Workshop Manual

Yeti 2010 ➤
Yeti 2011 ➤

Axles, steering

Edition 05.2016

List of Workshop Manual Repair Groups

Repair Group

40 - Front suspension

42 - Rear suspension

44 - Wheels, tyres, vehicle geometry

48 - Steering

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

Contents

40 – Front suspension

1 Repairing front axle

(SRL000943; Edition 05.2016)

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1.1 Front axle - Overview

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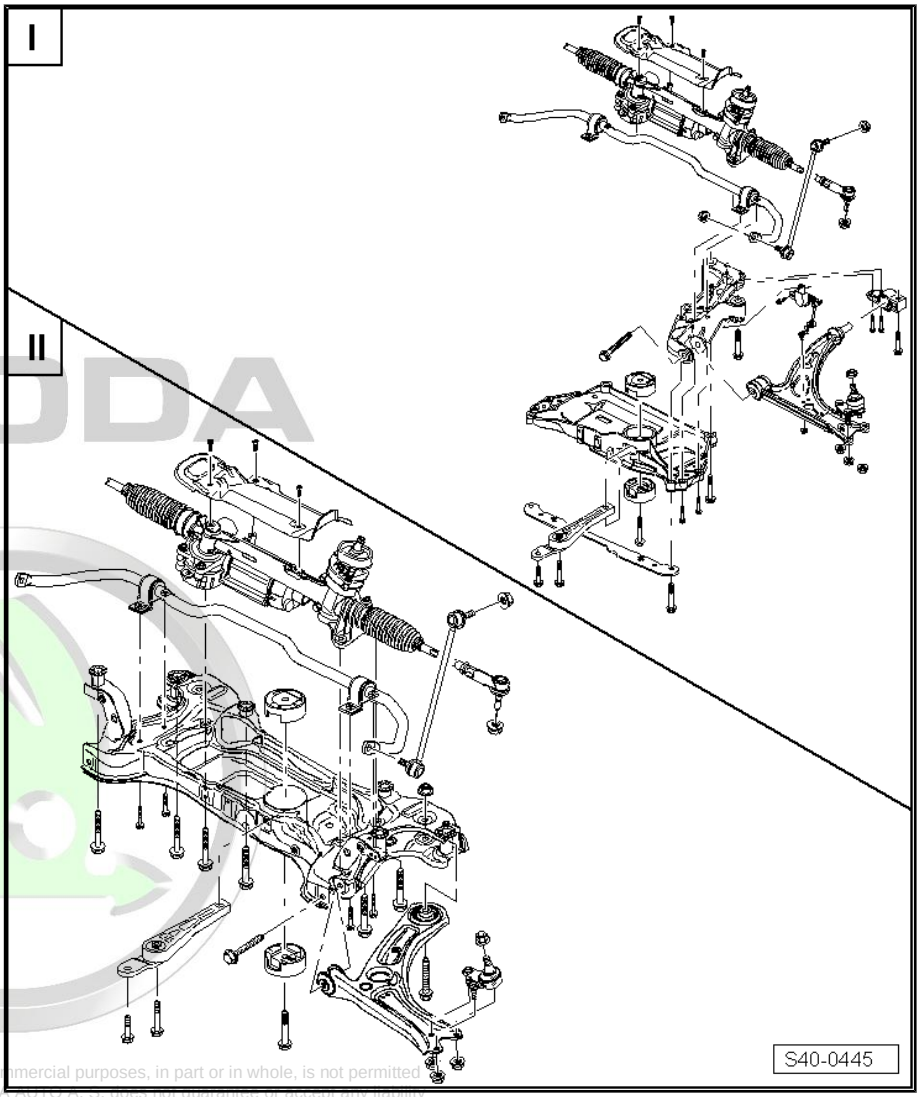

III -
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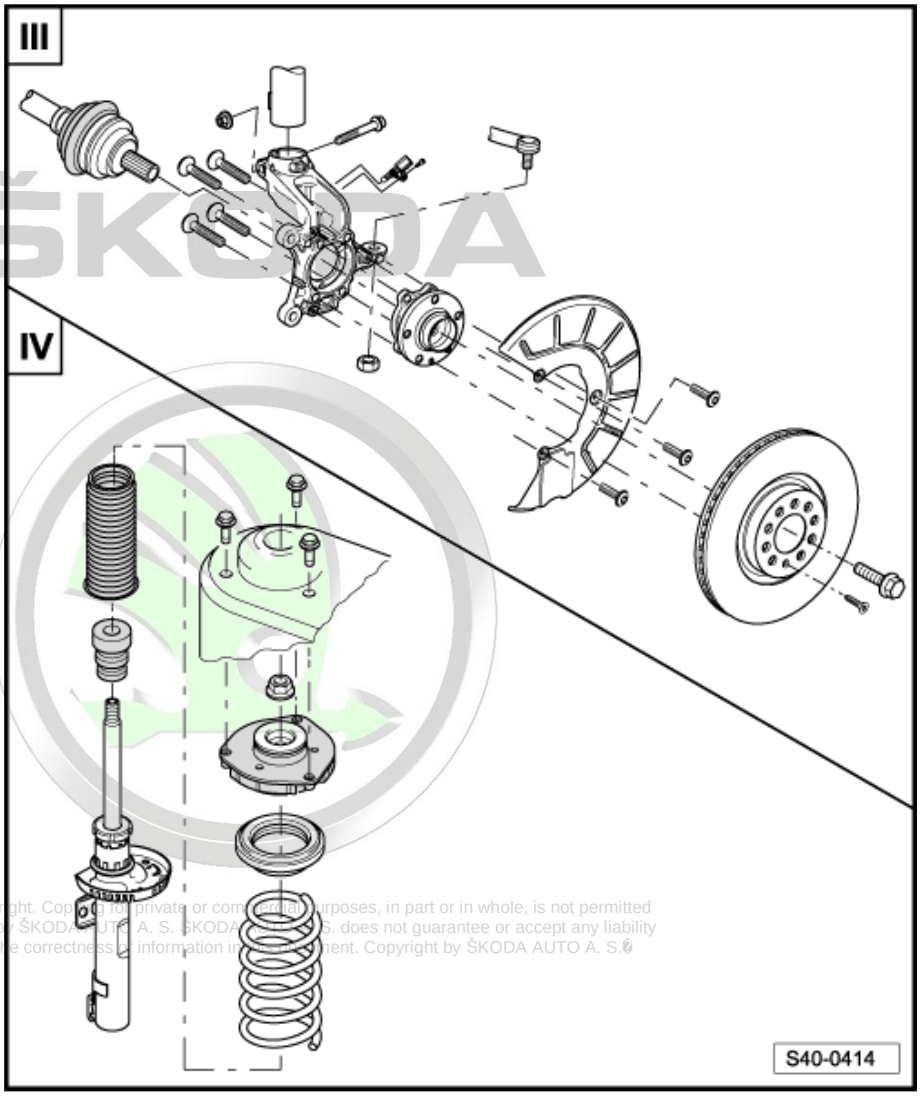


⇒ “6 Repairing the drive shafts”, page 139

1.2 Lift the wheel bearing in the unladen weight position

Special tools and workshop equipment required

- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-
- Tensioning strap - T10038-
- Support - T10149-

Note

All screws must always be tightened firmly in the unladen weight position to the chassis parts with rubber-metal bearings.

Unladen weight:

Unladen weight of the vehicle ready for driving (full fuel tank and washer fluid/headlight cleaning system reservoir, spare wheel and jack (if the vehicle was fitted at the factory with them), tool kit and without driver). The spare wheel, tool kit and jack must be located in the position prescribed by the vehicle manufacturer.

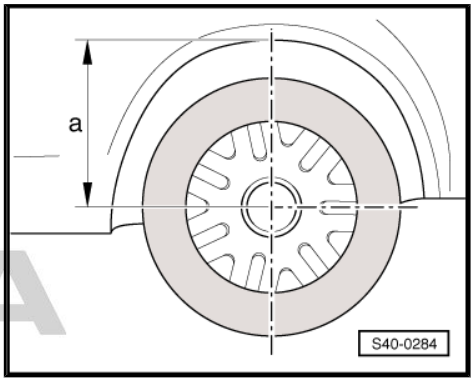
Rubber-metal bearings can be twisted only to a limited extent.

Therefore the axle components with rubber-metal bearings must be put in a position before tightening, which corresponds to the position while driving (unladen weight position).

Otherwise the rubber-metal bearing will be under tension, this shortens its life.

This position on the lift platform can be simulated by lifting out the corresponding wheel suspension with the engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- and the support - T10149- .

– Before commencing work, measure e.g. with a measuring tape, the dimension -a- from wheel centre to lower edge of the wheelhouse ⇒ “1.1 Nominal values front axle”, page 333 .



Measuring must be performed in the unladen weight position.

– Note the measured value. It is required for tightening the screws/nuts.

Before the corresponding wheel suspension is lifted, the vehicle must be lashed securely at the supporting arms of the lift platform with the tensioning straps - T10038- .

WARNING

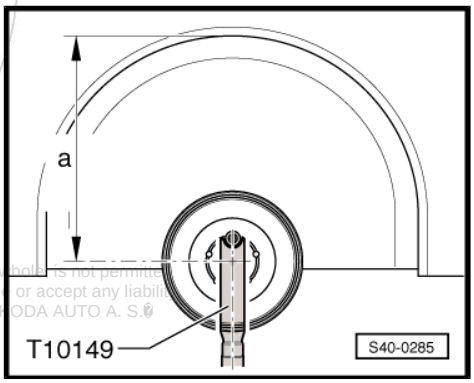
If the vehicle is not lashed, there is a risk of the vehicle toppling off the lift platform.

– Remove wheel.

– Rotate the wheel hub until one of the holes for the wheel bolts is located at the top.

– Install support - T10149- with wheel bolt at the wheel hub.

The tightening of the corresponding screw/nut must only be performed, if the measured dimension -a- between the wheel hub centre and the lower edge of the wheel house is achieved before commencing work.



– Raise up the wheel-bearing housing using the engine and gearbox jack e. g. -V.A.G 1383A- or -VAS6931- until dimension -a- is achieved.

WARNING

- ***Do not raise or lower the vehicle, if the engine/gearbox jack is positioned under the vehicle.***
- ***Do not leave the engine/gearbox jack e. g. -V.A.G 1383A- or -VAS6931- positioned under the vehicle for longer than necessary.***

– Tighten respective nuts and bolts.

– Lower the wheel bearing housing.

– Pull out the engine/gearbox jack e. g. -V.A.G 1383A- or -VAS6931- from underneath the vehicle.

– Remove support - T10149- .

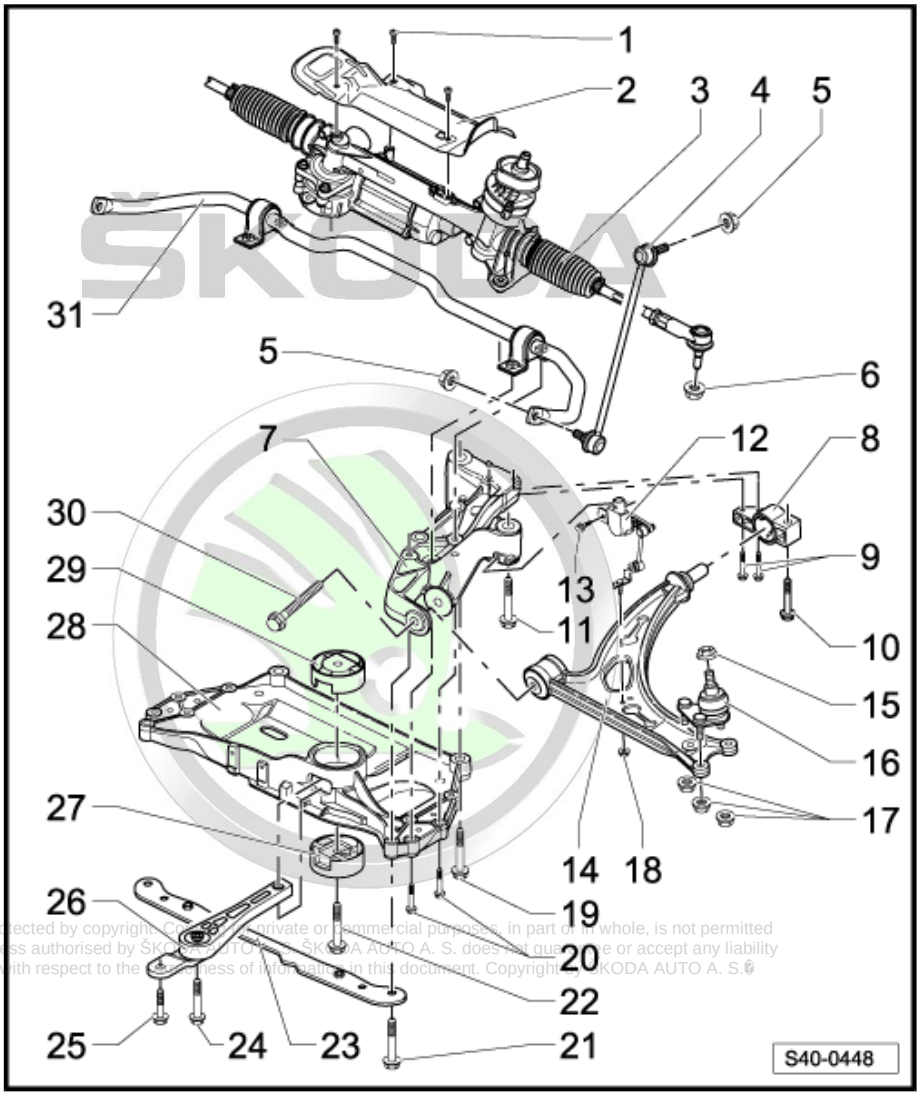
– Remove tensioning strap - T10038- .

2 Front axle with aluminium assembly carrier

2.1 Summary of components: Aluminium assembly carrier, anti-roll bar, track control arm, LHD - vehicles with left-hand drive

Note

- *Welding and straightening work is not allowed on the bearing and wheel control components of the wheel suspension.*
- *Always replace self-locking nuts.*
- *Always replace corroded screws/nuts.*



1 - Screw

- ❑ 6 Nm

2 - Protection plate

3 - Power-steering gear

- ❑ Summary of components ⇒ “3.1 Summary of components for electro-mechanical steering gear LHD - aluminium assembly carrier”, page 383

4 - Coupling rod

- ❑ connects anti-roll bar with suspension strut

5 - Nut

- ❑ Counterhold the internal serration of the pivot pin when tightening
- ❑ self-locking
- ❑ replace after each removal
- ❑ 65 Nm

6 - Nut

- ❑ replace after each removal
- ❑ 20 Nm + 90°

7 - Console

- ❑ fix ⇒ “2.3 Fixing the assembly carrier and the console - aluminium assembly carrier”, page 11
- ❑ If the console is replaced, the vehicle must be aligned ⇒ “2 Axle alignment”, page 336

8 - Bearing bracket

- ❑ fix ⇒ “2.3 Fixing the assembly carrier and the console - aluminium assembly carrier”, page 11
- ❑ with rubber-metal bearing

9 - Screw

- ❑ Bracket to console
- ❑ replace after each removal
- ❑ M10 x 76
- ❑ 50 Nm + 90°

10 - Screw

- ❑ M12 x 1.5 x 90
- ❑ replace after each removal
- ❑ 70 Nm + 135°

11 - Screw

- ❑ M12 x 1.5 x 90
- ❑ replace after each removal
- ❑ 70 Nm + 135°

12 - Front left side vehicle level sensor - G78-

- ❑ for vehicles with automatic headlight range control until 11.09

- ❑ in the event of a fault:
- – removing ⇒ “2.13 Removing and installing front left vehicle level sensor G78 ”, page 54
- – insulate the electrical installation and attach to the body in a suitable manner
- – Change the code for the Xenon headlight CU ⇒ Vehicle diagnostic tester

13 - Screw

- ❑ only on vehicles until 11.09
- ❑ 9 Nm

14 - Track control arm

- ❑ also replace the axle link in the event of damage of the steering joint
- ❑ removing and installing ⇒ “2.10 Removing and installing track control arm with bracket - aluminium assembly carrier”, page 47
- ❑ Replacing the bearing ⇒ “2.11 Replacing rubber-metal bearing for track control arm - aluminium assembly carrier”, page 52
- ❑ different versions - steel casting/steel sheet
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

15 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 60 Nm

16 - Steering joint

- ❑ check ⇒ “2.14 Inspecting the suspension link”, page 56
- ❑ removing and installing ⇒ “2.15 Removing and installing the suspension link”, page 56
- ❑ also replace the axle link in the event of damage of the steering joint
- ❑ observe left/right version ⇒ page 7

17 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ Track control arm made of steel sheet = 100 Nm
- ❑ Track control arm made of steel casting = 60 Nm

18 - Nut

- ❑ only on vehicles until 11.09
- ❑ 9 Nm

19 - Screw

- ❑ M12 x 1.5 x 100
- ❑ replace after each removal
- ❑ 70 Nm + 135°

20 - Screw

- ❑ M8 x 75
- ❑ replace after each removal
- ❑ 20 Nm + 90°

21 - Screw

- ❑ M12 x 1.5 x 75
- ❑ replace after each removal
- ❑ 70 Nm + 90°

22 - Screw

- ❑ M14 x 1.5 x 70

- ❑ first tighten when the pendulum support is screwed to the gearbox
- ❑ replace after each removal
- ❑ 100 Nm + 90°

23 - Holder of the noise insulation

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

24 - Screw

- ❑ M10 x 75
- ❑ replace after each removal
- ❑ Tightening torque ⇒ Engine; Rep. gr. 10

25 - Screw

- ❑ M10 x 35
- ❑ replace after each removal
- ❑ Tightening torque ⇒ Engine; Rep. gr. 10

26 - Pendulum support

- ❑ screw first to the gearbox then to the assembly carrier
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

27 - Bottom rubber-metal bearing for pendulum support

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

28 - Assembly carrier

- ❑ different versions
- ❑ Removing and installing without steering gear
  ⇒ “2.5 Removing and installing the assembly carrier - aluminium assembly carrier, LHD - vehicles with left-hand drive”, page 22
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

29 - Top rubber-metal bearing for pendulum support

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

30 - Screw

- ❑ M12 x 1.5 x 110
- ❑ replace after each removal
- ❑ tighten in unladen weight position ⇒ “1.2 Lift the wheel bearing in the unladen weight position”, page 2
- ❑ 70 Nm + 180°

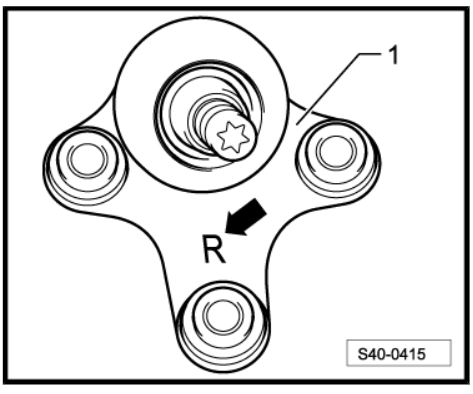
31 - Anti-roll bar

- ❑ different versions
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing
  ⇒ “2.7 Removing and installing the anti-roll bar - aluminium assembly carrier, LHD - vehicles with left-hand drive”, page 39

Fitting position according to the identification -arrow- on the suspension link

R - means right

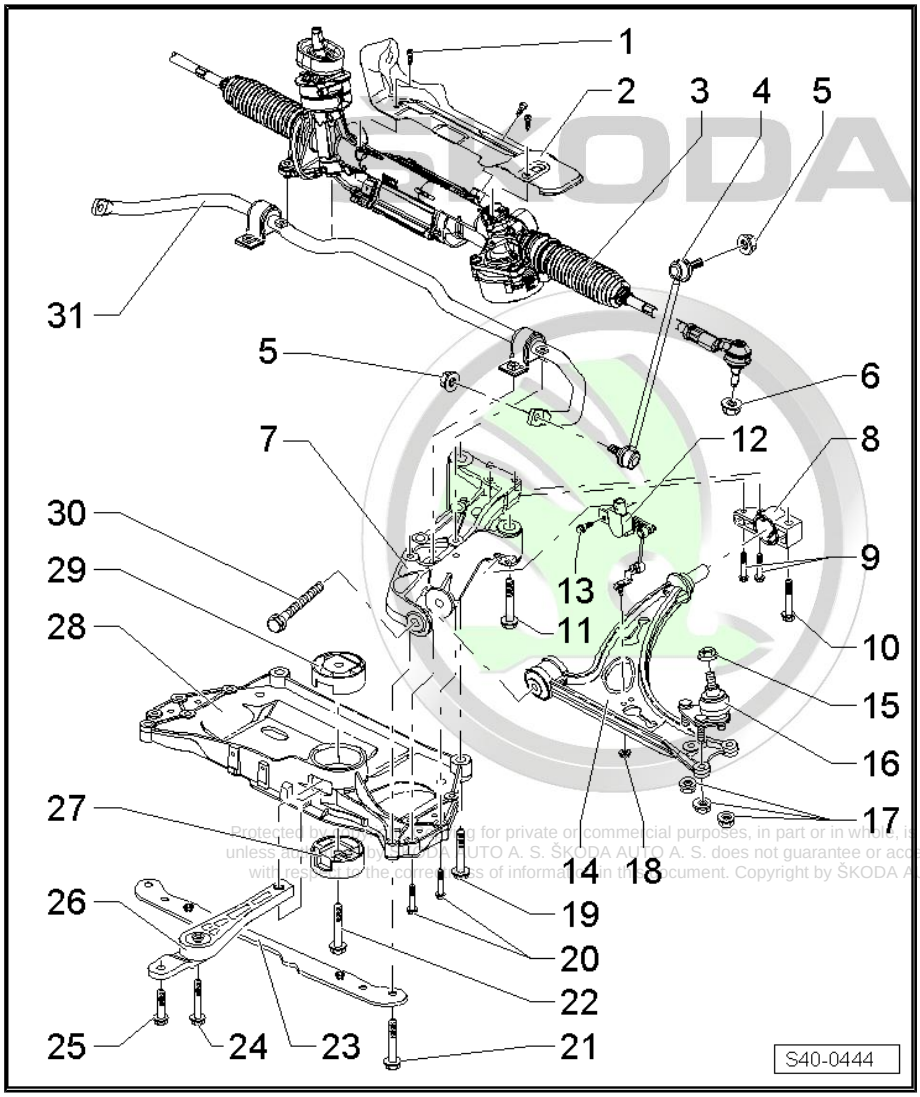
L - means left



2.2 Summary of components: Aluminium assembly carrier, anti-roll bar, track control arm, RHD - vehicles with right-hand drive

Note

- *Welding and straightening work is not allowed on the bearing and wheel control components of the wheel suspension.*
- *Always replace self-locking nuts.*
- *Always replace corroded screws/nuts.*



1 - Screw
- ❑ 6 Nm

2 - Protection plate

3 - Power-steering gear
- ❑ Summary of components ⇒ “4.1 Summary of components for electro-mechanical steering gear RHD - aluminium assembly carrier”, page 391

4 - Coupling rod
- ❑ connects anti-roll bar with suspension strut

5 - Nut
- ❑ Counterhold the internal serration of the pivot pin when tightening
- ❑ self-locking
- ❑ replace after each removal
- ❑ 65 Nm

6 - Nut
- ❑ replace after each removal
- ❑ 20 Nm + 90°

7 - Console
- ❑ fix ⇒ “2.3 Fixing the assembly carrier and the console - aluminium assembly carrier”, page 11
- ❑ If the console is replaced, the vehicle must be aligned ⇒ “2 Axle alignment”, page 336

8 - Bearing bracket
- ❑ Bracket to console
- ❑ fix ⇒ “2.3 Fixing the assembly carrier and the console - aluminium assembly carrier”, page 11
- ❑ with rubber-metal bearing

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- ❑ 70 Nm + 135°

11 - Screw

- ❑ M12 x 1.5 x 90
- ❑ replace after each removal
- ❑ 70 Nm + 135°

12 - Front left side vehicle level sensor - G78-

- ❑ for vehicles with automatic headlight range control until 11.09
- ❑ in the event of a fault:

– removing ⇒ “2.13 Removing and installing front left vehicle level sensor G78 ”, page 54

– insulate the electrical installation and attach to the body in a suitable manner

– Change the code for the Xenon headlight CU ⇒ Vehicle diagnostic tester

13 - Screw

- ❑ only on vehicles until 11.09
- ❑ 9 Nm

14 - Track control arm

- ❑ also replace the axle link in the event of damage of the steering joint
- ❑ removing and installing
  ⇒ “2.10 Removing and installing track control arm with bracket - aluminium assembly carrier”, page 47
- ❑ Replacing the bearing
  ⇒ “2.11 Replacing rubber-metal bearing for track control arm - aluminium assembly carrier”, page 52
- ❑ different versions - steel casting/steel sheet
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

15 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 60 Nm

16 - Steering joint

- ❑ check ⇒ “2.14 Inspecting the suspension link”, page 56
- ❑ removing and installing ⇒ “2.15 Removing and installing the suspension link”, page 56
- ❑ also replace the axle link in the event of damage of the steering joint
- ❑ observe left/right version
  ⇒ Fig. ““Fitting position according to the identification -arrow- on the suspension link”“ , page 7

17 - Nut

- ❑ replace after each removal
- ❑ self-locking
- ❑ Track control arm made of steel sheet = 100 Nm
- ❑ Track control arm made of steel casting = 60 Nm

18 - Nut

- ❑ only on vehicles until 11.09
- ❑ 9 Nm

19 - Screw

- ❑ M12 x 1.5 x 100
- ❑ replace after each removal
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20 - Screw

- ❑ M8 x 75
- ❑ replace after each removal
- ❑ 20 Nm + 90°

21 - Screw

- ❑ M12 x 1.5 x 75
- ❑ replace after each removal
- ❑ 70 Nm + 90°

22 - Screw

- ❑ M14 x 1.5 x 70
- ❑ first tighten when the pendulum support is screwed to the gearbox
- ❑ replace after each removal
- ❑ 100 Nm + 90°

23 - Holder of the noise insulation

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

24 - Screw

- ❑ M10 x 75
- ❑ replace after each removal
- ❑ Tightening torque ⇒ Engine; Rep. gr. 10

25 - Screw

- ❑ M10 x 35
- ❑ replace after each removal
- ❑ Tightening torque ⇒ Engine; Rep. gr. 10

26 - Pendulum support

- ❑ screw first to the gearbox then to the assembly carrier
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

27 - Bottom rubber-metal bearing for pendulum support

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

28 - Assembly carrier

- ❑ different versions
- ❑ removing and installing
  ⇒ “2.5 Removing and installing the assembly carrier - aluminium assembly carrier, LHD - vehicles with left-hand drive”, page 22
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

29 - Top rubber-metal bearing for pendulum support

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

30 - Screw

- ❑ M12 x 1.5 x 110
- ❑ replace after each removal
- ❑ tighten in unladen weight position ⇒ “1.2 Lift the wheel bearing in the unladen weight position”, page 2
- ❑ 70 Nm + 180°

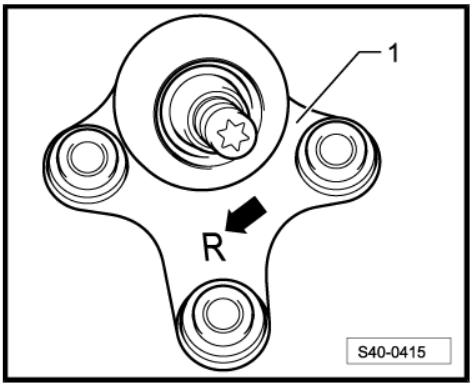
31 - Anti-roll bar

- ❑ different versions
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing
  ⇒ “2.7 Removing and installing the anti-roll bar - aluminium assembly carrier, LHD - vehicles with left-hand drive”, page 39

Fitting position according to the identification -arrow- on the suspension link

R - means right

L - means left



2.3 Fixing the assembly carrier and the console - aluminium assembly carrier

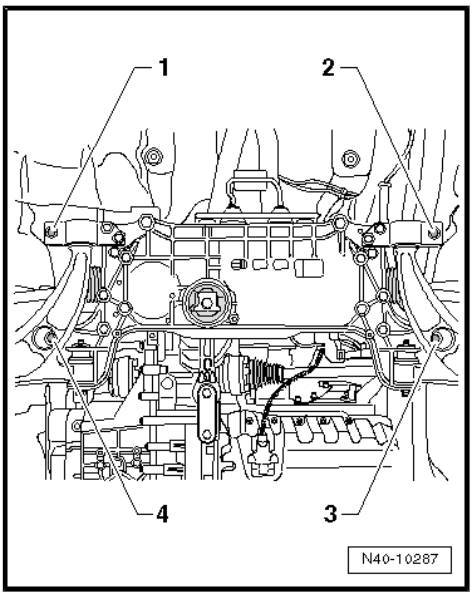
Special tools and workshop equipment required

- Fixing device - T10096-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-

In order to fix the assembly carrier with the consoles, the fixing devices - T10096- must be successively screwed into the positions -1-, -2-, -3- and -4-.

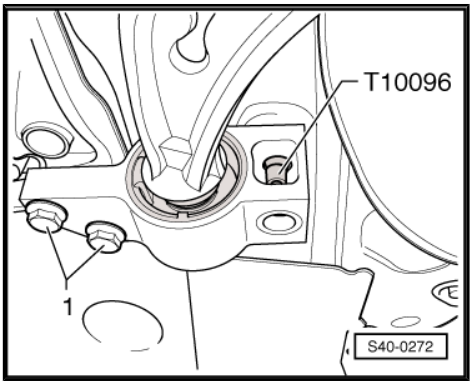
Note

The locating pin - T10096- must only be tightened to maximum 20 Nm as otherwise the fixing bolt thread becomes damaged.



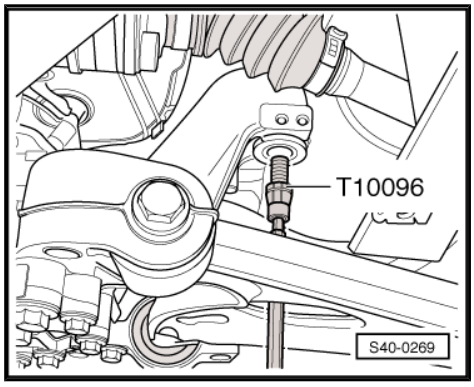
Fix the bracket:

– Successively replace the fixing bolts of the bracket/body on both sides with fixing devices - T10096- and tighten to 20 Nm.



Fix the consoles:

– Successively replace the fixing screws on the consoles with fixing devices - T10096- and tighten to 20 Nm.



The position of the front axle is now fixed.

Further remove the anti-roll bar
⇒ “2.7 Removing and installing the anti-roll bar - aluminium assembly carrier, LHD - vehicles with left-hand drive”, page 39 .

Further remove the steering gear
⇒ “3 Electro-mechanical steering gear LHD - vehicles with left-hand drive”, page 383 .

Release:

Releasing is carried out in the reverse order. Make sure that the fixing devices - T10096- are replaced successively with new screws.

– Perform a test drive.

– Check the steering wheel position during the test drive.

– Carry out axle alignment ⇒ “2.3 Axle alignment”, page 338 .

Tightening torques:

Assembly carrier to body ◆ Use new screws!	70 Nm + 135°
Wheel bolts	120 Nm

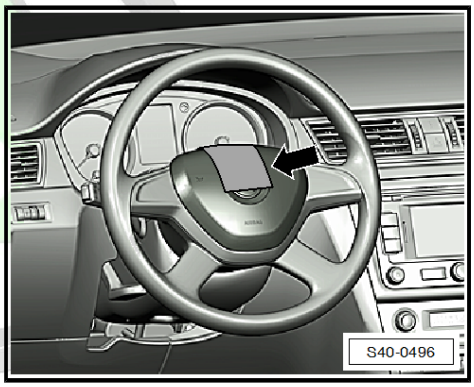
2.4 Lower the assembly carrier in the service position - aluminium assembly carrier

Special tools and workshop equipment required

- Fixing device - T10096-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-

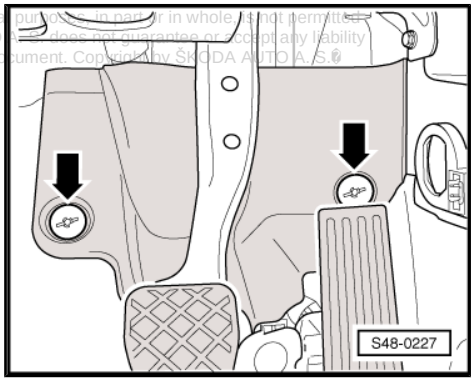
Lower the assembly carrier in the service position:

– Secure the steering wheel with the wheels in straight ahead position with adhesive tape -arrow- against unintended turning.

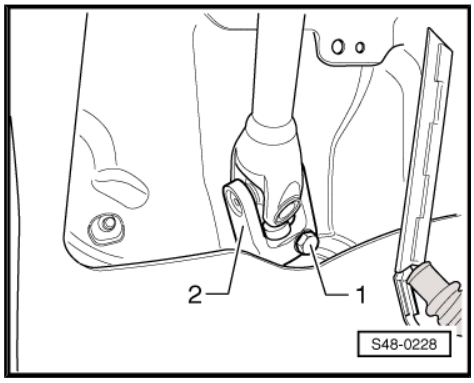


Vehicles with left-hand drive:

– Remove footwell covering, to do so unscrew the nuts -arrows-.

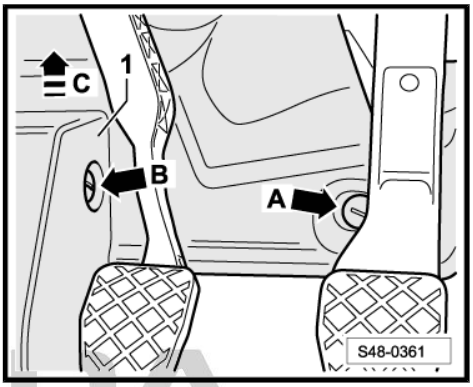


– Remove screw -1- and pull off the universal joint -2- from the steering gear.



Vehicles with right hand drive:

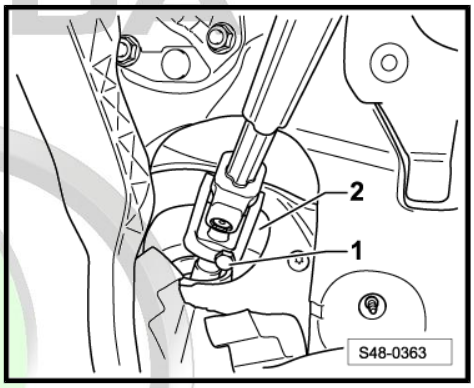
– Unscrew the fixing nut -arrow A- and the expansion clamp -arrow B- of the footwell covering.
– Take the expansion clamp of the covering out of the opening -arrow B-.
– Unclip the footwell covering in -direction of arrow C- and remove.



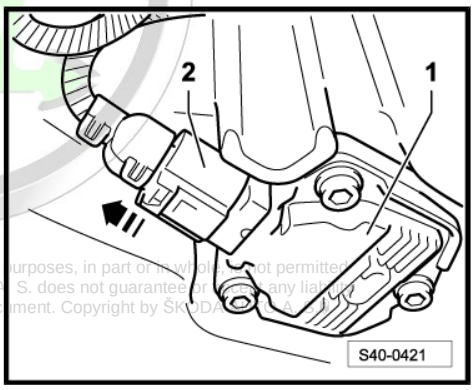
– Remove screw -1- and pull off the universal joint -2- from the steering gear.

Continued for all vehicles:

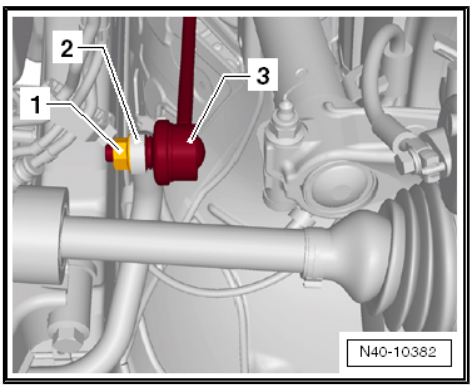
– Remove front wheels.
– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .
– For vehicles fitted with automatic headlight range control, disconnect the plug from the front left vehicle level sensor - G78- , if the vehicle is fitted with this.



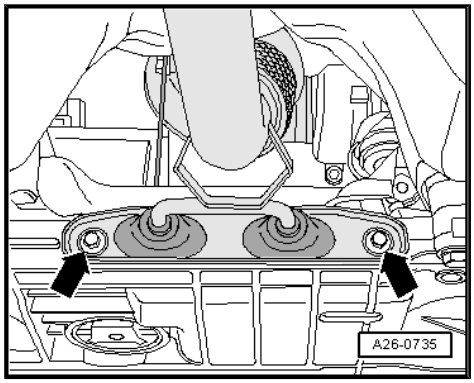
– Disconnect plug -2- for oil level and oil temperature sender - G266- -1-, if present.



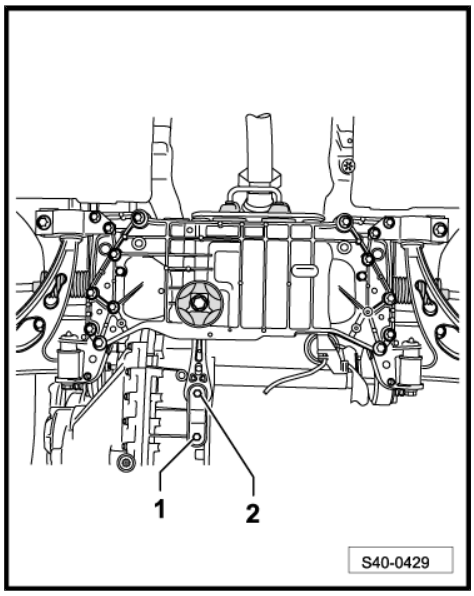
– Remove the coupling rods -3- from the anti-roll bar -2- on both vehicle sides.



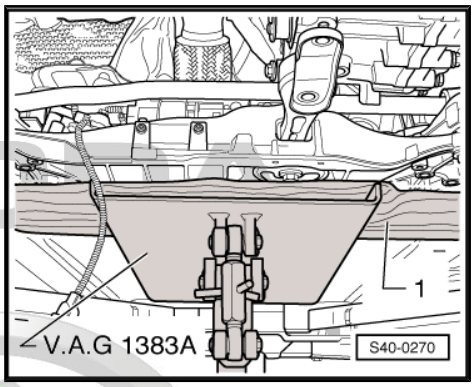
– Unbolt bracket for exhaust system -arrows- from assembly carrier.



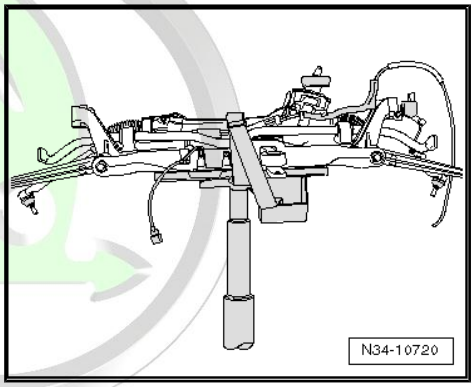
– Remove pendulum support from gearbox, to do so release screws -1- and -2-.
– Fix the assembly carrier
⇒ “2.3 Fixing the assembly carrier and the console - aluminium assembly carrier”, page 11 .



– Put the engine/gearbox jack e. g. -V.A.G 1383A- or -VAS6931- underneath the assembly carrier.
– For example place a piece of wood -1- between engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- and the assembly carrier.

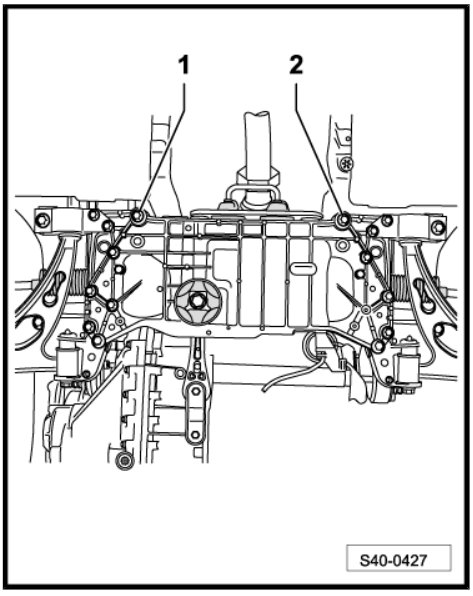


– Secure assembly carrier on engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with corresponding strap.



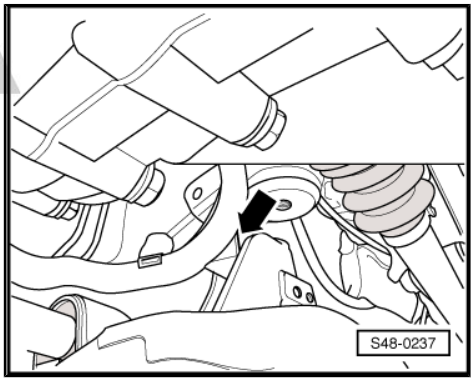
– Unscrew the screws -1- and -2- and lower the assembly carrier by approx. 7 cm. While doing so observe the electrical cables.

Lower the assembly carrier by max. 11 cm.

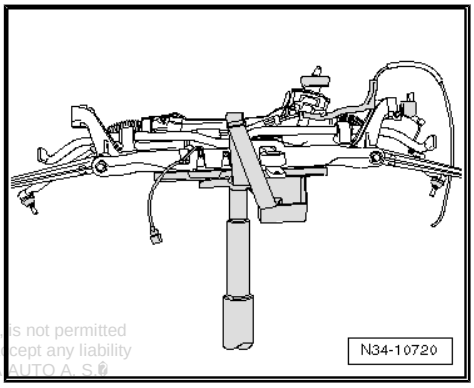


– Release the screw -arrow- for the cable duct from the assembly carrier.
– Lower the assembly carrier under the body by max. 11 cm. While doing so observe the electrical cables.

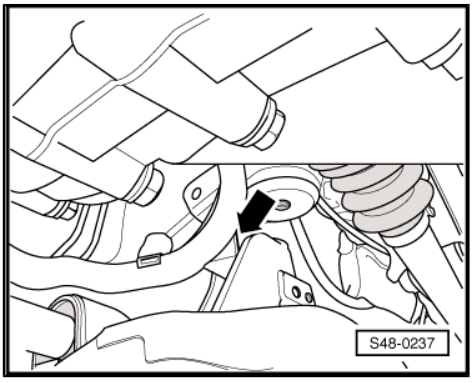
Installing:



– Secure assembly carrier on engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with corresponding strap.



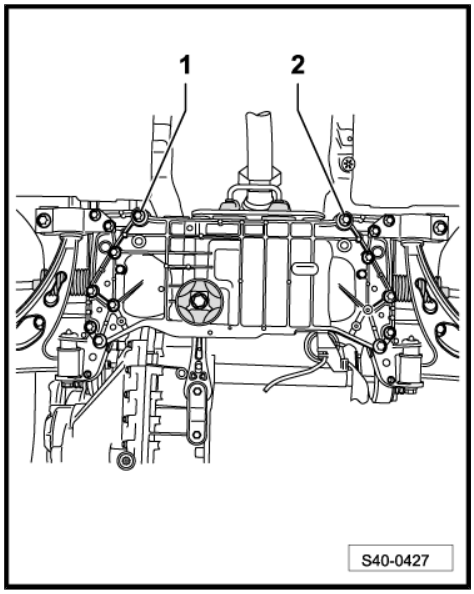
– Bolt the cable duct -arrow- to the assembly carrier.
– Raise the assembly carrier in such a way that the fixing holes of the assembly carrier rest fully against the fixing devices -T10096- , while doing so pay attention to the electrical cables.



Note

- *Coat the sealing sleeve on the steering gear with lubricant, e.g. lubricating soap, before installing the steering gear.*
- *Make sure the steering gear boot is neither damaged nor twisted.*
- *Make sure all sealing surfaces are clean.*

– Screw in new screws -1- and -2- and pre-tighten to 70 Nm.

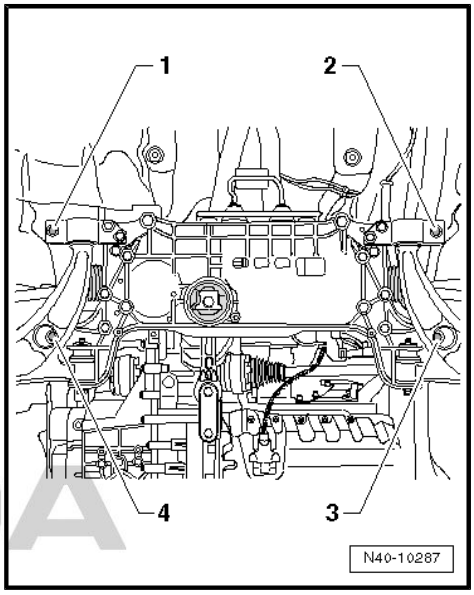


– Unscrew the fixing device - T10096- at positions -1-, -2-, -3- and -4- in sequence, and replace them with new screws.

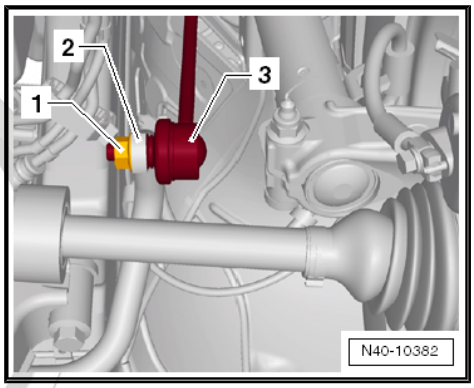
Note

Observe the different lengths of the fixing screws for assembly carrier.

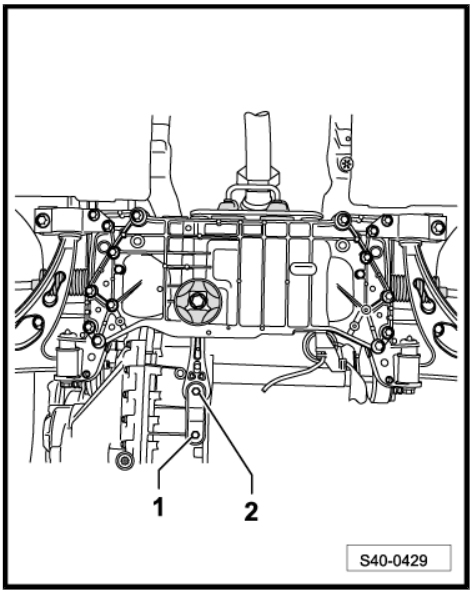
– Tighten all fixing screws of the assembly carrier to the specified tightening torque ⇒ page 21 .



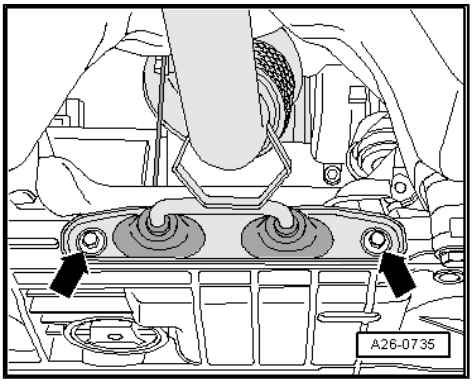
– Screw the coupling rods -3- onto the anti-roll bar -2-.



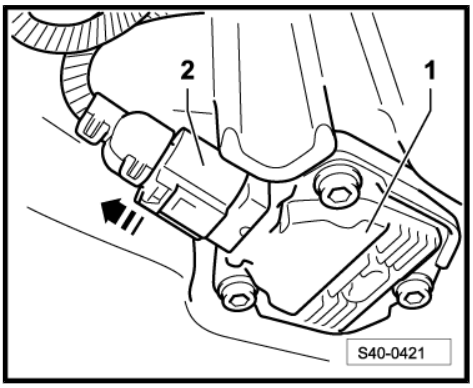
– Install the pendulum support at the gearbox, to do so screw on screws -1- and -2-.



– Screw bracket for exhaust system -arrows- onto assembly carrier.

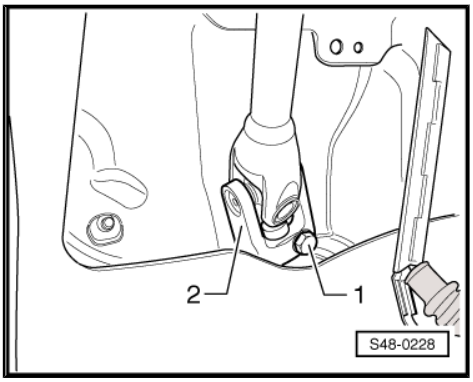


– Fit on plug -2- for oil level and oil temperature sender - G266- -1- by pressing against the -direction of the arrow-, if present.
– For vehicles fitted with automatic headlight range control, connect the plug from the front left vehicle level sensor - G78- , if the vehicle is fitted with this.
– Install the noise insulation ⇒ Body Work; Rep. gr. 50 .
– Install front wheels.

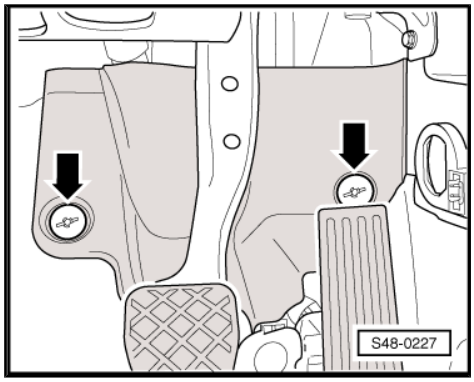


Vehicles with left-hand drive:

– Fit the universal joint -2- on the shaft of the steering gear and screw on the screw -1-.

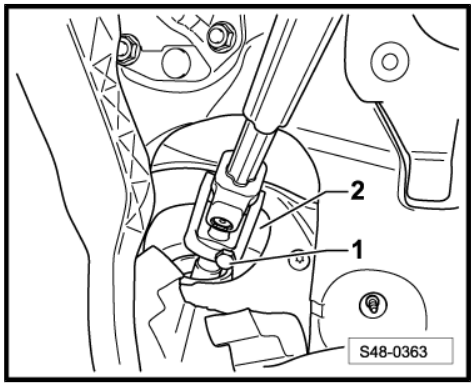


– Install footwell covering, to do so screw on the nuts -arrows-.

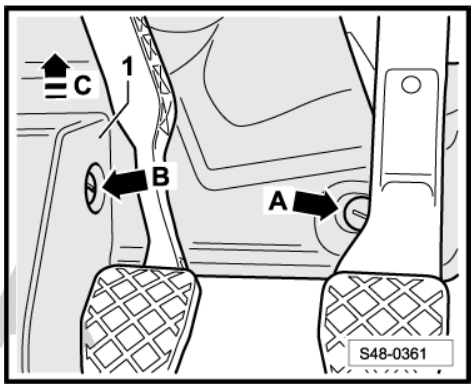


Vehicles with right hand drive:

– Fit the universal joint -2- on the shaft of the steering gear and screw on the screw -1-.



– Position the footwell covering and clip in against the -direction of arrow C-.
– Insert the expansion clamp of the covering into the opening -arrow B-.
– Screw on the fixing nut -arrow A- and the expansion clamp -arrow B- of the footwell covering.



Continued for all vehicles:

Note

It is necessary to perform an axle alignment in the event of:
⇒ “2.3 Axle alignment”, page 338 .

– Perform a test drive.
– Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment
⇒ “2.3 Axle alignment”, page 338 .

Tightening torques:

Assembly carrier to body ♦ Use new screws	70 Nm + 135°
Assembly carrier to console ♦ Use new screws	70 Nm + 90°
Coupling rod ♦ Use new nuts! ♦ Counterhold the internal serration of the pivot pin	65 Nm
Universal joint to steering gear ♦ Use new screw!	20 Nm + 90°
Coupling rod for front left vehicle level sensor - G78- to track control arm	9 Nm
Wheel bolts	120 Nm
Pendulum support to gearbox ⇒ Engine; Rep. gr. 10	
Bracket for exhaust system to assembly carrier ⇒ Engine; Rep. gr. 26	

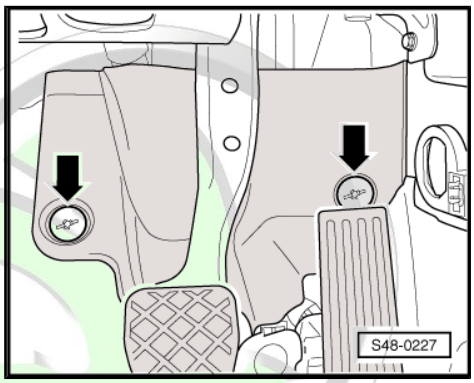
2.5 Removing and installing the assembly carrier - aluminium assembly carrier, LHD - vehicles with left-hand drive

Special tools and workshop equipment required

- Fixing device - T10096-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-
- Ball joint extractor - 3287A-

Removing:

– Remove footwell covering, to do so unscrew the nuts -arrows-.

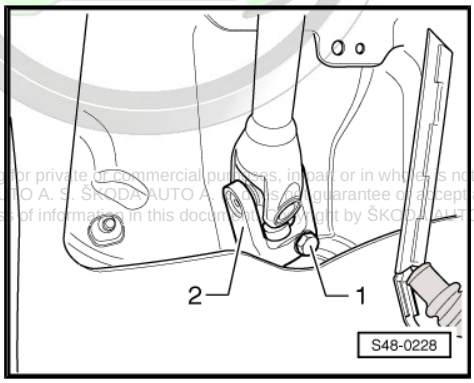


– Remove screw -1- and pull off the universal joint -2- from the steering gear.

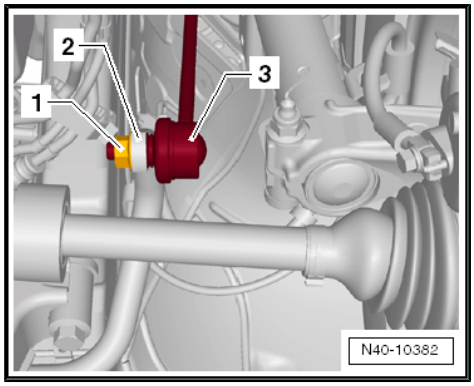
– Remove front wheels.

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

– For vehicles fitted with automatic headlight range control, remove the front left vehicle level sensor - G78- , if the vehicle is fitted with this
⇒ “2.13 Removing and installing front left vehicle level sensor G78 ”, page 54 .

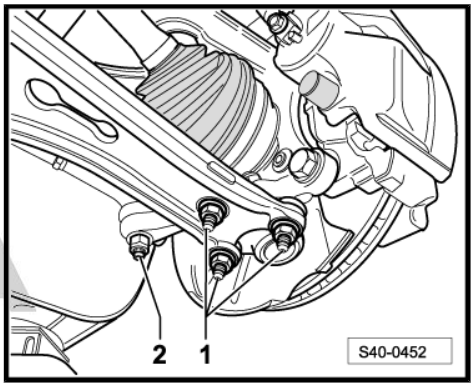


– Remove the coupling rods -3- from the anti-roll bar -2- on both vehicle sides.



– Unscrew nuts for steering joint -1- on both sides.

– Loosen nut of track rod end -2- on both sides, but do not unscrew yet.

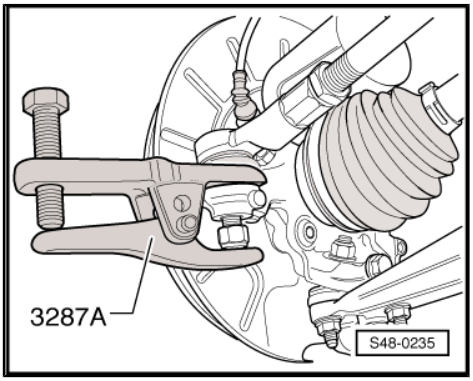


Note

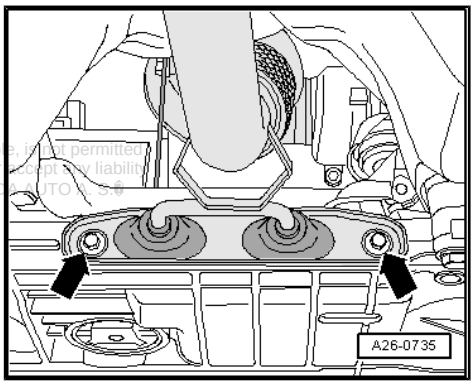
To protect the thread, screw the nut a couple of thread turns onto the stud of the track rod end.

– Remove the suspension link/track rod from the wheel-bearing housing with the ball joint extractor - 3287A- .

– Unscrew nut for suspension link/track rod on both sides.

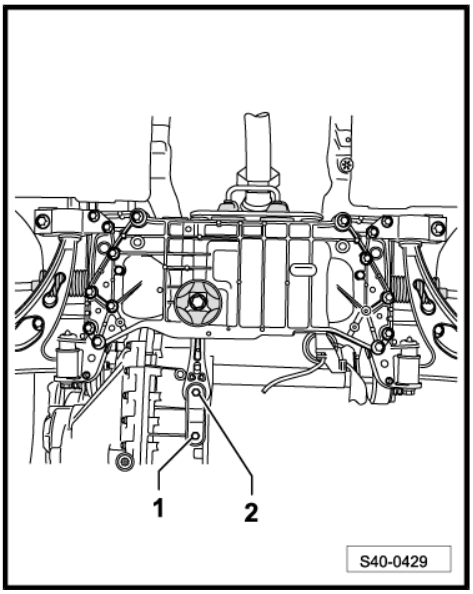


– Unbolt bracket for exhaust system -arrows- from assembly carrier.

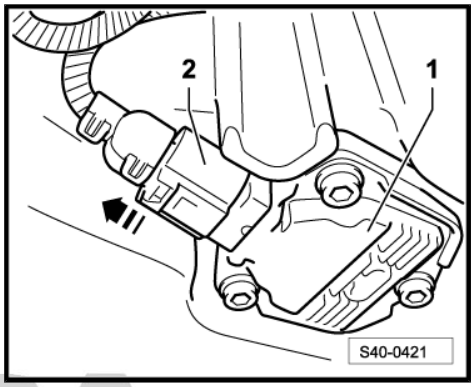


– Remove pendulum support from gearbox, to do so release screws -1- and -2-.

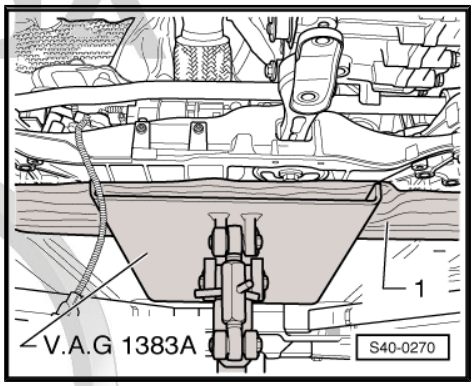
– Fix the assembly carrier with consoles
⇒ “2.3 Fixing the assembly carrier and the console - aluminium assembly carrier”, page 11 .



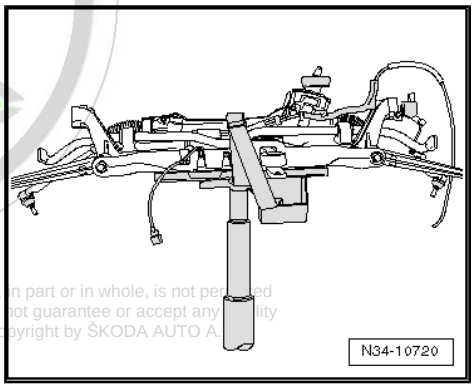
– Disconnect plug -2- for oil level and oil temperature sender - G266- -1-, if present.



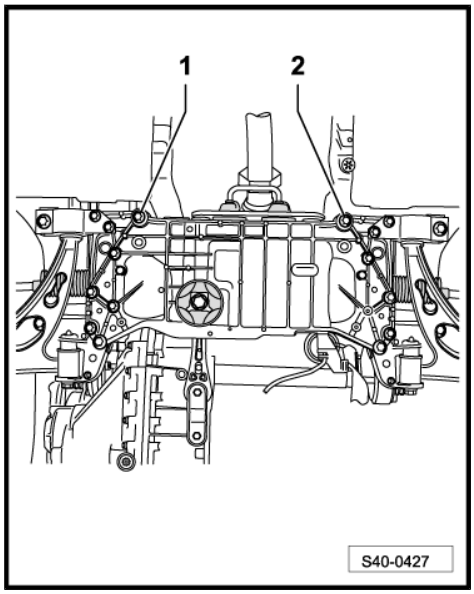
– Put the engine/gearbox jack e. g. -V.A.G 1383A- or -VAS6931- underneath the assembly carrier.
– For example place a piece of wood -1- between engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- and the assembly carrier.



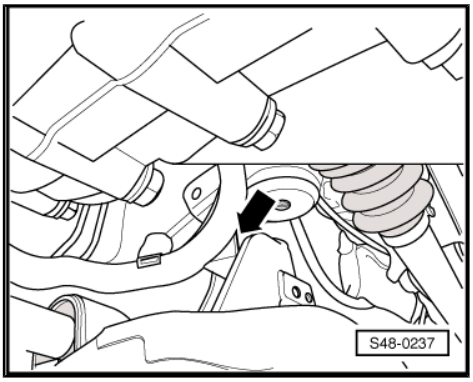
– Secure assembly carrier on engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with corresponding strap.



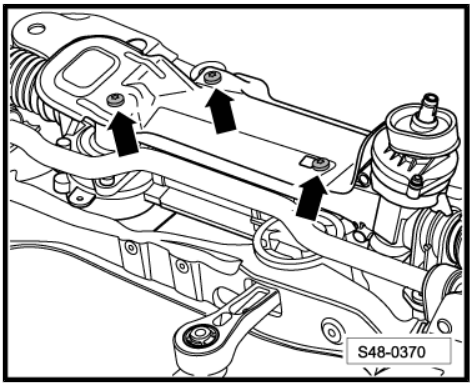
– Unscrew the screws -1- and -2- and lower the assembly carrier by approx. 7 cm. While doing so observe the electrical cables.



– Release the screw -arrow- for the cable duct from the assembly carrier.
– Lower the assembly carrier under the body by max. 11 cm. While doing so observe the electrical cables.



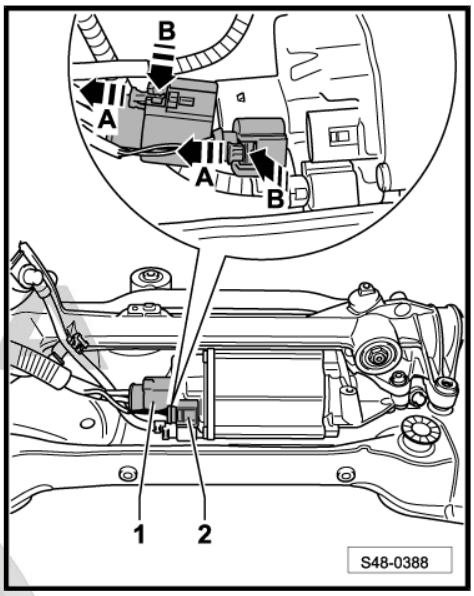
– Remove the heat shield -arrows- above the steering gear.
– Unclip all the cable attachment points at the steering gear.



– Disconnect the plug connections -1- and -2- from the steering gear.

When doing this, it is necessary to:

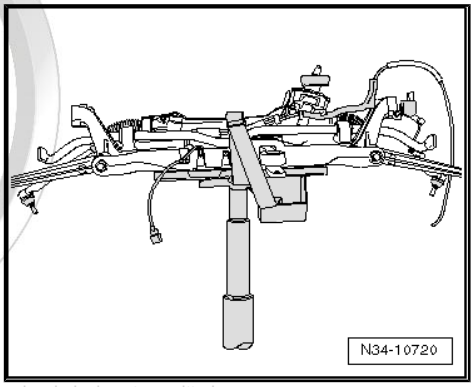
– Pull out the fuse of the plug connection in -direction of arrow A-.
– Press together the catch of the plug connection in -direction of arrow B- and separate the plug connection by pulling.
– Slacken the wiring harness for oil level and oil temperature sender - G266- (if present).
– Lower assembly carrier.



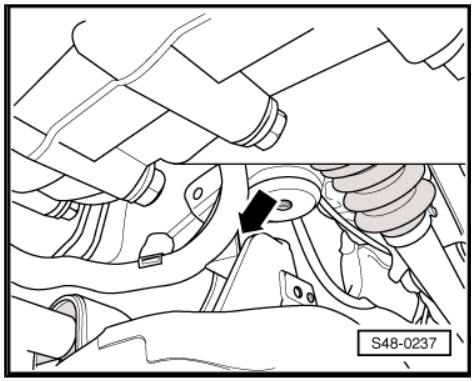
Installing:

Installation is carried out in the reverse order.

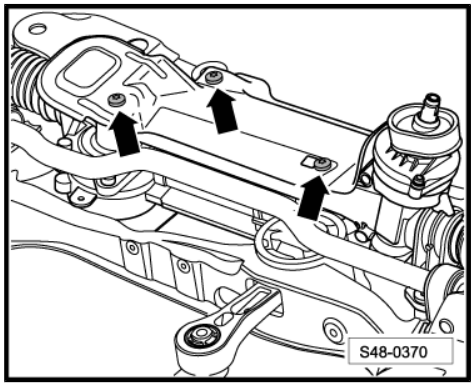
– Secure assembly carrier on engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with corresponding strap.
– Raise the assembly carrier under the vehicle body by approx. 11 cm.
– Attach the wiring harness for oil level and oil temperature sender - G266- (if present).
– Connect the electrical connections to the steering gear and attach.



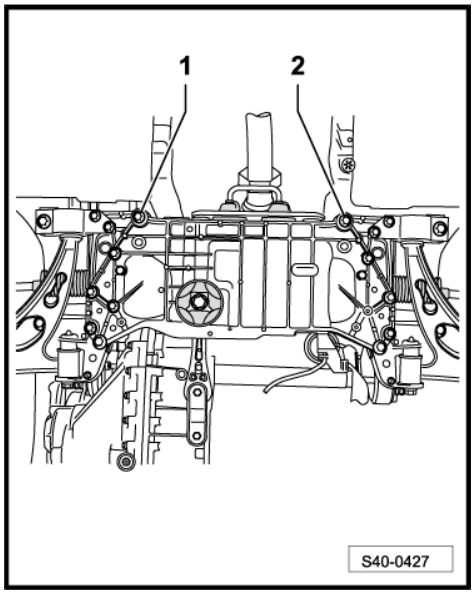
– Screw cable guide onto assembly carrier, if it was removed.



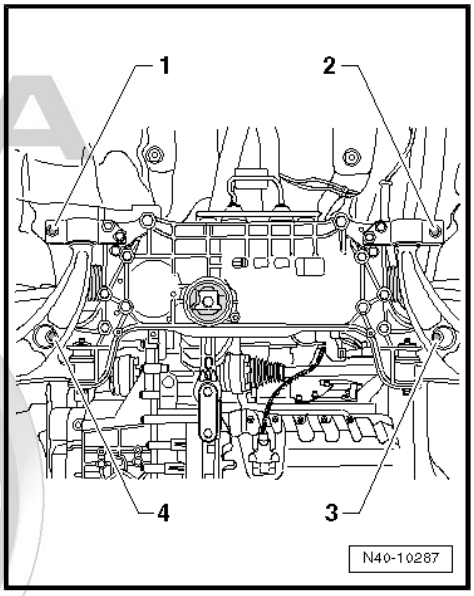
– Screw heat shield to steering gear -arrows-.
– Raise the assembly carrier in such a way that the fixing holes of the assembly carrier rest fully against the fixing devices - T10096- , while doing so pay attention to the electrical cables.



– Screw in new screws -1- and -2- and pre-tighten to 70 Nm.



– Unscrew the fixing device - T10096- at positions -1-, -2-, -3- and -4- in sequence, and replace them with new screws.



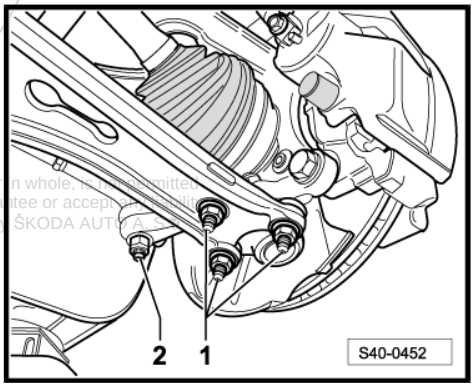
Note

- *Observe the different lengths of the fixing screws for assembly carrier.*
- *Make sure the steering gear boot is neither damaged nor twisted.*

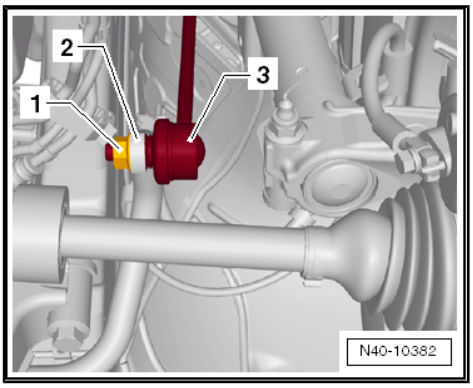
– Tighten all fixing screws of the assembly carrier to the specified tightening torque.

– Screw nuts for steering joint -1- onto front track control arm.

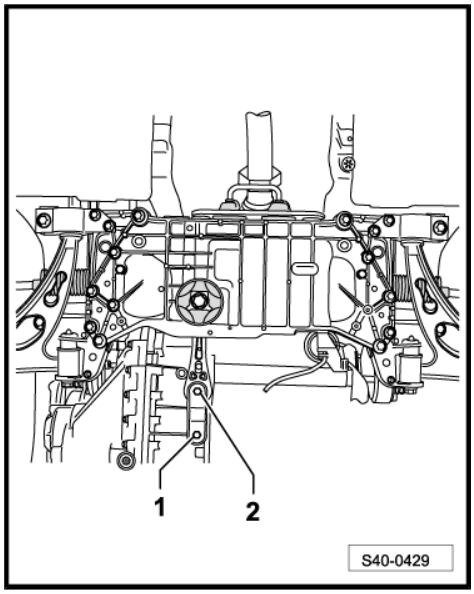
– Screw steering joint/track rod -2- onto wheel-bearing housing.



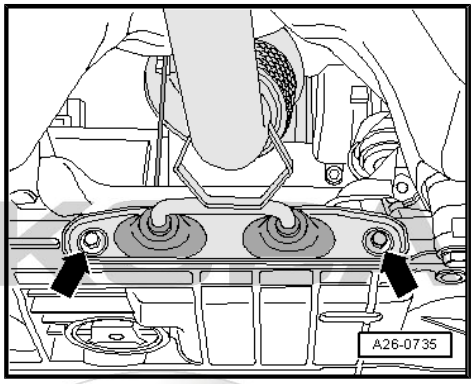
– Screw the coupling rods -3- onto the anti-roll bar -2-.



– Install the pendulum support at the gearbox, to do so screw on screws -1- and -2-.



– Screw bracket for exhaust system -arrows- onto assembly carrier.

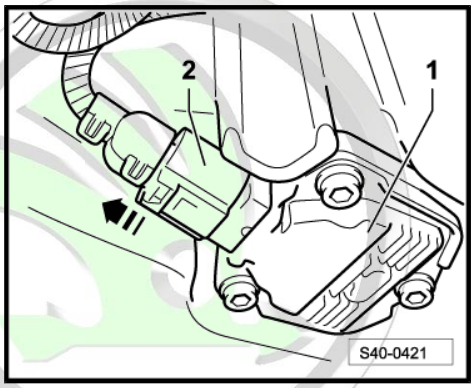


– Fit on plug -2- for oil level and oil temperature sender - G266- -1- by pressing against the -direction of the arrow-, if present.

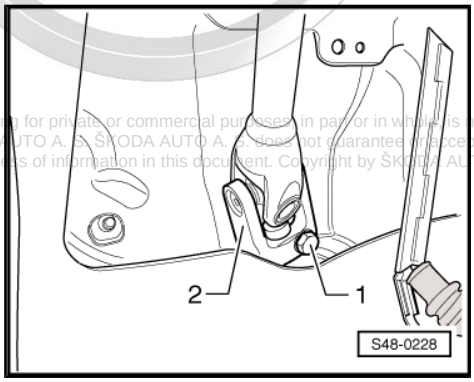
– For vehicles fitted with automatic headlight range control, install the front left vehicle level sensor - G78- , if the vehicle is fitted with this.
⇒ “2.13 Removing and installing front left vehicle level sensor G78 ”, page 54 .

– Install the noise insulation ⇒ Body Work; Rep. gr. 50 .

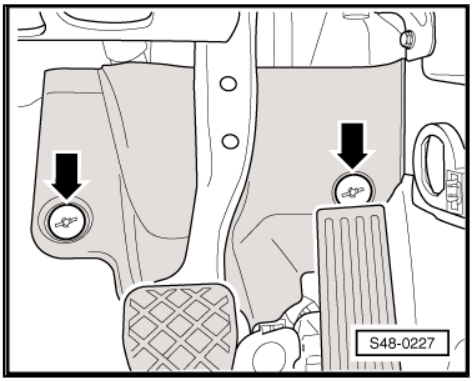
– Install front wheels.



– Fit the universal joint -2- on the shaft of the steering gear and screw on the screw -1-.



– Install footwell covering, to do so screw on the nuts -arrows-.



Note

It is necessary to perform an axle alignment in the event of:
⇒ “2.3 Axle alignment”, page 338

– Perform a test drive.
– Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment ⇒ “2.3 Axle alignment”, page 338 .

Tightening torques:

Assembly carrier to body ♦ Use new screws	70 Nm + 135°
Assembly carrier to console ♦ Use new screws	70 Nm + 90°
Track rod end to wheel-bearing housing ♦ Use new nuts! ♦ Counterhold the internal serration of the pivot pin	20 Nm + 90°
Coupling rod ♦ Use new nuts! ♦ Counterhold the internal serration of the pivot pin	65 Nm
Universal joint to steering gear ♦ Use new screw!	20 Nm + 90°
Coupling rod for front left vehicle level sensor - G78- to track control arm	9 Nm
Steering joint to track control arm ♦ Track control arm made of steel casting ♦ Track control arm made of steel sheet	 60 Nm 100 Nm
Wheel bolts	120 Nm
Pendulum support to gearbox ⇒ Engine; Rep. gr. 10	
Bracket for exhaust system to assembly carrier ⇒ Engine; Rep. gr. 26	

2.6 Removing and installing the assembly carrier - aluminium assembly carrier, RHD - vehicles with right-hand drive

Special tools and workshop equipment required

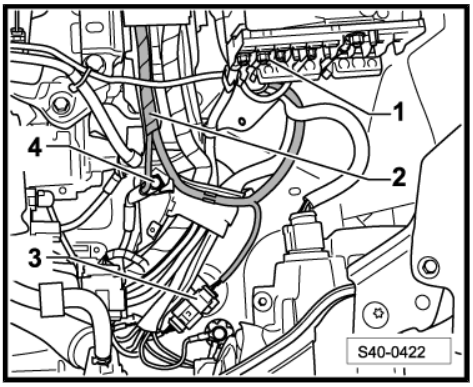
- Fixing device - T10096-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-
- Ball joint extractor - 3287A-

Removing:

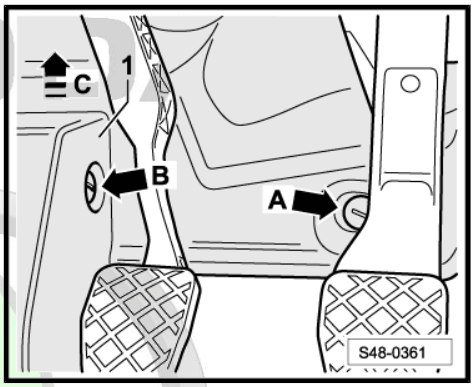
Note

On right-hand drive vehicles, the wiring harness is removed from the engine compartment at the same when removing the assembly carrier.

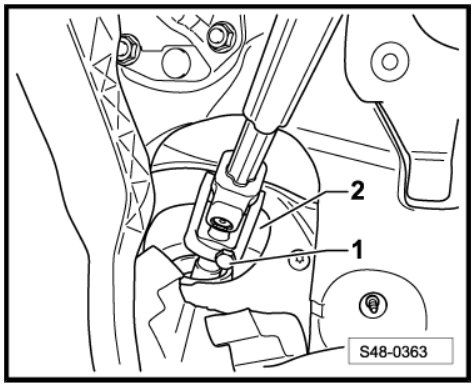
– Remove battery and battery tray ⇒ Electrical System; Rep. gr. 27 .
– Remove air filter and air guide with air mass meter ⇒ Engine; Rep. gr. 23 or ⇒ Engine; Rep. gr. 24 .
– Disconnect cable -1- from the E-box.
– Disconnect plug -3- for oil level and oil temperature sender - G266- , if present.
– Disconnect earth line -4-.
– Unclip wiring harness -2-.



– Remove the footwell covering, to do so unscrew the fixing nut -arrow A- and the expansion clamp -arrow B-.
– Take the expansion clamp of the covering out of the opening -arrow B-.
– Unclip the footwell covering in -direction of arrow C- and remove.



– Remove screw -1- and pull off the universal joint -2- from the steering gear.

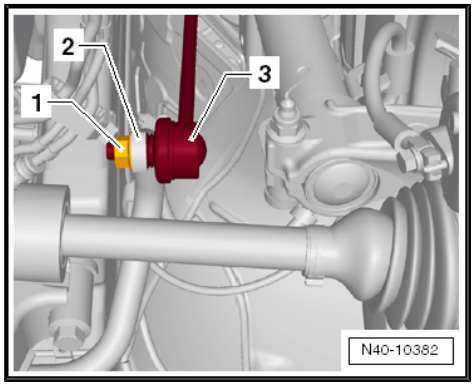


– Remove front wheels.

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

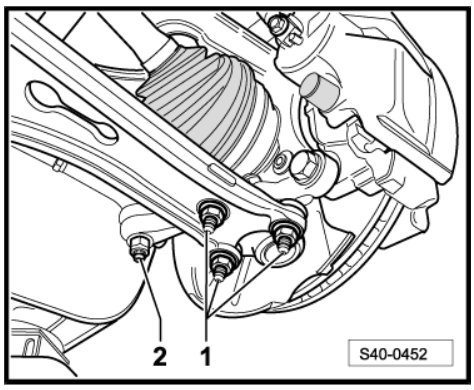
– For vehicles fitted with automatic headlight range control, remove the front left vehicle level sensor - G78- , if the vehicle is fitted with this
⇒ “2.13 Removing and installing front left vehicle level sensor G78 ”, page 54 .

– Remove the coupling rods -3- from the anti-roll bar -2- on both vehicle sides.



– Unscrew nuts for steering joint -1- on both sides.

– Loosen nut of track rod end -2- on both sides, but do not unscrew yet.

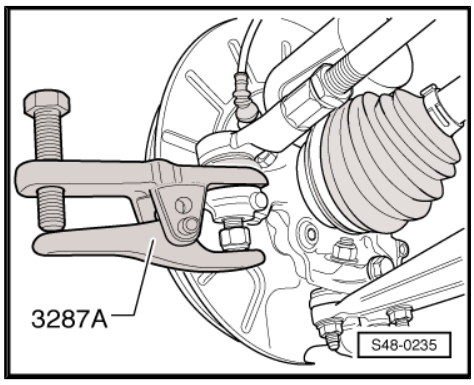


Note

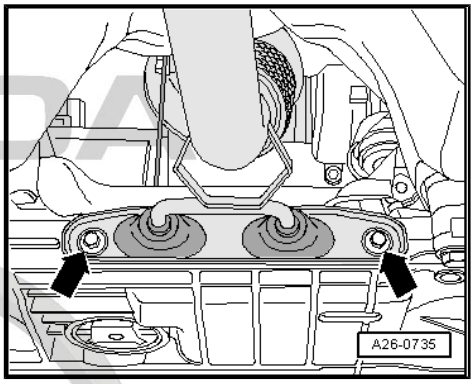
To protect the thread, screw the nut a couple of thread turns onto the stud of the track rod end.

– Remove the suspension link/track rod from the wheel-bearing housing with the ball joint extractor - 3287A- .

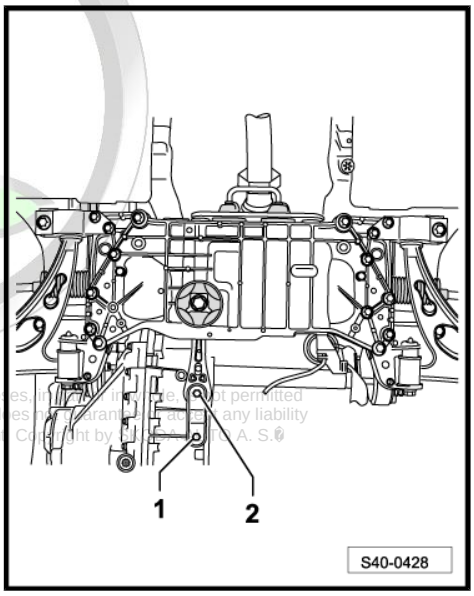
– Unscrew nut for suspension link/track rod.



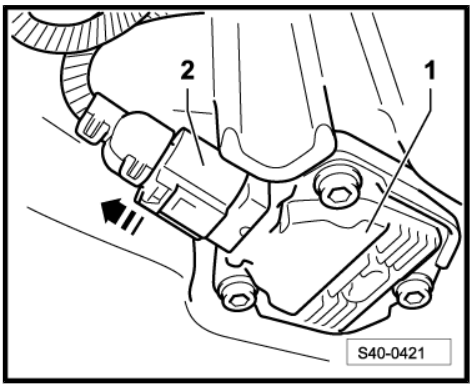
– Unbolt bracket for exhaust system -arrows- from assembly carrier.



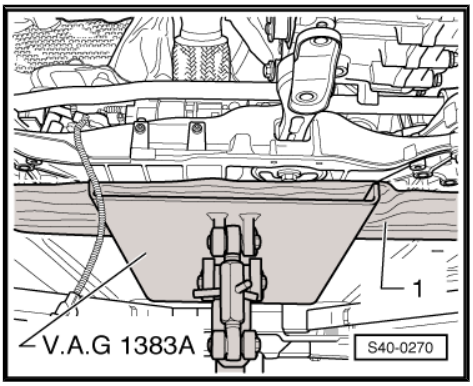
– Remove pendulum support from gearbox, to do so release screws -1- and -2-.



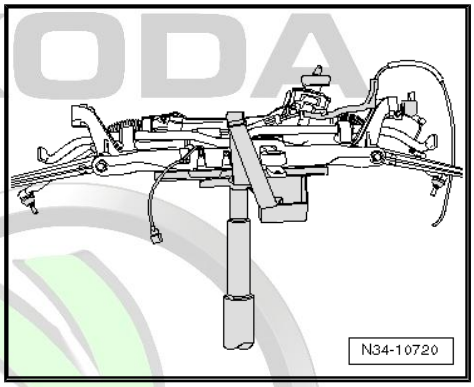
– Disconnect plug -2- for oil level and oil temperature sender -G266- -1-, if present.
– Fix the assembly carrier with consoles ⇒ “2.3 Fixing the assembly carrier and the console - aluminium assembly carrier”, page 11 .



– Put the engine/gearbox jack e. g. -V.A.G 1383A- or -VAS6931- underneath the assembly carrier.
– For example place a piece of wood -1- between engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- and the assembly carrier.



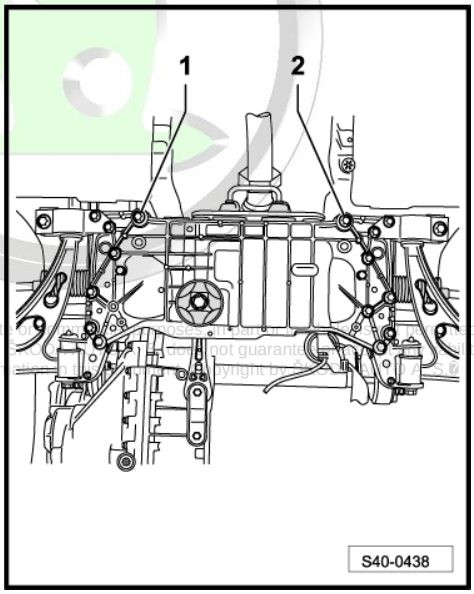
– Secure assembly carrier on engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with corresponding strap.



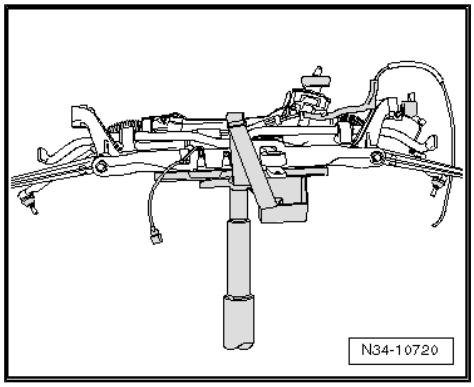
– Unscrew screws -1- and -2- and lower the assembly carrier. While doing so observe the electrical cables.

Installing:

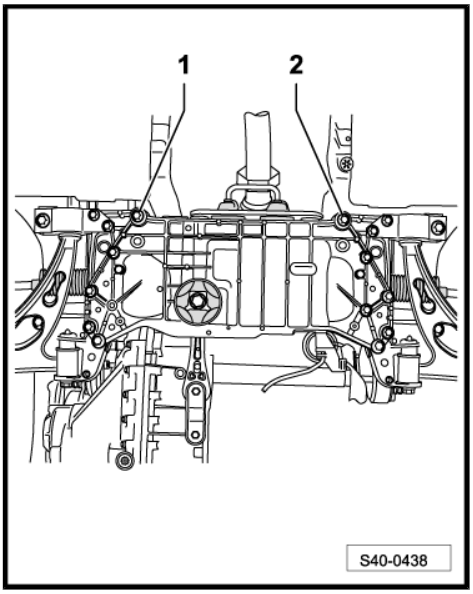
Installation is carried out in the reverse order.



– Secure assembly carrier on engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with corresponding strap.
– Raise the assembly carrier in such a way that the fixing holes of the assembly carrier rest fully against the fixing devices -T10096- , while doing so pay attention to the electrical cables.



– Screw in new screws -1- and -2- and pre-tighten to 70 Nm.

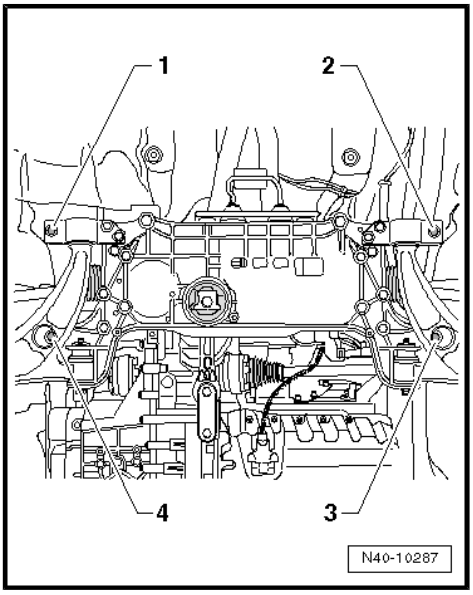


– Unscrew the fixing device - T10096- at positions -1-, -2-, -3- and -4- in sequence, and replace them with new screws.

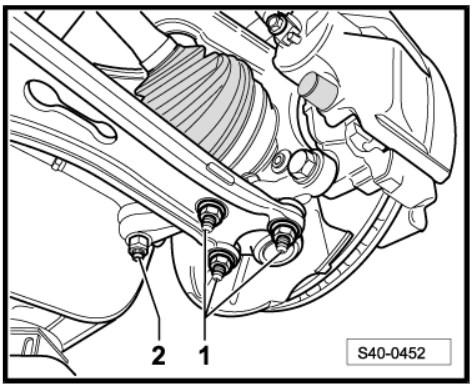
Note

- *Observe the different lengths of the fixing screws for assembly carrier.*
- *Make sure the steering gear boot is neither damaged nor twisted.*

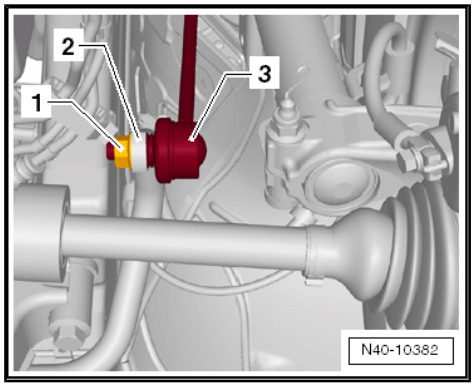
– Tighten all fixing screws of the assembly carrier to the specified tightening torque.



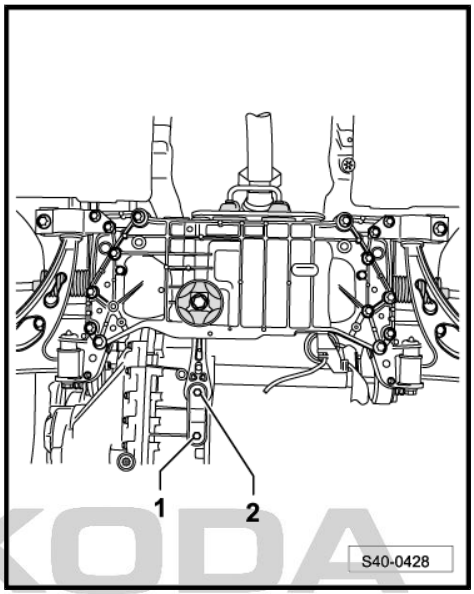
– Screw nuts for steering joint -1- onto front track control arm.
– Screw steering joint/track rod -2- onto wheel-bearing housing.



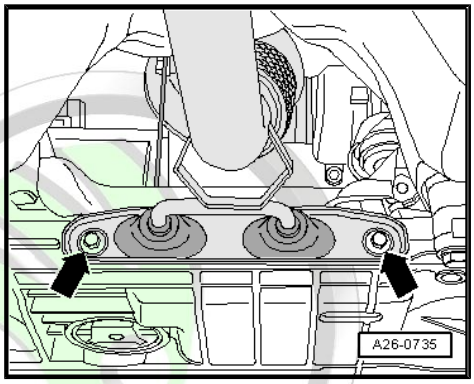
– Screw the coupling rods -3- onto the anti-roll bar.



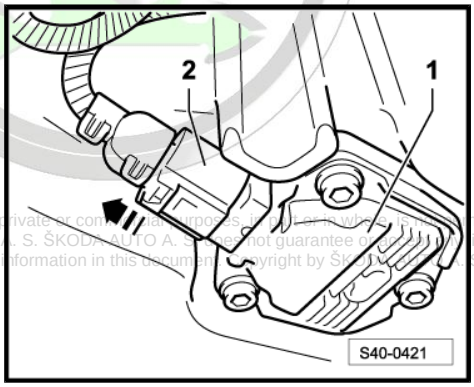
– Install the pendulum support at the gearbox, to do so screw on screws -1- and -2-.



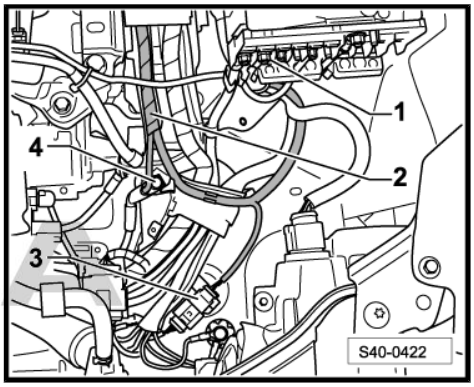
– Screw bracket for exhaust system -arrows- onto assembly carrier.



– Fit on plug -2- for oil level and oil temperature sender - G266- -1- by pressing against the -direction of the arrow-, if present.
– For vehicles fitted with automatic headlight range control, install the front left vehicle level sensor - G78- , if the vehicle is fitted with this.
– Install the noise insulation ⇒ Body Work; Rep. gr. 50 .
– Install front wheels.



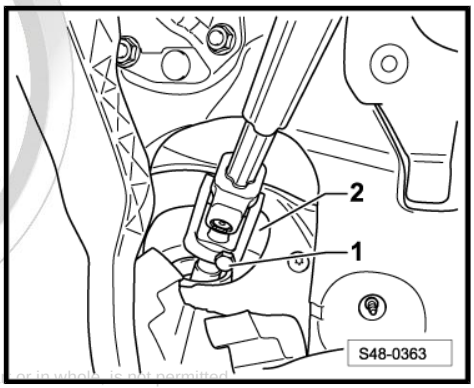
– Clip in wiring harness -2-.
– Connect earth strap -4-.
– Fit on plug -3- for oil level and oil temperature sender - G266- , if present.
– Connect the cable -1- to the E-box.
– Install air filter and air guide with air mass meter ⇒ Engine; Rep. gr. 23 or ⇒ Engine; Rep. gr. 24 .
– Install the battery tray and battery ⇒ Electrical System; Rep. gr. 27 .



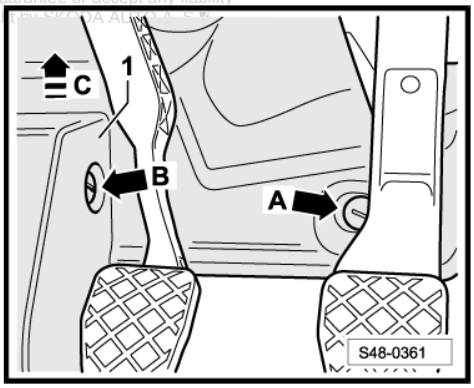
Note

If the battery earth strap is disconnected and connected, carry out certain additional operations ⇒ Electrical System; Rep. gr. 27 .

– Fit the universal joint -2- on the shaft of the steering gear and screw on the screw -1-.



– Position the footwell covering and clip in against the -direction of arrow C-.
– Insert the expansion clamp of the covering into the opening -arrow B-.
– Screw on the fixing nut -arrow A- and the expansion clamp -arrow B- of the footwell covering.



Note

It is necessary to perform an axle alignment in the event of:
⇒ "2.3 Axle alignment", page 338 .

– Perform a test drive.
– Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment ⇒ "2 Axle alignment", page 336 .

Tightening torques:

Assembly carrier to body ♦ Use new screws	70 Nm + 135°
Assembly carrier to console ♦ Use new screws	70 Nm + 90°
Track rod end to wheel-bearing housing ♦ Use new nuts! ♦ Counterhold the internal serration of the pivot pin	20 Nm + 90°
Coupling rod ♦ Use new nuts! ♦ Counterhold the internal serration of the pivot pin	65 Nm
Universal joint to steering gear ♦ Use new screw!	20 Nm + 90°
Coupling rod for front left vehicle level sensor - G78- to track control arm	9 Nm
Steering joint to track control arm made of steel sheet	100 Nm
Steering joint to track control arm made of steel casting	60 Nm
Wheel bolts	120 Nm
Pendulum support to gearbox ⇒ Engine; Rep. gr. 10	
Bracket for exhaust system to assembly carrier ⇒ Engine; Rep. gr. 26	

2.7 Removing and installing the anti-roll bar - aluminium assembly carrier, LHD - vehicles with left-hand drive

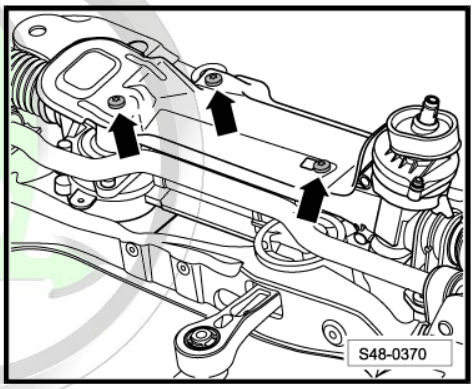
Special tools and workshop equipment required

- Fixing device - T10096 -
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-
- Ball joint extractor - 3287A-

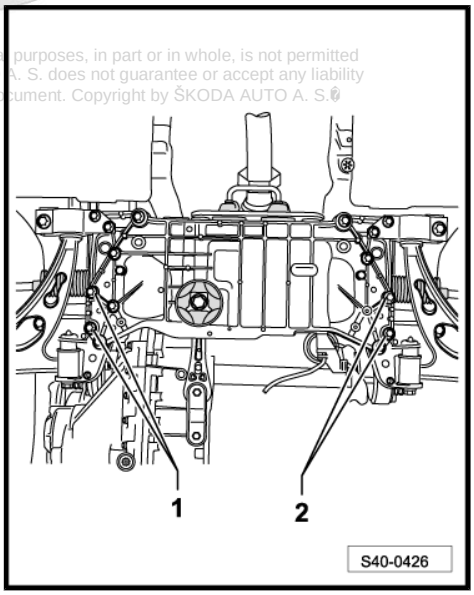
Removing:

– Lower the assembly carrier in the service position ⇒ “2.4 Lower the assembly carrier in the service position - aluminium assembly carrier”, page 14 .

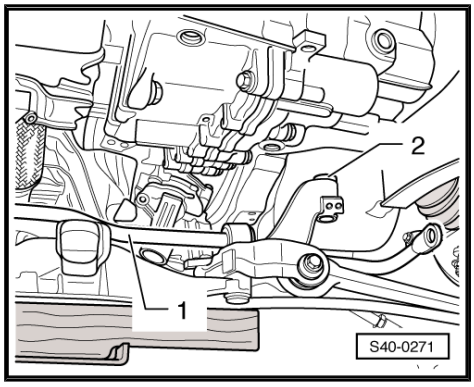
– Remove the heat shield -1- above the steering gear.



– Unscrew screws for anti-roll bar tabs -1- and -2- from assembly carrier.



– Lift the anti-roll bar -1- to the front via the console, -2- off the assembly carrier.



Installing:

Installation is carried out in the reverse order.

– Install assembly carrier
⇒ “2.4 Lower the assembly carrier in the service position - aluminium assembly carrier”, page 14 .

Note

- *Coat the sealing sleeve on the steering gear with lubricant, e.g. lubricating soap, before installing the steering gear.*
- *After positioning the steering gear on the drive shaft make sure the seal on the steering gear is not bent on the assembly plate and correctly seals the footwell opening. Otherwise this could cause water penetration and/or noise.*
- *Make sure all sealing surfaces are clean.*

– Perform a test drive.

– Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment
⇒ “2.3 Axle alignment”, page 338 .

Tightening torques:

Anti-roll bar to assembly carrier ♦ Use new screws	20 Nm + 90°
Coupling rod ♦ Use new nuts! ♦ Counterhold the internal serration of the pivot pin	65 Nm

2.8 Removing and installing the anti-roll bar - aluminium assembly carrier, RHD - vehicles with right-hand drive

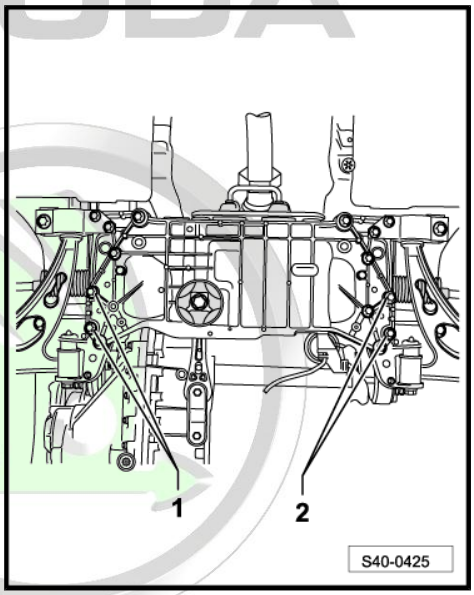
Special tools and workshop equipment required

- Fixing device - T10096 -
- Ball joint extractor - 3287A-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-

Removing:

– Remove assembly carrier
⇒ “2.6 Removing and installing the assembly carrier - aluminium assembly carrier, RHD - vehicles with right-hand drive”, page 31 .

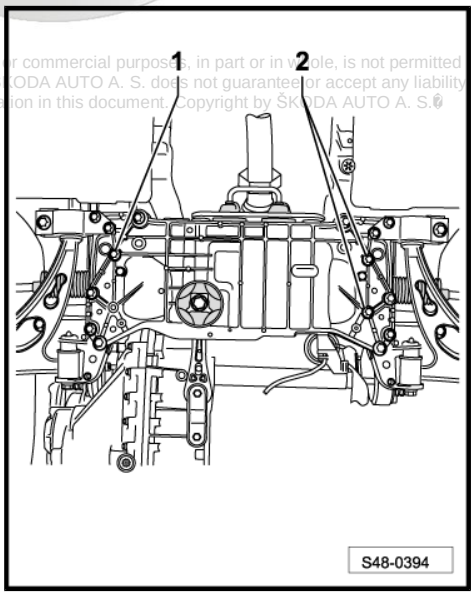
– Unscrew screws for anti-roll bar tabs -1- and -2- from assembly carrier.



– Unscrew screws for steering gear -1- and -2- from assembly carrier.

– Lift the steering gear out of the threaded bushings and partly push to the rear.

– Remove anti-roll bar from assembly carrier.

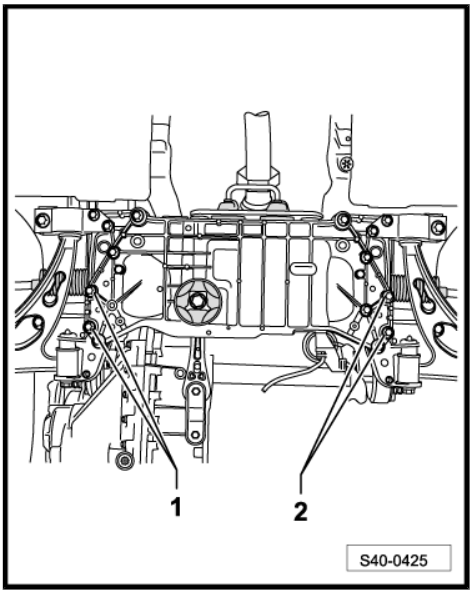


Installing:

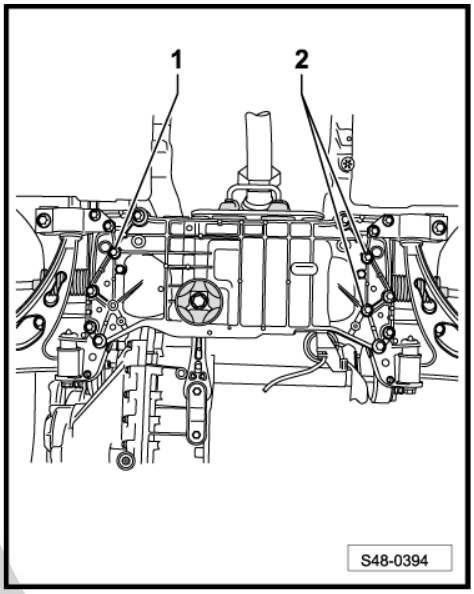
Installation is carried out in the reverse order.

– Position anti-roll bar on assembly carrier.

– Screw in new screws for anti-roll bar tabs -1- and -2- and tighten.
– Insert the steering gear above the threaded bushings into the assembly carrier.



– Tighten the screws for the steering gear -1- and -2- to the specified tightening torque.
– Install assembly carrier
⇒ “2.6 Removing and installing the assembly carrier - aluminium assembly carrier, RHD - vehicles with right-hand drive”, page 31 .
– Perform a test drive.
– Check the steering wheel position during the test drive.



Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment
⇒ “2.3 Axle alignment”, page 338 .

Tightening torques:

Anti-roll bar to assembly carrier ♦ Use new screws	20 Nm + 90°
Steering gear to assembly carrier ♦ Use new screws	50 Nm + 90°

2.9 Replacing rubber-metal bearing for pendulum support - aluminium assembly carrier

Special tools and workshop equipment required

- Ejection tool - T30082 (3372)-
- Assembly device - T10214-
- Assembly device - T10244-
- Pressure plate - MP3-406-
- Pressure plate - MP3-407-

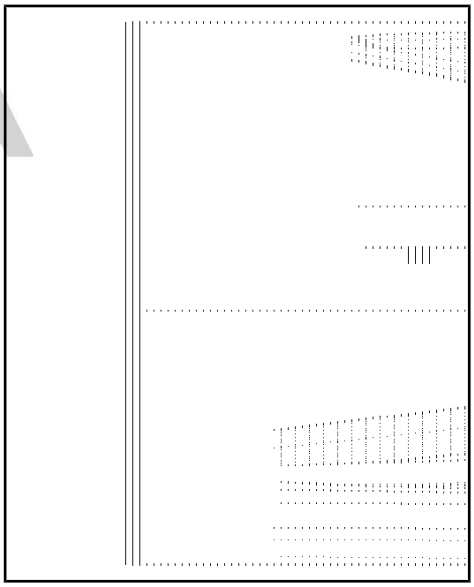
Pulling out the rubber-metal bearing

– Removing the assembly carrier, LHD - left-hand drive
⇒ “2.5 Removing and installing the assembly carrier - aluminium assembly carrier, LHD - vehicles with left-hand drive”, page 22 .

– Removing the assembly carrier, RHD - right-hand drive
⇒ “2.6 Removing and installing the assembly carrier - aluminium assembly carrier, RHD - vehicles with right-hand drive”, page 31 .

– Install assembly device - T10244- on the assembly carrier.

– Pull out both rubber-metal bearings as shown.

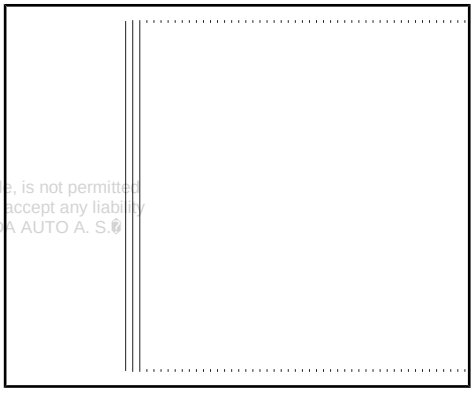


Note

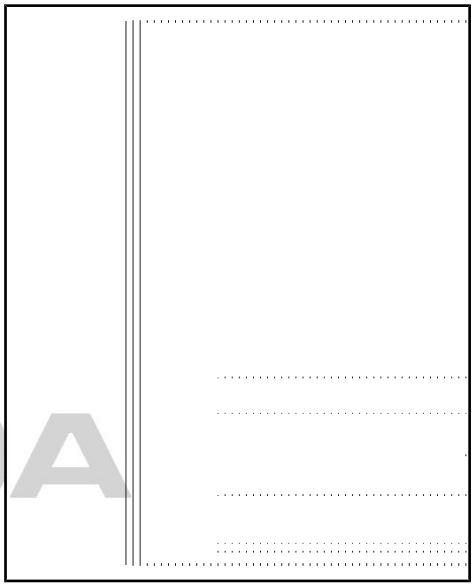
- *The flat side of the ejection tool - 3372/1 (T30082)- must point towards the insert -A- of the assembly device - T10244- otherwise the insert can be damaged.*
- *The pipe - T10244/3- has a larger and a smaller inner diameter. The assembly carrier must be positioned on the larger inner diameter of the pipe - T10244/3- .*

Inserting the rubber-metal bearing:

– Screw both rubber-metal bearings with the original screw, while doing so the cutouts -arrows- must be positioned exactly one above the other.



– Insert the screwed rubber-metal bearing into the pipe - T10214/2- with the screw head downwards.



1 - Thrust piece - T10214/3-

2 - Rubber-metal bearing

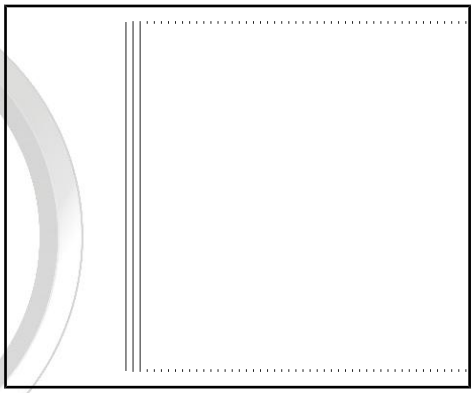
3 - Pipe section - T10214/2-

4 - Pipe section - T10214/1-

5 - Pressure plate - MP3-406-

6 - Pressure plate - MP3-407-

– Insert the rubber-metal bearing -1- until the dimension -a- is achieved.



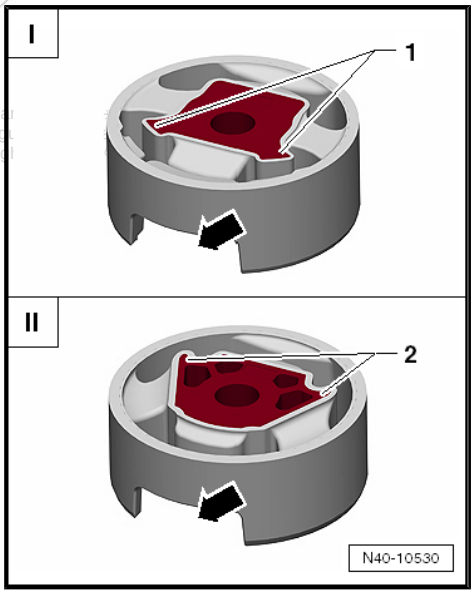
Dimension -a- = 2 - 3 mm.

Note

- *There are two different versions of rubber-metal bearings.*
- *Assignment ⇒ Electronic Catalogue of Original Parts*

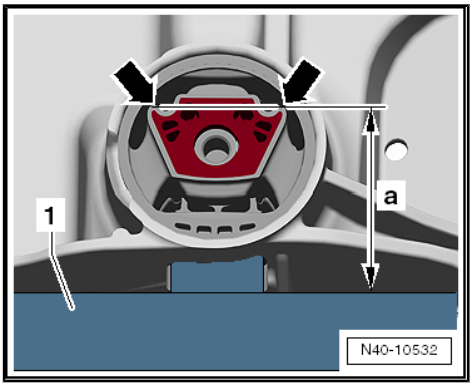
I - The edges of the inner core -1- point to the recess of the rubber-metal bearing.

II - The edges of the inner core -2- point away from the recess of the rubber-metal bearing.



– Align the pipe - T10214/2- with the pressed-in rubber-metal bearings in such a way that the edges of the inner core are positioned on an imaginary line parallel to the edge of the assembly device - T10244- -1- and the cutouts in the rubber-metal bearings point to the opening of the assembly carrier.

The distance -a- must be identical on the right and left so that the parallelism is assured.



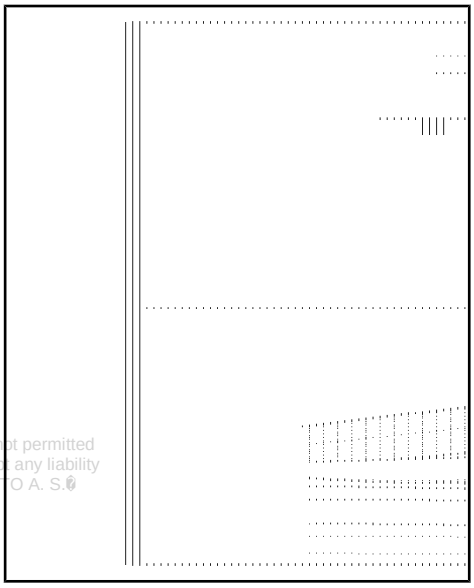
– Place the assembly carrier on the smaller inner diameter of the pipe - T10244/3- .

– Press in the bearing up to the stop so that a press force of 20 kN is reached.

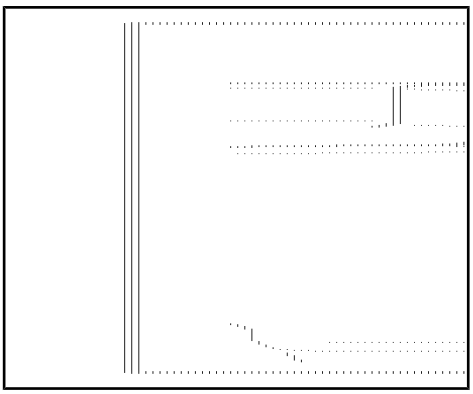
– Remove assembly device - T10244- from assembly carrier and check the seating of the pressed-in rubber-metal bearing.

Pressure plate - MP3-406 (VW 401)-

Pressure plate - MP3-407 (VW 402)-



- The outside diameter -1- of both rubber-metal bearings must protrude up to 2 mm beyond the edge in the area of the opening for the pendulum support.
- The cutouts of the rubber-metal bearing must be centered in the opening of the assembly carrier.
- A gap -arrow- between the rubber-metal bearings is allowed.



– Install assembly carrier.

– Perform a test drive.

– Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment
⇒ “2.3 Axle alignment”, page 338 .

2.10 Removing and installing track control arm with bracket - aluminium assembly carrier

Special tools and workshop equipment required

♦ Fixing device - T10096-

Removing:

– Remove wheel.

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

Vehicles with automatic headlight range control:

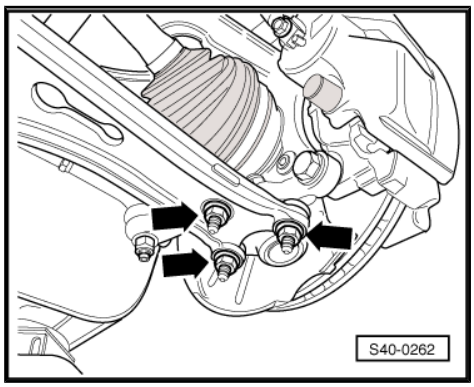
– Remove the coupling rod of the front left vehicle level sensor - G78- from the track control arm on the left vehicle side, if the vehicle is fitted with this
⇒ “2.13 Removing and installing front left vehicle level sensor G78 ”, page 54 .

Continued for all vehicles:

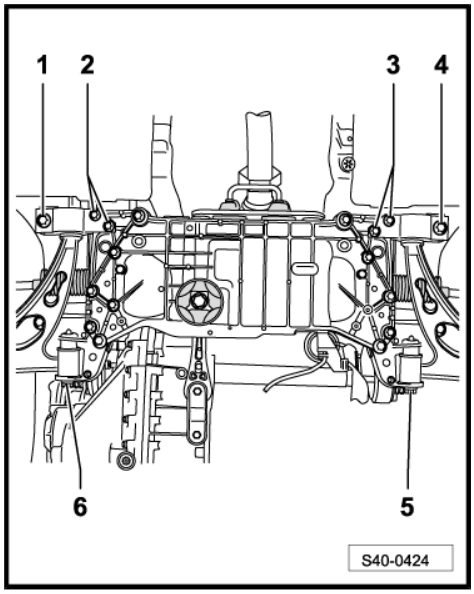
– Unscrew the nuts -arrows-.

– Pull the wheel-bearing housing with steering joint out of the track control arm.

– Fix position for the bracket
⇒ “2.3 Fixing the assembly carrier and the console - aluminium assembly carrier”, page 11 .



– Unscrew the screw -6- for the left vehicle side or the screw -5- for the right vehicle side.

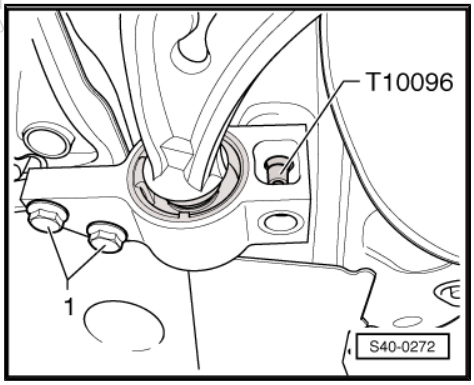


– Unscrew bolts -1-.

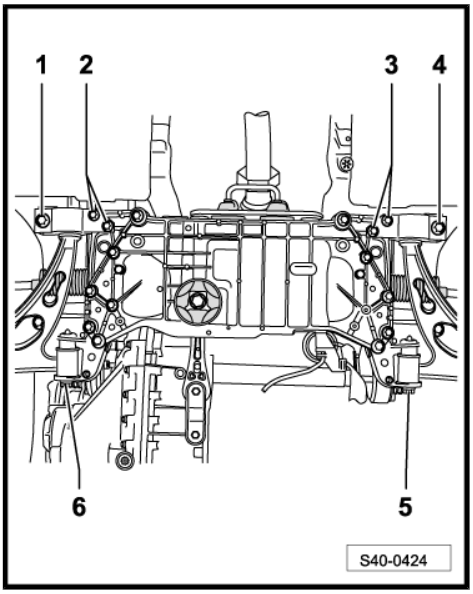
– Remove track control arm.

Installing:

– Insert the track control arm along with the bracket in the assembly carrier.

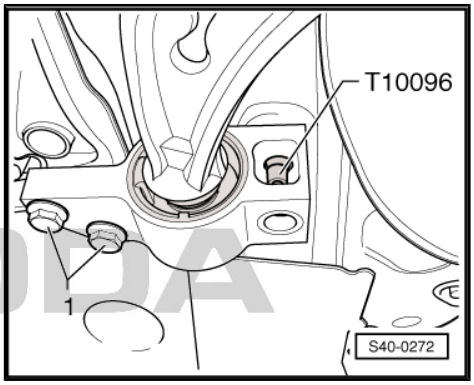


– Screw on new screw -5- for the right vehicle side or -6- for the left vehicle side, but do not tighten yet.

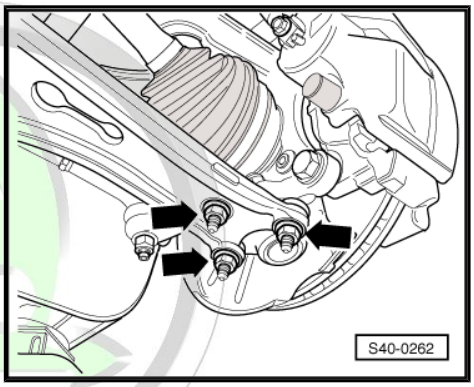


– Insert new screws -1- and tighten.

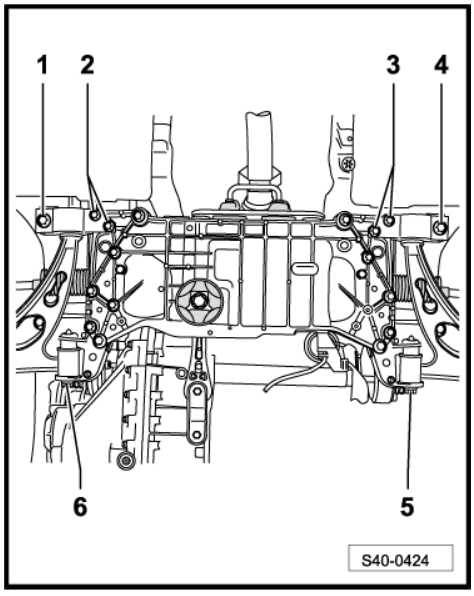
– Replace the fixing device - T10096- with a new screw and tighten.



– Tighten the track control arm to the steering joint -arrows-.



– Tighten screw -5- or -6- of track control arm to console (in the unladen weight position)
⇒ “1.2 Lift the wheel bearing in the unladen weight position”, page 2 .



Further installation occurs in reverse order.

– Install the noise insulation ⇒ Body Work; Rep. gr. 50 .

Note

Make sure the boot is neither damaged nor twisted.

– Perform a test drive.

– Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment
⇒ “2.3 Axle alignment”, page 338 .

Tightening torques:

Bracket to console ♦ Use new screws!	50 Nm + 90°
Mounting bracket on the body ♦ Use new screws	70 Nm + 135°
Steering joint to track control arm ♦ Track control arm made of steel casting ♦ Track control arm made of steel sheet	 60 Nm 100 Nm
Track control arm to console ♦ Use new screw! ♦ Tighten in unladen weight position!	70 Nm + 180°
Wheel bolts	120 Nm
Coupling rod for front left vehicle level sensor - G78- to track control arm	9 Nm

2.11 Replacing rubber-metal bearing for track control arm - aluminium assembly carrier

Special tools and workshop equipment required

- Pressure plate - MP3-407 (VW 402)-
- Pressure spindle - MP6-405 (VW 411)-
- Pipe section - T10219/1-
- Drift - T10219/2-

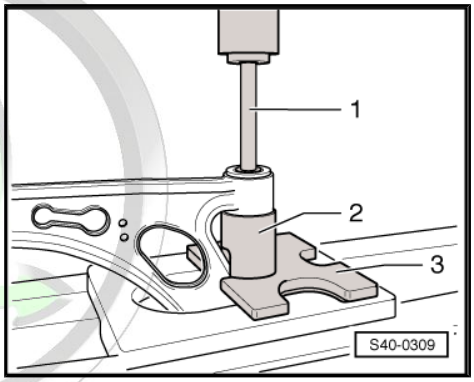
Pulling out the rubber-metal bearing:

– Press out rubber-metal bearing as shown.

1 - Pressure spindle - MP6-405 (VW 411)-

2 - Pipe section - T10219/1-

3 - Pressure plate - MP3-407 (VW 402)-



Inserting the rubber-metal bearing:

In order not to damage the rubber-metal bearing when inserting it, it must positioned at an angle. During the press-in procedure the rubber-metal bearing straightens.

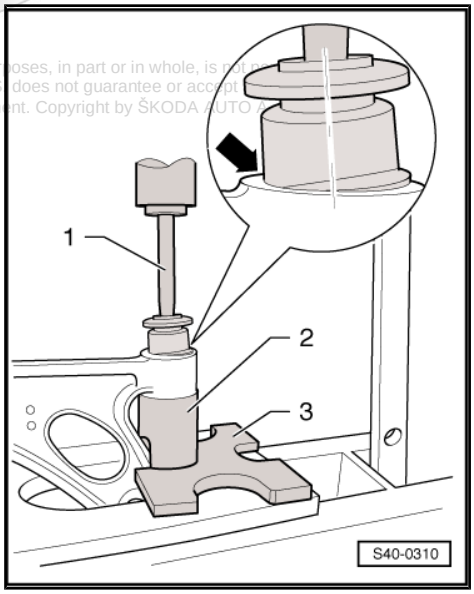
– Apply assembly sliding oil - G 294 421 A1- to the outside of the rubber-metal bearing.

– Position the rubber-metal bearing at an angle (in direction of track control arm), at the same time the lip -arrow- must slide into the hole (as shown in the figure).

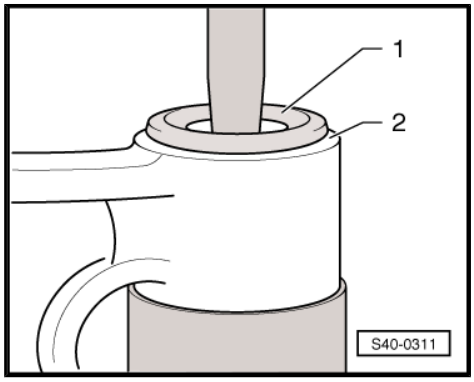
1 - Drift - T10219/2-

2 - Pipe section - T10219/1-

3 - Pressure plate - MP3-407 (VW 402)-

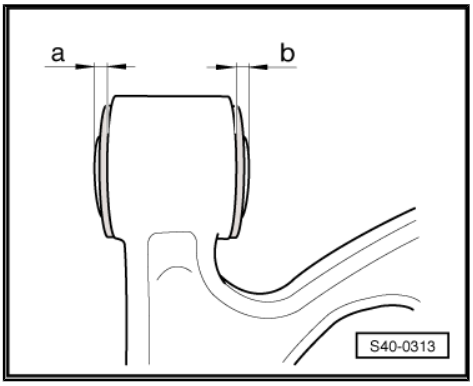


– Insert the core of the rubber-metal bearing -1- into the hole of the track control arm -2-.



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

If the dimensions -a- and -b- are not identical:



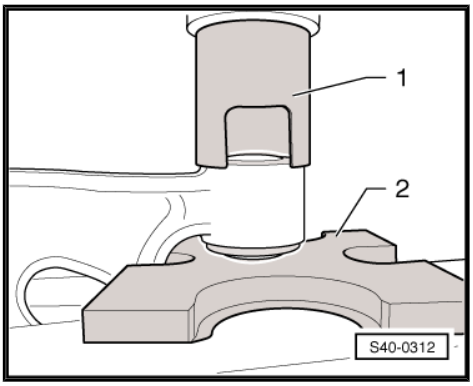
– Slightly pull back the bearing from the track control arm.

1 - Pipe section - T10219/1-

2 - Pressure plate - MP3-407 (VW 402)-

– Perform a test drive.

– Check the steering wheel position during the test drive.



Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment *⇒ "2.3 Axle alignment", page 338* *.*

2.12 Replacing bracket with bearing for track control arm - aluminium assembly carrier

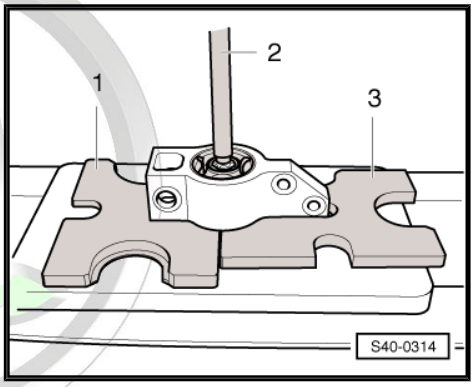
Press off track control arm from bracket:

Special tools and workshop equipment required

- Pressure plate - MP3-406 (VW 401)-
- Pressure plate - MP3-407 (VW 402)-
- Guide piece - MP3-454 (VW 439)-

Rubber-metal bearing only exists with the bracket as a spare part.

– Press off track control arm from rubber-metal bearing of bracket.



Note

During the press-out procedure, hold the track control arm.

1 - Pressure plate - MP3-406 (VW 401)-

2 - Guide piece - MP3-454 (VW 439)-

3 - Pressure plate - MP3-407 (VW 402)-

Press bracket with bearing onto track control arm:

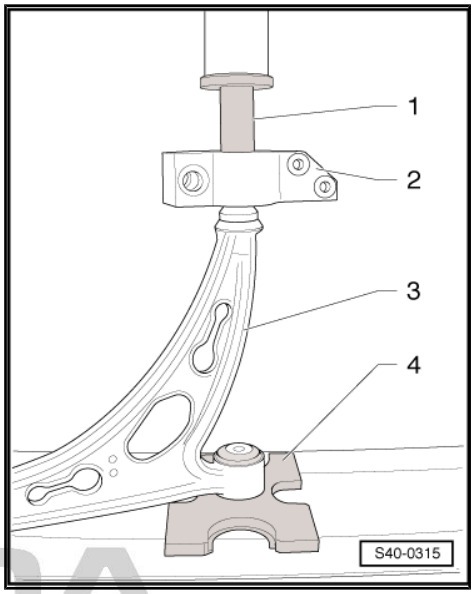
Special tools and workshop equipment required

- Pressure plate - MP3-406 (VW 401)-
- Pipe section - MP3-409 (VW 418 A)-

– Coat the track control arm hexagon with assembly sliding oil - G 294 421 A1- (1:20 diluted).
– Carefully press the bracket with rubber-metal bearing as far as the stop onto the track control arm.

1 - Pipe section - MP3-409 (VW 418 A)-
2 - Bracket with rubber-metal bearing
3 - Track control arm
4 - Pressure plate - MP3-406 (VW 401)-

– Perform a test drive.
– Check the steering wheel position during the test drive.



Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment *⇒ "2.3 Axle alignment", page 338* .

2.13 Removing and installing front left vehicle level sensor -G78-

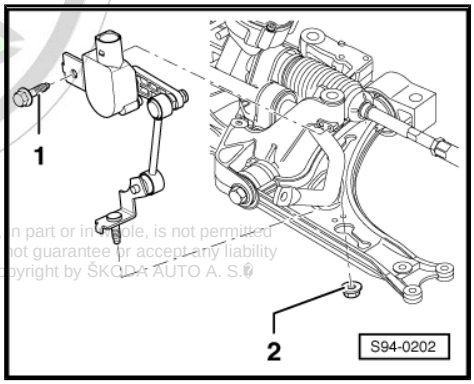
The sensor must not be mechanically adjusted.

Removing:

Note

The axle in the illustration is removed for purposes of clear presentation.

– Remove noise insulation ⇒ Engine; Rep. gr. 10 .
– Disconnect the plug connection on the front left vehicle level sensor.
– Unscrew nut -2- from track control arm.
– Release screw -1- from assembly carrier and remove sender.



Installing:

Installation is carried out in the reverse order.

After installing:

– Undertake the basic setting for beam range regulation ⇒ Vehicle diagnostic tester.

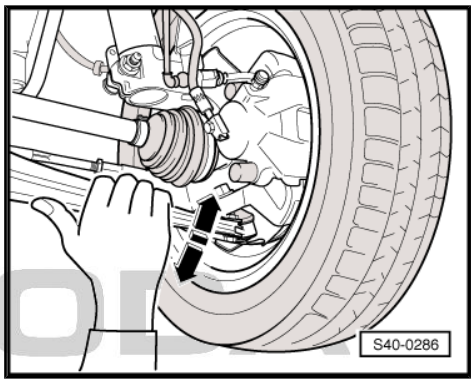
Tightening torques:

Front left vehicle level sensor - G78- at console	9 Nm
Front left vehicle level sensor - G78- at track control arm	9 Nm

2.14 Inspecting the suspension link

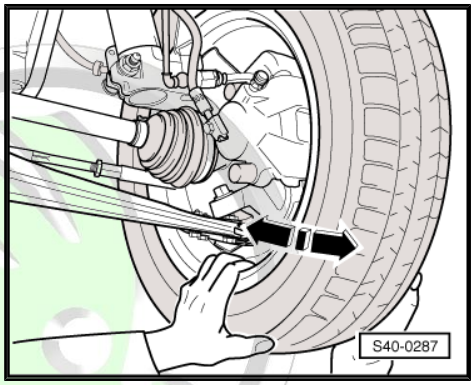
Inspecting axial play:

– Pull the track control arm down with force and push up again.



Inspecting radial play:

– Forcefully push the wheel at the bottom towards the inside and the outside.



Note

- *For these two tests no “play” may be felt or be visible.*
- *Observe the suspension link during the tests.*
- *Take into account possible wheel bearing play or “play” in top suspension strut bearing.*
- *Check rubber boot for damage and renew swivel joint if necessary.*

2.15 Removing and installing the suspension link

Special tools and workshop equipment required

- Ball joint extractor - 3287A-

Removing:

– Remove fixing screw of drive shaft at wheel hub
⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117 .

Note

- *If the fixing screw of the drive shaft is loosened more than 90°, the wheel bearings must not be loaded through the weight of the vehicle, i.e the vehicle must not stand on its wheels.*
- *If the wheel bearings are loaded through the weight of the vehicle when the fixing screw for the drive shaft is removed, the inner wheel bearing will be damaged. This shortens the life of the wheel bearing.*
- *If the vehicle should be positioned on its wheels or moved, pay attention to the following points: Install an outer joint instead of the drive shaft. Tighten the fixing screw (use the one which was previously removed) of the outer joint to the tightening torque of 120 Nm.*

– Remove wheel.

Vehicles with automatic headlight range control:

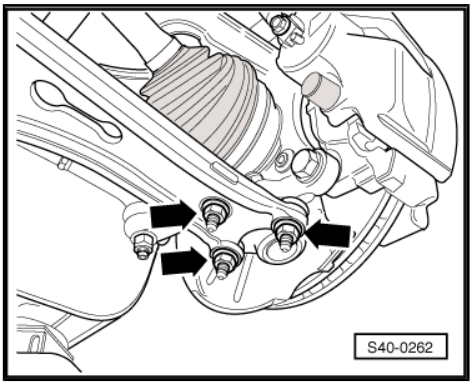
– Remove the coupling rod of the front left vehicle level sensor - G78- from the track control arm on the left vehicle side, if the vehicle is fitted with this
⇒ “2.13 Removing and installing front left vehicle level sensor G78 ”, page 54 .

Continued for all vehicles:

– Release fixing nuts -arrows-.

– Unhook steering joint out of the suspension link.

– Swivel out the wheel-bearing housing with the suspension strut and simultaneously pull the cardan shaft out of the wheel hub and attach it to the body e.g with a wire.

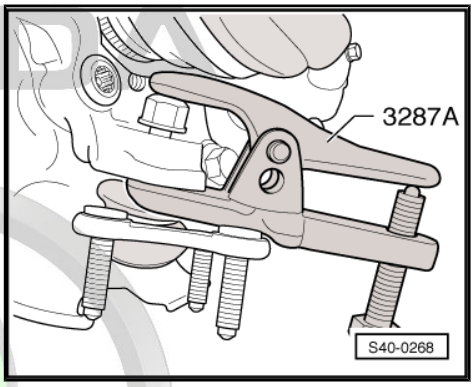


Note

If the cardan shaft cannot be removed from the wheel hub, it can be pressed out using the extractor
⇒ “6.2.2 Push the cardan shaft out of the wheel hub.”, page 144 .

– Slacken the nut of the steering joint and partially unscrew.

– Place the ball joint extractor - 3287A- as shown in the figure and push out the steering joint.

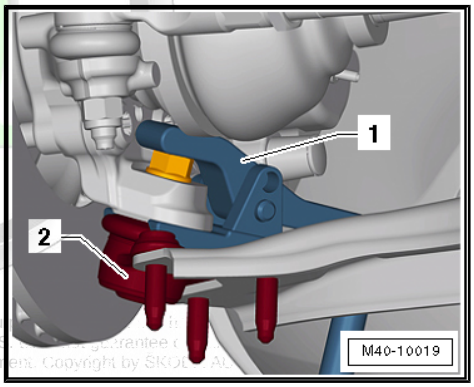


Note

To protect the thread, only partially unscrew the nut of the steering joint, in order to position the ball joint extractor - 3287A- .

– Using the ball joint extractor - 3287A- -1-, press the steering joint -2- out from the wheel-bearing housing.

– Remove the nut (counterhold at the pin of the steering joint using the Torx key) and remove the steering joint.



Installing:

– Insert suspension link in the wheel-house bearing. Note installation position
⇒ Fig. ““Fitting position according to the identification -arrow- on the suspension link”“ , page 7 .

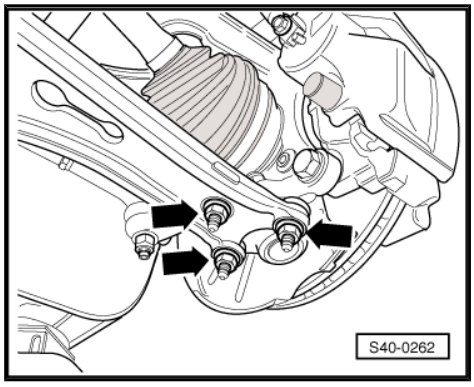
Note

Make sure the steering joint boot is neither damaged nor twisted.

– Install a new self-locking nut for te steering joint (counterhold at the pin of the steering joint using the Torx key) and tighten.

– Push CV joint into wheel bearing housing.

– Tighten the nuts -arrows-.



– On vehicles fitted with automatic headlight range control, install the coupling rod of the front left vehicle level sensor - G78- on the track control arm (left side), if the vehicle is fitted with this
⇒ “2.13 Removing and installing front left vehicle level sensor G78 ”, page 54 .

– Tighten fixing screw of drive shaft to wheel hub
⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117 .

Note

When tightening the fixing screw of the drive shaft, the wheel must be raised until it is fully off the ground, otherwise the wheel bearing can be damaged.

– Tighten wheel.

Tightening torques:

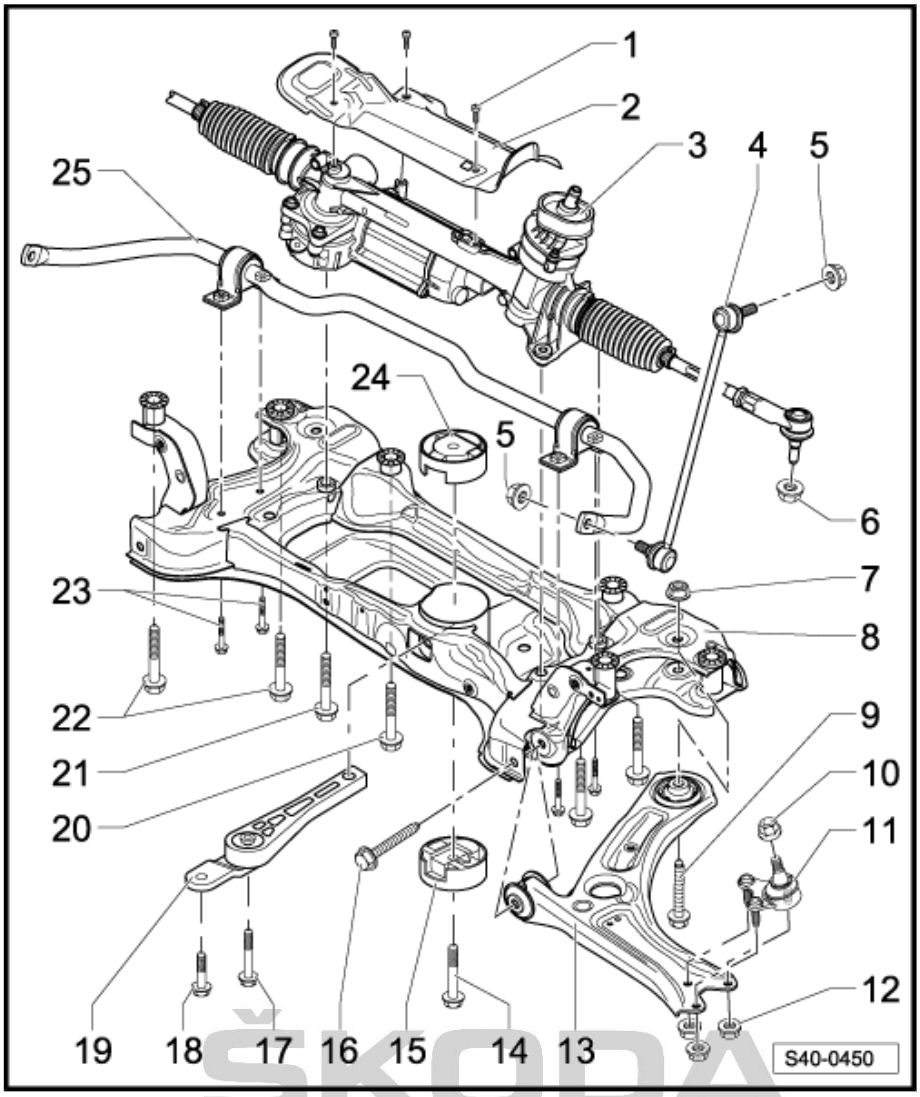
Steering joint to wheel-bearing housing ♦ Use new nuts	60 Nm
Steering joint to track control arm ♦ Track control arm made of steel casting ♦ Track control arm made of steel sheet	 60 Nm 100 Nm
Drive shaft to wheel hub with wheel bearing “twelve-sided bolt” ♦ Use new screw ♦ Vehicle must not be standing on its wheels for tightening the screw	70 Nm + 90°
Wheel bolts	120 Nm
Front left vehicle level sensor - G78- at console	9 Nm
Front left vehicle level sensor - G78- at track control arm	9 Nm

3 Front axle with assembly carrier made of steel sheet

3.1 Summary of components: Assembly carrier made of steel sheet, anti-roll bar, track control arm, LHD - vehicles with left-hand drive

Note

- *Welding and straightening work is not allowed on the bearing and wheel control components of the wheel suspension.*
- *Self-locking nuts must always be replaced.*
- *Always replace corroded screws/nuts.*



1 - Screw

- ❑ 6 Nm

2 - Protection plate

3 - Power-steering gear

- ❑ Summary of components ⇒ “3.2 Summary of components for electro-mechanical steering gear LHD - assembly carrier made of steel sheet”, page 384

4 - Coupling rod

- ❑ connects anti-roll bar with suspension strut

5 - Nut

- ❑ 65 Nm

6 - Nut

- ❑ replace after each removal
- ❑ 20 Nm + 90°

7 - Nut

- ❑ replace after each removal
- ❑ when loosening or tightening the screw ⇒ Item 9 (page 61) , counterhold with wrench
- ❑ 70 Nm + 180°

8 - Assembly carrier

- ❑ Welded part made of steel sheet
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

9 - Screw

- ❑ M12 x 1.5 x 80
- ❑ replace after each removal
- ❑ Counterhold nut ⇒ Item 7 (page 61) with wrench when loosening or tightening
- ❑ 70 Nm + 180°

10 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 60 Nm

11 - Steering joint

- ❑ check ⇒ “2.14 Inspecting the suspension link”, page 56
- ❑ removing and installing ⇒ “2.15 Removing and installing the suspension link”, page 56
- ❑ also replace the axle link in the event of damage of the steering joint
- ❑ observe left/right version ⇒ page 63

12 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 100 Nm

13 - Track control arm

- ❑ also replace the axle link in the event of damage of the steering joint
- ❑ removing and installing
  ⇒ “3.9 Removing and installing the track control arm - assembly carrier made of steel sheet”, page 99
- ❑ Steel sheet version
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

14 - Screw

- ❑ M14 x 1.5 x 70
- ❑ first tighten when the pendulum support is screwed to the gearbox
- ❑ replace after each removal
- ❑ 100 Nm + 90°

15 - Bottom rubber-metal bearing for pendulum support

- ❑ different versions
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

16 - Screw

- ❑ M12 x 1.5 x 90
- ❑ replace after each removal
- ❑ 70 Nm + 180°

17 - Screw

- ❑ M10 x 75
- ❑ replace after each removal
- ❑ Tightening torque ⇒ Engine; Rep. gr. 10

18 - Screw

- ❑ M10 x 35
- ❑ replace after each removal
- ❑ Tightening torque ⇒ Engine; Rep. gr. 10

19 - Pendulum support

- ❑ screw first to the gearbox then to the assembly carrier
- ❑ different versions
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

20 - Screw

- ❑ M12 x 100
- ❑ replace after each removal
- ❑ 90 Nm + 180°

21 - Screw

- ❑ M10 x 76
- ❑ replace after each removal
- ❑ 50 Nm + 90°

22 - Screw

- ❑ M12 x 92
- ❑ replace after each removal
- ❑ 90 Nm + 180°

23 - Screw

- ❑ M8 x 75
- ❑ replace after each removal
- ❑ 20 Nm + 90°

24 - Top rubber-metal bearing for pendulum support

- ❑ different versions
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

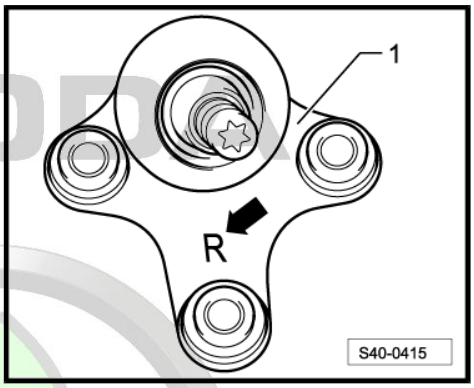
25 - Anti-roll bar

- ❑ different versions
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

Fitting position according to the identification -arrow- on the steering joint

R - means right

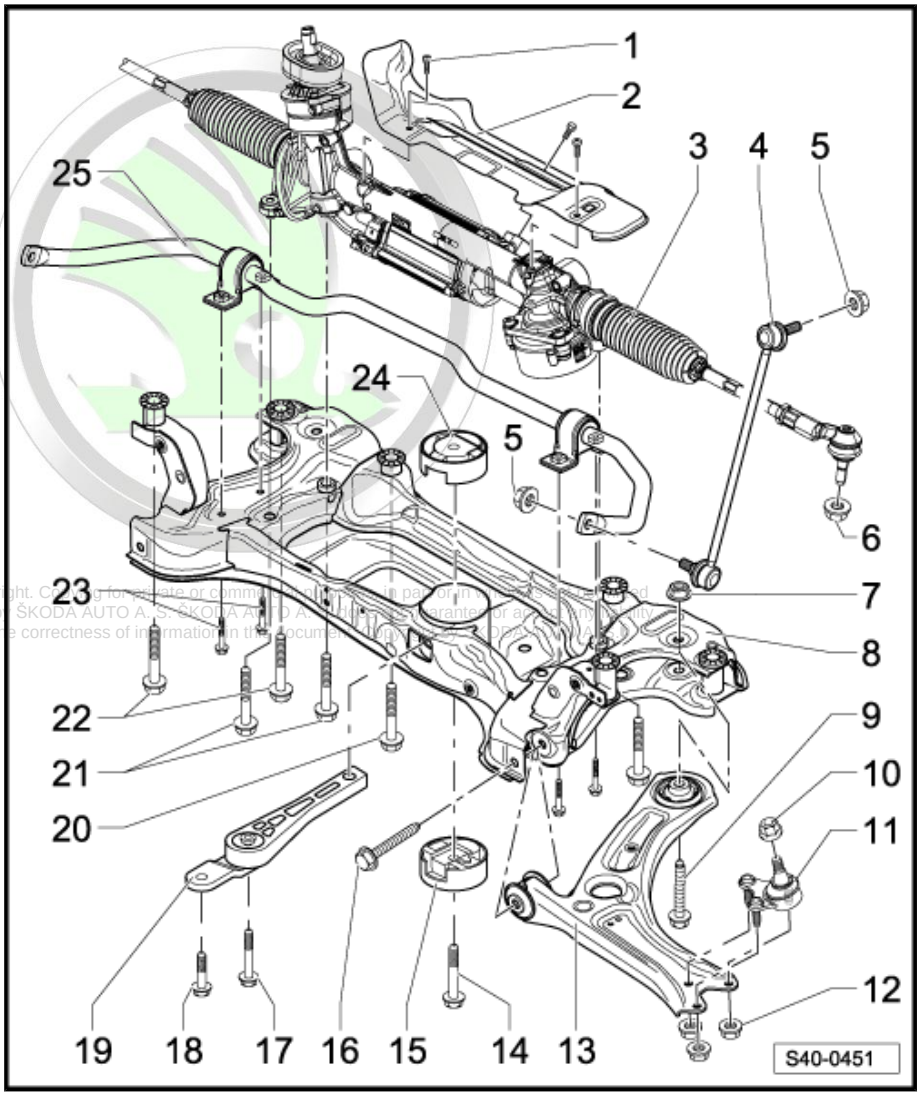
L - means left



3.2 Summary of components: Assembly carrier made of steel sheet, anti-roll bar, track control arm, RHD - vehicles with right-hand drive

Note

- *Welding and straightening work is not allowed on the bearing and wheel control components of the wheel suspension.*
- *Self-locking nuts must always be replaced.*
- *Always replace corroded screws/nuts.*



1 - Screw
- ❑ 6 Nm

2 - Protection plate

3 - Power-steering gear
- ❑ Summary of components ⇒ "4.2 Summary of components for electro-mechanical steering gear RHD - assembly carrier made of steel sheet", page 392

4 - Coupling rod
- ❑ connects anti-roll bar with suspension strut

5 - Nut
- ❑ 65 Nm

6 - Nut
- ❑ replace after each removal
- ❑ 20 Nm + 90°

7 - Nut
- ❑ replace after each removal
- ❑ when loosening or tightening the screw ⇒ Item 9 (page 64) , counterhold with wrench
- ❑ 70 Nm + 180°

8 - Assembly carrier
- ❑ Welded part made of steel sheet
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

9 - Screw
- ❑ replace after each removal
- ❑ Counterhold nut ⇒ Item 7 (page 64) with wrench when loosening or tightening
- ❑ 70 Nm + 180°

10 - Nut
- ❑ self-locking
- ❑ replace after each removal

- ❑ 60 Nm

11 - Steering joint

- ❑ check ⇒ “2.14 Inspecting the suspension link”, page 56
- ❑ removing and installing ⇒ “2.15 Removing and installing the suspension link”, page 56
- ❑ also replace the axle link in the event of damage of the steering joint
- ❑ observe left/right version ⇒ page 7

12 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 100 Nm

13 - Track control arm

- ❑ also replace the axle link in the event of damage of the steering joint
- ❑ Steel sheet version
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

14 - Screw

- ❑ M14 x 1.5 x 70
- ❑ first tighten when the pendulum support is screwed to the gearbox
- ❑ replace after each removal
- ❑ 100 Nm + 90°

15 - Bottom rubber-metal bearing for pendulum support

- ❑ different versions
- ❑ Renew. ⇒ “3.11 Repairing assembly carrier”, page 107 .
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

16 - Screw

- ❑ M12 x 1.5 x 90
- ❑ replace after each removal
- ❑ 70 Nm + 180°

17 - Screw

- ❑ M10 x 75
- ❑ replace after each removal
- ❑ Tightening torque ⇒ Engine; Rep. gr. 10

18 - Screw

- ❑ M10 x 35
- ❑ replace after each removal
- ❑ Tightening torque ⇒ Engine; Rep. gr. 10

19 - Pendulum support

- ❑ screw first to the gearbox then to the assembly carrier
- ❑ different versions
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

20 - Screw

- ❑ M12 x 100
- ❑ replace after each removal
- ❑ 90 Nm + 180°

21 - Screw

- ❑ M10 x 76
- ❑ replace after each removal
- ❑ 50 Nm + 90°

22 - Screw

- ❑ replace after each removal
- ❑ 90 Nm + 180°

23 - Screw

- ❑ M8 x 75
- ❑ replace after each removal
- ❑ 20 Nm + 90°

24 - Top rubber-metal bearing for pendulum support

- ❑ different versions
- ❑ Renew. ⇒ “3.11 Repairing assembly carrier”, page 107 .
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

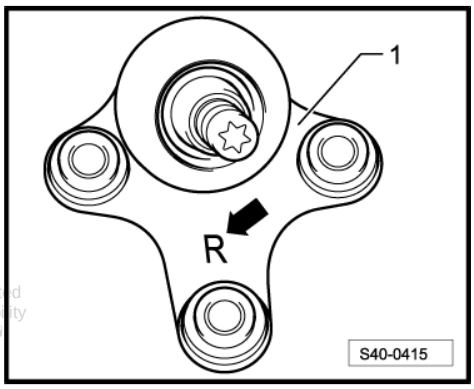
25 - Anti-roll bar

- ❑ different versions
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

Fitting position according to the identification -arrow- on the steering joint

R - means right

L - means left



3.3 Fix the assembly carrier - assembly carrier made of steel sheet

Special tools and workshop equipment required

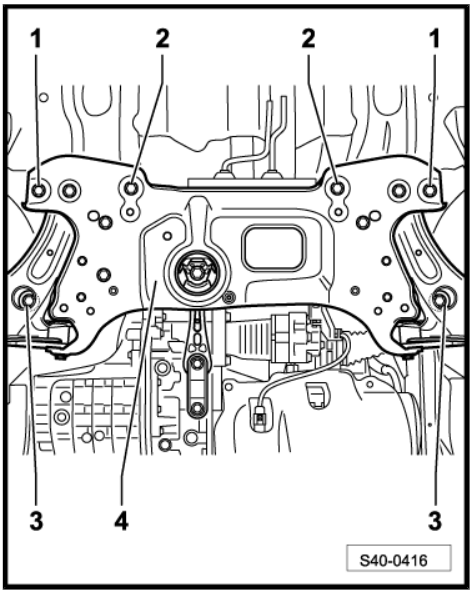
- ♦ Fixing device - T10096- (smaller diameter)
- ♦ Fixing device - T10452- (larger diameter)
- ♦ Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-

Fixing:

In order to fix the assembly carrier, the fixing devices must be successively screwed into the following positions:

Fixing devices - T10096- (smaller diameter) in positions -2-

Fixing devices - T10452- (larger diameter) in positions -3-



Note

The locating pin - T10096- and - T10452- must only be tightened to maximum 20 Nm as otherwise the fixing bolt thread becomes damaged.

- Successively screw out the fixing screws of the assembly carrier/body -2- and replace on both sides with the fixing devices - T10096- (smaller diameter) and tighten to 20 Nm.
- Support the assembly carrier with engine/gearbox jack e.g. - V.A.G 1383A- or -VAS6931- .
- Successively screw out the fixing screws of the assembly carrier/body -3- and replace on both sides with the fixing devices - T10452- (larger diameter) and tighten to 20 Nm.

The position of the front axle is now fixed.

If it is not possible to insert the fixing devices - T10096- or - T10452- into the corresponding openings of the assembly carrier, the following measures must be carried out:

- Prepare the inlet openings in the lower area of the assembly carrier e.g. with a file so that the fixing devices - T10096- or - T10452- can be inserted into the openings.
- Treat prepared openings to protect against corrosion, e.g. with Zinc spray - D 007 500 04- .

Release:

Releasing is carried out in the reverse order.

- Successively replace the fixing devices - T10096- and - T10452- with new screws.
- Tighten screws to corresponding tightening torque ⇒ page 68 .

Note

It is necessary to perform an axle alignment in the event of:
⇒ "2.3 Axle alignment", page 338

- Perform a test drive.
- Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment *⇒ "2.3 Axle alignment", page 338* .

Tightening torques:

Assembly carrier to body ♦ Use new screws!	90 Nm + 180°
Wheel bolts	120 Nm

3.4 Lower the assembly carrier in the service position - assembly carrier made of steel sheet

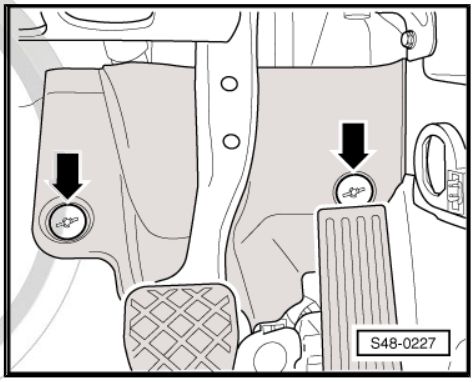
Special tools and workshop equipment required

- Fixing device - T10096- (smaller diameter)
- Fixing device - T10452- (larger diameter)
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-

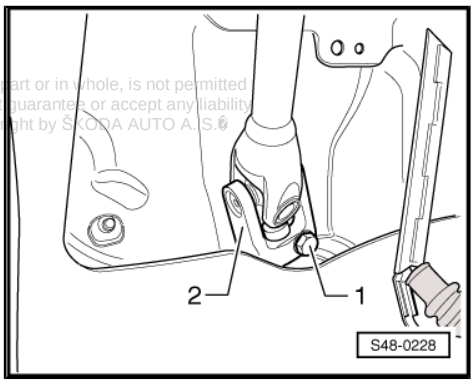
Lower the assembly carrier in the service position:

Vehicles with left-hand drive:

– Remove footwell covering, to do so unscrew the nuts -arrows-.

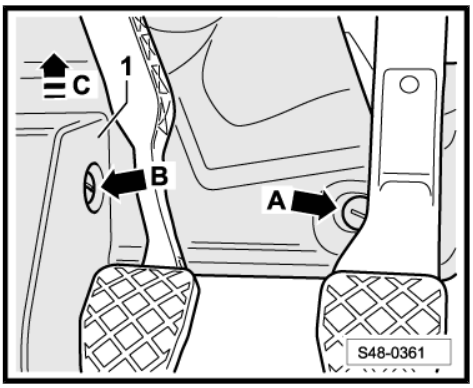


– Remove screw -1- and pull off the universal joint -2- from the steering gear.

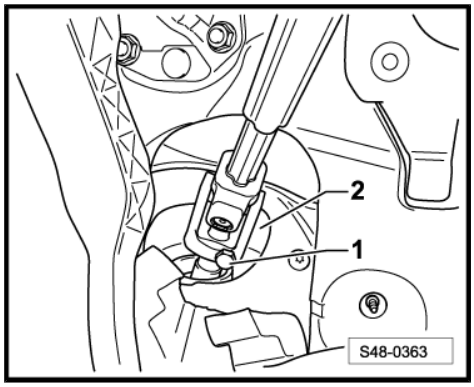


Vehicles with right hand drive:

– Unscrew the fixing nut -arrow A- and the expansion clamp -arrow B- of the footwell covering.
– Take the expansion clamp of the covering out of the opening -arrow B-.
– Unclip the footwell covering in -direction of arrow C- and remove.



– Remove screw -1- and pull off the universal joint -2- from the steering gear.

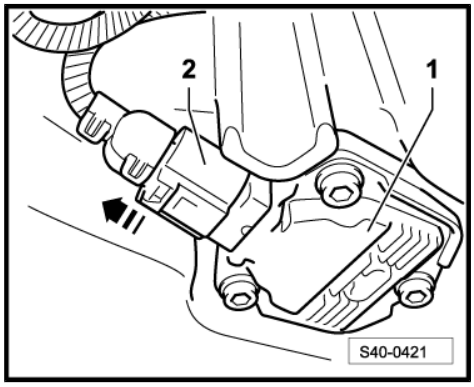


Continued for all vehicles:

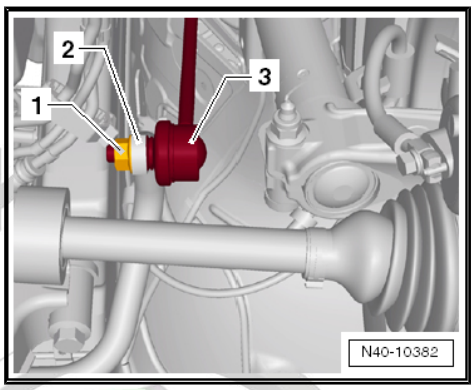
– Remove front wheels.

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

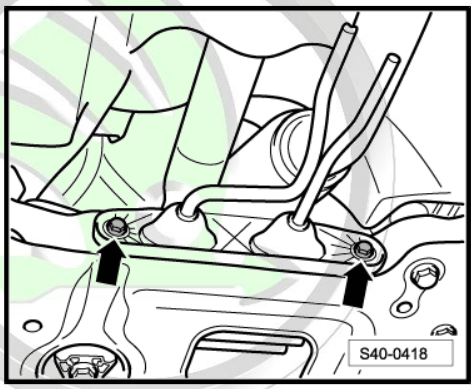
– Disconnect plug -2- for oil level and oil temperature sender -G266- -1-, if present.



– Remove the coupling rods -3- from the anti-roll bar -2- on both vehicle sides.

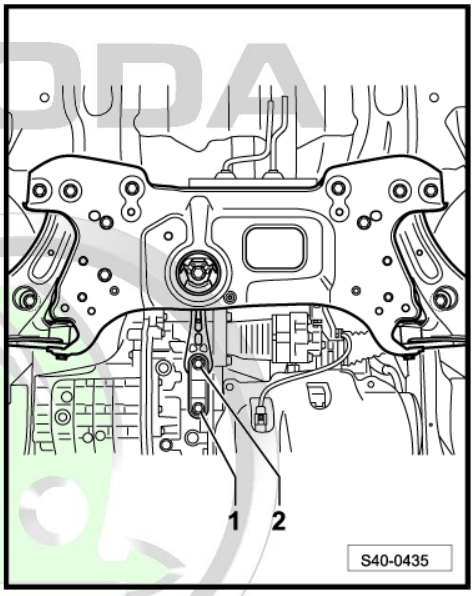


– Unbolt bracket for exhaust system -arrows- from assembly carrier.



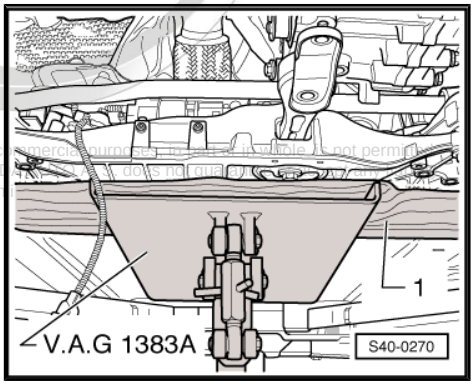
– Remove pendulum support from gearbox, to do so release screws -1- and -2-.

– Fix the assembly carrier
⇒ “3.3 Fix the assembly carrier - assembly carrier made of steel sheet”, page 66 .

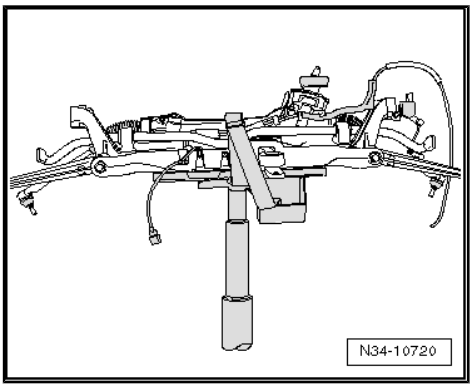


– Put the engine/gearbox jack e. g. -V.A.G 1383A- or -VAS6931- underneath the assembly carrier.

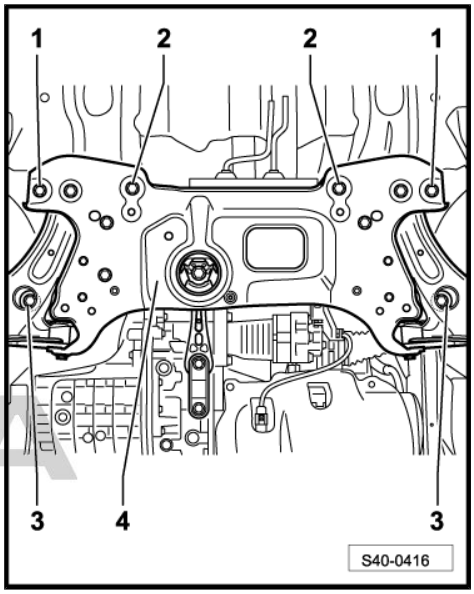
– For example place a piece of wood -1- between engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- and the assembly carrier.



– Secure assembly carrier on engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with corresponding strap.



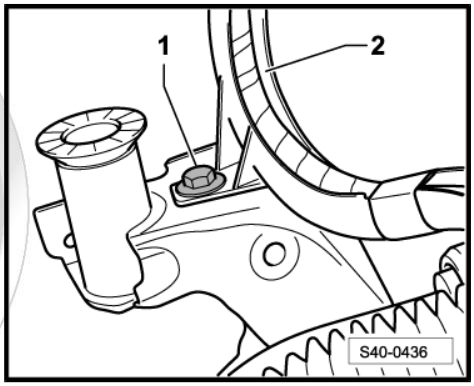
– Unscrew the screws -1- and lower the assembly carrier by max. 7 cm. While doing so observe the electrical cables.



Lower the assembly carrier by approx. 11 cm:

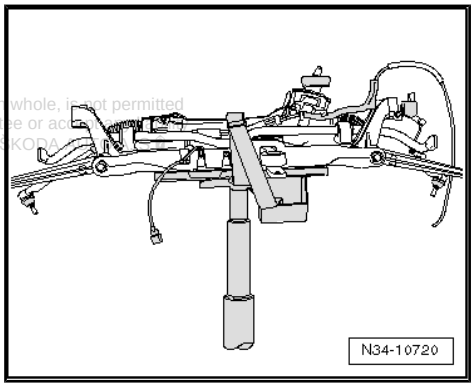
– Release the screw -1- for the cable duct -2- from the assembly carrier.

– Lower the assembly carrier under the body by max. 11 cm. While doing so observe the electrical cables.

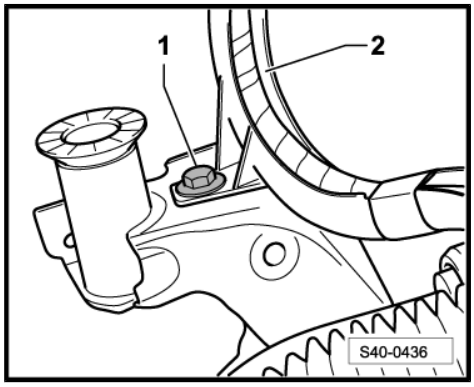


Re-install the assembly carrier:

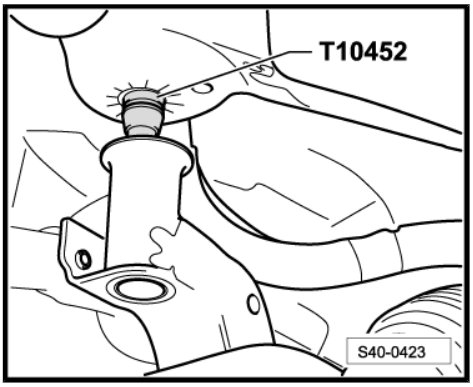
– Secure assembly carrier on engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with corresponding strap.



– Attach the screw -1- for the cable duct -2- to the assembly carrier.



– Raise the assembly carrier in such a way that the fixing holes of the assembly carrier rest fully against the fixing devices - T10096- and - T10452- , while doing so pay attention to the electrical cables.

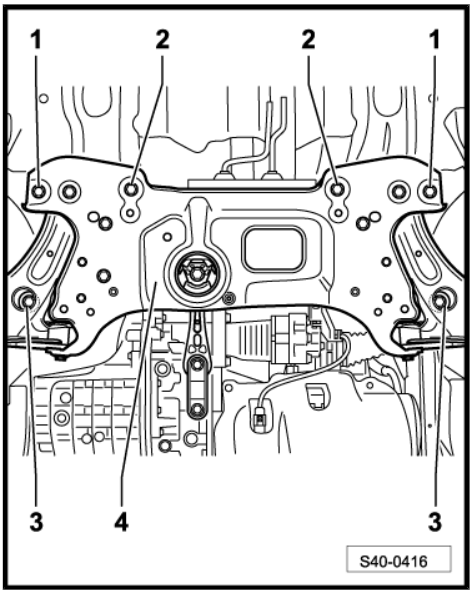


Note

- *Coat the sealing sleeve on the steering gear with lubricant, e.g. lubricating soap, before installing the steering gear.*
- *Make sure the steering gear boot is neither damaged nor twisted.*
- *Make sure all sealing surfaces are clean.*

– Screw in new screws -1- and pre-tighten to 90 Nm.

– Unscrew the fixing device - T10096- and - T10452- at positions -2- and -3- in sequence, and replace them with new bolts.

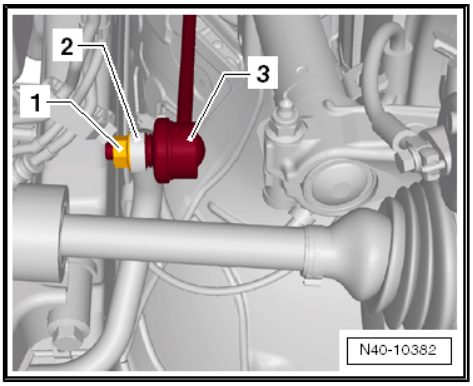


Note

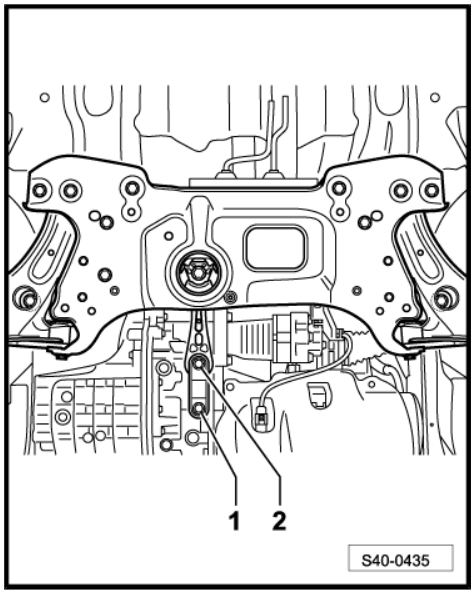
Observe the different lengths of the fixing screws for assembly carrier.

– Tighten all fixing screws of the assembly carrier to the specified tightening torque.

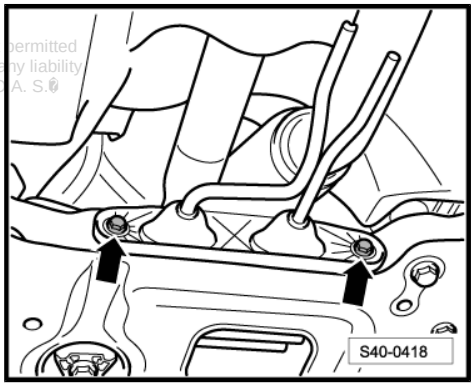
– Screw the coupling rods -3- onto the anti-roll bar -2-.



– Install the pendulum support at the gearbox, to do so screw on screws -1- and -2-.

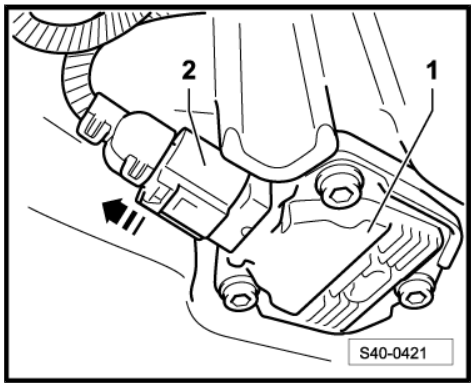


– Screw bracket for exhaust system -arrows- onto assembly carrier.

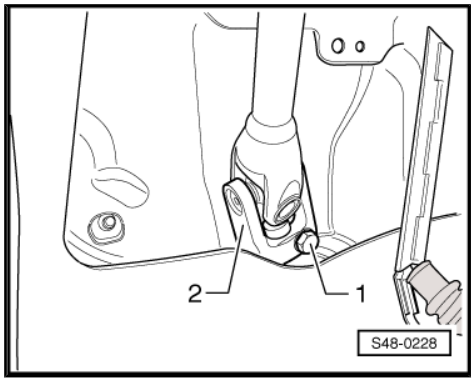


– Fit on plug -2- for oil level and oil temperature sender - G266- -1- by pressing against the direction of the arrow, if present.
– Install the noise insulation ⇒ Body Work; Rep. gr. 50 .
– Install front wheels.

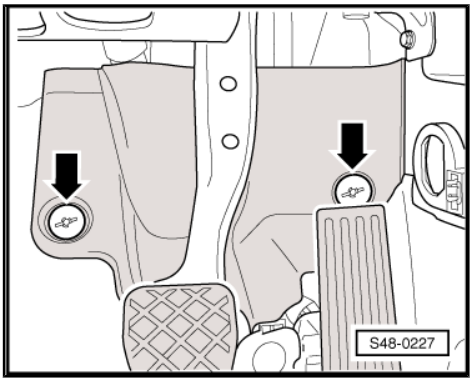
Vehicles with left-hand drive:



– Fit the universal joint -2- on the shaft of the steering gear and screw on the screw -1-.

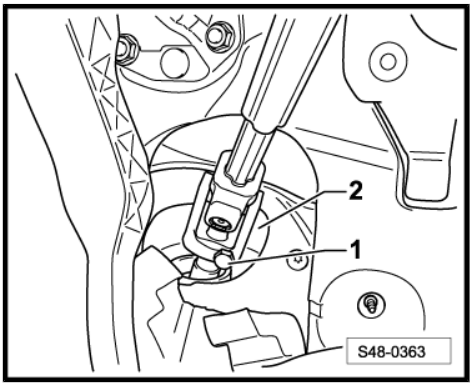


– Install footwell covering, to do so screw on the nuts -arrows-.

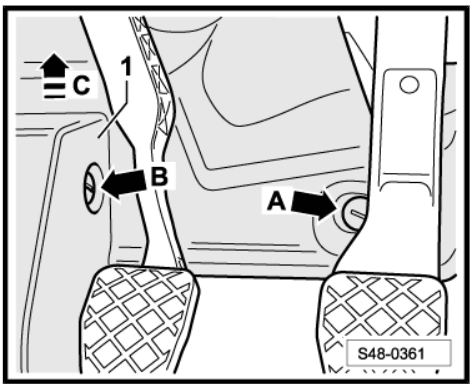


Vehicles with right hand drive:

– Fit the universal joint -2- on the shaft of the steering gear and screw on the screw -1-.



– Position the footwell covering and clip in against the -direction of arrow C-.
– Insert the expansion clamp of the covering into the opening -arrow B-.
– Screw on the fixing nut -arrow A- and the expansion clamp -arrow B- of the footwell covering.



Continued for all vehicles:

Note

It is necessary to perform an axle alignment in the event of:
⇒ “2.3 Axle alignment”, page 338

– Perform a test drive.
– Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment ⇒ “2.3 Axle alignment”, page 338 .

Tightening torques:

Assembly carrier to body ♦ Use new screws	90 Nm + 180°
Coupling rod ♦ Use new nuts! ♦ Counterhold the internal serration of the pivot pin	65 Nm
Universal joint to steering gear ♦ Use new screw!	20 Nm + 90°
Wheel bolts	120 Nm
Pendulum support to gearbox ⇒ Engine; Rep. gr. 10	
Bracket for exhaust system to assembly carrier ⇒ Engine; Rep. gr. 26	

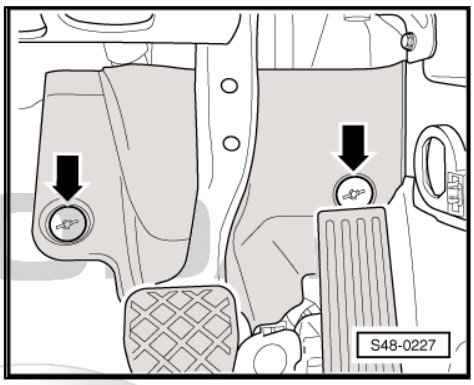
3.5 Removing and installing the assembly carrier - assembly carrier made of steel sheet, LHD - vehicles with left-hand drive

Special tools and workshop equipment required

- Fixing device - T10096- (smaller diameter)
- Fixing device - T10452- (larger diameter)
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-
- Ball joint extractor - 3287A-

Removing:

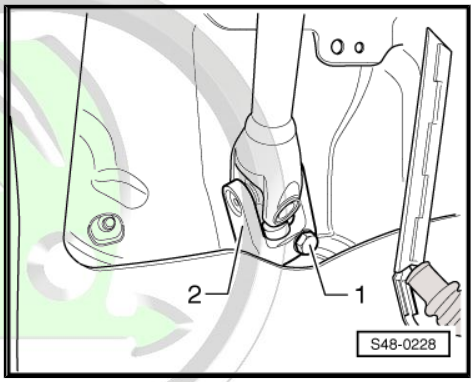
– Remove footwell covering, to do so unscrew the nuts -arrows-.



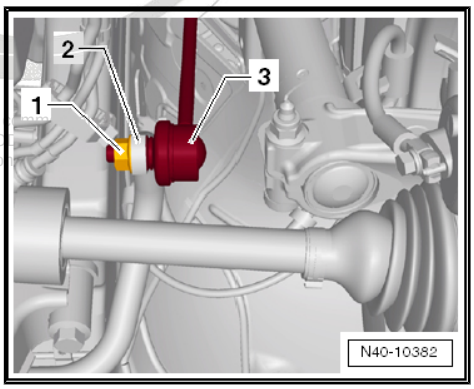
– Remove screw -1- and pull off the universal joint -2- from the steering gear.

– Remove front wheels.

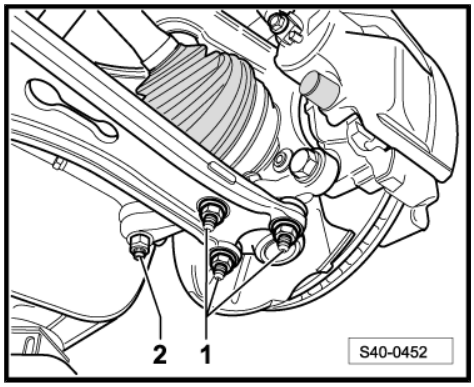
– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .



– Remove coupling rods -3- from anti-roll bar -2-.



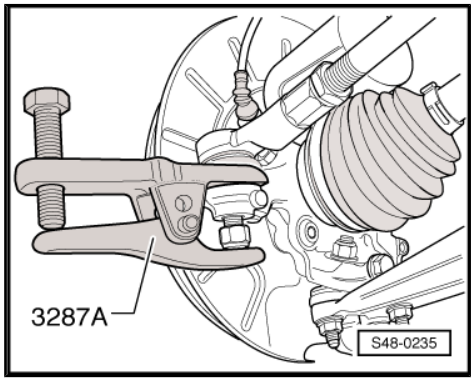
– Unscrew nuts for steering joint -1- on both sides.
– Loosen nut of track rod end -2- on both sides, but do not unscrew yet.



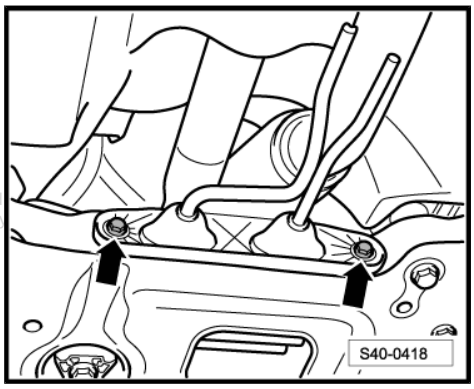
Note

To protect the thread, screw the nut a couple of thread turns onto the stud of the track rod end.

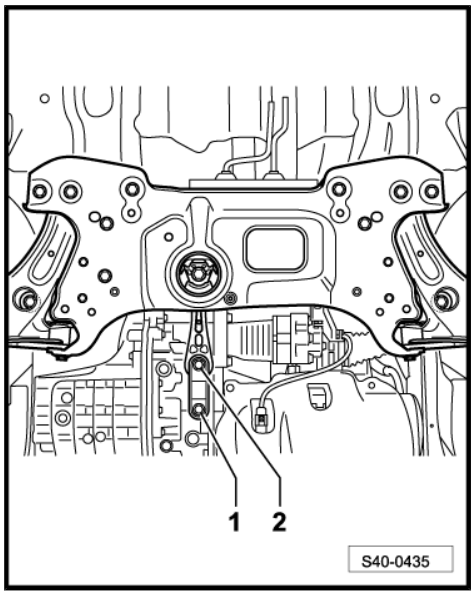
– Remove the suspension link/track rod from the wheel-bearing housing with the ball joint extractor - 3287A- .
– Unscrew nut for suspension link/track rod.



– Unbolt bracket for exhaust system -arrows- from assembly carrier.

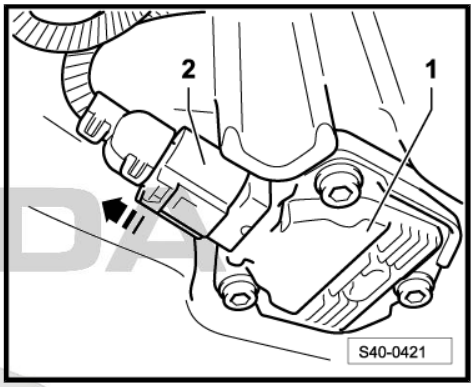


– Remove pendulum support from gearbox, to do so release screws -1- and -2-.



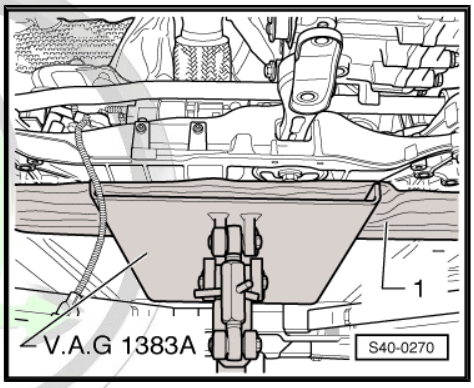
– Disconnect plug -2- for oil level and oil temperature sender - G266- -1-, if present.

– Fix the assembly carrier
⇒ “3.3 Fix the assembly carrier - assembly carrier made of steel sheet”, page 66 .

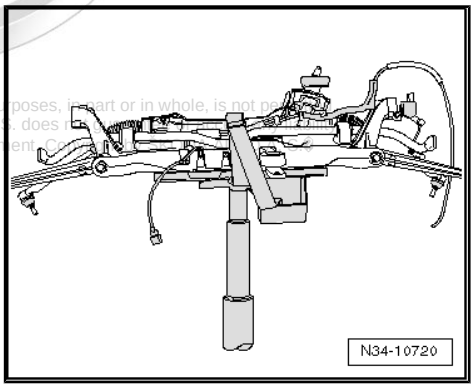


– Put the engine/gearbox jack e. g. -V.A.G 1383A- or -VAS6931- underneath the assembly carrier.

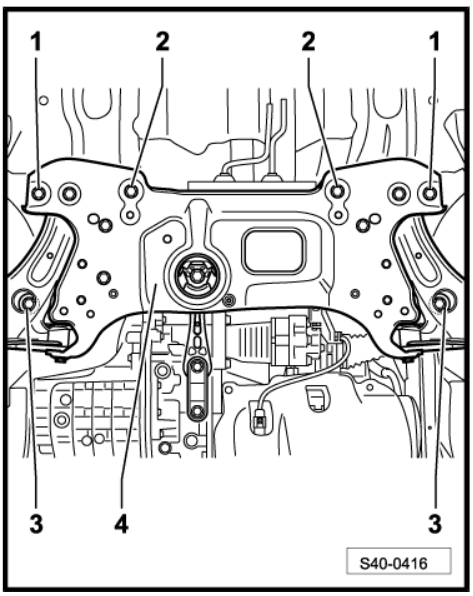
– For example place a piece of wood -1- between engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- and the assembly carrier.



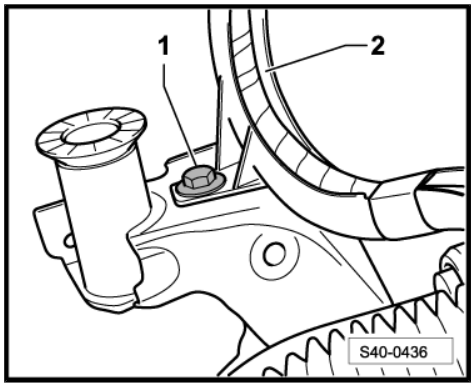
– Secure assembly carrier on engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with corresponding strap.



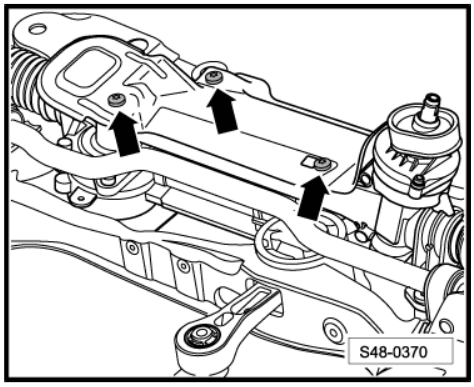
– Unscrew the screws -1- and lower the assembly carrier by max. 11 cm. While doing so observe the electrical cables.



– Release the screw -1- for the cable duct -2- from the assembly carrier.



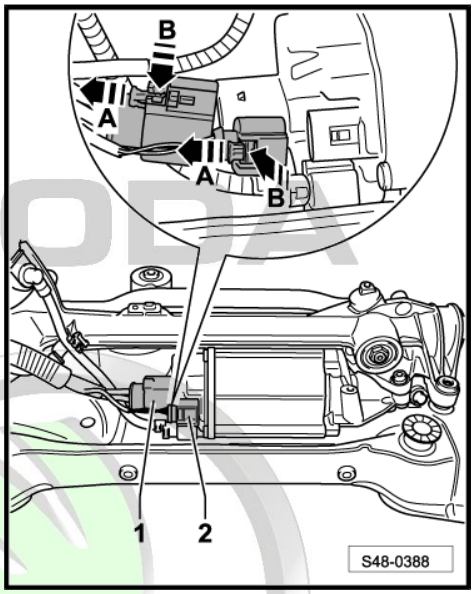
– Remove the heat shield -arrows- above the steering gear.
– Unclip all the cable attachment points at the steering gear.



– Disconnect the plug connections -1- and -2- from the steering gear.

When doing this, it is necessary to:

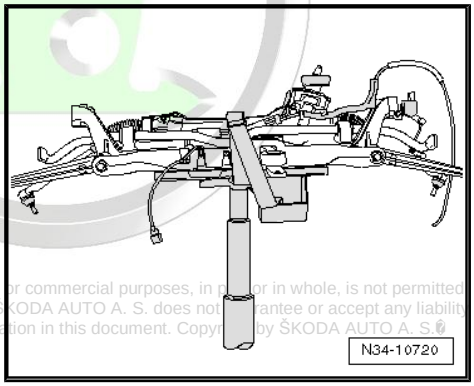
– Pull out the fuse of the plug connection in -direction of arrow A-.
– Press together the catch of the plug connection in -direction of arrow B- and separate the plug connection by pulling.
– Slacken the wiring harness for oil level and oil temperature sender - G266- (if present).
– Lower assembly carrier.



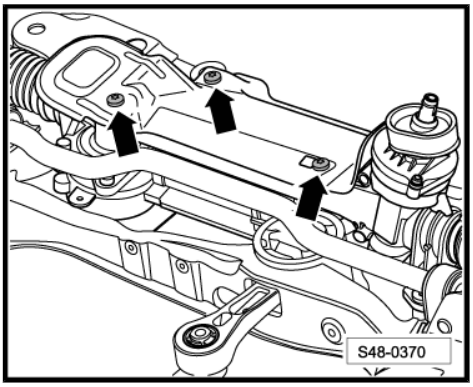
Installing:

Installation is carried out in the reverse order.

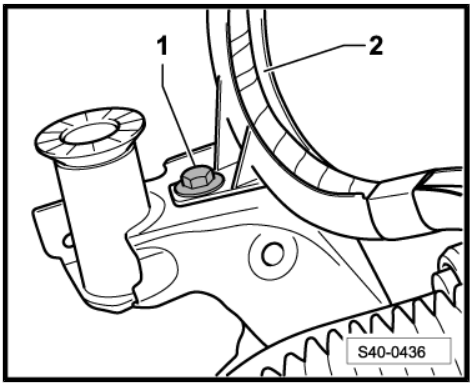
– Secure assembly carrier on engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with corresponding strap.
– Raise the assembly carrier under the vehicle body by max. 11 cm.
– Attach the wiring harness for oil level and oil temperature sender - G266- (if present).
– Connect the electrical connections to the steering gear and attach.



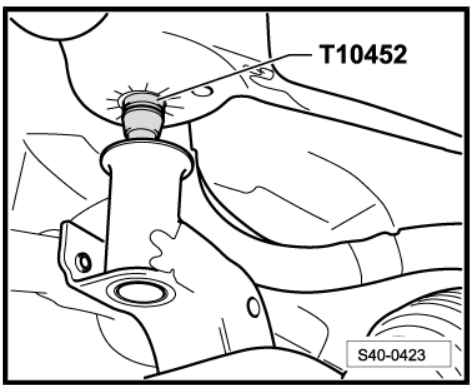
– Screw heat shield to steering gear -arrows-.



– Attach the screw -1- for the cable duct -2- to the assembly carrier.



– Raise the assembly carrier in such a way that the fixing holes of the assembly carrier rest fully against the fixing devices - T10096- and - T10452- , while doing so pay attention to the electrical cables.



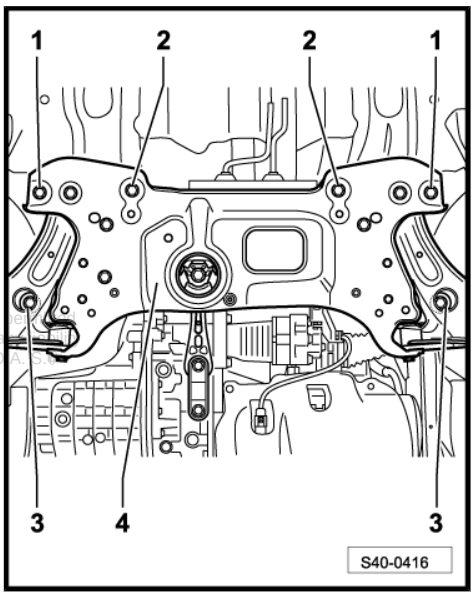
– Screw in new screws -1- and pre-tighten to 90 Nm.

– Unscrew the fixing device - T10096- and - T10452- at positions -2- and -3- in sequence, and replace them with new bolts.

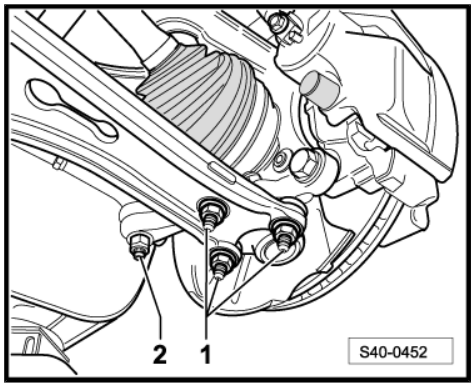
Note

- *Observe the different lengths of the fixing screws for assembly carrier.*
- *Make sure the steering gear boot is neither damaged nor twisted.*

– Tighten all fixing screws of the assembly carrier to the specified tightening torque.



– Install nuts for steering joint -1- on both sides.

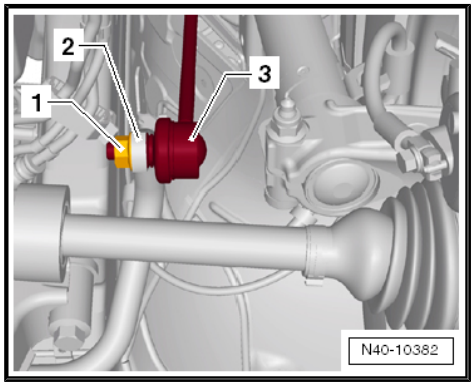


Note

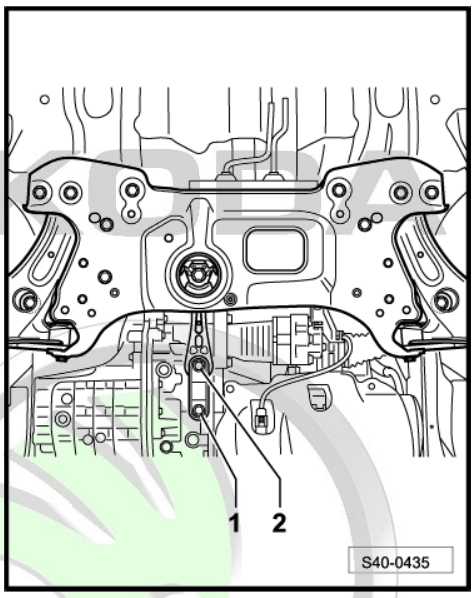
Make sure the steering joint/track rod boot is neither damaged nor twisted.

– Screw steering joint/track rod -2- onto wheel-bearing housing.

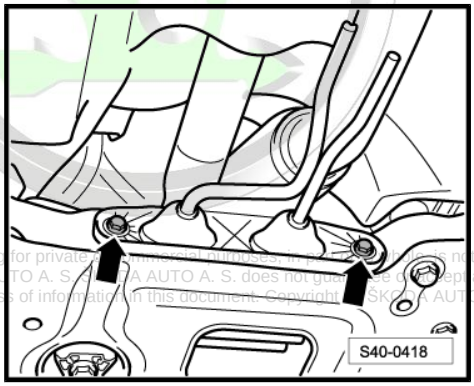
– Screw the coupling rods -3- onto the anti-roll bar -2-.



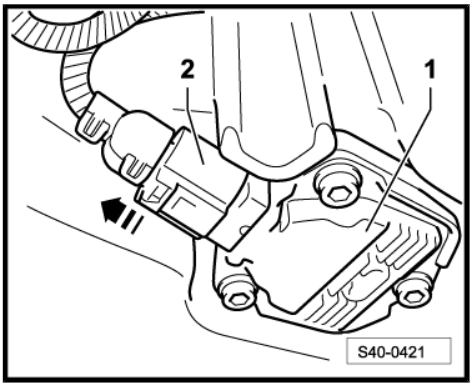
– Install the pendulum support at the gearbox, to do so screw on screws -1- and -2-.



– Screw bracket for exhaust system -arrows- onto assembly carrier.



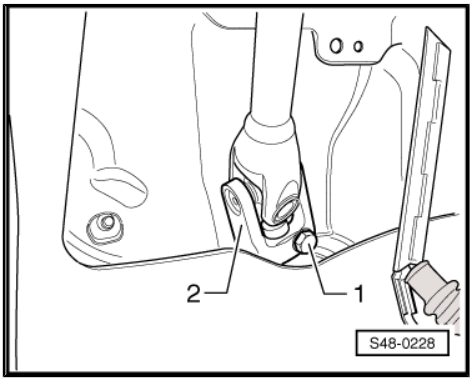
– Fit on plug -2- for oil level and oil temperature sender - G266- -1- by pressing against the -direction of the arrow-, if present.



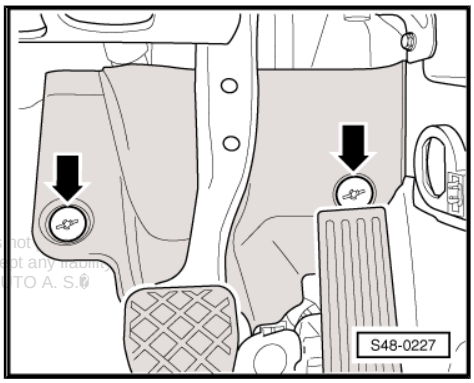
– Install the noise insulation ⇒ Body Work; Rep. gr. 50 .

– Install front wheels.

– Fit the universal joint -2- on the shaft of the steering gear and screw on the screw -1-.



– Install footwell covering, to do so screw on the nuts -arrows-.



Note

It is necessary to perform an axle alignment in the event of:
⇒ “2.3 Axle alignment”, page 338 .

– Perform a test drive.

– Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment
⇒ “2.3 Axle alignment”, page 338 .

Tightening torques:

Assembly carrier to body ♦ Use new screws	90 Nm + 180°
Anti-roll bar to assembly carrier ♦ Use new screws	20 Nm + 90°
Steering gear to assembly carrier ♦ Use new screws	50 Nm + 90°
Track rod end to wheel-bearing housing ♦ Use new nuts! ♦ Counterhold the internal serration of the pivot pin	20 Nm + 90°
Coupling rod ♦ Use new nuts! ♦ Counterhold the internal serration of the pivot pin	65 Nm
Universal joint to steering gear ♦ Use new screw!	20 Nm + 90°
Steering joint to track control arm ♦ Track control arm made of steel casting ♦ Track control arm made of steel sheet	 60 Nm 100 Nm
Wheel bolts	120 Nm
Pendulum support to gearbox ⇒ Engine; Rep. gr. 10	
Bracket for exhaust system to assembly carrier ⇒ Engine; Rep. gr. 26	

3.6 Removing and installing the assembly carrier - assembly carrier made of steel sheet, RHD - vehicles with right-hand drive

Special tools and workshop equipment required

- Fixing device - T10096- (smaller diameter)
- Fixing device - T10452- (larger diameter)
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-
- Ball joint extractor - 3287A-

Removing:

Note

On right-hand drive vehicles, the wiring harness is removed from the engine compartment at the same when removing the assembly carrier.

– Remove battery and battery tray ⇒ Electrical System; Rep. gr. 27 .

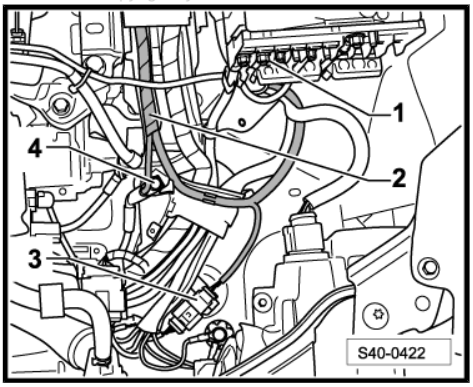
– Remove air filter and air guide with air mass meter ⇒ Engine; Rep. gr. 23 or ⇒ Engine; Rep. gr. 24 .

– Disconnect cable -1- from the E-box.

– Disconnect plug -3- for oil level and oil temperature sender -G266- , if present.

– Disconnect earth line -4-.

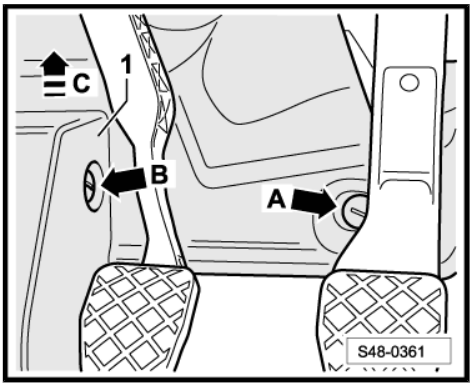
– Unclip wiring harness -2-.



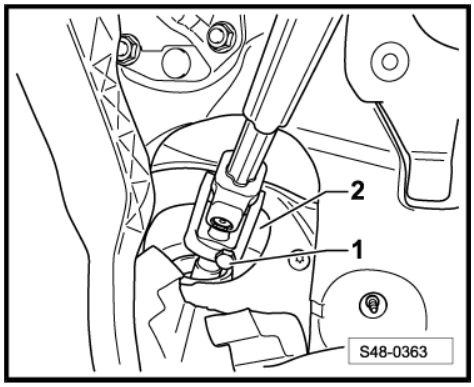
– Remove the footwell covering, to do so unscrew the fixing nut -arrow A- and the expansion clamp -arrow B-.

– Take the expansion clamp of the covering out of the opening -arrow B-.

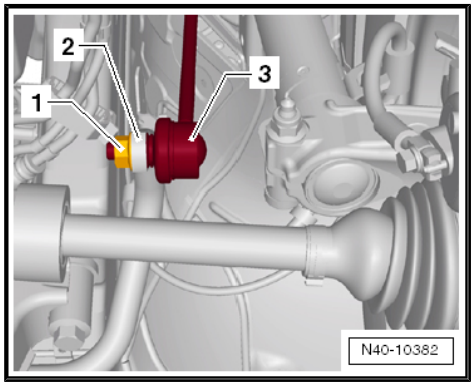
– Unclip the footwell covering in -direction of arrow C- and remove.



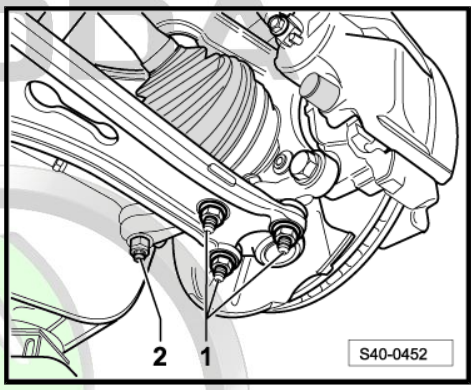
– Remove screw -1- and pull off the universal joint -2- from the steering gear.
– Remove front wheels.
– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .



– Remove coupling rods -3- from anti-roll bar -2-.



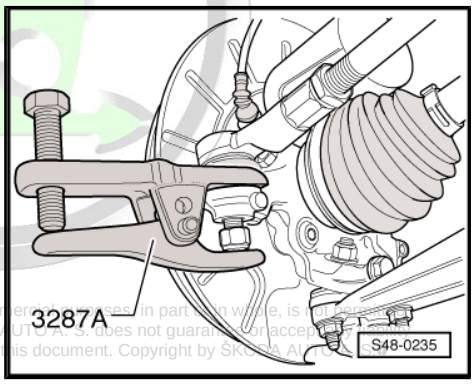
– Unscrew nuts for steering joint -1- on both sides.
– Loosen nut of track rod end -2- on both sides, but do not unscrew yet.



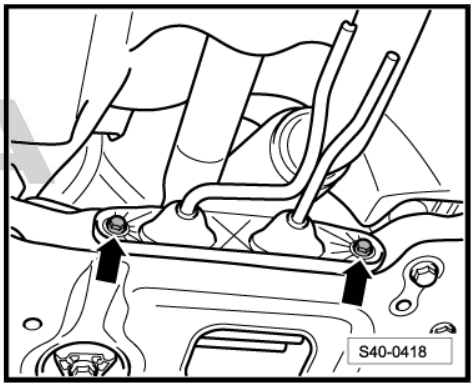
Note

To protect the thread, screw the nut a couple of thread turns onto the stud of the track rod end.

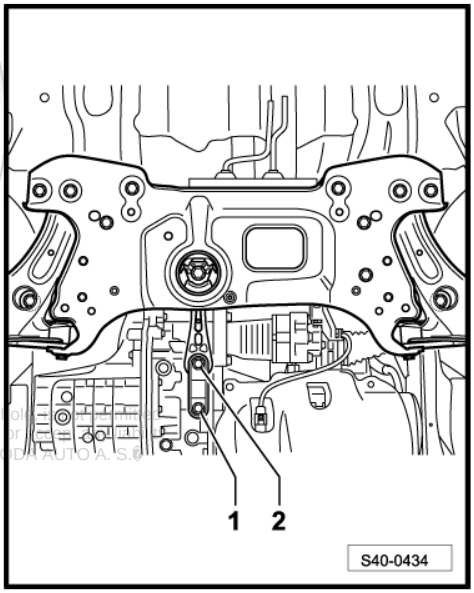
– Remove the suspension link/track rod from the wheel-bearing housing with the ball joint extractor - 3287A- .
– Unscrew nut for suspension link/track rod.



– Unbolt bracket for exhaust system -arrows- from assembly carrier.

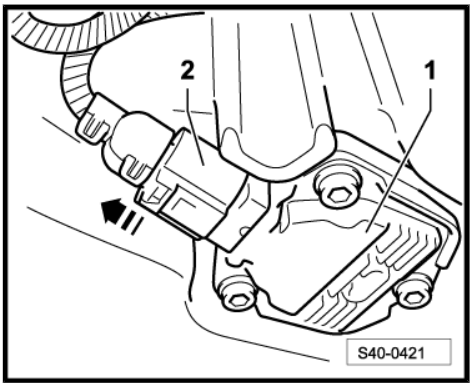


– Remove pendulum support from gearbox, to do so release screws -1- and -2-.



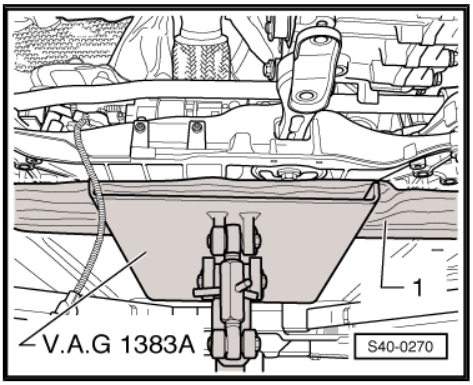
– Disconnect plug -2- for oil level and oil temperature sender -G266- -1-, if present.

– Fix the assembly carrier
⇒ “3.3 Fix the assembly carrier - assembly carrier made of steel sheet”, page 66 .

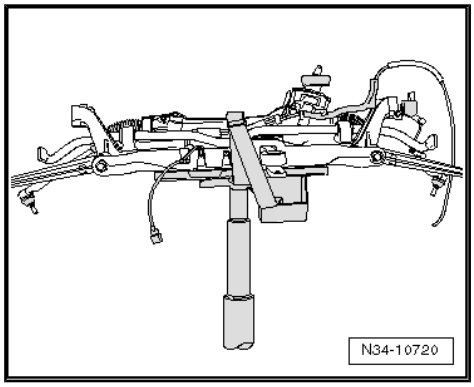


– Put the engine/gearbox jack e. g. -V.A.G 1383A- or -VAS6931- underneath the assembly carrier.

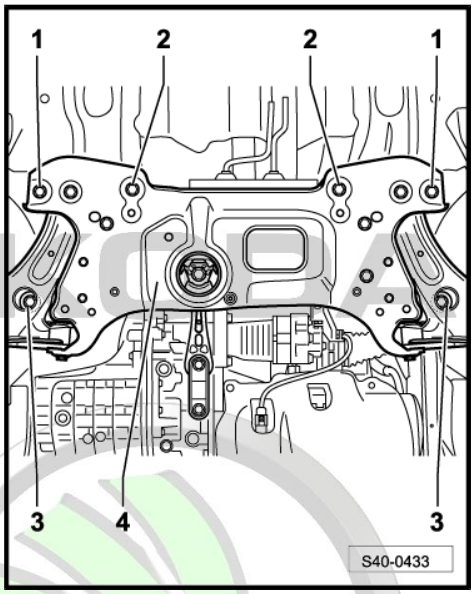
– For example place a piece of wood -1- between engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- and the assembly carrier.



– Secure assembly carrier on engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with corresponding strap.



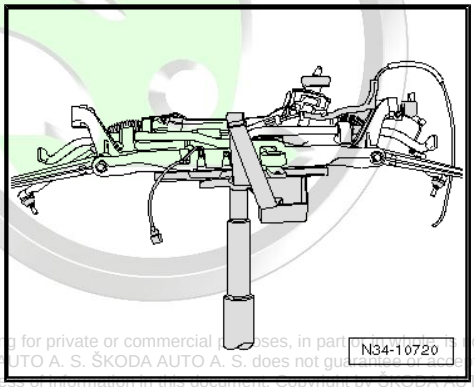
– Unscrew screws -1- and lower the assembly carrier. While doing so, pay attention to the electrical cables which must be removed together with the assembly carrier.



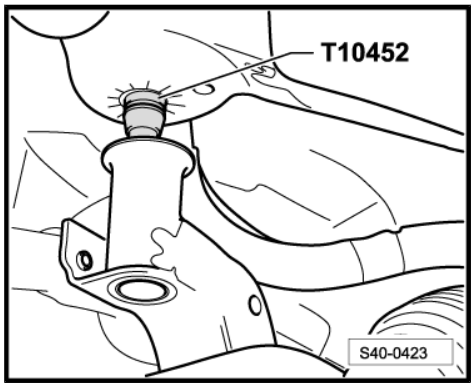
Installing:

Installation is carried out in the reverse order.

– Secure assembly carrier on engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with corresponding strap.

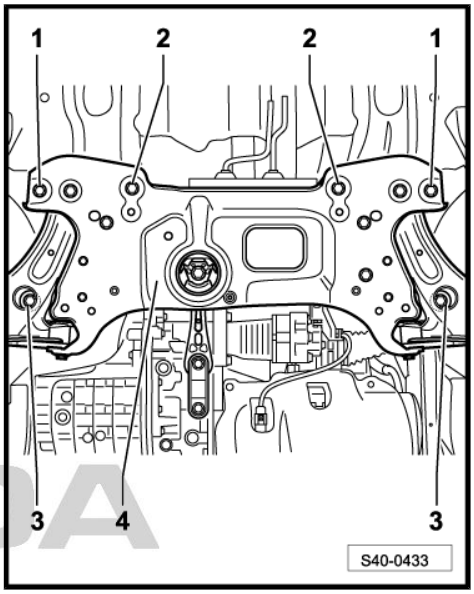


– Raise the assembly carrier in such a way that the fixing holes of the assembly carrier rest fully against the fixing devices - T10096- and - T10452- , while doing so pay attention to the electrical cables.



– Screw in new screws -1- and pre-tighten to 90 Nm.

– Unscrew the fixing device - T10096- and - T10452- at positions -2- and -3- in sequence, and replace them with new screws.

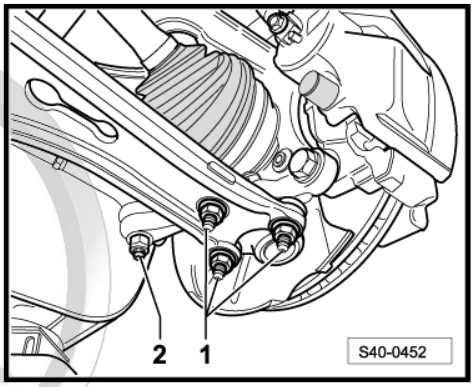


Note

- *Observe the different lengths of the fixing screws for assembly carrier.*
- *Make sure the steering gear boot is neither damaged nor twisted.*

– Tighten all fixing screws of the assembly carrier to the specified tightening torque.

– Screw on nuts for steering joint -1- on both sides.



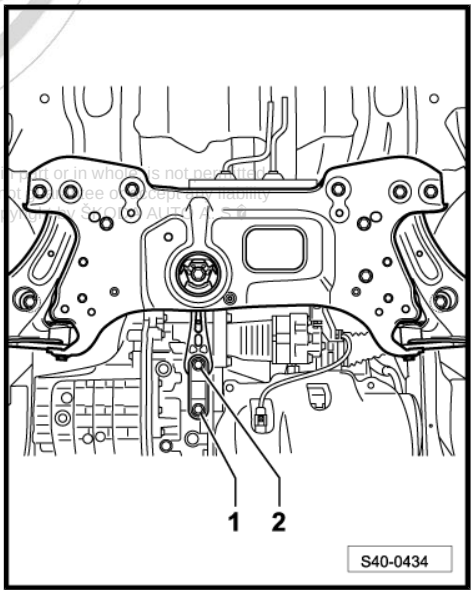
Note

Make sure the steering joint/track rod boot is neither damaged nor twisted.

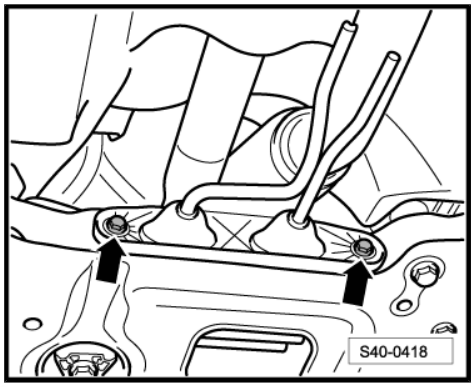
– Screw steering joint/track rod onto wheel-bearing housing -2-.

– Screw the coupling rods onto the anti-roll bar -3-.

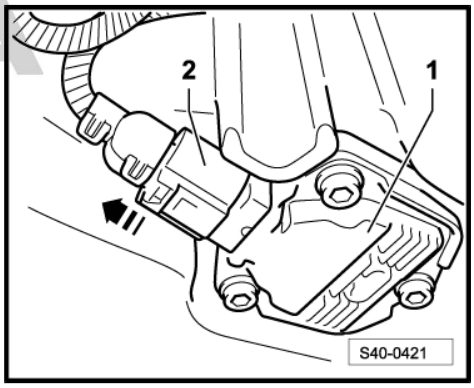
– Install the pendulum support at the gearbox, to do so screw on screws -1- and -2-.



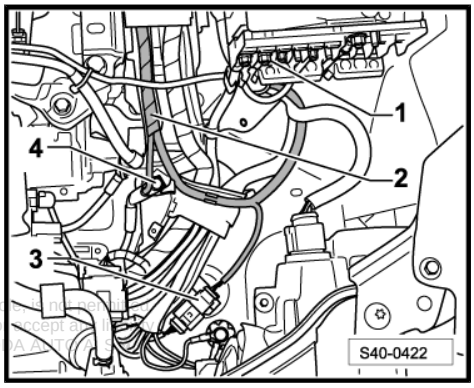
– Screw bracket for exhaust system -arrows- onto assembly carrier.



– Fit on plug -2- for oil level and oil temperature sender - G266- -1- by pressing against the -direction of the arrow-, if present.
– Install the noise insulation ⇒ Body Work; Rep. gr. 50 .
– Install front wheels.



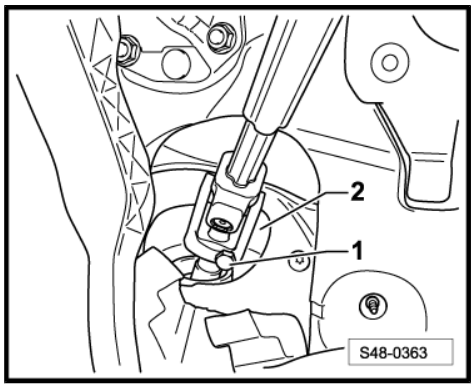
– Clip in wiring harness -2-.
– Connect earth strap -4-.
– Fit on plug -3- for oil level and oil temperature sender - G266- , if present.
– Connect the cable -1- to the E-box.
– Install air filter and air guide with air mass meter ⇒ Engine; Rep. gr. 23 or ⇒ Engine; Rep. gr. 24 .
– Install the battery tray and battery ⇒ Electrical System; Rep. gr. 27 .



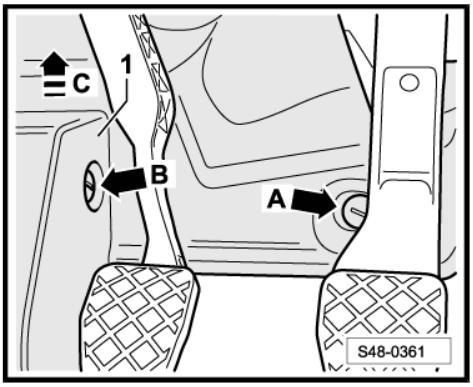
Note

If the battery earth strap is disconnected and connected, carry out certain additional operations ⇒ Electrical System; Rep. gr. 27 .

– Fit the universal joint -2- on the shaft of the steering gear and screw on the screw -1-.



– Position the footwell covering and clip in against the -direction of arrow C-.
– Insert the expansion clamp of the covering into the opening -arrow B-.
– Screw on the fixing nut -arrow A- and the expansion clamp -arrow B- of the footwell covering.



Note

It is necessary to perform an axle alignment in the event of:
⇒ "2.3 Axle alignment", page 338

– Perform a test drive.
– Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment
⇒ "2.3 Axle alignment", page 338 .

Tightening torques:

Assembly carrier to body ♦ Use new screws	90 Nm + 180°
Anti-roll bar to assembly carrier ♦ Use new screws	20 Nm + 90°
Steering gear to assembly carrier ♦ Use new screws	50 Nm + 90°
Track rod end to wheel-bearing housing ♦ Use new nuts! ♦ Counterhold the internal serration of the pivot pin	20 Nm + 90°
Coupling rod ♦ Use new nuts! ♦ Counterhold the internal serration of the pivot pin	65 Nm
Universal joint to steering gear ♦ Use new screw!	20 Nm + 90°
Steering joint to track control arm ♦ Track control arm made of steel casting ♦ Track control arm made of steel sheet	 60 Nm 100 Nm
Wheel bolts	120 Nm
Pendulum support to gearbox ⇒ Engine; Rep. gr. 10	
Bracket for exhaust system to assembly carrier ⇒ Engine; Rep. gr. 26	

3.7 Removing and installing the anti-roll bar - assembly carrier made of steel sheet, LHD - vehicles with left-hand drive

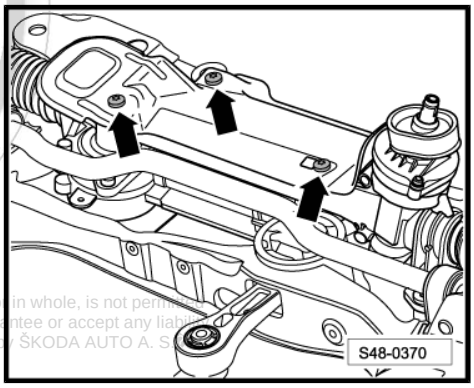
Special tools and workshop equipment required

- Fixing device - T10096- (smaller diameter)
- Fixing device - T10452- (larger diameter)
- Ball joint extractor - 3287A-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-

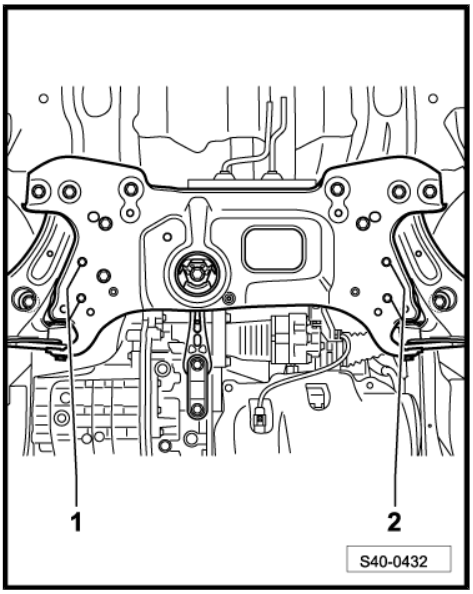
Removing:

– Lower the assembly carrier in the service position ⇒ “3.4 Lower the assembly carrier in the service position - assembly carrier made of steel sheet”, page 69 .

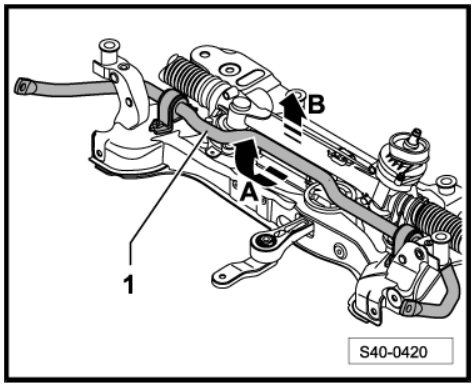
– Remove the heat shield -1- above the steering gear.



– Unscrew screws for anti-roll bar tabs -1- and -2- from assembly carrier.



– Remove the anti-roll bar -1- from the assembly carrier towards the front via the support for the assembly carrier.



Installing:

Installation is carried out in the reverse order.

– Install assembly carrier
⇒ “3.4 Lower the assembly carrier in the service position - assembly carrier made of steel sheet”, page 69 .

– Perform a test drive.

– Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment
⇒ “2.3 Axle alignment”, page 338 .

Tightening torques:

Anti-roll bar to assembly carrier ♦ Use new screws	20 Nm + 90°
Coupling rod ♦ Use new nuts! ♦ Counterhold the internal serration of the pivot pin	65 Nm

3.8 Removing and installing the anti-roll bar - assembly carrier made of steel sheet, RHD - vehicles with right-hand drive

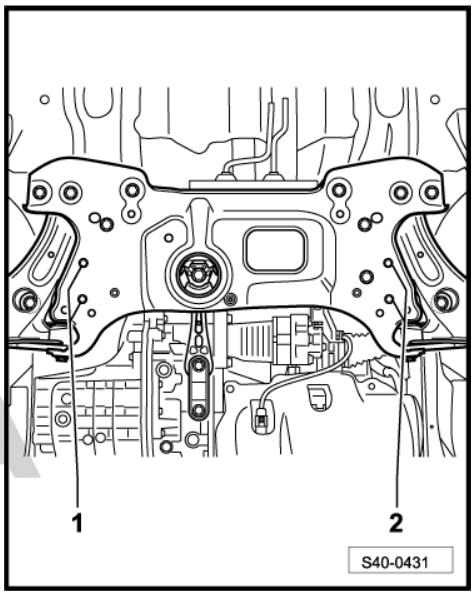
Special tools and workshop equipment required

- Fixing device - T10096- (smaller diameter)
- Fixing device - T10452- (larger diameter)
- Ball joint extractor - 3287A-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-

Removing:

– Remove assembly carrier
⇒ “3.6 Removing and installing the assembly carrier - assembly carrier made of steel sheet, RHD - vehicles with right-hand drive”, page 85 .

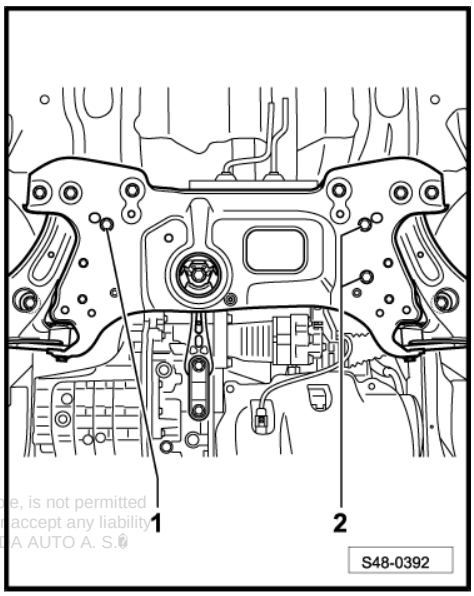
– Unscrew screws for anti-roll bar tabs -1- and -2- from assembly carrier.



– Unscrew screws for steering gear -1- and -2- from assembly carrier.

– Lift the steering gear out of the threaded bushings and partly push to the rear.

– Remove anti-roll bar from assembly carrier.

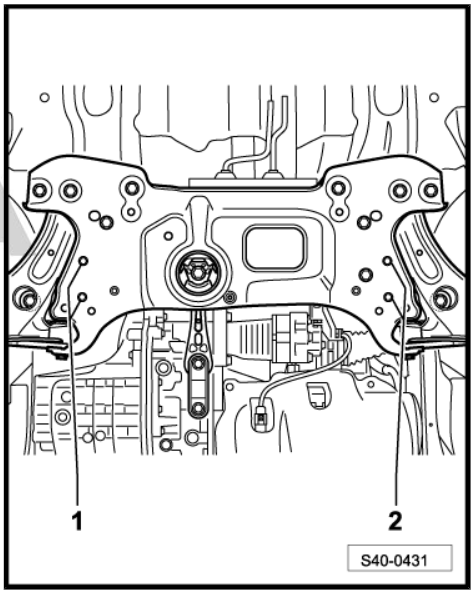


Installing:

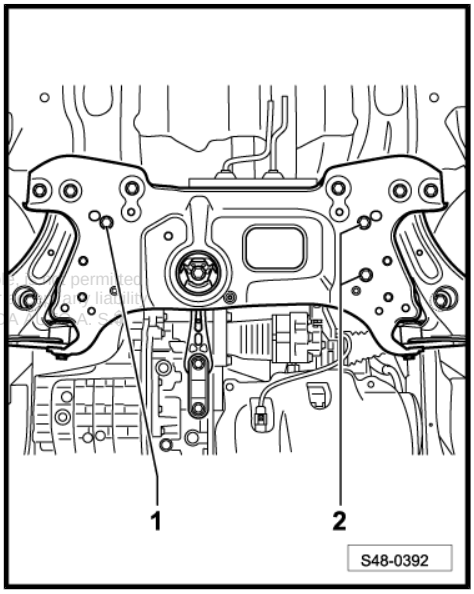
Installation is carried out in the reverse order.

– Position anti-roll bar on assembly carrier.

– Screw in screws for anti-roll bar tabs -1- and -2- and tighten.
– Insert the steering gear above the threaded bushings into the assembly carrier.



– Tighten the screws for the steering gear -1- and -2- to the specified tightening torque.
– Install assembly carrier
⇒ “3.6 Removing and installing the assembly carrier - assembly carrier made of steel sheet, RHD - vehicles with right-hand drive”, page 85 .
– Perform a test drive.
– Check the steering wheel position during the test drive.



Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment
⇒ “2.3 Axle alignment”, page 338 .

Tightening torques:

Anti-roll bar to assembly carrier ♦ Use new screws	20 Nm + 90°
Steering gear to assembly carrier ♦ Use new screws	50 Nm + 90°

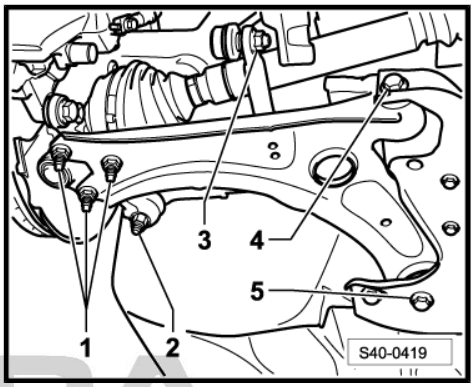
3.9 Removing and installing the track control arm - assembly carrier made of steel sheet

Removing:

– Remove wheel.

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

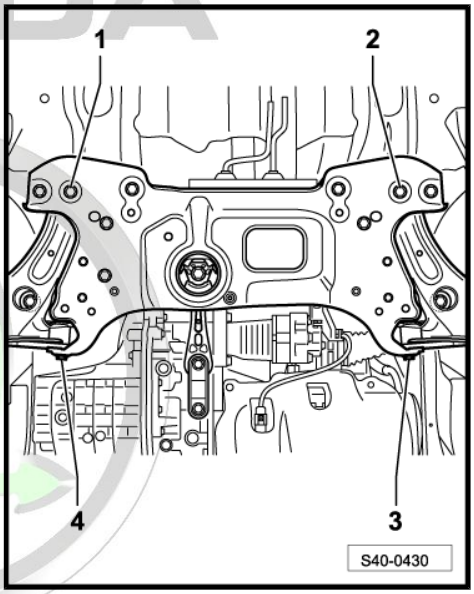
– Unscrew nuts -1-.



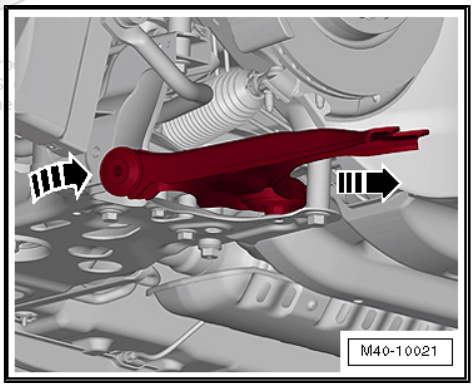
– Unscrew the screw -1- for the left vehicle side or the screw -2- for the right vehicle side.

– Counterhold the screw nuts -1- or -2- on the top side of the assembly carrier using a wrench.

– Unscrew the screw -3- for the right vehicle side or the screw -4- for the left vehicle side.



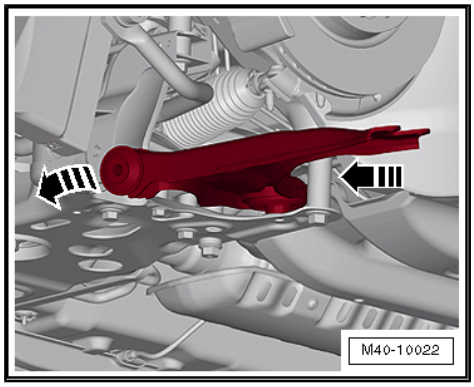
– Turn the track control arm out of the assembly carrier and remove -arrows-.



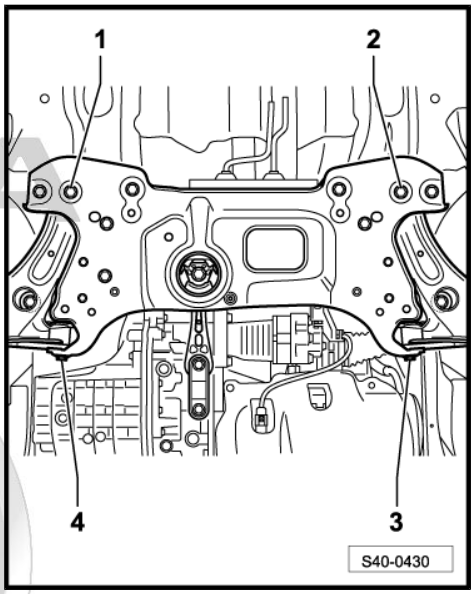
Installing:

Installation is carried out in the reverse order.

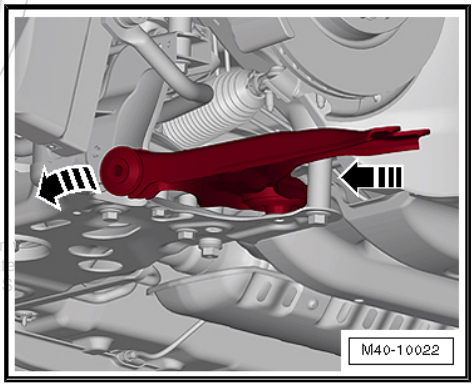
– Insert the rear track control arm into the assembly carrier -arrow-.



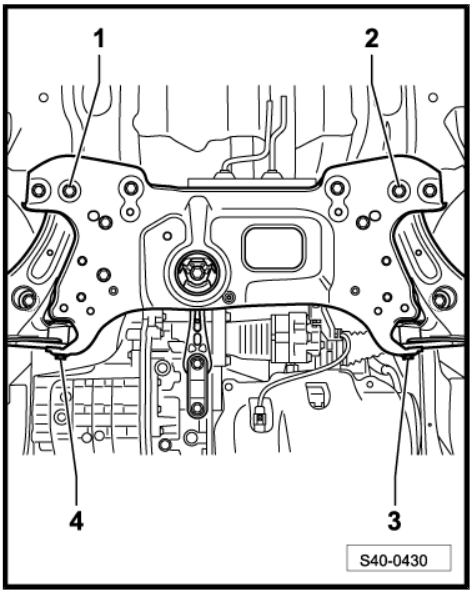
– Position the new screws -1- for the left vehicle side or -2- for the right vehicle side.
– Screw in the new screw nuts -1- or -2- on the top side of the assembly carrier, but do not tighten yet.



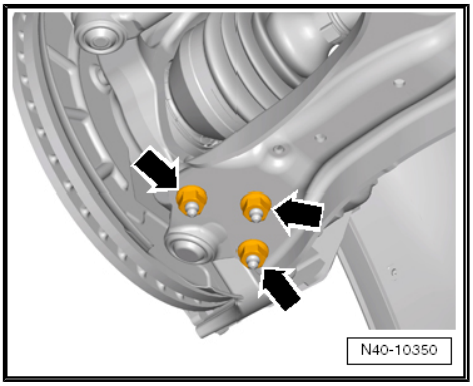
– Turn the track control arm in such a way that it grips into the assembly carrier at the front -arrow-.



– Position the new screws -3- for the right vehicle side or -4- for the left vehicle side and partly screw in, but do not tighten yet.

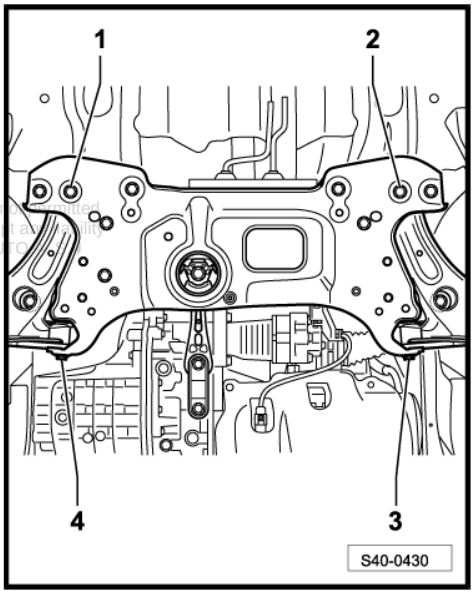


– Tighten the track control arm to the steering joint -arrows-.

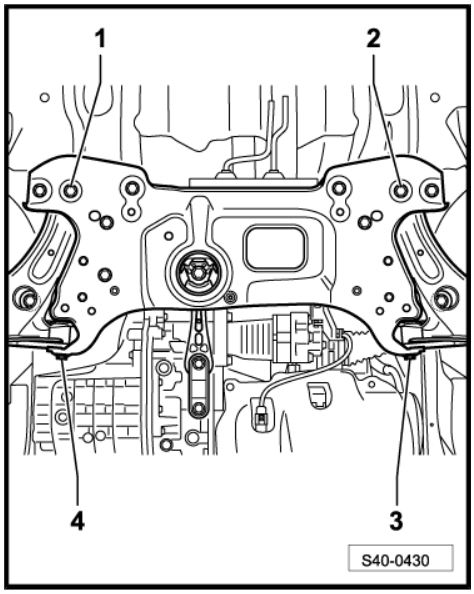


– Tighten the screws for the track control arm -1- for the left vehicle side or -2- for the right vehicle side, while doing so counterhold on the top side of the assembly carrier using a wrench for screw nuts.

– Move the vehicle into the unladen weight position ⇒ “1.2 Lift the wheel bearing in the unladen weight position”, page 2 .



– Tighten the new screws for the track control arm -3- for the left vehicle side or -4- for the right vehicle side.
– Install the noise insulation ⇒ Body Work; Rep. gr. 50 .
– Attach the wheel.
– Perform a test drive.
– Check the steering wheel position during the test drive.



Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment ⇒ "2.3 Axle alignment", page 338 .

Tightening torques:

Steering joint to track control arm ♦ Track control arm made of steel casting ♦ Track control arm made of steel sheet	 60 Nm 100 Nm
Track control arm to assembly carrier	70 Nm + 180°
Wheel bolts	120 Nm

3.10 Replacing rubber-metal bearing for track control arm - assembly carrier made of steel sheet

3.10.1 Front bearing

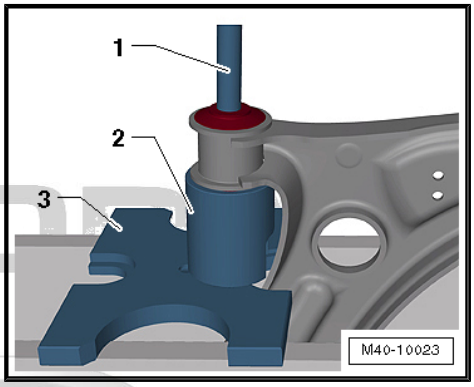
Special tools and workshop equipment required

- Pressure plate - MP3-407 (VW 402)-
- Pressure spindle - MP6-405 (VW 411)-
- Pipe section - T10219/1-
- Drift - T10219/2-
- Pressure spindle - MP3–408 (VW 412)-

– Removing the track control arm
⇒ “3.9 Removing and installing the track control arm - assembly carrier made of steel sheet”, page 99 .

Pressing out rubber-metal bearing

– Press out rubber-metal bearing as shown.



1 - Pressure spindle - MP6-405 (VW 411)-

2 - Pipe section - T10219/1-

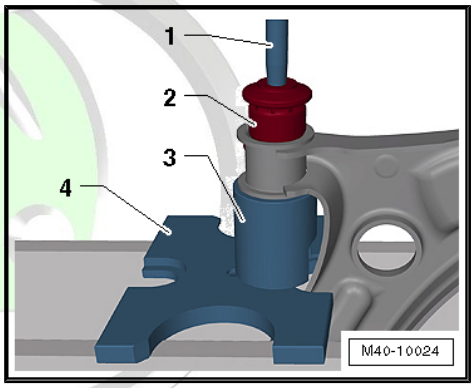
3 - Pressure plate - MP3-407 (VW 402)-

Installing front rubber-metal bearing

In order not to damage the rubber-metal bearing when inserting it, it must positioned at an angle. During the press-in procedure the rubber-metal bearing straightens.

– Apply assembly sliding oil - G 294 421 A1- to the outside of the rubber-metal bearing.

– Position the rubber-metal bearing at an angle (in direction of track control arm), at the same time the lip must slide into the hole.



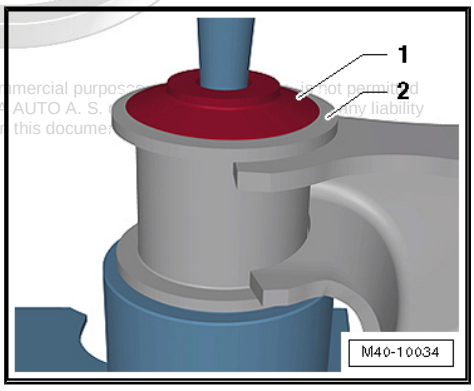
1 - Drift - T10219/2-

2 - Rubber-metal bearing

3 - Pipe section - T10219/1-

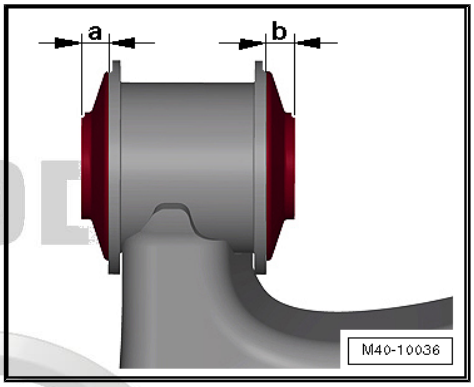
4 - Pressure plate - MP3-407 (VW 402)-

– Insert the core of the rubber-metal bearing -1- into the hole of the track control arm -2-.



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

If the dimensions -a- and -b- are not identical:

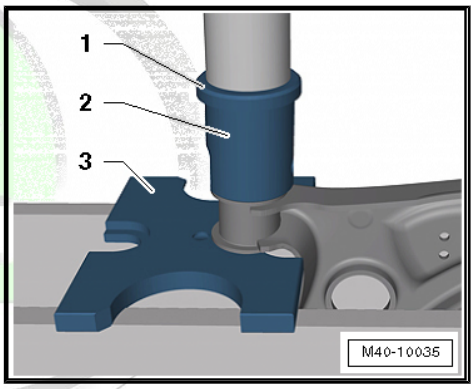


– Slightly pull back the bearing from the track control arm.

1 - Pressure spindle - MP3–408 (VW 412)-

2 - Pipe section - T10219/1-

3 - Pressure plate - MP3-407 (VW 402)-



– Installing the track control arm
⇒ “3.9 Removing and installing the track control arm - assembly carrier made of steel sheet”, page 99 .

– Perform a test drive.

– Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment
⇒ “2.3 Axle alignment”, page 338 .

3.10.2 Rear bearing

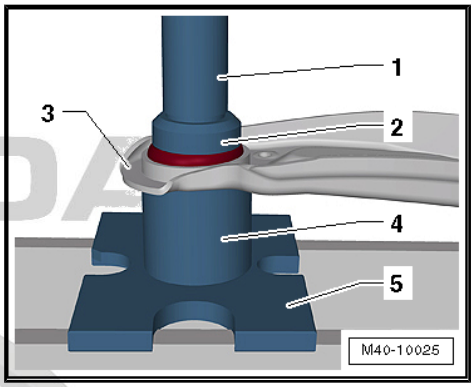
– Removing the track control arm
⇒ “3.9 Removing and installing the track control arm - assembly carrier made of steel sheet”, page 99 .

Special tools and workshop equipment required

- Pressure spindle - MP3-423 (VW 407)-
- Assembly device - MP5-401 (VW 3345)-
- Pipe - T30019-
- Pressure plate - MP3-407 (VW 402)-
- Pressure spindle - MP3–408 (VW 412)-
- Pressure element - T10453-

Pressing out rear rubber-metal bearing

– Press out rubber-metal bearing as shown.



1 - Pressure spindle - MP3-423 (VW 407)-

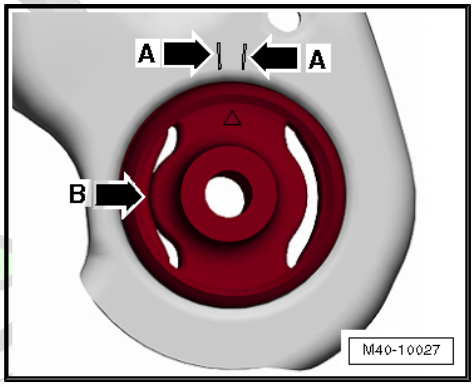
2 - Assembly device - MP5-401 (VW 3345)-

3 - Arm of wheel suspension - the hole in the arm of the wheel suspension must point upwards

4 - Pipe - T30019-

5 - Pressure plate - MP3-407 (VW 402)-

Fitting position of the rear bearing in the arm of the wheel suspension:

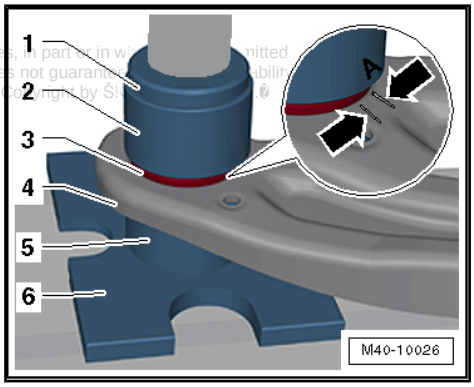


Insert the rubber-metal bearing in such a way that the arrow of the bearing points between the set of markings -arrows A- on the arm of the wheel suspension.

The shoulder -arrow B- must always point to the outside of the vehicle.

Inserting the rubber-metal bearing:

– Insert rubber-metal bearing as shown.



1 - Pressure spindle - MP3–408 (VW 412)-

2 - Pressure element - T10453- - the marking -A- on the pressure element must point to the markings -arrows- on the arm

3 - Rubber-metal bearing

4 - Arm of wheel suspension - the hole in the arm of the wheel suspension must point downwards

5 - Pipe - T30019-

6 - Pressure plate - MP3-407 (VW 402)-

Note

Insert the rubber-metal bearing in such a way that the pressure element - T10453- rests against the arm of the wheel suspension.

– Installing the track control arm
⇒ “3.9 Removing and installing the track control arm - assembly carrier made of steel sheet”, page 99 .

– Perform a test drive.

– Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment
⇒ “2.3 Axle alignment”, page 338 .

3.11 Repairing assembly carrier

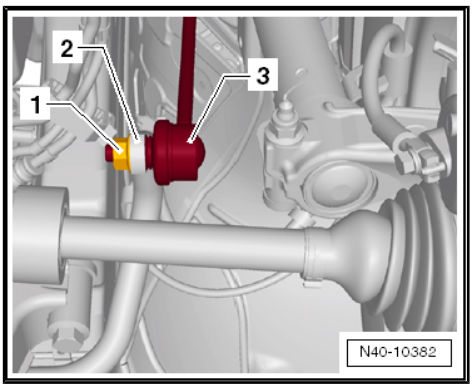
Special tools and workshop equipment required

- Hydraulic cylinder - VAS 6178-
- Foot pump - VAS 6179-
- Assembly device - VAS 6779-
- Pressure spindle - MP3-408 (VW 412)-
- Pressure plate - MP3-407 (VW 402)-
- Pressure plate - MP3-406 (VW 401)-

Replacing rubber-metal bearing for pendulum support.

– Remove the noise insulation ⇒ Body Work; Rep. gr. 66 ; Noise insulation; Summary of components - noise insulation .

– Remove the coupling rods -3- from the anti-roll bar -2- on both vehicle sides.

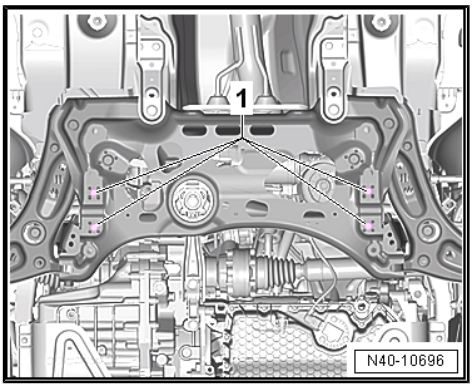


– Unscrew screws -1- for anti-roll bar clamps.

• Leave the anti-roll bar in the installation position.

– Remove pendulum support ⇒ Rep. gr. 10 ; Assembly bracket .

– Fit assembly device - VAS 6779- to assembly carrier, as shown.



– Fit the pressure element of the assembly device - VAS 6779/1- -1- onto the rubber-metal bearing with the flat side -arrow- in the driving direction.

1 - Thrust piece - VAS 6779/1-

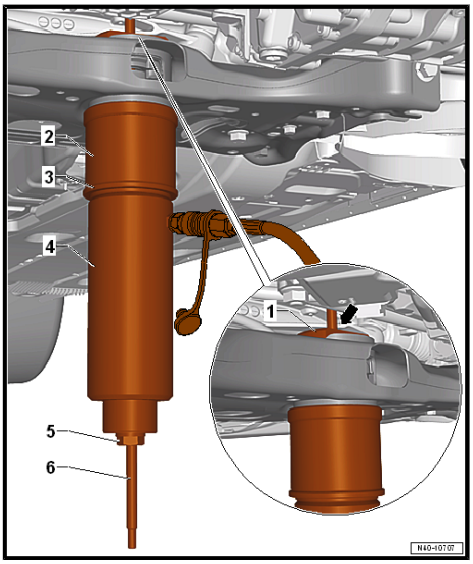
2 - Pipe - VAS 6779/4-

3 - Thrust piece - VAS 6779/5-

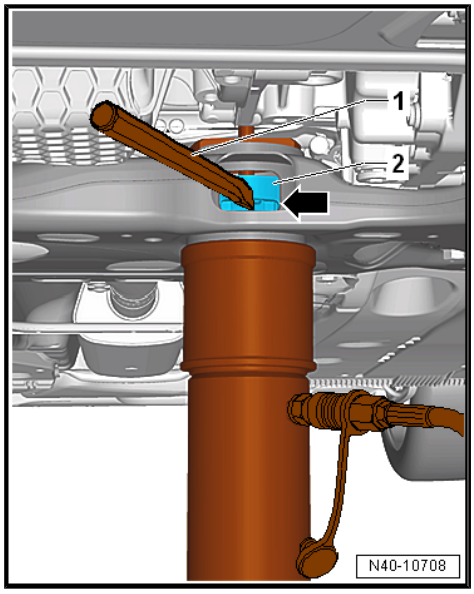
4 - Hydraulic press - VAS 6178-

5 - Nut - VAS 6779/3-

6 - Threaded spindle - VAS 6779/2-



– both parts of the rubber-metal bearing -2- so that it can be seen through the opening in the assembly carrier -arrow-.
– Carry out a visual inspection of the rubber-metal bearing -2-.
• if the upper part is deformed, it must be disrupted through the opening in the assembly carrier -arrow-.
– Push through the outer ring for the top part of the rubber-metal bearing -2- e.g. using a cold chisel -1-.



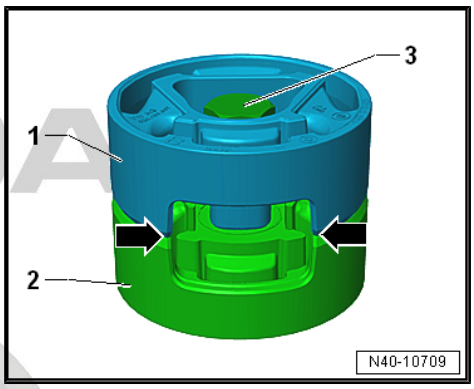
Note

Pushing through the deformed bearing prevents tilting in the assembly carrier during removal.

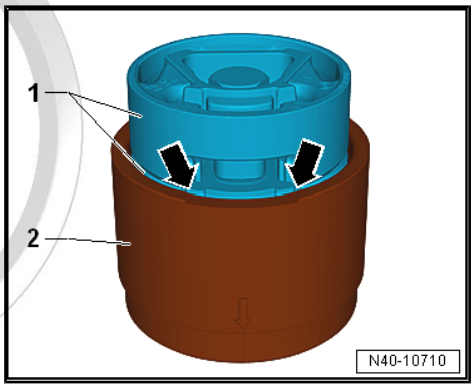
– Remove both parts of the rubber-metal bearing at the same time.

Prepare the rubber-metal bearing for pressing in

– Place the top part -1- and bottom part -2- on top of each other so that the edges of the opening -arrows- fit together precisely.
– Screw both parts together with the previous screw -3-.
– Place the bearing into the pipe - VAS 6779/6- -2- with the side with the largest diameter- the screw points to the top.



– Align the bearing -1- in the pipe - VAS 6779/6- , the edges of the opening must lie flush with the recess in the pipe - VAS 6779/6- -arrows-.



– Insert the bearing -3- into the pipe - VAS 6779/6- as far as it will go, as shown.

1 - Pressure spindle - MP3-408-

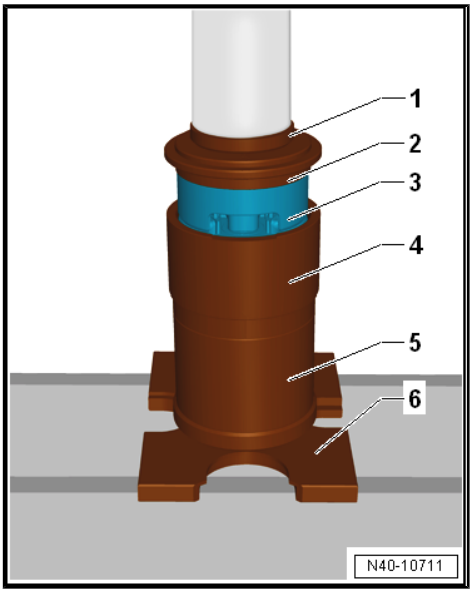
2 - Thrust element - VAS 6779/5- , side with marking »A« must face upwards

3 - Rubber-metal bearing

4 - Pipe - VAS 6779/6-

5 - Pipe - VAS 6779/4-

6 - Pressure plate - MP3-406-

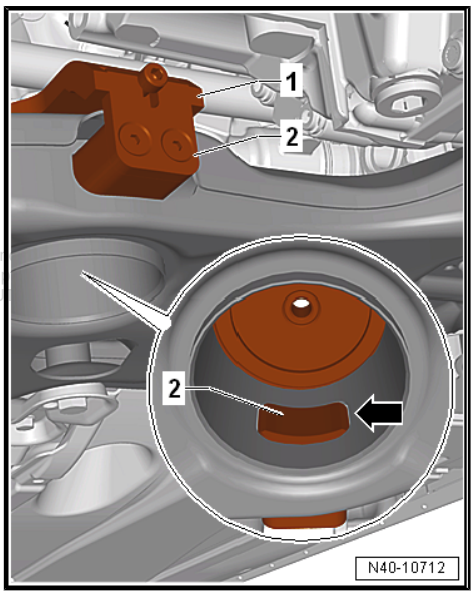


– Fit holder - VAS 6779/7- -1- to assembly carrier.

– Insert the counterpart - VAS 6779/7-1- into the opening for the pendulum support in the assembly carrier.

– Screw counterpart - VAS 6779/7-1- to holder - VAS 6779/7- .

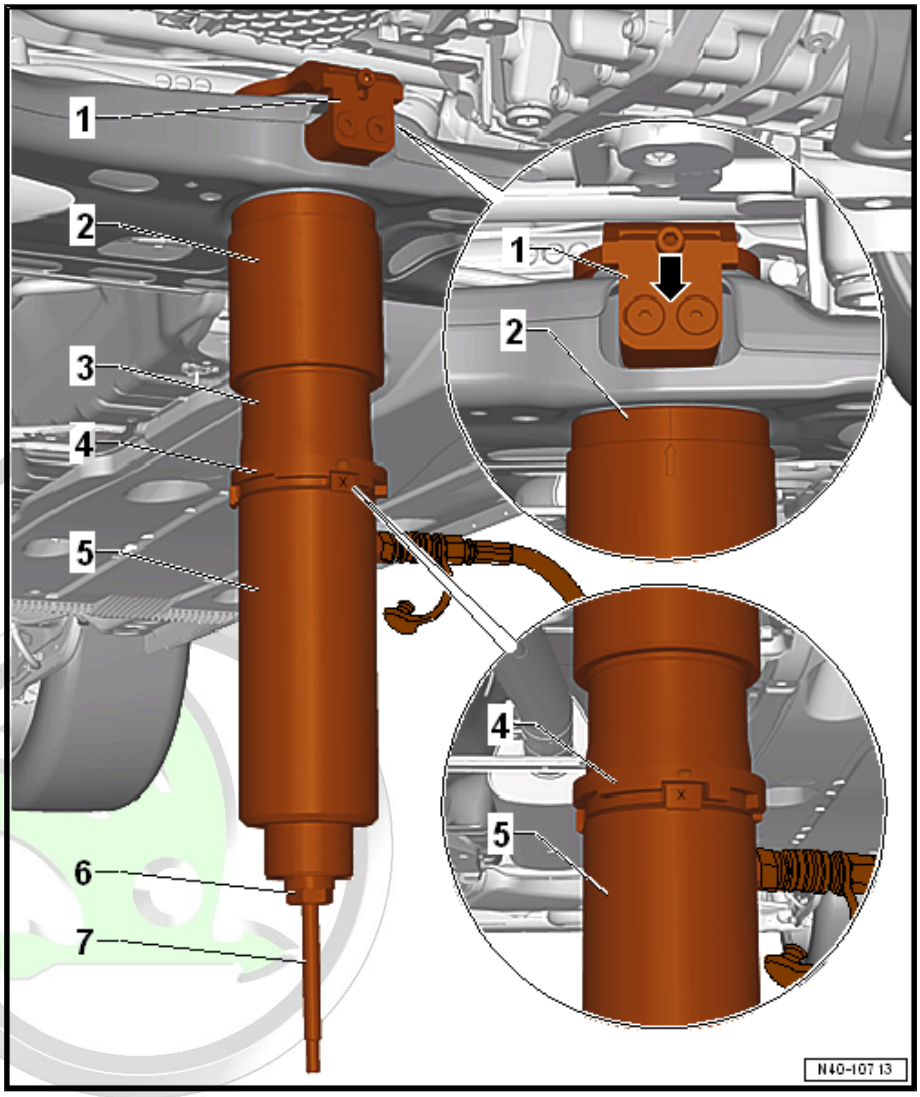
– Make sure that the counterpart - VAS 6779/7-1- is positioned exactly in the opening for the pendulum support in the assembly carrier.



Inserting the rubber-metal bearing

– Screw threaded spindle - VAS 6779/2- -7- into the holder - VAS 6779/7- -1-.

– Screw assembly device - VAS 6779- together as shown.



1 - Bracket - VAS 6779/7-

2 - Pipe - VAS 6779/6- , the -arrow- marking on the pipe must point exactly to the centre between the screws on the bracket - VAS 6779/7- -arrow-

3 - Thrust piece - VAS 6779/9-

4 - Composite seal - VAS 6779/8- , marking -I- on the composite seal , must line up with marking -X- on the thrust piece - VAS 6779/9- .

5 - Hydraulic press - VAS 6178-

6 - Hexagon nut - VAS 6779/3-

7 - Threaded spindle - VAS 6779/2-

– Draw in both parts of the rubber-metal bearing.

– Remove assembly device - VAS 6779- .

– Check the bearing of the rubber-metal bearing.

– Screw the anti-roll bar with the assembly carrier, and the coupling rods.

– Install the coupling rod ⇒ Rep. gr. 10 ; Powertrain mounting; remove and install coupling rod .

– Remove front noise insulation ⇒ Body Work; Rep. gr. 66 .

Tightening torques

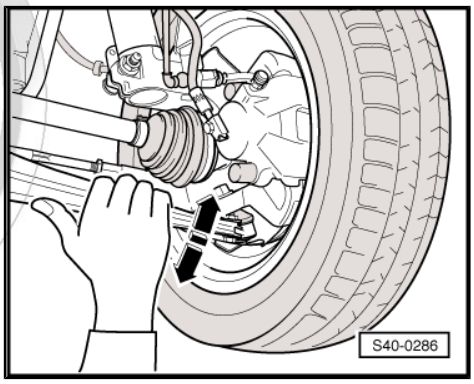
- ⇒ “3.1 Summary of components: Assembly carrier made of steel sheet, anti-roll bar, track control arm, LHD - vehicles with left-hand drive”, page 60
- ⇒ “3.2 Summary of components: Assembly carrier made of steel sheet, anti-roll bar, track control arm, RHD - vehicles with right-hand drive”, page 64
- Screws for pendulum support ⇒ Rep. gr. 10 ; Assembly bracket; Installation overview - Assembly bracket
- Screws for noise insulation ⇒ Body Work; Rep. gr. 66

3.12 Inspecting the suspension link

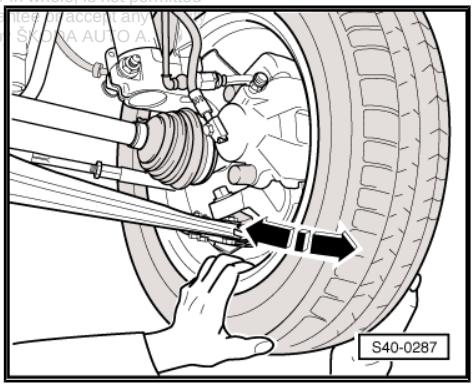
Inspecting axial play:

– Pull the track control arm down with force and push up again.

Inspecting radial play:



– Forcefully push the wheel at the bottom towards the inside and the outside.



Note

- *For these two tests no “play” may be felt or be visible.*
- *Observe the suspension link during the tests.*
- *Take into account possible wheel bearing play or “play” in top suspension strut bearing.*
- *Check rubber boot for damage and renew swivel joint if necessary.*

3.13 Removing and installing the suspension link

Special tools and workshop equipment required

- Ball joint extractor - 3287A-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-

Removing:

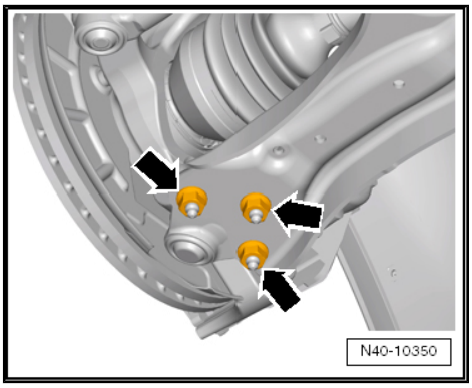
– Remove fixing screw of drive shaft at wheel hub ⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117 .

Note

- *If the fixing screw of the drive shaft is loosened more than 90°, the wheel bearings must not be loaded through the weight of the vehicle, i.e the vehicle must not stand on its wheels.*
- *If the wheel bearings are loaded through the weight of the vehicle when the fixing screw for the drive shaft is removed, the inner wheel bearing will be damaged. This shortens the life of the wheel bearing.*
- *If the vehicle should be positioned on its wheels or moved, pay attention to the following points: Install an outer joint instead of the cardan shaft. Tighten the fixing screw (use the one which was previously removed) of the outer joint to the tightening torque of 120 Nm.*

– Remove wheel.

– Release fixing nuts -arrows-.



– Unhook steering joint out of the suspension link.

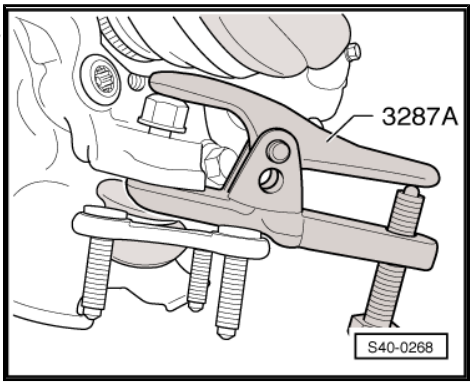
– Swivel out the wheel-bearing housing with the suspension strut and simultaneously pull the cardan shaft out of the wheel hub and attach it to the body e.g with a wire.

Note

If the cardan shaft cannot be removed from the wheel hub, it can be pressed out using the extractor *⇒ "6.2.2 Push the cardan shaft out of the wheel hub.", page 144* .

– Slacken the nut of the steering joint and partially unscrew.

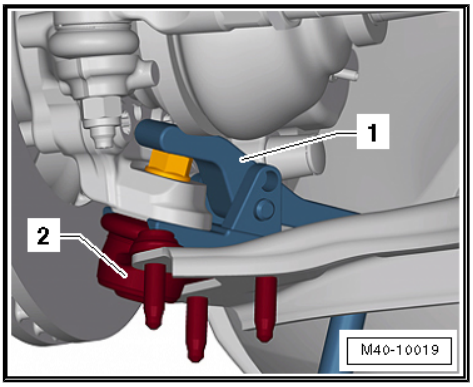
– Place the ball joint extractor - 3287A- as shown in the figure and push out the steering joint.



Note

To protect the thread, only partially unscrew the nut of the steering joint, in order to position the ball joint extractor - 3287A- .

– Using the ball joint extractor - 3287A- -1-, press the steering joint -2- out from the wheel-bearing housing.
– Remove the nut (counterhold at the pin of the steering joint using the Torx key) and remove the steering joint.



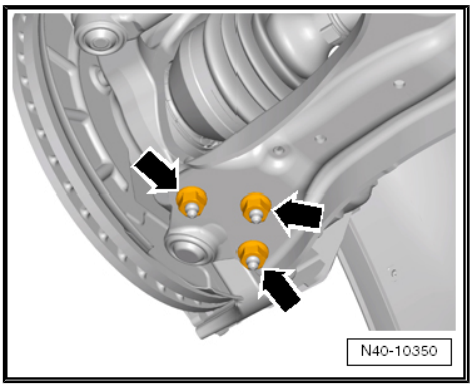
Installing:

– Insert suspension link in the wheel-house bearing. Note installation position
⇒ Fig. ““Fitting position according to the identification -arrow- on the suspension link”“ , page 7 .

Note

Make sure the steering joint boot is neither damaged nor twisted.

– Install a new self-locking nut for te steering joint (counterhold at the pin of the steering joint using the Torx key) and tighten.
– Push CV joint into wheel bearing housing.
– Tighten the nuts -arrows-.
– Tighten fixing screw of drive shaft to wheel hub
⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117 .



Note

When tightening the fixing screw of the drive shaft, the wheel must be raised until it is fully off the ground, otherwise the wheel bearing can be damaged.

– Tighten wheel.

Tightening torques:

Steering joint to wheel-bearing housing ♦ Use new nuts	60 Nm
Steering joint to track control arm ♦ Track control arm made of steel casting ♦ Track control arm made of steel sheet	 60 Nm 100 Nm
Drive shaft to wheel hub with wheel bearing “twelve-sided bolt” ♦ Use new screw ♦ Vehicle must not be standing on its wheels for tightening the screw	70 Nm + 90°
Wheel bolts	120 Nm

4 The wheel bearing

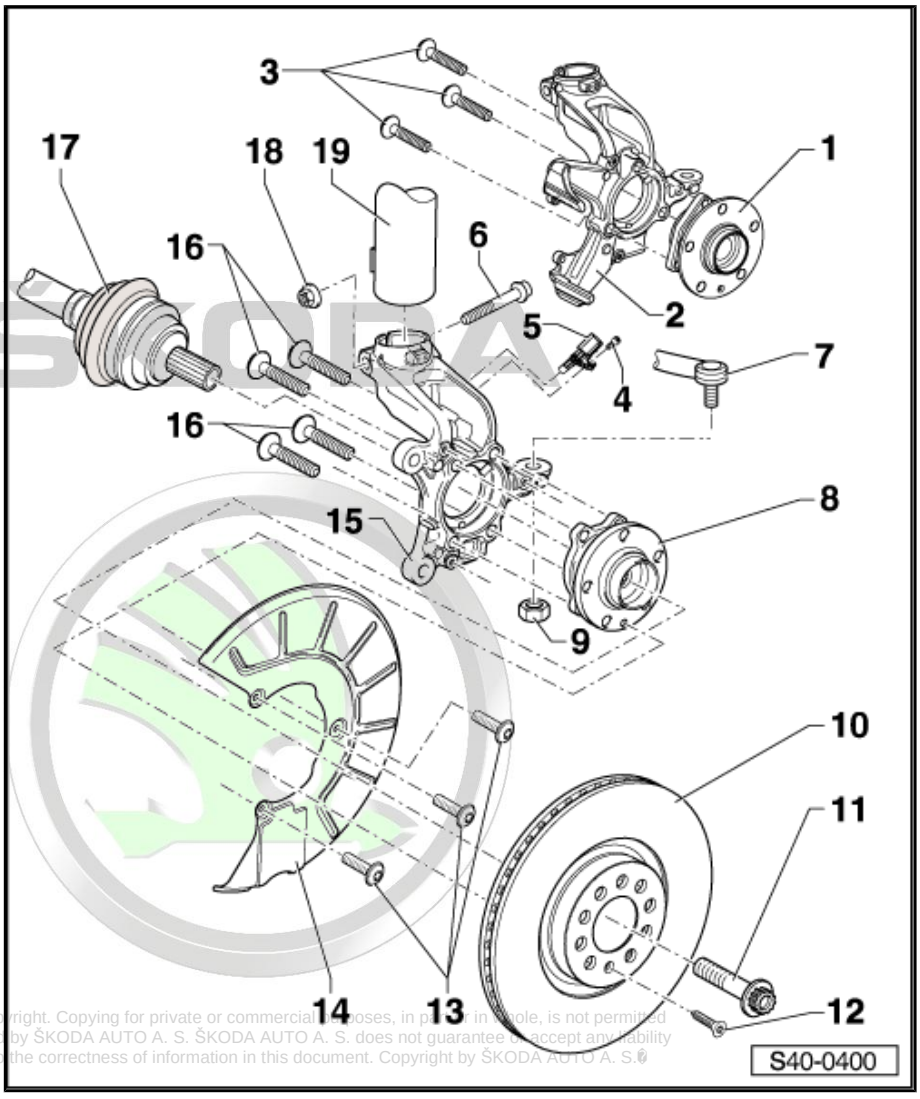
⇒ “4.1 Summary of components of the wheel bearing”, page 115

⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117 .

⇒ “4.3 Removing and installing the wheel hub with wheel bearing”, page 120 .

⇒ “4.4 Removing and installing wheel bearing housing”, page 123 .

4.1 Summary of components of the wheel bearing



1 - Wheel hub with wheel bearing (3-point support) - FS III brake

- ❑ removing and installing ⇒ “4.3 Removing and installing the wheel hub with wheel bearing”, page 120
- ❑ Sensor ring for ABS is built into the wheel hub
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

2 - Wheel bearing housing (3-point support) - FS III brake

- ❑ removing and installing ⇒ “4.4 Removing and installing wheel bearing housing”, page 123
- ❑ If the wheel bearing housing is replaced, the vehicle must be aligned ⇒ “2 Axle alignment”, page 336
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

3 - Screw

- ❑ M12 x 1.5 x 45
- ❑ replace after each removal
- ❑ 70 Nm + 90°

4 - Screw

- ❑ M6 x 16
- ❑ 8 Nm

5 - Front left wheel speed sensor - G47- / Front right wheel speed sensor - G45-

- ❑ can be checked ⇒ Vehicle diagnostic tester in the guided fault detection system
- ❑ Clean the inner surface of the hole before inserting the wheel speed sensor and coat with a solid lubricant paste - G 000 650- .

6 - Screw

- ❑ the tip of bolt must point in the direction of travel

7 - Track rod end

8 - Wheel hub with wheel bearing (4-point support) - FN3 brake

- ❑ removing and installing ⇒ “4.3 Removing and installing the wheel hub with wheel bearing”, page 120
- ❑ Sensor ring for ABS is built into the wheel hub
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

9 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 20 Nm + 90°

10 - Brake disc, internally ventilated

11 - Screw

- ❑ replace after each removal
- ❑ Turn twelve-sided bolt with serration = 70 Nm + 90°
- ❑ Turn twelve-sided bolt without serration = 200 Nm + 180°

when loosening and tightening the vehicle must not stand on its wheels

12 - Screw

- ❑ 4 Nm

13 - Screw

- ❑ M6 x 12
- ❑ 12 Nm

14 - Protection plate

15 - Wheel bearing housing (4-point support) - FN3 brakes

- ❑ removing and installing ⇒ “4.4 Removing and installing wheel bearing housing”, page 123
- ❑ If the wheel bearing housing is replaced, the vehicle must be aligned ⇒ “2 Axle alignment”, page 336
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

16 - Screw

- ❑ M12 x 1.5 x 45
- ❑ replace after each removal
- ❑ 70 Nm + 90°

17 - Drive shaft

- ❑ removing and installing ⇒ “6 Repairing the drive shafts”, page 139

18 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 70 Nm + 90°

19 - Suspension strut

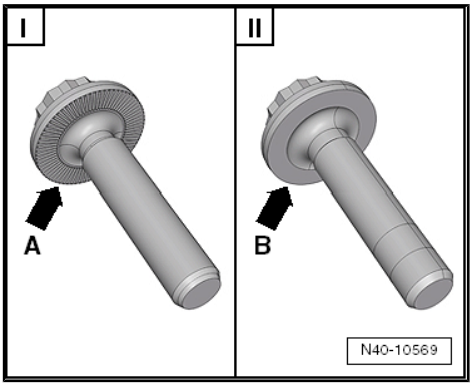
4.2 Removing and installing twelve-sided bolt for securing the drive shaft

Note

- *If the fixing screw of the drive shaft is loosened more than 90°, the wheel bearings must not be loaded through the weight of the vehicle, i.e the vehicle must not stand on its wheels.*
- *If the wheel bearings are loaded through the weight of the vehicle when the fixing screw for the drive shaft is removed, the inner wheel bearing will be damaged. This shortens the life of the wheel bearing.*
- *If the vehicle should be positioned on its wheels or moved, pay attention to the following points: Install an outer joint instead of the cardan shaft. Tighten the fixing screw (use the one which was previously removed) of the outer joint to the tightening torque of 120 Nm.*

Distinguishing feature of twelve-sided bolts

The twelve-sided bolts differ in the surface area -arrow A- and -arrow B-.

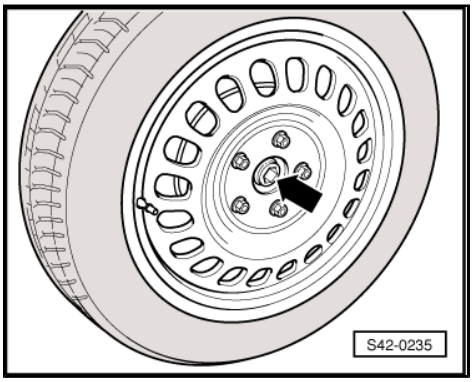


- I - Twelve-sided bolt with serration - -arrow A-
- II - Twelve-sided bolt without serration - -arrow B-

Remove twelve-sided bolt

– Remove wheel trim cap, for light-alloy wheels remove the cap on the removed wheel (depending on version) ⇒ Wheels, Tyres; Rep. gr. 44 .

– Re-install light-alloy wheel (depending on the version) without cap.



– Slacken the screw -arrow- by max. 90° on the vehicle while it is standing on its wheels, otherwise the wheel bearing may be damaged.
– Raise the vehicle until the wheels are fully off the ground.
– Depress brake pedal (assistance of second mechanic required).
– Unscrew twelve-sided bolt -arrow-.

Install twelve-sided bolt

– Always install a new screw.

Note

The wheels should not touch the ground when tightening the drive shaft screwed connection, otherwise the wheel bearing will be damaged.

– Depress brake pedal (assistance of second mechanic required).

Twelve-sided bolt with serration

– Tighten the twelve-sided bolt to 70 Nm.
– Place vehicle onto its wheels.
– Depress brake pedal (assistance of second mechanic required).
– Turn twelve-sided bolt a further 90°.
– Install wheel trim cap, for light-alloy wheels (depending on version) install cap.

Twelve-sided bolt without serration

– Tighten the twelve-sided bolt to 200 Nm.
– Place vehicle onto its wheels.
– Depress brake pedal (assistance of second mechanic required).
– Tighten twelve-sided bolt by turning it 180°.
– Install wheel trim cap, for light-alloy wheels (depending on version) install cap.

Tightening torques:

Twelve-sided bolt with serration for securing the drive shaft of the front axle ♦ Use new screw!	70 Nm + 90°
Twelve-sided bolt without serration for securing the drive shaft of the front axle ♦ Use new screw!	200 Nm + 180°
Wheel bolt	120 Nm

4.3 Removing and installing the wheel hub with wheel bearing

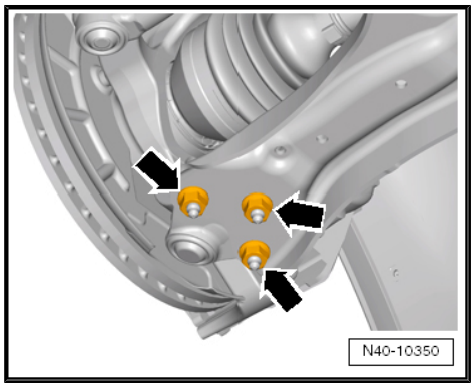
Removing:

– Remove fixing screw of drive shaft at wheel hub
⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117 .

Note

- *If the fixing screw of the drive shaft is loosened more than 90°, the wheel bearings must not be loaded through the weight of the vehicle, i.e the vehicle must not stand on its wheels.*
- *If the wheel bearings are loaded through the weight of the vehicle when the fixing screw for the drive shaft is removed, the inner wheel bearing will be damaged. This shortens the life of the wheel bearing.*
- *If the vehicle should be positioned on its wheels or moved, pay attention to the following points: Install an outer joint instead of the cardan shaft. Tighten the fixing screw (use the one which was previously removed) of the outer joint to the tightening torque of 120 Nm.*

– Remove wheel.
– Remove brake caliper with brake carrier (depending on the version) and tie with wire to the body ⇒ Brake systems; Rep. gr. 46 .
– Remove the ABS-speed sensor ⇒ Brake systems; Rep. gr. 45 .
– Remove the brake disk (depending on the design) ⇒ Brake systems; Rep. gr. 46 .
– Release fixing nuts -arrows-.
– Unhook steering joint out of the suspension link.
– Swivel out the wheel-bearing housing with the suspension strut and simultaneously pull the cardan shaft out of the wheel hub and attach it to the body e.g with a wire.

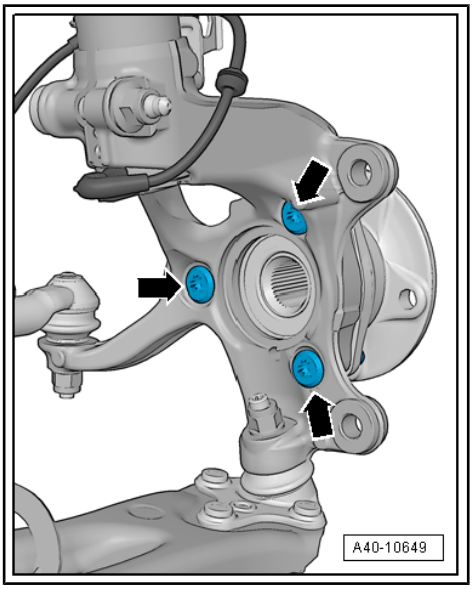


Note

- *If the cardan shaft cannot be removed from the wheel hub, it can be pressed out using the extractor*
⇒ “6.2.2 Push the cardan shaft out of the wheel hub.”, page 144 .
- *The cardan shaft must not hang down, otherwise the inner joint will be damaged.*

– Screw steering joint to the track control arm.

– Remove bolts -arrows-.



Depending on the build status, the wheel hub with wheel bearing is supported with 3 or 4 screws.

– Remove the wheel bearing out of the wheel-bearing housing.

Installing:

Installation is carried out in the reverse order.

– Slide in the drive shaft into the wheel hub with wheel bearing.

– Install the brake disk (depending on the design) ⇒ Brake systems; Rep. gr. 46 .

– Install brake caliper with brake carrier (depending on the version) ⇒ Brake systems; Rep. gr. 46 .

– Installing the ABS speed sensor ⇒ Brake systems; Rep. gr. 45 .

– Tighten fixing screw of drive shaft to wheel hub ⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117 .

Note

When tightening the fixing screw of the drive shaft, the wheel must be raised until it is fully off the ground, otherwise the wheel bearing can be damaged.

Tightening torques:

Wheel bearing/wheel bearing unit to wheel bearing housing ♦ Use new screws	70 Nm + 90°
Brake caliper to wheel-bearing housing ♦ Brake caliper FN3 with brake carrier ♦ Brake caliper FS III	 190 Nm 30 Nm
Speed sensor to wheel-bearing housing	8 Nm
Brake disc to wheel hub with wheel bearing	4 Nm
Drive shaft to wheel hub with wheel bearing “twelve-sided bolt” ♦ Use new screw ♦ Vehicle must not be standing on its wheels for tightening the screw	⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117
Wheel bolts	120 Nm

4.4 Removing and installing wheel bearing housing

Special tools and workshop equipment required

- Ball joint extractor - 3287A-
- Spreader - 3424-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-

Removing:

– Remove fixing screw of drive shaft at wheel hub
⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117 .

Note

- *If the fixing screw of the drive shaft is loosened more than 90°, the wheel bearings must not be loaded through the weight of the vehicle, i.e the vehicle must not stand on its wheels.*
- *If the wheel bearings are loaded through the weight of the vehicle when the fixing screw for the drive shaft is removed, the inner wheel bearing will be damaged. This shortens the life of the wheel bearing.*
- *If the vehicle should be positioned on its wheels or moved, pay attention to the following points: Install an outer joint instead of the cardan shaft. Tighten the fixing screw (use the one which was previously removed) of the outer joint to the tightening torque of 120 Nm.*

– Remove wheel.

– Remove brake caliper with brake carrier (depending on the version) and tie with wire to the body ⇒ Brake systems; Rep. gr. 46 .

– Remove the ABS-speed sensor ⇒ Brake systems; Rep. gr. 45 .

– Remove the brake disk (depending on the design) ⇒ Brake systems; Rep. gr. 46 .

– Removing heat shield from wheel-bearing housing.

– Loosen nut of track rod end, but do not unscrew yet.

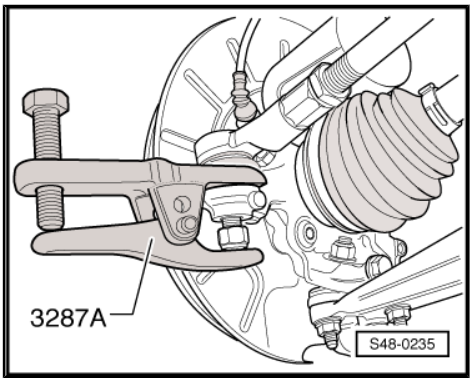
Note

To protect the thread, screw the nut a couple of thread turns onto the pivot pin.

– Press the steering joint off the wheel-bearing housing with ball joint extractor - 3287A- and now unscrew the nut.

– Unscrew nut for suspension link/track rod.

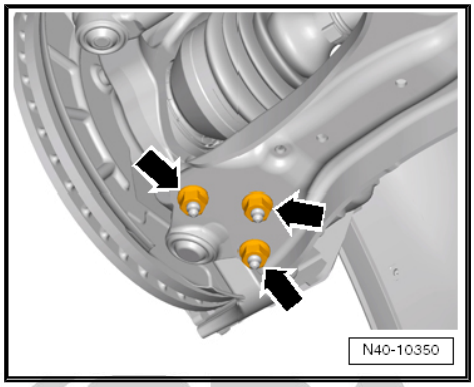
– Pull track rod end out of the wheel bearing housing.



– Release fixing nuts -arrows-.

– Unhook steering joint out of the suspension link.

– Swivel out the wheel-bearing housing with the suspension strut and simultaneously pull the cardan shaft out of the wheel hub and attach it to the body e.g with a wire.

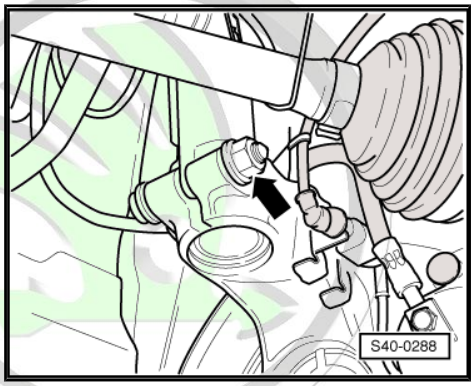


Note

- *If the cardan shaft cannot be removed from the wheel hub, it can be pressed out using the extractor* ⇒ *"6.2.2 Push the cardan shaft out of the wheel hub.", page 144* .
- *The cardan shaft must not hang down, otherwise the inner joint will be damaged.*

– Position the engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- under the wheel-bearing housing.

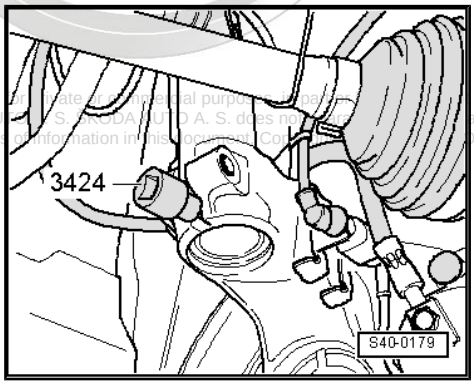
– Separate the screwed connection wheel-bearing housing/suspension strut -arrow-.



– Insert the spreader - 3424- in the slot on the wheel-bearing housing.

– Turn ratchet with spreader - 3424- by 90° and remove ratchet.

– Pull wheel bearing housing from suspension strut.



Installing:

Installation is performed in the reverse order; pay attention to the following points:

– Tighten fixing screw of drive shaft to wheel hub ⇒ "4.2 Removing and installing twelve-sided bolt for securing the drive shaft", page 117 .

Note

When tightening the fixing screw of the drive shaft, the wheel must be raised until it is fully off the ground, otherwise the wheel bearing can be damaged.

If the wheel-bearing housing was replaced, the vehicle must be aligned ⇒ "2 Axle alignment", page 336 .

Tightening torques:

Wheel-bearing housing to suspension strut ♦ Use new nuts ♦ the tip of bolt must point in the direction of travel	70 Nm + 90°
Steering joint to track control arm ♦ Track control arm made of steel casting ♦ Track control arm made of steel sheet	 60 Nm 100 Nm
Cover plate to wheel-bearing housing	12 Nm
Brake caliper to wheel-bearing housing ♦ Brake caliper FN3 with brake carrier ♦ Brake caliper FS III	 190 Nm 30 Nm
Speed sensor to wheel-bearing housing	8 Nm
Brake disc to wheel hub with wheel bearing	4 Nm
Track rod end to wheel-bearing housing ♦ Use new nuts! ♦ Counterhold the internal serration of the pivot pin	20 Nm + 90°
Drive shaft to wheel hub with wheel bearing “twelve-sided bolt” ♦ Use new screw ♦ Vehicle must not be standing on its wheels for tightening the screw	⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117
Brake line holder on wheel-bearing housing	15 Nm
Wheel bolts	120 Nm

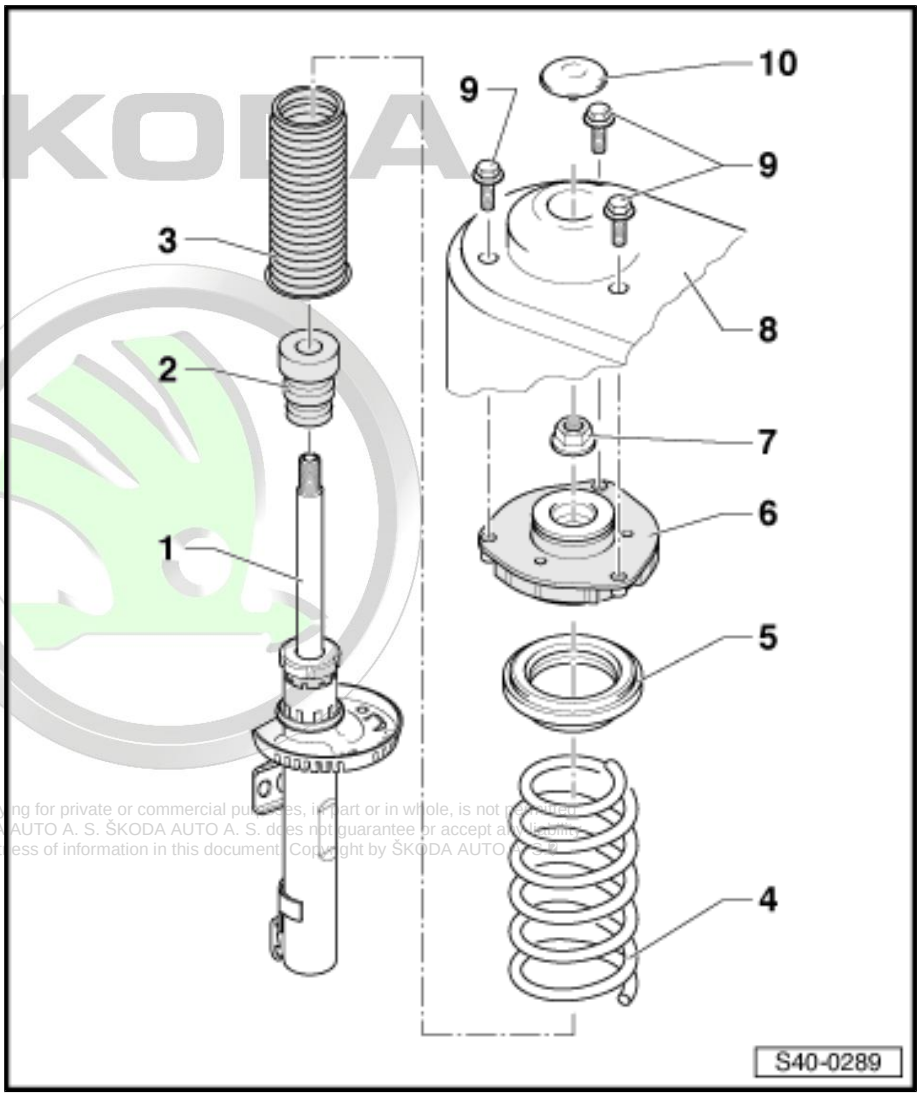
5 Summary of components of wheel suspension

⇒ “5.1 Removing and installing the suspension strut”, page 127 .

⇒ “5.2 Repairing suspension strut”, page 133 .

⇒ “5.3 Inspect shock absorber”, page 135 .

⇒ “5.4 Disposing of the shock absorber”, page 136 .



1 - Shock absorber

- ❑ can be replaced separately
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ checking ⇒ “5.3 Inspect shock absorber”, page 135 .
- ❑ disposing of ⇒ “5.4 Disposing of the shock absorber”, page 136

2 - Stop buffer

3 - Boot

4 - Coil spring

- ❑ removing and installing ⇒ “5.2 Repairing suspension strut”, page 133
- ❑ check colour coding
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

Allocation of the springs via PR No.

These numbers can be found on the vehicle data sticker.

- ❑ The surface of the spring coil must not be damaged

5 - Axial grooved ball bearing

6 - Suspension strut bearing

- ❑ Note installation position ⇒ “5.1 Removing and installing the suspension strut”, page 127

7 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 60 Nm

8 - Suspension strut dome

9 - Screw

- ❑ replace after each removal
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

- ❑ M8 x 26 tightening torque: 15 Nm + 90°
- ❑ M8 x 32 tightening torque: 15 Nm + 180°

10 - Protective cap

5.1 Removing and installing the suspension strut

Special tools and workshop equipment required

- ♦ Spreader - 3424-
- ♦ Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-
- ♦ Support - T10149-

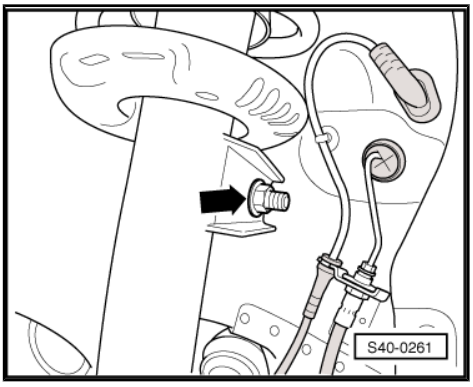
Removing:

– Remove fixing screw of drive shaft at wheel hub
⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117

Note

- ♦ *If the fixing screw of the drive shaft is loosened more than 90°, the wheel bearings must not be loaded through the weight of the vehicle, i.e the vehicle must not stand on its wheels.*
- ♦ *If the wheel bearings are loaded through the weight of the vehicle when the fixing screw for the drive shaft is removed, the inner wheel bearing will be damaged. This shortens the life of the wheel bearing.*
- ♦ *If the vehicle should be positioned on its wheels or moved, pay attention to the following points: Install an outer joint instead of the drive shaft. Tighten the fixing screw (use the one which was previously removed) of the outer joint to the tightening torque of 120 Nm.*

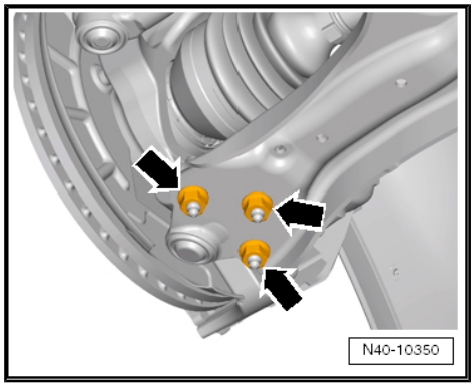
– Remove wheel.
– Unscrew the nut of the coupling rod -arrow- from the suspension strut.
– Unhook ABS speed sensor cable at the suspension strut.



– Release fixing nuts -arrows-.

– Unhook steering joint out of the suspension link.

– Swivel out the wheel-bearing housing with the suspension strut and simultaneously pull the cardan shaft out of the wheel hub and attach it to the body e.g with a wire.

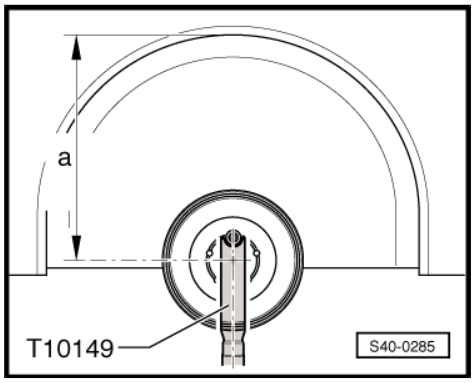


Note

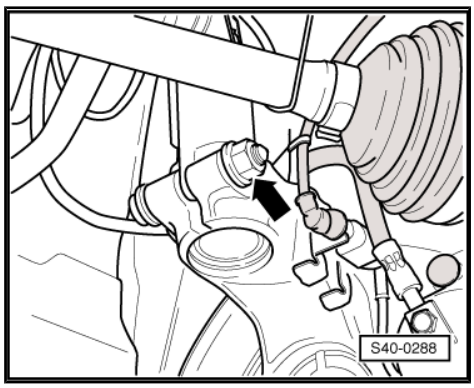
- *If the cardan shaft cannot be removed from the wheel hub, it can be pressed out using the extractor* *⇒ "6.2.2 Push the cardan shaft out of the wheel hub.", page 144* *.*
- *The cardan shaft must not hang down, otherwise the inner joint will be damaged.*

– Screw steering joint to the track control arm.

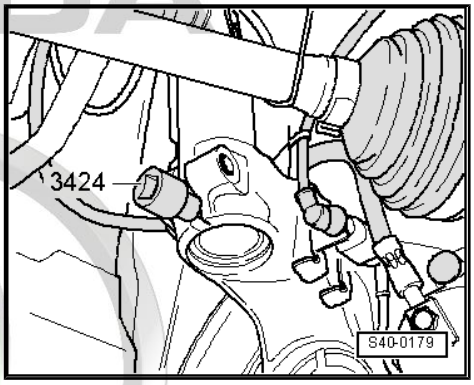
– Attach engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with support - T10149- to the wheel hub with a wheel bolt.



– Separate the screwed connection wheel-bearing housing/suspension strut -arrow-.



– Insert the spreader - 3424- in the slot on the wheel-bearing housing.

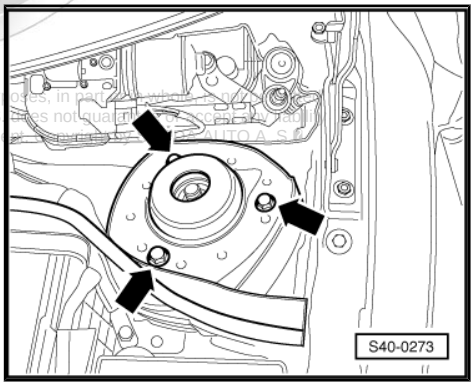


– Turn ratchet with spreader - 3424- by 90° and remove ratchet.
– Press the brake disc by hand towards the suspension strut.

Otherwise the shock absorber tube can cant in the opening of the wheel bearing housing.

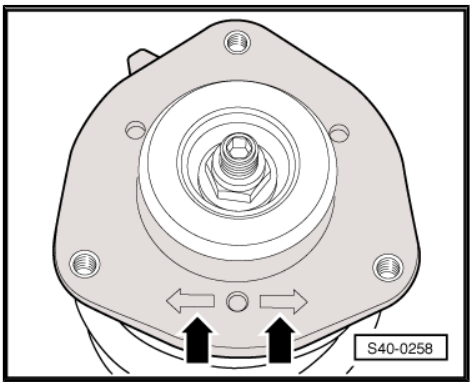
– Pull wheel-bearing housing downwards away from the shock-absorber tube and lower with engine/gearbox jack e.g.. -V.A.G 1383A- or -VAS6931- until the shock-absorber tube hangs free.
– Secure the wheel-bearing housing with wire to the console.
– Remove the engine/gearbox jack from underneath the wheel-bearing housing.
– Remove the cooling water tank cover ⇒ Body Work; Rep. gr. 66 .

– Unscrew screws -arrows- for top shock-absorber fixture and take out suspension strut.

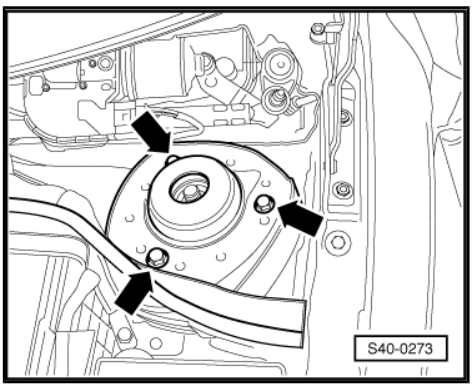


Installing:

– Insert suspension strut, while doing so one of the two markings -arrows- must point in direction of travel.



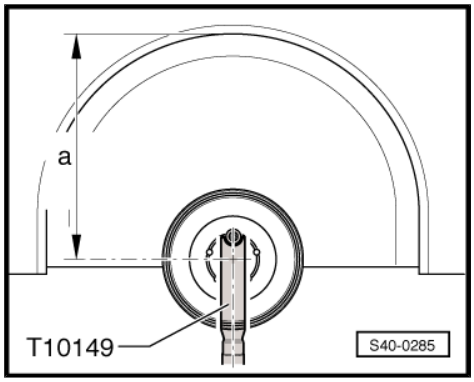
Tighten screws -arrows- for top shock-absorber fixture.



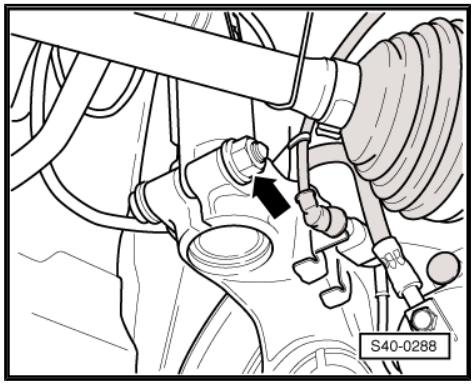
– Install the cooling water tank cover ⇒ Body Work; Rep. gr. 66 .

– Attach engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with support - T10149- to the wheel hub with a wheel bolt.
– Attach wheel-bearing housing to suspension strut.
– Remove the wire at the wheel-bearing housing.
– Carefully raise up the wheel-bearing housing using the engine/gearbox jack to the point where the screw for the suspension strut/wheel-bearing housing can be inserted.
– When lifting, press the brake disc by hand towards the suspension strut.

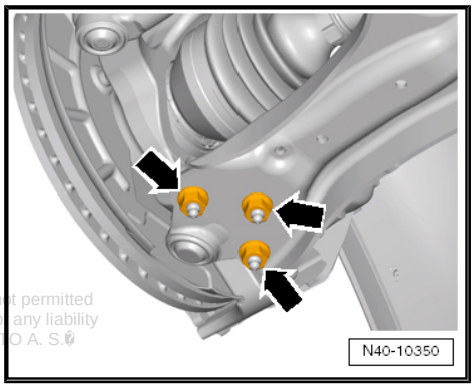
Otherwise the shock absorber tube can cant in the opening of the wheel bearing housing.



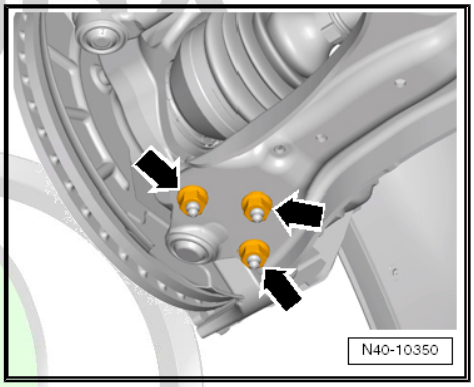
– Remove spreader - 3424- .
– Tighten the screwed connection wheel-bearing housing/suspension strut -arrow-.



– Unscrew the nuts -arrows-.
– Unhook steering joint out of the suspension link.
– Slide in the drive shaft into the wheel hub with wheel bearing.
– Insert wheel-bearing housing with steering joint into the track control arm.



– Screw steering joint and suspension link together -arrows- and tighten with specified tightening torque.
– Attach ABS speed sensor cable to the suspension strut.



Note

Make sure the boot is neither damaged nor twisted.

– Insert coupling rod into suspension strut and tighten.
– Tighten fixing screw of drive shaft to wheel hub
⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117 .

Note

When tightening the fixing screw of the drive shaft, the wheel must be raised until it is fully off the ground, otherwise the wheel bearing can be damaged.

– Tighten wheel.

Tightening torques:

Wheel-bearing housing to suspension strut ♦ Use new nuts ♦ the tip of bolt must point in the direction of travel	70 Nm + 90°
Suspension strut to body ♦ Use new screws	⇒ “5 Summary of components of wheel suspension”, page 126 Pos. 9
Steering joint to track control arm ♦ Track control arm made of steel casting ♦ Track control arm made of steel sheet	 60 Nm 100 Nm
Coupling rod to suspension strut ♦ Use new nuts! ♦ Counterhold the internal serration of the pivot pin	65 Nm
Drive shaft to wheel hub with wheel bearing “twelve-sided bolt” ♦ Use new screw ♦ Vehicle must not be standing on its wheels for tightening the screw	⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117
Wheel bolts	120 Nm

5.2 Repairing suspension strut

Special tools and workshop equipment required

- Spring tensioning device , e.g. -V.A.G 1752/1-
- Spring holder , e.g. -V.A.G 1752/5-
- Shock absorber set - T10001-

Removing the coil spring:

– Removing the suspension strut
⇒ “5.1 Removing and installing the suspension strut”, page 127 .

– Preload the coil spring with tensioning device e.g. -V.A.G 1752/1- until the top axial grooved ball bearing is released.

1 - Spring tensioning device , e.g. -V.A.G 1752/1-

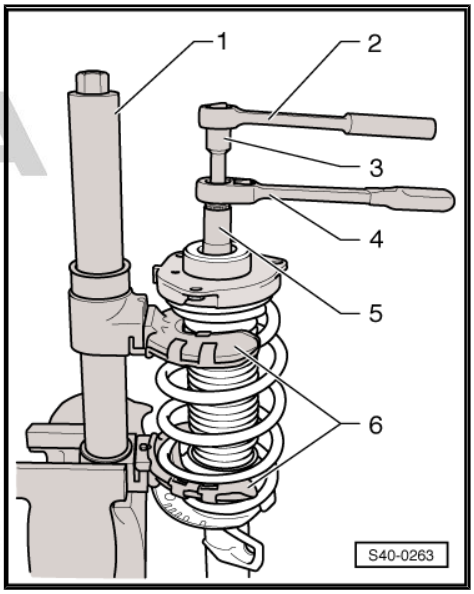
2 - Torque wrench

3 - Socket - T10001/8-

4 - Ratchet - T10001/11-

5 - Socket - T10001/5-

6 - Spring holder , e.g. -V.A.G 1752/4-



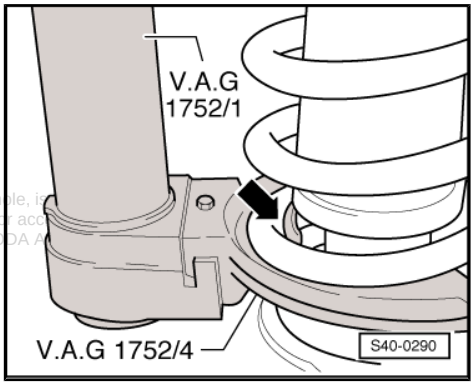
WARNING

First preload the spring so that the top spring cap is relieved!

– Check correct seating of the helical spring in the spring tensioner , e.g. -V.A.G 1752/4- -arrow-.

– Unscrew nut from the piston rod.

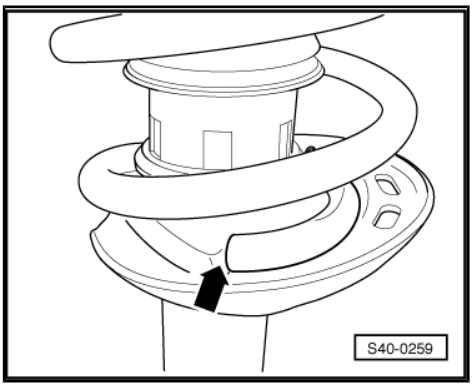
– Remove individual parts of the suspension strut and the coil spring using the spring tensioning device , e.g. -V.A.G 1752/1- .



Installing the coil spring:

– Position the helical spring with° spring tensioning device , e.g. -V.A.G 1752/1- on the bottom spring washer.

The thread end of the helical spring must lie against the stop -arrow-.



– Tighten new nut to piston rod.

– Slacken the spring tensioning device e. g. -V.A.G 1752/1- and remove from the coil spring.

– Install suspension strut
⇒ “5.1 Removing and installing the suspension strut”, page 127 .

Tightening torque:

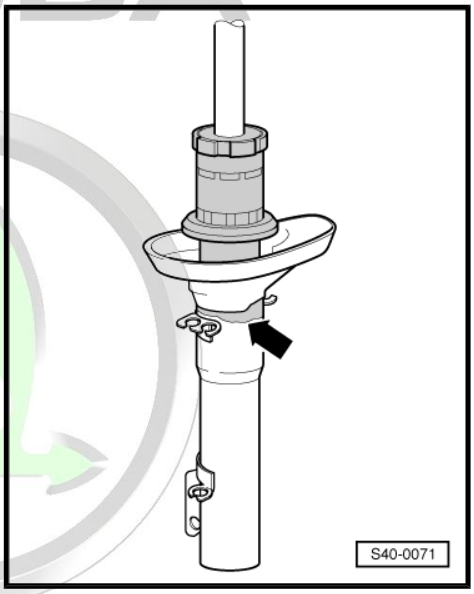
Suspension strut bearing to piston rod ♦ Use new nuts	60 Nm

5.3 Inspect shock absorber

5.3.1 Leaks on the shock absorber

Minor oil leakage (sweating) on the piston rod seal does not entail the replacement of the shock absorber.

If an oil leak is visible (but blunt, dull, possibly dried by dust) and does not propagate any further than from the top shock-absorber plug (piston rod seal) to the bottom spring cap -arrow-, the shock absorber is deemed to be O.K.



Note

A slight oil leak is beneficial as the gasket is lubricated and this increases the life time. This applies for shock absorbers on the front as well as the rear axle.

5.3.2 Noises on the shock absorber

There is reason to believe that in the event of noise complaints the shock absorbers are all too often considered as the source.

Possible causes of noise may be e.g.:

- defective shock absorber
- suspension strut/body attachment is loose
- defective axial grooved ball bearing
- poor operation of the suspension strut
- defective outer joint
- defective wheel bearing
- cracked welding points on body
- parts loosened or overtensioned when installed (exhaust system, attachments, flaps, etc.)

Note

In the event of complaints about noises interpreted as knocking or cracking noises, always first perform a test drive with the customer to determine where, when and how these noises occur (preferably on a bumpy dry road).

5.3.3 Inspecting the removed shock absorber without gas pressure

Defective shock absorbers become noticeable while driving because of the knocking noises caused by wheel hopping, more specifically on poor road surfaces and they must be replaced. The failure is mainly caused by the loss of oil. The shock absorber

then compresses and/or expands in jolts. It exhibits “idle”, before it begins to operate.

Note

The shock absorbers are maintenance-free. It is not possible to top up the shock absorber oil.

5.3.4 Inspecting the removed shock absorber with gas pressure

Damaged shock absorbers with gas pressure become noticeable because of a laud banging sound, caused by wheel hopping, and also because a strong oil leak occurs.

Manual testing, as described below, can determine if the shock absorber is damaged or not:

– Compress the shock absorber by hand.

– The piston rod must move evenly over the entire stroke without jolting.

– Release the piston rod. On sufficiently pressurized shock absorbers it will automatically return to its original position.

If this is not the case, the shock absorber need not necessarily be replaced, as it will still operate as a conventional shock absorber (see instructions below).

Note

- *The absorbing function is still fully present without sufficient gas pressure as long as the oil leakage is not too large. However, the noise level may increase. On older vehicles it is possible to continue using an operational yet pressureless shock absorber without problem.*
- *Adequate gas pressure in the shock absorber improves the noise behaviour and function when driving over poor road surfaces.*

5.4 Disposing of the shock absorber

Special tools and workshop equipment required

- Drill ∅ 3 mm (commercially available)
- Drill ∅ 6 mm (commercially available)
- Safety goggles (commercially available)
- Oil catch container (commercially available)
- Pipe cutter, e. g. Stahlwille Express - 150/3- (commercially available)

Note

There are two ways of disposing of shock absorbers.

5.4.1 Degassing the front and rear gas-filled shock absorber - Variant A

Option A: Degas by drilling out:

I - Front gas-filled shock absorber

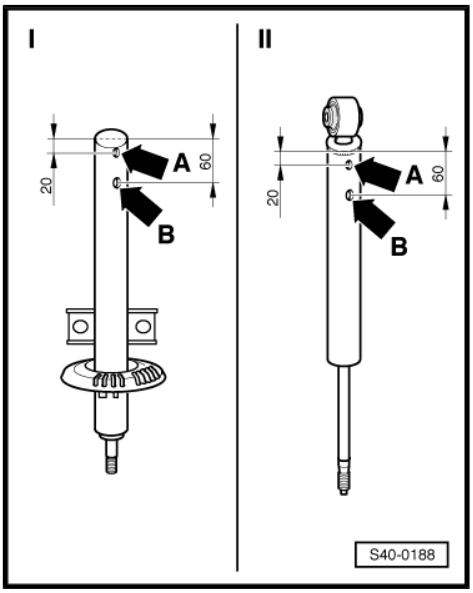
II - Rear gas-filled shock absorber

– Clamp the gas-filled shock absorber in the vice in such a way that the piston points downwards.

Caution

Wear safety goggles during the drilling procedure.

– Drill a hole ∅ 3 mm -arrow A- through the outer pipe of the shock absorber.



Note

Gas will escape during drilling.

– Drill further until the inner pipe of the shock absorber has also been drilled through (approx. 25 mm deep).

– Drill a second hole ∅ 6 mm -arrow B- through the outer and inner shock absorber pipes.

– Hold the shock absorber over an oil catch container and move the piston rod up and down over its entire stroke until no more oil escapes.

5.4.2 Degassing the front and rear gas-filled shock absorber- Variant B

Variant B: Open with the pipe cutter:

I - Front gas-filled shock absorber

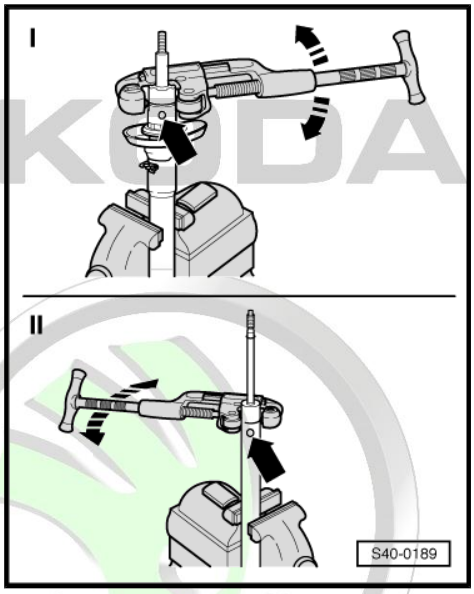
II - Rear gas-filled shock absorber

– Clamp the gas-filled shock absorber in the vice in such a way that the piston points upwards.

Caution

Wear safety goggles during the drilling procedure.

– Drill a hole ∅ 3 mm -arrow- through the outer pipe of the shock absorber.



Note

Gas will escape during drilling.

– Position a pipe cutter, e.g. Stahlwille Express - 150/3- , as shown in the figure, and cut through the outer pipe of the shock absorber.
– Pull the piston rod upwards and while doing so grip the inner pipe of the shock absorber with pliers and press it down in such a way that it remains in the outer pipe of the shock absorber when the piston rod is slowly pulled up.
– Pull the piston rod out of the inner pipe of the shock absorber.
– Empty shock absorber pipe.

6 Repairing the drive shafts

⇒ “6.1 Overview of the drive shafts”, page 139 .

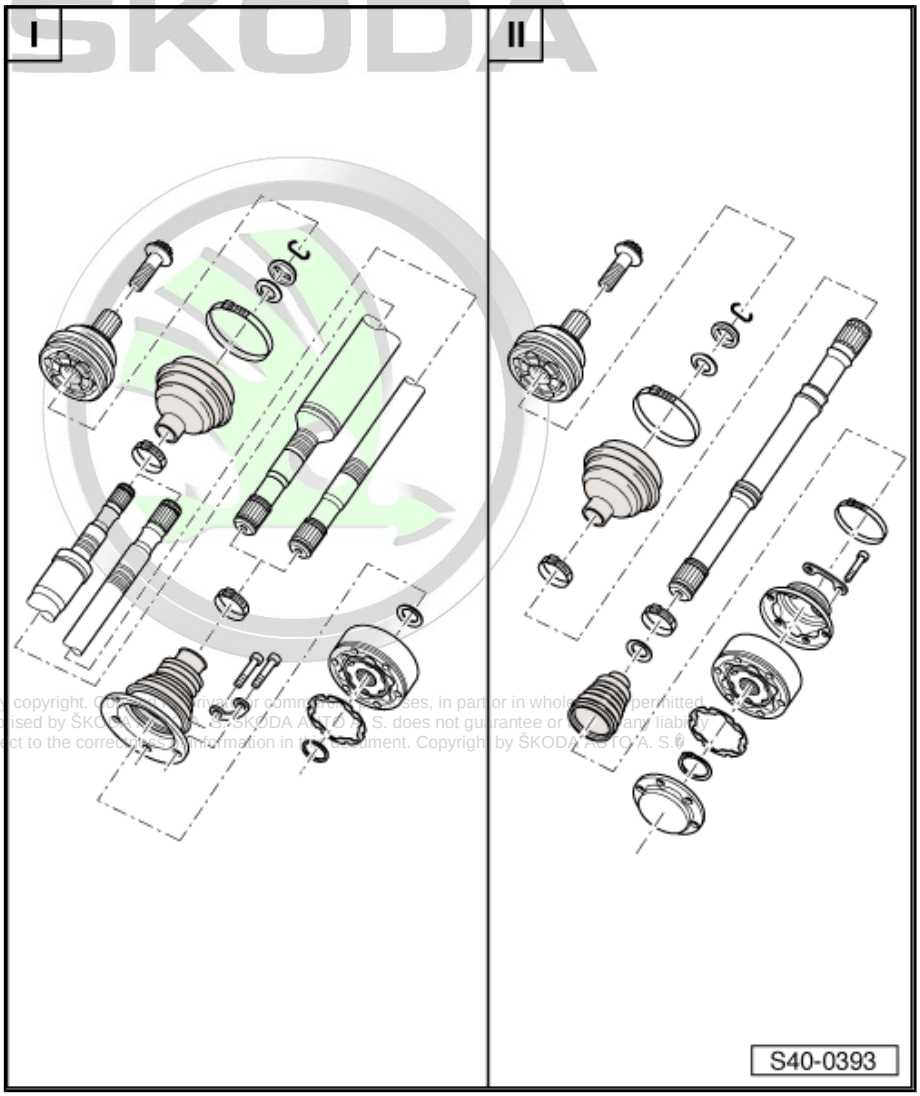
⇒ “6.2 Removing and installing drive shafts”, page 140 .

6.1 Overview of the drive shafts

The types of joints must be distinguished according to the diameter
⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173 .

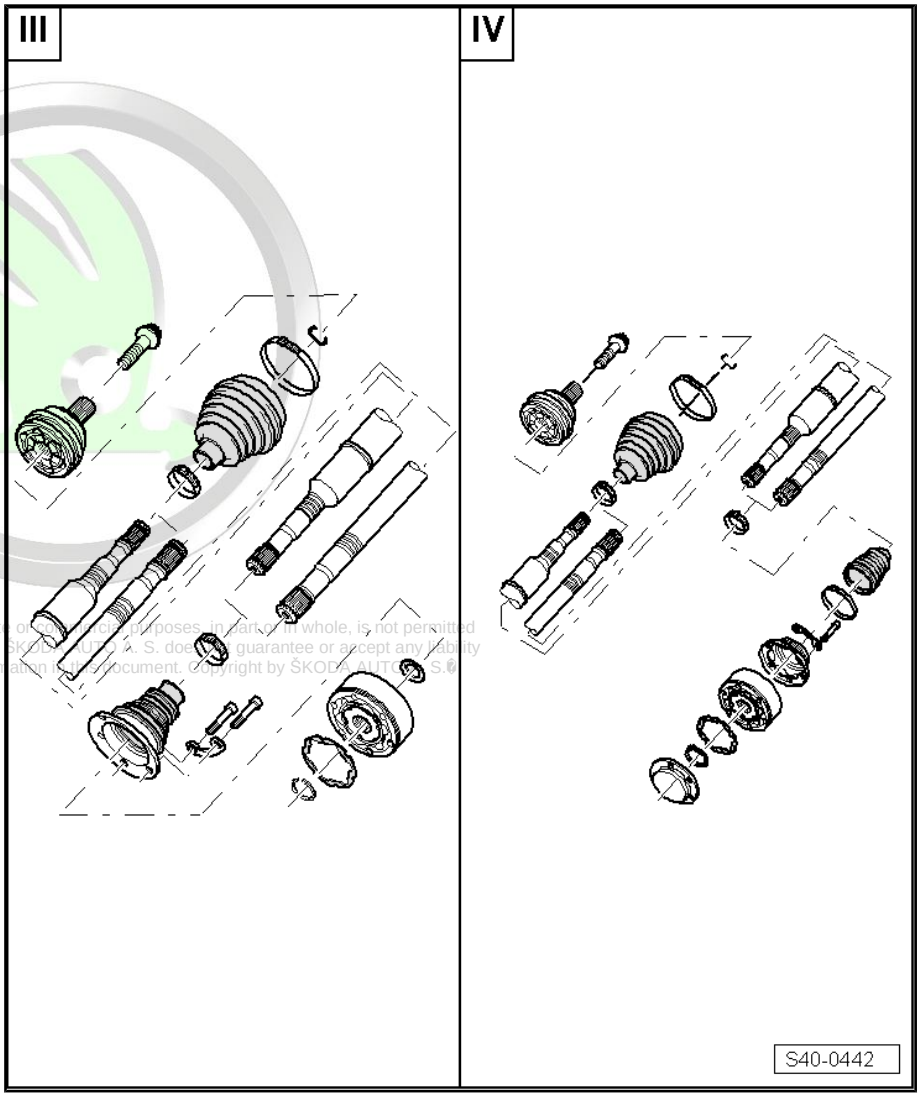
I -
⇒ “7 Drive shaft with inner CV joint VL 100”, page 147

II -
⇒ “8 Drive shaft with inner CV joint VL107”, page 155



III -
⇒ “9 Drive shaft with outer CV joint RO104”, page 163

IV -
⇒ “10 Drive shaft with outer CV joint RO3700”, page 166



6.2 Removing and installing drive shafts

WARNING

During disassembly and assembly work on the vehicle, the drive shafts must not hang down loosely and through over-stretching rest against the stop in the joints.

6.2.1 Removing and installing a drive shaft with CV joint

Removing:

– Remove fixing screw of drive shaft at wheel hub
⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117 .

Note

- *If the fixing screw of the drive shaft is loosened more than 90°, the wheel bearings must not be loaded through the weight of the vehicle, i.e the vehicle must not stand on its wheels.*
- *If the wheel bearings are loaded through the weight of the vehicle when the fixing screw for the drive shaft is removed, the inner wheel bearing will be damaged. This shortens the life of the wheel bearing.*
- *If the vehicle should be positioned on its wheels or moved, pay attention to the following points: Install an outer joint instead of the cardan shaft. Tighten the fixing screw (use the one which was previously removed) of the outer joint to the tightening torque of 120 Nm.*

– Remove wheel.

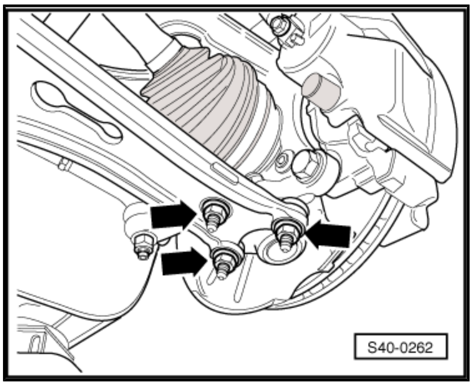
– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

– Remove drive shaft protector from the engine (if present).

– Unscrew drive shaft from gearbox flange.

– Mark the opposite position of the track control arm/steering joint.

– Release fixing nuts -arrows-.



– Unhook steering joint out of the suspension link.

– Swivel out the wheel-bearing housing with the suspension strut and simultaneously pull the cardan shaft out of the wheel hub and attach it to the body e.g with a wire.

Note

- *If the cardan shaft cannot be removed from the wheel hub, it can be pressed out using the extractor* *⇒ “6.2.2 Push the cardan shaft out of the wheel hub.”, page 144* .
- *The cardan shaft must not hang down, otherwise the inner joint will be damaged.*

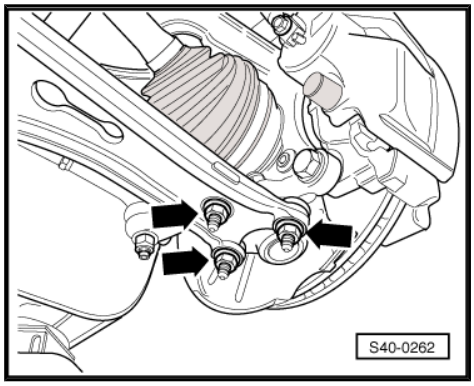
– Remove the cardan shaft.

Installing:

Remove possible paint and/or corrosion residue from the thread/ the serration of the outer joint

– Insert outer joint of the drive shaft into the wheel hub.

– Screw steering joint to the track control arm -arrows-.



Note

- *Make sure the boot is neither damaged nor twisted.*
- *Use new washers and new screws.*

– Position the inner joint of the drive shaft and tighten new screws to 10 Nm crosswise.

– Tighten the screws crosswise to the tightening torque.

– Attach drive shaft screening to the engine (if present).

– Install the noise insulation ⇒ Body Work; Rep. gr. 50 .

– Tighten fixing screw of drive shaft to wheel hub ⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117 .

Note

When tightening the fixing screw of the drive shaft, the wheel must be raised until it is fully off the ground, otherwise the wheel bearing can be damaged.

– Tighten wheel.

Tightening torques:

Drive shaft to wheel hub with wheel bearing “twelve-sided bolt” ♦ Use new screw ♦ Vehicle must not be standing on its wheels for tightening the screw	⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117
Drive shaft to gearbox mounting flange ♦ First of all pre-tighten to 10 Nm crossways ♦ Use new screws!	Tighten crosswise! M8 = 40 Nm M10 = 70 Nm
Steering joint to track control arm ♦ Track control arm made of steel casting ♦ Track control arm made of steel sheet	 60 Nm 100 Nm
Drive shaft protector	25 Nm
Wheel bolts	120 Nm

6.2.2 Push the cardan shaft out of the wheel hub.

Special tools and workshop equipment required

- ♦ Extractor - T10520A- or -T10520-

Note

If the cardan shaft cannot be pulled out of the wheel hub, it can be pressed out using the extractor - T10520A- or -T10520- .

– Unscrew cardan shaft screw ⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117 .

Note

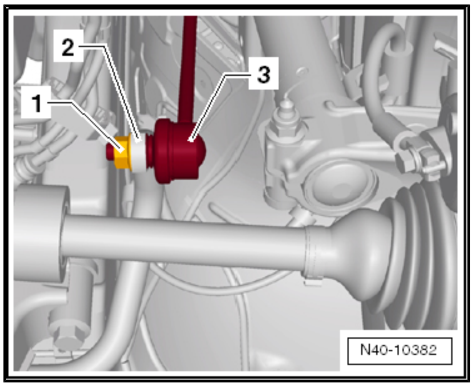
- ♦ *If the fixing screw of the drive shaft is loosened more than 90°, the wheel bearings must not be loaded through the weight of the vehicle, i.e the vehicle must not stand on its wheels.*
- ♦ *If the wheel bearings are loaded through the weight of the vehicle when the fixing screw for the drive shaft is removed, the inner wheel bearing will be damaged. This shortens the life of the wheel bearing.*
- ♦ *If the vehicle should be positioned on its wheels or moved, pay attention to the following points: Install an outer joint instead of the cardan shaft. Tighten the fixing screw (use the one which was previously removed) of the outer joint to the tightening torque of 120 Nm.*

– Remove wheel.

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

– Unscrew nut -1- from coupling rod -3-.

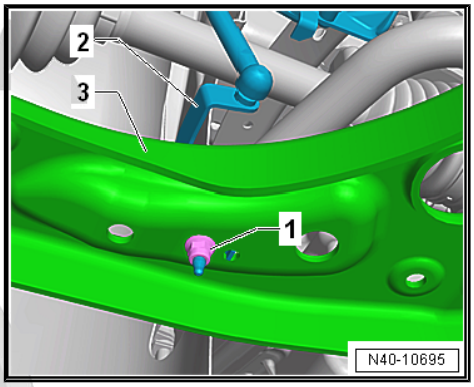
– Pull out coupling rod -3- from the anti-roll bar -2-.



Vehicles with vehicle level sender

– Remove nut - 1 -.

– Undo holder -2- from the front left vehicle level sensor - G78- and front right vehicle level sender - G289- from the suspension link -3-.

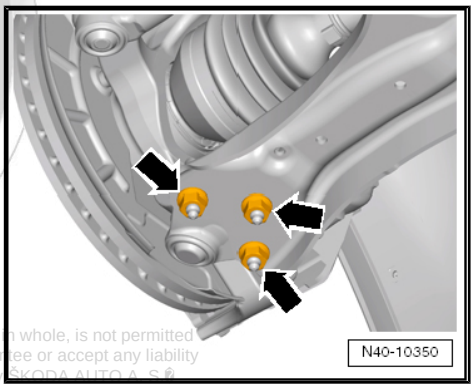


Continued for all vehicles

– Release fixing nuts -arrows-.

– Remove suspension link from suspension link of the wheel bearing housing.

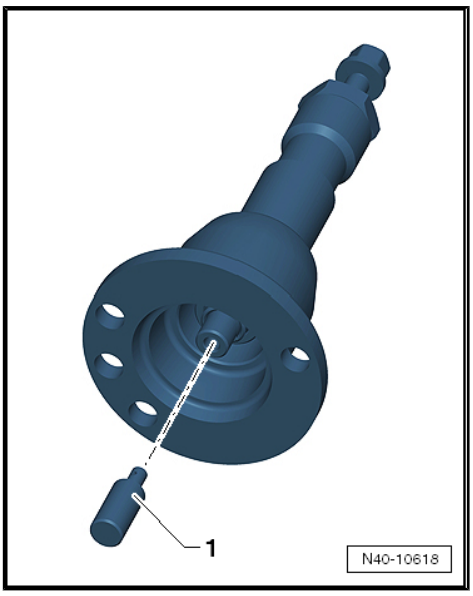
– Push the cardan shaft out using the extractor - T10520A- or - T10520- .



Process for pressing out with extractor - T10520A-

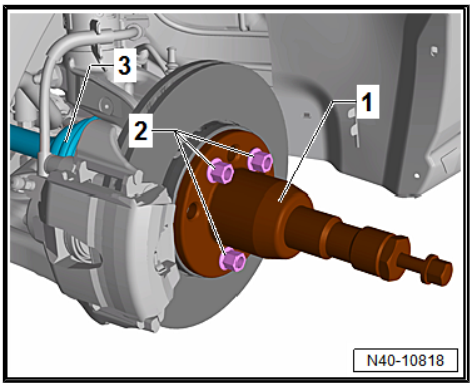
Note

Before using extractor - T10520A- ensure that thrust piece -1- is inserted.



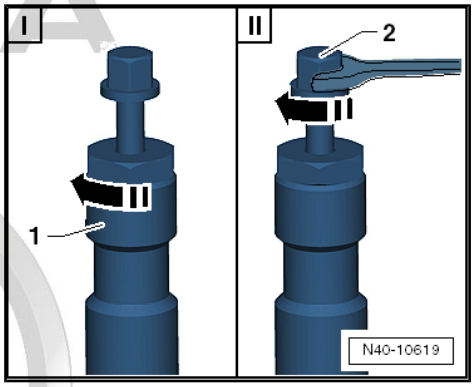
– Secure the extractor - T10520A- -1- with 3 wheel bolts -2- to the wheel hub in order to be able to press out the cardan shaft -3-.

Therefore, the following order must be observed.



– Tighten the knurled nut -1- by hand.

– Turn the screw -2- and press out the cardan shaft from the wheel hub.



Note

At the end of the procedure or for pressing out cardan shaft further the spindle must be moved to its original position in order to deploy the hydraulic force!

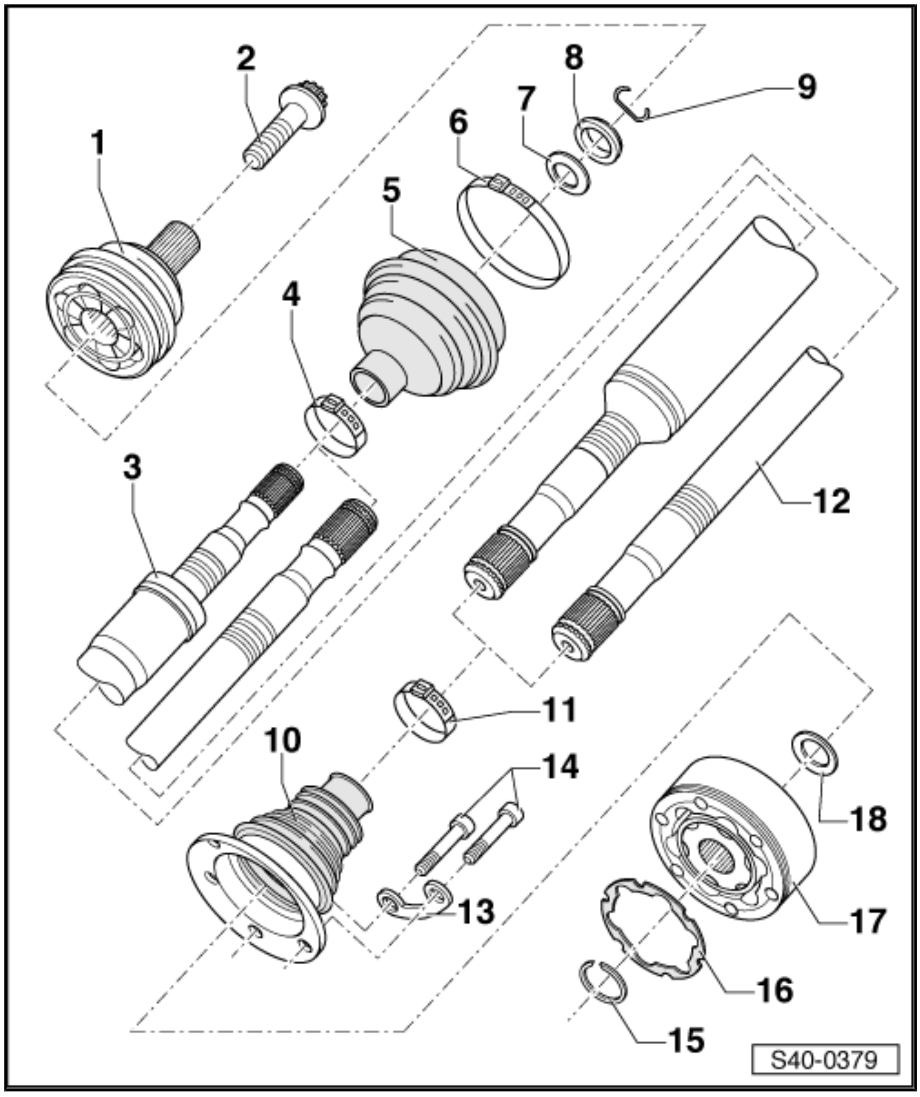
– Remove cardan shaft from wheel hub.

7 Drive shaft with inner CV joint VL 100

7.1 Summary of components

Note

- *Before removing the joints and the joint boots, thoroughly clean the surrounding areas.*
- *When disassembling the joint, remove the old lubricant and any dirt present.*
- *Clean the joint with great care.*
- *Dispose of old lubricant and cleaning agent in compliance with the applicable regulations.*
- *Place removed and cleaned parts on a clean surface and cover as needed. Use lint-free cloths!*
- *Carefully cover removed parts if the repair is not completed immediately.*
- *Only install clean parts: Remove spare parts from their wrapping immediately before fitting. Do not use any parts which have been stored unwrapped (e.g. on a shelf or in a tool box etc...).*



1 - Outer CV joint complete

- ❑ must be replaced completely
- ❑ Type of joint, grease quantity ⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173
- ❑ removing ⇒ “11.1 Removing outer CV joint”, page 169
- ❑ installing ⇒ “11.2 Installing the outer CV joint”, page 169
- ❑ check ⇒ “11.3 Check outer joint”, page 172

2 - Screw

- ❑ removing and installing ⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117
- ❑ replace after each removal

3 - Right drive shaft

4 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ page 152

5 - Collar

- ❑ inspect for tears and chafing points
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

6 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ page 152

7 - Disc spring

- ❑ Fitting position ⇒ page 171

8 - Thrust ring

- ❑ Fitting position ⇒ page 171

9 - Circlip

- ❑ replace after each removal
- ❑ insert in the shaft groove

10 - Joint boot for inner CV joint

- ❑ without ventilation hole
- ❑ inspect for tears and chafing points
- ❑ drive off from joint with a drift
- ❑ before the installation on the joint, cover the sealing surface with -D 454 300 A2-
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

11 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ page 152

12 - Left drive shaft

13 - Base

- ❑ replace after each removal

14 - Screw

- ❑ replace after each removal
- ❑ first of all pre-tighten all screws crosswise up to 10 Nm and subsequently tighten crosswise to final torque:

  Screw M8 x 48, 40 Nm

  Screw M10 x 52, 70 Nm

15 - Circlip

- ❑ remove and install e.g. with circlip pliers - VW 161A-

16 - Gasket

- ❑ The adherend must be free of grease and oil
- ❑ replace after each removal
- ❑ Pull off protective foil and stick in joint
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

17 - Inner joint

- ❑ must be replaced completely
- ❑ Grease quantity
  ⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173
- ❑ Push out ⇒ page 150
- ❑ inserting ⇒ page 151
- ❑ check ⇒ “7.4 Checking the inner joint”, page 152

18 - Disc spring

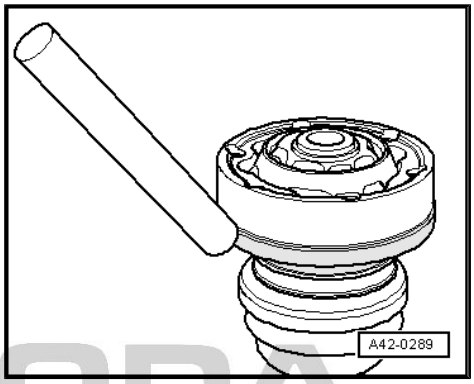
- ❑ Fitting position ⇒ page 151

7.2 Dismantling

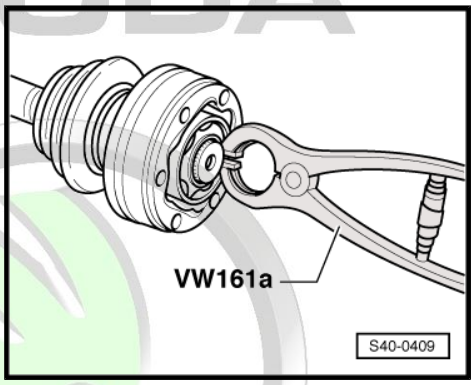
Special tools and workshop equipment required

- ♦ Pressure plate - MP3-406 (VW 401)-
- ♦ Pressure plate - MP3-407 (VW 402)-
- ♦ Thrust piece - MP3-411 (VW 454)-
- ♦ Pressure spindle - MP3-448 (VW 408 A)-
- ♦ Pressure screw - MP3-455 (VW 447 H)-
- ♦ Pressure spindle - MP6-405 (VW 411)-
- ♦ Circlip pliers , e.g. -VW 161 A-
- ♦ Tensioning pliers , e.g. -V.A.G 1682-
- ♦ Assembly device - T10065-

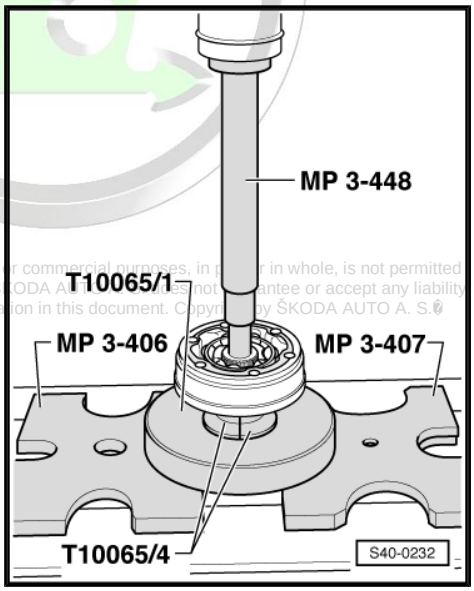
– Drive off cover and joint boot with a drift.
– Remove warm-type clamp.
– Push the cover with the warm-type clamp in direction of outer joint.



– Remove circlip with a pair of circlip pliers .
– Press the inner joint off the drive shaft.



Pressing off the inner joint



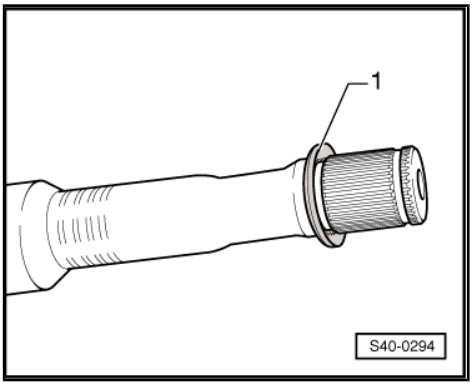
7.3 Assembling together

– Push the sheet metal cover with the joint boot onto the drive shaft.
– Push the open warm-type clamp on the drive shaft.

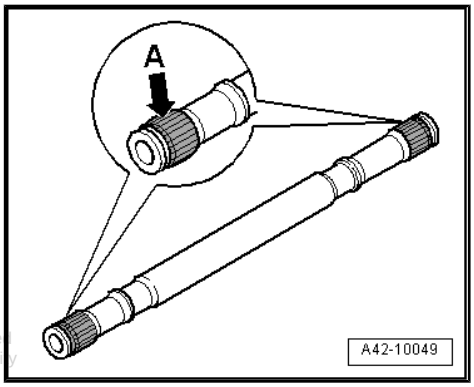
– Pay attention to the fitting position of the disc spring at the inner joint.

Fitting position of the disc spring at inner joint

1 - Disc spring



– Thinly coat the serration -A- with joint grease.
– Press on the inner joint up to the stop.

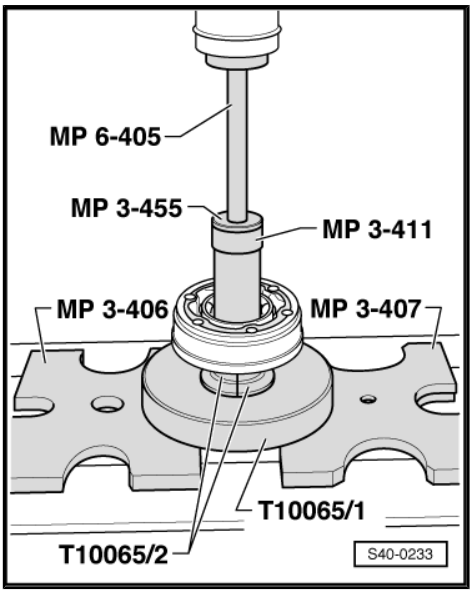


Pressing on the inner joint

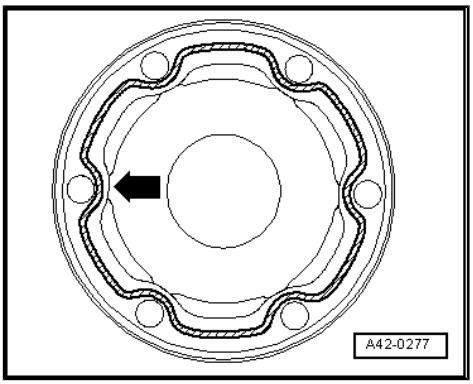
Note

Chamfer on inner diameter of the ball hub (serration) must point towards the bearing collar of the drive shaft.

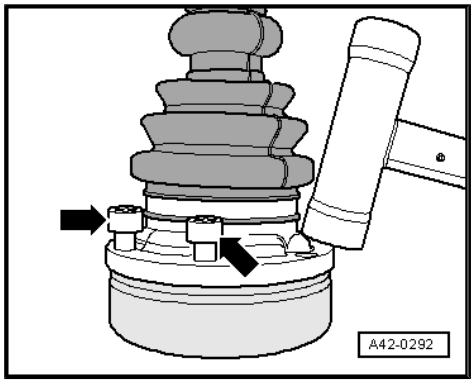
– Install circlip.
– Fill the joint with grease
⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173 .
– Clean and degrease the end faces of the joint.
– Clean and degrease the end face of the sheet metal cover for the joint boot which rests against the joint.



– Apply sealant -D 454 300 A2- on the shaded surfaces of the cover.
♦ Sealant bead: Apply continuously, Ø 2...3 mm, from inside in the area of the holes -arrow-.
– Push the sheet metal cover with the joint boot onto the joint.



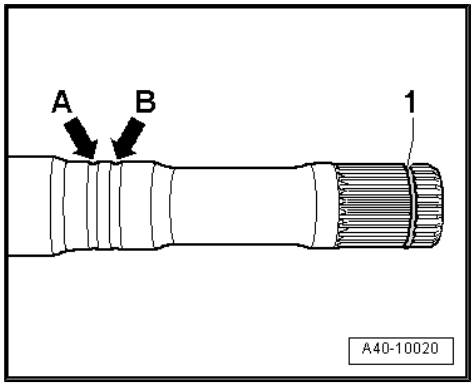
– Align the cover with the joint boot to the screw holes with screws -arrows-.



Note

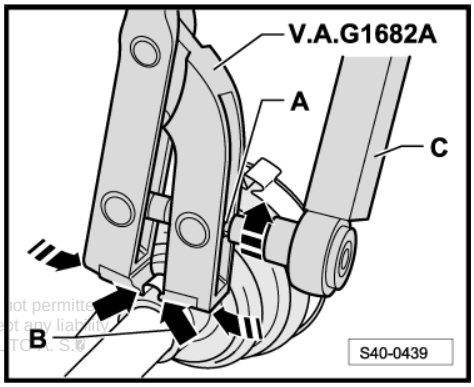
The alignment of the cover must be performed very carefully as this is no longer possible after striking it.

– Use a plastic hammer to strike the sheet metal cover with the joint boot on the joint.
– Wipe off any excess sealant, if necessary.
– Remove the protective foil from the gasket and stick the gasket into the joint from the gearbox side.
– Insert the joint boot into the outer groove of the shaft -arrow B-.
– Install warm-type clamp.



Tighten warm-type clamp:

– Position the tensioning pliers as shown in the figure. Make sure the cutting edges of the pliers are positioned in the corners -arrows B- of the open warm-type clamp.
– Tighten the open warm-type clamp by turning the spindle with a torque wrench (do not tilt the pliers during this process).



Note

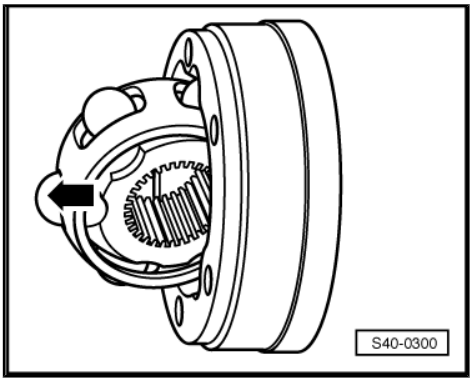
- *In view of the hard material (as opposed to rubber) of the joint boot, which requires the use of stainless steel open warm-type clamps, these can only be tightened with tensioning pliers , e.g. -V.A.G 1682 A- .*
- *Specified torque: 25 Nm.*
- *Use torque wrench -C-.*
- *Ensure that the thread of the spindle -A- of the pliers is smooth. Lubricate if necessary with grease.*
- *If it is not smooth, e.g. if the thread is dirty, the necessary clamping force of the open warm-type clamp is not reached at the given torque.*

7.4 Checking the inner joint

Removing:

Disassemble the joint to replace badly soiled grease or if the contact surfaces of the balls must be inspected for wear and damage.

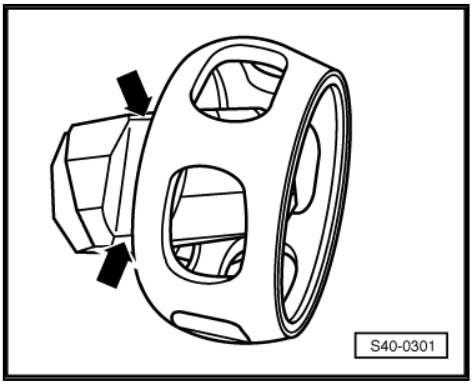
– Rotate the ball hub and ball cage.
– Press out joint part in -direction of arrow-.
– Successively press out the balls from the cage.



Note

The ball hub and joint piece are paired. These are not interchangeable.

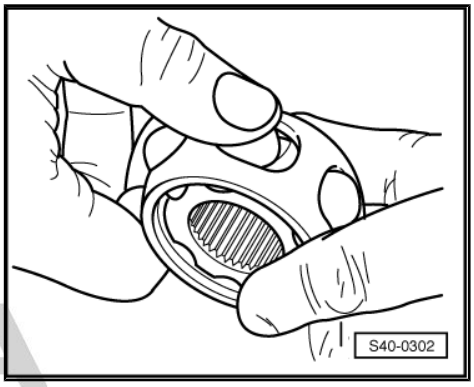
– Tilt the ball hub out of the ball cage over the ball bearing track -arrows-.
– Inspect the joint part, ball hub, ball cage and balls for small broken out depressions (pitting = point corrosion) and seizing marks.



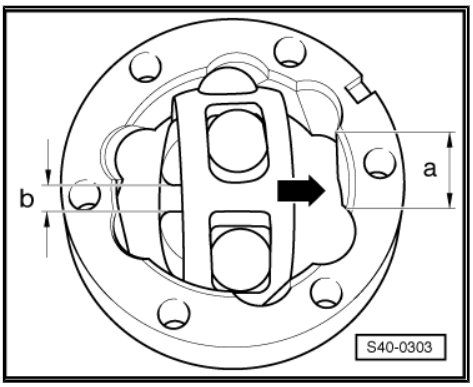
Load alteration shocks indicate too much torsional clearance in the joint. If this is the case, replace the joint. Smoothing and traces of wear of the balls are no reason to change the joint.

Installing:

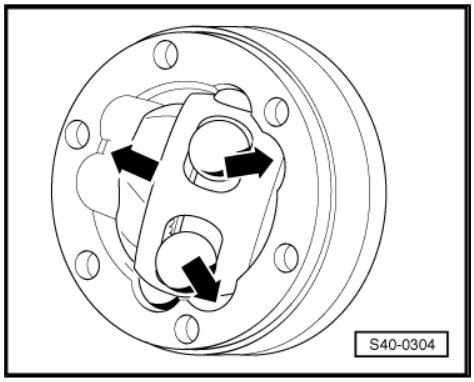
– Insert the ball hub in the ball cage over the two chamfers. The fitting location is random. Press the balls into the cage.
– Insert the hub with cage upright into the joint part.



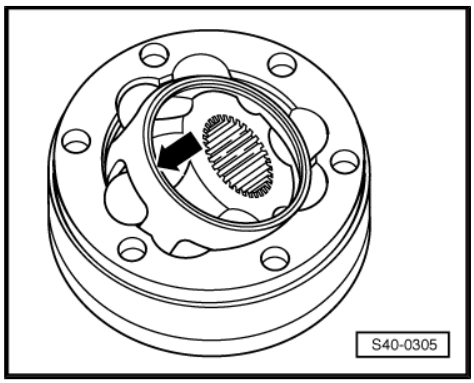
♦ When inserting make sure the greatest distance -a- on the joint part is close to the short distance -b- on the hub after it has been swivelled in.
♦ Chamfer on inner diameter of the ball hub (serration) must point towards the large diameter of the joint body.



– Swivel in the ball hub, to do so swivel the hub out of the cage -arrows- until the balls are at bearing track distance.



– Lock the hub with the balls into position by exerting considerable pressure on the cage -arrow-.



7.5 Check proper operation of joint.

The CV joint is correctly assembled if the ball hub can be rolled by hand up and down the entire linear compensation.

8 Drive shaft with inner CV joint VL107

⇒ “8.1 Summary of components”, page 155 .

⇒ “8.2 Dismantling”, page 157 .

⇒ “8.3 Assembling together”, page 158 .

⇒ “8.4 Checking the inner joint”, page 161 .

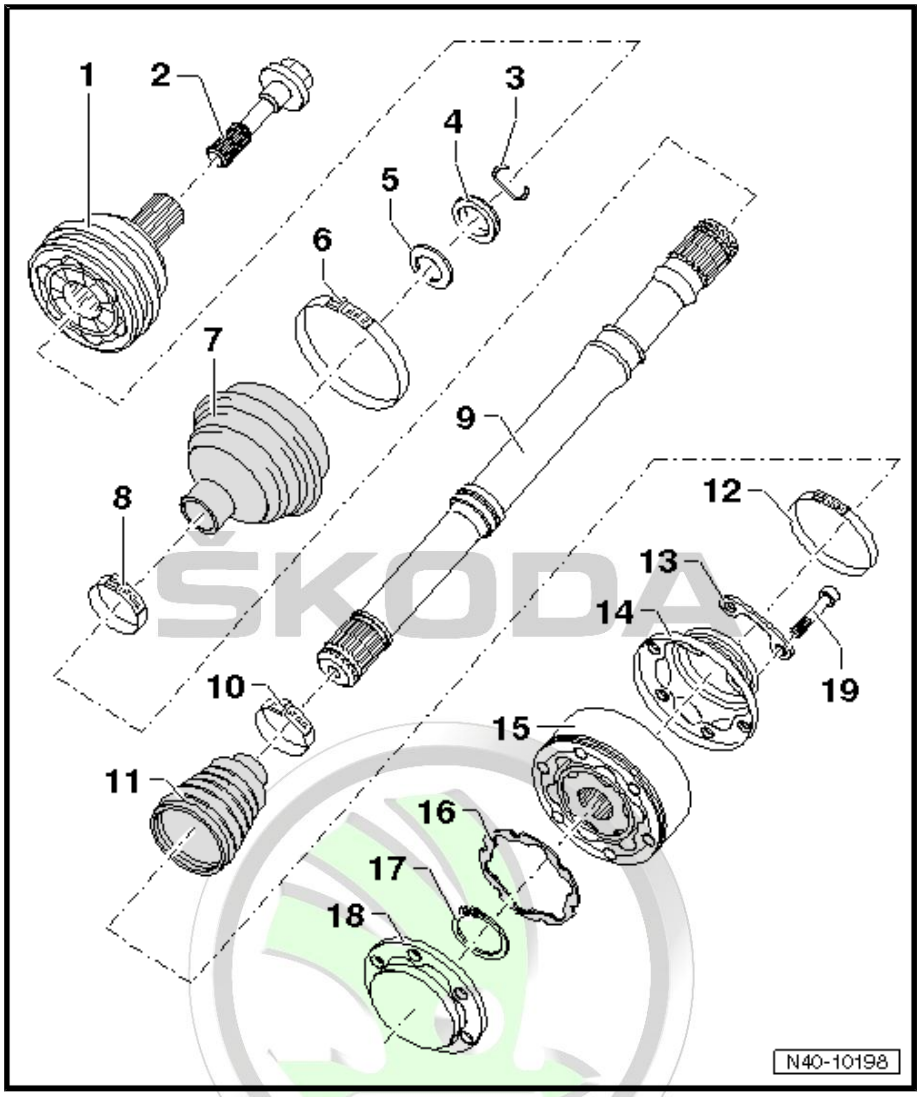
⇒ “8.5 Check proper operation of joint.”, page 162 .

8.1 Summary of components

The types of joints must be distinguished according to the diameter
⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173 .

Note

- *Before removing the joints and the joint boots, thoroughly clean the surrounding areas.*
- *When disassembling the joint, remove the old lubricant and any dirt present.*
- *Clean the joint with great care.*
- *Dispose of old lubricant and cleaning agent in compliance with the applicable regulations.*
- *Place removed and cleaned parts on a clean surface and cover as needed. Use lint-free cloths!*
- *Carefully cover removed parts if the repair is not completed immediately.*
- *Only install clean parts: Remove spare parts from their wrapping immediately before fitting. Do not use any parts which have been stored unwrapped (e.g. on a shelf or in a tool box etc...).*



1 - Outer CV joint complete

- ❑ must be replaced completely
- ❑ Type of joint, grease quantity ⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173
- ❑ removing ⇒ “11.1 Removing outer CV joint”, page 169
- ❑ installing ⇒ “11.2 Installing the outer CV joint”, page 169
- ❑ check ⇒ “11.3 Check outer joint”, page 172
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

2 - Screw

- ❑ removing and installing ⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117
- ❑ replace after each removal

3 - Circlip

- ❑ replace after each removal
- ❑ insert in the shaft groove

4 - Thrust ring

- ❑ Fitting position ⇒ “11.2 Installing the outer CV joint”, page 169

5 - Disc spring

- ❑ Fitting position ⇒ “11.2 Installing the outer CV joint”, page 169

6 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ “7.3 Assembling together”, page 150

7 - Collar

- ❑ inspect for tears and chafing points
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

8 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ “7.3 Assembling together”, page 150

9 - Cardan shaft

10 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ page 161

11 - Joint boot for inner joint

- ❑ without ventilation hole

- ❑ inspect for tears and chafing points
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

12 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ page 160

13 - Base

14 - Cap

- ❑ carefully remove with a drift
- ❑ before the installation on the joint, cover the sealing surface with -D 454 300 A2-
- ❑ The adherend must be free of grease and oil!

15 - Inner joint

- ❑ must be replaced completely
- ❑ Grease quantity
  ⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173
- ❑ Push out ⇒ page 158
- ❑ inserting ⇒ page 159
- ❑ check ⇒ “8.4 Checking the inner joint”, page 161

16 - Gasket

- ❑ The adherend must be free of grease and oil
- ❑ replace after each removal
- ❑ Pull off protective foil and stick in joint
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

17 - Circlip

- ❑ removing and installing with circlip pliers

18 - Cover

- ❑ replace after each removal
- ❑ drive out of the CV joint with a drift ⇒ page 158

19 - Screw

- ❑ replace after each removal
- ❑ first of all pre-tighten all screws crosswise to 10 Nm and subsequently tighten the screws crosswise to final torque
- ❑ M10 x 52
- ❑ 70 Nm

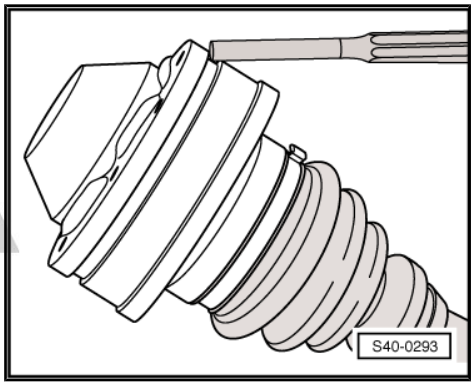
8.2 Dismantling

Special tools and workshop equipment required

- ♦ Pressure plate - MP3-406 (VW 401)-
- ♦ Pressure plate - MP3-407 (VW 402)-
- ♦ Thrust piece - MP3-411 (VW 454)-
- ♦ Pressure spindle - MP3-448 (VW 408 A)-
- ♦ Pressure screw - MP3-455 (VW 447 H)-
- ♦ Pressure spindle - MP6-405 (VW 411)-
- ♦ Circlip pliers , e.g. -VW 161 A-
- ♦ Tensioning pliers , e.g. -V.A.G 1682 A-
- ♦ Assembly device - T10065-

Removing and installing outer joint
⇒ “11.1 Removing outer CV joint”, page 169 .

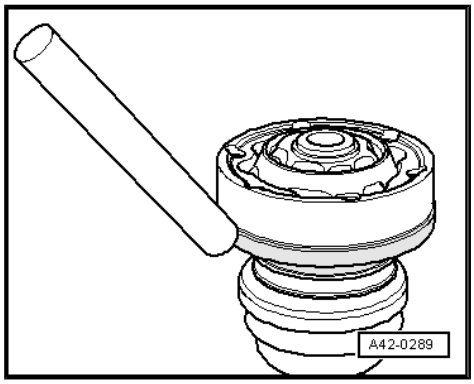
– Drive off cover for inner joint with a drift.



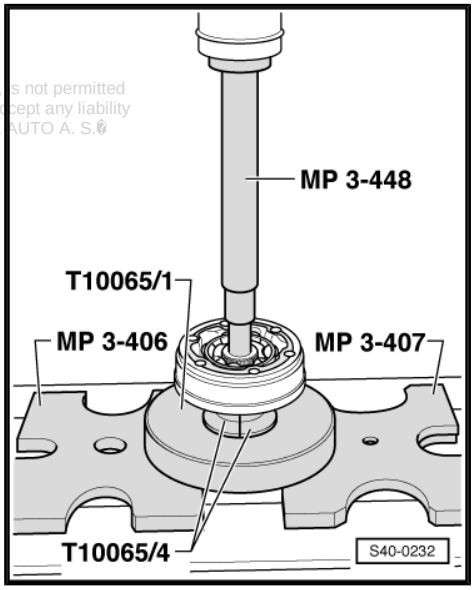
Remove cover for inner joint:

– Remove open warm-type clamps, push the joint boot to the outer joint.

– Drive off cap of joint boot with a drift.
– Take off circlip.
– Press off the inner joint.



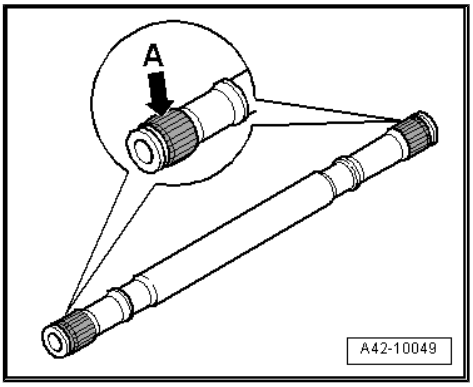
Pressing out the inner CV joint:



8.3 Assembling together

– Push the joint boot and the cap of the joint boot onto the drive shaft.
– Push the open warm-type clamps on the drive shaft.

– Thinly coat the serration -A- with joint grease.
– Press on the inner joint up to the stop.

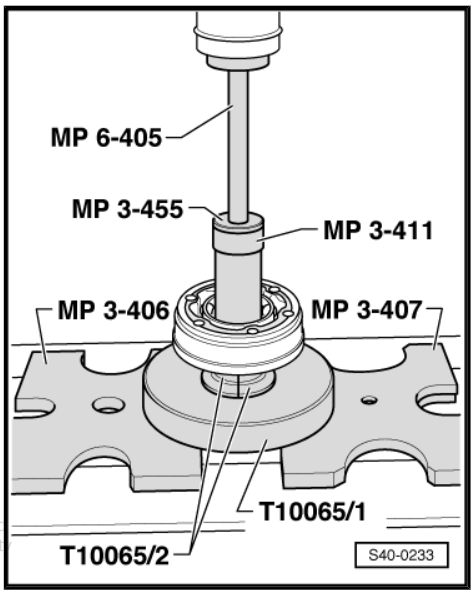


Pressing in the inner CV joint:

Note

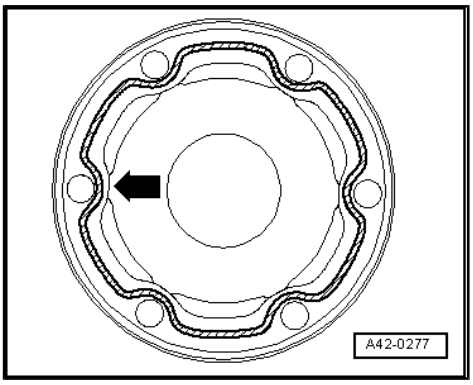
Chamfer on inner diameter of the ball hub (serration) must point towards the bearing collar of the drive shaft.

– Insert the circlip.
– Fill the joint with grease
⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173 .
– Clean and degrease the end faces of the joint.
– Clean and degrease the end face of the sheet metal cap for the joint boot which rests against the joint.

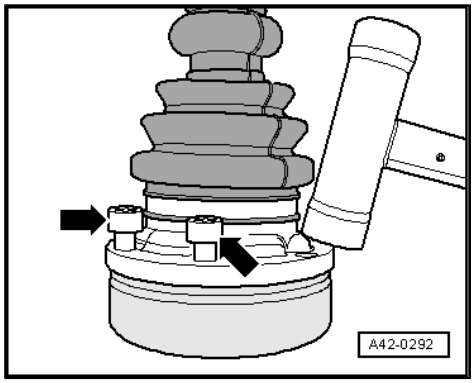


– Apply sealant -D 454 300 A2- on the shaded surfaces of the cap.

♦ Sealant bead: Apply continuously, Ø 2...3 mm, from inside in the area of the holes -arrow-.



– Align the cap of the joint boot to the screw holes with screws -arrows-.

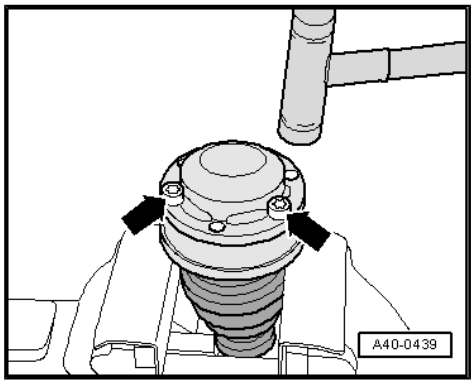


Note

The alignment must be performed very carefully as this is no longer possible after striking it.

– Use a plastic hammer to strike the sheet metal cap of the joint boot on the joint.
– Wipe off any excess sealant, if necessary.
– If necessary, stick the gasket into the joint from the gearbox side (remove the protective foil and stick the gasket into the joint). Assignment ⇒ Electronic Catalogue of Original Parts .

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

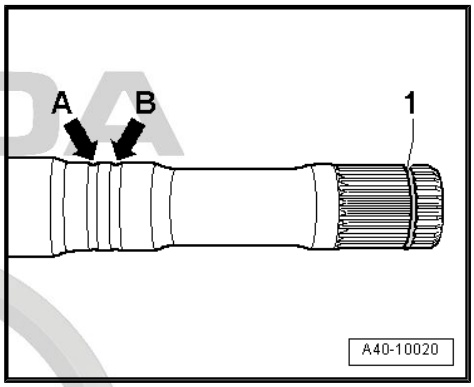


Note

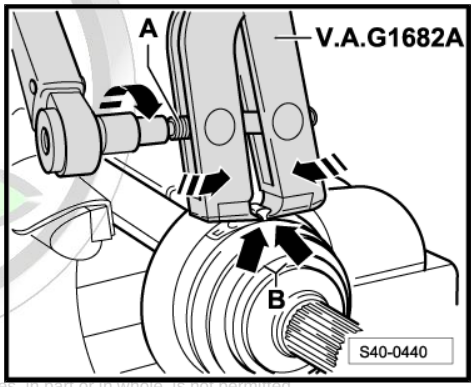
The alignment of the cover must be performed very carefully as this is no longer possible after striking it.

– Use a plastic hammer to strike the sheet metal cover on the joint.

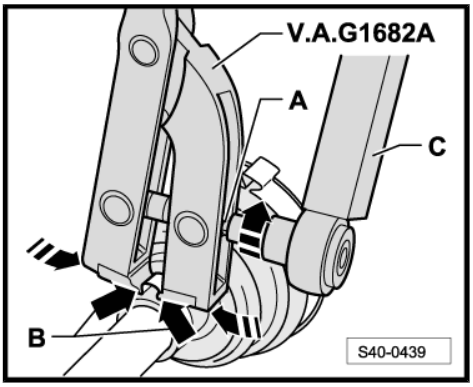
– Insert the joint boot on the joint and into the outer groove of the shaft -arrow B-.
– Install warm-type clamps.



Tighten the open warm-type clamp at the larger diameter:



Tighten the open warm-type clamp at the smaller diameter:



– Apply tensioning pliers , e.g. -V.A.G 1682 A- , as shown Make sure the cutting edges of the pliers are positioned in the corners -arrows B- of the open warm-type clamp.
– Tighten the open warm-type clamp by turning the spindle with a torque wrench (do not tilt the pliers during this process).

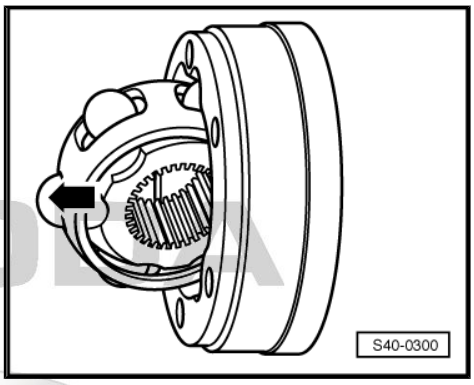
Note

- *In view of the hard material (as opposed to rubber) of the joint boot, which requires the use of stainless steel open warm-type clamps, these can only be tightened with tensioning pliers , e.g. -V.A.G 1682 A- .*
- *Specified torque: 25 Nm.*
- *Use torque wrench -C-.*
- *Ensure that the thread of the spindle -A- of the pliers is smooth. Lubricate if necessary with grease.*
- *If it is not smooth, e.g. if the thread is dirty, the necessary clamping force of the open warm-type clamp is not reached at the given torque.*

8.4 Checking the inner joint

Removing:

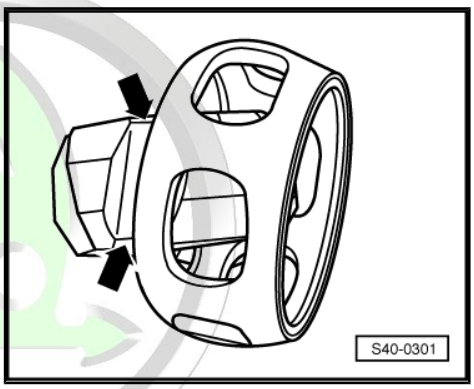
Disassemble the joint to replace badly soiled grease or if the contact surfaces of the balls must be inspected for wear and damage.



– Rotate the ball hub and ball cage.
– Press out joint part in -direction of arrow-.
– Successively press out the balls from the cage.

Note

The ball hub and joint piece are paired. These are not interchangeable.

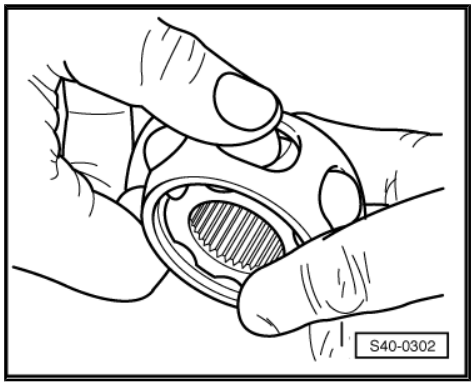


– Tilt the ball hub out of the ball cage over the ball bearing track -arrows-.
– Inspect the joint part, ball hub, ball cage and balls for small broken out depressions (pitting = point corrosion) and seizing marks.

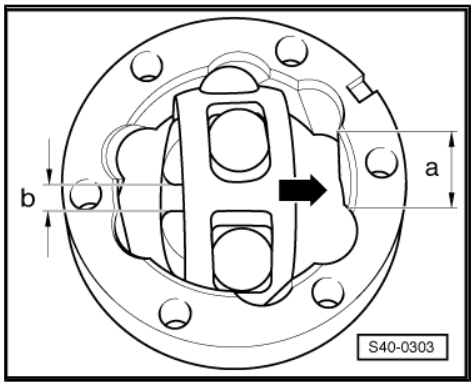
Load alteration shocks indicate too much torsional clearance in the joint. If this is the case, replace the joint. Smoothing and traces of wear of the balls are no reason to change the joint.

Installing:

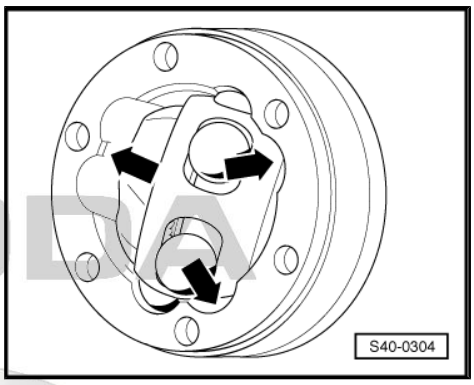
– Insert the ball hub in the ball cage over the two chamfers. The fitting location is random. Press the balls into the cage.
– Insert the hub with cage upright into the joint part.



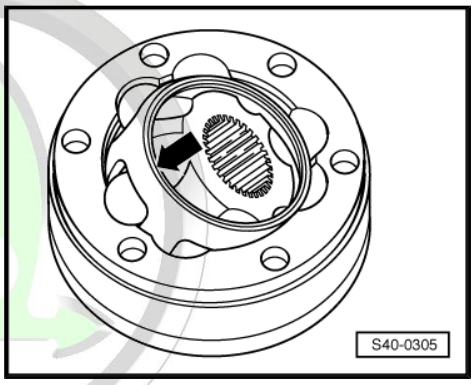
♦ When inserting make sure the greatest distance -a- on the joint part is close to the short distance -b- on the hub after it has been swivelled in.
♦ Chamfer on inner diameter of the ball hub (serration) must point towards the large diameter of the joint body.



– Swivel in the ball hub, to do so swivel the hub out of the cage -arrows- until the balls are at bearing track distance.



– Lock the hub with the balls into position by exerting considerable pressure on the cage -arrow-.



8.5 Check proper operation of joint.

The CV joint is correctly assembled if the ball hub can be rolled by hand up and down the entire linear compensation.

9 Drive shaft with outer CV joint RO104

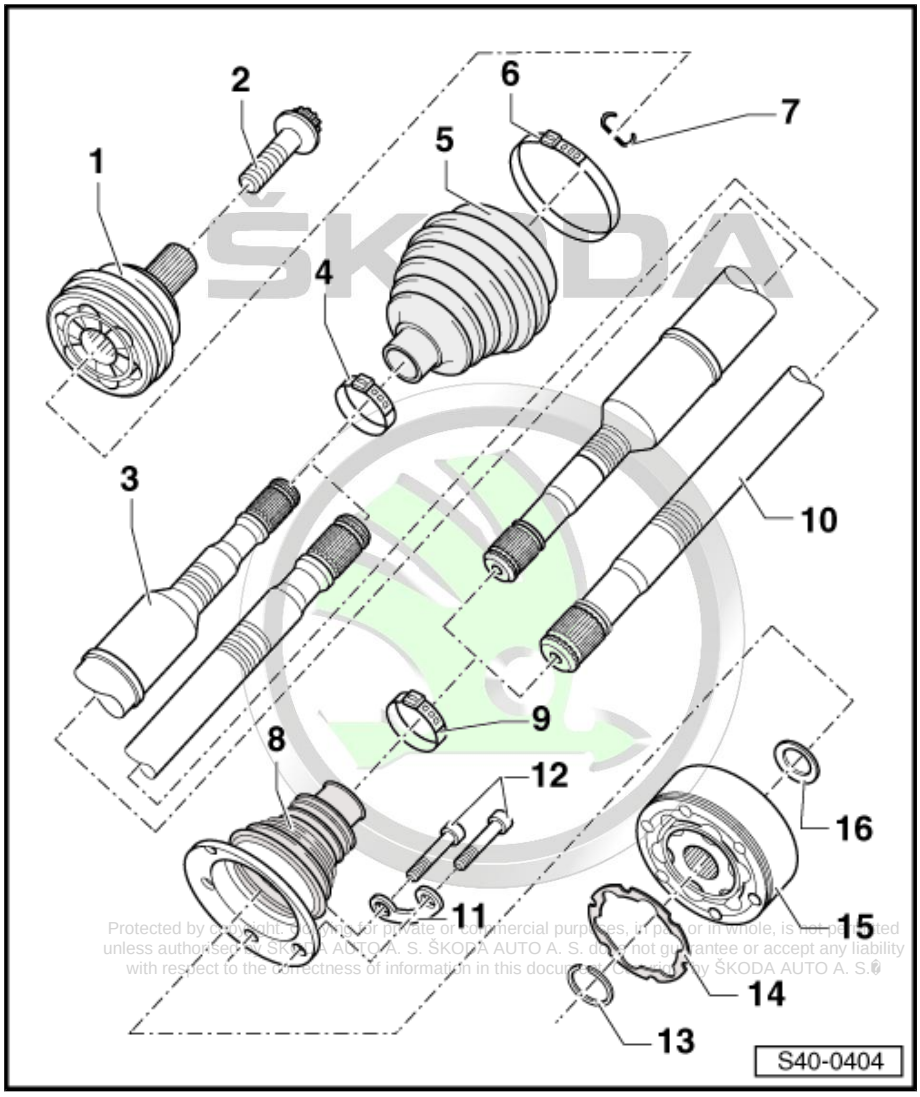
⇒ “9.1 Summary of components”, page 163 .

9.1 Summary of components

The types of joints must be distinguished according to the diameter
⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173 .

Note

- *Before removing the joints and the joint boots, thoroughly clean the surrounding areas.*
- *When disassembling the joint, remove the old lubricant and any dirt present.*
- *Clean the joint with great care.*
- *Dispose of old lubricant and cleaning agent in compliance with the applicable regulations.*
- *Place removed and cleaned parts on a clean surface and cover as needed. Use lint-free cloths!*
- *Carefully cover removed parts if the repair is not completed immediately.*
- *Only install clean parts: Remove spare parts from their wrapping immediately before fitting. Do not use any parts which have been stored unwrapped (e.g. on a shelf or in a tool box etc...).*



1 - Outer CV joint complete

- ❑ must be replaced completely
- ❑ Grease quantity ⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173
- ❑ removing ⇒ “11.1 Removing outer CV joint”, page 169
- ❑ installing ⇒ “11.2 Installing the outer CV joint”, page 169
- ❑ check ⇒ “11.3 Check outer joint”, page 172

2 - Screw

- ❑ removing and installing ⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117
- ❑ replace after each removal

3 - Cardan shaft

4 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ page 172

5 - Collar

- ❑ inspect for tears and chafing points
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

6 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ page 171

7 - Circlip

- ❑ replace after each removal
- ❑ insert in the shaft groove

8 - Joint boot for inner joint

- ❑ with sheet metal cover
- ❑ without ventilation hole
- ❑ inspect for tears and chafing points
- ❑ drive off from joint with a drift
- ❑ before the installation on the joint, cover the sealing surface with -D 454 300 A2-
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

9 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ page 152

10 - Cardan shaft

11 - Base

12 - Screw

- ❑ replace after each removal
- ❑ first of all pre-tighten all screws crosswise to 10 Nm and subsequently tighten the screws crosswise to final torque
- ❑ M8 x 48
- ❑ 40 Nm

13 - Circlip

- ❑ remove and install e.g. with circlip pliers - VW 161A-

14 - Gasket

- ❑ The adherend must be free of grease and oil
- ❑ replace after each removal
- ❑ Pull off protective foil and stick in joint
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

15 - Inner joint

- ❑ must be replaced completely
- ❑ Type of joint, grease quantity
  ⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173
- ❑ Push out ⇒ “7.2 Dismantling”, page 149
- ❑ inserting ⇒ “7.3 Assembling together”, page 150
- ❑ check ⇒ “7.4 Checking the inner joint”, page 152

16 - Disc spring

- ❑ Fitting position ⇒ page 151

10 Drive shaft with outer CV joint RO3700

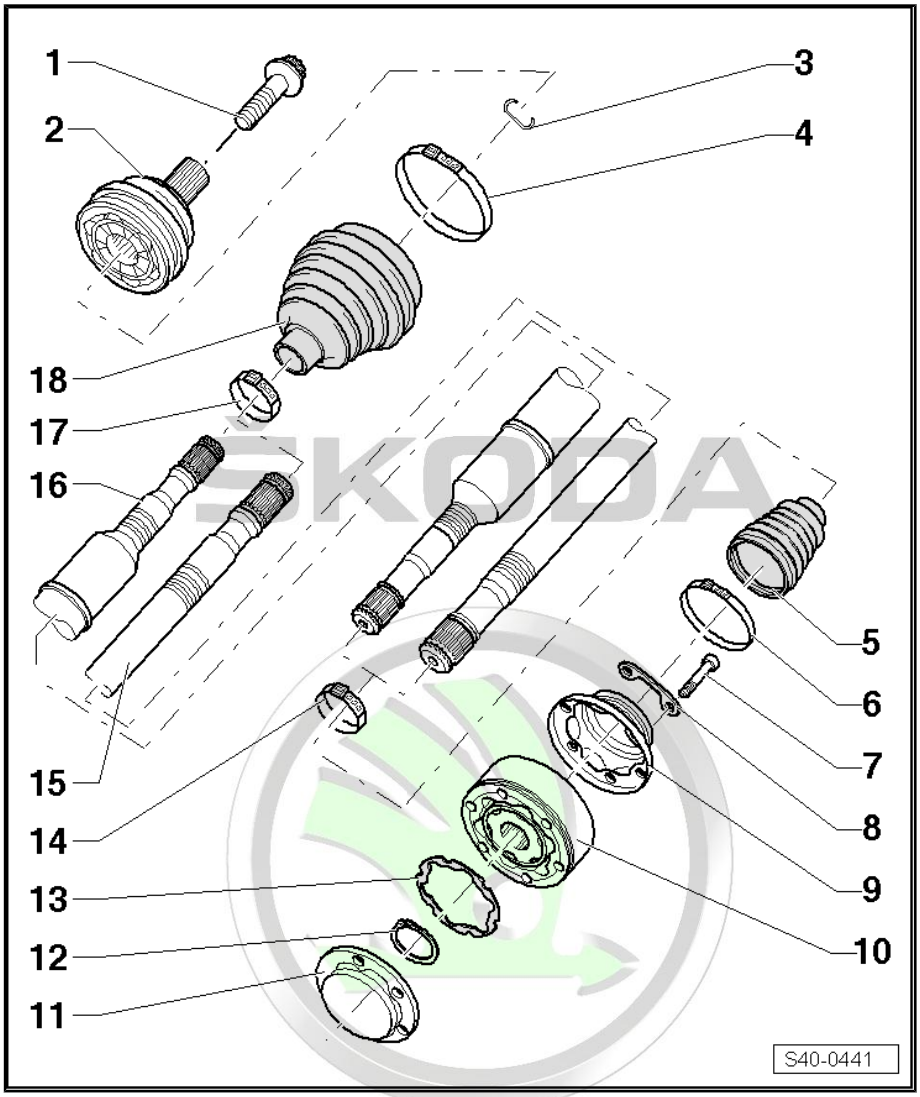
⇒ “10.1 Summary of components”, page 166 .

10.1 Summary of components

The types of joints must be distinguished according to the diameter
⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173 .

Note

- *Before removing the joints and the joint boots, thoroughly clean the surrounding areas.*
- *When disassembling the joint, remove the old lubricant and any dirt present.*
- *Clean the joint with great care.*
- *Dispose of old lubricant and cleaning agent in compliance with the applicable regulations.*
- *Place removed and cleaned parts on a clean surface and cover as needed. Use lint-free cloths!*
- *Carefully cover removed parts if the repair is not completed immediately.*
- *Only install clean parts: Remove spare parts from their wrapping immediately before fitting. Do not use any parts which have been stored unwrapped (e.g. on a shelf or in a tool box etc...).*



1 - Screw

- ❑ removing and installing ⇒ “4.2 Removing and installing twelve-sided bolt for securing the drive shaft”, page 117
- ❑ replace after each removal

2 - Outer CV joint complete

- ❑ must be replaced completely
- ❑ Grease quantity ⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173
- ❑ removing ⇒ “11.1 Removing outer CV joint”, page 169
- ❑ installing ⇒ “11.2 Installing the outer CV joint”, page 169
- ❑ check ⇒ “11.3 Check outer joint”, page 172
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

3 - Circlip

- ❑ replace after each removal
- ❑ insert in the shaft groove

4 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ page 171

5 - Joint boot for inner joint

- ❑ without ventilation hole
- ❑ inspect for tears and chafing points
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

6 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ page 160

7 - Screw

- ❑ replace after each removal
- ❑ first of all pre-tighten all screws crosswise to 10 Nm and subsequently tighten the screws crosswise to final torque
- ❑ M10 x 52
- ❑ 70 Nm

8 - Base

- ❑ replace after each removal

9 - Cap

- ❑ carefully remove with a drift

- ❑ before the installation on the joint, cover the sealing surface with -D 454 300 A2-
- ❑ The adherend must be free of grease and oil!

10 - Inner joint

- ❑ must be replaced completely
- ❑ Grease quantity
  ⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173
- ❑ Push out ⇒ page 158
- ❑ inserting ⇒ page 159
- ❑ check ⇒ “8.4 Checking the inner joint”, page 161

11 - Cover

- ❑ replace after each removal
- ❑ drive out of the CV joint with a drift ⇒ page 158

12 - Circlip

- ❑ removing and installing with circlip pliers

13 - Gasket

- ❑ The adherend must be free of grease and oil
- ❑ replace after each removal
- ❑ Pull off protective foil and stick in joint
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

14 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ page 152

15 - Cardan shaft

16 - Cardan shaft

17 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ page 172

18 - Collar

- ❑ inspect for tears and chafing points
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

11 Repairing outer CV joints UF100, UF107, RO104, RO3700

Note

- *Before removing the joints and the joint boots, thoroughly clean the surrounding areas.*
- *When disassembling the joint, remove the old lubricant and any dirt present.*
- *Clean the joint with great care.*
- *Dispose of old lubricant and cleaning agent in compliance with the applicable regulations.*
- *Place removed and cleaned parts on a clean surface and cover as needed. Use lint-free cloths!*
- *Carefully cover removed parts if the repair is not completed immediately.*
- *Only install clean parts: Remove spare parts from their wrapping immediately before fitting. Do not use any parts which have been stored unwrapped (e.g. on a shelf or in a tool box etc...).*

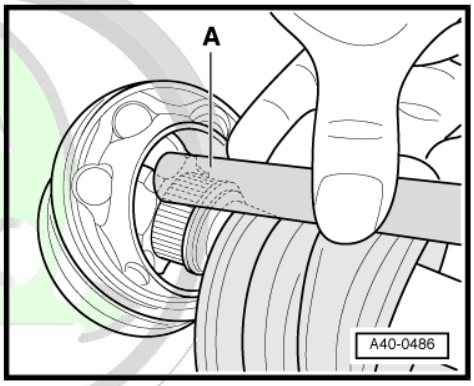
11.1 Removing outer CV joint

– Clamp the cardan shaft in a vice with protective jaws.

– Remove both warm-type clamps and detach the joint boot from the outer joint.

– Remove the CV joint from the drive shaft using a drift (copper or brass) -A-.

The drift must be positioned exactly at the tripod spider of the CV join.



11.2 Installing the outer CV joint

Special tools and workshop equipment required

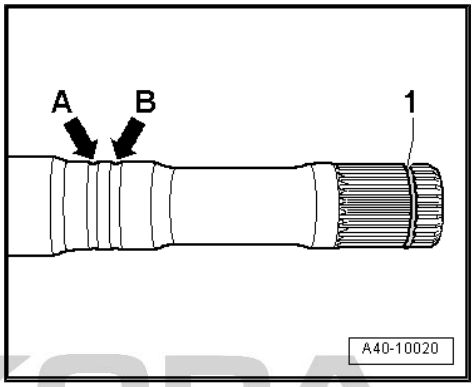
- Tensioning pliers , e.g. -V.A.G 1682 A-

The joint boot and the drive shaft must be free of grease.

– Replace circlip -1-.

– Push on the small open warm-type clamp with the joint boot and position the joint boot onto the drive shaft according to the version.

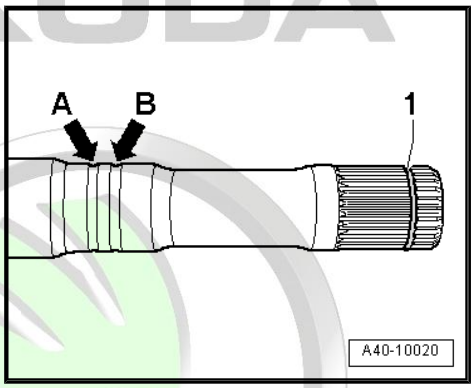
Version with the identification groove:



– Fit the joint boot in the outer groove -arrow B-.

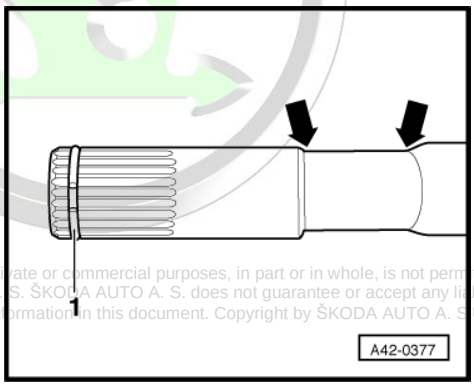
The inner groove -arrow A- must remain visible (“identification groove” for a correct installation of the joint boot).

Version with deeper bearing:



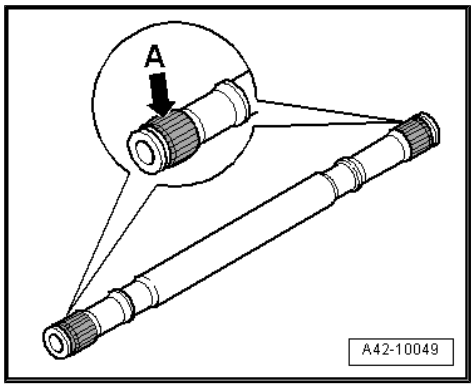
– Fit the joint boot between the -arrows-.

– Fill the joint with grease
⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173 .

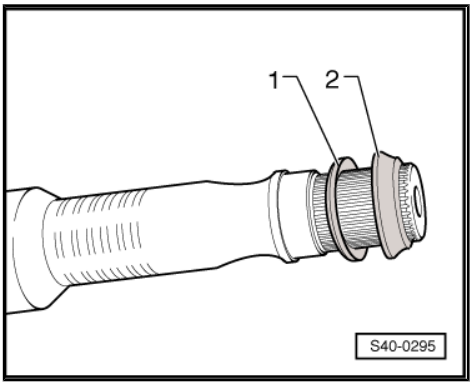


– Thinly coat the serration -A- with joint grease.

– Observe the fitting position of the disc spring -1- and the thrust ring -2-.



Fitting position of the disc spring and the thrust ring:



Note

The fitting position of the disc spring -1- and the thrust ring -2- is not valid for CV joints RO104 and RO3700, which do not have these parts.

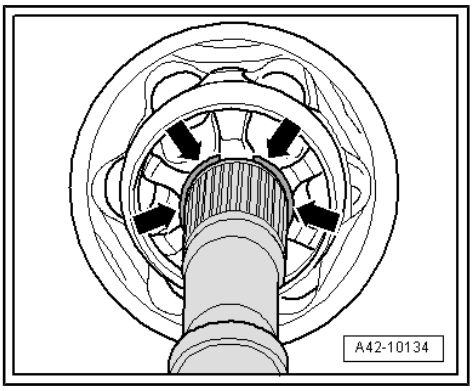
1 - Disc spring

2 - Thrust ring

– Insert circlip in the groove of the shaft.

– Push the CV joint up to the circlip.

– Align the circlip upwards to the centre of the hole, see -arrows-.



– Screw the old screw for the drive shaft, as shown, into the joint.

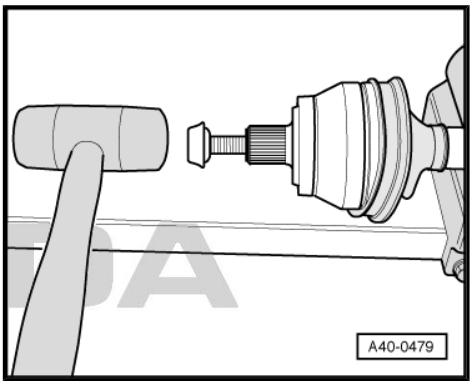
– Use a plastic hammer to strike the joint onto the drive shaft until the circlip locks in place.

– Fill the joint on the side of the boot with the allowed grease quantity
⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173 .

– Push the joint boot onto the joint.

– Bleed the joint boot.

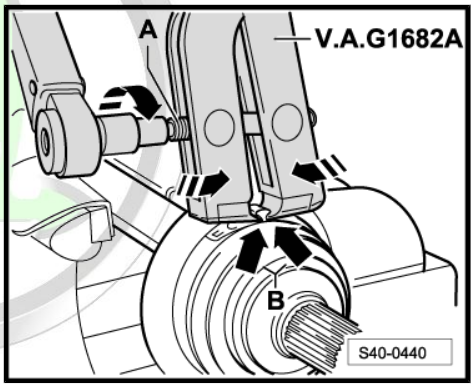
– Pay attention to the correct position of the joint boot on the outer joint.



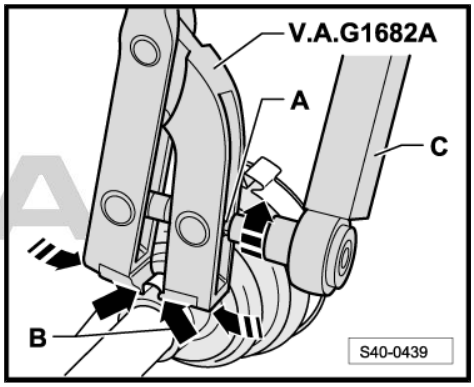
The joint boot must be positioned in the groove and must rest on the contour of the joint.

– Tighten the open warm-type clamp on the outer joint.

Tighten the open warm-type clamp at the larger diameter:



Tighten the open warm-type clamp at the smaller diameter:



- Position the tensioning pliers as shown in the figure. Make sure the cutting edges of the pliers are positioned in the corners -arrows B- of the open warm-type clamp.
- Tighten the open warm-type clamp by turning the spindle with a torque wrench (do not tilt the pliers during this process).

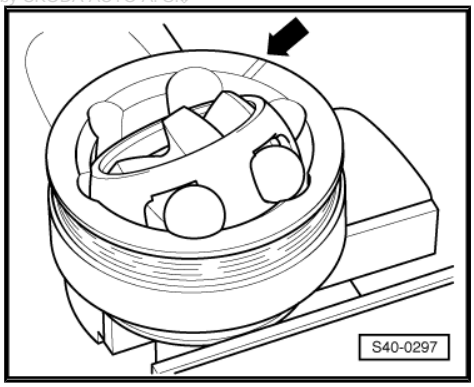
Note

- *In view of the hard material (as opposed to rubber) of the joint boot, which requires the use of stainless steel open warm-type clamps, these can only be tightened with tensioning pliers , e.g. -V.A.G 1682 A- .*
- *Specified torque: 25 Nm.*
- *Use torque wrench -C-.*
- *Ensure that the thread of the spindle -A- of the pliers is smooth. Lubricate if necessary with grease.*
- *If it is not smooth, e.g. if the thread is dirty, the necessary clamping force of the open warm-type clamp is not reached at the given torque.*

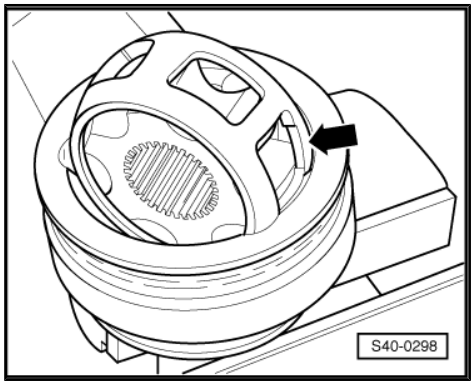
11.3 Check outer joint

Disassemble the joint to replace badly soiled grease or if the contact surfaces of the balls must be inspected for wear and damage.

Removing:



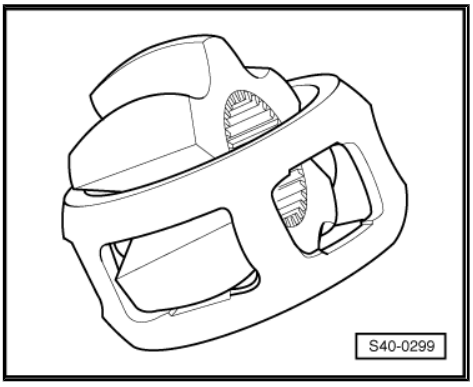
- Mark the opposite position of the ball hub, the cage, the balls and the joint body before disassembling -arrow- (e.g. electric stylus, rubstone or felt-tip pen).
- Swivel the ball hub and the cage with balls until individual balls have to be removed.
- Remove the balls one after the other.



- Turn the cage until two rectangular cage windows -arrow- rest on the joint part.
- Remove cage with hub.

– Turn the hub segment in the window of the cage.

– Tilt hub out of the cage.



The 6 balls of each joint belong to a tolerance group. Inspect the axle studs, hub, cage and balls for small depressions (pitting = point erosion) and seizing marks. Load alteration shocks indicate too much torsional clearance in the joint. If this is the case, replace the joint. Smoothing and traces of wear of the balls are no reason to change the joint.

Installing:

– Press half of the total grease quantity into the joint body ⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173 .

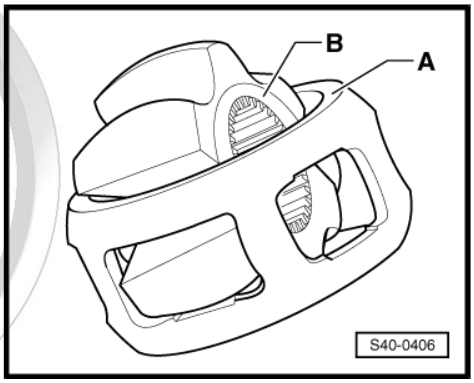
– Insert the cage and hub in the joint body.

Note

Absolutely observe the opposite position of the ball hub, the cage and the joint body on joints RO104 and RO3700.

Fitting position of the ball hub -B- and the cage -A- for joints RO104 and RO3700:

The shoulder of the hub -B- and the wider side of the cage -A- must point into the joint body.



– Press in opposite balls one after the other, during this process observe the prior position of the ball hub relatively to the ball cage and to the joint body.

– Spread the remaining grease in the joint from the side of the boot ⇒ “11.4 Designation, distinguish the diameter as specified and grease quantity for joints”, page 173 .

11.4 Designation, distinguish the diameter as specified and grease quantity for joints

Outer joint			Inner joint		
Denomination	**Diameter**	**Grease**	**Denomination**	**Diameter**	**Grease**
UF100	Lower by 90 mm	110g, grind the grease evenly in the joint	VL100	Lower by 100 mm	110g, evenly in both halves of the joint
UF107	Lower by 98 mm	130 g, grind the grease evenly in the joint from both sides	VL107	Lower by 108 mm	150g, evenly in both halves of the joint
RO104	Lower by 94 mm	130g, grind the grease evenly in the joint			
RO3700	Lower by 100 mm	150g, grind the grease evenly in the joint from both sides			

Use the relevant grease for outer joints, assignment ⇒ Electronic Catalogue of Original Parts .

Use heat-resistant grease for inner joints, assignment ⇒ Electronic Catalogue of Original Parts .

42 – Rear suspension

1 Repairing rear wheel suspension (vehicles with four-wheel drive)

⇒ “1.1 Overview of rear axle”, page 175 .

⇒ “1.2 Rear axle in unladen weight position”, page 177 .

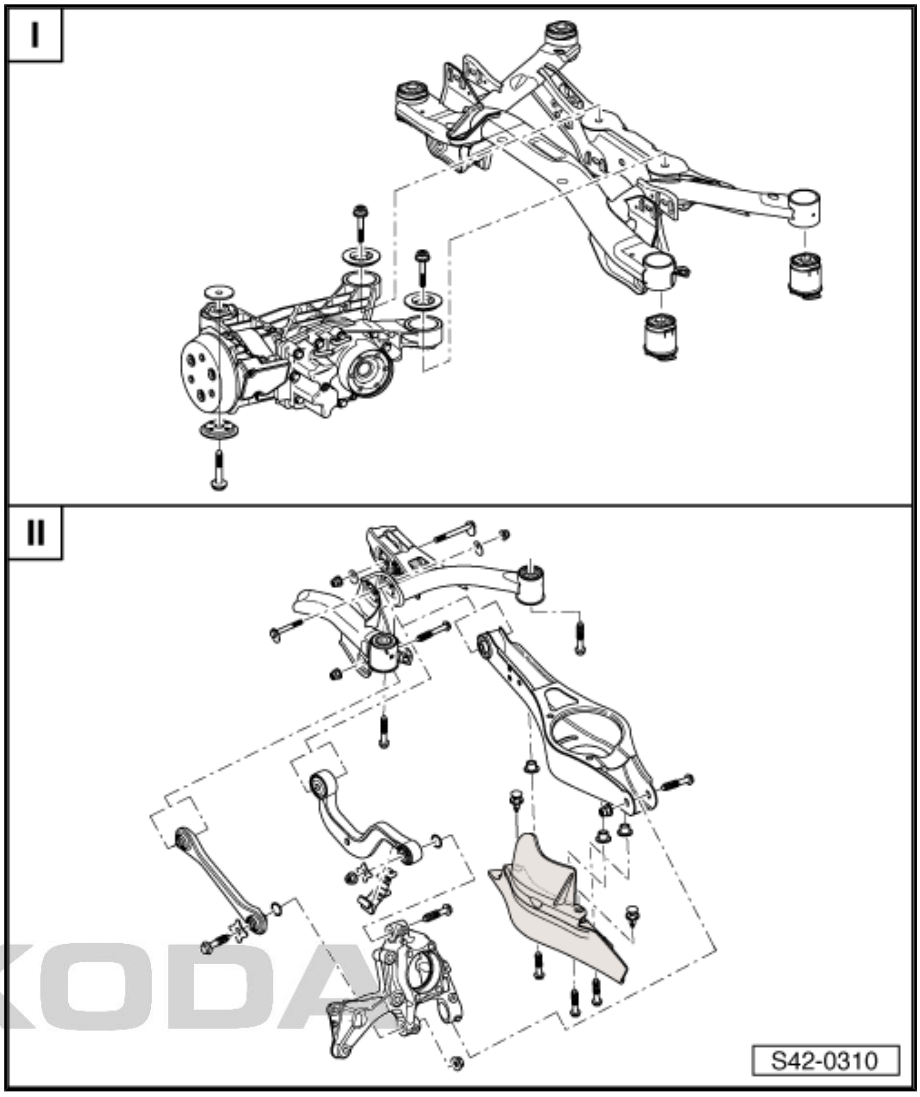
1.1 Overview of rear axle

Note

- *Welding and straightening work is not allowed on the bearing and wheel control components of the wheel suspension.*
- *Self-locking nuts must always be replaced.*
- *Always replace corroded screws/nuts.*
- *Rubber-metal bearings can be twisted only to a limited extent. Therefore first tighten up the screwed connections to the components with rubber-metal bearings, if the wheel-bearing housing is lifted (unladen weight position) ⇒ “1.2 Rear axle in unladen weight position”, page 177 .*
- *Always replace rubber-metal bearing on both sides of the vehicle.*

I -
⇒ “2 Summary of components: Assembly carrier, final drive (vehicles with four-wheel drive)”, page 180

II -
⇒ “3 Summary of components: Suspension arm, track rod for rear axle, Rear left side vehicle level sensor G76 (vehicles with four-wheel drive)”, page 198

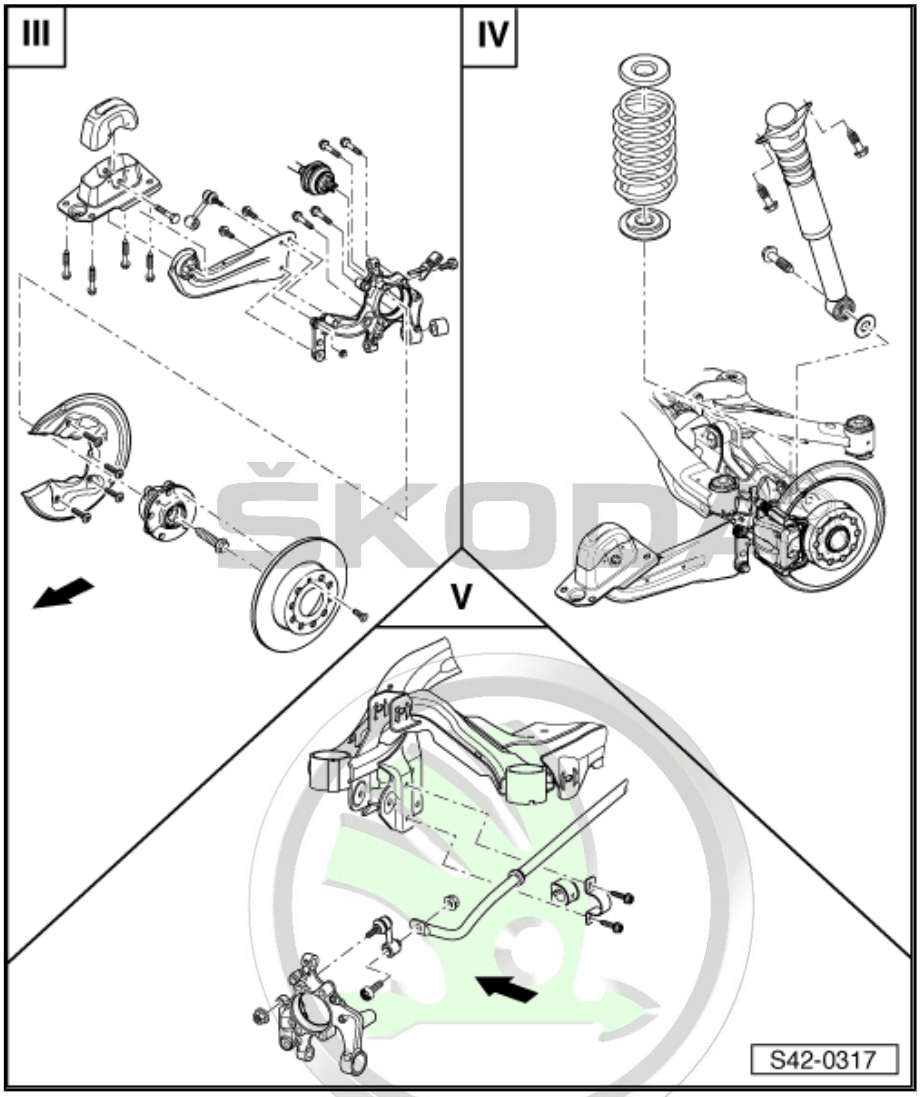


-Arrows- point in direction of travel.

III -
⇒ “4 Summary of components: Wheel-bearing housing, trailing arm (vehicles with four-wheel drive)”, page 214

IV -
⇒ “5 Summary of components: Shock absorber, helical spring (vehicles with four-wheel drive)”, page 232

V -
⇒ “6 Summary of components: Anti-roll bar (vehicles with four-wheel drive)”, page 238



Summary of components: Drive shaft (vehicles with four-wheel drive)

⇒ “7 Summary of components: Drive shaft (vehicles with four-wheel drive)”, page 241 .

Rear axle in unladen weight position

⇒ “1.2 Rear axle in unladen weight position”, page 177 .

1.2 Rear axle in unladen weight position

Special tools and workshop equipment required

- Tensioning strap - T10038-
- Support - T10149-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-

All screws must always be tightened firmly in the unladen weight position to the chassis parts with rubber-metal bearings.

Unladen weight:

Weight of the vehicle - full fuel tank and washer fluid/headlight cleaning system reservoir, spare wheel and jack (if the vehicle was fitted at the factory with them), tool kit, without driver. The

spare wheel, tool kit and jack must be located in the position prescribed by the vehicle manufacturer.

Rubber-metal bearings can be twisted only to a limited extent.

Therefore the axle components with rubber-metal bearings must be put in a position before tightening, which corresponds to the position while driving (unladen weight position).

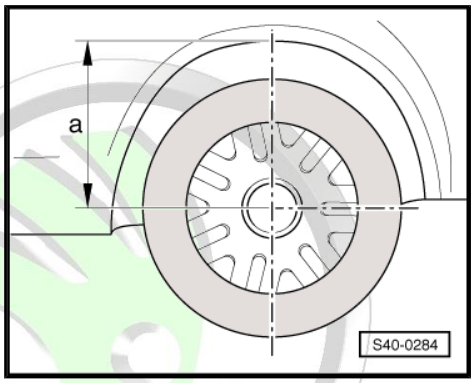
Otherwise the rubber-metal bearing will be under tension and as a result, will have a lower life.

This position on the lift platform can be simulated by lifting out the axle on one side with the e.g. -V.A.G 1383A- or -VAS6931- and the support - T10149- .

– Before commencing work, measure e.g. with a measuring tape, the dimension -a- from wheel centre to lower edge of the wheelhouse ⇒ “1.2 Nominal values rear axle”, page 334 .

Measuring must be performed in the unladen weight position.

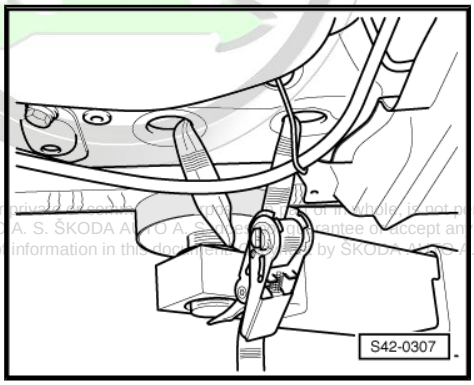
– Note the measured value. It is required for tightening the screws/nuts.



Before the axle on one side is lifted, the vehicle must be lashed securely at the supporting arms of the lift platform with the tensioning straps - T10038- .

WARNING

If the vehicle is not lashed, there is a risk of the vehicle toppling off the lift platform.

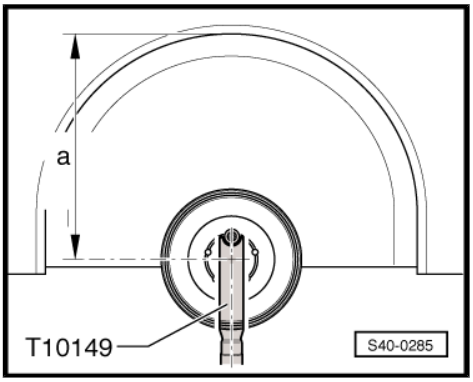


– Remove wheel.

– Rotate the wheel hub until one of the holes for the wheel bolts is located at the top.

– Install support - T10149- with wheel bolt at the wheel hub.

– Raise up the wheel-bearing housing using the engine and gearbox jack e. g. -V.A.G 1383A- or -VAS6931- until dimension -a- is achieved.



The tightening of the corresponding screw/nut must only be performed, if the measured dimension -a- between the wheel hub centre and the lower edge of the wheel house is achieved before commencing work ⇒ page 178 **.**

WARNING

- *Do not raise or lower the vehicle, if the engine/gearbox jack is positioned under the vehicle.*
- *Do not leave the engine/gearbox jack e. g. -V.A.G 1383A- or -VAS6931- positioned under the vehicle for longer than necessary.*

– Tighten corresponding screws/nuts to the specified tightening torque.

– Lower the wheel bearing housing.

– Pull out the engine/gearbox jack from underneath the vehicle.

– Remove support - T10149- .

– Remove tensioning strap - T10038- .

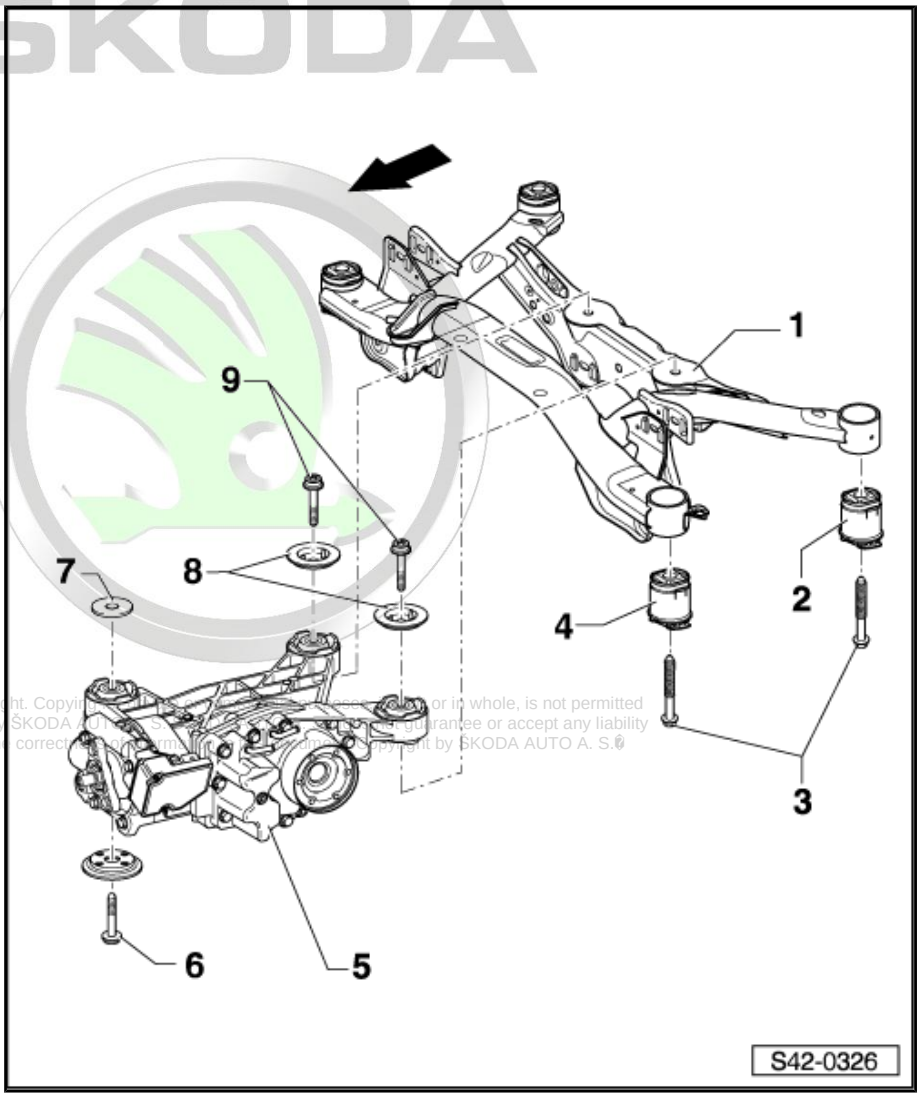
2 Summary of components: Assembly carrier, final drive (vehicles with four-wheel drive)

⇒ “2.1 Removing and installing rear suspension”, page 181 .

⇒ “2.2 Removing and installing front rubber-metal bearing”, page 188 .

⇒ “2.3 Removing and installing rear rubber-metal bearing”, page 192 .

The -arrow- shows the direction of travel.



1 - Assembly carrier

- ❑ removing and installing ⇒ “2.1 Removing and installing rear suspension”, page 181
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

2 - Rear rubber-metal bearing

- ❑ pressing in and pressing out ⇒ “2.3 Removing and installing rear rubber-metal bearing”, page 192
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

3 - Screw

- ❑ replace after each removal
- ❑ 70 Nm + 180°

4 - Front rubber-metal bearing

- ❑ pressing in and pressing out ⇒ “2.2 Removing and installing front rubber-metal bearing”, page 188
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

5 - Rear final drive

- ❑ removing and installing ⇒ Gearbox 02Q; Rep. gr. 39

6 - Screw

- ❑ replace after each removal
- ❑ 60 Nm + 90°

7 - Washer

- ❑ Information: ⇒ Gearbox 02Q; Rep. gr. 39

8 - Washer

- ❑ Information: ⇒ Gearbox 02Q; Rep. gr. 39

9 - Screw

- ❑ replace after each removal
- ❑ 60 Nm + 90°

2.1 Removing and installing rear suspension

Special tools and workshop equipment required

- ♦ Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-
- ♦ Tensioning strap - T10038-
- ♦ Fixing device - T10096-

Removing assembly carrier with its component parts:

Note

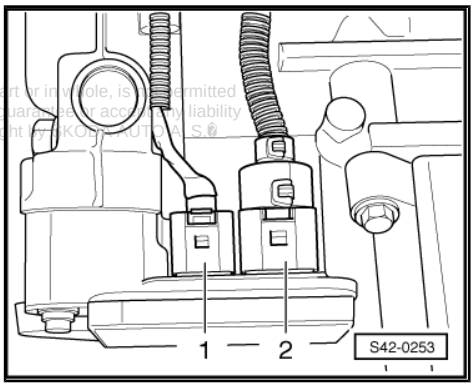
- ♦ *During certain installations the fixing screw of the drive shaft must be released:*
  ⇒ "7.1 Removing and installing fixing screw of drive shaft - twelve-sided bolt", page 243 .
- ♦ *The components of the rear axle must be removed and installed in the same way on both sides of the axle.*

– Remove rear wheels.

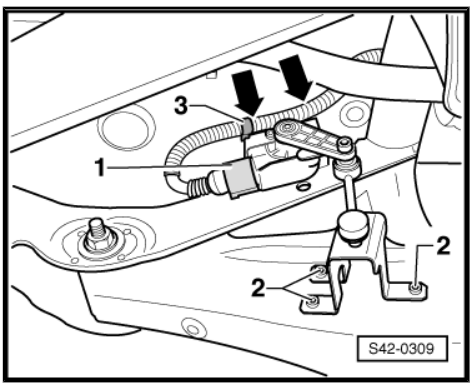
– Remove the rear silencer ⇒ Engine; Rep. gr. 26 .

– Remove coil springs
⇒ "5.1 Removing and installing coil spring", page 232 .

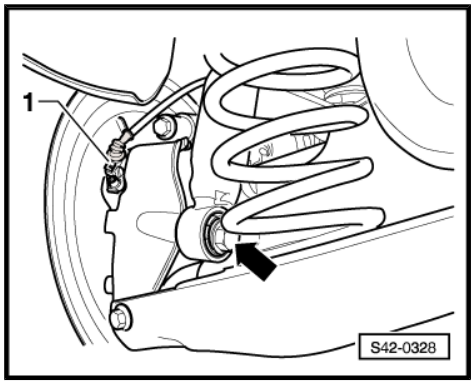
– Disconnect the plug connection -2- at the control unit of the four-wheel drive clutch.



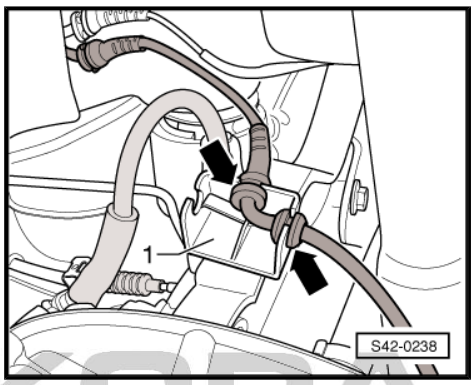
– On vehicles equipped with automatic headlight beam control, disconnect plug -1- and slacken line holder of the sender -3-.



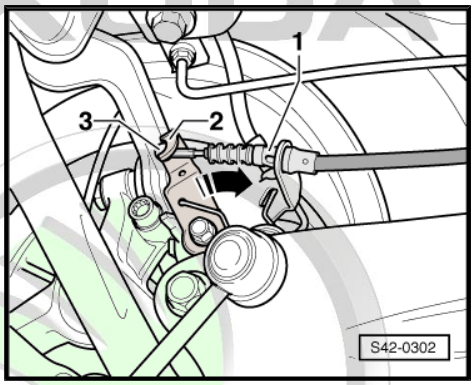
– Disconnect the plug of the ABS speed sensor -1- from the wheel bearing housing.



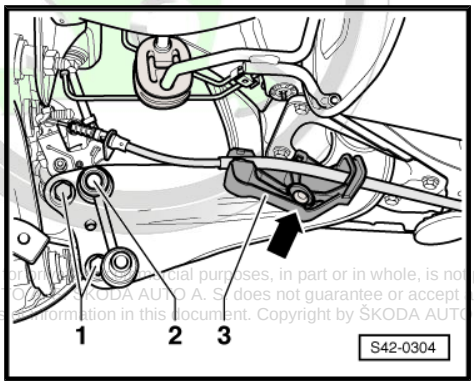
– Unclip speed sensor cable from bracket -1- -arrows-.



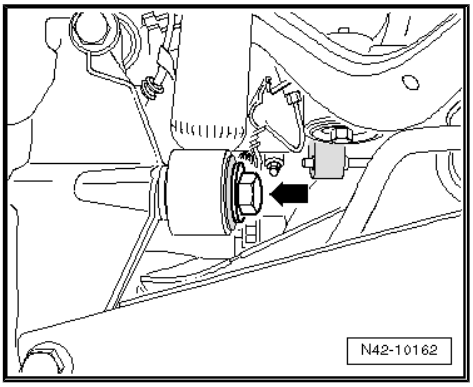
– Press the lever -2- in the -direction of the arrow- and while doing so unhook the hand-brake cable -3-.
– Slacken the spring bushing -1- for the hand-brake cable from the bracket on the brake caliper.



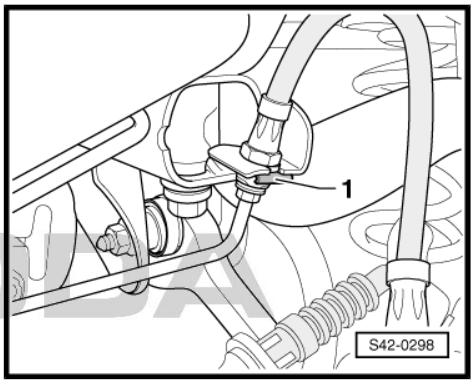
– Slacken the hand-brake cable from the bracket -3- at the trailing arms and pull the cables out of the brackets.



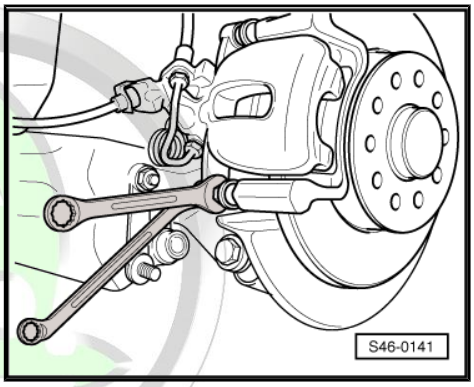
– Unscrew plug -arrow-.



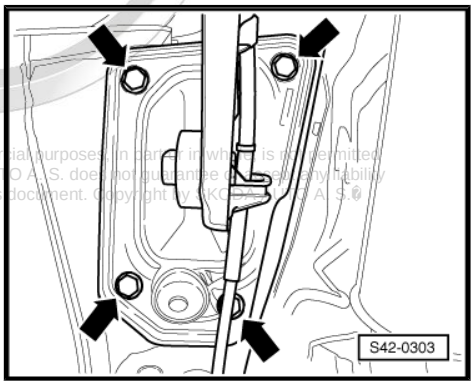
– Remove retaining clips -1- for the brake line.



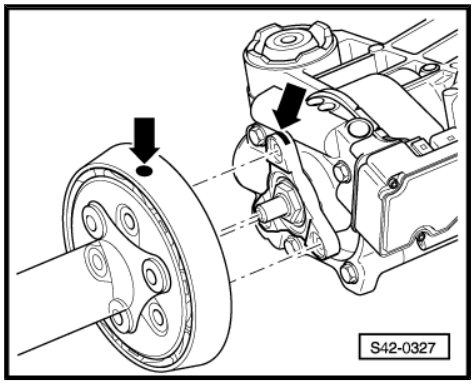
– Remove brake calliper: Unscrew the fixing screws of the brake carrier while counterholding the guide bolts.
– Remove the brake caliper and e.g. secure with wire in such a way that the weight of the brake caliper does not burden or damage the brake hose.



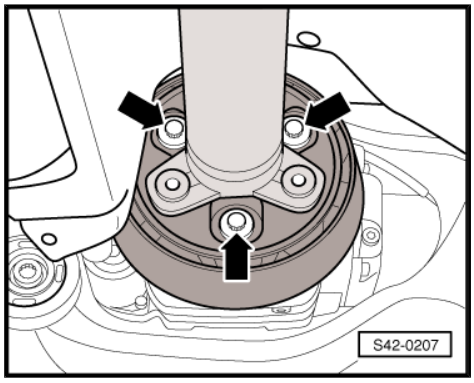
– Mark the installed position of the bracket on the body.
– Remove bolts -arrows-.



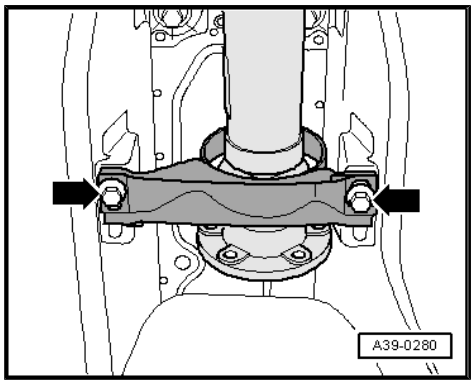
– Check, if a marking (colour point) is present on the flexible disk and at the flange on the final drive -arrows-. If no marking is present, mark opposite position of the flexible disk/flange on the four-wheel drive clutch -arrows-.



– Unscrew rear propshaft pipe with flexible disk and oscillation damper from rear final drive -arrows-.



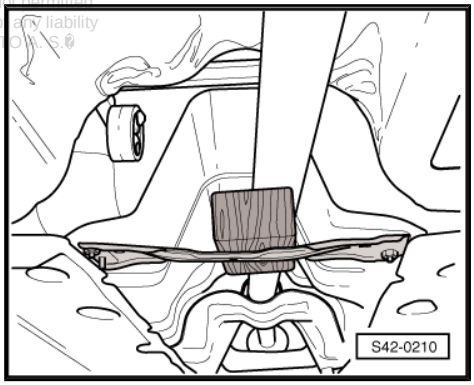
– Unscrew the screws of the centre bearing -arrows- by two turns.



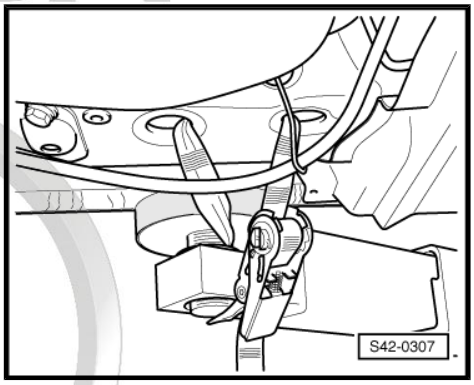
Note

For purposes of clear presentation, the centre bearing and the screws -arrows- are shown without the heat shield.

– Support propshaft on the tunnel bridge with a wooden wedge.
– Push the rear propshaft pipe as far as possible in direction of gearbox.



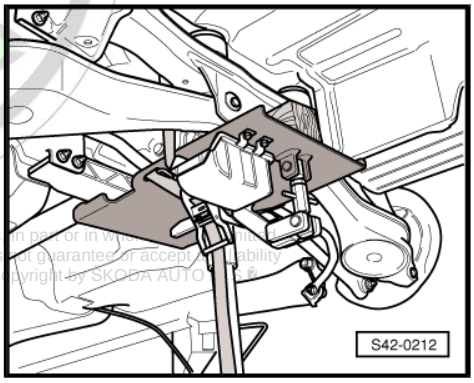
– Lash the vehicle to the lift platform using the tensioning straps - T10038- .



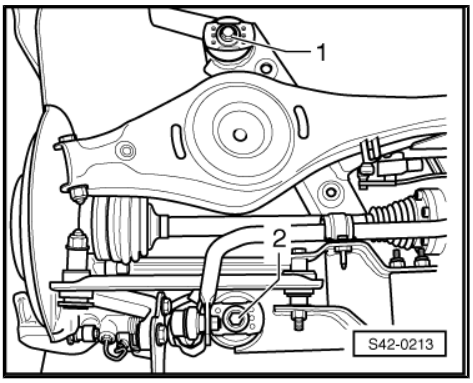
WARNING

If the vehicle is not lashed, there is a risk of the vehicle toppling off the lift platform.

– Place engine and gearbox jack e.g. -V.A.G 1383A- or - VAS6931- with gearbox mount - V.A.G 1359/2- beneath the assembly carrier and secure with tensioning strap .



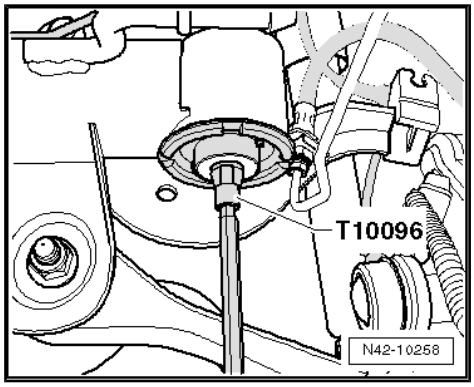
– Release screw -1- or -2- on both sides.



Note

Only the left vehicle side is illustrated for purposes of clear presentation.

– Fix the position of the assembly carrier using fixing devices - T10096- .



Note

The locating pin - T10096- must only be tightened to maximum 20 Nm as otherwise the fixing bolt thread becomes damaged.

In order to fix the assembly carrier, the fixing devices - T10096- must be successively screwed into the positions -1- and -2- on both vehicle sides.

– Carefully lower assembly carrier to maximum 30 mm.

Note

When lowering, pay attention to possible damage of the brake lines and electrical lines.

– Unclip the brake line from the assembly carrier.
– Lowering assembly carrier with attached parts.

Installing assembly carrier with its component parts:

Installation occurs in reverse order to removal. Pay attention to the following:

Install propshaft at rear final drive ⇒ Manual Gearbox 02Q; Rep. gr. 39 .

– Perform a test drive.
– Check the steering wheel position during the test drive.
– Carry out axle alignment ⇒ “2.3 Axle alignment”, page 338 .

Tightening torques:

Mounting bracket on the body ♦ Use new screws!	50 Nm + 45°
Assembly carrier to body ♦ Use new screws!	70 Nm + 180°
Shock absorber to wheel-bearing housing ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	130 Nm + 90°
Screws of the propshaft on rear final drive	60 Nm
Screws to secure the centre bearing to the body	25 Nm
ABS wheel speed sensor	8 Nm
Brake line holder to assembly carrier	12 Nm
Wheel bolts	120 Nm

2.2 Removing and installing front rubber-metal bearing

Special tools and workshop equipment required

- Tensioning strap - T10038-
- Fixing device - T10096-
- Assembly device - T10263-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-
- Hydraulic cylinder e.g. -VAS 6178-
- Foot pump , e. g. -VAS 6179-

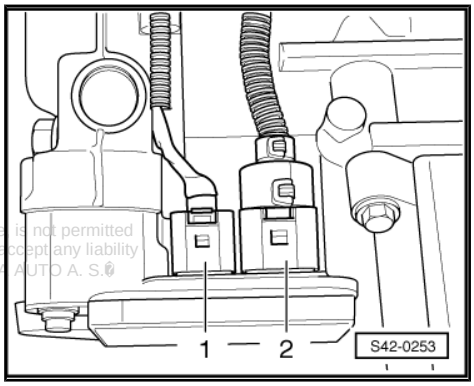
Pressing out rubber-metal bearing

– Remove wheels.

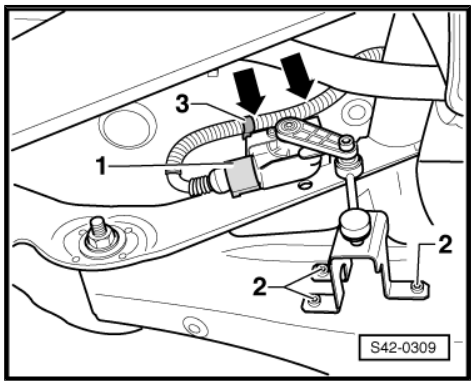
– Remove the rear silencer ⇒ Engine; Rep. gr. 26 .

– Remove coil springs
⇒ “5.1 Removing and installing coil spring”, page 232 .

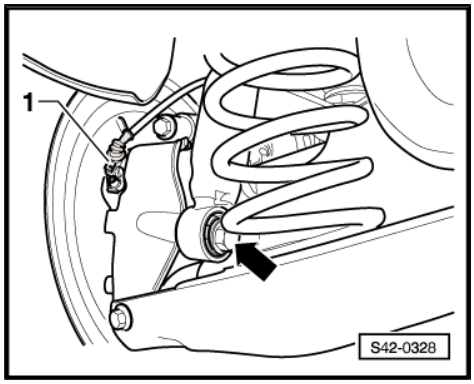
– Disconnect the plug connection -2- at the control unit of the four-wheel drive clutch.



– On vehicles equipped with automatic headlight beam control, disconnect plug -1- and slacken line holder of the sender -3-.



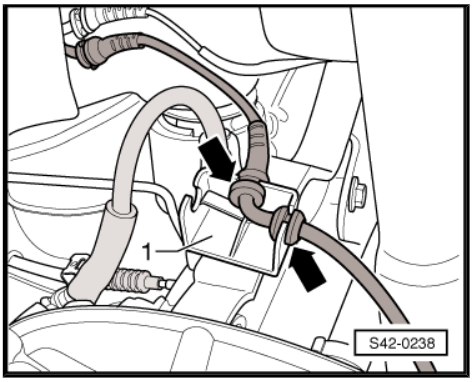
– Disconnect the plug of the ABS speed sensor -1- from the wheel bearing housing.



– Unclip speed sensor cable from bracket -1- -arrows-.

– Removing anti-roll bar
⇒ “6.1 Removing and installing the anti-roll bar”, page 238 .

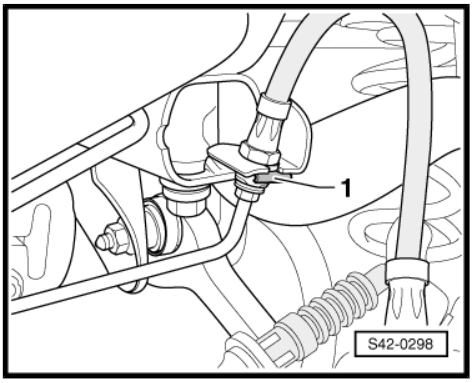
– Removing track rods
⇒ “3.5 Removing and installing track rod for rear axle”, page 210 .



– Remove retaining clips -1- for the brake line.

Note

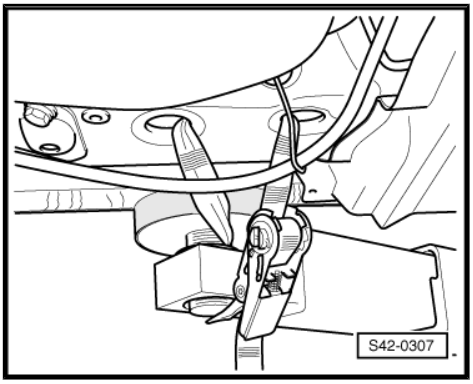
Do not disconnect the brake line.



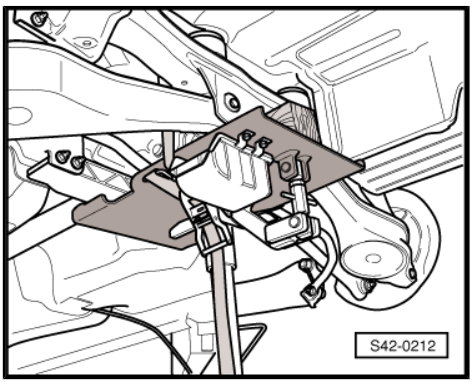
– Lash the vehicle on both sides to the supporting arms of the lift platform using tensioning straps - T10038- .

WARNING

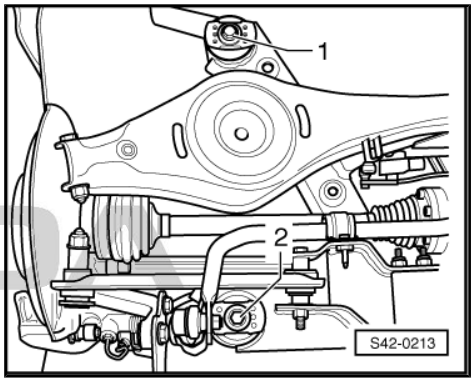
If the vehicle is not lashed, there is a risk of the vehicle toppling off the lift platform.



– Place engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with gearbox mount , e.g. -V.A.G 1359/2- beneath the assembly carrier and secure with tensioning strap.



– Release screw -1- or -2- on both sides.

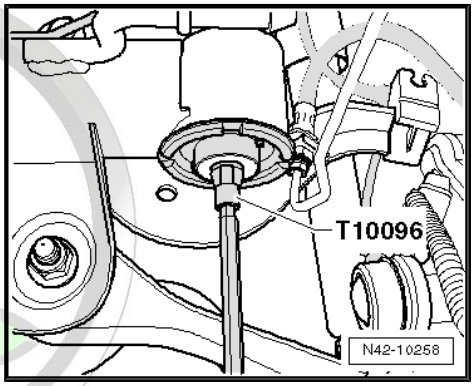


Note

Only the left vehicle side is illustrated for purposes of clear presentation.

– Fix the position of the assembly carrier using fixing devices - T10096- .

In order to fix the assembly carrier, the fixing devices - T10096- must be successively screwed into the positions -1- and -2- on both vehicle sides.



Note

The locating pin - T10096- must only be tightened to maximum 20 Nm as otherwise the fixing bolt thread becomes damaged.

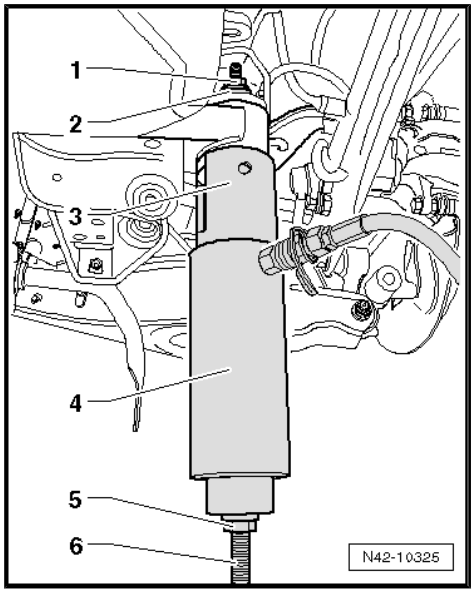
– Successively replace the fixing bolts at the assembly carrier on both sides with fixing devices - T10096- and tighten to 20 Nm.

The fitting position of the assembly carrier is now fixed.

– Lower the assembly carrier with engine/gearbox jack e.g. - V.A.G 1383A- Or -VAS6931- by approx. 10 cm.

– Mark the position of the rubber-metal bearing to the assembly carrier (e.g with a felt-tip pen).

– Position the special tools as shown in the figure.



1 - Nut - T10263/5-

2 - Washer out -T10263-

3 - Pipe section - T10263/6-

4 - Hydraulic cylinder e.g. -VAS 6178-

5 - Nut - T10263/5-

6 - Screw - T10263/4-

– Pretension special tool.

– Pull out the rubber-metal bearing by actuating the pump.

Note

When pulling out the rubber-metal bearing, the outer ring of the bearing is sheared off. This is done with a loud bang.

– After pulling out the rubber-metal bearing, it must be removed from the pipe section - T10263/6- .
– Clamp pipe section - T10263/6- on the surfaces provided in a vice.
– Lever between the pipe section - T10263/6- and the rubber-metal bearing -arrow- using a screwdriver and drive out the rubber-metal bearing; if necessary slightly knock onto the drift with a hammer.

Installing front rubber-metal bearing:

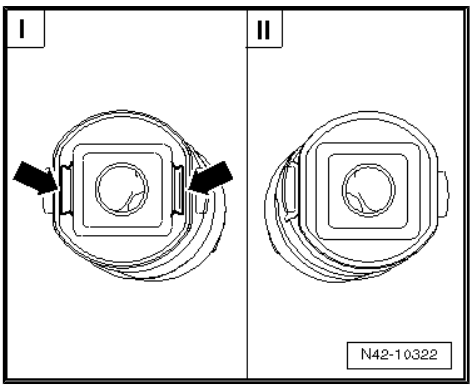
Installation is carried out in the reverse order. Pay attention to the following:

Distinguishing feature of the rubber-metal bearing

I - Front rubber-metal bearing

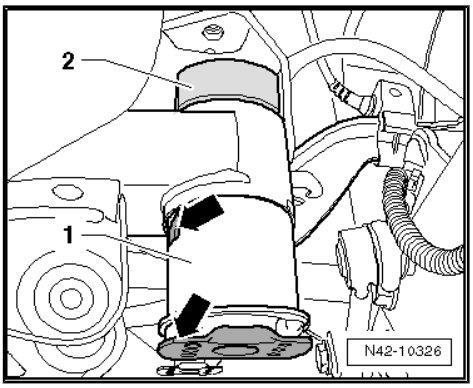
II - Rear rubber-metal bearing

The front rubber-metal bearings have two recesses on the top side -arrows- and differ only slightly in the overall height ⇒ Electronic Catalogue of Original Parts .

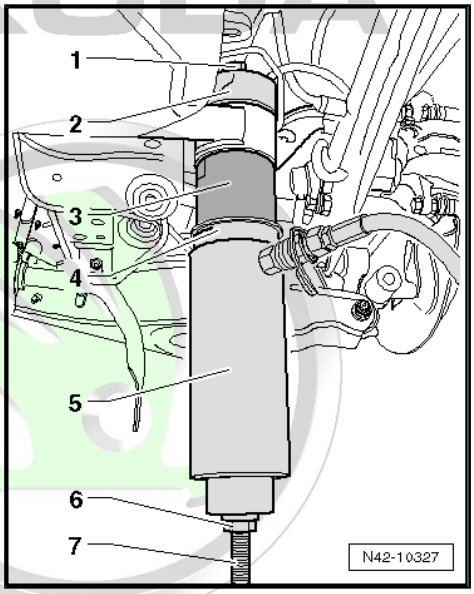


The rubber-metal bearing must be installed in a certain direction, the markings on the assembly carrier should be observed.

– Insert rubber-metal bearing -1- into the assembly carrier in such a way, that the recess and the panel -arrows- point transversely to the direction of travel.
– Position pressure plate - T10263/3- -2- in such a way, that the flattened side also points transversely to the direction of travel.



– Insert special tool together with rubber-metal bearing as shown in the assembly carrier.



1 - Nut - T10263/5-

2 - Thrust piece - T10263/3-

3 - Rubber-metal bearing

4 - Thrust piece - T10263/2-

5 - Hydraulic cylinder e.g. -VAS 6178-

6 - Nut - T10263/5-

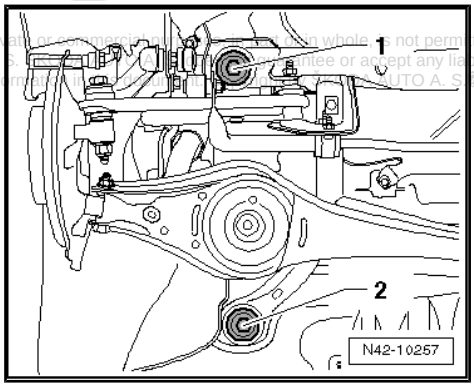
7 - Screw - T10263/4-

– Pretension special tool with rubber-metal bearing.

– Carefully install the rubber-metal bearing by actuating the pump, until the collar rests »free of gap« against the assembly carrier.

– Raise the assembly carrier onto the fixing bolts until the assembly carrier with the rubber-metal bearings touch the body.

– Replace fixing bolts -1- or -2- on both vehicle sides with the fixing screws and tighten the assembly carrier.



– Replace fixing bolts on both vehicle sides with the fixing screws and tighten the assembly carrier.

– Install track rods
⇒ “3.5 Removing and installing track rod for rear axle”, page 210 .

– Install anti-roll bar
⇒ “6.1 Removing and installing the anti-roll bar”, page 238 .

– Mount plug between rear axle and body.

– Installing the helical springs
⇒ “5.1 Removing and installing coil spring”, page 232 .

– Install the rear silencer ⇒ Engine; Rep. gr. 26 .

– Attach the wheels.

2.3 Removing and installing rear rubber-metal bearing

Special tools and workshop equipment required

- Tensioning strap - T10038-
- Fixing device - T10096-
- Assembly device - T10263-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-
- Hydraulic cylinder e.g. -VAS 6178-
- Foot pump , e. g. -VAS 6179-

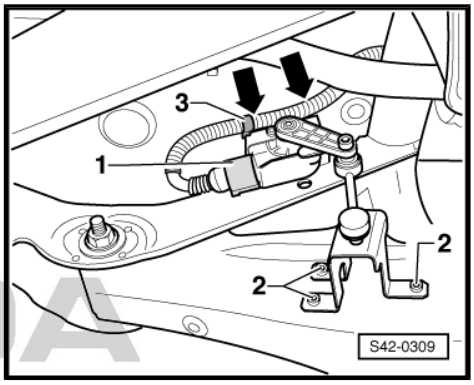
Removing rear rubber-metal bearing:

– Remove rear wheels.

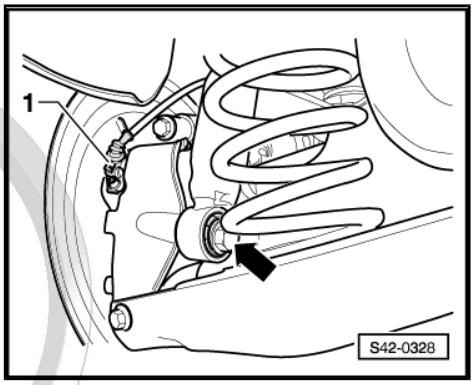
– Remove the rear silencer ⇒ Engine; Rep. gr. 26 .

– Remove coil springs
⇒ “5.1 Removing and installing coil spring”, page 232 .

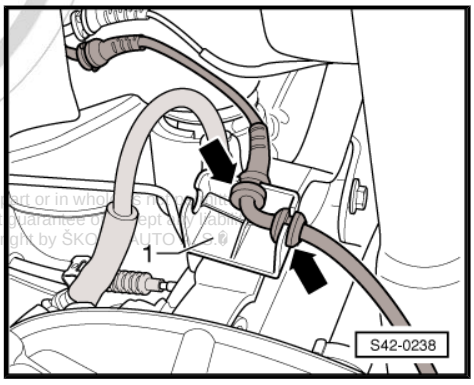
– On vehicles equipped with automatic headlight beam control, disconnect plug -1- and slacken line holder of the sender -3-.



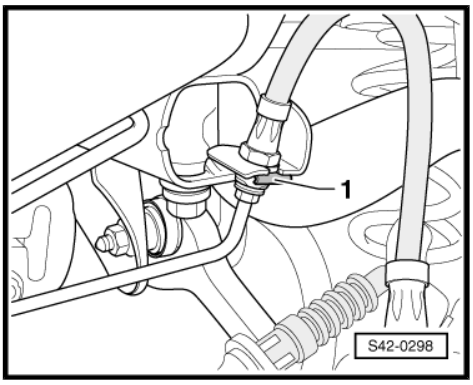
– Disconnect the plug of the ABS speed sensor -1- from the wheel bearing housing.



– Unclip ABS speed sensor cable from bracket -1- -arrows-.



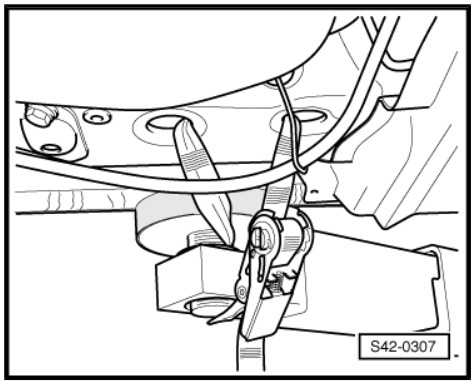
– Remove retaining clips -1- for the brake line and unclip the brake line from the assembly carrier.



Note

Do not disconnect the brake line.

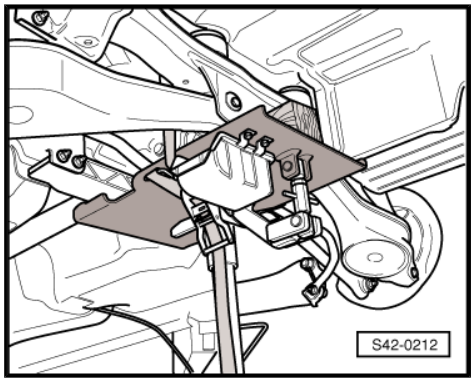
– Lash the vehicle on both sides to the supporting arms of the lift platform using tensioning straps - T10038- .



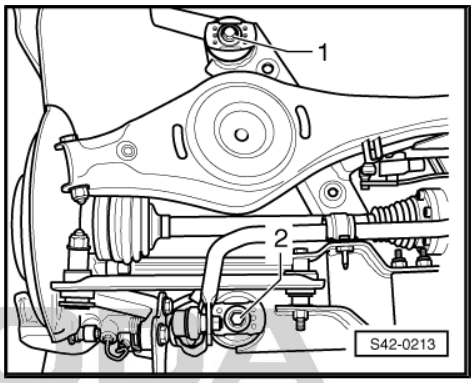
WARNING

If the vehicle is not lashed, there is a risk of the vehicle toppling off the lift platform.

– Place engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with gearbox mount , e.g. -V.A.G 1359/2- beneath the assembly carrier and secure with tensioning strap.



– Release screw -1- or -2- on both sides.

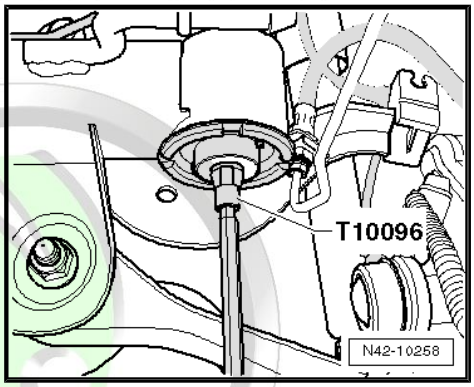


Note

Only the left vehicle side is illustrated for purposes of clear presentation.

– Fix the position of the assembly carrier using fixing devices - T10096- .

In order to fix the assembly carrier, the fixing devices - T10096- must be successively screwed into the positions -1- and -2- on both vehicle sides.



Note

The locating pin - T10096- must only be tightened to maximum 20 Nm as otherwise the fixing bolt thread becomes damaged.

– Successively replace the fixing bolts at the assembly carrier on both sides with fixing devices - T10096- and tighten to 20 Nm.

The fitting position of the assembly carrier is now fixed.

– Lower the assembly carrier with engine/gearbox jack e.g. - V.A.G 1383A- Or -VAS6931- by approx. 10 cm.

– Mark the position of the rubber-metal bearing to the assembly carrier (e.g with a felt-tip pen).

– Position the special tools as shown in the figure.

1 - Nut - T10263/5-

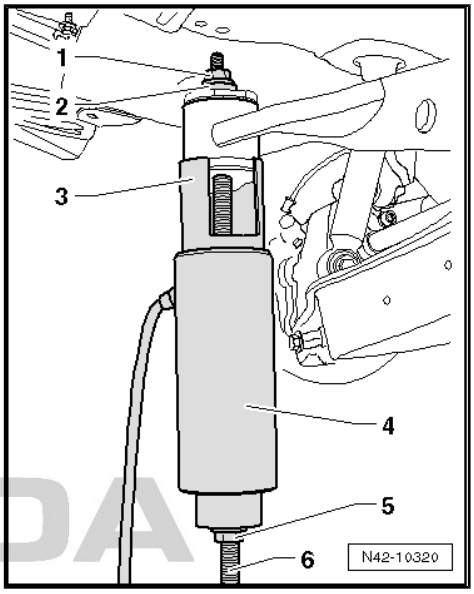
2 - Washer out -T10263-

3 - Pipe section - T10263/6-

4 - Hydraulic cylinder e.g. -VAS 6178-

5 - Nut - T10263/5-

6 - Screw - T10263/4-



– Pretension special tool.

– Pull out the rubber-metal bearing by actuating the pump.

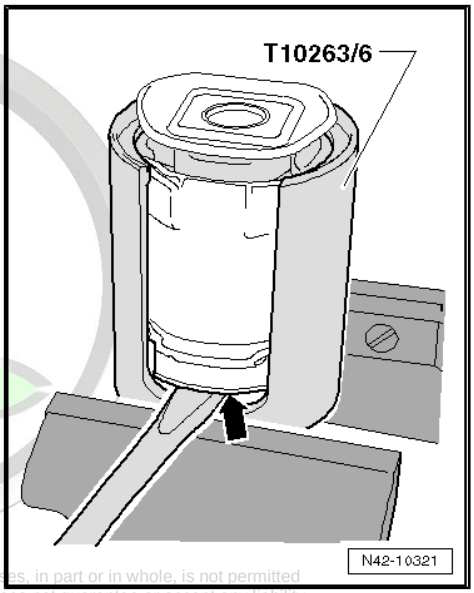
Note

When pulling out the rubber-metal bearing, the outer ring of the bearing is sheared off. This is done with a loud bang.

– After pulling out the rubber-metal bearing, it must be removed from the pipe section - T10263/6- .

– Clamp pipe section - T10263/6- on the surfaces provided in a vice.

– Lever between the pipe section - T10263/6- and the rubber-metal bearing -arrow- using a screwdriver and drive out the rubber-metal bearing; if necessary slightly knock onto the drift with a hammer.



Installing rear rubber-metal bearing

Installation is carried out in the reverse order. Pay attention to the following:

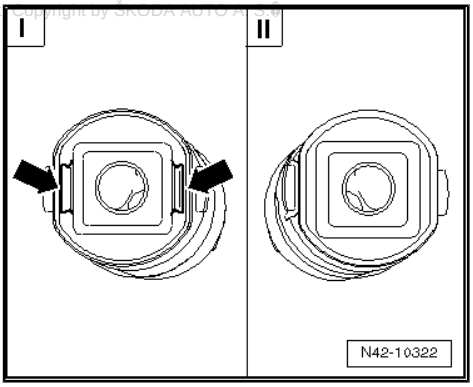
Distinguishing feature of the rubber-metal bearing

I - Front rubber-metal bearing

II - Rear rubber-metal bearing

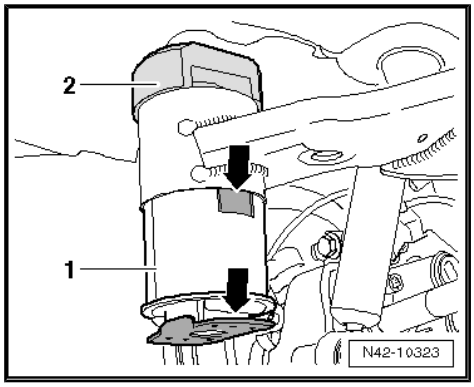
The front rubber-metal bearings have two recesses on the top side -arrows- and differ only slightly in the overall height ⇒ Electronic Catalogue of Original Parts .

The rubber-metal bearing must be installed in a certain direction, the markings on the assembly carrier should be observed.



– Insert rubber-metal bearing -1- into the assembly carrier in such a way, that the recess and the panel -arrows- point transversely to the direction of travel.

– Position pressure plate - T10263/3- -2- in such a way, that the flattened side also points transversely to the direction of travel.



– Insert special tool together with rubber-metal bearing as shown in the assembly carrier.

1 - Nut - T10263/5-

2 - Thrust piece - T10263/3-

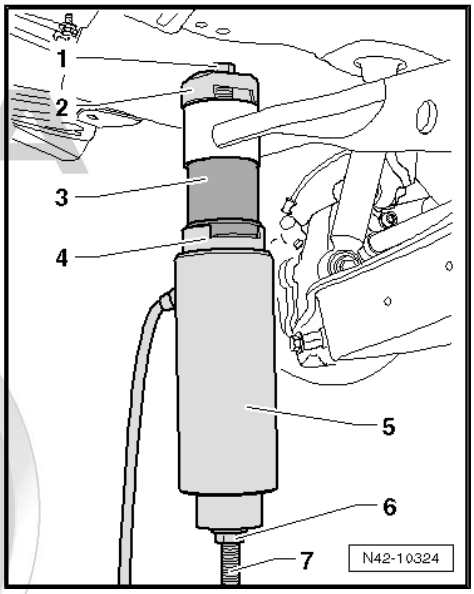
3 - Rubber-metal bearing

4 - Thrust piece - T10263/2-

5 - Hydraulic cylinder e.g. -VAS 6178-

6 - Nut - T10263/5-

7 - Screw - T10263/4-

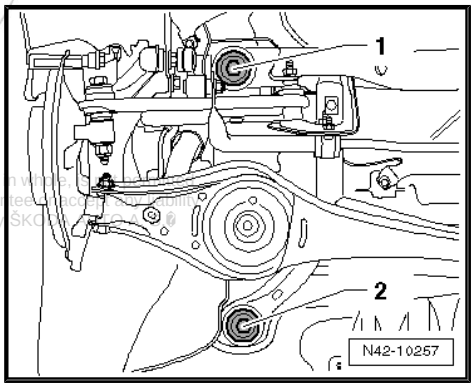


– Pretension special tool with rubber-metal bearing.

– Carefully install the rubber-metal bearing by actuating the pump, until the collar rests »free of gap« against the assembly carrier.

– Raise the assembly carrier onto the fixing bolts until the assembly carrier with the rubber-metal bearings touch the body.

– Replace fixing bolts -1- or -2- on both vehicle sides with the fixing screws and tighten the assembly carrier.



– Replace fixing bolts on both vehicle sides with the fixing screws and tighten the assembly carrier.

– Installing the helical springs
⇒ “5.1 Removing and installing coil spring”, page 232 .

– Install the rear silencer ⇒ Engine; Rep. gr. 26 .

– Attach rear wheels.

Tightening torques:

Assembly carrier to body ◆ Use new screws!	70 Nm + 180°
Wheel bolts	120 Nm

3 Summary of components: Suspension arm, track rod for rear axle, Rear left side vehicle level sensor - G76- (vehicles with four-wheel drive)

⇒ “3.1 Summary of components - rear left vehicle level sensor G76 ”, page 201 .

⇒ “3.2 Remove and install rear left vehicle level sensor G76 in the vehicle”, page 202 .

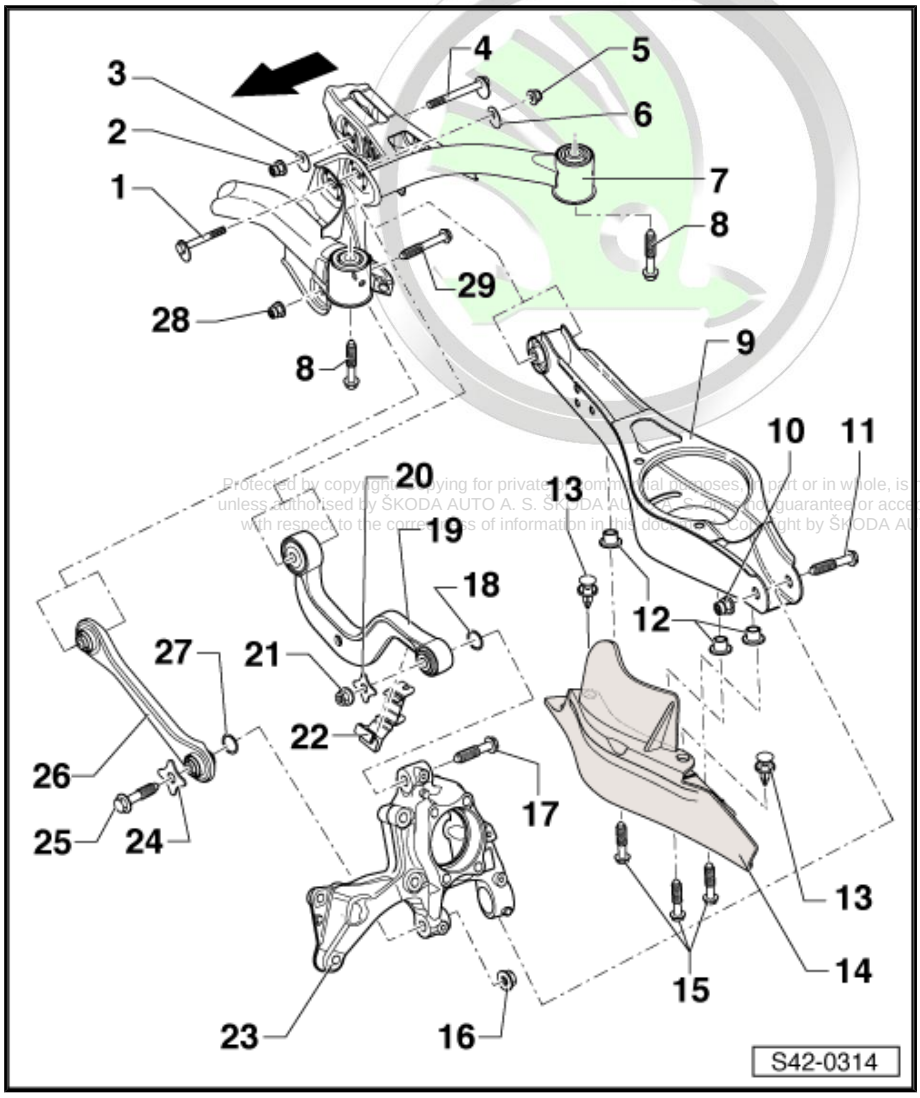
⇒ “3.3 Removing and installing top suspension arm”, page 204 .

⇒ “3.4 Removing and installing bottom suspension arm”, page 207 .

⇒ “3.5 Removing and installing track rod for rear axle”, page 210 .

⇒ “3.6 Removing and installing bracket for the speed sensor cable”, page 213 .

The -arrow- shows the direction of travel.



1 - Eccentric bolt

- ❑ after undoing, carry out an axle alignment ⇒ “2.3 Axle alignment”, page 338
- ❑ do not turn more than 90° to the right or to the left (i.e smallest to largest adjustment possibility)

2 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ 95 Nm

3 - Eccentric washer

- ❑ Inner hole with lug

4 - Eccentric bolt

- ❑ after undoing, carry out an axle alignment ⇒ “2.3 Axle alignment”, page 338
- ❑ do not turn more than 90° to the right or to the left (i.e smallest to largest adjustment possibility)

5 - Nut

- ❑ self-locking
- ❑ replace after each removal

- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ 95 Nm

6 - Eccentric washer

- ❑ Inner hole with lug

7 - Assembly carrier

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

8 - Screw

- ❑ replace after each removal
- ❑ 70 Nm + 180°

9 - Bottom suspension arm

- ❑ removing and installing ⇒ “3.4 Removing and installing bottom suspension arm”, page 207

10 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ Tightening torque can be applied via the screw Pos. 11
- ❑ 90 Nm + 90°

11 - Screw

- ❑ replace after each removal

12 - Threaded rivet

- ❑ M6

13 - Body-bound rivet

14 - Protection plate

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

15 - Screw

- ❑ 8 Nm

16 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ 130 Nm + 90°

17 - Screw

- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ 130 Nm + 90°

18 - Washer

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

19 - Top suspension arm

- ❑ removing and installing ⇒ “3.3 Removing and installing top suspension arm”, page 204

20 - Washer

21 - Nut

- ❑ self-locking
- ❑ replace after each removal

- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ the tightening torque must be applied via the screw ⇒ Item 17 (page 199) , in order not to put the bearing under tension

22 - Support

- ❑ for speed sensor cable
- ❑ clipped with top suspension arm
- ❑ removing and installing ⇒ “3.6 Removing and installing bracket for the speed sensor cable”, page 213

23 - Wheel-bearing housing

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing ⇒ “4.1 Removing and installing wheel bearing housing”, page 215

24 - Washer

25 - Screw

- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177

26 - Track rod for rear axle

- ❑ different versions ⇒ page 201
- ❑ closed in direction of travel (track rods on the right and left differ)
- ❑ opened towards the bottom (track rods on the right and left are identical)
- ❑ combined installation is allowed
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing ⇒ “3.5 Removing and installing track rod for rear axle”, page 210

27 - Washer

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

28 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 90 Nm + 90°

29 - Screw

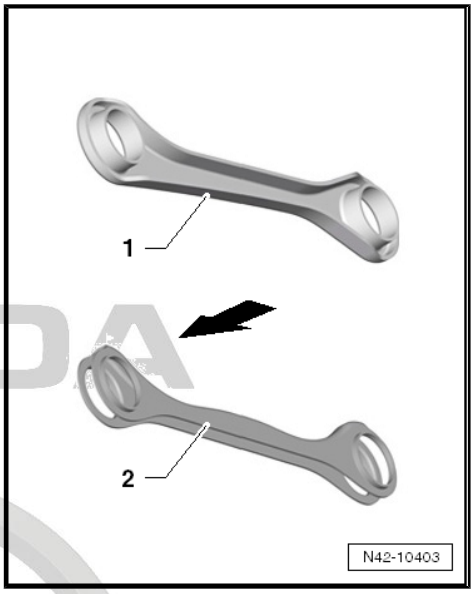
- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177

Track rod versions

1 - Track rod closed in direction of travel (track rods on the right and left differ)

2 - Track rod opened towards the bottom (track rods on the right and left are identical)

- The -arrow- shows the direction of travel.
- A combined installation of the track rod versions -1- and -2- is allowed.
- Pay attention to correct installation position.



3.1 Summary of components - rear left vehicle level sensor - G76-

Note

- *The rear left vehicle level sensor - G76- is supplied complete with coupling rod and upper and lower retaining bracket as a spare part.*
- *Replace with installed assembly carrier*
  ⇒ "3.2 Remove and install rear left vehicle level sensor G76 in the vehicle", page 202 .

1 - Assembly carrier

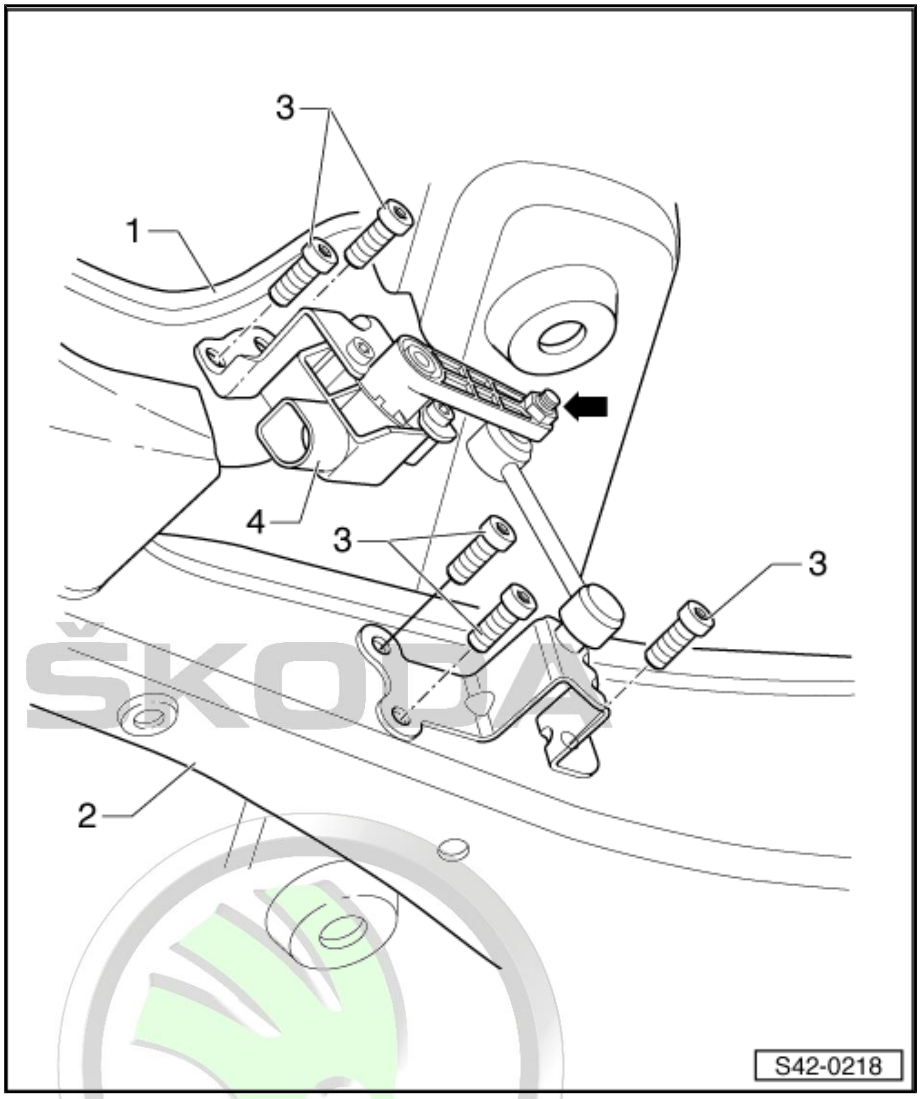
2 - Bottom suspension arm

3 - Screw

- ❑ 5 Nm

4 - Rear left vehicle level sensor - G76-

- ❑ complete with component parts
- ❑ Lever -arrow- must points towards the outer side of the vehicle
- ❑ replace in vehicle ⇒ “3.2 Remove and install rear left vehicle level sensor G76 in the vehicle”, page 202
- ❑ after replacing, carry out the basic setting of the headlight range control unit - J431- ⇒ Vehicle diagnostic tester in the function “Targeted fault finding”.



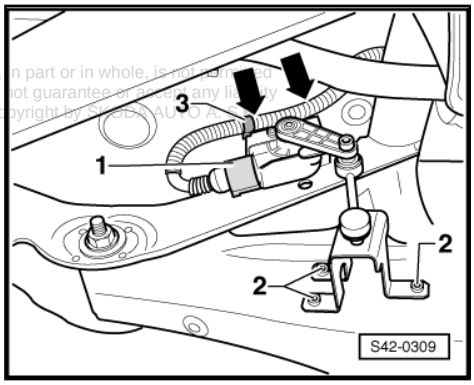
3.2 Remove and install rear left vehicle level sensor - G76- in the vehicle

Removing:

– Disconnect plug -1- and slacken line holder from the sender -3-.

– Unscrew screws -2- and -arrows-.

– Remove sensor.



Installing:

Installation is carried out in the reverse order. Pay attention to the following:

The lever of the sensor must point towards the outer side of the vehicle.

– After replacing the rear left vehicle level sensor - G76- carry out the basic setting of the headlight range control unit - J431- ⇒ Vehicle diagnostic tester in the function “Targeted fault finding”.

Tightening torques:

Rear left vehicle level sensor - G76- to assembly carrier	5 Nm
Rear left vehicle level sensor - G76- to bottom top suspension	5 Nm

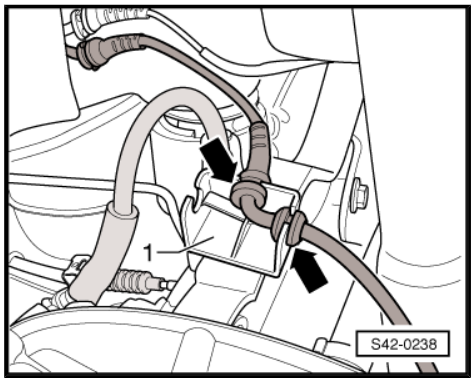
3.3 Removing and installing top suspension arm

Removing:

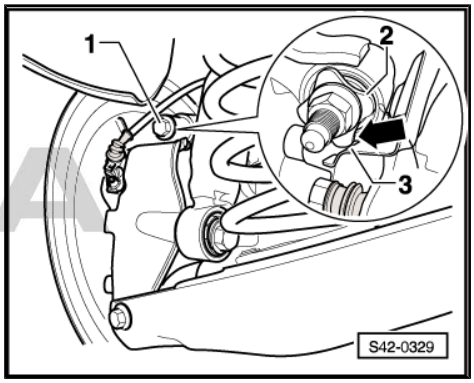
– Remove wheel.

– Remove coil spring
⇒ “5.1 Removing and installing coil spring”, page 232 .

– Unhook speed sensor cable from holder -1- at top suspension arm -arrows-.



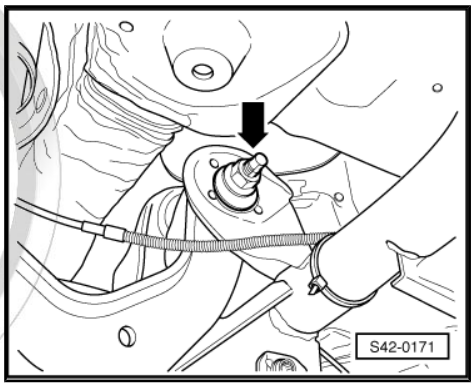
– Release screw -1-.



– Mark the position of the eccentric bolt -arrow- to the assembly carrier (e.g with a felt-tip pen).

– Unscrew plug -arrow-.

– Remove top suspension arm.



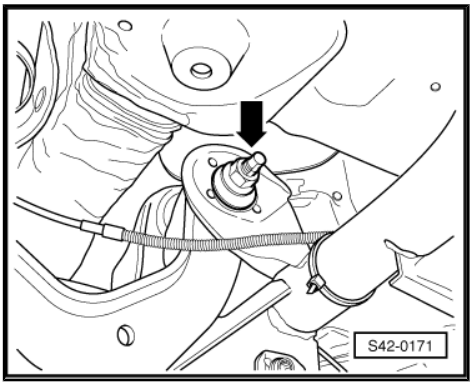
Installing:

Installation is carried out in the reverse order. Pay attention to the following:

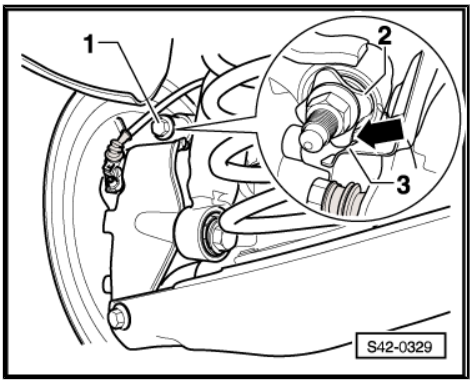
Note

The bolted connection of the top suspension arm must only be performed, if the measured dimension “a” between the wheel hub centre and the lower edge of the wheel house is respected (unladen weight position)!
⇒ “1.2 Rear axle in unladen weight position”, page 177 .

– Screw top suspension arm onto the assembly carrier and tighten the nut.
– Observe the marked marking of the position of the eccentric bolt -arrow- to the assembly carrier!



– Tighten screw -1- for top suspension arm at wheel-bearing housing. The tightening torque must be applied via the screw, in order not to put the bearing under tension.



Note

The washer -2- must be fitted so that there is a gap -arrow- between the washer and the cover plate -3-.

– Hook the speed sensor cable into the holder at the suspension arm.
– Install coil spring
⇒ “5.1 Removing and installing coil spring”, page 232 .
– Installing and tightening the wheel.
– Perform a test drive.
– Check the steering wheel position during the test drive.
– Carry out axle alignment ⇒ “2.3 Axle alignment”, page 338 .

Tightening torques:

Top suspension arm to assembly carrier ♦ Use new nut! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	95 Nm
Top suspension arm to wheel-bearing housing ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	130 Nm + 90°
Wheel bolts	120 Nm

3.4 Removing and installing bottom suspension arm

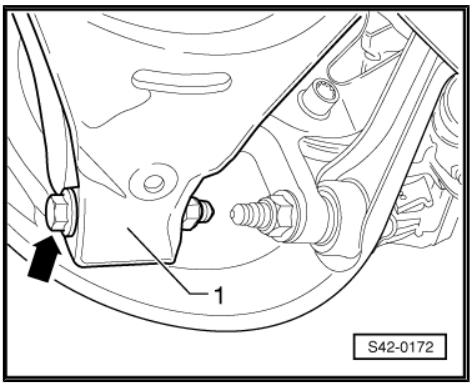
Removing:

– Remove wheel.

– Unhook exhaust system at rear and lower.

– Remove coil spring
⇒ “5.1 Removing and installing coil spring”, page 232 .

– Release screw -arrow- for bottom suspension arm -1-.

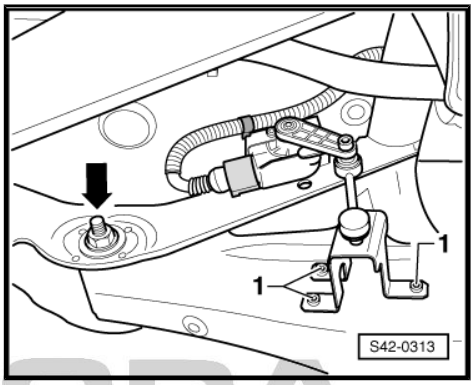


– Remove the screws -1- for the bracket of the rear left vehicle level sensor - G76- on vehicles fitted with automatic headlight range control.

– Mark the position of the eccentric bolt -arrow- to the assembly carrier (e.g with a felt-tip pen).

– Unscrew plug -arrow-.

– Remove bottom suspension arm.



Installing:

Installation is carried out in the reverse order. Pay attention to the following:

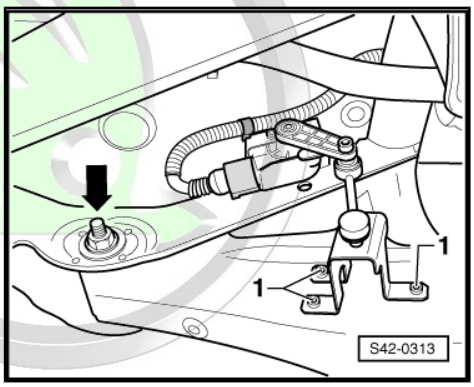
Note

The bolted connection of the bottom suspension arm must only be performed, if the measured dimension “a” between the wheel hub centre and the lower edge of the wheel house is respected (unladen weight position)!
⇒ “1.2 Rear axle in unladen weight position”, page 177 .

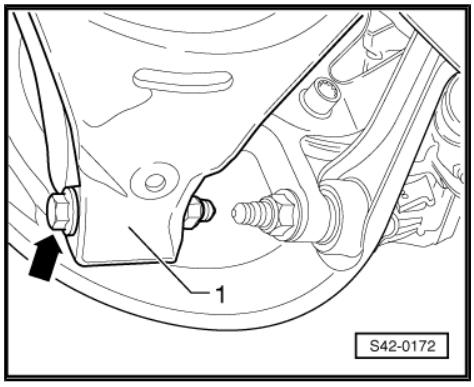
– Screw bottom suspension arm onto the assembly carrier and tighten the nuts to tightening torque.

Observe the marked marking of the eccentric bolt -arrow- to the assembly carrier!

– Install the screws -1- for the bracket of the rear left vehicle level sensor - G76- on vehicles fitted with automatic headlight range control.



– Tighten screw -arrow- for bottom suspension arm -1-.
– Install coil spring
⇒ “5.1 Removing and installing coil spring”, page 232 .
– Hook on exhaust system at rear.
– Installing and tightening the wheel.
– Perform a test drive.
– Check the steering wheel position during the test drive.
– Carry out axle alignment ⇒ “2.3 Axle alignment”, page 338 .



Vehicles with automatic headlight range control:

– Carry out the basic setting of the headlight range control unit - J431- ⇒ Vehicle diagnostic tester in the function “Targeted fault finding”.

Tightening torques:

Bottom suspension arm to assembly carrier ♦ Use new nut! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	95 Nm
Bottom suspension arm to wheel-bearing housing ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	90 Nm + 90°
Rear left vehicle level sensor - G76- to bottom top suspension	5 Nm
Wheel bolts	120 Nm

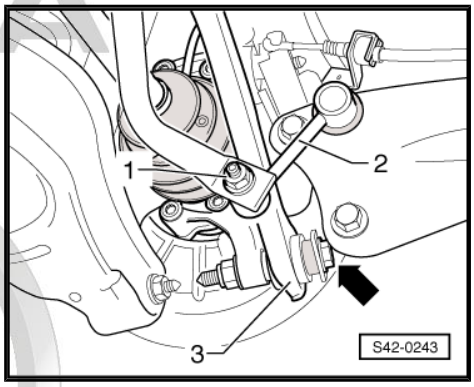
3.5 Removing and installing track rod for rear axle

Removing:

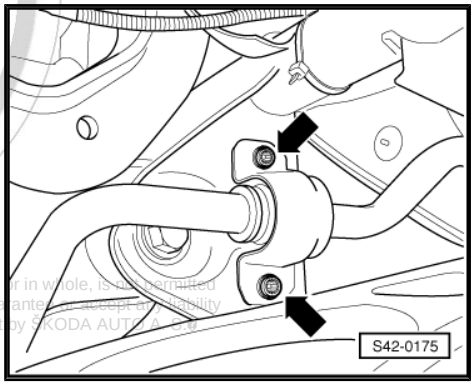
– Remove wheel.

– Remove nut -1- and pull screw out of anti-roll bar and coupling rod -2-.

– Tighten screw -arrow- for track rod for rear axle -3-.

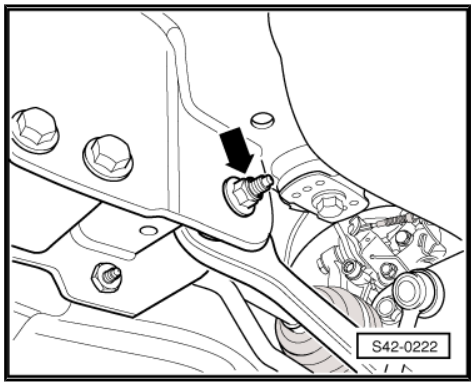


– Unscrew screws -arrows- for clamp of anti-roll bar.



– Unscrew nut -arrow- and remove screw towards the rear

– Remove track rod for rear axle.



Installing:

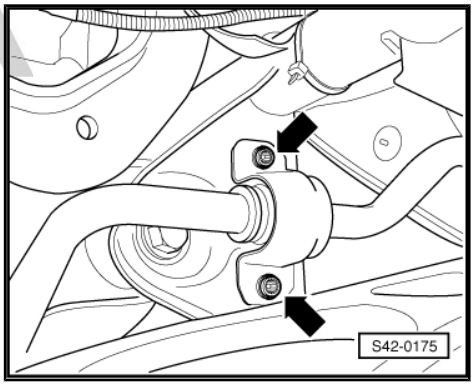
Installation is carried out in the reverse order. Pay attention to the following:

– Insert track rod for rear axle into the vehicle and tighten the screws by hand.

Note

- *Note of the different versions of the track rods: opened downwards or closed in the driving direction ⇒ page 201 A combined installation is allowed.*
- *The screwing of the track rod for rear axle and the clamps of the anti-roll bar must only be performed, if the measured dimension "a" between the wheel hub centre and the lower edge of the wheel house is respected (unladen weight position)! ⇒ "1.2 Rear axle in unladen weight position", page 177 .*

– Tighten screws -arrows- for the clamp of the anti-roll bar alternatively and uniformly.
– Screw the coupling rod with a new screw and nut onto the anti-roll bar.
– Tighten screwed connections of track rod for rear axle to specified torque.
– Perform a test drive.
– Check the steering wheel position during the test drive.
– Carry out axle alignment ⇒ “2.3 Axle alignment”, page 338 .



Tightening torques:

Track rod for rear axle to assembly carrier ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	90 Nm + 90°
Track rod for rear axle to wheel-bearing housing ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	130 Nm + 90°
Clamp of anti-roll bar to assembly carrier ♦ Use new screws! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177 ♦ tighten bolts alternatively and evenly.	25 Nm + 45°
Coupling rod ♦ Use new nut!	45 Nm
Wheel bolts	120 Nm

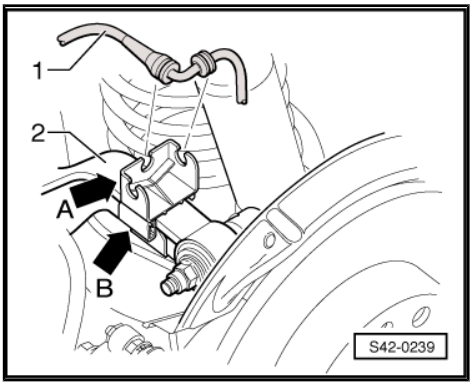
3.6 Removing and installing bracket for the speed sensor cable

Removing:

– Unclip speed sensor cable -1- from the holder.

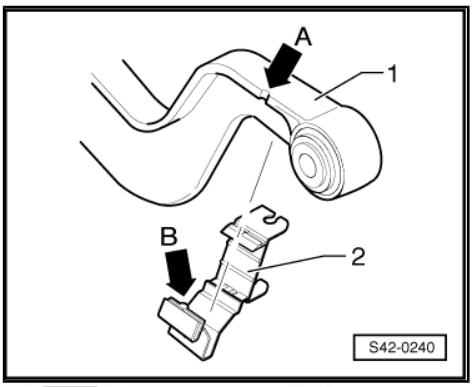
– Unclip the top part of the holder -arrow A- from the tab -arrow B- and open the holder.

– Remove the holder from the top suspension arm -2-.



Installing:

– Push the opened holder -2- from below onto the top suspension arm -1-.



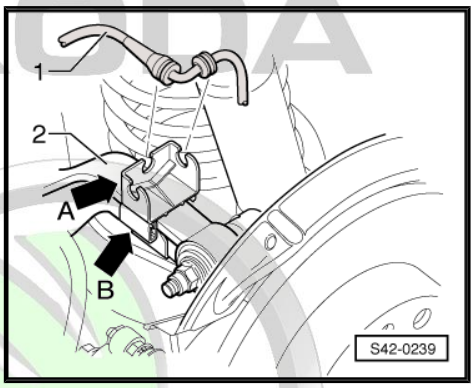
Note

The surrounding components are not shown in the illustration for purposes of clear presentation.

– Insert the holder at the top suspension arm and position the holder in such a way, that the dent -arrow B- and the recess -arrow A- are flush.

– Close holder: Interlock part of the holder -arrow A- with the tab -arrow B-.

– Clip the speed sensor cable -1- into the holder.



4 Summary of components: Wheel-bearing housing, trailing arm (vehicles with four-wheel drive)

⇒ “4.1 Removing and installing wheel bearing housing”, page 215 .

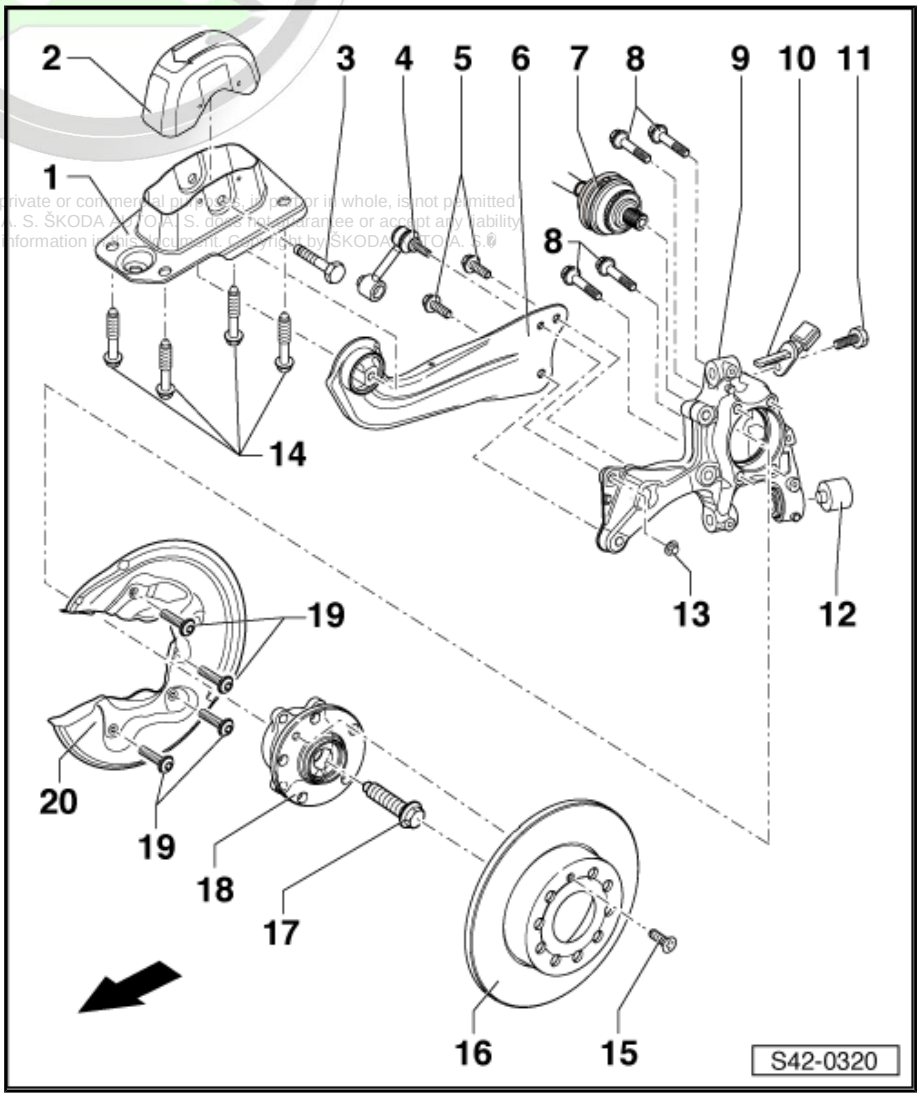
⇒ “4.2 Replacing the rubber-metal bearing for wheel-bearing housing”, page 220 .

⇒ “4.3 Removing and installing the wheel hub with wheel bearing ”, page 223 .

⇒ “4.4 Removing and installing trailing arm with bracket”, page 225 .

⇒ “4.5 Repairing trailing arm”, page 230 .

The -arrow- shows the direction of travel.



1 - Bearing bracket

2 - Cover

3 - Screw

- ❑ replace after each removal
- ❑ determine ⇒ page 226 the fitting position of the bracket to the trailing arm before tightening the screw
- ❑ 90 Nm + 90°

4 - Coupling rod

- ❑ connects anti-roll bar with trailing arm/wheel-bearing housing

5 - Screw

- ❑ observe the order of tightening up ⇒ page 226
- ❑ replace after each removal
- ❑ note ⇒ page 226 the fitting position of the trailing arm to the wheel-bearing housing before tightening the screws
- ❑ 90 Nm + 45°

6 - Trailing arm

- ❑ removing and installing ⇒ “4.4 Removing and installing trailing arm with bracket”, page 225
- ❑ repairing ⇒ “4.5 Repairing trailing arm”, page 230

7 - Cardan shaft

- ❑ Summary of components ⇒ “7 Summary of components: Drive shaft (vehicles with four-wheel drive)”, page 241
- ❑ removing and installing ⇒ “7.2 Removing and installing a drive shaft”, page 246

8 - Screw

- ❑ replace after each removal
- ❑ 70 Nm + 90°

9 - Wheel-bearing housing

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing ⇒ “4.1 Removing and installing wheel bearing housing”, page 215

10 - Rear right wheel speed sensor - G44- / Rear left wheel speed sensor - G46-

- ❑ can be checked ⇒ Vehicle diagnostic tester in the guided fault detection system
- ❑ Clean the inner surface of the hole before inserting the sensor and coat with a solid lubricant paste - G 000 650- .

11 - Screw

- ❑ 8 Nm

12 - Rubber-metal bearing

- ❑ Renew. ⇒ “4.2 Replacing the rubber-metal bearing for wheel-bearing housing”, page 220 .

13 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 40 Nm

14 - Screw

- ❑ replace after each removal
- ❑ 50 Nm + 45°

15 - Screw

- ❑ 4 Nm

16 - Brake disc

17 - Screw

- ❑ Twelve-sided bolt
- ❑ removing and installing
  ⇒ “7.1 Removing and installing fixing screw of drive shaft - twelve-sided bolt”, page 243
- ❑ replace after each removal
- ❑ 70 Nm + 90°

18 - Wheel hub with wheel bearing

- ❑ Sensor ring for ABS is built into the wheel hub
- ❑ removing and installing ⇒ “4.3 Removing and installing the wheel hub with wheel bearing ”, page 223

Wheel hub and wheel bearing form one unit. It is clearance free, adjusting and repairs are not possible.

19 - Screw

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ 12 Nm

20 - Protection plate

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

4.1 Removing and installing wheel bearing housing

Removing:

– Remove wheel.

– Remove coil spring
⇒ “5.1 Removing and installing coil spring”, page 232 .

– Unscrew fixing screw of the drive shaft
⇒ “7.1 Removing and installing fixing screw of drive shaft - twelve-sided bolt”, page 243 .

– Remove brake calliper: Unscrew the fixing screws of the brake carrier while counterholding the guide bolts.

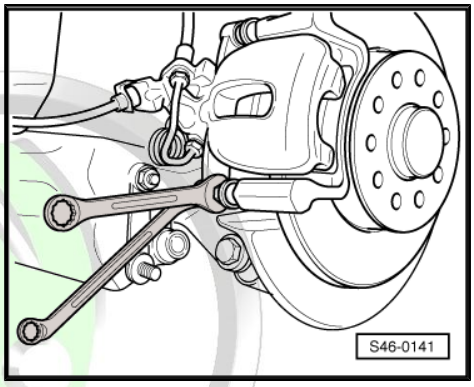
– Remove the brake caliper and e.g. secure with wire in such a way that the weight of the brake caliper does not burden or damage the brake hose.

– Remove brake disc.

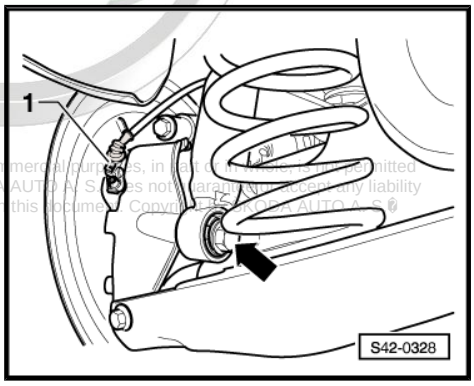
– Remove cover plate.

– Removing the wheel hub with wheel bearing
⇒ “4.3 Removing and installing the wheel hub with wheel bearing ”, page 223 .

– Remove the ABS-speed sensor -1- from the wheel bearing housing.

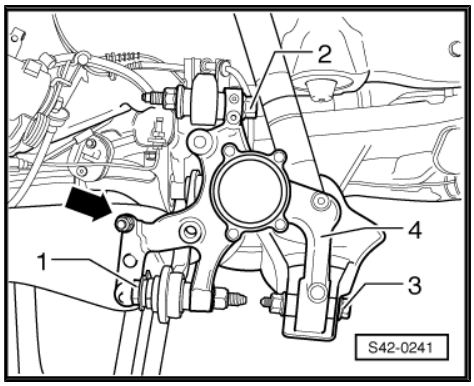


– Unscrew screw for shock absorber mounting -arrow-.



– Unscrew the nut of the coupling rod -arrow-.

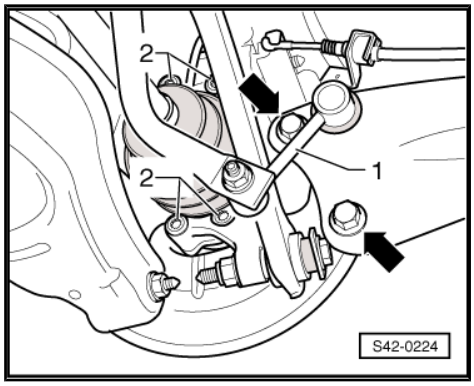
– Unscrew screw for track rod for rear axle -1-, top suspension arm -2- and bottom suspension arm -3- from wheel-bearing housing -4-.



– Hold the wheel-bearing housing and unscrew screws -arrows-.

– Take the wheel-bearing housing out of the coupling rod joint thread -1-.

– Remove the wheel bearing housing.



Installing:

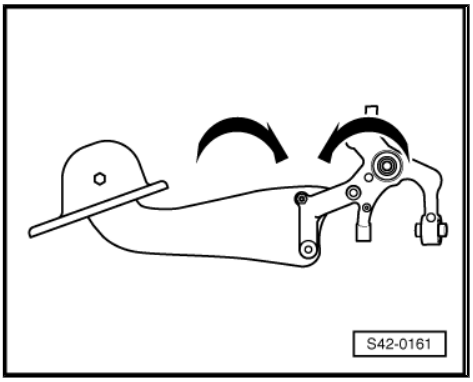
Installation is carried out in the reverse order. Pay attention to the following:

Note

Pay attention to correct installation position of trailing arm and wheel-bearing housing.

Installation position of trailing arm and wheel-bearing housing:

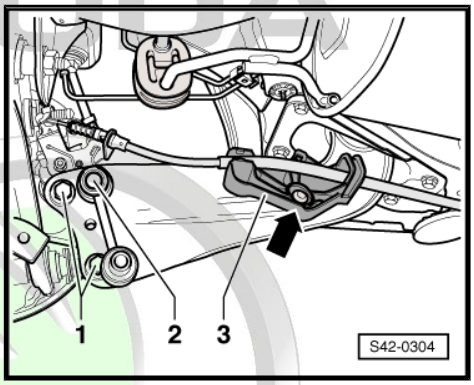
The screwed connection of the trailing arm/wheel-bearing housing must only be tightened if all other components (spring and shock absorber are required) of the wheel suspension in question are already fitted. For tightening, the wheel-bearing housing must be in the unladen weight position
⇒ “1.2 Rear axle in unladen weight position”, page 177 . Only move the trailing arm and the wheel-bearing housing into the necessary position for tightening the screwed connection -arrows- under these conditions.



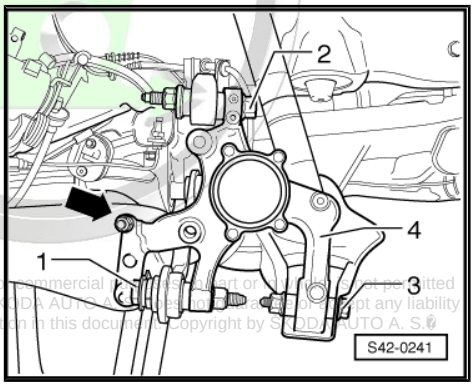
Note

Note the following work steps and absolutely ensure that you follow the sequence!

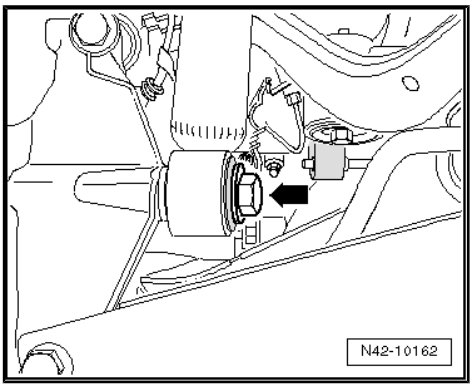
– Screw wheel-bearing housing with screws -1- onto trailing arm and coupling rod -2-, but do not tighten the screws and the nut yet!



– Screw the track rod for rear axle -1-, top suspension arm -2- and bottom suspension arm -3- to the wheel-bearing housing -4- but do not tighten yet!
– Installing the wheel hub with wheel bearing
⇒ “4.3 Removing and installing the wheel hub with wheel bearing ”, page 223 .
– Install cover plate.



– Screw in screw for shock absorber mounting -arrow-, but do not tighten yet!
– Install coil spring
⇒ “5.1 Removing and installing coil spring”, page 232 .

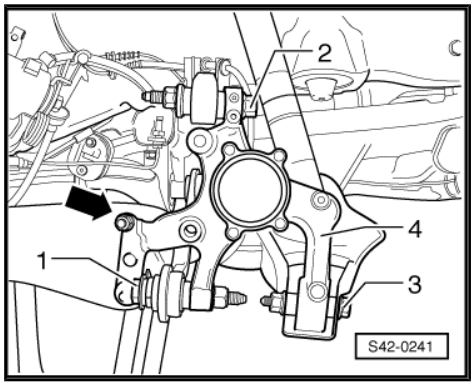


Note

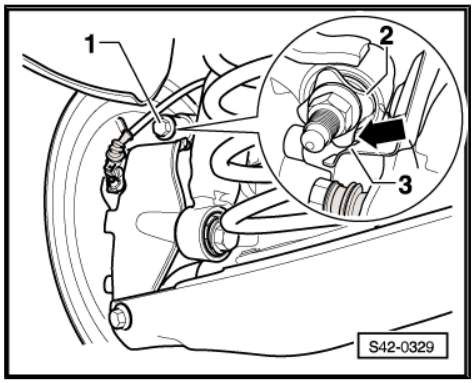
The tightening of the track control arm and shock absorber to the wheel-bearing housing must only be performed, if the dimension “a” between the wheel hub centre and the lower edge of the wheel house is respected (unladen weight position)!
⇒ “1.2 Rear axle in unladen weight position”, page 177 .

– Adjust dimension -a-
⇒ “1.2 Rear axle in unladen weight position”, page 177 .

– Tighten screw for track rod for rear axle -1-.
– Tighten screw for bottom suspension arm -3-.



– Tighten screw -1- for top suspension arm.

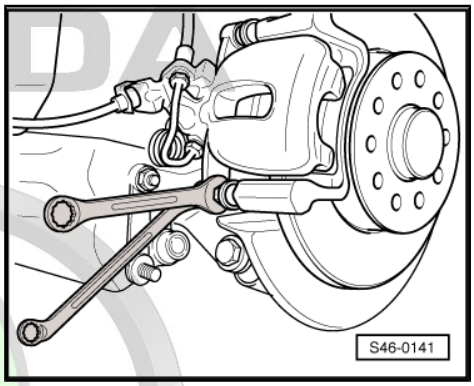


Note

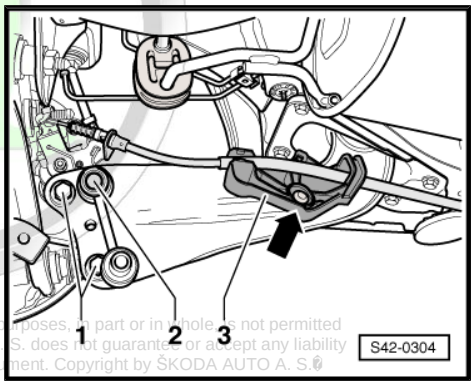
The washer -2- must be fitted so that there is a gap -arrow- between the washer and the cover plate -3-.

– Tighten screw for shock absorber mounting.
– Remove tools for adjusting the dimension -a-.
– Install the ABS-speed sensor in the wheel-bearing housing.
– Install brake disc.

– Install brake calliper: Screw the fixing screws into the brake carrier while counterholding the guide bolt.



– Tighten screws -1- of trailing arm with tightening torque, while doing so pay attention to the required position of the trailing arm and wheel-bearing housing ⇒ page 217 .
– Tighten nut of coupling rod -2- to wheel-bearing housing to tightening torque.
– Carry out axle alignment ⇒ “2.3 Axle alignment”, page 338 .



Tightening torques:

Shock absorber to wheel-bearing housing	180 Nm
Speed sensor to wheel-bearing housing	8 Nm
Trailing arm to wheel-bearing housing ♦ Use new screws! ♦ Determine ⇒ page 217 the fitting position of the trailing arm to the wheel-bearing housing before tightening the screws	90 Nm + 45°
Top suspension arm to wheel-bearing housing ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	130 Nm + 90°
Bottom suspension arm to wheel-bearing housing ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	90 Nm + 90°
Track rod for rear axle to wheel-bearing housing ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	130 Nm + 90°
Coupling rod ♦ Use new nut!	45 Nm
Brake caliper to brake carrier	35 Nm
Wheel bolts	120 Nm

4.2 Replacing the rubber-metal bearing for wheel-bearing housing

Special tools and workshop equipment required

- Nut - MP5-401/3 (3346)-
- Screw - MP5-401/2 (3346)-
- Pipe section - MP5-402/3 (3301)-
- Assembly device - MP5-402 (3301)-
- Assembly device - T30017/1 (3350)-
- Assembly device - T30017/2 (3350)-
- Pipe - T30034 (41-501)-
- Press-in ring - MP3-483 (30204)-

Removing:

– Remove wheel.

– Remove coil spring
⇒ “5.1 Removing and installing coil spring”, page 232 .

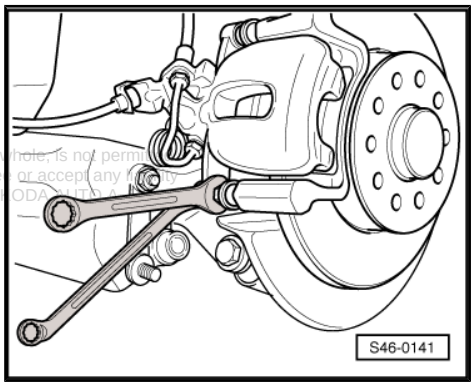
– Remove brake calliper: Unscrew the fixing screws of the brake carrier while counterholding the guide bolts.

– Remove the brake caliper and e.g. secure with wire in such a way that the weight of the brake caliper does not burden or damage the brake hose.

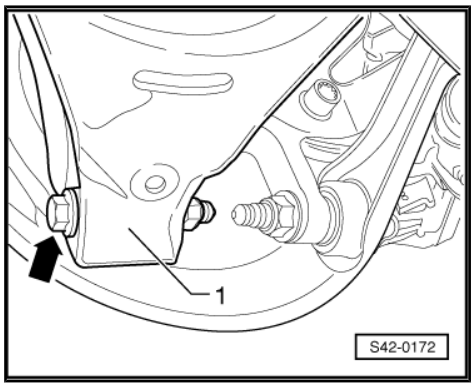
– Screw out the screw for the brake disc and remove the brake disc.

– Remove wheel hub
⇒ “4.3 Removing and installing the wheel hub with wheel bearing ”, page 223 .

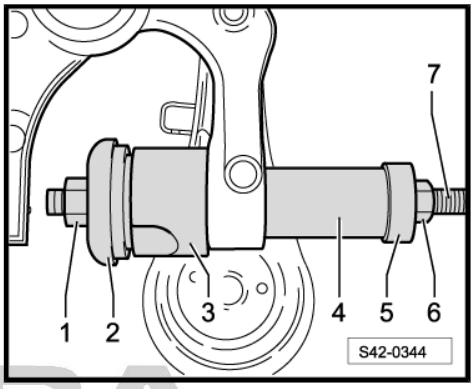
– Remove cover plate.



– Release screw -arrow- for bottom suspension arm -1-.



Pulling out the rubber-metal bearing:



– Position the special tools as shown in the figure.

1 - Nut - MP5-401/3 (3346)-

2 - Assembly device - MP5-402 (3301)-

3 - Pipe section - MP5-402/3 (3301)-

4 - Pipe - T30034 (41-501)-

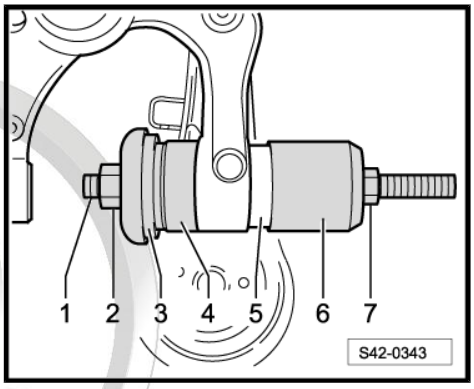
5 - Assembly device - T30017/1 (3350)-

6 - Nut, commercially available

7 - Screw - MP5-401/2 (3346)-

– Pull out rubber-metal bearing by turning the nut -1-.

Inserting the rubber-metal bearing



– Position the special tools as shown in the figure.

1 - Screw - MP5-401/2 (3346)-

2 - Nut - MP5-401/3 (3346)-

3 - Assembly device - MP5-402 (3301)-

4 - Assembly device - T30017/2 (3350)-

5 - Rubber-metal bearing

6 - Press-in ring - MP3-483 (30-204)-

7 - Nut, commercially available

Note

- *Do not use any lubricant!*
- *Carefully insert the rubber-metal bearing, so that it does not tilt.*

– Insert the rubber-metal bearing -5- by turning the nut -2-.

Installing:

Installation occurs in reverse order to removal. Pay attention to the following:

Note

The tightening of the track control arm at the wheel-bearing housing must only be performed, if the dimension between the wheel hub centre and the lower edge of the wheel house is achieved (unladen weight position)!
⇒ "1.2 Rear axle in unladen weight position", page 177 .

Tightening torques:

Wheel bearing/wheel bearing unit to wheel bearing housing ♦ Use new screws!	70 Nm + 90°
Bottom suspension arm to wheel-bearing housing ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	90 Nm + 90°
Screw for brake disc	4 Nm
Brake caliper to brake carrier	35 Nm
Cover plate to wheel-bearing housing	12 Nm
Wheel bolts	120 Nm

4.3 Removing and installing the wheel hub with wheel bearing

Removing:

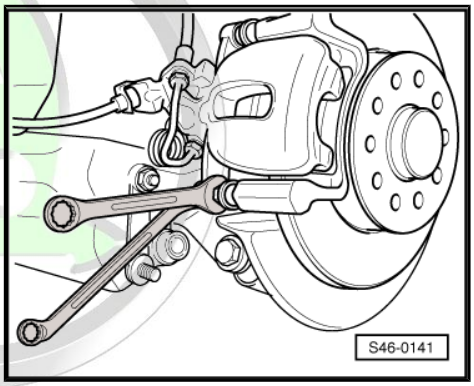
– Remove wheel.

– Remove coil spring
⇒ “5.1 Removing and installing coil spring”, page 232 .

– Removing drive shaft
⇒ “7.2 Removing and installing a drive shaft”, page 246 .

– Remove brake calliper: Unscrew the fixing screws of the brake carrier while counterholding the guide bolts.

– Remove the brake caliper and e.g. secure with wire in such a way that the weight of the brake caliper does not burden or damage the brake hose.



Note

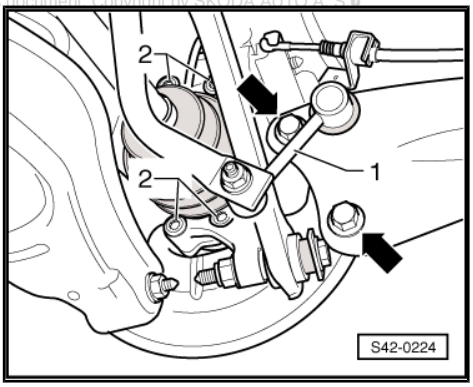
Do not hang the brake caliper on the brake hose.

– Screw out the Phillips head screws of the brake disc and remove brake disc.

– Remove cover plate.

– Unscrew bolts -2-.

– Pull the wheel bearing out of the wheel-bearing housing.



Installing:

Installation is carried out in the reverse order. Pay attention to the following:

– Tighten fixing screw of the drive shaft
⇒ “7.1 Removing and installing fixing screw of drive shaft - twelve-sided bolt”, page 243 .

Tightening torques:

Wheel bearing/wheel bearing unit to wheel bearing housing ♦ Use new screws!	70 Nm + 90°
Phillips head screw for front brake disc	4 Nm
Brake caliper to brake carrier	35 Nm
Wheel bolts	120 Nm

4.4 Removing and installing trailing arm with bracket

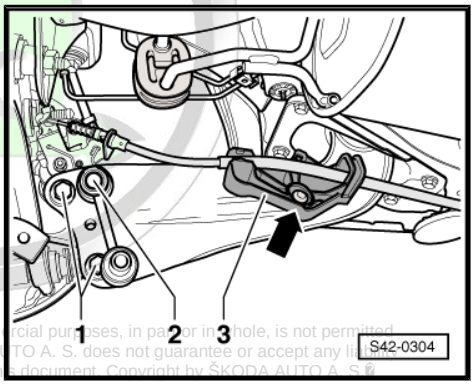
Special tools and workshop equipment required

- Support - T10149-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-

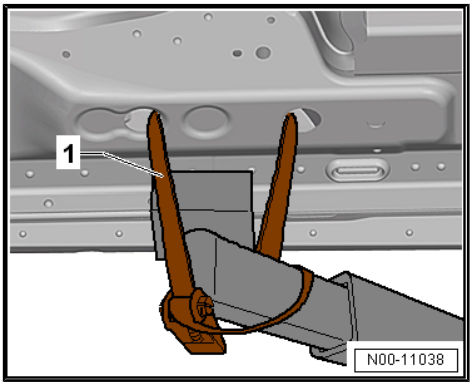
Removing:

– Remove wheel.

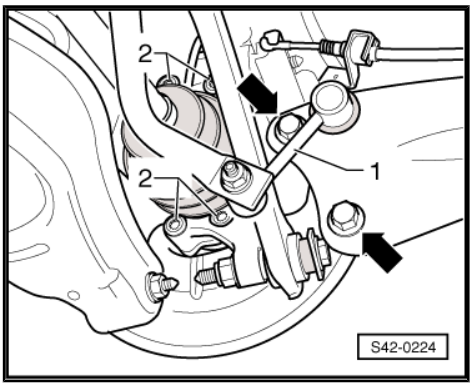
– Remove holder for hand brake cable from trailing arm -arrow- (screw or expanding rivet - depending on the design).



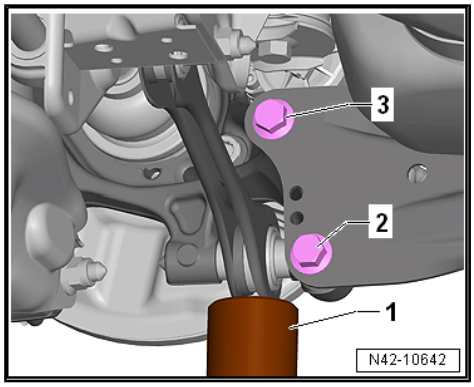
– Use tensioning straps - T10038- to strap vehicle to support beams of lifting platform on both sides.



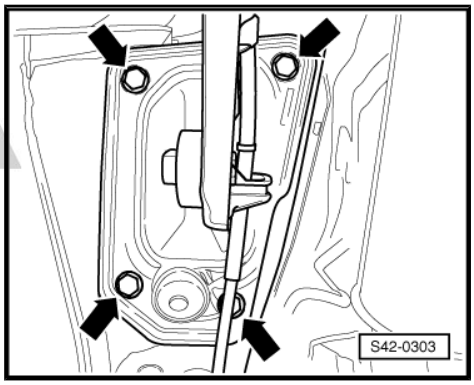
– Remove coupling rod -1- from anti-roll bar and trailing arm with wheel-bearing housing.



– Place the engine and gearbox jack e.g. -V.A.G 1383/A- or -VAS6931- -1- underneath the track rod and raise slightly.
– Remove screw -2- and -3-.
– Remove the engine and gearbox jack e.g. -V.A.G 1383/A- or -VAS6931- -1- under the track rod.



– Mark the installed position of the bracket on the body.
– Release the screws of the bracket -arrows-.
– Remove the trailing arm with the bracket.



Replace the trailing arm:

If the trailing arm should be replaced, the bracket must be removed from the trailing arm.

The installation position of the bracket to the trailing arm must then be adjusted.

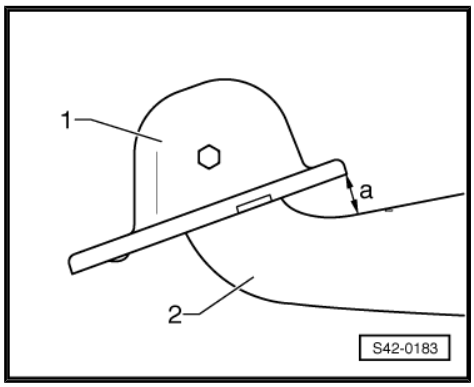
Determine the fitting position of the bracket to the trailing arm:

The dimension -a- is 34 ± 1 mm.

1 - Bearing bracket

2 - Trailing arm

– If the dimension -a- is adjusted, tighten the screw.



Installing:

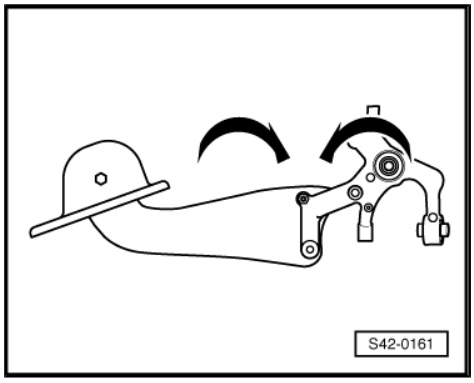
Installation is carried out in the reverse order. Pay attention to the following:

Note

Pay attention to correct installation position of trailing arm and wheel-bearing housing.

Installation position of trailing arm and wheel-bearing housing.

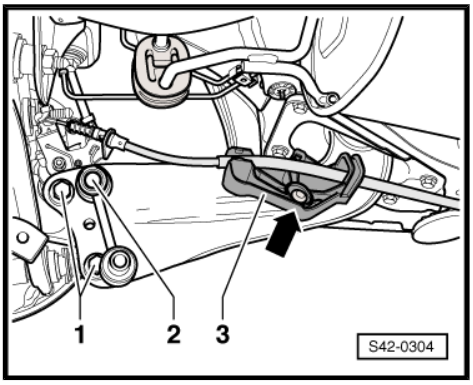
The screwed connection of the trailing arm/wheel-bearing housing must only be tightened if all other components (spring and shock absorber are required) of the wheel suspension in question are already fitted. For tightening, the wheel-bearing housing must be in the unladen weight position
⇒ “1.2 Rear axle in unladen weight position”, page 177 . Only move the trailing arm and the wheel-bearing housing into the necessary position for tightening the screwed connection -arrows- under these conditions.



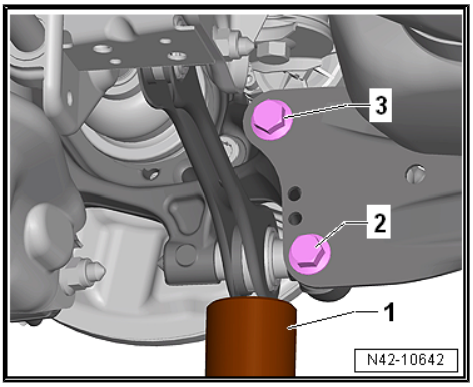
Note

Note the following work steps and absolutely ensure that you follow the sequence!

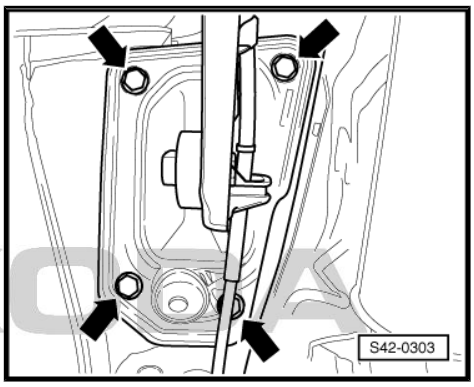
– Screw trailing arm including bracket with screws -1- onto the wheel-bearing housing, but do not tighten yet.
– Insert the coupling rod -2- into the trailing arm with wheel-bearing housing, but do not tighten the nut yet!



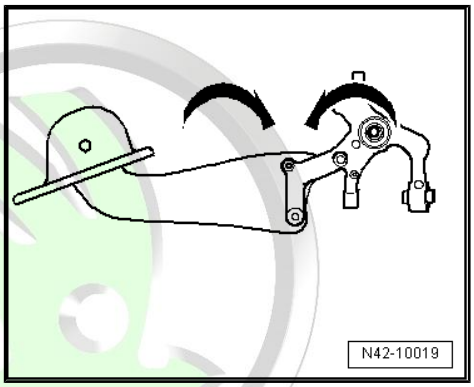
– Raise wheel-bearing housing with trailing arm using engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- -1- until the bracket rests on the body.



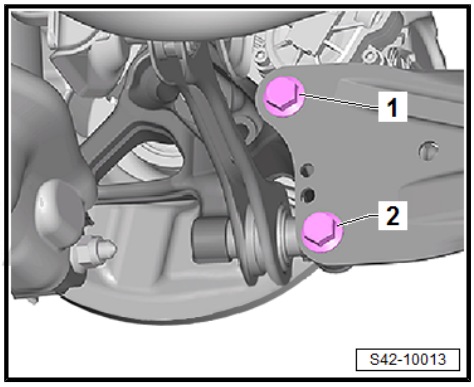
– Tighten screws -arrows- to the marked fitting location - to the “former positions”.
– Remove the engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- from underneath the vehicle.



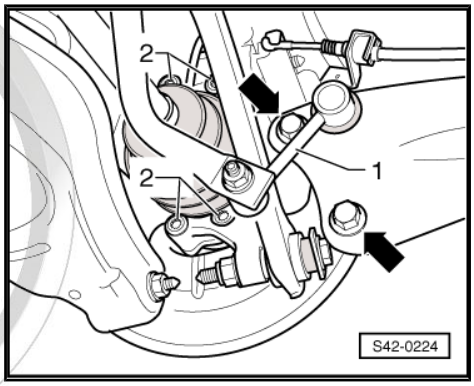
The screwed connection of the trailing arm/wheel-bearing housing must only be tightened if all other components (spring and shock absorber are required) of the wheel suspension in question are already fitted. The wheel suspension must be in the rebound state for tightening. Only in this state do the trailing arm and wheel bearing housing move into the necessary position -arrows-.



– Tighten screws -1- and -2- of trailing arm with tightening torque, while doing so pay attention to the required position of the trailing arm and wheel-bearing housing.



– Tighten coupling rod -1- at trailing arm and wheel-bearing housing and anti-roll bar to the tightening torque.
– Install holder for hand brake cable to trailing arm (screw or expanding rivet).
– Installing and tightening the wheel.
– Perform a test drive.
– Check the steering wheel position during the test drive.
– Carry out axle alignment ⇒ “2.3 Axle alignment”, page 338 .



Tightening torques:

Holder for hand brake cable to trailing arm	4 Nm
Trailing arm to bracket ♦ Use new screw! ♦ Determine ⇒ page 226 the fitting position of the bracket to the trailing arm before tightening the screw	90 Nm + 90°
Trailing arm to wheel-bearing housing ♦ Use new screws! ♦ Determine ⇒ page 226 the fitting position of the trailing arm to the wheel-bearing housing before tightening the screws	90 Nm + 45°
Mounting bracket on the body ♦ Use new screws!	50 Nm + 45°
Coupling rod to trailing arm/wheel-bearing housing ♦ Use new nut!	40 Nm
Wheel bolts	120 Nm

4.5 Repairing trailing arm

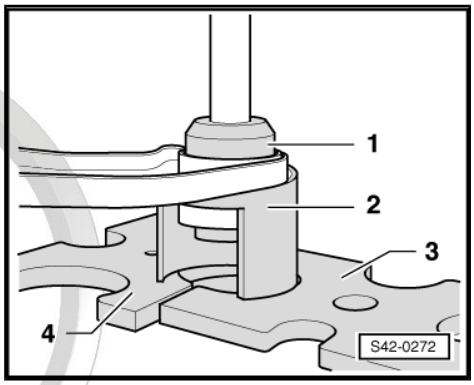
Special tools and workshop equipment required

- Assembly device , e.g. -T10230/10- and -T10230/12-
- Ejection tool - T30082 (3372)-
- Pressure plate - MP3-406 (VW 401)-
- Pressure plate - MP3-407 (VW 402)-

Pulling out the rubber-metal bearing

– Removing the trailing arm
⇒ “4.4 Removing and installing trailing arm with bracket”, page 225 .

– Position the special tools as shown in the figure.



1 - Assembly device , e.g. -T10230/10- and -T10230/12-

2 - Ejection tool - T30082 (3372)-

3 - Pressure plate - MP3-406 (VW 401)-

4 - Pressure plate - MP3-407 (VW 402)-

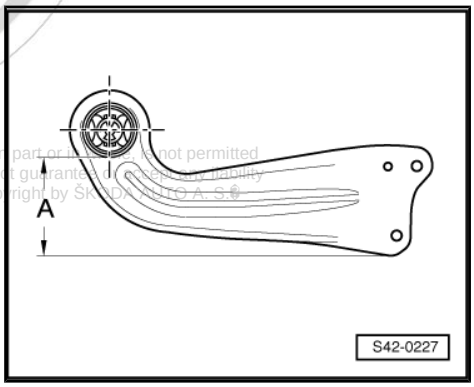
– Pulling out the rubber-metal bearing.

Inserting the rubber-metal bearing:

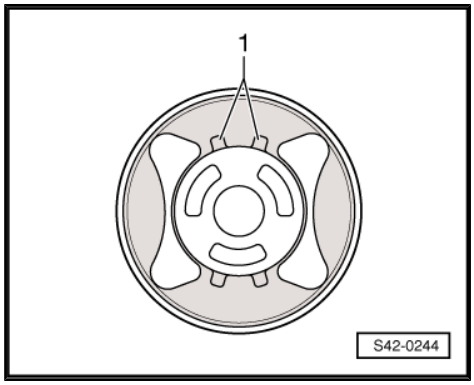
– Position the trailing arm on an even surface.

– Mark a vertical line on the bushing of the trailing arm.

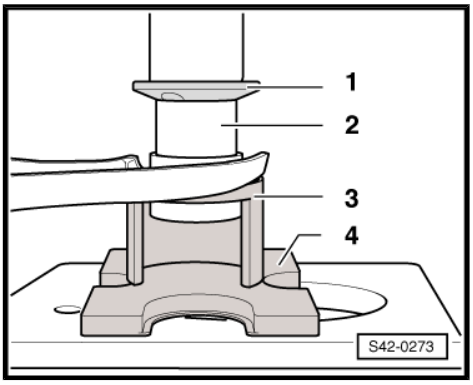
Dimension -A- = 114 mm



The marked line must be between the lobes -1- after inserting.



– Position the special tools as shown in the figure.



1 - Pressure plate e.g. -T10230/10- and -T10230/12- , the chamfer must point to the rubber-metal bearing

2 - Rubber-metal bearing

3 - Ejection tool - T30082 (3372)-

4 - Pressure plate - MP3-407 (VW 402)-

– Insert the rubber-metal bearing flush.

– Install bracket at trailing arm ⇒ page 226 .

– Installing the trailing arm ⇒ “4.4 Removing and installing trailing arm with bracket”, page 225 .

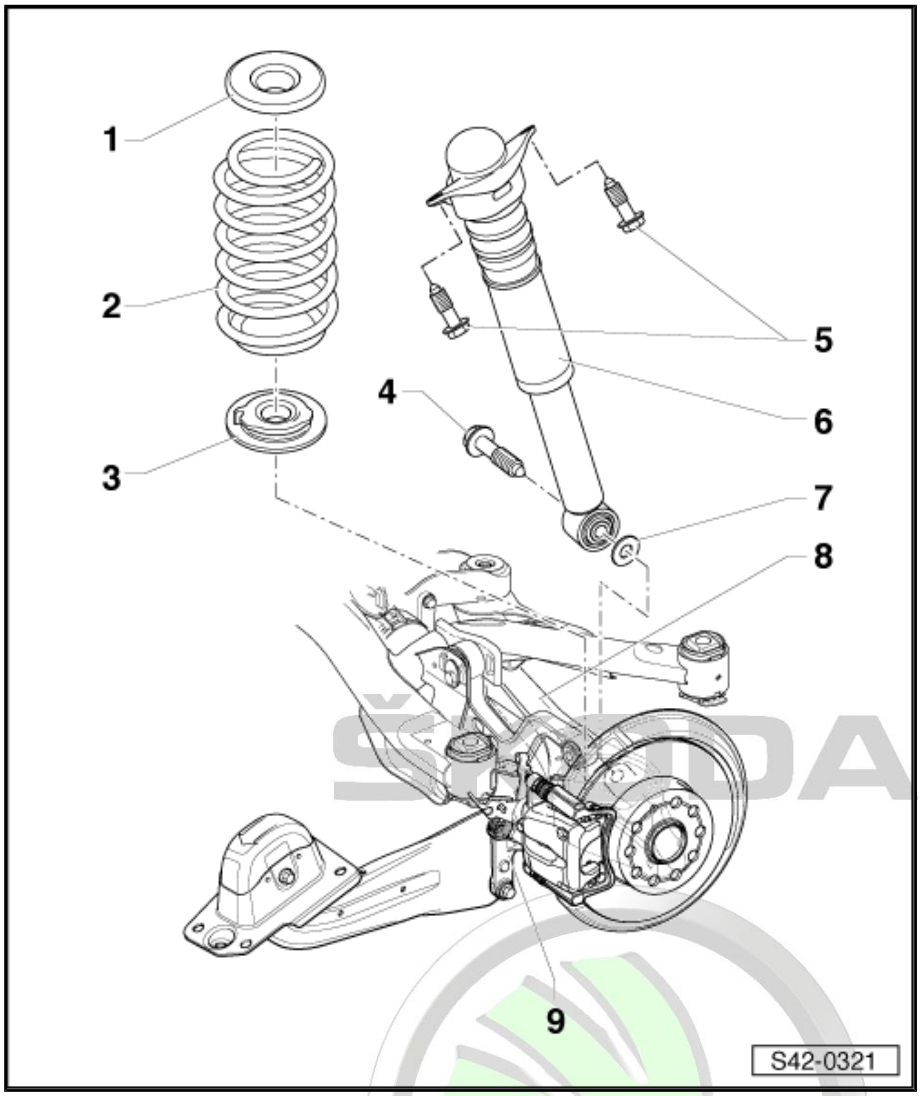
– Carry out axle alignment ⇒ “2.3 Axle alignment”, page 338 .

5 Summary of components: Shock absorber, helical spring (vehicles with four-wheel drive)

⇒ “5.1 Removing and installing coil spring”, page 232 .

⇒ “5.2 Removing and installing shock absorber”, page 235 .

⇒ “5.3 Repairing shock absorber”, page 237 .



1 - Top spring seat

2 - Coil spring

- ❑ removing and installing ⇒ “5.1 Removing and installing coil spring”, page 232
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

3 - Bottom spring seat

- ❑ Turn spring coil end up to the stop

4 - Screw

- ❑ 130 Nm + 90°

5 - Screw

- ❑ replace after each removal
- ❑ 50 Nm + 45°

6 - Shock absorber

- ❑ removing and installing ⇒ “5.2 Removing and installing shock absorber”, page 235
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

7 - Washer

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

8 - Bottom suspension arm

- ❑ removing and installing ⇒ “3.4 Removing and installing bottom suspension arm”, page 207

9 - Wheel-bearing housing

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing ⇒ “4.1 Removing and installing wheel bearing housing”, page 215

5.1 Removing and installing coil spring

Special tools and workshop equipment required

- ♦ Spring tensioning device , e.g. -V.A.G 1752/1-
- ♦ Spring holder , e.g. -V.A.G 1752/3A-
- ♦ Adapter e.g. -V.A.G 1752/9-

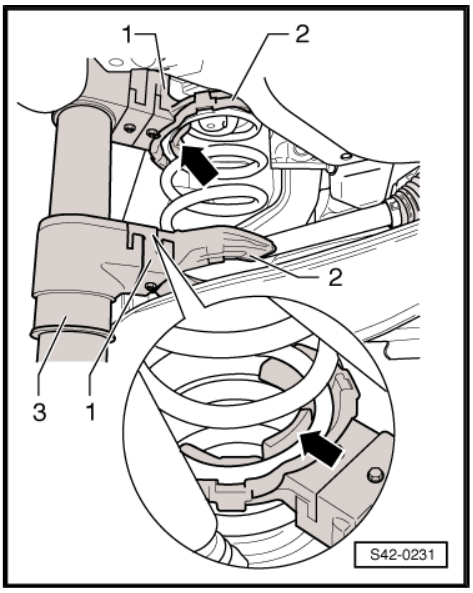
Removing:

– Remove wheel.

– Insert spring tensioning device -3-.

WARNING

Pay attention to the correct seating of the helical spring in the spring tensioner , e.g. -V.A.G 1752/3A- (risk of accident).



– Tension helical spring sufficiently until it can be taken out.

– Remove coil spring.

1 - Adapter e.g. -V.A.G 1752/9-

2 - Spring holder , e.g. -V.A.G 1752/3A-

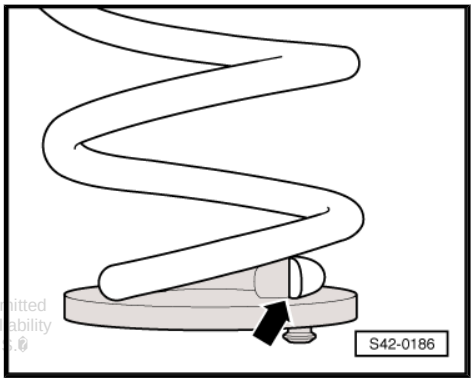
3 - Spring tensioning device , e.g. -V.A.G 1752/1-

Installing:

Installation is carried out in the reverse order. Pay attention to the following:

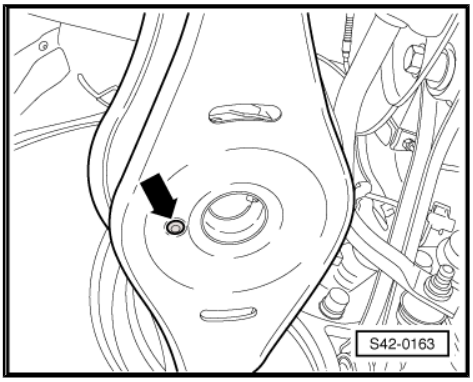
Note

The beginning of the spring -arrow- must be positioned at the stop of the bottom spring seat.



– Install the helical spring along with the spring seat.

– Insert the stud of the spring seat into the hole of the bottom suspension arm -arrow-.



Note

In the fig. the bottom suspension arm is illustrated without protection against stones.

– Insert top spring seat into the upper spring coil end.

– Slacken spring. While doing so, the top spring seat must be positioned onto the lug of the body.

– Remove spring tensioning device.

– Installing and tightening the wheel.

Specified torque:

Wheel bolts	120 Nm

5.2 Removing and installing shock absorber

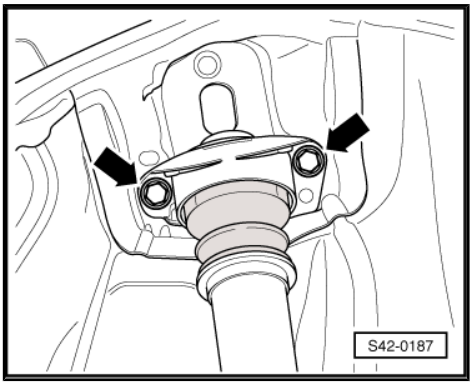
Removing:

– Remove wheel.

– Remove wheelhouse liner ⇒ Body Work; Rep. gr. 66 .

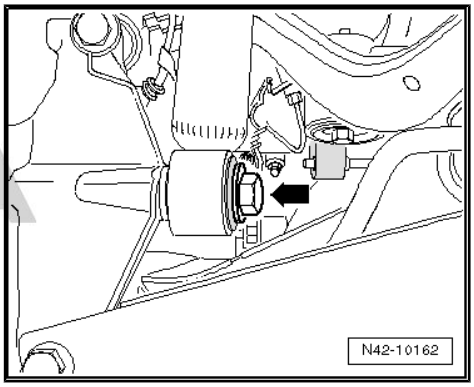
– Remove coil spring
⇒ “5.1 Removing and installing coil spring”, page 232 .

– Release screws -arrows-.



– Unscrew plug -arrow-.

– Take out shock absorber.



Installing:

Installation is carried out in the reverse order. Pay attention to the following:

Note

The bolted connection of the shock absorber to the wheel-bearing housing must only be performed, if the dimension “a” between the wheel hub centre and the lower edge of the wheel house is respected (unladen weight position)!
⇒ “1.2 Rear axle in unladen weight position”, page 177 .

Tightening torques:

Shock absorber to body ♦ Use new screws!	50 Nm + 45°
Shock absorber to wheel-bearing housing ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	130 Nm + 90°
Wheel bolts	120 Nm

5.3 Repairing shock absorber

Special tools and workshop equipment required

- ♦ Shock absorber set - T10001-

1 - Shock absorber

- ❑ removing and installing ⇒ “5.2 Removing and installing shock absorber”, page 235
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

2 - Boot

3 - Protective tube

4 - Supporting ring

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

5 - Stop buffer

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

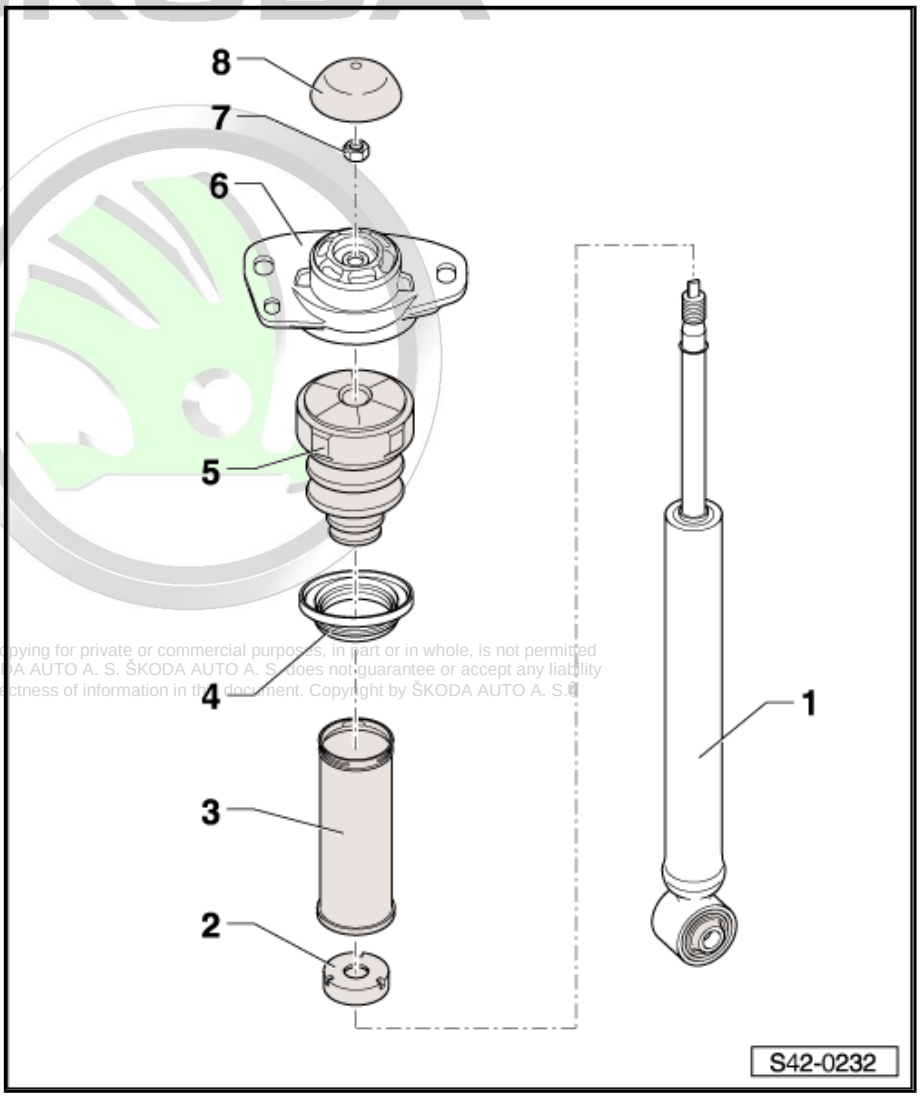
6 - Shock absorber bushing

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

7 - Nut

- ❑ replace after each removal
- ❑ slacken and tighten ⇒ page 237
- ❑ 25 Nm

8 - Cover



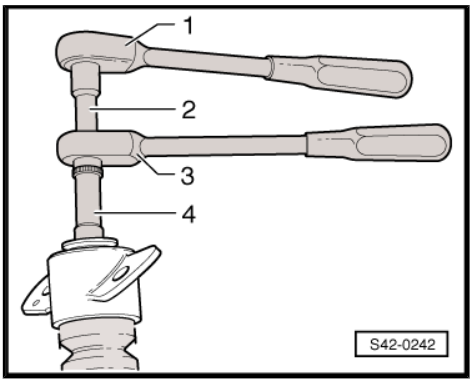
Release the screw connection of the shock absorber bushing and tighten up again

1 - Ratchet, commercially available ratchet

2 - Socket - T10001/9-

3 - Ratchet - T10001/11-

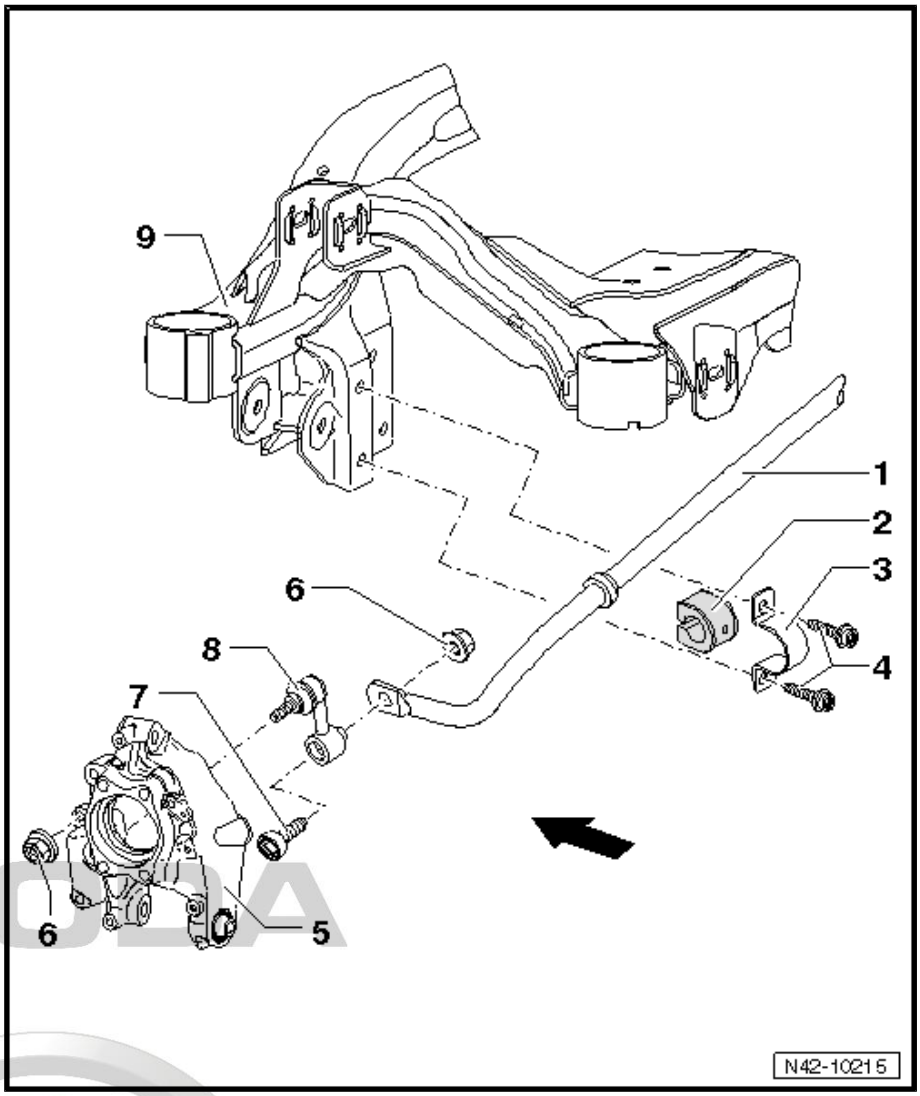
4 - Socket - T10001/1-



6 Summary of components: Anti-roll bar (vehicles with four-wheel drive)

⇒ “6.1 Removing and installing the anti-roll bar”, page 238 .

The -arrow- shows the direction of travel.



1 - Anti-roll bar

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing ⇒ “6.1 Removing and installing the anti-roll bar”, page 238

2 - Bearings

- ❑ Always replace bearings on both sides of the vehicle

3 - Retaining clip

4 - Screw

- ❑ replace after each removal
- ❑ tighten in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ tighten bolts alternatively and evenly
- ❑ 25 Nm + 45°

5 - Wheel-bearing housing

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing ⇒ “4.1 Removing and installing wheel bearing housing”, page 215

6 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 45 Nm

7 - Screw

8 - Coupling rod

- ❑ connects anti-roll bar with trailing arm and wheel-bearing housing

9 - Assembly carrier

6.1 Removing and installing the anti-roll bar

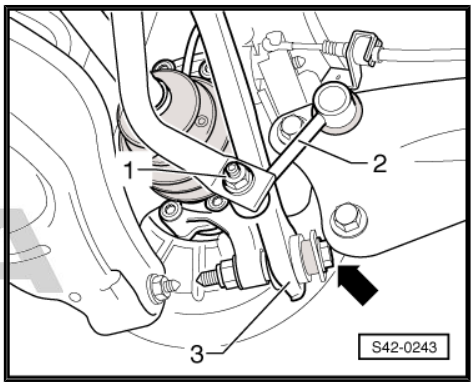
Removing:

– Remove rear wheels.

Note

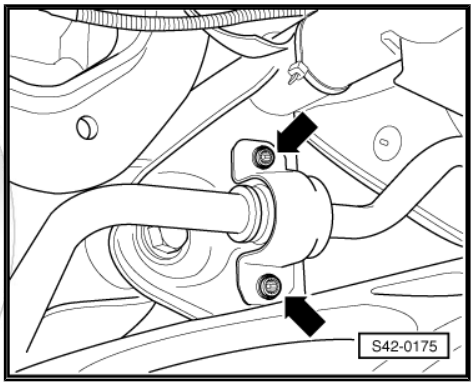
The following steps are described for the left side of the vehicle.
The steps apply also for the right side of the vehicle.

– Unscrew nut -1- and pull screw out of anti-roll bar as well as coupling rod -2-.



– Unscrew screws -arrows- for the clamp of the anti-roll bar.

– Remove anti-roll bar.



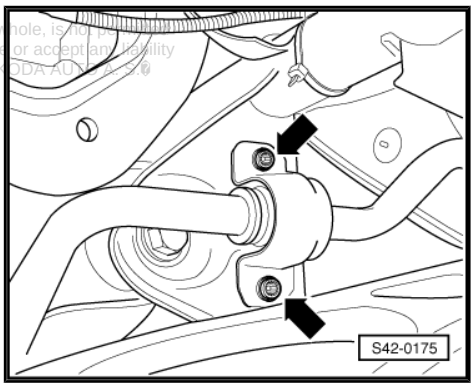
Installing:

Installation is carried out in the reverse order. Pay attention to the following:

Note

The bolted connection of the anti-roll bar to the assemble carrier must only be performed, if the measured dimension "a" between the wheel hub centre and the lower edge of the wheel house is achieved before assembly (unladen weight position)!
⇒ "1.2 Rear axle in unladen weight position", page 177 .

– Tighten screws -arrows- for the clamp of the anti-roll bar alternatively and uniformly.



Tightening torques:

Coupling rod ♦ Use new nut!	45 Nm
Clamp to assembly carrier ♦ Use new screws! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177 ♦ tighten bolts alternatively and evenly.	25 Nm + 45°
Wheel bolts	120 Nm

7 Summary of components: Drive shaft (vehicles with four-wheel drive)

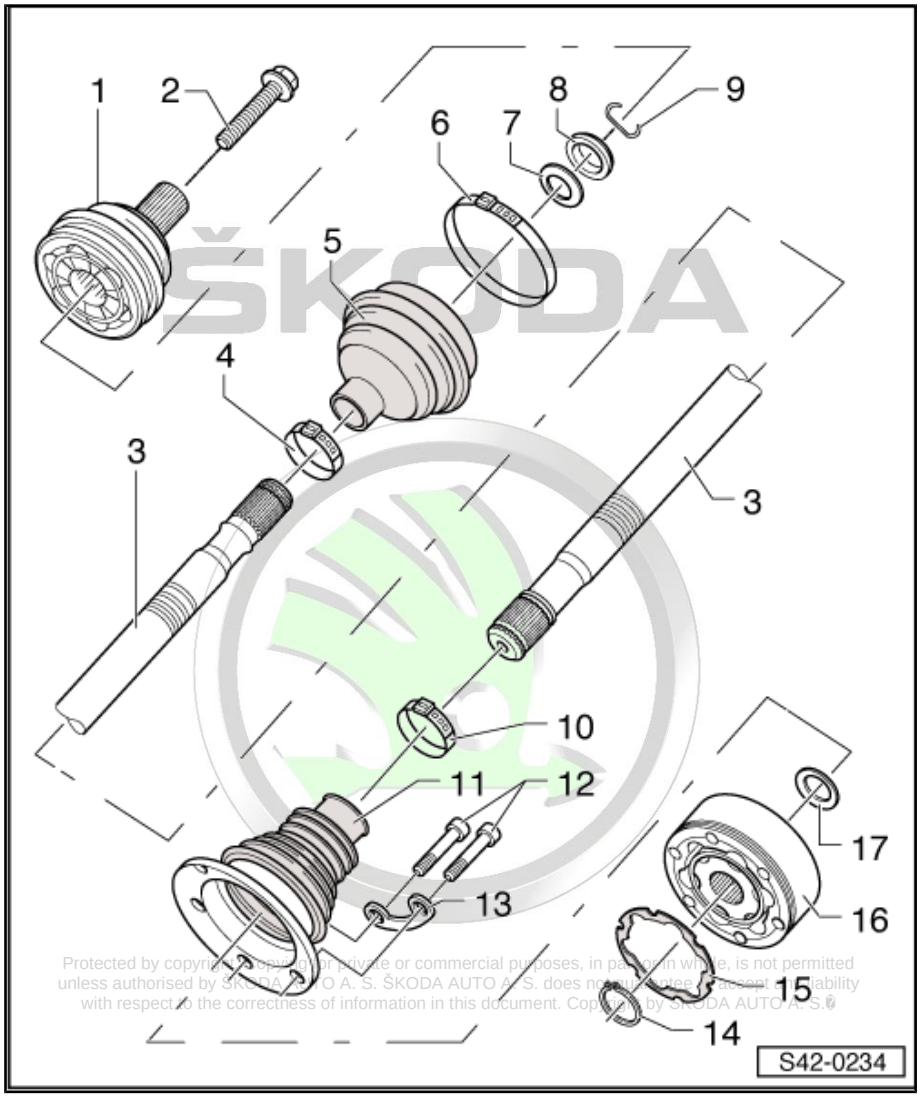
⇒ “7.1 Removing and installing fixing screw of drive shaft - twelve-sided bolt”, page 243 .

⇒ “7.2 Removing and installing a drive shaft”, page 246 .

⇒ “7.3 Disassembling and assembling drive shaft”, page 249 .

Note

- *Before removing the joints and the joint boots, thoroughly clean the surrounding areas.*
- *When disassembling the joint, remove the old lubricant and any dirt present.*
- *Clean the joint with great care.*
- *Dispose of old lubricant and cleaning agent in compliance with the applicable regulations.*
- *Place removed and cleaned parts on a clean surface and cover as needed. Use lint-free cloths!*
- *Carefully cover removed parts if the repair is not completed immediately.*
- *Only install clean parts: Remove spare parts from their wrapping immediately before fitting. Do not use any parts which have been stored unwrapped (e.g. on a shelf or in a tool box etc...).*



1 - Outer CV joint complete

- ❑ must be replaced completely
- ❑ removing ⇒ “11.1 Removing outer CV joint”, page 169
- ❑ Installing: Drive fully onto the shaft with a plastic hammer
- ❑ checking ⇒ “7.3.3 Check outer joint”, page 254 .

2 - Screw

- ❑ Turn twelve-sided bolt with serration = 70 Nm + 90° ⇒ “7.1 Removing and installing fixing screw of drive shaft - twelve-sided bolt”, page 243
- ❑ Turn twelve-sided bolt without serration = 200 Nm + 180° ⇒ “7.1 Removing and installing fixing screw of drive shaft - twelve-sided bolt”, page 243
- ❑ replace after each removal

3 - Cardan shaft

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

4 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ page 251

5 - Collar

- ❑ inspect for tears and chafing points

6 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ page 251

7 - Disc spring

- ❑ Fitting position ⇒ page 171

8 - Thrust ring

- ❑ Fitting position ⇒ page 171

9 - Circlip

- ❑ replace after each removal
- ❑ insert in the shaft groove

10 - Open warm-type clamp

- ❑ replace after each removal
- ❑ tensioning ⇒ page 251

11 - Joint boot for inner CV joint

- ❑ without ventilation hole

- ❑ inspect for tears and chafing points
- ❑ drive off from joint with a drift
- ❑ before the installation on the joint, cover the sealing surface with -D 454 300 A2-
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

12 - Screw

- ❑ M8 x 48
- ❑ first, pre-tighten all the screws crosswise to 10 Nm
- ❑ replace after removal
- ❑ 20 Nm + 180°

13 - Base

- ❑ replace after each removal

14 - Circlip

- ❑ replace after each removal
- ❑ removing and installing with circlip pliers - VW 161A-

15 - Gasket

- ❑ replace after each removal
- ❑ The adherend must be free of grease and oil!

16 - Inner joint

- ❑ must be replaced completely
- ❑ Push out ⇒ page 252
- ❑ inserting ⇒ page 253
- ❑ checking ⇒ “7.3.4 Checking the inner joint”, page 255 .

17 - Disc spring

- ❑ with internal serration
- ❑ Fitting position ⇒ page 252

7.1 Removing and installing fixing screw of drive shaft - twelve-sided bolt

Special tools and workshop equipment required

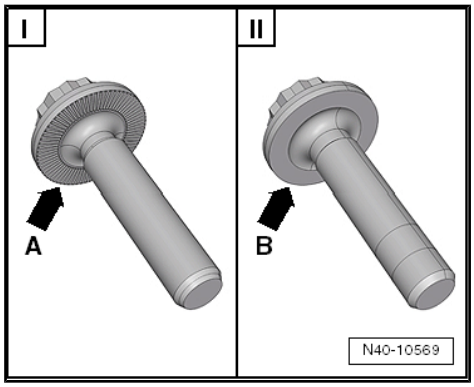
- ♦ Socket insert, 24 mm - T10361-

Note

- ♦ *If the fixing screw of the drive shaft is loosened more than 90°, the wheel bearings must not be loaded through the weight of the vehicle, i.e the vehicle must not stand on its wheels.*
- ♦ *If the wheel bearings are loaded through the weight of the vehicle when the fixing screw for the drive shaft is removed, the inner wheel bearing will be damaged. This shortens the life of the wheel bearing.*
- ♦ *If the vehicle should be positioned on its wheels or moved, pay attention to the following points: Install an outer joint instead of the cardan shaft. Tighten the fixing screw (use the one which was previously removed) of the outer joint to the tightening torque of 120 Nm.*

Distinguishing feature of twelve-sided bolts

The twelve-sided bolts differ in the surface area -arrow A- and -arrow B-.



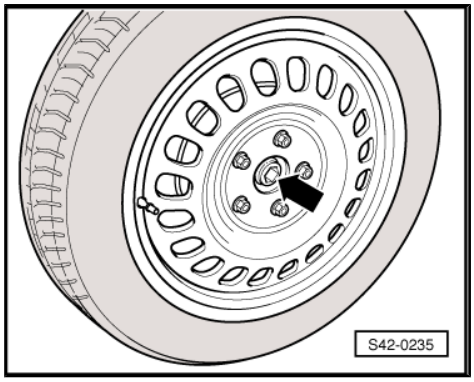
- I - Twelve-sided bolt with serration - -arrow A-
- II - Twelve-sided bolt without serration - -arrow B-

Remove twelve-sided bolt:

– Remove wheel trim cap, for light-alloy wheels remove the cap on the removed wheel (depending on version) ⇒ Wheels, Tyres; Rep. gr. 44 .

– Re-install light-alloy wheel (depending on the version) without cap.

– Slacken the screw -arrow- by max. 90° on the vehicle while it is standing on its wheels, otherwise the wheel bearing may be damaged.



– Raise the vehicle until the wheels are fully off the ground.

– Depress brake pedal (assistance of second mechanic required).

– Unscrew screw -arrow- and release brake pedal.

Install twelve-sided bolt:

Note

The wheels should not touch the ground when tightening the drive shaft screwed connection, otherwise the wheel bearing will be damaged.

Twelve-sided bolt with serration

– Install a new screw.

– Depress brake pedal (assistance of second mechanic required).

– Tighten the twelve-sided bolt to 70 Nm.

– Place vehicle onto its wheels.

– Depress brake pedal (assistance of second mechanic required).

– Turn twelve-sided bolt a further 90°.

– Install wheel trim cap, for light-alloy wheels (depending on version) install cap.

Twelve-sided bolt without serration

– Install a new screw.

– Depress brake pedal (assistance of second mechanic required).

– Tighten the twelve-sided bolt to 200 Nm.

– Place vehicle onto its wheels.

– Depress brake pedal (assistance of second mechanic required).

– Tighten twelve-sided bolt by turning it 180°.

– Install wheel trim cap, for light-alloy wheels (depending on version) install cap.

Tightening torques:

Twelve-sided bolt with serration for securing the drive shaft of the front axle ♦ Use new screw!	70 Nm + 90°
Twelve-sided bolt without serration for securing the drive shaft of the front axle ♦ Use new screw!	200 Nm + 180°
Wheel bolt	120 Nm

7.2 Removing and installing a drive shaft

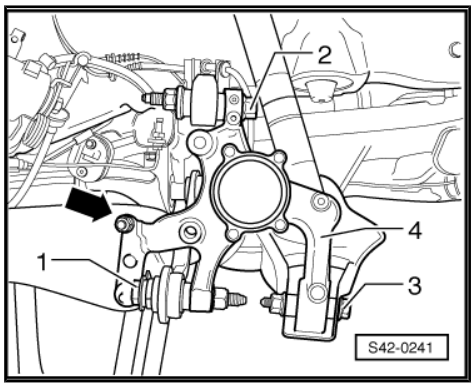
Removing:

– Unscrew fixing screw of drive shaft at wheel hub
⇒ “7.1 Removing and installing fixing screw of drive shaft - twelve-sided bolt”, page 243 .

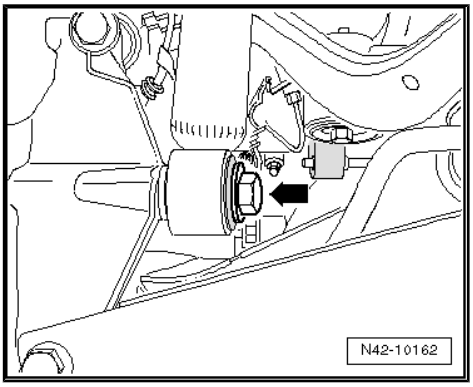
– Remove wheel.

– Remove coil spring
⇒ “5.1 Removing and installing coil spring”, page 232 .

– Unscrew screw for track rod for rear axle -1-and bottom suspension arm -3- from wheel-bearing housing -4-.



– Unscrew plug -arrow-.



– Remove the rear left vehicle level sensor - G76- ⇒ “3.2 Remove and install rear left vehicle level sensor G76 in the vehicle”, page 202 , if necessary unhook the rear silencer from the right retaining straps.

– Unscrew drive shaft at rear final drive.

– Swivel out the wheel-bearing housing and pull the drive shaft out of the internal serration.

– Remove the drive shaft.

Installing:

Installation is carried out in the reverse order. Pay attention to the following:

Note

♦ *Make sure the boot is neither damaged nor twisted.*

♦ *Use new washers and new screws.*

– Position the inner joint of the drive shaft and tighten new screws to 10 Nm crosswise.

– Tighten the screws with internal serrations crosswise according to the specified torque.

– Tighten fixing screw of drive shaft to wheel hub ⇒ “7.1 Removing and installing fixing screw of drive shaft - twelve-sided bolt”, page 243 .

Note

The bolted connection to the wheel-bearing housing must only be performed, if the dimension “a” between the wheel hub centre and the lower edge of the wheel house is respected (in unladen weight position)!
⇒ “1.2 Rear axle in unladen weight position”, page 177 .

Tightening torques:

Track rod for rear axle to wheel-bearing housing ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	130 Nm + 90°
Bottom suspension arm to wheel-bearing housing ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	90 Nm + 90°
Drive shaft to wheel hub with wheel bearing “twelve-sided bolt” ♦ Use new screw ♦ Vehicle must not be standing on its wheels for tightening the screw	⇒ “7.1 Removing and installing fixing screw of drive shaft - twelve-sided bolt”, page 243
Drive shaft to flange shaft/rear final drive ♦ First of all pre-tighten to 10 Nm crossways ♦ Use new screws!	Tighten crosswise! 20 Nm + 180°
Rear left vehicle level sensor - G76- to assembly carrier	5 Nm
Rear left vehicle level sensor - G76- to bottom top suspension	5 Nm
Wheel bolts	120 Nm

7.3 Disassembling and assembling drive shaft

Special tools and workshop equipment required

- Pressure plate - MP3-406 (VW 401)-
- Pressure plate - MP3-407 (VW 402)-
- Thrust piece - MP3-411 (VW 454)-
- Pressure spindle - MP3-448 (VW 408 A)-
- Pressure washer - MP3-455 (VW 447 H)-
- Pressure spindle - MP6-405 (VW 411)-
- Assembly device - T10065-
- Circlip pliers , e.g. -VW 161A-
- Tensioning pliers , e.g. -V.A.G 1682-

7.3.1 Removing and installing the outer CV joint

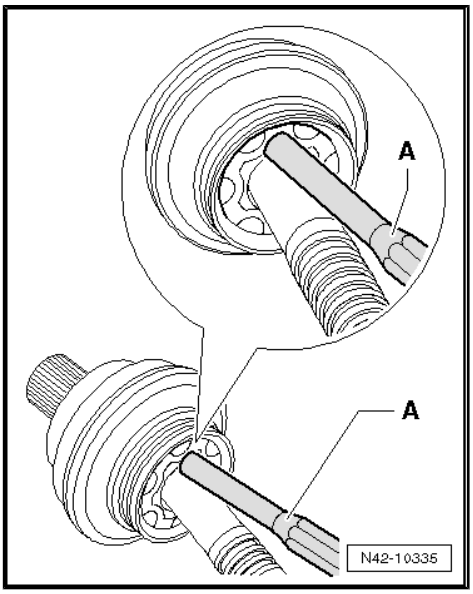
Removing:

– Clamp the cardan shaft in a vice with protective jaws.

– Open both warm-type clamps and remove the joint boot from the outer joint.

– Remove the CV joint from the drive shaft using a drift (copper or brass) -A-.

The drift must be positioned exactly at the tripod spider of the CV join.

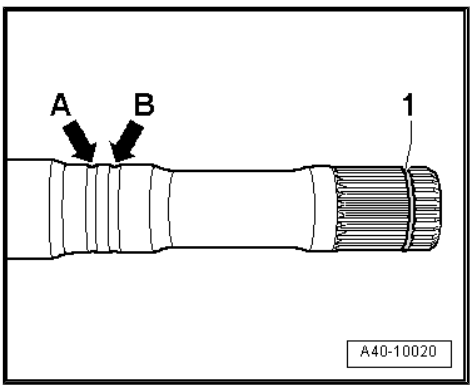


Installing:

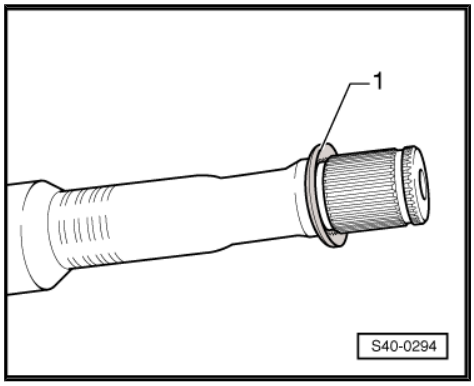
– Replace circlip -1-.

– Push the joint boot and the open warm-type clamp on the drive shaft.

– Pay attention to the fitting position of the disc spring on the outer joint.



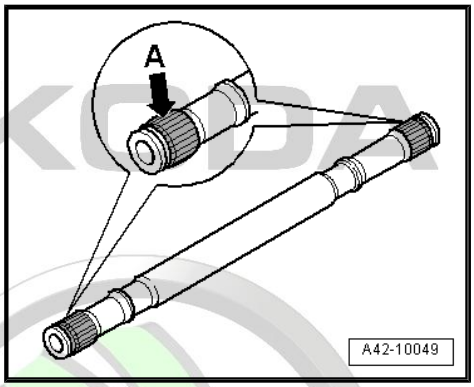
Fitting position of the disc spring on the outer joint:



1 - Disc spring

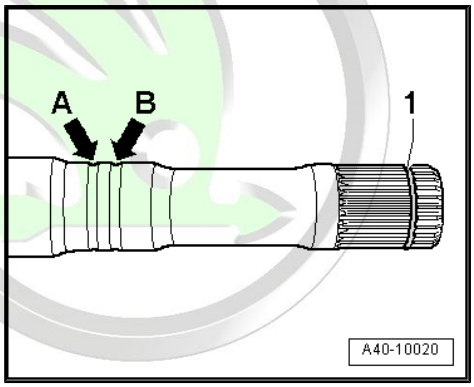
– Fill the joint with allowed grease quantity
⇒ “7.3.5 Designation, distinguish the diameter as specified and grease quantity for joints”, page 256 .

– Thinly coat the serration -A- with joint grease.



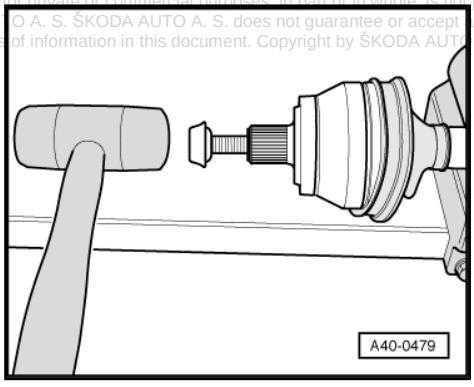
– Fit the joint boot in the outer groove -arrow B-.

The inner groove -arrow A- must remain visible (“identification groove” for a correct installation of the joint boot).



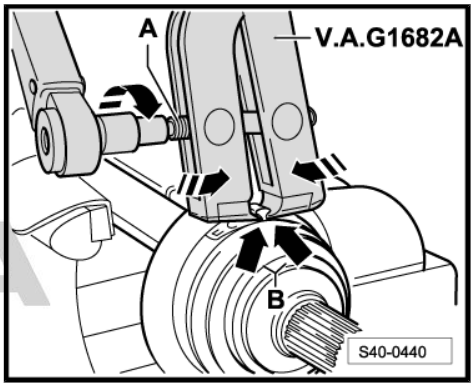
– Screw the old screw for the drive shaft, as shown, into the joint.
– Use a plastic hammer to strike the joint onto the drive shaft until the circlip locks in place.
– Push the joint boot onto the joint.
– Bleed the joint boot.
– Pay attention to the correct position of the joint boot on the outer joint.

The joint boot must be positioned in the groove and must rest on the contour of the joint.

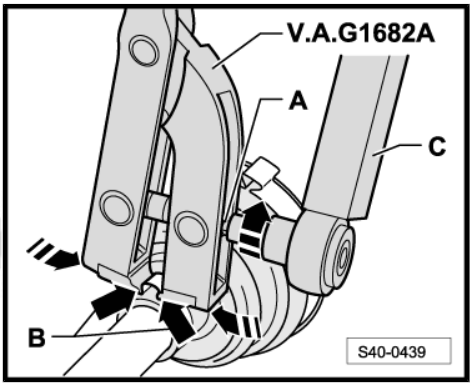


– Tighten the open warm-type clamp on the outer joint.

Tighten the open warm-type clamp at the larger diameter:



Tighten the open warm-type clamp at the smaller diameter:



– Position the tensioning pliers as shown in the figure. Make sure the cutting edges of the pliers are positioned in the corners -arrows B- of the open warm-type clamp.

– Tighten the open warm-type clamp by turning the spindle with a torque wrench (do not tilt the pliers during this process).

Note

- *In view of the hard material (as opposed to rubber) of the joint boot, which requires the use of stainless steel open warm-type clamps, these can only be tightened with tensioning pliers , e.g. -V.A.G 1682 A- .*
- *Specified torque: 25 Nm.*
- *Use torque wrench -C-.*
- *Ensure that the thread of the spindle -A- of the pliers is smooth. Lubricate if necessary with grease.*
- *If it is not smooth, e.g. if the thread is dirty, the necessary clamping force of the open warm-type clamp is not reached at the given torque.*

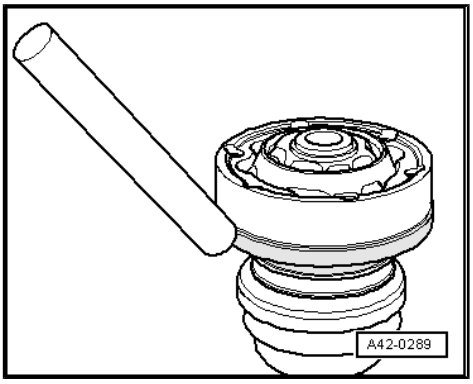
7.3.2 Removing and installing the inner CV joint

Removing:

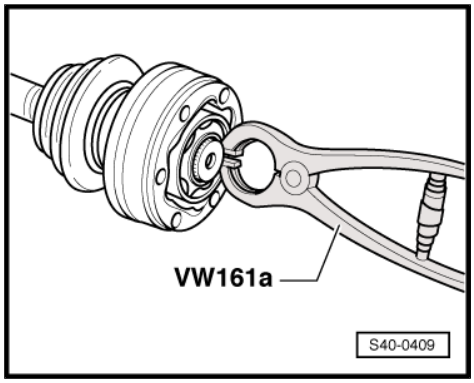
– Drive off cover and joint boot with a drift.

– Open warm-type clamp.

– Push the cover with the warm-type clamp in direction of outer joint.



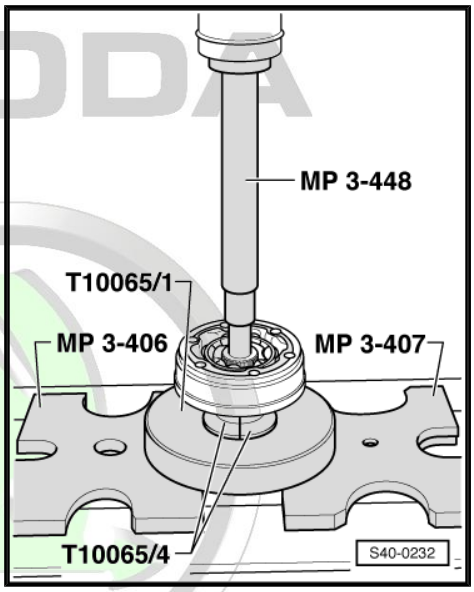
– Remove circlip with a pair of circlip pliers .
– Press the inner joint off the drive shaft.



Pressing off the inner joint

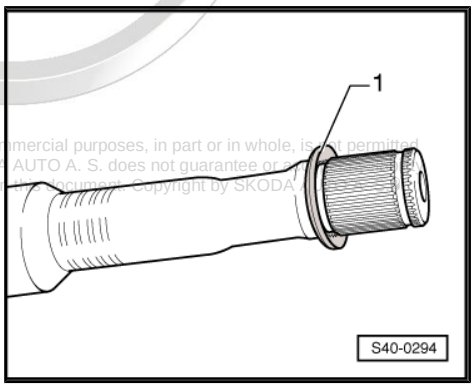
Installing:

– Push the sheet metal cover with the joint boot onto the drive shaft.
– Push the open warm-type clamp on the drive shaft.
– Pay attention to the fitting position of the disc spring at the inner joint.

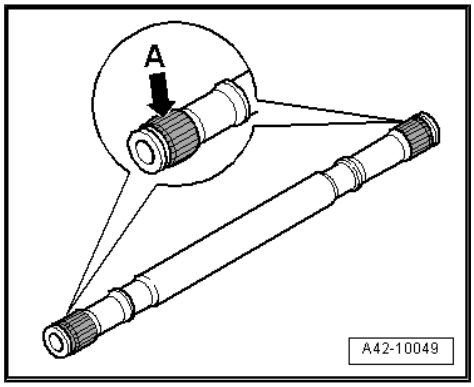


Fitting position of the disc spring at inner joint

1 - Disc spring



– Thinly coat the serration -A- with joint grease.
– Press the joint up to the stop.



Pressing on the inner joint

Note

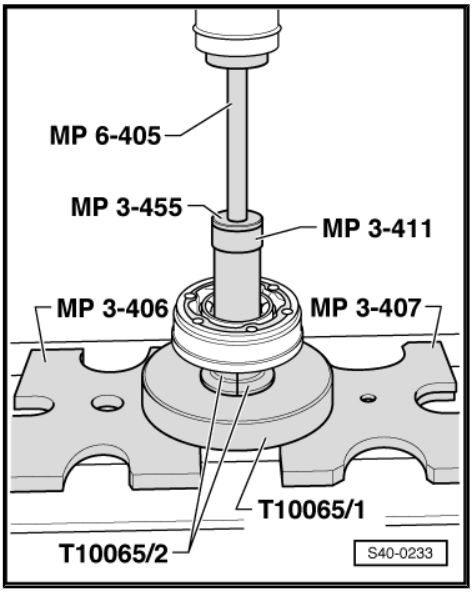
Chamfer on inner diameter of the ball hub (serration) must point towards the bearing collar of the drive shaft.

– Install circlip.

– Fill the joint with allowed grease quantity
⇒ “7.3.5 Designation, distinguish the diameter as specified and grease quantity for joints”, page 256 .

– Clean and degrease the end faces of the joint.

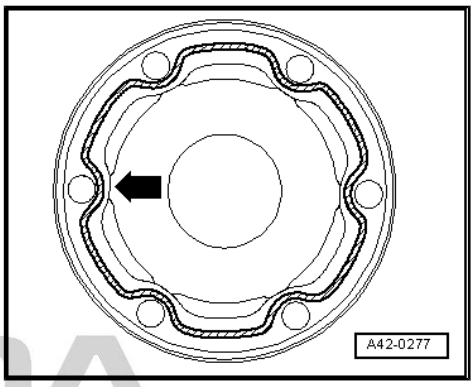
– Clean and degrease the end face of the sheet metal cover for the joint boot which rests against the joint.



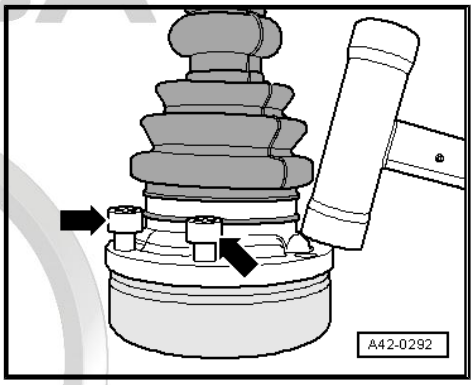
– Apply sealant -D 454 300 A2- on the shaded surfaces of the cover.

♦ Sealant bead: Apply continuously, Ø 2...3 mm, from inside in the area of the holes -arrow-.

– Push the sheet metal cover with the joint boot onto the joint.



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



Note

The alignment must be performed very carefully as this is no longer possible after striking it.

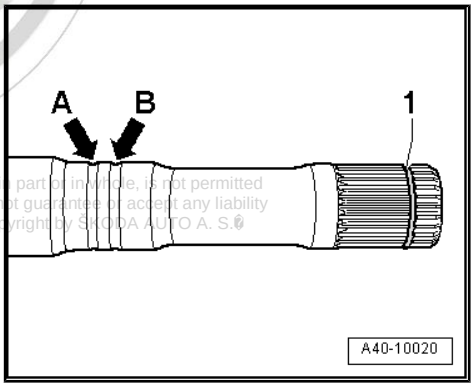
– Use a plastic hammer to strike the sheet metal cover with the joint boot on the joint.

– Wipe off any excess sealant, if necessary.

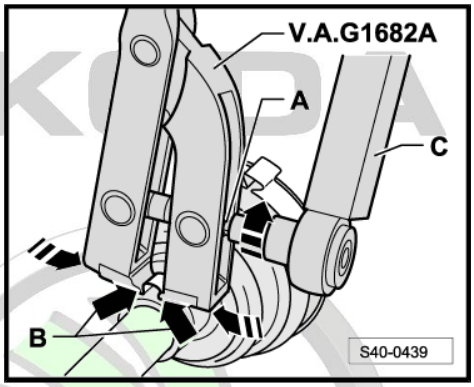
– Remove the protective foil from the gasket and stick the gasket into the joint from the gearbox side.

– Insert the joint boot into the outer groove of the shaft -arrow B-.

– Install warm-type clamp.



Tighten warm-type clamp:



- Position the tensioning pliers as shown in the figure. Make sure the cutting edges of the pliers are positioned in the corners -arrows B- of the open warm-type clamp.
- Tighten the open warm-type clamp by turning the spindle with a torque wrench (do not tilt the pliers during this process).

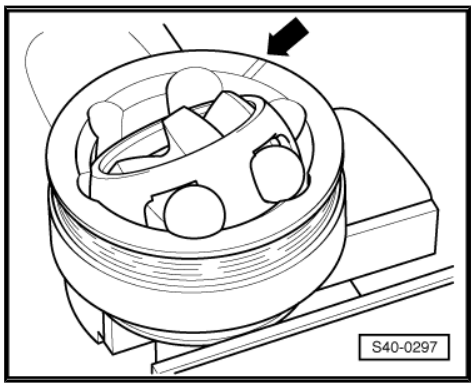
Note

- *In view of the hard material (as opposed to rubber) of the joint boot, which requires the use of stainless steel open warm-type clamps, these can only be tightened with tensioning pliers , e.g. -V.A.G 1682 A- .*
- *Specified torque: 25 Nm.*
- *Use torque wrench -C-.*
- *Ensure that the thread of the spindle -A- of the pliers is smooth. Lubricate if necessary with grease.*
- *If it is not smooth, e.g. if the thread is dirty, the necessary clamping force of the open warm-type clamp is not reached at the given torque.*

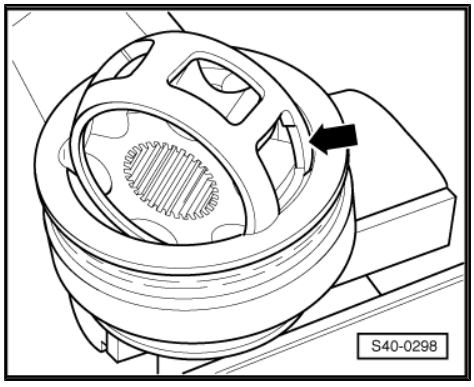
7.3.3 Check outer joint

Removing:

Disassemble the joint to replace badly soiled grease or if the contact surfaces of the balls must be inspected for wear and damage.



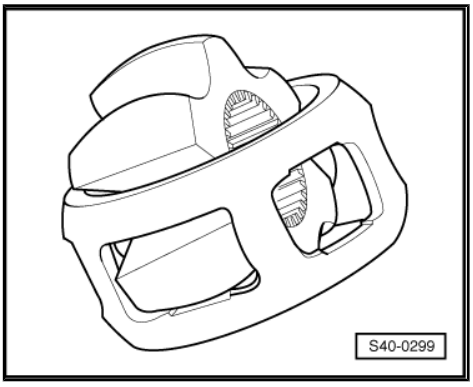
- With an electric stylus or rubstone mark the position of the ball hub relatively to the ball cage and housing before disassembling -arrow-.
- Rotate the ball hub and ball cage.
- Remove the balls one after the other.



- Turn the cage until two rectangular cage windows -arrow- rest on the joint part.
- Remove cage with hub.

– Turn the hub segment in the window of the cage.

– Tilt hub out of the cage.



The 6 balls of each joint belong to a tolerance group. Inspect the axle studs, hub, cage and balls for small depressions (pitting = point erosion) and seizing marks. Load alteration shocks indicate too much torsional clearance in the joint. If this is the case, replace the joint. Smoothing and traces of wear of the balls are no reason to change the joint.

Installing:

– Press half of the total grease quantity (40 g) into the joint body.

– Insert the cage and hub in the joint body.

– Press in opposite balls one after the other, during this process observe the prior position of the ball hub relatively to the ball cage and to the joint body.

– Insert new circlip in the groove of the shaft.

– Spread any residual grease in the joint boot.

– Check proper operation of joint.

The CV joint is correctly assembled if the ball hub can be rolled by hand up and down the entire linear compensation.

7.3.4 Checking the inner joint

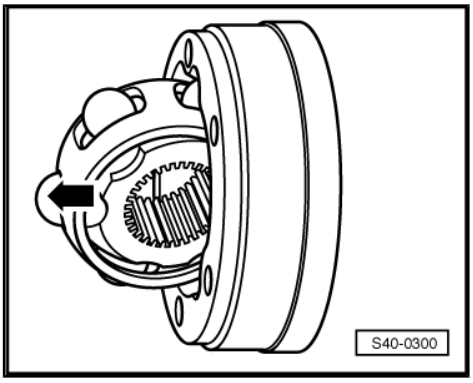
Removing:

Disassemble the joint to replace badly soiled grease or if the contact surfaces of the balls must be inspected for wear and damage.

– Rotate the ball hub and ball cage.

– Press out joint part in -direction of arrow-.

– Successively press out the balls from the cage.

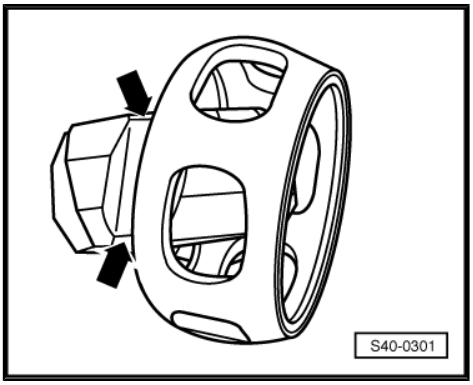


Note

The ball hub and joint piece are paired. These are not interchangeable.

– Tilt the ball hub out of the ball cage over the ball bearing track -arrows-.

– Inspect the joint part, ball hub, ball cage and balls for small broken out depressions (pitting = point corrosion) and seizing marks.

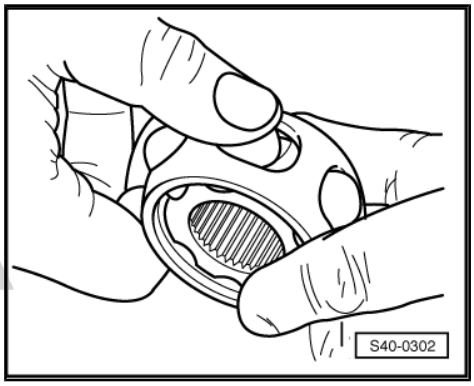


Load alteration shocks indicate too much torsional clearance in the joint. If this is the case, replace the joint. Smoothing and traces of wear of the balls are no reason to change the joint.

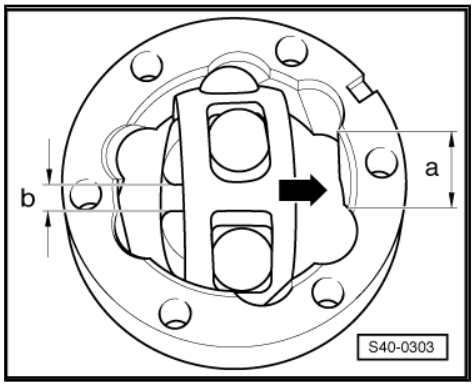
Installing:

– Insert the ball hub in the ball cage over the two chamfers. The fitting location is random. Press the balls into the cage.

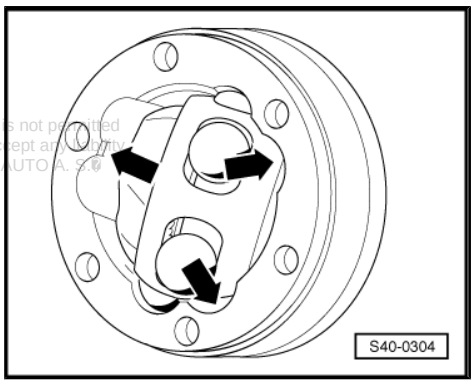
The ball hub has two different distances between the ball bearing tacks, a larger and a smaller.



– Insert the hub with cage upright into the joint part, while doing so a smaller distance -b- must point to the open side of the joint part.
– Pay attention to the chamfer on the inner diameter of the ball hub, this must be visible after the swivelling.

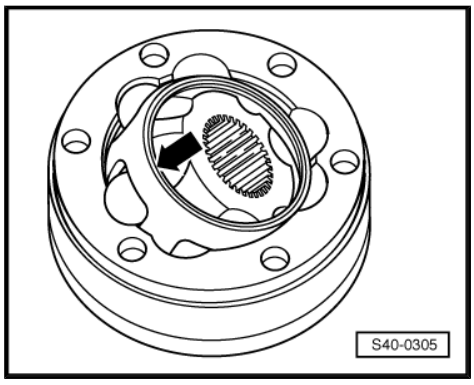


– Swivel in the ball hub, to do so swivel the hub out of the cage -arrows- until the balls are at bearing track distance.



– Lock the hub with the balls into position by exerting considerable pressure on the cage -arrow-.
– Check proper operation of joint.

The CV joint is correctly assembled if the ball hub can be rolled by hand up and down the entire linear compensation.



7.3.5 Designation, distinguish the diameter as specified and grease quantity for joints

Outer joint			Inner joint		
Denomination	**Diameter**	**Grease**	**Denomination**	**Diameter**	**Grease**
CG-FIX2000	Lower by 82 mm	45g, grind the grease evenly in the joint	VL100	Lower by 100 mm	110g, evenly in both halves of the joint

Use the relevant grease for outer joints, assignment ⇒ Electronic Catalogue of Original Parts .

Use heat-resistant grease for inner joints, assignment ⇒ Electronic Catalogue of Original Parts .

8 Repairing rear wheel suspension (vehicles with front-wheel drive)

⇒ “8.1 Overview of rear axle”, page 258

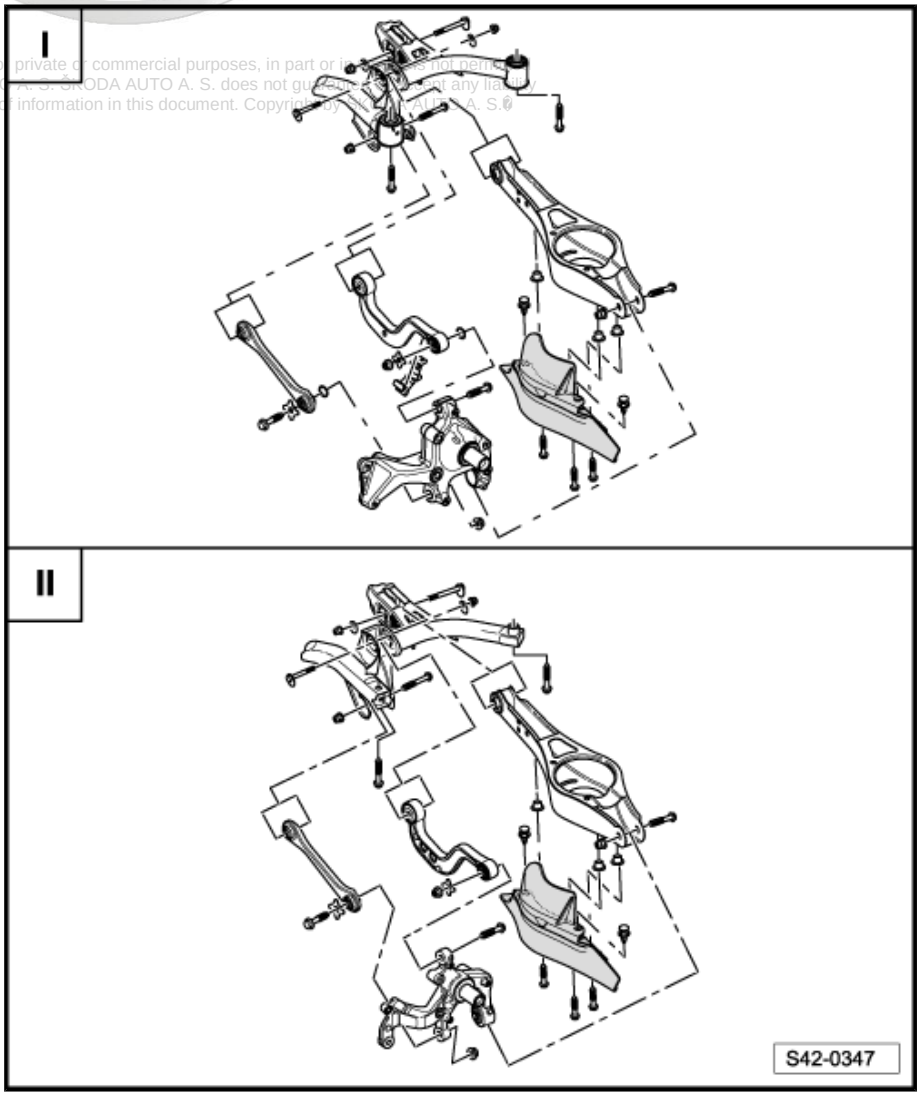
8.1 Overview of rear axle

Note

- *Welding and straightening work is not allowed on the bearing and wheel control components of the wheel suspension.*
- *Self-locking nuts must always be replaced.*
- *Always replace corroded screws/nuts.*
- *Rubber-metal bearings can be twisted only to a limited extent. Therefore first tighten up the screwed connections to the components with rubber-metal bearings, if the wheel-bearing housing is lifted (unladen weight position) ⇒ “1.2 Rear axle in unladen weight position”, page 177*
- *Always replace rubber-metal bearing on both sides of the vehicle.*

I -
⇒ “9.1 Summary of components: Assembly carrier, suspension arm, track rod for rear axle, vehicle level sensor - G76- (vehicles with front-wheel drive) up to CW 21/2010”, page 260

II -
⇒ “9.2 Summary of components: Assembly carrier, suspension arm, track rod for rear axle, vehicle level sensor - G76- (vehicles with front-wheel drive) as of CW 22/2010”, page 264

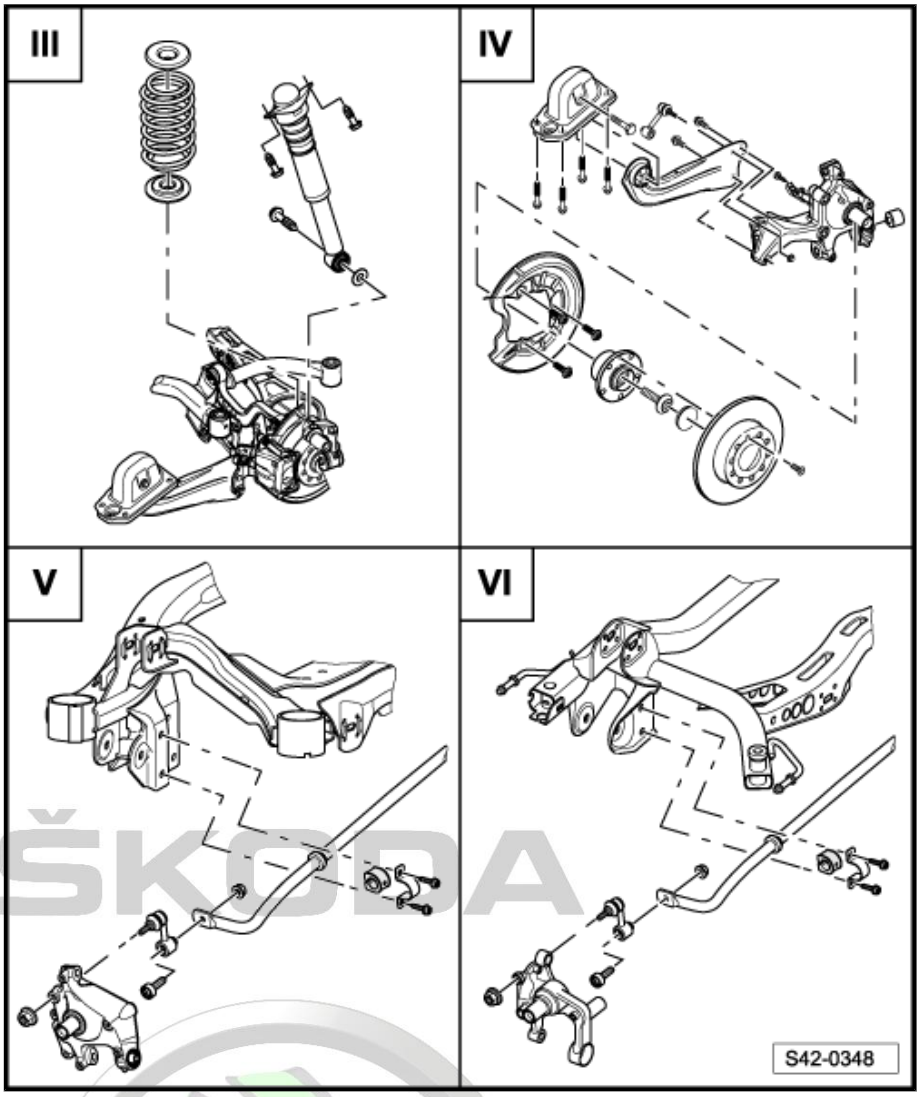


III -
⇒ “11 Summary of components: Shock absorber, helical spring (vehicles with front-wheel drive)”, page 321

IV -
⇒ “10 Summary of components: Wheel-bearing housing, trailing arm (vehicles with front-wheel drive)”, page 301

V -
⇒ “12 Summary of components: Anti-roll bar (vehicles with front-wheel drive)”, page 329

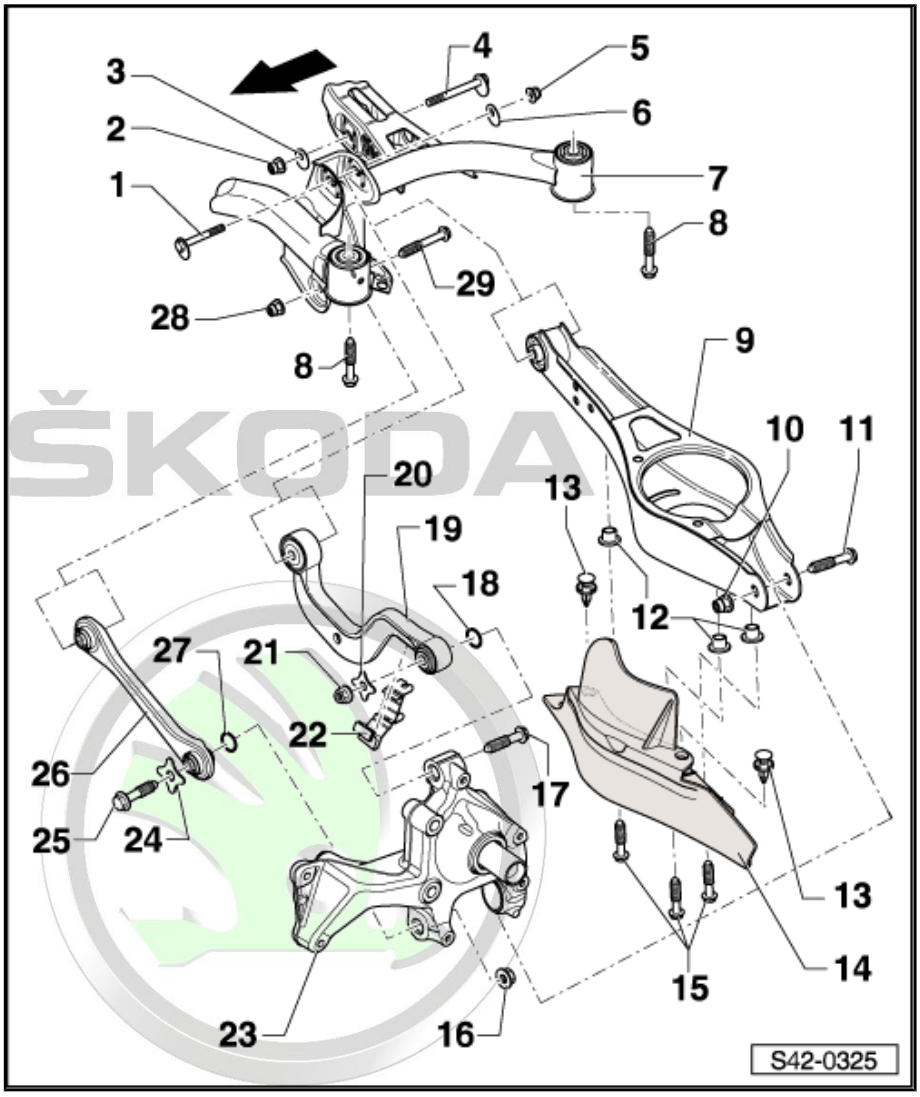
VI -
⇒ “12.2 Summary of components: Anti-roll bar (vehicles with front-wheel-drive) as of CW 22/2010”, page 330



9 Summary of components: Assembly carrier, suspension arm, track rod for rear axle, vehicle level sensor -G76- (vehicles with front-wheel drive)

9.1 Summary of components: Assembly carrier, suspension arm, track rod for rear axle, vehicle level sensor -G76- (vehicles with front-wheel drive) up to CW 21/2010

The -arrow- shows the direction of travel.



1 - Eccentric bolt

- ❑ after undoing, carry out an axle alignment ⇒ “2.3 Axle alignment”, page 338
- ❑ do not turn more than 90° to the right or to the left (i.e smallest to largest adjustment possibility)

2 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ 95 Nm

3 - Eccentric washer

- ❑ Inner hole with lug

4 - Eccentric bolt

- ❑ after undoing, carry out an axle alignment ⇒ “2.3 Axle alignment”, page 338
- ❑ do not turn more than 90° to the right or to the left (i.e smallest to largest adjustment possibility)

5 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ 95 Nm

6 - Eccentric washer

- ❑ Inner hole with lug

7 - Assembly carrier

- ❑ removing and installing ⇒ “9.3 Removing and installing rear axle up to CW 21/2010”, page 266

Front rubber-metal bearing:

- ❑ pressing in and pressing out ⇒ “9.5 Removing and installing front rubber-metal bearing for rear axle up to CW 21/2010”, page 277

Rear rubber-metal bearing:

- ❑ pressing in and pressing out ⇒ “9.6 Removing and installing rear rubber-metal bearing for rear axle up to CW 21/2010”, page 283
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

8 - Screw

- ❑ replace after each removal
- ❑ 70 Nm + 180°

9 - Bottom suspension arm

- ❑ removing and installing ⇒ “9.10 Removing and installing bottom suspension arm”, page 294

10 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ 90 Nm + 90°

11 - Screw

- ❑ replace after each removal

12 - Threaded rivet

- ❑ M6

13 - Body-bound rivet

14 - Protection plate

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

15 - Screw

- ❑ 8 Nm

16 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ 130 Nm + 90°

17 - Screw

- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ 130 Nm + 90°

18 - Washer

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

19 - Top suspension arm

- ❑ removing and installing ⇒ “9.9 Removing and installing top suspension arm”, page 291

20 - Washer

21 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ The tightening torque must be applied via the screw - Pos. 17, in order not to put the bearing under tension

22 - Support

- ❑ for speed sensor cable
- ❑ clipped with top suspension arm
- ❑ removing and installing ⇒ “9.12 Removing and installing bracket for the speed sensor cable”, page 300

23 - Wheel-bearing housing

- ❑ removing and installing ⇒ “10.1 Removing and installing wheel bearing housing”, page 302

24 - Washer

25 - Screw

- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position
  ⇒ “1.2 Rear axle in unladen weight position”, page 177

26 - Track rod for rear axle

- ❑ different versions ⇒ page 263
- ❑ closed in direction of travel (track rods on the right and left differ)
- ❑ opened towards the bottom (track rods on the right and left are identical)
- ❑ combined installation is allowed
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing ⇒ “9.11 Removing and installing track rod for rear axle”, page 297

27 - Washer

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

28 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position
  ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ 90 Nm + 90°

29 - Screw

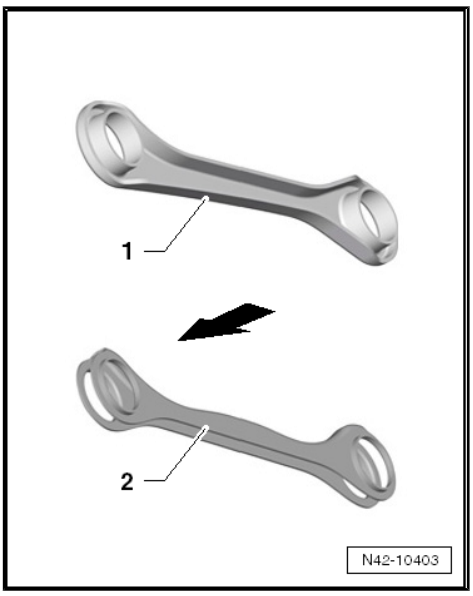
- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position
  ⇒ “1.2 Rear axle in unladen weight position”, page 177

Track rod versions

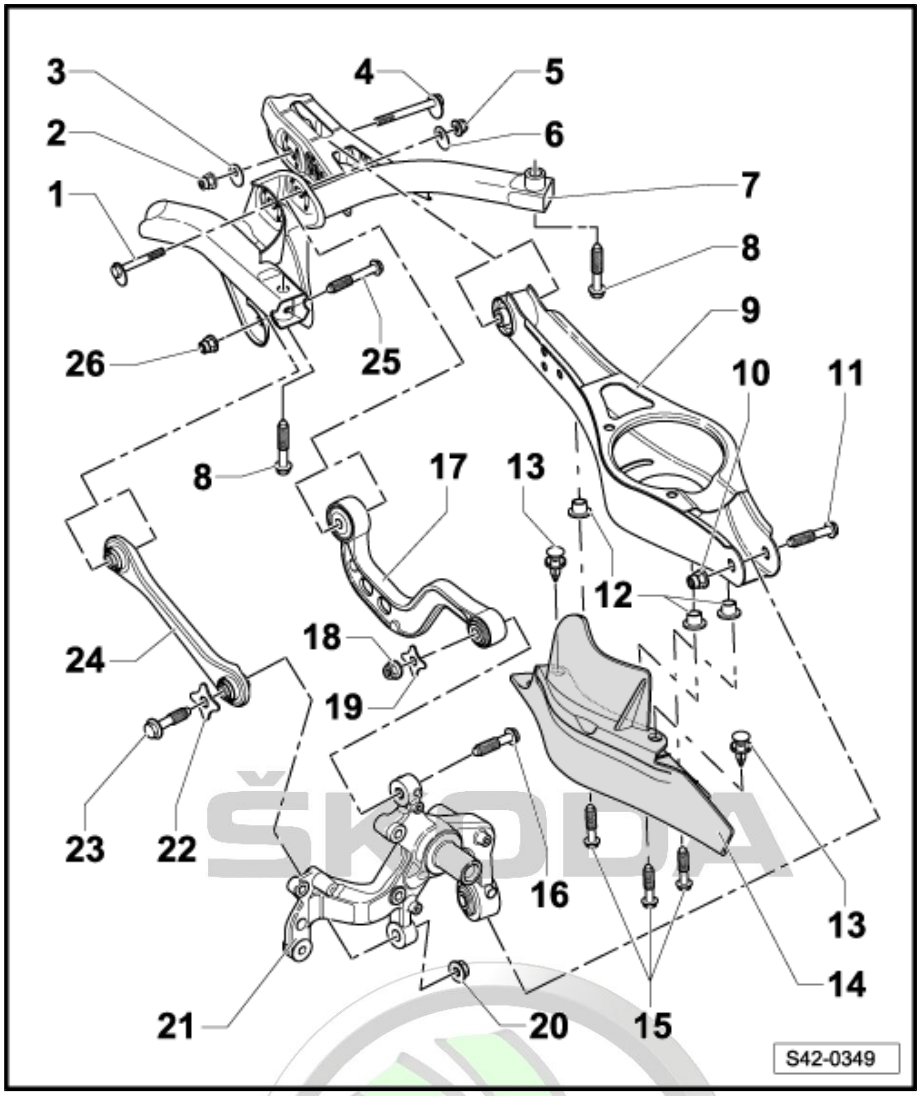
1 - Track rod closed in direction of travel (track rods on the right and left differ)

2 - Track rod opened towards the bottom (track rods on the right and left are identical)

- ♦ The -arrow- shows the direction of travel.
- ♦ A combined installation of the track rod versions -1- and -2- is allowed.
- ♦ Pay attention to correct installation position.



9.2 Summary of components: Assembly carrier, suspension arm, track rod for rear axle, vehicle level sensor -G76- (vehicles with front-wheel drive) as of CW 22/2010



1 - Eccentric bolt

- ❑ after undoing, carry out an axle alignment ⇒ “2.3 Axle alignment”, page 338
- ❑ do not turn more than 90° to the right or to the left (i.e smallest to largest adjustment possibility)

2 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ 95 Nm

3 - Eccentric washer

- ❑ Inner hole with lug

4 - Eccentric bolt

- ❑ after undoing, carry out an axle alignment ⇒ “2.3 Axle alignment”, page 338
- ❑ do not turn more than 90° to the right or to the left (i.e smallest to largest adjustment possibility)

5 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ 95 Nm

6 - Eccentric washer

- ❑ Inner hole with lug

7 - Assembly carrier

- ❑ removing and installing ⇒ “9.4 Removing and installing rear axle as of CW 22/2010”, page 272
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

8 - Screw

- ❑ replace after each removal
- ❑ 70 Nm + 180°

9 - Bottom suspension arm

- ❑ removing and installing ⇒ “9.10 Removing and installing bottom suspension arm”, page 294

10 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position
  ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ 90 Nm + 90°

11 - Screw

- ❑ replace after each removal

12 - Threaded rivet

- ❑ M6

13 - Body-bound rivet

14 - Protection plate

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

15 - Screw

- ❑ 8 Nm

16 - Screw

- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position
  ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ 130 Nm + 90°

17 - Top suspension arm

- ❑ removing and installing ⇒ “9.9 Removing and installing top suspension arm”, page 291

18 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ The tightening torque must be applied via the screw - Pos. 16, in order not to put the bearing under tension

19 - Washer

20 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ the tightening torque must be applied via the screw, in order not to put the bearing under tension
- ❑ Always tighten bolted connections in unladen weight position
  ⇒ “1.2 Rear axle in unladen weight position”, page 177

21 - Wheel-bearing housing

- ❑ removing and installing ⇒ “10.1 Removing and installing wheel bearing housing”, page 302

22 - Washer

23 - Screw

- ❑ replace after each removal
- ❑ the tightening torque must be applied via the screw, in order not to put the bearing under tension
- ❑ Always tighten bolted connections in unladen weight position
  ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ 130 Nm + 90°

24 - Track rod for rear axle

- ❑ different versions ⇒ page 263
- ❑ closed in direction of travel (track rods on the right and left differ)
- ❑ opened towards the bottom (track rods on the right and left are identical)
- ❑ combined installation is allowed

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing ⇒ “9.11 Removing and installing track rod for rear axle”, page 297

25 - Screw

- ❑ replace after each removal

26 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ Always tighten bolted connections in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ 90 Nm + 90°

9.3 Removing and installing rear axle up to CW 21/2010

Special tools and workshop equipment required

- ♦ Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-
- ♦ Tensioning strap - T10038-
- ♦ Fixing device - T10096-

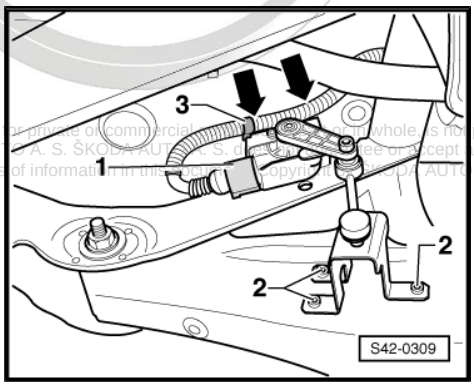
Removing assembly carrier with its component parts:

– Remove wheels.

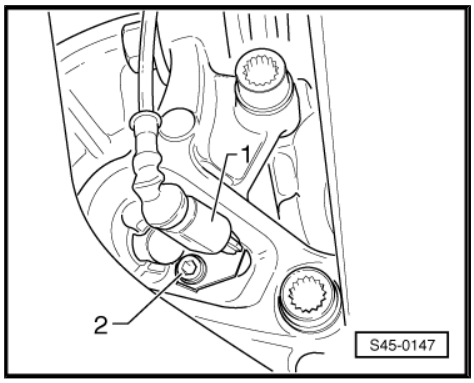
– Remove the rear silencer ⇒ Engine; Rep. gr. 26 .

– Remove coil springs ⇒ “11.1 Removing and installing coil spring”, page 322

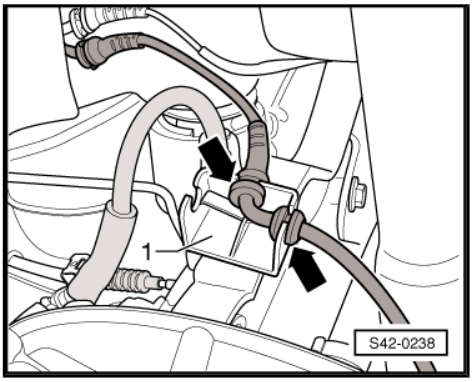
– On vehicles equipped with automatic headlight beam control, disconnect plug -1- and slacken line holder from the sender -3-.



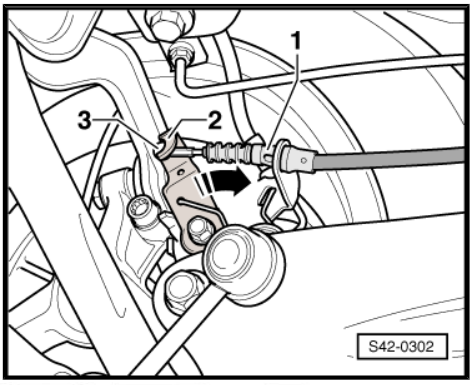
– Unplug connector -1- from the wheel speed sensors.



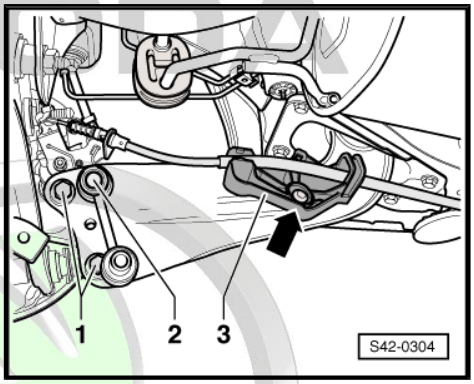
– Unclip wheel speed sensor cables -arrows- from the holders -1-.



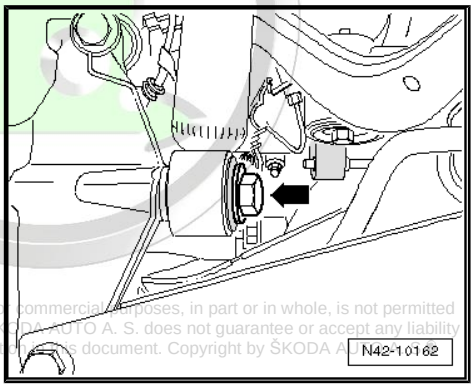
– Press the lever -2- in the -direction of the arrow- and unhook the hand-brake cables -3-.
– Slacken the spring strap clips -1- for the hand-brake cables from the bracket on the brake calipers.



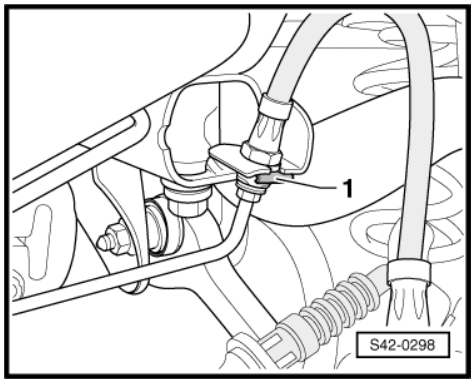
– Slacken the hand-brake cables from the brackets -3- to the trailing arms and pull the cables out of the brackets.



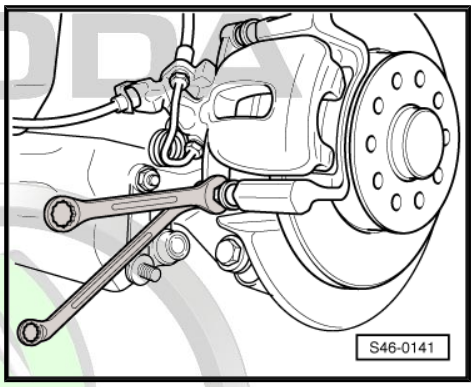
– Unscrew screws -arrow-.



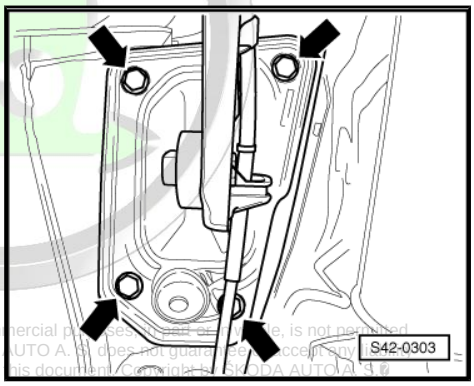
– Remove retaining clips for brake line -1-.



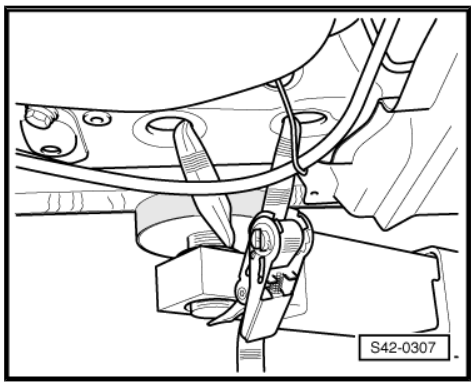
– Remove brake calliper: Unscrew the fixing screws of the brake carrier while counterholding the guide bolts.
– Remove the brake caliper and e.g. secure with wire in such a way that the weight of the brake caliper does not burden or damage the brake hose.



– Mark the installed position of the bracket on the body.
– Remove bolts -arrows-.



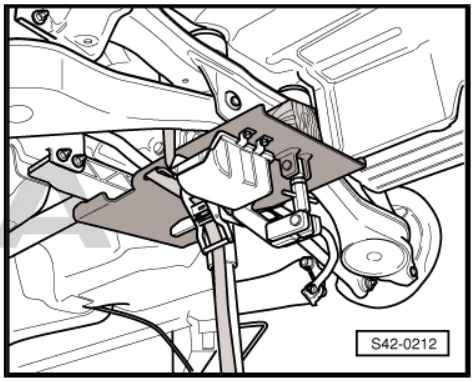
– Lash the vehicle to the lift platform using the tensioning straps - T10038- .



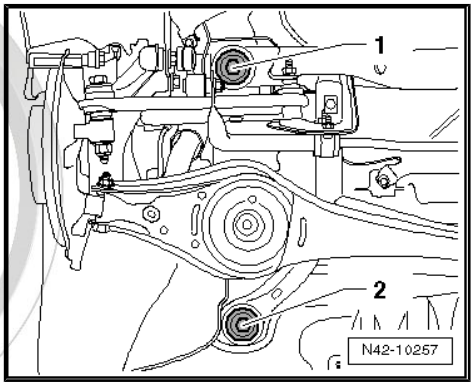
WARNING

If the vehicle is not lashed, there is a risk of the vehicle toppling off the lift platform.

– Place engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with gearbox mount - V.A.G 1359/2- beneath the assembly carrier and secure with tensioning strap .



– Release screw -1- or -2- on both sides of the axle.

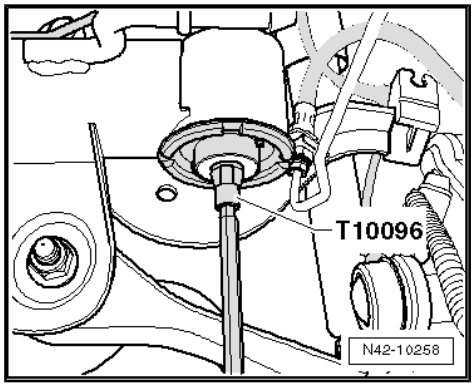


Note

Only the left vehicle side is illustrated for purposes of clear presentation.

– Fix the position of the assembly carrier using fixing devices - T10096- .

In order to fix the fitting position of the assembly carrier, the fixing devices - T10096- must be successively screwed into the positions -1- and -2- on both vehicle sides.



Note

The locating pin - T10096- must only be tightened to maximum 20 Nm as otherwise the fixing bolt thread becomes damaged.

– Successively replace the fixing bolts at the assembly carrier on both sides with fixing devices - T10096- and tighten to 20 Nm.

The fitting position of the assembly carrier is now fixed.

– Lower the assembly carrier with engine/gearbox jack e.g. - V.A.G 1383A- Or -VAS6931- by approx. 30 mm.

Note

When lowering, pay attention to possible damage of the brake lines and electrical installation.

– Unclip the brake line from the assembly carrier.

– Lowering assembly carrier with attached parts.

Installing assembly carrier with its component parts:

Installation is carried out in the reverse order. Pay attention to the following:

– Perform a test drive.

– Check the steering wheel position during the test drive.

– Carry out axle alignment ⇒ “2.3 Axle alignment”, page 338 .

Tightening torques:

Mounting bracket on the body ♦ Use new screws!	50 Nm + 45°
Assembly carrier to body ♦ Use new screws!	70 Nm + 180°
Shock absorber to wheel-bearing housing ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	130 Nm + 90°
Brake caliper to brake carrier ♦ Use new self-locking screws!	35 Nm
Speed sensor	8 Nm
Wheel bolts	120 Nm

9.4 Removing and installing rear axle as of CW 22/2010

Special tools and workshop equipment required

- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-
- Tensioning strap - T10038-
- Fixing device - T10096-

Removing assembly carrier with its component parts:

Note

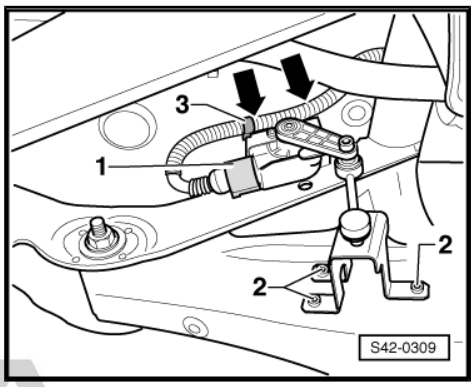
The removal of the rear axle parts is carried out in the same way on both sides.

– Remove wheels.

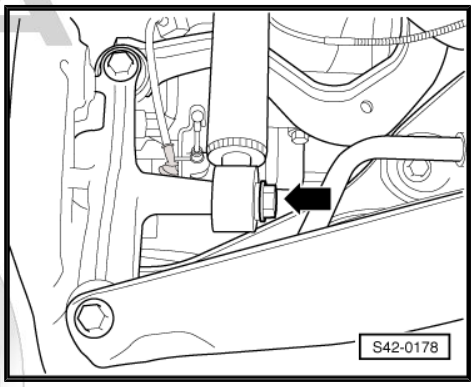
– Remove coil springs
⇒ “11.1 Removing and installing coil spring”, page 322 .

– On vehicles equipped with automatic headlight beam control, disconnect plug -1- and slacken line holder of the sender -3-.

– Take the speed sensor out of the wheel bearing housing.



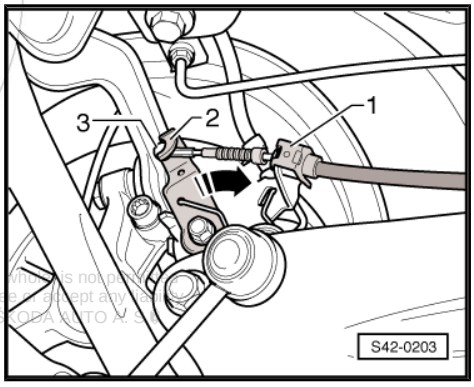
– Unscrew plug -arrow-.



For the version with the spring clip:

– Slacken the spring clip -1- for the hand-brake cable.

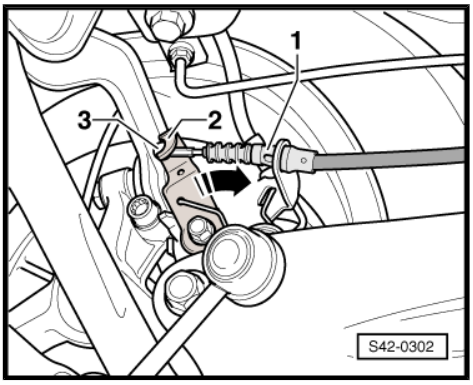
– Press the lever -2- in the -direction of the arrow- and while doing so unhook the hand-brake cable -3-.



For the version with the spring bushing:

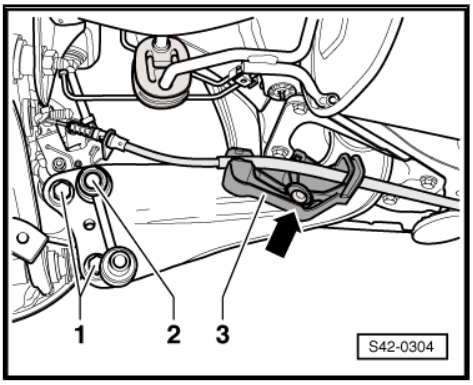
– Press the lever -2- in the -direction of the arrow- and while doing so unhook the hand-brake cable -3-.

– Slacken the spring bushing -1- for the hand-brake cable from the bracket on the brake caliper.

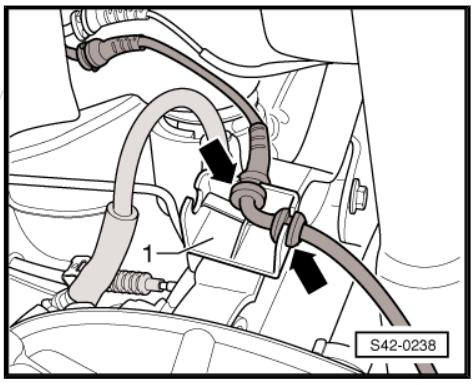


Continued for all versions:

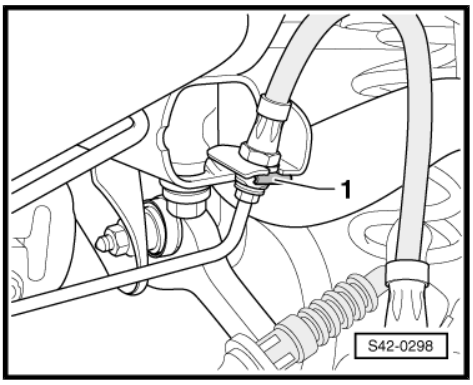
– Slacken the hand-brake cables from the brackets -3- to the trailing arms and pull the cables out of the brackets.



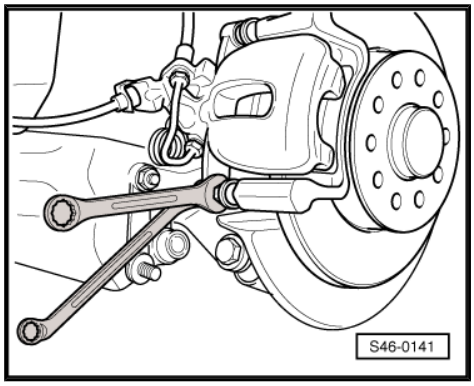
– Unclip speed sensor cable from bracket -1- -arrows- on both sides.



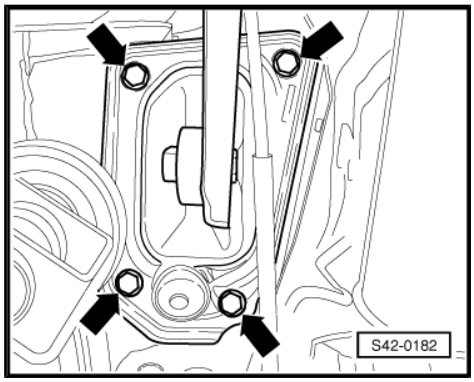
– Pull out the bracket for wiring -1- on both vehicle sides.



– Remove brake calliper: Unscrew the fixing screws of the brake carrier while counterholding the guide bolts.
– Remove the brake caliper and e.g. secure with wire in such a way that the weight of the brake caliper does not burden or damage the brake hose.



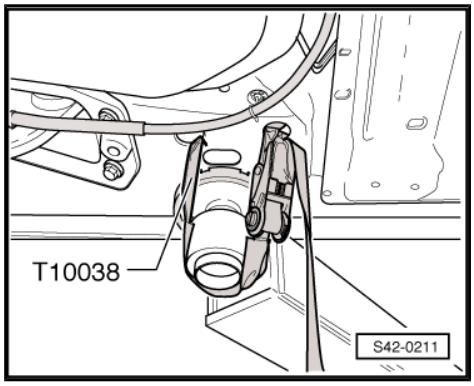
– Mark the installed position of the bracket on the body.
– Remove bolts -arrows-.
– Unhook the rear silencer from the retaining strap on the assembly carrier ⇒ Engine; Rep. gr. 26 .



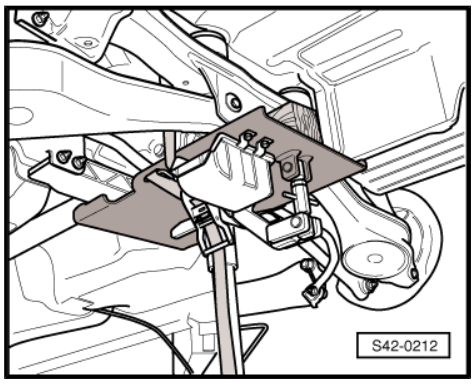
– Lash the vehicle to the lift platform using the tensioning straps - T10038- .

WARNING

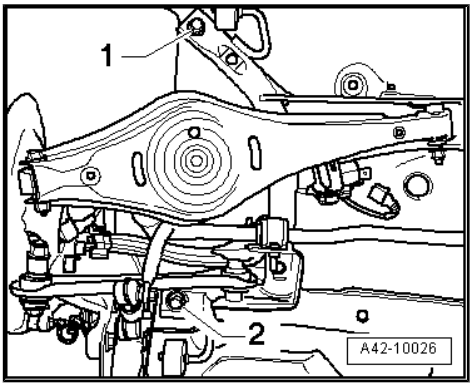
If the vehicle is not lashed, there is a risk of the vehicle toppling off the lift platform.



– Place engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with gearbox mount - V.A.G 1359/2- beneath the assembly carrier and secure with tensioning strap .



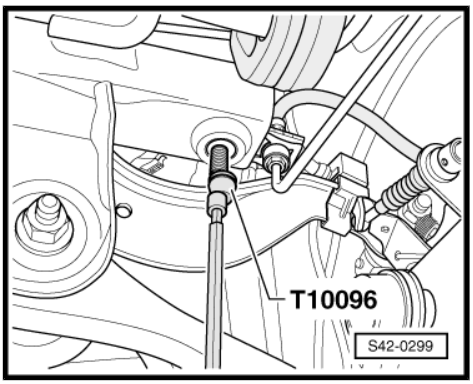
– Release screw -1- or -2- on both sides.



Note

To provide a clearer illustration, only the left vehicle side is illustrated.

– Fix the position of the assembly carrier using two fixing devices - T10096- ; tighten to 20°Nm.



Note

The locating pin - T10096- must only be tightened to maximum 20 Nm as otherwise the fixing bolt thread becomes damaged.

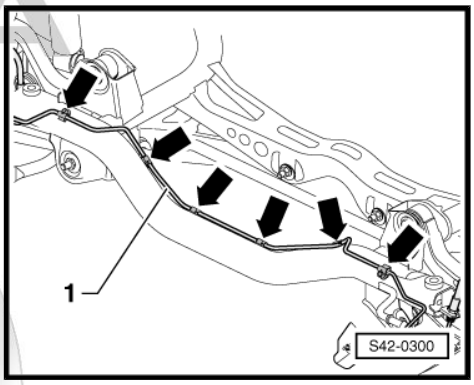
– Unscrew the remaining two screws from the assembly carrier.

– Carefully lower assembly carrier to maximum 30 mm.

Note

Ensure adequate clearance of brake and electric lines when lowering.

– Unclip brake line -1- -arrows-.



Note

The fig. shows the assembly carrier from above and in the removed condition for purposes of clear presentation.

– Lowering assembly carrier with attached parts.

Installing assembly carrier with its component parts:

Installation occurs in reverse order to removal. Pay attention to the following:

– Perform a test drive.

– Check the steering wheel position during the test drive.

– Carry out axle alignment ⇒ “2.3 Axle alignment”, page 338 .

Tightening torques:

Mounting bracket on the body ♦ Use new screws!	50 Nm + 45°
Assembly carrier to body ♦ Use new screws!	70 Nm + 180°
Shock absorber to wheel-bearing housing ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	130 Nm + 90°
Brake caliper to brake carrier ♦ Use new self-locking screws!	35 Nm
Speed sensor	8 Nm
Wheel bolts	120 Nm

9.5 Removing and installing front rubber-metal bearing for rear axle up to CW 21/2010

Special tools and workshop equipment required

- Tensioning strap - T10038-
- Fixing device - T10096-
- Assembly device - T10263-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-
- Hydraulic cylinder e.g. -VAS 6178-
- Foot pump , e. g. -VAS 6179-

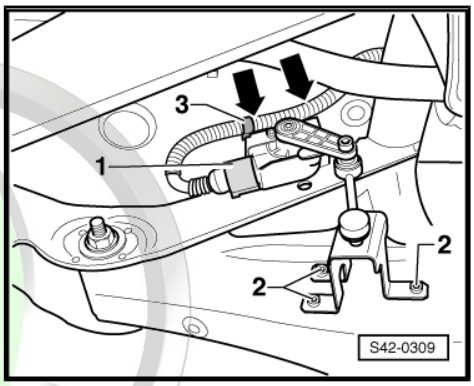
Removing front rubber-metal bearing:

– Remove rear wheels.

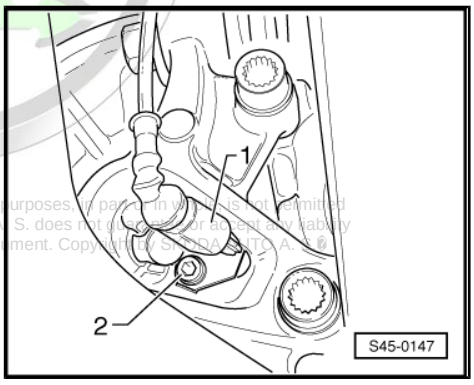
– Remove the rear silencer ⇒ Engine; Rep. gr. 26 .

– Remove coil springs
⇒ “11.1 Removing and installing coil spring”, page 322 .

– On vehicles equipped with automatic headlight beam control, disconnect plug -1- and slacken line holder from the sender -3-.



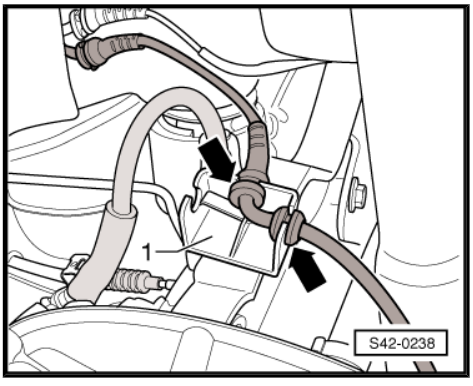
– Unplug connector -1- from the wheel speed sensors.



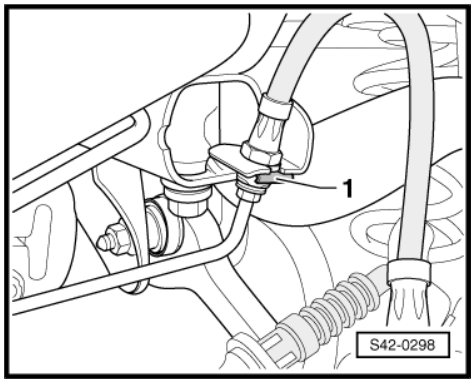
– Unclip wheel speed sensor cables -arrows- from the holders -1-.

– Removing anti-roll bar
⇒ “12.3 Removing and installing the anti-roll bar”, page 330 .

– Removing track rods
⇒ “9.11 Removing and installing track rod for rear axle”, page 297 .



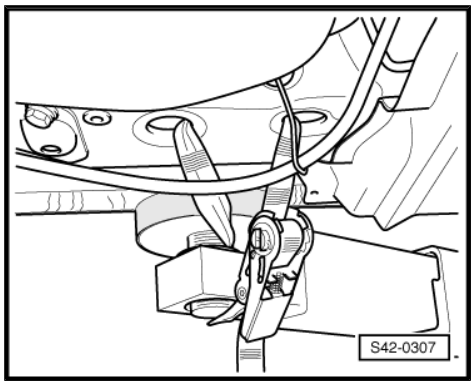
– Remove retaining clips -1- for the brake line and unclip the brake line from the assembly carrier.



Note

Do not disconnect the brake line.

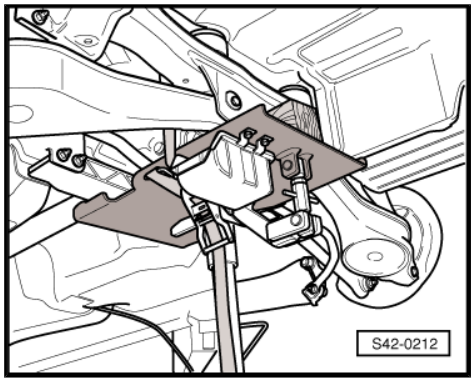
– Lash the vehicle on both sides to the supporting arms of the lift platform using tensioning straps - T10038- .



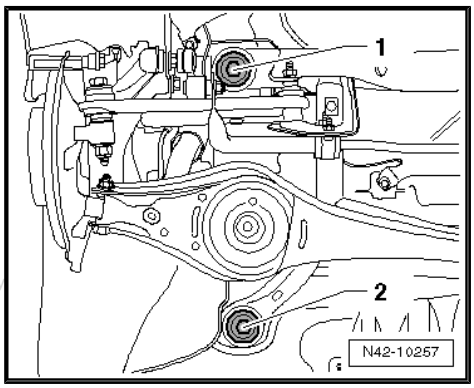
WARNING

If the vehicle is not lashed, there is a risk of the vehicle toppling off the lift platform.

– Place engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with gearbox mount , e.g. -V.A.G 1359/2- beneath the assembly carrier and secure with tensioning strap.



– Release screw -1- or -2- on both sides of the assembly carrier.

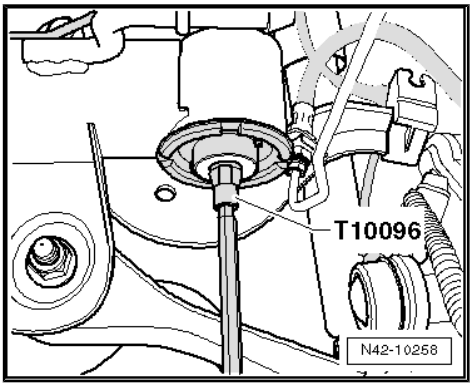


Note

Only the left vehicle side is illustrated for purposes of clear presentation.

– Fix the position of the assembly carrier using fixing devices - T10096- .

In order to fix the assembly carrier, the fixing screws must be successively replaced by the fixing devices - T10096- in the positions -1- and -2- on both vehicle sides.



Note

The locating pin - T10096- must only be tightened to maximum 20 Nm as otherwise the fixing bolt thread becomes damaged.

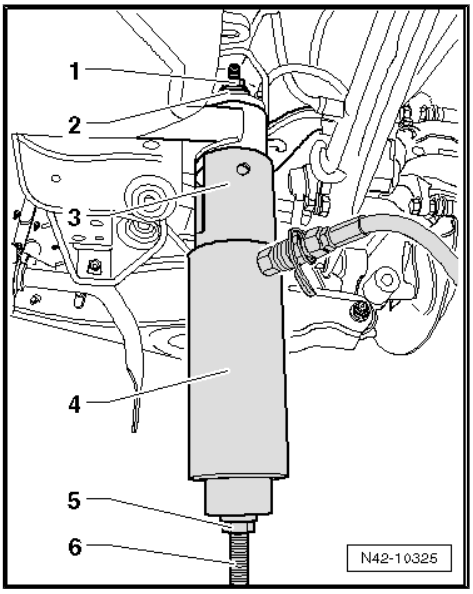
– Successively replace the fixing bolts at the assembly carrier on both sides with fixing devices - T10096- and tighten to 20 Nm.

The fitting position of the assembly carrier is now fixed.

– Lower the assembly carrier with engine/gearbox jack e.g. - V.A.G 1383A- Or -VAS6931- by approx. 10 cm.

– Mark the position of the rubber-metal bearing to the assembly carrier (e.g with a felt-tip pen).

– Position the special tools as shown in the figure.



1 - Nut - T10263/5-

2 - Washer out -T10263-

3 - Pipe section - T10263/6-

4 - Hydraulic cylinder e.g. -VAS 6178-

5 - Nut - T10263/5-

6 - Screw - T10263/4-

– Pretension special tool.

– Pull out the rubber-metal bearing by actuating the pump.

Note

When pulling out the rubber-metal bearing, the outer ring of the bearing is sheared off. This is done with a loud bang.

After pulling out the rubber-metal bearing, the bearing must be removed from the pipe section - T10263/6- .

– Clamp pipe section - T10263/6- on the surfaces provided in a vice.
– Lever between the pipe section - T10263/6- and the rubber-metal bearing -arrow- using a screwdriver and drive out the rubber-metal bearing; if necessary slightly knock onto the drift with a hammer.

Installing front rubber-metal bearing:

Installation is carried out in the reverse order. Pay attention to the following:

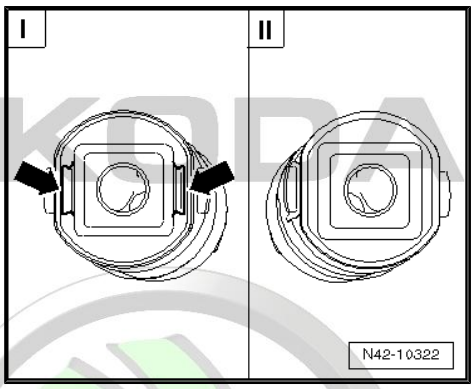
Distinguishing feature of the rubber-metal bearing

I - Front rubber-metal bearing

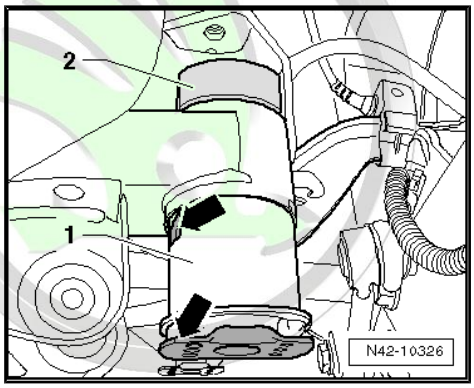
II - Rear rubber-metal bearing

The front rubber-metal bearings have two recesses on the top side -arrows- and differ only slightly in the overall height ⇒ Electronic Catalogue of Original Parts .

The rubber-metal bearing must be installed in a certain direction, the markings on the assembly carrier should be observed.



– Insert rubber-metal bearing -1- into the assembly carrier in such a way, that the recess and the panel -arrows- point at right angles to the direction of travel.
– Position pressure plate - T10263/3- -2- in such a way, that the flattened side also points at right angles to the direction of travel.



– Insert special tool together with rubber-metal bearing as shown in the assembly carrier.

1 - Nut - T10263/5-

2 - Thrust piece - T10263/3-

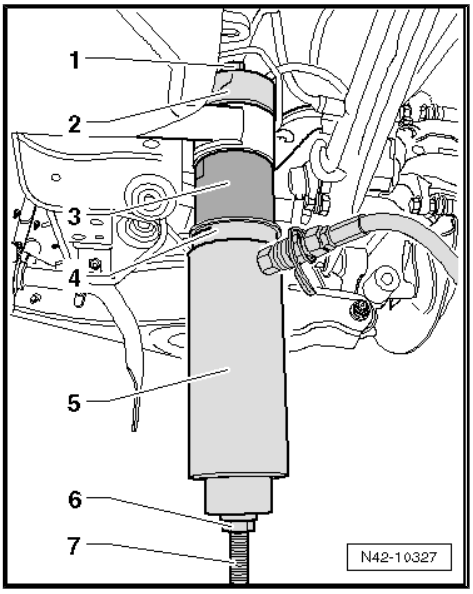
3 - Rubber-metal bearing

4 - Thrust piece - T10263/2-

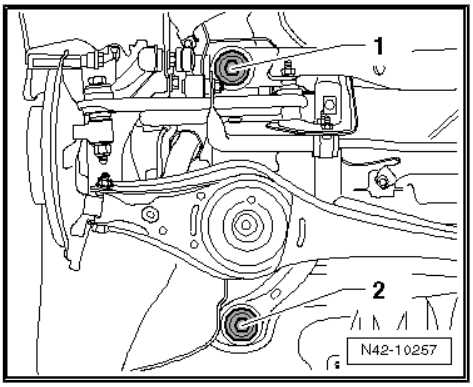
5 - Hydraulic cylinder e.g. -VAS 6178-

6 - Nut - T10263/5-

7 - Screw - T10263/4-



– Pretension special tool with rubber-metal bearing.
– Carefully install the rubber-metal bearing by actuating the pump, until the collar rests »free of gap« against the assembly carrier.
– Raise the assembly carrier onto the fixing bolts until the assembly carrier with the rubber-metal bearings touch the body.
– Replace fixing bolts -1- or -2- on both vehicle sides with the fixing screws and tighten the assembly carrier.
– Replace fixing bolts on both vehicle sides with the fixing screws and tighten the assembly carrier.
– Install track rods
⇒ “9.11 Removing and installing track rod for rear axle”, page 297 .
– Install anti-roll bar
⇒ “12.3 Removing and installing the anti-roll bar”, page 330 .
– Installing the helical springs
⇒ “11.1 Removing and installing coil spring”, page 322 .
– Install the rear silencer ⇒ Engine; Rep. gr. 26 .
– Attach rear wheels.



Tightening torques:

Assembly carrier to body ♦ Use new screws!	70 Nm + 180°
Wheel bolts	120 Nm

9.6 Removing and installing rear rubber-metal bearing for rear axle up to CW 21/2010

Special tools and workshop equipment required

- Tensioning strap - T10038-
- Fixing device - T10096-
- Assembly device - T10263-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-
- Hydraulic cylinder e.g. -VAS 6178-
- Foot pump , e. g. -VAS 6179-

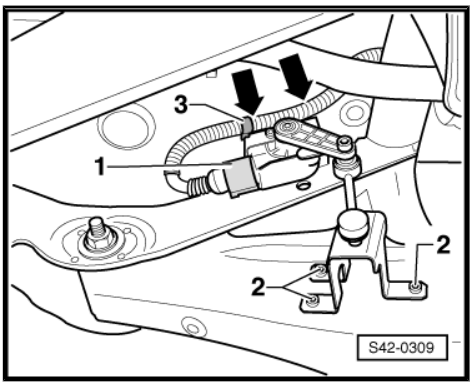
Removing rear rubber-metal bearing:

– Remove rear wheels.

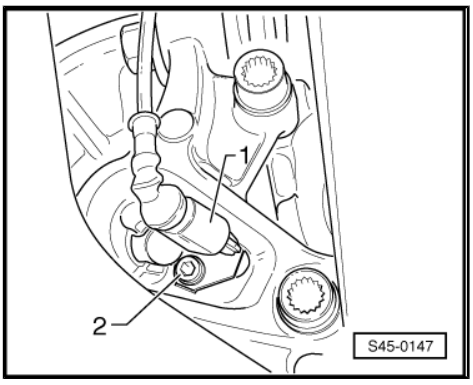
– Remove the rear silencer ⇒ Engine; Rep. gr. 26 .

– Remove coil springs
⇒ “11.1 Removing and installing coil spring”, page 322 .

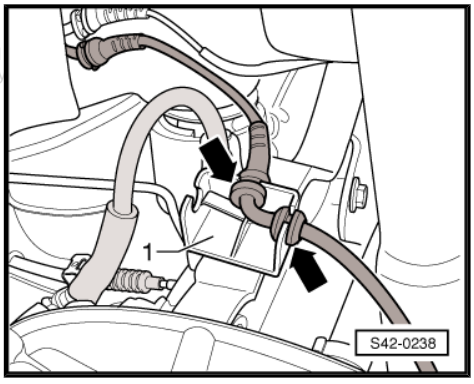
– On vehicles equipped with automatic headlight beam control, disconnect plug -1- and slacken line holder from the sender -3-.



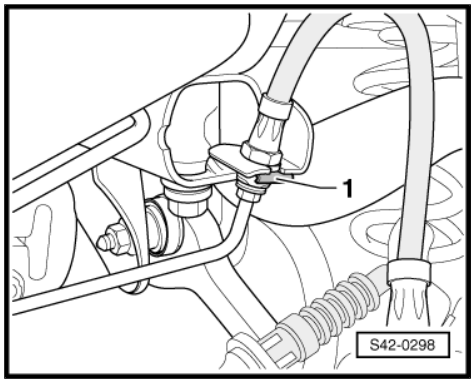
– Unplug connector -1- from the wheel speed sensors.



– Unclip wheel speed sensor cables -arrows- from the holders -1-.



– Remove retaining clips -1- for the brake line and unclip the brake line from the assembly carrier.



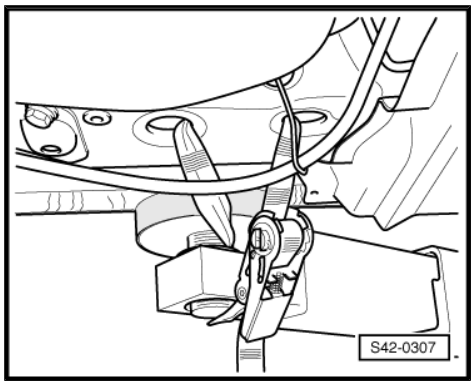
Note

Do not disconnect the brake line.

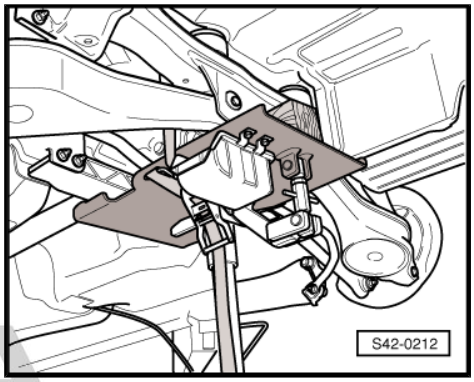
– Lash the vehicle on both sides to the supporting arms of the lift platform using tensioning straps - T10038- .

WARNING

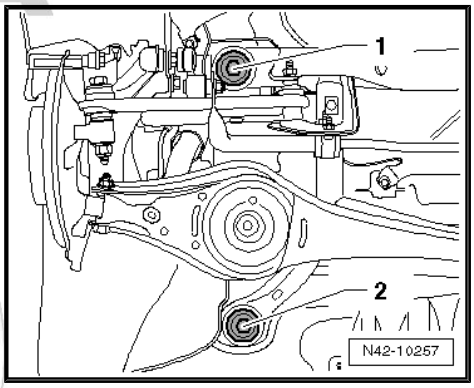
If the vehicle is not lashed, there is a risk of the vehicle toppling off the lift platform.



– Place engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931- with gearbox mount , e.g. -V.A.G 1359/2- beneath the assembly carrier and secure with tensioning strap.



– Release screw -1- or -2- on both sides of the assembly carrier.

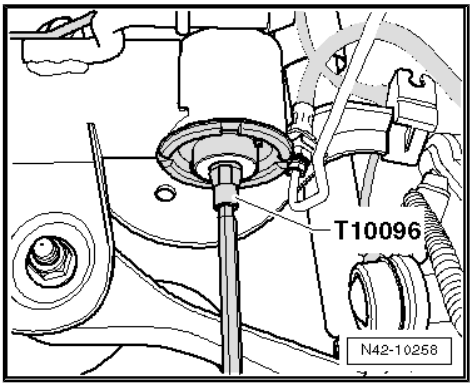


Note

Only the left vehicle side is illustrated for purposes of clear presentation.

In order to fix the assembly carrier, the fixing screws must be successively replaced by the fixing devices - T10096- in the positions -1- and -2- on both vehicle sides.

– Fix the position of the assembly carrier using fixing devices - T10096- .



Note

The locating pin - T10096- must only be tightened to maximum 20 Nm as otherwise the fixing bolt thread becomes damaged.

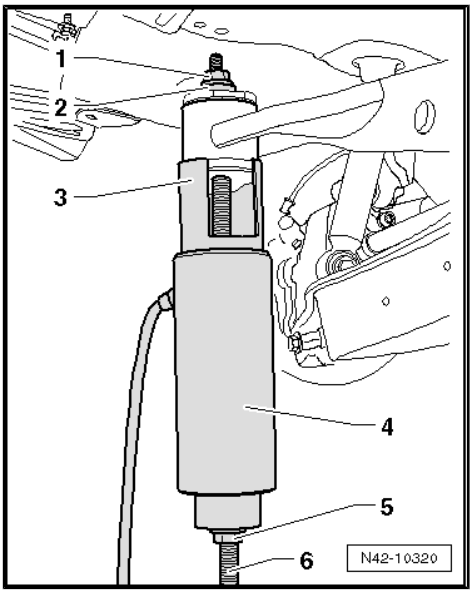
– Successively replace the fixing bolts at the assembly carrier on both sides with fixing devices - T10096- and tighten to 20 Nm.

The fitting position of the assembly carrier is now fixed.

– Lower the assembly carrier with engine/gearbox jack e.g. - V.A.G 1383A- Or -VAS6931- by approx. 10 cm.

– Mark the position of the rubber-metal bearing to the assembly carrier (e.g with a felt-tip pen).

– Position the special tools as shown in the figure.



1 - Nut - T10263/5-

2 - Washer out -T10263-

3 - Pipe section - T10263/6-

4 - Hydraulic cylinder e.g. -VAS 6178-

5 - Nut - T10263/5-

6 - Screw - T10263/4-

– Pretension special tool.

– Pull out the rubber-metal bearing by actuating the pump.

Note

When pulling out the rubber-metal bearing, the outer ring of the bearing is sheared off. This is done with a loud bang.

After pulling out the rubber-metal bearing, the bearing must be removed from the pipe section - T10263/6- .

– Clamp pipe section - T10263/6- on the surfaces provided in a vice.

– Lever between the pipe section - T10263/6- and the rubber-metal bearing -arrow- using a screwdriver and drive out the rubber-metal bearing; if necessary slightly knock onto the drift with a hammer.

Installing rear rubber-metal bearing:

Installation is carried out in the reverse order. Pay attention to the following:

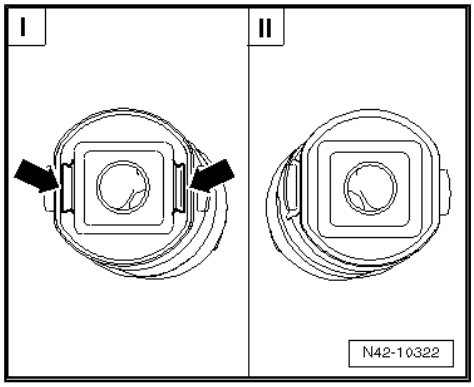
Distinguishing feature of the rubber-metal bearing

I - Front rubber-metal bearing

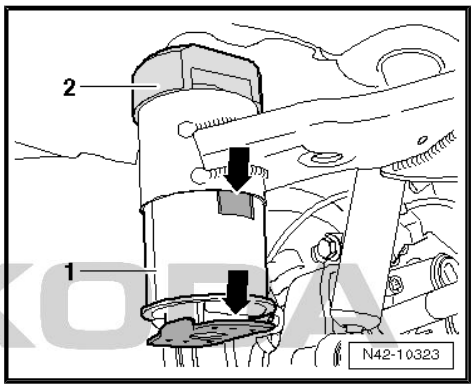
II - Rear rubber-metal bearing

The front rubber-metal bearings have two recesses on the top side -arrows- and differ only slightly in the overall height ⇒ Electronic Catalogue of Original Parts .

The rubber-metal bearing must be installed in a certain direction, the markings on the assembly carrier should be observed.



– Insert rubber-metal bearing -1- into the assembly carrier in such a way, that the recess and the panel -arrows- point at right angles to the direction of travel.
– Position pressure plate - T10263/3- -2- in such a way, that the flattened side also points at right angles to the direction of travel.



– Insert special tool together with rubber-metal bearing as shown in the assembly carrier.

1 - Nut - T10263/5-

2 - Thrust piece - T10263/3-

3 - Rubber-metal bearing

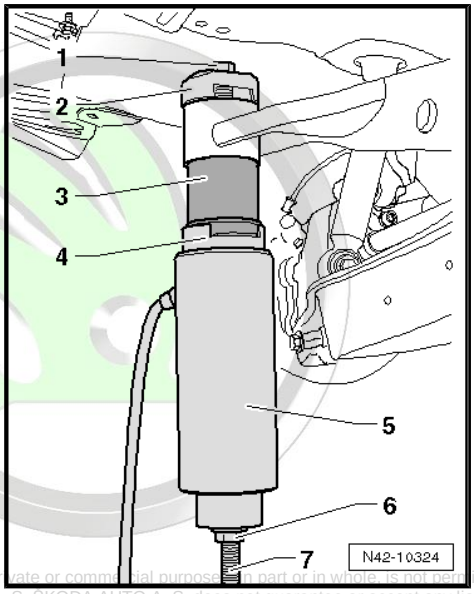
4 - Thrust piece - T10263/2-

5 - Hydraulic cylinder e.g. -VAS 6178-

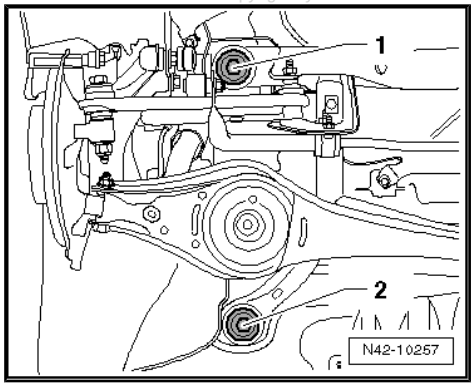
6 - Nut - T10263/5-

7 - Screw - T10263/4-

– Pretension special tool with rubber-metal bearing.
– Carefully install the rubber-metal bearing by actuating the pump, until the collar rests »free of gap« against the assembly carrier.
– Raise the assembly carrier onto the fixing bolts until the assembly carrier with the rubber-metal bearings touch the body.



– Replace fixing bolts -1- or -2- on both vehicle sides with the fixing screws and tighten the assembly carrier.
– Replace fixing bolts on both vehicle sides with the fixing screws and tighten the assembly carrier.
– Installing the helical springs
⇒ “11.1 Removing and installing coil spring”, page 322 .
– Install the rear silencer ⇒ Engine; Rep. gr. 26 .
– Attach rear wheels.



Tightening torques:

Assembly carrier to body ◆ Use new screws!	70 Nm + 180°
Wheel bolts	120 Nm

9.7 Rear left vehicle level sensor - G76- (Summary of components)

Note

- *The rear left vehicle level sensor - G76- is supplied complete with coupling rod and upper and lower retaining bracket as a spare part.*
- *Replace with installed assembly carrier*
  ⇒ *"9.8 Replace rear left vehicle level sensor G76 in the vehicle", page 289* .

1 - Assembly carrier

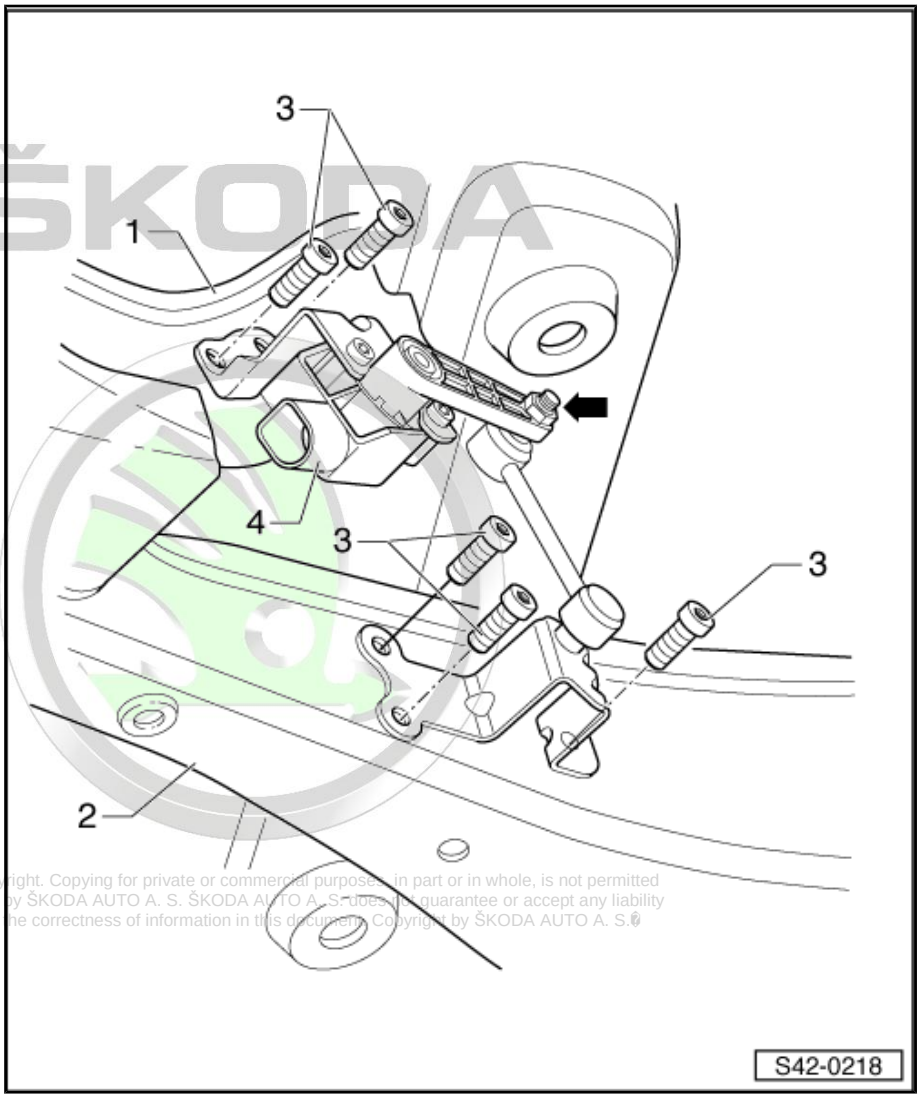
2 - Bottom suspension arm

3 - Screw

- ❑ 5 Nm

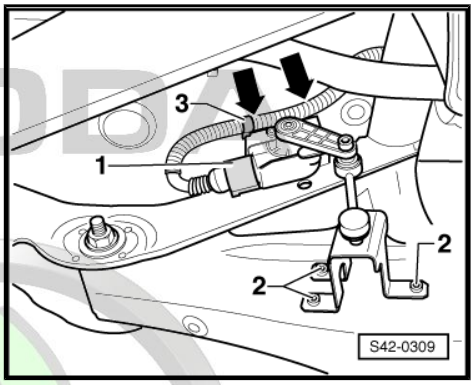
4 - Rear left vehicle level sensor - G76-

- ❑ complete with component parts
- ❑ Lever -arrow- must points towards the outer side of the vehicle
- ❑ replace in vehicle
  ⇒ "9.8 Replace rear left vehicle level sensor G76 in the vehicle", page 289
- ❑ after replacing, carry out the basic setting of the headlight range control unit - J431- ⇒ Vehicle diagnostic tester in the function "Targeted fault finding".



9.8 Replace rear left vehicle level sensor - G76- in the vehicle

Removing:



– Separate plug connection -1-.
– Unscrew screws -2- and -arrows-.
– Remove sensor.

Installing:

Installation is carried out in the reverse order. Pay attention to the following:

The lever of the sensor must point towards the outer side of the vehicle.

– After replacing the rear left vehicle level sensor - G76- carry out the basic setting of the headlight range control unit - J431- ⇒ Vehicle diagnostic tester in the function “Targeted fault finding”.

Tightening torques:

Rear left vehicle level sensor - G76- to assembly carrier	5 Nm
Rear left vehicle level sensor - G76- to bottom top suspension	5 Nm

9.9 Removing and installing top suspension arm

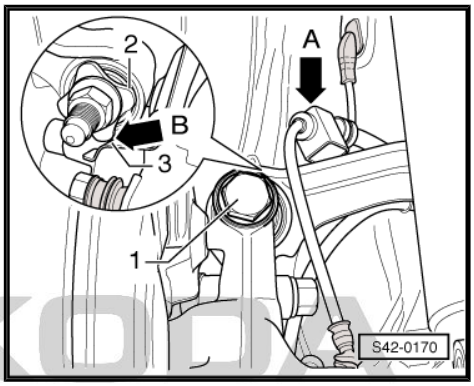
Removing:

– Remove wheel.

– Remove coil spring
⇒ “11.1 Removing and installing coil spring”, page 322 .

– Unhook cable -arrow A- for wheel speed sensor at top suspension arm.

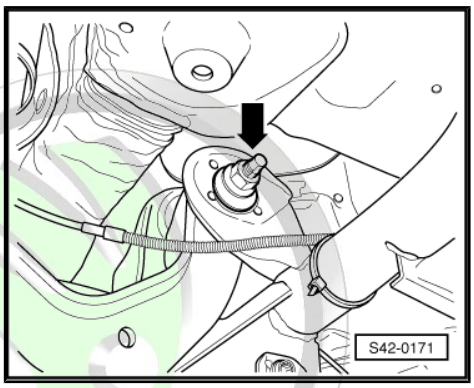
– Release screw -1-.



– For example mark with a felt-tip pen the position of the eccentric bolt -arrow- to the assembly carrier.

– Unscrew plug -arrow-.

– Remove top suspension arm.



Installing:

Installation is carried out in the reverse order. Pay attention to the following:

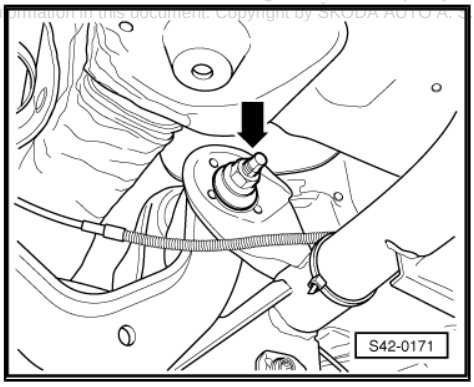
– Insert top suspension arm into the vehicle and tighten the screws by hand.

Note

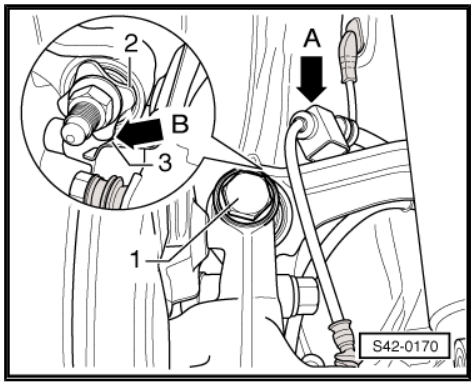
The bolted connection of the top suspension arm must only be performed, if the measured dimension “a” between the wheel hub centre and the lower edge of the wheel house is respected (unladen weight position)!
⇒ “1.2 Rear axle in unladen weight position”, page 177 .

– Screw top suspension arm onto the assembly carrier and tighten the nut.

Observe the marked marking of the position of the eccentric bolt -arrow- to the assembly carrier!



– Tighten screw -1- for top suspension arm at wheel-bearing housing. The tightening torque must be applied via the screw, in order not to put the bearing under tension.



Note

The washer -2- must be fitted so that there is -arrow B- a gap between the washer and the cover plate -3-

– Hook cable -arrow A- for wheel speed sensor at top suspension arm.
– Install coil spring
⇒ “11.1 Removing and installing coil spring”, page 322 .
– Installing and tightening the wheel.
– Perform a test drive.
– Check the steering wheel position during the test drive.
– Carry out axle alignment ⇒ “2.3 Axle alignment”, page 338 .

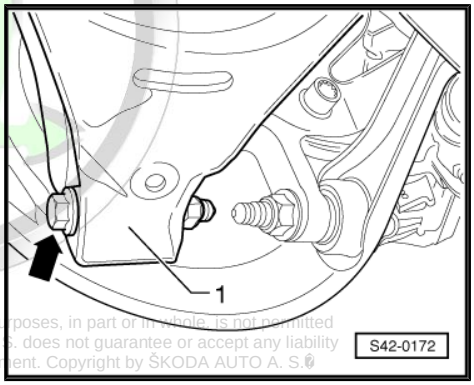
Tightening torques:

Top suspension arm to assembly carrier ♦ Use new nut! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	95 Nm
Top suspension arm to wheel-bearing housing ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	130 Nm + 90°
Wheel bolts	120 Nm

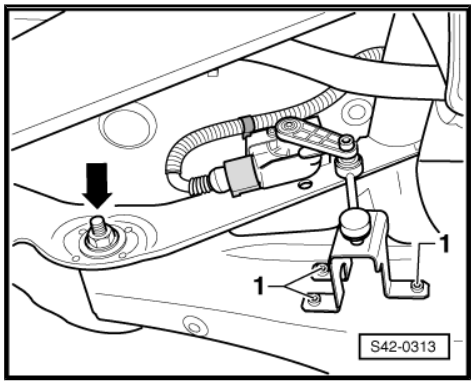
9.10 Removing and installing bottom suspension arm

Removing:

- Remove wheel.
- Unhook exhaust system at rear and lower.
- Remove coil spring
  ⇒ “11.1 Removing and installing coil spring”, page 322 .
- Release screw -arrow- for bottom suspension arm -1-.



- Remove the screws -1- for the bracket of the rear left vehicle level sensor - G76- on vehicles fitted with automatic headlight range control.
- Mark the position of the eccentric bolt -arrow- to the assembly carrier (e.g with a felt-tip pen).
- Unscrew plug -arrow-.
- Remove bottom suspension arm.



Installing:

Installation is carried out in the reverse order. Pay attention to the following:

- Insert bottom suspension arm into the vehicle and tighten the screws by hand.

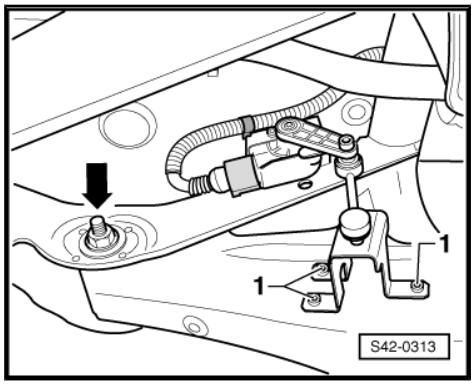
Note

The bolted connection of the bottom suspension arm must only be performed, if the measured dimension “a” between the wheel hub centre and the lower edge of the wheel house is respected (unladen weight position)!
⇒ “1.2 Rear axle in unladen weight position”, page 177 .

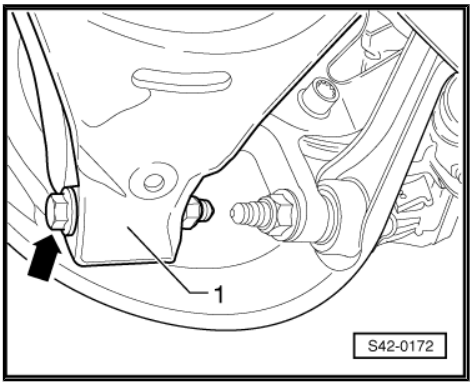
- Screw bottom suspension arm onto the assembly carrier and tighten the nuts to tightening torque.

Observe the marked marking of the eccentric bolt -arrow- to the assembly carrier!

- Install the screws -1- for the bracket of the rear left vehicle level sensor - G76- on vehicles fitted with automatic headlight range control.



– Tighten screw -arrow- for bottom suspension arm -1-.
– Install coil spring
⇒ “11.1 Removing and installing coil spring”, page 322 .
– Hook on exhaust system at rear.
– Installing and tightening the wheel.
– Perform a test drive.
– Check the steering wheel position during the test drive.
– Carry out axle alignment ⇒ “2.3 Axle alignment”, page 338 .



Vehicles with automatic headlight range control:

– Carry out the basic setting of the headlight range control unit - J431- ⇒ Vehicle diagnostic tester in the function “Targeted fault finding”.

Tightening torques:

Bottom suspension arm to assembly carrier ♦ Use new nut! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	95 Nm
Bottom suspension arm to wheel-bearing housing ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	90 Nm + 90°
Wheel bolts	120 Nm

9.11 Removing and installing track rod for rear axle

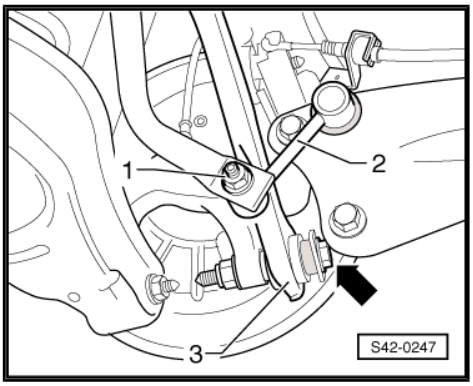
Removing:

– Remove wheel.

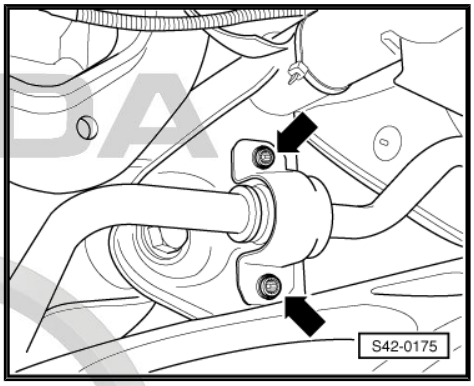
– Remove coil spring
⇒ “11.1 Removing and installing coil spring”, page 322 .

– Unscrew nut -1- and pull screw out of anti-roll bar and coupling rod -2-.

– Unscrew screw -arrow- for track rod for rear axle -3-.

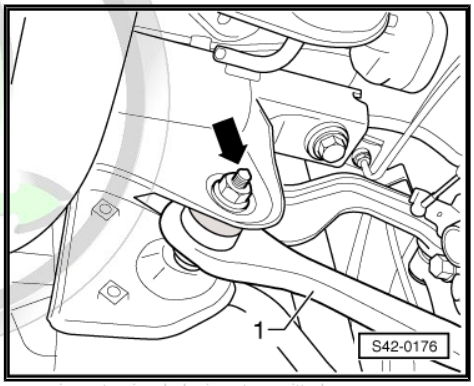


– Unscrew screws -arrows- for clamp of anti-roll bar.



– Unscrew nut -arrow- and remove screw towards the rear

– Remove track rod for rear axle.



Installing:

Installation is carried out in the reverse order. Pay attention to the following:

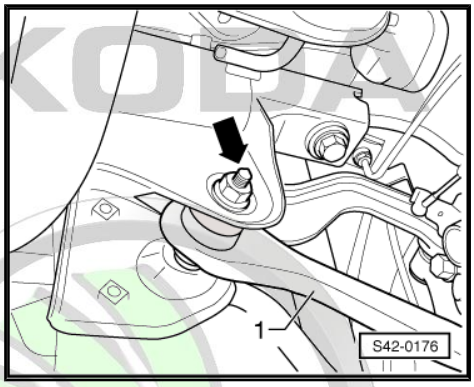
– Insert track rod for rear axle into the vehicle and tighten the screws by hand.

Note

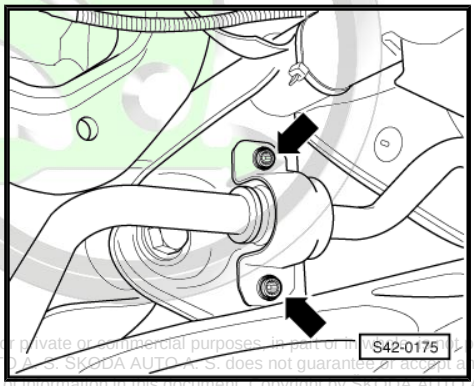
♦ *Note of the different versions of the track rods: open downwards or closed in the driving direction ⇒ page 263 . A combined installation is allowed.*

♦ *The screwing of the track rod for rear axle and the clamps of the anti-roll bar must only be performed, if the measured dimension “a” between the wheel hub centre and the lower edge of the wheel house is respected (unladen weight position)!*
⇒ “1.2 Rear axle in unladen weight position”, page 177 .

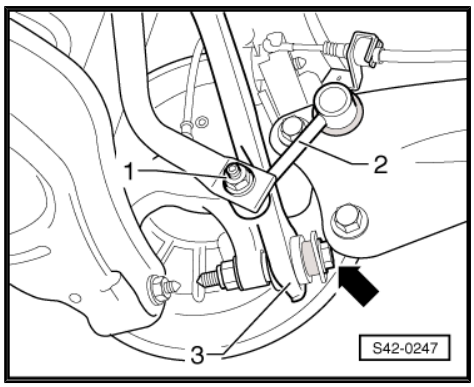
– Screw track rod for rear axle onto the assembly carrier and tighten the nut.



– Tighten screws -arrows- for the clamp of the anti-roll bar alternatively and uniformly.



– Tighten screw -arrow- for track rod for rear axle -3-.
– Insert coupling rod -2- with new screw in anti-roll bar and tighten the new nut -1-.
– Install coil spring
⇒ “11.1 Removing and installing coil spring”, page 322 .
– Installing and tightening the wheel.
– Perform a test drive.
– Check the steering wheel position during the test drive.
– Carry out axle alignment ⇒ “2.3 Axle alignment”, page 338 .



Tightening torques:

Track rod for rear axle to assembly carrier ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	90 Nm + 90°
Track rod for rear axle to wheel-bearing housing ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	130 Nm + 90°
Clamp of anti-roll bar to assembly carrier ♦ Use new screws! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177 ♦ tighten bolts alternatively and evenly.	25 Nm + 90°
Coupling rod to anti-roll bar ♦ Use new nut!	45 Nm
Wheel bolts	120 Nm

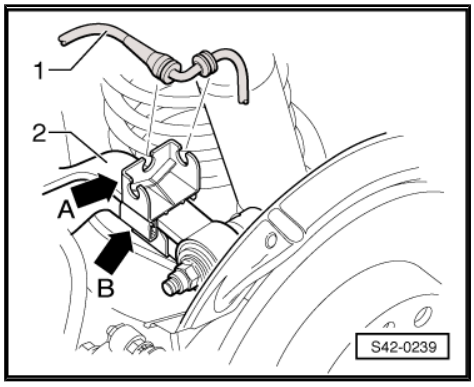
9.12 Removing and installing bracket for the speed sensor cable

Removing:

– Unclip speed sensor cable -1- from the holder.

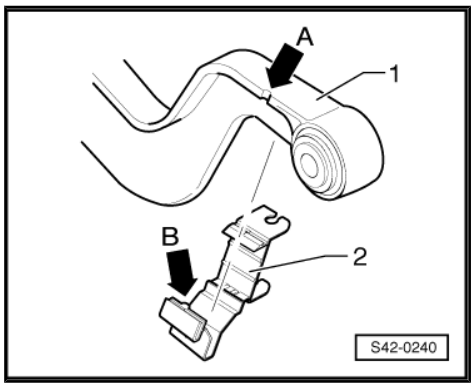
– Unclip the top part of the holder -arrow A- from the tab -arrow B- and open the holder.

– Remove the holder from the top suspension arm -2-.



Installing:

– Push the opened holder -2- from below onto the top suspension arm -1-.



Note

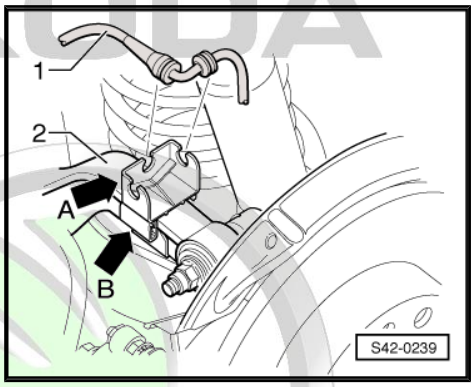
The surrounding components are not shown in the illustration for purposes of clear presentation.

– Insert the holder at the top suspension arm and position the holder in such a way, that the dent -arrow B- and the recess -arrow A- are flush.

– Close holder.

– Interlock the top part of the holder -arrow°A- with the tab -arrow°B-.

– Clip the speed sensor cable -1- into the holder.



10 Summary of components: Wheel-bearing housing, trailing arm (vehicles with front-wheel drive)

⇒ “10.1 Removing and installing wheel bearing housing”, page 302 .

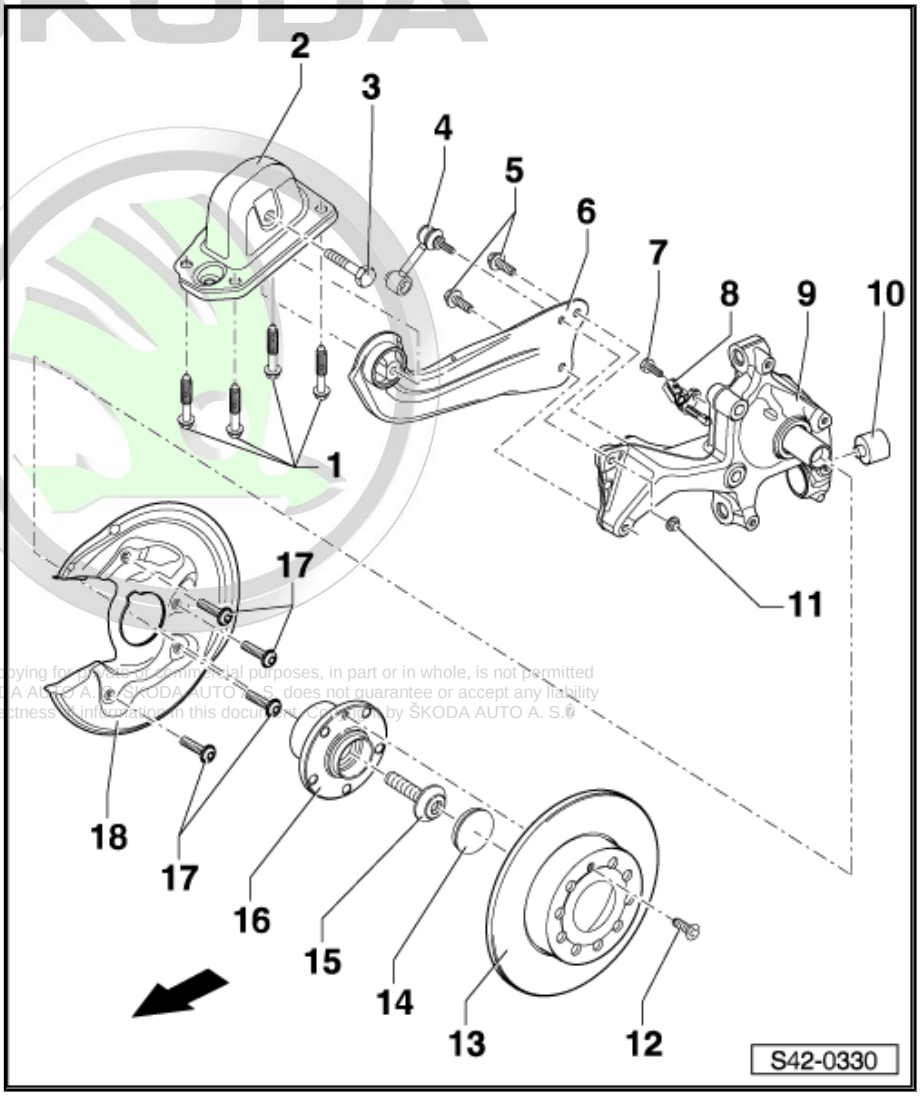
⇒ “10.2 Replacing the rubber-metal bearing for wheel-bearing housing”, page 307 .

⇒ “10.3 Removing and installing the wheel hub with wheel bearing ”, page 311 .

⇒ “10.4 Removing and installing trailing arm with bracket”, page 314 .

⇒ “10.5 Repairing trailing arm”, page 319 .

The -arrow- shows the direction of travel.



1 - Screw

- ❑ replace after each removal
- ❑ 50 Nm + 45°

2 - Bearing bracket

3 - Screw

- ❑ replace after each removal
- ❑ determine ⇒ page 304 the fitting position of the bracket to the trailing arm before tightening the screw
- ❑ 90 Nm + 90°

4 - Coupling rod

- ❑ connects anti-roll bar with trailing arm/wheel-bearing housing

5 - Screw

- ❑ observe the order of tightening up ⇒ page 304
- ❑ replace after each removal
- ❑ determine ⇒ page 304 the fitting position of the trailing arm to the wheel-bearing housing before tightening the screws
- ❑ 90 Nm + 45°

6 - Trailing arm

- ❑ removing and installing ⇒ “10.4 Removing and installing trailing arm with bracket”, page 314
- ❑ repairing ⇒ “10.5 Repairing trailing arm”, page 319

7 - Screw

- ❑ 8 Nm

8 - Rear right wheel speed sensor - G44- / Rear left wheel speed sensor - G46-

- ❑ can be checked ⇒ Vehicle diagnostic tester in the guided fault detection system
- ❑ Clean the inner surface of the hole before inserting the sensor and coat with a solid lubricant paste - G 000 650 - .

9 - Wheel-bearing housing

- ❑ removing and installing ⇒ “10.1 Removing and installing wheel bearing housing”, page 302

10 - Rubber-metal bearing

- ❑ Renew. ⇒ “10.2 Replacing the rubber-metal bearing for wheel-bearing housing”, page 307 .

11 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 45 Nm

12 - Screw

- ❑ 4 Nm

13 - Brake disc

14 - Cap

- ❑ replace after each removal
- ❑ extracting and inserting
  ⇒ “10.3 Removing and installing the wheel hub with wheel bearing ”, page 311

a professional seal can only be achieved with a new cap

15 - Screw

- ❑ replace after each removal
- ❑ 180 Nm + 180°

16 - Wheel hub with wheel bearing

- ❑ Sensor ring for ABS is built into the wheel hub
- ❑ removing and installing ⇒ “10.3 Removing and installing the wheel hub with wheel bearing ”, page 311

Wheel hub and wheel bearing form one unit. It is clearance free, adjusting and repairs are not possible.

17 - Screw

- ❑ 12 Nm

18 - Protection plate

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

10.1 Removing and installing wheel bearing housing

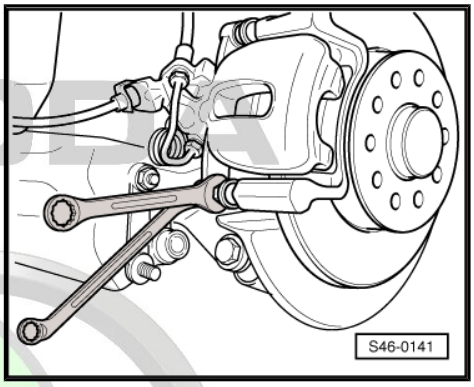
Removing:

– Remove wheel.

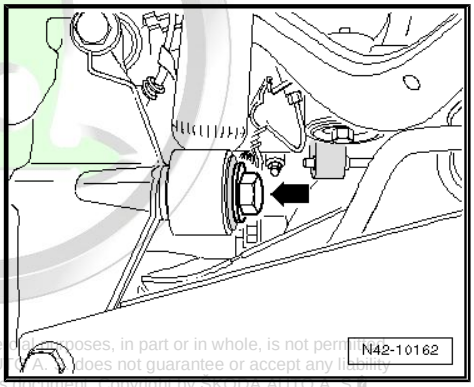
– Remove coil spring
⇒ “11.1 Removing and installing coil spring”, page 322 .

– Unscrew fixing screw of the drive shaft
⇒ “7.1 Removing and installing fixing screw of drive shaft - twelve-sided bolt”, page 243 .

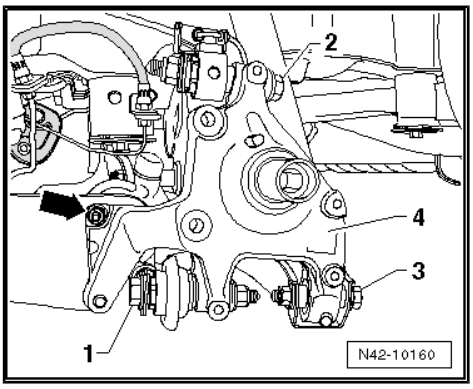
– Remove brake calliper: Unscrew the fixing screws of the brake carrier while counterholding the guide bolts.
– Remove the brake caliper and e.g. secure with wire in such a way that the weight of the brake caliper does not burden the brake hose.
– Remove brake disc.
– Removing the wheel hub with wheel bearing ⇒ “10.3 Removing and installing the wheel hub with wheel bearing ”, page 311 .
– Remove cover plate.
– Remove the ABS-speed sensor from the wheel bearing housing.



– Unscrew screw for shock absorber mounting -arrow-.



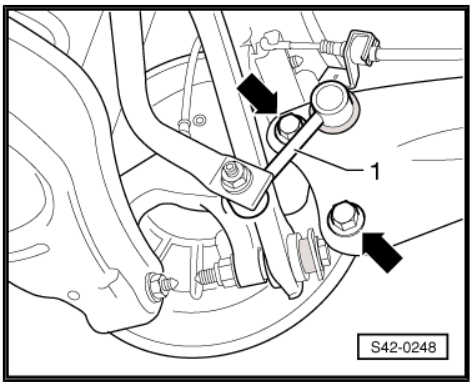
– Unscrew the nut of the coupling rod -arrow-.
– Unscrew screw for track rod for rear axle -1-, top suspension arm -2- and bottom suspension arm -3- from wheel-bearing housing -4-.



– Hold the wheel-bearing housing and unscrew screws -arrows-.
– Take the wheel-bearing housing out of the coupling rod joint thread -1-.
– Remove the wheel bearing housing.

Installing:

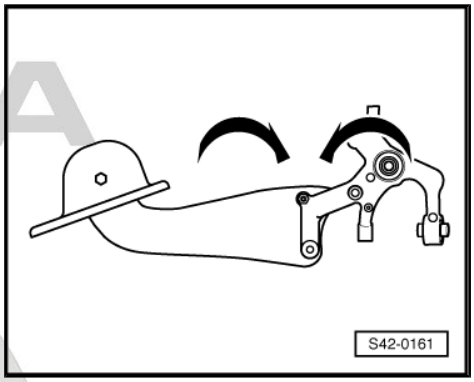
Installation is carried out in the reverse order. Pay attention to the following:



Note

Pay attention to correct installation position of trailing arm and wheel-bearing housing.

Installation position of trailing arm and wheel-bearing housing.

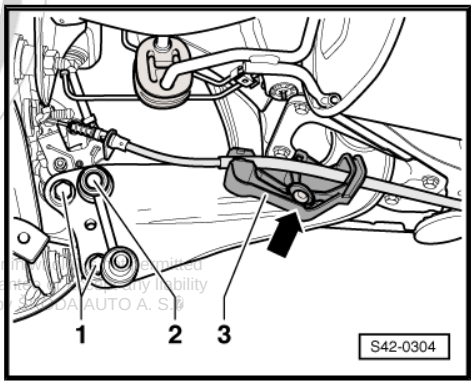


The screwed connection of the trailing arm/wheel-bearing housing must only be tightened if all other components (spring and shock absorber are required) of the wheel suspension in question are already fitted. For tightening, the wheel-bearing housing must be in the unladen weight position
⇒ “1.2 Rear axle in unladen weight position”, page 177 . Only move the trailing arm and the wheel-bearing housing into the necessary position for tightening the screwed connection -arrows- under these conditions.

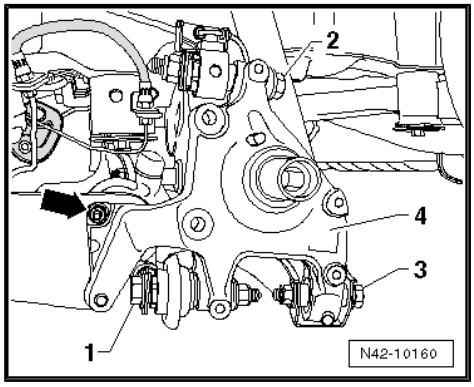
Note

Note the following work steps and absolutely ensure that you follow the sequence!

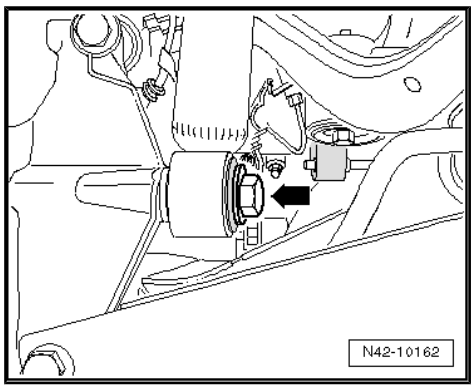
– Screw wheel-bearing housing with screws -1- onto trailing arm and coupling rod -2-, but do not tighten the screws and the nut yet!



– Screw the track rod for rear axle -1-, top suspension arm -2- and bottom suspension arm -3- to the wheel-bearing housing -4- but do not tighten yet!
– Install cover plate.
– Installing the wheel hub with wheel bearing
⇒ “10.3 Removing and installing the wheel hub with wheel bearing ”, page 311 .



– Screw in screw for shock absorber mounting -arrow-, but do not tighten yet!
– Install coil spring
⇒ “11.1 Removing and installing coil spring”, page 322 .

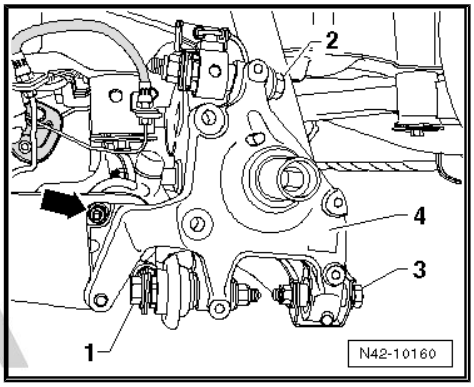


Note

The tightening of the track control arm and shock absorber to the wheel-bearing housing must only be performed, if the dimension “a” between the wheel hub centre and the lower edge of the wheel house is respected (unladen weight position)!
⇒ “1.2 Rear axle in unladen weight position”, page 177 .

– Adjust dimension -a-
⇒ “1.2 Rear axle in unladen weight position”, page 177 .

– Tighten screw for track rod for rear axle -1-.
– Tighten screw for bottom suspension arm -3-.

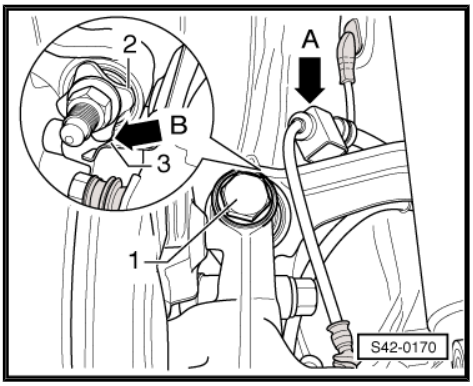


– Tighten screw -1- for top suspension arm.

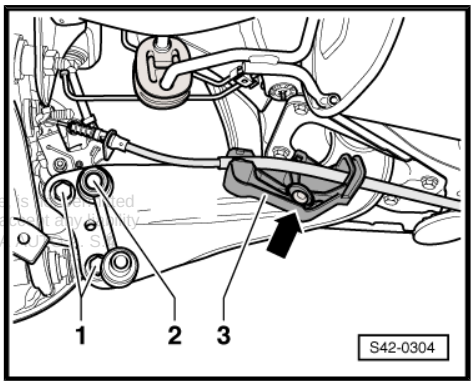
Note

The washer -2- must be fitted so that there is -arrow B- a gap between the washer and the cover plate -3-

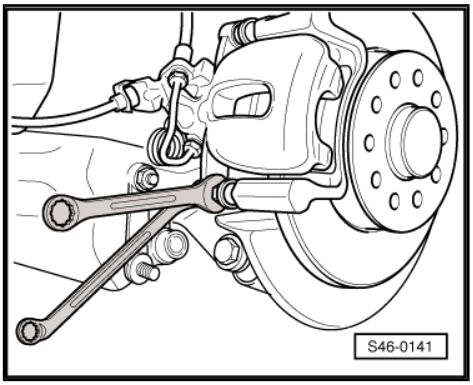
– Tighten screw for shock absorber mounting.



– Tighten screws -1- of trailing arm with tightening torque, while doing so pay attention to the required position of the trailing arm and wheel-bearing housing ⇒ page 304 .
– Tighten nut of coupling rod -2- to wheel-bearing housing.
– Remove tools for adjusting the dimension -a-.
– Install the ABS-speed sensor in the wheel-bearing housing.
– Install brake disc.



– Install brake caliper: Screw the fixing screws into the brake carrier while counterholding the guide bolt.
– Perform a test drive.
– Check the steering wheel position during the test drive.
– Carry out axle alignment ⇒ “2.3 Axle alignment”, page 338 .



Tightening torques:

Shock absorber to wheel-bearing housing ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	130 Nm + 90°
Speed sensor to wheel-bearing housing	8 Nm
Cover plate to wheel-bearing housing	12 Nm
Bottom suspension arm to wheel-bearing housing ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	90 Nm + 90°
Top suspension arm to wheel-bearing housing ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	130 Nm + 90°
Track rod for rear axle to wheel-bearing housing ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	130 Nm + 90°
Trailing arm to wheel-bearing housing ♦ Use new screws! ♦ Determine ⇒ page 304 the fitting position of the trailing arm to the wheel-bearing housing before tightening the screws	90 Nm + 45°
Coupling rod ♦ Use new nut!	45 Nm
Brake caliper to brake carrier	35 Nm
Wheel bolts	120 Nm

10.2 Replacing the rubber-metal bearing for wheel-bearing housing

Special tools and workshop equipment required

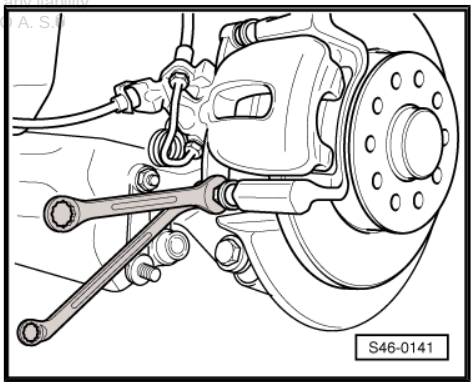
- Nut - MP5-401/3 (3346)-
- Screw - MP5-401/2 (3346)-
- Pipe section - MP5-402/3 (3301)-
- Assembly device - MP5-402 (3301)-
- Assembly device - T30017/1 (3350)-
- Assembly device - T30017/2 (3350)-
- Pipe - T30034 (41-501)-
- Press-in ring - MP3-483 (30204)-

Removing:

– Remove wheel.

– Remove coil spring
⇒ “11.1 Removing and installing coil spring”, page 322 .

– Remove brake calliper: Unscrew the fixing screws of the brake carrier while counterholding the guide bolts.



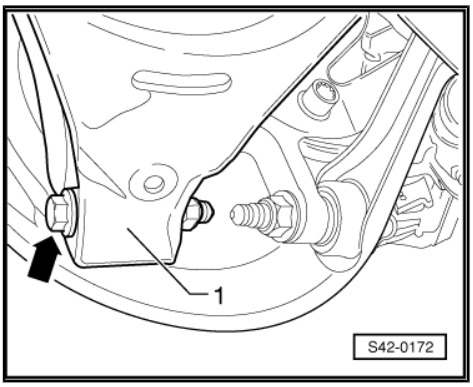
– Remove the brake caliper and e.g. secure with wire in such a way that the weight of the brake caliper does not burden the brake hose.

– Screw out the Phillips head screws of the brake disc and remove brake disc.

– Removing the wheel hub with wheel bearing
⇒ “10.3 Removing and installing the wheel hub with wheel bearing ”, page 311 .

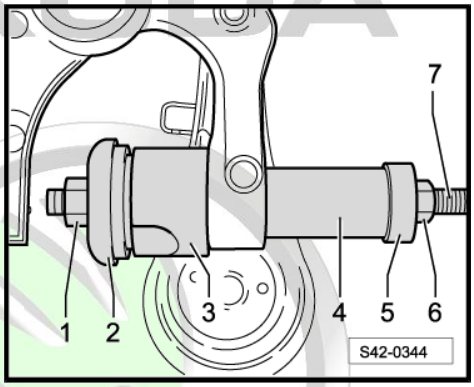
– Remove cover plate.

– Release screw -arrow- for bottom suspension arm -1-.



Pulling out the rubber-metal bearing:

– Position the special tools as shown in the figure.

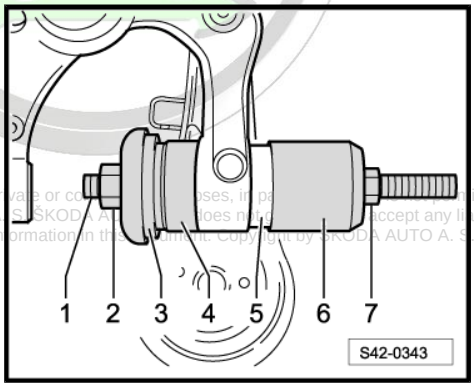


1 - Nut - MP5-401/3 (3346)-
2 - Assembly device - MP5-402 (3301)-
3 - Pipe section - MP5-402/3 (3301)-
4 - Pipe - T30034 (41-501)-
5 - Assembly device - T30017/1 (3350)-
6 - Nut, commercially available
7 - Screw - MP5-401/2 (3346)-

– Pull out rubber-metal bearing by turning the nut -1-.

Inserting the rubber-metal bearing:

– Position the special tools as shown in the figure.



1 - Screw - MP5-401/2 (3346)-
2 - Nut - MP5-401/3 (3346)-
3 - Assembly device - MP5-402 (3301)-
4 - Assembly device - T30017/2 (3350)-
5 - Rubber-metal bearing
6 - Press-in ring - MP3-483 (30-204)-
7 - Nut, commercially available

Note

- *Do not use any lubricant!*
- *Carefully insert the rubber-metal bearing, so that it does not tilt.*

– Insert the rubber-metal bearing -5- by turning the nut -2-.

Installing:

– Install cover plate.

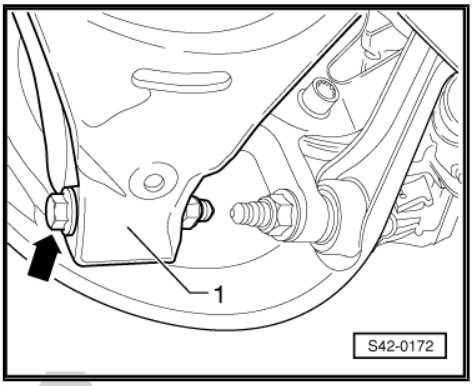
– Installing the wheel hub with wheel bearing
⇒ “10.3 Removing and installing the wheel hub with wheel bearing ”, page 311 .

Note

The tightening of the track control arm and shock absorber to the wheel-bearing housing must only be performed, if the dimension “a” between the wheel hub centre and the lower edge of the wheel house is respected (unladen weight position)!
⇒ “1.2 Rear axle in unladen weight position”, page 177 .

– Adjust dimension -a-
⇒ “1.2 Rear axle in unladen weight position”, page 177 .

– Tighten screw -arrow- for bottom suspension arm -1-.
– Install coil spring
⇒ “11.1 Removing and installing coil spring”, page 322 .
– Install brake disc.
– Install brake caliper with brake carrier ⇒ Brake systems; Rep. gr. 46 .
– Installing and tightening the wheel.



Tightening torques:

Wheel bearing/wheel bearing unit to wheel bearing housing ♦ Use new screw!	180 Nm + 180°
Bottom suspension arm to wheel-bearing housing ♦ Use new screws and nuts! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	90 Nm + 90°
Phillips head screw for front brake disc	4 Nm
Cover plate to wheel-bearing housing	12 Nm
Wheel bolts	120 Nm

10.3 Removing and installing the wheel hub with wheel bearing

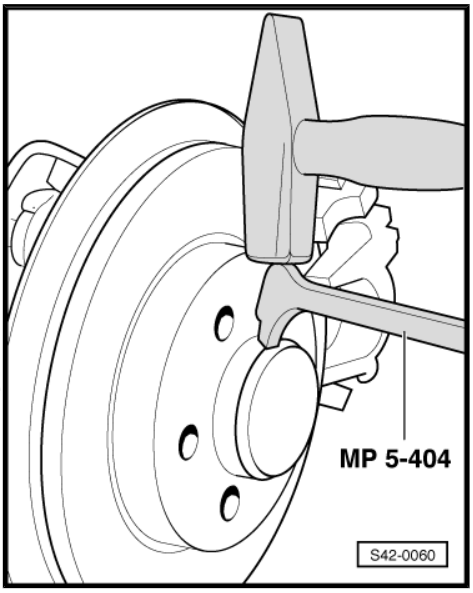
Special tools and workshop equipment required

- Insertion sleeve - MP1-228 (3241)-
- Hub cap extractor - MP5-404 (VW 637/2)-
- Socket insert XZN 18 - T10162-

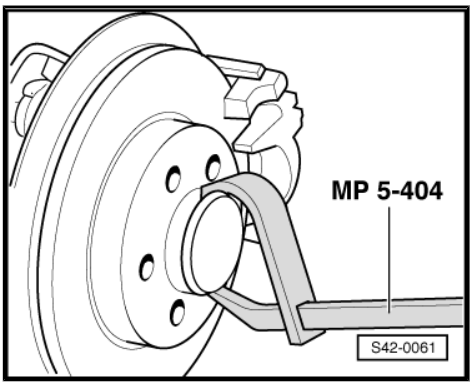
Removing:

– Remove wheel.

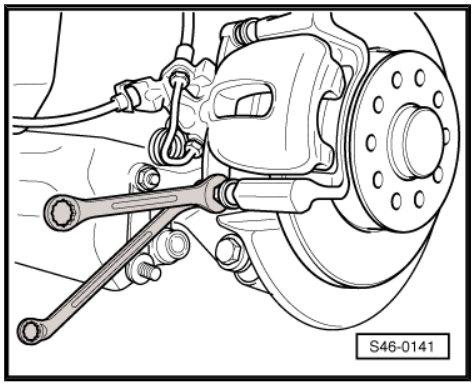
– Release dust cap from its position by gently tapping the claw of the hub cap extractor - MP5-404 (VW 637/2) - .



– Press off dust cap.



– Remove brake calliper: Unscrew the fixing screws of the brake carrier while counterholding the guide bolts.
– Remove the brake caliper and e.g. secure with wire in such a way that the weight of the brake caliper does not burden the brake hose.



Note

Do not hang the brake caliper on the brake hose.

– Screw out the Phillips head screws of the brake disc and remove brake disc.
– Unscrew splined nut with socket insert XZN 18 - T10162- .
– Removing the wheel hub with wheel bearing.

Installing:

– Carefully push the wheel hub with the wheel bearing onto the axle stud.

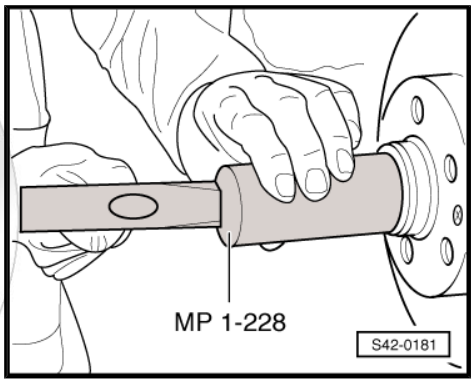
Ensure that the wheel hub with the wheel bearing does not tilt on the axle stud.

– Screw in splined nut with socket insert XZN 18 - T10162- .

Note

- *First of all tighten screw with the torque wrench to the given tightening torque.*
- *Use a rigid wrench for tightening to the torquing angle.*

– Drive in the dust cap with insertion sleeve - MP1-228 (3241)- .



Note

- *Always replace dust caps.*
- *Damaged dust caps allow moisture to penetrate. Therefore absolutely use the shown tool.*

Further installation occurs in reverse order.

– Install brake caliper with brake carrier ⇒ Brake systems; Rep. gr. 46 .
– Installing and tightening the wheel.

Tightening torques:

Wheel bearing/wheel bearing unit to wheel bearing housing ♦ Use new screws!	180 Nm + 180°
Phillips head screw for front brake disc	4 Nm
Brake caliper to brake carrier	35 Nm
Wheel bolts	120 Nm

10.4 Removing and installing trailing arm with bracket

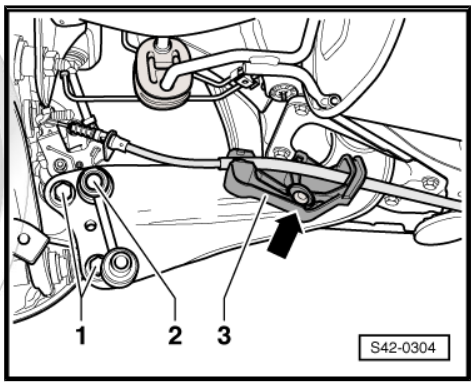
Special tools and workshop equipment required

- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-

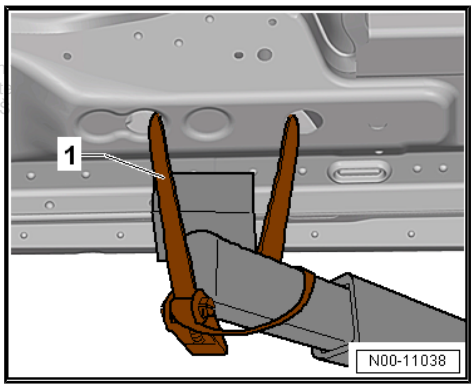
Removing:

– Remove wheel.

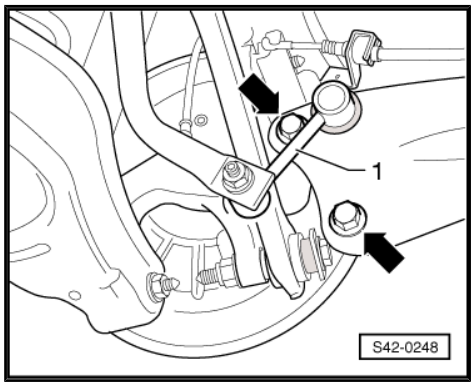
– Remove holder for hand brake cable from trailing arm -arrow- (screw or expanding rivet - depending on the design).



– Use tensioning straps - T10038- to strap vehicle to support beams of lifting platform on both sides.



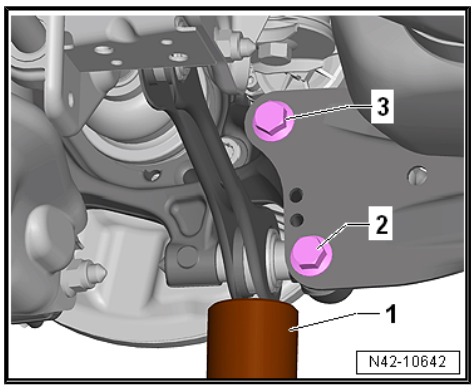
– Remove coupling rod -1- from anti-roll bar and trailing arm with wheel-bearing housing.



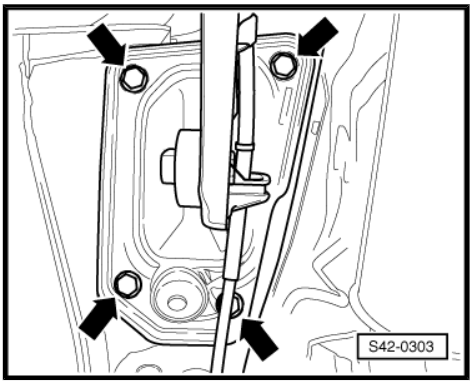
– Place the engine and gearbox jack e.g. -V.A.G 1383/A- or -VAS6931- -1- underneath the track rod and raise slightly.

– Remove screw -2- and -3-.

– Remove the engine and gearbox jack e.g. -V.A.G 1383/A- or -VAS6931- -1- under the track rod.



– Mark the installed position of the bracket on the body.
– Release the screws of the bracket -arrows-.
– Remove the trailing arm with the bracket.



Replace the trailing arm:

If the trailing arm should be replaced, the bracket must be removed from the trailing arm.

The installation position of the bracket to the trailing arm must then be adjusted.

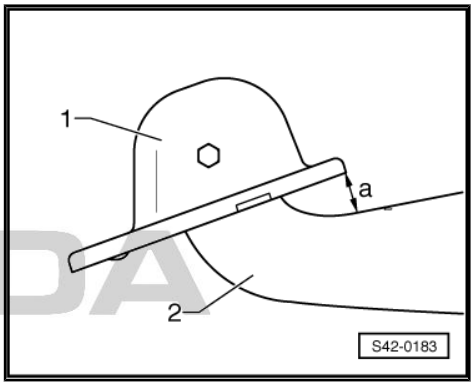
Determine the fitting position of the bracket to the trailing arm:

The dimension -a- is 34 ± 1 mm.

1 - Bearing bracket

2 - Trailing arm

– If the dimension -a- is adjusted, tighten the screw.



Installing:

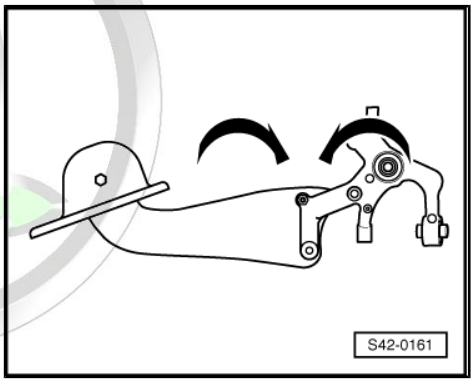
Installation is carried out in the reverse order. Pay attention to the following:

Note

Pay attention to correct installation position of trailing arm and wheel-bearing housing.

Installation position of trailing arm and wheel-bearing housing:

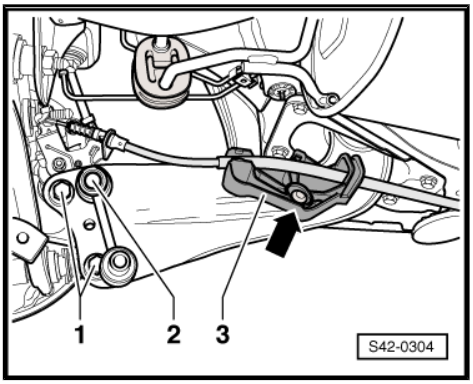
The screwed connection of the trailing arm/wheel-bearing housing must only be tightened if all other components (spring and shock absorber are required) of the wheel suspension in question are already fitted. For tightening, the wheel-bearing housing must be in the unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177 . Only move the trailing arm and the wheel-bearing housing into the necessary position for tightening the screwed connection -arrows- under these conditions.



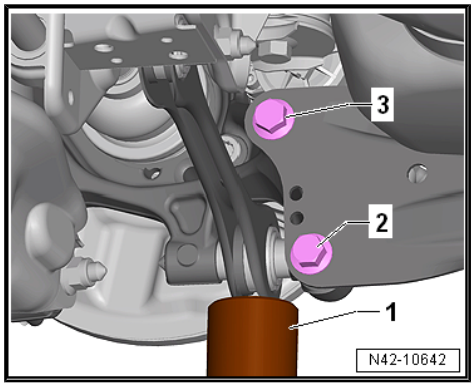
Note

Note the following work steps and absolutely ensure that you follow the sequence!

– Screw trailing arm including bracket with screws -1- onto the wheel-bearing housing, but do not tighten yet.
– Insert the coupling rod -2- into the trailing arm with wheel-bearing housing, but do not tighten the nut yet!

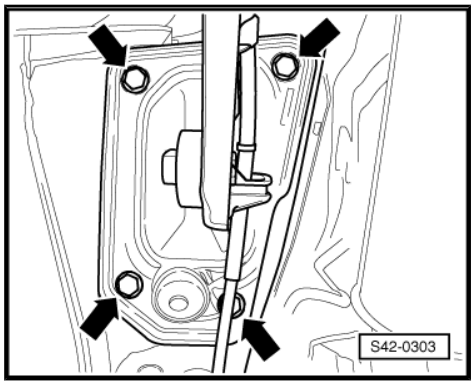


– Raise wheel-bearing housing with trailing arm using engine/ gearbox jack e.g. -V.A.G 1383A- or -VAS6931- -1- until the bracket rests on the body.

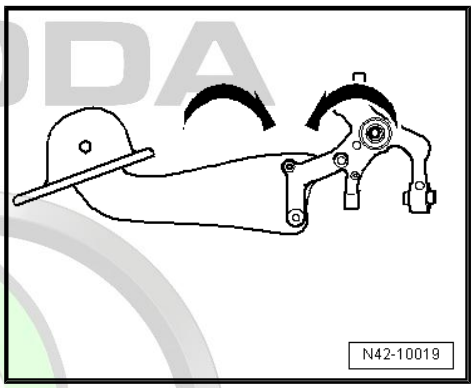


– Tighten screws -arrows- to the marked fitting location - to the “former positions”.

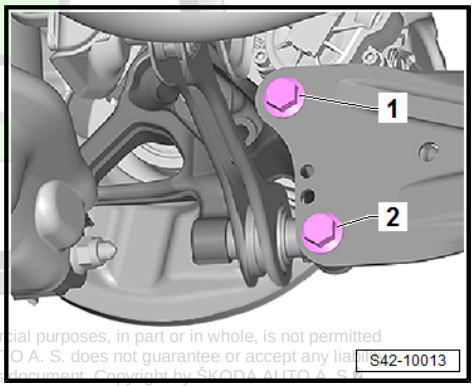
– Remove the engine/gearbox jack e.g. -V.A.G 1383A- or -VAS6931- from underneath the vehicle.



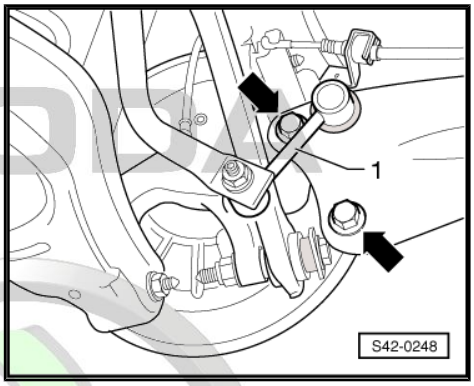
The screwed connection of the trailing arm/wheel-bearing housing must only be tightened if all other components (spring and shock absorber are required) of the wheel suspension in question are already fitted. The wheel suspension must be in the rebound state for tightening. Only in this state do the trailing arm and wheel bearing housing move into the necessary position -arrows-.



– Tighten screws -1- and -2- of trailing arm with tightening torque, while doing so pay attention to the required position of the trailing arm and wheel-bearing housing.



– Tighten coupling rod -1- at trailing arm and wheel-bearing housing and anti-roll bar to the tightening torque.
– Install holder for hand brake cable to trailing arm (screw or expanding rivet).
– Installing and tightening the wheel.
– Perform a test drive.
– Check the steering wheel position during the test drive.
– Carry out axle alignment ⇒ “2.3 Axle alignment”, page 338 .



Tightening torques:

Holder for hand brake cable to trailing arm	4 Nm
Trailing arm to bracket ♦ Use new screw! ♦ Observe the fitting position of the trailing arm to the bracket before tightening the screw ⇒ page 315 .	90 Nm + 90°
Trailing arm to wheel-bearing housing ♦ Use new screws! ♦ Observe the fitting position of the trailing arm with the wheel-bearing housing before tightening the screws ⇒ page 315 .	90 Nm + 45°
Mounting bracket on the body ♦ Use new screws!	50 Nm + 45°
Coupling rod ♦ Use new nut!	45 Nm
Wheel bolts	120 Nm

10.5 Repairing trailing arm

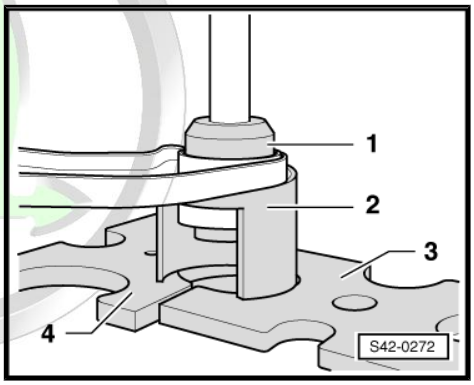
Special tools and workshop equipment required

- Assembly device - T10230/10-
- Ejection tool - T30082 (3372)-
- Pressure plate - MP3-406 (VW 401)-
- Pressure plate - MP3-407 (VW 402)-

Pulling out the rubber-metal bearing:

– Removing the trailing arm
⇒ “10.4 Removing and installing trailing arm with bracket”, page 314 .

– Position the special tools as shown in the figure.



1 - Assembly device - T10230/10-

2 - Ejection tool - T30082 (3372)-

3 - Pressure plate - MP3-406 (VW 401)-

4 - Pressure plate - MP3-407 (VW 402)-

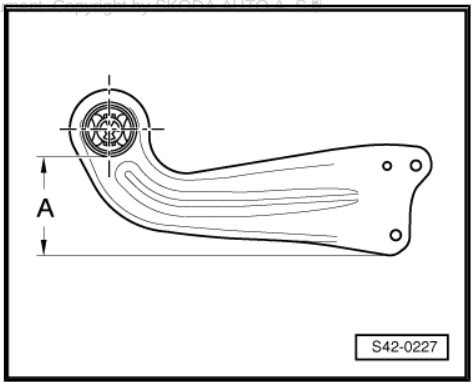
– Pulling out the rubber-metal bearing.

Inserting the rubber-metal bearing:

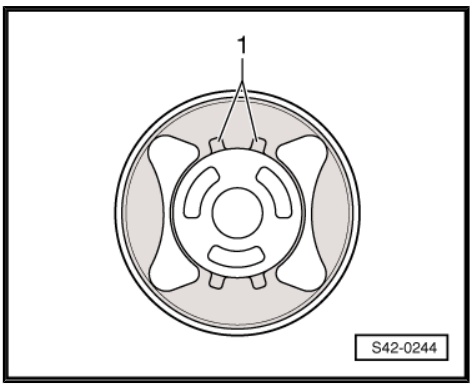
– Position the trailing arm on an even surface.

– Mark a vertical line on the bushing of the trailing arm.

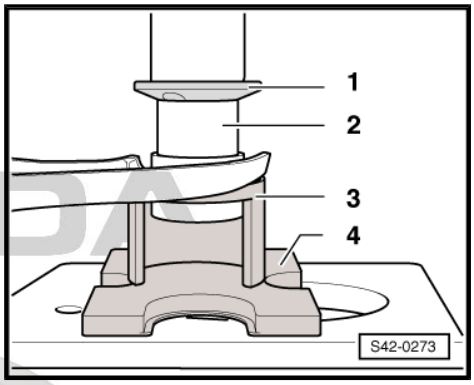
Dimension -A- = 114 mm



The marked line must be between the lobes -1- after inserting.



– Position the special tools as shown in the figure.



1 - Pressure plate e.g. -T10230/12- , the chamfer must point to the rubber-metal bearing.

2 - Rubber-metal bearing

3 - Ejection tool - T30082 (3372)-

4 - Pressure plate - MP3-407 (VW 402)-

– Insert the rubber-metal bearing flush.

– Install bracket at trailing arm
⇒ “10.4 Removing and installing trailing arm with bracket”, page 314 .

– Installing the trailing arm
⇒ “10.4 Removing and installing trailing arm with bracket”, page 314 .

– Perform a test drive.

– Check the steering wheel position during the test drive.

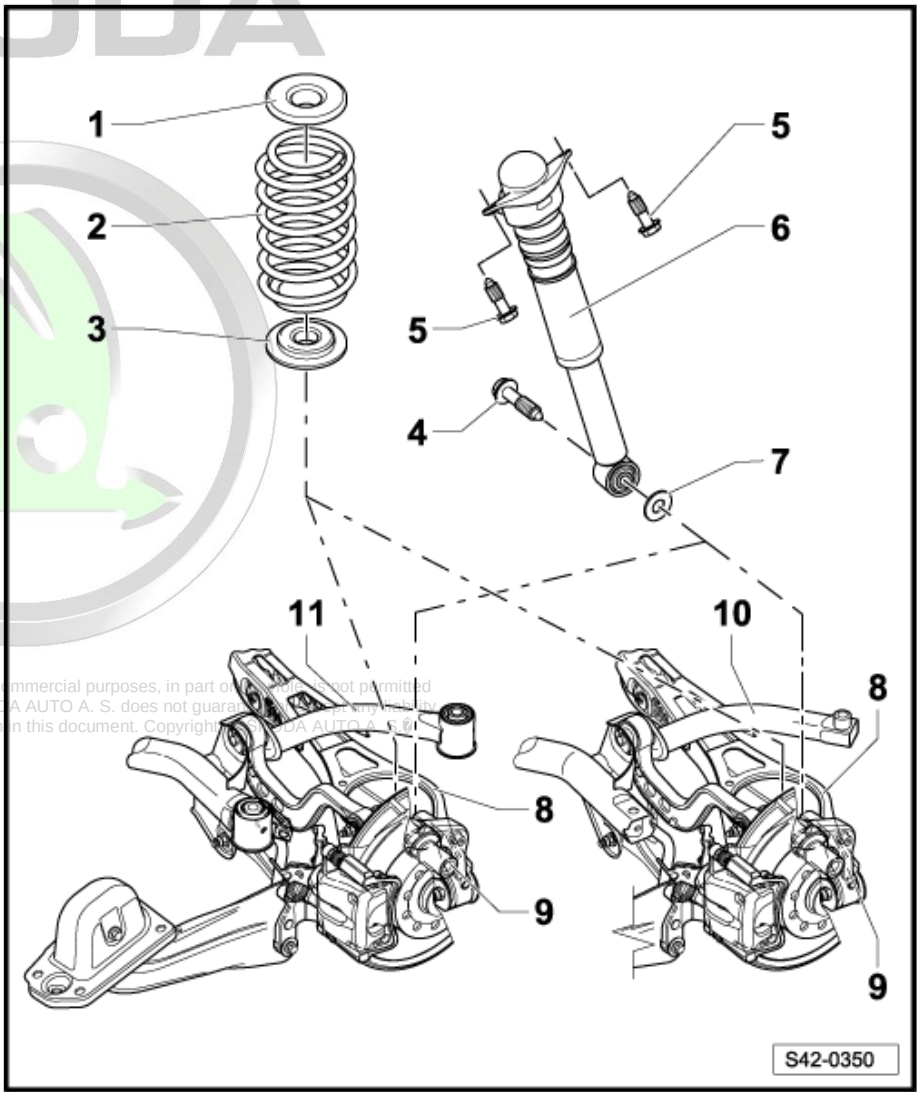
– Carry out axle alignment ⇒ “2.3 Axle alignment”, page 338 .

11 Summary of components: Shock absorber, helical spring (vehicles with front-wheel drive)

⇒ “11.1 Removing and installing coil spring”, page 322 .

⇒ “11.2 Removing and installing shock absorber”, page 324 .

⇒ “11.3 Repairing shock absorber”, page 327 .



1 - Top spring seat

2 - Coil spring

- ❑ removing and installing ⇒ “11.1 Removing and installing coil spring”, page 322
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

3 - Bottom spring seat

- ❑ Turn spring coil end up to the stop

4 - Screw

- ❑ Tighten in unladen weight position
- ❑ 130 Nm + 90°

5 - Screw

- ❑ replace after each removal
- ❑ 50 Nm + 45°

6 - Shock absorber

- ❑ removing and installing ⇒ “11.2 Removing and installing shock absorber”, page 324
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

7 - Washer

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

8 - Bottom suspension arm

- ❑ removing and installing ⇒ “9.10 Removing and installing bottom suspension arm”, page 294

9 - Wheel-bearing housing

- ❑ removing and installing ⇒ “10.1 Removing and installing wheel bearing housing”, page 302

10 - Assembly carrier

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing ⇒ “2.1 Removing and installing rear suspension”, page 181

11 - Assembly carrier

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing ⇒ “2.1 Removing and installing rear suspension”, page 181

11.1 Removing and installing coil spring

Special tools and workshop equipment required

- Tensioning device for the suspension struts , e.g. -V.A.G 1752-
- Spring holder , e.g. -V.A.G 1752/3A-
- Adapter e.g. -V.A.G 1752/9-

Removing:

– Remove wheel.

– Insert spring tensioning device -3-.

WARNING

Pay attention to the correct seating of the helical spring in the spring tensioner , e.g. -V.A.G 1752/3A- (risk of accident).

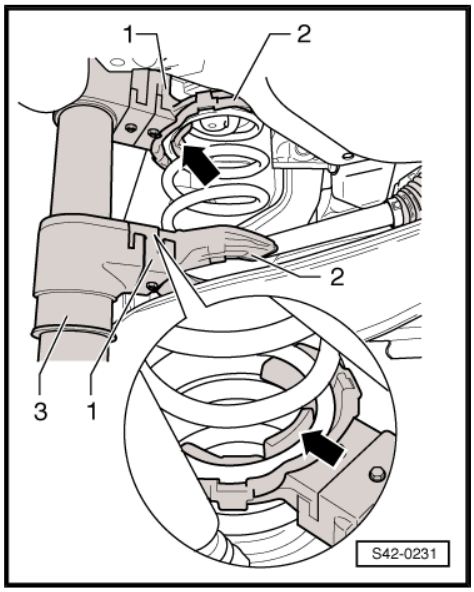
– Tension helical spring sufficiently until it can be taken out.

– Remove coil spring.

1 - Adapter e.g. -V.A.G 1752/9-

2 - Spring holder , e.g. -V.A.G 1752/3A-

3 - Spring tensioning device , e.g. -V.A.G 1752/1-

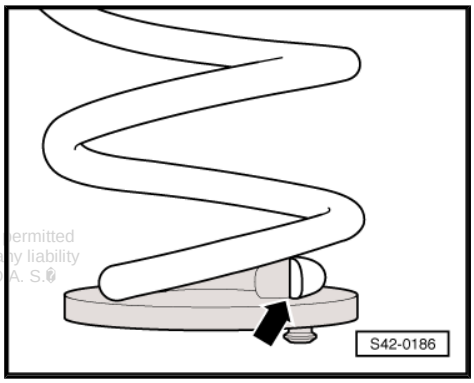


Installing:

Installation is carried out in the reverse order. Pay attention to the following:

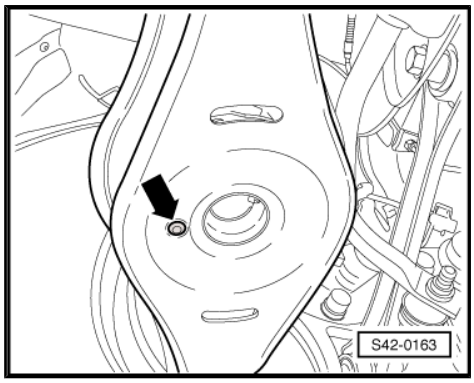
Note

The beginning of the spring -arrow- must be positioned at the stop of the bottom spring seat.



– Install the helical spring along with the spring seat.

– Insert the stud of the spring seat into the hole of the bottom suspension arm -arrow-.



Note

In the fig. the bottom suspension arm is illustrated without protection against stones.

– Insert top spring seat into the upper spring coil end.

– Slacken spring. While doing so, the top spring seat must be positioned onto the lug of the body.

– Remove spring tensioning device.

– Installing and tightening the wheel.

Specified torque:

Wheel bolts	120 Nm

11.2 Removing and installing shock absorber

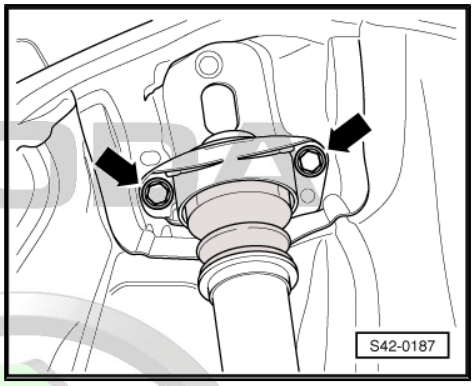
Removing:

– Remove wheel.

– Partly remove wheelhouse liner ⇒ Body Work; Rep. gr. 66 .

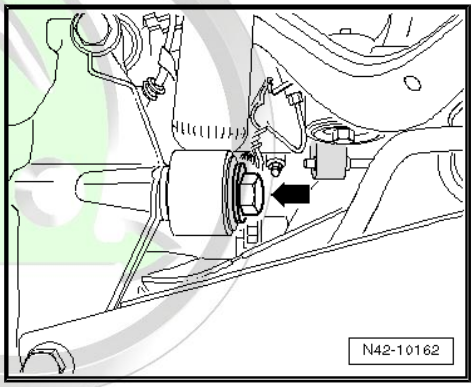
– Remove coil spring
⇒ “11.1 Removing and installing coil spring”, page 322 .

– Release screws -arrows-.



– Unscrew plug -arrow-.

– Take out shock absorber.



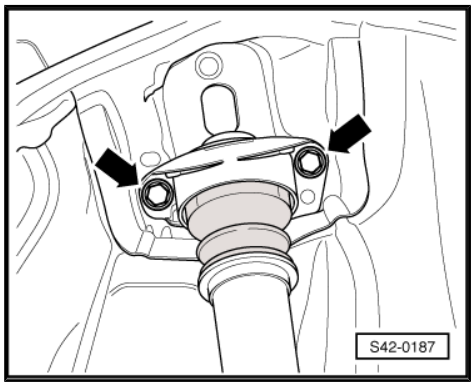
Installing:

Installation is carried out in the reverse order. Pay attention to the following:

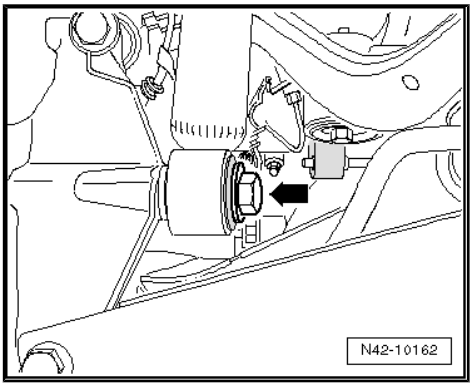
Note

The bolted connection of the shock absorber to the wheel-bearing housing must only be performed, if the dimension “a” between the wheel hub centre and the lower edge of the wheel house is respected (unladen weight position)!
⇒ “1.2 Rear axle in unladen weight position”, page 177

– Insert shock absorber and tighten screws -arrows-.



Tighten screw -arrow-.



– Install coil spring
  ⇒ “11.1 Removing and installing coil spring”, page 322 .
– Install wheelhouse liner ⇒ Body Work; Rep. gr. 66 .
– Installing and tightening the wheel.

Tightening torques:

Shock absorber to body ♦ Use new screws!	50 Nm + 45°
Shock absorber to wheel-bearing housing ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177	130 Nm + 90°
Wheel bolts	120 Nm

11.3 Repairing shock absorber

Special tools and workshop equipment required

♦ Shock absorber set - T10001-

1 - Shock absorber

- ❑ removing and installing ⇒ “11.2 Removing and installing shock absorber”, page 324
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

2 - Protective cap

3 - Protective tube

4 - Supporting ring

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

5 - Stop buffer

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

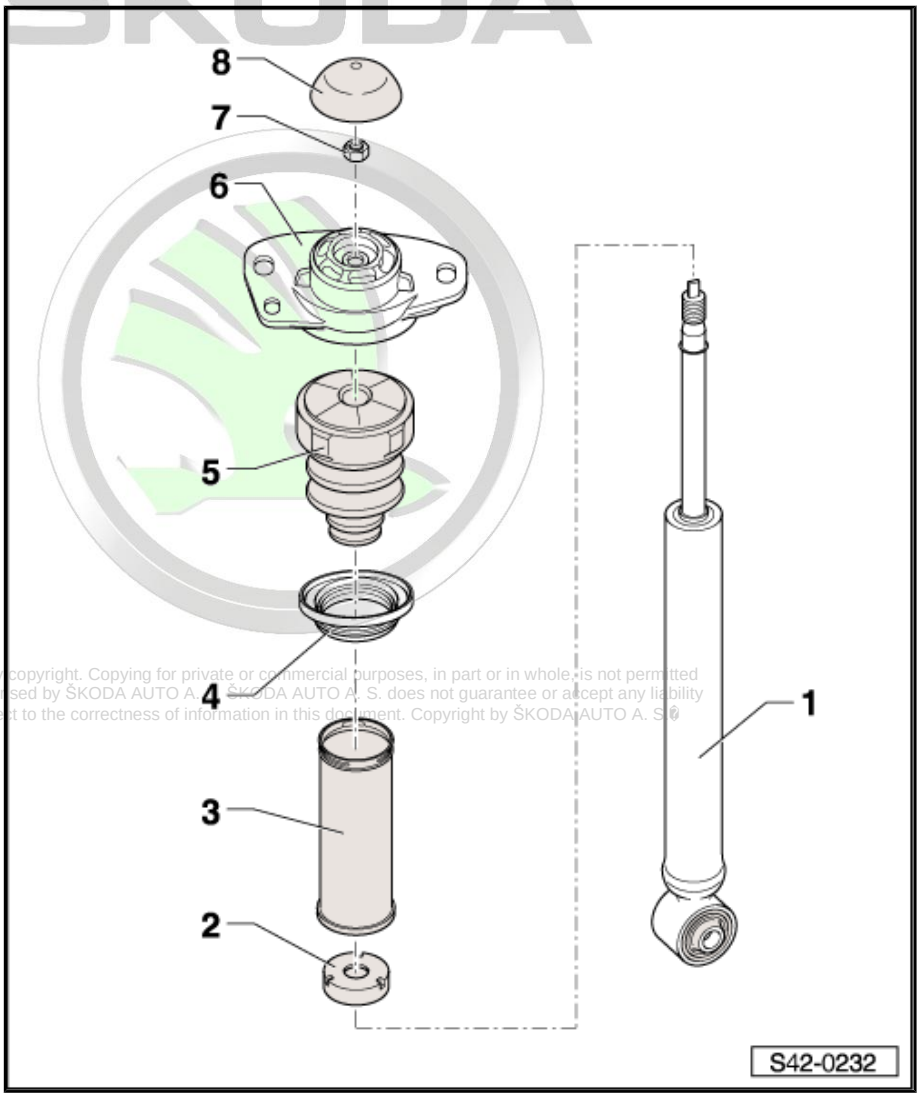
6 - Shock absorber bushing

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

7 - Nut

- ❑ replace after each removal
- ❑ slacken and tighten ⇒ “11.3.1 Release the screw connection of the shock absorber bushing and tighten up again”, page 327
- ❑ 25 Nm

8 - Cover



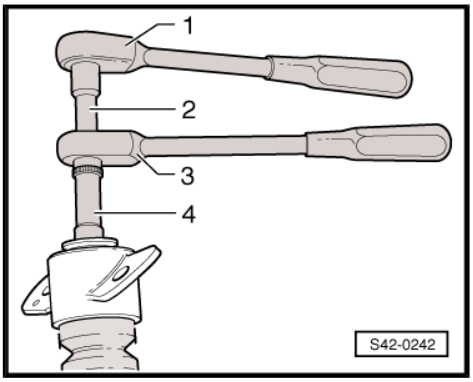
11.3.1 Release the screw connection of the shock absorber bushing and tighten up again

1 - Ratchet (commercially available)

2 - Tool - T10001/9-

3 - Ratchet - T10001/11-

4 - Tool - T10001/1-



Tightening torque:

Nut for shock absorber bushing to shock absorber	25 Nm

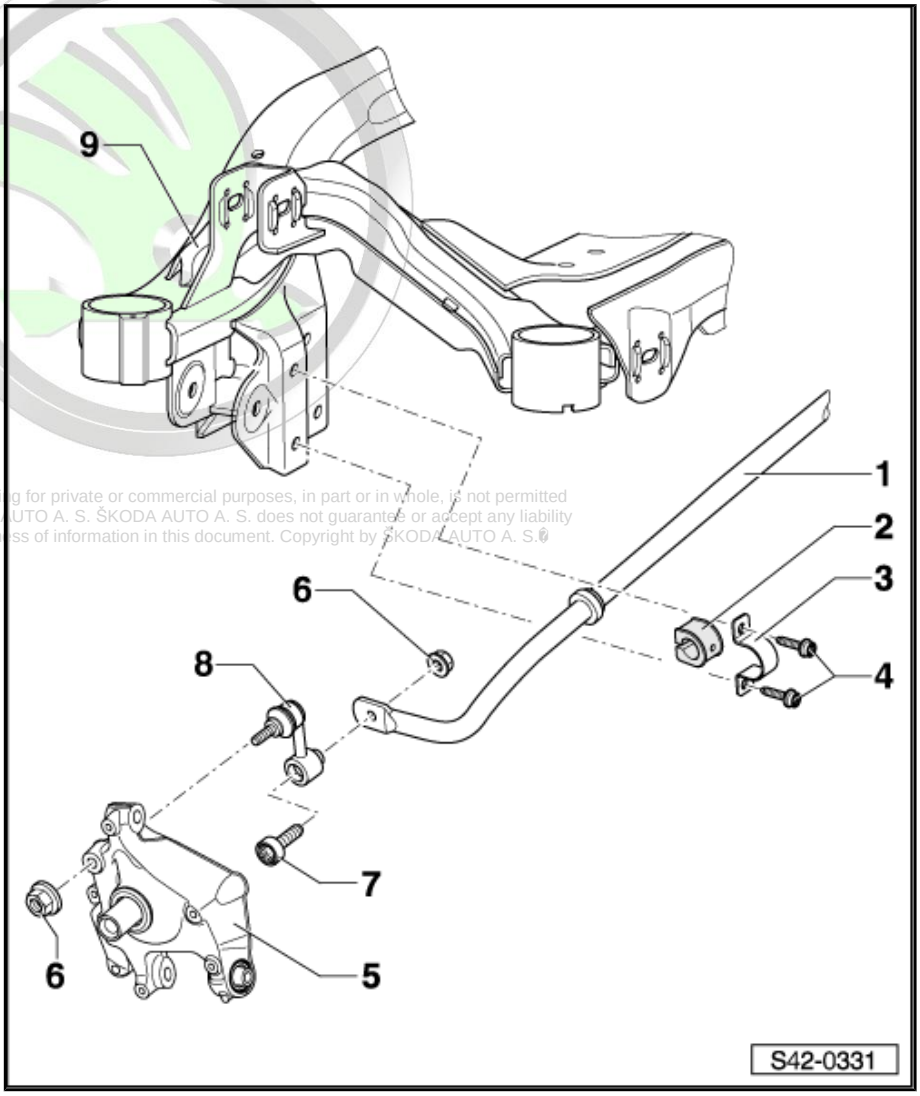
12 Summary of components: Anti-roll bar (vehicles with front-wheel drive)

⇒ “12.1 Summary of components: Anti-roll bar (vehicles with front-wheel-drive) up to CW 21/2010”, page 329 .

⇒ “12.2 Summary of components: Anti-roll bar (vehicles with front-wheel-drive) as of CW 22/2010”, page 330 .

⇒ “12.3 Removing and installing the anti-roll bar”, page 330 .

12.1 Summary of components: Anti-roll bar (vehicles with front-wheel-drive) up to CW 21/2010



1 - Anti-roll bar

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing ⇒ “12.3 Removing and installing the anti-roll bar”, page 330

2 - Bearings

- ❑ Always replace bearings on both sides of the vehicle

3 - Retaining clip

4 - Screw

- ❑ replace after each removal
- ❑ tighten in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ tighten bolts alternatively and evenly.
- ❑ 20 Nm + 90°

5 - Wheel-bearing housing

6 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 45 Nm

7 - Screw

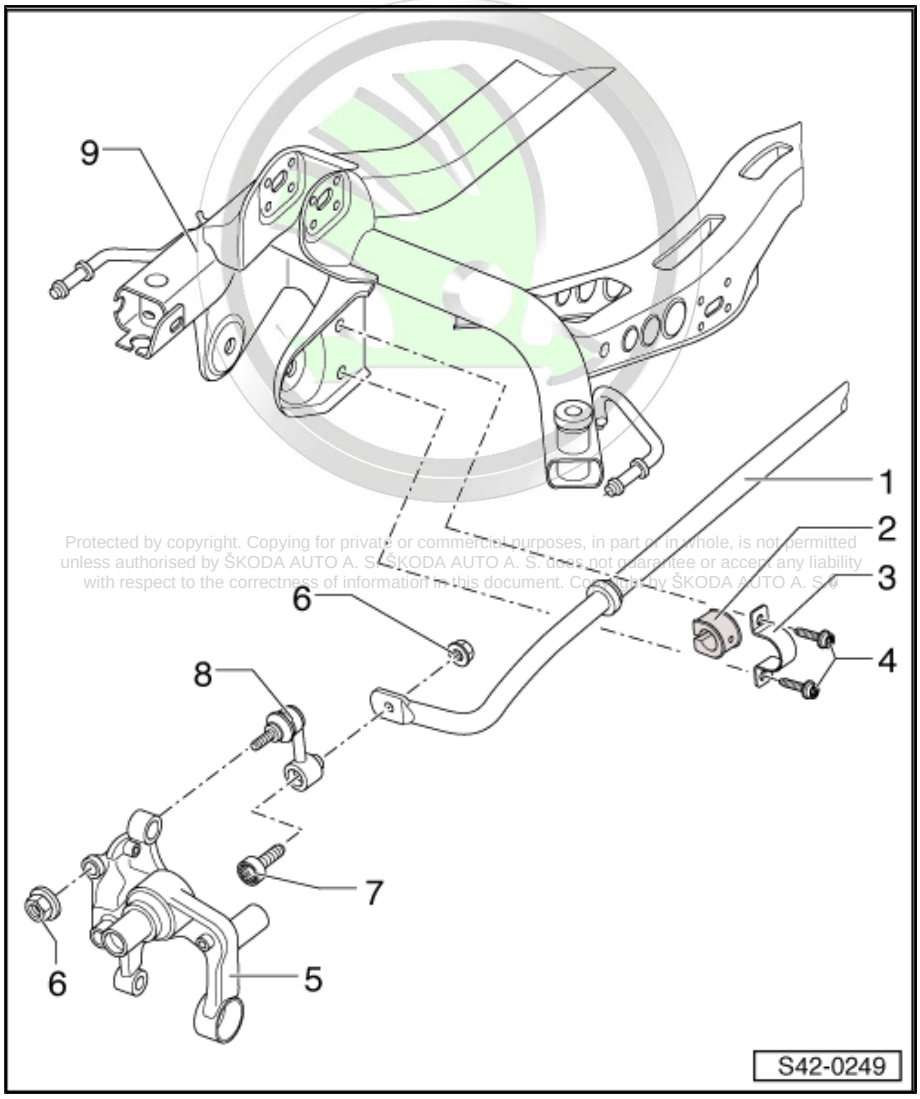
8 - Coupling rod

- ❑ connects anti-roll bar with trailing arm/wheel-bearing housing

9 - Assembly carrier

- ❑ up to CW 21/2010
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

12.2 Summary of components: Anti-roll bar (vehicles with front-wheel-drive) as of CW 22/2010



1 - Anti-roll bar

- ❑ Assignment ⇒ Electronic Catalogue of Original Parts
- ❑ removing and installing ⇒ “12.3 Removing and installing the anti-roll bar”, page 330

2 - Bearings

- ❑ Always replace bearings on both sides of the vehicle

3 - Retaining clip

4 - Screw

- ❑ replace after each removal
- ❑ tighten in unladen weight position ⇒ “1.2 Rear axle in unladen weight position”, page 177
- ❑ tighten bolts alternatively and evenly
- ❑ 20 Nm + 90°

5 - Wheel-bearing housing

6 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 45 Nm

7 - Screw

8 - Coupling rod

- ❑ connects anti-roll bar with trailing arm/wheel-bearing housing

9 - Assembly carrier

- ❑ as of CW 22/2010
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

12.3 Removing and installing the anti-roll bar

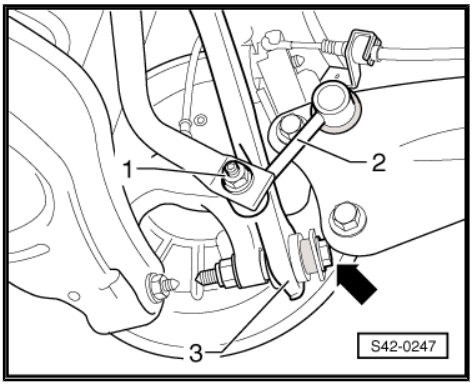
Removing:

– Remove rear wheels.

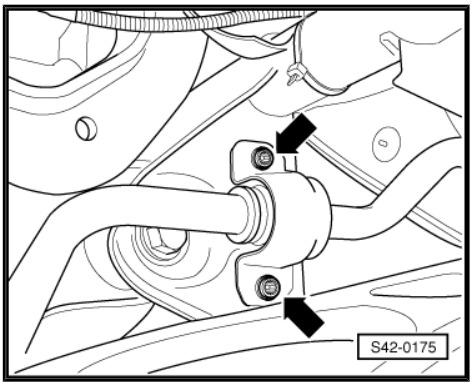
Note

The following steps are described for the left side of the vehicle.
The steps apply also for the right side of the vehicle.

– Unscrew nut -1- and pull screw out of anti-roll bar and coupling rod -2-.



– Unscrew screws -arrows- for the clamp of the anti-roll bar.
– Remove anti-roll bar.



Installing:

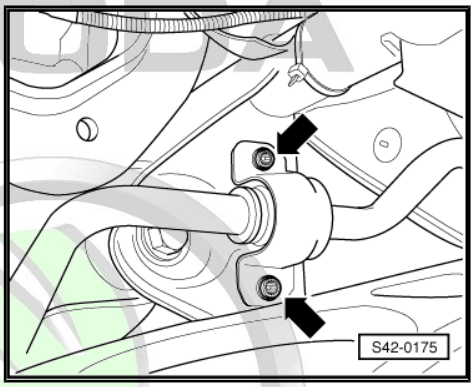
Installation is carried out in the reverse order. Pay attention to the following:

Note

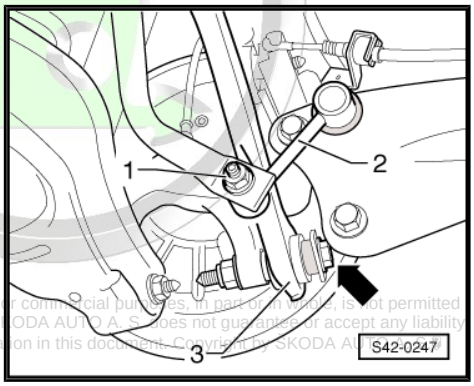
The bolted connection of the anti-roll bar and the assembly carrier must only be performed, if the measured dimension "a" between the wheel hub centre and the lower edge of the wheel house is respected (unladen weight position)!
⇒ "1.2 Rear axle in unladen weight position", page 177 .

– Insert the anti-roll bar.

– Tighten screws -arrows- for the clamp of the anti-roll bar alternatively and uniformly.



– Insert screw into the coupling rod -2- and tighten the nut -1-.
– Installing and tightening the wheel.



Tightening torques:

Coupling rod ♦ Use new nut!	45 Nm
Clamp of anti-roll bar to assembly carrier ♦ Use new screws! ♦ Tighten in unladen weight position! ⇒ “1.2 Rear axle in unladen weight position”, page 177 ♦ tighten bolts alternatively and evenly.	20 Nm + 90°
Wheel bolts	120 Nm

44 – Wheels, tyres, vehicle geometry

1 Chassis - Specified values

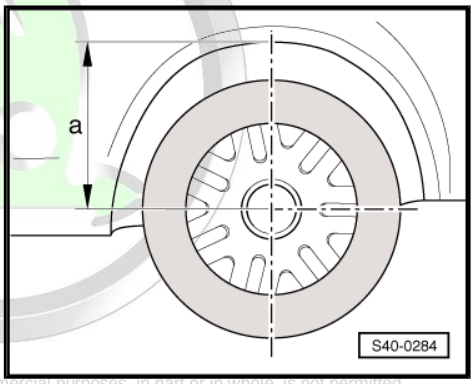
⇒ “1.1 Nominal values front axle”, page 333 .

⇒ “1.2 Nominal values rear axle”, page 334 .

⇒ “1.3 Vehicle data sticker and chassis PR numbers”, page 335 .

1.1 Nominal values front axle

The stationary heights specified in the table apply for the dimension -a-.



Before the axle alignment and the adjustment of the steering geometry, lock the steering wheel in the middle position of the height adjustment of steering column.

- Technical data apply for the unladen weight of the vehicle ready for driving - full fuel tank and washer fluid/headlight cleaning system reservoir, spare wheel and jack (if the vehicle was fitted at the factory with them), tool kit and without driver). The spare wheel, tool kit and jack must be located in the position prescribed by the vehicle manufacturer.

Note

If the corresponding unladen weight cannot be achieved (e.g. a vehicle with a breakdown set or a vehicle with a fuel tank which is not completely full), the vehicle load must be set as follows:

– Load the vehicle with a corresponding weight.

– Determine the fuel volume in the fuel gauge display.

– Place a weight above the fuel tank according to the following table:

Fuel gauge	Weight (kg)
Reserve	39
1/4	36
1/2	24
3/4	12
Fuel tank full	0

Note

- *Use as weight e.g. plastic tanks filled with water or canisters. 1 liter of water = 1 kg.*
- *When fitting the weight onto the rear seat pay special attention so that the seat upholsteries are not dirty or damaged.*

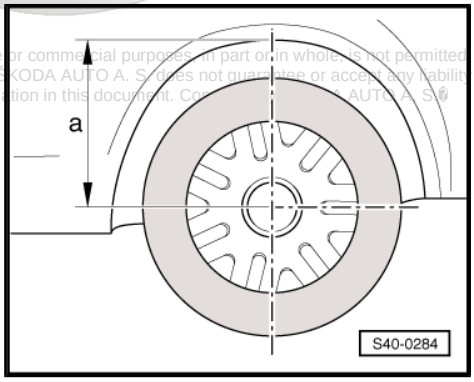
Front axle	Rough road chassis	
Chassis PR No. ⇒ “1.3 Vehicle data sticker and chassis PR numbers”, page 335	2UB	
PR No. of front damping ⇒ “1.3 Vehicle data sticker and chassis PR numbers”, page 335	**G02, G06**	**G77 Green Line**
Overall track (not depressed)	10' ± 10'	10' ± 10'
Toe difference angle on turns of 20° of inside wheel -not adjustable-	1° 20' ± 20'	1° 20' ± 20'
Max. wheel lock angle -not adjustable-	40° 57'	41° 00'
Camber (in straightahead position) Maximum permissible difference between the two sides	-8' ± 30' max. 30	-17' ± 30' max. 30
Castor Maximum permissible difference between the two sides	7° 14' ± 30' max. 30	7° 24' ± 30' max. 30
Stationary height -a- in (mm)	461.9 ± 10	452.9 ± 10

The nominal values are valid for all types of engines with front as well as four-wheel drive.

- Explanations concerning the chassis PR numbers ⇒ “1.3 Vehicle data sticker and chassis PR numbers”, page 335 .

1.2 Nominal values rear axle

The stationary heights specified in the table apply for the dimension -a-.



- Technical data apply for the unladen weight of the vehicle ready for driving - full fuel tank and washer fluid/headlight cleaning system reservoir, spare wheel and jack (if the vehicle was fitted at the factory with them), tool kit and without driver). The spare wheel, tool kit and jack must be located in the position prescribed by the vehicle manufacturer ⇒ page 333 .

Rear axle	Rough road chassis	
Chassis PR No. ⇒ “1.3 Vehicle data sticker and chassis PR numbers”, page 335	2UB	
PR No. of front damping ⇒ “1.3 Vehicle data sticker and chassis PR numbers”, page 335	**G02, G06**	**G77 Green Line**
Overall track (for specified camber) Maximum permissible deviation from the running direction	+10' ± 10' max. 20	+10' ± 10' max. 20
Camber	-1° 20' ± 30'	-1° 20' ± 30'

Rear axle	Rough road chassis	
Chassis PR No. ⇒ “1.3 Vehicle data sticker and chassis PR numbers”, page 335	2UB	
PR No. of front damping ⇒ “1.3 Vehicle data sticker and chassis PR numbers”, page 335	**G02, G06**	**G77 Green Line**
Maximum permissible difference between the two sides	max. 30	max. 30
Stationary height -a- in mm	466.9 ± 10	457.9 ± 10

The nominal values are valid for all types of engines with front as well as four-wheel drive.

- Explanations concerning the chassis PR numbers ⇒ “1.3 Vehicle data sticker and chassis PR numbers”, page 335 .

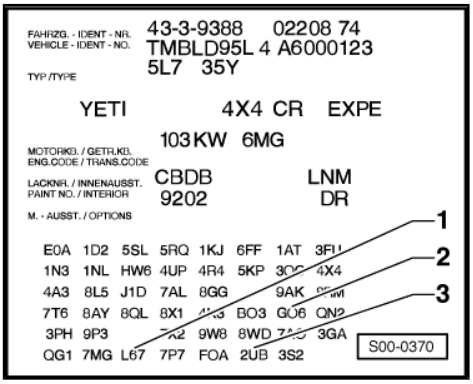
1.3 Vehicle data sticker and chassis PR numbers

The chassis are identified by PR numbers.

The type of chassis is identified by a chassis PR number on the vehicle data sticker.

The vehicle data sticker is located on the luggage compartment floor and in the Service Schedule.

Example of a vehicle data sticker



1 - L67 - Spring system

2 - G06 - Damping

3 - 2UB - Chassis

The chassis PR numbers are required to determine the nominal values for the vehicle.

The vehicle data sticker is located on the luggage compartment floor and in the Service Schedule.

2 Axle alignment

2.1 General points

The vehicle must only be aligned using an alignment gauge released by the manufacturer.

Before the axle alignment and the adjustment of the steering geometry, lock the steering wheel in the middle position of the height adjustment of steering column.

You should align both the front and rear axles during each axle alignment procedure.

If the fitting position of the rear axle and hence the running direction of the vehicle are not considered this could result in a skewed steering wheel.

Otherwise correct vehicle driving behaviour cannot be guaranteed!

Note

- *Only perform the appropriate axle alignment after 1 000 to 2 000 km to allow the rubber-metal bearings, the coil springs and other axle components to fully settle.*
- *One cause of vibration in the vehicle can be a residual unbalance which is too high and/or off-centre runout of the wheels.*
- *During adjustment work try to approximate the nominal values.*

Caution

On vehicles with the ESP system, the steering wheel must not be offset, except when a new steering column is installed.

The steering wheel position is defined by stamped lines on the steering wheel as well as on the steering column ⇒ Body Work; Rep. gr. 69 .

This position must not be changed! Otherwise the central position of the gear rack cannot be guaranteed!

Before removing the steering column, mark the opposite position of the steering wheel and the shaft with a line, as long as this position is not factory-marked.

A skewed steering wheel must be corrected in the straight ahead position by adjusting the lengths of the track rods ⇒ "2.10 Adjust the track on the front axle", page 353 .

Steering columns supplied as spare parts do not have dotting marks for the centre position of the gear rack. These steering columns must be marked after the axle alignment and a subsequent test drive.

If the steering wheel is offset, the basic setting of the steering angle sender - G85- must always be performed with the diagnostic unit - VAS- ⇒ Vehicle diagnostic tester.

2.2 Measurement preliminaries

Special tools and workshop equipment required

♦ Brake pedal load e.g. -V.A.G 1869/2-

Check the vehicle prior to measurement:

- Determine the chassis version according to the vehicle data sticker ⇒ "1.3 Vehicle data sticker and chassis PR numbers", page 335 .
- Check the wheel suspension, wheel bearing of the vehicle, steering and steering linkage for impermissible play and damage, if necessary repair.
- Before the axle alignment and the adjustment of the steering geometry, lock the steering wheel in the middle position of the height adjustment of steering column.
- Check rim runout compensation (compensation). Otherwise the measuring result is inaccurate and a correct toe-in adjustment is not possible!
- Required tyre pressure.
- The tyre tread depth on an axle must have a difference of maximum 2 mm.
- The vehicle has an unladen weight.
- Fuel tank must be full ⇒ page 333 .
- Spare wheel and tool kit at corresponding fitting location of the vehicle.
- The reservoir for the washer fluid reservoir must be full.
- Vehicle must be aligned perfectly, with the springs having been repeatedly deflected and having returned to their original position.

- Make sure that during alignment no sliding base and no rotating plate touch the limit stop.
- Check position of steering wheel
⇒ “2.11 Check position of steering wheel, align if necessary”, page 355 .

Unladen weight:

Technical data apply for the unladen weight of the vehicle ready for driving - full fuel tank and washer fluid/headlight cleaning system reservoir, spare wheel and jack (if the vehicle was fitted at the factory with them), tool kit and without driver). The spare wheel, tool kit and jack must be located in the position prescribed by the vehicle manufacturer.

WARNING

- *The measuring device must be positioned and adjusted in compliance with the specifications; observe the manufacturer's instructions!*

If necessary obtain information on your alignment gauge from the manufacturer.

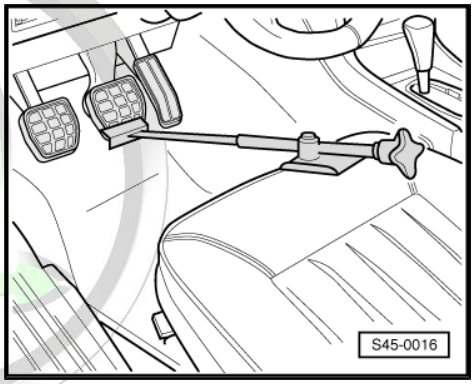
In the course of time the alignment platform and alignment gauge/alignment computer may deviate from their original adjustment/setting.

Alignment platform and alignment gauge/alignment computer should be inspected at least once a year within the scope of servicing and if necessary adjusted!

Handle these highly sensitive devices carefully and conscientiously.

To this end comply with the instructions of the alignment gauge manufacturer.

– Perform a rim runout compensation.
– Insert brake pedal load , e.g. -V.A.G 1869/2 -
– Secure the brake pedal with the brake pedal load.



2.3 Axle alignment

It is necessary to perform an axle alignment in the event of:

- incorrect driving behaviour.
- damage caused by accident and if parts have been replaced
⇒ page 339 .
- Components were removed ⇒ page 339 .
- Tyres wear on one side.

Vehicles with aluminium assembly carrier

Components replaced:

Front axle:	Chassis alignment required		Rear axle:	Chassis alignment required	
Component replaced	**Yes**	**No**	**Component replaced**	**Yes**	**No**
Track control arm		X 1)	Bottom suspension arm	X	
Rubber-metal bearing for track control arm		X 1)	Top suspension arm	X	
Wheel-bearing housing	X		Track rod for rear axle	X	
Track rod/track-rod ends	X		Wheel-bearing housing	X	
Steering gear	X		Assembly carrier	X	
Aluminium assembly carrier		X 1)	Coil spring		X
Suspension strut		X	Shock absorber		X
Console for aluminium assembly carrier	X		Anti-roll bar		X
Anti-roll bar		X 1)	Trailing arm	X	

1) Precondition: The aluminium assembly carrier and consoles were fixed before removal
⇒ “2.3 Fixing the assembly carrier and the console - aluminium assembly carrier”, page 11 .

Vehicles with aluminium assembly carrier:

Removing and installing part of the axle:

Front axle:	Chassis alignment required		Rear axle:	Chassis alignment required	
Part of the axle removed and installed	**Yes**	**No**	**Part of the axle removed and installed**	**Yes**	**No**
Track control arm		X 1)	Bottom suspension arm	X	
Wheel-bearing housing		X	Top suspension arm	X	
Track rod/track-rod ends	X		Track rod for rear axle	X	
Steering gear	X		Wheel-bearing housing	X	
Aluminium assembly carrier		X 1)	Assembly carrier	X	
Suspension strut		X	Coil spring		X
Console for aluminium assembly carrier		X 1)	Shock absorber		X
Anti-roll bar		X 1)	Anti-roll bar		X
			Trailing arm	X	

1) Precondition: The aluminium assembly carrier and consoles were fixed before removal
⇒ “2.3 Fixing the assembly carrier and the console - aluminium assembly carrier”, page 11 .

Vehicles with assembly carrier made of steel sheet:

Components replaced:

Front axle:	Chassis alignment required		Rear axle:	Chassis alignment required	
Component replaced	**Yes**	**No**	**Component replaced**	**Yes**	**No**
Track control arm		X	Bottom suspension arm	X	
Rubber-metal bearing for track control arm		X	Top suspension arm	X	
Wheel-bearing housing	X		Track rod for rear axle	X	
Track rod/track-rod ends	X		Wheel-bearing housing	X	
Steering gear	X		Assembly carrier	X	
Assembly carrier made of steel sheet	X		Coil spring		X
Suspension strut		X	Shock absorber		X
Anti-roll bar		X [1)]	Anti-roll bar		X
			Trailing arm	X	

[1)] Precondition: Assembly carrier made of sheet steel was fixed in place before removal
⇒ “3.3 Fix the assembly carrier - assembly carrier made of steel sheet”, page 66 .

Vehicles with assembly carrier made of steel sheet:

Removing and installing part of the axle:

Front axle:	Chassis alignment required		Rear axle:	Chassis alignment required	
Part of the axle removed and installed	**Yes**	**No**	**Part of the axle removed and installed**	**Yes**	**No**
Track control arm		X	Bottom suspension arm	X	
Wheel-bearing housing		X	Top suspension arm	X	
Track rod/track-rod ends	X		Track rod for rear axle	X	
Steering gear	X		Wheel-bearing housing	X	
Assembly carrier made of steel sheet		X [1)]	Assembly carrier	X	
Suspension strut		X	Coil spring		X
Anti-roll bar		X [1)]	Shock absorber		X
			Anti-roll bar		X
			Trailing arm	X	

[1)] Precondition: Assembly carrier made of sheet steel was fixed in place before removal
⇒ “3.3 Fix the assembly carrier - assembly carrier made of steel sheet”, page 66 .

2.4 Overview of the work sequence for the axle alignment

The following sequence of work steps must always be respected!

1 - Determine what chassis has been mounted in the vehicle. This information can be found on the vehicle data sticker

⇒ “1.3 Vehicle data sticker and chassis PR numbers”, page 335 .

2 - Perform a rim runout compensation.

3 - Deflect the vehicle.

4 - Insert brake pedal load, , e.g. -V.A.G 1869/2 - .

5 - Measure vehicle height
⇒ “2.5 Check transversal inclination of the vehicle straight-ahead position ”, page 341 .

6 - Before the axle alignment and the adjustment of the steering geometry, lock the steering wheel in the middle position of the height adjustment of steering column.

7 - Set the centre position of the gear rack at the steering wheel and fix the steering wheel (an even clearance circle to both sides is assured by means of the centre position of the gear rack). If the steering wheel is off straight, it must be positioned straight at the end of the chassis alignment.

8 - Check camber on front axle, if necessary adjust
⇒ “2.6 Adjust the camber on the front axle - aluminium assembly carrier”, page 342 .

9 - Check camber on rear axle, if necessary adjust
⇒ “2.8 Adjust the camber on the rear axle”, page 348 .

10 - Check track on rear axle, if necessary adjust
⇒ “2.9 Adjust the track on the rear axle”, page 351 .

11 - Check the castor on the front axle.

12 - Check track on front axle, if necessary adjust
⇒ “2.10 Adjust the track on the front axle”, page 353 .

Note

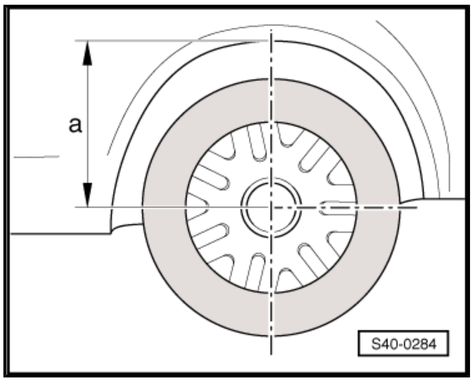
The following always applies! Check the transversal inclination of the vehicle prior to adjustment if one of the measuring values is outside the tolerance
⇒ “2.5 Check transversal inclination of the vehicle straight-ahead position ”, page 341 .

2.5 Check transversal inclination of the vehicle “straight-ahead position”

It is possible the vehicle is skew if the measured values lie outside the tolerance.

RHD vehicles or e. g. vehicles with an automatic gearbox may be slightly skew.

This is normal and is due to the fitting locations of the assemblies and the related weight transfer.



– Check absolutely the left and right dimension -a- on the front and rear axle.

Dimension -a-: ⇒ “1 Chassis - Specified values”, page 333 .

– Correct possible deviations of nominal value.

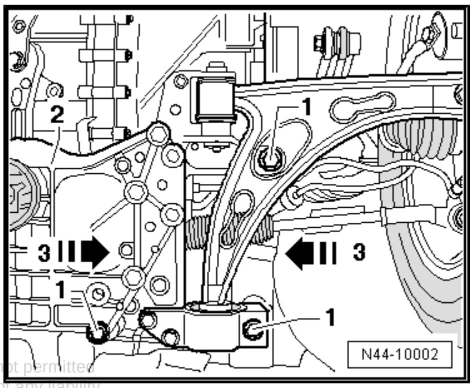
Balance the difference on the front axle by placing weights on the relevant suspension strut dome in the engine compartment.

Balance the difference on the rear axle by placing weights in the luggage compartment on the relevant side.

Suitable weights are e.g. sand bags approx. 10 kg

2.6 Adjust the camber on the front axle - aluminium assembly carrier

Move assembly carrier (looking in direction of travel) only to the left or right, never to the front or to the rear!



– Remove the noise insulation.

– Release screws -1- for the console attachment/assembly carrier to the body on both sides.

– Only the specified value for the camber can be set by moving the assembly carrier -2- with the consoles.

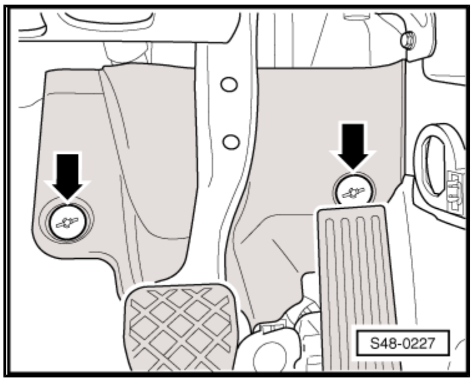
Note

Assembly carrier should only be moved to the left or right, on no account in the direction of travel or opposite the direction of travel.

– Screw the assembly carrier and the consoles with new bolts to the body and tighten with the torquing angle.

After moving the assembly carrier and also the steering gear, the clearance between the universal joint of the steering column and the cutout of the bulkhead plenum chamber must be checked.

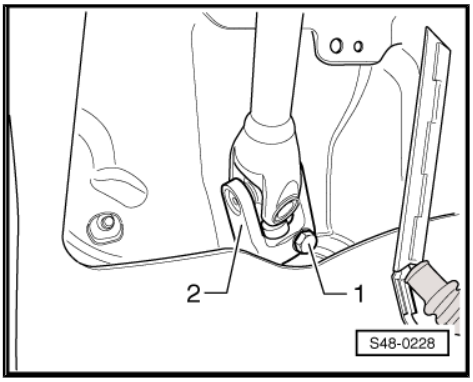
Vehicles with left-hand drive:



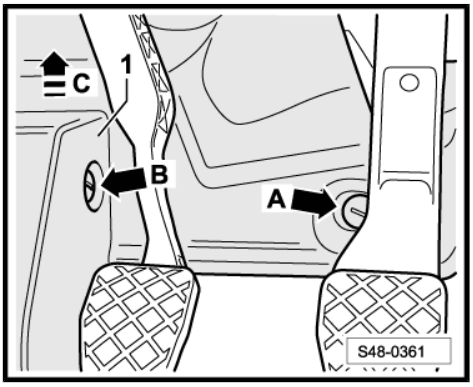
– Unscrew fixing nuts -arrows- and remove footwell covering.

Now there must be at least a circular clearance of 5 mm between the universal joint -2- and the cutout of the bulkhead plenum chamber.

Vehicles with right hand drive:



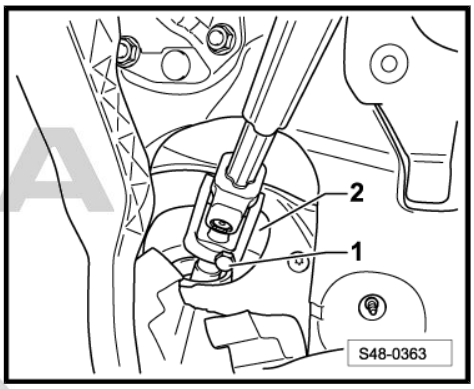
- Unscrew the fixing nut -arrow A- and the expansion clamp -arrow B- of the footwell covering.
- Take the expansion clamp of the covering out of the opening -arrow B-.
- Unclip the footwell covering in -direction of arrow C- and remove.
- Remove screw -1- and pull off the universal joint -2- from the steering gear.



Now there must be at least a circular clearance of 5 mm between the universal joint -2- and the cutout of the bulkhead plenum chamber.

Continued for all vehicles:

Installation is carried out in the reverse order.



Tightening torque:

Assembly carrier to body ♦ Use new screws!	70 Nm + 135°

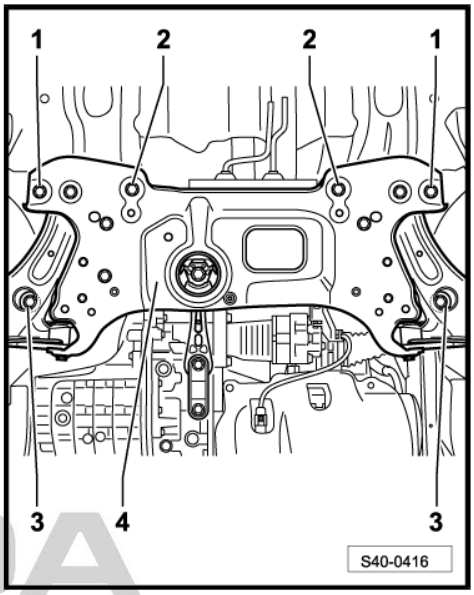
2.7 Adjusting the camber on the front axle - assembly carrier made of steel sheet

Move assembly carrier (looking in direction of travel) only to the left or right, never to the front or to the rear!

– Remove the noise insulation.

– Successively slacken the fixing screws -1-, -2- and -3- of the assembly carrier/body.

– Push the assembly carrier -4- until the specified value for the camber is achieved
⇒ “1.1 Nominal values front axle”, page 333 .



Note

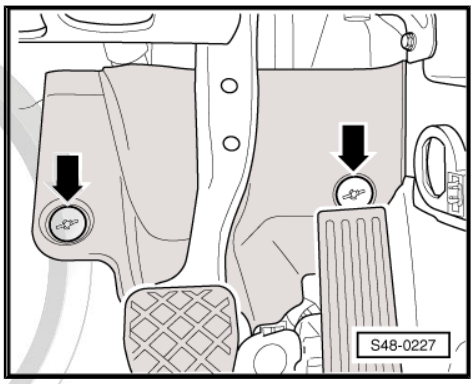
Assembly carrier should only be moved to the left or right, on no account in the direction of travel or opposite the direction of travel.

– Screw the assembly carrier with new screws to the body and tighten to the torquing angle
⇒ “2.1 Summary of components: Aluminium assembly carrier, anti-roll bar, track control arm, LHD - vehicles with left-hand drive”, page 4 .

After moving the assembly carrier and also the steering gear, the clearance between the universal joint of the steering column and the cutout of the bulkhead plenum chamber must be checked.

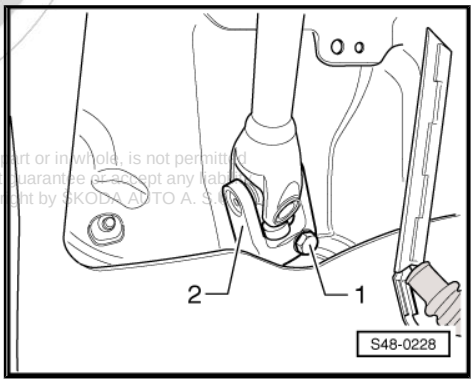
Vehicles with left-hand drive:

– Unscrew fixing nuts -arrows- and remove footwell covering.

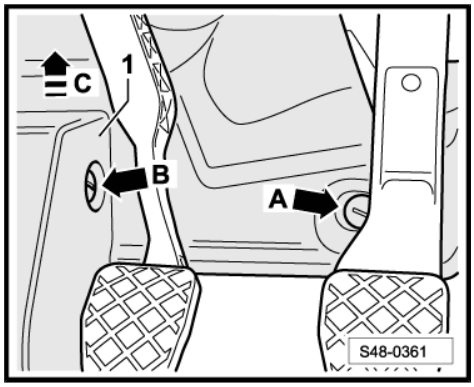


Now there must be at least a circular clearance of 5 mm between the universal joint -2- and the cutout of the bulkhead plenum chamber.

Vehicles with right hand drive:



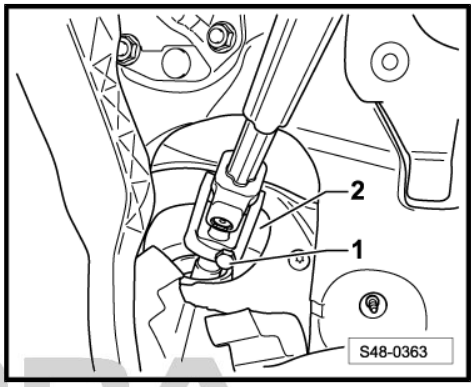
– Unscrew the fixing nut -arrow A- and the expansion clamp -arrow B- of the footwell covering.
– Take the expansion clamp of the covering out of the opening -arrow B-.
– Unclip the footwell covering in -direction of arrow C- and remove.



Now there must be at least a circular clearance of 5 mm between the universal joint -2- and the cutout of the bulkhead plenum chamber.

Continued for all vehicles:

Installation is carried out in the reverse order.



Tightening torque:

Assembly carrier to body ◆ Use new screws!	90 Nm + 180°

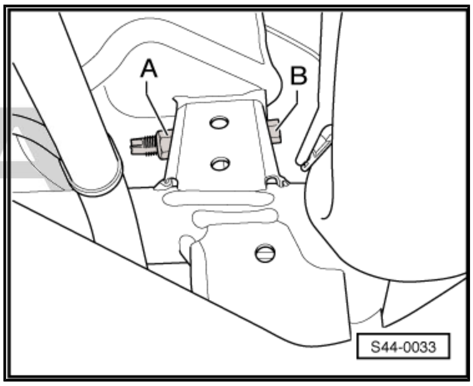
2.8 Adjust the camber on the rear axle

Special tools and workshop equipment required

- ♦ Shock absorber set , e.g. - T10001-
- ♦ Insertion tool - T10179-

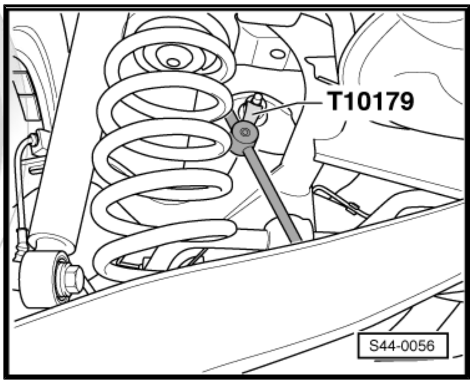
Fitting position of the adjusting screw.

– Slacken the nut -A- of the screw connection for top suspension arm to assembly carrier.



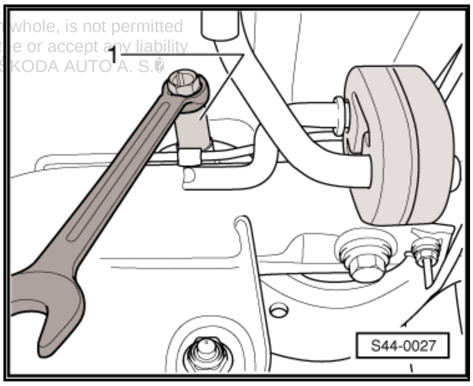
– To do this use insertion tool - T10179- .

– Adjust the camber by turning the eccentric bolt -B-.



– Turn the eccentric bolt -B- using socket insert , e.g. - T10001/3- .

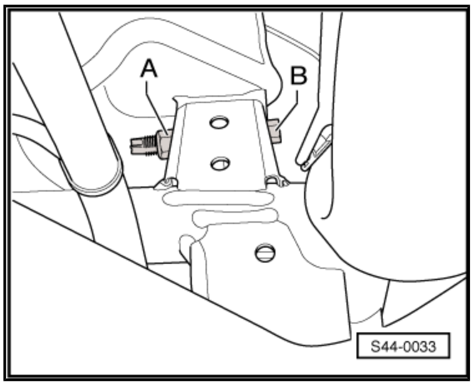
1 - Socket insert e.g. -T10001/3-



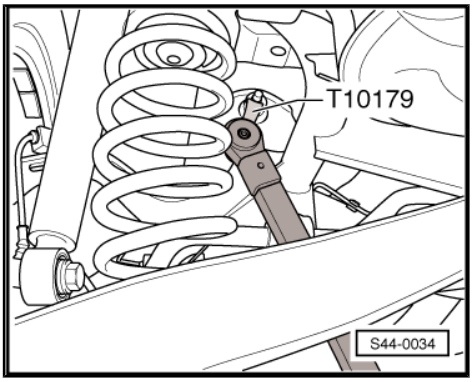
Note

The maximum adjustment range is 90 ° from the centre position to the left or to the right.

– Tighten the nut -A- while counterholding at the eccentric bolt -B-.



– To do this use insertion tool - T10179- .



When using the insertion tool - T10179- tighten the nut to 80 Nm.

– After the nut -A- has been tightened, inspect once again the camber value.

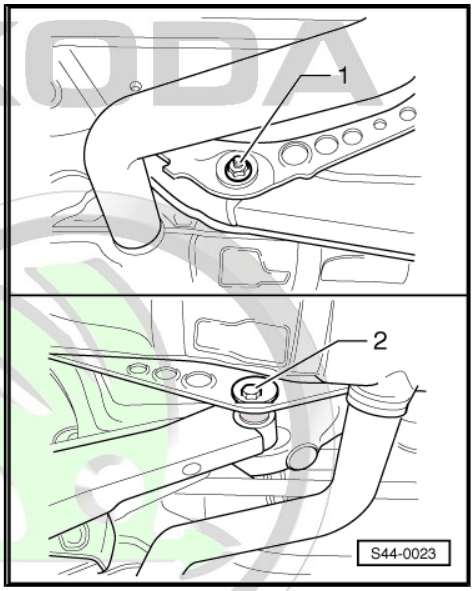
Tightening torques:

Assembly carrier to body (using the insertion tool - T10179-) ♦ Use new nut! ♦ Tighten in unladen weight position!	80 Nm
Assembly carrier to body (without using the insertion tool - T10179-) ♦ Use new nut! ♦ Tighten in unladen weight position!	95 Nm

2.9 Adjust the track on the rear axle

– Release the nut -1-.

– Turn the eccentric bolt -2- until the specified value is achieved and the nut -1- is tightened.



Tightening torque:

Bottom track control arm to assembly carrier ♦ Use new nut! ♦ Tighten in unladen weight position!	95 Nm

2.10 Adjust the track on the front axle

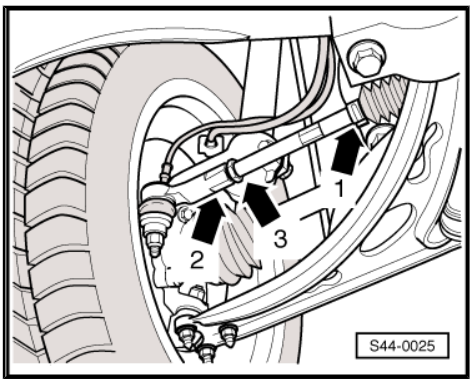
Special tools and workshop equipment required

- Socket insert , e.g. -V.A.G 1332/11-

– Release nut -3- while counterholding the track rod end -2-.

– Pull off the spring strap clip -1- from the bellows.

– Adjust track by turning the left and/or right track rod.

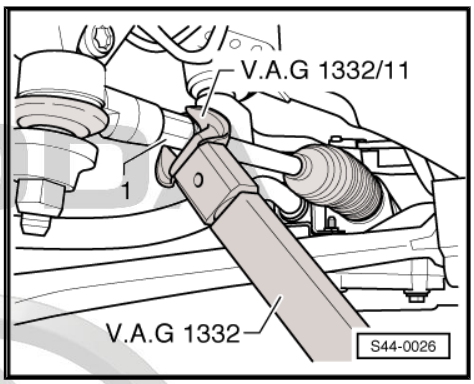


Position an open-jawed spanner on the hexagon bolt of the track rod.

Note

- *Check that the bellows have not become twisted after turning the track rods!*
- *Twisted bellows wear fast.*

– Tighten counternut with insertion tool e.g. -V.A.G 1332/11- while counterholding the track rod end -1-.



– Check the track value once again.

After tightening the counternut it is possible that the set value may vary slightly.

If the measured tracking value lies within tolerance then the setting is OK.

– Mount spring strap clip onto the bellows.

Vehicle with ESP:

– pay attention to the notes ⇒ page 337 .

Tightening torque:

Counternut to track-rod end	55 Nm

2.11 Check position of steering wheel, align if necessary

Check position of steering wheel

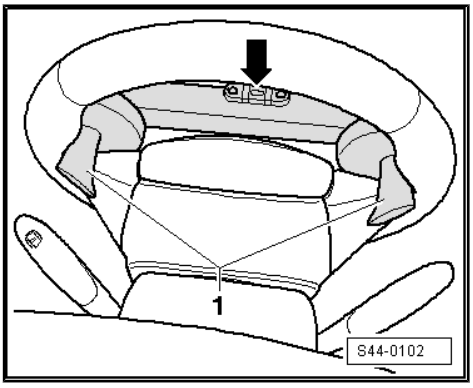
Special tools and workshop equipment required

- Steering wheel scale , e.g. -VAS 6458-

– Put the front wheels in straight ahead position.

– Place the steering wheel scale , e.g. -VAS 6458- , on the steering wheel.

The supports -1- of the steering wheel scale must rest against the steering wheel spokes.



– Check the alignment of the steering wheel through the windscreen -arrow-.

Align position of steering wheel:

If the steering wheel is not in the horizontal position and a noticeable maximum toe difference angle is obtained during the preceding axle alignment.

– Align the steering wheel by turning it horizontally.

– Correct the track by turning the left and right track rod.

Example:

The steering wheel was positioned to the right.

– Align the steering wheel by turning it horizontally.

– Release the counternuts on the track rods.

– Turn the track rod on the left (slightly unscrew from track-rod end).

– Turn the track rod on the right to the same extent (screw into track-rod end).

– Check overall track.

After this adjustment procedure the overall track must correspond with the specified nominal value!

– Tighten counternuts.

After tightening the counternuts the set value may change slightly.

Make sure this value remains within the tolerance of the nominal value. If this is not the case repeat the overall track adjustment operation.

Check that the bellows have not become twisted after turning the track rods!

If the steering wheel is not in the horizontal position and a noticeable maximum toe difference angle is not obtained during the preceding axle alignment.

– Reposition the steering wheel into the specified position ⇒ Body Work; Rep. gr. 69 .

– Check overall track.

Tightening torque:

Counternut to track-rod end	50 Nm
Steering wheel nut to steering column	⇒ Body Work; Rep. gr. 69

48 – Steering

1 Steering column LHD - vehicles with left-hand drive

⇒ “1.1 Summary of components of steering column - vehicles without knee airbag”, page 357 .

⇒ “1.2 Summary of components of steering column - vehicles with knee airbag”, page 359 .

⇒ “1.3 Removing and installing steering column”, page 360 .

⇒ “1.4 Observe handling and transportation of the steering column”, page 365 .

⇒ “1.5 Check the steering column for damage”, page 366 .

1.1 Summary of components of steering column - vehicles without knee airbag

Note

- *Observe handling and transportation of the steering column*
  ⇒ “1.4 Observe handling and transportation of the steering column”, page 365 .
- *Always replace corroded screws/nuts.*

1 - Holder (central pipe)

2 - Steering column

- ❑ Observe handling and transportation ⇒ “1.4 Observe handling and transportation of the steering column”, page 365
- ❑ Crash struts for the pedal cluster are fixed with the steering column to the central pipe.

3 - Screw

- ❑ M8 x 30
- ❑ 20 Nm

4 - Crash bar

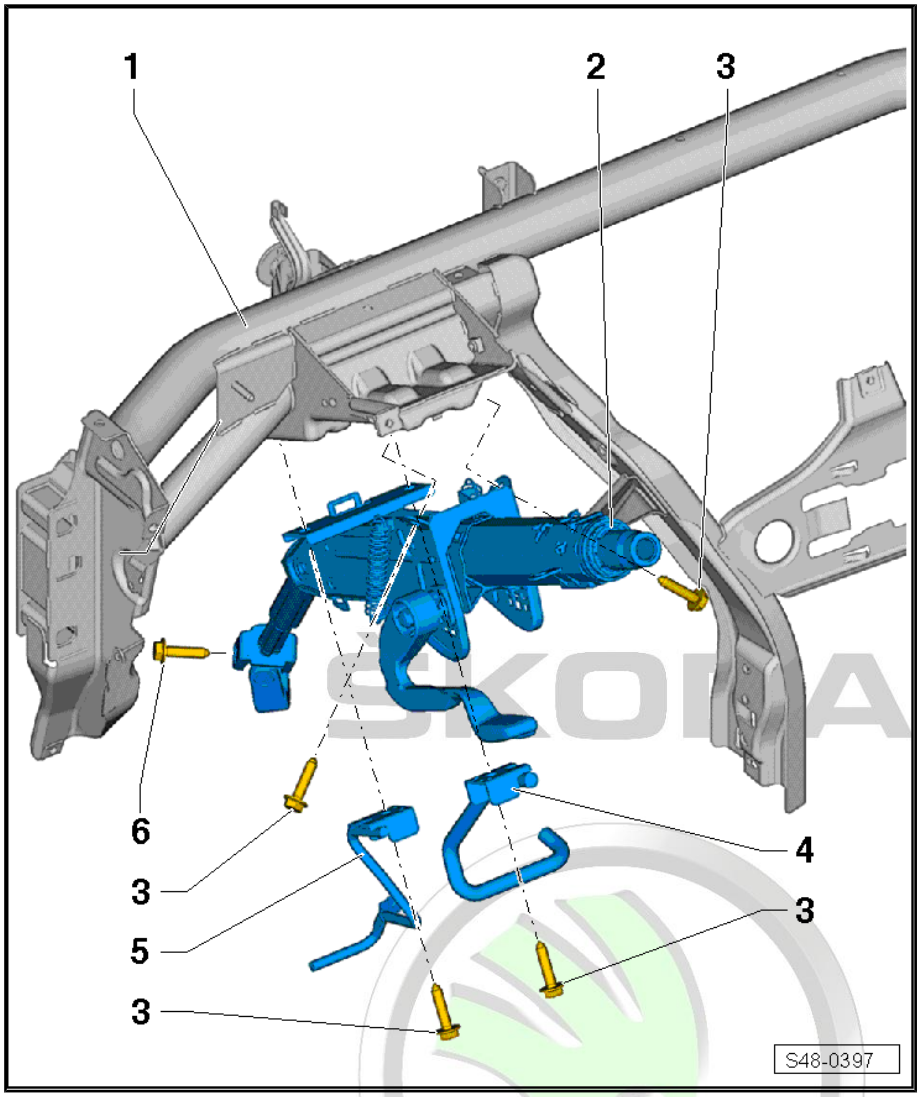
- ❑ for brake pedal
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

5 - Crash bar

- ❑ for the clutch pedal
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

6 - Screw

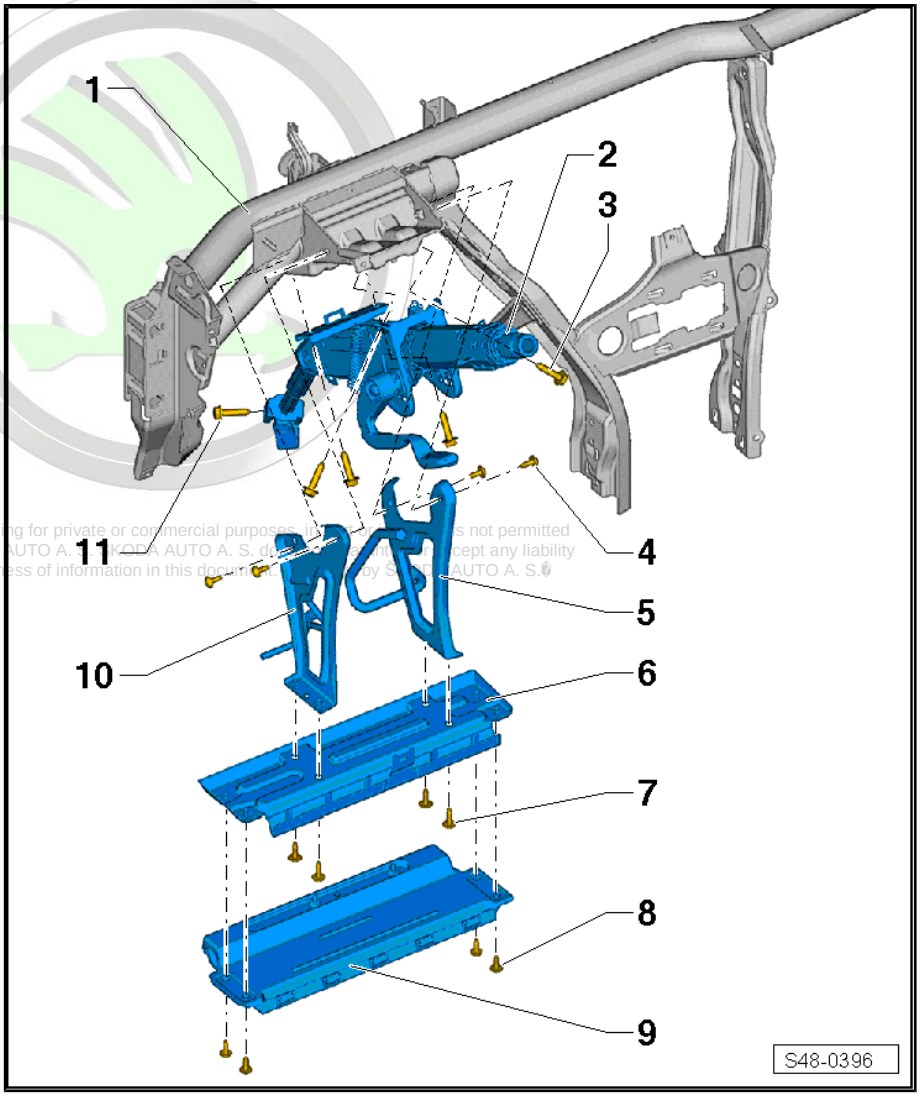
- ❑ M8 x 35
- ❑ replace after each removal
- ❑ 30 Nm



1.2 Summary of components of steering column - vehicles with knee airbag

Note

- *Observe handling and transportation of the steering column*
  ⇒ "1.4 Observe handling and transportation of the steering column", page 365 .
- *Always replace corroded screws/nuts.*



1 - Holder (central pipe)

2 - Steering column

- ❑ Observe handling and transportation ⇒ "1.4 Observe handling and transportation of the steering column", page 365

3 - Screw

- ❑ M8 x 30
- ❑ 20 Nm

4 - Screw, 9 Nm

- ❑ M6 x 16

5 - Holder for knee airbag

- ❑ the crash struts for the foot controls together with the holders for knee airbag are fixed at the central pipe

6 - Strut for knee airbag

7 - Screw

- ❑ M6 x 20
- ❑ 9 Nm

8 - Screw

- ❑ M6 x 20
- ❑ 9 Nm

9 - Knee airbag

10 - Holder for knee airbag

- ❑ the crash struts for the foot controls together with the holders for knee airbag are fixed at the central pipe

11 - Screw

- ❑ M8 x 35
- ❑ replace after each removal
- ❑ 30 Nm

1.3 Removing and installing steering column

⇒ “1.3.1 Removing”, page 360

⇒ “1.3.2 Install”, page 362

1.3.1 Removing

The steering column is supplied as a spare part in the form of a complete assembly. Repairs are not allowed!

The ignition lock housing can be modified ⇒ Electrical System; Rep. gr. 94 .

When replacing the steering column, refit the steering column switches ⇒ Electrical System; Rep. gr. 94 .

WARNING

Before working on the electrical system and the removal of the steering wheel the following conditions must be fulfilled:

- *Disconnect battery earth strap ⇒ Electrical System; Rep. gr. 27 .*
- *The wheels must be in the straight-ahead position.*

If you do not observe this note, it can lead to a failure of the airbag system.

– Put the front wheels in straight ahead position.

– Press the adjusting lever for steering column downwards.

– Press the steering column downwards, pull it towards you and lock with the adjusting lever (the lever upwards).

– Remove airbag and steering wheel ⇒ Body Work; Rep. gr. 69 .

– Removing top and bottom steering column trim ⇒ Body Work; Rep. gr. 70 .

– Remove bottom part of dash panel ⇒ Body Work; Rep. gr. 70 .

Vehicles with knee airbag:

– Remove knee airbag driver's side and support for knee airbag ⇒ Body Work; Rep. gr. 69 .

Continued for all vehicles:

– Removing the left footwell vent on the driver side ⇒ Heating, Air Conditioning; Rep. gr. 87 .

– Disconnect the plug from the steering column electronics control unit - J527- ⇒ Electrical System; Rep. gr. 94 .

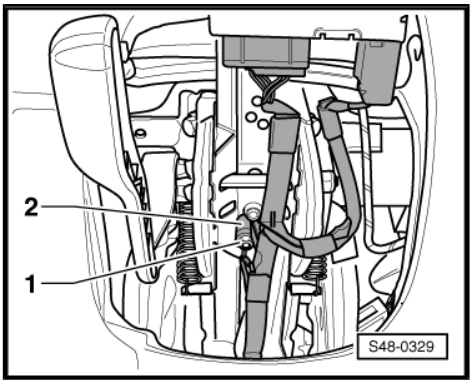
– Disconnect the plug from the immobilizer reading coil (remove lock cylinder from steering lock housing) ⇒ Electrical System; Rep. gr. 94 .

Note

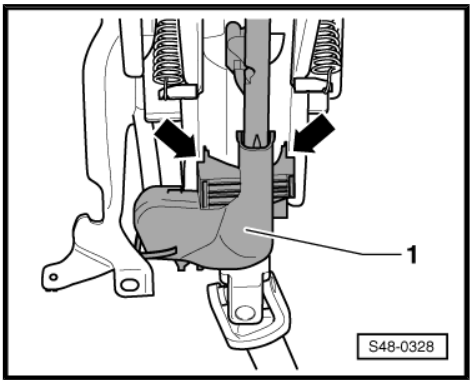
The steering lock must not be moved unless the lock cylinder is removed, otherwise it would block completely. The blocked steering lock must be replaced

– After disconnecting the plug from the immobilizer reading coil, re-install the lock cylinder into the steering lock housing ⇒ Electrical System; Rep. gr. 94 .

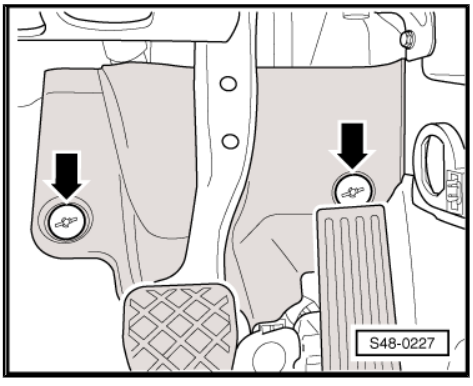
– Remove earth cable -1- and cable guide -2- from the steering column.



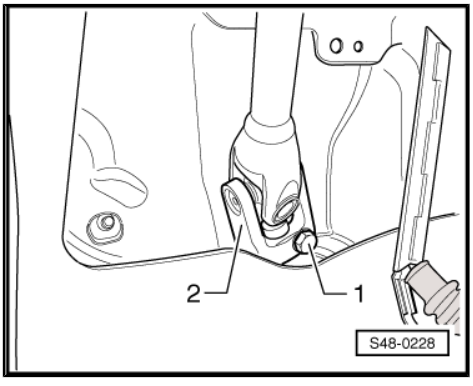
– Remove cable duct -1- from the steering column -arrows-.



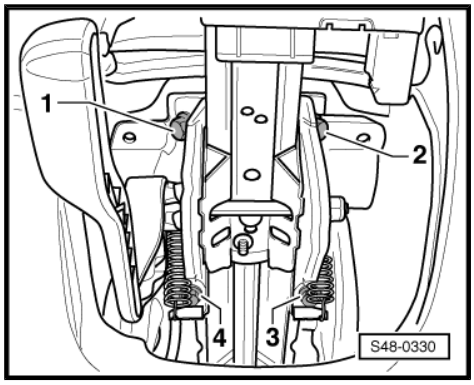
– Unscrew fixing nuts -arrows- and remove footwell covering.



– Unscrew screw -1- and remove the universal joint -2- from the steering gear.



– Remove fixing screws -3- and -4- for steering column and crash struts, if present.
– Hold steering column and remove fixing screws -1- and -2-.
– Carefully remove the steering column in direction of the vehicle interior.



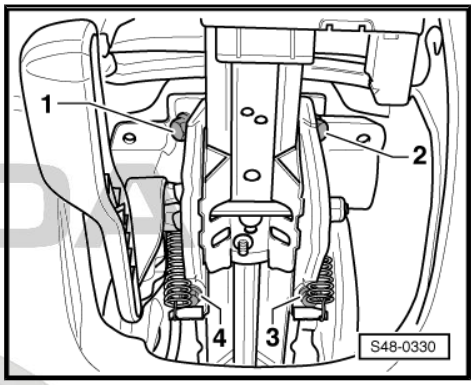
Observe handling and transportation of the steering column
⇒ “1.4 Observe handling and transportation of the steering column”, page 365 .

1.3.2 Install

The ignition lock housing can be modified ⇒ Electrical System; Rep. gr. 94 .

When replacing the steering column, refit the steering column switches ⇒ Electrical System; Rep. gr. 94 .

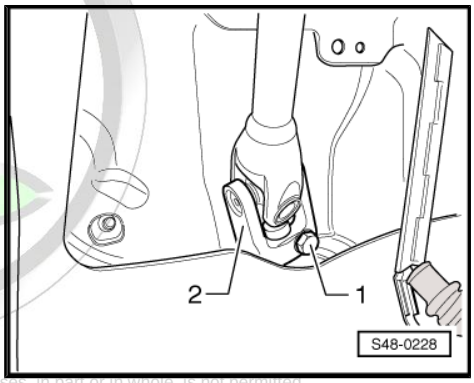
– Position the steering column on the holder (central pipe).
– Attach the steering column to the holder (central pipe) with screws -1- and -2-.
– Screw in screws -3- and -4- together with the crash struts, if present, and do not tighten yet.
– Tighten screws -1- and -2- and while doing so, check if the steering column lies flush at the holder for steering column (central pipe).
– Tighten screws -3- and -4-.



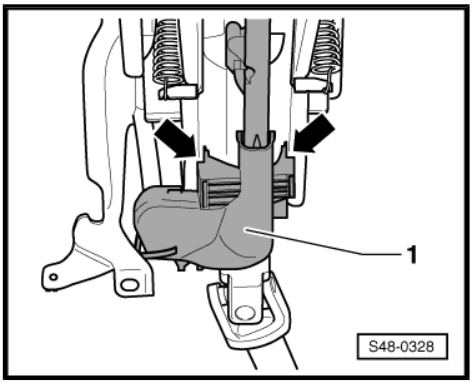
Note

When tightening, check if the steering column lies flush at the central pipe.

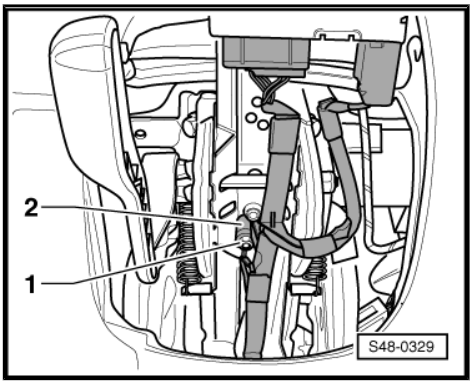
– Insert the universal joint -2- on the steering pinion, and tighten the screw -1-.



– Install cable duct -1- on steering column -arrows-.



– Position cable guide -2- on steering column and screw on earth cable -1-.
– Fit the plug onto the steering column electronics control unit - J527- ⇒ Electrical System; Rep. gr. 94 .
– Fit the plug onto the immobilizer reading coil (remove lock cylinder from steering lock housing) ⇒ Electrical System; Rep. gr. 94 .



Note

The steering lock must not be moved unless the lock cylinder is removed, otherwise it would block completely. The blocked steering lock must be replaced

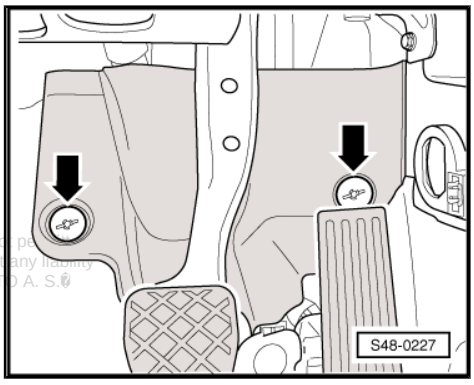
– After fitting the plug onto the immobilizer reading coil, re-install the lock cylinder into the steering lock housing ⇒ Electrical System; Rep. gr. 94 .
– Install footwell vent driver's side ⇒ Heating, Air Conditioning; Rep. gr. 87 .

Vehicles with knee airbag:

– Install support for knee airbag and knee airbag driver's side ⇒ Body Work; Rep. gr. 69 .

Continued for all vehicles:

– Install bottom and top steering column trim ⇒ Body Work; Rep. gr. 70 .
– Install steering wheel and airbag ⇒ Body Work; Rep. gr. 69 .
– Install bottom part of dash panel ⇒ Body Work; Rep. gr. 70 .
– Install footwell covering and fasten with nuts -arrows-.



– Perform basic setting of the steering angle sender - G85- ⇒ Vehicle diagnostic tester.

After the following installation work the basic setting of the steering angle sender - G85- must be checked:

- when replacing the steering column
- after replacing the power-steering gear
- if the steering wheel was offset

Tightening torques:

Steering column on holder (central pipe)	20 Nm
Universal joint to steering gear ♦ Use new screw!	30 Nm

1.4 Observe handling and transportation of the steering column

WARNING

- *The correct handling of the steering column must absolutely be respected.*
- *An incorrect handling of the steering column can lead to damages of the steering column and therefore to a risk of safety.*

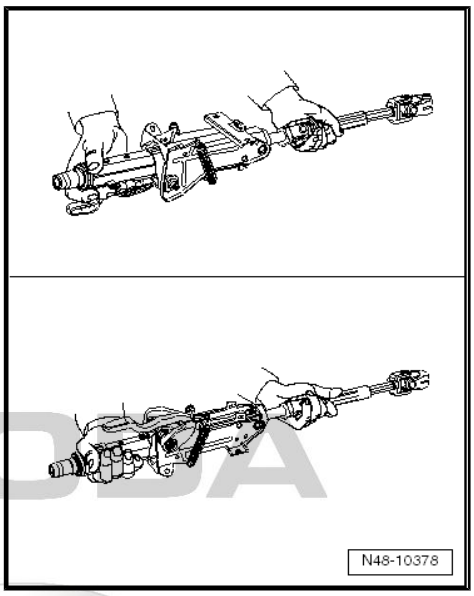
Observe correct handling and transportation of the steering column

- Always transport the steering column with both hands.
- Always take hold of the steering column at the casing and in the area of the top universal joint.

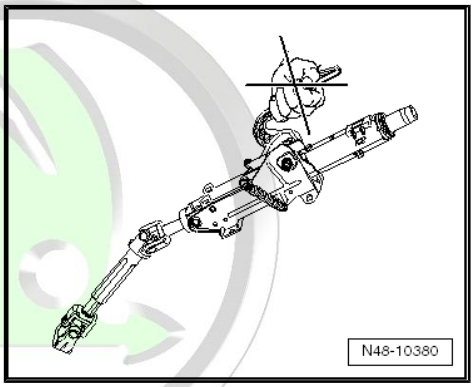
DANGER!

Incorrect gripping lead to damage of the universal joint bushings of the lower steering column bearing:

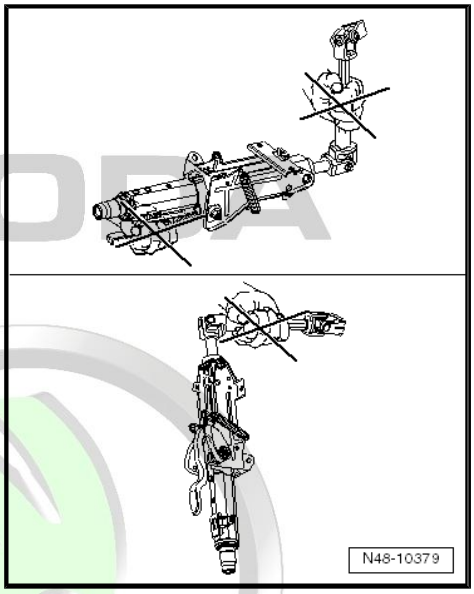
- *Transporting the steering column with one hand at the cardan shaft.*
- *Bending of the drive shaft over 90°.*



Incorrect gripping:



Incorrect handling:



1.5 Check the steering column for damage

Visual inspection:

– Inspecting parts of the steering column for damage.

Functional test:

– Check whether the steering column turns freely without jerking.

– Check if the steering column is adjustable in longitudinal direction as well as in height and is easy to operate without hooking.

2 Steering column RHD - vehicles with right-hand drive

⇒ “2.1 Summary of components of steering column - vehicles without knee airbag”, page 367 .

⇒ “2.2 Summary of components of steering column - vehicles with knee airbag”, page 369 .

⇒ “2.3 Removing and installing steering column RHD”, page 371 .

⇒ “2.4 Removing and installing holder for steering column and frequency link RHD - vehicles with right-hand drive”, page 377 .

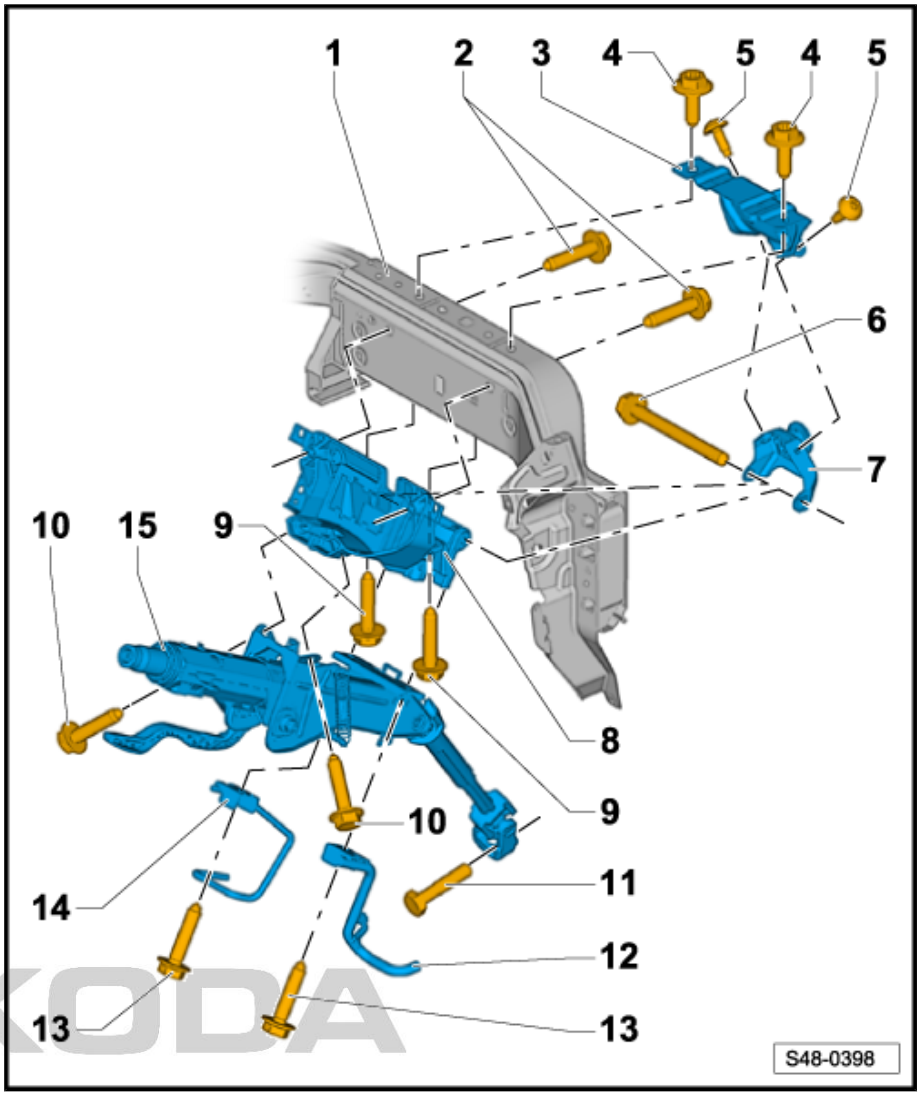
⇒ “2.5 Observe handling and transportation of the steering column”, page 381 .

⇒ “2.6 Check the steering column for damage”, page 382 .

2.1 Summary of components of steering column - vehicles without knee airbag

Note

- *Observe handling and transportation of the steering column*
  ⇒ “1.4 Observe handling and transportation of the steering column”, page 365 .
- *Always replace corroded screws/nuts.*



1 - Holder (central pipe)

2 - Screw

- ❑ M8 x 85
- ❑ 20 Nm

3 - Frequency link (top part)

- ❑ removing and installing ⇒ “2.4 Removing and installing holder for steering column and frequency link RHD - vehicles with right-hand drive”, page 377

4 - Screw

- ❑ M8 x 24
- ❑ 20 Nm

5 - Screw

- ❑ M6 x 16
- ❑ 9 Nm

6 - Screw

- ❑ M8 x 100
- ❑ 20 Nm

7 - Frequency link (bottom part)

- ❑ removing and installing ⇒ “2.4 Removing and installing holder for steering column and frequency link RHD - vehicles with right-hand drive”, page 377

8 - Bracket (for steering column)

- ❑ removing and installing ⇒ “2.4 Removing and installing holder for steering column and frequency link RHD - vehicles with right-hand drive”, page 377

9 - Screw

- ❑ M8 x 30
- ❑ 20 Nm

10 - Screw

- ❑ M8 x 30
- ❑ 20 Nm

11 - Screw

- ❑ replace after each removal
- ❑ ⇒ Electronic Catalogue of Original Parts
- ❑ 30 Nm

12 - Crash bar

- ❑ for brake pedal
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

13 - Screw

- ❑ M8 x 30
- ❑ 20 Nm

14 - Crash bar

- ❑ for the clutch pedal
- ❑ Assignment ⇒ Electronic Catalogue of Original Parts

15 - Steering column

- ❑ Observe handling and transportation
  ⇒ “1.4 Observe handling and transportation of the steering column”, page 365
- ❑ Crash struts for the pedal cluster are fixed with the steering column to the bracket (central pipe)

2.2 Summary of components of steering column - vehicles with knee airbag

Note

- ♦ *Observe handling and transportation of the steering column*
  ⇒ “1.4 Observe handling and transportation of the steering column”, page 365 .
- ♦ *Always replace corroded screws/nuts.*

1 - Holder (central pipe)

2 - Screw

- ❑ M8 x 85
- ❑ 20 Nm

3 - Frequency link (top part)

- ❑ removing and installing
  ⇒ “2.4 Removing and installing holder for steering column and frequency link RHD - vehicles with right-hand drive”, page 377

4 - Screw

- ❑ M8 x 24
- ❑ 20 Nm

5 - Screw

- ❑ M6 x 16
- ❑ 9 Nm

6 - Screw

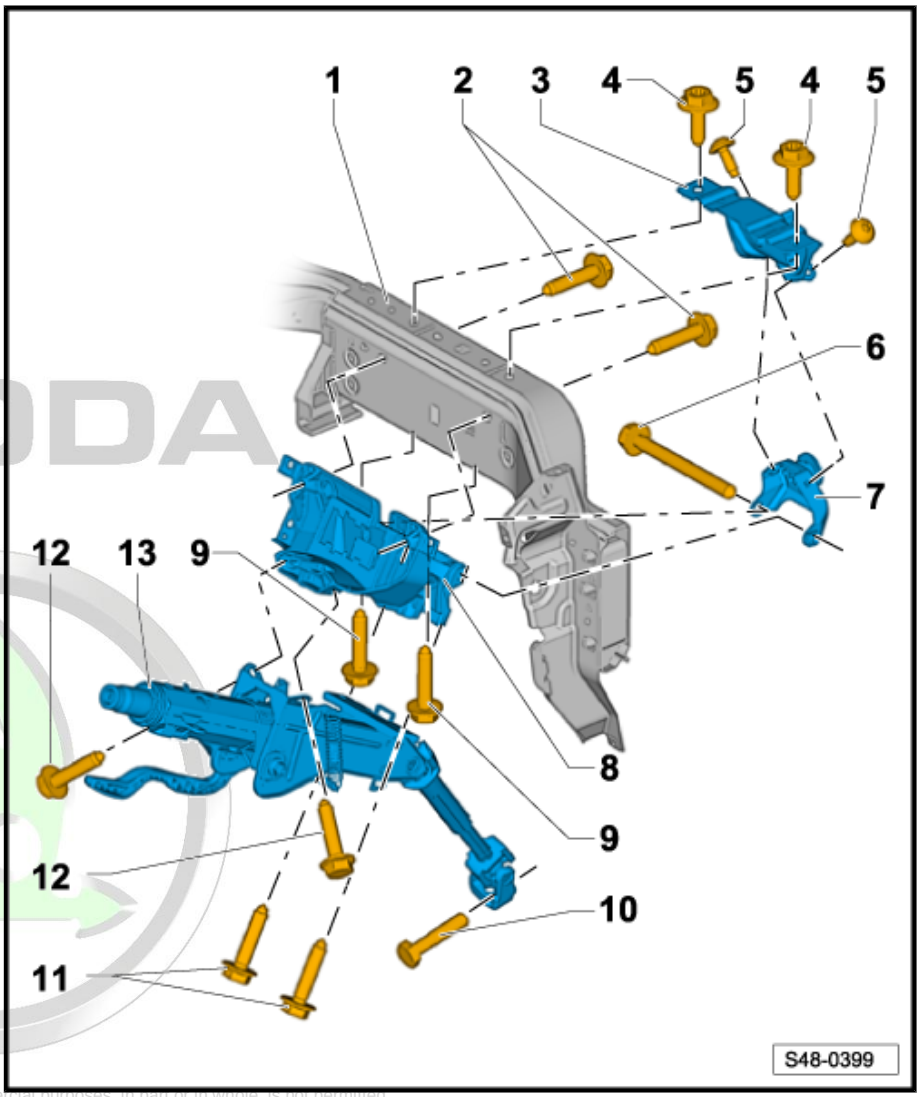
- ❑ M8 x 100
- ❑ 20 Nm

7 - Frequency link (bottom part)

- ❑ removing and installing
  ⇒ “2.4 Removing and installing holder for steering column and frequency link RHD - vehicles with right-hand drive”, page 377

8 - Bracket (for steering column)

- ❑ removing and installing
  ⇒ “2.4 Removing and installing holder for steering column and frequency link RHD - vehicles with right-hand drive”, page 377



9 - Screw
- ❑ M8 x 30
- ❑ 20 Nm

10 - Screw
- ❑ replace after each removal
- ❑ ⇒ Electronic Catalogue of Original Parts
- ❑ 30 Nm

11 - Screw
- ❑ M8 x 30
- ❑ 20 Nm

12 - Screw
- ❑ M8 x 30
- ❑ 20 Nm

13 - Steering column
- ❑ Observe handling and transportation
  ⇒ “1.4 Observe handling and transportation of the steering column”, page 365

1 - Holder (central pipe)

2 - Screw
- ❑ M6 x 16
- ❑ 9 Nm

3 - Holder for knee airbag

4 - Screw
- ❑ M8 x 24
- ❑ 9 Nm

5 - Strut for knee airbag

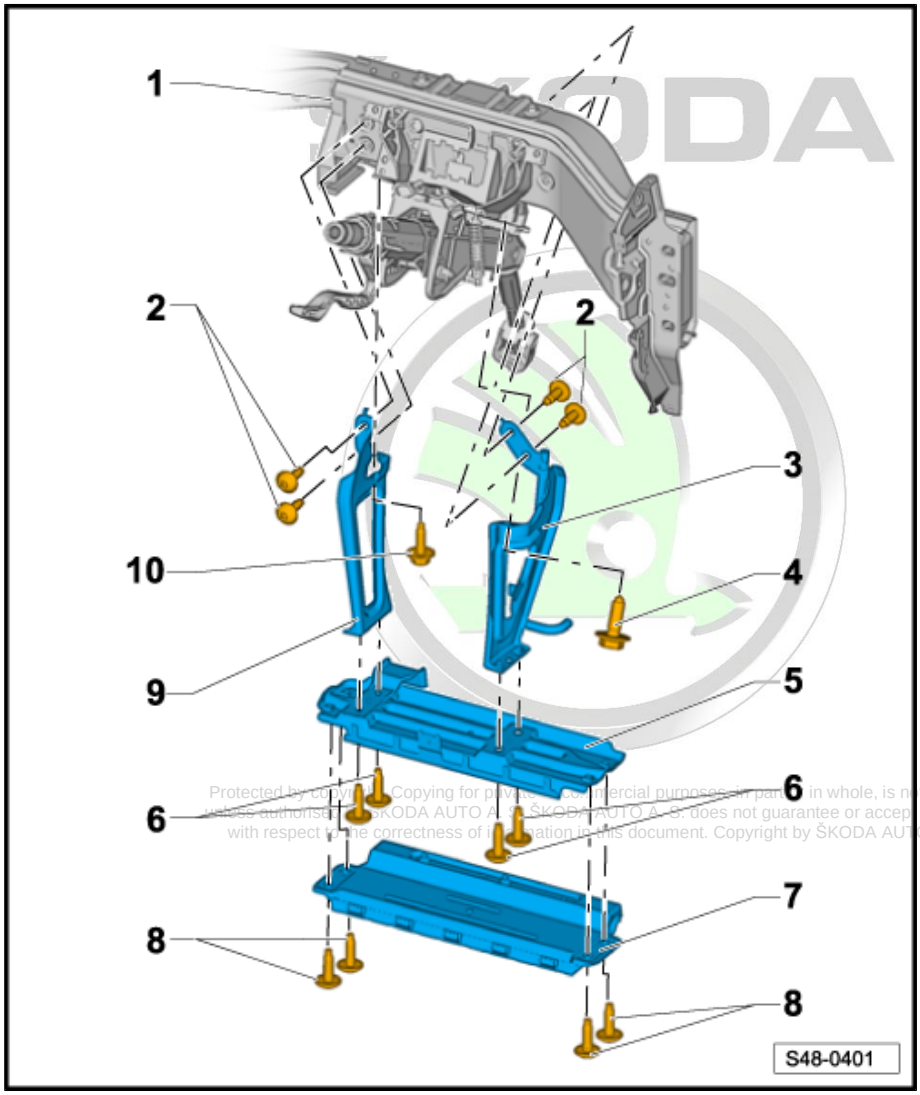
6 - Screw
- ❑ M6 x 20
- ❑ 9 Nm

7 - Knee airbag

8 - Screw
- ❑ M6 x 20
- ❑ 9 Nm

9 - Holder for knee airbag

10 - Screw
- ❑ M6 x 20
- ❑ 9 Nm



2.3 Removing and installing steering column RHD

2.3.1 Removing:

The steering column is supplied as a spare part in the form of a complete assembly. Repairs are not allowed!

The ignition lock housing can be modified ⇒ Electrical System; Rep. gr. 94 .

When replacing the steering column, refit the steering column switches ⇒ Electrical System; Rep. gr. 94 .

WARNING

Before working on the electrical system and the removal of the steering wheel the following conditions must be fulfilled:

- *Disconnect battery earth strap ⇒ Electrical System; Rep. gr. 27 .*
- *The wheels must be in the straight-ahead position.*

If you do not observe this note, it can lead to a failure of the airbag system.

– Put the front wheels in straight ahead position.

– Press the adjusting lever for steering column downwards.

– Press the steering column downwards, pull it towards you and lock with the adjusting lever (the lever upwards).

– Remove airbag and steering wheel ⇒ Body Work; Rep. gr. 69 .

– Removing top and bottom steering column trim ⇒ Body Work; Rep. gr. 70 .

– Remove the storage area on the driver's side ⇒ Body Work; Rep. gr. 70 .

– Remove the damping trim panel below the dash panel ⇒ Body Work; Rep. gr. 70 .

Vehicles with knee airbag:

– Remove knee airbag driver's side ⇒ Body Work; Rep. gr. 69 .

Continued for all vehicles:

– Removing the left footwell vent on the driver side ⇒ Heating, Air Conditioning; Rep. gr. 87 .

– Disconnect the plug from the steering column electronics control unit -J527- ⇒ Electrical System; Rep. gr. 94 .

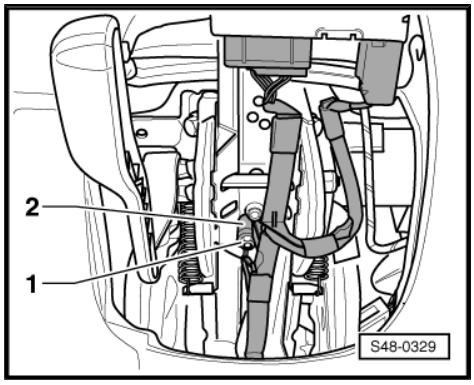
– Disconnect the plug from the immobilizer reading coil (remove lock cylinder from steering lock housing) ⇒ Electrical System; Rep. gr. 94 .

Note

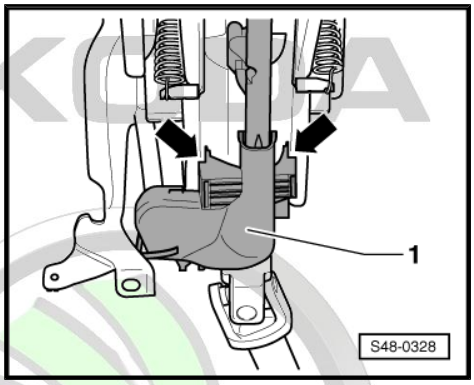
The steering lock must not be moved unless the lock cylinder is removed, otherwise it would block completely. The blocked steering lock must be replaced

– After disconnecting the plug from the immobilizer reading coil, re-install the lock cylinder into the steering lock housing ⇒ Electrical System; Rep. gr. 94 .

– Remove earth cable -1- and cable guide -2- from the steering column.



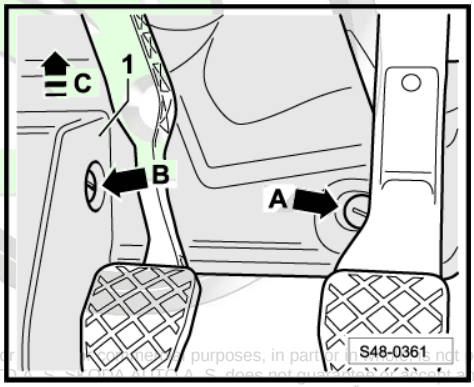
– Unclip cable duct -1- from the steering column -arrows-.



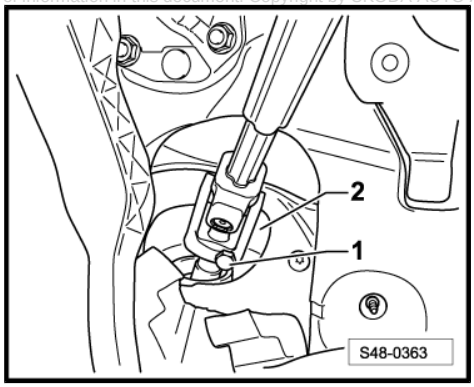
– Unscrew the fixing nut -arrow A- and the expansion clamp -arrow B- of the footwell covering.

– Take the expansion clamp of the covering out of the opening -arrow B-.

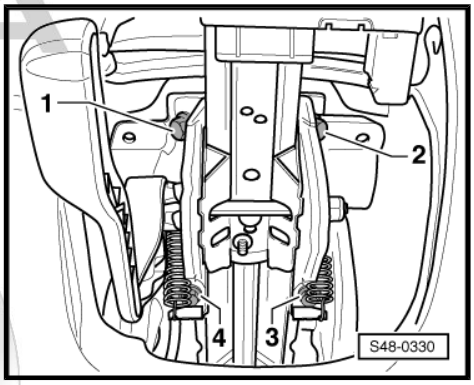
– Unclip the footwell covering in -direction of arrow C- and remove.



– Unscrew screw -1- and remove the universal joint -2- from the steering gear.

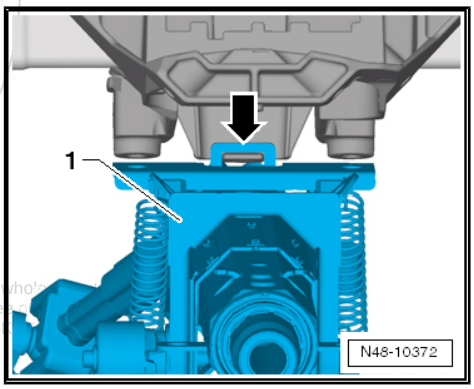


– Remove fixing screws -3- and -4- for steering column and crash struts, if present.
– Hold steering column and remove fixing screws -1- and -2-.



– Slightly lower the steering column -1- and carefully pull out of the guide of the holder for the steering column in the direction of the vehicle interior.

Observe handling and transportation of the steering column
⇒ "2.5 Observe handling and transportation of the steering column", page 381 .

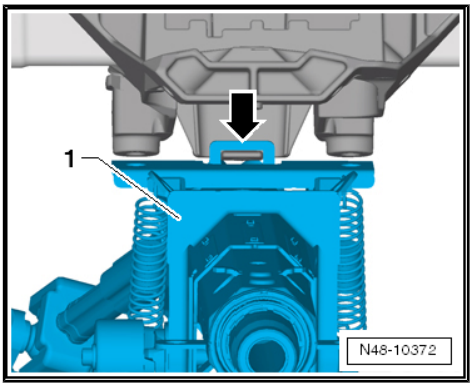


2.3.2 Installing:

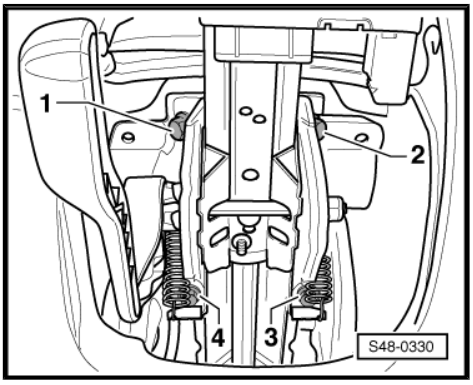
The ignition lock housing can be modified ⇒ Electrical System; Rep. gr. 94 .

When replacing the steering column, refit the steering column switches ⇒ Electrical System; Rep. gr. 94 .

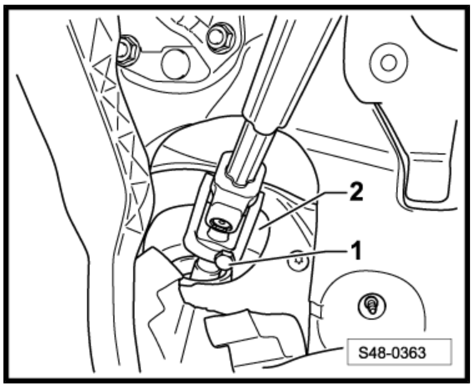
– Hook the steering column -1- with hanger onto the guide of the holder for the steering column -arrow-.



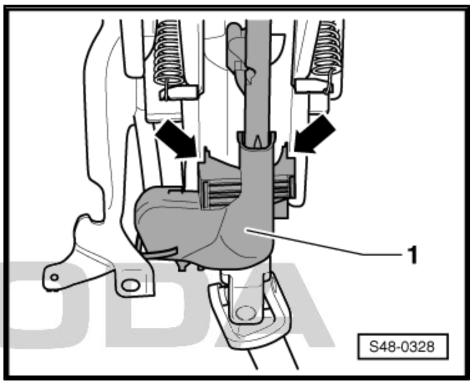
– Attach the steering column to the bracket with screws -1- and -2-.
– Screw in screws -3- and -4- together with the crash struts, if present, and do not tighten yet.
– Tighten screws -1- and -2- and while doing so, check if the steering column lies flush at the holder for steering column.
– Tighten screws -3- and -4-.



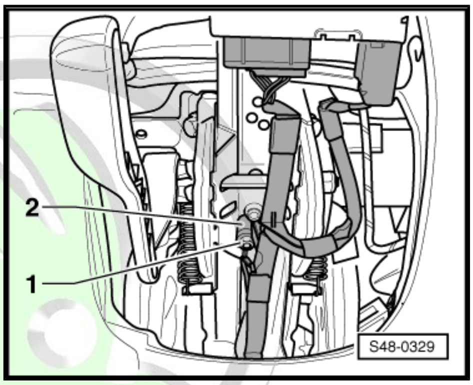
– Connect the universal joint -2- to the steering gear and screw in screw -1-.



– Clip cable duct -1- onto steering column -arrows-.



– Position cable guide -2- on steering column and screw on earth cable -1-.



– Fit the plug onto the steering column electronics control unit -J527- ⇒ Electrical System; Rep. gr. 94 .

– Fit the plug onto the immobilizer reading coil (remove lock cylinder from steering lock housing) ⇒ Electrical System; Rep. gr. 94 .

Note

The steering lock must not be moved unless the lock cylinder is removed, otherwise it would block completely. The blocked steering lock must be replaced

– After fitting the plug onto the immobilizer reading coil, re-install the lock cylinder into the steering lock housing ⇒ Electrical System; Rep. gr. 94 .

– Install footwell vent driver's side ⇒ Heating, Air Conditioning; Rep. gr. 87 .

Vehicles with knee airbag:

– Install support for knee airbag and knee airbag driver's side ⇒ Body Work; Rep. gr. 69 .

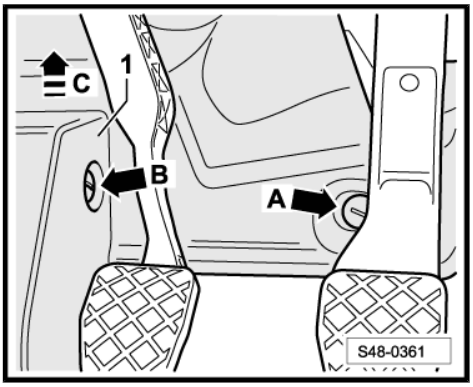
Continued for all vehicles:

– Install bottom and top steering column trim ⇒ Body Work; Rep. gr. 70 .

– Install steering wheel and airbag ⇒ Body Work; Rep. gr. 69 .

– Install the storage area on the driver's side ⇒ Body Work; Rep. gr. 70 .

– Position the footwell covering and clip in against the -direction of arrow C-.
– Insert the expansion clamp of the covering into the opening -arrow B-.
– Screw on the fixing nut -arrow A- and the expansion clamp -arrow B- of the footwell covering.
– Insert the damping trim panel ⇒ Body Work; Rep. gr. 70 .



After the following installation work the basic setting of the steering angle sender - G85- must be checked ⇒ Vehicle diagnostic tester.

- when replacing the steering column
- after replacing the power-steering gear
- if the steering wheel was offset

Tightening torques:

Steering column at holder for steering column ♦ The crash struts for the brake and clutch pedal are screwed with the steering column at the holder for steering column.	20 Nm
Universal joint to steering gear ♦ Use new screw!	30 Nm

2.4 Removing and installing holder for steering column and frequency link RHD - vehicles with right-hand drive

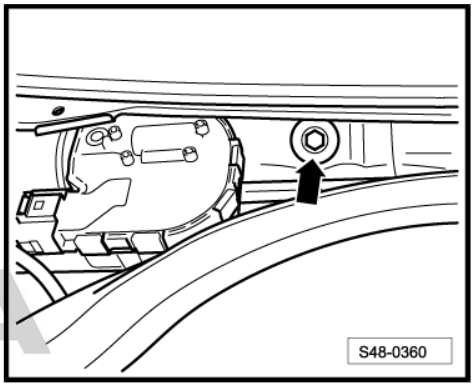
Removing:

– Removing the steering column
⇒ “2.3 Removing and installing steering column RHD”, page 371 .

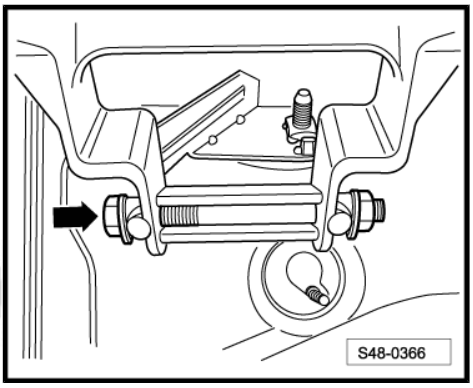
– Remove the cooling water tank cover ⇒ Body Work; Rep. gr. 66 .

– Remove screw for frequency link -arrow- in the plenum chamber.

– Removing dash panel insert ⇒ Electrical System; Rep. gr. 90 .

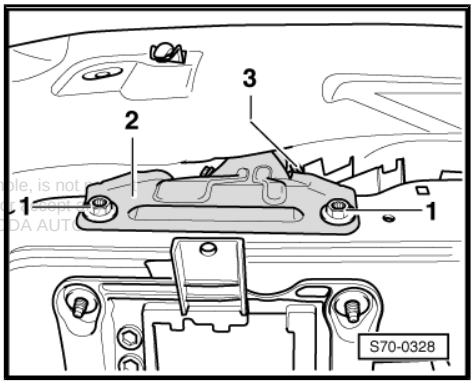


– Unscrew fixing screw -arrow- of frequency link/holder for steering column.

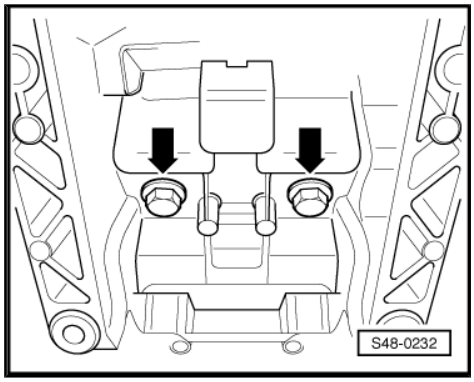


– Release the fixing screws -1- of the frequency link -2-, while doing so raise the dash panel carefully above the screws of the frequency link -1-.

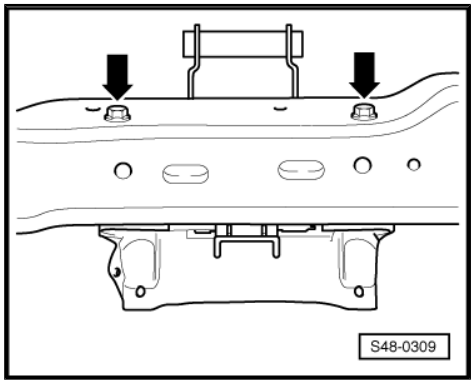
– Swivel the frequency link at the central pipe in the direction of the foot controls and pull out.



– Unscrew screws -arrows- below the holder for the steering column.



– Remove screws -arrows- from the holder for the steering column at the central pipe.



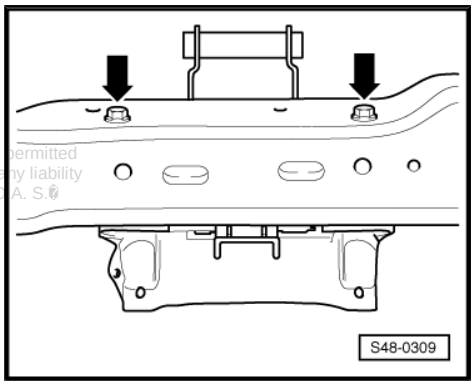
Note

The central pipe in the illustration is removed for purposes of clear presentation.

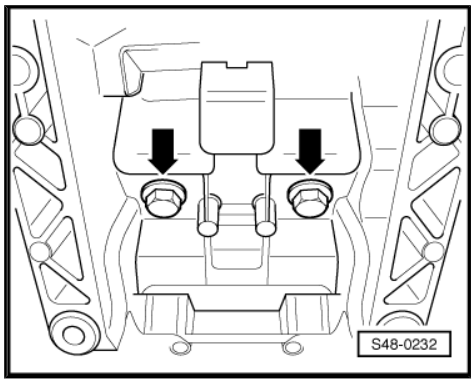
– Remove holder for steering column.

Installing:

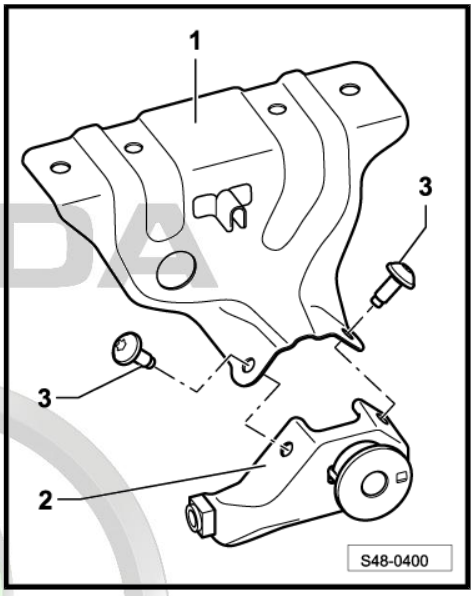
– Position the holder for the steering column at the central pipe and screw on the screws -arrows-.



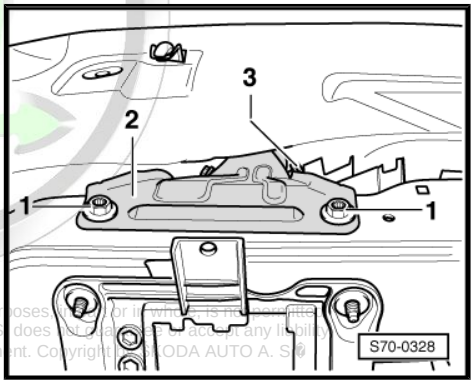
– Screw in screws -arrows- below the holder for the steering column.



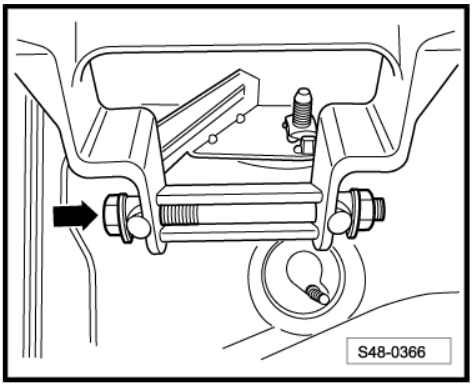
– Place the top part of the frequency link -1- onto the bottom part of the frequency link -2-, outside the vehicle, and screw together with screws -3-.
– Insert the frequency link in the area above the foot controls.
– Swivel the frequency link on the central pipe upwards.



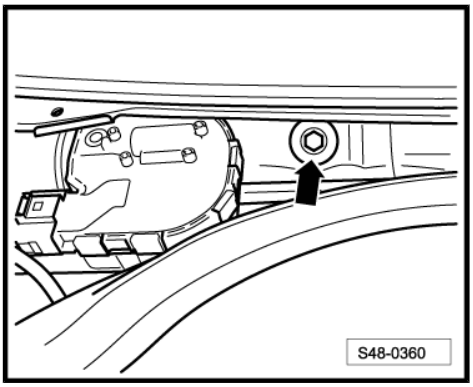
– Slightly screw on the fixing screws -1- of the frequency link -2-, while doing so raise the dash panel carefully above the screws of the frequency link -1-.



– Screw on fixing screw -arrow- of frequency link/holder for steering column.



– Attach frequency link to the body, tighten screw -arrow- to tightening torque.
– Tighten fixing screws of frequency link to the specified tightening torque.
– Install the cooling water tank cover ⇒ Body Work; Rep. gr. 66 .
– Installing dash panel insert ⇒ Electrical System; Rep. gr. 90 .
– Installing the steering column ⇒ “2.3.2 Installing:”, page 373 .



Tightening torques:

Holder for steering column at central pipe	20 Nm
Frequency link to body	25 Nm
Frequency link to central pipe	20 Nm
Frequency link at holder for steering column	20 Nm
Frequency link connection	9 Nm

2.5 Observe handling and transportation of the steering column

WARNING

- *The correct handling of the steering column must absolutely be respected.*
- *An incorrect handling of the steering column can lead to damages of the steering column and therefore to a risk of safety.*

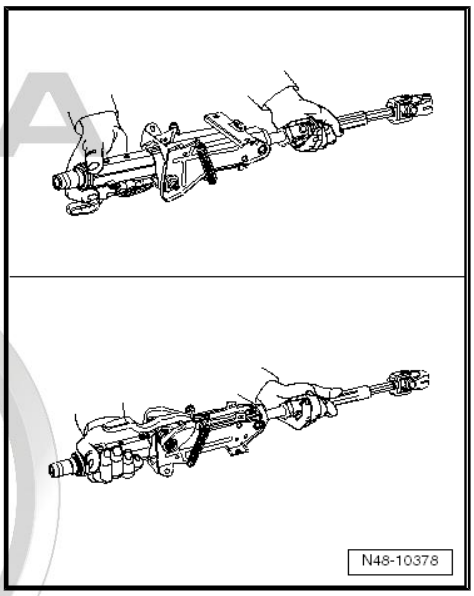
Observe correct handling and transportation of the steering column

- Always transport the steering column with both hands.
- Always take hold of the steering column at the casing and in the area of the top universal joint.

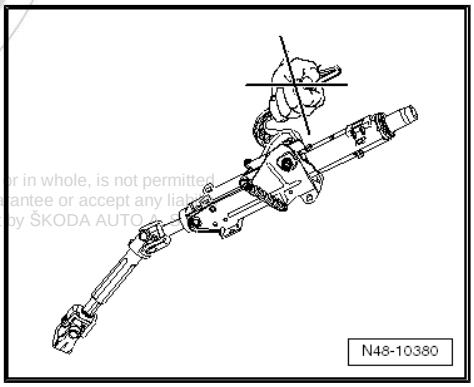
DANGER!

Incorrect gripping lead to damage of the universal joint bushings of the lower steering column bearing:

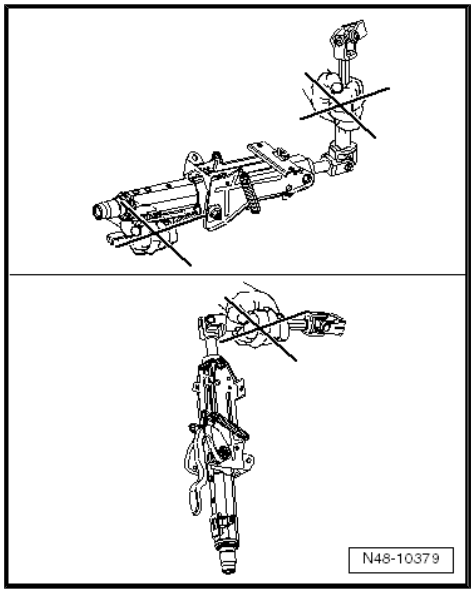
- *Transporting the steering column with one hand at the cardan shaft.*
- *Bending of the drive shaft over 90°.*



Incorrect gripping:



Incorrect handling:



2.6 Check the steering column for damage

Visual inspection:

– Inspecting parts of the steering column for damage.

Functional test:

– Check whether the steering column turns freely without jerking.

– Check if the steering column is adjustable in longitudinal direction as well as in height and is easy to operate without hooking.

3 Electro-mechanical steering gear LHD - vehicles with left-hand drive

⇒ “3.1 Summary of components for electro-mechanical steering gear LHD - aluminium assembly carrier”, page 383

⇒ “3.2 Summary of components for electro-mechanical steering gear LHD - assembly carrier made of steel sheet”, page 384 .

⇒ “3.3 Removing and installing steering gear LHD - aluminium assembly carrier”, page 385 .

⇒ “3.4 Removing and installing steering gear LHD - assembly carrier made of steel sheet”, page 388

3.1 Summary of components for electro-mechanical steering gear LHD - aluminium assembly carrier

1 - Universal joint

2 - Screw

- ❑ M8 x 35
- ❑ replace after each removal
- ❑ 30 Nm

3 - Electrical line

4 - Power-steering gear

- ❑ The 3rd generation power-assisted steering
- ❑ with power-assisted steering control unit -J500-
- ❑ the steering angle sender -G85- is integrated in the steering gear and cannot be replaced separately
- ❑ check in the targeted fault finding ⇒ Vehicle diagnostic tester

5 - Wheel-bearing housing

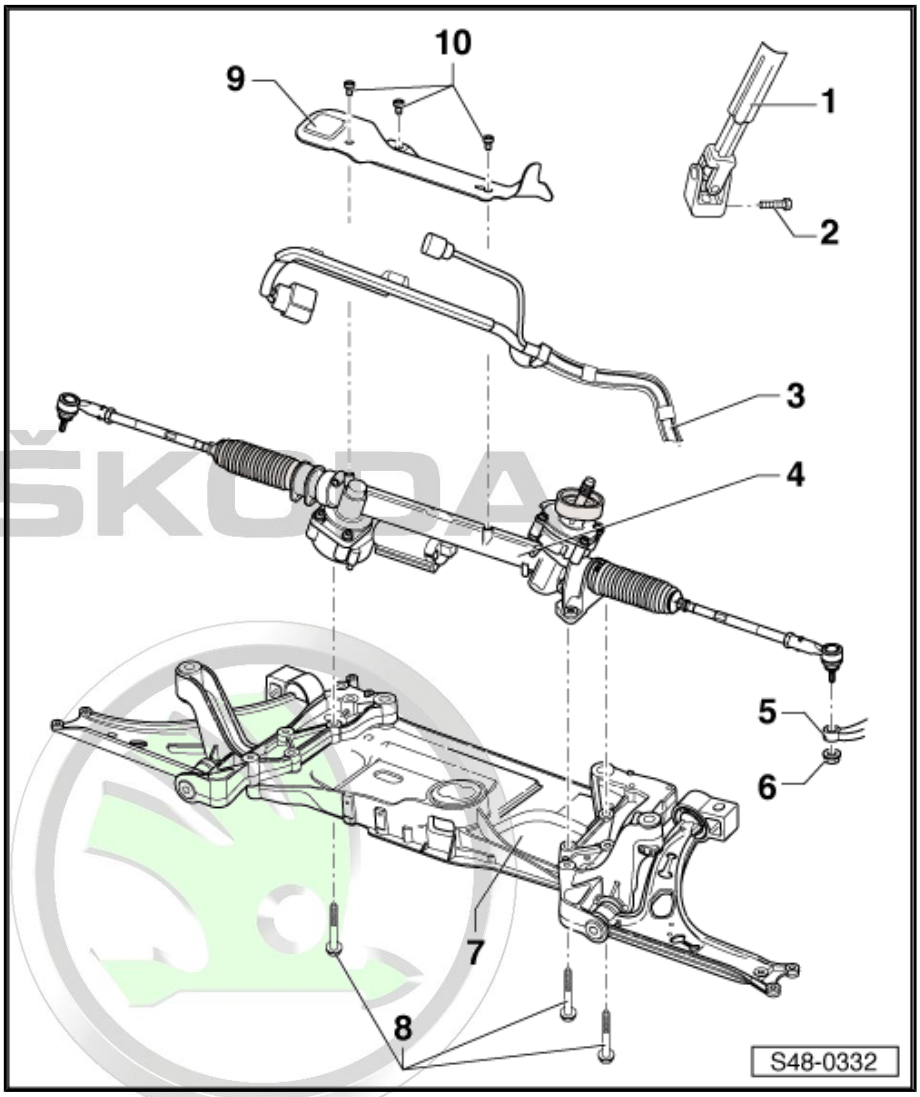
6 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 20 Nm + 90°

7 - Assembly carrier with consoles

8 - Screw

- ❑ M10 x 76
- ❑ replace after each removal
- ❑ 50 Nm + 90°

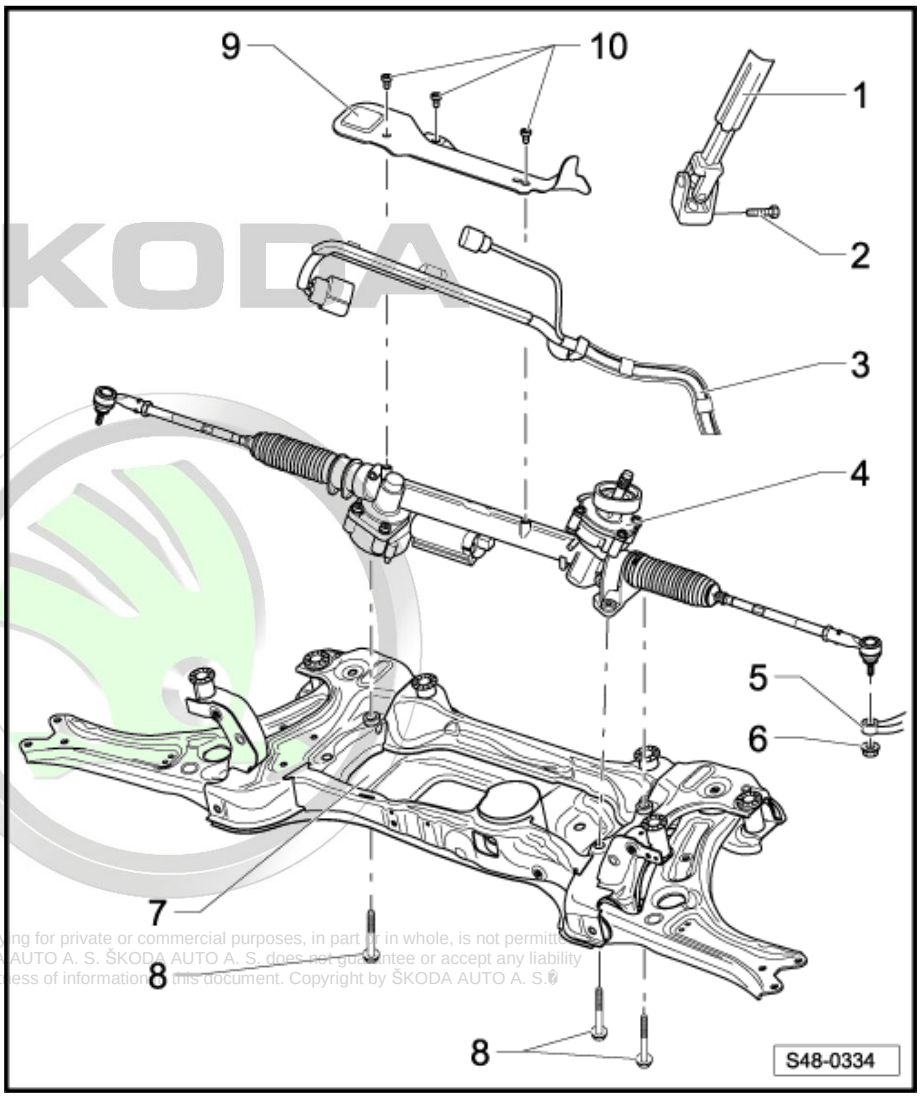


9 - Protection plate

10 - Screw

- ❑ 6 Nm

3.2 Summary of components for electro-mechanical steering gear LHD - assembly carrier made of steel sheet



1 - Universal joint

2 - Screw

- ❑ M8 x 35
- ❑ replace after each removal
- ❑ 30 Nm

3 - Electrical line

4 - Power-steering gear

- ❑ The 3rd generation power-assisted steering
- ❑ with power-assisted steering control unit - J500-
- ❑ The steering angle sender - G85- is integrated in the steering gear and cannot be replaced separately
- ❑ check in the targeted fault finding ⇒ Vehicle diagnostic tester
- ❑ adapt the steering angle sender - G85- after each removal ⇒ Vehicle diagnostic tester
- ❑ adapt the power-assisted steering control unit - J500- after installing a new power-steering gear ⇒ Vehicle diagnostic tester

5 - Wheel-bearing housing

6 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 20 Nm + 90°

7 - Assembly carrier made of steel sheet

8 - Screw

- ❑ M10 x 76
- ❑ replace after each removal
- ❑ 50 Nm + 90°

9 - Protection plate

10 - Screw

- ❑ 6 Nm

3.3 Removing and installing steering gear LHD - aluminium assembly carrier

Special tools and workshop equipment required

- Fixing device - T10096-
- Ball joint extractor - 3287A-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-

3.3.1 Removing steering gear

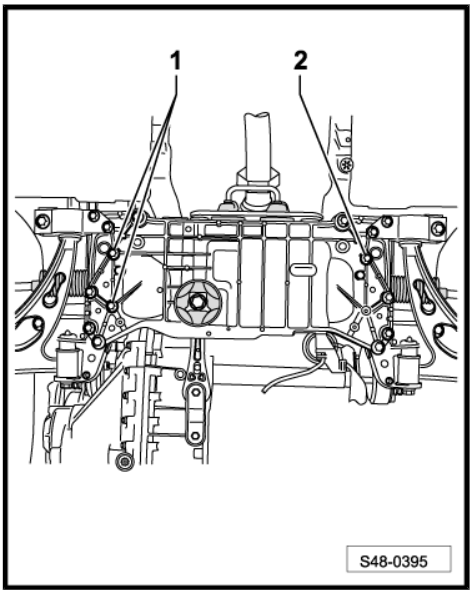
– Disconnect battery ⇒ Electrical System; Rep. gr. 27 .

– Remove assembly carrier
⇒ “2 Front axle with aluminium assembly carrier”, page 4 .

– Unscrew screws for steering gear -1- and -2- from assembly carrier.

– Raise the steering gear until the threaded bushings of the steering gear are pushed out of the assembly carrier.

– Raise the steering gear.



3.3.2 Installing steering gear

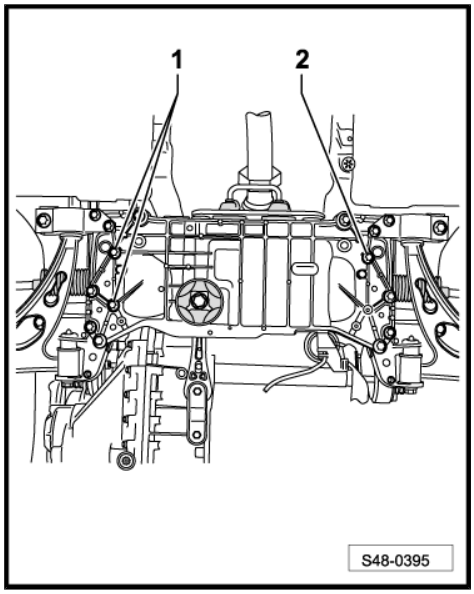
Installation is carried out in the reverse order.

Note

- *Coat the sealing sleeve on the steering gear with lubricant, e.g. lubricating soap, before installing the steering gear.*
- *After positioning the steering gear on the drive shaft make sure the seal on the steering gear is not bent on the assembly plate and correctly seals the footwell opening. Otherwise this could cause water penetration and/or noise.*
- *Make sure all sealing surfaces are clean.*

– Position the steering gear on the assembly carrier so that the threaded bushings lock into the openings of the assembly carrier.

– Screw in the new screws for the steering gear -1- and -2- and tighten to the specified tightening torque.
– Install the assembly carrier on the body
⇒ “2 Front axle with aluminium assembly carrier”, page 4 .



Note

Make sure the steering gear boot is neither damaged nor twisted.

– Connect battery ⇒ Electrical System; Rep. gr. 27 .

Note

Observe the instructions after reattaching the battery ⇒ Electrical System; Rep. gr. 27 .

Note

It is necessary to perform an axle alignment in the event of:
⇒ “2.3 Axle alignment”, page 338

– Perform a test drive.
– Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment
⇒ “2.3 Axle alignment”, page 338 .

If a new steering gear is installed, perform the basic setting of the power-assisted steering control unit - J500- and the steering angle sender - G85 - with the ⇒ Vehicle diagnostic tester

Tightening torques:

Steering gear to assembly carrier ♦ Use new screws	50 Nm + 90°
Heat shield to steering gear	6 Nm

3.4 Removing and installing steering gear LHD - assembly carrier made of steel sheet

Special tools and workshop equipment required

- Fixing device - T10096- (smaller diameter)
- Fixing device - T10452- (larger diameter)
- Ball joint extractor - 3287A-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-

3.4.1 Removing steering gear

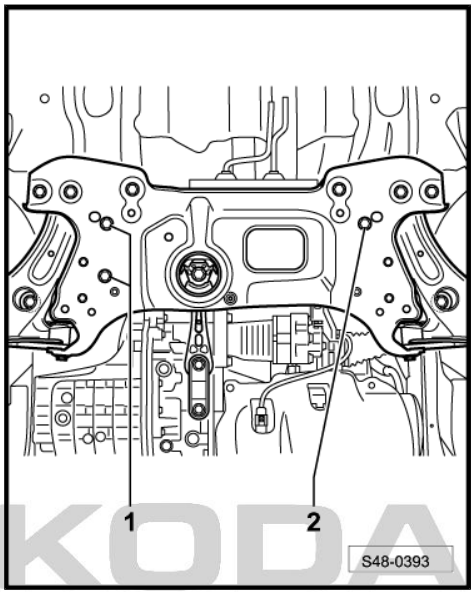
– Disconnect battery ⇒ Electrical System; Rep. gr. 27 .

– Remove assembly carrier
⇒ “3 Front axle with assembly carrier made of steel sheet”, page 60 .

– Unscrew screws for steering gear -1- and -2- from assembly carrier.

– Raise the steering gear until the threaded bushings of the steering gear are pushed out of the assembly carrier.

– Raise the steering gear.



3.4.2 Installing steering gear

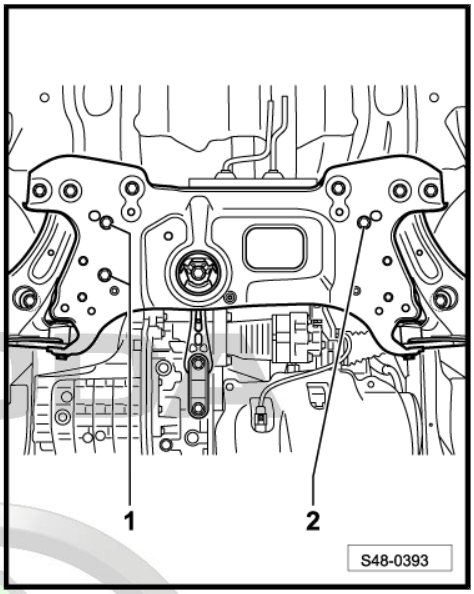
Installation is carried out in the reverse order.

Note

- *Coat the sealing sleeve on the steering gear with lubricant, e.g. lubricating soap, before installing the steering gear.*
- *After positioning the steering gear on the drive shaft make sure the seal on the steering gear is not bent on the assembly plate and correctly seals the footwell opening. Otherwise this could cause water penetration and/or noise.*
- *Make sure all sealing surfaces are clean.*

– Position the steering gear on the assembly carrier so that the threaded bushings lock into the openings of the assembly carrier.

– Screw in the new screws for the steering gear -1- and -2- and tighten to the specified tightening torque.
– Install the assembly carrier on the body
⇒ “3 Front axle with assembly carrier made of steel sheet”, page 60 .



Note

Make sure the steering gear boot is neither damaged nor twisted.

– Connect battery ⇒ Electrical System; Rep. gr. 27 .

Note

Observe the instructions after reattaching the battery ⇒ Electrical System; Rep. gr. 27 .

Note

It is necessary to perform an axle alignment in the event of:
⇒ “2.3 Axle alignment”, page 338

– Perform a test drive.
– Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment
⇒ “2.3 Axle alignment”, page 338 .

If a new steering gear is installed, perform the basic setting of the power-assisted steering control unit - J500- and the steering angle sender - G85 - with the ⇒ Vehicle diagnostic tester

Tightening torques:

Steering gear to assembly carrier ♦ Use new screws	50 Nm + 90°
Heat shield to steering gear	6 Nm

4 Electro-mechanical steering gear RHD - vehicles with right-hand drive

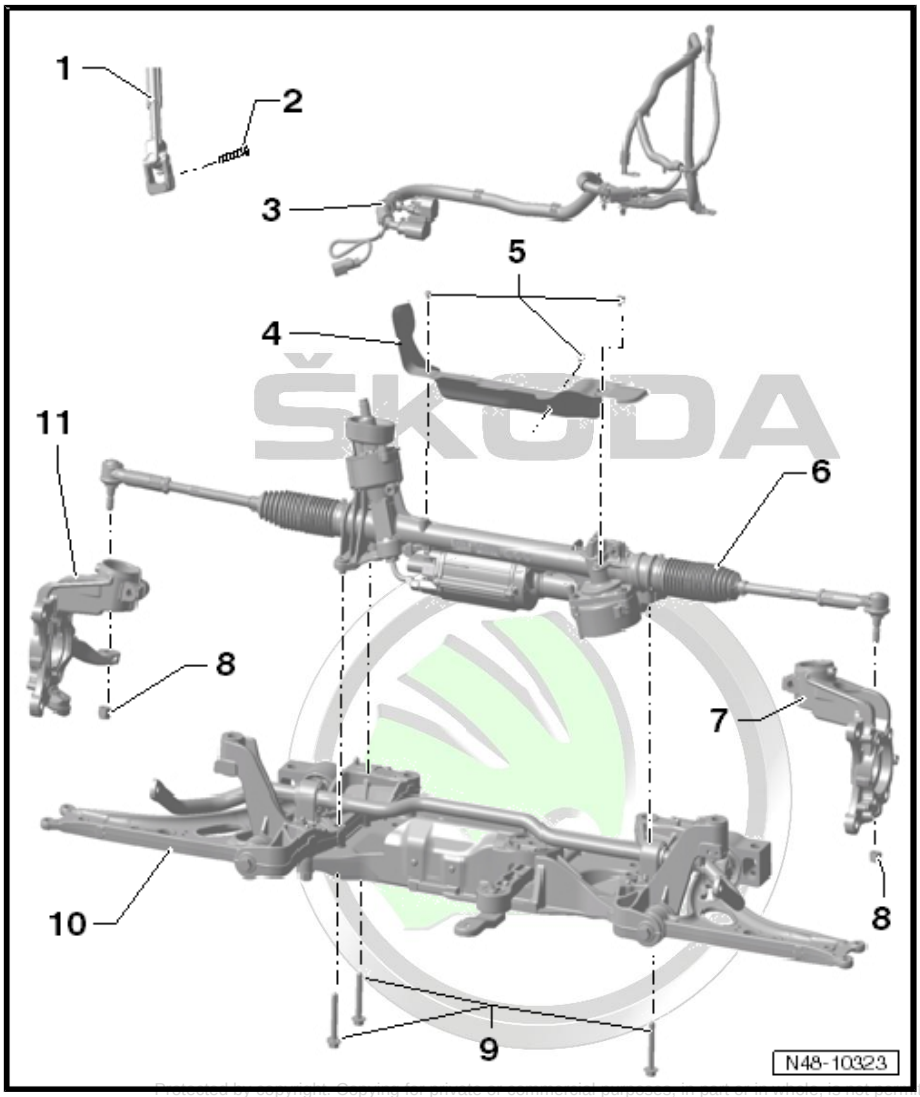
⇒ “4.1 Summary of components for electro-mechanical steering gear RHD - aluminium assembly carrier”, page 391 .

⇒ “4.2 Summary of components for electro-mechanical steering gear RHD - assembly carrier made of steel sheet”, page 392 .

⇒ “4.3 Removing and installing steering gear RHD - aluminium assembly carrier”, page 393 .

⇒ “4.4 Removing and installing steering gear RHD - assembly carrier made of steel sheet”, page 396 .

4.1 Summary of components for electro-mechanical steering gear RHD - aluminium assembly carrier



1 - Universal joint

2 - Screw

- ❑ M8 x 35
- ❑ replace after each removal
- ❑ 30 Nm

3 - Electrical line

4 - Protection plate

5 - Screw

- ❑ 6 Nm

6 - Power-steering gear

- ❑ The 3rd generation power-assisted steering
- ❑ with power-assisted steering control unit - J500-
- ❑ The steering angle sender - G85- is integrated in the steering gear and cannot be replaced separately
- ❑ check in the targeted fault finding ⇒ Vehicle diagnostic tester
- ❑ after installing a new power-steering gear, adapt the steering angle sender - G85- ⇒ Vehicle diagnostic tester
- ❑ adapt the power-assisted steering control unit - J500- after installing a new power-steering gear ⇒ Vehicle diagnostic tester

7 - Wheel bearing housing ⇒ “4 The wheel bearing”, page 115

8 - Nut

- ❑ self-locking
- ❑ replace after each removal

- ❑ 20 Nm + 90°

9 - Screw

- ❑ M10 x 76
- ❑ replace after each removal
- ❑ 50 Nm + 90°

10 - Assembly carrier with aluminium consoles

11 - Wheel bearing housing ⇒ “4 The wheel bearing”, page 115

4.2 Summary of components for electro-mechanical steering gear RHD - assembly carrier made of steel sheet

1 - Universal joint

2 - Screw

- ❑ M8 x 35
- ❑ replace after each removal
- ❑ 30 Nm

3 - Electrical line

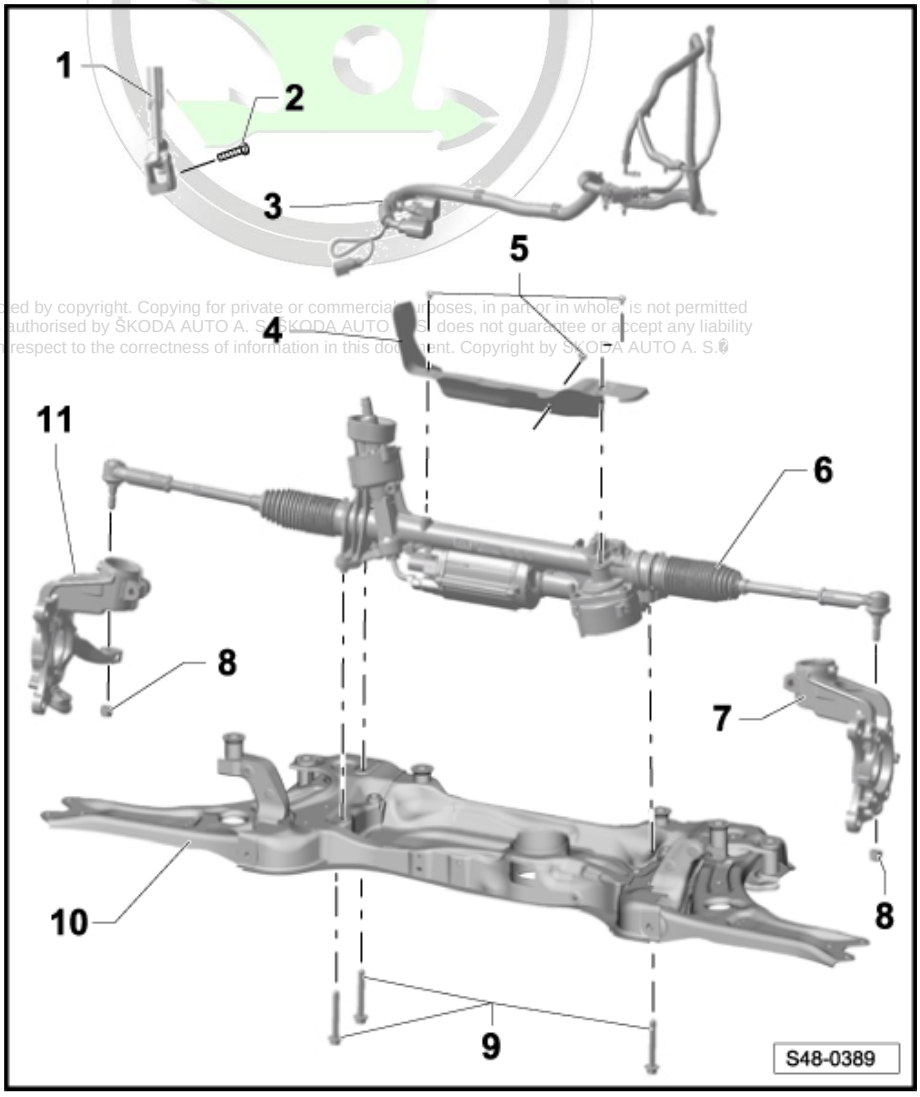
4 - Protection plate

5 - Screw

- ❑ 6 Nm

6 - Power-steering gear

- ❑ The 3rd generation power-assisted steering
- ❑ with power-assisted steering control unit - J500-
- ❑ The steering angle sender - G85- is integrated in the steering gear and cannot be replaced separately
- ❑ check in the targeted fault finding ⇒ Vehicle diagnostic tester
- ❑ after installing a new power-steering gear, adapt the steering angle sender - G85- ⇒ Vehicle diagnostic tester
- ❑ adapt the power-assisted steering control unit - J500- after installing a new power-steering gear ⇒ Vehicle diagnostic tester



7 - Wheel bearing housing ⇒ “4 The wheel bearing”, page 115

8 - Nut

- ❑ self-locking
- ❑ replace after each removal
- ❑ 20 Nm + 90°

9 - Screw

- ❑ M10 x 76
- ❑ replace after each removal
- ❑ 50 Nm + 90°

10 - Assembly carrier made of steel sheet

11 - Wheel bearing housing ⇒ "4 The wheel bearing", page 115

4.3 Removing and installing steering gear RHD - aluminium assembly carrier

Special tools and workshop equipment required

- ♦ Fixing device - T10096-
- ♦ Ball joint extractor - 3287A-
- ♦ Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-

4.3.1 Removing steering gear

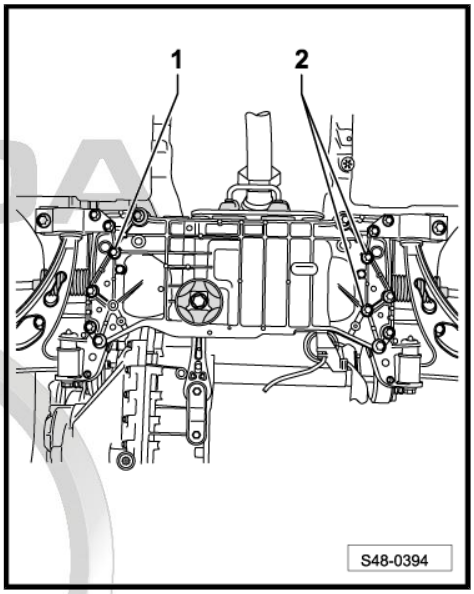
– Disconnect battery ⇒ Electrical System; Rep. gr. 27 .

– Remove assembly carrier
⇒ "2 Front axle with aluminium assembly carrier", page 4 .

– Unscrew screws for steering gear -1- and -2- from assembly carrier.

– Raise the steering gear until the threaded bushings of the steering gear are pushed out of the assembly carrier.

– Raise the steering gear.



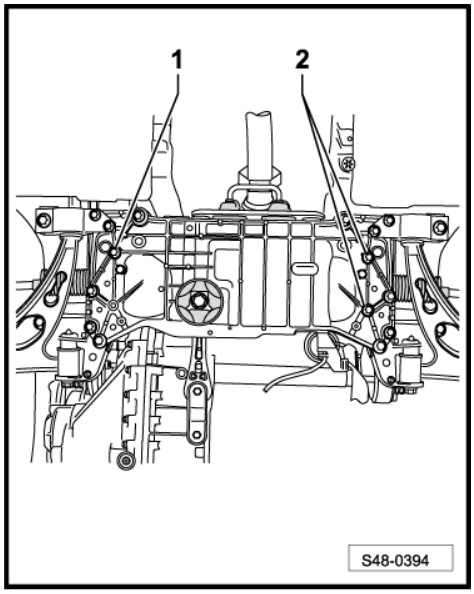
4.3.2 Installing steering gear

Installation is carried out in the reverse order.

Note

- ♦ *Coat the sealing sleeve on the steering gear with lubricant, e.g. lubricating soap, before installing the steering gear.*
- ♦ *After positioning the steering gear on the drive shaft make sure the seal on the steering gear is not bent on the assembly plate and correctly seals the footwell opening. Otherwise this could cause water penetration and/or noise.*
- ♦ *Make sure all sealing surfaces are clean.*

– Position the steering gear on the assembly carrier so that the threaded bushings lock into the openings of the assembly carrier.
– Screw in the new screws for the steering gear -1- and -2- and tighten to the specified tightening torque.
– Install the assembly carrier on the body ⇒ “2 Front axle with aluminium assembly carrier”, page 4 .



Note

Make sure the steering gear boot is neither damaged nor twisted.

– Connect battery ⇒ Electrical System; Rep. gr. 27 .

Note

Observe the instructions after reattaching the battery ⇒ Electrical System; Rep. gr. 27 .

Note

It is necessary to perform an axle alignment in the event of: ⇒ “2.3 Axle alignment”, page 338 .

– Perform a test drive.
– Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment ⇒ “2.3 Axle alignment”, page 338 .

If a new steering gear is installed, perform the basic setting of the power-assisted steering control unit - J500- and the steering angle sender - G85 - with the ⇒ Vehicle diagnostic tester

Tightening torques:

Steering gear to assembly carrier ♦ Use new screws	50 Nm + 90°
Heat shield to steering gear	6 Nm

4.4 Removing and installing steering gear RHD - assembly carrier made of steel sheet

Special tools and workshop equipment required

- Fixing device - T10096- (smaller diameter)
- Fixing device - T10452- (larger diameter)
- Ball joint extractor - 3287A-
- Engine and gearbox jack e.g. -V.A.G 1383A- or -VAS6931-

4.4.1 Removing steering gear

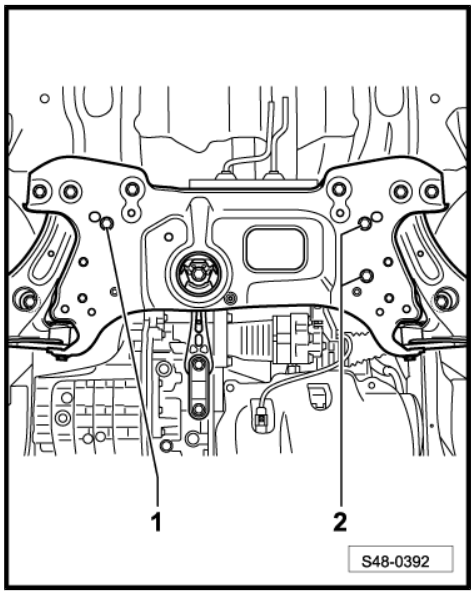
– Disconnect battery ⇒ Electrical System; Rep. gr. 27 .

– Remove assembly carrier
⇒ “2 Front axle with aluminium assembly carrier”, page 4

– Unscrew screws for steering gear -1- and -2- from assembly carrier.

– Raise the steering gear until the threaded bushings of the steering gear are pushed out of the assembly carrier.

– Raise the steering gear.



4.4.2 Installing steering gear

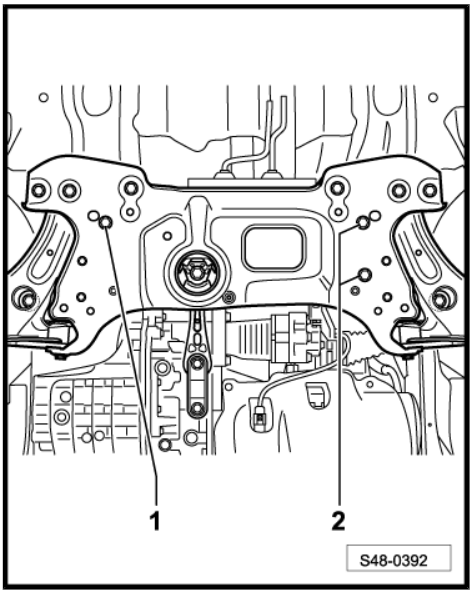
Installation is carried out in the reverse order.

Note

- *Coat the sealing sleeve on the steering gear with lubricant, e.g. lubricating soap, before installing the steering gear.*
- *After positioning the steering gear on the drive shaft make sure the seal on the steering gear is not bent on the assembly plate and correctly seals the footwell opening. Otherwise this could cause water penetration and/or noise.*
- *Make sure all sealing surfaces are clean.*

– Position the steering gear on the assembly carrier so that the threaded bushings lock into the openings of the assembly carrier.

– Screw in the new screws for the steering gear -1- and -2- and tighten to the specified tightening torque.
– Install the assembly carrier on the body
⇒ “2 Front axle with aluminium assembly carrier”, page 4



Note

Make sure the steering gear boot is neither damaged nor twisted.

– Connect battery ⇒ Electrical System; Rep. gr. 27 .

Note

Observe the instructions after reattaching the battery ⇒ Electrical System; Rep. gr. 27 .

Note

It is necessary to perform an axle alignment in the event of:
⇒ “2.3 Axle alignment”, page 338

– Perform a test drive.
– Check the steering wheel position during the test drive.

Note

If after the test drive and with the wheels pointing straight ahead the steering wheel is off straight, perform an axle alignment
⇒ “2.3 Axle alignment”, page 338 .

If a new steering gear is installed, perform the basic setting of the power-assisted steering control unit - J500- and the steering angle sender - G85 - with the ⇒ Vehicle diagnostic tester

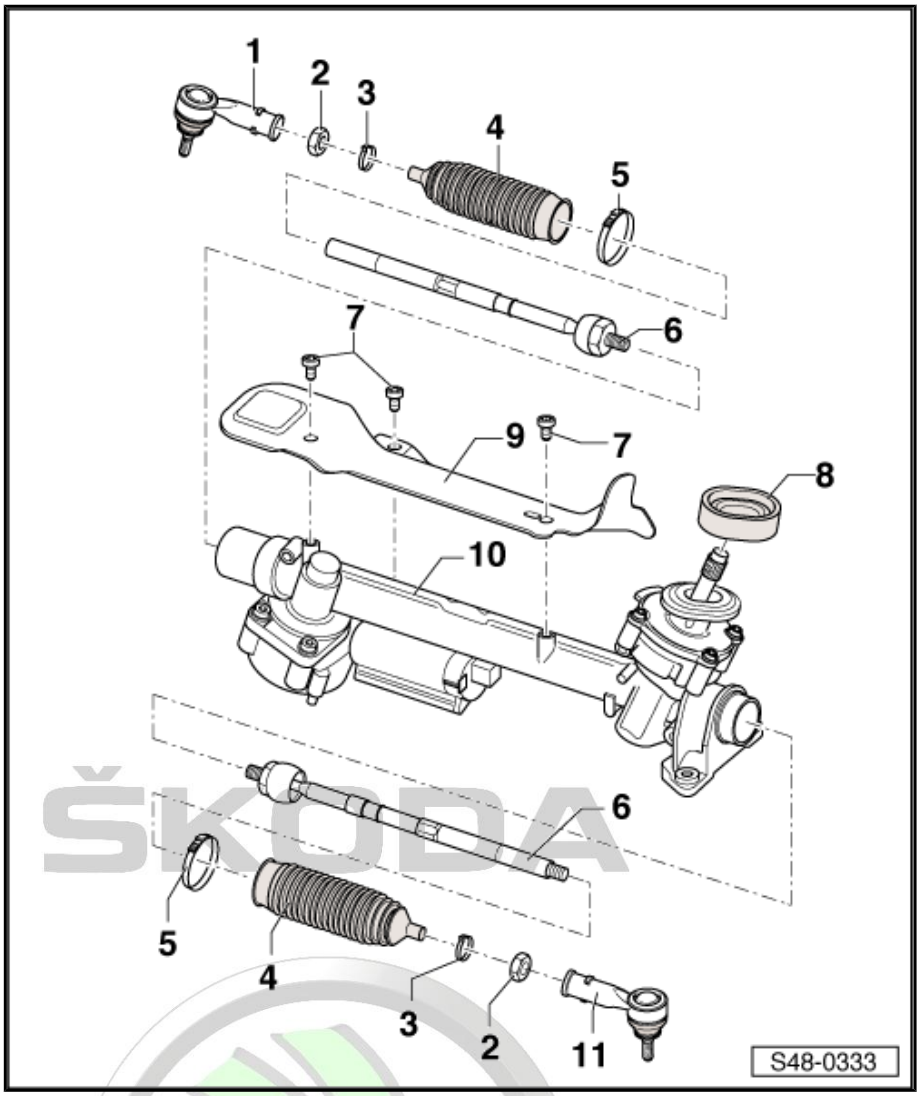
Tightening torques:

Steering gear to assembly carrier ♦ Use new screws	50 Nm + 90°
Heat shield to steering gear	6 Nm

5 Repairing electro-mechanical steering gear

⇒ “5.1 Removing and installing bellows”, page 400 .

⇒ “5.2 Removing and installing track rod”, page 404 .



1 - Right track rod end

- ❑ Inspect dust caps for damage and check that they are sitting correctly.

if a track rod end was replaced or removed and installed, the vehicle must be aligned ⇒ “2 Axle alignment”, page 336

2 - Nut

- ❑ When tightening the nut, the track rod end must be counterheld with a wrench.
- ❑ 55 Nm

3 - Spring strap clamp

4 - Collar

- ❑ check for damage
- ❑ must not be twisted after setting the wheel toe
- ❑ removing and installing ⇒ “5.1 Removing and installing bellows”, page 400

5 - Open warm-type clamp

- ❑ replace after each removal
- ❑ Clamp new open warm-type clamp with clamp pliers for steering gear e. g. -VAS 6199-

6 - Track rod

- ❑ removing and installing ⇒ “5.2 Removing and installing track rod”, page 404
- ❑ 100 Nm

7 - Screw

- ❑ 6 Nm

8 - Gasket

9 - Protection plate

10 - Steering gear

- ❑ The 3rd generation power-assisted steering
- ❑ with power-assisted steering control unit - J500-
- ❑ the steering angle sender -G85- is integrated in the steering gear and cannot be replaced separately
- ❑ can be checked in the guided fault detection system with ⇒ Vehicle diagnostic tester

11 - Left track rod end

- ❑ Inspect dust caps for damage and check that they are sitting correctly.

5.1 Removing and installing bellows

Special tools and workshop equipment required

- ♦ Clamp pliers for steering gear e.g. -VAS 6199-
- ♦ Torque wrench , e.g. -V.A.G 1332-
- ♦ Hose strap pliers , e.g. -V.A.G 1275-

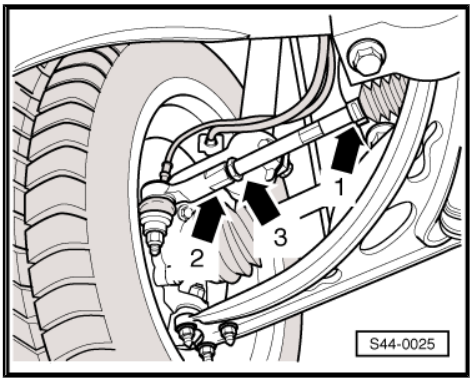
Removing bellows:

Note

If bellows are defective humidity and dirt penetrates into the steering gear. In the area of the serration on the gear rack, a tangible grease film must be present. If the grease film is not present, the steering gear must be replaced. Also if there is corrosion, damage or wear to the gear rack, the steering gear must be replaced.

– Turn steering wheel to the straight ahead position.
– Remove wheel.
– Clean outside of steering gear in the area of the bellows.

While doing so, no dirt must get into the steering gear through the defective bellows.



- Mark the position of the nut -3- on the track rod.
- Release nut -3- while counterholding the track rod end -2-.
- Release the spring clip -1- with the hose binding claw - V.A.G 1275- from the bellows and slide the spring clip onto the track rod.
- Remove warm-type clamp and pull off bellows from steering gear housing.
- Rotate the track rod out of the track rod end.
- Detach the spring clip and the bellow from the track rod.

Note

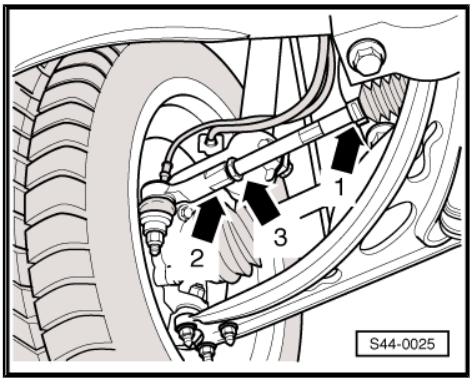
- *If corrosion, damage, wear or traces of dirt are visible on the gear rack, the steering gear must be replaced completely.*
- *If no grease film is visible on the gear rack, the steering gear must also be replaced completely.*

Install bellows:

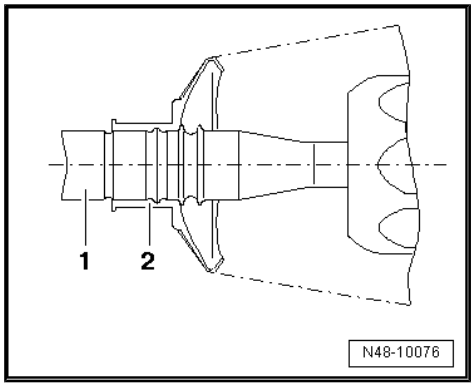
Caution

The gear rack must not be greased.

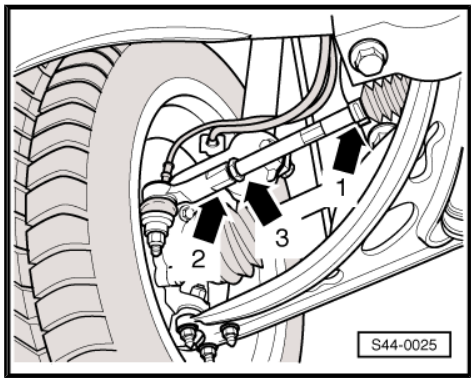
- Turn steering wheel to the straight ahead position.
- Push warm-type clamp, bellows and spring clip onto the track rod.
- Screw the track rod into the track rod end up to the marking made before the removal.
- Tighten nut -3- with a torque wrench while counterholding at the track rod end -2-.
- Lightly coat the sealing surface of the bellows/track rod with grease -G 052 168 A1- .



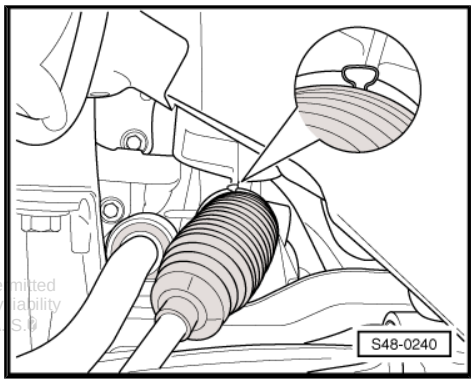
– Slide bellows -2-, as shown in the illustration, onto the track rod -1-.



– Secure spring clip -1- onto the bellows with the hose binding claw e.g. -V.A.G 1275- .
– Lightly coat the sealing surface of the bellows/steering gear housing with grease -G 052 168 A1- .
– Slide bellows onto the steering gear housing up to the stop.



– Clamp new warm-type clamp with clamp pliers for steering gear e.g. -VAS 6199- at the steering gear as far as shown in the figure.



Further installation occurs in reverse order.

After installing, perform axle alignment
⇒ “2.3 Axle alignment”, page 338 .

– Perform basic setting of the steering angle sender - G85- with the ⇒ Vehicle diagnostic tester.
– Perform basic setting of the steering ⇒ Vehicle diagnostic tester.

Tightening torques:

Track rod end to track rod	55 Nm
Track rod to gear rack	100 Nm

5.2 Removing and installing track rod

Special tools and workshop equipment required

- Open-jawed wrench insert , e.g. -V.A.G 1332/8-
- Hose strap pliers , e.g. -V.A.G 1275-
- Clamp pliers for steering gear e.g. -VAS 6199-
- Ball joint extractor - 3287A-

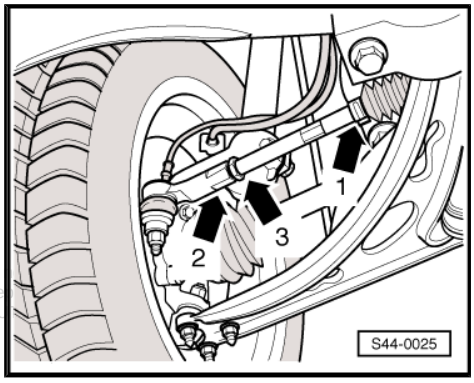
Removing track rod:

– Turn steering wheel to the straight ahead position.

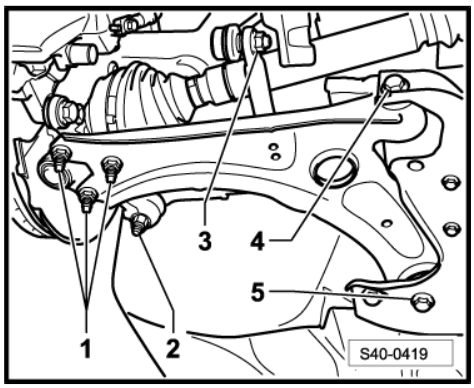
– Remove wheel.

– Clean outside of steering gear in the area of the bellows.

– Release nut -3- while counterholding the track rod end -2-.



– Loosen nut from track rod end -2-, but do not unscrew yet.



Note

To protect the thread, screw the nut a couple of thread turns onto the stud of the track rod end.

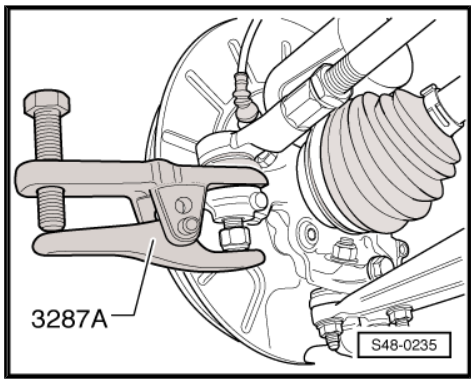
– Press the track rod end off the wheel-bearing housing with the ball joint extractor - 3287A- .

– Unscrew nut for track rod end.

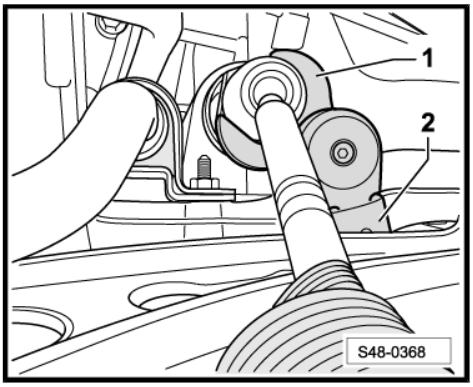
– Release the spring clip -1- with the hose binding claw - V.A.G 1275- from the bellows and slide the spring clip onto the track rod.

– Remove warm-type clamp and pull off bellows from steering gear housing.

– Push the bellows with the spring clip slightly away from the steering gear.



– Remove track rod from gear rack with an open-jawed wrench insert -1-.



1 - Open-jawed wrench insert e.g. -V.A.G 1923-

2 - Torque wrench

Note

- *If corrosion, damage, wear or traces of dirt are visible on the gear rack, the steering gear must be replaced completely.*
- *If no grease film is visible on the gear rack, the steering gear must also be replaced completely.*
- *Inspect bellows for wear »cuts, splits«; replace if necessary.*

Installing track rod:

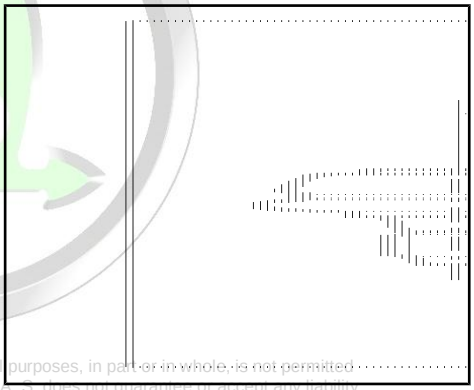
Caution

The gear rack must not be greased.

– Turn steering wheel to the straight ahead position.

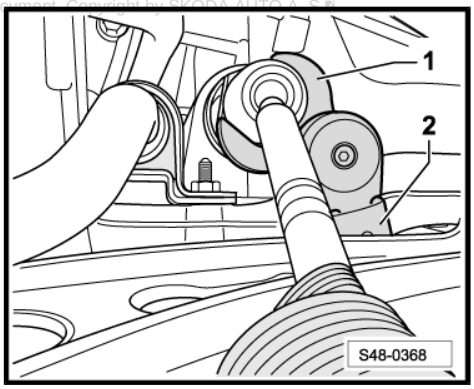
– Push warm-type clamp, bellows and spring clip onto the track rod.

– Screw thw track rod into the track rod end, until the dimension -a- is reached.



a - 371 ± 1 mm

– Screw track rod into the gear rack and tighten with an open-jawed wrench insert -1-.

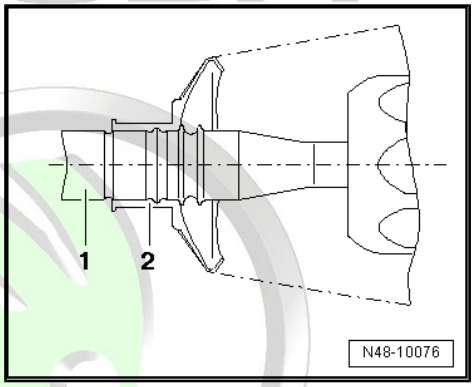


1 - Open-jawed wrench insert e.g. -V.A.G 1923-

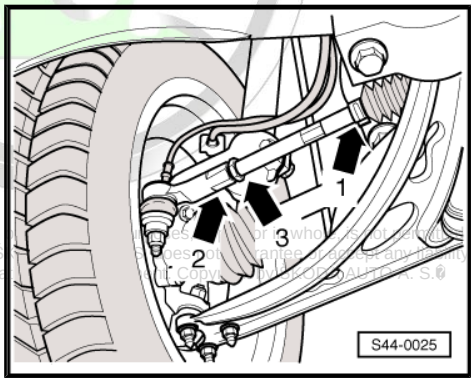
2 - Torque wrench

– Lightly coat the sealing surface of the bellows/track rod with grease -G 052 168 A1- .

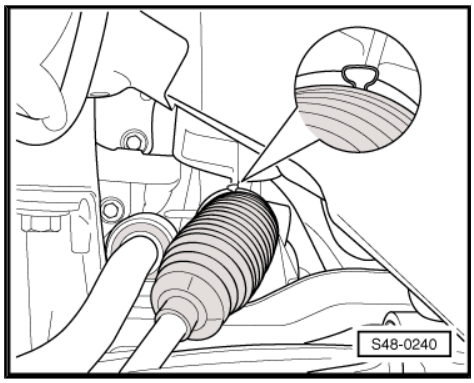
– Slide the bellows -2- onto the track rod -1-.



– Secure spring clip -1- onto the bellows with the hose binding claw e.g. -V.A.G 1275- .
– Lightly coat the sealing surface of the bellows/steering gear housing with grease -G 052 168 A1- .
– Slide bellows onto the steering gear housing up to the stop.



– Clamp new warm-type clamp with clamp pliers for steering gear e.g. -VAS 6199- at the steering gear as far as shown in the figure.



Note

Only use original warm-type clamps for steering gear.

Further installation occurs in reverse order.

After installing, perform axle alignment
⇒ “2.3 Axle alignment”, page 338 .

– Perform basic setting of the steering angle sender - G85- with the ⇒ Vehicle diagnostic tester.

Tightening torques:

Track rod end to track rod	55 Nm
Track rod to gear rack	100 Nm
Track rod end to wheel-bearing housing ♦ Use new nuts! ♦ Counterhold the internal serration of the pivot pin	20 Nm + 90°