

**Danger of poisoning!**

Ingesting oil or absorbing through the skin may cause poisoning!

Possible symptoms are:

- Headaches
- Dizziness
- Stomach aches
- Vomiting
- Diarrhoea
- Cramps/fits
- Unconsciousness

**Protective measures/rules of conduct:**

- Pour oil only into appropriately marked containers
- Do not pour oil into drinking vessels (drinks bottles, glasses, cups or mugs)
- Observe country-specific safety regulations

**First aid measures:**

- Do not induce vomiting.

If the person affected is still conscious, he/she must rinse out their mouth with water, drink plenty of water and consult a doctor immediately.

If the person affected is unconscious, do not administer anything by mouth, place the person in the recovery position and seek immediate medical attention.

31 00 ... Notes on wheel bearing replacement following accident damage

Wheel bearing facts:

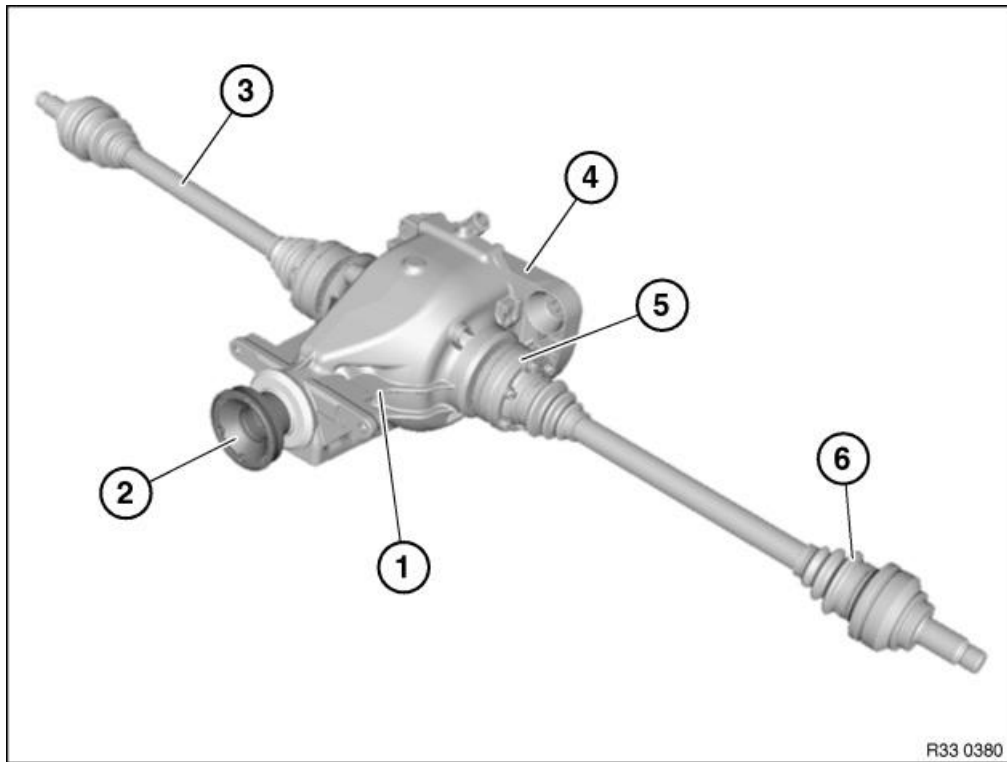
In the event of accidents or driving conditions similar to accidents, shock-like loads to the wheel bearing units can cause slight damage to the bearing track. Despite initial running without noise, with continued use, this results in later noise generation at the wheel bearing.

Procedure:

The wheel bearing must be replaced on the damaged side of the axle if one or several of the following points apply:

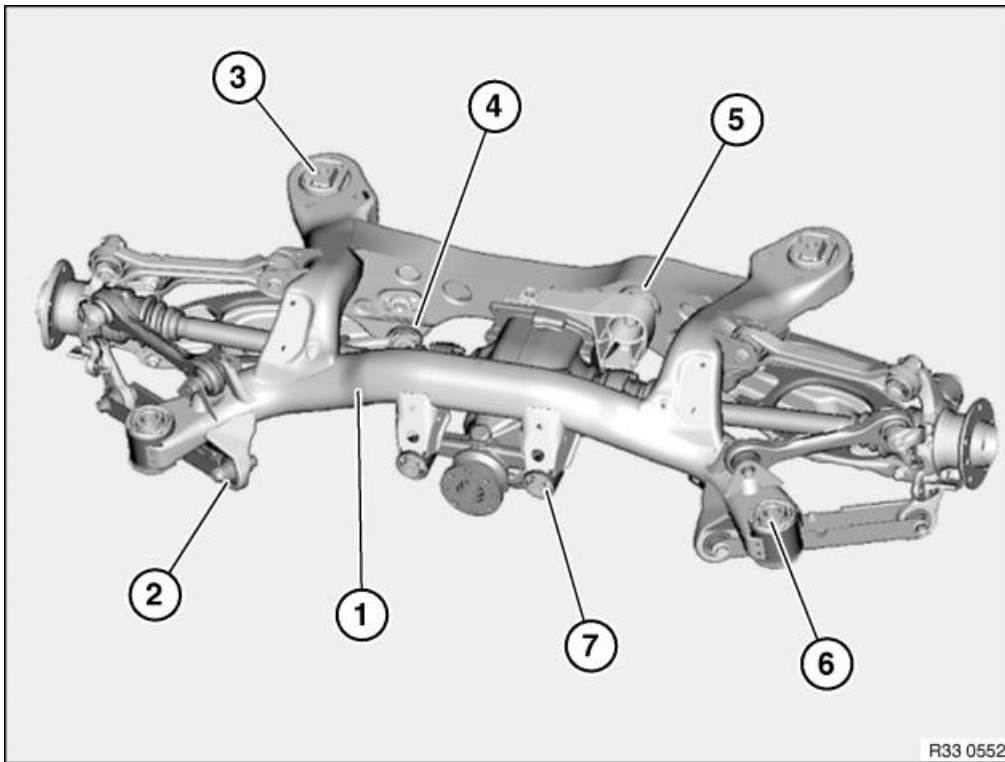
- Visible or noticeable damage to the wheel bearing
- Rolling noises, radial/lateral runout on the wheel bearing
- Permissible tolerance for the wheel alignment is exceeded and no longer adjustable without the exchange of additional components
- Damage, permanent deformation or fractures to:
 - Wheel rims (major damage) and simultaneous negative result for wheel alignment
 - Spring struts, swivel bearings, wheel carriers
 - Wishbones
 - Struts or trailing links or anti-roll bar with this function
 - Body-side screwing/attachment points for wheel guide/control components
 - Track rods
 - Steering box fixtures

This guideline is binding for all accident repairs to BMW, MINI and Rolls-Royce vehicles!



[Safety instructions & general information](#)

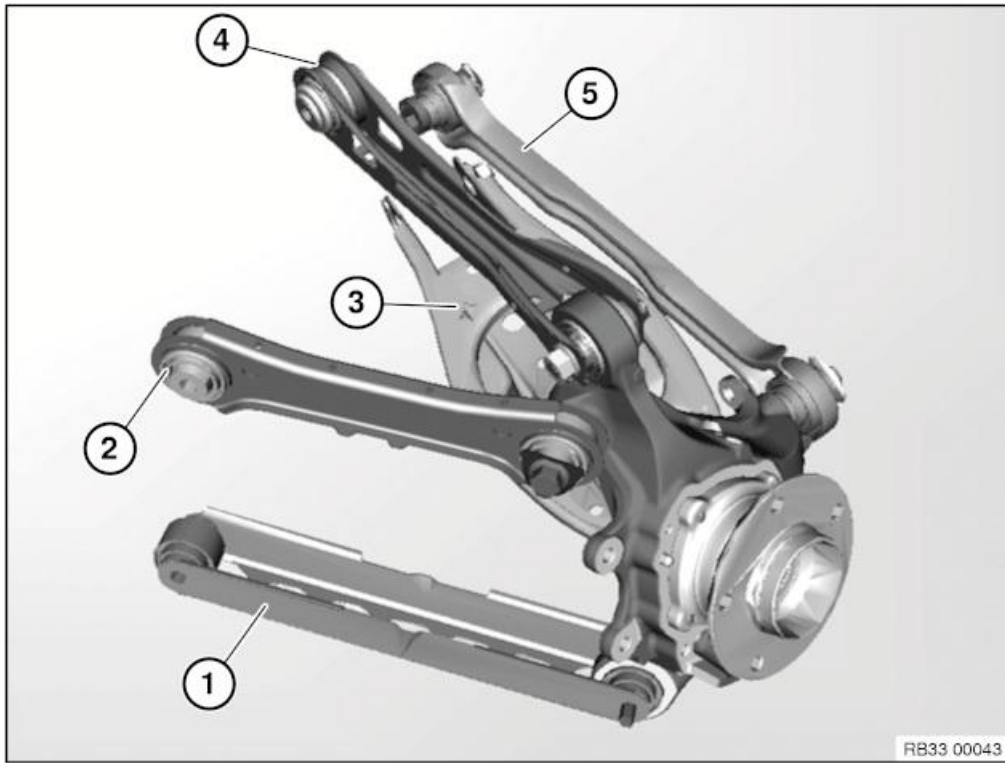
- | | |
|--|--|
| 1 Rear axle final drive | 4 Cover gasket |
| 2 Drive flange/radial shaft seal | 5 Drive flange/radial shaft seal |
| 3 Output shaft (left/right) | 6 Output shaft gaiters |



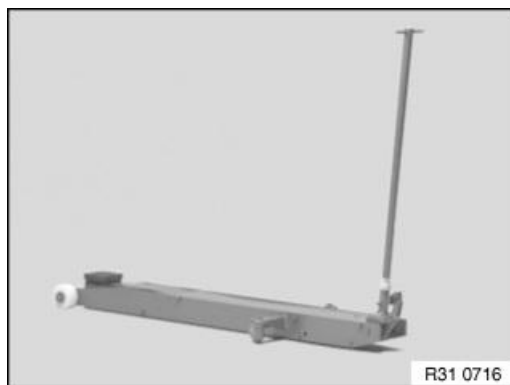
R33 0552

- | | |
|--|---|
| 1 Rear axle support | 5 Rear axle final drive rubber mount, rear |
| 2 Rubber mount for trailing arm | 6 Rear axle support rubber mount, front |
| 3 Rear axle support rubber mount, rear | 7 Rear axle final drive rubber mount, front |
| 4 Rubber mount for camber arm | |

33 32 ... Overview of steering links



- 1 [Trailing arm](#)
 - 2 [Traction strut](#)
 - 3 [Camber arm](#)
 - 4 [Wishbone](#)
 - 5 [Toe arm](#)
- [Adjusting procedure](#)



Observe the following trolley-jack-related notes:

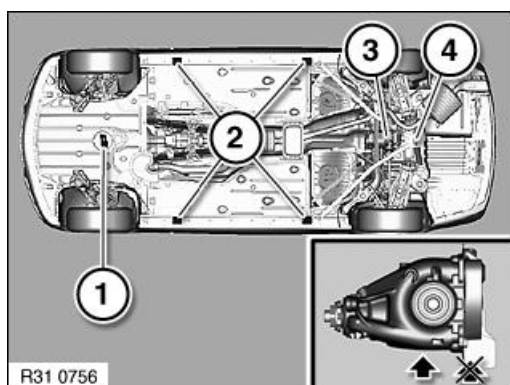
1. Only trolley jacks sold or approved by BMW, with a rubber plate on their mounting, may be used!
2. Trolley jacks must be regularly serviced and always checked for functional reliability before they are used!
3. Check the rubber plate on the trolley jack prior to each use, replacing if necessary.



Caution!

All-wheel drive vehicles may only be raised with the reinforcement plate fitted on the front axle!

Raising directly on the front axle support without reinforcement plate is not permissible!



Warning!

The vehicle may be raised with a trolley jack only at the following mounting point!

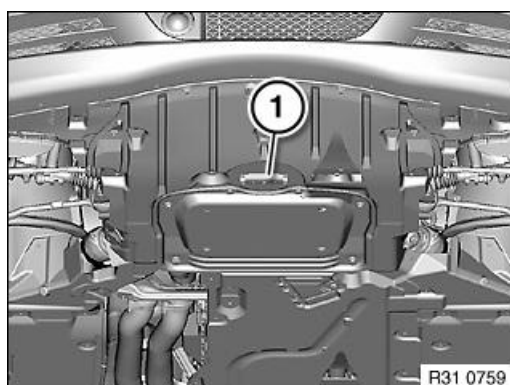
- 1 Jacking point on reinforcement strut (rear-wheel drive)

- 2 Side car jacking points

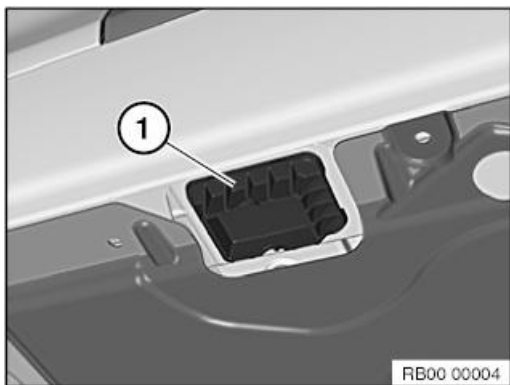
- 3 Rear axle final drive

Note: It is not permitted to raise the vehicle at the rear differential cover!

- 4 Bolting point for rear axle trailing links



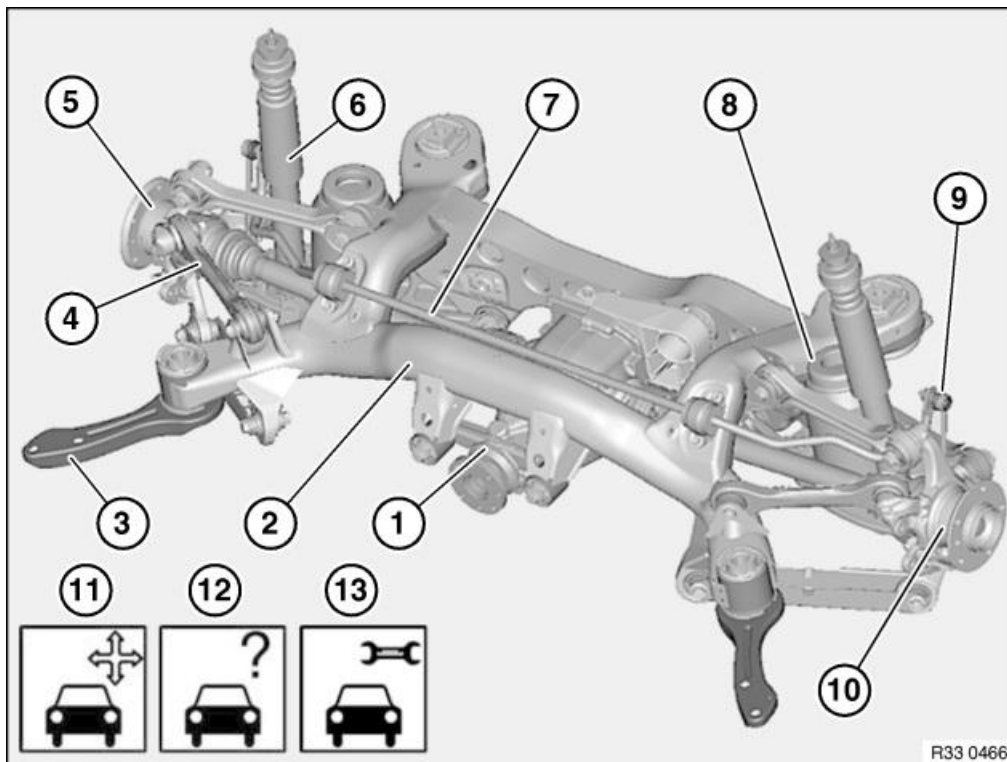
- 1 Jacking point on front axle support (four-wheel drive)

**Risk of damage!**

Jacking point (1) must be present!

Align the rubber plate on the trolley jack to the jacking point (1) in such a way that there is no contact to adjacent components and that they are therefore not damaged.

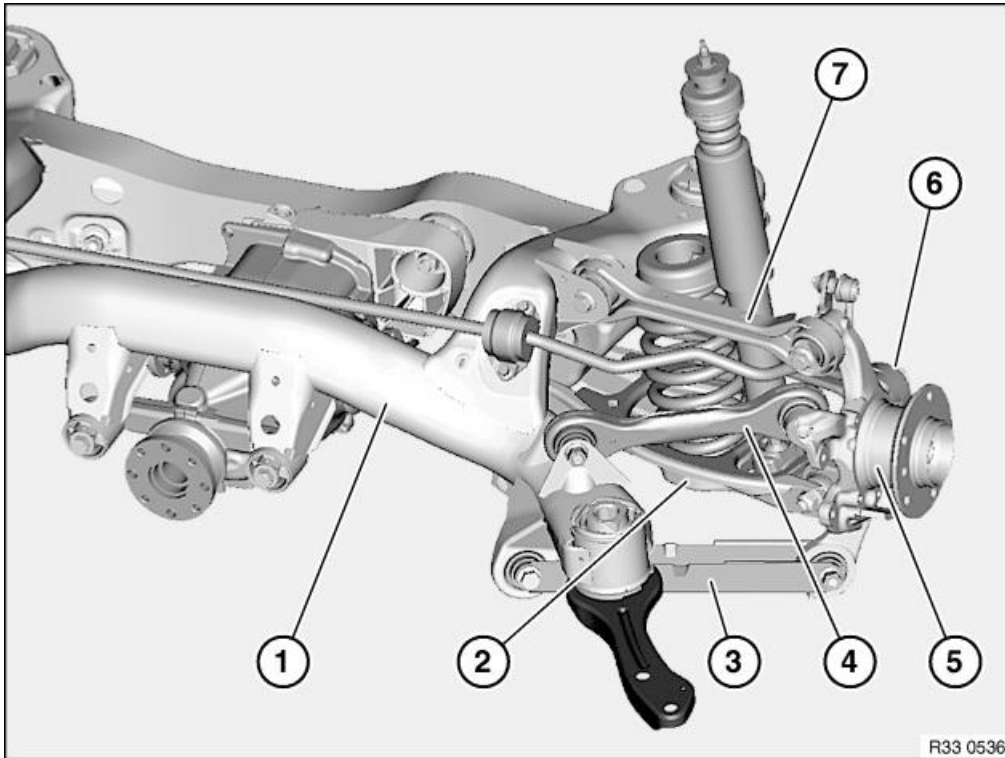
33 Rear axle layout



[Safety instructions & general information](#)

- | | |
|--|---|
| 1 Rear axle differential/output shafts | 8 Coil spring |
| 2 Rear axle support | 9 Anti-roll bar link |
| 3 Compression strut/trailing link | 10 Wheel carrier |
| 4 Arm | 11 Adjustment work |
| 5 Wheel bearing / drive flange | 12 Troubleshooting (shock absorber/rear axle) |
| 6 Shock absorber | 13 Testing |
| 7 Anti-roll bar | |

33 00 ... Rear axle: wheel/chassis alignment check must be carried out after the following work



A [wheel/chassis alignment check](#) must be carried out after the following work:

- Release of following screw/bolt connections:
 - Camber arm to rear axle carrier / wheel carrier
 - Trailing arm to rear axle carrier / wheel carrier
 - Guide arm to rear axle carrier
 - Toe arm to rear axle carrier / wheel carrier
 - Control arm to rear axle carrier
- Replacement of following parts:
 1. Rear axle carrier
 2. Camber arm / rubber mount / ball joint
 3. Trailing arm / rubber mount
 4. Guide arm
 5. Wheel carrier / rubber mount / ball joint
 6. Toe arm
 7. Control arm

00 Risk of injury if oil comes into contact with eyes and skin



Danger of injury!

Contact with eyes or skin may result in injury!

Possible symptoms are:

- Impaired sight
- Irritation of the eyes
- Reddening of the skin
- Rough and cracked skin



Protective measures/rules of conduct:

- Wear protective goggles
- Wear oil-resistant protective gloves
- Observe country-specific safety regulations



First aid measures:

- Eye contact: Rinse eyes immediately with plenty of water for at least 15 minutes; if available, use an eye-rinsing bottle. If irritation of the eyes persists, consult a doctor.
- Skin contact: Wash off with soap and water immediately. If irritation persists, consult a doctor.

Note: Do not use solvents/thinners.

00 Safety instructions for handling oil



Warning!

[Danger of poisoning](#) if oil is ingested/absorbed through the skin!

[Risk of injury](#) if oil comes into contact with eyes and skin!



Recycling:

Observe country-specific waste-disposal regulations.



Measures if oil is unintentionally released:

- [Personal precautionary measures](#): Danger of slipping! Keep non-involved persons away from the work area. Wear personal protective clothing/equipment.
- [Environmental protection measures](#): Prevent oil from draining into drain channels, sewerage systems, pits, cellars, water and the ground.
- [Limiting spread](#): Use oil blocks to prevent the surface spread of oil.
- [Cleaning procedure](#): Bind and dispose of escaped oil with nonflammable absorbents.

Note: Do not flush oil away with water or aqueous cleaning agents.

**Warning!**

[Danger of poisoning](#) if oil is ingested/absorbed through the skin!

[Risk of injury](#) if oil comes into contact with eyes and skin!

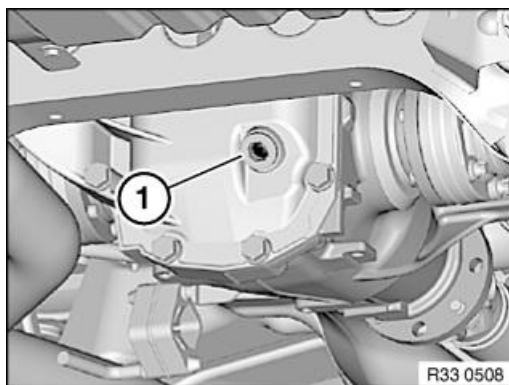
**Important!**

Risk of damage!

To avoid serious damage to the rear axle differential, it is essential to use only [approved transmission oils](#) in the rear axle differential.

Note:

The oil does not need to be changed in rear axle final drives carrying the "Life-Time-Oil" sticker.



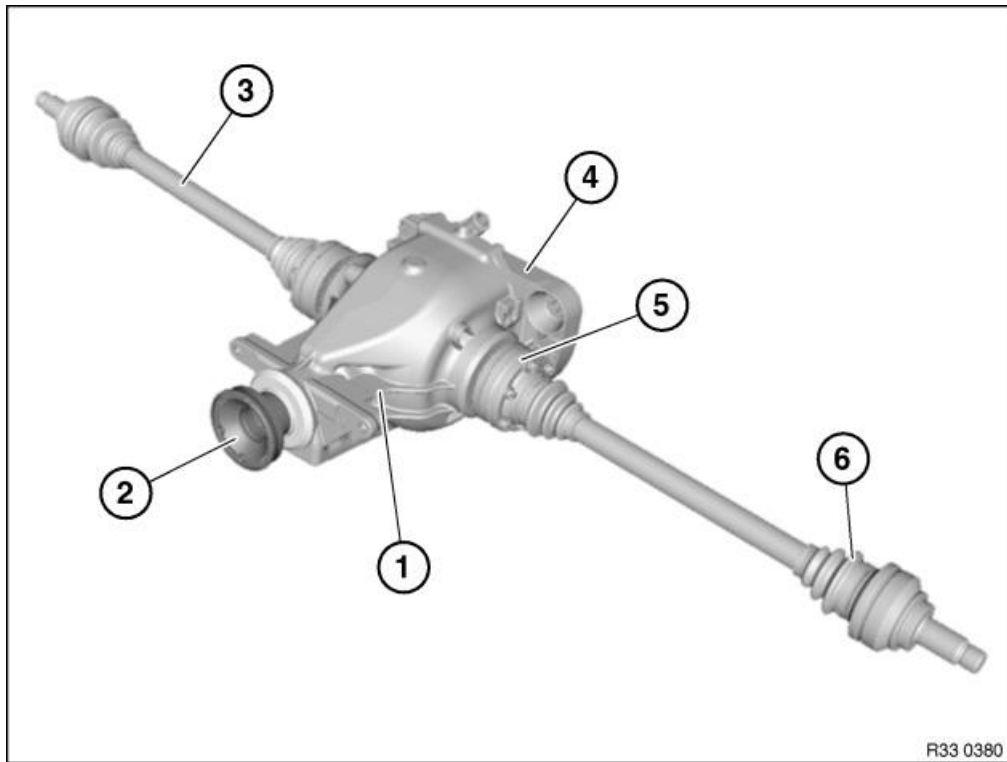
Check/top up final drive oil.

Open plug (1).

Pour in final drive up to lower edge of opening for screw plug (1).

Replace screw plug (1).

Tightening torque [33 11 2AZ](#).



[Safety instructions & general information](#)

- | | |
|--|--|
| 1 Rear axle final drive | 4 Cover gasket |
| 2 Drive flange/radial shaft seal | 5 Drive flange/radial shaft seal |
| 3 Output shaft (left/right) | 6 Output shaft gaiters |

33 10 ... **Rear axle final drive: Assignment to model series**

Model series	Engine	Rear axle final drive	Remarks
E84	N20, N43, N46T, N47, N47S, N47T, N52K, N55	188L / 188LW	
	N46T	168L	

L Smooth running

LW Smooth running optimised-efficiency

**Special tools required:**

- [33 4 420](#)

**Attention!**

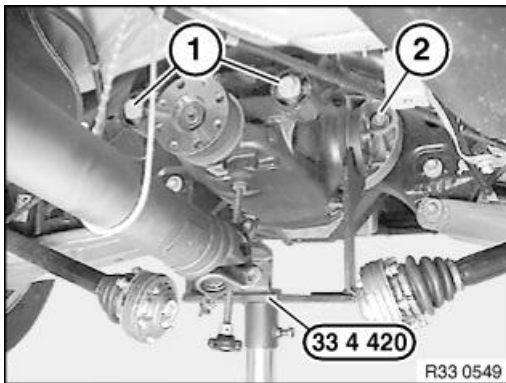
Use only [approved oils for rear axle final drive](#).

Note:

The following procedure was created using the E90 with N55 as an example. Differences in detail (e.g. due to [vibration absorber](#)) in other engines are possible.

*Necessary preliminary work:*

- Remove [trailing link](#). (E88/93 only)
- Lower rear exhaust system.
- Completely remove [exhaust system \(2-flow\)](#). (Only E9x with N54/N55/N57/M57)
- Remove and tie back [propeller shaft on rear axle final drive](#).
- Remove and tie back [output shaft on both sides of rear axle final drive](#).

**Attention!**

Observe gap between special tool [33 4 420](#) and dust plates.

To avoid grinding noises, make sure the dust plates are not damaged (e.g. bent).

Support rear axle final drive with workshop jack and special tool [33 4 420](#).

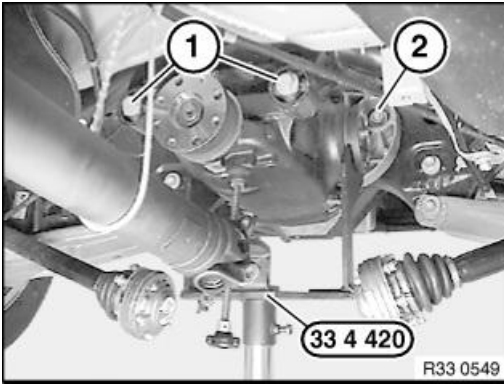
Release screws (1).

Release nut (2) and remove screw towards rear.

Slowly lower workshop jack and remove rear axle final drive towards rear.

**Attention!**

Adhere to the following installation sequence in order to prevent distortion of the rear axle final drive during installation and thereby avoid potential complaints about noise.



Installation sequence:

1. Install rear axle final drive using workshop jack and special tool [33 4 420](#).
2. Insert screws (1) (do not tighten).
3. Insert screw from rear and replace nut (2) (do not tighten).
4. Lower workshop jack.
5. Tighten down screws (1).
Tightening torque [33 17 1AZ](#).
6. Tighten nut (2).
Tightening torque [33 17 1AZ](#).



After installation:

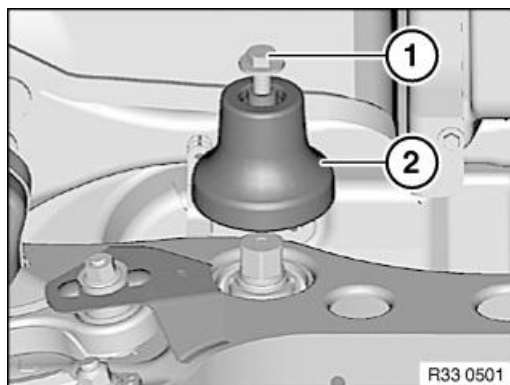
- Check [final drive oil level](#), correct if necessary.

Applies only to all-wheel drive vehicles:

Replacement only:

- With BMW diagnosis and information system under
 - Control unit functions
Perform function check of transfer box (calibration).

33 10 ... Removing and installing/replacing vibration absorber

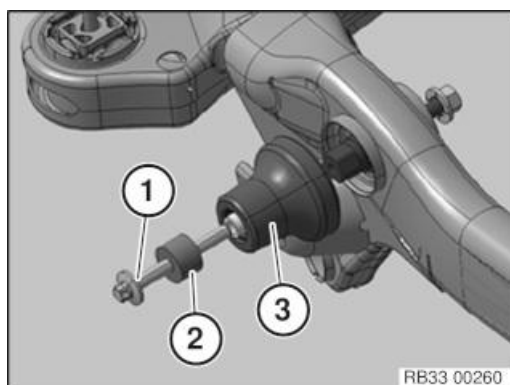


Version A:

Release screw (1).

Tightening torque [33 17 2AZ](#).

Remove vibration absorber (2).

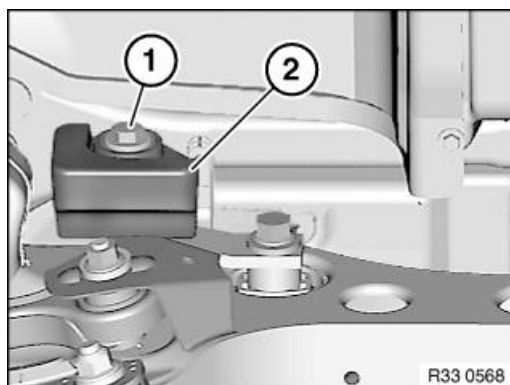


Version A with additional absorber:

Only E92 320 D with automatic transmission!

Release bolt (1) and remove the vibration damper (3) with the additional mass (2).

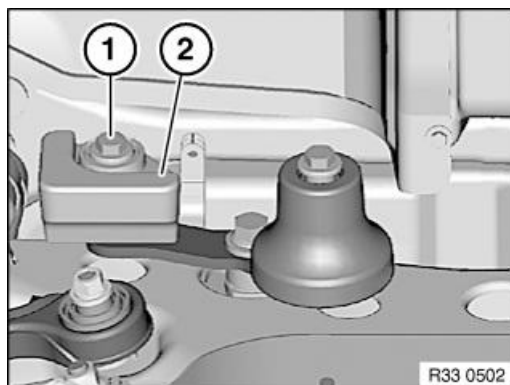
Tightening torque [33 17 4AZ](#).



Version B:

Undo screw (1) and remove vibration absorber (2).

Tightening torque [33 17 3AZ](#).



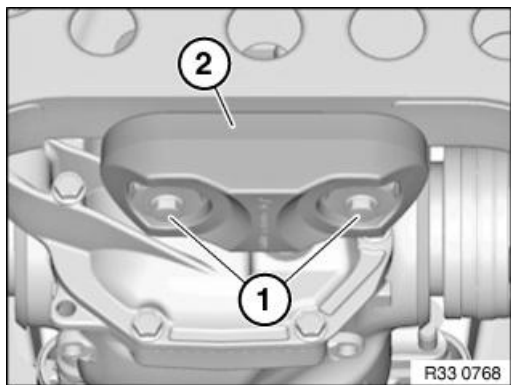
Version C:

Note:

Removal process shown for left-hand vibration absorber.

Undo screw (1) and remove vibration absorber (2).

Tightening torque [33 17 3AZ](#).



Version D (E93):

Remove [trailing link on left and right rear axle](#).

Undo screws (1) and remove vibration absorber (2).

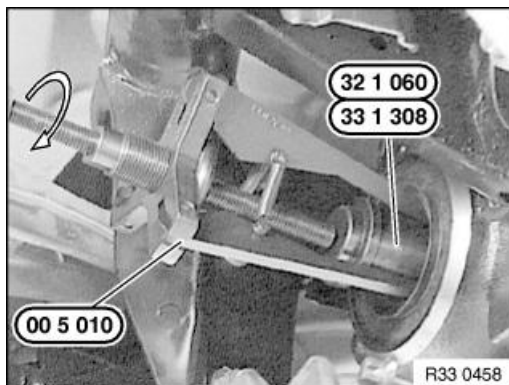
Tightening torque [33 33 3AZ](#).

**Special tools required:**

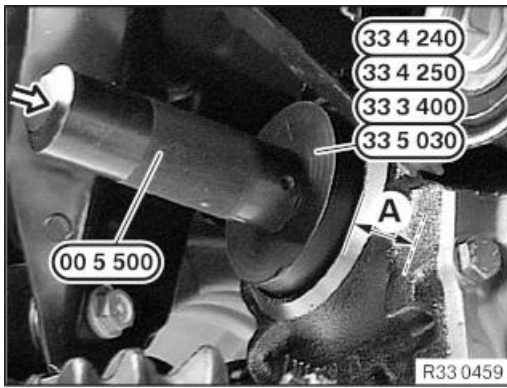
- [00 5 010](#)
- [00 5 500](#)
- [32 1 060](#)
- [33 1 308](#)
- [33 3 400](#)
- [33 4 240](#)
- [33 4 250](#)
- [33 5 030](#)
- [33 4 320](#)
- [33 4 330](#)
- [33 4 340](#)

**Necessary preliminary tasks:**

- [Remove drive flange on the rear axle final drive.](#)
- If necessary, press of dust plate.



Pull out the radial shaft seal with special tools [00 5 010](#) and [32 1 060](#) / [33 1 308](#) .



Coat the housing from the rear axle differential and sealing lips of the new radial shaft seal with [approved final drive transmission oil](#).

Drive in the new radial shaft seal with the following special tools (depending on the [rear axle differential](#)/outer diameter) up to the limit position or up to the rim offset (M3).

- [00 5 500](#) + [33 3 400](#) (or [33 4 320](#)): 168K/L - 78x44x10
- [00 5 500](#) + [33 4 240](#) (or [33 4 330](#)): 188K/L/LW - 90x44x10
- [00 5 500](#) + [33 4 250](#) (or [33 4 340](#)): 215K/L/LW, 220K to 230K - 100x50x10
- **M3:** [33 5 030](#) : 210, 215 with lock - 76x50x10

Observe the rim offset (dimension A = 19.5 mm) for the radial shaft seal.



After installation:

- [Correct the transmission oil level / change the final drive transmission oil.](#)

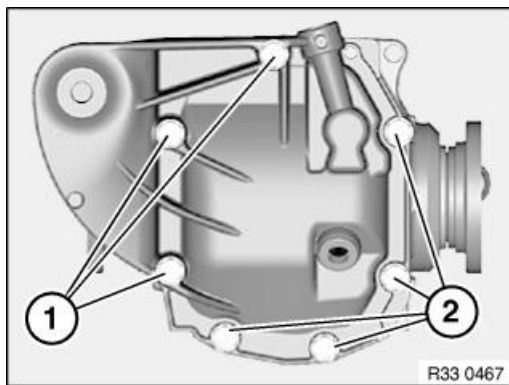
33 11 ... Replacing cover gasket on rear axle final drive at rear (168L)



Important!

To avoid leaks from the rear differential cover, do not use a paper gasket in cars with liquid sealing compounds!

To prevent the final drive oil from foaming over, make sure that no remnants of the liquid sealing compound are pressed into the rear axle final drive housing.



Release screws (1).

Tightening torque (M10x60) [33 11 1AZ](#).

Unfasten screws (2).

Tightening torque (M10x25) [33 11 1AZ](#).

Remove cover.

If necessary, remove remnants of liquid sealing compound with scraper.

Clean sealing face on cover and rear differential.

Installation note:

If a paper gasket was fitted, a paper gasket or liquid sealing compound can be used.

The liquid sealing compound can be found in Main Group 33 in the Electronic Parts Catalogue.

**Warning!**

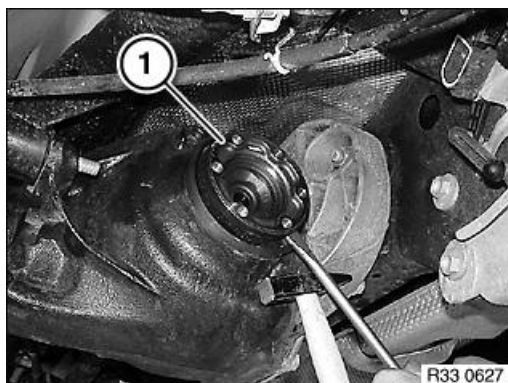
Risk of burning on the exhaust system!

Important!

The [radial shaft seal](#) must also be replaced when replacing the drive flange!

**Necessary preliminary tasks:**

- Remove [output shaft](#) from rear axle final drive and tie back.



Press off the drive flange (1) from the rear axle final drive using a suitable screwdriver and hammer (serves as support). *Installation note:* Replace any deformed or damaged dust plates.

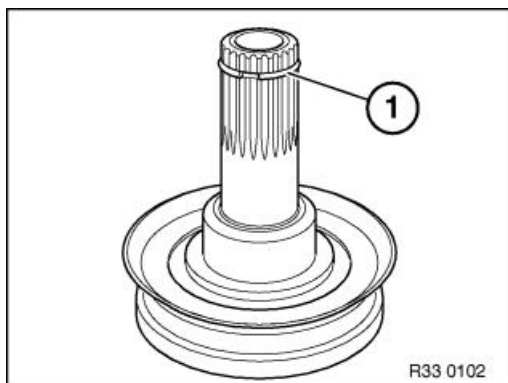
Insert drive flange and rotate until flange gearing meshes with gearing of differential bevel gear.

Press drive flange in further until circlip locates with an audible click.

Important!

High installation forces indicate that the gearing on the drive flange/differential bevel gear is damaged and/or deformed!

Check spline teeth, replaced damaged parts.



Install circlip (1). *Installation note:*

Clean shaft seal race on drive flange thoroughly.

Coat drive flange at contact face of radial shaft seal with [approved final drive oil](#).

**Replacement:**

Replace [radial shaft seal](#).

**After installation:**

- Check [final drive oil level](#), correct if necessary.

33 11 021 Replacing radial shaft seal for drive flange on rear axle final drive (inserted propeller shaft)



Special tools required:

- 0 495 552
- 0 495 554
- 0 495 553
- 0 495 595
- 2 456 244
- [00 5 010](#)
- [33 5 080](#)
- [33 0 150](#)



Attention!

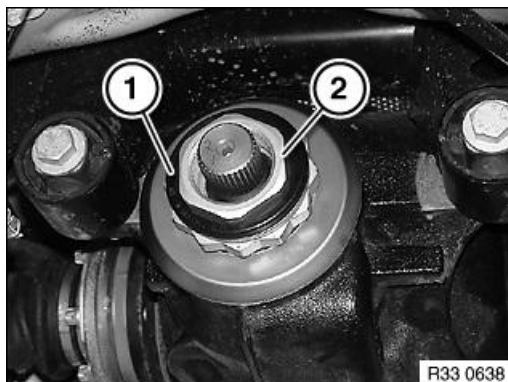
Use only [approved gearbox oils](#).

Failure to comply with this instruction will result in serious damage to the rear axle final drive!

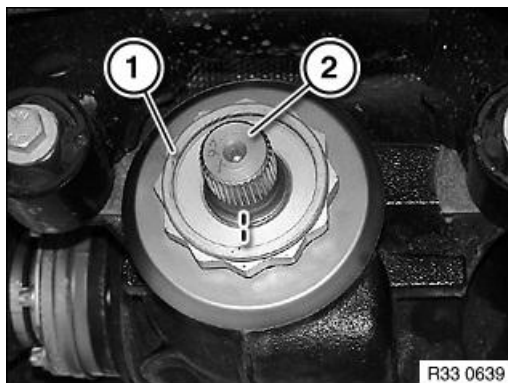


Necessary preliminary work:

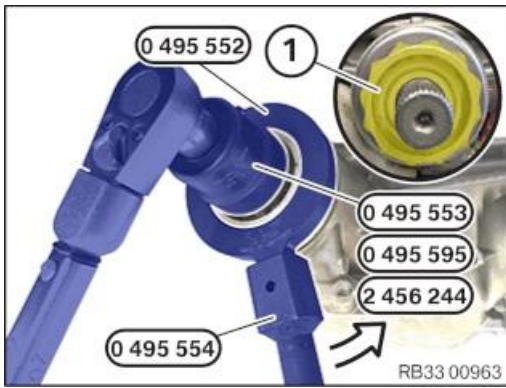
- Remove [propeller shaft](#).



Remove the mounting clip (1) and recessed nut (2) including seal.



Mark installation position of flange nut (1) to bevel pinion (2).



Warm up flange nut (1) using a hot air blower.

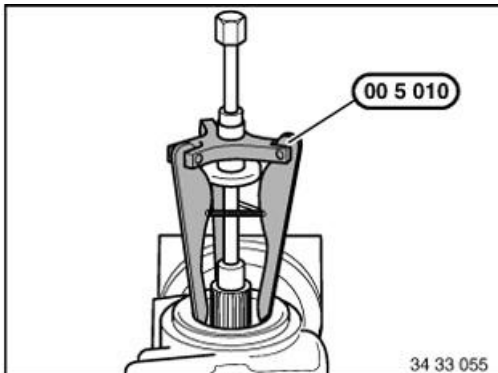


Attention: Do not heat beyond the dimension required to open the nut! Do not use naked flames (e.g. welders) to heat up the component!

Release flange nut (1) using the special tools 0 495 552 and 0 495 554 in the direction of arrow, For this, support on the bevel pinion with a 500-Nm torque wrench and the suitable special tool 0 495 553 , 0 495 595 or 2 456 244 .

Attention!

Since the flange nut (1) has a very high release torque, the torque wrench must be set to the maximum scale value (500 Nm) to avoid damaging the inner resting functional elements!



Pull out radial shaft seal with special tool [00 5 010](#) .

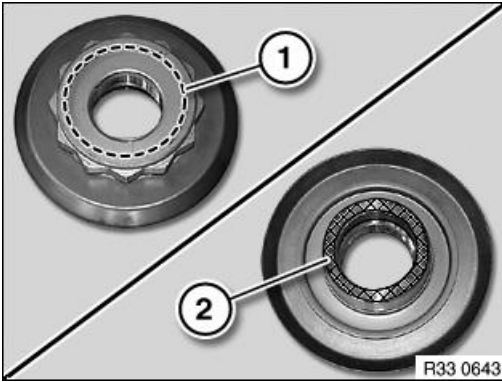


Coat sealing lips of new radial shaft seal and sealing surface of bevel pinion with final drive oil.

Drive in radial shaft seal with special tool [33 5 080](#) or [33 0 150](#) .



Clean bevel pinion thoroughly to remove remnants of screw locking agent.



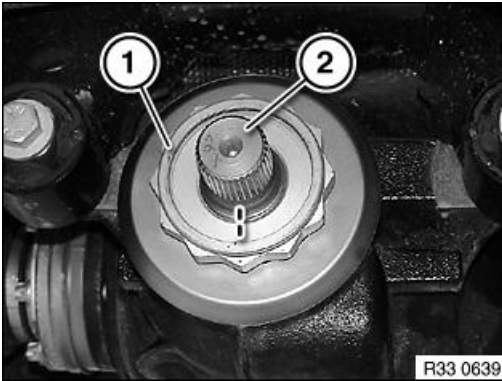
Check dust plate for damage, replace if necessary. **Attention!**

Clean flange nut thoroughly to remove remnants of grease and screw locking agent.

Pack collar insert (1) of flange nut with [grease](#).

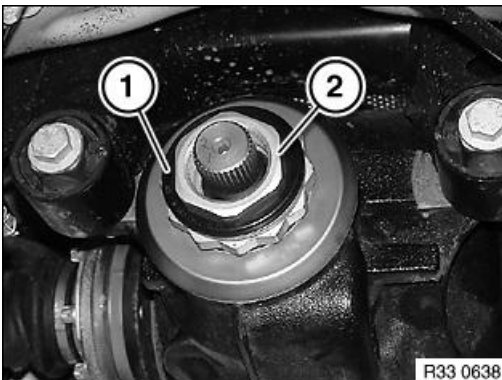
Apply a thin coating of [grease](#) to shaded area (2) of flange nut.

Coat at least four thread turns of the flange nut with "Drei Bond adhesive type 1385".



Attention!

In order to avoid damaging the rear axle final drive, do not under any circumstances tighten down the flange nut (1) beyond the marker point of the bevel pinion (2).



Insert the recessed nut (2) including seal into the flange nut.
Introduce retaining clip (1).



After installation:

- Correct [oil level in the rear axle differential](#).

**Special tools required:**

- [00 5 010](#)
- [00 5 500](#)
- [23 0 020](#)
- [23 1 300](#)
- [23 1 302](#)
- [23 1 303](#)
- [31 2 101](#)
- [31 2 102](#)
- [31 2 103](#)
- [31 2 104](#)
- [33 1 150](#)
- [33 1 341](#)
- [33 3 390](#)
- [33 3 440](#)
- [33 3 470](#)
- [33 3 480](#)
- [33 3 490](#)

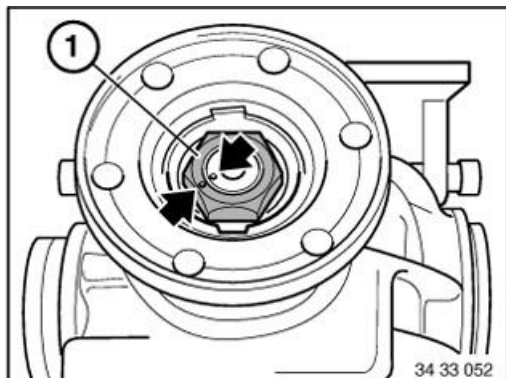
**Caution!**

Use only [approved gearbox oils](#).

Failure to comply with this instruction will result in serious damage to the rear axle final drive!

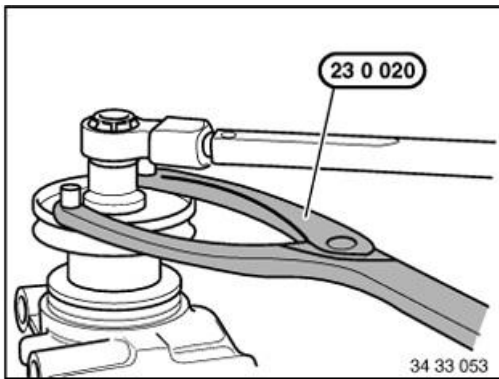
**Necessary preliminary work:**

- Remove and tie back [propeller shaft on rear axle final drive](#).

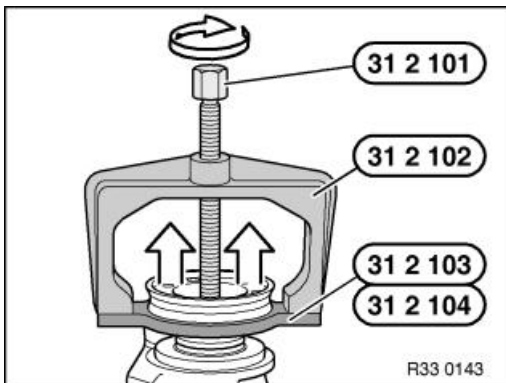
**Removing drive flange:**

Lift out retainer.

Mark installation position of collar nut (1) on drive shaft with a centre punch.



Counter support input flange with special tool [23 0 020](#) and release collar nut.

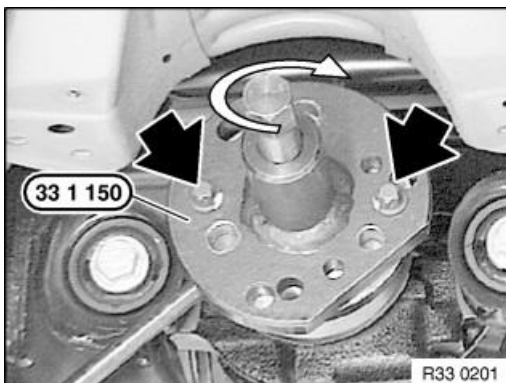


Note:

Read and comply with document "[Rear axle final drive: Assignment to model series](#)".

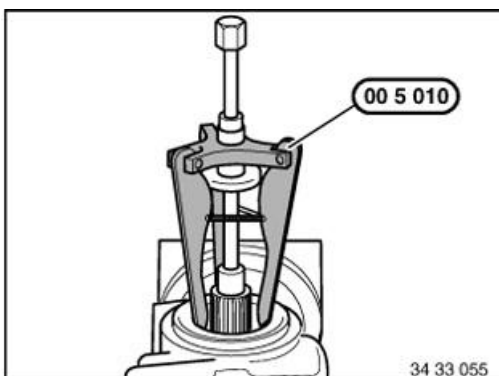
215L / 215LW / 215 with lock:

Pull off input flange with special tools [31 2 101](#) , [31 2 102](#) , [31 2 103](#) / [31 2 104](#) .



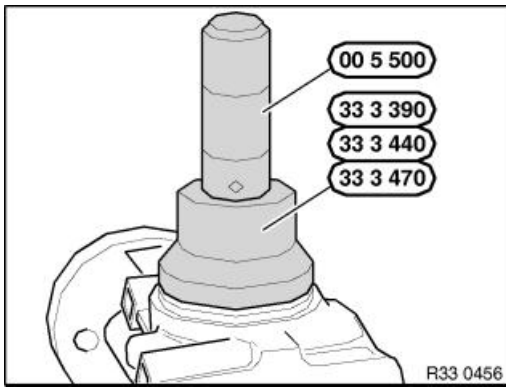
168L / 188L / 188LW:

Pull off input flange with special tool [33 1 150](#) .



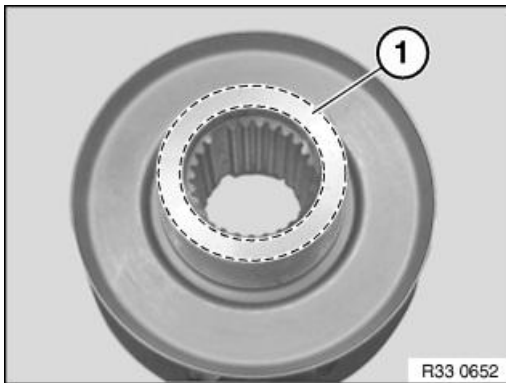
Replacing radial shaft seal:

Pull the radial shaft seal out with the special tool [00 5 010](#) .



Drive in new radial shaft seal with the following special tools (depending on [rear axle differential](#)) up to limit position.

- 168L: Use special tools [00 5 500](#) and [33 3 390](#).
- 188L / 188LW: Use special tools [00 5 500](#) and [33 3 470](#).
- 215L / 215LW / 215 with lock: Use special tools [00 5 500](#) and [33 3 440](#).

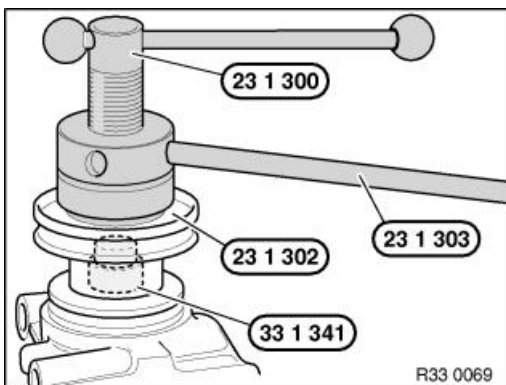


Caution!

Clean end face (1) of drive flange and apply thin layer of [grease](#).

Note:

Non-compliance with the instructions will result in noise from the rear axle final drive.

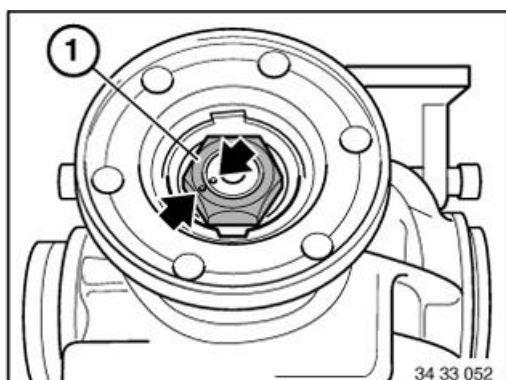


Installing drive flange:

Coat sealing lips of radial shaft seal and sealing surface of input flange with rear axle differential oil.

Fit drive flange.

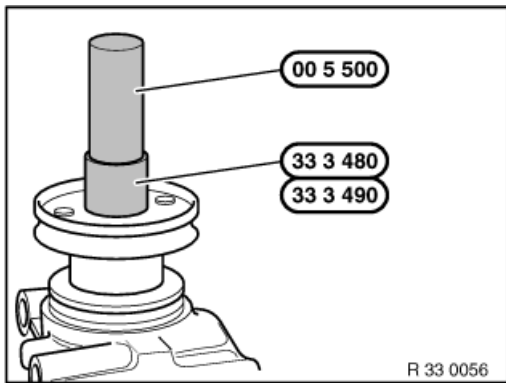
Press on input flange with special tools [23 1 300](#), [33 1 341](#) and [23 1 303](#), and if necessary [23 1 302](#) until collar nut can be screwed on.



Caution!

Do not under any circumstances tighten down collar nut beyond marker points in order to avoid damaging the clamping sleeve.

Tighten down collar nut (1) to point where marker points are aligned.



Drive in new retainer with following special tools (depending on [rear axle final drive](#)) until limit position.

- 168L / 188L / 188LW: Use special tools [00 5 500](#) and [33 3 480](#) .
- 215L / 215LW / 215 with lock: Use special tools [00 5 500](#) and [33 3 490](#) .



After installation:

- Correct [transmission oil level of the rear axle differential](#).

**Important!**

In event of oil loss, always check rear differential for traces of wear and damage.

**Necessary preliminary tasks:**

- Suctioning off/draining [final drive oil](#).
- Remove [rear axle final drive](#).

*Note:*

Read and comply with document "[rear axle final drive: Assignment to model series](#)".

Select rear axle final drive:

- [168L](#)
- [188L/188LW](#)
- [215L / 215LW](#)
- [215 with lock](#)

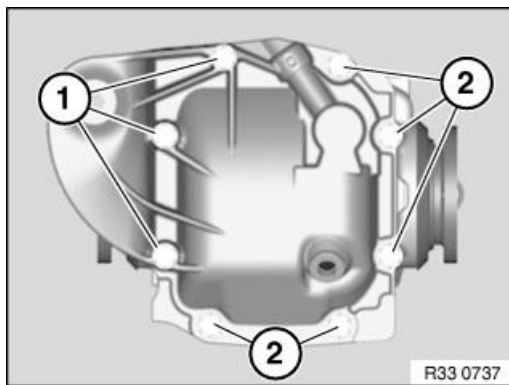
**After installation:**

- Add [final drive oil](#).

**Important!**

To avoid leaks from the rear differential cover, do not use a paper gasket in cars with liquid sealing compounds!

To prevent the final drive oil from foaming over, make sure that no remnants of the liquid sealing compound are pressed into the rear axle final drive housing.



Release screws (1).

Tightening torque (M10x60) [33 11 1AZ](#).

Unfasten screws (2).

Tightening torque (M10x25) [33 11 1AZ](#).

Remove cover.

If necessary, remove remnants of liquid sealing compound with scraper.

Clean sealing face on cover and rear differential.

Installation note:

If a paper gasket was fitted, a paper gasket or liquid sealing compound can be used.

The liquid seal is in the electronic parts catalogue under main group 33.

33 11 521 Replacing the dust plate on the rear axle differential (input flange removed)



TECHNICAL INFORMATION

The work must be performed with care to prevent component damage.

1 – Removing the dust plate

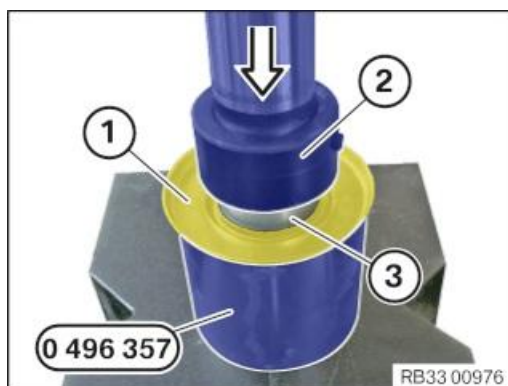


TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

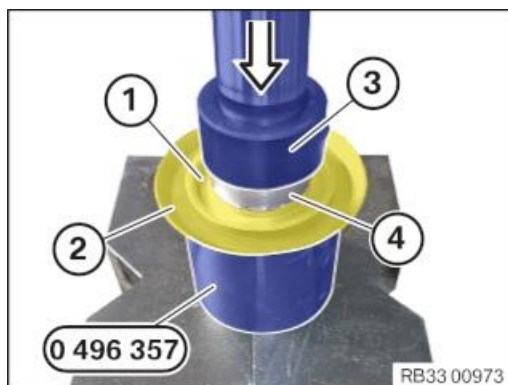
► Version A: Removing the dust plate

- Release and remove the dust plate (1) with the help of a hydraulic press (2) and the special tool in the direction of arrow from the input flange (3).



► Version B: Removing the dust plate

- Release and remove the small dust plate (1) and the large dust plate (2) using hydraulic press (3) and special tool from input flange (4) in the direction of the arrow.



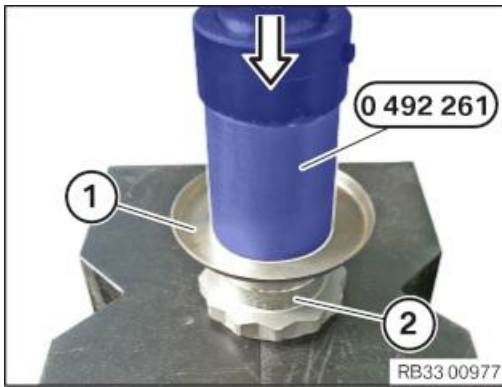
2 – Installing dust plate



TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

► Version A: Installing dust plate

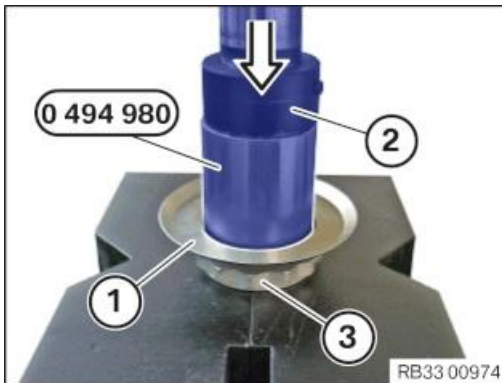


- Renew dust plate (1).

Parts: dust plate

- Press the dust plate (1) onto the input flange (2) with a hydraulic press and the special tool **0 492 261 (33 3 201)** in the direction of arrow.

► Version B: Installing dust plate



- Renew the large dust plate (1).

Parts: Large dust plate

- Press the large dust plate (1) using hydraulic press (2) and special tool **0 494 980 (33 4 464)** in the direction of the arrow on input flange (3).



- Renew the small dust plate (1).

Parts: Small dust plate

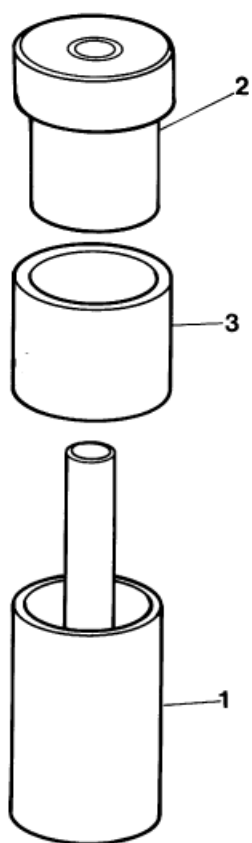
- Press the small dust plate (1) using hydraulic press (2) and special tool **0 494 980 (33 4 464)** on the input flange in the direction of the arrow.

Additional Information

Overview of Special Tools

0 492 261 (33 3 201) Bush

Used in step **2**

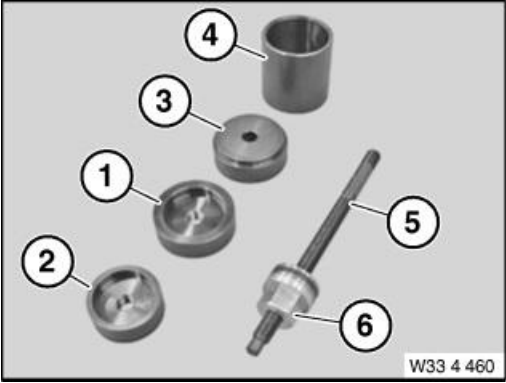


W33 3 200

Common

Usage	For accommodating control arm when pressing out rubber mount Series: E31 Discontinued, only available via complete tool
Included in the tool or work	0 492 260
Storage location	B13
Replaced by	
In connection with	
SI-Number	

0 494 980 (33 4 464) Holding sleeve



Common

Used in step [2](#)

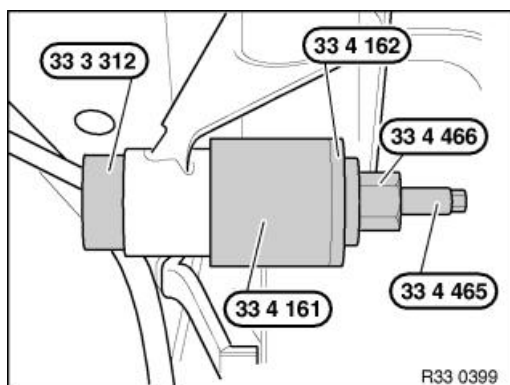
Usage	(support sleeve)
Included in the tool or work	0 494 929
Storage location	
Replaced by	
In connection with	
SI-Number	

**Special tools required:**

- [33 3 312](#)
- [33 4 161](#)
- [33 4 162](#)
- [33 4 166](#)
- [33 4 311](#)
- [33 4 312](#)
- [33 4 465](#)
- [33 4 466](#)

**Necessary preliminary tasks:**

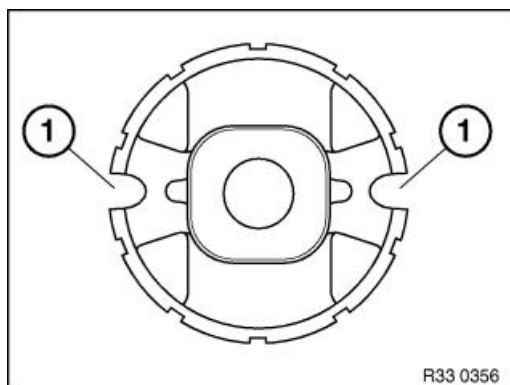
- Remove [rear axle final drive](#)

**Withdrawing front rubber mount:**

Remove front rubber mount with special tools [33 3 312](#) , [33 4 161](#) , [33 4 162](#) , [33 4 466](#) and [33 4 465](#) .

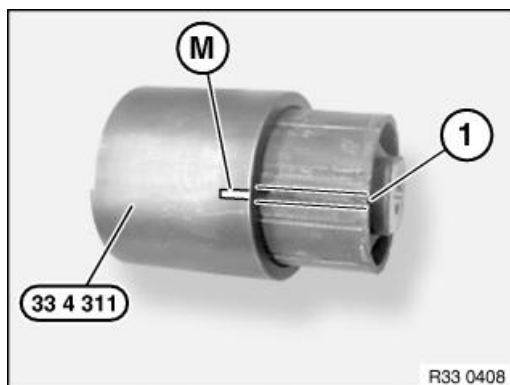
Note:

The milled recess of special tool [33 4 161](#) must point upward toward the rear axle support.

**Installing front rubber mount:****Important!**

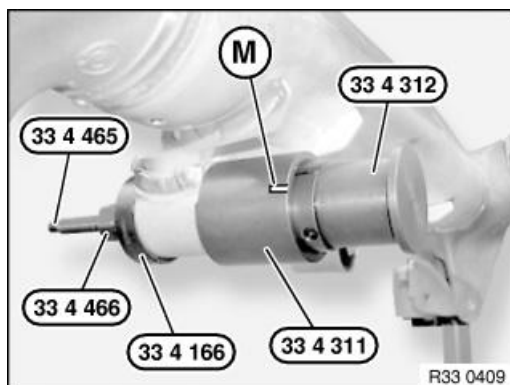
Coat bearing bushing in rear axle carrier and front rubber mount with Circolight (refer to BMW Parts Service).

Front rubber mount must be aligned by way of slots (1) to vehicle transversal direction.



Insert front rubber mount in special tool [33 4 311](#) .

Align front rubber mount so that side slots (1) line up with marking (M) on tool.



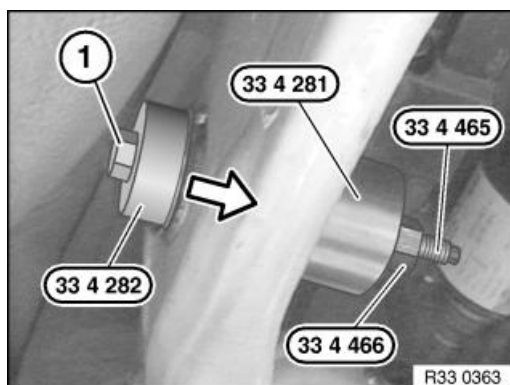
Draw in front rubber mount as far as it will go using special tools [33 4 465](#) , [33 4 466](#) , [33 4 166](#) , [33 4 311](#) and [33 4 312](#) .

33 17 ... Replacing rubber mount



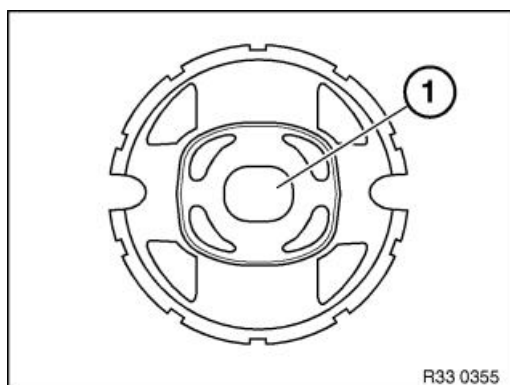
Special tools required:

- [33 4 281](#)
- [33 4 282](#)
- [33 4 283](#)
- [33 4 284](#)
- [33 4 465](#)
- [33 4 466](#)



Withdrawing rubber mount:

Pull out rubber mount with special tools [33 4 282](#) , [33 4 281](#) , [33 4 466](#) , [33 4 465](#) and nut (1).

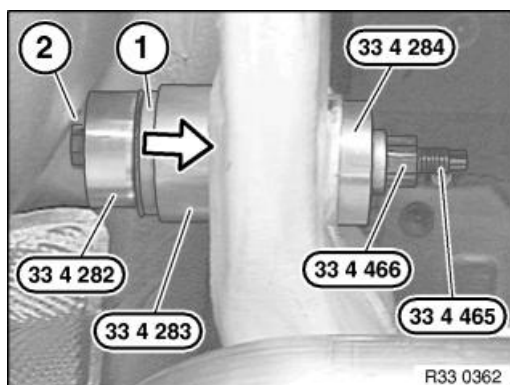


Installing rubber mount:

Important!

Coat bearing bush in rear axle support and new rubber mount with Circo Light (refer to BMW Parts Department).

Align rubber mount by way of elongated hole (1) to vehicle transversal direction.



Insert rubber mount (1) in special tool [33 4 283](#) .

Align rubber mount (1) by way of elongated hole to vehicle transversal direction.

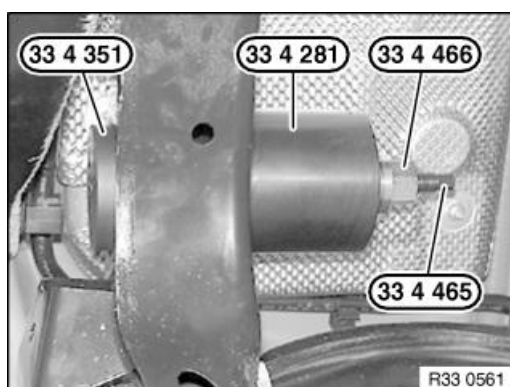
Draw in rubber mount (1) with special tools [33 4 282](#) , [33 4 283](#) , [33 4 284](#) , [33 4 466](#) , [33 4 465](#) 2 and as far as it will go.

33 17 ... Replacing rubber mount (with hydraulic damping)



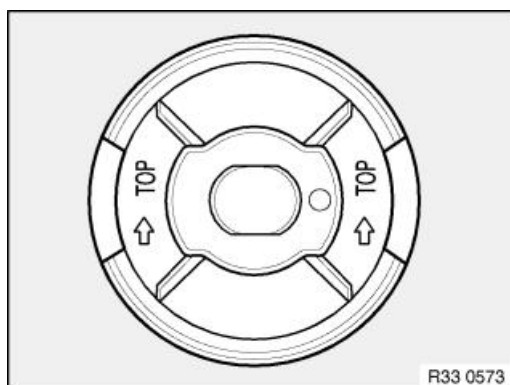
Special tools required:

- [33 4 281](#)
- [33 4 351](#)
- [33 4 357](#)
- [33 4 358](#)
- [33 4 465](#)
- [33 4 466](#)



Pulling out rubber mount:

Pull out rubber mount with special tools [33 4 351](#) , [33 4 281](#) , [33 4 466](#) and [33 4 465](#) .

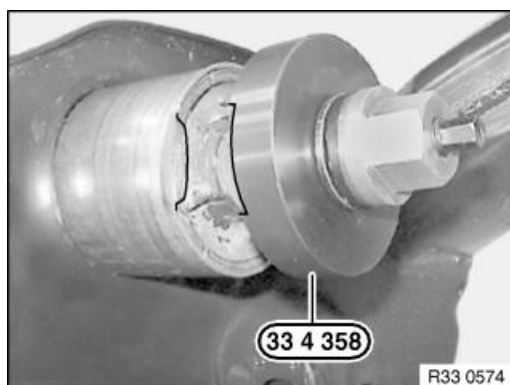


Installing rubber mount:

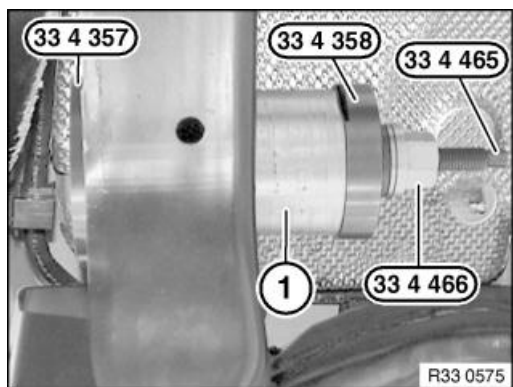
Important!

Coat bearing bush in rear axle support and new rubber mount with Circo Light (refer to BMW Parts Department).

Draw in rubber mount with end shown from front into rear axle carrier. In so doing, make sure that the arrows on the rubber mount point upwards.



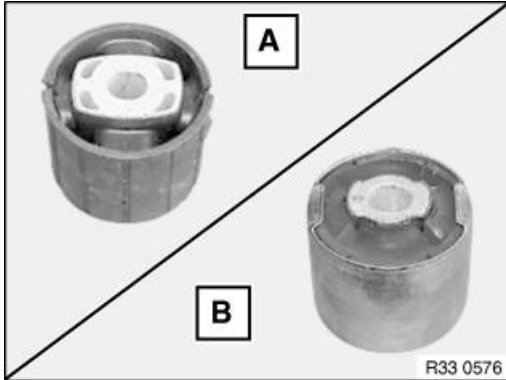
Align special tool [33 4 358](#) with rubber mount using openings.



Pull on rubber mount (1) with special tools [33 4 357](#) , [33 4 358](#) , [33 4 466](#) and [33 4 465](#) as far as it will go.

**Necessary preliminary tasks:**

- Remove [rear axle final drive](#)

**Important!**

Rubber mounts must not be mixed up!

A = Remove [rubber mount](#)

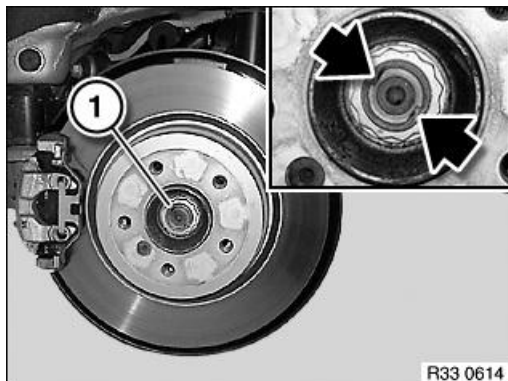
B = Remove [rubber mount \(with hydraulic damping\)](#)

33 21 ... Pressing output shaft out of drive flange and drawing in



Necessary preliminary tasks:

- Remove [output shaft from rear axle differential](#).



Important!

Expand anti-twist lock sufficiently to avoid damaging thread when releasing collar nut (1).

Activate parking brake and release collar nut (1).

Tightening torque [33 41 1AZ](#).

Installation note:

Slightly grease the gearing at the shaft journal.

No oil permitted on thread of shaft journal or collar nut.

Replace collar nut (1) by positive peening at flat areas of output shaft.



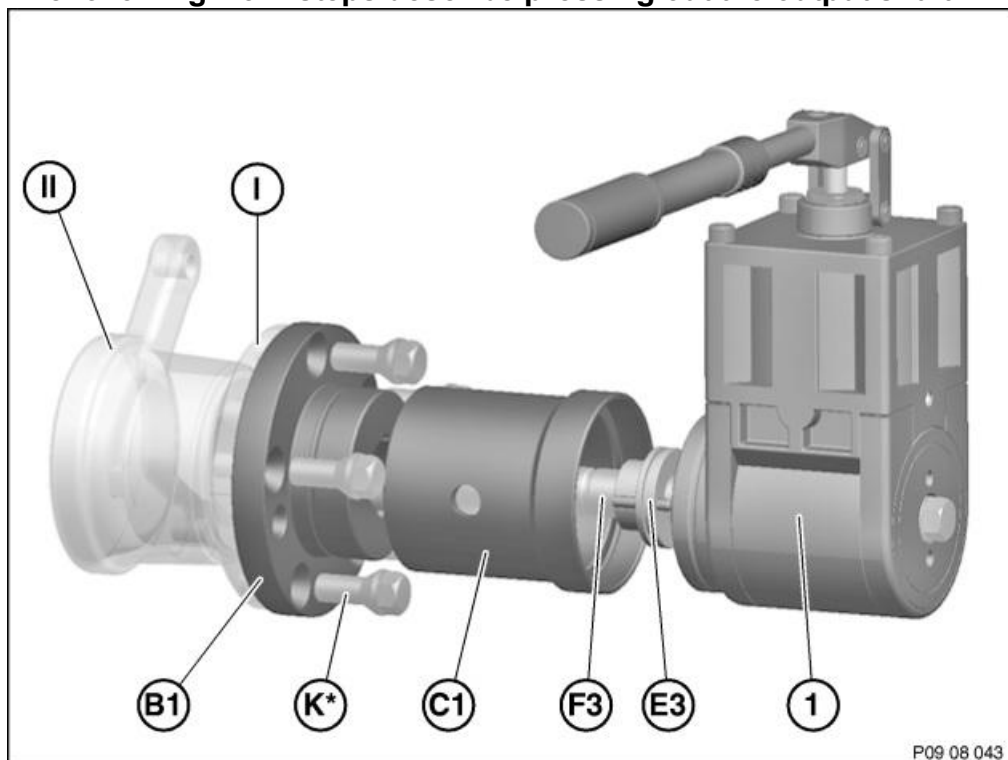
Use **special tool** , see **BMW Workshop Catalogue**.

- Hydraulic unit - 81 64 2 155 744
- Adapter kit 1 - 81 64 2 155 745
- Adapter kit 2 - 81 64 2 155 746



- Secure output shaft against falling out.

The following work steps describe pressing out the output shaft:



The following tools are required to press out the output shaft from the drive flange, see graphic for arrangement:

Vehicle components:

I	Drive flange hub
II	Wheel carrier

Required components for all models and types:

1	Hydraulic unit
E3	Washer M24
F3	Spindle M24 (length 270 mm)
C1	Holding sleeve
B1	Adapter

* Components specific to model and type:

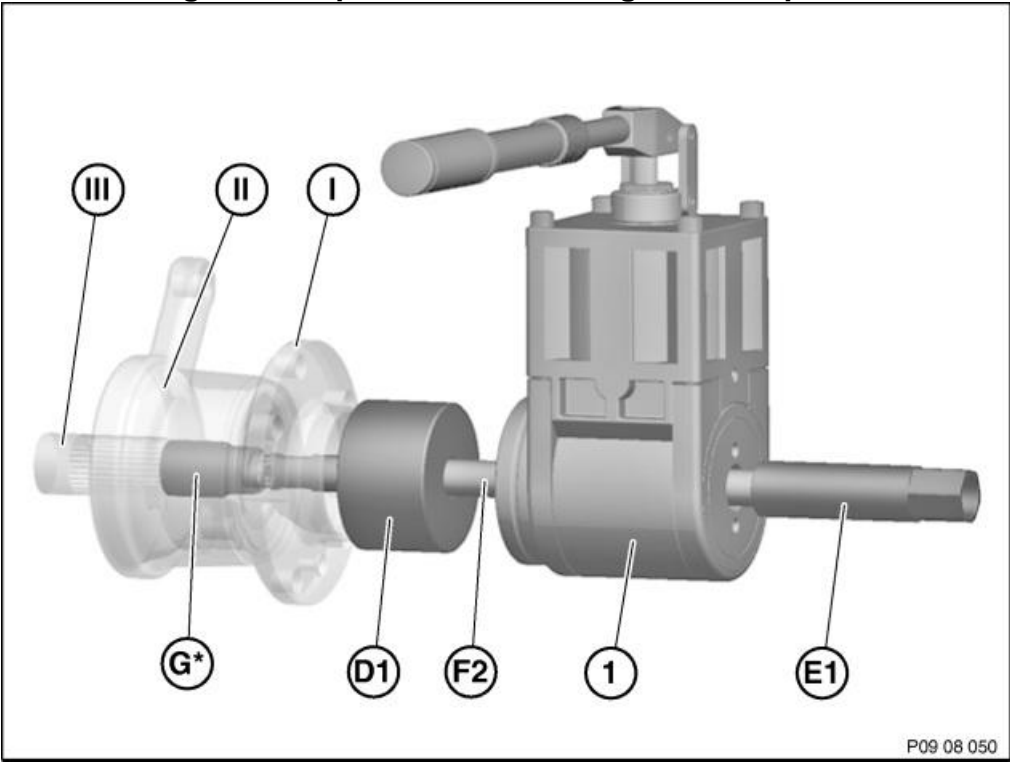
K*	Wheel studs
----	-------------



Risk of damage!

Oil drive flange lightly and attach to gearing of output shaft.
To avoid damaging the tool, the load on the hydraulic pump must be observed during the insertion.

The following work steps describe drawing in the output shaft:



The following tools are required to fit the output shaft in the drive flange, see graphic for arrangement:

Vehicle components:

I	Drive flange hub
II	Wheel carrier
III	Output shaft

Required components for all models and types:

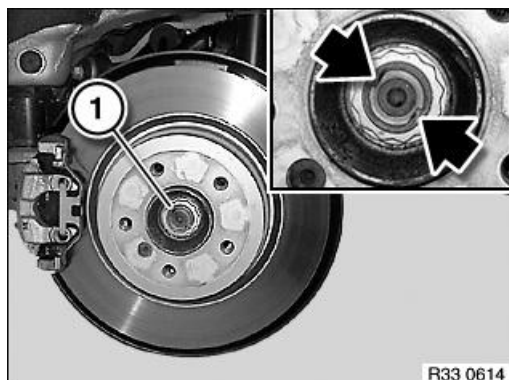
1	Hydraulic unit
E1	Holding sleeve M24
D1	Washer
F2	Spindle M24 / M20 (length 335 mm)

*** Components specific to model and type (thread diameter, output shaft):**

G3	Adapter M27 x 1.5 to M20
----	--------------------------

Installation note:

The output shaft and drive flange may be inserted in the same procedure.



Tighten collar nut (1), activate parking brake for this purpose.

Tightening torque [33 41 1AZ](#).

Installation note:

No oil permitted on thread of shaft journal or collar nut.

Replace collar nut (1) by positive peening at flat areas of output shaft.

**Warning!**

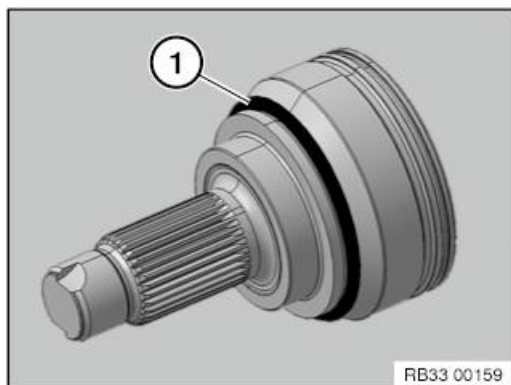
Risk of burning on the exhaust system!

**Necessary preliminary tasks:**

- Remove [trailing link](#) if necessary
- Lower [exhaust system in rear area](#).

The subsequent procedure is described in the document entitled "[Remove/install/replace output shaft on the right](#)".

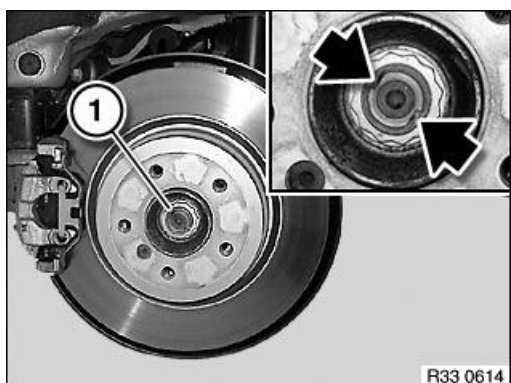
33 21 002 Removing and installing/replacing right output shaft



Attention!

E84 only:

It is essential to supplement/replace the O-ring (1) on the output shaft.



Remove [rear wheel](#).

Attention!

Expand anti-twist lock sufficiently to avoid damaging thread when releasing collar nut.

Undo collar nut (1), applying parking brake to do so.

Tightening torque [33 41 1AZ](#).

Installation note:

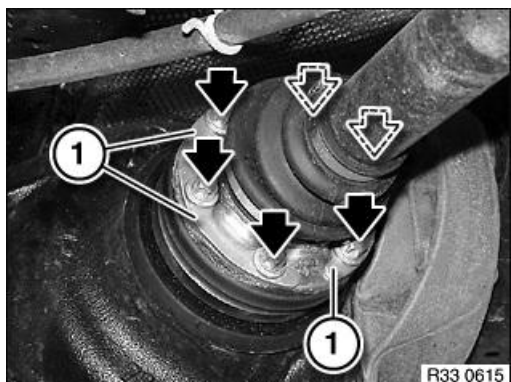
Replace collar nut, oil collar nut/wheel bearing contact surface only and tighten down.

No oil permitted on thread of shaft journal or collar nut.

Secure collar nut by positive peening on flat areas of output shaft.



Remove [trailing link](#) if necessary



Release bolts and remove with shims (1).

Tightening torque [33 21 1AZ](#).

Force output shaft off drive flange with a suitable tool. If necessary, lift the wheel carrier by approximately 20 mm using a universal jack.

Installation note:

Before installing output shaft, make sure that drive flange is fully engaged in rear axle final drive.

Replace bolts and shims (1).



Press [output shaft out of drive flange](#) and remove towards centre of vehicle.

**After installation:**

- Check output shaft for correct seating on rear axle final drive.

Applies only to all-wheel drive vehicles:

Replacement only:

- With diagnosis and information system under:
 - Control unit functionsPerform transfer box function check (calibration).



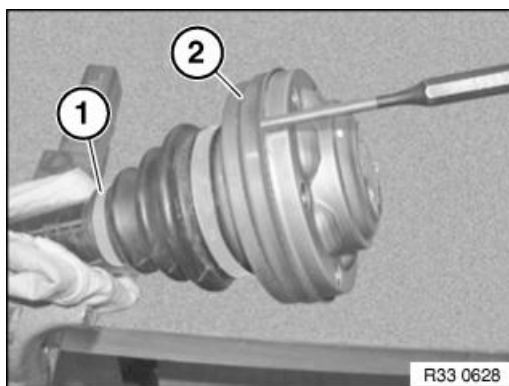
The procedure is described in document "[Replacing left output shaft](#)".

**Special tools required:**

- [21 2 120](#)
- [26 1 110](#)
- [33 2 100](#)

**Necessary preliminary tasks:**

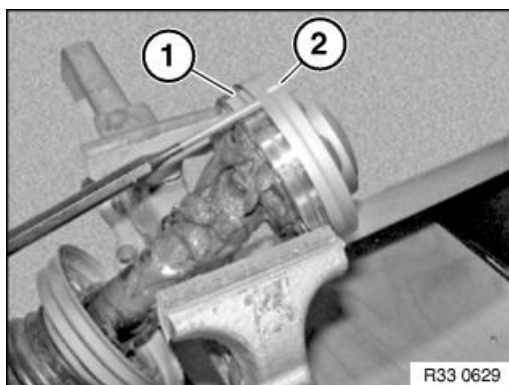
- Remove [output shaft](#).

**Remove inner gaiter:**

Clean output shaft and grip in vice with a cloth.

Unfasten hose clamp (1).

Using a suitable tool, press off cap (2) of the gaiter from joint or sealing cap.



Slide back gaiter with cap.

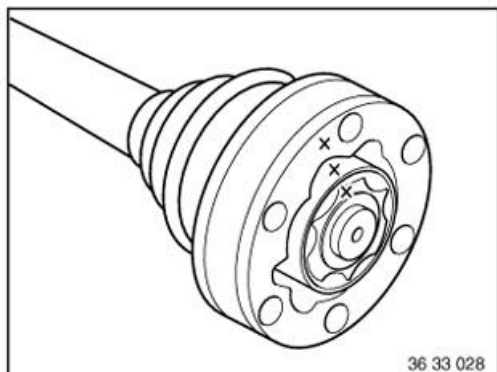
Important!

Risk of damage!

Pay attention that the joint does not fall apart.

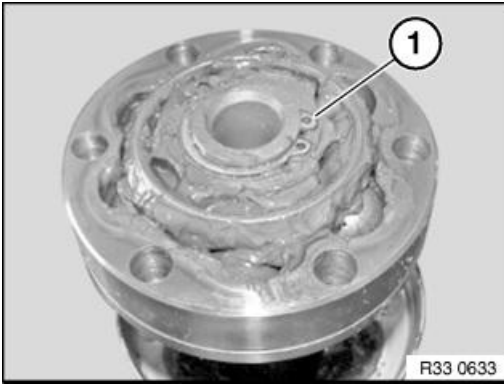
Grip joint (1) in vice.

Press off sealing cap (2) from joint (1) with suitable tool.

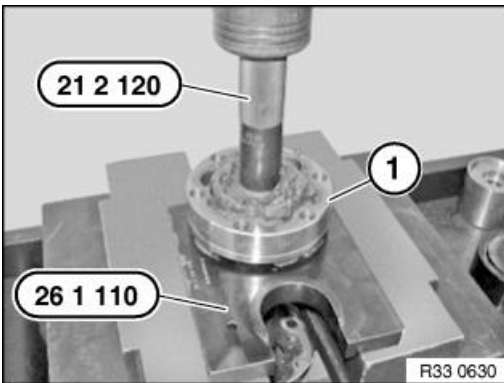
**Important!**

Mark position of ball hub, ball cage and joint on the face side to each other!

Note: If the joint falls apart, it can only be assembled correctly by using the marking.



Remove circlamp (1).



Hold down output shaft.

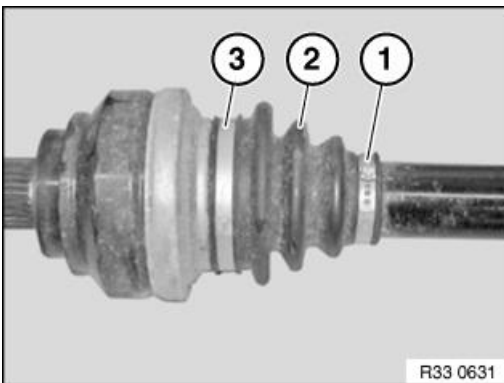
Using special tool [21 2 120](#) and a suitable tool (for hollow shaft [21 2 120](#)) press the output shaft out of the joint (1).

Carefully clean the joint (1).

Note:

Completely remove old grease.

Pull off gaiter from the output shaft.



Removing and installing gaiter:

Release hose clamp (1, 3) and pull off gaiter (2) from the output shaft.

Carefully clean joint and output shaft.

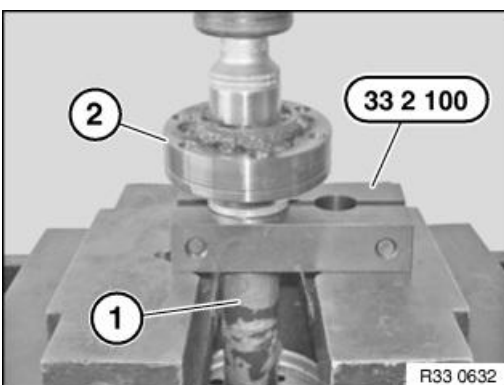
Note:

Completely remove old grease.

Check joint for damage and replace [output shaft](#) if necessary.

Fill joint with propeller shaft grease.

Pull on gaiter (2) onto the joint and secure with hose clamps (1, 3).

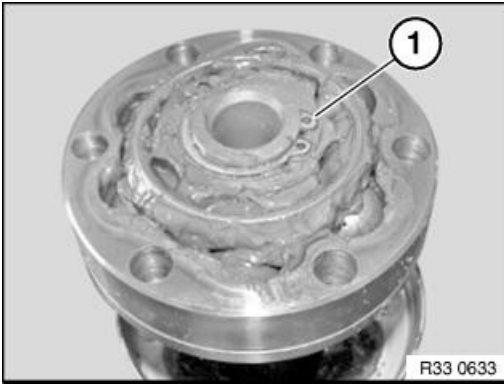


Installing inner gaiter:

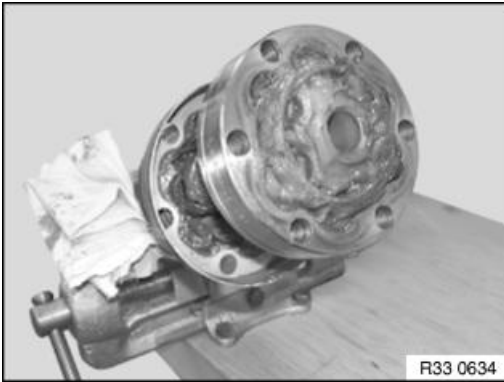
Slide gaiter with cap onto the output shaft (1).

Mount special tool [33 2 100](#) with the corresponding insert shells on the output shaft (1).

Press joint (2) over the bearing inner race onto output shaft.



Mount new circlip (1).



Important!

Keep sealing surface of the cap and the joint (both sides) clean and free from grease!

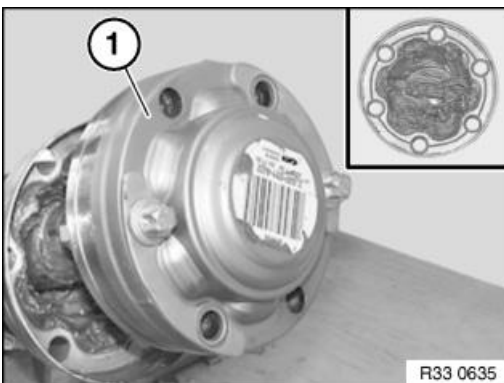
Fill joint on both sides with high-temperature grease.



Important!

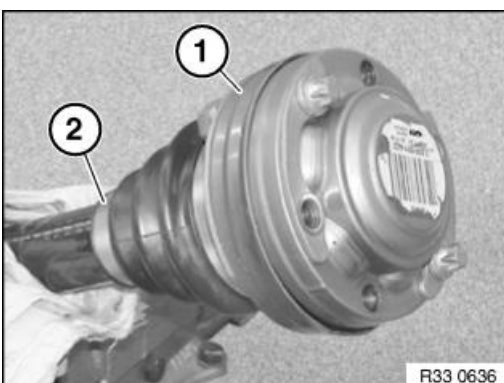
Risk of damage!

Do not pull on gaiter with cap and sealing cap onto the joint without shim.



Apply a thin layer of sealing gel onto the sealing surface of the sealing cap and the cap.

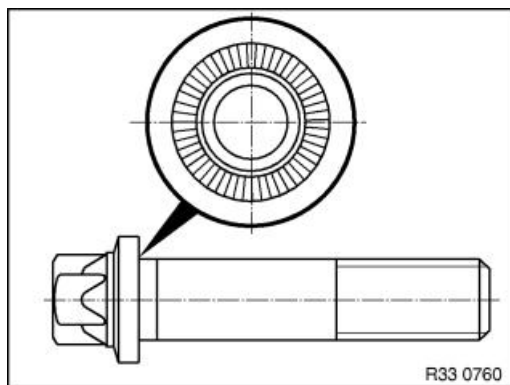
Pull sealing cap (1) with two screws, shims and nuts onto the joint.



Pull cap (1) with two screws, shims and nuts onto the joint.

Fit hose clamp (2).

33 21 ... Ribbed teeth



Important!

Bolts with ribbed teeth must be replaced after they have been released!

**Special tools required:**

- [00 2 030](#)
- [31 5 251](#)
- [31 5 253](#)
- [31 5 255](#)
- [33 5 206](#)

**Warning!**

Failure to comply with the following instructions may result in the vehicle slipping off the vehicle hoist and critically injuring other persons.

Load the luggage compartment with a minimum of 100 kg before lowering/removing the rear axle support. This prevents the vehicle from tilting or sliding off the vehicle hoist!

When supporting components, make sure that:

- the vehicle can no longer be raised or lowered
- the vehicle does not lift off the locating plates on the vehicle hoist.

**Important!**

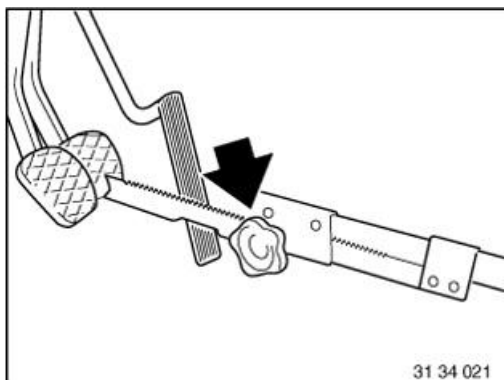
Before lowering/removing rear axle support:

Observe [safety instructions](#) for raising the vehicle

In order to avoid damage to vehicle hoist, perform weight compensation on vehicle.

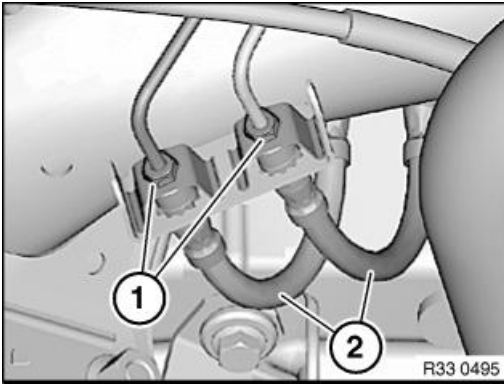
**Necessary preliminary tasks:**

- Remove both [rear coil springs](#).
- If necessary, remove [trailing links](#).



Press brake pedal down to floor and secure with pedal support. *Note:* The pedal support may only be released when the brake lines are reconnected.

This prevents brake fluid from emerging from the expansion tank and air from entering the system when the brake lines are opened.



Position an oil sump underneath to catch brake fluid.

Release banjo bolts (1), counter supporting brake hoses (2) at square head in the process.

Tightening torque [34 32 1AZ](#).

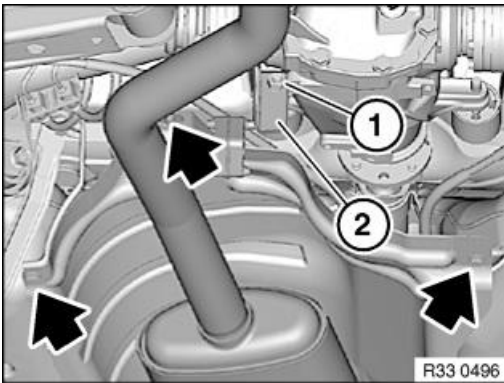
Disconnect brake hoses (2) and seal off with seal plugs.

Installation note:

Make sure brake hoses are laid without tension and with sufficient distance to adjoining components.



Unclip the cable for the pulse sensor and the ride height sensor/brake pad wear sensor on the side of the rear axle support.

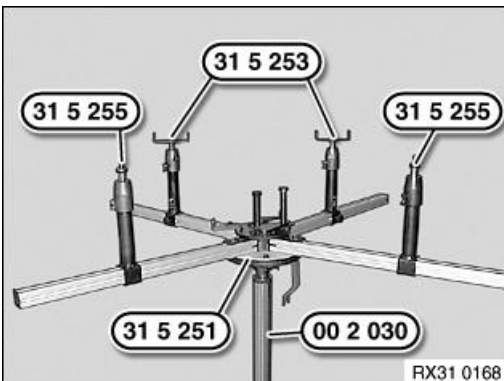


Slacken nut (1).

Turn holder (2) for exhaust system towards rear.

Release sheet metal nuts and bolts (arrows).

Place heat shield on exhaust system.



Engage special tool [31 5 251](#) with a 2nd person helping completely on workshop jack [00 2 030](#).

Insert special tools [31 5 255](#) in telescopic supports of a profile rail pair.

Insert special tools [31 5 253](#) in telescopic supports of other profile rail pair.

Note:

In a profile rail pair, two profile rails are connected to one another by gearing.



The jacking points on the left side are shown.

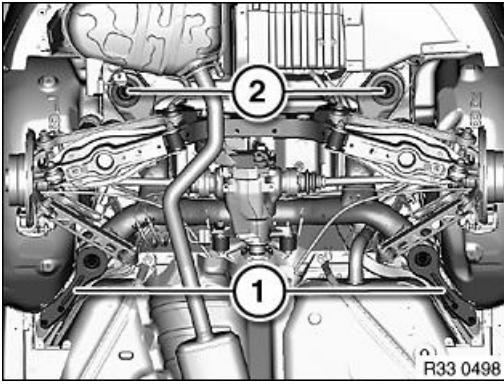
Align special tools [31 5 253](#) and [31 5 255](#) to rear axle support.

Support rear axle support by operating workshop jack [00 2 030](#).

Important!

The centre of gravity of the rear axle must be positioned centrally over the workshop jack.

Tie down rear axle support [33 5 206](#) to the special tool [31 5 251](#) using a tensioning strap!



Remove [compression struts](#) (1).

Release screws (2) and swivel/remove stop plates to one side.

Tightening torque [33 33 1AZ](#)

Lower rear axle support.

Installation note:

Observe screw length.

A longer screw (with shim) may be fitted at the rear left!

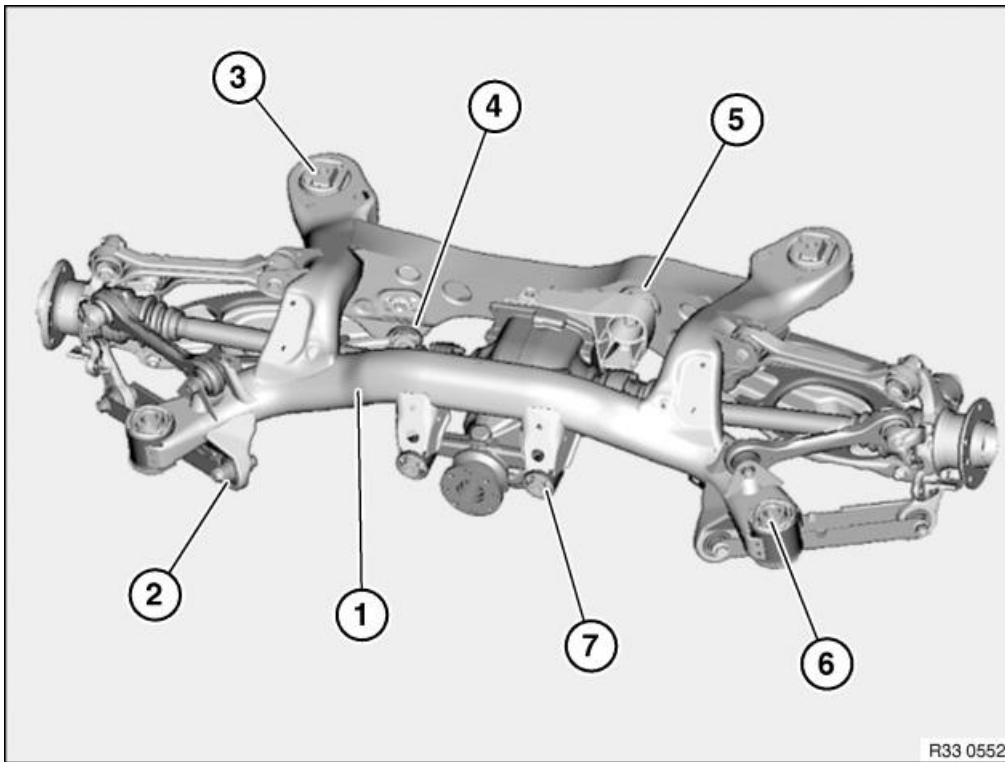
Check threads for damage; if necessary, repair with [Helicoil thread inserts](#).

First fit [compression struts](#) (1), then tighten screws (2).



After installation:

- [Bleed brake system.](#)



R33 0552

- | | |
|--|---|
| 1 Rear axle support | 5 Rear axle final drive rubber mount, rear |
| 2 Rubber mount for trailing arm | 6 Rear axle support rubber mount, front |
| 3 Rear axle support rubber mount, rear | 7 Rear axle final drive rubber mount, front |
| 4 Rubber mount for camber arm | |

**Warning!**

Failure to comply with the following instructions may result in the vehicle slipping off the lifting platform and critically injuring other persons.

Load the luggage compartment with a minimum of 100 kg before lowering/removing the rear axle support.

When supporting components, make sure that:

- the vehicle can no longer be raised or lowered
- the vehicle does not lift off the locating plates on the vehicle hoist.

**Important!**

Observe [safety information](#) for raising the vehicle

In order to avoid damage to vehicle hoist, perform weight compensation on vehicle.

**Necessary preliminary tasks:**

- Remove both [rear wheels](#).
- Remove [propeller shaft](#).
- If necessary, remove [trailing link\(s\)](#).
- Remove both [rear coil springs](#).
- Remove both [pulse sensors from wheel carrier](#), unclip cable from wishbone and rear axle support.
- Disconnect plug connection for [brake pad wear sensor](#)
- Disconnect plug connection from ride height sensor and unclip cable from rear axle support
- Detach both [parking brake Bowden cables from brake shoe expander](#) and then remove from hooks.
- Remove both [shock absorbers from rubber mount/camber arm](#)

**Note:**

The subsequent procedure is described in the document "[Lowering/raising rear axle support](#)".

**Important!**

- Prior to installation, check sensor head and cable from pulse sensor and renew if necessary.



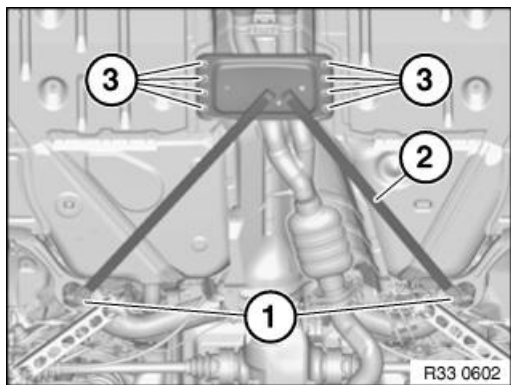
After installation:

- [Bleed brake system.](#)
- Adjust [parking brake](#) if the setting of the adjustment unit was changed during detachment and attachment of the parking brake Bowden cable.

**Important!**

Observe [safety instructions](#) for raising the vehicle

Driving without the trailing link is not permitted!



Release screws (1).

Tightening torque [33 32 12AZ](#).

Release screws (3).

Tightening torque [33 32 11AZ](#).

Remove trailing link (2).

Installation note:

Replace screws (1).

**Warning!**

Danger of injury!

Failure to comply with the following instructions may result in the vehicle slipping off the lifting platform and critically injuring other persons.

Load the luggage compartment with a minimum of 100 kg before lowering/removing the rear axle support. This prevents the vehicle from tilting or sliding off the vehicle hoist!

When supporting components, make sure that:

- the vehicle can no longer be raised or lowered.
- the vehicle does not lift off the locating plates on the vehicle hoist.

**Attention!**

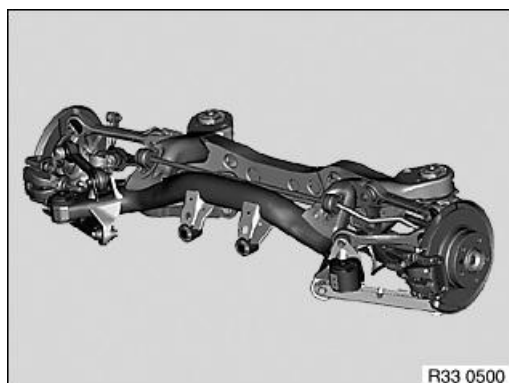
Before lowering/removing rear axle support:

Observe [safety information](#) for raising the vehicle!

In order to avoid damage to vehicle hoist, perform weight compensation on vehicle.

**Necessary preliminary work:**

- Remove [rear axle final drive](#).
- Remove [complete rear axle carrier](#).



Remove both [brake calipers](#) if necessary with brake pad wear sensor (disconnect brake hose from brake line).

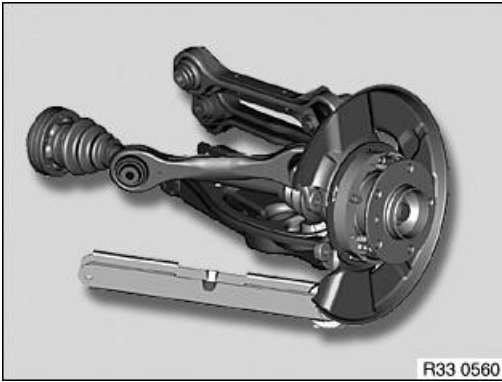
Remove both [brake discs](#).

Remove both brake lines from rear axle support.

Remove [anti-roll bar](#) (remove anti-roll bar links from wheel carrier).

Remove [ride height sensor with holder from rear axle support](#).

E93 except for M3: Remove [vibration absorber](#) (version D).



Remove both [camber arms from rear axle support](#).

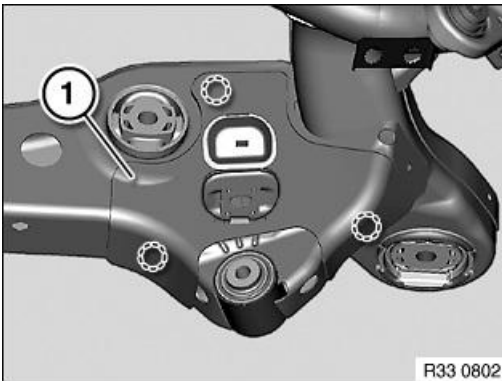
Remove both [toe arms on rear axle support](#).

Remove both [trailing arms from rear axle support](#).

Remove both [control arms on rear axle support](#).

Remove both [wishbones on rear axle support](#).

Remove both wheel carriers with output shaft and all arms from rear axle support.



If necessary, unclip and remove left and right stoneguards (1) in the marked areas. *Installation note:*

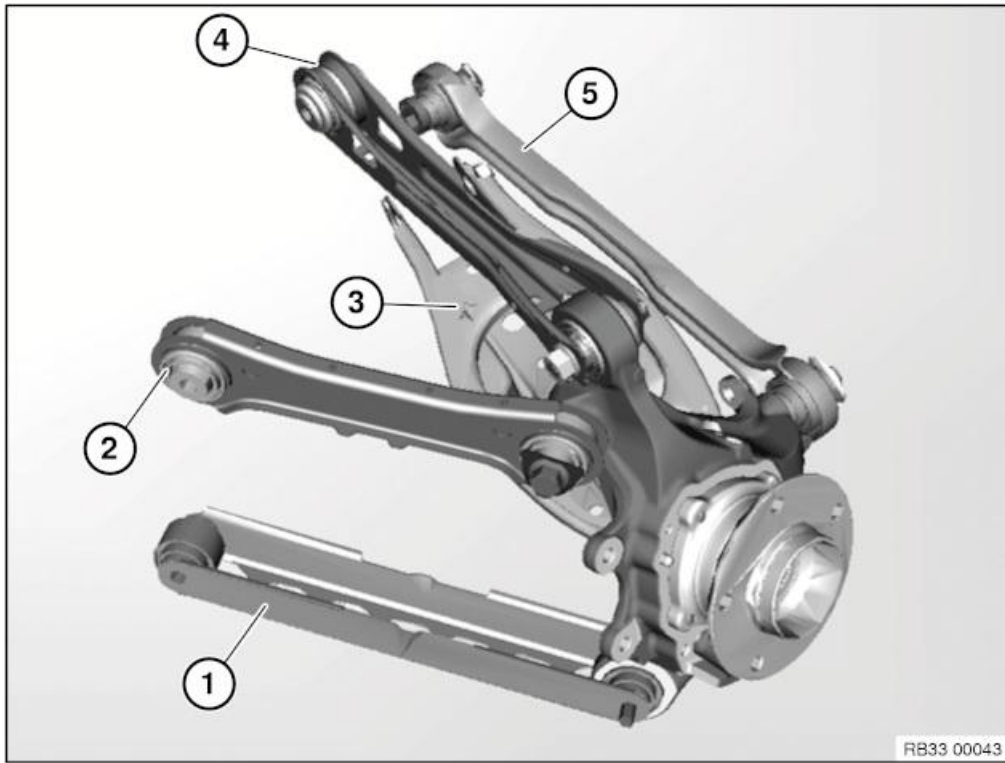
Replace damaged stoneguards.



After installation:

- [Bleed brake system](#).
- Adjust [parking brake](#) if the setting of the adjustment unit was changed during detachment and attachment of the handbrake Bowden cables.
- Carry out [wheel alignment procedure](#).

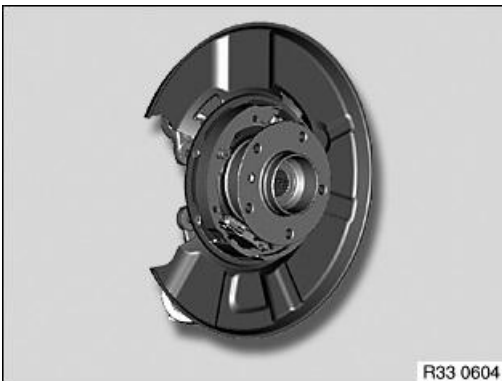
33 32 ... Overview of steering links



- 1 [Trailing arm](#)
- 2 [Traction strut](#)
- 3 [Camber arm](#)
- 4 [Wishbone](#)
- 5 [Toe arm](#)
- [Adjusting procedure](#)

**Necessary preliminary work:**

- Remove [output shaft](#).
- Remove [brake disc](#).
- Replacement only: Remove [drive flange for rear axle shaft](#).
- Detach [parking brake Bowden cable from brake shoe expander](#).
- Remove [pulse sensor from wheel carrier](#).
- Remove [coil spring](#).
- Remove [rubber mount/shock absorber on camber arm](#).



Secure wheel carrier against falling out.

Remove [anti-roll bar link on wheel carrier](#).

Remove [trailing arm from wheel carrier](#).

Remove [control arm from wheel carrier](#).

Remove [toe arm from wheel carrier](#).

Remove [top wishbone from wheel carrier](#).

Remove [camber arm from wheel carrier](#).

Remove wheel carrier.

**Attention!**

- Check sensor head and line from pulse sensor prior to installation for external damage, replacing if necessary.

**Replacement:**

- Install [rubber mount for wishbone](#) at top in wheel carrier
- Install [rubber mount for trailing arm](#) into wheel carrier
- Install [ball joint](#) into wheel carrier
- Remount or replace [parking brake shoes](#).
- Remount or replace [brake shoe expander](#).
- Remount or replace [caliper carrier/brake guard plate](#)
- Replace [wheel bearing](#).

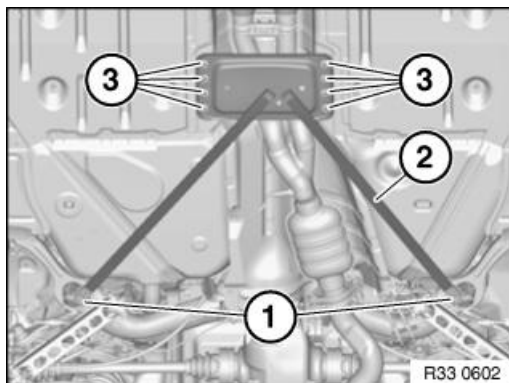
**After installation:**

- Adjust [parking brake](#).
- Carry out [wheel alignment procedure](#).

**Important!**

Observe [safety instructions](#) for raising the vehicle

Driving without the trailing link is not permitted!



Release screws (1).

Tightening torque [33 32 12AZ](#).

Release screws (3).

Tightening torque [33 32 11AZ](#).

Remove trailing link (2).

Installation note:

Replace screws (1).

**Warning!**

Scalding hazard!

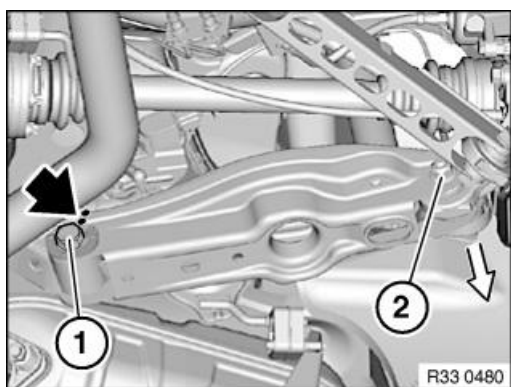
This work may only be carried out on an exhaust system which has cooled down.

**Note:**

If the camber arm is detached from the rear axle carrier/wheel carrier, it is necessary after reinstallation to carry out a wheel/chassis alignment check.

**Necessary preliminary tasks:**

- Remove [coil spring at rear](#)
- Remove [rubber mount for shock absorber mounting on camber arm](#)
- Remove jointed rod of ride-height sensor from camber arm bracket



Support wheel carrier with workshop jack.

Mark position of eccentric screw (1) to camber arm.

Replacement only: Carry over marking from old part to new part.

Release nut (2) and remove bolt towards rear.

Tightening torque [33 32 10AZ](#).

Installation:

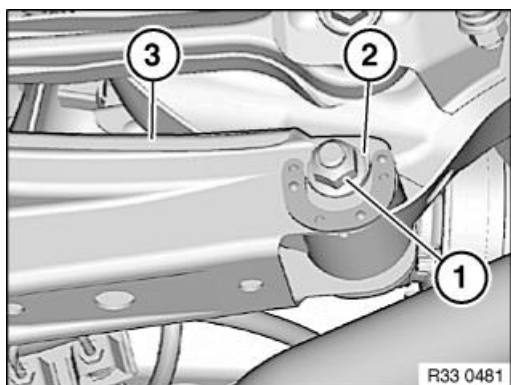
Note insertion direction of screw.

Replace self-locking nut.



If necessary, remove [exhaust system bracket from rear axle carrier](#).

If necessary, remove [rear muffler from body](#).



Release nut (1) and remove eccentric washer (2).

Tightening torque [33 32 9AZ](#).

Pull out eccentric screw and remove camber arm (3).

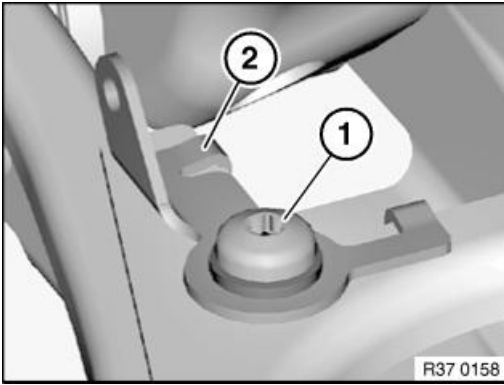
Installation:

Note insertion direction of eccentric screw.

Align eccentric screw by means of marking to camber arm.

Fit eccentric washer (2).

Replace nut (1).

**Replacement:**

Replace lower spring pad (refer to [Removing and installing/replacing coil spring](#)).

Version with xenon lights:

Release screw (1) and remove bracket (2).

Tightening torque [37 14 4AZ](#) .

**After installation:**

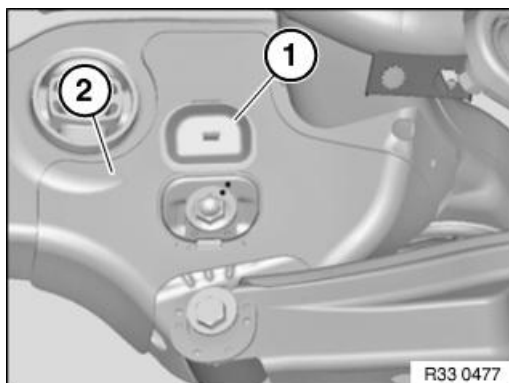
- Perform [chassis alignment check](#)

**Note:**

If the toe arm is detached from the rear axle support/wheel carrier, it is necessary after reinstallation to carry out a wheel/chassis alignment check.

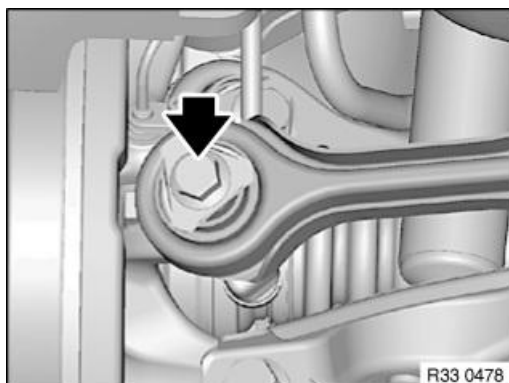
**Necessary preliminary tasks:**

- Remove [rear wheel](#)



If necessary, open cover (1) on stoneguard (2).

Mark position of eccentric bolt to rear axle support.

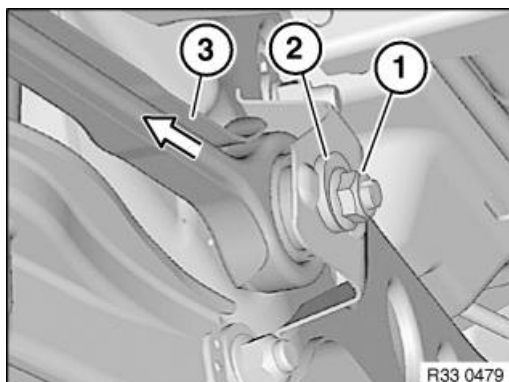


Release bolt.

Tightening torque [33 32 8AZ](#).

Installation:

If necessary, turn toe arm by hand.



Release nut (1) and remove eccentric washer (2).

Tightening torque [33 32 7AZ](#).

Unscrew eccentric bolt towards front and remove toe arm (3).

Installation:

Bolt head points in direction of travel.

Reinstall eccentric washer.

Replace self-locking nut.

Align eccentric bolt to rear axle support by means of marking.

**After installation:**

- Perform [wheel/chassis alignment check](#)

**Special tools required:**

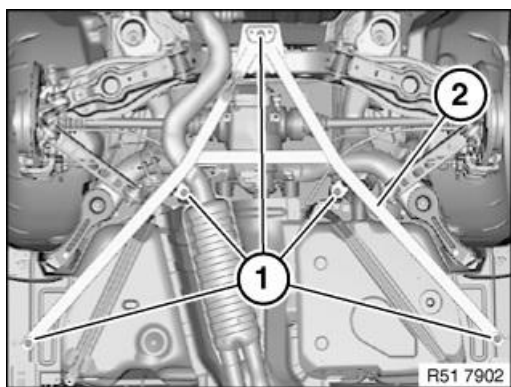
- [00 9 120](#)

**Important!**

Vehicles must not be driven without trailing links.

Driving without trailing links may damage the vehicle body.

Tension strut bolts must be tightened to torque and then tightened down with special tool [00 9 120](#).



Release screws (1) and remove trailing link (2). *Installation note:* Replace screws.

Tightening torque [51 71 3AZ](#).

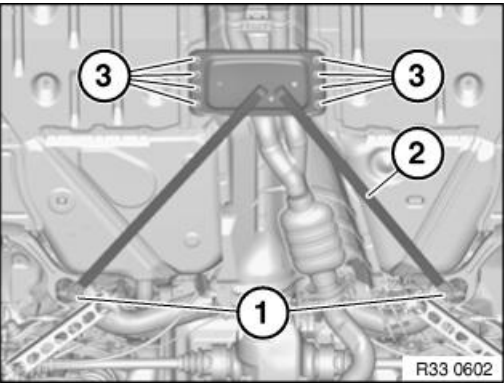
33 32 165 Removing and installing/replacing tension strut \PREMIUM

1 – Remove trailing link

i

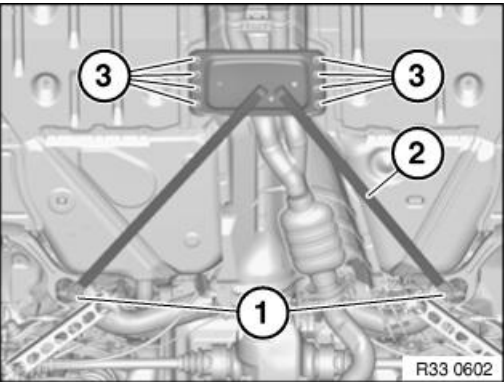
TECHNICAL INFORMATION

Driving without the strut brace/front end or tension strut is not permitted.



- Loosen screws (1).
- Loosen screws (3).
- Remove the tension struts (2).

2 – Install the tension strut



- Install the tension struts (2).
- Tighten down screws (3).

Tension strut to body

M8		24 Nm
----	--	-------

- Renew screws (1).

Parts: Bolts

- Tighten the screws (1).

Tension strut to compression strut

Renew screws.

M12		Jointing torque	100 Nm
		Angle of rotation	90 °

Additional Information

Overview of Tightening Torques

Tension strut to body

Used in step 2

M8		24 Nm
----	--	-------

Tension strut to compression strut

Used in step 2

Renew screws.

M12		Jointing torque	100 Nm
		Angle of rotation	90 °

**Special tools required:**

- [33 4 465](#)
- [33 4 466](#)
- [33 4 474](#)
- [33 4 475](#)
- [33 4 481](#)
- [33 4 482](#)

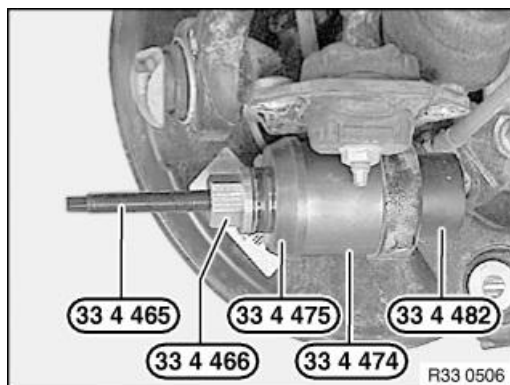
**Note:**

E90, E91 from 09/2008:

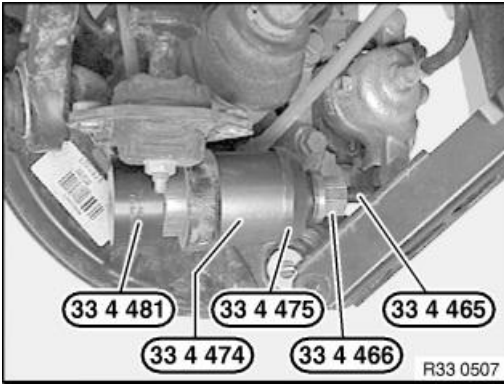
For driving dynamic reasons, both ball joints must be replaced on first replacement. After replacing the rubber mounts, mark wheel carriers with punch marks. If the punch marks are provided, the ball joints can be changed again individually.

**Necessary preliminary tasks:**

- Remove [coil spring at rear](#)
- If necessary, remove jointed rod of ride-height sensor from camber arm bracket
- Remove rear [shock absorber from rubber mount](#)
- Remove [camber arm from wheel carrier](#)
- Remove [trailing arm from wheel carrier](#)



Pull out and remove ball joint with special tools [33 4 465](#) , [33 4 466](#) , [33 4 475](#) , [33 4 474](#) and [33 4 482](#) .



Installation:

Push in new ball joint until it stops using special tools [33 4 481](#) , [33 4 474](#) , [33 4 475](#) , [33 4 466](#) and [33 4 465](#) .



After installation:

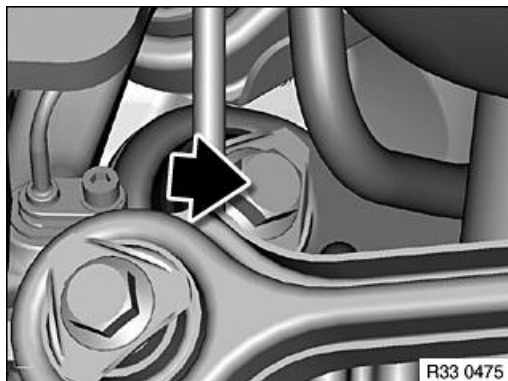
- Perform [chassis alignment check](#)

**Note:**

If the control arm is detached from the rear axle support, it is necessary after reinstallation to carry out a wheel/chassis alignment check.

**Necessary preliminary tasks:**

- Remove [rear wheel](#)



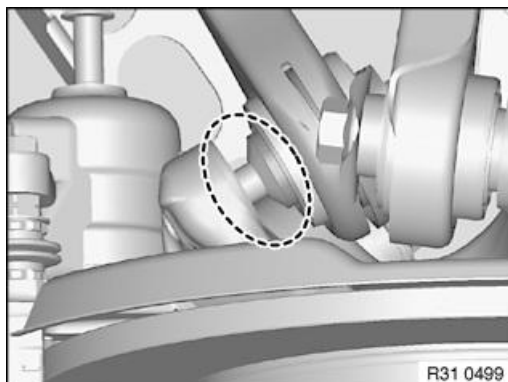
Release screw.

Tightening torque [33 32 4AZ](#).

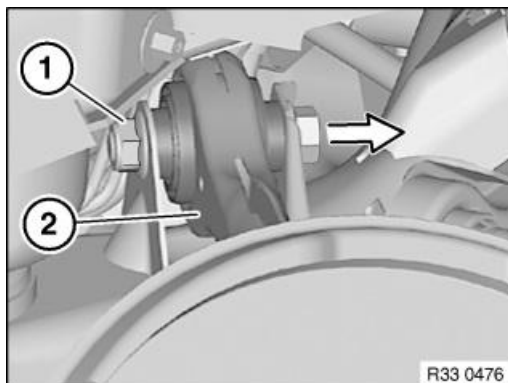
Installation note:

If necessary, raise wheel carrier in area of brake calliper by hand.

Replace screw.

**Important!**

Make sure during installation that in the connection area to the wheel carrier the tapered end of the bearing bushing (of the rubber mount) points in the direction of the wheel carrier.

**Note:**

On the M3 a ball joint is fitted in the guide arm.

Slacken nut (1).

Tightening torque [33 32 3AZ](#).

Unscrew bolt towards rear and remove guide arm (2).

Installation note:

Bolt head must point to rear.

Replace self-locking nut.



After installation:

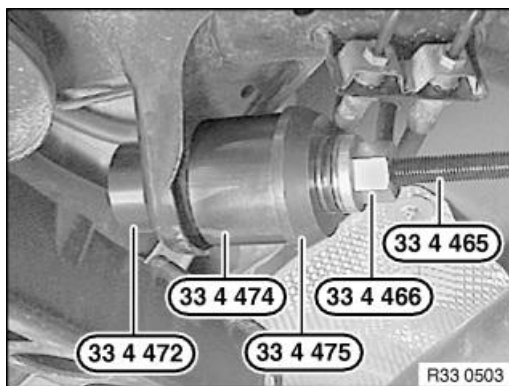
- Perform [chassis / wheel alignment check](#)

**Special tools required:**

- [33 4 450](#)
- [33 4 451](#)
- [33 4 452](#)
- [33 4 453](#)
- [33 4 454](#)
- [33 4 465](#)
- [33 4 466](#)
- [33 4 471](#)
- [33 4 472](#)
- [33 4 474](#)
- [33 4 475](#)

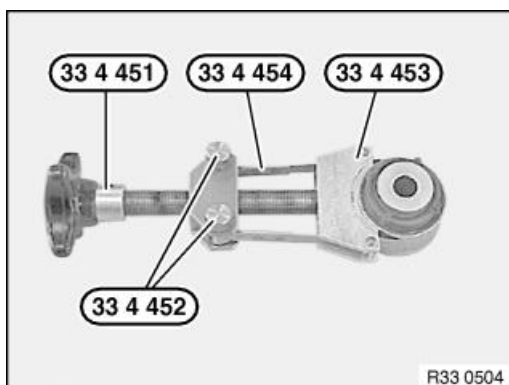
**Necessary preliminary tasks:**

- Remove [trailing arm from rear axle support](#).

**Removing rubber mount:**

Mark installation position of rubber mount by way of slot to rear axle support.

Remove rubber mount using special tools [33 4 472](#) , [33 4 474](#) , [33 4 475](#) , [33 4 466](#) and [33 4 465](#) .

**Installing new rubber mount:**

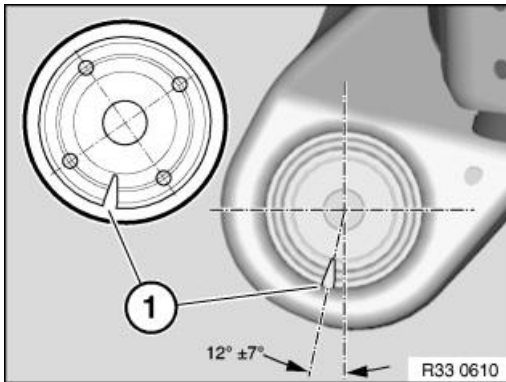
If necessary, release knurled screws [33 4 452](#) and pull off mount 33 4 455 with spring steel 33 4 456.

Insert rubber mount in the special tools [33 4 451](#) , [33 4 452](#) , [33 4 454](#) , [33 4 453](#) with spray points at the top.

**Important!**

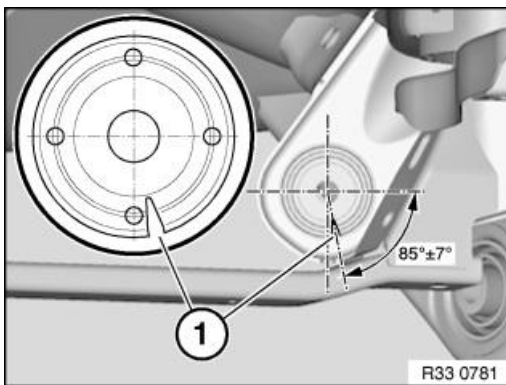
Clean rubber mount prior to drawing in and coat with Loctite 638!

Spray-on points of rubber mount must point to rear!



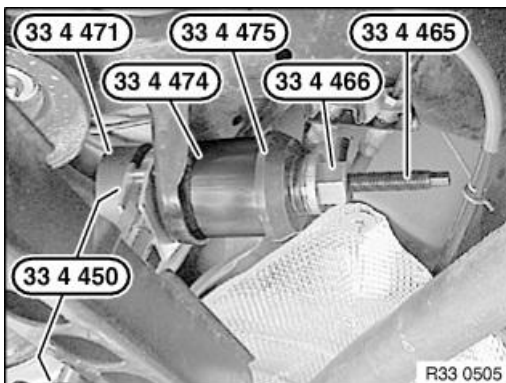
All except M3, M Coupé:

Align rubber mount by way of slot (1) at an angle to rear axle support.



M3, M Coupé:

Align rubber mount by way of slot (1) at an angle to rear axle support.



Align rubber mount by way of slot to marking on rear axle support.

Using special tools [33 4 471](#) , [33 4 474](#) , [33 4 475](#) , [33 4 466](#) and [33 4 465](#) draw rubber mount into the rear axle support.

Remove special tool [33 4 450](#) .

Apply a thin coating of Loctite 638 to new rubber mount.

Draw in rubber mount until limit position.

**After installation:**

- Carry out [wheel alignment](#).

33 32 071 Replacing an upper wishbone



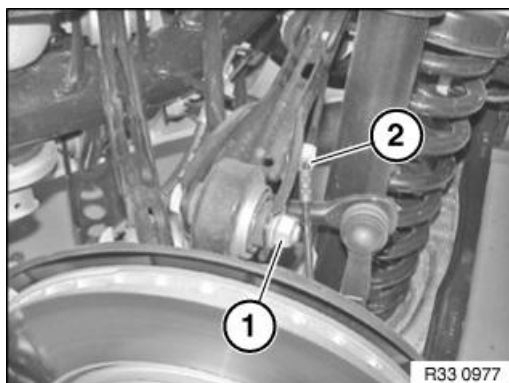
Note:

If the wishbone is detached from the rear axle support, it is necessary after reinstallation to carry out a wheel/chassis alignment check.



Necessary preliminary tasks:

- Remove [rear wheel](#)



Slacken nut (1).

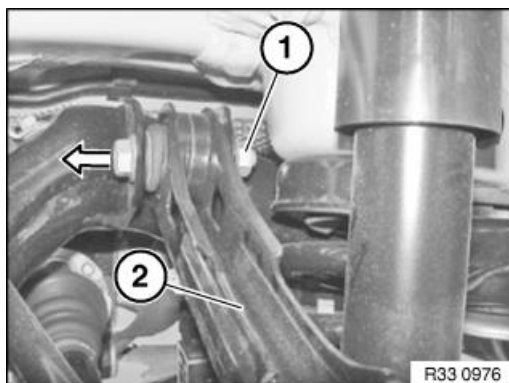
Tightening torque [33 32 6AZ](#) .

Unclip line holder (2) for pulse sensor or brake pad sensor on wishbone.

Installation:

Raise drive flange area using workshop jack.

Replace nut.



Release nut (1) and remove screw towards front.

Tightening torque [33 32 5AZ](#) .

Remove wishbone (2).

Installation:

Bolt head points in direction of travel.

Replace nut.

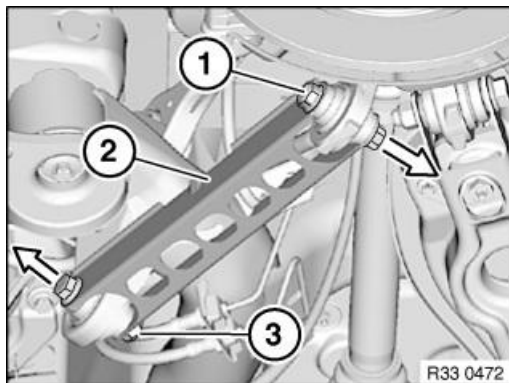


After installation:

- Perform [chassis alignment check](#)

**Note:**

If the trailing arm is detached from the rear axle support/wheel carrier, it is necessary after reinstallation to carry out a wheel/chassis alignment check.



Release nuts (1, 3).

Tightening torque (on rear axle support) [33 32 1AZ](#) .

Tightening torque (on wheel carrier) [33 32 2AZ](#) .

Unscrew bolts.

Remove trailing arm (2) downward.

Installation:

Note insertion direction of bolts.

Replace self-locking nuts.

**After installation:**

- Perform [wheel/chassis alignment check](#)

**Special tools required:**

- [33 4 450](#)
- [33 4 451](#)
- [33 4 452](#)
- [33 4 455](#)
- [33 4 456](#)
- [33 4 461](#)
- [33 4 462](#)
- [33 4 463](#)
- [33 4 464](#)
- [33 4 465](#)
- [33 4 466](#)

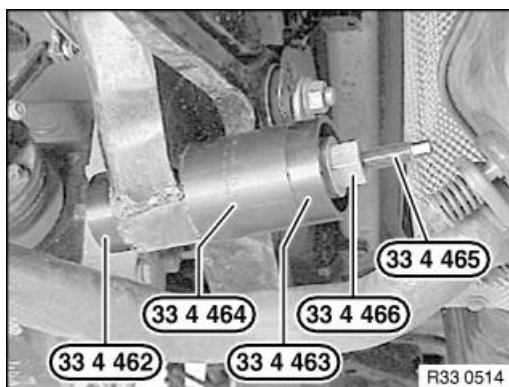
**Warning!**

Risk of burns!

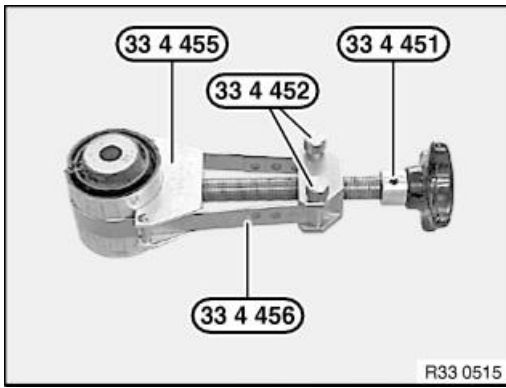
This work may only be carried out on an exhaust system which has cooled down.

**Necessary preliminary tasks:**

- Remove [coil spring](#)
- Remove [camber arm from rear axle support](#)

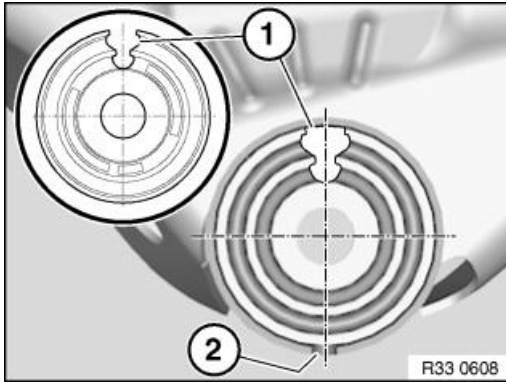
**Removing rubber mount:**

Pull out and remove rubber mount with special tools [33 4 462](#) , [33 4 464](#) , [33 4 463](#) , [33 4 466](#) and [33 4 465](#) .

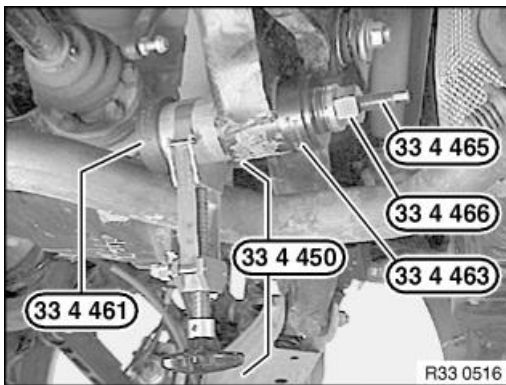


Installing new rubber mount:

Pull together rubber mount with special tools [33 4 455](#) , [33 4 456](#) , [33 4 452](#) and [33 4 451](#) .



Draw rubber mount into rear axle support so that slot (1), rubber mount centre point and notch (2) form a line.



Draw rubber mount into rear axle support as far as possible using special tools [33 4 461](#) , [33 4 463](#) , [33 4 466](#) and [33 4 465](#) .

Remove special tool [33 4 450](#) and draw in rubber mount as far as it will go.



After installation:

- Perform [wheel/chassis alignment check](#)

**Special tools required:**

- [33 4 450](#)
- [33 4 451](#)
- [33 4 452](#)
- [33 4 453](#)
- [33 4 454](#)
- [33 4 465](#)
- [33 4 466](#)
- [33 4 472](#)
- [33 4 473](#)
- [33 4 474](#)
- [33 4 475](#)

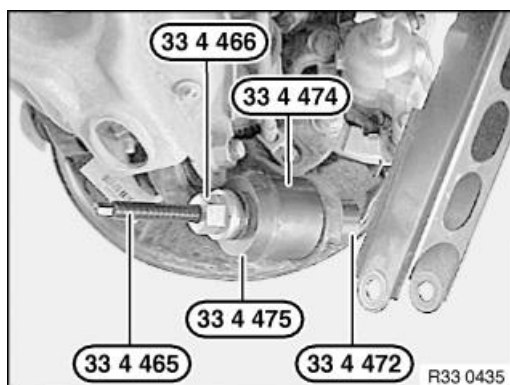
**Note:**

E90, E91 from 09/2008:

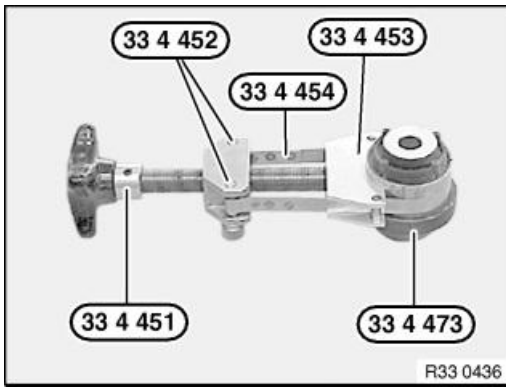
For driving dynamic reasons, both rubber mounts must be replaced on first replacement. After replacing the rubber mounts, mark wheel carriers with punch marks. If the punch marks are provided, the rubber mounts can be changed again individually.

**Necessary preliminary tasks:**

- Remove [trailing arm from wheel carrier](#)

**Removing rubber mount:**

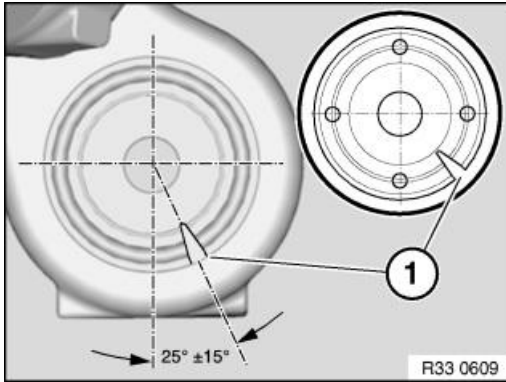
Remove rubber mount with special tool [33 4 465](#) , [33 4 466](#) , [33 4 475](#) , [33 4 474](#) and [33 4 472](#) .



Installing new rubber mount:

Insert rubber mount with spray-on points facing upwards in special tool [33 4 451](#) , [33 4 452](#) , [33 4 454](#) , [33 4 453](#) and pull together.

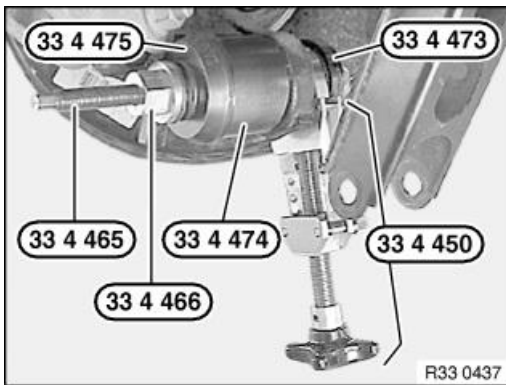
Insert rubber mount in special tool [33 4 473](#) .



Important!

Spray-on points of rubber mount must point to rear!

Align rubber mount by way of slot (1) at an angle to wheel carrier.



Pull rubber mount with special tool [33 4 465](#) , [33 4 466](#) , [33 4 475](#) , [33 4 474](#) and [33 4 473](#) partially into the wheel carrier.

Remove special tool [33 4 450](#) and pull in rubber mount until limit position.



After installation:

- Carry out [wheel alignment](#)

**Special tools required:**

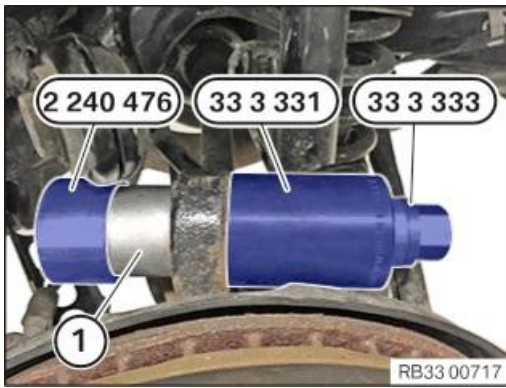
- [33 4 450](#)
- [33 4 451](#)
- [33 4 452](#)
- [33 4 453](#)
- [33 4 454](#)
- [33 4 465](#)
- [33 4 466](#)
- [33 4 472](#)
- [33 4 473](#)
- [33 4 474](#)
- [33 4 475](#)
- [33 3 333](#)
- [33 3 331](#)
- [2 240 472](#)
- [2 240 476](#)

**Necessary preliminary work:**

- Remove rear [wheel](#)
- Remove [control arm](#)
- Release [control arm](#) from wheel carrier

**Removing rubber mount:**

Pull out rubber mount using special tool [33 3 333](#) , [33 3 331](#) , and [2 240 472](#) .



Installing rubber mounts:

Drain in rubber mount (1) using special tool [33 3 333](#) , [33 3 331](#) and [2 240 476](#) up to limit position.

(draw-in direction opposite direction of travel)



After installation:

- Perform [wheel alignment](#)

**Important!**

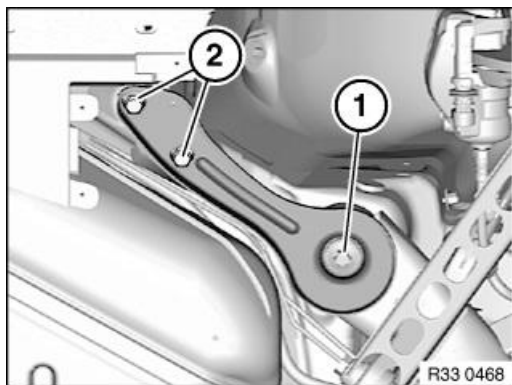
Observe [safety instructions](#) for raising the vehicle
Driving without compression struts is not permitted!

Risk of damage!

The rear axle support must be supported at the front if both compression struts need to be replaced.

**Necessary preliminary tasks:**

- Remove [rear air guide](#). (E87, E88)
- Remove tank cover. (E84)



Unfasten screws (2).

Tightening torque [33 33 2AZ](#)

Installation note:

Replace screws.

Release screw (1) and remove compression strut.

Tightening torque [33 33 1AZ](#)

Installation note:

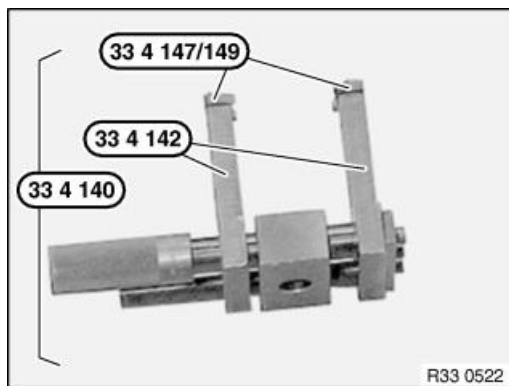
Check threads for damage; if necessary, repair with [Helicoil thread inserts](#).

**Special tools required:**

- [33 4 140](#)
- [33 4 142](#)
- [33 4 147](#)
- [33 4 149](#)
- [33 4 431](#)
- [33 4 432](#)
- [33 4 433](#)
- [33 4 434](#)
- [33 4 435](#)
- [33 4 436](#)
- [33 4 437](#)

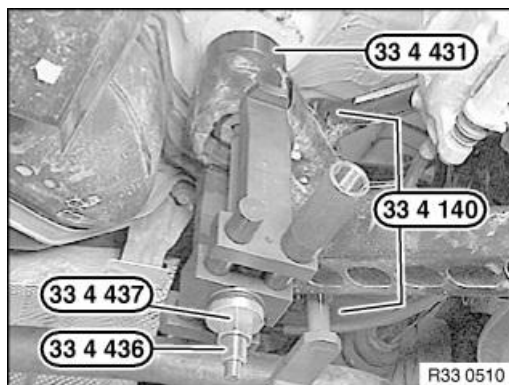
**Necessary preliminary tasks:**

- Lower [rear axle support](#)



If necessary assemble special tools [33 4 140](#) , [33 4 142](#) and [33 4 147](#) as illustrated.

If necessary screw new synchronising keys [33 4 149](#) onto special tool [33 4 140](#) with countersunk screws



Coat top edge of rubber mount with Circo Light (refer to BMW Parts Service).

Fit special tool [33 4 431](#) on rubber mount in such a way that edge of rubber mount disappears in special tool.

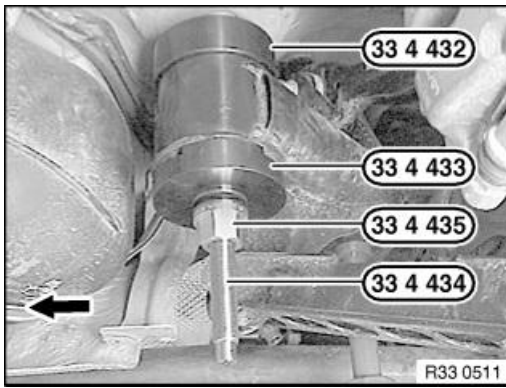
Oil special tool [33 4 436](#) lightly before use.

Align special tool [33 4 140](#) by way of openings in rubber mount.

Note:

Ensure it is correctly supported on bearing bushing of rear axle carrier.

Using the special tools [33 4 436](#) , [33 4 437](#) , [33 4 140](#) and [33 4 431](#) , pull rubber mount out of bearing bush.



Installation:

Coat new rubber mount with Circo Light (refer to BMW Parts Service).

Oil special tool [33 4 434](#) lightly before use.

If necessary, assemble [33 4 432](#) , [33 4 433](#) , [33 4 435](#) and [33 4 434](#) as illustrated.

Align rubber mount by way of arrow to direction of travel.

Draw in rubber mount as far as it will go.



After installation:

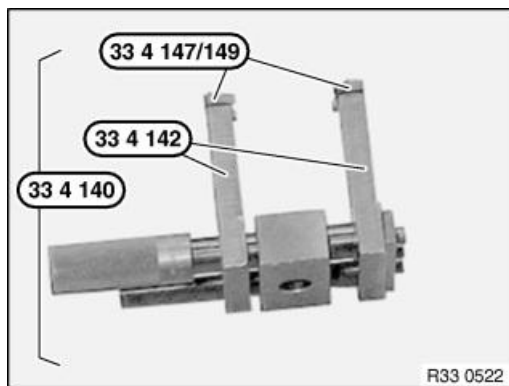
- Bleed [braking system](#)

**Special tools required:**

- [33 4 140](#)
- [33 4 142](#)
- [33 4 147](#)
- [33 4 149](#)
- [33 4 431](#)
- [33 4 434](#)
- [33 4 435](#)
- [33 4 436](#)
- [33 4 437](#)
- [33 4 441](#)
- [33 4 442](#)
- [33 4 443](#)
- [33 4 444](#)

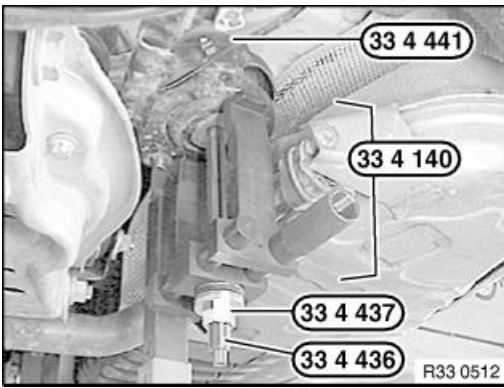
**Necessary preliminary tasks:**

- Lower [rear axle support](#)



If necessary, assemble special tool [33 4 140](#) , [33 4 142](#) and [33 4 147](#) as shown.

If necessary, screw new thrust pieces [33 4 149](#) with countersunk screws on special tool [33 4 140](#) .



Coat top edge of rubber mount with Circo Light (refer to BMW Parts Service).

Fit special tool [33 4 441](#) on rubber mount in such a way that edge of rubber mount disappears in special tool.

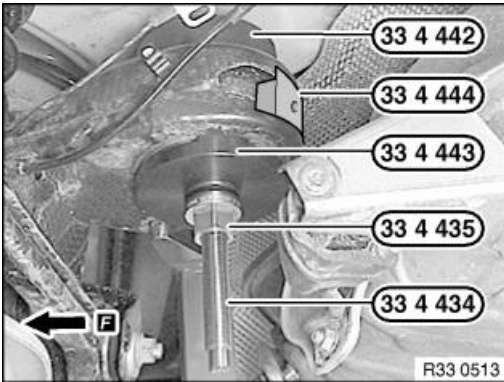
Oil special tool [33 4 436](#) slightly before use.

Align special tool [33 4 140](#) by way of openings in rubber mount.

Note:

Ensure it is correctly supported on bearing bushing of rear axle carrier.

Pull rubber mount with special tools [33 4 436](#) , [33 4 437](#) , [33 4 140](#) and [33 4 431](#) out of bearing bush.



Installation:

Coat new rubber mount with Circo Light (refer to BMW Parts Service).

Insert special tool [33 4 444](#) in opening on rear axle carrier to avoid damaging the rear axle carrier when drawing in the rubber mount.

Oil special tool [33 4 434](#) slightly before use.

If necessary, assemble special tool [33 4 442](#) , [33 4 443](#) , [33 4 435](#) and [33 4 434](#) as shown.

Align rubber mount by way of arrow to direction of travel.

Draw in rubber mount as far as it will go.



After installation:

- Bleed [braking system](#)

33 41 ... removed)

Detaching wheel bearing inner ring from drive flange (drive flange



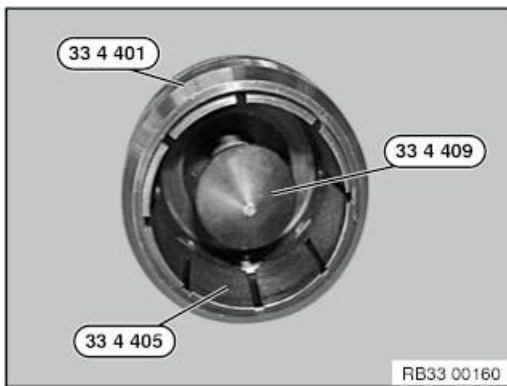
Special tools required:

- [33 4 409](#)
- [33 4 405](#)
- [33 4 401](#)
- [33 4 403](#)
- [33 4 404](#)
- [33 4 402](#)
- [33 4 400](#)

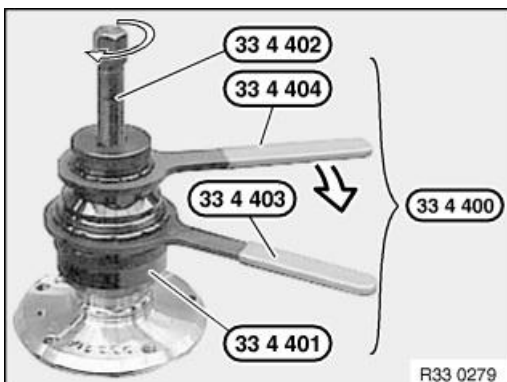
Important!

- Special tool [33 4 409](#) must not be removed!

Insert special tool [33 4 405](#) into special tool [33 4 401](#) .



Position special tool [33 4 401](#) in conjunction with [33 4 405](#) on drive flange.



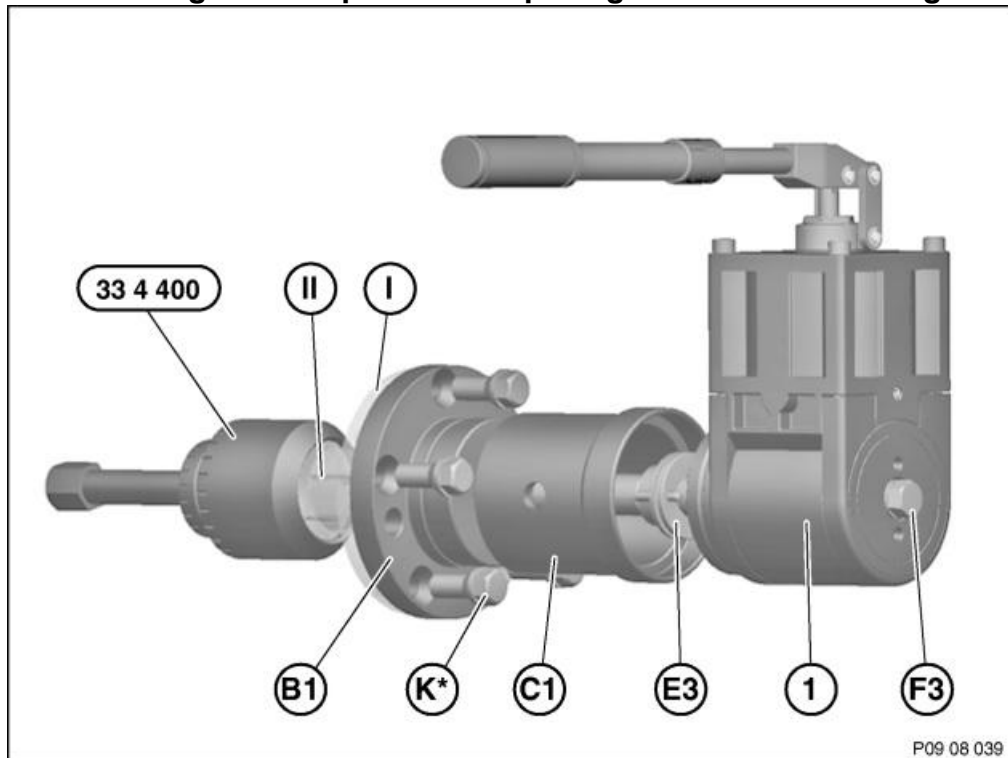
Tension special tool [33 4 401](#) with spanners [33 4 403](#) and [33 4 404](#) together until special tool is resting against wheel bearing inner ring. Unscrew spindle [33 4 402](#) as far as is possible.



Use **special tool** , see **BMW Workshop Catalogue**.

- Hydraulic unit - 81 64 2 155 744
- Adapter kit 1 - 81 64 2 155 745
- Adapter kit 2 - 81 64 2 155 746

The following work steps describe pulling off the wheel bearing inner ring:



- Pressure cylinder of hydraulic unit (1) must be in the initial position.
- Spindle F3 must terminate flush with hydraulic unit (1).
- Assemble special tool, see graphic
- Turn spindle of special tool [33 4 400](#) as far as it will go.

The following tools are required for detachment, consult graphic for arrangement:

Vehicle components:

I	Drive flange hub
II	Wheel bearing inner ring

Required components for all models and types:

F3	Spindle M24 (length 270 mm)
1	Hydraulic unit
E3	Washer M24
C1	Holding sleeve
B1	Adapter
33 4 400	Special tool

*** Components specific to model and type:**

K1	Screws M12 x 1.5
----	------------------

**Necessary preliminary tasks:**

- Remove [rear wheel](#).
- Remove [parking brake shoes](#).

**Important!**

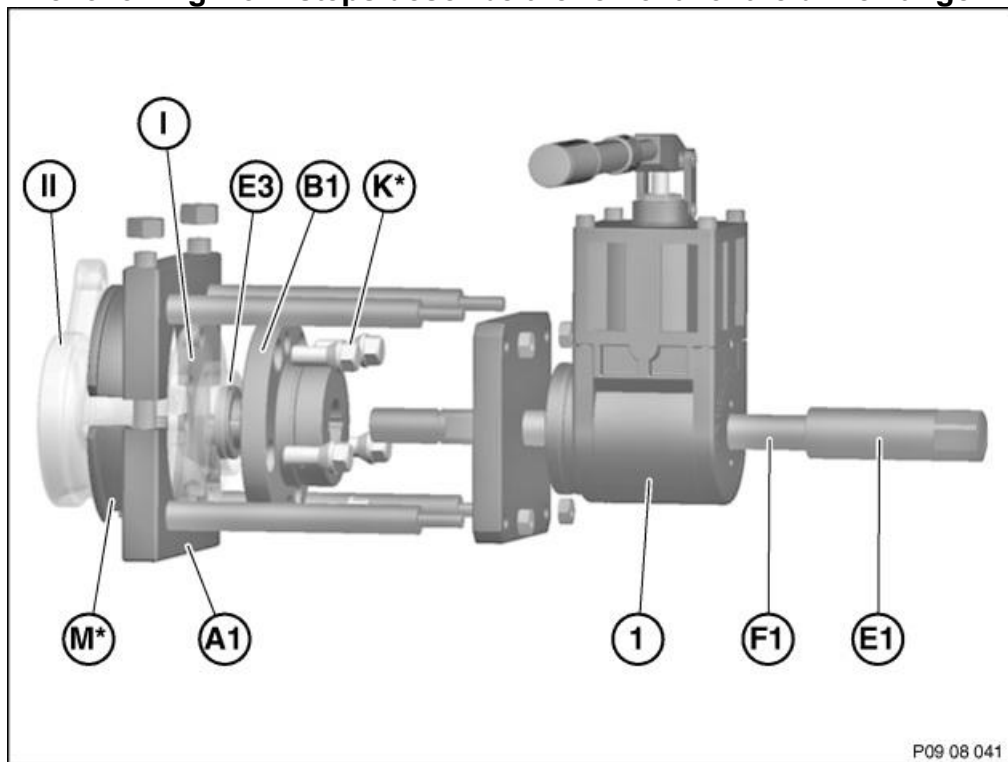
Check sensor head and cable of the pulse sensor for exterior damage and replace, if necessary.



Use **special tool** , see **BMW Workshop Catalogue**.

- Hydraulic unit - 81 64 2 155 744
- Adapter kit 1 - 81 64 2 155 745
- Adapter kit 2 - 81 64 2 155 746

The following work steps describe the removal of the drive flange:



The following tools are required to pull out the drive flange hub from the wheel bearing; see graphic for arrangement:

Vehicle components:

I	Drive flange hub
II	Wheel carrier

Required components for all models and types:

E3	Washer
B1	Adapter

E1	Holding sleeveM24
F1	Spindle M24 / M20 (length 425 mm)
1	Hydraulic unit
A1	Device

*** Components specific to model and type:**

M5	Adapter $\varnothing$ 90
K1	Screws M12 x 1.5



Important!

The wheel bearing is destroyed when the drive flange is removed and cannot be reused!

Replace [wheel bearing](#).

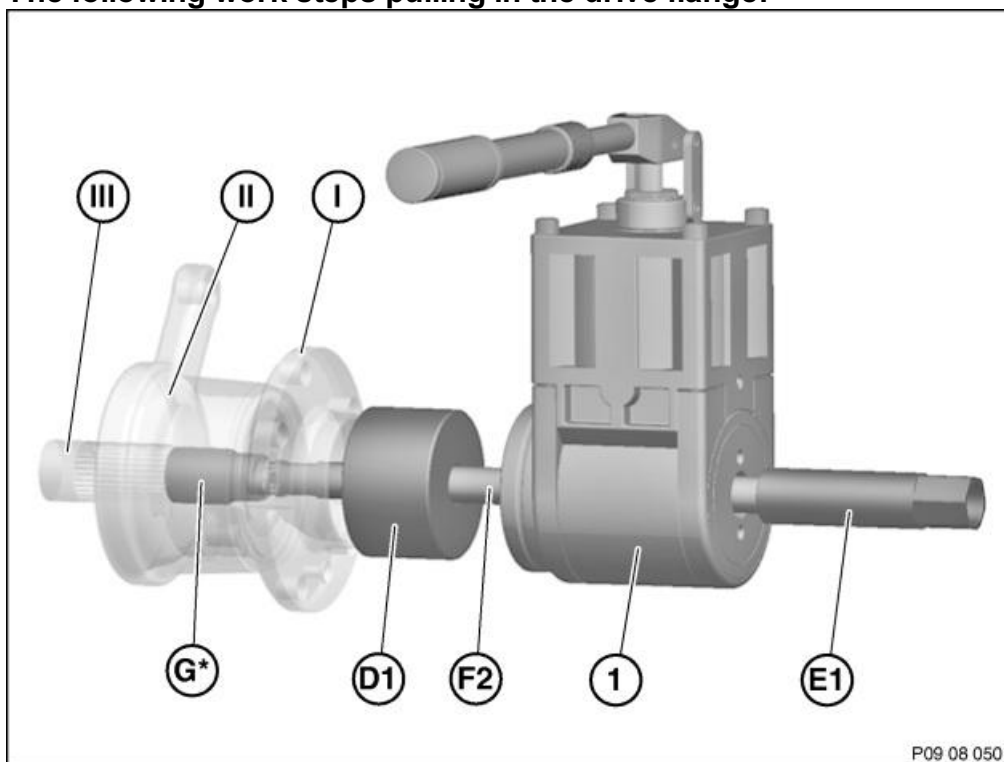


Risk of damage!

Oil drive flange lightly and attach to gearing of output shaft.

To avoid damaging the tool, the load on the hydraulic pump must be observed during the insertion.

The following work steps pulling in the drive flange:



The following tools are required to insert the drive flange hub; see graphic for arrangement:

Vehicle components:

I	Drive flange hub
II	Wheel carrier
III	Output shaft

Required components for all models and types:

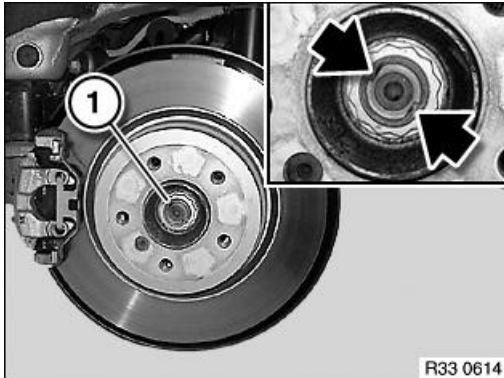
1	Hydraulic unit
E1	Holding sleeveM24
D1	Washer
F2	Spindle M24 / M20 (length 335 mm)

*** Components specific to model and type (thread diameter, output shaft):**

G3	Adapter M27 x 1.5 to M20
----	--------------------------

Installation note:

The output shaft and drive flange may be inserted in the same procedure.



Tighten collar nut (1), activate parking brake for this purpose.

Tightening torque [33 41 1AZ](#).

Installation note:

No oil permitted on thread of shaft journal or collar nut.

Replace collar nut (1) by positive peening at flat areas of output shaft.



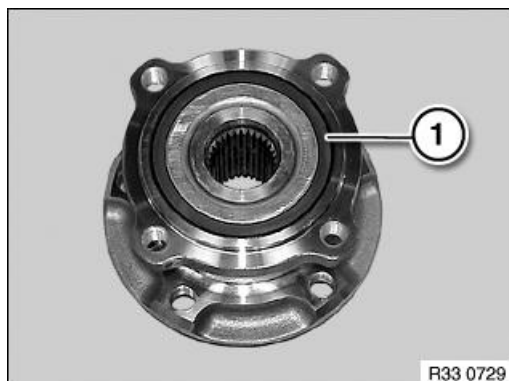
After installation:

- Adjust [parking brake](#).

*Note:*

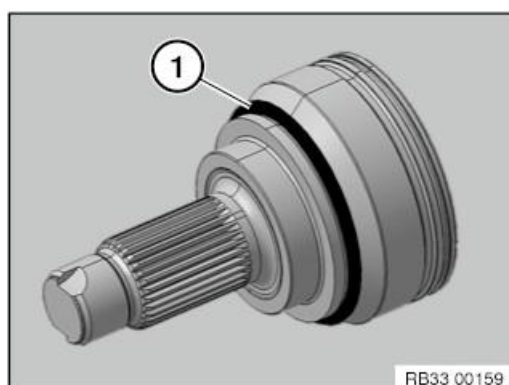
The procedure is described in document "[Replacing drive flange on rear axle shaft on left](#)".

33 41 153 Replacing wheel bearing of rear axle shaft on left



Important!

Do not damage the multipole impulse ring (1)!



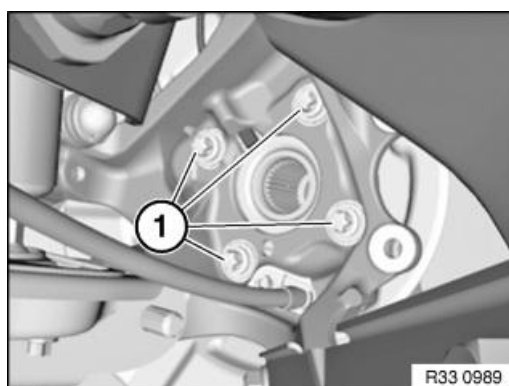
Important!

It is essential to supplement/replace the O-ring (1) on the output shaft.



Necessary preliminary tasks:

- Remove [drive flange for rear axle shaft](#).
- Detach [wheel bearing inner ring from drive flange](#).



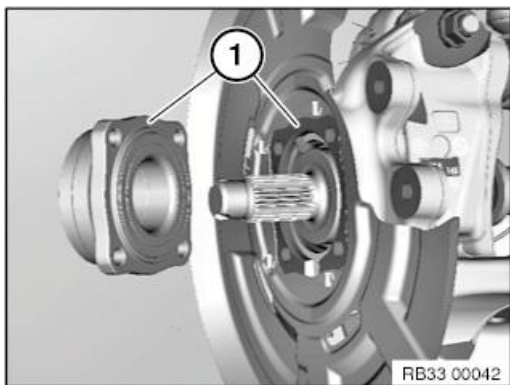
Release screws (1).

Tightening torque [33 41 2AZ](#).

Remove wheel bearing.

Installation note:

Replace screws.



Installation note:

Keep contact surface (1) of wheel bearing/wheel carrier clean and free from oil and grease.



After installation:

- Adjust [parking brake](#).

*Note:*

The procedure is described in document "[Replacing wheel bearing of rear axle shaft on left](#)".

**Warning!**

Danger to life!

Vehicle may tilt off vehicle hoist if the workshop jack is incorrectly handled.

After supporting components, make sure that:

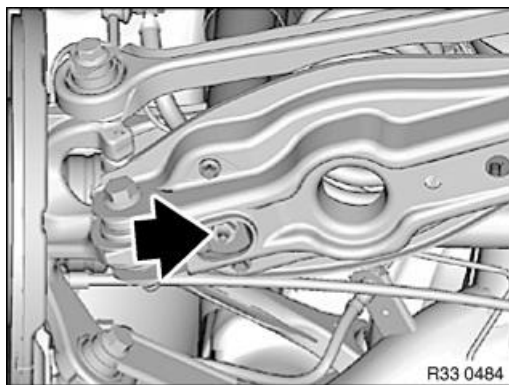
- the vehicle can no longer be raised or lowered
- the vehicle does not lift off the locating plates on the lifting platform

*Installation note:*

1. All screws, nuts, bolts and hose clamps removed during the repair must be replaced.
2. Retaining elements on chassis and suspension and steering parts must be replaced.

**Necessary preliminary tasks:**

- Remove [rear wheel](#)
- Remove [luggage compartment wheel house trim panel](#)



Support wheel carrier with workshop jack.

Release nut; if necessary brace on hexagon head.

Tightening torque [33 52 2AZ](#).

Raise wheel carrier with workshop jack until shock absorber can be removed from rubber mount.

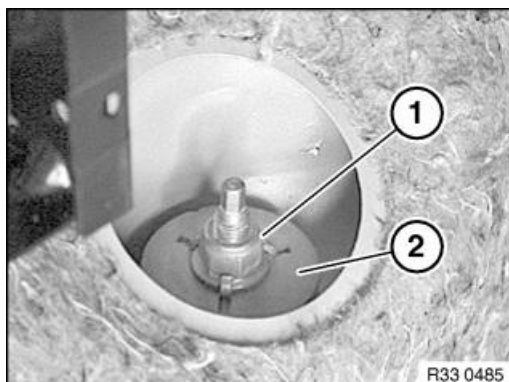
Press shock absorber together and remove from rubber mount.

Slowly lower wheel carrier until wheel carrier is suspended.

Remove workshop jack underneath car and lower car.

Installation note:

Replace self-locking nut.



Remove protective cap.

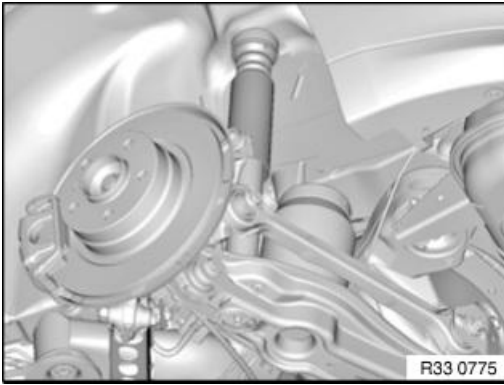
Release nut (1); if necessary, grip at hexagon head.

Tightening torque [33 52 1AZ](#).

Remove support bearing upper part (2).

Installation note:

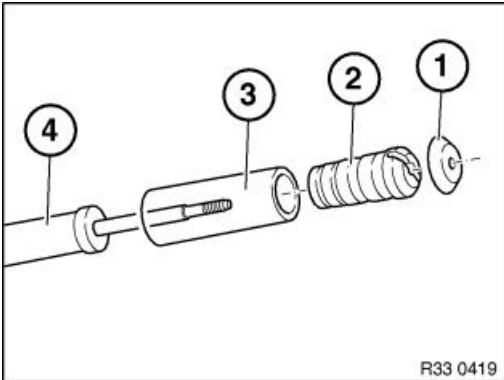
Replace support bearing upper part (2).



Press shock absorber together and remove from wheel arch. *Installation note:*

Remove [support bearing \(lower section\)](#), check for damage and if necessary replace.

Check auxiliary damper and protective tube for damage, replace if necessary.



Replacement:

- Remove support cup (1) and auxiliary damper (2) with protective tube (3) from rear shock absorber (4)

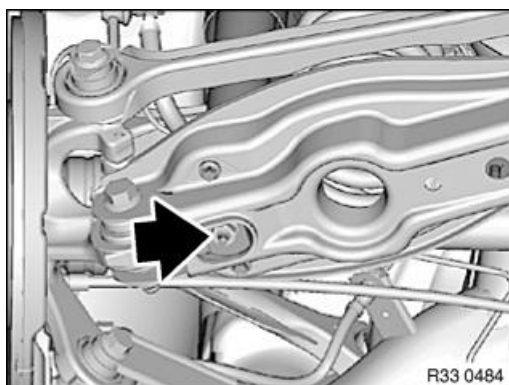
*Installation note:*

1. All screws, nuts, bolts and hose clamps removed during the repair must be replaced.
2. Retaining elements on chassis and suspension and steering parts must be replaced.

**Warning!**

Danger of injury!

Vehicle may tilt off vehicle hoist if the workshop jack is incorrectly handled.



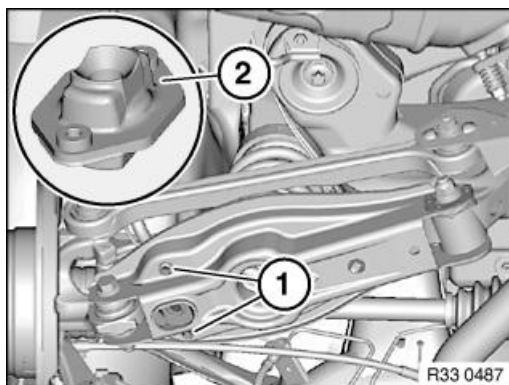
Release nut; if necessary brace on hexagon head.

Tightening torque [33 52 2AZ](#).

Raise wheel carrier with workshop jack until shock absorber can be removed from rubber mount.

Installation note:

Replace self-locking nut.



Release screws (1).

Tightening torque [33 52 3AZ](#).

Press shock absorber upwards and remove rubber mount (2) from camber arm.

33 52 161 Replacing support bearing (lower section) for rear left or right spring strut/shock absorber



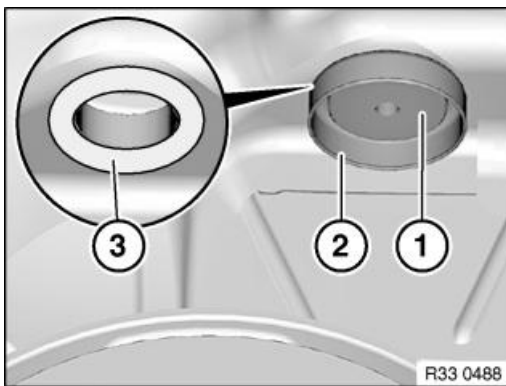
Installation note:

1. All screws, nuts, bolts and hose clamps removed during the repair must be replaced.
2. Retaining elements on chassis and suspension and steering parts must be replaced.

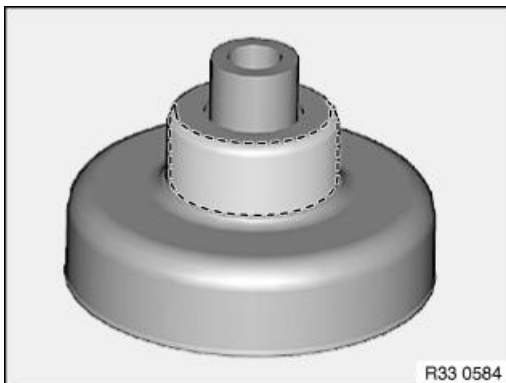


Necessary preliminary tasks:

- Remove [rear shock absorber](#).



Press support bearing lower section (1) with seal grommet (2) out of shock absorber mounting. *Installation note:* Clean shock absorber mounting including contact surface (3) all round. Insert support bearing lower section (1) in sealing grommet (2).



Installation note:

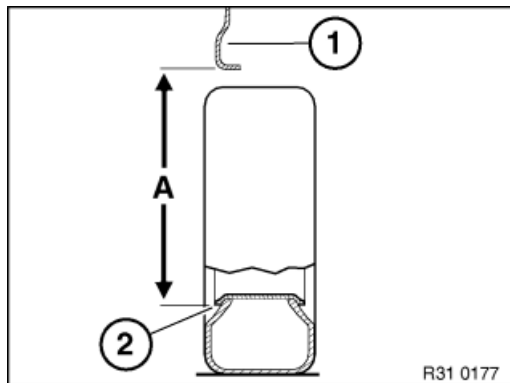
Coat sealing grommet as illustrated with Circolight and press into shock absorber mounting.

33 53 ... Measuring ride-level height of vehicle



Necessary preliminary tasks:

- Move vehicle into [normal position](#)



Determine actual ride height (A) - to do so, attach tape measure to rim flange (2) at bottom middle and measure to lower edge of wheel arch (1).

**Special tools required:**

- [33 5 010](#)
- [33 5 011](#)
- [33 5 012](#)
- [33 5 013](#)
- [33 5 014](#)
- [33 5 015](#)
- [33 5 016](#)
- [33 5 017](#)
- [33 5 020](#)

**Important!**

Both coil springs on the relevant axle must be replaced in the event of corrosion breakage.

The spring pads at the top and bottom must also be renewed when replacing the coil springs.

Avoid damaging the coil spring coating.

Note:

The coil spring is allocated in the Electronic Parts Catalogue (EPC) under the item "Spring table" after the vehicle identification number has been entered and the optional equipments of the car have been selected.

**Warning!**

Before using the special tool [33 5 010](#) take care to read through the Owner's Handbook!

All the safety precautions and instructions contained in the Owner's Handbook must be strictly observed!

Failure to observe these safety precautions and instructions increases the risk of serious physical injury, damage to your health and damage to property and equipment!



Important!

1. Prior to each use, check the special tools for defects, modifications and operational reliability.
2. Damaged/modified special tools must not be used!
3. No changes or modifications may be made to the special tools!
4. These special tools are intended solely for the purpose of tightening and relieving cylindrical and tapered suspension springs.
5. Keep special tools dry, clean and (down to the spindle) free from grease.
6. Impact screwdrivers are prohibited!
7. Do not compress coil spring to full extent.



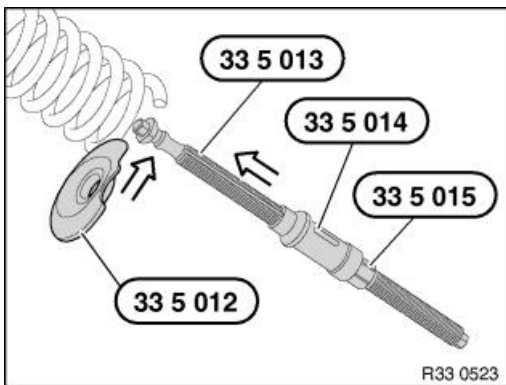
Installation note:

1. All screws, nuts, bolts and hose clamps removed during the repair must be replaced.
2. Retaining elements on chassis and suspension and steering parts must be replaced.



Necessary preliminary tasks:

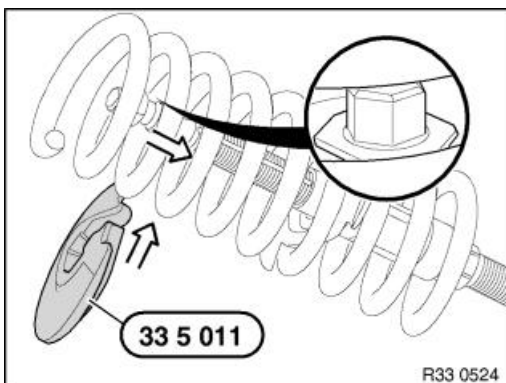
- Remove [rear wheel](#).



Removal:

Insert lower spring cup [33 5 012](#) centrally into coil spring and turn to lowest winding.

Guide spindle [33 5 013](#) , [33 5 014](#) , [33 5 015](#) from below through the camber link and the lower spring cup [33 5 012](#) .

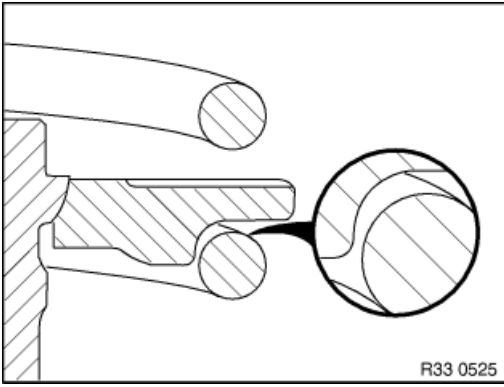


Insert top spring cup [33 5 011](#) sideways into coil spring and turn to the uppermost winding.

Important!

Make sure spindle (hexagonal) is correctly seated in upper spring cup [33 5 011](#) !

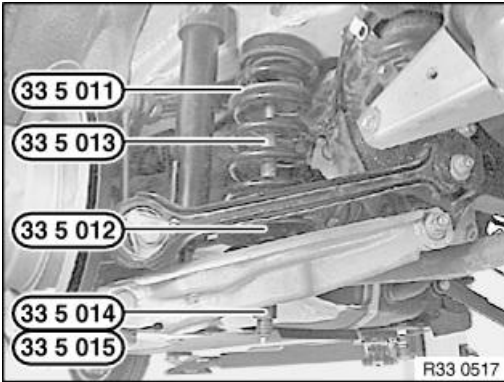
Pull spindle [33 5 013](#) down.



Warning!

Danger of injury!

Make sure coil spring is correctly positioned in spring cups.



Important!

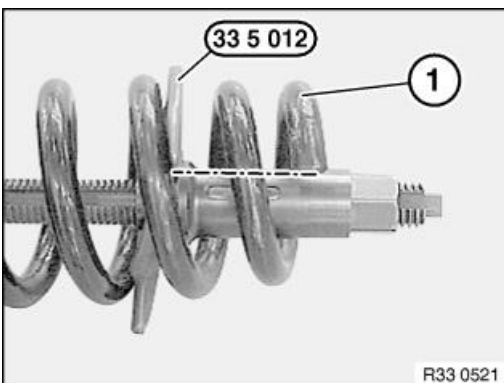
Centre special tools [33 5 011](#) , [33 5 012](#) , [33 5 013](#) , [33 5 014](#) , [33 5 015](#) to achieve the greatest possible contact surface with the coil spring.

Check installed position of the special tool [33 5 011](#) , [33 5 012](#) and [33 5 013](#) , [33 5 014](#) , [33 5 015](#) , and correct as needed.



Tighten coil spring using special tools [33 5 016](#) and [33 5 020](#) , gripping the spindle of the spring tensioner with special tool [33 5 017](#) .

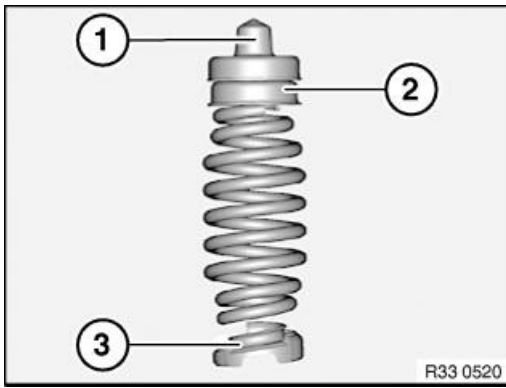
Remove coil spring upwards.



If necessary, relieve tension on coil spring. **Important!**

Replacement only:

Bottom end of coil spring (1) must be flush with opening of spring cup [33 5 012](#) (see dotted-dashed line)!



Installation:

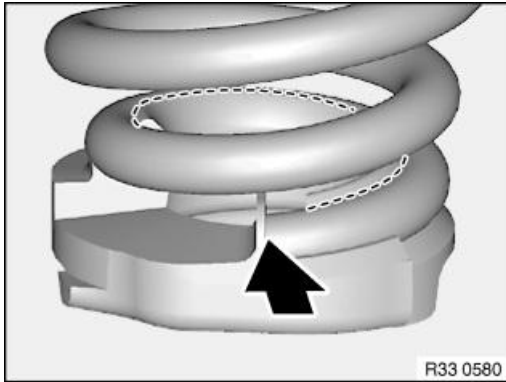
Check spring pads (2, 3) for damage.

Remove spring cup (1) and position with upper spring pad (2) on coil spring.

Note:

Upper spring pad (2) must come into contact with end of coil spring.

Equipment specification with bad-road package: Install adapter as well.



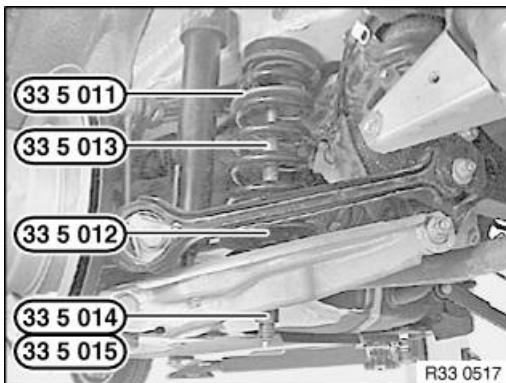
Important!

Observe the following when installing and relieving tension on coil spring:

- Lower spring pad must be positively seated in the designated receptacle in the camber arm

Note: Otherwise there is a risk of the coil spring jumping out sideways.

- Lower spring pad must come into contact with end of coil spring (see arrow)
- Lower spring pad must rest flush on last coil (see broken line)



Align coil spring by way of spring cup to opening in side member and relieve tension.

Remove special tools [33 5 011](#) , [33 5 012](#) and [33 5 013](#) , [33 5 014](#) , [33 5 015](#) .



After installation:

- Check [headlight adjustment](#), correct if necessary.

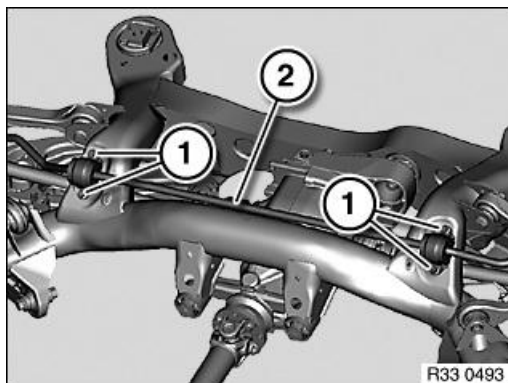
**Important!**

M3, M Coupé:

When installing the anti-roll bar, make sure the two rubber mount halves are correctly installed and correctly latched on both sides (on the retaining bracket)!

**Necessary preliminary tasks:**

- Remove both [rear coil springs](#).
- Remove [left wishbone on wheel carrier](#).
- Remove [both anti-roll bar links from anti-roll bar](#).
- Lower [rear axle support](#).

**Note:**

To simplify the image, anti-roll bar removal is shown on the removed rear axle.

Release screws (1).

Tightening torque [33 55 1AZ](#).

Remove both [rubber mounts from anti-roll bar](#).

Turn anti-roll bar (2) and remove sideways.

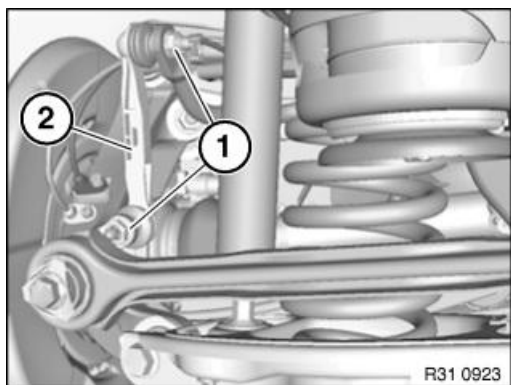
Installation note:

Check both rubber mounts for damage and replace if necessary.

**After installation:**

- [Bleed brake system](#).

33 55 041 Replacing anti-roll bar link for anti-roll bar on left or right



Release nuts (1); if necessary, grip at Torx socket.

Remove anti-roll bar link (2).

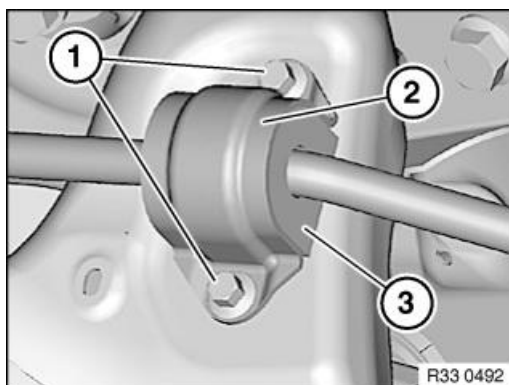
Installation note:

Replace self-locking nut.

Tightening torque [33 55 2AZ](#).

**Necessary preliminary tasks:**

- Remove [rear wheels](#).
- Lower [rear axle support](#).



Release screws (1).

Tightening torque, [33 55 1AZ](#).

Remove retaining bracket (2) and rubber mount (3).

Installation note:

Keep retaining bracket (2), rubber mount (3) and anti-roll bar clean and free from oil and grease.

Clean rear anti-roll bar on both sides.

Position rubber mount on rear anti-roll bar.

Position retaining bracket on rubber mount.

Push rubber mount with retaining bracket on rear anti-roll bar to installation position.



Screw securing adhesive is a means of preventing a screwed connection from being loosened by external influences.

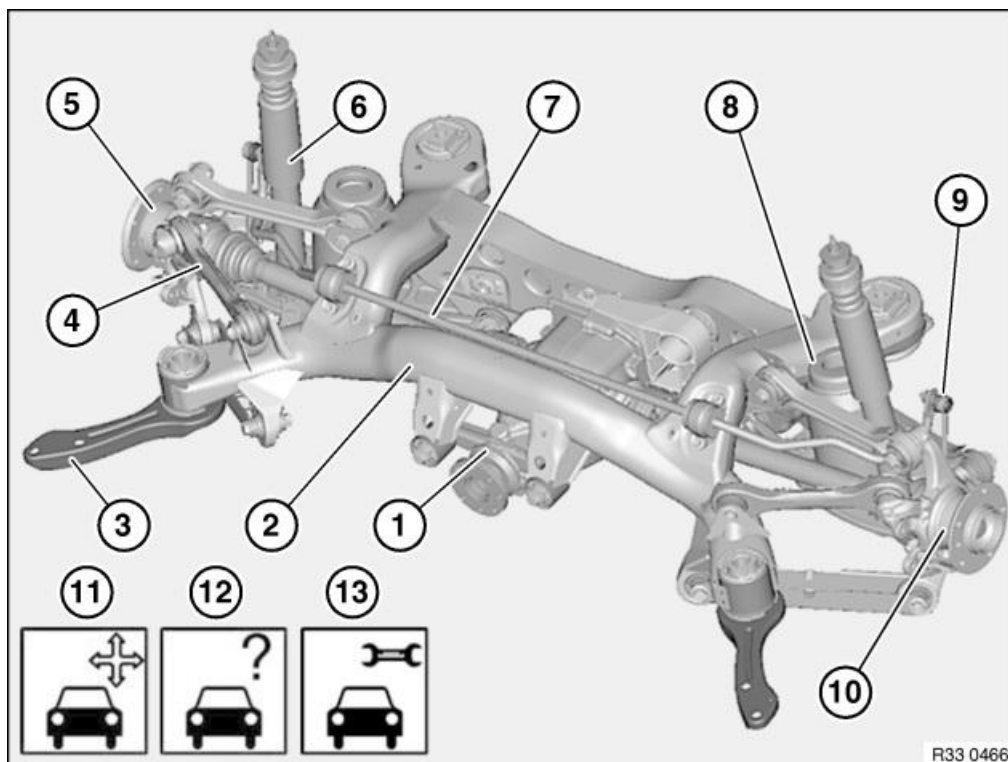
Once the screw has been coated with adhesive, the adhesive remains inactive until such time that it is activated by the encapsulation breaking when the screw is inserted and then cures (hardens) at room temperature.



Installation note:

- Screw connection must be completed within 20 mins. (start of curing)
- Microencapsulated screws must not be retightened
- Thread of nut must be cleaned beforehand in event of repeated use

33 Rear axle layout



[Safety instructions & general information](#)

- | | |
|--|---|
| 1 Rear axle differential/output shafts | 8 Coil spring |
| 2 Rear axle support | 9 Anti-roll bar link |
| 3 Compression strut/trailing link | 10 Wheel carrier |
| 4 Arm | 11 Adjustment work |
| 5 Wheel bearing / drive flange | 12 Troubleshooting (shock absorber/rear axle) |
| 6 Shock absorber | 13 Testing |
| 7 Anti-roll bar | |