

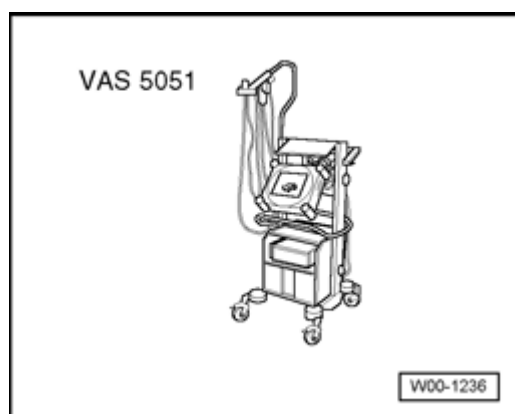
Volkswagen Phaeton



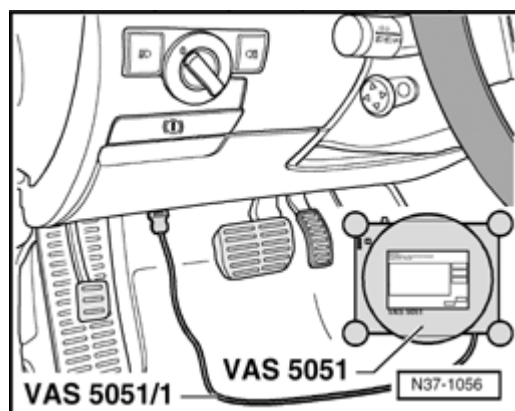
Front suspension, servicing

VAS 5051, connecting and selecting functions

Special tools, equipment, testers, measuring instruments and auxiliary items required



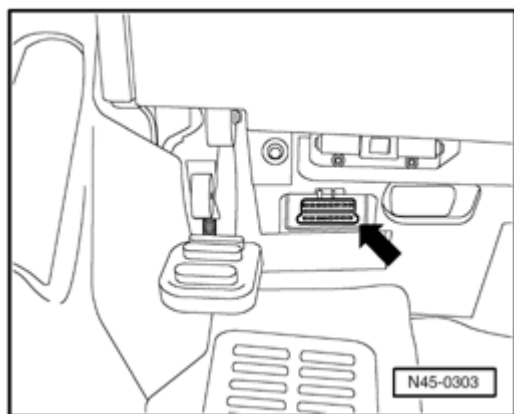
- VAS 5051 Vehicle diagnosis, testing and information system



- Diagnostic cable VAS 5051/1 or VAS 5051/3

Warning!

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



- Connect diagnosis cable connector VAS 5051/1 or VAS 5051/3 to diagnosis connection.

- Switch on tester - **arrow** - .

The tester is operational when it displays a picture of a car.

- Switch on ignition.

- Touch button/field for "Guided Fault Finding" on screen.

- Select one after another:

- Brand
- Type
- Model year
- Version
- Engine code

- Confirm data entered.

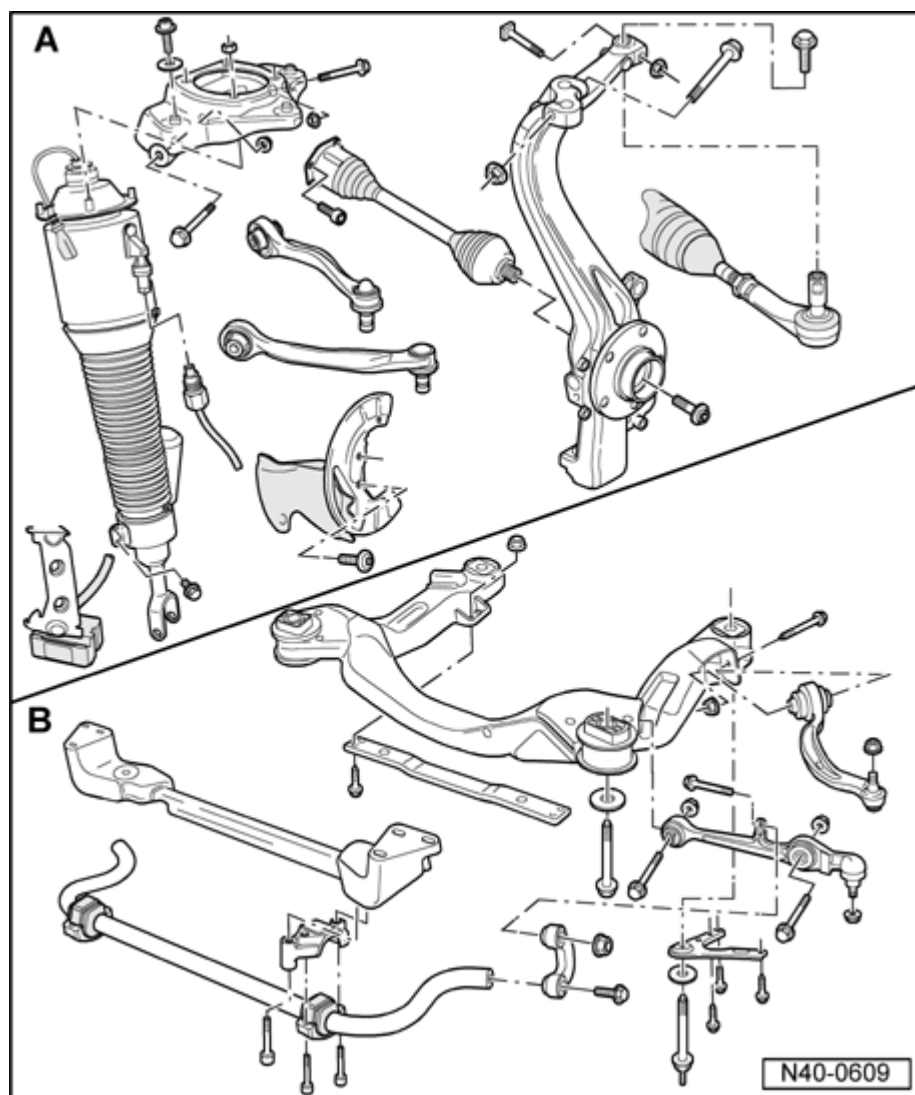
Note:

- *Wait until tester has checked all control modules in vehicle.*

- Press Goto button and select "Function/component selection" function

Follow information given on screen to start the desired functions.

Front axle, overview



A - Mounting bracket, upper links, air spring strut, and wheel bearing housing ⇒ [40-3, A - Mounting bracket, upper links, air spring strut and wheel bearing housings, assembly overview](#)

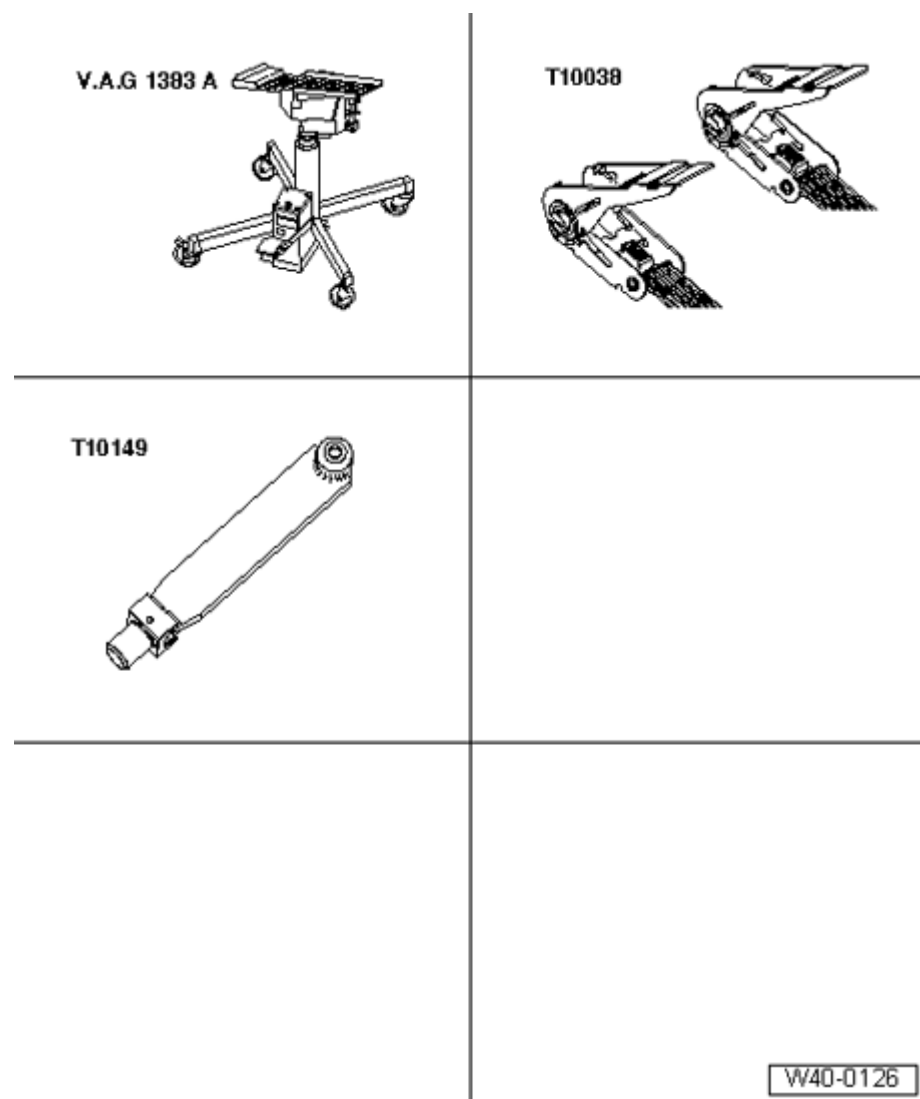
B - Subframe, lower links, and stabilizer bar ⇒ [40-4, B - Subframe, lower link, and stabilizer bar, assembly overview](#)

Note:

- *If vehicles with drive axle removed must be moved, an outer joint must be installed first. Tighten outer joint to 50 Nm, otherwise the wheel bearings will be damaged.*
- *Welding and straightening work on supporting or wheel carrying components of suspension is not permitted.*

- *Always replace self-locking nuts.*
- *Always replaced corroded nuts/bolts.*

Wheel bearing, lifting to curb weight position



Special tools, testers and auxiliary items required

- engine/transmission jack V.A.G 1383 A
- Tightening strap T10038
- Wheel hub support T10149

Note:

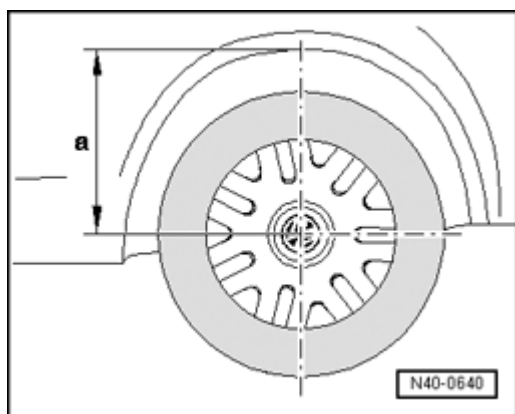
- *Always tighten all connecting bolts to suspension parts with bonded rubber bushings in curb weight position (unloaded).*

Bonded rubber bushings have a limited twisting range.

Axle components with bonded rubber bushings must be brought into installation position before tightening, which corresponds to curb weight position when driving.

Otherwise, if you stress the bonded rubber bushing it will lead to a shorter life span.

By raising the suspension on one side using the engine/transmission jack V.A.G 1383 A and support T10149 , this position will be simulated on the hoist.



- Before beginning assembly, measure dimension - **a** - from center of wheel to lower edge of wheelhousing using a tape measure.

The measurement must be taken in the curb weight position (unloaded).

- Note measured value. This is needed for tightening bolts and nuts.

Before the individual suspension is raised on one side, the vehicle must be secured to the lifting arms on the hoist using tensioning straps T10038 .

Caution!

If the vehicle is not secured, it may slip off the hoist!

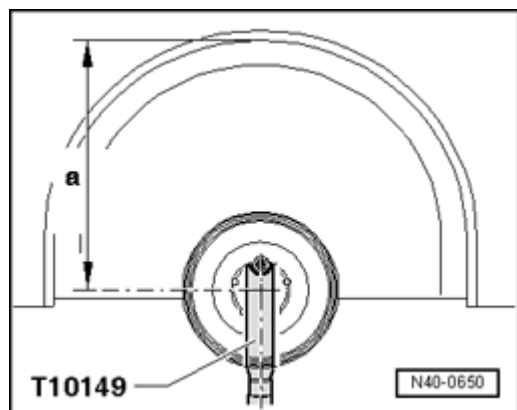
- Turn wheel hub until one of the wheel bolt holes is at 12 o'clock position. .

- Attach Wheel Hub Support T10149 to wheel hub with a wheel bolt.

Only tighten respective bolts and nuts after dimension - **a - between wheel hub center and lower edge of wheel housing, measured before beginning of assembly, is**

achieved ⇒ [Topic 40-2](#) .

- Raise wheel bearing housing using engine/transmission jack V.A.G 1383 A until dimension - **a** - is achieved.



Lift wheel bearing housing

Caution!

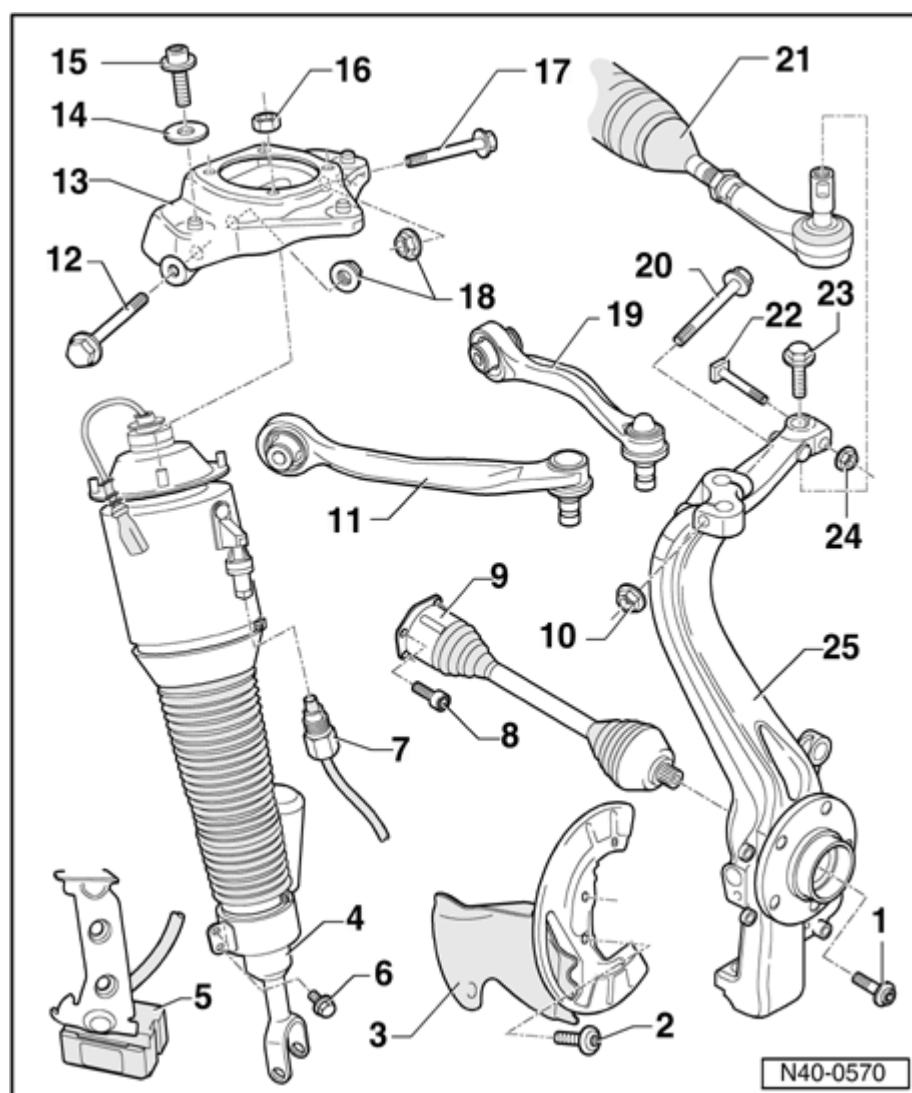
- ***Do not raise or lower the hoist if the engine/transmission jack is under the vehicle.***
- ***Do not leave engine/transmission jack V.A.G 1383 A under vehicle any longer than necessary.***

- Tighten respective nuts/bolts.
- Lower wheel bearing housing.
- Move engine/transmission jack V.A.G 1383 A below vehicle away.
- Remove wheel hub support T10149 .

A - Mounting bracket, upper links, air spring strut and wheel bearing housings, assembly overview

Note:

- *If a vehicle has to be moved after removing the drive axle, first install an outer joint and tighten this to 50 Nm, otherwise you will damage the wheel bearings.*
- *Welding and straightening work on supporting or wheel carrying components of the suspension is not permitted.*
- *Always replace self-locking hex head nuts.*
- *Always replaced corroded bolts and nuts.*



- Hex socket head bolt

- 200 Nm plus an additional
180 ° ($\frac{1}{2}$ turn)
- Always replace

**Vehicle must not be raised
when tightening**

- **Torx bolt**

- 9 Nm

- **Cover plate**

- **Air spring strut**

- Protective boot must not have any indentations (be pressed inward)
 - Removing and installing ⇒
[40-3, Air spring strut removing and installing](#)

- **Wheel acceleration sensor**

- Left front wheel acceleration sensor G337
 - Right front wheel acceleration sensor G338
 - Check with Vehicle Diagnosis, Testing and Information System VAS 5051 in "Guided Fault Finding"

- **Hex bolt**

- 10 Nm

- **Air supply line**

- 5 Nm
 - Clean connection before loosening
 - Air escapes when connections are loosened
 - Protect threaded connection

from dirt

- **Multi-point socket head bolt**

- 70 Nm
- M 10 x 20
- Pre-tighten to 10 Nm in diagonal sequence

- **Drive axle**

- **Hex nut**

- 50 Nm
- Self-locking
- Always replace

- **Upper front link**

- Can only be removed together with mounting bracket
- Mounting bracket, removing and installing ⇒ [40-3, Mounting bracket, removing and installing](#)
- Bonded rubber bushings, replacing ⇒ [40-3, Upper link bonded rubber bushing, replacing](#)

- **Hex bolt**

- Always replace

- **Mounting bracket**

- Removing and installing ⇒ [40-3, Mounting bracket, removing and installing](#)

- **Washer**

- **Multi-point socket head bolt**

- Observe tightening sequence ⇒ [40-3, Tightening sequence,](#)

[air spring damper to body](#)

- 50 Nm plus an additional 90 °
($\frac{1}{4}$ turn)
- Always replace

- **Hex nut**

- 23 Nm

- **Hex bolt**

- Always replace

- **Hex nut**

- 50 Nm and 90 ° ($\frac{1}{4}$ turn)
 - Self-locking
 - Replace after every removal

- **Upper rear link**

- Can only be removed together with mounting bracket
 - Mounting bracket, removing and installing ⇒ [40-3, Mounting bracket, removing and installing](#)
 - Bonded rubber bushings, replacing ⇒ [40-3, Upper link bonded rubber bushing, replacing](#)

- **Hex bolt**

- On aluminum wheel bearing housings, tighten against driving direction

- **Tie rod**

- **Hex bolt**

- **Hex bolt**

- 7 Nm

- Always replace

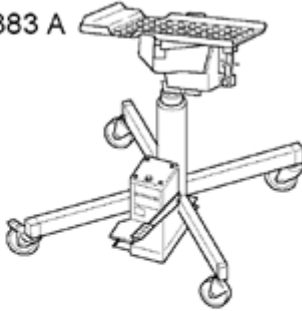
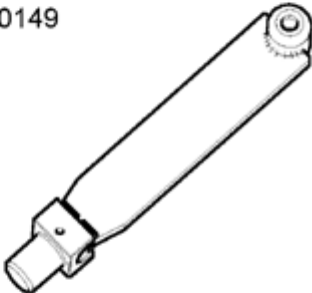
- **Hex nut**

- 50 Nm
- Self-locking
- Always replace

- **Wheel bearing housing**

- Removing and installing ⇒
[40-3, Wheel bearing housing, removing and installing](#)
- Aluminum or steel, application
⇒ *Parts catalog*

Air spring strut removing and installing

V.A.G 1332 	V.A.G 1383 A 
V.A.G 1331 	T10149 
	W40-10009

Special tools, testers and auxiliary items required

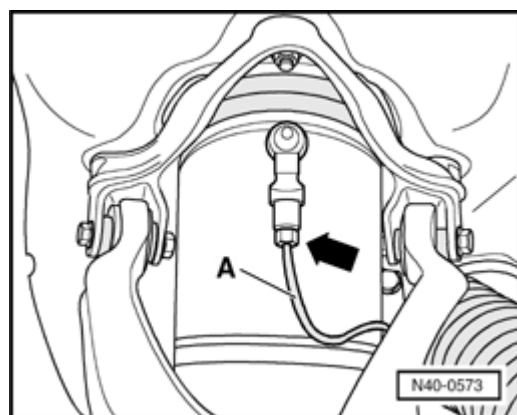
- Torque wrench V.A.G 1331
- Torque wrench V.A.G 1332
- Engine/transmission jack V.A.G 1383 A
- Wheel hub support T10149

Removing

Remove air spring strut together with mounting bracket and upper links.

During assembly work, make sure that no indentations form on boot of air spring strut!

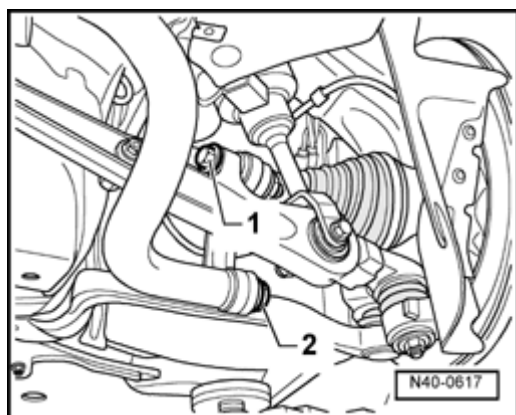
- Remove front wheel.



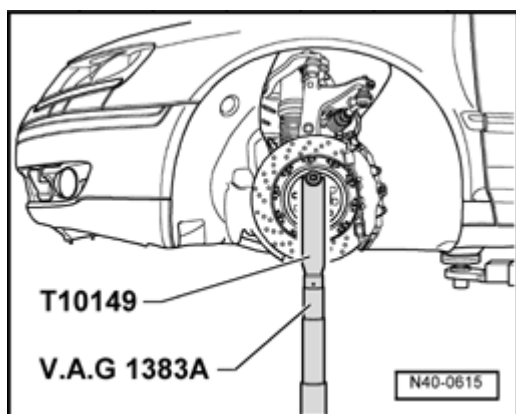
- Clean air line connection - **arrow** - to air spring strut.

- Remove air line - **A** - from air spring strut and then seal off both connections.

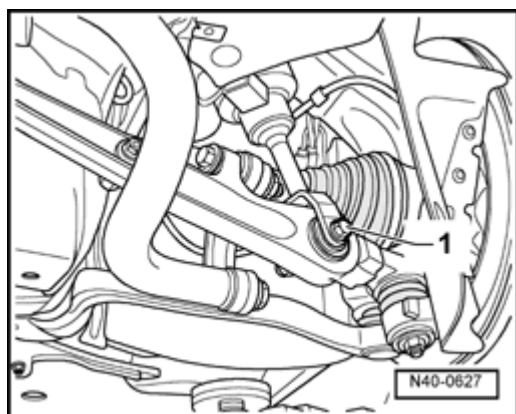
- Open air line cable ties at air spring strut.



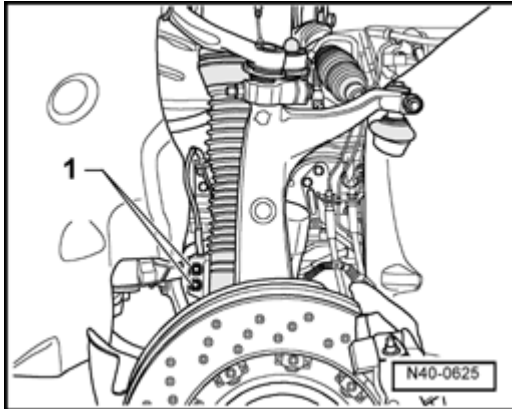
- Loosen connecting link to stabilizer bar - **2** - and to lower link - **1** - .



- Attach Wheel Hub Support T10149 to wheel hub with a wheel bolt.
- Raise wheel bearing housing with engine/transmission jack V.A.G 1383 A and Wheel Hub Support T10149 until connecting link is "stress free" .
- Remove connecting link from stabilizer bar.
- Lower wheel bearing housing.
- Move engine/transmission jack V.A.G 1383 A away from under vehicle.
- Remove both upper links from wheel bearing housing.

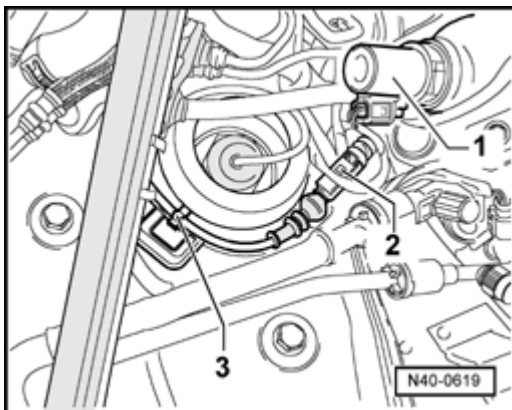


- Remove air spring strut from lower link - **1** - .



- Remove Wheel Acceleration Sensor - **1** - from air spring strut.
- Remove plenum chamber cover.

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



- Unclip cable - **3** - .
- Disconnect strut adjustment switching valve electrical connector - **2** - .

Vehicles with Adaptive Cruise Control

- Remove Brake Booster Membrane Position Sensor G420 - **1** - .

⇒ [Repair Manual, Brake System, Repair Group 47, Brake booster/brake master cylinder, assembly overview; Brake Booster Membrane Position Sensor G420, removing and installing](#)

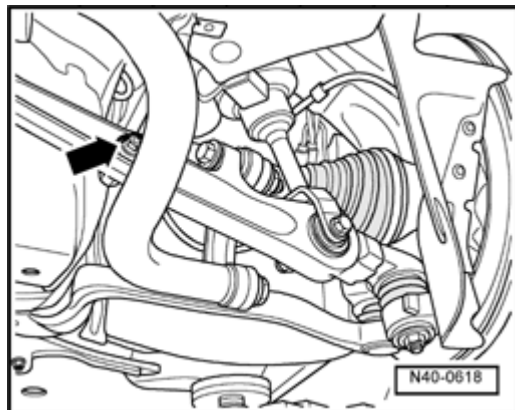
Left side air spring strut, removing

- Turn steering gear left to stop.

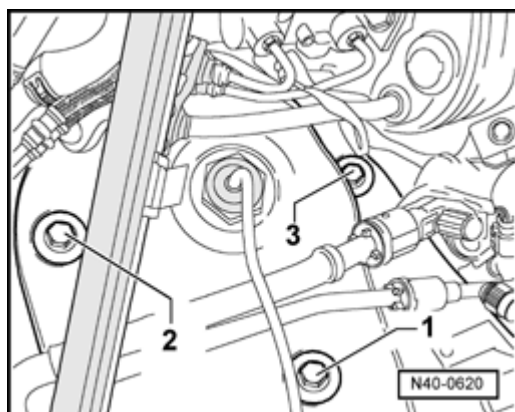
Continue removing air spring strut on right side

- Turn steering gear right to stop.

Continue for both sides



- Remove Level Control System Sensor connecting link - **arrow** - from lower link.



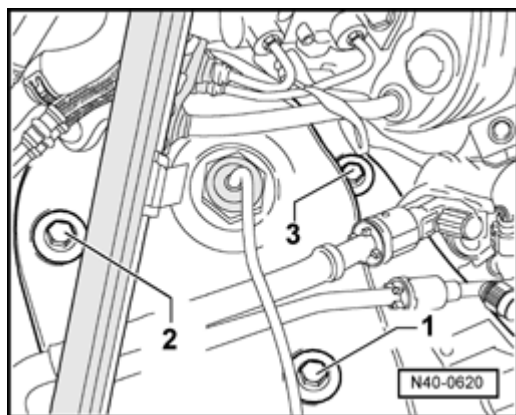
- Remove air spring strut multi-point socket head bolts - **1, 2, 3** - from air spring strut.
- Pull wheel bearing housing as far downward as possible and then remove from air spring strut.
- Remove mounting bracket from air spring strut.

If air spring strut is to be replaced, first read the following ⇒ [40-3, Air spring strut, filling](#) .

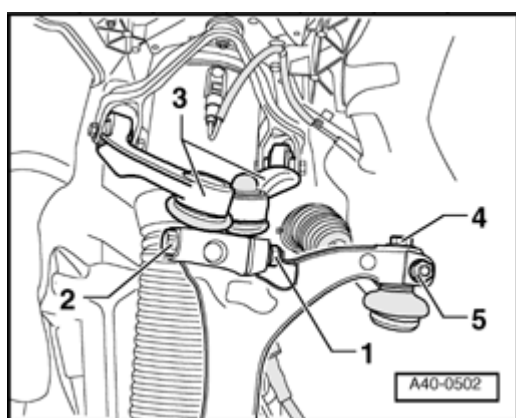
Installing

Installation is in reverse order of removal. Note the following:

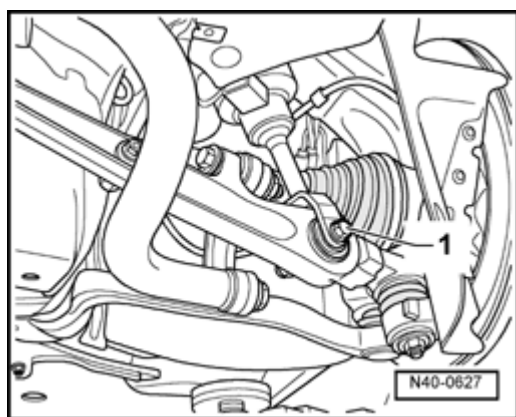
- Check threaded bushings (3 pieces, as part of mounting bracket) are located properly in body.
- Observe tightening sequence for multi-point socket head bolts.



Tightening sequence, air spring damper to body



- Push upper link - **3** - as far down as possible when tightening.



- Raise wheel bearing housing and then tighten hex bolt - **1**
- ⇒ [40-2, Lift wheel bearing housing](#)
- Check basic setting of level control system ⇒ *Vehicle Diagnosis, Testing and Information System VAS 5051* .

Tightening torques	
Air line to air spring strut	5 Nm
Connecting link to stabilizer bar	90 Nm plus an additional $\frac{1}{4}$ turn (90

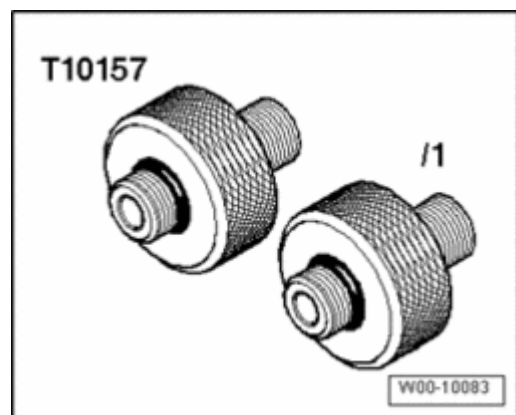
1) 2)	°)
Connecting link to lower link 1) 2)	90 Nm plus an additional $\frac{1}{4}$ turn (90°)
Upper link to wheel bearing housing	50 Nm
Wheel acceleration sensor to air spring strut	10 Nm
Connecting link from vehicle level sensor to lower link	8 Nm
Air spring strut to lower link 1) 2)	90 Nm plus an additional $\frac{1}{4}$ turn (90°)
Mounting bracket to body 1)	50 Nm plus an additional $\frac{1}{4}$ turn (90°)
Air spring strut to mounting bracket	20 Nm

1) Use new bolts/nuts

2) Tighten bolts/nuts in curb weight position

Air spring strut, filling

Special tools, testers and auxiliary items required



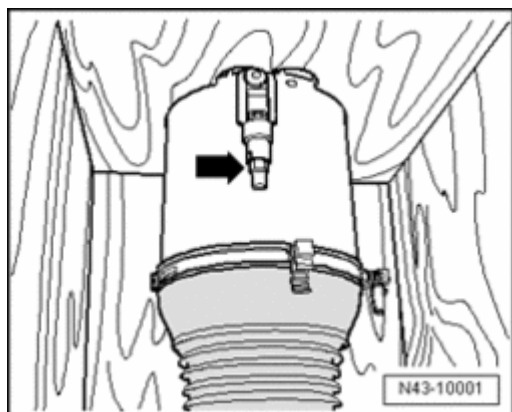
- Adapter T10157
- Air suspension strut charger VAS 6231 , not depicted
- Steel gas cylinder filled with Argon or Corgon, not illustrated

Note:

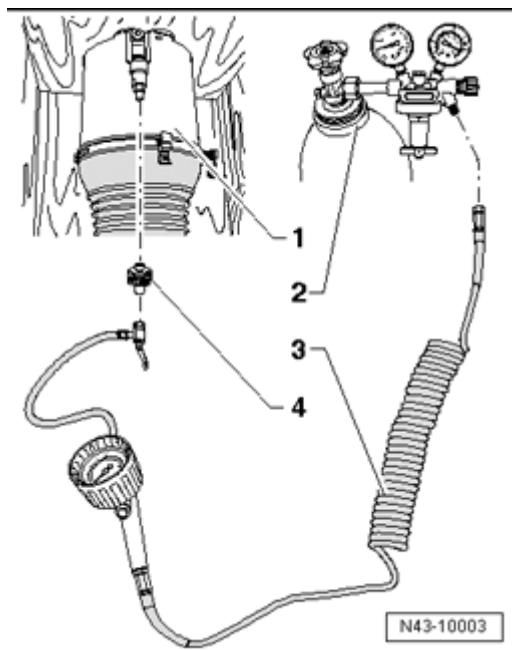
- *Air spring struts are supplied as replacement parts with a minimum pressure. By sitting in storage for*

extended periods this minimum pressure can diminish (just like a tire). Before the air spring strut is removed from its packaging, this minimum pressure must be controlled and restored by "refilling". Without this necessary refilling, folds can form in the under-filled air spring boot. These folds cause damage which can lead to premature failure.

- Remove cover from packaging.

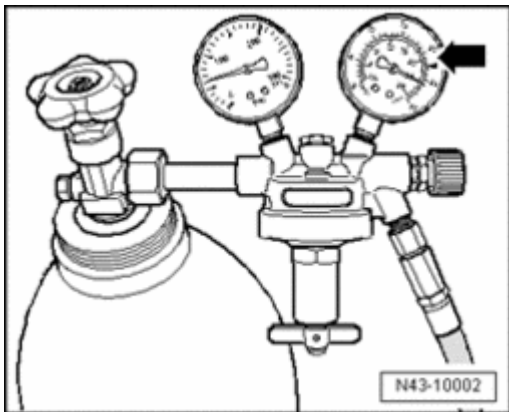


- Remove bolt - **arrow** - from residual pressure retaining valve.
- Close steel gas bottle pressure valve.
- Become familiar with the relevant rules for prevention of accidents for pressurized containers and technical gases.

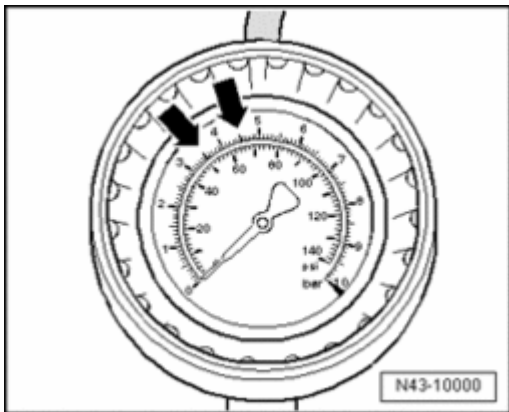


- Connect air spring filler unit VAS 6231 and adapter T10157 as shown in the illustration.
 - Air spring strut with packaging
 - Steel gas bottle for argon, corgon with gauges

- Air spring filler unit VAS 6231
- Adapter T10157



- Set flow rate limiter gauge to 2.0 L/min - **arrow** - .
- Fill gas into air spring strut using several individual pressure bursts.



The display only shows a correct gas pressure if the "oscillatory pressure" of the residual pressure retaining valve is overcome. The "oscillatory pressure" is at approx. 3.5 bar. When the display reaches 3.5 to 4.5 bar, air spring damper is sufficiently filled with gas.

- Make sure display does not climb over 4.5 bar when filling.
- Disconnect air spring filler unit VAS 6231 from adapter T10157 . This dissipates gas above an internal pressure of 3.5 bar.

Minimum pressure is now set. Remove air spring strut from packaging.

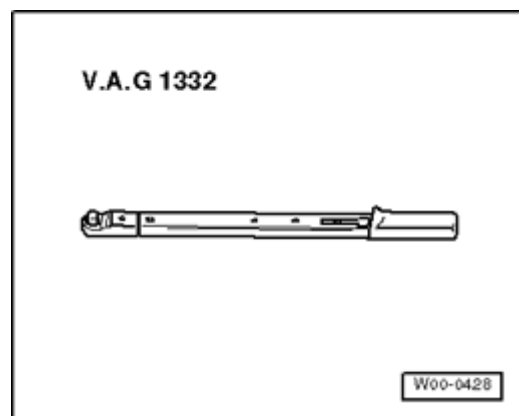
- After installation, first drive the vehicle at high ride height and then at normal ride height. Repeat this sequence once more.

Move twice to different ride heights, the gas is replaced with cleaned air from air supply unit.

- Install air spring strut ⇒ [40-3, Installing](#) .

Mounting bracket, removing and installing

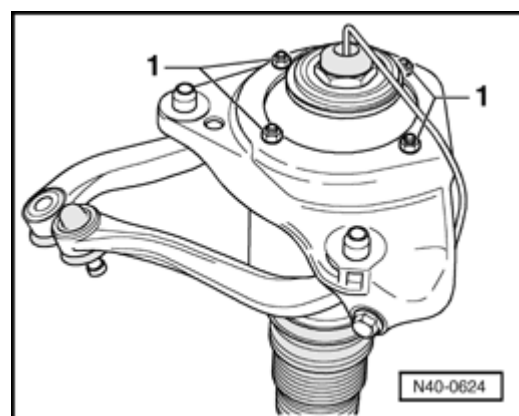
Special tools, testers and auxiliary items required



- Torque wrench V.A.G 1332

Removing

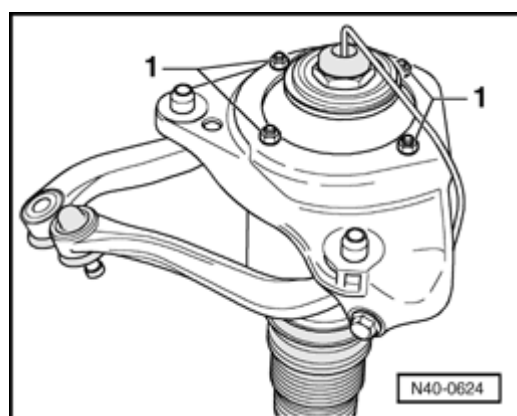
- Remove air spring strut ⇒ [40-3, Air spring strut removing and installing](#) .



- Remove mounting bracket from air spring strut - **1** - .

Installing

Installation is in reverse order of removal.



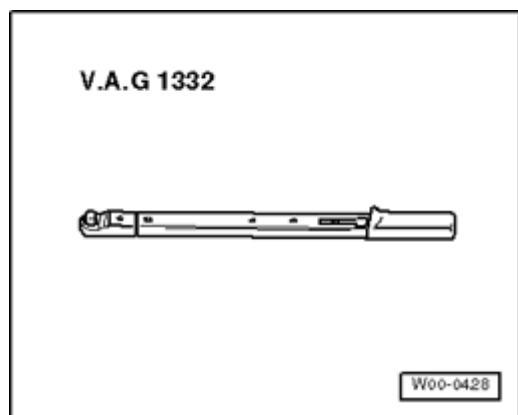
- Install mounting bracket to air spring strut - **1** - .
- Install air spring strut ⇒ [40-3, Installing](#) .

Tightening torque	
Air line to air spring strut	5 Nm
Connecting link to stabilizer bar 1) 2)	90 Nm plus an additional $\frac{1}{4}$ turn (90°)
Connecting link to lower link 1) 2)	90 Nm plus an additional $\frac{1}{4}$ turn (90°)
Upper link to wheel bearing housing	50 Nm
Wheel acceleration sensor to air spring strut	10 Nm
Connecting link from vehicle level sensor to lower link	8 Nm
Air spring strut to lower link 1) 2)	90 Nm plus an additional $\frac{1}{4}$ turn (90°)
Mounting bracket to body 1)	50 Nm plus an additional $\frac{1}{4}$ turn (90°)
Air spring strut to mounting bracket	20 Nm

- 1) Always use new nuts and bolts
- 2) Tighten bolts and nuts in curb weight position

Upper link, removing and installing

Special tools, testers and auxiliary items required

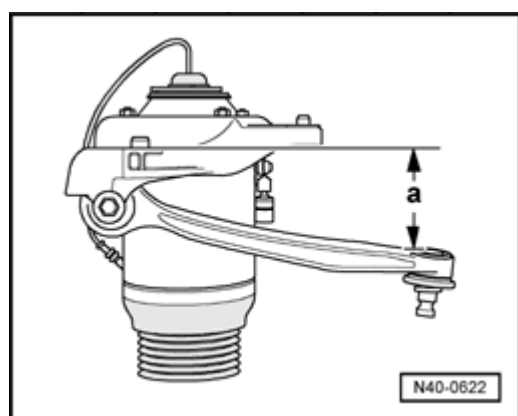


- Torque wrench V.A.G 1332

Removing

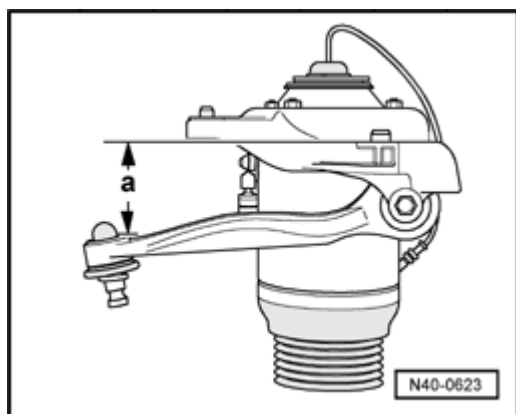
- Remove air spring strut ⇒ [40-3, Air spring strut removing and installing](#) .
- Compress air spring strut in a vise with protective covers.
- Remove mounting bracket ⇒ [40-3, Mounting bracket, removing and installing](#) .
- Remove both links from mounting bracket.

Links, setting



- Set upper front link to dimension - **a** - and tighten.

Dimension - **a** - = 81 ± 2 mm



- Set upper rear link to dimension - **a** - and tighten.

Dimension - **a** - = 69 ± 2 mm

Installing

Installation is in reverse order of removal, note the following:

- Attach both links to mounting bracket.
- Adjust both links before tightening. ⇒ [40-3, Links, setting](#)

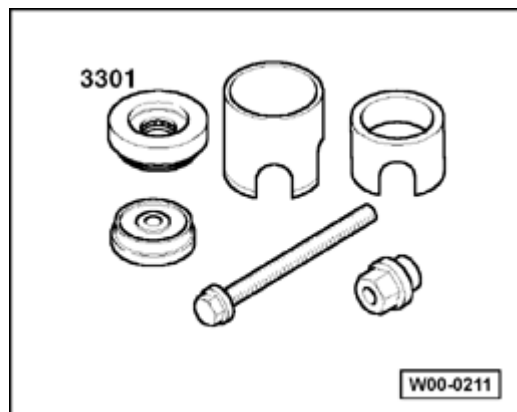
Tightening torque	
Air line to air spring strut	5 Nm
Connecting link to stabilizer bar 1) 2)	90 Nm plus an additional $\frac{1}{4}$ turn (90°)
Connecting link to lower link 1) 2)	90 Nm plus an additional $\frac{1}{4}$ turn (90°)
Upper link to wheel bearing housing	50 Nm
Wheel acceleration sensor to air spring strut	10 Nm
Connecting link from vehicle level sensor to lower link	8 Nm
Air spring strut to lower link 1) 2)	90 Nm plus an additional $\frac{1}{4}$ turn (90°)
Mounting bracket to body 1)	50 Nm plus an additional $\frac{1}{4}$ turn (90°)
Air spring strut to mounting bracket	20 Nm
Upper link to mounting bracket 1)	50 Nm plus an additional $\frac{1}{4}$ turn (90°)

1) Use new bolts and nuts

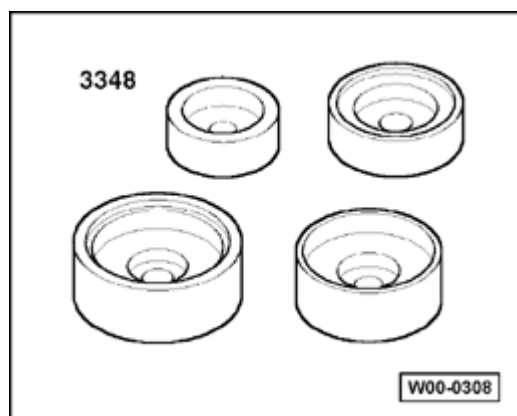
2) Tighten bolts in curb weight position

Upper link bonded rubber bushing, replacing

Special tools, testers and auxiliary items required



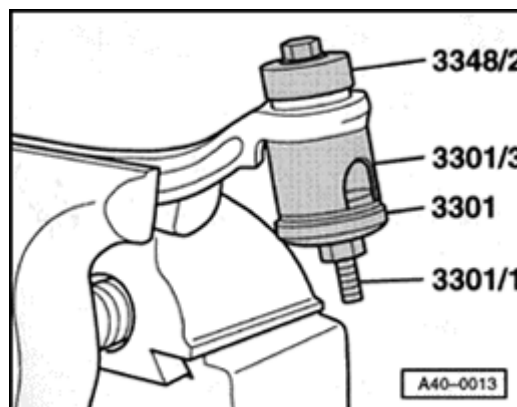
- Assembly tool 3301



- Front and Rear Bearing Tool 3348

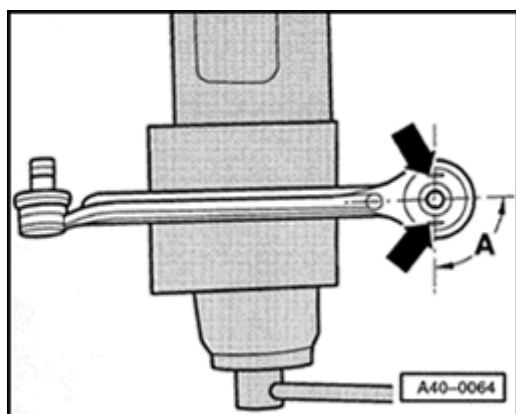
Bonded rubber bushing, removing

Clamp link only in vise with protective covers!



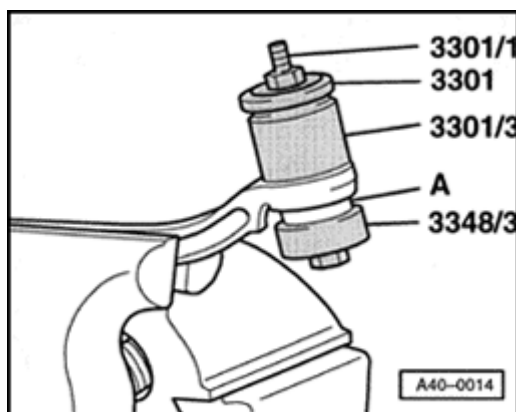
Removing bonded rubber bushing

Bonded rubber bushing, seating



Bonded rubber bushing installation location

$$A = 90^{\circ} \pm 5^{\circ}$$

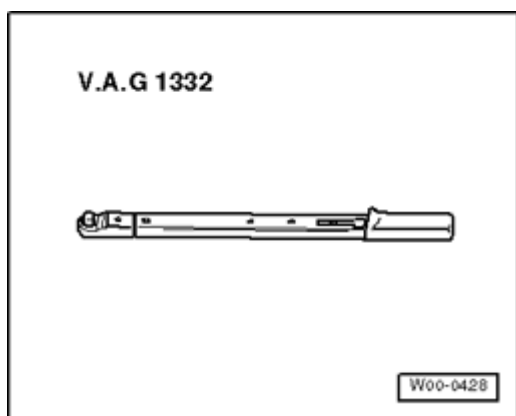


Seating bonded rubber bushing

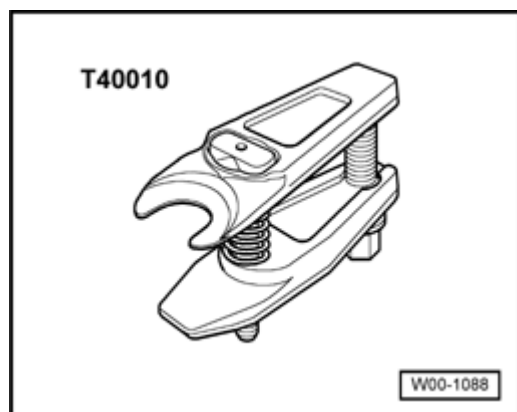
- A - Bushing

Wheel bearing housing, removing and installing

Special tools, testers and auxiliary items required



- Torque wrench V.A.G 1332

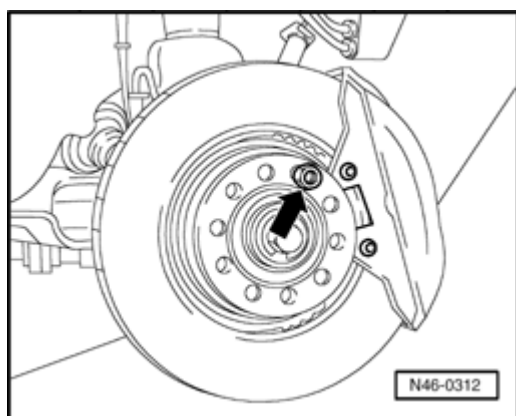


- Ball joint puller T40010

Removing

During assembly work, make sure that no indentations form on boot of air spring strut!

- Remove drive axle hex bolt. Vehicle must be on ground to do this - **risk of accident** - .
- Remove front wheel.

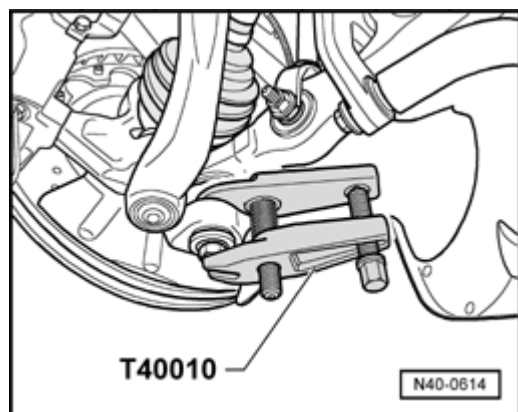


- Secure brake disc using wheel bolt - **arrow** - .
- Remove brake caliper and disengage from wire to body

⇒ [*Repair Manual, Brake System, Repair Group 46, Front brakes, servicing*](#)

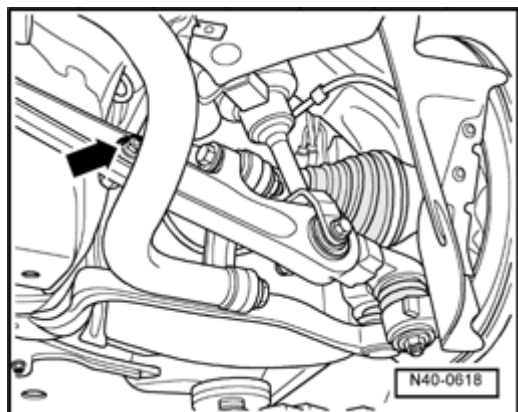
- Remove brake disc and cover plate.
- Loosen lower link hex nut and guide link on wheel bearing housing 2 turns.

Volkswagen Technical Site: <http://volkswagen.msk.ru> <http://vwts.info> <http://vwts.ru>
огромный архив документации по автомобилям Volkswagen, Skoda, Seat, Audi

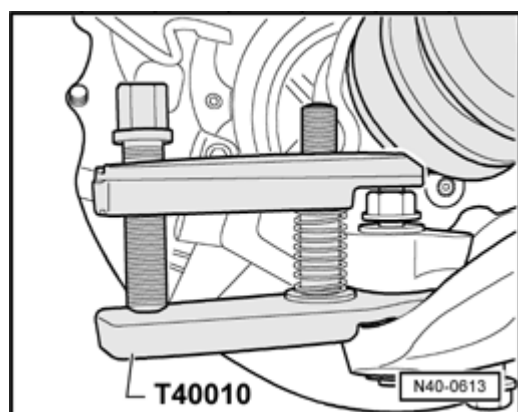


- Press lower link guide pins away from tapered seat using ball joint puller T40010 .

Do not damage protective joint boot when doing this!

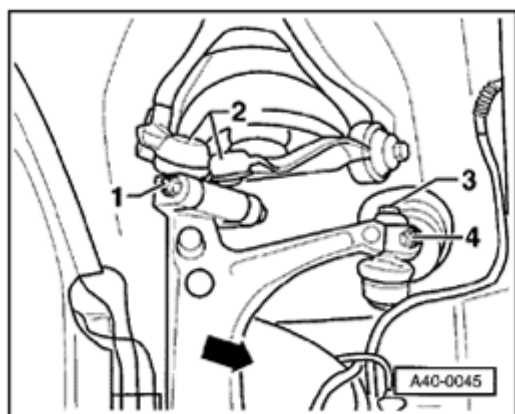


- Remove level control system sensor connecting link from lower link - **arrow** - .

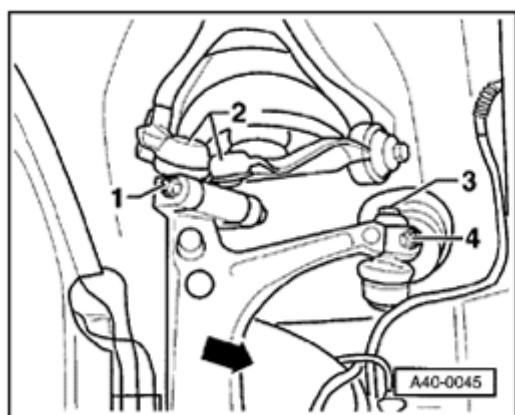


- Separate guide link guide pin from tapered seat using ball joint puller T40010 .

Do not damage protective joint boot when doing this!



- Remove hex bolt - **3** - and nut - **4** - .
- Remove tie rod end.



- Remove nut - **1** - and remove hex bolt. Then remove both links - **2** - upward.
- Remove lower link and guide link from wheel bearing housing.
- Remove wheel bearing housing.

Installing

Installation is in reverse order of removal, note the following:

During assembly work, make sure that no indentations form on boot of air spring strut!

- Insert wheel bearing housing.
- Slide drive axle outer joint into wheel hub and hand-tighten new hex socket head bolt.
- Insert lower link and guide link guide pins in wheel bearing housing.
- Insert upper link in wheel bearing housing.
- Press both upper links down as far as possible when

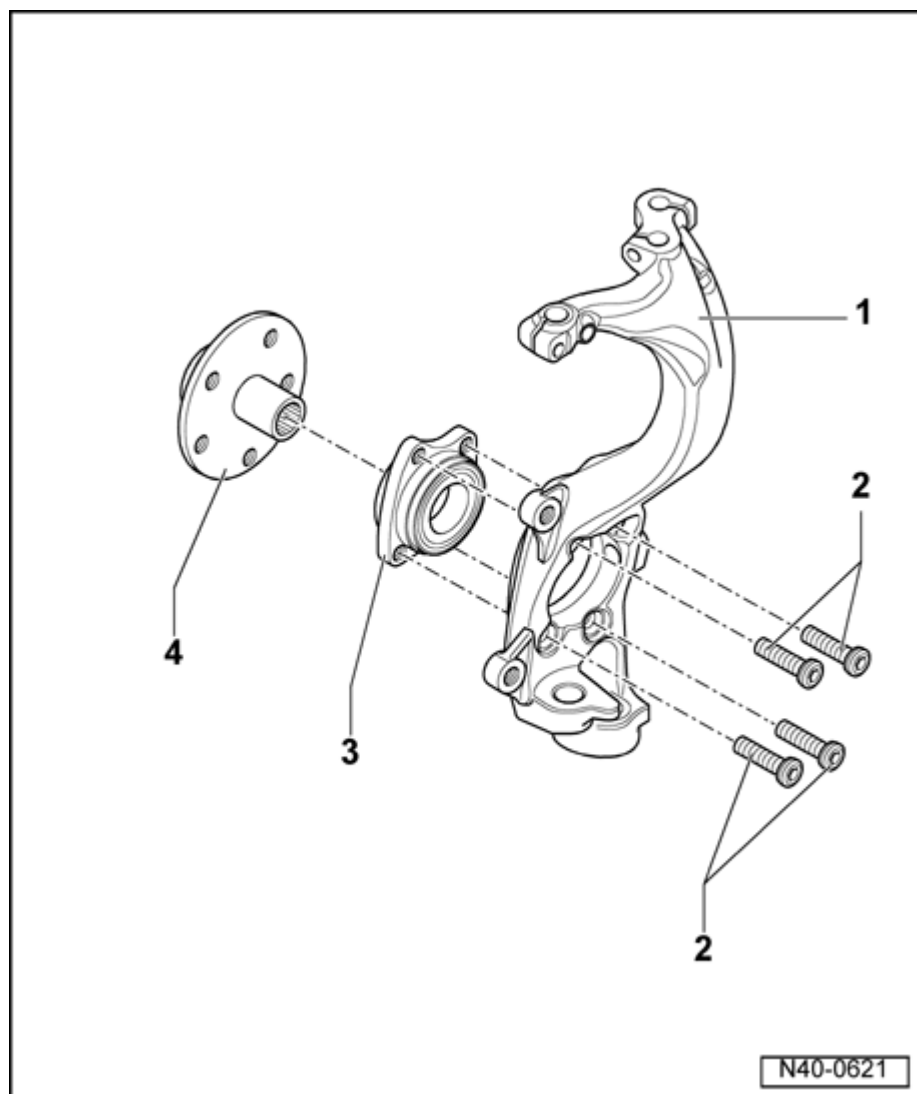
tightening!

- Install tie rod.
- Check basic setting of level control system.
- Measure vehicle after installation. ⇒ [44-3, Wheel alignment](#)

Tightening torque	
Drive axle to wheel hub 1)	200 Nm plus an additional $1/2$ turn (180°)
Brake caliper to wheel bearing housing	⇒ Repair Manual, Brake System, Repair Group 46, Front brakes, servicing
Cover plate to wheel bearing housing	10 Nm
Lower link to wheel bearing housing 1)	120 Nm
Guide link to wheel bearing housing 1)	120 Nm
Connecting link from vehicle level sensor to lower link	8 Nm
Upper link to mounting bracket 1)	50 Nm
Tie rod to wheel bearing housing 1)	50 Nm

1) Always use new nuts and bolts

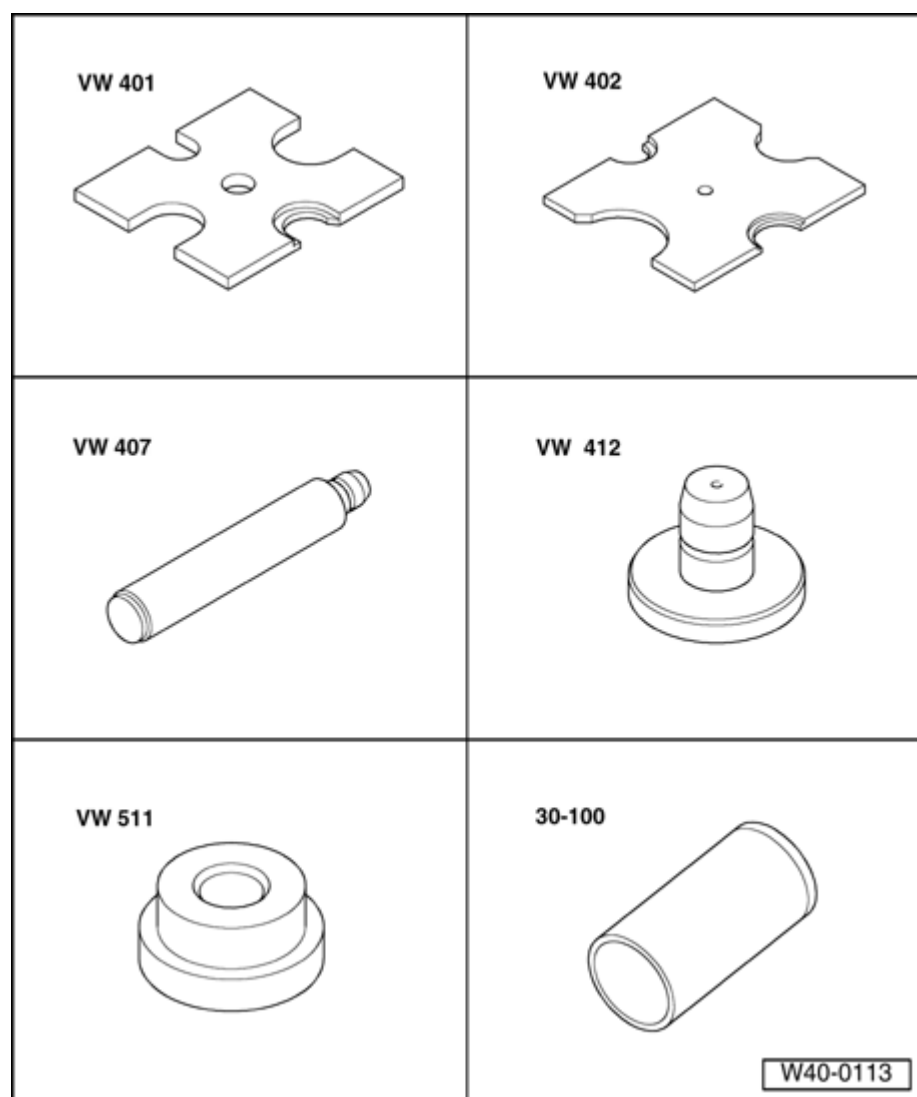
Wheel bearing, assembly overview



- **Wheel bearing housing**
- **Multi-point socket head bolt**
 - 80 Nm plus an additional $\frac{1}{4}$ turn (90°)
 - Always replace
- **Wheel bearing**
 - Removing and installing $\Rightarrow$ [40-3, Wheel bearing, removing and installing](#)
 - Installed location:
 - Larger diameter of wheel bearing faces wheel hub
- **Wheel hub**

- Pressing out ⇒ [40-3, Wheel bearing, removing and installing](#)
- Pull off bearing inner ring from hub ⇒ [40-3, Pressing off bearing inner ring](#)
- Pressing in ⇒ [40-3, Wheel bearing, removing and installing](#)

Wheel bearing, removing and installing

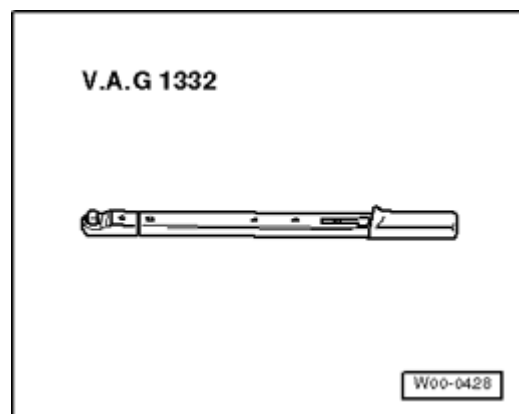


Special tools, testers and auxiliary items required

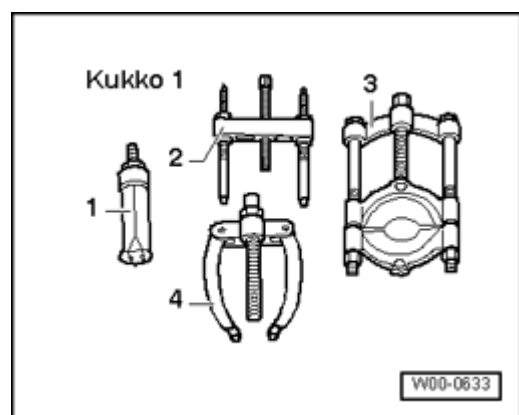
- Thrust plate VW 401
- Thrust plate VW 402

- Punch VW 407
- Punch VW 412
- Thrust pad VW 512

Special tools, testers and auxiliary items required



- Torque wrench V.A.G 1332



- 3 - Separating tool Kukko 17/2

Removing

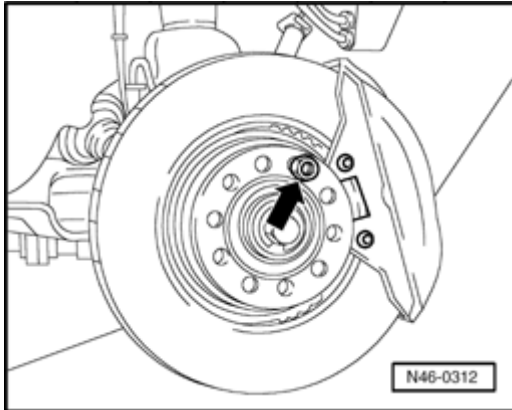
During assembly work, make sure that no indentations form on boot of air spring strut!

- Remove drive axle hex bolt.

Note:

- *Only loosen when vehicle is resting on the wheels - **danger of accident** -*

- Remove front wheel.



- Secure brake disc using a wheel bolt - **arrow** - .
- Remove brake caliper and tie to body using wire.

⇒ [Repair Manual, Brake System, Repair Group 46, Front brakes, servicing](#)

.

- Remove ABS speed sensor

⇒ [Repair Manual, Brake System, Repair Group 46, Front brakes, servicing](#)

.

- Remove brake disc and cover plate.
- Press drive axle as far out of wheel hub as possible (in direction of final drive).
- Turn steering gear toward right.
- Remove wheel bearing unit from wheel bearing housing.

Installing

Installation is in reverse order of removal, note the following:

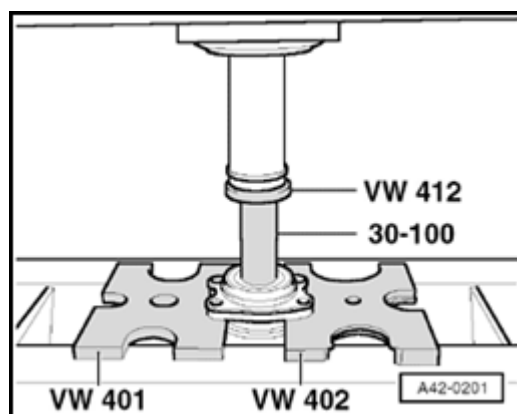
During assembly work, make sure that no indentations form on boot of air spring strut!

- Insert wheel bearing unit and tighten.
- Press upper links down as far as possible when tightening!

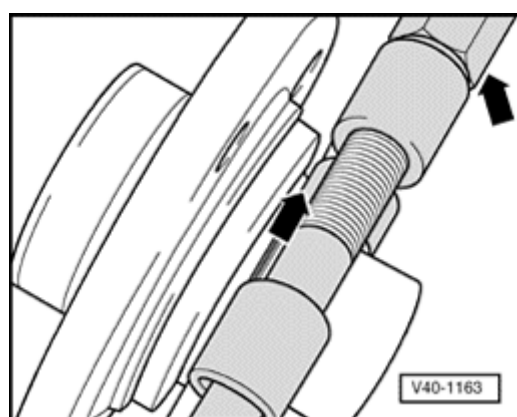
Tightening torque	
Drive shaft to wheel hub 1)	200 Nm plus an additional $1/2$ turn (180°)
Brake caliper to wheel bearing housing	$\Rightarrow$ Repair Manual, Brake System, Repair Group 46, Front brakes, servicing
Cover plate to wheel bearing housing	10 Nm
Wheel bearing unit to wheel bearing housing 1)	80 Nm plus an additional $1/4$ turn (90°)

1) Always use new nuts and bolts

Pressing out hub



- Press out wheel hub.

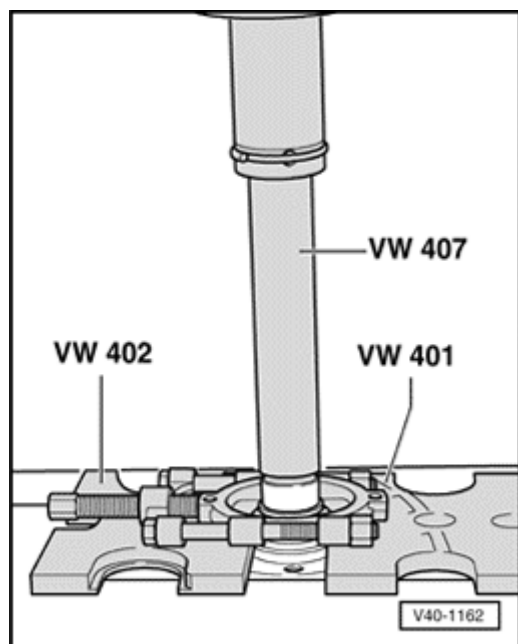


- Insert separating tool in bearing inner race ring groove - **arrow** - and hub and tension threaded spindle.

Note:

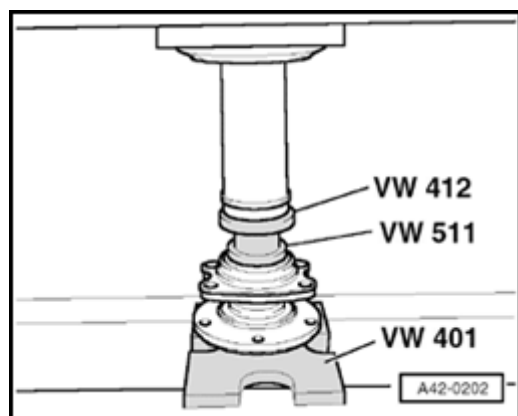
- Use a commercially available separating tool, such as Kukko 17/2.

- Press bearing inner race off wheel hub.



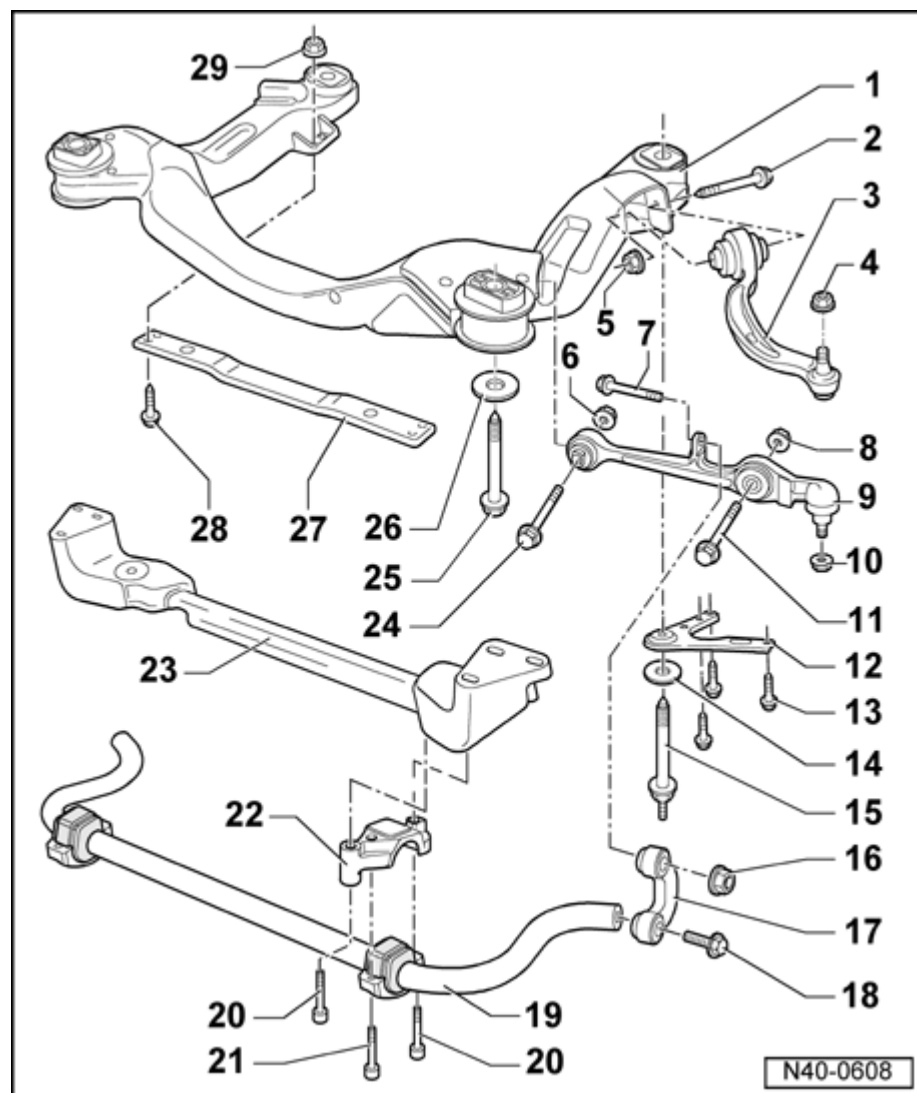
Pressing off bearing inner ring

Pressing in wheel hub



- Press wheel hub into wheel bearing to stop.

B - Subframe, lower link, and stabilizer bar, assembly overview



■ Subframe

- Removing and installing ⇒ [40-4, Subframe, removing and installing](#)

- Application ⇒ *See Parts Catalog*

■ Hex bolt

- M 12 x 1.5 x 120
- 70 Nm plus an additional 180° ($\frac{1}{2}$ turn)
- Always replace

- **Guide link**

- Removing and installing ⇒ [40-4, Guide link, removing and installing](#)

- **Hex nut**

- 120 Nm
- Self-locking
- Always replace

- **Hex nut**

- Lift wheel bearing housing before fastening ⇒ [40-2, Lift wheel bearing housing](#)
- Self-locking
- Always replace

- **Hex nut**

- 70 Nm plus an additional 180 ° ($\frac{1}{2}$ turn)
- Lift wheel bearing housing before fastening ⇒ [40-2, Lift wheel bearing housing](#)
- Self-locking
- Always replace

- **Hex bolt**

- M 12 x 1.5 x 70
- Lift wheel bearing housing before fastening ⇒ [40-2, Lift wheel bearing housing](#)
- Always replace

- **Hex nut**

- 90 Nm plus an additional 90 ° ($\frac{1}{4}$ turn)

- Self-locking
- Always replace
- **Lower link**
 - Removing and installing ⇒ [40-4, Lower link, removing and installing](#)
- **Hex nut**
 - 120 Nm
 - Self-locking
 - Always replace
- **Hex head bolt**
 - M 12 x 1.5 x 85
 - Lift wheel bearing housing before fastening ⇒ [40-2, Lift wheel bearing housing](#)
 - Always replace
- **Subframe support plate**
- **Hex bolt**
 - M10 x 25
 - 40 Nm plus an additional 90 °
($\frac{1}{4}$ turn)
 - Always replace
- **Washer**
- **Hex bolt**
 - M14 x 1.5 x 90
 - 130 Nm plus an additional 90 °
($\frac{1}{4}$ turn)
 - Always replace
- **Hex nut**

- 90 Nm plus an additional 90 °
($\frac{1}{4}$ turn)
- Self-locking
- Always replace

- **Connecting link**

- Left and right connecting links are identical

Installed location ⇒ [40-4, Installed location of connecting link](#)

Arrow on connecting link points in direction of travel

Larger diameter of connecting link is at stabilizer bar and lower link

- **Hex bolt**

- M 12 x 1.5 x 65
 - 90 Nm plus an additional 90 °
($\frac{1}{4}$ turn)
 - Lift wheel bearing housing before fastening ⇒ [40-2, Lift wheel bearing housing](#)
 - Always replace

- **Stabilizer bar**

- Removing and installing ⇒ [40-4, Stabilizer bar, removing and installing](#)

- **Multi-point socket head bolt**

- 50 Nm

- **Multi-point socket head bolt**

- 50 Nm

- **Mounting bracket**

- **Engine carrier**

-

*⇒ Repair Manual, Engine Mechanical,
Fuel Injection Ignition, Repair Group 10,
Engine, removing and installing*

- **Hex bolt**

- M 12 x 1.5 x 95
 - Always replace

- **Hex bolt**

- M14 x 1.5 x 135
 - 130 Nm plus an additional 90 °
(¹ / ₄ turn)
 - Always replace

- **Washer**

- **Subframe support**

- **Hex bolt**

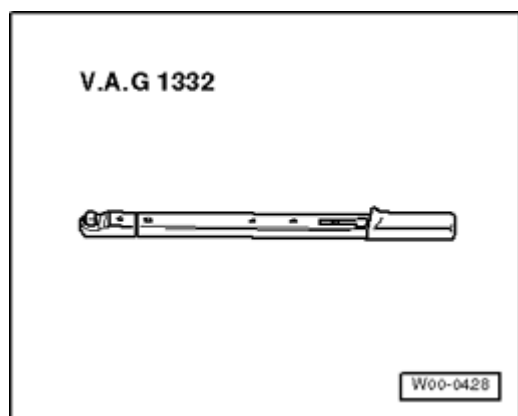
- M10 × 40
 - 50 Nm plus an additional 90 °
(¹ / ₄ turn)

- **Self-locking hex nut**

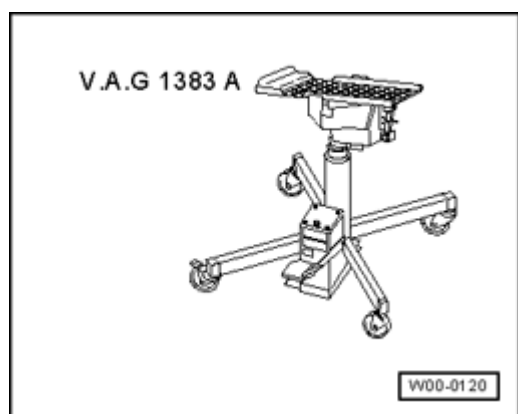
- Always replace

Subframe, removing and installing

Special tools, testers and auxiliary items required



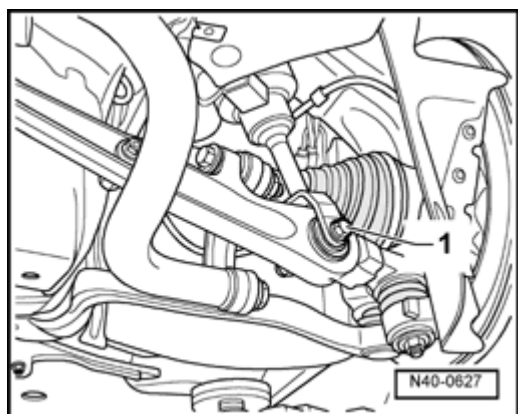
- Torque wrench V.A.G 1332



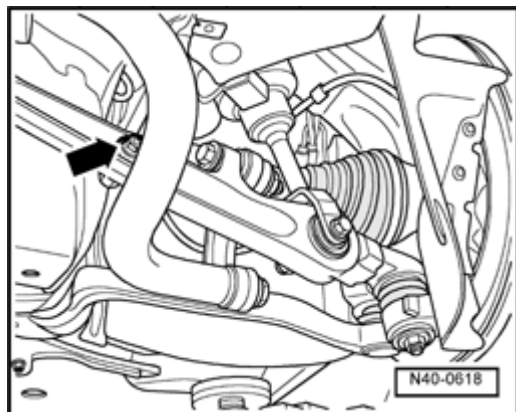
- Engine/transmission jack V.A.G 1383 A

Removing

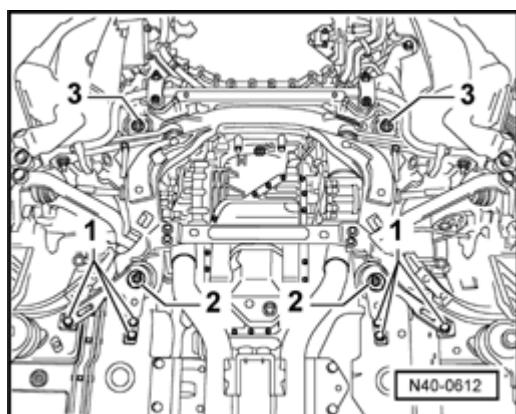
- Remove stabilizer bar ⇒ [40-4, Stabilizer bar, removing and installing](#) .
- Remove front wheels.
- Remove both guide links ⇒ [40-4, Guide link, removing and installing](#) .
- Loosen both lower links at subframe.



- Loosen hex bolt - **1** - but do not remove.
- Disconnect all electrical wires from body to front axle.



- Remove connecting link - **arrow** - from level control system sensor to lower link.
- Mark installation position of subframe to body with felt-tip pen.
- Support subframe with engine/transmission jack V.A.G 1383 A and universal mount.



- Remove hex bolts - **1, 2** - and - **3** - in sequence shown.
- Lower subframe as far as possible and then remove both lower links from subframe.
- Slowly lower subframe and remove.

Installing

Installation is in reverse order of removal, note the following:

- When installing subframe, align with help of markings on body.
- Install subframe with old hex bolts. Replace with new ones after vehicle alignment.
- When doing so, tighten hex bolts to specified tightening

torque without additional tightening.

- Place vehicle on wheels or raise wheel bearing housing to tighten lower link and guide link ⇒ [40-2, Lift wheel bearing housing](#)

- Check basic setting of self-levelling suspension.

- Measure vehicle after installation ⇒ [44-3, Wheel alignment](#) .

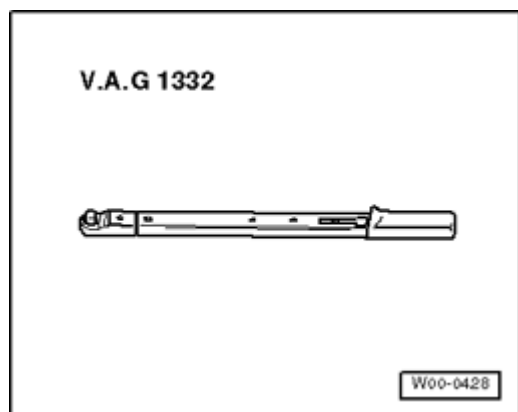
Tightening torque	
Stabilizer bar to engine carrier	50 Nm
Connecting link to stabilizer bar 1) 2)	90 Nm plus an additional 90 ° (1 / 4 turn)
Connecting link to lower link 1) 2)	90 Nm plus an additional 90 ° (1 / 4 turn)
Guide link to subframe 1) 2)	70 Nm plus an additional 90 ° (1 / 4 turn)
Guide link to wheel bearing housing	120 Nm
Air spring strut to lower link 1) 2)	90 Nm plus an additional 90 ° (1 / 4 turn)
Connecting link from vehicle level sensor to lower link	8 Nm
Subframe to body, bolts M14 1)	130 Nm plus an additional 90 ° (1 / 4 turn)
Subframe to body, bolts M10 1)	40 Nm plus an additional 90 ° (1 / 4 turn)

1) Always use new nuts and bolts

2) Tighten screws and nuts in curb weight position

Stabilizer bar, removing and installing

Special tools, testers and auxiliary items required



- Torque wrench V.A.G 1332

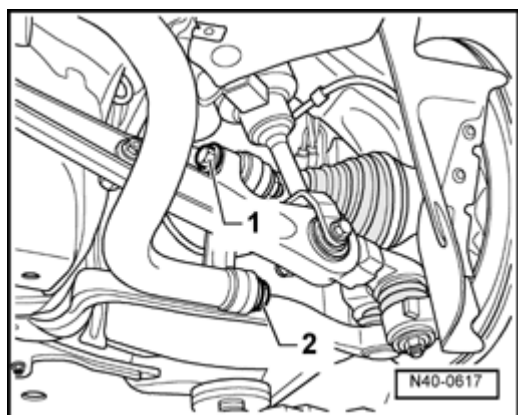
Removing

Note:

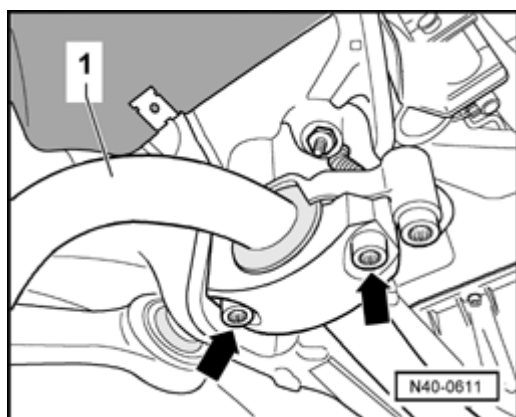
- *Vehicle must rest on wheels for removal and installation of stabilizer bar. Otherwise, there is a risk that the stabilizer bar or other components may be damaged.*

- Remove front and rear noise insulation.

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



- Loosen hex bolt - **1** - and remove hex bolt - **2** - .

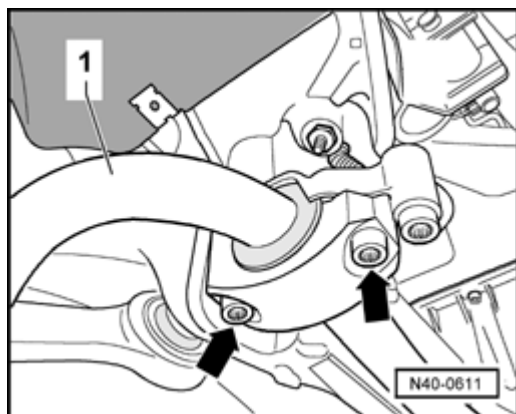


- Loosen stabilizer bar - **1** - on both sides.
- Align stabilizer bar so that the multi-point socket head bolts - **arrows** - can be turned easily by hand.
- Remove stabilizer bar.

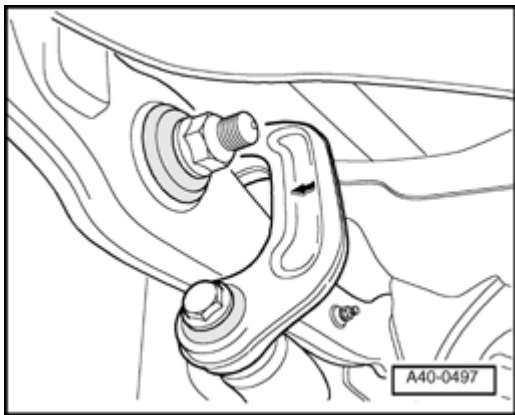
Installing

Installation is in reverse order of removal, note the following:

- Insert stabilizer bar.



- Install multi-point socket head bolts - **arrows** - by hand on both sides.
- Align stabilizer bar - **1** - so that the multi-point socket head bolts can be turned by hand easily.
- Alternately tighten multi-point socket head bolts to stabilizer bar mounting bracket.
- Attach stabilizer bar to connecting link.
- Tighten connecting links.

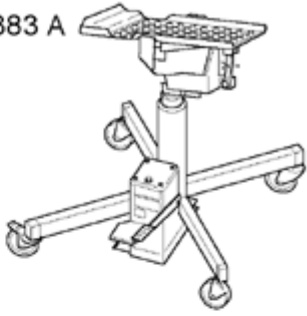
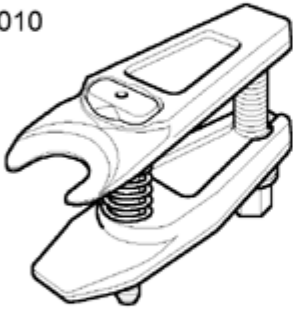
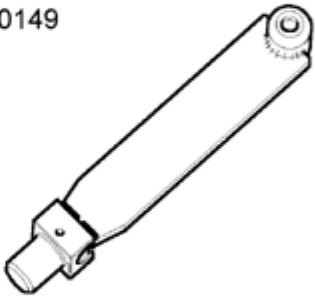


Installed location of connecting link

Tightening torque	
Stabilizer bar to engine carrier	50 Nm
Connecting link to stabilizer bar 1) 2)	90 Nm plus an additional $\frac{1}{4}$ turn (90 °)
Connecting link to lower link 1) 2)	90 Nm plus an additional $\frac{1}{4}$ turn (90 °)

- 1) Always use new nuts and bolts
- 2) Tighten bolts and nuts in curb weight position

Lower link, removing and installing

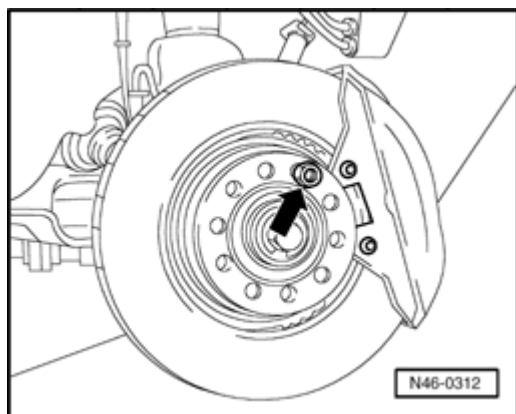
V.A.G 1332 	V.A.G 1383 A 
T40010 	T10149 
	

Special tools, testers and auxiliary items required

- Torque wrench V.A.G 1332
- Engine/transmission jack V.A.G 1383 A
- Wheel hub support T10149
- Ball joint puller T40010

Removing

- Remove hex bolt for drive axle. (Only loosen when vehicle is resting on the wheels - **danger of accident** -).
- Remove front wheel.



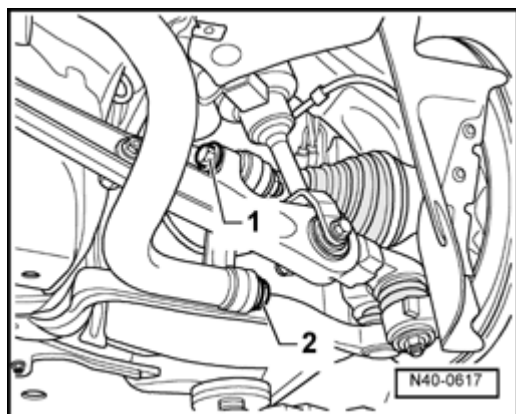
- Secure brake disk using a wheel bolt - **arrow** - .
- Remove brake caliper and tie to body using wire.

⇒ [Repair Manual, Brake System, Repair Group 46, Front brakes, servicing](#)

- Remove brake disc and cover plate.
- Remove front and rear noise insulation

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

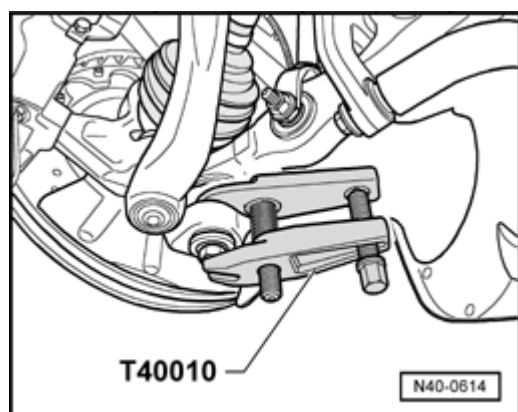
- Raise wheel bearing housing until connecting link is "stress free" ⇒ [40-2, Lift wheel bearing housing](#)



- Loosen connecting link at stabilizer bar - **2** - and to lower link - **1** - .
- Remove connecting link from stabilizer bar.
- Lower wheel bearing housing.
- Move engine/transmission jack away from under the

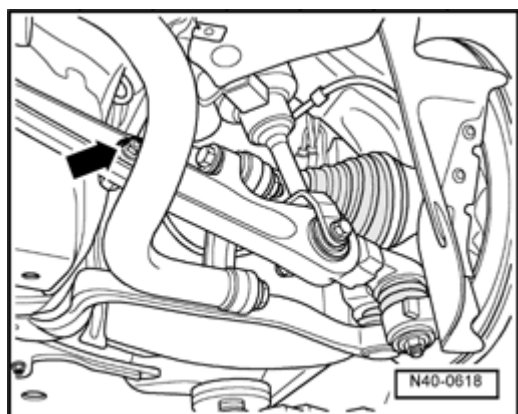
vehicle.

- Remove both upper links from wheel bearing housing.

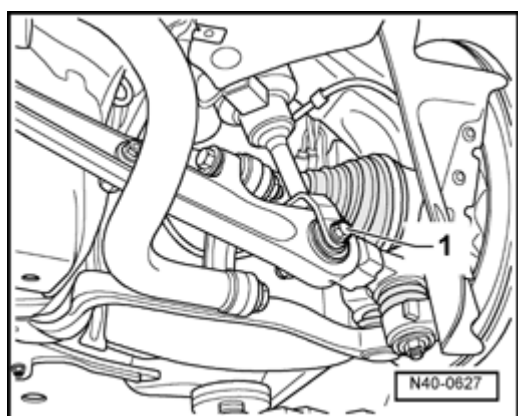


- Remove hex bolt from lower link guide pin. Then press guide pin away from tapered seat with ball join puller T40010 .

Do not damage protective joint boot when doing this!



- Remove Level Control System Sensor connecting link - **arrow** - from lower link.



- Remove air spring strut - **1** - from lower link.
- Turn steering gear toward right.
- Pull wheel bearing housing down as far as possible and swing lower link out of air spring strut fork.

- Remove lower link from subframe.
- Mark installation position of subframe to body using a felt-tip pen.
- Lower subframe to remove hex bolt.
- Remove lower link.

Installing

Installation is in reverse order of removal, note the following:

- Align subframe with help of markings on body.
- Tighten subframe with bolts originally installed. Replace these with new bolts after vehicle alignment.
- Tighten bolts originally installed to specified torque without additional tightening.
- Raise wheel bearing housing for fastening to subframe ⇒ [40-2, Lift wheel bearing housing](#)
- Check basic setting of level control system.
- Measure vehicle after installation ⇒ [44-3, Wheel alignment](#) .

Tightening torque	
Drive shaft to wheel hub 1) .	200 Nm plus an additional $1/2$ turn (180°)
Brake caliper to wheel bearing housing	⇒ Repair Manual, Brake System, Repair Group 46, Front brakes, servicing
Cover plate to wheel bearing housing	10 Nm
Connecting link to stabilizer bar 1) 2)	90 Nm plus an additional $1/4$ turn (90°)
Connecting link to lower link 1) 2)	90 Nm plus an additional $1/4$ turn (90°)
upper link to mounting bracket 1)	50 Nm
Lower link to wheel bearing housing 1)	120 Nm
Connecting link from vehicle level sensor to lower link	8 Nm

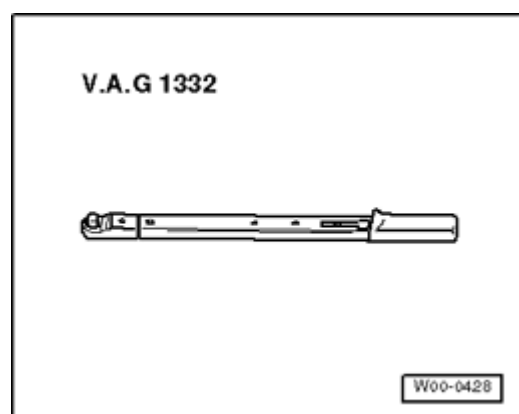
Air spring strut to lower link 1) 2)	90 Nm plus an additional $1/4$ turn (90°)
Subframe to body, bolts M14 1)	130 Nm plus an additional $1/4$ turn (90°)
Subframe to body, bolts M10 1)	40 Nm plus an additional $1/4$ turn (90°)
Lower link to subframe 1) 2)	70 Nm plus an additional $1/2$ turn (180°)

1) Always use new nuts and bolts

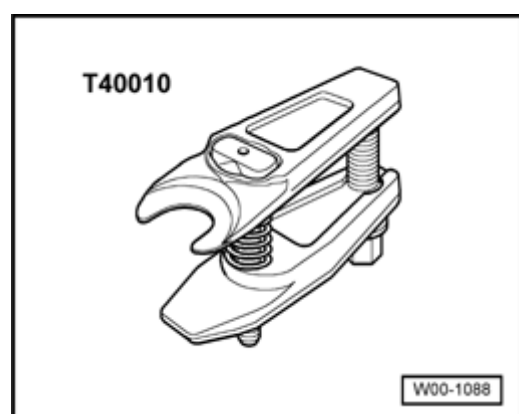
2) Tighten bolts and nuts in curb weight position

Guide link, removing and installing

Special tools, testers and auxiliary items required



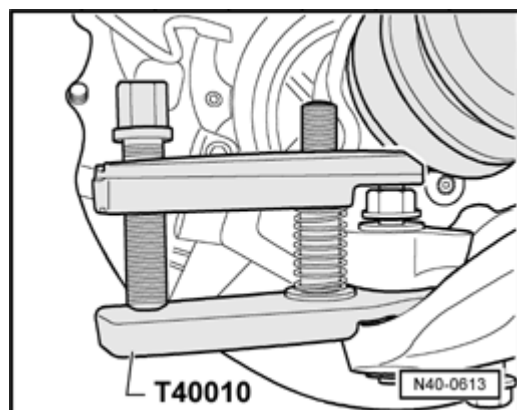
- Torque wrench V.A.G 1332



- Ball joint puller T40010

Removing

- Remove front wheel.
- Loosen guide link hex nut at wheel bearing housing 2 turns.



- Separate guide link guide pins away from tapered seat using ball joint puller T40010 .

Do not damage protective joint boot when doing this!

- Remove guide link from subframe.

Installing

Installation is in reverse order of removal, note the following:

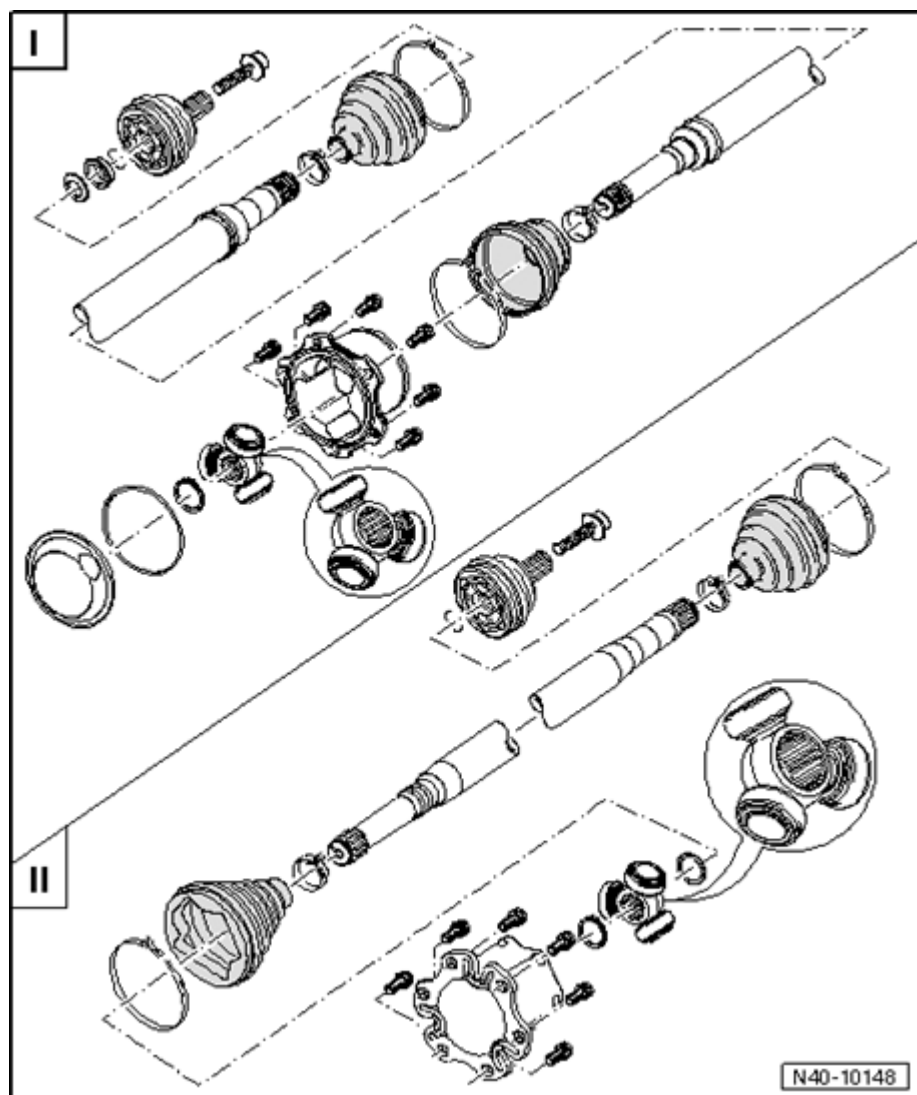
- Raise wheel bearing housing for tightening to subframe ⇒ [40-2, Lift wheel bearing housing](#)
- Measure vehicle after installation ⇒ [44-3, Wheel alignment](#) .

Tightening torque	
Guide link to subframe 1) 2)	70 Nm plus an additional $\frac{1}{2}$ turn (180°)
Guide link to wheel bearing housing 1)	120 Nm

- 1) Always use new nuts and bolts
- 2) Tighten bolts and nuts in curb weight position

Drive shaft, servicing

Drive axles, overview



I - Drive axle with triple-roller joint AAR 2900, assembly overview ⇒ [40-5, I - Drive axle with triple-roller joint AAR 2900, assembly overview](#)

II - Drive axle with peened triple-roller joint AAR 3300i, assembly overview ⇒ [40-5, II Drive axle with peened triple roller joint AAR 3300i, assembly overview](#)

Drive axles, removing and Installing

Removing

During assembly work, make sure that no indentations form on boot of air spring strut!

Caution!

Remove drive axle hex bolts (only loosen if vehicle is standing on wheels -danger accident-).

- Loosen drive axle at transmission flange.
- Remove front wheel.
- Remove noise insulation

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

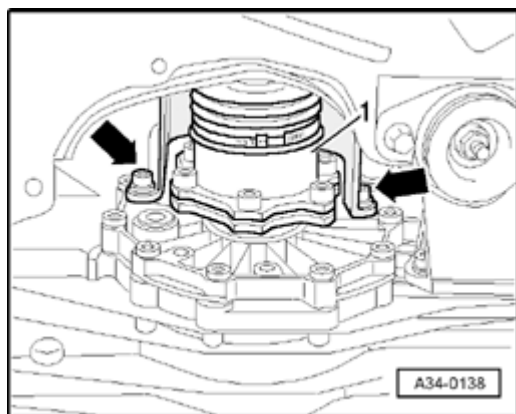
.

- Remove ABS speed sensor.
- Remove cover plate

⇒ [Repair Manual, Brake System, Repair Group 46, Front brakes, servicing](#)

.

- Remove both upper links from wheel bearing housing.



- Remove drive axle heat shield - **arrows** - . The third bolt can not be seen in illustration.

Left drive axle

- Turn steering gear toward left.

Right drive axle

- Turn steering gear toward right.

Continued for both drive axles

- Disconnect drive axle from transmission flange and

remove.

Installing

Installation is in reverse order of removal, note the following:

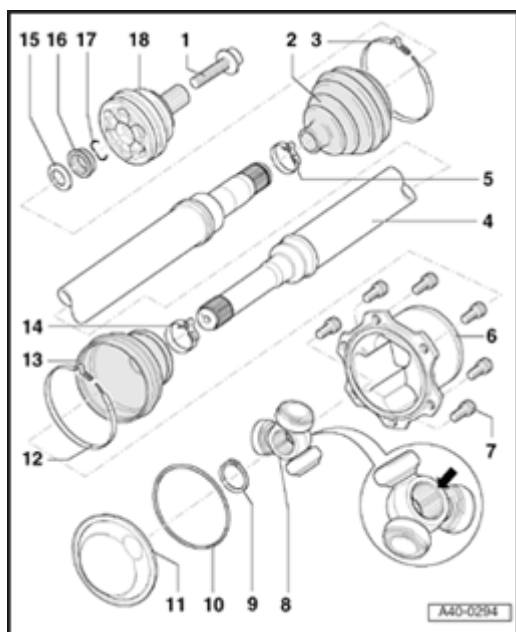
During assembly work, make sure that no indentations form on boot of air spring strut!

- Press upper links as far down as possible when tightening!

Tightening torque	
Drive axle to wheel hub 1)	200 Nm plus an additional $1/2$ turn (180°)
Cover plate to wheel bearing housing	10 Nm
ABS speed sensor to wheel bearing housing	$\Rightarrow$ Repair Manual, Brake System, Repair Group 46, Front brakes, servicing
Upper link to mounting bracket 1)	50 Nm plus an additional $1/4$ turn (90°)
Drive axle to transmission, pre-tighten 1)	10 Nm
Drive shaft to transmission, tighten	70 Nm
Heat shield to transmission housing	23 Nm

1) Always use new nuts and bolts

I - Drive axle with triple-roller joint AAR 2900, assembly overview



- **Hex head bolt**

- Always replace

M16 screw tightening torque:

- 200 Nm plus an additional ¹ / ₂ turn (180 °)

- **Outer constant velocity protective joint boot**

- Check for tears and chafing
 - Before clamping hose clamp, raise protective joint boot briefly to balance pressure ⇒ [40-5, Protective joint boot, ventilating](#)
 - Different version in rubber or Hytrel

- **Clamp**

- Different versions for protective joint boot in rubber or Hytrel
 - Always replace
 - Tighten rubber protective joint boots ⇒ [40-5, Clamping sleeves on rubber protective joint boots are clamped with](#)

- Tighten Hytrel protective joint boots ⇒ [40-5, Clamping sleeves on Hytrel protective joint boots are clamped with](#)

- **Axle shaft**

- **Clamp**

- Always replace
- Tensioning ⇒ [40-5, Clamping sleeves on Hytrel protective joint boots are clamped with](#)

- **Joint piece**

- **Multiple point socket head bolt, 70 Nm**

- Pre-tighten to 10 Nm

- **Triple roller star**

**Chamfer - arrow - faces splines
axle shaft splines**

- Installed location ⇒ [Topic 40-5](#)

- **Circlip**

- Replace each time it is removed
- Insert in shaft groove

- **O-ring**

A new seal is in repair kit and must be replaced.

- **Cover**

- Replace each time it is removed

Destroyed when disassembling.

A modified cover is included in the repair kit.

- **Clamp**

- Always replace
- Tensioning ⇒ [40-5, Clamp large clamping sleeve to inner joint with](#)
- Different hose clamps are possible depending on construction. Can also be assembled with pliers 3340 ⇒ *Electronic Parts Catalog "ETKA"*.

- **Protective joint boot for triple roller joint**

- **Clamp**

- Always replace
- Tensioning ⇒ [40-5, Clamp small clamping sleeve to inner joint with](#)

- **Spring washer**

- Installed location ⇒ [40-5, Installation location of thrust washer and spring washer \(wheel side\)](#)

- **Thrust washer**

- Installed location ⇒ [40-5, Installation location of thrust washer and spring washer \(wheel side\)](#)

- **Circlip**

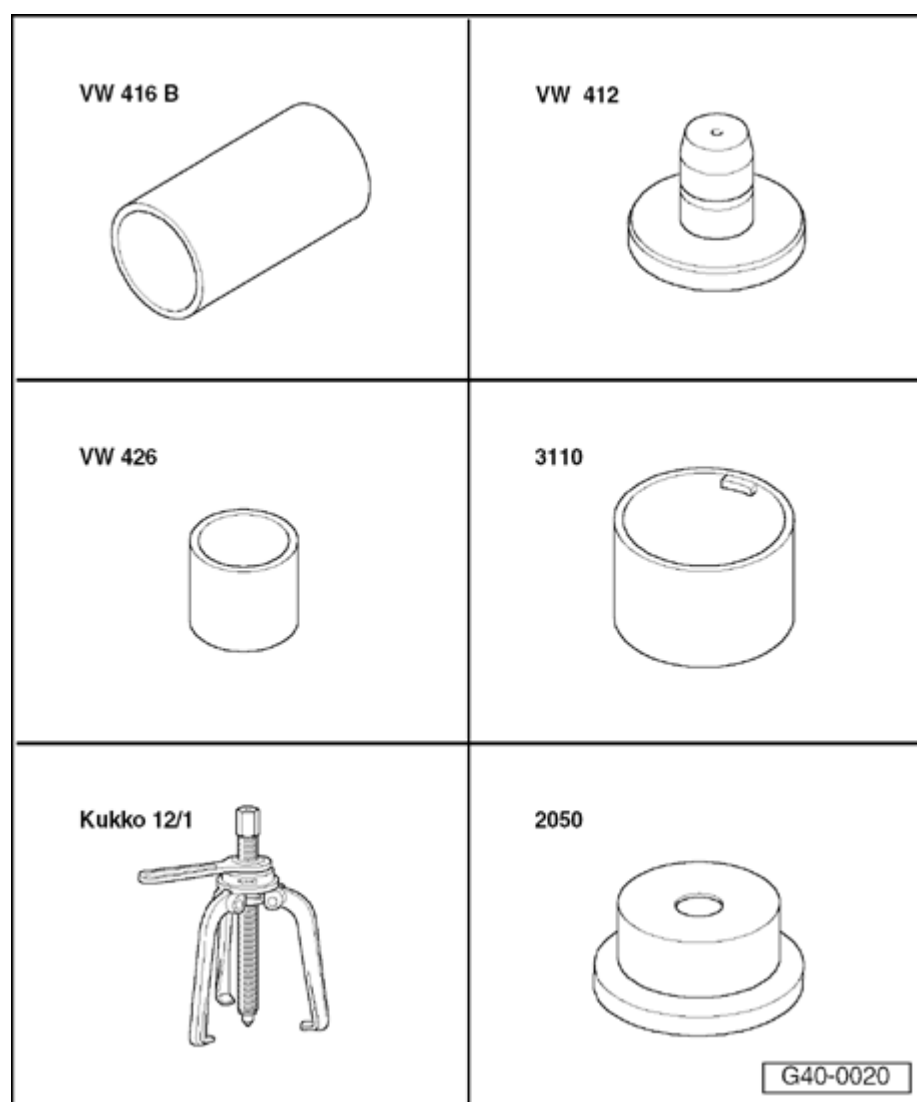
- Always replace
- Insert before mounting in ring groove (not visible with joint installed)

- **Outer constant velocity joint**

- Replace only as a unit

- Pressing off ⇒ [40-5, Pressing off outer constant velocity joint](#)
- Installing: Drive joint onto shaft with a plastic hammer until circlip engages.
- Checking ⇒ [40-5, Outer constant velocity \(CV\) joint, checking](#)

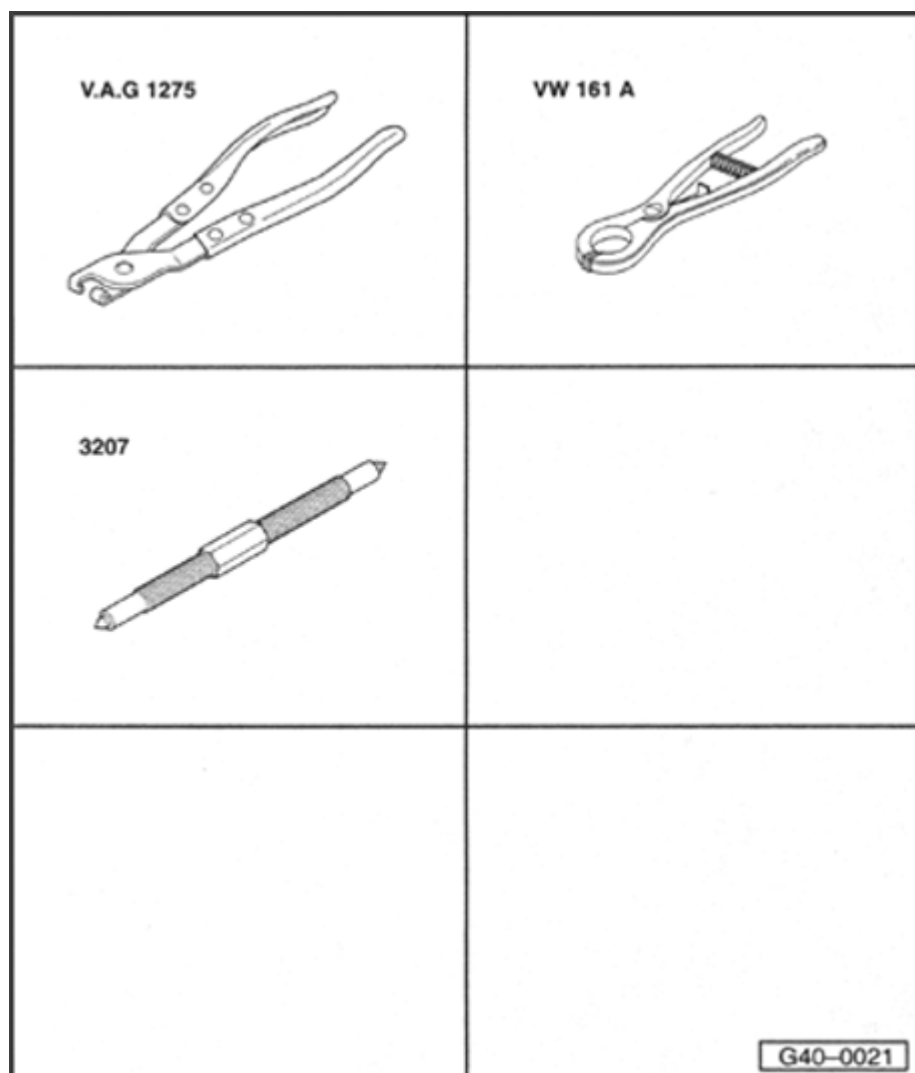
Triple-roller joint AAR 2900, disassembling and assembling



Special tools, testers and auxiliary items required

- Sleeve VW 416 B
- Punch VW 412

- Sleeve VW 426
- Sleeve 3110
- Puller Kukko 12/1
- Press piece 2050



Special tools, testers and auxiliary items required

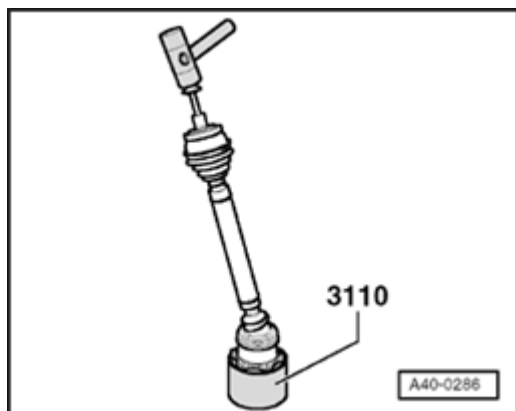
- CV joint boot clamp tool V.A.G 1275
- Circlip pliers VW 161 A
- Pressure spindle 3207

Disassembling

- Line cover.

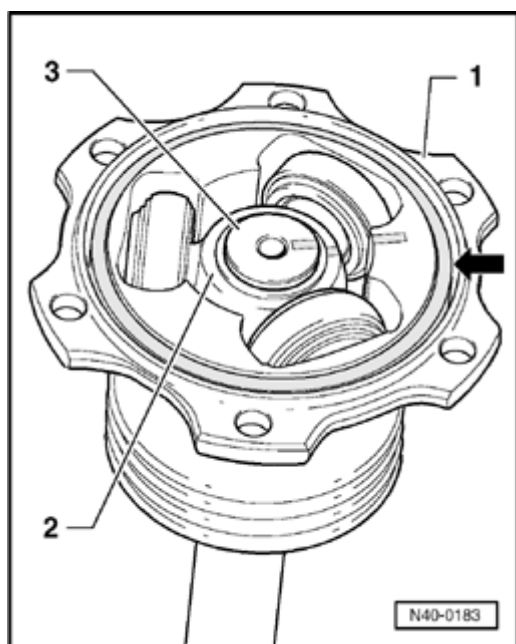
Note:

- Use old screw to line cover.
- When doing so, hold shaft at a 20 ° angle .



Use a plastic hammer and sleeve 3110 .

- Remove any shavings in cover area.
- Open large clamping sleeve.
- Open small clamping sleeve on shaft and slide protective joint boot back.



- Identify installation location for parts - **1** - to - **3** - with lines.

If parts are not marked when assembling, the components

are not brought back to their previous installation position then it is possible that it will be noisy when driving.

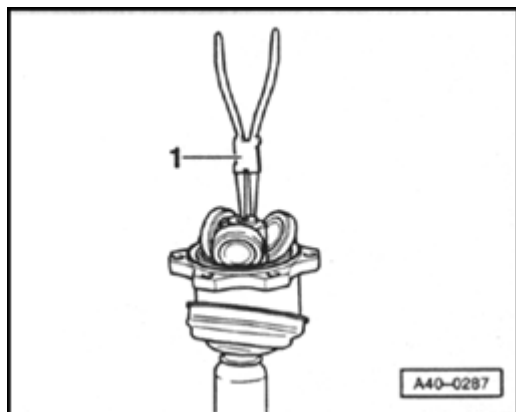
A waterproof felt tipped pen is suitable for marking.

- Remove O-ring - **arrow** - from groove.

1 - Joint piece

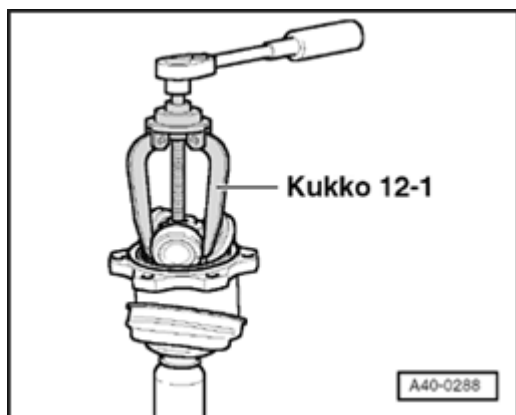
2 - Triple roller star

3 - Axle shaft



- Remove circlip.

1 - Pliers (commercially available)



- Remove triple roller star from axle shaft. Use puller Kukko 12/1 (commercially-available) to do this.

- Remove grease in sealing ring groove and on shaft splines.

- Check roller body and ball cage for wear.

- Clean shaft and housing.

Assembling

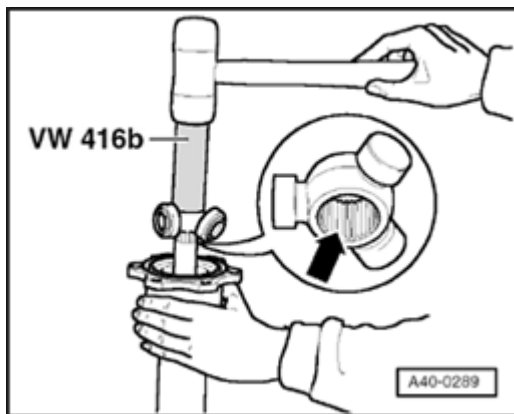
- Slide small protective joint boot clamping sleeve onto shaft.

- Slide new protective joint boot onto shaft.

- Slide joint onto shaft.
- Slide protective joint boot onto joint.

Mount triple roller star

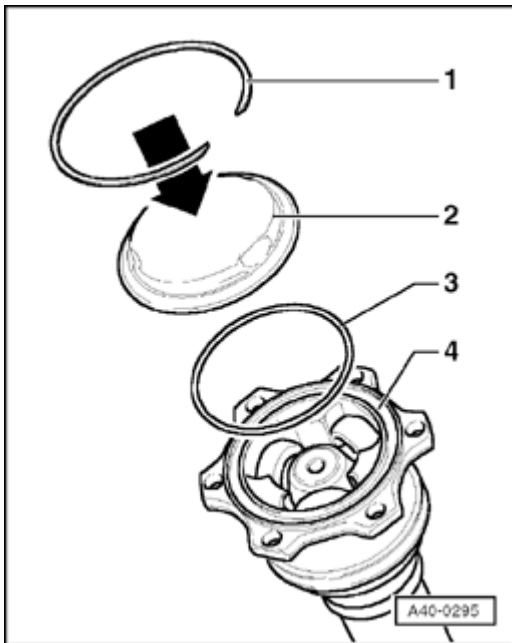
The chamfer - **arrow** - on star faces toward shaft, this is used as an assembly aid.



- Place triple roller star onto shaft corresponding to marking and drive to stop.
- Install circlip. Ensure proper seating.
- Press half of grease G 000 605 from repair kit into triple roller joint.
- Slide joint over rollers.

Note:

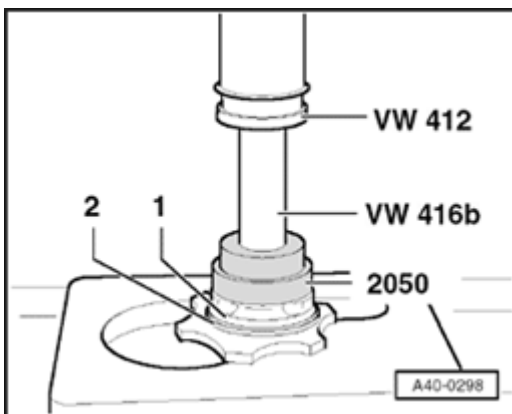
- *Make sure protective joint boot does not twist.*
- Press half of grease G 000 605 from repair kit into rear side of triple roller joint.



- Carefully clean sealing ring groove - **4** - .
- Lay O-ring - **1** - in groove - **4** - .

The individual parts are shown disassembled for sake of better illustration.

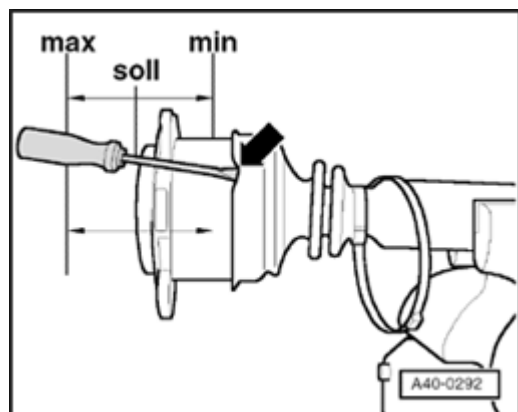
- 1 - Circlip
- 2 - Cover from repair kit
- 3 - O-ring
- 4 - Groove in triple roller joint



- Lay axle shaft in press.
- Lightly press on cover - **1** - from repair kit so circlips from repair kit can engage.
- Place circlip from repair kit around circumference below edge.

Note:

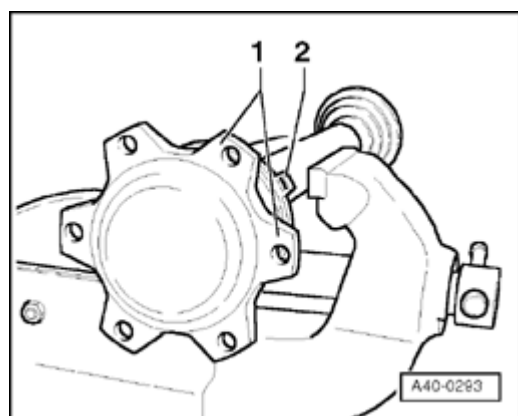
- *Make sure you hear circlip engage.*



- Position joint in middle position, see "min" - "max" position.

Note:

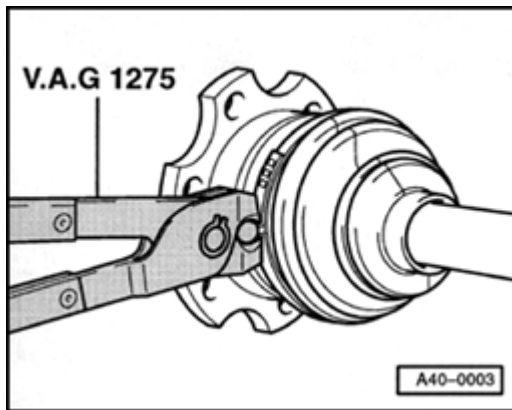
- When positioning joint in middle position, it is necessary to bleed protective joint boot, e.g. with a screwdriver - **arrow** - .



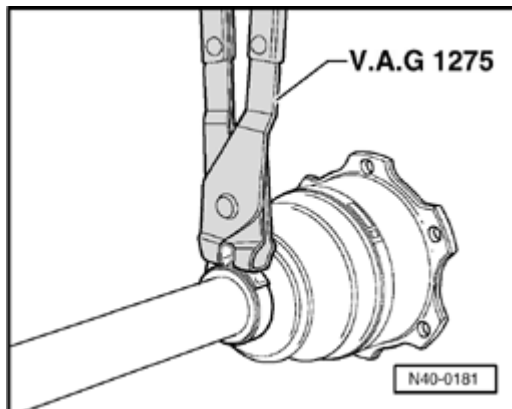
- Install clamping sleeve - **2** - .

Note:

- For a better alignment of multi-point socket head bolts when installing axle shaft, clamping sleeve connecting tube - **2** - must be between joint connecting flanges - **1** - .

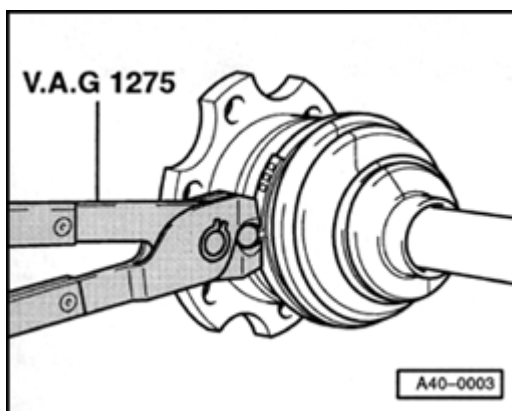


Clamp large clamping sleeve to inner joint with pliers V.A.G 1275 .

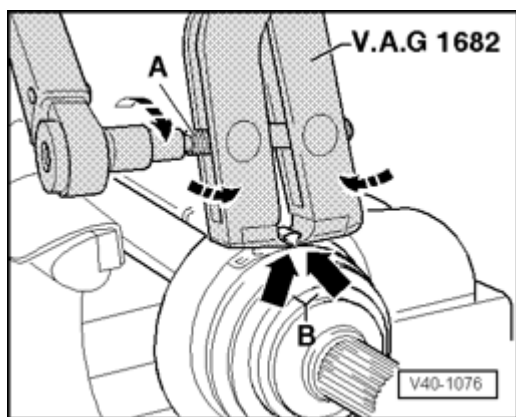


Clamp small clamping sleeve to inner joint with pliers V.A.G 1275 .

Outer constant velocity joint, servicing



Clamping sleeves on rubber protective joint boots are clamped with pliers V.A.G 1275 .

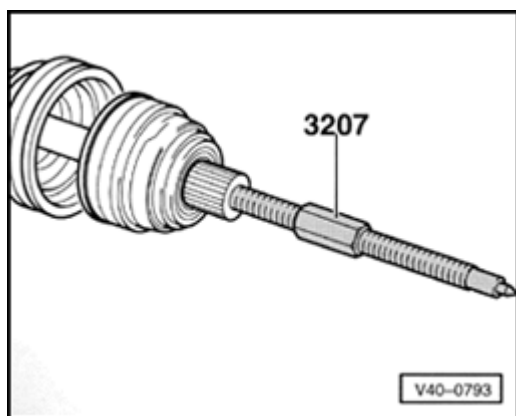


Clamping sleeves on Hytrel protective joint boots are clamped with clamping tool V.A.G 1682 .

- Install clamping tool V.A.G 1682 as shown in illustration. When doing so, make sure clamping tool jaws are in corners - **arrow B** - of clamping sleeves.

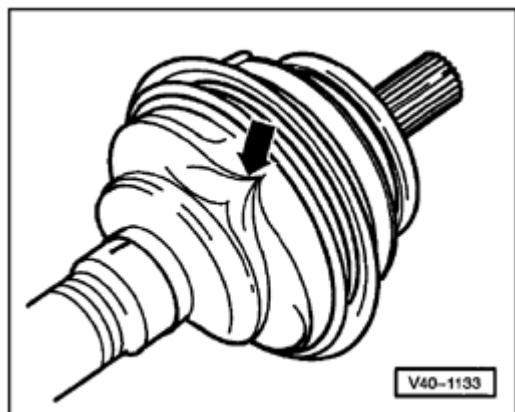
- Clamp clamping sleeve by turning spindle with torque wrench (when doing so, do not tilt pliers).

- Torque specification: 20 Nm
- Use torque wrench with 5 to 50 Nm range (e.g. V.A.G 1331).
- Be sure thread of spindle of clamp tool moves freely. Grease with MoS₂ grease if necessary.
- If thread is tight e.g. dirty, the required tensioning force for the hose clamp will not be achieved in spite of correct torque specification settings.



Pressing off outer constant velocity joint

- Clamp drive shaft in vise with protective covers.
- Remove large clamping sleeve and turn back protective joint boot.
- Screw on pressure spindle 3207 onto guide pins until CV joint can be removed.



Protective joint boot, ventilating

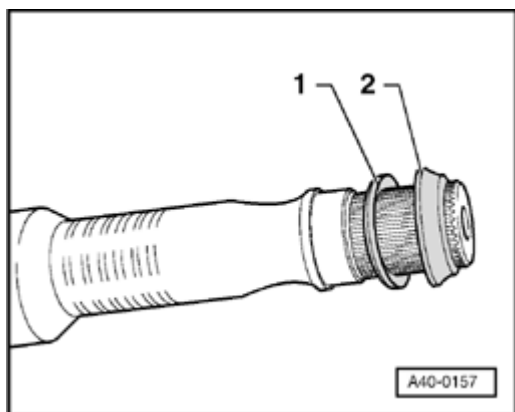
Only for rubber protective joint boot:

A vacuum can form in joint when installing protective joint boot.

This vacuum pulls a fold in when driving - **arrow** - .

Observe the following:

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



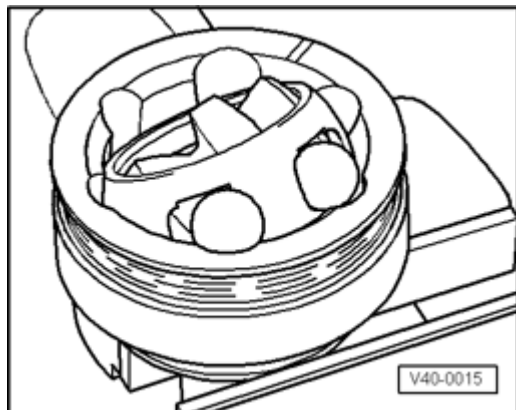
Installation location of thrust washer and spring washer (wheel side)

- 1 - Spring washer
- 2 - Thrust washer (plastic)

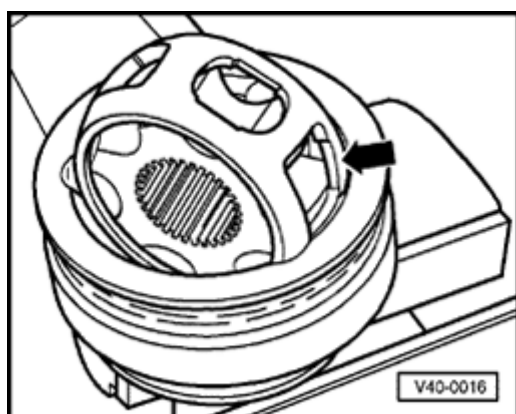
Outer constant velocity (CV) joint, checking

In order to replace grease in case of strong soiling, joint must be disassembled or if journal surface of balls must be checked for wear and damage.

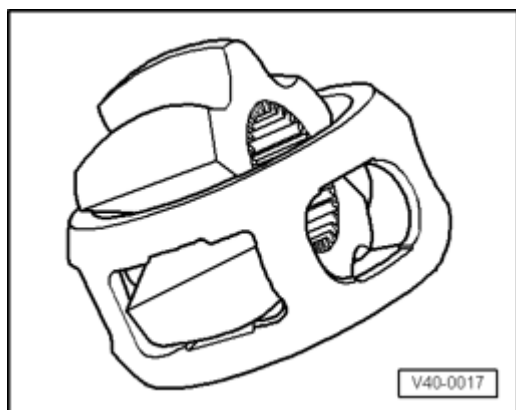
Removing



- Mark ball hub position to ball cage and housing using an electric scribe or oil stone, before disassembling.
- Pivot ball hub and ball cage.
- Remove balls one after another.



- Turn cage until two rectangular windows - **arrow** - contact joint body.
- Lift out cage together with hub.



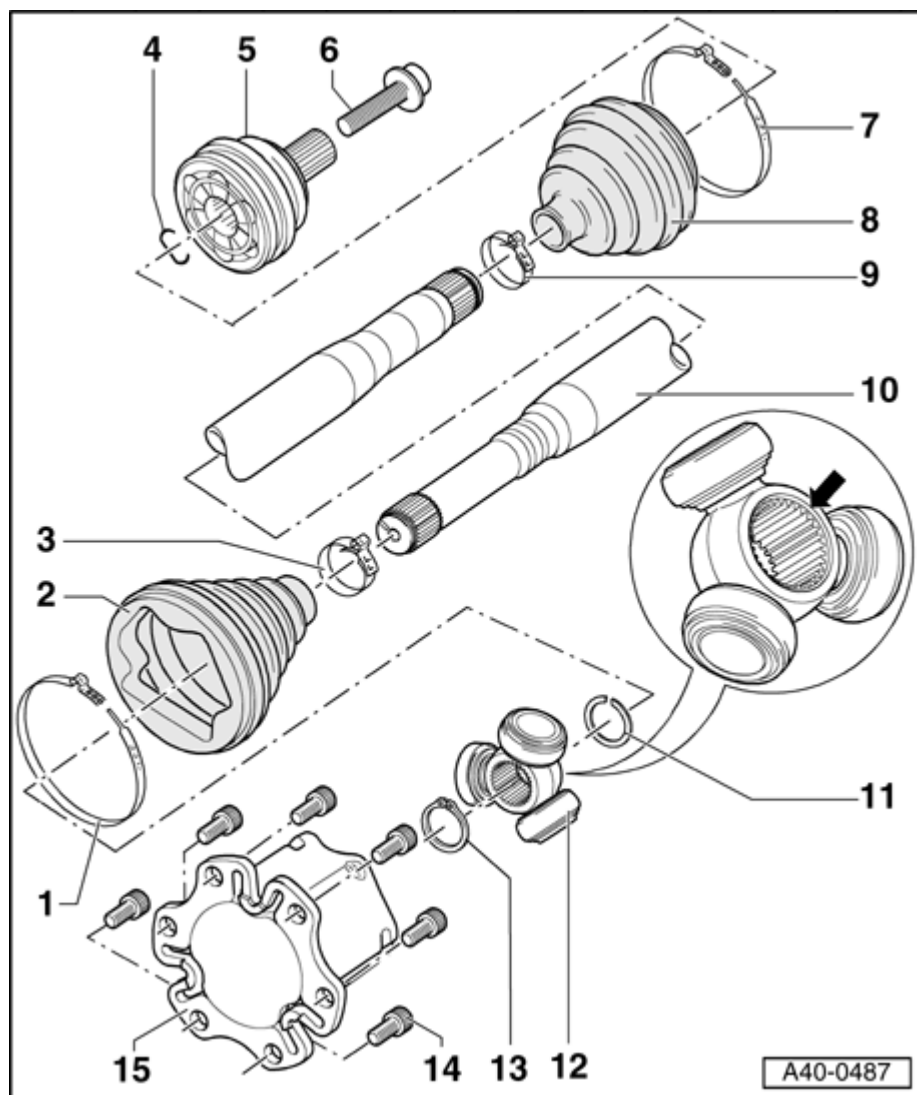
- Swing hub segment into rectangular window on cage.
- Tip hub out of cage.

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

Installing

- Press half of total amount of grease into joint body.
- Insert cage with hub into joint body.
- Press in opposite balls one after the other. Reestablish old position of ball hub to ball cage and to joint body.
- Insert new circlip in hub.
- Distribute remaining grease in cover.

II Drive axle with peened triple roller joint AAR 3300i, assembly overview



■ Clamp

- Always replace
- Tensioning ⇒ [40-5, Clamp large clamping sleeve to inner joint with](#)

■ Protective joint boot for triple roller joint

- Protective joint boot must fit in groove and on joint contour.

■ Clamp

- Always replace
- Tensioning ⇒ [40-5, Clamp small clamping sleeve to inner joint with](#)

- **Circlip**

- Always replace
- Insert before mounting in ring groove (not visible with joint installed)

- **Outer constant velocity joint**

- Replace only as a unit
- Removing ⇒ [Topic 40-5](#)
- Checking ⇒ [40-5, Outer constant velocity \(CV\) joint, checking](#)
- installing ⇒ [Topic 40-5](#)

- **Collar screw**

- Always replace
- 200 Nm plus an additional 180 ° ($\frac{1}{2}$ turn)

- **Clamp**

- Always replace
- Tensioning ⇒ [40-5, Clamping sleeves on Hytrel protective joint boots are clamped with](#)

- **Outer constant velocity protective joint boot**

- Check for tears and chafing

- **Clamp**

- Always replace
- Tensioning ⇒ [40-5, Clamping sleeves on Hytrel protective joint boots are clamped with](#)

- **Driveshaft**

- **Circlip**

- Application $\Rightarrow$ *Electronic Parts Catalog "ETKA"*

- **Triple roller star**

**Chamfer - arrow - faces splines
axle shaft splines**

- **Circlip**

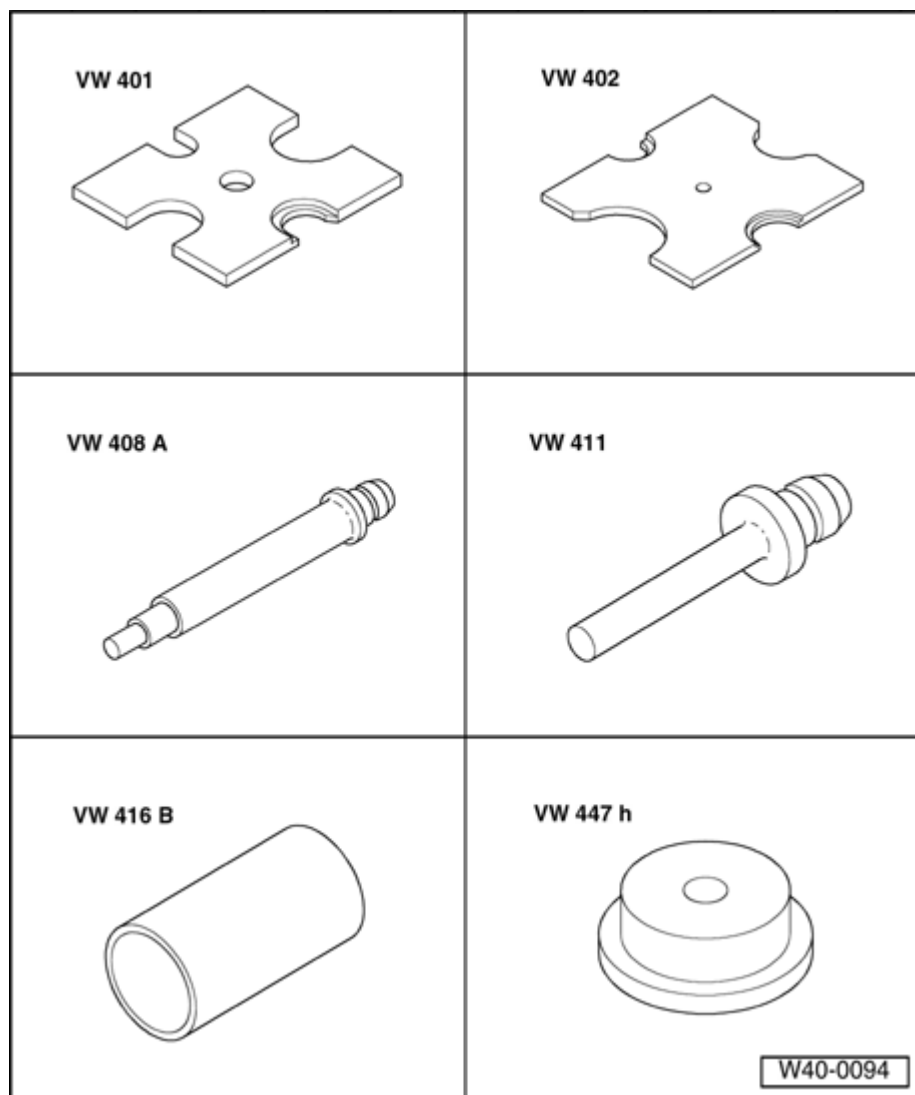
- Always replace
- Insert in shaft groove

- **Bolt, 70 Nm**

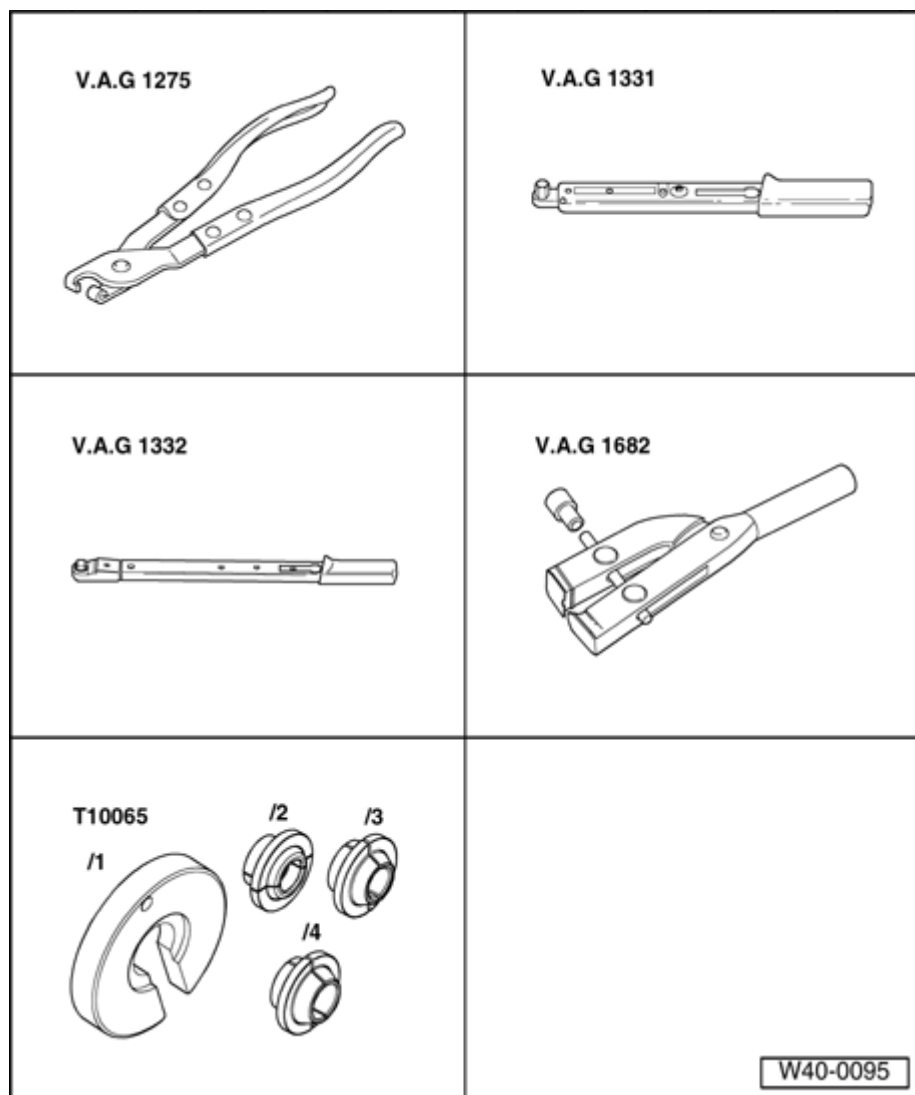
- Pre-tighten to 10 Nm

- **Joint piece**

Triple roller joint AAR 3300i, disassembling and assembling

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

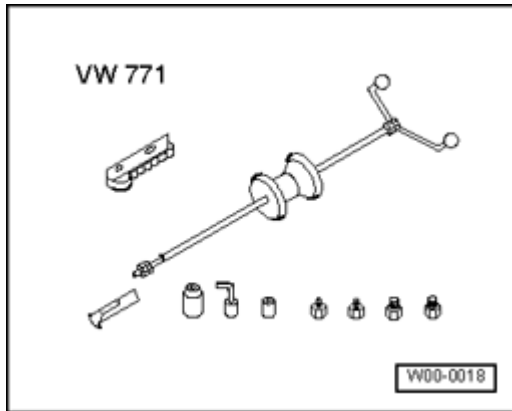
- Thrust plate VW 401
- Thrust plate VW 402
- Punch VW 408 A
- Punch VW 411
- Tube VW 416 B
- Thrust pad VW 447 H



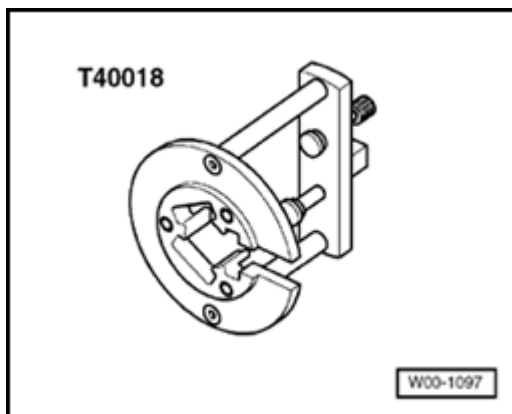
Special tools, testers and auxiliary items required

- CV joint boot clamp tool V.A.G 1275
- Torque wrench V.A.G 1331
- Torque wrench V.A.G 1332
- CV joint boot clamp tool V.A.G 1682
- Assembly tool T10065

Special tools, testers and auxiliary items required



- Slide hammer - complete set VW 771



- Assembly tool T40018
- Brass or copper drift

Peened triple roller joint AAR 3301, disassembling

- Clamp joint horizontally in vise.

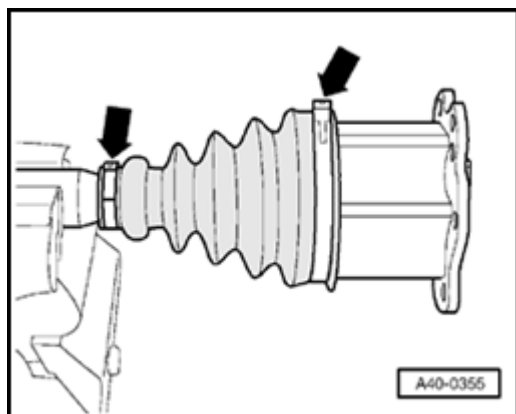
Note:

- *Use protective vise covers.*
- *Make sure joint is not damaged.*

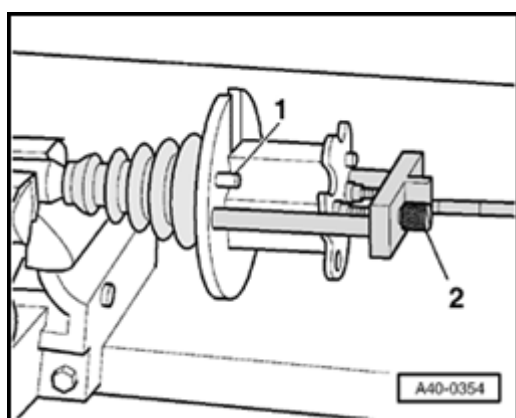
- Mark location of joint to axle shaft.

If parts are not marked when assembling, the components are not brought back to their previous installation position then it is possible that it will be noisy when driving.

A waterproof felt tipped pen is suitable for marking.



- Open clamping sleeves - **arrows** - .
- Slide protective joint boot back.



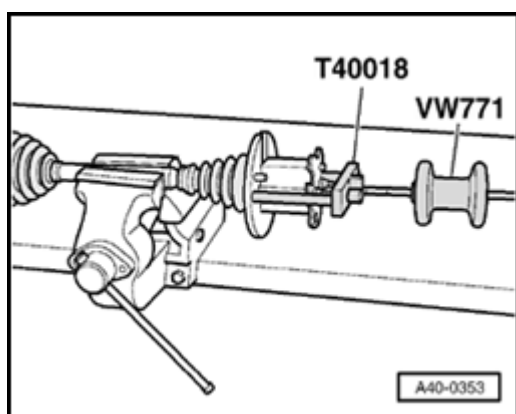
- Insert assembly device T40018 behind joint.

Guide pins - **1** - must contact joint.

- Bring assembly device T40018 into contact with joint by turning knurled thumb screws - **2** - .

Note:

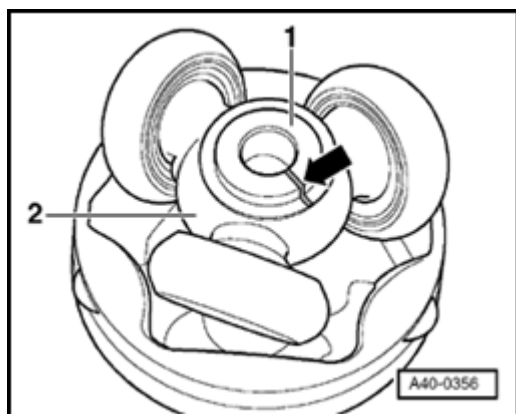
- *Secure joint in assembly device T40018 with no play.*
- *Only hand-tighten screws - **2** - .*



- Screw slide hammer VW 771 into assembly device T40018 .

- Remove joint horizontally with slide hammer VW 771 .

Lower joint in assembly device T40018 .



- Identify installation location for parts - **1** - and - **2** - with lines.

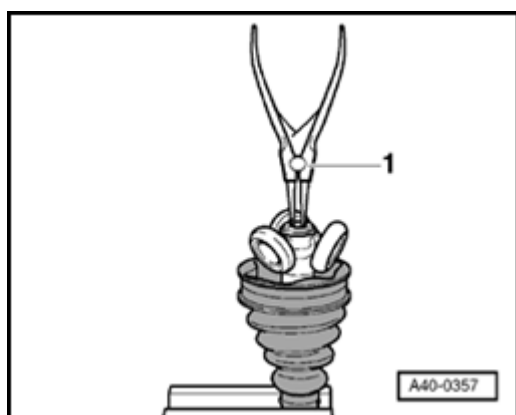
If parts are not marked when assembling, the components are not brought back to their previous installation position then it is possible that it will be noisy when driving.

A waterproof felt tipped pen is suitable for marking.

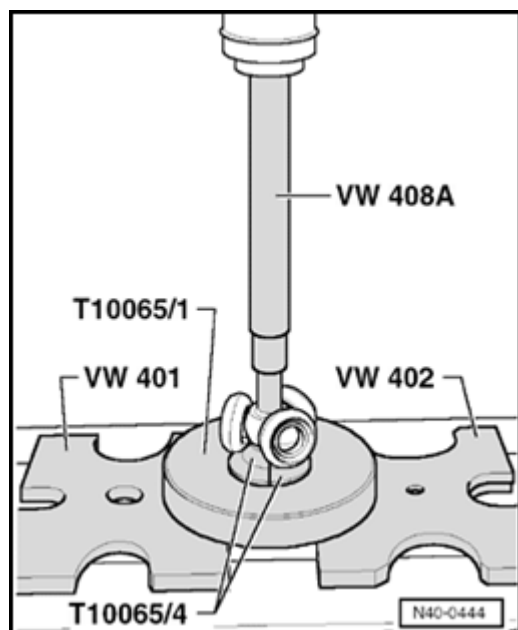
1 - Axle shaft

2 - Triple roller star

- Remove grease with a lint-free cloth.



- Remove circlip with pliers - **1** - (commercially-available).



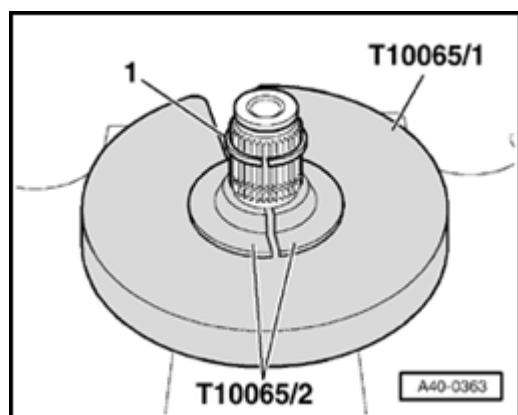
- Press triple roller star off axle shaft.

Assembly tool T10065/4 must not be applied to roller body.

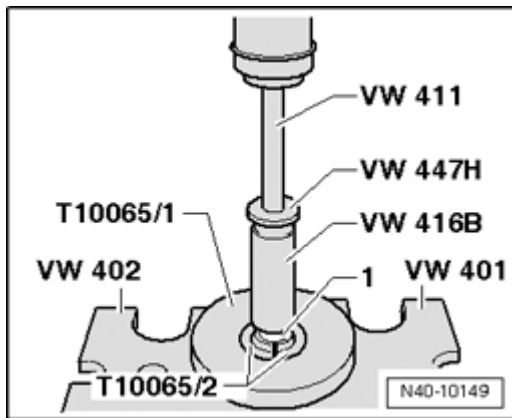
- Remove protective joint boot.
- Remove grease on shaft splines.
- Check roller body and ball cage for wear.
- Clean axle shaft and housing.

Triple roller joint AAR 3300i, assembling

- Slide new protective joint boot onto axle shaft.



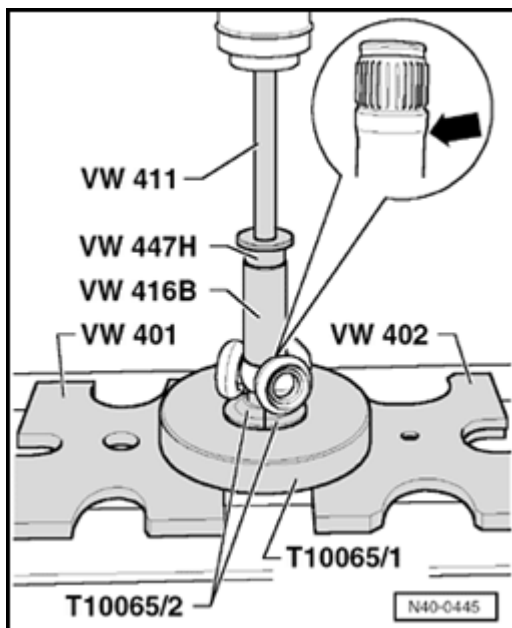
- Press circlip - **1** - onto center of splines.



- To press on circlips - **1** - , use special tool shown in illustration.

Instead of T10065/2 conical axle shafts, cylindrical axle shafts T10065/3 are used ⇒ [Topic 40-5](#) .

Triple roller star, pressing onto axle shaft



This illustration only applies to conical axle shafts - arrow - .

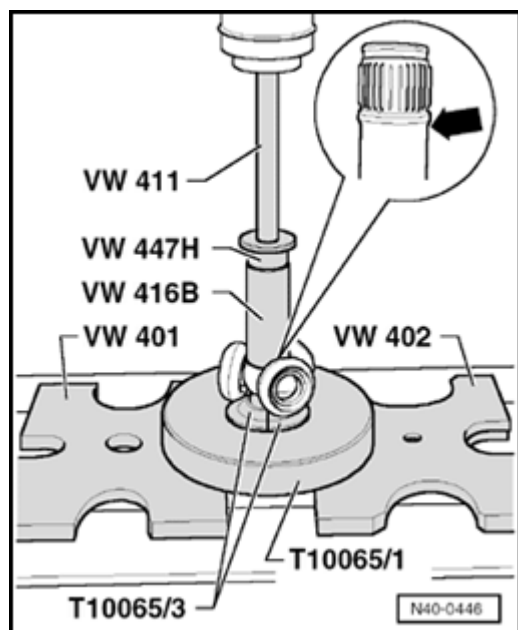
The chamfer on star faces toward axle shaft, this is used as an assembly aid.

- Use special tool shown in illustration.

Special tool T10065/2 must not come in contact with roller body.

- Place triple roller star onto shaft corresponding to marking and drive to stop.

Circlip must engage audibly, triple roller star must lie against circlip with no gap.



This illustration is only for cylindrical axle shaft - arrow

- .

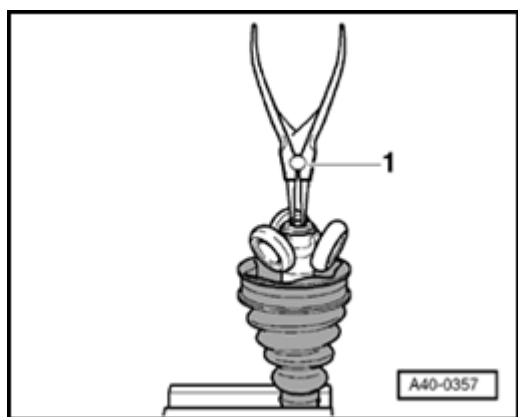
The chamfer on star faces toward axle shaft, this is used as an assembly aid.

- Use special tool shown in illustration.

Special tool T10065/3 must not come in contact with roller body.

- Place triple roller star onto shaft corresponding to marking and drive to stop.

Circlip must engage audibly, triple roller star must lie against circlip with no gap.

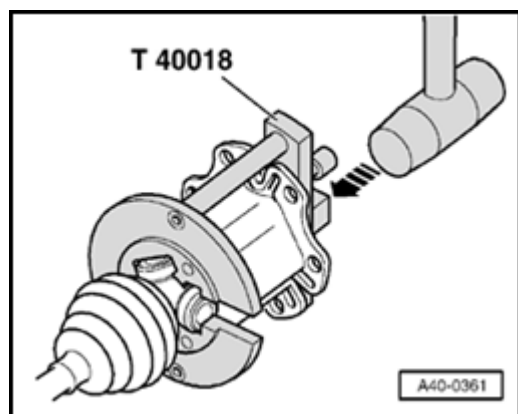


- Install circlip with pliers - **1** - (commercially-available).

- Press half of high-temperature grease from repair kit into triple roller joint.

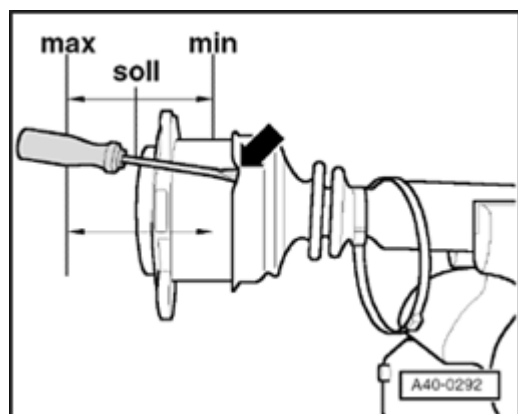
- Lightly lubricate roller body.

Make sure roller body does not tilt!



- Press joint over triple roller bar with a plastic hammer.
- Press rest of grease into protective joint boot.
- Ensure correct seating of boot on joint.

Boot must fit in groove and on joint contour.



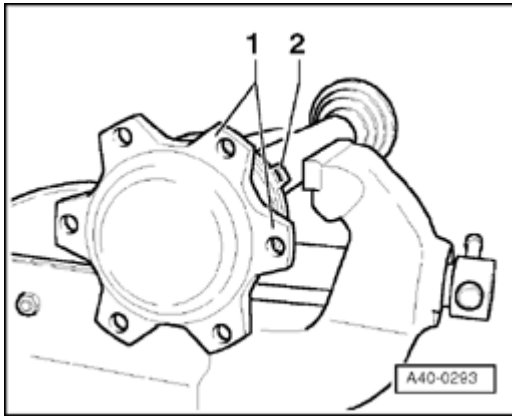
- Position joint in middle position, see "min - max" position.

Note:

- *When positioning joint in middle position, it is necessary to bleed protective joint boot, e.g. with a screwdriver - **arrow** - .*

- Install clamping sleeve.

Note:



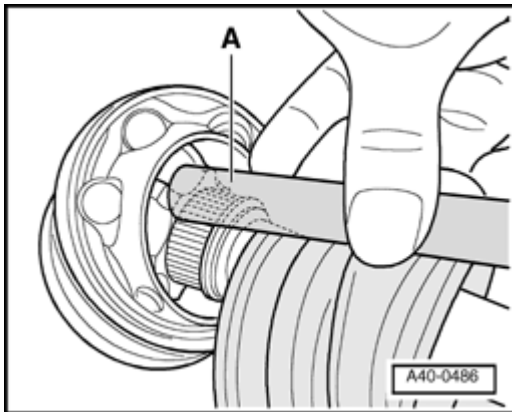
- *For a better alignment of multi-point socket head bolts when installing axle shaft, clamping sleeve connecting tube - **2** - must be between joint connecting flanges - **1** - .*

- Clamp clamping sleeves on triple roller joint ⇒ [40-5](#),
[Clamp small clamping sleeve to inner joint with](#)

Outer constant velocity joint, servicing

Outer CV joint, removing

- Clamp axle shaft in vise with protective covers.
- Open both clamping sleeves and remove protective joint boot from CV joint.

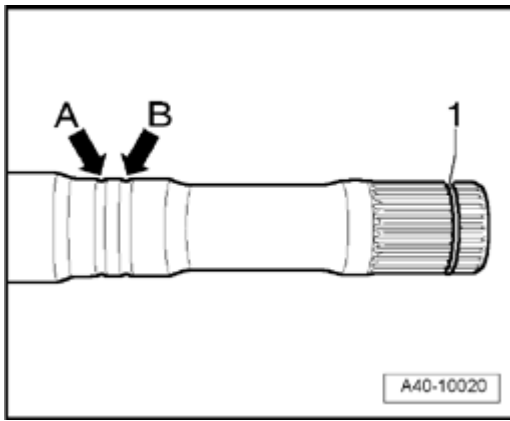


- Strike a copper or brass drift - **A** - on CV joint inner race with a hammer.
- Remove joint and protective joint boot.

Outer CV joint, installing

- Guide protective joint boot with small clamping sleeve onto joint.

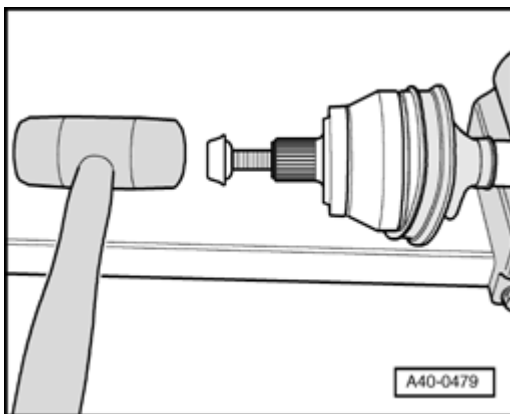
Joints and protective joint boots must be free of grease.



- Always replace circlip - **1** - .
- Position protective joint boot in outer groove - **arrow B** - .

Inner groove - **arrow A** - must remain visible "identifying groove" (for correct installation of protective joint boot).

- Press half of grease from repair kit into inner joint.



- Screw old axle shaft screw into joint as shown in illustration.
- Drive joint onto axle shaft with a plastic hammer until circlip engages.
- Press rest of grease into protective joint boot.
- Slide protective joint boot onto joint.
- Ensure correct seating of protective joint boot on joint.

Protective joint boot must fit in groove and on joint contour.

- Clamp clamping sleeves onto outer joint ⇒ [40-5](#), [Clamping sleeves on Hytel protective joint boots are clamped with](#)