33 00 ... Information on replacing shock absorbers

Situation:

When a shock absorber is faulty on one side (leaking, noises, limit violation 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 100 000 km.

Exception: In all models of M GmbH (for example, M3, M4, M5, M X5, M X6, M8), both shock absorbers on the corresponding axle must always be renewed even if a limit value is exceeded on one side only (MPA models not included).

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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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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!

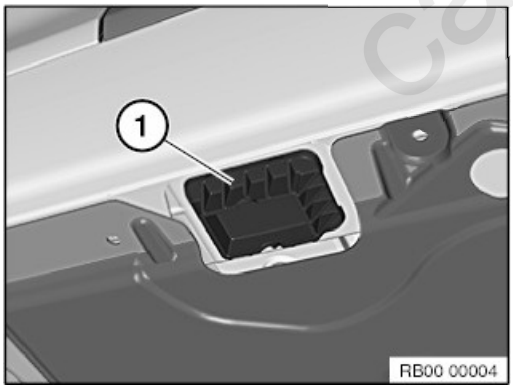
Before driving onto a vehicle hoist, make sure there is sufficient ground clearance between the vehicle hoist and the vehicle.

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



Necessary preliminary work:

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

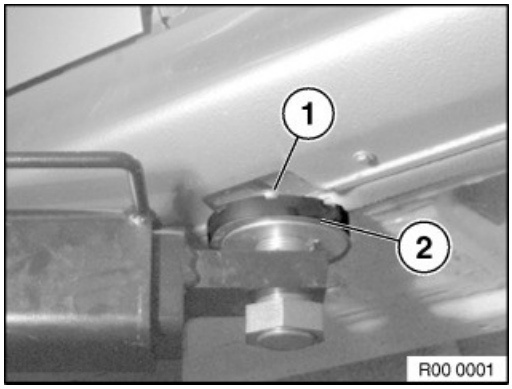


Caution!

All four jacking points (1) must be available!

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

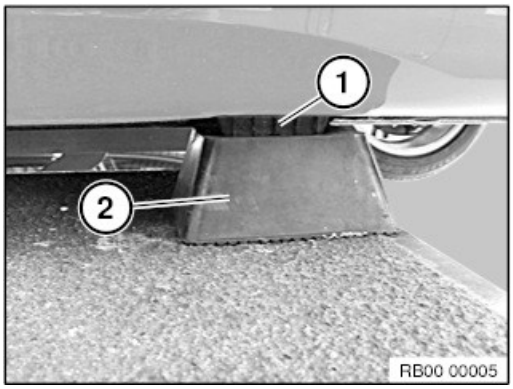
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Caution!

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.



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!

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33 10 013 Removing and installing rear axle differential of M Sport differential

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- After completion of repair work, check the transmission oil level in the rear axle differential.
- Use only the approved final drive transmission oil.

PRELIMINARY WORK

1 – Remove complete exhaust system

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

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CAUTION

Heavy component.

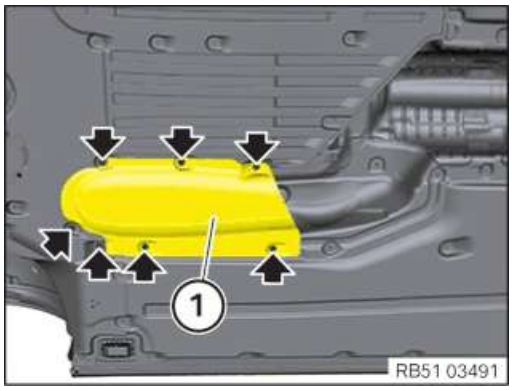
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

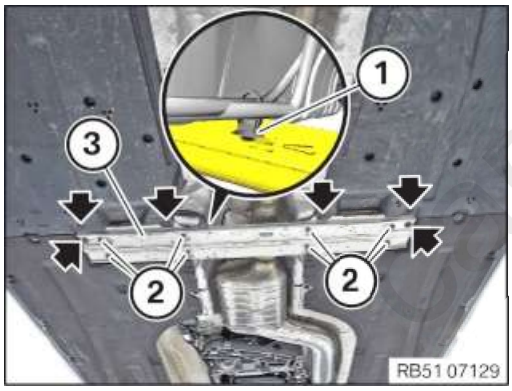
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**



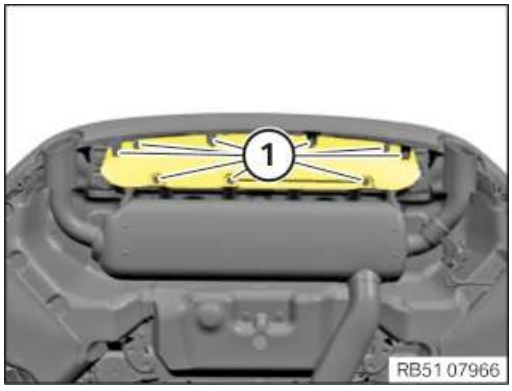
- Remove screws (arrows).

NOTICE

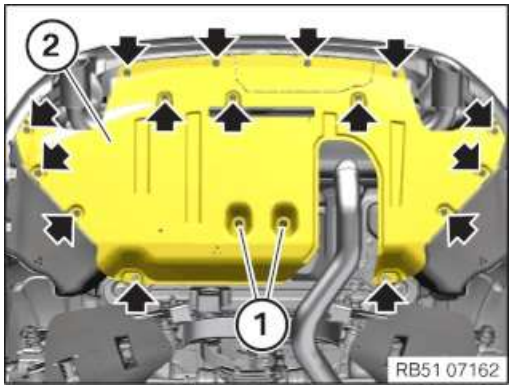
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

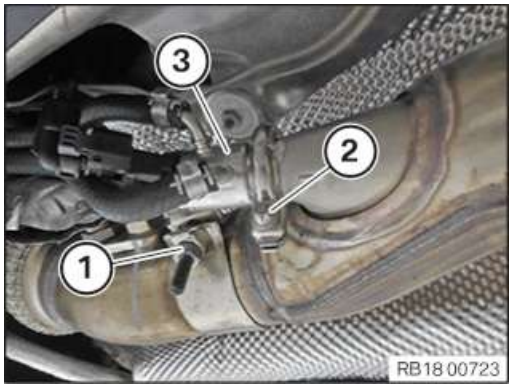
▸ **Removing the rear diffuser**



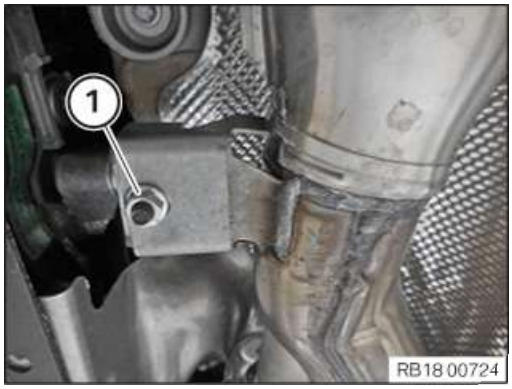
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



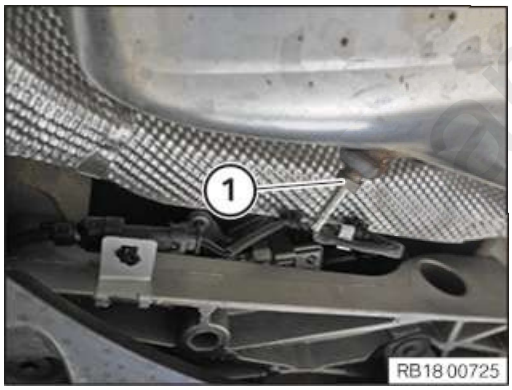
- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).



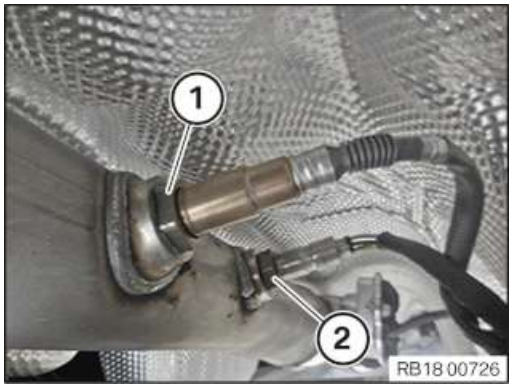
- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.



- Loosen nut (1).

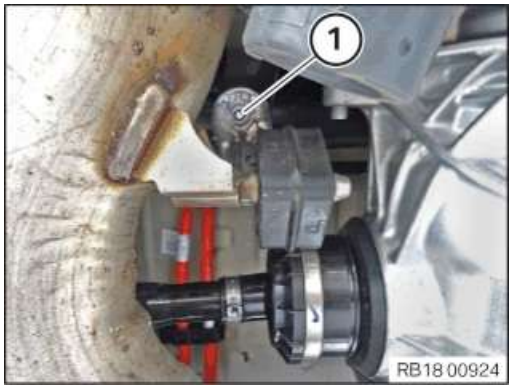


- Detach the exhaust temperature sensor (1) from the exhaust system.

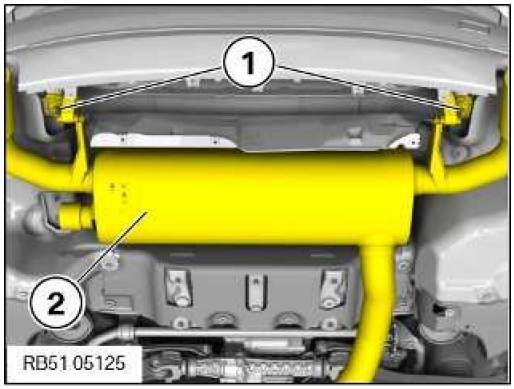


- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.

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- Release the nut (1) on the rear axle support.



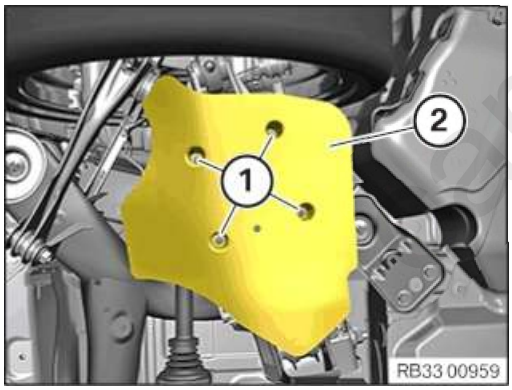
- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

2 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover of camber control arm**

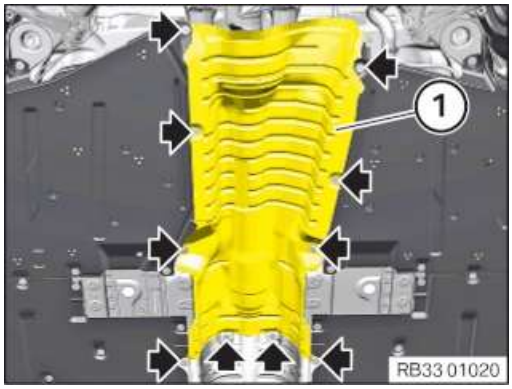


- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

3 – Remove heat shield at rear.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

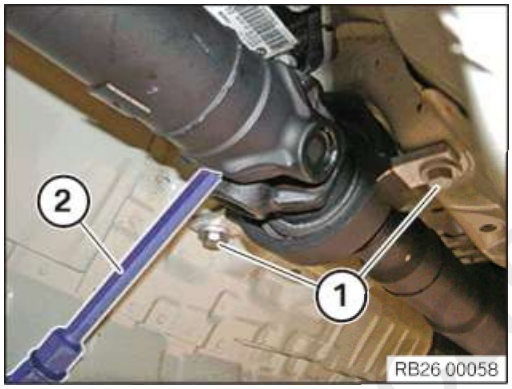
4 – Releasing the propeller shaft from the rear axle differential

RISK OF DAMAGE

Damage to propeller shaft during removal.

Non-observance of the removal guidelines for the propeller shaft on the rear axle differential may cause severe damage.

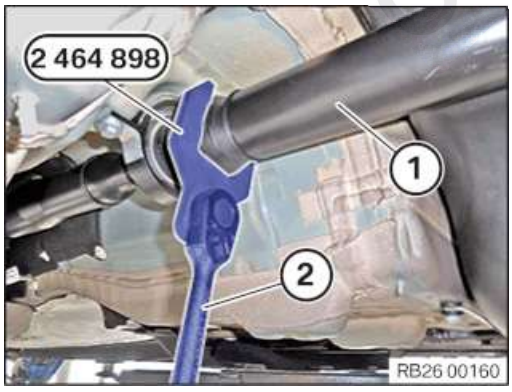
- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened on the recessed nut only and exclusively in the direction of rotation otherwise the anti-twist lock of the bi-hexagonal flange nut is damaged.
- In the event of a damaged anti-twist lock on the bi-hexagonal flange nut: Replace the rear axle differential.



- Loosen screws (1).

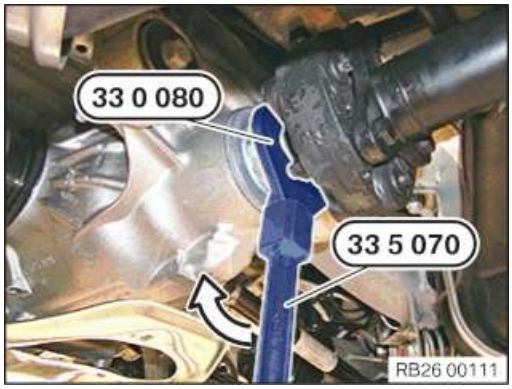
  Do not remove bolts (1) yet.
- **Version A (propeller shaft with wide universal joint):**

  Secure the propeller shaft against twisting at the centre universal joint using a suitable tool (2).



- **Version B (propeller shaft with narrow universal joint):**

  Secure the propeller shaft (1) against twisting by using the special tool 2 464 898 and a suitable tool (2) at the central universal joint.



RISK OF DAMAGE

Damage to rear axle differential.

Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

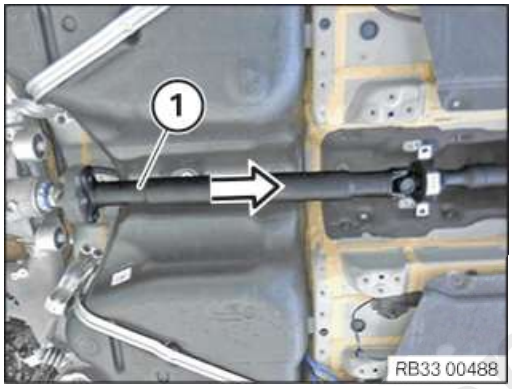
- Do not use the double hexagon head flange nut as counter support.

- Loosen the recessed nut **against** the direction of travel **in clockwise direction** using special tools 0 495 554 (33 5 070) and .

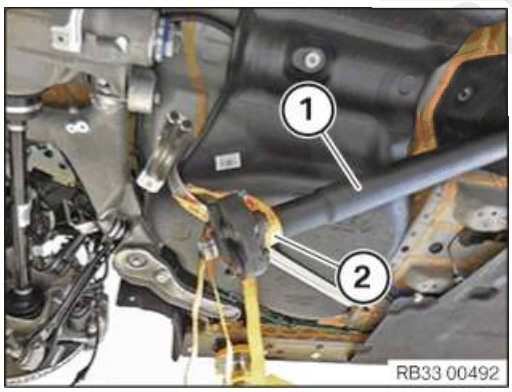
  The bi-hexagonal flange nut must not be used for counter-holding.



- Loosen screws (1) on centre mount.

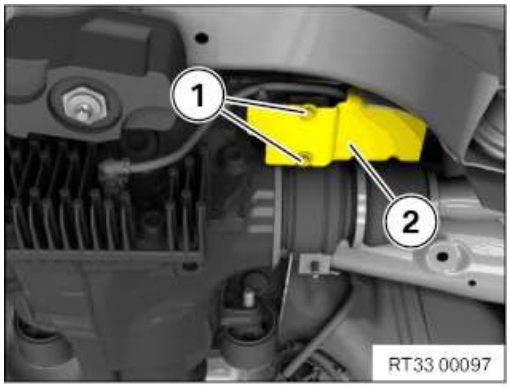


- Loosen the propeller shaft (1) from the rear axle differential in the direction of the arrow.

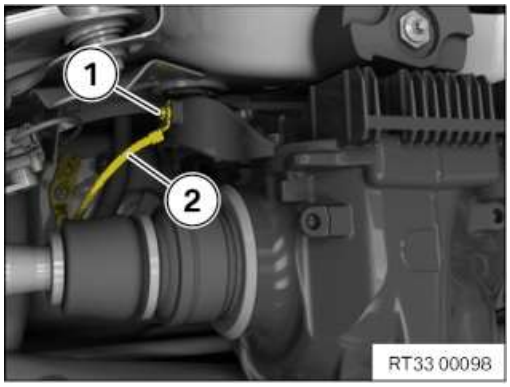


- Tie up the propeller shaft (1) using a tensioning strap (2).

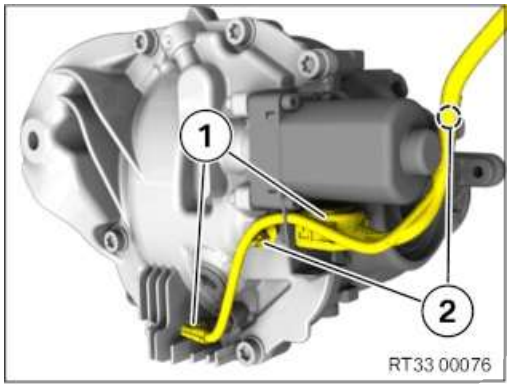
5 – Disconnecting the plug connections at the servomotor (GHAS)



- Loosen screws (1).
- Remove heat shield (2).



- Loosen screw (1).
- Detach the ground strap (2) from the rear axle differential.



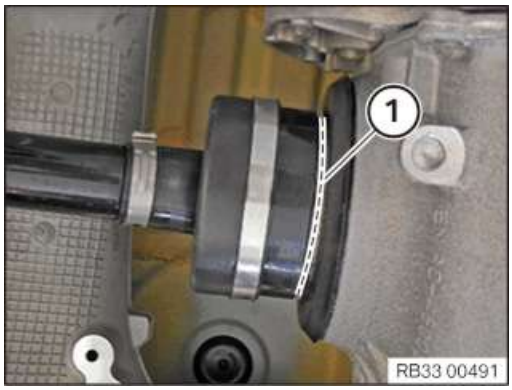
- Unlock and disconnect plug connections (1).
- Release cable from brackets (2).

6 – Detaching the output shafts from the rear axle differential

NOTICE

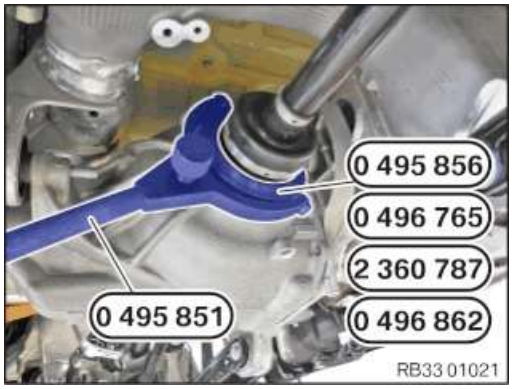
Perform the operations on the left and right side.

▸ **Detach the output shaft from the rear axle differential**



- Position the special tool at the circumferential slot (1) of the output shaft.

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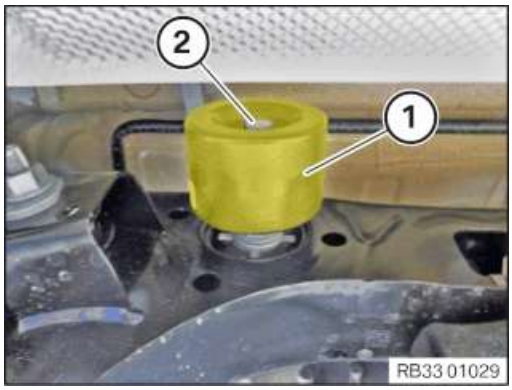
- Press out the output shaft with the special tool and the special tool , , or suitable depending on the equipment specification of the output shaft with jerky movements from the rear axle differential.

7 – Remove the vibration absorber on the rear axle differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

▸ **Remove the vibration absorber on the rear axle differential**



- Loosen screw (2).
- Remove the vibration absorber (1).

MAIN WORK

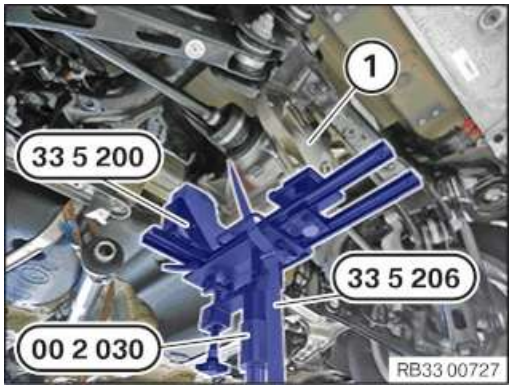
8 – Removing rear axle differential

RISK OF DAMAGE

Damage to rear axle differential.

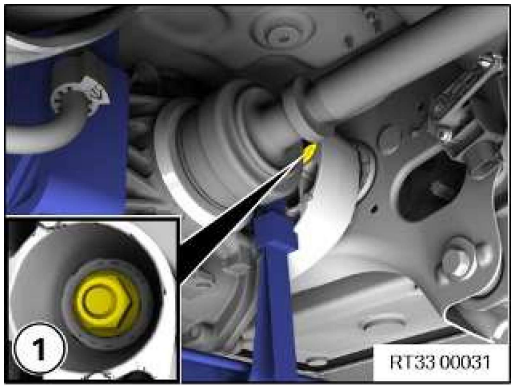
If the rear axle differential drops down, persons can be injured or the rear axle differential can be damaged.

- Secure the rear axle differential using a tensioning strap.

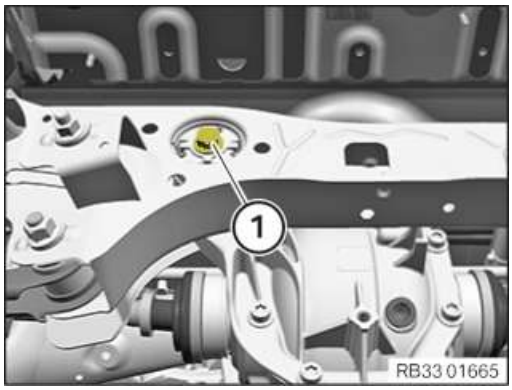


- Attach the special tool on the special tool 0 490 133 (00 2 030).
- Support the rear axle differential (1) with the special tool .
- Secure the rear axle differential (1) with the special tool on the special tool .

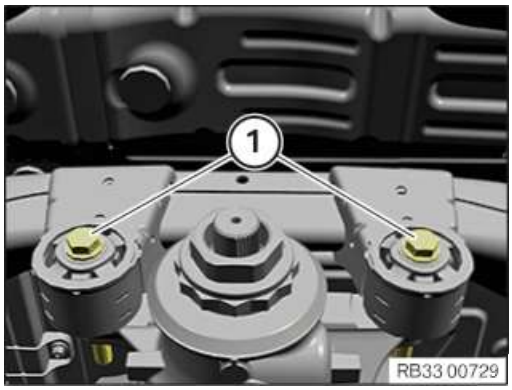
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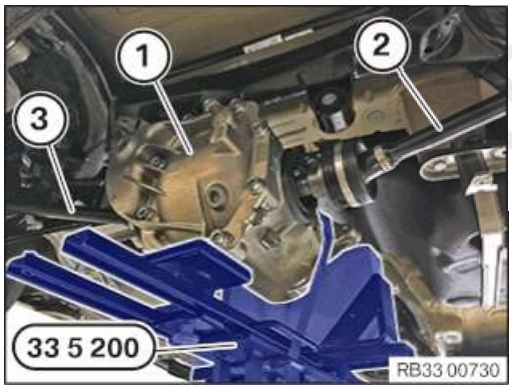
- Loosen nut (1).



- Pull the bolt (1) out of the rear axle support.



- Loosen screws (1) on rear axle support at front.



- Lower the rear axle differential (1) slightly with the special tool .
- Turn the rear axle differential (1) with the special tool towards the right and pull out the right output shaft (2).
- Then pull out the left output shaft (3).
- Tie up the output shafts (2) and (3).

  Do not leave the output shafts hanging on the joint!
- Completely lower the rear axle differential (1) and remove.

9 – Replace the radial shaft seal for the output shaft on the left and right

NOTICE

Perform the operations on the left and right side.

▸ **Replace the radial shaft seal for the output shaft**

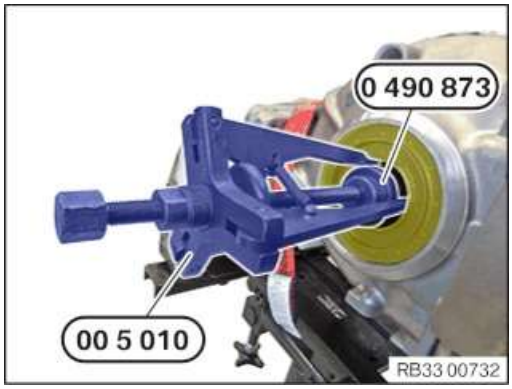
rdiagn.com

TECHNICAL INFORMATION

Radial shaft seal ring are equipped with an installation protection ring. The installation protection ring is used to protect the sealing lip when installing the output shaft.

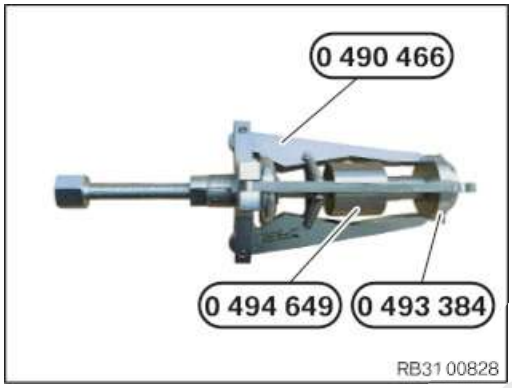
TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.



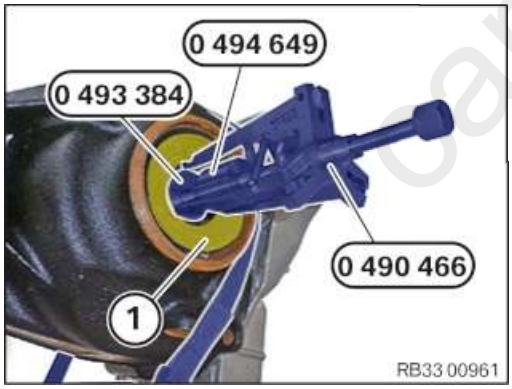
- **Version A:**

  Pull out and remove the radial shaft seal with special tools and .

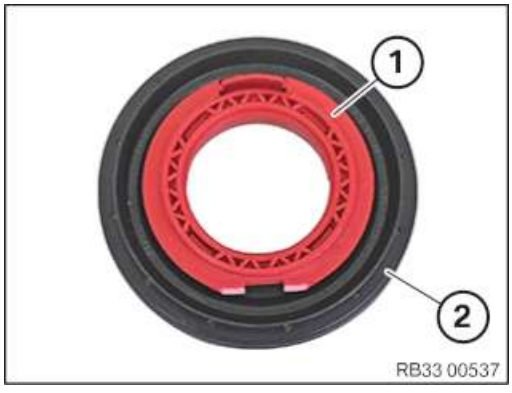


- **Version B:**

  Prepare the special tool with the special tools 0 494 649 (21 2 230) (without the screw) and .



- Pull out the radial shaft seal (1) with special tools , 0 494 649 (21 2 230) and and remove it.



- Renew radial shaft seal (2).

  Parts: Radial seal

- Remove the installation protection ring (1) from the radial shaft seal (2).

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- Coat the housing sheet metal flange and the sealing lips of the radial shaft seal with the approved rear axle differential oil.
- Strike the radial shaft seal with the special tool or until it reaches the limit position.
- Remove the special tool or .



- Insert the installation protection ring (1) into the radial shaft seal (2).
- Make sure installation protection ring (1) does not slip out of radial shaft seal (2).

10 – If reusing: Checking the left and right output shaft and replacing the circlip

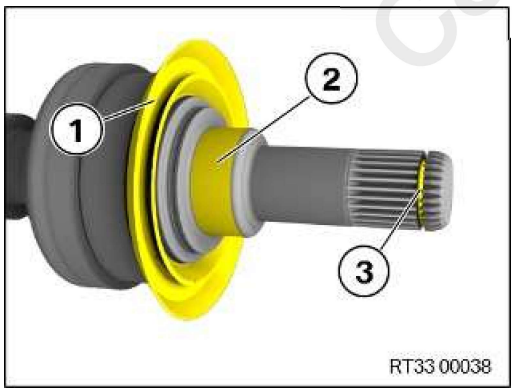
NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **If reusing: Check the output shaft and replace the circlip**

TECHNICAL INFORMATION

It is essential to renew the circlip of the output shaft.



TECHNICAL INFORMATION

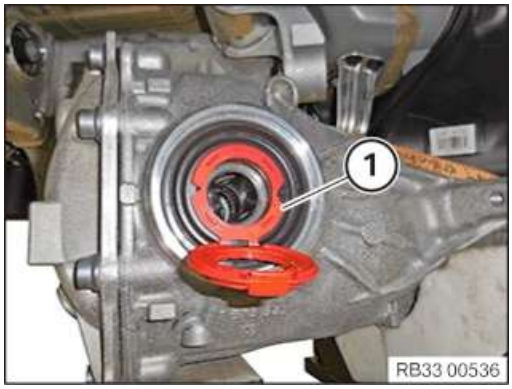
Extreme force being required during installation is an indication that the component is damaged or deformed. Check component and replace if necessary.

- Check the gearing of the output shaft for damage and renew damaged parts if necessary.
- Check the dust plate (1) for damage and renew damaged parts as needed.
- Renew the circlip (3).

  Parts: Circlip
- Coat the contact surface (2) using approved rear axle differential oil.

11 – Installing the rear axle differential

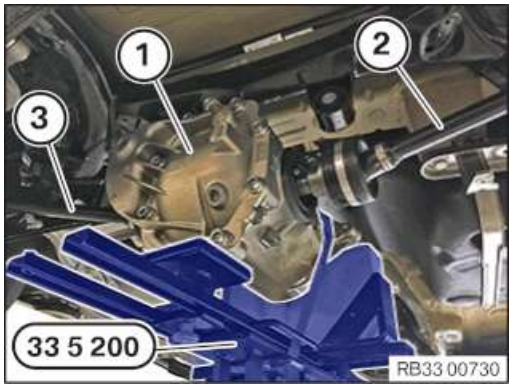
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NOTICE

Perform the operations on the left and right side.

- Fold open the assembly protection ring (1).



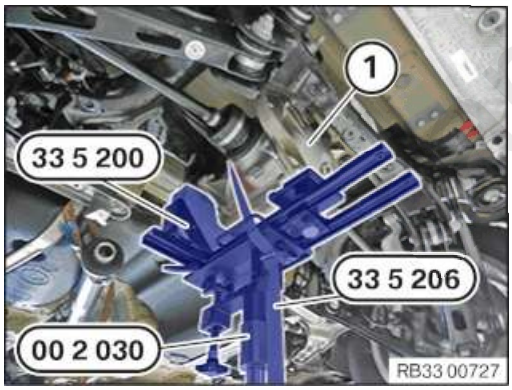
- Raise the rear axle differential (1) somewhat with the special tool .
- Insert the left-hand output shaft (3) into the rear axle differential (1).
- Turn rear axle differential (1) using special tool to right and insert output shaft at right (2) into rear axle differential (1).



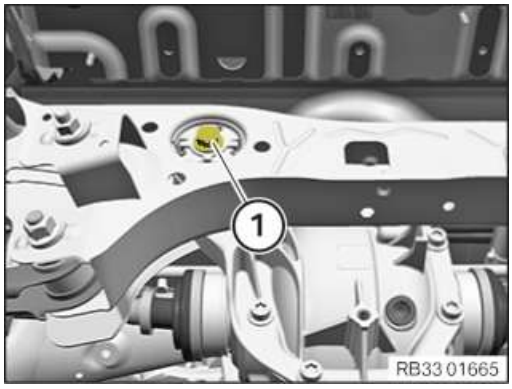
NOTICE

Perform the operations on the left and right side.

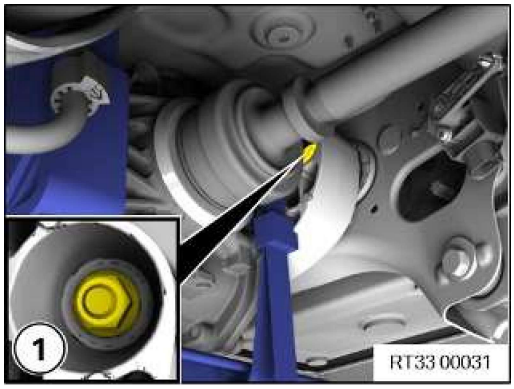
- Pull on the tab of the installation protection ring (1) until one of the two predetermined breaking points breaks.
- Pull out and dispose of the installation protection ring (1).



- Lift the rear axle differential (1) using special tools and 0 490 133 (00 2 030) and position on the rear axle support.
- Make sure that the special tool does not get jammed between the rear axle differential (1) and a dust plate of an output shaft.

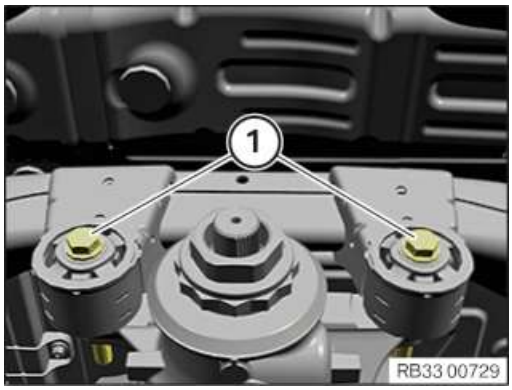


- Insert screw (1).



- Renew nut (1).

  Parts: Nut
- Prescrew the nut (1).

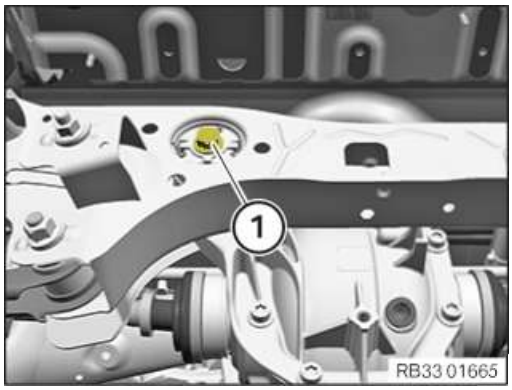


- Renew screws (1).

  Parts: Screws
- Screw in the screws (1) by hand and tighten.

Rear differential to rear axle carrier, front

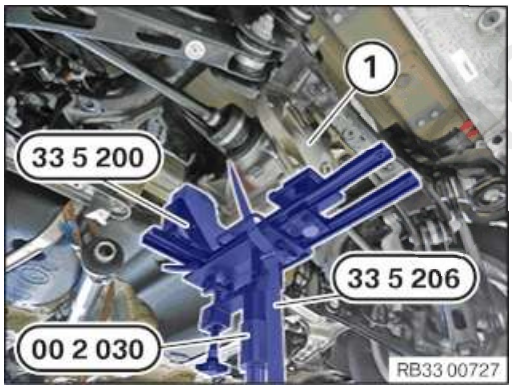
M12	Renew screw.	Tightening torque	100 Nm



- Tighten down screw (1). In doing so, counter support at the nut.

Rear differential to rear axle carrier, rear

M14	Renew nut.	Tightening torque.	175 Nm



- Loosen and remove the tensioning strap from the rear axle differential (1).
- Lower the special tools 0 490 133 (00 2 030) and and set them aside.

POSTPROCESSES

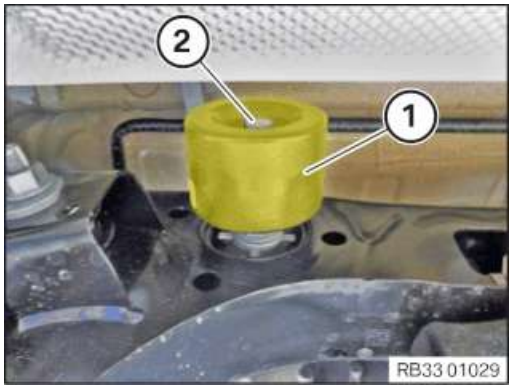
12 – Install the vibration absorber on the rear axle differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

▸ **Install the vibration absorber on the rear axle differential**

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- Position the (1) vibration absorber.
- Renew the screw (2).

  Parts: Screw
- Position and tighten the screw (2).

Vibration absorber to rear axle

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle

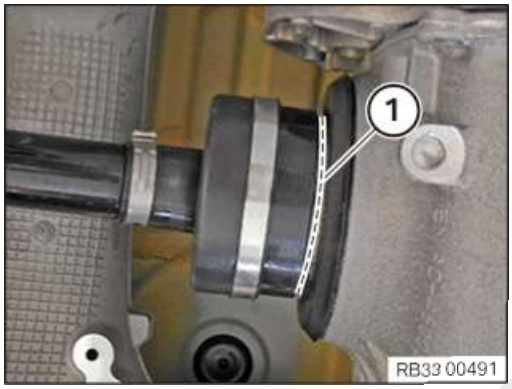
M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

13 – Secure output shafts on the rear axle differential

NOTICE

Perform the operations on the left and right side.

▸ **Secure the output shaft on the rear axle differential**



- Position the following special tool on the slot running around the output shaft (1).



- Drive the output shaft into the rear axle differential with a suitable special tool , or and a rubber mallet.

14 – Check/top up oil level in the rear axle differential

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

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CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- Only use approved oil in the rear axle differential.

TECHNICAL INFORMATION

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

▸ **Supplement the rear axle differential oil change/oil level with oil gun**

Your browser doesn't support HTML5 video.

TECHNICAL INFORMATION

The training video illustrates the methodology for changing the rear axle differential oil using the oil gun special tool.

The training video does not replace the repair instructions.

The training video is not subject to the update service.

No liability can be accepted for printing or other faults. Subject to changes of a technical nature

- Follow repair instructions!

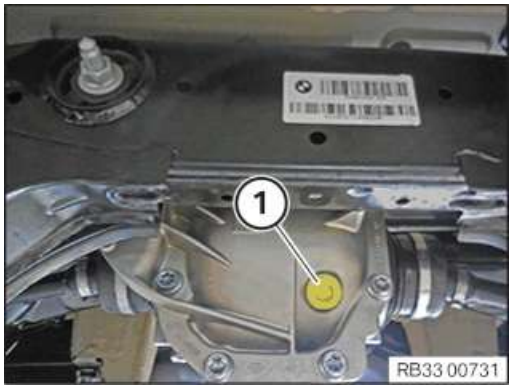


TECHNICAL INFORMATION

With the specified capacity, it is imperative to take into account the capacity of the hose of the special tool.

- Use the special tool 2 460 340 to top up the rear axle differential oil.

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- Open the oil filler plug (1).
- Check oil level:

  The oil level at the rear axle differential has been adjusted correctly once a small quantity of oil escapes from the opening of the oil filler plug.

  If necessary, top up final drive transmission oil.

Rear axle differential oil: Capacity overview (all)

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l
Transmission oil: Technically suitable rear axle differential oils	

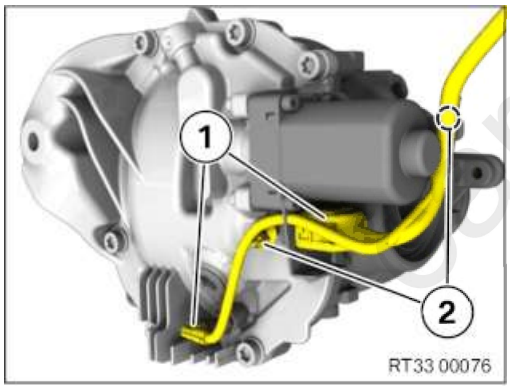
- Replace the oil filler plug (1).

  Parts: Oil filler plug
- Screw in and tighten the oil filler plug (1).

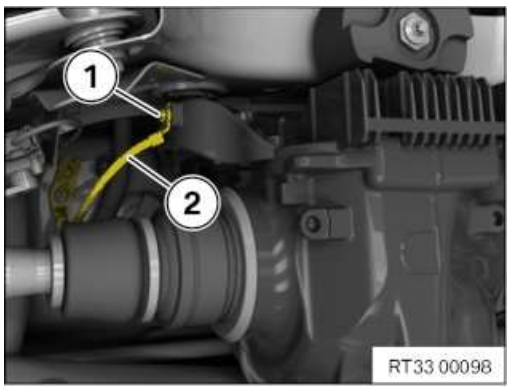
Rear axle differential oil filler plug

M22	Renew the oil filler plug.	Tightening torque	60 Nm

15 – Connecting the connector to the servomotor (GHAS)



- Connect connectors (1) and lock.
- Secure the cables on the brackets (2).

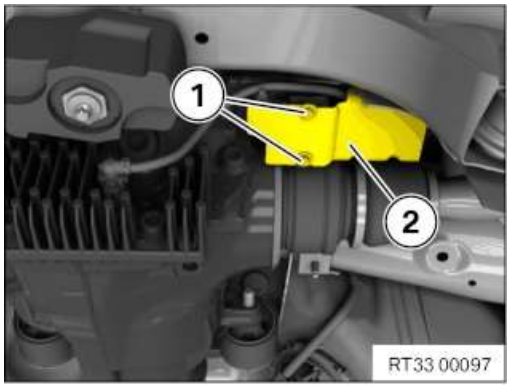


- Position the ground strap (2) on the rear axle differential.
- Tighten down screw (1).

Ground strap to rear axle differential

M6x20		Tightening torque	8 Nm

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- Position the heat shield (2).
- Tighten the screws (1).

Heat shield to servomotor

M5x10		Tightening torque	5 Nm

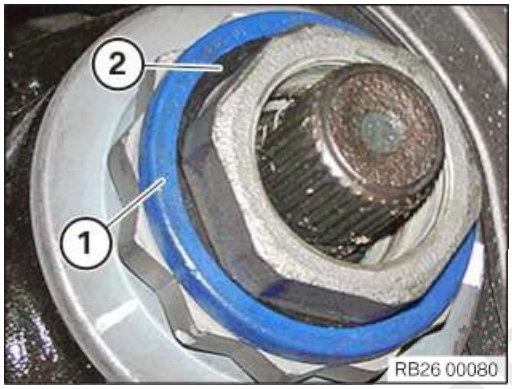
16 – Securing the propeller shaft on the rear axle differential

RISK OF DAMAGE

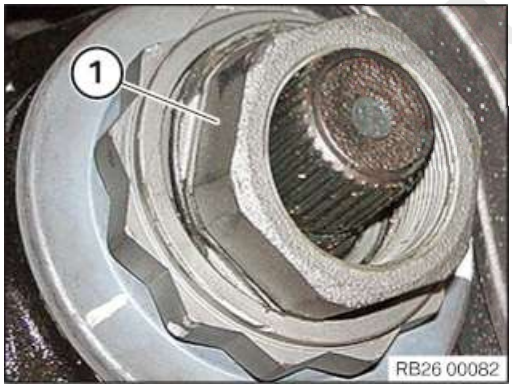
Damage to the propeller shaft during installation.

Non-observance of the installation guidelines for the propeller shaft on the rear axle differential may cause severe damage.

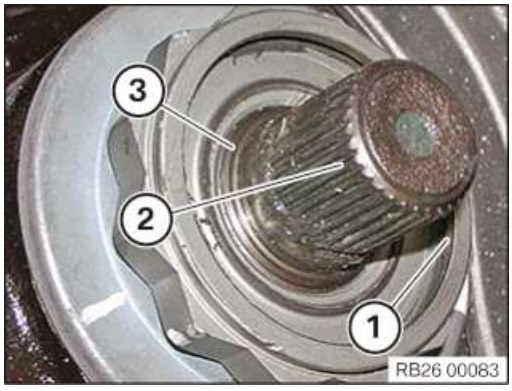
- Always renew the recessed nut on the rear axle differential. Screw locking must be available.
- Strictly observe a hardening time of minimum 3 h after screwing the recessed nut. The hardening time may be longer at lower temperatures.



- Remove the retaining ring (1) and the seal (2).



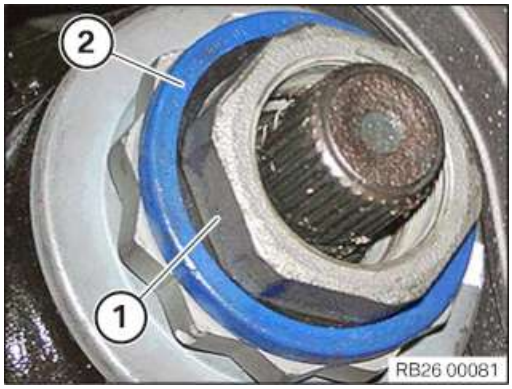
- Remove recessed nut (1).



- Clean and degrease the recessed collar (1) the flange nut, the gearing on the bevel pinion (2) and the taper (3) without any residue.
- Top up the collar insert (1)with grease.

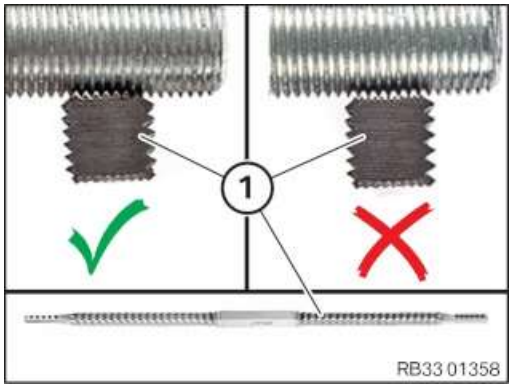
Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Renew the recessed nut (1), seal and retaining ring (2).

  Parts: Recessed nut, seal, retaining ring
- Insert recessed nut (1) including gasket into collar insert of the flange nut.
- Mount the retaining ring (2).



- Use a thread file (1) to remove the adhesive residue on the thread.
- **Make sure that the thread pitch is correct!**



RISK OF DAMAGE

Damage to the output flange.

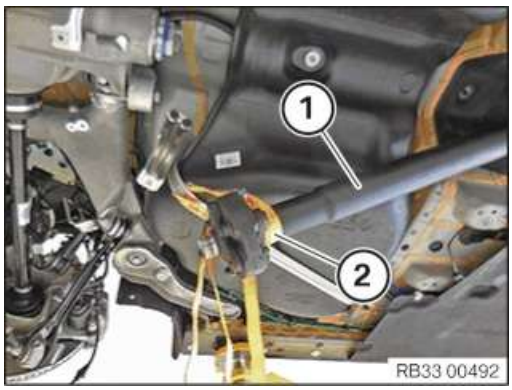
Failure to observe the greasing specifications may lead to damage on the output flange.

- Do not contaminate the thread of the output flange with grease.

- Remove any adhesive residue on thread (1) of the flange and clean it.
- Clean gearing (2).
- Grease gearing (2).

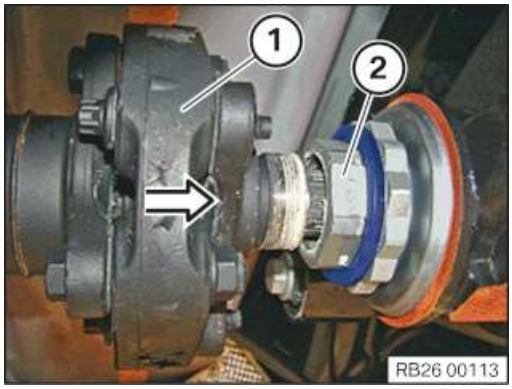
Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754

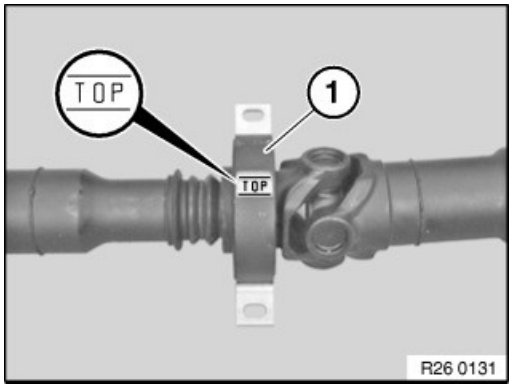


- Loosen the tensioning strap (2) from the propeller shaft (1).

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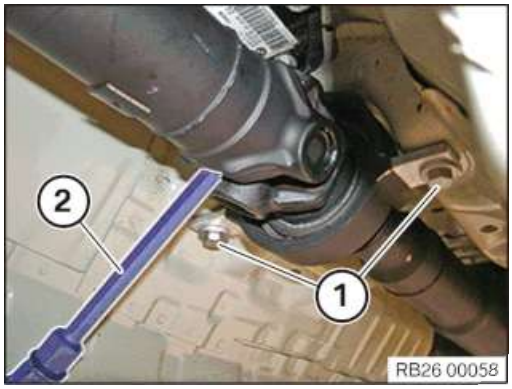


- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Screw and secure recessed nut (2) at least 2 thread starts onto propeller shaft (1) by hand.



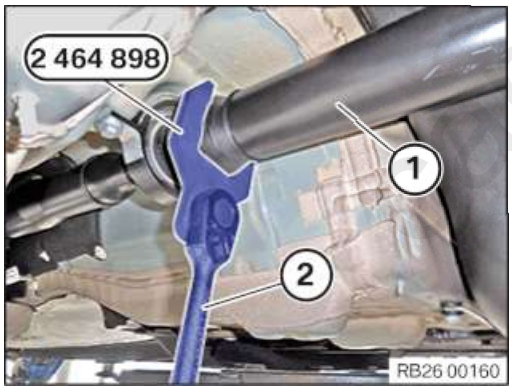
- Position the centre mount (1).

  Position the centre mount (1) with the designation TOP at the top in the transmission tunnel.



- Screw in the screws (1) by a few turns.
- **Version with a broad universal joint:**

  Secure the propeller shaft from twisting with a suitable tool (2) on the centre universal joint.



- **Version with a narrow universal joint:**

  Secure the propeller shaft (1) from twisting with the special tool 2 464 898 and a suitable tool (2) on the centre universal joint.

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RISK OF DAMAGE

Damage to the flange nut.

Failure to observe the installation specifications may lead to serious damage to the flange nut and the rear axle differential.

- Do not use the double hexagon flange nut as counter support.
- Screw in the recessed nut within 5 minutes.

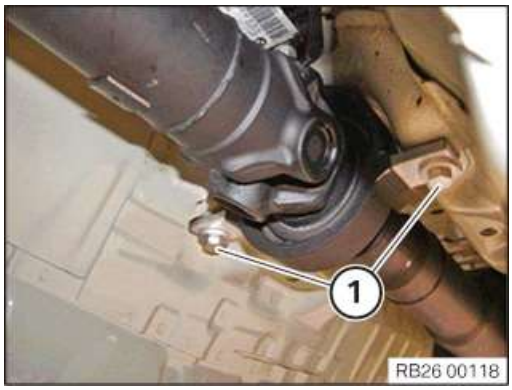
- Tighten recessed nut **counter-clockwise in the direction of the arrow** using special tools 0 495 554 (33 5 070) and .

Propeller shaft on the rear axle differential

Insert nut	Replace insert nut.	Tightening torque	100 Nm

- **After the propeller shaft is installed and the recessed nut is screwed in, strictly observe a hardening time of minimum 3 hours.**

  Do not move or push the vehicle during this time!



- Tighten the screws (1).

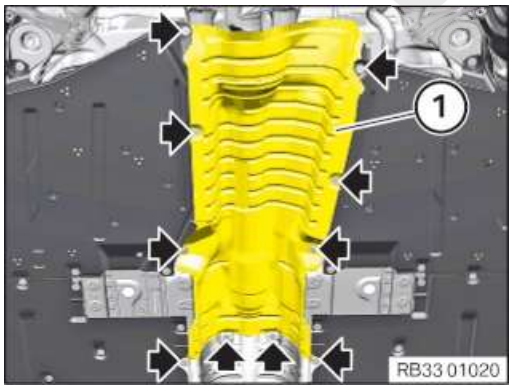
Centre mount to body

M8		Tightening torque	19 Nm

17 – Installing the rear heat shield

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

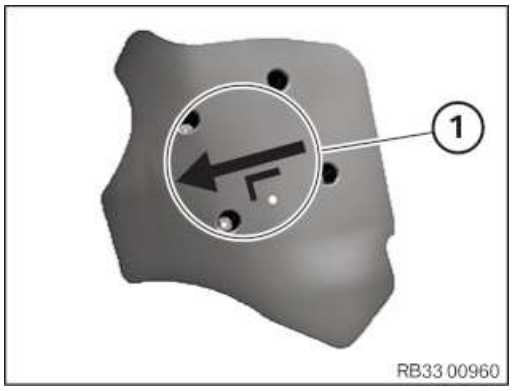
18 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

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▸ **Installing the cover of the camber control arm**



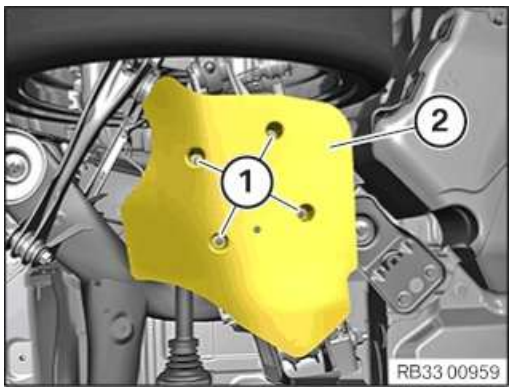
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

19 – Installing the complete exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

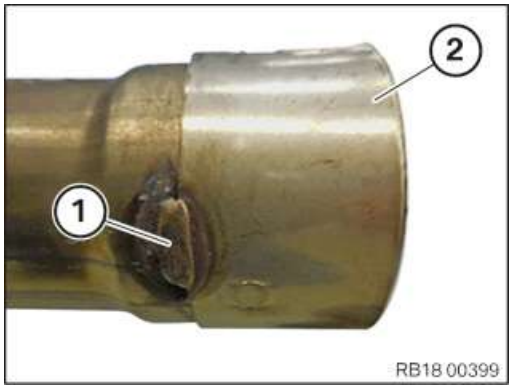
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TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.



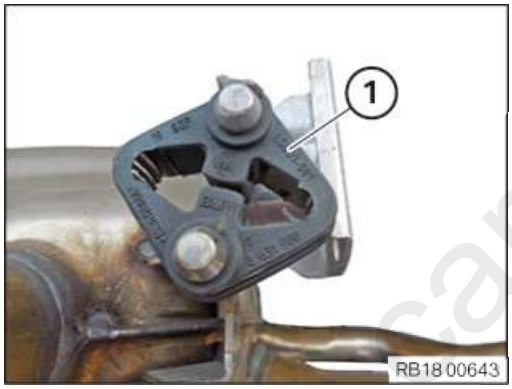
CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

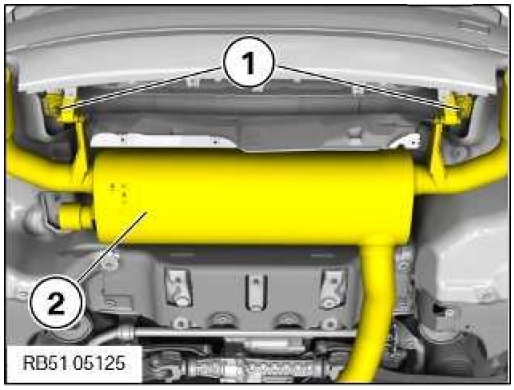


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

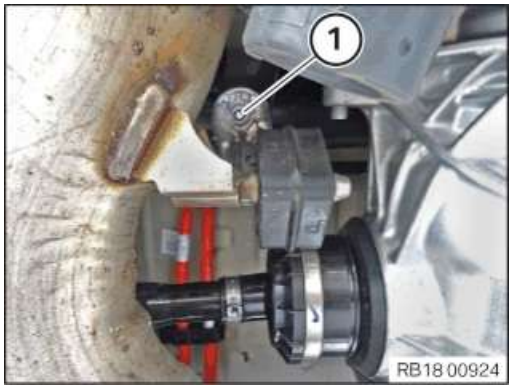


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

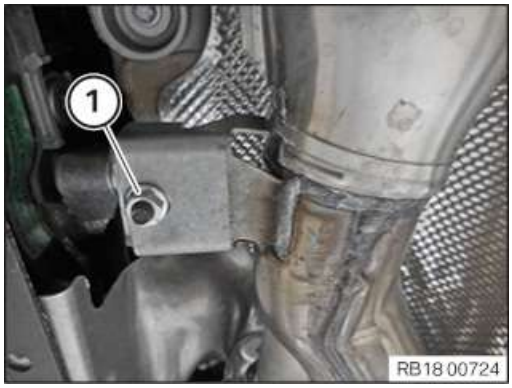


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

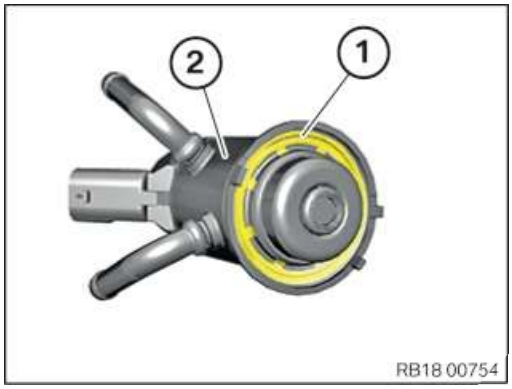
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

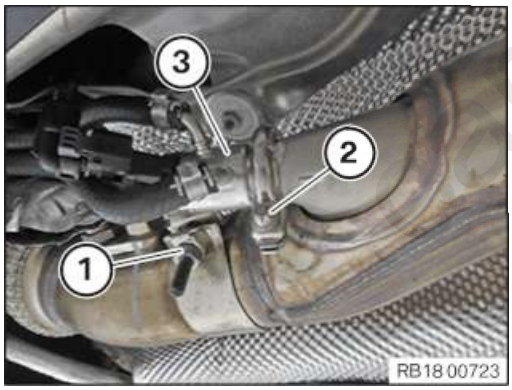
Exhaust system to transmission

M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

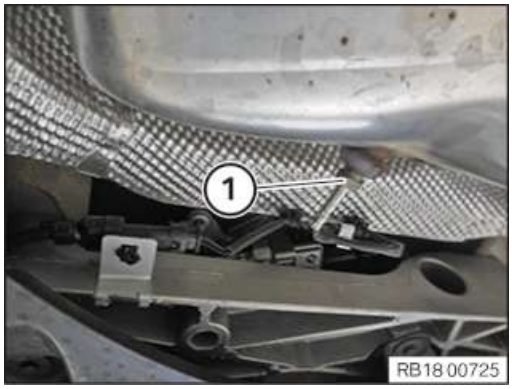
- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

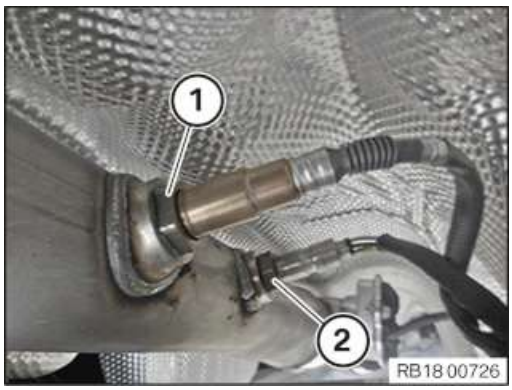
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- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm



- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

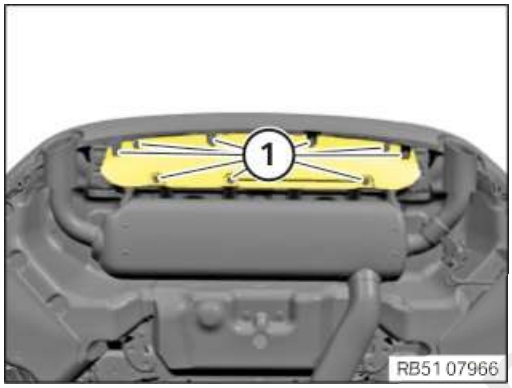
Sensor		Tightening torque	50 Nm

- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

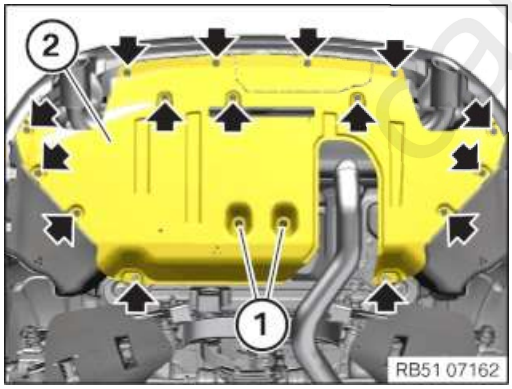
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

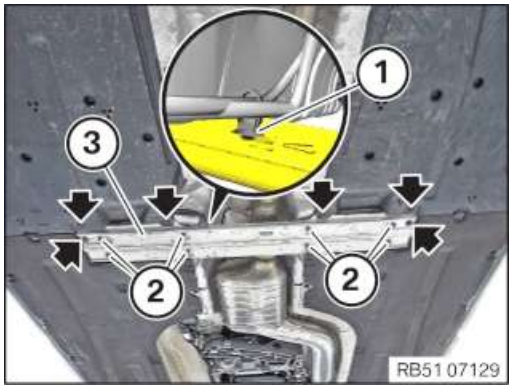
- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**

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- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

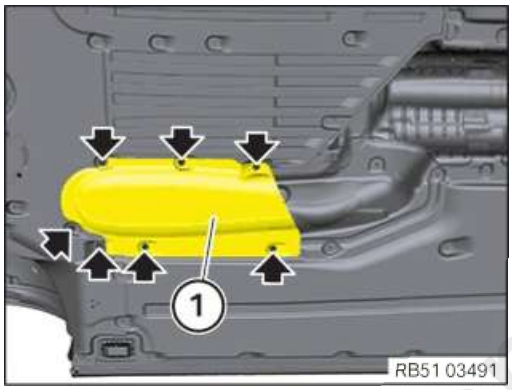
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Additional Information

Overview of Tightening Torques

Rear differential to rear axle carrier, front — Used in step 11

M12	Renew screw.	Tightening torque	100 Nm

Rear differential to rear axle carrier, rear — Used in step 11

M14	Renew nut.	Tightening torque.	175 Nm

Vibration absorber to rear axle — Used in step 12

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle — Used in step 12

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

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Rear axle differential oil filler plug			Used in step 14
M22	Renew the oil filler plug.	Tightening torque	60 Nm

Ground strap to rear axle differential			Used in step 15
M6x20		Tightening torque	8 Nm

Heat shield to servomotor			Used in step 15
M5x10		Tightening torque	5 Nm

Propeller shaft on the rear axle differential			Used in step 16
Insert nut	Replace insert nut.	Tightening torque	100 Nm

Centre mount to body			Used in step 16
M8		Tightening torque	19 Nm

Heat shield to undercarriage			Used in step 17
Screws and nuts		Tightening torque	3 Nm

Cover to camber control arm			Used in step 18
M6	Replace nuts.	Tightening torque	6 Nm

Rear silencer to body / bumper support			Used in step 19
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 19
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 19
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 19
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 19
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 19
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 19
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 19
Sensor		Tightening torque	55 Nm

Diffuser / underbody panelling			Used in step 19
Nuts and screws		Tightening torque	3 Nm

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Connecting support to tunnel Used in step 19

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling Used in step 19

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Overview of Special Tools

2 464 898 Open-end spanner



Common Used in step 416

Usage	Open-end spanner SW50 for disassembly and installation of the propeller shaft on rear axle differential. The silhouette foil is included in the delivery specification.
Included in the tool or work	
Storage location	A7
Replaced by	
In connection with	
SI-Number	01 19 18 (579)

0 495 554 (33 5 070) Extension



Common Used in step 416

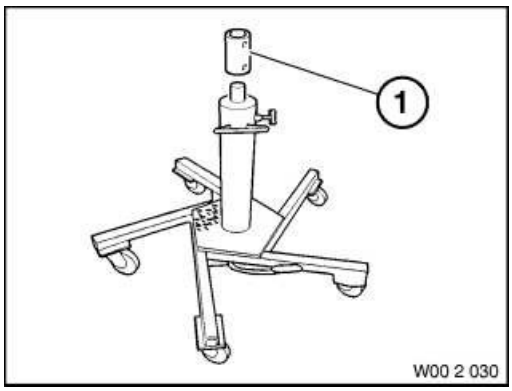
Usage	Pull-out extension for 33 5 040, 33 5 050, 33 5 060.
Included in the tool or work	
Storage location	A18
Replaced by	
In connection with	
SI-Number	01 21 06 (300)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 495 592 (33 5 071)		**Extension** (Extension (1 item)) discontinued, can only be ordered using complete tool	

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0 490 133 (00 2 030) Device



Common Used in step 811

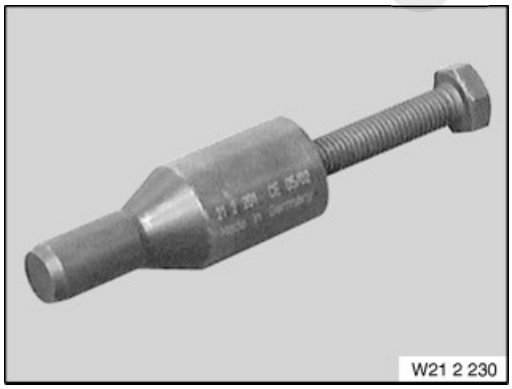
Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

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0 494 649 (21 2 230) Mandrel



Common Used in step 9

Usage	(clutch centring drift) With screw M10 (G transmission)
Included in the tool or work	
Storage location	C45
Replaced by	
In connection with	
SI-Number	01 03 03 (960)

2 460 340 Pump



Common	Used in step 14
Usage	Oil gun to fill rear axle differentials or differentials with 1 litre containers.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 09 18 (553)

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Overview Technical Data

Rear axle differential oil: Capacity overview (all)	Used in step 14
168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	

Operating materials	Used in step
1.1 Grease for propeller shaft inserted	16
1.0 Grease for propeller shaft (flexible disc centring and sliding piece)	16

Operating materials	Used in step
Main group 33	14

33 10 016 Removing and installing rear axle final drive

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- After completion of repair work, check the transmission oil level in the rear axle differential.
- Use only the approved final drive transmission oil.

PRELIMINARY WORK

1 – Remove complete exhaust system

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WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

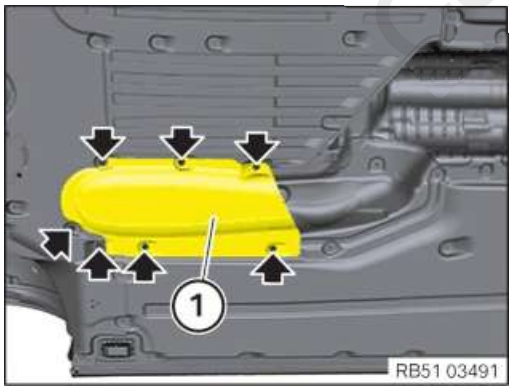
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

NOTICE

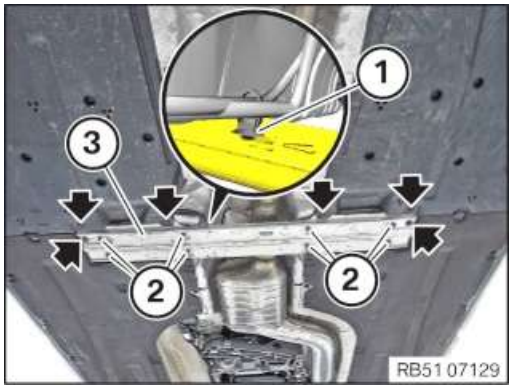
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**

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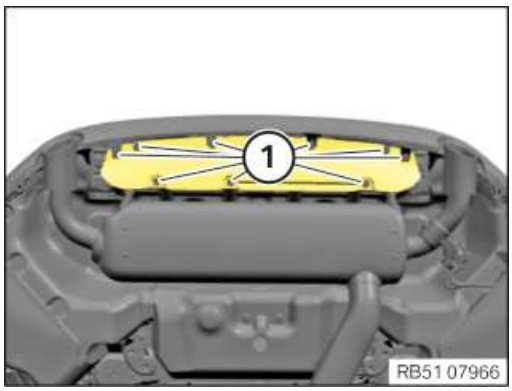
- Remove screws (arrows).

NOTICE

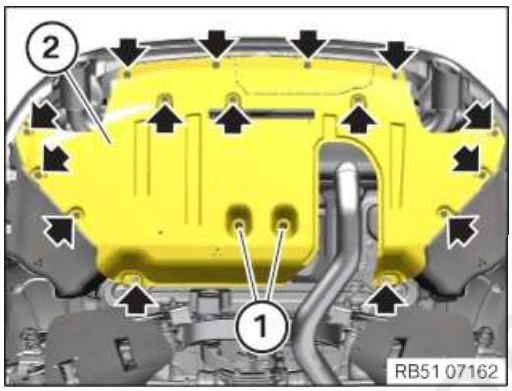
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

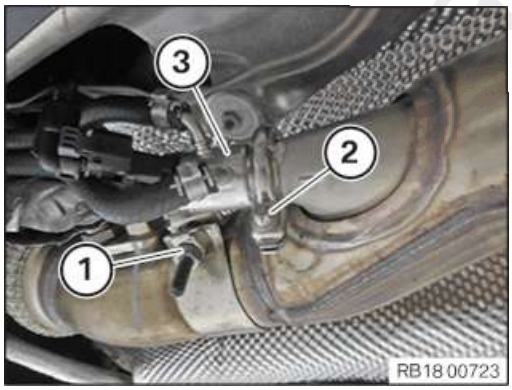
▸ **Removing the rear diffuser**



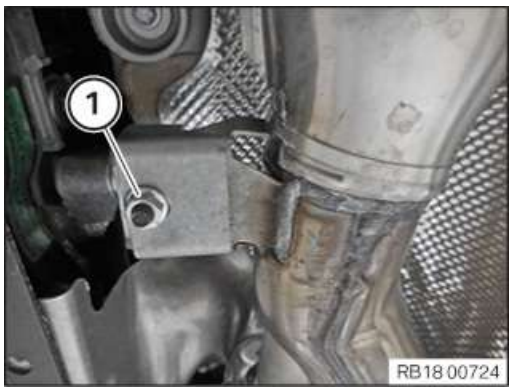
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).

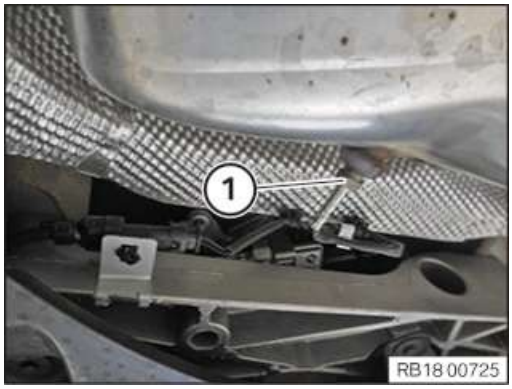


- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.

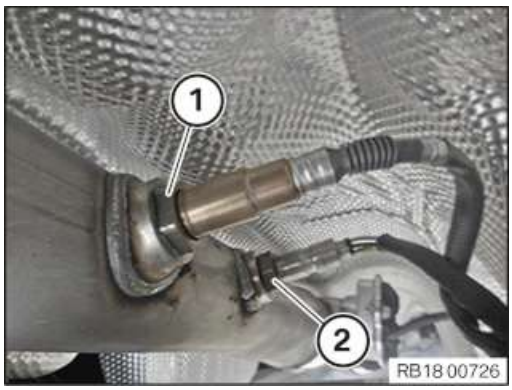


- Loosen nut (1).

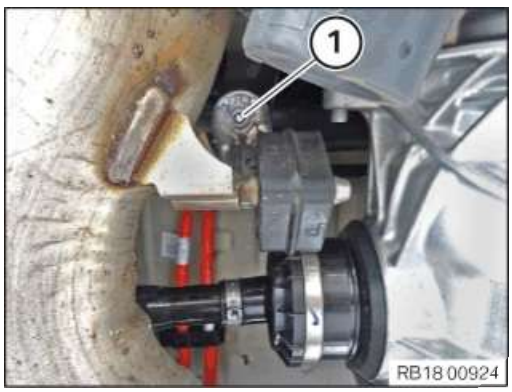
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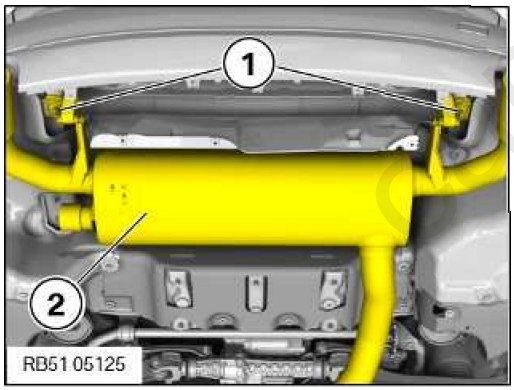
- Detach the exhaust temperature sensor (1) from the exhaust system.



- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.



- Release the nut (1) on the rear axle support.



- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

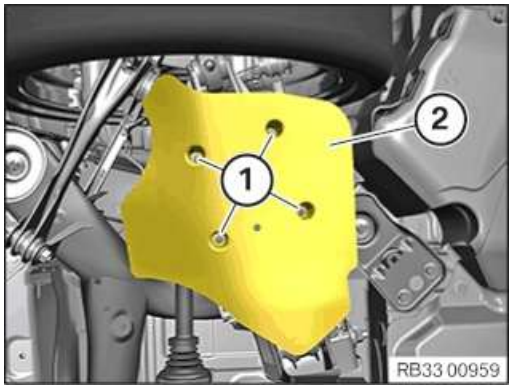
2 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover of camber control arm**

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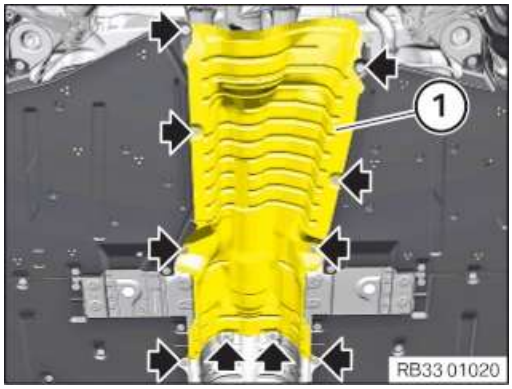


- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

3 – Remove heat shield at rear.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

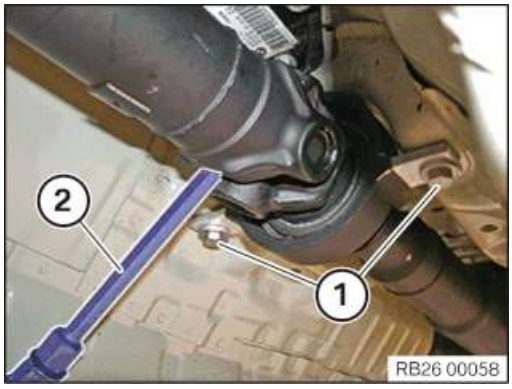
4 – Releasing the propeller shaft from the rear axle differential

RISK OF DAMAGE

Damage to propeller shaft during removal.

Non-observance of the removal guidelines for the propeller shaft on the rear axle differential may cause severe damage.

- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened on the recessed nut only and exclusively in the direction of rotation otherwise the anti-twist lock of the bi-hexagonal flange nut is damaged.
- In the event of a damaged anti-twist lock on the bi-hexagonal flange nut: Replace the rear axle differential.

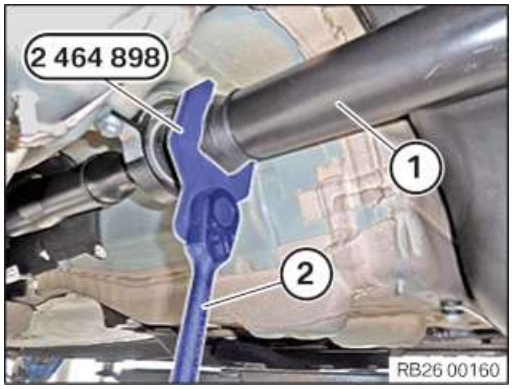


- Loosen screws (1).

  Do not remove bolts (1) yet.
- **Version A (propeller shaft with wide universal joint):**

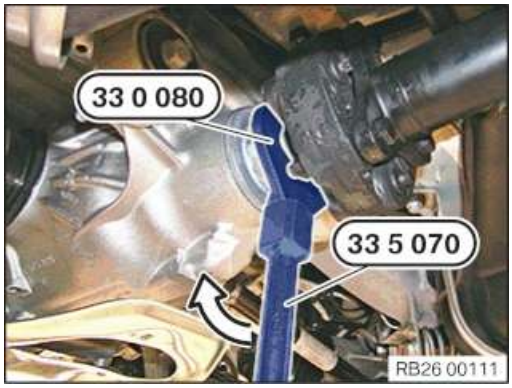
  Secure the propeller shaft against twisting at the centre universal joint using a suitable tool (2).

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- **Version B (propeller shaft with narrow universal joint):**

  Secure the propeller shaft (1) against twisting by using the special tool 2 464 898 and a suitable tool (2) at the central universal joint.



RISK OF DAMAGE

Damage to rear axle differential.

Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

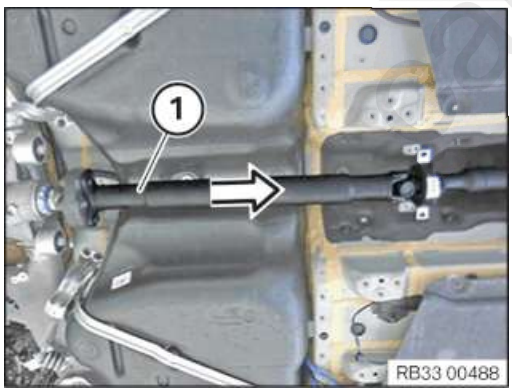
- Do not use the double hexagon head flange nut as counter support.

- Loosen the recessed nut **against** the direction of travel **in clockwise direction** using special tools 0 495 554 (33 5 070) and .

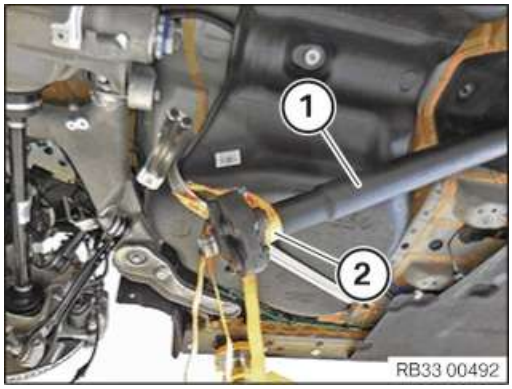
  The bi-hexagonal flange nut must not be used for counter-holding.



- Loosen screws (1) on centre mount.



- Loosen the propeller shaft (1) from the rear axle differential in the direction of the arrow.



- Tie up the propeller shaft (1) using a tensioning strap (2).

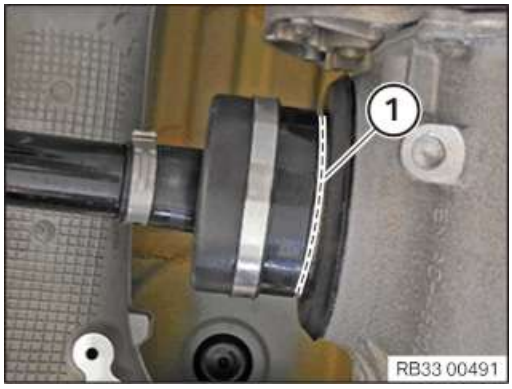
5 – Detaching the output shafts from the rear axle differential

5 – Detaching the output shafts from the rear axle

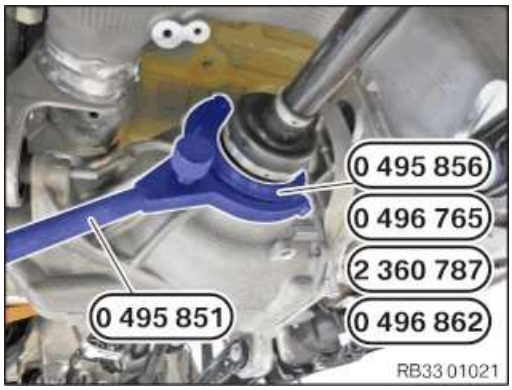
NOTICE

Perform the operations on the left and right side.

▸ **Detach the output shaft from the rear axle differential**



- Position the special tool at the circumferential slot (1) of the output shaft.



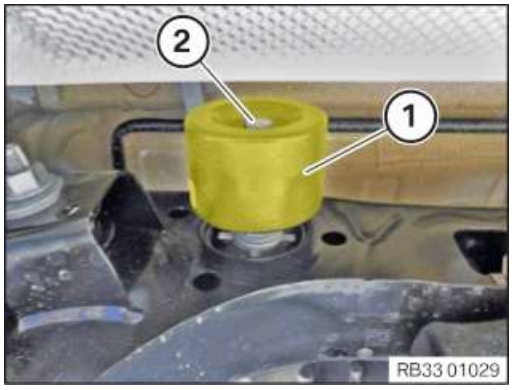
- Press out the output shaft with the special tool and the special tool , , or suitable depending on the equipment specification of the output shaft with jerky movements from the rear axle differential.

6 – Remove the vibration absorber on the rear axle differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

▸ **Remove the vibration absorber on the rear axle differential**



- Loosen screw (2).
- Remove the vibration absorber (1).

MAIN WORK

7 – Removing rear axle differential

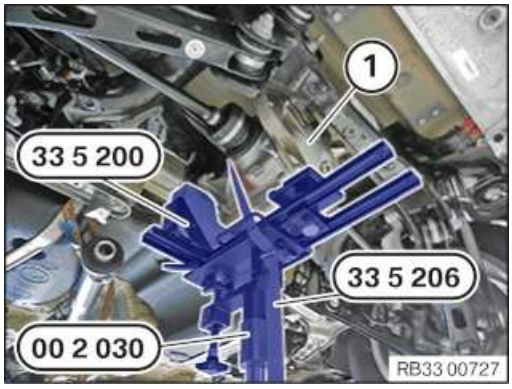
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RISK OF DAMAGE

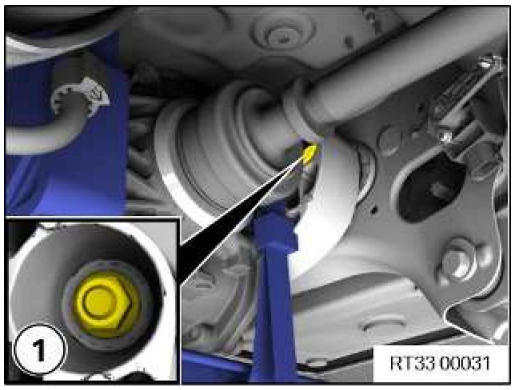
Damage to rear axle differential.

If the rear axle differential drops down, persons can be injured or the rear axle differential can be damaged.

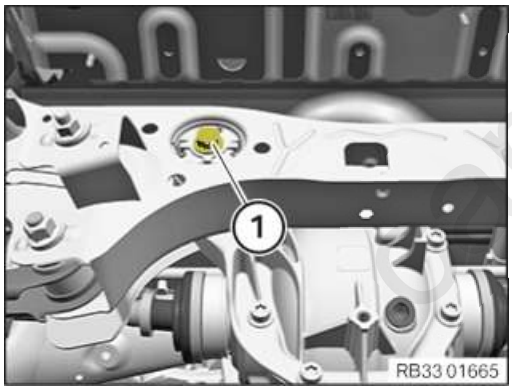
- Secure the rear axle differential using a tensioning strap.



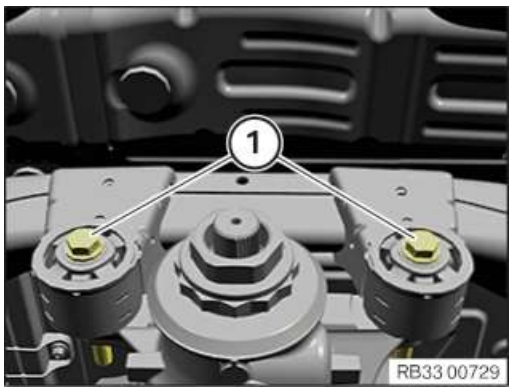
- Attach the special tool on the special tool 0 490 133 (00 2 030).
- Support the rear axle differential (1) with the special tool .
- Secure the rear axle differential (1) with the special tool on the special tool .



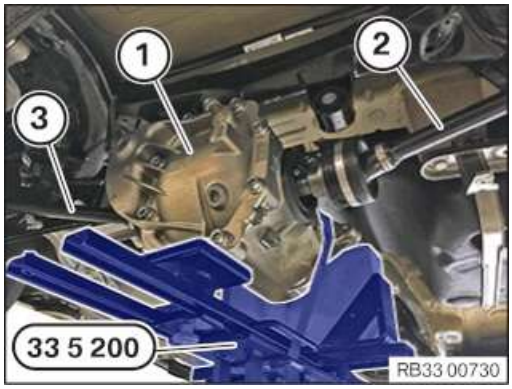
- Loosen nut (1).



- Pull the bolt (1) out of the rear axle support.



- Loosen screws (1) on rear axle support at front.



- Lower the rear axle differential (1) slightly with the special tool .
- Turn the rear axle differential (1) with the special tool towards the right and pull out the right output shaft (2).
- Then pull out the left output shaft (3).
- Tie up the output shafts (2) and (3).

  Do not leave the output shafts hanging on the joint!
- Completely lower the rear axle differential (1) and remove.

8 – Replace the radial shaft seal for the output shaft on the left and right

NOTICE

Perform the operations on the left and right side.

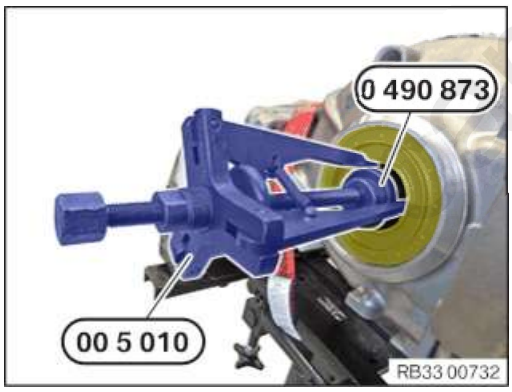
▸ **Replace the radial shaft seal for the output shaft**

TECHNICAL INFORMATION

Radial shaft seal ring are equipped with an installation protection ring. The installation protection ring is used to protect the sealing lip when installing the output shaft.

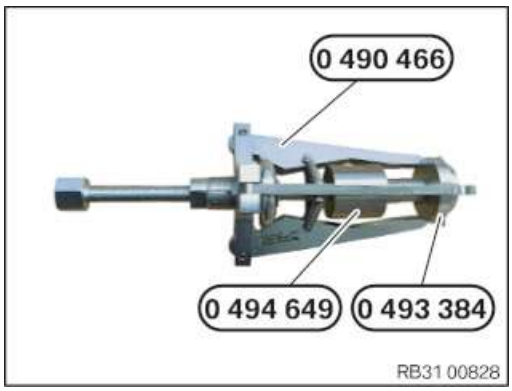
TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.



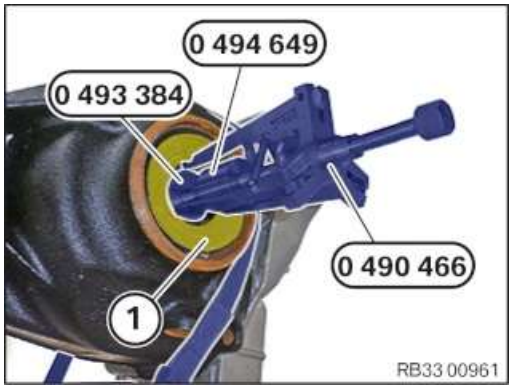
- **Version A:**

  Pull out and remove the radial shaft seal with special tools and .



- **Version B:**

  Prepare the special tool with the special tools 0 494 649 (21 2 230) (without the screw) and .



- Pull out the radial shaft seal (1) with special tools , 0 494 649 (21 2 230) and and remove it.



- Renew radial shaft seal (2).

  Parts: Radial seal

- Remove the installation protection ring (1) from the radial shaft seal (2).



- Coat the housing sheet metal flange and the sealing lips of the radial shaft seal with the approved rear axle differential oil.
- Strike the radial shaft seal with the special tool or until it reaches the limit position.
- Remove the special tool or .



- Insert the installation protection ring (1) into the radial shaft seal (2).
- Make sure installation protection ring (1) does not slip out of radial shaft seal (2).

9 – If reusing: Checking the left and right output shaft and replacing the circlip

NOTICE

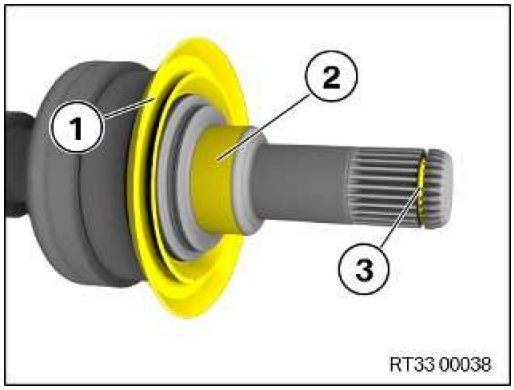
Description is for left component only. Procedure on the right side is identical.

▸ **If reusing: Check the output shaft and replace the circlip**

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TECHNICAL INFORMATION

It is essential to renew the circlip of the output shaft.



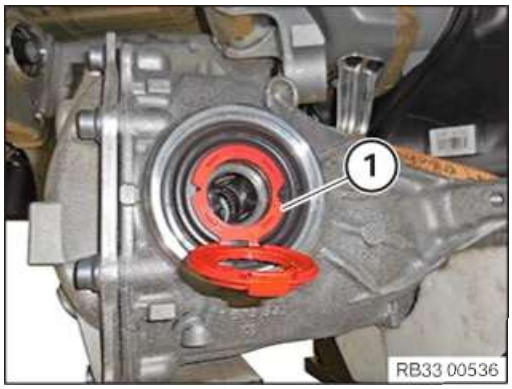
TECHNICAL INFORMATION

Extreme force being required during installation is an indication that the component is damaged or deformed. Check component and replace if necessary.

- Check the gearing of the output shaft for damage and renew damaged parts if necessary.
- Check the dust plate (1) for damage and renew damaged parts as needed.
- Renew the circlip (3).

  Parts: Circlip
- Coat the contact surface (2) using approved rear axle differential oil.

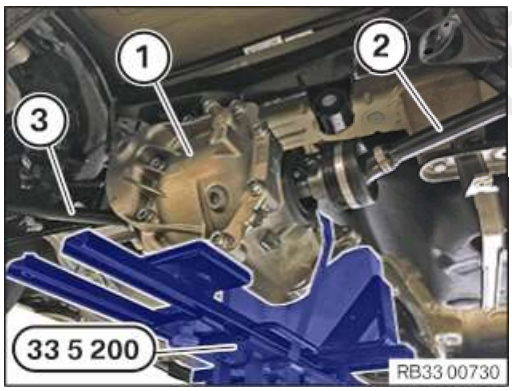
10 – Installing the rear axle differential



NOTICE

Perform the operations on the left and right side.

- Fold open the assembly protection ring (1).



- Raise the rear axle differential (1) somewhat with the special tool .
- Insert the left-hand output shaft (3) into the rear axle differential (1).
- Turn rear axle differential (1) using special tool to right and insert output shaft at right (2) into rear axle differential (1).

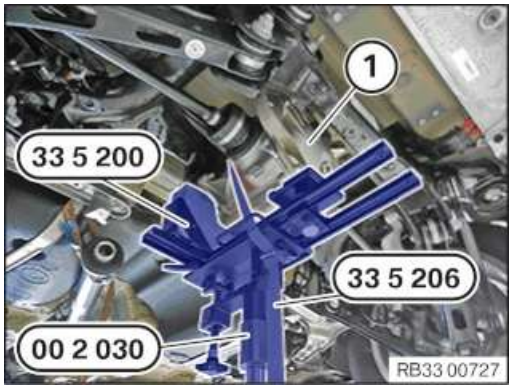


NOTICE

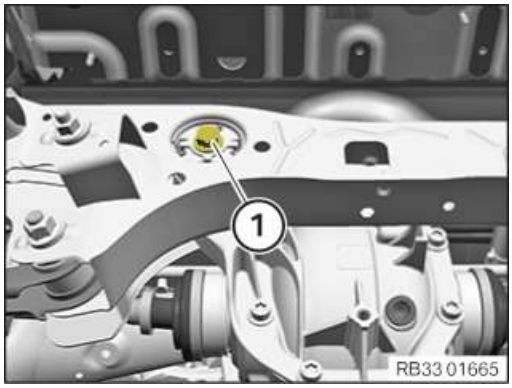
Perform the operations on the left and right side.

- Pull on the tab of the installation protection ring (1) until one of the two predetermined breaking points breaks.
- Pull out and dispose of the installation protection ring (1).

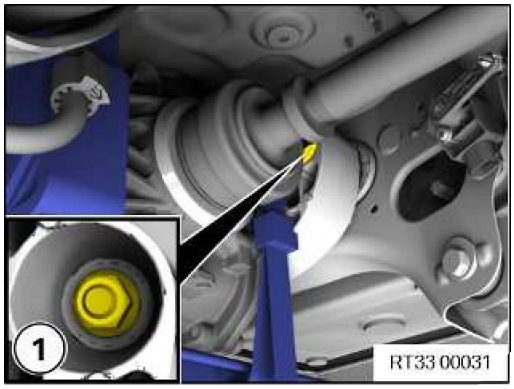
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- Lift the rear axle differential (1) using special tools and 0 490 133 (00 2 030) and position on the rear axle support.
- Make sure that the special tool does not get jammed between the rear axle differential (1) and a dust plate of an output shaft.

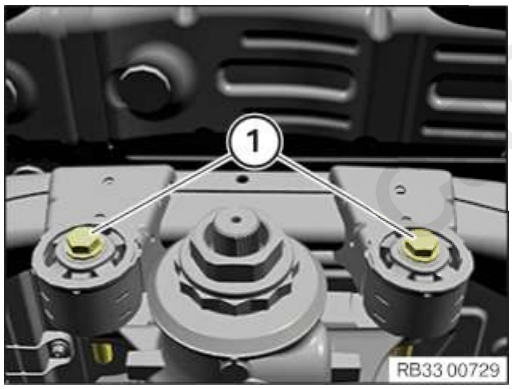


- Insert screw (1).



- Renew nut (1).

  Parts: Nut
- Prescrew the nut (1).

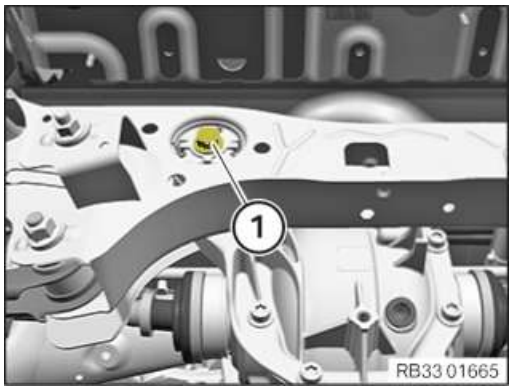


- Renew screws (1).

  Parts: Screws
- Screw in the screws (1) by hand and tighten.

Rear differential to rear axle carrier, front

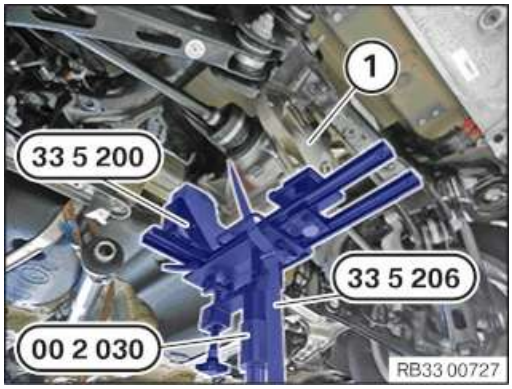
M12	Renew screw.	Tightening torque	100 Nm



- Tighten down screw (1). In doing so, counter support at the nut.

Rear differential to rear axle carrier, rear

M14	Renew nut.	Tightening torque.	175 Nm



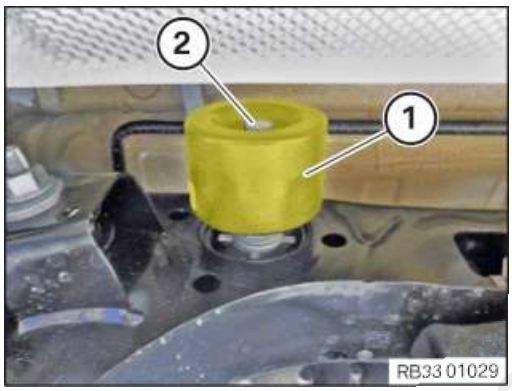
- Loosen and remove the tensioning strap from the rear axle differential (1).
- Lower the special tools 0 490 133 (00 2 030) and and set them aside.

POSTPROCESSES

11 – Install the vibration absorber on the rear axle differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



▸ **Install the vibration absorber on the rear axle differential**

- Position the (1) vibration absorber.
- Renew the screw (2).

  Parts: Screw
- Position and tighten the screw (2).

Vibration absorber to rear axle

M8	Renew screw.	Tightening torque	28 Nm

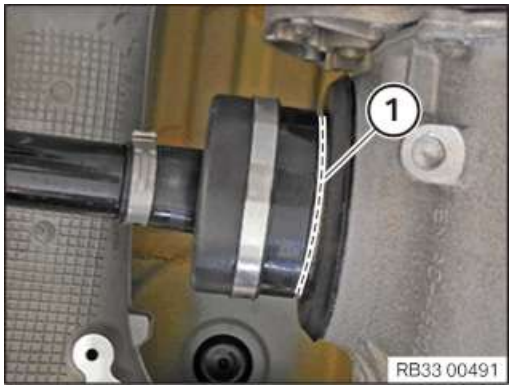
Vibration absorber to rear axle

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

12 – Secure output shafts on the rear axle differential

NOTICE

Perform the operations on the left and right side.



▸ **Secure the output shaft on the rear axle differential**

- Position the following special tool on the slot running around the output shaft (1).



- Drive the output shaft into the rear axle differential with a suitable special tool , or and a rubber mallet.

13 – Check/top up oil level in the rear axle differential

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- Only use approved oil in the rear axle differential.

TECHNICAL INFORMATION

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

▸ **Supplement the rear axle differential oil change/oil level with oil gun**

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Your browser doesn't support HTML5 video.

TECHNICAL INFORMATION

The training video illustrates the methodology for changing the rear axle differential oil using the oil gun special tool.

The training video does not replace the repair instructions.

The training video is not subject to the update service.

No liability can be accepted for printing or other faults. Subject to changes of a technical nature

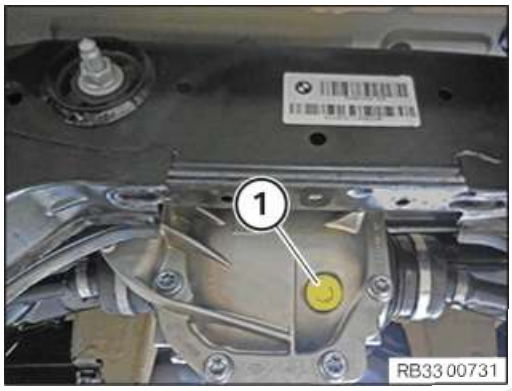
- Follow repair instructions!



TECHNICAL INFORMATION

With the specified capacity, it is imperative to take into account the capacity of the hose of the special tool.

- Use the special tool 2 460 340 to top up the rear axle differential oil.



- Open the oil filler plug (1).
- Check oil level:

  The oil level at the rear axle differential has been adjusted correctly once a small quantity of oil escapes from the opening of the oil filler plug.

  If necessary, top up final drive transmission oil.

Rear axle differential oil: Capacity overview (all)

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

- Replace the oil filler plug (1).

  Parts: Oil filler plug

- Screw in and tighten the oil filler plug (1).

Rear axle differential oil filler plug

M22	Renew the oil filler plug.	Tightening torque	60 Nm

14 – Securing the propeller shaft on the rear axle differential

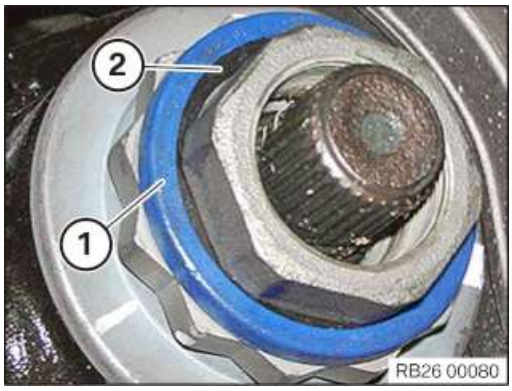
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RISK OF DAMAGE

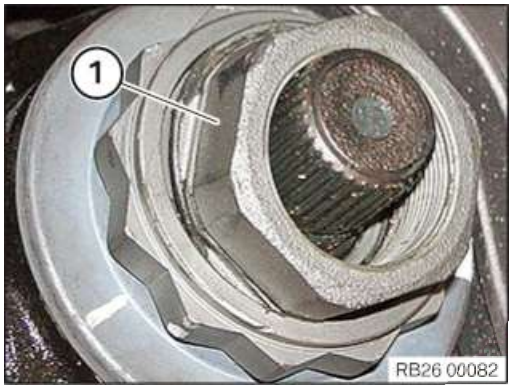
Damage to the propeller shaft during installation.

Non-observance of the installation guidelines for the propeller shaft on the rear axle differential may cause severe damage.

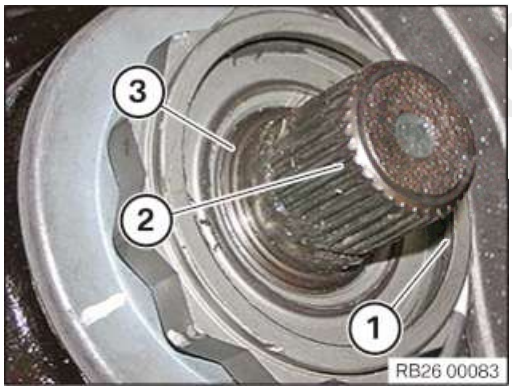
- Always renew the recessed nut on the rear axle differential. Screw locking must be available.
- Strictly observe a hardening time of minimum 3 h after screwing the recessed nut. The hardening time may be longer at lower temperatures.



- Remove the retaining ring (1) and the seal (2).



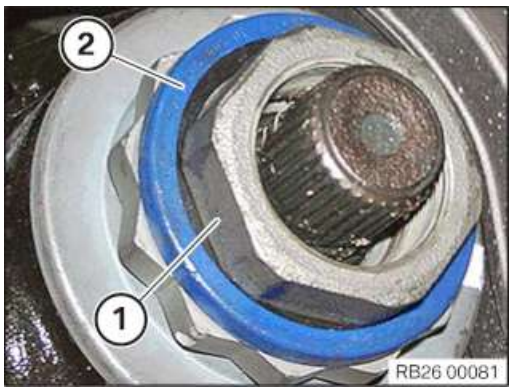
- Remove recessed nut (1).



- Clean and degrease the recessed collar (1) the flange nut, the gearing on the bevel pinion (2) and the taper (3) without any residue.
- Top up the collar insert (1)with grease.

Expendable materials

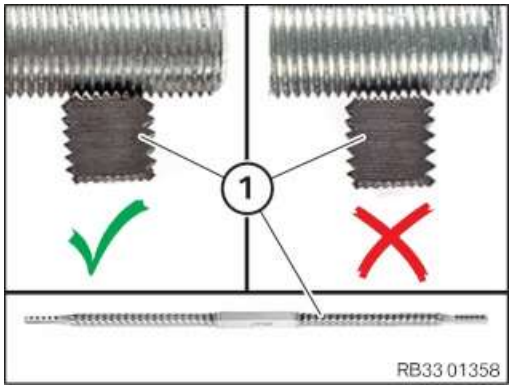
Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Renew the recessed nut (1), seal and retaining ring (2).

  Parts: Recessed nut, seal, retaining ring
- Insert recessed nut (1) including gasket into collar insert of the flange nut.
- Mount the retaining ring (2).

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- Use a thread file (1) to remove the adhesive residue on the thread.
- **Make sure that the thread pitch is correct!**



RISK OF DAMAGE

Damage to the output flange.

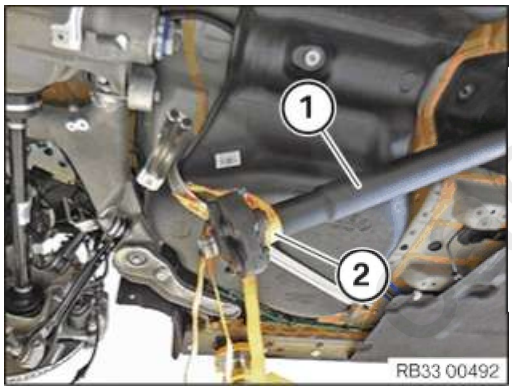
Failure to observe the greasing specifications may lead to damage on the output flange.

- Do not contaminate the thread of the output flange with grease.

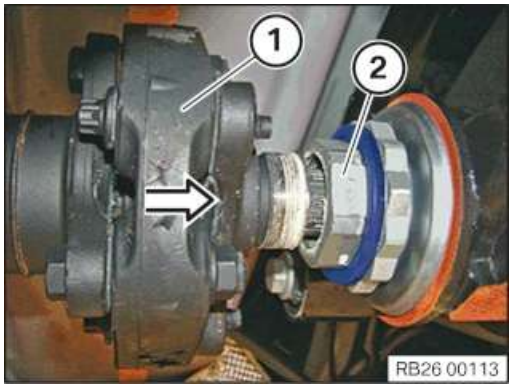
- Remove any adhesive residue on thread (1) of the flange and clean it.
- Clean gearing (2).
- Grease gearing (2).

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754

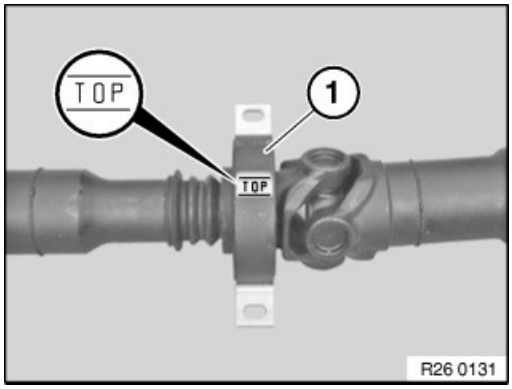


- Loosen the tensioning strap (2) from the propeller shaft (1).



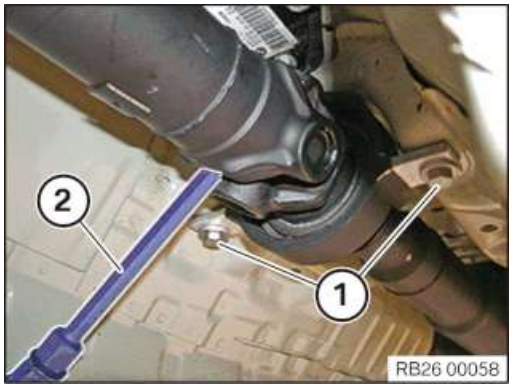
- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Screw and secure recessed nut (2) at least 2 thread starts onto propeller shaft (1) by hand.

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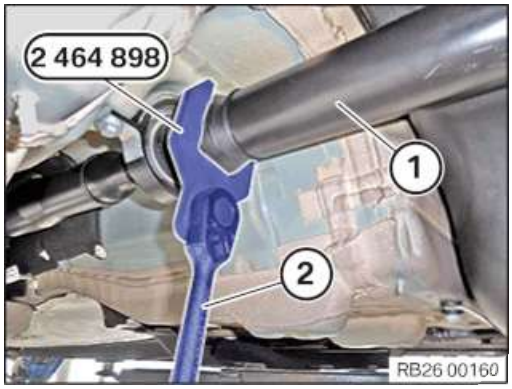
- Position the centre mount (1).

  Position the centre mount (1) with the designation TOP at the top in the transmission tunnel.



- Screw in the screws (1) by a few turns.
- **Version with a broad universal joint:**

  Secure the propeller shaft from twisting with a suitable tool (2) on the centre universal joint.



- **Version with a narrow universal joint:**

  Secure the propeller shaft (1) from twisting with the special tool 2 464 898 and a suitable tool (2) on the centre universal joint.



RISK OF DAMAGE

Damage to the flange nut.

Failure to observe the installation specifications may lead to serious damage to the flange nut and the rear axle differential.

- Do not use the double hexagon flange nut as counter support.
- Screw in the recessed nut within 5 minutes.

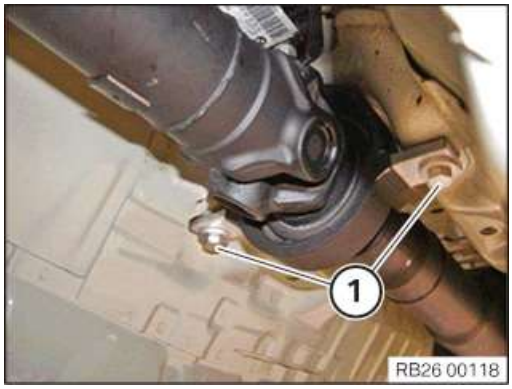
- Tighten recessed nut **counter-clockwise in the direction of the arrow** using special tools 0 495 554 (33 5 070) and .

Propeller shaft on the rear axle differential

Insert nut	Replace insert nut.	Tightening torque	100 Nm

- **After the propeller shaft is installed and the recessed nut is screwed in, strictly observe a hardening time of minimum 3 hours.**

  Do not move or push the vehicle during this time!



- Tighten the screws (1).

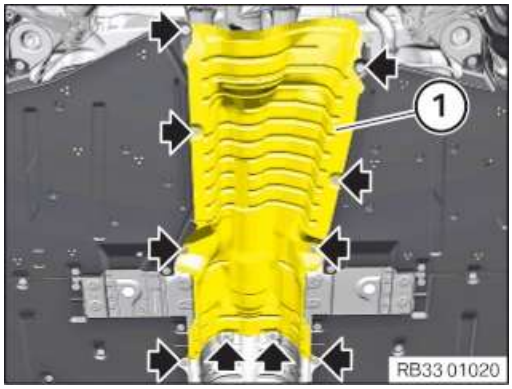
Centre mount to body

M8		Tightening torque	19 Nm

15 – Installing the rear heat shield

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

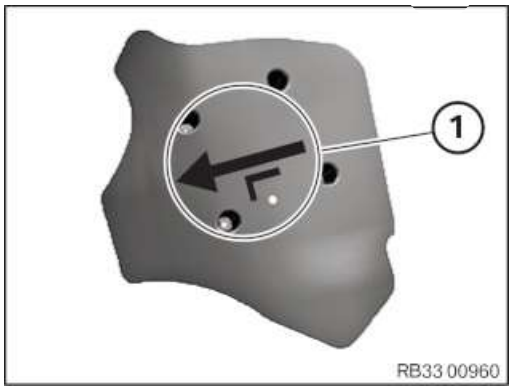
Screws and nuts		Tightening torque	3 Nm

16 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Installing the cover of the camber control arm**



- It is imperative to note the installation location and direction of installation (1).

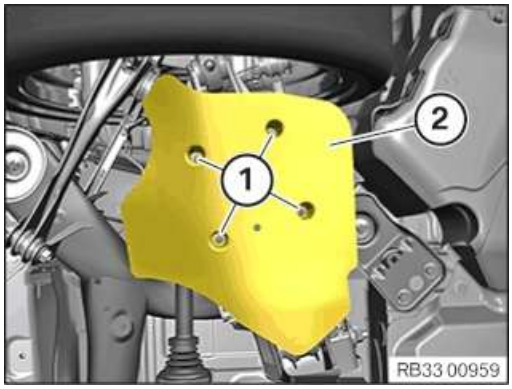
  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right

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- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

17 – Installing the complete exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

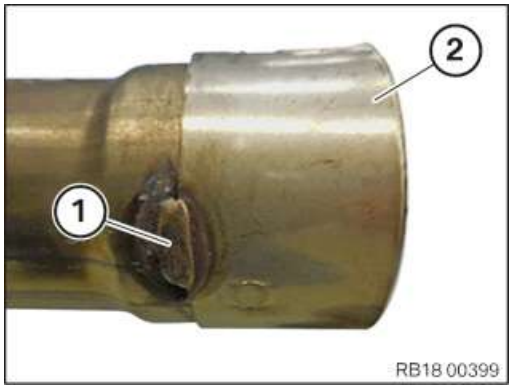
TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.

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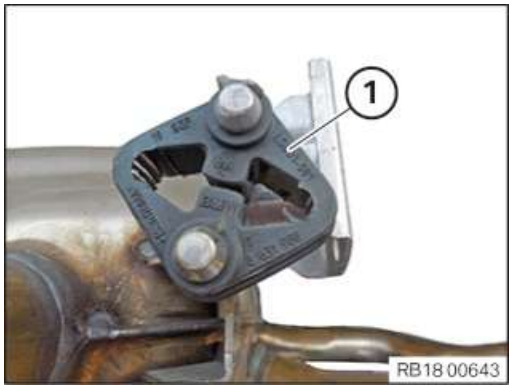
CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

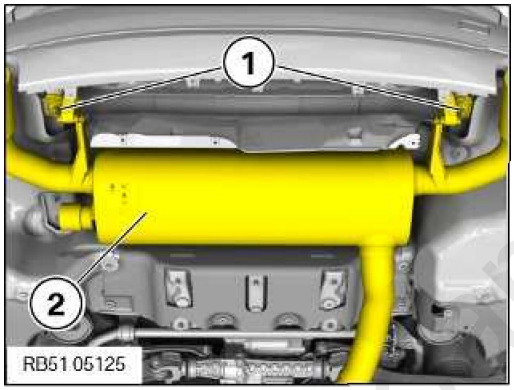


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

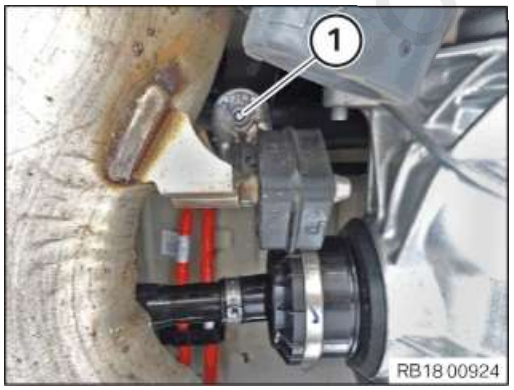


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm



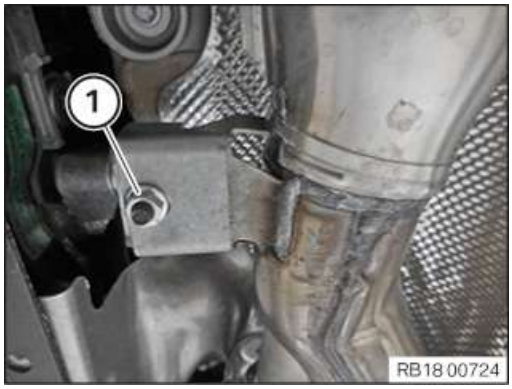
- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

M8 nut		Tightening torque	19 Nm

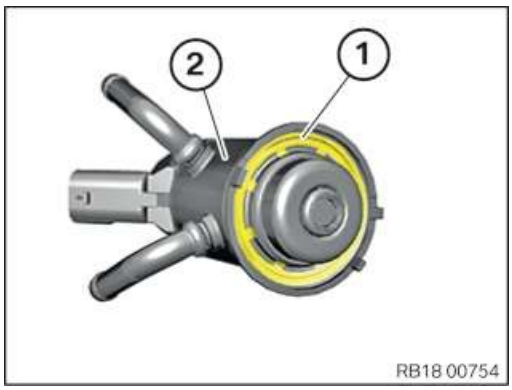
manualagn.com



- Tighten nut (1).

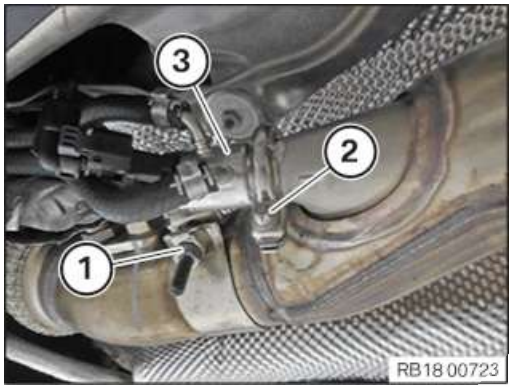
Exhaust system to transmission

M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

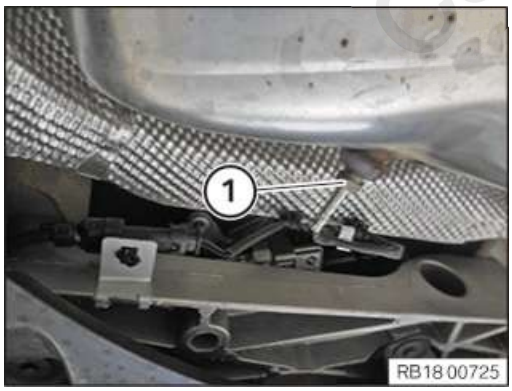
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

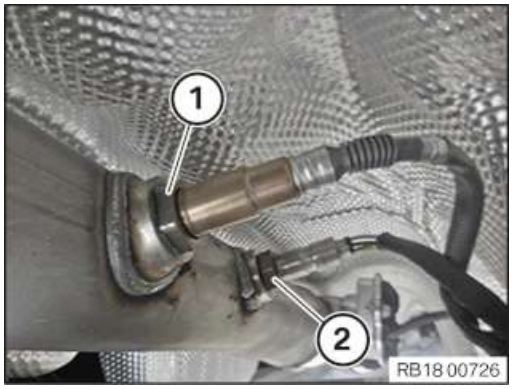


- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm

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- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

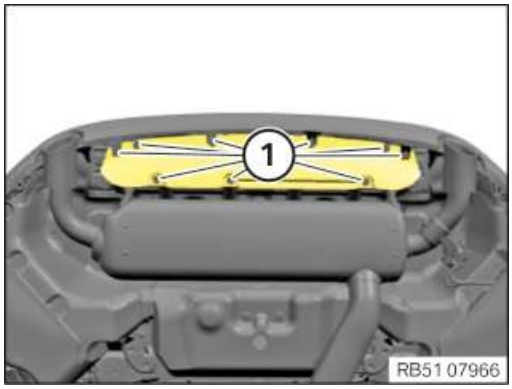
Sensor		Tightening torque	50 Nm

- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

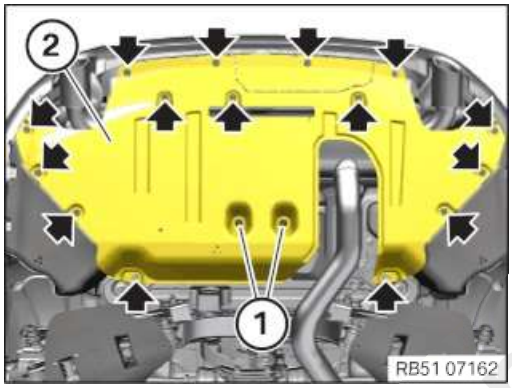
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

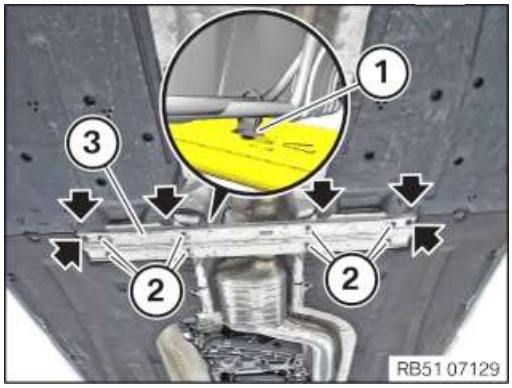
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**



- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

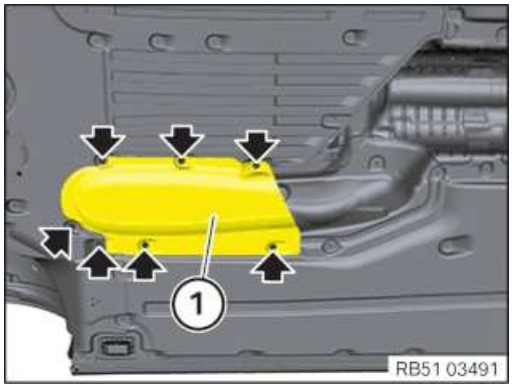
- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Additional Information

Overview of Tightening Torques

Rear differential to rear axle carrier, front — Used in step 10

M12	Renew screw.	Tightening torque	100 Nm

Rear differential to rear axle carrier, rear — Used in step 10

M14	Renew nut.	Tightening torque.	175 Nm

Vibration absorber to rear axle — Used in step 11

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle — Used in step 11

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Rear axle differential oil filler plug — Used in step 13

M22	Renew the oil filler plug.	Tightening torque	60 Nm

Propeller shaft on the rear axle differential — Used in step 14

Insert nut	Replace insert nut.	Tightening torque	100 Nm

Centre mount to body — Used in step 14

M8		Tightening torque	19 Nm

Heat shield to undercarriage — Used in step 15

Screws and nuts		Tightening torque	3 Nm

Cover to camber control arm — Used in step 16

M6	Replace nuts.	Tightening torque	6 Nm

Rear silencer to body / bumper support — Used in step 17

M8	Replace nuts.	Tightening torque	19 Nm

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Exhaust system to rear axle carrier			Used in step 17
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 17
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 17
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 17
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 17
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 17
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 17
Sensor		Tightening torque	55 Nm

Diffuser / underbody panelling			Used in step 17
Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel			Used in step 17
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling			Used in step 17
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Overview of Special Tools

2 464 898 Open-end spanner



Common	Used in step 414
Usage	Open-end spanner SW50 for disassembly and installation of the propeller shaft on rear axle differential. The silhouette foil is included in the delivery specification.
Included in the tool or work	
Storage location	A7
Replaced by	
In connection with	
SI-Number	01 19 18 (579)

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0 495 554 (33 5 070) Extension



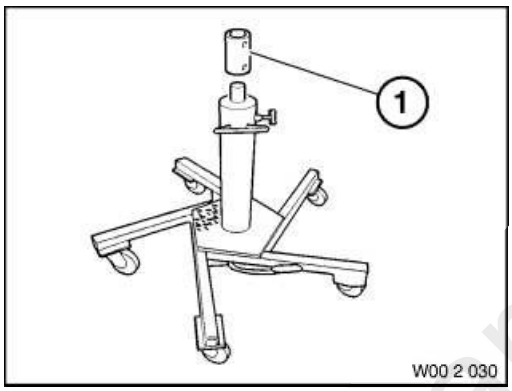
Common Used in step 414

Usage	Pull-out extension for 33 5 040, 33 5 050, 33 5 060.
Included in the tool or work	
Storage location	A18
Replaced by	
In connection with	
SI-Number	01 21 06 (300)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 495 592 (33 5 071)		**Extension** (Extension (1 item)) discontinued, can only be ordered using complete tool	

0 490 133 (00 2 030) Device



Common Used in step 710

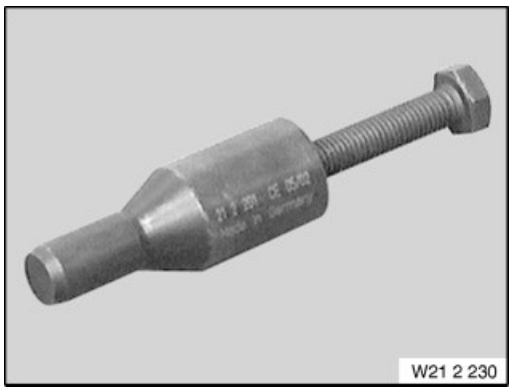
Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

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0 494 649 (21 2 230) Mandrel



Common	Used in step 8
Usage	(clutch centring drift) With screw M10 (G transmission)
Included in the tool or work	
Storage location	C45
Replaced by	
In connection with	
SI-Number	01 03 03 (960)

2 460 340 Pump



Common	Used in step 13
Usage	Oil gun to fill rear axle differentials or differentials with 1 litre containers.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 09 18 (553)

Overview Technical Data

Rear axle differential oil: Capacity overview (all) Used in step 13

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168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	

Operating materials	Used in step
1.1 Grease for propeller shaft inserted	14
1.0 Grease for propeller shaft (flexible disc centring and sliding piece)	14

Operating materials	Used in step
Main group 33	13

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33 10 155 Removing and installing the servomotor for the rear axle differential, right

Prerequisite

-

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

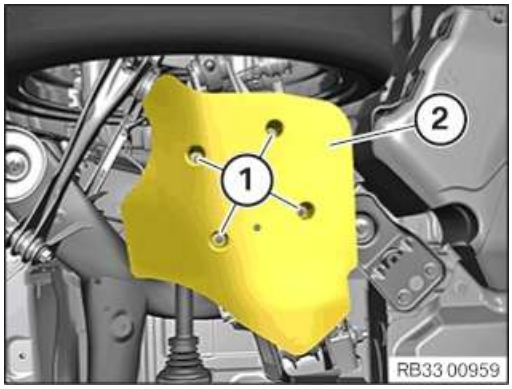
Hot exhaust system.

Risk of burning!

- Any work must exclusively be carried out with an exhaust system that has cooled down.

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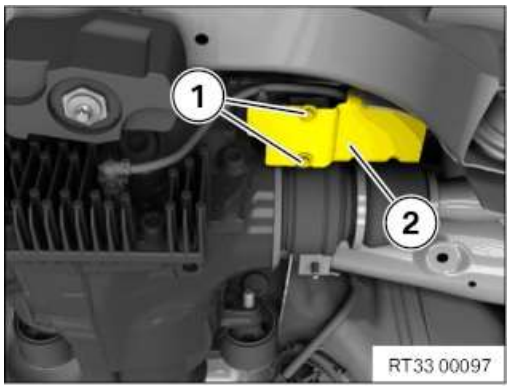
1 – Removing the cover of the right camber control arm



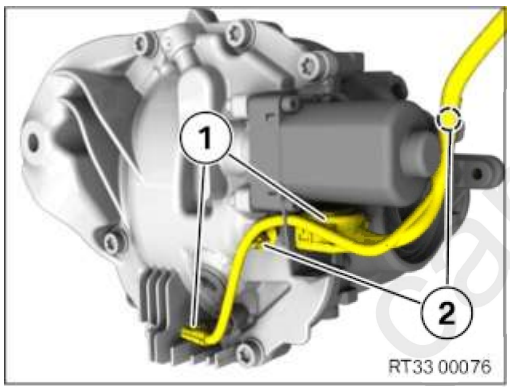
▸ **Removing the cover of camber control arm**

- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

2 – Disconnect plug connection



- Loosen screws (1).
- Remove heat shield (2).

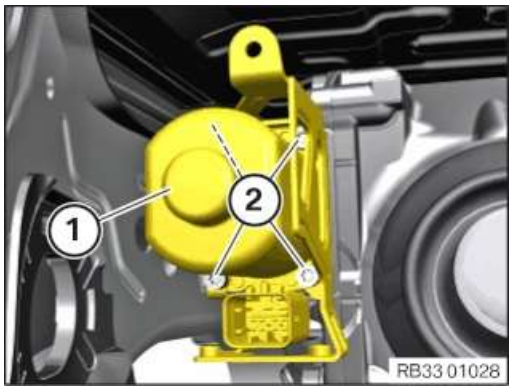


- Unlock and disconnect plug connections (1).
- Release cable from brackets (2).

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MAIN WORK

3 – Remove servomotor

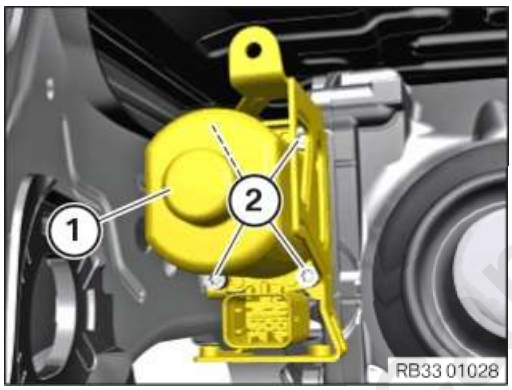


- Loosen screws (2).
- Feed out the servomotor (1) with the holder and remove it.

4 – Install servomotor



- Check the O-ring (2) for the servomotor (1), replace if necessary.



TECHNICAL INFORMATION

The gearing of servomotor and the intermediate wheel must be checked and the positive locking ensured.

- Guide in servomotor (1) with the holder and position.

  The servomotor (1) must be flush against the cover of the rear axle differential.
- Renew screws (2).

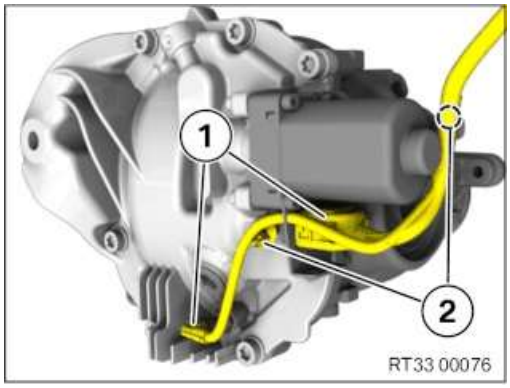
  Parts: Screws
- Tighten the screws (2).

Servomotor to rear axle final drive

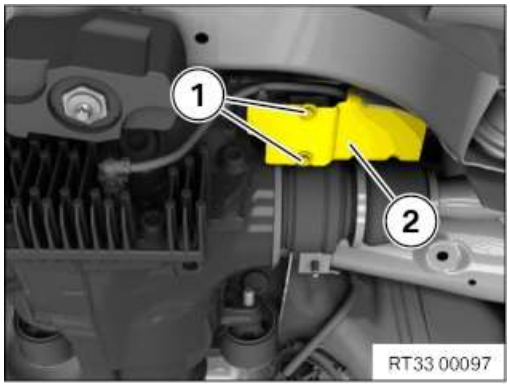
M6	Renew screws.	Tightening torque	9 Nm

POSTPROCESSES

5 – Connect connector



- Connect connectors (1) and lock.
- Secure the cables on the brackets (2).



- Position the heat shield (2).
- Tighten the screws (1).

Heat shield to servomotor

M5x10		Tightening torque	5 Nm

6 – Install the cover of the right camber control arm

▸ **Installing the cover of the camber control arm**



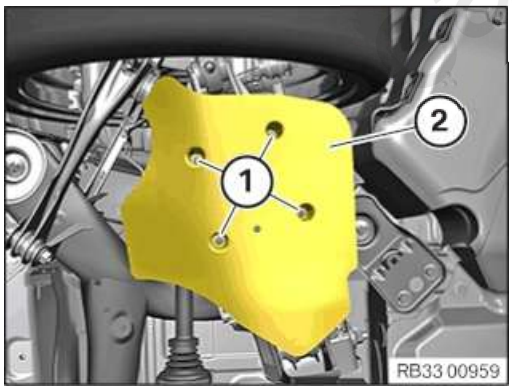
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

Additional Information

Overview of Tightening Torques

Servomotor to rear axle final drive Used in step 4

M6	Renew screws.	Tightening torque	9 Nm

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Heat shield to servomotor			Used in step 5
M5x10		Tightening torque	5 Nm

Cover to camber control arm			Used in step 6
M6	Replace nuts.	Tightening torque	6 Nm

Links

Repair instructions	Used in step
00 .. ... Raising the vehicle using a vehicle hoist	

cardiagn.com

33 10 053 Removing and installing/replacing temperature sensor

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Hot exhaust system.

Risk of burning!

- Any work must exclusively be carried out with an exhaust system that has cooled down.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

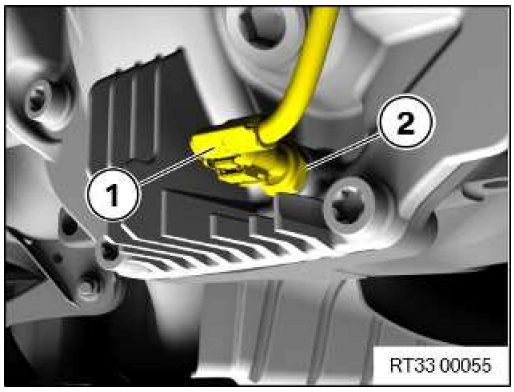
- After completion of repair work, check the transmission oil level in the rear axle differential.
- Use only the approved final drive transmission oil.

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1 – Remove temperature sensor

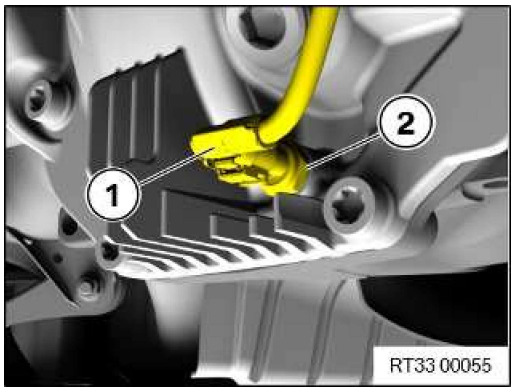
TECHNICAL INFORMATION

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.



- Unlock plug connection (1) and disconnect.
- Release and remove temperature sensor (2).

2 – Install temperature sensor



- Coat the sealing ring on the temperature sensor (2) with the approved rear axle differential oil.
- Screw in temperature sensor (2) by a few turns by hand.
- Tighten the temperature sensor (2).

Temperature sensor to lid of M Sport differential of rear axle transmission

M12		Tightening torque	14 Nm

- Connect connectors (1) and lock.

3 – Checking/Topping up the oil level in the rear axle differential (M Sport differential)

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

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CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- Only use approved oil in the rear axle differential.

TECHNICAL INFORMATION

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

▸ **Supplement the rear axle differential oil change/oil level with oil gun**

Your browser doesn't support HTML5 video.

TECHNICAL INFORMATION

The training video illustrates the methodology for changing the rear axle differential oil using the oil gun special tool.

The training video does not replace the repair instructions.

The training video is not subject to the update service.

No liability can be accepted for printing or other faults. Subject to changes of a technical nature

- Follow repair instructions!

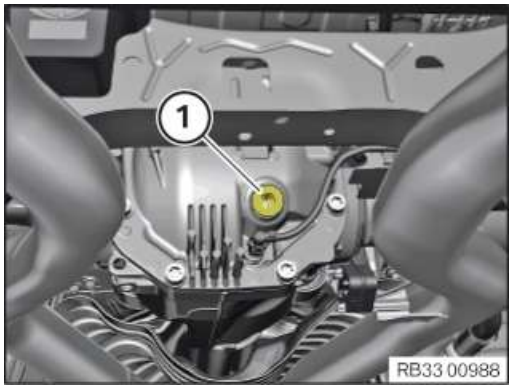


TECHNICAL INFORMATION

With the specified capacity, it is imperative to take into account the capacity of the hose of the special tool.

- Use the special tool 2 460 340 to top up the rear axle differential oil.

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- Loosen oil drain plug (1).
- Check oil level:

  The oil level at the rear axle differential has been adjusted correctly once a small quantity of oil escapes from the opening of the screw plug.
- If necessary, top up final drive transmission oil.

Rear axle differential oil: Capacity overview (all)

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l
Transmission oil: Technically suitable rear axle differential oils	

- Renew the screw plug (1).

  Parts: Plug
- Screw the in screw plug (1) manually by a few turns and tighten it.

Oil filler plug on the rear axle differential

M22	Renew screw plug with O-ring.	Tightening torque	60 Nm

Additional Information

Overview of Tightening Torques

Temperature sensor to lid of M Sport differential of rear axle transmission — Used in step 2

M12		Tightening torque	14 Nm

Oil filler plug on the rear axle differential — Used in step 3

M22	Renew screw plug with O-ring.	Tightening torque	60 Nm

Overview of Special Tools

2 460 340 Pump



Common — Used in step 3

Usage	Oil gun to fill rear axle differentials or differentials with 1 litre containers.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 09 18 (553)

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Overview Technical Data

Rear axle differential oil: Capacity overview (all)	Used in step 3
168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l
Transmission oil: Technically suitable rear axle differential oils	

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	

Operating materials	Used in step
Main group 33	3

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33 10 024 Replacing both radial shaft seals for the output shaft on the rear axle differential

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- After completion of repair work, check the transmission oil level in the rear axle differential.
- Use only the approved final drive transmission oil.

PRELIMINARY WORK

1 – Remove complete exhaust system

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WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

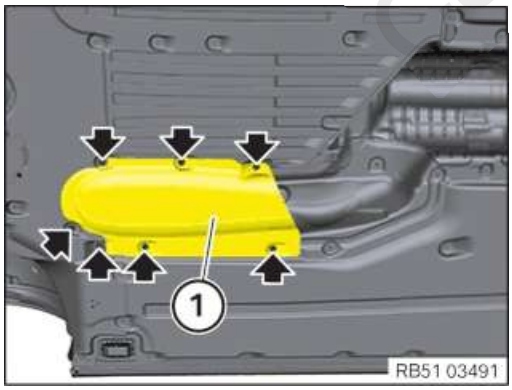
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

NOTICE

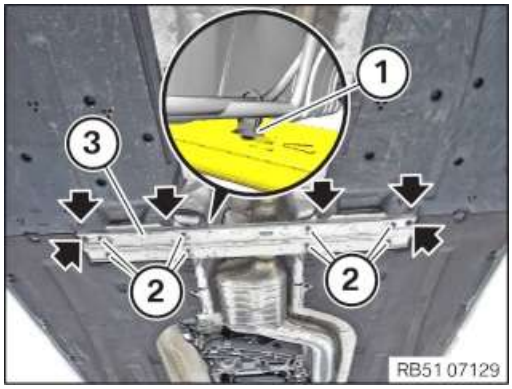
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**

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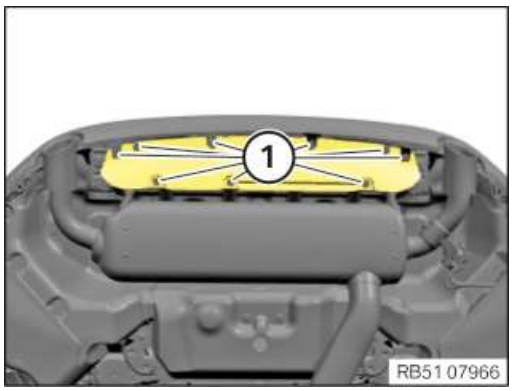
- Remove screws (arrows).

NOTICE

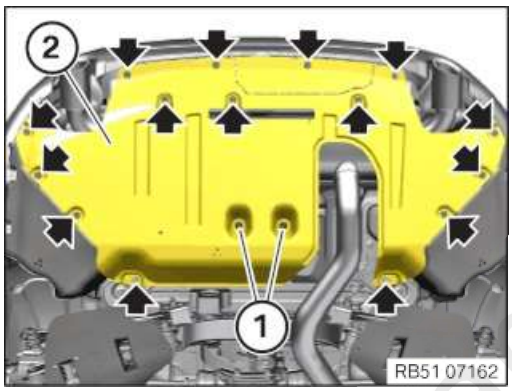
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

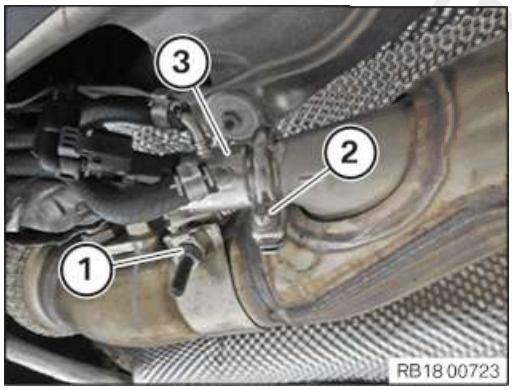
▸ **Removing the rear diffuser**



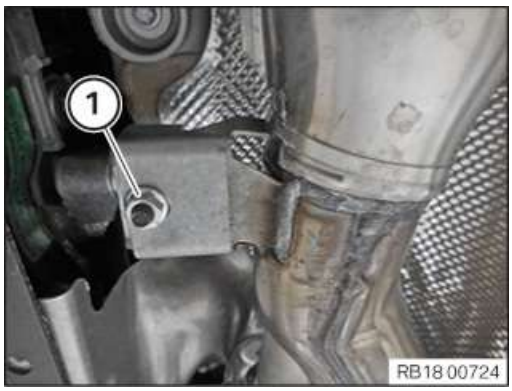
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).

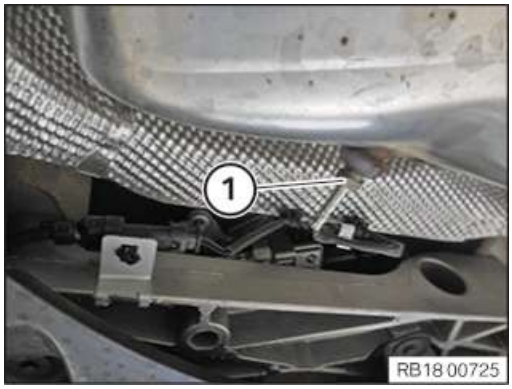


- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.

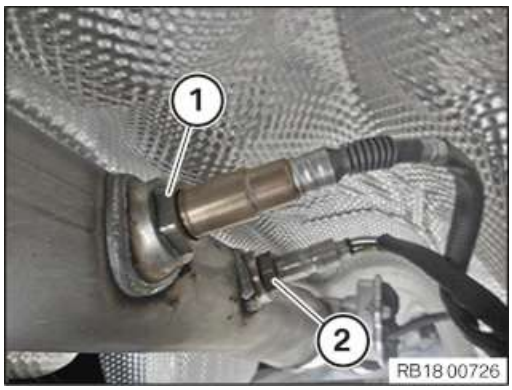


- Loosen nut (1).

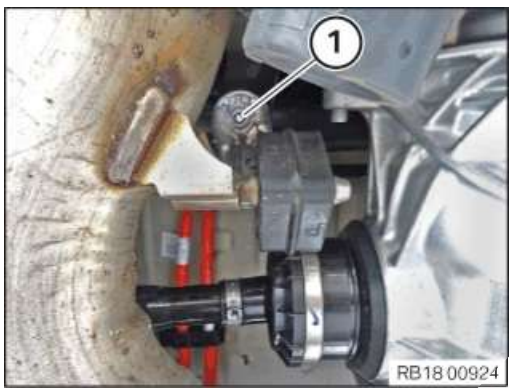
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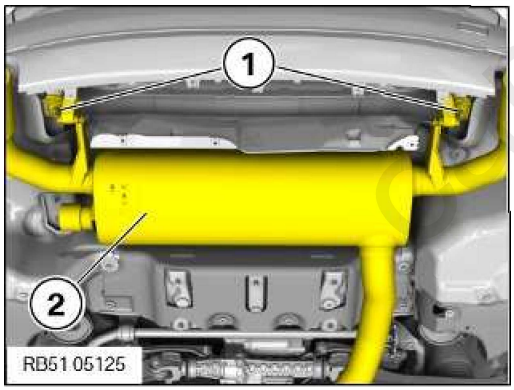
- Detach the exhaust temperature sensor (1) from the exhaust system.



- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.



- Release the nut (1) on the rear axle support.



- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

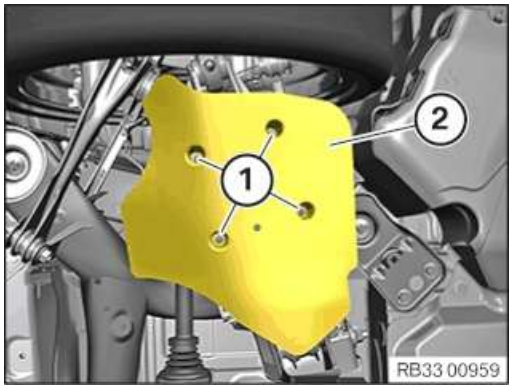
2 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover of camber control arm**

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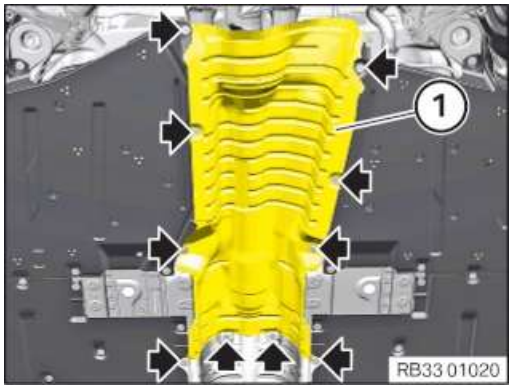


- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

3 – Remove heat shield at rear.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

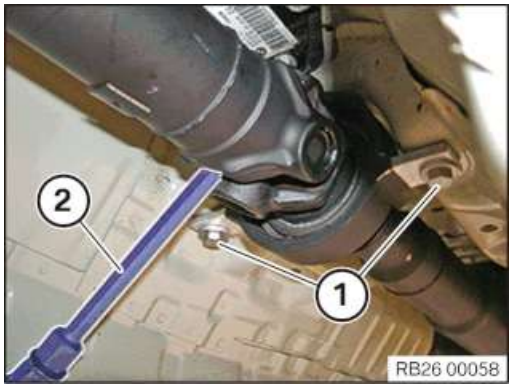
4 – Releasing the propeller shaft from the rear axle differential

RISK OF DAMAGE

Damage to propeller shaft during removal.

Non-observance of the removal guidelines for the propeller shaft on the rear axle differential may cause severe damage.

- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened on the recessed nut only and exclusively in the direction of rotation otherwise the anti-twist lock of the bi-hexagonal flange nut is damaged.
- In the event of a damaged anti-twist lock on the bi-hexagonal flange nut: Replace the rear axle differential.

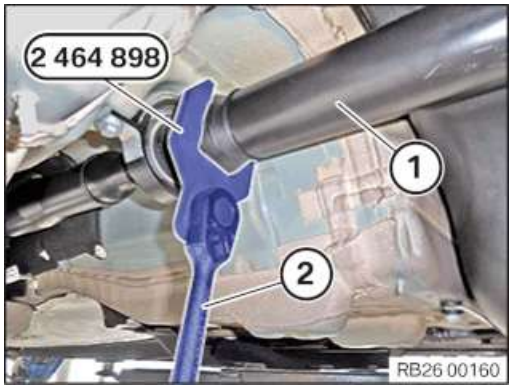


- Loosen screws (1).

  Do not remove bolts (1) yet.
- **Version A (propeller shaft with wide universal joint):**

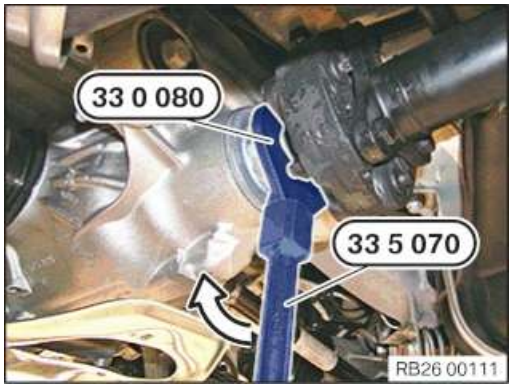
  Secure the propeller shaft against twisting at the centre universal joint using a suitable tool (2).

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- **Version B (propeller shaft with narrow universal joint):**

  Secure the propeller shaft (1) against twisting by using the special tool 2 464 898 and a suitable tool (2) at the central universal joint.



RISK OF DAMAGE

Damage to rear axle differential.

Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

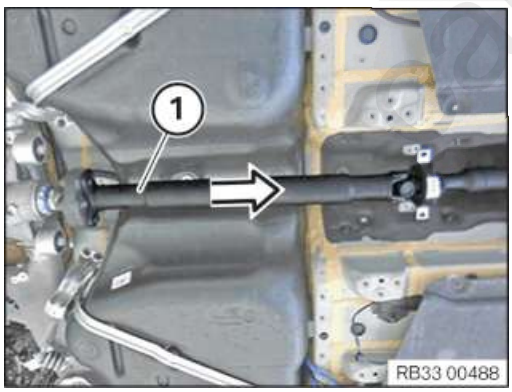
- Do not use the double hexagon head flange nut as counter support.

- Loosen the recessed nut **against** the direction of travel **in clockwise direction** using special tools 0 495 554 (33 5 070) and .

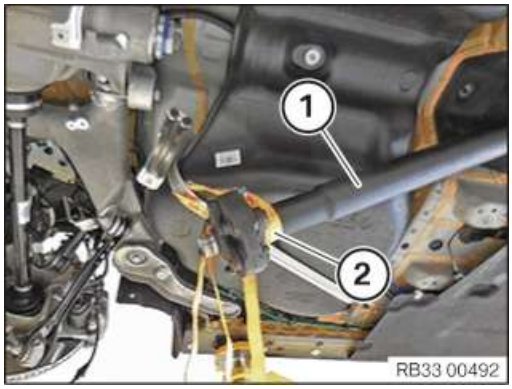
  The bi-hexagonal flange nut must not be used for counter-holding.



- Loosen screws (1) on centre mount.



- Loosen the propeller shaft (1) from the rear axle differential in the direction of the arrow.



- Tie up the propeller shaft (1) using a tensioning strap (2).

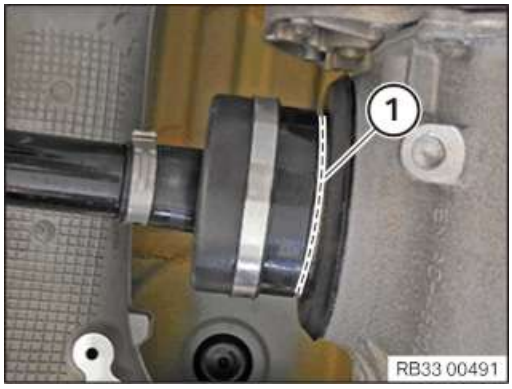
5 – Detaching the output shafts from the rear axle differential

5 – Detaching the output shafts from the rear axle

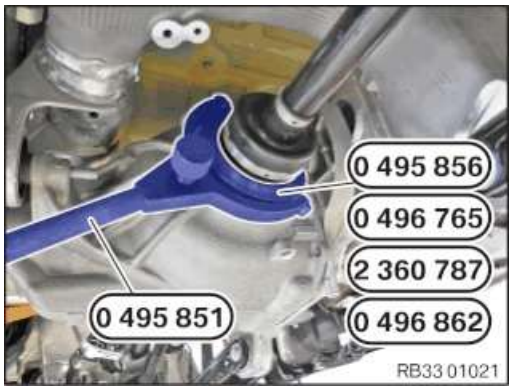
NOTICE

Perform the operations on the left and right side.

▸ **Detach the output shaft from the rear axle differential**



- Position the special tool at the circumferential slot (1) of the output shaft.



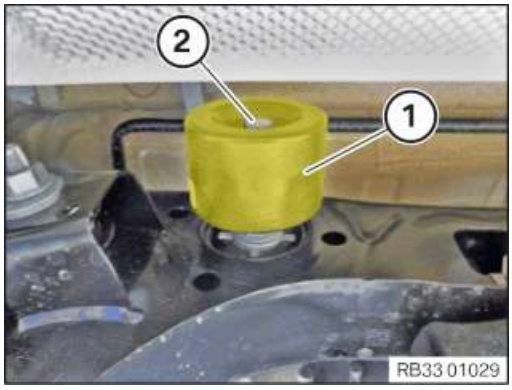
- Press out the output shaft with the special tool and the special tool , , or suitable depending on the equipment specification of the output shaft with jerky movements from the rear axle differential.

6 – Remove the vibration absorber on the rear axle differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

▸ **Remove the vibration absorber on the rear axle differential**



- Loosen screw (2).
- Remove the vibration absorber (1).

7 – Removing rear axle differential

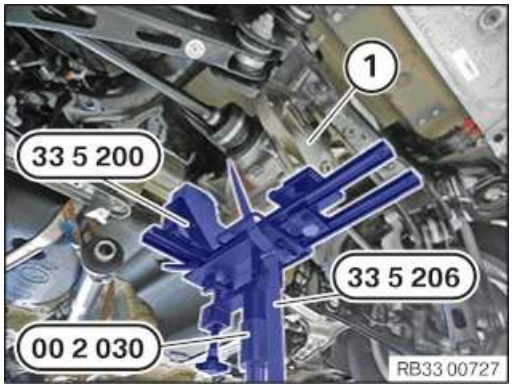
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RISK OF DAMAGE

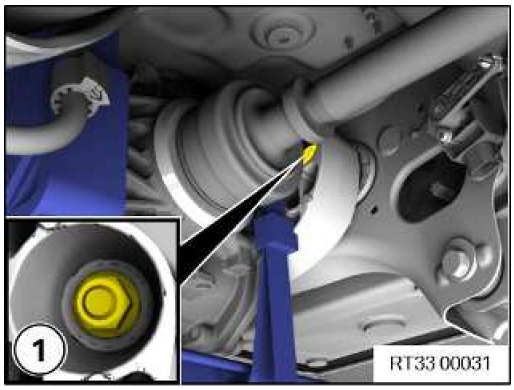
Damage to rear axle differential.

If the rear axle differential drops down, persons can be injured or the rear axle differential can be damaged.

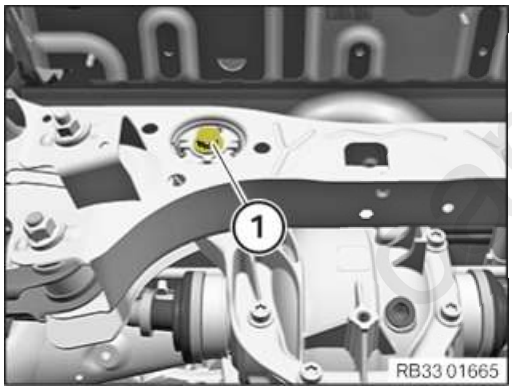
- Secure the rear axle differential using a tensioning strap.



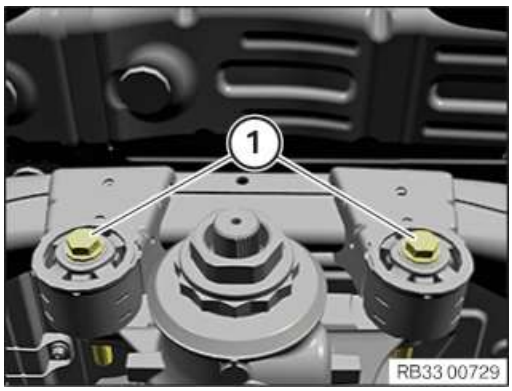
- Attach the special tool on the special tool 0 490 133 (00 2 030).
- Support the rear axle differential (1) with the special tool .
- Secure the rear axle differential (1) with the special tool on the special tool .



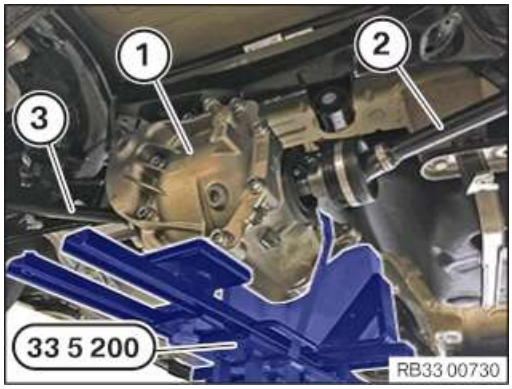
- Loosen nut (1).



- Pull the bolt (1) out of the rear axle support.



- Loosen screws (1) on rear axle support at front.



- Lower the rear axle differential (1) slightly with the special tool .
- Turn the rear axle differential (1) with the special tool towards the right and pull out the right output shaft (2).
- Then pull out the left output shaft (3).
- Tie up the output shafts (2) and (3).

  Do not leave the output shafts hanging on the joint!
- Completely lower the rear axle differential (1) and remove.

MAIN WORK

8 – Replace the radial shaft seal for the output shaft on the left and right

NOTICE

Perform the operations on the left and right side.

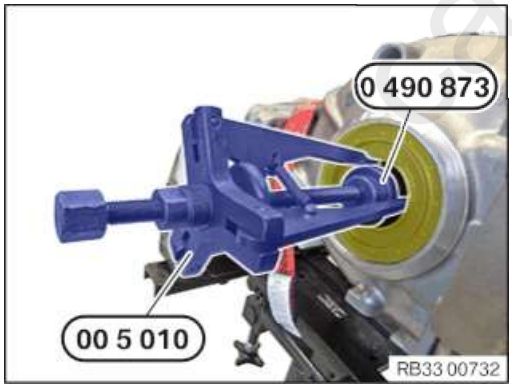
▸ **Replace the radial shaft seal for the output shaft**

TECHNICAL INFORMATION

Radial shaft seal ring are equipped with an installation protection ring. The installation protection ring is used to protect the sealing lip when installing the output shaft.

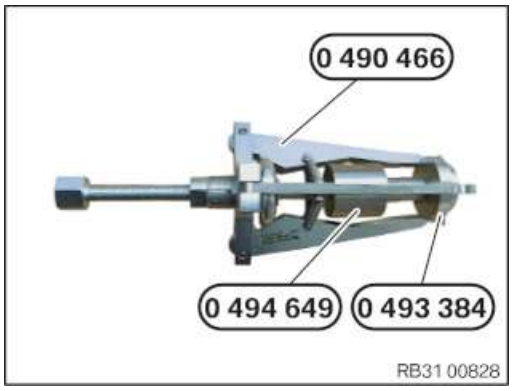
TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.



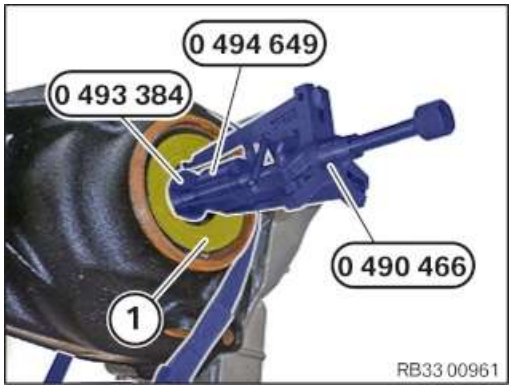
- **Version A:**

  Pull out and remove the radial shaft seal with special tools and .



- **Version B:**

  Prepare the special tool with the special tools 0 494 649 (21 2 230) (without the screw) and .



- Pull out the radial shaft seal (1) with special tools , 0 494 649 (21 2 230) and and remove it.



- Renew radial shaft seal (2).

  Parts: Radial seal

- Remove the installation protection ring (1) from the radial shaft seal (2).



- Coat the housing sheet metal flange and the sealing lips of the radial shaft seal with the approved rear axle differential oil.
- Strike the radial shaft seal with the special tool or until it reaches the limit position.
- Remove the special tool or .



- Insert the installation protection ring (1) into the radial shaft seal (2).
- Make sure installation protection ring (1) does not slip out of radial shaft seal (2).

POSTPROCESSES

9 – If reusing: Checking the left and right output shaft and replacing the circlip

NOTICE

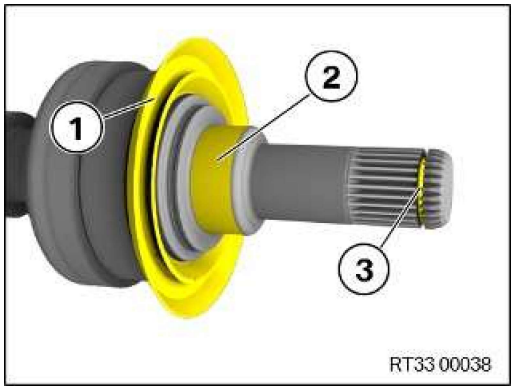
Description is for left component only. Procedure on the right side is identical.

▸ **If reusing: Check the output shaft and replace the circlip**

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TECHNICAL INFORMATION

It is essential to renew the circlip of the output shaft.



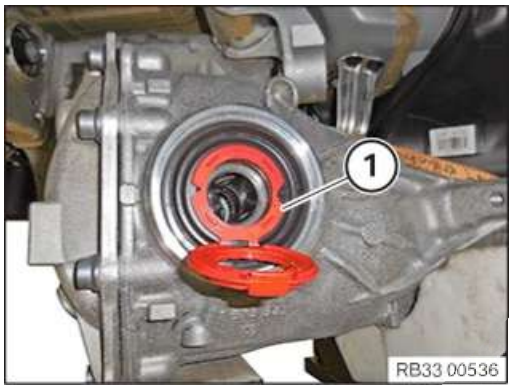
TECHNICAL INFORMATION

Extreme force being required during installation is an indication that the component is damaged or deformed. Check component and replace if necessary.

- Check the gearing of the output shaft for damage and renew damaged parts if necessary.
- Check the dust plate (1) for damage and renew damaged parts as needed.
- Renew the circlip (3).

  Parts: Circlip
- Coat the contact surface (2) using approved rear axle differential oil.

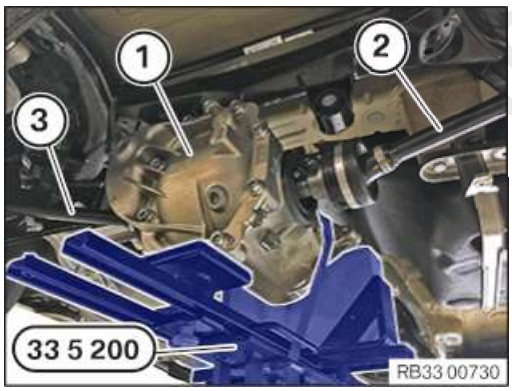
10 – Installing the rear axle differential



NOTICE

Perform the operations on the left and right side.

- Fold open the assembly protection ring (1).



- Raise the rear axle differential (1) somewhat with the special tool .
- Insert the left-hand output shaft (3) into the rear axle differential (1).
- Turn rear axle differential (1) using special tool to right and insert output shaft at right (2) into rear axle differential (1).

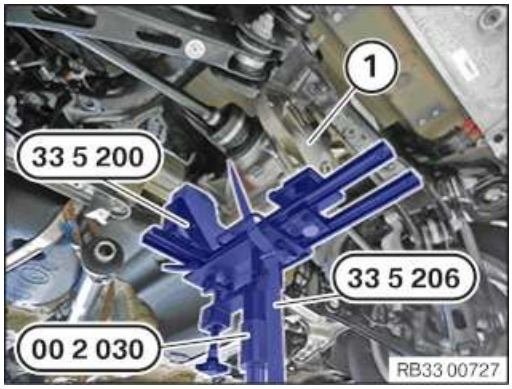


NOTICE

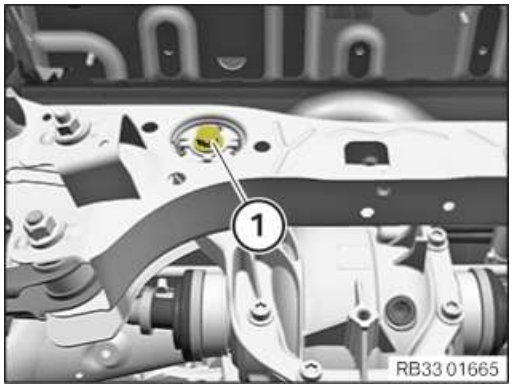
Perform the operations on the left and right side.

- Pull on the tab of the installation protection ring (1) until one of the two predetermined breaking points breaks.
- Pull out and dispose of the installation protection ring (1).

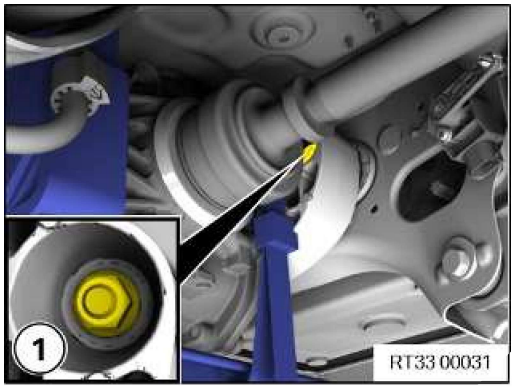
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- Lift the rear axle differential (1) using special tools and 0 490 133 (00 2 030) and position on the rear axle support.
- Make sure that the special tool does not get jammed between the rear axle differential (1) and a dust plate of an output shaft.

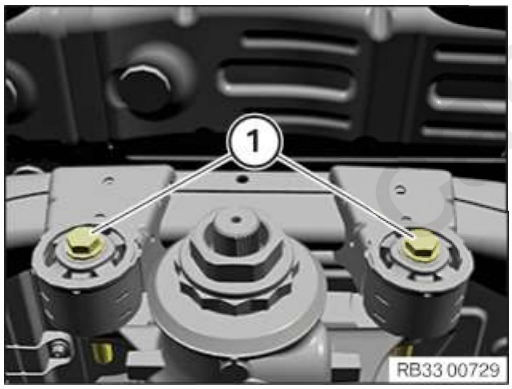


- Insert screw (1).



- Renew nut (1).

  Parts: Nut
- Prescrew the nut (1).

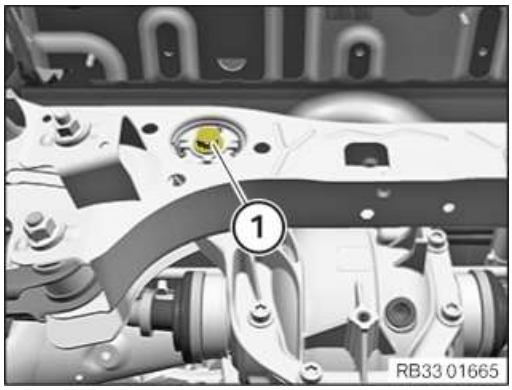


- Renew screws (1).

  Parts: Screws
- Screw in the screws (1) by hand and tighten.

Rear differential to rear axle carrier, front

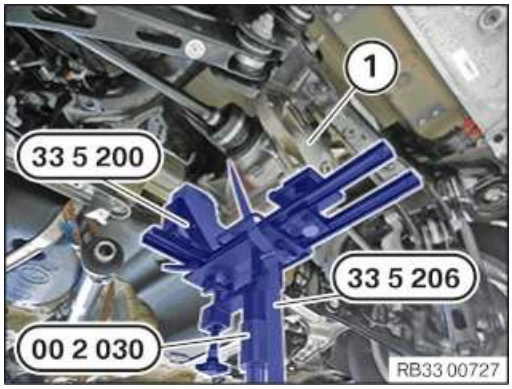
M12	Renew screw.	Tightening torque	100 Nm



- Tighten down screw (1). In doing so, counter support at the nut.

Rear differential to rear axle carrier, rear

M14	Renew nut.	Tightening torque.	175 Nm

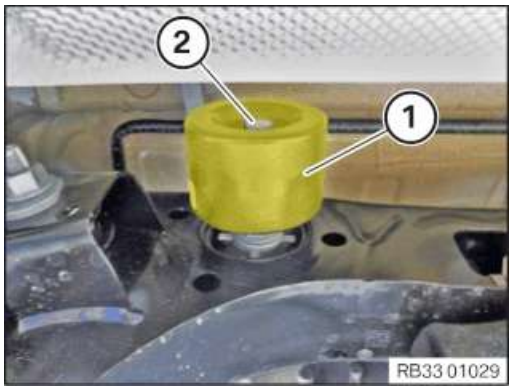


- Loosen and remove the tensioning strap from the rear axle differential (1).
- Lower the special tools 0 490 133 (00 2 030) and and set them aside.

11 – Install the vibration absorber on the rear axle differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



▸ **Install the vibration absorber on the rear axle differential**

- Position the (1) vibration absorber.
- Renew the screw (2).

  Parts: Screw
- Position and tighten the screw (2).

Vibration absorber to rear axle

M8	Renew screw.	Tightening torque	28 Nm

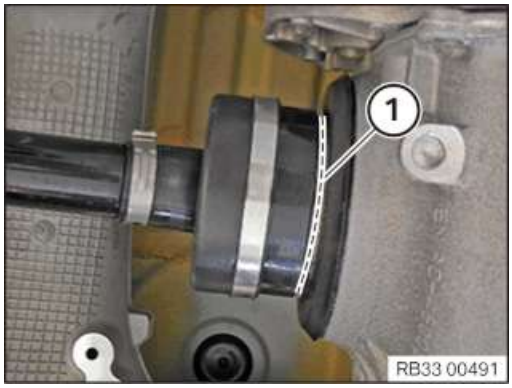
Vibration absorber to rear axle

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

12 – Secure output shafts on the rear axle differential

NOTICE

Perform the operations on the left and right side.



▸ **Secure the output shaft on the rear axle differential**

- Position the following special tool on the slot running around the output shaft (1).

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- Drive the output shaft into the rear axle differential with a suitable special tool , or and a rubber mallet.

13 – Check/top up oil level in the rear axle differential

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- Only use approved oil in the rear axle differential.

TECHNICAL INFORMATION

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

▸ **Supplement the rear axle differential oil change/oil level with oil gun**

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Your browser doesn't support HTML5 video.

TECHNICAL INFORMATION

The training video illustrates the methodology for changing the rear axle differential oil using the oil gun special tool.

The training video does not replace the repair instructions.

The training video is not subject to the update service.

No liability can be accepted for printing or other faults. Subject to changes of a technical nature

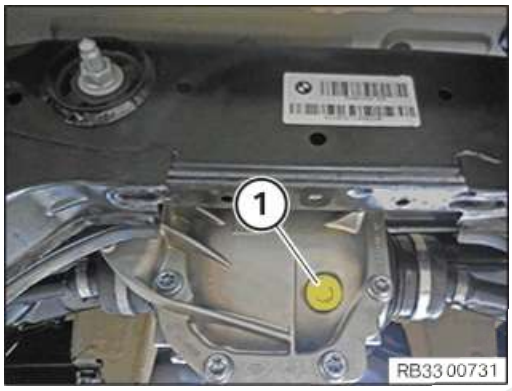
- Follow repair instructions!



TECHNICAL INFORMATION

With the specified capacity, it is imperative to take into account the capacity of the hose of the special tool.

- Use the special tool 2 460 340 to top up the rear axle differential oil.



- Open the oil filler plug (1).
- Check oil level:

  The oil level at the rear axle differential has been adjusted correctly once a small quantity of oil escapes from the opening of the oil filler plug.

  If necessary, top up final drive transmission oil.

Rear axle differential oil: Capacity overview (all)

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

- Replace the oil filler plug (1).

  Parts: Oil filler plug

- Screw in and tighten the oil filler plug (1).

Rear axle differential oil filler plug

M22	Renew the oil filler plug.	Tightening torque	60 Nm

14 – Securing the propeller shaft on the rear axle differential

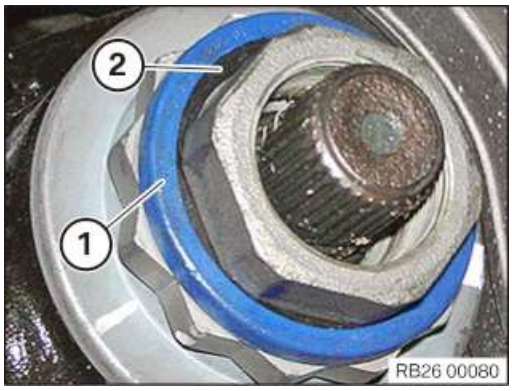
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RISK OF DAMAGE

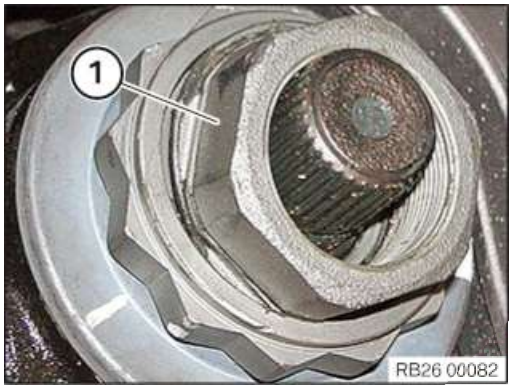
Damage to the propeller shaft during installation.

Non-observance of the installation guidelines for the propeller shaft on the rear axle differential may cause severe damage.

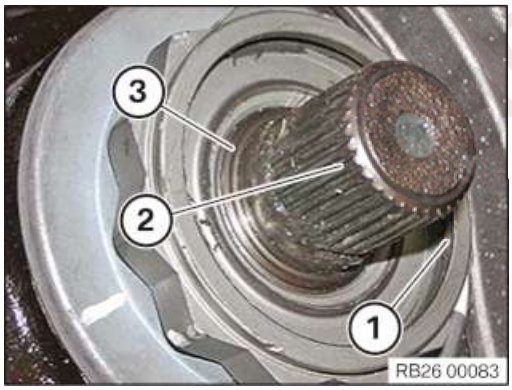
- Always renew the recessed nut on the rear axle differential. Screw locking must be available.
- Strictly observe a hardening time of minimum 3 h after screwing the recessed nut. The hardening time may be longer at lower temperatures.



- Remove the retaining ring (1) and the seal (2).



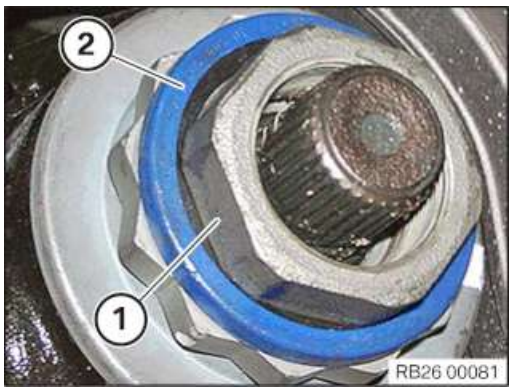
- Remove recessed nut (1).



- Clean and degrease the recessed collar (1) the flange nut, the gearing on the bevel pinion (2) and the taper (3) without any residue.
- Top up the collar insert (1)with grease.

Expendable materials

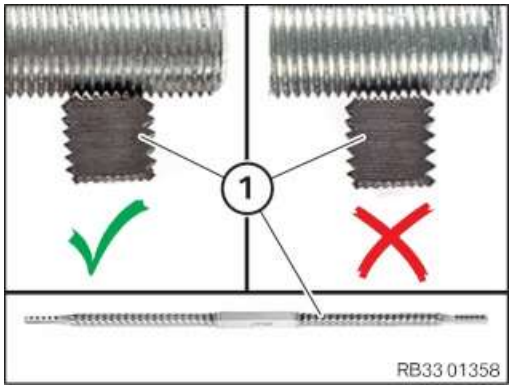
Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Renew the recessed nut (1), seal and retaining ring (2).

  Parts: Recessed nut, seal, retaining ring
- Insert recessed nut (1) including gasket into collar insert of the flange nut.
- Mount the retaining ring (2).

diagn.com



- Use a thread file (1) to remove the adhesive residue on the thread.
- **Make sure that the thread pitch is correct!**



RISK OF DAMAGE

Damage to the output flange.

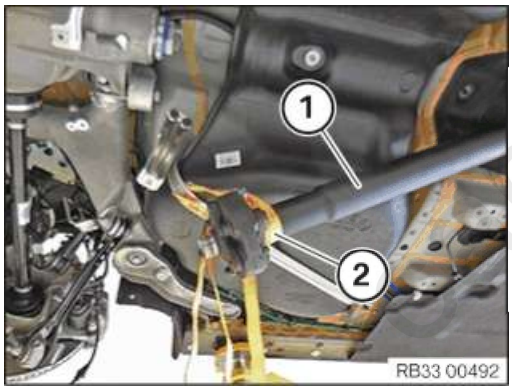
Failure to observe the greasing specifications may lead to damage on the output flange.

- Do not contaminate the thread of the output flange with grease.

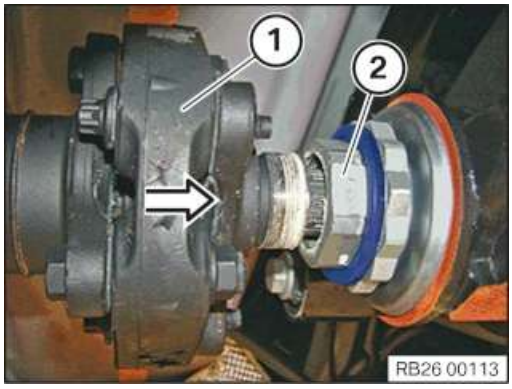
- Remove any adhesive residue on thread (1) of the flange and clean it.
- Clean gearing (2).
- Grease gearing (2).

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754

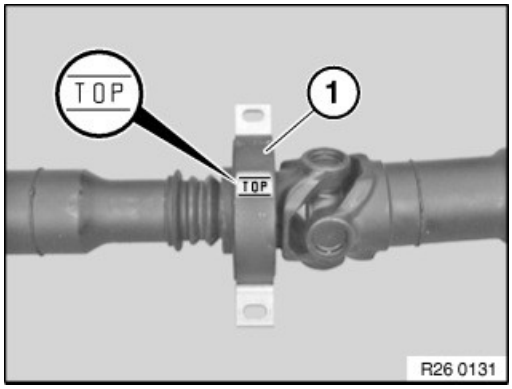


- Loosen the tensioning strap (2) from the propeller shaft (1).



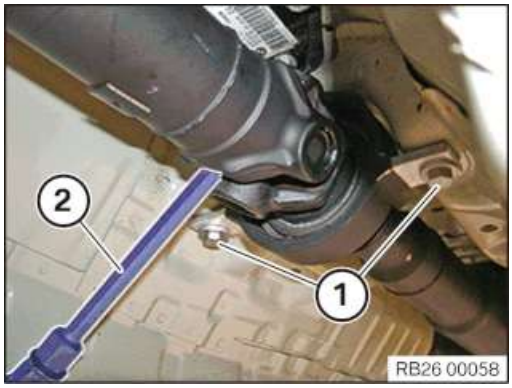
- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Screw and secure recessed nut (2) at least 2 thread starts onto propeller shaft (1) by hand.

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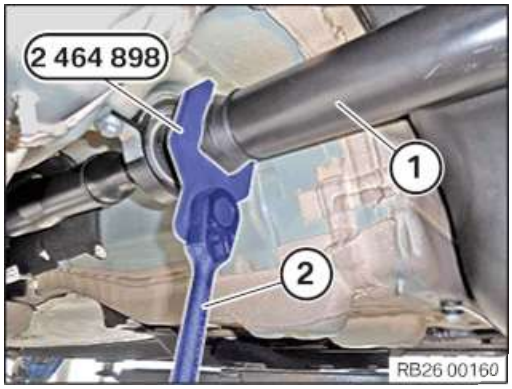
- Position the centre mount (1).

  Position the centre mount (1) with the designation TOP at the top in the transmission tunnel.



- Screw in the screws (1) by a few turns.
- **Version with a broad universal joint:**

  Secure the propeller shaft from twisting with a suitable tool (2) on the centre universal joint.



- **Version with a narrow universal joint:**

  Secure the propeller shaft (1) from twisting with the special tool 2 464 898 and a suitable tool (2) on the centre universal joint.



RISK OF DAMAGE

Damage to the flange nut.

Failure to observe the installation specifications may lead to serious damage to the flange nut and the rear axle differential.

- Do not use the double hexagon flange nut as counter support.
- Screw in the recessed nut within 5 minutes.

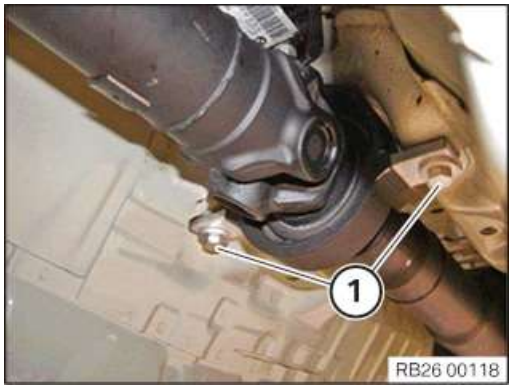
- Tighten recessed nut **counter-clockwise in the direction of the arrow** using special tools 0 495 554 (33 5 070) and .

Propeller shaft on the rear axle differential

Insert nut	Replace insert nut.	Tightening torque	100 Nm

- **After the propeller shaft is installed and the recessed nut is screwed in, strictly observe a hardening time of minimum 3 hours.**

  Do not move or push the vehicle during this time!



- Tighten the screws (1).

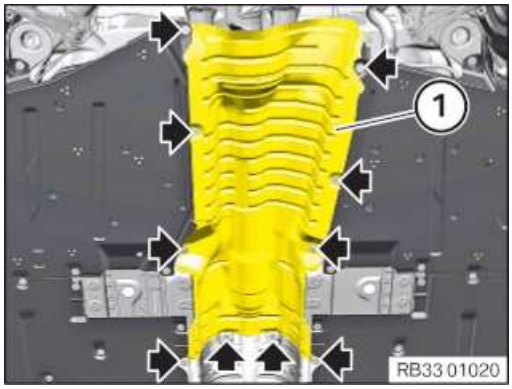
Centre mount to body

M8		Tightening torque	19 Nm

15 – Installing the rear heat shield

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

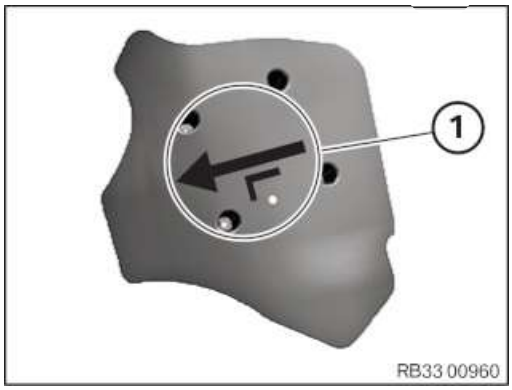
Screws and nuts		Tightening torque	3 Nm

16 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Installing the cover of the camber control arm**



- It is imperative to note the installation location and direction of installation (1).

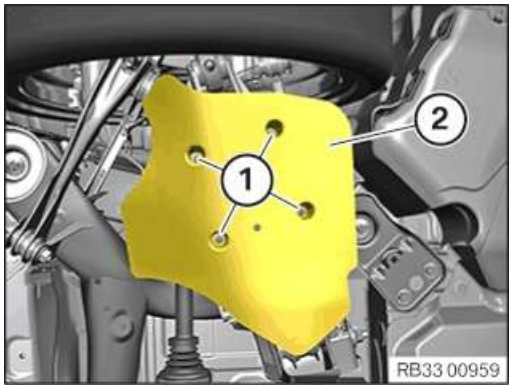
  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right

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- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

17 – Installing the complete exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

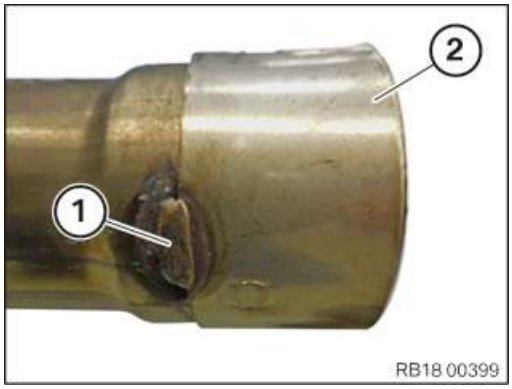
TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.

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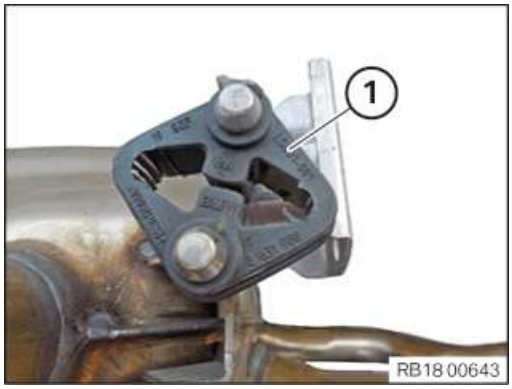
CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

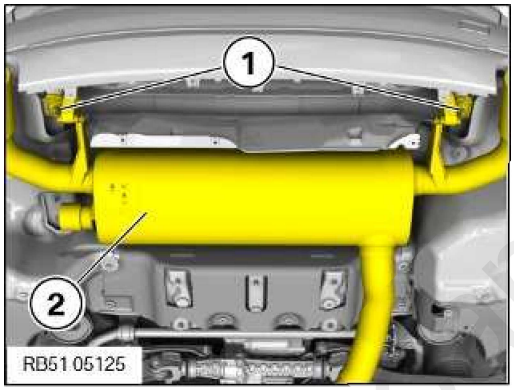


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

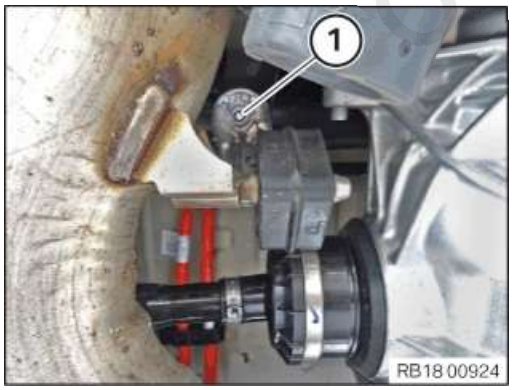


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm



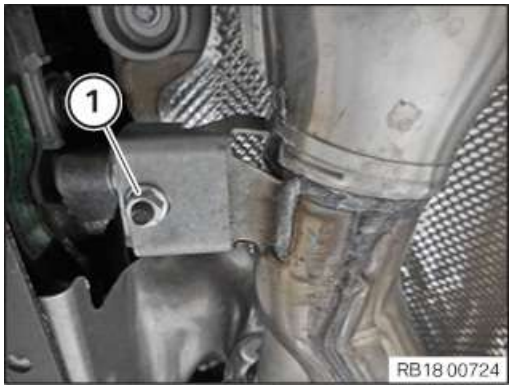
- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

M8 nut		Tightening torque	19 Nm

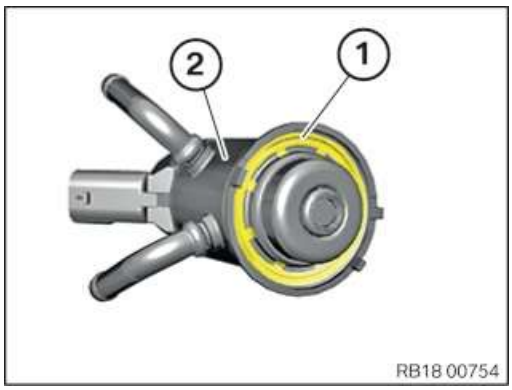
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- Tighten nut (1).

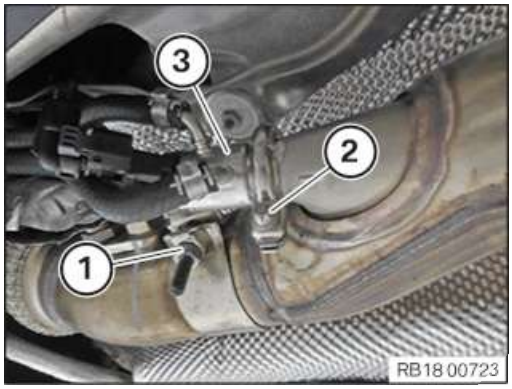
Exhaust system to transmission

M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

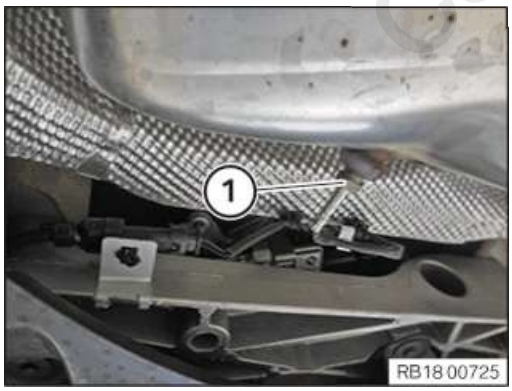
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

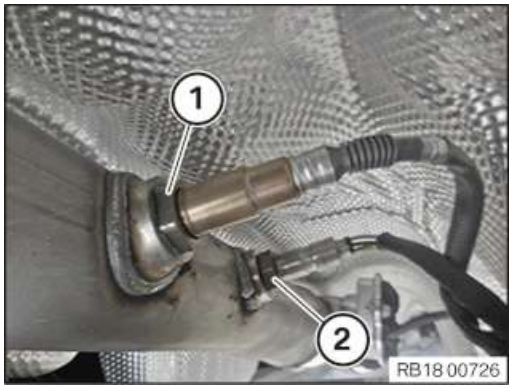


- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm

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- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

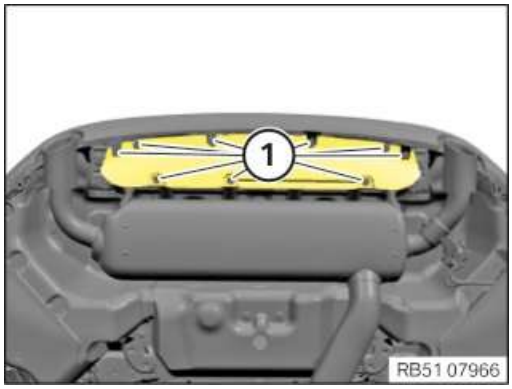
Sensor		Tightening torque	50 Nm

- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

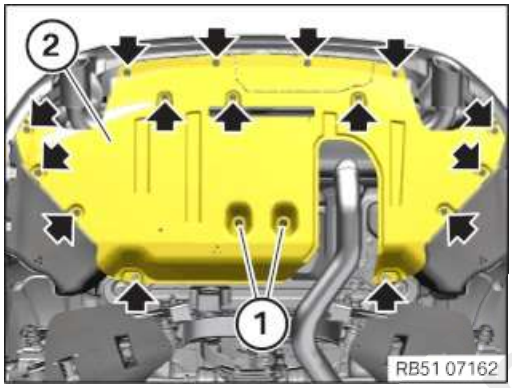
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

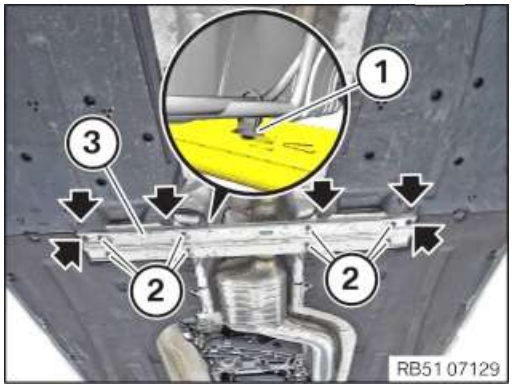
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**



- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

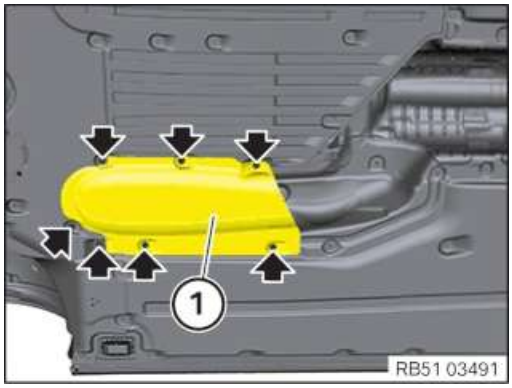
- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Additional Information

Overview of Tightening Torques

Rear differential to rear axle carrier, front — Used in step 10

M12	Renew screw.	Tightening torque	100 Nm

Rear differential to rear axle carrier, rear — Used in step 10

M14	Renew nut.	Tightening torque.	175 Nm

Vibration absorber to rear axle — Used in step 11

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle — Used in step 11

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Rear axle differential oil filler plug — Used in step 13

M22	Renew the oil filler plug.	Tightening torque	60 Nm

Propeller shaft on the rear axle differential — Used in step 14

Insert nut	Replace insert nut.	Tightening torque	100 Nm

Centre mount to body — Used in step 14

M8		Tightening torque	19 Nm

Heat shield to undercarriage — Used in step 15

Screws and nuts		Tightening torque	3 Nm

Cover to camber control arm — Used in step 16

M6	Replace nuts.	Tightening torque	6 Nm

Rear silencer to body / bumper support — Used in step 17

M8	Replace nuts.	Tightening torque	19 Nm

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Exhaust system to rear axle carrier			Used in step 17
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 17
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 17
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 17
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 17
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 17
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 17
Sensor		Tightening torque	55 Nm

Diffuser / underbody panelling			Used in step 17
Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel			Used in step 17
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling			Used in step 17
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Overview of Special Tools

2 464 898 Open-end spanner



Common	Used in step 414
Usage	Open-end spanner SW50 for disassembly and installation of the propeller shaft on rear axle differential. The silhouette foil is included in the delivery specification.
Included in the tool or work	
Storage location	A7
Replaced by	
In connection with	
SI-Number	01 19 18 (579)

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0 495 554 (33 5 070) Extension



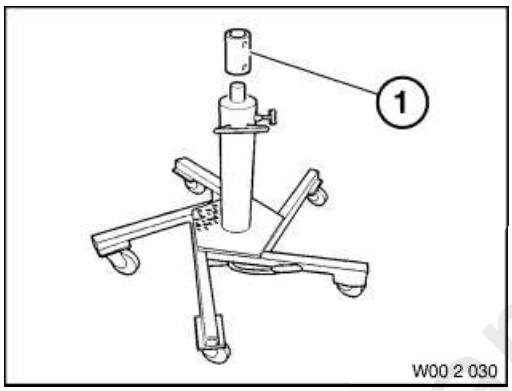
Common Used in step 414

Usage	Pull-out extension for 33 5 040, 33 5 050, 33 5 060.
Included in the tool or work	
Storage location	A18
Replaced by	
In connection with	
SI-Number	01 21 06 (300)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 495 592 (33 5 071)		**Extension** (Extension (1 item)) discontinued, can only be ordered using complete tool	

0 490 133 (00 2 030) Device



Common Used in step 710

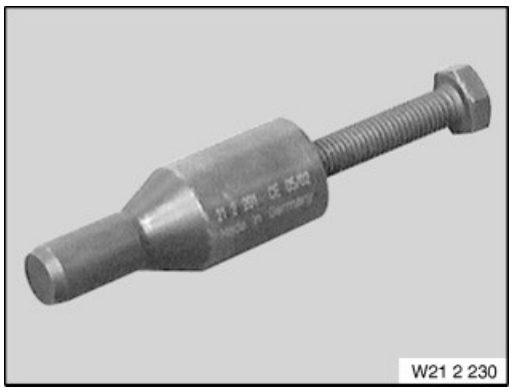
Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

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0 494 649 (21 2 230) Mandrel



Common	Used in step 8
Usage	(clutch centring drift) With screw M10 (G transmission)
Included in the tool or work	
Storage location	C45
Replaced by	
In connection with	
SI-Number	01 03 03 (960)

2 460 340 Pump



Common	Used in step 13
Usage	Oil gun to fill rear axle differentials or differentials with 1 litre containers.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 09 18 (553)

Overview Technical Data

Rear axle differential oil: Capacity overview (all) Used in step 13

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168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	

Operating materials	Used in step
1.1 Grease for propeller shaft inserted	14
1.0 Grease for propeller shaft (flexible disc centring and sliding piece)	14

Operating materials	Used in step
Main group 33	13

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33 10 656 Replacing right rear axle differential servomotor

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

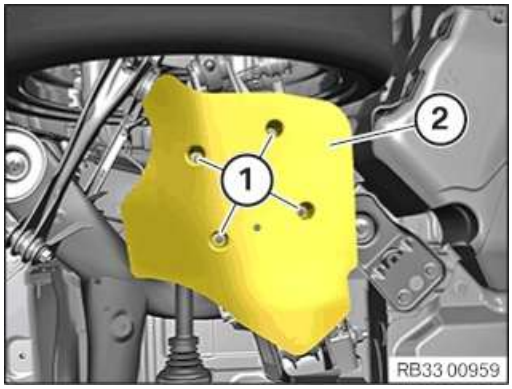
Hot exhaust system.

Risk of burning!

- Any work must exclusively be carried out with an exhaust system that has cooled down.

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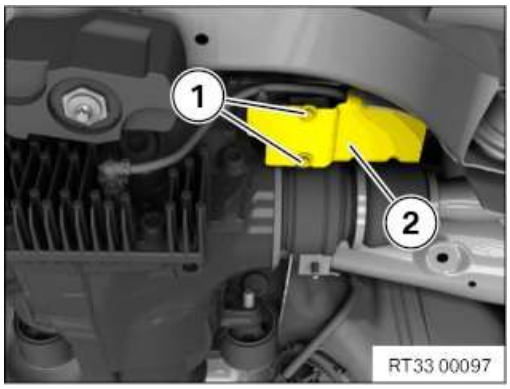
1 – Removing the cover of the right camber control arm



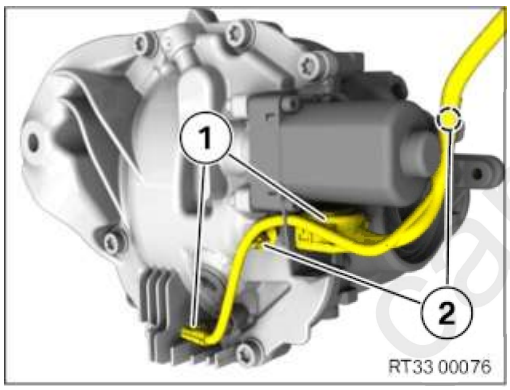
▸ **Removing the cover of camber control arm**

- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

2 – Disconnect plug connection



- Loosen screws (1).
- Remove heat shield (2).

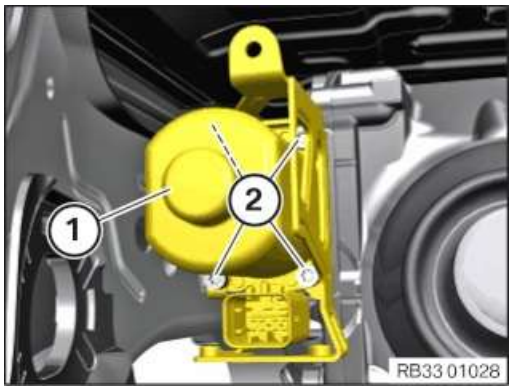


- Unlock and disconnect plug connections (1).
- Release cable from brackets (2).

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MAIN WORK

3 – Replacing servomotor

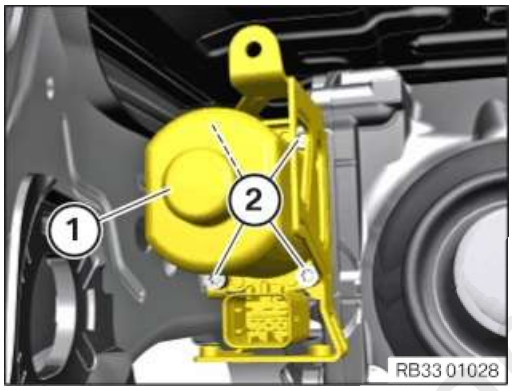


- Loosen screws (2).
- Feed out the servomotor (1) with the holder and remove it.



- Renew the servomotor (1).

  Parts: Servomotor
- Mount the O-ring (2) on the servomotor (1).



TECHNICAL INFORMATION

The gearing of servomotor and the intermediate wheel must be checked and the positive locking ensured.

- Guide in servomotor (1) with the holder and position.

  The servomotor (1) must be flush against the cover of the rear axle differential.
- Renew screws (2).

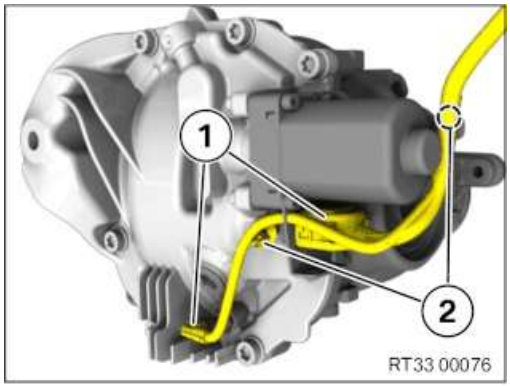
  Parts: Screws
- Tighten the screws (2).

Servomotor to rear axle final drive

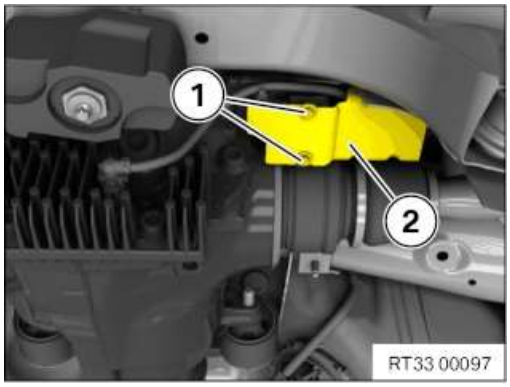
M6	Renew screws.	Tightening torque	9 Nm

POSTPROCESSES

4 – Connect connector



- Connect connectors (1) and lock.
- Secure the cables on the brackets (2).



- Position the heat shield (2).
- Tighten the screws (1).

Heat shield to servomotor

M5x10		Tightening torque	5 Nm

5 – Install the cover of the right camber control arm

▸ **Installing the cover of the camber control arm**



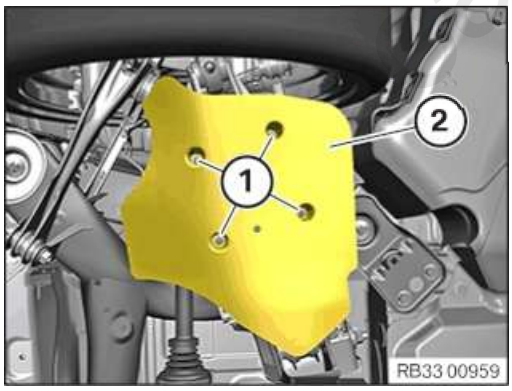
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

6 – Replacement (rear axle differential or servomotor): Carrying out the "Delete wear data" service function



- Connect vehicle to the diagnosis system.
- Carry out the "Delete wear data" service function.

Additional Information

Overview of Tightening Torques

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Servomotor to rear axle final drive			Used in step 3
M6	Renew screws.	Tightening torque	9 Nm

Heat shield to servomotor			Used in step 4
M5x10		Tightening torque	5 Nm

Cover to camber control arm			Used in step 5
M6	Replace nuts.	Tightening torque	6 Nm

Links

Repair instructions	Used in step
00 .. ... Raising the vehicle using a vehicle hoist	

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

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- After completion of repair work, check the transmission oil level in the rear axle differential.
- Use only the approved final drive transmission oil.

PRELIMINARY WORK

1 – Remove complete exhaust system

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

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CAUTION

Heavy component.

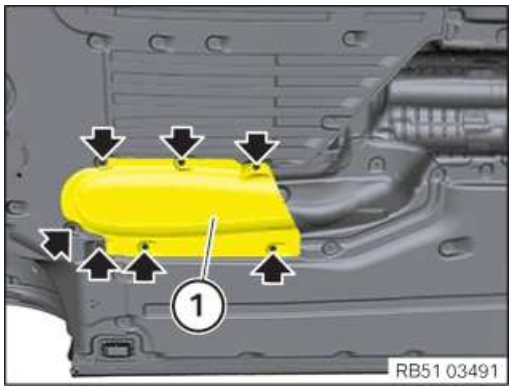
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

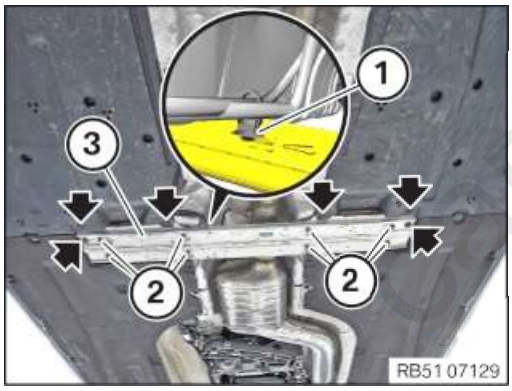
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**



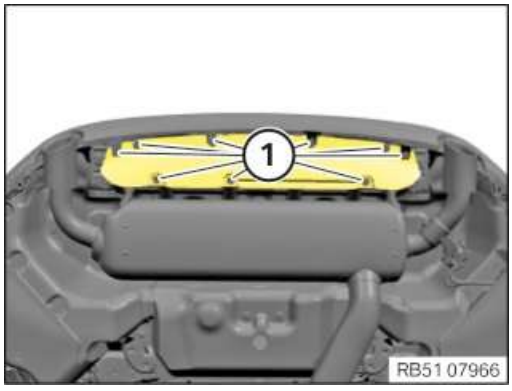
- Remove screws (arrows).

NOTICE

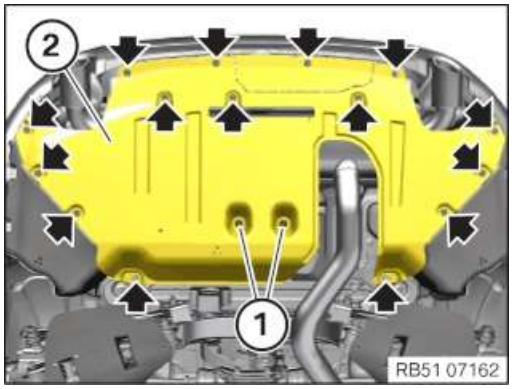
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

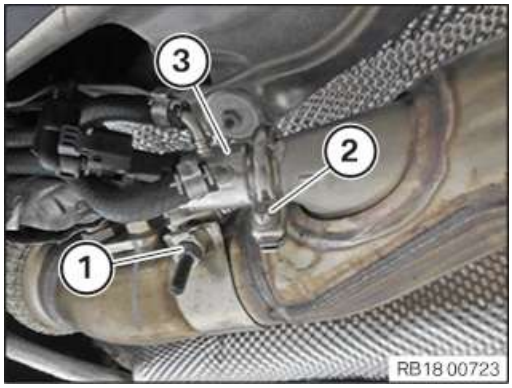
▸ **Removing the rear diffuser**



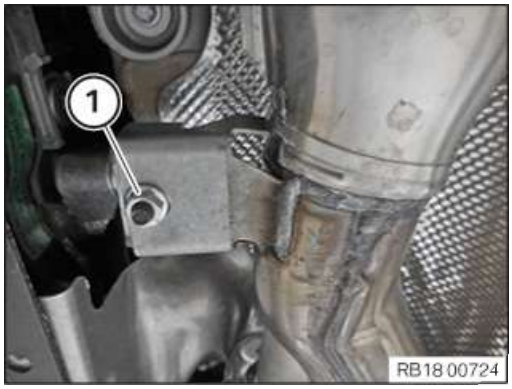
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



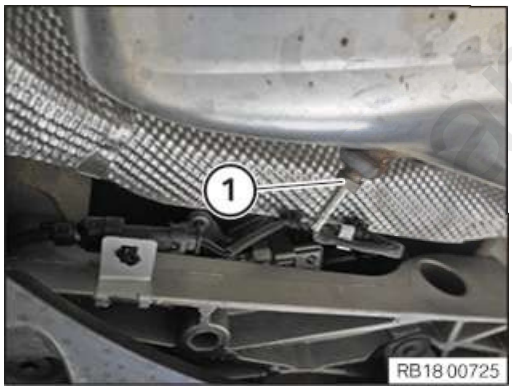
- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).



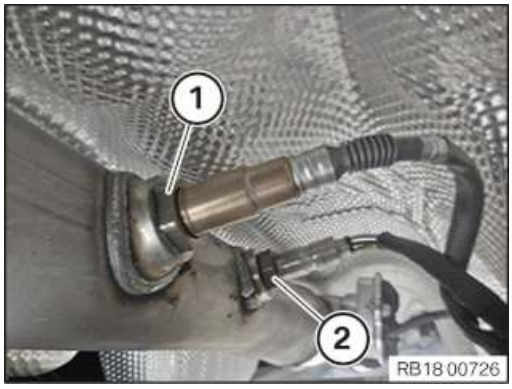
- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.



- Loosen nut (1).

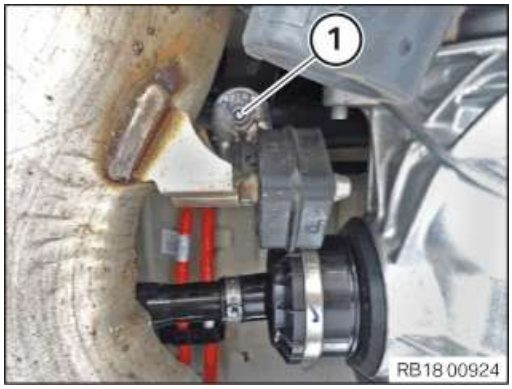


- Detach the exhaust temperature sensor (1) from the exhaust system.

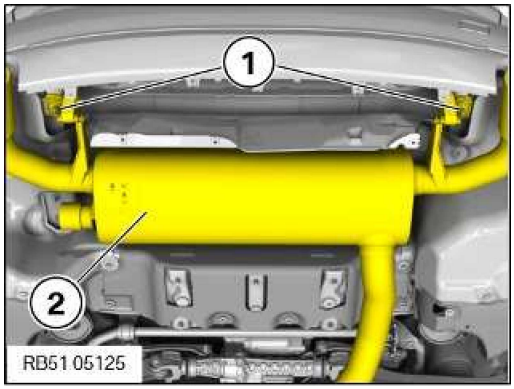


- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.

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- Release the nut (1) on the rear axle support.



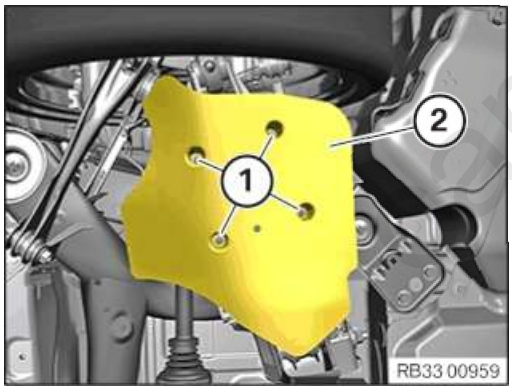
- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

2 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover of camber control arm**

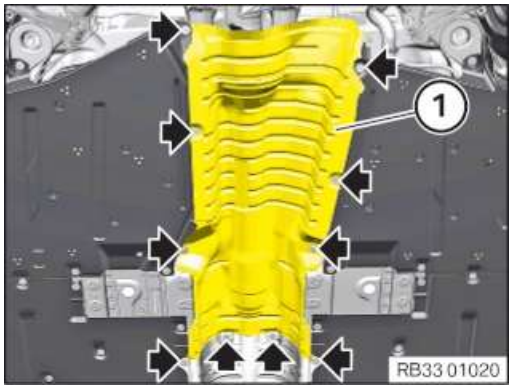


- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

3 – Remove heat shield at rear.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

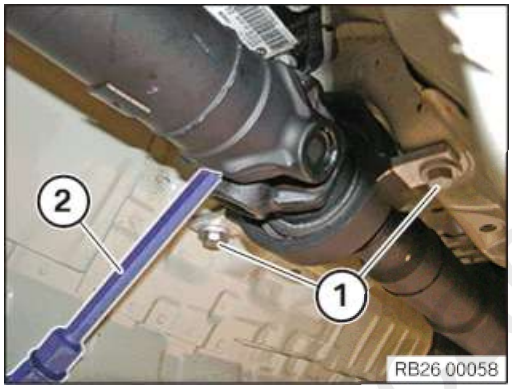
4 – Releasing the propeller shaft from the rear axle differential

RISK OF DAMAGE

Damage to propeller shaft during removal.

Non-observance of the removal guidelines for the propeller shaft on the rear axle differential may cause severe damage.

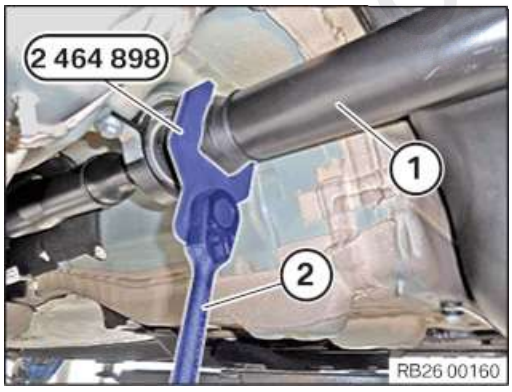
- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened on the recessed nut only and exclusively in the direction of rotation otherwise the anti-twist lock of the bi-hexagonal flange nut is damaged.
- In the event of a damaged anti-twist lock on the bi-hexagonal flange nut: Replace the rear axle differential.



- Loosen screws (1).

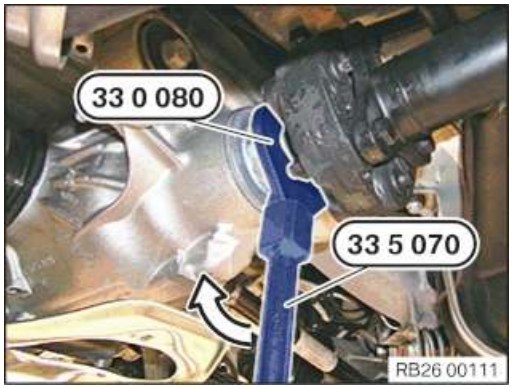
  Do not remove bolts (1) yet.
- **Version A (propeller shaft with wide universal joint):**

  Secure the propeller shaft against twisting at the centre universal joint using a suitable tool (2).



- **Version B (propeller shaft with narrow universal joint):**

  Secure the propeller shaft (1) against twisting by using the special tool 2 464 898 and a suitable tool (2) at the central universal joint.



RISK OF DAMAGE

Damage to rear axle differential.

Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

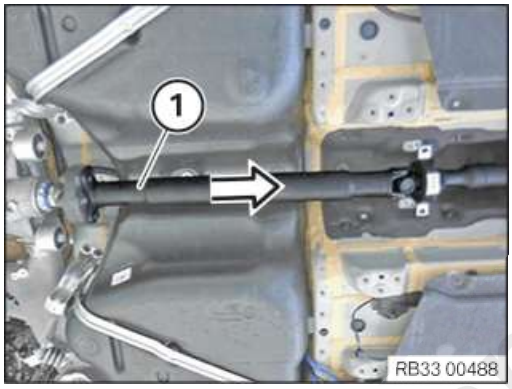
- Do not use the double hexagon head flange nut as counter support.

- Loosen the recessed nut **against** the direction of travel **in clockwise direction** using special tools 0 495 554 (33 5 070) and .

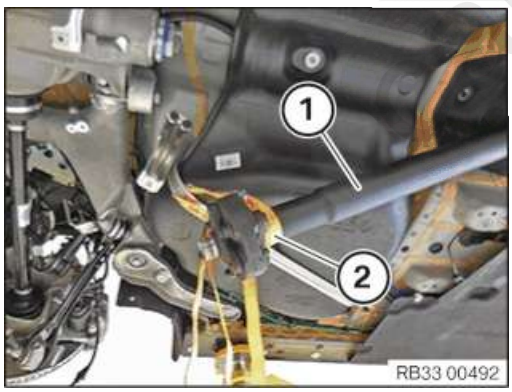
  The bi-hexagonal flange nut must not be used for counter-holding.



- Loosen screws (1) on centre mount.



- Loosen the propeller shaft (1) from the rear axle differential in the direction of the arrow.

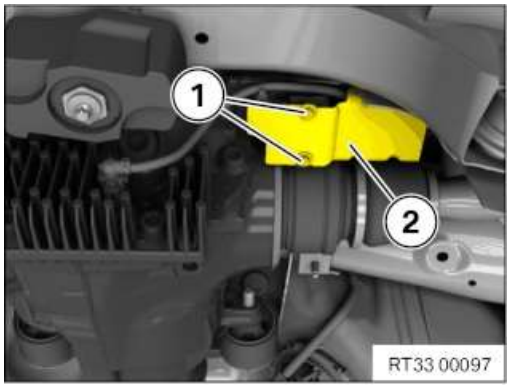


- Tie up the propeller shaft (1) using a tensioning strap (2).

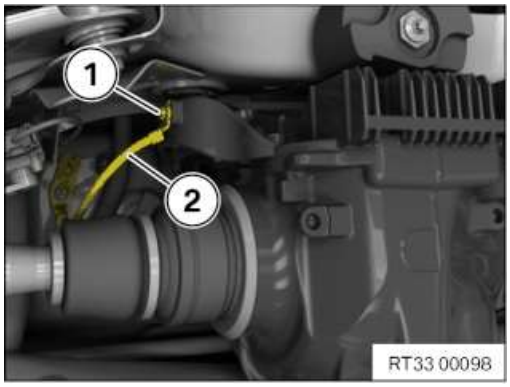
5 – Releasing the wiring harness from the M Sport differential

NOTICE

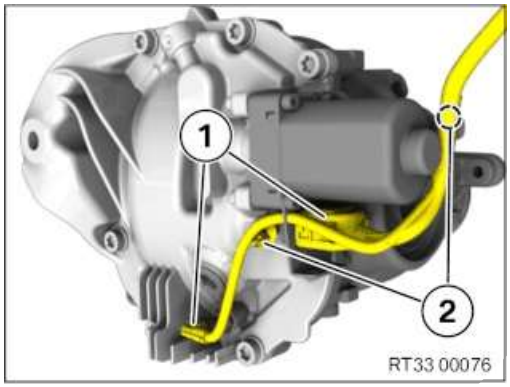
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Loosen screws (1).
- Remove heat shield (2).



- Release the screw (1).
- Detach the ground strap (2) from the rear axle differential.



- Unlock and disconnect plug connections (1).
- Release cable from brackets (2).

6 – Releasing the left or right output shaft from the rear axle differential

NOTICE

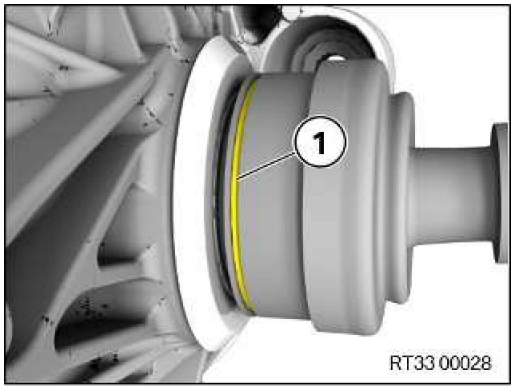
Description is for left component only. Procedure on the right side is identical.

▸ **Detach the output shaft from the rear axle differential**

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

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- Position the special tool described below at the circular groove (1) of the output shaft.



- Position the special tool with a suitable special tool , , or on the output shaft depending on its equipment specification.
- Support the special tool with a standard tool (1) and press the output shaft out jerkily from the rear axle differential.

7 – Lowering rear axle differential

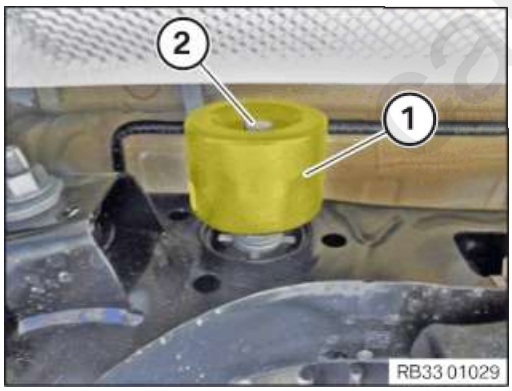
RISK OF DAMAGE

Damage to rear axle differential.

If the rear axle differential drops down, persons can be injured or the rear axle differential can be damaged.

- Secure the rear axle differential using a tensioning strap.

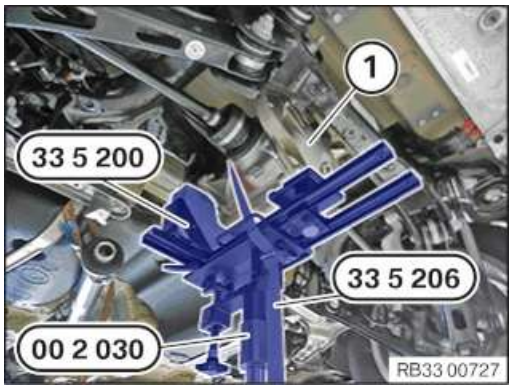
▸ **Remove vibration absorber**



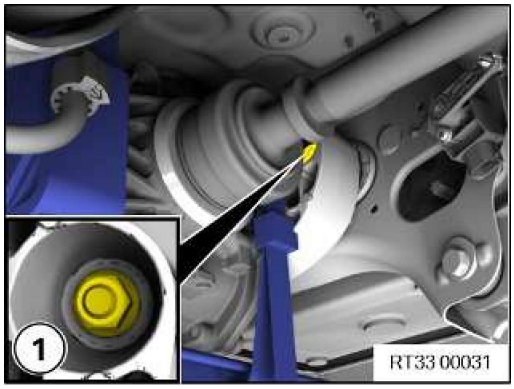
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

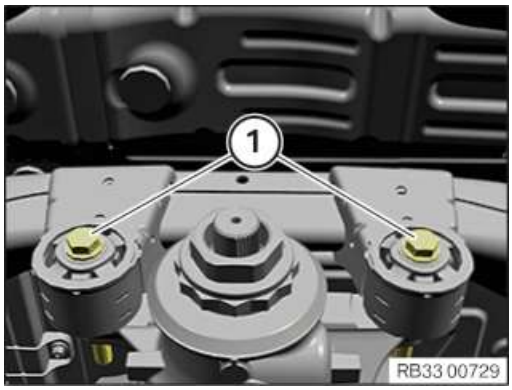
- Release the screw (2).
- Remove the vibration absorber (1).



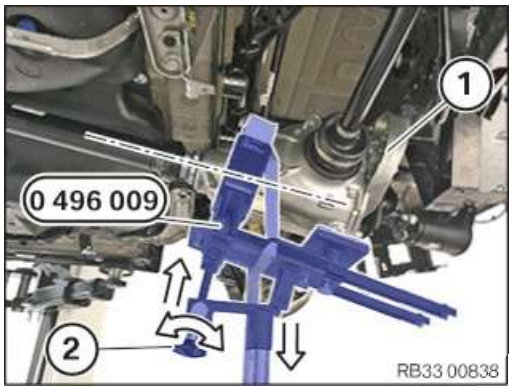
- Place the special tool onto the universal jack 0 490 133 (00 2 030).
- Support the rear axle differential (1) with the special tool .
- Secure the rear axle differential (1) with a tensioning strap on the special tool .



- Loosen nut (1) on the rear axle support at rear.
- Remove screw.



- Loosen screws (1) on rear axle support at front.



- Lower rear axle differential (1) using the special tool only until the cover on the rear axle differential is accessible.

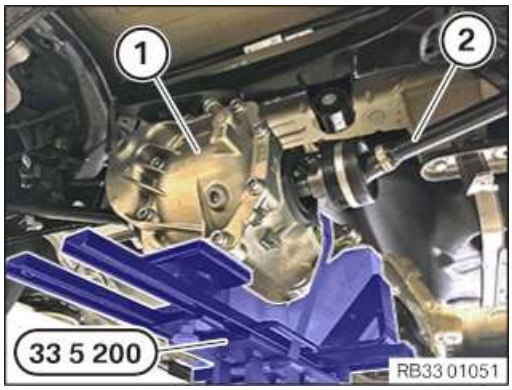
  During lowering, twist the adjusting screw (2) to slightly raise the rear axle differential at the front.

8 – Pulling the left or right output shaft out from the rear axle differential

NOTICE

Description is for right component only. The procedure on the left side is identical.

▸ **Pulling the output shaft out from the rear axle differential**



- Turn the rear axle differential (1) to the left with the special tool . Thereby, pull out the output shaft (2).
- Bind the output shaft firmly (2).

MAIN WORK

9 – Replacing the radial shaft seal for the output shaft on the left or right

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NOTICE

Description is for left component only. Procedure on the right side is identical.

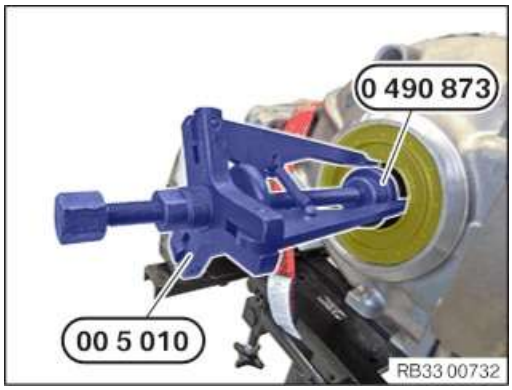
▸ **Replace the radial shaft seal for the output shaft**

TECHNICAL INFORMATION

Radial shaft seal ring are equipped with an installation protection ring. The installation protection ring is used to protect the sealing lip when installing the output shaft.

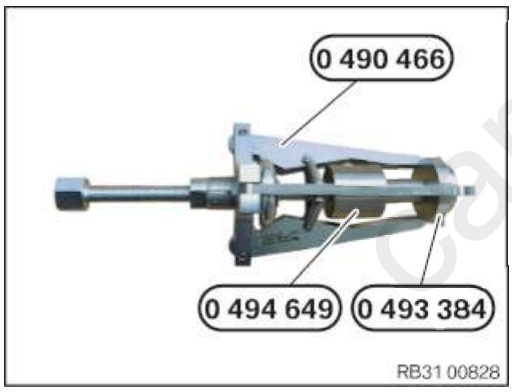
TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.



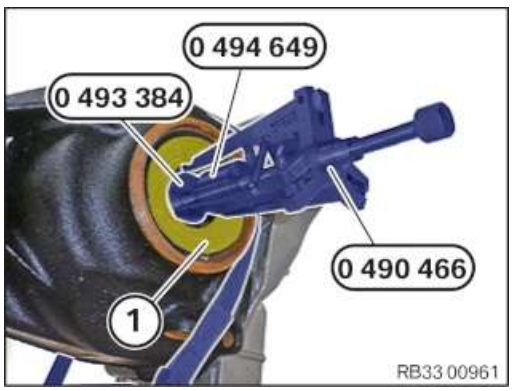
- **Version A:**

  Pull out and remove the radial shaft seal with special tools and .



- **Version B:**

  Prepare the special tool with the special tools 0 494 649 (21 2 230) (without the screw) and .



- Pull out the radial shaft seal (1) with special tools , 0 494 649 (21 2 230) and and remove it.

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- Renew radial shaft seal (2).

  Parts: Radial seal

- Remove the installation protection ring (1) from the radial shaft seal (2).



- Coat the housing sheet metal flange and the sealing lips of the radial shaft seal with the approved rear axle differential oil.
- Strike the radial shaft seal with the special tool or until it reaches the limit position.
- Remove the special tool or .

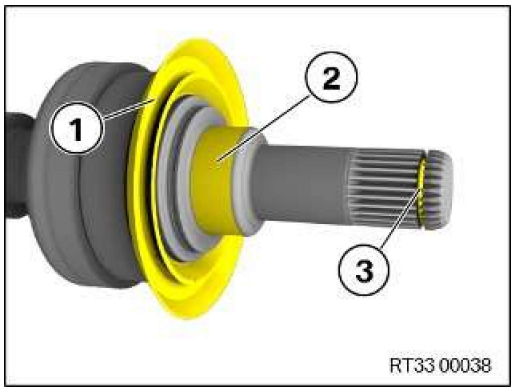


- Insert the installation protection ring (1) into the radial shaft seal (2).
- Make sure installation protection ring (1) does not slip out of radial shaft seal (2).

10 – If reusing: Check the output shaft and replace the circlip

TECHNICAL INFORMATION

It is essential to renew the circlip of the output shaft.



TECHNICAL INFORMATION

Extreme force being required during installation is an indication that the component is damaged or deformed. Check component and replace if necessary.

- Check the gearing of the output shaft for damage and renew damaged parts if necessary.
- Check the dust plate (1) for damage and renew damaged parts as needed.
- Renew the circlip (3).

  Parts: Circlip

- Coat the contact surface (2) using approved rear axle differential oil.

POSTPROCESSES

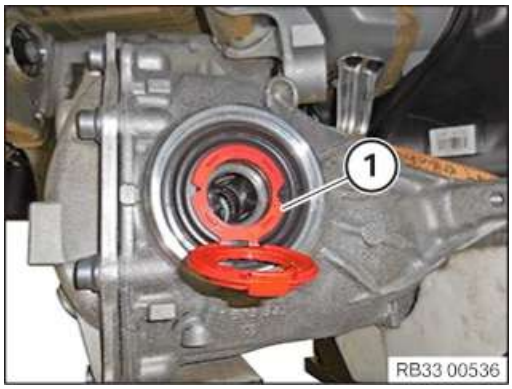
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11 – Inserting the left or right output shaft in the rear axle differential

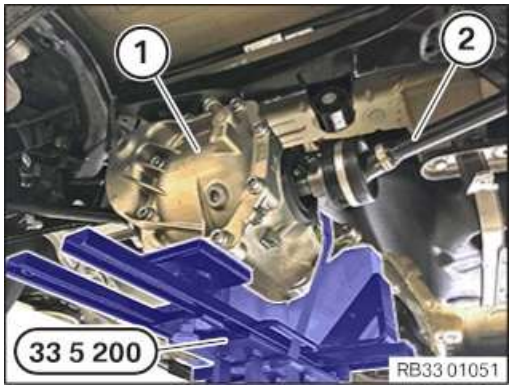
NOTICE

Description is for right component only. The procedure on the left side is identical.

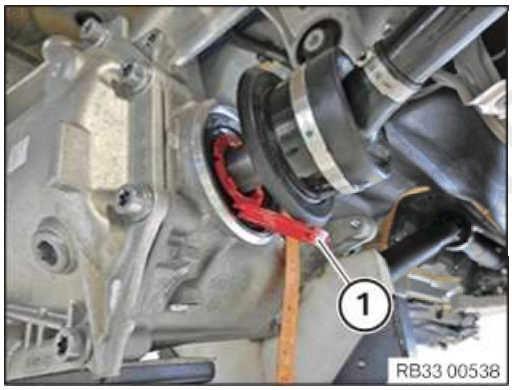
▸ **Feeding the output shaft into the rear axle differential**



- Fold open the assembly protection ring (1).

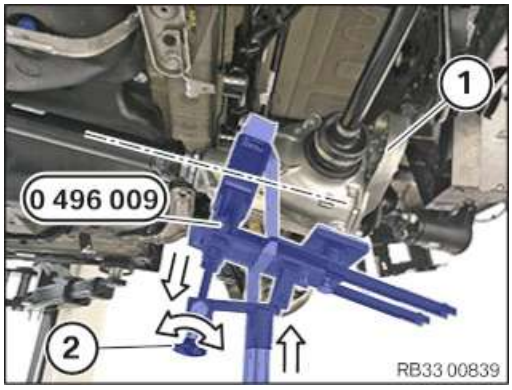


- Turn the rear axle differential (1) with the special tool to the left. While doing so, feed in the output shaft (2).

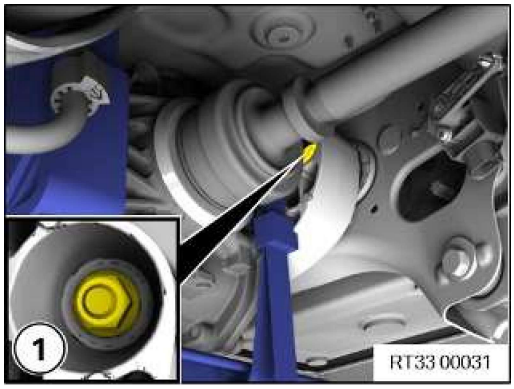


- Pull on the tab of the installation protection ring (1) until one of the two predetermined breaking points breaks.
- Pull out and dispose of the installation protection ring (1).

12 – Lifting the rear axle differential

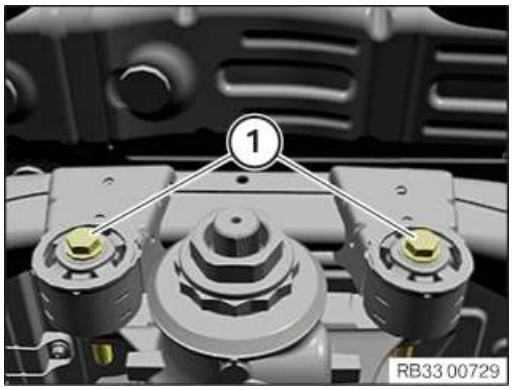


- Lift and position the rear axle differential (1)with the special tool .
- While lifting the rear axle differential (1), twist the adjusting screw (2) to correct the installation position.



- Insert screw from behind.
- Renew nut (1).

  Parts: Nut
- Screw on the nut (1) by several turns onto the screw.

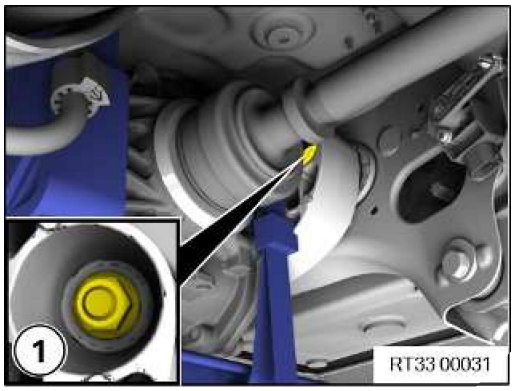


- Renew screws (1).

  Parts: Screws
- Screw in the screws (1) by hand.
- Tighten the screws (1).

Rear differential to rear axle carrier, front

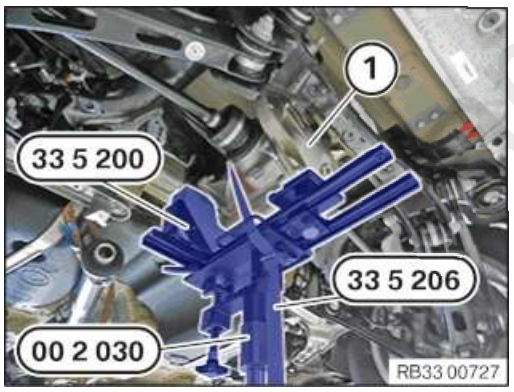
M12	Renew screw.	Tightening torque	100 Nm



- Tighten nut (1).

Rear differential to rear axle carrier, rear

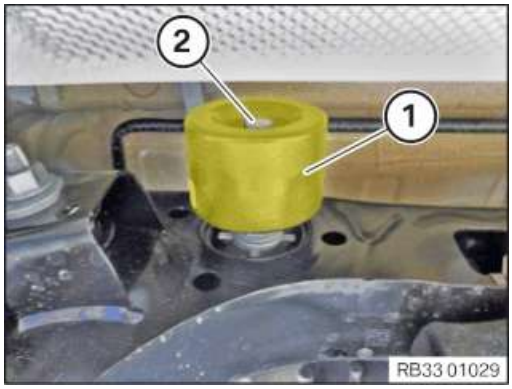
M14	Renew nut.	Tightening torque.	175 Nm



- Loosen and remove the tensioning strap from the rear axle differential (1).
- Lower and remove the special tools 0 490 133 (00 2 030) and .

▸ **install the vibration absorber**

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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Position the (1) vibration absorber.
- Renew the screw (2).

  Parts: Screw
- Tighten down screw (2).

Vibration absorber to rear axle

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle

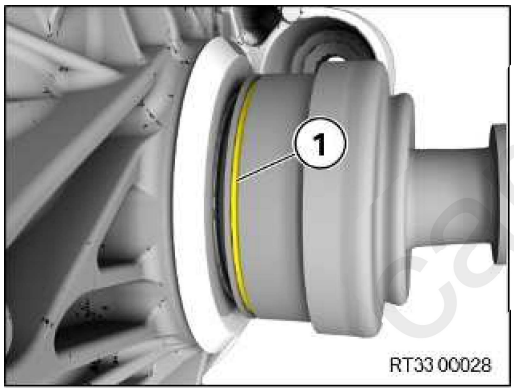
M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

13 – Secure left or right output shaft on rear axle differential.

▸ **Secure the output shaft on the rear axle differential**

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.



- Position the special tool described below at the circular groove (1) of the output shaft.



- Drive in the output shaft with a suitable special tool , or and a rubber mallet in the rear axle differential.

14 – Check/top up oil level in the rear axle differential

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CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- Only use approved oil in the rear axle differential.

TECHNICAL INFORMATION

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

▸ **Supplement the rear axle differential oil change/oil level with oil gun**

Your browser doesn't support HTML5 video.

TECHNICAL INFORMATION

The training video illustrates the methodology for changing the rear axle differential oil using the oil gun special tool.

The training video does not replace the repair instructions.

The training video is not subject to the update service.

No liability can be accepted for printing or other faults. Subject to changes of a technical nature

- Follow repair instructions!

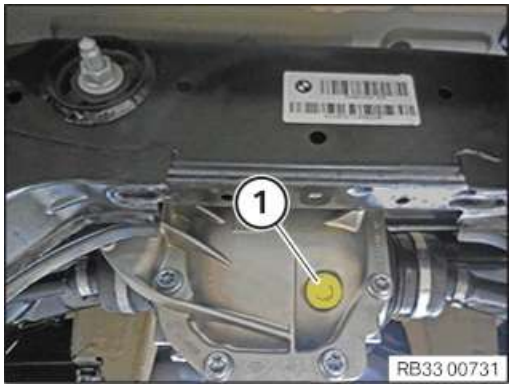
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TECHNICAL INFORMATION

With the specified capacity, it is imperative to take into account the capacity of the hose of the special tool.

- Use the special tool 2 460 340 to top up the rear axle differential oil.



- Open the oil filler plug (1).
- Check oil level:

  The oil level at the rear axle differential has been adjusted correctly once a small quantity of oil escapes from the opening of the oil filler plug.

  If necessary, top up final drive transmission oil.

Rear axle differential oil: Capacity overview (all)

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

- Replace the oil filler plug (1).

  Parts: Oil filler plug
- Screw in and tighten the oil filler plug (1).

Rear axle differential oil filler plug

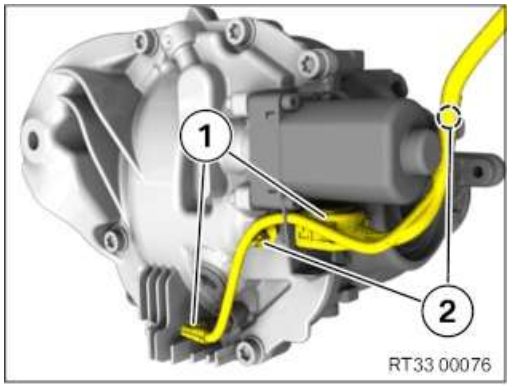
M22	Renew the oil filler plug.	Tightening torque	60 Nm

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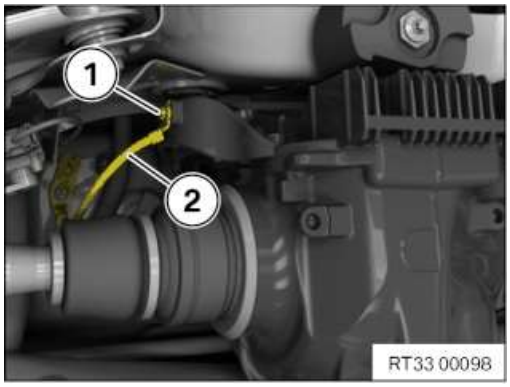
15 – Mounting the wiring harness to the M Sport differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



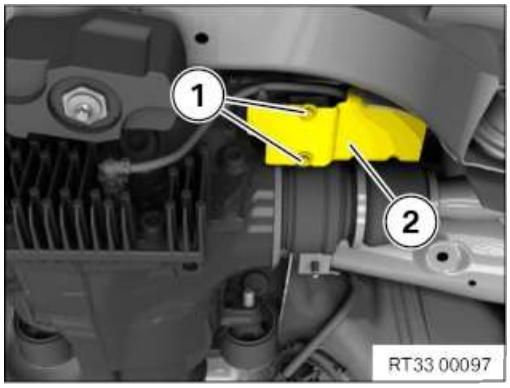
- Connect connectors (1) and lock.
- Secure the cables on the brackets (2).



- Position the ground strap (2) on the rear axle differential.
- Tighten down screw (1).

Ground strap to rear axle differential

M6x20		Tightening torque	8 Nm



- Position the heat shield (2).
- Tighten the screws (1).

Heat shield to servomotor

M5x10		Tightening torque	5 Nm

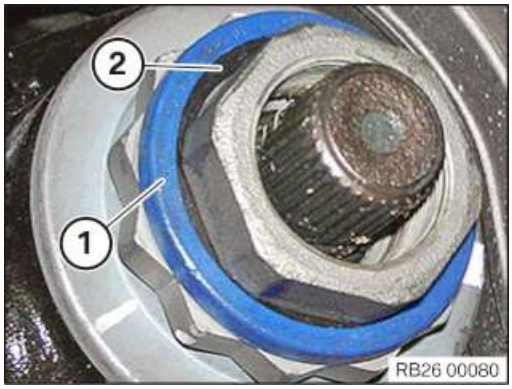
16 – Securing the propeller shaft on the rear axle differential

RISK OF DAMAGE

Damage to the propeller shaft during installation.

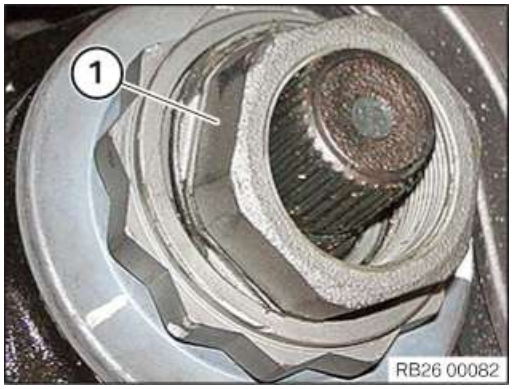
Non-observance of the installation guidelines for the propeller shaft on the rear axle differential may cause severe damage.

- Always renew the recessed nut on the rear axle differential. Screw locking must be available.
- Strictly observe a hardening time of minimum 3 h after screwing the recessed nut. The hardening time may be longer at lower temperatures.

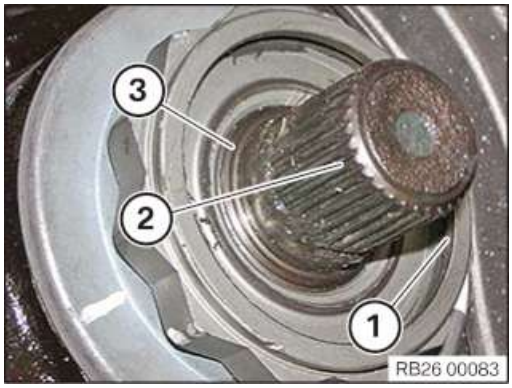


- Remove the retaining ring (1) and the seal (2).

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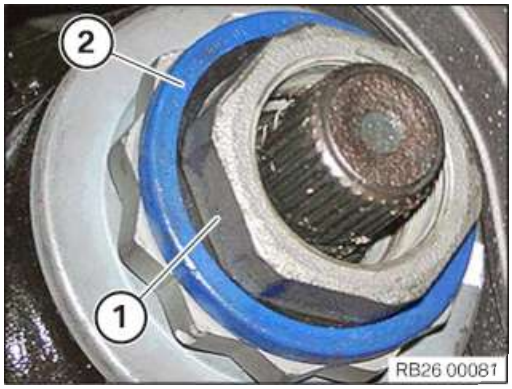
- Remove recessed nut (1).



- Clean and degrease the recessed collar (1) the flange nut, the gearing on the bevel pinion (2) and the taper (3) without any residue.
- Top up the collar insert (1)with grease.

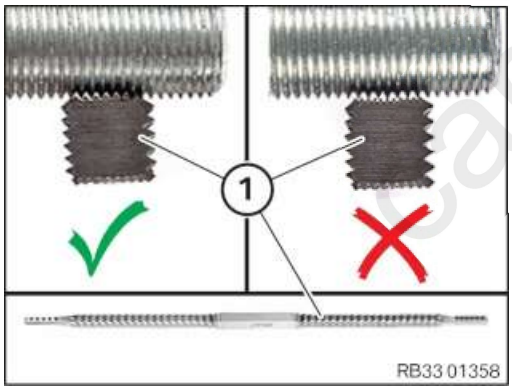
Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Renew the recessed nut (1), seal and retaining ring (2).

  Parts: Recessed nut, seal, retaining ring
- Insert recessed nut (1) including gasket into collar insert of the flange nut.
- Mount the retaining ring (2).



- Use a thread file (1) to remove the adhesive residue on the thread.
- **Make sure that the thread pitch is correct!**

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RISK OF DAMAGE

Damage to the output flange.

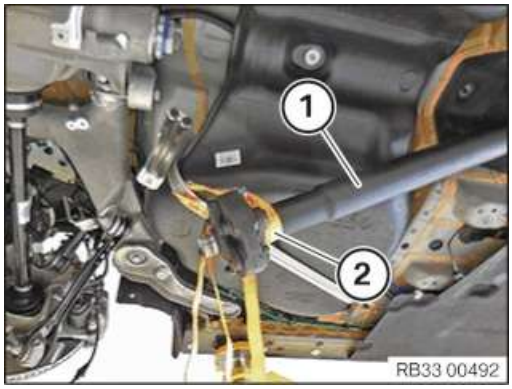
Failure to observe the greasing specifications may lead to damage on the output flange.

- Do not contaminate the thread of the output flange with grease.

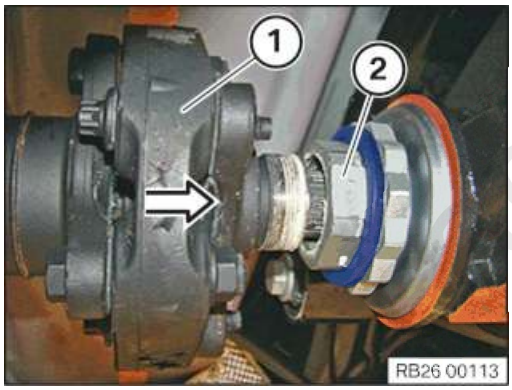
- Remove any adhesive residue on thread (1) of the flange and clean it.
- Clean gearing (2).
- Grease gearing (2).

Expendable materials

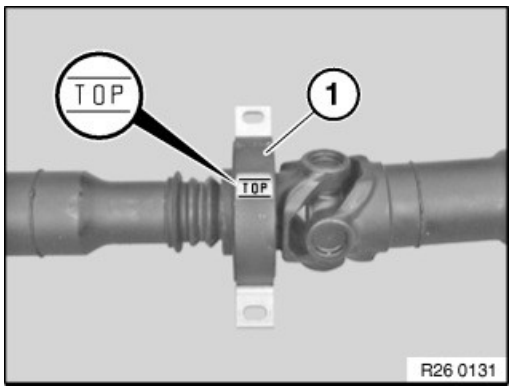
Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Loosen the tensioning strap (2) from the propeller shaft (1).

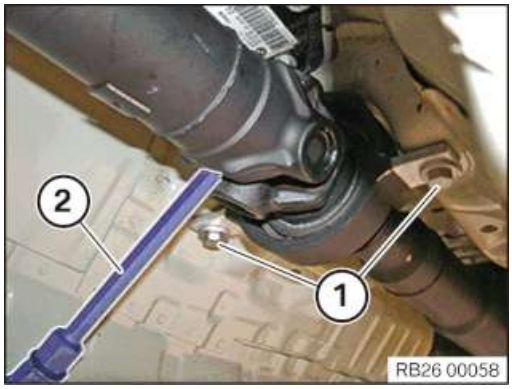


- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Screw and secure recessed nut (2) at least 2 thread starts onto propeller shaft (1) by hand.



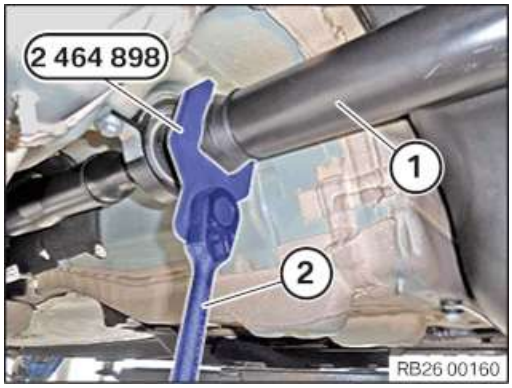
- Position the centre mount (1).

  Position the centre mount (1) with the designation TOP at the top in the transmission tunnel.



- Screw in the screws (1) by a few turns.
- **Version with a broad universal joint:**

  Secure the propeller shaft from twisting with a suitable tool (2) on the centre universal joint.



- **Version with a narrow universal joint:**

  Secure the propeller shaft (1) from twisting with the special tool 2 464 898 and a suitable tool (2) on the centre universal joint.



RISK OF DAMAGE

Damage to the flange nut.

Failure to observe the installation specifications may lead to serious damage to the flange nut and the rear axle differential.

- Do not use the double hexagon flange nut as counter support.
- Screw in the recessed nut within 5 minutes.

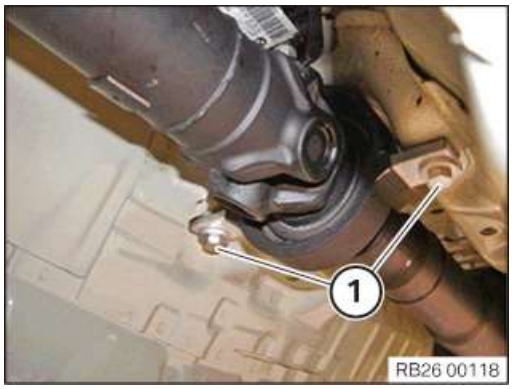
- Tighten recessed nut **counter-clockwise in the direction of the arrow** using special tools 0 495 554 (33 5 070) and .

Propeller shaft on the rear axle differential

Insert nut	Replace insert nut.	Tightening torque	100 Nm

- **After the propeller shaft is installed and the recessed nut is screwed in, strictly observe a hardening time of minimum 3 hours.**

  Do not move or push the vehicle during this time!



- Tighten the screws (1).

Centre mount to body

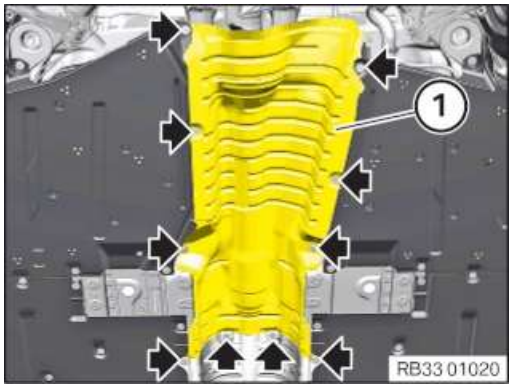
M8		Tightening torque	19 Nm

17 – Installing the rear heat shield

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NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

18 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Installing the cover of the camber control arm**



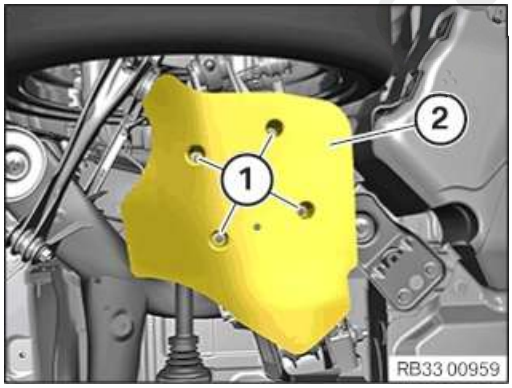
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

19 – Installing the complete exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

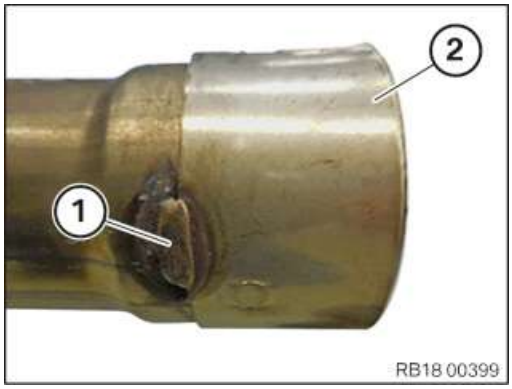
TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.

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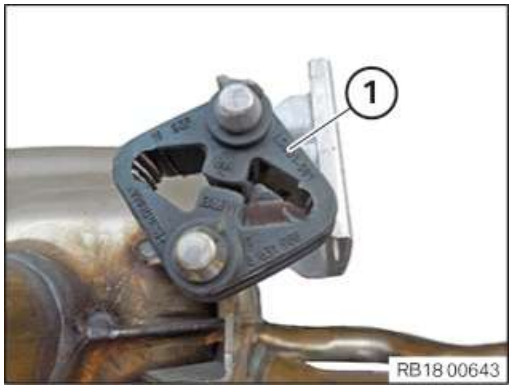
CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

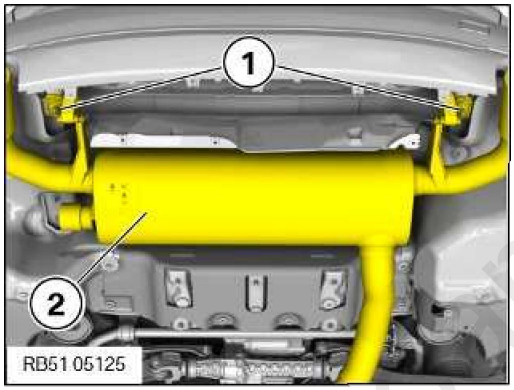


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

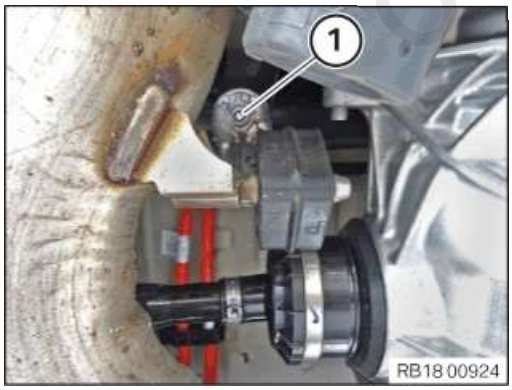


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

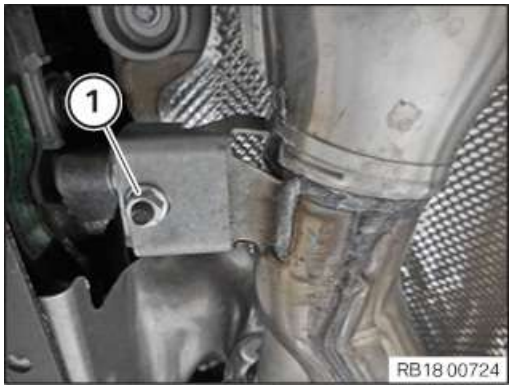


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

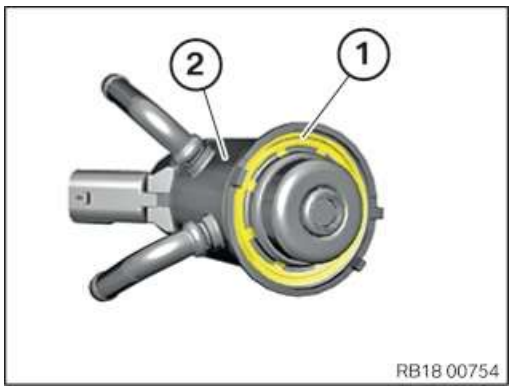
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

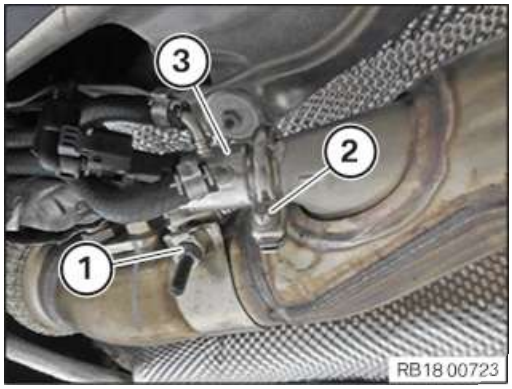
Exhaust system to transmission

M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

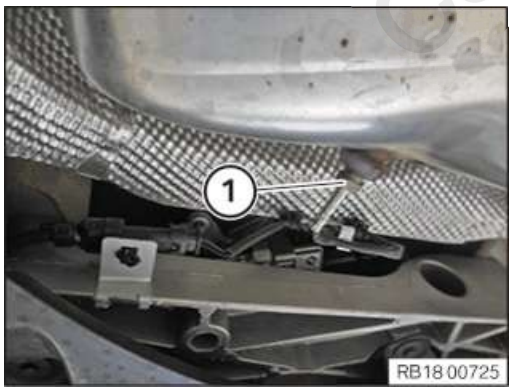
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

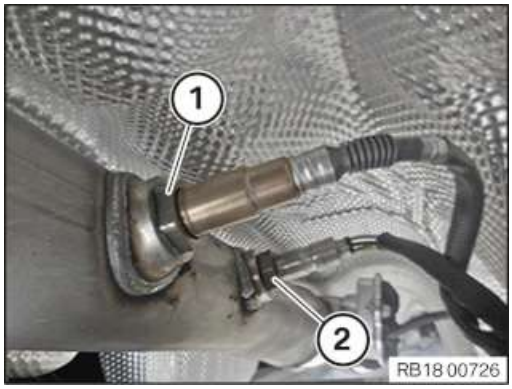


- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm

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- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

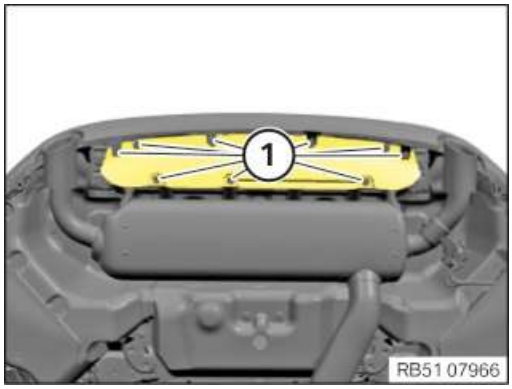
Sensor		Tightening torque	50 Nm

- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

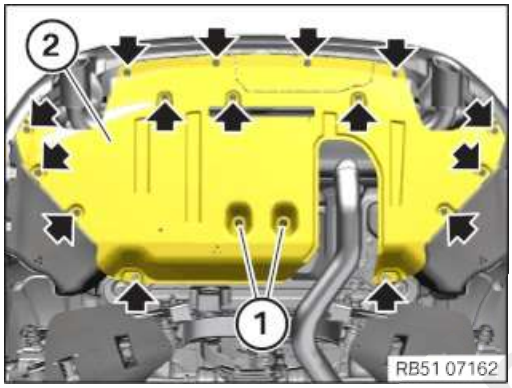
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

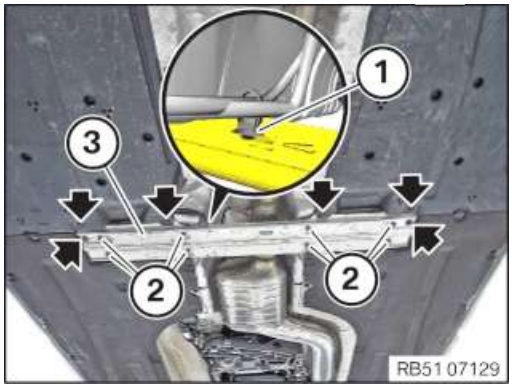
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**



- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

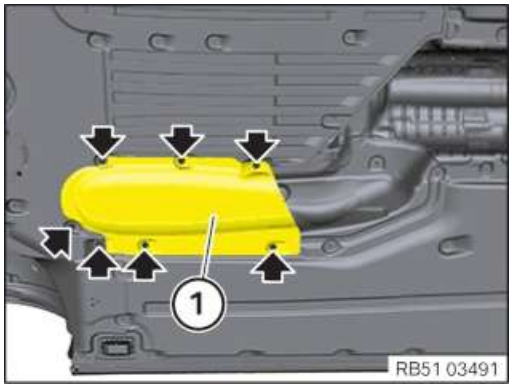
- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Additional Information

Overview of Tightening Torques

Rear differential to rear axle carrier, front — Used in step 12

M12	Renew screw.	Tightening torque	100 Nm

Rear differential to rear axle carrier, rear — Used in step 12

M14	Renew nut.	Tightening torque.	175 Nm

Vibration absorber to rear axle — Used in step 12

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle — Used in step 12

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Rear axle differential oil filler plug — Used in step 14

M22	Renew the oil filler plug.	Tightening torque	60 Nm

Ground strap to rear axle differential — Used in step 15

M6x20		Tightening torque	8 Nm

Heat shield to servomotor — Used in step 15

M5x10		Tightening torque	5 Nm

Propeller shaft on the rear axle differential — Used in step 16

Insert nut	Replace insert nut.	Tightening torque	100 Nm

Centre mount to body — Used in step 16

M8		Tightening torque	19 Nm

Heat shield to undercarriage — Used in step 17

Screws and nuts		Tightening torque	3 Nm

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Cover to camber control arm			Used in step 18
M6	Replace nuts.	Tightening torque	6 Nm

Rear silencer to body / bumper support			Used in step 19
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 19
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 19
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 19
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 19
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 19
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 19
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 19
Sensor		Tightening torque	55 Nm

Diffuser / underbody panelling			Used in step 19
Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel			Used in step 19
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling			Used in step 19
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Overview of Special Tools

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2 464 898 Open-end spanner



Common Used in step 416

Usage	Open-end spanner SW50 for disassembly and installation of the propeller shaft on rear axle differential. The silhouette foil is included in the delivery specification.
Included in the tool or work	
Storage location	A7
Replaced by	
In connection with	
SI-Number	01 19 18 (579)

0 495 554 (33 5 070) Extension



Common Used in step 416

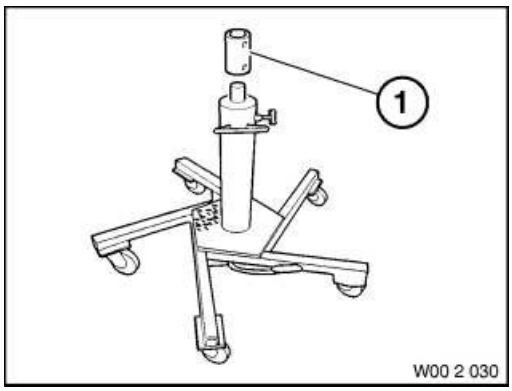
Usage	Pull-out extension for 33 5 040, 33 5 050, 33 5 060.
Included in the tool or work	
Storage location	A18
Replaced by	
In connection with	
SI-Number	01 21 06 (300)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 495 592 (33 5 071)		**Extension** (Extension (1 item)) discontinued, can only be ordered using complete tool	

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0 490 133 (00 2 030) Device



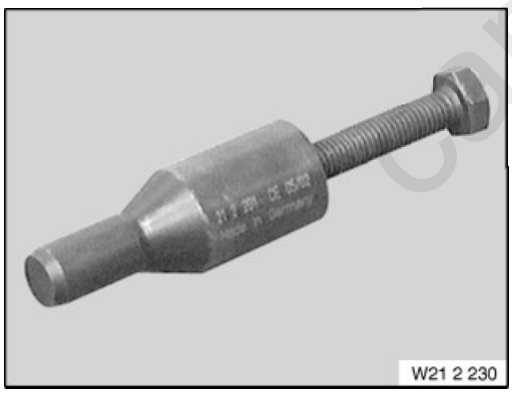
Common Used in step 712

Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

0 494 649 (21 2 230) Mandrel



Common Used in step 9

Usage	(clutch centring drift) With screw M10 (G transmission)
Included in the tool or work	
Storage location	C45
Replaced by	
In connection with	
SI-Number	01 03 03 (960)

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2 460 340 Pump



Common	Used in step 14
Usage	Oil gun to fill rear axle differentials or differentials with 1 litre containers.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 09 18 (553)

Overview Technical Data

Rear axle differential oil: Capacity overview (all)	Used in step 14
168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	

Operating materials	Used in step
1.1 Grease for propeller shaft inserted	16
1.0 Grease for propeller shaft (flexible disc centring and sliding piece)	16

Operating materials	Used in step
Main group 33	14

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33 10 017 Replacing the rear axle differential

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- After completion of repair work, check the transmission oil level in the rear axle differential.
- Use only the approved final drive transmission oil.

PRELIMINARY WORK

1 – Remove complete exhaust system

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WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

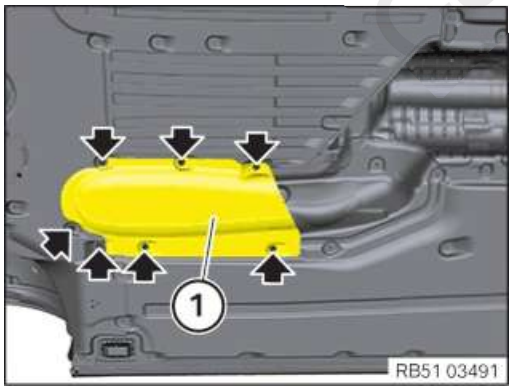
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

NOTICE

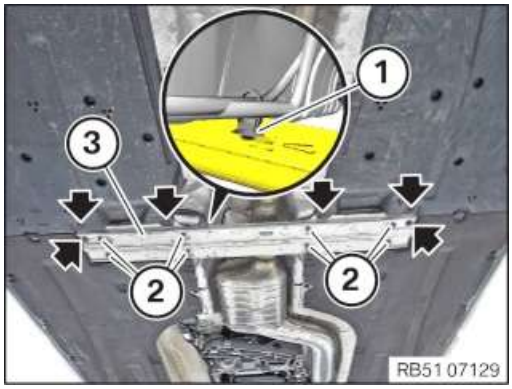
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**

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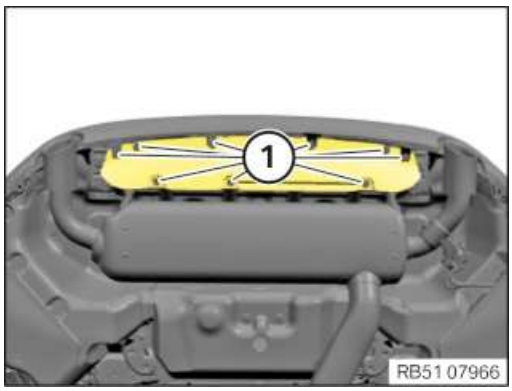
- Remove screws (arrows).

NOTICE

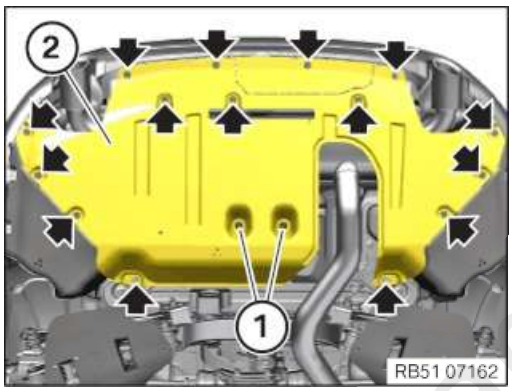
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

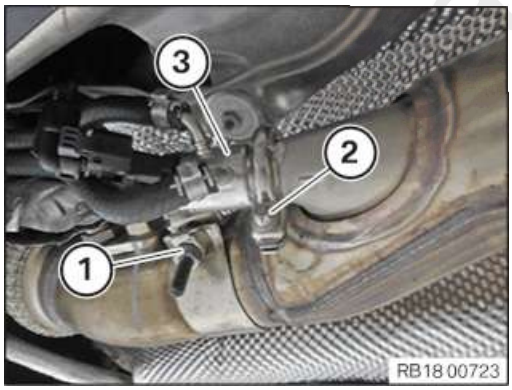
▸ **Removing the rear diffuser**



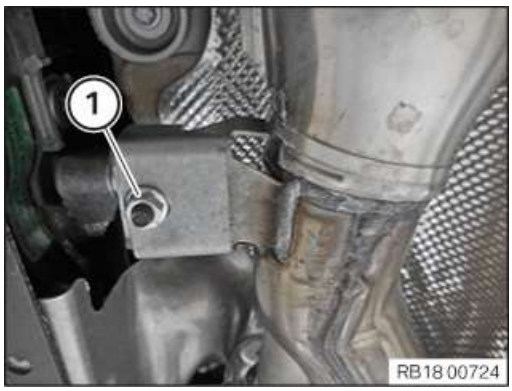
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).

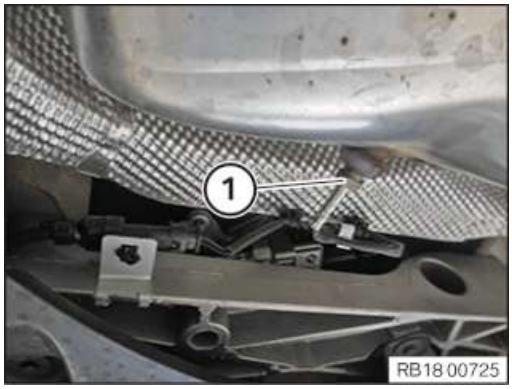


- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.

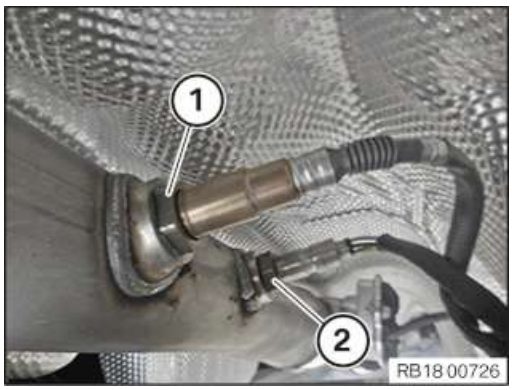


- Loosen nut (1).

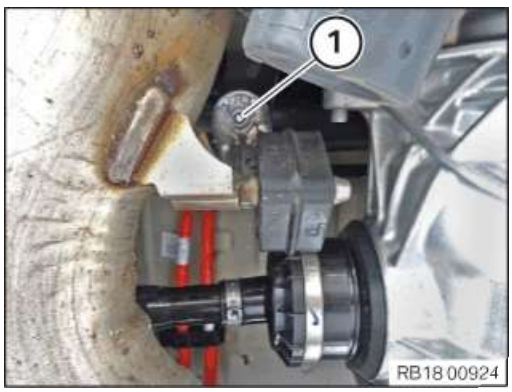
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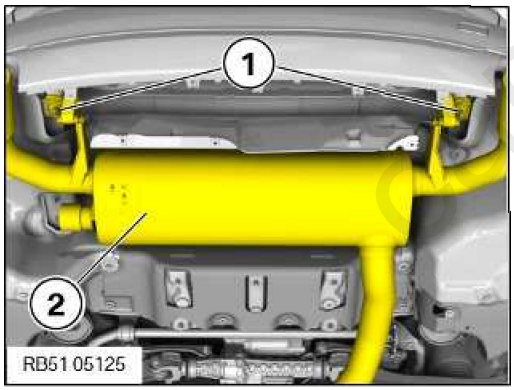
- Detach the exhaust temperature sensor (1) from the exhaust system.



- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.



- Release the nut (1) on the rear axle support.



- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

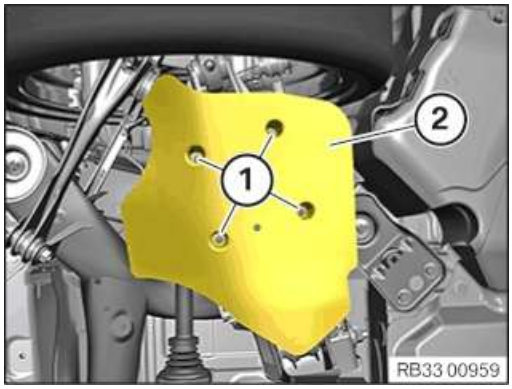
2 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover of camber control arm**

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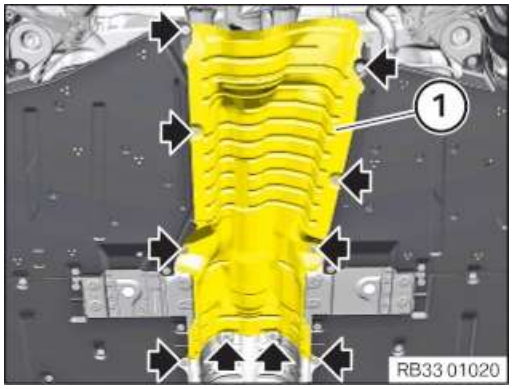


- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

3 – Remove heat shield at rear.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

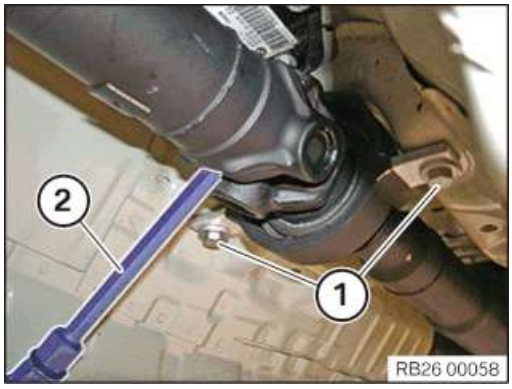
4 – Releasing the propeller shaft from the rear axle differential

RISK OF DAMAGE

Damage to propeller shaft during removal.

Non-observance of the removal guidelines for the propeller shaft on the rear axle differential may cause severe damage.

- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened on the recessed nut only and exclusively in the direction of rotation otherwise the anti-twist lock of the bi-hexagonal flange nut is damaged.
- In the event of a damaged anti-twist lock on the bi-hexagonal flange nut: Replace the rear axle differential.

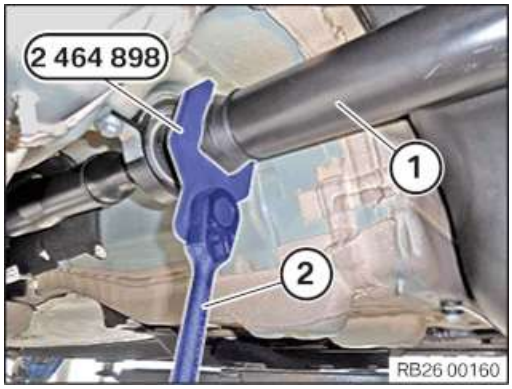


- Loosen screws (1).

  Do not remove bolts (1) yet.
- **Version A (propeller shaft with wide universal joint):**

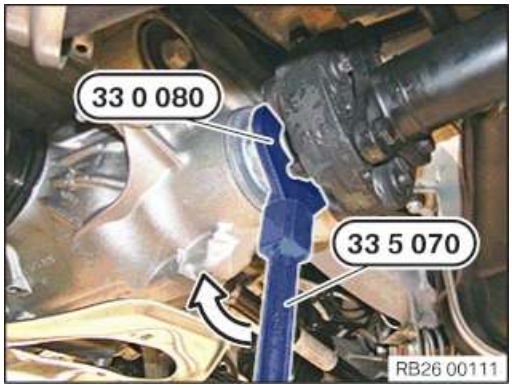
  Secure the propeller shaft against twisting at the centre universal joint using a suitable tool (2).

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- **Version B (propeller shaft with narrow universal joint):**

  Secure the propeller shaft (1) against twisting by using the special tool 2 464 898 and a suitable tool (2) at the central universal joint.



RISK OF DAMAGE

Damage to rear axle differential.

Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

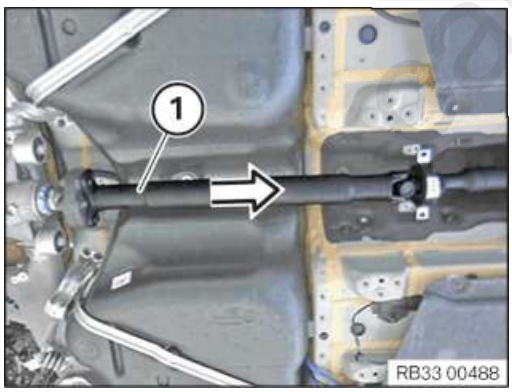
- Do not use the double hexagon head flange nut as counter support.

- Loosen the recessed nut **against** the direction of travel **in clockwise direction** using special tools 0 495 554 (33 5 070) and .

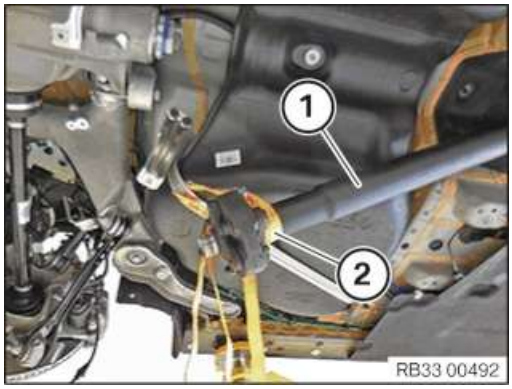
  The bi-hexagonal flange nut must not be used for counter-holding.



- Loosen screws (1) on centre mount.



- Loosen the propeller shaft (1) from the rear axle differential in the direction of the arrow.



- Tie up the propeller shaft (1) using a tensioning strap (2).

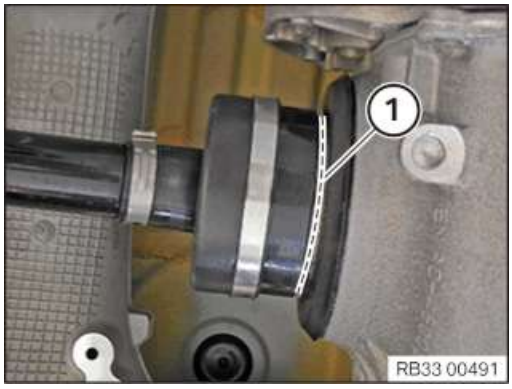
5 – Detaching the output shafts from the rear axle differential

5 – Detaching the output shafts from the rear axle

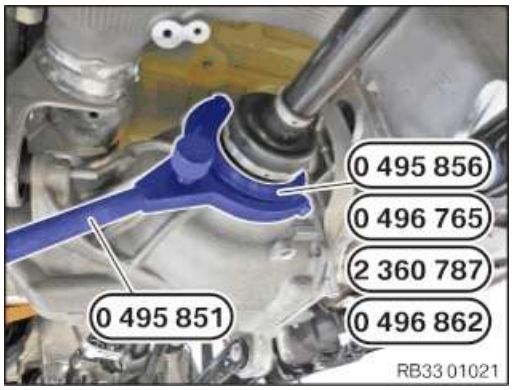
NOTICE

Perform the operations on the left and right side.

▸ **Detach the output shaft from the rear axle differential**



- Position the special tool at the circumferential slot (1) of the output shaft.



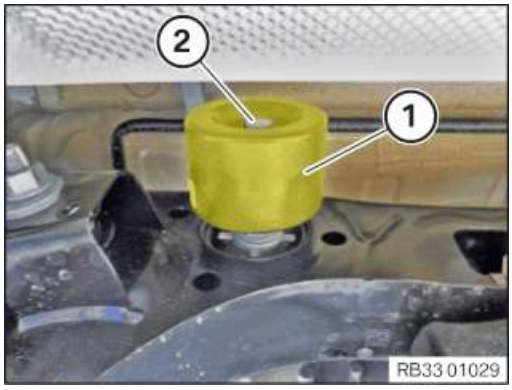
- Press out the output shaft with the special tool and the special tool , , or suitable depending on the equipment specification of the output shaft with jerky movements from the rear axle differential.

6 – Remove the vibration absorber on the rear axle differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

▸ **Remove the vibration absorber on the rear axle differential**



- Loosen screw (2).
- Remove the vibration absorber (1).

MAIN WORK

7 – Removing rear axle differential

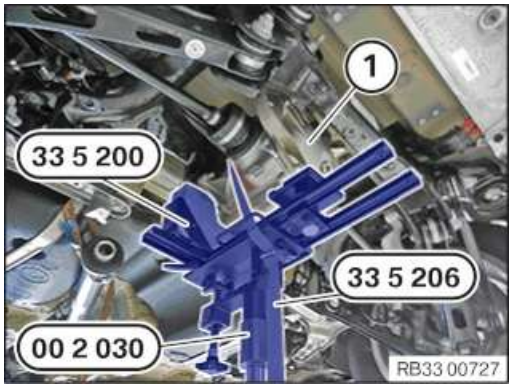
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RISK OF DAMAGE

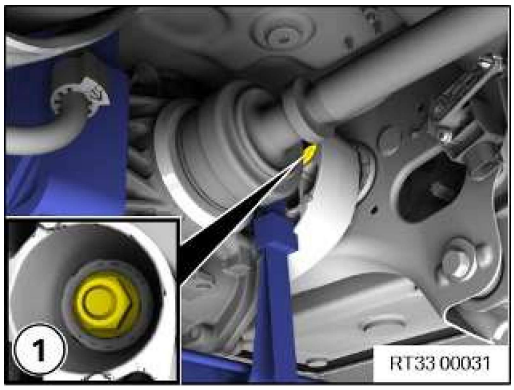
Damage to rear axle differential.

If the rear axle differential drops down, persons can be injured or the rear axle differential can be damaged.

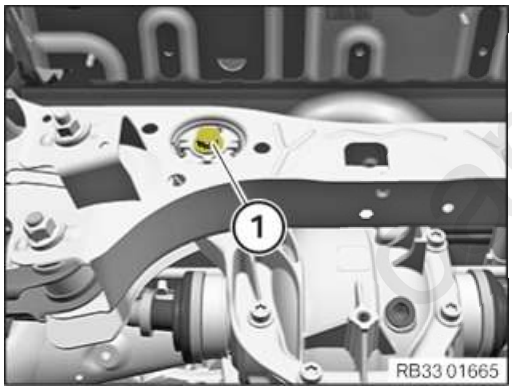
- Secure the rear axle differential using a tensioning strap.



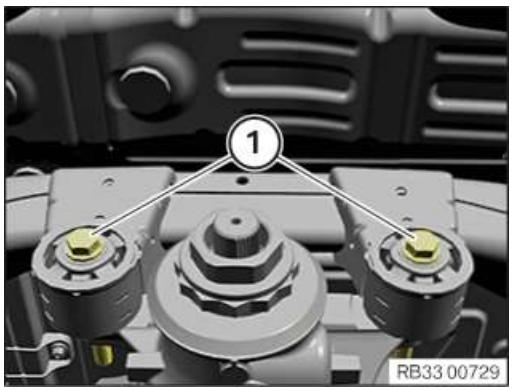
- Attach the special tool on the special tool 0 490 133 (00 2 030).
- Support the rear axle differential (1) with the special tool .
- Secure the rear axle differential (1) with the special tool on the special tool .



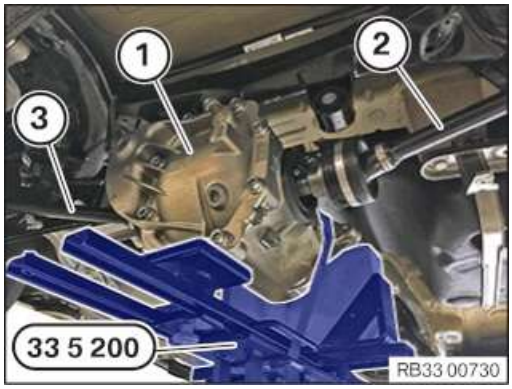
- Loosen nut (1).



- Pull the bolt (1) out of the rear axle support.



- Loosen screws (1) on rear axle support at front.



- Lower the rear axle differential (1) slightly with the special tool .
- Turn the rear axle differential (1) with the special tool towards the right and pull out the right output shaft (2).
- Then pull out the left output shaft (3).
- Tie up the output shafts (2) and (3).

  Do not leave the output shafts hanging on the joint!
- Completely lower the rear axle differential (1) and remove.

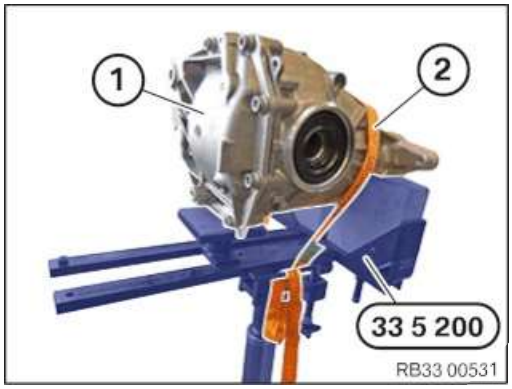
8 – Lifting off the rear axle differential from the special tool

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.



- Loosening the tensioning strap (2).
- Lift down the rear axle differential (1) from the special tool .

  If necessary, ask for support by a second person.

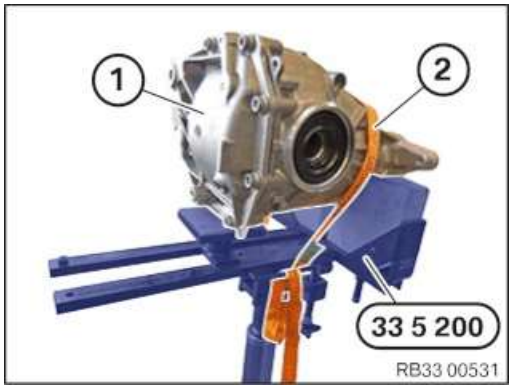
9 – Position the new rear axle differential on the special tool

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.



- Position the new rear axle differential (1) on the special tool .

  If necessary, ask for support by a second person.
- Secure the rear axle differential (1) with the tensioning strap (2) on the special tool .
- Remove the protective caps of the radial shaft seal.

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- Position the assembly protection ring (1) in the radial shaft seals (2) of the drive flanges.

10 – If reusing: Checking the left and right output shaft and replacing the circlip

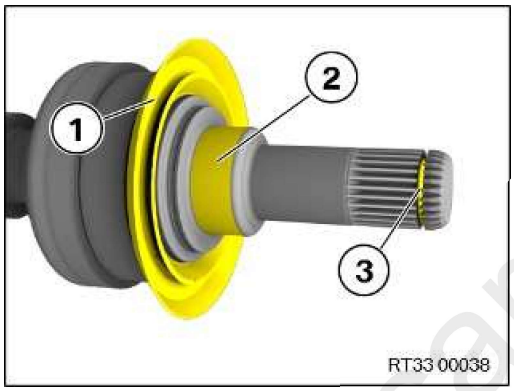
NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **If reusing: Check the output shaft and replace the circlip**

TECHNICAL INFORMATION

It is essential to renew the circlip of the output shaft.



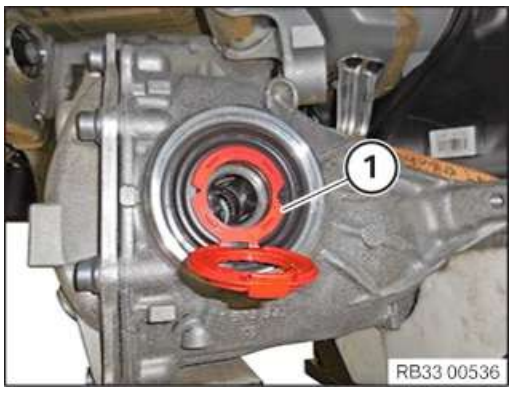
TECHNICAL INFORMATION

Extreme force being required during installation is an indication that the component is damaged or deformed. Check component and replace if necessary.

- Check the gearing of the output shaft for damage and renew damaged parts if necessary.
- Check the dust plate (1) for damage and renew damaged parts as needed.
- Renew the circlip (3).

  Parts: Circlip
- Coat the contact surface (2) using approved rear axle differential oil.

11 – Installing the rear axle differential

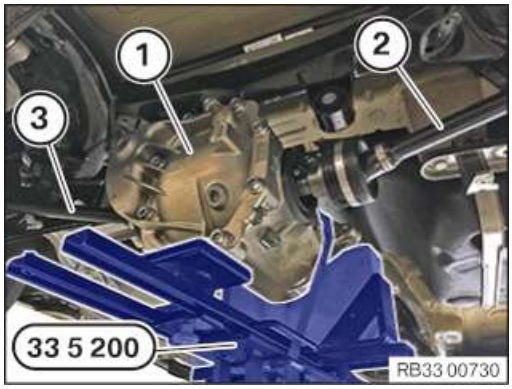


NOTICE

Perform the operations on the left and right side.

- Fold open the assembly protection ring (1).

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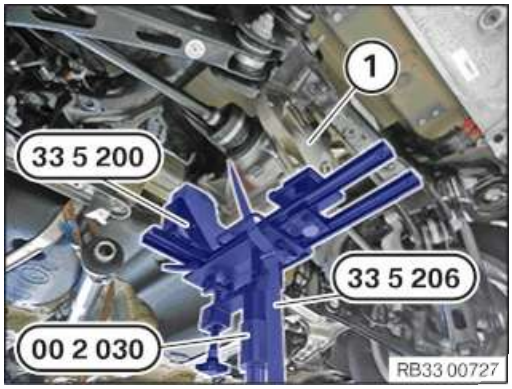
- Raise the rear axle differential (1) somewhat with the special tool .
- Insert the left-hand output shaft (3) into the rear axle differential (1).
- Turn rear axle differential (1) using special tool to right and insert output shaft at right (2) into rear axle differential (1).



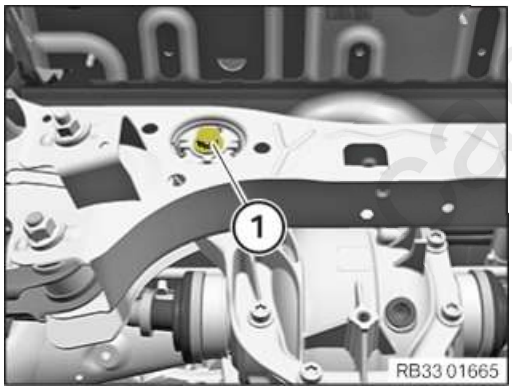
NOTICE

Perform the operations on the left and right side.

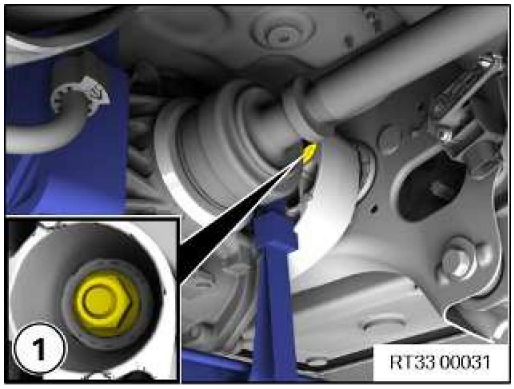
- Pull on the tab of the installation protection ring (1) until one of the two predetermined breaking points breaks.
- Pull out and dispose of the installation protection ring (1).



- Lift the rear axle differential (1) using special tools and 0 490 133 (00 2 030) and position on the rear axle support.
- Make sure that the special tool does not get jammed between the rear axle differential (1) and a dust plate of an output shaft.



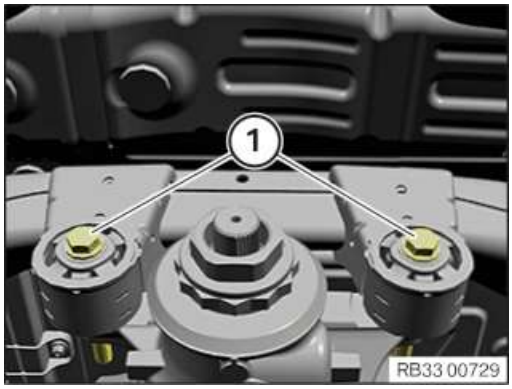
- Insert screw (1).



- Renew nut (1).

  Parts: Nut
- Prescrew the nut (1).

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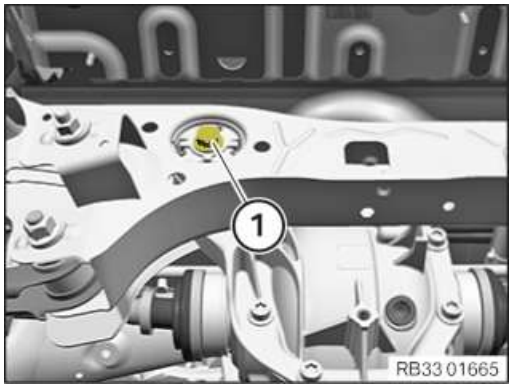


- Renew screws (1).

  Parts: Screws
- Screw in the screws (1) by hand and tighten.

Rear differential to rear axle carrier, front

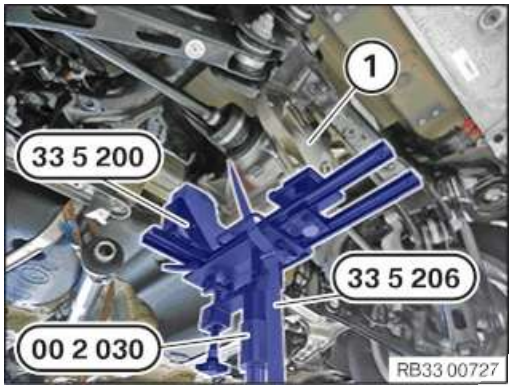
M12	Renew screw.	Tightening torque	100 Nm



- Tighten down screw (1). In doing so, counter support at the nut.

Rear differential to rear axle carrier, rear

M14	Renew nut.	Tightening torque.	175 Nm



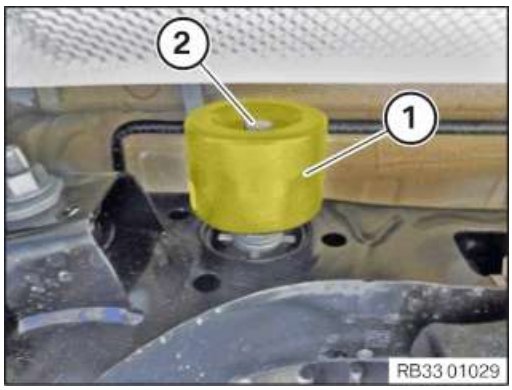
- Loosen and remove the tensioning strap from the rear axle differential (1).
- Lower the special tools 0 490 133 (00 2 030) and and set them aside.

POSTPROCESSES

12 – Install the vibration absorber on the rear axle differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



▸ **Install the vibration absorber on the rear axle differential**

- Position the (1) vibration absorber.
- Renew the screw (2).

  Parts: Screw
- Position and tighten the screw (2).

Vibration absorber to rear axle

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

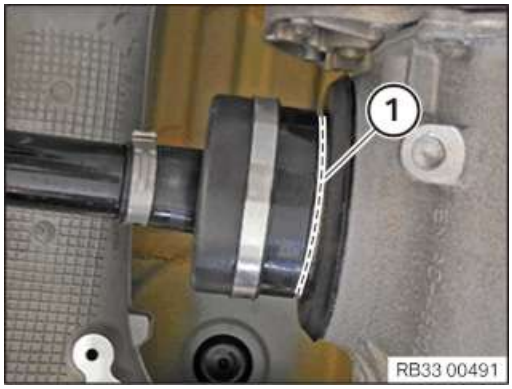
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13 – Secure output shafts on the rear axle differential

NOTICE

Perform the operations on the left and right side.

▸ **Secure the output shaft on the rear axle differential**



- Position the following special tool on the slot running around the output shaft (1).



- Drive the output shaft into the rear axle differential with a suitable special tool , or and a rubber mallet.

14 – Check/top up oil level in the rear axle differential

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

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RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- Only use approved oil in the rear axle differential.

TECHNICAL INFORMATION

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

▸ **Supplement the rear axle differential oil change/oil level with oil gun**

Your browser doesn't support HTML5 video.

TECHNICAL INFORMATION

The training video illustrates the methodology for changing the rear axle differential oil using the oil gun special tool.

The training video does not replace the repair instructions.

The training video is not subject to the update service.

No liability can be accepted for printing or other faults. Subject to changes of a technical nature

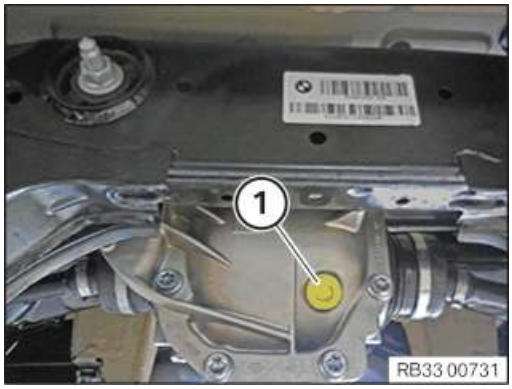
- Follow repair instructions!



TECHNICAL INFORMATION

With the specified capacity, it is imperative to take into account the capacity of the hose of the special tool.

- Use the special tool 2 460 340 to top up the rear axle differential oil.



- Open the oil filler plug (1).
- Check oil level:

  The oil level at the rear axle differential has been adjusted correctly once a small quantity of oil escapes from the opening of the oil filler plug.

  If necessary, top up final drive transmission oil.

Rear axle differential oil: Capacity overview (all)

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l
Transmission oil: Technically suitable rear axle differential oils	

- Replace the oil filler plug (1).

  Parts: Oil filler plug
- Screw in and tighten the oil filler plug (1).

Rear axle differential oil filler plug

M22	Renew the oil filler plug.	Tightening torque	60 Nm

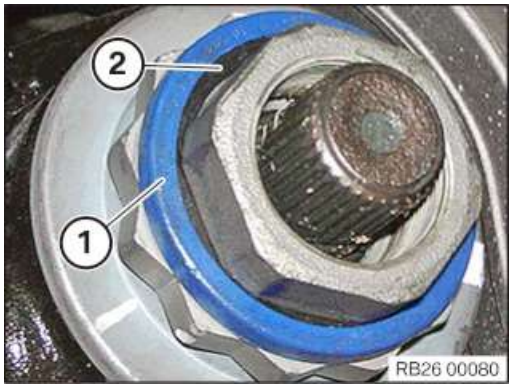
15 – Securing the propeller shaft on the rear axle differential

RISK OF DAMAGE

Damage to the propeller shaft during installation.

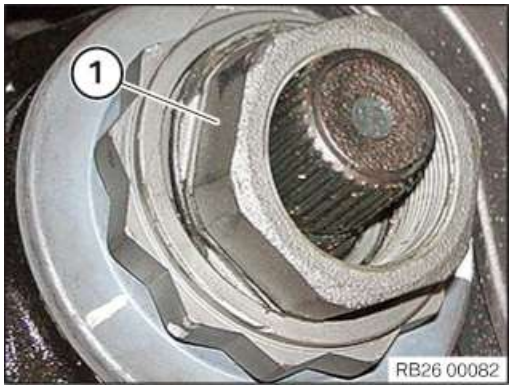
Non-observance of the installation guidelines for the propeller shaft on the rear axle differential may cause severe damage.

- Always renew the recessed nut on the rear axle differential. Screw locking must be available.
- Strictly observe a hardening time of minimum 3 h after screwing the recessed nut. The hardening time may be longer at lower temperatures.

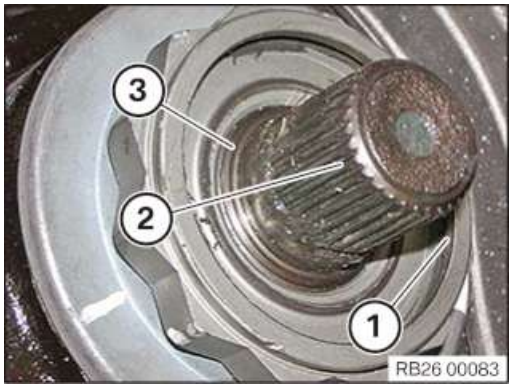


- Remove the retaining ring (1) and the seal (2).

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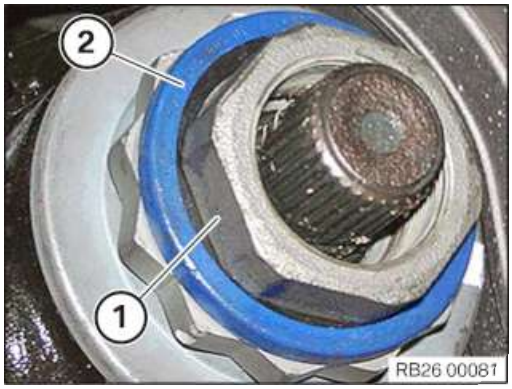
- Remove recessed nut (1).



- Clean and degrease the recessed collar (1) the flange nut, the gearing on the bevel pinion (2) and the taper (3) without any residue.
- Top up the collar insert (1)with grease.

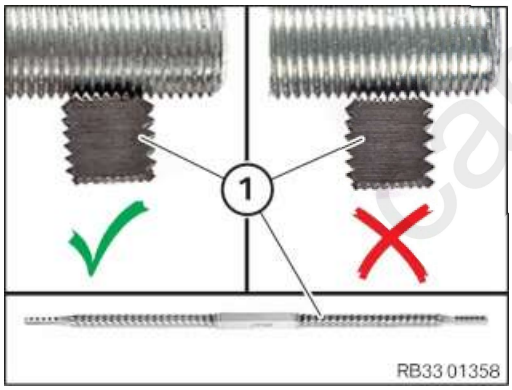
Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Renew the recessed nut (1), seal and retaining ring (2).

  Parts: Recessed nut, seal, retaining ring
- Insert recessed nut (1) including gasket into collar insert of the flange nut.
- Mount the retaining ring (2).



- Use a thread file (1) to remove the adhesive residue on the thread.
- **Make sure that the thread pitch is correct!**

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RISK OF DAMAGE

Damage to the output flange.

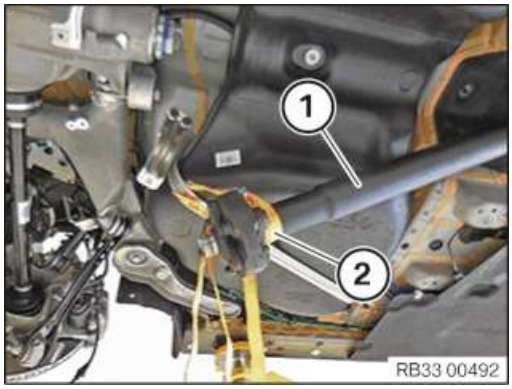
Failure to observe the greasing specifications may lead to damage on the output flange.

- Do not contaminate the thread of the output flange with grease.

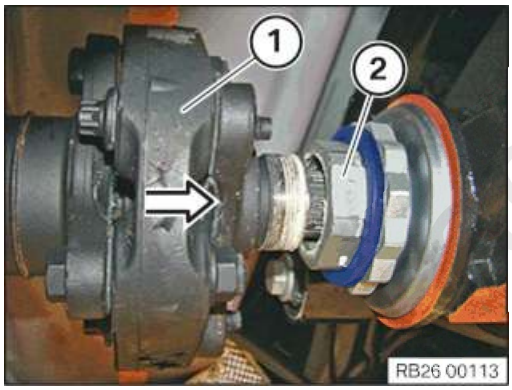
- Remove any adhesive residue on thread (1) of the flange and clean it.
- Clean gearing (2).
- Grease gearing (2).

Expendable materials

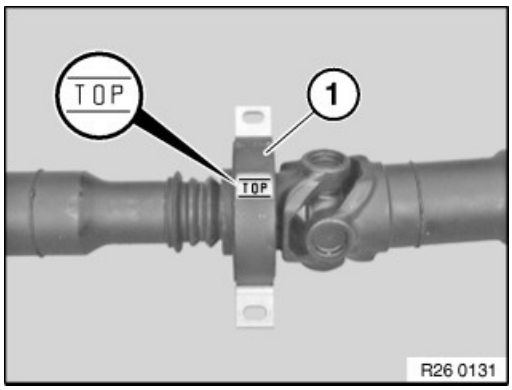
Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Loosen the tensioning strap (2) from the propeller shaft (1).

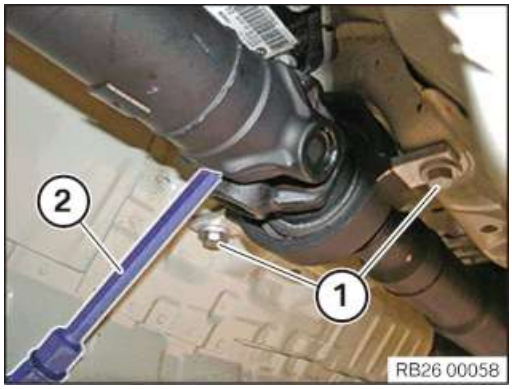


- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Screw and secure recessed nut (2) at least 2 thread starts onto propeller shaft (1) by hand.



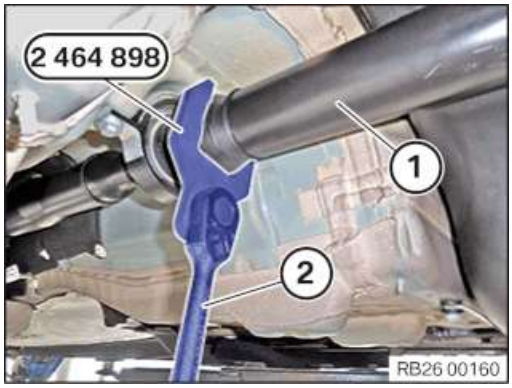
- Position the centre mount (1).

  Position the centre mount (1) with the designation TOP at the top in the transmission tunnel.



- Screw in the screws (1) by a few turns.
- **Version with a broad universal joint:**

  Secure the propeller shaft from twisting with a suitable tool (2) on the centre universal joint.



- **Version with a narrow universal joint:**

  Secure the propeller shaft (1) from twisting with the special tool 2 464 898 and a suitable tool (2) on the centre universal joint.



RISK OF DAMAGE

Damage to the flange nut.

Failure to observe the installation specifications may lead to serious damage to the flange nut and the rear axle differential.

- Do not use the double hexagon flange nut as counter support.
- Screw in the recessed nut within 5 minutes.

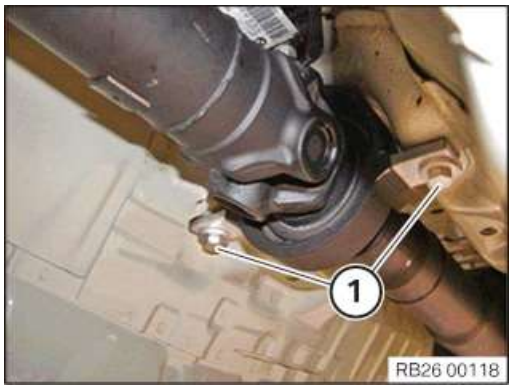
- Tighten recessed nut **counter-clockwise in the direction of the arrow** using special tools 0 495 554 (33 5 070) and .

Propeller shaft on the rear axle differential

Insert nut	Replace insert nut.	Tightening torque	100 Nm

- **After the propeller shaft is installed and the recessed nut is screwed in, strictly observe a hardening time of minimum 3 hours.**

  Do not move or push the vehicle during this time!



- Tighten the screws (1).

Centre mount to body

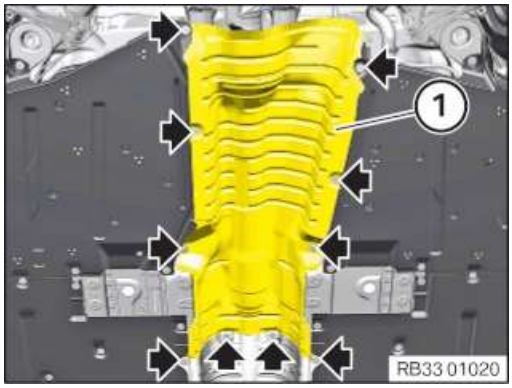
M8		Tightening torque	19 Nm

16 – Installing the rear heat shield

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NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

17 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Installing the cover of the camber control arm**



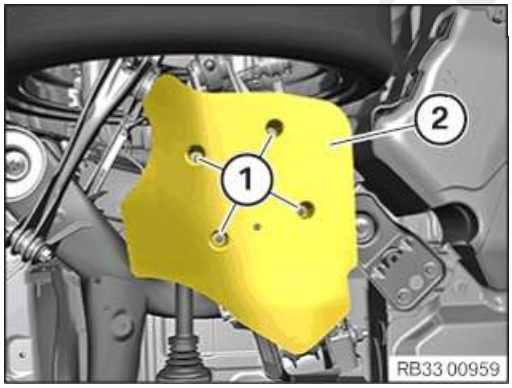
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

18 – Installing the complete exhaust system

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CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

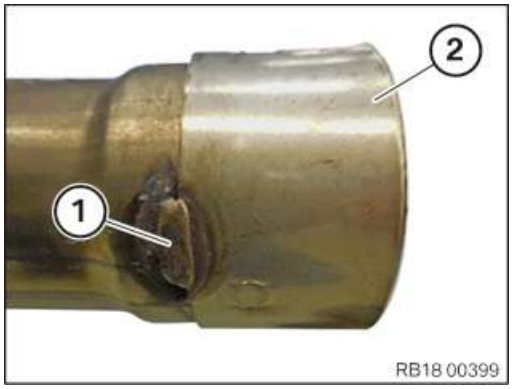
TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.

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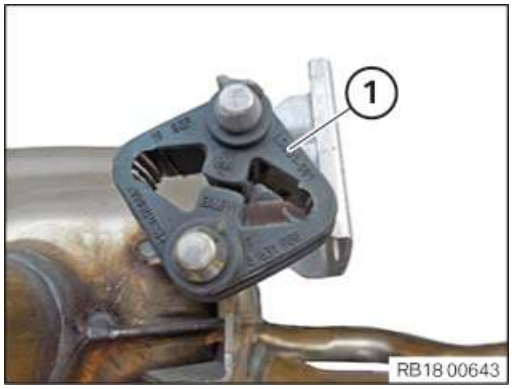
CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

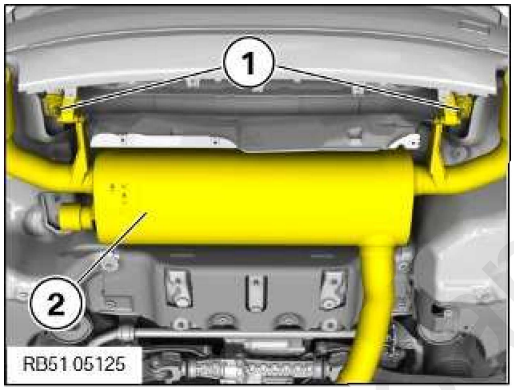


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

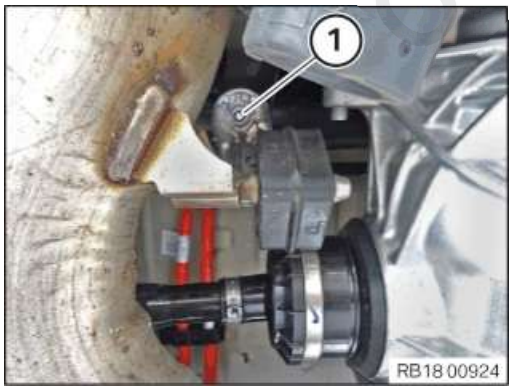


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm



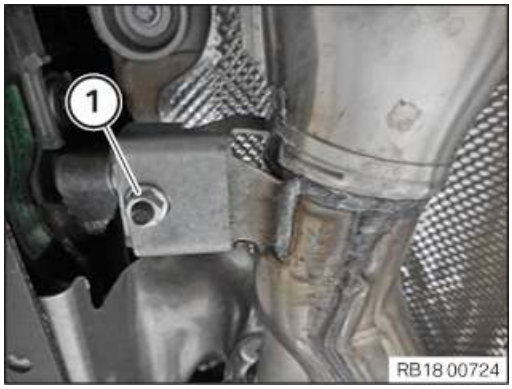
- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

M8 nut		Tightening torque	19 Nm

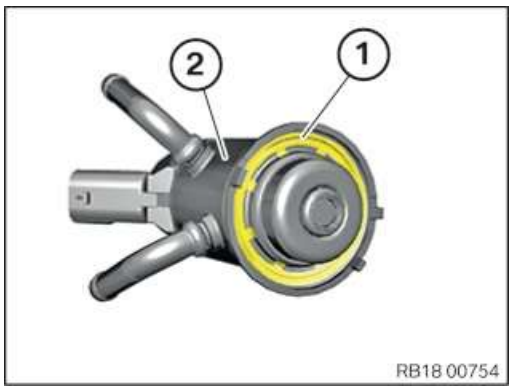
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- Tighten nut (1).

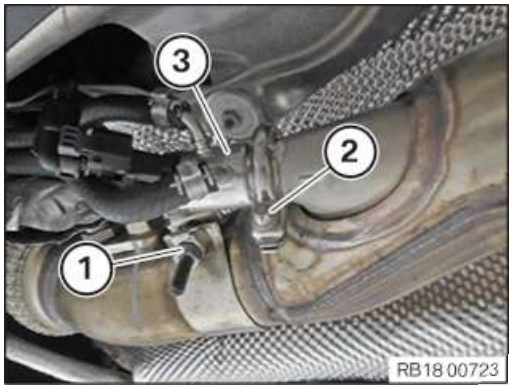
Exhaust system to transmission

M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

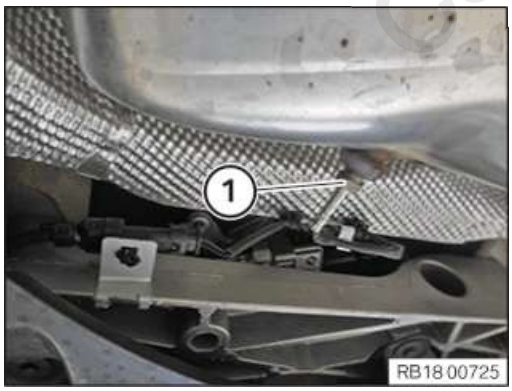
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

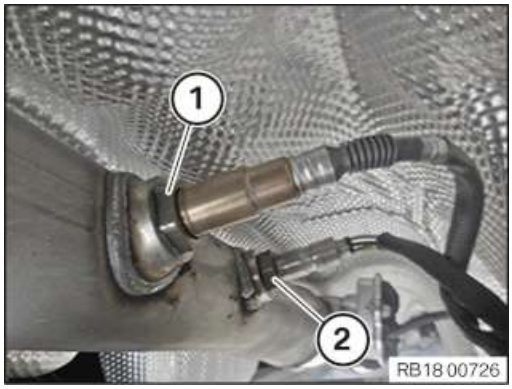


- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm

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- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

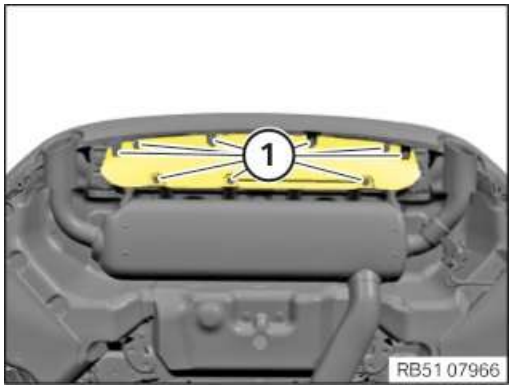
Sensor		Tightening torque	50 Nm

- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

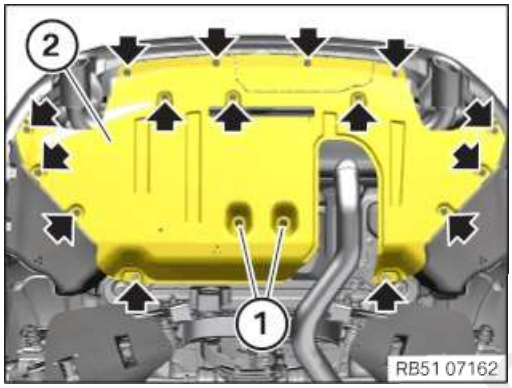
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

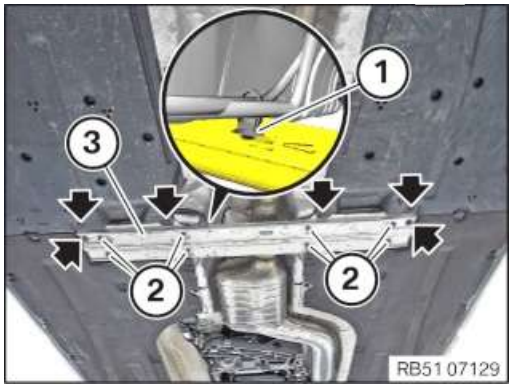
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**



- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

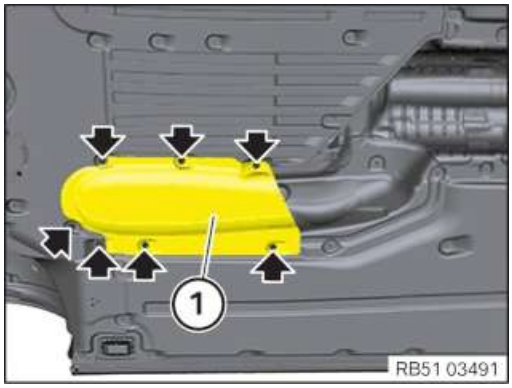
- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Additional Information

Overview of Tightening Torques

Rear differential to rear axle carrier, front — Used in step 11

M12	Renew screw.	Tightening torque	100 Nm

Rear differential to rear axle carrier, rear — Used in step 11

M14	Renew nut.	Tightening torque.	175 Nm

Vibration absorber to rear axle — Used in step 12

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle — Used in step 12

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Rear axle differential oil filler plug — Used in step 14

M22	Renew the oil filler plug.	Tightening torque	60 Nm

Propeller shaft on the rear axle differential — Used in step 15

Insert nut	Replace insert nut.	Tightening torque	100 Nm

Centre mount to body — Used in step 15

M8		Tightening torque	19 Nm

Heat shield to undercarriage — Used in step 16

Screws and nuts		Tightening torque	3 Nm

Cover to camber control arm — Used in step 17

M6	Replace nuts.	Tightening torque	6 Nm

Rear silencer to body / bumper support — Used in step 18

M8	Replace nuts.	Tightening torque	19 Nm

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Exhaust system to rear axle carrier			Used in step 18
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 18
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 18
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 18
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 18
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 18
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 18
Sensor		Tightening torque	55 Nm

Diffuser / underbody panelling			Used in step 18
Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel			Used in step 18
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling			Used in step 18
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Overview of Special Tools

2 464 898 Open-end spanner



Common	Used in step 415
Usage	Open-end spanner SW50 for disassembly and installation of the propeller shaft on rear axle differential. The silhouette foil is included in the delivery specification.
Included in the tool or work	
Storage location	A7
Replaced by	
In connection with	
SI-Number	01 19 18 (579)

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0 495 554 (33 5 070) Extension



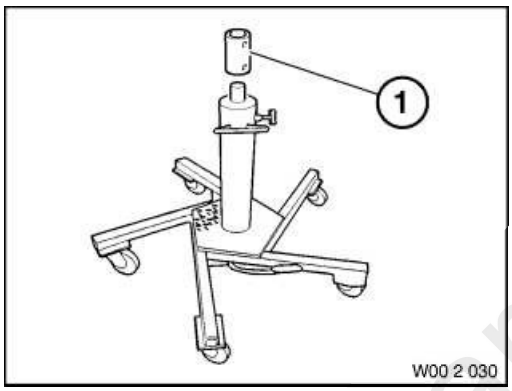
Common Used in step 415

Usage	Pull-out extension for 33 5 040, 33 5 050, 33 5 060.
Included in the tool or work	
Storage location	A18
Replaced by	
In connection with	
SI-Number	01 21 06 (300)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 495 592 (33 5 071)		**Extension** (Extension (1 item)) discontinued, can only be ordered using complete tool	

0 490 133 (00 2 030) Device



Common Used in step 711

Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

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2 460 340 Pump



Common	Used in step 14
Usage	Oil gun to fill rear axle differentials or differentials with 1 litre containers.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 09 18 (553)

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Overview Technical Data

Rear axle differential oil: Capacity overview (all)	Used in step 14
168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	

Operating materials	Used in step
1.1 Grease for propeller shaft inserted	15
1.0 Grease for propeller shaft (flexible disc centring and sliding piece)	15

Operating materials	Used in step
Main group 33	14

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33 10 014 Replacing the rear axle differential M sport differential

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- After completion of repair work, check the transmission oil level in the rear axle differential.
- Use only the approved final drive transmission oil.

PRELIMINARY WORK

1 – Remove complete exhaust system

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

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CAUTION

Heavy component.

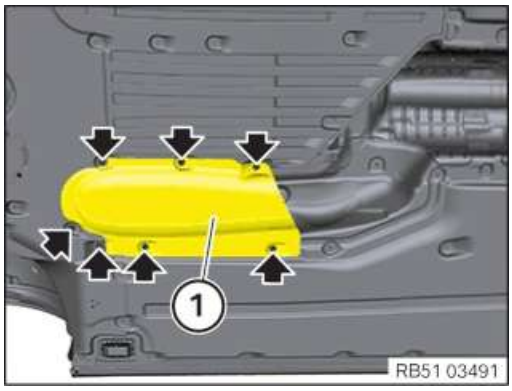
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

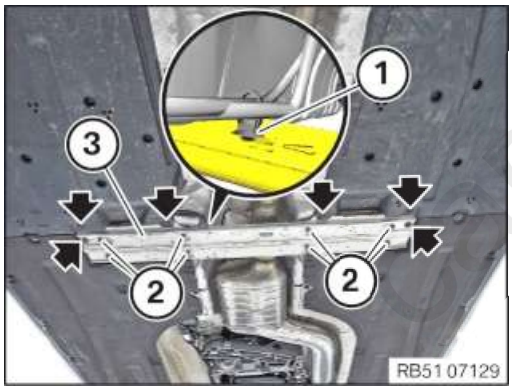
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**



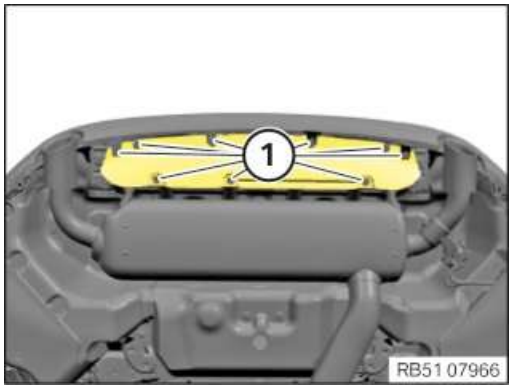
- Remove screws (arrows).

NOTICE

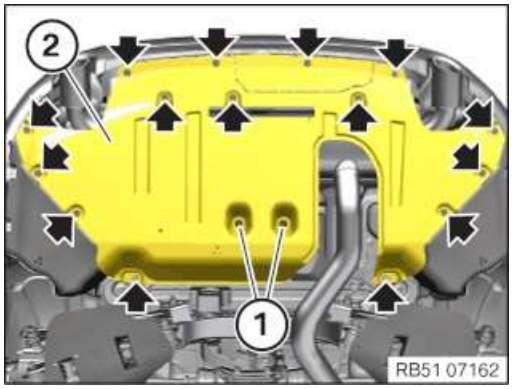
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

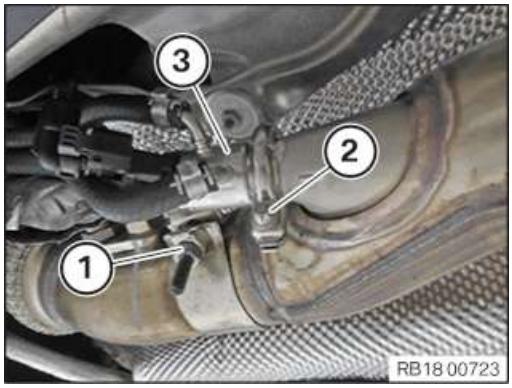
▸ **Removing the rear diffuser**



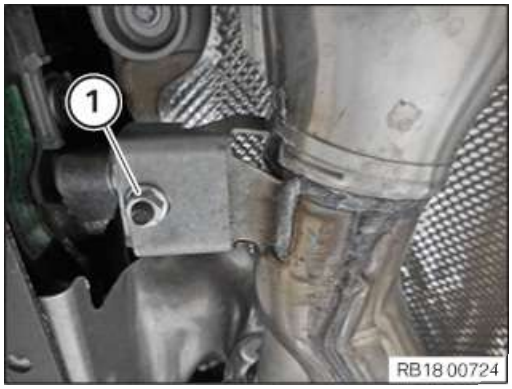
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



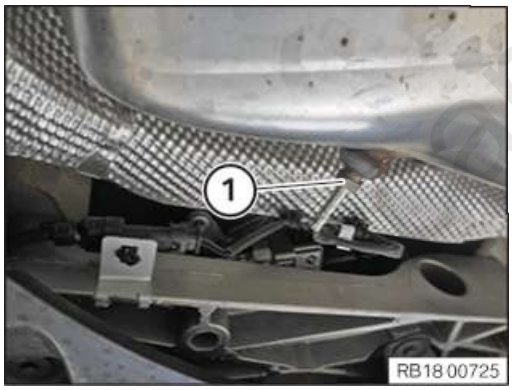
- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).



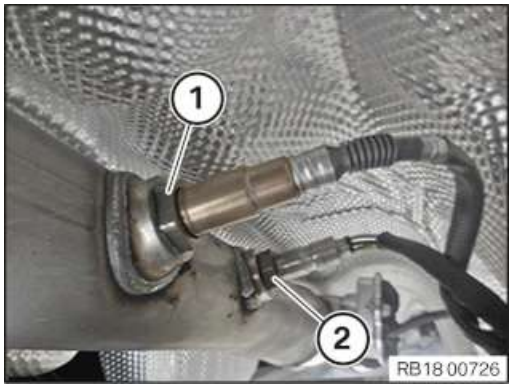
- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.



- Loosen nut (1).

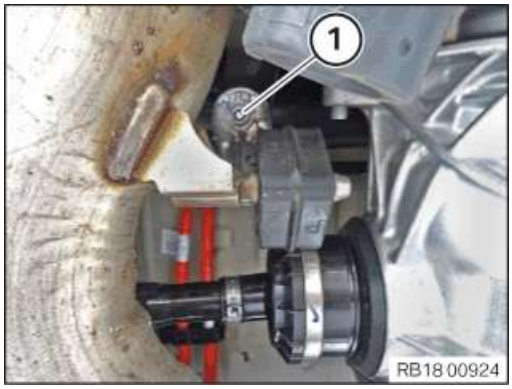


- Detach the exhaust temperature sensor (1) from the exhaust system.

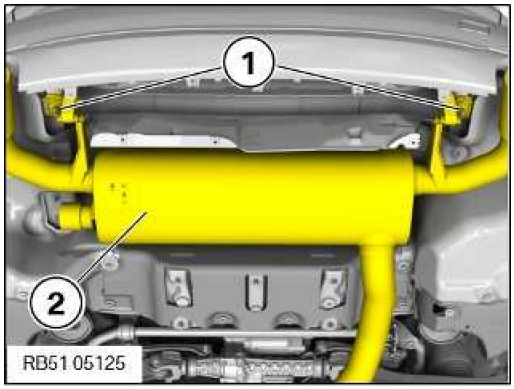


- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.

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- Release the nut (1) on the rear axle support.



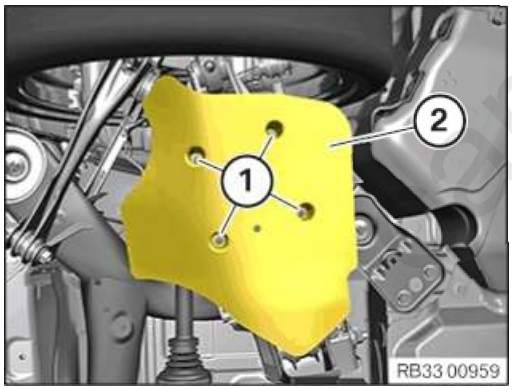
- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

2 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover of camber control arm**

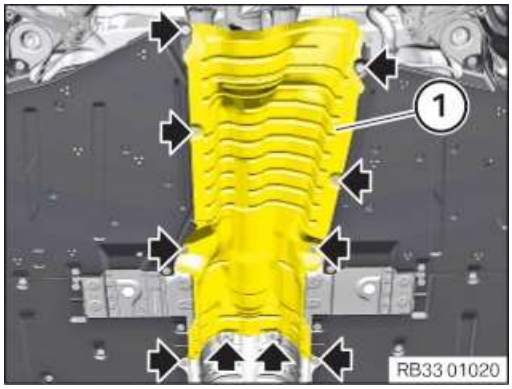


- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

3 – Remove heat shield at rear.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

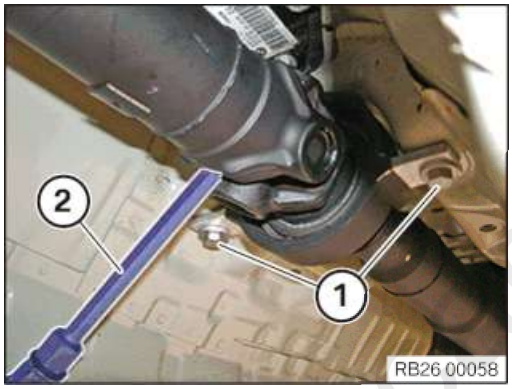
4 – Releasing the propeller shaft from the rear axle differential

RISK OF DAMAGE

Damage to propeller shaft during removal.

Non-observance of the removal guidelines for the propeller shaft on the rear axle differential may cause severe damage.

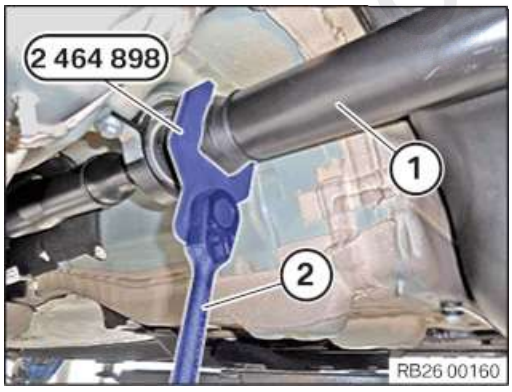
- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened on the recessed nut only and exclusively in the direction of rotation otherwise the anti-twist lock of the bi-hexagonal flange nut is damaged.
- In the event of a damaged anti-twist lock on the bi-hexagonal flange nut: Replace the rear axle differential.



- Loosen screws (1).

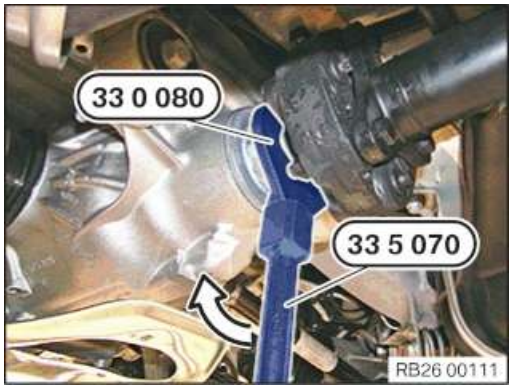
  Do not remove bolts (1) yet.
- **Version A (propeller shaft with wide universal joint):**

  Secure the propeller shaft against twisting at the centre universal joint using a suitable tool (2).



- **Version B (propeller shaft with narrow universal joint):**

  Secure the propeller shaft (1) against twisting by using the special tool 2 464 898 and a suitable tool (2) at the central universal joint.



RISK OF DAMAGE

Damage to rear axle differential.

Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

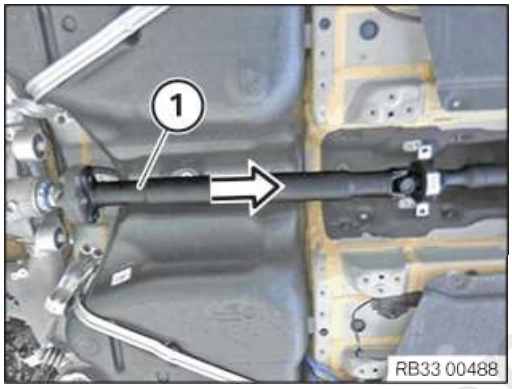
- Do not use the double hexagon head flange nut as counter support.

- Loosen the recessed nut **against** the direction of travel **in clockwise direction** using special tools 0 495 554 (33 5 070) and .

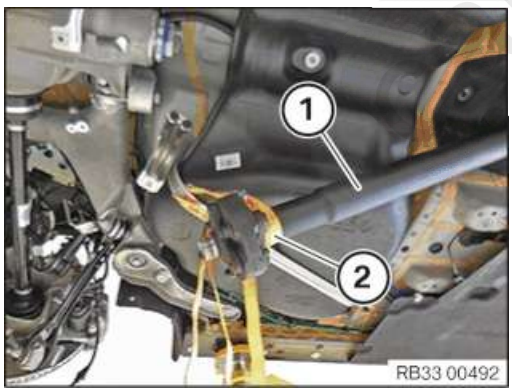
  The bi-hexagonal flange nut must not be used for counter-holding.



- Loosen screws (1) on centre mount.

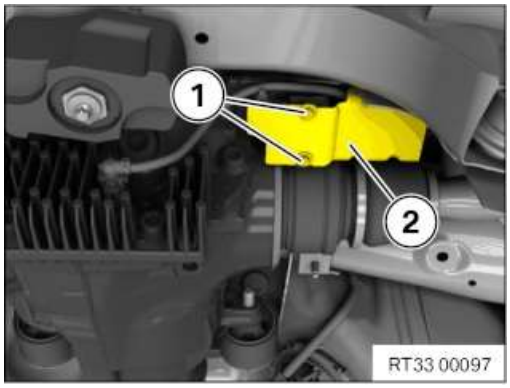


- Loosen the propeller shaft (1) from the rear axle differential in the direction of the arrow.

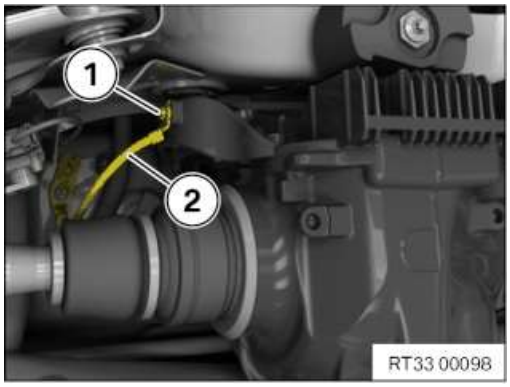


- Tie up the propeller shaft (1) using a tensioning strap (2).

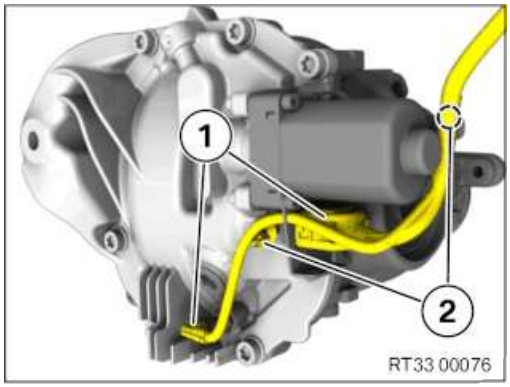
5 – Disconnecting the plug connections at the servomotor (GHAS)



- Loosen screws (1).
- Remove heat shield (2).



- Loosen screw (1).
- Detach the ground strap (2) from the rear axle differential.



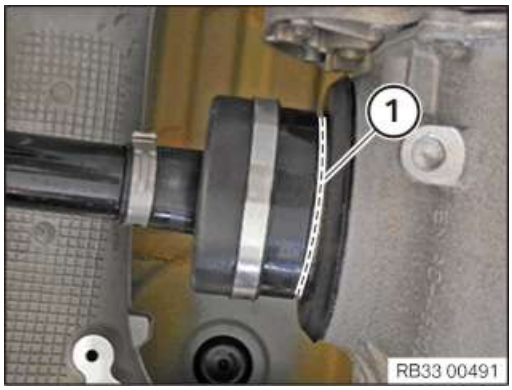
- Unlock and disconnect plug connections (1).
- Release cable from brackets (2).

6 – Detaching the output shafts from the rear axle differential

NOTICE

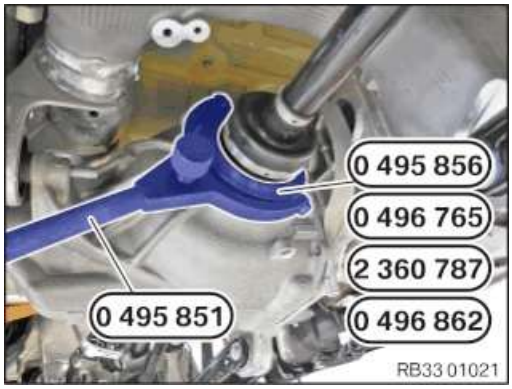
Perform the operations on the left and right side.

▸ **Detach the output shaft from the rear axle differential**



- Position the special tool at the circumferential slot (1) of the output shaft.

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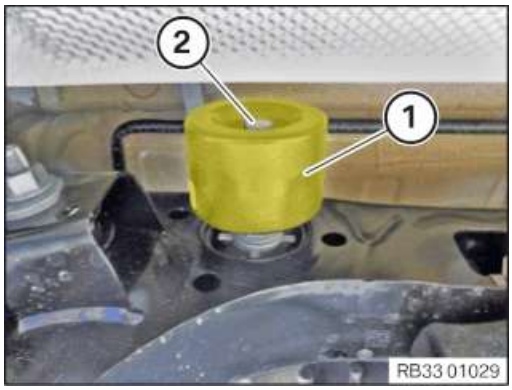
- Press out the output shaft with the special tool and the special tool , , or suitable depending on the equipment specification of the output shaft with jerky movements from the rear axle differential.

7 – Remove the vibration absorber on the rear axle differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

▸ **Remove the vibration absorber on the rear axle differential**



- Loosen screw (2).
- Remove the vibration absorber (1).

MAIN WORK

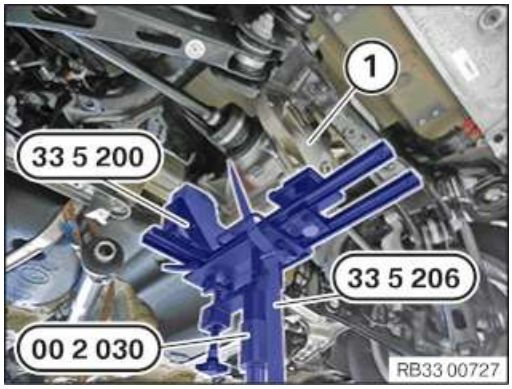
8 – Removing rear axle differential

RISK OF DAMAGE

Damage to rear axle differential.

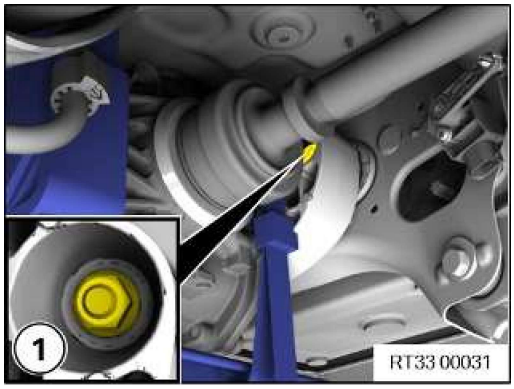
If the rear axle differential drops down, persons can be injured or the rear axle differential can be damaged.

- Secure the rear axle differential using a tensioning strap.

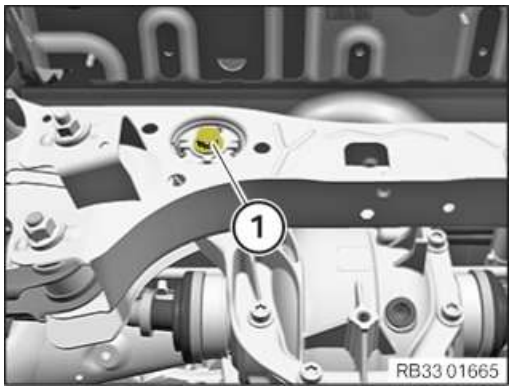


- Attach the special tool on the special tool 0 490 133 (00 2 030).
- Support the rear axle differential (1) with the special tool .
- Secure the rear axle differential (1) with the special tool on the special tool .

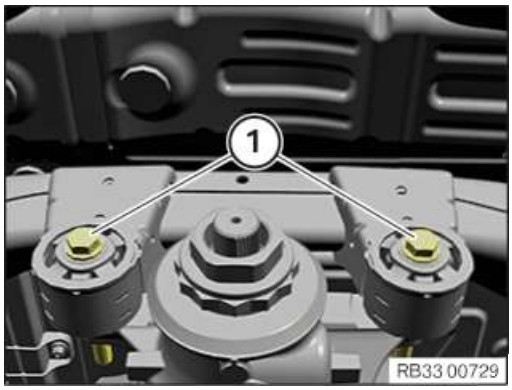
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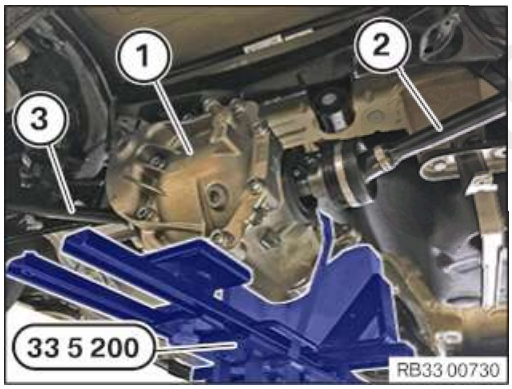
- Loosen nut (1).



- Pull the bolt (1) out of the rear axle support.



- Loosen screws (1) on rear axle support at front.



- Lower the rear axle differential (1) slightly with the special tool .
- Turn the rear axle differential (1) with the special tool towards the right and pull out the right output shaft (2).
- Then pull out the left output shaft (3).
- Tie up the output shafts (2) and (3).

  Do not leave the output shafts hanging on the joint!
- Completely lower the rear axle differential (1) and remove.

9 – Lifting off the rear axle differential from the special tool

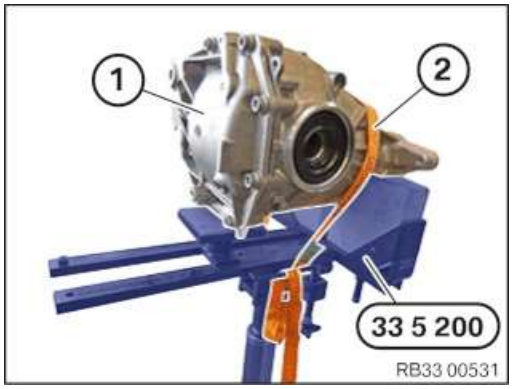
CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

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- Loosening the tensioning strap (2).
- Lift down the rear axle differential (1) from the special tool .

  If necessary, ask for support by a second person.

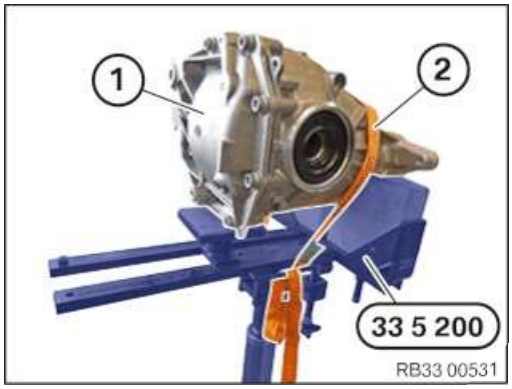
10 – Position the new rear axle differential on the special tool

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.



- Position the new rear axle differential (1) on the special tool .

  If necessary, ask for support by a second person.
- Secure the rear axle differential (1) with the tensioning strap (2) on the special tool .
- Remove the protective caps of the radial shaft seal.



- Position the assembly protection ring (1) in the radial shaft seals (2) of the drive flanges.

11 – If reusing: Checking the left and right output shaft and replacing the circlip

NOTICE

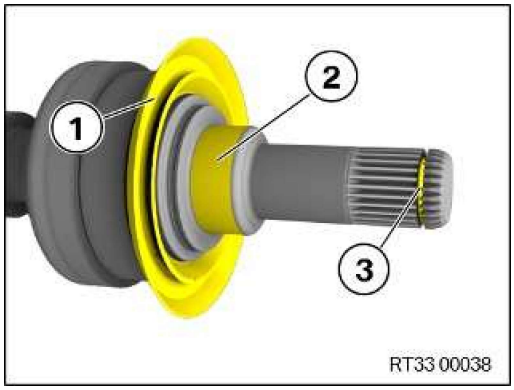
Description is for left component only. Procedure on the right side is identical.

▸ **If reusing: Check the output shaft and replace the circlip**

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TECHNICAL INFORMATION

It is essential to renew the circlip of the output shaft.



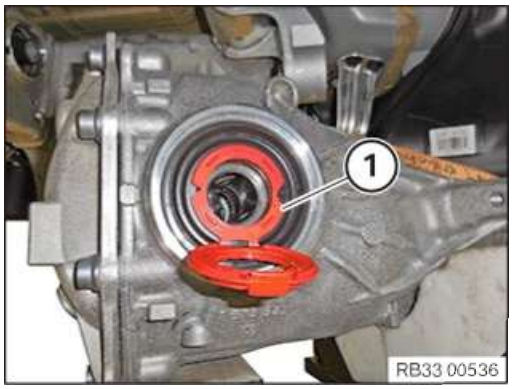
TECHNICAL INFORMATION

Extreme force being required during installation is an indication that the component is damaged or deformed. Check component and replace if necessary.

- Check the gearing of the output shaft for damage and renew damaged parts if necessary.
- Check the dust plate (1) for damage and renew damaged parts as needed.
- Renew the circlip (3).

  Parts: Circlip
- Coat the contact surface (2) using approved rear axle differential oil.

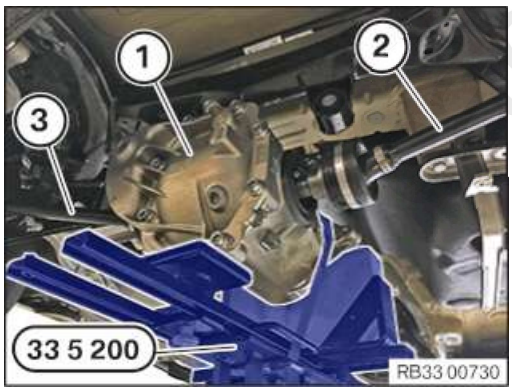
12 – Installing the rear axle differential



NOTICE

Perform the operations on the left and right side.

- Fold open the assembly protection ring (1).



- Raise the rear axle differential (1) somewhat with the special tool .
- Insert the left-hand output shaft (3) into the rear axle differential (1).
- Turn rear axle differential (1) using special tool to right and insert output shaft at right (2) into rear axle differential (1).

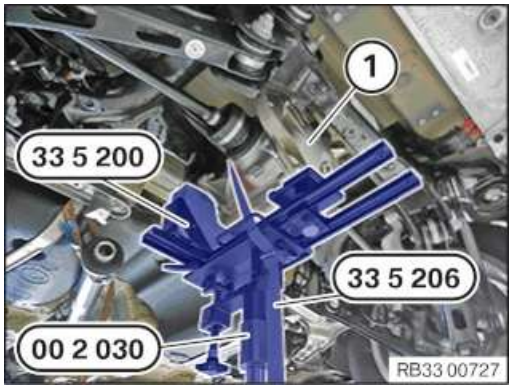


NOTICE

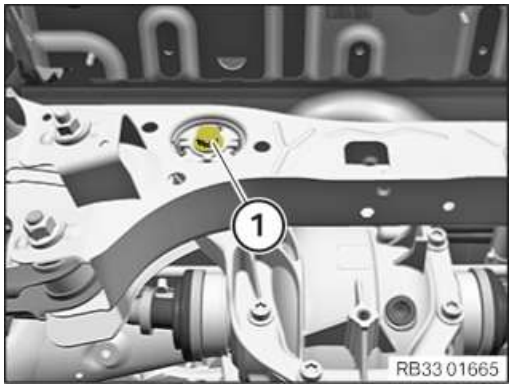
Perform the operations on the left and right side.

- Pull on the tab of the installation protection ring (1) until one of the two predetermined breaking points breaks.
- Pull out and dispose of the installation protection ring (1).

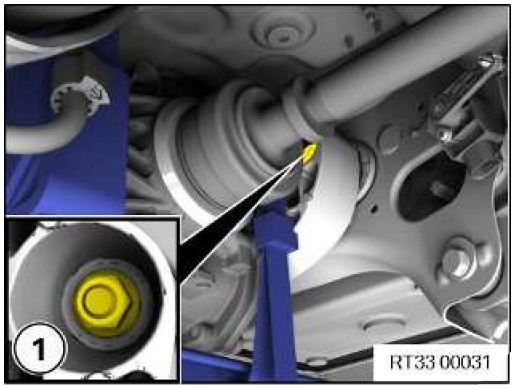
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- Lift the rear axle differential (1) using special tools and 0 490 133 (00 2 030) and position on the rear axle support.
- Make sure that the special tool does not get jammed between the rear axle differential (1) and a dust plate of an output shaft.

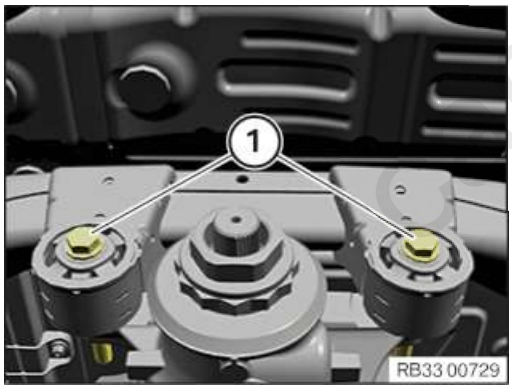


- Insert screw (1).



- Renew nut (1).

  Parts: Nut
- Prescrew the nut (1).

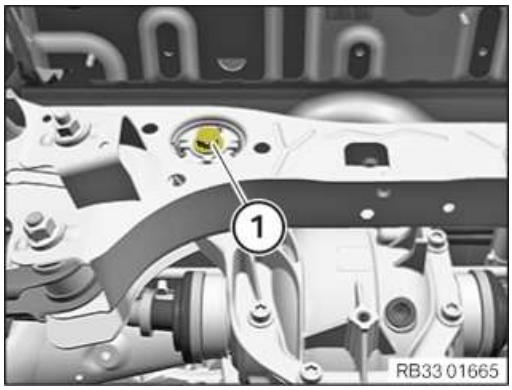


- Renew screws (1).

  Parts: Screws
- Screw in the screws (1) by hand and tighten.

Rear differential to rear axle carrier, front

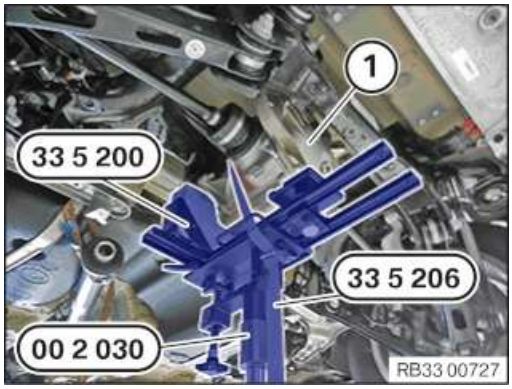
M12	Renew screw.	Tightening torque	100 Nm



- Tighten down screw (1). In doing so, counter support at the nut.

Rear differential to rear axle carrier, rear

M14	Renew nut.	Tightening torque.	175 Nm



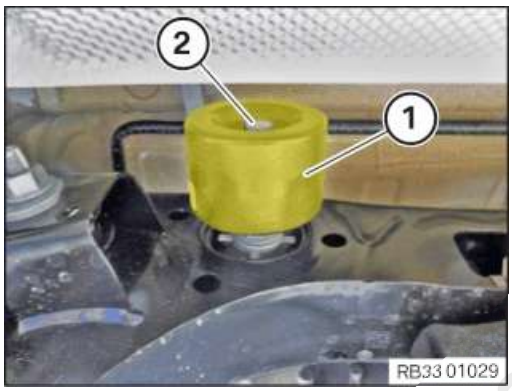
- Loosen and remove the tensioning strap from the rear axle differential (1).
- Lower the special tools 0 490 133 (00 2 030) and and set them aside.

POSTPROCESSES

13 – Install the vibration absorber on the rear axle differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



▸ **Install the vibration absorber on the rear axle differential**

- Position the (1) vibration absorber.
- Renew the screw (2).

  Parts: Screw
- Position and tighten the screw (2).

Vibration absorber to rear axle

M8	Renew screw.	Tightening torque	28 Nm

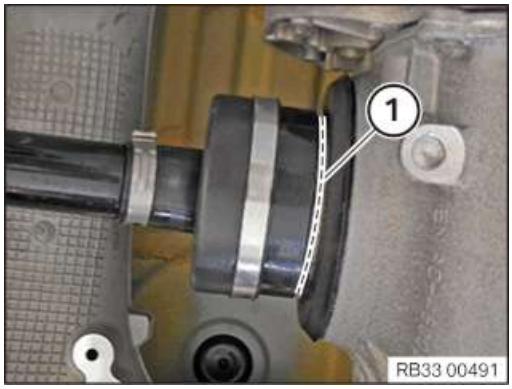
Vibration absorber to rear axle

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

14 – Secure output shafts on the rear axle differential

NOTICE

Perform the operations on the left and right side.



▸ **Secure the output shaft on the rear axle differential**

- Position the following special tool on the slot running around the output shaft (1).

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- Drive the output shaft into the rear axle differential with a suitable special tool , or and a rubber mallet.

15 – Check/top up oil level in the rear axle differential

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- Only use approved oil in the rear axle differential.

TECHNICAL INFORMATION

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

▸ **Supplement the rear axle differential oil change/oil level with oil gun**

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Your browser doesn't support HTML5 video.

TECHNICAL INFORMATION

The training video illustrates the methodology for changing the rear axle differential oil using the oil gun special tool.

The training video does not replace the repair instructions.

The training video is not subject to the update service.

No liability can be accepted for printing or other faults. Subject to changes of a technical nature

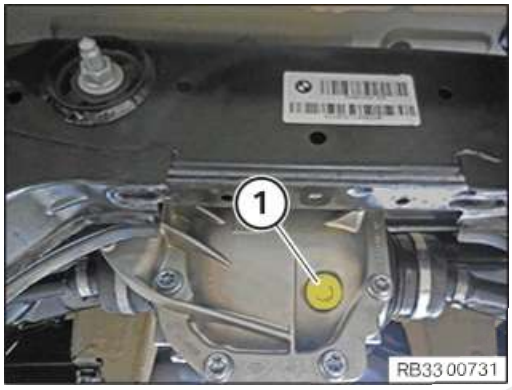
- Follow repair instructions!



TECHNICAL INFORMATION

With the specified capacity, it is imperative to take into account the capacity of the hose of the special tool.

- Use the special tool 2 460 340 to top up the rear axle differential oil.



- Open the oil filler plug (1).
- Check oil level:

  The oil level at the rear axle differential has been adjusted correctly once a small quantity of oil escapes from the opening of the oil filler plug.

  If necessary, top up final drive transmission oil.

Rear axle differential oil: Capacity overview (all)

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

- Replace the oil filler plug (1).

  Parts: Oil filler plug

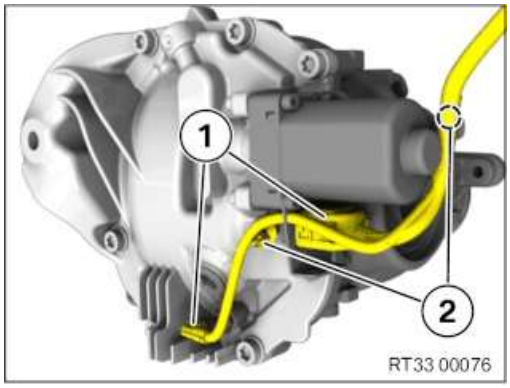
- Screw in and tighten the oil filler plug (1).

Rear axle differential oil filler plug

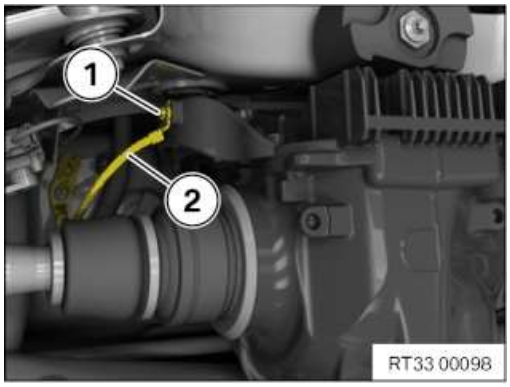
M22	Renew the oil filler plug.	Tightening torque	60 Nm

16 – Connecting the connector to the servomotor (GHAS)

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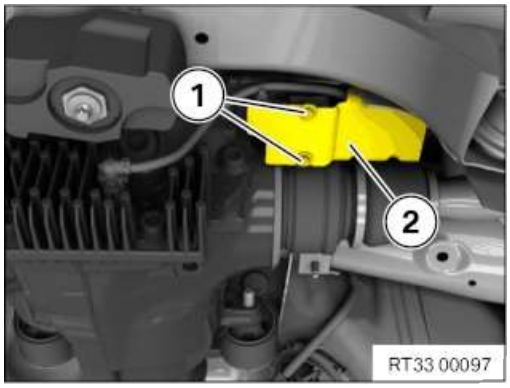
- Connect connectors (1) and lock.
- Secure the cables on the brackets (2).



- Position the ground strap (2) on the rear axle differential.
- Tighten down screw (1).

Ground strap to rear axle differential

M6x20		Tightening torque	8 Nm



- Position the heat shield (2).
- Tighten the screws (1).

Heat shield to servomotor

M5x10		Tightening torque	5 Nm

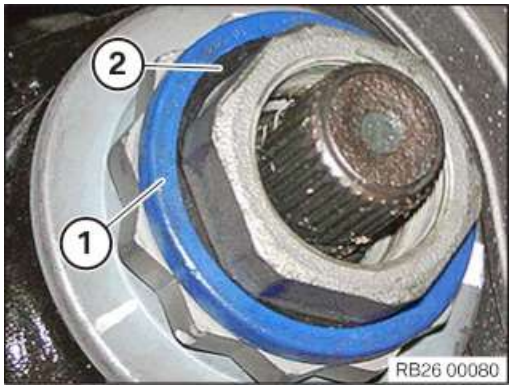
17 – Securing the propeller shaft on the rear axle differential

RISK OF DAMAGE

Damage to the propeller shaft during installation.

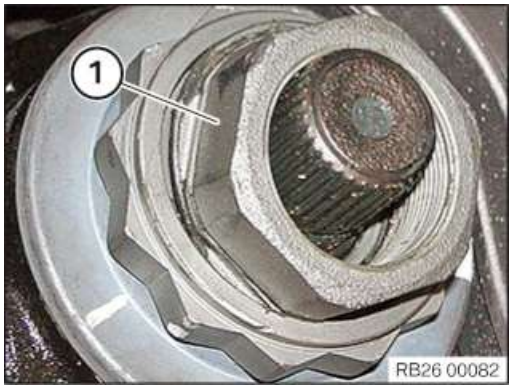
Non-observance of the installation guidelines for the propeller shaft on the rear axle differential may cause severe damage.

- Always renew the recessed nut on the rear axle differential. Screw locking must be available.
- Strictly observe a hardening time of minimum 3 h after screwing the recessed nut. The hardening time may be longer at lower temperatures.

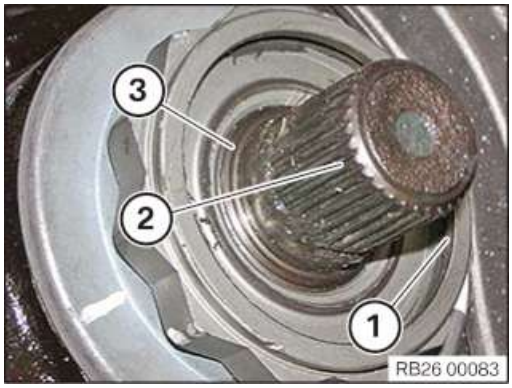


- Remove the retaining ring (1) and the seal (2).

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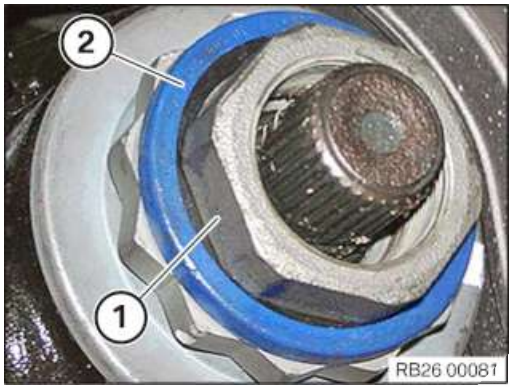
- Remove recessed nut (1).



- Clean and degrease the recessed collar (1) the flange nut, the gearing on the bevel pinion (2) and the taper (3) without any residue.
- Top up the collar insert (1)with grease.

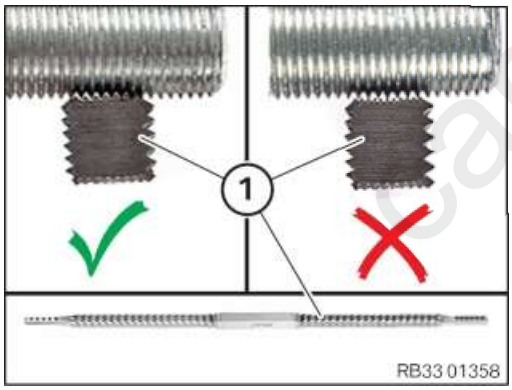
Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Renew the recessed nut (1), seal and retaining ring (2).

  Parts: Recessed nut, seal, retaining ring
- Insert recessed nut (1) including gasket into collar insert of the flange nut.
- Mount the retaining ring (2).



- Use a thread file (1) to remove the adhesive residue on the thread.
- **Make sure that the thread pitch is correct!**

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RISK OF DAMAGE

Damage to the output flange.

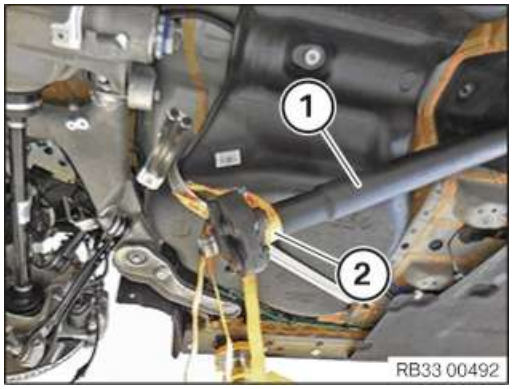
Failure to observe the greasing specifications may lead to damage on the output flange.

- Do not contaminate the thread of the output flange with grease.

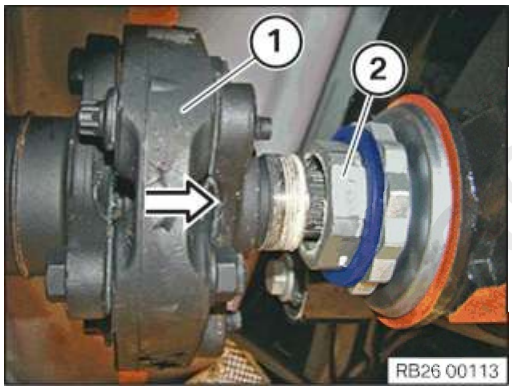
- Remove any adhesive residue on thread (1) of the flange and clean it.
- Clean gearing (2).
- Grease gearing (2).

Expendable materials

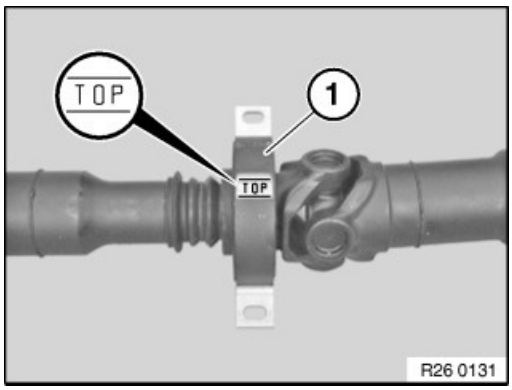
Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Loosen the tensioning strap (2) from the propeller shaft (1).

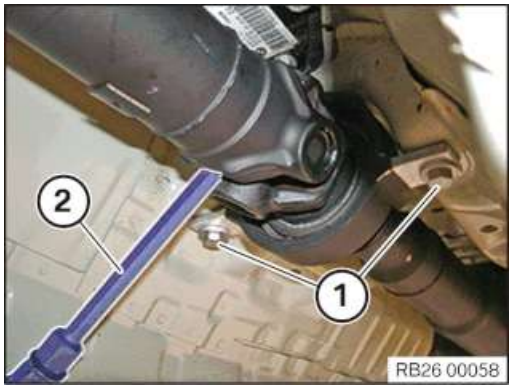


- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Screw and secure recessed nut (2) at least 2 thread starts onto propeller shaft (1) by hand.



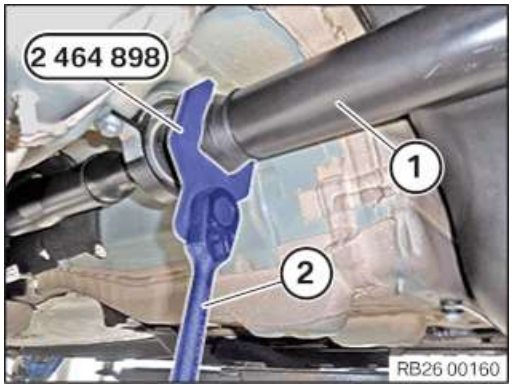
- Position the centre mount (1).

  Position the centre mount (1) with the designation TOP at the top in the transmission tunnel.



- Screw in the screws (1) by a few turns.
- **Version with a broad universal joint:**

  Secure the propeller shaft from twisting with a suitable tool (2) on the centre universal joint.



- **Version with a narrow universal joint:**

  Secure the propeller shaft (1) from twisting with the special tool 2 464 898 and a suitable tool (2) on the centre universal joint.



RISK OF DAMAGE

Damage to the flange nut.

Failure to observe the installation specifications may lead to serious damage to the flange nut and the rear axle differential.

- Do not use the double hexagon flange nut as counter support.
- Screw in the recessed nut within 5 minutes.

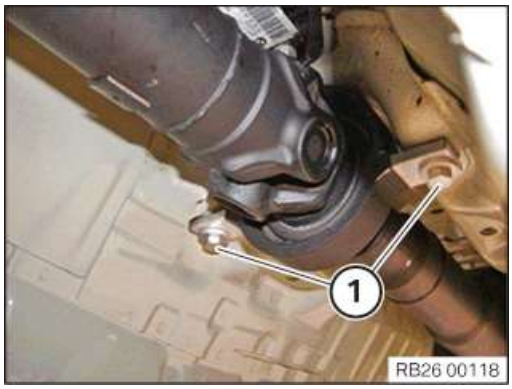
- Tighten recessed nut **counter-clockwise in the direction of the arrow** using special tools 0 495 554 (33 5 070) and .

Propeller shaft on the rear axle differential

Insert nut	Replace insert nut.	Tightening torque	100 Nm

- **After the propeller shaft is installed and the recessed nut is screwed in, strictly observe a hardening time of minimum 3 hours.**

  Do not move or push the vehicle during this time!



- Tighten the screws (1).

Centre mount to body

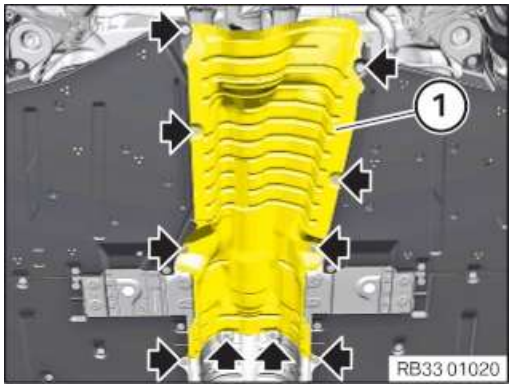
M8		Tightening torque	19 Nm

18 – Installing the rear heat shield

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NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

19 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Installing the cover of the camber control arm**



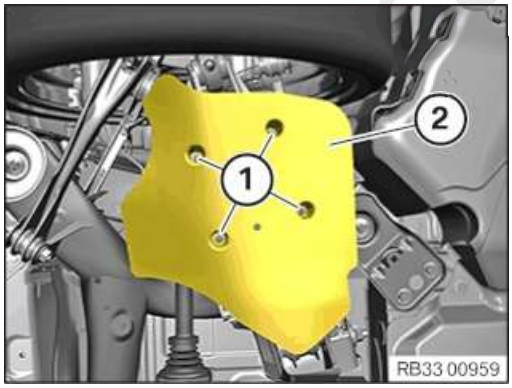
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

20 – Installing the complete exhaust system

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CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

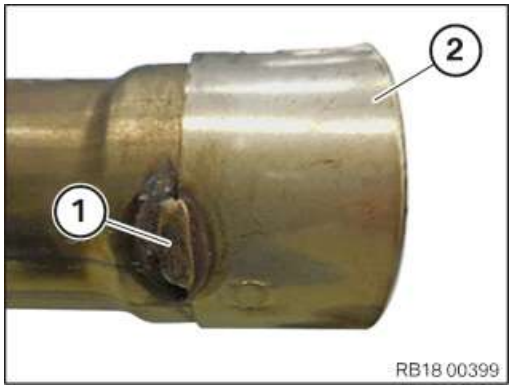
TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.

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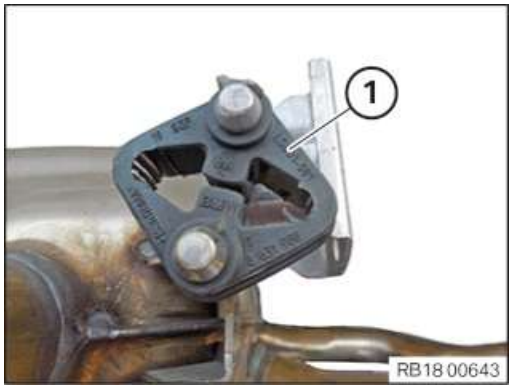
CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

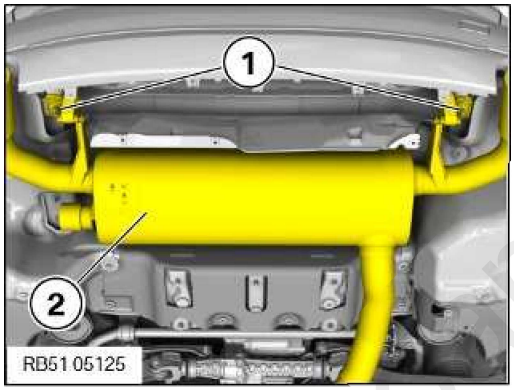


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

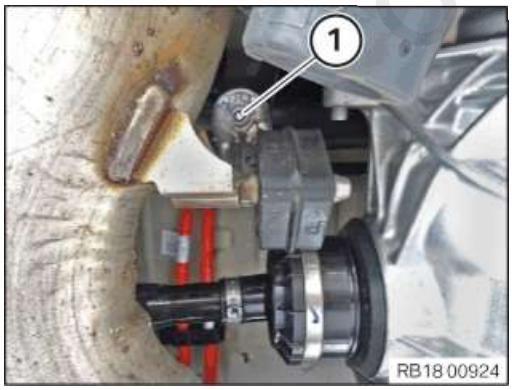


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm



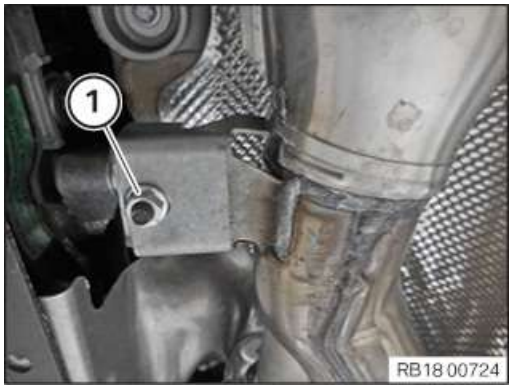
- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

M8 nut		Tightening torque	19 Nm

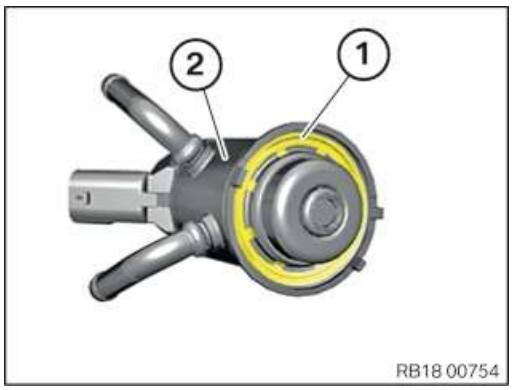
manualslib.com



- Tighten nut (1).

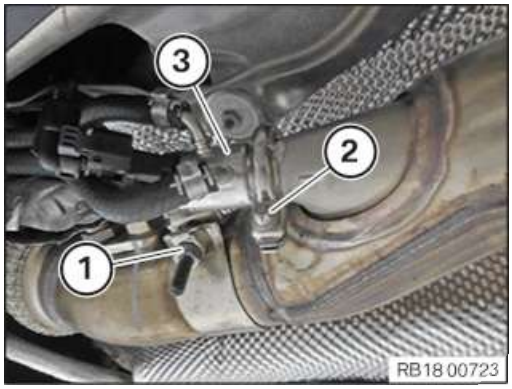
Exhaust system to transmission

M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

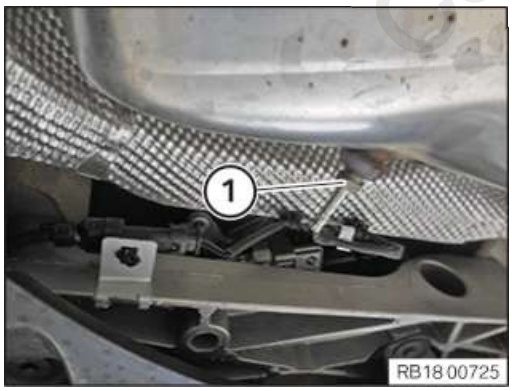
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

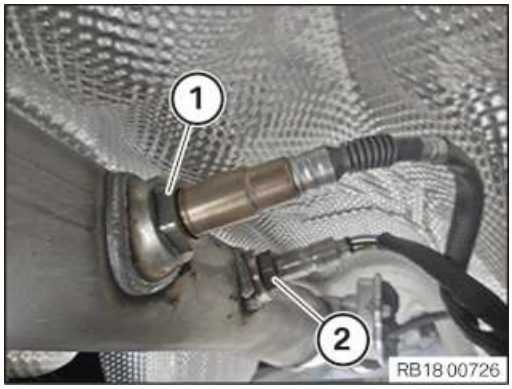


- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm

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- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

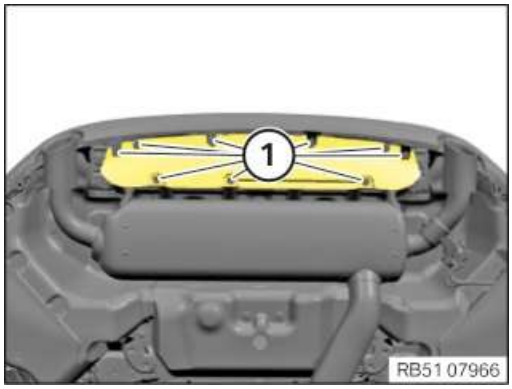
Sensor		Tightening torque	50 Nm

- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

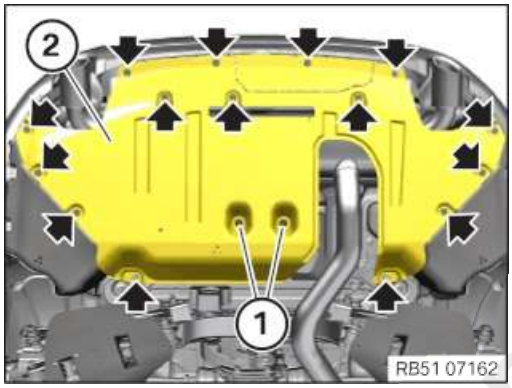
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

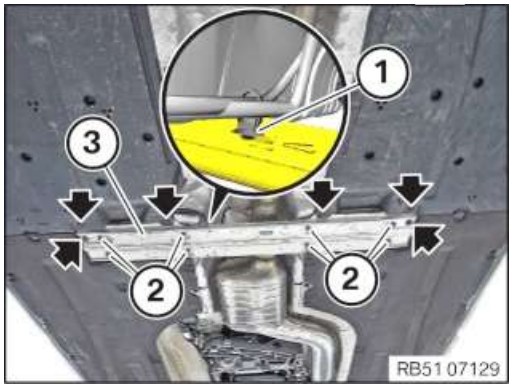
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**



- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

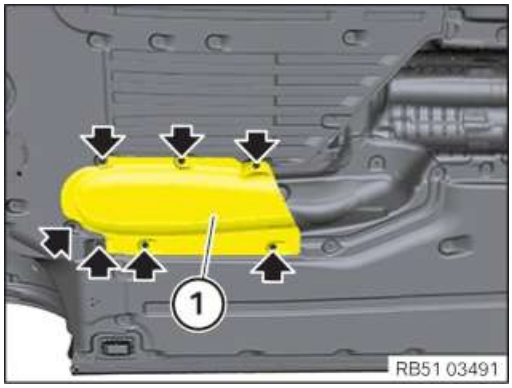
- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

21 – Replacement (rear axle differential or servomotor): Carrying out the "Delete wear data" service function



- Connect vehicle to the diagnosis system.
- Carry out the "Delete wear data" service function.

22 – Replacement (rear axle differential): carry out the service function for the correction values of the characteristic curve



- Connect vehicle to the diagnosis system.
- Carry out the "Correction values of the characteristic curve" service function.

Additional Information

Overview of Tightening Torques

Rear differential to rear axle carrier, front — Used in step 12

M12	Renew screw.	Tightening torque	100 Nm

Rear differential to rear axle carrier, rear — Used in step 12

M14	Renew nut.	Tightening torque.	175 Nm

Vibration absorber to rear axle — Used in step 13

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle — Used in step 13

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Rear axle differential oil filler plug — Used in step 15

M22	Renew the oil filler plug.	Tightening torque	60 Nm

Ground strap to rear axle differential — Used in step 16

M6x20		Tightening torque	8 Nm

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Heat shield to servomotor			Used in step 16
M5x10		Tightening torque	5 Nm

Propeller shaft on the rear axle differential			Used in step 17
Insert nut	Replace insert nut.	Tightening torque	100 Nm

Centre mount to body			Used in step 17
M8		Tightening torque	19 Nm

Heat shield to undercarriage			Used in step 18
Screws and nuts		Tightening torque	3 Nm

Cover to camber control arm			Used in step 19
M6	Replace nuts.	Tightening torque	6 Nm

Rear silencer to body / bumper support			Used in step 20
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 20
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 20
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 20
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 20
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 20
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 20
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 20
Sensor		Tightening torque	55 Nm

Diffuser / underbody panelling			Used in step 20
Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel			Used in step 20
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling			Used in step 20
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

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Overview of Special Tools

2 464 898 Open-end spanner



Common Used in step 417

Usage	Open-end spanner SW50 for disassembly and installation of the propeller shaft on rear axle differential. The silhouette foil is included in the delivery specification.
Included in the tool or work	
Storage location	A7
Replaced by	
In connection with	
SI-Number	01 19 18 (579)

0 495 554 (33 5 070) Extension



Common Used in step 417

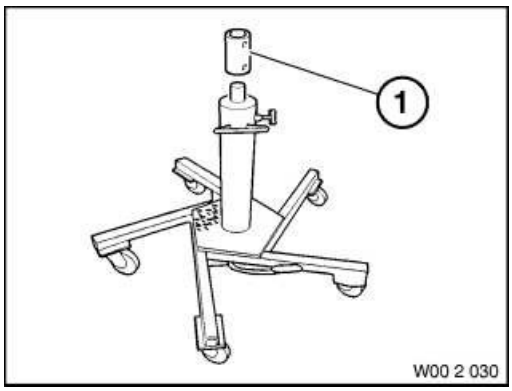
Usage	Pull-out extension for 33 5 040, 33 5 050, 33 5 060.
Included in the tool or work	
Storage location	A18
Replaced by	
In connection with	
SI-Number	01 21 06 (300)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 495 592 (33 5 071)		**Extension** (Extension (1 item)) discontinued, can only be ordered using complete tool	

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0 490 133 (00 2 030) Device



Common Used in step 812

Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

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2 460 340 Pump



Common	Used in step 15
Usage	Oil gun to fill rear axle differentials or differentials with 1 litre containers.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 09 18 (553)

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Overview Technical Data

Rear axle differential oil: Capacity overview (all)	Used in step 15
168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	

Operating materials	Used in step

1.1 Grease for propeller shaft inserted	17
1.0 Grease for propeller shaft (flexible disc centring and sliding piece)	17

Operating materials	**Used in step**
Main group 33	15

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33 11 030 Replacing lid for rear axle differential

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- After completion of repair work, check the transmission oil level in the rear axle differential.
- Use only the approved final drive transmission oil.

PRELIMINARY WORK

1 – Remove complete exhaust system

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WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

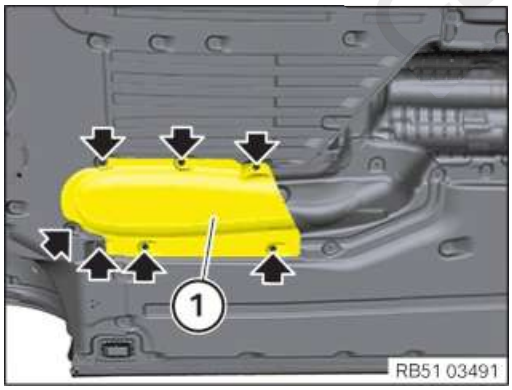
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

NOTICE

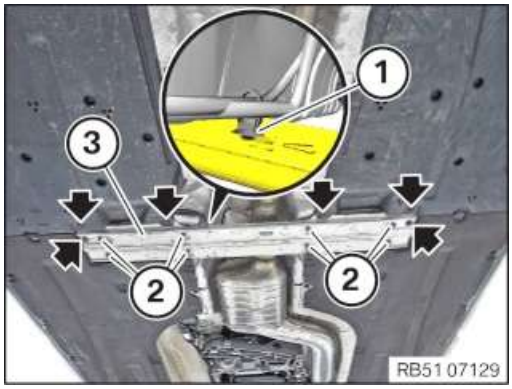
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**

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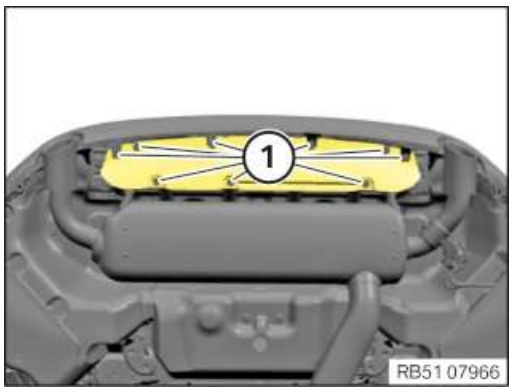
- Remove screws (arrows).

NOTICE

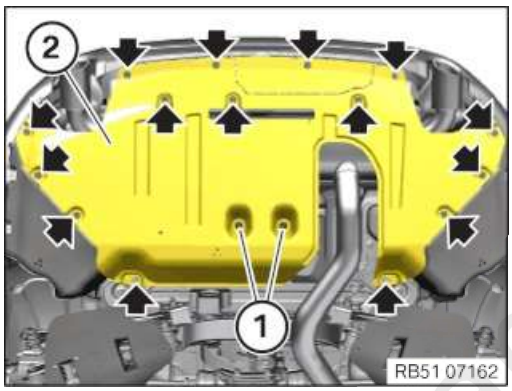
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

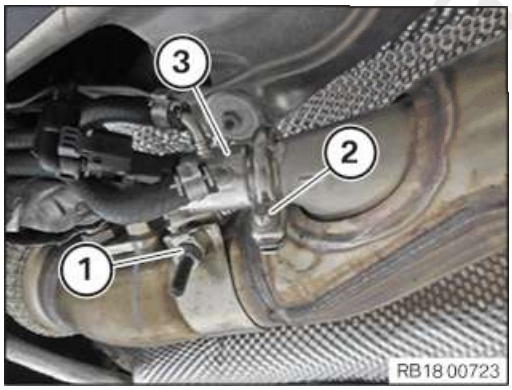
▸ **Removing the rear diffuser**



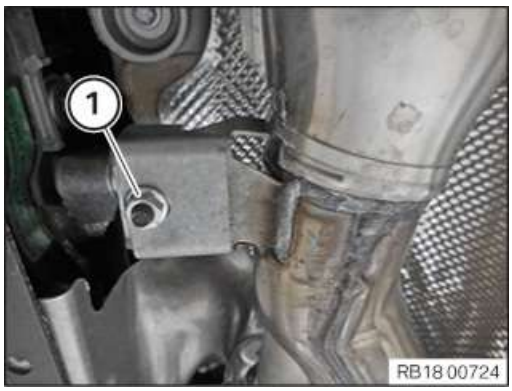
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).

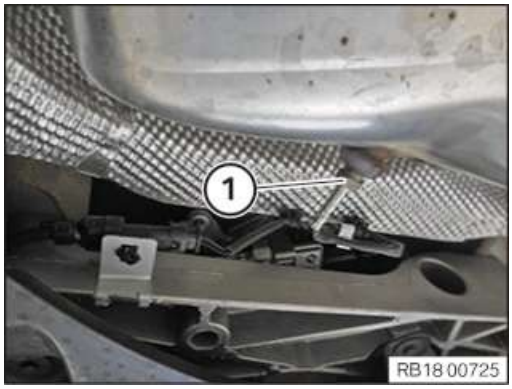


- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.

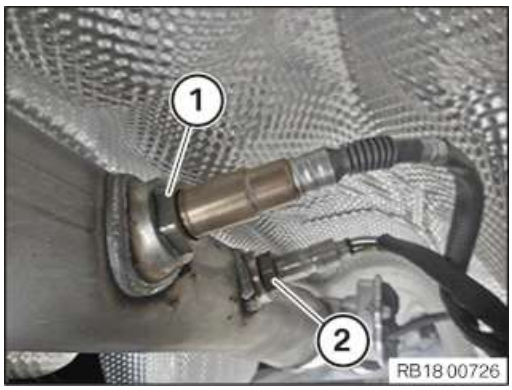


- Loosen nut (1).

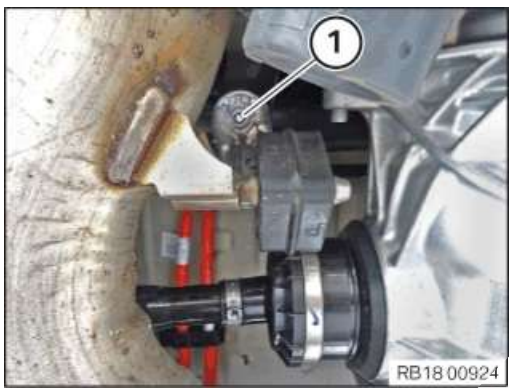
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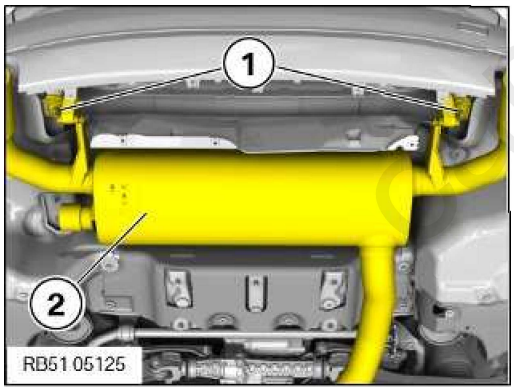
- Detach the exhaust temperature sensor (1) from the exhaust system.



- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.



- Release the nut (1) on the rear axle support.



- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

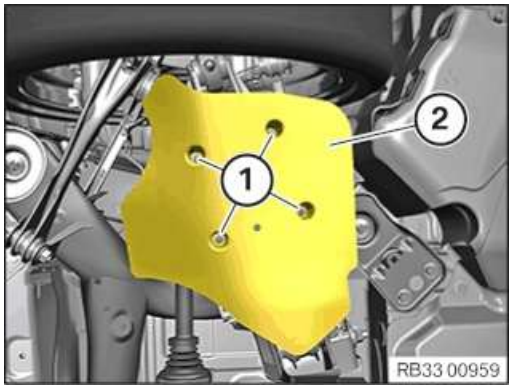
2 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover of camber control arm**

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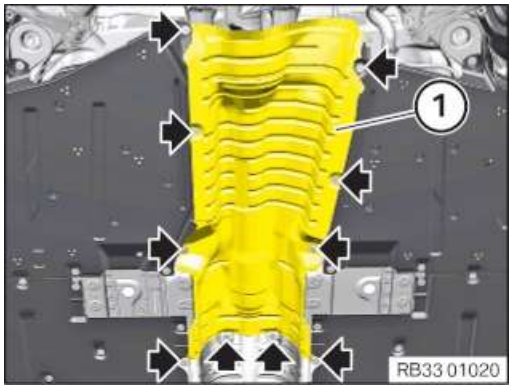


- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

3 – Remove heat shield at rear.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

4 – Drawing off oil in the rear axle differential

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

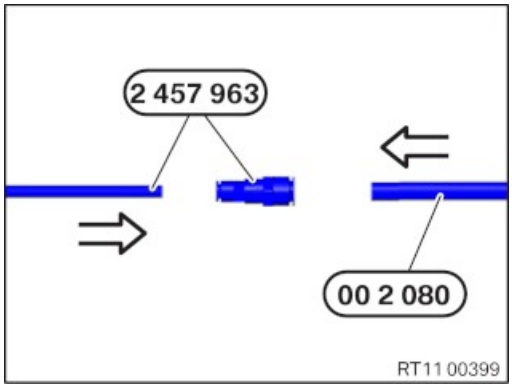
NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

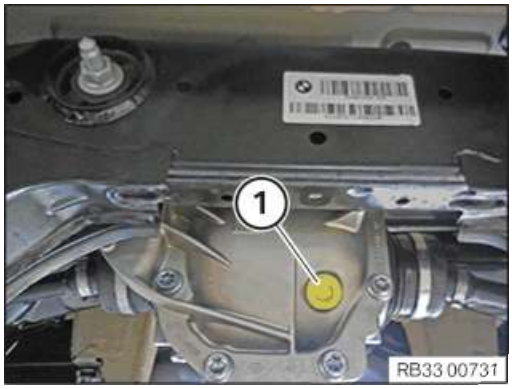
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- Use the special tool 0 493 337 (00 2 080) for drawing off the rear axle differential oil.



- Connect the special tool with the special tool 0 493 337 (00 2 080).



- Open the oil filler plug (1).
- Draw off rear axle differential oil.

5 – Lowering rear axle differential

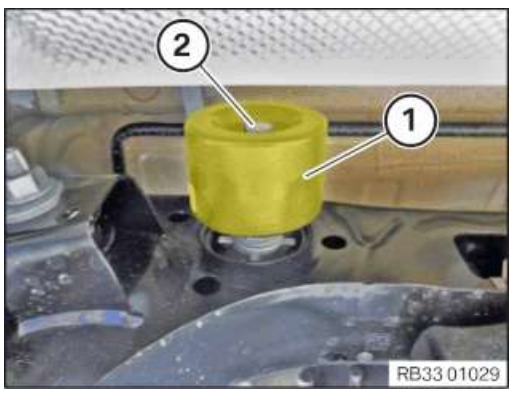
RISK OF DAMAGE

Damage to rear axle differential.

If the rear axle differential drops down, persons can be injured or the rear axle differential can be damaged.

- Secure the rear axle differential using a tensioning strap.

▸ **Remove vibration absorber**

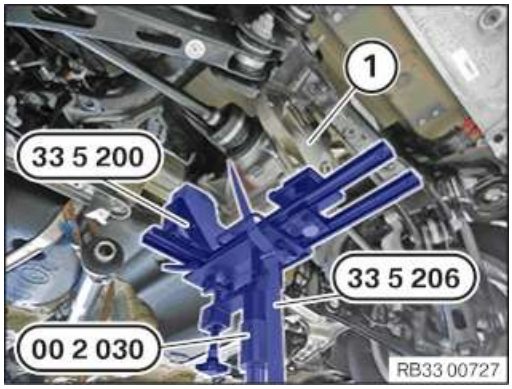


NOTICE

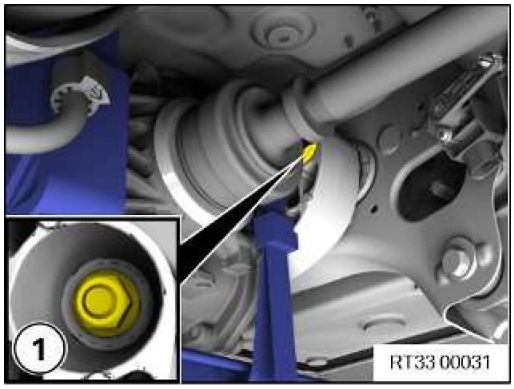
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Release the screw (2).
- Remove the vibration absorber (1).

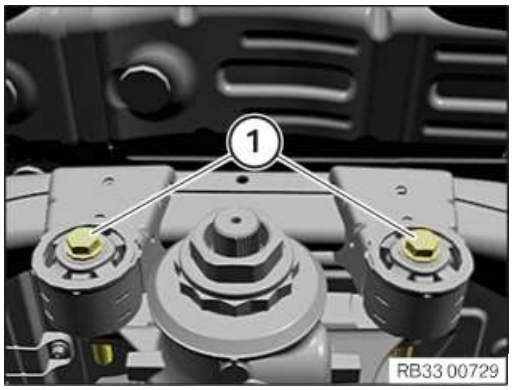
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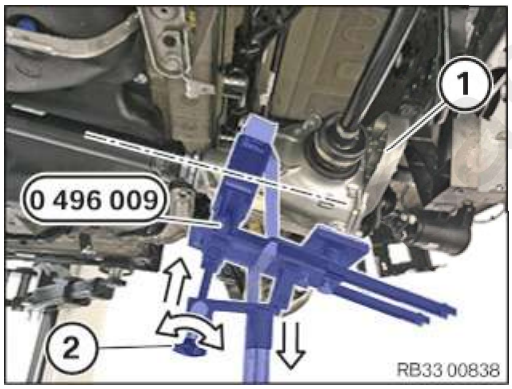
- Place the special tool onto the universal jack 0 490 133 (00 2 030).
- Support the rear axle differential (1) with the special tool .
- Secure the rear axle differential (1) with a tensioning strap on the special tool .



- Loosen nut (1) on the rear axle support at rear.
- Remove screw.



- Loosen screws (1) on rear axle support at front.



- Lower rear axle differential (1) using the special tool only until the cover on the rear axle differential is accessible.

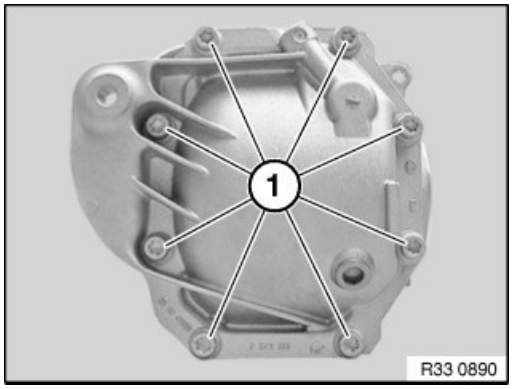
  During lowering, twist the adjusting screw (2) to slightly raise the rear axle differential at the front.

MAIN WORK

6 – Removing the housing cover

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

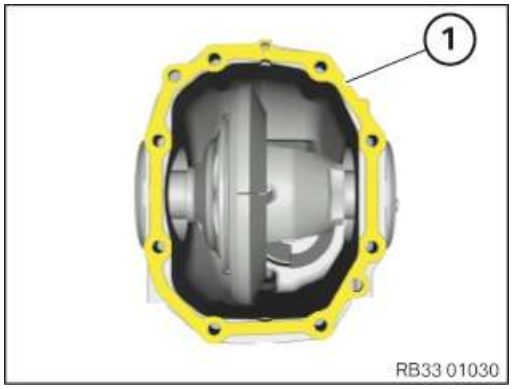


- Loosen screws (1).
- Take off case cover.

7 – Removing the seal and clean the sealing surface

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Remove the seal from the housing of the rear axle differential using a scraper.
- Clean sealing surface (1) on the rear axle differential.

8 – Apply liquid sealing compound

TECHNICAL INFORMATION

- The application time of the liquid sealing compound can be at a maximum of 10 min.
- Start-up of the assembly is not possible until 25 minutes after the application time.
- Non-observance can lead to leaks in the assembly.



- Position the liquid sealing compound (1) on special tool 2 469 803 as shown.

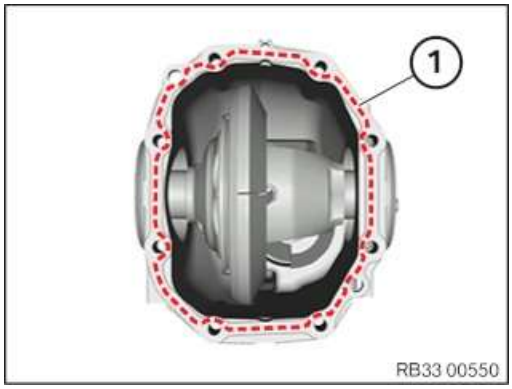
  Parts: Liquid sealing compound

Sealing compound

Loctite 5970 liquid sealing compound **Processing time <10 minutes at room temperature**	50 ml, Cartridge	83190404517

Overview of consumables (Electronic Parts Catalogue)

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NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

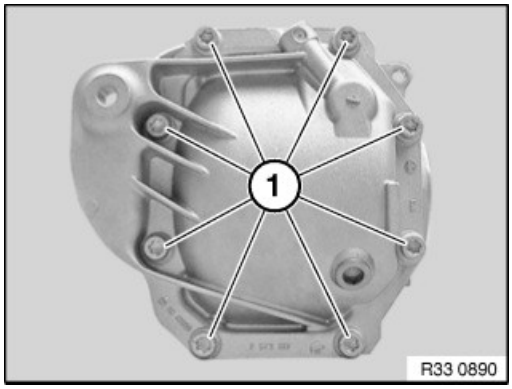
- Apply liquid sealing compound along the dotted line (1) on the sealing surface of the rear axle differential.

  The sealing bead must run along the inner edge.

9 – Installing the housing cover

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



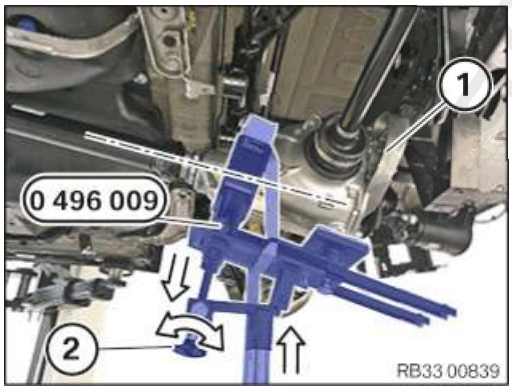
- Position the housing cover on the rear axle differential.
- Tighten the screws (1).

Lid to rear axle differential

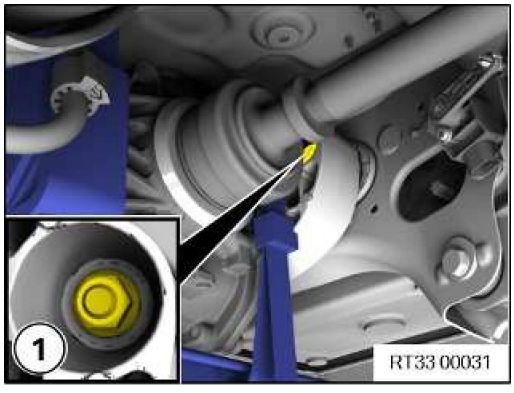
M12			140 Nm
M10			90 Nm

POSTPROCESSES

10 – Lifting the rear axle differential

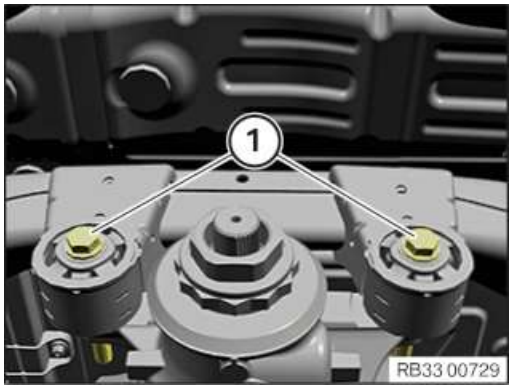


- Lift and position the rear axle differential (1)with the special tool .
- While lifting the rear axle differential (1), twist the adjusting screw (2) to correct the installation position.



- Insert screw from behind.
- Renew nut (1).

  Parts: Nut
- Screw on the nut (1) by several turns onto the screw.

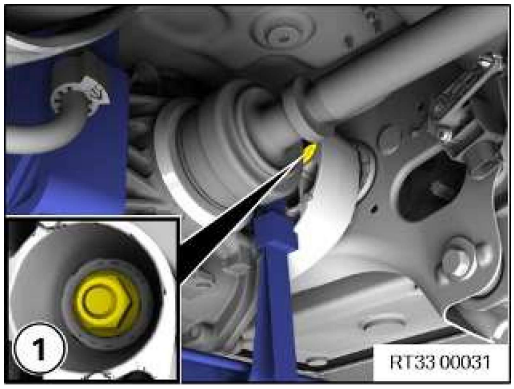


- Renew screws (1).

  Parts: Screws
- Screw in the screws (1) by hand.
- Tighten the screws (1).

Rear differential to rear axle carrier, front

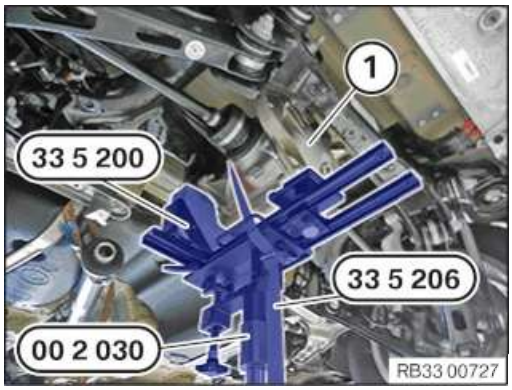
M12	Renew screw.	Tightening torque	100 Nm



- Tighten nut (1).

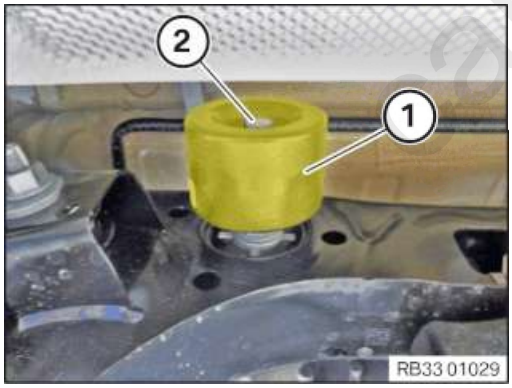
Rear differential to rear axle carrier, rear

M14	Renew nut.	Tightening torque.	175 Nm



- Loosen and remove the tensioning strap from the rear axle differential (1).
- Lower and remove the special tools 0 490 133 (00 2 030) and .

▸ **install the vibration absorber**



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Position the (1) vibration absorber.
- Renew the screw (2).

  Parts: Screw
- Tighten down screw (2).

Vibration absorber to rear axle

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

11 – Check/top up oil level in the rear axle differential

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CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- Only use approved oil in the rear axle differential.

TECHNICAL INFORMATION

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

▸ **Supplement the rear axle differential oil change/oil level with oil gun**

Your browser doesn't support HTML5 video.

TECHNICAL INFORMATION

The training video illustrates the methodology for changing the rear axle differential oil using the oil gun special tool.

The training video does not replace the repair instructions.

The training video is not subject to the update service.

No liability can be accepted for printing or other faults. Subject to changes of a technical nature

- Follow repair instructions!

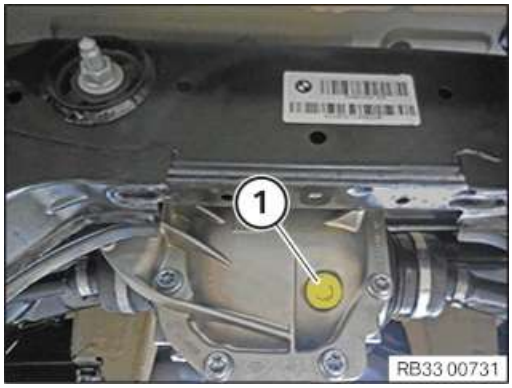
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TECHNICAL INFORMATION

With the specified capacity, it is imperative to take into account the capacity of the hose of the special tool.

- Use the special tool 2 460 340 to top up the rear axle differential oil.



- Open the oil filler plug (1).
- Check oil level:

  The oil level at the rear axle differential has been adjusted correctly once a small quantity of oil escapes from the opening of the oil filler plug.

  If necessary, top up final drive transmission oil.

Rear axle differential oil: Capacity overview (all)

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

- Replace the oil filler plug (1).

  Parts: Oil filler plug
- Screw in and tighten the oil filler plug (1).

Rear axle differential oil filler plug

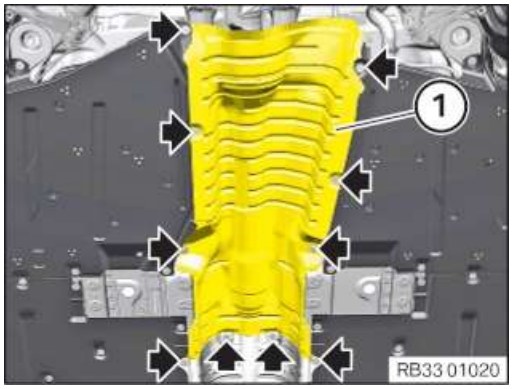
M22	Renew the oil filler plug.	Tightening torque	60 Nm

12 – Installing the rear heat shield

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

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- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

13 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Installing the cover of the camber control arm**



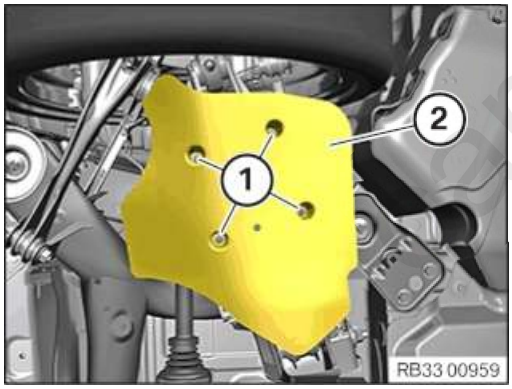
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

14 – Installing the complete exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

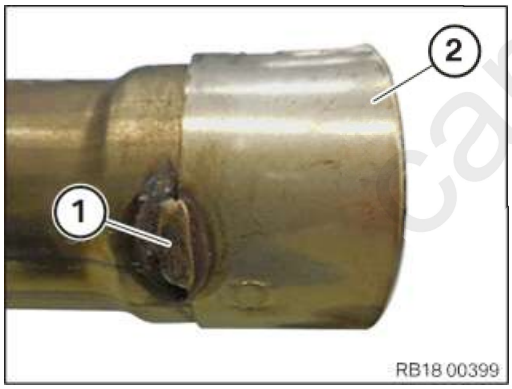
- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.



CAUTION

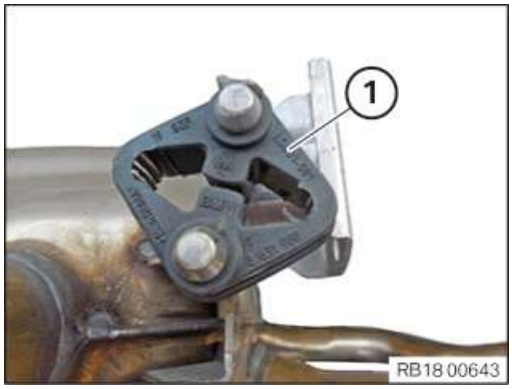
Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

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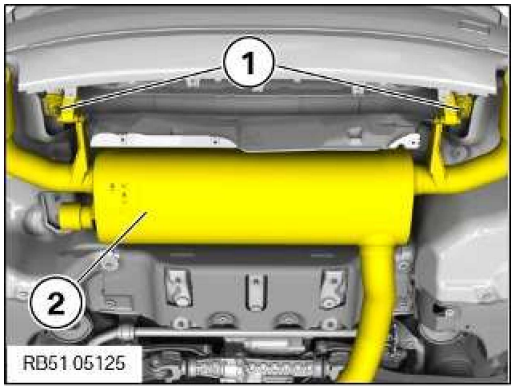


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

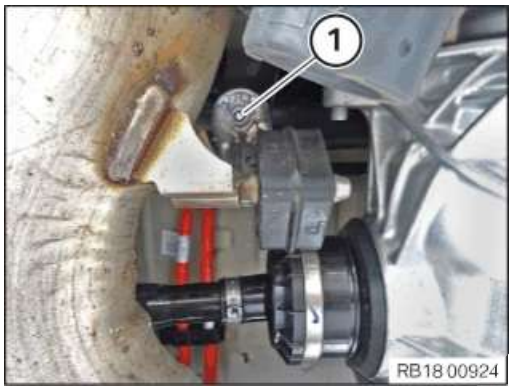


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

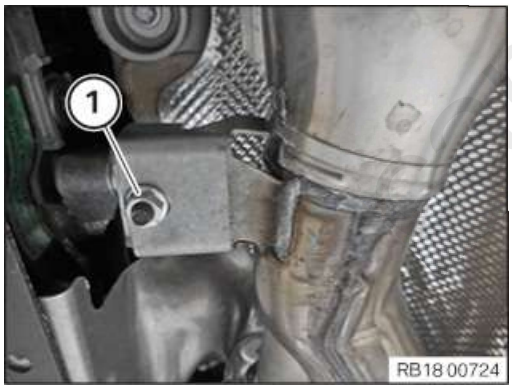


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

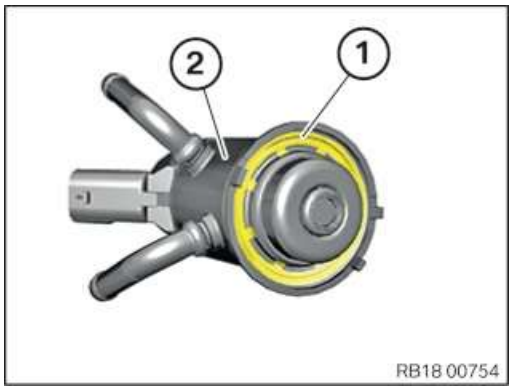
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

Exhaust system to transmission

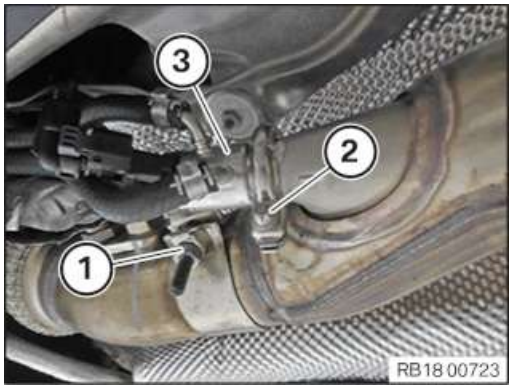
M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring

mdiagn.com



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

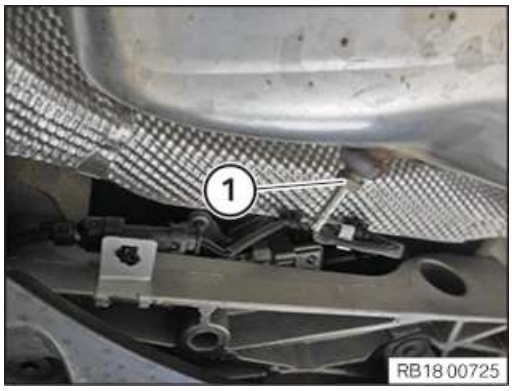
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

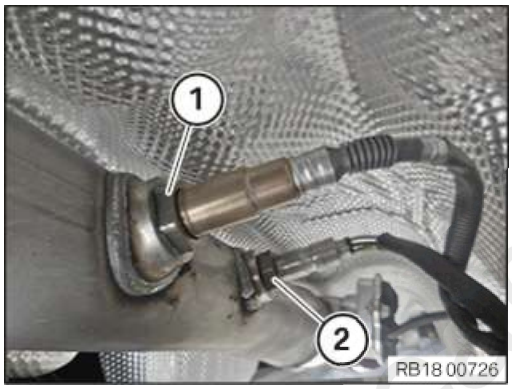
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm



- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm



- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

Sensor		Tightening torque	50 Nm

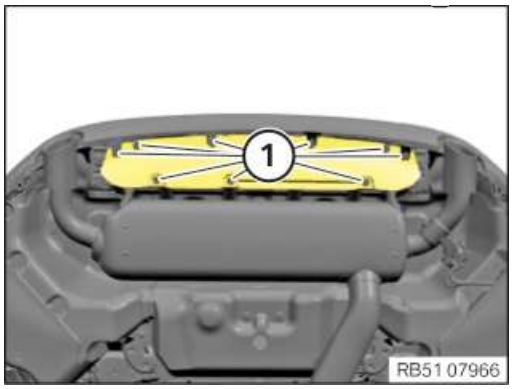
- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

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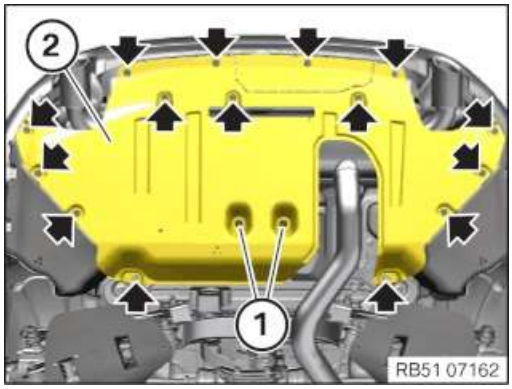
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

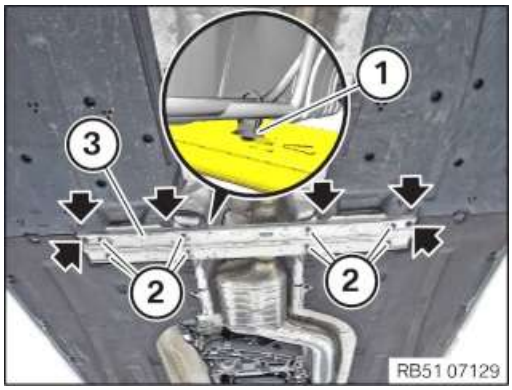
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**



- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

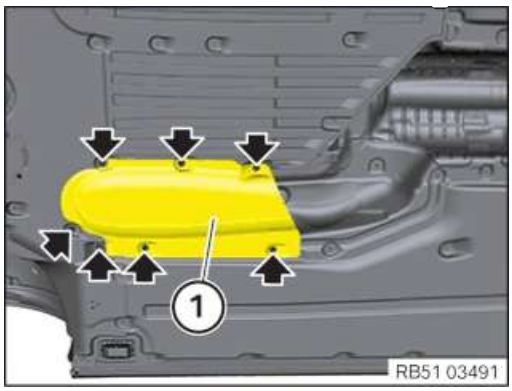
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Additional Information

Overview of Tightening Torques

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Lid to rear axle differential			Used in step 9
M12			140 Nm
M10			90 Nm

Rear differential to rear axle carrier, front			Used in step 10
M12	Renew screw.	Tightening torque	100 Nm

Rear differential to rear axle carrier, rear			Used in step 10
M14	Renew nut.	Tightening torque.	175 Nm

Vibration absorber to rear axle			Used in step 10
M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle			Used in step 10
M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Rear axle differential oil filler plug			Used in step 11
M22	Renew the oil filler plug.	Tightening torque	60 Nm

Heat shield to undercarriage			Used in step 12
Screws and nuts		Tightening torque	3 Nm

Cover to camber control arm			Used in step 13
M6	Replace nuts.	Tightening torque	6 Nm

Rear silencer to body / bumper support			Used in step 14
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 14
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 14
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 14
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 14
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 14
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 14
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 14
Sensor		Tightening torque	55 Nm

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Diffuser / underbody panelling Used in step 14

Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel Used in step 14

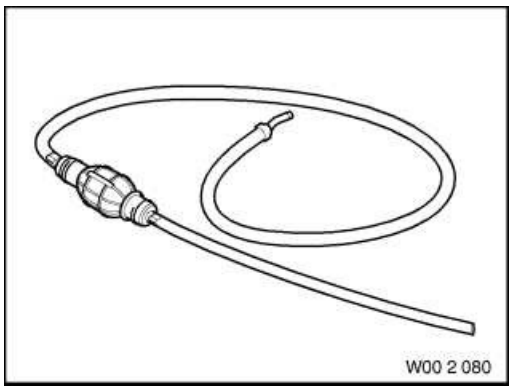
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling Used in step 14

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Overview of Special Tools

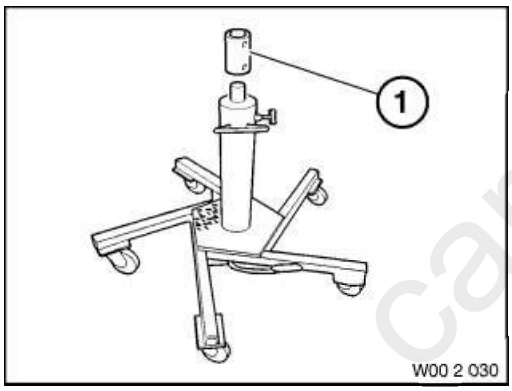
0 493 337 (00 2 080) Pump



Common Used in step 4

Usage	(Hand pump) For lifetime oil filling
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 01 98 (294)

0 490 133 (00 2 030) Device



Common Used in step 510

Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

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2 469 803 Cartridge gun



Common	Used in step 8
Usage	For the application of the liquid sealing compound Loctite 5970.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 39 18 (616)

2 460 340 Pump



Common	Used in step 11
Usage	Oil gun to fill rear axle differentials or differentials with 1 litre containers.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 09 18 (553)

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Overview Technical Data

Rear axle differential oil: Capacity overview (all) Used in step 11

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

Links

General repair instructions	Used in step

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	

Operating materials	Used in step
Main group 33	11

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

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- After completion of repair work, check the transmission oil level in the rear axle differential.
- Use only the approved final drive transmission oil.

PRELIMINARY WORK

1 – Remove complete exhaust system

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

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CAUTION

Heavy component.

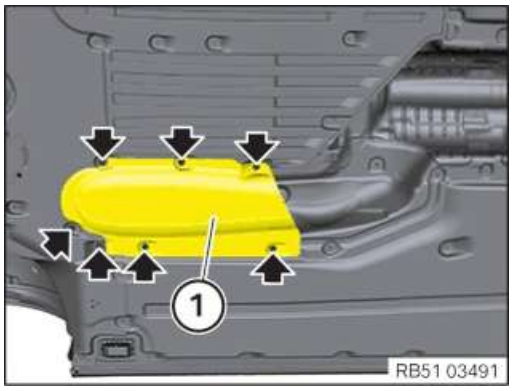
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

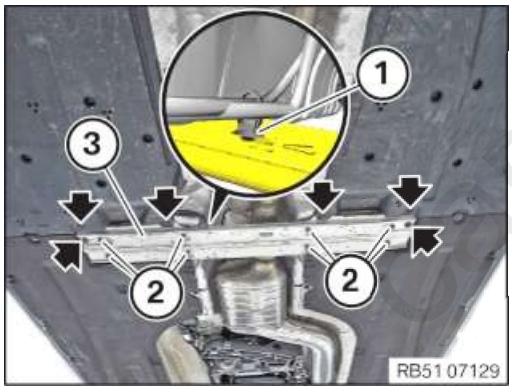
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**



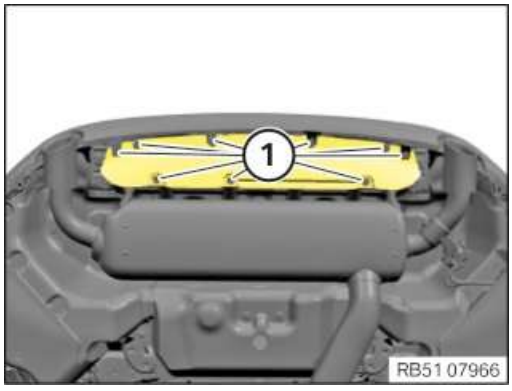
- Remove screws (arrows).

NOTICE

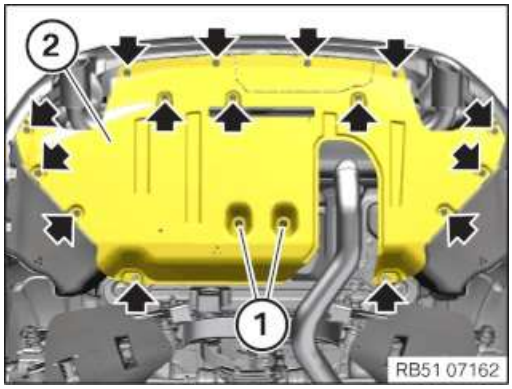
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

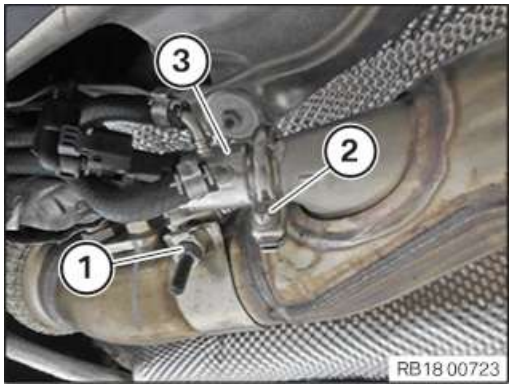
▸ **Removing the rear diffuser**



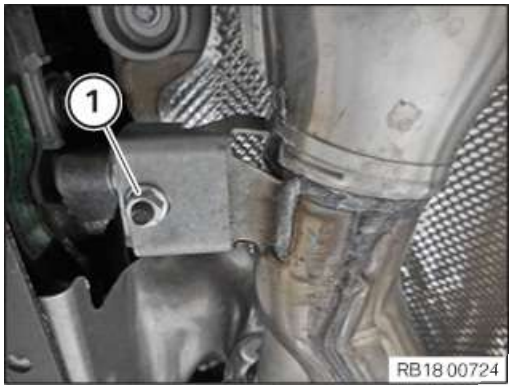
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



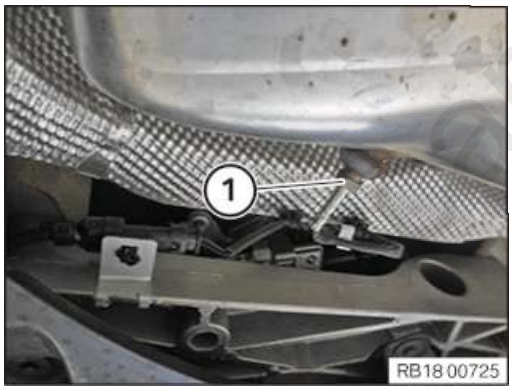
- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).



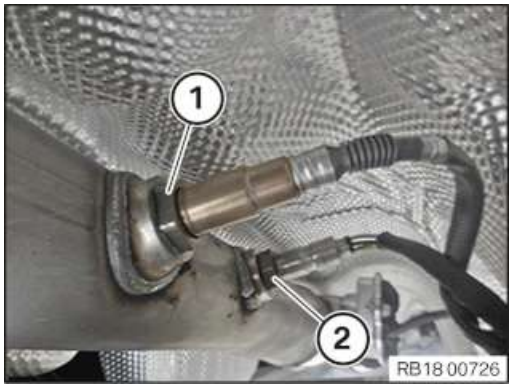
- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.



- Loosen nut (1).

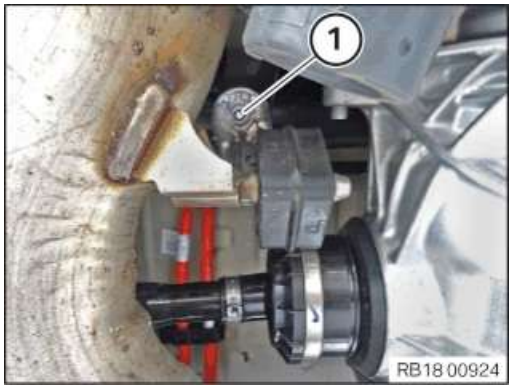


- Detach the exhaust temperature sensor (1) from the exhaust system.

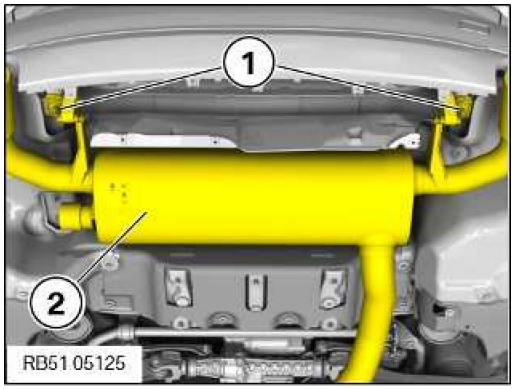


- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.

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- Release the nut (1) on the rear axle support.

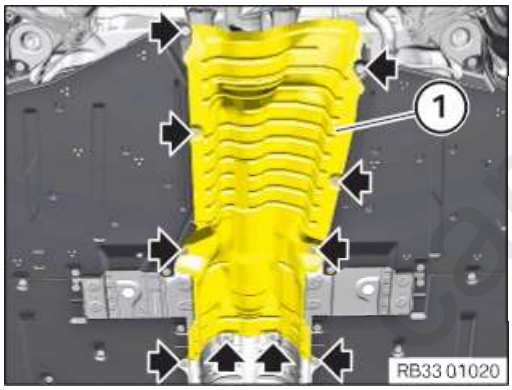


- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

2 – Remove heat shield at rear.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

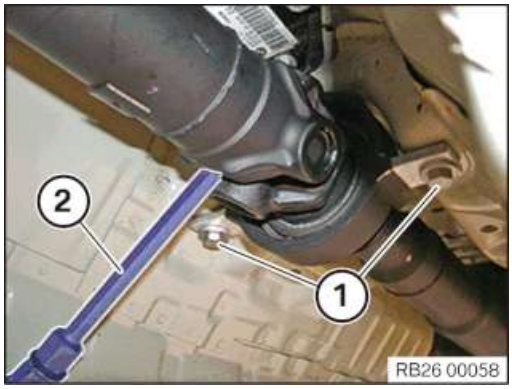
3 – Releasing the propeller shaft from the rear axle differential

RISK OF DAMAGE

Damage to propeller shaft during removal.

Non-observance of the removal guidelines for the propeller shaft on the rear axle differential may cause severe damage.

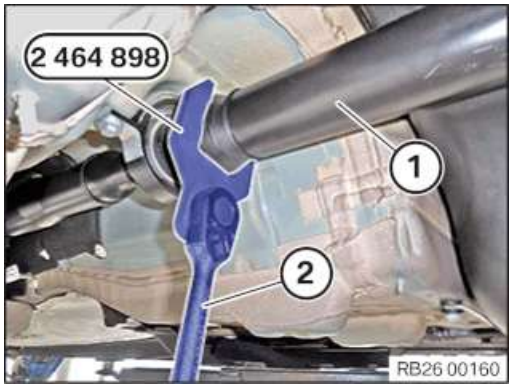
- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened on the recessed nut only and exclusively in the direction of rotation otherwise the anti-twist lock of the bi-hexagonal flange nut is damaged.
- In the event of a damaged anti-twist lock on the bi-hexagonal flange nut: Replace the rear axle differential.



- Loosen screws (1).

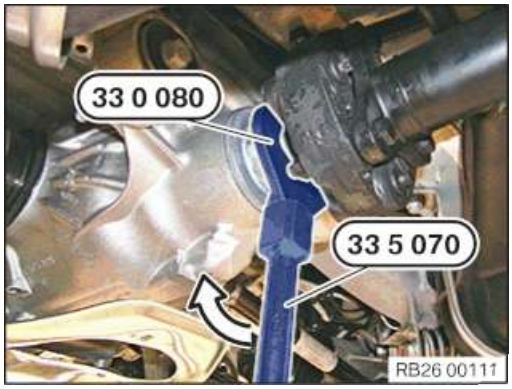
  Do not remove bolts (1) yet.
- **Version A (propeller shaft with wide universal joint):**

  Secure the propeller shaft against twisting at the centre universal joint using a suitable tool (2).



- **Version B (propeller shaft with narrow universal joint):**

  Secure the propeller shaft (1) against twisting by using the special tool 2 464 898 and a suitable tool (2) at the central universal joint.



RISK OF DAMAGE

Damage to rear axle differential.

Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

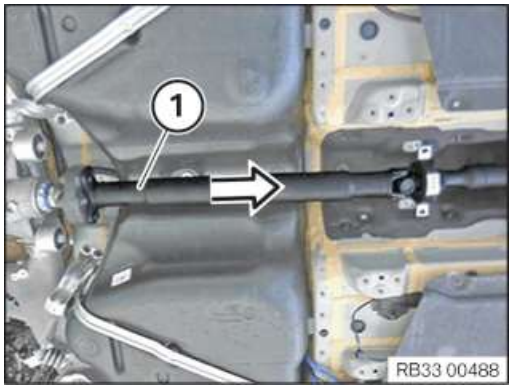
- Do not use the double hexagon head flange nut as counter support.

- Loosen the recessed nut **against** the direction of travel **in clockwise direction** using special tools 0 495 554 (33 5 070) and .

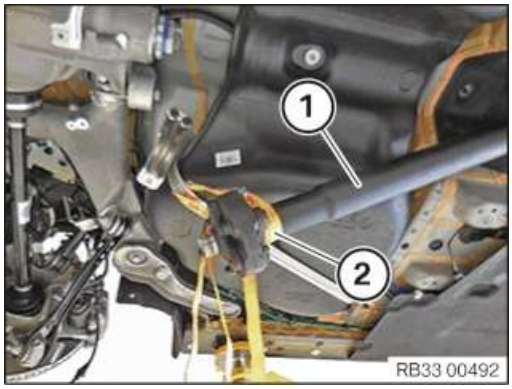
  The bi-hexagonal flange nut must not be used for counter-holding.



- Loosen screws (1) on centre mount.



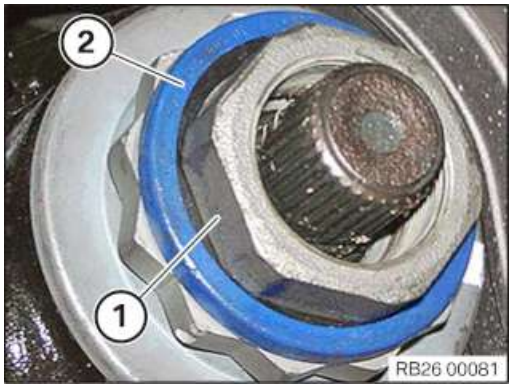
- Loosen the propeller shaft (1) from the rear axle differential in the direction of the arrow.



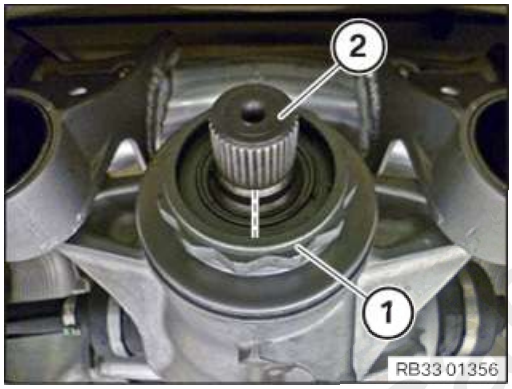
- Tie up the propeller shaft (1) using a tensioning strap (2).

MAIN WORK

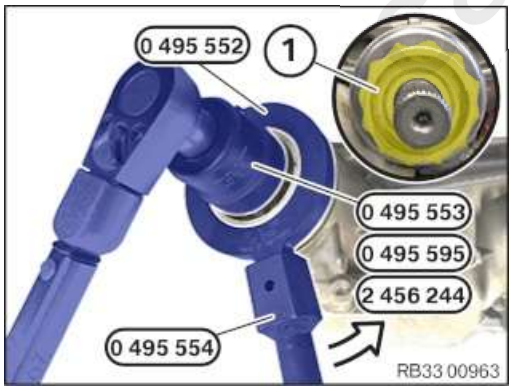
4 – Removing the radial shaft seal of the input flange



- Release the retaining ring (2).
- Remove the recessed nut (1) with the seal.

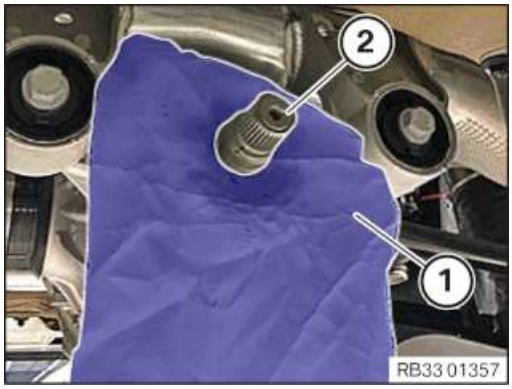


- Mark the position of the double hexagon flange nut (1) for the bevel pinion (2).

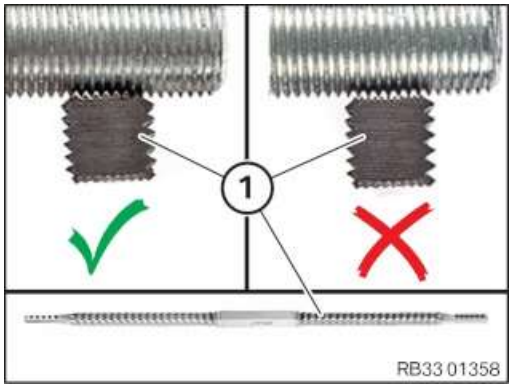


- Heat the double hexagon flange nut (1) by using a hot air blower.

  Do not heat beyond the dimension required to open the double hexagon flange nut (1) **! Do not use open flames for heating!**
- Release the double hexagon flange nut (1) with the special tools and 0 495 554 (33 5 070) in the direction of arrow. Counter support on the bevel pinion with a 500 Nm torque wrench and the appropriate special tool , or .
- **It is essential to adjust the torque wrench to the maximum value on the scale to avoid damage to the internal functional elements** (500 Nm) **, since the double hexagon flange nut** (1) **has a very high loosening torque.**

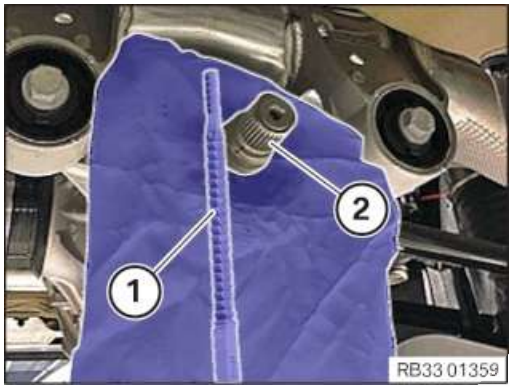


- Cut a small hole in a cloth (1).
- Slide the cloth (1) over the bevel pinion (2).

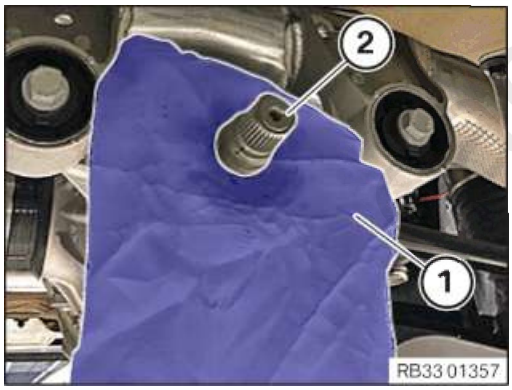


- Use a thread file (1) to remove the adhesive residue.

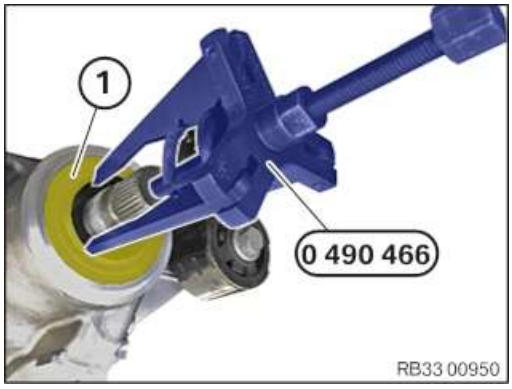
  Make sure that the thread pitch is correct.



- Fix the thread files (1) on the thread of the bevel pinion (2).
- Clean the thread by turning a wheel to the rear and thoroughly remove the adhesive residue.



- Remove the cloth (1) from the bevel pinion (2).



- Pull out the radial shaft seal (1) with the special tool .

5 – Installing the radial shaft seal of the input flange

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RISK OF DAMAGE

Failure to comply with the specifications.

Component damage.

- All specifications for installation and removal **must be**observed.

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.



- **Version A:**

  Coat sealing lips of new radial shaft seals (1) and the sealing surface on the transmission housing with rear axle differential oil.

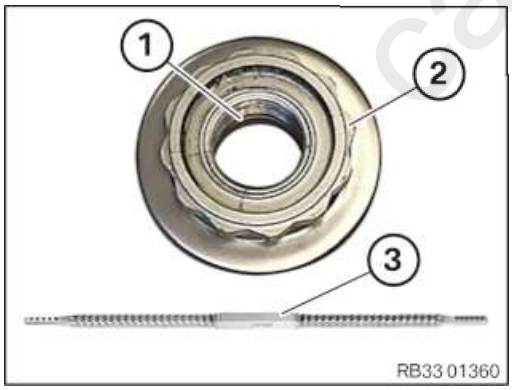
  Drive in the radial shaft seal (1) with the special tool 0 496 596 (33 0 150).



- **Version B:**

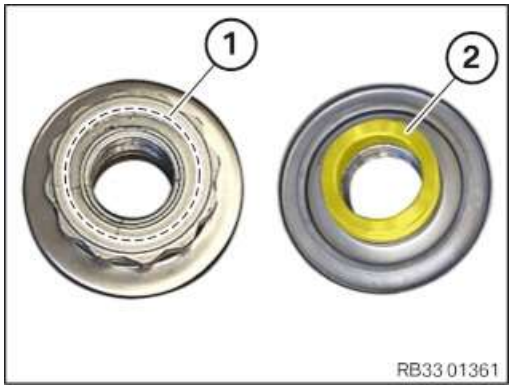
  Coat sealing lips of new radial shaft seals (1) and the sealing surface on the transmission housing with rear axle differential oil.

  Drive in the radial shaft seal (1) with the special tool 0 495 593 (33 5 080).



- Check the dust plates for damage and renew where required.
- Clean the thread (1) of the double hexagon flange nut (2) with the thread files (3).

  Make sure that the thread pitch is correct.
- Thoroughly clean the double hexagon flange nut (2) to remove the grease residues and adhesive residues.

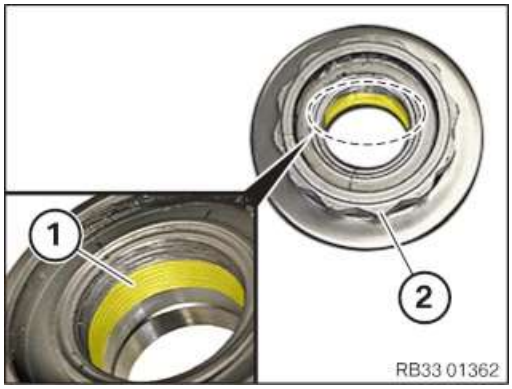


- Top up the recessed collar (1) of the double hexagon flange nut with grease.
- Apply a thin coating of grease to surface (2) of the flange nut.

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754

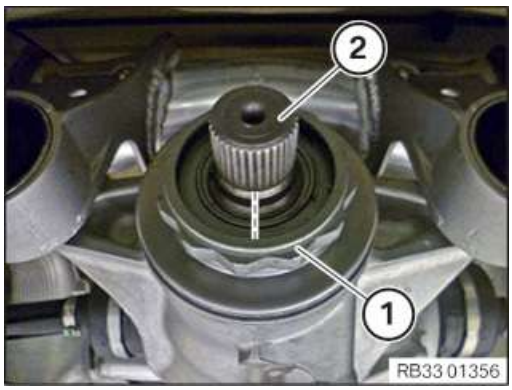
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- Coat the 5 rear thread starts (1) of the double hexagon flange nut (2) with adhesive.

Adhesive

Adhesive anaerobic Drei Bond 1385	50 g, Bottle	83190417376



- Tighten the double hexagon flange nut (1) until the mark corresponds with the bevel pinion (2).

  The double hexagon flange nuts (1) **must not be applied beyond the mark!**

POSTPROCESSES

6 – Check/top up oil level in the rear axle differential

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- Only use approved oil in the rear axle differential.

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TECHNICAL INFORMATION

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

▸ **Supplement the rear axle differential oil change/oil level with oil gun**

Your browser doesn't support HTML5 video.

TECHNICAL INFORMATION

The training video illustrates the methodology for changing the rear axle differential oil using the oil gun special tool.

The training video does not replace the repair instructions.

The training video is not subject to the update service.

No liability can be accepted for printing or other faults. Subject to changes of a technical nature

- Follow repair instructions!

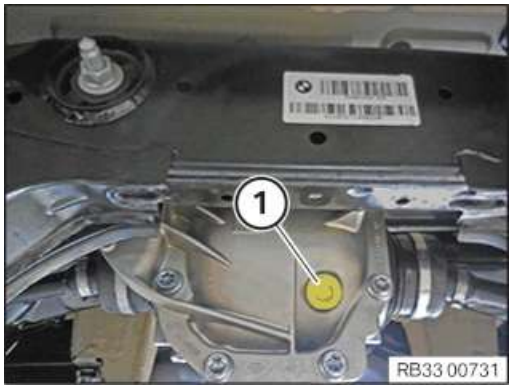


TECHNICAL INFORMATION

With the specified capacity, it is imperative to take into account the capacity of the hose of the special tool.

- Use the special tool 2 460 340 to top up the rear axle differential oil.

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- Open the oil filler plug (1).
- Check oil level:

  The oil level at the rear axle differential has been adjusted correctly once a small quantity of oil escapes from the opening of the oil filler plug.

  If necessary, top up final drive transmission oil.

Rear axle differential oil: Capacity overview (all)

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l
Transmission oil: Technically suitable rear axle differential oils	

- Replace the oil filler plug (1).

  Parts: Oil filler plug
- Screw in and tighten the oil filler plug (1).

Rear axle differential oil filler plug

M22	Renew the oil filler plug.	Tightening torque	60 Nm

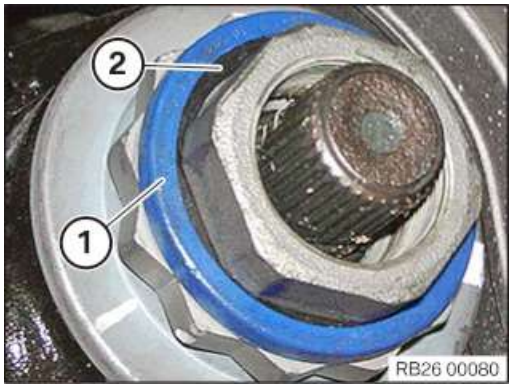
7 – Securing the propeller shaft on the rear axle differential

RISK OF DAMAGE

Damage to the propeller shaft during installation.

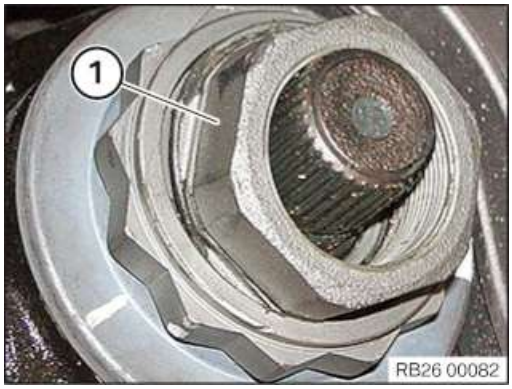
Non-observance of the installation guidelines for the propeller shaft on the rear axle differential may cause severe damage.

- Always renew the recessed nut on the rear axle differential. Screw locking must be available.
- Strictly observe a hardening time of minimum 3 h after screwing the recessed nut. The hardening time may be longer at lower temperatures.

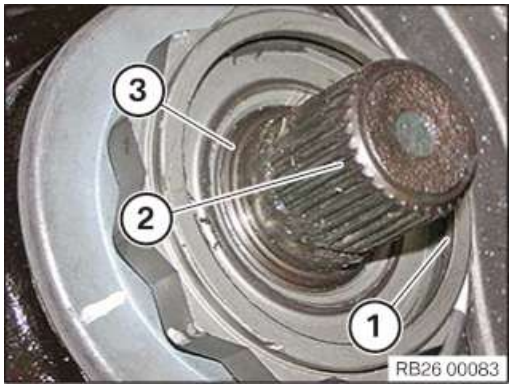


- Remove the retaining ring (1) and the seal (2).

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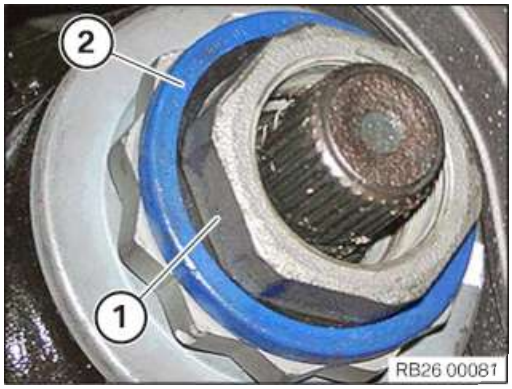
- Remove recessed nut (1).



- Clean and degrease the recessed collar (1) the flange nut, the gearing on the bevel pinion (2) and the taper (3) without any residue.
- Top up the collar insert (1)with grease.

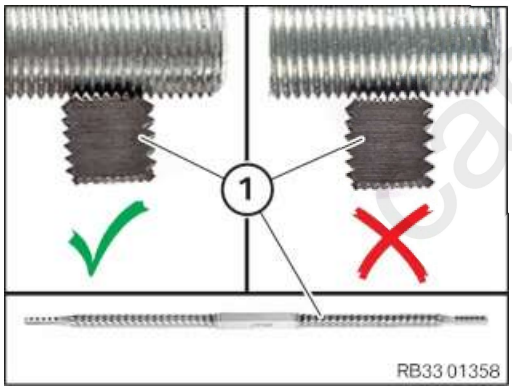
Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Renew the recessed nut (1), seal and retaining ring (2).

  Parts: Recessed nut, seal, retaining ring
- Insert recessed nut (1) including gasket into collar insert of the flange nut.
- Mount the retaining ring (2).



- Use a thread file (1) to remove the adhesive residue on the thread.
- **Make sure that the thread pitch is correct!**

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RISK OF DAMAGE

Damage to the output flange.

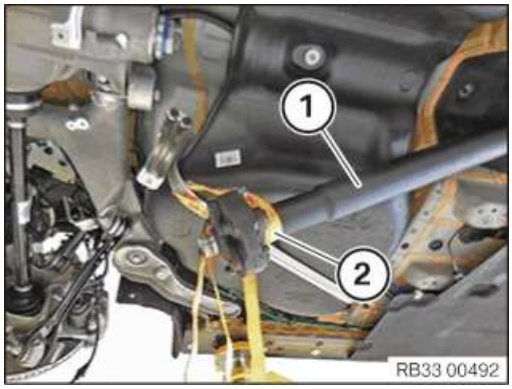
Failure to observe the greasing specifications may lead to damage on the output flange.

- Do not contaminate the thread of the output flange with grease.

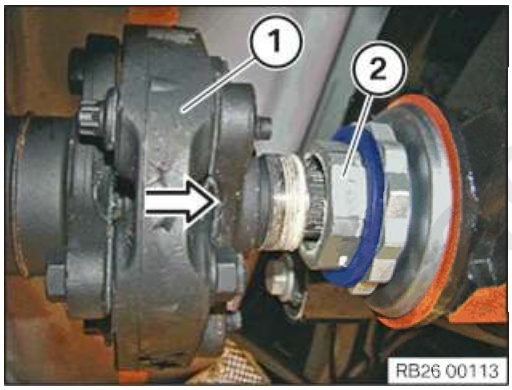
- Remove any adhesive residue on thread (1) of the flange and clean it.
- Clean gearing (2).
- Grease gearing (2).

Expendable materials

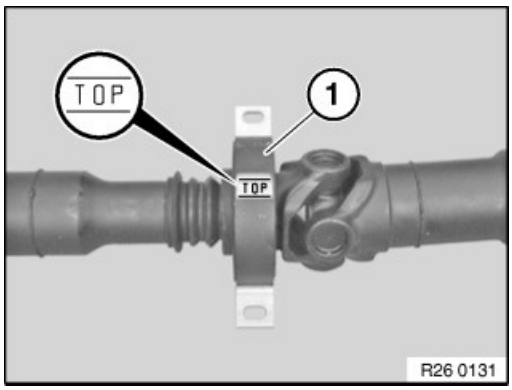
Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Loosen the tensioning strap (2) from the propeller shaft (1).

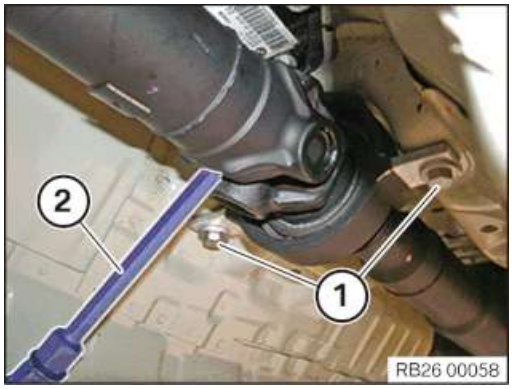


- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Screw and secure recessed nut (2) at least 2 thread starts onto propeller shaft (1) by hand.



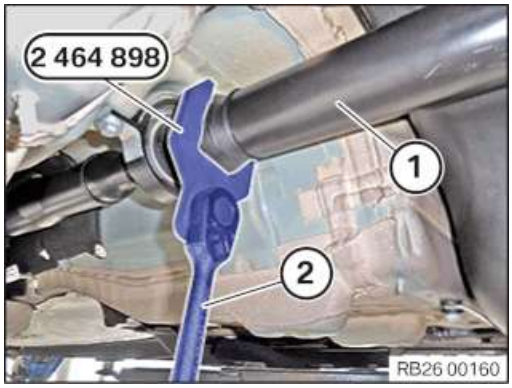
- Position the centre mount (1).

  Position the centre mount (1) with the designation TOP at the top in the transmission tunnel.



- Screw in the screws (1) by a few turns.
- **Version with a broad universal joint:**

  Secure the propeller shaft from twisting with a suitable tool (2) on the centre universal joint.



- **Version with a narrow universal joint:**

  Secure the propeller shaft (1) from twisting with the special tool 2 464 898 and a suitable tool (2) on the centre universal joint.



RISK OF DAMAGE

Damage to the flange nut.

Failure to observe the installation specifications may lead to serious damage to the flange nut and the rear axle differential.

- Do not use the double hexagon flange nut as counter support.
- Screw in the recessed nut within 5 minutes.

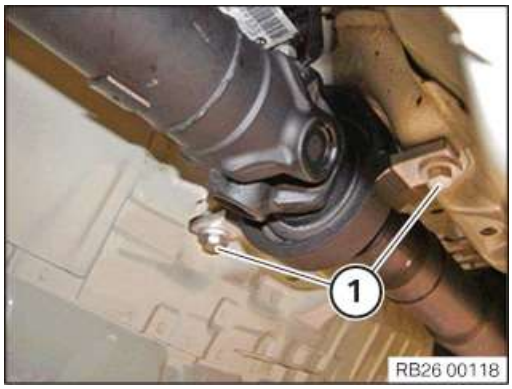
- Tighten recessed nut **counter-clockwise in the direction of the arrow** using special tools 0 495 554 (33 5 070) and .

Propeller shaft on the rear axle differential

Insert nut	Replace insert nut.	Tightening torque	100 Nm

- **After the propeller shaft is installed and the recessed nut is screwed in, strictly observe a hardening time of minimum 3 hours.**

  Do not move or push the vehicle during this time!



- Tighten the screws (1).

Centre mount to body

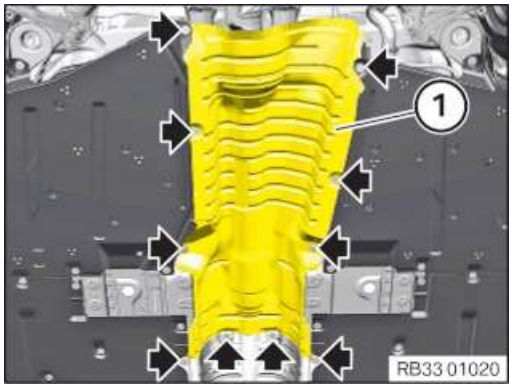
M8		Tightening torque	19 Nm

8 – Installing the rear heat shield

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NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

9 – Installing the complete exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

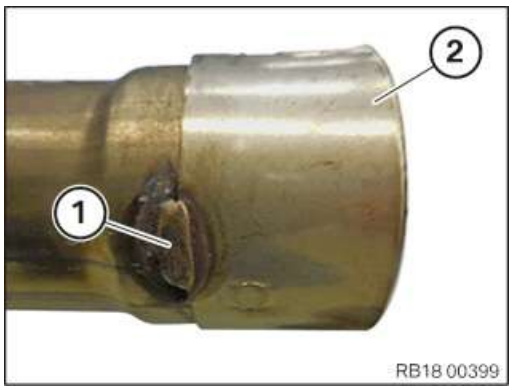
TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

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TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.



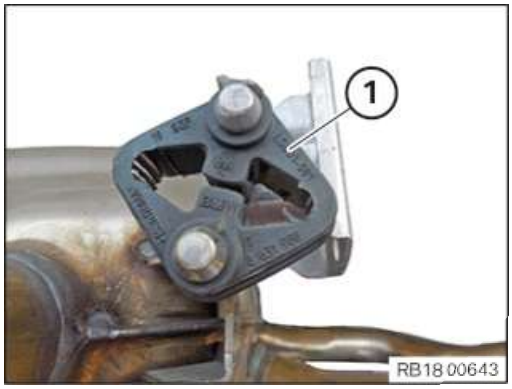
CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

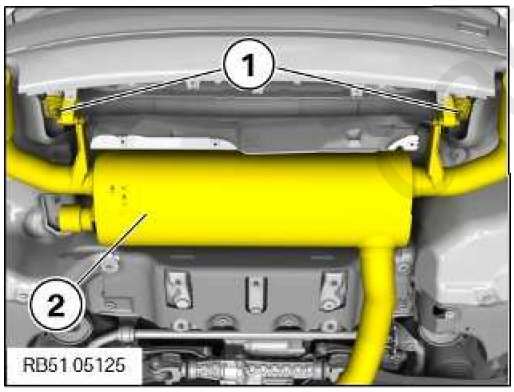


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

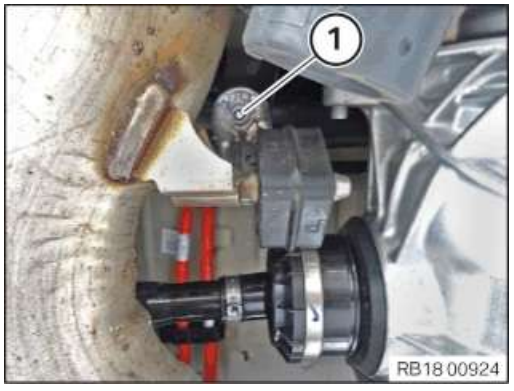


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

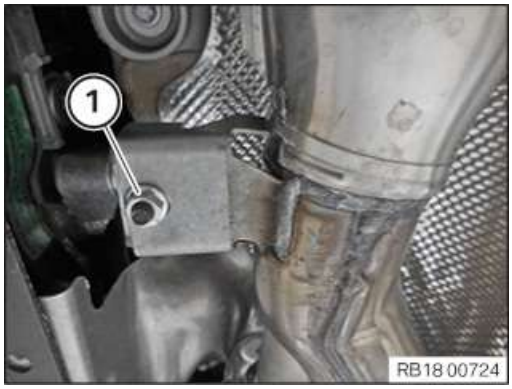


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

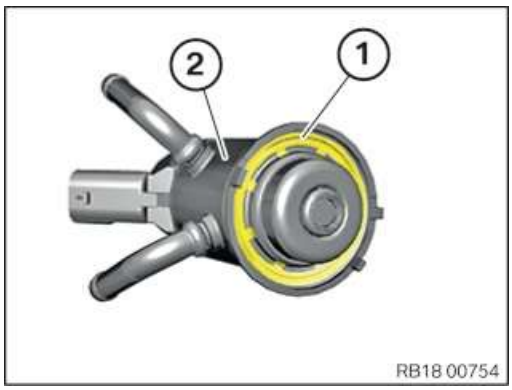
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

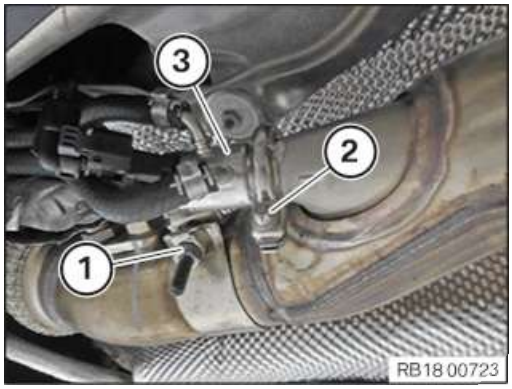
Exhaust system to transmission

M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

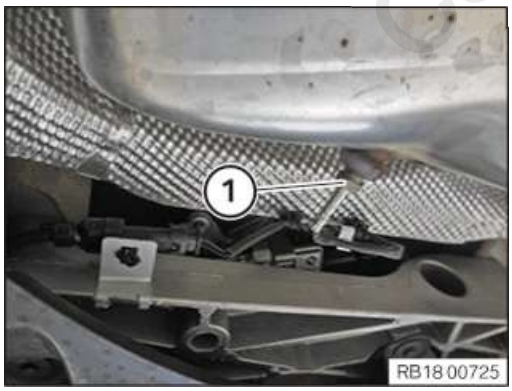
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

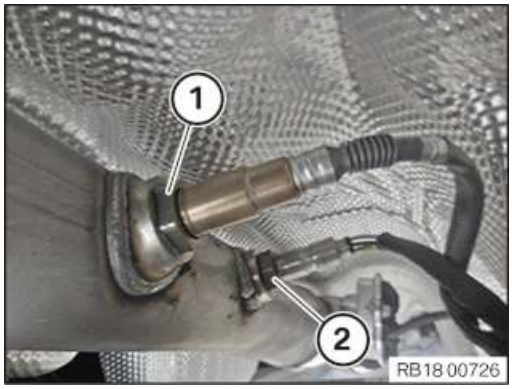


- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm

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- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

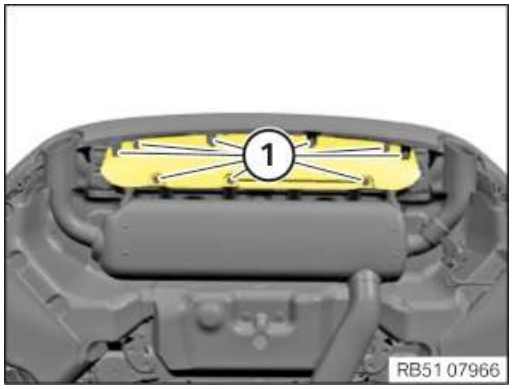
Sensor		Tightening torque	50 Nm

- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

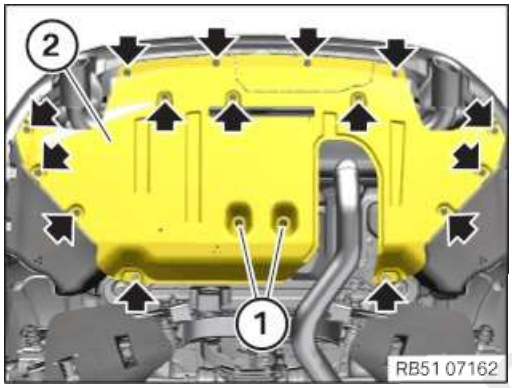
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

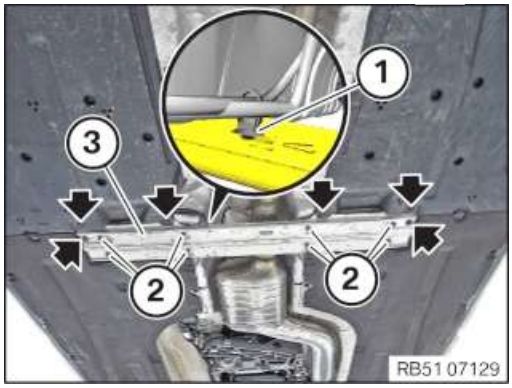
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**



- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

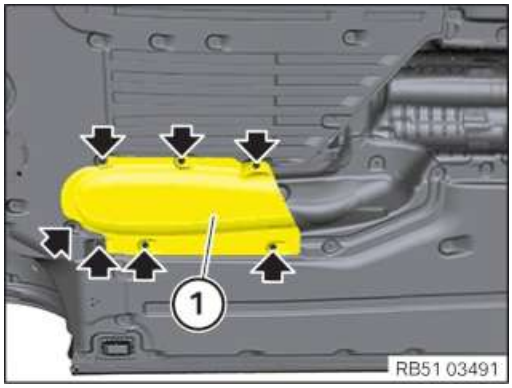
- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Additional Information

Overview of Tightening Torques

Rear axle differential oil filler plug — Used in step 6

M22	Renew the oil filler plug.	Tightening torque	60 Nm

Propeller shaft on the rear axle differential — Used in step 7

Insert nut	Replace insert nut.	Tightening torque	100 Nm

Centre mount to body — Used in step 7

M8		Tightening torque	19 Nm

Heat shield to undercarriage — Used in step 8

Screws and nuts		Tightening torque	3 Nm

Rear silencer to body / bumper support — Used in step 9

M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier — Used in step 9

M8 nut		Tightening torque	19 Nm

Exhaust system to transmission — Used in step 9

M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter — Used in step 9

M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system — Used in step 9

V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter — Used in step 9

Sensor		Tightening torque	30 Nm

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Diesel particulate sensor to exhaust system Used in step 9

Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter Used in step 9

Sensor		Tightening torque	55 Nm

Diffuser / underbody panelling Used in step 9

Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel Used in step 9

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling Used in step 9

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Overview of Special Tools

2 464 898 Open-end spanner



Common Used in step 37

Usage	Open-end spanner SW50 for disassembly and installation of the propeller shaft on rear axle differential. The silhouette foil is included in the delivery specification.
Included in the tool or work	
Storage location	A7
Replaced by	
In connection with	
SI-Number	01 19 18 (579)

0 495 554 (33 5 070) Extension



Common Used in step 347

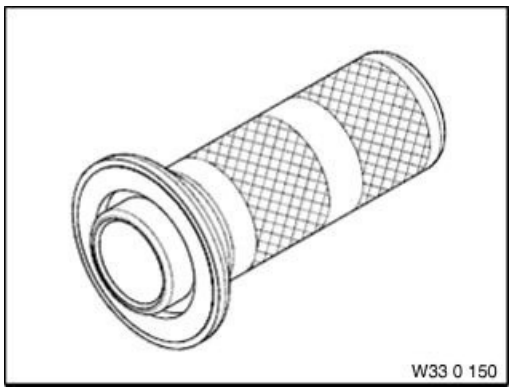
Usage	Pull-out extension for 33 5 040, 33 5 050, 33 5 060.
Included in the tool or work	
Storage location	A18
Replaced by	
In connection with	
SI-Number	01 21 06 (300)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 495 592 (33 5 071)		**Extension** (Extension (1 item)) discontinued, can only be ordered using complete tool	

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0 496 596 (33 0 150) Mandrel



Common	Used in step 5
Usage	(Drift) For driving radial shaft seal onto drive flange. Replaces 33 3 470 / 0 492 343
Included in the tool or work	
Storage location	B25
Replaced by	
In connection with	
SI-Number	01 09 09 (532)

0 495 593 (33 5 080) Mandrel



Common	Used in step 5
Usage	For driving in shaft seal on gearbox drive shaft.
Included in the tool or work	
Storage location	A12
Replaced by	
In connection with	
SI-Number	01 21 06 (300)

2 460 340 Pump



Common	Used in step 6
Usage	Oil gun to fill rear axle differentials or differentials with 1 litre containers.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 09 18 (553)

Overview Technical Data

Rear axle differential oil: Capacity overview (all) Used in step 6

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

Links

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Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	

Operating materials	Used in step
1.1 Grease for propeller shaft inserted	7
1.0 Grease for propeller shaft (flexible disc centring and sliding piece)	7

Operating materials	Used in step
Main group 33	6

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

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- After completion of repair work, check the transmission oil level in the rear axle differential.
- Use only the approved final drive transmission oil.

PRELIMINARY WORK

1 – Remove complete exhaust system

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WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

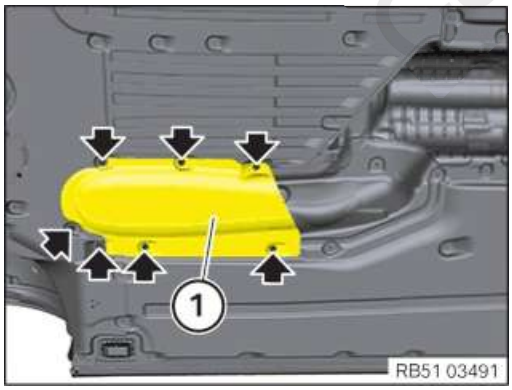
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

NOTICE

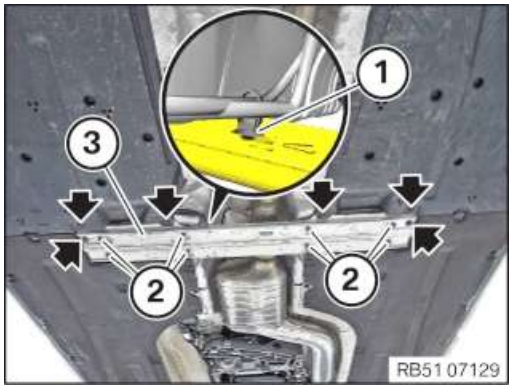
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**

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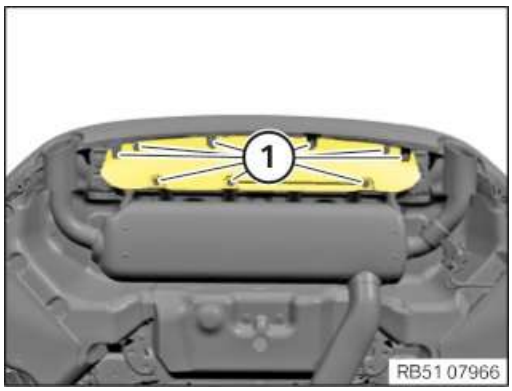
- Remove screws (arrows).

NOTICE

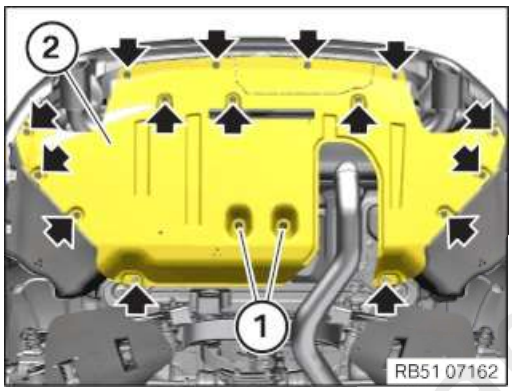
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

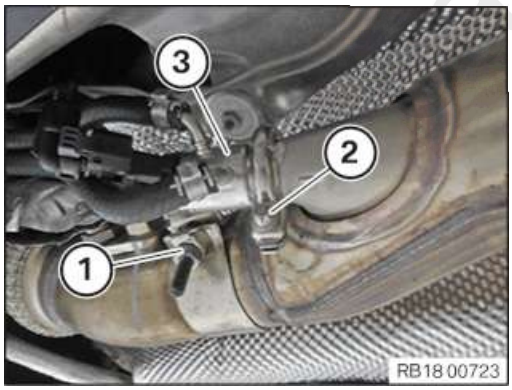
▸ **Removing the rear diffuser**



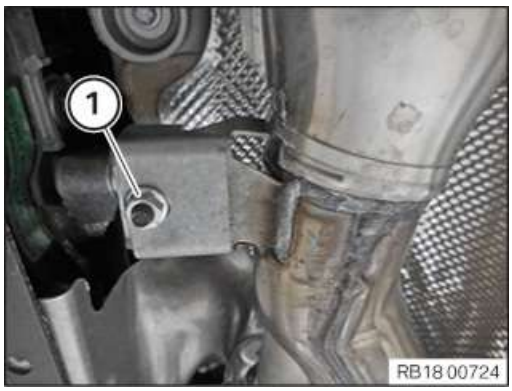
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).

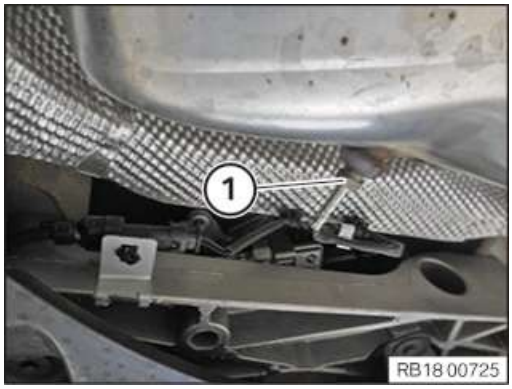


- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.

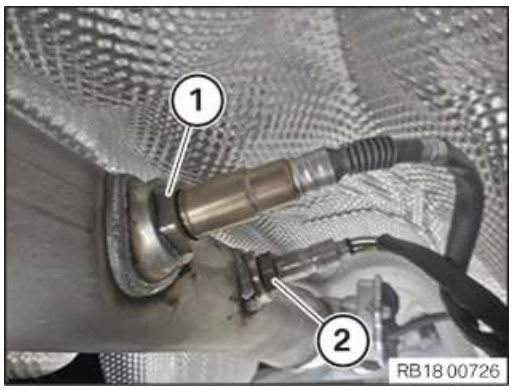


- Loosen nut (1).

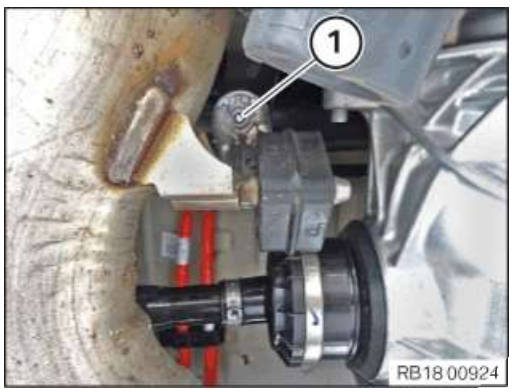
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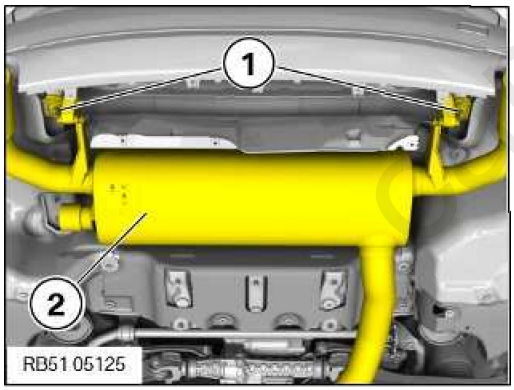
- Detach the exhaust temperature sensor (1) from the exhaust system.



- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.



- Release the nut (1) on the rear axle support.



- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

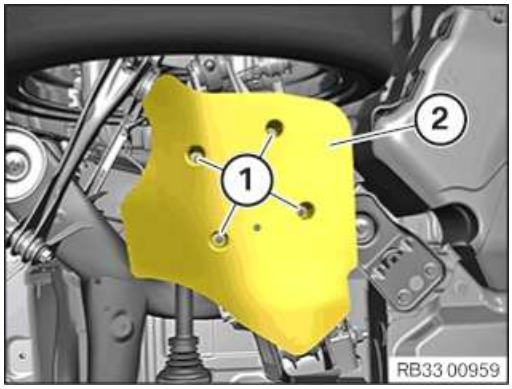
2 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover of camber control arm**

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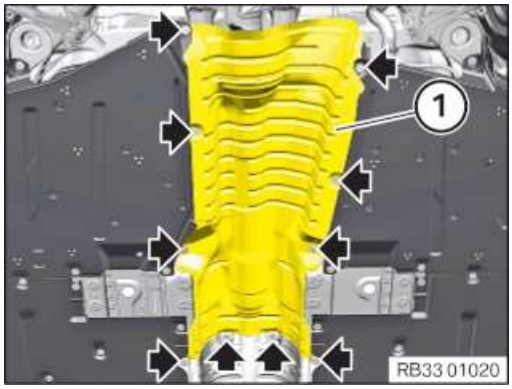


- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

3 – Remove heat shield at rear.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

4 – Drawing off oil in the rear axle differential

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

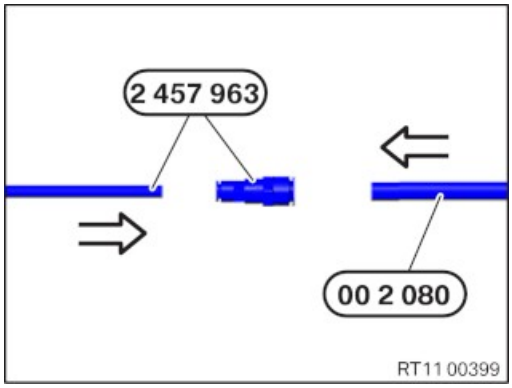
NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

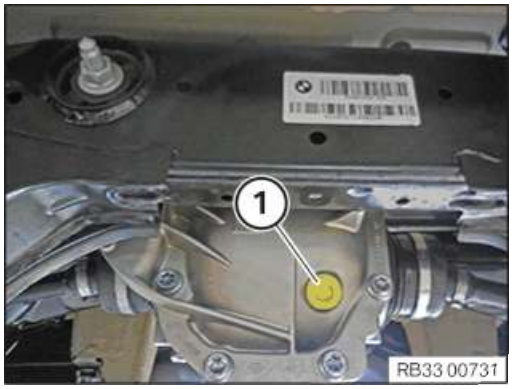
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- Use the special tool 0 493 337 (00 2 080) for drawing off the rear axle differential oil.



- Connect the special tool with the special tool 0 493 337 (00 2 080).



- Open the oil filler plug (1).
- Draw off rear axle differential oil.

5 – Lowering rear axle differential

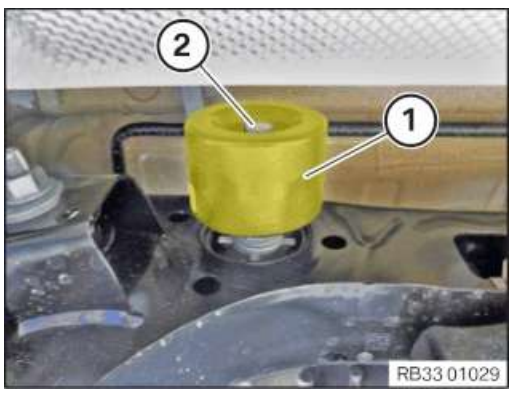
RISK OF DAMAGE

Damage to rear axle differential.

If the rear axle differential drops down, persons can be injured or the rear axle differential can be damaged.

- Secure the rear axle differential using a tensioning strap.

▸ **Remove vibration absorber**

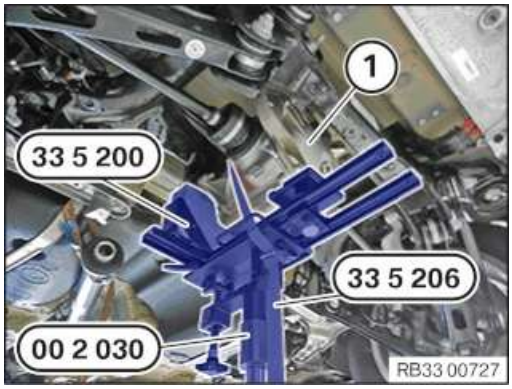


NOTICE

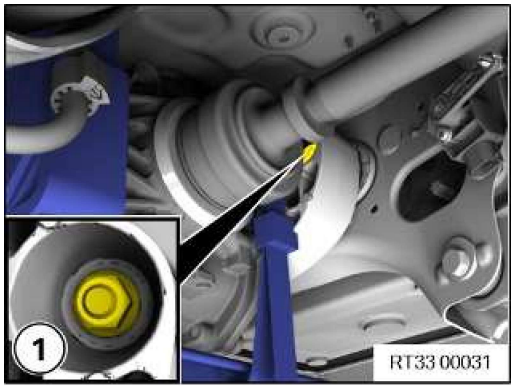
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Release the screw (2).
- Remove the vibration absorber (1).

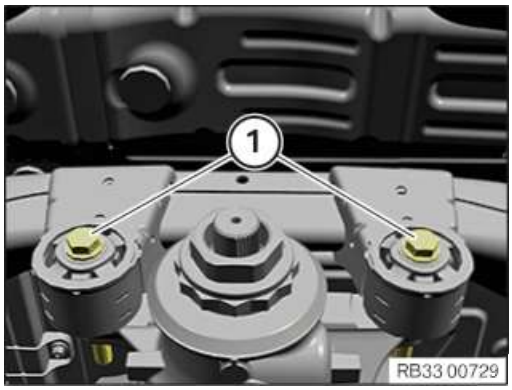
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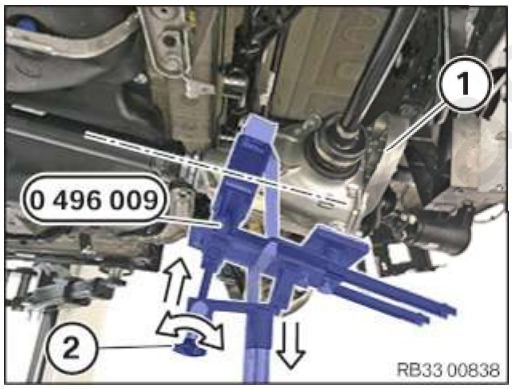
- Place the special tool onto the universal jack 0 490 133 (00 2 030).
- Support the rear axle differential (1) with the special tool .
- Secure the rear axle differential (1) with a tensioning strap on the special tool .



- Loosen nut (1) on the rear axle support at rear.
- Remove screw.



- Loosen screws (1) on rear axle support at front.



- Lower rear axle differential (1) using the special tool only until the cover on the rear axle differential is accessible.

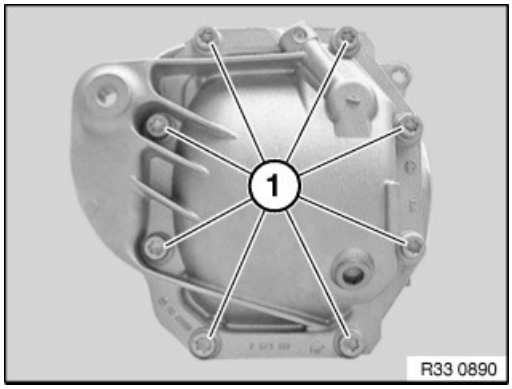
  During lowering, twist the adjusting screw (2) to slightly raise the rear axle differential at the front.

MAIN WORK

6 – Removing the housing cover

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

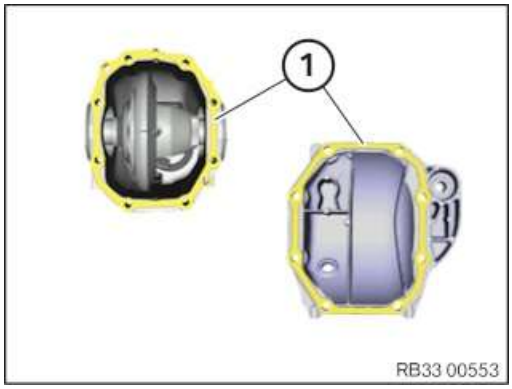


- Loosen screws (1).
- Take off case cover.

7 – Removing the seals and cleaning the sealing surfaces

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Remove the seals from the housing cover and the housing of the rear axle differential using a scraper.
- Clean sealing surfaces (1) on the cover and rear axle differential.

8 – Apply liquid sealing compound

TECHNICAL INFORMATION

- The application time of the liquid sealing compound can be at a maximum of 10 min.
- Start-up of the assembly is not possible until 25 minutes after the application time.
- Non-observance can lead to leaks in the assembly.



- Position the liquid sealing compound (1) on special tool 2 469 803 as shown.

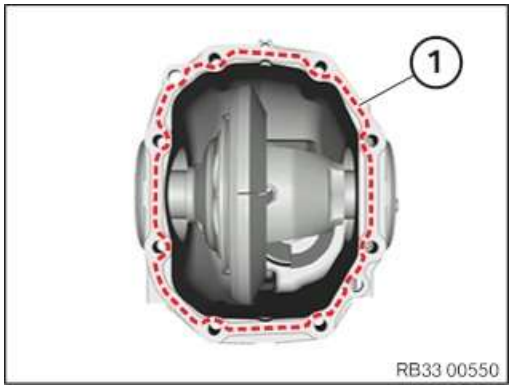
  Parts: Liquid sealing compound

Sealing compound

Loctite 5970 liquid sealing compound **Processing time <10 minutes at room temperature**	50 ml, Cartridge	83190404517

Overview of consumables (Electronic Parts Catalogue)

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NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

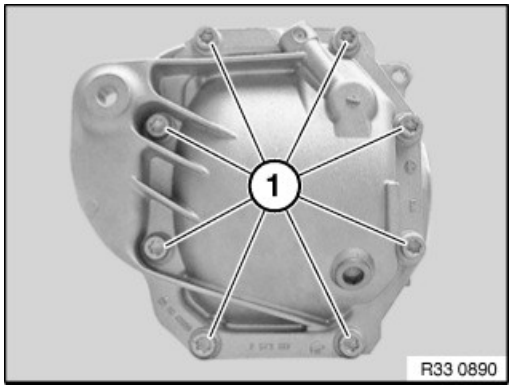
- Apply liquid sealing compound along the dotted line (1) on the sealing surface of the rear axle differential.

  The sealing bead must run along the inner edge.

9 – Installing the housing cover

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



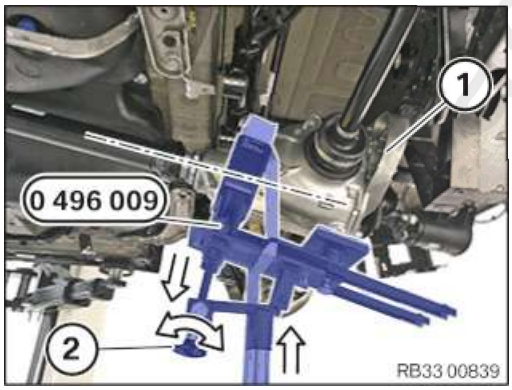
- Position the housing cover on the rear axle differential.
- Tighten the screws (1).

Lid to rear axle differential

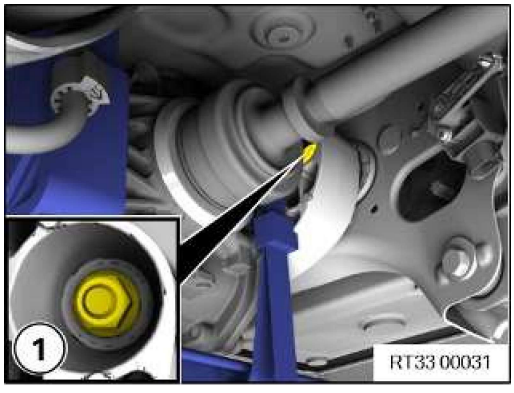
M12			140 Nm
M10			90 Nm

POSTPROCESSES

10 – Lifting the rear axle differential

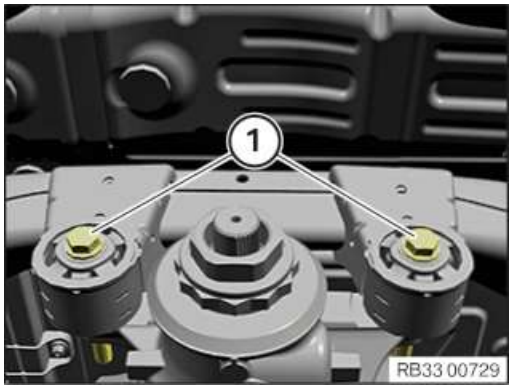


- Lift and position the rear axle differential (1)with the special tool .
- While lifting the rear axle differential (1), twist the adjusting screw (2) to correct the installation position.



- Insert screw from behind.
- Renew nut (1).

  Parts: Nut
- Screw on the nut (1) by several turns onto the screw.

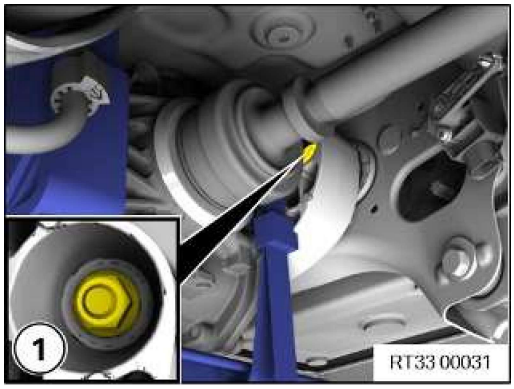


- Renew screws (1).

  Parts: Screws
- Screw in the screws (1) by hand.
- Tighten the screws (1).

Rear differential to rear axle carrier, front

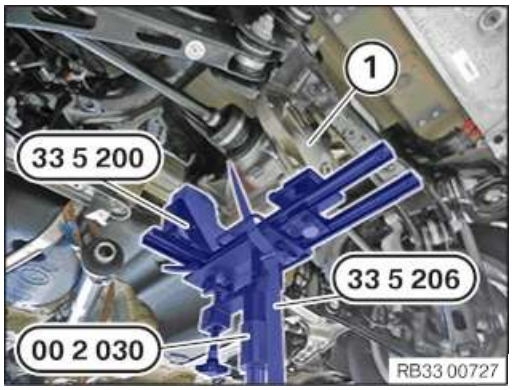
M12	Renew screw.	Tightening torque	100 Nm



- Tighten nut (1).

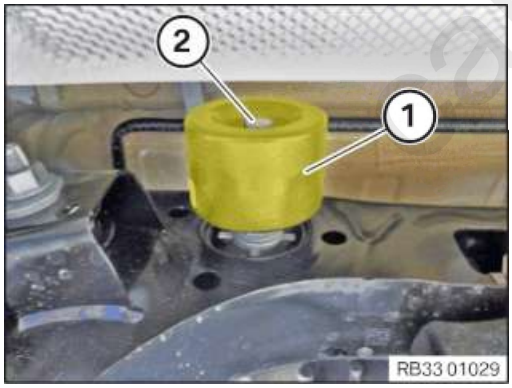
Rear differential to rear axle carrier, rear

M14	Renew nut.	Tightening torque.	175 Nm



- Loosen and remove the tensioning strap from the rear axle differential (1).
- Lower and remove the special tools 0 490 133 (00 2 030) and .

▸ **install the vibration absorber**



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Position the (1) vibration absorber.
- Renew the screw (2).

  Parts: Screw
- Tighten down screw (2).

Vibration absorber to rear axle

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

11 – Check/top up oil level in the rear axle differential

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CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- Only use approved oil in the rear axle differential.

TECHNICAL INFORMATION

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

▸ **Supplement the rear axle differential oil change/oil level with oil gun**

Your browser doesn't support HTML5 video.

TECHNICAL INFORMATION

The training video illustrates the methodology for changing the rear axle differential oil using the oil gun special tool.

The training video does not replace the repair instructions.

The training video is not subject to the update service.

No liability can be accepted for printing or other faults. Subject to changes of a technical nature

- Follow repair instructions!

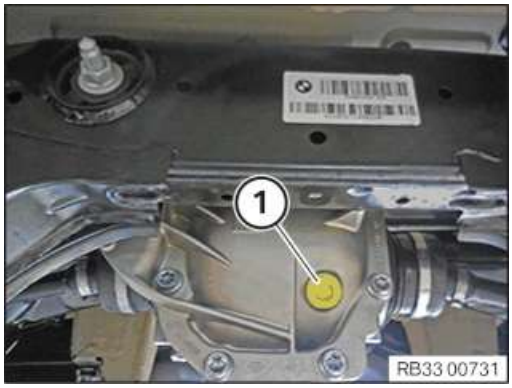
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TECHNICAL INFORMATION

With the specified capacity, it is imperative to take into account the capacity of the hose of the special tool.

- Use the special tool 2 460 340 to top up the rear axle differential oil.



- Open the oil filler plug (1).
- Check oil level:

  The oil level at the rear axle differential has been adjusted correctly once a small quantity of oil escapes from the opening of the oil filler plug.

  If necessary, top up final drive transmission oil.

Rear axle differential oil: Capacity overview (all)

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

- Replace the oil filler plug (1).

  Parts: Oil filler plug
- Screw in and tighten the oil filler plug (1).

Rear axle differential oil filler plug

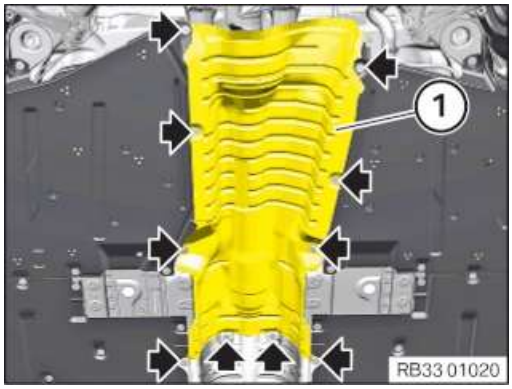
M22	Renew the oil filler plug.	Tightening torque	60 Nm

12 – Installing the rear heat shield

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

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- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

13 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Installing the cover of the camber control arm**



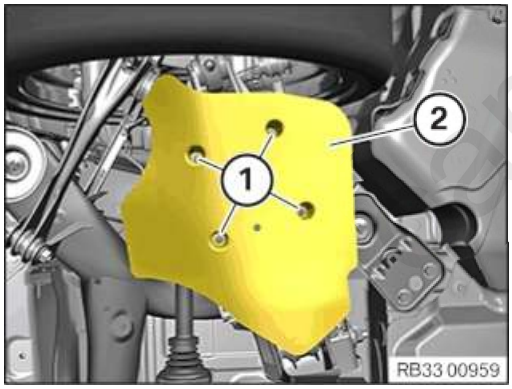
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

14 – Installing the complete exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

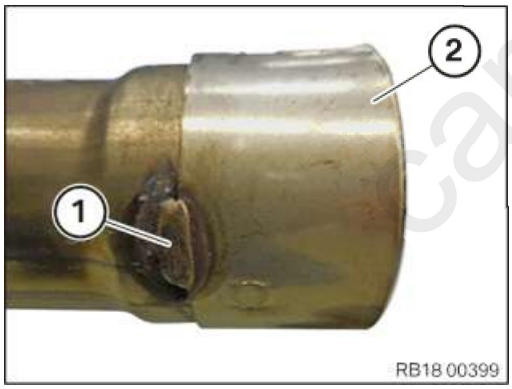
- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.



CAUTION

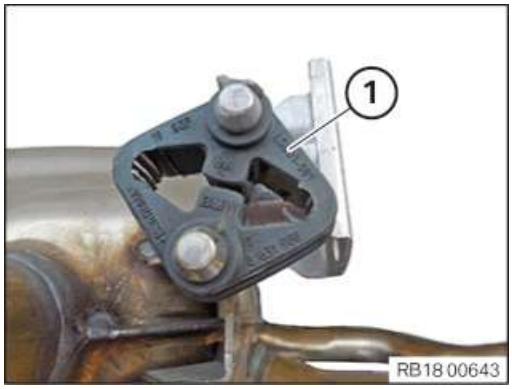
Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

carflash.com

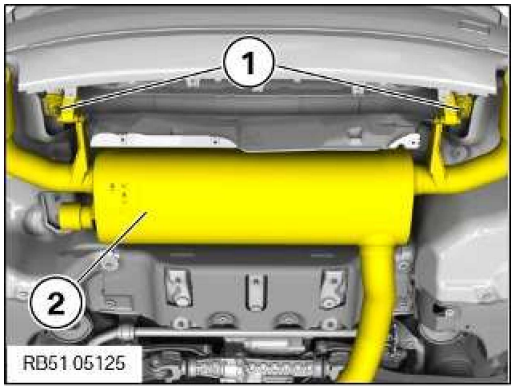


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

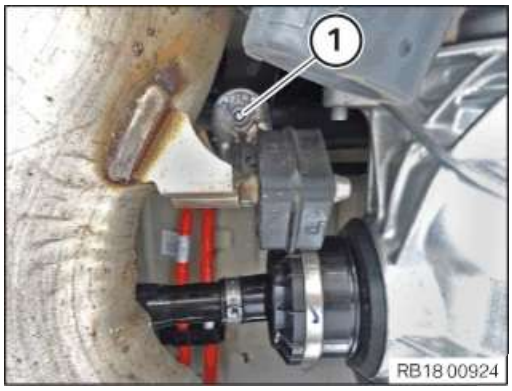


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

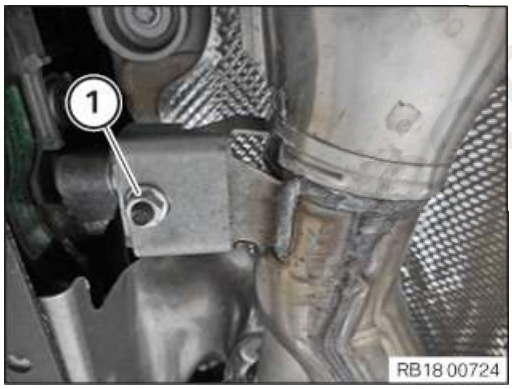


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

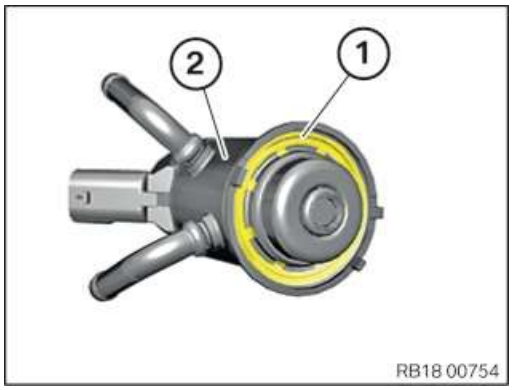
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

Exhaust system to transmission

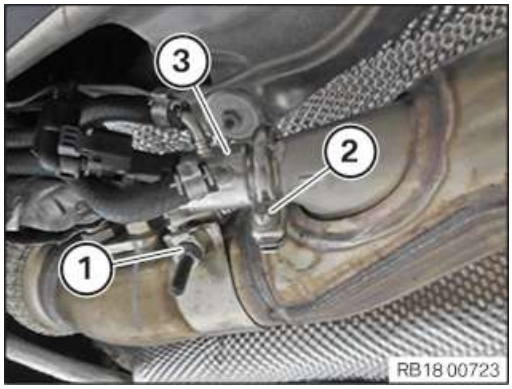
M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring

mdiagn.com



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

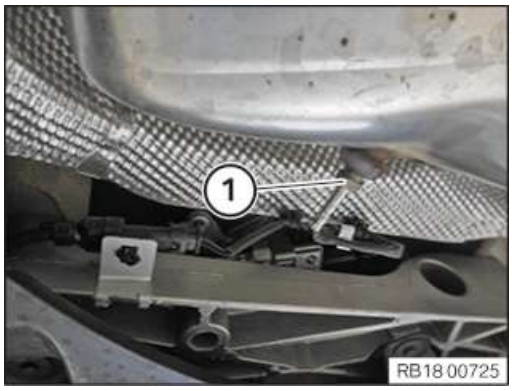
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

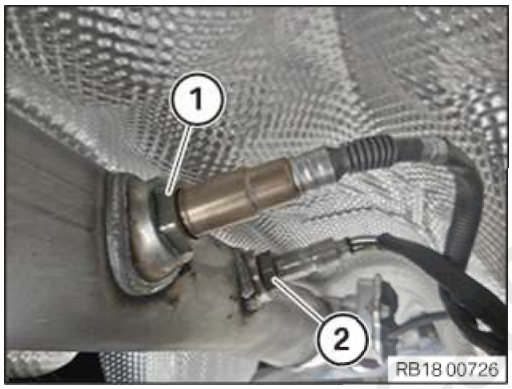
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm



- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm



- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

Sensor		Tightening torque	50 Nm

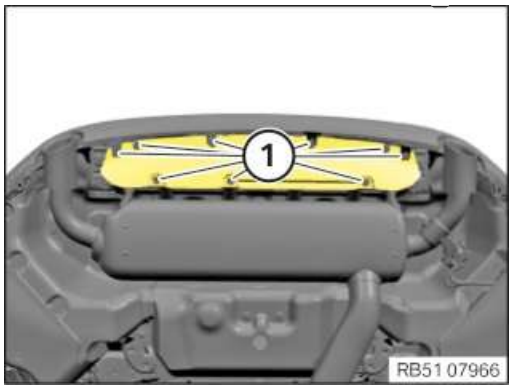
- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

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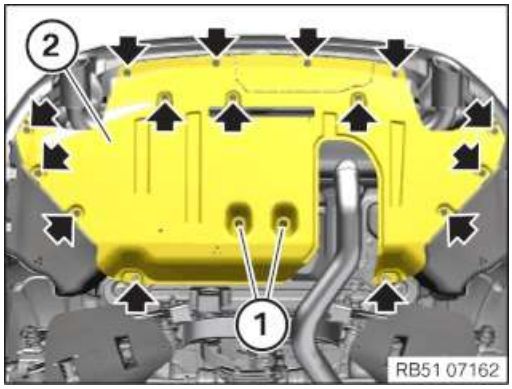
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

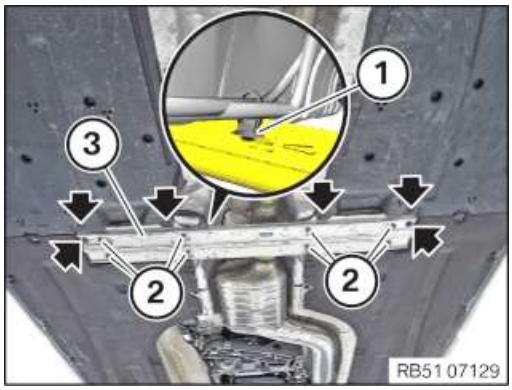
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**



- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

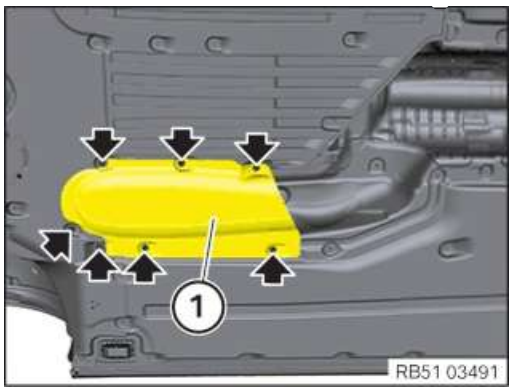
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Additional Information

Overview of Tightening Torques

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Lid to rear axle differential			Used in step 9
M12			140 Nm
M10			90 Nm

Rear differential to rear axle carrier, front			Used in step 10
M12	Renew screw.	Tightening torque	100 Nm

Rear differential to rear axle carrier, rear			Used in step 10
M14	Renew nut.	Tightening torque.	175 Nm

Vibration absorber to rear axle			Used in step 10
M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle			Used in step 10
M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Rear axle differential oil filler plug			Used in step 11
M22	Renew the oil filler plug.	Tightening torque	60 Nm

Heat shield to undercarriage			Used in step 12
Screws and nuts		Tightening torque	3 Nm

Cover to camber control arm			Used in step 13
M6	Replace nuts.	Tightening torque	6 Nm

Rear silencer to body / bumper support			Used in step 14
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 14
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 14
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 14
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 14
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 14
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 14
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 14
Sensor		Tightening torque	55 Nm

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Diffuser / underbody panelling Used in step 14

Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel Used in step 14

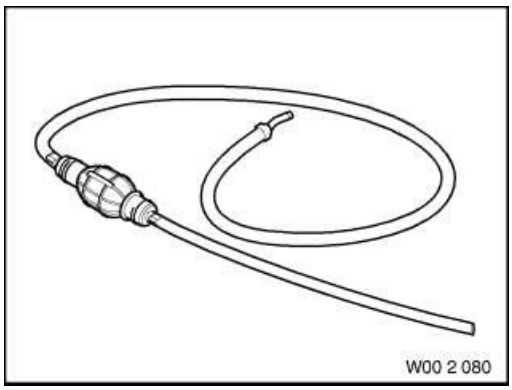
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling Used in step 14

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Overview of Special Tools

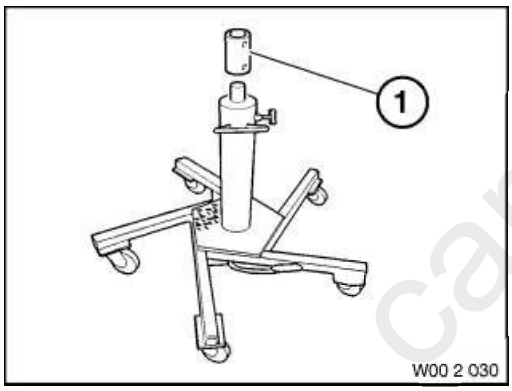
0 493 337 (00 2 080) Pump



Common Used in step 4

Usage	(Hand pump) For lifetime oil filling
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 01 98 (294)

0 490 133 (00 2 030) Device



Common Used in step 510

Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

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2 469 803 Cartridge gun



Common	Used in step 8
Usage	For the application of the liquid sealing compound Loctite 5970.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 39 18 (616)

2 460 340 Pump



Common	Used in step 11
Usage	Oil gun to fill rear axle differentials or differentials with 1 litre containers.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 09 18 (553)

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Overview Technical Data

Rear axle differential oil: Capacity overview (all) Used in step 11

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

Links

General repair instructions	Used in step

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	

Operating materials	Used in step
Main group 33	11

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

TECHNICAL INFORMATION

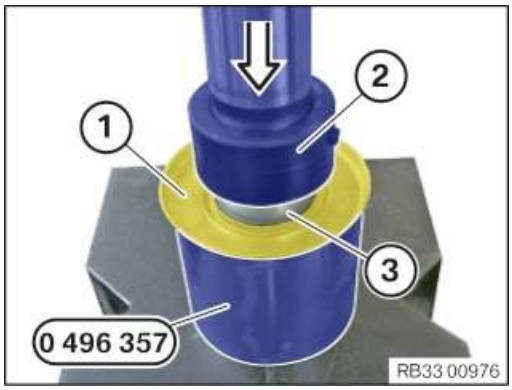
The work must be performed with care to prevent component damage.

1 – Removing the dust plate

TECHNICAL INFORMATION

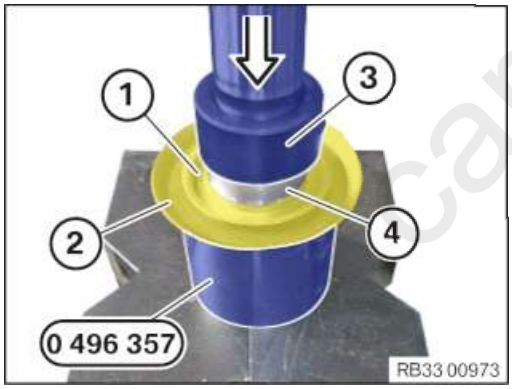
Different variants may be installed depending on the vehicle equipment.

▸ **Version A: Removing the dust plate**



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

▸ **Version B: Removing the dust plate**



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

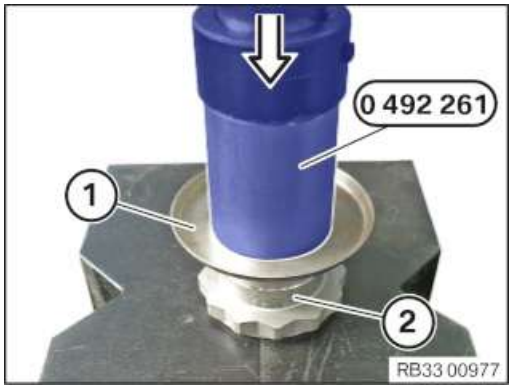
2 – Installing dust plate

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

▸ **Version A: Installing dust plate**

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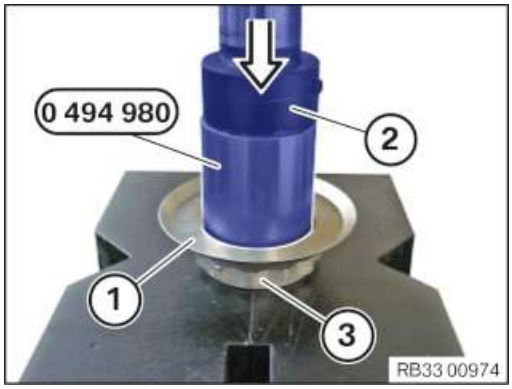


- Renew dust plate (1).

  Parts: dust plate

- Press the dust plate (1) onto the input flange (2) with a hydraulic press and the special tool in the direction of arrow.

▸ **Version B: Installing dust plate**



- Renew the large dust plate (1).

  Parts: Large dust plate

- Press the large dust plate (1) using hydraulic press (2) and special tool in the direction of the arrow on input flange (3).



- Renew the small dust plate (1).

  Parts: Small dust plate

- Press the small dust plate (1) using hydraulic press (2) and special tool on the input flange in the direction of the arrow.

Additional Information

Overview of Special Tools

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33 11 031 Replacing the rear axle differential cover M sport differential

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- After completion of repair work, check the transmission oil level in the rear axle differential.
- Use only the approved final drive transmission oil.

PRELIMINARY WORK

1 – Remove complete exhaust system

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WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

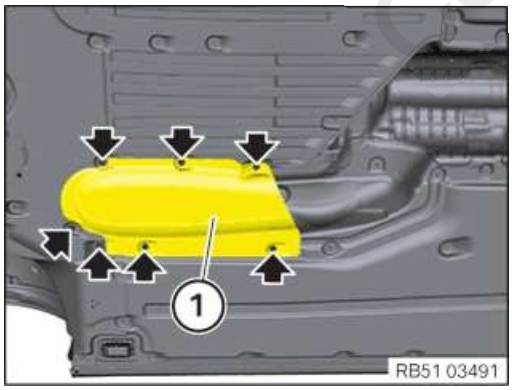
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

NOTICE

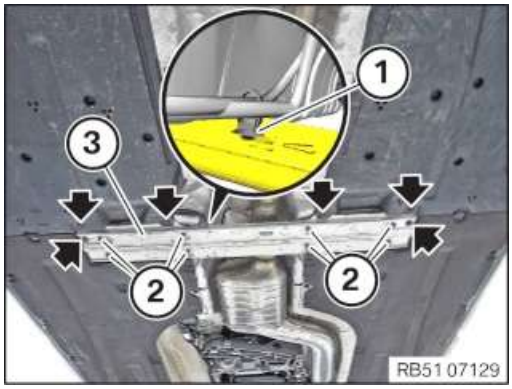
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**

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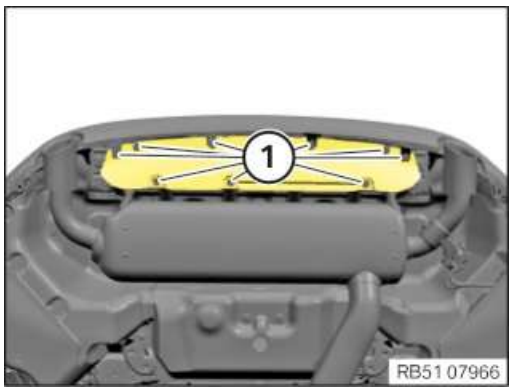
- Remove screws (arrows).

NOTICE

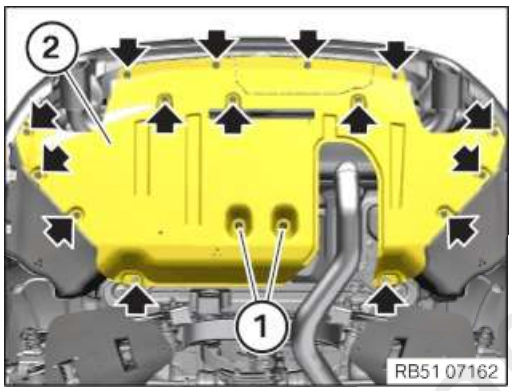
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

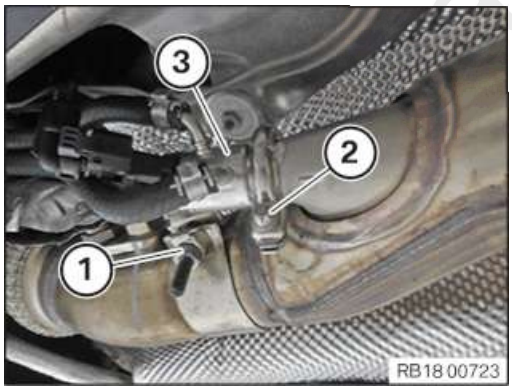
▸ **Removing the rear diffuser**



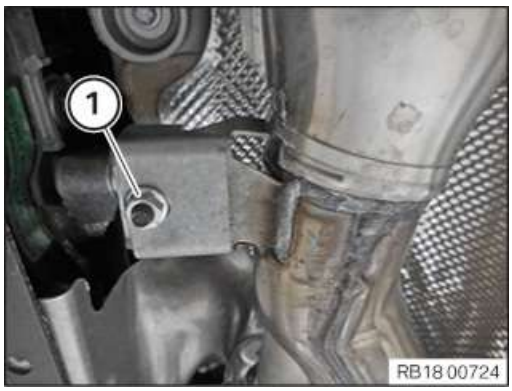
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).

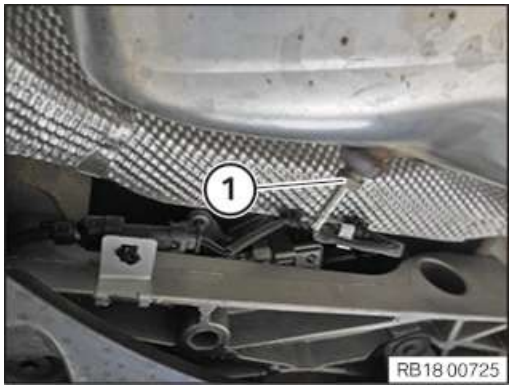


- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.

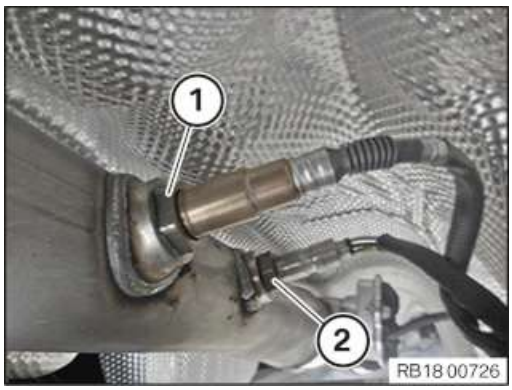


- Loosen nut (1).

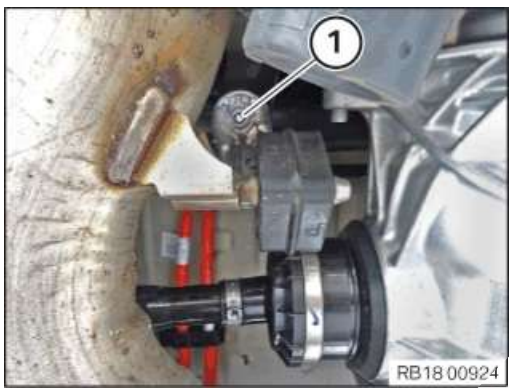
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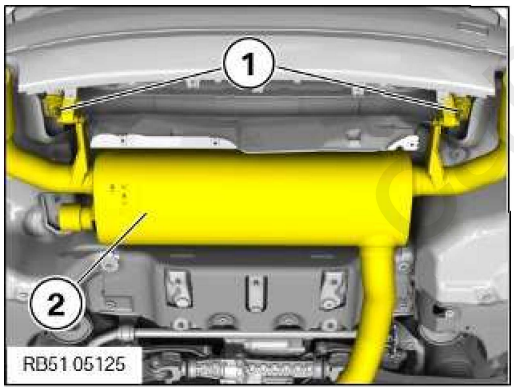
- Detach the exhaust temperature sensor (1) from the exhaust system.



- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.



- Release the nut (1) on the rear axle support.



- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

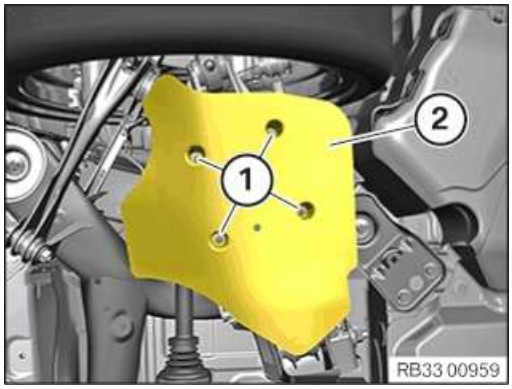
2 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover of camber control arm**

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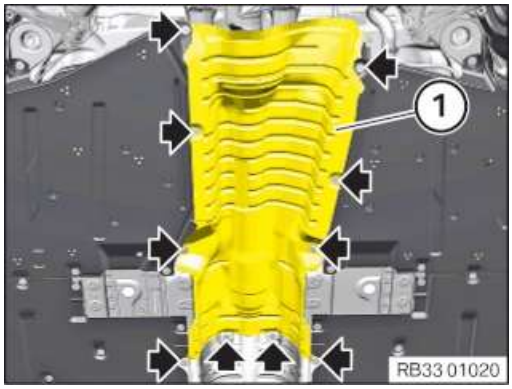


- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

3 – Remove heat shield at rear.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

4 – Drawing off oil in the rear axle differential

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

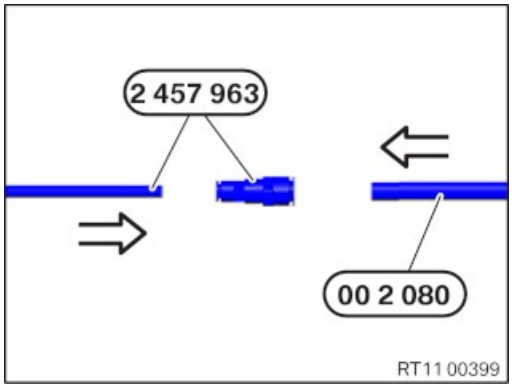
NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

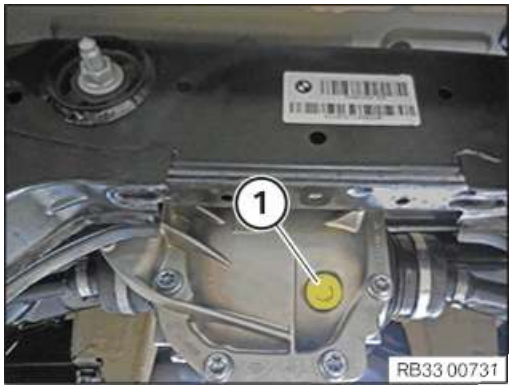
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- Use the special tool 0 493 337 (00 2 080) for drawing off the rear axle differential oil.



- Connect the special tool with the special tool 0 493 337 (00 2 080).



- Open the oil filler plug (1).
- Draw off rear axle differential oil.

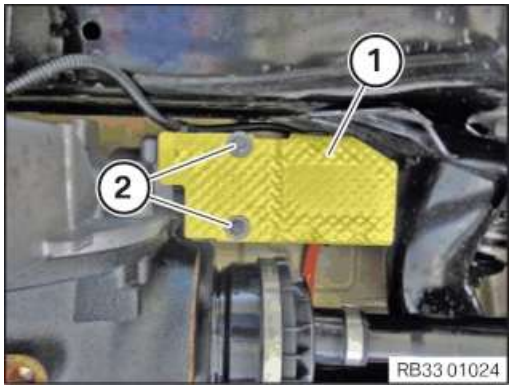
5 – Detaching and lowering the rear axle differential (with GHAS)

RISK OF DAMAGE

Damage to rear axle differential.

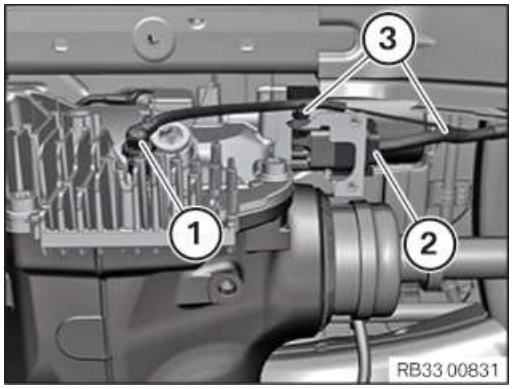
If the rear axle differential drops down, persons can be injured or the rear axle differential can be damaged.

- Secure the rear axle differential using a tensioning strap.

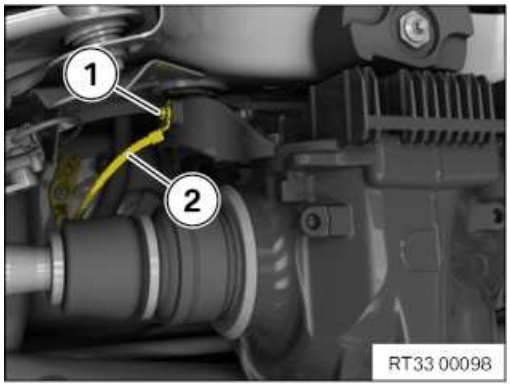


- Loosen screws (2).
- Remove thermal protection(1).

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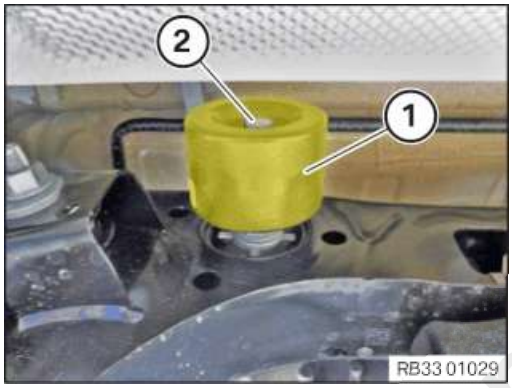


- Unlock and disconnect the plug connections (1) and (2).
- Detach the cables from the brackets (3).



- Loosen screw (1).
- Remove ground strap (2).

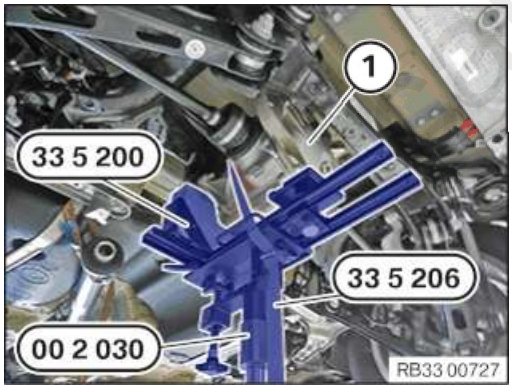
▸ **Remove vibration absorber**



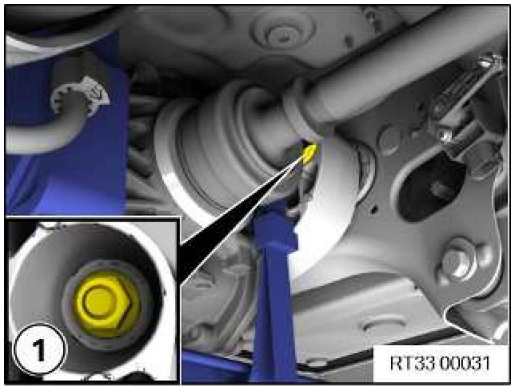
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

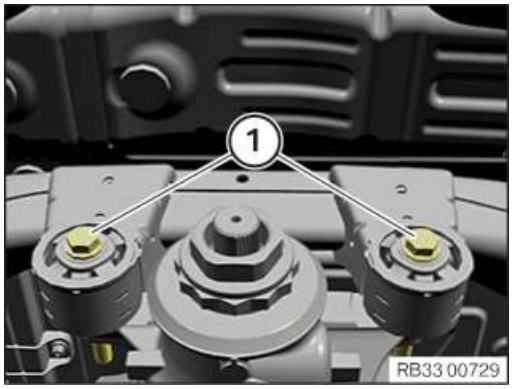
- Release the screw (2).
- Remove the vibration absorber (1).



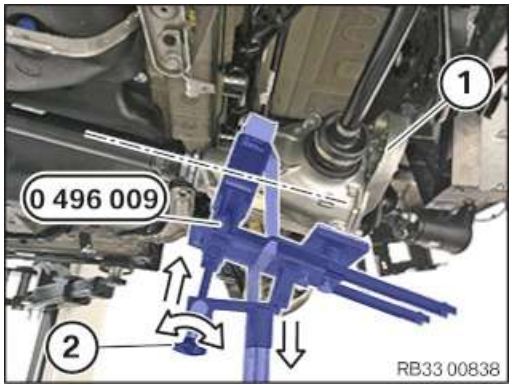
- Place the special tool onto the universal jack 0 490 133 (00 2 030).
- Support the rear axle differential (1) with the special tool .
- Secure the rear axle differential (1) with a tensioning strap on the special tool .



- Loosen nut (1).
- Move screw toward the rear.



- Loosen screws (1) on rear axle support at front.



- Lower rear axle differential (1) using the special tool only until the cover on the rear axle differential is accessible.

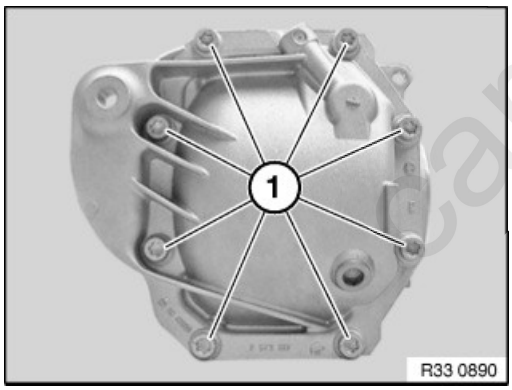
  During lowering, twist the adjusting screw (2) to slightly raise the rear axle differential at the front.

MAIN WORK

6 – Removing the housing cover

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



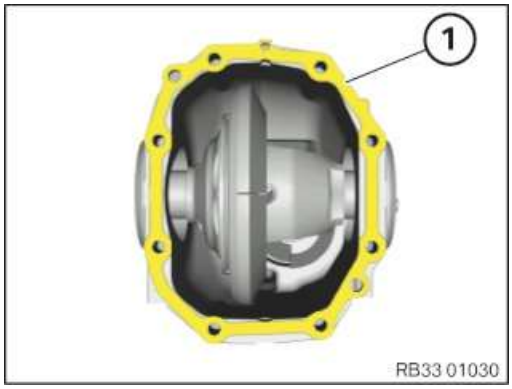
- Loosen screws (1).
- Take off case cover.

7 – Removing the seal and clean the sealing surface

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

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- Remove the seal from the housing of the rear axle differential using a scraper.
- Clean sealing surface (1) on the rear axle differential.

8 – Apply liquid sealing compound

TECHNICAL INFORMATION

- The application time of the liquid sealing compound can be at a maximum of 10 min.
- Start-up of the assembly is not possible until 25 minutes after the application time.
- Non-observance can lead to leaks in the assembly.



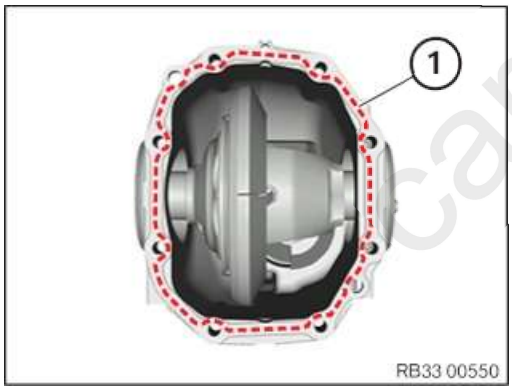
- Position the liquid sealing compound (1) on special tool 2 469 803 as shown.

  Parts: Liquid sealing compound

Sealing compound

Loctite 5970 liquid sealing compound **Processing time <10 minutes at room temperature**	50 ml, Cartridge	83190404517

Overview of consumables (Electronic Parts Catalogue)



NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

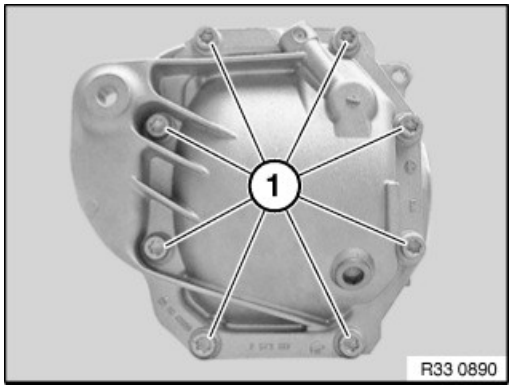
- Apply liquid sealing compound along the dotted line (1) on the sealing surface of the rear axle differential.

  The sealing bead must run along the inner edge.

9 – Installing the housing cover

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



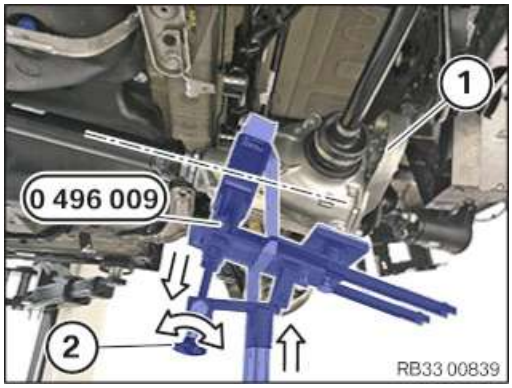
- Position the housing cover on the rear axle differential.
- Tighten the screws (1).

Lid to rear axle differential

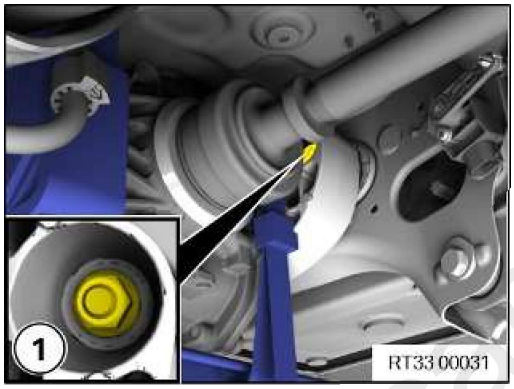
M12			140 Nm
M10			90 Nm

POSTPROCESSES

10 – Raise rear axle differential and secure (with GHAS)

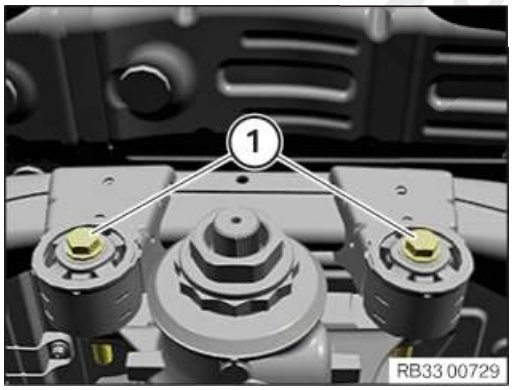


- Lift and position the rear axle differential (1)with the special tool .
- Correct the installation position while lifting the rear axle differential (1) by turning the adjusting screw (2).



- Renew screw and nut (1).

  Parts: Nut, bolt
- Insert the screw.
- Screw on nut (1) by hand.

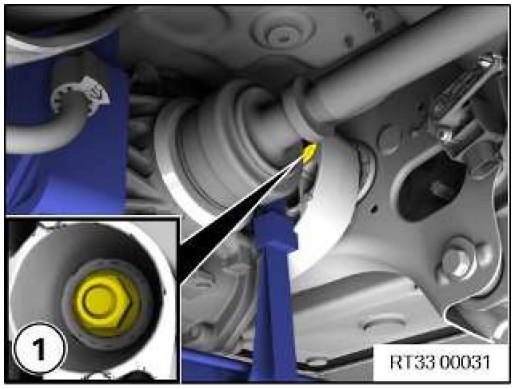


- Renew screws (1).

  Parts: Screws
- Screw in the screws (1) by hand.
- Tighten the screws (1).

Rear differential to rear axle carrier, front

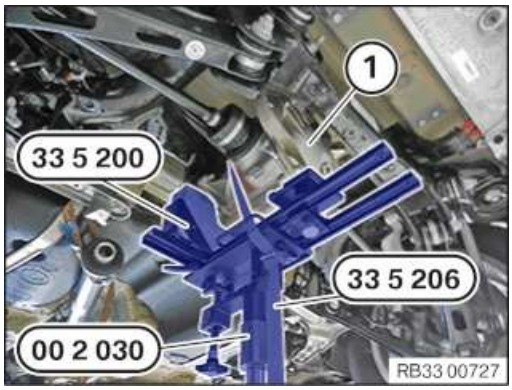
M12	Renew screw.	Tightening torque	100 Nm



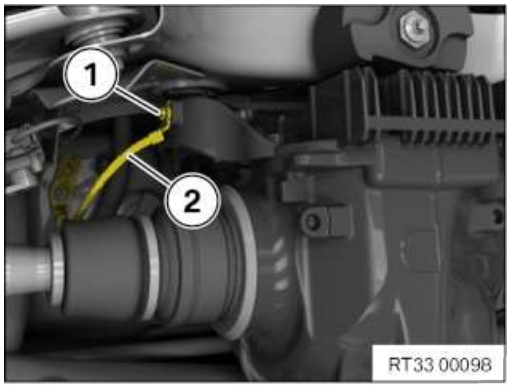
- Tighten nut (1).

Rear differential to rear axle carrier, rear

M14x110	Renew screw and nut.	Tightening torque.	175 Nm



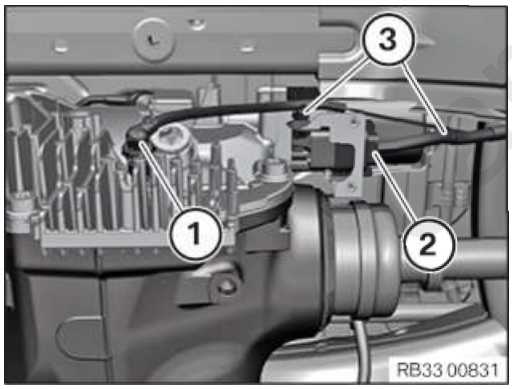
- Release the special tool from the rear axle differential (1) and remove it.
- Lower the special tools 0 490 133 (00 2 030) and and set them aside.



- Position the ground strap (2) on the rear axle differential.
- Tighten down screw (1).

Ground strap to rear axle differential

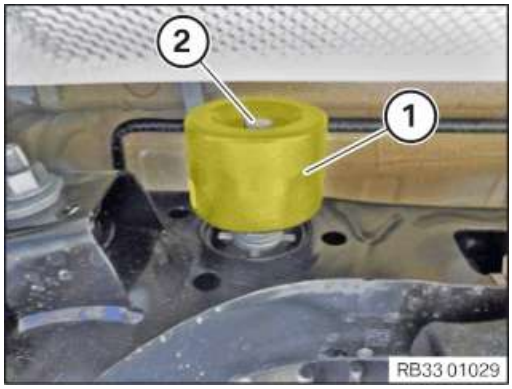
M6x20		Tightening torque	8 Nm



- Secure the cables on the brackets (3).
- Connect the connector (1) and (2) and audibly lock it.

▸ **install the vibration absorber**

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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Position the (1) vibration absorber.
- Renew the screw (2).

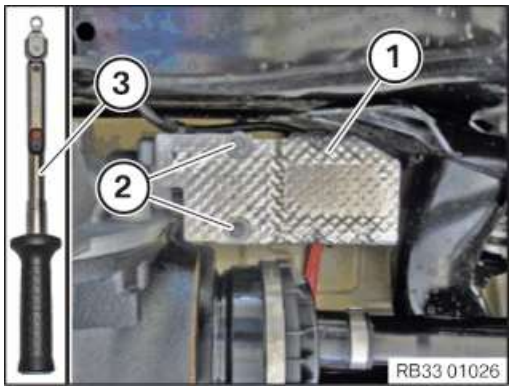
  Parts: Screw
- Tighten down screw (2).

Vibration absorber to rear axle

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °



- Prepare the torque wrench (3) as shown with at the severance cut.
- Position the heat shield (1).
- Tighten the screws (2).

Heat shield to servomotor

M5x10		Tightening torque	5 Nm

11 – Check/top up oil level in the rear axle differential

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

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RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- Only use approved oil in the rear axle differential.

TECHNICAL INFORMATION

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

▸ **Supplement the rear axle differential oil change/oil level with oil gun**

Your browser doesn't support HTML5 video.

TECHNICAL INFORMATION

The training video illustrates the methodology for changing the rear axle differential oil using the oil gun special tool.

The training video does not replace the repair instructions.

The training video is not subject to the update service.

No liability can be accepted for printing or other faults. Subject to changes of a technical nature

- Follow repair instructions!

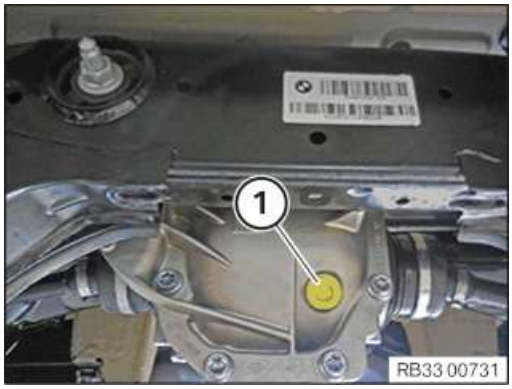


TECHNICAL INFORMATION

With the specified capacity, it is imperative to take into account the capacity of the hose of the special tool.

- Use the special tool 2 460 340 to top up the rear axle differential oil.

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- Open the oil filler plug (1).
- Check oil level:

  The oil level at the rear axle differential has been adjusted correctly once a small quantity of oil escapes from the opening of the oil filler plug.

  If necessary, top up final drive transmission oil.

Rear axle differential oil: Capacity overview (all)

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l
Transmission oil: Technically suitable rear axle differential oils	

- Replace the oil filler plug (1).

  Parts: Oil filler plug
- Screw in and tighten the oil filler plug (1).

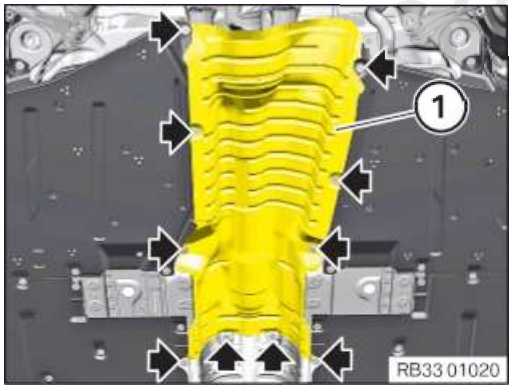
Rear axle differential oil filler plug

M22	Renew the oil filler plug.	Tightening torque	60 Nm

12 – Installing the rear heat shield

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

13 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Installing the cover of the camber control arm**

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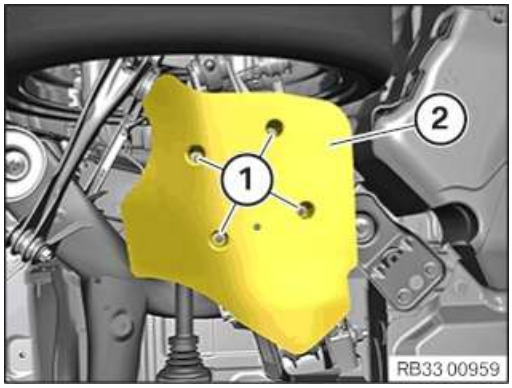
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

14 – Installing the complete exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

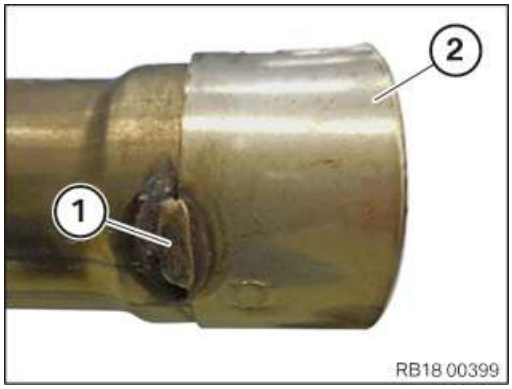
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TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.



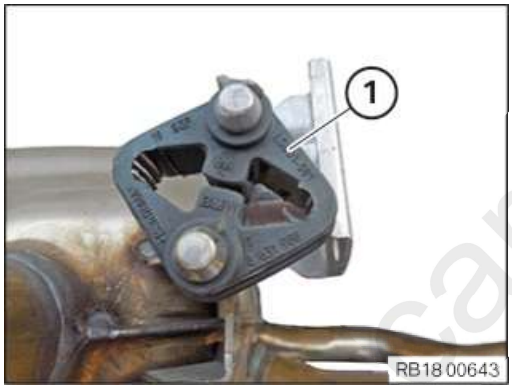
CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

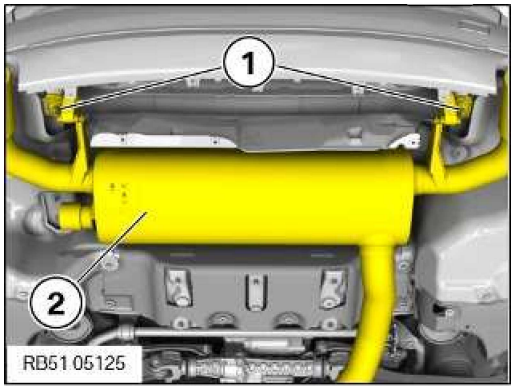


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount



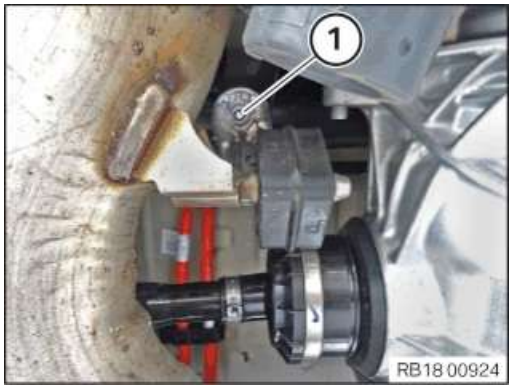
- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

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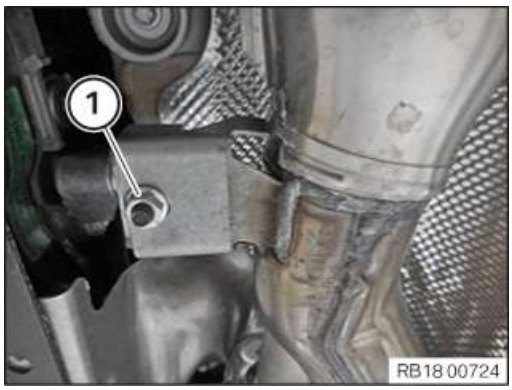


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

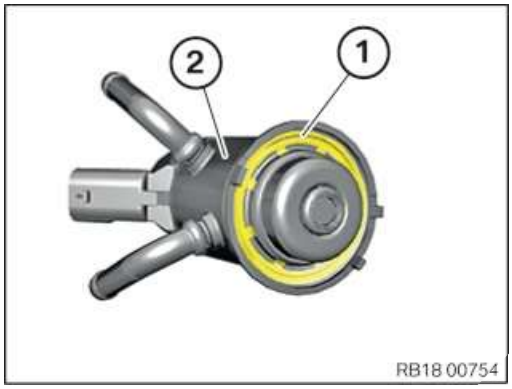
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

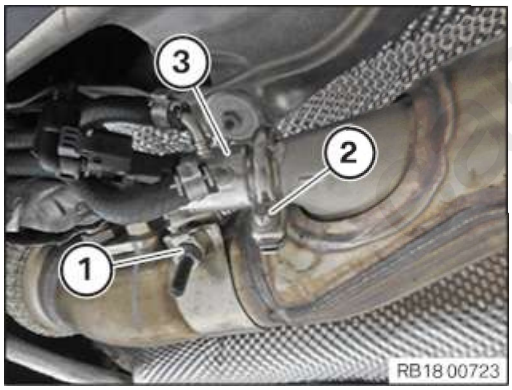
Exhaust system to transmission

M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

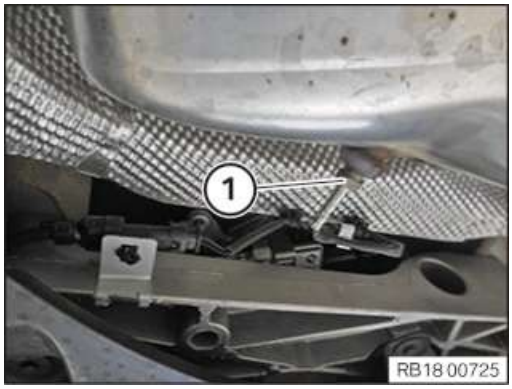
- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

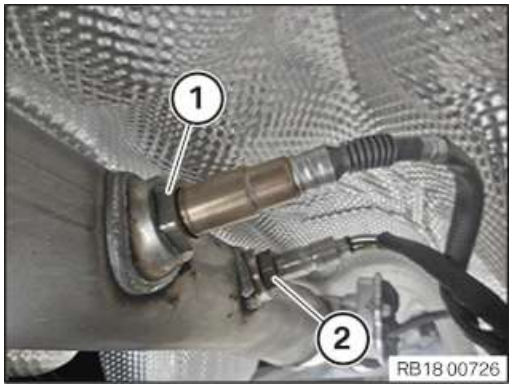
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- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm



- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

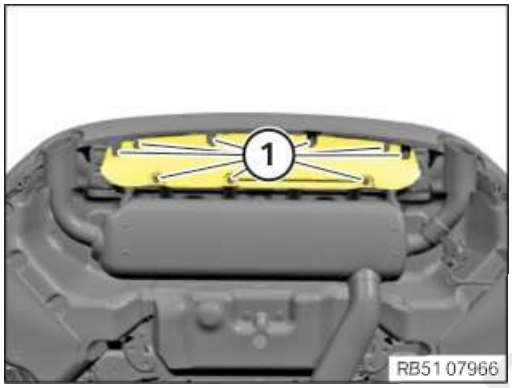
Sensor		Tightening torque	50 Nm

- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

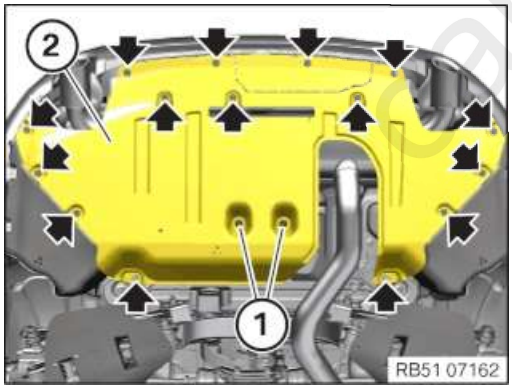
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

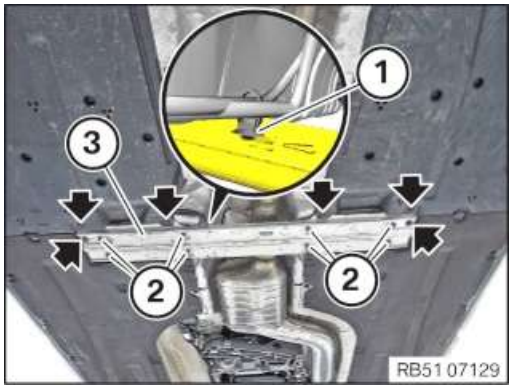
- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**

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- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

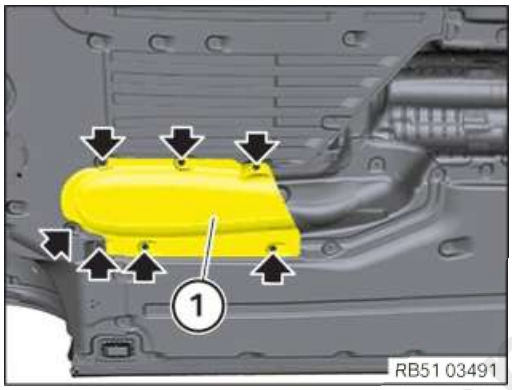
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Additional Information

Overview of Tightening Torques

Lid to rear axle differential — Used in step 9

M12			140 Nm
M10			90 Nm

Rear differential to rear axle carrier, front — Used in step 10

M12	Renew screw.	Tightening torque	100 Nm

Rear differential to rear axle carrier, rear — Used in step 10

M14x110	Renew screw and nut.	Tightening torque.	175 Nm

Ground strap to rear axle differential — Used in step 10

M6x20		Tightening torque	8 Nm

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Vibration absorber to rear axle			Used in step 10
M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle			Used in step 10
M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Heat shield to servomotor			Used in step 10
M5x10		Tightening torque	5 Nm

Rear axle differential oil filler plug			Used in step 11
M22	Renew the oil filler plug.	Tightening torque	60 Nm

Heat shield to undercarriage			Used in step 12
Screws and nuts		Tightening torque	3 Nm

Cover to camber control arm			Used in step 13
M6	Replace nuts.	Tightening torque	6 Nm

Rear silencer to body / bumper support			Used in step 14
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 14
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 14
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 14
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 14
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 14
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 14
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 14
Sensor		Tightening torque	55 Nm

Diffuser / underbody panelling			Used in step 14
Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel			Used in step 14
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

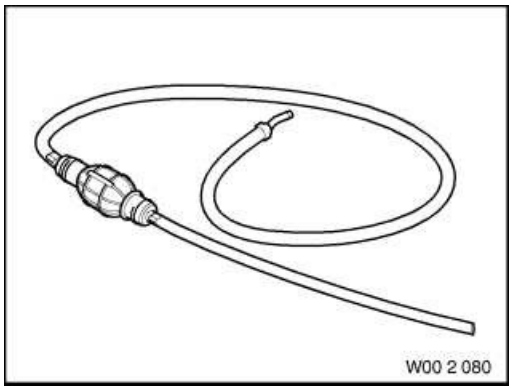
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Underbody panelling Used in step 14

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Overview of Special Tools

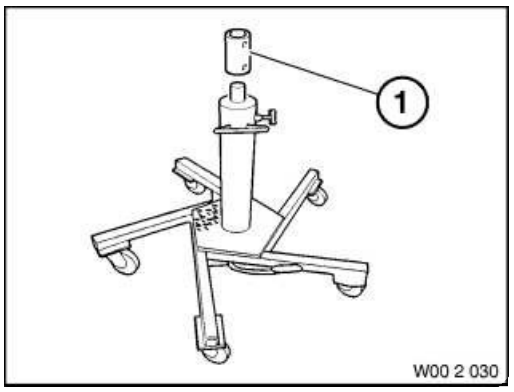
0 493 337 (00 2 080) Pump



Common Used in step 4

Usage	(Hand pump) For lifetime oil filling
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 01 98 (294)

0 490 133 (00 2 030) Device



Common Used in step 510

Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

2 469 803 Cartridge gun



Common Used in step 8

Usage	For the application of the liquid sealing compound Loctite 5970.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 39 18 (616)

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2 460 340 Pump



Common	Used in step 11
Usage	Oil gun to fill rear axle differentials or differentials with 1 litre containers.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 09 18 (553)

Overview Technical Data

Rear axle differential oil: Capacity overview (all)	Used in step 11
168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

Links

General repair instructions	Used in step

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	

Operating materials	Used in step
Main group 33	11

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33 11 272 Replacing the rear axle differential M sport differential cover gasket

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- After completion of repair work, check the transmission oil level in the rear axle differential.
- Use only the approved final drive transmission oil.

PRELIMINARY WORK

1 – Remove complete exhaust system

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WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

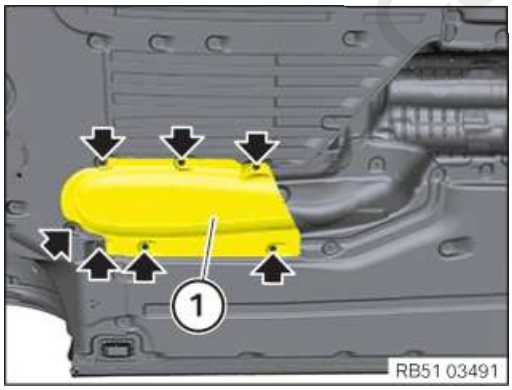
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

NOTICE

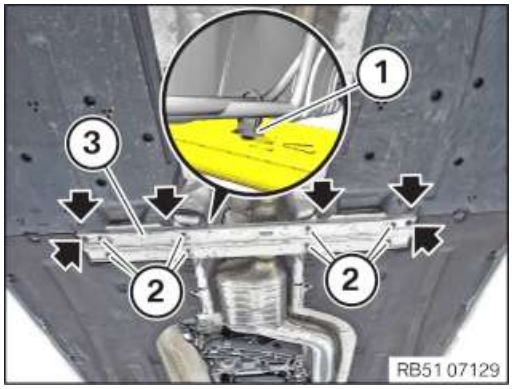
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**

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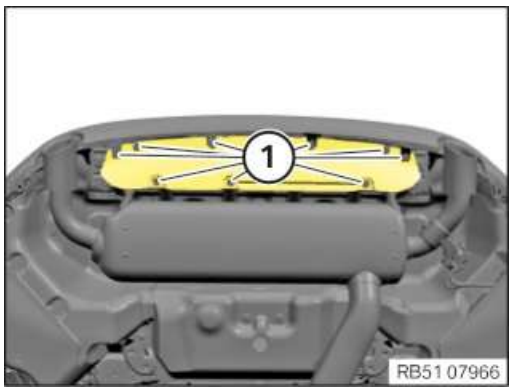
- Remove screws (arrows).

NOTICE

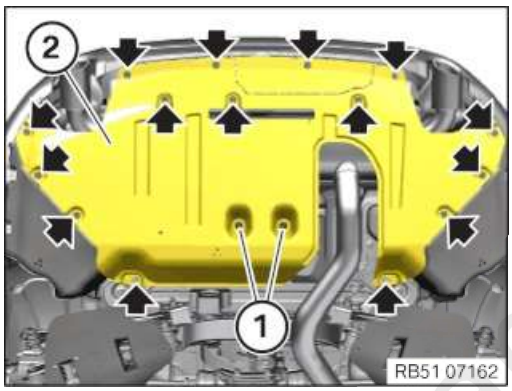
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

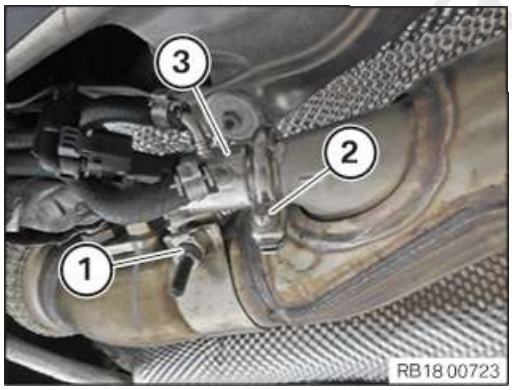
▸ **Removing the rear diffuser**



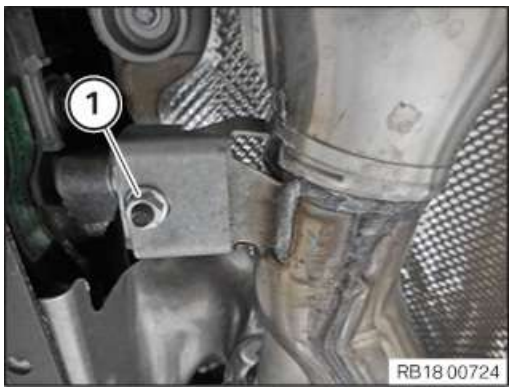
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).

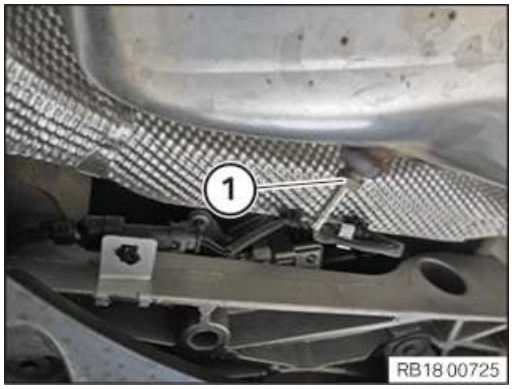


- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.

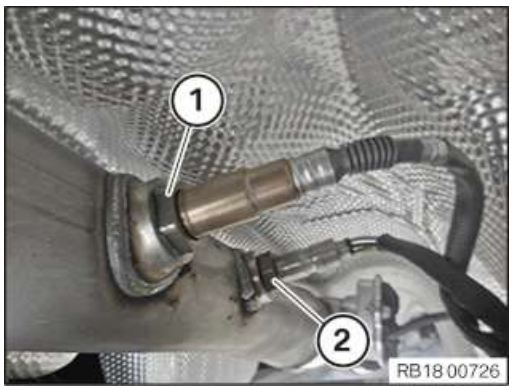


- Loosen nut (1).

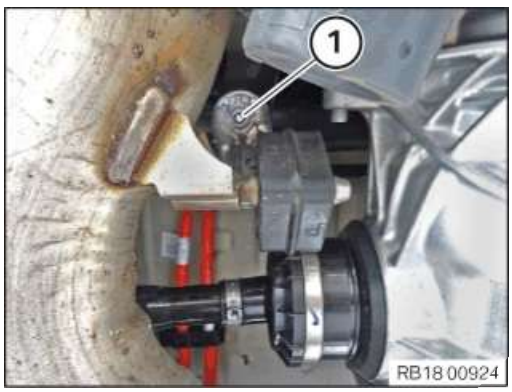
tdiagn.com



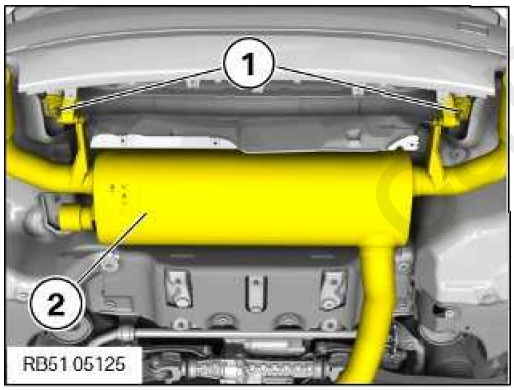
- Detach the exhaust temperature sensor (1) from the exhaust system.



- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.



- Release the nut (1) on the rear axle support.



- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

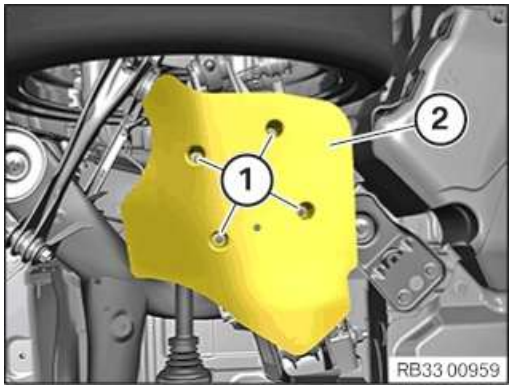
2 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover of camber control arm**

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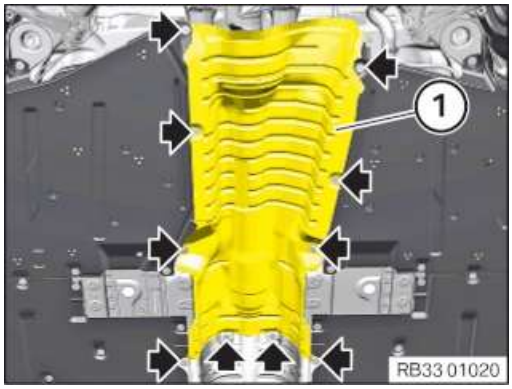


- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

3 – Remove heat shield at rear.

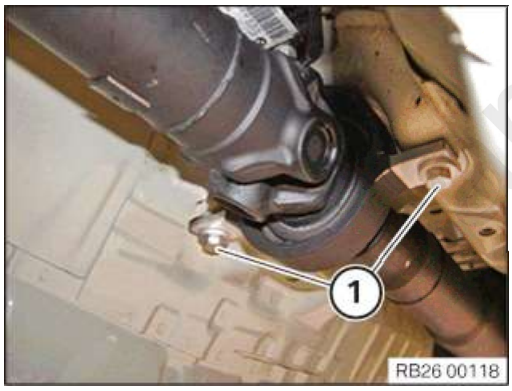
NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

4 – Release propeller shaft centre mount



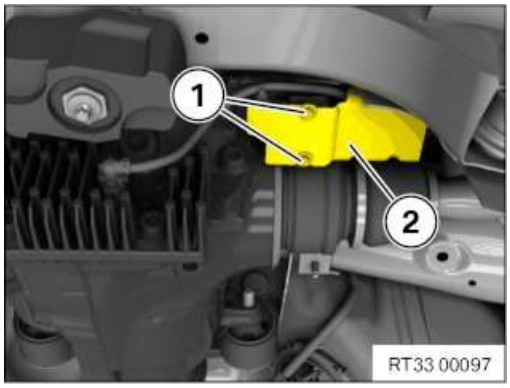
- Unscrew the bolts (1) from the centre mount approx. 1 cm.
  Do not unscrew the bolts completely.

5 – Releasing the wiring harness from the M Sport differential

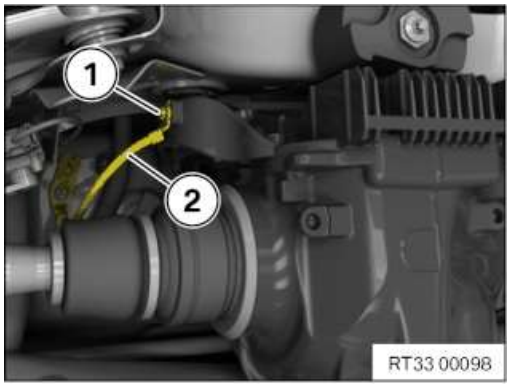
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

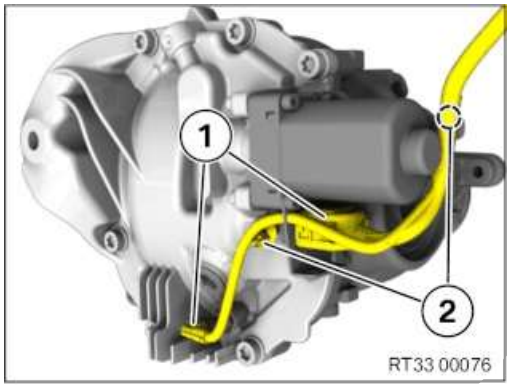
rdiagn.com



- Loosen screws (1).
- Remove heat shield (2).



- Release the screw (1).
- Detach the ground strap (2) from the rear axle differential.



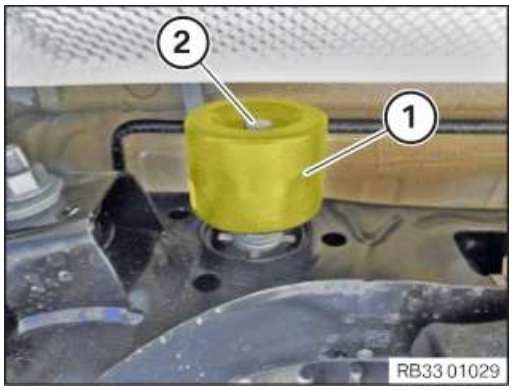
- Unlock and disconnect plug connections (1).
- Release cable from brackets (2).

6 – Remove the vibration absorber on the rear axle differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

▸ **Remove the vibration absorber on the rear axle differential**



- Loosen screw (2).
- Remove the vibration absorber (1).

7 – Drawing off oil in the rear axle differential

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CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

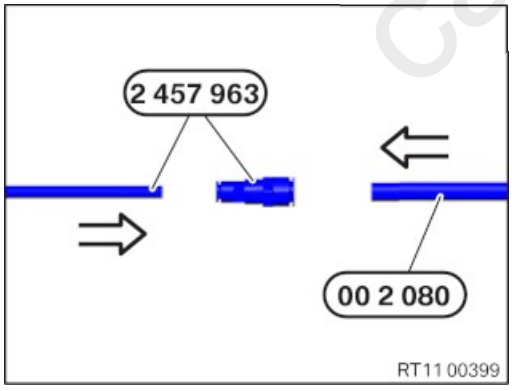
- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

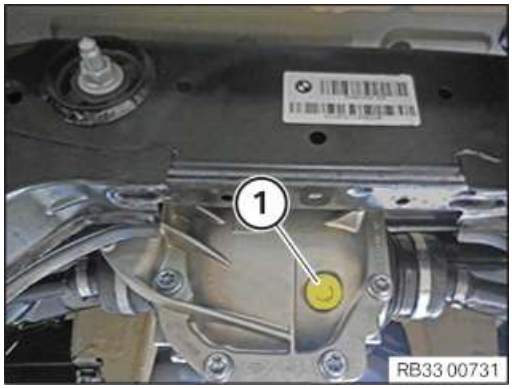


- Use the special tool 0 493 337 (00 2 080) for drawing off the rear axle differential oil.



- Connect the special tool with the special tool 0 493 337 (00 2 080).

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- Open the oil filler plug (1).
- Draw off rear axle differential oil.

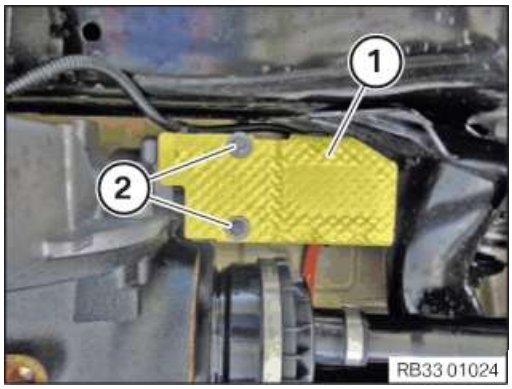
8 – Detaching and lowering the rear axle differential (with GHAS)

RISK OF DAMAGE

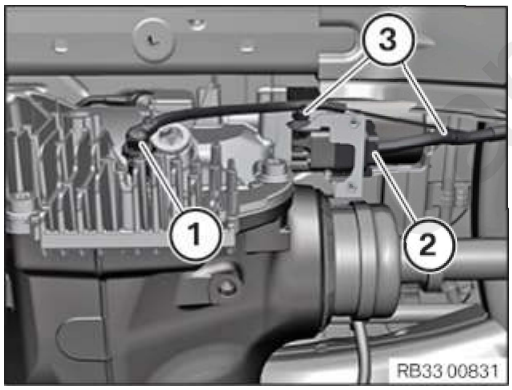
Damage to rear axle differential.

If the rear axle differential drops down, persons can be injured or the rear axle differential can be damaged.

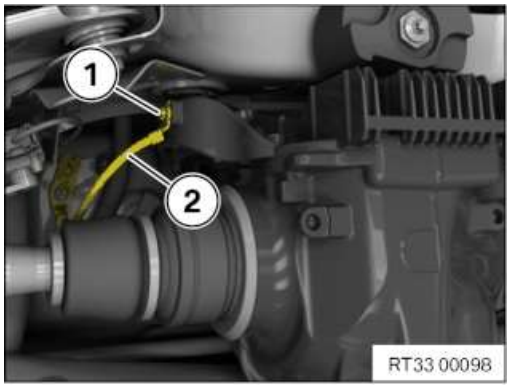
- Secure the rear axle differential using a tensioning strap.



- Loosen screws (2).
- Remove thermal protection(1).



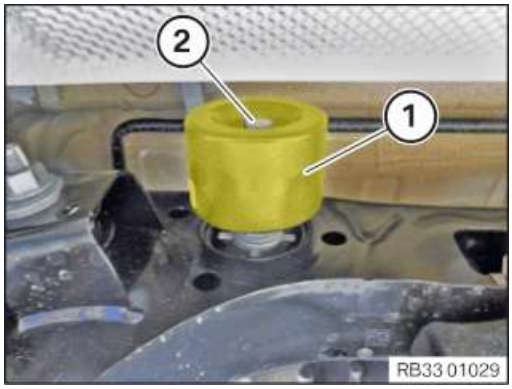
- Unlock and disconnect the plug connections (1) and (2).
- Detach the cables from the brackets (3).



- Loosen screw (1).
- Remove ground strap (2).

▸ **Remove vibration absorber**

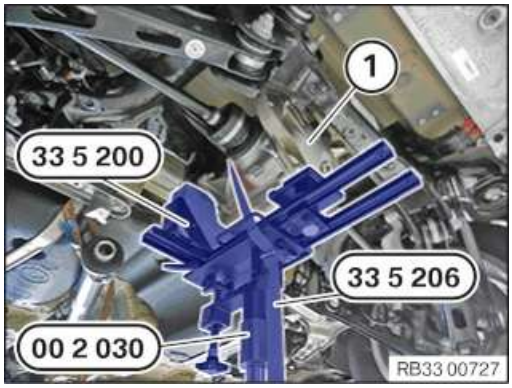
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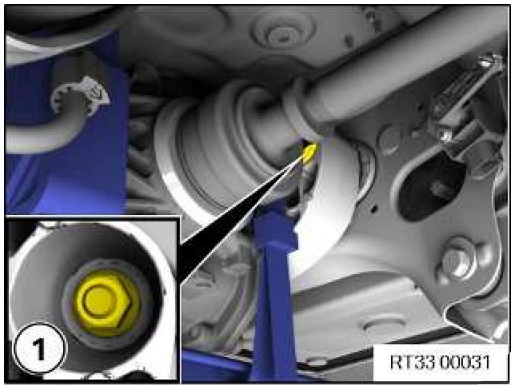
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

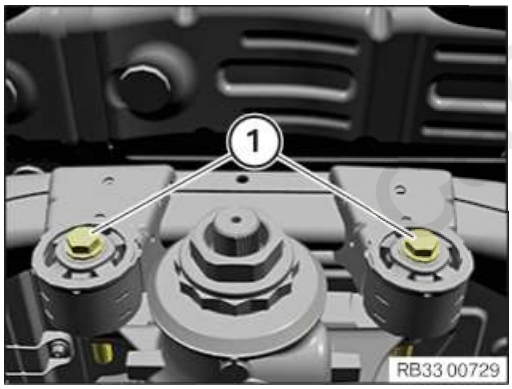
- Release the screw (2).
- Remove the vibration absorber (1).



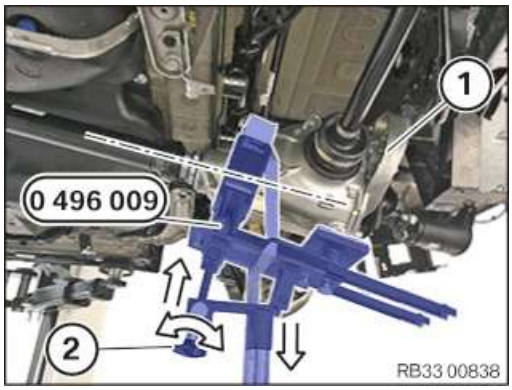
- Place the special tool onto the universal jack 0 490 133 (00 2 030).
- Support the rear axle differential (1) with the special tool .
- Secure the rear axle differential (1) with a tensioning strap on the special tool .



- Loosen nut (1).
- Move screw toward the rear.



- Loosen screws (1) on rear axle support at front.



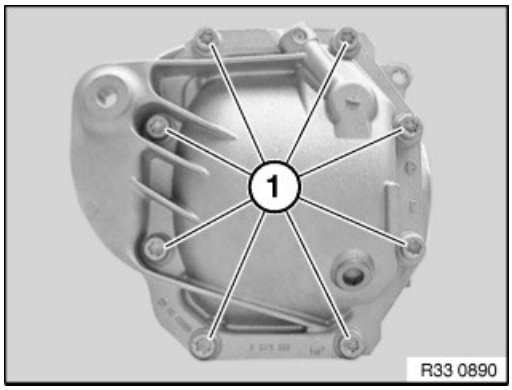
- Lower rear axle differential (1) using the special tool only until the cover on the rear axle differential is accessible.

  During lowering, twist the adjusting screw (2) to slightly raise the rear axle differential at the front.

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NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

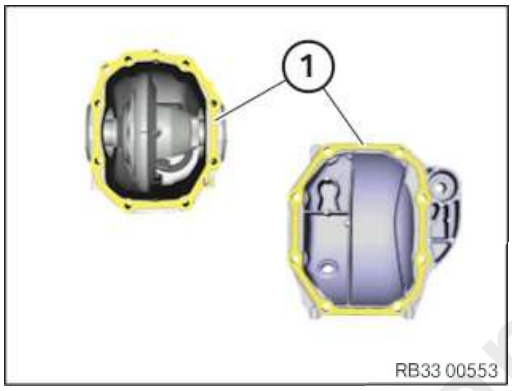


- Loosen screws (1).
- Take off case cover.

10 – Removing the seals and cleaning the sealing surfaces

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Remove the seals from the housing cover and the housing of the rear axle differential using a scraper.
- Clean sealing surfaces (1) on the cover and rear axle differential.

11 – Apply liquid sealing compound

TECHNICAL INFORMATION

- The application time of the liquid sealing compound can be at a maximum of 10 min.
- Start-up of the assembly is not possible until 25 minutes after the application time.
- Non-observance can lead to leaks in the assembly.



- Position the liquid sealing compound (1) on special tool 2 469 803 as shown.

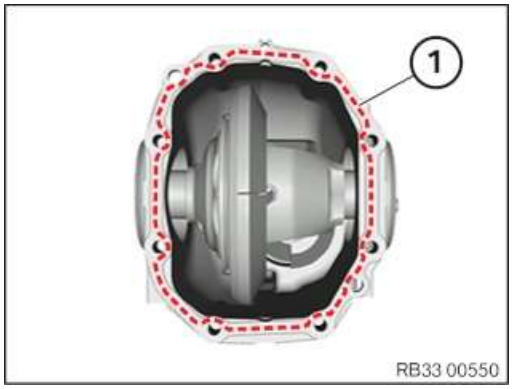
  Parts: Liquid sealing compound

Sealing compound

Loctite 5970 liquid sealing compound **Processing time <10 minutes at room temperature**	50 ml, Cartridge	83190404517

Overview of consumables (Electronic Parts Catalogue)

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NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

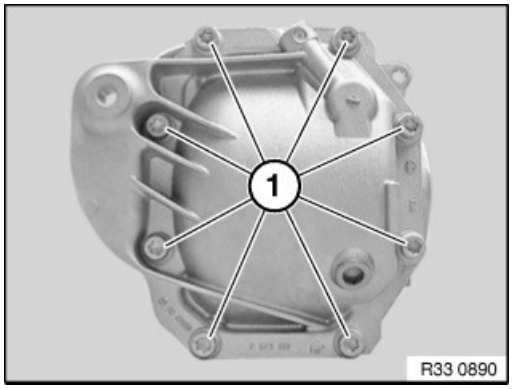
- Apply liquid sealing compound along the dotted line (1) on the sealing surface of the rear axle differential.

  The sealing bead must run along the inner edge.

12 – Installing the housing cover

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



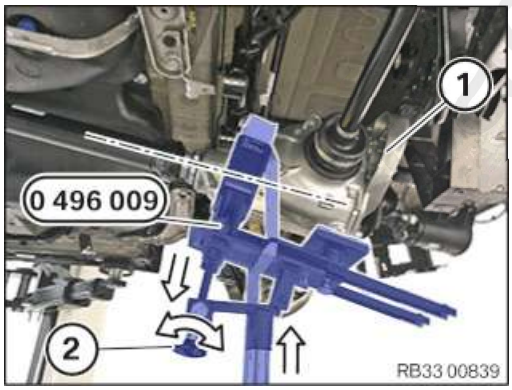
- Position the housing cover on the rear axle differential.
- Tighten the screws (1).

Lid to rear axle differential

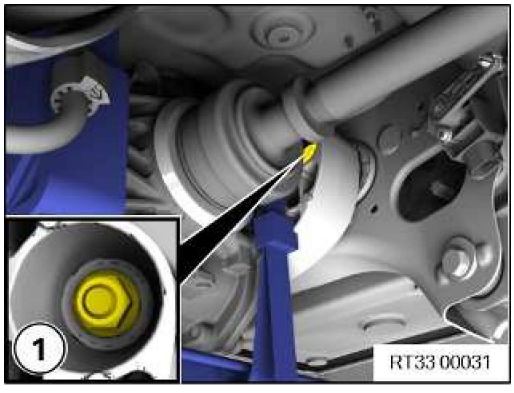
M12			140 Nm
M10			90 Nm

POSTPROCESSES

13 – Raise rear axle differential and secure (with GHAS)

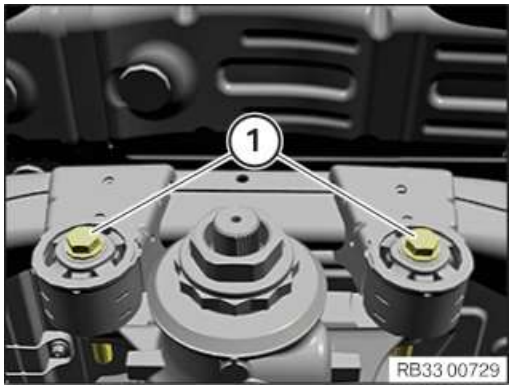


- Lift and position the rear axle differential (1)with the special tool .
- Correct the installation position while lifting the rear axle differential (1) by turning the adjusting screw (2).



- Renew screw and nut (1).

  Parts: Nut, bolt
- Insert the screw.
- Screw on nut (1) by hand.

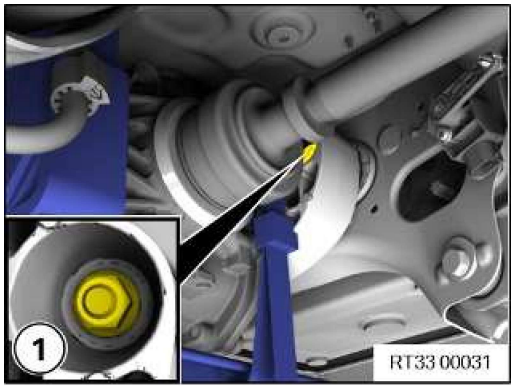


- Renew screws (1).

  Parts: Screws
- Screw in the screws (1) by hand.
- Tighten the screws (1).

Rear differential to rear axle carrier, front

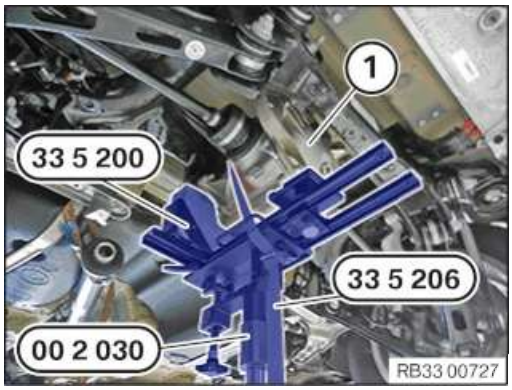
M12	Renew screw.	Tightening torque	100 Nm



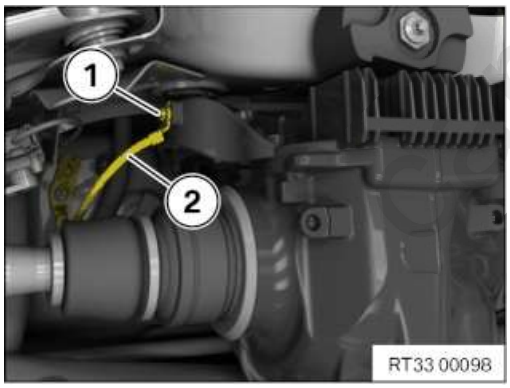
- Tighten nut (1).

Rear differential to rear axle carrier, rear

M14x110	Renew screw and nut.	Tightening torque.	175 Nm



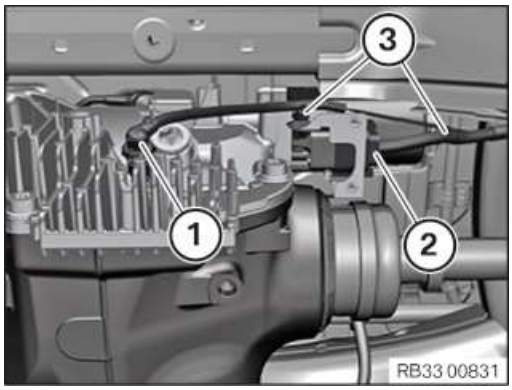
- Release the special tool from the rear axle differential (1) and remove it.
- Lower the special tools 0 490 133 (00 2 030) and and set them aside.



- Position the ground strap (2) on the rear axle differential.
- Tighten down screw (1).

Ground strap to rear axle differential

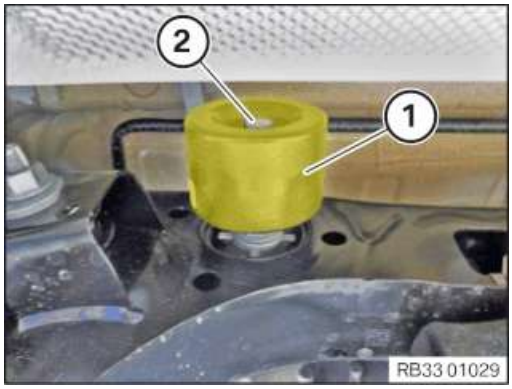
M6x20		Tightening torque	8 Nm



- Secure the cables on the brackets (3).
- Connect the connector (1) and (2) and audibly lock it.

▸ **install the vibration absorber**

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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Position the (1) vibration absorber.
- Renew the screw (2).

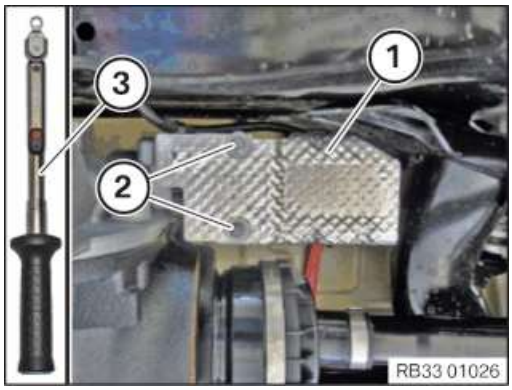
  Parts: Screw
- Tighten down screw (2).

Vibration absorber to rear axle

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °



- Prepare the torque wrench (3) as shown with at the severance cut.
- Position the heat shield (1).
- Tighten the screws (2).

Heat shield to servomotor

M5x10		Tightening torque	5 Nm

14 – Check/top up oil level in the rear axle differential

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

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RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- Only use approved oil in the rear axle differential.

TECHNICAL INFORMATION

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

▸ **Supplement the rear axle differential oil change/oil level with oil gun**

Your browser doesn't support HTML5 video.

TECHNICAL INFORMATION

The training video illustrates the methodology for changing the rear axle differential oil using the oil gun special tool.

The training video does not replace the repair instructions.

The training video is not subject to the update service.

No liability can be accepted for printing or other faults. Subject to changes of a technical nature

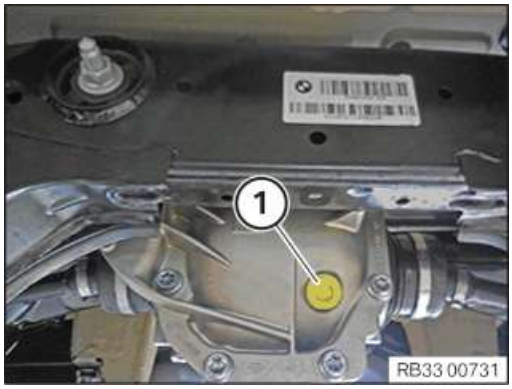
- Follow repair instructions!



TECHNICAL INFORMATION

With the specified capacity, it is imperative to take into account the capacity of the hose of the special tool.

- Use the special tool 2 460 340 to top up the rear axle differential oil.



- Open the oil filler plug (1).
- Check oil level:

  The oil level at the rear axle differential has been adjusted correctly once a small quantity of oil escapes from the opening of the oil filler plug.

  If necessary, top up final drive transmission oil.

Rear axle differential oil: Capacity overview (all)

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l
Transmission oil: Technically suitable rear axle differential oils	

- Replace the oil filler plug (1).

  Parts: Oil filler plug
- Screw in and tighten the oil filler plug (1).

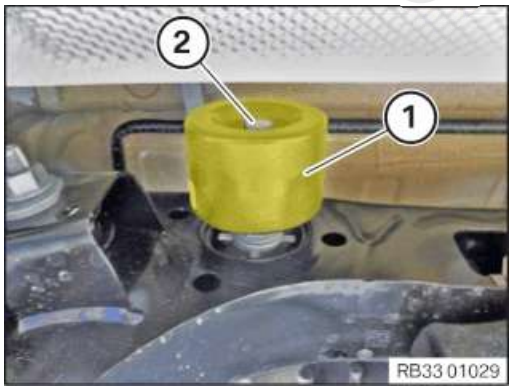
Rear axle differential oil filler plug

M22	Renew the oil filler plug.	Tightening torque	60 Nm

15 – Install the vibration absorber on the rear axle differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



▸ **Install the vibration absorber on the rear axle differential**

- Position the (1) vibration absorber.
- Renew the screw (2).

  Parts: Screw
- Position and tighten the screw (2).

Vibration absorber to rear axle

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle

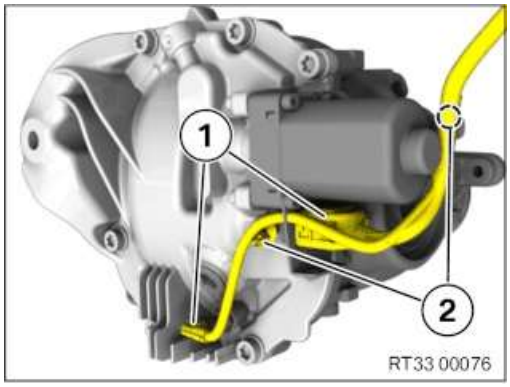
M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

16 – Mounting the wiring harness to the M Sport differential

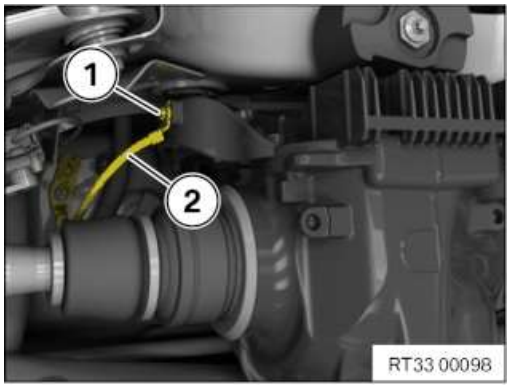
cardiagn.com

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



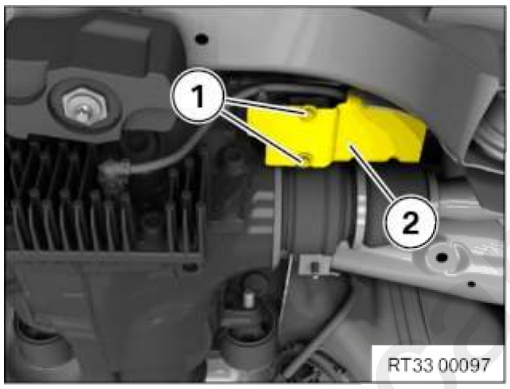
- Connect connectors (1) and lock.
- Secure the cables on the brackets (2).



- Position the ground strap (2) on the rear axle differential.
- Tighten down screw (1).

Ground strap to rear axle differential

M6x20		Tightening torque	8 Nm

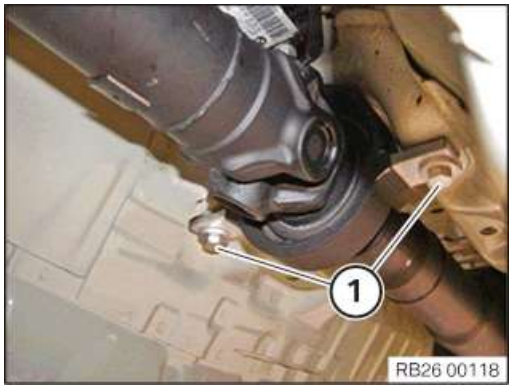


- Position the heat shield (2).
- Tighten the screws (1).

Heat shield to servomotor

M5x10		Tightening torque	5 Nm

17 – Attach the centre mount of the propeller shaft



- Tighten the screws (1).

Centre mount to body

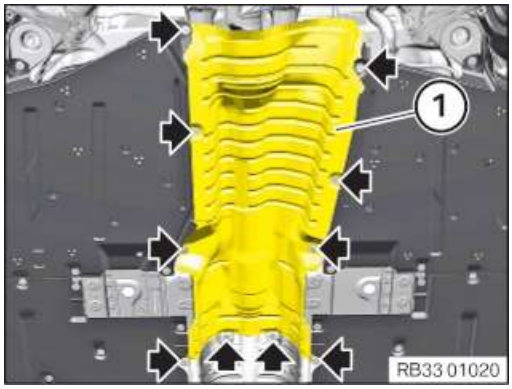
M8		Tightening torque	19 Nm

18 – Installing the rear heat shield

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

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- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

19 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Installing the cover of the camber control arm**



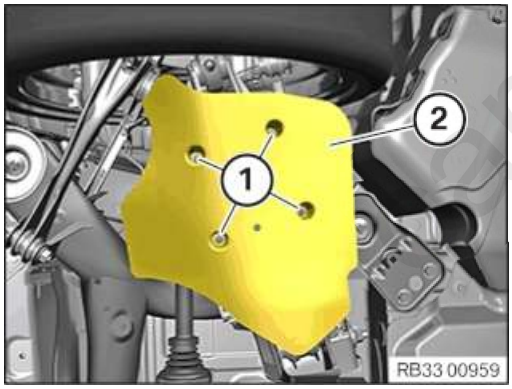
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

20 – Installing the complete exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

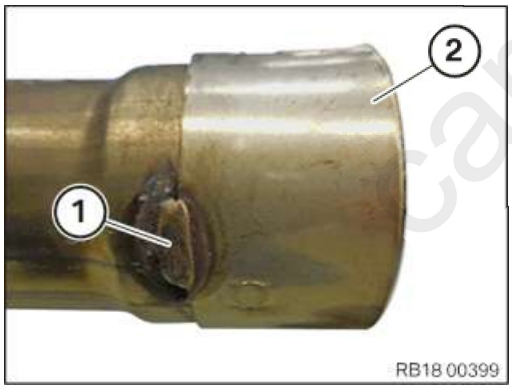
- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.



CAUTION

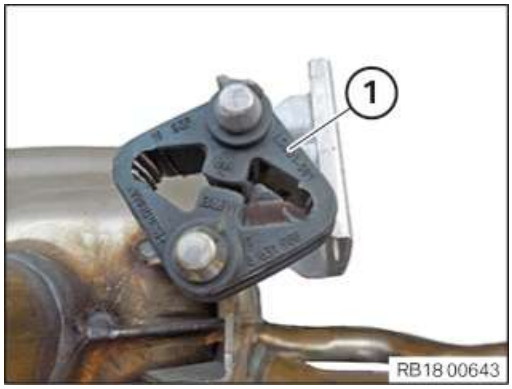
Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

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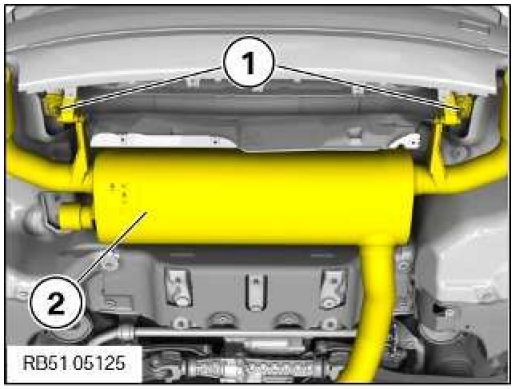


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

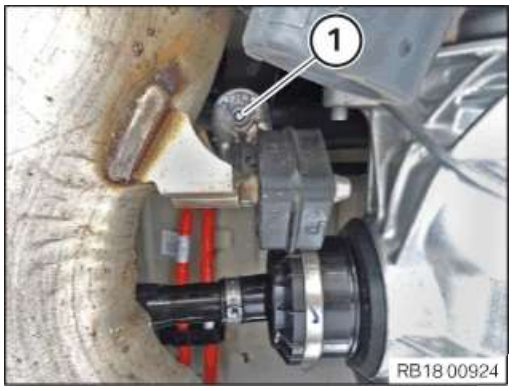


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

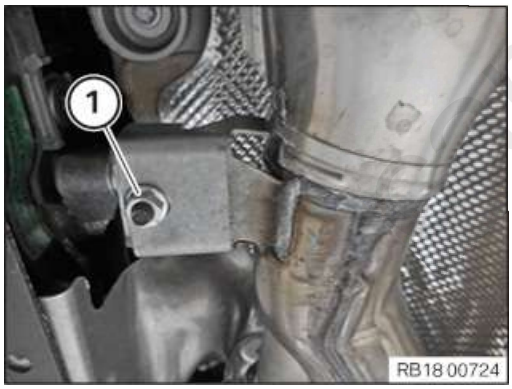


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

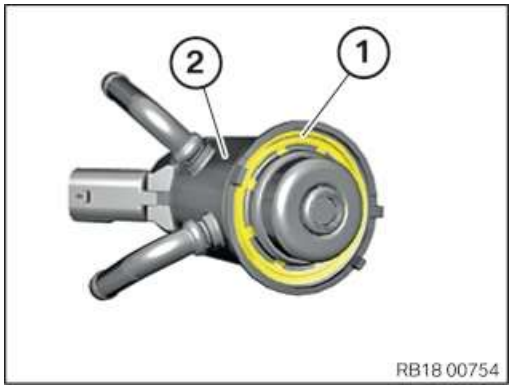
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

Exhaust system to transmission

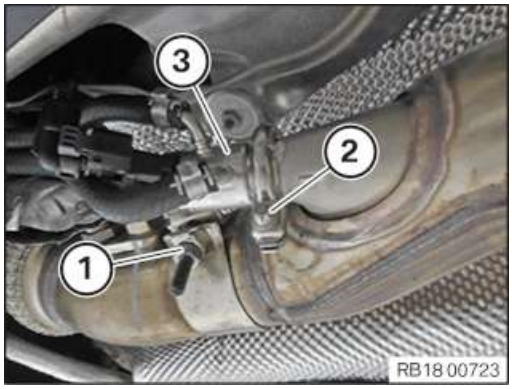
M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring

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- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

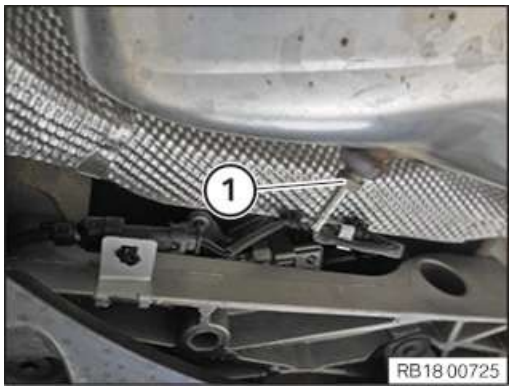
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

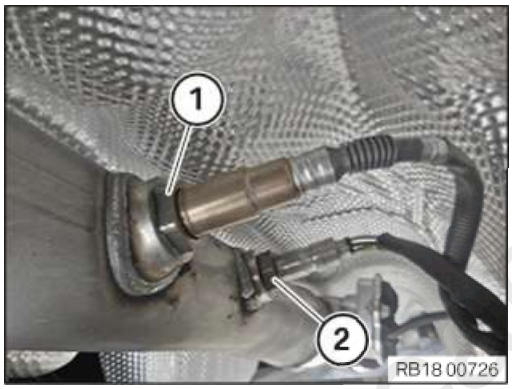
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm



- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm



- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

Sensor		Tightening torque	50 Nm

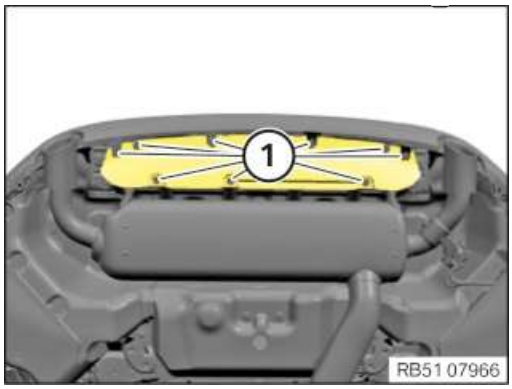
- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

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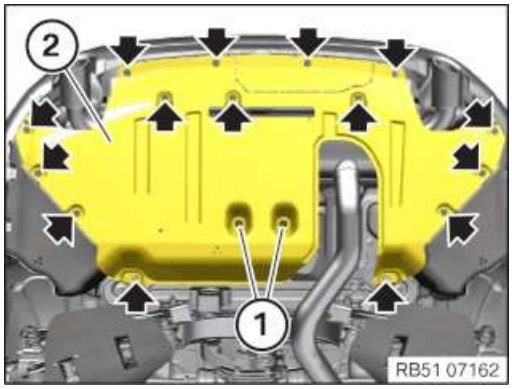
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

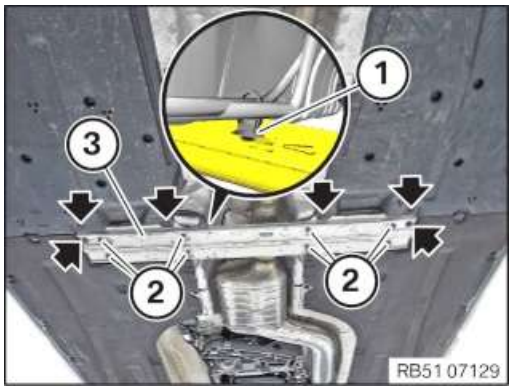
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**



- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

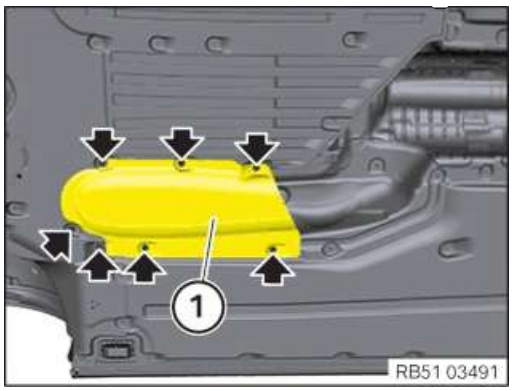
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Additional Information

Overview of Tightening Torques

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Lid to rear axle differential			Used in step 12
M12			140 Nm
M10			90 Nm

Rear differential to rear axle carrier, front			Used in step 13
M12	Renew screw.	Tightening torque	100 Nm

Rear differential to rear axle carrier, rear			Used in step 13
M14x110	Renew screw and nut.	Tightening torque.	175 Nm

Ground strap to rear axle differential			Used in step 1316
M6x20		Tightening torque	8 Nm

Vibration absorber to rear axle			Used in step 1315
M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle			Used in step 1315
M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Heat shield to servomotor			Used in step 1316
M5x10		Tightening torque	5 Nm

Rear axle differential oil filler plug			Used in step 14
M22	Renew the oil filler plug.	Tightening torque	60 Nm

Centre mount to body			Used in step 17
M8		Tightening torque	19 Nm

Heat shield to undercarriage			Used in step 18
Screws and nuts		Tightening torque	3 Nm

Cover to camber control arm			Used in step 19
M6	Replace nuts.	Tightening torque	6 Nm

Rear silencer to body / bumper support			Used in step 20
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 20
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 20
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 20
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 20
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

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Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 20
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 20
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 20
Sensor		Tightening torque	55 Nm

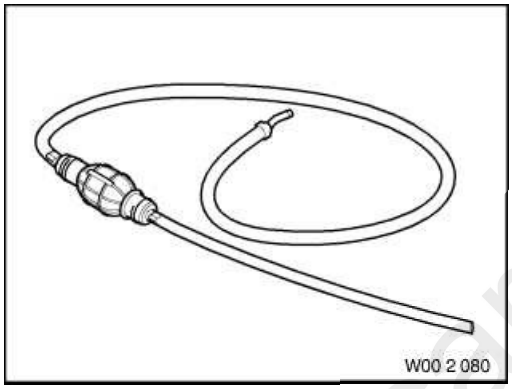
Diffuser / underbody panelling			Used in step 20
Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel			Used in step 20
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling			Used in step 20
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Overview of Special Tools

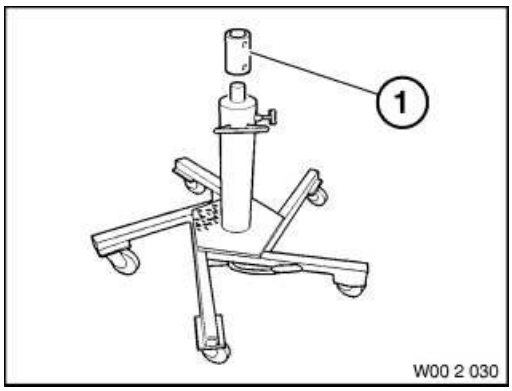
0 493 337 (00 2 080) Pump



Common	Used in step 7
Usage	(Hand pump) For lifetime oil filling
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 01 98 (294)

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0 490 133 (00 2 030) Device



Common Used in step 813

Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

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2 469 803 Cartridge gun



Common Used in step 11

Usage	For the application of the liquid sealing compound Loctite 5970.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 39 18 (616)

2 460 340 Pump



Common	Used in step 14
Usage	Oil gun to fill rear axle differentials or differentials with 1 litre containers.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 09 18 (553)

Overview Technical Data

Rear axle differential oil: Capacity overview (all)	Used in step 14
168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

Links

General repair instructions	Used in step

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	

Operating materials	Used in step
Main group 33	14

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

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

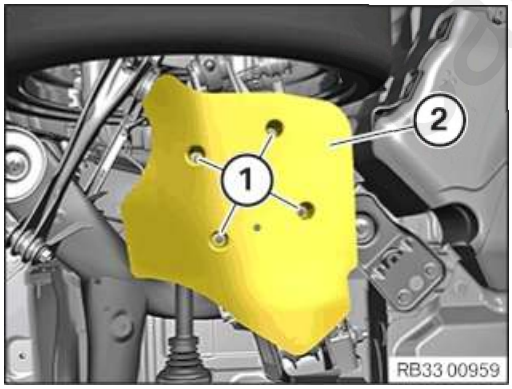
- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

PRELIMINARY WORK

1 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.



▸ **Removing the cover of camber control arm**

- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

2 – Remove exhaust system

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

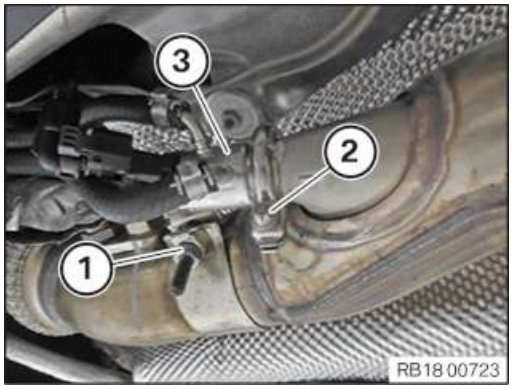
- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

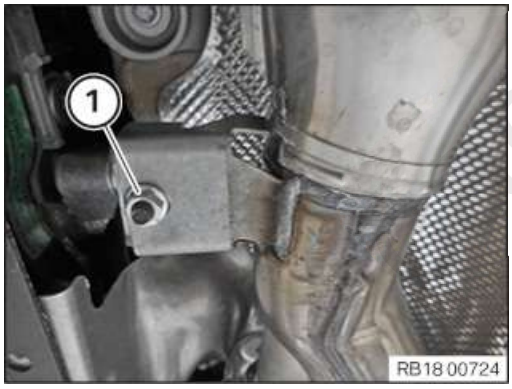
Heavy component.

Heavy components can lead to injury or damage.

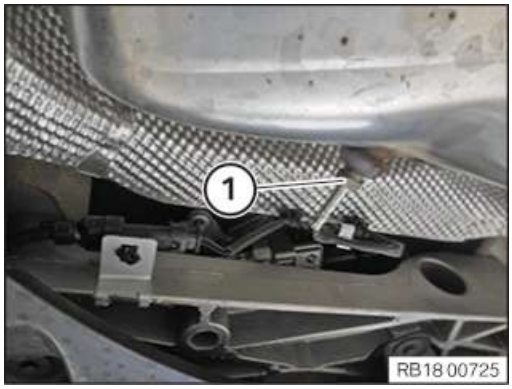
- Remove and install heavy components with the aid of another person/other persons.



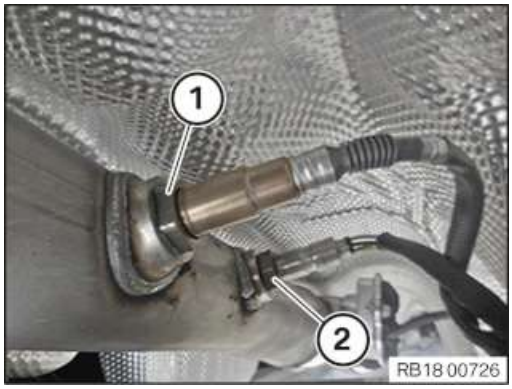
- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3)from the exhaust system and place to one side.



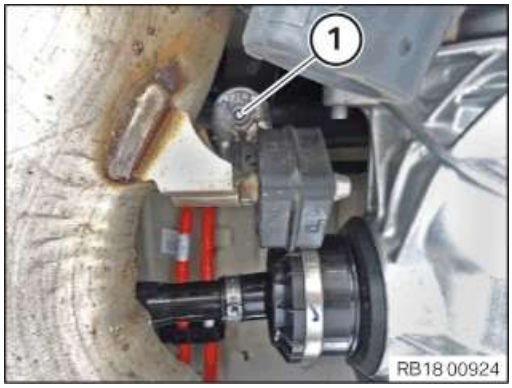
- Loosen nut (1).



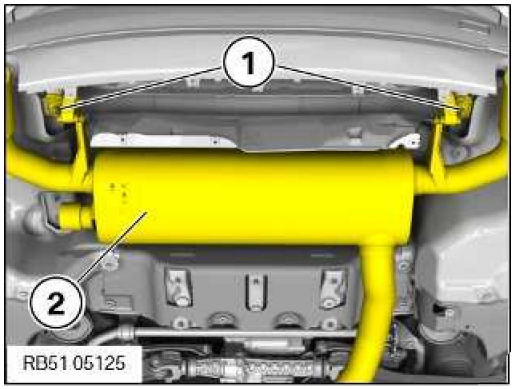
- Detach the exhaust temperature sensor (1) from the exhaust system.



- Release the diesel particulate sensor (1) from the exhaust system and place to one side.
- Release the nitrogen oxide sensor (2) from the exhaust system and place to one side.



- Release the nut (1) on the rear axle support.

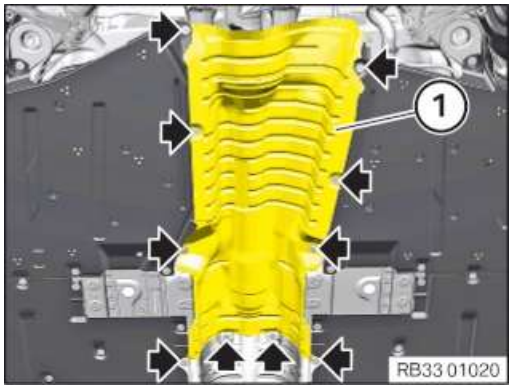


- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

3 – Remove heat shield at rear.

NOTICE

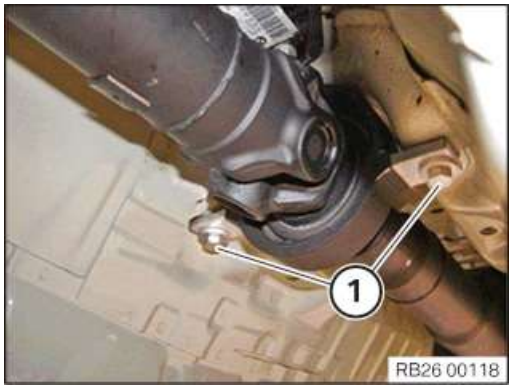
Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

4 – Release propeller shaft centre mount

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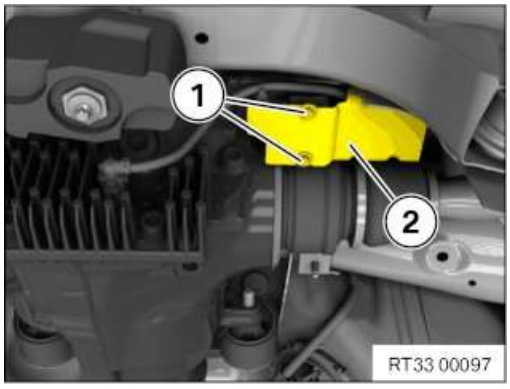


- Unscrew the bolts (1) from the centre mount approx. 1 cm.
  Do not unscrew the bolts completely.

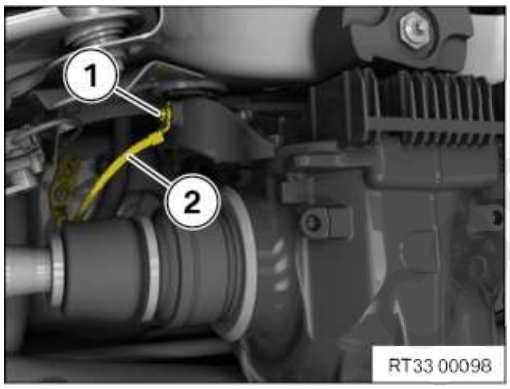
5 – Releasing the wiring harness from the M Sport differential

NOTICE

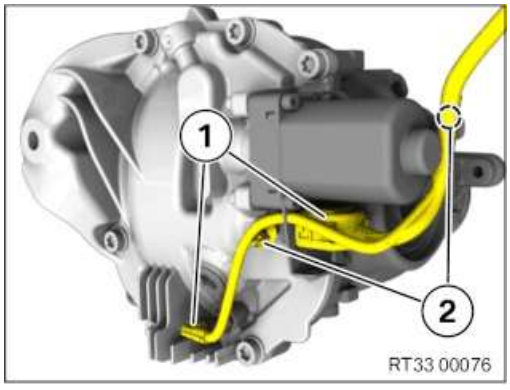
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Loosen screws (1).
- Remove heat shield (2).



- Release the screw (1).
- Detach the ground strap (2) from the rear axle differential.



- Unlock and disconnect plug connections (1).
- Release cable from brackets (2).

6 – Lowering rear axle differential

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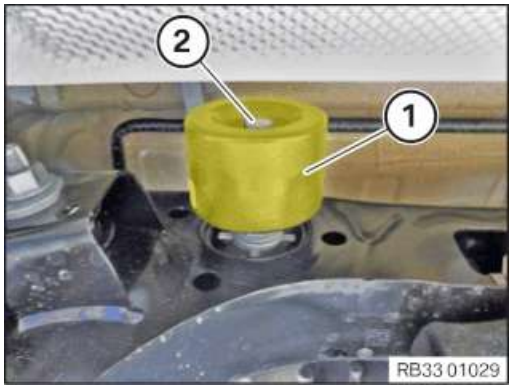
RISK OF DAMAGE

Damage to rear axle differential.

If the rear axle differential drops down, persons can be injured or the rear axle differential can be damaged.

- Secure the rear axle differential using a tensioning strap.

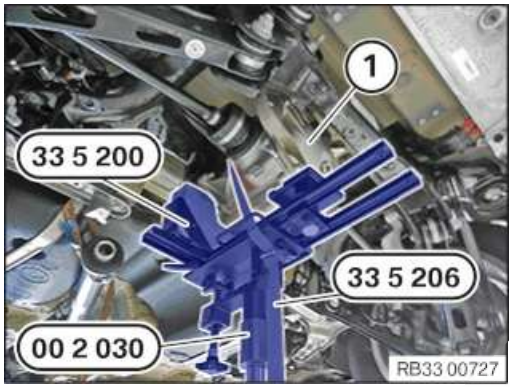
▸ **Remove vibration absorber**



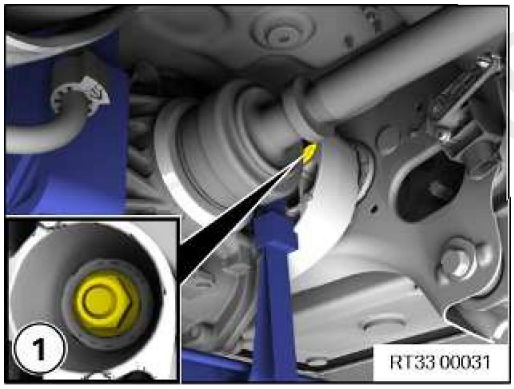
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

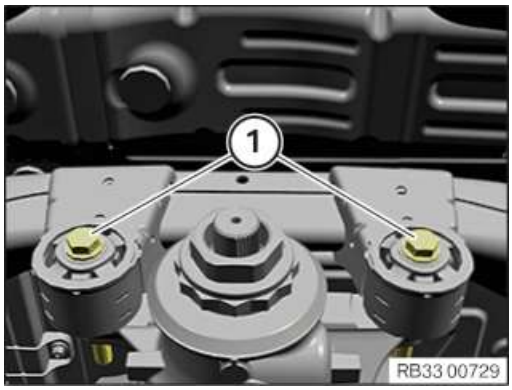
- Release the screw (2).
- Remove the vibration absorber (1).



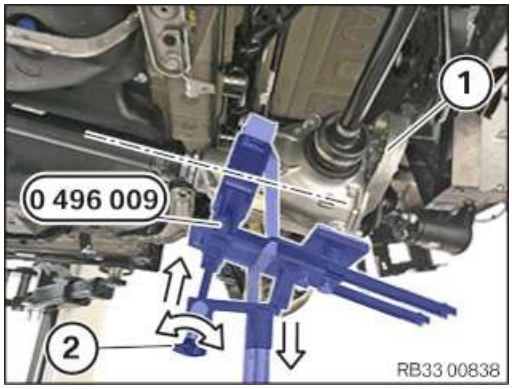
- Place the special tool onto the universal jack 0 490 133 (00 2 030).
- Support the rear axle differential (1) with the special tool .
- Secure the rear axle differential (1) with a tensioning strap on the special tool .



- Loosen nut (1) on the rear axle support at rear.
- Remove screw.



- Loosen screws (1) on rear axle support at front.



- Lower rear axle differential (1) using the special tool only until the cover on the rear axle differential is accessible.

  During lowering, twist the adjusting screw (2) to slightly raise the rear axle differential at the front.

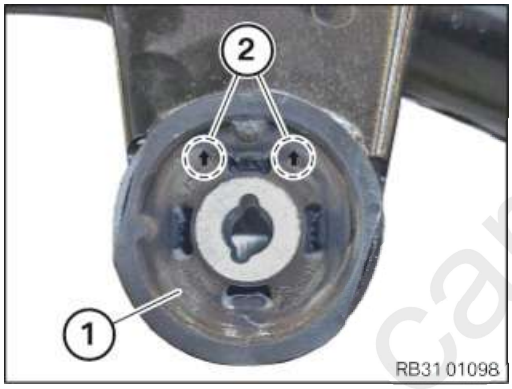
MAIN WORK

7 – Removing the rubber mount for the rear axle differential mounting at the front



- Pull rubber bearing out from the rear axle support using special tools , , and and remove.
- Ensure that the special tool is correctly positioned on the rear axle support.

8 – Noting the installation position of the front rubber mount for the rear axle support



- Observe the installation position of the rubber mount (1) in the rear axle support.

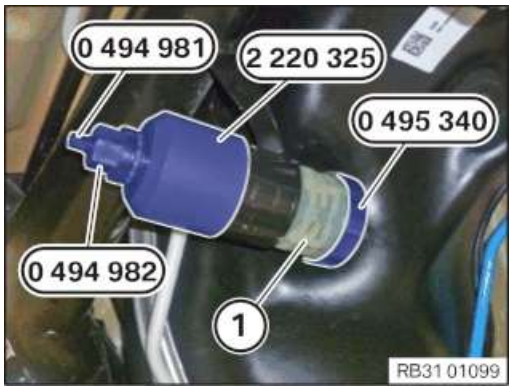
  The arrows (2) on the rubber mount point vertically upwards.

Position of the rubber mount in the rear axle support

If necessary, make a mark on the outer area of the rubber mount to check the installation position.

Permissible rotation	-7 ° ... +7 °

9 – Installing the rubber mounts for the front rear axle differential mounting

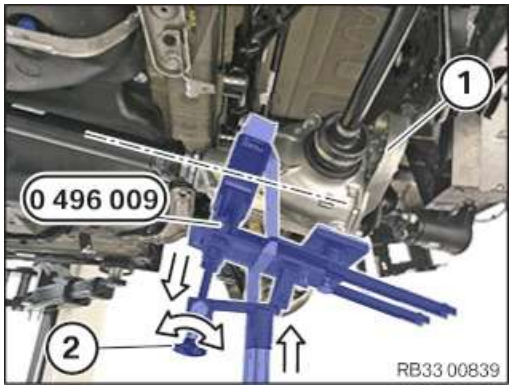


- Pull the rubber mounting into the rear axle carrier using special tools , , and .
- Ensure that the special tool is correctly positioned on the rear axle support.
- Remove special tools.

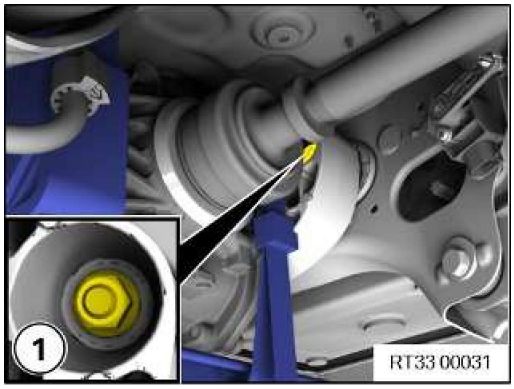
POSTPROCESSES

10 – Lifting the rear axle differential

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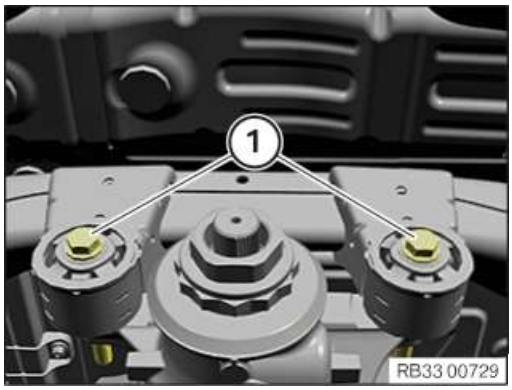


- Lift and position the rear axle differential (1)with the special tool .
- While lifting the rear axle differential (1), twist the adjusting screw (2) to correct the installation position.



- Insert screw from behind.
- Renew nut (1).

  Parts: Nut
- Screw on the nut (1) by several turns onto the screw.

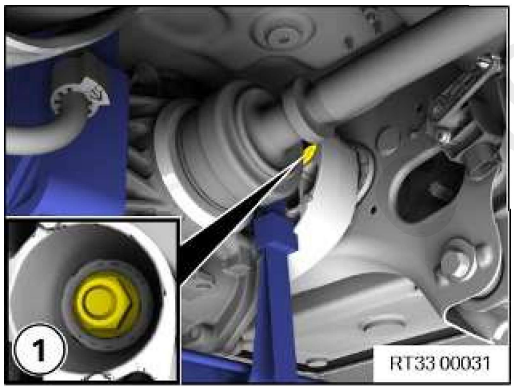


- Renew screws (1).

  Parts: Screws
- Screw in the screws (1) by hand.
- Tighten the screws (1).

Rear differential to rear axle carrier, front

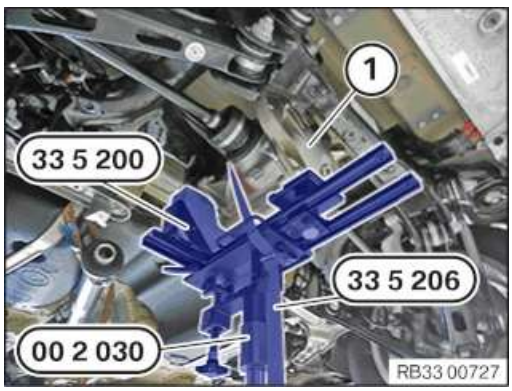
M12	Renew screw.	Tightening torque	100 Nm



- Tighten nut (1).

Rear differential to rear axle carrier, rear

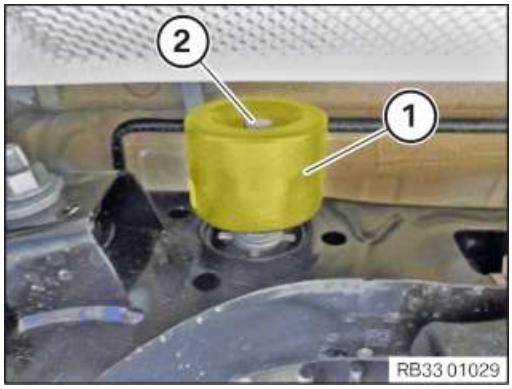
M14	Renew nut.	Tightening torque.	175 Nm



- Loosen and remove the tensioning strap from the rear axle differential (1).
- Lower and remove the special tools 0 490 133 (00 2 030) and .

▸ **install the vibration absorber**

mdiagn.com



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Position the (1) vibration absorber.
- Renew the screw (2).

  Parts: Screw
- Tighten down screw (2).

Vibration absorber to rear axle

M8	Renew screw.	Tightening torque	28 Nm

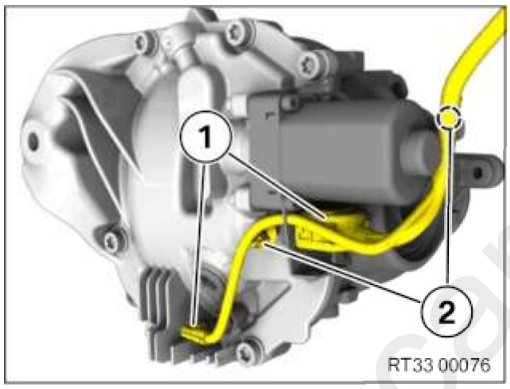
Vibration absorber to rear axle

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

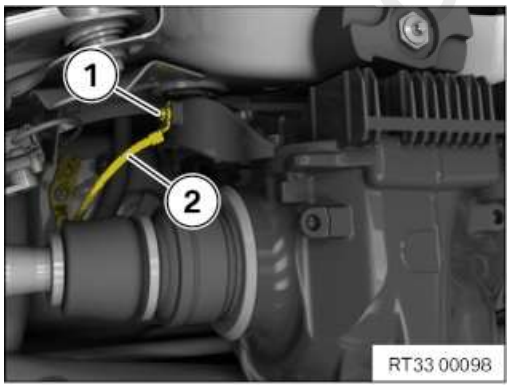
11 – Mounting the wiring harness to the M Sport differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Connect connectors (1) and lock.
- Secure the cables on the brackets (2).

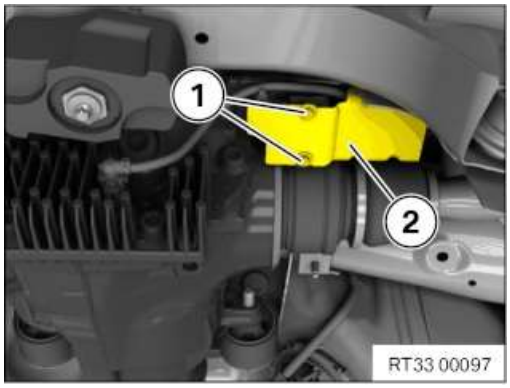


- Position the ground strap (2) on the rear axle differential.
- Tighten down screw (1).

Ground strap to rear axle differential

M6x20		Tightening torque	8 Nm

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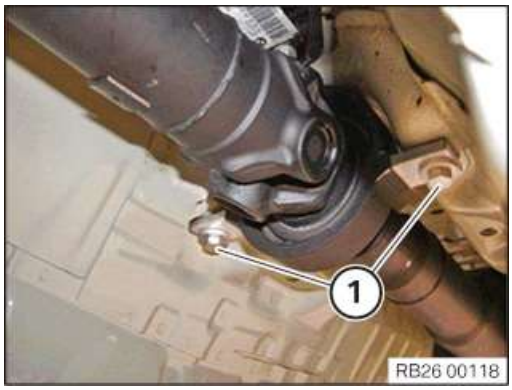


- Position the heat shield (2).
- Tighten the screws (1).

Heat shield to servomotor

M5x10		Tightening torque	5 Nm

12 – Attach the centre mount of the propeller shaft



- Tighten the screws (1).

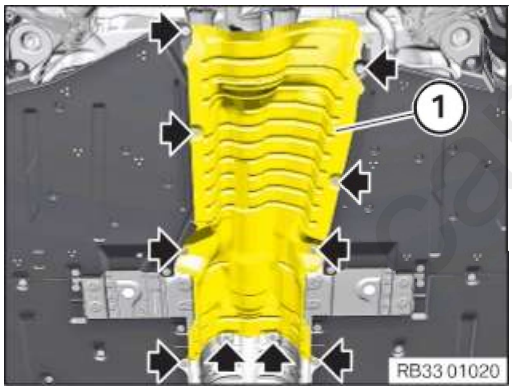
Centre mount to body

M8		Tightening torque	19 Nm

13 – Installing the rear heat shield

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

14 – Installing the exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

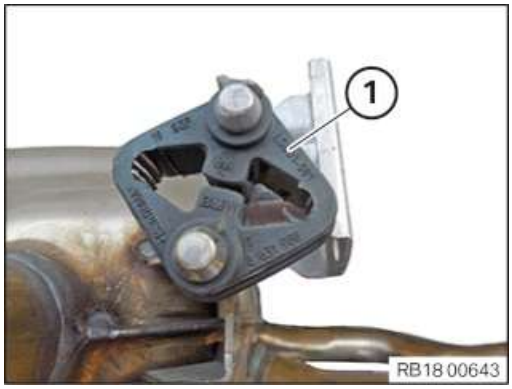
Heavy component.

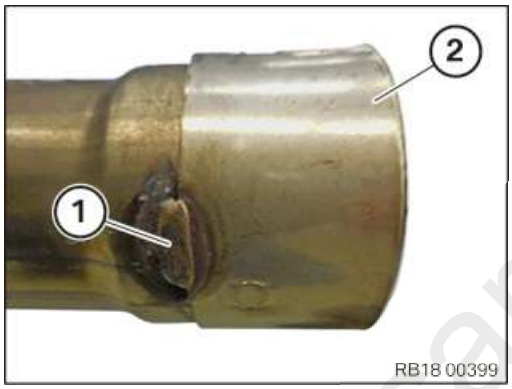
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.





NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

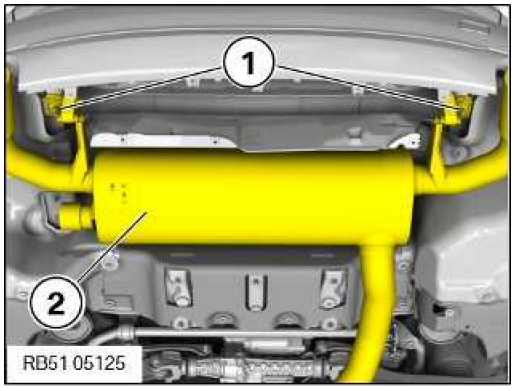
CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a conventional tool.
- Remove the clamp (2).



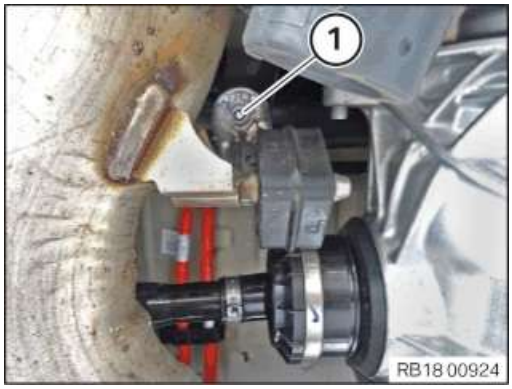
- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

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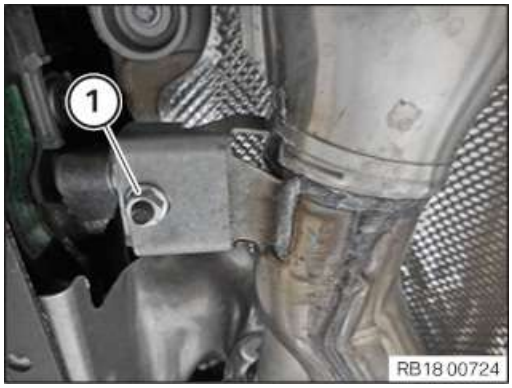


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

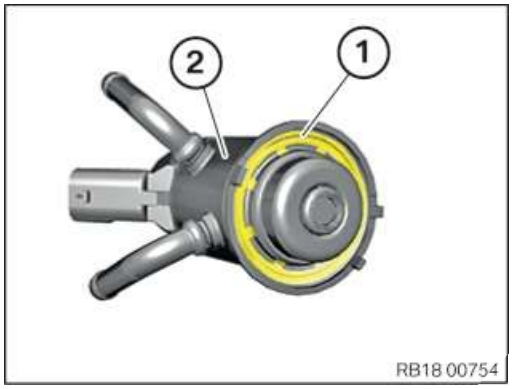
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

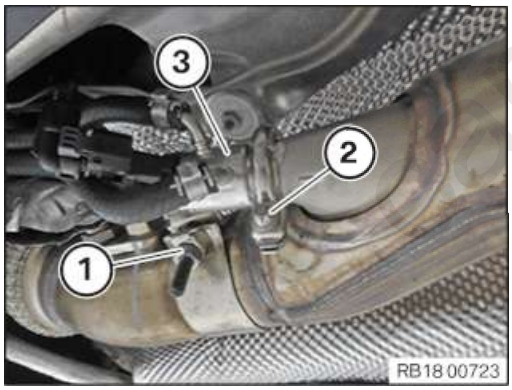
Exhaust system to transmission

M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

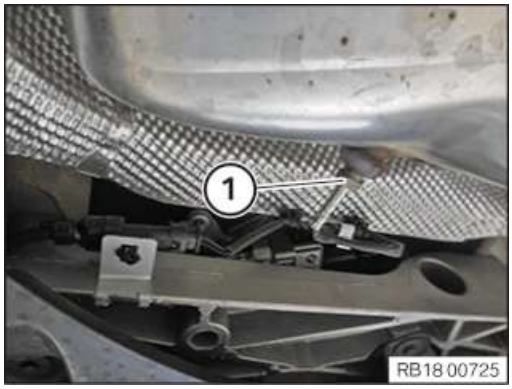
- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

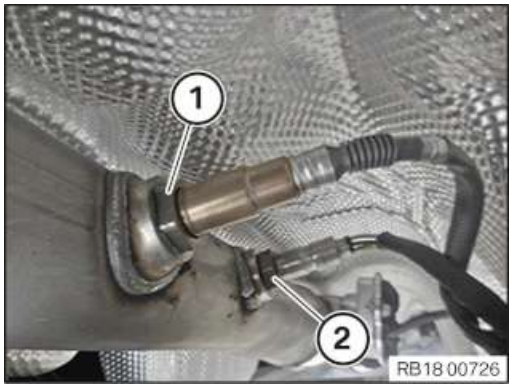
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- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm



- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

Sensor		Tightening torque	50 Nm

- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

15 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Installing the cover of the camber control arm**



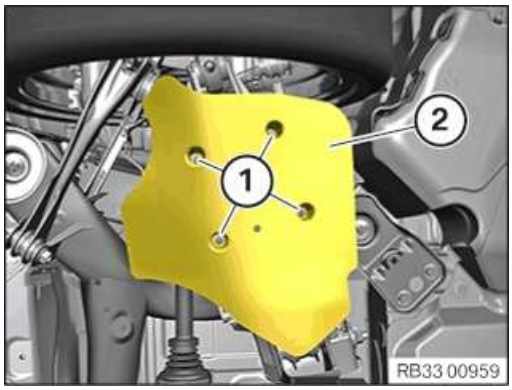
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

Additional Information

Overview of Tightening Torques

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Rear differential to rear axle carrier, front			Used in step 10
M12	Renew screw.	Tightening torque	100 Nm

Rear differential to rear axle carrier, rear			Used in step 10
M14	Renew nut.	Tightening torque.	175 Nm

Vibration absorber to rear axle			Used in step 10
M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle			Used in step 10
M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Ground strap to rear axle differential			Used in step 11
M6x20		Tightening torque	8 Nm

Heat shield to servomotor			Used in step 11
M5x10		Tightening torque	5 Nm

Centre mount to body			Used in step 12
M8		Tightening torque	19 Nm

Heat shield to undercarriage			Used in step 13
Screws and nuts		Tightening torque	3 Nm

Rear silencer to body / bumper support			Used in step 14
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 14
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 14
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 14
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 14
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 14
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 14
Sensor		Tightening torque	50 Nm

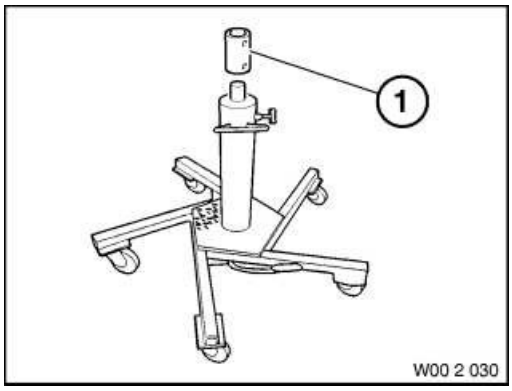
Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 14
Sensor		Tightening torque	55 Nm

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Cover to camber control arm			Used in step 15
M6	Replace nuts.	Tightening torque	6 Nm

Overview of Special Tools

0 490 133 (00 2 030) Device



Common	Used in step 610
Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

Overview Technical Data

Position of the rubber mount in the rear axle support	Used in step 8
If necessary, make a mark on the outer area of the rubber mount to check the installation position.	
Permissible rotation	-7 ° ... +7 °

Links

Repair instructions	Used in step
00 .. ... Raising the vehicle using a vehicle hoist	

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

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

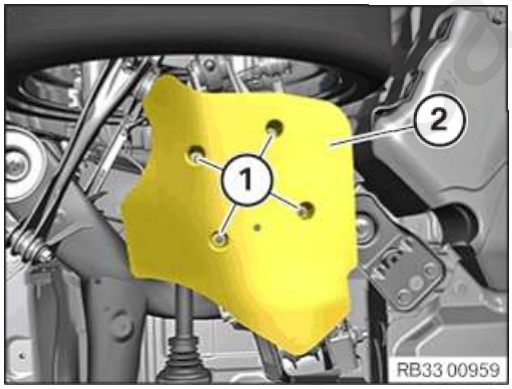
- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

PRELIMINARY WORK

1 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.



▸ **Removing the cover of camber control arm**

- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

2 – Remove exhaust system

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

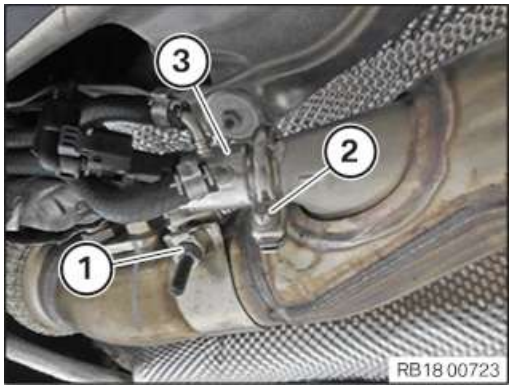
- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

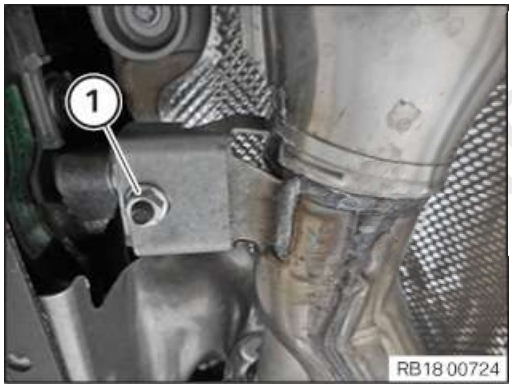
Heavy component.

Heavy components can lead to injury or damage.

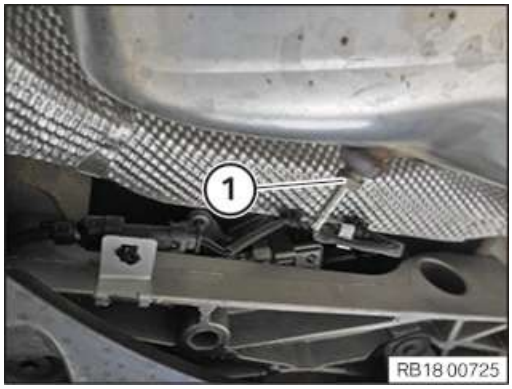
- Remove and install heavy components with the aid of another person/other persons.



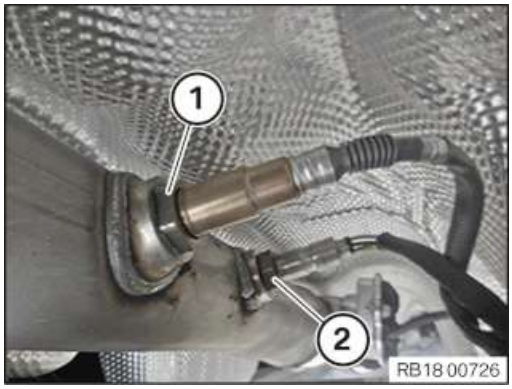
- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3)from the exhaust system and place to one side.



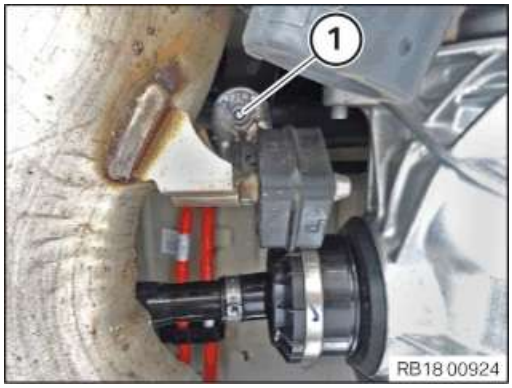
- Loosen nut (1).



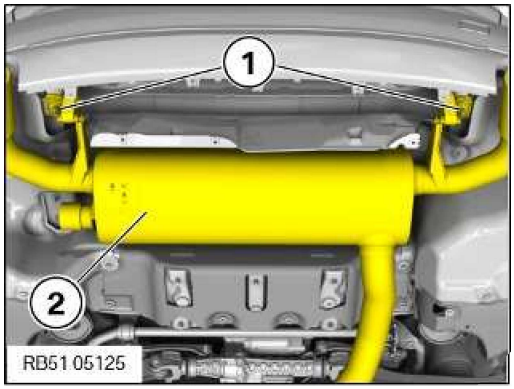
- Detach the exhaust temperature sensor (1) from the exhaust system.



- Release the diesel particulate sensor (1) from the exhaust system and place to one side.
- Release the nitrogen oxide sensor (2) from the exhaust system and place to one side.



- Release the nut (1) on the rear axle support.

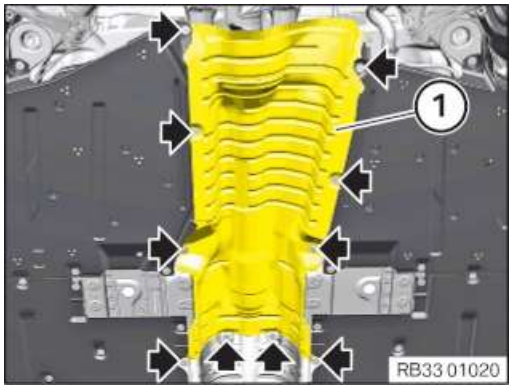


- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

3 – Remove heat shield at rear.

NOTICE

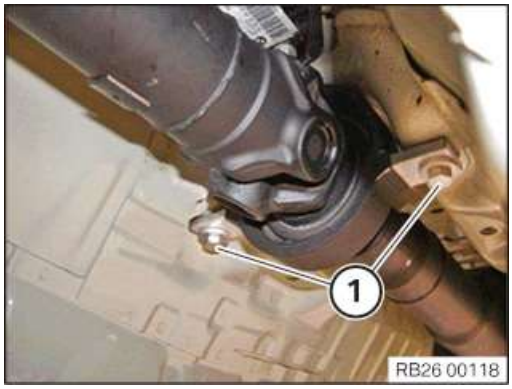
Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

4 – Release propeller shaft centre mount

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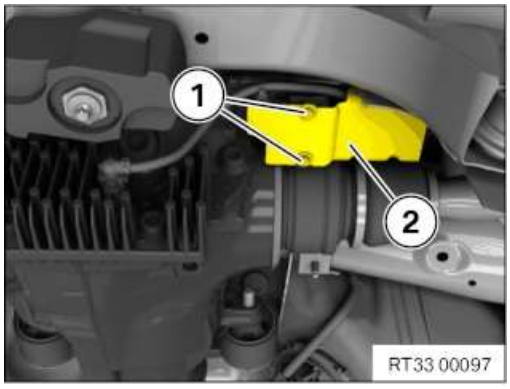


- Unscrew the bolts (1) from the centre mount approx. 1 cm.
  Do not unscrew the bolts completely.

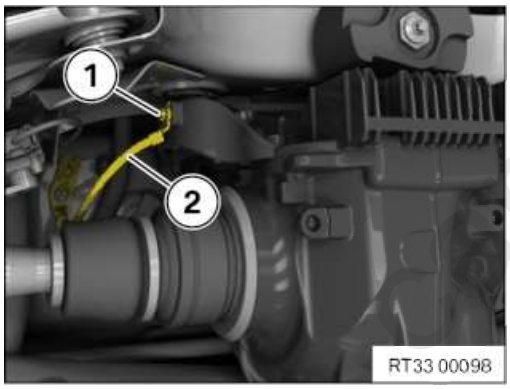
5 – Releasing the wiring harness from the M Sport differential

NOTICE

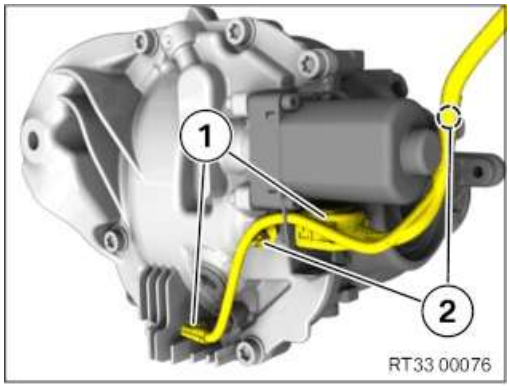
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Loosen screws (1).
- Remove heat shield (2).



- Release the screw (1).
- Detach the ground strap (2) from the rear axle differential.



- Unlock and disconnect plug connections (1).
- Release cable from brackets (2).

6 – Lowering rear axle differential

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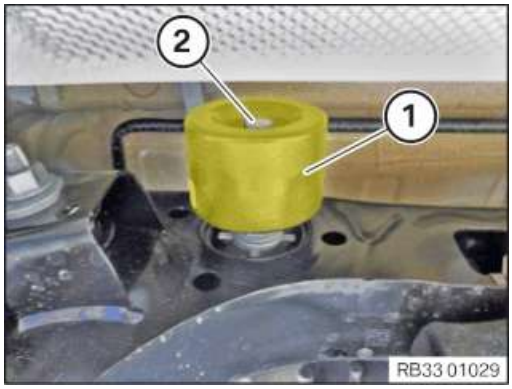
RISK OF DAMAGE

Damage to rear axle differential.

If the rear axle differential drops down, persons can be injured or the rear axle differential can be damaged.

- Secure the rear axle differential using a tensioning strap.

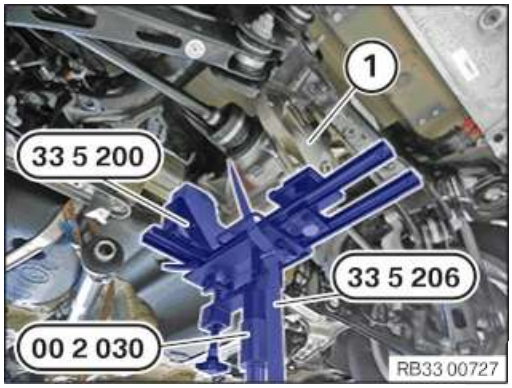
▸ **Remove vibration absorber**



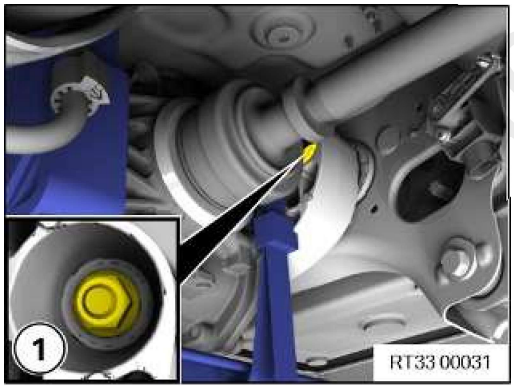
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

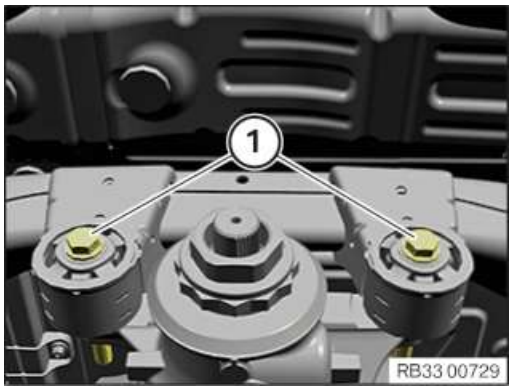
- Release the screw (2).
- Remove the vibration absorber (1).



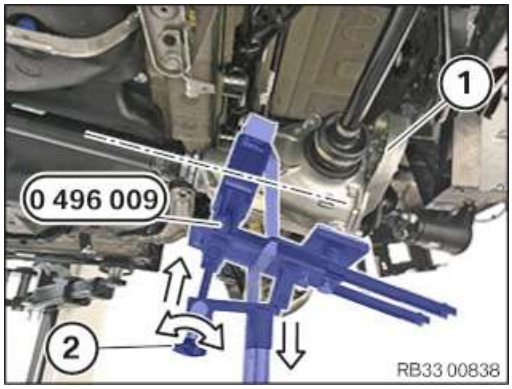
- Place the special tool onto the universal jack 0 490 133 (00 2 030).
- Support the rear axle differential (1) with the special tool .
- Secure the rear axle differential (1) with a tensioning strap on the special tool .



- Loosen nut (1) on the rear axle support at rear.
- Remove screw.



- Loosen screws (1) on rear axle support at front.

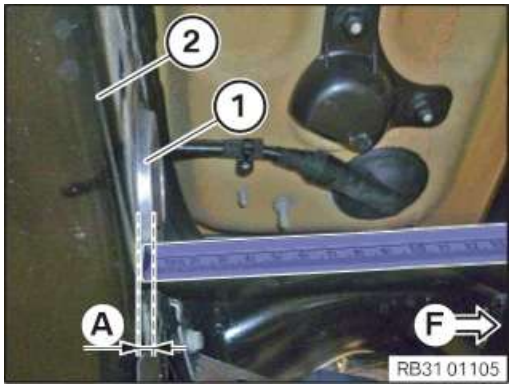


- Lower rear axle differential (1) using the special tool only until the cover on the rear axle differential is accessible.

  During lowering, twist the adjusting screw (2) to slightly raise the rear axle differential at the front.

MAIN WORK

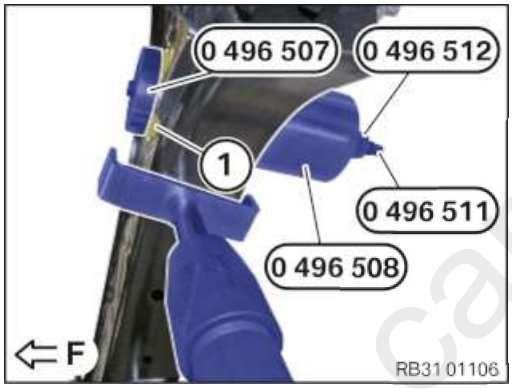
7 – Measuring the installation position (protrusion)



- Before removing, the protrusion (A) of rubber mount or hydro mount (1) on rear axle support (2) **must** be measured.

  (F) = Direction of travel

8 – Removing the rubber mount and the hydro mount at the rear of the rear axle differential



- Pull out and remove rubber mount or hydro mount (1) using special tools , , and from the rear axle support.

  (F) = Direction of travel

9 – Observing the installation position of the rubber mount or hydro mount (rear) to the rear axle support



- The arrows (2) on the rubber mount and hydro mount (1) point upwards.

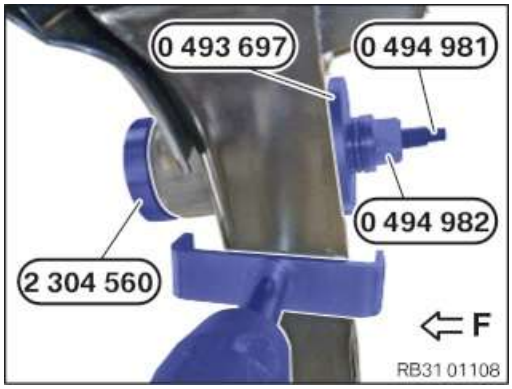
Note: To check the installation position, if necessary, place a mark on the outer area of the rubber mount and hydro mount respectively.

Position of the rubber mount or hydraulic bearing for rear axle differential

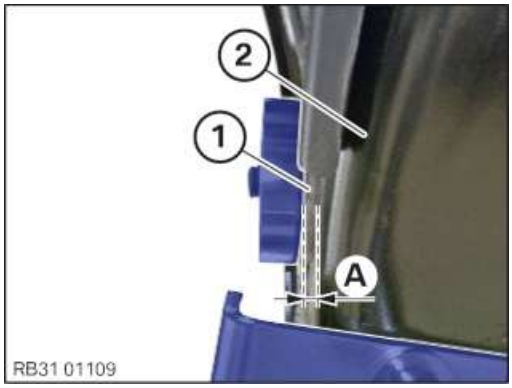
Permissible rotation in relation to the vertical	-5 ° ... +5 °

10 – Installing the rubber mount or hydro mount on the rear axle differential

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- Position the rubber mount or hydro mount using special tools , , and on the rear axle support.
- (F) = Direction of travel



- Draw rubber mount or hydro mount (1) into rear axle support (2) using special tools until protrusion (A) is reached.

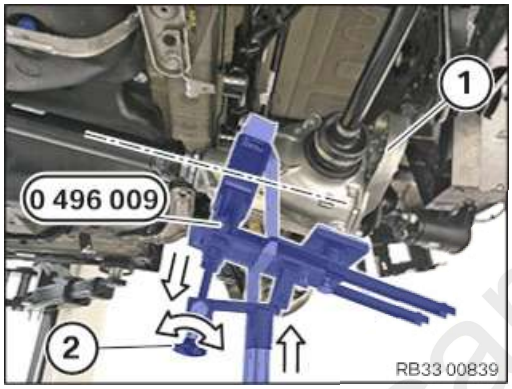
  The dimension must not be less than (A).

Note: Protrusion (A) was measured before removal.

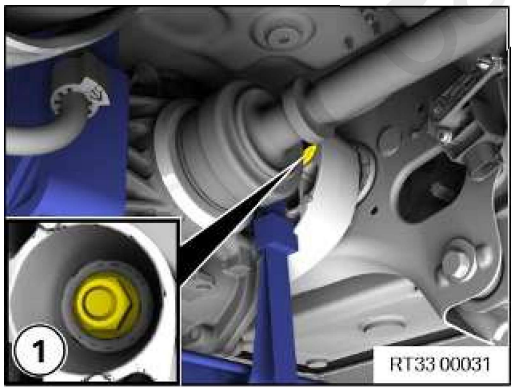
- Remove special tools.

POSTPROCESSES

11 – Lifting the rear axle differential



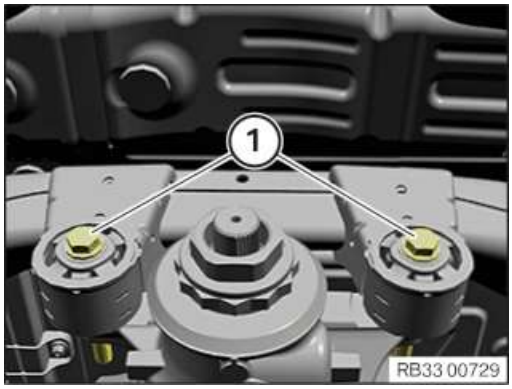
- Lift and position the rear axle differential (1)with the special tool .
- While lifting the rear axle differential (1), twist the adjusting screw (2) to correct the installation position.



- Insert screw from behind.
- Renew nut (1).

  Parts: Nut
- Screw on the nut (1) by several turns onto the screw.

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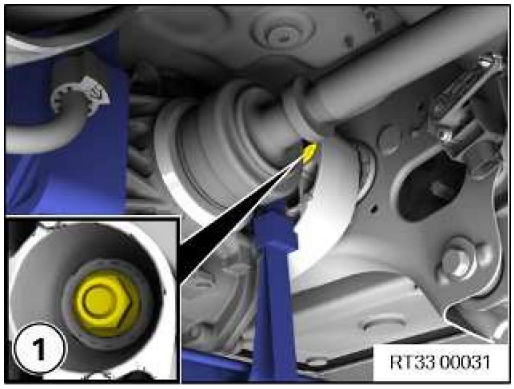


- Renew screws (1).

  Parts: Screws
- Screw in the screws (1) by hand.
- Tighten the screws (1).

Rear differential to rear axle carrier, front

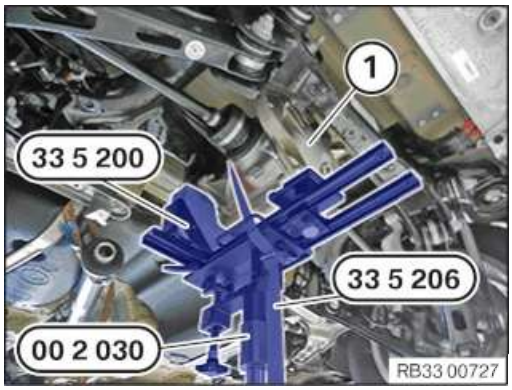
M12	Renew screw.	Tightening torque	100 Nm



- Tighten nut (1).

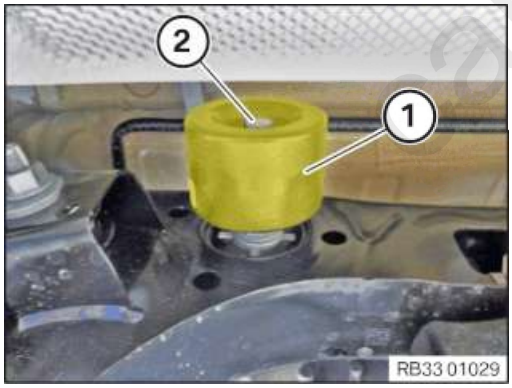
Rear differential to rear axle carrier, rear

M14	Renew nut.	Tightening torque.	175 Nm



- Loosen and remove the tensioning strap from the rear axle differential (1).
- Lower and remove the special tools 0 490 133 (00 2 030) and .

▸ **install the vibration absorber**



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Position the (1) vibration absorber.
- Renew the screw (2).

  Parts: Screw
- Tighten down screw (2).

Vibration absorber to rear axle

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle

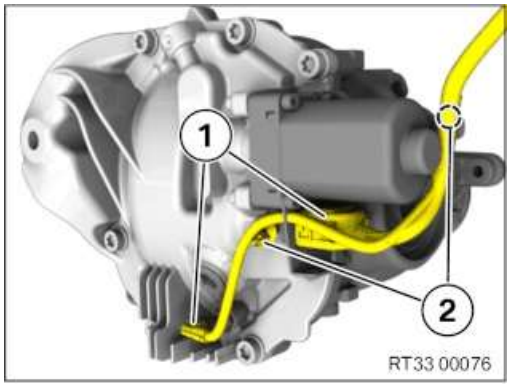
M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

12 – Mounting the wiring harness to the M Sport differential

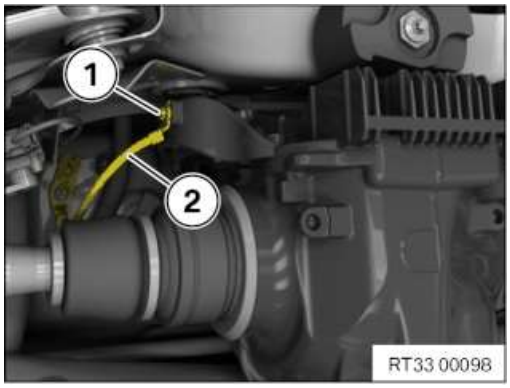
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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



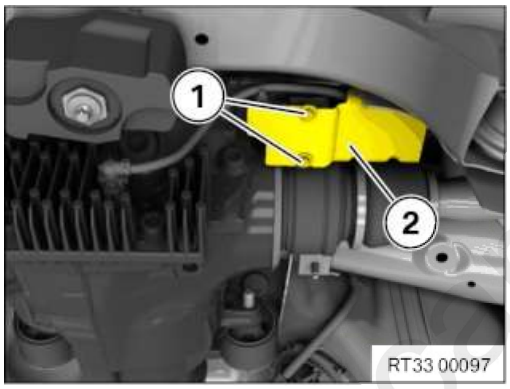
- Connect connectors (1) and lock.
- Secure the cables on the brackets (2).



- Position the ground strap (2) on the rear axle differential.
- Tighten down screw (1).

Ground strap to rear axle differential

M6x20		Tightening torque	8 Nm

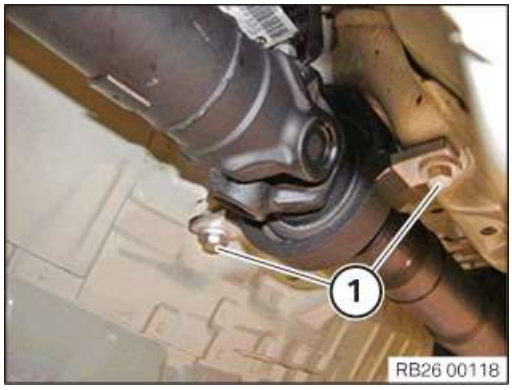


- Position the heat shield (2).
- Tighten the screws (1).

Heat shield to servomotor

M5x10		Tightening torque	5 Nm

13 – Attach the centre mount of the propeller shaft



- Tighten the screws (1).

Centre mount to body

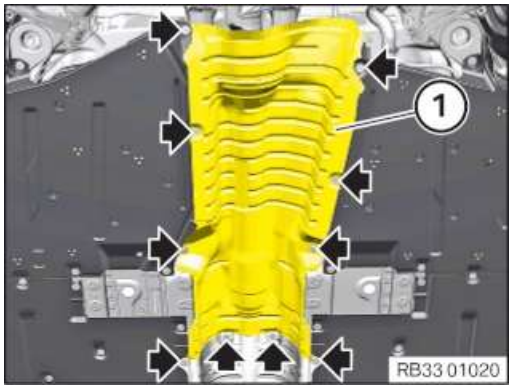
M8		Tightening torque	19 Nm

14 – Installing the rear heat shield

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

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- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

15 – Installing the exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

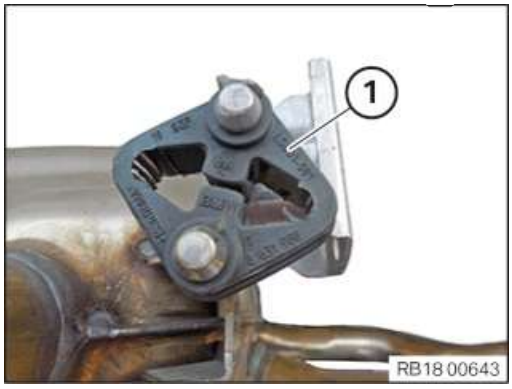
Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.



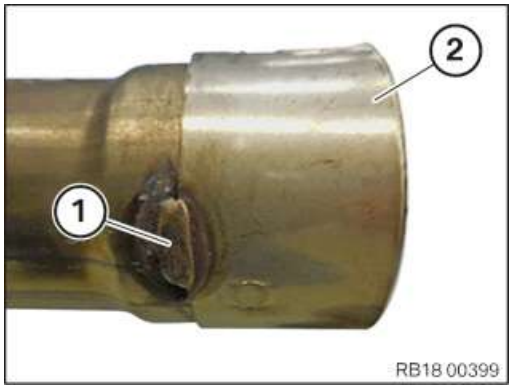
NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

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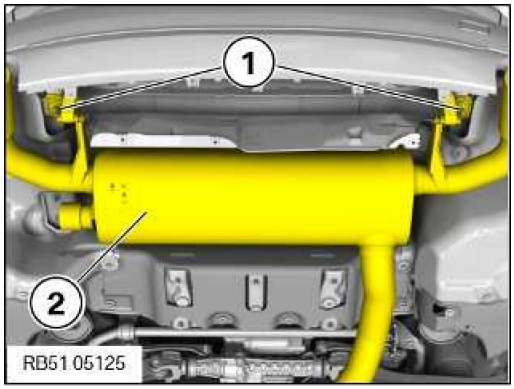
CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a conventional tool.
- Remove the clamp (2).

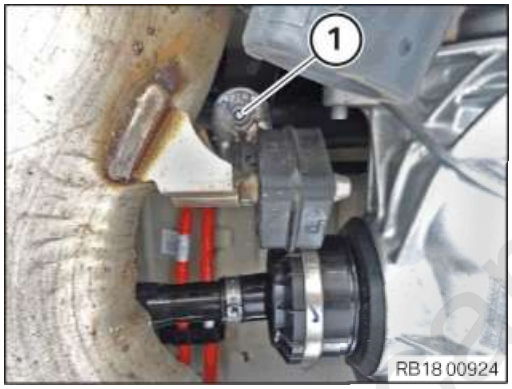


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

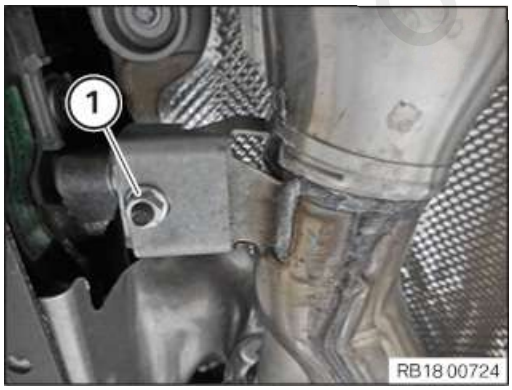


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

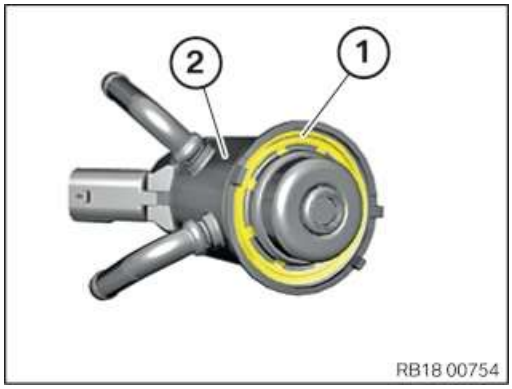
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

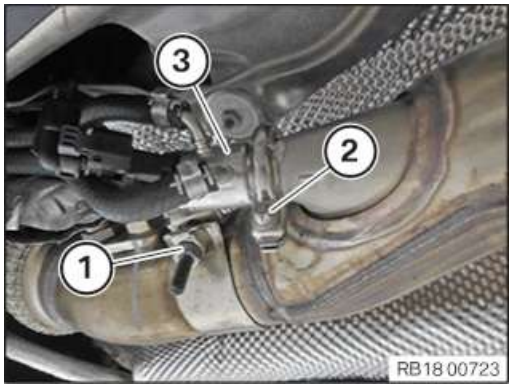
Exhaust system to transmission

M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

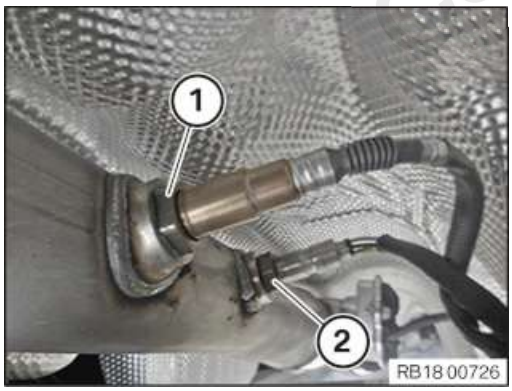
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm



- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm



- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

Sensor		Tightening torque	50 Nm

- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

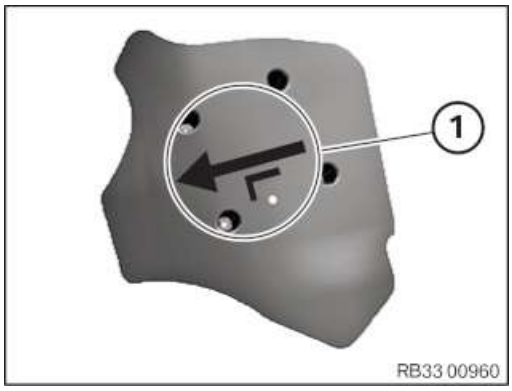
16 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Installing the cover of the camber control arm**

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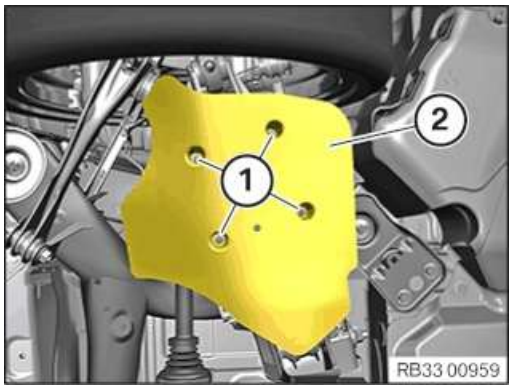
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

Additional Information

Overview of Tightening Torques

Rear differential to rear axle carrier, front — Used in step 11

M12	Renew screw.	Tightening torque	100 Nm

Rear differential to rear axle carrier, rear — Used in step 11

M14	Renew nut.	Tightening torque.	175 Nm

Vibration absorber to rear axle — Used in step 11

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle — Used in step 11

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Ground strap to rear axle differential — Used in step 12

M6x20		Tightening torque	8 Nm

Heat shield to servomotor — Used in step 12

M5x10		Tightening torque	5 Nm

Centre mount to body — Used in step 13

M8		Tightening torque	19 Nm

Heat shield to undercarriage — Used in step 14

Screws and nuts		Tightening torque	3 Nm

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Rear silencer to body / bumper support			Used in step 15
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 15
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 15
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 15
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 15
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 15
Sensor		Tightening torque	30 Nm

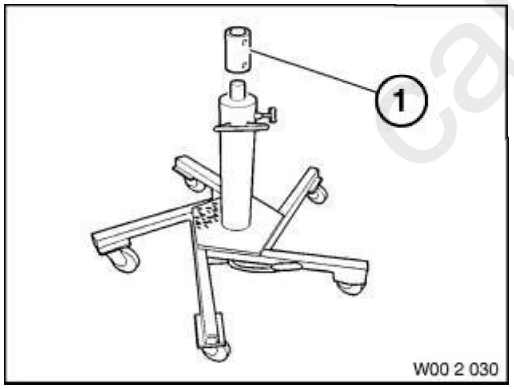
Diesel particulate sensor to exhaust system			Used in step 15
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 15
Sensor		Tightening torque	55 Nm

Cover to camber control arm			Used in step 16
M6	Replace nuts.	Tightening torque	6 Nm

Overview of Special Tools

0 490 133 (00 2 030) Device



Common		Used in step 611
Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012	
Included in the tool or work		
Storage location		
Replaced by		
In connection with		
SI-Number	01 05 90 (207)	

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

Overview Technical Data

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Position of the rubber mount or hydraulic bearing for rear axle differential	Used in step 9
Permissible rotation in relation to the vertical	-5 ° ... +5 °

Links

Repair instructions	Used in step
00 .. ... Raising the vehicle using a vehicle hoist	

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33 21 001 Removing and installing/replacing left output shaft

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- After completion of repair work, check the transmission oil level in the rear axle differential.
- Use only the approved final drive transmission oil.

PRELIMINARY WORK

1 – Removing the rear left wheel

▶ **Removing the wheel**

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TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

  This process is intended to prevent damage to the brake disc.



- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

2 – Remove complete exhaust system

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

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CAUTION

Heavy component.

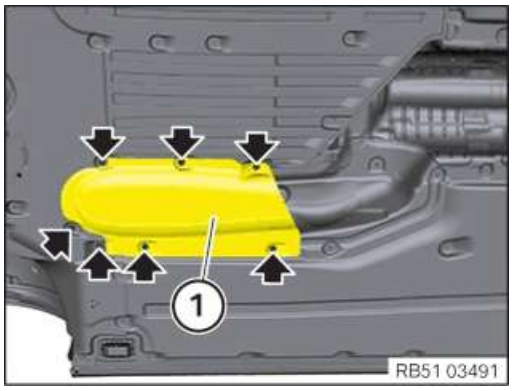
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

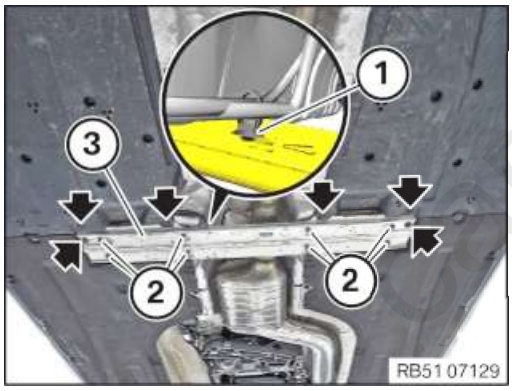
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**



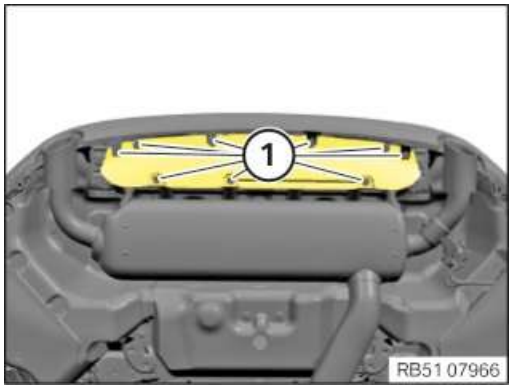
- Remove screws (arrows).

NOTICE

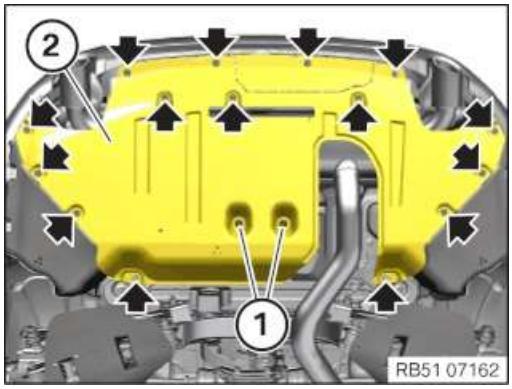
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

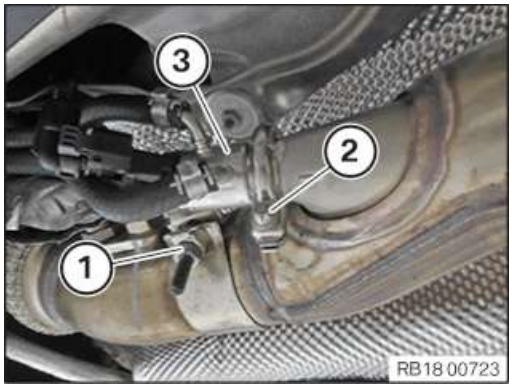
▸ **Removing the rear diffuser**



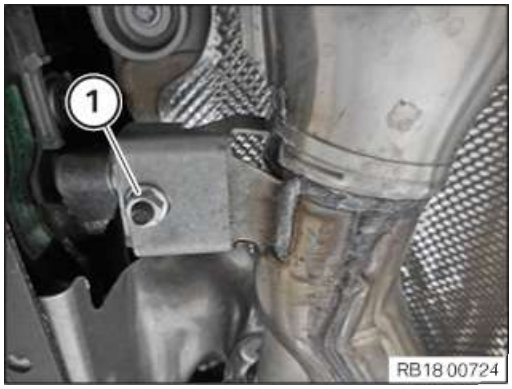
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



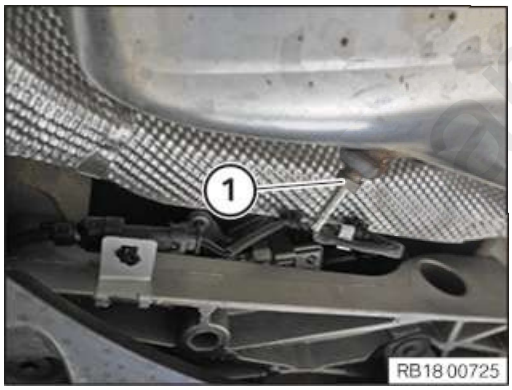
- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).



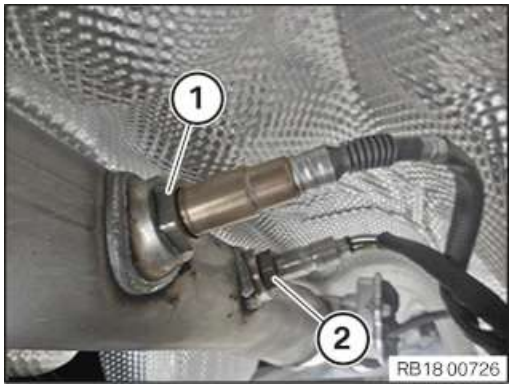
- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.



- Loosen nut (1).

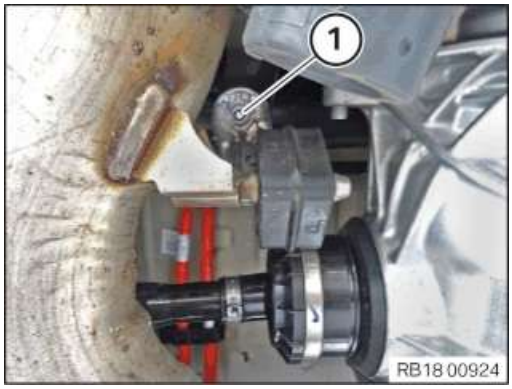


- Detach the exhaust temperature sensor (1) from the exhaust system.

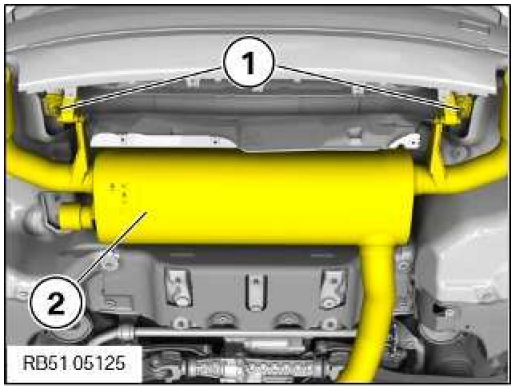


- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.

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- Release the nut (1) on the rear axle support.



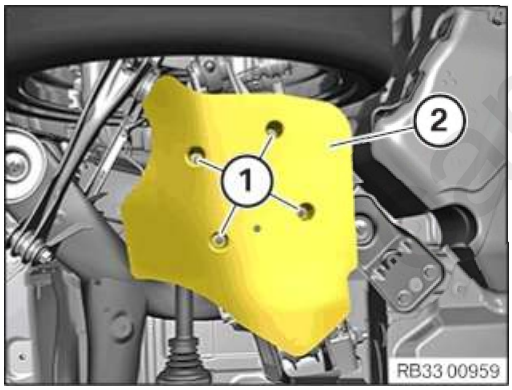
- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

3 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover of camber control arm**

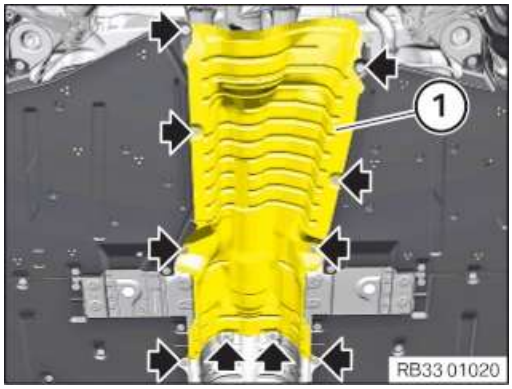


- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

4 – Remove heat shield at rear.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

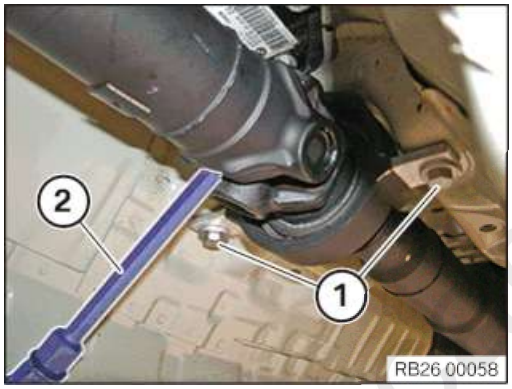
5 – Releasing the propeller shaft from the rear axle differential

RISK OF DAMAGE

Damage to propeller shaft during removal.

Non-observance of the removal guidelines for the propeller shaft on the rear axle differential may cause severe damage.

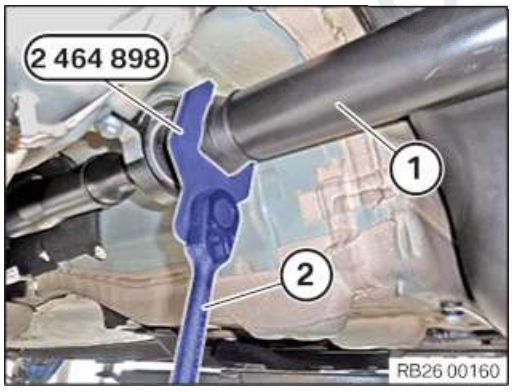
- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened on the recessed nut only and exclusively in the direction of rotation otherwise the anti-twist lock of the bi-hexagonal flange nut is damaged.
- In the event of a damaged anti-twist lock on the bi-hexagonal flange nut: Replace the rear axle differential.



- Loosen screws (1).

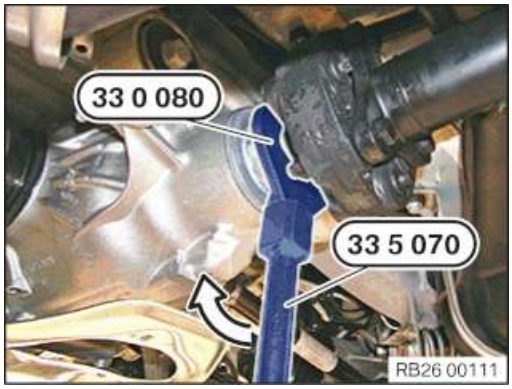
  Do not remove bolts (1) yet.
- **Version A (propeller shaft with wide universal joint):**

  Secure the propeller shaft against twisting at the centre universal joint using a suitable tool (2).



- **Version B (propeller shaft with narrow universal joint):**

  Secure the propeller shaft (1) against twisting by using the special tool 2 464 898 and a suitable tool (2) at the central universal joint.



RISK OF DAMAGE

Damage to rear axle differential.

Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

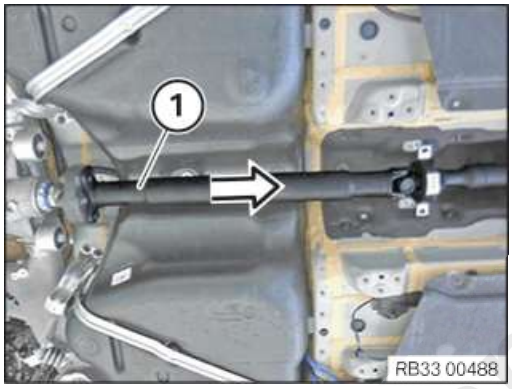
- Do not use the double hexagon head flange nut as counter support.

- Loosen the recessed nut **against** the direction of travel **in clockwise direction** using special tools 0 495 554 (33 5 070) and .

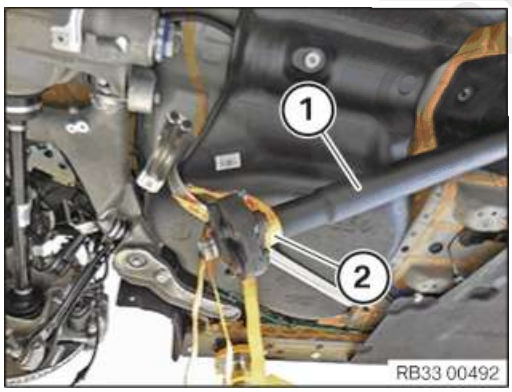
  The bi-hexagonal flange nut must not be used for counter-holding.



- Loosen screws (1) on centre mount.



- Loosen the propeller shaft (1) from the rear axle differential in the direction of the arrow.

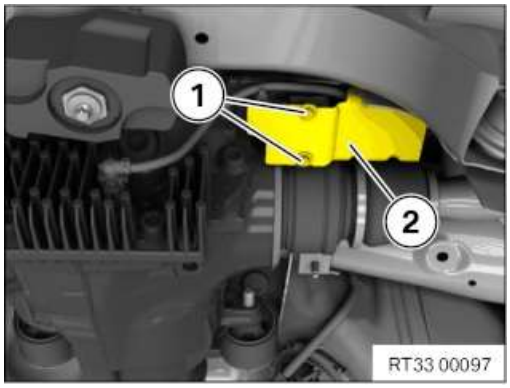


- Tie up the propeller shaft (1) using a tensioning strap (2).

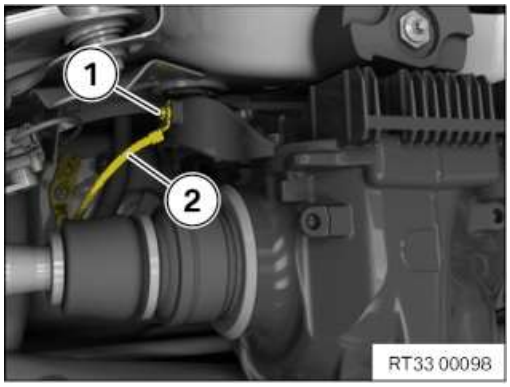
6 – Releasing the wiring harness from the M Sport differential

NOTICE

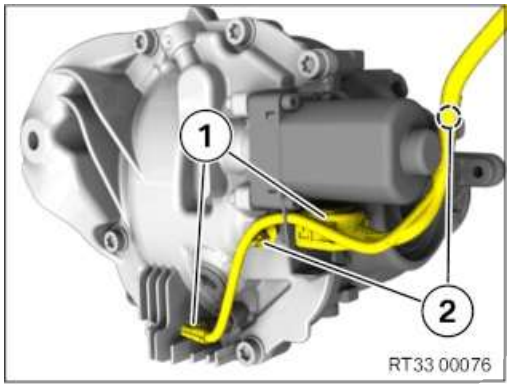
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Loosen screws (1).
- Remove heat shield (2).

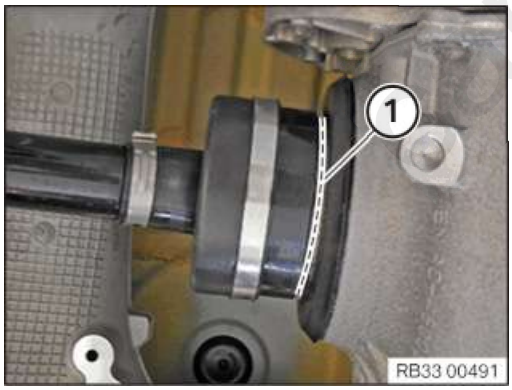


- Release the screw (1).
- Detach the ground strap (2) from the rear axle differential.

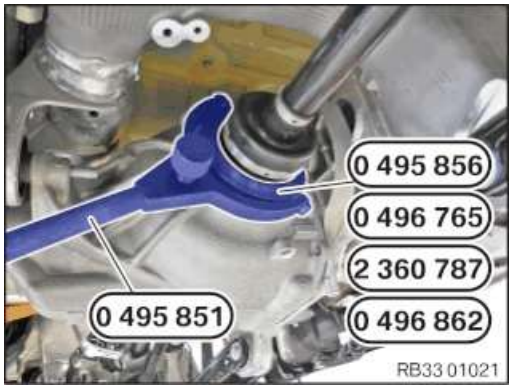


- Unlock and disconnect plug connections (1).
- Release cable from brackets (2).

7 – Detach the output shaft from the rear axle differential



- Position the special tool at the circumferential slot (1) of the output shaft.



- Press out the output shaft with the special tool and the special tool , , or suitable depending on the equipment specification of the output shaft with jerky movements from the rear axle differential.

8 – Lowering rear axle differential

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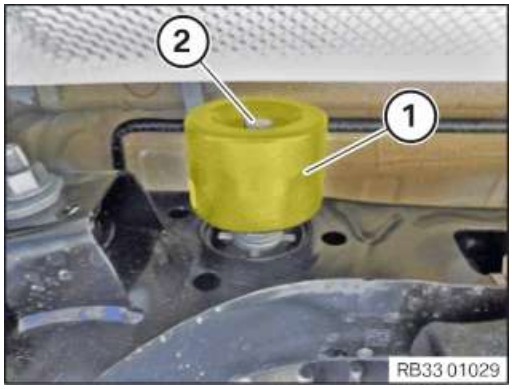
RISK OF DAMAGE

Damage to rear axle differential.

If the rear axle differential drops down, persons can be injured or the rear axle differential can be damaged.

- Secure the rear axle differential using a tensioning strap.

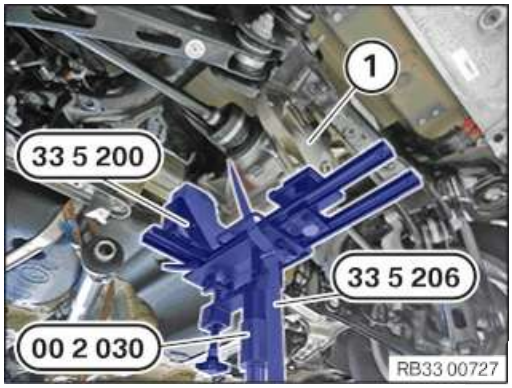
▸ **Remove vibration absorber**



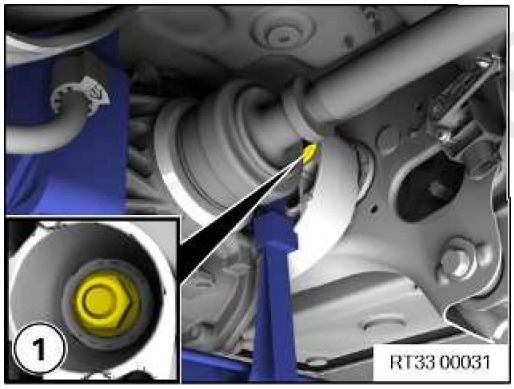
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

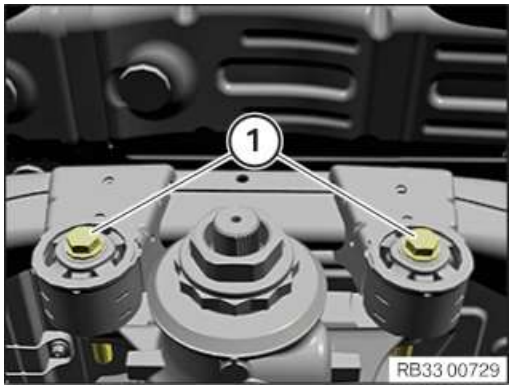
- Release the screw (2).
- Remove the vibration absorber (1).



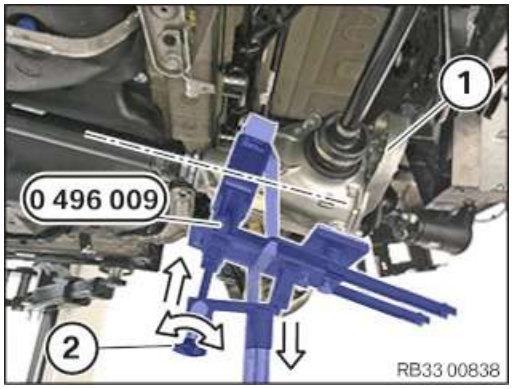
- Place the special tool onto the universal jack 0 490 133 (00 2 030).
- Support the rear axle differential (1) with the special tool .
- Secure the rear axle differential (1) with a tensioning strap on the special tool .



- Loosen nut (1) on the rear axle support at rear.
- Remove screw.



- Loosen screws (1) on rear axle support at front.



- Lower rear axle differential (1) using the special tool only until the cover on the rear axle differential is accessible.

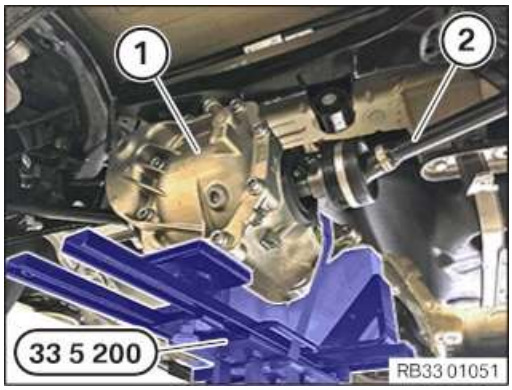
  During lowering, twist the adjusting screw (2) to slightly raise the rear axle differential at the front.

9 – Feed out the left output shaft from the rear axle differential

NOTICE

Description is for right component only. The procedure on the left side is identical.

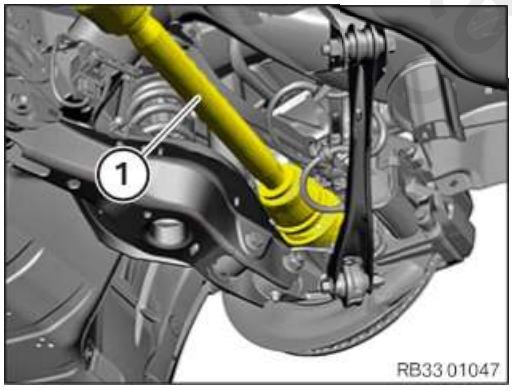
▸ **Pulling the output shaft out from the rear axle differential**



- Turn the rear axle differential (1) to the left with the special tool . Thereby, pull out the output shaft (2).
- Bind the output shaft firmly (2).

MAIN WORK

10 – Remove output shaft



- Secure the output shaft (1) from falling.

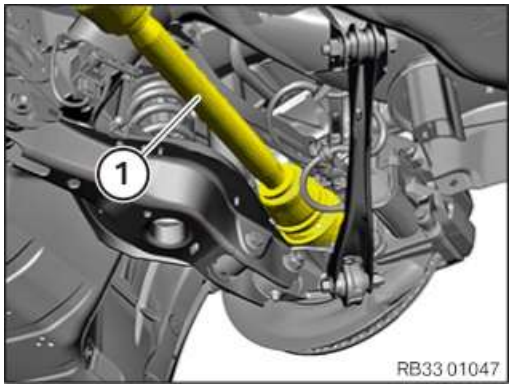
▸ **Loosen the output shaft from the wheel bearing**

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- Press brake pedal.
- Loosen the collar bolt (1).

  The output shaft is released from the wheel bearing.



- Pull the output shaft (1) out and remove it.

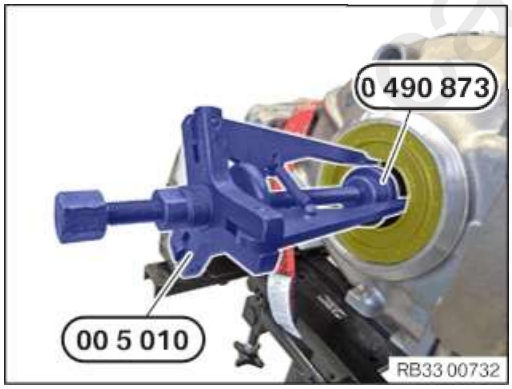
11 – Replace the radial shaft seal for the output shaft

TECHNICAL INFORMATION

Radial shaft seal ring are equipped with an installation protection ring. The installation protection ring is used to protect the sealing lip when installing the output shaft.

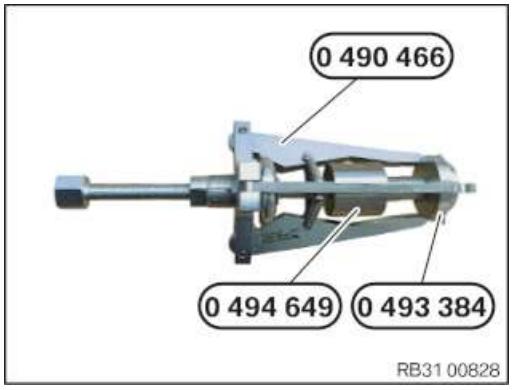
TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.



- **Version A:**

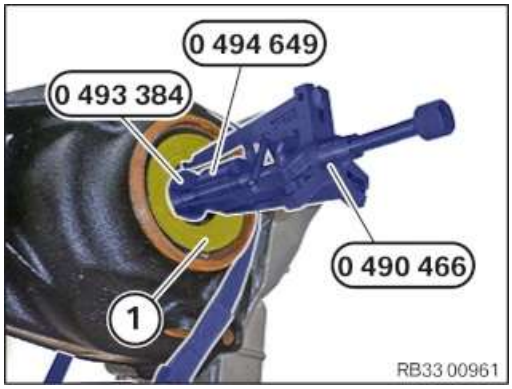
  Pull out and remove the radial shaft seal with special tools and .



- **Version B:**

  Prepare the special tool with the special tools 0 494 649 (21 2 230) (without the screw) and .

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- Pull out the radial shaft seal (1) with special tools , 0 494 649 (21 2 230) and and remove it.



- Renew radial shaft seal (2).

  Parts: Radial seal

- Remove the installation protection ring (1) from the radial shaft seal (2).



- Coat the housing sheet metal flange and the sealing lips of the radial shaft seal with the approved rear axle differential oil.
- Strike the radial shaft seal with the special tool or until it reaches the limit position.
- Remove the special tool or .



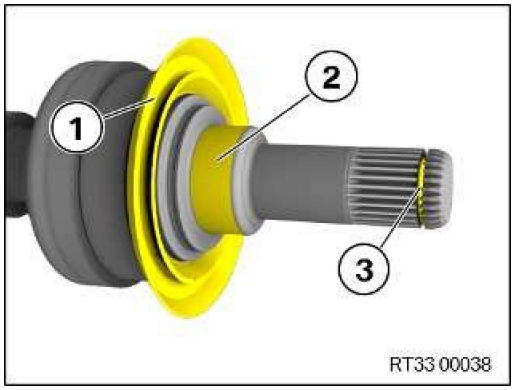
- Insert the installation protection ring (1) into the radial shaft seal (2).
- Make sure installation protection ring (1) does not slip out of radial shaft seal (2).

12 – If reusing: Check the output shaft and replace the circlip

TECHNICAL INFORMATION

It is essential to renew the circlip of the output shaft.

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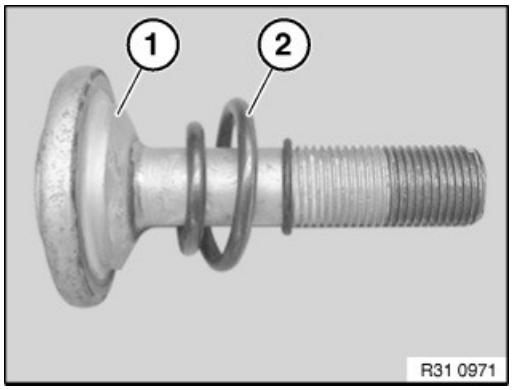
TECHNICAL INFORMATION

Extreme force being required during installation is an indication that the component is damaged or deformed. Check component and replace if necessary.

- Check the gearing of the output shaft for damage and renew damaged parts if necessary.
- Check the dust plate (1) for damage and renew damaged parts as needed.
- Renew the circlip (3).

  Parts: Circlip
- Coat the contact surface (2) using approved rear axle differential oil.

13 – Installing the output shaft

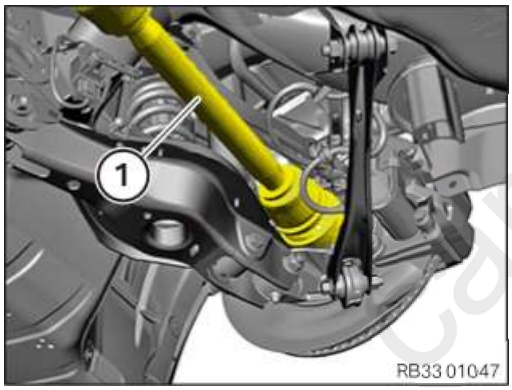


TECHNICAL INFORMATION

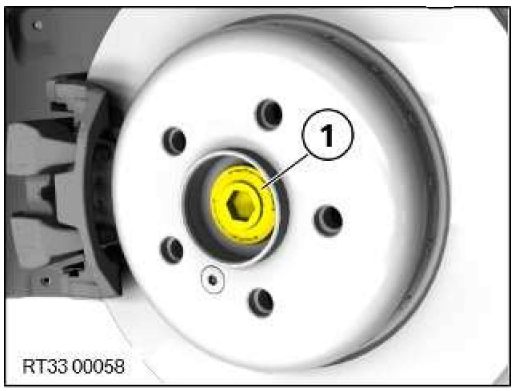
The installation note for front gearing must be observed at all times.

- Renew the collar bolt (1) and the compression spring (2).

  Parts: Collar bolt and compression spring
- Note installation position of compression spring (2).
- Keep the collar bolt (1) and the front gearing of the wheel bearing and the output shaft clean and free of grease.

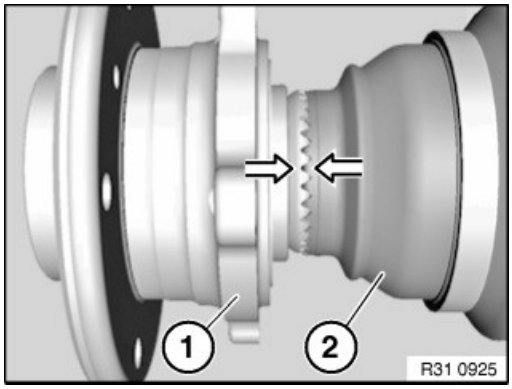


- Feed in the output shaft (1) and position it on the wheel bearing.



- Hand-tighten the collar bolt (1) with the compression spring.

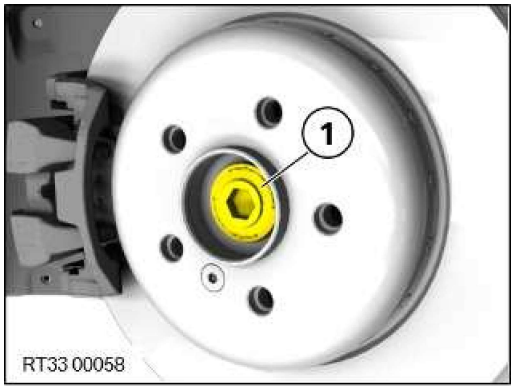
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TECHNICAL INFORMATION

The front gearing of the wheel bearing and output shaft must be installed in an interlocking position (tooth-in-tooth).

- Ensure positive locking by mutual twisting of the wheel bearing (1) and the output shaft (2).



- Press brake pedal.
- Tighten the collar bolt (1).

Output shaft to wheel bearing

M16	Replace the collar bolt.	Jointing torque	210 Nm
		Angle of rotation	90 °

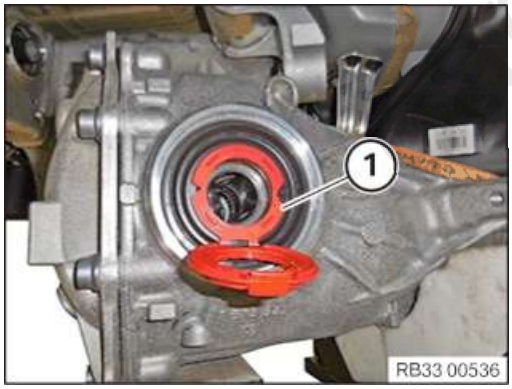
POSTPROCESSES

14 – Inserting the left output shaft in the rear axle differential

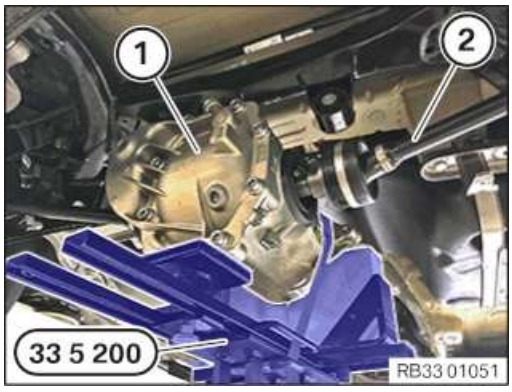
NOTICE

Description is for right component only. The procedure on the left side is identical.

▸ **Feeding the output shaft into the rear axle differential**



- Fold open the assembly protection ring (1).



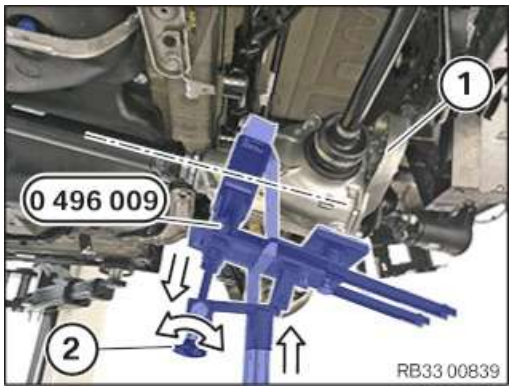
- Turn the rear axle differential (1) with the special tool to the left. While doing so, feed in the output shaft (2).

mdiagn.com

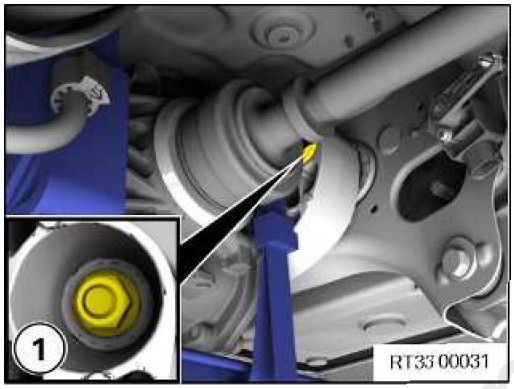


- Pull on the tab of the installation protection ring (1) until one of the two predetermined breaking points breaks.
- Pull out and dispose of the installation protection ring (1).

15 – Lifting the rear axle differential

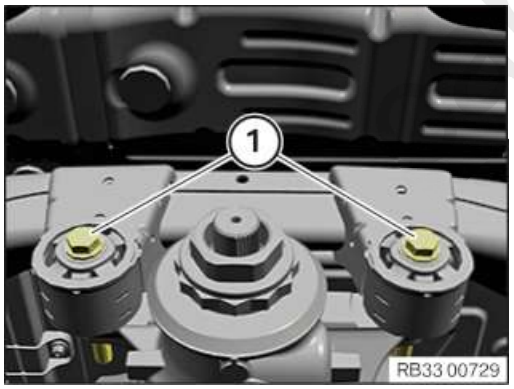


- Lift and position the rear axle differential (1)with the special tool .
- While lifting the rear axle differential (1), twist the adjusting screw (2) to correct the installation position.



- Insert screw from behind.
- Renew nut (1).

  Parts: Nut
- Screw on the nut (1) by several turns onto the screw.

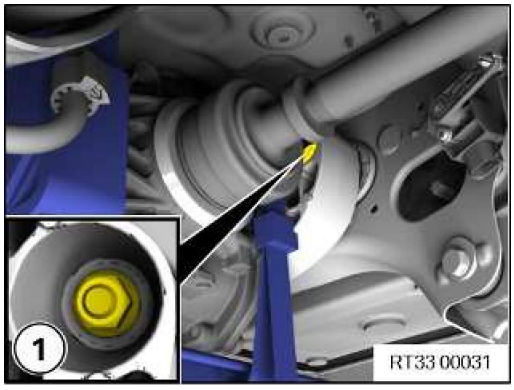


- Renew screws (1).

  Parts: Screws
- Screw in the screws (1) by hand.
- Tighten the screws (1).

Rear differential to rear axle carrier, front

M12	Renew screw.	Tightening torque	100 Nm

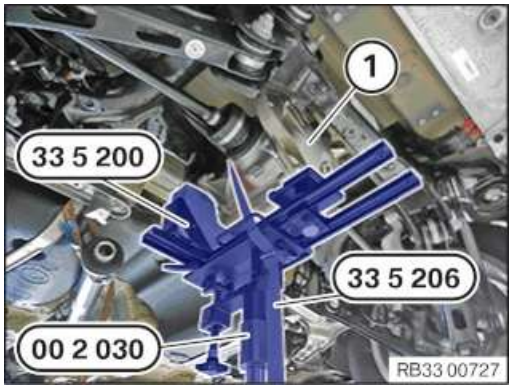


- Tighten nut (1).

Rear differential to rear axle carrier, rear

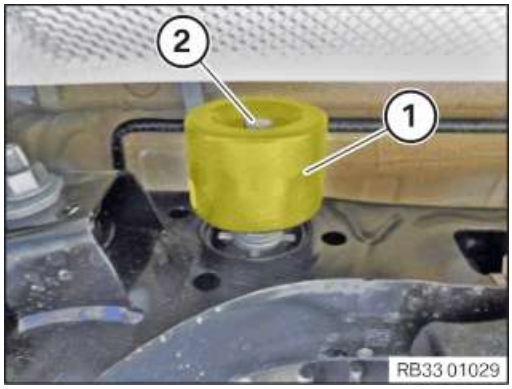
M14	Renew nut.	Tightening torque.	175 Nm

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- Loosen and remove the tensioning strap from the rear axle differential (1).
- Lower and remove the special tools 0 490 133 (00 2 030) and .

▸ **install the vibration absorber**



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Position the (1) vibration absorber.
- Renew the screw (2).

  Parts: Screw
- Tighten down screw (2).

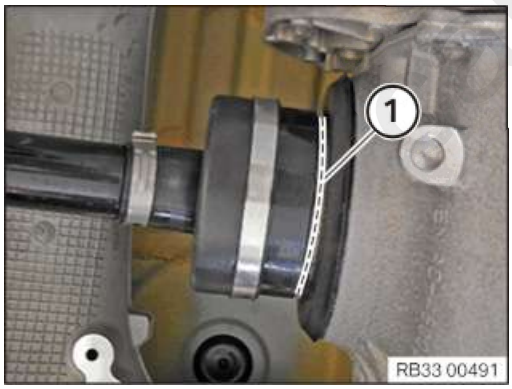
Vibration absorber to rear axle

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

16 – Secure the output shaft on the rear axle differential



- Position the following special tool on the slot running around the output shaft (1).



- Drive the output shaft into the rear axle differential with a suitable special tool , or and a rubber mallet.

17 – Check/top up oil level in the rear axle differential

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- Only use approved oil in the rear axle differential.

TECHNICAL INFORMATION

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

▸ **Supplement the rear axle differential oil change/oil level with oil gun**

Your browser doesn't support HTML5 video.

TECHNICAL INFORMATION

The training video illustrates the methodology for changing the rear axle differential oil using the oil gun special tool.

The training video does not replace the repair instructions.

The training video is not subject to the update service.

No liability can be accepted for printing or other faults. Subject to changes of a technical nature

- Follow repair instructions!

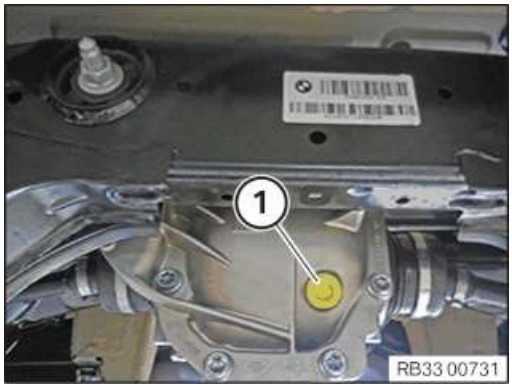
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TECHNICAL INFORMATION

With the specified capacity, it is imperative to take into account the capacity of the hose of the special tool.

- Use the special tool 2 460 340 to top up the rear axle differential oil.



- Open the oil filler plug (1).
- Check oil level:

  The oil level at the rear axle differential has been adjusted correctly once a small quantity of oil escapes from the opening of the oil filler plug.

  If necessary, top up final drive transmission oil.

Rear axle differential oil: Capacity overview (all)

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

- Replace the oil filler plug (1).

  Parts: Oil filler plug
- Screw in and tighten the oil filler plug (1).

Rear axle differential oil filler plug

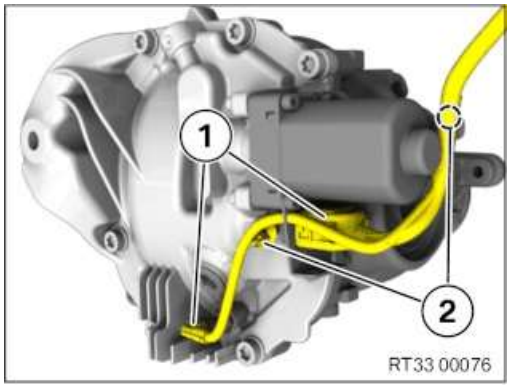
M22	Renew the oil filler plug.	Tightening torque	60 Nm

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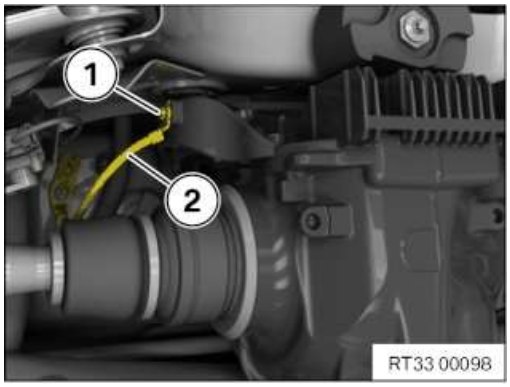
18 – Mounting the wiring harness to the M Sport differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



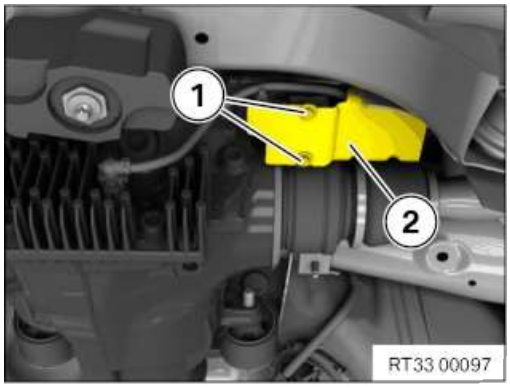
- Connect connectors (1) and lock.
- Secure the cables on the brackets (2).



- Position the ground strap (2) on the rear axle differential.
- Tighten down screw (1).

Ground strap to rear axle differential

M6x20		Tightening torque	8 Nm



- Position the heat shield (2).
- Tighten the screws (1).

Heat shield to servomotor

M5x10		Tightening torque	5 Nm

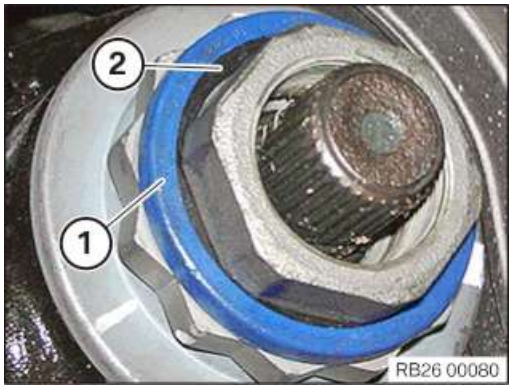
19 – Securing the propeller shaft on the rear axle differential

RISK OF DAMAGE

Damage to the propeller shaft during installation.

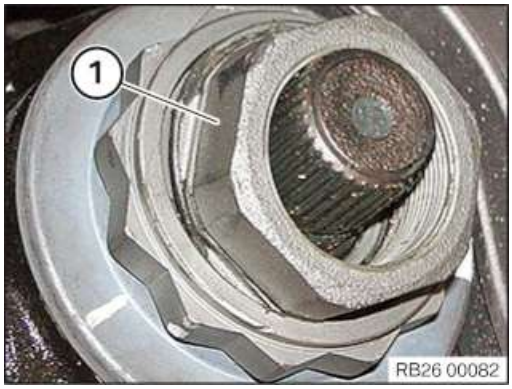
Non-observance of the installation guidelines for the propeller shaft on the rear axle differential may cause severe damage.

- Always renew the recessed nut on the rear axle differential. Screw locking must be available.
- Strictly observe a hardening time of minimum 3 h after screwing the recessed nut. The hardening time may be longer at lower temperatures.

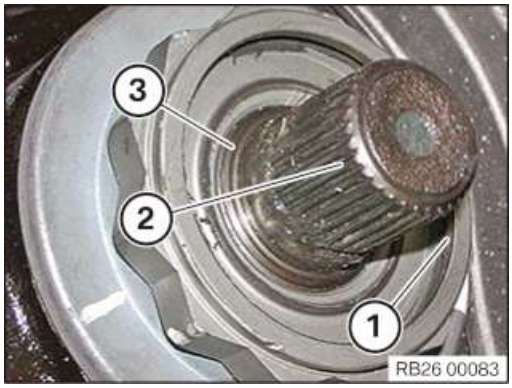


- Remove the retaining ring (1) and the seal (2).

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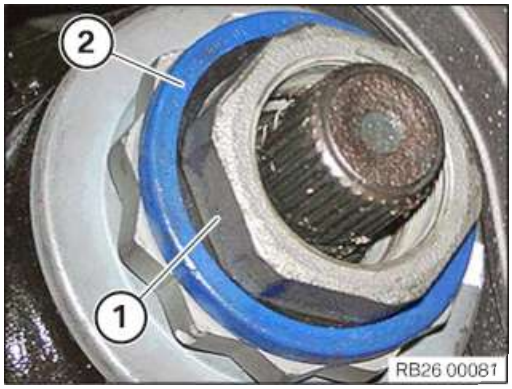
- Remove recessed nut (1).



- Clean and degrease the recessed collar (1) the flange nut, the gearing on the bevel pinion (2) and the taper (3) without any residue.
- Top up the collar insert (1)with grease.

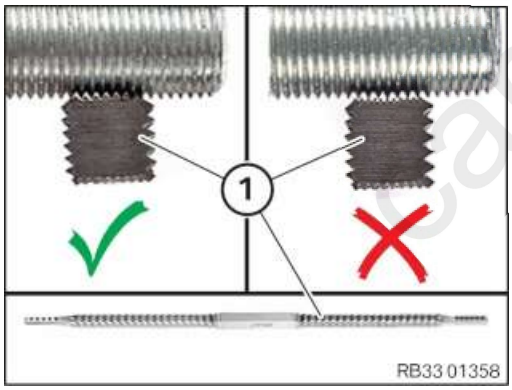
Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Renew the recessed nut (1), seal and retaining ring (2).

  Parts: Recessed nut, seal, retaining ring
- Insert recessed nut (1) including gasket into collar insert of the flange nut.
- Mount the retaining ring (2).



- Use a thread file (1) to remove the adhesive residue on the thread.
- **Make sure that the thread pitch is correct!**

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RISK OF DAMAGE

Damage to the output flange.

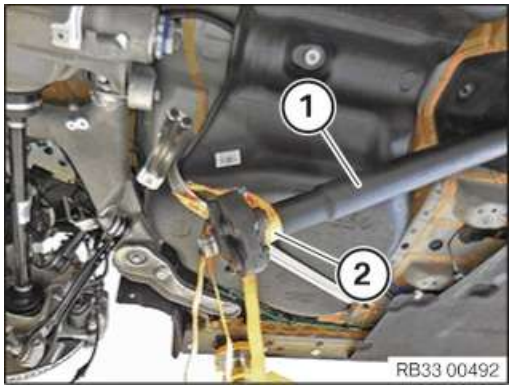
Failure to observe the greasing specifications may lead to damage on the output flange.

- Do not contaminate the thread of the output flange with grease.

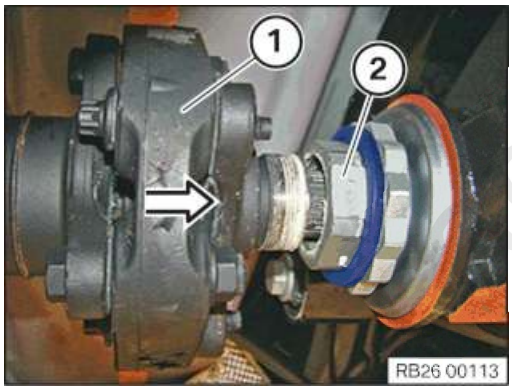
- Remove any adhesive residue on thread (1) of the flange and clean it.
- Clean gearing (2).
- Grease gearing (2).

Expendable materials

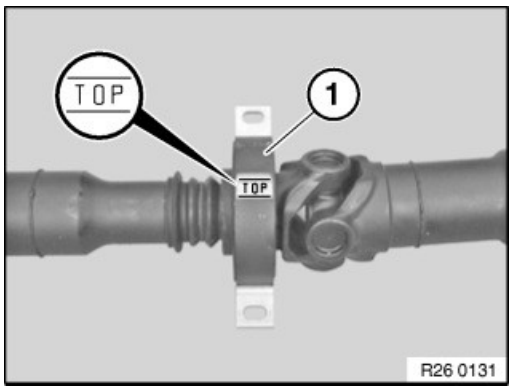
Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Loosen the tensioning strap (2) from the propeller shaft (1).

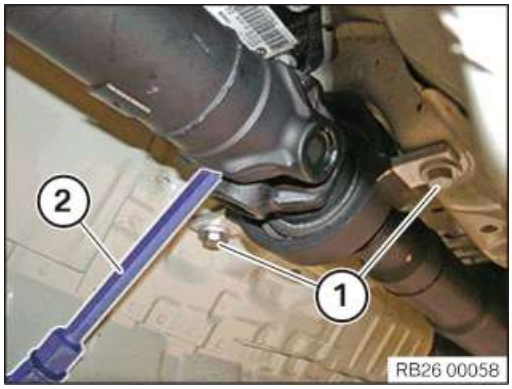


- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Screw and secure recessed nut (2) at least 2 thread starts onto propeller shaft (1) by hand.



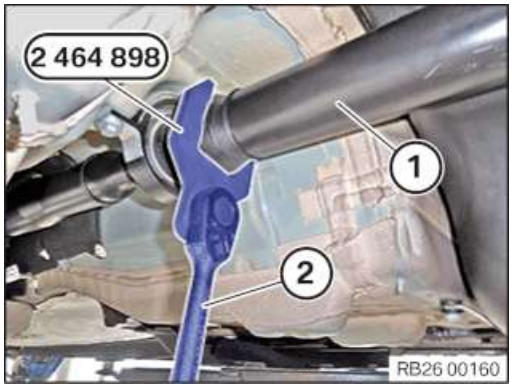
- Position the centre mount (1).

  Position the centre mount (1) with the designation TOP at the top in the transmission tunnel.



- Screw in the screws (1) by a few turns.
- **Version with a broad universal joint:**

  Secure the propeller shaft from twisting with a suitable tool (2) on the centre universal joint.



- **Version with a narrow universal joint:**

  Secure the propeller shaft (1) from twisting with the special tool 2 464 898 and a suitable tool (2) on the centre universal joint.



RISK OF DAMAGE

Damage to the flange nut.

Failure to observe the installation specifications may lead to serious damage to the flange nut and the rear axle differential.

- Do not use the double hexagon flange nut as counter support.
- Screw in the recessed nut within 5 minutes.

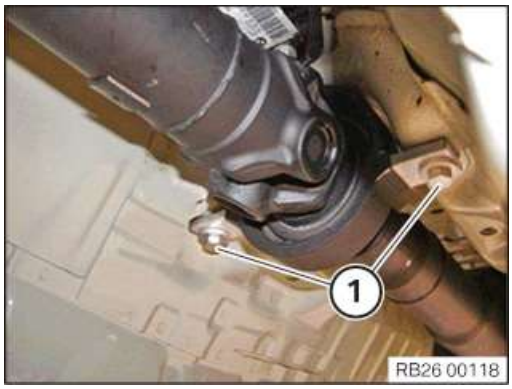
- Tighten recessed nut **counter-clockwise in the direction of the arrow** using special tools 0 495 554 (33 5 070) and .

Propeller shaft on the rear axle differential

Insert nut	Replace insert nut.	Tightening torque	100 Nm

- **After the propeller shaft is installed and the recessed nut is screwed in, strictly observe a hardening time of minimum 3 hours.**

  Do not move or push the vehicle during this time!



- Tighten the screws (1).

Centre mount to body

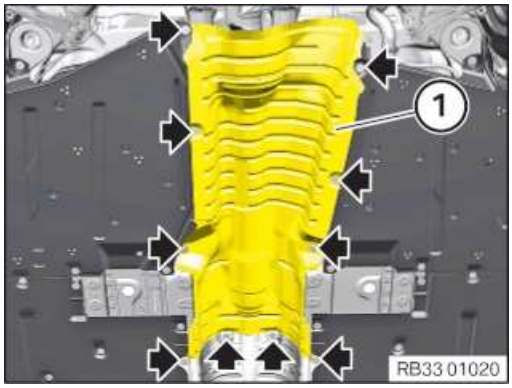
M8		Tightening torque	19 Nm

20 – Installing the rear heat shield

cardiagn.com

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

21 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Installing the cover of the camber control arm**



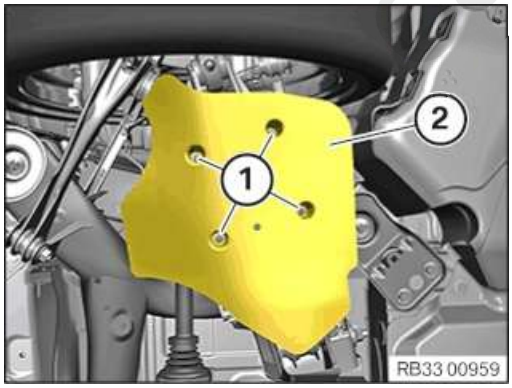
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

22 – Installing the complete exhaust system

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CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

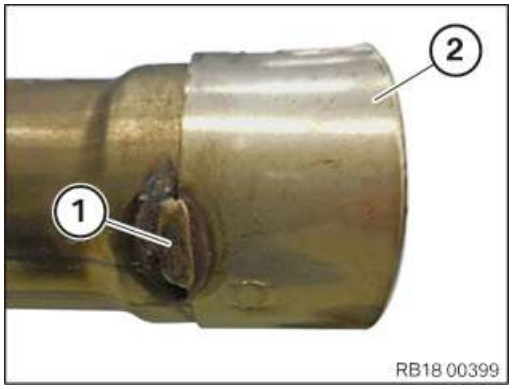
TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.

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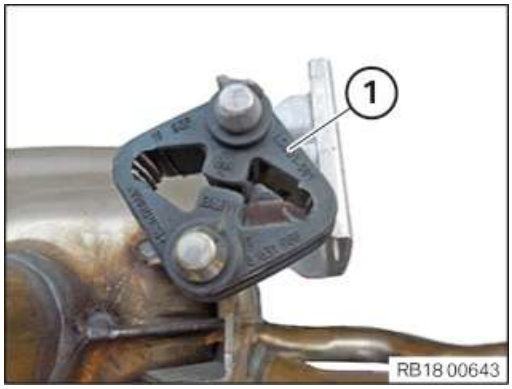
CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

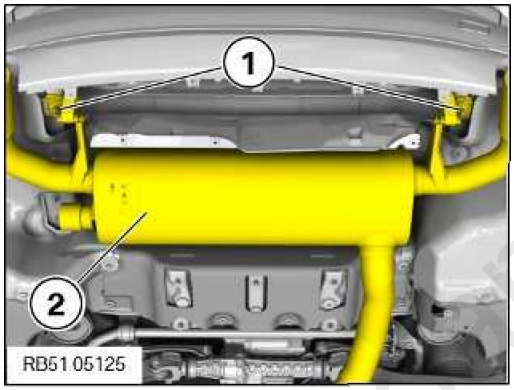


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

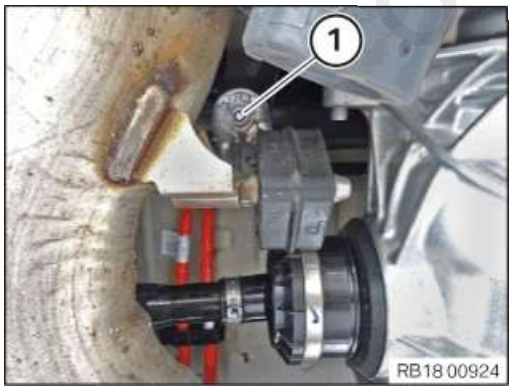


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm



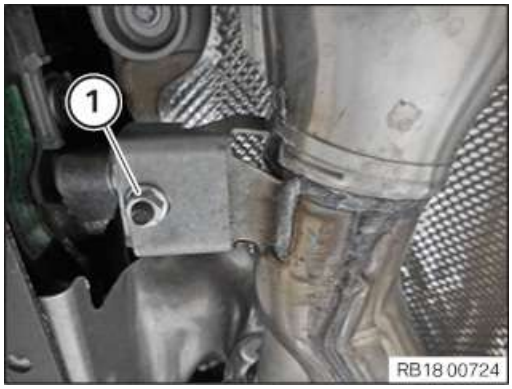
- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

M8 nut		Tightening torque	19 Nm

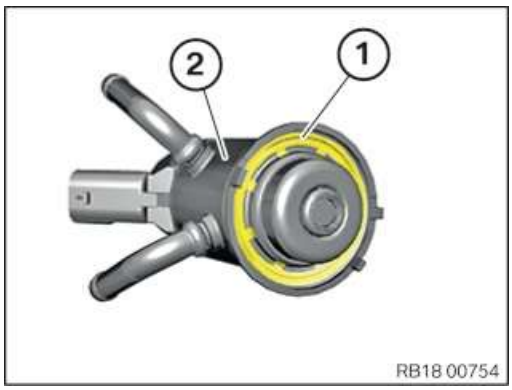
manualslib.com



- Tighten nut (1).

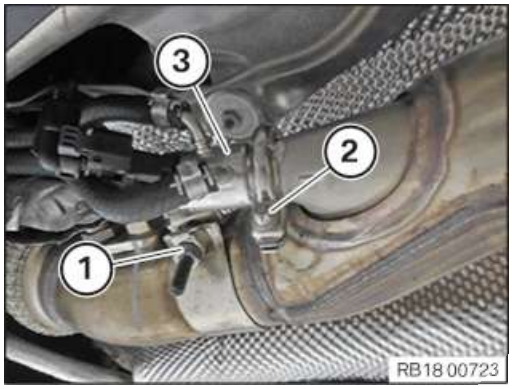
Exhaust system to transmission

M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

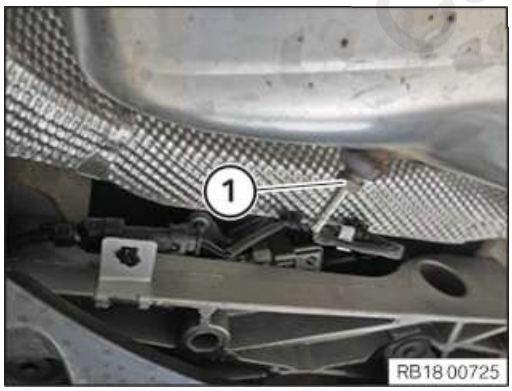
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

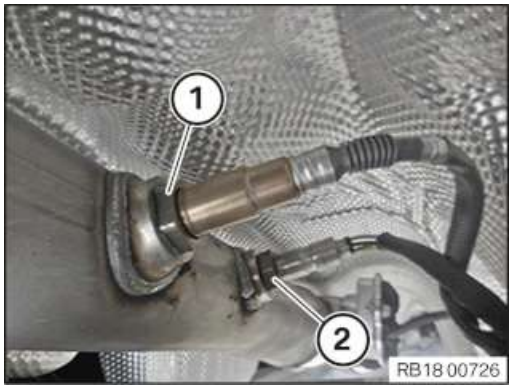


- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm

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- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

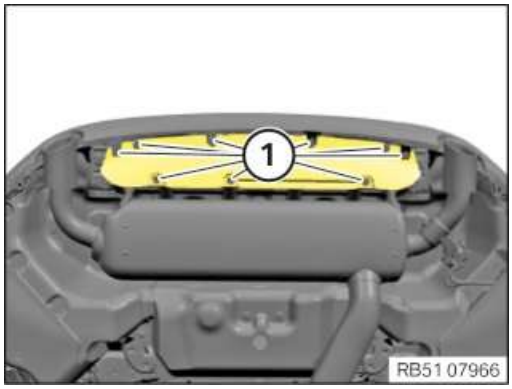
Sensor		Tightening torque	50 Nm

- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

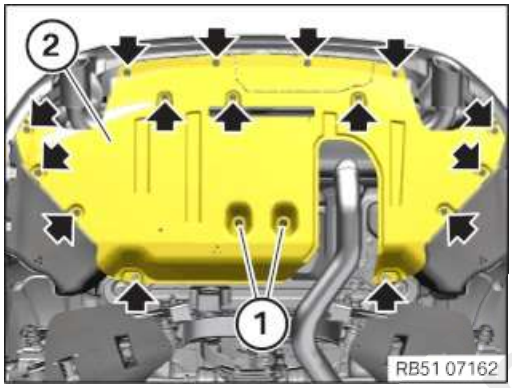
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

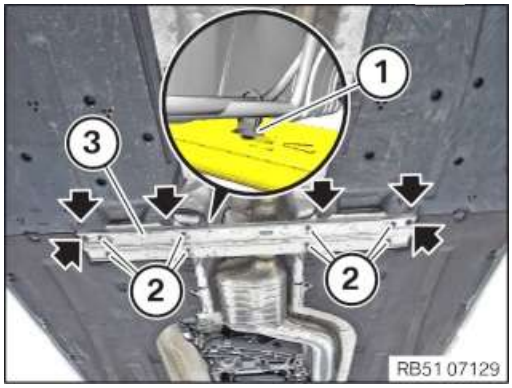
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**



- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

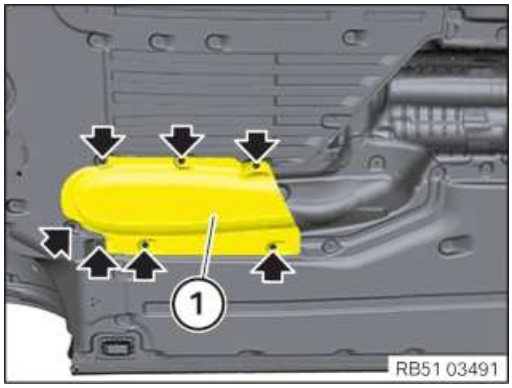
- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

23 – Installing the rear left wheel

▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

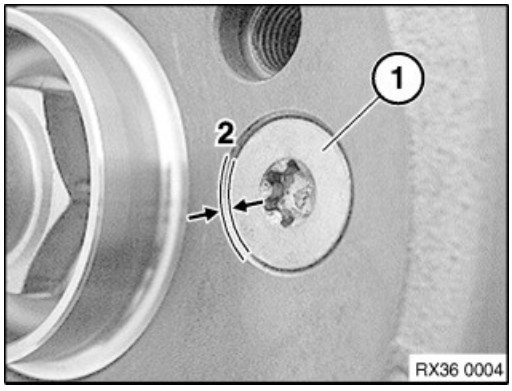
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).



- Check that the mounting bolt (1) for the brake disc is securely seated.

  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

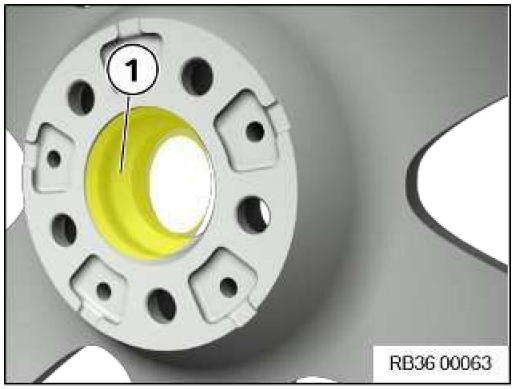
Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm

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TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

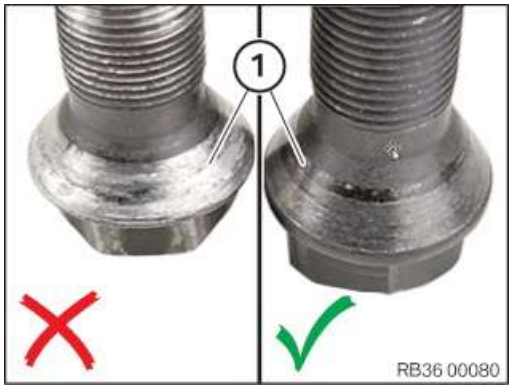
A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.

Check

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- **Check wheel bolts for wear.**

Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

  Parts: Wheel bolts

- Clean the wheel bolts (arrows).
- Check the wheel bolts (arrows) and threads for damage, renew the wheel bolts (arrows) if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.	Check	140 Nm
	Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.		

Additional Information

Overview of Tightening Torques

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Output shaft to wheel bearing			Used in step 13
M16	Replace the collar bolt.	Jointing torque	210 Nm
		Angle of rotation	90 °

Rear differential to rear axle carrier, front			Used in step 15
M12	Renew screw.	Tightening torque	100 Nm

Rear differential to rear axle carrier, rear			Used in step 15
M14	Renew nut.	Tightening torque.	175 Nm

Vibration absorber to rear axle			Used in step 15
M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle			Used in step 15
M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Rear axle differential oil filler plug			Used in step 17
M22	Renew the oil filler plug.	Tightening torque	60 Nm

Ground strap to rear axle differential			Used in step 18
M6x20		Tightening torque	8 Nm

Heat shield to servomotor			Used in step 18
M5x10		Tightening torque	5 Nm

Propeller shaft on the rear axle differential			Used in step 19
Insert nut	Replace insert nut.	Tightening torque	100 Nm

Centre mount to body			Used in step 19
M8		Tightening torque	19 Nm

Heat shield to undercarriage			Used in step 20
Screws and nuts		Tightening torque	3 Nm

Cover to camber control arm			Used in step 21
M6	Replace nuts.	Tightening torque	6 Nm

Rear silencer to body / bumper support			Used in step 22
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 22
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 22
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 22
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

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SCR metering module V-clip to exhaust system			Used in step 22
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 22
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 22
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 22
Sensor		Tightening torque	55 Nm

Diffuser / underbody panelling			Used in step 22
Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel			Used in step 22
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling			Used in step 22
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Brake disc to front wheel hub			Used in step 23
M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub			Used in step 23
M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts			Used in step 23
M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Overview of Special Tools

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2 464 898 Open-end spanner



Common

Used in step 519

Usage	Open-end spanner SW50 for disassembly and installation of the propeller shaft on rear axle differential. The silhouette foil is included in the delivery specification.
Included in the tool or work	
Storage location	A7
Replaced by	
In connection with	
SI-Number	01 19 18 (579)

0 495 554 (33 5 070) Extension



Common

Used in step 519

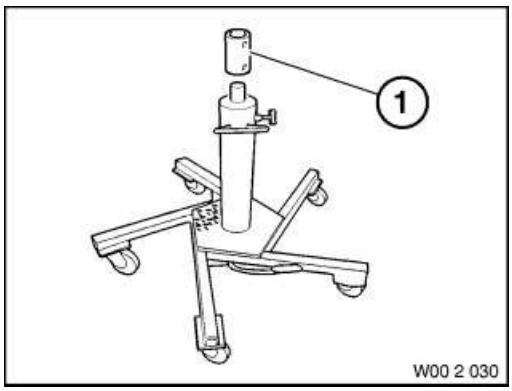
Usage	Pull-out extension for 33 5 040, 33 5 050, 33 5 060.
Included in the tool or work	
Storage location	A18
Replaced by	
In connection with	
SI-Number	01 21 06 (300)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 495 592 (33 5 071)		**Extension** (Extension (1 item)) discontinued, can only be ordered using complete tool	

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0 490 133 (00 2 030) Device



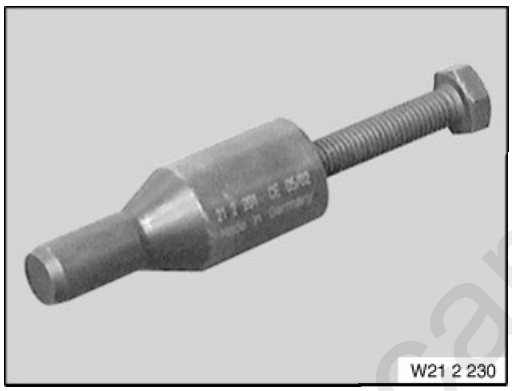
Common Used in step 815

Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

0 494 649 (21 2 230) Mandrel



Common Used in step 11

Usage	(clutch centring drift) With screw M10 (G transmission)
Included in the tool or work	
Storage location	C45
Replaced by	
In connection with	
SI-Number	01 03 03 (960)

2 460 340 Pump



Common Used in step 17

Usage	Oil gun to fill rear axle differentials or differentials with 1 litre containers.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 09 18 (553)

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2 344 011 Tool



Common	Used in step 23
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

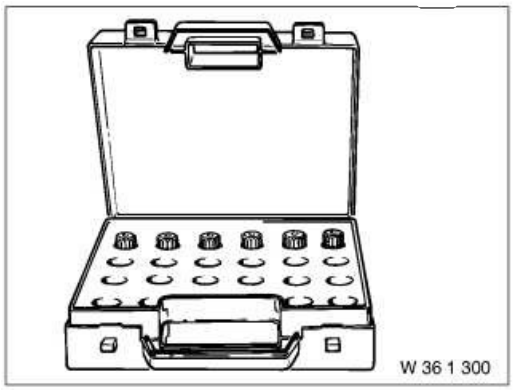
Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

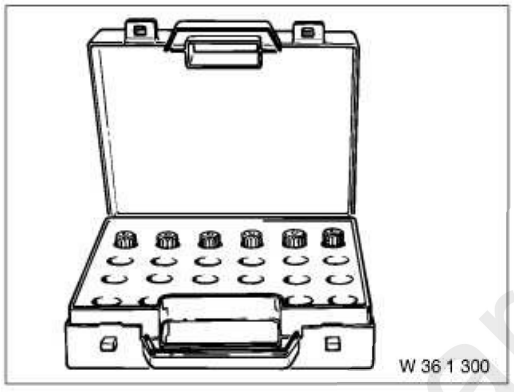
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0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

Rear axle differential oil: Capacity overview (all) Used in step 17

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168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	123

Operating materials	Used in step
1.1 Grease for propeller shaft inserted	19
1.0 Grease for propeller shaft (flexible disc centring and sliding piece)	19

Operating materials	Used in step
Main group 33	17

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33 21 002 Removing and installing/replacing right output shaft

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- After completion of repair work, check the transmission oil level in the rear axle differential.
- Use only the approved final drive transmission oil.

PRELIMINARY WORK

1 – Removing the rear right wheel

▶ **Removing the wheel**

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TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

  This process is intended to prevent damage to the brake disc.



- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

2 – Remove complete exhaust system

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

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CAUTION

Heavy component.

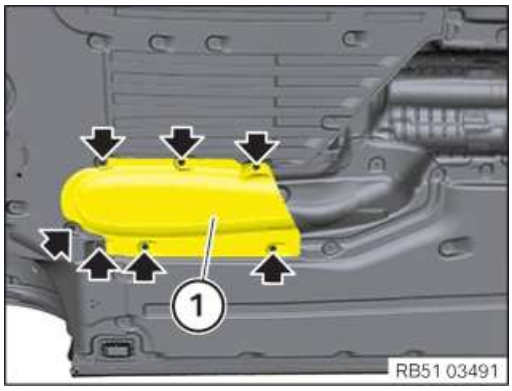
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

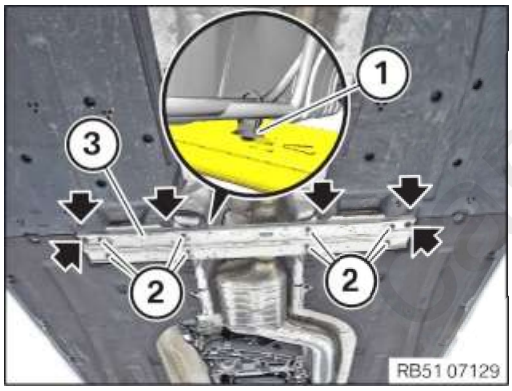
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**



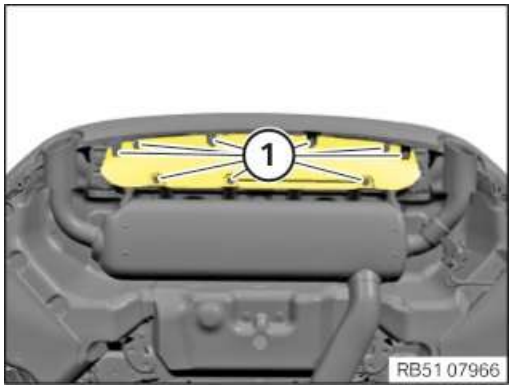
- Remove screws (arrows).

NOTICE

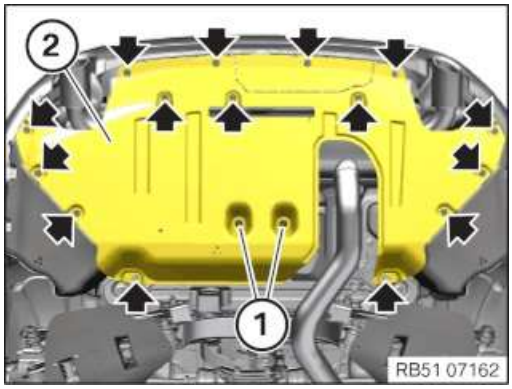
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

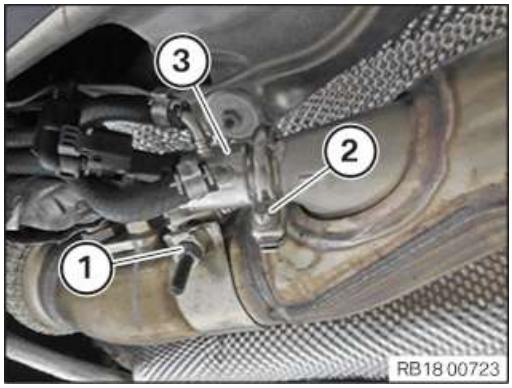
▸ **Removing the rear diffuser**



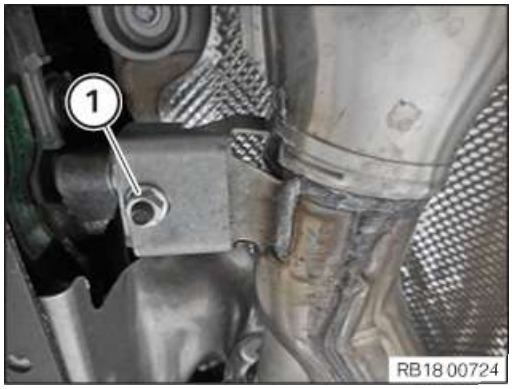
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



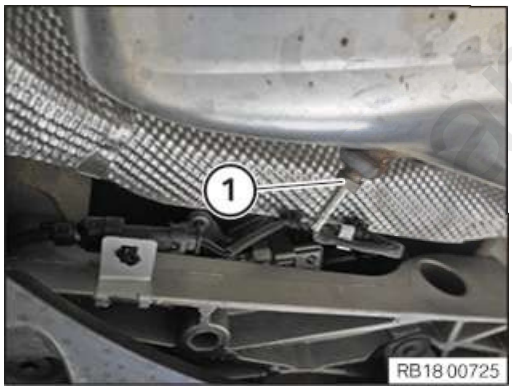
- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).



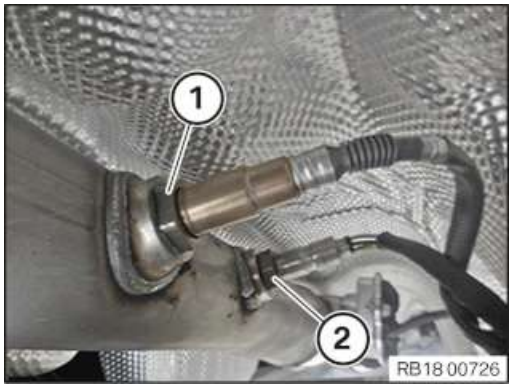
- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.



- Loosen nut (1).

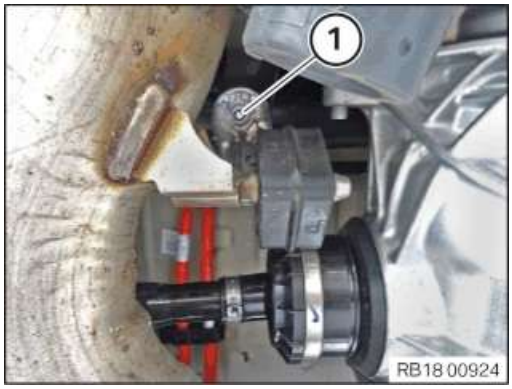


- Detach the exhaust temperature sensor (1) from the exhaust system.

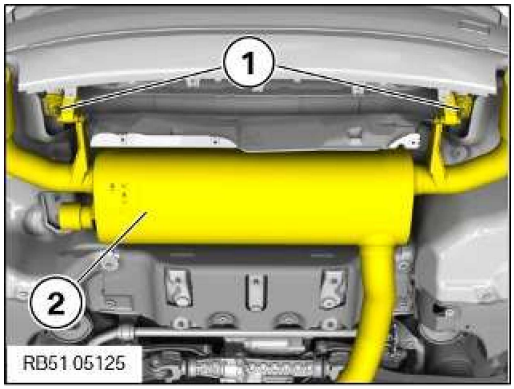


- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.

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- Release the nut (1) on the rear axle support.



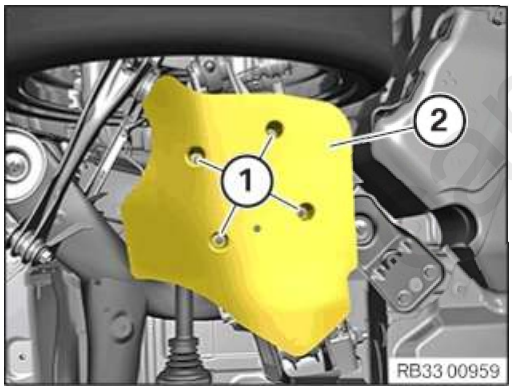
- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

3 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover of camber control arm**

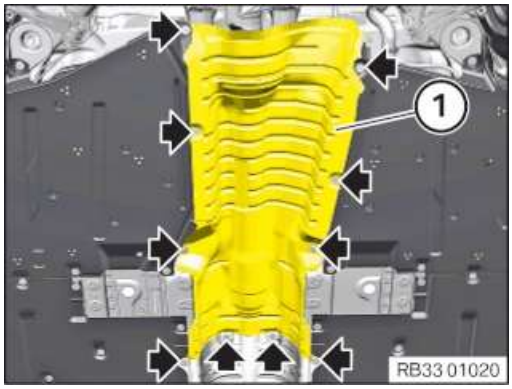


- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

4 – Remove heat shield at rear.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

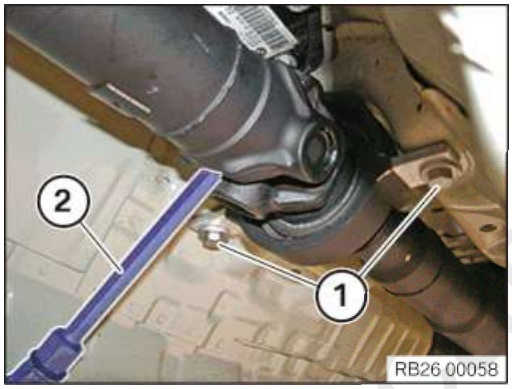
5 – Releasing the propeller shaft from the rear axle differential

RISK OF DAMAGE

Damage to propeller shaft during removal.

Non-observance of the removal guidelines for the propeller shaft on the rear axle differential may cause severe damage.

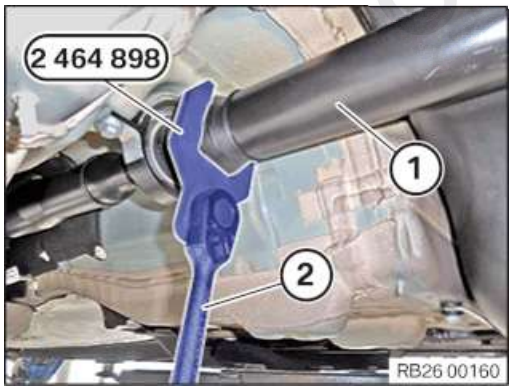
- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened on the recessed nut only and exclusively in the direction of rotation otherwise the anti-twist lock of the bi-hexagonal flange nut is damaged.
- In the event of a damaged anti-twist lock on the bi-hexagonal flange nut: Replace the rear axle differential.



- Loosen screws (1).

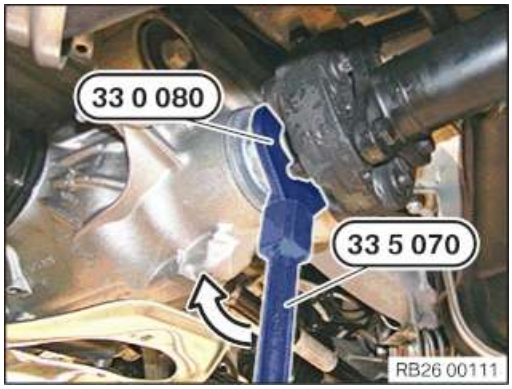
  Do not remove bolts (1) yet.
- **Version A (propeller shaft with wide universal joint):**

  Secure the propeller shaft against twisting at the centre universal joint using a suitable tool (2).



- **Version B (propeller shaft with narrow universal joint):**

  Secure the propeller shaft (1) against twisting by using the special tool 2 464 898 and a suitable tool (2) at the central universal joint.



RISK OF DAMAGE

Damage to rear axle differential.

Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

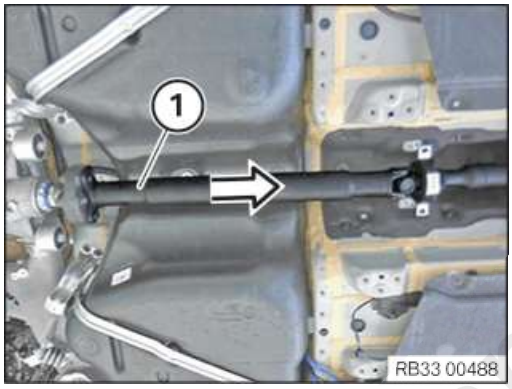
- Do not use the double hexagon head flange nut as counter support.

- Loosen the recessed nut **against** the direction of travel **in clockwise direction** using special tools 0 495 554 (33 5 070) and .

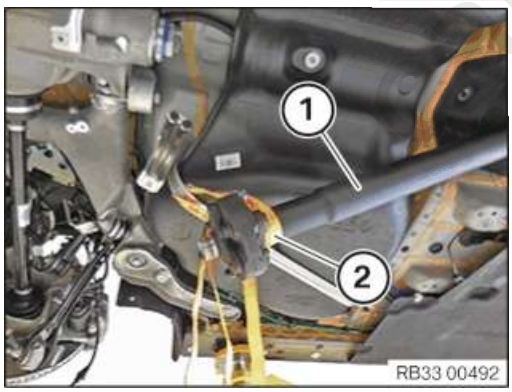
  The bi-hexagonal flange nut must not be used for counter-holding.



- Loosen screws (1) on centre mount.



- Loosen the propeller shaft (1) from the rear axle differential in the direction of the arrow.

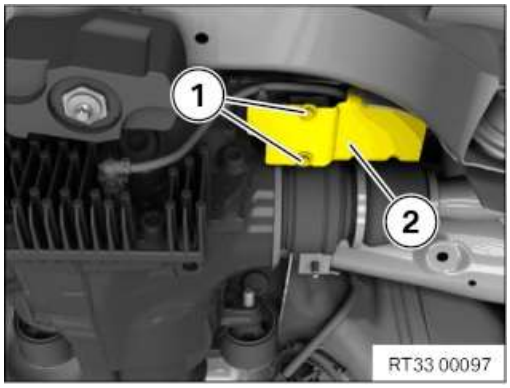


- Tie up the propeller shaft (1) using a tensioning strap (2).

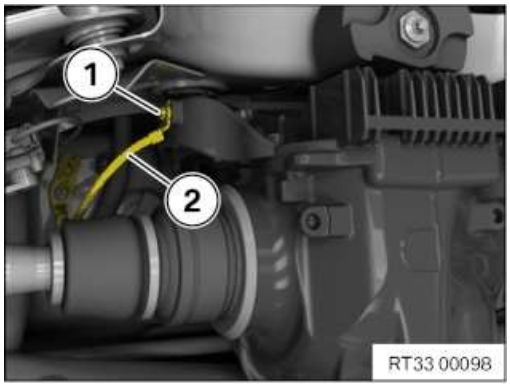
6 – Releasing the wiring harness from the M Sport differential

NOTICE

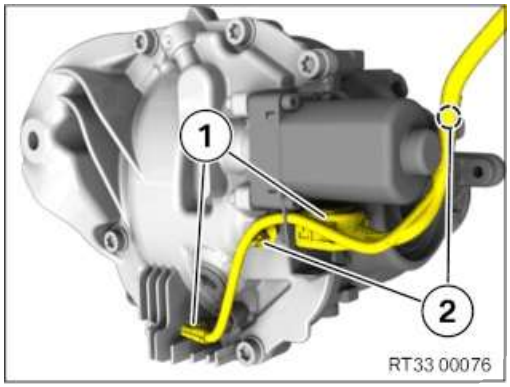
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Loosen screws (1).
- Remove heat shield (2).

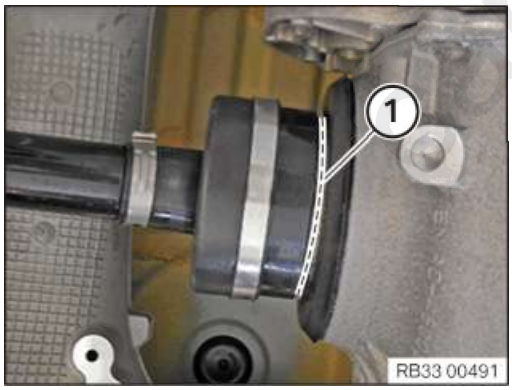


- Release the screw (1).
- Detach the ground strap (2) from the rear axle differential.

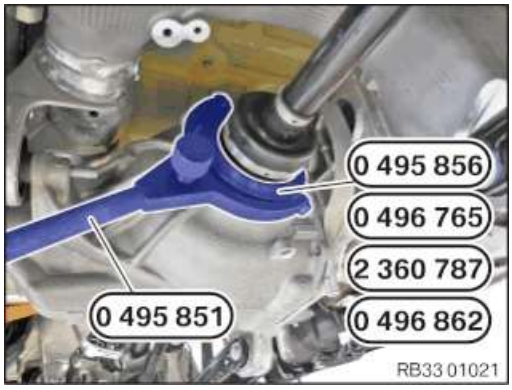


- Unlock and disconnect plug connections (1).
- Release cable from brackets (2).

7 – Detach the output shaft from the rear axle differential



- Position the special tool at the circumferential slot (1) of the output shaft.



- Press out the output shaft with the special tool and the special tool , , or suitable depending on the equipment specification of the output shaft with jerky movements from the rear axle differential.

8 – Lowering rear axle differential

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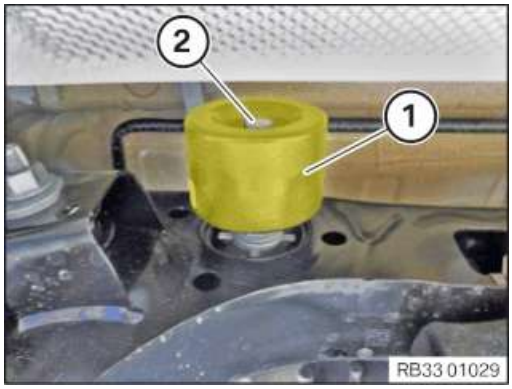
RISK OF DAMAGE

Damage to rear axle differential.

If the rear axle differential drops down, persons can be injured or the rear axle differential can be damaged.

- Secure the rear axle differential using a tensioning strap.

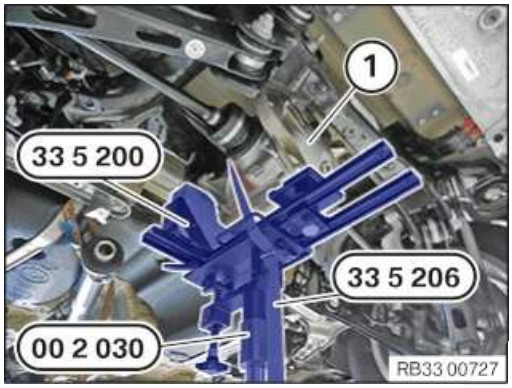
▸ **Remove vibration absorber**



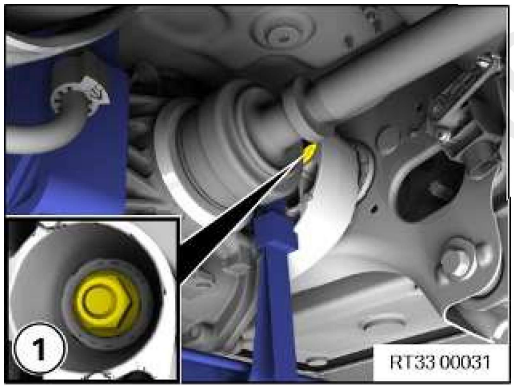
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

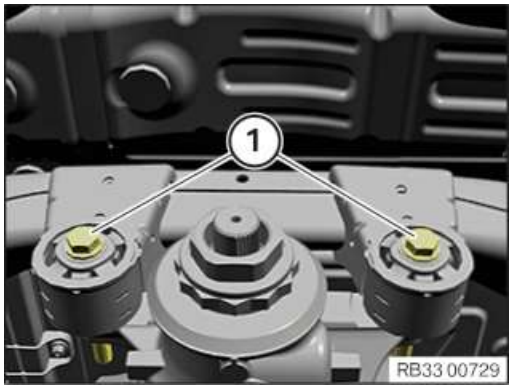
- Release the screw (2).
- Remove the vibration absorber (1).



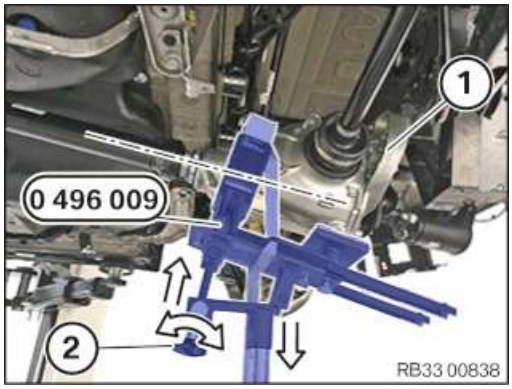
- Place the special tool onto the universal jack 0 490 133 (00 2 030).
- Support the rear axle differential (1) with the special tool .
- Secure the rear axle differential (1) with a tensioning strap on the special tool .



- Loosen nut (1) on the rear axle support at rear.
- Remove screw.



- Loosen screws (1) on rear axle support at front.

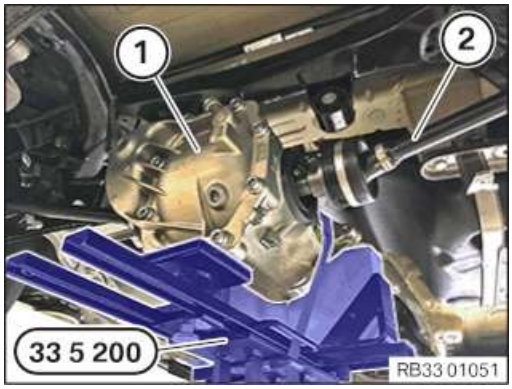


- Lower rear axle differential (1) using the special tool only until the cover on the rear axle differential is accessible.

  During lowering, twist the adjusting screw (2) to slightly raise the rear axle differential at the front.

9 – Feeding out the right output shaft from the rear axle differential

▸ **Pulling the output shaft out from the rear axle differential**



- Turn the rear axle differential (1) to the left with the special tool . Thereby, pull out the output shaft (2).
- Bind the output shaft firmly (2).

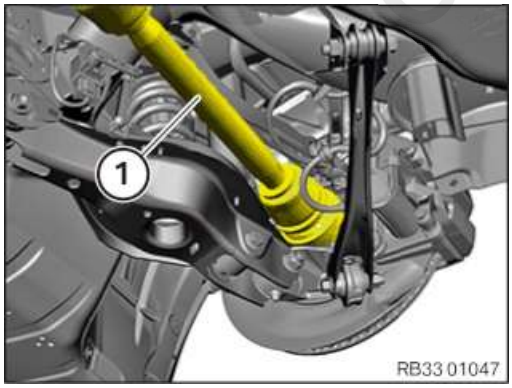
MAIN WORK

10 – Remove right output shaft

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Remove output shaft**



- Secure the output shaft (1) from falling.

▹ **Loosen the output shaft from the wheel bearing**

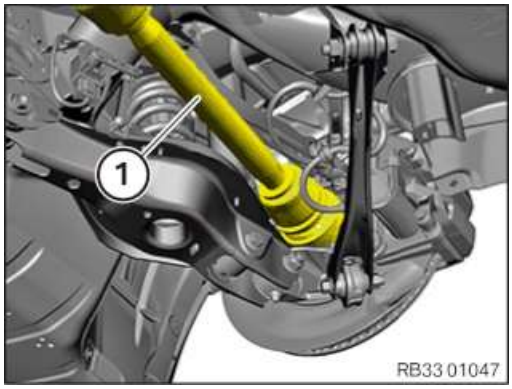
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- Press brake pedal.
- Loosen the collar bolt (1).

  The output shaft is released from the wheel bearing.

◁



- Pull the output shaft (1) out and remove it.

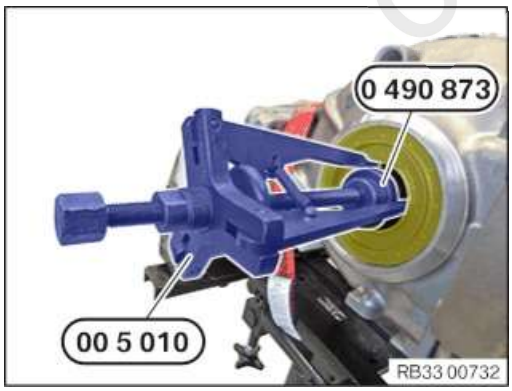
11 – Replace the radial shaft seal for the output shaft

TECHNICAL INFORMATION

Radial shaft seal ring are equipped with an installation protection ring. The installation protection ring is used to protect the sealing lip when installing the output shaft.

TECHNICAL INFORMATION

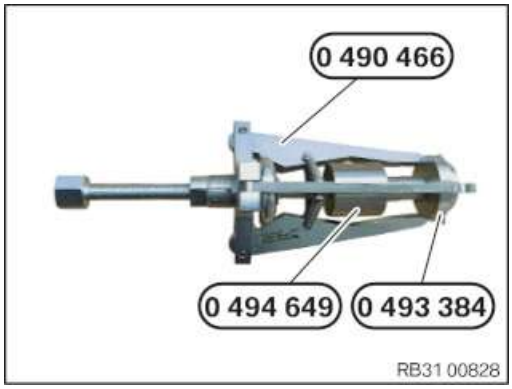
Different variants may be installed depending on the vehicle equipment.



- **Version A:**

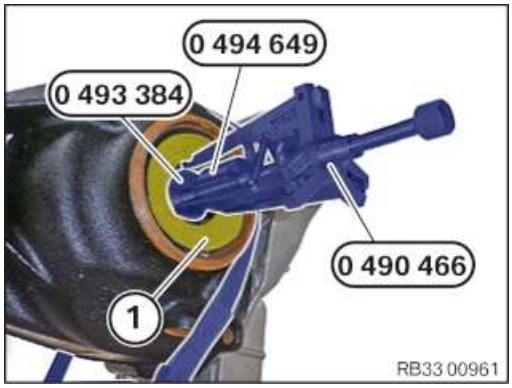
  Pull out and remove the radial shaft seal with special tools and .

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- **Version B:**

  Prepare the special tool with the special tools 0 494 649 (21 2 230) (without the screw) and .



- Pull out the radial shaft seal (1) with special tools , 0 494 649 (21 2 230) and and remove it.



- Renew radial shaft seal (2).

  Parts: Radial seal

- Remove the installation protection ring (1) from the radial shaft seal (2).



- Coat the housing sheet metal flange and the sealing lips of the radial shaft seal with the approved rear axle differential oil.
- Strike the radial shaft seal with the special tool or until it reaches the limit position.
- Remove the special tool or .



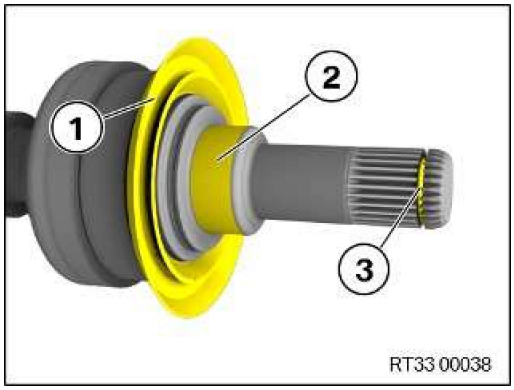
- Insert the installation protection ring (1) into the radial shaft seal (2).
- Make sure installation protection ring (1) does not slip out of radial shaft seal (2).

12 – If reusing: Check the output shaft and replace the circlip

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TECHNICAL INFORMATION

It is essential to renew the circlip of the output shaft.



TECHNICAL INFORMATION

Extreme force being required during installation is an indication that the component is damaged or deformed. Check component and replace if necessary.

- Check the gearing of the output shaft for damage and renew damaged parts if necessary.
- Check the dust plate (1) for damage and renew damaged parts as needed.
- Renew the circlip (3).

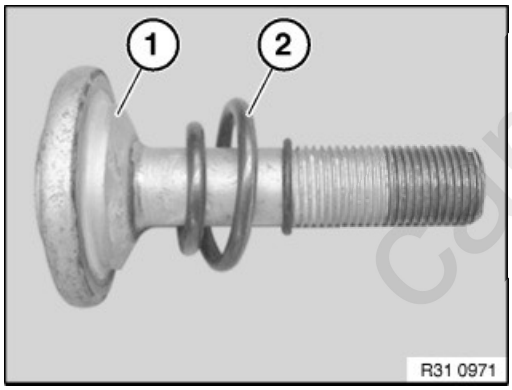
  Parts: Circlip
- Coat the contact surface (2) using approved rear axle differential oil.

13 – Install right output shaft

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Installing the output shaft**

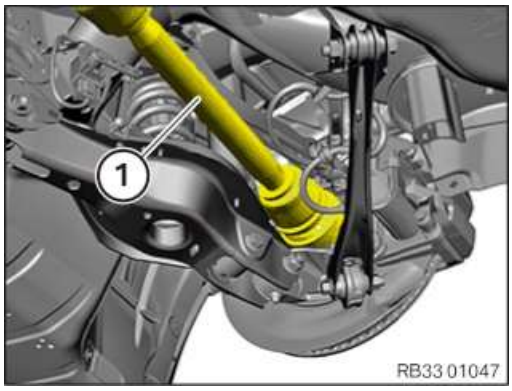


TECHNICAL INFORMATION

The installation note for front gearing must be observed at all times.

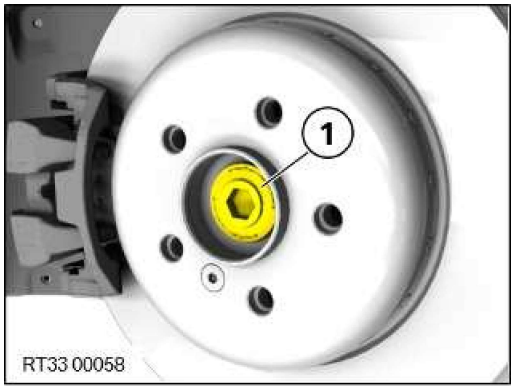
- Renew the collar bolt (1) and the compression spring (2).

  Parts: Collar bolt and compression spring
- Note installation position of compression spring (2).
- Keep the collar bolt (1) and the front gearing of the wheel bearing and the output shaft clean and free of grease.

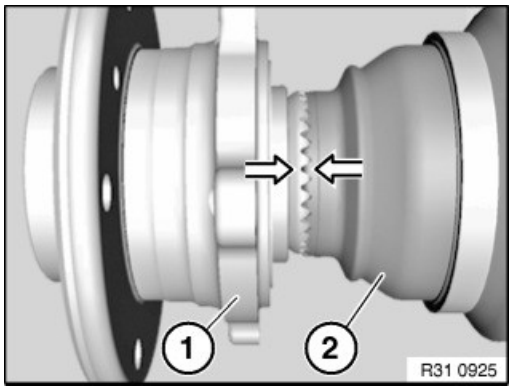


- Feed in the output shaft (1) and position it on the wheel bearing.

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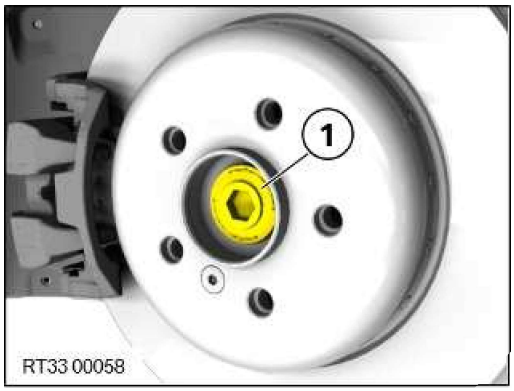
- Hand-tighten the collar bolt (1) with the compression spring.



TECHNICAL INFORMATION

The front gearing of the wheel bearing and output shaft must be installed in an interlocking position (tooth-in-tooth).

- Ensure positive locking by mutual twisting of the wheel bearing (1) and the output shaft (2).



- Press brake pedal.
- Tighten the collar bolt (1).

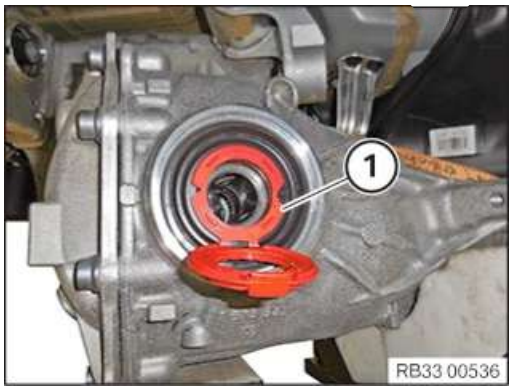
Output shaft to wheel bearing

M16	Replace the collar bolt.	Jointing torque	210 Nm
		Angle of rotation	90 °

POSTPROCESSES

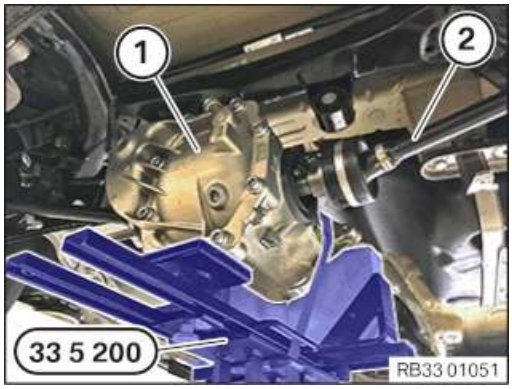
14 – Feeding the right output shaft into the rear axle differential

▸ **Feeding the output shaft into the rear axle differential**



- Fold open the assembly protection ring (1).

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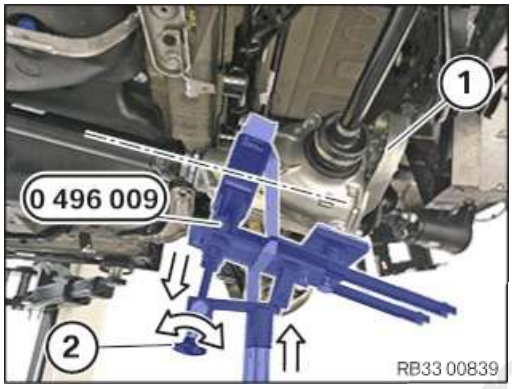


- Turn the rear axle differential (1) with the special tool to the left. While doing so, feed in the output shaft (2).

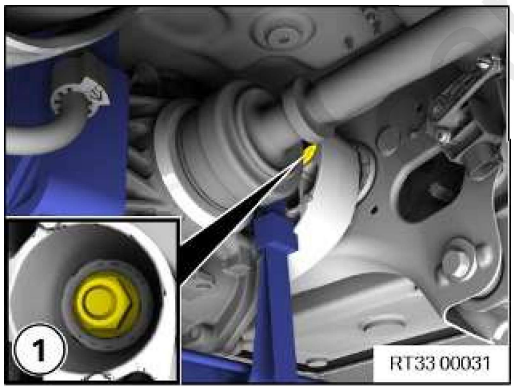


- Pull on the tab of the installation protection ring (1) until one of the two predetermined breaking points breaks.
- Pull out and dispose of the installation protection ring (1).

15 – Lifting the rear axle differential

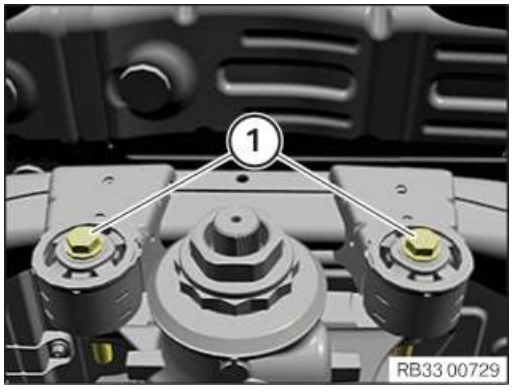


- Lift and position the rear axle differential (1)with the special tool .
- While lifting the rear axle differential (1), twist the adjusting screw (2) to correct the installation position.



- Insert screw from behind.
- Renew nut (1).

  Parts: Nut
- Screw on the nut (1) by several turns onto the screw.



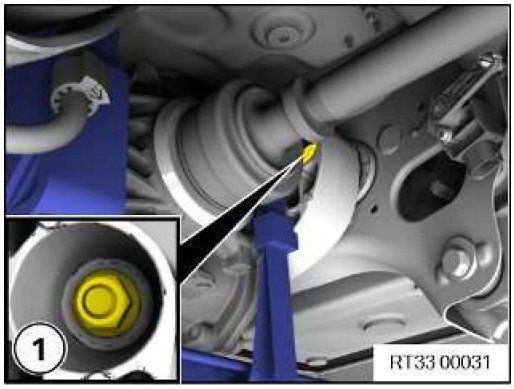
- Renew screws (1).

  Parts: Screws
- Screw in the screws (1) by hand.
- Tighten the screws (1).

Rear differential to rear axle carrier, front

M12	Renew screw.	Tightening torque	100 Nm

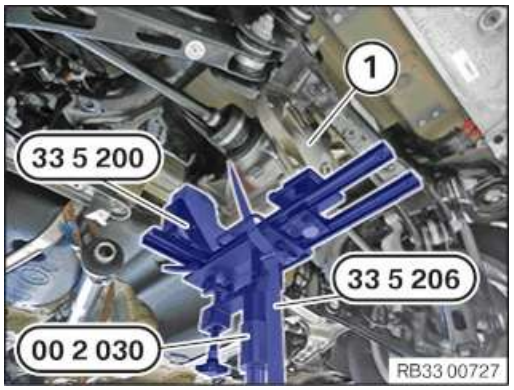
.diagn.com



- Tighten nut (1).

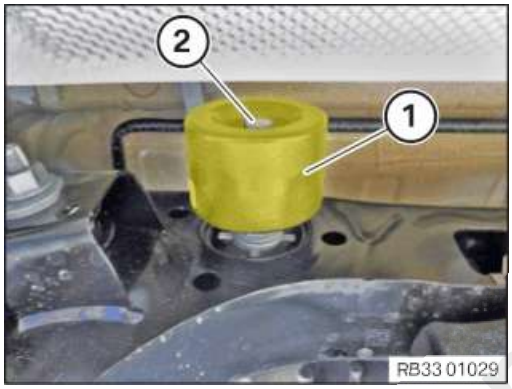
Rear differential to rear axle carrier, rear

M14	Renew nut.	Tightening torque.	175 Nm



- Loosen and remove the tensioning strap from the rear axle differential (1).
- Lower and remove the special tools 0 490 133 (00 2 030) and .

▸ **install the vibration absorber**



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Position the (1) vibration absorber.
- Renew the screw (2).

  Parts: Screw
- Tighten down screw (2).

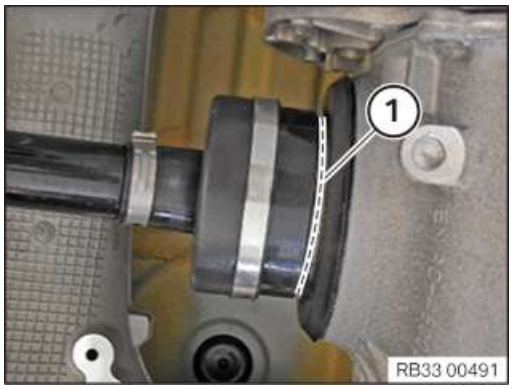
Vibration absorber to rear axle

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

16 – Secure the output shaft on the rear axle differential



- Position the following special tool on the slot running around the output shaft (1).

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- Drive the output shaft into the rear axle differential with a suitable special tool , or and a rubber mallet.

17 – Check/top up oil level in the rear axle differential

CAUTION

Materials harmful to health.

Health risks in the event of contact with substances that are harmful to health!

- Observe and comply with the Safety Information on the containers and the notes on the manufacturer's safety data sheet.
- Conduct all work in appropriate personal protective equipment only.

CAUTION

Acid burns may result from skin contact with oil or inhaling oil vapours.

Risk of acid burns from contact with oil!

- Wear safety goggles and protective gloves.
- Ensure adequate ventilation.

RISK OF DAMAGE

Damage to rear axle differential.

Failure to comply with the oil specifications can result in serious damage to the rear axle differential.

- Only use approved oil in the rear axle differential.

TECHNICAL INFORMATION

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

▸ **Supplement the rear axle differential oil change/oil level with oil gun**

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Your browser doesn't support HTML5 video.

TECHNICAL INFORMATION

The training video illustrates the methodology for changing the rear axle differential oil using the oil gun special tool.

The training video does not replace the repair instructions.

The training video is not subject to the update service.

No liability can be accepted for printing or other faults. Subject to changes of a technical nature

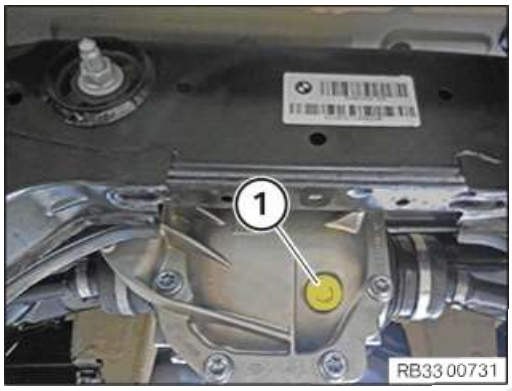
- Follow repair instructions!



TECHNICAL INFORMATION

With the specified capacity, it is imperative to take into account the capacity of the hose of the special tool.

- Use the special tool 2 460 340 to top up the rear axle differential oil.



- Open the oil filler plug (1).
- Check oil level:

  The oil level at the rear axle differential has been adjusted correctly once a small quantity of oil escapes from the opening of the oil filler plug.

  If necessary, top up final drive transmission oil.

Rear axle differential oil: Capacity overview (all)

168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

- Replace the oil filler plug (1).

  Parts: Oil filler plug

- Screw in and tighten the oil filler plug (1).

Rear axle differential oil filler plug

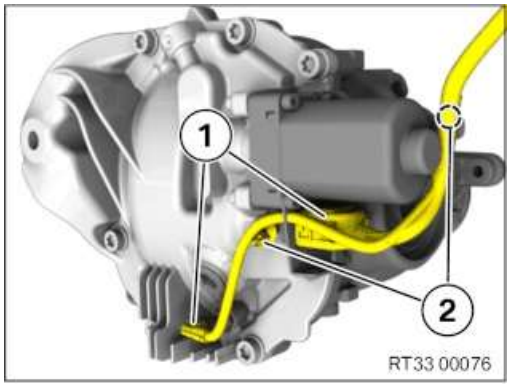
M22	Renew the oil filler plug.	Tightening torque	60 Nm

18 – Mounting the wiring harness to the M Sport differential

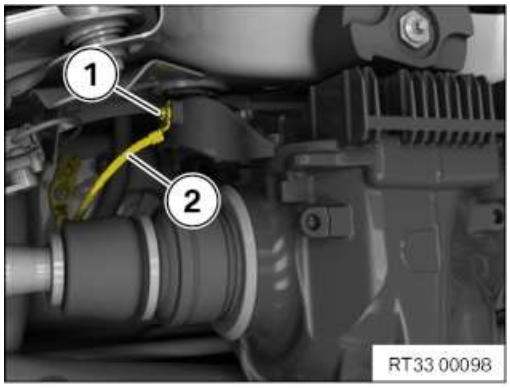
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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



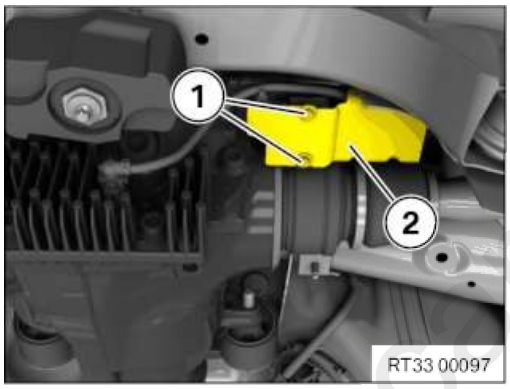
- Connect connectors (1) and lock.
- Secure the cables on the brackets (2).



- Position the ground strap (2) on the rear axle differential.
- Tighten down screw (1).

Ground strap to rear axle differential

M6x20		Tightening torque	8 Nm



- Position the heat shield (2).
- Tighten the screws (1).

Heat shield to servomotor

M5x10		Tightening torque	5 Nm

19 – Securing the propeller shaft on the rear axle differential

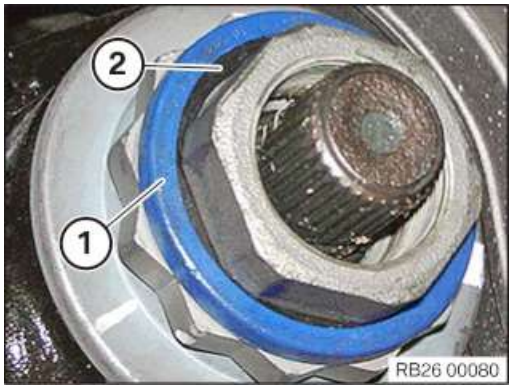
RISK OF DAMAGE

Damage to the propeller shaft during installation.

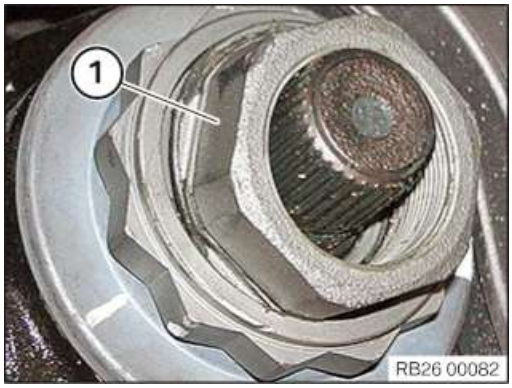
Non-observance of the installation guidelines for the propeller shaft on the rear axle differential may cause severe damage.

- Always renew the recessed nut on the rear axle differential. Screw locking must be available.
- Strictly observe a hardening time of minimum 3 h after screwing the recessed nut. The hardening time may be longer at lower temperatures.

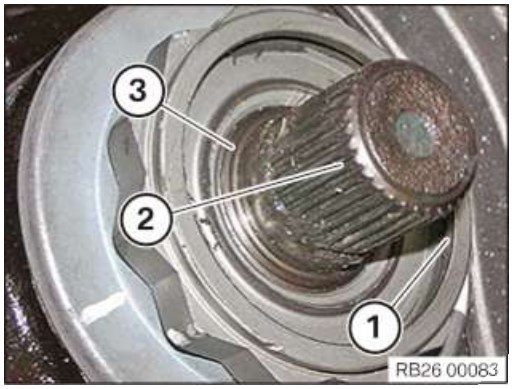
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- Remove the retaining ring (1) and the seal (2).



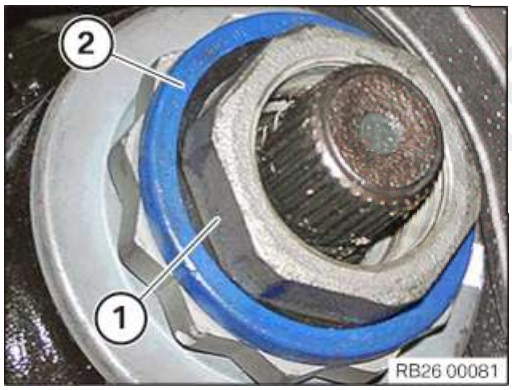
- Remove recessed nut (1).



- Clean and degrease the recessed collar (1) the flange nut, the gearing on the bevel pinion (2) and the taper (3) without any residue.
- Top up the collar insert (1)with grease.

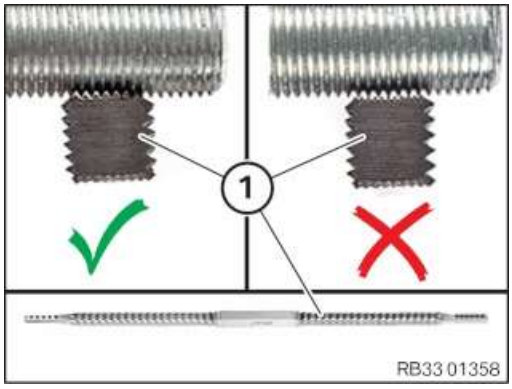
Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Renew the recessed nut (1), seal and retaining ring (2).

  Parts: Recessed nut, seal, retaining ring
- Insert recessed nut (1) including gasket into collar insert of the flange nut.
- Mount the retaining ring (2).



- Use a thread file (1) to remove the adhesive residue on the thread.
- **Make sure that the thread pitch is correct!**

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RISK OF DAMAGE

Damage to the output flange.

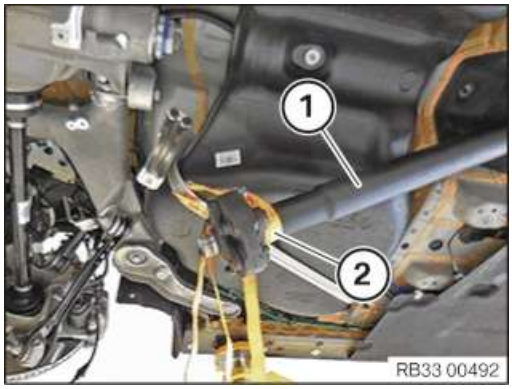
Failure to observe the greasing specifications may lead to damage on the output flange.

- Do not contaminate the thread of the output flange with grease.

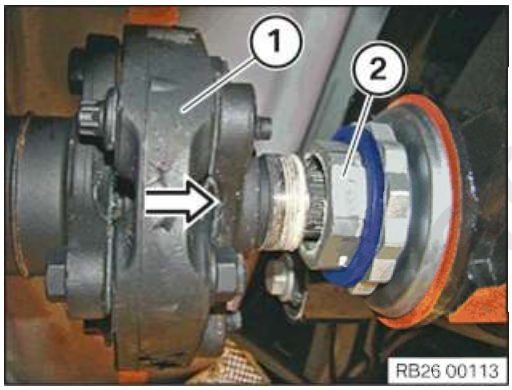
- Remove any adhesive residue on thread (1) of the flange and clean it.
- Clean gearing (2).
- Grease gearing (2).

Expendable materials

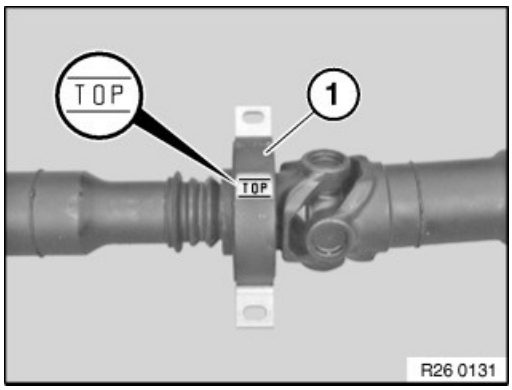
Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Loosen the tensioning strap (2) from the propeller shaft (1).

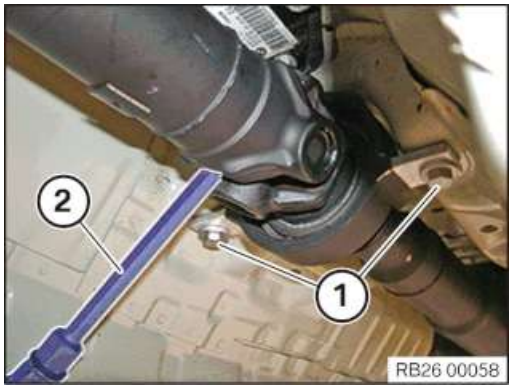


- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Screw and secure recessed nut (2) at least 2 thread starts onto propeller shaft (1) by hand.



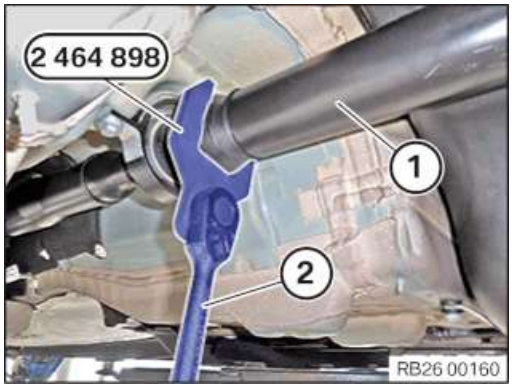
- Position the centre mount (1).

  Position the centre mount (1) with the designation TOP at the top in the transmission tunnel.



- Screw in the screws (1) by a few turns.
- **Version with a broad universal joint:**

  Secure the propeller shaft from twisting with a suitable tool (2) on the centre universal joint.



- **Version with a narrow universal joint:**

  Secure the propeller shaft (1) from twisting with the special tool 2 464 898 and a suitable tool (2) on the centre universal joint.



RISK OF DAMAGE

Damage to the flange nut.

Failure to observe the installation specifications may lead to serious damage to the flange nut and the rear axle differential.

- Do not use the double hexagon flange nut as counter support.
- Screw in the recessed nut within 5 minutes.

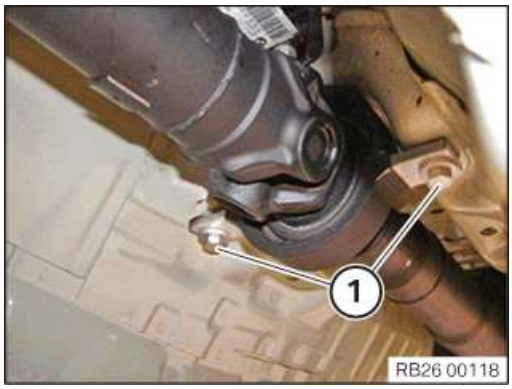
- Tighten recessed nut **counter-clockwise in the direction of the arrow** using special tools 0 495 554 (33 5 070) and .

Propeller shaft on the rear axle differential

Insert nut	Replace insert nut.	Tightening torque	100 Nm

- **After the propeller shaft is installed and the recessed nut is screwed in, strictly observe a hardening time of minimum 3 hours.**

  Do not move or push the vehicle during this time!



- Tighten the screws (1).

Centre mount to body

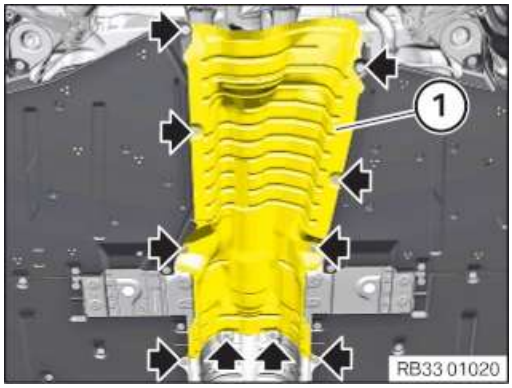
M8		Tightening torque	19 Nm

20 – Installing the rear heat shield

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NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

21 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Installing the cover of the camber control arm**



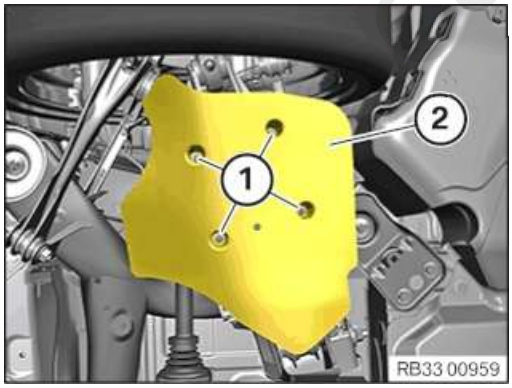
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

22 – Installing the complete exhaust system

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CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

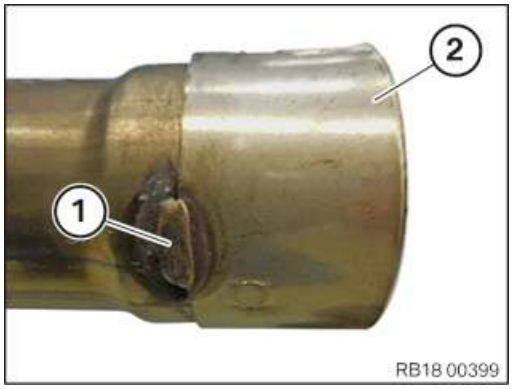
TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.

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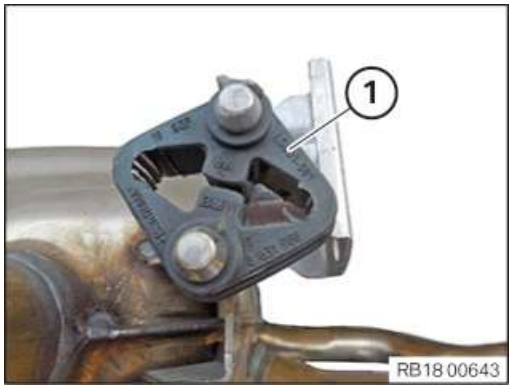
CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

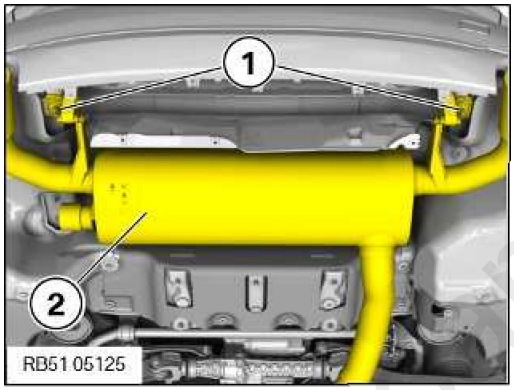


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

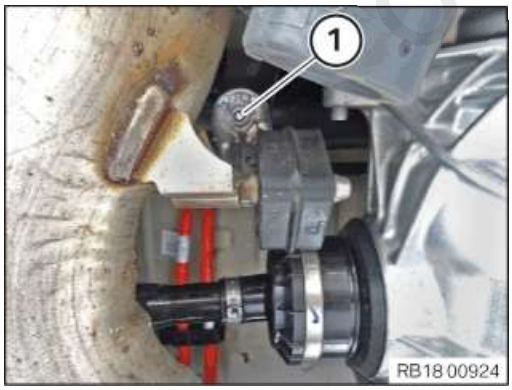


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm



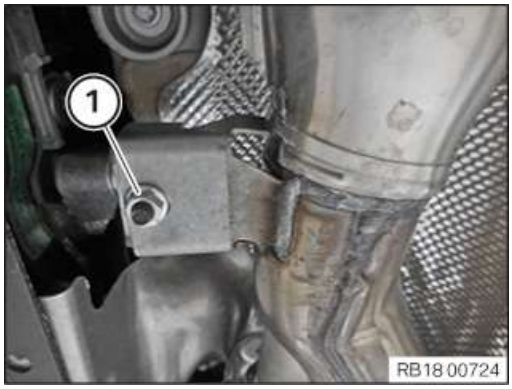
- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

M8 nut		Tightening torque	19 Nm

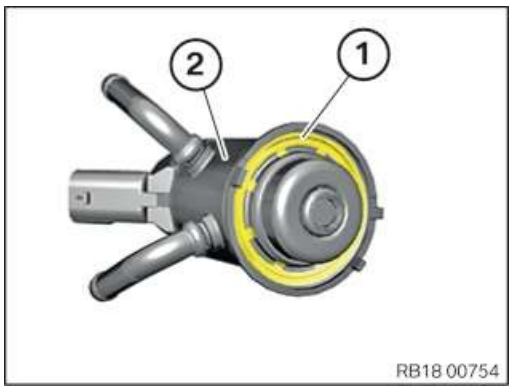
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- Tighten nut (1).

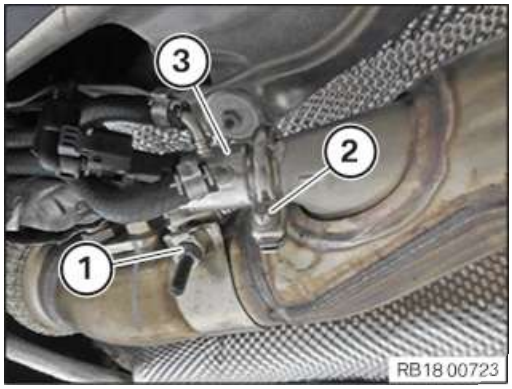
Exhaust system to transmission

M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

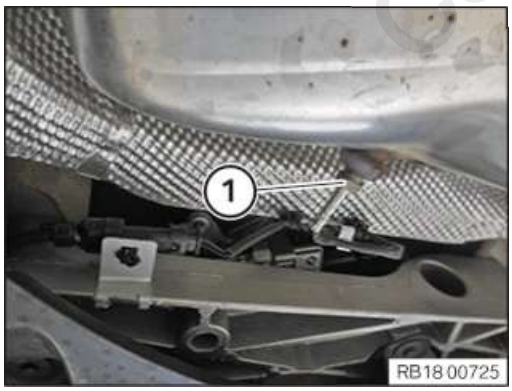
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

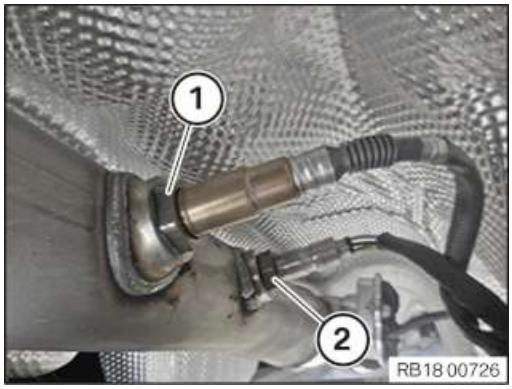


- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm

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- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

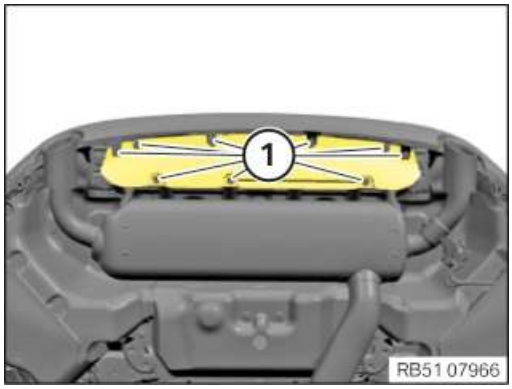
Sensor		Tightening torque	50 Nm

- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

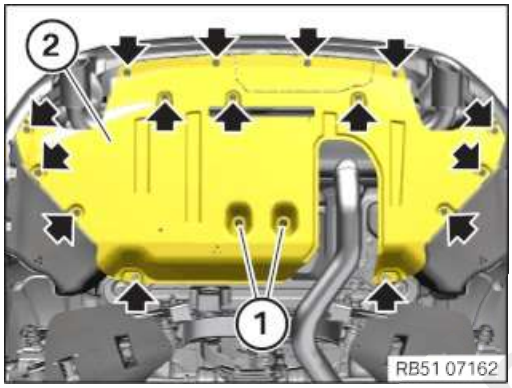
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

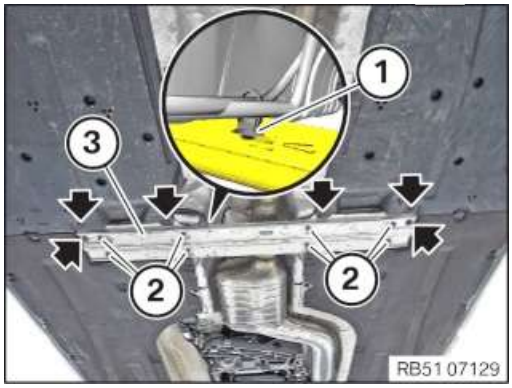
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**



- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

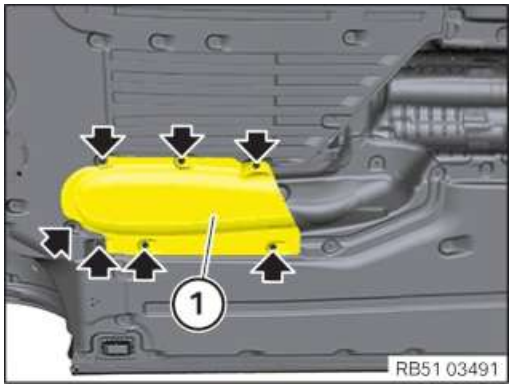
- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

23 – Mounting the rear right wheel

▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

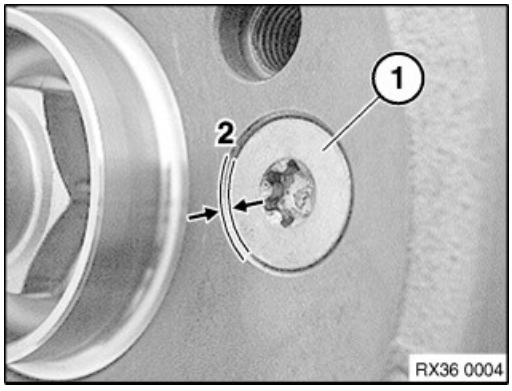
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).



- Check that the mounting bolt (1) for the brake disc is securely seated.

  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

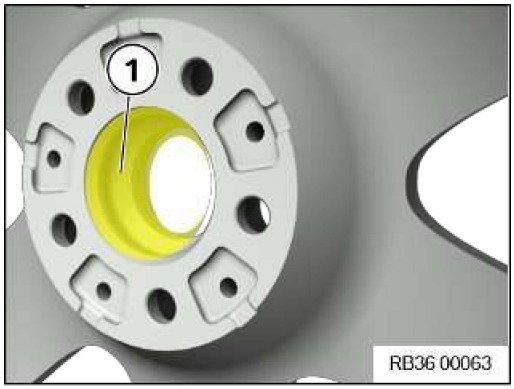
Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm

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TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

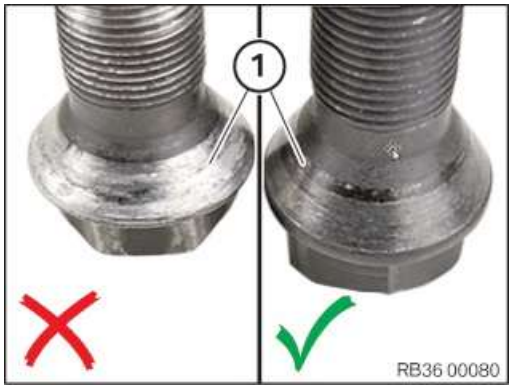
A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.

Check

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- **Check wheel bolts for wear.**

Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

  Parts: Wheel bolts

- Clean the wheel bolts (arrows).
- Check the wheel bolts (arrows) and threads for damage, renew the wheel bolts (arrows) if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.	Check	140 Nm
	Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.		

Additional Information

Overview of Tightening Torques

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Output shaft to wheel bearing			Used in step 13
M16	Replace the collar bolt.	Jointing torque	210 Nm
		Angle of rotation	90 °

Rear differential to rear axle carrier, front			Used in step 15
M12	Renew screw.	Tightening torque	100 Nm

Rear differential to rear axle carrier, rear			Used in step 15
M14	Renew nut.	Tightening torque.	175 Nm

Vibration absorber to rear axle			Used in step 15
M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle			Used in step 15
M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Rear axle differential oil filler plug			Used in step 17
M22	Renew the oil filler plug.	Tightening torque	60 Nm

Ground strap to rear axle differential			Used in step 18
M6x20		Tightening torque	8 Nm

Heat shield to servomotor			Used in step 18
M5x10		Tightening torque	5 Nm

Propeller shaft on the rear axle differential			Used in step 19
Insert nut	Replace insert nut.	Tightening torque	100 Nm

Centre mount to body			Used in step 19
M8		Tightening torque	19 Nm

Heat shield to undercarriage			Used in step 20
Screws and nuts		Tightening torque	3 Nm

Cover to camber control arm			Used in step 21
M6	Replace nuts.	Tightening torque	6 Nm

Rear silencer to body / bumper support			Used in step 22
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 22
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 22
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 22
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

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SCR metering module V-clip to exhaust system			Used in step 22
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 22
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 22
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 22
Sensor		Tightening torque	55 Nm

Diffuser / underbody panelling			Used in step 22
Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel			Used in step 22
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling			Used in step 22
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Brake disc to front wheel hub			Used in step 23
M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub			Used in step 23
M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts			Used in step 23
M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Overview of Special Tools

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2 464 898 Open-end spanner



Common

Used in step 519

Usage	Open-end spanner SW50 for disassembly and installation of the propeller shaft on rear axle differential. The silhouette foil is included in the delivery specification.
Included in the tool or work	
Storage location	A7
Replaced by	
In connection with	
SI-Number	01 19 18 (579)

0 495 554 (33 5 070) Extension



Common

Used in step 519

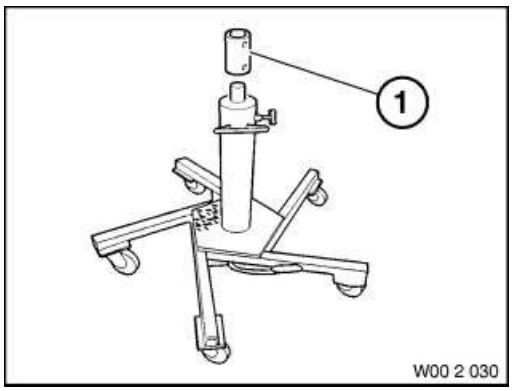
Usage	Pull-out extension for 33 5 040, 33 5 050, 33 5 060.
Included in the tool or work	
Storage location	A18
Replaced by	
In connection with	
SI-Number	01 21 06 (300)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 495 592 (33 5 071)		**Extension** (Extension (1 item)) discontinued, can only be ordered using complete tool	

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0 490 133 (00 2 030) Device



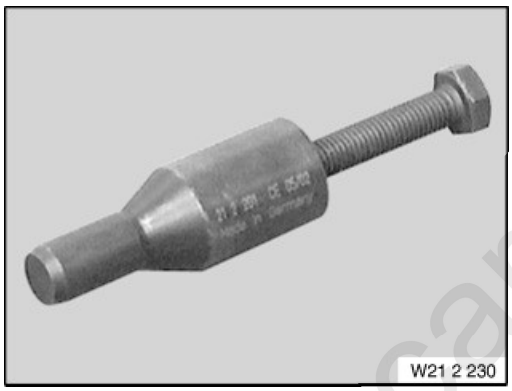
Common Used in step 815

Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

0 494 649 (21 2 230) Mandrel



Common Used in step 11

Usage	(clutch centring drift) With screw M10 (G transmission)
Included in the tool or work	
Storage location	C45
Replaced by	
In connection with	
SI-Number	01 03 03 (960)

2 460 340 Pump



Common Used in step 17

Usage	Oil gun to fill rear axle differentials or differentials with 1 litre containers.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 09 18 (553)

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2 344 011 Tool



Common	Used in step 23
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

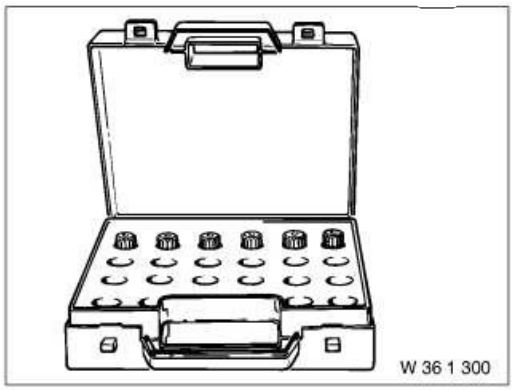
Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

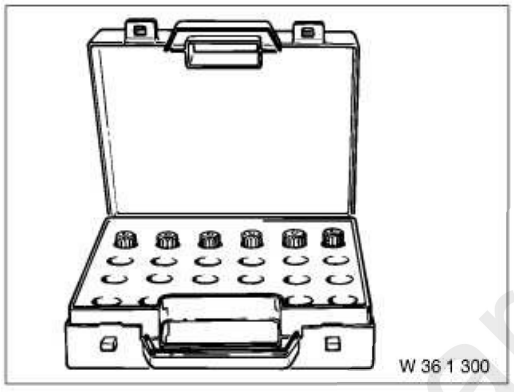
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0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

Rear axle differential oil: Capacity overview (all) Used in step 17

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168LW	0,75 l
190AL	0,8 l
205AL	0,8 l
215LW	0,9 l
215LWS	1.0 l
225AL	0,9 l
225ALS	1.0 l
225M	1.0 l
235LK	1,2 l

Transmission oil: Technically suitable rear axle differential oils

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	123

Operating materials	Used in step
1.1 Grease for propeller shaft inserted	19
1.0 Grease for propeller shaft (flexible disc centring and sliding piece)	19

Operating materials	Used in step
Main group 33	17

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33 31 503 Lowering/raising rear axle support

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

WARNING

Motor vehicle may slip off the vehicle hoist if the weight is distributed unevenly.

Danger! Life-threatening injuries!

- Ensure there is a specific weight compensation on the motor vehicle.

PRELIMINARY WORK

1 – Removing the rear left and right wheels

NOTICE

Perform the operations on the left and right side.

▸ **Removing the wheel**

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TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

  This process is intended to prevent damage to the brake disc.



- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

2 – Remove complete exhaust system

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

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CAUTION

Heavy component.

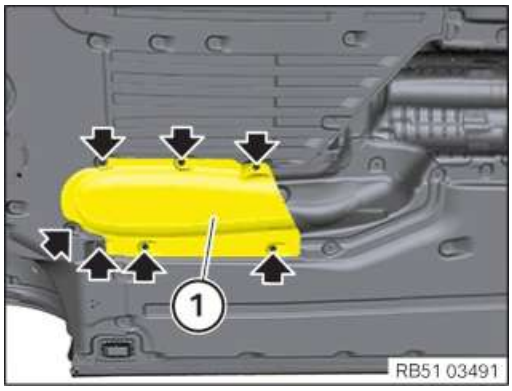
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

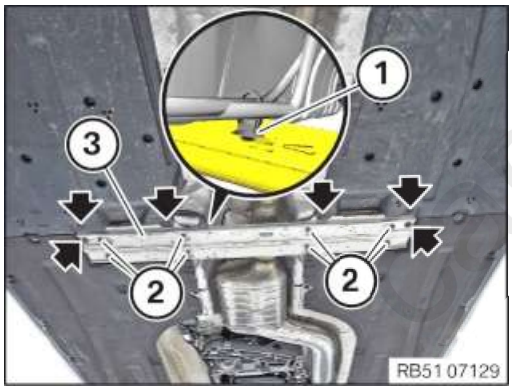
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**



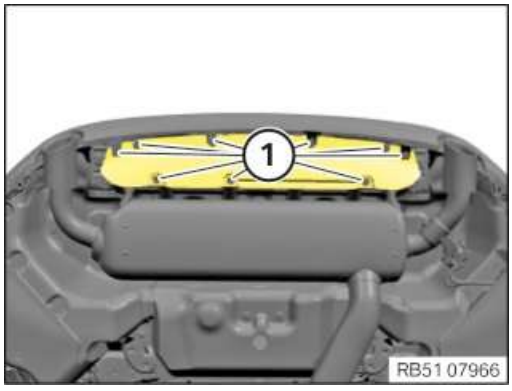
- Remove screws (arrows).

NOTICE

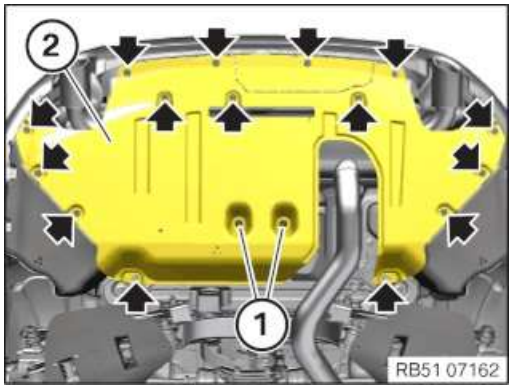
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

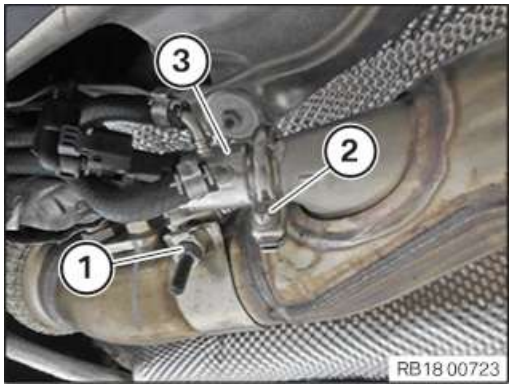
▸ **Removing the rear diffuser**



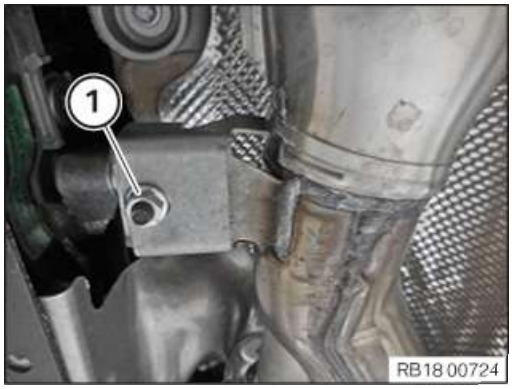
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



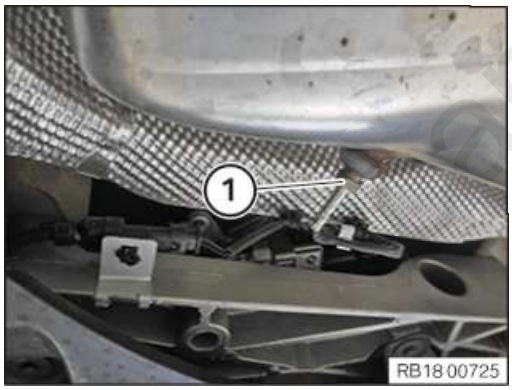
- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).



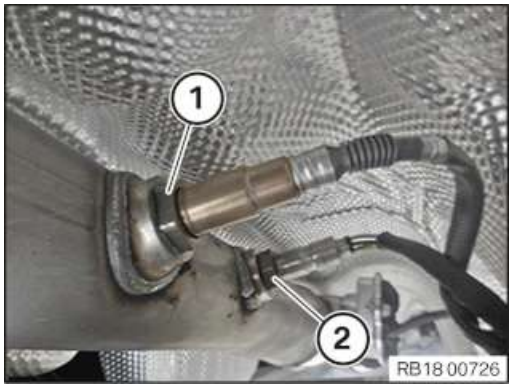
- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.



- Loosen nut (1).

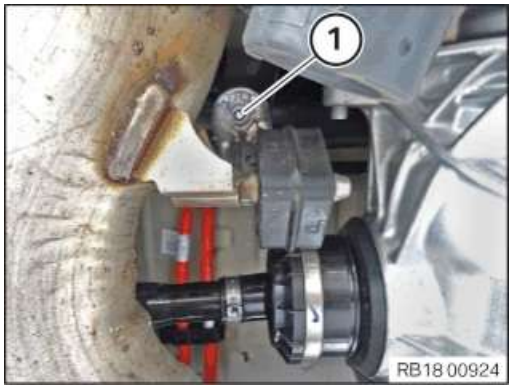


- Detach the exhaust temperature sensor (1) from the exhaust system.

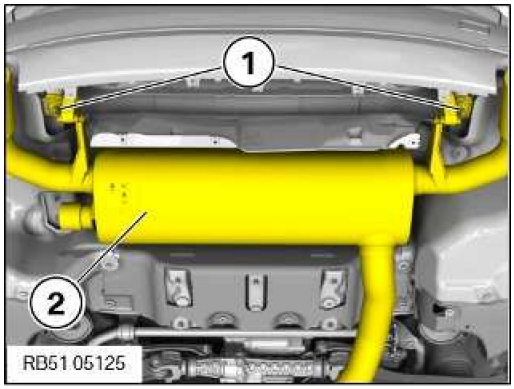


- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.

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- Release the nut (1) on the rear axle support.



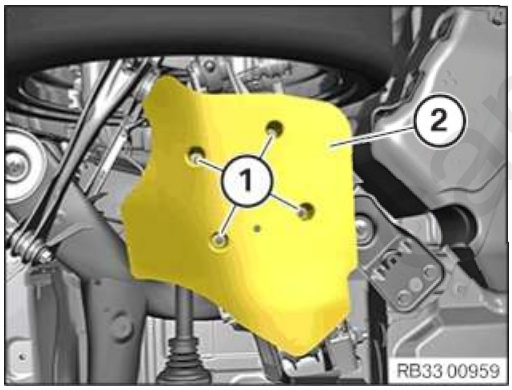
- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

3 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover of camber control arm**



- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

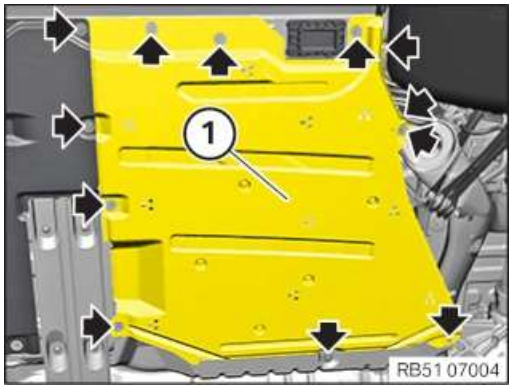
4 – Remove tank cover on left and right

NOTICE

Perform the operations on the left and right side.

▸ **Removing the tank cover**

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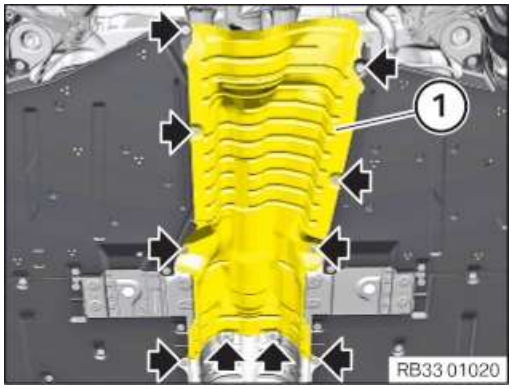


- Release all bolts (arrows).
- Remove the tank cover (1).

5 – Remove heat shield at rear.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

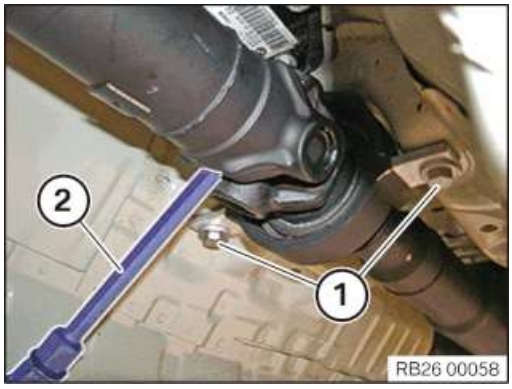
6 – Releasing the propeller shaft from the rear axle differential

RISK OF DAMAGE

Damage to propeller shaft during removal.

Non-observance of the removal guidelines for the propeller shaft on the rear axle differential may cause severe damage.

- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened on the recessed nut only and exclusively in the direction of rotation otherwise the anti-twist lock of the bi-hexagonal flange nut is damaged.
- In the event of a damaged anti-twist lock on the bi-hexagonal flange nut: Replace the rear axle differential.

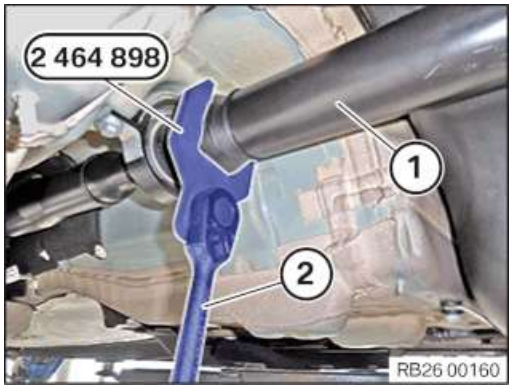


- Loosen screws (1).

  Do not remove bolts (1) yet.
- **Version A (propeller shaft with wide universal joint):**

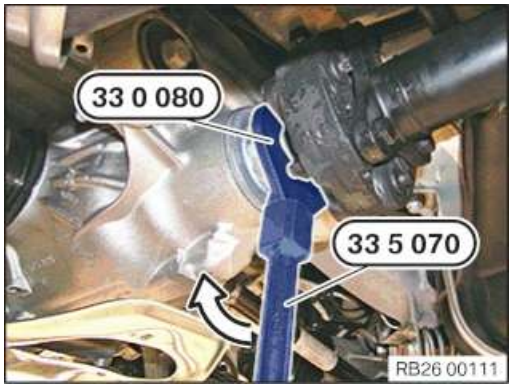
  Secure the propeller shaft against twisting at the centre universal joint using a suitable tool (2).

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- **Version B (propeller shaft with narrow universal joint):**

  Secure the propeller shaft (1) against twisting by using the special tool 2 464 898 and a suitable tool (2) at the central universal joint.



RISK OF DAMAGE

Damage to rear axle differential.

Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

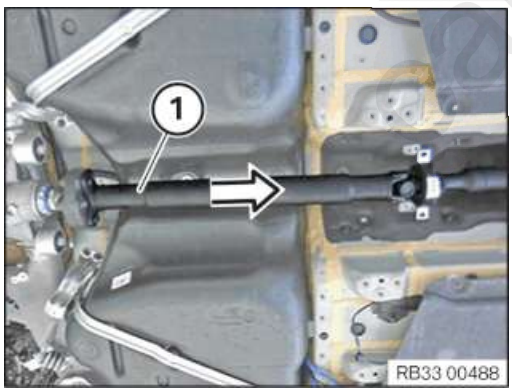
- Do not use the double hexagon head flange nut as counter support.

- Loosen the recessed nut **against** the direction of travel **in clockwise direction** using special tools 0 495 554 (33 5 070) and .

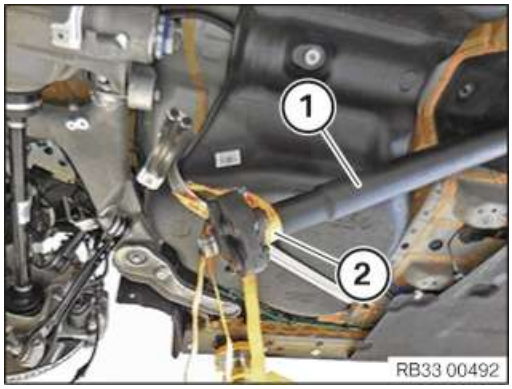
  The bi-hexagonal flange nut must not be used for counter-holding.



- Loosen screws (1) on centre mount.



- Loosen the propeller shaft (1) from the rear axle differential in the direction of the arrow.

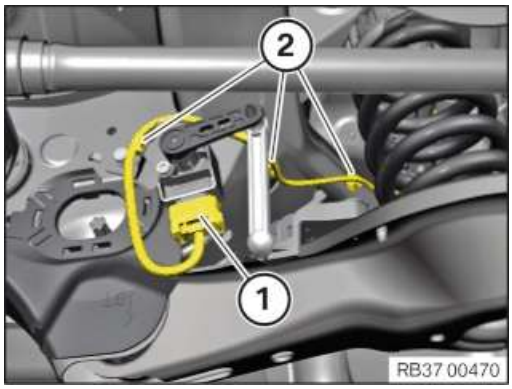


- Tie up the propeller shaft (1) using a tensioning strap (2).

7 – Releasing the cable for the ride height sensor from the rear axle support

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7 – Releasing the cable for the ride height sensor from the rear axle support



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

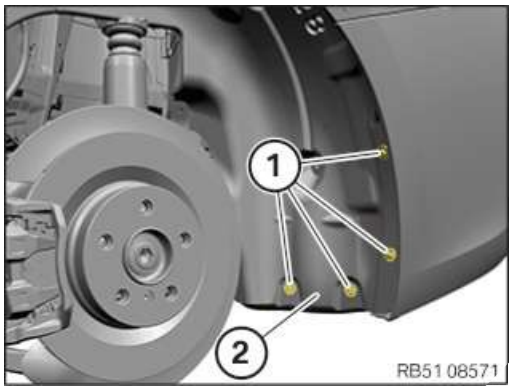
- Unlock the plug connection (1) from the ride height sensor and disconnect.
- Release the cable with the holders (2) from the rear axle support.

8 – Loosen cable of rear left and right RPM sensor

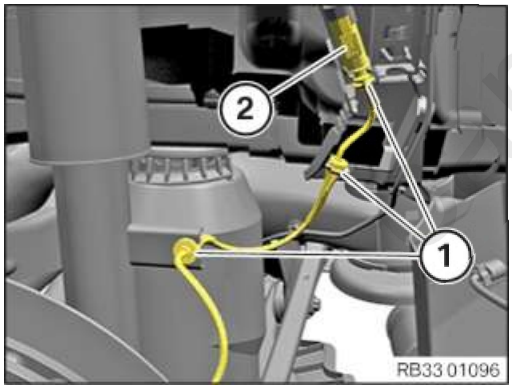
NOTICE

Perform the operations on the left and right side.

▸ **Release the cable of the rear wheel speed sensor**



- Loosen screws (1).
- Set the wheel arch cover (2) aside.



- Detach the wheel speed sensor cable from the brackets (1).
- Unlock plug connection (2) and disconnect.

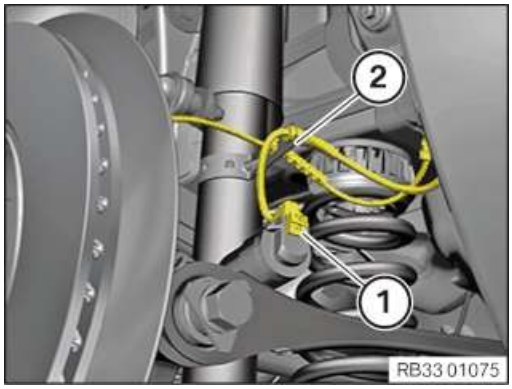
9 – Release the shock absorbers at the rear left and right from the body

NOTICE

Perform the operations on the left and right side.

▸ **Releasing the rear shock absorber from the body**

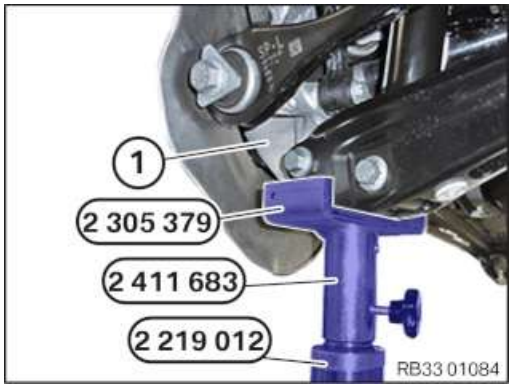
.com



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Release all the existing cables from holder (2).
- Unlock plug connection (1) and disconnect.



WARNING

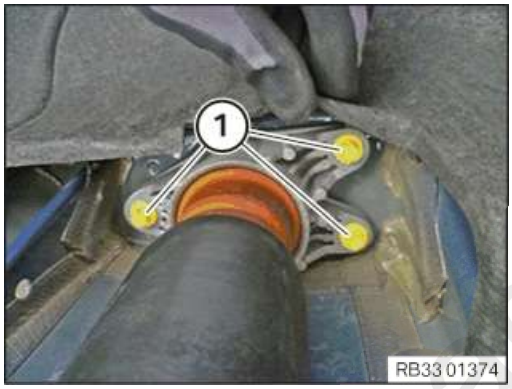
Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).
- Support the wheel carrier (1) with the special tool 2 219 012.

  Do not press against the spring force of the coil spring.



- Loosen screws (1).
- Disconnect the special tool 2 219 012 and set it aside.

10 – Remove the coil spring on the left and right

NOTICE

Perform the operations on the left and right side.

▸ **Remove coil spring**

▹ **Preparing the special tool (G22/G23/G26/G42)**

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

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- **Basic version:**

  Spindle = Special tools and

  Upper spring cup = Special tool 5 A36 B04

  Lower spring cup = Special tool 5 A36 B05



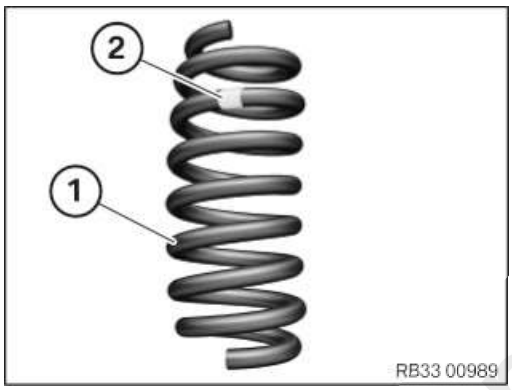
- **BMW M Performance Automobile (Sport) and Alpina:**

  Spindle = special tools , and

  Upper spring cup = Special tool

  Lower spring cup = Special tool

◁



TECHNICAL INFORMATION

Incorrect assembly is possible. Ensure correct installation position.

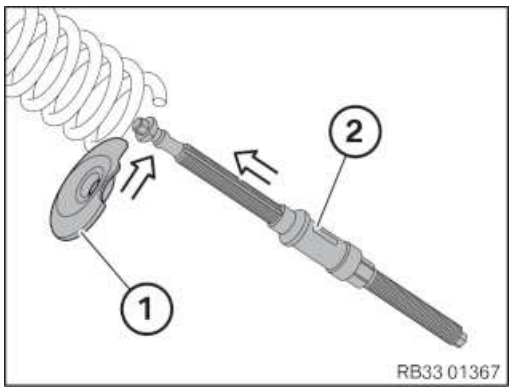
- The installation position of the coil spring(1) is marked with a label (2).

  The label (2) is attached at the top end of the coil spring (1) and is marked as “top”

- Check coil spring (1) for availability of label (2)

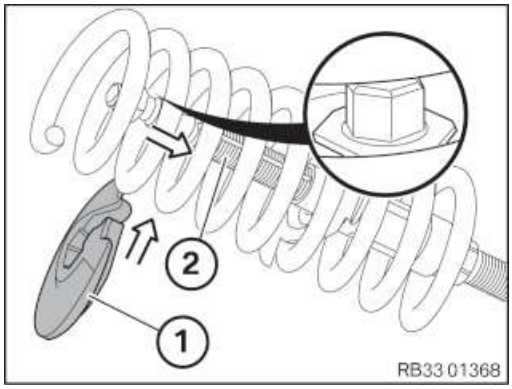
  If the label (2) on the installed coil spring (1) is missing and it has to be fixed after repair, then the installation position of the coil spring (1) must be marked necessarily.

Note: Mark the installation position of the coil spring, by attaching an adhesive tape at the top end of spring.



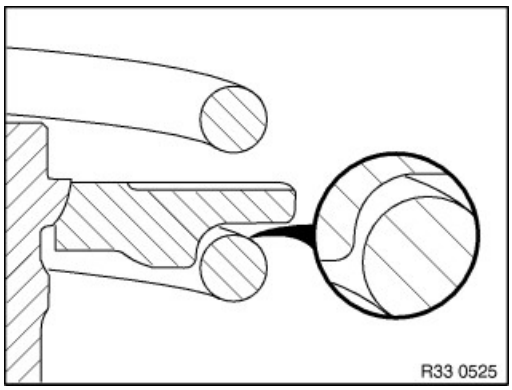
- Insert the bottom spring cup (1) sideways in the direction of arrow in the coil spring and turn up to the lowest coil.
- Insert the spindle (2) from below in the direction of arrow through the camber control arm and the bottom spring cup (1).

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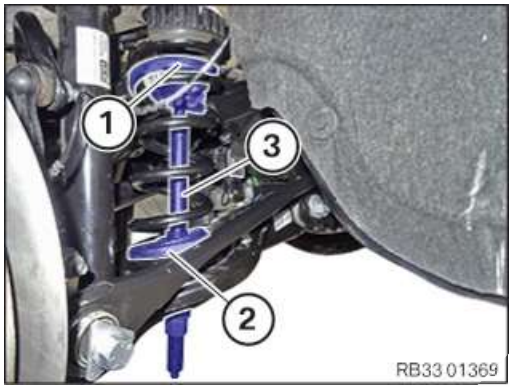


- Insert the top spring cup (1) sideways in the direction of arrow in the coil spring, feed in to the spindle (2) and turn it upwards as far as possible.

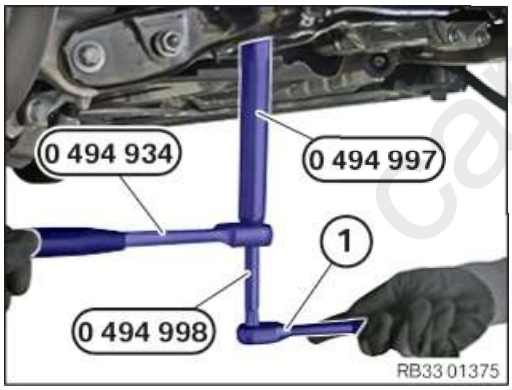
  Check the position of the spindle (2) with the hexagon head in the top spring cup (1) and correct if necessary.
- Pull the spindle (2) downwards in the direction of arrow.



- Check the position of the spring cup in the coil spring at the top and bottom and, if necessary, correct it.



- Align the top spring cup (1) and the bottom spring cup (2) with the spindle (3) in the centre to reach the highest possible contact surface on the coil spring.



RISK OF DAMAGE

Compression of coil spring to solid height.

Damage of the coil spring.

- Do not compress coil spring to solid height.
- Make sure there is a gap between the spring coils.

- Tension the coil spring using special tools and . In doing so, counter support at the spindle with the special tool and the standard tool (1).

  Standard tool:



- Feed out coil spring on upper spring pad (1). If necessary, remove upper spring pad (1).

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- Guide out and remove the coil spring (1) toward the top in the direction of the arrow.

11 – Releasing left and right brake caliper

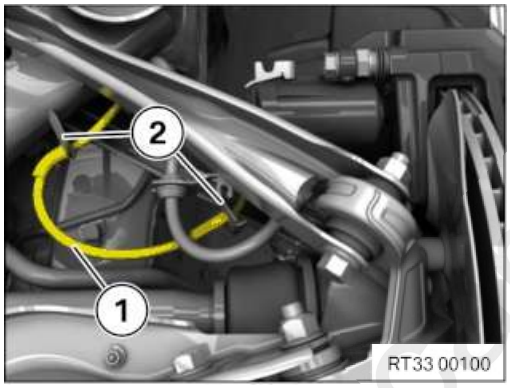
NOTICE

Perform the operations on the left and right side.

▸ **Releasing the brake caliper**

TECHNICAL INFORMATION

During work on the rear brake, it must be ensured that the button for the electromechanical parking brake cannot be pressed.

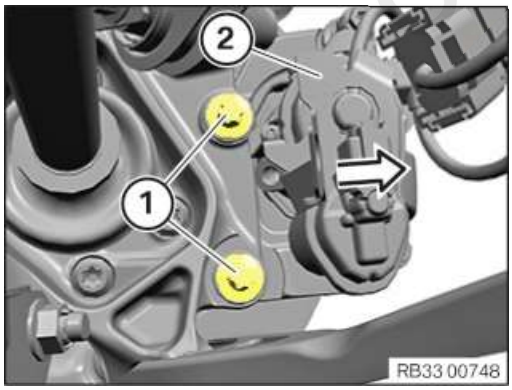


- Release the cable for the parking brake (1) from the holders (2).

NOTICE

Perform this step on the right side only.

- Release the cable for brake pad wear indicator from rear axle support.



- Loosen screws (1).
- Pull brake caliper (2) down in direction of arrow.

  The brake caliper must not hang on the brake hose.



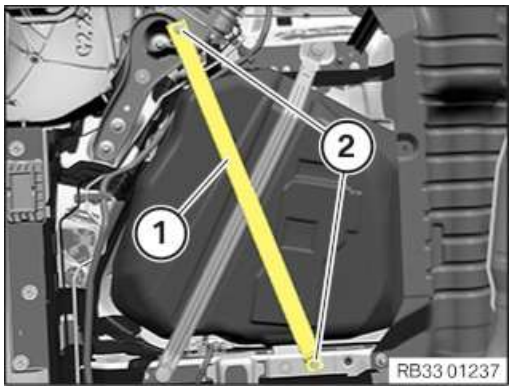
- Tie the brake caliper (1) up with the special tool 2 413 317.

12 – Remove reinforcement strut on the left and right

NOTICE

Perform the operations on the left and right side.

▸ **Remove stiffening strut**



NOTICE

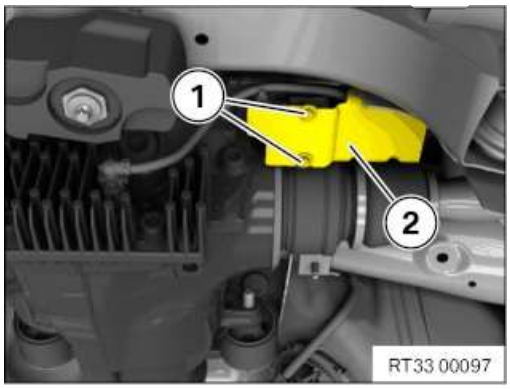
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen screws (2).
- Remove bracing strut (1).

13 – Releasing the wiring harness from the M Sport differential

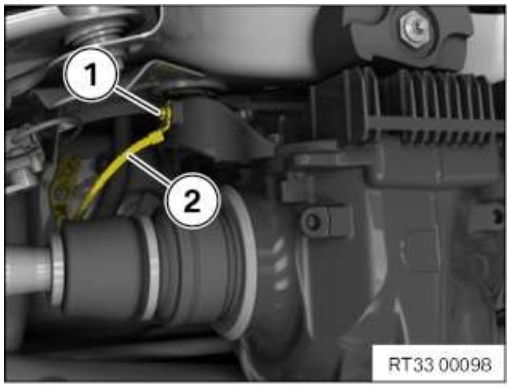
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

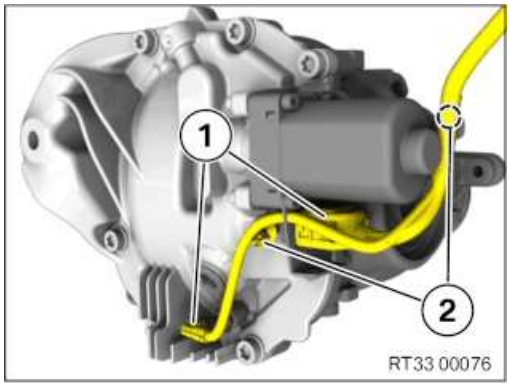


- Loosen screws (1).
- Remove heat shield (2).

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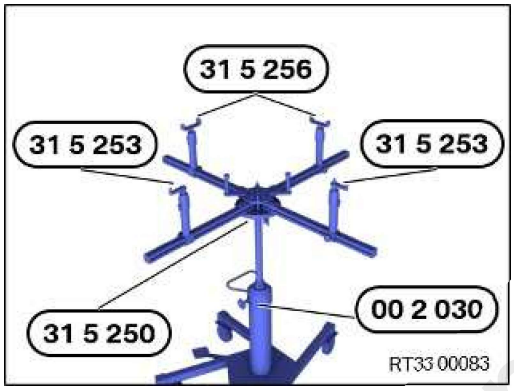


- Release the screw (1).
- Detach the ground strap (2) from the rear axle differential.



- Unlock and disconnect plug connections (1).
- Release cable from brackets (2).

14 – Preparing the special tool



TECHNICAL INFORMATION

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

- Apply special tool completely on the special tool 0 490 133 (00 2 030) with an auxiliary person helping.
- Insert special tool in telescopic supports of a profile rail pair.
- Insert special tools in telescopic supports of other profile rail pair.

15 – Positioning the special tool on the rear axle support

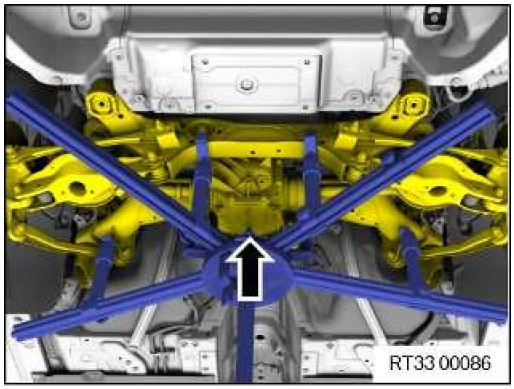
TECHNICAL INFORMATION

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

TECHNICAL INFORMATION

The centre of gravity of the axle support must be in the centre over the special tool.

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- Align special tools to rear axle support.
- Lift the special tool 2 219 012 and support the rear axle support.
- Secure the rear axle support with a tensioning strap on the special tool .

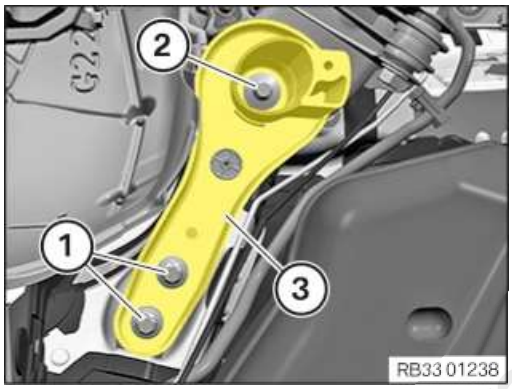
MAIN WORK

16 – Loosening the rear axle support

NOTICE

Perform the operations on the left and right side.

▸ **Remove compression strut**



RISK OF DAMAGE

Damage to the components on the rear axle.

If both compression struts are removed simultaneously, it can cause serious damage to the rear axle.

- Renew or remove compression strut only individually.
- When lowering or removing the rear axle: Support rear axle support before both compression struts are removed.

- Loosen screws (1).
- Loosen screw (2).
- Remove compression strut (3).

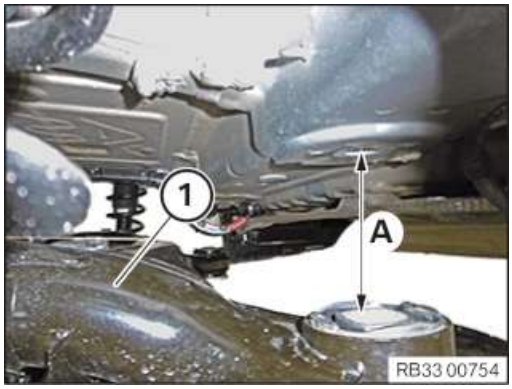
▸ **Removing the rear compression strut**



- Loosen screws (2).
- Loosen screw (3).
- Remove compression strut (1).

17 – Lowering rear axle support

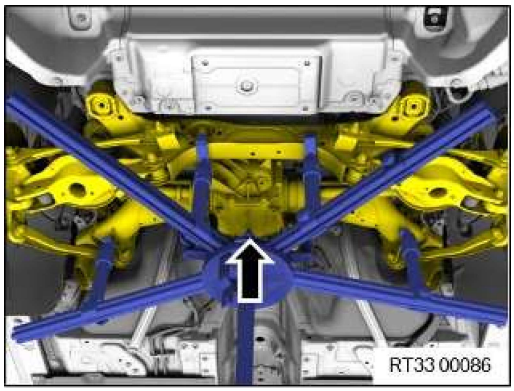
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- Lower the rear axle support (1) with the special tool 2 219 012 by the dimension (A).

  Dimension (A) = approx. 10 cm

18 – Raising the rear axle support



- Lift the rear axle support with the special tool 2 219 012 and position on the body.

19 – Securing the rear axle support

NOTICE

Perform the operations on the left and right side.



▸ **Installing the rear compression strut**

- Renew screws (2) and (3).

  Parts: Screws
- Position compression strut (1).
- Screw in screws (2) and (3).
- Tighten down screw (3).

Rear axle carrier to body

M12	Renew screws.	Tightening torque	108 Nm

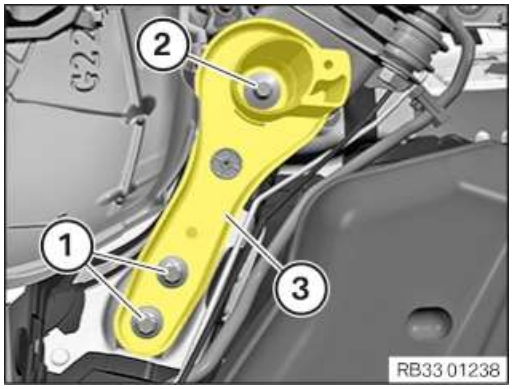
- Tighten the screws (2).

Compression strut on body

M10	Renew screws.	Jointing torque	47 Nm
		Angle of rotation	45 °

▸ **Install compression strut**

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- Renew screws (1) and (2).

  Parts: Screws
- Position compression strut (3).
- Screw in screws (1) and (2).
- Tighten down screw (2).

Rear axle carrier to body

M12	Renew screws.	Tightening torque	108 Nm

- Tighten the screws (1).

Compression strut on body

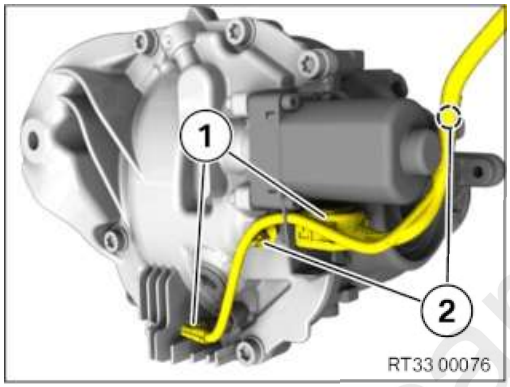
M10	Renew screws.	Jointing torque	47 Nm
		Angle of rotation	45 °

POSTPROCESSES

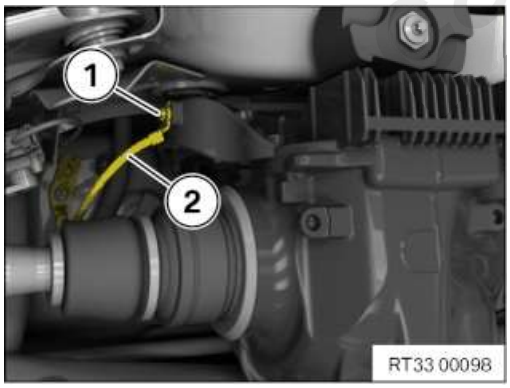
20 – Mounting the wiring harness to the M Sport differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



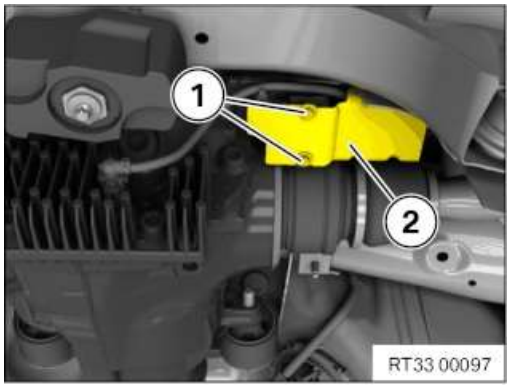
- Connect connectors (1) and lock.
- Secure the cables on the brackets (2).



- Position the ground strap (2) on the rear axle differential.
- Tighten down screw (1).

Ground strap to rear axle differential

M6x20		Tightening torque	8 Nm



- Position the heat shield (2).
- Tighten the screws (1).

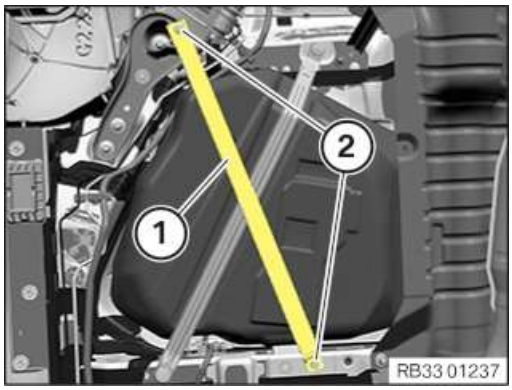
Heat shield to servomotor

M5x10		Tightening torque	5 Nm

21 – Installing the bracing strut on the left and right

NOTICE

Perform the operations on the left and right side.



▸ **Installing the bracing strut**

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Position the reinforcement strut (1).
- Tighten the screws (2).

Bracing strut on compression strut/body

M8		Tightening torque	28 Nm

22 – Securing the brake calipers at left and right

NOTICE

Perform the operations on the left and right side.

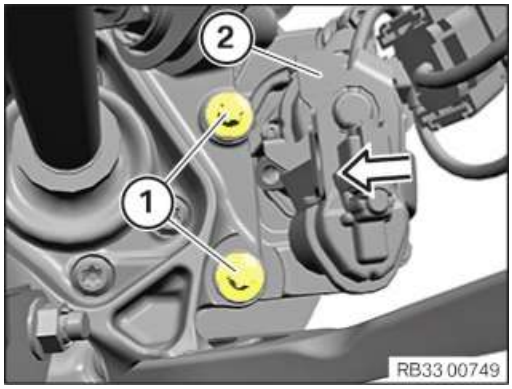
▸ **Securing the brake caliper**



- Release and remove special tool 2 413 317.

  The brake caliper must not hang on the brake hose.

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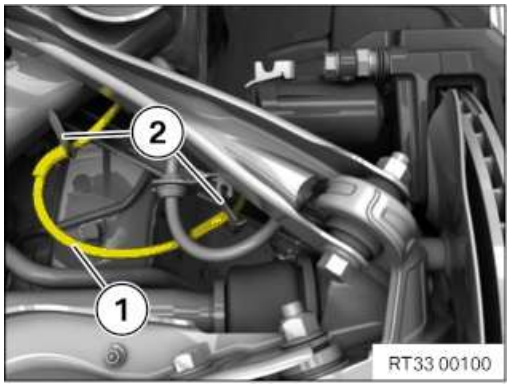


- Position the brake caliper (2) in the direction of the arrow.
- Renew screws (1).

  Parts: Screws
- Tighten the screws (1).

Caliper carrier to rear wheel carrier

M12	Renew screw.	Tightening torque	130 Nm



- Fasten the cable for the parking brake (1) to the holders (2).

NOTICE

Perform this step on the right side only.

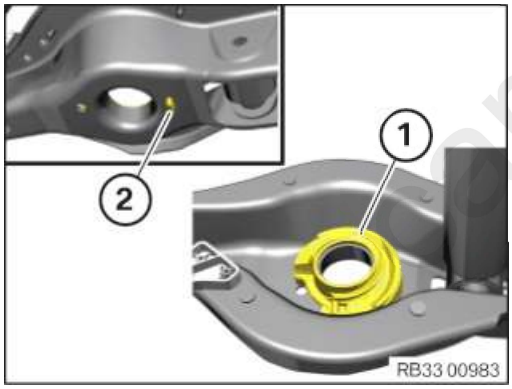
- Fasten the cable for the brake pad wear indicator on the rear axle support.

23 – Install the left and right coil spring

NOTICE

Perform the operations on the left and right side.

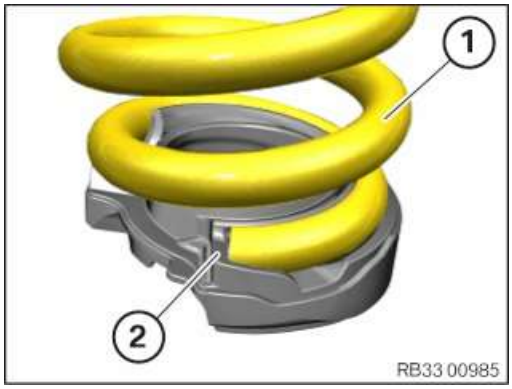
▸ **Install the coil springs**



- Check bottom spring pad (1) for damage, renew if necessary.
- Check the position of the lower spring pad (1) with the plastic tab (2) on the camber control arm, correct if necessary.



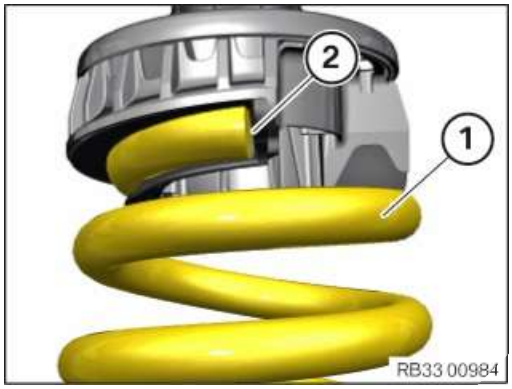
- Feed in the coil spring (1) in direction of arrow from the top and lock.



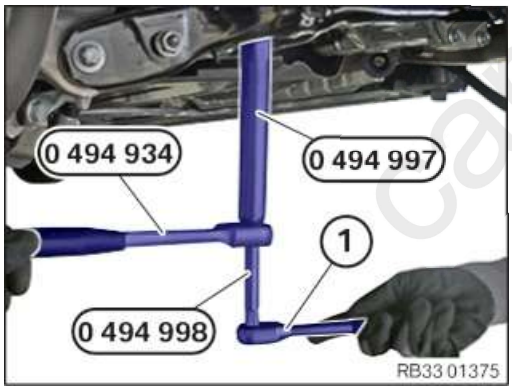
- Position the coil spring (1) in such a way that the coil spring end is in form-fit contact with the lower spring pad (2).



- Feed in the spring pad at the top (1).



- Position the upper spring pad on the coil spring (1) in such a way that the coil spring end (2) is in form-fit contact with the upper spring pad.



- Slacken the coil spring with the special tools and . In doing so, counter support at the spindle with the special tool and the standard tool (1).

  Standard tool:

  Pay attention to the mounting orientation when releasing the coil spring, correct if necessary.
- Remove special tools.

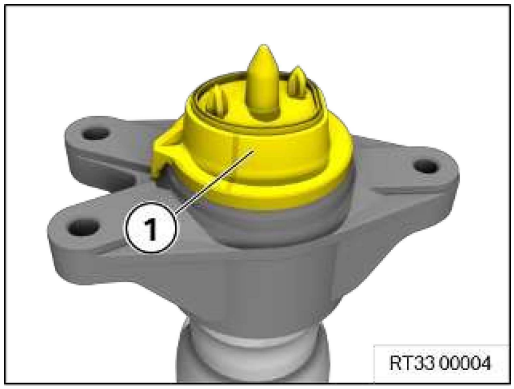
24 – Securing rear left and right shock absorbers to body

NOTICE

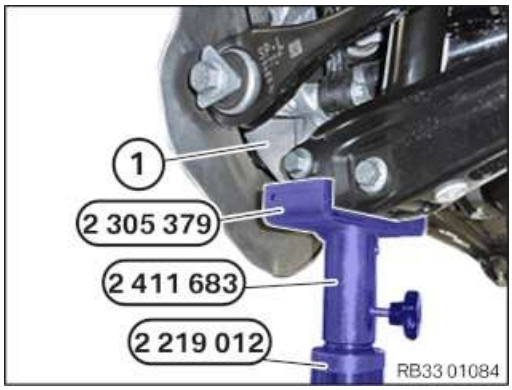
Perform the operations on the left and right side.

▸ **Securing shock absorber at rear to body**

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- Check the centering plate (1) for damage, renew if necessary.
- Check the position of the centering plate (1), correct if necessary.



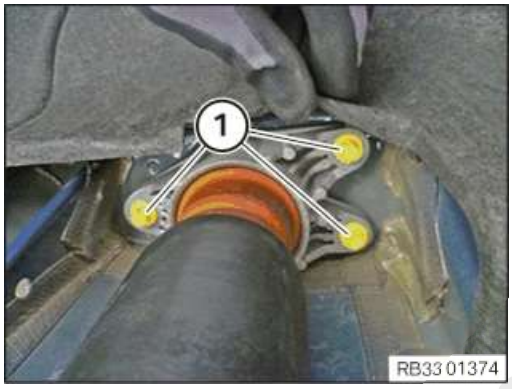
WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).



- Slightly lift the wheel carrier with the special tool 2 219 012. Position the shock absorber on the body in the process.

  Do not press against the spring force of the coil spring.

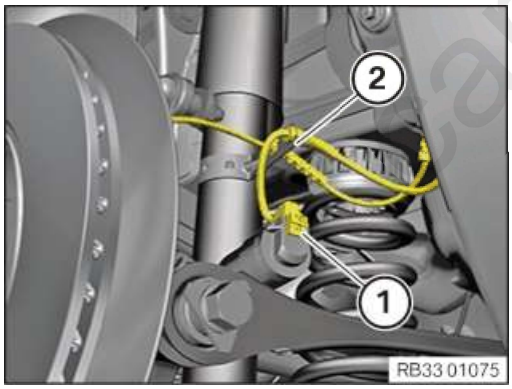
- Renew screws (1).

  Parts: Screws

- Tighten the screws (1).

Nut and locknut/self-locking nut

M8x40	Renew screws.	Tightening torque	28 Nm



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

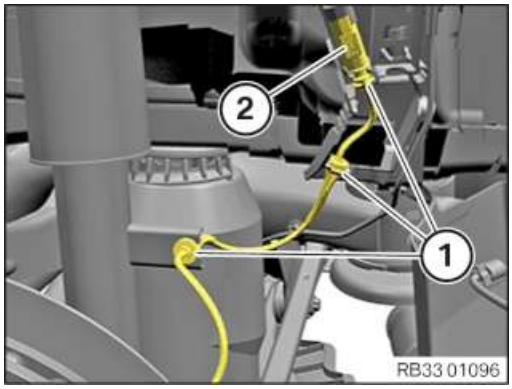
- Secure all existing cables on the holder (2).
- Connect connectors (1) and lock.

25 – Securing cable of rear left and right wheel speed sensor

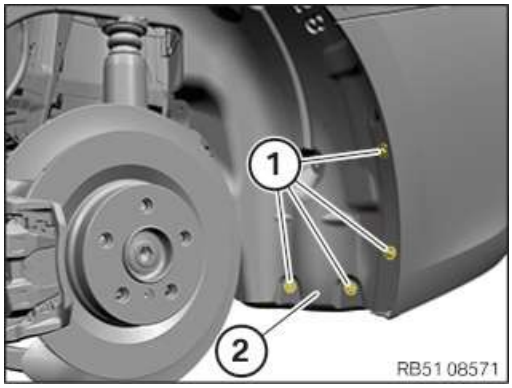
NOTICE

Perform the operations on the left and right side.

▸ **Mounting the cable of the rear wheel speed sensor**



- Connect connectors (2) and lock.
- Mount the cable of wheel speed sensor on the holders (1).

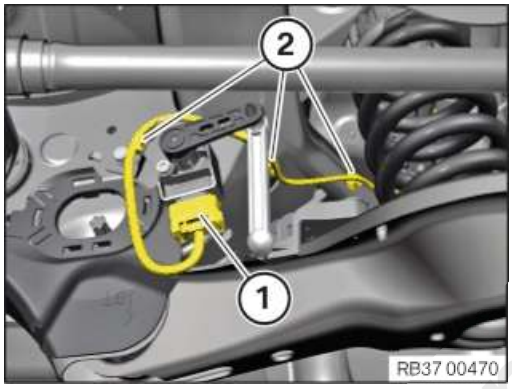


- Insert the wheel arch cover (2).
- Tighten the screws (1).

Rear wheel arch cover to bumper trim panel

Hexagon screw		Tightening torque	2,6 Nm

26 – Fastening the cable for the ride height sensor on the rear axle support



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure the cable with the holders (2) on the rear axle support.
- Connect the connector (1) to the ride height sensor and lock it.

27 – Securing the propeller shaft on the rear axle differential

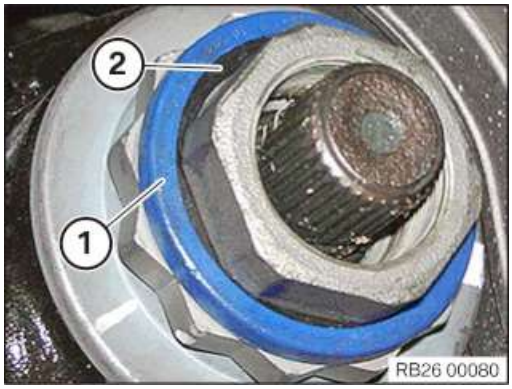
RISK OF DAMAGE

Damage to the propeller shaft during installation.

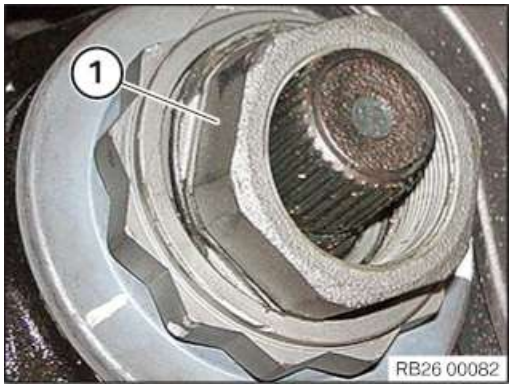
Non-observance of the installation guidelines for the propeller shaft on the rear axle differential may cause severe damage.

- Always renew the recessed nut on the rear axle differential. Screw locking must be available.
- Strictly observe a hardening time of minimum 3 h after screwing the recessed nut. The hardening time may be longer at lower temperatures.

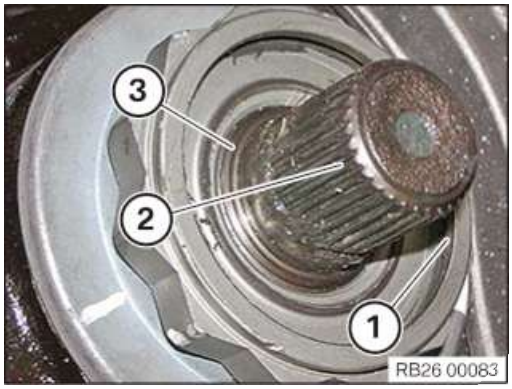
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- Remove the retaining ring (1) and the seal (2).



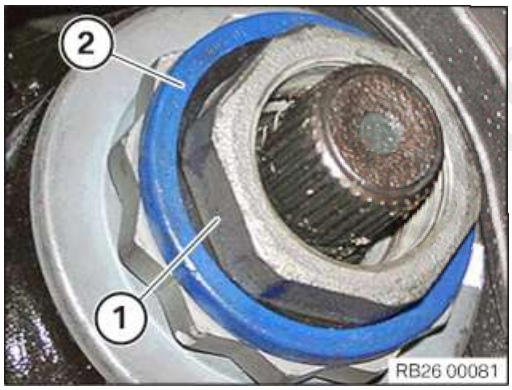
- Remove recessed nut (1).



- Clean and degrease the recessed collar (1) the flange nut, the gearing on the bevel pinion (2) and the taper (3) without any residue.
- Top up the collar insert (1)with grease.

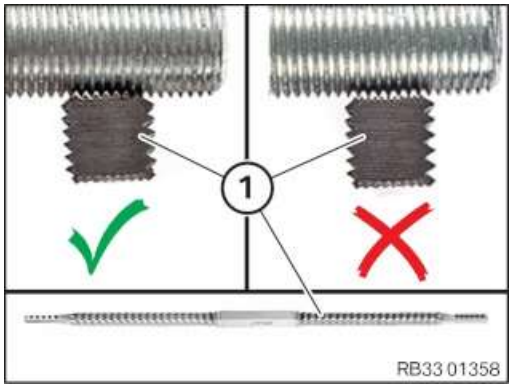
Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Renew the recessed nut (1), seal and retaining ring (2).

  Parts: Recessed nut, seal, retaining ring
- Insert recessed nut (1) including gasket into collar insert of the flange nut.
- Mount the retaining ring (2).



- Use a thread file (1) to remove the adhesive residue on the thread.
- **Make sure that the thread pitch is correct!**

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RISK OF DAMAGE

Damage to the output flange.

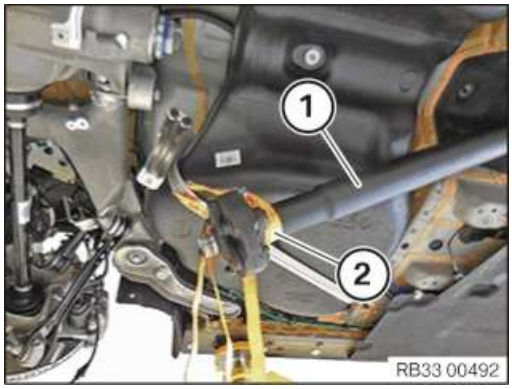
Failure to observe the greasing specifications may lead to damage on the output flange.

- Do not contaminate the thread of the output flange with grease.

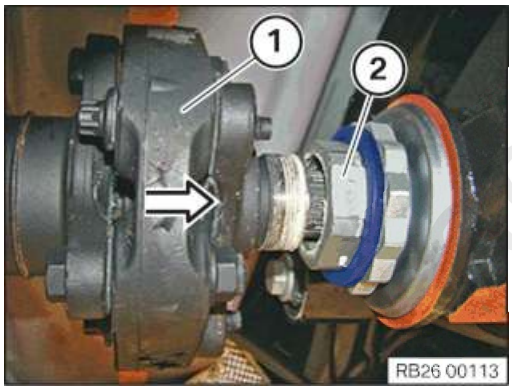
- Remove any adhesive residue on thread (1) of the flange and clean it.
- Clean gearing (2).
- Grease gearing (2).

Expendable materials

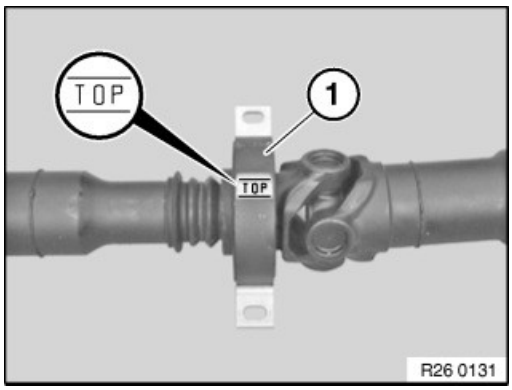
Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Loosen the tensioning strap (2) from the propeller shaft (1).

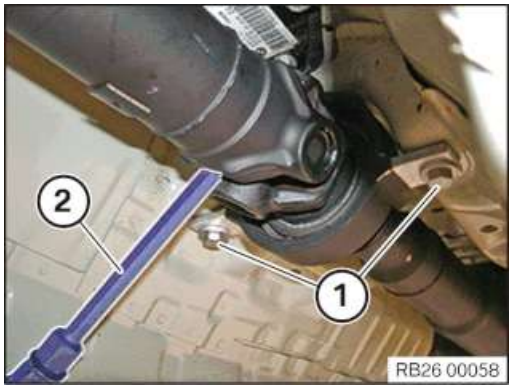


- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Screw and secure recessed nut (2) at least 2 thread starts onto propeller shaft (1) by hand.



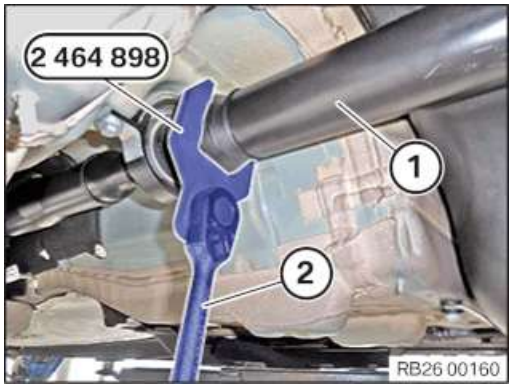
- Position the centre mount (1).

  Position the centre mount (1) with the designation TOP at the top in the transmission tunnel.



- Screw in the screws (1) by a few turns.
- **Version with a broad universal joint:**

  Secure the propeller shaft from twisting with a suitable tool (2) on the centre universal joint.



- **Version with a narrow universal joint:**

  Secure the propeller shaft (1) from twisting with the special tool 2 464 898 and a suitable tool (2) on the centre universal joint.



RISK OF DAMAGE

Damage to the flange nut.

Failure to observe the installation specifications may lead to serious damage to the flange nut and the rear axle differential.

- Do not use the double hexagon flange nut as counter support.
- Screw in the recessed nut within 5 minutes.

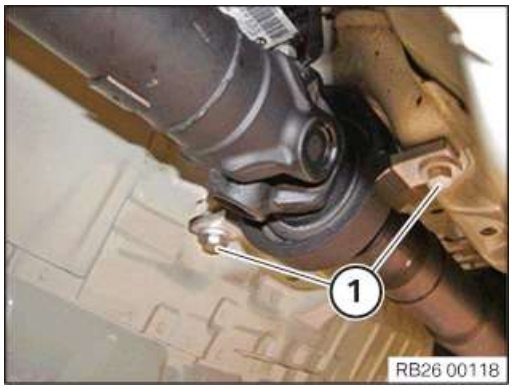
- Tighten recessed nut **counter-clockwise in the direction of the arrow** using special tools 0 495 554 (33 5 070) and .

Propeller shaft on the rear axle differential

Insert nut	Replace insert nut.	Tightening torque	100 Nm

- **After the propeller shaft is installed and the recessed nut is screwed in, strictly observe a hardening time of minimum 3 hours.**

  Do not move or push the vehicle during this time!



- Tighten the screws (1).

Centre mount to body

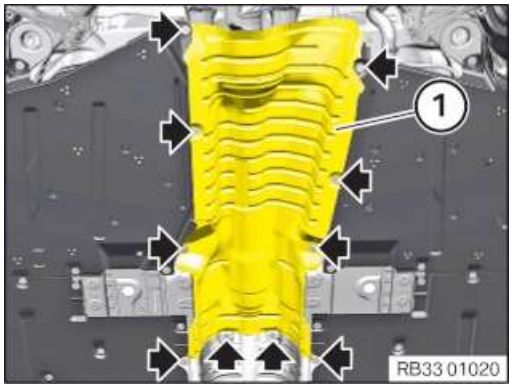
M8		Tightening torque	19 Nm

28 – Installing the rear heat shield

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NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

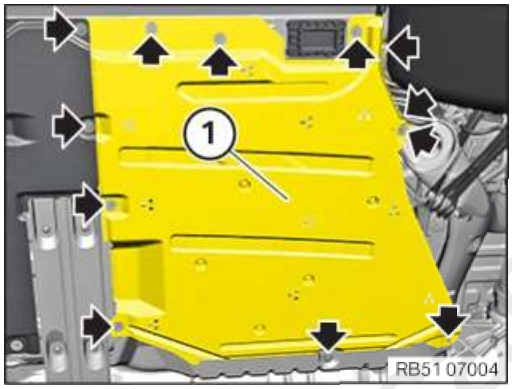
Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

29 – Install left and right tank cover

NOTICE

Perform the operations on the left and right side.



▸ **Installing tank cover**

- Position the tank cover (1).
- Tighten all bolts (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

30 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.



▸ **Installing the cover of the camber control arm**

- It is imperative to note the installation location and direction of installation (1).

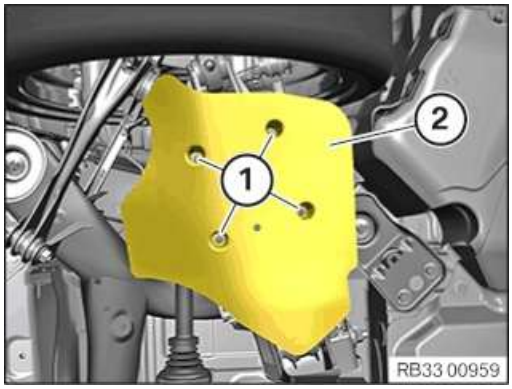
  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right

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- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

31 – Installing the complete exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

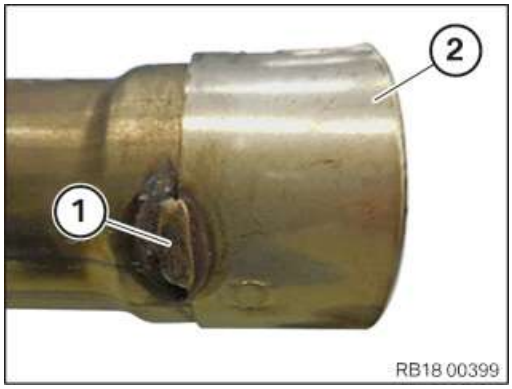
TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.

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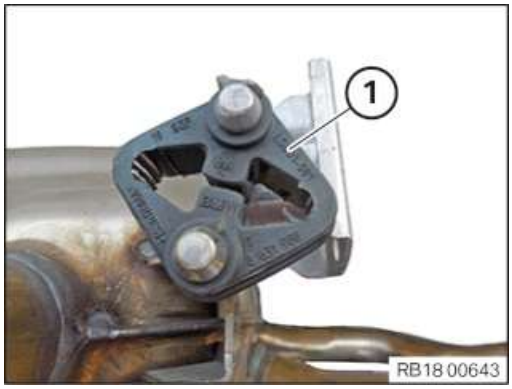
CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

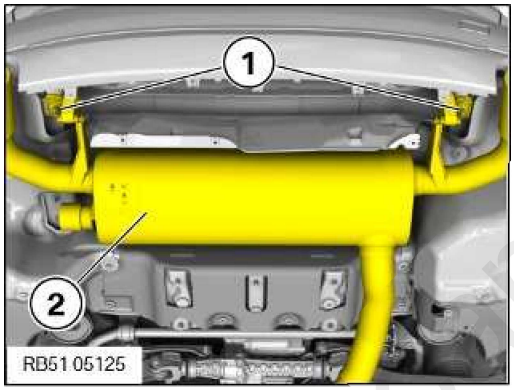


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

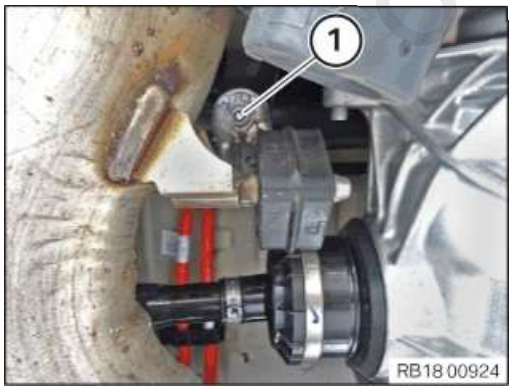


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm



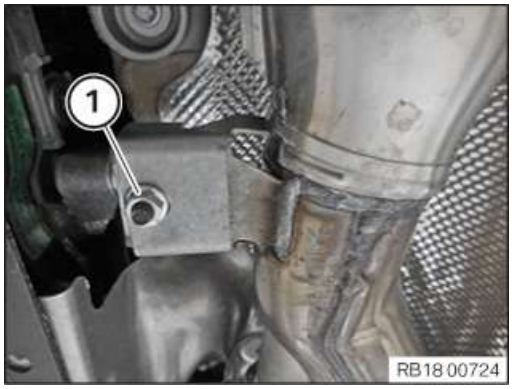
- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

M8 nut		Tightening torque	19 Nm

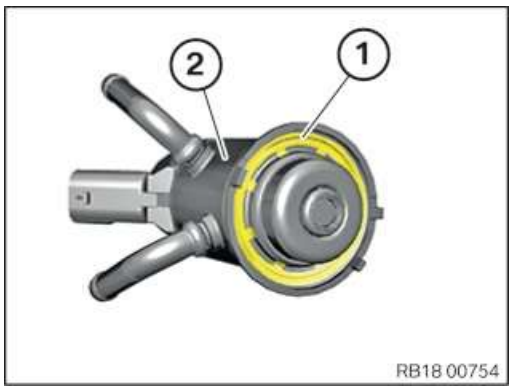
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- Tighten nut (1).

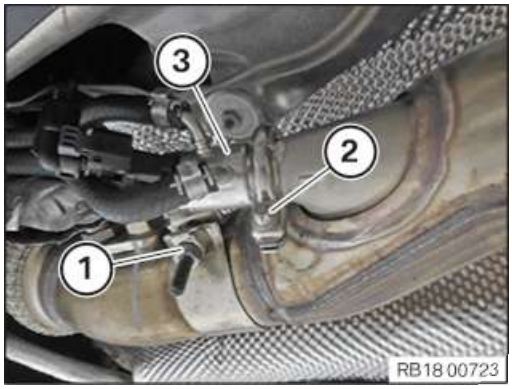
Exhaust system to transmission

M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

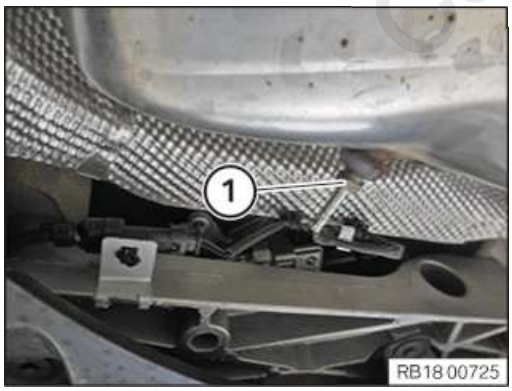
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

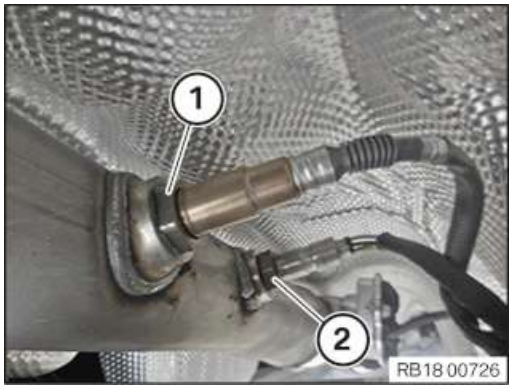


- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm

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- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

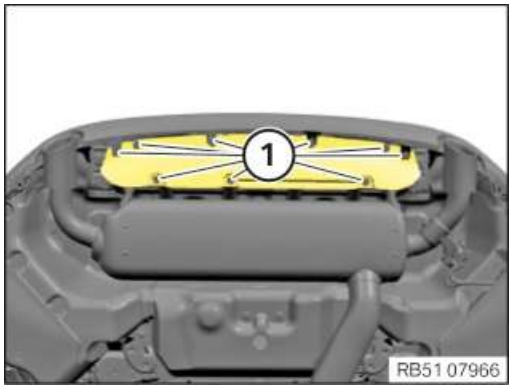
Sensor		Tightening torque	50 Nm

- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

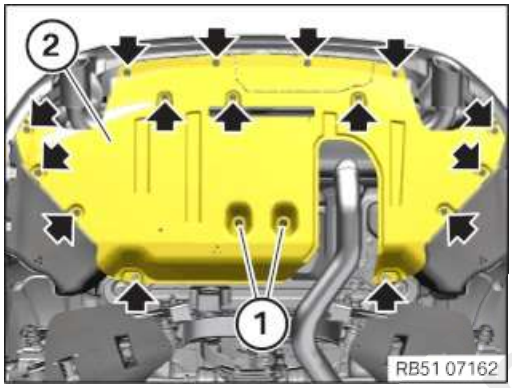
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

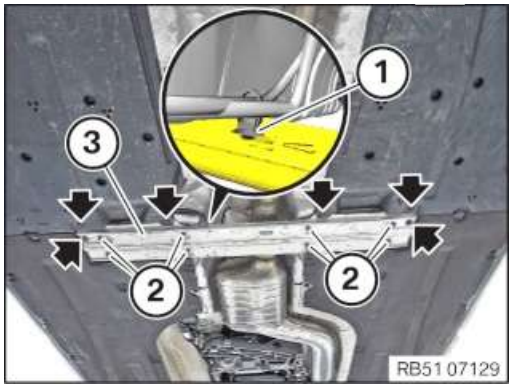
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**



- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

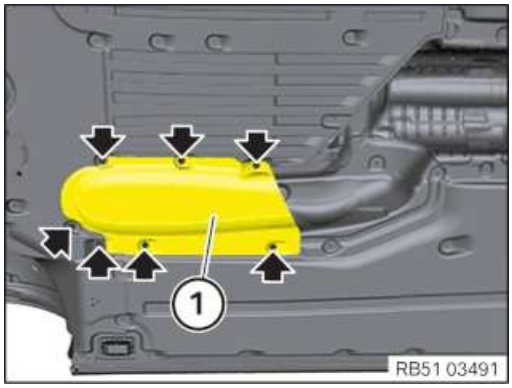
- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

32 – Installing the rear wheel on the left and right

NOTICE

Perform the operations on the left and right side.

▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

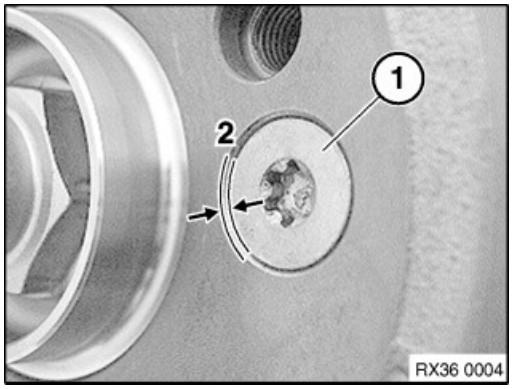
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).



- Check that the mounting bolt (1) for the brake disc is securely seated.

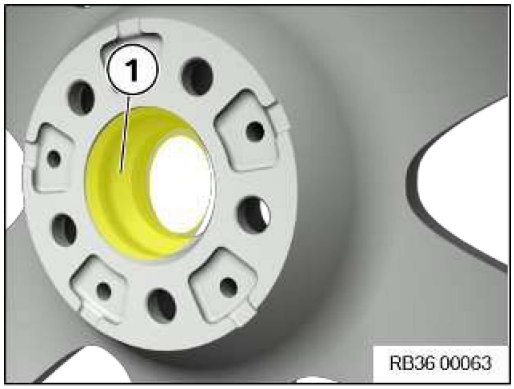
  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233

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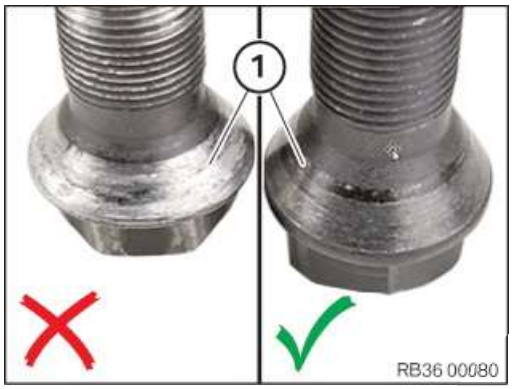


TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.



Check

- **Check wheel bolts for wear.**

Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts

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TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

  Parts: Wheel bolts
- Clean the wheel bolts (arrows).
- Check the wheel bolts (arrows) and threads for damage, renew the wheel bolts (arrows) if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.	Check	140 Nm
	Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.		

Additional Information

Overview of Tightening Torques

Rear axle carrier to body — Used in step 19

M12	Renew screws.	Tightening torque	108 Nm

Compression strut on body — Used in step 19

M10	Renew screws.	Jointing torque	47 Nm
		Angle of rotation	45 °

Ground strap to rear axle differential — Used in step 20

M6x20		Tightening torque	8 Nm

Heat shield to servomotor — Used in step 20

M5x10		Tightening torque	5 Nm

Bracing strut on compression strut/body — Used in step 21

M8		Tightening torque	28 Nm

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Caliper carrier to rear wheel carrier			Used in step 22
M12	Renew screw.	Tightening torque	130 Nm

Nut and locknut/self-locking nut			Used in step 24
M8x40	Renew screws.	Tightening torque	28 Nm

Rear wheel arch cover to bumper trim panel			Used in step 25
Hexagon screw		Tightening torque	2,6 Nm

Propeller shaft on the rear axle differential			Used in step 27
Insert nut	Replace insert nut.	Tightening torque	100 Nm

Centre mount to body			Used in step 27
M8		Tightening torque	19 Nm

Heat shield to undercarriage			Used in step 28
Screws and nuts		Tightening torque	3 Nm

Underbody panelling			Used in step 2931
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Cover to camber control arm			Used in step 30
M6	Replace nuts.	Tightening torque	6 Nm

Rear silencer to body / bumper support			Used in step 31
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 31
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 31
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 31
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 31
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 31
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 31
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 31
Sensor		Tightening torque	55 Nm

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Diffuser / underbody panelling — Used in step 31

Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel — Used in step 31

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Brake disc to front wheel hub — Used in step 32

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub — Used in step 32

M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts — Used in step 32

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Overview of Special Tools

2 464 898 Open-end spanner



Common — Used in step 627

Usage	Open-end spanner SW50 for disassembly and installation of the propeller shaft on rear axle differential. The silhouette foil is included in the delivery specification.
Included in the tool or work	
Storage location	A7
Replaced by	
In connection with	
SI-Number	01 19 18 (579)

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0 495 554 (33 5 070) Extension



Common Used in step 627

Usage	Pull-out extension for 33 5 040, 33 5 050, 33 5 060.
Included in the tool or work	
Storage location	A18
Replaced by	
In connection with	
SI-Number	01 21 06 (300)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 495 592 (33 5 071)		**Extension** (Extension (1 item)) discontinued, can only be ordered using complete tool	

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2 219 012 Hydraulic lifter



Common Used in step 915171824

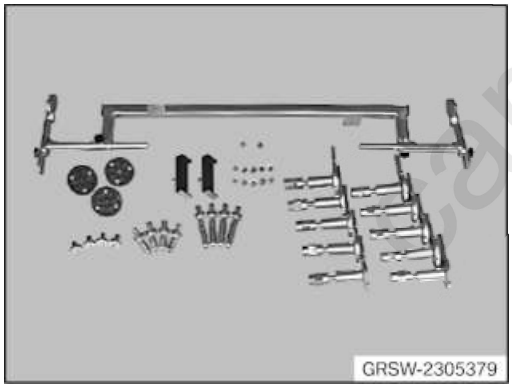
Usage	For raising and lowering various vehicle components.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

2 411 683 Adapter



Common	Used in step 924
Usage	Adapter for connecting a mounting plate part number: 2 357 071 on universal hydraulic lifting equipment centrically on piston rod.
Included in the tool or work	
Storage location	B76
Replaced by	
In connection with	
SI-Number	

2 305 379 Accessories



Common	Used in step 924
Usage	Holder set for MHT 1200 major assembly table lift and new generation (from 2020)
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	Mobile major assembly table lift MHT 1200 81222184136
SI-Number	06 01 10 (649)

5 A36 B04 Spring cups



Common	Used in step 10
Usage	Spring cup for disassembly and installation of suspension springs on the rear axle in connection with the spring tensioner basic unit, SWZ 33 5 010 or SWZ 33 5 100.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 23 21 (851)

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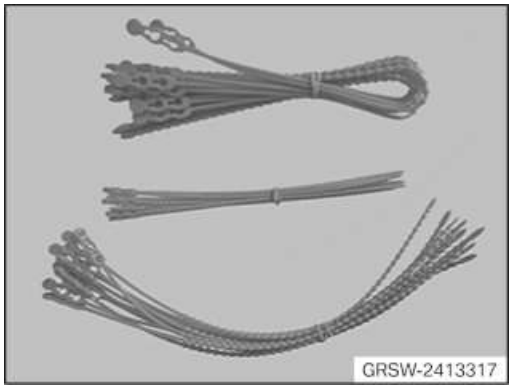
5 A36 B05 Spring cups



Common Used in step 10

Usage	Spring cup for disassembly and installation of suspension springs on the rear axle in connection with the spring tensioner basic unit, SWZ 33 5 010 or SWZ 33 5 100.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 23 21 (851)

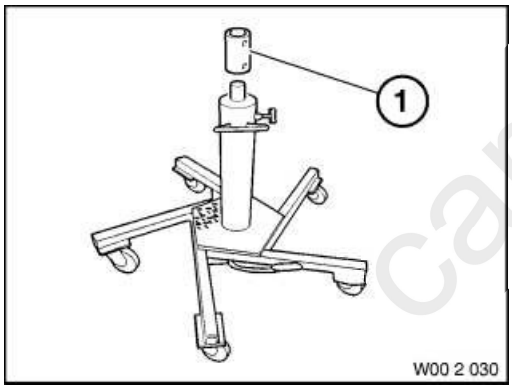
2 413 317 Cable strap



Common Used in step 1122

Usage	The "Cable ties" parts set consists of 3 items as follows: ABV232 Length: 320 mm colour: RedABV250 Length: 500 mm colour: RedABVS270 Length: 665 mm colour: Red
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 47 15 (332)

0 490 133 (00 2 030) Device



Common Used in step 14

Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

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2 344 011 Tool



Common	Used in step 32
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Links

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Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	132

Operating materials	Used in step
1.1 Grease for propeller shaft inserted	27
1.0 Grease for propeller shaft (flexible disc centring and sliding piece)	27

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33 31 017 Remove and install/replace the vibration absorber on the rear axle differential

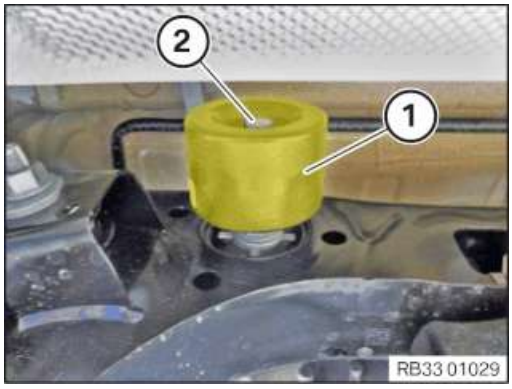
WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

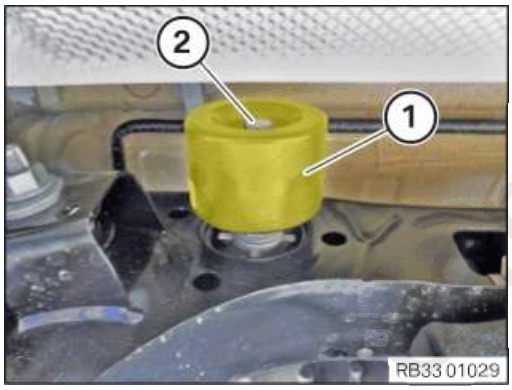
- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

1 – Remove the vibration absorber on the rear axle differential



- Loosen screw (2).
- Remove the vibration absorber (1).

2 – Install the vibration absorber on the rear axle differential



- Position the (1) vibration absorber.
- Renew the screw (2).

  Parts: Screw
- Position and tighten the screw (2).

Vibration absorber to rear axle

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Additional Information

Overview of Tightening Torques

Vibration absorber to rear axle Used in step 2

M8	Renew screw.	Tightening torque	28 Nm

Vibration absorber to rear axle Used in step 2

M10	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	

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33 31 000 Removing and installing complete rear axle support

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

WARNING

Motor vehicle may slip off the vehicle hoist if the weight is distributed unevenly.

Danger! Life-threatening injuries!

- Ensure there is a specific weight compensation on the motor vehicle.

PRELIMINARY WORK

1 – Removing the rear left and right wheels

NOTICE

Perform the operations on the left and right side.

▸ **Removing the wheel**

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TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

  This process is intended to prevent damage to the brake disc.



- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

2 – Remove complete exhaust system

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

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CAUTION

Heavy component.

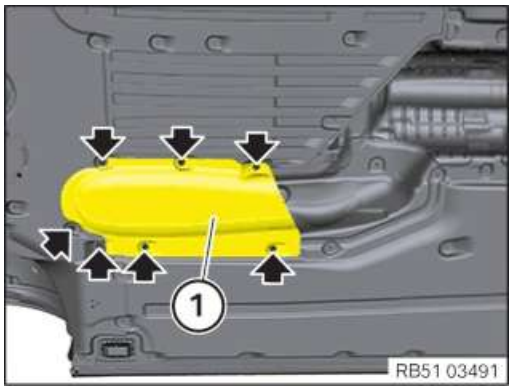
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

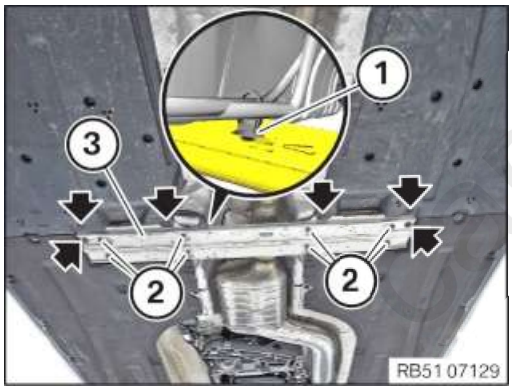
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**



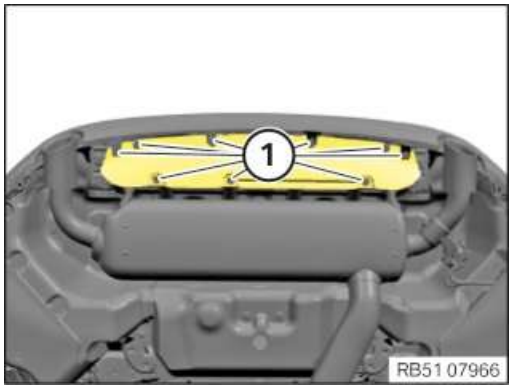
- Remove screws (arrows).

NOTICE

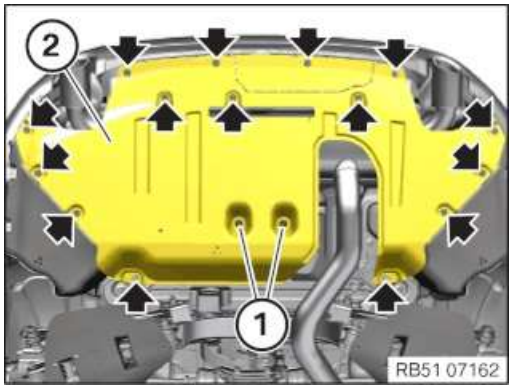
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

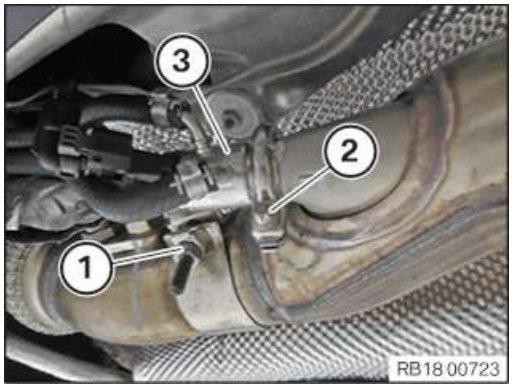
▸ **Removing the rear diffuser**



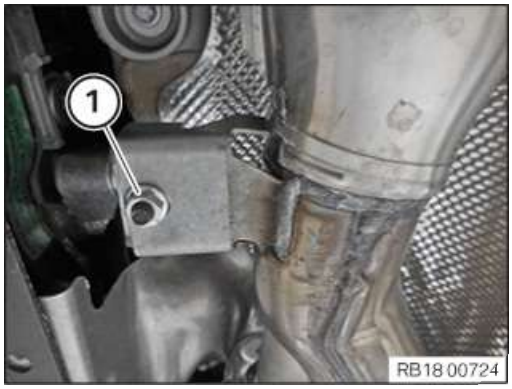
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



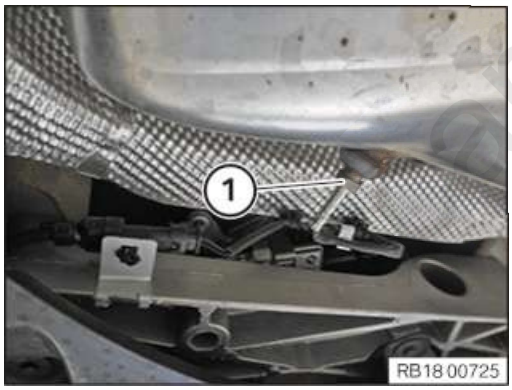
- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).



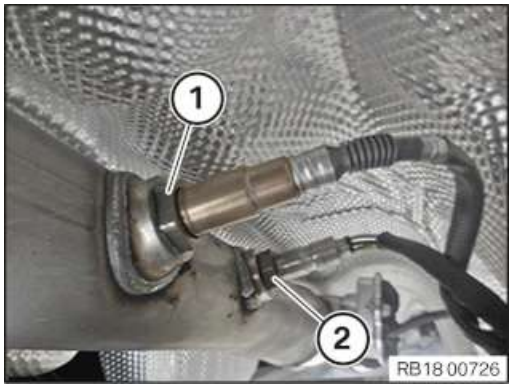
- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.



- Loosen nut (1).

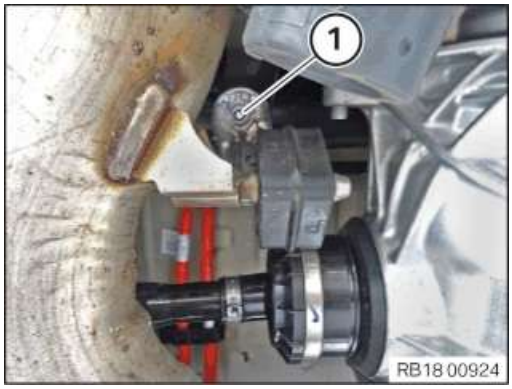


- Detach the exhaust temperature sensor (1) from the exhaust system.

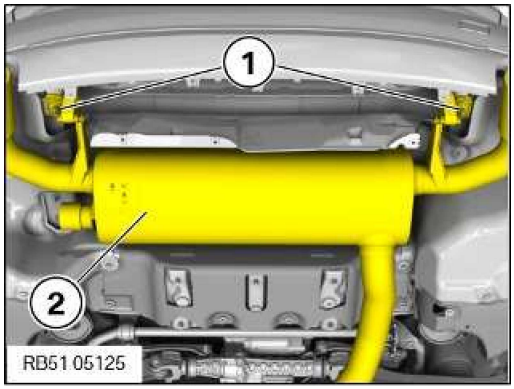


- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.

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- Release the nut (1) on the rear axle support.



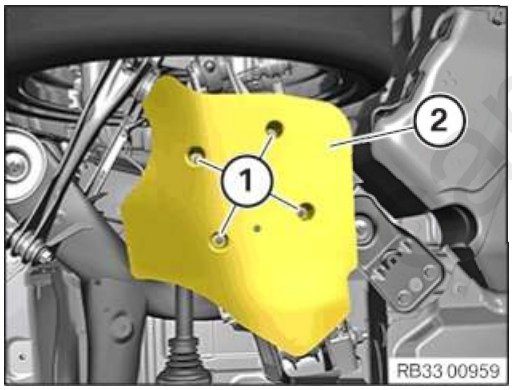
- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

3 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover of camber control arm**



- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

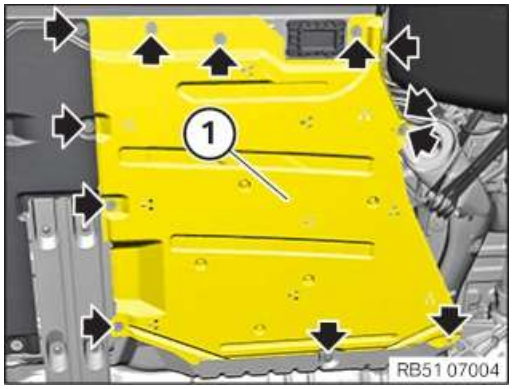
4 – Remove tank cover on left and right

NOTICE

Perform the operations on the left and right side.

▸ **Removing the tank cover**

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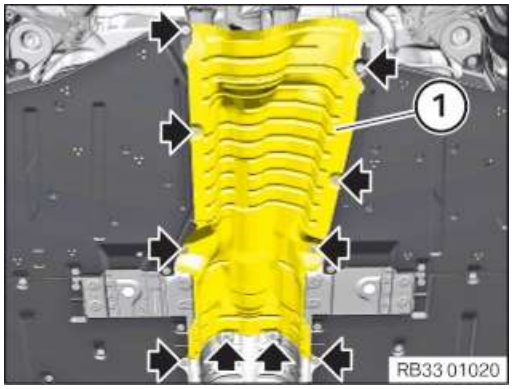


- Release all bolts (arrows).
- Remove the tank cover (1).

5 – Remove heat shield at rear.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

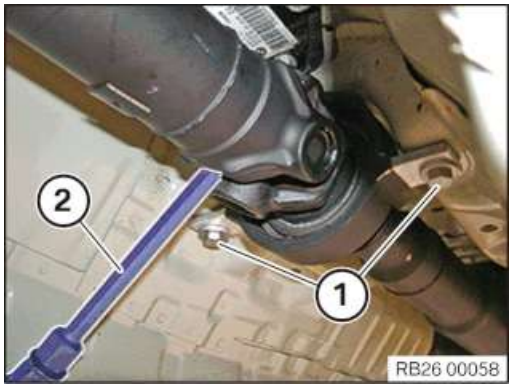
6 – Releasing the propeller shaft from the rear axle differential

RISK OF DAMAGE

Damage to propeller shaft during removal.

Non-observance of the removal guidelines for the propeller shaft on the rear axle differential may cause severe damage.

- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened on the recessed nut only and exclusively in the direction of rotation otherwise the anti-twist lock of the bi-hexagonal flange nut is damaged.
- In the event of a damaged anti-twist lock on the bi-hexagonal flange nut: Replace the rear axle differential.

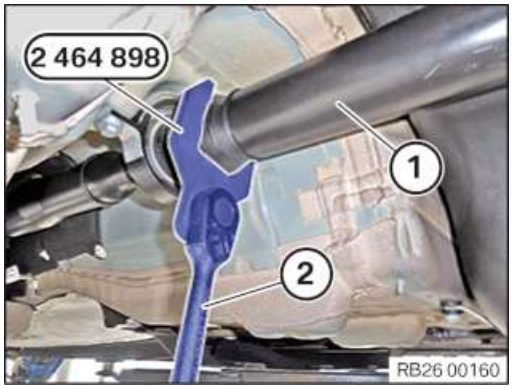


- Loosen screws (1).

  Do not remove bolts (1) yet.
- **Version A (propeller shaft with wide universal joint):**

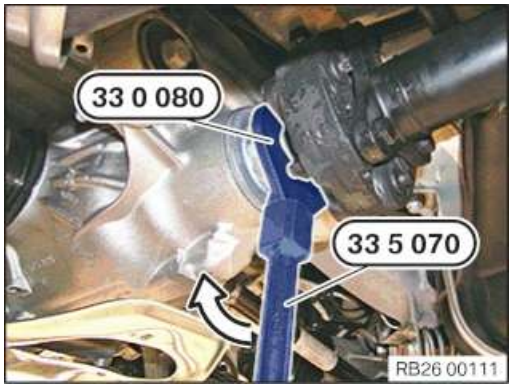
  Secure the propeller shaft against twisting at the centre universal joint using a suitable tool (2).

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- **Version B (propeller shaft with narrow universal joint):**

  Secure the propeller shaft (1) against twisting by using the special tool 2 464 898 and a suitable tool (2) at the central universal joint.



RISK OF DAMAGE

Damage to rear axle differential.

Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

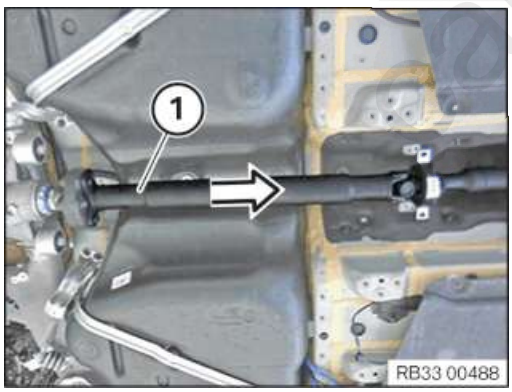
- Do not use the double hexagon head flange nut as counter support.

- Loosen the recessed nut **against** the direction of travel **in clockwise direction** using special tools 0 495 554 (33 5 070) and .

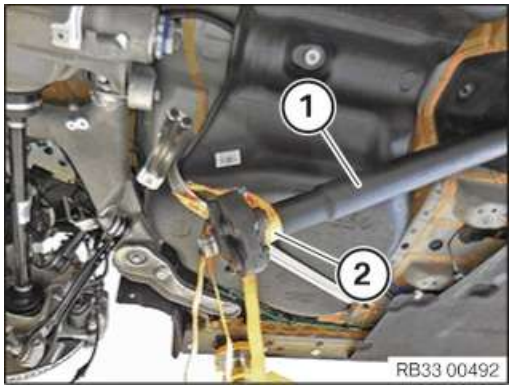
  The bi-hexagonal flange nut must not be used for counter-holding.



- Loosen screws (1) on centre mount.



- Loosen the propeller shaft (1) from the rear axle differential in the direction of the arrow.

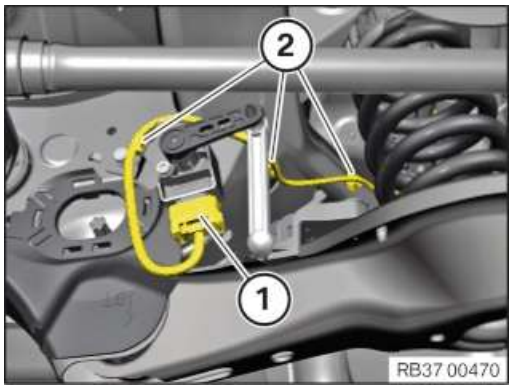


- Tie up the propeller shaft (1) using a tensioning strap (2).

7 – Releasing the cable for the ride height sensor from the rear axle support

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7 – Releasing the cable for the ride height sensor from the rear axle support



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

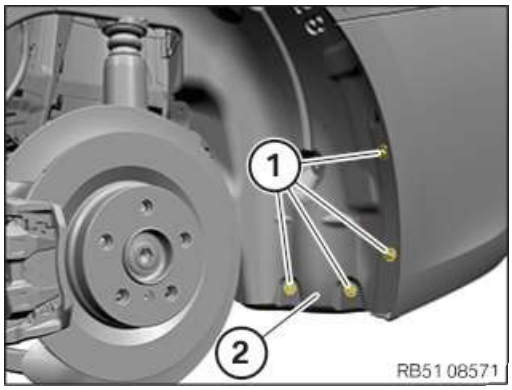
- Unlock the plug connection (1) from the ride height sensor and disconnect.
- Release the cable with the holders (2) from the rear axle support.

8 – Loosen cable of rear left and right RPM sensor

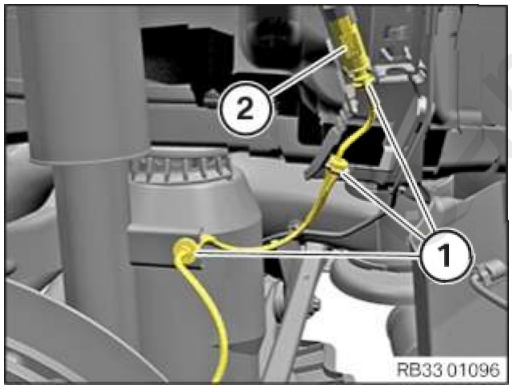
NOTICE

Perform the operations on the left and right side.

▸ **Release the cable of the rear wheel speed sensor**



- Loosen screws (1).
- Set the wheel arch cover (2) aside.



- Detach the wheel speed sensor cable from the brackets (1).
- Unlock plug connection (2) and disconnect.

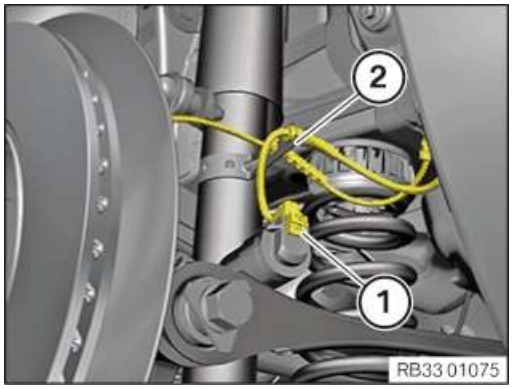
9 – Release the shock absorbers at the rear left and right from the body

NOTICE

Perform the operations on the left and right side.

▸ **Releasing the rear shock absorber from the body**

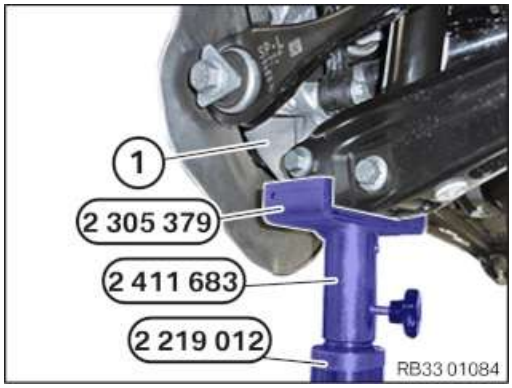
.com



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Release all the existing cables from holder (2).
- Unlock plug connection (1) and disconnect.



WARNING

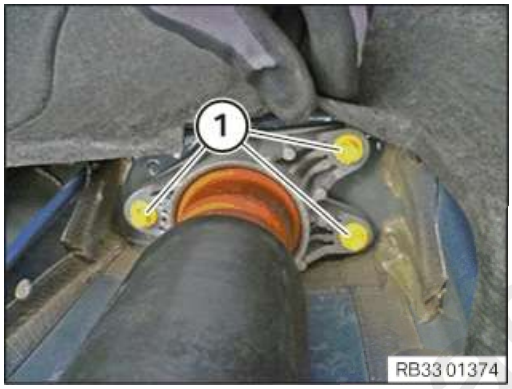
Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).
- Support the wheel carrier (1) with the special tool 2 219 012.

  Do not press against the spring force of the coil spring.



- Loosen screws (1).
- Disconnect the special tool 2 219 012 and set it aside.

10 – Remove the coil spring on the left and right

NOTICE

Perform the operations on the left and right side.

▸ **Remove coil spring**

▹ **Preparing the special tool (G22/G23/G26/G42)**

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

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- **Basic version:**

  Spindle = Special tools and

  Upper spring cup = Special tool 5 A36 B04

  Lower spring cup = Special tool 5 A36 B05



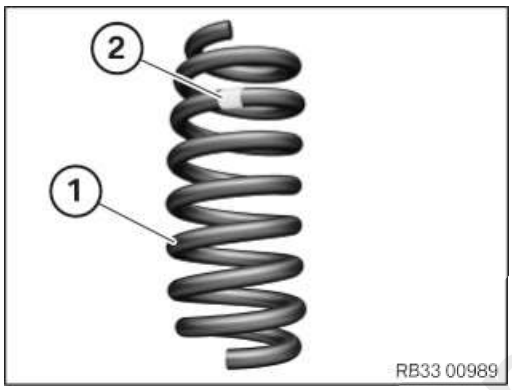
- **BMW M Performance Automobile (Sport) and Alpina:**

  Spindle = special tools , and

  Upper spring cup = Special tool

  Lower spring cup = Special tool

◁



TECHNICAL INFORMATION

Incorrect assembly is possible. Ensure correct installation position.

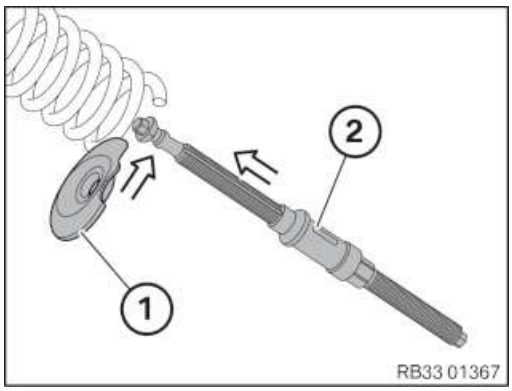
- The installation position of the coil spring(1) is marked with a label (2).

  The label (2) is attached at the top end of the coil spring (1) and is marked as “top”

- Check coil spring (1) for availability of label (2)

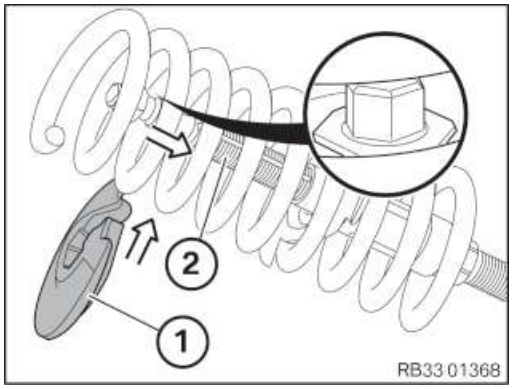
  If the label (2) on the installed coil spring (1) is missing and it has to be fixed after repair, then the installation position of the coil spring (1) must be marked necessarily.

Note: Mark the installation position of the coil spring, by attaching an adhesive tape at the top end of spring.



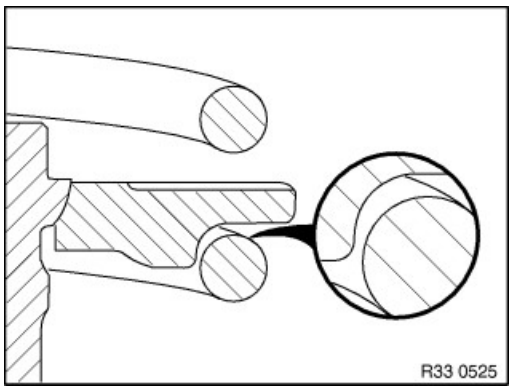
- Insert the bottom spring cup (1) sideways in the direction of arrow in the coil spring and turn up to the lowest coil.
- Insert the spindle (2) from below in the direction of arrow through the camber control arm and the bottom spring cup (1).

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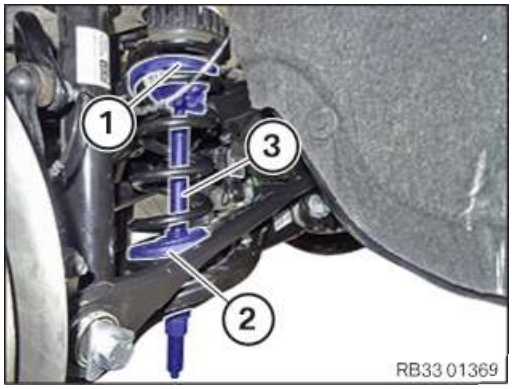


- Insert the top spring cup (1) sideways in the direction of arrow in the coil spring, feed in to the spindle (2) and turn it upwards as far as possible.

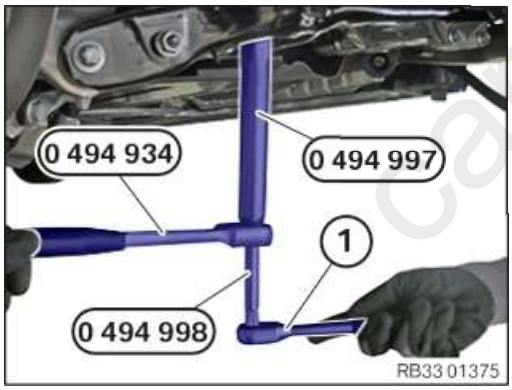
  Check the position of the spindle (2) with the hexagon head in the top spring cup (1) and correct if necessary.
- Pull the spindle (2) downwards in the direction of arrow.



- Check the position of the spring cup in the coil spring at the top and bottom and, if necessary, correct it.



- Align the top spring cup (1) and the bottom spring cup (2) with the spindle (3) in the centre to reach the highest possible contact surface on the coil spring.



RISK OF DAMAGE

Compression of coil spring to solid height.

Damage of the coil spring.

- Do not compress coil spring to solid height.
- Make sure there is a gap between the spring coils.

- Tension the coil spring using special tools and . In doing so, counter support at the spindle with the special tool and the standard tool (1).

  Standard tool:



- Feed out coil spring on upper spring pad (1). If necessary, remove upper spring pad (1).

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- Guide out and remove the coil spring (1) toward the top in the direction of the arrow.

11 – Releasing left and right brake caliper

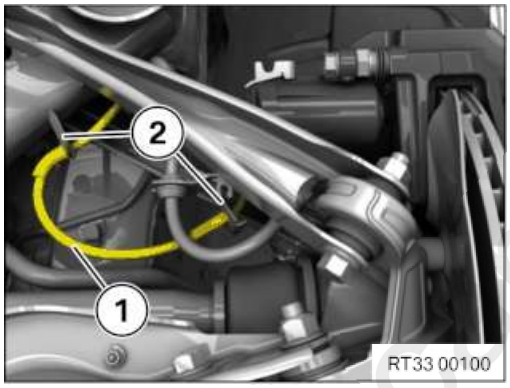
NOTICE

Perform the operations on the left and right side.

▸ **Releasing the brake caliper**

TECHNICAL INFORMATION

During work on the rear brake, it must be ensured that the button for the electromechanical parking brake cannot be pressed.

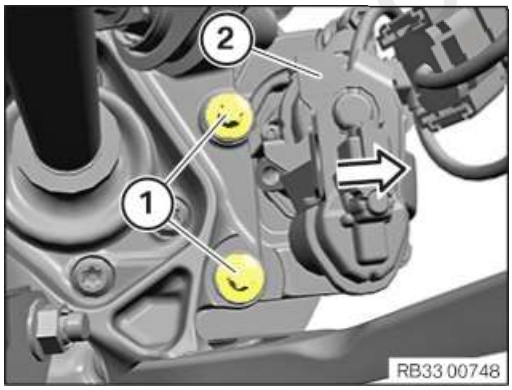


- Release the cable for the parking brake (1) from the holders (2).

NOTICE

Perform this step on the right side only.

- Release the cable for brake pad wear indicator from rear axle support.



- Loosen screws (1).
- Pull brake caliper (2) down in direction of arrow.

  The brake caliper must not hang on the brake hose.



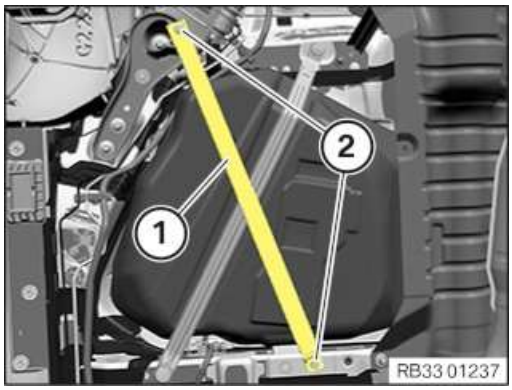
- Tie the brake caliper (1) up with the special tool 2 413 317.

12 – Remove reinforcement strut on the left and right

NOTICE

Perform the operations on the left and right side.

▸ **Remove stiffening strut**



NOTICE

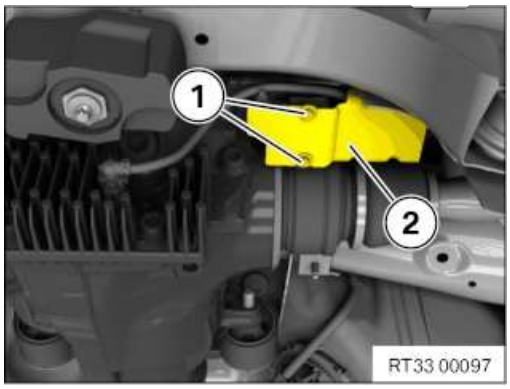
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen screws (2).
- Remove bracing strut (1).

13 – Releasing the wiring harness from the M Sport differential

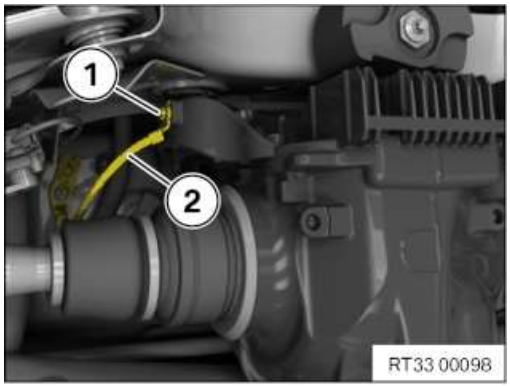
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

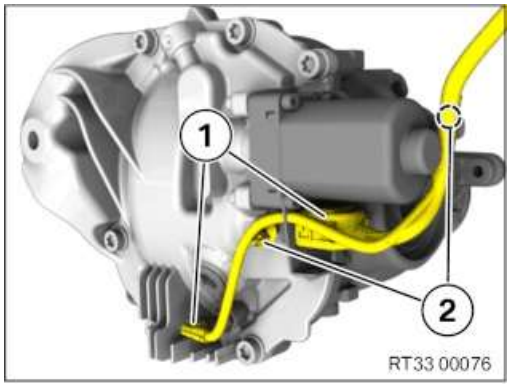


- Loosen screws (1).
- Remove heat shield (2).

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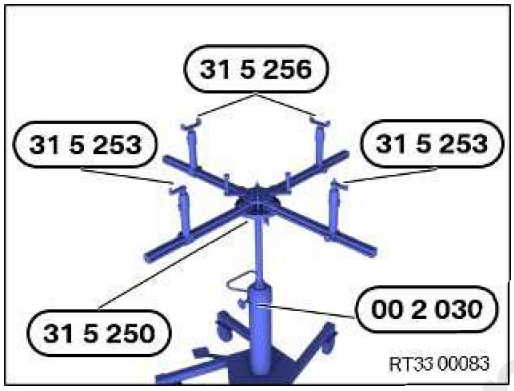


- Release the screw (1).
- Detach the ground strap (2) from the rear axle differential.



- Unlock and disconnect plug connections (1).
- Release cable from brackets (2).

14 – Preparing the special tool



TECHNICAL INFORMATION

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

- Apply special tool completely on the special tool 0 490 133 (00 2 030) with an auxiliary person helping.
- Insert special tool in telescopic supports of a profile rail pair.
- Insert special tools in telescopic supports of other profile rail pair.

15 – Positioning the special tool on the rear axle support

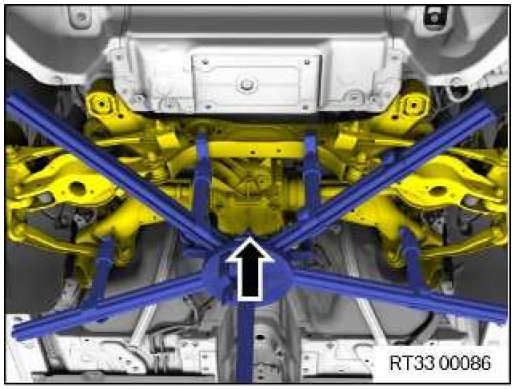
TECHNICAL INFORMATION

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

TECHNICAL INFORMATION

The centre of gravity of the axle support must be in the centre over the special tool.

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- Align special tools to rear axle support.
- Lift the special tool 2 219 012 and support the rear axle support.
- Secure the rear axle support with a tensioning strap on the special tool .

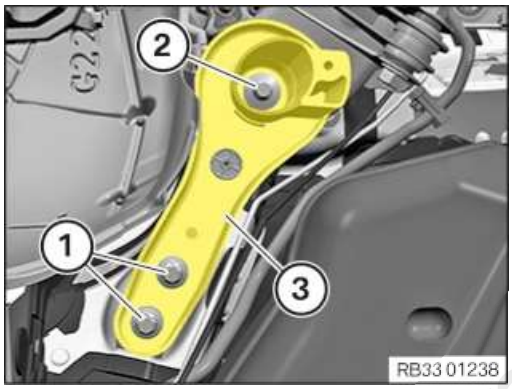
MAIN WORK

16 – Loosening the rear axle support

NOTICE

Perform the operations on the left and right side.

▸ **Remove compression strut**



RISK OF DAMAGE

Damage to the components on the rear axle.

If both compression struts are removed simultaneously, it can cause serious damage to the rear axle.

- Renew or remove compression strut only individually.
- When lowering or removing the rear axle: Support rear axle support before both compression struts are removed.

- Loosen screws (1).
- Loosen screw (2).
- Remove compression strut (3).

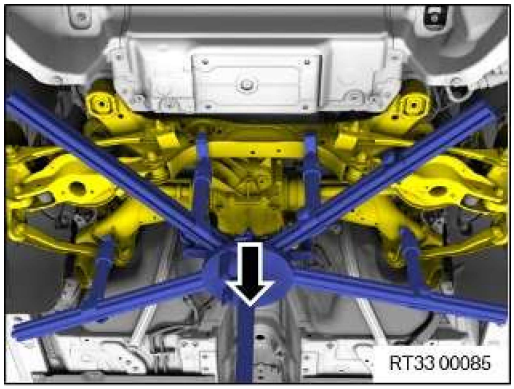
▸ **Removing the rear compression strut**



- Loosen screws (2).
- Loosen screw (3).
- Remove compression strut (1).

17 – Remove complete rear axle support

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RISK OF DAMAGE

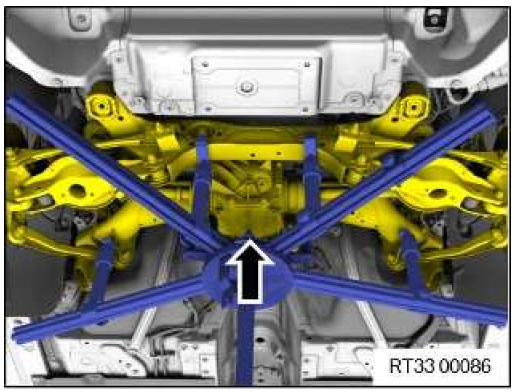
Insufficient freedom of movement for adjacent components.

Damage to adjacent components.

- When lowering or lifting the subframe, ensure freedom of movement of the adjacent components.

- Completely lower and remove the rear axle support with the universal jack in the direction of arrow.

18 – Install complete rear axle support



RISK OF DAMAGE

Insufficient freedom of movement for adjacent components.

Damage to adjacent components.

- When lowering or lifting the subframe, ensure freedom of movement of the adjacent components.

- Raise the rear axle support completely in the direction of arrow with a universal jack and position it.

19 – Securing the rear axle support

NOTICE

Perform the operations on the left and right side.



▸ **Installing the rear compression strut**

- Renew screws (2) and (3).

  Parts: Screws

- Position compression strut (1).
- Screw in screws (2) and (3).
- Tighten down screw (3).

Rear axle carrier to body

M12	Renew screws.	Tightening torque	108 Nm

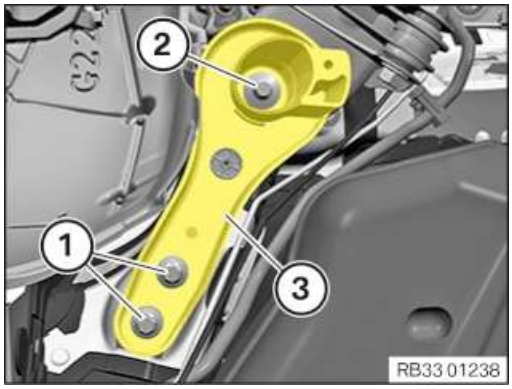
- Tighten the screws (2).

Compression strut on body

M10	Renew screws.	Jointing torque	47 Nm
		Angle of rotation	45 °

▸ **Install compression strut**

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- Renew screws (1) and (2).

  Parts: Screws
- Position compression strut (3).
- Screw in screws (1) and (2).
- Tighten down screw (2).

Rear axle carrier to body

M12	Renew screws.	Tightening torque	108 Nm

- Tighten the screws (1).

Compression strut on body

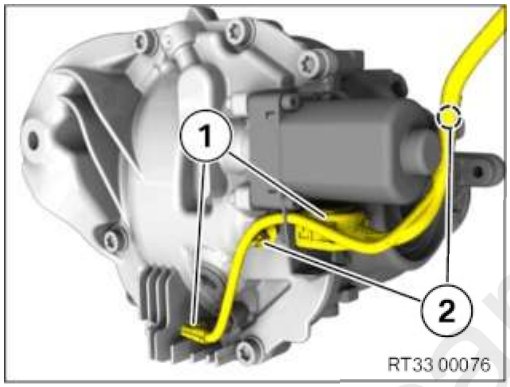
M10	Renew screws.	Jointing torque	47 Nm
		Angle of rotation	45 °

POSTPROCESSES

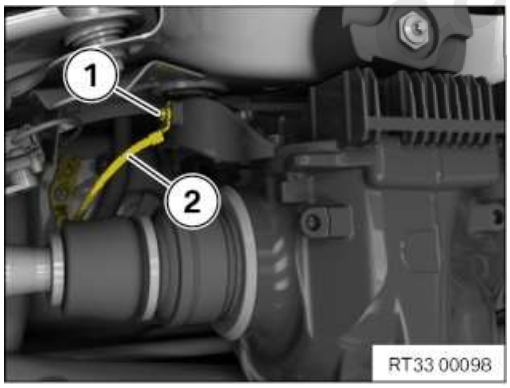
20 – Mounting the wiring harness to the M Sport differential

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



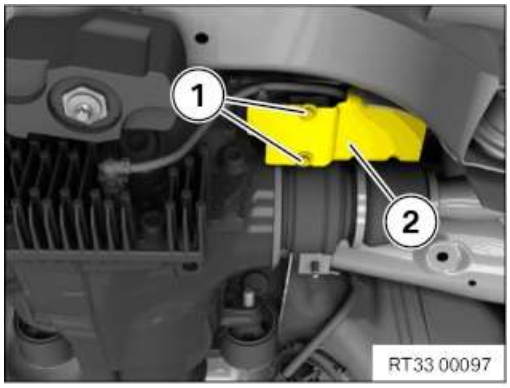
- Connect connectors (1) and lock.
- Secure the cables on the brackets (2).



- Position the ground strap (2) on the rear axle differential.
- Tighten down screw (1).

Ground strap to rear axle differential

M6x20		Tightening torque	8 Nm



- Position the heat shield (2).
- Tighten the screws (1).

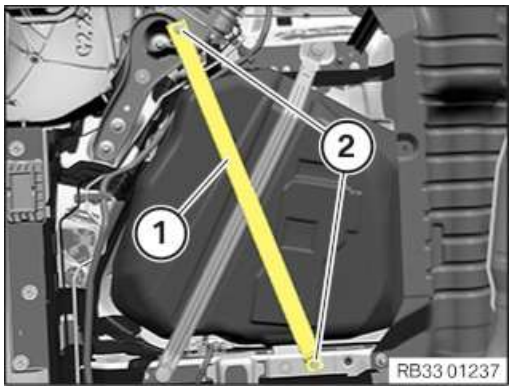
Heat shield to servomotor

M5x10		Tightening torque	5 Nm

21 – Installing the bracing strut on the left and right

NOTICE

Perform the operations on the left and right side.



▸ **Installing the bracing strut**

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Position the reinforcement strut (1).
- Tighten the screws (2).

Bracing strut on compression strut/body

M8		Tightening torque	28 Nm

22 – Securing the brake calipers at left and right

NOTICE

Perform the operations on the left and right side.

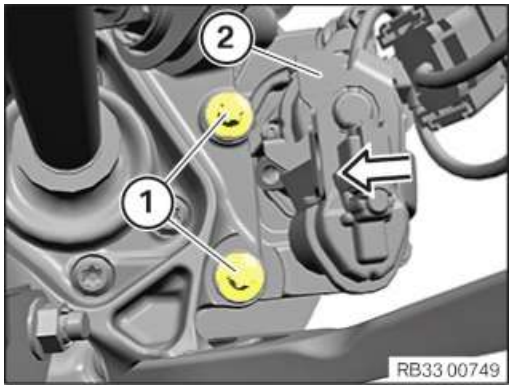
▸ **Securing the brake caliper**



- Release and remove special tool 2 413 317.

  The brake caliper must not hang on the brake hose.

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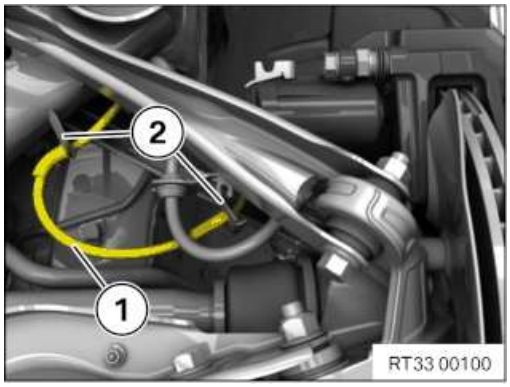


- Position the brake caliper (2) in the direction of the arrow.
- Renew screws (1).

  Parts: Screws
- Tighten the screws (1).

Caliper carrier to rear wheel carrier

M12	Renew screw.	Tightening torque	130 Nm



- Fasten the cable for the parking brake (1) to the holders (2).

NOTICE

Perform this step on the right side only.

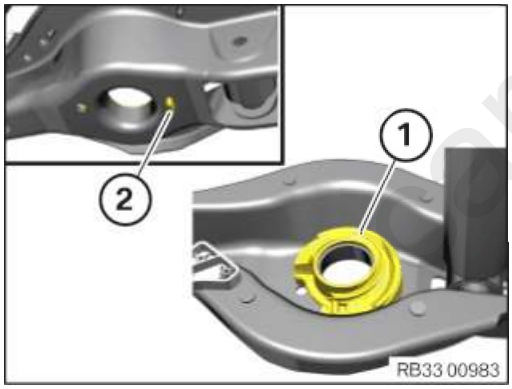
- Fasten the cable for the brake pad wear indicator on the rear axle support.

23 – Install the left and right coil spring

NOTICE

Perform the operations on the left and right side.

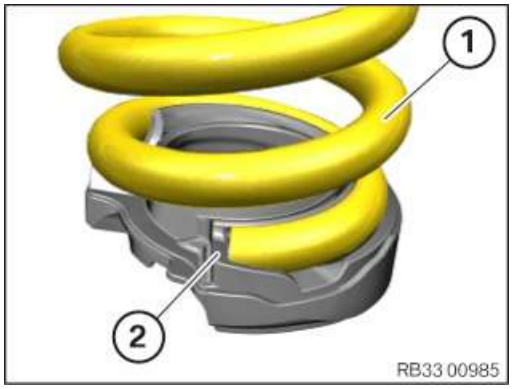
▸ **Install the coil springs**



- Check bottom spring pad (1) for damage, renew if necessary.
- Check the position of the lower spring pad (1) with the plastic tab (2) on the camber control arm, correct if necessary.



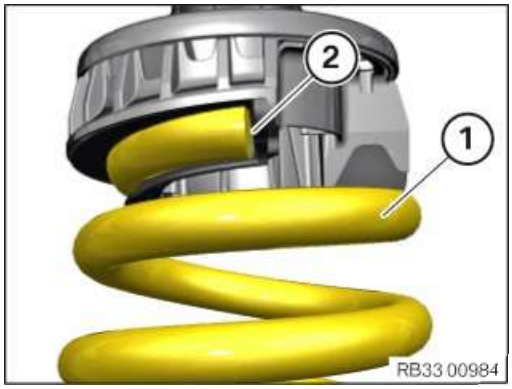
- Feed in the coil spring (1) in direction of arrow from the top and lock.



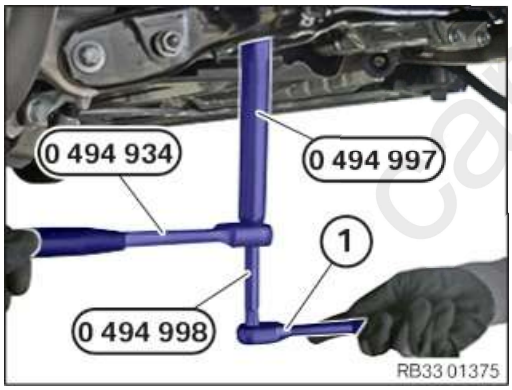
- Position the coil spring (1) in such a way that the coil spring end is in form-fit contact with the lower spring pad (2).



- Feed in the spring pad at the top (1).



- Position the upper spring pad on the coil spring (1) in such a way that the coil spring end (2) is in form-fit contact with the upper spring pad.



- Slacken the coil spring with the special tools and . In doing so, counter support at the spindle with the special tool and the standard tool (1).

  Standard tool:

  Pay attention to the mounting orientation when releasing the coil spring, correct if necessary.
- Remove special tools.

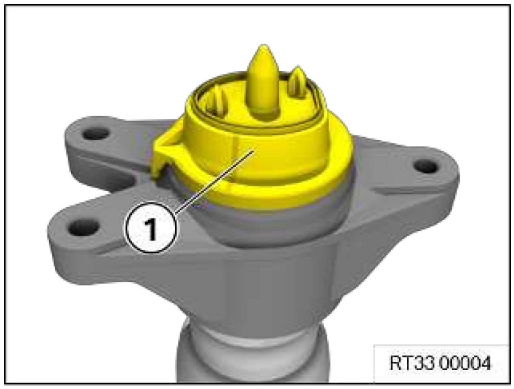
24 – Securing rear left and right shock absorbers to body

NOTICE

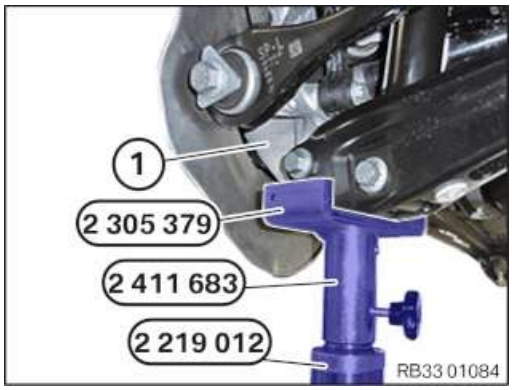
Perform the operations on the left and right side.

▸ **Securing shock absorber at rear to body**

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- Check the centering plate (1) for damage, renew if necessary.
- Check the position of the centering plate (1), correct if necessary.



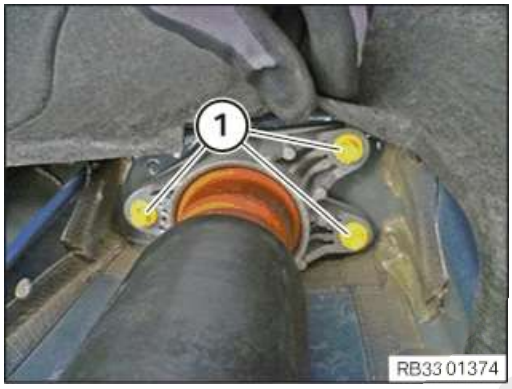
WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).



- Slightly lift the wheel carrier with the special tool 2 219 012. Position the shock absorber on the body in the process.

  Do not press against the spring force of the coil spring.

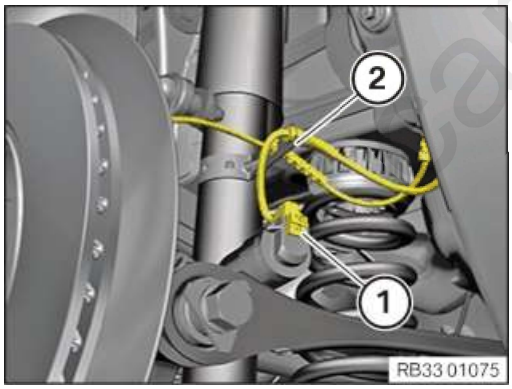
- Renew screws (1).

  Parts: Screws

- Tighten the screws (1).

Nut and locknut/self-locking nut

M8x40	Renew screws.	Tightening torque	28 Nm



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

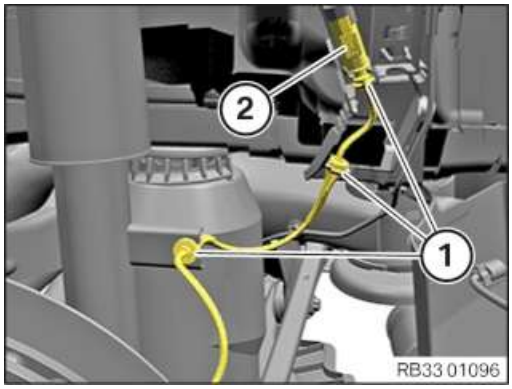
- Secure all existing cables on the holder (2).
- Connect connectors (1) and lock.

25 – Securing cable of rear left and right wheel speed sensor

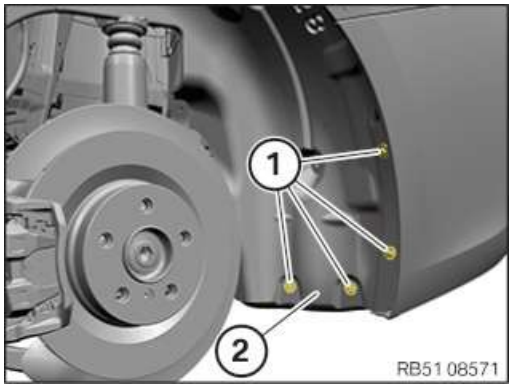
NOTICE

Perform the operations on the left and right side.

▸ **Mounting the cable of the rear wheel speed sensor**



- Connect connectors (2) and lock.
- Mount the cable of wheel speed sensor on the holders (1).

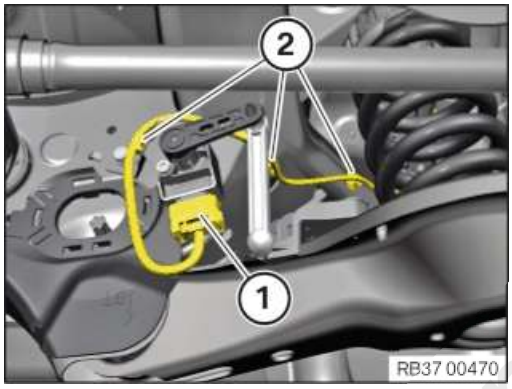


- Insert the wheel arch cover (2).
- Tighten the screws (1).

Rear wheel arch cover to bumper trim panel

Hexagon screw		Tightening torque	2,6 Nm

26 – Fastening the cable for the ride height sensor on the rear axle support



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure the cable with the holders (2) on the rear axle support.
- Connect the connector (1) to the ride height sensor and lock it.

27 – Securing the propeller shaft on the rear axle differential

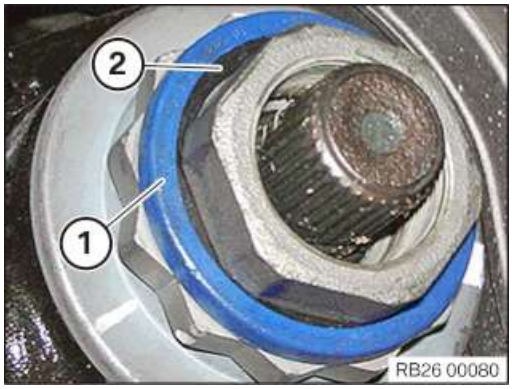
RISK OF DAMAGE

Damage to the propeller shaft during installation.

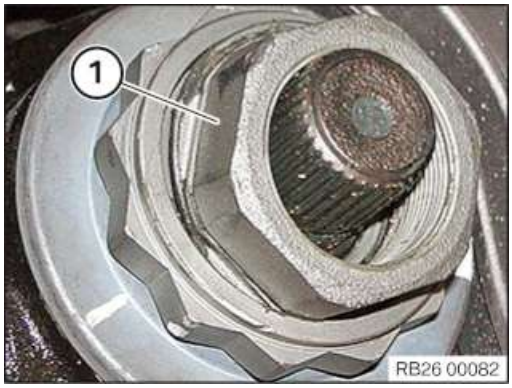
Non-observance of the installation guidelines for the propeller shaft on the rear axle differential may cause severe damage.

- Always renew the recessed nut on the rear axle differential. Screw locking must be available.
- Strictly observe a hardening time of minimum 3 h after screwing the recessed nut. The hardening time may be longer at lower temperatures.

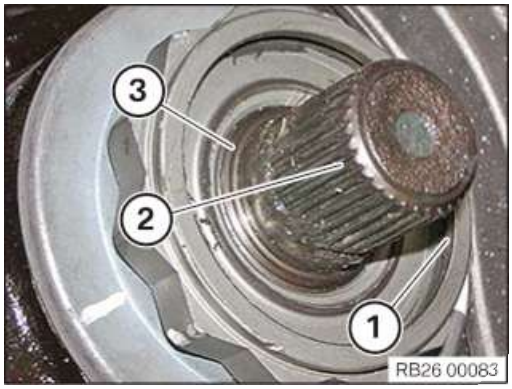
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- Remove the retaining ring (1) and the seal (2).



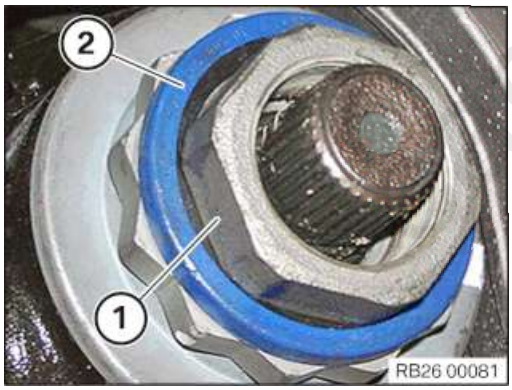
- Remove recessed nut (1).



- Clean and degrease the recessed collar (1) the flange nut, the gearing on the bevel pinion (2) and the taper (3) without any residue.
- Top up the collar insert (1)with grease.

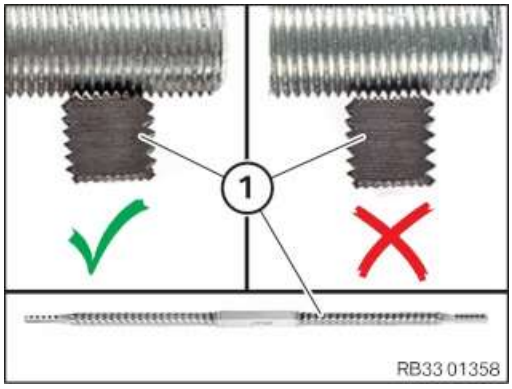
Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Renew the recessed nut (1), seal and retaining ring (2).

  Parts: Recessed nut, seal, retaining ring
- Insert recessed nut (1) including gasket into collar insert of the flange nut.
- Mount the retaining ring (2).



- Use a thread file (1) to remove the adhesive residue on the thread.
- **Make sure that the thread pitch is correct!**

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RISK OF DAMAGE

Damage to the output flange.

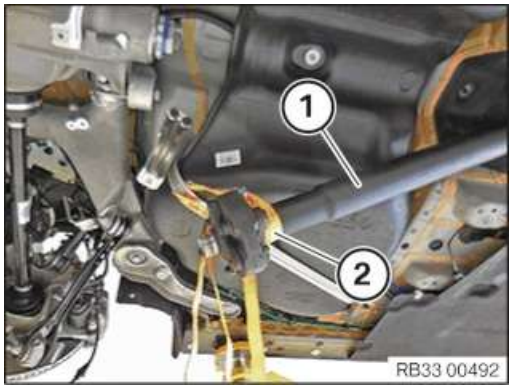
Failure to observe the greasing specifications may lead to damage on the output flange.

- Do not contaminate the thread of the output flange with grease.

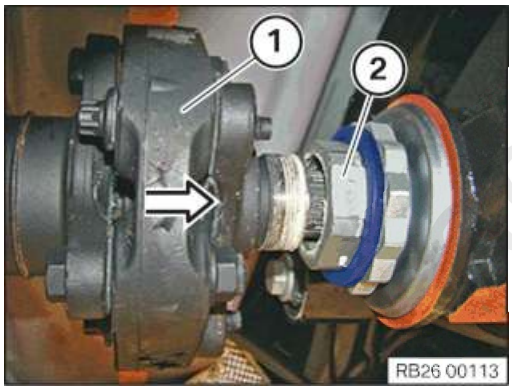
- Remove any adhesive residue on thread (1) of the flange and clean it.
- Clean gearing (2).
- Grease gearing (2).

Expendable materials

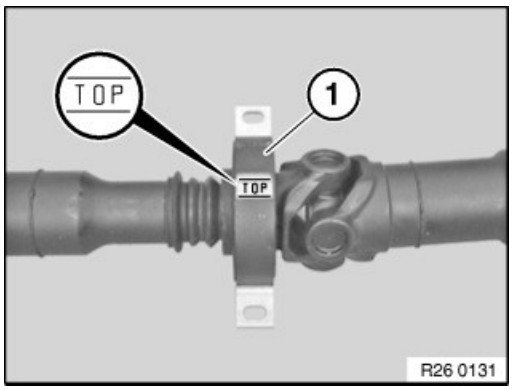
Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Loosen the tensioning strap (2) from the propeller shaft (1).

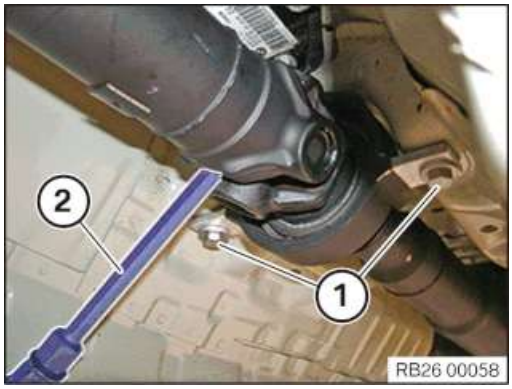


- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Screw and secure recessed nut (2) at least 2 thread starts onto propeller shaft (1) by hand.



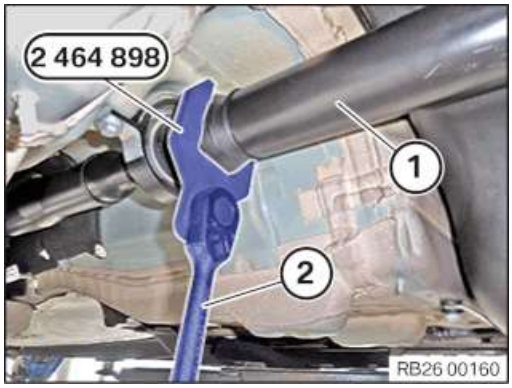
- Position the centre mount (1).

  Position the centre mount (1) with the designation TOP at the top in the transmission tunnel.



- Screw in the screws (1) by a few turns.
- **Version with a broad universal joint:**

  Secure the propeller shaft from twisting with a suitable tool (2) on the centre universal joint.



- **Version with a narrow universal joint:**

  Secure the propeller shaft (1) from twisting with the special tool 2 464 898 and a suitable tool (2) on the centre universal joint.



RISK OF DAMAGE

Damage to the flange nut.

Failure to observe the installation specifications may lead to serious damage to the flange nut and the rear axle differential.

- Do not use the double hexagon flange nut as counter support.
- Screw in the recessed nut within 5 minutes.

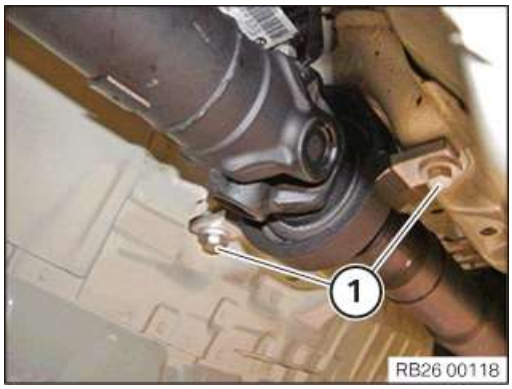
- Tighten recessed nut **counter-clockwise in the direction of the arrow** using special tools 0 495 554 (33 5 070) and .

Propeller shaft on the rear axle differential

Insert nut	Replace insert nut.	Tightening torque	100 Nm

- **After the propeller shaft is installed and the recessed nut is screwed in, strictly observe a hardening time of minimum 3 hours.**

  Do not move or push the vehicle during this time!



- Tighten the screws (1).

Centre mount to body

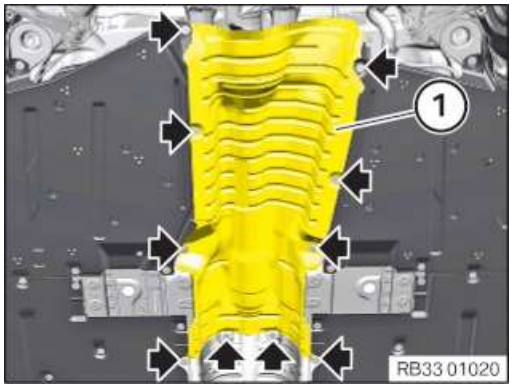
M8		Tightening torque	19 Nm

28 – Installing the rear heat shield

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NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

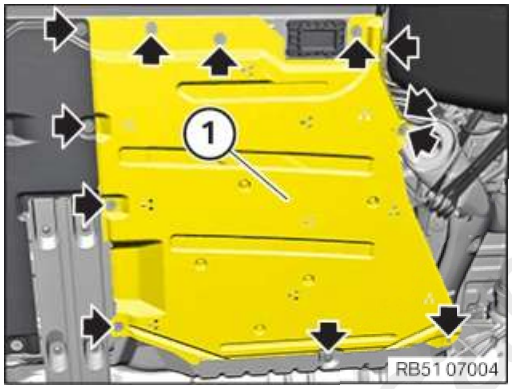
Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

29 – Install left and right tank cover

NOTICE

Perform the operations on the left and right side.



▸ **Installing tank cover**

- Position the tank cover (1).
- Tighten all bolts (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

30 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.



▸ **Installing the cover of the camber control arm**

- It is imperative to note the installation location and direction of installation (1).

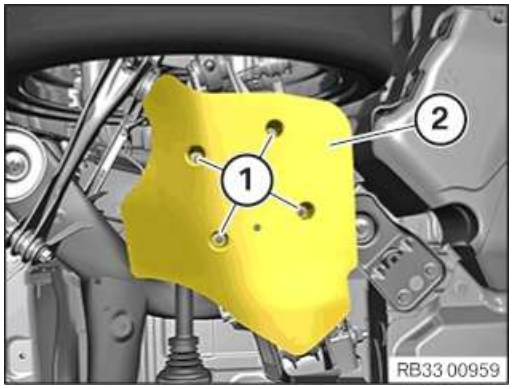
  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right

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- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

31 – Installing the complete exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

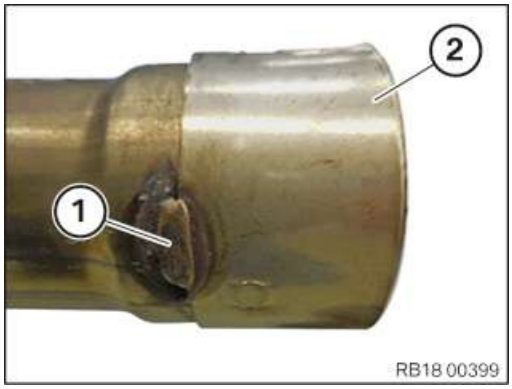
TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.

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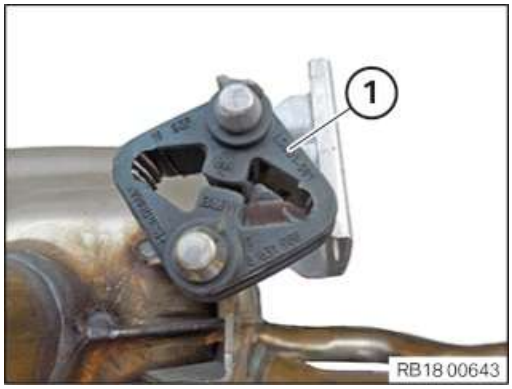
CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

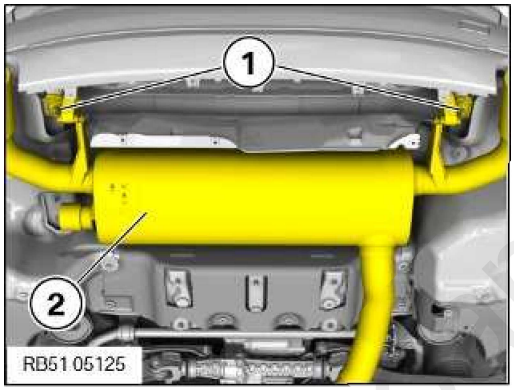


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

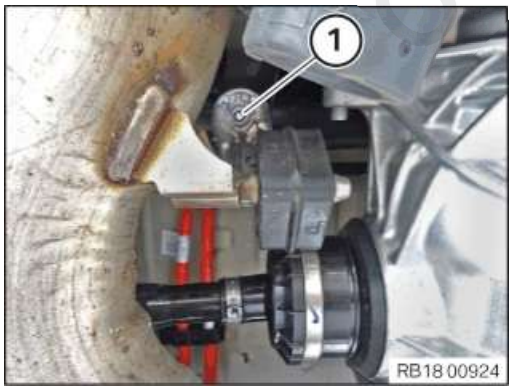


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm



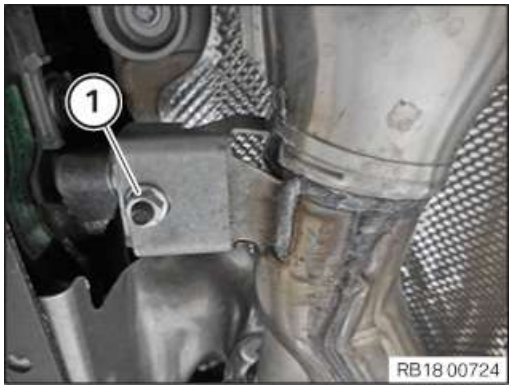
- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

M8 nut		Tightening torque	19 Nm

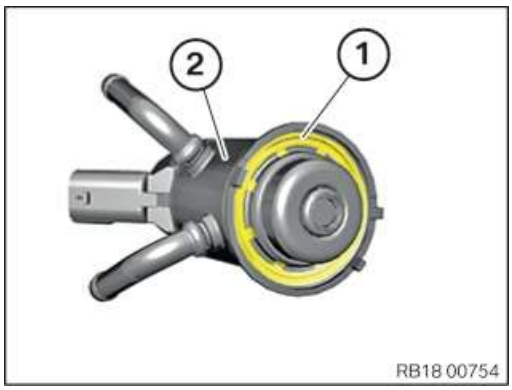
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- Tighten nut (1).

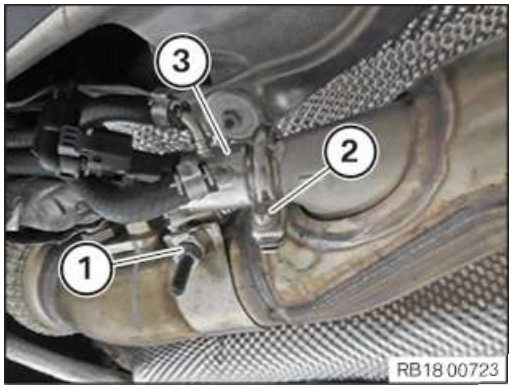
Exhaust system to transmission

M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

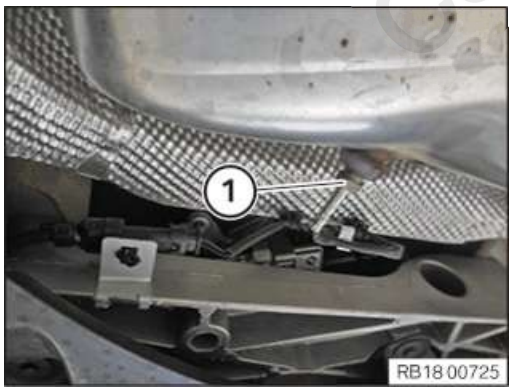
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

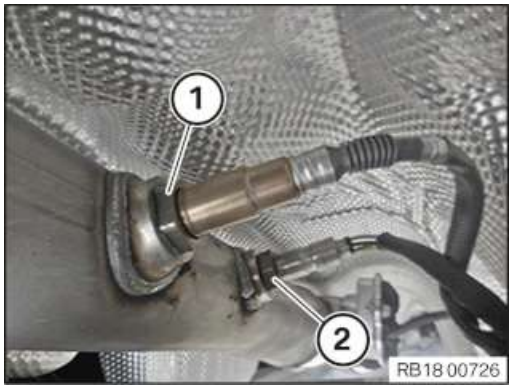


- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm

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- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

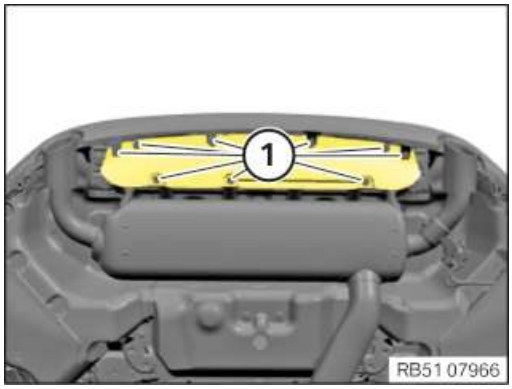
Sensor		Tightening torque	50 Nm

- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

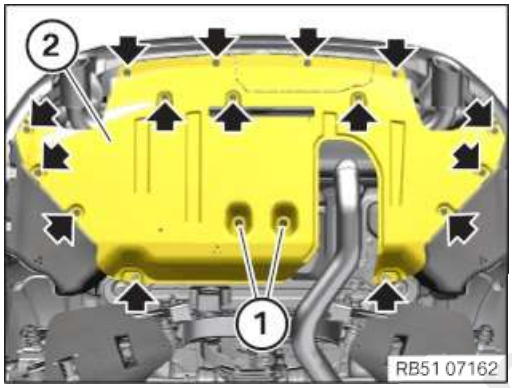
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

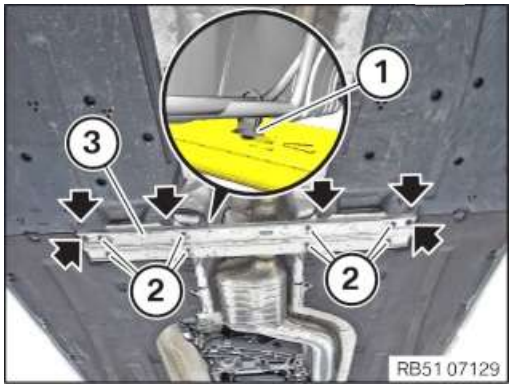
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**



- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

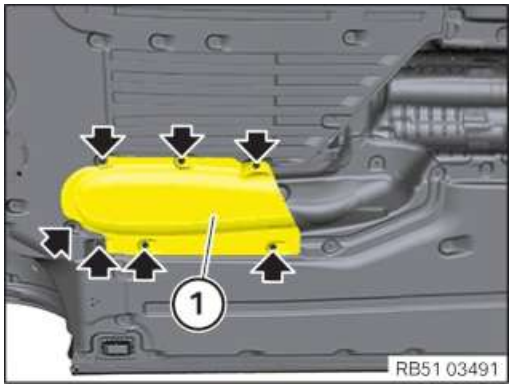
- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

32 – Installing the rear wheel on the left and right

NOTICE

Perform the operations on the left and right side.

▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

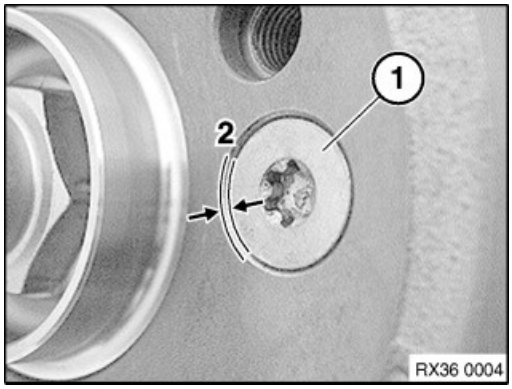
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).



- Check that the mounting bolt (1) for the brake disc is securely seated.

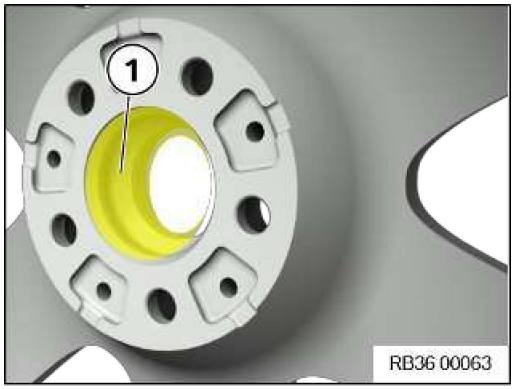
  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233

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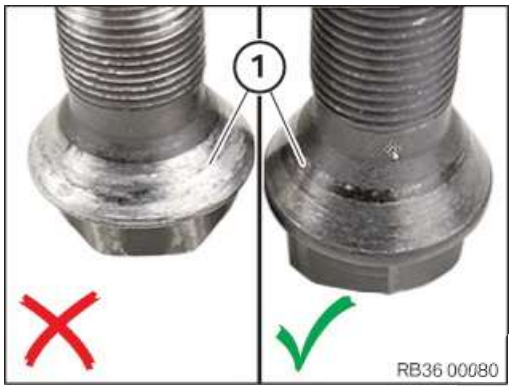


TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.



Check

- **Check wheel bolts for wear.**

Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts

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TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

  Parts: Wheel bolts
- Clean the wheel bolts (arrows).
- Check the wheel bolts (arrows) and threads for damage, renew the wheel bolts (arrows) if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.	Check	140 Nm
	Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.		

Additional Information

Overview of Tightening Torques

Rear axle carrier to body — Used in step 19

M12	Renew screws.	Tightening torque	108 Nm

Compression strut on body — Used in step 19

M10	Renew screws.	Jointing torque	47 Nm
		Angle of rotation	45 °

Ground strap to rear axle differential — Used in step 20

M6x20		Tightening torque	8 Nm

Heat shield to servomotor — Used in step 20

M5x10		Tightening torque	5 Nm

Bracing strut on compression strut/body — Used in step 21

M8		Tightening torque	28 Nm

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Caliper carrier to rear wheel carrier			Used in step 22
M12	Renew screw.	Tightening torque	130 Nm

Nut and locknut/self-locking nut			Used in step 24
M8x40	Renew screws.	Tightening torque	28 Nm

Rear wheel arch cover to bumper trim panel			Used in step 25
Hexagon screw		Tightening torque	2,6 Nm

Propeller shaft on the rear axle differential			Used in step 27
Insert nut	Replace insert nut.	Tightening torque	100 Nm

Centre mount to body			Used in step 27
M8		Tightening torque	19 Nm

Heat shield to undercarriage			Used in step 28
Screws and nuts		Tightening torque	3 Nm

Underbody panelling			Used in step 2931
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Cover to camber control arm			Used in step 30
M6	Replace nuts.	Tightening torque	6 Nm

Rear silencer to body / bumper support			Used in step 31
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 31
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 31
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 31
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 31
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 31
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 31
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 31
Sensor		Tightening torque	55 Nm

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Diffuser / underbody panelling — Used in step 31

Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel — Used in step 31

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Brake disc to front wheel hub — Used in step 32

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub — Used in step 32

M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts — Used in step 32

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Overview of Special Tools

2 464 898 Open-end spanner



Common — Used in step 627

Usage	Open-end spanner SW50 for disassembly and installation of the propeller shaft on rear axle differential. The silhouette foil is included in the delivery specification.
Included in the tool or work	
Storage location	A7
Replaced by	
In connection with	
SI-Number	01 19 18 (579)

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0 495 554 (33 5 070) Extension



Common Used in step 627

Usage	Pull-out extension for 33 5 040, 33 5 050, 33 5 060.
Included in the tool or work	
Storage location	A18
Replaced by	
In connection with	
SI-Number	01 21 06 (300)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 495 592 (33 5 071)		**Extension** (Extension (1 item)) discontinued, can only be ordered using complete tool	

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2 219 012 Hydraulic lifter



Common Used in step 91524

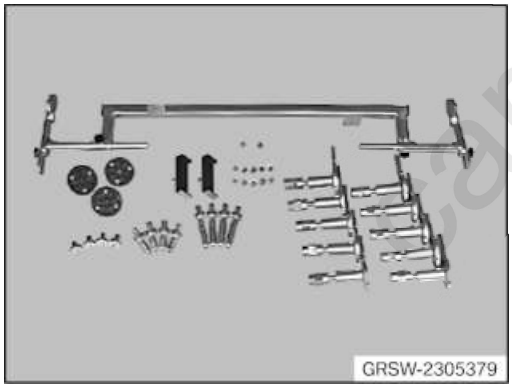
Usage	For raising and lowering various vehicle components.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

2 411 683 Adapter



Common	Used in step 924
Usage	Adapter for connecting a mounting plate part number: 2 357 071 on universal hydraulic lifting equipment centrically on piston rod.
Included in the tool or work	
Storage location	B76
Replaced by	
In connection with	
SI-Number	

2 305 379 Accessories



Common	Used in step 924
Usage	Holder set for MHT 1200 major assembly table lift and new generation (from 2020)
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	Mobile major assembly table lift MHT 1200 81222184136
SI-Number	06 01 10 (649)

5 A36 B04 Spring cups



Common	Used in step 10
Usage	Spring cup for disassembly and installation of suspension springs on the rear axle in connection with the spring tensioner basic unit, SWZ 33 5 010 or SWZ 33 5 100.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 23 21 (851)

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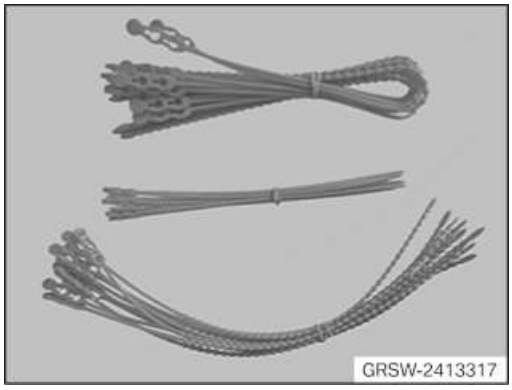
5 A36 B05 Spring cups



Common Used in step 10

Usage	Spring cup for disassembly and installation of suspension springs on the rear axle in connection with the spring tensioner basic unit, SWZ 33 5 010 or SWZ 33 5 100.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 23 21 (851)

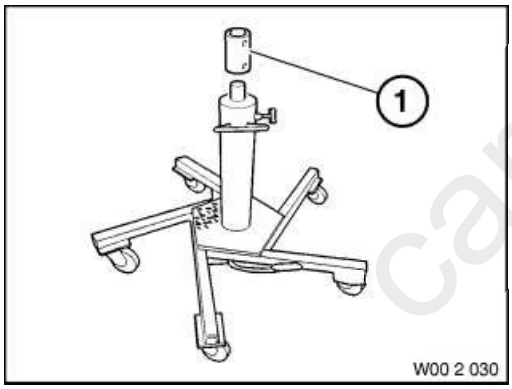
2 413 317 Cable strap



Common Used in step 1122

Usage	The "Cable ties" parts set consists of 3 items as follows: ABV232 Length: 320 mm colour: RedABV250 Length: 500 mm colour: RedABVS270 Length: 665 mm colour: Red
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 47 15 (332)

0 490 133 (00 2 030) Device



Common Used in step 14

Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

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2 344 011 Tool



Common	Used in step 32
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Links

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Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	132

Operating materials	Used in step
1.1 Grease for propeller shaft inserted	27
1.0 Grease for propeller shaft (flexible disc centring and sliding piece)	27

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33 31 015 Removing and installing/replacing the vibration absorber on the rear axle support

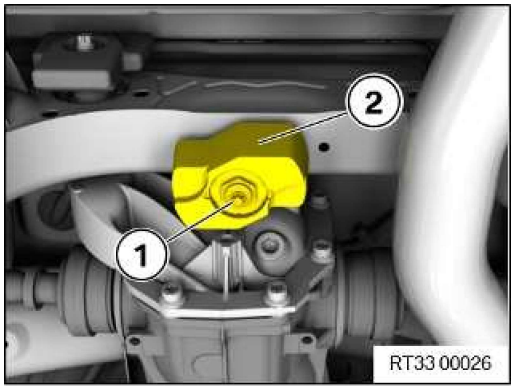
WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

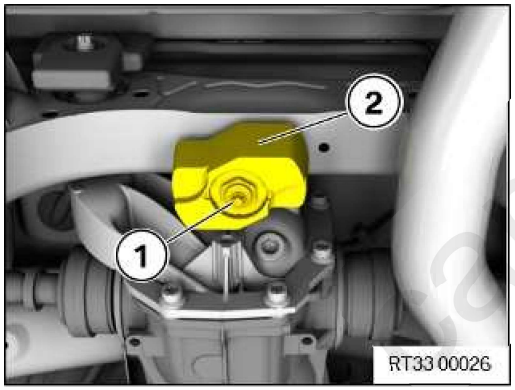
- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

1 – Remove the vibration damper on the rear axle support



- Loosen screw (1).
- Remove the vibration absorber (2).

2 – Install the vibration absorber on the rear axle support



- Renew the screw (1) and nut clip.

  Parts: Screw, nut clip
- Position the vibration absorber (2).
- Tighten down screw (1).

Vibration absorber to rear axle support

M12	Replace screw and clip nut.	Tightening torque	28 Nm

Additional Information

Overview of Tightening Torques

Vibration absorber to rear axle support Used in step 2

M12	Replace screw and clip nut.	Tightening torque	28 Nm

Links

Repair instructions	Used in step
00 .. ... Raising the vehicle using a vehicle hoist	

33 32 131 Remove and install a steering stub / wheel carrier

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

TECHNICAL INFORMATION

Perform wheel alignment after installation.

NOTICE

Description is for left component only. Procedure on the right side is identical.

PRELIMINARY WORK

1 – Remove rear left or right wheel

▸ **Removing the wheel**



TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

  This process is intended to prevent damage to the brake disc.



- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

2 – Loosen the output shaft from the wheel bearing

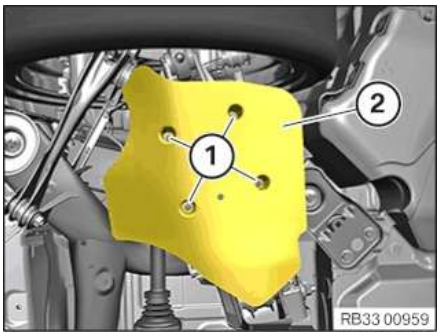
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- Press brake pedal.
- Loosen the collar bolt (1).

  The output shaft is released from the wheel bearing.

3 – Removing the cover of camber control arm

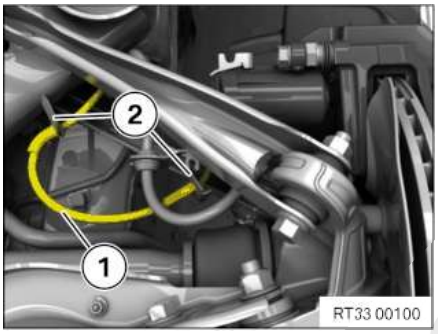


- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

4 – Releasing the brake caliper

TECHNICAL INFORMATION

During work on the rear brake, it must be ensured that the button for the electromechanical parking brake cannot be pressed.

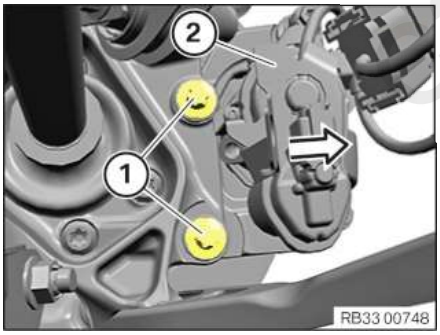


- Release the cable for the parking brake (1) from the holders (2).

NOTICE

Perform this step on the right side only.

- Release the cable for brake pad wear indicator from rear axle support.



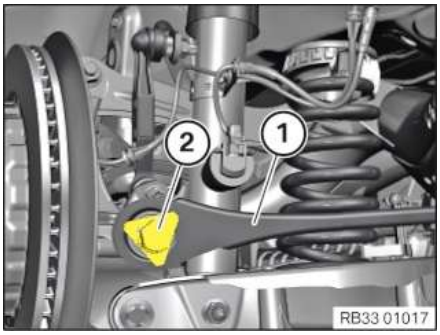
- Loosen screws (1).
- Pull brake caliper (2) down in direction of arrow.

  The brake caliper must not hang on the brake hose.



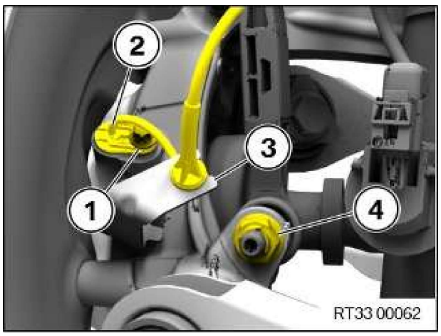
- Tie the brake caliper (1) up with the special tool 2 413 317.

5 – Releasing the track control arm from the wheel carrier



- Loosen screw (2).
- Release the track control arm (1) from the wheel carrier.

6 – Releasing anti-roll bar link and wheel speed sensor from the wheel carrier



- Loosen screw (1).
- Release wheel speed sensor (2) from the wheel carrier.
- Press the track control arm slightly downwards.
- Release nut (4).

  Use the Torx socket for counter support.
- Release the anti-roll bar link from the wheel carrier.

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Detach the cable for the wheel speed sensor from the holder (3).

7 – Remove rear brake disc



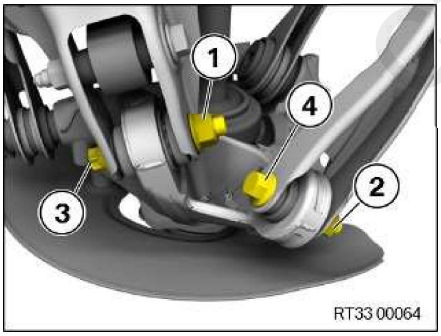
TECHNICAL INFORMATION

Note the following for the removal of the brake disc:

Do not strike the friction ring with a tool under any circumstance (for example, hammer). If required, **carefully** tap with a rubber mallet against the brake disc chamber.

- Loosen screw (1).
- Remove brake disc (2).

8 – Releasing the camber control arm and trailing arm from the wheel carrier

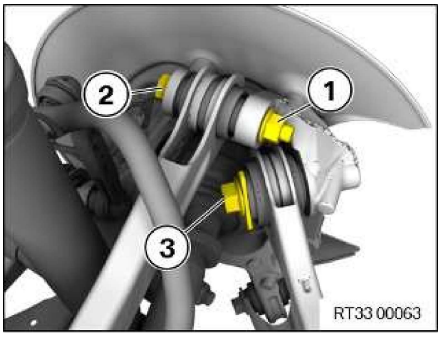


- Release the nuts (1) and (2).
- Pull out the screws (3) and (4).

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MAIN WORK

9 – Removing the wheel carrier

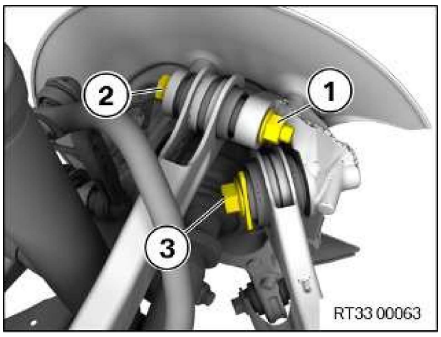


TECHNICAL INFORMATION

Secure component against falling.

- Loosen screw (3).
- Loosen nut (1).
- Pull out screw (2).
- Remove wheel carrier.

10 – Install wheel carrier



TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Position wheel carrier.
- Renew nut (1).

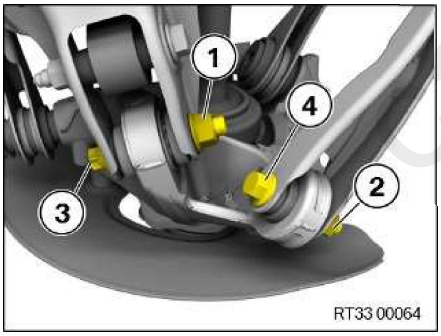
  Parts: Nut
- Renew screws (2) and (3).

  Parts: Screws
- Insert screw (2).
- Tighten nut (1) hand-tight.
- Tighten bolt (3) hand-tight.

  The tightening of the screw connections takes place later in normal position.

POSTPROCESSES

11 – Mounting the camber control arm and the trailing arm to the wheel carrier



- Renew nuts (1) and (2) and screws (3) and (4).

  Parts: Nut and screws
- Position the camber control arm and trailing arm on the wheel carrier.
- Insert screws (3) and (4).
- Tighten nut (1).

Camber control arm to wheel carrier

M14	Renew screw and nut.	Jointing torque	165 Nm
		Angle of rotation	90 °

TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Tighten the nut (2) hand-tight.

  The screw connection is tightened later in the normal position.

12 – Installing the rear brake disc

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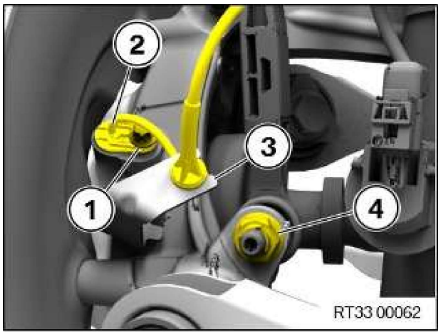


- Thoroughly clean the contact surface of the wheel hub and remove traces of corrosion if necessary.
  Irregularities in the contact surface can cause distortion in the brake disc!
- Position the brake disc (2).
- Renew the screw (1).
  Parts: Screw
- Tighten down screw (1).

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm

13 – Attaching the anti-roll bar link and the wheel speed sensor to the wheel carrier



- Position the anti-roll bar link on the wheel carrier.
- Press the track control arm slightly downwards.
- Renew nut (4).
  Parts: Nut
- Tighten nut (4). If necessary, counter support at the Torx socket.

Rear anti-roll bar link to anti-roll bar / wheel carrier

M10	Renew nut.	Tightening torque	56 Nm

- Clean and grease the bore hole for wheel speed sensor (2).

Expendable materials

Lubricating grease Staburags NBU 12K	100 g, Tube	83 23 9 407 810

- Position wheel speed sensor (2).
- Renew the screw (1).
  Parts: Screw
- Tighten down screw (1).

Rear wheel speed sensor on wheel carrier

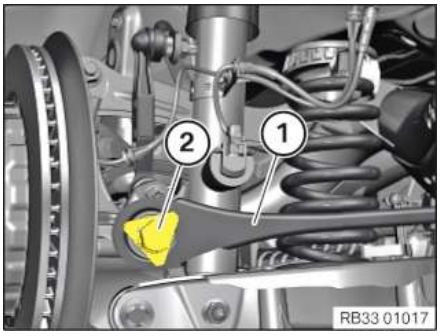
M6	Renew screw.	Tightening torque	12 Nm

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Attach the cable for the wheel speed sensor into the holder (3).

14 – Mounting the control link to the wheel carrier



TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Position the track control arm (1) on the wheel carrier.
- Renew the screw (2).
  Parts: Screw
- Tighten screw (2) by hand.
  The screw connection is tightened later in the normal position.

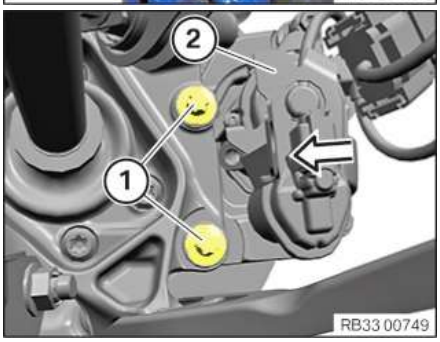
15 – Securing the brake caliper

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- Release and remove special tool 2 413 317.

  The brake caliper must not hang on the brake hose.

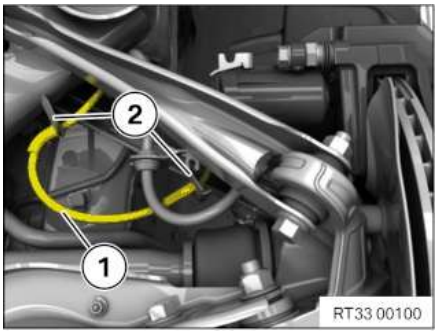


- Position the brake caliper (2) in the direction of the arrow.
- Renew screws (1).

  Parts: Screws
- Tighten the screws (1).

Caliper carrier to rear wheel carrier

M12	Renew screw.	Tightening torque	130 Nm



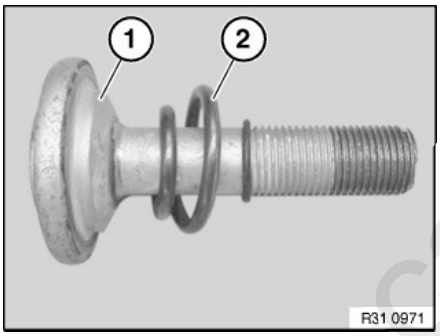
- Fasten the cable for the parking brake (1) to the holders (2).

NOTICE

Perform this step on the right side only.

- Fasten the cable for the brake pad wear indicator on the rear axle support.

16 – Securing the output shaft on the wheel bearing

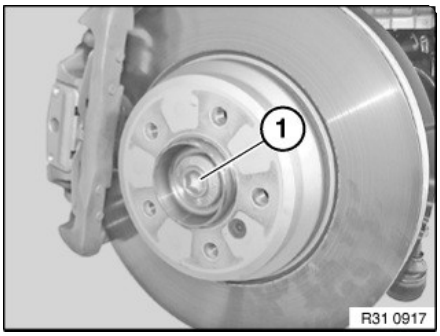


TECHNICAL INFORMATION

The installation note for front gearing must be observed at all times.

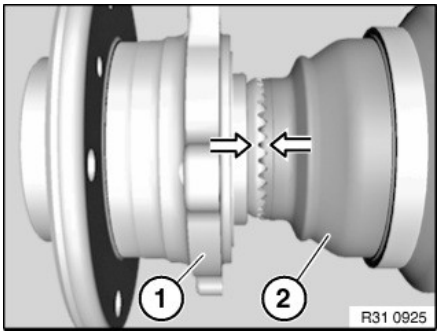
- Renew the collar bolt (1) and the compression spring (2).

  Parts: Collar bolt and compression spring
- Note installation position of compression spring (2).
- Keep the collar bolt (1) and the front gearing of the wheel bearing and the output shaft clean and free of grease.



- Hand-tighten the collar bolt (1) with the compression spring.

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TECHNICAL INFORMATION

The front gearing of the wheel bearing and output shaft must be installed in an interlocking position (tooth-in-tooth).

- Ensure positive locking by twisting the wheel bearings against each other (1) and the output shaft (2).
- Press brake pedal.
- Tighten the collar bolt.

Output shaft to wheel bearing

M16	Replace the collar bolt.	Jointing torque	210 Nm
		Angle of rotation	90 °

17 – Install rear left or right wheel

▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

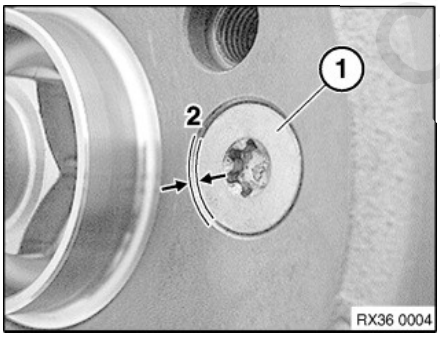
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).



- Check that the mounting bolt (1) for the brake disc is securely seated.

  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

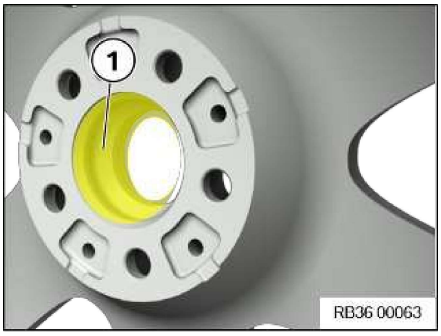
Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm

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TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

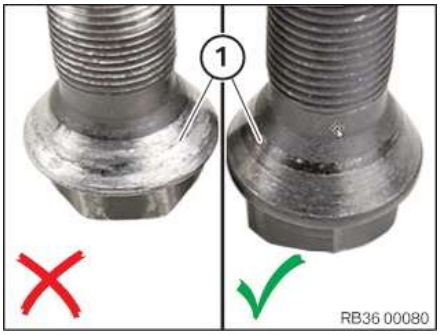
A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.

Check

- **Check wheel bolts for wear.**



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Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

  Parts: Wheel bolts

- Clean the wheel bolts (arrows).
- Check the wheel bolts (arrows) and threads for damage, renew the wheel bolts (arrows) if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

18 – Measuring the ride height of rear axle and adjusting the normal position



- Set the vehicle down on its wheels (e.g. On an approach ramp).
- Measure the ride height (A).
- Load or unload the vehicle until the ride height (A) is within the tolerance.

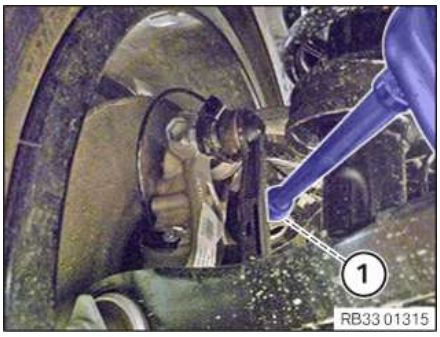
G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung

Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

19 – Tightening the screw connections on the wheel carrier

TECHNICAL INFORMATION

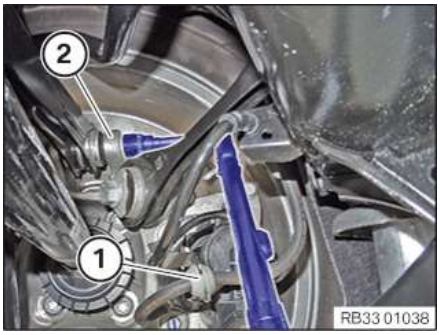
Tighten down screw connection in normal position.



- Slacken the screw (1) on the control arm by a turn.
- Tighten down screw (1).

Control arm to wheel carrier

M14	Renew screw. Tighten in normal position.	Tightening torque Angle of rotation	165 Nm 90 °

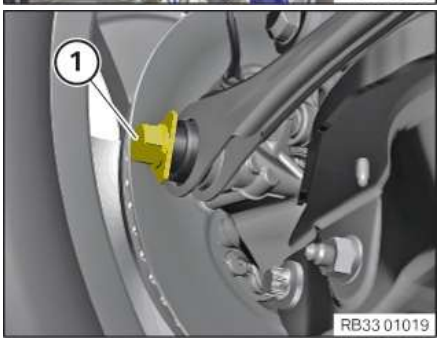


- Detach the brake hose (1) from the holder.
- Slacken the screw connection (2) on the wishbone on the top by a turn.
- Tighten the screw connection (2).

Upper wishbone to wheel carrier

M12	Renew screw and nut. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

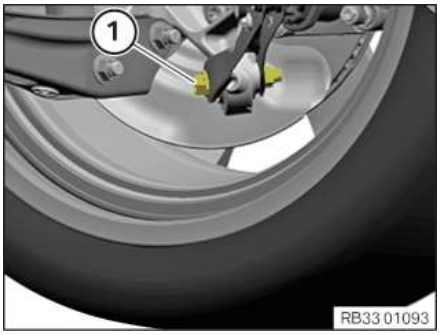
- Attach the brake hose (1) in the holder.



- Slacken the screw (1) on the track control arm by a turn.
- Tighten down screw (1).

Toe arm to wheel carrier

M12	Renew screw. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °



- Slacken the screw connection (1) on the trailing arm by a turn.
- Tighten screw connection (1).

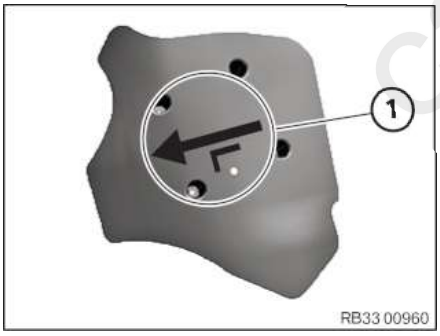
Trailing arm to wheel carrier

M12	Renew screw and nut. Tighten in normal position.	Tightening torque	100 Nm

20 – Perform chassis alignment check

- Perform the introductory wheel alignment in accordance with equipment manufacturer's instructions.
- If necessary, adjust the front axle and the rear axle.
- Perform the final wheel alignment in accordance with equipment manufacturer's instructions.
- Save and print out test record.

21 – Installing the cover of the camber control arm



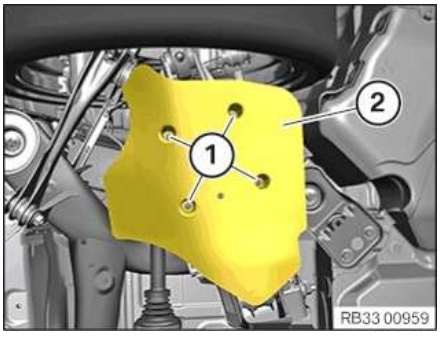
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

Additional Information

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Overview of Tightening Torques

Camber control arm to wheel carrier — Used in step 11

M14	Renew screw and nut.	Jointing torque	165 Nm
		Angle of rotation	90 °

Brake disc to rear wheel hub — Used in step 1217

M8	Renew screw.	Tightening torque	16 Nm

Rear anti-roll bar link to anti-roll bar / wheel carrier — Used in step 13

M10	Renew nut.	Tightening torque	56 Nm

Rear wheel speed sensor on wheel carrier — Used in step 13

M6	Renew screw.	Tightening torque	12 Nm

Caliper carrier to rear wheel carrier — Used in step 15

M12	Renew screw.	Tightening torque	130 Nm

Output shaft to wheel bearing — Used in step 16

M16	Replace the collar bolt.	Jointing torque	210 Nm
		Angle of rotation	90 °

Brake disc to front wheel hub — Used in step 17

M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts — Used in step 17

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Control arm to wheel carrier — Used in step 19

M14	Renew screw. Tighten in normal position.	Tightening torque	165 Nm
		Angle of rotation	90 °

Upper wishbone to wheel carrier — Used in step 19

M12	Renew screw and nut. Tighten in normal position.	Tightening torque	100 Nm
		Angle of rotation	90 °

Toe arm to wheel carrier — Used in step 19

M12	Renew screw. Tighten in normal position.	Tightening torque	100 Nm
		Angle of rotation	90 °

Trailing arm to wheel carrier — Used in step 19

M12	Renew screw and nut. Tighten in normal position.	Tightening torque	100 Nm

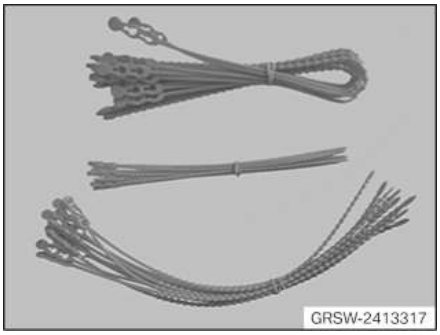
Cover to camber control arm — Used in step 21

M6	Replace nuts.	Tightening torque	6 Nm

Overview of Special Tools

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2 413 317 Cable strap



Common	Used in step 415
Usage	The "Cable ties" parts set consists of 3 items as follows: ABV232 Length: 320 mm colour: RedABV250 Length: 500 mm colour: RedABVS270 Length: 665 mm colour: Red
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 47 15 (332)

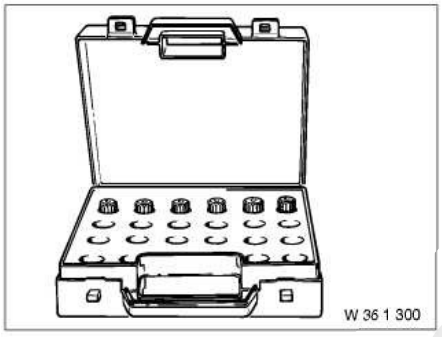
2 344 011 Tool



Common	Used in step 17
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung	Used in step 18
Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	117
00 02 001 Raising the vehicle using a vehicle lift	

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

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

TECHNICAL INFORMATION

Perform wheel alignment after installation.

PRELIMINARY WORK

1 – Remove rear left or right wheel

▸ **Removing the wheel**



TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

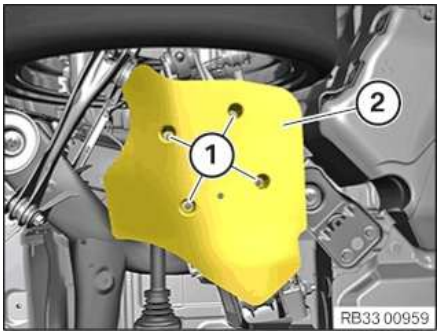
- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

  This process is intended to prevent damage to the brake disc.



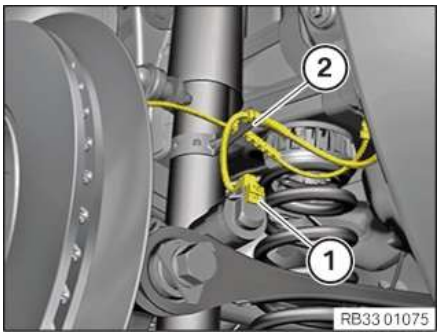
- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

2 – Removing the cover of camber control arm



- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

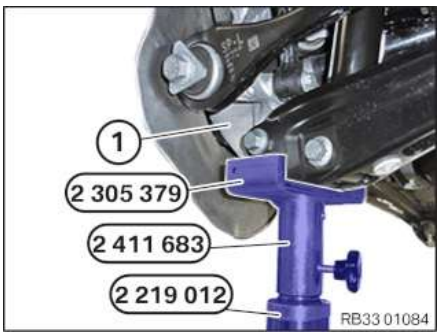
3 – Releasing the rear shock absorber from the camber control arm



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Release all the existing cables from holder (2).
- Unlock plug connection (1) and disconnect.



WARNING

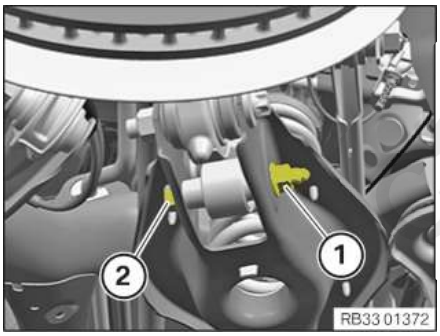
Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).
- Support the wheel carrier (1) with the special tool 2 219 012.

  Do not press against the spring force of the coil spring.



- Unfasten nut (1).
- Pull out bolt (2).
- Disconnect the special tool 2 219 012 and set it aside.

4 – Remove coil spring

▸ **Preparing the special tool (G22/G23/G26/G42)**

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

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- **Basic version:**

  Spindle = Special tools and

  Upper spring cup = Special tool 5 A36 B04

  Lower spring cup = Special tool 5 A36 B05

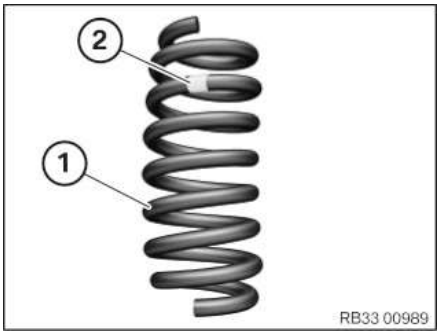


- **BMW M Performance Automobile (Sport) and Alpina:**

  Spindle = special tools , and

  Upper spring cup = Special tool

  Lower spring cup = Special tool



TECHNICAL INFORMATION

Incorrect assembly is possible. Ensure correct installation position.

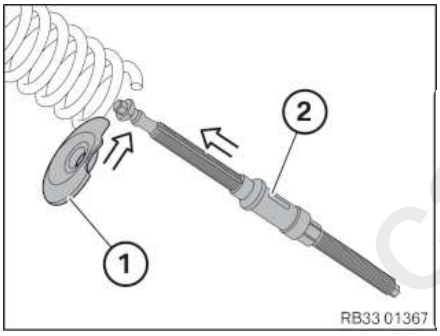
- The installation position of the coil spring(1) is marked with a label (2).

  The label (2) is attached at the top end of the coil spring (1) and is marked as “top”

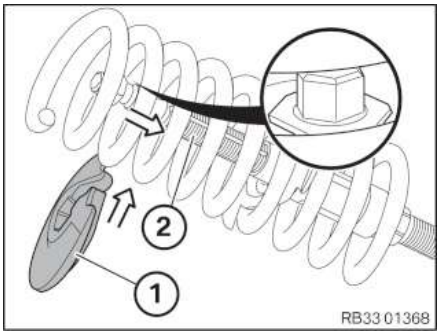
- Check coil spring (1) for availability of label (2)

  If the label (2) on the installed coil spring (1) is missing and it has to be fixed after repair, then the installation position of the coil spring (1) must be marked necessarily.

Note: Mark the installation position of the coil spring, by attaching an adhesive tape at the top end of spring.



- Insert the bottom spring cup (1) sideways in the direction of arrow in the coil spring and turn up to the lowest coil.
- Insert the spindle (2) from below in the direction of arrow through the camber control arm and the bottom spring cup (1).

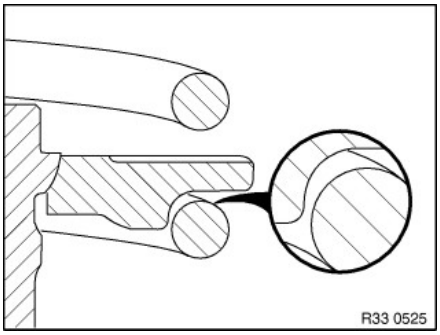


- Insert the top spring cup (1) sideways in the direction of arrow in the coil spring, feed in to the spindle (2) and turn it upwards as far as possible.

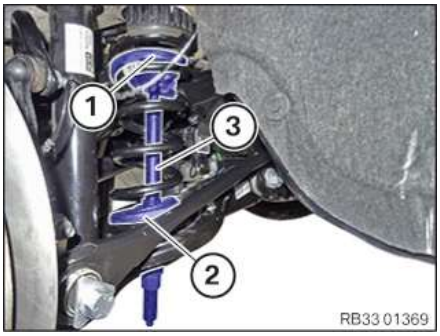
  Check the position of the spindle (2) with the hexagon head in the top spring cup (1) and correct if necessary.

- Pull the spindle (2) downwards in the direction of arrow.

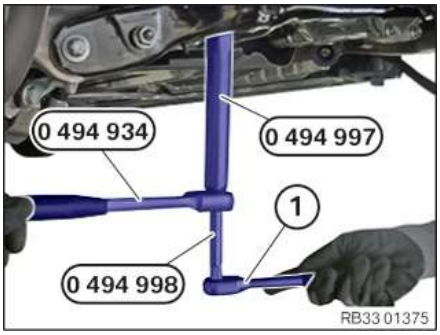
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- Check the position of the spring cup in the coil spring at the top and bottom and, if necessary, correct it.



- Align the top spring cup (1) and the bottom spring cup (2) with the spindle (3) in the centre to reach the highest possible contact surface on the coil spring.



RISK OF DAMAGE

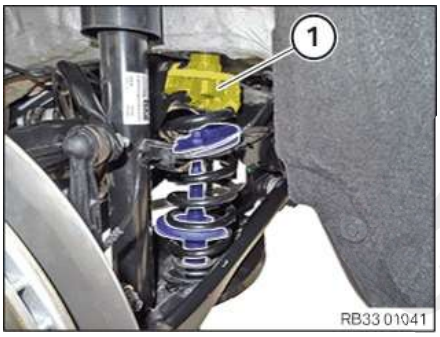
Compression of coil spring to solid height.

Damage of the coil spring.

- Do not compress coil spring to solid height.
- Make sure there is a gap between the spring coils.

- Tension the coil spring using special tools and . In doing so, counter support at the spindle with the special tool and the standard tool (1).

Standard tool:



- Feed out coil spring on upper spring pad (1). If necessary, remove upper spring pad (1).

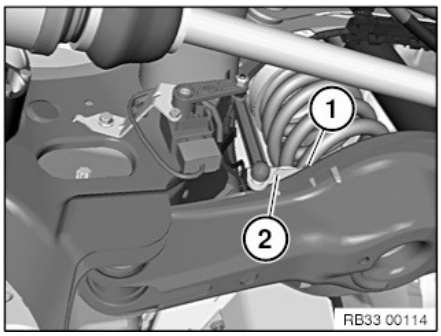


- Guide out and remove the coil spring (1) toward the top in the direction of the arrow.

MAIN WORK

5 – Removing the camber control arm

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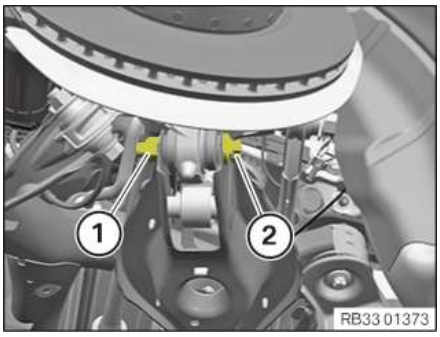
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

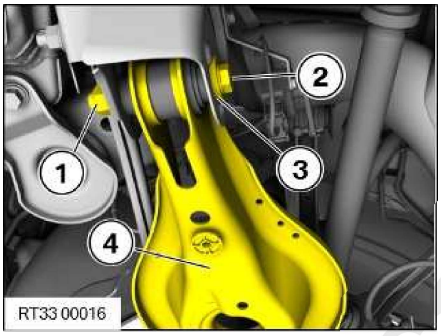
- Unclip the holder (2) for height sensor from the camber control arm (1).



- Release the stone chip guard (1) and remove it.



- Loosen nut (1).
- Pull out screw (2).

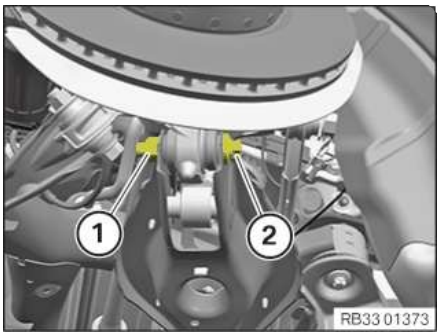


TECHNICAL INFORMATION

Secure component against falling.

- Mark the position of eccentric adjustment washer (3) for the rear axle support to make it easier to set the rear axle subsequently.
- Release the nut (1) and remove the eccentric washer.
- Pull out the eccentric bolt (2).
- Remove the camber arm (4).

6 – Installing the camber control arm



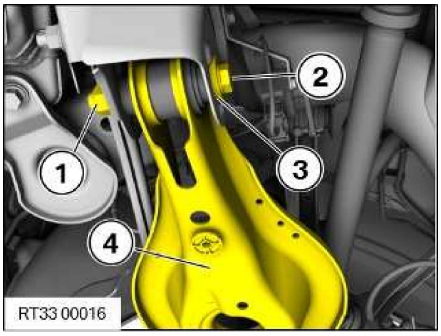
- Position camber control arm on the wheel carrier.
- Replace the nuts (1) and the bolt (2).

  Parts: Nut, bolt
- Insert the screw (2).
- Tighten nut (1).

Camber control arm to wheel carrier

M14	Renew screw and nut.	Jointing torque	165 Nm
		Angle of rotation	90 °

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TECHNICAL INFORMATION

The vehicle ride height may change as a result of turning the eccentric bolts for the adjustment of toe and camber. When renewing the bolts, make sure the eccentric bolts are correctly positioned to keep the ride height change to a minimum during the adjustment work.

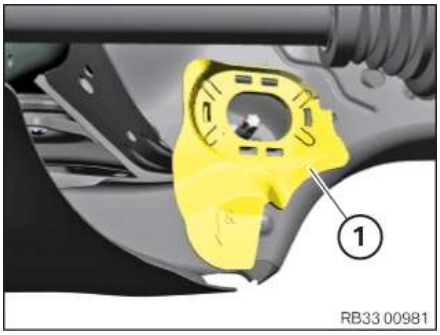
TECHNICAL INFORMATION

Tighten down screw connection in normal position.

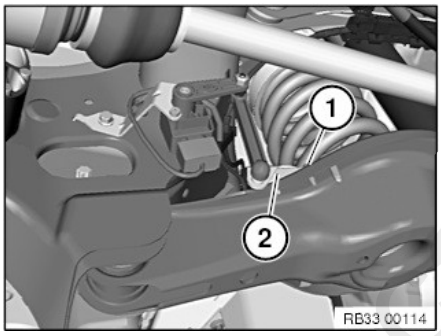
- Position the camber control arm (4) on the rear axle support.
- Renew the nut (1), the eccentric washer and the eccentric screw (2).

  Parts: Nut, eccentric washer, eccentric bolt
- Insert the eccentric screw (2) and position it in such a way that the eccentric (3) points vertically upwards.
- Connect the eccentric washer.
- Tighten the nut (1) hand-tight.

  The tightening of the screw connection with the torque wrench is carried out later in normal position.



- Mount stone chip guard (1).



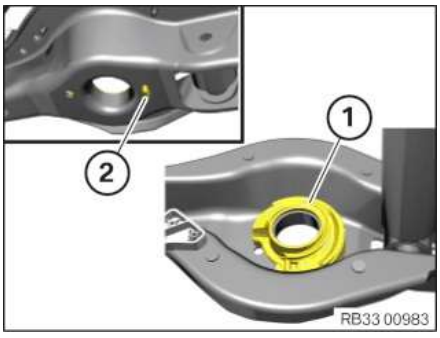
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Clip in the holder (2) for the ride height sensor on the camber control arm (1).

POSTPROCESSES

7 – Install the coil springs

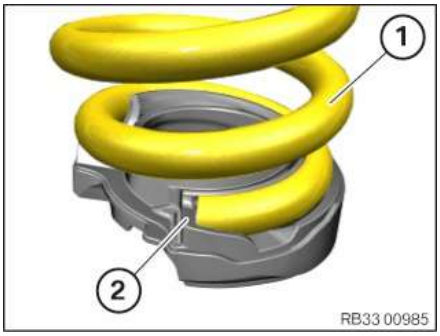


- Check bottom spring pad (1) for damage, renew if necessary.
- Check the position of the lower spring pad (1) with the plastic tab (2) on the camber control arm, correct if necessary.

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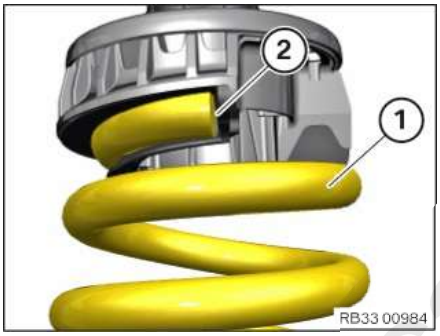
- Feed in the coil spring (1) in direction of arrow from the top and lock.



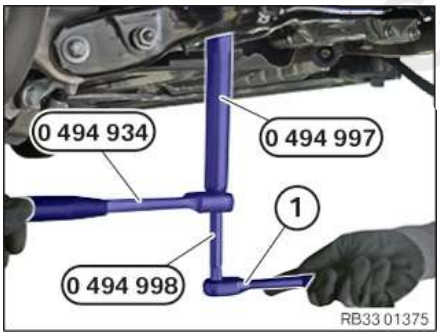
- Position the coil spring (1) in such a way that the coil spring end is in form-fit contact with the lower spring pad (2).



- Feed in the spring pad at the top (1).



- Position the upper spring pad on the coil spring (1) in such a way that the coil spring end (2) is in form-fit contact with the upper spring pad.

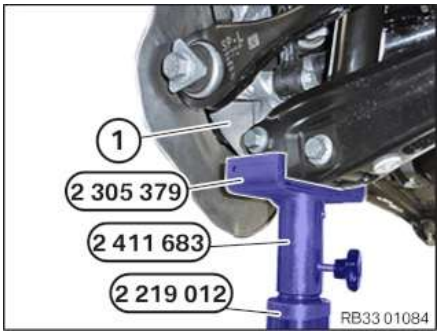


- Slacken the coil spring with the special tools and . In doing so, counter support at the spindle with the special tool and the standard tool (1).

  Standard tool:

  Pay attention to the mounting orientation when releasing the coil spring, correct if necessary.
- Remove special tools.

8 – Securing the rear shock absorber on the camber control arm



WARNING

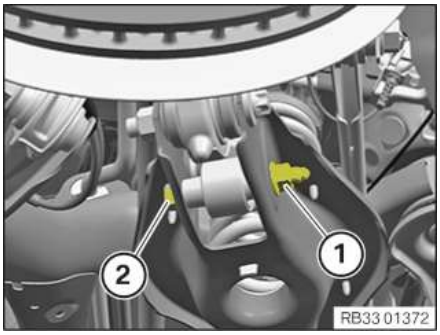
Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).

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TECHNICAL INFORMATION

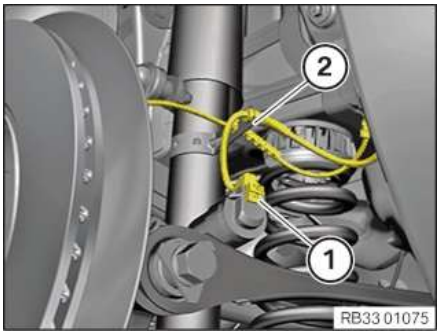
Tighten down screw connection in normal position.

- Slightly lift the wheel carrier with the special tool 2 219 012. In so doing, position the shock absorber on the camber control arm.

  Do not press against the spring force of the coil spring.
- Replace the nuts (1) and the bolt (2).

  Parts: Nut, bolt
- Insert the screw (2).
- Tighten the nut (1) hand-tight.

  The tightening of the screw connection with the torque wrench is carried out later in normal position.
- Disconnect the special tool 2 219 012 and set it aside.



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure all existing cables on the holder (2).
- Connect connectors (1) and lock.

9 – Install rear left or right wheel

▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

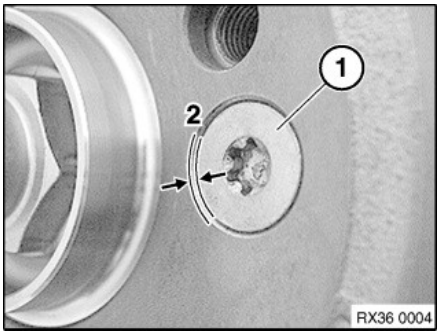
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).



- Check that the mounting bolt (1) for the brake disc is securely seated.

  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

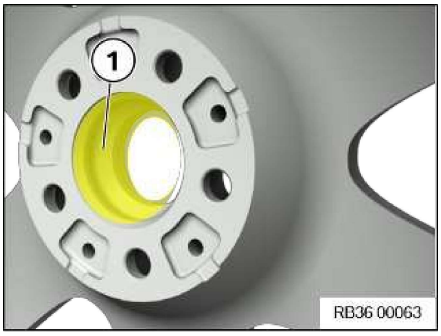
Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm

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TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

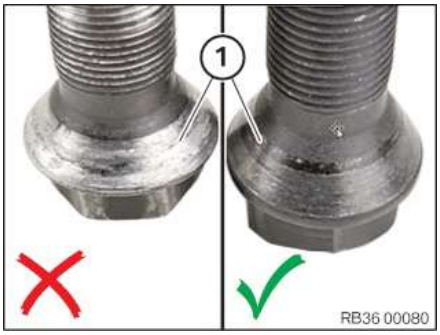
A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.

Check

- **Check wheel bolts for wear.**



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Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

  Parts: Wheel bolts

- Clean the wheel bolts (arrows).
- Check the wheel bolts (arrows) and threads for damage, renew the wheel bolts (arrows) if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

10 – Measuring the ride height of rear axle and adjusting the normal position

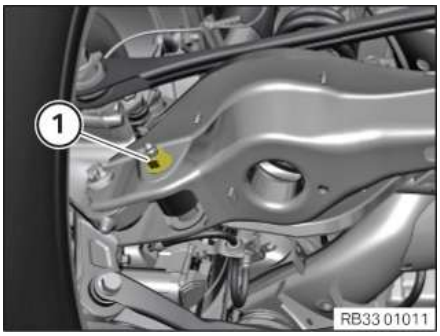


- Set the vehicle down on its wheels (e.g. On an approach ramp).
- Measure the ride height (A).
- Load or unload the vehicle until the ride height (A) is within the tolerance.

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung

Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

11 – Tightening the screw connection of the shock absorber on the camber control arm



TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Release the nut (1) by one turn and tighten it. In doing so, counter support at the screw.

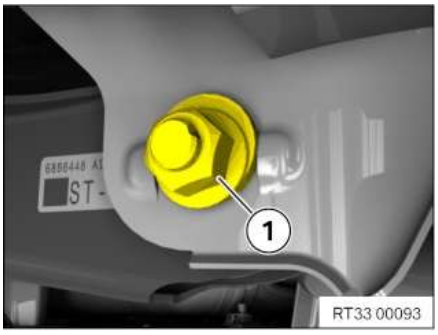
Shock absorber to camber arm

M12	Renew nut and screw. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

12 – Perform chassis alignment check

- Perform the introductory wheel alignment in accordance with equipment manufacturer's instructions.
- If necessary, adjust the front axle and the rear axle.
- Perform the final wheel alignment in accordance with equipment manufacturer's instructions.
- Save and print out test record.

13 – Tightening the screw connection on the rear axle support



TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Release the nut (1) by one turn and tighten it. Counter support on the eccentric screw while doing so.

Camber control arm to rear axle support

M14	Renew eccentric bolt, nut and eccentric washer. Tighten in normal position.	Tightening torque	175 Nm

14 – Installing the cover of the camber control arm



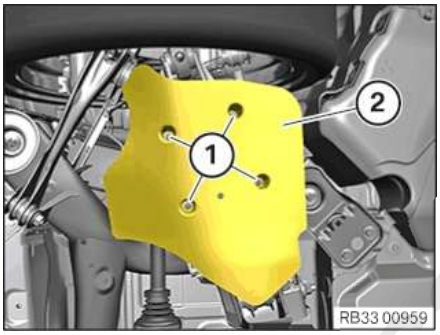
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

Additional Information

Overview of Tightening Torques

Camber control arm to wheel carrier — Used in step 6

M14	Renew screw and nut.	Jointing torque Angle of rotation	165 Nm 90 °

Brake disc to front wheel hub — Used in step 9

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub — Used in step 9

M8	Renew screw.	Tightening torque	16 Nm

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Wheel bolts			Used in step 9
M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Shock absorber to camber arm			Used in step 11
M12	Renew nut and screw. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

Camber control arm to rear axle support			Used in step 13
M14	Renew eccentric bolt, nut and eccentric washer. Tighten in normal position.	Tightening torque	175 Nm

Cover to camber control arm			Used in step 14
M6	Replace nuts.	Tightening torque	6 Nm

Overview of Special Tools

2 219 012 Hydraulic lifter



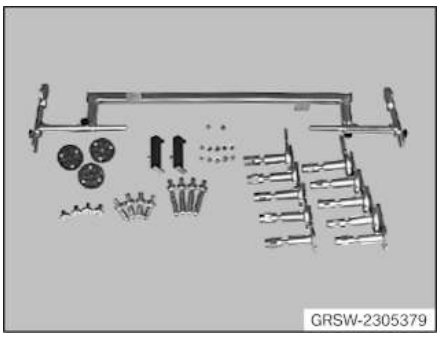
Common	Used in step 38
Usage	For raising and lowering various vehicle components.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

2 411 683 Adapter



Common	Used in step 38
Usage	Adapter for connecting a mounting plate part number: 2 357 071 on universal hydraulic lifting equipment centrically on piston rod.
Included in the tool or work	
Storage location	B76
Replaced by	
In connection with	
SI-Number	

2 305 379 Accessories



Common	Used in step 38
Usage	Holder set for MHT 1200 major assembly table lift and new generation (from 2020)
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	Mobile major assembly table lift MHT 1200 81222184136
SI-Number	06 01 10 (649)

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5 A36 B04 Spring cups



Common	Used in step 4
Usage	Spring cup for disassembly and installation of suspension springs on the rear axle in connection with the spring tensioner basic unit, SWZ 33 5 010 or SWZ 33 5 100.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 23 21 (851)

5 A36 B05 Spring cups



Common	Used in step 4
Usage	Spring cup for disassembly and installation of suspension springs on the rear axle in connection with the spring tensioner basic unit, SWZ 33 5 010 or SWZ 33 5 100.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 23 21 (851)

2 344 011 Tool



Common	Used in step 9
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung	Used in step 10
Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

Links

Repair instructions	**Used in step**
00 02 001 Raising the vehicle using a vehicle lift	19

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

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

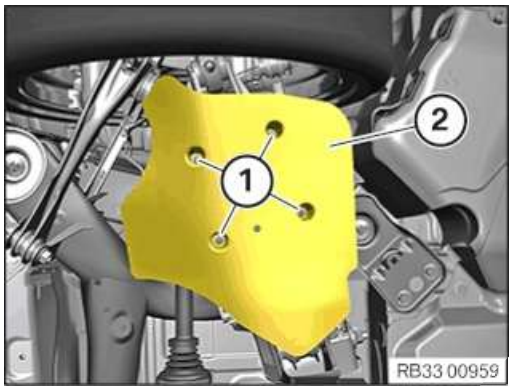
Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

NOTICE

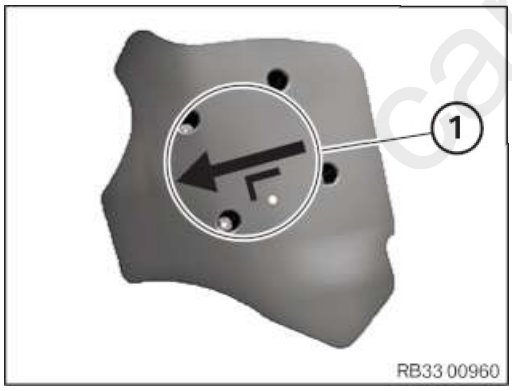
Description is for left component only. Procedure on the right side is identical.

1 – Removing the cover of camber control arm



- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

2 – Installing the cover of the camber control arm



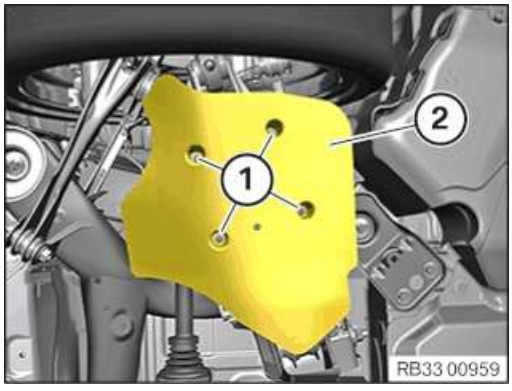
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

Additional Information

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Overview of Tightening Torques

Cover to camber control arm Used in step 2

M6	Replace nuts.	Tightening torque	6 Nm

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	

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

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

TECHNICAL INFORMATION

Perform wheel alignment after installation.

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PRELIMINARY WORK

1 – Removing the rear left wheel

▸ **Removing the wheel**



TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

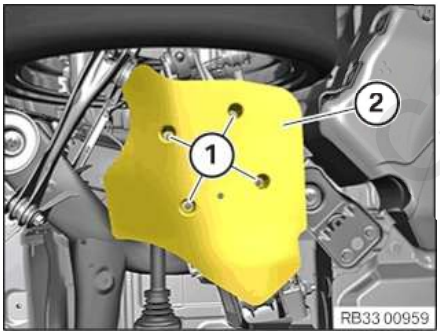
- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

  This process is intended to prevent damage to the brake disc.



- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

2 – Removing the cover of camber control arm

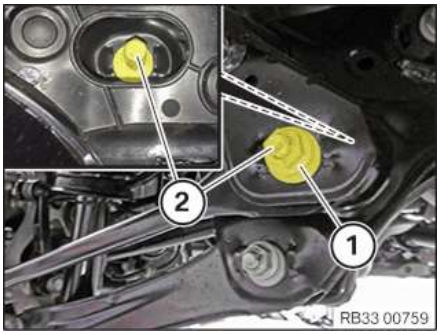


- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

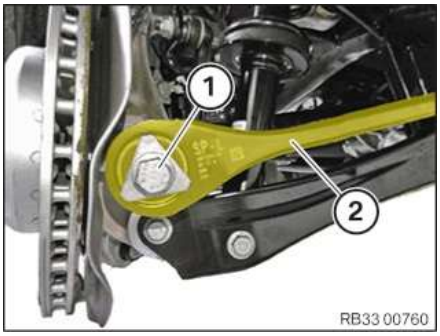
MAIN WORK

3 – Removing the track control arm

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- Loosen nut (1).
- Remove the eccentric washer.
- Remove the eccentric bolt (2).



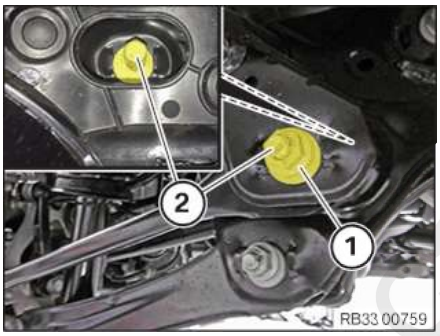
- Loosen screw (1).
- Remove the track control arm (2).

4 – Installing the track control arm



- Position the track control arm (2).
- Renew the screw (1).

  Parts: Screw
- Screw in the bolt (1) by a few turns.



TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Renew the nut (1), the eccentric washer and the eccentric screw (2).

  Parts: Nut, eccentric washer, eccentric bolt
- Install the eccentric bolt (2).
- Position eccentric washer .
- Tighten the nut (1) hand-tight.

  The screw connection is tightened later in normal position.

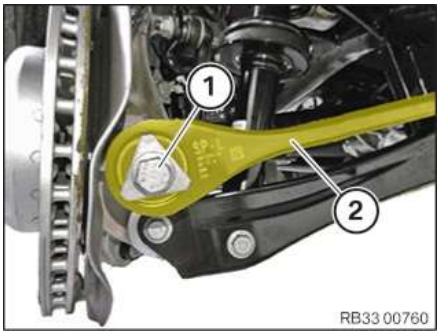


TECHNICAL INFORMATION

The vehicle ride height may change as a result of turning the eccentric bolts for the adjustment of toe and camber. When renewing the bolts, make sure the eccentric bolts are correctly positioned to keep the ride height change to a minimum during the adjustment work.

- Position the eccentric bolt (1) during renewal in a way that the eccentric (2) points vertically upwards!

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TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Tighten screw (1) by hand.

  The screw connection is tightened later in normal position.

POSTPROCESSES

5 – Installing the rear left wheel

▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

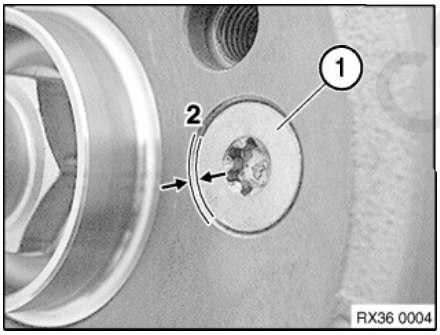
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).



- Check that the mounting bolt (1) for the brake disc is securely seated.

  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

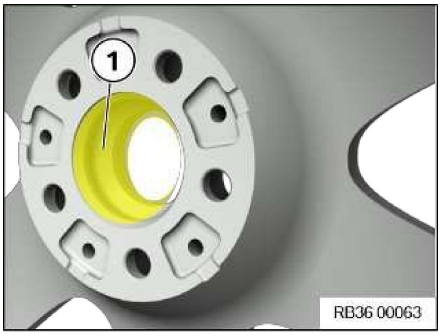
Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm

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TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

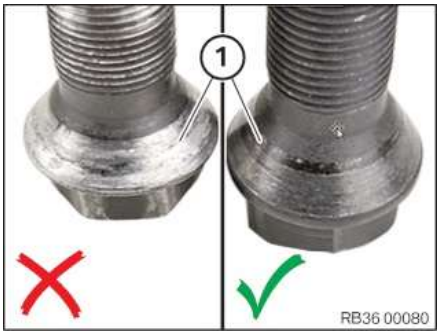
A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.

Check

- **Check wheel bolts for wear.**



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Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

  Parts: Wheel bolts

- Clean the wheel bolts (arrows).
- Check the wheel bolts (arrows) and threads for damage, renew the wheel bolts (arrows) if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

6 – Measuring the ride height of rear axle and adjusting the normal position



- Set the vehicle down on its wheels (e.g. On an approach ramp).
- Measure the ride height (A).
- Load or unload the vehicle until the ride height (A) is within the tolerance.

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung

Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

7 – Tightening the screw connection of the track control arm on the wheel carrier



TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Slacken the screw (1) by a turn.
- Tighten the screw (1) with the standard tool.

  Standard tool:

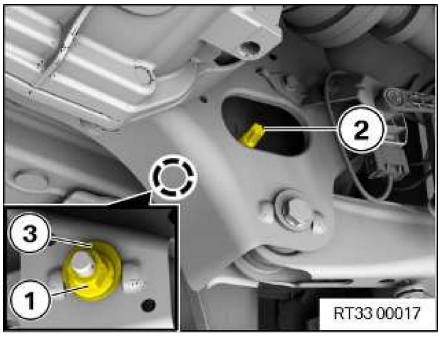
Toe arm to wheel carrier

M12	Renew screw. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

8 – Perform chassis alignment check

- Perform the introductory wheel alignment in accordance with equipment manufacturer's instructions.
- If necessary, adjust the front axle and the rear axle.
- Perform the final wheel alignment in accordance with equipment manufacturer's instructions.
- Save and print out test record.

9 – Tightening the track control arm on the rear axle support in normal position



TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Loosen nut (1) by turning it once.
- Correctly position the eccentric disc (3).
- Use the eccentric screw (2) as a counter support and tighten the nut (1) to normal position.

Toe arm to rear axle support

M12	Replace the eccentric bolt, cam and disc. Tighten in normal position.	Tightening torque	108 Nm

10 – Installing the cover of the camber control arm



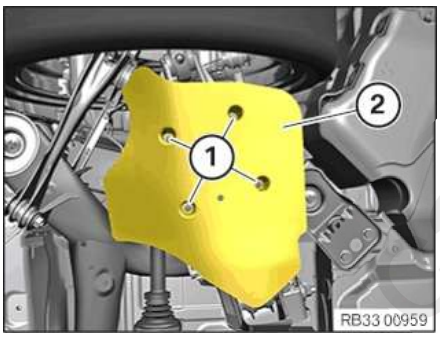
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

Additional Information

Overview of Tightening Torques

Brake disc to front wheel hub — Used in step 5

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub — Used in step 5

M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts — Used in step 5

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

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Toe arm to wheel carrier — Used in step 7

M12	Renew screw. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

Toe arm to rear axle support — Used in step 9

M12	Replace the eccentric bolt, cam and disc. Tighten in normal position.	Tightening torque	108 Nm

Cover to camber control arm — Used in step 10

M6	Replace nuts.	Tightening torque	6 Nm

Overview of Special Tools

2 344 011 Tool



Common — Used in step 5

Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

Replacement tools:

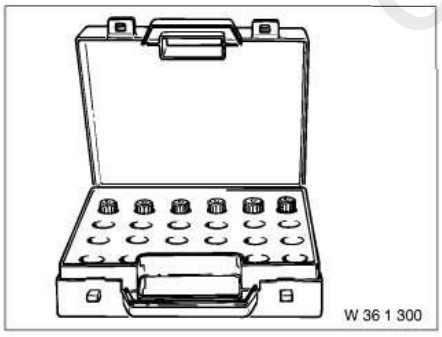
0 495 221 (36 1 323) Wheel stud



Common — Used in step 1

Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common — Used in step 1

Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

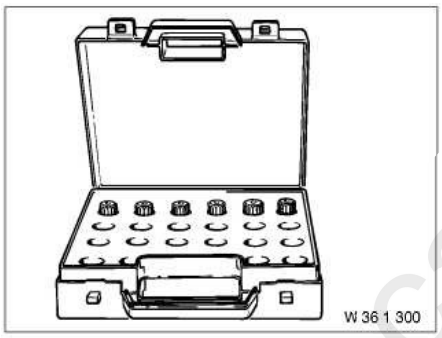
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0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung	Used in step 6
Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	15

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This documentation refers to special tools that were not yet available when going to press.

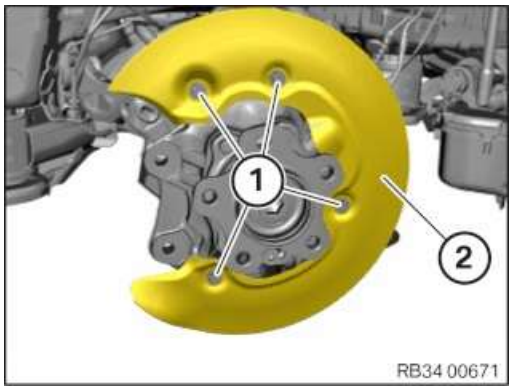
33 32 729 Replacing a steering stub / wheel carrier

NOTICE

Description is for left component only. Procedure on the right side is identical.

PRELIMINARY WORK

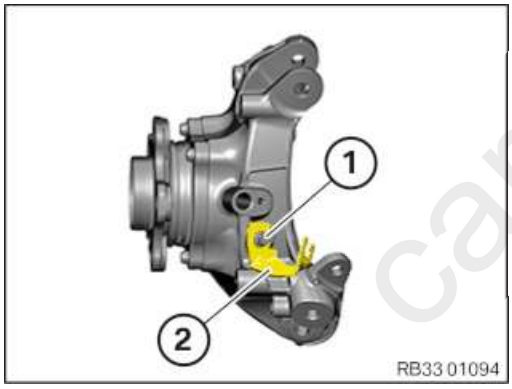
1 – Remove rear brake guard plate



- Unscrew the bolts (1) and remove the brake guard plate (2).

MAIN WORK

2 – Replacing the wheel carrier

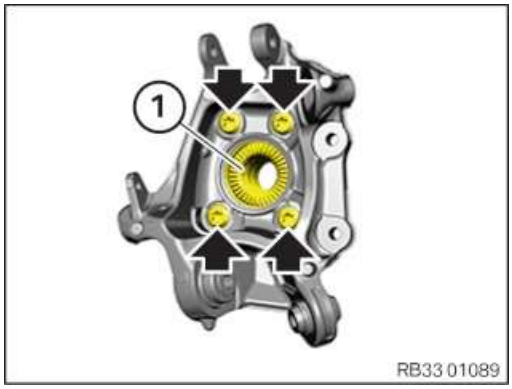


- Release the screw (1).
- Remove the holder (2).

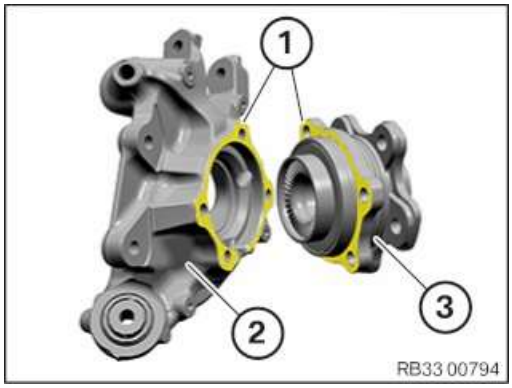


- Use special tool or to loosen and tighten the spherical-collar bolts.

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- Loosen spherical-collar bolts (arrows).
- Remove wheel bearing (1).

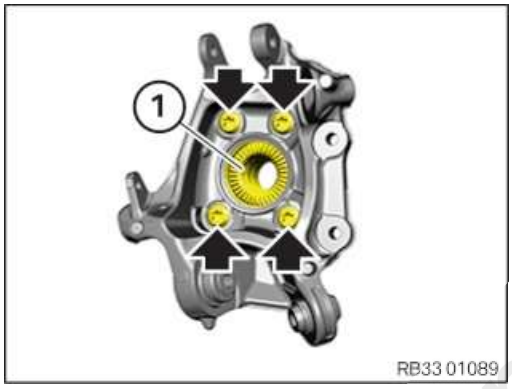


TECHNICAL INFORMATION

Keep the connection of the wheel bearing on the wheel carrier clean and free of oil and grease.

- Renew wheel carrier (2).

  Parts: Wheel carrier
- Recut the thread for the spherical-collar bolts on the wheel bearing.
- Clean the contact surfaces (1) of the wheel carrier (2) and the wheel bearing (3).

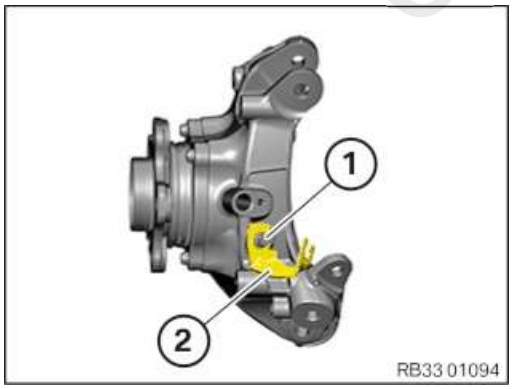


- Position wheel bearings (1) on the wheel carrier.
- Renew the spherical-collar bolts (arrows) .

  Parts: Spherical-collar bolts
- Tighten spherical-collar bolts (arrows) cross-wise.

Wheel bearing to wheel carrier

M12	Renew spherical collar screws. **Tighten the spherical-collar bolts crosswise.** *Tightening sequence must be strictly adhered to and carried out on all spherical-collar bolts at the same time!*	Tightening torque Initial torque Unscrew all bolts. Tightening torque Angle of rotation	20 Nm 140 Nm max. 45 ° 120 Nm 90 °



- Position holder (2).
- Tighten down screw (1).

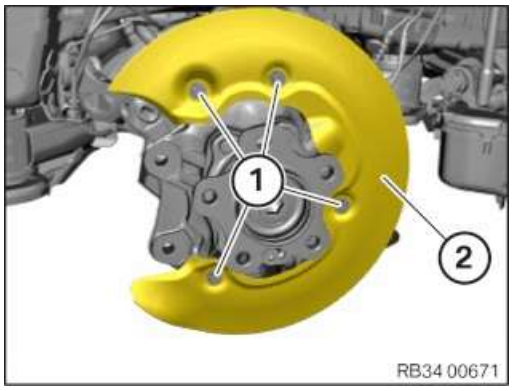
Holder on wheel carrier

	Renew screw.	Tightening torque	12 Nm

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POSTPROCESSES

3 – Mount rear brake guard plate



- Install brake guard plate (2).
- Insert screws (1) and tighten.

Brake protection plate on the rear wheel carrier

M6x12	Renew screw.	Tightening torque	8 Nm

Additional Information

Overview of Tightening Torques

Wheel bearing to wheel carrier — Used in step 2

M12	Renew spherical collar screws. **Tighten the spherical-collar bolts crosswise.** *Tightening sequence must be strictly adhered to and carried out on all spherical-collar bolts at the same time!*	Tightening torque Initial torque Unscrew all bolts. Tightening torque Angle of rotation	20 Nm 140 Nm max. 45 ° 120 Nm 90 °

Holder on wheel carrier — Used in step 2

	Renew screw.	Tightening torque	12 Nm

Brake protection plate on the rear wheel carrier — Used in step 3

M6x12	Renew screw.	Tightening torque	8 Nm

Overview of Special Tools

Links

Repair instructions	Used in step
33 32 131 Removing and installing a steering stub/wheel carrier (FRU specification without wheel alignment)	

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33 32 021 Replacing left or right trailing arm

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

1 – Remove trailing arm



- Release the nut (2) and (4).
- Pull the bolts (3) out.
- Remove the trailing arm (1).

2 – Installing the trailing arm

TECHNICAL INFORMATION

Tighten down screw connection in normal position.



- Position the trailing arm (1).
- Renew the bolts (3) and the nuts (2) and (4).

  Parts: Bolts, nuts
- Insert the screws (3) .
- Tighten nuts (2) and (4) hand-tight.

  The screw connections are tightened later in normal position.

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3 – Measuring the ride height of rear axle and adjusting the normal position



- Set the vehicle down on its wheels (e.g. On an approach ramp).
- Measure the ride height (A).
- Load or unload the vehicle until the ride height (A) is within the tolerance.

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung

Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

4 – Tightening the screw connection on trailing arm

TECHNICAL INFORMATION

Tighten down screw connection in normal position.



- Counter support the bolt (3) and release the nuts (2) and (4) by one rotation.
- Tighten nut (2) on trailing arm (1).

Trailing arm to rear axle support

M12	Renew screw and nut. Tighten in normal position.	Tightening torque	100 Nm

- Tighten nut (4) on trailing arm (1).

Trailing arm to wheel carrier

M12	Renew screw and nut. Tighten in normal position.	Tightening torque	100 Nm

Additional Information

Overview of Tightening Torques

Trailing arm to rear axle support Used in step 4

M12	Renew screw and nut. Tighten in normal position.	Tightening torque	100 Nm

Trailing arm to wheel carrier Used in step 4

M12	Renew screw and nut. Tighten in normal position.	Tightening torque	100 Nm

Overview Technical Data

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung Used in step 3

Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	

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33 32 071 Replacing one upper wishbone

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

TECHNICAL INFORMATION

Perform wheel alignment after installation.

PRELIMINARY WORK

1 – Remove rear left or right wheel

▸ **Removing the wheel**



TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

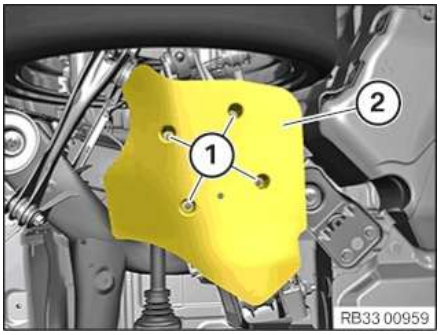
  This process is intended to prevent damage to the brake disc.



- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

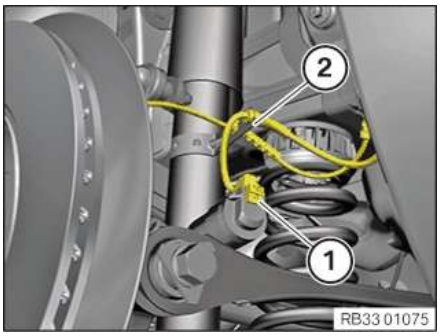
2 – Removing the cover of camber control arm

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- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

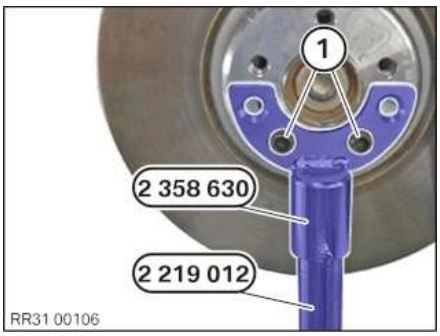
3 – Releasing the rear shock absorber from the body



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Release all the existing cables from holder (2).
- Unlock plug connection (1) and disconnect.



WARNING

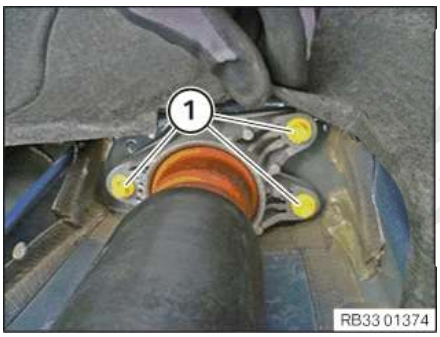
Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tools 2 219 012 and 2 358 630 on the brake disc.
- Hand-tighten the wheel bolts (1).
- Support the wheel carrier (1) with the special tool 2 219 012.

  Do not press against the spring force of the coil spring.



- Loosen screws (1).
- Disconnect the special tool 2 219 012 and set it aside.

4 – Remove coil spring

▸ **Preparing the special tool (G22/G23/G26/G42)**

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

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- **Basic version:**

  Spindle = Special tools and

  Upper spring cup = Special tool 5 A36 B04

  Lower spring cup = Special tool 5 A36 B05

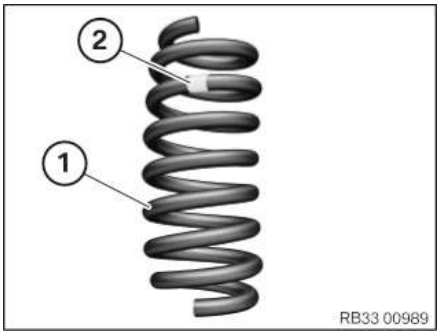


- **BMW M Performance Automobile (Sport) and Alpina:**

  Spindle = special tools , and

  Upper spring cup = Special tool

  Lower spring cup = Special tool



TECHNICAL INFORMATION

Incorrect assembly is possible. Ensure correct installation position.

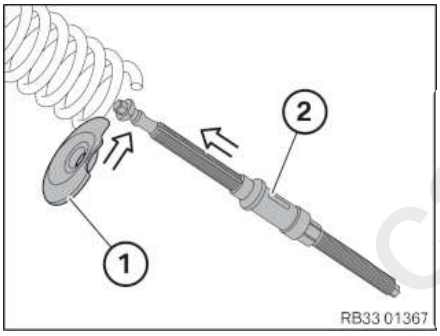
- The installation position of the coil spring(1) is marked with a label (2).

  The label (2) is attached at the top end of the coil spring (1) and is marked as “top”

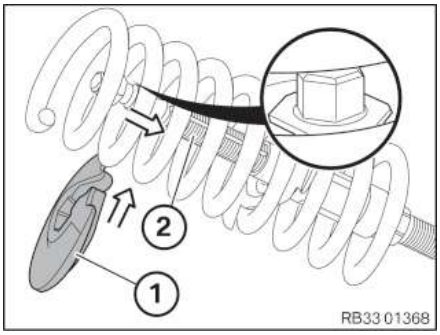
- Check coil spring (1) for availability of label (2)

  If the label (2) on the installed coil spring (1) is missing and it has to be fixed after repair, then the installation position of the coil spring (1) must be marked necessarily.

Note: Mark the installation position of the coil spring, by attaching an adhesive tape at the top end of spring.



- Insert the bottom spring cup (1) sideways in the direction of arrow in the coil spring and turn up to the lowest coil.
- Insert the spindle (2) from below in the direction of arrow through the camber control arm and the bottom spring cup (1).

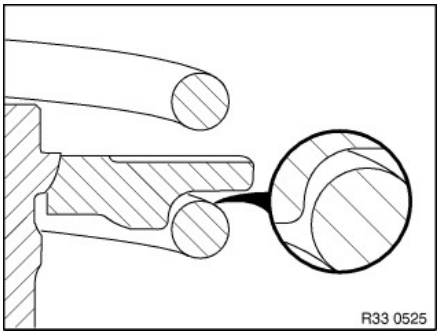


- Insert the top spring cup (1) sideways in the direction of arrow in the coil spring, feed in to the spindle (2) and turn it upwards as far as possible.

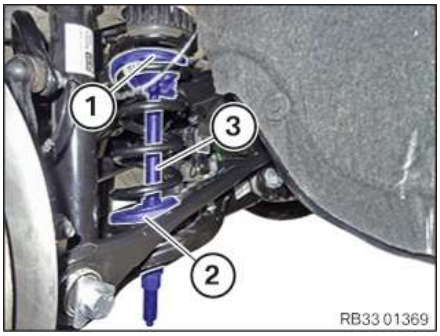
  Check the position of the spindle (2) with the hexagon head in the top spring cup (1) and correct if necessary.

- Pull the spindle (2) downwards in the direction of arrow.

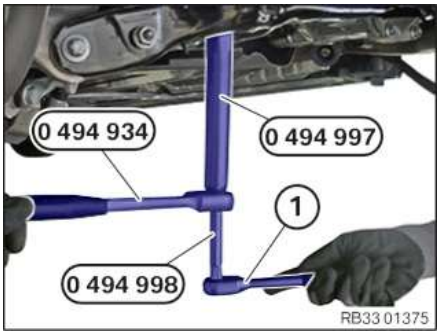
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- Check the position of the spring cup in the coil spring at the top and bottom and, if necessary, correct it.



- Align the top spring cup (1) and the bottom spring cup (2) with the spindle (3) in the centre to reach the highest possible contact surface on the coil spring.



RISK OF DAMAGE

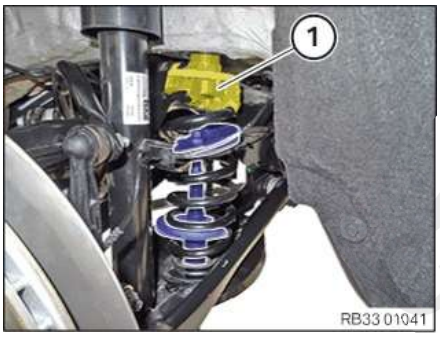
Compression of coil spring to solid height.

Damage of the coil spring.

- Do not compress coil spring to solid height.
- Make sure there is a gap between the spring coils.

- Tension the coil spring using special tools and . In doing so, counter support at the spindle with the special tool and the standard tool (1).

Standard tool:



- Feed out coil spring on upper spring pad (1). If necessary, remove upper spring pad (1).

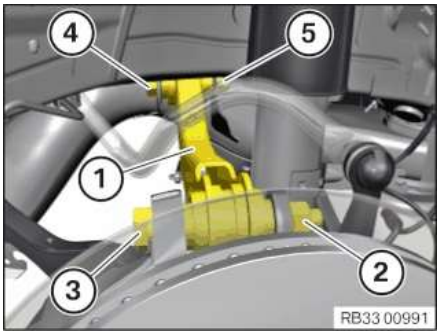


- Guide out and remove the coil spring (1) toward the top in the direction of the arrow.

MAIN WORK

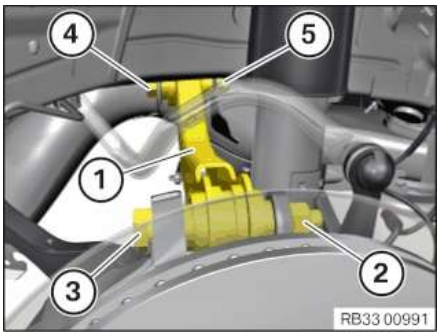
5 – Remove top wishbone

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- Release the nuts (2) and (5).
- Pull out screws (3) and (4).
- Remove top wishbone (1).

6 – Installing the top wishbone



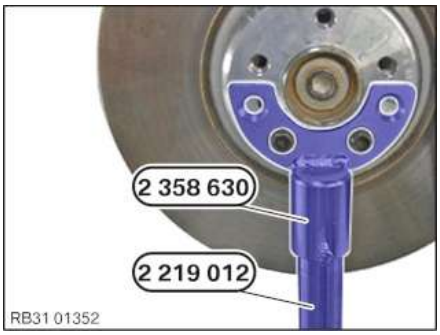
TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Position the upper wishbone (1).
- Renew screws (3) and (4) and the nuts (2) and (5).

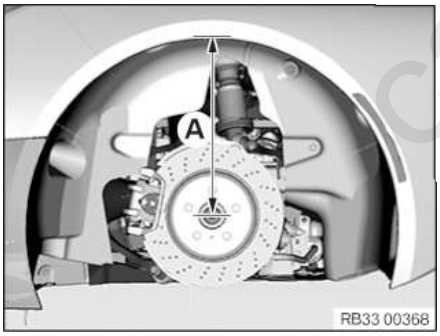
  Parts: Bolts, nuts
- Insert the screw (4) and screw on the nuts (5) manually.
- Insert the screw (3) and screw on the nuts (2) manually.

  The screw connections are tightened with the torque wrench later in normal position.



- Insert the special tool 2 219 012 into the special tool 2 358 630.

▸ **Adjusting to the normal position**



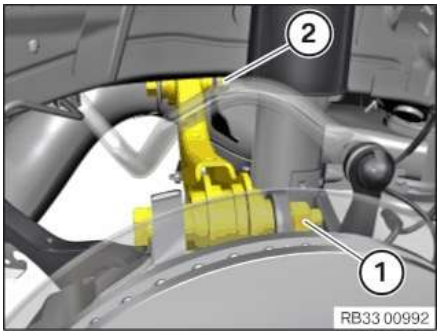
TECHNICAL INFORMATION

To raise the wheel carrier, the spring absolutely must be tensioned or removed!
Do not move the wheel carrier to normal position against the spring force.

- Lift the wheel carrier with the special tool 2 219 012 to the dimension (A).

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung

Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm



- Tighten nut (2).

Upper wishbone to rear axle carrier

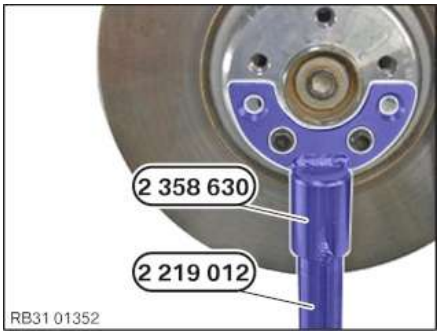
M12	Renew screw and nut. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

- Tighten nut (1).

Upper wishbone to wheel carrier

M12	Renew screw and nut. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

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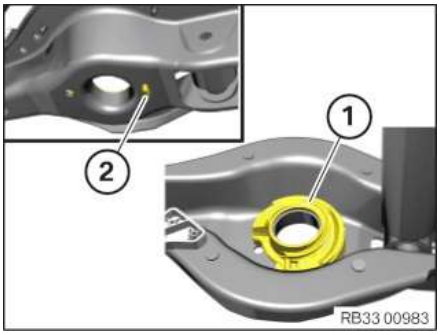


- Empty special tool 2 219 012 and set it aside.

  Do not dismantle the special tool 2 358 630 yet.

POSTPROCESSES

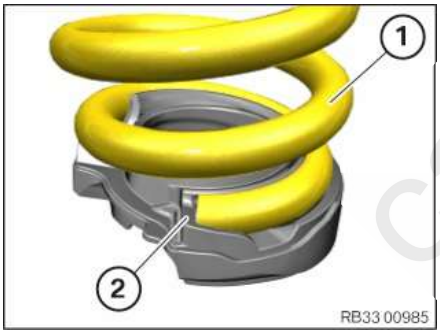
7 – Install the coil springs



- Check bottom spring pad (1) for damage, renew if necessary.
- Check the position of the lower spring pad (1) with the plastic tab (2) on the camber control arm, correct if necessary.



- Feed in the coil spring (1) in direction of arrow from the top and lock.

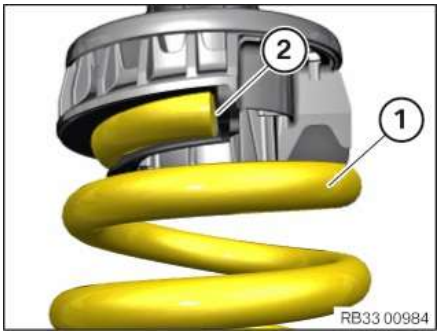


- Position the coil spring (1) in such a way that the coil spring end is in form-fit contact with the lower spring pad (2).

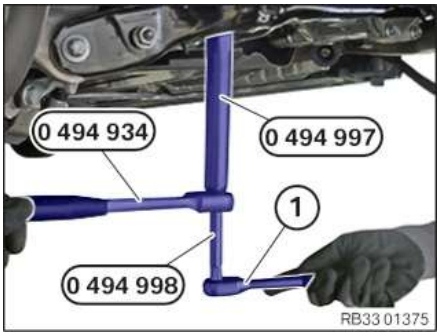


- Feed in the spring pad at the top (1).

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- Position the upper spring pad on the coil spring (1) in such a way that the coil spring end (2) is in form-fit contact with the upper spring pad.

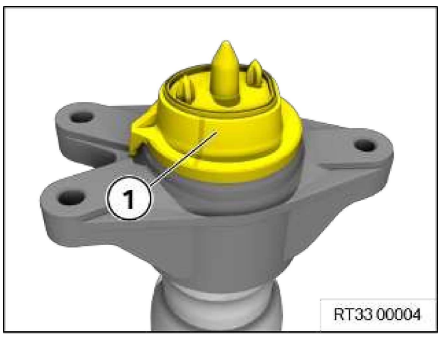


- Slacken the coil spring with the special tools and . In doing so, counter support at the spindle with the special tool and the standard tool (1).

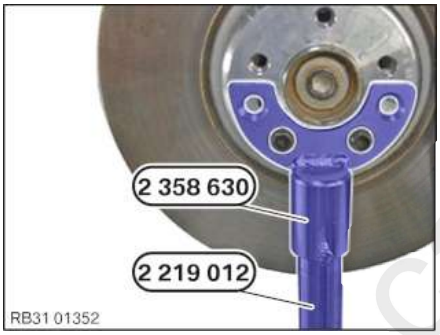
  Standard tool:

  Pay attention to the mounting orientation when releasing the coil spring, correct if necessary.
- Remove special tools.

8 – Securing shock absorber at rear to body



- Check the centering plate (1) for damage, renew if necessary.
- Check the position of the centering plate (1), correct if necessary.



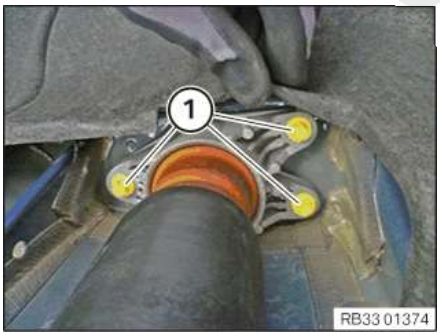
WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Insert the special tool 2 219 012 into the special tool 2 358 630.



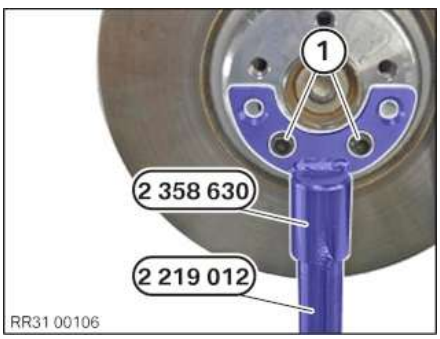
- Slightly lift the wheel carrier with the special tool 2 219 012. Position the shock absorber on the body in the process.

  Do not press against the spring force of the coil spring.
- Renew screws (1).

  Parts: Screws
- Tighten the screws (1).

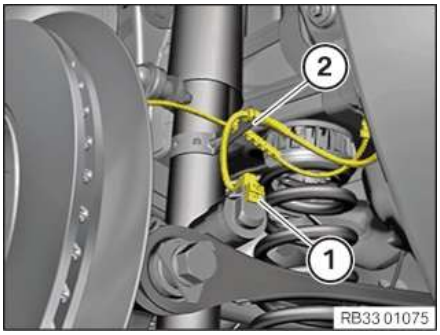
Nut and locknut/self-locking nut

M8x40	Renew screws.	Tightening torque	28 Nm



- Disconnect the special tool 2 219 012 and set it aside.
- Release wheel bolts (1).
- Remove special tool 2 358 630.

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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure all existing cables on the holder (2).
- Connect connectors (1) and lock.

9 – Installing the cover of the camber control arm



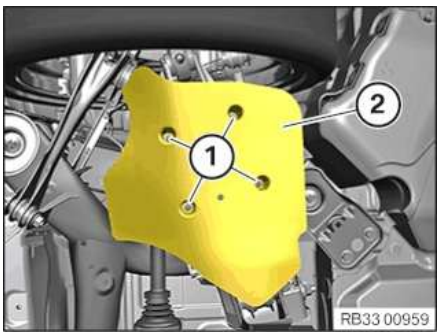
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

10 – Install rear left or right wheel

▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

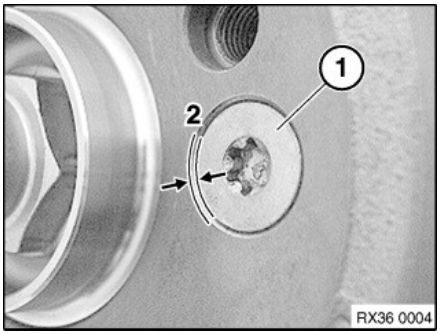
  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).

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- Check that the mounting bolt (1) for the brake disc is securely seated.

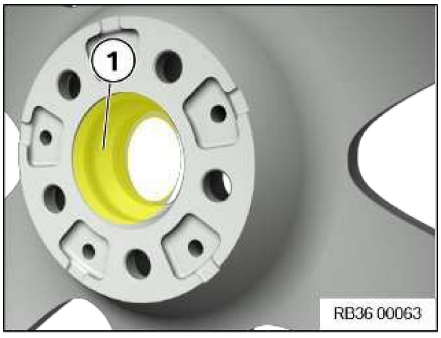
  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

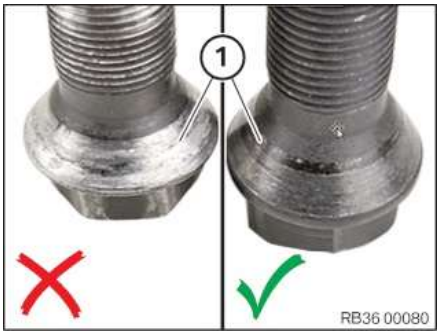
A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.

Check

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- **Check wheel bolts for wear.**

Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

  Parts: Wheel bolts

- Clean the wheel bolts (arrows).
- Check the wheel bolts (arrows) and threads for damage, renew the wheel bolts (arrows) if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.	Check	140 Nm
	Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.		

11 – Perform chassis alignment check

- Perform the introductory wheel alignment in accordance with equipment manufacturer's instructions.
- If necessary, adjust the front axle and the rear axle.
- Perform the final wheel alignment in accordance with equipment manufacturer's instructions.
- Save and print out test record.

Additional Information

Overview of Tightening Torques

Upper wishbone to rear axle carrier — Used in step 6

M12	Renew screw and nut. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

Upper wishbone to wheel carrier — Used in step 6

M12	Renew screw and nut. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

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Nut and locknut/self-locking nut — Used in step 8

M8x40	Renew screws.	Tightening torque	28 Nm

Cover to camber control arm — Used in step 9

M6	Replace nuts.	Tightening torque	6 Nm

Brake disc to front wheel hub — Used in step 10

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub — Used in step 10

M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts — Used in step 10

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Overview of Special Tools

2 219 012 Hydraulic lifter



Common — Used in step 368

Usage	For raising and lowering various vehicle components.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

2 358 630 Adapter



Common — Used in step 368

Usage	Adapter for workshop jack for screwing on at existing 120 mm hole-circle diameter and new 112 mm hole-circle diameter on the wheel hub. Contour-graphic silhouette foil is included in the delivery specification.
Included in the tool or work	
Storage location	A74
Replaced by	
In connection with	
SI-Number	01 21 14 (110)

5 A36 B04 Spring cups



Common — Used in step 4

Usage	Spring cup for disassembly and installation of suspension springs on the rear axle in connection with the spring tensioner basic unit, SWZ 33 5 010 or SWZ 33 5 100.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 23 21 (851)

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5 A36 B05 Spring cups



Common	Used in step 4
Usage	Spring cup for disassembly and installation of suspension springs on the rear axle in connection with the spring tensioner basic unit, SWZ 33 5 010 or SWZ 33 5 100.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 23 21 (851)

2 344 011 Tool



Common	Used in step 10
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

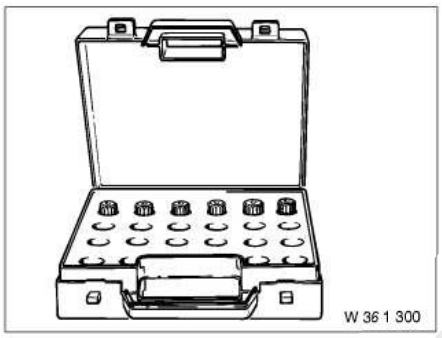
carmagn.com

0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung	Used in step 6
Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	110

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This documentation refers to special tools that were not yet available when going to press.

33 33 111 Replacing all rubber mounts for rear axle support

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

WARNING

Motor vehicle may slip off the vehicle hoist if the weight is distributed unevenly.

Danger! Life-threatening injuries!

- Ensure there is a specific weight compensation on the motor vehicle.

PRELIMINARY WORK

1 – Removing the rear left and right wheels

NOTICE

Perform the operations on the left and right side.

▸ **Removing the wheel**

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TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

  This process is intended to prevent damage to the brake disc.



- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

2 – Remove complete exhaust system

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

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CAUTION

Heavy component.

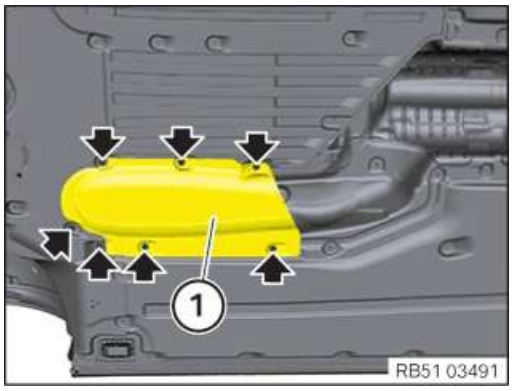
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

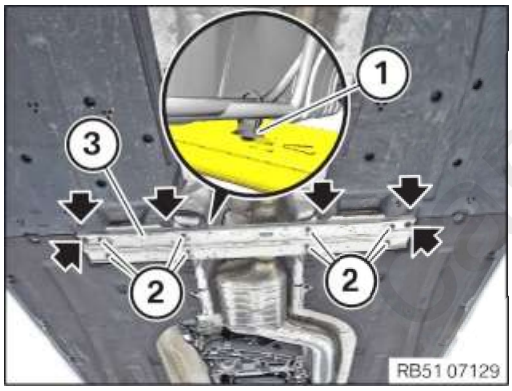
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**



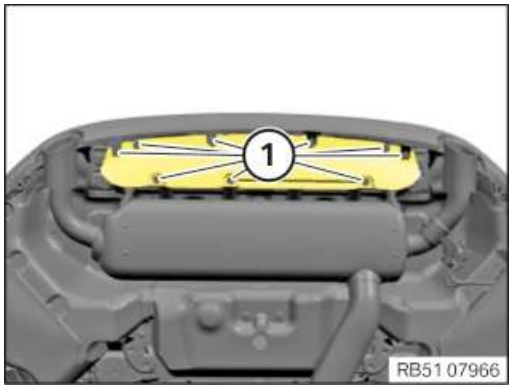
- Remove screws (arrows).

NOTICE

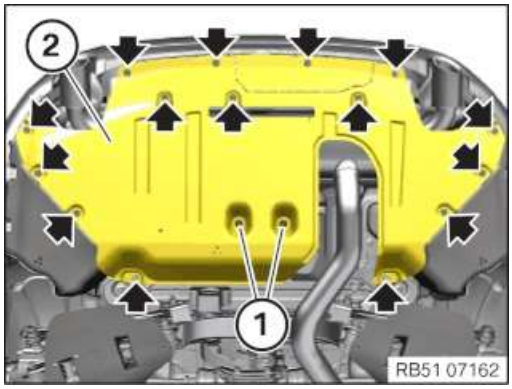
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

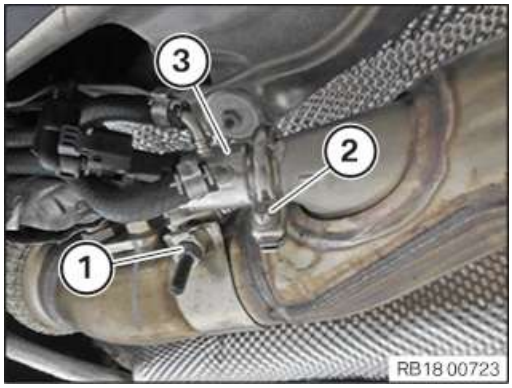
▸ **Removing the rear diffuser**



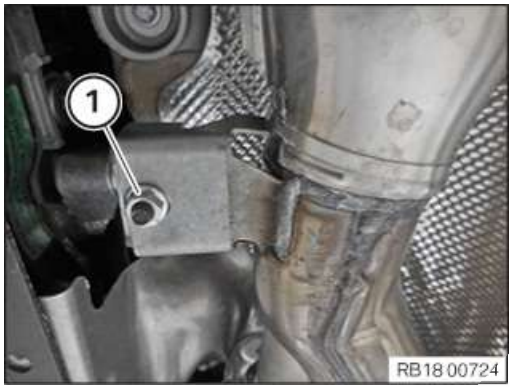
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



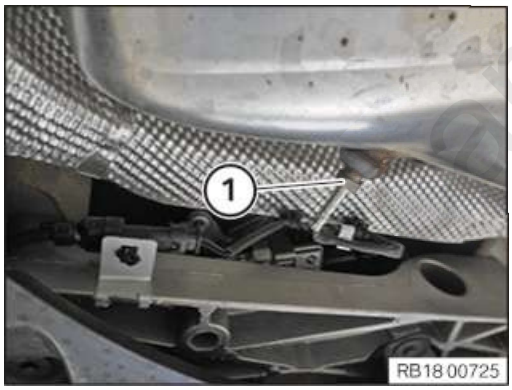
- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).



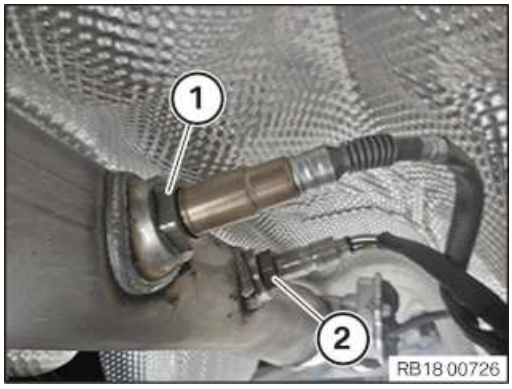
- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.



- Loosen nut (1).

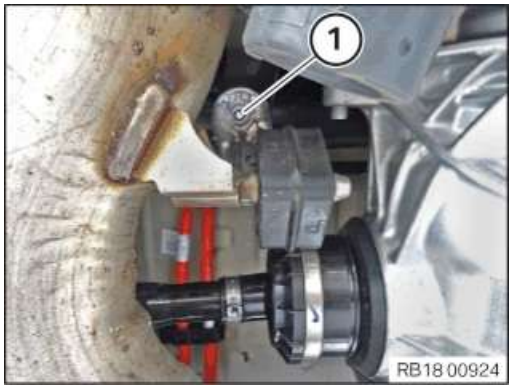


- Detach the exhaust temperature sensor (1) from the exhaust system.

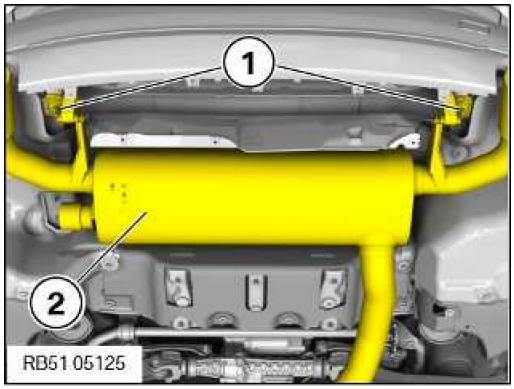


- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.

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- Release the nut (1) on the rear axle support.



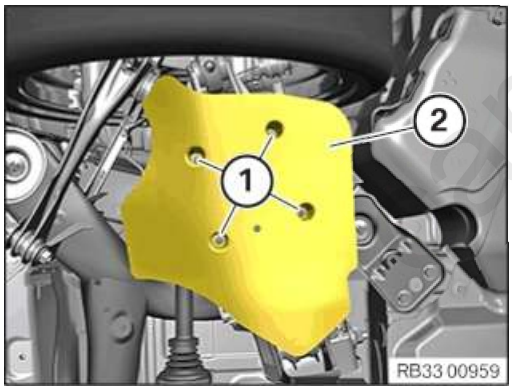
- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

3 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover of camber control arm**



- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

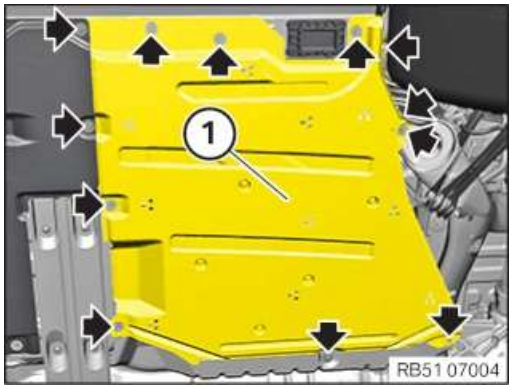
4 – Remove tank cover on left and right

NOTICE

Perform the operations on the left and right side.

▸ **Removing the tank cover**

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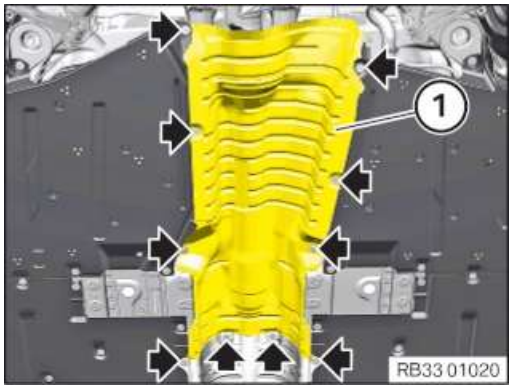


- Release all bolts (arrows).
- Remove the tank cover (1).

5 – Remove heat shield at rear.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

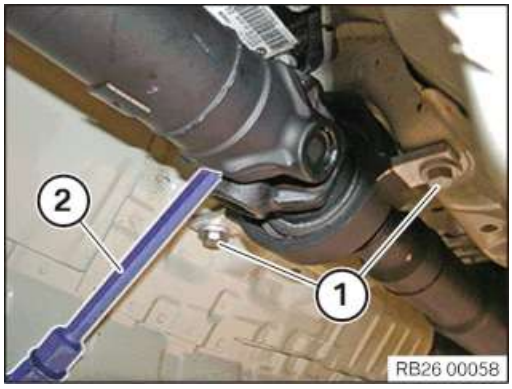
6 – Releasing the propeller shaft from the rear axle differential

RISK OF DAMAGE

Damage to propeller shaft during removal.

Non-observance of the removal guidelines for the propeller shaft on the rear axle differential may cause severe damage.

- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened on the recessed nut only and exclusively in the direction of rotation otherwise the anti-twist lock of the bi-hexagonal flange nut is damaged.
- In the event of a damaged anti-twist lock on the bi-hexagonal flange nut: Replace the rear axle differential.

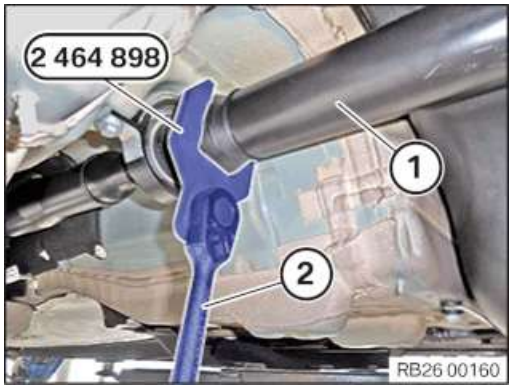


- Loosen screws (1).

  Do not remove bolts (1) yet.
- **Version A (propeller shaft with wide universal joint):**

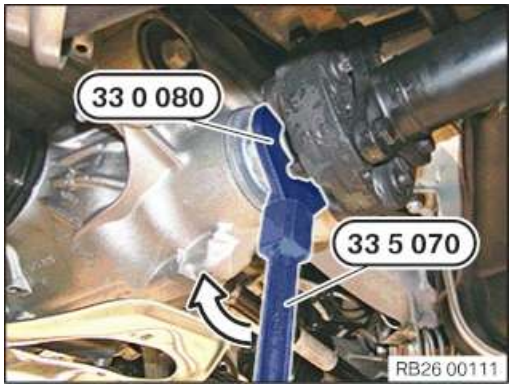
  Secure the propeller shaft against twisting at the centre universal joint using a suitable tool (2).

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- **Version B (propeller shaft with narrow universal joint):**

  Secure the propeller shaft (1) against twisting by using the special tool 2 464 898 and a suitable tool (2) at the central universal joint.



RISK OF DAMAGE

Damage to rear axle differential.

Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

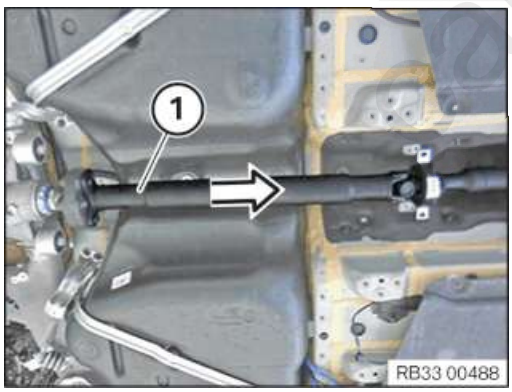
- Do not use the double hexagon head flange nut as counter support.

- Loosen the recessed nut **against** the direction of travel **in clockwise direction** using special tools 0 495 554 (33 5 070) and .

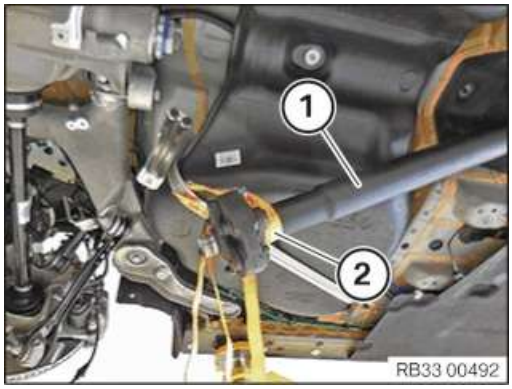
  The bi-hexagonal flange nut must not be used for counter-holding.



- Loosen screws (1) on centre mount.



- Loosen the propeller shaft (1) from the rear axle differential in the direction of the arrow.

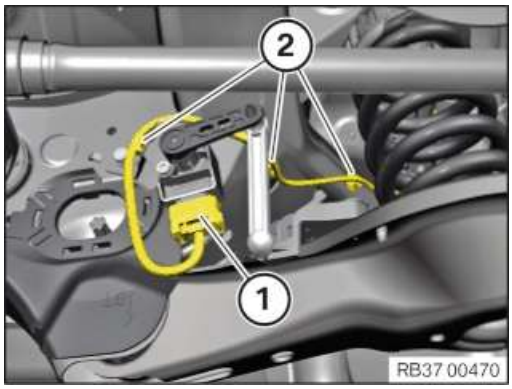


- Tie up the propeller shaft (1) using a tensioning strap (2).

7 – Releasing the cable for the ride height sensor from the rear axle support

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7 – Releasing the cable for the ride height sensor from the rear axle support



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

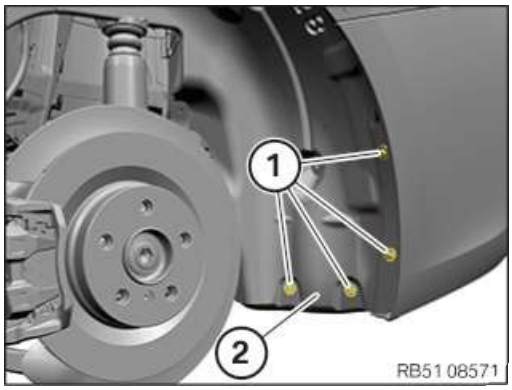
- Unlock the plug connection (1) from the ride height sensor and disconnect.
- Release the cable with the holders (2) from the rear axle support.

8 – Loosen cable of rear left and right RPM sensor

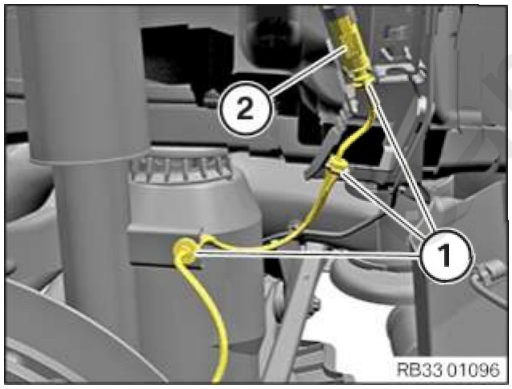
NOTICE

Perform the operations on the left and right side.

▸ **Release the cable of the rear wheel speed sensor**



- Loosen screws (1).
- Set the wheel arch cover (2) aside.



- Detach the wheel speed sensor cable from the brackets (1).
- Unlock plug connection (2) and disconnect.

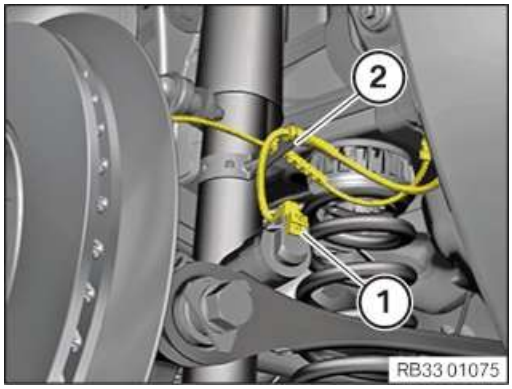
9 – Release the shock absorbers at the rear left and right from the body

NOTICE

Perform the operations on the left and right side.

▸ **Releasing the rear shock absorber from the body**

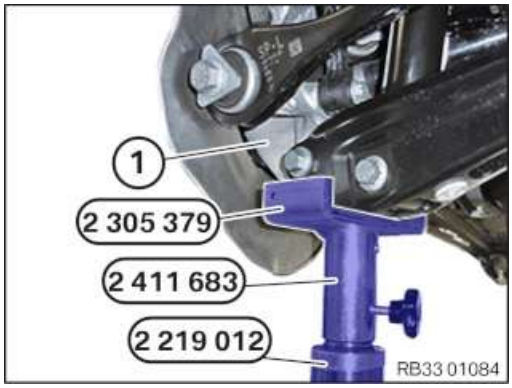
.com



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Release all the existing cables from holder (2).
- Unlock plug connection (1) and disconnect.



WARNING

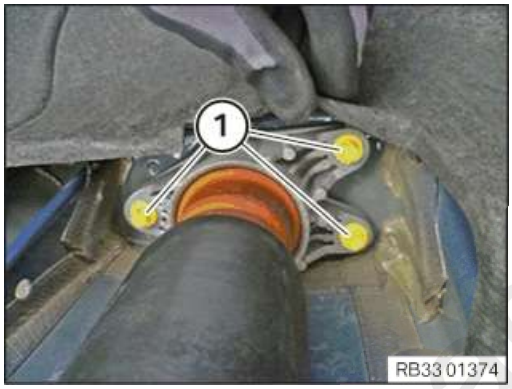
Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).
- Support the wheel carrier (1) with the special tool 2 219 012.

  Do not press against the spring force of the coil spring.



- Loosen screws (1).
- Disconnect the special tool 2 219 012 and set it aside.

10 – Remove the coil spring on the left and right

NOTICE

Perform the operations on the left and right side.

▸ **Remove coil spring**

▹ **Preparing the special tool (G22/G23/G26/G42)**

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

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- **Basic version:**

  Spindle = Special tools and

  Upper spring cup = Special tool 5 A36 B04

  Lower spring cup = Special tool 5 A36 B05



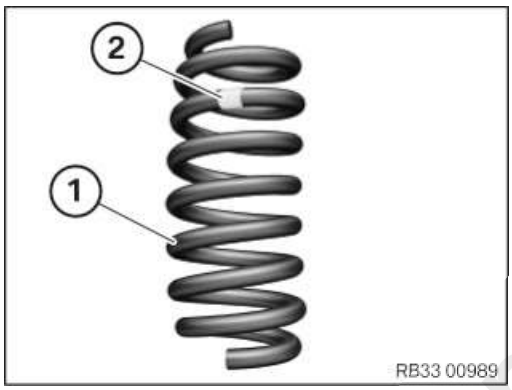
- **BMW M Performance Automobile (Sport) and Alpina:**

  Spindle = special tools , and

  Upper spring cup = Special tool

  Lower spring cup = Special tool

◁



TECHNICAL INFORMATION

Incorrect assembly is possible. Ensure correct installation position.

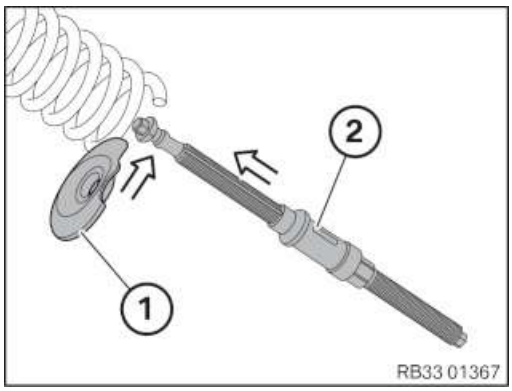
- The installation position of the coil spring(1) is marked with a label (2).

  The label (2) is attached at the top end of the coil spring (1) and is marked as “top”

- Check coil spring (1) for availability of label (2)

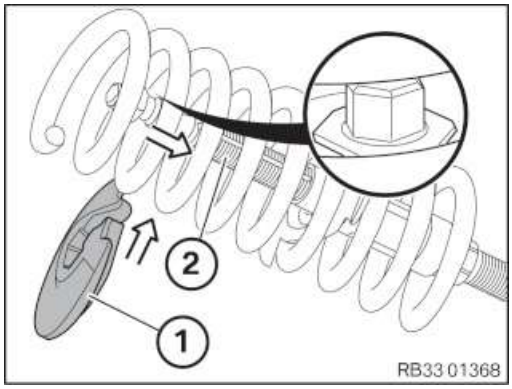
  If the label (2) on the installed coil spring (1) is missing and it has to be fixed after repair, then the installation position of the coil spring (1) must be marked necessarily.

Note: Mark the installation position of the coil spring, by attaching an adhesive tape at the top end of spring.



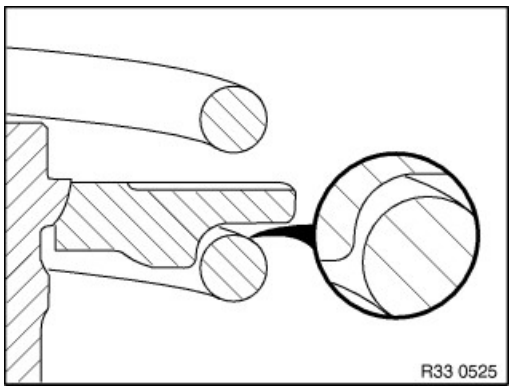
- Insert the bottom spring cup (1) sideways in the direction of arrow in the coil spring and turn up to the lowest coil.
- Insert the spindle (2) from below in the direction of arrow through the camber control arm and the bottom spring cup (1).

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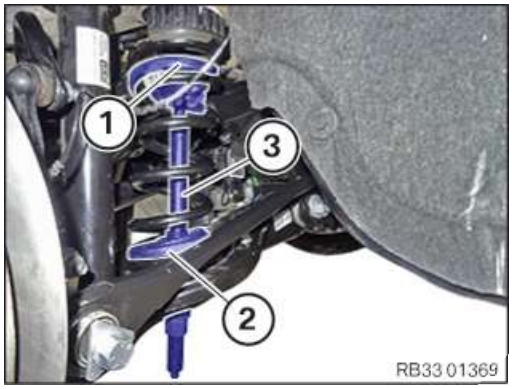


- Insert the top spring cup (1) sideways in the direction of arrow in the coil spring, feed in to the spindle (2) and turn it upwards as far as possible.

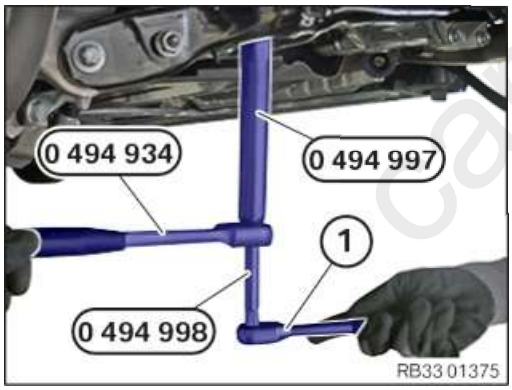
  Check the position of the spindle (2) with the hexagon head in the top spring cup (1) and correct if necessary.
- Pull the spindle (2) downwards in the direction of arrow.



- Check the position of the spring cup in the coil spring at the top and bottom and, if necessary, correct it.



- Align the top spring cup (1) and the bottom spring cup (2) with the spindle (3) in the centre to reach the highest possible contact surface on the coil spring.



RISK OF DAMAGE

Compression of coil spring to solid height.

Damage of the coil spring.

- Do not compress coil spring to solid height.
- Make sure there is a gap between the spring coils.

- Tension the coil spring using special tools and . In doing so, counter support at the spindle with the special tool and the standard tool (1).

  Standard tool:



- Feed out coil spring on upper spring pad (1). If necessary, remove upper spring pad (1).

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- Guide out and remove the coil spring (1) toward the top in the direction of the arrow.

11 – Releasing left and right brake caliper

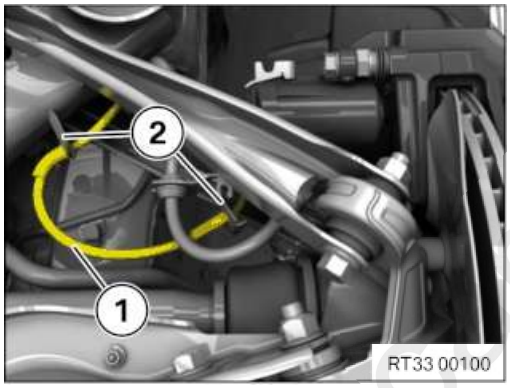
NOTICE

Perform the operations on the left and right side.

▸ **Releasing the brake caliper**

TECHNICAL INFORMATION

During work on the rear brake, it must be ensured that the button for the electromechanical parking brake cannot be pressed.

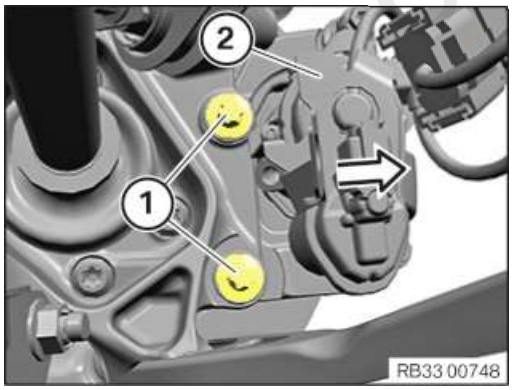


- Release the cable for the parking brake (1) from the holders (2).

NOTICE

Perform this step on the right side only.

- Release the cable for brake pad wear indicator from rear axle support.



- Loosen screws (1).
- Pull brake caliper (2) down in direction of arrow.

  The brake caliper must not hang on the brake hose.



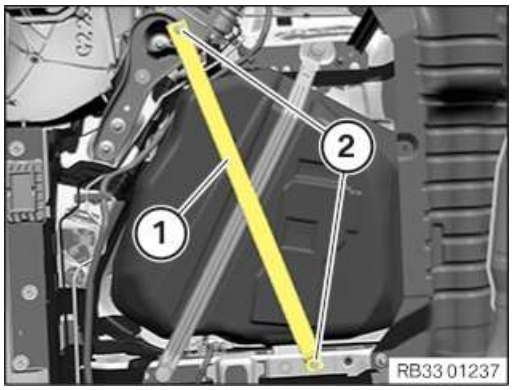
- Tie the brake caliper (1) up with the special tool 2 413 317.

12 – Remove reinforcement strut on the left and right

NOTICE

Perform the operations on the left and right side.

▸ **Remove stiffening strut**



NOTICE

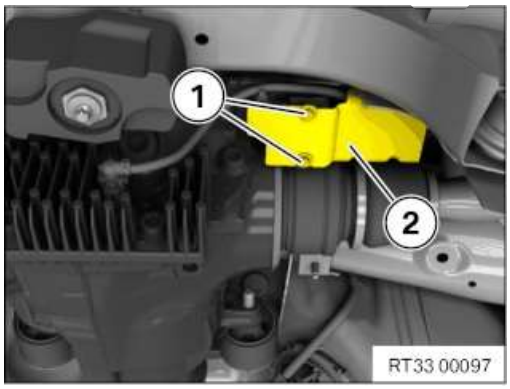
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen screws (2).
- Remove bracing strut (1).

13 – Releasing the wiring harness from the M Sport differential

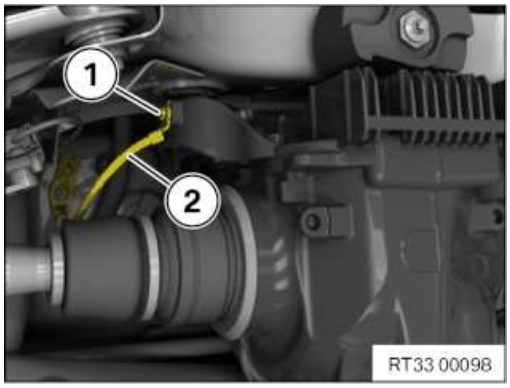
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

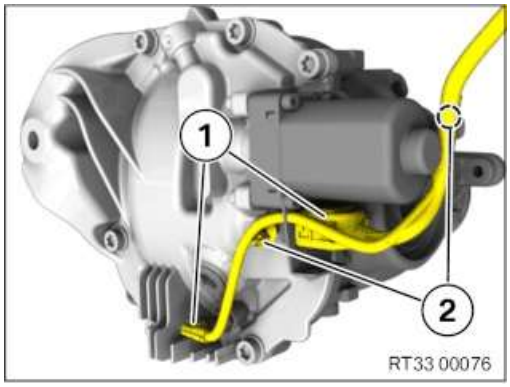


- Loosen screws (1).
- Remove heat shield (2).

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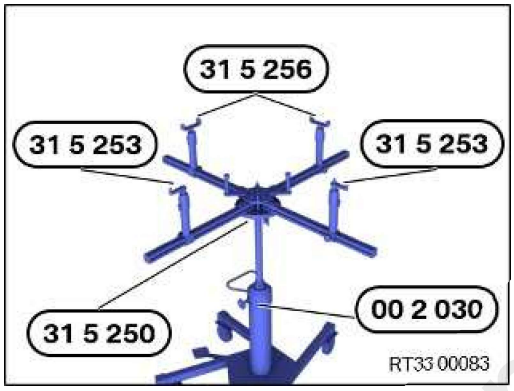


- Release the screw (1).
- Detach the ground strap (2) from the rear axle differential.



- Unlock and disconnect plug connections (1).
- Release cable from brackets (2).

14 – Preparing the special tool



TECHNICAL INFORMATION

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

- Apply special tool completely on the special tool 0 490 133 (00 2 030) with an auxiliary person helping.
- Insert special tool in telescopic supports of a profile rail pair.
- Insert special tools in telescopic supports of other profile rail pair.

15 – Positioning the special tool on the rear axle support

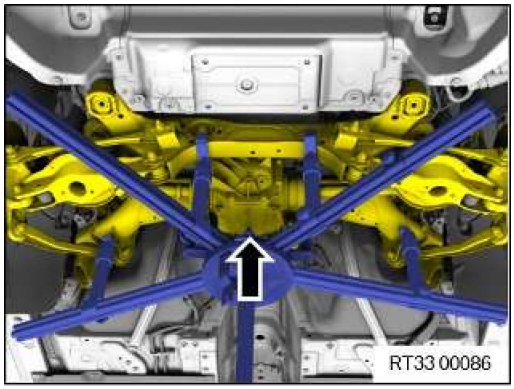
TECHNICAL INFORMATION

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

TECHNICAL INFORMATION

The centre of gravity of the axle support must be in the centre over the special tool.

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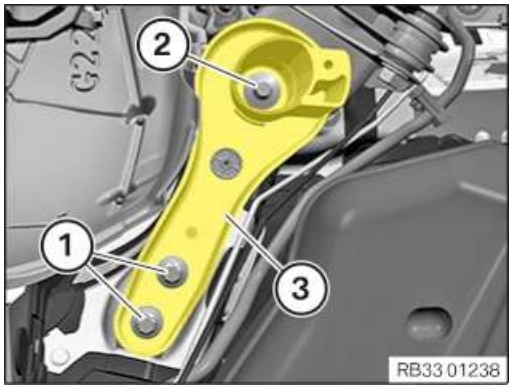
- Align special tools to rear axle support.
- Lift the special tool 2 219 012 and support the rear axle support.
- Secure the rear axle support with a tensioning strap on the special tool .

16 – Loosening the rear axle support

NOTICE

Perform the operations on the left and right side.

▸ **Remove compression strut**



RISK OF DAMAGE

Damage to the components on the rear axle.

If both compression struts are removed simultaneously, it can cause serious damage to the rear axle.

- Renew or remove compression strut only individually.
- When lowering or removing the rear axle: Support rear axle support before both compression struts are removed.

- Loosen screws (1).
- Loosen screw (2).
- Remove compression strut (3).

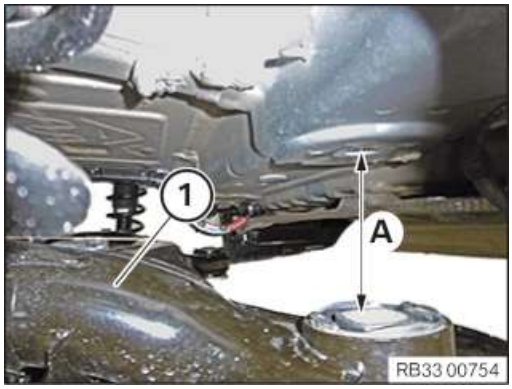
▸ **Removing the rear compression strut**



- Loosen screws (2).
- Loosen screw (3).
- Remove compression strut (1).

17 – Lowering rear axle support

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- Lower the rear axle support (1) with the special tool 2 219 012 by the dimension (A).

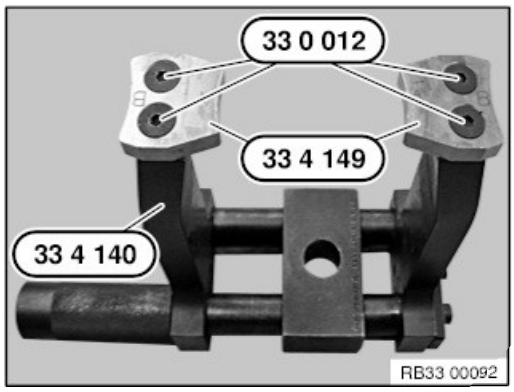
  Dimension (A) = approx. 10 cm

MAIN WORK

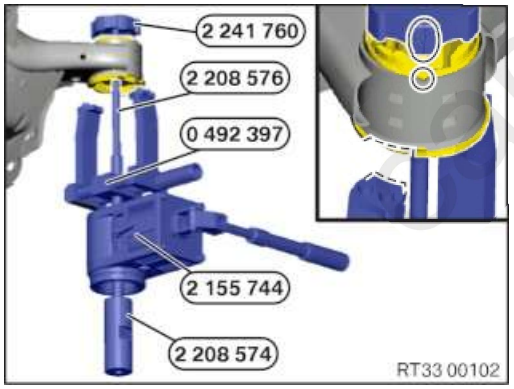
18 – Removing and installing rear rubber mount for rear axle support, left and right

NOTICE

Perform the operations on the left and right side.



- Complete special tool 0 492 397 (33 4 140) in conjunction with special tools and 0 492 406 (33 4 149).



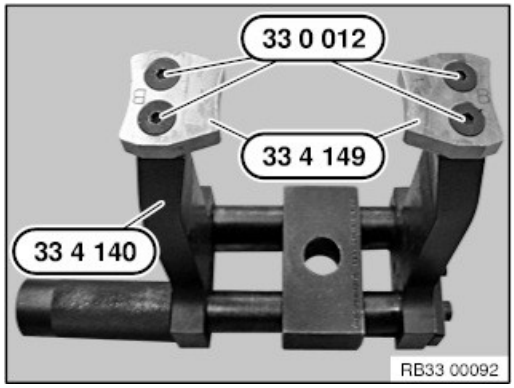
- Align the notch on the special tool with the notch on the rear axle carrier in the marked area.
- Pull the rear rubber mount out from the rear axle support using special tools , 0 492 397 (33 4 140), , 2 155 744 and 2 208 574 and remove.

19 – Removing the front rubber mount for the rear axle support on the left and right

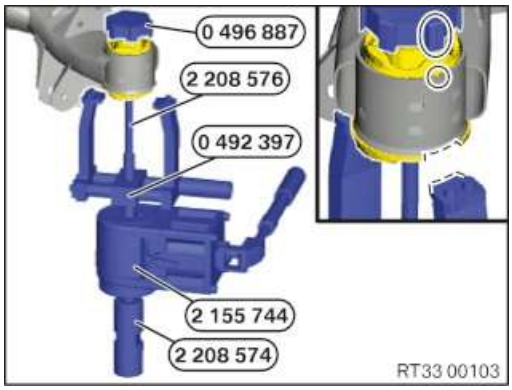
NOTICE

Perform the operations on the left and right side.

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- Complete special tool 0 492 397 (33 4 140) in connection with and 0 492 406 (33 4 149) as shown in the diagram.



- Align the notch on the special tool with the notch on the rear axle carrier in the marked area.
- Pull front rubber mount out of the rear axle support using special tools , 0 492 397 (33 4 140), , 2 155 744 and 2 208 574 and remove.

20 – Installing the front rubber mount for the rear axle support on the left and right

RISK OF DAMAGE

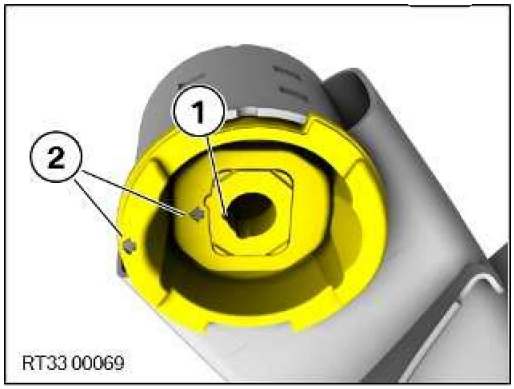
Damage to the rear axle support.

Damage to the rear axle support due to non-compliance of direction of extraction and the direction of insertion of the rubber mount.

- Adherence to the pull-out and pull-in direction is absolutely mandatory.

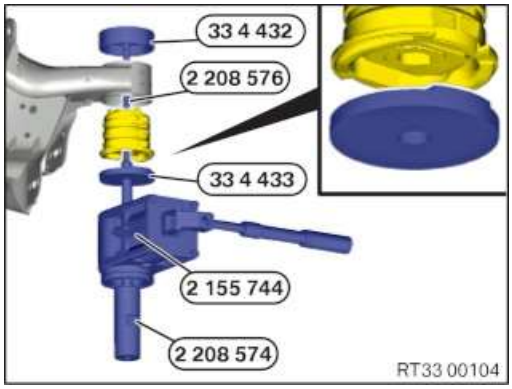
NOTICE

Perform the operations on the left and right side.



- Make sure that the notch (1) and the arrows (2) of the front rubber mount point in the direction of travel.

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- Align recesses on special tool with rubber mounting.
- Insert the front rubber mount up to limit position with the special tools , , 2 155 744, 2 208 574 and .
- Remove special tools for inserting rubber mount (1).

21 – Installing rubber mount for rear axle support on left and right

RISK OF DAMAGE

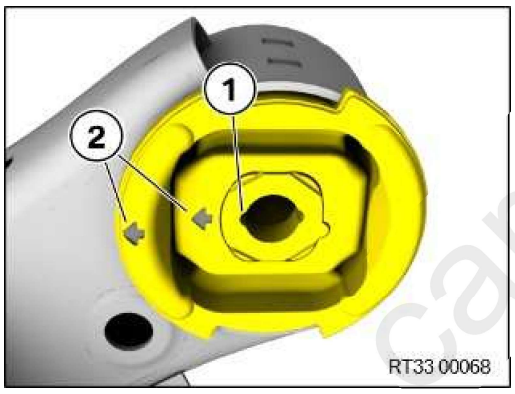
Damage to the rear axle support.

Damage to the rear axle support due to non-compliance of direction of extraction and the direction of insertion of the rubber mount.

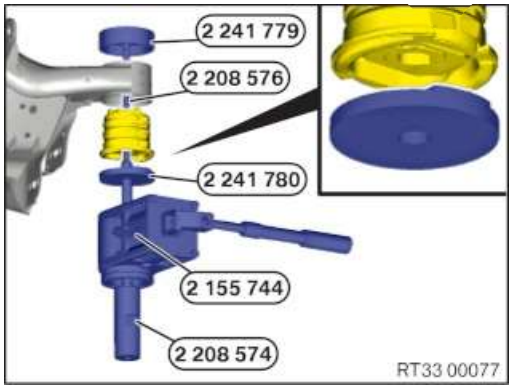
- Adherence to the pull-out and pull-in direction is absolutely mandatory.

NOTICE

Perform the operations on the left and right side.



- Make sure that the notch (1) and the arrows (2) of the rear rubber mount point in the direction of travel.

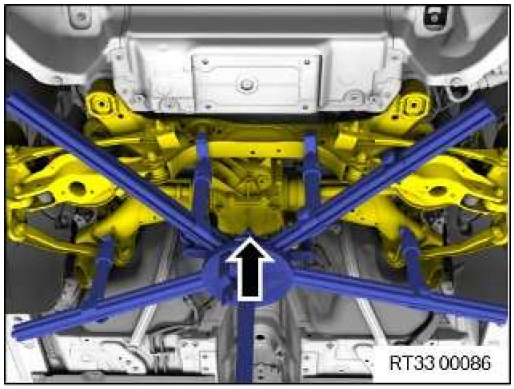


- Align recesses on special tool with rubber mounting.
- Fully retract rear rubber mount with special tools , 2 155 744, , 2 208 574 and .
- Remove special tools for inserting rubber mount (1).

POSTPROCESSES

22 – Raising the rear axle support

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- Lift the rear axle support with the special tool 2 219 012 and position on the body.

23 – Securing the rear axle support

NOTICE

Perform the operations on the left and right side.



▸ **Installing the rear compression strut**

- Renew screws (2) and (3).

  Parts: Screws
- Position compression strut (1).
- Screw in screws (2) and (3).
- Tighten down screw (3).

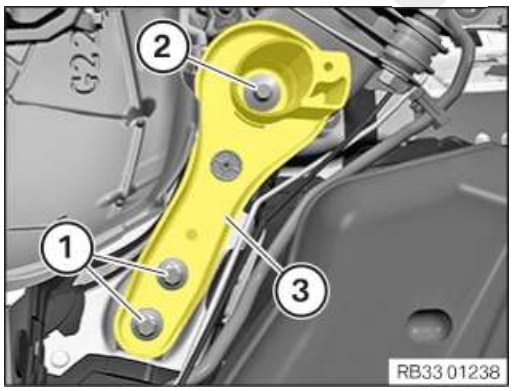
Rear axle carrier to body

M12	Renew screws.	Tightening torque	108 Nm

- Tighten the screws (2).

Compression strut on body

M10	Renew screws.	Jointing torque	47 Nm
		Angle of rotation	45 °



▸ **Install compression strut**

- Renew screws (1) and (2).

  Parts: Screws
- Position compression strut (3).
- Screw in screws (1) and (2).
- Tighten down screw (2).

Rear axle carrier to body

M12	Renew screws.	Tightening torque	108 Nm

- Tighten the screws (1).

Compression strut on body

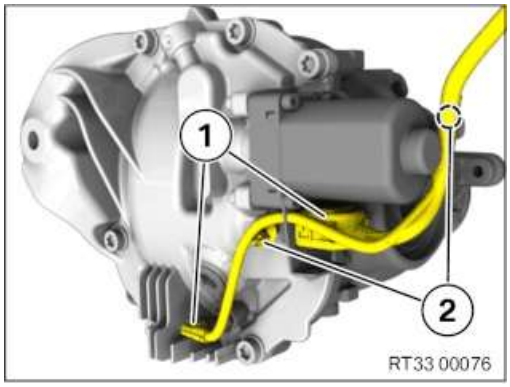
M10	Renew screws.	Jointing torque	47 Nm
		Angle of rotation	45 °

24 – Mounting the wiring harness to the M Sport differential

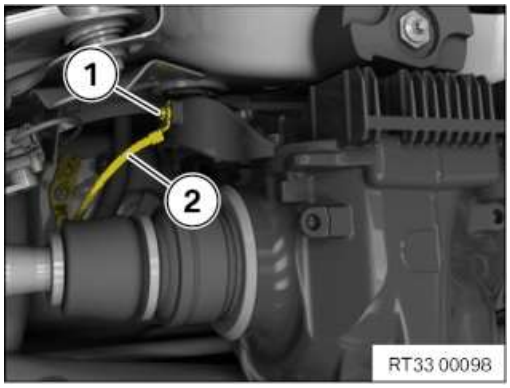
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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



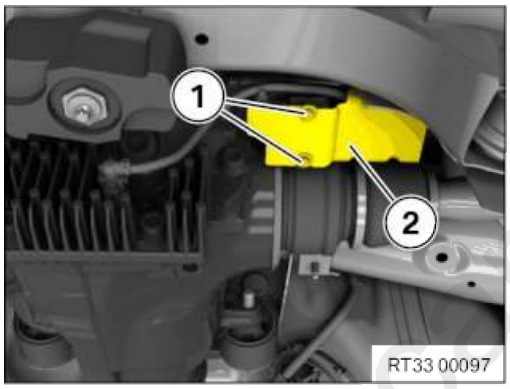
- Connect connectors (1) and lock.
- Secure the cables on the brackets (2).



- Position the ground strap (2) on the rear axle differential.
- Tighten down screw (1).

Ground strap to rear axle differential

M6x20		Tightening torque	8 Nm



- Position the heat shield (2).
- Tighten the screws (1).

Heat shield to servomotor

M5x10		Tightening torque	5 Nm

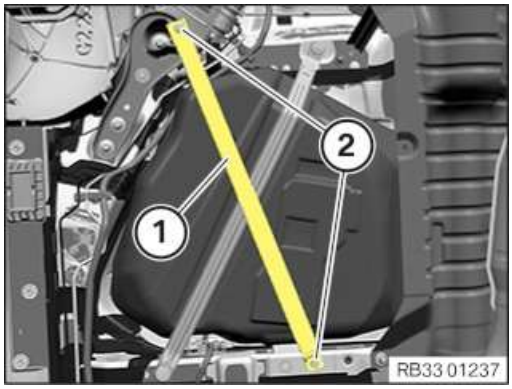
25 – Installing the bracing strut on the left and right

NOTICE

Perform the operations on the left and right side.

▸ **Installing the bracing strut**

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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Position the reinforcement strut (1).
- Tighten the screws (2).

Bracing strut on compression strut/body

M8		Tightening torque	28 Nm

26 – Securing the brake calipers at left and right

NOTICE

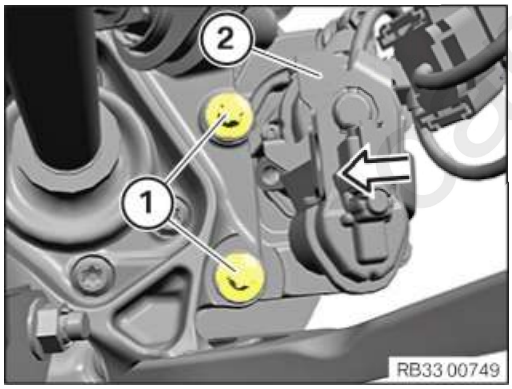
Perform the operations on the left and right side.

▸ **Securing the brake caliper**



- Release and remove special tool 2 413 317.

  The brake caliper must not hang on the brake hose.

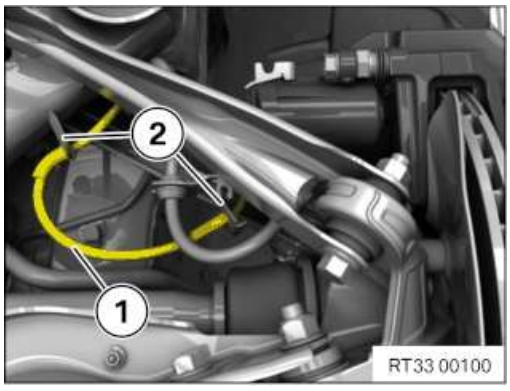


- Position the brake caliper (2) in the direction of the arrow.
- Renew screws (1).

  Parts: Screws
- Tighten the screws (1).

Caliper carrier to rear wheel carrier

M12	Renew screw.	Tightening torque	130 Nm



- Fasten the cable for the parking brake (1) to the holders (2).

NOTICE

Perform this step on the right side only.

- Fasten the cable for the brake pad wear indicator on the rear axle support.

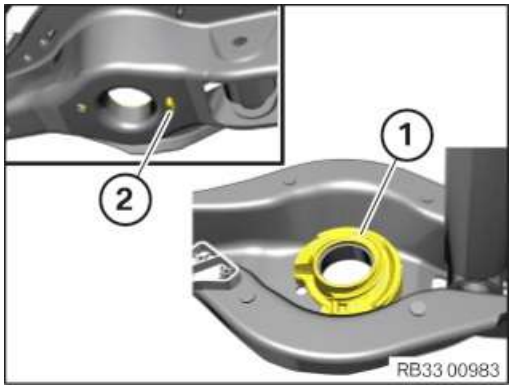
27 – Install the left and right coil spring

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NOTICE

Perform the operations on the left and right side.

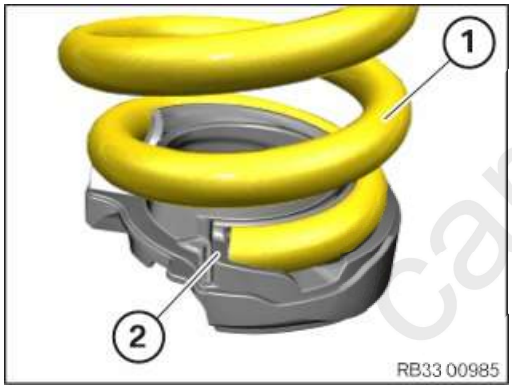
▶ **Install the coil springs**



- Check bottom spring pad (1) for damage, renew if necessary.
- Check the position of the lower spring pad (1) with the plastic tab (2) on the camber control arm, correct if necessary.



- Feed in the coil spring (1) in direction of arrow from the top and lock.

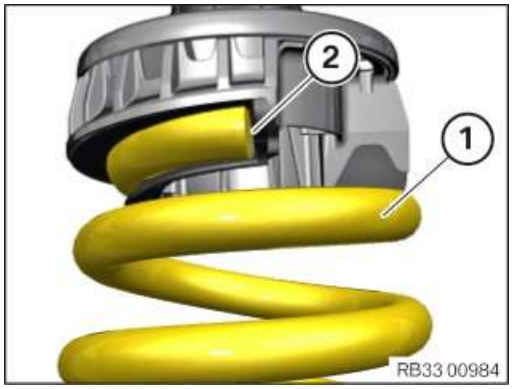


- Position the coil spring (1) in such a way that the coil spring end is in form-fit contact with the lower spring pad (2).

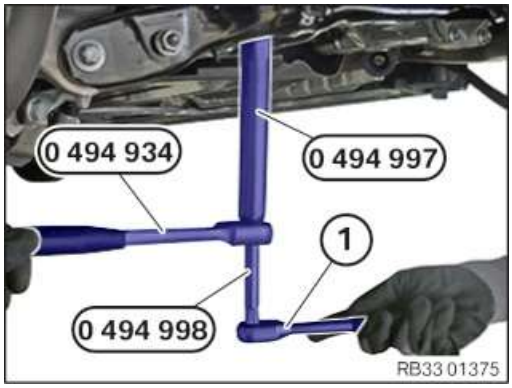


- Feed in the spring pad at the top (1).

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- Position the upper spring pad on the coil spring (1) in such a way that the coil spring end (2) is in form-fit contact with the upper spring pad.



- Slacken the coil spring with the special tools and . In doing so, counter support at the spindle with the special tool and the standard tool (1).

  Standard tool:

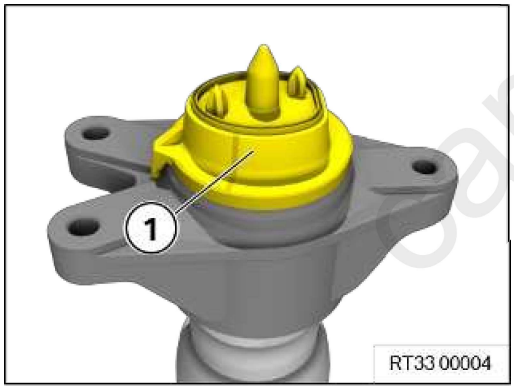
  Pay attention to the mounting orientation when releasing the coil spring, correct if necessary.
- Remove special tools.

28 – Securing rear left and right shock absorbers to body

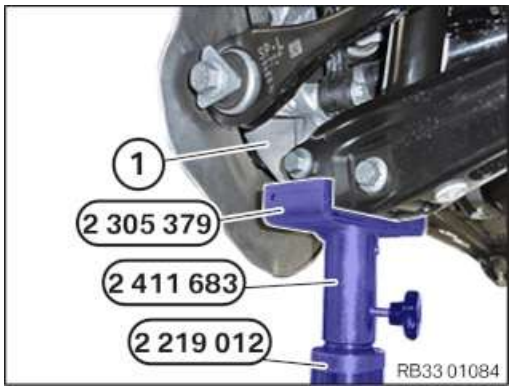
NOTICE

Perform the operations on the left and right side.

▸ **Securing shock absorber at rear to body**



- Check the centering plate (1) for damage, renew if necessary.
- Check the position of the centering plate (1), correct if necessary.



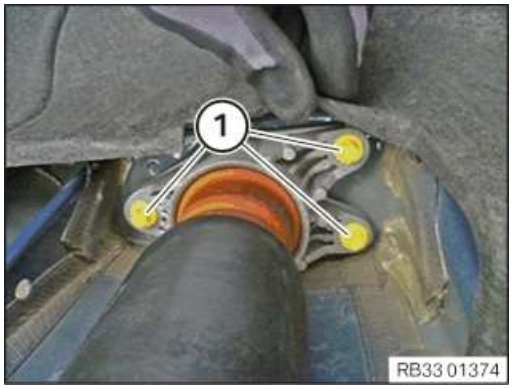
WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).



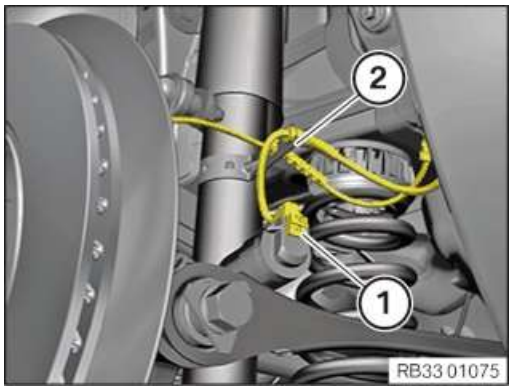
- Slightly lift the wheel carrier with the special tool 2 219 012. Position the shock absorber on the body in the process.

  Do not press against the spring force of the coil spring.
- Renew screws (1).

  Parts: Screws
- Tighten the screws (1).

Nut and locknut/self-locking nut

M8x40	Renew screws.	Tightening torque	28 Nm



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

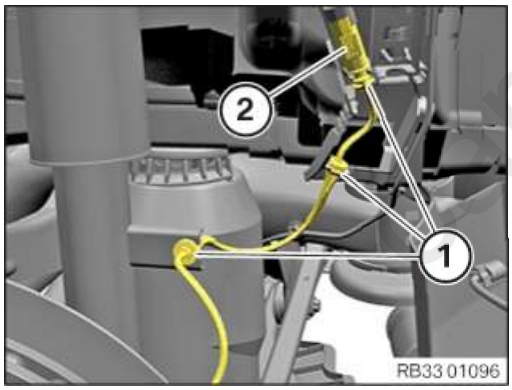
- Secure all existing cables on the holder (2).
- Connect connectors (1) and lock.

29 – Securing cable of rear left and right wheel speed sensor

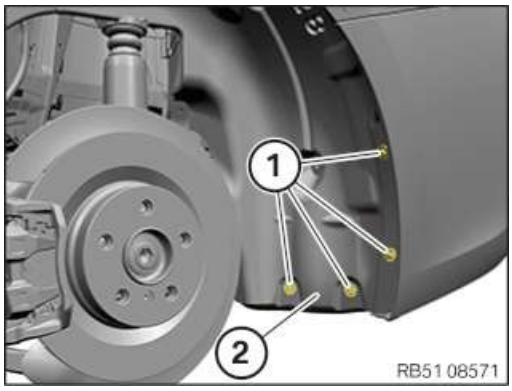
NOTICE

Perform the operations on the left and right side.

▸ **Mounting the cable of the rear wheel speed sensor**



- Connect connectors (2) and lock.
- Mount the cable of wheel speed sensor on the holders (1).

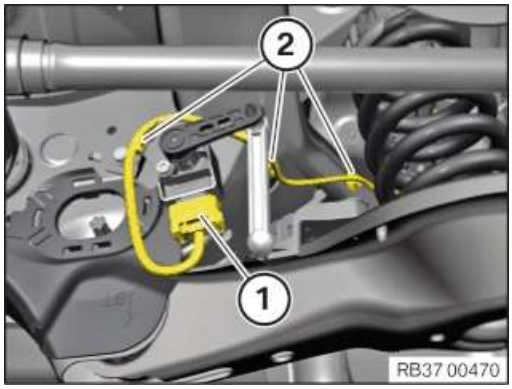


- Insert the wheel arch cover (2).
- Tighten the screws (1).

Rear wheel arch cover to bumper trim panel

Hexagon screw		Tightening torque	2,6 Nm

30 – Fastening the cable for the ride height sensor on the rear axle support



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure the cable with the holders (2) on the rear axle support.
- Connect the connector (1) to the ride height sensor and lock it.

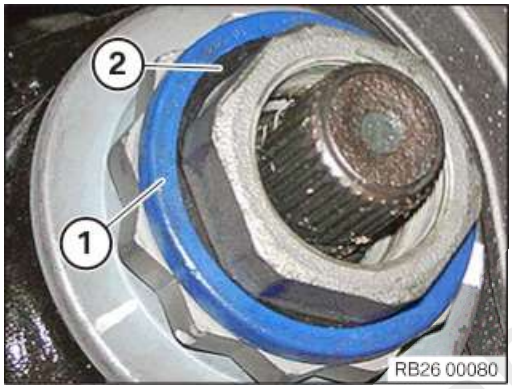
31 – Securing the propeller shaft on the rear axle differential

RISK OF DAMAGE

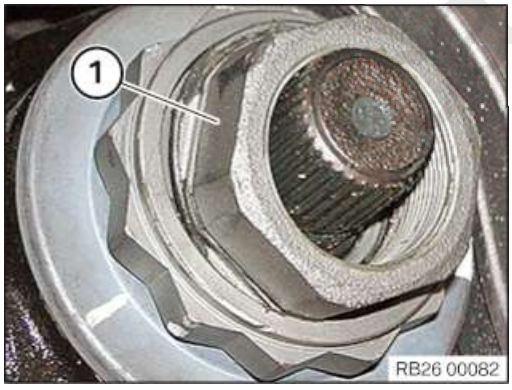
Damage to the propeller shaft during installation.

Non-observance of the installation guidelines for the propeller shaft on the rear axle differential may cause severe damage.

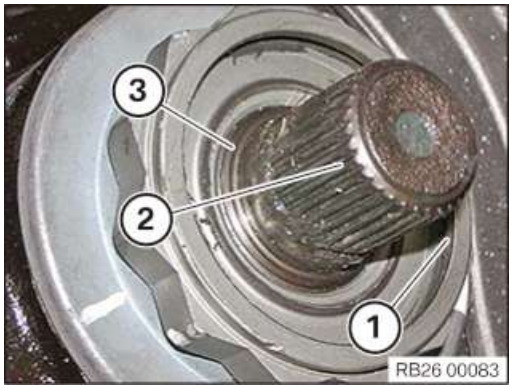
- Always renew the recessed nut on the rear axle differential. Screw locking must be available.
- Strictly observe a hardening time of minimum 3 h after screwing the recessed nut. The hardening time may be longer at lower temperatures.



- Remove the retaining ring (1) and the seal (2).



- Remove recessed nut (1).

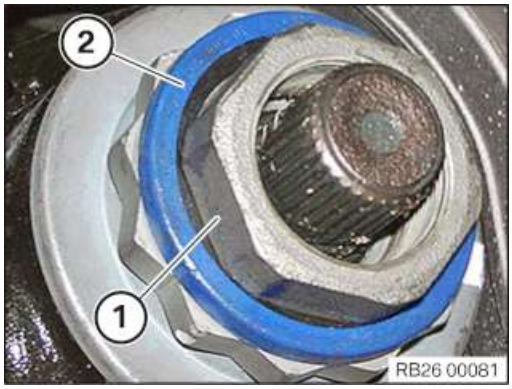


- Clean and degrease the recessed collar (1) the flange nut, the gearing on the bevel pinion (2) and the taper (3) without any residue.
- Top up the collar insert (1)with grease.

Expendable materials

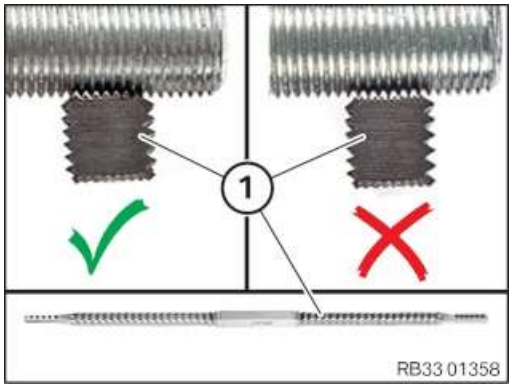
Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754

rdiagn.com



- Renew the recessed nut (1), seal and retaining ring (2).

  Parts: Recessed nut, seal, retaining ring
- Insert recessed nut (1) including gasket into collar insert of the flange nut.
- Mount the retaining ring (2).



- Use a thread file (1) to remove the adhesive residue on the thread.
- **Make sure that the thread pitch is correct!**



RISK OF DAMAGE

Damage to the output flange.

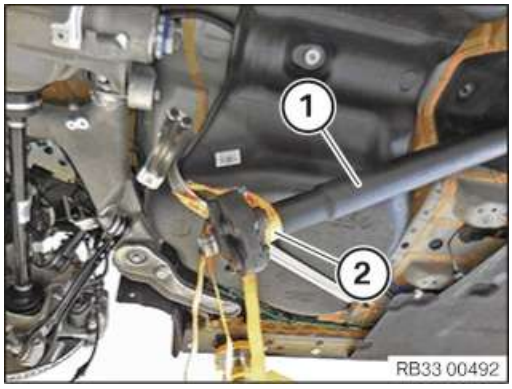
Failure to observe the greasing specifications may lead to damage on the output flange.

- Do not contaminate the thread of the output flange with grease.

- Remove any adhesive residue on thread (1) of the flange and clean it.
- Clean gearing (2).
- Grease gearing (2).

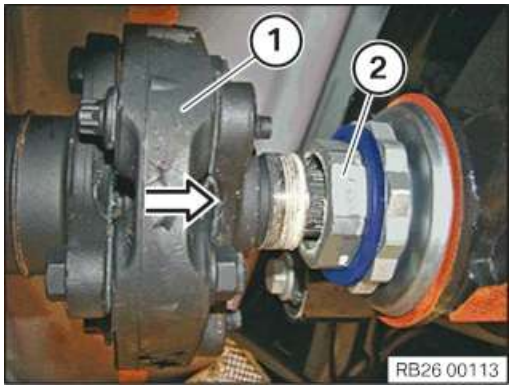
Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754

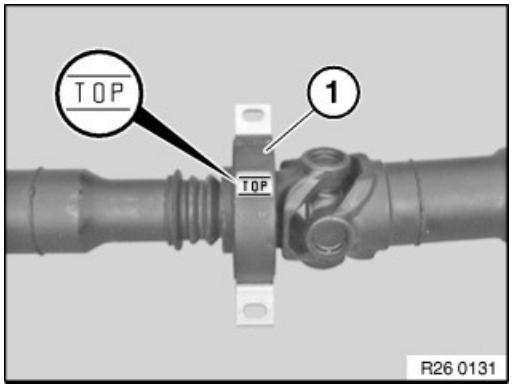


- Loosen the tensioning strap (2) from the propeller shaft (1).

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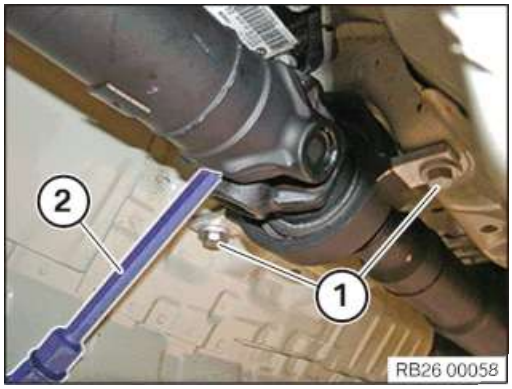


- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Screw and secure recessed nut (2) at least 2 thread starts onto propeller shaft (1) by hand.



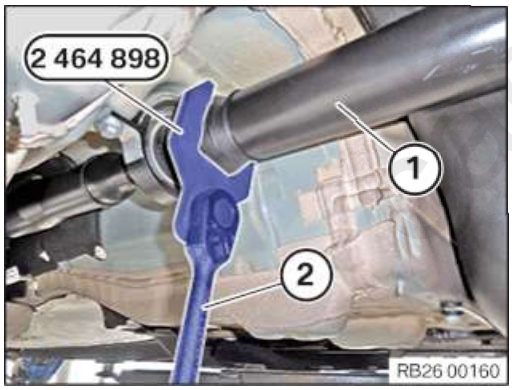
- Position the centre mount (1).

  Position the centre mount (1) with the designation TOP at the top in the transmission tunnel.



- Screw in the screws (1) by a few turns.
- **Version with a broad universal joint:**

  Secure the propeller shaft from twisting with a suitable tool (2) on the centre universal joint.



- **Version with a narrow universal joint:**

  Secure the propeller shaft (1) from twisting with the special tool 2 464 898 and a suitable tool (2) on the centre universal joint.

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RISK OF DAMAGE

Damage to the flange nut.

Failure to observe the installation specifications may lead to serious damage to the flange nut and the rear axle differential.

- Do not use the double hexagon flange nut as counter support.
- Screw in the recessed nut within 5 minutes.

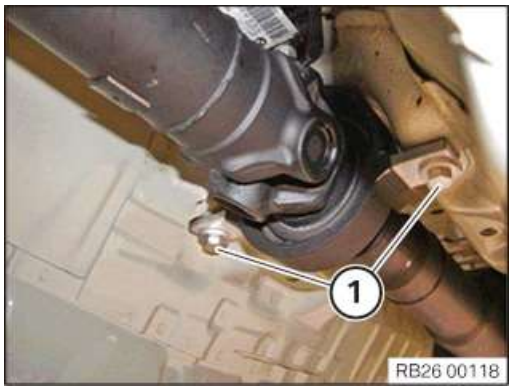
- Tighten recessed nut **counter-clockwise in the direction of the arrow** using special tools 0 495 554 (33 5 070) and .

Propeller shaft on the rear axle differential

Insert nut	Replace insert nut.	Tightening torque	100 Nm

- **After the propeller shaft is installed and the recessed nut is screwed in, strictly observe a hardening time of minimum 3 hours.**

  Do not move or push the vehicle during this time!



- Tighten the screws (1).

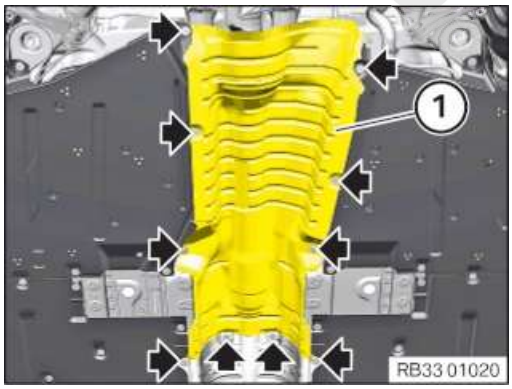
Centre mount to body

M8		Tightening torque	19 Nm

32 – Installing the rear heat shield

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

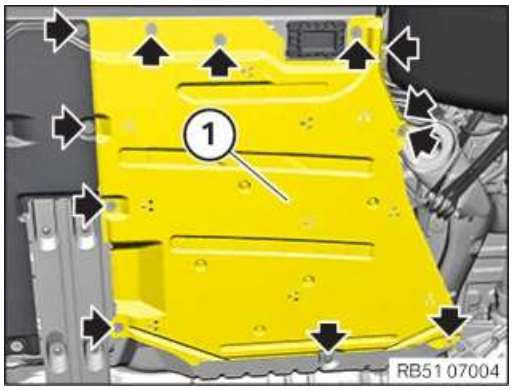
33 – Install left and right tank cover

NOTICE

Perform the operations on the left and right side.

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▸ **Installing tank cover**



- Position the tank cover (1).
- Tighten all bolts (arrows).

Underbody panelling

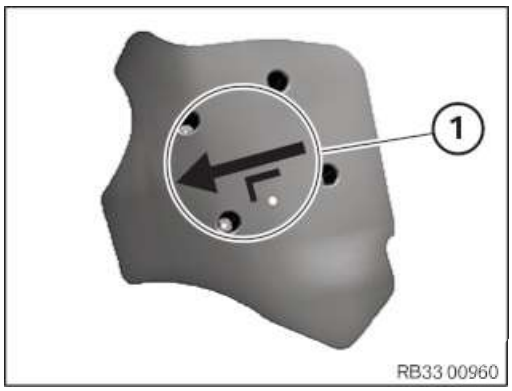
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

34 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Installing the cover of the camber control arm**



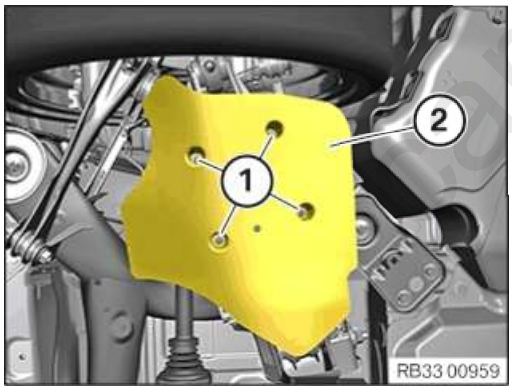
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

35 – Installing the complete exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

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CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

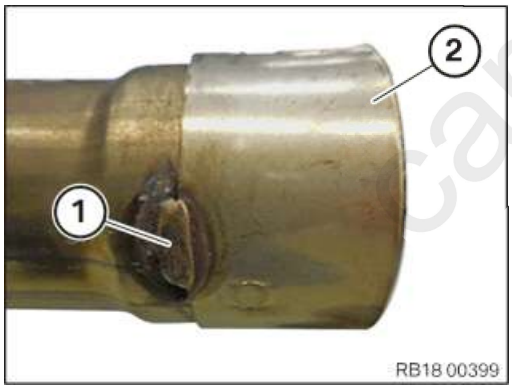
- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.



CAUTION

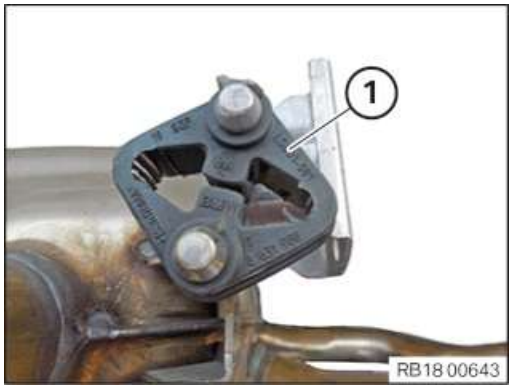
Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

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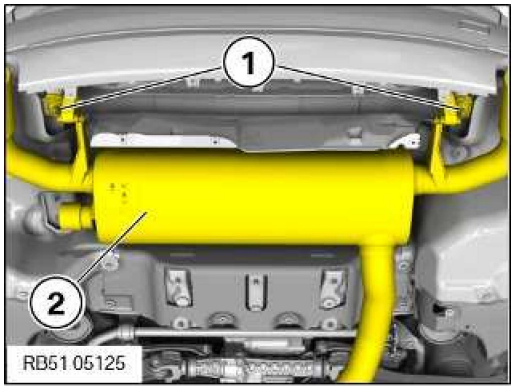


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

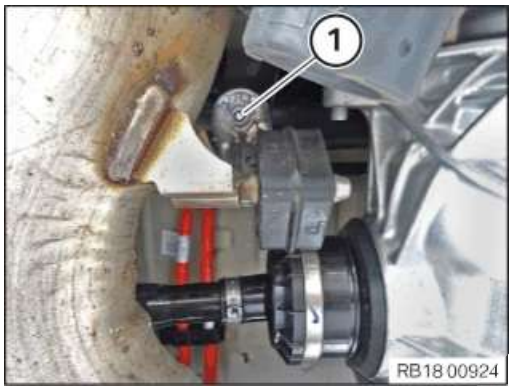


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

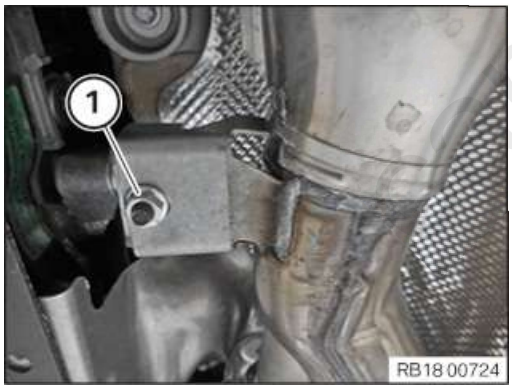


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

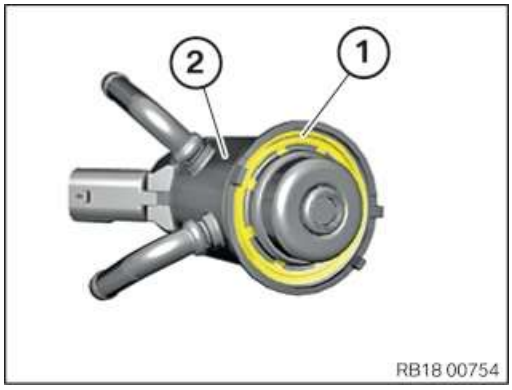
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

Exhaust system to transmission

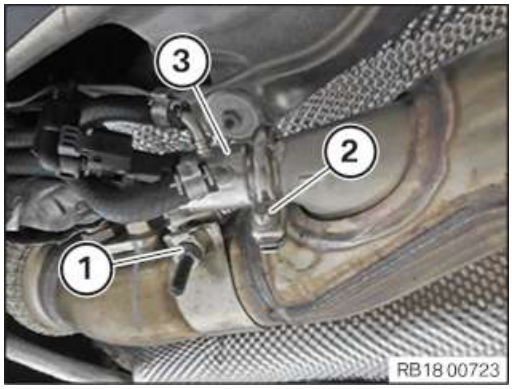
M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring

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- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

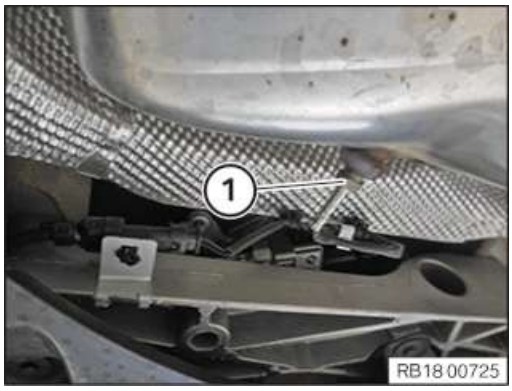
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

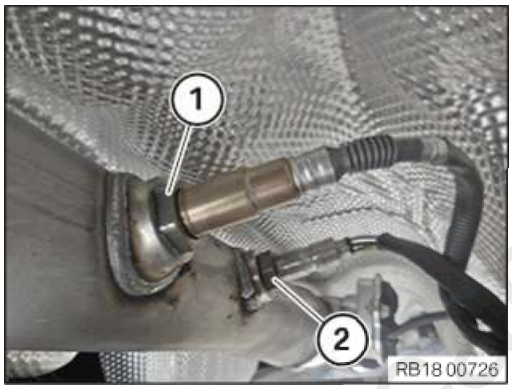
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm



- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm



- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

Sensor		Tightening torque	50 Nm

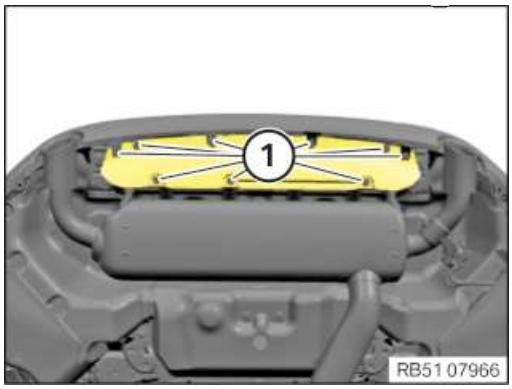
- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

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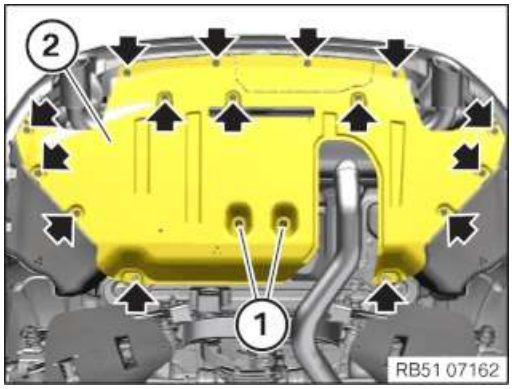
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

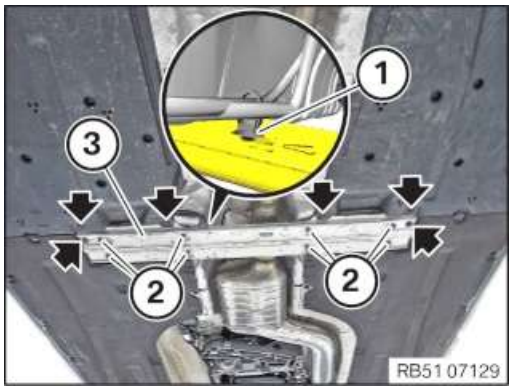
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**



- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

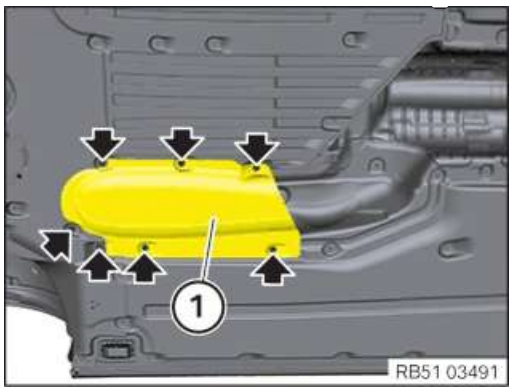
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

36 – Installing the rear wheel on the left and right

NOTICE

Perform the operations on the left and right side.

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▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

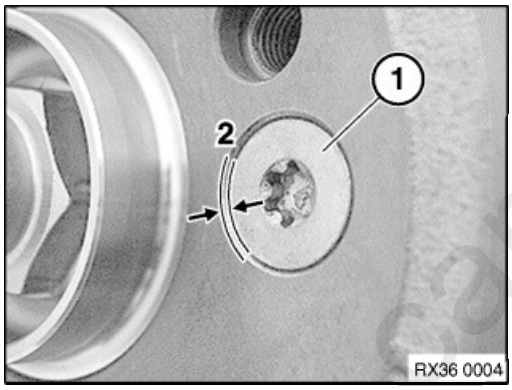
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).



- Check that the mounting bolt (1) for the brake disc is securely seated.

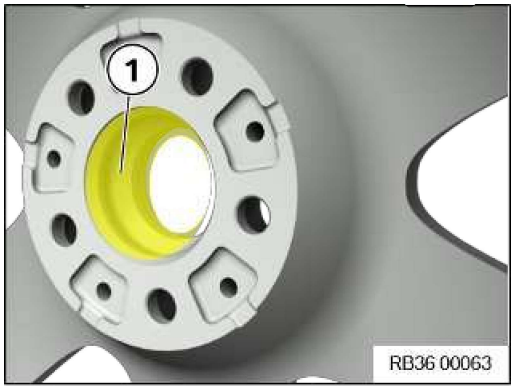
  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233

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TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

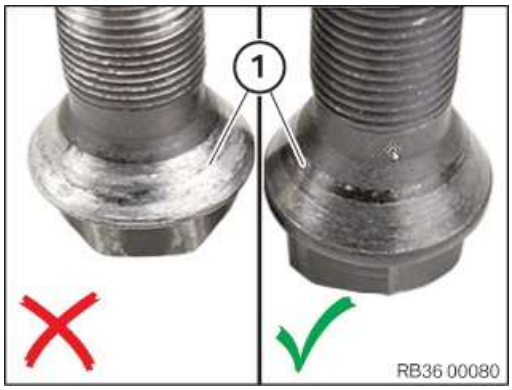
A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.

Check

- **Check wheel bolts for wear.**



Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

  Parts: Wheel bolts
- Clean the wheel bolts (arrows).
- Check the wheel bolts (arrows) and threads for damage, renew the wheel bolts (arrows) if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.		
	Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Check	140 Nm

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Additional Information

Overview of Tightening Torques

Rear axle carrier to body — Used in step 23

M12	Renew screws.	Tightening torque	108 Nm

Compression strut on body — Used in step 23

M10	Renew screws.	Jointing torque	47 Nm
		Angle of rotation	45 °

Ground strap to rear axle differential — Used in step 24

M6x20		Tightening torque	8 Nm

Heat shield to servomotor — Used in step 24

M5x10		Tightening torque	5 Nm

Bracing strut on compression strut/body			Used in step 25
M8		Tightening torque	28 Nm

Caliper carrier to rear wheel carrier			Used in step 26
M12	Renew screw.	Tightening torque	130 Nm

Nut and locknut/self-locking nut			Used in step 28
M8x40	Renew screws.	Tightening torque	28 Nm

Rear wheel arch cover to bumper trim panel			Used in step 29
Hexagon screw		Tightening torque	2,6 Nm

Propeller shaft on the rear axle differential			Used in step 31
Insert nut	Replace insert nut.	Tightening torque	100 Nm

Centre mount to body			Used in step 31
M8		Tightening torque	19 Nm

Heat shield to undercarriage			Used in step 32
Screws and nuts		Tightening torque	3 Nm

Underbody panelling			Used in step 3335
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Cover to camber control arm			Used in step 34
M6	Replace nuts.	Tightening torque	6 Nm

Rear silencer to body / bumper support			Used in step 35
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 35
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 35
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 35
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 35
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 35
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 35
Sensor		Tightening torque	50 Nm

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Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 35
Sensor		Tightening torque	55 Nm

Diffuser / underbody panelling			Used in step 35
Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel			Used in step 35
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Brake disc to front wheel hub			Used in step 36
M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub			Used in step 36
M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts			Used in step 36
M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Overview of Special Tools

2 464 898 Open-end spanner



Common	Used in step 631
Usage	Open-end spanner SW50 for disassembly and installation of the propeller shaft on rear axle differential. The silhouette foil is included in the delivery specification.
Included in the tool or work	
Storage location	A7
Replaced by	
In connection with	
SI-Number	01 19 18 (579)

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0 495 554 (33 5 070) Extension



Common Used in step 631

Usage	Pull-out extension for 33 5 040, 33 5 050, 33 5 060.
Included in the tool or work	
Storage location	A18
Replaced by	
In connection with	
SI-Number	01 21 06 (300)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 495 592 (33 5 071)		**Extension** (Extension (1 item)) discontinued, can only be ordered using complete tool	

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2 219 012 Hydraulic lifter



Common Used in step 915172228

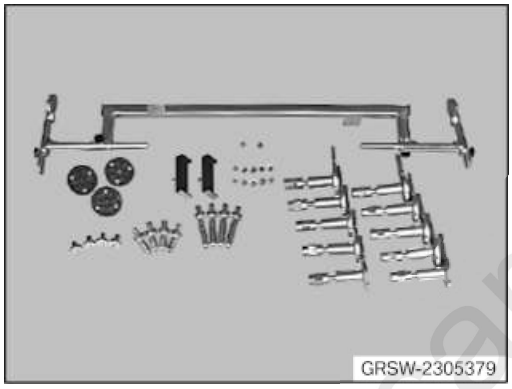
Usage	For raising and lowering various vehicle components.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

2 411 683 Adapter



Common	Used in step 928
Usage	Adapter for connecting a mounting plate part number: 2 357 071 on universal hydraulic lifting equipment centrically on piston rod.
Included in the tool or work	
Storage location	B76
Replaced by	
In connection with	
SI-Number	

2 305 379 Accessories



Common	Used in step 928
Usage	Holder set for MHT 1200 major assembly table lift and new generation (from 2020)
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	Mobile major assembly table lift MHT 1200 81222184136
SI-Number	06 01 10 (649)

5 A36 B04 Spring cups



Common	Used in step 10
Usage	Spring cup for disassembly and installation of suspension springs on the rear axle in connection with the spring tensioner basic unit, SWZ 33 5 010 or SWZ 33 5 100.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 23 21 (851)

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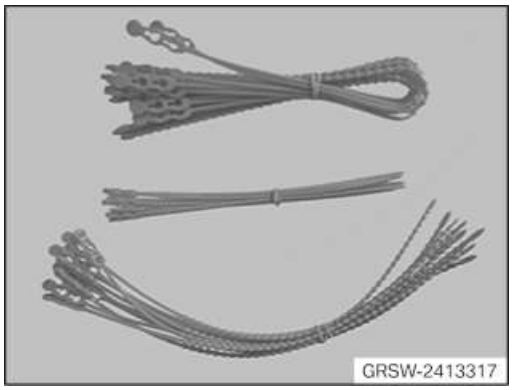
5 A36 B05 Spring cups



Common Used in step 10

Usage	Spring cup for disassembly and installation of suspension springs on the rear axle in connection with the spring tensioner basic unit, SWZ 33 5 010 or SWZ 33 5 100.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 23 21 (851)

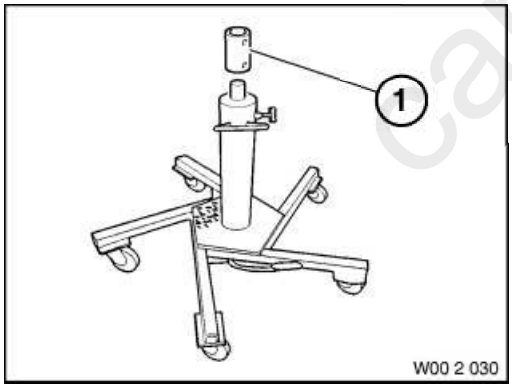
2 413 317 Cable strap



Common Used in step 1126

Usage	The "Cable ties" parts set consists of 3 items as follows: ABV232 Length: 320 mm colour: RedABV250 Length: 500 mm colour: RedABVS270 Length: 665 mm colour: Red
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 47 15 (332)

0 490 133 (00 2 030) Device



Common Used in step 14

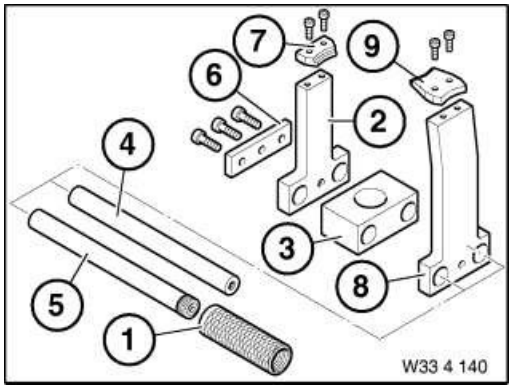
Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

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0 492 397 (33 4 140) Device



Common Used in step 1819

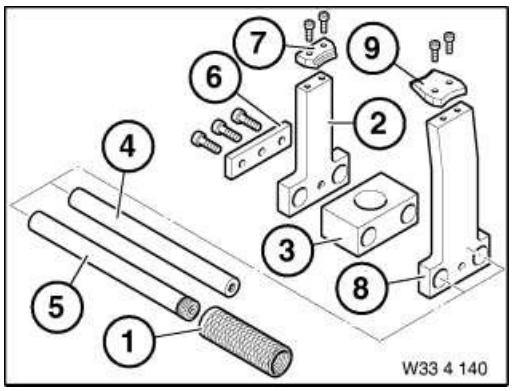
Usage	For removing rubber mount in rear axle support.
Included in the tool or work	
Storage location	A4
Replaced by	
In connection with	
SI-Number	01 02 99 (417)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 492 398 (33 4 141)		**Pipe** (Threaded tube) Deletion, only available via tool set	
2	0 492 399 (33 4 142)		**Shaped part** (Shaped part) 2 pieces Model series: E38, E39, E46 Deletion, only available via tool set	
3	0 492 400 (33 4 143)		**Shaped part** (Shaped part)	
4	0 492 401 (33 4 144)		**Rod** (Guide rod)	
5	0 492 402 (33 4 145)		**Rod** (Guide rod) With thread dog point	
6	0 492 403 (33 4 146)		**Plate** (Fixing plate) With screws Deletion, only available via tool set	
7	0 492 404 (33 4 147)		**Synchronising key** (Synchronising key (2 x)) With screws - model series: E38, E39, E46 Deletion, only available via tool set	
8	0 492 405 (33 4 148)		**Shaped part** (Shaped part) 2 pieces Model series: E39/2, E65, E67, RR1	
9	0 492 406 (33 4 149)		**Synchronising key** (Synchronising key (2 x)) With countersunk screw - model series: E39/2, E65, E67, E87	

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0 492 406 (33 4 149) Synchronising key



Common Used in step 1819

Usage	(synchronising key (2 x)) With countersunk screw - model series: E39/2, E65, E67, E87, delivery while stocks last - as of 02/2019.
Included in the tool or work	0 492 397
Storage location	
Replaced by	
In connection with	
SI-Number	01 15 04 (117)

2 155 744 Tool set



Common Used in step 18192021

Usage	Hydraulic unit (basic unit) for removal and installation of wheel bearings, propeller shafts and drive flanges. All replacement parts and separate components can be reordered at www.tkr-service.com, See Service Information 08 12 14 (155).
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	08 12 14 (155)

2 208 574 Nut



Common	Used in step 18192021
Usage	TR18 nuts for removing and installing the rubber mount on the rear axle support. Contained in threaded spindle set 81642208573. TR18 nuts cannot be ordered separately. All replacement parts and separate components can be reordered at www.tkr-service.com. See Service Information 08 12 14 (155).
Included in the tool or work	2 208 573
Storage location	
Replaced by	
In connection with	
SI-Number	08 06 10 (658)

2 344 011 Tool



Common	Used in step 36
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	136

Operating materials	Used in step
1.1 Grease for propeller shaft inserted	31
1.0 Grease for propeller shaft (flexible disc centring and sliding piece)	31

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

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

RISK OF DAMAGE

Damage to the components on the rear axle.

If both compression struts are removed simultaneously, it can cause serious damage to the rear axle.

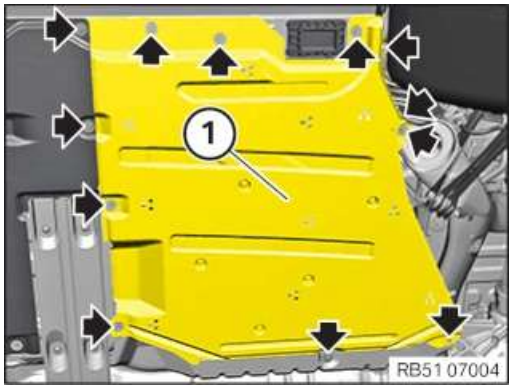
- Renew or remove compression strut only individually.
- When lowering or removing the rear axle: Support rear axle support before both compression struts are removed.

NOTICE

Description is for left component only. Procedure on the right side is identical.

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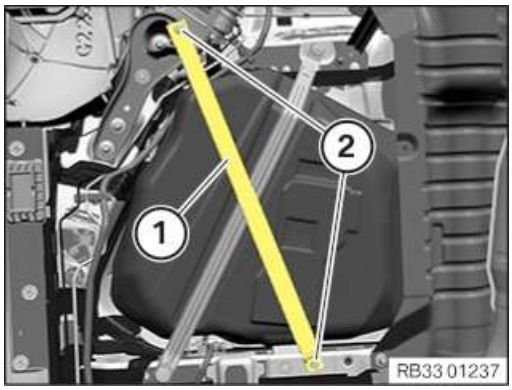
1 – Removing the tank cover



▸ **Removing the tank cover**

- Release all bolts (arrows).
- Remove the tank cover (1).

2 – Remove stiffening strut



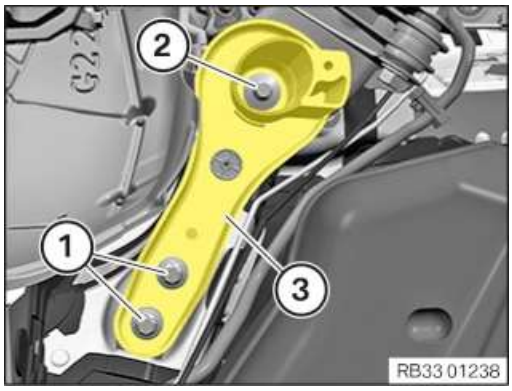
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen screws (2).
- Remove bracing strut (1).

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3 – Remove compression strut



RISK OF DAMAGE

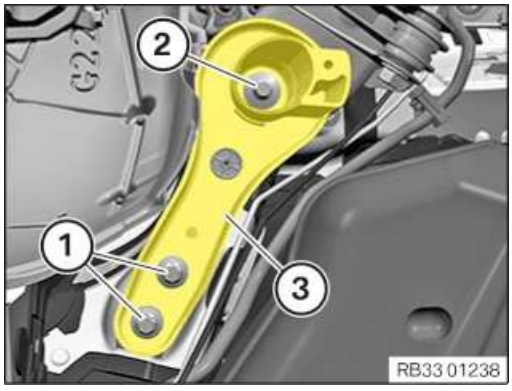
Damage to the components on the rear axle.

If both compression struts are removed simultaneously, it can cause serious damage to the rear axle.

- Renew or remove compression strut only individually.
- When lowering or removing the rear axle: Support rear axle support before both compression struts are removed.

- Loosen screws (1).
- Loosen screw (2).
- Remove compression strut (3).

4 – Install compression strut



- Renew screws (1) and (2).

  Parts: Screws
- Position compression strut (3).
- Screw in screws (1) and (2).
- Tighten down screw (2).

Rear axle carrier to body

M12	Renew screws.	Tightening torque	108 Nm

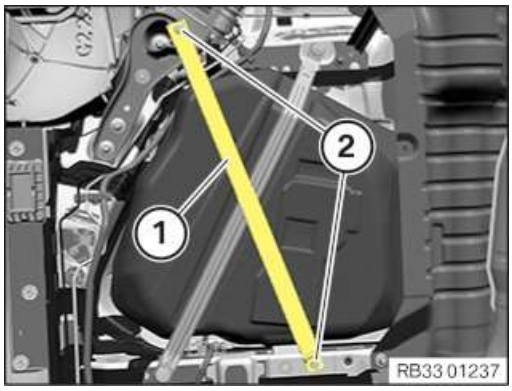
- Tighten the screws (1).

Compression strut on body

M10	Renew screws.	Jointing torque	47 Nm
		Angle of rotation	45 °

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5 – Installing the bracing strut



NOTICE

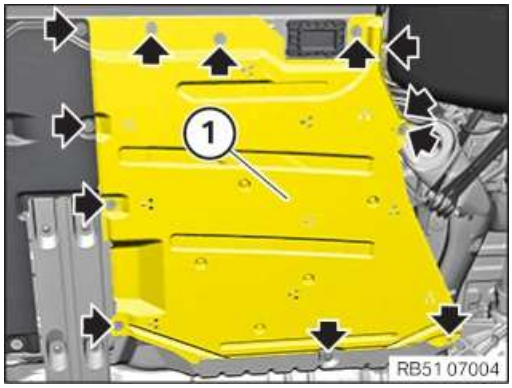
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Position the reinforcement strut (1).
- Tighten the screws (2).

Bracing strut on compression strut/body

M8		Tightening torque	28 Nm

6 – Installing tank cover



▸ **Installing tank cover**

- Position the tank cover (1).
- Tighten all bolts (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

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Additional Information

Overview of Tightening Torques

Rear axle carrier to body — Used in step 4

M12	Renew screws.	Tightening torque	108 Nm

Compression strut on body — Used in step 4

M10	Renew screws.	Jointing torque	47 Nm
		Angle of rotation	45 °

Bracing strut on compression strut/body — Used in step 5

M8		Tightening torque	28 Nm

Underbody panelling — Used in step 6

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Links

Repair instructions	Used in step
00 .. ... Raising the vehicle using a vehicle hoist	

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33 33 012 Replacing rear left or right compression strut for rear axle support

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

RISK OF DAMAGE

Damage to the components on the rear axle.

If both compression struts are removed simultaneously, it can cause serious damage to the rear axle.

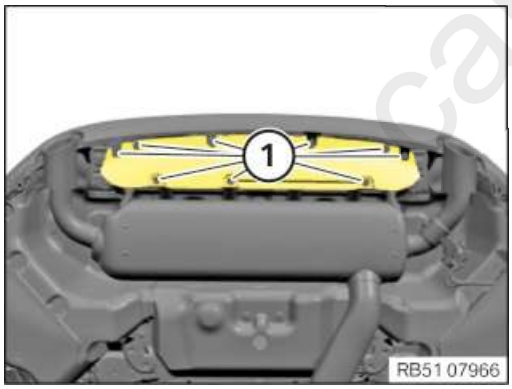
- Renew or remove compression strut only individually.
- When lowering or removing the rear axle: Support rear axle support before both compression struts are removed.

NOTICE

Description is for left component only. Procedure on the right side is identical.

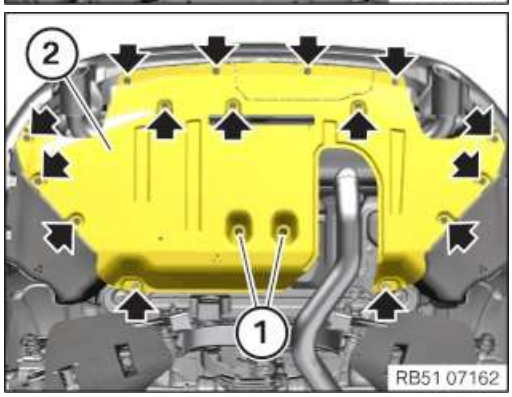
PRELIMINARY WORK

1 – Removing the rear diffuser if necessary



▸ **Removing the rear diffuser**

- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).

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2 – Removing the rear compression strut



- Loosen screws (2).
- Loosen screw (3).
- Remove compression strut (1).

3 – Installing the rear compression strut



- Renew screws (2) and (3).

  Parts: Screws
- Position compression strut (1).
- Screw in screws (2) and (3).
- Tighten down screw (3).

Rear axle carrier to body

M12	Renew screws.	Tightening torque	108 Nm

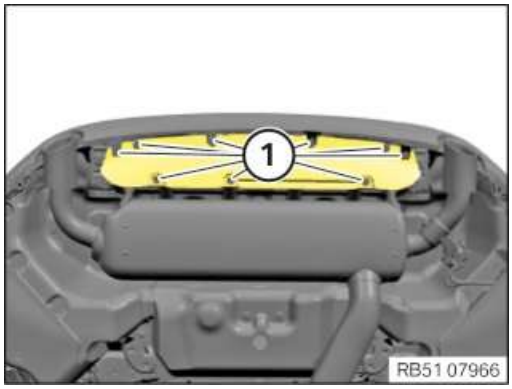
- Tighten the screws (2).

Compression strut on body

M10	Renew screws.	Jointing torque	47 Nm
		Angle of rotation	45 °

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4 – Installing the rear diffuser if necessary

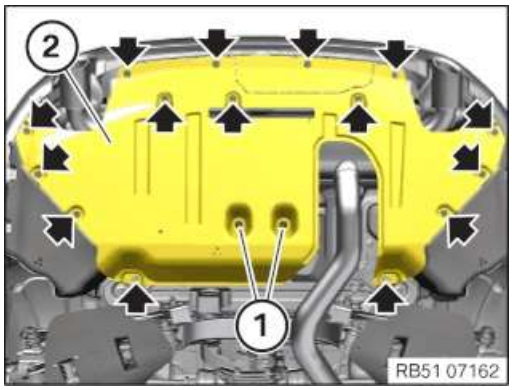


▸ **Installing the rear diffuser**

- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

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Additional Information

Overview of Tightening Torques

Rear axle carrier to body — Used in step 3

M12	Renew screws.	Tightening torque	108 Nm

Compression strut on body — Used in step 3

M10	Renew screws.	Jointing torque	47 Nm
		Angle of rotation	45 °

Diffuser / underbody panelling — Used in step 4

Nuts and screws		Tightening torque	3 Nm

Links

Repair instructions — **Used in step**

00 .. ... Raising the vehicle using a vehicle hoist

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This documentation refers to special tools that were not yet available when going to press.

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

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

PRELIMINARY WORK

1 – Remove rear left or right wheel

▸ **Removing the wheel**



TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

  This process is intended to prevent damage to the brake disc.



- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

2 – Loosen the output shaft from the wheel bearing

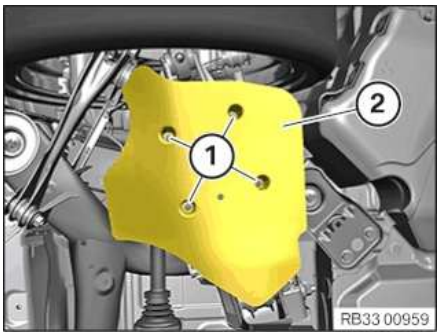


- Press brake pedal.
- Loosen the collar bolt (1).

  The output shaft is released from the wheel bearing.

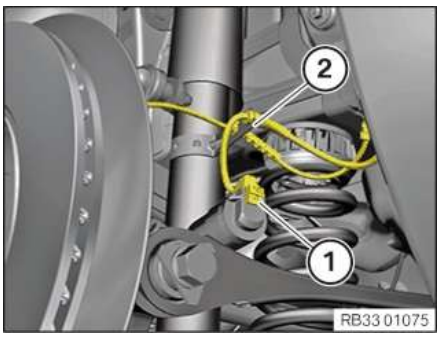
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3 – Removing the cover of camber control arm



- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

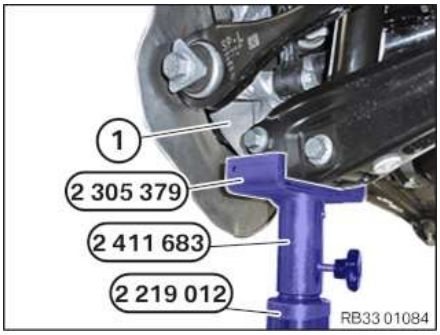
4 – Remove rear shock absorber



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Release all the existing cables from holder (2).
- Unlock plug connection (1) and disconnect.



WARNING

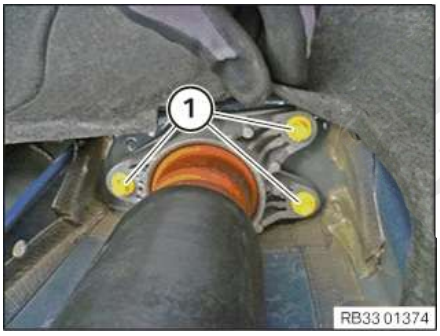
Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

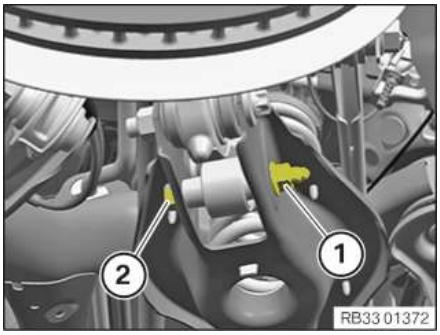
- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).
- Support the wheel carrier (1) with the special tool 2 219 012.

  Do not press against the spring force of the coil spring.

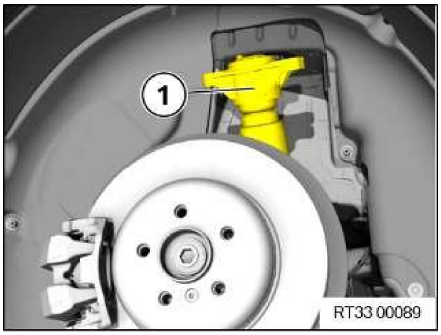


- Loosen screws (1).
- Disconnect the special tool 2 219 012 and set it aside.



- Unfasten nut (1).
- Pull out bolt (2).

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- Press the shock absorbers (1) together and guide upwards out of the wheel arch.

5 – Remove coil spring

▸ **Preparing the special tool (G22/G23/G26/G42)**

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.



- **Basic version:**

  Spindle = Special tools and

  Upper spring cup = Special tool 5 A36 B04

  Lower spring cup = Special tool 5 A36 B05

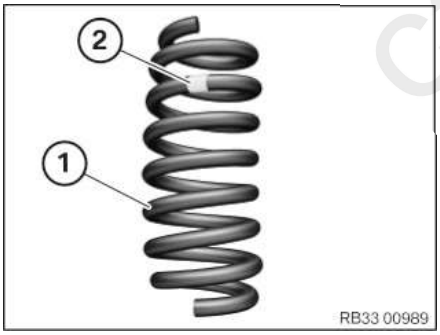


- **BMW M Performance Automobile (Sport) and Alpina:**

  Spindle = special tools , and

  Upper spring cup = Special tool

  Lower spring cup = Special tool



TECHNICAL INFORMATION

Incorrect assembly is possible. Ensure correct installation position.

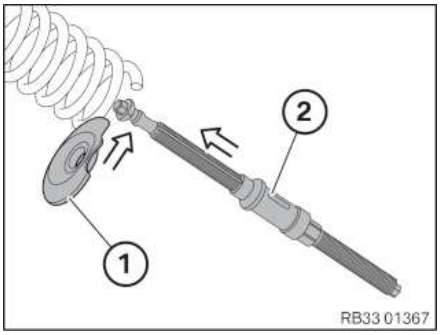
- The installation position of the coil spring(1) is marked with a label (2).

  The label (2) is attached at the top end of the coil spring (1) and is marked as “top”

- Check coil spring (1) for availability of label (2)

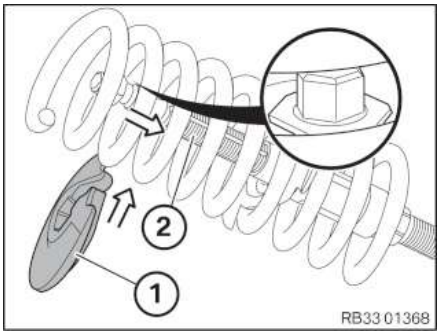
  If the label (2) on the installed coil spring (1) is missing and it has to be fixed after repair, then the installation position of the coil spring (1) must be marked necessarily.

Note: Mark the installation position of the coil spring, by attaching an adhesive tape at the top end of spring.



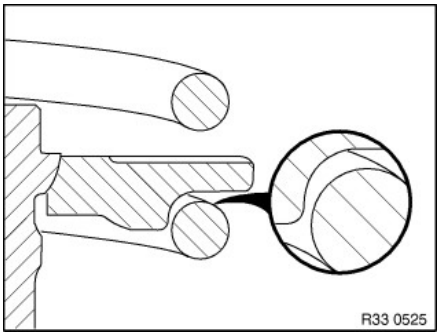
- Insert the bottom spring cup (1) sideways in the direction of arrow in the coil spring and turn up to the lowest coil.
- Insert the spindle (2) from below in the direction of arrow through the camber control arm and the bottom spring cup (1).

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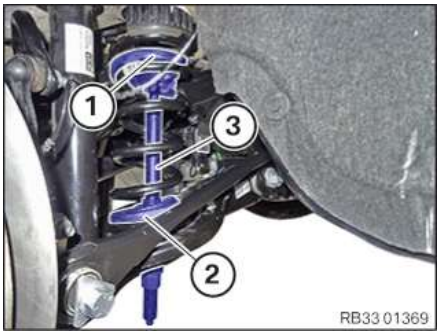


- Insert the top spring cup (1) sideways in the direction of arrow in the coil spring, feed in to the spindle (2) and turn it upwards as far as possible.

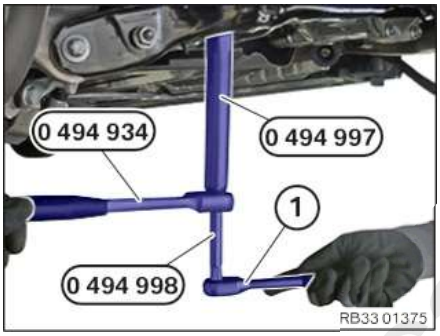
  Check the position of the spindle (2) with the hexagon head in the top spring cup (1) and correct if necessary.
- Pull the spindle (2) downwards in the direction of arrow.



- Check the position of the spring cup in the coil spring at the top and bottom and, if necessary, correct it.



- Align the top spring cup (1) and the bottom spring cup (2) with the spindle (3) in the centre to reach the highest possible contact surface on the coil spring.



RISK OF DAMAGE

Compression of coil spring to solid height.

Damage of the coil spring.

- Do not compress coil spring to solid height.
- Make sure there is a gap between the spring coils.

- Tension the coil spring using special tools and . In doing so, counter support at the spindle with the special tool and the standard tool (1).

  Standard tool:



- Feed out coil spring on upper spring pad (1). If necessary, remove upper spring pad (1).



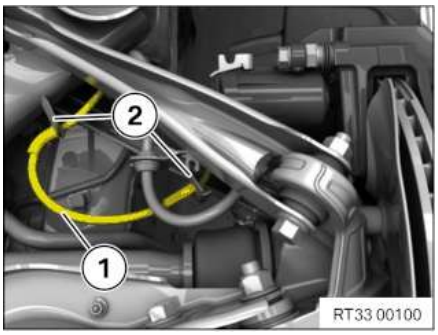
- Guide out and remove the coil spring (1) toward the top in the direction of the arrow.

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6 – Releasing the brake caliper

TECHNICAL INFORMATION

During work on the rear brake, it must be ensured that the button for the electromechanical parking brake cannot be pressed.

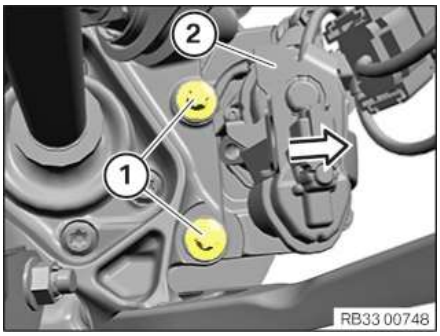


- Release the cable for the parking brake (1) from the holders (2).

NOTICE

Perform this step on the right side only.

- Release the cable for brake pad wear indicator from rear axle support.



- Loosen screws (1).
- Pull brake caliper (2) down in direction of arrow.

  The brake caliper must not hang on the brake hose.



- Tie the brake caliper (1) up with the special tool 2 413 317.

7 – Releasing the control arm from the wheel carrier



- Release the screw (1) with the standard tool (2).

  Standard tool:

8 – Remove rear brake disc



TECHNICAL INFORMATION

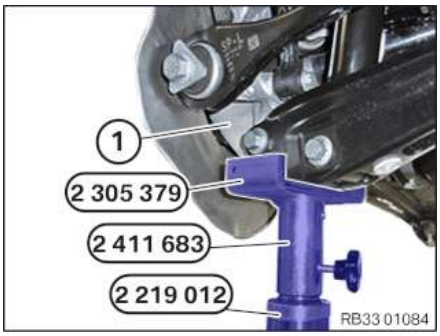
Note the following for the removal of the brake disc:

Do not strike the friction ring with a tool under any circumstance (for example, hammer). If required, **carefully** tap with a rubber mallet against the brake disc chamber.

- Loosen screw (1).
- Remove brake disc (2).

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9 – Removing the wheel bearing



WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

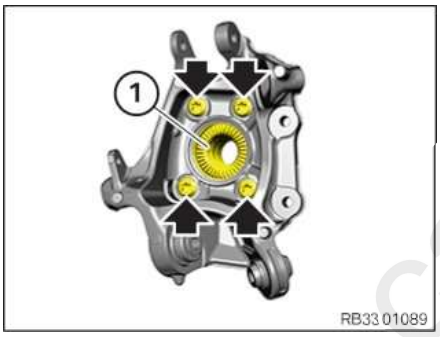
- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).



- Use special tool and / or to loosen the spherical-collar bolts.



- Lift or lower the wheel carrier with the special tool 2 219 012 respectively, to reach all the spherical-collar bolts with the special tool .

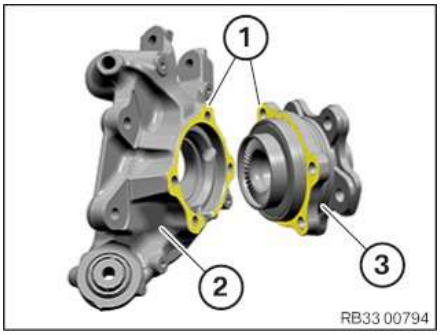


TECHNICAL INFORMATION

Secure component against falling.

- Loosen spherical-collar bolts (arrows).
- Remove wheel bearing (1).
- Empty special tool 2 219 012 and set it aside.

10 – Installing the wheel bearing

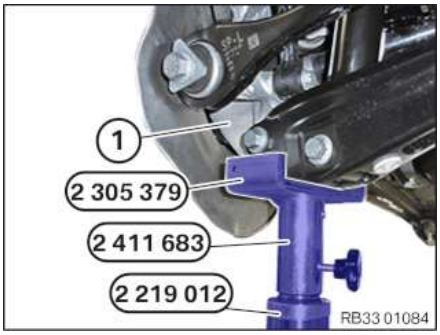


TECHNICAL INFORMATION

Keep the connection of the wheel bearing on the wheel carrier clean and free of oil and grease.

- Clean the contact surfaces (1) of the wheel carrier (2) and the wheel bearing (3).

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WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).



- Use special tool and/or to release and tighten the spherical-collar bolts.



- Position the wheel bearing (1).
- Renew the spherical-collar bolts (arrows).

  Parts: Spherical-collar bolts



- Tighten the spherical-collar bolts cross-wise with the special tool .

  For the accessibility of the spherical-collar bolts, raise or lower the wheel carrier with the special tool 2 219 012.

Wheel bearing to wheel carrier

M12	Renew spherical collar screws. **Tighten the spherical-collar bolts crosswise.** *Tightening sequence must be strictly adhered to and carried out on all spherical-collar bolts at the same time!*	Tightening torque Initial torque Unscrew all bolts. Tightening torque Angle of rotation	20 Nm 140 Nm max. 45 ° 120 Nm 90 °

- Empty special tool 2 219 012 and set it aside.

POSTPROCESSES

11 – Installing the rear brake disc



- Thoroughly clean the contact surface of the wheel hub and remove traces of corrosion if necessary.

  Irregularities in the contact surface can cause distortion in the brake disc!
- Position the brake disc (2).
- Renew the screw (1).

  Parts: Screw
- Tighten down screw (1).

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm

12 – Fastening the control arm to the wheel carrier

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TECHNICAL INFORMATION

Tighten down screw connection in normal position.



- Renew the screw (1).

  Parts: Screw
- Screw the screw (1) in manually by a few turns and hand-tighten with the standard tool (2).

  Standard tool:

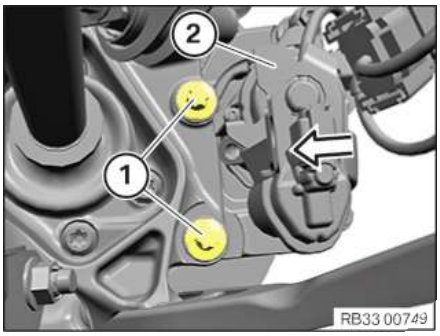
  The tightening of the screw connection with the torque wrench is carried out later in normal position.

13 – Securing the brake caliper



- Release and remove special tool 2 413 317.

  The brake caliper must not hang on the brake hose.

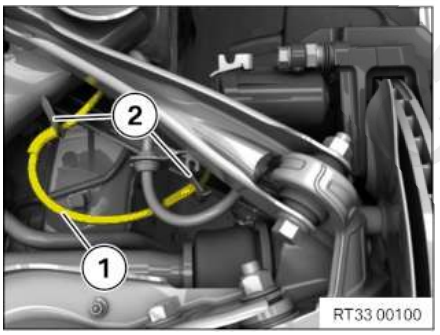


- Position the brake caliper (2) in the direction of the arrow.
- Renew screws (1).

  Parts: Screws
- Tighten the screws (1).

Caliper carrier to rear wheel carrier

M12	Renew screw.	Tightening torque	130 Nm



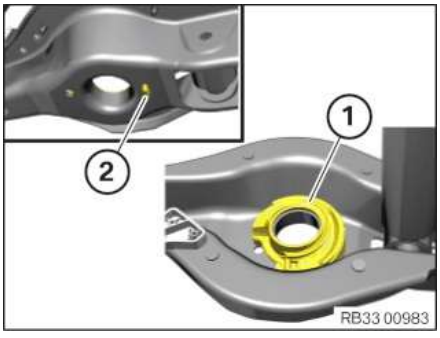
- Fasten the cable for the parking brake (1) to the holders (2).

NOTICE

Perform this step on the right side only.

- Fasten the cable for the brake pad wear indicator on the rear axle support.

14 – Install the coil springs

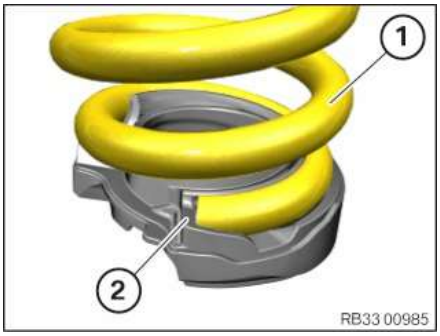


- Check bottom spring pad (1) for damage, renew if necessary.
- Check the position of the lower spring pad (1) with the plastic tab (2) on the camber control arm, correct if necessary.

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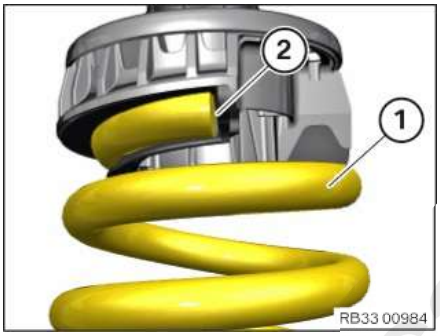
- Feed in the coil spring (1) in direction of arrow from the top and lock.



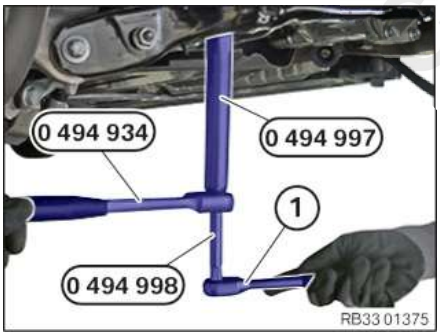
- Position the coil spring (1) in such a way that the coil spring end is in form-fit contact with the lower spring pad (2).



- Feed in the spring pad at the top (1).



- Position the upper spring pad on the coil spring (1) in such a way that the coil spring end (2) is in form-fit contact with the upper spring pad.

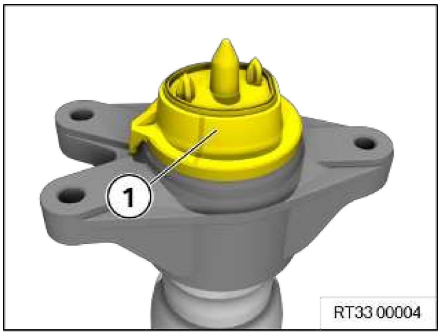


- Slacken the coil spring with the special tools and . In doing so, counter support at the spindle with the special tool and the standard tool (1).

  Standard tool:

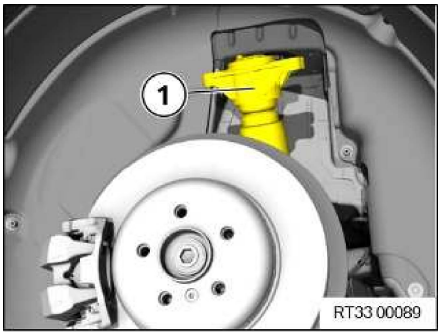
  Pay attention to the mounting orientation when releasing the coil spring, correct if necessary.
- Remove special tools.

15 – Installing the rear shock absorber

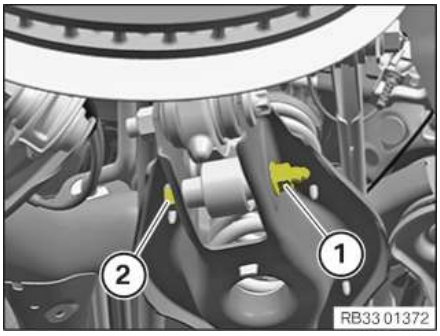


- Check the centering plate (1) for damage, renew if necessary.
- Check the position of the centering plate (1), correct if necessary.

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- Press shock absorbers (1) together and insert into the wheel arch.



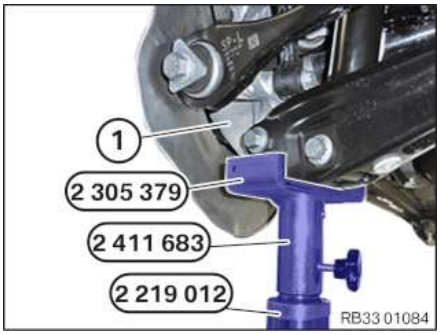
TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Replace the nuts (1) and the bolt (2).

  Parts: Nut, bolt
- Insert the screw (2).
- Tighten the nut (1) hand-tight.

  The tightening of the screw connection with the torque wrench is carried out later in normal position.



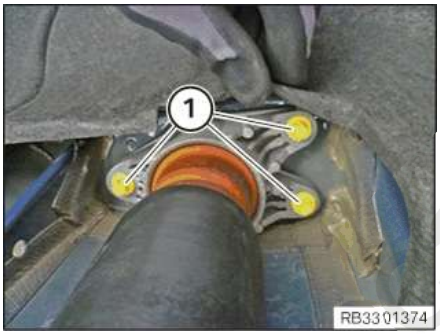
WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).



- Slightly lift the wheel carrier with the special tool 2 219 012. Position the shock absorber on the body in the process.

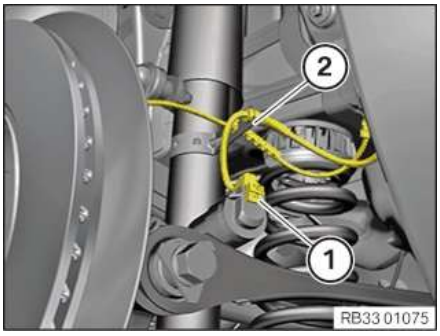
  Do not press against the spring force of the coil spring.
- Renew screws (1).

  Parts: Screws
- Tighten the screws (1).

Nut and locknut/self-locking nut

M8x40	Renew screws.	Tightening torque	28 Nm

- Disconnect the special tool 2 219 012 and set it aside.

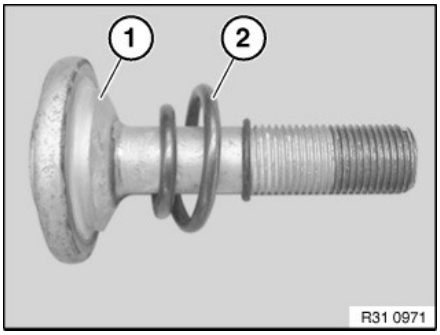


NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure all existing cables on the holder (2).
- Connect connectors (1) and lock.

16 – Securing the output shaft on the wheel bearing

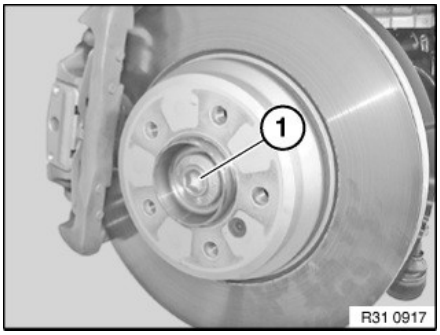


TECHNICAL INFORMATION

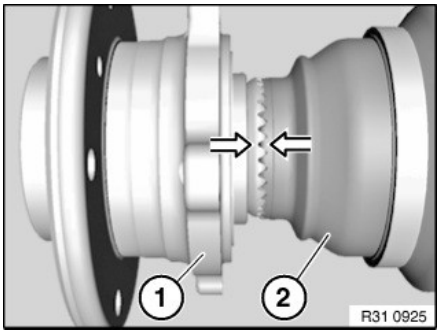
The installation note for front gearing must be observed at all times.

- Renew the collar bolt (1) and the compression spring (2).

  Parts: Collar bolt and compression spring
- Note installation position of compression spring (2).
- Keep the collar bolt (1) and the front gearing of the wheel bearing and the output shaft clean and free of grease.



- Hand-tighten the collar bolt (1) with the compression spring.



TECHNICAL INFORMATION

The front gearing of the wheel bearing and output shaft must be installed in an interlocking position (tooth-in-tooth).

- Ensure positive locking by twisting the wheel bearings against each other (1) and the output shaft (2).
- Press brake pedal.
- Tighten the collar bolt.

Output shaft to wheel bearing

M16	Replace the collar bolt.	Jointing torque	210 Nm
		Angle of rotation	90 °

17 – Install rear left or right wheel

▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

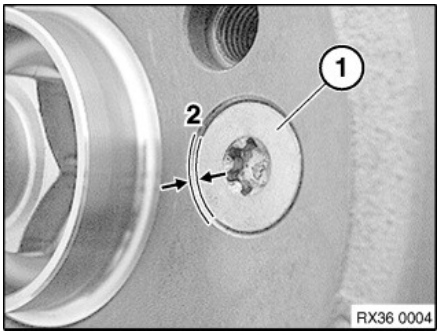
  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).

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- Check that the mounting bolt (1) for the brake disc is securely seated.

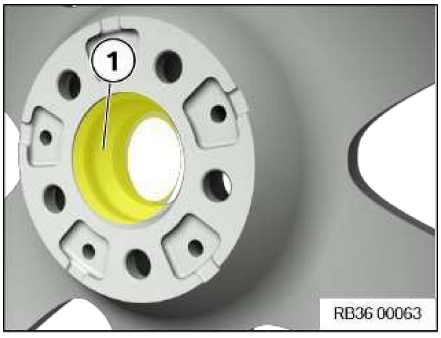
  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

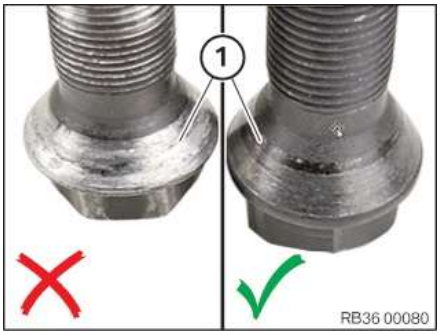
A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.

Check

carsiagn.com



- **Check wheel bolts for wear.**

Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

  Parts: Wheel bolts

- Clean the wheel bolts (arrows).
- Check the wheel bolts (arrows) and threads for damage, renew the wheel bolts (arrows) if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.	Check	140 Nm
	Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.		

18 – Measuring the ride height of rear axle and adjusting the normal position



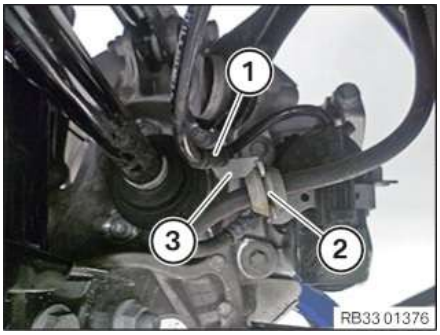
- Set the vehicle down on its wheels (e.g. On an approach ramp).
- Measure the ride height (A).
- Load or unload the vehicle until the ride height (A) is within the tolerance.

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung

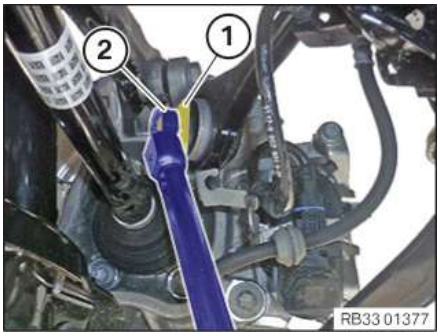
Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

19 – Tightening the screw connection on the wheel carrier

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- Release the cable (1) for the electromechanical parking brake and the brake hose (2) from the holder (3).



TECHNICAL INFORMATION

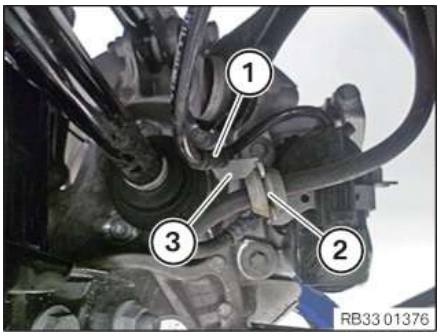
Tighten down screw connection in normal position.

- Release the screw (1) with the standard tool (2) by a few turns and tighten it.

  Standard tool:

Control arm to wheel carrier

M14	Renew screw. Tighten in normal position.	Tightening torque Angle of rotation	165 Nm 90 °



- Fasten the cable (1) for the electromechanical parking brake and the brake hose (2) on to the holder (3).

20 – Installing the cover of the camber control arm



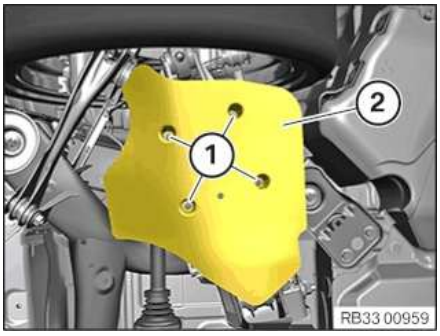
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

Additional Information

Overview of Tightening Torques

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Wheel bearing to wheel carrier — Used in step 10

M12	Renew spherical collar screws. **Tighten the spherical-collar bolts crosswise.** *Tightening sequence must be strictly adhered to and carried out on all spherical-collar bolts at the same time!*	Tightening torque Initial torque Unscrew all bolts. Tightening torque Angle of rotation	20 Nm 140 Nm max. 45 ° 120 Nm 90 °

Brake disc to rear wheel hub — Used in step 1117

M8	Renew screw.	Tightening torque	16 Nm

Caliper carrier to rear wheel carrier — Used in step 13

M12	Renew screw.	Tightening torque	130 Nm

Nut and locknut/self-locking nut — Used in step 15

M8x40	Renew screws.	Tightening torque	28 Nm

Output shaft to wheel bearing — Used in step 16

M16	Replace the collar bolt.	Jointing torque Angle of rotation	210 Nm 90 °

Brake disc to front wheel hub — Used in step 17

M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts — Used in step 17

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Control arm to wheel carrier — Used in step 19

M14	Renew screw. Tighten in normal position.	Tightening torque Angle of rotation	165 Nm 90 °

Cover to camber control arm — Used in step 20

M6	Replace nuts.	Tightening torque	6 Nm

Overview of Special Tools

2 219 012 Hydraulic lifter



Common — Used in step 491015

Usage	For raising and lowering various vehicle components.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

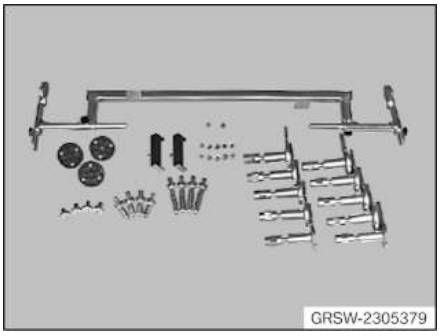
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2 411 683 Adapter



Common	Used in step 491015
Usage	Adapter for connecting a mounting plate part number: 2 357 071 on universal hydraulic lifting equipment centrically on piston rod.
Included in the tool or work	
Storage location	B76
Replaced by	
In connection with	
SI-Number	

2 305 379 Accessories



Common	Used in step 491015
Usage	Holder set for MHT 1200 major assembly table lift and new generation (from 2020)
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	Mobile major assembly table lift MHT 1200 81222184136
SI-Number	06 01 10 (649)

5 A36 B04 Spring cups



Common	Used in step 5
Usage	Spring cup for disassembly and installation of suspension springs on the rear axle in connection with the spring tensioner basic unit, SWZ 33 5 010 or SWZ 33 5 100.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 23 21 (851)

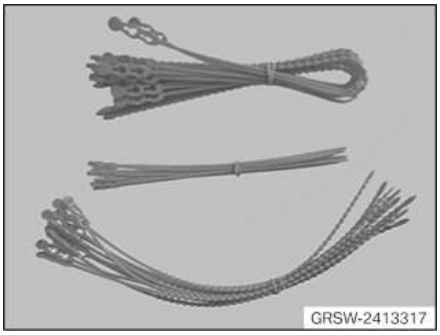
5 A36 B05 Spring cups



Common	Used in step 5
Usage	Spring cup for disassembly and installation of suspension springs on the rear axle in connection with the spring tensioner basic unit, SWZ 33 5 010 or SWZ 33 5 100.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 23 21 (851)

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2 413 317 Cable strap



Common	Used in step 613
Usage	The "Cable ties" parts set consists of 3 items as follows: ABV232 Length: 320 mm colour: RedABV250 Length: 500 mm colour: RedABVS270 Length: 665 mm colour: Red
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 47 15 (332)

2 344 011 Tool



Common	Used in step 17
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

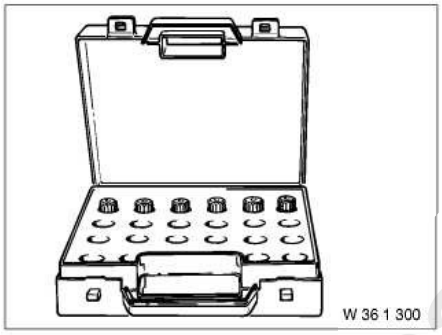
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0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung	Used in step 18
Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

Links

Repair instructions	Used in step

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33 00 ... Information on replacing shock absorbers

Situation:

When a shock absorber is faulty on one side (leaking, noises, limit violation 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 100 000 km.

Exception: In all models of M GmbH (for example, M3, M4, M5, M X5, M X6, M8), both shock absorbers on the corresponding axle must always be renewed even if a limit value is exceeded on one side only (MPA models not included).

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

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

PRELIMINARY WORK

1 – Remove rear left or right wheel

▸ **Removing the wheel**



TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

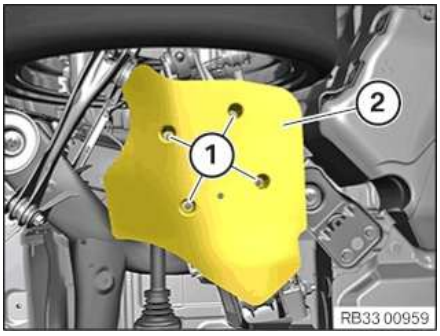
- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

  This process is intended to prevent damage to the brake disc.



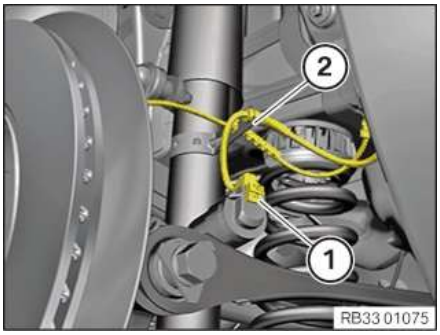
- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

2 – Removing the cover of camber control arm



- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

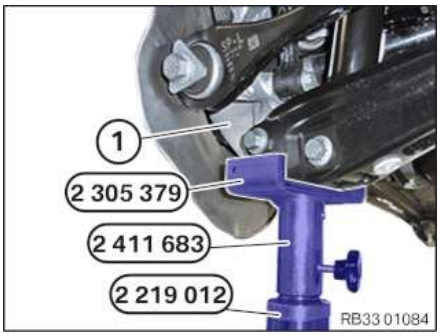
3 – Remove rear shock absorber



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Release all the existing cables from holder (2).
- Unlock plug connection (1) and disconnect.



WARNING

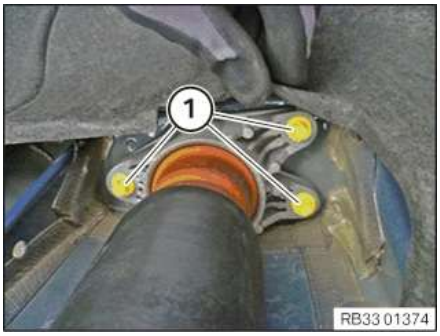
Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

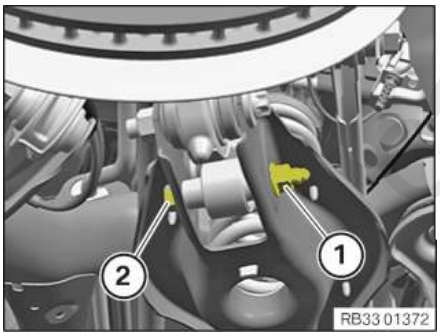
- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).
- Support the wheel carrier (1) with the special tool 2 219 012.

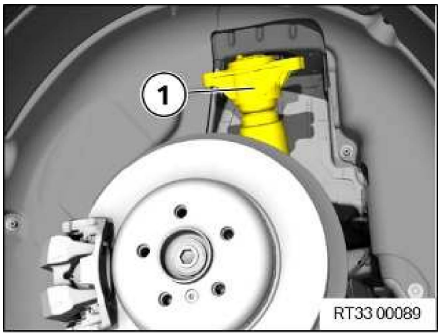
  Do not press against the spring force of the coil spring.



- Loosen screws (1).
- Disconnect the special tool 2 219 012 and set it aside.



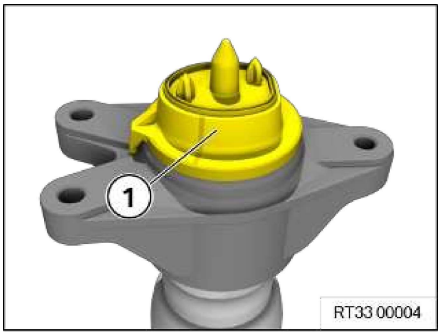
- Unfasten nut (1).
- Pull out bolt (2).



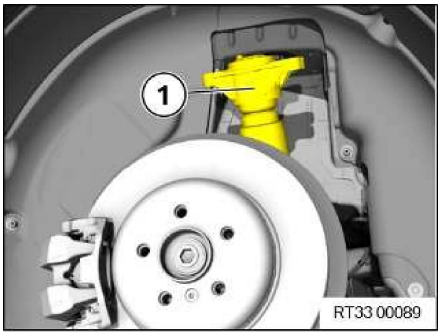
- Press the shock absorbers (1) together and guide upwards out of the wheel arch.

4 – Installing the rear shock absorber

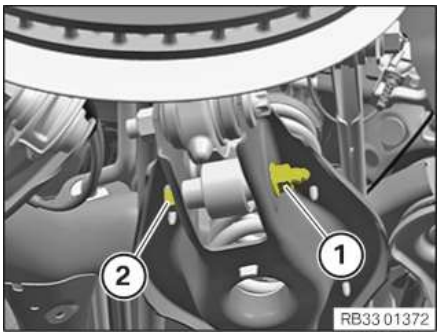
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- Check the centering plate (1) for damage, renew if necessary.
- Check the position of the centering plate (1), correct if necessary.



- Press shock absorbers (1) together and insert into the wheel arch.



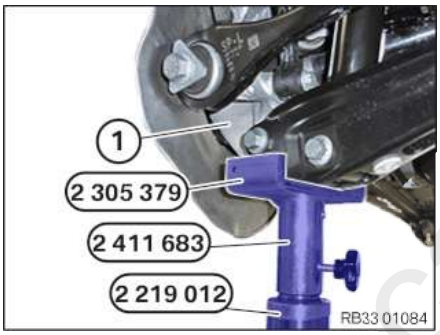
TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Replace the nuts (1) and the bolt (2).

  Parts: Nut, bolt
- Insert the screw (2).
- Tighten the nut (1) hand-tight.

  The tightening of the screw connection with the torque wrench is carried out later in normal position.



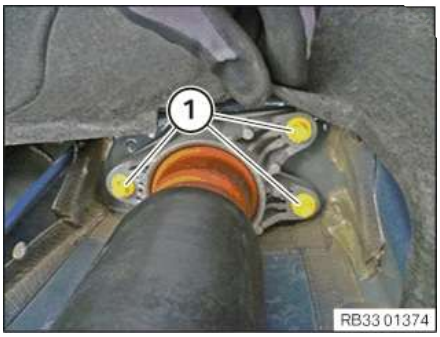
WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).



- Slightly lift the wheel carrier with the special tool 2 219 012. Position the shock absorber on the body in the process.

  Do not press against the spring force of the coil spring.
- Renew screws (1).

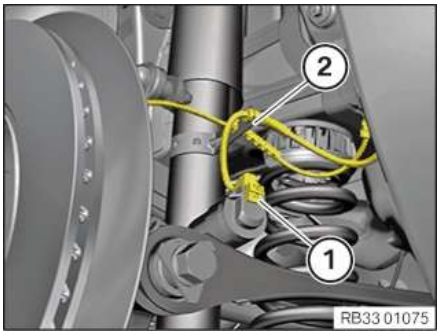
  Parts: Screws
- Tighten the screws (1).

Nut and locknut/self-locking nut

M8x40	Renew screws.	Tightening torque	28 Nm

- Disconnect the special tool 2 219 012 and set it aside.

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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure all existing cables on the holder (2).
- Connect connectors (1) and lock.

POSTPROCESSES

5 – Install rear left or right wheel

▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

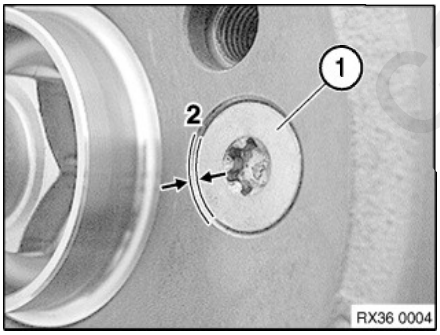
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).



- Check that the mounting bolt (1) for the brake disc is securely seated.

  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

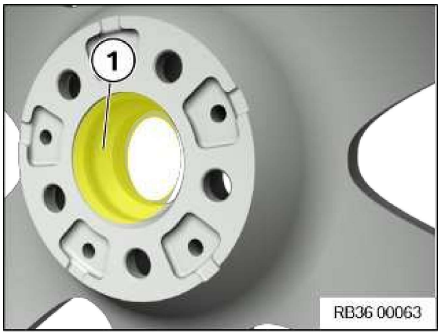
Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm

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TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

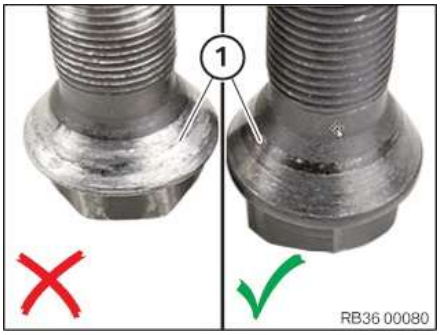
A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.

Check

- **Check wheel bolts for wear.**



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Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

  Parts: Wheel bolts

- Clean the wheel bolts (arrows).
- Check the wheel bolts (arrows) and threads for damage, renew the wheel bolts (arrows) if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

6 – Measuring the ride height of rear axle and adjusting the normal position

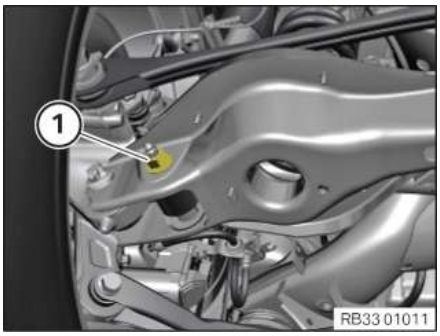


- Set the vehicle down on its wheels (e.g. On an approach ramp).
- Measure the ride height (A).
- Load or unload the vehicle until the ride height (A) is within the tolerance.

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung

Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

7 – Tightening the screw connection of the shock absorber on the camber control arm



TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Release the nut (1) by one turn and tighten it. In doing so, counter support at the screw.

Shock absorber to camber arm

M12	Renew nut and screw. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

8 – Installing the cover of the camber control arm



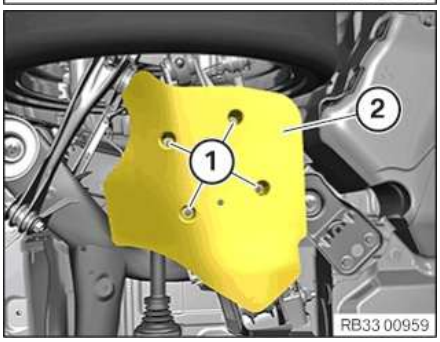
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

Additional Information

Overview of Tightening Torques

Nut and locknut/self-locking nut — Used in step 4

M8x40	Renew screws.	Tightening torque	28 Nm

Brake disc to front wheel hub — Used in step 5

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub — Used in step 5

M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts — Used in step 5

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Shock absorber to camber arm — Used in step 7

M12	Renew nut and screw. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

Cover to camber control arm — Used in step 8

M6	Replace nuts.	Tightening torque	6 Nm

Overview of Special Tools

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2 219 012 Hydraulic lifter



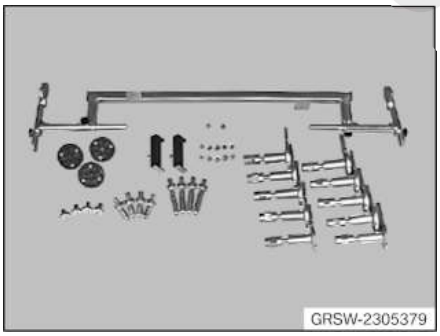
Common	Used in step 34
Usage	For raising and lowering various vehicle components.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

2 411 683 Adapter



Common	Used in step 34
Usage	Adapter for connecting a mounting plate part number: 2 357 071 on universal hydraulic lifting equipment centrically on piston rod.
Included in the tool or work	
Storage location	B76
Replaced by	
In connection with	
SI-Number	

2 305 379 Accessories



Common	Used in step 34
Usage	Holder set for MHT 1200 major assembly table lift and new generation (from 2020)
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	Mobile major assembly table lift MHT 1200 81222184136
SI-Number	06 01 10 (649)

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2 344 011 Tool



Common	Used in step 5
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

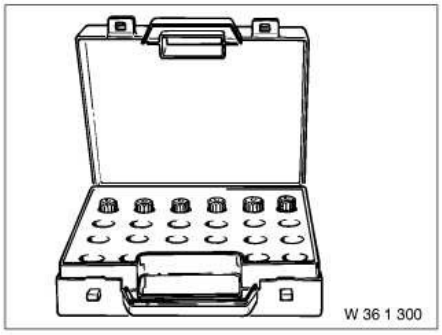
Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung Used in step 6

Measured from centre of wheel hub to lower edge of wheel arch

Dimension A	357 (347 - 367) mm

Links

cardiagn.com

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	15

00 02 001 Raising the vehicle using a vehicle lift

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33 52 012 Replacing rear left or right side shock absorber

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

PRELIMINARY WORK

1 – Remove rear left or right wheel

▸ **Removing the wheel**



TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

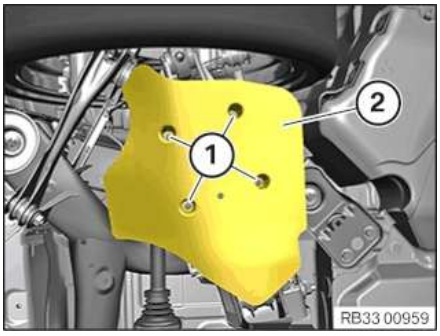
- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

  This process is intended to prevent damage to the brake disc.



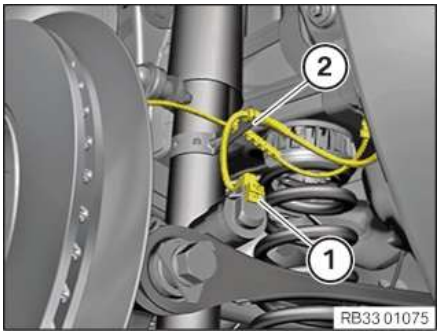
- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

2 – Removing the cover of camber control arm



- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

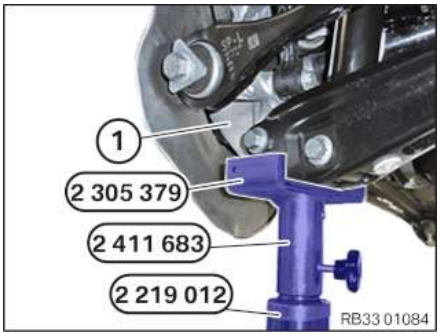
3 – Remove rear shock absorber



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Release all the existing cables from holder (2).
- Unlock plug connection (1) and disconnect.



WARNING

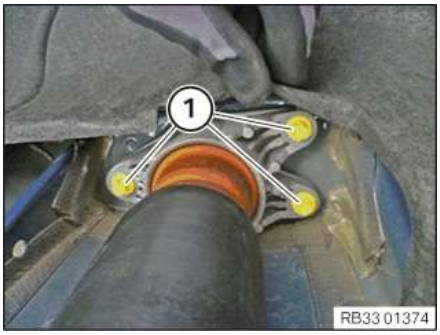
Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

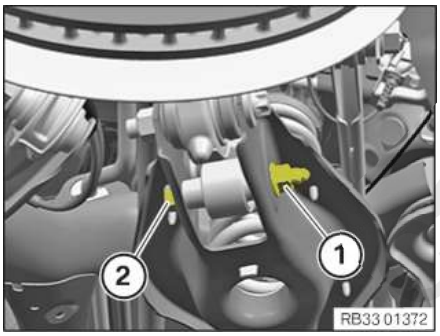
- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).
- Support the wheel carrier (1) with the special tool 2 219 012.

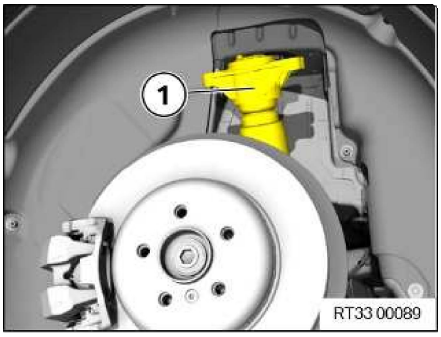
  Do not press against the spring force of the coil spring.



- Loosen screws (1).
- Disconnect the special tool 2 219 012 and set it aside.



- Unfasten nut (1).
- Pull out bolt (2).

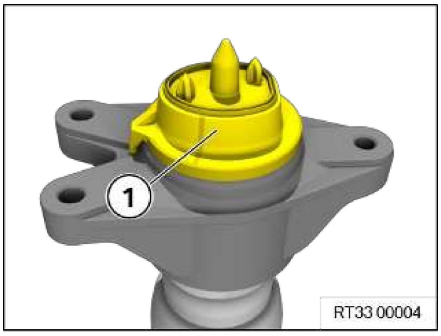


- Press the shock absorbers (1) together and guide upwards out of the wheel arch.

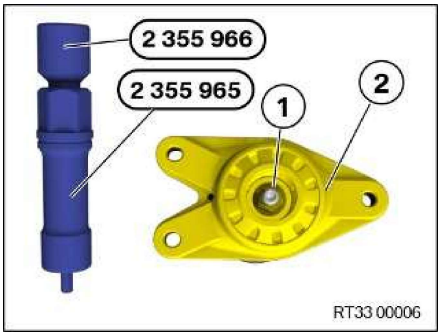
MAIN WORK

4 – Replacing the shock absorber

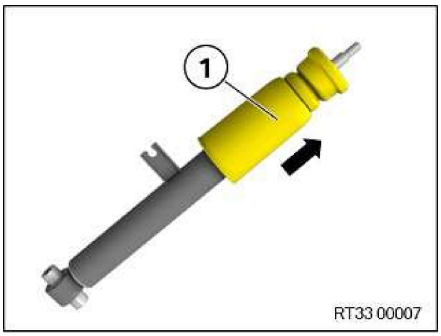
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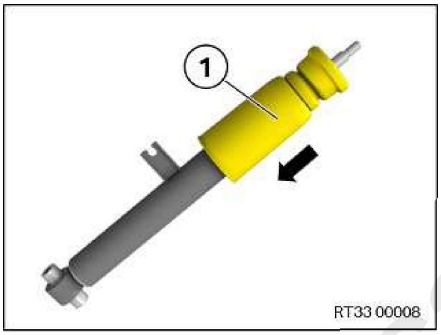
- Remove the centring plate (1).



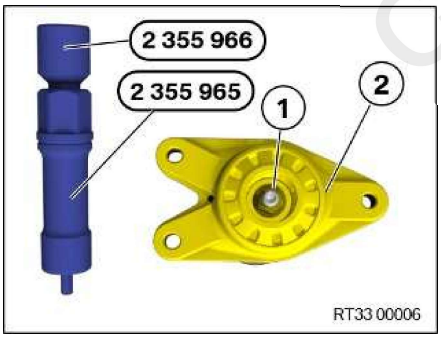
- Release the nut (1) with the special tools and .
- Remove the support bearing (2) from the shock absorber.



- Remove the auxiliary damper (1).



- Check the auxiliary damper (1) for damage and renew if necessary.
- Attach the auxiliary damper (1) to the new shock absorber.

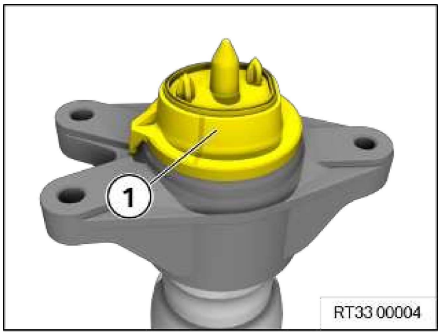


- Attach support bearing (2) to the new shock absorber.
- Renew nut (1).

  Parts: Nut
- Tighten the nut (1) with the special tools and .

Support bearing on shock absorber

M10	Renew nut.	Tightening torque	41 Nm

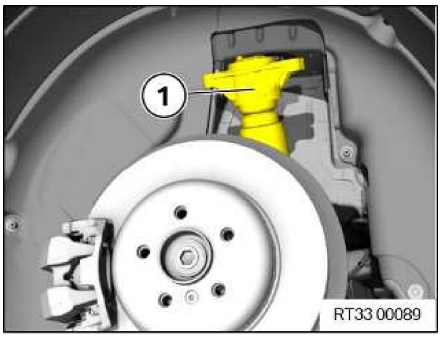


- Check the centering plate (1) for damage and renew if necessary.
- Install the centring plate (1).

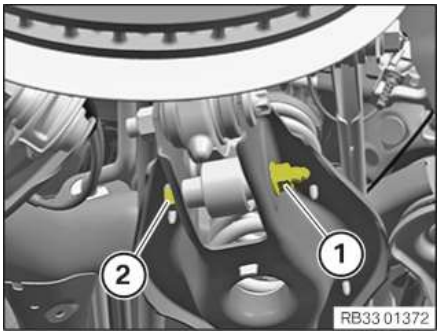
POSTPROCESSES

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5 – Installing the rear shock absorber



- Press shock absorbers (1) together and insert into the wheel arch.



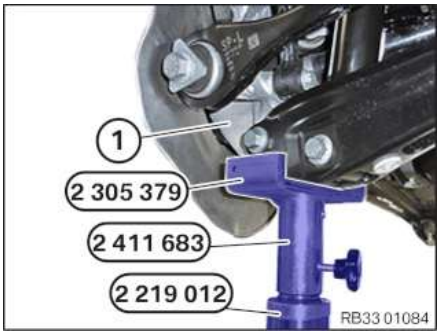
TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Replace the nuts (1) and the bolt (2).

  Parts: Nut, bolt
- Insert the screw (2).
- Tighten the nut (1) hand-tight.

  The tightening of the screw connection with the torque wrench is carried out later in normal position.



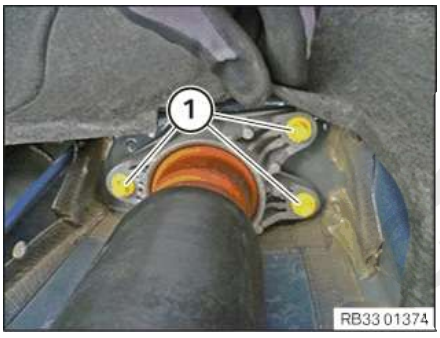
WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).



- Slightly lift the wheel carrier with the special tool 2 219 012. Position the shock absorber on the body in the process.

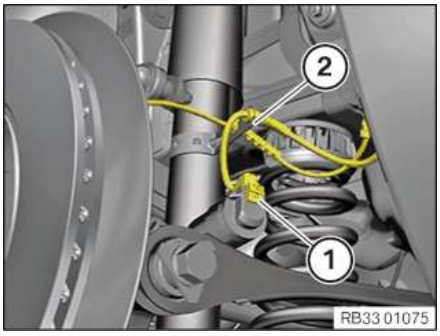
  Do not press against the spring force of the coil spring.
- Renew screws (1).

  Parts: Screws
- Tighten the screws (1).

Nut and locknut/self-locking nut

M8x40	Renew screws.	Tightening torque	28 Nm

- Disconnect the special tool 2 219 012 and set it aside.



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure all existing cables on the holder (2).
- Connect connectors (1) and lock.

6 – Install rear left or right wheel

▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

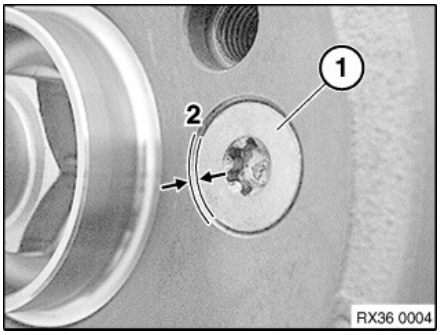
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).



- Check that the mounting bolt (1) for the brake disc is securely seated.

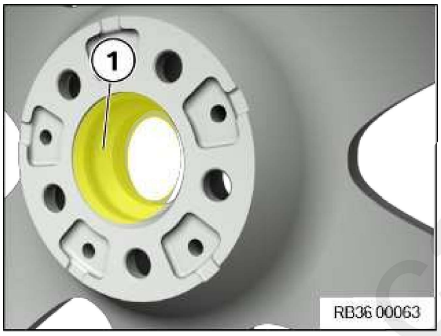
  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233

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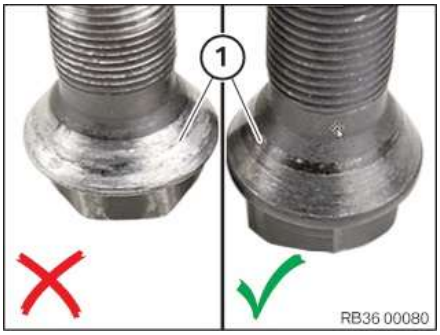


TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.



Check

- **Check wheel bolts for wear.**

Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

  Parts: Wheel bolts

- Clean the wheel bolts (arrows).
- Check the wheel bolts (arrows) and threads for damage, renew the wheel bolts (arrows) if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.	Check	140 Nm
	Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.		

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7 – Measuring the ride height of rear axle and adjusting the normal position

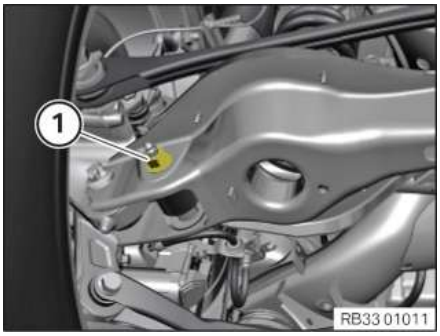


- Set the vehicle down on its wheels (e.g. On an approach ramp).
- Measure the ride height (A).
- Load or unload the vehicle until the ride height (A) is within the tolerance.

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung

Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

8 – Tightening the screw connection of the shock absorber on the camber control arm



TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Release the nut (1) by one turn and tighten it. In doing so, counter support at the screw.

Shock absorber to camber arm

M12	Renew nut and screw. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

9 – Installing the cover of the camber control arm



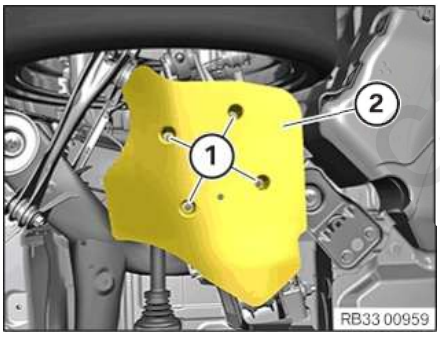
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

Additional Information

Overview of Tightening Torques

Support bearing on shock absorber — Used in step 4

M10	Renew nut.	Tightening torque	41 Nm

Nut and locknut/self-locking nut — Used in step 5

M8x40	Renew screws.	Tightening torque	28 Nm

Brake disc to front wheel hub — Used in step 6

M8	Renew screw.	Tightening torque	16 Nm

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Brake disc to rear wheel hub — Used in step 6

M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts — Used in step 6

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Shock absorber to camber arm — Used in step 8

M12	Renew nut and screw. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

Cover to camber control arm — Used in step 9

M6	Replace nuts.	Tightening torque	6 Nm

Overview of Special Tools

2 219 012 Hydraulic lifter



Common — Used in step 35

Usage	For raising and lowering various vehicle components.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

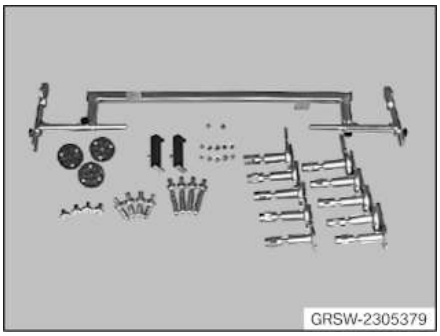
2 411 683 Adapter



Common — Used in step 35

Usage	Adapter for connecting a mounting plate part number: 2 357 071 on universal hydraulic lifting equipment centrically on piston rod.
Included in the tool or work	
Storage location	B76
Replaced by	
In connection with	
SI-Number	

2 305 379 Accessories



Common — Used in step 35

Usage	Holder set for MHT 1200 major assembly table lift and new generation (from 2020)
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	Mobile major assembly table lift MHT 1200 81222184136
SI-Number	06 01 10 (649)

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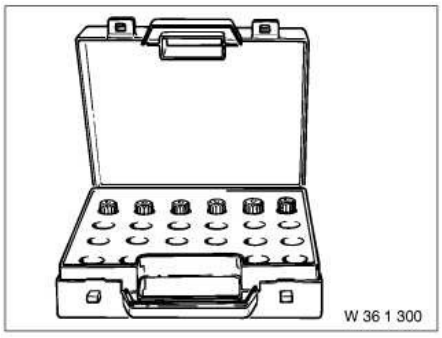
2 344 011 Tool



Common	Used in step 6
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung	Used in step 7
Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

Links

Repair instructions	**Used in step**
00 02 001 Raising the vehicle using a vehicle lift	16

00 02 001 Raising the vehicle using a vehicle lift

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

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

PRELIMINARY WORK

1 – Remove rear left or right wheel

▸ **Removing the wheel**



TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

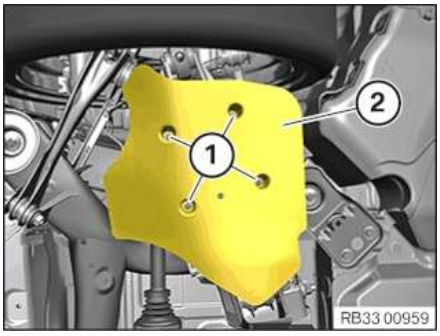
- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

  This process is intended to prevent damage to the brake disc.



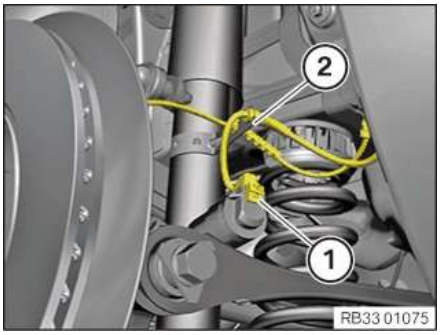
- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

2 – Removing the cover of camber control arm



- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

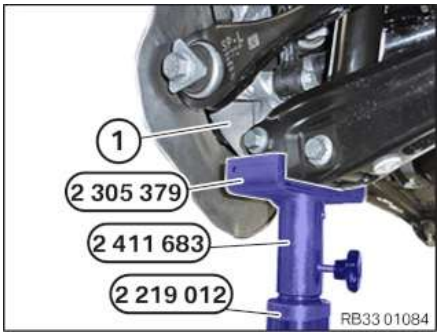
3 – Remove rear shock absorber



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Release all the existing cables from holder (2).
- Unlock plug connection (1) and disconnect.



WARNING

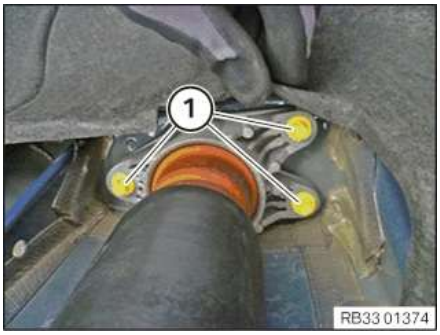
Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

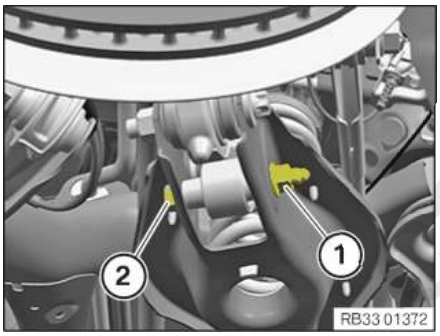
- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).
- Support the wheel carrier (1) with the special tool 2 219 012.

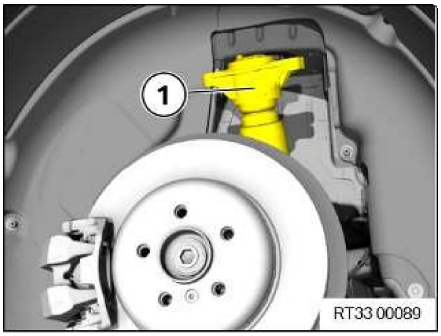
  Do not press against the spring force of the coil spring.



- Loosen screws (1).
- Disconnect the special tool 2 219 012 and set it aside.



- Unfasten nut (1).
- Pull out bolt (2).

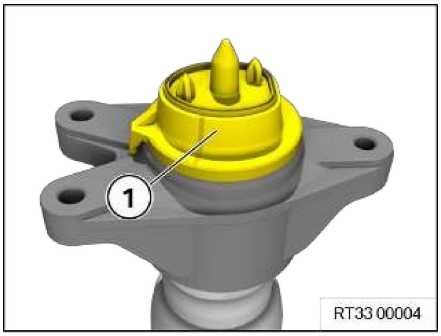


- Press the shock absorbers (1) together and guide upwards out of the wheel arch.

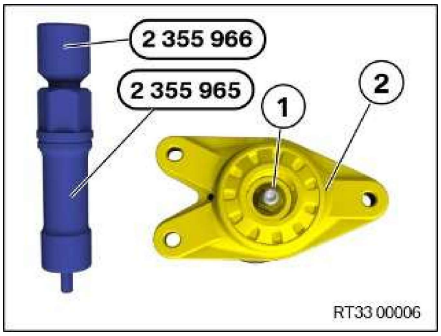
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MAIN WORK

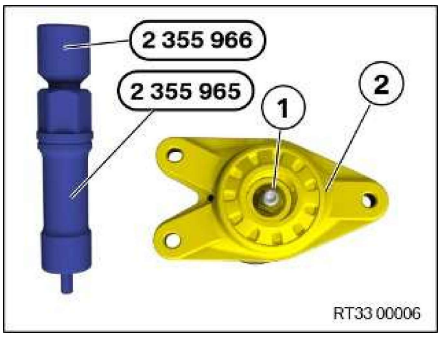
4 – Replace support bearing



- Remove the centring plate (1).



- Release the nut (1) with the special tools and .
- Remove the support bearing (2) from the shock absorber.

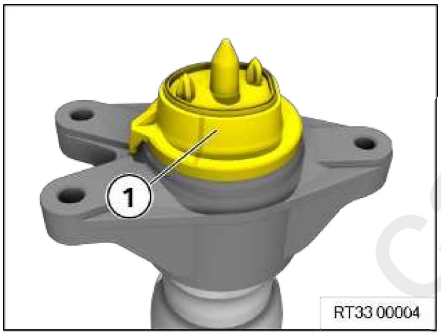


- Attach new support bearing (2) to the shock absorber.
- Renew nut (1).

  Parts: Nut
- Tighten the nut (1) with the special tools and .

Support bearing on shock absorber

M10	Renew nut.	Tightening torque	41 Nm

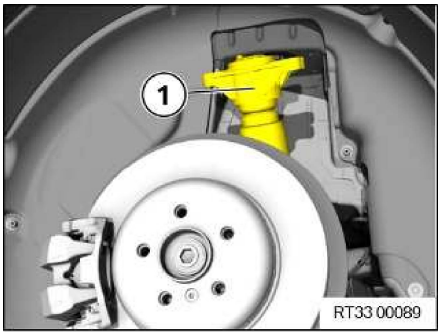


- Check the centering plate (1) for damage and renew if necessary.
- Install the centring plate (1).

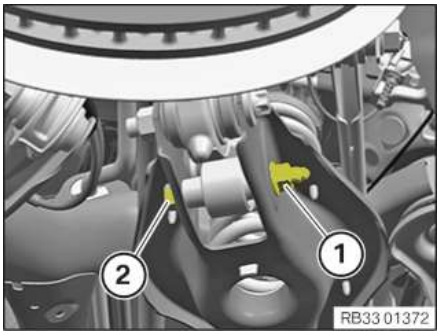
POSTPROCESSES

5 – Installing the rear shock absorber

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- Press shock absorbers (1) together and insert into the wheel arch.



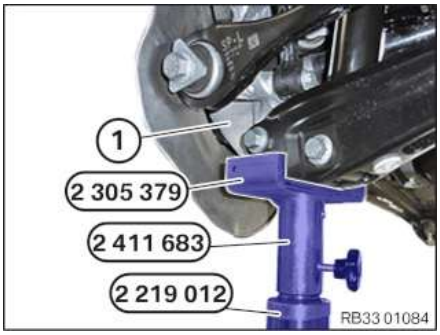
TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Replace the nuts (1) and the bolt (2).

  Parts: Nut, bolt
- Insert the screw (2).
- Tighten the nut (1) hand-tight.

  The tightening of the screw connection with the torque wrench is carried out later in normal position.



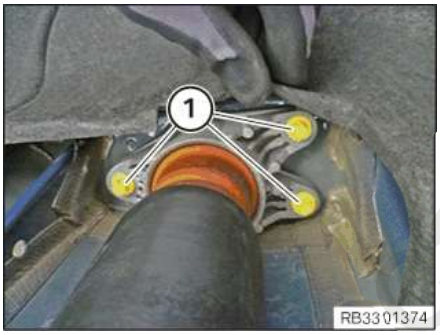
WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).



- Slightly lift the wheel carrier with the special tool 2 219 012. Position the shock absorber on the body in the process.

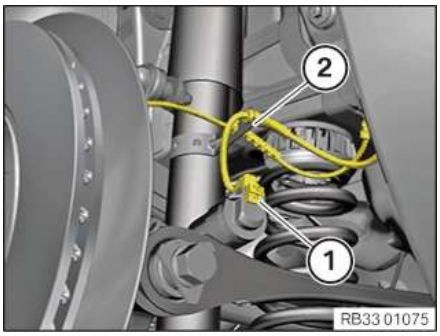
  Do not press against the spring force of the coil spring.
- Renew screws (1).

  Parts: Screws
- Tighten the screws (1).

Nut and locknut/self-locking nut

M8x40	Renew screws.	Tightening torque	28 Nm

- Disconnect the special tool 2 219 012 and set it aside.



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure all existing cables on the holder (2).
- Connect connectors (1) and lock.

6 – Install rear left or right wheel

▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

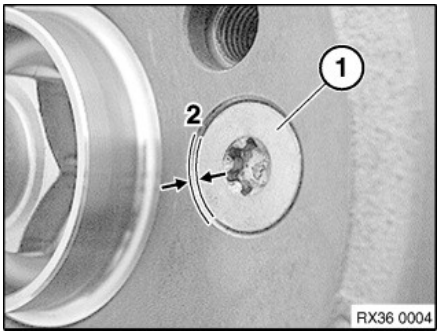
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).



- Check that the mounting bolt (1) for the brake disc is securely seated.

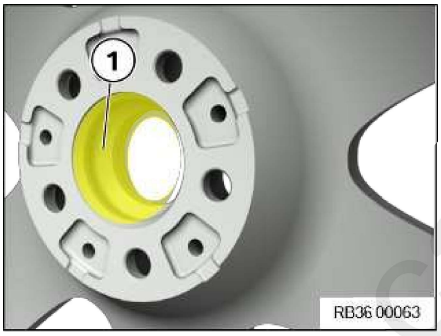
  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233

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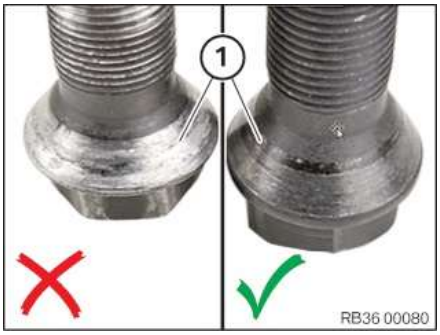


TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.



Check

- **Check wheel bolts for wear.**

Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

  Parts: Wheel bolts

- Clean the wheel bolts (arrows).
- Check the wheel bolts (arrows) and threads for damage, renew the wheel bolts (arrows) if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.	Check	140 Nm
	Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.		

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7 – Measuring the ride height of rear axle and adjusting the normal position

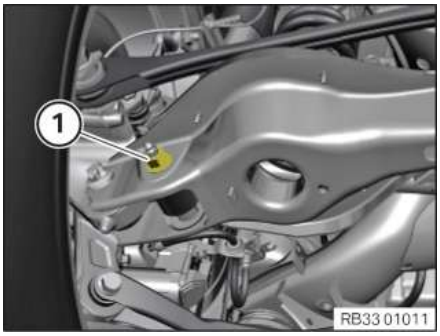


- Set the vehicle down on its wheels (e.g. On an approach ramp).
- Measure the ride height (A).
- Load or unload the vehicle until the ride height (A) is within the tolerance.

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung

Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

8 – Tightening the screw connection of the shock absorber on the camber control arm



TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Release the nut (1) by one turn and tighten it. In doing so, counter support at the screw.

Shock absorber to camber arm

M12	Renew nut and screw. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

9 – Installing the cover of the camber control arm



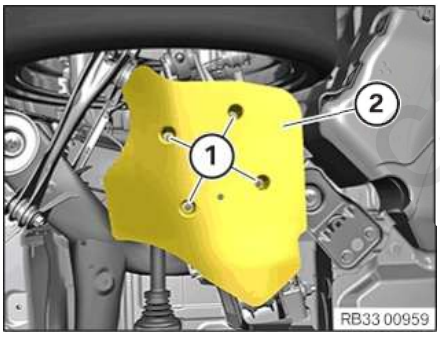
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

Additional Information

Overview of Tightening Torques

Support bearing on shock absorber — Used in step 4

M10	Renew nut.	Tightening torque	41 Nm

Nut and locknut/self-locking nut — Used in step 5

M8x40	Renew screws.	Tightening torque	28 Nm

Brake disc to front wheel hub — Used in step 6

M8	Renew screw.	Tightening torque	16 Nm

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Brake disc to rear wheel hub — Used in step 6

M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts — Used in step 6

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Shock absorber to camber arm — Used in step 8

M12	Renew nut and screw. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

Cover to camber control arm — Used in step 9

M6	Replace nuts.	Tightening torque	6 Nm

Overview of Special Tools

2 219 012 Hydraulic lifter



Common — Used in step 35

Usage	For raising and lowering various vehicle components.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

2 411 683 Adapter

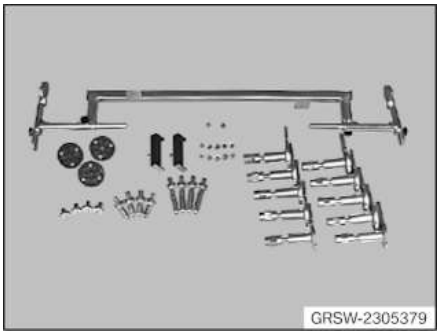


Common — Used in step 35

Usage	Adapter for connecting a mounting plate part number: 2 357 071 on universal hydraulic lifting equipment centrically on piston rod.
Included in the tool or work	
Storage location	B76
Replaced by	
In connection with	
SI-Number	

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2 305 379 Accessories



Common	Used in step 35
Usage	Holder set for MHT 1200 major assembly table lift and new generation (from 2020)
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	Mobile major assembly table lift MHT 1200 81222184136
SI-Number	06 01 10 (649)

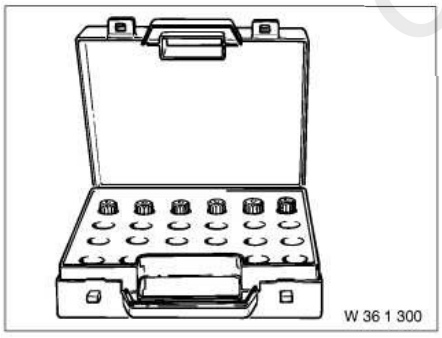
2 344 011 Tool



Common	Used in step 6
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

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G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung	Used in step 7
Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	16

00 02 001 Raising the vehicle using a vehicle lift

cardiagn.com

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

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

NOTICE

Description is for left component only. Procedure on the right side is identical.

PRELIMINARY WORK

1 – Remove rear left or right wheel

▸ **Removing the wheel**



TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

  This process is intended to prevent damage to the brake disc.

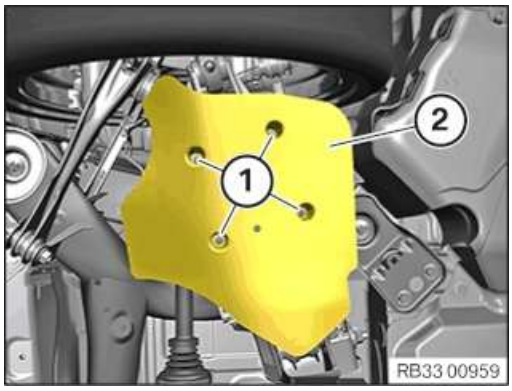


- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

2 – Removing the cover of camber control arm

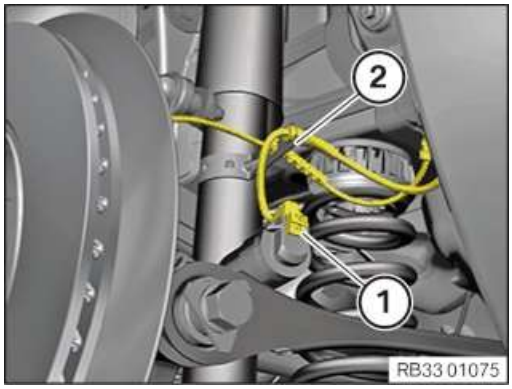
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2 – Removing the cover of camber control arm



- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

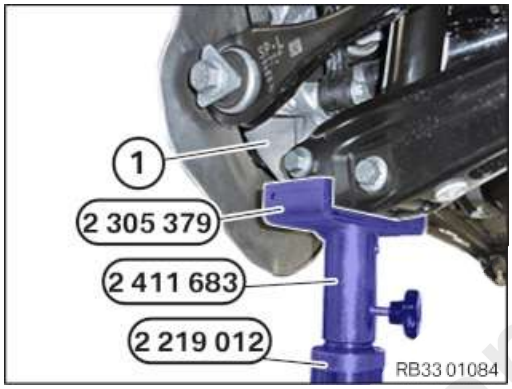
3 – Releasing the rear shock absorber from the body



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Release all the existing cables from holder (2).
- Unlock plug connection (1) and disconnect.



WARNING

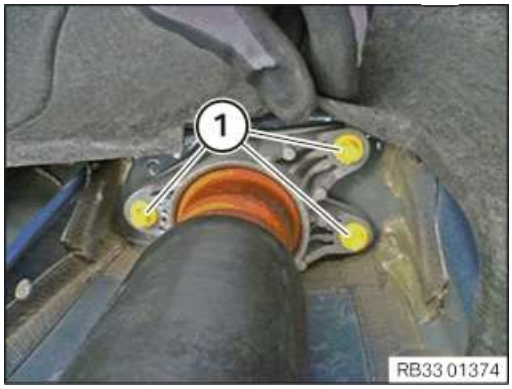
Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).
- Support the wheel carrier (1) with the special tool 2 219 012.

  Do not press against the spring force of the coil spring.



- Loosen screws (1).
- Disconnect the special tool 2 219 012 and set it aside.

MAIN WORK

4 – Remove coil spring

▸ **Preparing the special tool (G22/G23/G26/G42)**

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TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.



- **Basic version:**

  Spindle = Special tools and

  Upper spring cup = Special tool 5 A36 B04

  Lower spring cup = Special tool 5 A36 B05

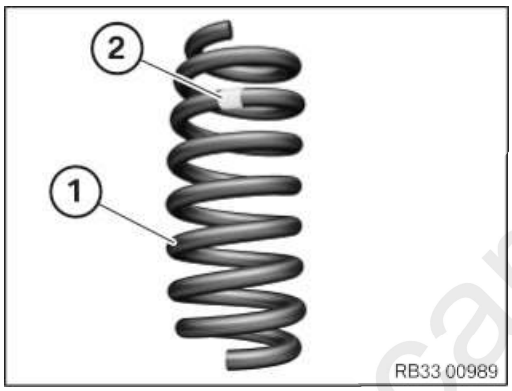


- **BMW M Performance Automobile (Sport) and Alpina:**

  Spindle = special tools , and

  Upper spring cup = Special tool

  Lower spring cup = Special tool



TECHNICAL INFORMATION

Incorrect assembly is possible. Ensure correct installation position.

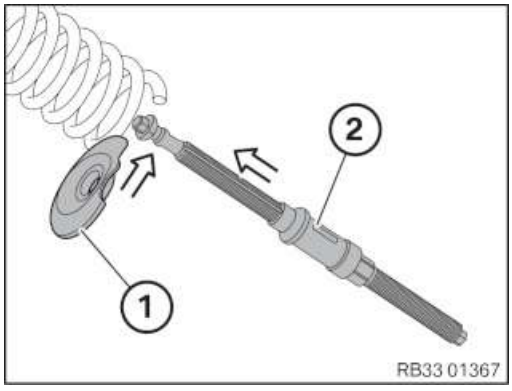
- The installation position of the coil spring(1) is marked with a label (2).

  The label (2) is attached at the top end of the coil spring (1) and is marked as “top”

- Check coil spring (1) for availability of label (2)

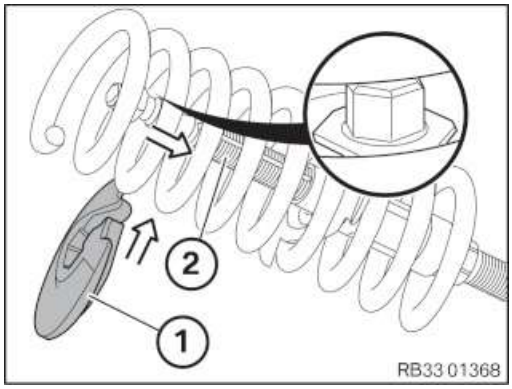
  If the label (2) on the installed coil spring (1) is missing and it has to be fixed after repair, then the installation position of the coil spring (1) must be marked necessarily.

Note: Mark the installation position of the coil spring, by attaching an adhesive tape at the top end of spring.



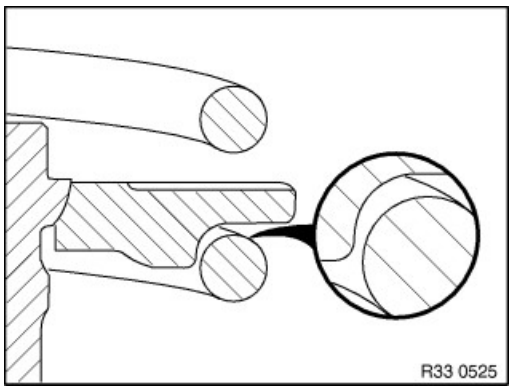
- Insert the bottom spring cup (1) sideways in the direction of arrow in the coil spring and turn up to the lowest coil.
- Insert the spindle (2) from below in the direction of arrow through the camber control arm and the bottom spring cup (1).

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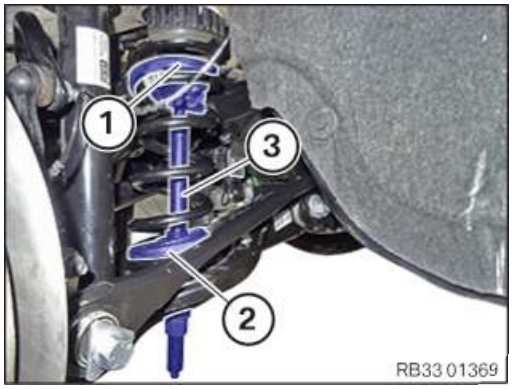


- Insert the top spring cup (1) sideways in the direction of arrow in the coil spring, feed in to the spindle (2) and turn it upwards as far as possible.

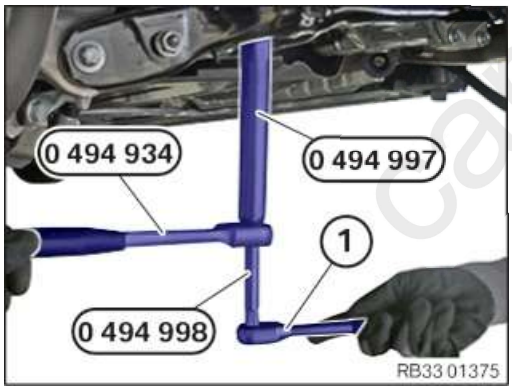
  Check the position of the spindle (2) with the hexagon head in the top spring cup (1) and correct if necessary.
- Pull the spindle (2) downwards in the direction of arrow.



- Check the position of the spring cup in the coil spring at the top and bottom and, if necessary, correct it.



- Align the top spring cup (1) and the bottom spring cup (2) with the spindle (3) in the centre to reach the highest possible contact surface on the coil spring.



RISK OF DAMAGE

Compression of coil spring to solid height.

Damage of the coil spring.

- Do not compress coil spring to solid height.
- Make sure there is a gap between the spring coils.

- Tension the coil spring using special tools and . In doing so, counter support at the spindle with the special tool and the standard tool (1).

  Standard tool:



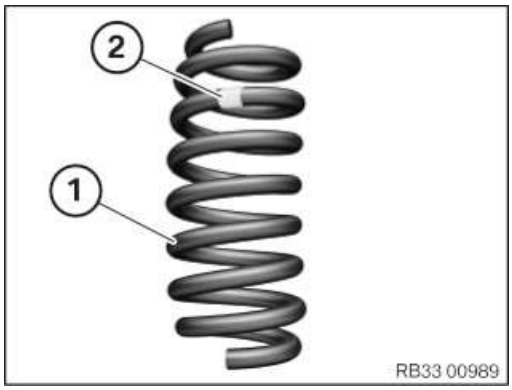
- Feed out coil spring on upper spring pad (1). If necessary, remove upper spring pad (1).

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- Guide out and remove the coil spring (1) toward the top in the direction of the arrow.

5 – Renewing the coil spring

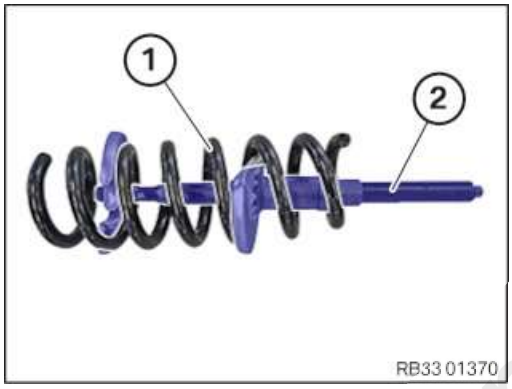


TECHNICAL INFORMATION

Incorrect assembly is possible. Ensure correct installation position.

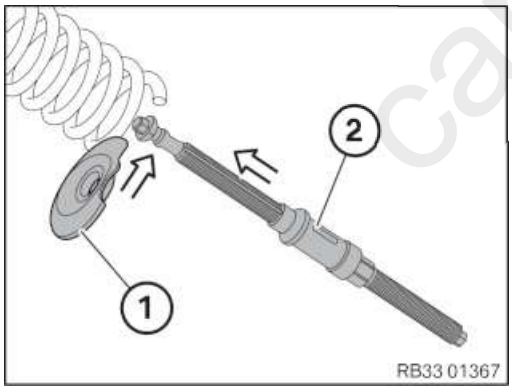
- The mounting orientation of coil spring (1) is identified with label (2).

  The label (2) is mounted on the upper coil spring end.

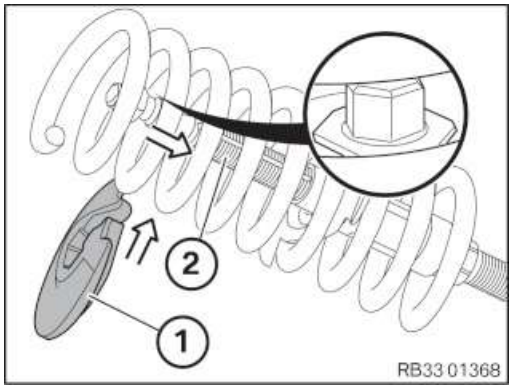


- Relieve tension on coil spring (1) by releasing spindle (2).
- Renew coil spring (1).

  Parts: Coil spring

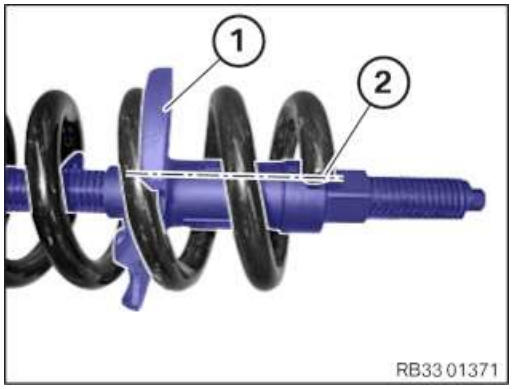


- Insert the bottom spring cup (1) sideways in the direction of arrow in the coil spring and turn up to the lowest coil.
- Feed in spindle (2) in direction of arrow through lower spring cup (1).

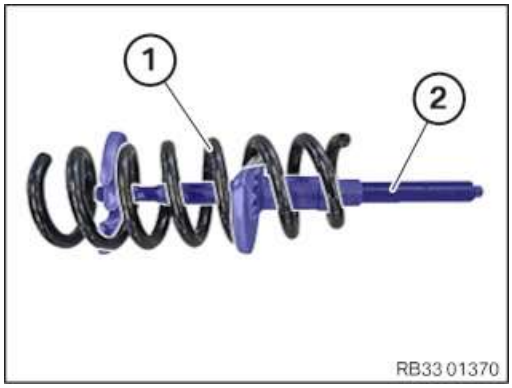


- Insert upper spring cup (1) at side into the coil spring, feed in on spindle (2) and turn as far upwards as possible.
- Check the position of spindle (2) with the hexagon in upper spring cup (1), correct if necessary.
- Pull the spindle (2) downwards in the direction of arrow.

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- Align lower spring cup (1) with the opening for lower coil spring end (2).



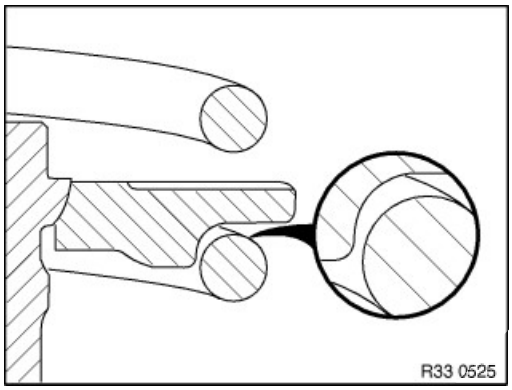
RISK OF DAMAGE

Compression of coil spring to solid height.

Damage of the coil spring.

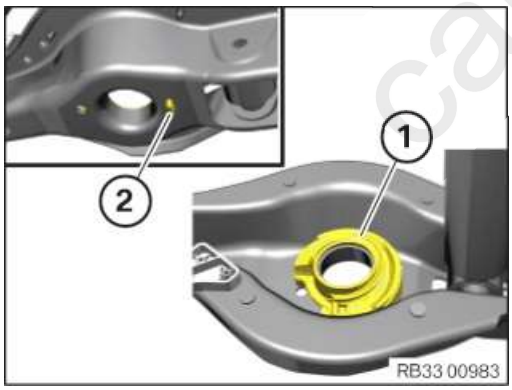
- Do not compress coil spring to solid height.
- Make sure there is a gap between the spring coils.

- Tension coil spring (1) with spindle (2).



- Check the position of the spring cup in the coil spring at the top and bottom and, if necessary, correct it.

6 – Install the coil springs

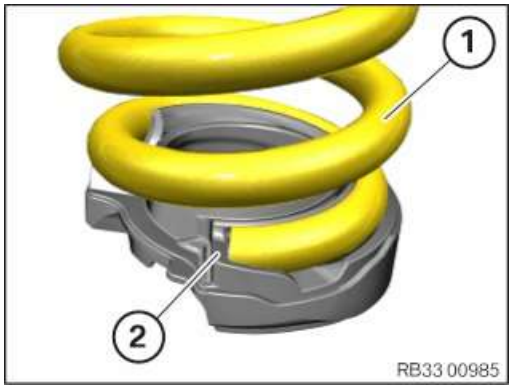


- Check bottom spring pad (1) for damage, renew if necessary.
- Check the position of the lower spring pad (1) with the plastic tab (2) on the camber control arm, correct if necessary.



- Feed in the coil spring (1) in direction of arrow from the top and lock.

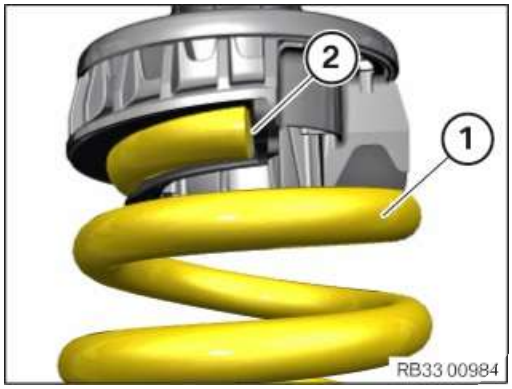
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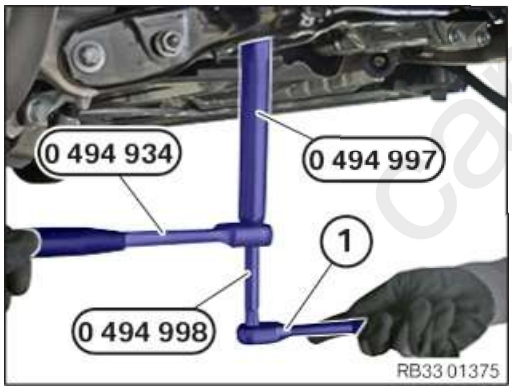
- Position the coil spring (1) in such a way that the coil spring end is in form-fit contact with the lower spring pad (2).



- Feed in the spring pad at the top (1).



- Position the upper spring pad on the coil spring (1) in such a way that the coil spring end (2) is in form-fit contact with the upper spring pad.



- Slacken the coil spring with the special tools and . In doing so, counter support at the spindle with the special tool and the standard tool (1).

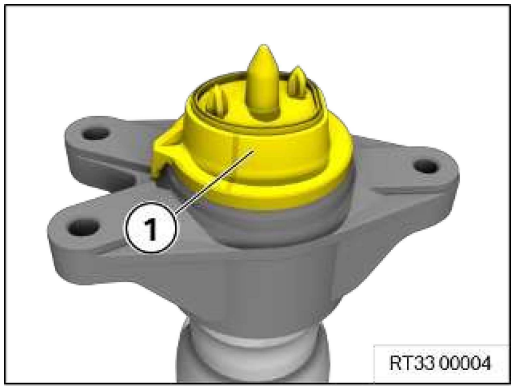
  Standard tool:

  Pay attention to the mounting orientation when releasing the coil spring, correct if necessary.
- Remove special tools.

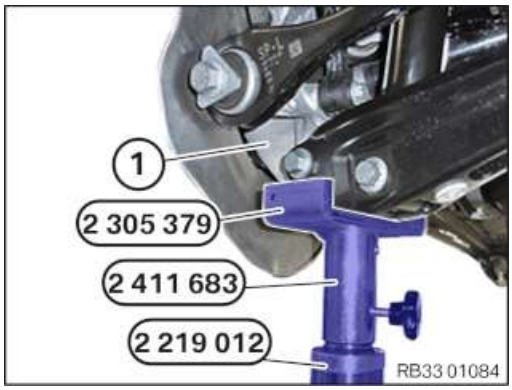
POSTPROCESSES

7 – Securing shock absorber at rear to body

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- Check the centering plate (1) for damage, renew if necessary.
- Check the position of the centering plate (1), correct if necessary.



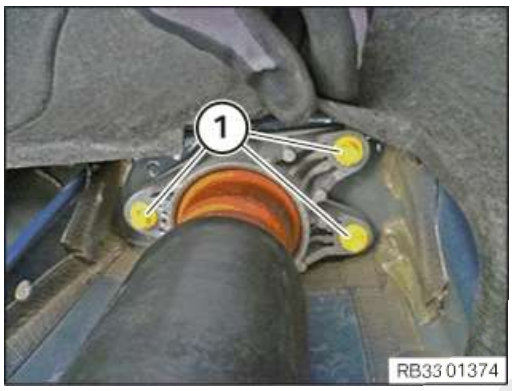
WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).



- Slightly lift the wheel carrier with the special tool 2 219 012. Position the shock absorber on the body in the process.

  Do not press against the spring force of the coil spring.

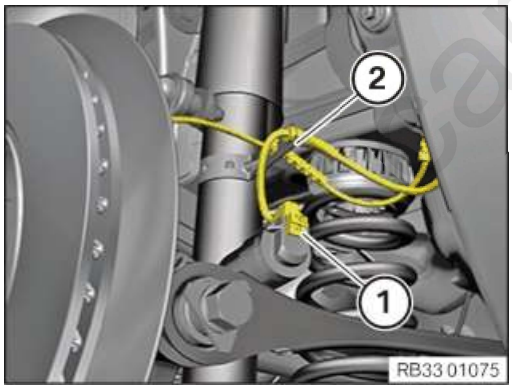
- Renew screws (1).

  Parts: Screws

- Tighten the screws (1).

Nut and locknut/self-locking nut

M8x40	Renew screws.	Tightening torque	28 Nm



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure all existing cables on the holder (2).
- Connect connectors (1) and lock.

8 – Installing the cover of the camber control arm



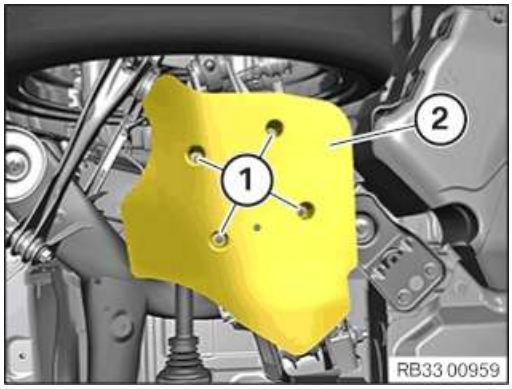
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

9 – Install rear left or right wheel

▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

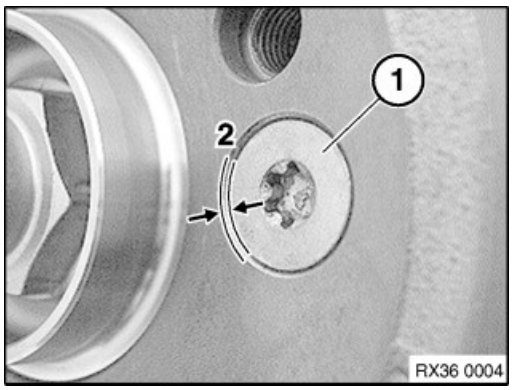
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).



- Check that the mounting bolt (1) for the brake disc is securely seated.

  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

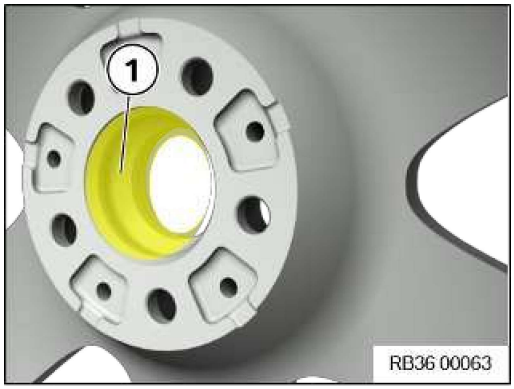
Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm

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TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

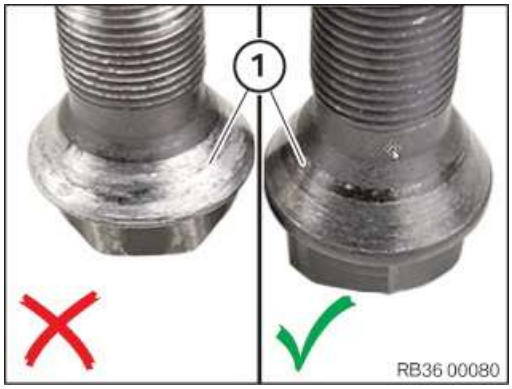
A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.

Check

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- **Check wheel bolts for wear.**

Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

  Parts: Wheel bolts

- Clean the wheel bolts (arrows).
- Check the wheel bolts (arrows) and threads for damage, renew the wheel bolts (arrows) if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.	Check	140 Nm
	Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.		

Additional Information

Overview of Tightening Torques

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Nut and locknut/self-locking nut			Used in step 7
M8x40	Renew screws.	Tightening torque	28 Nm

Cover to camber control arm			Used in step 8
M6	Replace nuts.	Tightening torque	6 Nm

Brake disc to front wheel hub			Used in step 9
M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub			Used in step 9
M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts			Used in step 9
M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Overview of Special Tools

2 219 012 Hydraulic lifter



Common	Used in step 37
Usage	For raising and lowering various vehicle components.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

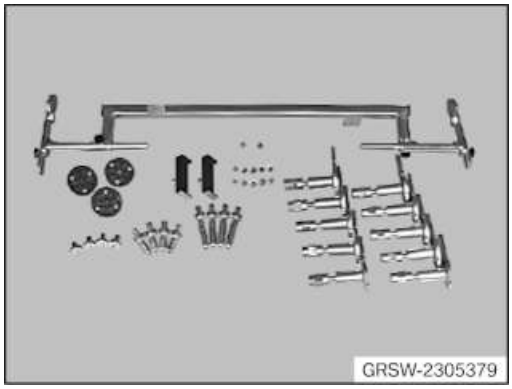
2 411 683 Adapter



Common	Used in step 37
Usage	Adapter for connecting a mounting plate part number: 2 357 071 on universal hydraulic lifting equipment centrically on piston rod.
Included in the tool or work	
Storage location	B76
Replaced by	
In connection with	
SI-Number	

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2 305 379 Accessories



Common	Used in step 37
Usage	Holder set for MHT 1200 major assembly table lift and new generation (from 2020)
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	Mobile major assembly table lift MHT 1200 81222184136
SI-Number	06 01 10 (649)

5 A36 B04 Spring cups



Common	Used in step 4
Usage	Spring cup for disassembly and installation of suspension springs on the rear axle in connection with the spring tensioner basic unit, SWZ 33 5 010 or SWZ 33 5 100.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 23 21 (851)

5 A36 B05 Spring cups



Common	Used in step 4
Usage	Spring cup for disassembly and installation of suspension springs on the rear axle in connection with the spring tensioner basic unit, SWZ 33 5 010 or SWZ 33 5 100.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 23 21 (851)

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2 344 011 Tool



Common	Used in step 9
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

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Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	

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

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

WARNING

Motor vehicle may slip off the vehicle hoist if the weight is distributed unevenly.

Danger! Life-threatening injuries!

- Ensure there is a specific weight compensation on the motor vehicle.

PRELIMINARY WORK

1 – Removing the rear left and right wheels

NOTICE

Perform the operations on the left and right side.

▸ **Removing the wheel**

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TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

  This process is intended to prevent damage to the brake disc.



- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

2 – Remove complete exhaust system

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

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CAUTION

Heavy component.

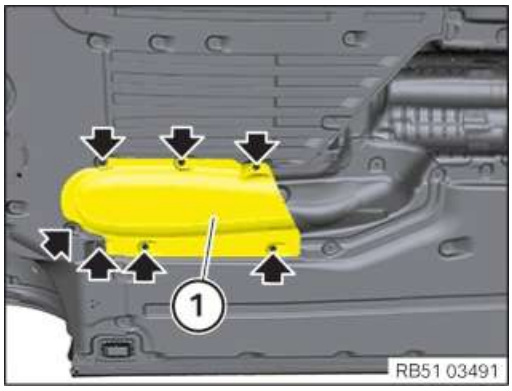
Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

▸ **Remove the underbody panelling of the transmission on the side**

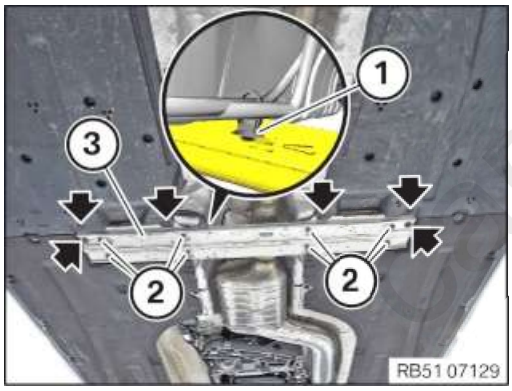
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Remove screws (arrows).
- Remove the underbody panelling (1).

▸ **Remove the connecting support from the tunnel**



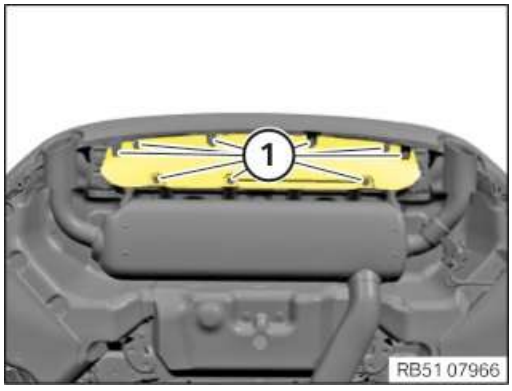
- Remove screws (arrows).

NOTICE

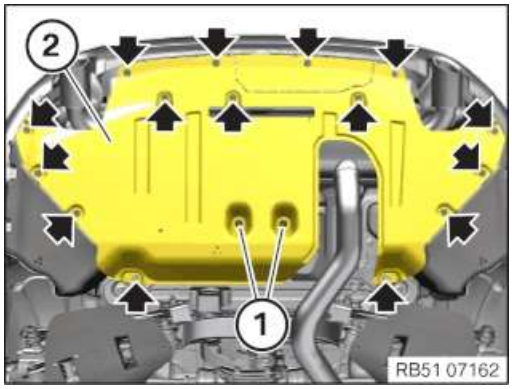
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

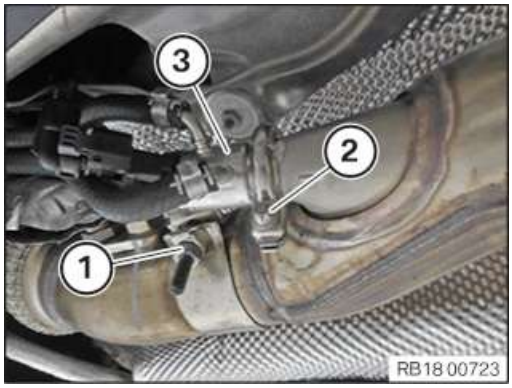
▸ **Removing the rear diffuser**



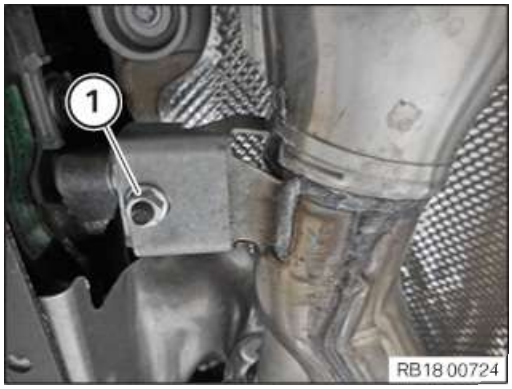
- **Version 1:**
- Release the screws and nuts (1).
- Remove the diffuser.



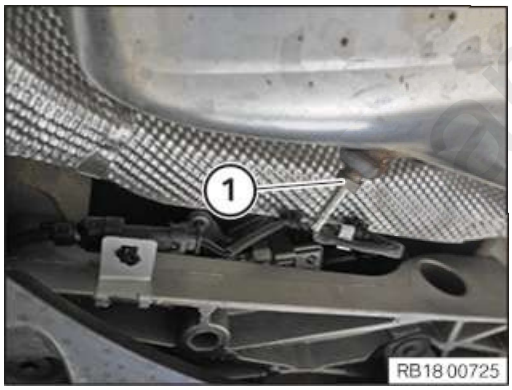
- **Version 2:**
- Loosen nuts (1).
- Remove screws (arrows).
- Guide out and remove rear diffuser (2).



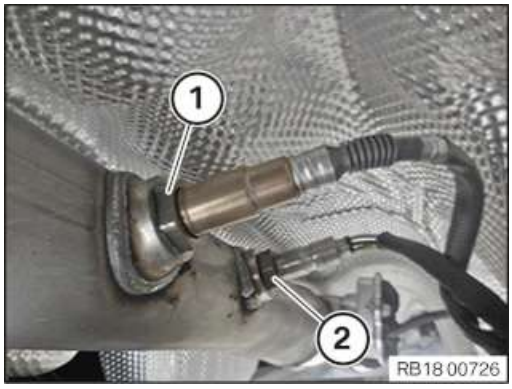
- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3) from the exhaust system and set it aside.



- Loosen nut (1).

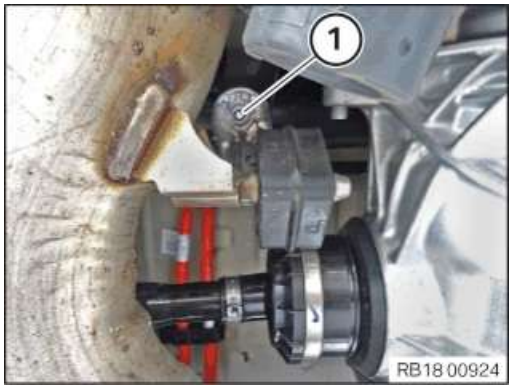


- Detach the exhaust temperature sensor (1) from the exhaust system.

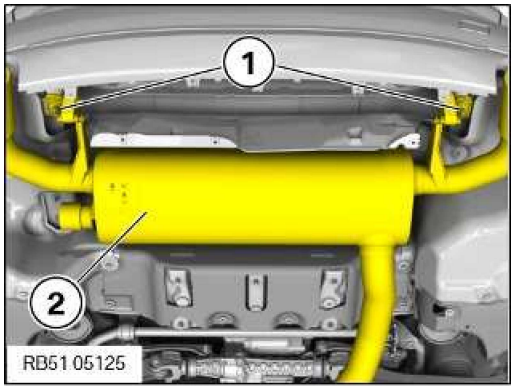


- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.

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- Release the nut (1) on the rear axle support.



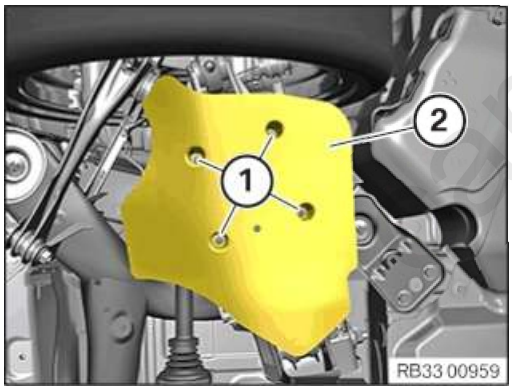
- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

3 – Remove the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover of camber control arm**



- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

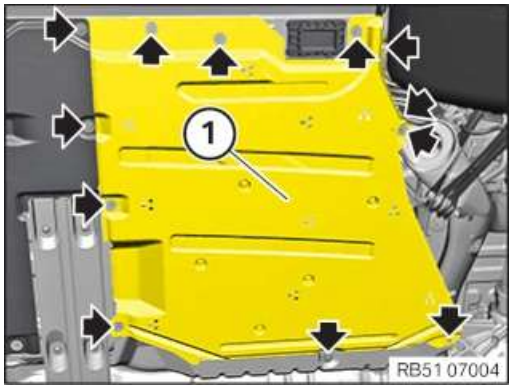
4 – Remove tank cover on left and right

NOTICE

Perform the operations on the left and right side.

▸ **Removing the tank cover**

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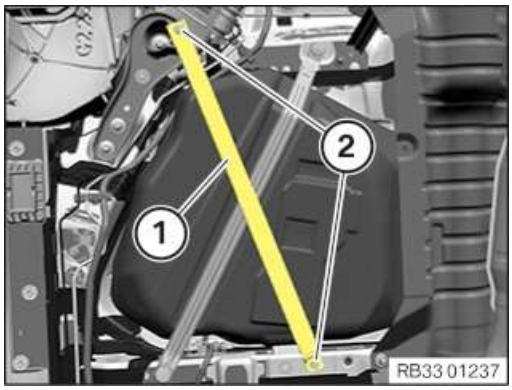
- Release all bolts (arrows).
- Remove the tank cover (1).

5 – Remove reinforcement strut on the left and right

NOTICE

Perform the operations on the left and right side.

▸ **Remove stiffening strut**



NOTICE

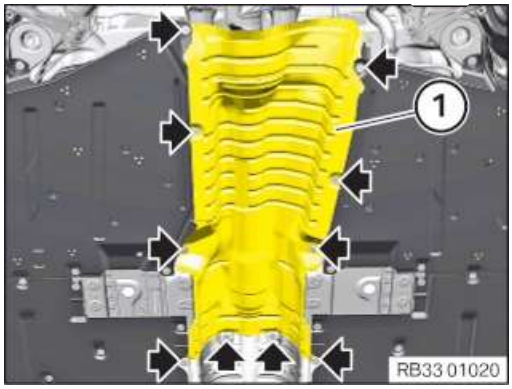
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen screws (2).
- Remove bracing strut (1).

6 – Remove heat shield at rear.

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Loosen bolts and nuts (arrows).
- Remove the rear heat shield (1).

7 – Releasing the propeller shaft from the rear axle differential

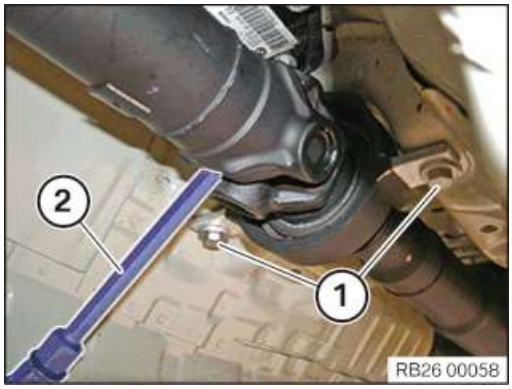
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RISK OF DAMAGE

Damage to propeller shaft during removal.

Non-observance of the removal guidelines for the propeller shaft on the rear axle differential may cause severe damage.

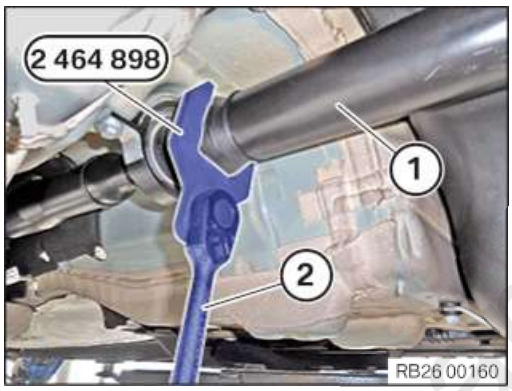
- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened on the recessed nut only and exclusively in the direction of rotation otherwise the anti-twist lock of the bi-hexagonal flange nut is damaged.
- In the event of a damaged anti-twist lock on the bi-hexagonal flange nut: Replace the rear axle differential.



- Loosen screws (1).

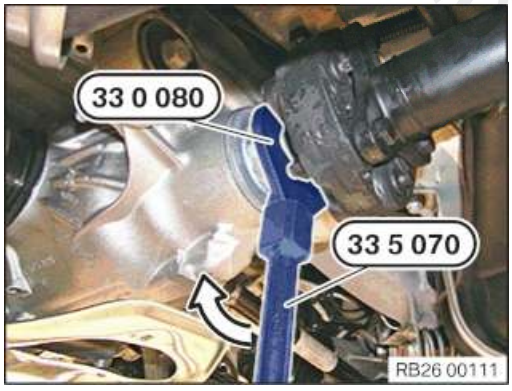
  Do not remove bolts (1) yet.
- **Version A (propeller shaft with wide universal joint):**

  Secure the propeller shaft against twisting at the centre universal joint using a suitable tool (2).



- **Version B (propeller shaft with narrow universal joint):**

  Secure the propeller shaft (1) against twisting by using the special tool 2 464 898 and a suitable tool (2) at the central universal joint.



RISK OF DAMAGE

Damage to rear axle differential.

Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

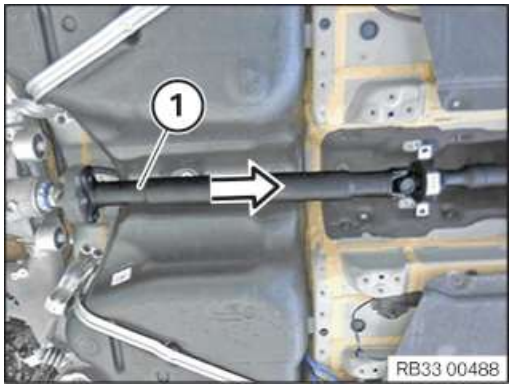
- Do not use the double hexagon head flange nut as counter support.

- Loosen the recessed nut **against** the direction of travel **in clockwise direction** using special tools 0 495 554 (33 5 070) and .

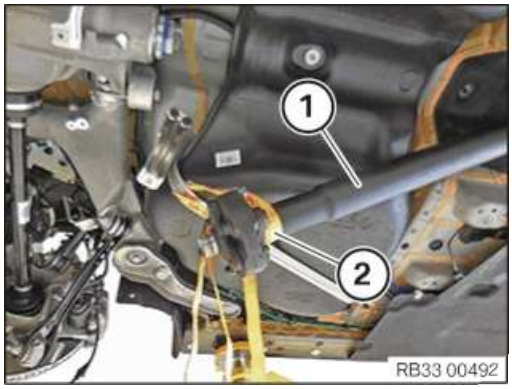
  The bi-hexagonal flange nut must not be used for counter-holding.



- Loosen screws (1) on centre mount.

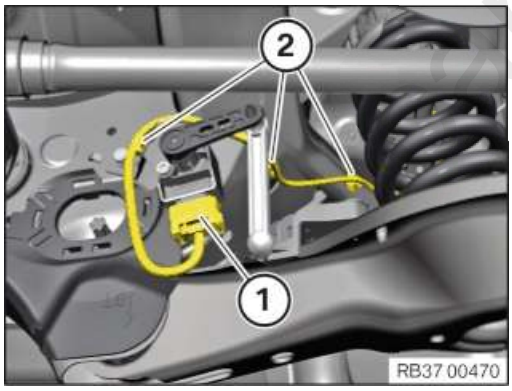


- Loosen the propeller shaft (1) from the rear axle differential in the direction of the arrow.



- Tie up the propeller shaft (1) using a tensioning strap (2).

8 – Releasing the cable for the ride height sensor from the rear axle support



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Unlock the plug connection (1) from the ride height sensor and disconnect.
- Release the cable with the holders (2) from the rear axle support.

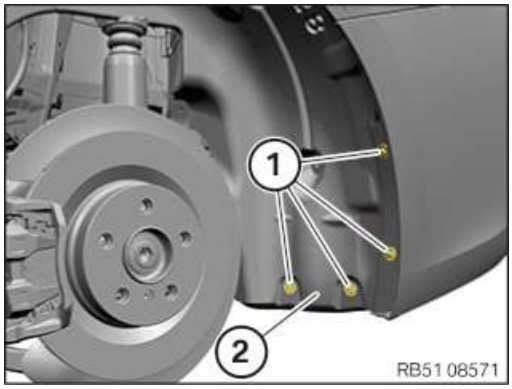
9 – Loosen cable of rear left and right RPM sensor

NOTICE

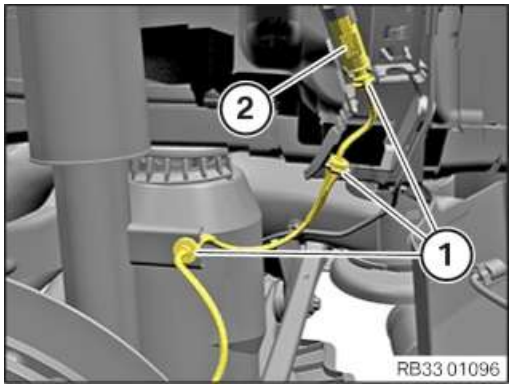
Perform the operations on the left and right side.

▸ **Release the cable of the rear wheel speed sensor**

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- Loosen screws (1).
- Set the wheel arch cover (2) aside.



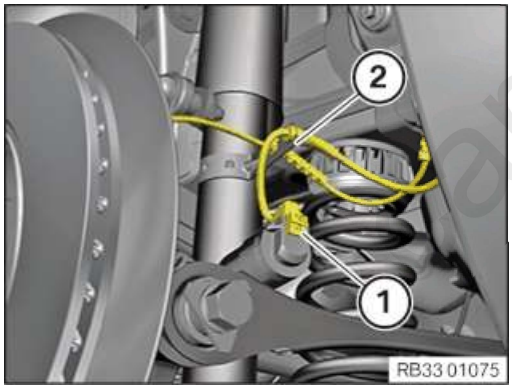
- Detach the wheel speed sensor cable from the brackets (1).
- Unlock plug connection (2) and disconnect.

10 – Release the shock absorbers at the rear left and right from the body

NOTICE

Perform the operations on the left and right side.

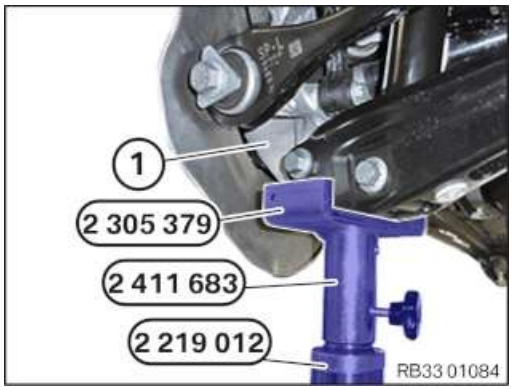
▸ **Releasing the rear shock absorber from the body**



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Release all the existing cables from holder (2).
- Unlock plug connection (1) and disconnect.



WARNING

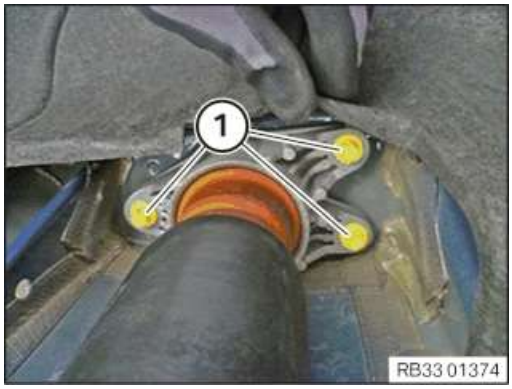
Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).
- Support the wheel carrier (1) with the special tool 2 219 012.

  Do not press against the spring force of the coil spring.



- Loosen screws (1).
- Disconnect the special tool 2 219 012 and set it aside.

11 – Remove the coil spring on the left and right

NOTICE

Perform the operations on the left and right side.

▸ **Remove coil spring**

▹ **Preparing the special tool (G22/G23/G26/G42)**

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.



- **Basic version:**

  Spindle = Special tools and

  Upper spring cup = Special tool 5 A36 B04

  Lower spring cup = Special tool 5 A36 B05



- **BMW M Performance Automobile (Sport) and Alpina:**

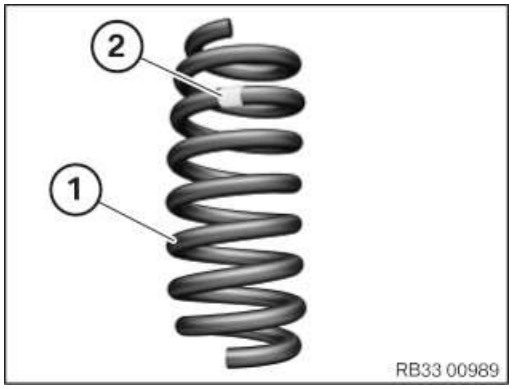
  Spindle = special tools , and

  Upper spring cup = Special tool

  Lower spring cup = Special tool

◃

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TECHNICAL INFORMATION

Incorrect assembly is possible. Ensure correct installation position.

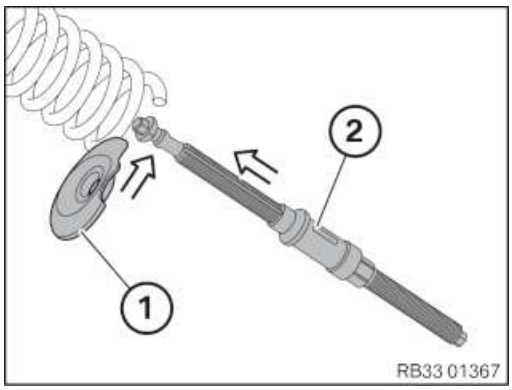
- The installation position of the coil spring(1) is marked with a label (2).

  The label (2) is attached at the top end of the coil spring (1) and is marked as “top”

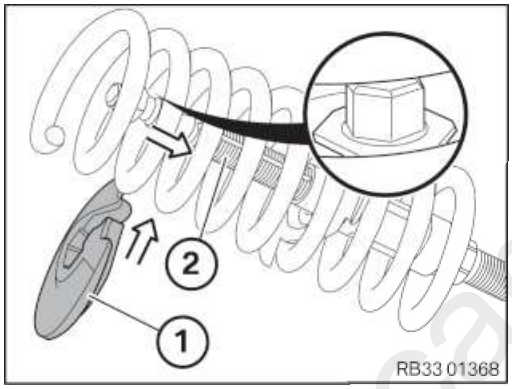
- Check coil spring (1) for availability of label (2)

  If the label (2) on the installed coil spring (1) is missing and it has to be fixed after repair, then the installation position of the coil spring (1) must be marked necessarily.

Note: Mark the installation position of the coil spring, by attaching an adhesive tape at the top end of spring.



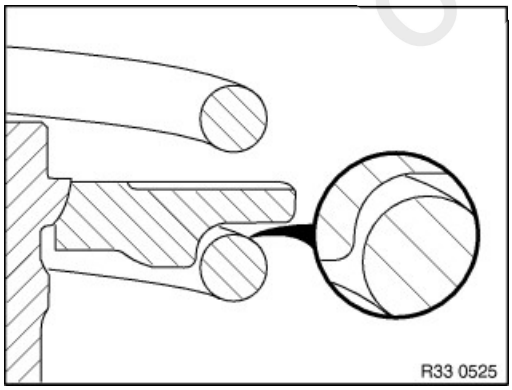
- Insert the bottom spring cup (1) sideways in the direction of arrow in the coil spring and turn up to the lowest coil.
- Insert the spindle (2) from below in the direction of arrow through the camber control arm and the bottom spring cup (1).



- Insert the top spring cup (1) sideways in the direction of arrow in the coil spring, feed in to the spindle (2) and turn it upwards as far as possible.

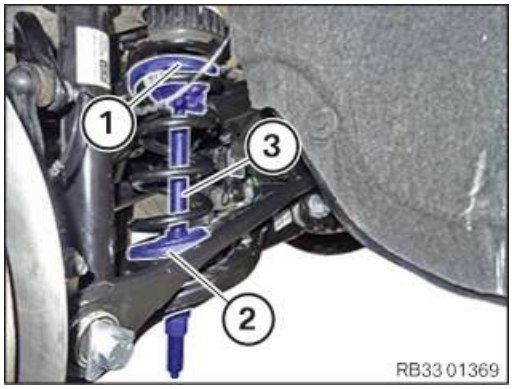
  Check the position of the spindle (2) with the hexagon head in the top spring cup (1) and correct if necessary.

- Pull the spindle (2) downwards in the direction of arrow.

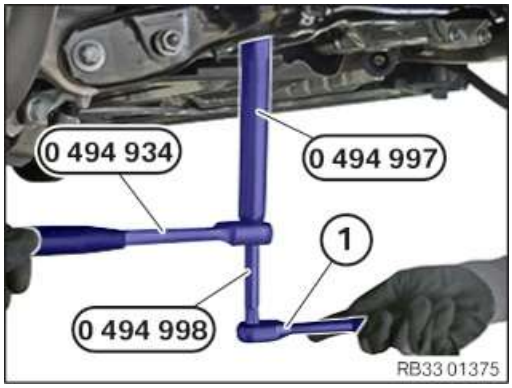


- Check the position of the spring cup in the coil spring at the top and bottom and, if necessary, correct it.

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- Align the top spring cup (1) and the bottom spring cup (2) with the spindle (3) in the centre to reach the highest possible contact surface on the coil spring.



RISK OF DAMAGE

Compression of coil spring to solid height.

Damage of the coil spring.

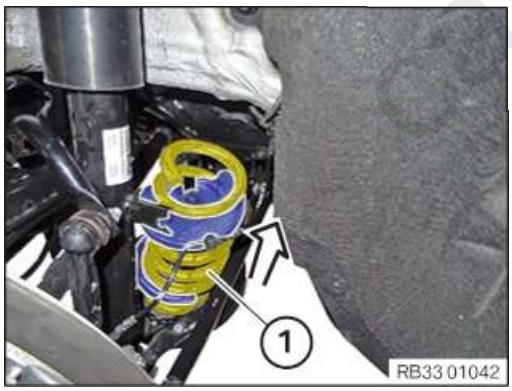
- Do not compress coil spring to solid height.
- Make sure there is a gap between the spring coils.

- Tension the coil spring using special tools and . In doing so, counter support at the spindle with the special tool and the standard tool (1).

Standard tool:



- Feed out coil spring on upper spring pad (1). If necessary, remove upper spring pad (1).



- Guide out and remove the coil spring (1) toward the top in the direction of the arrow.

12 – Releasing left and right brake caliper

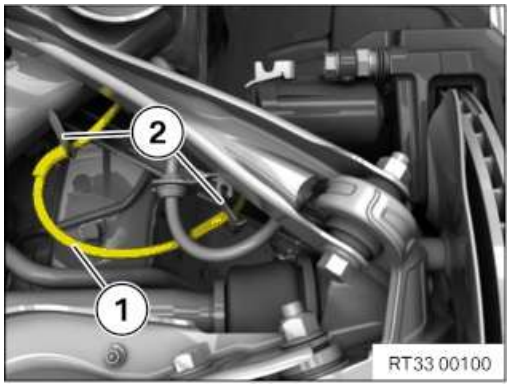
NOTICE

Perform the operations on the left and right side.

▸ **Releasing the brake caliper**

TECHNICAL INFORMATION

During work on the rear brake, it must be ensured that the button for the electromechanical parking brake cannot be pressed.

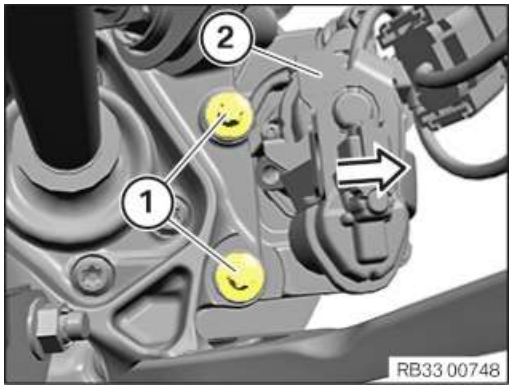


- Release the cable for the parking brake (1) from the holders (2).

NOTICE

Perform this step on the right side only.

- Release the cable for brake pad wear indicator from rear axle support.



- Loosen screws (1).
- Pull brake caliper (2) down in direction of arrow.

  The brake caliper must not hang on the brake hose.

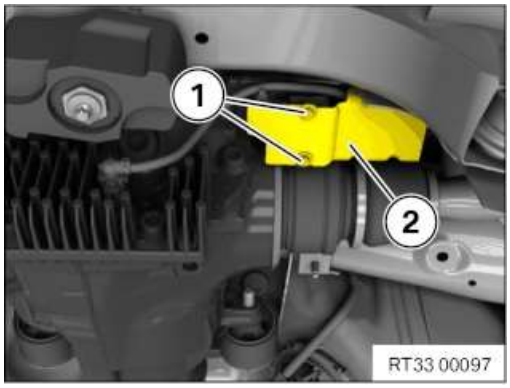


- Tie the brake caliper (1) up with the special tool 2 413 317.

13 – Releasing the wiring harness from the M Sport differential

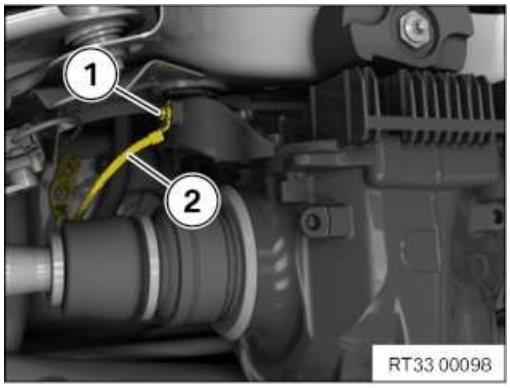
NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

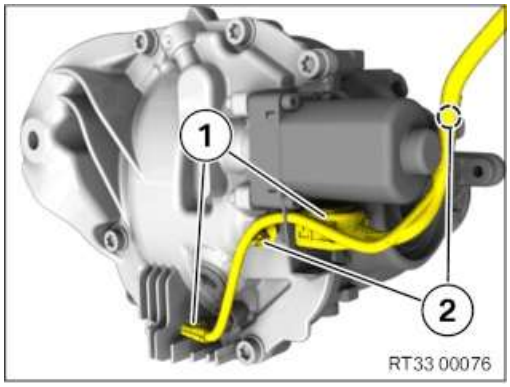


- Loosen screws (1).
- Remove heat shield (2).

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- Release the screw (1).
- Detach the ground strap (2) from the rear axle differential.

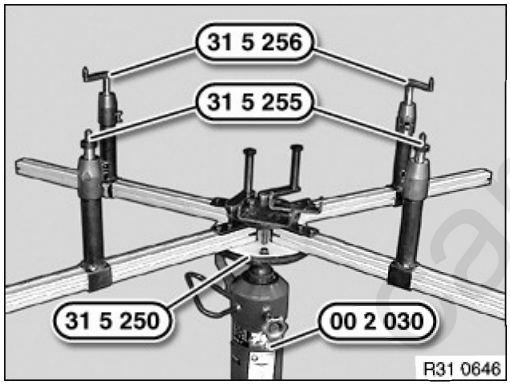


- Unlock and disconnect plug connections (1).
- Release cable from brackets (2).

14 – Preparing the special tool

TECHNICAL INFORMATION

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



- Fit the special tool completely on the universal jack 0 490 133 (00 2 030) with the help of an auxiliary person.
- Insert special tools in telescopic supports of a profile rail pair.
- Insert special tools in telescopic supports of other profile rail pair.

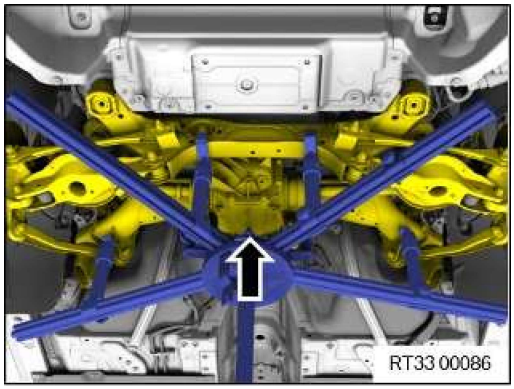
15 – Positioning the special tool on the rear axle support

TECHNICAL INFORMATION

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

TECHNICAL INFORMATION

The centre of gravity of the axle support must be in the centre over the special tool.



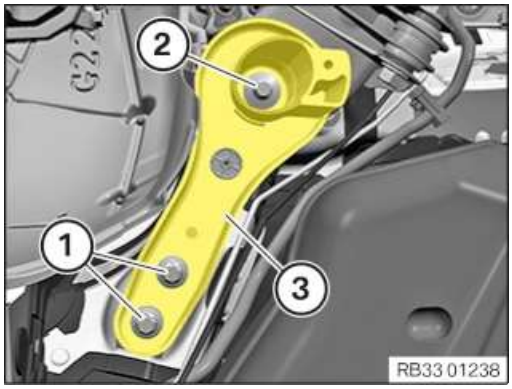
- Align special tools to rear axle support.
- Lift the special tool 2 219 012 and support the rear axle support.
- Secure the rear axle support with a tensioning strap on the special tool .

16 – Loosening the rear axle support

NOTICE

Perform the operations on the left and right side.

▸ **Remove compression strut**



RISK OF DAMAGE

Damage to the components on the rear axle.

If both compression struts are removed simultaneously, it can cause serious damage to the rear axle.

- Renew or remove compression strut only individually.
- When lowering or removing the rear axle: Support rear axle support before both compression struts are removed.

- Loosen screws (1).
- Loosen screw (2).
- Remove compression strut (3).

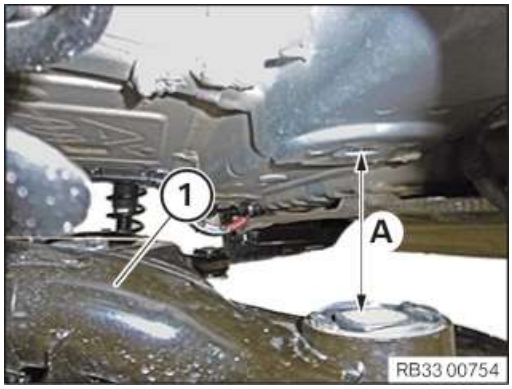
▸ **Removing the rear compression strut**



- Loosen screws (2).
- Loosen screw (3).
- Remove compression strut (1).

17 – Lowering rear axle support

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- Lower the rear axle support (1) with the special tool 2 219 012 by the dimension (A).

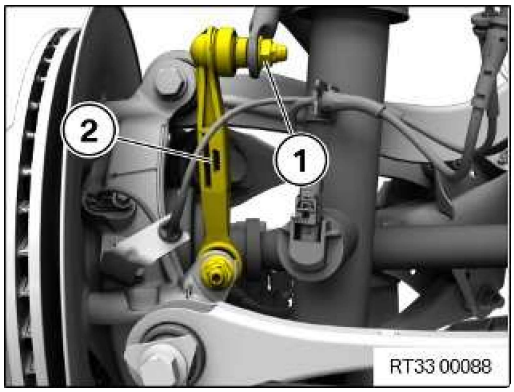
  Dimension (A) = approx. 10 cm

18 – Releasing the rear left and right anti-roll bar link from the anti-roll bar

NOTICE

Perform the operations on the left and right side.

▸ **Releasing the rear anti-roll bar link from the anti-roll bar**



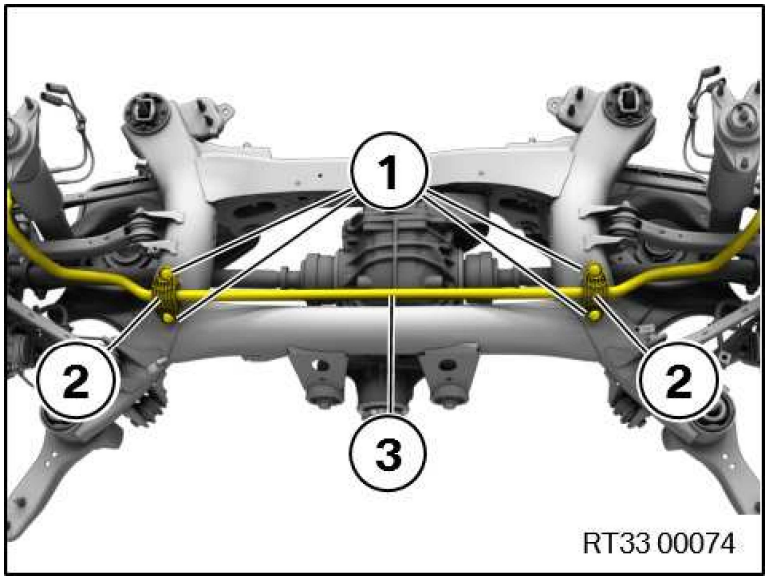
- Release nuts (1). If necessary, counter support at the Torx socket.
- Release anti-roll bar link (2) from the anti-roll bar.

MAIN WORK

19 – Remove the rear stabiliser

TECHNICAL INFORMATION

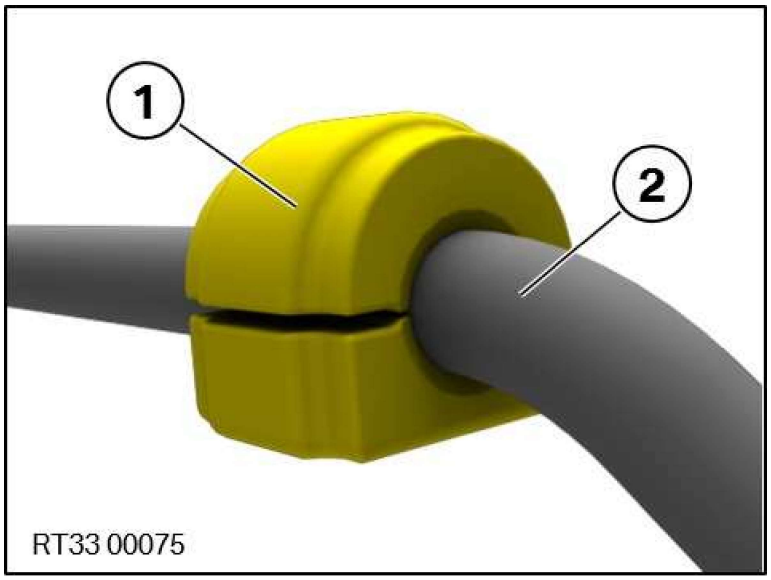
Incorrect assembly is possible. Ensure correct installation position.



- Loosen screws (1).
- Remove the retaining bracket (2).
- Remove the rear anti-roll bar (3).

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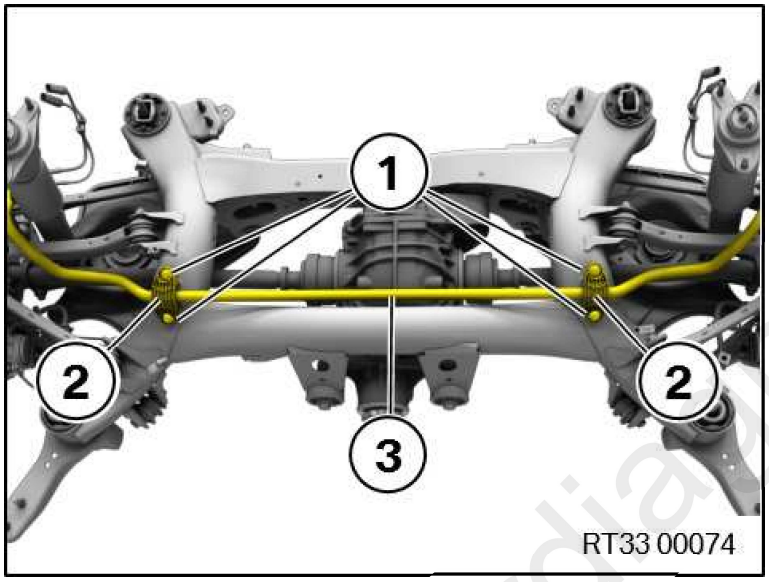
20 – Installing the rear stabiliser



- Coat the outer sides of the rubber mounts (1) on the rear anti-roll bar (2) with lubricant.

Expendable materials

Fitting aid (Circo Light; lubricant)	250 ml, Bottle	83192405829



- Position the rear anti-roll bar (3).
- Position the retaining bracket (2).
- Renew screws (1).

  Parts: Screws
- Tighten the screws (1).

Rear anti-roll bar retaining bracket on rear axle support

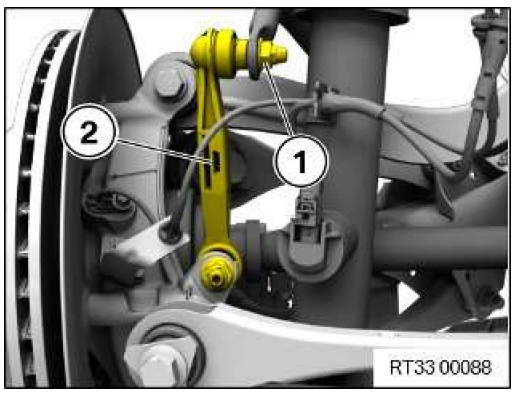
M8	Renew screws.		28 Nm

POSTPROCESSES

21 – Securing the rear anti-roll bar link on the left and right to the anti-roll bar

NOTICE

Perform the operations on the left and right side.



▸ **Securing the rear anti-roll bar link to the anti-roll bar**

- Position anti-roll bar link (2).
- Renew nut (1).

  Parts: Nut
- Tighten nut (1). If necessary, counter support at the Torx socket.

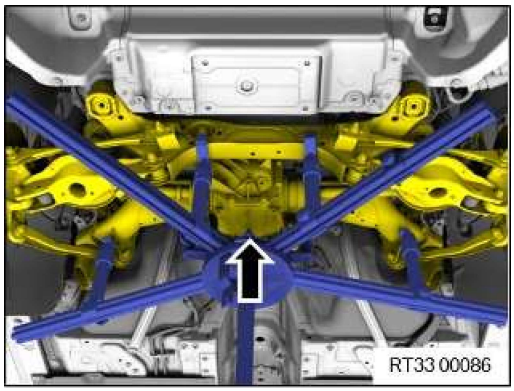
Rear anti-roll bar link to anti-roll bar / wheel carrier

M10	Renew nut.	Tightening torque	56 Nm

22 – Raising the rear axle support

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22 – Raising the rear axle support



- Lift the rear axle support with the special tool 2 219 012 and position on the body.

23 – Securing the rear axle support

NOTICE

Perform the operations on the left and right side.

▸ **Installing the rear compression strut**



- Renew screws (2) and (3).

  Parts: Screws
- Position compression strut (1).
- Screw in screws (2) and (3).
- Tighten down screw (3).

Rear axle carrier to body

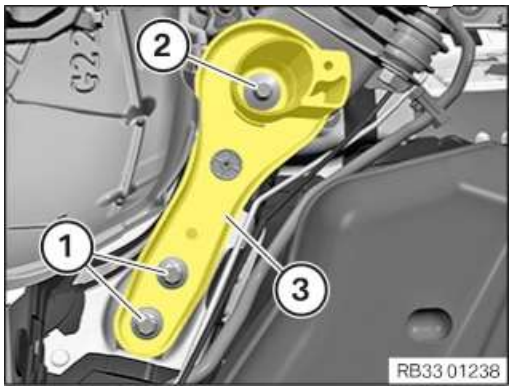
M12	Renew screws.	Tightening torque	108 Nm

- Tighten the screws (2).

Compression strut on body

M10	Renew screws.	Jointing torque	47 Nm
		Angle of rotation	45 °

▸ **Install compression strut**



- Renew screws (1) and (2).

  Parts: Screws
- Position compression strut (3).
- Screw in screws (1) and (2).
- Tighten down screw (2).

Rear axle carrier to body

M12	Renew screws.	Tightening torque	108 Nm

- Tighten the screws (1).

Compression strut on body

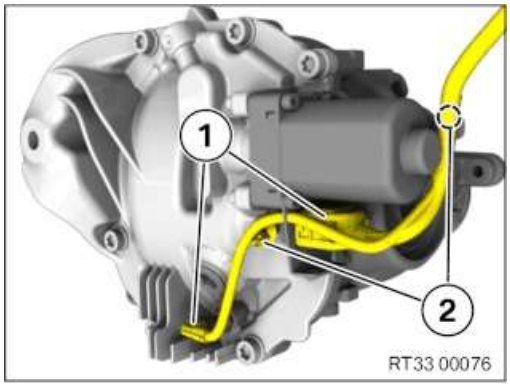
M10	Renew screws.	Jointing torque	47 Nm
		Angle of rotation	45 °

24 – Mounting the wiring harness to the M Sport differential

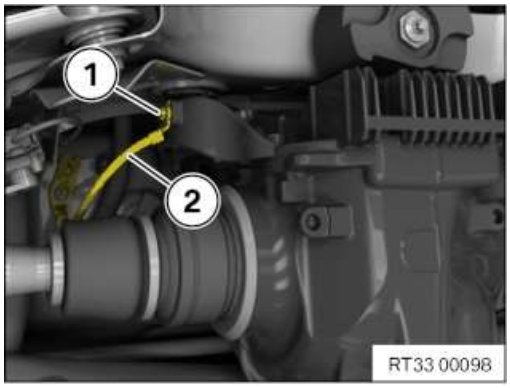
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NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



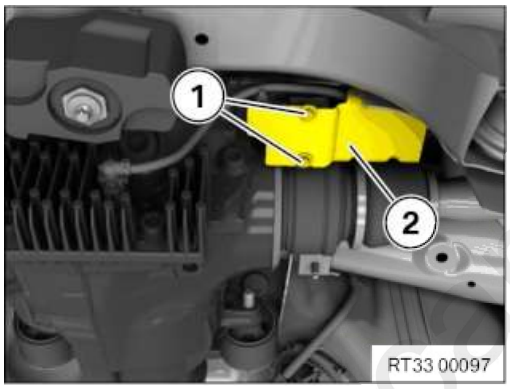
- Connect connectors (1) and lock.
- Secure the cables on the brackets (2).



- Position the ground strap (2) on the rear axle differential.
- Tighten down screw (1).

Ground strap to rear axle differential

M6x20		Tightening torque	8 Nm



- Position the heat shield (2).
- Tighten the screws (1).

Heat shield to servomotor

M5x10		Tightening torque	5 Nm

25 – Securing the brake calipers at left and right

NOTICE

Perform the operations on the left and right side.

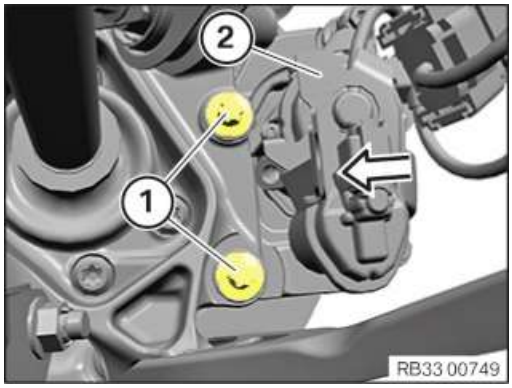
▸ **Securing the brake caliper**

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- Release and remove special tool 2 413 317.

  The brake caliper must not hang on the brake hose.

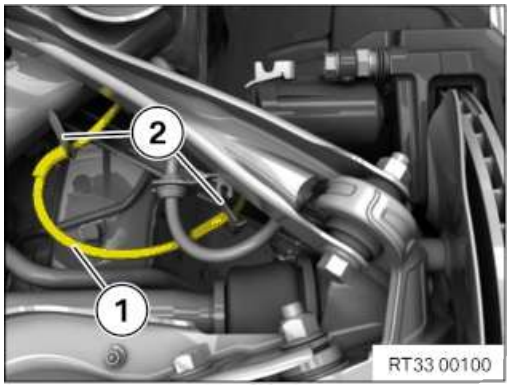


- Position the brake caliper (2) in the direction of the arrow.
- Renew screws (1).

  Parts: Screws
- Tighten the screws (1).

Caliper carrier to rear wheel carrier

M12	Renew screw.	Tightening torque	130 Nm



- Fasten the cable for the parking brake (1) to the holders (2).

NOTICE

Perform this step on the right side only.

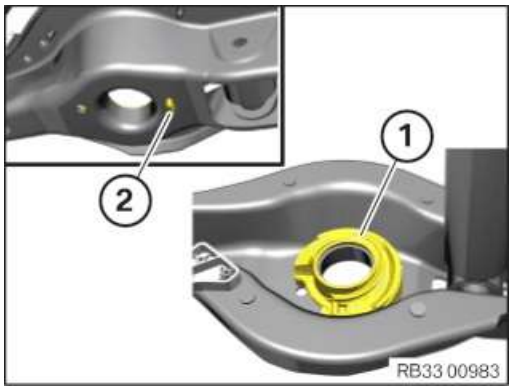
- Fasten the cable for the brake pad wear indicator on the rear axle support.

26 – Install the left and right coil spring

NOTICE

Perform the operations on the left and right side.

▸ **Install the coil springs**

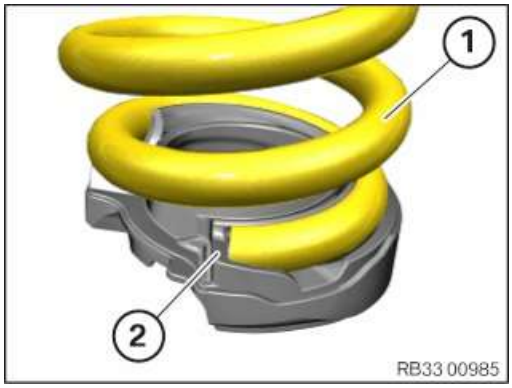


- Check bottom spring pad (1) for damage, renew if necessary.
- Check the position of the lower spring pad (1) with the plastic tab (2) on the camber control arm, correct if necessary.

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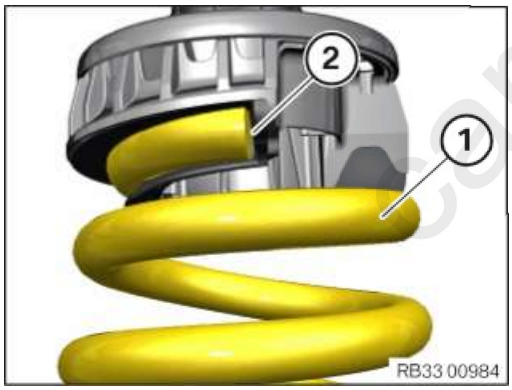
- Feed in the coil spring (1) in direction of arrow from the top and lock.



- Position the coil spring (1) in such a way that the coil spring end is in form-fit contact with the lower spring pad (2).



- Feed in the spring pad at the top (1).



- Position the upper spring pad on the coil spring (1) in such a way that the coil spring end (2) is in form-fit contact with the upper spring pad.



- Slacken the coil spring with the special tools and . In doing so, counter support at the spindle with the special tool and the standard tool (1).

  Standard tool:

  Pay attention to the mounting orientation when releasing the coil spring, correct if necessary.

- Remove special tools.

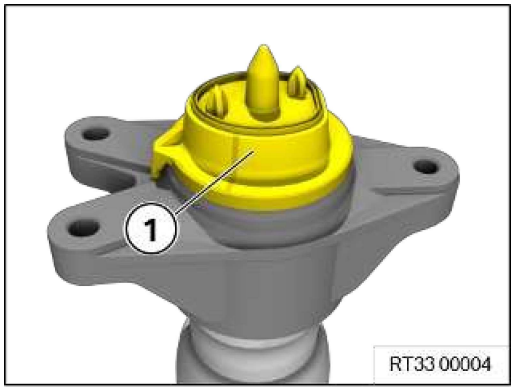
27 – Securing rear left and right shock absorbers to body

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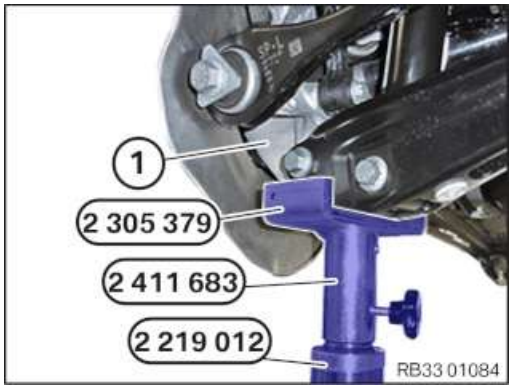
NOTICE

Perform the operations on the left and right side.

▸ **Securing shock absorber at rear to body**



- Check the centering plate (1) for damage, renew if necessary.
- Check the position of the centering plate (1), correct if necessary.



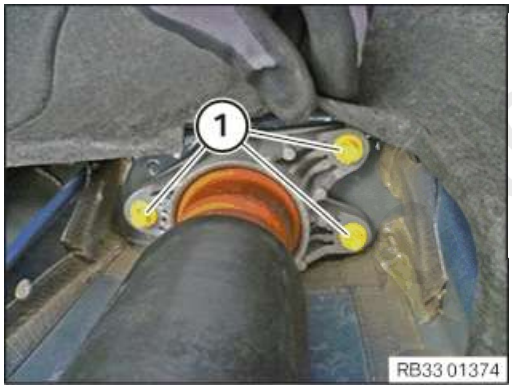
WARNING

Motor vehicle may slip off the vehicle hoist where components are supported.

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

- Position the special tool 2 219 012 with the special tools 2 411 683 and 2 305 379 under the wheel carrier (1).



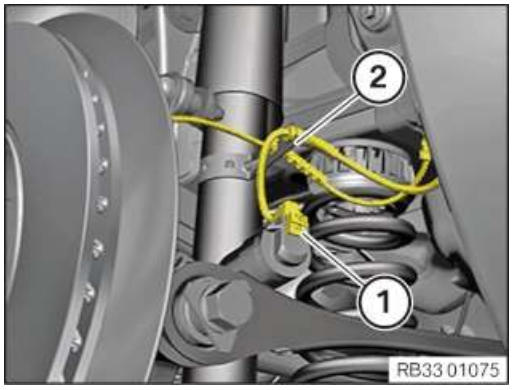
- Slightly lift the wheel carrier with the special tool 2 219 012. Position the shock absorber on the body in the process.

  Do not press against the spring force of the coil spring.
- Renew screws (1).

  Parts: Screws
- Tighten the screws (1).

Nut and locknut/self-locking nut

M8x40	Renew screws.	Tightening torque	28 Nm



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

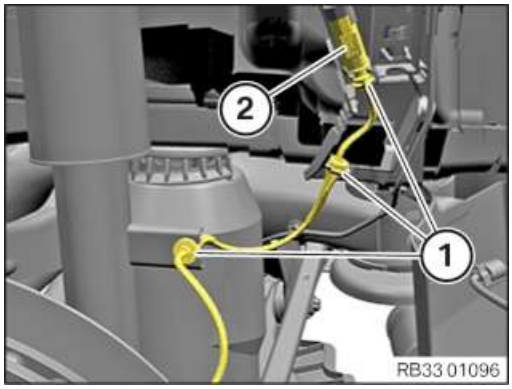
- Secure all existing cables on the holder (2).
- Connect connectors (1) and lock.

28 – Securing cable of rear left and right wheel speed sensor

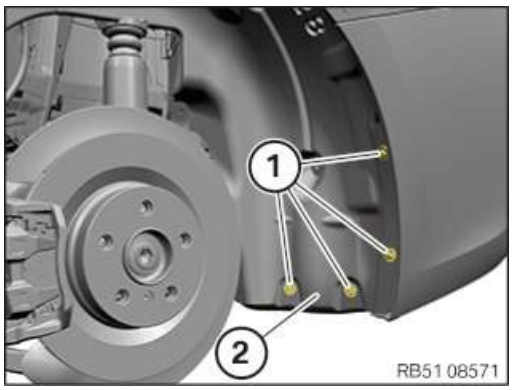
NOTICE

Perform the operations on the left and right side.

▸ **Mounting the cable of the rear wheel speed sensor**



- Connect connectors (2) and lock.
- Mount the cable of wheel speed sensor on the holders (1).

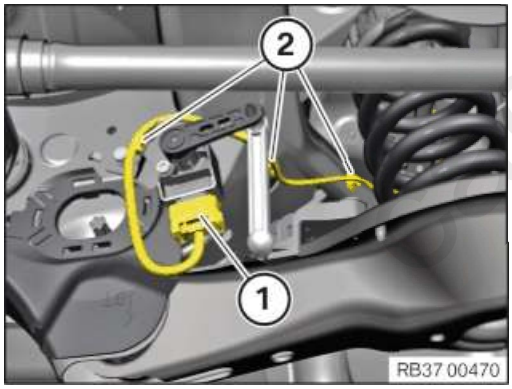


- Insert the wheel arch cover (2).
- Tighten the screws (1).

Rear wheel arch cover to bumper trim panel

Hexagon screw		Tightening torque	2,6 Nm

29 – Fastening the cable for the ride height sensor on the rear axle support



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure the cable with the holders (2) on the rear axle support.
- Connect the connector (1) to the ride height sensor and lock it.

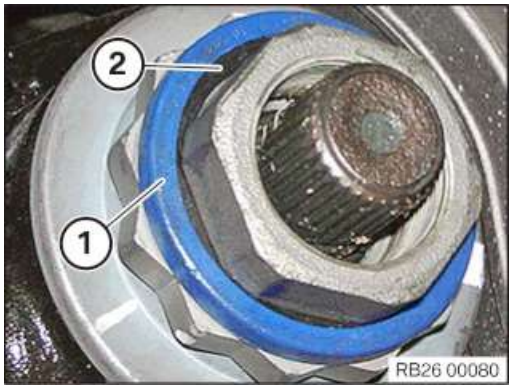
30 – Securing the propeller shaft on the rear axle differential

RISK OF DAMAGE

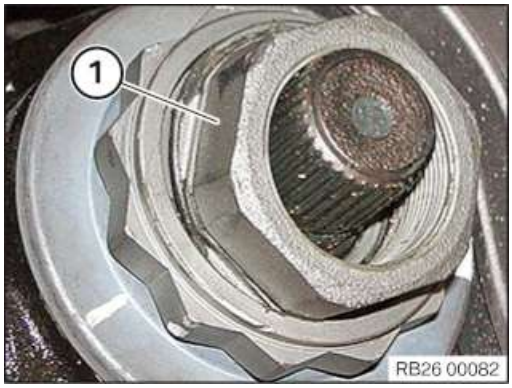
Damage to the propeller shaft during installation.

Non-observance of the installation guidelines for the propeller shaft on the rear axle differential may cause severe damage.

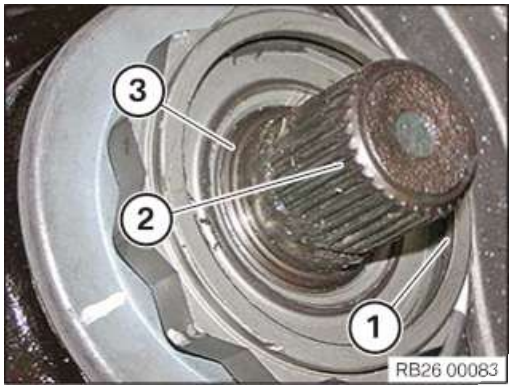
- Always renew the recessed nut on the rear axle differential. Screw locking must be available.
- Strictly observe a hardening time of minimum 3 h after screwing the recessed nut. The hardening time may be longer at lower temperatures.



- Remove the retaining ring (1) and the seal (2).



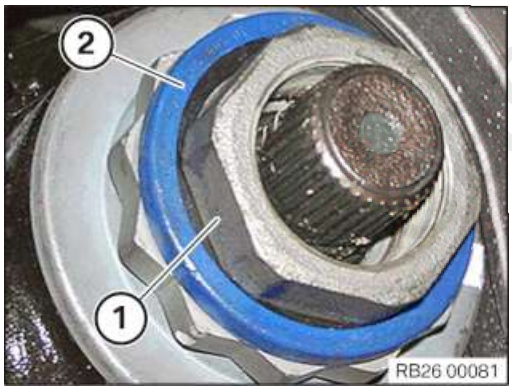
- Remove recessed nut (1).



- Clean and degrease the recessed collar (1) the flange nut, the gearing on the bevel pinion (2) and the taper (3) without any residue.
- Top up the collar insert (1)with grease.

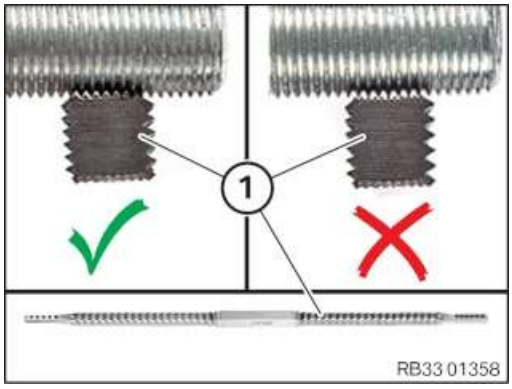
Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Renew the recessed nut (1), seal and retaining ring (2).

  Parts: Recessed nut, seal, retaining ring
- Insert recessed nut (1) including gasket into collar insert of the flange nut.
- Mount the retaining ring (2).



- Use a thread file (1) to remove the adhesive residue on the thread.
- **Make sure that the thread pitch is correct!**

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RISK OF DAMAGE

Damage to the output flange.

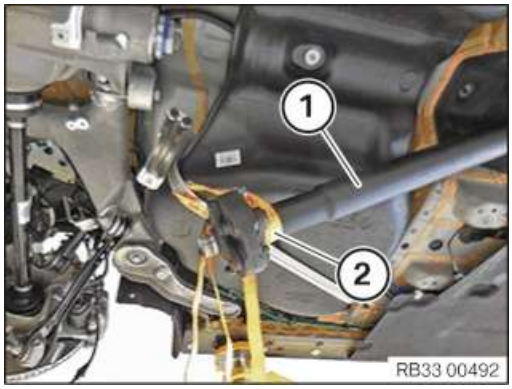
Failure to observe the greasing specifications may lead to damage on the output flange.

- Do not contaminate the thread of the output flange with grease.

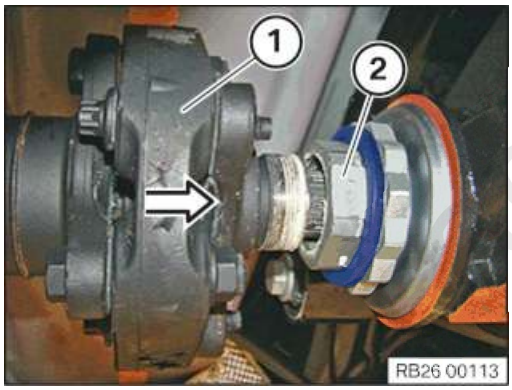
- Remove any adhesive residue on thread (1) of the flange and clean it.
- Clean gearing (2).
- Grease gearing (2).

Expendable materials

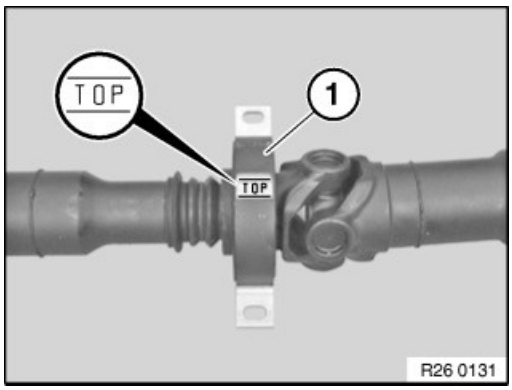
Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- Loosen the tensioning strap (2) from the propeller shaft (1).

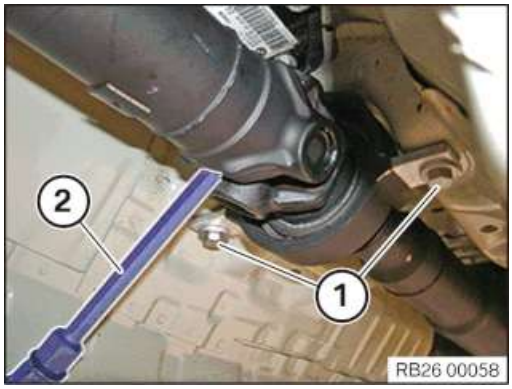


- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Screw and secure recessed nut (2) at least 2 thread starts onto propeller shaft (1) by hand.



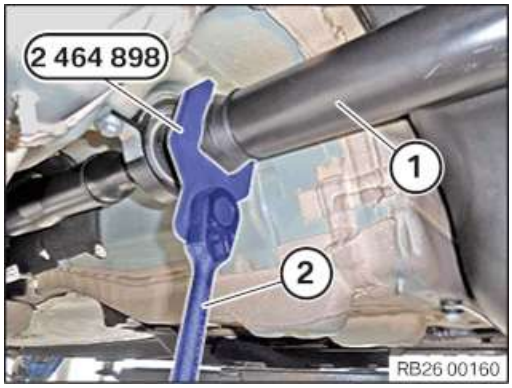
- Position the centre mount (1).

  Position the centre mount (1) with the designation TOP at the top in the transmission tunnel.



- Screw in the screws (1) by a few turns.
- **Version with a broad universal joint:**

  Secure the propeller shaft from twisting with a suitable tool (2) on the centre universal joint.



- **Version with a narrow universal joint:**

  Secure the propeller shaft (1) from twisting with the special tool 2 464 898 and a suitable tool (2) on the centre universal joint.



RISK OF DAMAGE

Damage to the flange nut.

Failure to observe the installation specifications may lead to serious damage to the flange nut and the rear axle differential.

- Do not use the double hexagon flange nut as counter support.
- Screw in the recessed nut within 5 minutes.

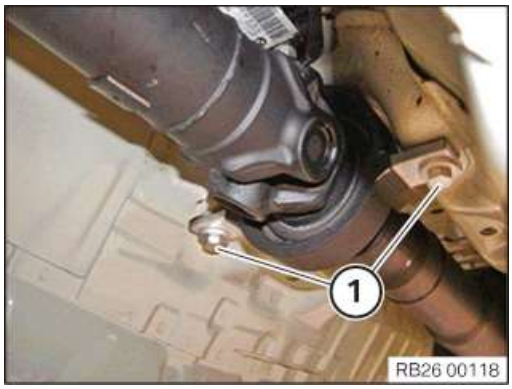
- Tighten recessed nut **counter-clockwise in the direction of the arrow** using special tools 0 495 554 (33 5 070) and .

Propeller shaft on the rear axle differential

Insert nut	Replace insert nut.	Tightening torque	100 Nm

- **After the propeller shaft is installed and the recessed nut is screwed in, strictly observe a hardening time of minimum 3 hours.**

  Do not move or push the vehicle during this time!



- Tighten the screws (1).

Centre mount to body

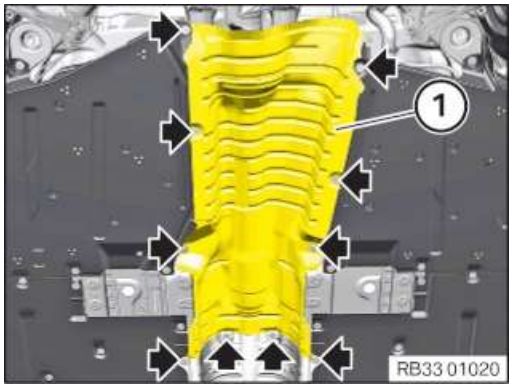
M8		Tightening torque	19 Nm

31 – Installing the rear heat shield

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NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Position the rear heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

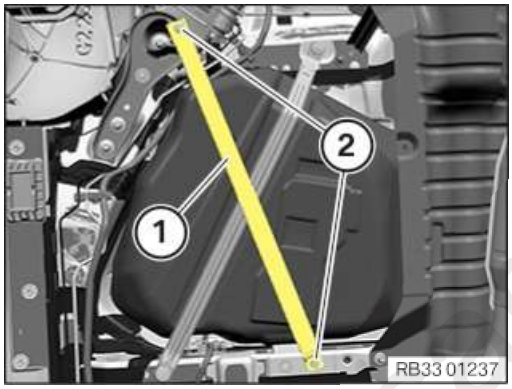
Screws and nuts		Tightening torque	3 Nm

32 – Installing the bracing strut on the left and right

NOTICE

Perform the operations on the left and right side.

▸ **Installing the bracing strut**



NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Position the reinforcement strut (1).
- Tighten the screws (2).

Bracing strut on compression strut/body

M8		Tightening torque	28 Nm

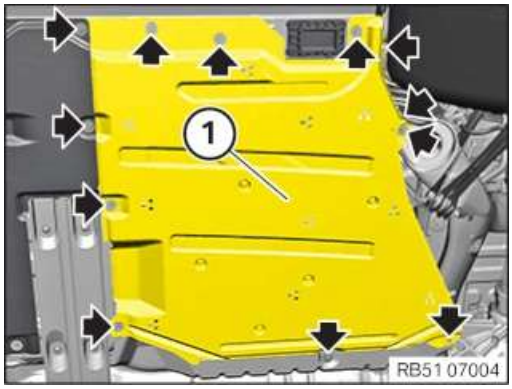
33 – Install left and right tank cover

NOTICE

Perform the operations on the left and right side.

▸ **Installing tank cover**

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- Position the tank cover (1).
- Tighten all bolts (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

34 – Install the cover of the camber control arm on the left and right

NOTICE

Description is for left component only. Procedure on the right side is identical.

▸ **Installing the cover of the camber control arm**



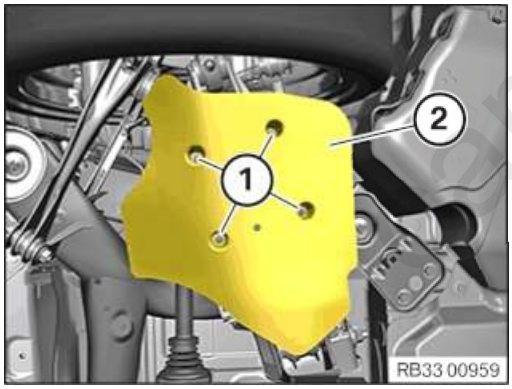
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

35 – Installing the complete exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Grinding dust when grinding components.

Hazardous to health!

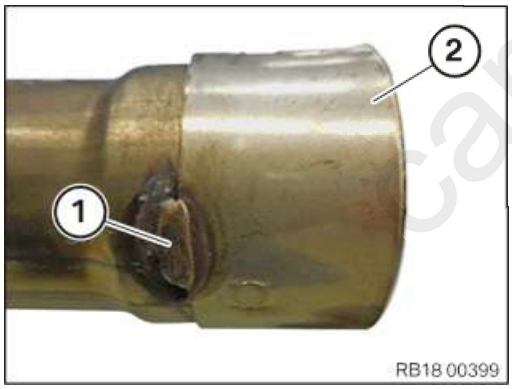
- Directly draw off the grinding dust.
- Ensure adequate ventilation.
- Conduct all work in appropriate personal protective equipment only.

TECHNICAL INFORMATION

Check the exhaust system for tightness after installation.

TECHNICAL INFORMATION

Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.



CAUTION

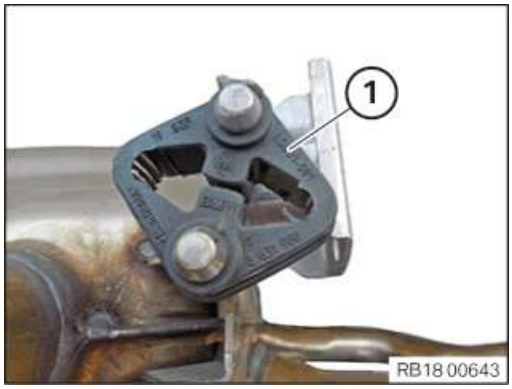
Swarf resulting from sawing or grinding components.

Danger of injury!

- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- Open the weld seam (1) with a standard tool.
- Remove the clamp (2).

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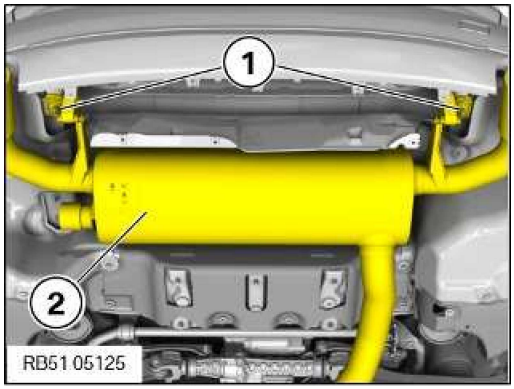


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Check all the rubber mounts (1) of the exhaust system for damage.
- Replaced damaged rubber mounts.

  Parts: Rubber mount

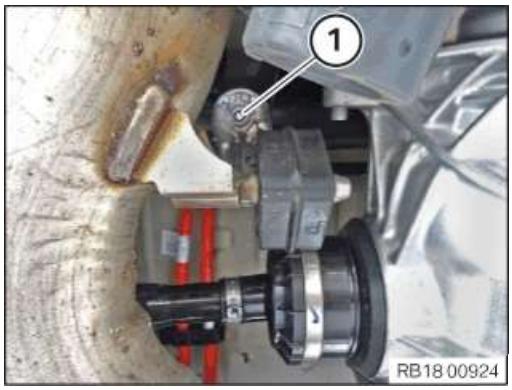


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

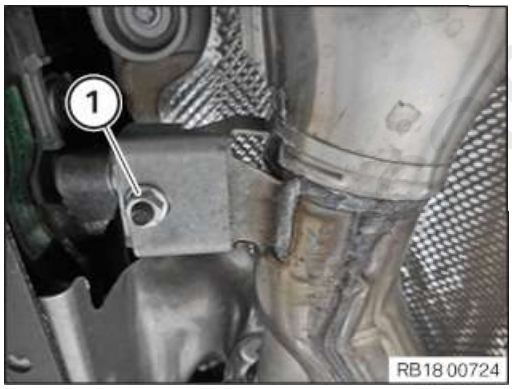


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

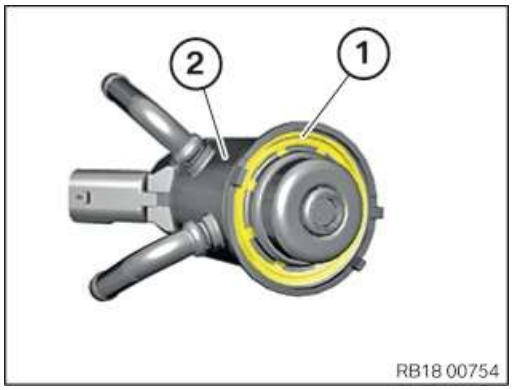
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

Exhaust system to transmission

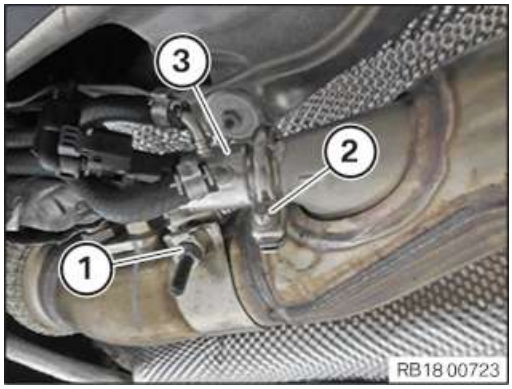
M8		Tightening torque	19 Nm



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring

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- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

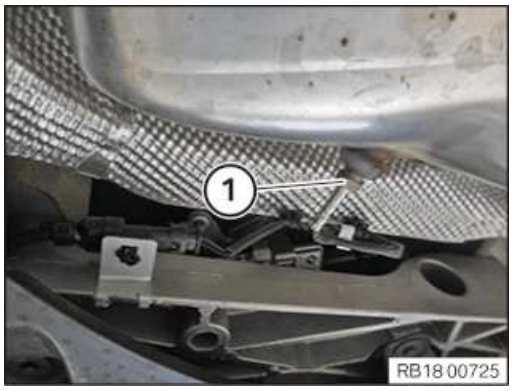
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

  Parts: V-band clamp
- Install the SCR metering module (3) in the exhaust system.
- Tighten the V-clip (2) of the SCR metering module (3).

SCR metering module V-clip to exhaust system

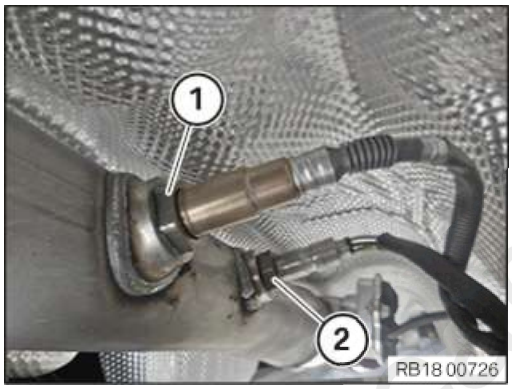
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm



- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm



- Install the diesel particulate sensor (1) in the exhaust system and tighten.

Diesel particulate sensor to exhaust system

Sensor		Tightening torque	50 Nm

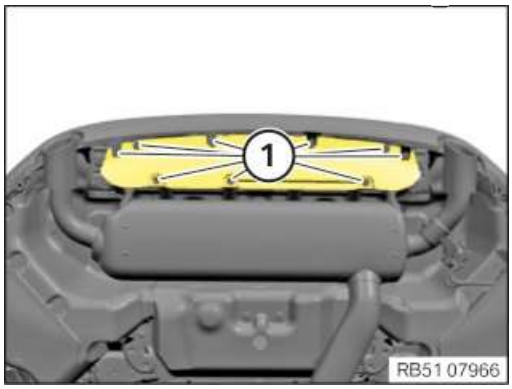
- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

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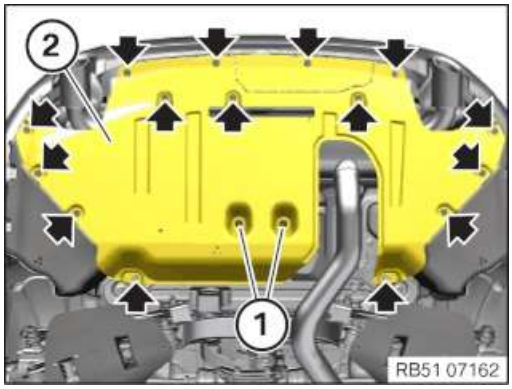
▸ **Installing the rear diffuser**



- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



- **Version 2:**
- Feed in and position the diffuser (2)
- Tighten screws (arrows).

Diffuser / underbody panelling

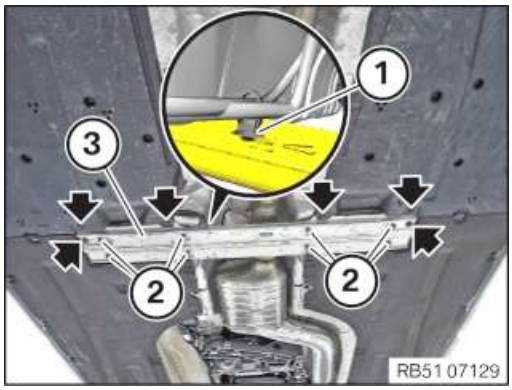
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

▸ **Install the connecting supports on the tunnel**



- Guide in and install connecting support (3) on the tunnel.
- Tighten the screws (2).
- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

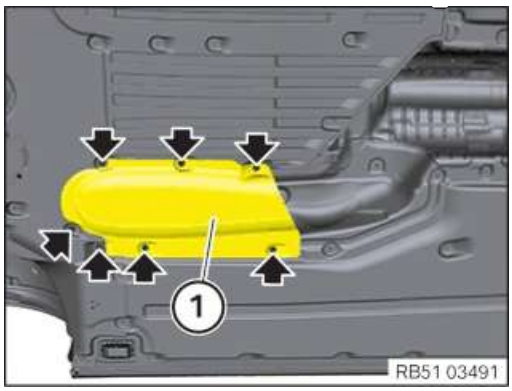
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure the clamp (1).

▸ **Install the underbody panelling of the transmission on the side**

NOTICE

The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

36 – Installing the rear wheel on the left and right

NOTICE

Perform the operations on the left and right side.

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▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

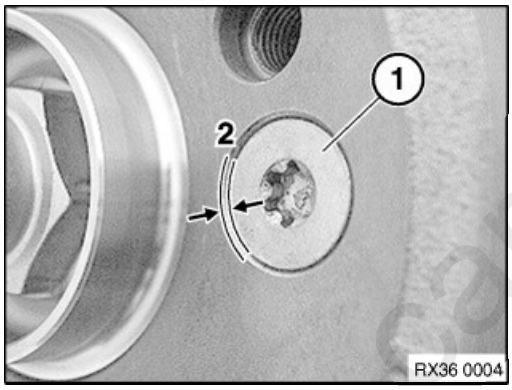
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).



- Check that the mounting bolt (1) for the brake disc is securely seated.

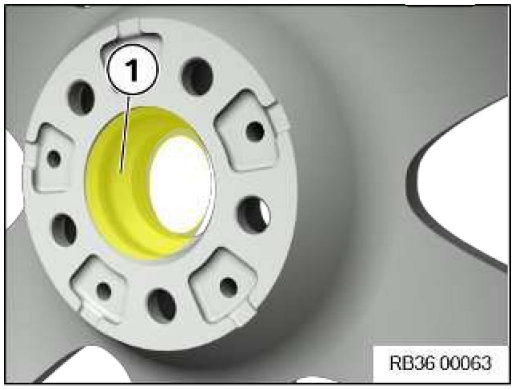
  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233

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TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

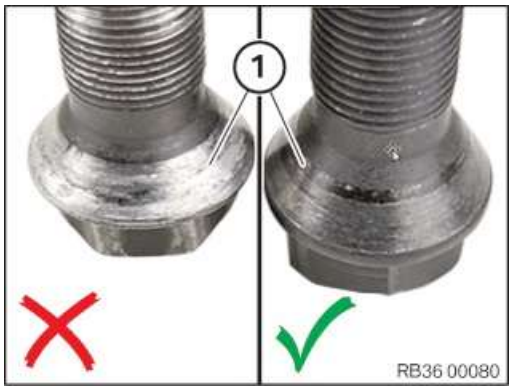
A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.

Check

- **Check wheel bolts for wear.**



Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

  Parts: Wheel bolts
- Clean the wheel bolts (arrows).
- Check the wheel bolts (arrows) and threads for damage, renew the wheel bolts (arrows) if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.		
	Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Check	140 Nm

Additional Information

Overview of Tightening Torques

Rear anti-roll bar retaining bracket on rear axle support — Used in step 20

M8	Renew screws.		28 Nm

Rear anti-roll bar link to anti-roll bar / wheel carrier — Used in step 21

M10	Renew nut.	Tightening torque	56 Nm

Rear axle carrier to body — Used in step 23

M12	Renew screws.	Tightening torque	108 Nm

Compression strut on body — Used in step 23

M10	Renew screws.	Jointing torque	47 Nm
		Angle of rotation	45 °

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Ground strap to rear axle differential			Used in step 24
M6x20		Tightening torque	8 Nm

Heat shield to servomotor			Used in step 24
M5x10		Tightening torque	5 Nm

Caliper carrier to rear wheel carrier			Used in step 25
M12	Renew screw.	Tightening torque	130 Nm

Nut and locknut/self-locking nut			Used in step 27
M8x40	Renew screws.	Tightening torque	28 Nm

Rear wheel arch cover to bumper trim panel			Used in step 28
Hexagon screw		Tightening torque	2,6 Nm

Propeller shaft on the rear axle differential			Used in step 30
Insert nut	Replace insert nut.	Tightening torque	100 Nm

Centre mount to body			Used in step 30
M8		Tightening torque	19 Nm

Heat shield to undercarriage			Used in step 31
Screws and nuts		Tightening torque	3 Nm

Bracing strut on compression strut/body			Used in step 32
M8		Tightening torque	28 Nm

Underbody panelling			Used in step 3335
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Cover to camber control arm			Used in step 34
M6	Replace nuts.	Tightening torque	6 Nm

Rear silencer to body / bumper support			Used in step 35
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 35
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 35
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 35
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 35
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

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Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 35
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 35
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 35
Sensor		Tightening torque	55 Nm

Diffuser / underbody panelling			Used in step 35
Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel			Used in step 35
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Brake disc to front wheel hub			Used in step 36
M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub			Used in step 36
M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts			Used in step 36
M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Overview of Special Tools

2 464 898 Open-end spanner



Common		Used in step 730
Usage	Open-end spanner SW50 for disassembly and installation of the propeller shaft on rear axle differential. The silhouette foil is included in the delivery specification.	
Included in the tool or work		
Storage location	A7	
Replaced by		
In connection with		
SI-Number	01 19 18 (579)	

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0 495 554 (33 5 070) Extension



Common Used in step 730

Usage	Pull-out extension for 33 5 040, 33 5 050, 33 5 060.
Included in the tool or work	
Storage location	A18
Replaced by	
In connection with	
SI-Number	01 21 06 (300)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 495 592 (33 5 071)		**Extension** (Extension (1 item)) discontinued, can only be ordered using complete tool	

2 219 012 Hydraulic lifter



Common Used in step 1015172227

Usage	For raising and lowering various vehicle components.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

2 411 683 Adapter

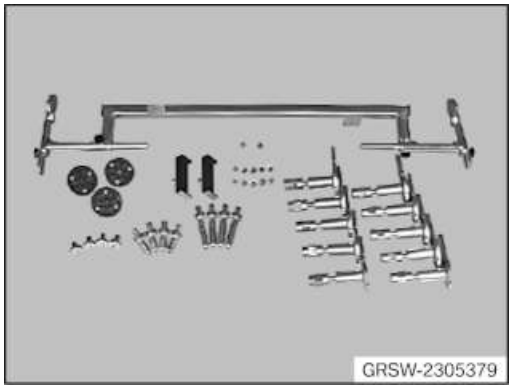


Common Used in step 1027

Usage	Adapter for connecting a mounting plate part number: 2 357 071 on universal hydraulic lifting equipment centrically on piston rod.
Included in the tool or work	
Storage location	B76
Replaced by	
In connection with	
SI-Number	

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2 305 379 Accessories



Common	Used in step 1027
Usage	Holder set for MHT 1200 major assembly table lift and new generation (from 2020)
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	Mobile major assembly table lift MHT 1200 81222184136
SI-Number	06 01 10 (649)

5 A36 B04 Spring cups



Common	Used in step 11
Usage	Spring cup for disassembly and installation of suspension springs on the rear axle in connection with the spring tensioner basic unit, SWZ 33 5 010 or SWZ 33 5 100.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 23 21 (851)

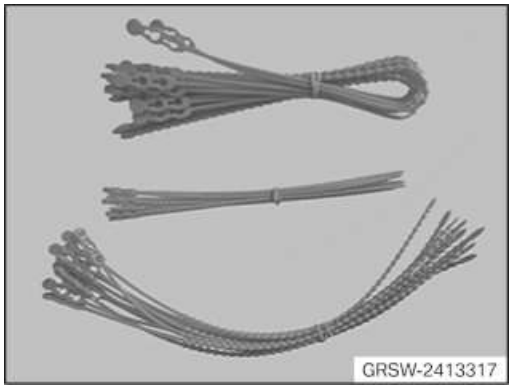
5 A36 B05 Spring cups



Common	Used in step 11
Usage	Spring cup for disassembly and installation of suspension springs on the rear axle in connection with the spring tensioner basic unit, SWZ 33 5 010 or SWZ 33 5 100.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 23 21 (851)

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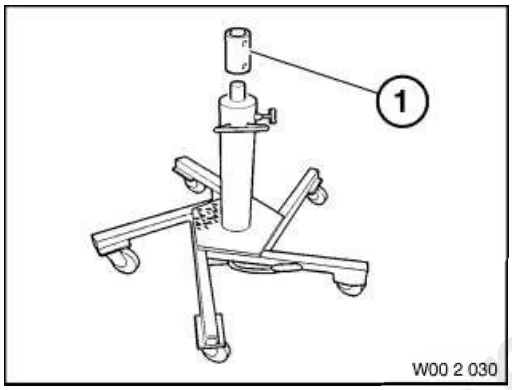
2 413 317 Cable strap



Common Used in step 1225

Usage	The "Cable ties" parts set consists of 3 items as follows: ABV232 Length: 320 mm colour: RedABV250 Length: 500 mm colour: RedABVS270 Length: 665 mm colour: Red
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 47 15 (332)

0 490 133 (00 2 030) Device



Common Used in step 14

Usage	(universal hydraulic lifter base unit) Chassis and hydraulic lifter - For removing and installing rear axle supports and gearboxes. Also for soft top mounts. Is replaced by 81 22 2 219 012
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		**Adapter** (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

2 344 011 Tool



Common Used in step 36

Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

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Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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Links

Repair instructions	Used in step
00 02 001 Raising the vehicle using a vehicle lift	136

Operating materials	Used in step
1.1 Grease for propeller shaft inserted	30
1.0 Grease for propeller shaft (flexible disc centring and sliding piece)	30

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

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raise the vehicle using a vehicle lift.

PRELIMINARY WORK

1 – Remove rear left or right wheel

▸ **Removing the wheel**



TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

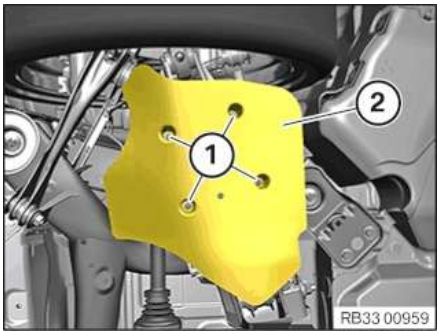
- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

  This process is intended to prevent damage to the brake disc.



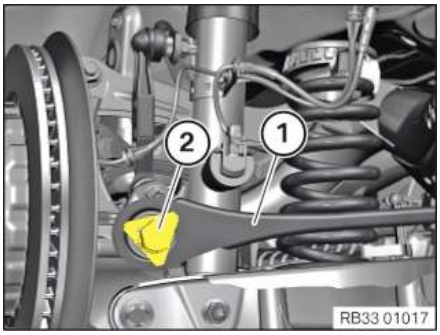
- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

2 – Removing the cover of camber control arm

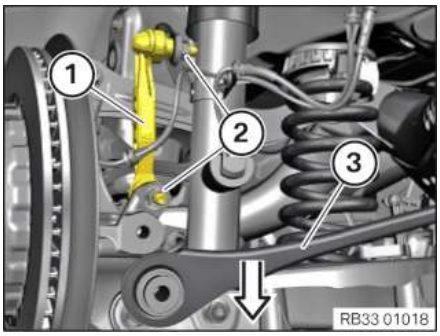


- Loosen nuts (1).
- Remove the cover (2) of camber control arm.

3 – Removing the anti-roll bar link

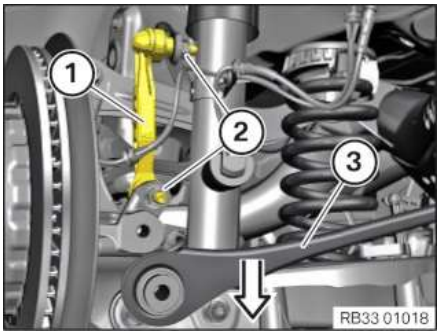


- Release bolt (2) on the track control arm (1).



- Press the track control arm (3) slightly down in the direction of the arrow.
- Release nuts (2). If necessary, counter support at the Torx socket.
- Feed out the anti-roll bar link (1) and remove.

4 – Install the anti-roll bar link

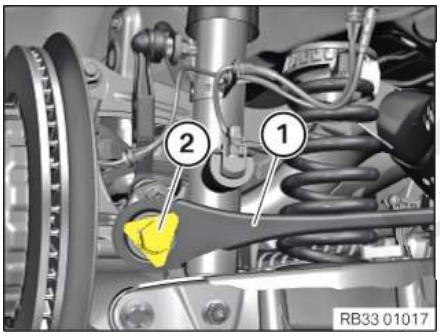


- Feed in the anti-roll bar link (1) and position.
- Press the track control arm (3) slightly down in the direction of the arrow.
- Renew nuts (2).

  Parts: Nuts
- Tighten nuts (2). If necessary, counter support at the Torx socket.

Rear anti-roll bar link to anti-roll bar / wheel carrier

M10	Renew nut.	Tightening torque	56 Nm



TECHNICAL INFORMATION

Tighten down screw connection in normal position.

- Position track control arm (1) on the wheel carrier.
- Renew the screw (2).

  Parts: Screw
- Tighten screw (2) by hand.

  The tightening of the screw connection with the torque wrench is carried out later in normal position.

POSTPROCESSES

5 – Install rear left or right wheel

▸ **Mounting the wheel**

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TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

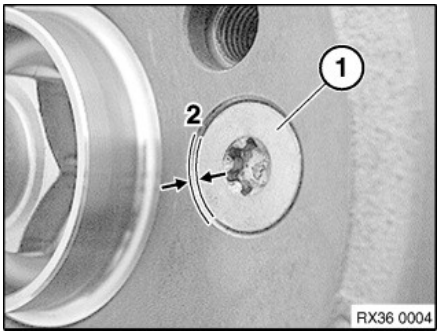
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).



- Check that the mounting bolt (1) for the brake disc is securely seated.

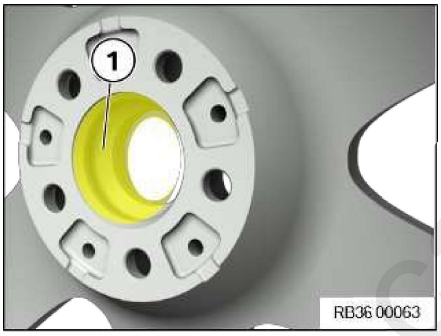
  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233

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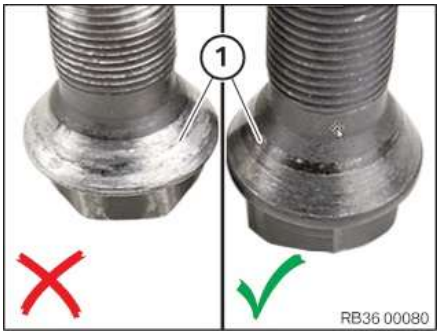


TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.



Check

- **Check wheel bolts for wear.**

Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

  Parts: Wheel bolts

- Clean the wheel bolts (arrows).
- Check the wheel bolts (arrows) and threads for damage, renew the wheel bolts (arrows) if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.	Check	140 Nm
	Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.		

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6 – Measuring the ride height of rear axle and adjusting the normal position



- Set the vehicle down on its wheels (e.g. On an approach ramp).
- Measure the ride height (A).
- Load or unload the vehicle until the ride height (A) is within the tolerance.

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung

Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

7 – Tightening the screw connection of the track control arm on the wheel carrier



TECHNICAL INFORMATION

Tighten down screw connection in normal position.

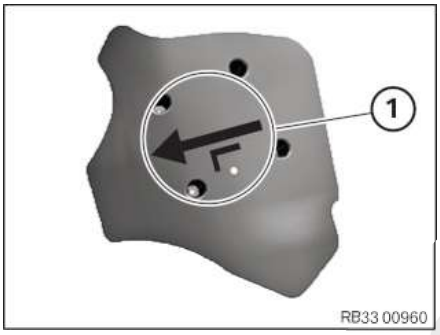
- Slacken the screw (1) by a turn.
- Tighten the screw (1) with the standard tool.

  Standard tool:

Toe arm to wheel carrier

M12	Renew screw. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

8 – Installing the cover of the camber control arm



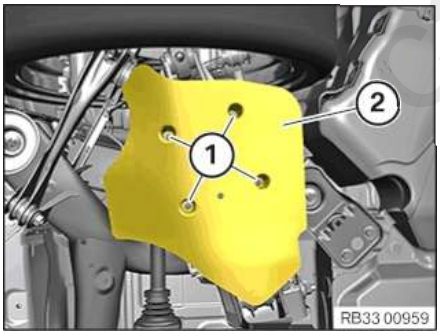
- It is imperative to note the installation location and direction of installation (1).

  Direction of installation (1):

  The arrow on the cover points in the direction of travel.

  Installation location:

  - **L** = left
  - **R** = right



- Position the cover (2) of the camber control arm on the camber control arm.
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Cover to camber control arm

M6	Replace nuts.	Tightening torque	6 Nm

Additional Information

Overview of Tightening Torques

Rear anti-roll bar link to anti-roll bar / wheel carrier Used in step 4

M10	Renew nut.	Tightening torque	56 Nm

Brake disc to front wheel hub Used in step 5

M8	Renew screw.	Tightening torque	16 Nm

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Brake disc to rear wheel hub — Used in step 5

M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts — Used in step 5

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Toe arm to wheel carrier — Used in step 7

M12	Renew screw. Tighten in normal position.	Tightening torque Angle of rotation	100 Nm 90 °

Cover to camber control arm — Used in step 8

M6	Replace nuts.	Tightening torque	6 Nm

Overview of Special Tools

2 344 011 Tool



Common — Used in step 5

Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common — Used in step 1

Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

G22/G23 Rear-wheel drive, standard suspension/sport suspension settings without low-slung	Used in step 6
Measured from centre of wheel hub to lower edge of wheel arch	
Dimension A	357 (347 - 367) mm

Links

Repair instructions	**Used in step**
00 02 001 Raising the vehicle using a vehicle lift	15

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33 60 508 Replacing the control unit for the limited slip differential

TECHNICAL INFORMATION

If the individual data recovery for the GHAS control unit failed, the data must be read out from the label on the rear axle differential and entered using the keyboard.The rear axle differential must be lowered to read out the data.

PRELIMINARY WORK

1 – Deactivating the 48 V electrical system

Prerequisite

Ignition is switched off.

WARNING

Deactivation of the 12 V vehicle electrical system.

Risk of short circuits! Risk of fire!

- Make sure that **no battery charger** is connected to the jump start terminal point in the engine compartment.
- For vehicles with additional electrical systems (48 V electrical system, high-voltage vehicle electrical system), it is mandatory to deactivate them **before** disconnecting the vehicle battery.

WARNING

Deactivation of the 48 V electrical system.

Risk of short circuits! Risk of fire!

- Make sure that **no charger** is connected to the jump start support point in the engine compartment.

RISK OF DAMAGE

Damage to 48-V battery

If a 48-V battery that is disconnected from the electrical system is activated, the battery electronics will be damaged.

- Only carry out activation of the 48V electrical system with a completely connected 48-V battery.

TECHNICAL INFORMATION

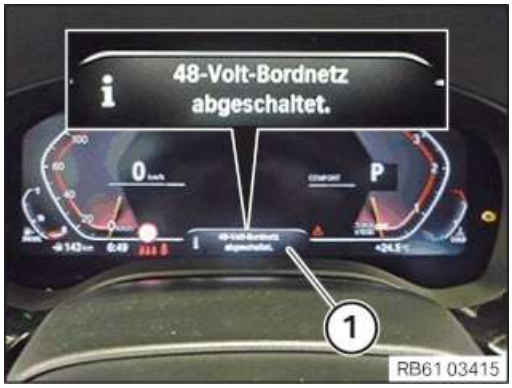
Follow notes for 48-V battery. See further information 6120 ... Notes on 48-V battery.

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- Deactivate the 48V electrical system by opening the bonnet.

  The deactivation takes place automatically.



Check

TECHNICAL INFORMATION

Zero voltage (48V electrical system is switched off) is displayed only in PAD mode.

- Press the START-STOP button quickly 3 times without stepping on the brake pedal to establish the PAD mode.
- Check isolation from the supply in the instrument cluster in PAD mode.

desired state

- The Check Control message "48V electrical system switched off." (1) is displayed.

Result

» **The absence of voltage** cannot be determined by means of the Check Control message "48V electrical system switched off:" (1). Work is not permitted to be started.

Measure

- Carry out the service function "48 V electrical system deactivation".
  - Vehicle management > Service functions > Voltage supply > Deactivate 48 V electrical system

  Only when the Check Control message “48 V electrical system switched off.” (1) is displayed in the instrument cluster is it permitted to disconnect the 12 V battery.

  If the absence of voltage is not indicated clearly, contact Technical Support.

Result

» The Check Control message signals that the 48V electrical system has been switched off.

Measure

- Exit PAD mode by pressing the START-STOP button once without depressing the brake pedal.

  The work “Disconnecting the negative battery cable of the 48-V battery” can be started.

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- Unlock and disconnect plug connection (1) of the CAN bus.
- Release the clip (2).



- Loosen nut (1).
- Pull off negative battery cable (2) of the 48-V battery from the negative battery terminal, set it aside and secure it.



WARNING

Unprotected battery terminals.

Risk of short circuits! Risk of fire!

- Cover the vehicle battery.

- Cover the vehicle battery with the special tool as shown.
- Position the battery earth lead (1) as shown.

2 – Disconnecting all battery earth leads



- See additional information.

3 – Removing the luggage compartment floor trim panel

▸ **Removing the luggage compartment floor trim panel**

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

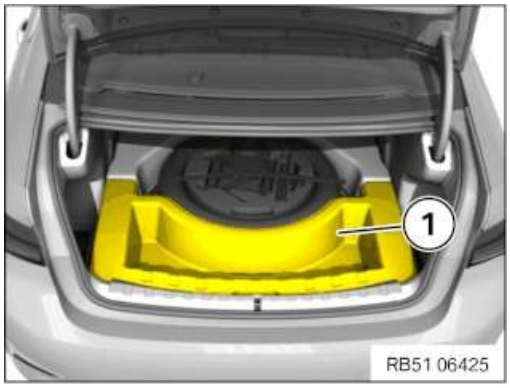
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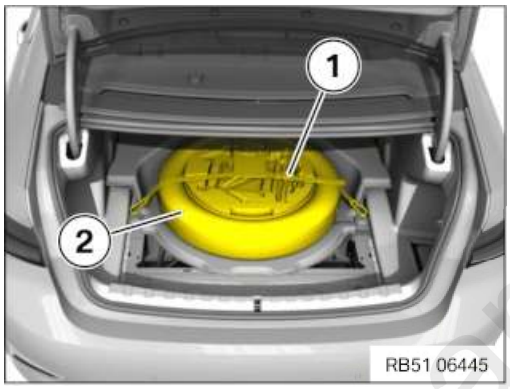
- Remove luggage compartment floor trim panel (1).

4 – If installed: Removing the compact spare wheel

▸ **Removing rear luggage compartment well**



- Remove rear luggage compartment well (1).

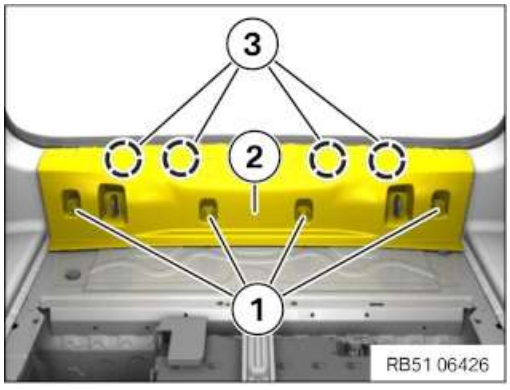


- Open buckle on seat belt strap (1) and set it aside.
- Remove emergency wheel (2) with the insert.

5 – Removing the loading edge trim

NOTICE

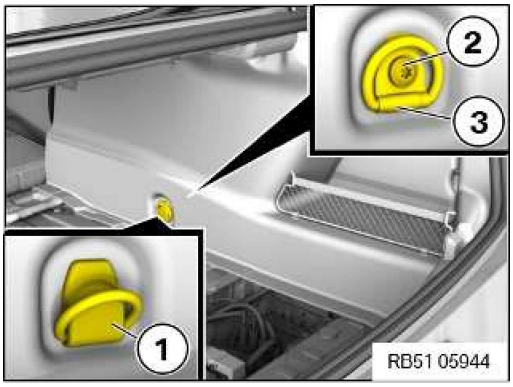
Schematic diagram is for example purposes. Some parts may differ in certain details.



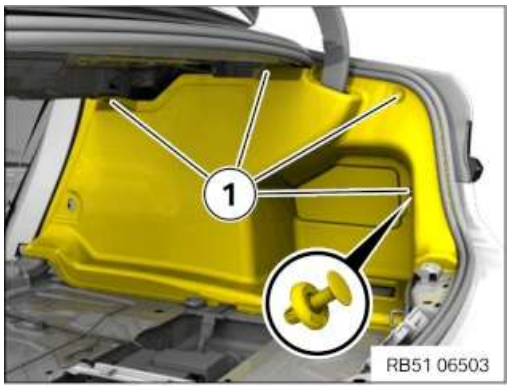
- Loosen the expanding rivet (1).
- Unclip loading edge trim(2) upwards from latch mechanisms (3).
- Guide out and remove loading edge trim (2) under the sealing lip of the tailgate seal.

6 – Removing right luggage compartment wheel arch trim panel

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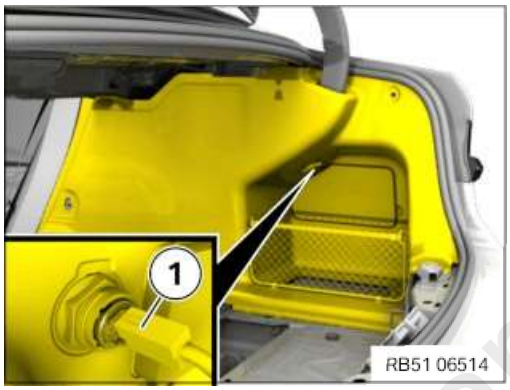


- Remove the cover (1).
- Loosen screw (2).
- Remove the lashing eye (3).

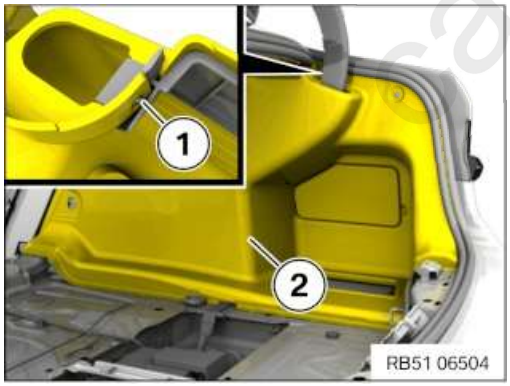


- Reposition the right rear seat backrest.
- Loosen the expanding rivet (1).

▸ If installed: Disconnect plug connection of the 12 V connection (additional work with storage package equipment specification)



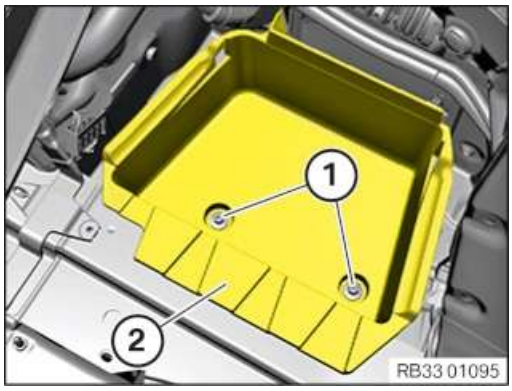
- Unlock and disconnect the plug connection (1) of the 12 V power socket.



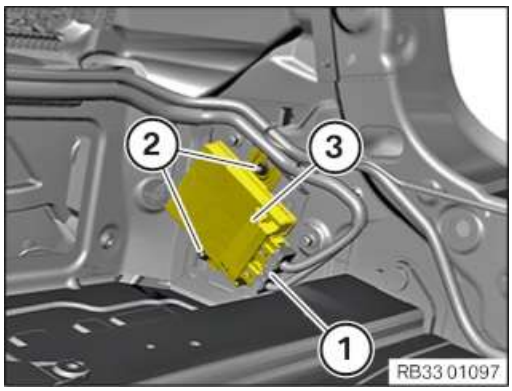
- Press the tab for luggage compartment wheel arch trim panel (2) on the outer side of the hinge to the front using the stop on trim (1).
- Guide out luggage compartment wheel arch trim panel (2) under the sealing lip for the tailgate and the side trim panel in the rear passenger compartment.
- Remove luggage compartment wheel arch trim panel (2).

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7 – Removing the control unit for the limited slip differential

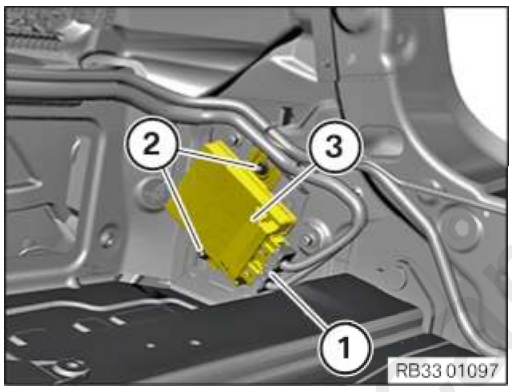


- Loosen nuts (1).
- Remove the storage compartment (2).



- Unlock and disconnect plug connections (1).
- Loosen nuts (2).
- Remove control unit (3).

8 – Installing control unit for limited slip differential

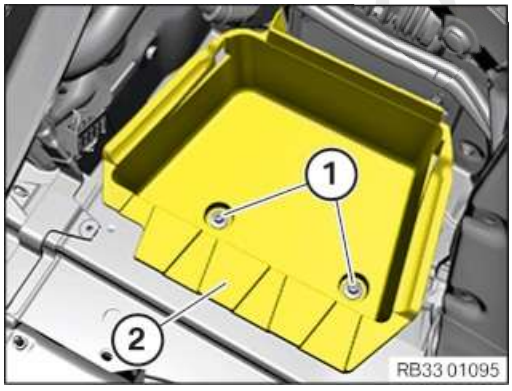


- Position control unit (3).
- Tighten nuts (2).

Control unit for the limited slip differential

Plastic nut with flange		Tightening torque	2.6 Nm
M6		Tightening torque	8 Nm

- Connect connectors (1) and lock.



- Install the storage compartment (2).
- Tighten nuts (1).

Storage compartment to body

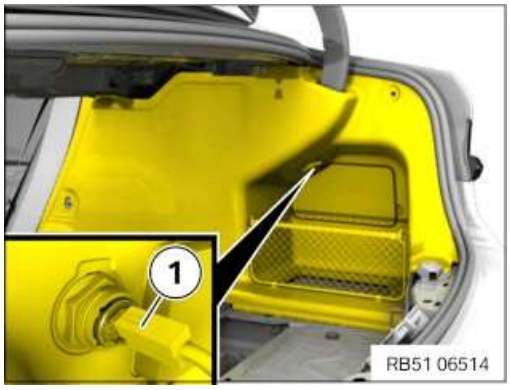
Plastic nut		Tightening torque	2,6 Nm

9 – Installing the luggage compartment wheel arch trim panel on the right

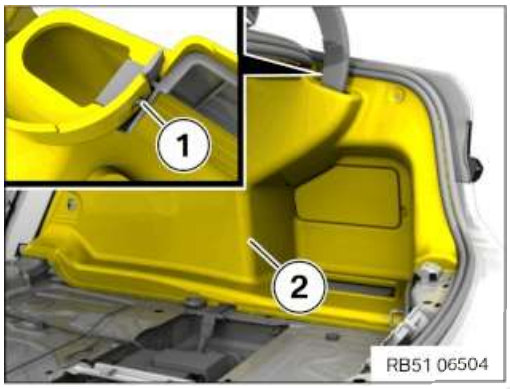
NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

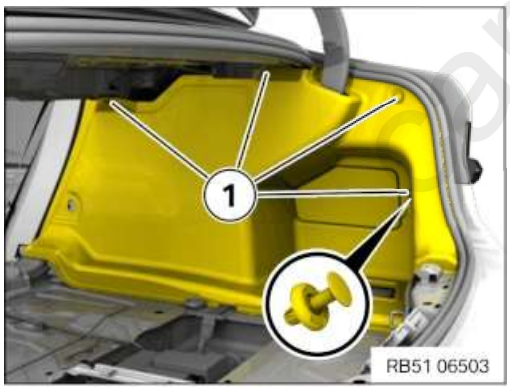
▶ If installed: Connecting plug of the 12 V power socket (additional work for equipment specification with storage package)



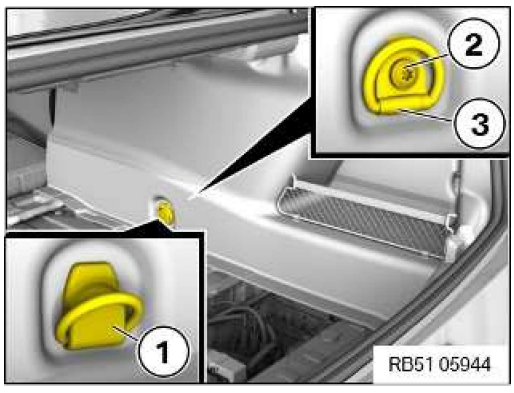
- Connect and lock connector (1) of the 12 V power socket.



- Feed luggage compartment wheel arch trim panel (2) under the side trim panel in the rear passenger compartment and the sealing lip for the tailgate.
- Feed the tab of the luggage compartment wheel arch trim panel (2) on the outer side of the hinge into the stop on the trim (1).



- Secure expanding rivet (1).
- Raise the right rear seat backrest.



- Position the lashing eye (3).
- Tighten down screw (2).

Lashing eye to body

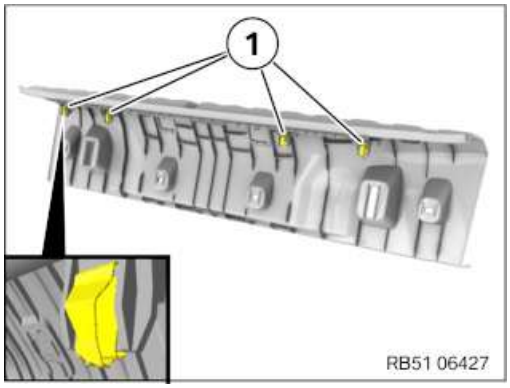
	Tightening torque	19 Nm

- Install the cover (1) .

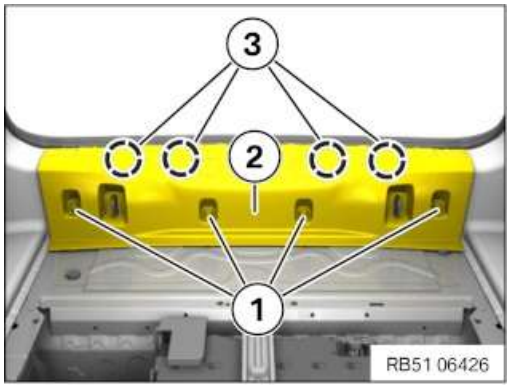
10 – Installing loading edge trim

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

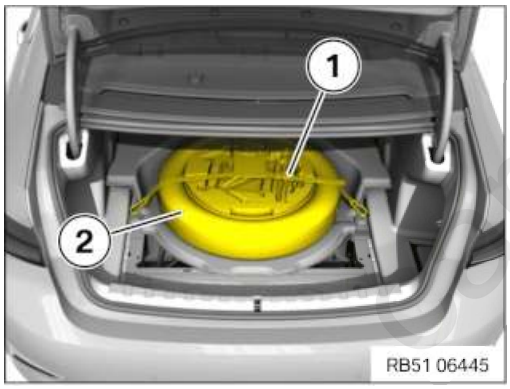


- Check the clamps (1) for damage and renew if necessary.



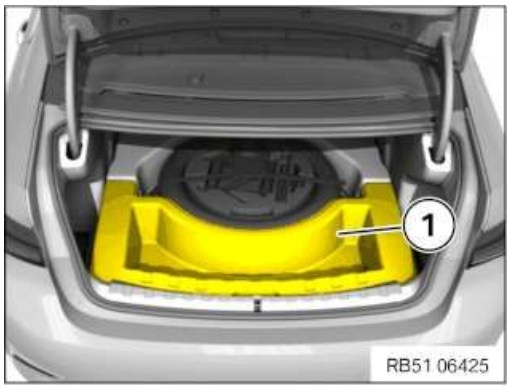
- Insert the loading edge trim (2) under the sealing lip of the tailgate seal.
- Fit the trim of the loading edge (2) at the latch mechanisms (3) and clip it in to the bottom.
- Secure expanding rivet (1).

11 – If installed: Install the emergency wheel



- Install the emergency wheel (2) with the insert.
- Position the seat belt strap above the emergency wheel and close the buckle on the seat belt strap (1).

▸ **Installing rear luggage compartment well**



- Install rear luggage compartment well (1).

12 – Installing the luggage compartment floor trim panel

▸ **Installing the luggage compartment floor trim panel**

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Insert the luggage compartment floor trim panel (1).

13 – Connecting all battery earth leads



- See additional information.

14 – Activating the 48 V electrical system

Prerequisite

Ignition is switched off.

RISK OF DAMAGE

Damage to 48-V battery

If a 48-V battery that is disconnected from the electrical system is activated, the battery electronics will be damaged.

- Only carry out activation of the 48V electrical system with a completely connected 48-V battery.



- Lift battery earth lead (1).
- Remove special tool .

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- Release the negative battery cable (2) of the 48-V battery from the mounting.
- Position the negative battery cable (2) of the 48-V battery on the negative battery terminal.
- Tighten nut (1).

Negative battery cable to 48-V battery

Nut M8		Tightening torque	19 Nm



- Connect the connector (1) of the CAN bus and lock it.
- Clip in clip (2).



- Activate the 48V electrical system by closing the bonnet.

  The activation takes place automatically.

15 – Encode/program control unit(s)

- **Replacement**.
- **This task is not included in this flat rate unit item.**

▸ **Encode/program control unit(s)**

Prerequisite

Component has been replaced.

TECHNICAL INFORMATION

Use the most recent software version to prevent faults during programming/encoding.
The battery voltage must not fall below 13.0 V during programming.
Use only chargers for a low volt-vehicle electrical system that are recommended by BMW.

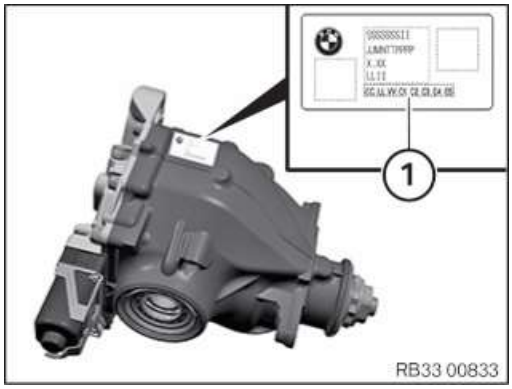
TECHNICAL INFORMATION

No high-voltage switch off is required in electric vehicles or hybrid vehicles for programming/encoding.
The high-voltage system will be automatically switched off by the programming system.

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- Connect the battery charger to the vehicle.
- Connect the programming system with the vehicle.
- Determine the action plan.
- Accept and fully process the measures plan.
- If applicable, connect the workshop system to the vehicle, depending on the reworking list.
- Carry out vehicle test.
- Delete the fault memory.
- The information about programming the workshop system and the corresponding notes in the user documentation must be observed.
- Wait until programming/encoding has been completed.
- Disconnect the programming system from the vehicle.
- Disconnect the battery charger from the vehicle.

16 – If programming/encoding has failed: read out data of the rear axle differential



TECHNICAL INFORMATION

If the individual data recovery for the GHAS control unit failed, the data must be read out from the label on the rear axle differential and entered using the keyboard.The rear axle differential must be lowered to read out the data.

- Lower rear axle differential.
- Read data (1) from the label on the rear axle differential.

17 – When replacing (control unit): carry out the "Renewing the limited slip differential control unit" service function



- Connect vehicle to the diagnosis system.
- Carry out the "Renewing the limited slip differential control unit" service function

Additional Information

Overview of Tightening Torques

Control unit for the limited slip differential — Used in step 8

Plastic nut with flange		Tightening torque	2.6 Nm
M6		Tightening torque	8 Nm

Storage compartment to body — Used in step 8

Plastic nut		Tightening torque	2,6 Nm

Lashing eye to body — Used in step 9

		Tightening torque	19 Nm

Negative battery cable to 48-V battery — Used in step 14

Nut M8		Tightening torque	19 Nm

Overview of Special Tools

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Links

Repair instructions (PRE)	Used in step
Notes on 48-V battery	114

Repair instructions	Used in step
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61 20 900 Disconnecting and connecting battery earth lead 213
61 20 900 Disconnecting and connecting battery earth lead 213

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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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