to the straight ahead position.
- Pull lever downward beneath steering column.
- Bring steering column downward as far as possible and pull out.
- Remove airbag unit. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Removal and Installation .
- Remove the airbag steering wheel. Refer to ⇒ ["5.1 Steering Wheel with Airbag", page 258](#) .
- Remove the steering column switch trim. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Removal and Installation .
- Remove storage compartment on driver side. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Removal and Installation .



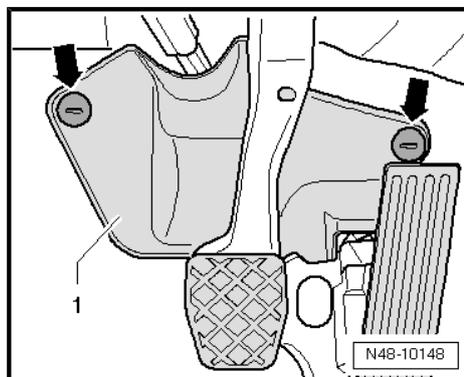
- Remove the driver side knee airbag if installed. Refer to => Body Interior; Rep. Gr. 69 ; Removal and Installation .
- Remove the steering column switch. Refer to => Electrical Equipment; Rep. Gr. 94 ; Removal and Installation .
- Disconnect the harness connector -1-.
- Free up the cable guide -2-.
- Remove the footwell vent underneath the steering column. Refer to => Heating, Ventilation and Air Conditioning; Rep. Gr. 80 ; Removal and Installation .



- Disconnect ground wire -2- from steering column.
- Unclip the cable guide -3-.
- Disconnect and free up all electrical connectors on steering column.



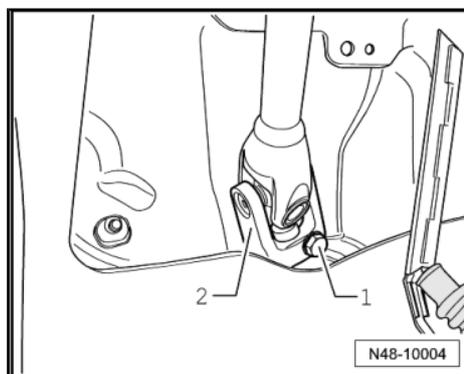
- Remove the nuts -arrows- and the steering column universal joint cover -1-.



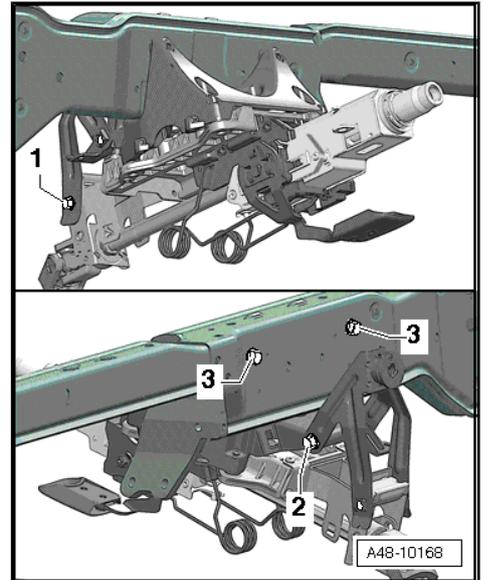
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- Remove the bolt -1- and pull off universal joint -2- from steering gear.
- Remove the left and right knee airbag supports if installed. Refer to => Body Interior; Rep. Gr. 69 ; Removal and Installation .



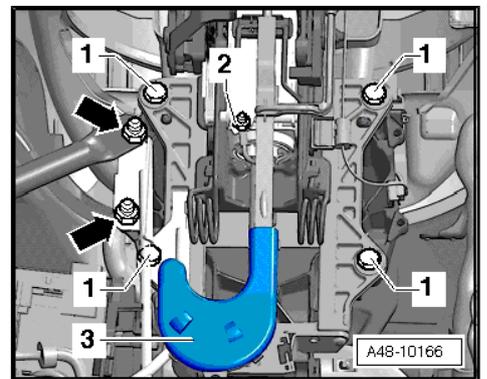
- Remove bolt -1-.



- First remove fuse panel screws -arrow-, then bolts -1-.
- Lower steering column slightly and carefully pull out upward.

 **Caution**

Pay particular attention to the correct handling and transport of the steering column
 ⇒ ["2.1 Steering Column, Handling and Transporting", page 250](#).



- Carefully remove steering column upward.

Installing

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

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Refer to ⇒ ["2.1 Steering Column, Handling and Transporting", page 250](#).

Tightening specifications, refer to ⇒ ["2.3 Steering Column and Mounting Bracket with Frequency Damper Assembly Overview", page 253](#).

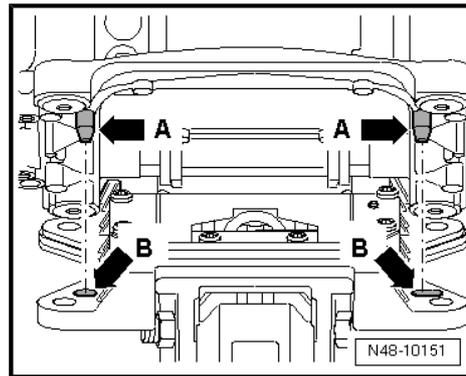
- Engage steering column into assembly aid on mounting bracket.

- Align steering column to mounting bracket and install.

When doing this, pins -arrows A- of mounting bracket and holes -arrows B- of steering column must be positioned toward each other and inserted into one another.

Only in this way is the correct installation position of steering column to mounting bracket guaranteed.

- Install the left and right knee airbag supports if installed. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Removal and Installation .
- Install the steering column switch. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Removal and Installation .
- Install the steering column switch trim. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Removal and Installation .
- Remove the footwell vent underneath the steering column. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 80 ; Removal and Installation .
- Install the driver side knee airbag if installed. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Removal and Installation .
- Install the driver side storage compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Removal and Installation .
- Installing steering wheel. Refer to ⇒ ["5.1 Steering Wheel with Airbag", page 258](#) .
- Install the airbag in the steering wheel. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Removal and Installation .
- Calibrate Steering Angle Sensor -G85- with Vehicle Diagnosis, Testing and Information System -VAS 5051B- . Refer to ⇒ ["1.5 Wheel Alignment", page 230](#)



After the following assembly work, the steering angle sensor must be calibrated.

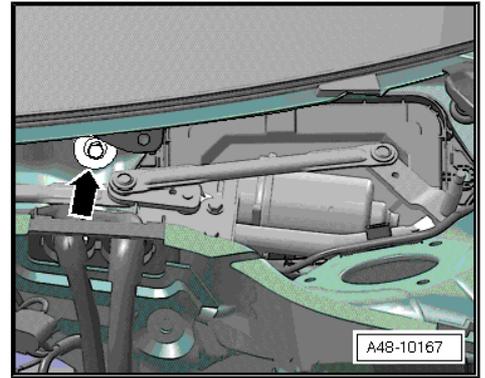
- ◆ When the steering angle sensor has been removed or replaced.
- ◆ After removing or replacing steering column.
- ◆ After removing or replacing steering column switch.
- ◆ After removing or replacing steering lock housing.
- ◆ If the steering wheel was offset.
- ◆ After removing or replacing coil spring with slip ring (spiral spring).
- ◆ After removing or replacing steering column electronics control module.

5.3 Mounting Bracket with Frequency Damper

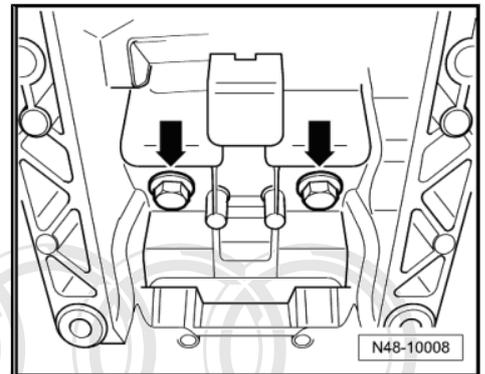
Removing

- Remove steering column. Refer to ⇒ ["5.2 Steering Column", page 259](#) .
- Remove plenum chamber cover. Refer to ⇒ Body Exterior; Rep. Gr. 50 ; Removal and Installation .

- Remove bolt -arrow- in plenum chamber.



- Remove bolts -arrows-.



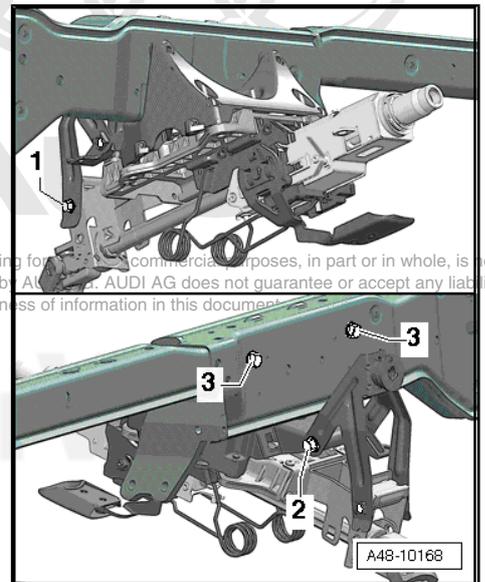
- Remove bolts -3-.
- Mounting bracket with frequency damper can now be removed from body.

Installing

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

Tightening specifications, refer to
 ⇒ ["2.3 Steering Column and Mounting Bracket with Frequency Damper Assembly Overview", page 253](#)

- Install steering column, refer to
 ⇒ ["5.2 Steering Column", page 259](#) .
- Install plenum chamber cover. Refer to ⇒ Body Exterior; Rep. Gr. 50 ; Removal and Installation .



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5.4 Steering Gear

Special tools and workshop equipment required

- ◆ Ball joint puller -3287 A-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Engine/transmission jack -V.A.G 1383 A-
- ◆ Locating pins -T10096-
- ◆ Vehicle diagnosis, testing and information system -VAS 5051B-

Removing



Note

The steering gear is removed together with the subframe, stabilizer bar and transverse links.

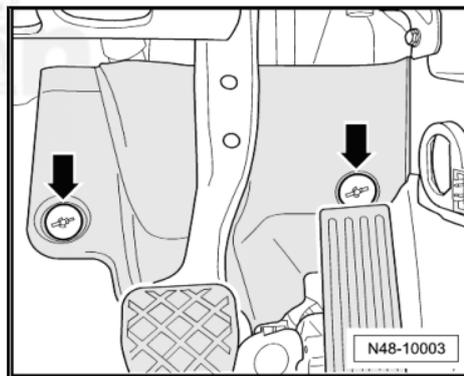


WARNING

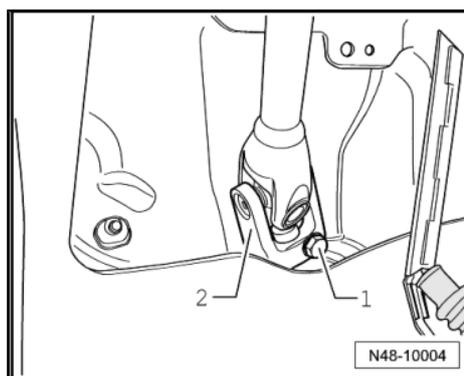
Before starting work on electrical equipment and removing steering wheel, the following conditions must be fulfilled:

- ◆ Disconnect the battery ground cable. Refer to ⇒ *Electrical Equipment; Rep. Gr. 27 ; Removal and Installation* .
- ◆ The wheels must be in the straight-ahead position.

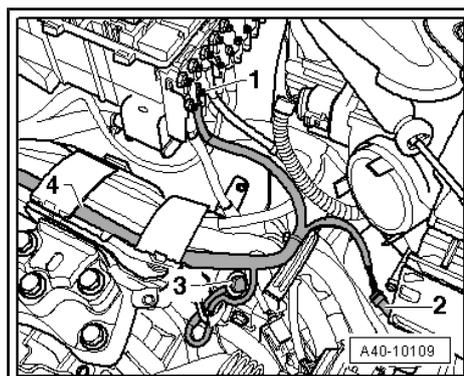
- Set the wheels to the straight ahead position.
- Disconnect the battery. Refer to ⇒ *Electrical Equipment; Rep. Gr. 27 ; Removal and Installation* .
- Remove the nuts -arrows- and the steering column universal joint cover.



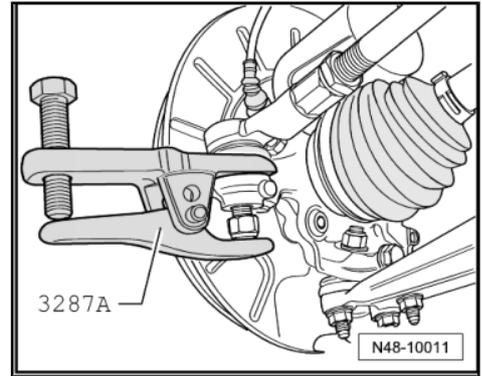
- Remove the bolt -1- and remove the universal joint -2- from the steering gear.



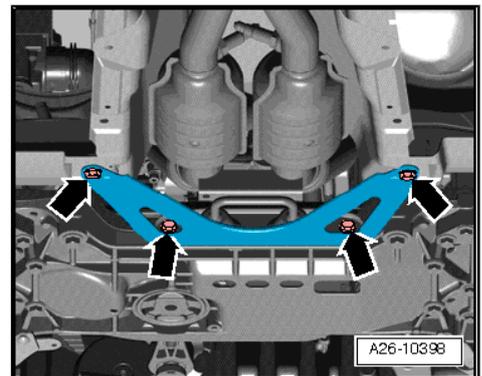
- Disconnect connector -2-, remove electrical wires -1- and -3-.
- Unclip wiring harness -4- from wiring shaft.
- Remove the front wheels.
- Remove lower noise insulation. Refer to ⇒ *Body Exterior; Rep. Gr. 66 ; Removal and Installation* .
- Remove noise insulation frame. Refer to ⇒ *Body Exterior; Rep. Gr. 50 ; Removal and Installation*
- Loosen tie rod end nut, but do not remove yet.



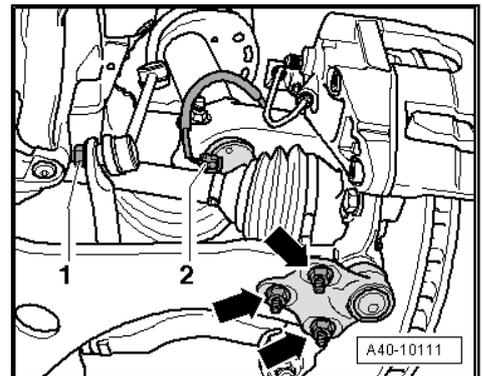
- Press tie rod end off of wheel bearing housing using -3287 A- .



- Remove exhaust system bracket bolts -arrows-.

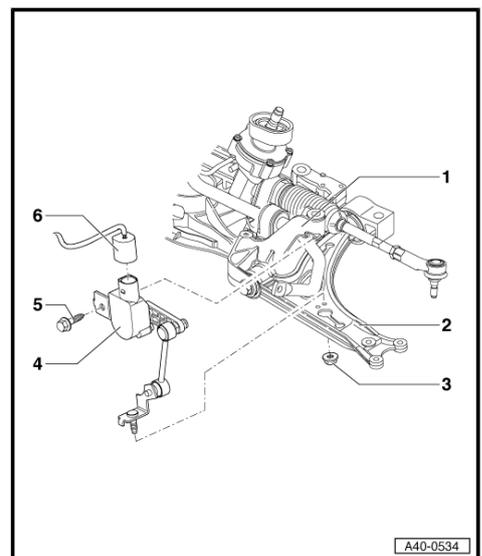


- Remove nut -1-.

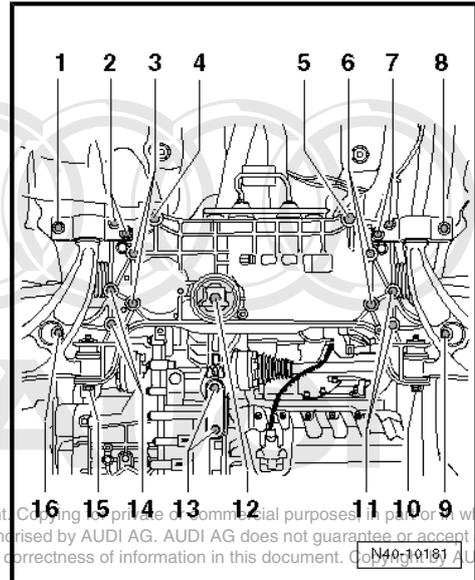


- On vehicles with level control system sensor, remove nut -3- and disconnect connector -6-.

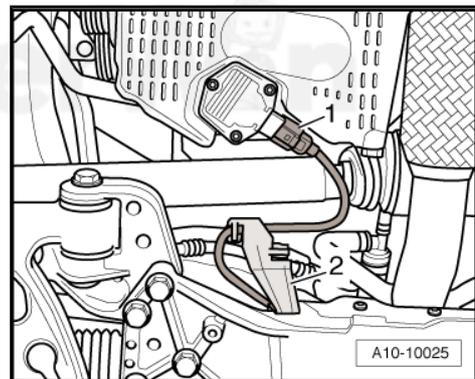
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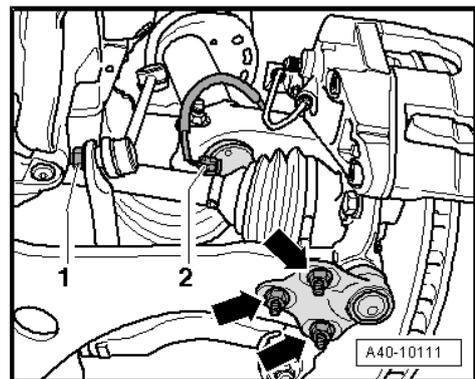
- Remove pendulum support from transmission, unscrew bolts -13- to do so.



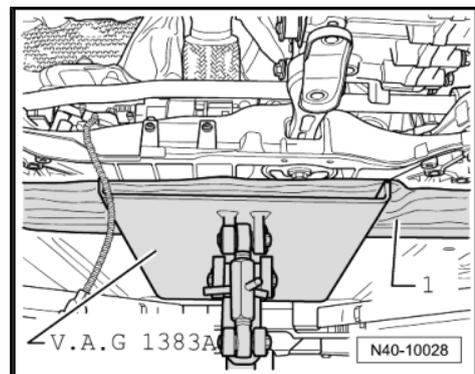
- Disconnect Oil Level Thermal Sensor -G266- connector -1- and unclip electrical wire from bracket -2-.



- Mark location of nuts -arrows- on left and right sides of vehicle using a felt-tip pen.
- Remove the nuts -arrows- on left and right side of vehicle.
- Remove transverse link from ball joint.
- Subframe, locating, refer to [⇒ "2.4 Subframe, Securing", page 16](#) .



- Place -V.A.G 1383 A- with wood blocks -1- under subframe and apply slight counterpressure.

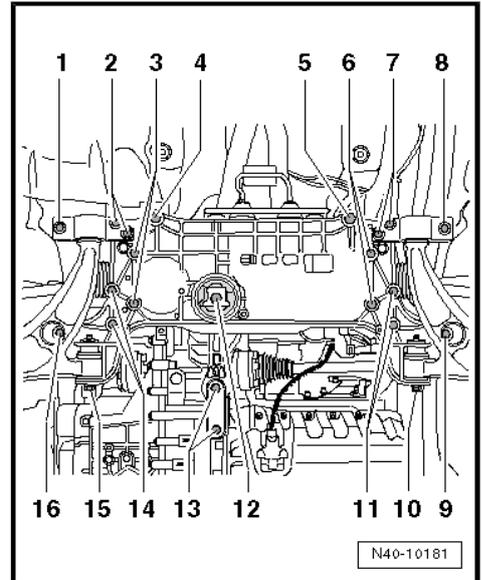


- Remove bolts -4- and -5-.
- Lower subframe with attachments.

 **Note**

When lowering, ensure the electrical wires have enough clearance.

- Remove wiring guide from subframe.
- Remove heat shields from steering gear.



- Remove steering gear bolts -3- and -6-.
- Remove steering gear from subframe.

Installing

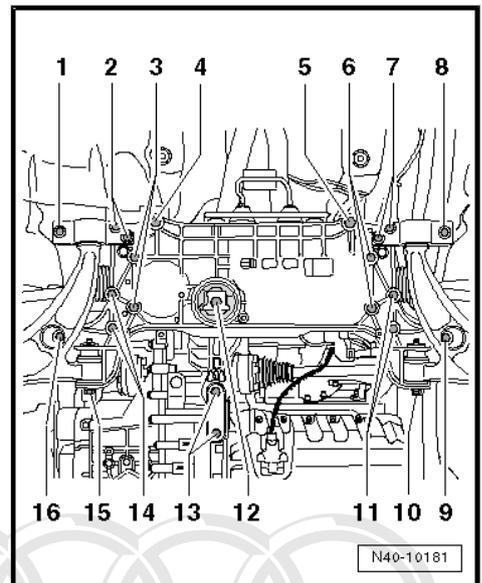
Installation is the reverse of removal, with special attention to the following:

Tightening specifications, refer to
 ⇒ ["2.3 Subframe, Stabilizer Bar, Transverse Link, Ball Joint and Level Control System Sensor Assembly Overview", page 14](#) .

Tightening specifications, refer to
 ⇒ ["2.4 Steering Gear Assembly Overview", page 254](#) .

The steering gear threaded sleeves must be seated in the subframe holes.

Clamp with nuts must be replaced after each removal.



 **Note**

- ◆ *Coat seal on steering gear with lubricant, e.g. soft soap, before installing steering gear.*
- ◆ *After attaching steering gear to drive axle, make sure that seal on steering gear is positioned to mounting plate without kinks and opening to foot well is sealed correctly. Ingress of water and/or noises may be the result.*
- ◆ *Make sure sealing surfaces are clean.*

 **Note**

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

- Replace locking element after each removal.

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- Align nuts -arrows- according to markings made earlier and tighten.
- Install noise insulation frame. Refer to ⇒ Body Exterior; Rep. Gr. 50 ; Removal and Installation .
- Install noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- Connect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Removal and Installation .

Applies to Vehicles with Generation II Steering Gear

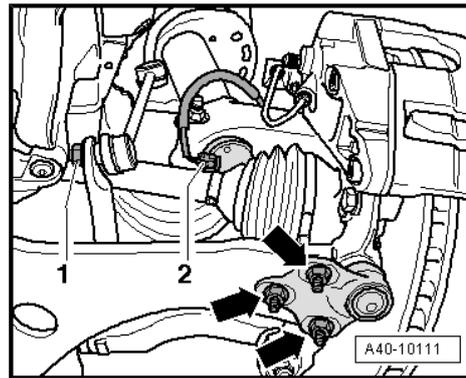
If a new steering gear was installed, the power steering control module -J500- must be programmed with the -VAS 5051B- and the characteristic lines must be downloaded in "Guided Fault Finding".

Applies to Vehicles with Generation III Steering Gear

If new steering box was installed, the power steering control module -J500- must be adapted with the -VAS 5051B- in "Guided Fault Finding".

Affects All Vehicles

- Vehicle alignment required, see table. Refer to ⇒ ["1.5 Wheel Alignment", page 230](#) .
- On vehicles with electronically-controlled damping (Audi magnetic ride), reprogram control position using the -VAS 5051B-
- On vehicles with automatic headlamp range control, perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Diagnosis and Testing .
- If a vehicle alignment was performed, calibrate steering angle sensor -G85- with -VAS 5051B- . Refer to ⇒ ["1.5 Wheel Alignment", page 230](#) .



5.5 Boot

Special tools and workshop equipment required

- ◆ Locking pliers -VAS 6199-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Hose clamp pliers -V.A.G 1275-
- ◆ Vehicle Diagnosis, Testing and Information System -VAS 5051B-

Removing



Note

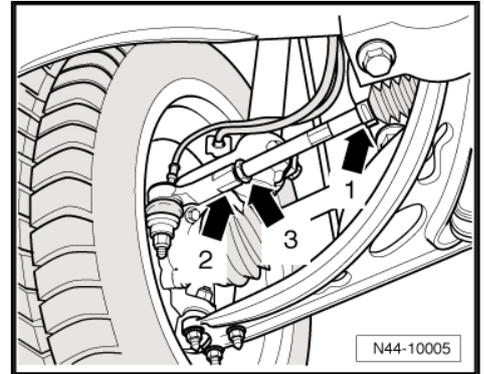
If bellows is faulty, moisture and dirt penetrates into steering gear. There must be a noticeable grease film present on steering rack in area of splines. If grease film is not present, steering gear must be replaced. Steering gear must also be replaced if there is corrosion or steering gear is damaged or worn out.

- Turn steering wheel into straight ahead position.
- Remove the wheel.
- Clean outside of steering gear in area of bellows.

 **Note**

While doing this, no dirt must enter the steering gear through the faulty bellows.

- Mark position of nut -3- on tie rod.
- Loosen nut -3-, counterhold on tie rod end -2- while doing this.
- Loosen spring clamp -1- using -V.A.G 1275- from bellows and slide onto tie rod.
- Remove clamp and pull off bellows from steering gear housing.
- Now twist tie rod out of tie rod end.
- Pull off bellows with spring clamp from tie rod.



 **Note**

- ◆ *If corrosion, damage, wear-out or first signs of soiling on steering rack can be seen, complete steering gear must be replaced.*
- ◆ *If no grease film is visible on steering rack, steering gear must also be replaced completely.*

Installing

Before installing, steering rack must be coated with grease -G 052 192 A1- supplied in repair set.



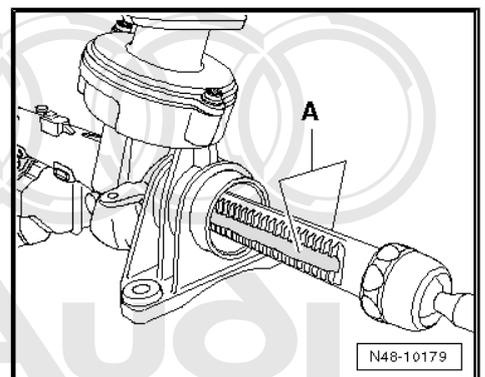
Caution

Do not use other grease under any circumstances.

For this purpose, turn steering to stop toward both sides in succession.

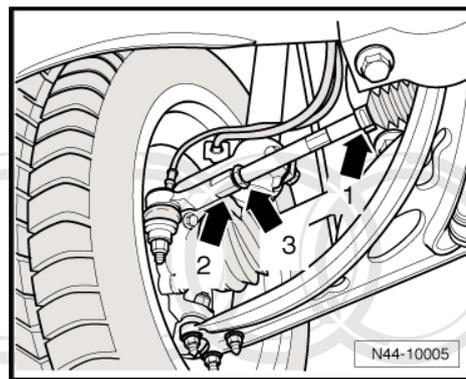
For clearer illustration, steering gear has been removed in the illustration.

- Grease steering rack on toothed side -A- and on thrust piece side with grease -G 052 192 A1- .
- Turn steering wheel into straight ahead position.
- Guide new clamp and bellows onto tie rod.
- Install the tie rod up to the marking made during removal.

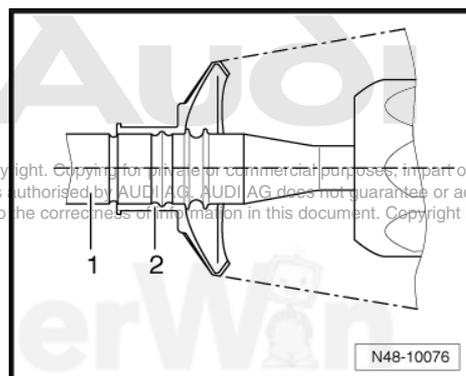


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- Tighten lock nut -3- to tightening specification, counterhold on tie rod end -2- while doing this.



- Slide bellows -2- onto tie rod -1- as depicted in the illustration.
- Secure spring clamp on bellows using -V.A.G 1275- .
- Slide bellows onto steering gear housing.



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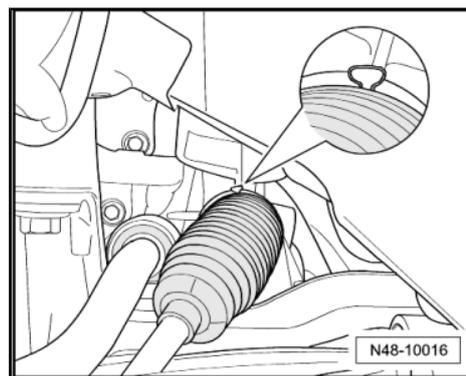
- Tighten new clamp using -VAS 6199- to the extent depicted in the illustration.

Further installation is in the reverse sequence to removal.

Tightening specifications, refer to
 => ["6.1 Steering Gear", page 291](#) .

After the installation the vehicle must be measured.

- Perform vehicle alignment. Refer to
 => ["1.5 Wheel Alignment", page 230](#) .
- Perform basic setting for steering angle sensor -G85- via -VAS 5051B- in "Guided Fault Finding".
- Perform a basic setting and program the steering on vehicles with Generation II steering gear via -VAS 5051B- in "Guided Fault Finding".



5.6 Tie Rod

Special tools and workshop equipment required

- ◆ Ball joint puller -3287 A-
- ◆ Hose clamp pliers -V.A.G 1275-
- ◆ Torque wrench -V.A.G 1332-
- ◆ 38 mm open end wrench insert -V.A.G 1923-
- ◆ Locking pliers -VAS 6199-

Removing

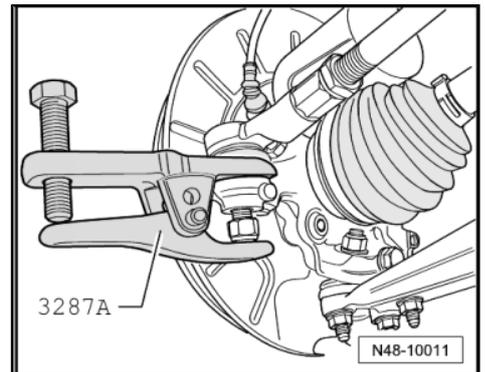
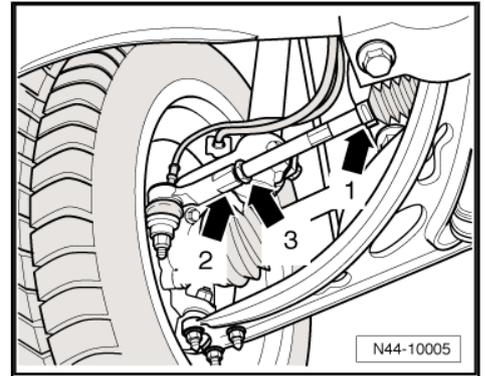
- Turn steering wheel into straight ahead position.
- Clean outside of steering gear in area of bellows.

- Loosen nut -3-, counterhold on tie rod end -2- while doing this.
- Remove front wheel.
- Loosen nut of track rod ball joint, but do not unscrew yet.

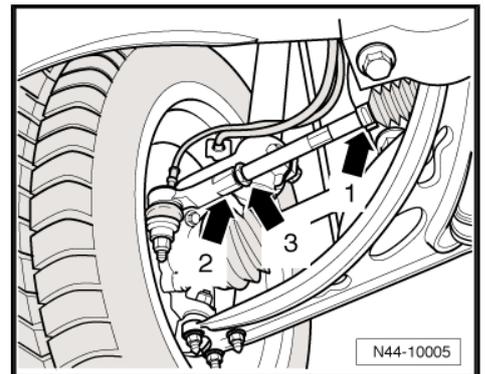
 **Note**

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

- Press off track rod ball joint from wheel bearing housing using -3287 A- and now unscrew nut.



- Loosen spring clamp -1- using -V.A.G 1275- from bellows and slide onto tie rod.
- Remove clamp and pull off bellows from steering gear housing.



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- Remove the tie rod from steering gear using -V.A.G 1923- .



Note

- ◆ *If corrosion, damage, wear-out or first signs of soiling on steering rack can be seen, complete steering gear must be re-placed.*
- ◆ *If no grease film is visible on steering rack, steering gear must also be replaced completely.*

Installing tie rod

Before installing, steering rack must be coated with grease -G 052 192 A1- supplied in repair set.



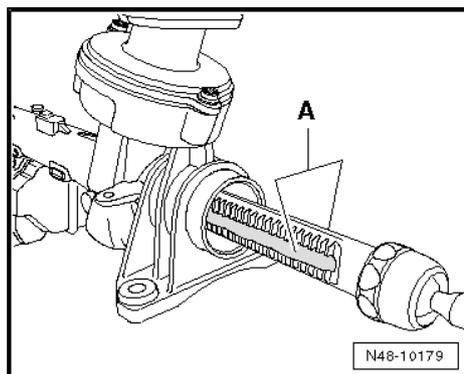
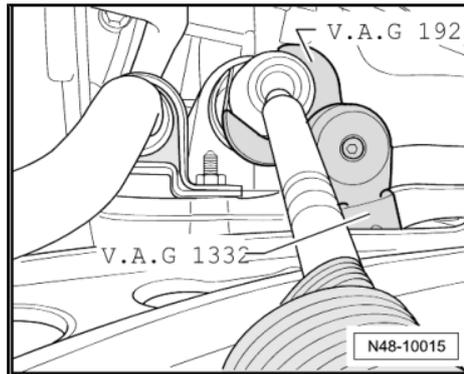
Caution

Do not use other grease under any circumstances.

For this purpose, turn steering to stop toward both sides in succession.

For clearer illustration, steering gear has been removed in the illustration.

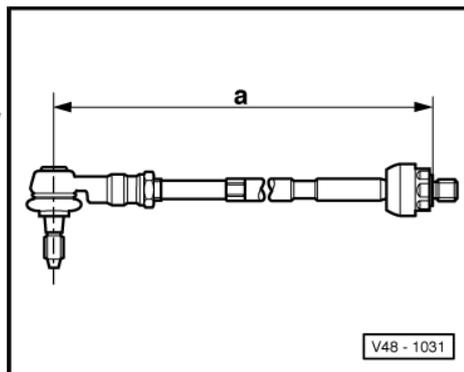
- Grease steering rack on toothed side -A- and on thrust piece side with grease -G 052 192 A1- .
- Turn steering wheel into straight ahead position.



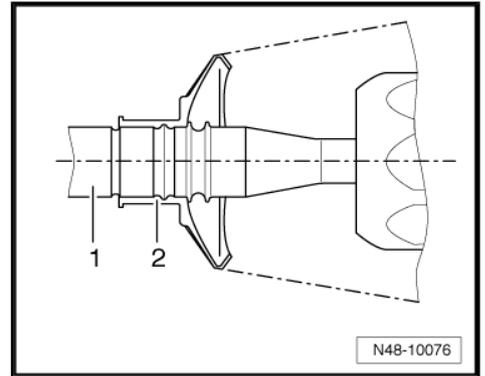
- Twist tie rod far enough into tie rod end until dimension -a- is obtained.

Dimension **a = 390 +/- 1 mm**

- Guide new clamp and bellows onto tie rod.
- Twist tie rod into steering gear and tighten to tightening specification.



- Slide bellows -2- onto tie rod -1-, pay attention to correct position when doing this.
- Slide bellows onto steering gear housing until it stops.



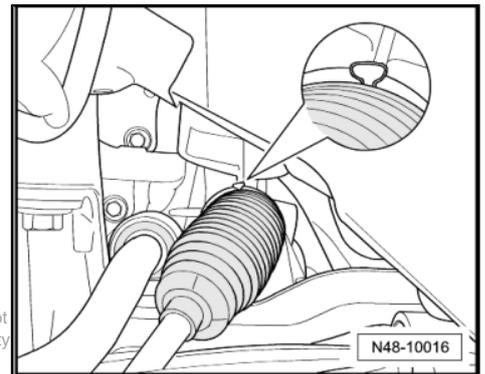
- Tighten new clamp using locking pliers -VAS 6199- to the extent depicted in the illustration.

Further installation is in the reverse sequence to removal.

Tightening specifications, refer to ⇒ ["6.1 Steering Gear", page 291](#) .

After the installation the vehicle must be measured.

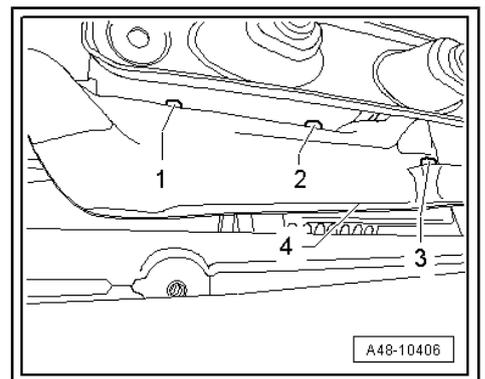
- Perform vehicle alignment. Refer to ⇒ ["1.5 Wheel Alignment", page 230](#) .
- Perform basic setting for steering angle sensor -G85- via -VAS 5051B- in "Guided Fault Finding".
- Perform a basic setting and program the steering on vehicles with Generation II steering gear via -VAS 5051B- in "Guided Fault Finding".



5.7 Generation II Steering Gear Bonded Rubber Bushing

Removing

- Remove lower noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Removal and Installation .
- Remove the bolts -2- and -3- and press the shield -4- up slightly.

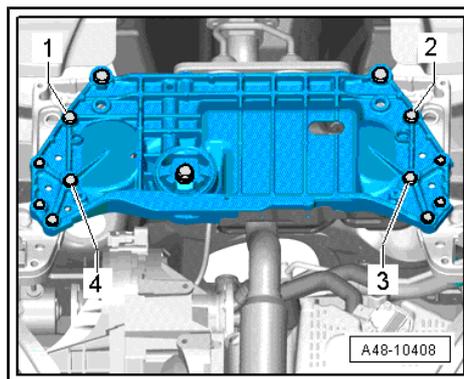




- Loosen the steering gear bolts -1- and -4- on the left side of the vehicle.
- Loosen the steering gear bolts -2- and -3- on the right side of the vehicle and remove them.

**Note**

The illustration shows a removed subframe with steering gear.



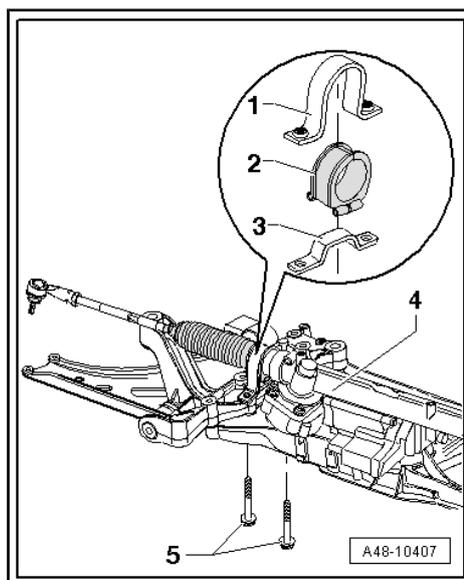
- Raise the steering gear -4- on the right side of the vehicle up slightly.
- Remove the clamp -1- and rubber bushing -2- with the bracket -3- from the steering gear.

Installing

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

Torque specifications, refer to

⇒ ["2.4 Steering Gear Assembly Overview", page 254](#) .

**5.8 Sensor Wire****Note**

Currently it is not possible to perform this repair.

Special tools and workshop equipment required

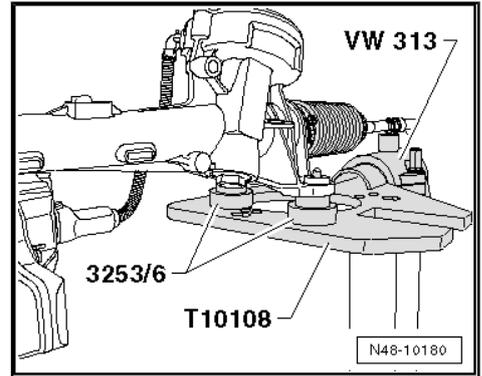
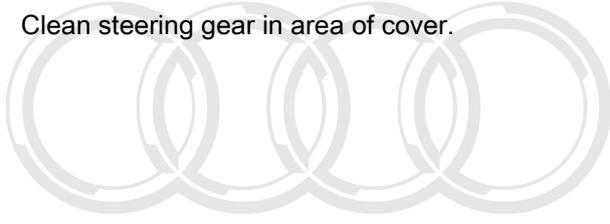
- ◆ Holding fixture -VW 313-
- ◆ Thrust piece -3253/6- qty. 2
- ◆ Torque wrench -V.A.G 1331-
- ◆ Locking pliers -VAS 6199-
- ◆ Transmission support -T10108-
- ◆ Adapter -T10304-
- ◆ Vehicle Diagnostic, Testing and Information System -VAS 5051B-
- ◆ 2 Bolts M10 x 60

Removing

- Remove steering gear. Refer to
⇒ ["5.4 Steering Gear", page 263](#) .

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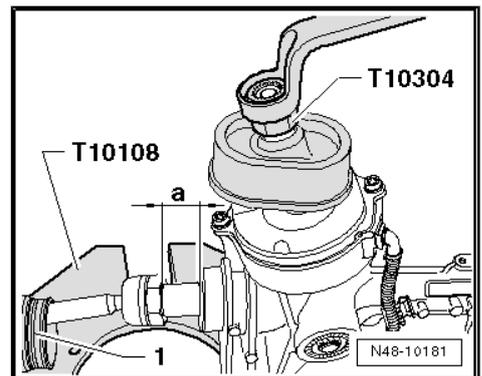
- Tension steering gear using 2 bolts M10 x 60 as depicted in the illustration.
- Clean steering gear in area of cover.



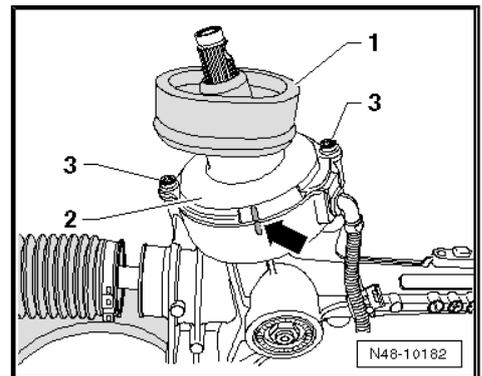
- Remove clamp for bellows at left -1- and pull off bellows from steering gear housing.

Turn steering into straight ahead position using **T10304**.
 For this purpose, dimension **a** = 25.5 mm.

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- Remove gasket -1- from cover -2-.
- Mark installation position of cover -2- to steering gear housing -arrow-.
- Remove cover -2-, unscrew bolts -3- to do this.



Prevent Contact with Electrical Components -arrow-!

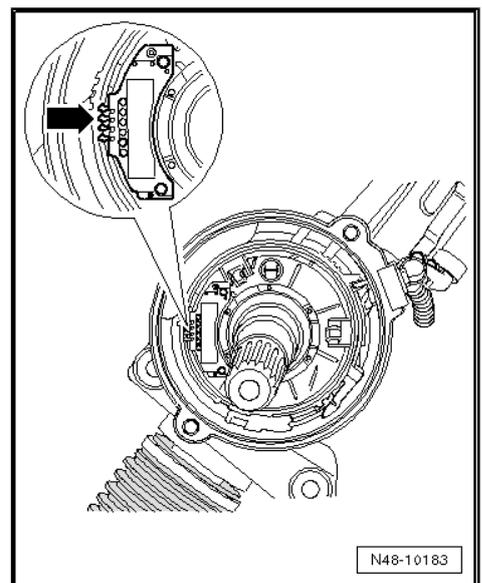
- Observe general repair notes for this. Refer to => ["1.1 General Repair Information", page 247](#)



Caution

During longer interruptions of work, cover the opened steering gear housing with e.g. foil to protect against moisture.

- Mark routing of sensor wire on steering gear housing.
- Unclip sensor wire on steering gear housing.



**Note**

A locking mechanism -arrow- for steering pinion spiral spring is located on sensor wire in steering gear housing. When removing sensor wire, make sure that spiral spring is twisted only as far until connector can be removed (twist a maximum of 30°).

- Now disconnect harness connector of sensor wire at steering pinion.

To do so, press connector terminal out of spiral spring housing in -direction of arrow- using a screwdriver (3 mm blade width) as depicted in the illustration.

- Pull locking mechanism in -direction of arrow- out of steering gear housing.
- Carefully pull sensor wire out of steering gear housing.

- Disconnect harness connector of sensor wire at power steering control module -J500- .
- To do so, press button -A- in -direction of arrow- and then disconnect connector.

Installing

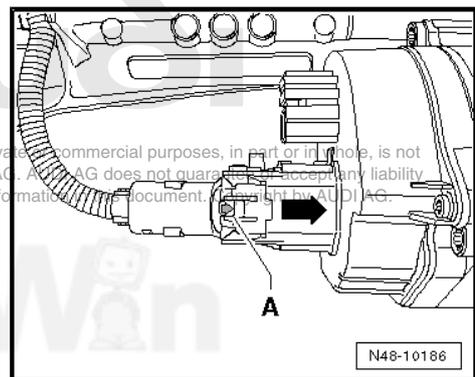
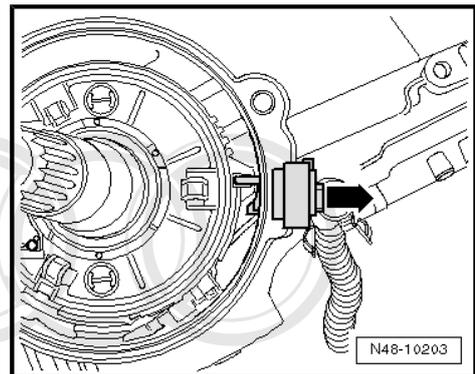
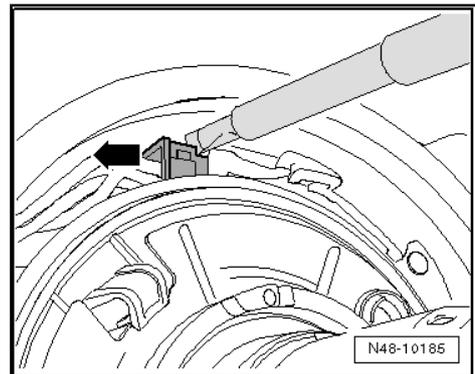
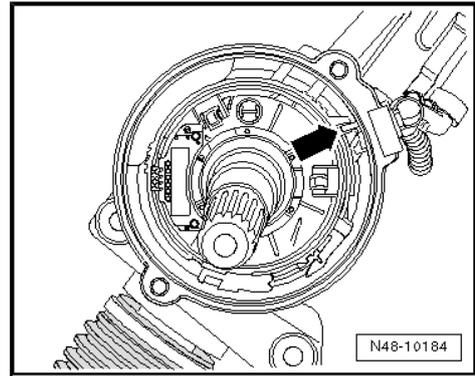
- Carefully guide sensor wire into steering gear housing.
- When doing this, insert connector terminal into housing of spiral spring, do not engage yet.

Connector terminal is coded and fits only in one direction.

**Note**

Twist spiral spring only as far until connector can be installed (maximum 30°).

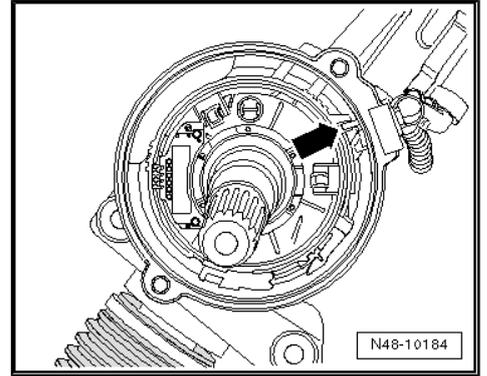
- Push locking mechanism into steering gear housing.



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While doing this, make sure locking mechanism engages correctly in plastic ring of sensor unit -arrow-.

- Now engage connector in spiral spring housing.



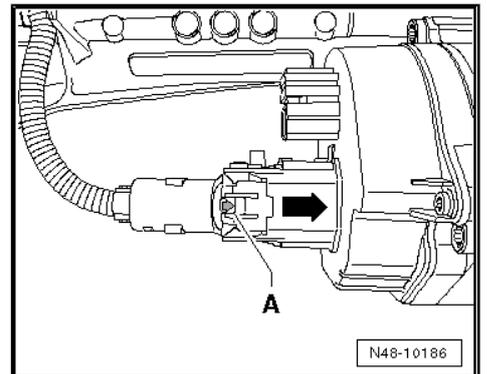
- Connect harness connector of sensor wire to power steering control module.

Connector must engage audibly.

- Clip sensor wire in on steering gear housing.

Pay attention to wire routing.

- Replace sealing ring on cover of steering pinion.



- Fill intermediate area above shaft oil seal in cover -arrow- completely with grease -G 052 192 A1- supplied.



Caution
Do not use other grease under any circumstances.

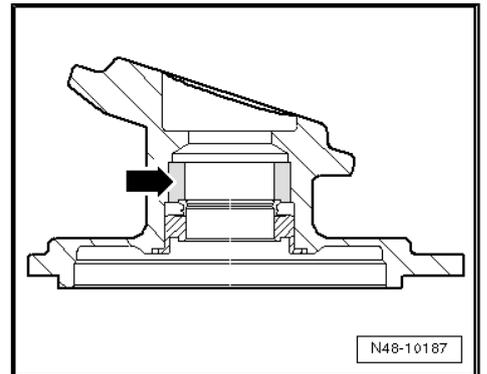
- Place cover on as marked during removal . Refer to [⇒ page 275](#) .
- Install new bolts and tighten them to the specification.

Tightening specifications, refer to [⇒ "6.1 Steering Gear", page 291](#) .

- Remove excess grease on cover of steering pinion and on steering pinion.

Further installation is in the reverse sequence to removal.

- Install steering gear. Refer to [⇒ "5.4 Steering Gear", page 263](#) .
- Perform vehicle alignment. Refer to [⇒ "1.5 Wheel Alignment", page 230](#) .
- Perform basic setting for steering angle sensor -G85- via -VAS 5051B- in "Guided Fault Finding".
- Then perform basic setting of steering system via -VAS 5051B- in "Guided Fault Finding".



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5.9 Hydraulic Thrust Piece, Removing, Installing and Replacing

Note

Currently it is not possible to perform this repair.

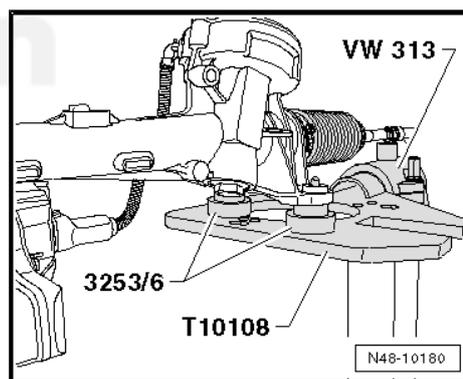
Special tools and workshop equipment required

- ◆ Holding fixture -VW 313-
- ◆ Thrust piece -3253/6- qty. 2
- ◆ Torque wrench -V.A.G 1331-
- ◆ Locking pliers -VAS 6199-
- ◆ Transmission support -T10108-
- ◆ Adapter -T10304-
- ◆ Friction meter -VAS 6222-
- ◆ Adapter -T10305-
- ◆ Wet and dry vacuum cleaner -V.A.G 1373-
- ◆ Cordless drill -VAS 5036-
- ◆ Vehicle Diagnosis, Testing and Information System -VAS 5051B-
- ◆ 4 mm drill bit
- ◆ 2 bolts M10 x 60

Removing

- Remove steering gear. Refer to ["5.4 Steering Gear", page 263](#).
- Clean steering gear in area of adjustment screw.
- Tension steering gear using 2 bolts M10 x 60 as depicted in the illustration.

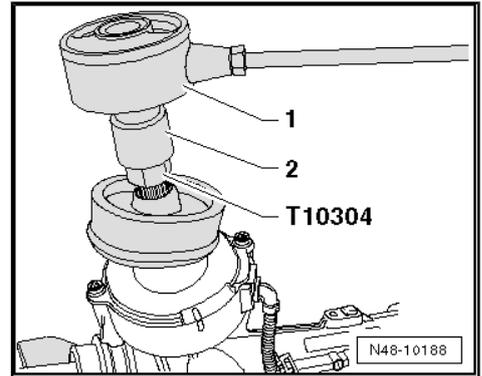
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- Determine starting torque of steering.
- First turn steering toward right in direction of travel until it stops.
- Now turn steering uniformly toward left until it stops on friction meter, e.g. -VAS 6222- . Read off steering torque while doing this.

Specified value: 3 +/- 2 Nm

- 1 - Friction meter, e.g. -VAS 6222-
- 2 - 24 mm socket

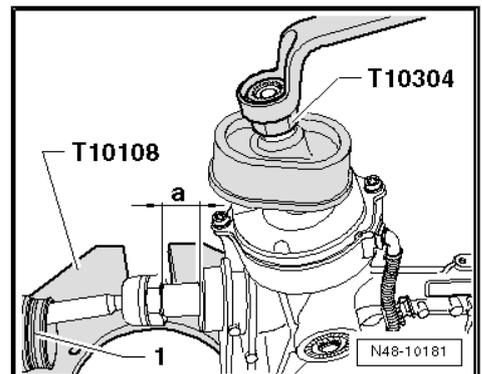


- Remove clamp for bellows at left -1- and pull off bellows from steering gear housing.

- Turn steering into straight ahead position using -T10304- .

For this purpose, dimension -a- = 25.5 mm.

- Rotate steering gear in mounting bracket so that thrust piece with adjustment screw points upward.
- Now slide boot onto steering gear cover again.

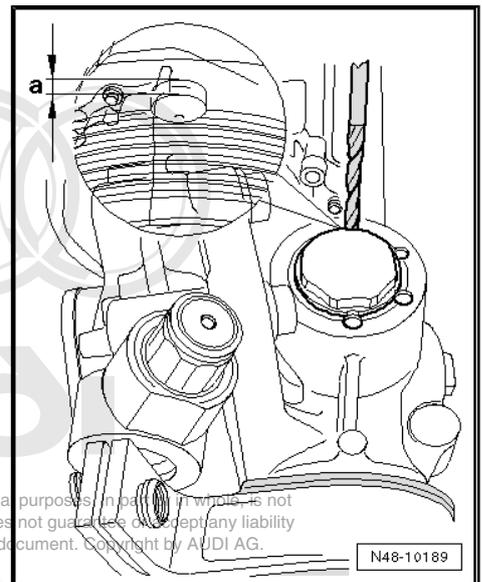


- Drill the 6 peenings out using a 4 mm drill bit until reaching dimension -a-.

Dimension -a- = 3 mm



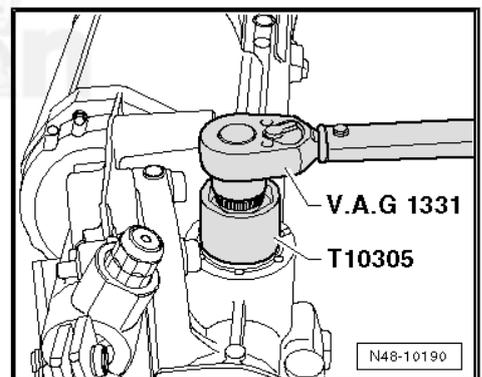
Caution
Do not drill deeper than 3 mm.



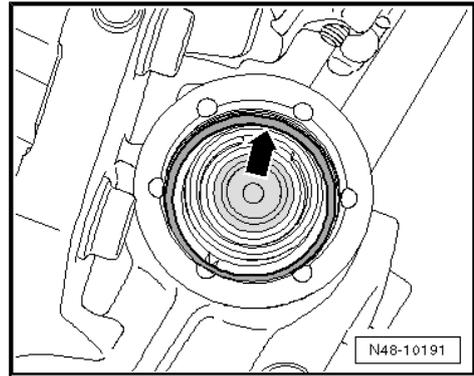
- Vacuum up drill shavings completely from steering gear housing using e.g. -V.A.G 1373- .

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- Remove the adjustment screw.



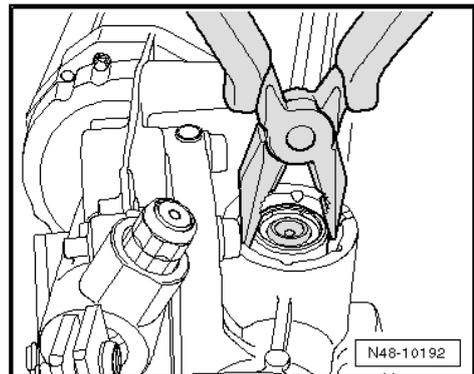
- Remove sealing ring -arrow-.
- Pull steering rack in direction of thrust piece so that it disengages from steering rack.



- Simultaneously pull out hydraulic thrust piece from steering gear housing using suitable pliers.

**Note**

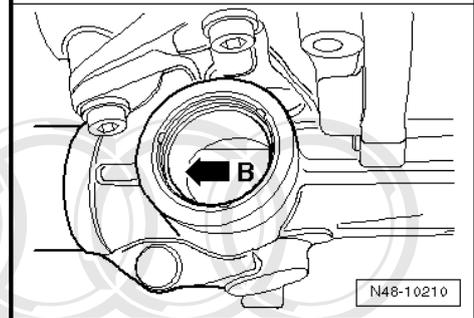
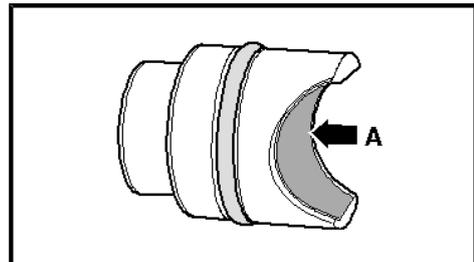
- ◆ If corrosion, damage, wear-out or first signs of soiling on steering rack can be seen, complete steering gear must be replaced.
- ◆ If no grease film is visible on steering rack, steering gear must also be replaced completely.

**Installing and Adjusting**

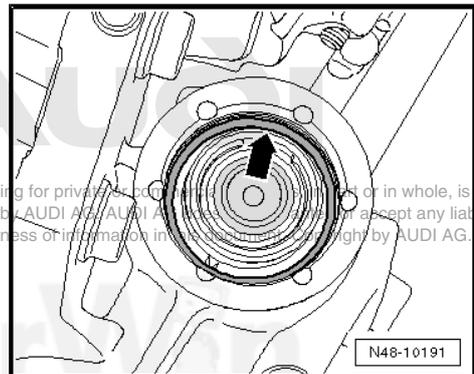
- Coat new thrust piece -arrow A- (contact surface at steering gear), sealing ring and hole in steering gear housing -arrow B- with grease -G 052 192 A1- supplied.

**Caution**

Do not use other grease under any circumstances.

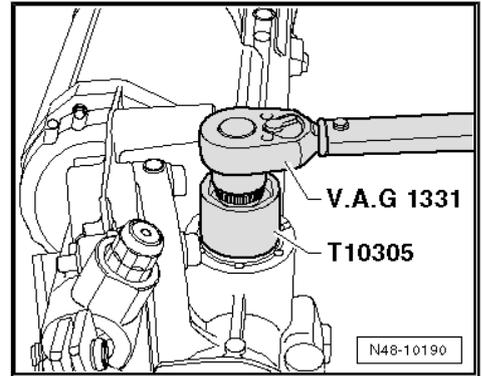


- Install hydraulic thrust piece and sealing ring -arrow- by hand.



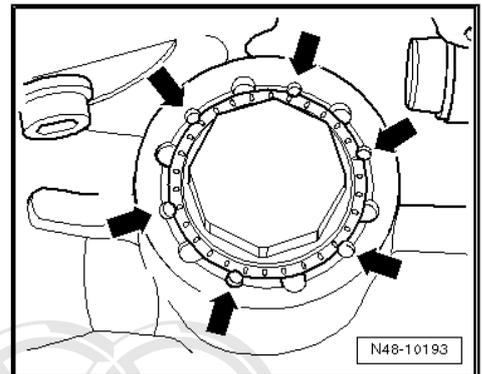
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- Tighten new adjustment screw to 40 Nm.



- Peen the adjustment screw 6 times -arrows- using a punch.

Punch points must be applied 2 graduation lines next to the drill out punch points.



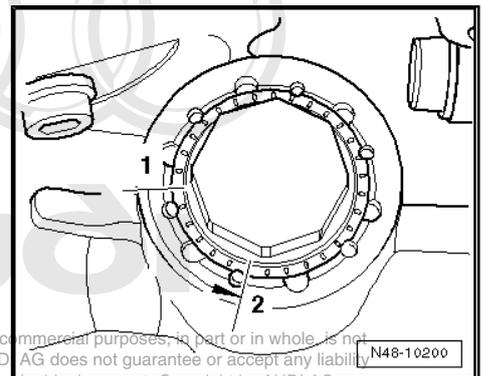
- Mark one graduation line of adjustment screw on the steering gear housing -1-.
- Remove the adjustment screw 5.5 graduation lines toward left -2-.

While doing this, a loosening torque of at least 15 Nm must be obtained.

If loosening torque is not obtained:

- Tighten adjustment screw to 40 Nm again.
- Reinforce the 6 peenings using a punch.
- Check applied marking of adjustment screw graduation line on steering gear housing, apply the marking again if necessary.
- Remove the adjustment screw 5.5 graduation lines toward left.

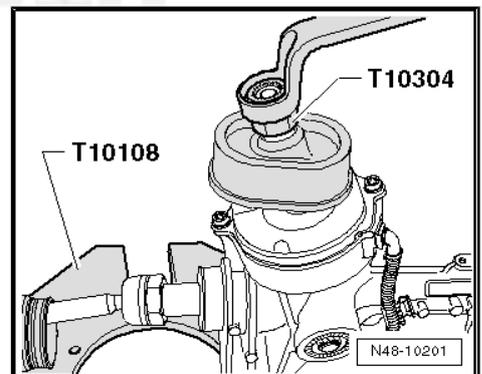
A loosening torque of at least 15 Nm must be obtained.



- Turn steering using -T10304- from left stop to right stop.

No hitching or jamming may occur while steering through. If there is, surface of steering rack is damaged and steering gear must be replaced.

- Install left bellows onto steering gear housing with new clamp.



Determine Starting Torque of Steering

- First turn steering toward right in direction of travel until it stops.
- Now turn steering uniformly toward left until it stops on friction meter, e.g. -VAS 6222-. Read off steering torque while doing this.

Specified value: 3 +/- 2 Nm

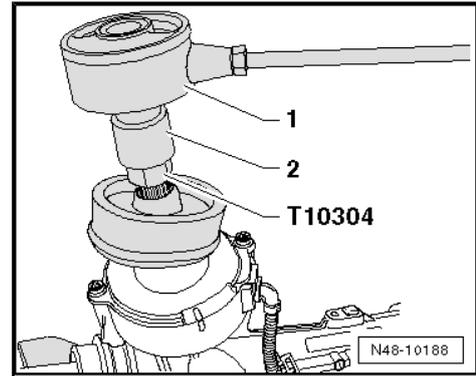
- 1 - Friction meter, e.g. -VAS 6222-
- 2 - 24 mm socket

If steering torque is exceeded:

- Loosen hydraulic thrust piece adjusting screws about one graduation line (turn adjustment screws toward left).
- Then, check steering torque. Refer to [⇒ page 282](#).

If steering torque falls short:

- Install hydraulic thrust piece adjusting screws about one graduation line (turn adjustment screws toward right).
- Then, check steering torque. Refer to [⇒ page 282](#).
- Install steering gear. Refer to [⇒ "5.4 Steering Gear", page 263](#).
- Perform vehicle alignment [⇒ "1.5 Wheel Alignment", page 230](#).
- Perform basic setting for steering angle sensor -G85- via -VAS 5051B- in "Guided Fault Finding".
- Then perform basic setting of steering system via -VAS 5051B- in "Guided Fault Finding".



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5.10 Thrust Piece, Steering Pinion Side, Removing, Installing and Adjusting



Note

Currently it is not possible to perform this repair.

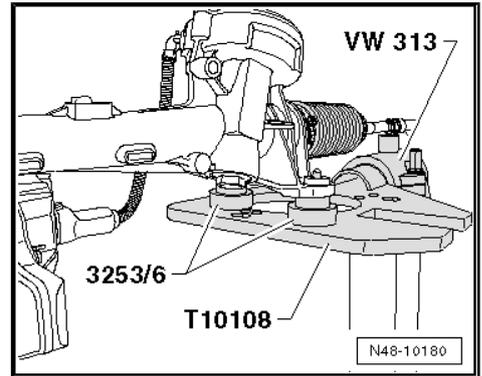
Special tools and workshop equipment required

- ◆ Holding fixture -VW 313-
- ◆ Thrust piece -3253/6- qty. 2
- ◆ Torque wrench -V.A.G 1331-
- ◆ Locking pliers -VAS 6199-
- ◆ Transmission support -T10108-
- ◆ Adapter -T10304-
- ◆ Universal dial gauge -VW 387-
- ◆ 38 mm open end wrench insert -V.A.G 1923-
- ◆ Adapter -3313-
- ◆ Friction meter -VAS 6222-
- ◆ Wet and dry vacuum cleaner -V.A.G 1373-
- ◆ Cordless drill -VAS 5036-

- ◆ Vehicle Diagnosis, Testing and Information System -VAS 5051B-
- ◆ 4 mm drill bit
- ◆ Pliers for outer securing rings, for example HAZET -1847-2-
- ◆ Dial gauge
- ◆ 2 bolts M10 x 80

Removing

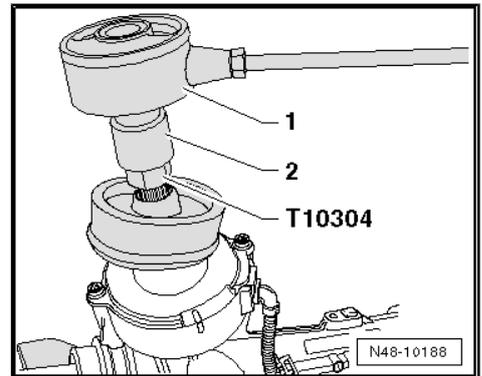
- Remove steering gear. Refer to ["5.4 Steering Gear", page 263](#).
- Clean steering gear in area of adjustment screw for mechanical thrust piece.
- Tension steering gear using 2 bolts M10 x 80 as depicted in the illustration.



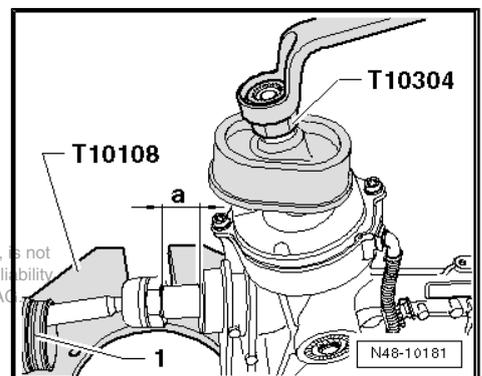
- Determine starting torque of steering.
- First turn steering toward right in direction of travel until it stops.
- Now turn steering uniformly toward left until it stops on friction meter, e.g. -VAS 6222-. Read off steering torque while doing this.

Specified value: 3 +/- 2 Nm

- 1 - Friction meter, e.g. -VAS 6222-
- 2 - 24 mm socket



- Remove clamp for bellows at left -1- and pull off bellows from steering gear housing.
 - Turn steering into straight ahead position using -T10304- .
- For this purpose, dimension -a- = 25.5 mm.
- Slide bellows -1- without clamp back onto steering gear housing.
 - Rotate steering gear in mounting bracket so that thrust piece with adjustment screw points upward.



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- Drill the 6 peenings out using a 4 mm drill bit until reaching dimension -a-.

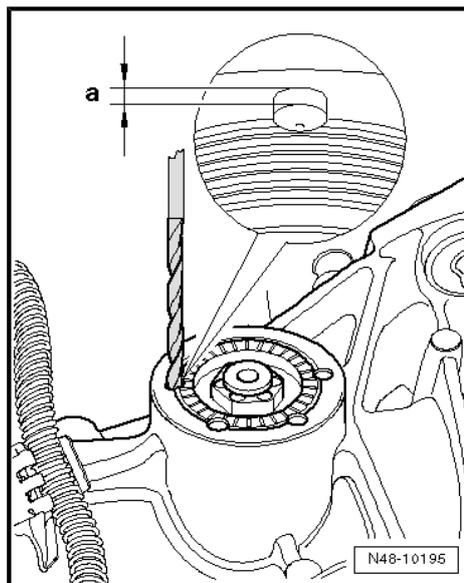
Dimension -a- = 3 mm



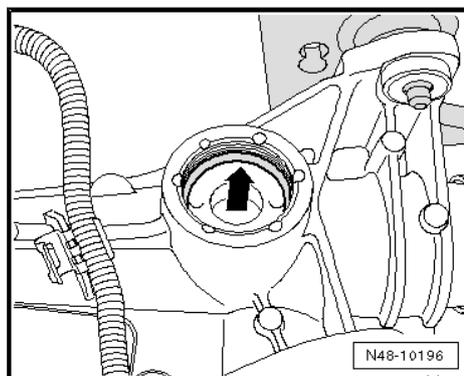
Caution

Do not drill deeper than 3 mm.

- Vacuum up drill shavings completely from steering gear housing using e.g. -V.A.G 1373- .
- Remove the adjustment screw.



- Remove spring and sealing ring -arrow-.



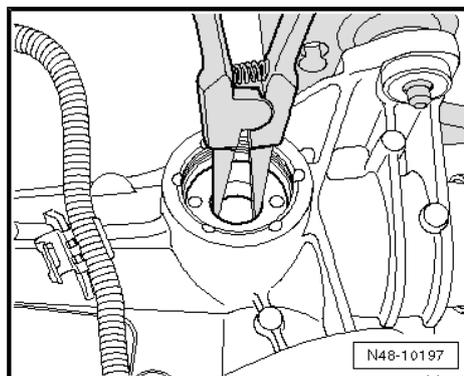
- Pull thrust piece out of steering gear housing using suitable pliers e.g. -1847-2- .

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Note

- ◆ *If corrosion, damage, wear-out or first signs of soiling on steering rack can be seen, complete steering gear must be replaced.*
- ◆ *If no grease film is visible on steering rack, steering gear must also be replaced completely.*



Installing and Adjusting

- Coat new thrust piece (contact surface at steering gear), sealing ring and hole in steering gear housing with grease -G 052 192 A1- supplied -arrows-.



Caution

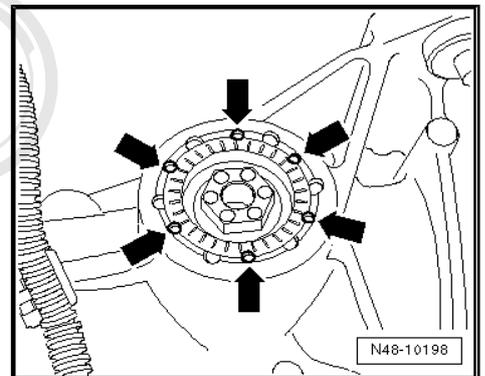
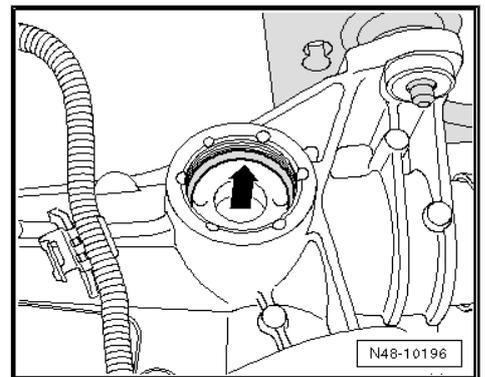
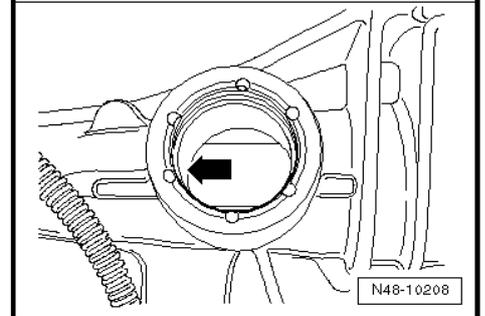
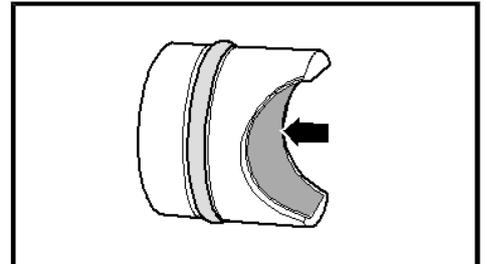
Do not use other grease under any circumstances.

- Insert thrust piece by hand into steering gear housing.

- Install new sealing ring -arrow- and new spring.
- Tighten new adjustment screw to 40 Nm.

- Peen the adjustment screw 6 times -arrows- using a punch.

Punch points must be applied 2 graduation lines next to the drill out punch points.



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- Mark one graduation line of adjustment screw on the steering gear housing -1-.
- Remove the adjustment screw 6 graduation lines toward left -2-.

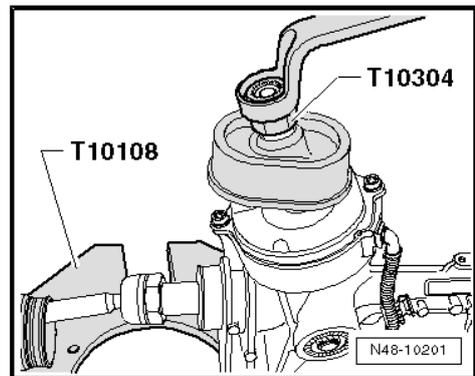
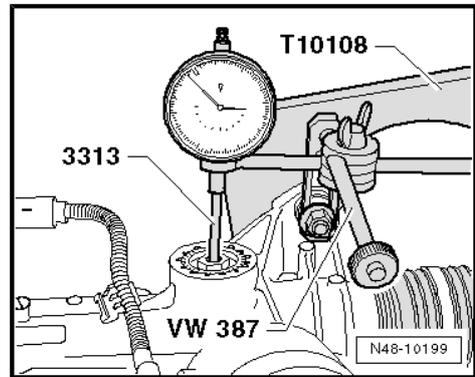
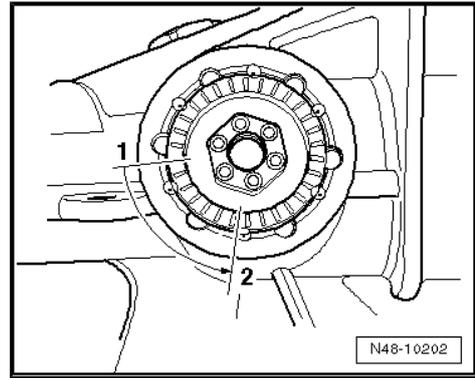
While doing this, a loosening torque of at least 15 Nm must be obtained.

If loosening torque is not obtained:

- Tighten adjustment screw to 40 Nm again.
- Reinforce the 6 peenings using a punch.
- Check applied marking of adjustment screw graduation line on steering gear housing, apply the marking again if necessary.
- Remove the adjustment screw 6 graduation lines toward left.

A loosening torque of at least 15 Nm must be obtained.

- Remove rubber plug from adjustment screw.
- Attach a dial gauge with 0.001 graduations as depicted in the illustration.
- Tension dial gauge to 1 mm pre-load.
- Rotate to tighten steering rack using -V.A.G 1331- and -V.A.G 1923- on tie rod to 40 Nm in one direction. When -V.A.G 1331- disengages, set dial gauge to "0".
- Now remove -V.A.G 1331- from tie rod.
- Read off value indicated on dial gauge.
Specified value: 0.005 to 0.05 mm
- Turn steering using -T10304- from left stop to right stop. Observe values indicating on dial gauge while doing this.
Specified value: 0.05 to 0.12 mm



Note

If specified values for steering rack play are not obtained, steering gear must be replaced completely!

- Remove dial gauge and adapter, press rubber plug in adjustment screw.
- Pull off left bellows from steering gear housing.
- Turn steering from left stop to right stop, while doing this grease visible area of steering rack with grease -G 052 192 A1- supplied.



Caution

Do not use other grease under any circumstances.

- Install left bellows onto steering gear housing with new clamp.

Determine Starting Torque of Steering

- First turn steering toward right in direction of travel until it stops.
- Now turn steering uniformly toward left until it stops on friction meter, e.g. -VAS 6222-. Read off steering torque while doing this.

Specified value: 3 +/- 2 Nm

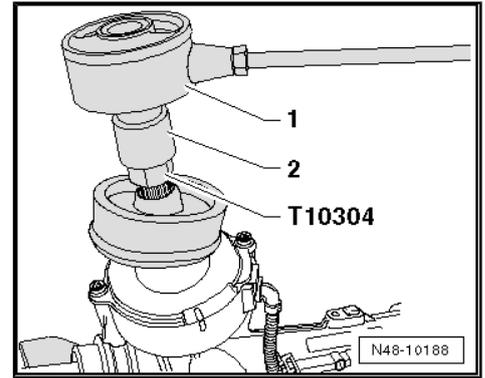
- 1 - Friction meter, e.g. -VAS 6222-
- 2 - 24 mm socket

If steering torque is exceeded:

- Loosen thrust piece adjusting screws on steering pinion side about one graduation line (turn adjustment screws toward left).
- Then, check steering torque. Refer to [⇒ page 287](#) .

If steering torque falls short:

- Install thrust piece adjusting screws on steering pinion side about one graduation line (turn adjustment screws toward right).
- Then, check steering torque. Refer to [⇒ page 287](#) .
- Install steering gear. Refer to [⇒ "5.4 Steering Gear", page 263](#) .
- Perform vehicle alignment. Refer to [⇒ "1.5 Wheel Alignment", page 230](#) .
- Perform basic setting for steering angle sensor -G85- via -VAS 5051B- in "Guided Fault Finding".
- Then perform basic setting of steering system via -VAS 5051B- in "Guided Fault Finding".



5.11 Steering Pinion with Steering Torque Sensor



Note

Currently it is not possible to perform this repair.

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Special tools and workshop equipment required

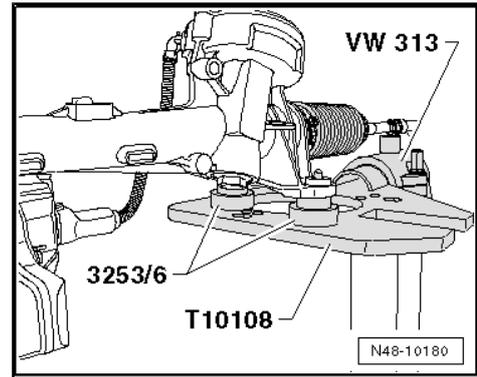
- ◆ Holding fixture -VW 313-
- ◆ Thrust piece -3253/6- qty. 2
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Transmission support -T10108-
- ◆ Adapter -T10304-
- ◆ Vehicle Diagnosis, Testing and Information System -VAS 5051B-
- ◆ 2 bolts M10 x 60

Removing

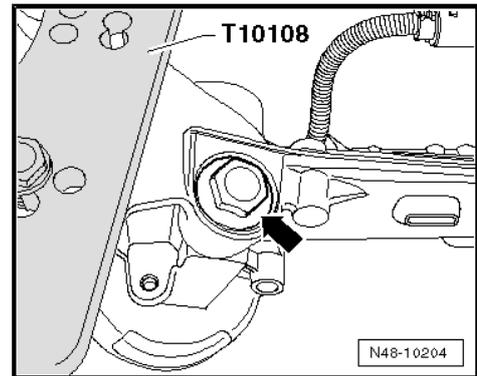
- Remove steering gear. Refer to [⇒ "5.4 Steering Gear", page 263](#) .



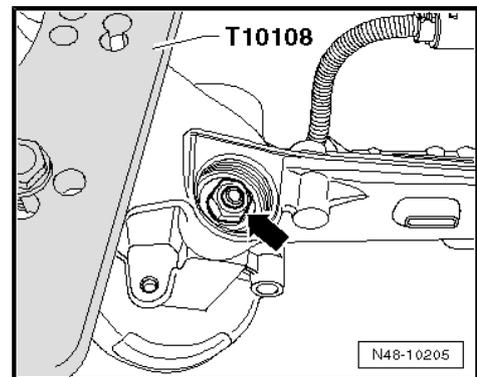
- Clean steering gear in area of steering pinion, screw plug and adjustment screw.
- Tension steering gear using 2 bolts M10 x 80 as depicted in the illustration.
- Remove thrust piece on steering pinion side. Refer to [⇒ "5.10 Thrust Piece, Steering Pinion Side, Removing, Installing and Adjusting", page 282](#).
- Turn steering gear with screw plug upward.
- Tie rods must be assembled.



- Remove the screw plug -arrow- and clean thread.



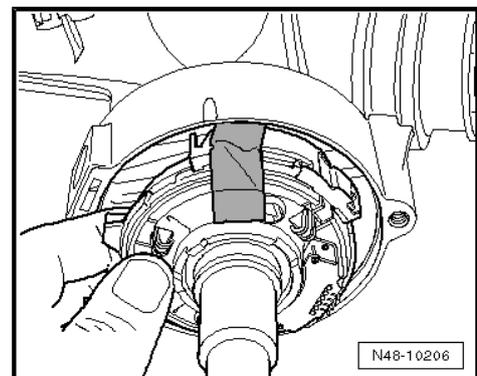
- Remove the hex nut -arrow- from steering pinion. Steering rack moves up to stop when this is done.
- Turn steering gear with steering pinion upward.
- Remove sensor wire. Refer to [⇒ "5.8 Sensor Wire", page 274](#).



Note

Sensor wire must be replaced. It is supplied in replacement part set.

- Mark position of steering pinion on steering gear housing.
- Now pull steering pinion with steering torque sensor out of steering gear housing. Secure spiral spring against twisting using e.g. adhesive tape.



Note

- ◆ *If corrosion, damage, wear-out or first signs of soiling on steering rack can be seen, complete steering gear must be replaced.*
- ◆ *If no grease film is visible on steering rack, steering gear must also be replaced completely.*

Installing

- Coat bushing -arrow 1- and splines of steering pinion -arrow 2- with -G 052 192 A1- .

 **Note**

While doing this, no grease must enter the sensor or its vicinity!

 **Caution**
Do not use other grease under any circumstances.

The new steering pinion with steering torque sensor -G269- has an anti-twist element -arrow-. This may only be removed after locking to sensor wire.

Only remove new steering pinion from packaging when it has been assembled.

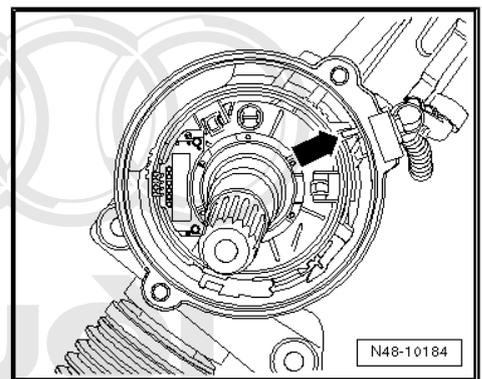
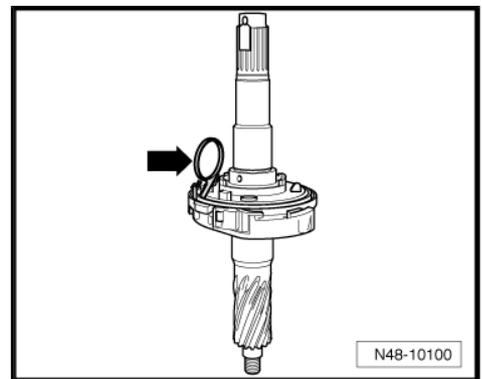
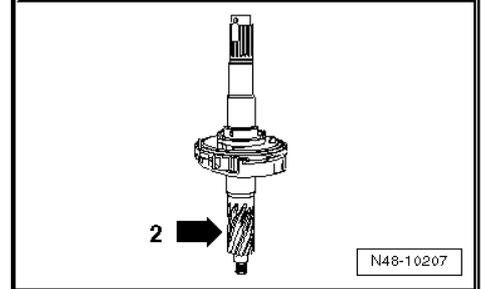
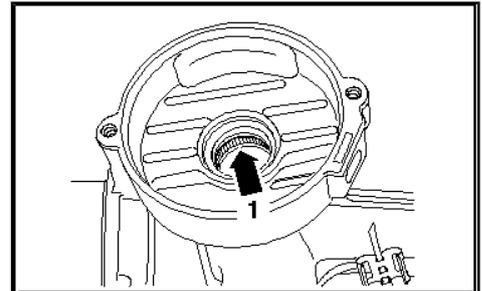
 **Caution**
Prevent contact with electrical components!

- Observe general repair notes for this. Refer to [⇒ "1.1 General Repair Information", page 247](#) .
- Insert steering pinion into steering gear housing.
- Rotate steering pinion until spiral spring with sensor wire -arrow- can be locked. While doing this, the marking applied during removal must align with steering gear housing.

 **Note**

Sensor wire must be replaced. It is supplied in replacement part set.

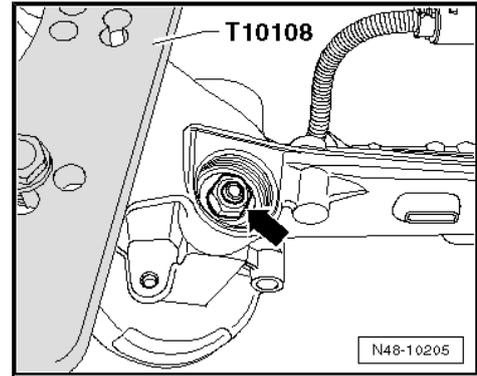
- Pull anti-twist element off the spiral spring.



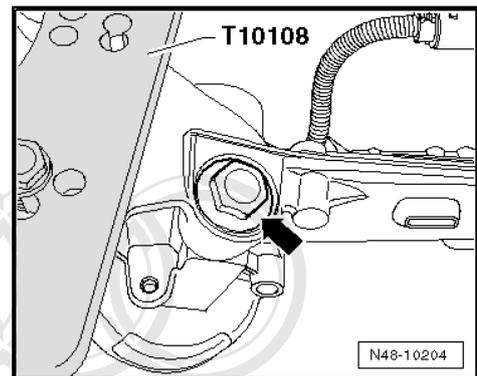
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- Tighten steering pinion with a new hex nut -arrow-. Steering rack moves up to stop when this is done.
- Fill hollow space of screw plug with grease -G 052 192 A1- .



- Apply LOCTITE -5910- sealant all around onto thread of screw plug -arrow- and install screw plug.
- Install sensor wire. Refer to ⇒ ["5.8 Sensor Wire", page 274](#) .

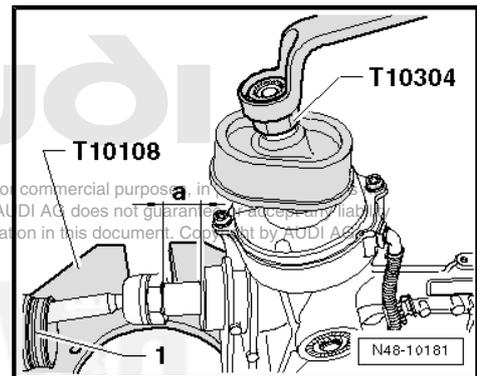


- Turn steering into straight ahead position using -T10304- . For this purpose, dimension -a- = 25.5 mm.

- Install and adjust thrust piece on steering pinion side. Refer to ⇒ ["5.10 Thrust Piece, Steering Pinion Side, Removing, Installing and Adjusting", page 282](#) .

Tightening specifications, refer to ⇒ ["6.1 Steering Gear", page 291](#) .

- Install steering gear. Refer to ⇒ ["5.4 Steering Gear", page 263](#) .
- Perform vehicle alignment. Refer to ⇒ ["1.5 Wheel Alignment", page 230](#) .
- Perform basic setting for steering angle sensor -G85- via -VAS 5051B- in "Guided Fault Finding".
- Then perform basic setting of steering system via -VAS 5051B- in "Guided Fault Finding".



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6 Disassembly and Assembly

⇒ ["6.1 Steering Gear", page 291](#)

6.1 Steering Gear

-Arrow- points in direction of travel

1 - Steering Gear Housing

2 - Tie Rod

- 100 Nm
- If faulty, replace with tie rod end.
- Removing and installing, refer to ⇒ ["5.6 Tie Rod", page 270](#).

3 - Left Tie Rod End

- Check dust caps for damage and correct seating.

4 - Nut

- 50 Nm
- Nut must be counter-held on tie rod end using a wrench when loosening and tightening.

5 - Spring Clamp

6 - Boot

- Removing and installing, refer to ⇒ ["5.5 Boot", page 268](#).
- Check for damage.
- Must not be twisted after toe is adjusted.

7 - Clamp

- Always replace if removed.
- Install new clamp using Locking Pliers -VAS 6199-.

8 - Gasket

- Between steering gear and vehicle interior.

9 - Bolt

- For mounting cap ⇒ [Item 10 \(page 291\)](#) to steering gear housing ⇒ [Item 1 \(page 291\)](#).
- Quantity: 2

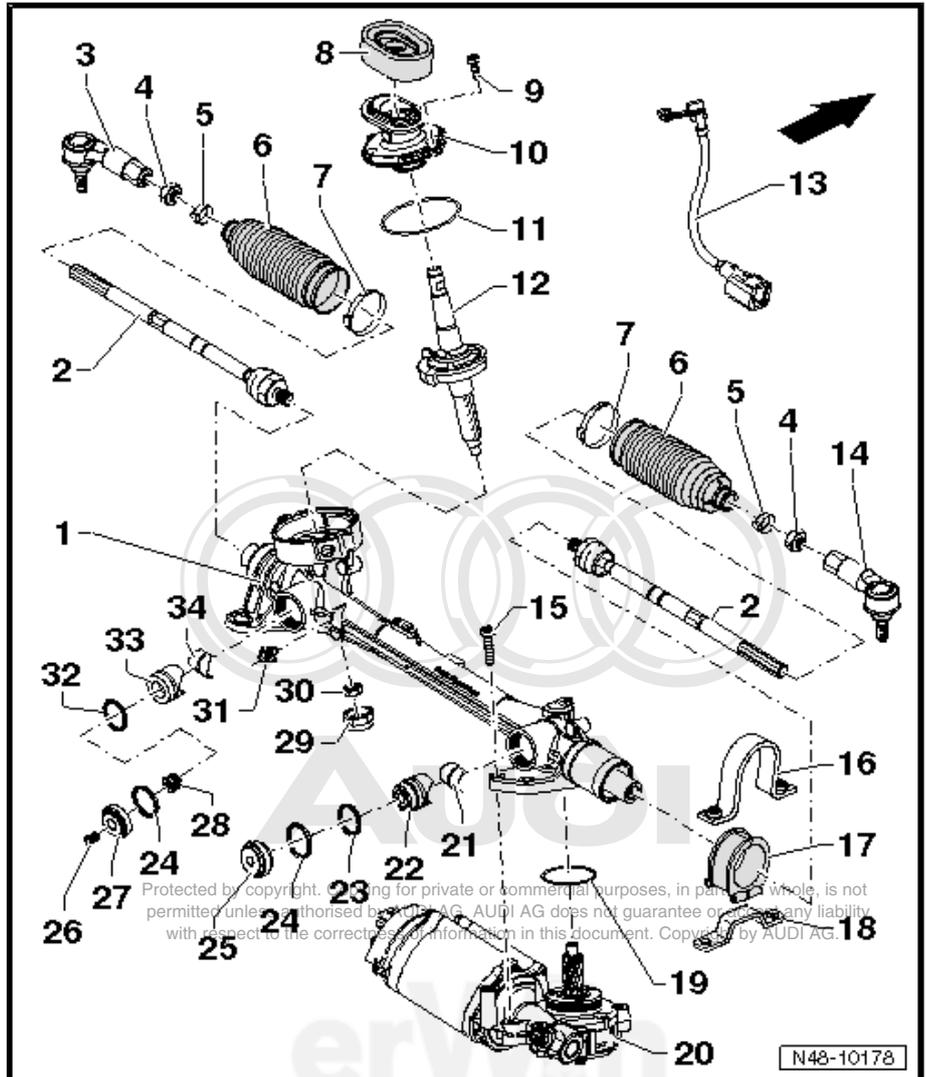
10 - Cover

11 - Seal

- Always replace if removed.

12 - Steering Pinion with Steering Torque Sensor -G269-

- Removing and installing, refer to ⇒ ["5.11 Steering Pinion with Steering Torque Sensor", page 287](#).



**13 - Sensor wire**

- Removing and installing, refer to ⇒ [“5.8 Sensor Wire”, page 274](#) .
- Electrical connection between steering torque sensor and Power Steering Control Module -J500- .

14 - Right Tie Rod End

- Check dust caps for damage and correct seating.

15 - Bolt

- For mounting servo motor to control module ⇒ [Item 20 \(page 292\)](#) on steering gear housing ⇒ [Item 1 \(page 291\)](#) .

16 - Clamp with Nuts

- Always replace if removed.
- Removing and installing, refer to ⇒ [“5.7 Generation II Steering Gear Bonded Rubber Bushing”, page 273](#) .
- Not installed on vehicles with Generation III steering gear.
- The Generation III steering gear is secured to the housing with a bolt in this location.

17 - Rubber Bushing

- Removing and installing, refer to ⇒ [“5.7 Generation II Steering Gear Bonded Rubber Bushing”, page 273](#) .
- Not installed on vehicles with Generation III steering gear.

18 - Bracket

- Removing and installing, refer to ⇒ [“5.7 Generation II Steering Gear Bonded Rubber Bushing”, page 273](#) .
- Not installed on vehicles with Generation III steering gear.

19 - Seal

- Always replace if removed.

20 - Servo Motor with Control Module

- With Power Steering Control Module -J500- .
- With Electromechanical Power Steering Motor -V187- .
- With Engine Speed (RPM) Sensor -G 577- .
- Can be tested in “Guided Fault Finding” using the Vehicle Diagnosis, Testing and Information system -VAS 5051B- .

21 - Contact Foil

- Not an individual part, is installed on hydraulic thrust piece ⇒ [Item 22 \(page 292\)](#) .
- Coat with supplied grease -G 052 192 A1- on contact side facing steering rack.

22 - Hydraulic Thrust Piece

- Removing and installing, refer to ⇒ [“5.9 Hydraulic Thrust Piece, Removing, Installing and Replacing”, page 278](#) .

23 - Seal

- Installed on hydraulic thrust piece ⇒ [Item 22 \(page 292\)](#) .

24 - Seal

- Insert into steering gear housing between thrust piece and adjustment screw.

25 - Adjustment Bolt

- For hydraulic thrust piece ⇒ [Item 22 \(page 292\)](#) .
- Always replace if removed.

26 - Rubber Plug**27 - Adjustment Bolt**

- For mechanical thrust piece ⇒ [Item 33 \(page 293\)](#) .
- Always replace if removed.

28 - Spring

29 - Screw Plug

- Fill with grease -G 052 192 A1- before installing.
- Coat thread with LOCTITE -5910- .

30 - Nut

- Always replace if removed.

31 - Retaining Clip

- For mounting sensor wire ⇒ [Item 13 \(page 291\)](#) to steering gear housing ⇒ [Item 1 \(page 291\)](#) .

32 - Seal

- Installed on mechanical thrust piece ⇒ [Item 33 \(page 293\)](#) .

33 - Mechanical Thrust Piece

- Removing and installing, refer to
⇒ [“5.10 Thrust Piece, Steering Pinion Side, Removing, Installing and Adjusting“](#), page 282 .

34 - Contact Foil

- Not an individual part, is installed on mechanical thrust piece ⇒ [Item 33 \(page 293\)](#) .

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- Coat with supplied grease -G 052 192 A1- on contact side facing steering rack.

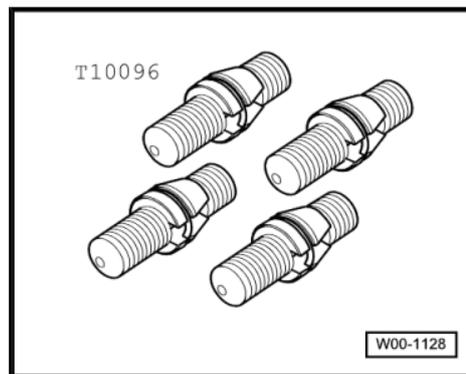
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7 Special Tools

Special tools and workshop equipment required

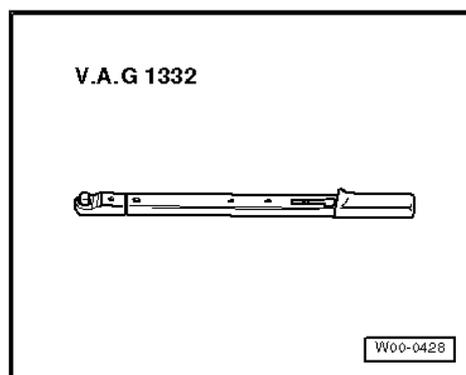
- ◆ Vehicle Diagnostic, Testing and Information System -VAS 5051B-
- ◆ Wet and dry vacuum cleaner -V.A.G 1373-
- ◆ Cordless drill -VAS 5036-
- ◆ Locating pins -T10096-



- ◆ Torque wrench -V.A.G 1332-



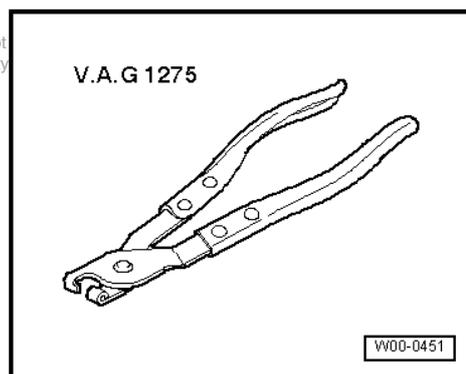
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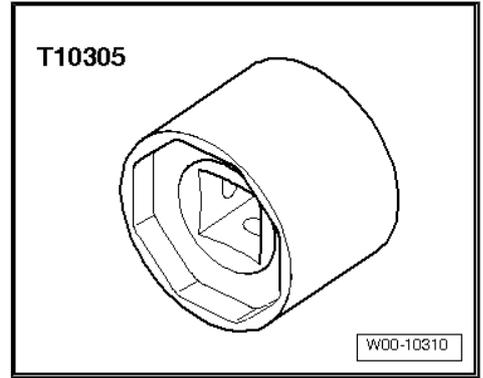
- ◆ Hose clamp pliers -V.A.G 1275-

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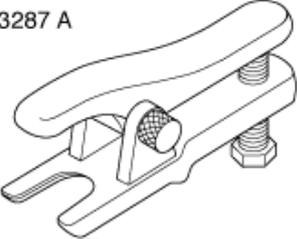


◆ Adapter -T10305-



Special tools and workshop equipment required

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

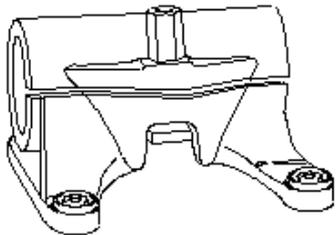
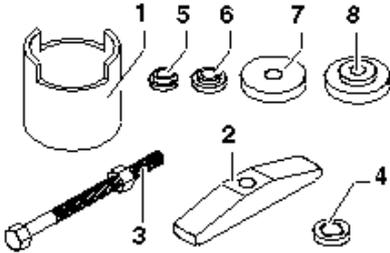
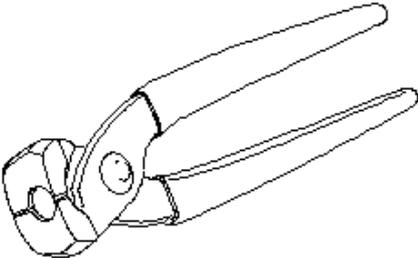
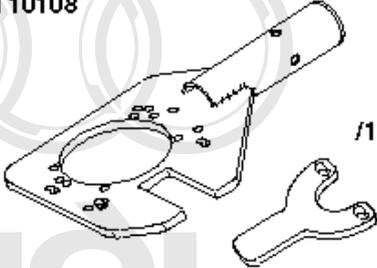
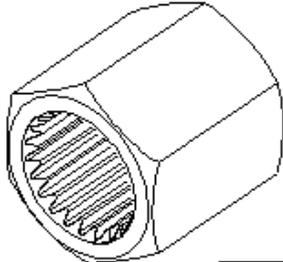
<p>3287 A</p> 	<p>V.A.G 1331</p> 
<p>V.A.G 1332</p> 	<p>V.A.G 1383 A</p> 
<p style="text-align: right;">W48-10004</p>	

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Special tools and workshop equipment required

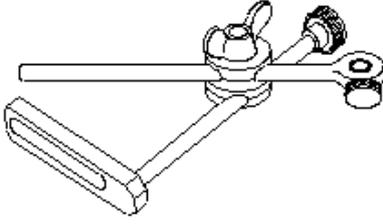
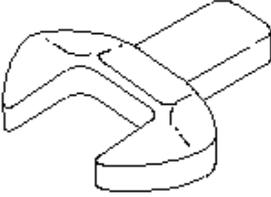
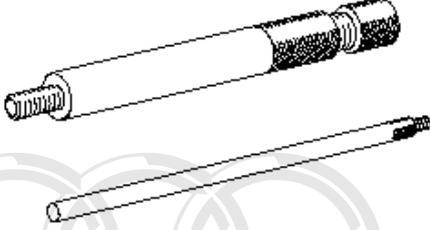
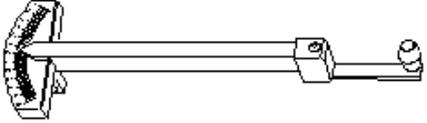
- ◆ Holding fixture -VW 313-
- ◆ Thrust piece -3253/6- qty. 2
- ◆ Torque wrench -V.A.G 1331-
- ◆ Locking pliers -VAS 6199-
- ◆ Transmission support - T10108-
- ◆ Adapter -T10304-

<p>VW 313</p> 	<p>3253</p> 
<p>V.A.G 1331</p> 	<p>VAS 6199</p> 
<p>T10108</p> 	<p>T10304</p> 

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- ◆ Universal dial gauge -VW 387-
- ◆ 38 mm open end wrench insert -V.A.G 1923-
- ◆ Adapter -3313-
- ◆ Friction meter -VAS 6222-

<p>VW 387</p> 	<p>V.A.G 1923</p> 
<p>3313</p> 	<p>VAS 6222</p> 
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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 Audi retailer or other qualified shop. We especially urge you to consult an authorized Audi retailer before beginning repairs on any vehicle that may still be covered wholly or in part by any of the extensive warranties issued by Audi.
- 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.
- Audi 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 Audi 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.

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Cautions & Warnings

- 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.
- 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 Audi 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.

Cautions & Warnings

- 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 Audi Service technicians should test, disassemble or service the airbag system.
- 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 Audi 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.