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



First aid measures:

- Eye contact: Immediately flush eyes with lots of water for at least 15 minutes. In the case that it is available, use an eye wash bottle. If eye irritation 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.

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00 Danger of poisoning if oil is ingested/absorbed through the skin



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:

- Fill oil in appropriately marked containers only.
- Do not fill oil in containers meant for drinking out of. (bottles for beverages, glasses or cups)
- 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.

  Do not administer anything to an unconscious person via their mouth; place them in a stable position on their side. Call the emergency doctor immediately.

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33 00 ... Information on replacing shock absorbers

Situation:

When a shock absorber is faulty on one side (leaking, noises, limit values exceeded on the shock tester), often both shock absorbers on the axle in question are replaced.

Effect:

This is not necessary for technical reasons and causes the manufacturer not to recognize the unnecessarily removed shock absorbers as defective parts. Unnecessarily high costs for the customer can be avoided by replacing the shock absorber on one side only.

Procedure:

If one shock absorber is damaged, it is only necessary to replace both shock absorbers when the car has driven in excess of 80 000 km.

Exception: On all M-GmbH models, when a limit value is exceeded on one side, it is still necessary always to replace both shock absorbers on the relevant axle.

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33 00 ... Instructions (chassis components made of aluminium)

Due to the chemical and corrosion characteristics of aluminium, always comply with the following points when handling aluminium components:

- Do not bring into contact with battery acid!

- Do not clean with wire brushes made of brass or iron! Always use wire brushes with stainless steel bristles!

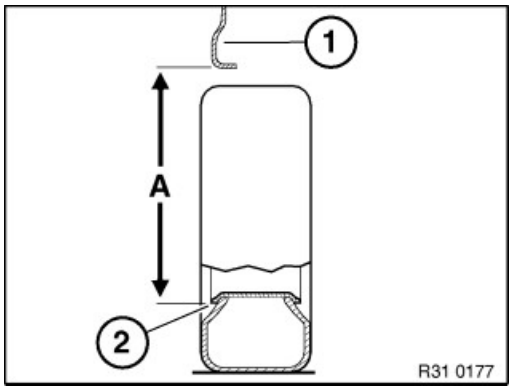
- Do not expose to flying sparks when grinding/separating! Cover components!

- Do not strike with steel welding splashes! Cover components!

- Do not expose to temperatures > 80 Â°C, even for brief periods! Temperatures in paint facilities do not have the same impact

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31 33 ... Measuring vehicle ride height



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

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41 00 ... Notes on repairing threads

Important!

Install Helicoil thread inserts so that they are flush with the original thread!

Note:

Damaged threads may be repaired with Helicoil thread inserts. Observe the procedure described in the example.

Screw connection	Vehicle	Bolting point	Helicoil thread insert
Front axle support to engine support	F20, F21, F22, F30, F31, F32, F33, F34, F35, F36	Front	M12x1.5x24
	F20, F21, F22, F30, F31, F32, F33, F34, F35, F36	Centre	M12x1.5x24
	F20, F21, F22, F30, F31, F32, F33, F34, F35, F36	Rear	M14x1.5x28
Rear axle support to side member	F20, F21, F22, F30, F31, F32, F33, F34, F35, F36	All	M12x1.5x24

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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:

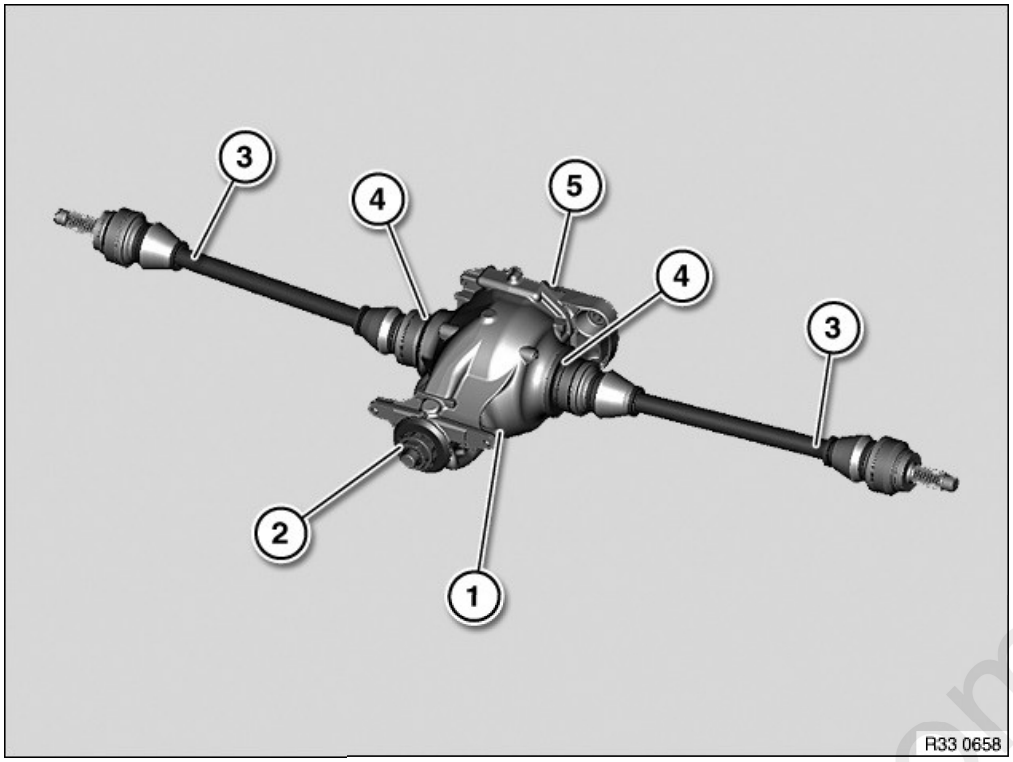
The wheel bearing must be replaced on the damaged side of the axle if one or several of the following points apply:

- 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!

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33 Overview of rear axle final drive/output shafts

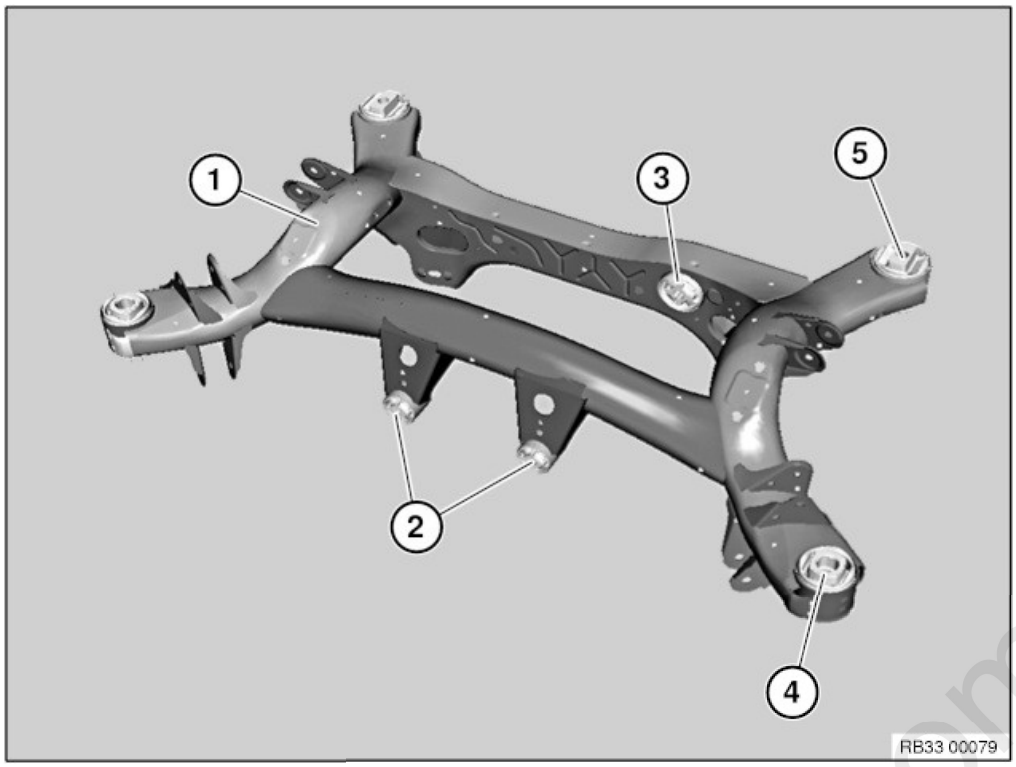


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Safety instructions & general information

1 Rear axle final drive
2 Radial shaft seal for drive flange
3 Output shaft (left/right)
4 Radial shaft seal for output shafts
5 Lid (incl. cover gasket)

33 Overview of rear axle support with rubber mounts

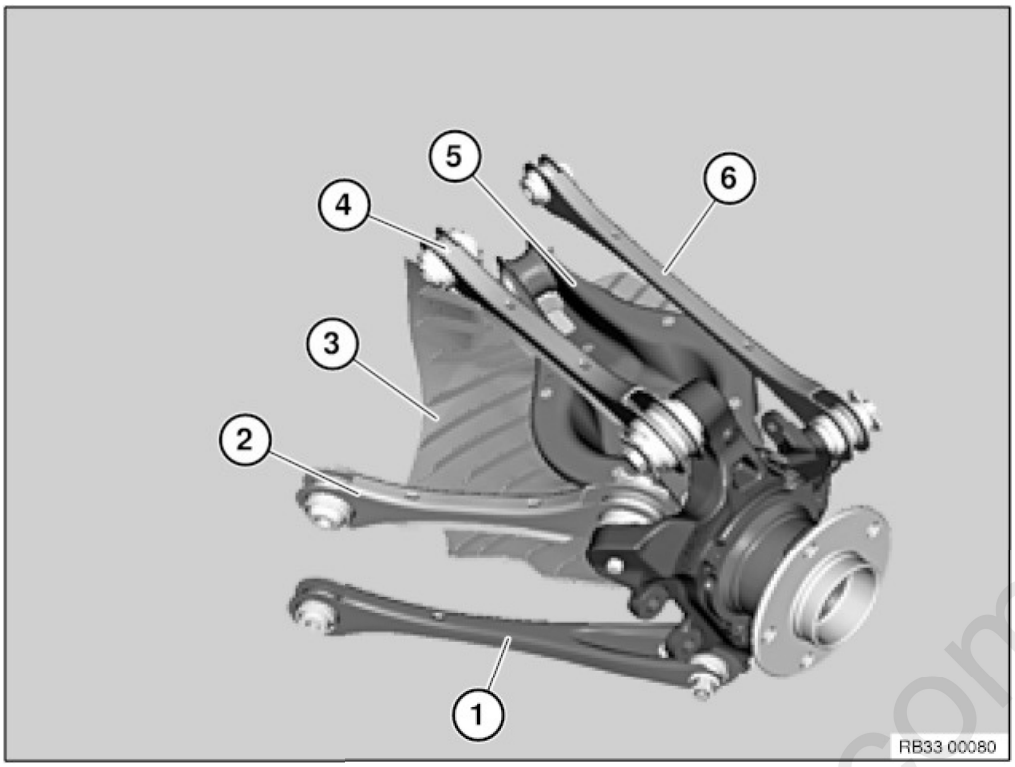


Safety instructions & general information

1 Rear axle support
2 Rear axle final drive rubber mount, front
3 Rear axle final drive rubber mount, rear
4 Rear axle support rubber mount, front
5 Rear axle support rubber mount, rear

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33 32 Overview of wishbone, camber arm, trailing arm, toe arm and control arm



Adjusting procedure

1 Trailing arm
2 Traction strut
3 Camber arm cover
4 Wishbone
5 Camber arm
6 Toe arm

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00 02 001 Raising the vehicle using a vehicle lift



Warning!

Danger to life!

Read and follow operating instructions for vehicle hoist.

Do not exceed approved load-carrying capacity and load distribution of vehicle hoist.

Weight compensation may be necessary due to the loading situation of the vehicle.

This also applies in the event of considerable removal of parts or conversions on the vehicle.

Note:

The vehicle hoist must comply with the relevant statutory/country-specific accident prevention regulations and be serviced according to the regulations.



Caution!

Risk of damage!

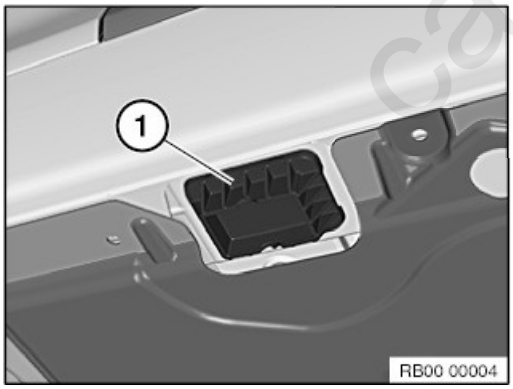
Before driving onto a vehicle hoist, make sure there is sufficient ground clearance between the vehicle hoist and the vehicle.

The vehicle may only be raised with the vehicle hoist at the four jacking points.



Necessary preliminary work:

- If necessary, remove jacking points from equipment pack (with new vehicles) and insert from below into openings in front and rear sill areas

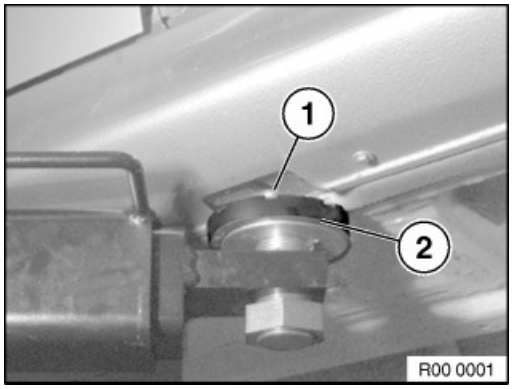


Caution!

All four jacking points (1) must be available!

Never raise the vehicle without the jacking points (1)!

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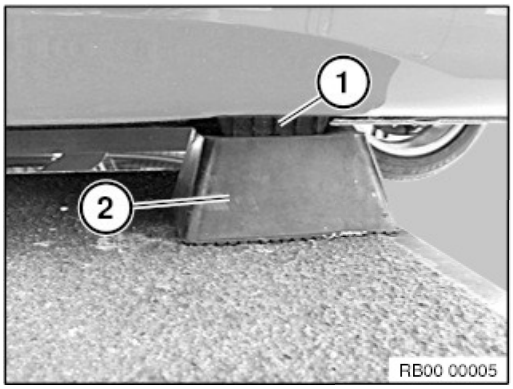


Caution!

Risk of damage!

Align support plates (2) of lifting platform arms to jacking points (1) in such a way that no adjoining components are touched and thereby damaged.

In hybrid cars there is a risk of damage to the high-voltage component behind the underbody panelling!



Caution!

Risk of damage!

Align the rubber block (2) with the jacking points (1) in such a way that no adjoining components are touched and thereby damaged.

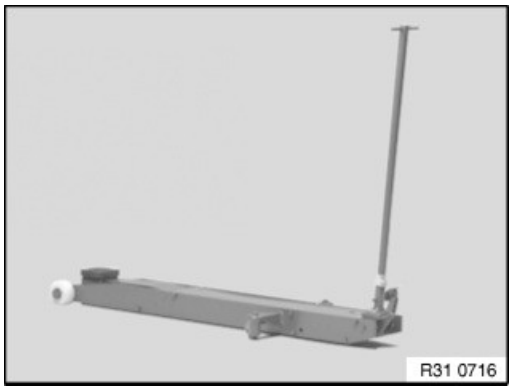
Never raise the vehicle without rubber blocks (or rigid foam blocks)!

There is a major risk of damage to the vehicle underbody!

In hybrid cars there is a risk of damage to the high-voltage component behind the underbody panelling!

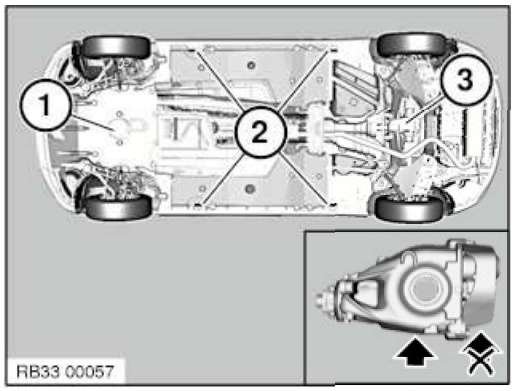
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00 02 000 Raising vehicle with trolley jack



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.



Warning!

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

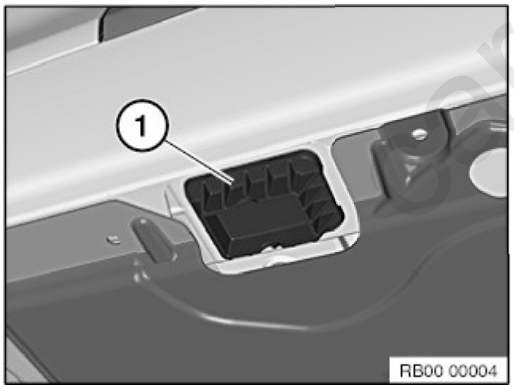
1 Car jacking point

Note: When raising, the underbody panelling is pressed against the front axle support.

2 Side car jacking points

3 Rear axle final drive

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



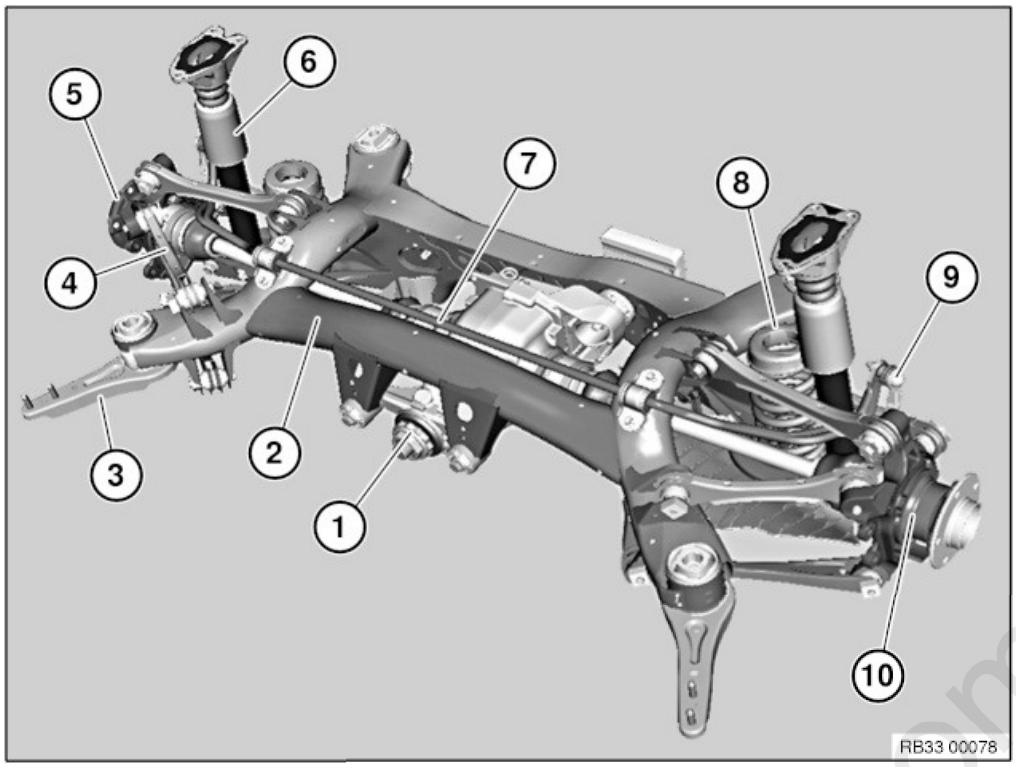
Risk of damage!

Jacking point (1) must be present!

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

bmwdiagn.com

33 Rear axle layout

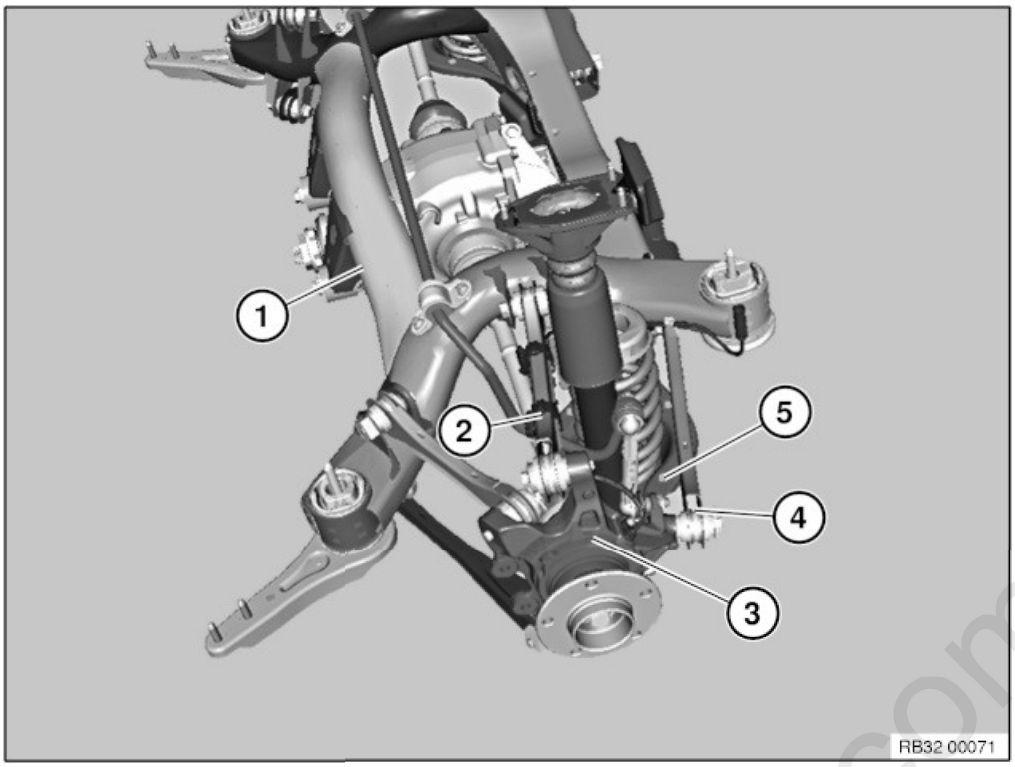


Safety instructions & general information

1 Overview of rear axle final drive/output shafts
2 Overview of rear axle support
3 Tension strut
4 Overview of wishbone, camber arm, trailing arm, toe arm and control arm
5 Wheel bearing / drive flange
6 Shock absorber
7 Anti-roll bar
8 Coil spring
9 Anti-roll bar link
10 Wheel carrier
11 Adjustment work
12 Testing

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



A wheel alignment check must be carried out after the following work:

- Release the following screw connection:
  - Wishbone to rear axle support (2)
  - Toe arm on rear axle support (4)
  - Toe arm to wheel carrier (4)
  - Camber arm on rear axle support (5)
  - Camber arm to wheel carrier (5)

- Replacement of following parts:
  - Rear axle support (1)
  - Wishbone (2)
  - Wheel carrier (3)
  - Toe arm (4)
  - Toe arm (5)
  - Ball joint in wheel carrier
  - Rubber mount in wheel carrier

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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.

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

Model series	Engine	Rear axle final drive	Remarks
F20 F21 F22 F23	N13, B38	168LW	
	N20	188LW	
	N55	215LW	
	N47, B47, B37	168LW	116ed, 116d with manual transmission
		188LW	116d with automatic transmission, 118d(X), 120d (X), 218d, 220d(X)
		215LW	125d, 225d
F30 F31 F32 F33 F34 F35 F36	N47, B47	188LW	
		215LW	325d, 425d
	N57	215LW	
	N13, B38	168LW	
	N20, B48	168LW	only 320i (iX only automatic), 420i
		188LW	
	N26	188LW	
	N55, B58	188LW 215LW	

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33 10 016 Removing and installing (replacing) rear axle differential



Special tools required:

- 33 5 206
- 33 5 200
- 33 5 120
- 2 360 787
- 2 240 465
- 0 496 862
- 33 5 124
- 33 5 122
- 2 360 944
- 2 240 464
- 2 406 774
- 33 5 125



Warning!

Rear axle differential must be lashed with tensioning strap 33 5 206 to prevent it from falling out when the output shafts are pressed off.



Attention!

When reinstalling the current rear axle differential, both radial shaft seals of the output shafts must be replaced!

The circlips on both output shafts must be replaced!



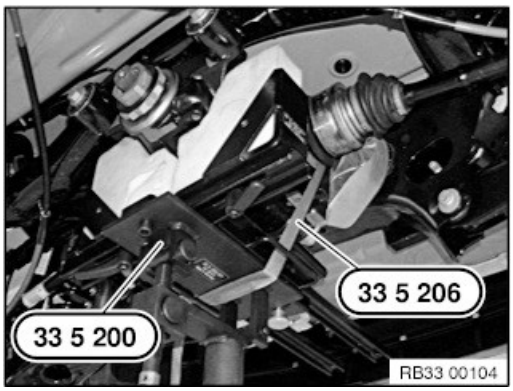
Necessary preliminary tasks:

- Remove vibration absorber at screw connection of rear of rear axle differential.
- If necessary, remove rear tension struts.
- Remove propeller shaft from rear axle differential.
  - Disconnect propeller shaft at rear axle differential.
  - Release centre mount.
  - Tie up propeller shaft to underbody.

    Note:

    Bending the propeller shaft by an excessive angle can cause premature damage to the joint/propeller shaft!

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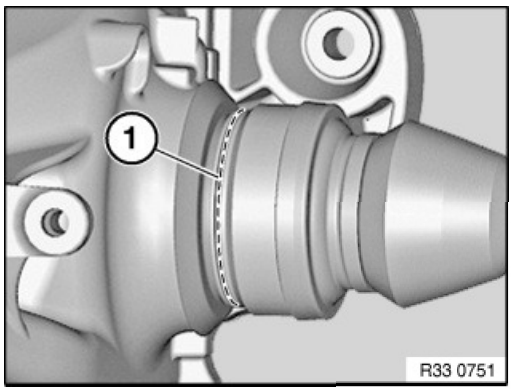
Place the special tool 33 5 200 onto the universal jack .

Support rear axle final drive33 5 200 with special tool .

Lash rear axle final drive unit to special tool33 5 200 with tightening strap 33 5 206 .

Attention!

Securing strap33 5 206 must be passed through between output shafts and rear axle final drive cover.



Attention!

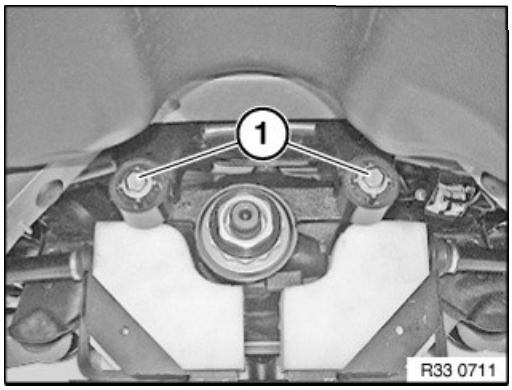
The following special tool must be inserted into the slot (1) of the output shaft on all sides.



Left output shaft only:

Press output shaft out of the rear axle differential with an abrupt movement using the set of special tools 33 5 120 and the appropriate special tool 2 360 787 , 2 240 465 , 0 496 862 or 33 5 124 .

The thrust piece of the screw 33 5 122 must be in contact with the rear axle differential.

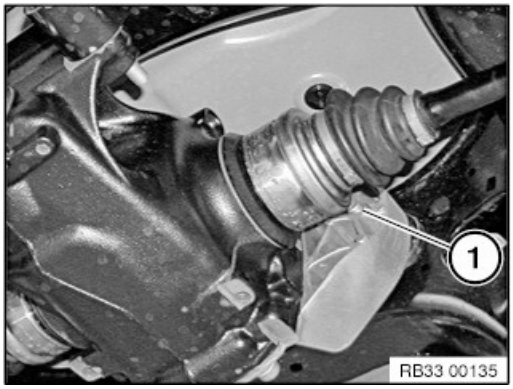


Release screws (1).

Tightening torque 33 17 1AZ

Installation note:
Adhere to the assembly sequence at the end of the document in order to prevent distortion of the rear axle differential during installation and thereby avoid potential complaints about noise.

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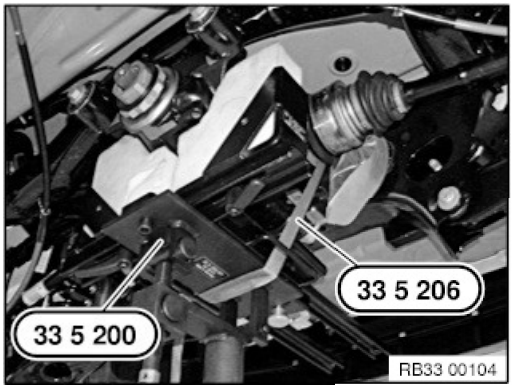


Release nut (1) and push screw towards rear to the limit position.

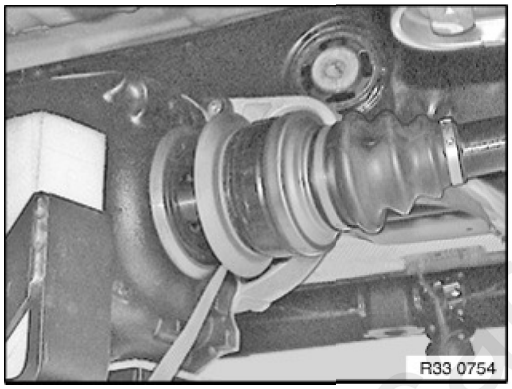
Tightening torque 33 17 2AZ.

Installation note:
Renew nut.

Adhere to the assembly sequence at the end of the document in order to prevent distortion of the rear axle differential during installation and thereby avoid potential complaints about noise.



Lower rear axle final drive with special tool33 5 200 .



Press (tilt) rear axle final drive on right upwards.

Feed out left output shaft in downward direction and tie up.

Swing rear axle final drive towards left side.



Right output shaft:

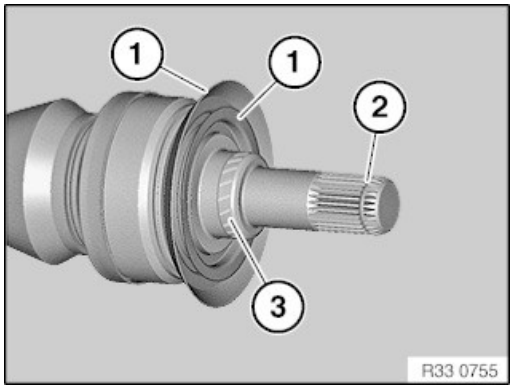
Press output shaft out of the rear axle differential with an abrupt movement using the set of special tools 33 5 120 and the appropriate special tool 2 360 787 , 2 240 465 , 0 496 862 or 33 5 124 .

The thrust piece of the screw 33 5 122 must be in contact with the rear axle differential.

Feed out output shaft and tie up.

Remove rear axle final drive.

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Attention!

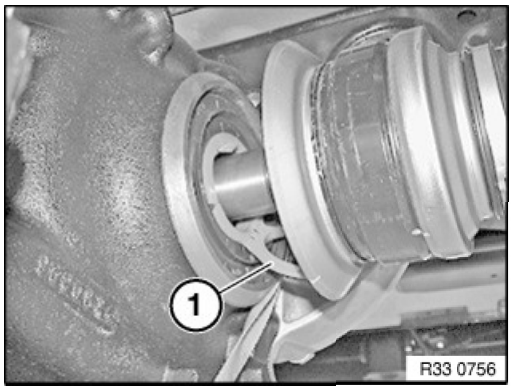
High installation forces indicate that the output shaft spline teeth are damaged or deformed!

Check gearing and replace components if damaged.

Check dust plate (1) for damage, renew if necessary.

Circlip (2) must be renewed!

Coat highlighted contact surface (3) of output shaft with approved final drive oil.

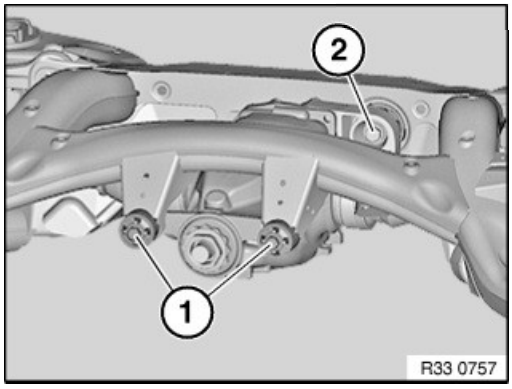


Installation note:
Insert output shaft into rear axle differential.

Pull out assembly protection ring at lug (1) until one of the two predetermined breaking points gives.



Drive in output shafts into the rear axle differential using the appropriate special tool 2 360 944 , 2 240 464 , 2 406 774 or 33 5 125 and a rubber mallet.*Installation note:*
The output shafts must audibly snap in place on the rear axle differential.



Assembly sequence:

1. Insert the rear axle differential into the rear axle support using the workshop jack and special tool33 5 200 .
2. Insert screws (1) (do not tighten).
3. Insert bolt from rear and replace nut (2) (do not tighten down).
4. Release securing strap, lower special tool33 5 200 and move it away.
5. Tighten down screws (1).

   Tightening torque 33 17 1AZ
6. Tighten nut (2).

   Tightening torque 33 17 2AZ

After installation:

- Check oil level in the rear axle final drive, correct if necessary.

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33 10 023 Replacing radial shaft seal for output shaft at rear axle differential, left or right

Special tools required:

- 33 5 200
- 33 5 206
- 33 5 120
- 2 360 787
- 2 240 465
- 0 496 862
- 33 5 124
- 33 5 122
- 00 5 010
- 33 1 308
- 33 4 320
- 00 5 500
- 33 5 130
- 33 5 140
- 2 360 944
- 2 240 464
- 2 406 774
- 33 5 125

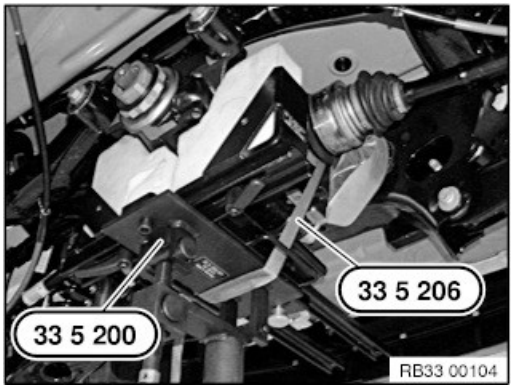
Necessary preliminary work:

- Remove vibration absorber at screw connection of rear of rear axle differential.
- If necessary, remove rear tension struts.
- Remove propeller shaft from rear axle differential.
  - Disconnect propeller shaft at rear axle differential.
  - Release centre mount.
  - Tie up propeller shaft to underbody.

    Attention:

    Bending the propeller shaft by an excessive angle can cause premature damage to the joint/propeller shaft!

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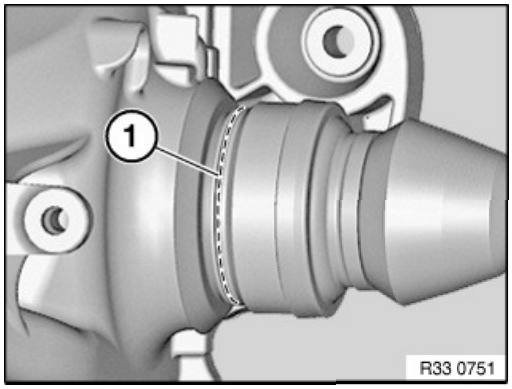
Place the special tool 33 5 200 onto the universal jack .

33 5 200 Support rear axle final drive unit with special tool .

Lash rear axle final drive unit to special tool33 5 200 with tightening strap 33 5 206 .

Attention!

Securing strap33 5 206 must be passed through between output shafts and rear axle final drive cover.



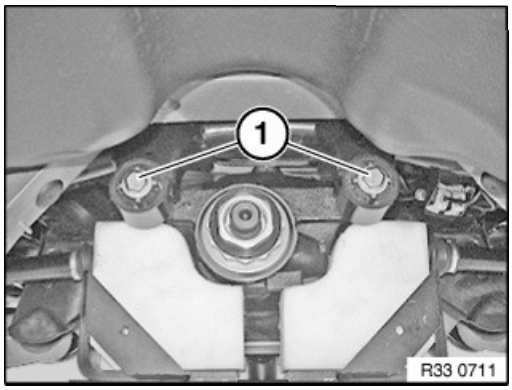
Attention!

The following special tool must be inserted into the slot (1) of the output shaft on all sides.



Press left or right output shaft out of the rear axle differential with an abrupt movement using the set of special tools 33 5 120 and the appropriate special tool 2 360 787 , 2 240 465 , 0 496 862 or 33 5 124 .

The thrust piece of the screw 33 5 122 must be in contact with the rear axle differential.

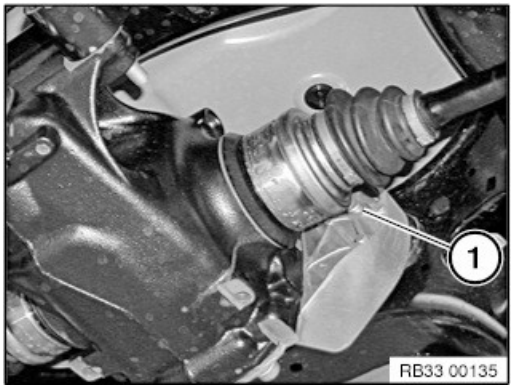


Release screws (1).

Tightening torque 33 17 1AZ.

Installation note:
Adhere to the assembly sequence at the end of the document in order to prevent distortion of the rear axle differential during installation and thereby avoid potential complaints about noise.

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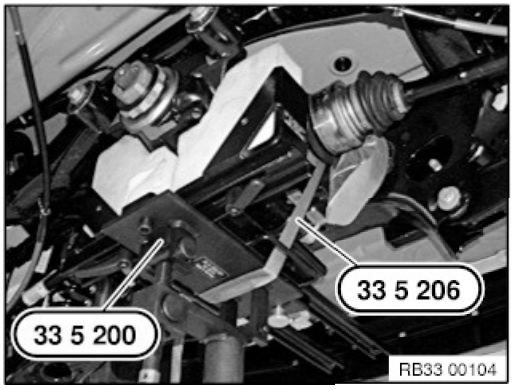


Release nut (1) and push screw towards rear to the limit position.

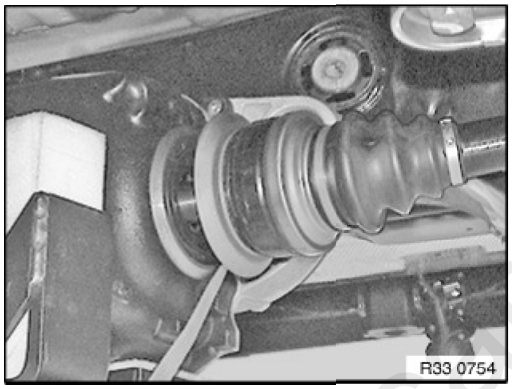
Tightening torque 33 17 2AZ.

Installation note:
Renew nut.

Adhere to the assembly sequence at the end of the document in order to prevent distortion of the rear axle differential during installation and thereby avoid potential complaints about noise.

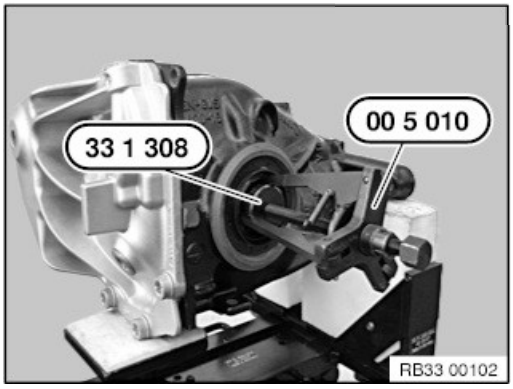


Lower rear axle final drive with special tool33 5 200 .



Press up (tip) rear axle differential on the side opposite the output shaft to be removed.

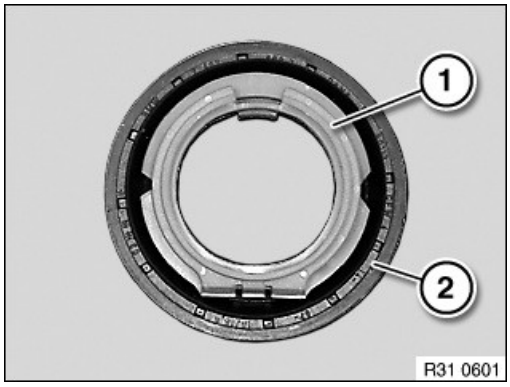
Feed out the left or right output shaft downwards and tie up.



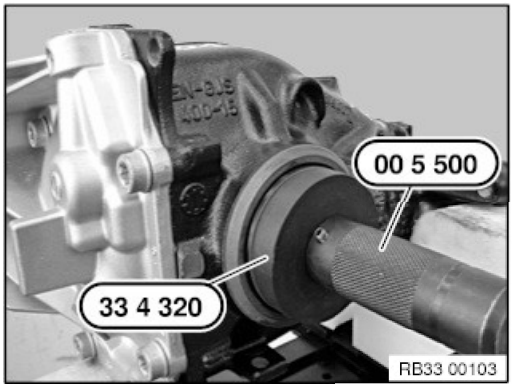
Pictured in removed rate:

Pull out radial shaft seal with special tools 00 5 010 and 33 1 308 .

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Note:
The installation protective ring (1) serves to protect the sealing lips of the radial shaft seal (2) when installing the output shaft.



Pictured in removed rate:

Find the right special tool 33 4 320 (with 00 5 500), 33 5 130 or 33 5 140 .

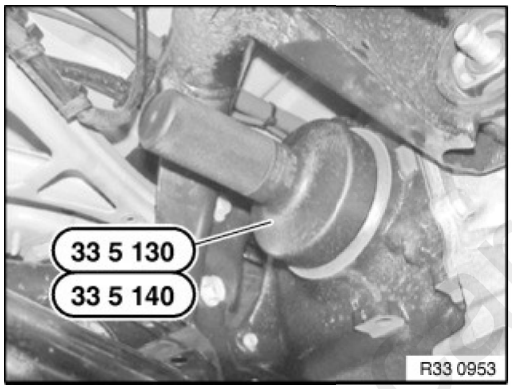
Depending on rear axle differential, the special tools of this or the next graphic are to be used.

Attention!

Installation protective ring must not slip out of shaft seal!

Coat housing sheet metal flange and sealing lips of new radial shaft seal with approved final drive oil.

Drive new radial shaft seal firmly home with special tools 00 5 500 and 33 4 320 .



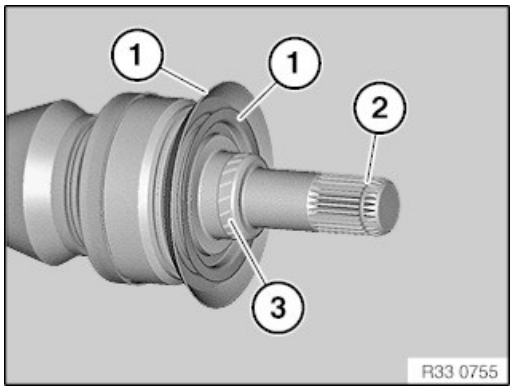
Note: Depending on rear axle differential, the special tools of this or the previous graphic are to be used.

Attention!

Installation protective ring must not slip out of shaft seal!

Coat housing sheet metal flange and sealing lips of new radial shaft seal with approved final drive oil.

Drive the new radial shaft seal firmly home with following special tools 33 5 130 or 33 5 140 .



Attention!

High installation forces indicate that the output shaft spline teeth are damaged or deformed!

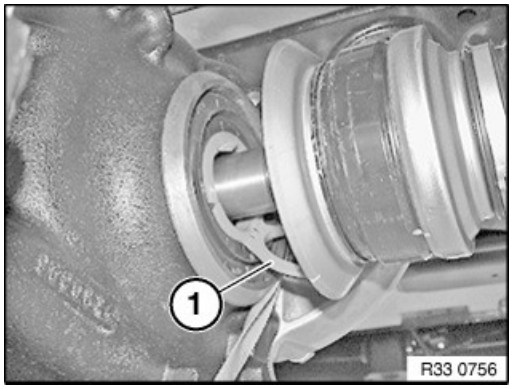
Installation note:
Check gearing and replace components if damaged.

Check dust plate (1) for damage, renew if necessary.

Replace circlip (2).

Coat highlighted contact surface (3) of output shaft with approved final drive oil.

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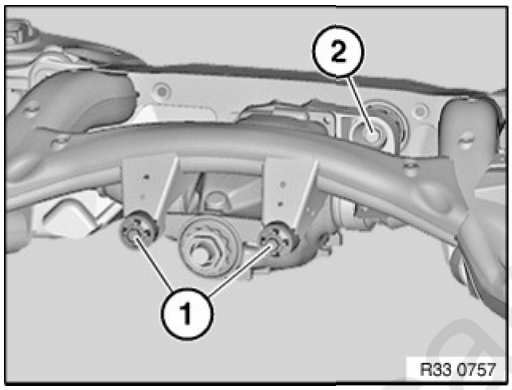
Installation note:
Insert left or right output shaft into rear axle final drive unit.

Pull out assembly protection ring at lug (1) until one of the two predetermined breaking points gives.



Installation note:
Drive left or right output shaft into the rear axle differential using suitable special tool 2 360 944 , 2 240 464 , 2 406 774 or 33 5 125 and a rubber mallet.

The output shaft must audibly snap in place on the rear axle differential.



Installation note:
Assembly sequence:

1. Position rear axle differential with universal jack and special tool 33 5 200 on the rear axle support.
2. Insert screws (1) (do not tighten).
3. Insert bolt from rear and replace nut (2) (do not tighten down).
4. Release securing strap, lower special tool33 5 200 and move it away.
5. Tighten down screws (1).
   Tightening torque 33 17 1AZ.
6. Tighten nut (2).
   Tightening torque 33 17 2AZ.

After installation:

- Check transmission oil level, correct if necessary.

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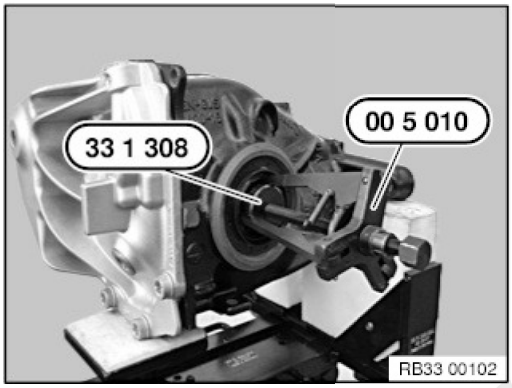
33 10 024 Replacing the radial shaft seal for the output shaft on the rear axle differential, left and right

Special tools required:

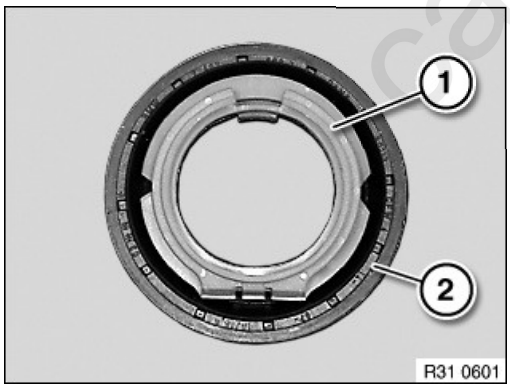
- 00 5 010
- 33 1 308
- 00 5 500
- 33 4 320
- 33 5 130
- 33 5 140

Necessary preliminary work:

- Remove rear axle final drive.

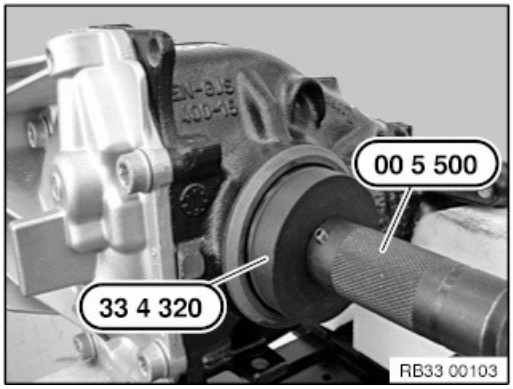


Pull out radial shaft seal using the special tools 00 5 010 and 33 1 308 .



Note:
The installation protective ring (1) serves to protect the sealing lips of the radial shaft seals (2) when installing the propeller shaft.

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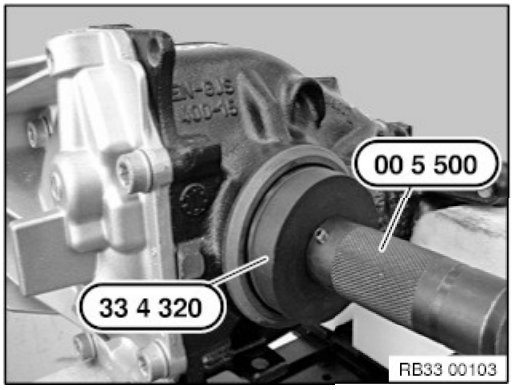
Depending on rear axle differential, the special tools of this or the next graphic are to be used.

Caution!

Installation protection ring must not slip out of radial shaft seal!

Coat housing sheet metal flange and sealing lips of new radial shaft seal with approved final drive oil.

Drive new radial shaft seal to limit position with special tools 00 5 500 and 33 4 320 .



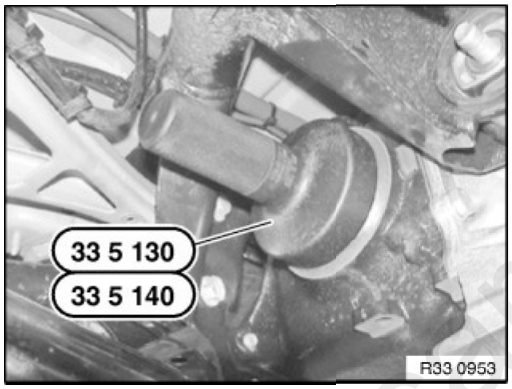
Note: Depending on rear axle differential, the special tools of this or the next graphic are to be used.

Caution!

Installation protection ring must not slip out of radial shaft seal!

Coat housing sheet metal flange and sealing lips of new radial shaft seals with approved rear axle differential oil.

Drive new radial shaft seals to the limit position with the special tools 00 5 500 and 33 4 320 .



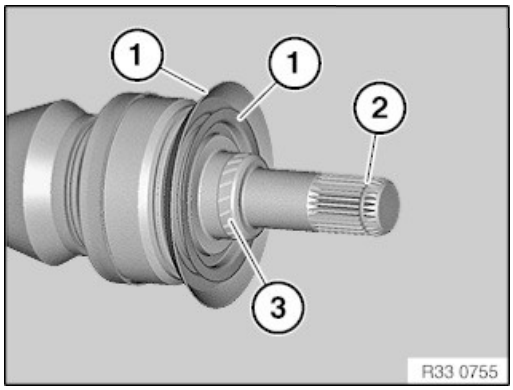
Note: Depending on rear axle differential, the special tools of this or the previous graphic are to be used.

Caution!

Installation protection ring must not slip out of radial shaft seal!

Coat housing sheet metal flange and sealing lips of new radial shaft seals with approved rear axle differential oil.

Drive new radial shaft seals to limit position with the following special tools 33 5 130 or 33 5 140 .



Caution!

High installation forces indicate that the output shaft spline teeth are damaged or deformed!

Installation note:

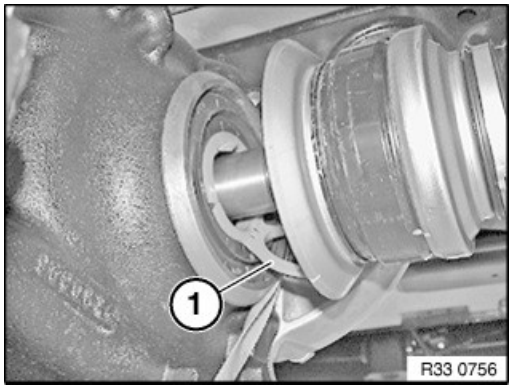
Check gearing and replace components if damaged.

Check dust plate (1) for damage, renew if necessary.

If the previous output shaft is reinstalled, circlip (2) must be renewed.

Coat highlighted contact surface (3) of output shaft with approved final drive oil.

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Insert output shaft into rear axle differential.

Pull out assembly protection ring at lug (1) until one of the two predetermined breaking points gives.

After installation:

- Check transmission oil level, correct if necessary.

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00 11 ... Checking/topping up oil level in rear axle final drive

Warning!

Danger of poisoning if oil is ingested/absorbed through the skin!

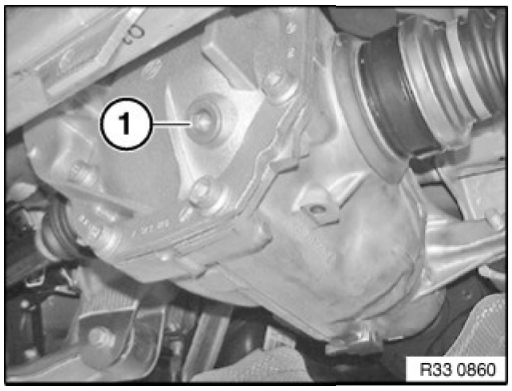
Risk of injury if oil comes into contact with eyes and skin!

Risk of damage!

To avoid serious damage to the rear axle final drive, it is essential to use only approved gearbox oils in the rear axle final drive.

Necessary preliminary work:

- If necessary, remove trailing links.
- If necessary, remove vibration absorber on the rear axle differential.



Open screw plug (1).

Tightening torque 33 11 2AZ.

Check oil level.

If necessary, pour in final drive oil up to lower edge of opening for screw plug (1).

Installation note:
Renew screw plug (1) with O-ring.

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33 11 021 Replacing radial shaft seal for input flange of rear axle differential

Special tools required:

- 0 495 552
- 0 495 554
- 0 495 553
- 0 495 595
- 2 456 244
- 00 5 010
- 00 5 500
- 33 3 390
- 33 3 470
- 33 0 150
- 33 3 440
- 33 5 080

Attention!

Use only approved gearbox oils.

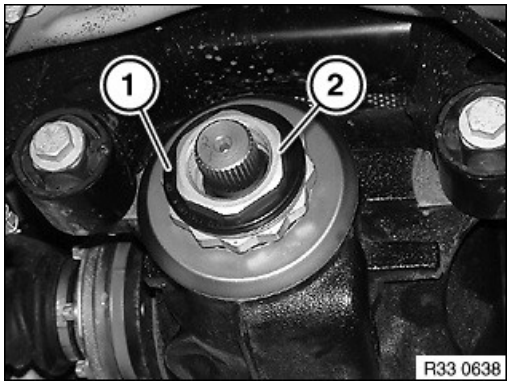
Failure to comply with this instruction will result in serious damage to the rear axle final drive!

Necessary preliminary work:

- Remove propeller shaft on rear axle final drive.
  - Disconnect propeller shaft at rear axle differential.
  - Release centre mount.
  - Tie up propeller shaft to underbody.

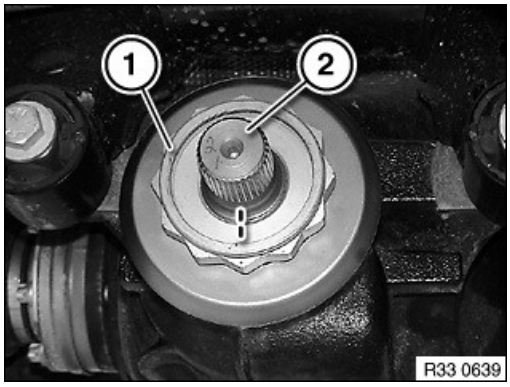
    Attention:

    Bending the propeller shaft by an excessive angle can cause premature damage to the joint/propeller shaft!

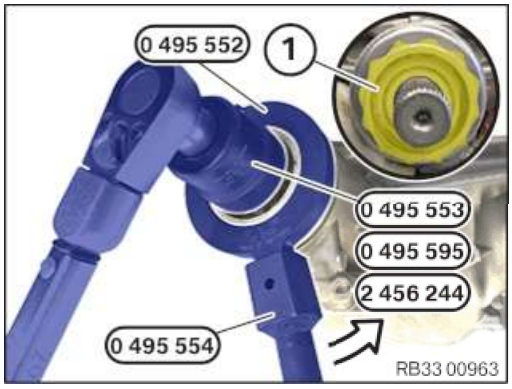


Remove the mounting clip (1) and recessed nut (2) including seal.

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



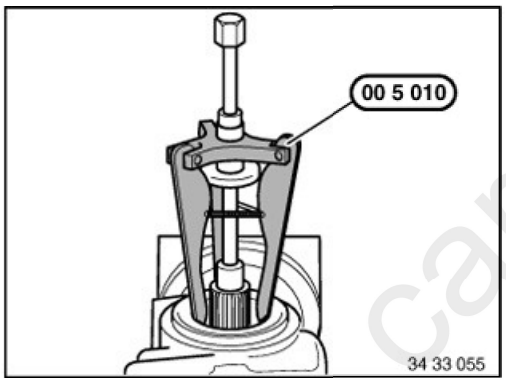
Warm up flange nut (1) using a hot air blower.

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!

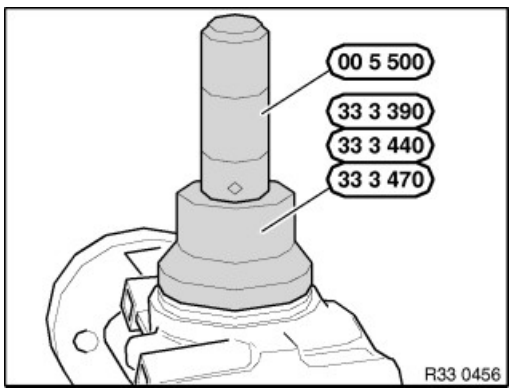
Release flange nut (1) with the special tools 0 495 552 and 0 495 554 in the direction of the arrow. Use a 500-Nm torque wrench and the correct special tool, either 0 495 553 , 0 495 595 or 2 456 244 , to counter hold the bevel pinion.

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!



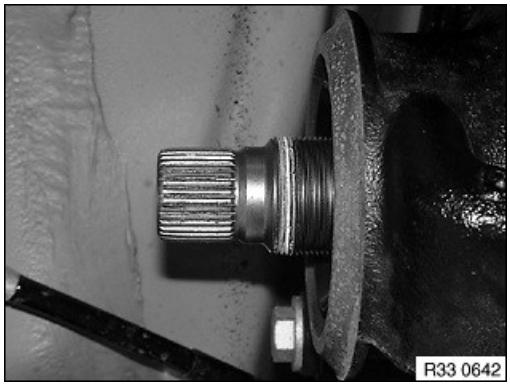
Pull out radial shaft seal with special tool 00 5 010 .



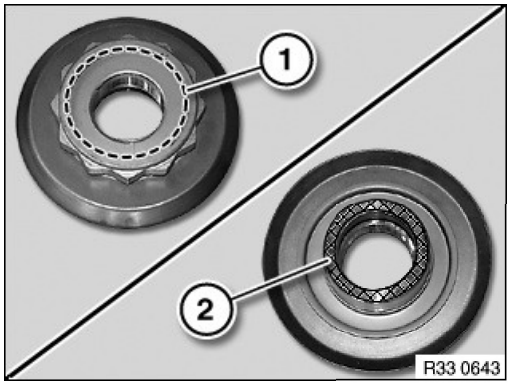
Drive in new radial shaft seal with the following special tools (depending on rear axle differential) up to limit position.

- 168LW: Use special tools 00 5 500 and 33 3 390 .
- 188LW: Use special tools 00 5 500 and 33 3 470 (new number: 33 0 150).
- 215LW: Use special tools 00 5 500 and 33 3 440 (new number: 33 5 080).

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



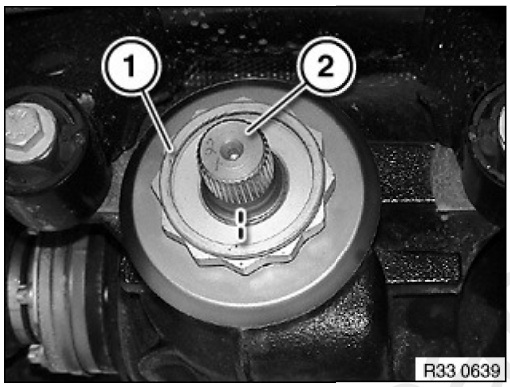
Check dust plate for damage, replace if necessary.**Attention!**

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

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

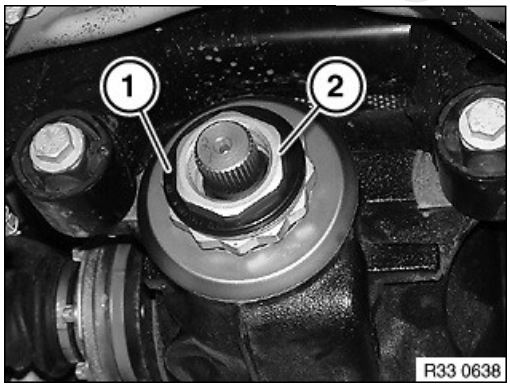
Apply a thin coating of grease to shaded area (2) of flange nut.

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:

- Check transmission oil level, correct if necessary.

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33 11 271 Replacing rear cover gasket on rear axle final drive

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!

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

To avoid leaks on the lid of the rear axle differential, do not use a paper gasket in vehicles with liquid sealing compound!

To prevent the rear axle differential oil from foaming over, make sure that no traces of the liquid sealing compound are pressed into the transmission housing.

Recycling:

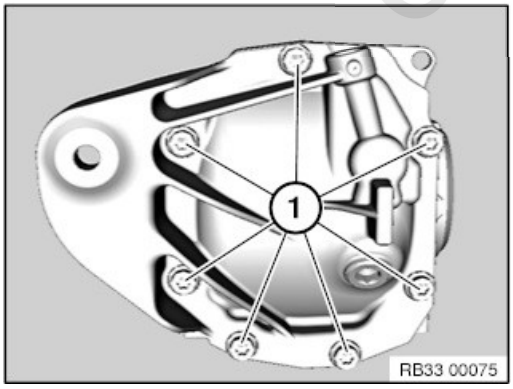
Collect and dispose of escaping final drive oil.

Observe country-specific waste disposal regulations.

Necessary preliminary tasks:

- Catch or draw off final drive oil.
- Remove rear axle final drive.

Note:
Rear axle final drive: Assignment to model series



168LW:

Release screws (1).

Tightening torque 33 11 1AZ.

Remove cover.

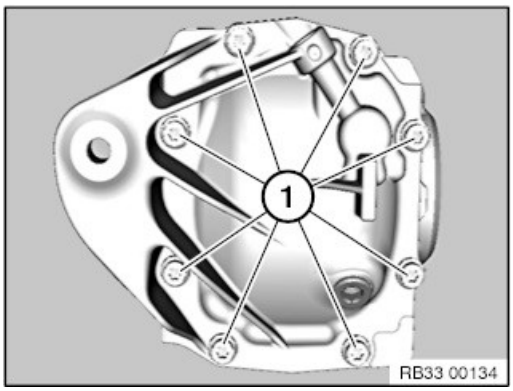
If necessary, remove remnants of liquid sealing compound with a scraper.

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.

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188LW, 215LW:

Release screws (1).

Tightening torque 33 11 1AZ.

Remove cover.

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

After installation:

- Add final drive oil.

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33 17 004 Replacing all rubber mounts at front of rear axle final drive suspension

Special tools required:

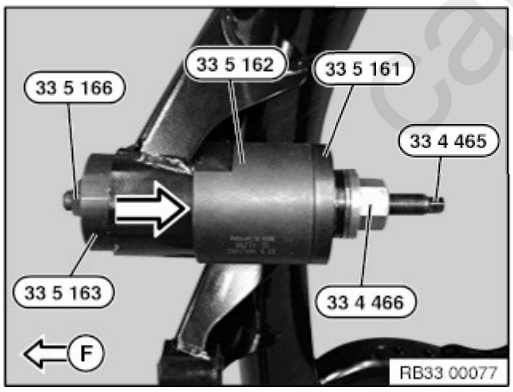
- 33 5 166
- 33 5 163
- 33 5 162
- 33 5 161
- 33 4 465
- 33 4 466
- 33 5 105
- 33 4 453
- 33 3 451
- 33 5 165

Attention!

Do not press in and out rubber mount several times.

Necessary preliminary tasks:

- Remove rear axle final drive.



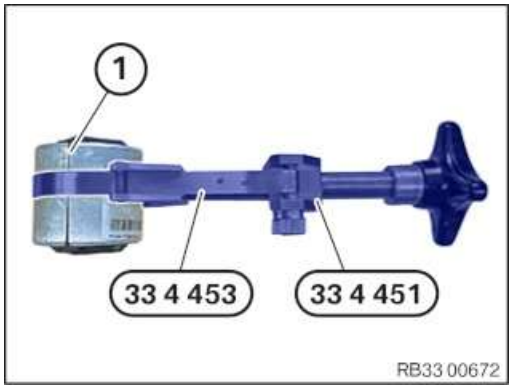
Withdrawing rubber mount:

Pull out rubber mount with special tools 33 5 166 , 33 5 163 , 33 5 162 , 33 5 161 , 33 4 465 and 33 4 466 .

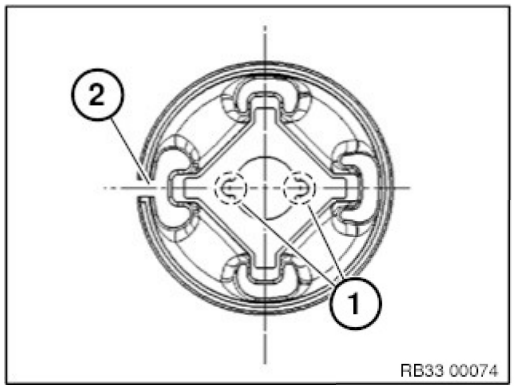
Note:
The milled recess of special tool 33 5 162 must be positioned on the rear axle support.

Use ratchet ring spanner 33 5 105 .

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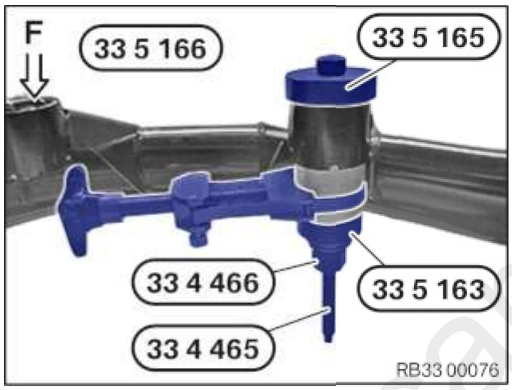


Installing rubber mount: *Installation note:*
Prestress the slitted rubber mount with special tool 33 4 453 and 33 3 451 until the gap (1) on the bearing bushing is closed.



Attention!

Align rubber mount horizontally by way of notches (1). Slot (2) on rubber mount points towards centre of vehicle.



Draw in rubber mount (1) with special tools 33 4 465 , 33 4 466 , 33 5 163 , 33 5 165 and 33 5 166 at least halfway.

Remove clamping tool and pull the rubber mount up to the limit position.

Note:
Use ratchet ring spanner 33 5 105 .

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33 17 005 Replacing the rubber mounts for the rear axle final drive suspension at rear

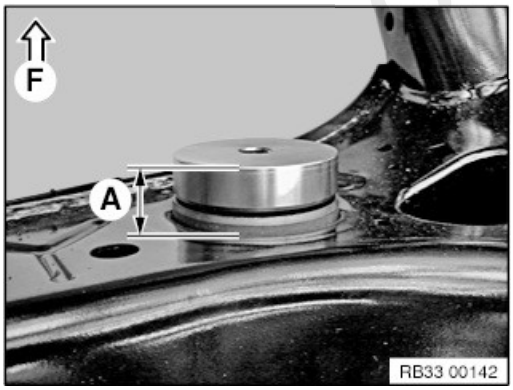
Special tools required:

- 33 0 163
- 33 0 031
- 33 0 032
- 33 0 035
- 33 0 036
- 33 5 105
- 33 4 465
- 33 4 466
- 33 3 233
- 33 5 166
- 33 5 200

Do not press the rubber mount in and out more than once.

Necessary preliminary tasks:

- Remove rear axle final drive.
- Lower rear axle support.

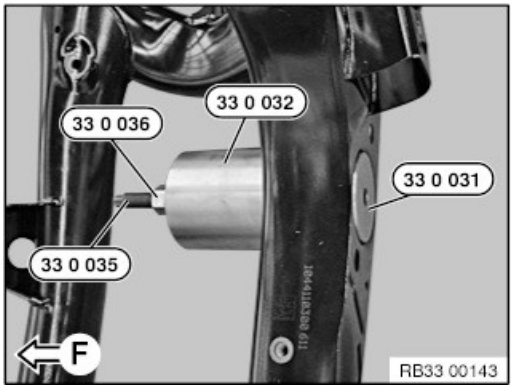


Attention!

Determine the installation position of the rubber mount before pressing it out to ensure a correct installation of the rear axle differential.

For this purpose, attach special tool 33 0 163 from the front. Measure the protrusion (A) and notate.

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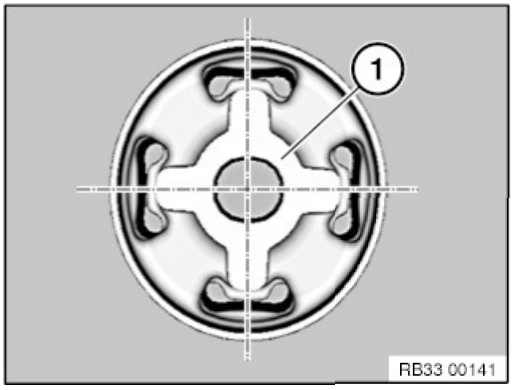
Withdrawing rubber mount:

Pull out rubber mount with special tools 33 0 031 , 33 0 032 , 33 0 035 and 33 0 036 .

Note:
Ensure that the33 0 032 special tool is correctly seated on the rear axle support.

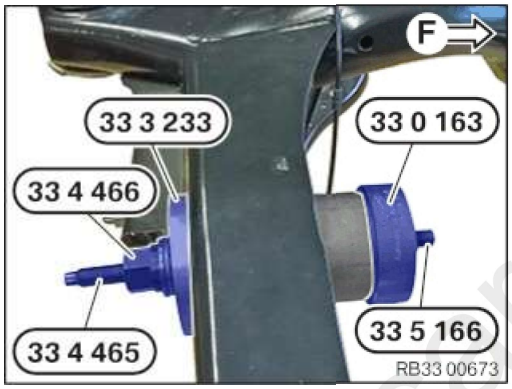
Counter support with spindle 33 0 035 .

Use ratchet ring wrench33 5 105 .



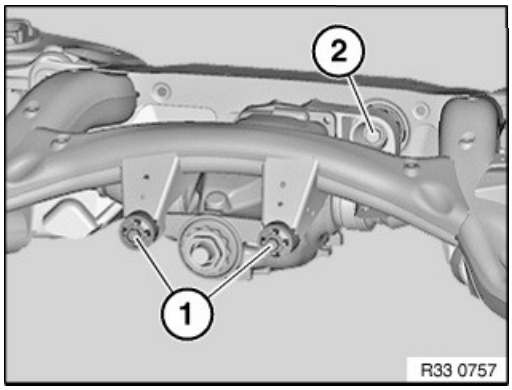
Installing rubber mount: Attention!

Align rubber mount horizontally by way of elongated hole (1).



Draw in the rubber mounts using special tools 33 4 465 , 33 4 466 , 33 3 233 , 33 0 163 and 33 5 166 to the protrusion (A) determined prior to removal.*Note:*
Make sure that the special tools 33 3 233 and 33 0 163 are set up correctly.

Use ratchet ring spanner 33 5 105 .



Assembly sequence:

1. Insert the rear axle differential into the rear axle support using the workshop jack and special tool33 5 200 .
2. Insert screws (1) (do not tighten).
3. Insert bolt from rear and replace nut (2) (do not tighten down).
4. Release tensioning strap and lower special tool33 5 200 and move away.
5. Tighten down screws (1).

   Tightening torque 33 17 1AZ.
6. Tighten nut (2).

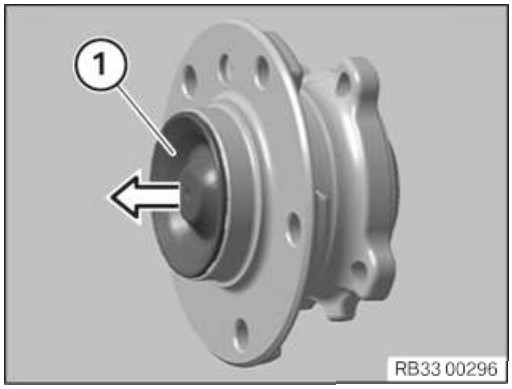
   Tightening torque 33 17 2AZ.

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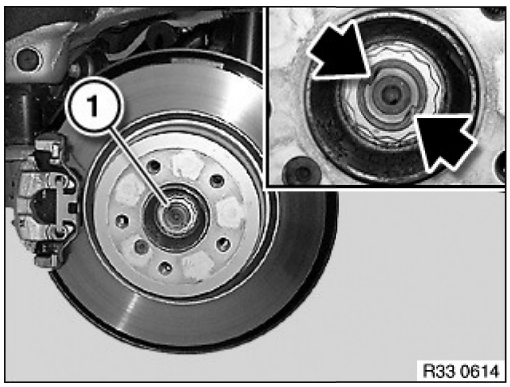
33 21 ... Pressing output shaft out of drive flange and drawing in

Necessary preliminary tasks:

- Remove rear axle final drive.



Remove protective cap (1), if required.



Important!

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

Activate parking brake.

Unfasten collar nut (1).

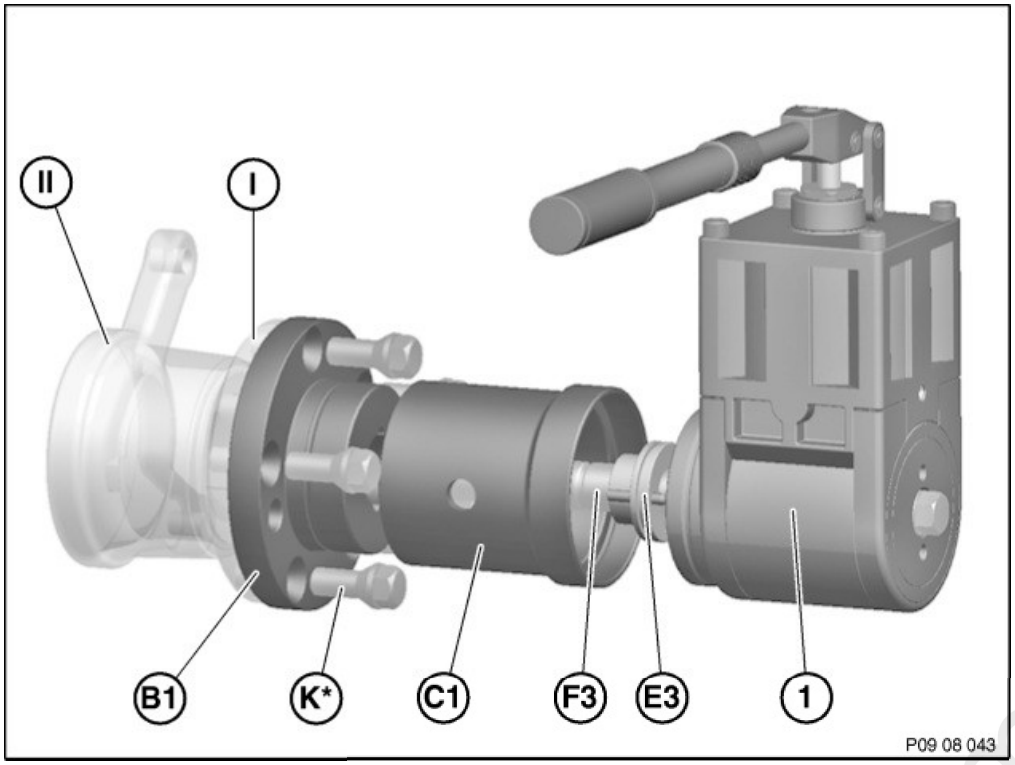
Use **special tool , see BMW Workshop Catalogue.**

- Hydraulic unit - 81 64 2 155 744
- Adapter kit 1 - 81 64 2 155 745
- Adapter kit 2 - 81 64 2 155 746
- Adapter - 81 64 2 318 661

- Secure output shaft against falling out.

The following work steps describe pressing out the output shaft:

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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:

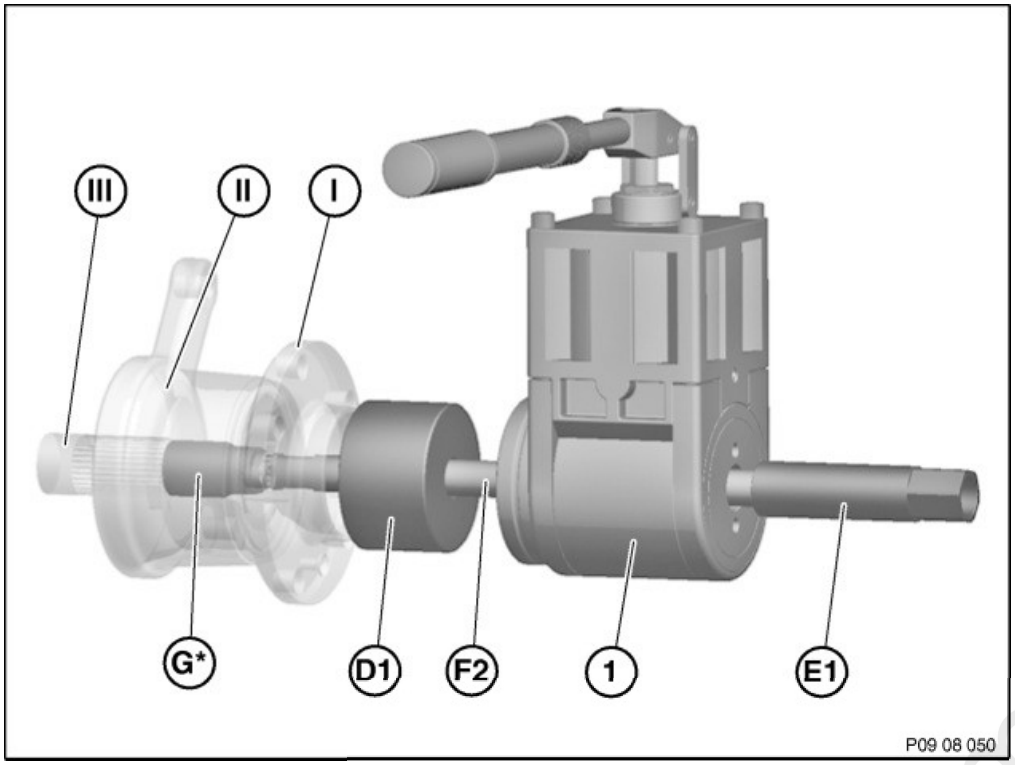
1	Hydraulic unit
E3	Thrust washerM24
F3	Spindle M24 (length 270 mm)
C1	Holding sleeve
B1	Adapter

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

K*	Wheel bolts

The following work steps describe drawing in the output shaft:

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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:

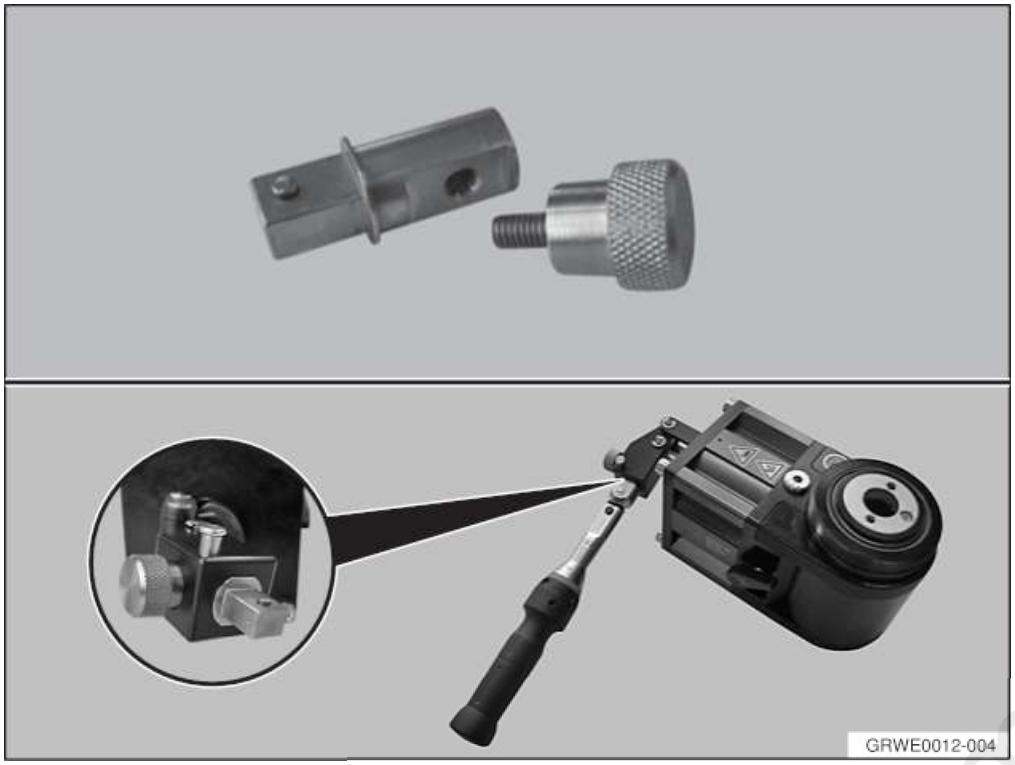
1	Hydraulic unit
E1	Holding sleeveM24
D1	Thrust washer
F2	Spindle M24 / M20 (length 335 mm)

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

G2	Adapter M24 x 1.5 to M20

Installation note:
Lightly oil gearing of the output shaft and insert in drive flange.

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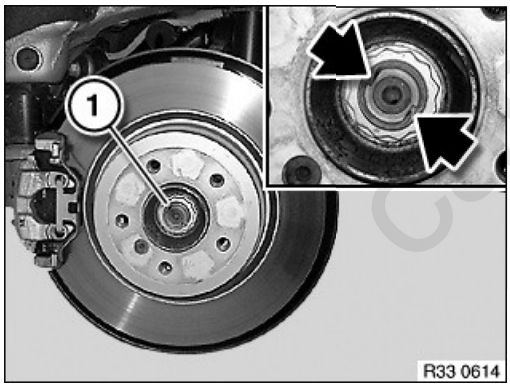


Important! Risk of damage!
Due to the technical requirements, the special tool used, sleeve G,* is relatively thin-walled. To ensure that the load limit of the tensioning sleeve is not exceeded when drawing in the output shaft, it is **essential** to use adapter 81 64 2 318 661 in combination with a torque wrench.

Fit adapter with torque wrench to hydraulic unit (see graphic).

Set torque wrench to 20 Nm.

Draw in output shaft with hydraulic tool until the torque wrench is activated.



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

Tightening torque 33 41 1AZ.

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

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

Renew collar nut (1).

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33 21 000 Removing and installing/replacing left or right output shaft

Attention!

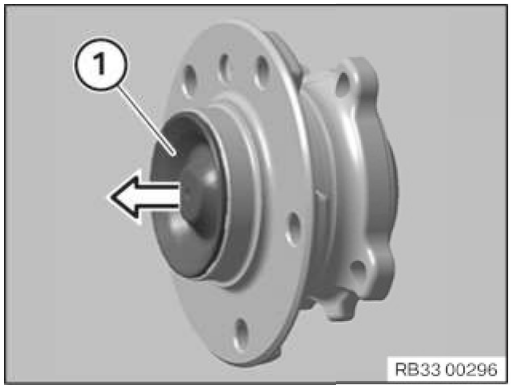
When reinstalling, place a new circlip on the output shaft!

The radial shaft seal for the output shaft should be replaced every time the output shaft is removed and installed.

Observe safety information for raising the vehicle

Necessary preliminary tasks:

- Remove rear wheel.

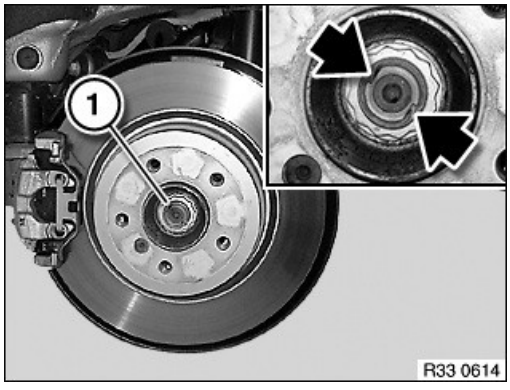


Remove protective cap (1), if required.



Installation note:
For reasons of corrosion problems, do not reinstall the protective cap (1)!

Apply a thin coat of grease in the area (1) instead!



Attention!

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

Remove collar nut (1); engage parking brake to do so.

Tightening torque 33 41 1AZ.

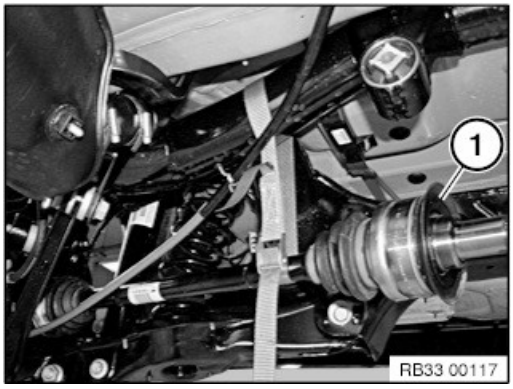
Installation note:
Lightly oil the gearing at the shaft journal.

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

Replace collar nut and secure by means of positive peening on flat areas of output shaft.

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Remove rear axle final drive.

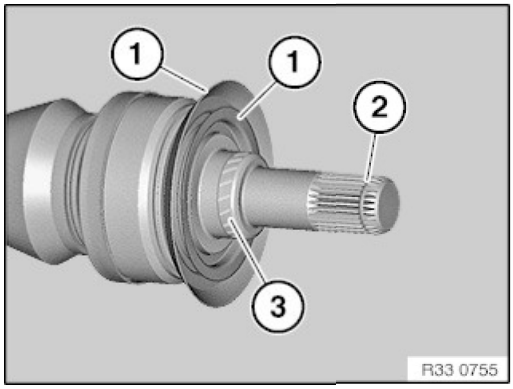


Attention!

Secure output shaft against falling out.

Do not damage dust plates (1) when setting down output shaft.

Press output shaft out of drive flange and remove towards centre of vehicle.



Installation note:
High installation forces indicate that the output shaft spline teeth are damaged or deformed!

Check gearing and replace components if damaged.

Check dust plate (1) for damage, renew if necessary.

If the previous output shaft is reinstalled, circlip (2) must be renewed.

Coat contact surface (3) of output shaft with approved final drive oil.

After installation:

- Check transmission oil level, correct if necessary.

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33 31 503 Lowering/raising rear axle support (universal lifter)



Special tools required:

- 31 5 250
- 00 2 030
- 31 5 256
- 31 5 253
- 33 5 206



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. 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 instructions for raising the vehicle

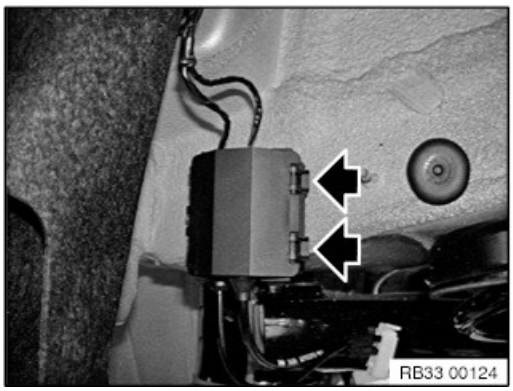
In order to avoid damage to vehicle hoist, perform weight compensation on vehicle.



Necessary preliminary work:

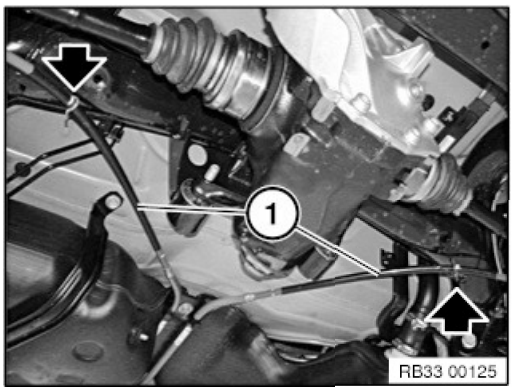
- Remove rear wheels.
- Remove exhaust system.
- If necessary, remove rear tension struts.
- Remove propeller shaft at final drive.
- Remove camber arm cover.
- Remove tank cover.
- Remove coil springs.
- Remove both brake-caliper supports and tie up.
- Release shock absorber from camber arm.
- Only on ride-height sensor at left: Disconnect plug connection and lay cable back toward vehicle.

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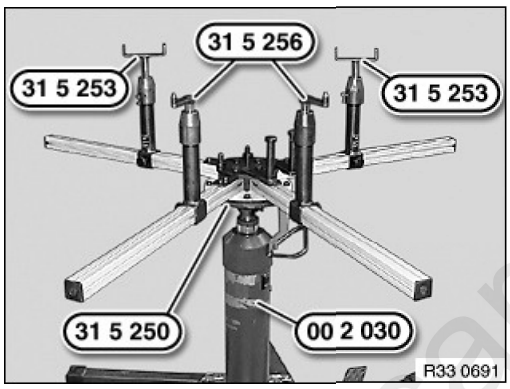


Release wheel arch panel in rear area.

Unlock clamps, open cover and detach connector. (Left side identical.)



Detach Bowden cable (1) of parking brake from rear axle support.

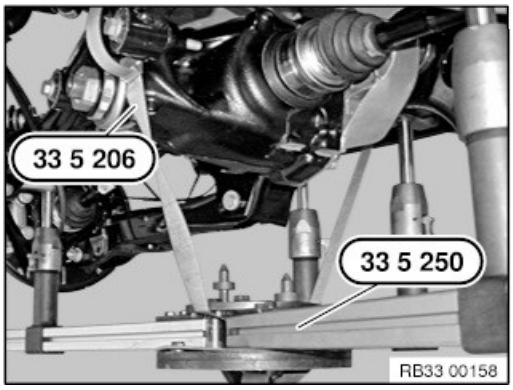


Engage special tool 31 5 250 with a 2nd person helping completely on workshop jack 00 2 030 .

Insert special tools 31 5 256 in telescopic supports of a profile rail pair.

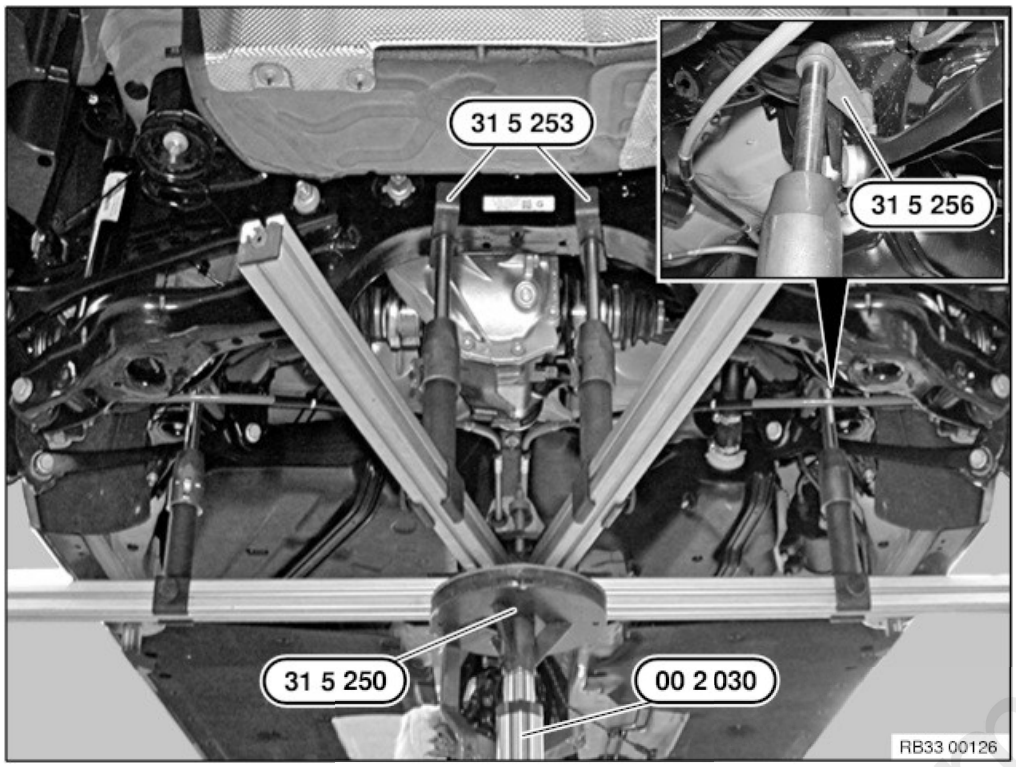
Insert special tools 31 5 253 in telescopic supports of other profile rail pair.

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



Lash rear axle support with tensioning strap 33 5 206 to special tool31 5 250 .

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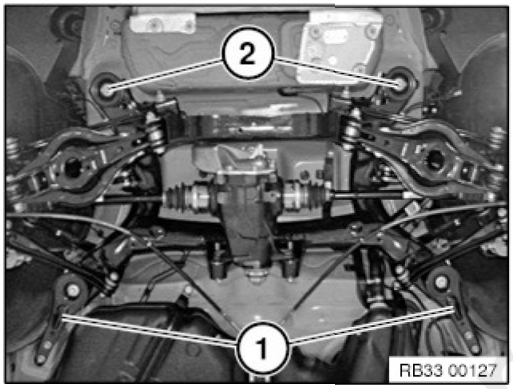
The mounting points on the right side are shown.

Align special tools 31 5 250 , 31 5 253 and 31 5 256 with rear axle support.

Support rear axle support by operating workshop jack 00 2 030 .

Attention!

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



Remove compression struts (1).

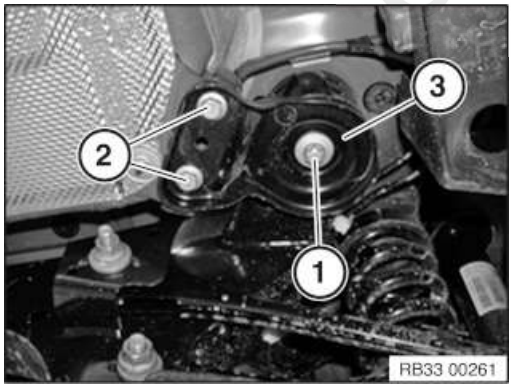
Release screws (2) and remove with thrust washer. (F34, F36- see next graphic)

Tightening torque 33 33 1AZ.

Lower rear axle support.

Installation note:
Check threads for damage; if necessary, repair with Helicoil thread inserts.

Screw in all screws, first tightening the compression struts (1) and then screws (2).



F34 and F36 only:

Loosen screws (2).

Tightening torque 33 33 3AZ.

Loosen screw (1).

Tightening torque 33 33 1AZ.

Remove rear compression strut (3).

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33 31 000 Removing and installing complete rear axle support



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 information for raising the vehicle

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



Necessary preliminary tasks:

- Detach parking brake Bowden cable from brake shoe expander.



Note:
The subsequent procedure is described in the document "Lowering/raising rear axle support".

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33 31 017 Removing and installing/replacing vibration absorber

Special tools required:

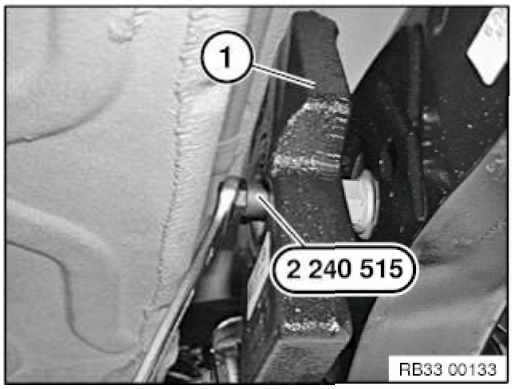
- 2 240 515
- 83 30 2 444 999

Attention!

Different vibration absorbers are installed depending on the vehicle equipment and motorisation.

The vibration absorbers have different nominal frequencies depending on the equipment and motorisation.

The nominal frequency is noted on the vibration absorber and its observation is mandatory.



Release the screw M8 on the vibration absorber (1) with special tool 2 240 515 and ring spanner (AF 13).

Tightening torque 33 17 3AZ.

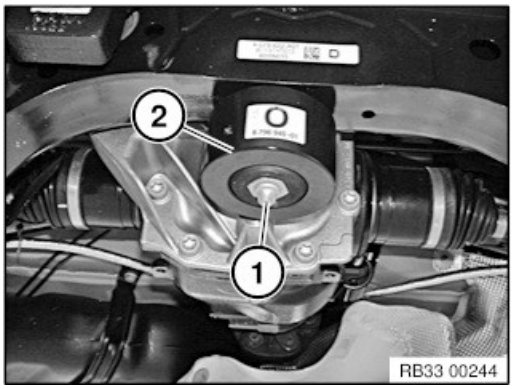
Remove vibration absorber (1).



Release the screw on the vibration absorber with special tool 83 30 2 444 999 and wrench socket.

Remove vibration absorber (1).

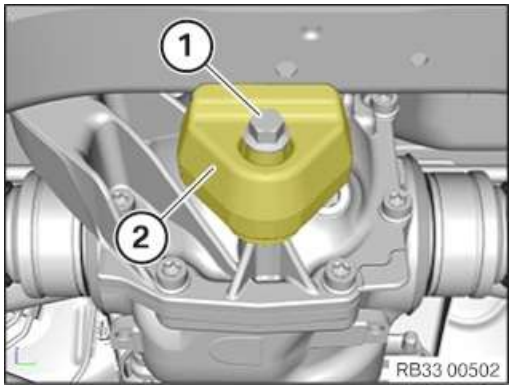
Tightening torque 33 17 7AZ.



Loosen screw (1).

Tightening torque 33 17 4AZ.

Remove vibration absorber (2).



Loosen screw (1).

Tightening torque 33 17 5AZ.

Remove vibration absorber (2).

Installation note:
It is mandatory to ensure correct installation position. The flat side of the vibration absorber (2) faces the rear axle support.

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33 31 011 Replacing rear axle support

Warning!

Danger of injury!

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.

Attention!

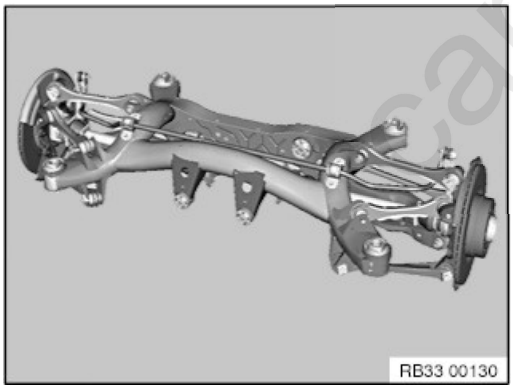
Before lowering/removing rear axle support:

Observe safety information for raising the vehicle!

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

Necessary preliminary work:

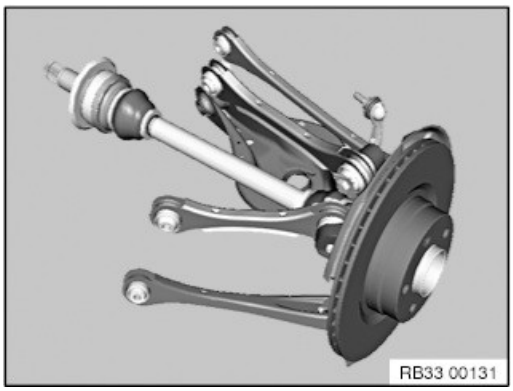
- Remove rear axle final drive.
- Remove complete rear axle carrier.



Release anti-roll bar link on anti-roll bar.

If applicable, remove ride height sensor with jointed rod from rear axle support .

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Secure wheel carrier against falling out.

Release both camber arms on rear axle support.

Release both toe arms on rear axle support.

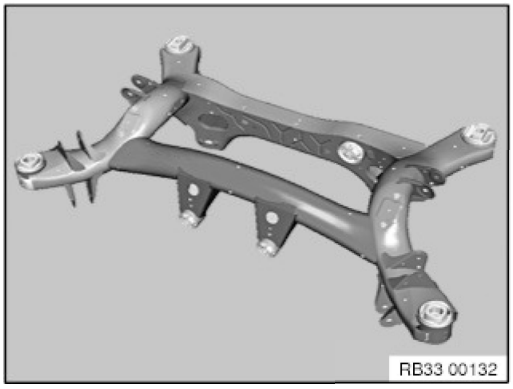
Release both trailing arms on rear axle support.

Release both control arms on rear axle support.

Release both wishbones on rear axle support.

Remove both wheel carriers with output shafts, all camber arms, toe arms, trailing arms, control arms, wishbones, anti-roll bar links and brake discs.

Remove anti-roll bar.



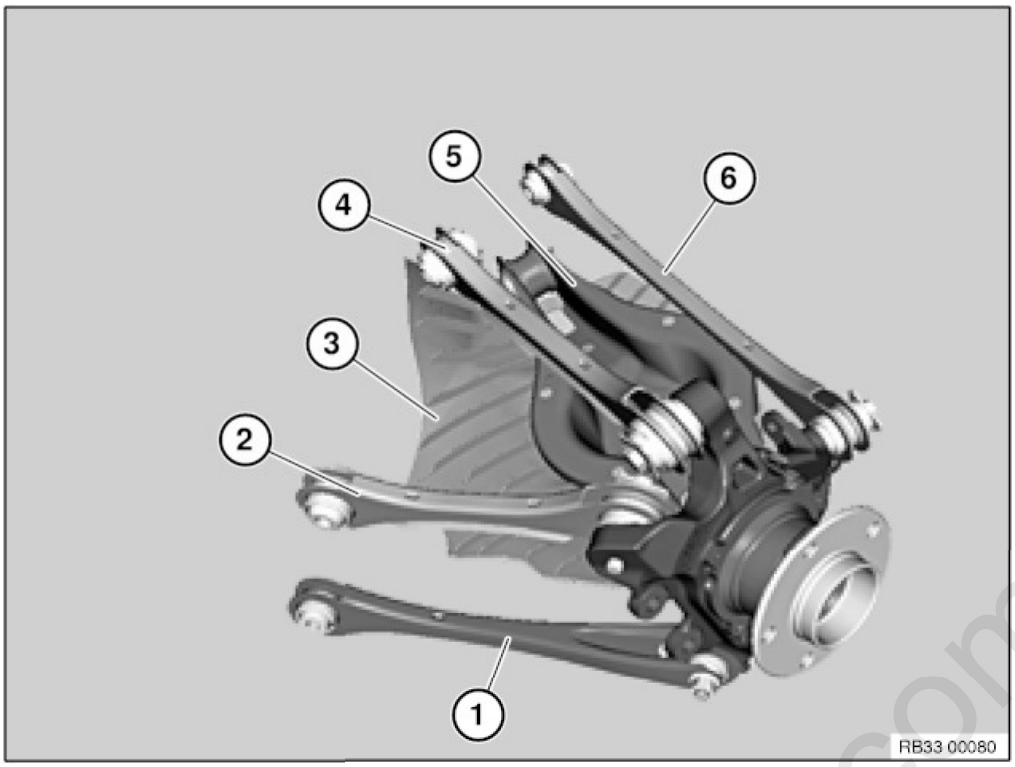
Take the rear axle support off the special tool with a helper and set onto a suitable support.*Installation note:*
Use previous rear axle support as a template for modifying or replacing small parts.

After installation:

- Carry out wheel alignment procedure.

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33 32 Overview of wishbone, camber arm, trailing arm, toe arm and control arm



Adjusting procedure

1 Trailing arm
2 Traction strut
3 Camber arm cover
4 Wishbone
5 Camber arm
6 Toe arm

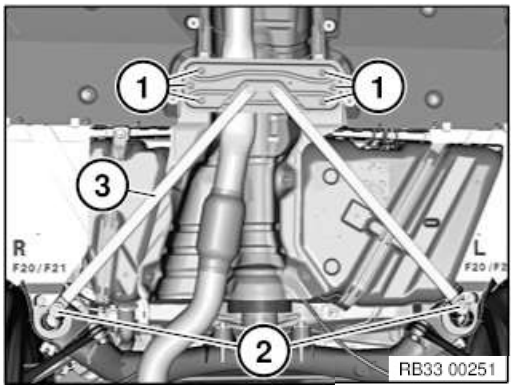
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33 32 165 Removing and installing or replacing tension strut

Important!

Observe safety instructions for raising the vehicle.

Driving without tension struts is not permitted!



Release screws (1).

Tightening torque 33 32 12AZ.

Unfasten screws (2).

Tightening torque 33 32 13AZ.

Remove tension strut (3).

Installation note:
Replace screws (2).

Check threads for damage; if necessary, repair with Helicoil thread inserts.

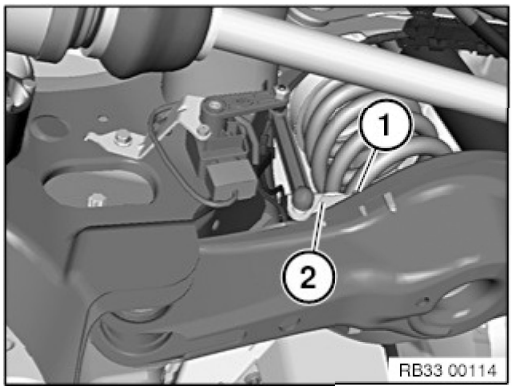
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33 32 190 Removing and installing/replacing left or right camber arm

Note:
If the camber arm is detached from the rear axle support/wheel carrier, it is necessary after installation to carry out a wheel alignment.

Necessary preliminary work:

- Remove coil spring, rear .
- Remove camber arm cover.

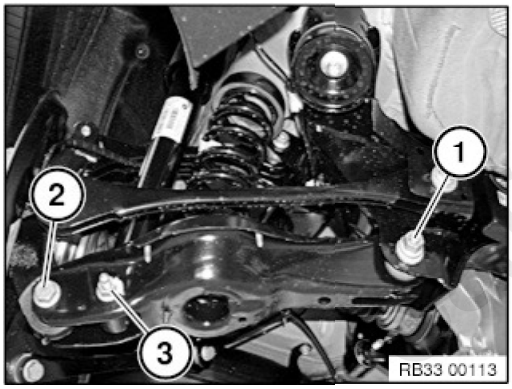


Only on left side at ride-height sensor:

Release screw (1) and remove holder (2) with jointed rod.

Tightening torque 37 14 3AZ.

Installation note:
Replace screw.



Secure camber arm against falling off.

Mark position of eccentric adjustment washer to rear axle support to simplify subsequent adjustment of rear axle.

Release nut (1) and remove eccentric bolt.

Tightening torque 33 32 9AZ.

Installation note:
Note insertion direction of eccentric screw.

Replace nut.

Tighten down screw connection in normal position.

Release nut (2) and remove screw.

Tightening torque 33 32 10AZ.

Installation note:
Note direction of insertion of screw.

Replace nut.

Release nut (3) and remove screw.

Tightening torque 33 52 3AZ.

Installation note:
Note direction of insertion of bolts.

Replace screw and nut.

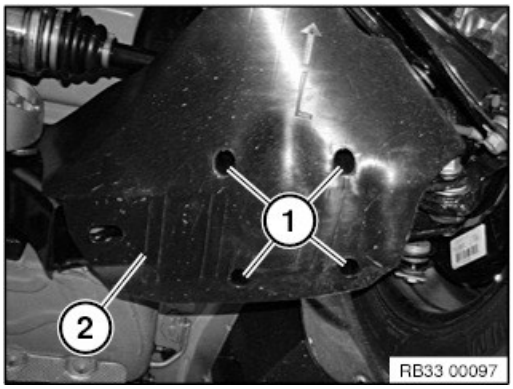
Tighten down screw connection in normal position.

After installation:

- Carry out wheel alignment procedure.

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33 32 188 Removing and installing/replacing left or right camber arm cover



Unscrew nuts (1).

Tightening torque 33 32 11AZ.

Remove cover (2).

Installation note:
Replace nuts.

Observe positions of marks for L (left) and R (right).

The arrow on the cover points toward the front of the vehicle.

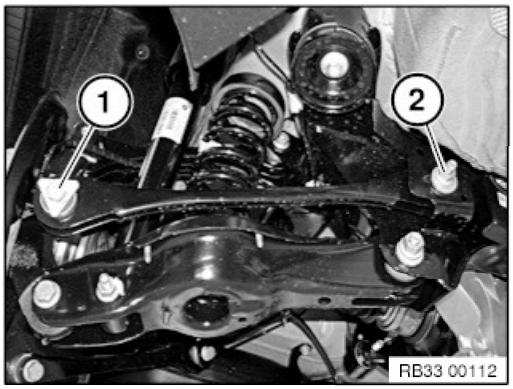
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33 32 180 Removing and installing/replacing left or right toe arm

Note:
If the toe arm is detached from the rear axle support/wheel carrier, it is necessary after installation to carry out a wheel alignment.

Necessary preliminary tasks:

- Remove rear wheel.



Release screw (1).

Mark position of eccentric adjustment washer to rear axle support to simplify subsequent adjustment of rear axle.

Release nut (2), unscrew screw and remove toe arm.

Important!

You must observe the installation sequence and installation notes!

Failure to comply with these instructions may result in serious damage to the threads of the wheel carrier!

Do not use an impact screwdriver!

Installation sequence:

Firstly insert toe arm in axle support and do not screw!

Renew screw (1) and position on wheel carrier **by hand**! Twist toe arm a little so that screw (1) can be screwed in by hand without tension!

Insert screw in axle support and renew nut (2)!

Only apply tightening force to both screw connections in normal position.

Tightening torque 33 32 8AZ.

Tightening torque 33 32 7AZ.

After installation:

- Carry out wheel alignment procedure.

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33 32 125 Replacing a ball joint in lower steering stub / wheel carrier

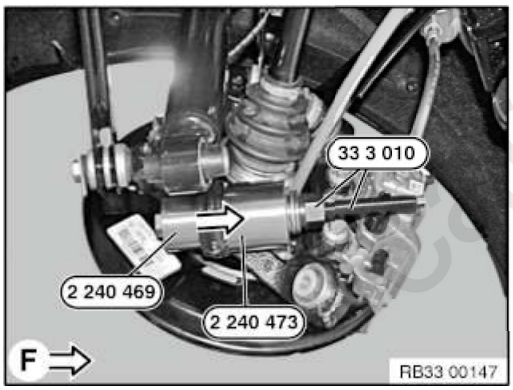
Special tools required:

- 33 3 010
- 2 240 473
- 2 240 469
- 2 240 476

The ball joint may not be reused after it has been pressed out!

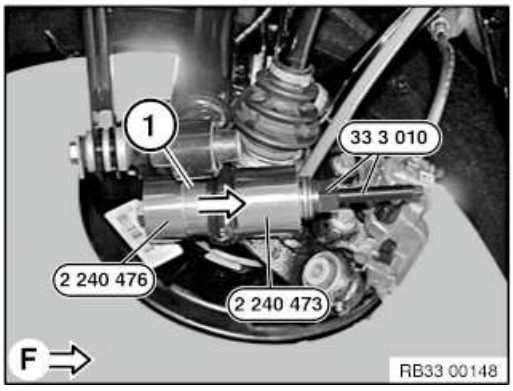
Necessary preliminary tasks:

- Remove rear wheel.
- Remove camber arm cover.
- Remove coil spring, rear .
- Remove trailing arm.
- Remove camber arm.
- If applicable, remove jointed rod for ride height sensor from the camber arm bracket.



Pull out ball joint:

Pull out ball joint with special tools 33 3 010 , 2 240 473 and 2 240 469 .



Pull in new ball joint:

Fit new ball joint (1) with special tools 33 3 010 , 2 240 473 , and 2 240 476 until limit position.

After installation:

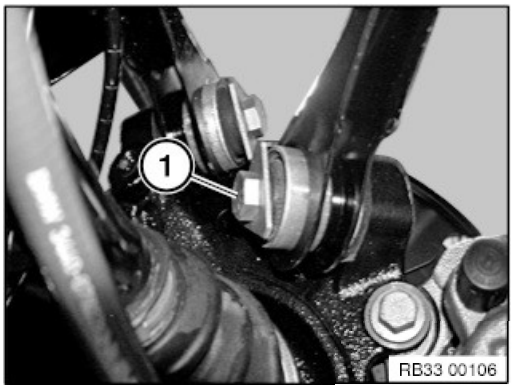
- Carry out wheel alignment procedure.

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33 32 091 Replacing a control arm

Necessary preliminary tasks:

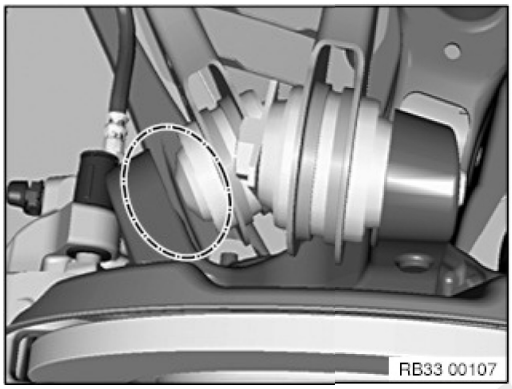
- Remove rear wheel.
- Remove camber arm cover.



Release screw (1).*Installation note:*
Observe installation sequence at the end of document!

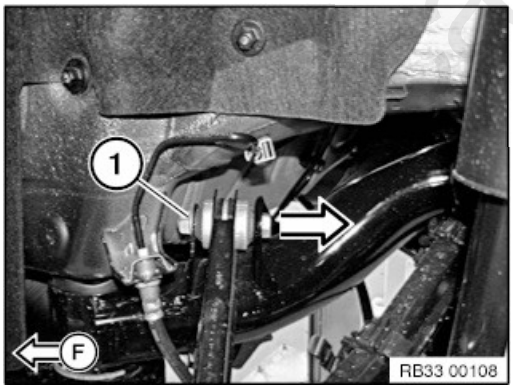
Manually lift wheel carrier in region of brake caliper if necessary.

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.



Slacken nut (1).*Installation note:*
Observe installation sequence at the end of document!

Screw head faces away from direction of travel.

Replace self-locking nut.

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Important!

You must observe the installation sequence and installation notes!

Failure to comply with these instructions may result in serious damage to the threads of the wheel carrier!

Do not use an impact screwdriver!

Installation sequence:

1. Put on screw (1) wishbone to wheel carrier manually!
2. Fit control arm to rear axle support, insert screw and screw on nut

   Important: Tighten both screw connections in normal position only
3. Tighten screw connection control arm to wheel carrier

   Tightening torque 33 32 4AZ
4. Tighten screw connection control arm to rear axle support

   Tightening torque 33 32 3AZ.

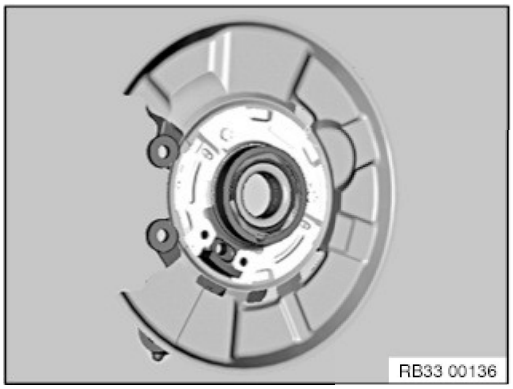
Put on screw (1) wishbone to wheel carrier manually!

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33 32 131 Replacing a wheel carrier

Necessary preliminary tasks:

- Remove rear wheel.
- Remove camber arm cover.
- Remove coil spring.
- Remove brake disc.
- Remove parking brake shoes.
- Remove pulse sensor on wheel carrier.
- Remove drive flange for rear axle shaft.



Secure wheel carrier against falling out.

Slacken anti-roll bar link on wheel carrier.
Slacken trailing arm on wheel carrier.
Slacken control arm on wheel carrier.
Slacken toe arm on wheel carrier.
Undo wishbone at the wheel carrier.
Slacken camber arm on wheel carrier.

Remove wheel carrier including brake guard plate.

Important!

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

- Replace wheel bearing.
- Modify or replace Â brake guard plate.

After installation:

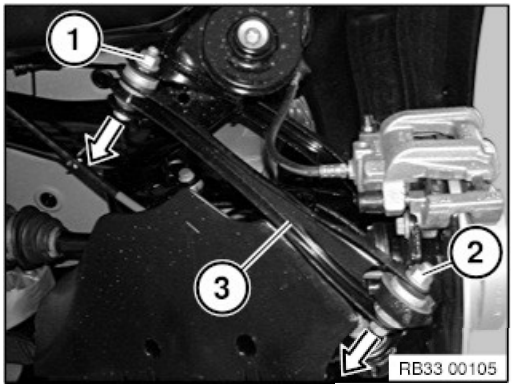
- Adjust parking brake.
- Carry out wheel alignment procedure.

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33 32 021 Replacing left or right trailing arm

Important!

- The trailing arm must be installed with the opening (U-section) facing downward!



Unscrew nuts (1).

Tightening torque 33 32 1AZ.

Move screw toward the rear.

Installation note:
Note direction of insertion of bolts.

Replace nut.

Tighten down screw connection in normal position.

Slacken nut (2).

Tightening torque 33 32 2AZ.

Move screws toward the rear.

Remove trailing arm (3) downward.

Installation note:
The trailing arm must be installed with the opening (U-section) facing downward!

Note direction of insertion of screw.

Replace nut.

Tighten down screw connection in normal position.

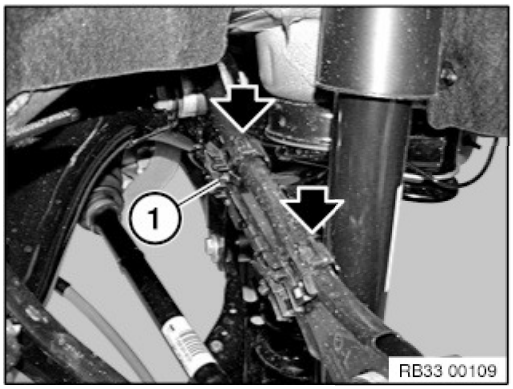
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33 32 071 Replacing one upper wishbone

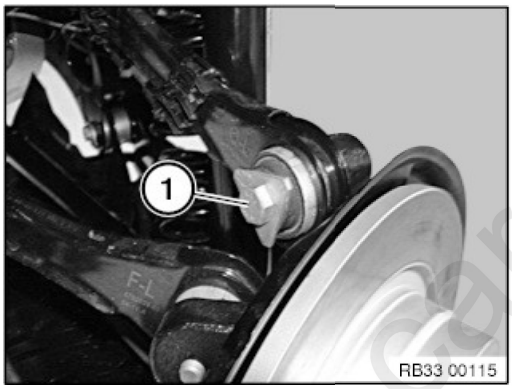
Note:
If the wishbone is detached from the rear axle support, it is necessary after reinstallation to carry out a chassis / wheel alignment check.

Necessary preliminary tasks:

- Remove rear wheel.

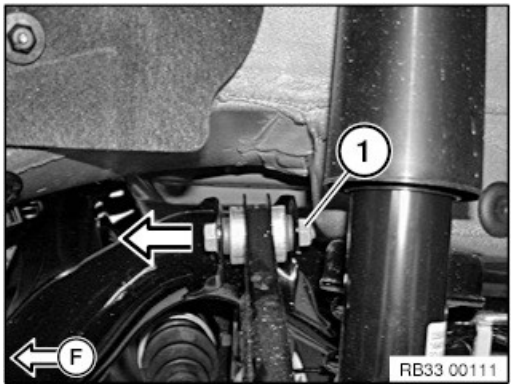


Open clamps and remove cable clip (1).*Installation note:*
Replace faulty cable clips.



Release screw (1).*Installation note:*
Replace screw.

Observe installation sequence at the end of document!

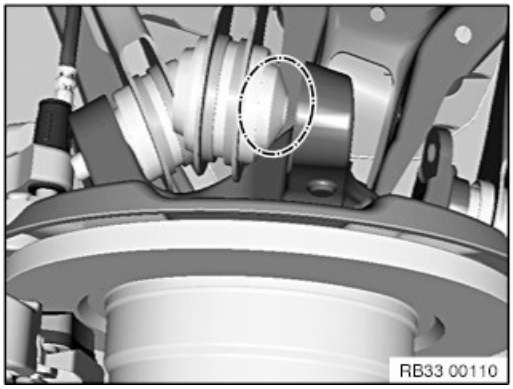


Release nut (1) and remove screw towards front.*Installation note:*
Observe installation sequence at the end of document!

Bolt head points in direction of travel.

Replace self-locking nut.

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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.

Important!

You must observe the installation sequence and installation notes!

Failure to comply with these instructions may result in serious damage to the threads of the wheel carrier!

Do not use an impact screwdriver!

Installation sequence:

1. Put on screw (1) wishbone to wheel carrier manually!
2. Fit wishbone to rear axle support, insert screw and screw on nut

   Important: Tighten both screw connections in normal position only!
3. Tighten wishbone to wheel carrier screw connection

   Tightening torque 33 32 6AZ
4. Tighten wishbone to rear axle support screw connection

   Tightening torque 33 32 5AZ

After installation:

- Carry out wheel alignment procedure.

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33 32 031 Replacing rubber mount for trailing arm in wheel carrier

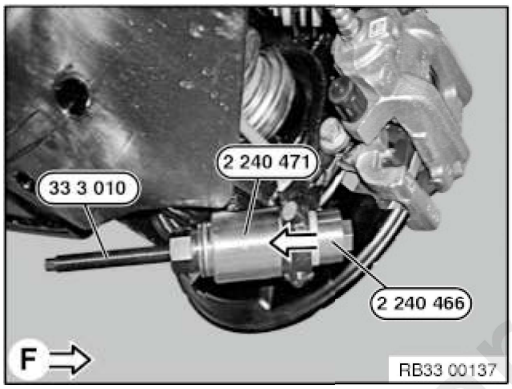
Special tools required:

- 33 3 010
- 2 240 471
- 2 240 466
- 2 240 472

The rubber mount may not be reused after it has been pressed out!

Necessary preliminary tasks:

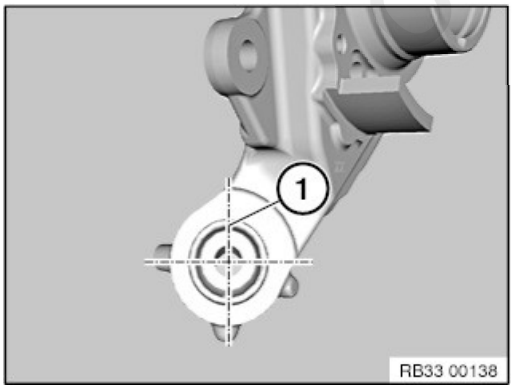
- Remove trailing arm.



Pulling out the rubber mount:

Pull out rubber mount with special tools 33 3 010 , 2 240 471 , and 2 240 466 .

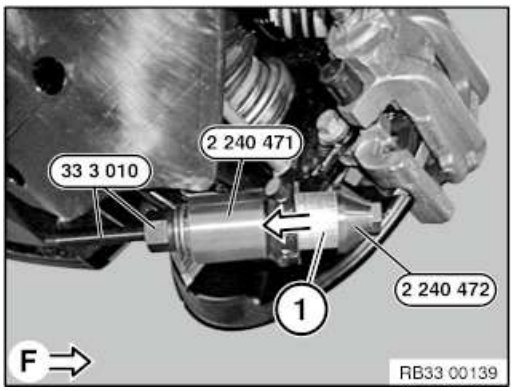
Note:
Align the slots on tool 2 240 471 with the wheel carrier so that it is resting straight.



Pulling in a new rubber mount:

Align the rubber mount with slot (1) upward in an angle to the wheel carrier.

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Pull on rubber mount (1) with special tools 33 3 010 , 2 240 471 , and 2 240 472 until limit position.*Note:*
Align the slots on tool 2 240 471 with the wheel carrier so that it is resting straight.

After installation:

- Carry out wheel alignment.

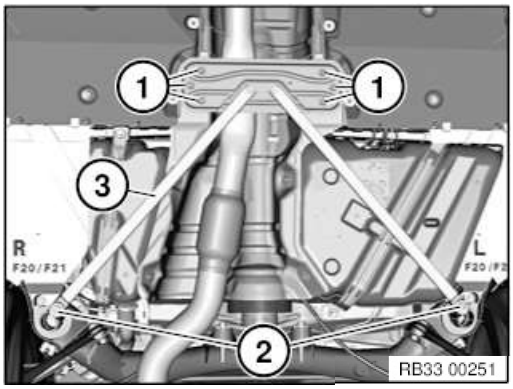
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33 32 165 Removing and installing or replacing tension strut

Important!

Observe safety instructions for raising the vehicle.

Driving without tension struts is not permitted!



Release screws (1).

Tightening torque 33 32 12AZ.

Unfasten screws (2).

Tightening torque 33 32 13AZ.

Remove tension strut (3).

Installation note:
Replace screws (2).

Check threads for damage; if necessary, repair with Helicoil thread inserts.

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33 33 001 Replacing left or right rear axle support compression strut

Important!

Observe safety informations for raising the vehicle

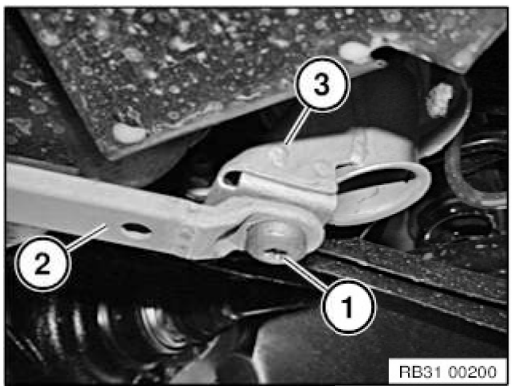
Driving without compression struts is not permitted!

Risk of damage!

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

Necessary preliminary tasks:

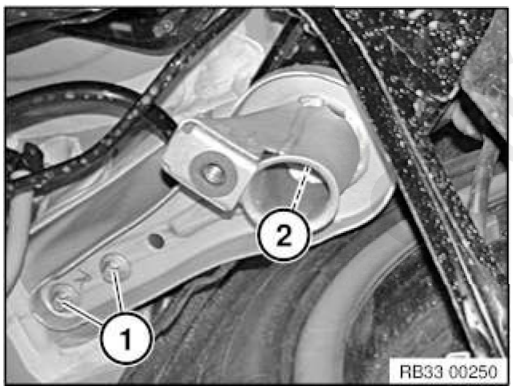
- Remove tank cover.



Release screw (1) from trailing link (2) and compression strut (3).

Tightening torque 33 32 13AZ.

Installation note:
Replace screw (1).



Release screws (1).

Tightening torque 33 33 2AZ.

Release screw (2).

Tightening torque 33 33 1AZ.

Remove compression strut.

Installation note:
Replace screws (1).

Check threads for damage; if necessary, repair with Helicoil thread inserts.

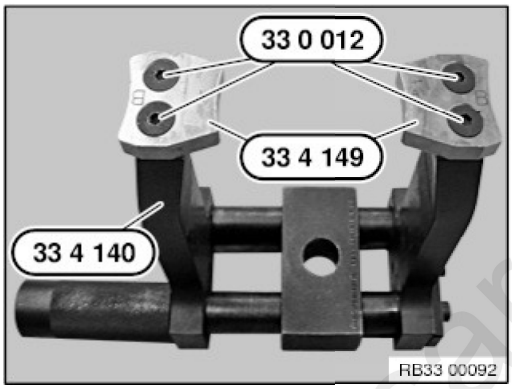
33 33 101 Replacing two rubber mounts (front) for rear axle support

Special tools required:

- 33 4 140
- 33 0 012
- 33 4 149
- 0 496 887
- 2 208 576
- 2 155 744
- 2 208 574
- 33 4 432
- 33 4 433

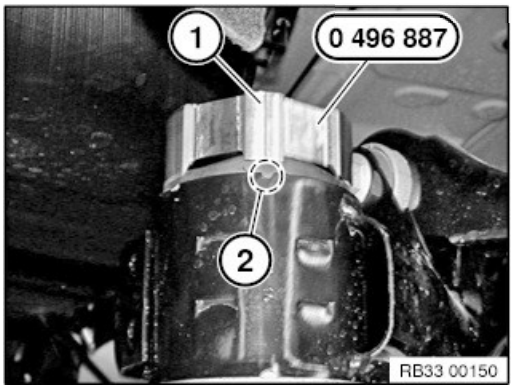
Necessary preliminary tasks:

- Lower rear axle support.



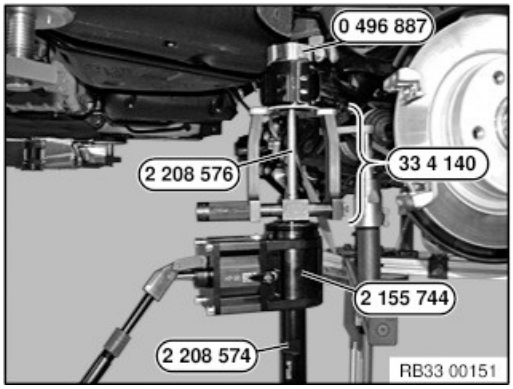
Withdrawing rubber mount:

Complete special tool 33 4 140 using 33 0 012 and 33 4 149 , as shown.

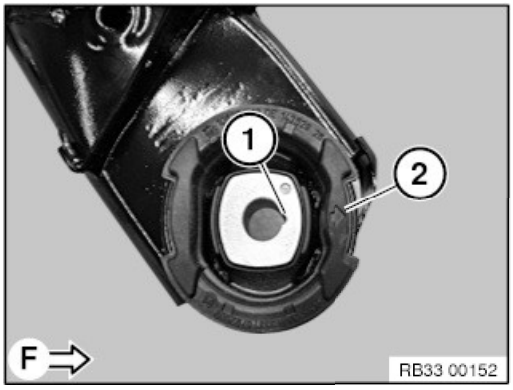


Align notch (1) on special tool 0 496 887 with notch (2) on the rear axle support.

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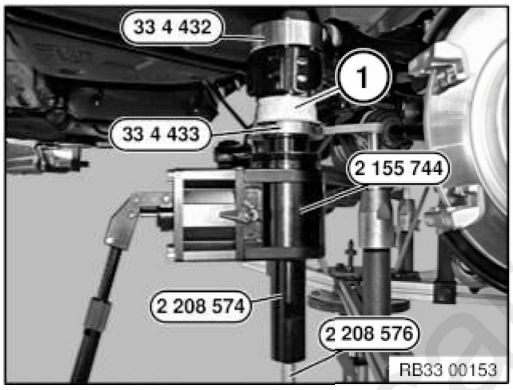


Pull out rubber mounts using special tools 0 496 887 , 33 4 140 , 2 208 576 ,2 155 744 and2 208 574 pull out of the rear axle support.*Note:*
Make sure special tool 33 4 140 is correctly supported on rear axle support bush.



Installing rubber mount:

Notch (1) and arrow (2) of the rubber mount must point in the direction of travel.



Draw in rubber mount (1) with special tools33 4 432 , 33 4 433 , 2 155 744 ,2 208 574 and2 208 576 to limit position.*Note:*
Align recesses on special tool 33 4 433 with rubber mount (1).

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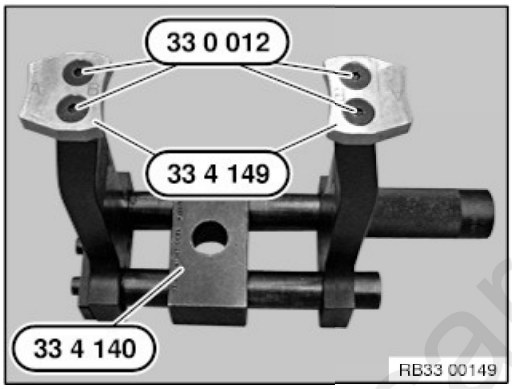
33 33 101 Replacing two rubber mounts (rear) for rear axle support

Special tools required:

- 33 4 140
- 33 0 012
- 33 4 149
- 2 241 760
- 2 208 576
- 2 155 744
- 2 208 574
- 2 241 779
- 2 208 780

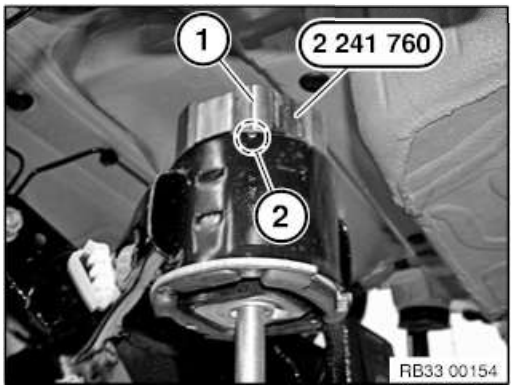
Necessary preliminary tasks:

- Lower rear axle support.



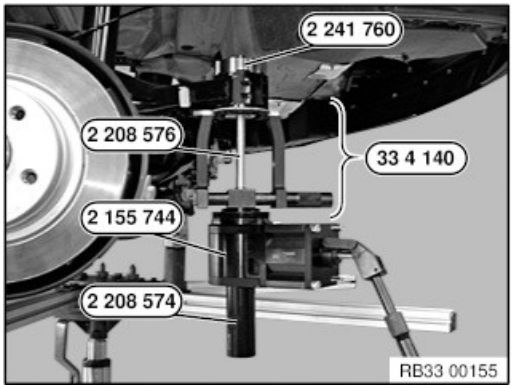
Withdrawing rubber mount:

Complete special tool 33 4 140 using 33 0 012 and 33 4 149 , as shown.

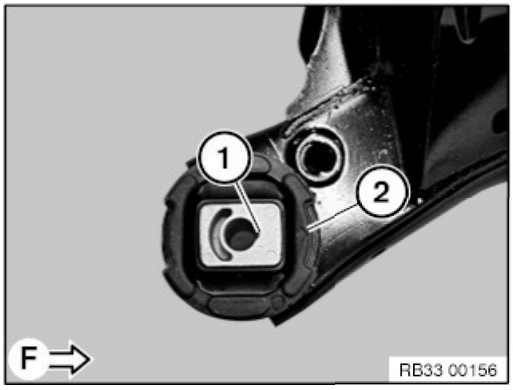


Align notch (1) on the special tool 2 241 760 with the notch (2) on the rear axle support.

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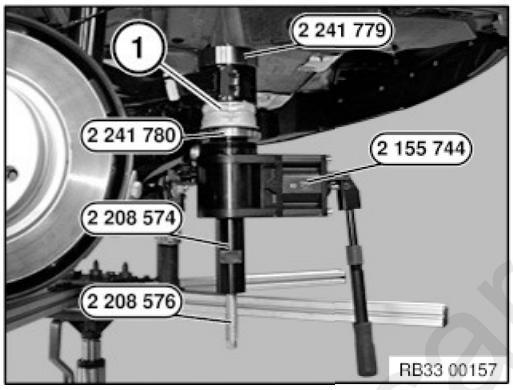


Pull out rubber mounts using special tools 2 241 760 , 33 4 140 , 2 208 576 , 2 155 744 and 2 208 574 pull out of the rear axle support.*Note:*
Make sure special tool 33 4 140 is correctly supported on rear axle support bush.



Installing rubber mount:

Notch (1) and arrow (2) of the rubber mount must point in the direction of travel.



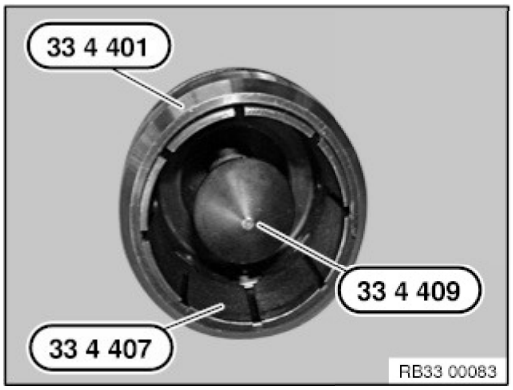
Draw in rubber mount (1) with special tools2 241 779 , 2 208 780 , 2 155 744 , 2 208 574 and 2 208 576 to limit position.*Note:*
Align recess on the special tool 2 208 780 with the rubber mount (1).

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33 41 ... Detaching wheel bearing inner ring from drive flange (drive flange removed)

Special tools required:

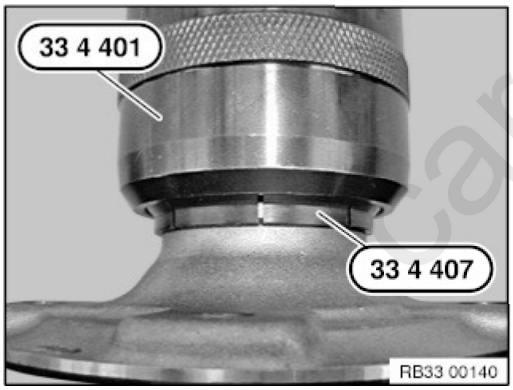
- 33 4 409
- 33 4 407
- 33 4 401
- 33 4 403
- 33 4 404
- 33 4 402
- 33 4 400



Important!

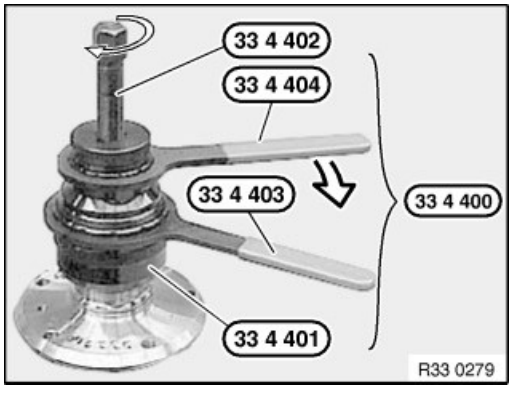
Thrust piece 33 4 409 must not be removed!

Insert pliers 33 4 407 into special tool 33 4 401 .



Position special tool 33 4 401 in conjunction with 33 4 407 on drive flange.**Important!**

Pliers 33 4 407 must be positions in the groove between the drive flange and wheel bearing inner ring.



Pull special tool 33 4 401 together with rings 33 4 403 and 33 4 404 until the pliers 33 4 407 are fitted flush in the groove between the drive flange and wheel bearing inner ring.

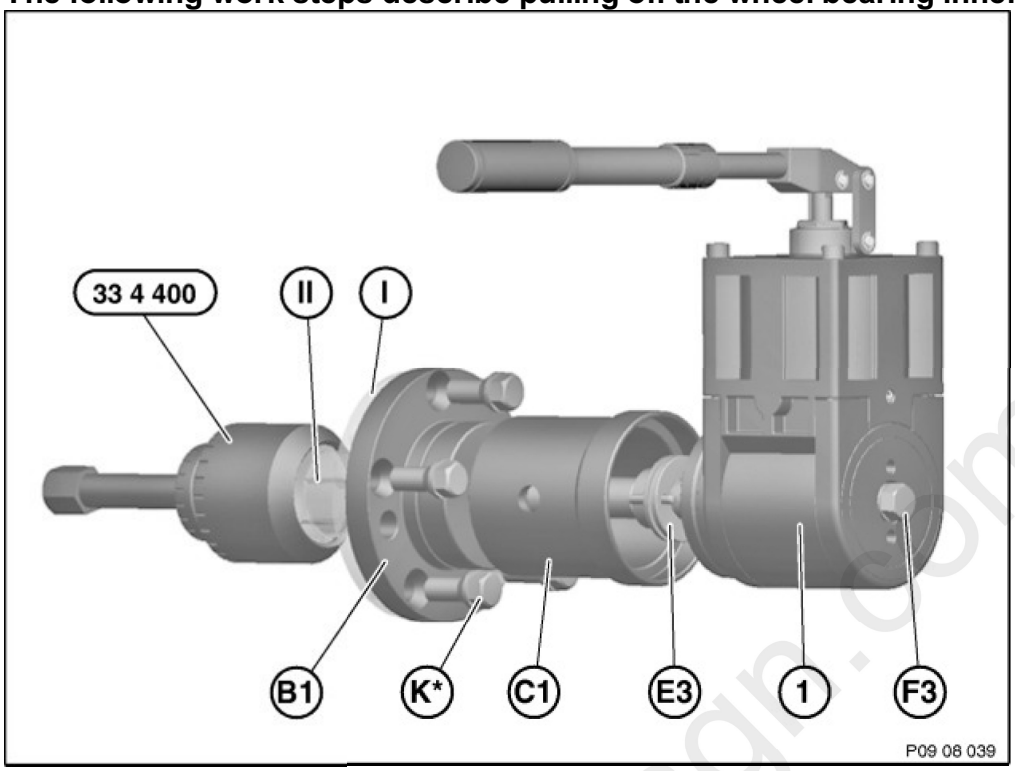
Unscrew spindle 33 4 402 as far as is possible.

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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 up to limit position.

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:**

K2	Screws M14 x 1.5

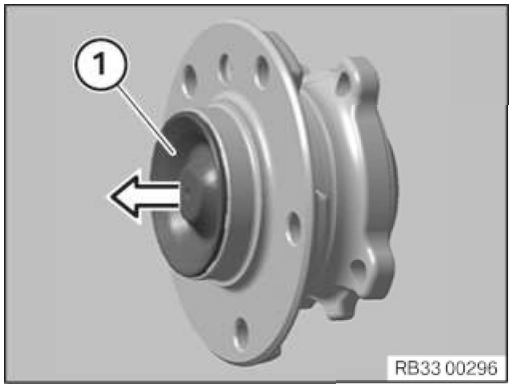
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33 41 000 Replacing drive flange on left/right rear axle shaft

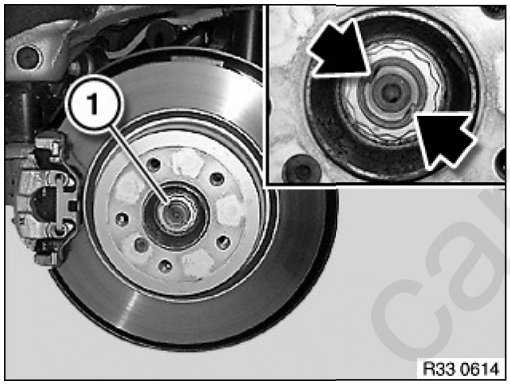
Necessary preliminary tasks:

- Remove rear wheel.
- Remove parking brake shoes.

Important!
Check sensor head and cable of pulse sensor and renew if necessary.



If necessary, remove visual protection cap (1).



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.

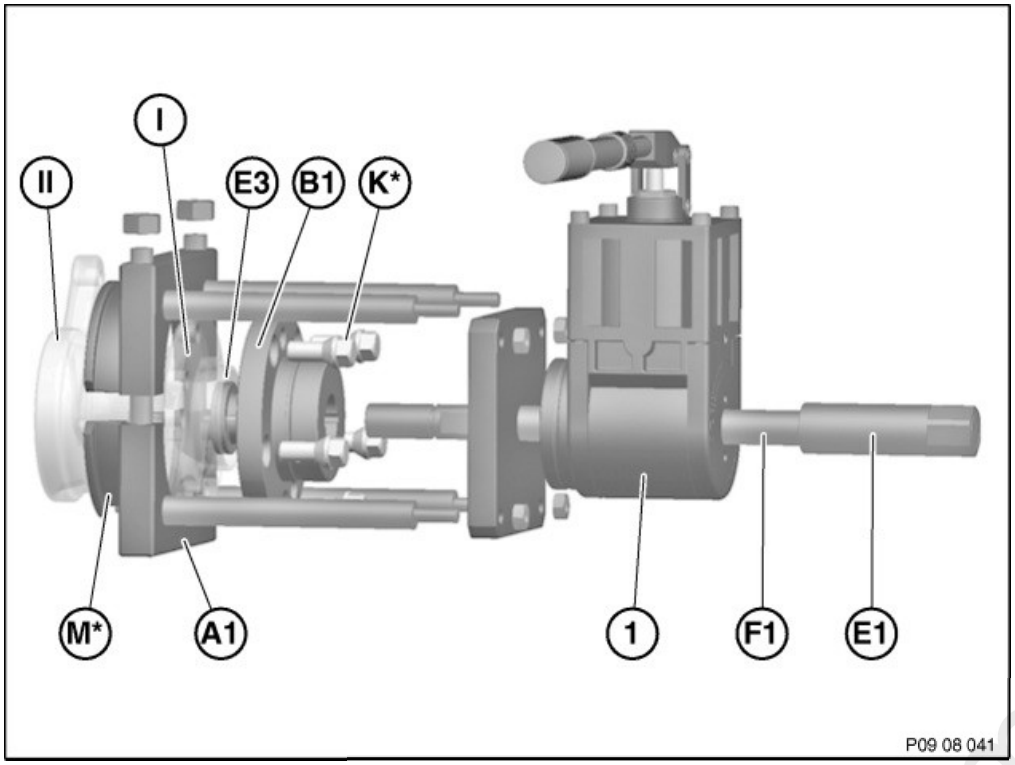
Replace collar nut (1) by positive peening at flat areas of output shaft.

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
- Adapter - 81 64 2 318 661

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

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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:**

Note:
Two variants of the wheel carrier are installed.

M5	Adapter diameter 90 mm
K1	Screws M12 x 1.5
	or
M3	Adapter Ø 102 mm
K1	Screws M12 x 1.5



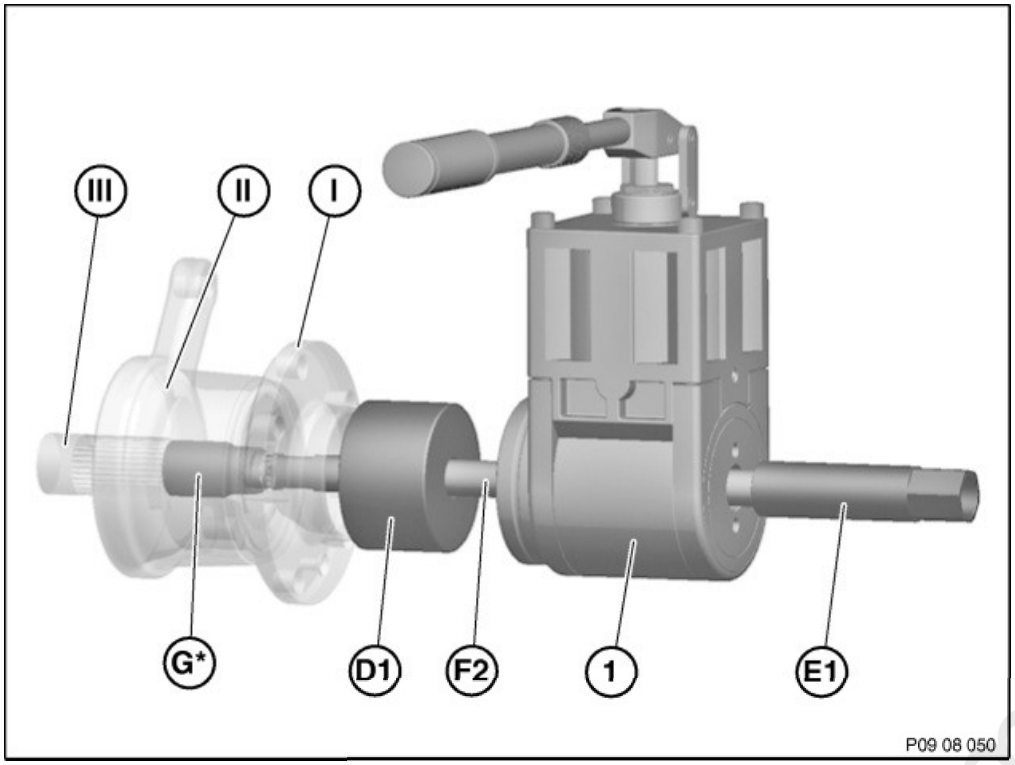
Important!

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

Replace wheel bearing.

The following work steps pulling in the drive flange:

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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)

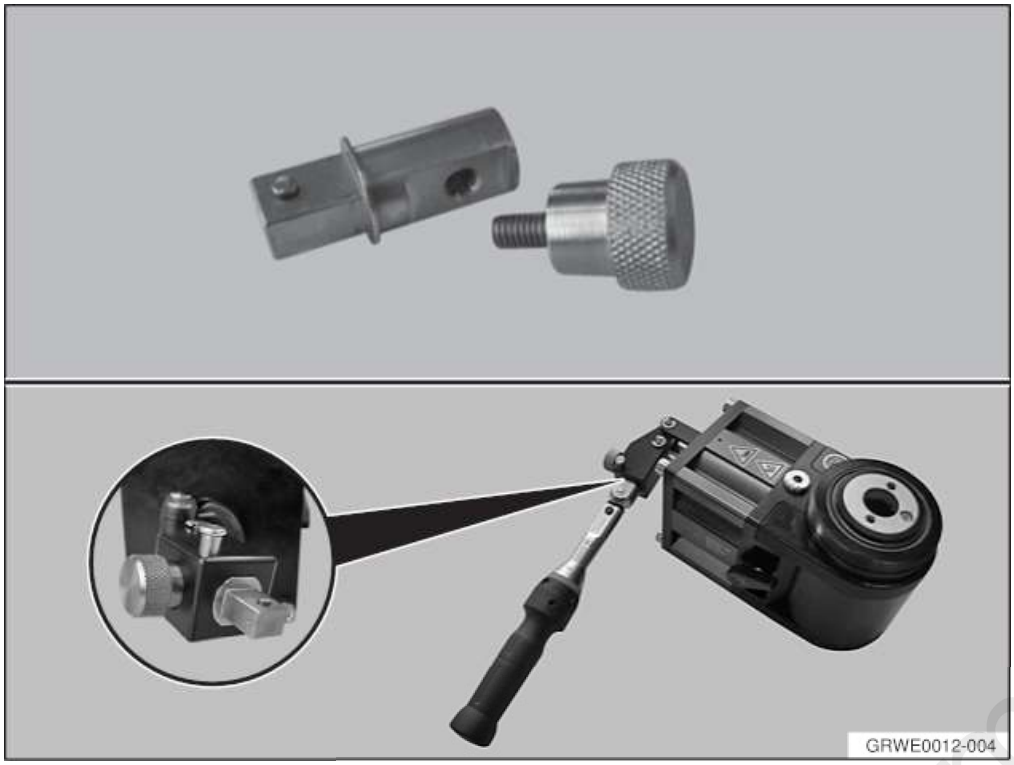
*** Components specific to model and type (thread diameter, output shaft):**

G2	Adapter M24 x 1.5 to M20

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

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

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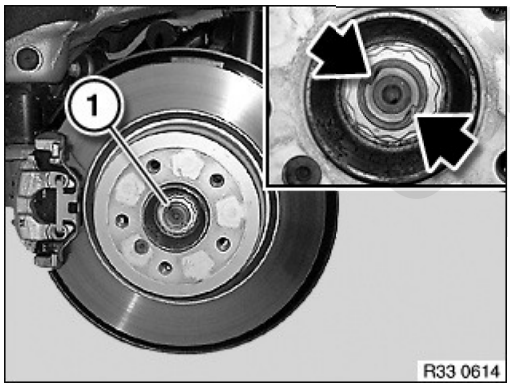


Important! Risk of damage!
Due to the technical requirements, the special tool used, sleeve G,* is relatively thin-walled. To ensure that the load limit of the tensioning sleeve is not exceeded when drawing in the output shaft, it is **essential** to use adapter 81 64 2 318 661 in combination with a torque wrench.

Fit adapter with torque wrench to hydraulic unit (see graphic).

Set torque wrench to 20 Nm.

Draw in output shaft with hydraulic tool until the torque wrench is activated.



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.

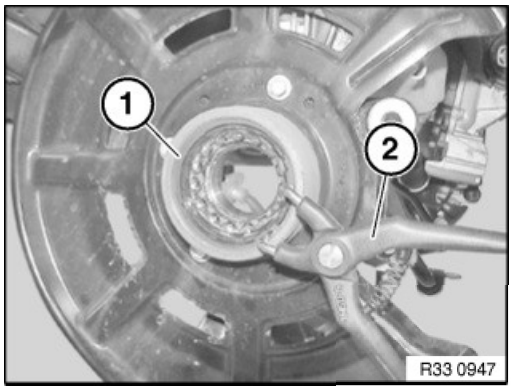
After installation:

- Adjust parking brake.

33 41 151 Replacing left or right wheel bearing on rear axle shaft

Necessary preliminary tasks:

- Remove output shaft.
- Remove drive flange for rear axle shaft.
- Detach wheel bearing inner ring from drive flange.



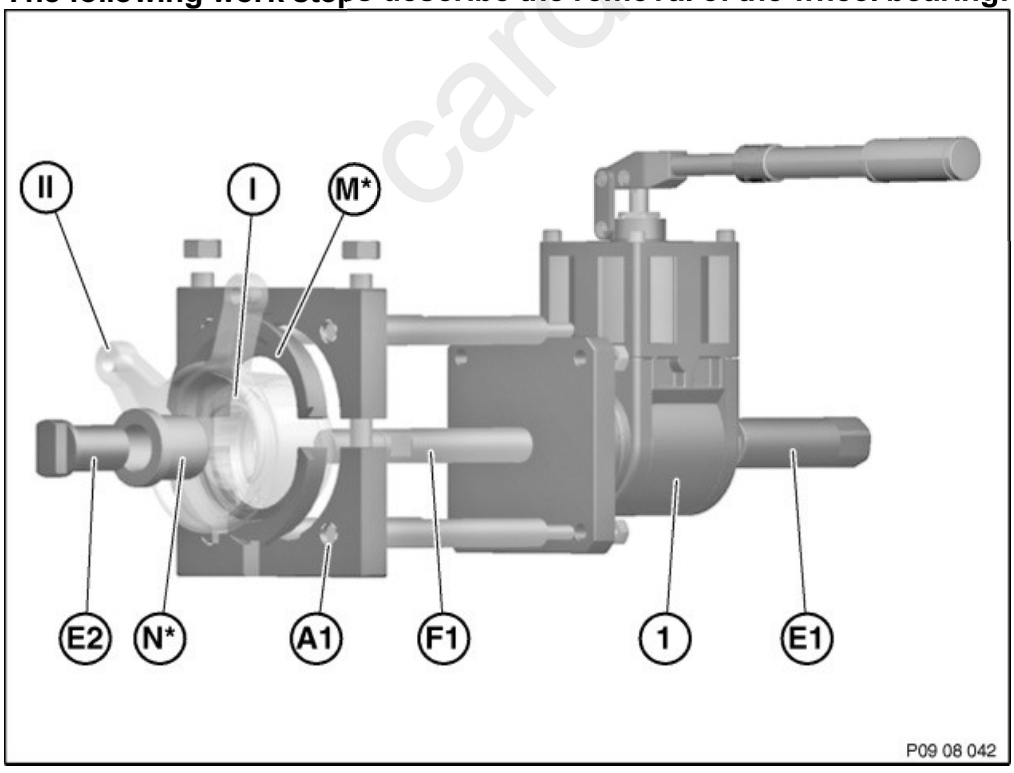
Press circlip (1) together using pliers (2) and remove.*Installation note:* Install retaining ring (1).

Check circlip (1) fit and correct 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
- Adapter - 81 64 2 318 661

The following work steps describe the removal of the wheel bearing:



The following tools are required to pull the wheel bearing out of the wheel carrier; see graphic for arrangement:

Vehicle components:

I	Drive flange hub
II	Wheel carrier

Required components for all models and types:

E1	Holding sleeveM24
1	Hydraulic unit
F1	Spindle M24 (length 425 mm)
A1	Device
E2	AdapterM24

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

Note:
Two variants of the wheel bearing are installed.

	Wheel bearing with inner diameter 42 mm
N3	Adapter diameter 42 mm
M5	Adapter diameter 90 mm
	or
	Wheel bearing with inner diameter 45 mm
N2	Adapter diameter 45 mm
M3	Adapter diameter 102 mm



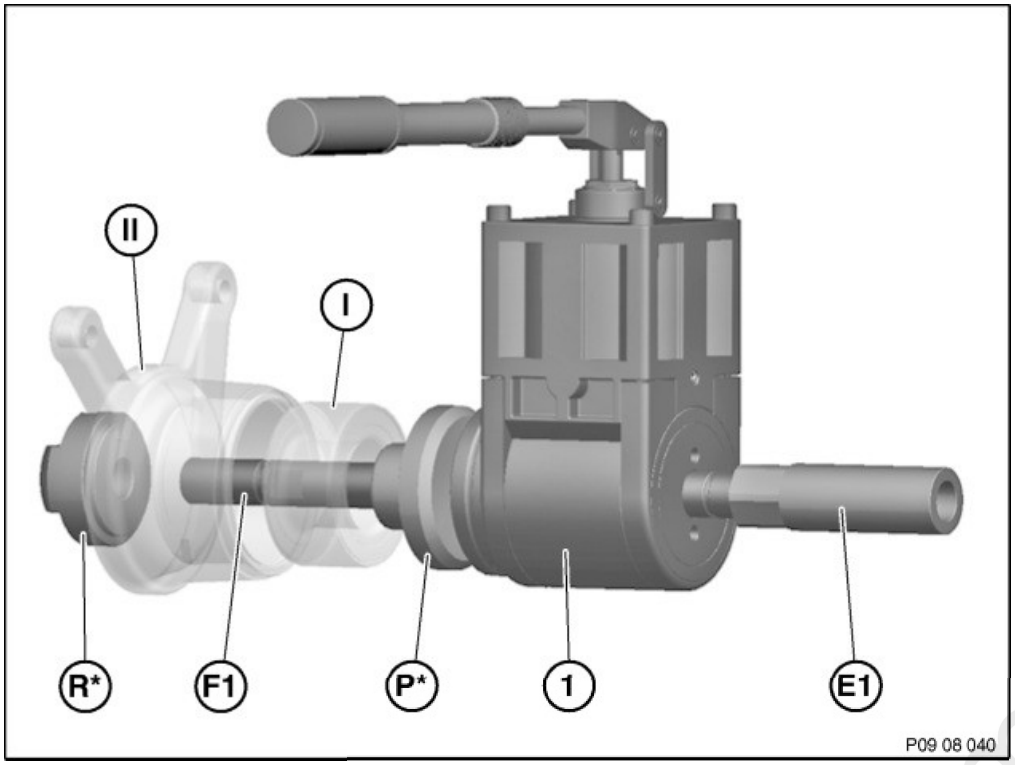
Important!

Do not reuse previously installed wheel bearing!

The black multi-pole gasket (1) must point towards the centre of the vehicle!

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The following work steps describe the insertion of the wheel bearing:



The following tools are required to insert the wheel bearing into the wheel carrier; see graphic for arrangement:

Vehicle components:

I	Wheel bearing
II	Wheel carrier

Required components for all models and types:

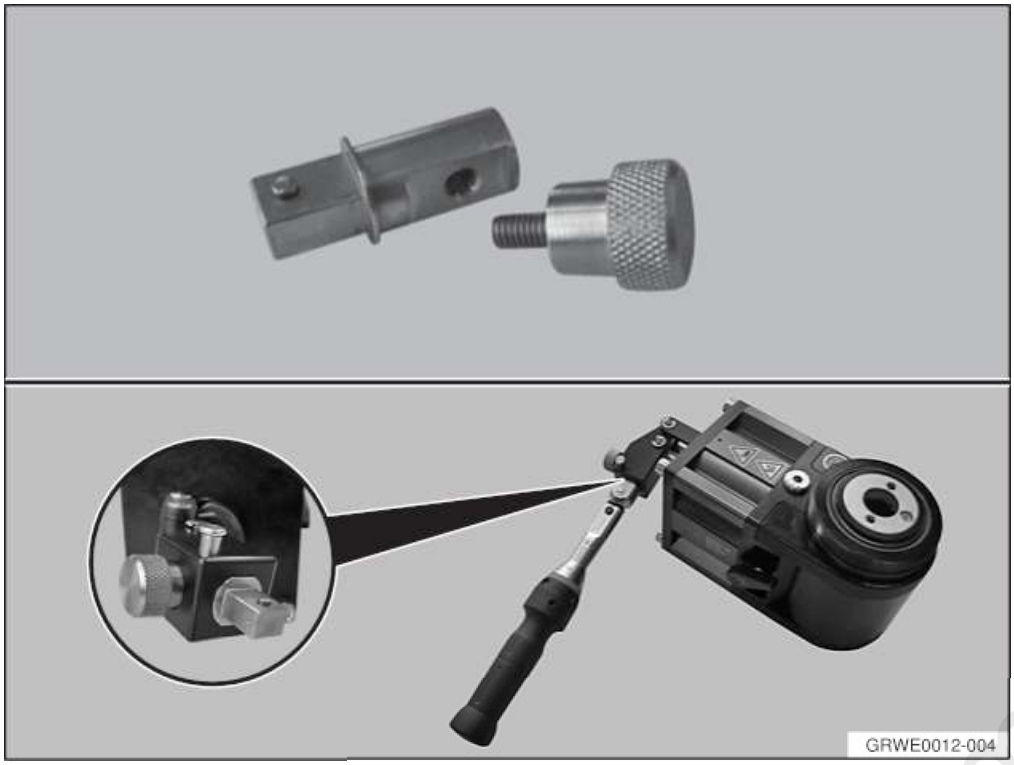
E1	Holding sleeveM24
1	Hydraulic unit
F1	Spindle M24 (length 425 mm)

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

Note:
Two variants of the wheel bearing are installed.

	Wheel bearing with inner diameter 42 mm
P4	Adapter diameter 42 / 75 mm
R4	Adapter M24 Ø 64/75 mm
	or
	Wheel bearing with inner diameter 45 mm
P5	Adapter ⌀ 45/84 mm
R6	Adapter M24 ⌀ 63/75 mm

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Mount adapter 81 64 2 318 661 to hydraulic unit using torque wrench (see graphic).
Set torque wrench to 20 Nm.
Move wheel bearing in using hydraulic tool until the torque wrench activates.

After installation:

- Adjust parking brake.

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33 00 ... Information on replacing shock absorbers

Situation:

When a shock absorber is faulty on one side (leaking, noises, limit values exceeded on the shock tester), often both shock absorbers on the axle in question are replaced.

Effect:

This is not necessary for technical reasons and causes the manufacturer not to recognize the unnecessarily removed shock absorbers as defective parts. Unnecessarily high costs for the customer can be avoided by replacing the shock absorber on one side only.

Procedure:

If one shock absorber is damaged, it is only necessary to replace both shock absorbers when the car has driven in excess of 80 000 km.

Exception: On all M-GmbH models, when a limit value is exceeded on one side, it is still necessary always to replace both shock absorbers on the relevant axle.

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37 12 310 Remove and install the shock absorber (VDM) on the rear left or right

Warning!

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

When supporting components, make sure that:

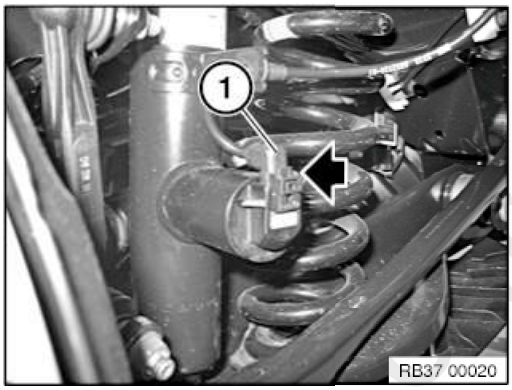
- the vehicle can no longer be raised or lowered.
- the vehicle does not lift off the locating plates on the vehicle hoist.

Important!

- Read and comply with Information on replacing shock absorbers.

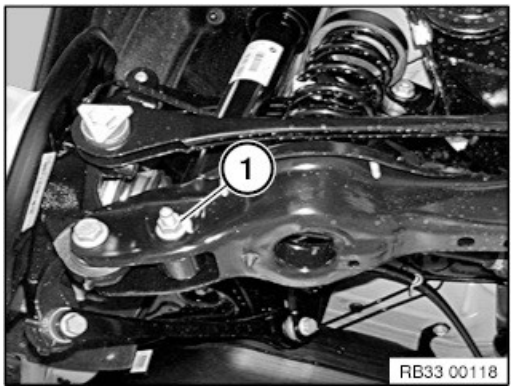
Necessary preliminary tasks:

- Remove rear wheel
- Remove camber arm cover



Unlock connector (1) in direction of arrow and pull off towards top.

Unclip wiring harness on shock absorber and place to one side.



Support wheel carrier with workshop jack.

Slacken nut (1).

Tightening torque 33 52 3AZ

Lift wheel carrier with workshop jack to the point where the screw can be removed.

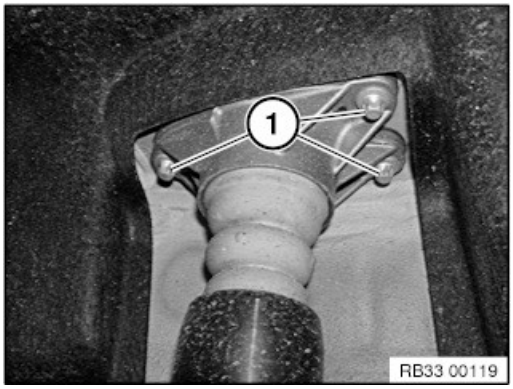
Slowly lower workshop jack until wheel carrier is suspended.

Remove workshop jack from under vehicle.

Installation note:
Renew screw and nut.

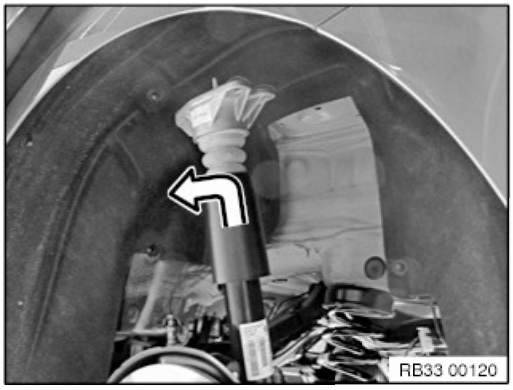
Note direction of insertion of screw.

Tighten down screw connection in normal position.

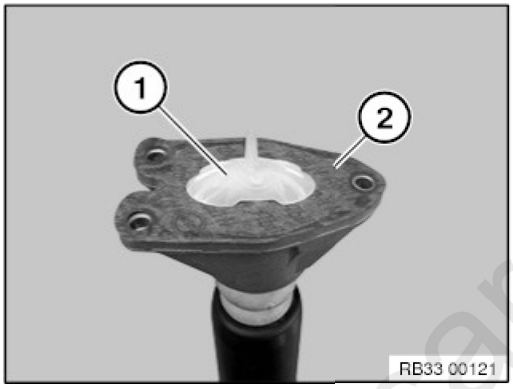


Release screws (1) on support bearing.

Tightening torque 33 52 1AZ.



Press shock absorber together and remove upward from wheel arch.



Installation note:
Check protective cap (1) and sealing washer (2) for damage and renew if necessary.

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33 52 010 Removing and installing rear left or right shock absorber

Warning!

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

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!

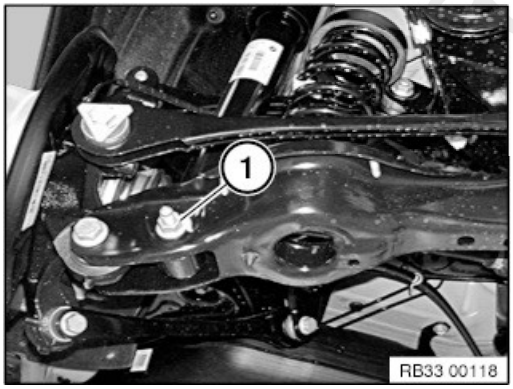
- Read and comply with Information on replacing shock absorbers.

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 work:

- Remove rear wheel.
- Remove camber arm cover.



Support wheel carrier with workshop jack.

Slacken nut (1).

Tightening torque 33 52 3AZ

Lift wheel carrier with workshop jack to the point where the screw can be removed.

Slowly lower workshop jack until wheel carrier is suspended.

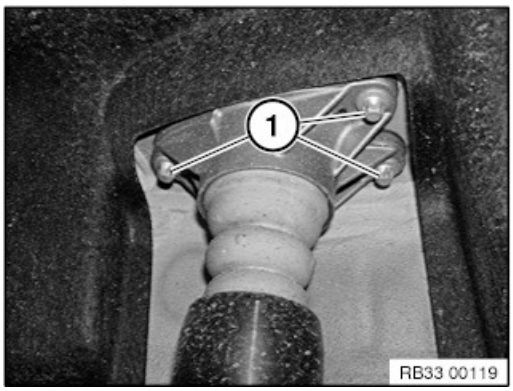
Remove workshop jack from under vehicle.

Installation note:
Renew screw and nut.

Note direction of insertion of screw.

Tighten down screw connection in normal position.

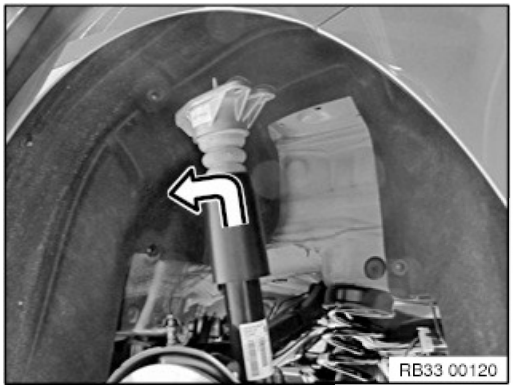
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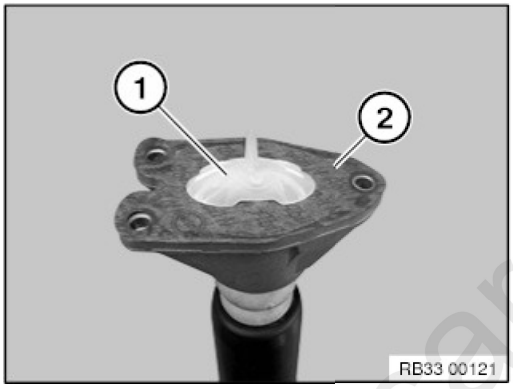
Release screws (1) on support bearing.

Tightening torque 33 52 1AZ.

Installation note:
Renew screws.



Press shock absorber together and remove upward from wheel arch.



Installation note:
Check protective cap (1) and sealing washer (2) for damage and renew if necessary.

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33 52 012 Replacing rear left or right side shock absorber

Special tools required:

- 2 355 965
- 2 355 966

Important!

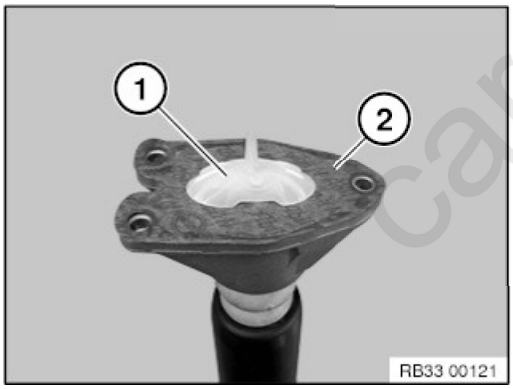
- When replacing the shock absorber, renew the auxiliary damper as well.
- Read and comply with Information on replacing shock absorbers.

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 the shock absorber.



Remove protective cap (1) and sealing washer (2).*Installation note:*
Replace the faulty components.



Release nut (1) with special tool 2 355 965 and 2 355 966 .

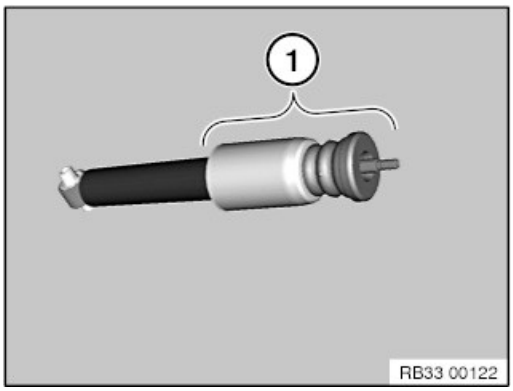
Tightening torque 33 52 2AZ.

Installation note:
Renew nut.

Impact screwdrivers are prohibited!

Risk of damage inside the shock absorber!

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Replace auxiliary damper with protective tube (1).

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

Special tools required:

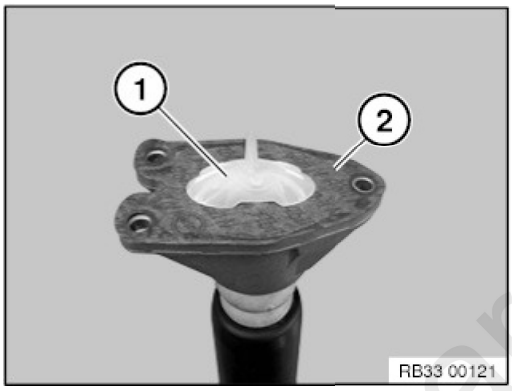
- 2 355 965
- 2 355 966

Installation note:

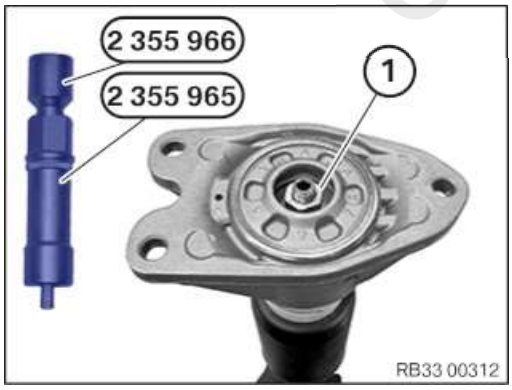
1. All screws, nuts, bolts and hose clamps removed during the repair must be replaced.
2. Retaining elements on chassis and suspension and steering parts must be replaced.

Necessary preliminary tasks:

- Remove the shock absorber.



Remove protective cap (1) and sealing washer (2).*Installation note:*
Replace the faulty components.



Use special tools 2 355 965 and 2 355 966 to undo the nut (1).

Tightening torque 33 52 2AZ.

Installation note:
Renew nut.

Impact screwdrivers are prohibited!

Risk of damage inside the shock absorber!

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33 53 000 Removing and installing / replacing rear left or right coil spring



Special tools required:

- 33 5 010
- 33 5 013
- 33 5 014
- 33 5 015
- 33 5 016
- 33 5 017
- 33 5 020
- 2 241 786
- 2 241 788



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!

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Important!

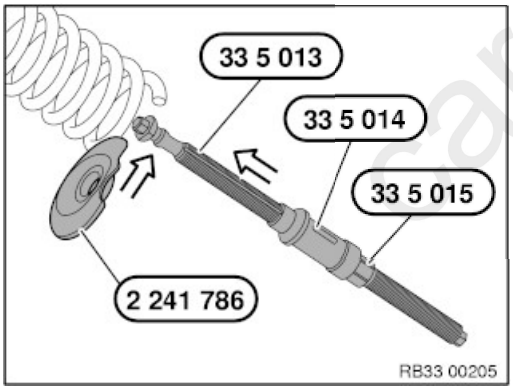
1. Use special tool approved by BMW only!
2. Prior to each use, check the special tools for defects, modifications and operational reliability.
3. Damaged/modified special tools must not be used!
4. No changes or modifications may be made to the special tools!
5. These special tools are intended solely for the purpose of tightening and relieving cylindrical and tapered suspension springs.
6. Keep special tools dry, clean and (down to the spindle) free from grease.
7. Impact screwdrivers are prohibited!
8. 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:

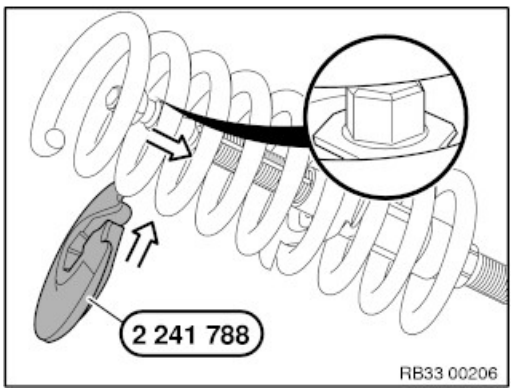
- Remove rear wheel.
- Remove camber arm cover.



Removal:

Insert lower spring cup 2 241 786 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 2 241 786 .



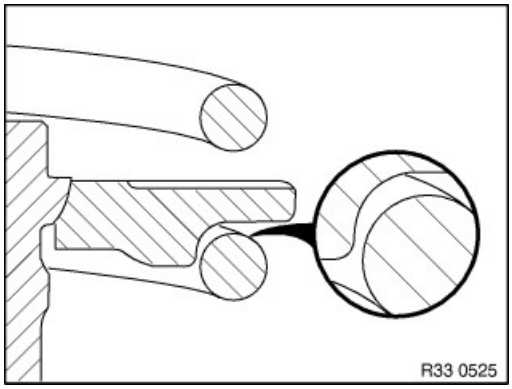
Insert top spring cup 2 241 788 sideways into coil spring and turn to the uppermost winding.

Important!

Make sure spindle (hexagonal) is correctly seated in upper spring cup 2 241 788 !

Pull spindle 33 5 013 down.

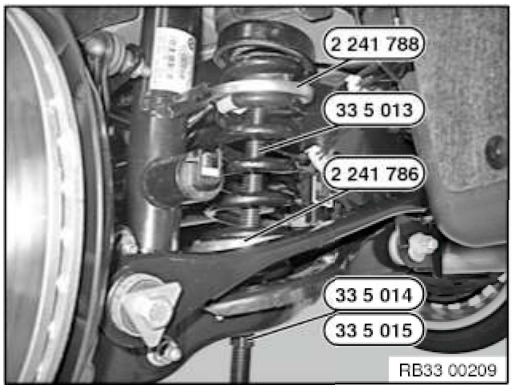
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Warning!

Danger of injury!

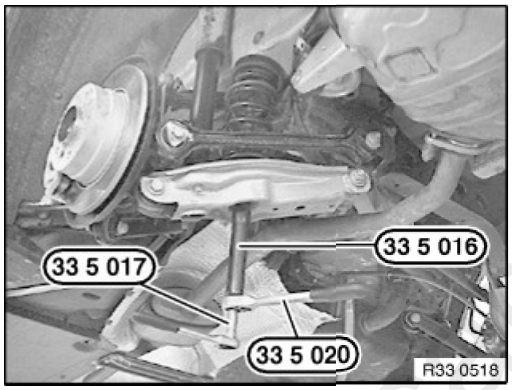
Make sure coil spring is correctly positioned in spring cups.



Important!

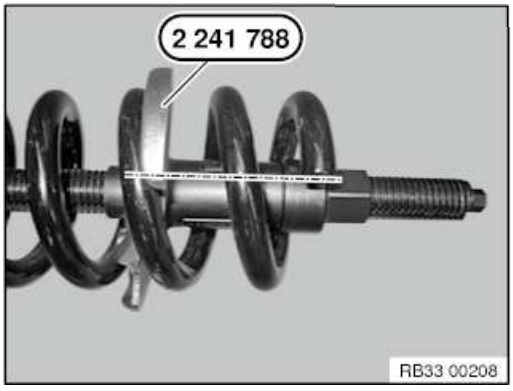
Centre special tools 2 241 786 , 2 241 788 , 33 5 013 , 33 5 014 , 33 5 015 to achieve the greatest possible contact surface with the coil spring.

Check installation position of special tools 2 241 786 , 2 241 788 , and 33 5 013 , 33 5 014 , 33 5 015 , correct if necessary.



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.



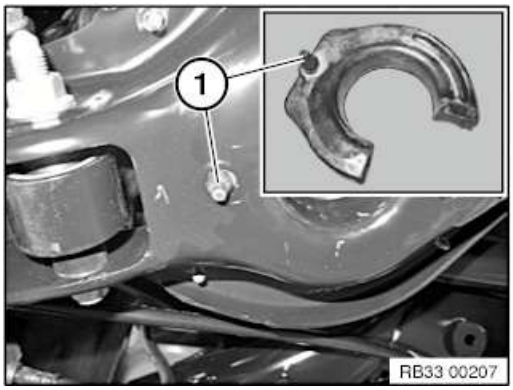
Important!

Replacement:

Relieve tension on coil spring.

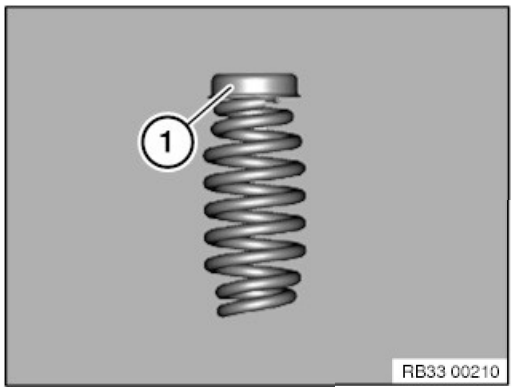
Insert spring tensioner in the new spring and position spring tensioner in the new spring so that the bottom end of coil spring (1) is flush with the opening of spring cup 2 241 786 (see drawn line)!

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Check spring pad for damage, renew if necessary.

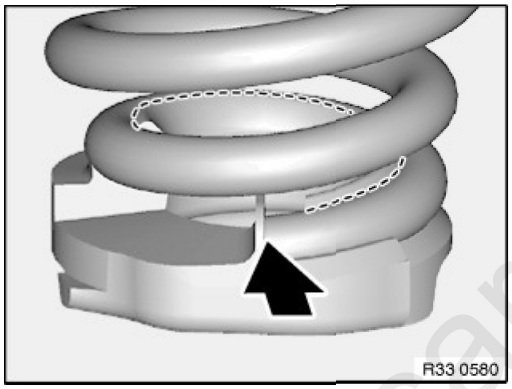
Insert spring pad in camber control arm so that plastic tab (1) is positioned in outer bore hole of camber control arm.



Installation:

Place top spring pad (1) on coil spring.

Note:
Upper spring pad (1) must come into contact with end of coil spring.

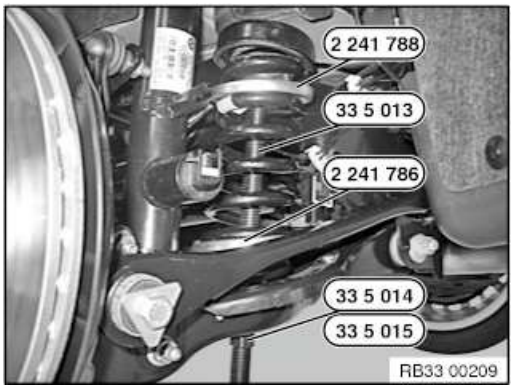


Important!

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)



Firstly insert coil spring in camber link.

Press wheel carrier slightly towards bottom by hand with second person and install coil spring with fitted spring pad at top in spring cup.

Check fitting of coil springs in spring pads (top and bottom), if necessary again align and relieve tension.

Remove special tools 2 241 788 , 2 241 786 and 33 5 013 , 33 5 014 , 33 5 015 .

After installation:

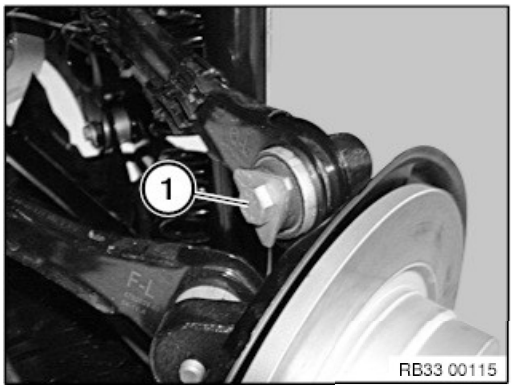
- Check headlight adjustment, correct if necessary.

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33 55 000 Removing and installing/replacing rear anti-roll bar

Necessary preliminary work:

- Undo anti-roll bar links at the anti-roll bar.
- Lower rear axle support.

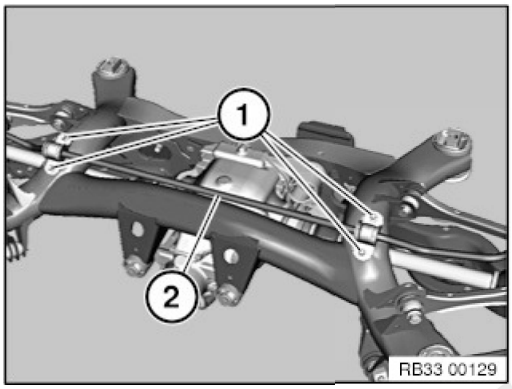


Release screw (1). (Left side only.)

Tightening torque 33 32 6AZ.

Installation note:
Replace screw.

Tighten down screw connection in normal position.



Note:
To simplify the graphic, 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 toward the left side.

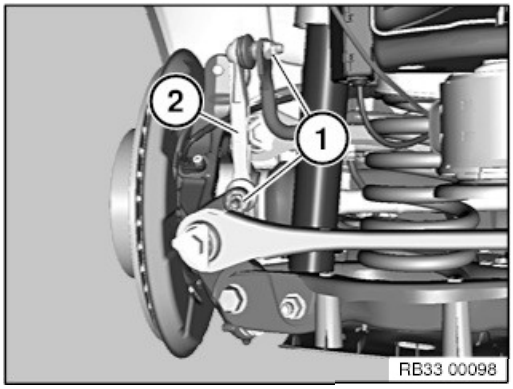
Installation note:
Check both rubber mounts for damage and replace if necessary.

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

Necessary preliminary tasks:

- Remove rear wheel.



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

Tightening torque 33 55 2AZ.

Remove anti-roll bar link (2).

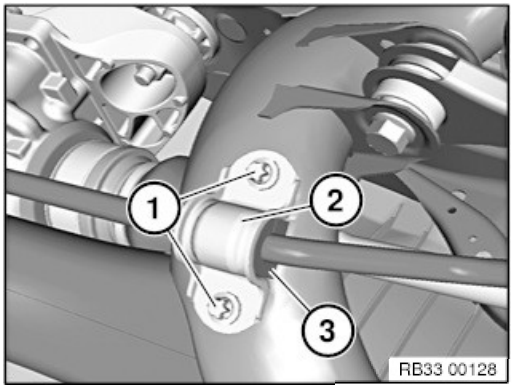
Installation note:
Replace self-locking nuts.

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33 55 021 Replacing both rubber mounts for anti-roll bar mounting

Necessary preliminary tasks:

- Lower rear axle support.



Release screws (1).

Tightening torque, 33 55 1AZ.

Remove retaining brackets (2).

Slide rubber mount (3) towards vehicle exterior and remove.

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

Clean anti-roll bar on both sides.

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

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00 00 ... Microencapsulated screws



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.

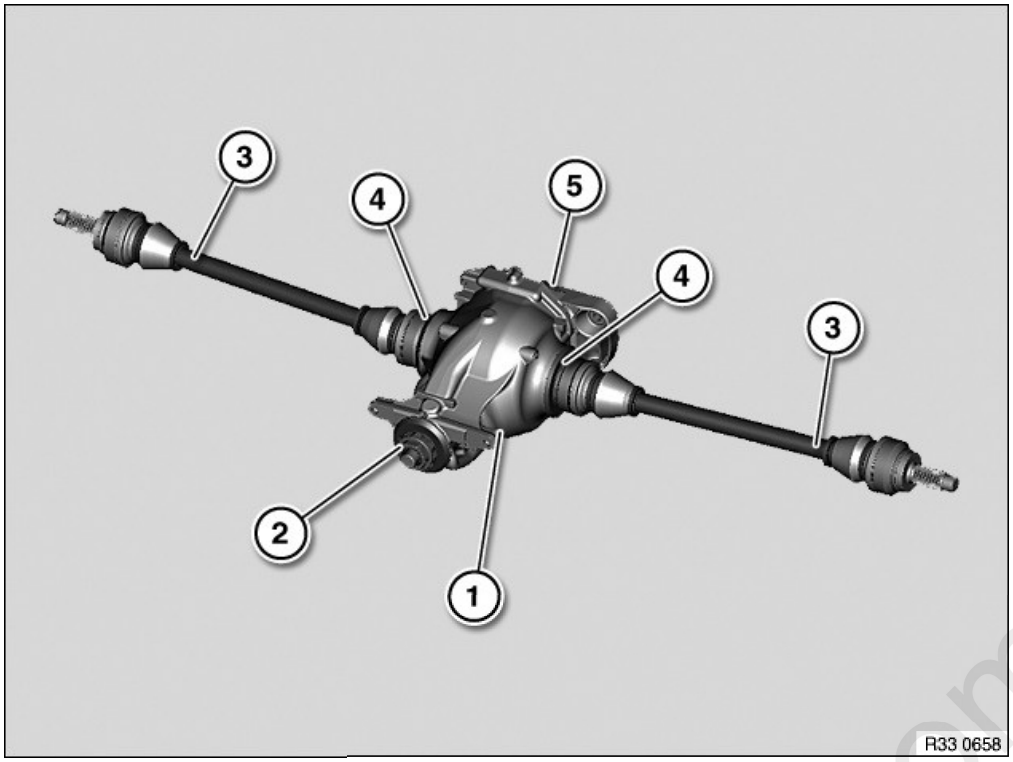


Installation note:

- 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

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33 Overview of rear axle final drive/output shafts

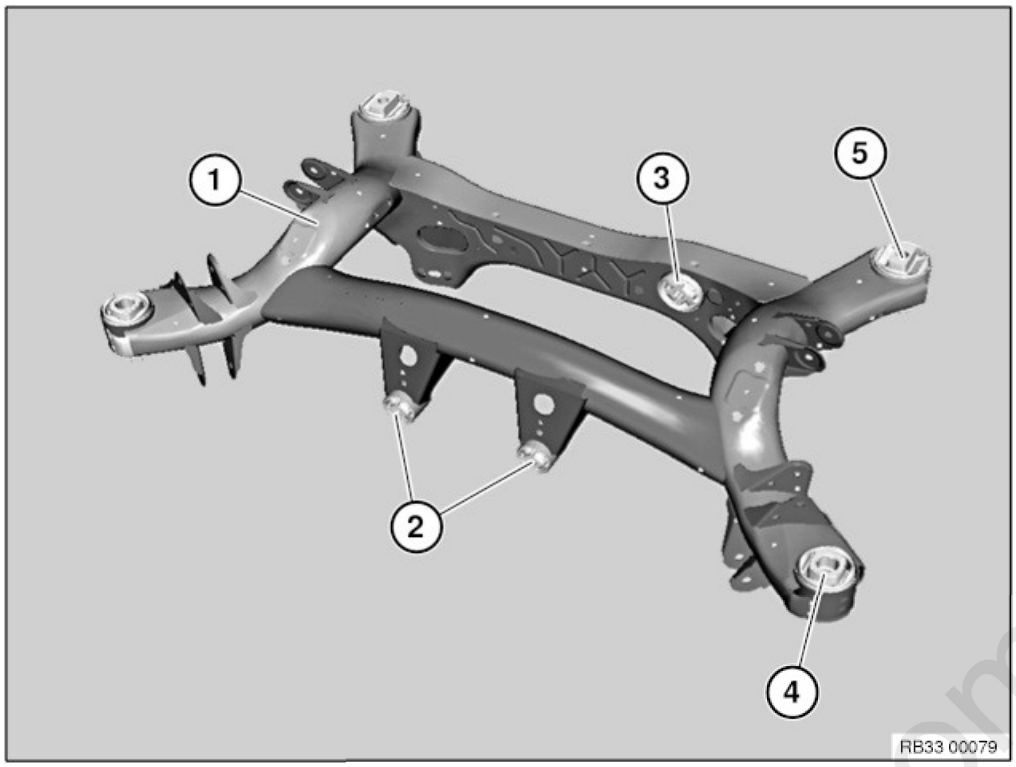


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Safety instructions & general information

1 Rear axle final drive
2 Radial shaft seal for drive flange
3 Output shaft (left/right)
4 Radial shaft seal for output shafts
5 Lid (incl. cover gasket)

33 Overview of rear axle support with rubber mounts

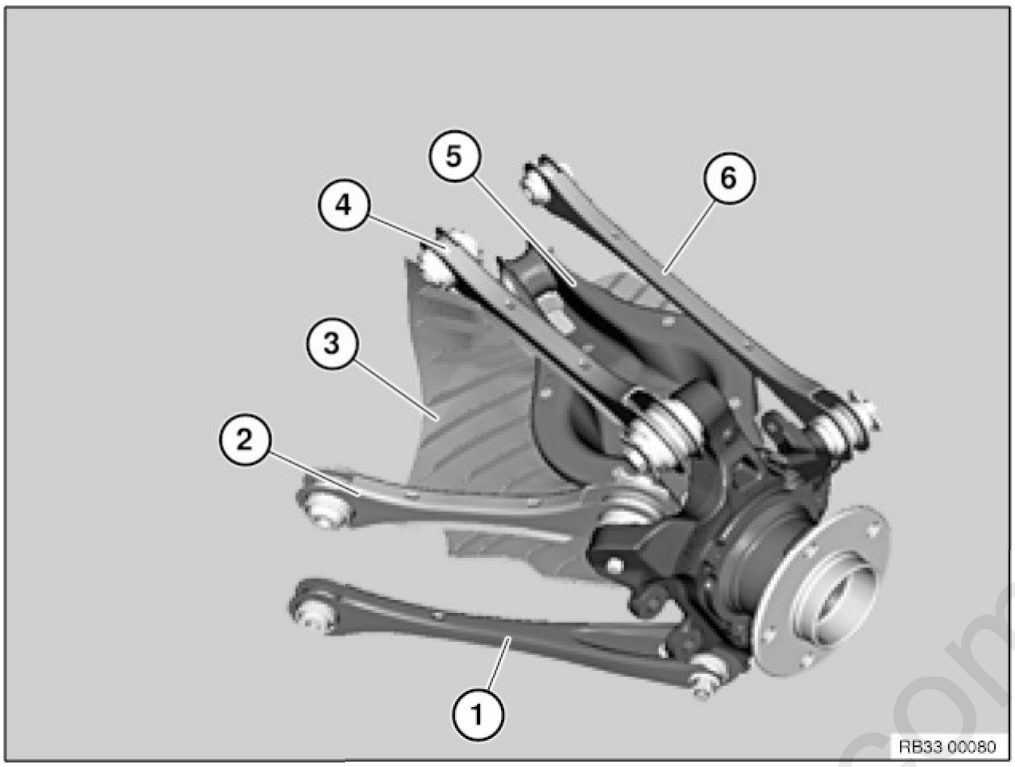


Safety instructions & general information

1 Rear axle support
2 Rear axle final drive rubber mount, front
3 Rear axle final drive rubber mount, rear
4 Rear axle support rubber mount, front
5 Rear axle support rubber mount, rear

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33 32 Overview of wishbone, camber arm, trailing arm, toe arm and control arm

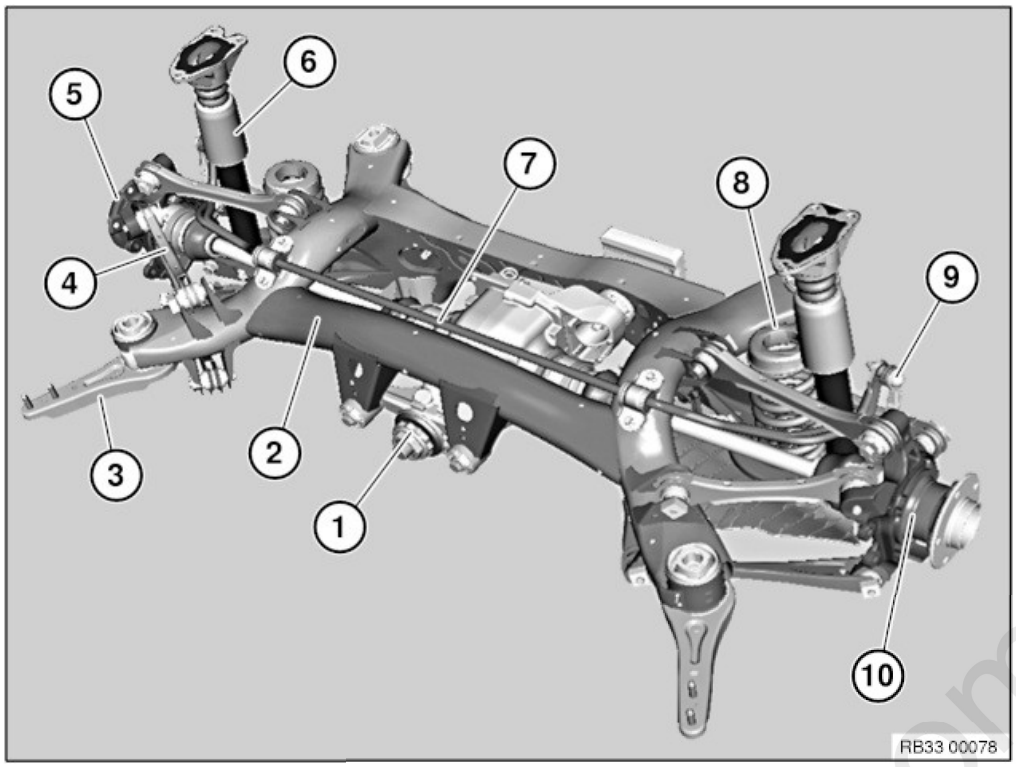


Adjusting procedure

1 Trailing arm
2 Traction strut
3 Camber arm cover
4 Wishbone
5 Camber arm
6 Toe arm

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33 Rear axle layout



Safety instructions & general information

1 Overview of rear axle final drive/output shafts
2 Overview of rear axle support
3 Tension strut
4 Overview of wishbone, camber arm, trailing arm, toe arm and control arm
5 Wheel bearing / drive flange
6 Shock absorber
7 Anti-roll bar
8 Coil spring
9 Anti-roll bar link
10 Wheel carrier
11 Adjustment work
12 Testing

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