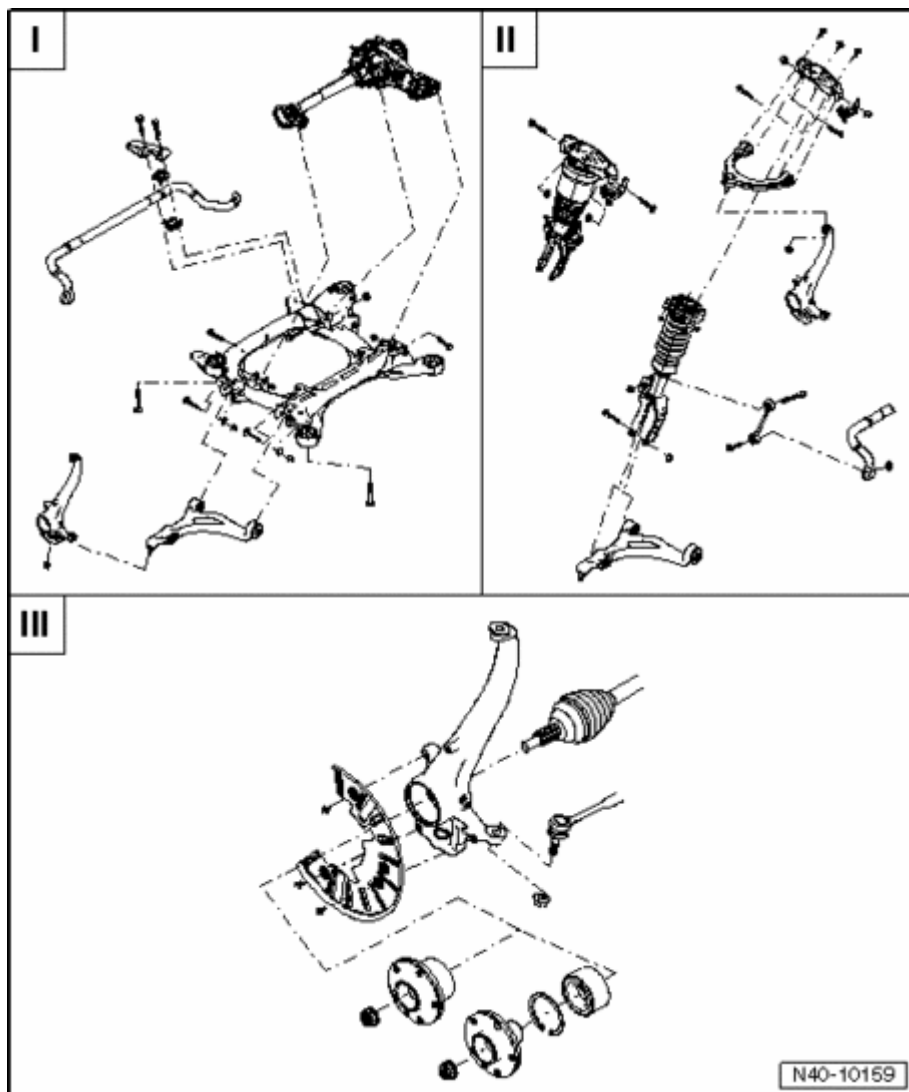




Front suspension, servicing

Note :

- If components using bonded rubber bushings are replaced, or nuts/bolts on these components are loosened, the wheel bearing must be moved to the curb weight position before they are tightened ⇒ [40-3, Bringing wheel bearing to curb weight position](#) .
- Always replace self-locking nuts.
- Always replaced corroded nuts/bolts..

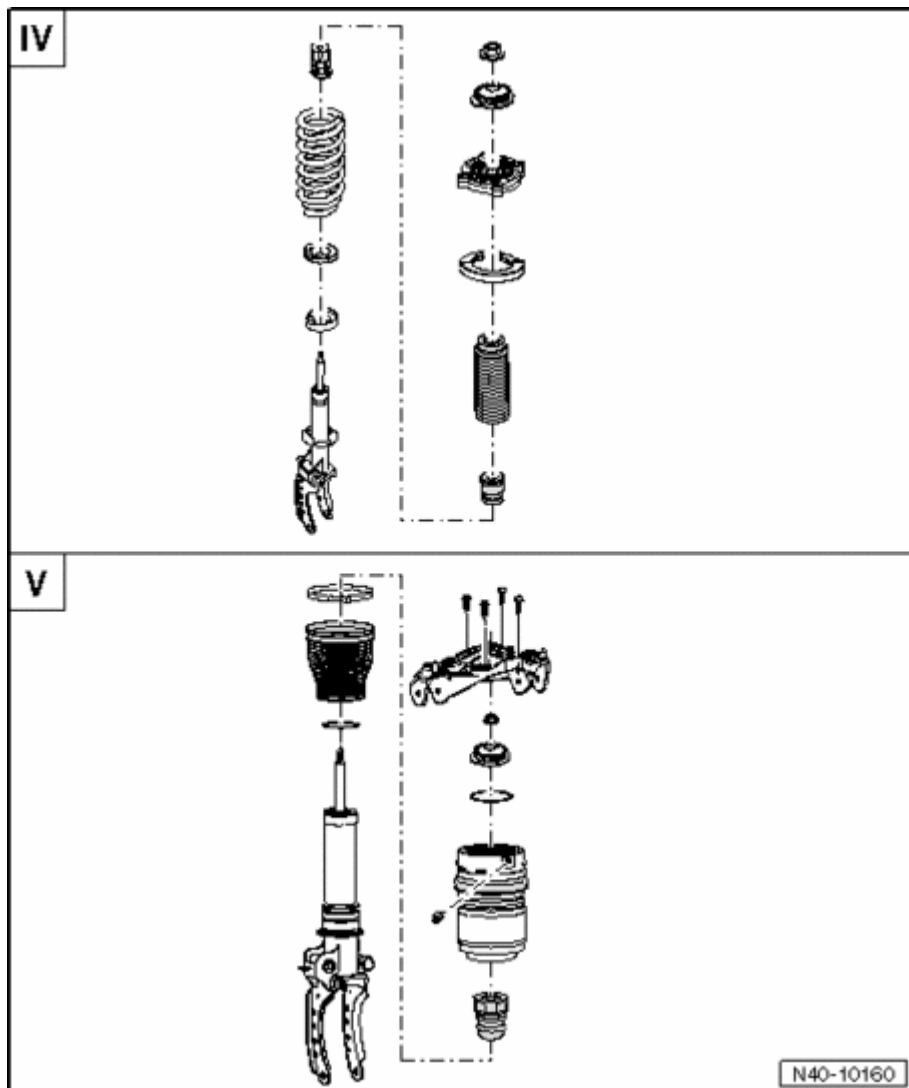


I - Assembly overview of subframe, stabilizer bar, lower control arm ⇒ [40-5, I - Subframe, stabilizer bar, lower](#)

[control arm, assembly overview](#)

II - Assembly overview of front suspension ⇒ [40-7, II - Front suspension, assembly overview](#)

III - Assembly overview of wheel bearing ⇒ [40-8, III - Wheel bearing, assembly overview](#)



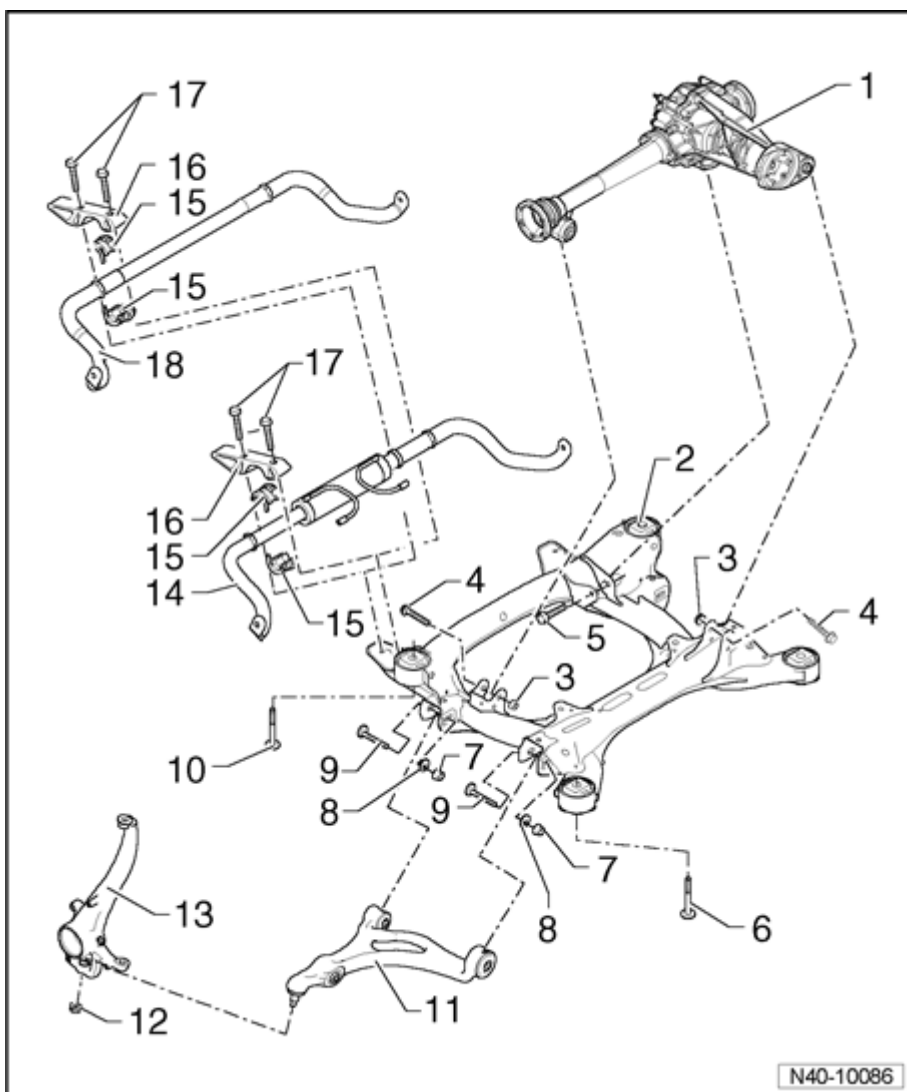
IV - Assembly overview: Suspension strut ⇒ [40-9, IV - Suspension strut, assembly overview](#)

V - Air spring shock absorbers ⇒ [40-10, V - Front air spring shock absorber](#)

I - Subframe, stabilizer bar, lower control arm, assembly overview

Note :

- When a component with a bonded rubber bushing is replaced or nuts/bolts on these components are loosened, the wheel bearing in question must be moved to the curb weight position before they are tightened ⇒ [40-3, Bringing wheel bearing to curb weight position](#) .



- Final drive
 - Removing and installing

⇒ [*Repair Manual, Final Drive, Repair Group 39, Final drive removing and installing*](#)

■ Subframe

- Locating ⇒ [40-5, Subframe, locating](#)
- Removing and installing ⇒ [40-5, Subframe, removing and installing](#)
- Servicing ⇒ [40-5, Subframe, servicing](#)

■ Self-locking nut

- M12 x 1.5
- Always replace

■ Hex bolt

- M12 x 1.5 x 90
- 90 Nm plus an additional ¹ /₄ turn 90 °
- Always replace

■ Hex bolt

- M12 x 1.5 x 90
- 90 Nm plus an additional ¹ /₄ turn 90 °
- Always replace

■ Hex head bolt

- M14 x 1.5 x 115
- 120 Nm plus an additional ¹ /₂ turn 180 °
- Always replace

- **Self-locking nut**

- M14 x 1.5
- 180 Nm
- Always replace

- **Eccentric washer**

- **Eccentric bolt**

- **Hex head bolt**

- M14 x 1.5 x 150
- 120 Nm plus an additional ¹ /₂ turn 180 °
- Always replace

- **Lower control arm**

- Tapered pin must be free of oil and grease
- If necessary, clean with a dry rag, do not use cleaning solvent.
- Removing and installing ⇒ [40-5, Lower control arm, removing and installing](#)
- Servicing ⇒ [40-5, Lower control arm, servicing](#)

- **Self-locking nut**

- M14 x 1.5
- 105 Nm
- Always replace

- **Wheel bearing housing**

- Tapered holes must be free of oil and grease
- If necessary, clean with a dry

rag, do not use cleaning solvent.

- Different versions for 17", 18" and 19" wheels
- Application ⇒ *Electronic Parts Catalog "ETKA"*

- **Decouplable stabilizer bar**

- Assembly overview ⇒ [40-6, Decouplable stabilizer bar, assembly overview](#)
- Removing and installing ⇒ [40-6, Decouplable stabilizer bar, removing and installing](#)
- Bleeding ⇒ [40-6, Decouplable stabilizer bar, bleeding](#)

- **Stabilizer bar mount**

- When installing, the larger outer diameter must face wheel side

- **Clamp**

- **Hex bolt**

- 60 Nm

- **Stabilizer bar**

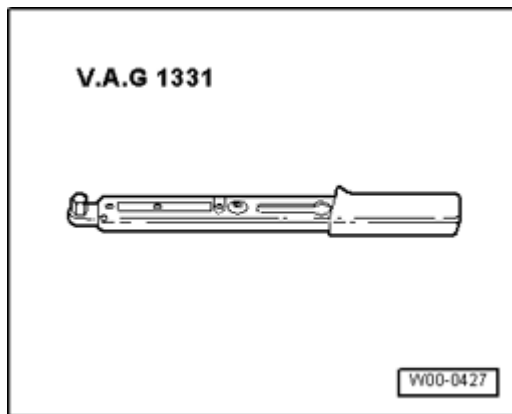
Thread in side rail, servicing

Under certain conditions, it is possible to service the thread in the weld nuts in the side rail

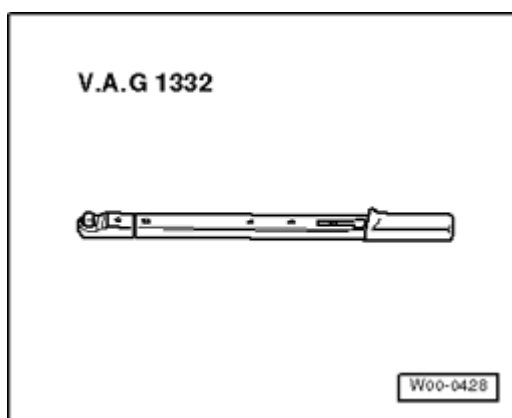
⇒ [Repair Manual, Body Exterior, Repair Group 50,](#)

Subframe, locating

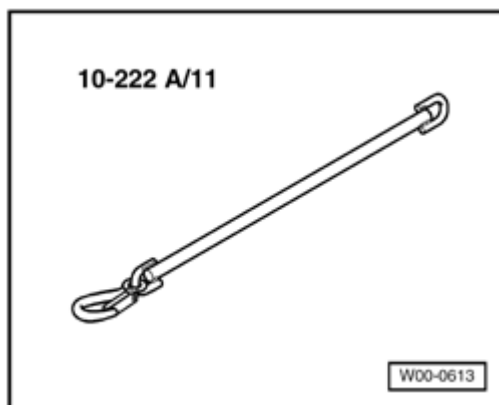
Special tools, testers and auxiliary items required



- Torque wrench V.A.G 1331



- Torque wrench V.A.G 1332



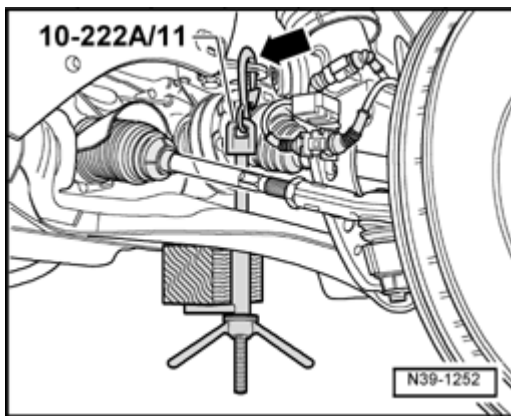
- Spindles 10-222 A/11
- Locating fixture T10300 , without illustration

Certain repairs on vehicles require removal of subframe or complete front axle. The original position of the subframe to the body can be maintained with assistance of the locating fixtures T10300 . To use the locating fixtures, a

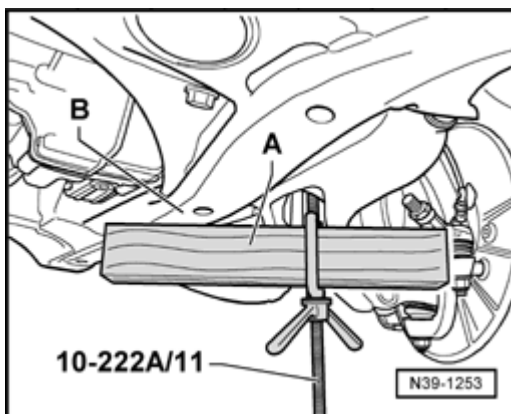
bonded rubber bushing with a round hole for the bolt is required. At start of production, bonded rubber bushings were produced with a square hole. Subframes with these bonded rubber bushings cannot be positioned with locating fixture. Always install locating fixtures just before lowering subframe or complete front axle. Perform a test drive after repairs. If the steering wheel is crooked, perform a vehicle alignment ⇒ [44-4, Wheel alignment](#) .

- Remove sound insulation below engine/transmission

⇒ [Repair Manual, Body Exterior, Repair Group 50, Sound insulation; sound insulation - assembly overview](#)



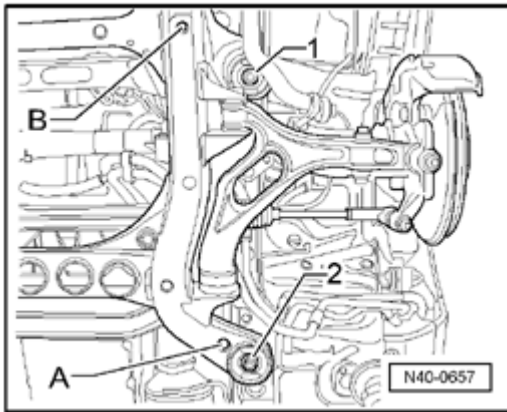
- Hook spindles 10-222 A/11 in eyelets - **Arrow** - of the engine mount on left and right sides of vehicle.



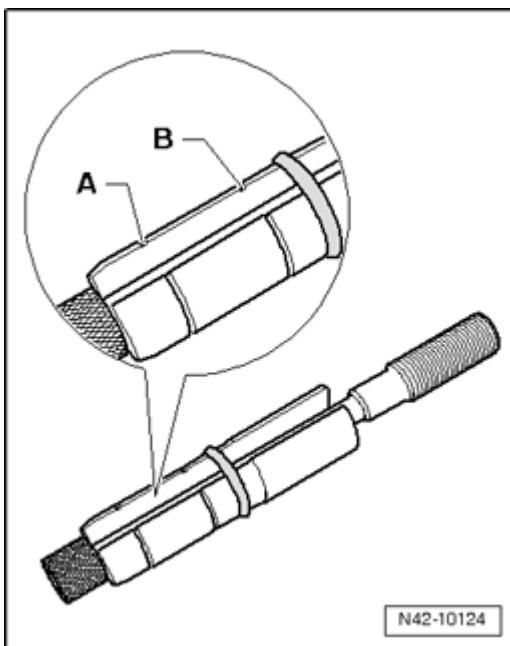
- Place a block of wood - **A** - about 300 mm long in the "U" of each spindle 10-222 A/11 .

The "U" must face rearward.

- Tighten wing nuts on spindles ; the blocks of wood must lie against subframe - **B** - .



- Remove bolts - **2** - .



- Screw in locating fixtures T10300 at both of these points "by hand" up to mark - **B** - .

- Tighten locating fixtures to 30 Nm, counter-holding the wrench surfaces of the sleeve with a open-end wrench; otherwise it will twist.

The position of subframe is now fixed.

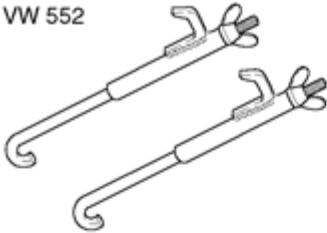
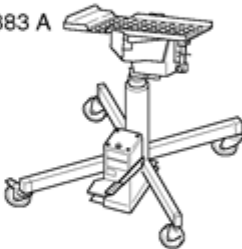
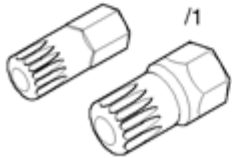
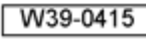
Remove locating fixtures T10300 is performed in reverse sequence.

Torque specifications

Subframe to body ¹⁾	120 Nm + quarter turn (+180 °)
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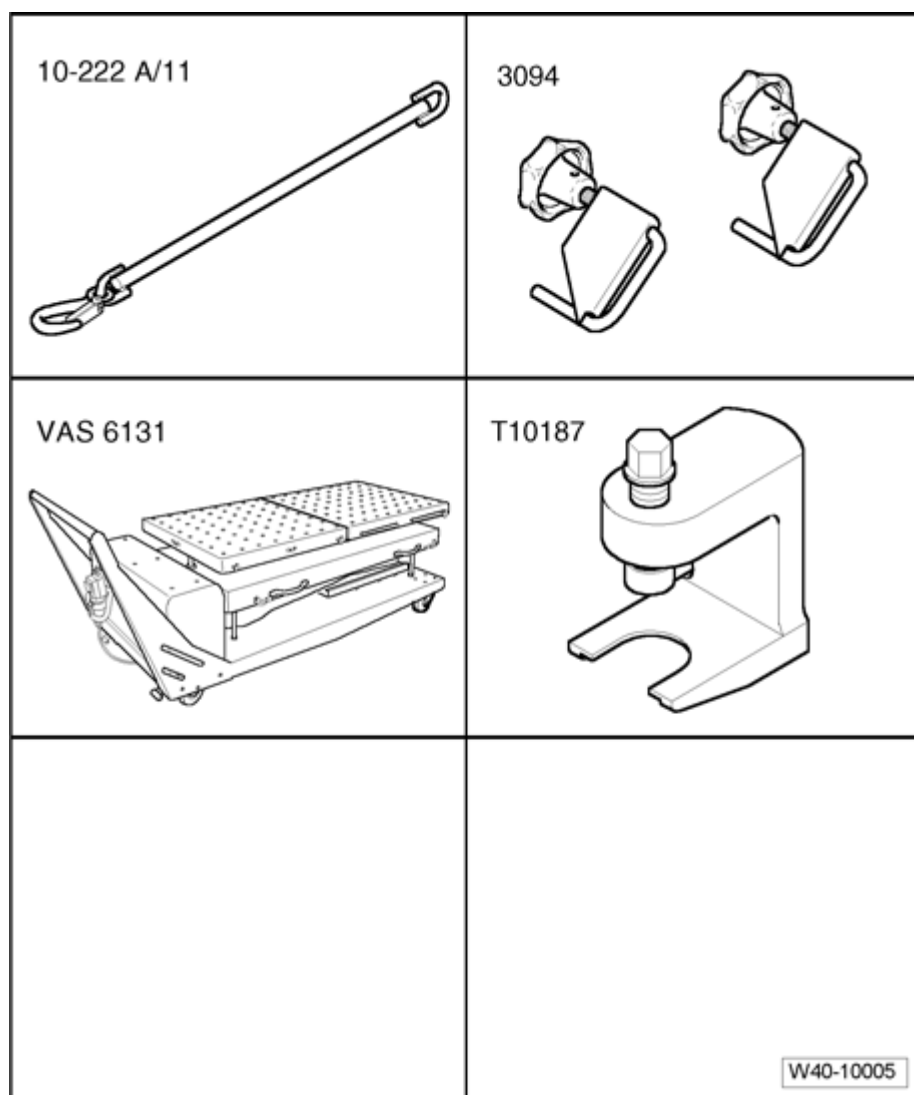
¹⁾ Replace each time it is removed

Subframe, removing and installing

VW 552 	V.A.G 1331 
V.A.G 1332 	V.A.G 1383 A 
T10099  /1	

Special tools, testers and auxiliary items required

- Tensioner hooks VW 552
- Torque wrench V.A.G 1331
- Torque wrench V.A.G 1332
- Engine/transmission jack V.A.G 1383 A
- 14-mm socket T10099/1



Special tools, testers and auxiliary items required

- Spindles 10-222 A/11
- Hose clamp 3094
- Scissors-type assembly platform VAS 6131
- Left support VAS 6131/6-1
- Right support VAS 6131/6-2
- Left axle support VAS 6131/6-3
- Right axle support VAS 6131/6-4

- Main supports for front axle w/adapters (Qty. 2) VAS 6131/6-5
- Ball joint puller T10187

Removing

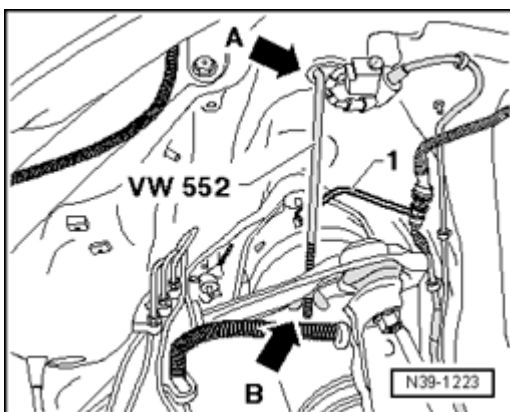
Brief description:

The subframe is removed using scissors-type assembly platform. The front securing points of the engine support must be secured with short bolts. The subframe is removed along with: the steering gear, front final drive, control arms/links and wheel bearing housing. The air suspension strut/coil spring suspension strut along with mounting brackets and track control arms remain in vehicle.

Warning!

On vehicles with decouplable stabilizer bars, the stabilizer bars must be coupled in before beginning work. Otherwise, the risk of injury exists when decoupled stabilizer bars become unintentionally coupled.

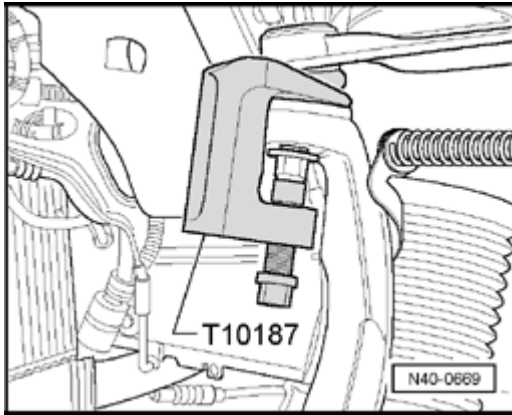
- Switch hydraulic system for the decouplable stabilizer bars pressureless, with the ⇒ *Vehicle Diagnosis, Testing and Information System VAS 5051* .
- Loosen wheel bolts.
- Raise vehicle.
- Remove front wheels.



- Hook tensioner hooks VW 552 in upper opening of the wheelhousing on both sides of the vehicle - **Arrow A** - and

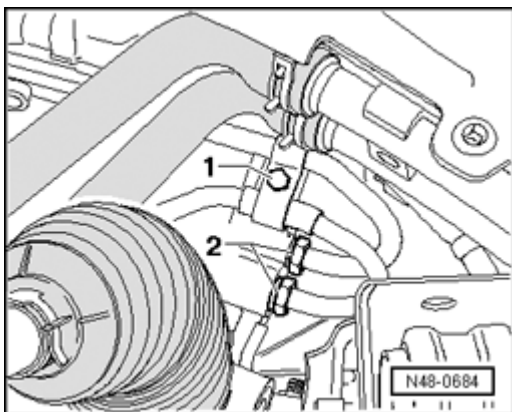
on upper control arm - **Arrow B** - .

- Preload suspension link slightly so that ball head pin of swivel joint will not be damaged.

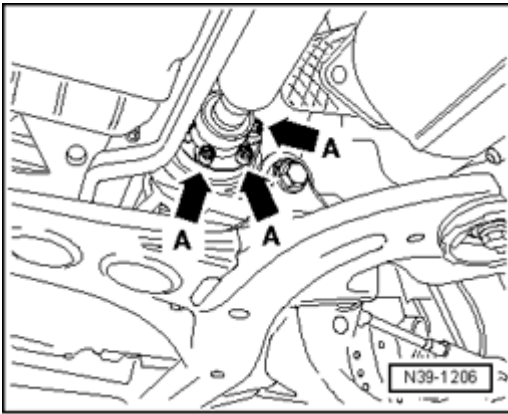


- Press out upper link joint.
- Separate brake hoses from brake lines in wheel housing.
- Disconnect all electrical connections from body to axle.
- Remove noise insulation below engine/transmission.

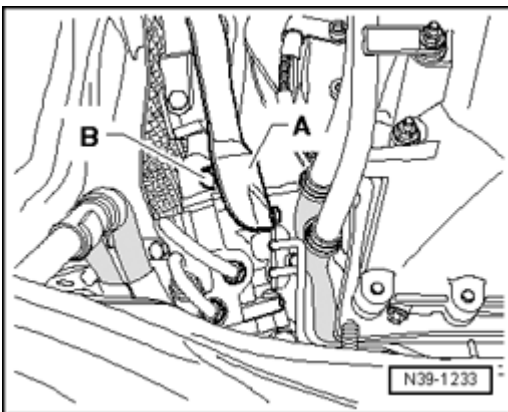
⇒ [Repair Manual, Body Exterior, Repair Group 50, Noise insulation; noise insulation - assembly overview](#)



- Remove retainers for hydraulic lines - **1** - .
- Disconnect pressure lines and return lines - **2** - from steering gear.

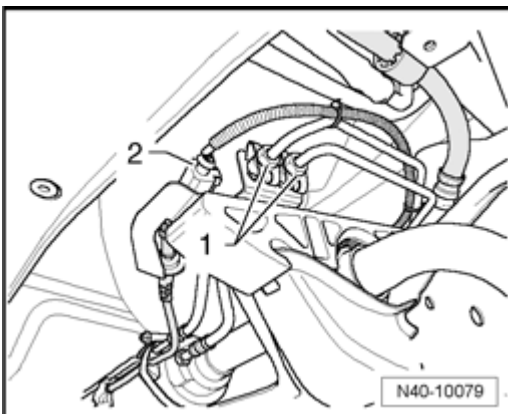


- Disconnect drive shaft from front final drive - **arrow A** - and tie out of the way.



- If installed, remove guard plate - **A** - from steering gear (2 bolts).
- Remove bolt - **B** - for the steering gear universal joint and remove universal joint from steering gear.

Vehicles with decouplable stabilizer bars



- Separate both hydraulic lines - **1** - , as well as electrical connection - **2** - .

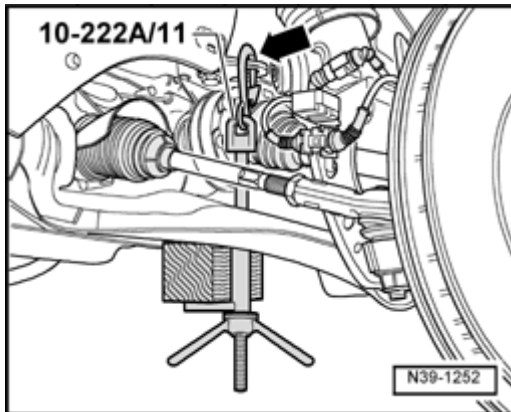
The lines must not be switched when installing!

- Check if a color marking is on the front line. If there is

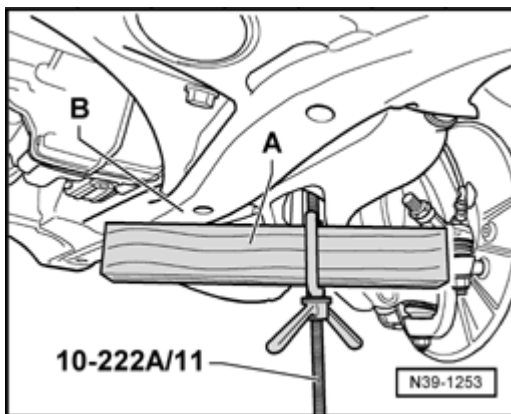
none, apply a new one.

- When removing the hydraulic lines, counterhold with an open-end wrench.

Continued for all vehicles



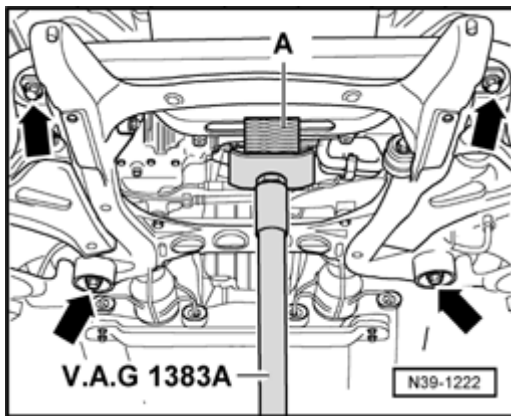
- Hook spindles 10-222 A/11 in the eyelets - **Arrow** - of engine carrier on left and right sides of the vehicle.



- Place a block of wood - **A** - about 300 mm long in the "U" of each spindle 10-222 A/11 .

The "U" must face to the rear.

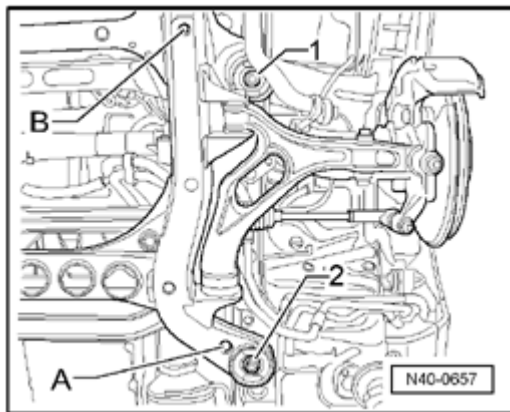
- Tighten wing nuts on the spindles ; the wooden blocks must lie against the subframe - **B** - .
- Install insert from a trolley jack in the engine/transmission jack V.A.G 1383 A .



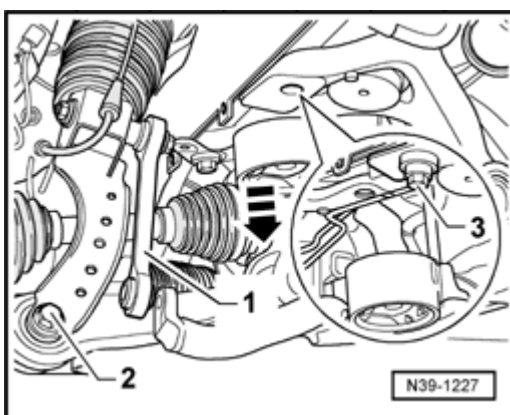
- Place engine/transmission jack V.A.G 1383 A under subframe and apply slight counter pressure.

A - Supporting wood blocks

- Subframe, locating ⇒ [40-5, Subframe, locating](#) .

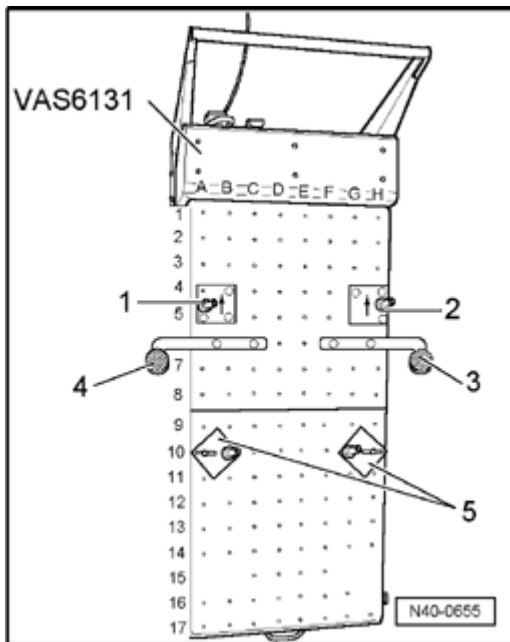


- Remove bolts - 1 - and - 2 - for subframe.



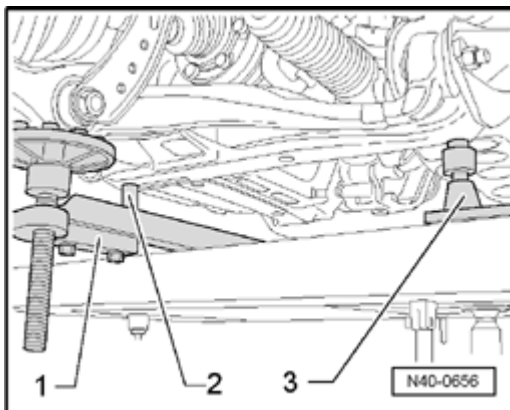
- Remove left and right links - 1 - from stabilizer bar.
- Lower subframe approx. 50 mm using spindles 10-222 A/11 .
- Take two bolts, M14 x 1.5 x 90 bolts N 104 281 01 for example, to secure engine carrier to body on left and right sides - 3 - .

- Remove engine/transmission jack V.A.G 1383 A from under vehicle.

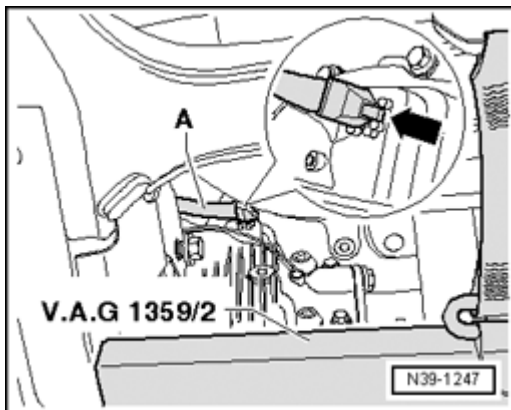


- Bolt supports to assembly platform as shown in the illustration.

- Left support VAS 6131/6-1
- Right support VAS 6131/6-2
- Left axle support VAS 6131/6-3
- Right axle support VAS 6131/6-4
- Support VAS 6131/6-5



- Support subframe with assembly platform.
 - Left axle support VAS 6131/6-3
 - Left support VAS 6131/6-1
 - Support VAS 6131/6-5
- Remove spindles 10-222 A/11 from subframe.



- Carefully pull vent line - **A** - from final drive.
- Slowly and carefully lower subframe, checking constantly to see that there is sufficient clearance.

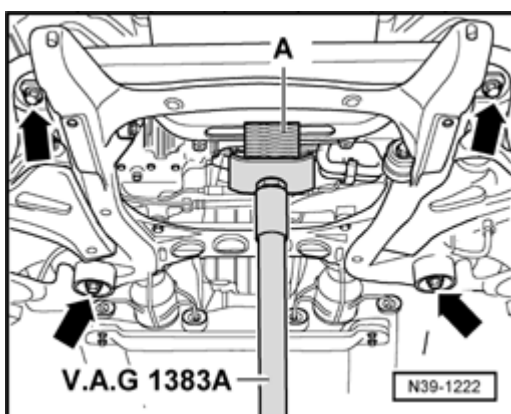
Installing

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

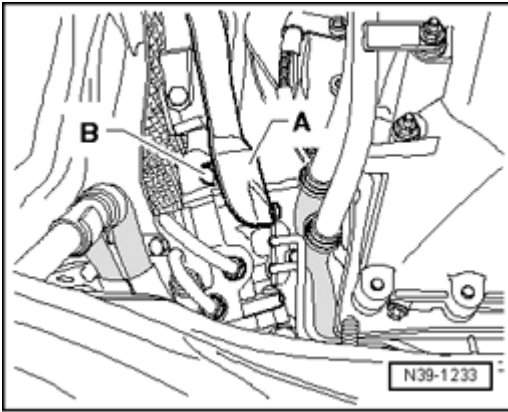
Always replace securing bolts for drive shaft

⇒ *Repair Manual, Final Drive, Repair Group 39, Drive shaft removing and installing*

.



- Install subframe with new bolts - **arrow** - .
- Remove spindles 10-222 A/11 from subframe.



- Install universal joint on steering gear and tighten bolt - **B**
- to specified torque.
- If installed, install guard plate - **A** - on steering gear ⇒ [48-3, Steering gear, assembly overview](#) .
- Install front wheels ⇒ [44-2, Tightening torque for wheel bolts](#) .

Vehicles with decouplable stabilizer bars

- Bleed decouplable stabilizer bar ⇒ [40-6, Decouplable stabilizer bar, bleeding](#) .

Continued for all vehicles

- Bleed brake system

⇒ [Repair Manual, Brake System, Repair Group 47, Brake system, bleeding](#)

.

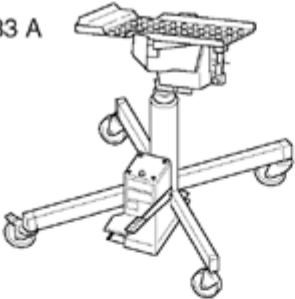
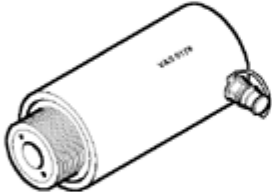
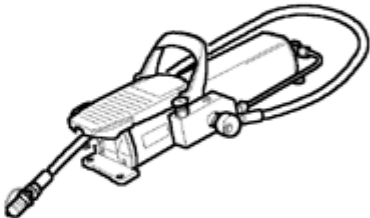
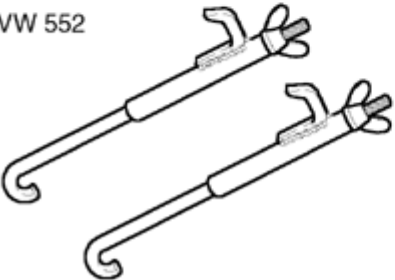
- A wheel alignment check must be made following installation ⇒ [44-4, Wheel alignment](#) .

Tightening torques	
Upper control arm to wheel bearing housing ■ Use new nut.	95 Nm
Pressure / return line at steering gear	30 Nm
Universal joint at steering gear ■ Use new bolt.	40 Nm plus an additional $\frac{1}{4}$ turn (90 °)
Shield at steering gear (if installed)	10 Nm

Subframe at body ■ Use new bolts.	120 Nm ¹ / ₂ (180 °)
Link at stabilizer bar ■ Use new nut.	100 Nm
Connection of hydraulic lines ¹⁾	15 Nm

¹⁾ When tightening, counterhold on the hex of the union nut

Subframe, servicing

V.A.G 1383 A 	V.A.G 1332 
VAS 6178 	VAS 6179 
VW 552 	

Special tools, testers and auxiliary items required

- Torque wrench V.A.G 1332
- Engine/transmission jack V.A.G

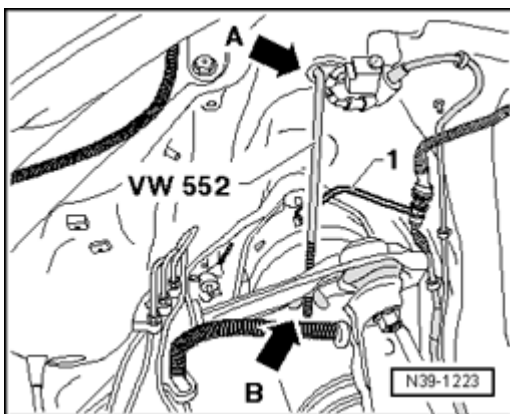
1383 A

- Hydraulic press VAS 6178
- Hollow piston cylinder VAS 6179
- Spring tensioner VW 552
- Assembly tool T10301 , without illustration

Warning!

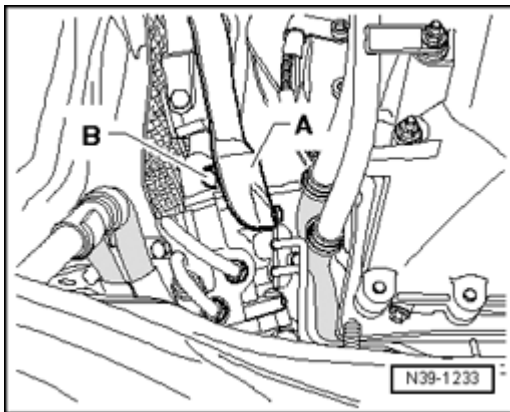
On vehicles with decouplable stabilizer bars, the stabilizer bars must be coupled in before beginning work. Otherwise, the risk of injury exists when decoupled stabilizer bars become unintentionally coupled.

- Switch hydraulic system for decouplable stabilizer bars pressureless, with ⇒ *Vehicle Diagnosis, Testing and Information System VAS 5051* .



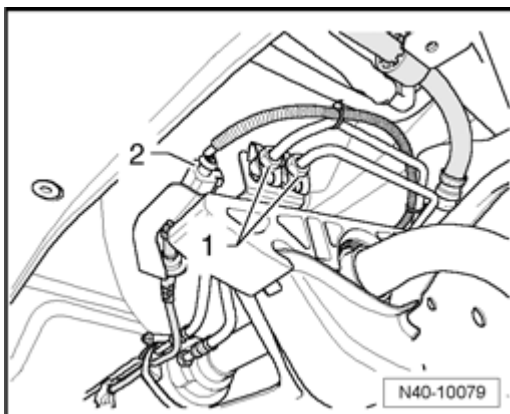
- Hook spring tensioner VW 552 in upper opening of the wheelhousing on both sides of the vehicle - **Arrow A** - and on the upper control arm - **Arrow B** - .
- Preload control arm slightly so that the ball stud of the ball joint is not damaged.
- Remove sound insulation below engine/transmission

⇒ [*Repair Manual, Body Exterior, Repair Group 50, Sound insulation; sound insulation - assembly overview*](#)



- If installed, remove shield - **A** - from steering gear (2 bolts).
- Remove bolt - **B** - for the steering gear universal joint and remove universal joint from steering gear.

Vehicles with decouplable stabilizer bars



- Separate both hydraulic lines - **1** - , as well as electrical connection - **2** - .

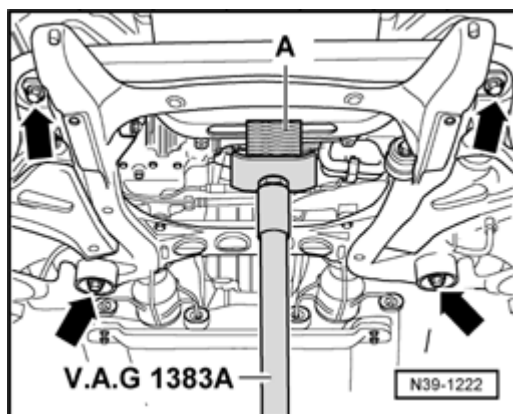
The lines must not be switched when installing!

- Check if a color marking is on front line. If there is none, apply a new one.
- When removing hydraulic lines, counterhold with an open-end wrench.

Continued for all vehicles

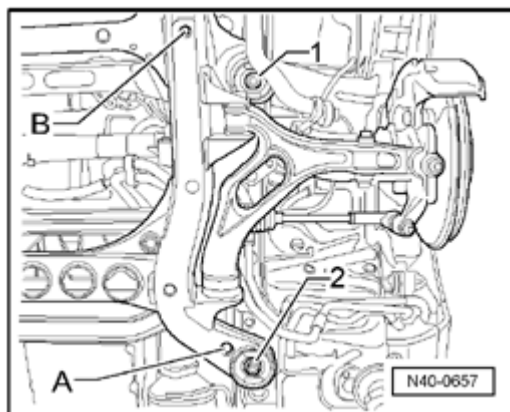
- Disconnect connecting links from stabilizer bar.
- Remove suspension strut from lower control arm.
- Subframe, locating ⇒ [40-5, Subframe, locating](#) .
- Install the insert from a trolley jack in engine/transmission

jack V.A.G 1383 A .

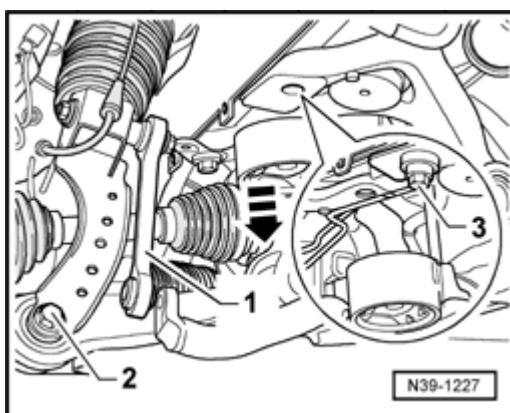


- Place engine/transmission jack V.A.G 1383 A under engine carrier and apply slight counterpressure.

A - Supporting wood blocks



- Remove bolts - **1** - for subframe.
- Lower subframe about 70 mm using spindles 10-222 A/11 .



- Take two bolts, M14 x 1.5 x 90 bolts N 104 281 01 for example, to secure engine carrier to body on left and right - **3** - .
- Remove engine/transmission jack V.A.G 1383 A from

under engine carrier.

Continue with removal of front bonded rubber bushing

⇒ [40-5, Front bonded rubber bushing \(in driving direction\), removing and installing](#)

Continue with removal of rear bonded rubber bushing

⇒ [40-5, Rear bonded rubber bushing \(in driving direction\), removing and installing](#)

- Install subframe to body and remove locating fixtures T10300 (2 mechanics required).

Installation is in reverse sequence of removal.

Vehicles with decouplable stabilizer bar

- Bleed hydraulic system for decouplable stabilizer bar ⇒ [42-5, Decouplable stabilizer bar, bleeding](#) .

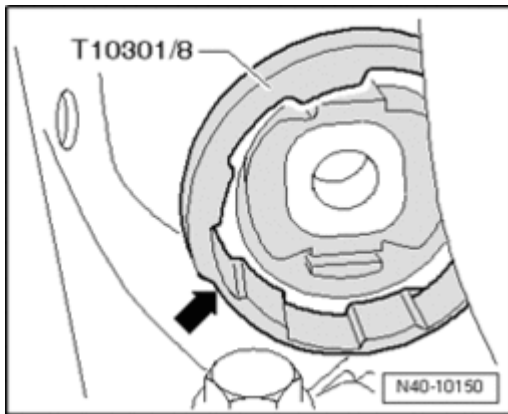
Perform a test drive after repairs. If the steering wheel is crooked, perform a vehicle alignment ⇒ [44-4, Wheel alignment](#) .

Torque specifications	
Upper control arm to wheel bearing housing ■ Use new nut.	95 Nm
Pressure / return line at steering gear	30 Nm
Universal joint at steering gear ■ Use new bolt.	40 Nm + quarter turn (+90 °)
Shield at steering gear (if installed)	10 Nm
Subframe at body ■ Use new bolts.	120 Nm + quarter turn (+180 °)
Coupling rod to stabilizer bar ■ Use new nut.	100 Nm
Connection of hydraulic lines ¹⁾	15 Nm

¹⁾ When tightening, counterhold on the hex of the union nut

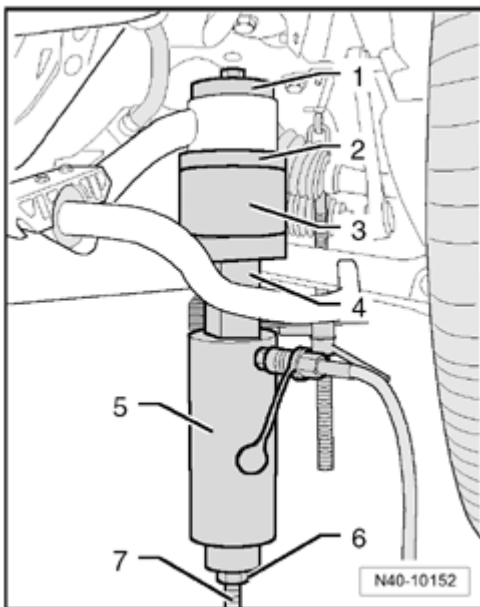
Front bonded rubber bushing (in driving direction), removing and installing

Pressing out bonded rubber mounting



- Set the support ring T10301/8 in place, so that the narrow side - **arrow** - faces toward the subframe.

The support ring T10301/8 must be lightly set in place and must not be tilted.

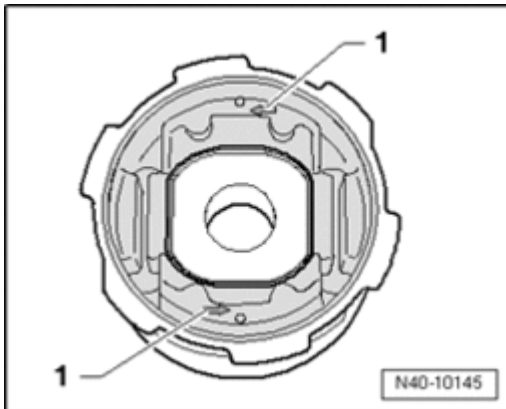


- Install tools as shown in illustration.
 - Press piece T10301/5
 - Support ring T10301/8
 - Tube T10301/3
 - Spacer T10301/9
 - Hydraulic press VAS 6178
 - Nut T10301/2
 - Spindle T10301/1
- Press out bonded rubber bushing.

Caution!

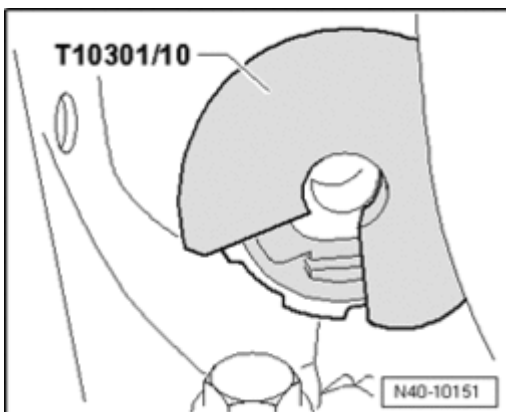
Hold hydraulic press VAS 6178 during the pressing-out procedure.

Installed location



One of the two arrows - **1** - must face in driving direction.

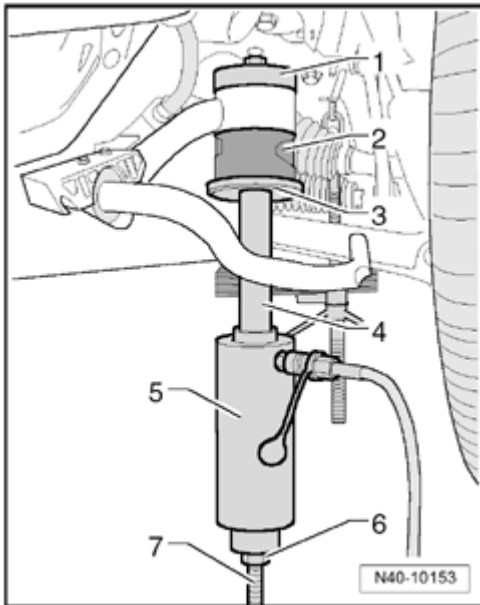
Pressing in bonded rubber bushing



- Set thrust plate T10301/10 in place with the open side toward subframe.

Caution!

When pressing in the bonded rubber bushings, make sure that the thrust plate T10301/10 is positioned correctly, to prevent the subframe from being damaged.



- Install tools as shown in illustration.

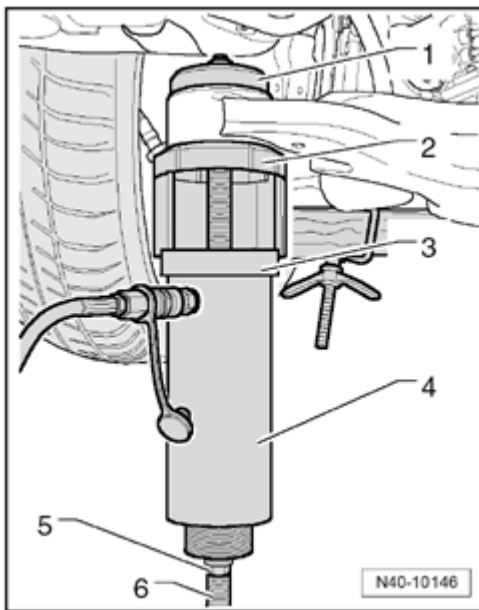
- Press piece T10301/7
- Bonded rubber bushing
- Thrust pad T10301/10
- Spacer T10301/11
- Hydraulic press VAS 6178
- Nut T10301/2
- Spindle T10301/1

- Press in bonded rubber bushing until shoulder is positioned "without gap" against socket of subframe.

- Install subframe to body ⇒ [Topic 40-5](#) .

Rear bonded rubber bushing (in driving direction), removing and installing

Pressing out bonded rubber bushing



- Install tools as shown in illustration.

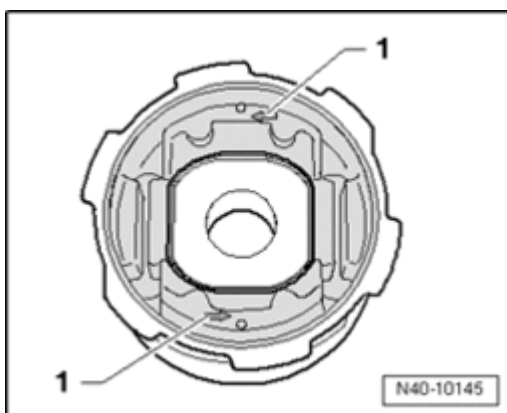
- Press piece T10301/5
- Support ring T10301/8
- Tube T10301/3
- Hydraulic press VAS 6178
- Nut T10301/2
- Spindle T10301/1

- Press out bonded rubber bushing.

Caution!

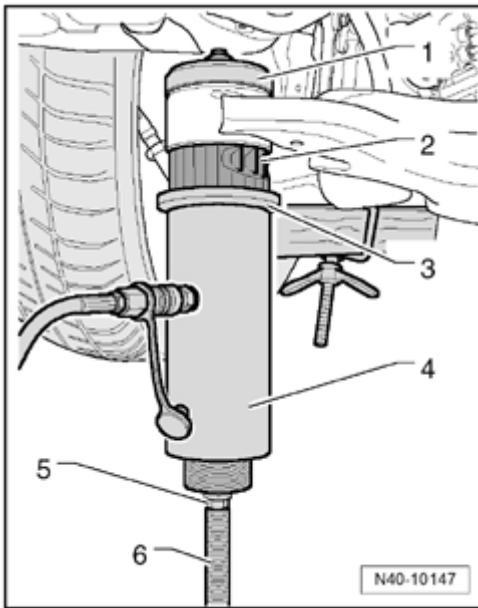
Hold hydraulic cylinder VAS 6178 during the pressing-out procedure.

Installed location



One of the two arrows - **1** - must face in driving direction.

Pressing in bonded rubber mounting



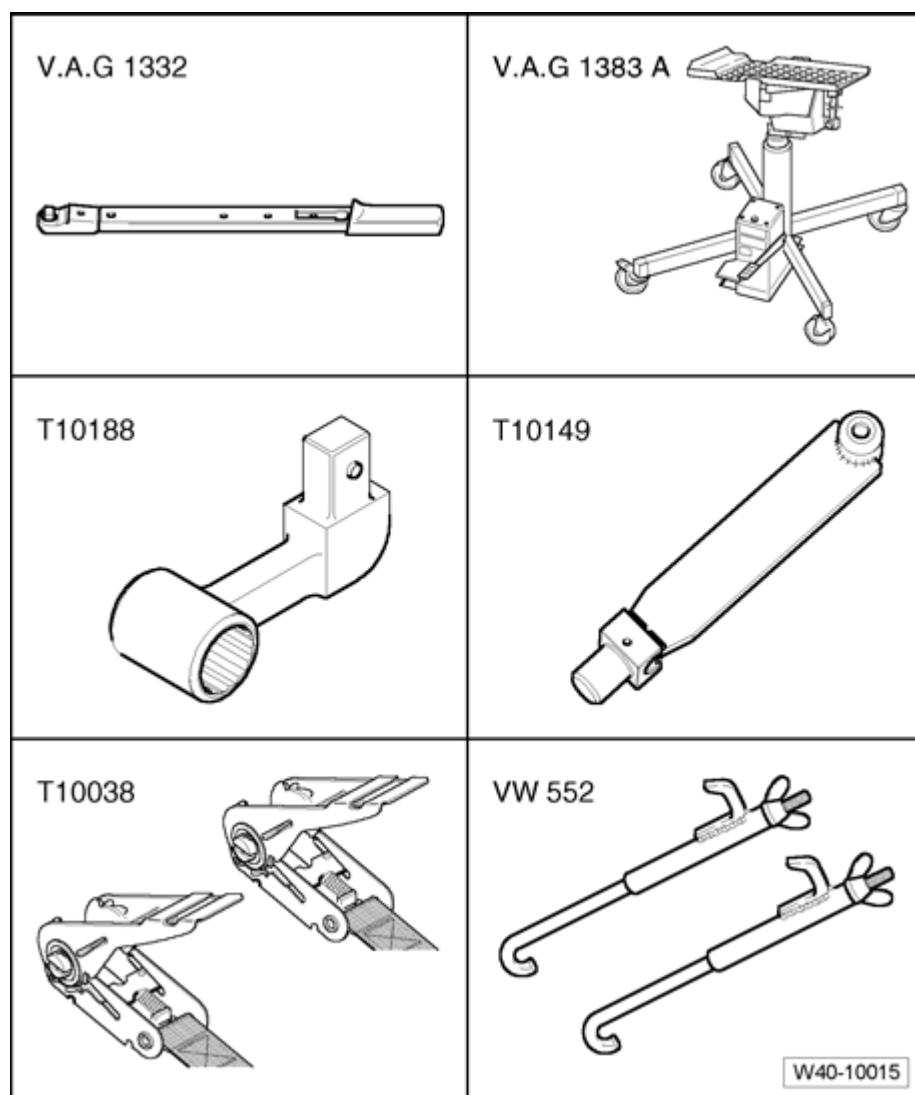
- Install tools as shown in illustration.

- Press piece T10301/7
- Bonded rubber bushing
- Thrust pad T10301/6
- Hydraulic press VAS 6178
- Nut T10301/2
- Spindle T10301/1

- Press in bonded rubber bushing until the shoulder is positioned "without gap" against the socket of the subframe.

- Install subframe to body ⇒ [Topic 40-5](#) .

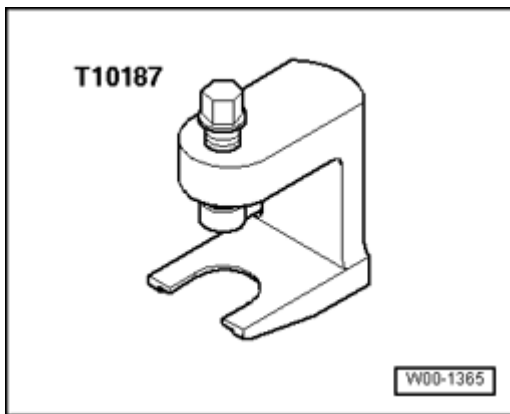
Lower control arm, removing and installing



Special tools, testers and auxiliary items required

- Tensioner hooks VW 552
- Torque wrench V.A.G 1332
- Socket T10188
- Tightening strap T10038
- Engine/transmission jack V.A.G 1383 A
- Wheel hub support T10149

Special tools, testers and auxiliary items required



- Ball joint puller T10187

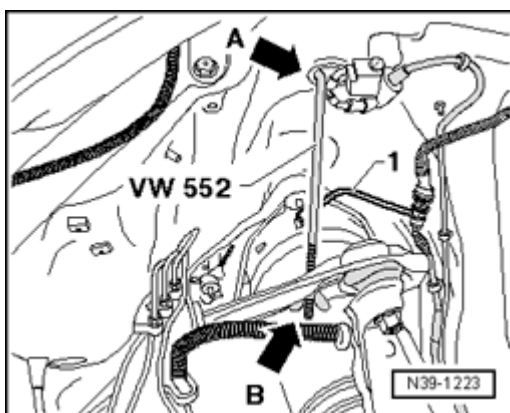
Lower control arm, removing

Warning!

On vehicles with decouplable stabilizer bars, the stabilizer bars must be coupled in before beginning work. Otherwise, the risk of injury exists when decoupled stabilizer bars become unintentionally coupled.

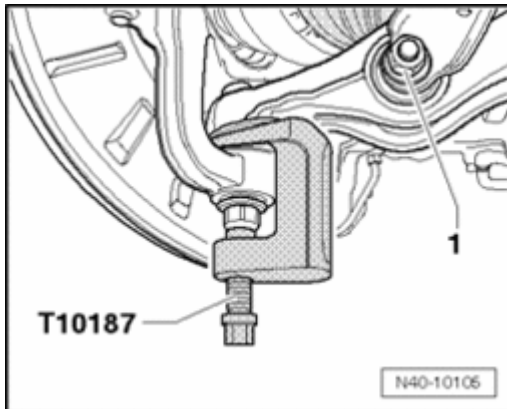
- Remove wheel.
- Remove wheelhousing liner

⇒ [Repair Manual, Body Exterior, Repair Group 66, wheelhousing liners; Front wheelhousing liner, assembly overview](#)



- Hook tensioner hooks VW 552 in upper opening of wheelhousing - **arrow A** - and on upper control arm - **arrow B** - .

- Preload control arm slightly so that the ball stud of the ball joint is not damaged.



- Remove suspension strut - **1** - from lower control arm.
- Remove nut from lower control arm and press off ball stud using ball joint puller - **T10187** - .
- Remove nut.
- Remove lower control from subframe and from wheel bearing housing.

Lower control arm, installing

Further installation is in reverse sequence to removal.

The threaded connection of the suspension strut/lower control arm must be tightened in the unloaded position ⇒ [40-3, Bringing wheel bearing to curb weight position](#) .

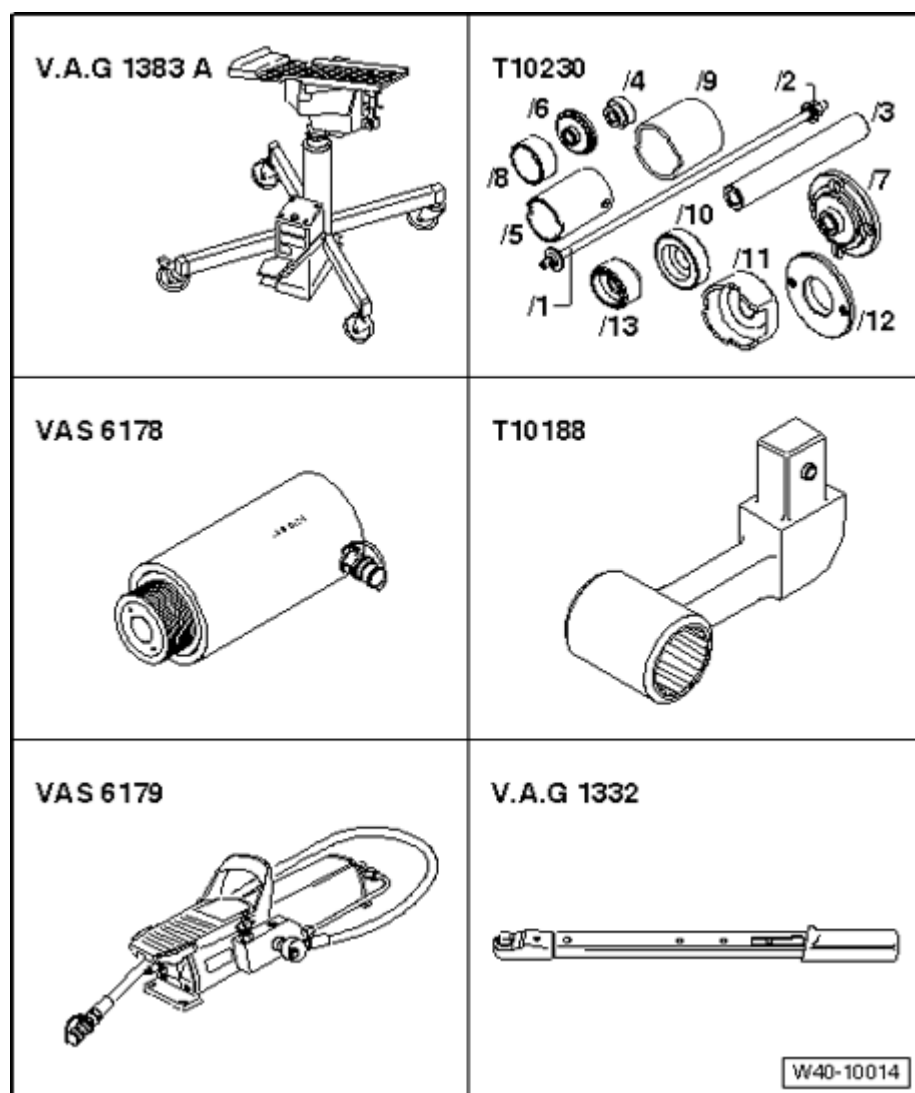
- Tighten threaded connection of the lower control arm/subframe during the vehicle alignment.
- Perform vehicle alignment ⇒ [44-4, Wheel alignment](#) .

Tightening torques	
Lower control arm to subframe ¹⁾	180 Nm
Suspension strut to lower control arm ²⁾	150 Nm plus an additional ¹ / ₄ turn 90 °
Lower control arm to wheel bearing housing ¹⁾	105 Nm
Wheel to wheel hub	160 Nm

¹⁾ Replace self-locking nuts every time they are removed

²⁾ Replace nut and bolt every time they are removed

Lower control arm, servicing



Special tools, testers and auxiliary items required

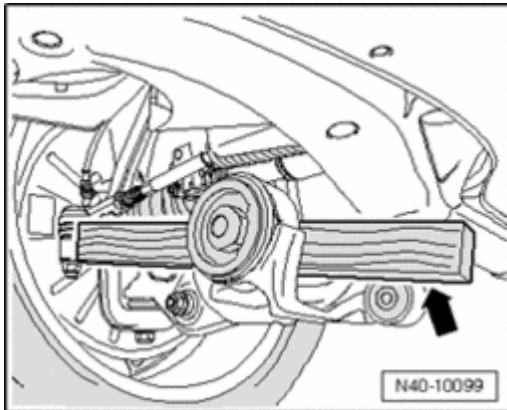
- Assembly tool T10230
- Hollow piston cylinder VAS 6179
- Hydraulic press VAS 6178
- Engine/transmission jack V.A.G 1383 A
- Torque wrench V.A.G 1332
- Socket T10188

Bonded rubber bushing, pressing out (camber adjustment bolt bushing)

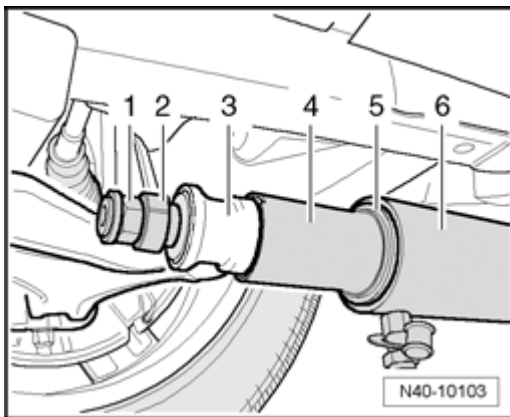
Warning!

On vehicles with decouplable stabilizer bars, the stabilizer bars must be coupled in before beginning work. Otherwise, the risk of injury exists when decoupled stabilizer bars become unintentionally coupled.

- Remove lower control arm from subframe.



- Pull lower control arm from subframe and place a piece of wood - **arrow** - between lower control arm and subframe.



- Install special tools to lower control arm as shown in the illustration.

- Nut T10230/2
- Press piece T10230/4
- Lower control arm
- Tube T10230/5
- Thrust plate T10230/7
- Hydraulic press VAS 6178

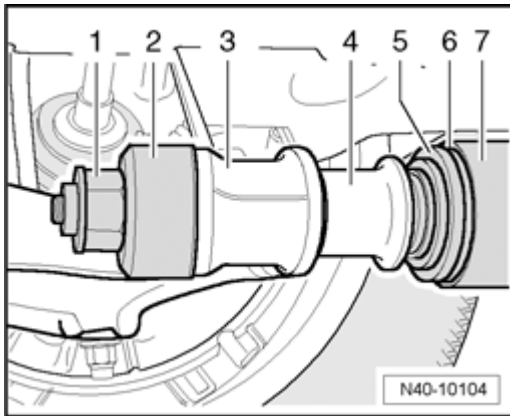
Caution!

Before pressing out bonded rubber bushing, place a

engine/transmission jack V.A.G 1383 A with universal mountings under the cylinder; the cylinder may fall down at the end of the pressing out procedure.

- Press out bonded rubber bushing.

Bonded rubber bushing, pressing in (camber adjustment bolt bushing)



- Install special tools to lower control arm as shown in the illustration.

- Nut T10230/2
- Press piece T10230/8
- Lower control arm
- Bonded rubber bushing
- Press piece T10230/6
- Thrust plate T10230/7
- Hydraulic press VAS 6178

- Press in bonded rubber bushing up to stop.

Thereby, the center of the bonded rubber bushing is pressed in further by press piece T10230/6. This is necessary so that the outside lip of bonded rubber bushing contacts control arm. The center of bonded rubber bushing sets itself in the correct position after the hydraulic press VAS 6178 is removed.

- Install control arm to subframe.
- Perform vehicle alignment ⇒ [44-4, Wheel alignment](#) .

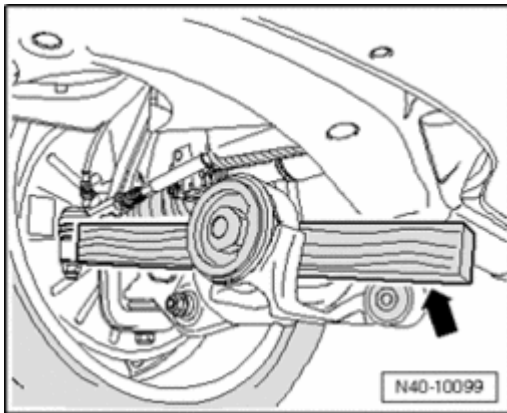
Bonded rubber bushing, pressing out (caster adjustment bolt bushing)

Warning!

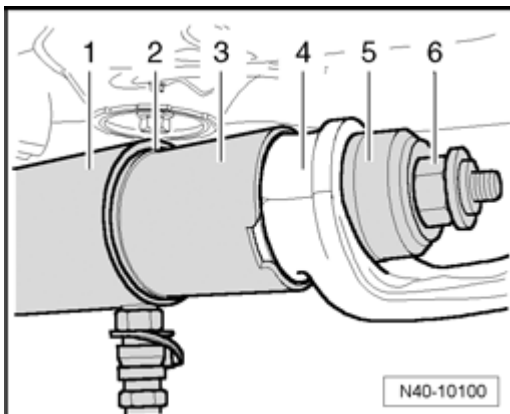
On vehicles with decouplable stabilizer bars, the stabilizer bars must be coupled in before beginning work. Otherwise, the risk of injury exists when

decoupled stabilizer bars become unintentionally coupled.

- Remove lower control arm from subframe.



- Pull lower control arm from subframe and place a piece of wood - **arrow** - between lower control arm and subframe.



- Install special tools to lower control arm as shown in illustration.

- Hydraulic press VAS 6178
- Thrust plate T10230/7
- Tube T10230/9
- Lower control arm
- Press piece T10230/10
- Nut T10230/2

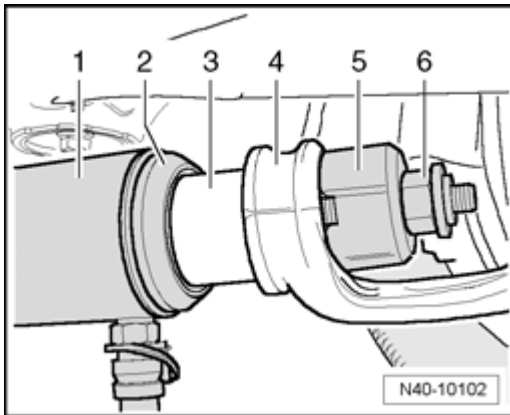
Caution!

Before pressing out, place a engine/transmission jack V.A.G 1383 A with universal mountings under the cylinder; the cylinder may fall down at the end of the pressing out procedure.

- Press out bonded rubber bushing.

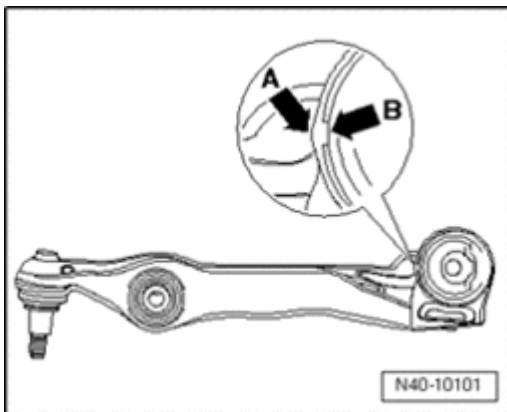
Bonded rubber bushing, pressing in (caster adjustment bolt bushing)

- Using a felt-tipped pen, draw an extension of the relief notch on the outer diameter of the bonded rubber bushing.



- Install special tools to lower control arm as shown in illustration.

- Hydraulic press VAS 6178
- Thrust plate T10230/7
- Tube T10230/9
- Lower control arm
- Press piece T10230/10
- Nut T10230/2



Align bonded rubber bushing according to the marking - **arrow** - and press in up to stop.

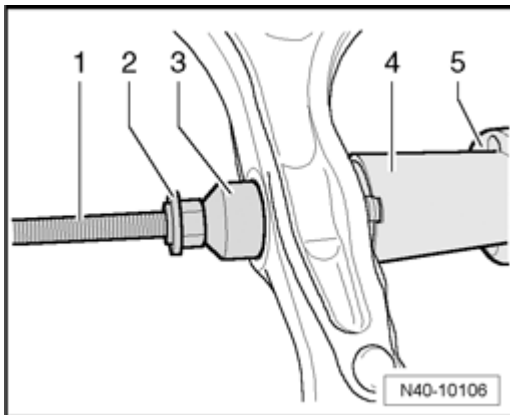
Arrow A - Seam edge in casting of control arm

Arrow B - Relief notch in bonded rubber bushing

- Install control arm to subframe.
- Perform vehicle alignment ⇒ [44-4, Wheel alignment](#) .

Bonded rubber bushing, pressing out (suspension strut bushing)

- Remove wheel.
- Remove lower control arm ⇒ [40-5, Lower control arm, removing and installing](#) .

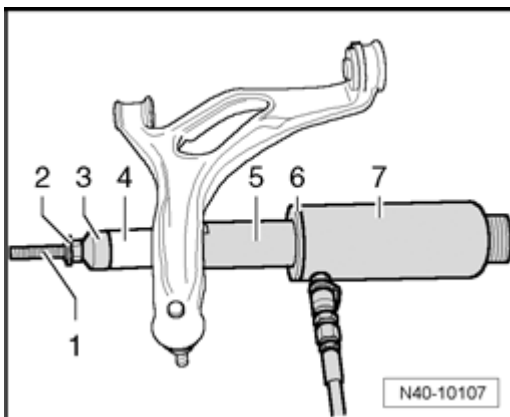


- Install special tools to lower control arm as shown in illustration.

- Threaded spindle T10230/1
- Nut T10230/2
- Press piece T10230/13
- Tube T10230/5
- Press plate T10230/7 and hydraulic press VAS 6178

- Press out bonded rubber bushing.

Bonded rubber bushing, pressing in (suspension strut bushing)



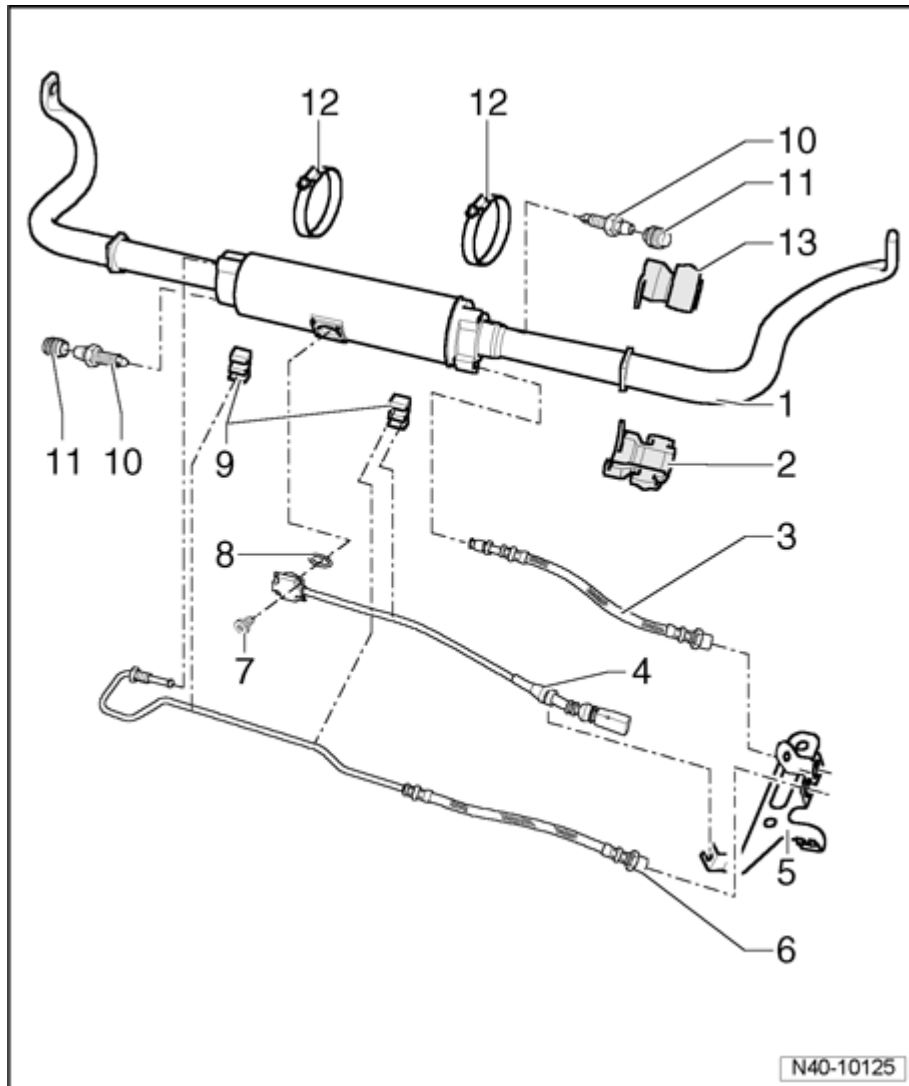
- Install special tools to lower control arm as shown in illustration.

- Threaded spindle T10230/1
- Nut T10230/2
- Press piece T10230/13
- Bonded rubber bushing
- Tube T10230/5
- Thrust plate T10230/7

- Hydraulic press VAS 6178

- Press in bonded rubber bushing so that it is flush.
- To observe the pressing-in process, utilize relief notches in tube T10230/5 .
- Install lower control arm ⇒ [40-5, Lower control arm, removing and installing](#) .
- Perform vehicle alignment ⇒ [44-4, Wheel alignment](#) .

Decouplable stabilizer bar, assembly overview



■ Decouplable stabilizer bar, front

- Removing and installing ⇒ [40-6, Decouplable stabilizer bar, removing and installing](#)
- Bleeding ⇒ [40-6, Decouplable stabilizer bar, bleeding](#)

■ Stabilizer bar mount

- Installed location:
 - Mark stabilizer bar before removing

- **Larger diameter must face toward outside**

- **Hydraulic line**

- Tighten to stabilizer bar, 40 Nm
- Place in the front holder in driving direction ⇒ [Item - 5 -](#)
- With color marking
- The claw coupling in the stabilizer bar closes when pressure is increased in this line
- Counterhold on hex of the union nut with an open-end wrench when loosening the connection

- **Front axle stabilizer decoupling sensor G484**

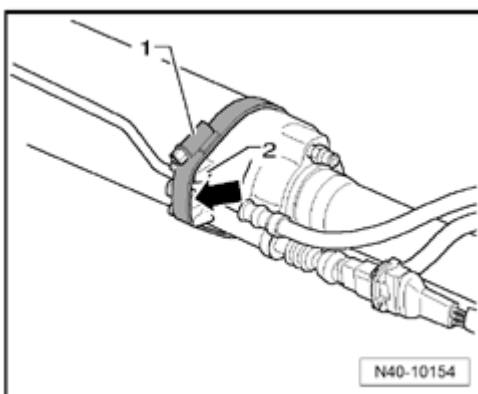
- Can be tested in "guided fault finding" with the Vehicle diagnosis, testing and information system VAS 5051

- **Bracket**

- **Hydraulic line**

- Tighten to stabilizer bar, 20 Nm
- Place in the rear holder in driving direction ⇒ [Item - 5 -](#)
- The claw coupling in the stabilizer bar opens when pressure is increased in this line
- Counterhold on hex of the union nut with an open-end wrench when loosening connection

- **Hex socket head bolt**
 - 3 Nm
- **Seal ring**
 - Always replace
- **Bracket**
 - Secure with clamp ⇒ [Item - 12 -](#) to stabilizer bar
- **Bleeder screw**
 - 5 Nm
- **Dust cap**
- **Clamp**
 - Installed location: ⇒ [40-6, Installed position of the clamp for securing the hydraulic lines to the decouplable stabilizer bar](#)



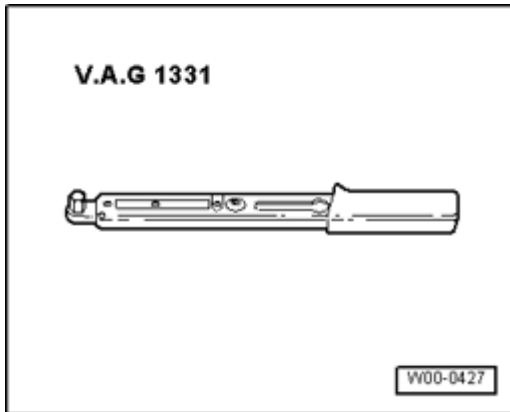
Installed position of the clamp for securing the hydraulic lines to the decouplable stabilizer bar

- The closure of the clamp - **1** - must be located above the bracket - **2** - . It must be positioned so that fastening of the clamp can be done from below.

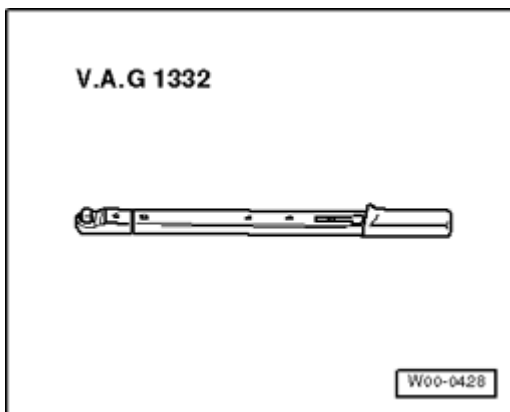
- The clamp must be positioned directly against the bracket - **2** - - **arrow** - .

Decouplable stabilizer bar, removing and installing

Special tools, testers and auxiliary items required



- Torque wrench V.A.G 1331



- Torque wrench V.A.G 1332

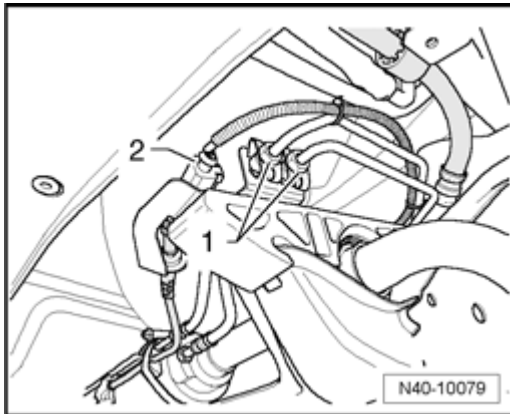
Decouplable stabilizer bar, removing

Warning!

On vehicles with decouplable stabilizer bars, the stabilizer bars must be coupled in before beginning work. Otherwise, the risk of injury exists when decoupled stabilizer bars become unintentionally coupled.

- Switch hydraulic system pressureless, with the ⇒ *Vehicle Diagnosis, Testing and Information System VAS 5051* .
- Remove front noise insulation

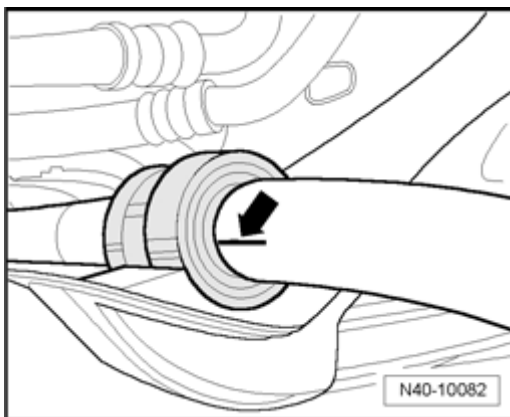
⇒ [Repair Manual, Body Exterior, Repair Group 50, Noise insulation; noise insulation - assembly overview](#)



- Separate both hydraulic lines - **1** - , as well as electrical connection - **2** - .

The lines must not be switched when installing!

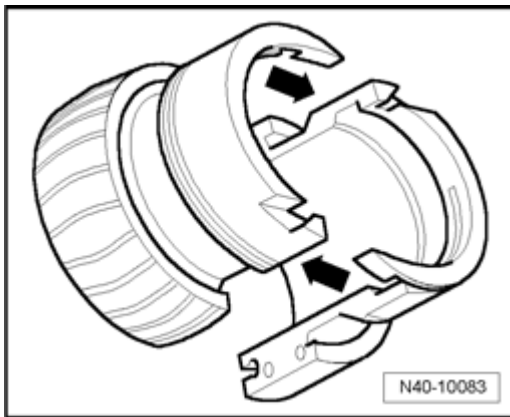
- Check if a color marking is on front line. If there is none, apply a new one.
- When removing hydraulic lines, counterhold with an open-end wrench.



- Remove stabilizer bar clamps and mark the installed location of stabilizer bar mount on stabilizer bar - **arrow** -
- Remove stabilizer bar from connecting links.

Decouplable stabilizer bar, installing

Installation is in reverse sequence to removal.



- Install halves of the stabilizer bar mount - **arrow** - to stabilizer bar. Note:

- Markings on the stabilizer bar that were applied during removal
- Larger outside diameter of the stabilizer bar mount halves face toward outside of vehicle

After installation, hydraulic system must be bled using the
 ⇒ *Vehicle Diagnosis, Testing and Information System VAS 5051* ⇒ [40-6, Decouplable stabilizer bar, bleeding](#) .

Tightening torques	
Coupling rod to stabilizer bar	110 Nm
Stabilizer bar to subframe	60 Nm
Connection of hydraulic lines ¹⁾	15 Nm

¹⁾ When tightening, counterhold on the hex of the union nut

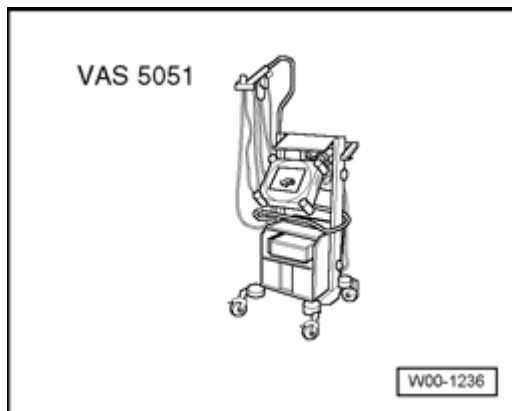
- Install front noise insulation

⇒ [Repair Manual, Body Exterior, Repair Group 50, Noise insulation; noise insulation - assembly overview](#)

.

Oil level for decouplable stabilizer bar hydraulic system, checking and filling

Special tools, testers and auxiliary items required

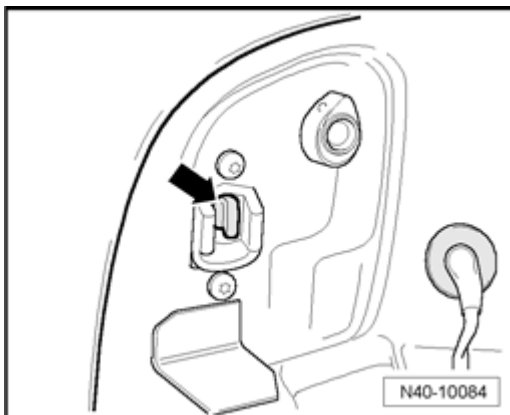


- Vehicle diagnostics, measurement and information system VAS 5051
- Plastic spray bottle (commercially available)

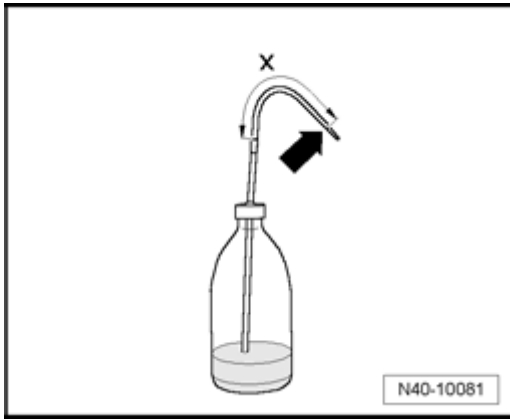
- Switch hydraulic system pressureless, with the ⇒ *Vehicle Diagnosis, Testing and Information System VAS 5051* .

- Remove left taillight

⇒ [Repair Manual, Electrical Equipment, Repair Group 94, Taillight; Taillight in side panel, assembly overview](#)



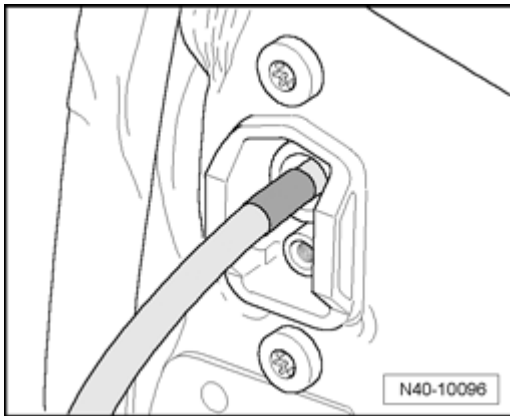
- Remove plug - **arrow** - from filling hole.



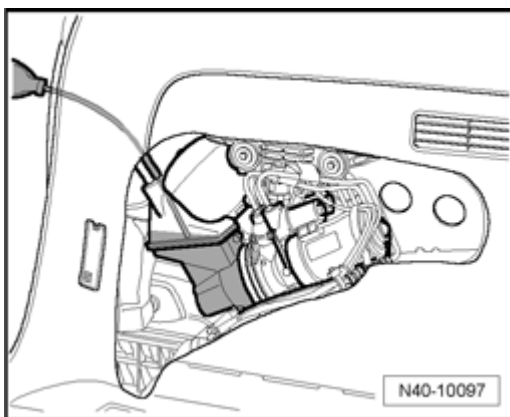
- Cut tip - **arrow** - off of plastic spray bottle.

Mark dimension - **X** - .

X = 135 mm



- Guide plastic spray bottle hose into filling hole, up to applied mark.

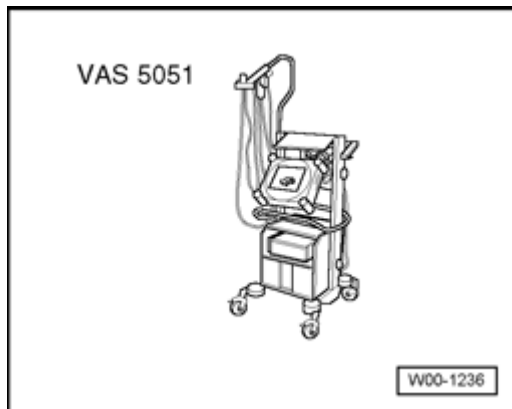


- Add enough central hydraulic oil and power steering oil G 002 000 until, through intake with the plastic spray bottle, oil climbs in the hose.

- Extract enough oil out of the reservoir with the plastic spray bottle until air climbs in the hose. Then observe the applied marking on the hose.

Decouplable stabilizer bar, bleeding

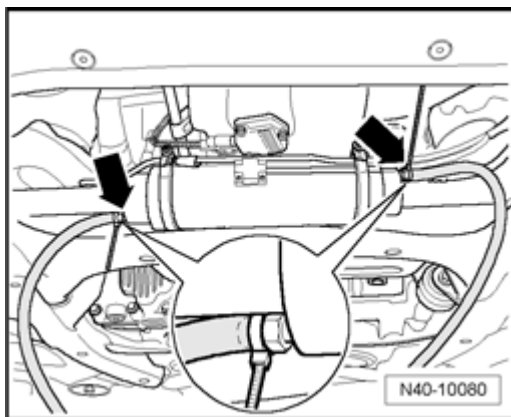
Special tools, testers and auxiliary items required



- Vehicle Diagnosis, Testing and Information System VAS 5051
- Clear plastic hose, inside diameter 6 mm, approx. 1 meter long

- Switch hydraulic system pressureless, with $\Rightarrow$ *Vehicle Diagnosis, Testing and Information System VAS 5051* .

- Check oil level in engine pump assembly $\Rightarrow$ [40-6, Oil level for decouplable stabilizer bar hydraulic system, checking and filling](#) .



- Attach hose to bleeder screw - **arrows** - .
- Secure hose on bleeder screw with a cable tie or hose clamp.

Note:

- *Due to the high pressure, the hose would slide off of the bleeder screw if not secured while bleeding.*

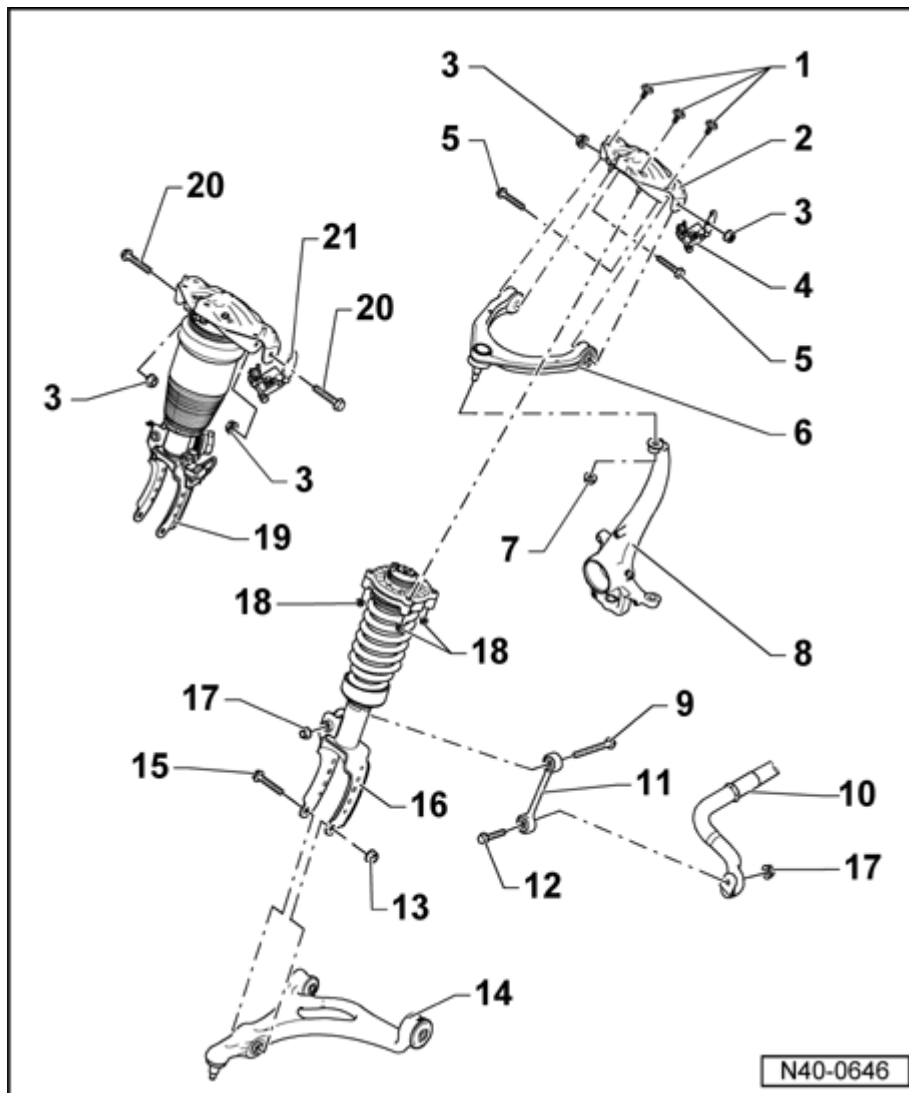
- Loosen bleeder screw approx. 1 turn.
- Follow directions in ⇒ *Vehicle Diagnosis, Testing and Information System VAS 5051* ⇒ *Vehicle Diagnosis, Testing and Information System VAS 5051* .
- Tighten bleeder screw and remove hose.
- Check oil level in engine pump assembly once more ⇒ [40-6, Oil level for decouplable stabilizer bar hydraulic system, checking and filling](#) .



II - Front suspension, assembly overview

Note :

- If components using bonded rubber bushings are replaced, or nuts/bolts on these components are loosened, the wheel bearing must be moved to the curb weight position before they are tightened ⇒ [40-3, Bringing wheel bearing to curb weight position](#) .



■ Hex bolt

- M10 x 37
- 50 Nm plus an additional $\frac{1}{4}$ turn 90°
- Always replace after

removal

- **Mounting bracket**
- **Self-locking nut**
 - M10
 - 50 Nm plus an additional ¹ /
4 90 °
 - Always replace
- **Left/Right front level control system sensor G78 G289**
 - Removing and Installing - Vehicles with Strut Suspension ⇒ [40-7, Left and right front level control system sensor G78 / G289 removing and installing, vehicles with strut suspension](#)
 - Removing and Installing - Vehicles with Air Spring Suspension ⇒ [40-7, Left/Right front level control system sensor G78 / G289 removing and installing, vehicles with air spring damper](#)
 - Check using "Guided Fault Finding" using VAS 5051
- **Hex bolt**
 - M10 x 70
 - 50 Nm plus an additional ¹ /
4 turn 90 °
 - Always replace
- **Upper control arm**
 - Can only be removed with mounting bracket

- Tapered pin must be free of oil and grease
- If necessary, clean with a dry cloth, do not use cleaning solutions.
- **Self-locking nut**
 - M12 x 1.5
 - 95 Nm
 - Always replace
- **Wheel bearing housing**
 - Different versions for 17", 18" and 19" wheels
 - Tapered holes must be free of oil and grease
 - If necessary, clean with a dry cloth, do not use cleaning solutions.
 - Application $\Rightarrow$ *Electronic Parts Catalog "ETKA"*
- **Hex bolt**
 - M12 x 1.5 x 125
 - 110 Nm
- **Stabilizer bar**
- **Connecting Link**
- **Hex bolt**
 - M12 x 1.5 x 60
 - 110 Nm
- **Self-locking nut**
 - M12 x 1.5
 - Always replace

- **Lower control arm**

- Tapered pin must be free of oil and grease
- If necessary, clean with a dry cloth, do not use cleaning solutions.

- **Hex bolt**

- M14 x 1.5 x 102
- 150 Nm plus an additional ¹ /₄ turn 90 °
- Always replace

- **Suspension strut**

- Removing and installing ⇒ [40-7, Suspension strut removing and installing](#)
- When removing, leave mounting bracket on vehicle

- **Self-locking nut**

- M12 x 1.5
- Always replace

- **Self-locking nut**

- M8
- 30 Nm
- Always replace

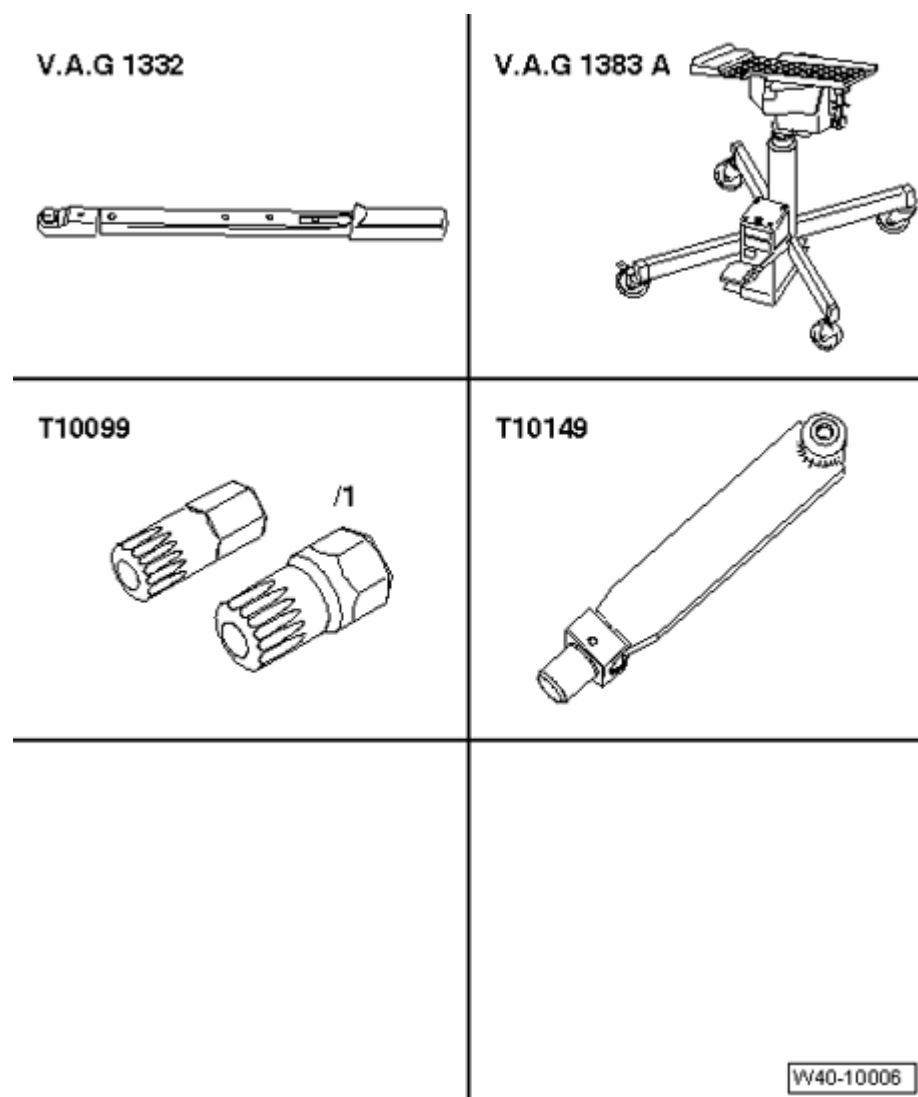
- **Air spring damper**

- Removing and installing ⇒ [40-7, Air spring damper, removing and installing](#)
- Guided fault finding for level control ⇒ [43-2, Air spring dampers and level](#)

[regulation, troubleshooting](#)

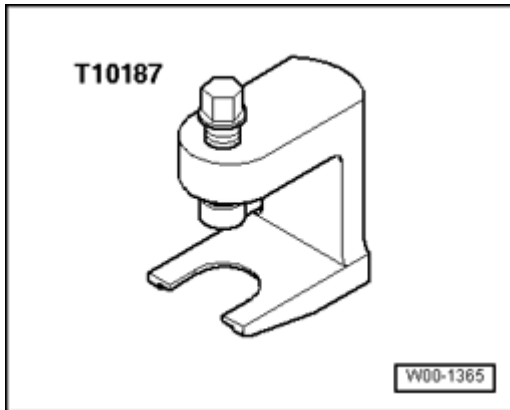
- Can only be removed with mounting bracket
- Mounting bracket must not be separated from air spring damper
- **Hex bolt**
 - M10 x 70
 - 50 Nm plus an additional ¹ /₄ turn 90 °
 - Always replace
- **Left/Right front level control sensor G78 G289**
 - Checked using "Guided Fault Finding" using VAS 5051

Suspension strut removing and installing

**Special tools, testers and auxiliary items required**

- Torque wrench V.A.G 1332
- Engine/transmission jack V.A.G 1383 A
- 12-mm socket T10099
- 14-mm socket T10099/1
- Wheel hub support T10149

Special tools, testers and auxiliary items required



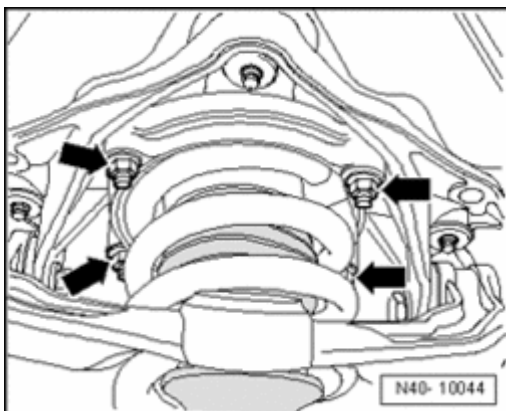
- Ball joint puller T10187

Removing

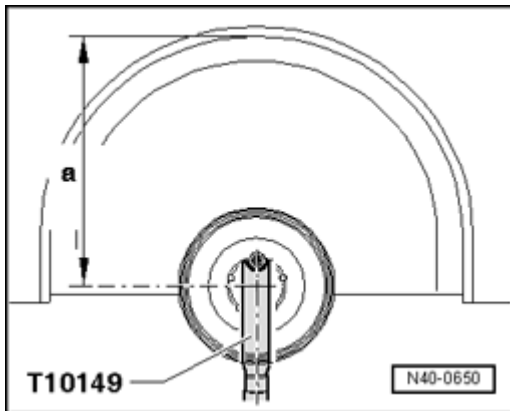
Warning!

On vehicles with decouplable stabilizer bars, the stabilizer bars must be coupled in before beginning work. Otherwise, the risk of injury exists when decoupled stabilizer bars become unintentionally coupled.

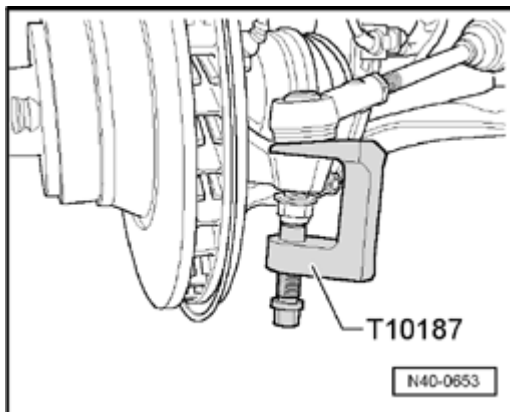
- Remove wheel.
- Disconnect link from stabilizer bar.
- Remove drive axle from final drive. Use 12-mm socket T10099 or 14-mm socket T10099/1 to remove bolts.



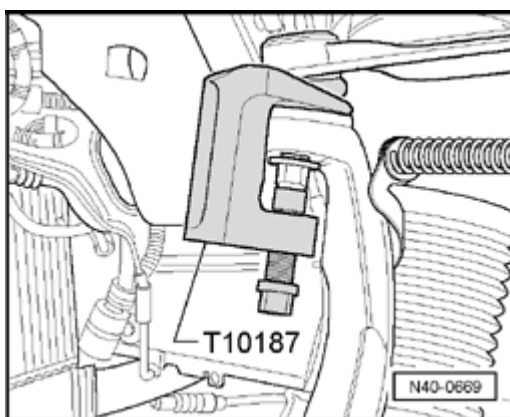
- Remove suspension strut from body - **Arrow** - .
- Turn the wheel hub until one of the holes for the wheel bolts is at the 12 o'clock position.



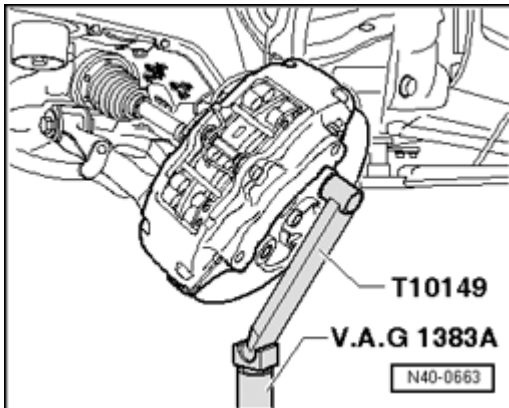
- Install wheel hub support T10149 with a wheel bolt.



- Press tie rod from wheel bearing housing.



- Press out upper control arm.
- Loosen suspension strut to lower control arm bolt.



- Lower wheel bearing housing only as far as necessary.
- Pull out bolt from lower control arm and remove suspension strut.

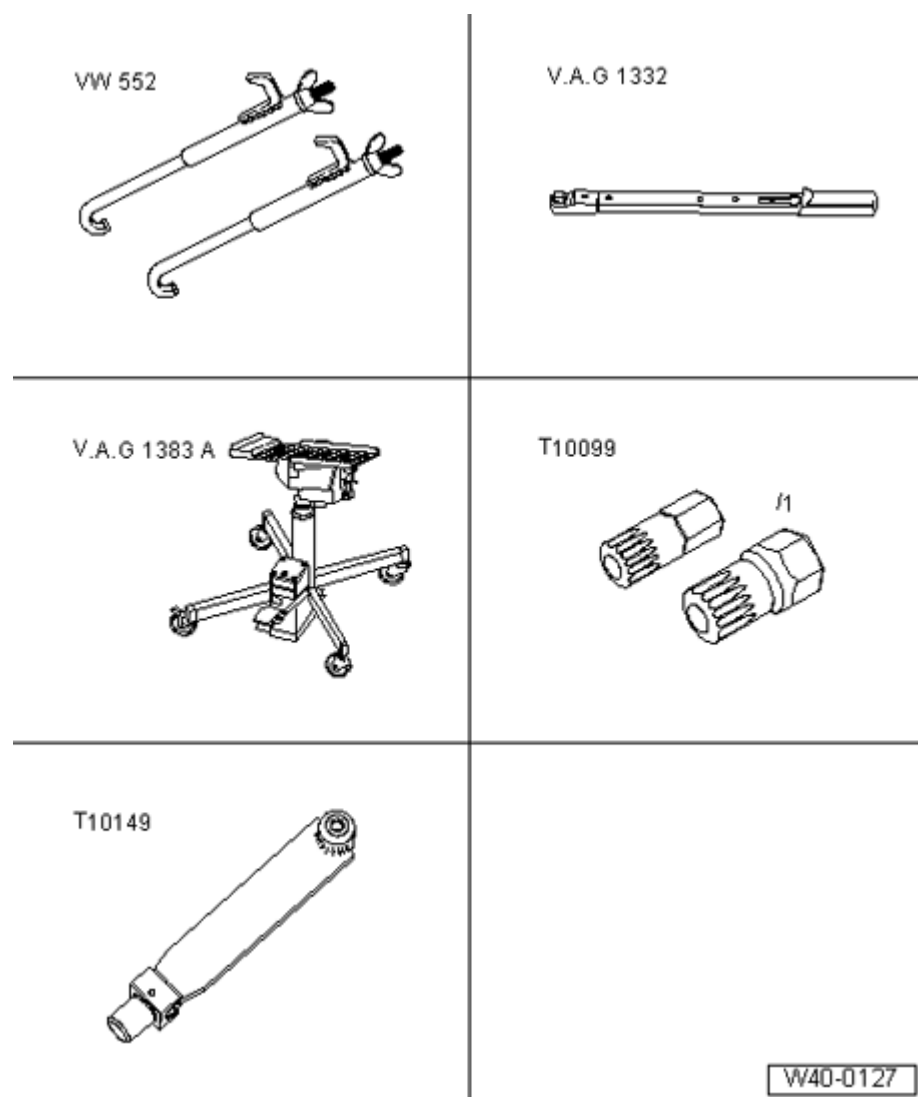
Installing

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

- A wheel alignment check must be made following installation ⇒ [44-4, Wheel alignment](#) .

Tightening torques	
Suspension strut to body ■ Use new nuts.	30 Nm
Suspension strut to lower control arm ■ Use new bolt and nut.	150 Nm plus an additional $\frac{1}{4}$ turn (90°)
Upper control arm to wheel bearing housing ■ Use new nut.	95 Nm
Tie rod to wheel bearing housing ■ Use new nut.	90 Nm

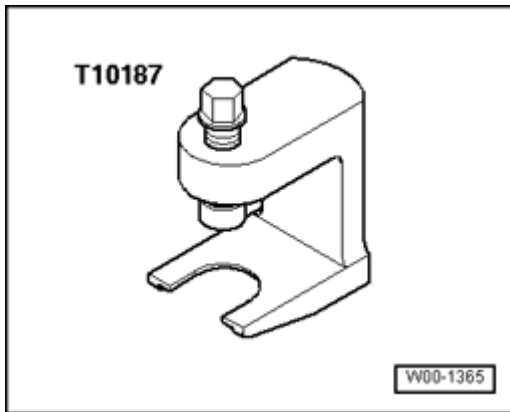
Air spring damper, removing and installing



Special tools, testers and auxiliary items required

- Tensioner hooks VW 552
- Torque wrench V.A.G 1332
- Engine/transmission jack V.A.G 1383 A
- 14-mm socket T10099/1
- Wheel hub support T10149

Special tools, testers and auxiliary items required



- Ball joint puller T10187

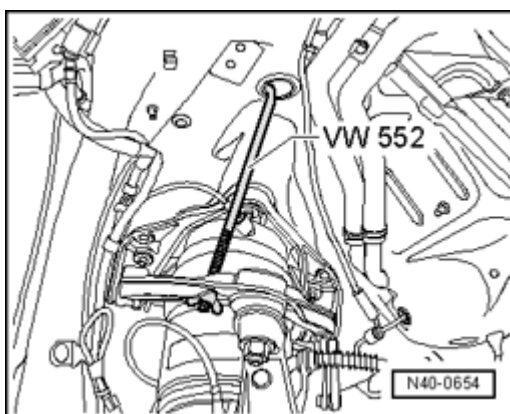
Removing

Warning!

On vehicles with decouplable stabilizer bars, the stabilizer bars must be coupled in before beginning work. Otherwise, the risk of injury exists when decoupled stabilizer bars become unintentionally coupled.

During disassembly and assembly, make sure that no pressure points (indentations) are formed on the protective boot for the air spring damper.

- Remove wheel.
- Remove air line from air spring damper, and plug both connectors.

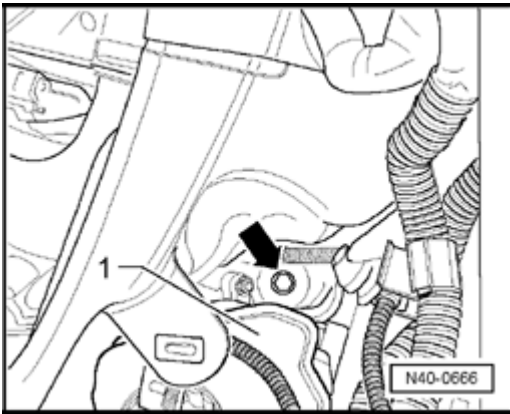


- Using tensioner hooks VW 552 hook upper control arm to body and pretension slightly.
- Remove front connector from Left front level control system sensor G78 .
- Disconnect link from stabilizer bar.

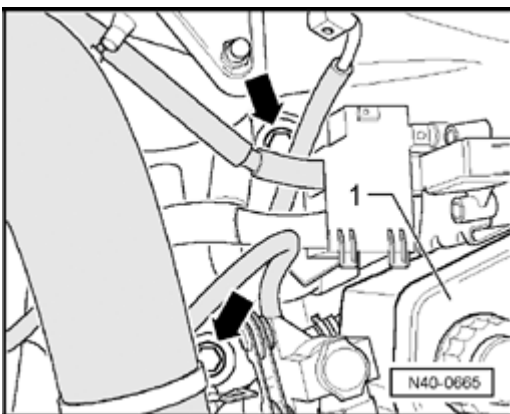
- Remove drive shaft from final drive. Use 14-mm socket T10099/1 to loosen bolts.
- Remove plenum chamber cover

⇒ [*Repair Manual, Body Exterior, Repair Group 64, Flush bonded windows; Plenum chamber cover, removing and installing*](#)

Disconnecting left air spring damper

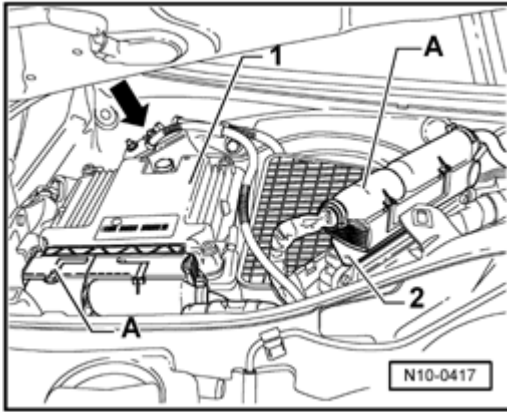


- Remove bolt - **Arrow** - under brake fluid reservoir - **1** -



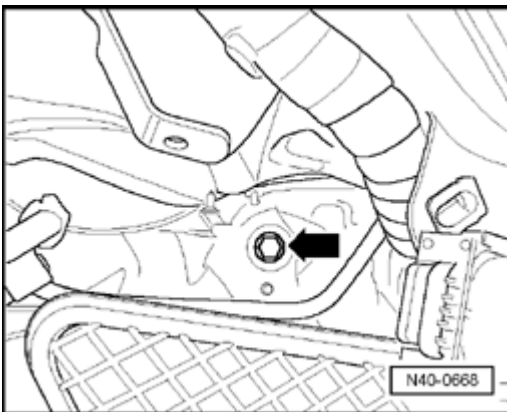
- Remove bolts - **Arrows** - under hydraulic fluid reservoir - **1** -

Disconnecting right air spring damper

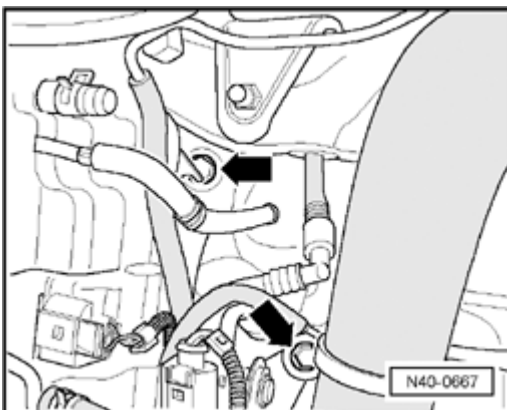


- Release connector on engine control module - **2** - and pull it off.
- Remove engine control module.
- Remove retainer for engine control module - **2** - .

The bolts (3) for the mounting bracket are now accessible.



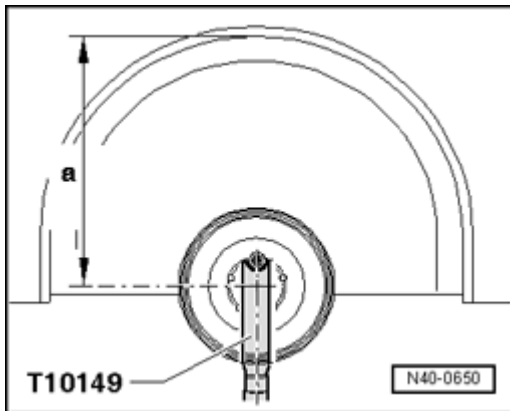
- Remove bolt - **Arrow** - .



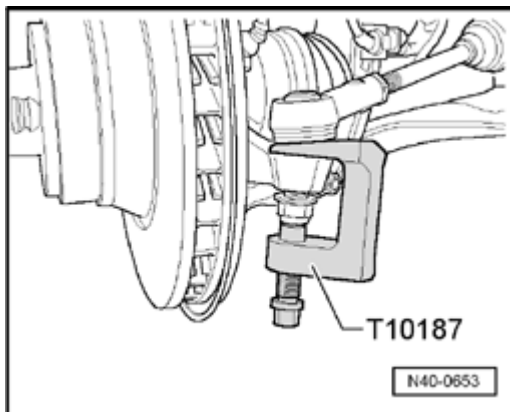
- Remove bolts - **Arrows** - .

Continue for both sides

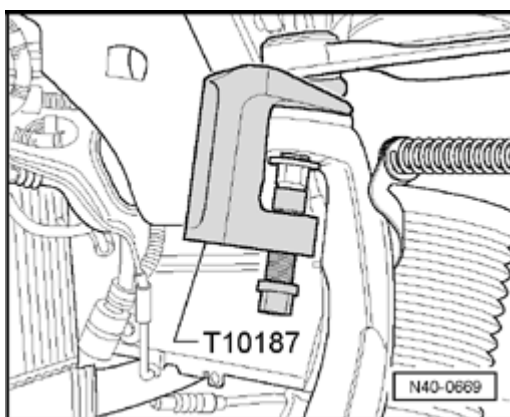
- Turn wheel hub until one of wheel bolt holes is at 12 o'clock position.



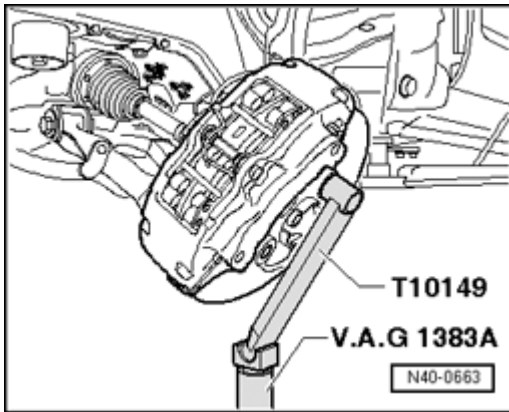
- Install wheel hub support T10149 using a wheel bolt.



- Press tie rod from wheel bearing housing.



- Press out upper control arm.
- Loosen air spring damper to lower control arm bolt.



- Lower wheel bearing housing only as far as necessary.
- Pull out bolt from lower control arm and remove air spring damper.

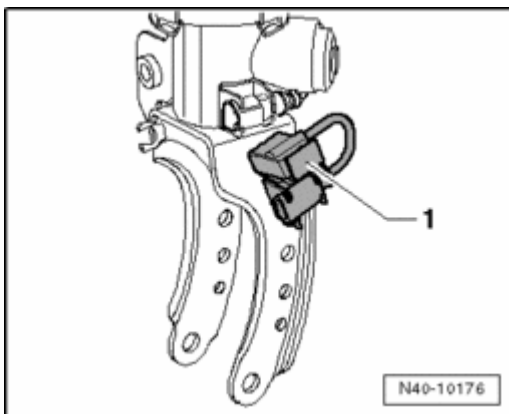
Installing

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

If a new air spring damper is being installed it must first be filled ⇒ [40-7, Air spring damper, filling](#) .

Note:

- *Stud for mounting wheel speed sensor is no longer present on new air spring shock absorbers.*



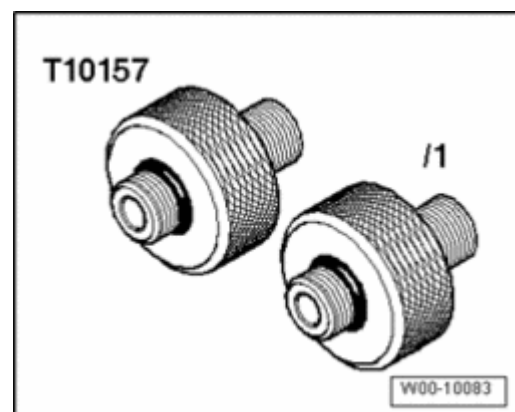
- *Vehicles with Vehicle Identification Numbers (VIN) up to 7L-4-052999 are still equipped with wheel speed sensor - 1 - on fork. This sensor must be reused when installing new shock absorber.*
- *To do so, the sensor must be installed on new shock absorber using a new bolt. Note installation position as shown in illustration.*

- Check basic setting of the vehicle level control system ⇒ [43-2, Self-leveling suspension, basic \(default\) setting](#) .
- A wheel alignment check must be made following installation ⇒ [44-4, Wheel alignment](#) .

Tightening torques	
Mounting bracket to body ■ Use new bolts.	50 Nm plus an additional $\frac{1}{4}$ turn (90 °)
Air spring damper to lower control arm ■ Use new bolt and nut.	150 Nm plus an additional $\frac{1}{4}$ turn (90 °)
Upper control arm to wheel bearing housing ■ Use new nut.	95 Nm
Tie rod to wheel bearing housing ■ Use new nut.	90 Nm

Air spring damper, filling

Special tools, testers and auxiliary items required

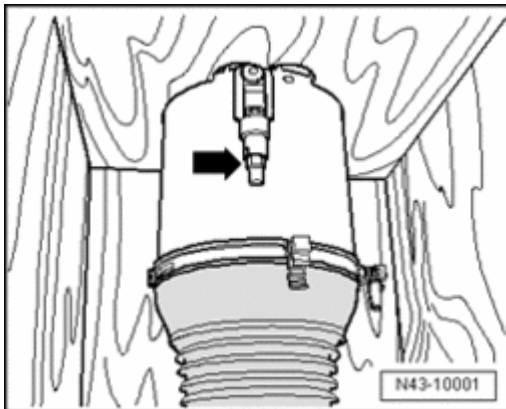


- Adapter T10157/1
- Air suspension strut charger VAS 6231 , without illustration
- Steel gas bottle filled with argon or corgon, without illustration

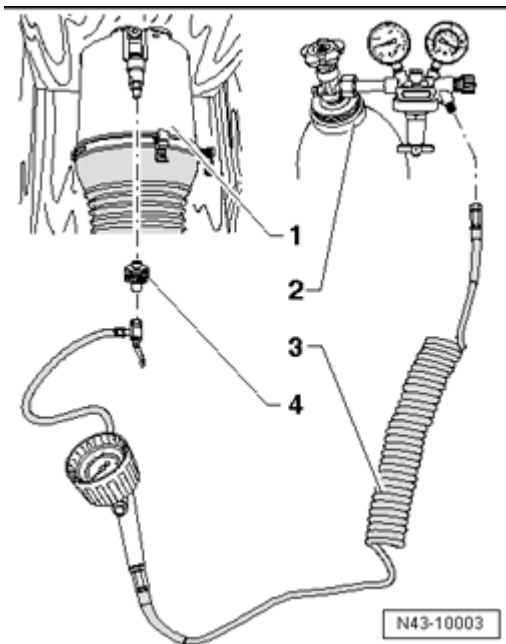
Note:

- *Replacement air spring dampers are delivered with a minimum pressure. By sitting in storage for extended periods this pressure can diminish (just like a tire). Before the air spring damper is removed from its packaging, this minimum pressure must be controlled by "refilling". If the air spring damper is removed from its packaging without this control/refilling, folds can occur in the under-filled air spring boot. These folds can cause damage and may lead to premature failure of the air spring.*

- Remove cover from packaging.

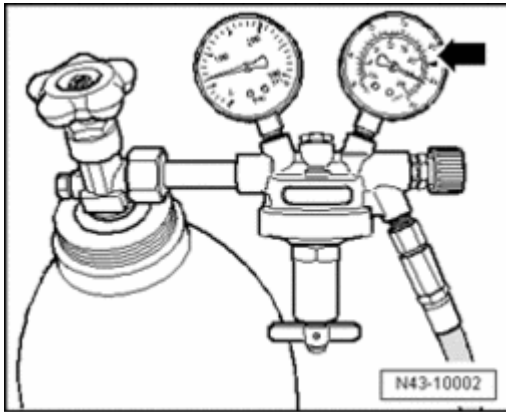


- Remove union bolt - **arrow** - from residual pressure holding valve.
- Close valve of steel gas bottle.
- Become familiar with the relevant rules for the prevention of accidents for pressurized containers and technical gases.

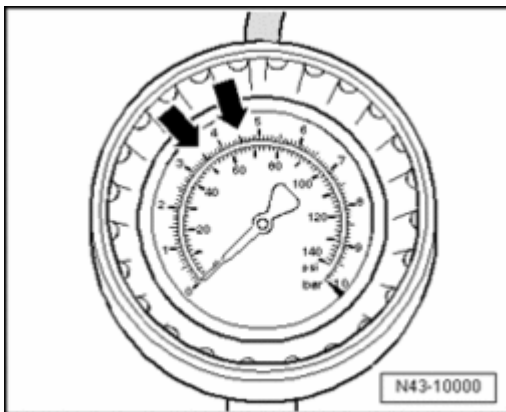


- Connect air suspension strut charger VAS 6231 and adapter T10157/1 as shown in the illustration.

- Air spring damper in packaging
- Steel gas bottle for argon, corgon with gauges
- Air suspension strut charger VAS 6231
- Adapter T10157/1



- Set flow rate limiter gauge to 2.0 L/min - **arrow** - .
- Fill gas into air spring damper using multiple short bursts.



The display only shows a correct pressure if the "oscillatory pressure" of residual pressure retaining valve is overcome. The "oscillatory pressure" is at approx. 3.5 bar. The air spring damper is sufficiently filled with gas when pressure has reached 3.5 - 4.5 bar.

- Make sure that the pressure does not exceed 4.5 bar.
- Disconnect air suspension strut charger VAS 6231 from adapter T10157/1, thereby gas escapes from a pressure above 3.5 bar.

The minimum pressure is now set, and the air spring damper can now be removed from the packaging.

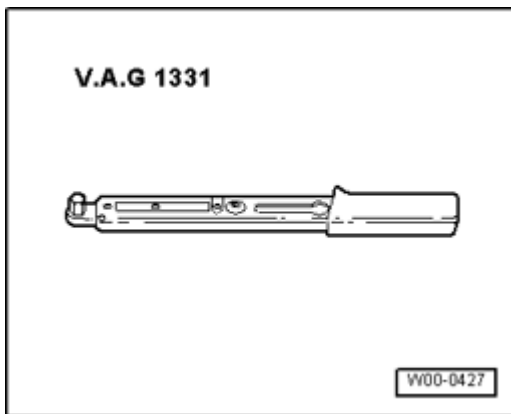
- Air spring damper, installation ⇒ [40-7, Air spring damper, removing and installing](#) .

- Perform a test drive first with the level control button E388 in the loaded level control setting and afterwards in the normal level control setting.

By moving the ride height settings, the majority of the gas is exchanged with filtered air from the air supply motor.

Left and right front level control system sensor G78 / G289 removing and installing, vehicles with strut suspension

Special tools, testers and auxiliary items required



- Torque wrench V.A.G 1331

Removing

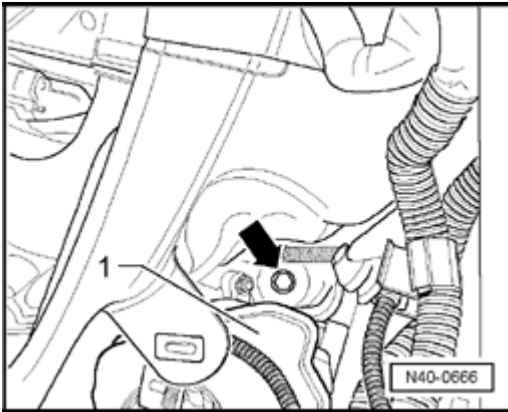
Warning!

On vehicles with decouplable stabilizer bars, the stabilizer bars must be coupled in before beginning work. Otherwise, the risk of injury exists when decoupled stabilizer bars become unintentionally coupled.

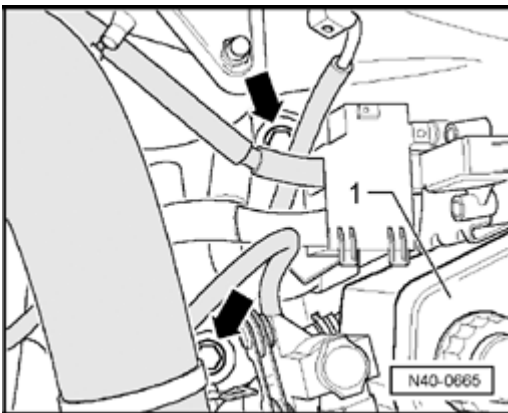
In order to remove level control system sensor , remove strut and mounting bracket.

- Strut removal ⇒ [40-7, Suspension strut removing and installing](#) .

Removing left mounting bracket

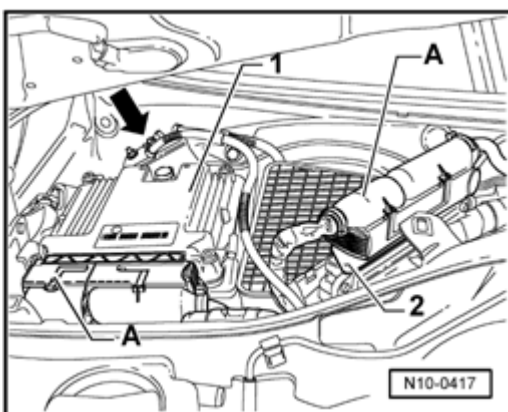


- Disconnect bolt - **Arrow** - under brake fluid reservoir - **1**
- .



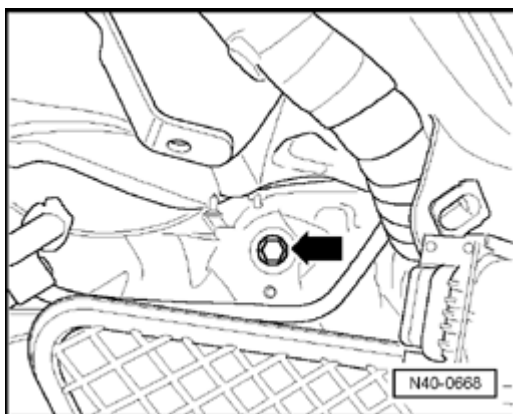
- Disconnect bolt - **Arrow** - under hydraulic fluid reservoir
- **1** - .

Removing right mounting bracket

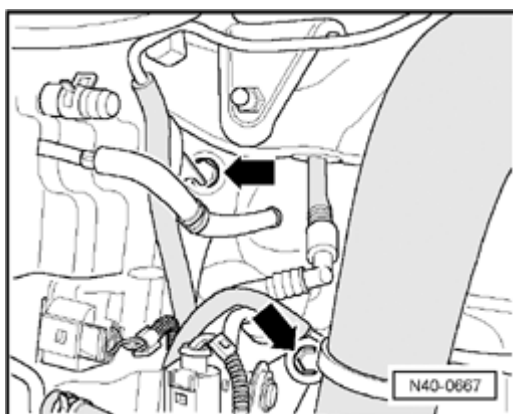


- Release connector for engine control module - **2** - and pull it off.
- Remove engine control module.
- Remove retainer for engine control module - **2** - .

Bolts (3) for the mounting bracket are now accessible.



Remove bolt - **Arrow** - .



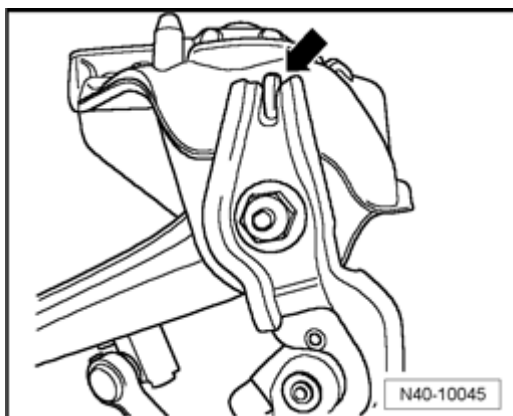
Remove bolts - **Arrows** - .

Continued for both sides

- Remove mounting bracket.
- Pull level control system sensor off upper control arm and unbolt it from mounting bracket.

Installing

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



The retainer for the level control system sensor must be against the nose of mounting bracket - **Arrow** - .

- Install mounting bracket.
- Install strut ⇒ [40-7, Suspension strut removing and installing](#) .

Tightening torques	
Mounting bracket to structure ■ Use new bolts.	50 Nm plus an additional $\frac{1}{4}$ turn (90°)
Upper control arm to mounting bracket ■ Use new bolt and nut.	50 Nm plus an additional $\frac{1}{4}$ turn (90°)

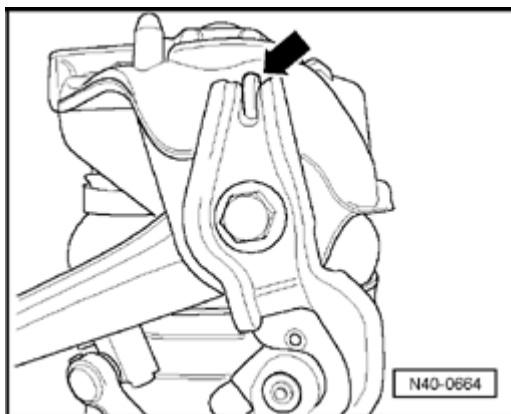
Left/Right front level control system sensor G78 / G289 removing and installing, vehicles with air spring damper

Removing

- Removing air spring damper ⇒ [40-7, Air spring damper, removing and installing](#)
- Pull level control system sensor off upper control arm and unbolt it from mounting bracket.

Installing

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

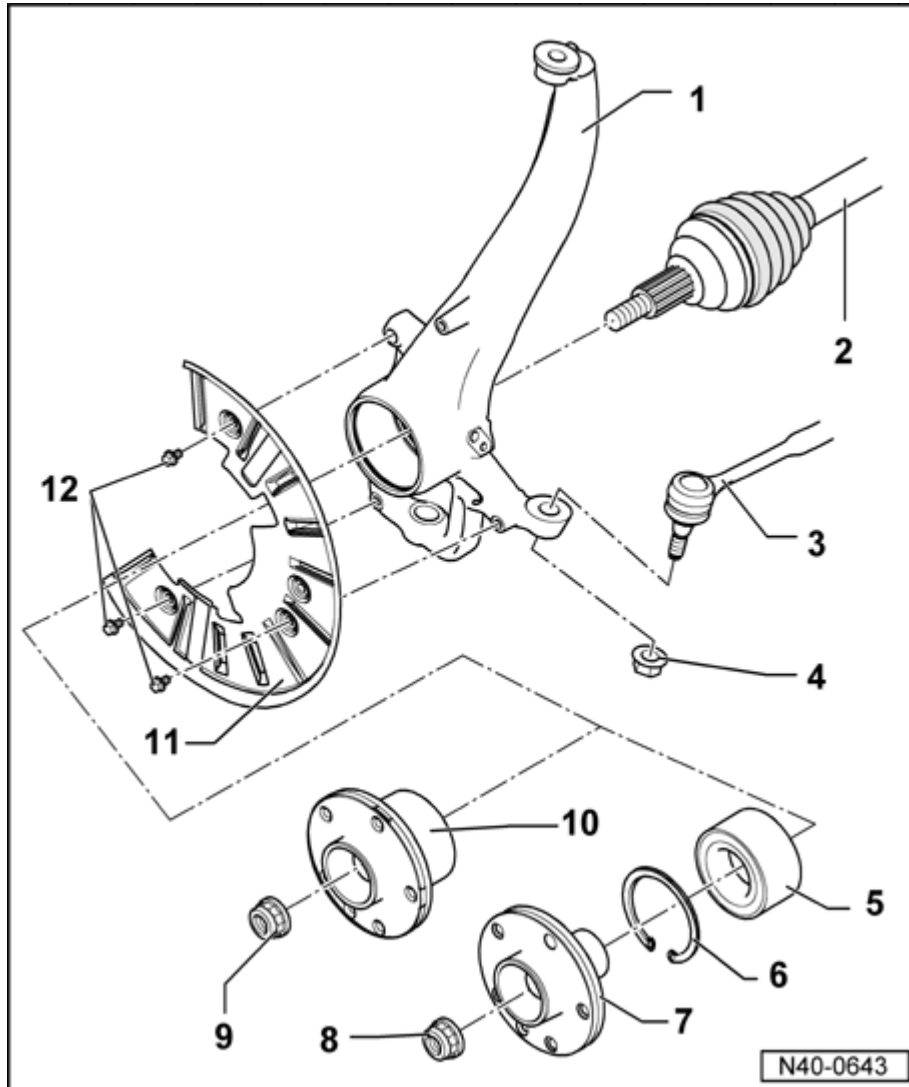


The retainer for the level control system sensor must be against nose of mounting bracket - **Arrow** - .

- Installing air spring damper ⇒ [40-7, Air spring damper, removing and installing](#) .

Tightening torque	
Upper control arm to mounting bracket ■ Use new nut and bolt.	50 Nm plus an additional $\frac{1}{4}$ turn (90 °)

III - Wheel bearing, assembly overview



■ Wheel bearing housing

- Different versions for 17", 18" and 19" wheels
- Tapered holes must be free of oil and grease
- If necessary, clean with a dry cloth, do not use cleaning solutions.
- Application ⇒ *Electronic Parts Catalog "ETKA"*

■ Axle shaft

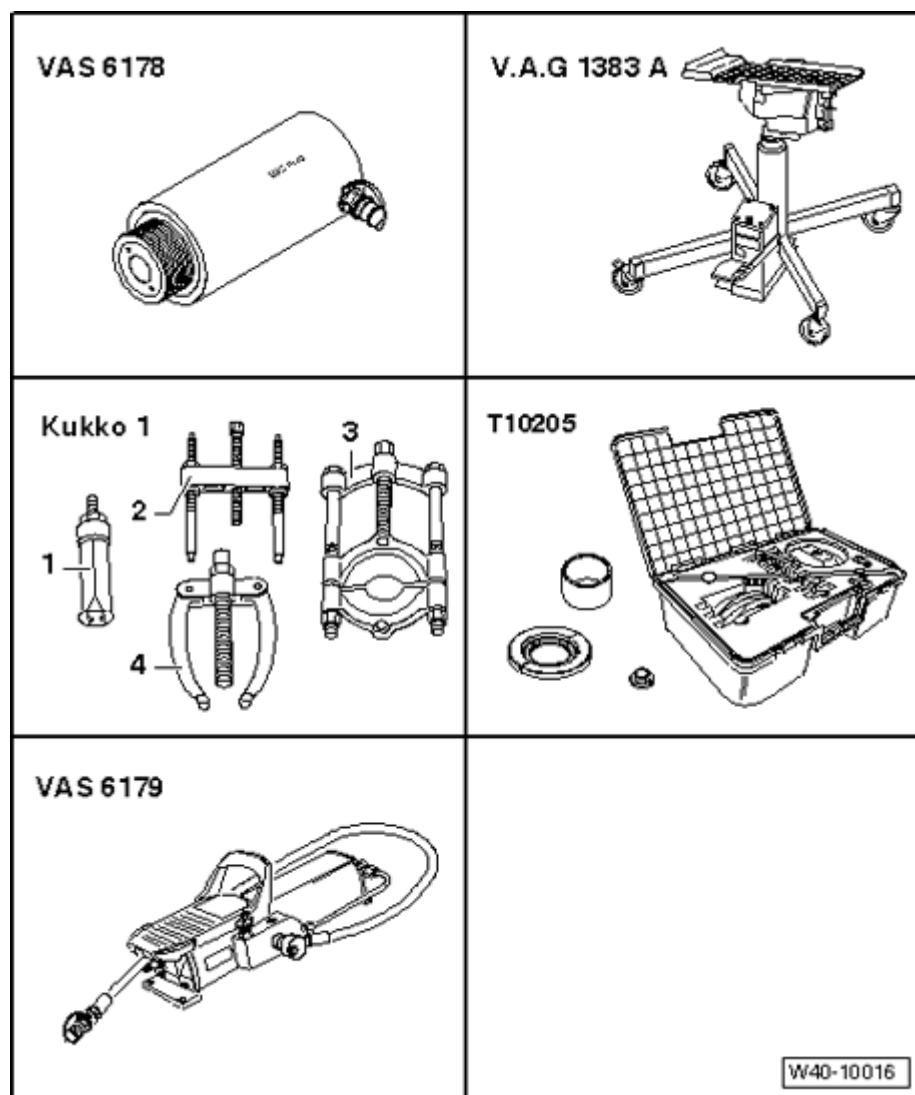
- Removing and installing ⇒ [40-11, Front drive axles, assembly overview](#)
- Coat splines with installation paste G 052 109 A2 .
- On vehicle with bonded drive axle, clean spline, remove grease and apply locking compound D 154 000 A1 to spline ⇒ [Topic 40-11](#) .
- **Tie rod**
 - Tapered plug must be free of oil and grease
 - If necessary, clean with a dry cloth, do not use cleaning solutions.
- **Self-locking nut**
 - M14 x 1.5
 - 90 Nm
 - Always replace
- **Wheel bearing**
 - For 17, 18 and 19 wheels
 - Removing and installing ⇒ [40-8, 17", 18" and 19" wheel, pressing wheel bearing in and out](#)
- **Circlip**
 - Ensure correct seating
- **Wheel hub**
 - For 17, 18 and 19 wheels
 - Removing and installing ⇒ [40-8, 17", 18" and 19" wheel, pressing wheel bearing in and out](#)

- **Self-locking nut**
 - M24 x 1.5
 - 500 Nm
 - For 17, 18 and 19 wheels
 - Always replace
 - Coat contact surface with installation paste G 052 109 A2 before installing
- **Self-locking nut (Not available)**
- **Wheel hub with wheel bearing (Not available)**
- **Splash plate**
- **Hex bolt**
 - M8 x 12
 - 20 Nm

17", 18" and 19" wheel, pressing wheel bearing in and out

Note:

- *Make sure tools and components (wheel bearing/wheel hub) are seated correctly throughout the entire procedure.*
- *Always position engine/transmission jack V.A.G 1383 A under wheel bearing housing throughout the entire procedure (danger of accident from falling parts)*



Special tools, testers and auxiliary items required

-
- Engine/transmission jack V.A.G 1383 A with universal transmission mount V.A.G 1359/2
- Hydraulic press VAS 6178
- Assembly tool T10205
- Separating tool 3 - Kukko 15/3
- Hollow piston cylinder VAS 6179

Special tools, testers and auxiliary items required

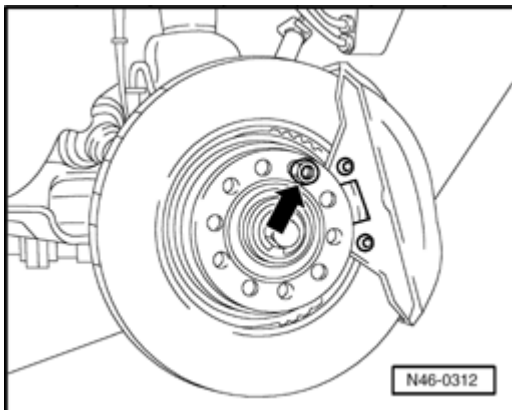
- Pliers for circlips, 180 mm internal circlip VAS 5498 , not shown
- Manometer with connecting line VAS 6179/1 , not shown

Removing

Warning!

On vehicles with decouplable stabilizer bars, the stabilizer bars must be coupled in before beginning work. Otherwise, the risk of injury exists when decoupled stabilizer bars become unintentionally coupled.

- Remove drive axle ⇒ [40-11, Drive axle, removing and installing](#) .
- Bolt upper control arm to wheel bearing housing.



- Secure brake rotor with a wheel bolt - **Arrow** - .
- Remove brake caliper and tie to body with wire

⇒ [Repair Manual, Brake System, Repair Group 46, Servicing front brakes](#)

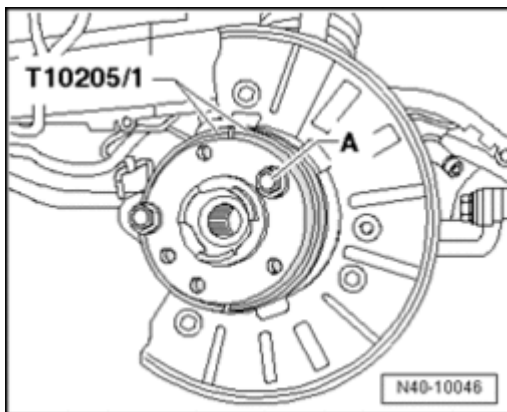
.

- Remove brake rotor and cover plate.
- Unclip wheel speed sensor wire from retainer.
- Remove ABS wheel speed sensor .

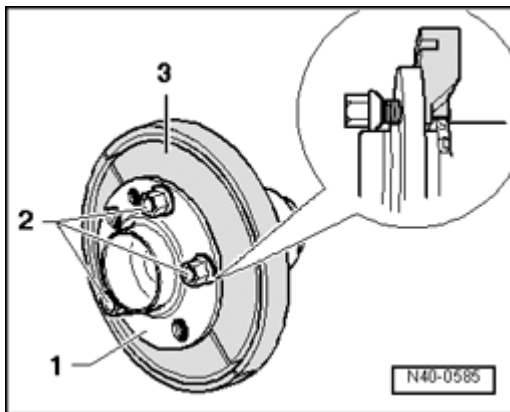
Pulling out wheel hub

Warning!

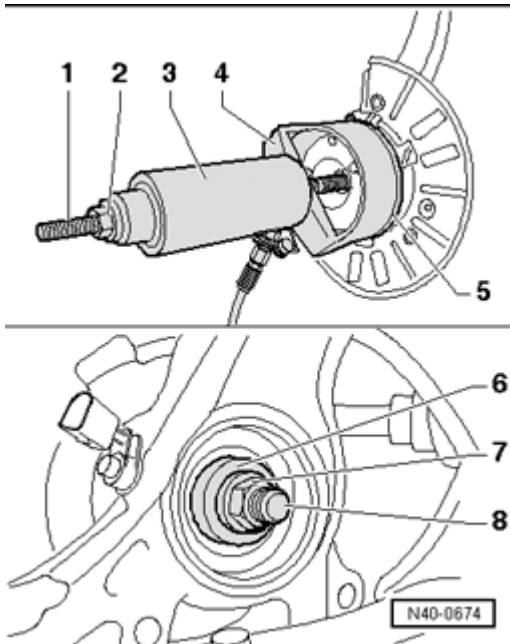
On vehicles with decouplable stabilizer bars, the stabilizer bars must be coupled in before beginning work. Otherwise, the risk of injury exists when decoupled stabilizer bars become unintentionally coupled.



- Bolt grips T10205/1 to wheel hub using wheel bolt - A -



The wheel bolts - 2 - must not project beyond the rear of the grips T10205/1 .



- Assemble tools as shown in illustration.

- Threaded rod M20 T10205/8-1
- Threaded nut M20 T10205/8-2
- Hydraulic press VAS 6178
- Bell T10205/2
- Grips T10205/1
- Press piece T10205/3
- Threaded nut M20 T10205/8-2
- Threaded rod M20 T10205/8-1

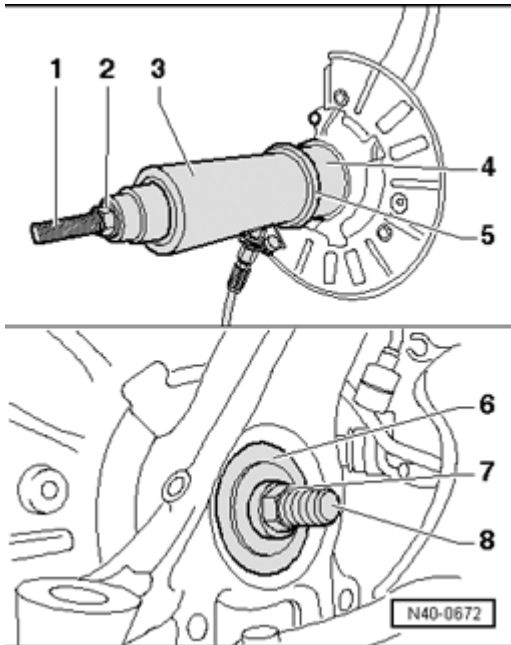
- Hold appliance firmly and pull wheel hub out.

Pulling out wheel bearing

Warning!

On vehicles with decouplable stabilizer bars, the stabilizer bars must be coupled in before beginning work. Otherwise, the risk of injury exists when decoupled stabilizer bars become unintentionally coupled.

- Remove circlip.



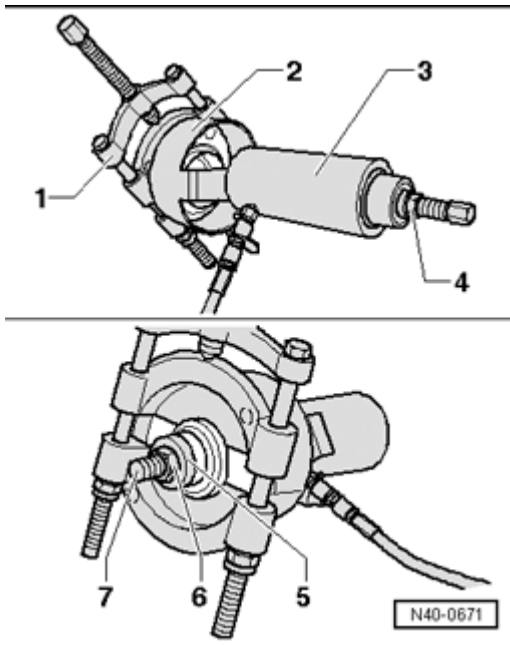
- Assemble tools as shown in illustration.

Note:

- *The shoulder of the pressure plate T10205/6 must point toward the final drive.*
- Threaded rod M20 T10205/8-1
- Threaded nut M20 T10205/8-2
- Hydraulic press VAS 6178
- Mounting tube T10205/5
- Support T10205/4
- Thrust pad T10205/6
- Threaded nut M20 T10205/8-2
- Threaded rod M20 T10205/8-1

- Hold appliance firmly and pull wheel bearing out.

Pulling inner race off wheel hub



- Install separating tool behind inner race.

Note:

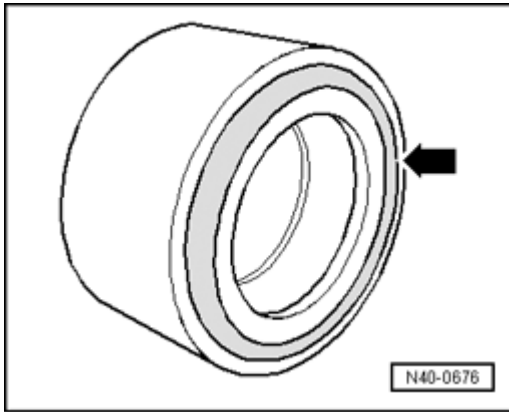
- *Chamfers on the jaws face toward the inner race.*
- Separating tool 3 - Kukko 15/3
- Bell T10205/2
- Hydraulic press VAS 6178
- Threaded nut M20 T10205/8-2
- Press piece T10205/3
- Threaded nut M20 T10205/8-2
- Threaded rod M20 T10205/8-1

Warning!

Hold tool when pulling off so that the bearing inner race faces downward (risk of accident from inner race jumping off at the end of the pulling process).

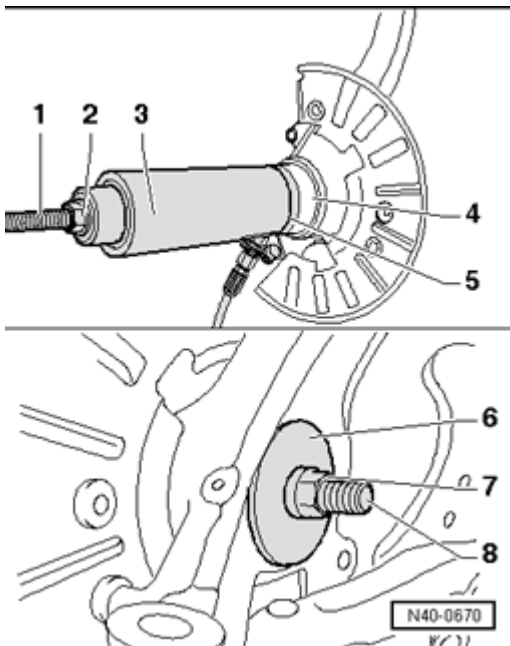
- Pull wheel hub from inner race.

Pressing in wheel bearing



- Make sure that the rubberized ABS sensor ring - **Arrow** - faces toward final drive.

If no rubberized ring is visible, check using a paper clip, which of the two sides is magnetic. When installed, this must face toward final drive.



- Install tools as shown in illustration.

Note:

- *The shoulder of the pressure piece T10205/9 must face toward wheel bearing housing.*
- Threaded rod M20 T10205/8-1
- Threaded nut M20 T10205/8-2
- Hydraulic press VAS 6178
- Wheel bearing
- Press piece T10205/7
- Press piece T10205/9
- Threaded nut M20 T10205/8-2

- Threaded rod M20 T10205/8-1

- Attach manometer with connecting line VAS 6179/1 between hydraulic press VAS 6178 and hydraulic line of the hydraulic press VAS 6178 .

The following listed pressures apply only for hydraulic press VAS 6178 .

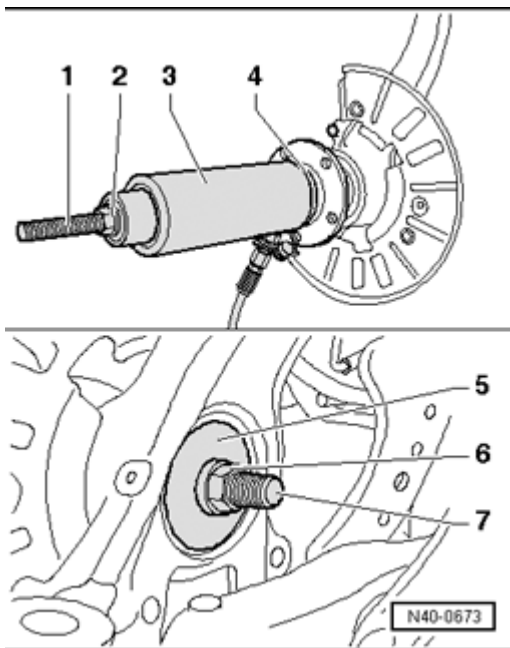
While pressing in, the pressure reading must be between 100 and 190 bar shortly before the end of pressing in.

The maximum pressure for pressing in should not exceed 310 bar.

- Press in wheel bearing up to stop.

- Install circlip.

Pressing in wheel hub



- Assemble tools as shown in illustration.

Note:

- *The shoulder of the pressure plate T10205/6 must point toward the final drive.*

- Threaded rod M20 T10205/8-1
- Threaded nut M20 T10205/8-2
- Hydraulic press VAS 6178
- Press piece T10205/10
- Thrust pad T10205/6
- Threaded nut M20 T10205/8-2
- Threaded rod M20 T10205/8-1

- Attach the manometer with connecting line VAS 6179/1 between the hydraulic press VAS 6178 and the hydraulic line of the hydraulic press VAS 6178 .

The following listed pressures apply only for the hydraulic press VAS 6178 .

While pressing in, the pressure reading must be between 30 and 100 bar shortly before the end of pressing in.

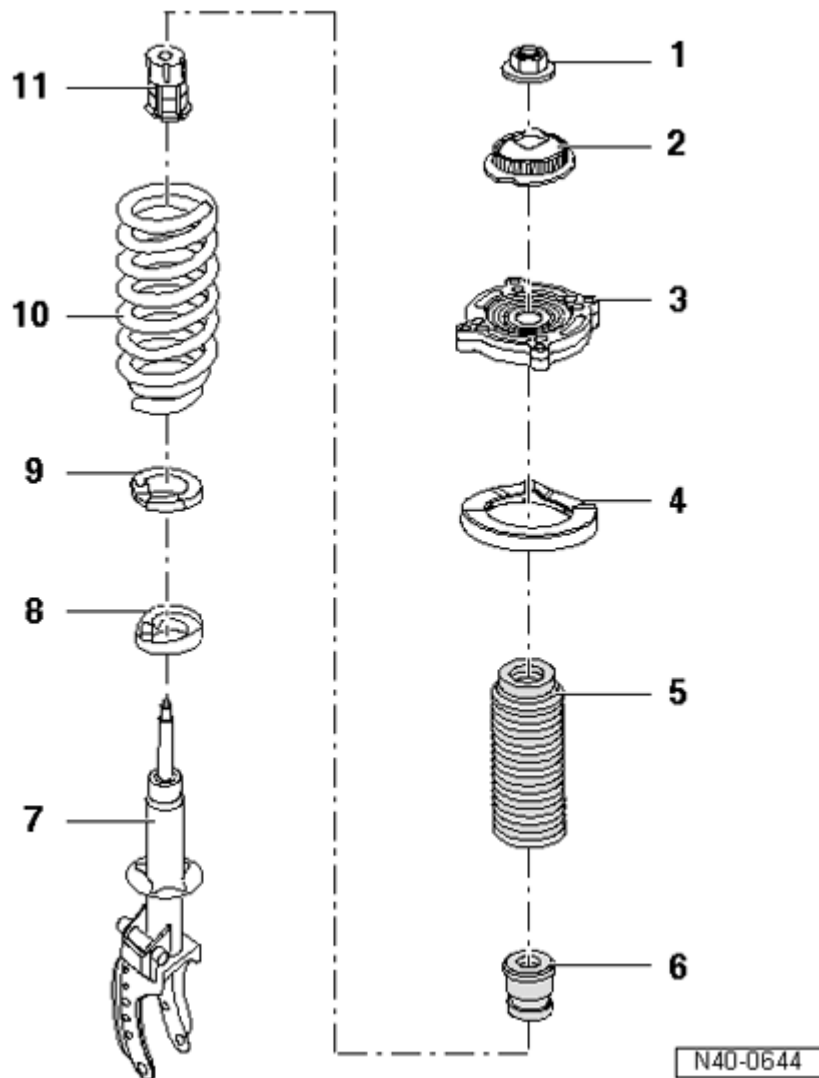
The maximum pressure for pressing in should not exceed 140 bar.

- Press in wheel bearing as far as stop.
- Install drive axle ⇒ [40-11, Installing](#) .

Further installation is in reverse sequence to removal.



IV - Suspension strut, assembly overview



- Self-locking nut
 - M14 x 1.5
 - 60 Nm
 - Always replace
- Shock absorber mount
- Upper spring plate
- Upper support
- Protective sleeve
- Buffer stop

- **Shock absorber**

- Application ⇒ *Electronic Parts Catalog "ETKA"*

- **Lower spacer**

- Application ⇒ [40-9, Lower spacer, application](#)

- **Lower support**

- **Coil spring**

- Surface spring must not be damaged
 - Observe color coding
 - Application ⇒ *Electronic Parts Catalog "ETKA"*

- **Protective cap**

Lower spacer, application

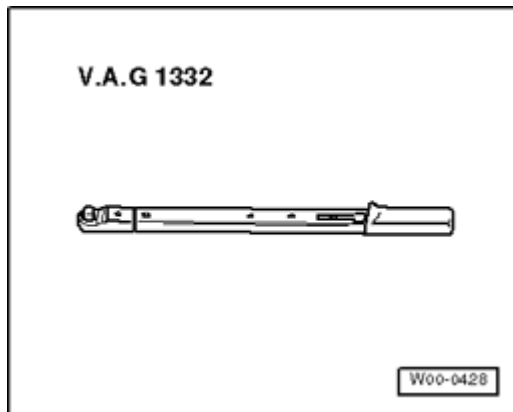
Make sure an even ride height on front and rear axles, the coil springs must be installed with an correct spacer.

Three different colored spacers are available: black, blue and beige.

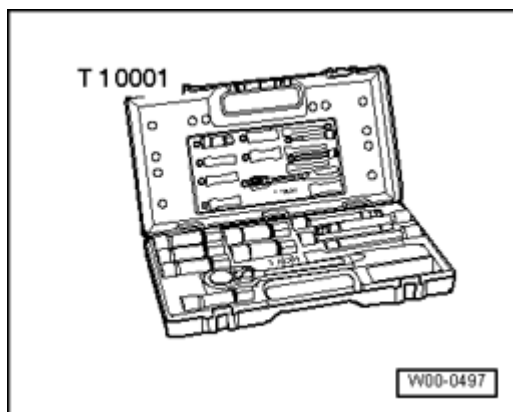
Number and color of markings (dots)	Color of spacer to be used
1, 2 or 3 green	black
1, 2 or 3 green + 1 blue	blue
1, 2 or 3 green + 1 beige	beige

Front strut, servicing

Special tools, testers and auxiliary items required



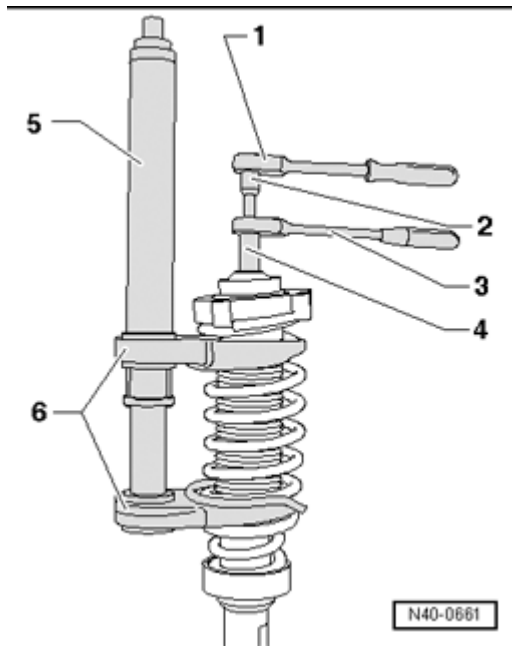
- Torque wrench V.A.G 1332
- Spring compressor VAS 6046
- Spring holder VAS 6046/3



- Shock absorber set T10001

- Removing strut ⇒ [40-7, Suspension strut removing and installing](#) .

Removing coil spring



- Pre-load coil spring until upper spring plate is free.
- Remove hex nut from piston rod.
- Remove individual components of suspension strut and coil spring using spring tensioner VAS 6046 and spring holder VAS 6046/3.

1 - Ratchet (commercially available)

2 - T10001/14

3 - T10001/11

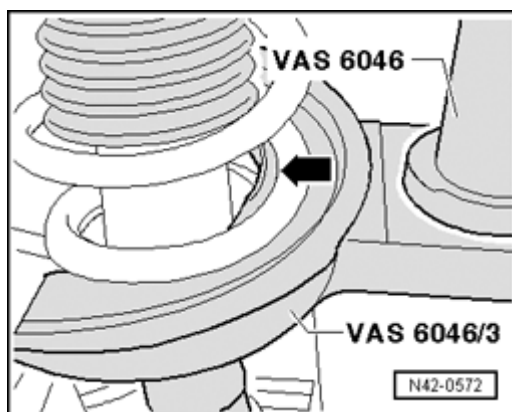
4 - T10001/5

5 - VAS 6046

6 - VAS 6046/3

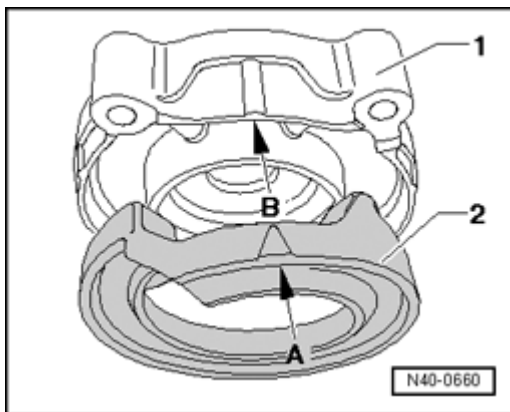
Caution!

First pre-load the spring until the upper spring plate is no longer under load.



- Make sure the coil spring is properly seated in spring holder VAS 6046/3 - **Arrow** - .

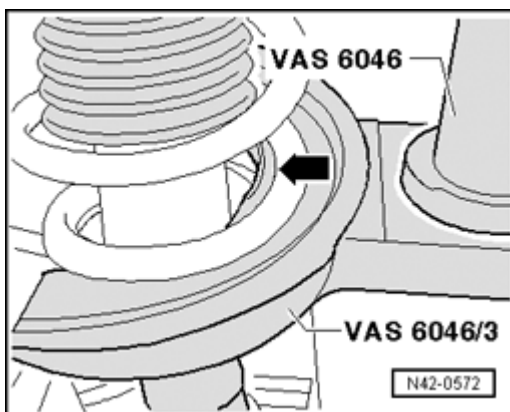
Installing coil spring



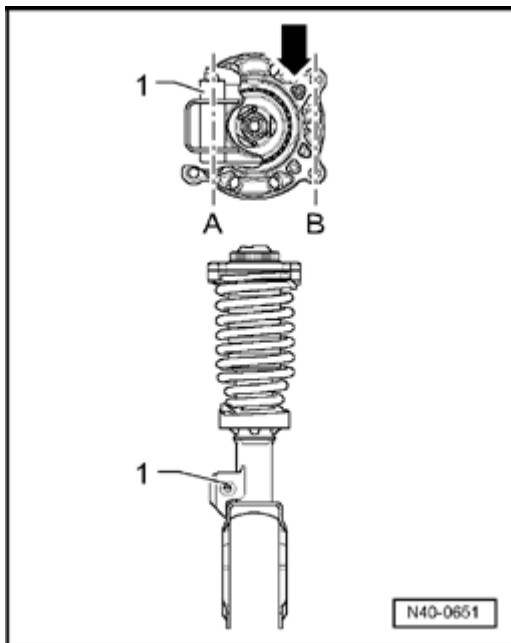
- Install upper support - **2** - in upper spring plate - **1** - .

The raised part - **Arrow A** - must line up with depression - **Arrow B** - .

- Set coil spring on lower spring holder VAS 6046/3 .

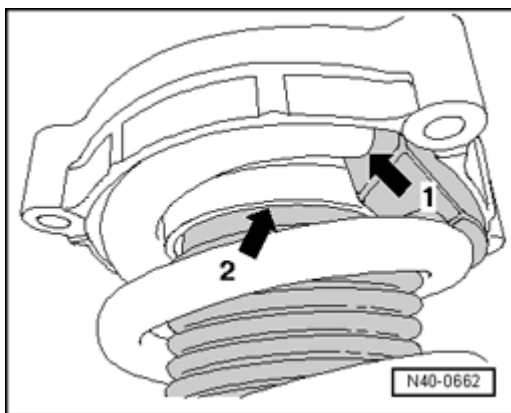


- Make sure coil spring is seated properly in the spring holder VAS 6046/3 - **Arrow** - .



- The upper spring plate must be set on spring so that the raised part - **Arrow** - is located opposite the attachment for link - **1** - .

The center lines - **A** - and - **B** - must run parallel to one another.



- The end of spring must lie against stop on support - **Arrow 1** - .
- Make sure that the protective sleeve is clipped into upper spring plate - **Arrow 2** - .
- Tighten new hex nut on piston rod.
- Release tension on spring tensioner VAS 6046 and remove from the coil spring.
- Install strut ⇒ [40-7, Suspension strut removing and installing](#) .

Tightening torque

Nut for suspension strut

- Use new nuts.

60 Nm



V - Front air spring shock absorber

Air spring shock absorbers, repair notes for servicing

For driven distances greater than 200,000 km it is recommended that the air spring on the opposite side is also replaced if air spring is damaged.

If shock absorbers are leaking, air suspension strut is to be replaced since the shock absorber oil may damage the dust boot ⇒ [Item - 4 -](#) .

When without pressure, air spring must not be twisted. There is the danger that the dust boot will be damaged on inside of the air spring by kinking or folding!

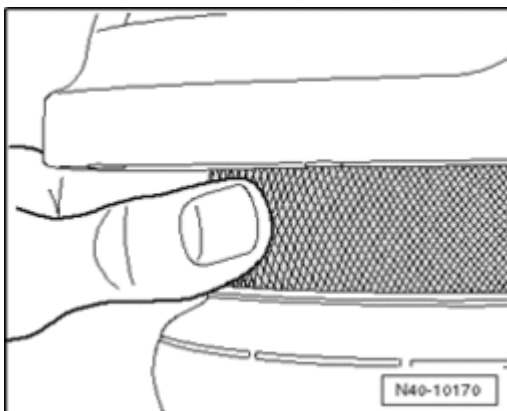
The maximum possible care, cleanliness and proper tools are essential to ensure satisfactory and successful air spring shock absorber repairs. The usual basic safety precautions also apply when performing vehicle repairs.

A number of generally applicable instructions for individual repair procedures, which are otherwise mentioned at various points in the Repair Manual, are summarized here. They apply to air spring shock absorber repairs.

A description of the construction and function of the air spring suspension can be found in
⇒ Self-study program no. 302 The Touareg Suspension and 4XMotion Systems .

Air spring shock absorbers

- Before loosening an installed air line, check whether air spring is still filled with residual pressure of approx. 3 bar.



- To do so, press thumb on bulge of air spring. There must be a tangible resistance.

- If no high resistance is felt, the air spring is without

pressure and must be replaced together with the residual pressure valve.

- Always clean connection points and vicinity and then loosen.
- When installing the air spring shock absorber, it must be filled with Argon or Corgon gas ⇒ [40-7, Air spring damper, filling](#) .
- Place removed parts on clean surface and cover them so they do not become soiled. Use foils and paper. Use lint-free cloths only!
- Only install clean components: Only unpack replacement parts immediately prior to installation.
- Use exclusively lubricants marked with part numbers.
- Carefully cover over opened components or seal, if repairs are not performed immediately.

Residual pressure valve

The residual pressure valve must only be replaced if:

- It was damaged when removing and installing or servicing the air spring shock absorber,
- The residual pressure valve no longer permits air to escape (is stuck),
- The sealing ring is faulty.

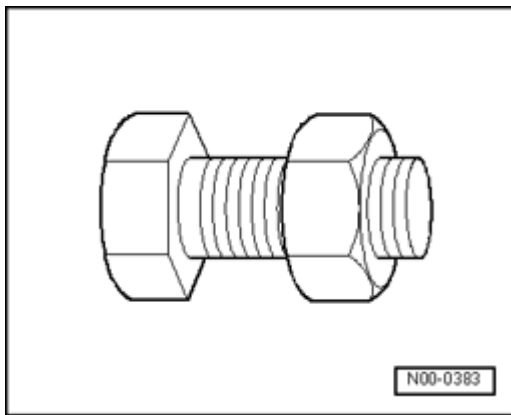
If the residual pressure valve no longer permits air to escape (is stuck), the vehicle must be lifted on a hoist and the wheels must turn freely in order to replace the residual pressure valve. The wheels must not be loaded when dust boot contains a vacuum!

Seals, sealing rings

- Always replace seals and boots.

- After removing seals, check contact surfaces on housings for burrs and damage.

Nuts, bolts

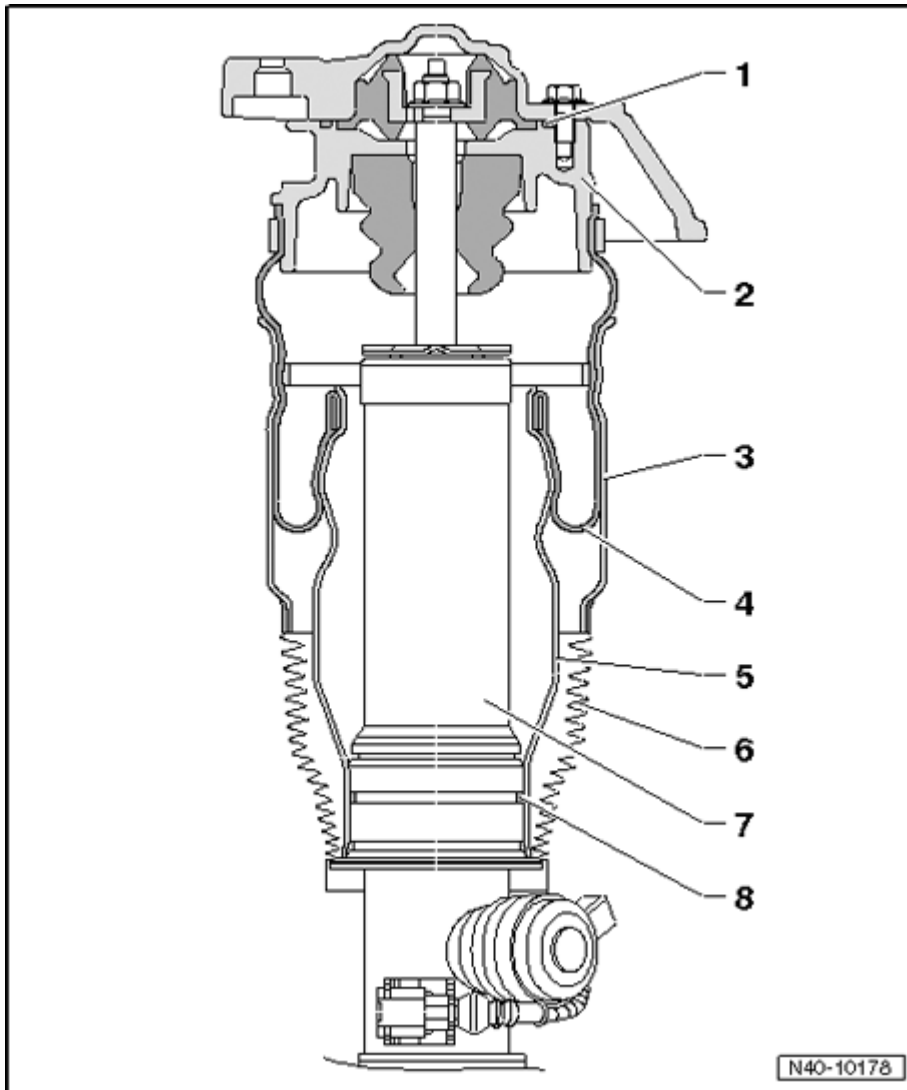


- Loosen and tighten bolts or nuts for securing covers and housings in diagonal sequence.
- The tightening torques stated apply to non-oiled nuts and bolts.

Front air spring shock absorber, components

Note :

- ⇒ [Item - 2 -](#) , ⇒ [Item - 3 -](#) , ⇒ [Item - 4 -](#) and ⇒ [Item - 5 -](#) are components of the air spring. They are inseparably connected and cannot be disassembled.



- **Seal**

- Always replace

- **Cover**

- Installed as part of air spring with ⇒ [Item - 3 -](#) , ⇒ [Item - 4 -](#) and ⇒ [Item - 5 -](#)
 - Cannot be removed and disassembled individually

- **Outer guide**

- Installed as part of air spring with ⇒ [Item - 2 -](#) , ⇒ [Item - 4 -](#) and ⇒ [Item - 5 -](#)
 - Cannot be removed and disassembled individually

- **Dust boot**

- Installed as part of air spring with ⇒ [Item - 2 -](#) , ⇒ [Item - 3 -](#) and ⇒ [Item - 5 -](#)
- Cannot be removed and disassembled individually

- **Rolling piston**

- Installed as part of air spring with ⇒ [Item - 2 -](#) , ⇒ [Item - 3 -](#) and ⇒ [Item - 4 -](#)
- Cannot be removed and disassembled individually

- **Boot**

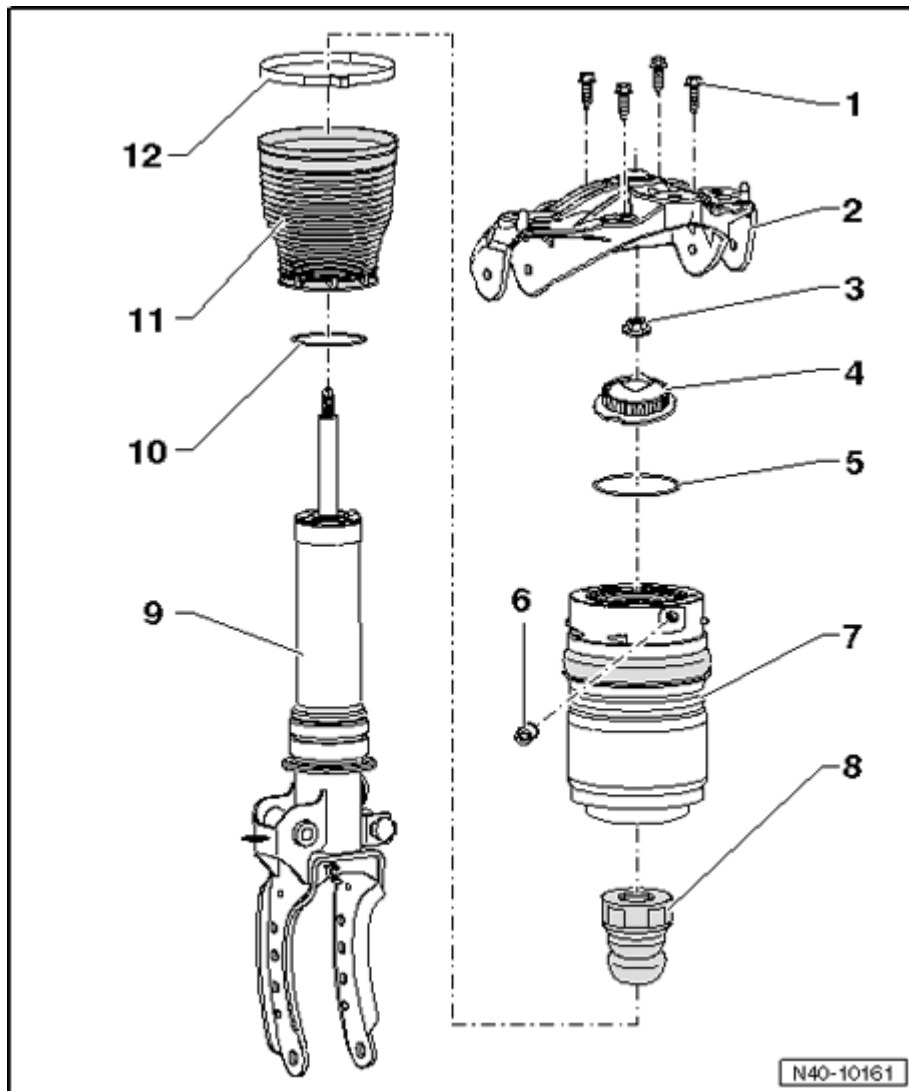
- Always replace

- **Shock absorber**

- **Seal**

- Always replace

Front air spring shock absorber, assembly overview



- Hex bolt, 30 Nm
 - 4x
- Mounting bracket
- Hex nut, tighten to 60 Nm
 - Always replace after removal
- Mount
- Seal
 - Always replace
- Residual pressure valve, 10 Nm
 - Observe important notes on

removal and installation ⇒
[Topic 40-10](#)

- Removing and installing ⇒
[40-10, Residual pressure valve, removing and installing](#)

- **Air spring**

- Observe repair notes for servicing air spring shock absorber ⇒ [40-10, Air spring shock absorbers, repair notes for servicing](#)
- For driven distances greater than 200,000 km it is recommended that the air spring on the opposite side is also replaced if air spring is damaged.

- **Buffer stop**

- **Shock absorber**

- Allocation ⇒ *Electronic parts catalog "ETKA"*
- Observe repair notes for servicing air spring shock absorber ⇒ [40-10, Air spring shock absorbers, repair notes for servicing](#)

- **Seal**

- Always replace
- Grease with N 052 150 00

- **Boot**

- Always replace

- **Clamp**

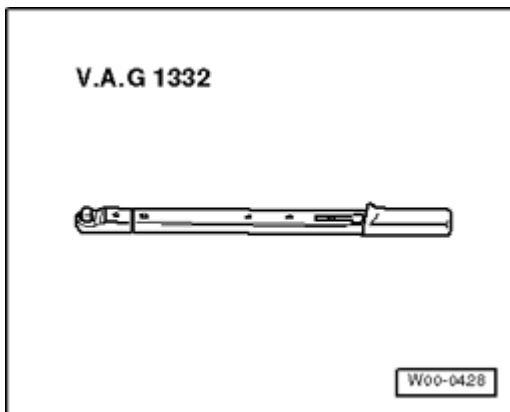
- Always replace

Front air spring shock absorber, servicing

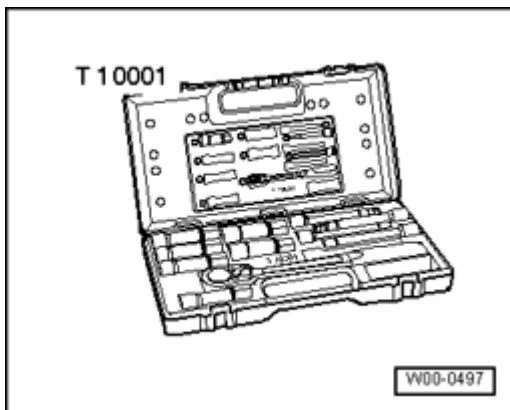
Note:

- *When replacing air spring, also boot must always be replaced.*
- *Observe repair notes for servicing air spring shock absorber ⇒ [40-10, Air spring shock absorbers, repair notes for servicing](#)*

Special tools, testers and auxiliary items required



- Torque Wrench 40-200Nm VAG1332

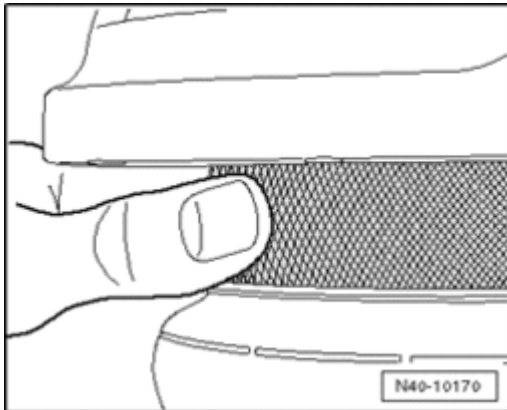


- Shock Absorber Set T10001

- Remove air spring shock absorber ⇒ [40-7, Air spring damper, removing and installing](#) .

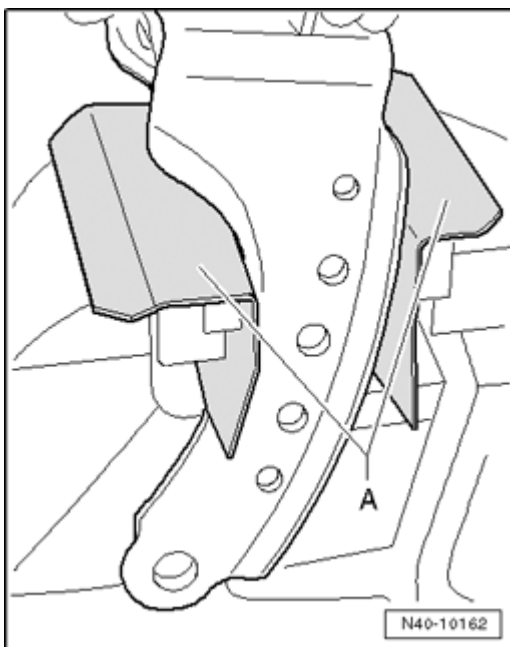
Note:

- *Check whether air spring is still filled with residual pressure of approx. 3 bar.*



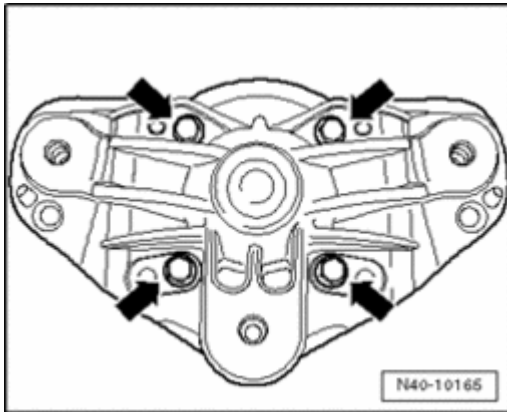
- *To do so, press thumb on bulge of air spring. There must be a tangible resistance.*
- *If no high resistance is felt, the air spring is without pressure and must be replaced together with the residual pressure valve.*

Air spring shock absorber, disassembling



- Secure air spring shock absorber at lower mount in vise with protective jaws - **A** - .

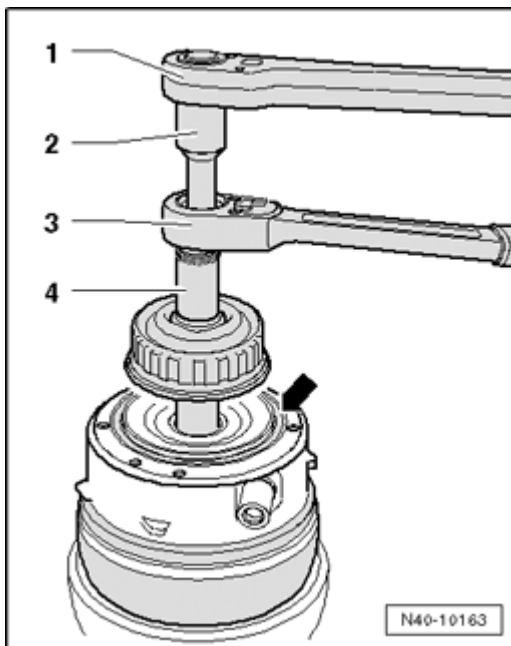
Make sure mount is not damaged.



- Remove mounting bolts - **arrows** - from mounting bracket alternately until air escapes from air spring.

Warning!

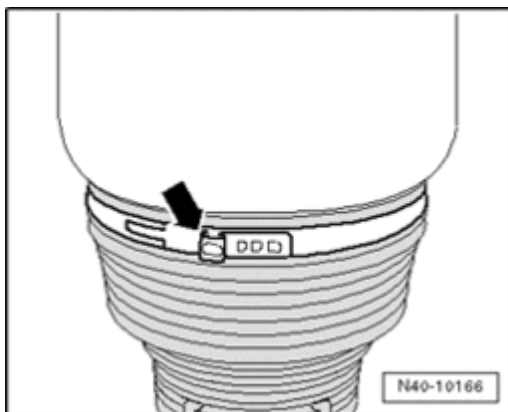
- *The air spring has a residual pressure of approx. 3 bar. Therefore, always unscrew bolts - arrows - only one turn each until air escapes.*
- *While removing bolts, remove mounting bracket from air spring by slightly tilting it.*
- *When loosening bolts, do not lean over air spring shock absorber under any circumstance. If bolts are loosened too much and air has not escaped yet, there is the danger of injury by mounting bracket and bolts.*
- *When without pressure, air spring must not be twisted. There is the danger that the dust boot will be damaged on inside of the air spring by kinking or folding!*



- Remove nut from bearing.

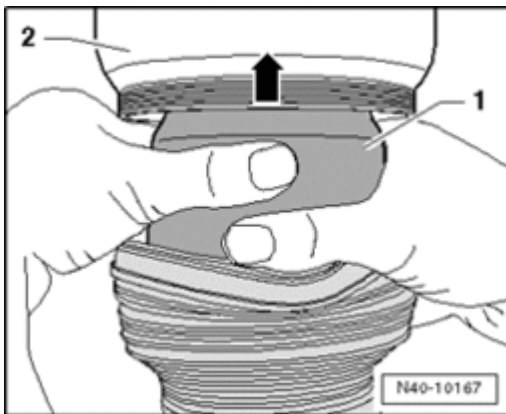
- Commercially available ratchet
- Supplement For T10001 T10001/14
- T10001/11
- T10001/3

- Remove bearing from shock absorber.



- Remove clamp for mounting boot - **arrow** - .

- Push boot downward and let a second mechanic secure it.

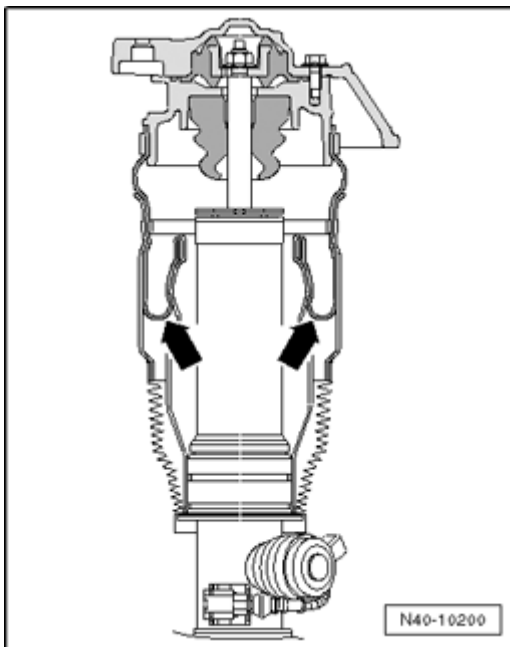


- Grasp rolling piston - **1** - of air spring with both hands and remove rolling piston upward - **direction of arrow** - from shock absorber with small rotations toward right and left.

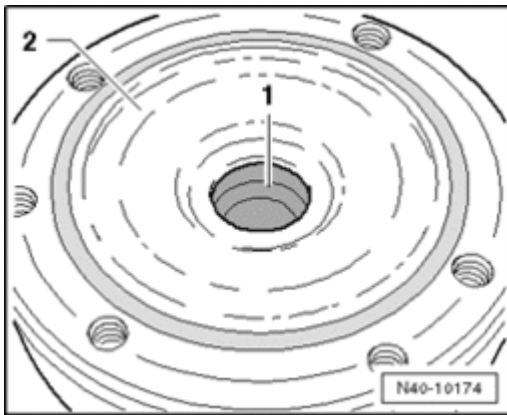
The entire air spring must turn when doing so.

Note:

- *Make sure rolling piston - **1** - does not slip downward out of outer guide - **2** - .*

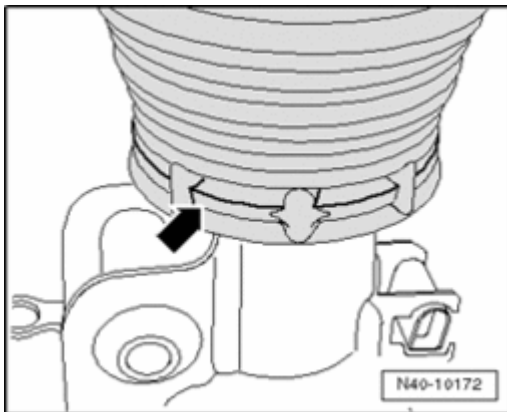


- *If the air spring is re-used but the rolling piston has slipped out of the outer guide, the rolling piston must be pushed inside again. Pay attention to forming a rolling fold evenly all around the rolling boot - **arrows** - .*



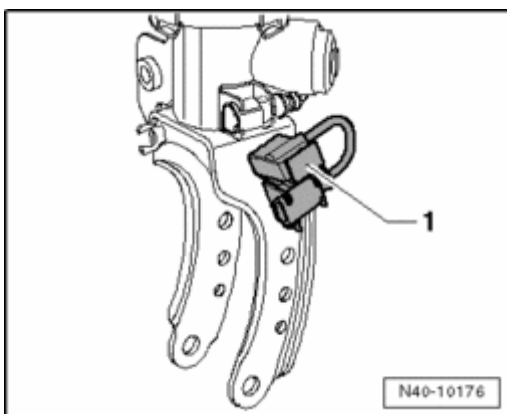
- When replacing air spring, remove buffer stop - **1** - downward out of air spring center.

Buffer stop is re-used.



- Remove boot from collar on shock absorber - **arrow** - and remove from shock absorber.

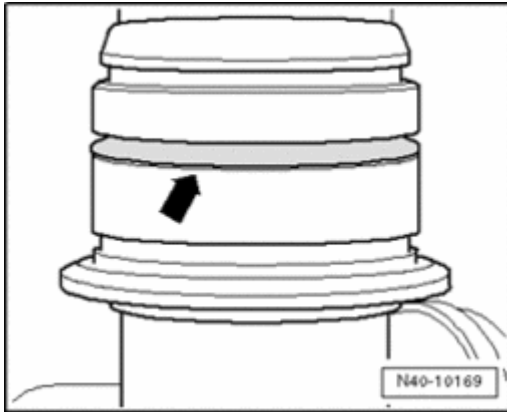
Note:



- Vehicles with Vehicle Identification Numbers (VIN) up to 7L-4-052999 are still equipped with wheel speed sensors - **1** - on fork. This sensor with metal bracket must be re-used when installing new shock absorber.

- *To do so, the sensor must be installed on new shock absorber using a new bolt. Note installation position as shown in illustration.*

Air spring shock absorber, assembling

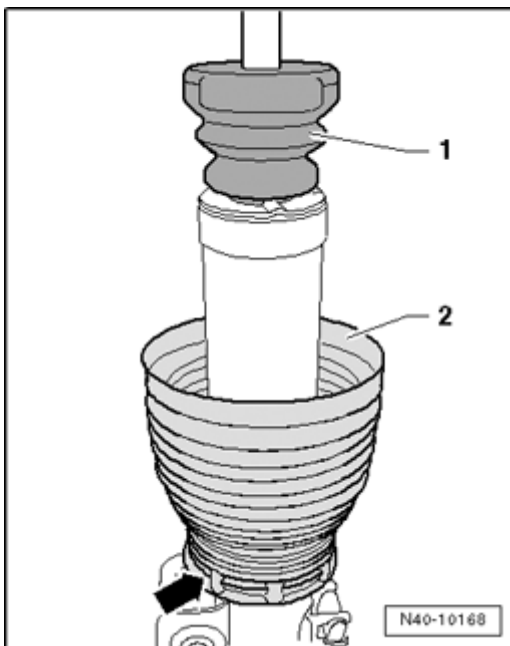


- If shock absorber was not replaced, sealing ring - **arrow** must be replaced.
- Clean contact surface using a lint-free rag.

Note:

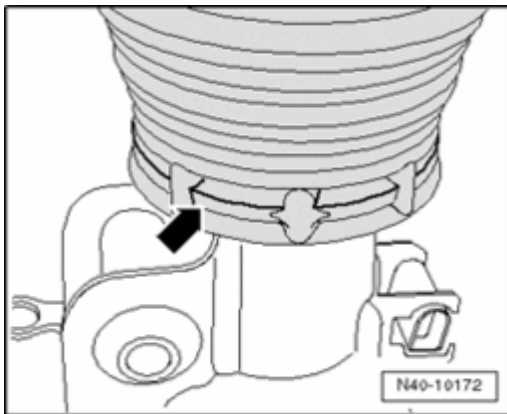
- *Even the smallest deposits cause leaks on the air spring shock absorber.*

- Coat sealing ring lightly with N 052 150 00 .



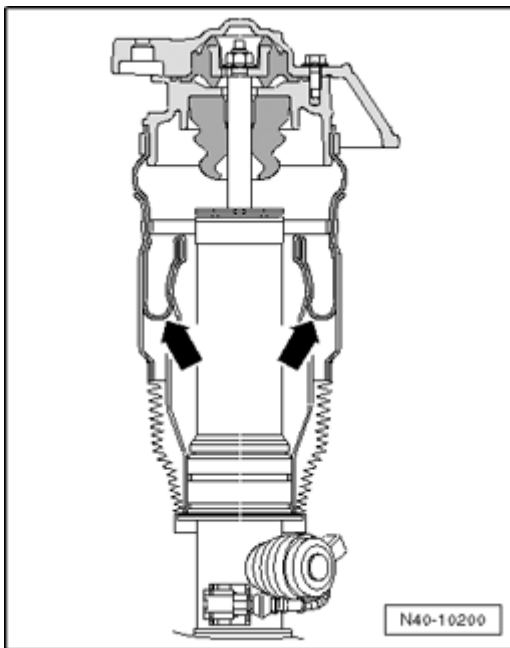
- Install boot - **2** - on shock absorber
- Slide buffer stop - **1** - with small diameter downward

onto shock absorber.



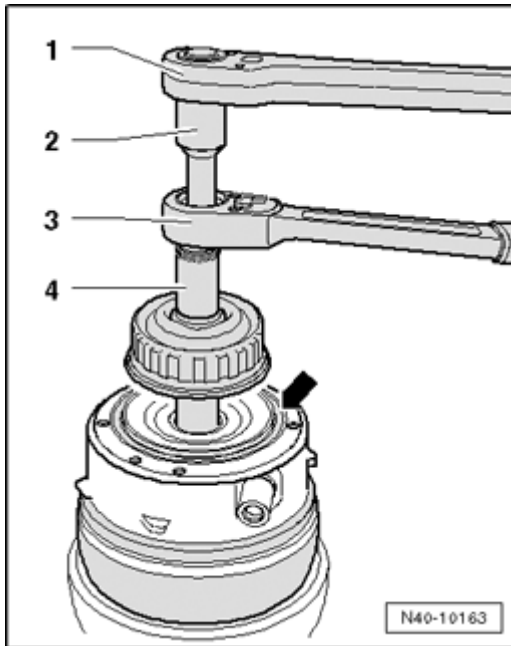
- Slip boot over shock absorber collar so that collar engages in boot groove - **arrow** - .
- Push boot downward and let a second mechanic secure it.

Note:



- *If the air spring is re-used but the rolling piston has slipped out of the outer guide, the rolling piston must be pushed inside again. Pay attention to forming a rolling fold evenly all around the rolling boot - **arrows** - .*

- Remove transport safety device from air spring.
- Place air spring on shock absorber and slide until stop onto shock absorber collar. When doing so, grasp air spring rolling piston ⇒ [Item - 5 -](#) with both hands and slide downward with small rotations toward right and left.



- Install bearing and secure using new nut.

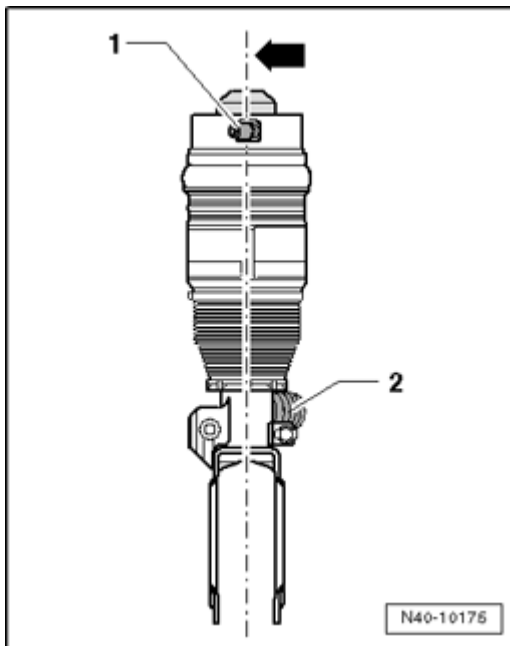
- Commercially available ratchet
- Supplement For T10001 T10001/14
- T10001/11
- T10001/3

- Clean contact surfaces on mounting bracket and air spring using lint-free rag.

Note:

- *Even the smallest deposits cause leaks on the air spring shock absorber.*

- Replace sealing ring - **arrow** - and slightly grease sealing ring using N 052 150 00 .



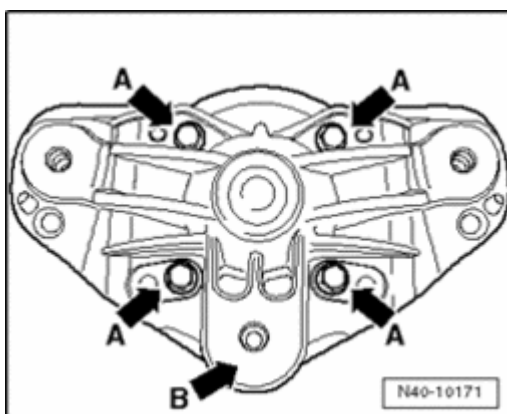
- Align air spring so that residual pressure valve - **1** - is placed exactly on imaginary symmetrical axis - **arrow** - of air spring shock absorber.

Note:

- Rotate rolling piston ⇒ [Item - 5 -](#) only, in order to prevent damage to dust boot ⇒ [Item - 4 -](#) inside of air spring.

- Residual pressure valve - **1** - faces opposite direction of CDC valve - **2** - .

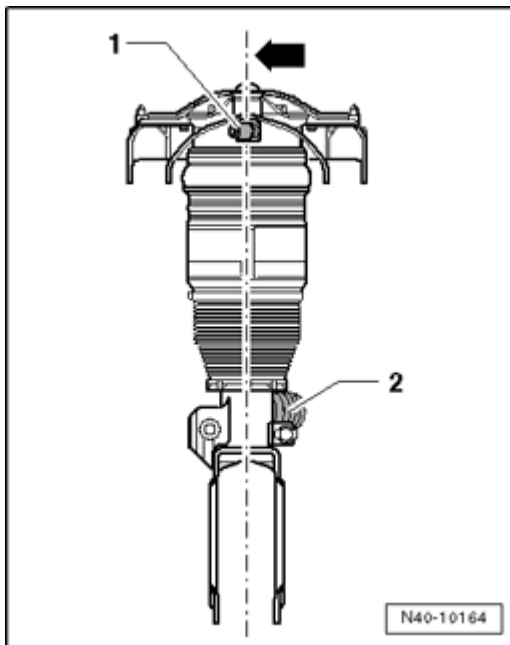
- Slide boot onto air spring and secure using new clamp.



- Install mounting bracket and secure air spring using bolts
 - **arrows A** - . Counterhold at mounting bracket in order to prevent dust boot from twisting.

Pointed end - **arrow B** - must point toward residual pressure valve.

- Fill air spring shock absorber ⇒ [40-7, Air spring damper, filling](#) .



- Align air spring again so that residual pressure valve - **1** - is placed exactly on imaginary symmetrical axis - **arrow** - of air spring shock absorber.

- Residual pressure valve - **1** - faces opposite direction of CDC valve - **2** - .

- Place air spring shock absorber completely in water bath in order check for proper seal.

If no air bubbles are detected in water bath, air spring shock absorber is properly sealed and can be re-installed in vehicle.

If there are air bubbles in the water bath escaping from the air spring shock absorber, the air spring shock absorber must be disassembled once again and sealing rings must be replaced.

Note:

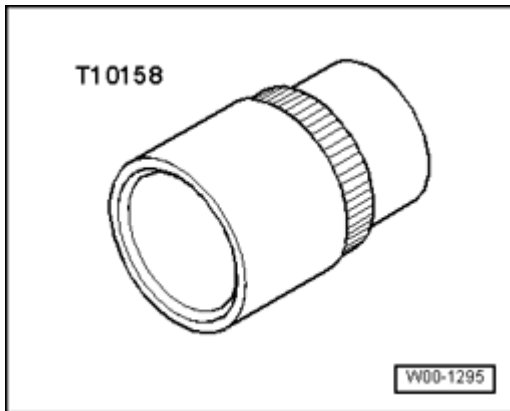
- *Before installing air spring shock absorber, all electrical connections and residual pressure valve must be blown out or dry with compressed air.*

Tightening torque	
Bearing to shock absorber	60 Nm
■ Use new nuts.	

Mounting bracket to air spring	30 Nm
--------------------------------	-------

Residual pressure valve, removing and installing

Special tools, testers and auxiliary items required



- Socket T10158/1

Note:

- *Residual pressure valve must only be replaced if damaged when removing and installing or servicing air spring shock absorber or it no longer permits air to escape (is stuck).*
- *When air spring shock absorber is removed, no further preparations are necessary for replacing the residual pressure valve ⇒ [Topic 40-10](#) .*

Warning!

- *If the residual pressure valve no longer permits air to escape (is stuck), the vehicle must be lifted on a hoist in order to replace the residual pressure valve and the wheels must turn freely.*
- *When loosening the air line, there is the danger to also loosen the residual pressure valve.*
- *If the vehicle is not lifted via a hoist, the vehicle lowers immediately on the side where the residual pressure retaining valve is loosened. There is the acute danger of injury since the arms get jammed.*
- *Vehicle must stay on hoist until new residual pressure valve is installed and air spring shock*

absorber is filled again.

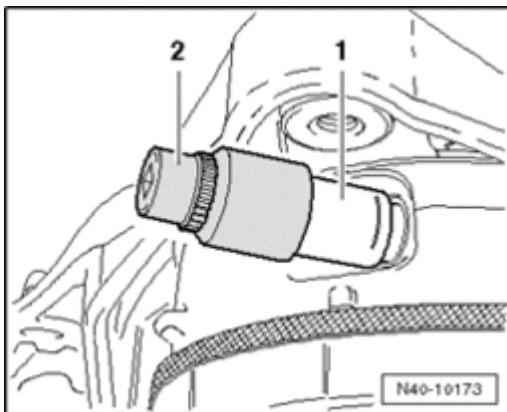
Removing

This work procedure applies to replacing the residual pressure valve with air spring shock absorber installed.

- Position vehicle on hoist and lift until wheels turn freely.
- Remove wheelhousing liner

⇒ [Repair Manual, Body Exterior, Repair Group 66, Wheelhousing liner](#)

- Unscrew air line from residual pressure valve.



- Remove residual pressure valve - **1** - from air spring shock absorber using socket T10158/1 - **2** - .

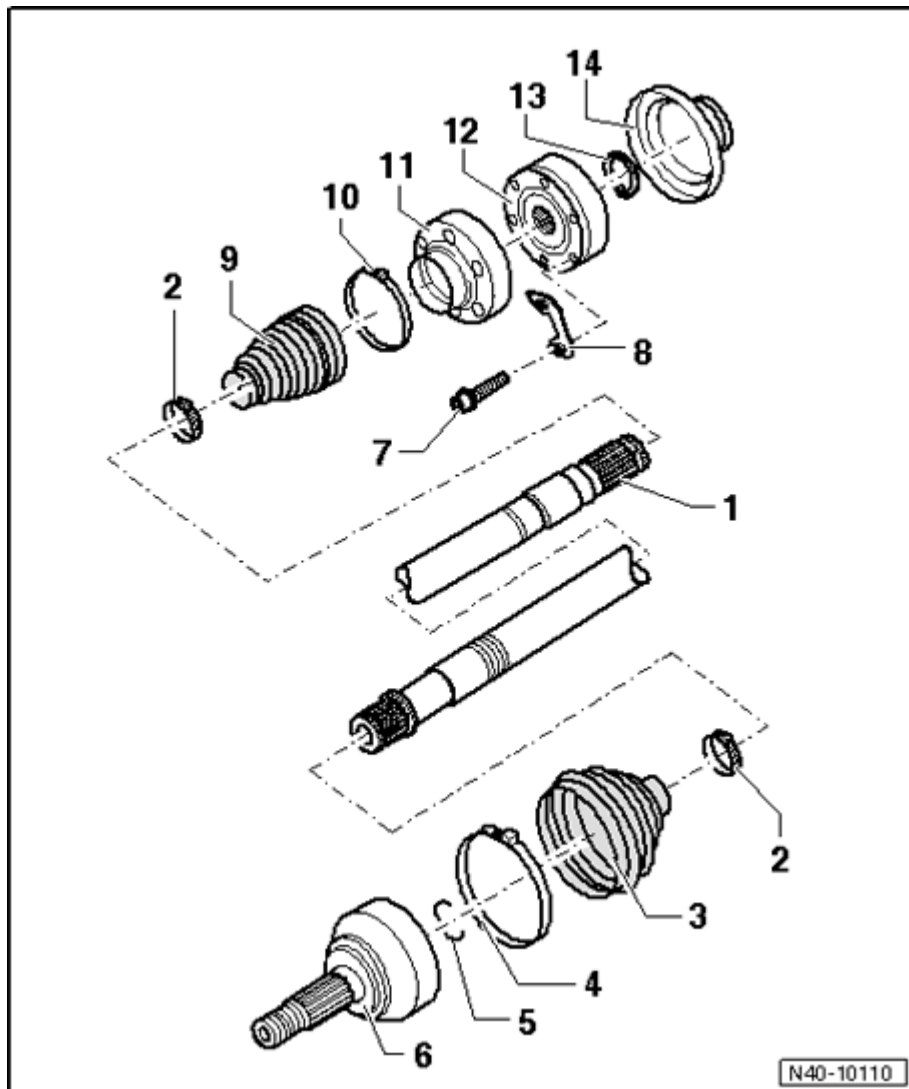
Installing

Installation is performed in the reverse order of removal.

- Fill air spring shock absorber using Vehicle Diagnosis, Testing and Information System VAS 5051 .

Tightening torque	
Residual pressure valve to shock absorber	10 Nm

Front drive axles, assembly overview



■ Drive axle

- Removing and installing ⇒ [40-11, Drive axle, removing and installing](#)
- Application ⇒ *Electronic Parts Catalog "ETKA"*

■ Clamp

- Always replace
- Application ⇒ *Electronic Parts Catalog "ETKA"*

- **Protective boot**

- Check for tears and chafing
- Application ⇒ *Electronic Parts Catalog "ETKA"*

- **Clamp**

- Always replace
- Application ⇒ *Electronic Parts Catalog "ETKA"*

- **Circlip**

- Always replace
- Insert in shaft groove
- Application ⇒ *Electronic Parts Catalog "ETKA"*

- **Outer constant velocity joint**

- Replace as a complete unit
- Installing: Using a plastic hammer, drive onto shaft as far as stop
- Before assembly, coat spline with assembly paste G 052 109 A2
- On vehicle with bonded drive axle, clean spline, remove grease and apply locking compound D 154 000 A1 to the spline ⇒ [Topic 40-11](#) .
- Application ⇒ *Electronic Parts Catalog "ETKA"*

- **Multi-point socket head bolt**

- M10 x 52
- 50 Nm plus an additional $\frac{1}{4}$ turn 90 °

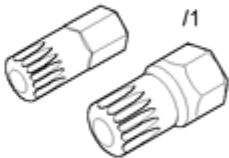
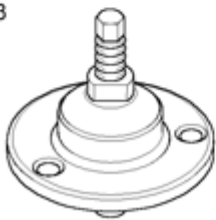
- Always replace
 - M12 x 1.5 x 60
- 90 Nm plus an additional $\frac{1}{4}$ turn 90 °
- Always replace
 - Application $\Rightarrow$ *Electronic Parts Catalog "ETKA"*
- **Plate**
 - Application $\Rightarrow$ *Electronic Parts Catalog "ETKA"*
- **Protective boot for inner constant velocity joint**
 - Check for tears and chafing
 - Application $\Rightarrow$ *Electronic Parts Catalog "ETKA"*
- **Clamp**
 - Always replace
 - Application $\Rightarrow$ *Electronic Parts Catalog "ETKA"*
- **Cover**
- **Inner constant velocity joint**
 - Replace only as a unit
 - Before removing inner constant velocity joint, first remove outer joint
 - Application $\Rightarrow$ *Electronic Parts Catalog "ETKA"*
- **Circlip**
 - Removing and installing with VW 161 A
 - Application $\Rightarrow$ *Electronic*

Parts Catalog "ETKA"

■ Cover

- Always replace
- Application ⇒ *Electronic Parts Catalog "ETKA"*

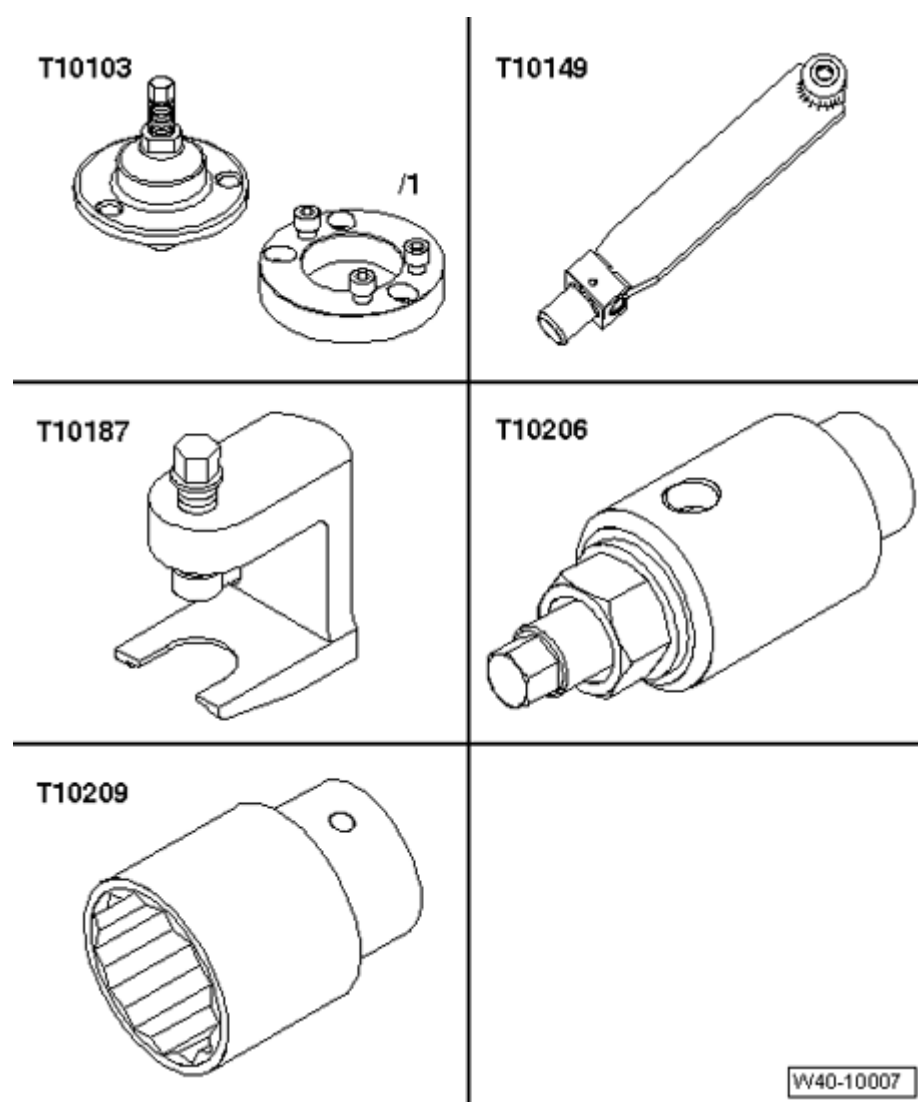
Drive axle, removing and installing

VW 552 	V.A.G 1332 
V.A.G 1601 	T10099 
T10103 	W40-0128

Special tools, testers and auxiliary items required

- Spring tensioner VW 552
- Torque wrench V.A.G 1332

- Torque wrench V.A.G 1601
- 14-mm socket T10099/1
- Press tool T10103



Special tools, testers and auxiliary items required

- Adapter for press tool T10103/1
- Wheel hub support T10149
- Ball joint puller T10187
- Seating tool T10206

- 12-mm socket T10209

Removing

Warning!

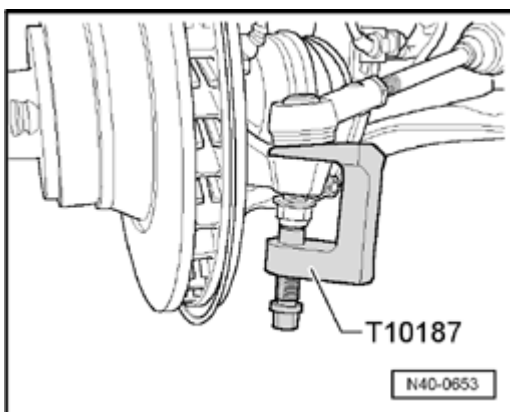
On vehicles with decouplable stabilizer bars, the stabilizer bars must be coupled in before beginning work. Otherwise, the risk of injury exists when decoupled stabilizer bars become unintentionally coupled.

- Loosen 12-point nut.

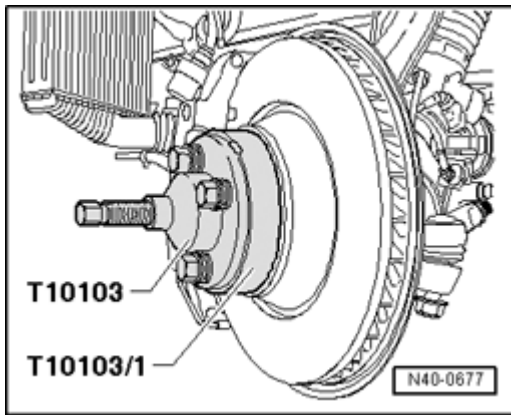
Note:

- Only loosen and tighten 12-point nut when the vehicle is standing on its wheels (risk of accident).
- Do not move vehicle when the 12-point nut is loosened. Otherwise the wheel bearing could be damaged.
- If the vehicle has to be moved with the drive axle removed, an outer joint must be installed and tightened to 150 Nm.

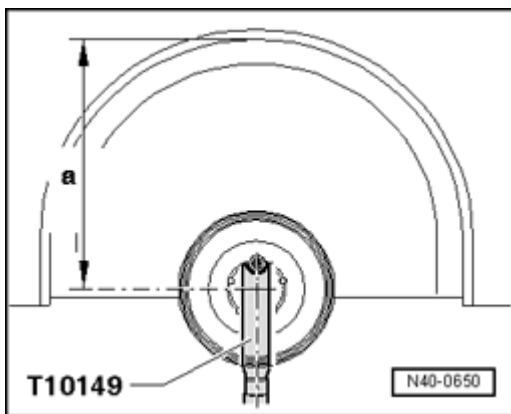
- Remove wheel and raise vehicle.
- Remove drive shaft from final drive. Use socket T10099/1 to loosen bolts.



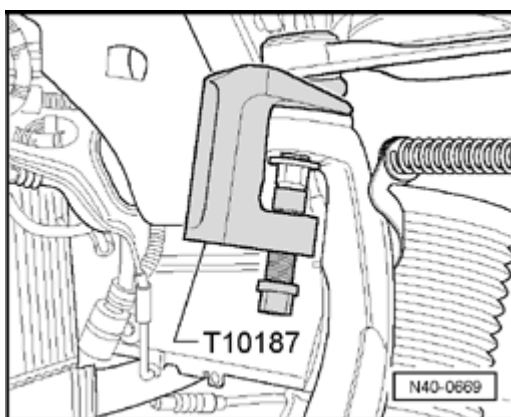
- Press tie rod from wheel bearing housing.



- Press drive axle out.
- Make sure there is adequate clearance when pressing out joints.
- Turn wheel hub until one of the holes for wheel bolts is at the 12 o'clock position.

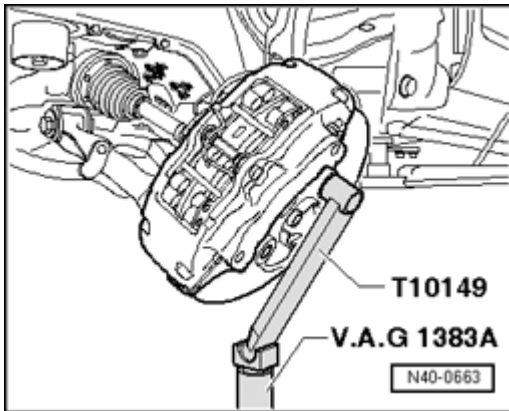


- Install wheel hub support T10149 with a wheel bolt.



- Press out upper control arm.
- Loosen air spring damper to lower control arm bolt.
- Remove brake line retainer from wheel bearing housing.
- Disconnect link from stabilizer bar.

- Pull out bolt from lower control arm.



- Lower wheel bearing housing sufficiently to remove drive axle.
- Remove drive axle.

Installing

Warning!

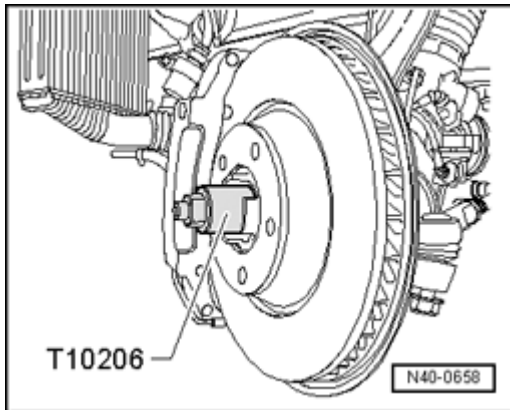
On vehicles with decouplable stabilizer bars, the stabilizer bars must be coupled in before beginning work. Otherwise, the risk of injury exists when decoupled stabilizer bars become unintentionally coupled.

At the start of production, a change was made from bonded to non-bonded drive axles. If you find a bonded drive axle in the vehicle, the following three additional steps have to be performed:

- Clean remaining locking compound from spline on outer joint and on wheel hub.
- Create a metal surface and remove the grease from spline on outer joint and wheel hub.
- Apply locking compound D 154 000 A1 to spline on outer joint.

Remaining installation applies to both drive axles, with special attention to the following:

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

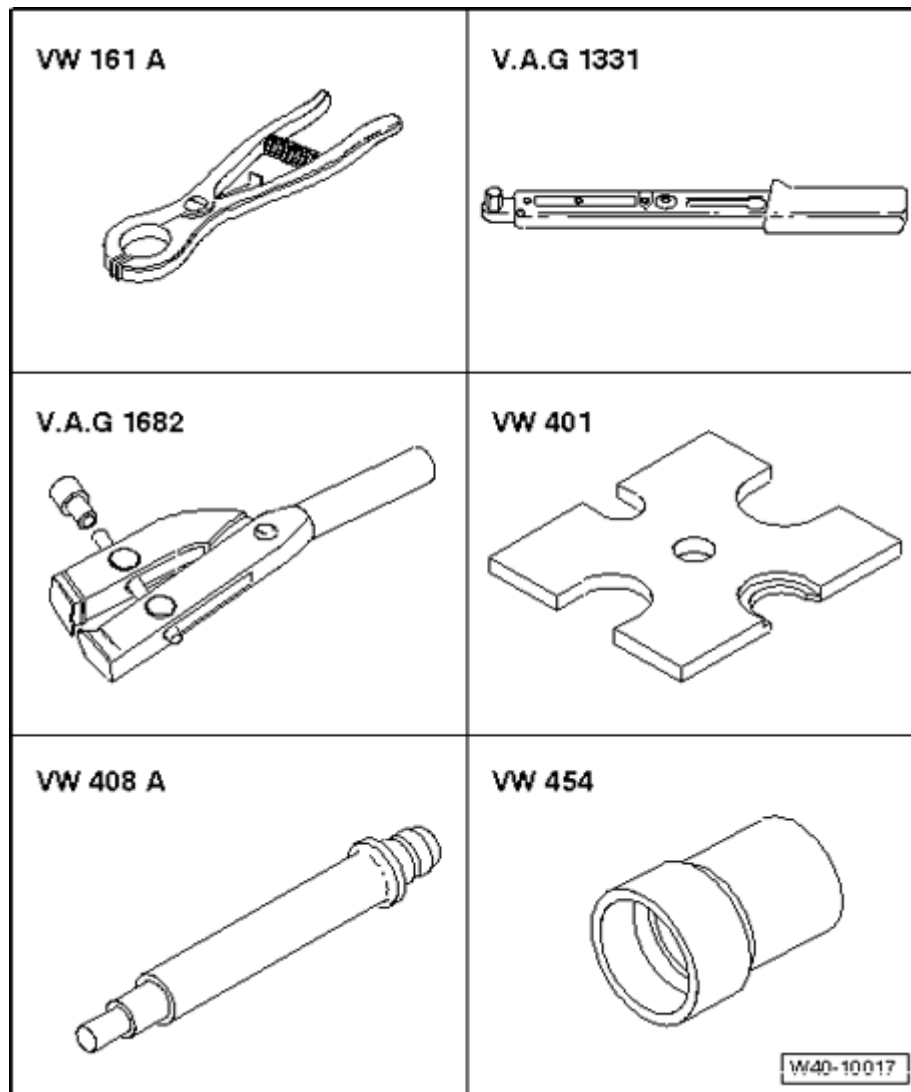


- Seat drive axle as far as stop using seating tool T10206 .
- Remove seating tool T10206 .

Further installation is in reverse sequence of removal.

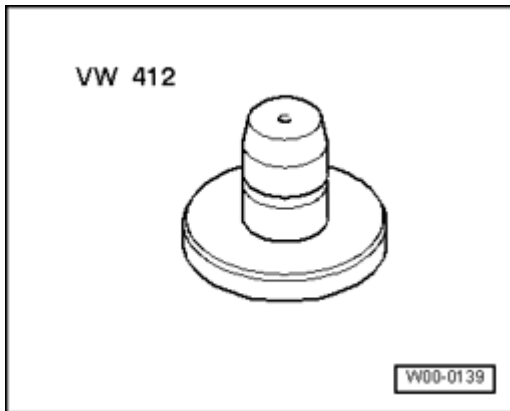
Tightening torques	
Drive shaft to final drive flange M10	50 Nm plus an additional $\frac{1}{4}$ turn (90 °)
Drive shaft to final drive flange M12	90 Nm plus an additional $\frac{1}{4}$ turn (90 °)
Drive axle to wheel bearing for vehicles with 17", 18" and 19" wheels ■ Use new nut.	500 Nm
Upper control arm to steering knuckle ■ Use new nut.	95 Nm

Front drive axle, servicing



Special tools, testers and auxiliary items required

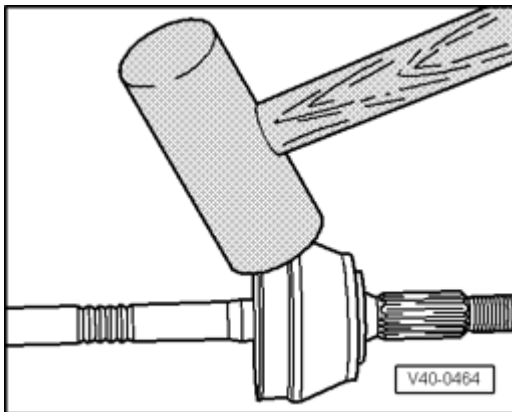
-
- Press piece VW 454
- Thrust plate VW 401
- Punch VW 408 A
- Torque wrench V.A.G 1331
- CV joint boot clamp tool V.A.G 1682
- Circlip pliers VW 161 A

Special tools, testers and auxiliary items required

- Punch VW 412

Drive axle, disassembling**Removing outer constant velocity joint**

- Remove both clamps from constant velocity joint boot.
- Pull constant velocity joint boot off from outer constant velocity joint.

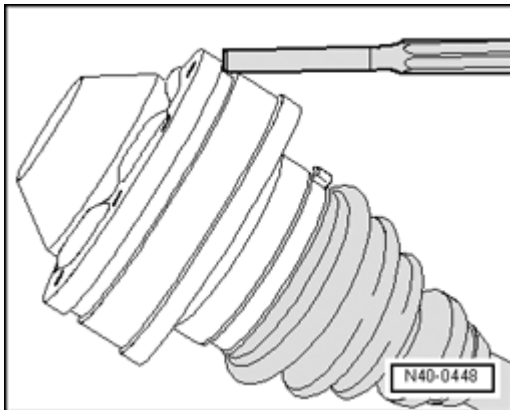


- Drive outer constant velocity joint off of drive axle through firm blows with a plastic hammer.

Check outer constant velocity joint ⇒ [40-11, Checking outer constant velocity joint](#) .

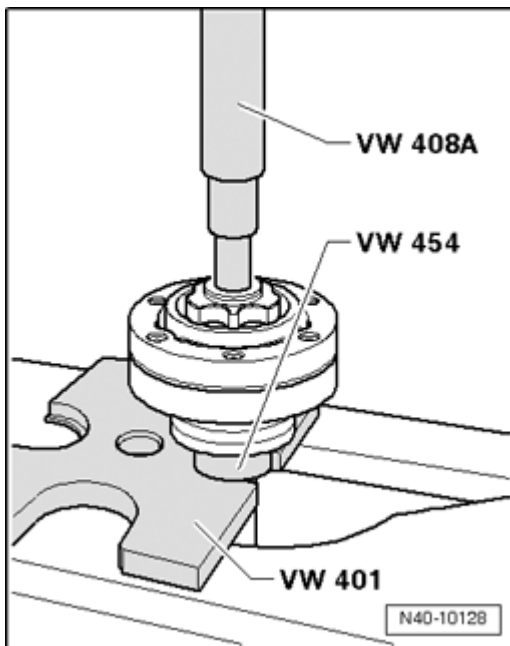
Removing inner constant velocity joint

- Remove both clamps from constant velocity joint boot.
- Pull constant velocity joint boot off from inner constant velocity joint.



- Drive off cover for inner constant velocity joint.

Remove circlip using circlip pliers VW 161 A .



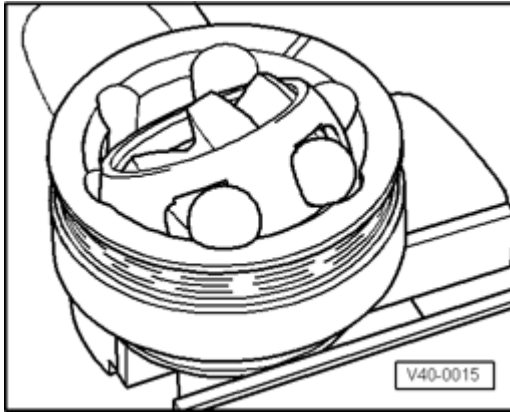
- Press inner constant velocity joint off from drive axle as shown in illustration. Thereby, holding drive axle tight.

The inner constant velocity joint cannot be disassembled for inspection.

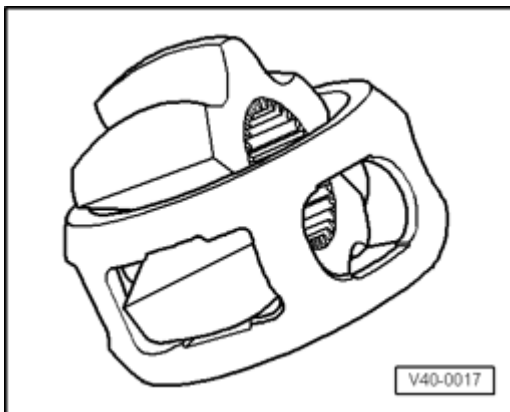
Checking outer constant velocity joint

Joint must be disassembled to replace dirty grease or for checking balls and ball tracks for wear and damage.

Removing



- Before disassembling mark ball hub position in relation to ball cage and housing with an electric scriber or oil stone.
- Swivel ball hub and ball cage.
- Remove balls one after another.
- Lift out cage together with hub.



- Pivot segment of hub into opening in cage.
- Tilt hub out of cage.

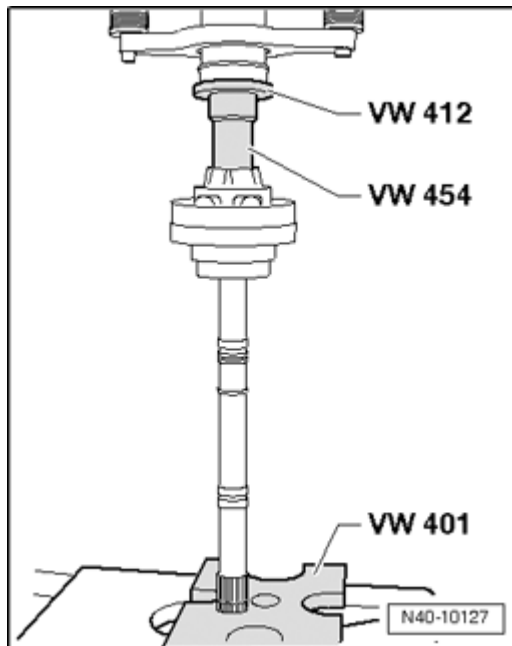
The 6 balls of each joint belong to one tolerance group. Check stub axle, hub, cage and balls for small indentations (pitting) and signs of seizure. Excessive backlash in joint will be noticed as a knock during load changes, in such cases the joint must be replaced. Polished areas and ball track marks are not a reason for changing joint.

Installing

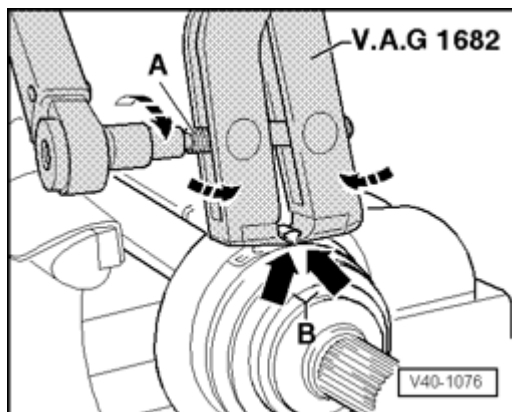
- Press half of the total amount of grease 60 grams (1.4 oz.) into joint body.
- Install cage with hub in joint housing.
- When installing, make sure that the large chamfer on inner diameter of the ball hub and the large inner diameter of ball cage face toward drive axle.

- Press in balls one after another from opposite sides whereby the original position of hub to cage and joint housing must be restored.
- Distribute remaining grease in constant velocity joint boot.

Drive axle, assembling



- Press inner constant velocity joint onto drive axle as shown in illustration.
- Install a new circlip onto drive axle, using the circlip pliers VW 161 A .
- Place a new cover onto inner constant velocity joint.



- Install CV joint boot clamp tool VAG 1682 as shown in illustration. Make sure that the jaws of tension clamp seat in the corners - **arrows B** - of hose clip.
- Tighten hose clamp by turning spindle with a torque wrench (do not bend tensioning clamp).

Note:

- *The hard material of the joint boot (compared to rubber) makes it necessary to use a stainless steel hose clamp, it is only possible to tighten the hose clamp with CV joint boot clamp tool V.A.G 1682 .*
- *Tightening torque: 25 Nm*
- *Use torque wrench with a range of 5 to 50 Nm (e.g. torque wrench V.A.G 1331).*
- *Make sure the spindle thread - **A** - is not tight. If necessary lubricate with MOS 2 grease.*
- *If the thread is tight e.g. dirty, the required tensioning force for the hose clamp will not be achieved in spite of correct tightening torque settings.*