26 00 ... Evaluation criteria for assessing flexible discs

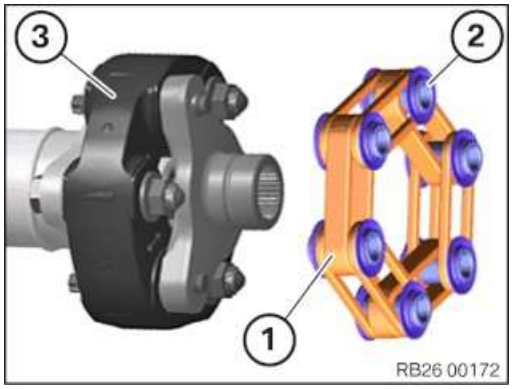
Function of flexible disc:

The flexible disc is also referred to as an elastic permanent clutch. It connects two shafts like a propeller shaft and, due to its spring stiffness, can influence the natural frequency of shaft strands.

It dampens torque peaks, shock pulses (clacking noise from the gear toothing) and decouples noises.

The two shafts to be connected must be aligned perfectly. A centering of the shaft ends with sufficient radial stiffness is essential to ensure the boot behaviour.

Due to a centering with radial stiffness, the occurrence of greater centrifugal forces is avoided, which can also occur with precisely aligned shafts as a result of the elastic behaviour of the flexible discs.



Structure of flexible disc:

- Inner structure of flexible disc (function: torque monitoring)

  (1) Thread packages

  (2) Steel bushes
- Exterior view of flexible disc (function: Decoupling, damping & angle compensation)

  (3) Outer material made of rubber

The following figures show the evaluation criteria of flexible discs, according to which these should **not be replaced**!

Evaluation OK

- Visible cracks in the rubber part, but no threads visible (→ only optical change)
- Crack size and number of cracks are irrelevant for the evaluation
- Flexible disc is fully functional and ready for use
- Remaining service life expected > 50% of the total service life



Evaluation OK

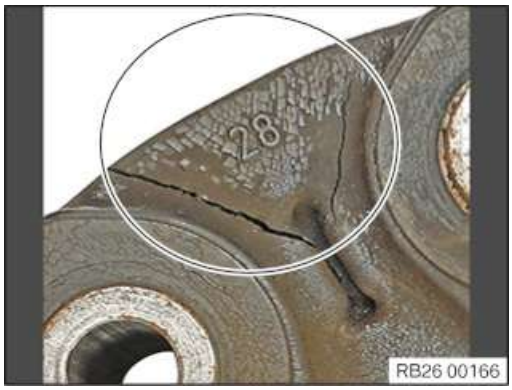
→ No replacement required

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Evaluation OK

→ No replacement required



Evaluation OK

→ No replacement required



Evaluation OK

→ No replacement required

The following figures show the evaluation criteria of flexible discs, according to which these should **be replaced**!

Evaluation not OK

- Cracks in the rubber part **and** isolated threads are visible.
- Component with restricted operability
- Remaining service life expected <50% of the total service life

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Evaluation not OK

→ It is recommended to replace the flexible disc.



Evaluation not OK

→ It is recommended to replace the flexible disc.



Evaluation not OK

→ It is recommended to replace the flexible disc.



Evaluation not OK

→ It is recommended to replace the flexible disc.

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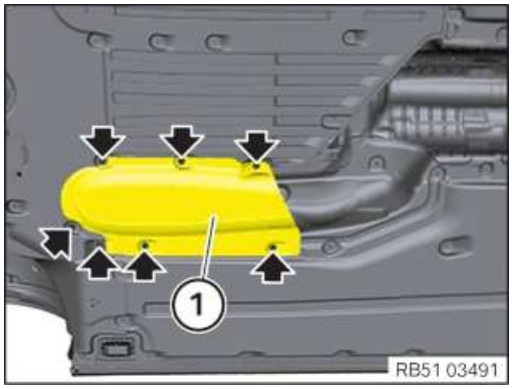
26 11 000 Removing and installing complete propeller shaft

PRELIMINARY WORK

1 – Remove the underbody panelling of the transmission on the side

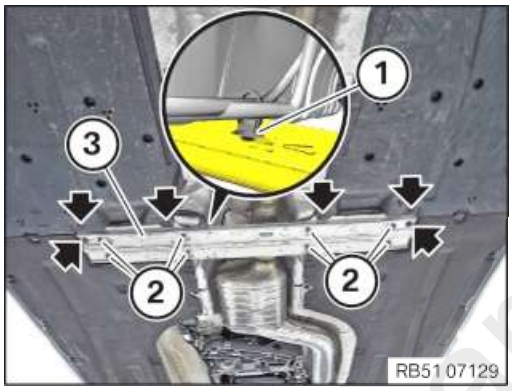
NOTICE

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).

2 – Remove the connecting support from the tunnel



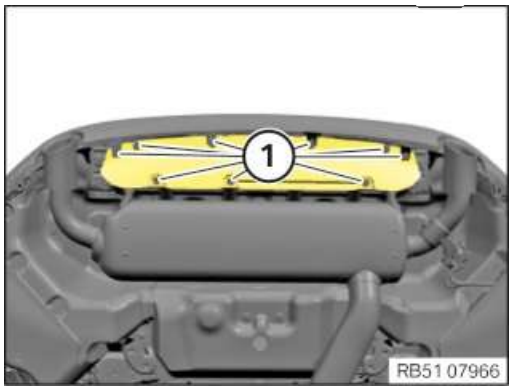
- Remove screws (arrows).

NOTICE

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

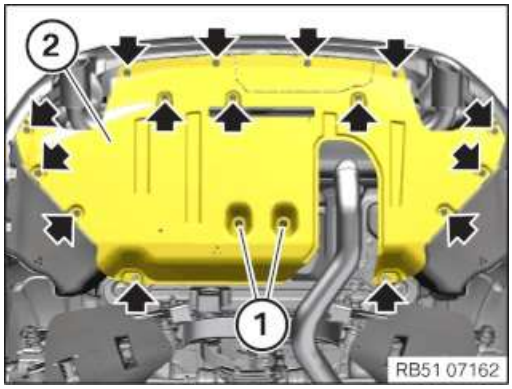
- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

3 – Removing the rear diffuser



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

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

4 – 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!

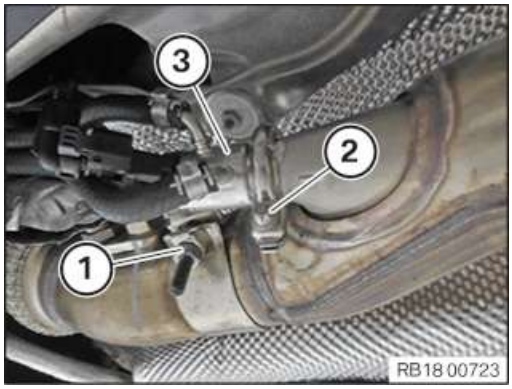
- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

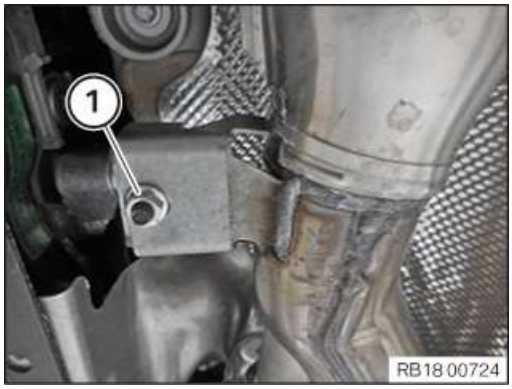
Heavy components can lead to injury or damage.

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

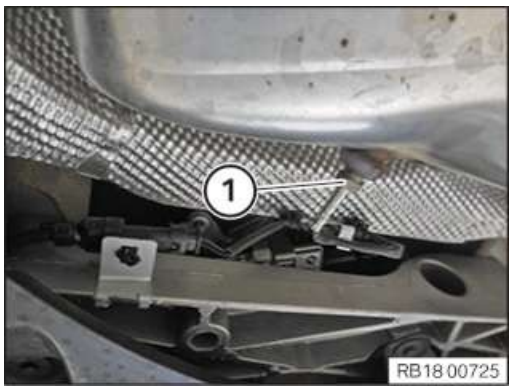


- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3)from the exhaust system and place to one side.

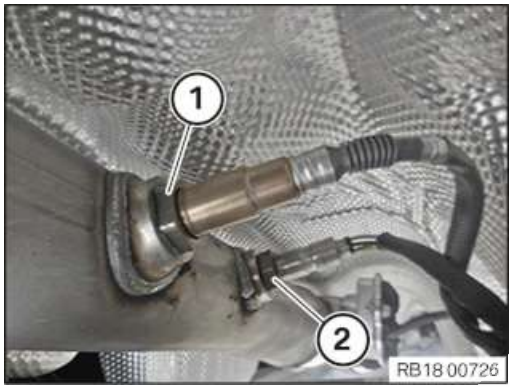
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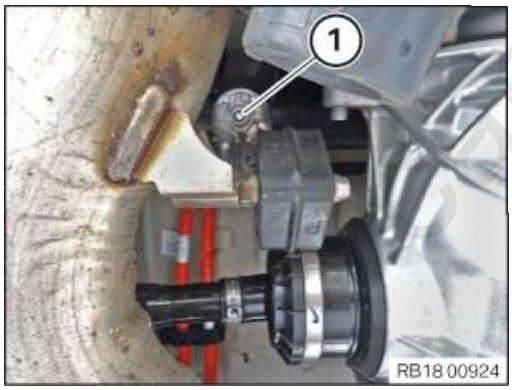
- Loosen nut (1).



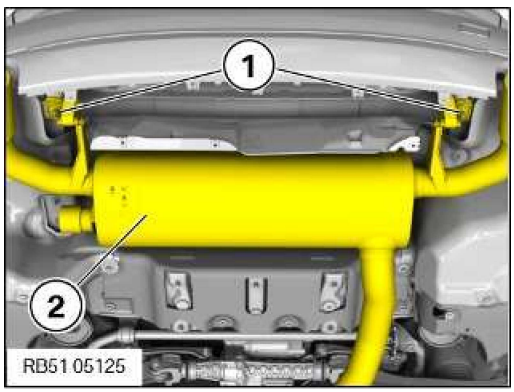
- Detach the exhaust temperature sensor (1) from the exhaust system.



- 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.



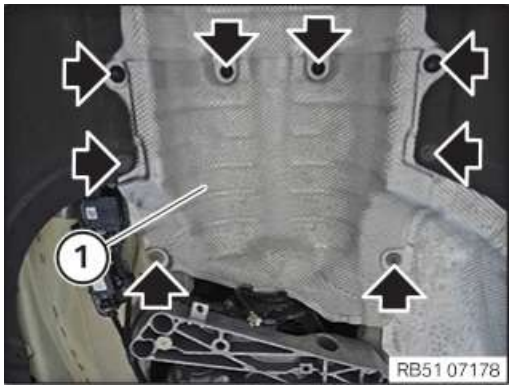
- Release the nut (1) on the rear axle support.



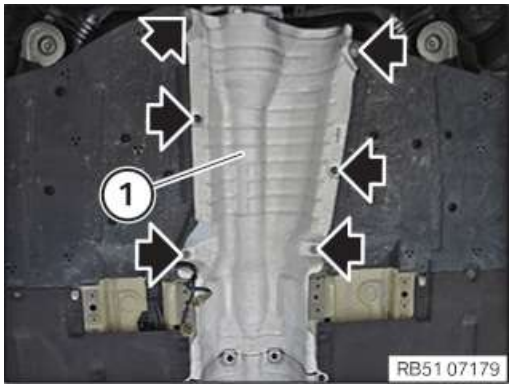
- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

5 – Remove the heat shield

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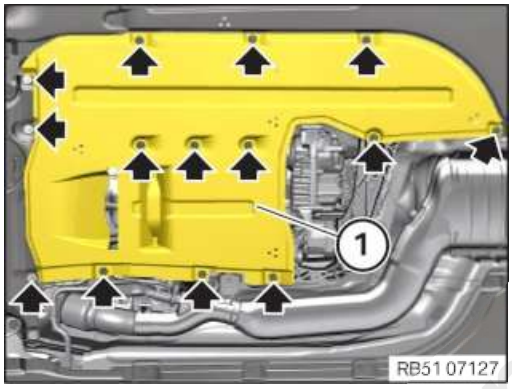


- Loosen bolts and nuts (arrows).
- Remove the heat shield (1).



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

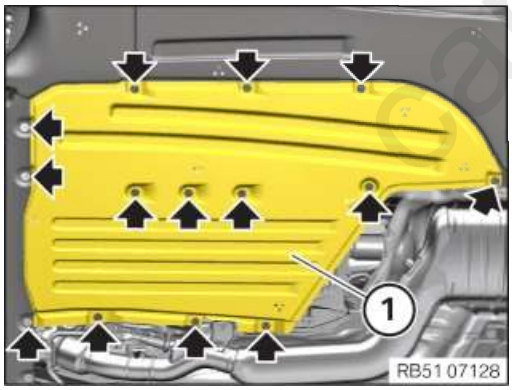
6 – Remove rear underbody protection



- **Version A:**

  Remove screws (arrows).

  Feed out the rear underbody protection (1).



- **Version B:**

  Remove screws (arrows).

  Guide out rear underbody protection (1) and remove it.

MAIN WORK

7 – Completely removing the propeller shaft (plug-in - rear flexible disc)

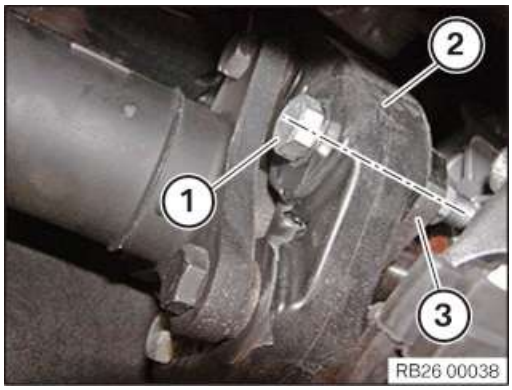
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RISK OF DAMAGE

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.

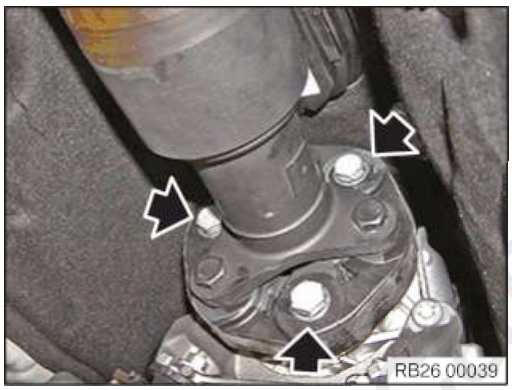
- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened 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.



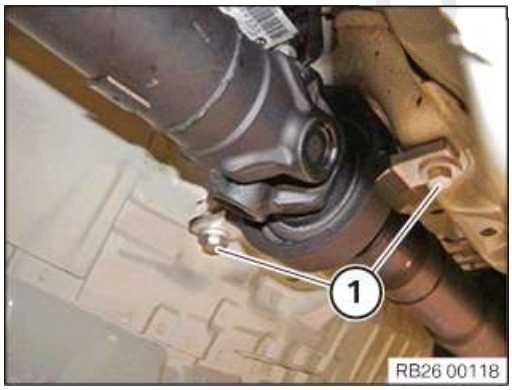
TECHNICAL INFORMATION

Compliance with the following instructions is required to avoid a humming noise from the propeller shaft after refitting the propeller shaft.

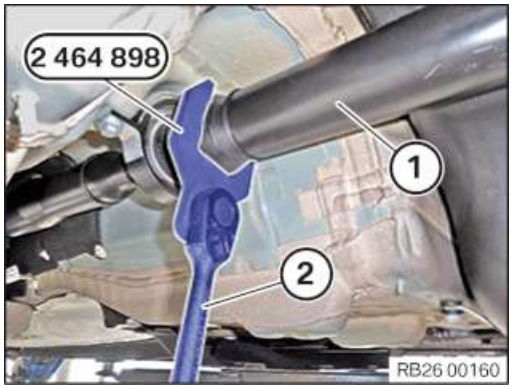
- Before loosening the flexible disc connection (1) at the front of the propeller shaft, it **must** be marked in one plane with the flexible disc (2) and the three-hole flange (3).
- It is essential to reassemble the three-hole flange (3) with the flexible disc (2) in the same position during installation.



- Remove screws (arrows).

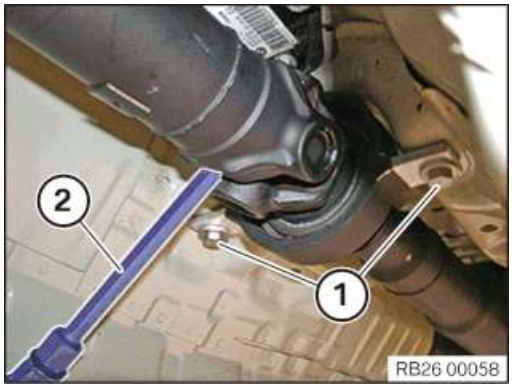


- Loosen screws (1).



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

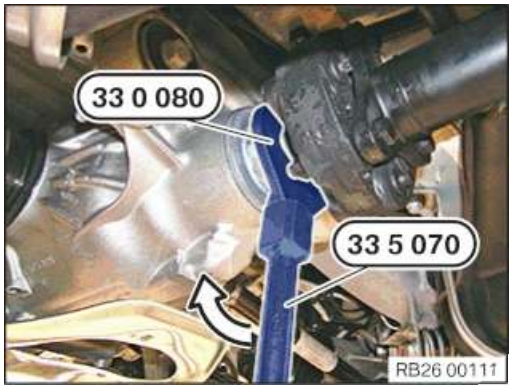
  With the special tool 2 464 898 and a suitable tool (2), secure the propeller shaft (1) on the centre universal joint against twisting.



- **Vehicles with a broad universal joint:**

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

  Remove the screws (1) of the centre mount only after opening the recessed nuts are removed completely.



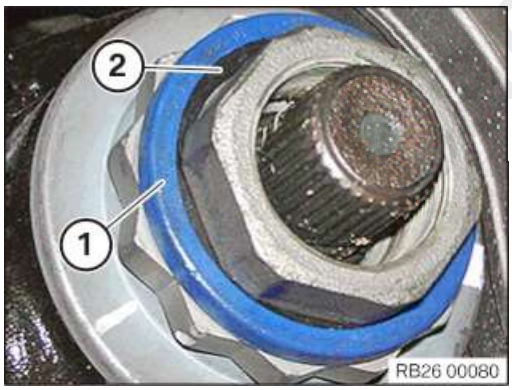
RISK OF DAMAGE

Damage to rear axle differential.

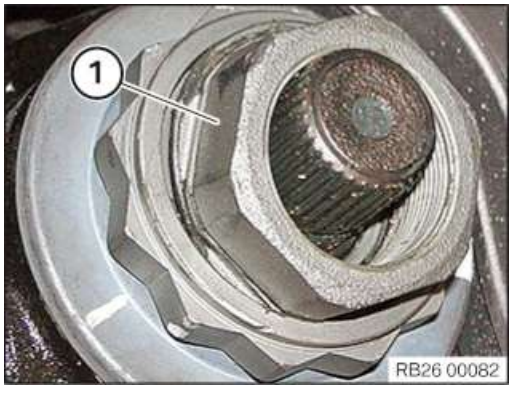
Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

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

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



- Remove the mounting clip (1) and the seal (2).



- Remove recessed nut (1).

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.

- Observe following installation sequence:
  - Position propeller shaft on transmission.
  - Position the propeller shaft at the rear axle differential.
  - Position centre mount.
- Observe the following screwing sequence:
  - Insert nut
  - Flexible disc to transmission
  - Centre mount



- Check the centring (arrow) for damage and renew if necessary.



- Apply a thin coat of grease to the soft centring (1), if necessary.

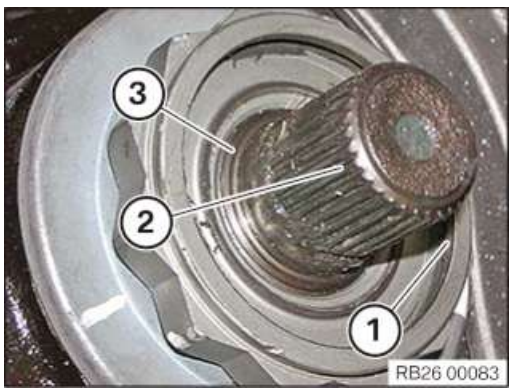
Expendable materials

Lubricating grease Olistamoly 2 LN 584 LO	100 g, Tube	83 19 0 447 919

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754

- Hard centring (2) must **not** be greased.

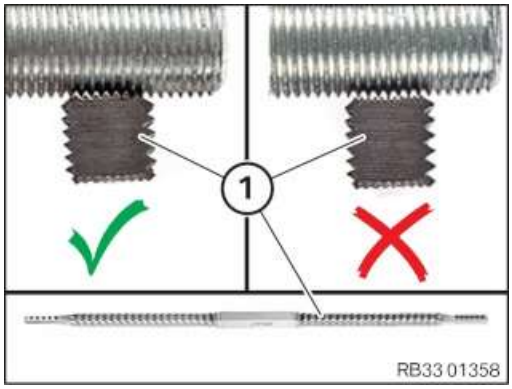


- Clean all residue from the insert collar (1) of the flange nut and the gearing on the bevel pinion (2) and degrease them.
- Top up the collar insert (1)with grease.

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754

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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.

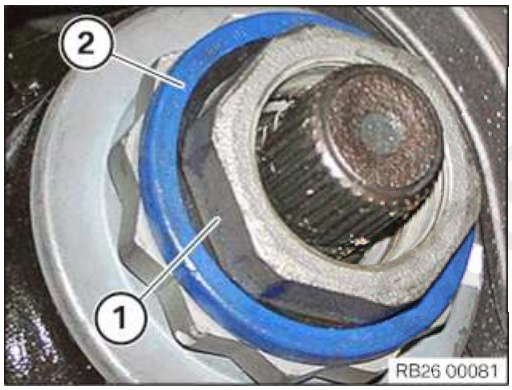
Failure to observe the greasing specifications may lead to damage on the output flange.

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

- Clean thread (1) of flange off adhesive residue.
- Clean gearing (2).
- Grease gearing (2).

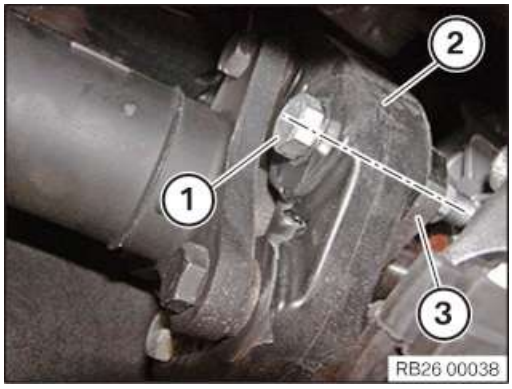
Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



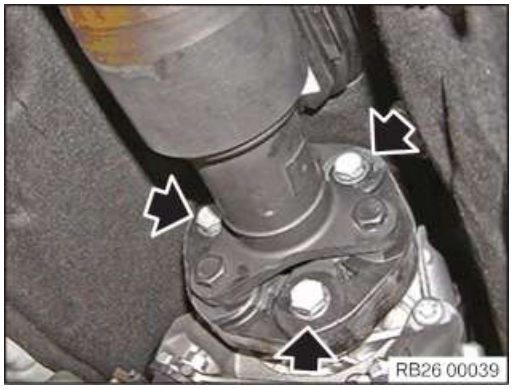
- Renew the seal, recessed nut (1) and the retaining ring (2).

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



- It is imperative to reassemble the three-hole flange (3) with the flexible disc (2) in the same position in order to avoid humming noise of the drivetrain after reinstalling the propeller shaft.
- Renew ZNS screws and the self-locking nuts (1).

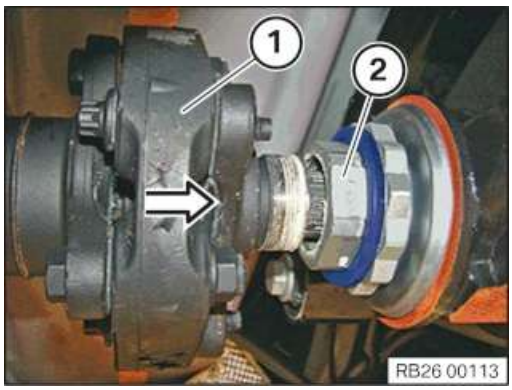
  Parts: ZNS screws, self-locking nuts



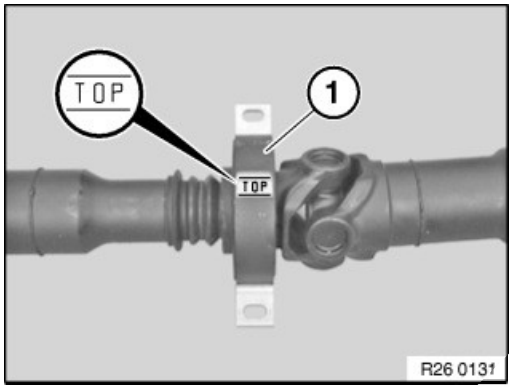
- Position the screws and nuts (arrows).
- Tighten the screws.

Front flexible disc to propeller shaft

M12	Renew screws. Comply with jointing torque and angle of rotation. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

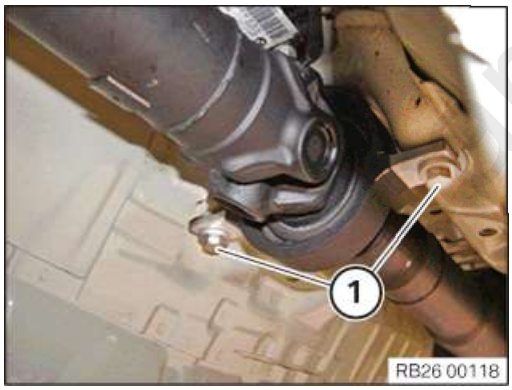


- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Manually screw on and tighten the recessed nut (2) onto the propeller shaft (1) by a minimum of two threads.

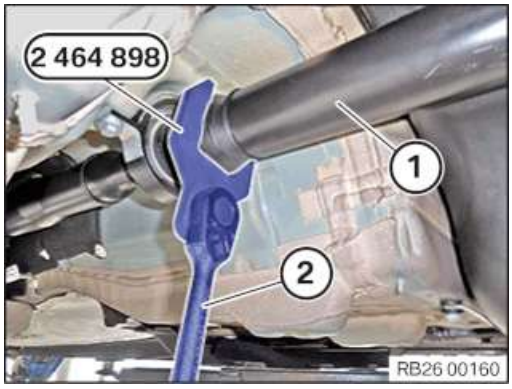


- **Version with the TOP designation:**

  The centre mount (1) must be installed with the TOP marking at the top in the gearbox tunnel.



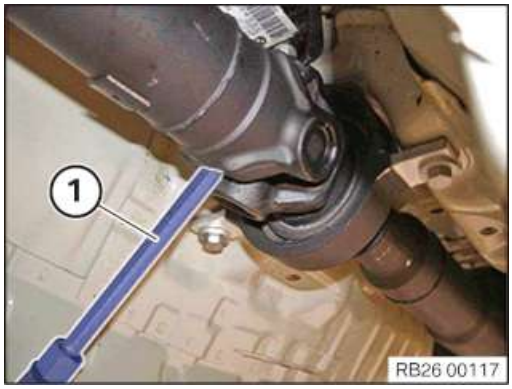
- Position centre mount.
- Position screws (1).



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

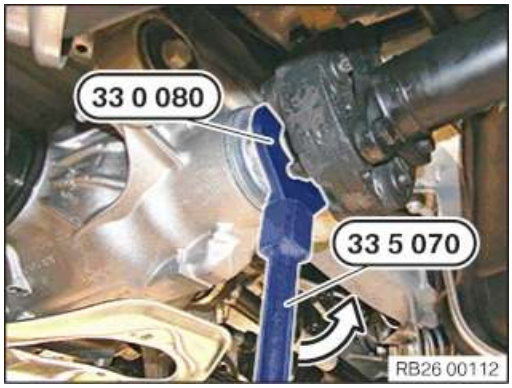
  Using the special tool 2 464 898 and a suitable tool (2), secure the propeller shaft (1) to the centre universal joint against twisting.

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

  Secure the propeller shaft against twisting at the central universal joint using a suitable tool (1).



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.

- Screw in the recessed nut **counter-clockwise, see direction of arrow** with special tools 0 495 554 (33 5 070) and .

  The recessed nut must be screwed in within 5 min .

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!

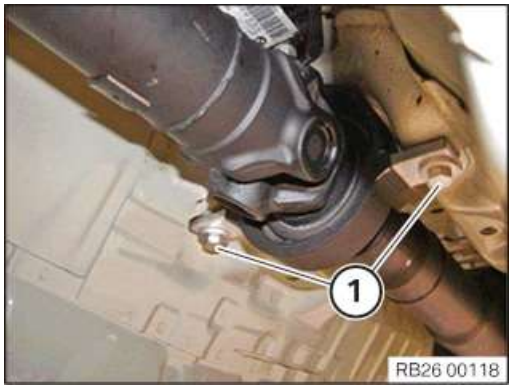


- Brace mounting bolts of flexible disc on nut and tighten by screw.

Rear flexible disc to three-hole flange

M12	Renew screws. Jointing torque and angle of rotation must be observed without fail. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

- Secure the special angle of rotation tool 0 490 504 (00 9 120) with the magnets to the vehicle underbody and screw it further depending on the angle of rotation.



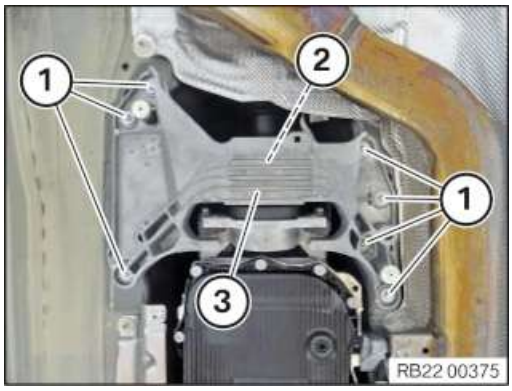
- Tighten the screws (1).

Centre mount to body

M8		Tightening torque	19 Nm

POSTPROCESSES

9 – Install transmission cross member.



- Install the transmission cross member (3).
- Insert screw (2) and tighten until hand-tight.
- Tighten the screws (1).

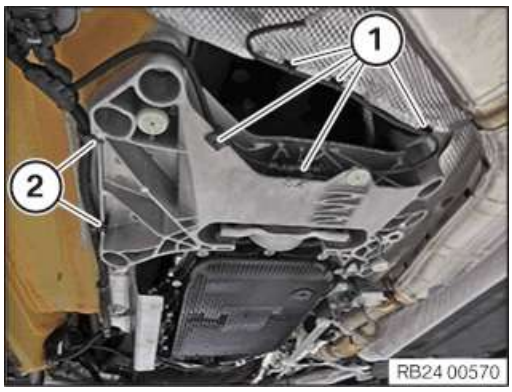
Transmission cross member to body

M8		Tightening torque	19 Nm

- Tighten down screw (2).

Transmission cross member to rubber mounts

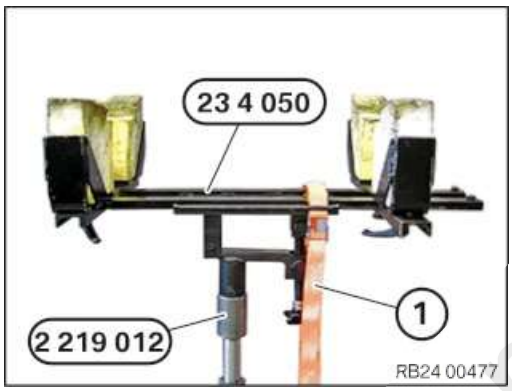
M12		Tightening torque	100 Nm



- **Only B47 and B57:**

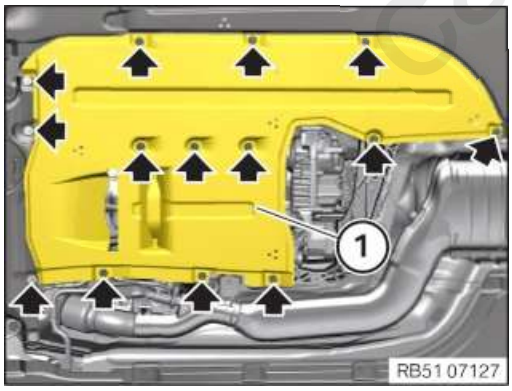
  Install the cable.

  Fasten the cable with clamps (1) and (2).



- Loosen the tensioning strap (1) from the transmission.
- Remove the special tools 0 495 498 (23 4 050) and 2 219 012 from the transmission.

10 – Installing underbody protection at rear



- **Version A:**

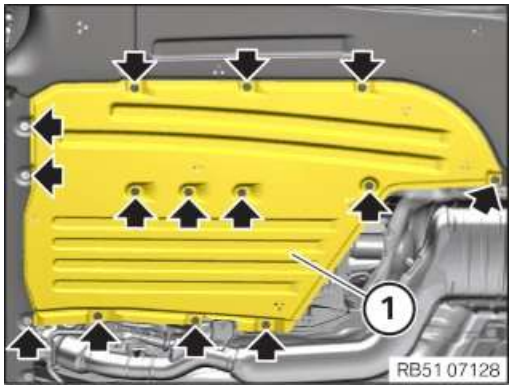
  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm

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- **Version B:**

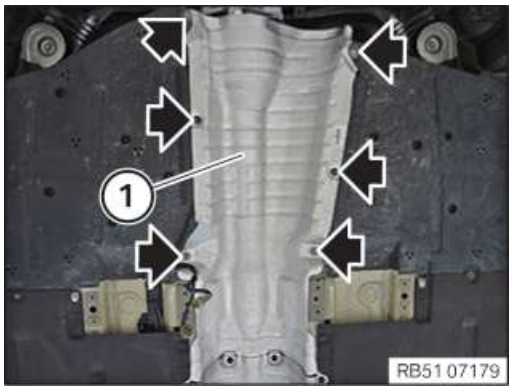
  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm

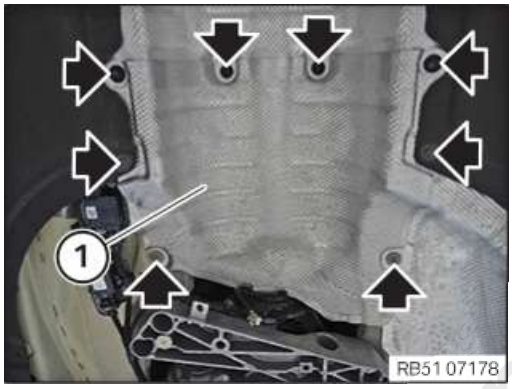
11 – Installing the heat shields



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

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm



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

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

12 – 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.

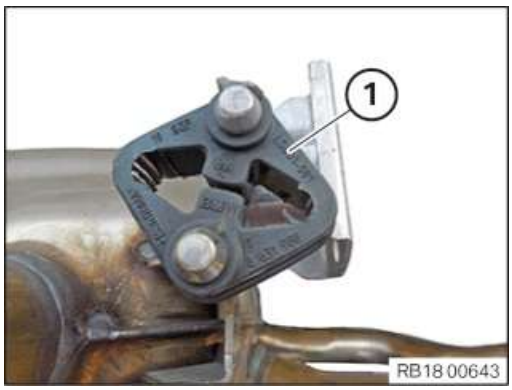
Heavy components can lead to injury or damage.

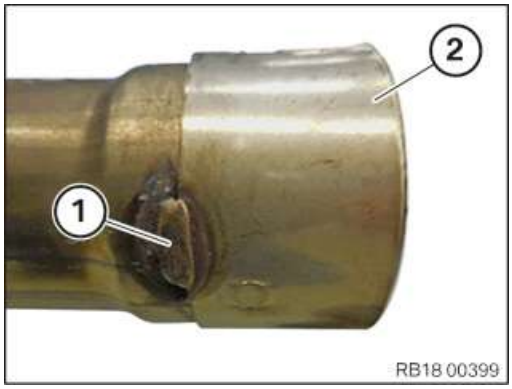
- Remove and install heavy components with the aid of another person/other persons.

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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.





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

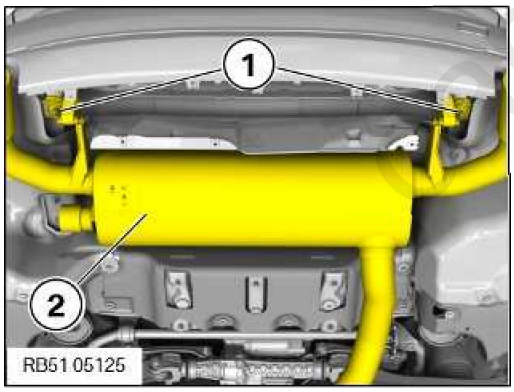
Swarf resulting from sawing or grinding components.

Danger of injury!

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

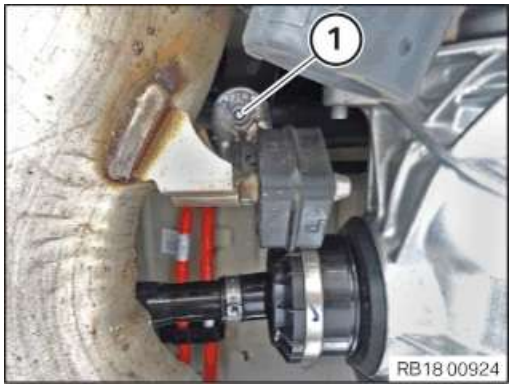
- Open the weld seam (1) with a conventional tool.
- Remove the clamp (2).
- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).



Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm



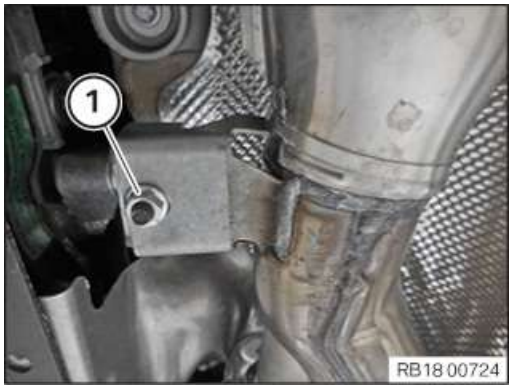
- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

M8 nut		Tightening torque	19 Nm

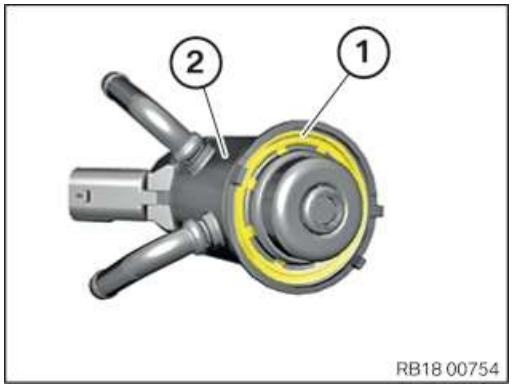
mdiagn.com



- Tighten nut (1).

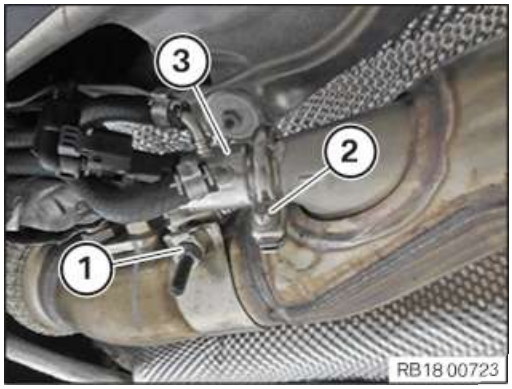
Exhaust system to transmission

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

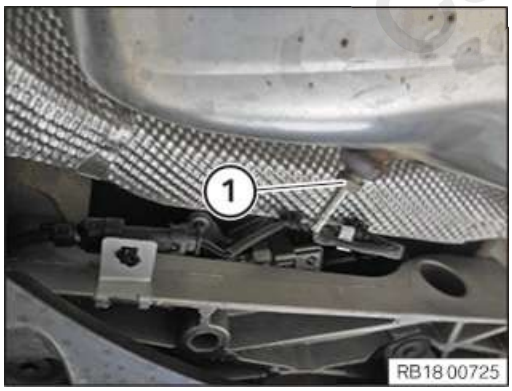
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- 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

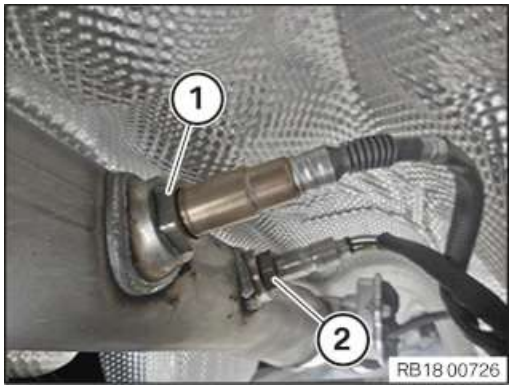


- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

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

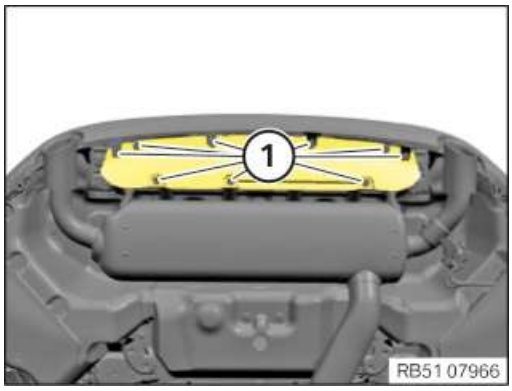
Sensor		Tightening torque	50 Nm

- 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

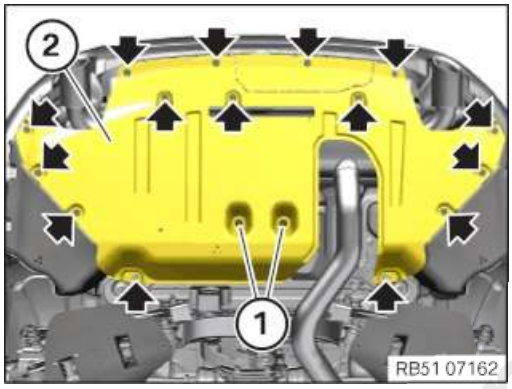
13 – Installing the rear diffuser



- **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

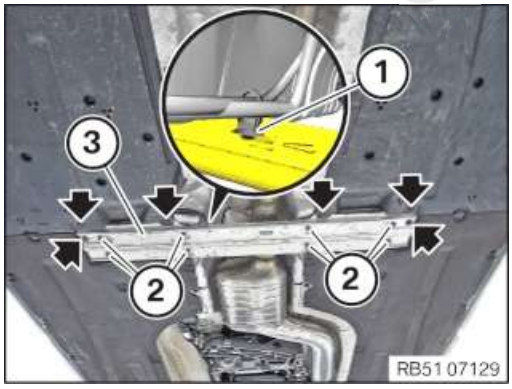
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

14 – 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.

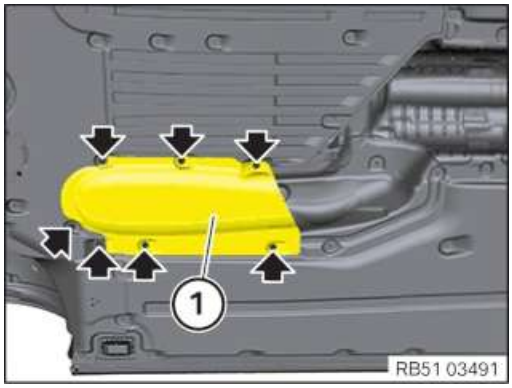
- Secure the clamp (1).

15 – 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

Front flexible disc to propeller shaft — Used in step 8

M12	Renew screws. Comply with jointing torque and angle of rotation. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

Propeller shaft on the rear axle differential — Used in step 8

Insert nut	Replace insert nut.	Tightening torque	100 Nm

Rear flexible disc to three-hole flange — Used in step 8

M12	Renew screws. Jointing torque and angle of rotation must be observed without fail. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

Centre mount to body — Used in step 8

M8		Tightening torque	19 Nm

Transmission cross member to body — Used in step 9

M8		Tightening torque	19 Nm

Transmission cross member to rubber mounts — Used in step 9

M12		Tightening torque	100 Nm

Underbody protection — Used in step 10

Hexagon screw		Tightening torque	3 Nm

Heat shield to undercarriage — Used in step 11

Screws and nuts		Tightening torque	3 Nm

Rear silencer to body / bumper support — Used in step 12

M8	Replace nuts.	Tightening torque	19 Nm

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Exhaust system to rear axle carrier — Used in step 12

M8 nut		Tightening torque	19 Nm

Exhaust system to transmission — Used in step 12

M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter — Used in step 12

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

SCR metering module V-clip to exhaust system — Used in step 12

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

Exhaust-gas temperature sensor upstream of SCR catalytic converter — Used in step 12

Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system — Used in step 12

Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter — Used in step 12

Sensor		Tightening torque	55 Nm

Diffuser / underbody panelling — Used in step 13

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 15

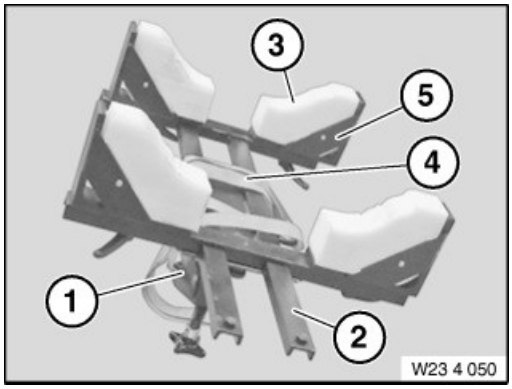
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Overview of Special Tools

0 495 498 (23 4 050) Fixture

Used in step 9

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Common

Usage	(universal gearbox holder) Support for removing and installing manual gearboxes and automatic transmissions for BMW & RR.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 06 (256)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
3	0 495 549 (23 4 053)		**Insert** (foam inserts (1 set = 4 pcs.))	
1	0 495 547 (23 4 051)		**Joint** Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
2	0 495 548 (23 4 052)		**Frame** (Basic frame) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
4	0 495 550 (23 4 054)		**Belt** (Tensioning strap) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
5	0 496 018 (23 4 055)		**Fixture** (Fixture for foam insert) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	

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2 219 012 Hydraulic lifter



Common Used in step 9

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)

2 464 898 Open-end spanner



Common	Used in step 78
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 78
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	

0 490 504 (00 9 120) Torque angle measuring dial



Common	Used in step 8
Usage	For torsion angle adjustment of cylinder head bolts (all engines) And reinforcement plate front axle support E46
Included in the tool or work	
Storage location	A4
Replaced by	
In connection with	
SI-Number	

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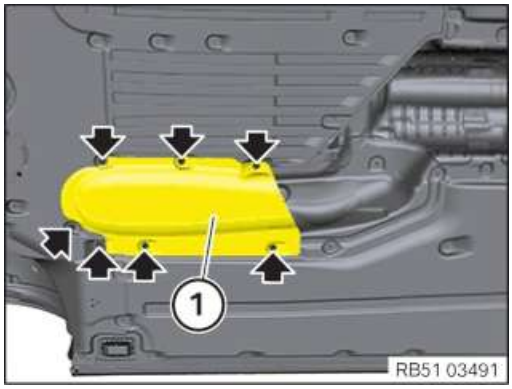
26 11 020 Replacing centre mount gaiter

PRELIMINARY WORK

1 – Remove the underbody panelling of the transmission on the side

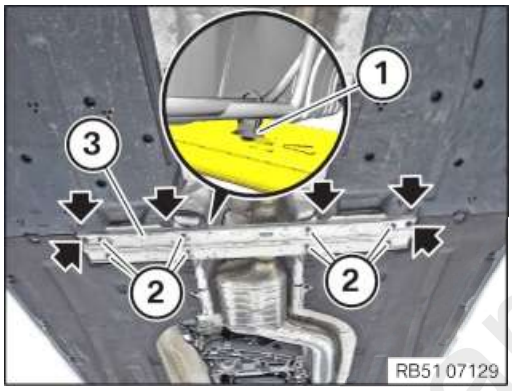
NOTICE

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).

2 – Remove the connecting support from the tunnel



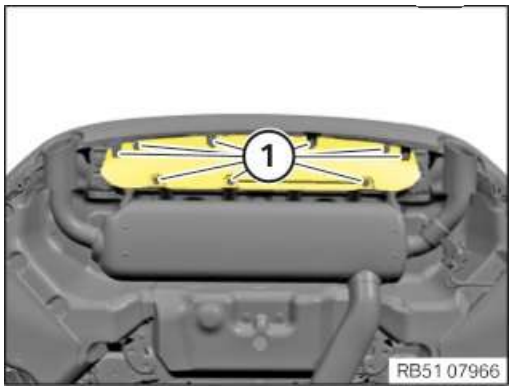
- Remove screws (arrows).

NOTICE

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

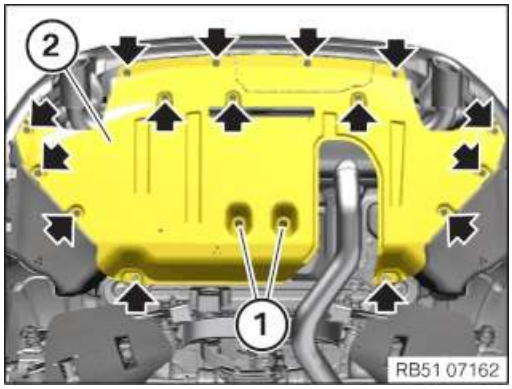
- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

3 – Removing the rear diffuser



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

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

4 – 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!

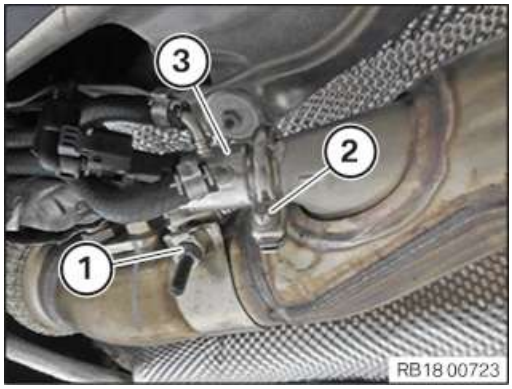
- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

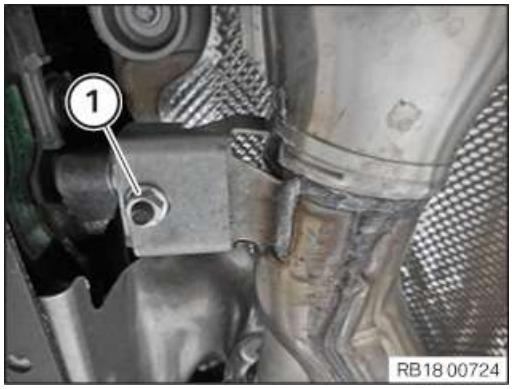
Heavy components can lead to injury or damage.

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

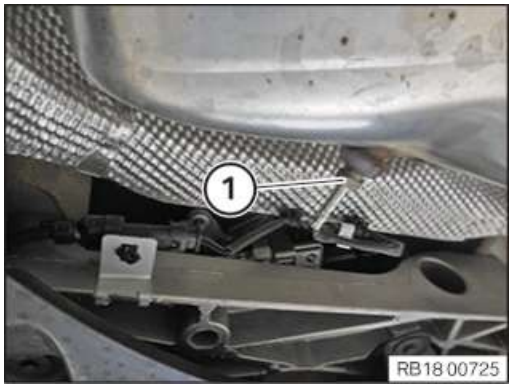


- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3)from the exhaust system and place to one side.

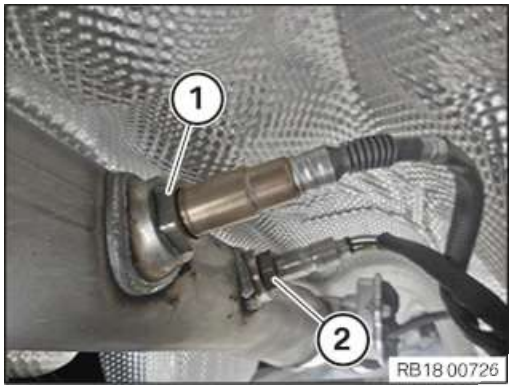
cardiagn.com



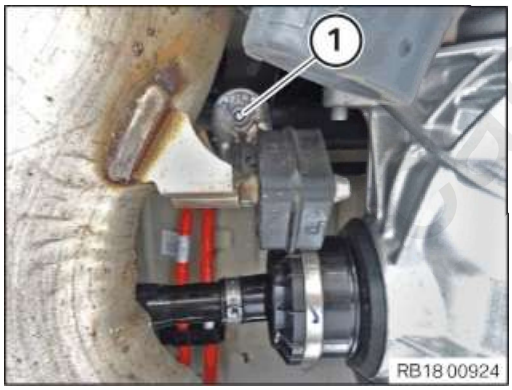
- Loosen nut (1).



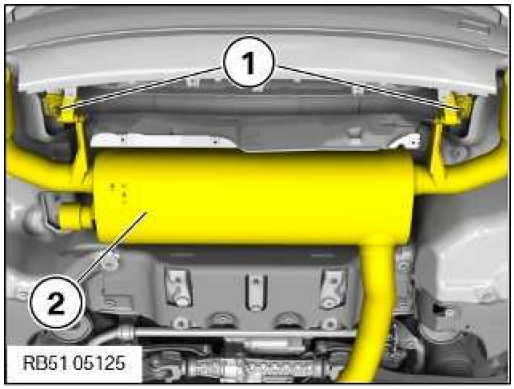
- Detach the exhaust temperature sensor (1) from the exhaust system.



- 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.



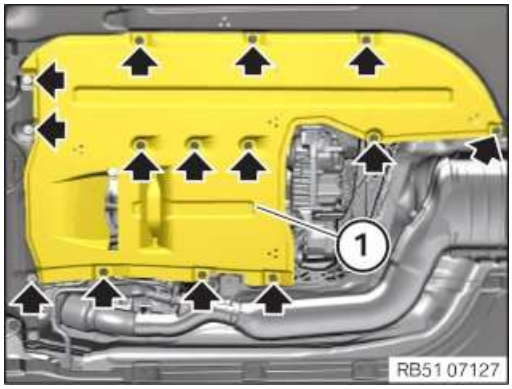
- Release the nut (1) on the rear axle support.



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

5 – Remove rear underbody protection

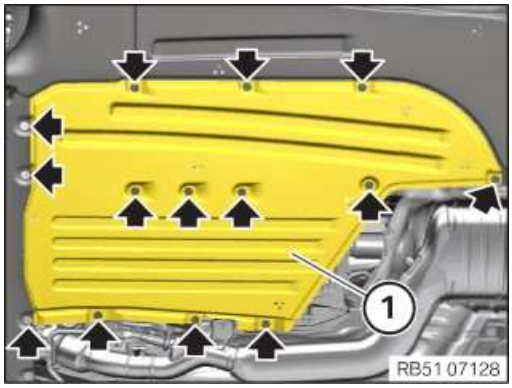
carsdiagn.com



- **Version A:**

  Remove screws (arrows).

  Feed out the rear underbody protection (1).

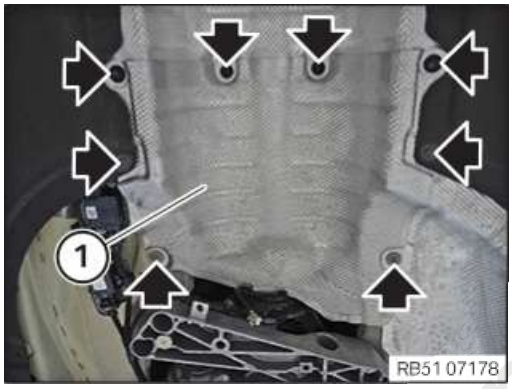


- **Version B:**

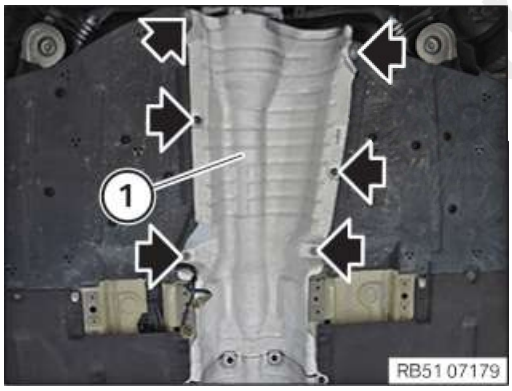
  Remove screws (arrows).

  Guide out rear underbody protection (1) and remove it.

6 – Remove the heat shield



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



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

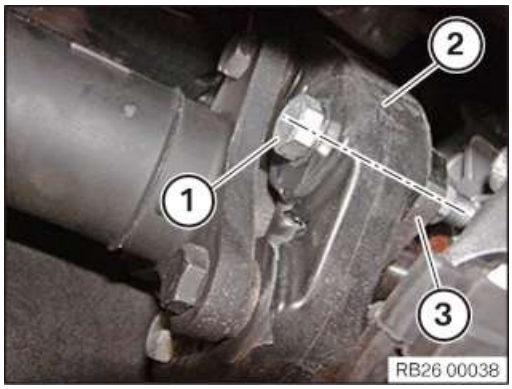
7 – Completely removing the propeller shaft (plug-in - rear flexible disc)

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.

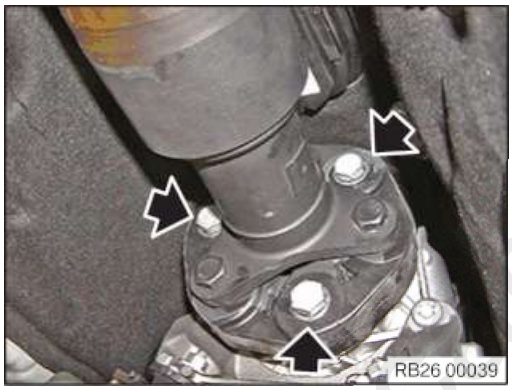
- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened 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.



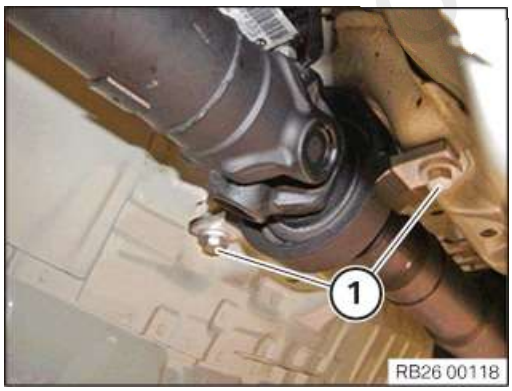
TECHNICAL INFORMATION

Compliance with the following instructions is required to avoid a humming noise from the propeller shaft after refitting the propeller shaft.

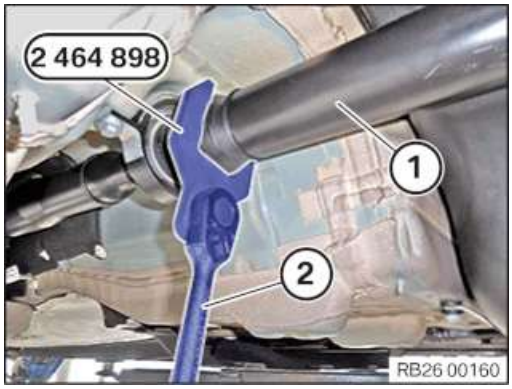
- Before loosening the flexible disc connection (1) at the front of the propeller shaft, it **must** be marked in one plane with the flexible disc (2) and the three-hole flange (3).
- It is essential to reassemble the three-hole flange (3) with the flexible disc (2) in the same position during installation.



- Remove screws (arrows).

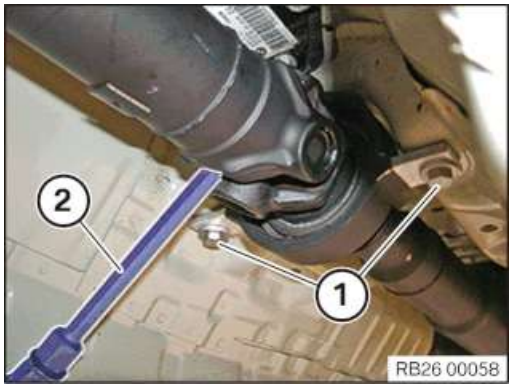


- Loosen screws (1).



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

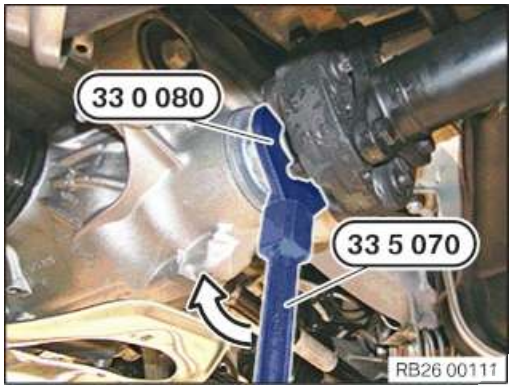
  With the special tool 2 464 898 and a suitable tool (2), secure the propeller shaft (1) on the centre universal joint against twisting.



- **Vehicles with a broad universal joint:**

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

  Remove the screws (1) of the centre mount only after opening the recessed nuts are removed completely.



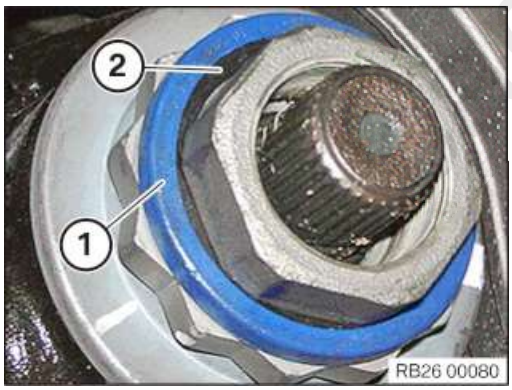
RISK OF DAMAGE

Damage to rear axle differential.

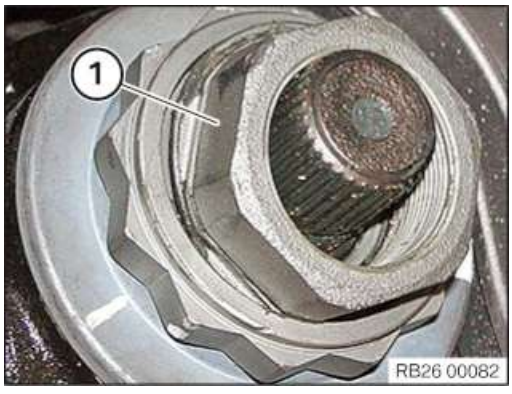
Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

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

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

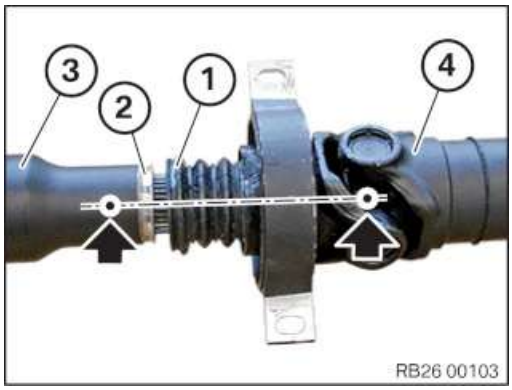


- Remove the mounting clip (1) and the seal (2).



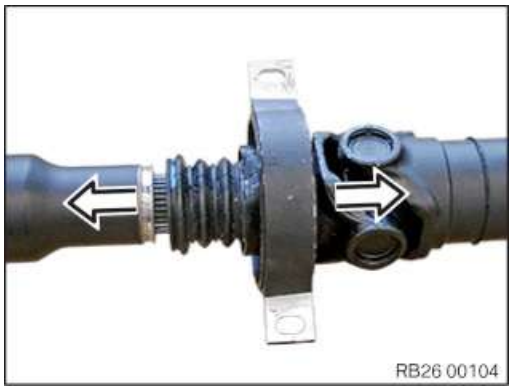
- Remove recessed nut (1).

8 – Removing the gaiter of the centre mount

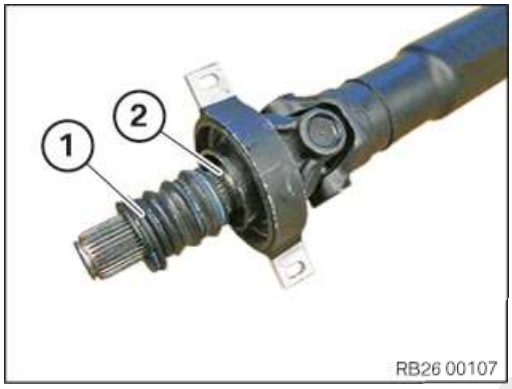


- Pull off the gaiter (1) from the groove (2).
- Mark the alignment of the installation positions of the front propeller shaft (3) and the rear propeller shaft (4).

  The identification allows the front and rear propeller shafts to be installed at the same position. This guarantees that the propeller shaft will once again be balanced within the system following installation.

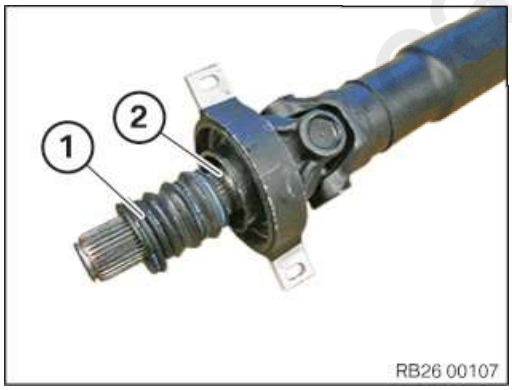


- Pull apart the propeller shaft in the direction of the arrow.



- Release the gaiter (1) from the groove (2) using a screwdriver and pull it off over the longitudinal splines.

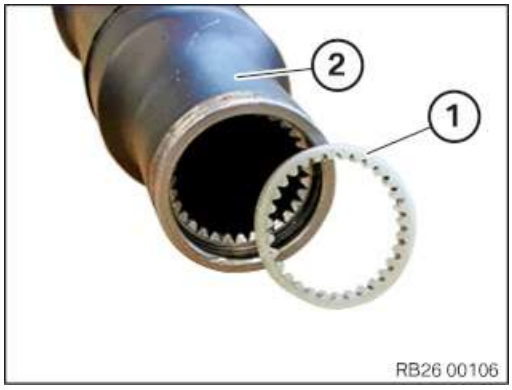
9 – Installing the gaiter of the centre mount



- Evenly grease the longitudinal splines of the propeller shaft.
- Push in the gaiter (1) onto the groove (2) and make sure it is securely positioned.

Expendable materials

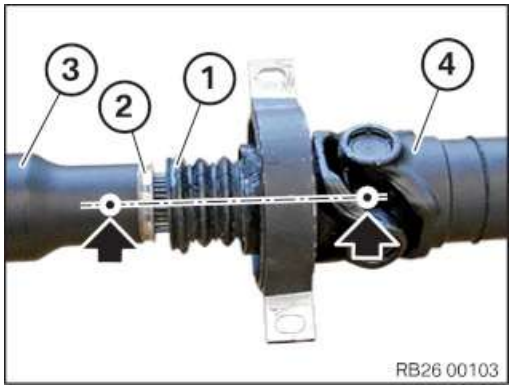
Lubricating grease Olistamoly 2 LN 584 LO	100 g, Tube	83 19 0 447 919



- If applicable, renew the clamping ring (1) and insert it in the front propeller shaft (2).

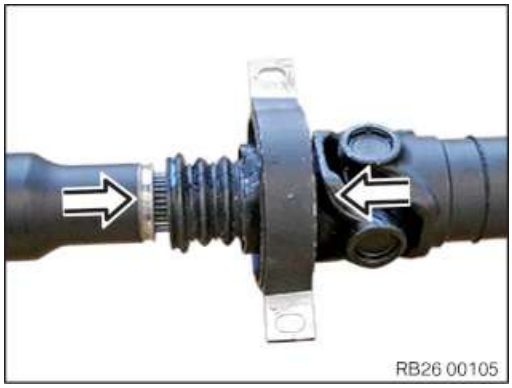
  Parts: Clamping ring

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- Push the front propeller shaft (3) onto the longitudinal splines of the rear propeller shaft (4) as per the individually applied marks.

  The marks (arrows) must be aligned.
- Push in the gaiter (1) onto the groove (2) and make sure it is securely positioned.



- Push the propeller shaft together in the direction of the arrow.

POSTPROCESSES

10 – Completely installing the propeller shaft

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.

- Observe following installation sequence:
  - Position propeller shaft on transmission.
  - Position the propeller shaft at the rear axle differential.
  - Position centre mount.
- Observe the following screwing sequence:
  - Insert nut
  - Flexible disc to transmission
  - Centre mount

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- Check the centring (arrow) for damage and renew if necessary.



- Apply a thin coat of grease to the soft centring (1), if necessary.

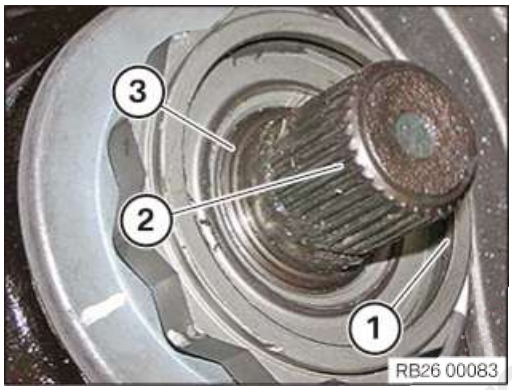
Expendable materials

Lubricating grease Olistamoly 2 LN 584 LO	100 g, Tube	83 19 0 447 919

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754

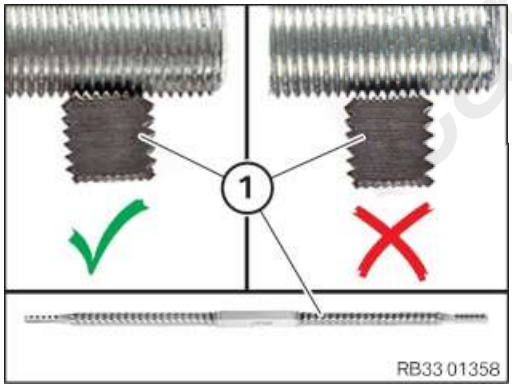
- Hard centring (2) must **not** be greased.



- Clean all residue from the insert collar (1) of the flange nut and the gearing on the bevel pinion (2) and degrease them.
- Top up the collar insert (1)with grease.

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- 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.

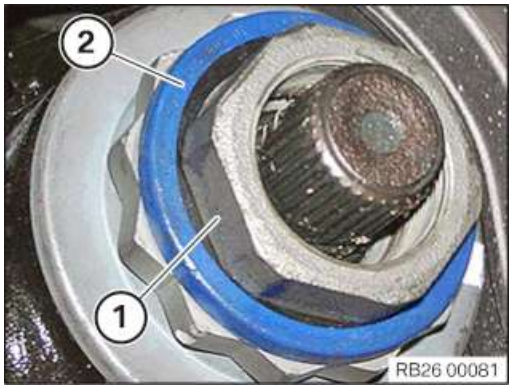
Failure to observe the greasing specifications may lead to damage on the output flange.

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

- Clean thread (1) of flange off adhesive residue.
- Clean gearing (2).
- Grease gearing (2).

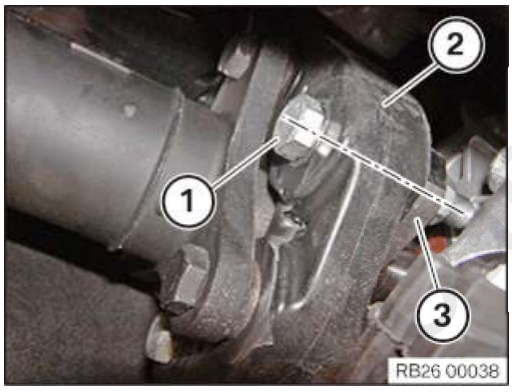
Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



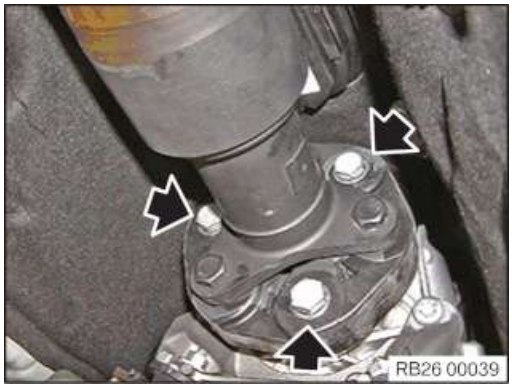
- Renew the seal, recessed nut (1) and the retaining ring (2).

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



- It is imperative to reassemble the three-hole flange (3) with the flexible disc (2) in the same position in order to avoid humming noise of the drivetrain after reinstalling the propeller shaft.
- Renew ZNS screws and the self-locking nuts (1).

  Parts: ZNS screws, self-locking nuts

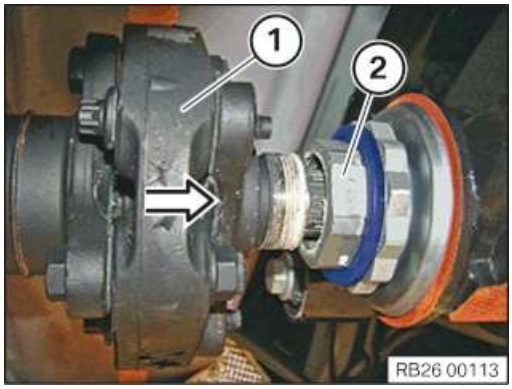


- Position the screws and nuts (arrows).
- Tighten the screws.

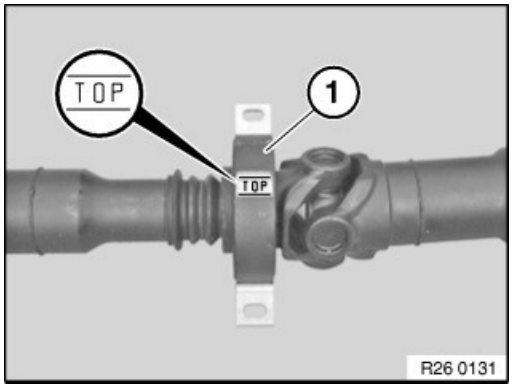
Front flexible disc to propeller shaft

M12	Renew screws. Comply with jointing torque and angle of rotation. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

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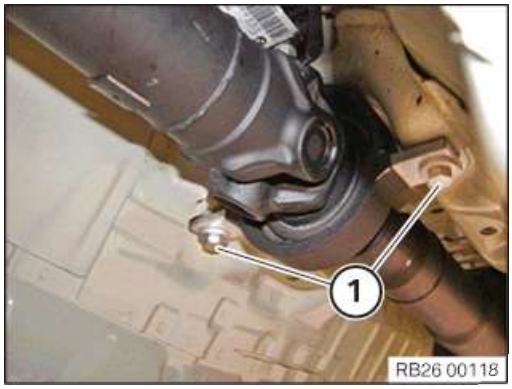


- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Manually screw on and tighten the recessed nut (2) onto the propeller shaft (1) by a minimum of two threads.

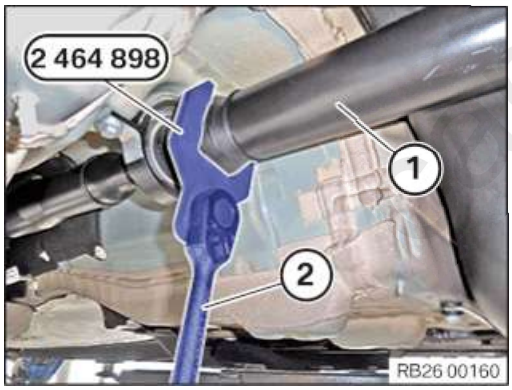


- **Version with the TOP designation:**

  The centre mount (1) must be installed with the TOP marking at the top in the gearbox tunnel.

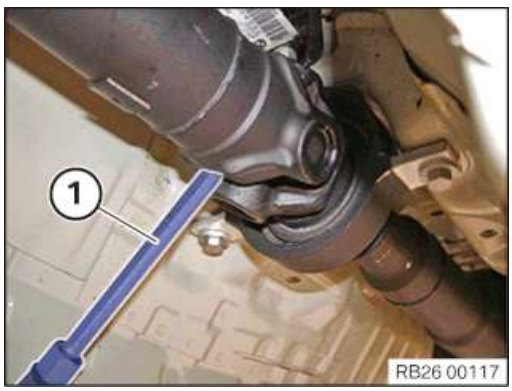


- Position centre mount.
- Position screws (1).



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

  Using the special tool 2 464 898 and a suitable tool (2), secure the propeller shaft (1) to the centre universal joint against twisting.



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

  Secure the propeller shaft against twisting at the central universal joint using a suitable tool (1).

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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.

- Screw in the recessed nut **counter-clockwise, see direction of arrow** with special tools 0 495 554 (33 5 070) and .

  The recessed nut must be screwed in within 5 min .

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!

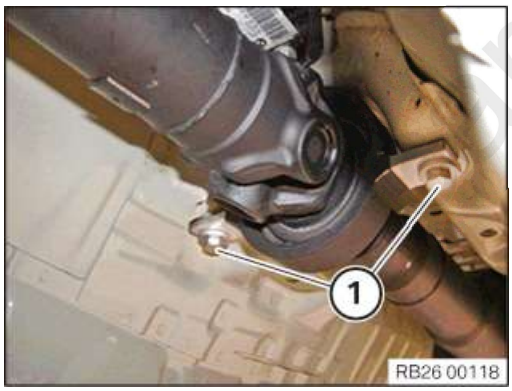


- Brace mounting bolts of flexible disc on nut and tighten by screw.

Rear flexible disc to three-hole flange

M12	Renew screws. Jointing torque and angle of rotation must be observed without fail. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

- Secure the special angle of rotation tool 0 490 504 (00 9 120) with the magnets to the vehicle underbody and screw it further depending on the angle of rotation.

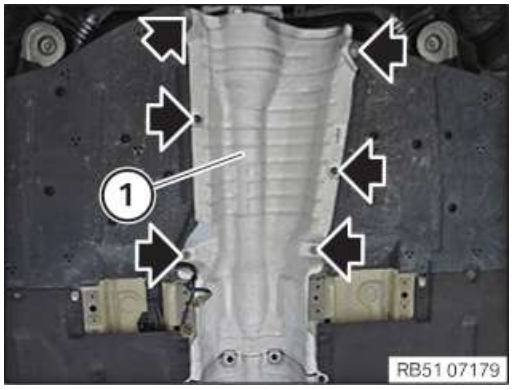


- Tighten the screws (1).

Centre mount to body

M8		Tightening torque	19 Nm

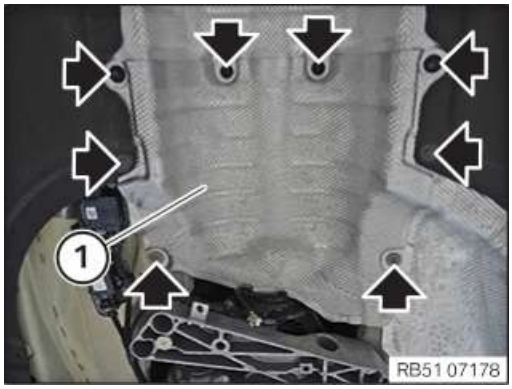
11 – Installing the heat shields



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

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

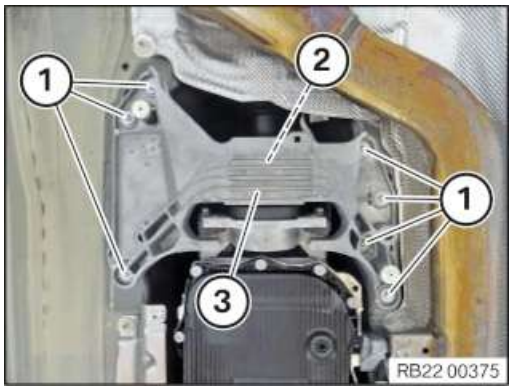


- Install the heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

12 – Install transmission cross member.



- Install the transmission cross member (3).
- Insert screw (2) and tighten until hand-tight.
- Tighten the screws (1).

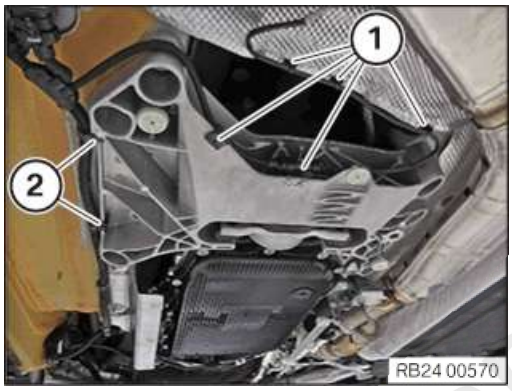
Transmission cross member to body

M8		Tightening torque	19 Nm

- Tighten down screw (2).

Transmission cross member to rubber mounts

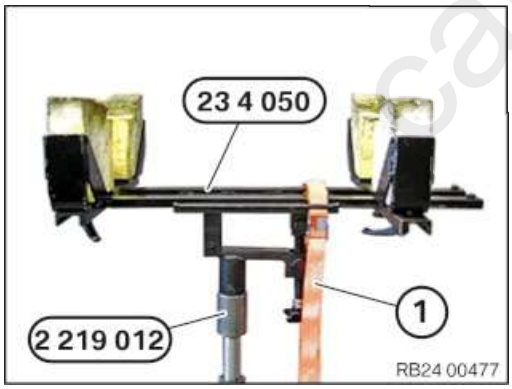
M12		Tightening torque	100 Nm



- **Only B47 and B57:**

  Install the cable.

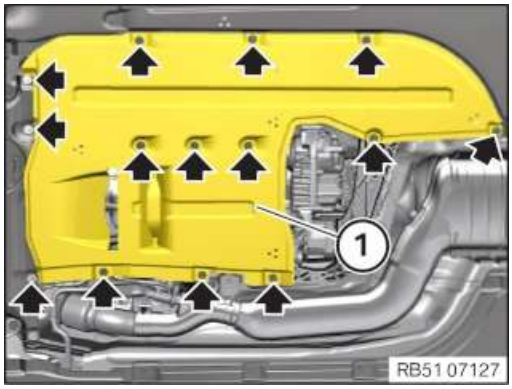
  Fasten the cable with clamps (1) and (2).



- Loosen the tensioning strap (1) from the transmission.
- Remove the special tools 0 495 498 (23 4 050) and 2 219 012 from the transmission.

13 – Installing underbody protection at rear

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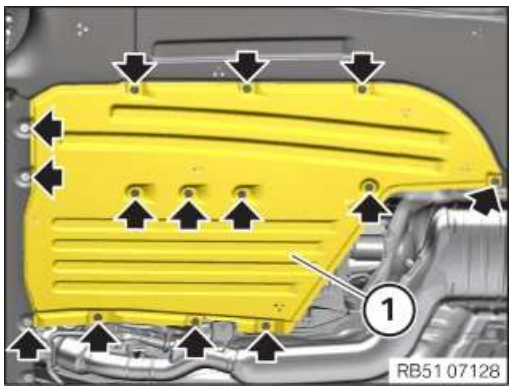
- **Version A:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm



- **Version B:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		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.

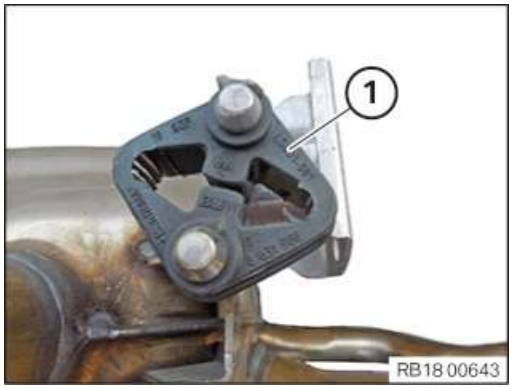
Heavy components can lead to injury or damage.

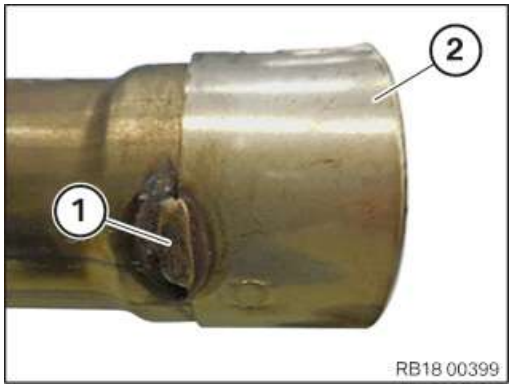
- Remove and install heavy components with the aid of another person/other persons.

TECHNICAL INFORMATION

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

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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

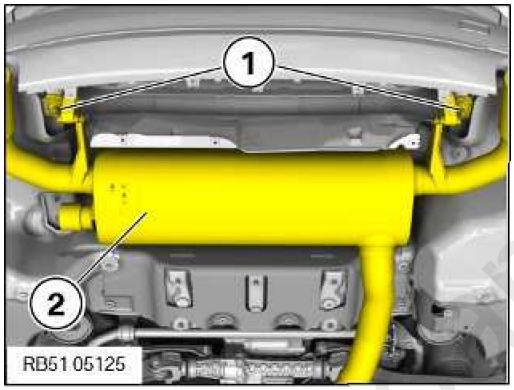
CAUTION

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).

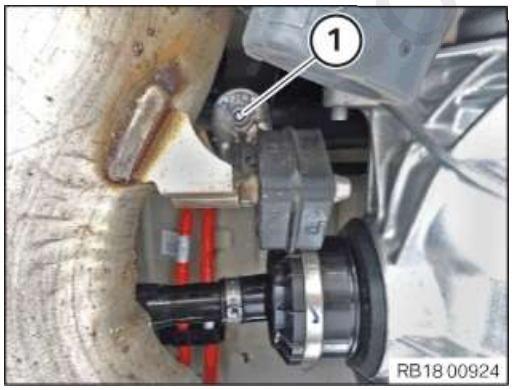


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

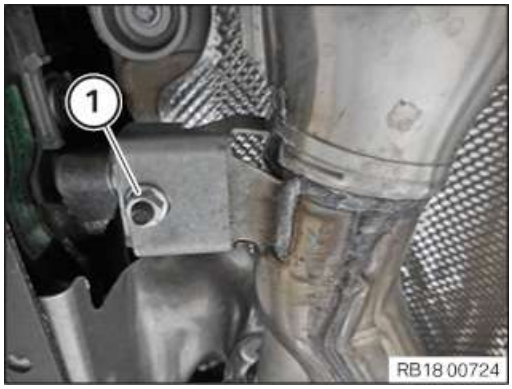


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

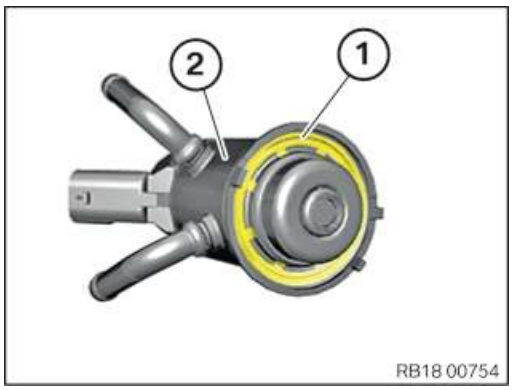
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

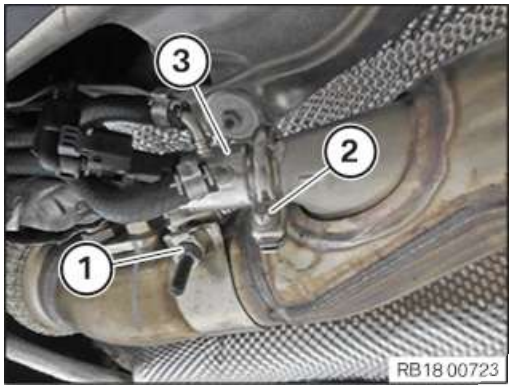
Exhaust system to transmission

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

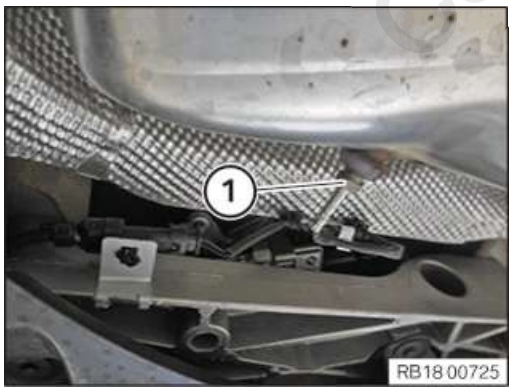
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- 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

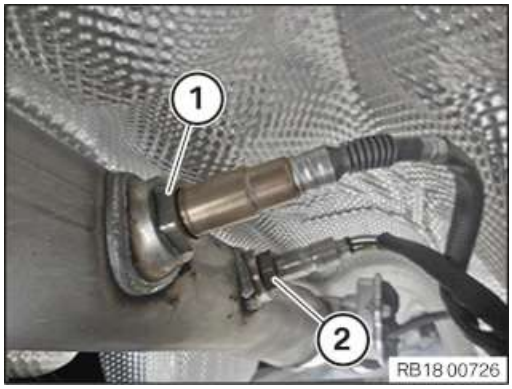


- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm

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

Diesel particulate sensor to exhaust system

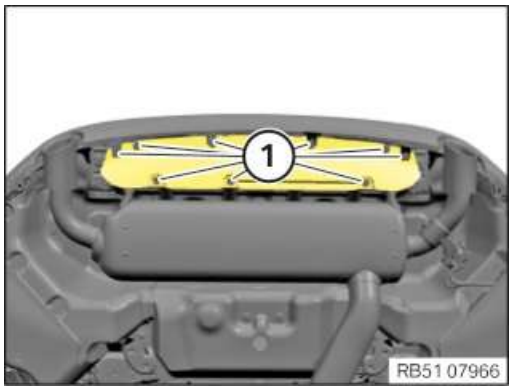
Sensor		Tightening torque	50 Nm

- 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

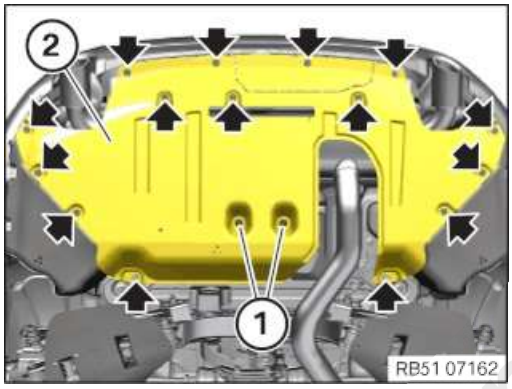
15 – Installing the rear diffuser



- **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

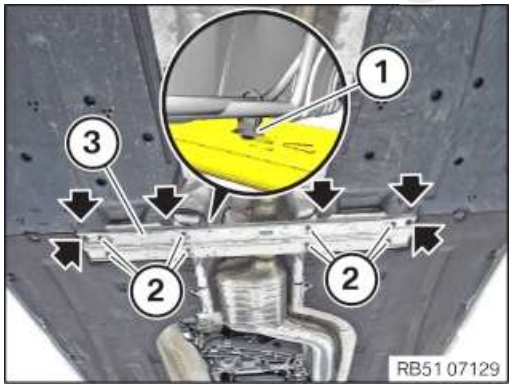
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

16 – 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.

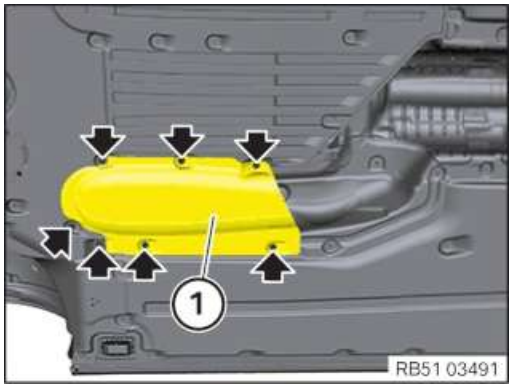
- Secure the clamp (1).

17 – 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

Front flexible disc to propeller shaft — Used in step 10

M12	Renew screws. Comply with jointing torque and angle of rotation. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

Propeller shaft on the rear axle differential — Used in step 10

Insert nut	Replace insert nut.	Tightening torque	100 Nm

Rear flexible disc to three-hole flange — Used in step 10

M12	Renew screws. Jointing torque and angle of rotation must be observed without fail. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

Centre mount to body — Used in step 10

M8		Tightening torque	19 Nm

Heat shield to undercarriage — Used in step 11

Screws and nuts		Tightening torque	3 Nm

Transmission cross member to body — Used in step 12

M8		Tightening torque	19 Nm

Transmission cross member to rubber mounts — Used in step 12

M12		Tightening torque	100 Nm

Underbody protection — Used in step 13

Hexagon screw		Tightening torque	3 Nm

Rear silencer to body / bumper support — Used in step 14

M8	Replace nuts.	Tightening torque	19 Nm

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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 15

Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel — Used in step 16

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling — Used in step 17

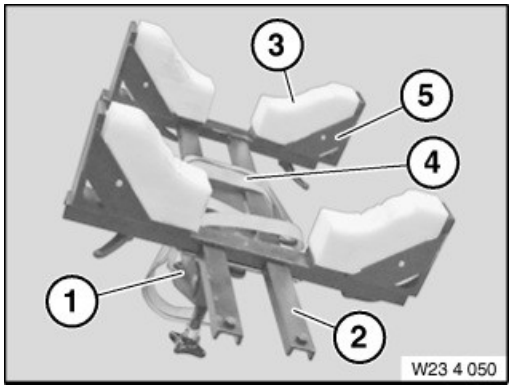
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Overview of Special Tools

0 495 498 (23 4 050) Fixture

Used in step 12

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Common

Usage	(universal gearbox holder) Support for removing and installing manual gearboxes and automatic transmissions for BMW & RR.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 06 (256)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
3	0 495 549 (23 4 053)		**Insert** (foam inserts (1 set = 4 pcs.))	
1	0 495 547 (23 4 051)		**Joint** Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
2	0 495 548 (23 4 052)		**Frame** (Basic frame) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
4	0 495 550 (23 4 054)		**Belt** (Tensioning strap) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
5	0 496 018 (23 4 055)		**Fixture** (Fixture for foam insert) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	

2 219 012 Hydraulic lifter



Common Used in step 12

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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2 464 898 Open-end spanner



Common	Used in step 710
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 710
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	

0 490 504 (00 9 120) Torque angle measuring dial



Common	Used in step 10
Usage	For torsion angle adjustment of cylinder head bolts (all engines) And reinforcement plate front axle support E46
Included in the tool or work	
Storage location	A4
Replaced by	
In connection with	
SI-Number	

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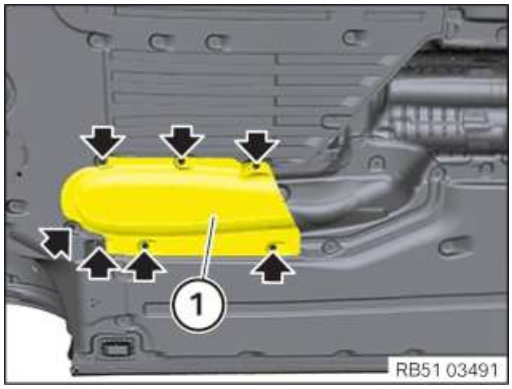
26 11 090 Replacing centring for propeller shaft

PRELIMINARY WORK

1 – Remove the underbody panelling of the transmission on the side

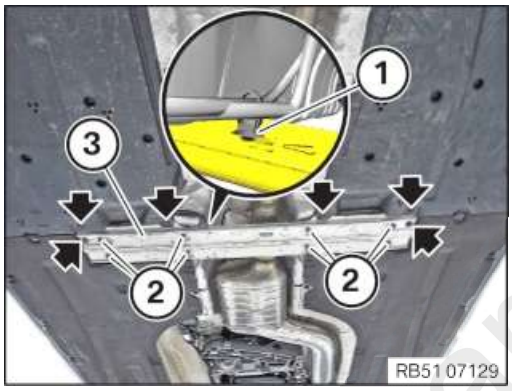
NOTICE

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).

2 – Remove the connecting support from the tunnel



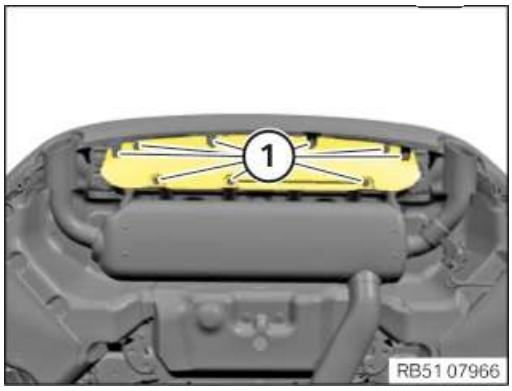
- Remove screws (arrows).

NOTICE

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

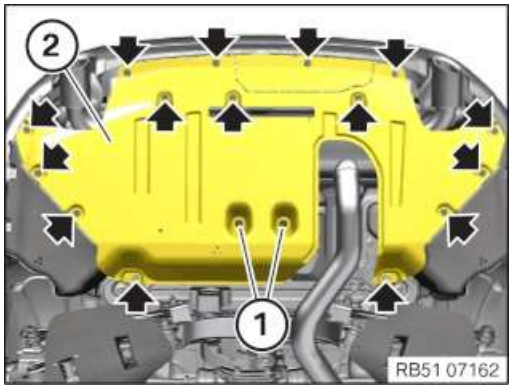
- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

3 – Removing the rear diffuser



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

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

4 – 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!

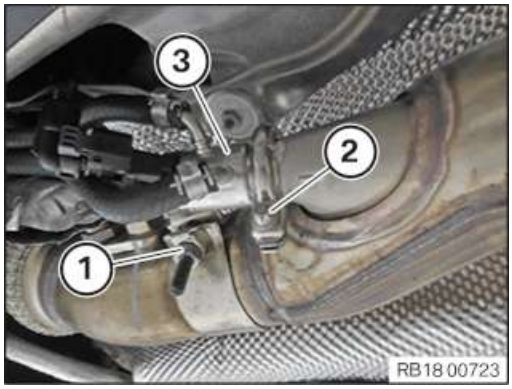
- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

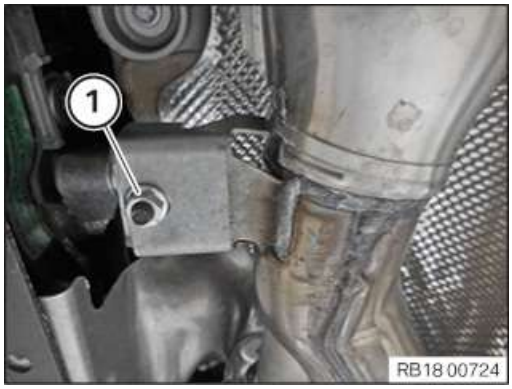
Heavy components can lead to injury or damage.

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

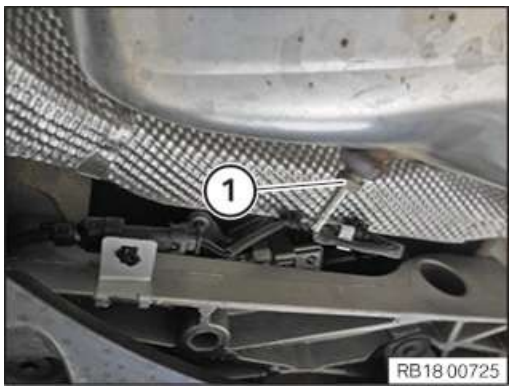


- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3)from the exhaust system and place to one side.

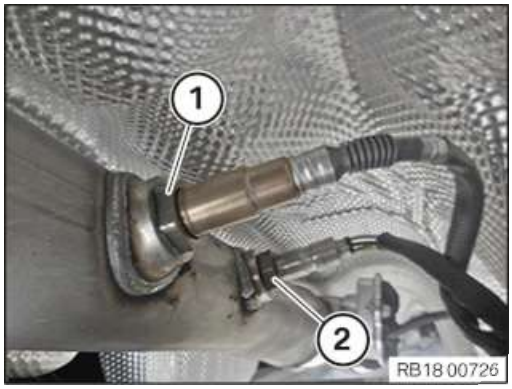
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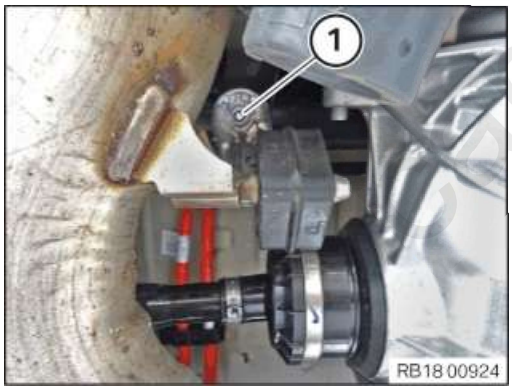
- Loosen nut (1).



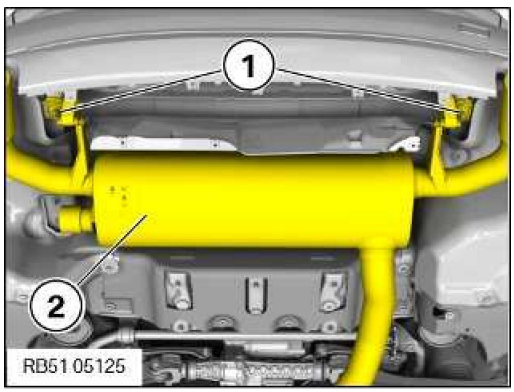
- Detach the exhaust temperature sensor (1) from the exhaust system.



- 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.



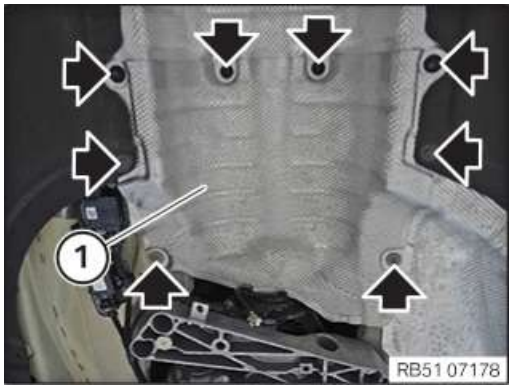
- Release the nut (1) on the rear axle support.



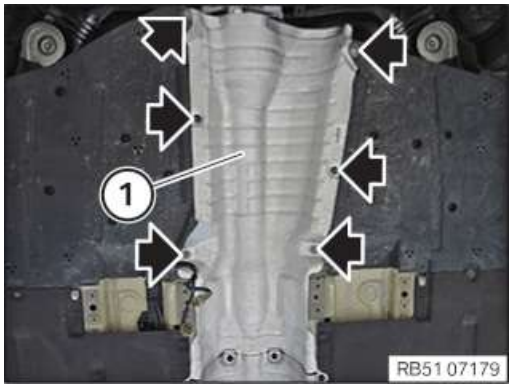
- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

5 – Remove the heat shield

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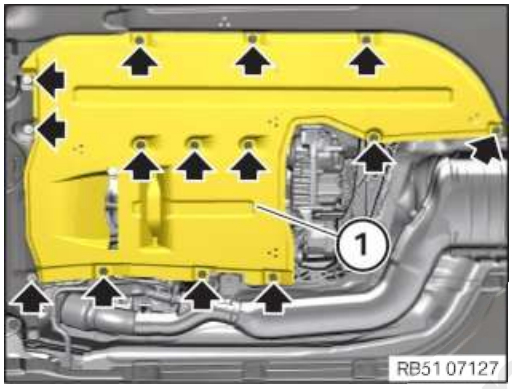


- Loosen bolts and nuts (arrows).
- Remove the heat shield (1).



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

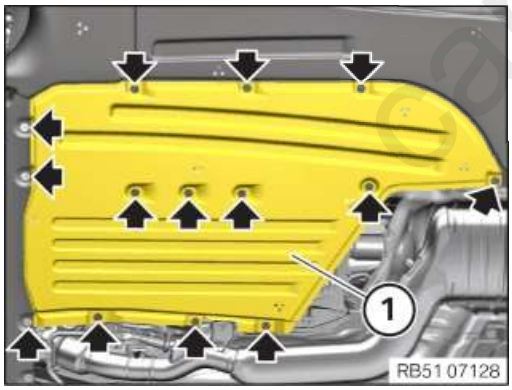
6 – Remove rear underbody protection



- **Version A:**

  Remove screws (arrows).

  Feed out the rear underbody protection (1).



- **Version B:**

  Remove screws (arrows).

  Guide out rear underbody protection (1) and remove it.

7 – Completely removing the propeller shaft (plug-in - rear flexible disc)

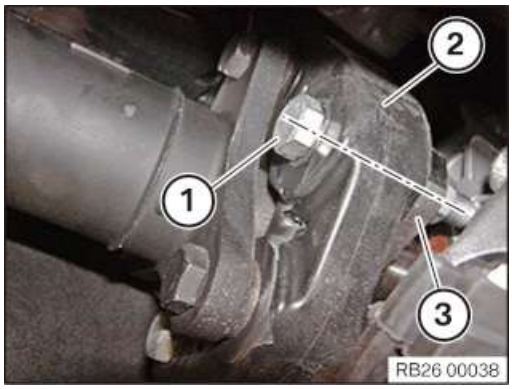
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RISK OF DAMAGE

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.

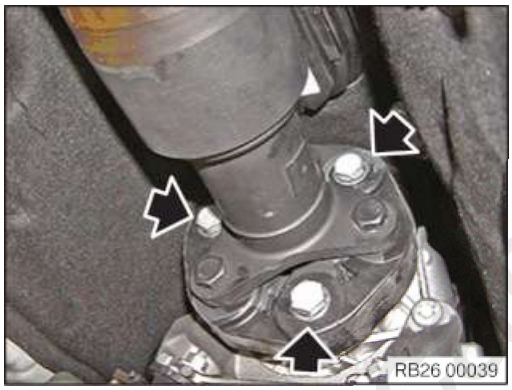
- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened 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.



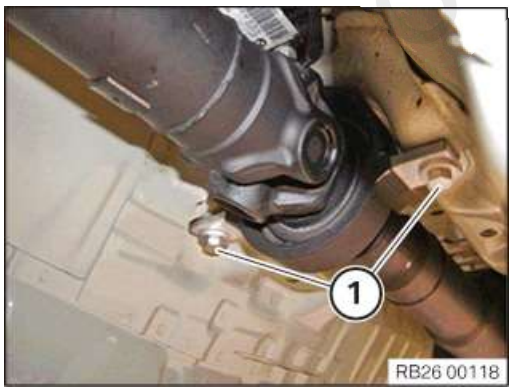
TECHNICAL INFORMATION

Compliance with the following instructions is required to avoid a humming noise from the propeller shaft after refitting the propeller shaft.

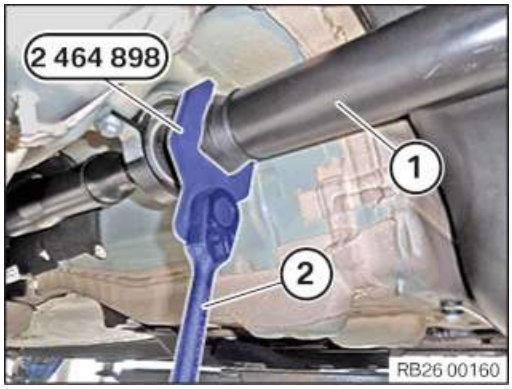
- Before loosening the flexible disc connection (1) at the front of the propeller shaft, it **must** be marked in one plane with the flexible disc (2) and the three-hole flange (3).
- It is essential to reassemble the three-hole flange (3) with the flexible disc (2) in the same position during installation.



- Remove screws (arrows).

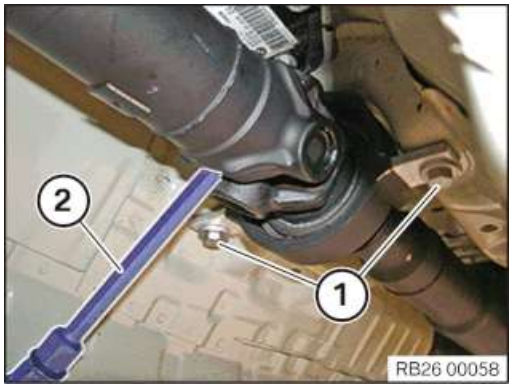


- Loosen screws (1).



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

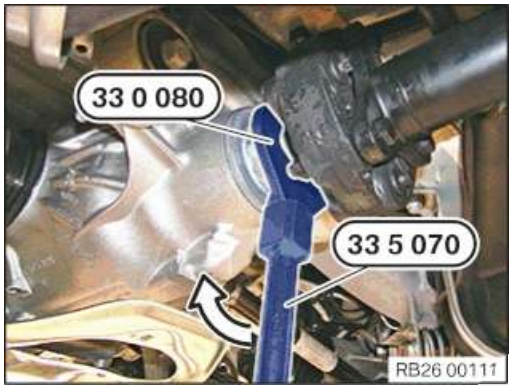
  With the special tool 2 464 898 and a suitable tool (2), secure the propeller shaft (1) on the centre universal joint against twisting.



- **Vehicles with a broad universal joint:**

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

  Remove the screws (1) of the centre mount only after opening the recessed nuts are removed completely.



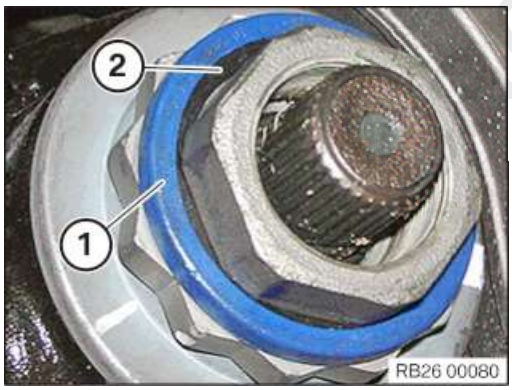
RISK OF DAMAGE

Damage to rear axle differential.

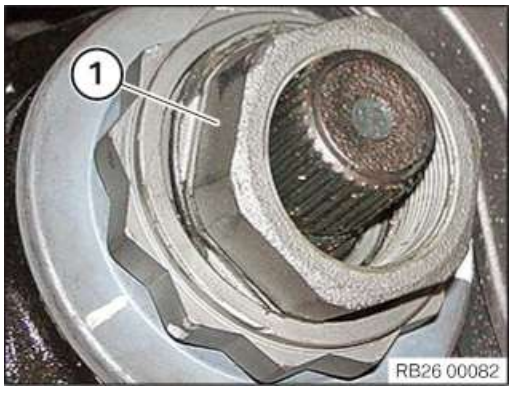
Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

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

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



- Remove the mounting clip (1) and the seal (2).

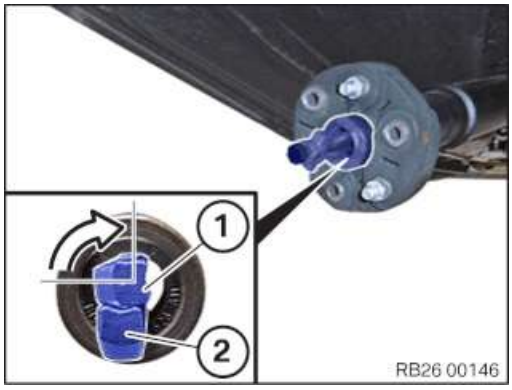


- Remove recessed nut (1).

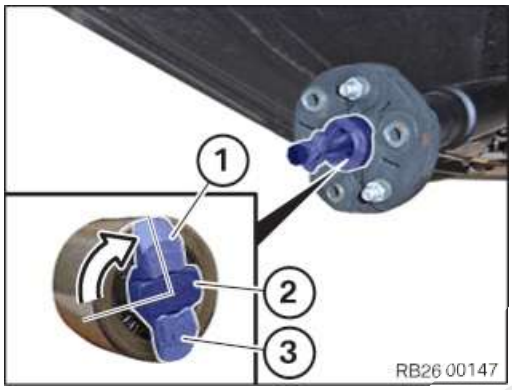
8 – Removing the centring for the propeller shaft



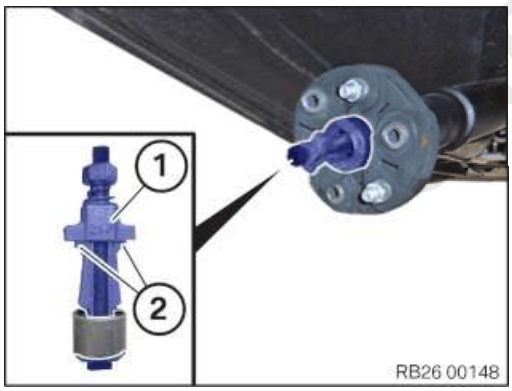
- Use special tool 2 450 247 to remove the centring bearing.



- Insert pin (1) and the pin (2) of the special tool 2 450 247 in the centring bearing of the propeller shaft.
- Turn pin (1) by 90° in relation to pin (2).

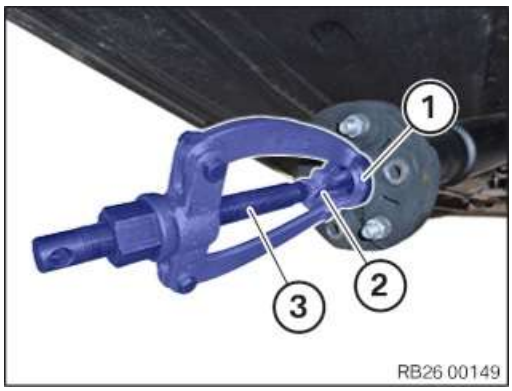


- Insert the pin (2) between pins (1) and (3) of the special tool 2 450 247 in the centering bearing of the propeller shaft.



- Lock the special tool 2 450 247 by turning the sleeve (1).

  The pins (2) are retained by the sleeve (1).



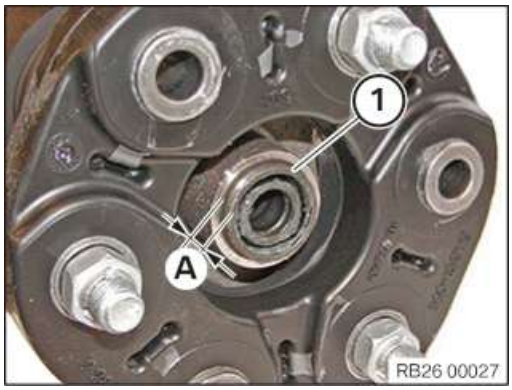
- Install the guide sleeve (1).
- Screw the special tool (3) with the special tool 2 450 247 (2) and support at the guide sleeve (1).

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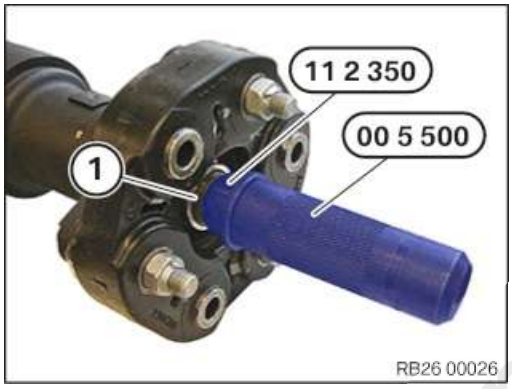
- Turn nut (1) in direction of arrow and pull out the centring bearing.

9 – Install propeller shaft centring



- Pay attention to the protrusion (A) on the centring (1).

  Protrusion (A) = 4+2 mm



- Remove grease or water from mount bore.
- Tap the centring (1) into the propeller shaft using the special tools and . Pay attention to the protrusion.



- Apply a thin coat of grease to the soft centring (1), if necessary.

  Do not grease the hard centring (2).

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754

Expendable materials

Lubricating grease Olistamoly 2 LN 584 LO	100 g, Tube	83 19 0 447 919

POSTPROCESSES

10 – Completely installing the propeller shaft

.com

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.

- Observe following installation sequence:
  - Position propeller shaft on transmission.
  - Position the propeller shaft at the rear axle differential.
  - Position centre mount.
- Observe the following screwing sequence:
  - Insert nut
  - Flexible disc to transmission
  - Centre mount



- Check the centring (arrow) for damage and renew if necessary.



- Apply a thin coat of grease to the soft centring (1), if necessary.

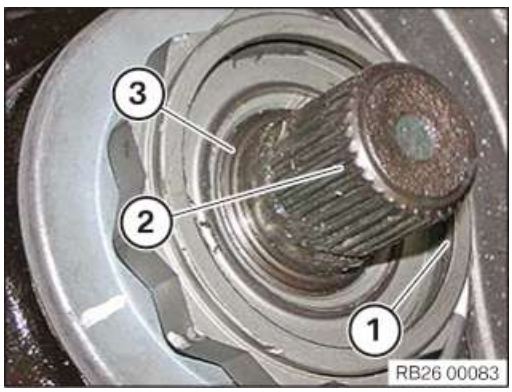
Expendable materials

Lubricating grease Olistamoly 2 LN 584 LO	100 g, Tube	83 19 0 447 919

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754

- Hard centring (2) must **not** be greased.

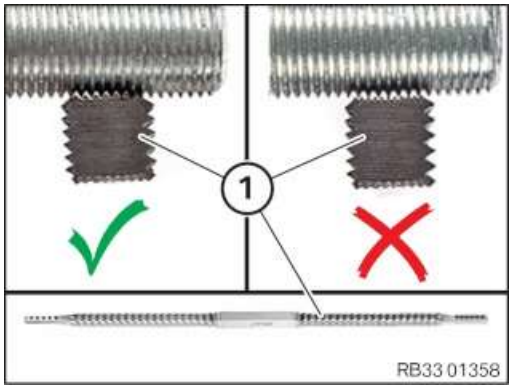


- Clean all residue from the insert collar (1) of the flange nut and the gearing on the bevel pinion (2) and degrease them.
- Top up the collar insert (1)with grease.

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754

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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.

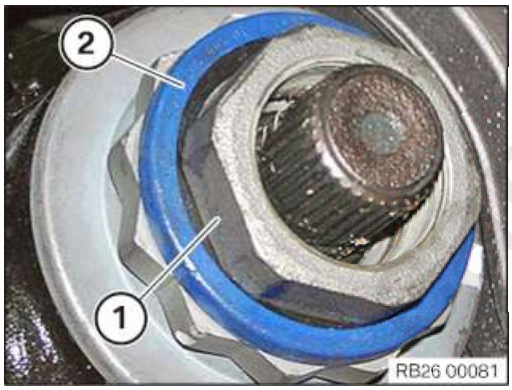
Failure to observe the greasing specifications may lead to damage on the output flange.

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

- Clean thread (1) of flange off adhesive residue.
- Clean gearing (2).
- Grease gearing (2).

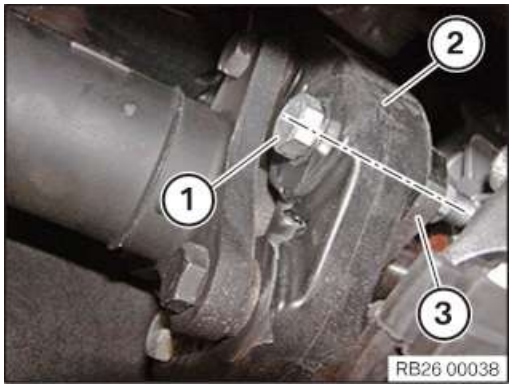
Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



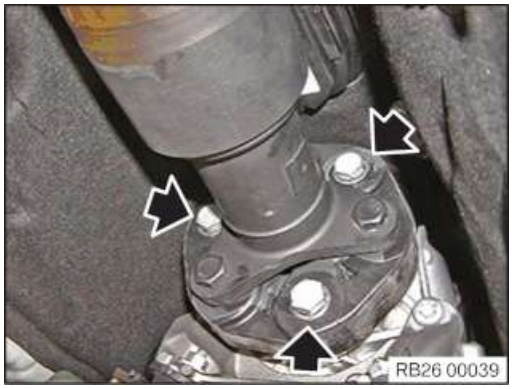
- Renew the seal, recessed nut (1) and the retaining ring (2).

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



- It is imperative to reassemble the three-hole flange (3) with the flexible disc (2) in the same position in order to avoid humming noise of the drivetrain after reinstalling the propeller shaft.
- Renew ZNS screws and the self-locking nuts (1).

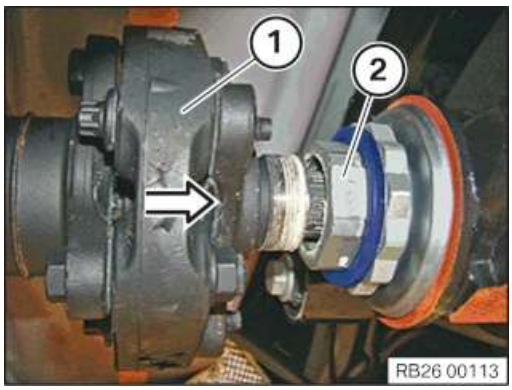
  Parts: ZNS screws, self-locking nuts



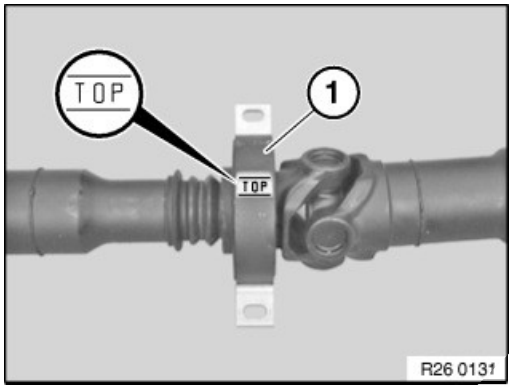
- Position the screws and nuts (arrows).
- Tighten the screws.

Front flexible disc to propeller shaft

M12	Renew screws. Comply with jointing torque and angle of rotation. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

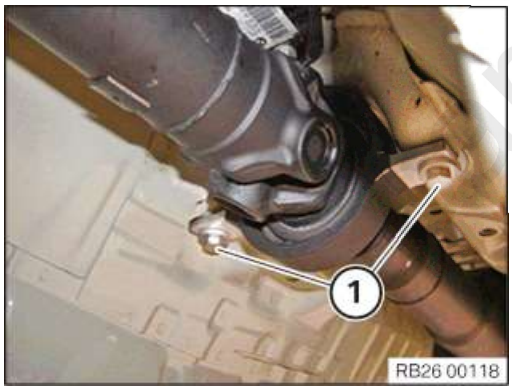


- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Manually screw on and tighten the recessed nut (2) onto the propeller shaft (1) by a minimum of two threads.

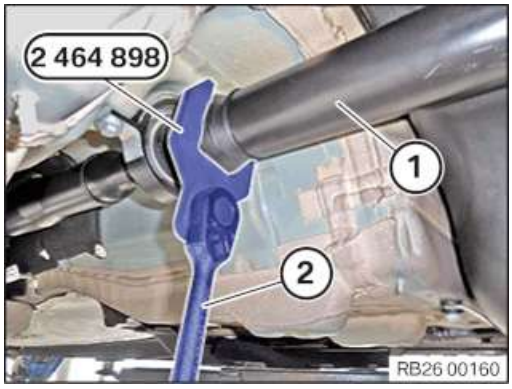


- **Version with the TOP designation:**

  The centre mount (1) must be installed with the TOP marking at the top in the gearbox tunnel.



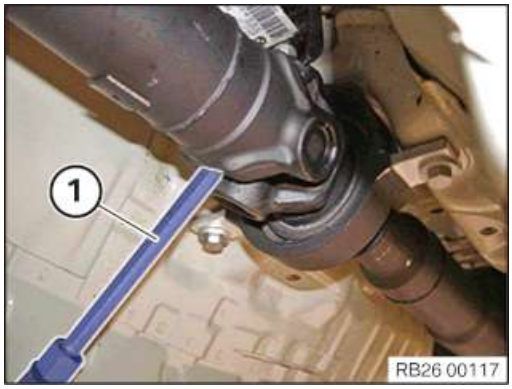
- Position centre mount.
- Position screws (1).



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

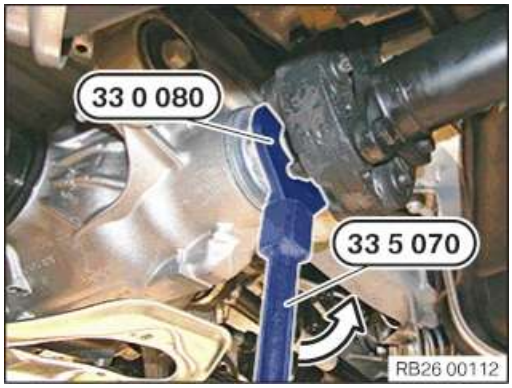
  Using the special tool 2 464 898 and a suitable tool (2), secure the propeller shaft (1) to the centre universal joint against twisting.

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

  Secure the propeller shaft against twisting at the central universal joint using a suitable tool (1).



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.

- Screw in the recessed nut **counter-clockwise, see direction of arrow** with special tools 0 495 554 (33 5 070) and .

  The recessed nut must be screwed in within 5 min .

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!

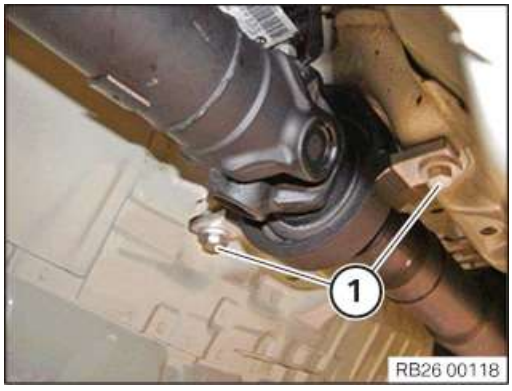


- Brace mounting bolts of flexible disc on nut and tighten by screw.

Rear flexible disc to three-hole flange

M12	Renew screws. Jointing torque and angle of rotation must be observed without fail. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

- Secure the special angle of rotation tool 0 490 504 (00 9 120) with the magnets to the vehicle underbody and screw it further depending on the angle of rotation.

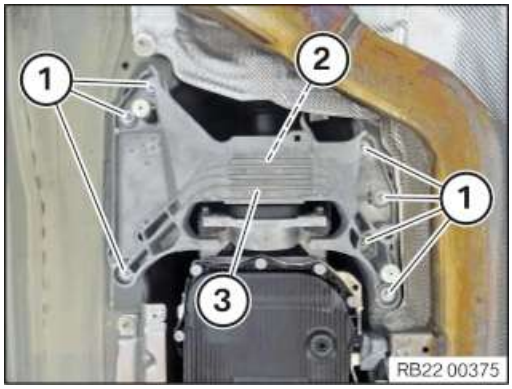


- Tighten the screws (1).

Centre mount to body

M8		Tightening torque	19 Nm

11 – Install transmission cross member.



- Install the transmission cross member (3).
- Insert screw (2) and tighten until hand-tight.
- Tighten the screws (1).

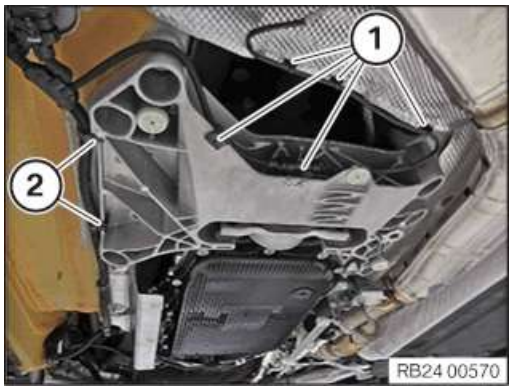
Transmission cross member to body

M8		Tightening torque	19 Nm

- Tighten down screw (2).

Transmission cross member to rubber mounts

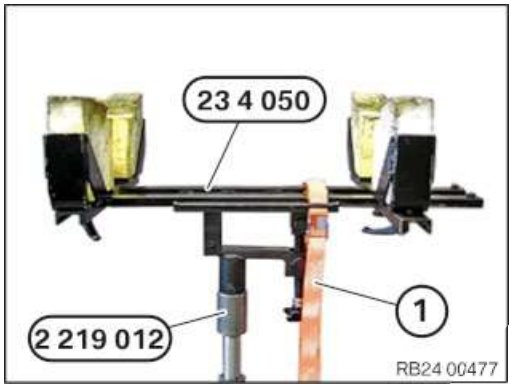
M12		Tightening torque	100 Nm



- **Only B47 and B57:**

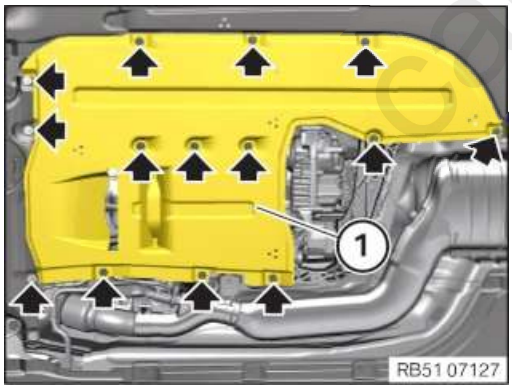
  Install the cable.

  Fasten the cable with clamps (1) and (2).



- Loosen the tensioning strap (1) from the transmission.
- Remove the special tools 0 495 498 (23 4 050) and 2 219 012 from the transmission.

12 – Installing underbody protection at rear



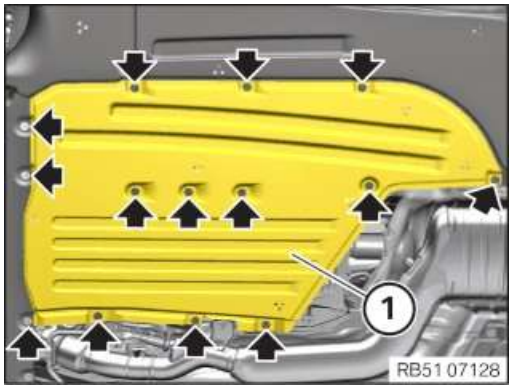
- **Version A:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm



- **Version B:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

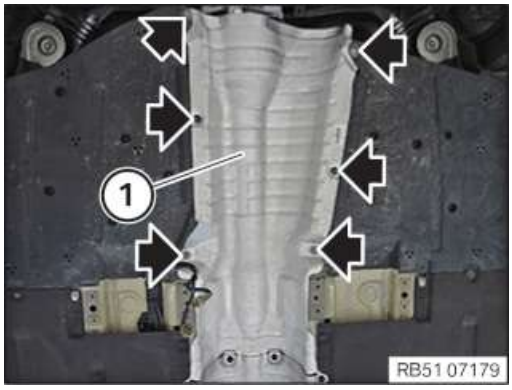
Underbody protection

Hexagon screw		Tightening torque	3 Nm

13 – Installing the heat shields

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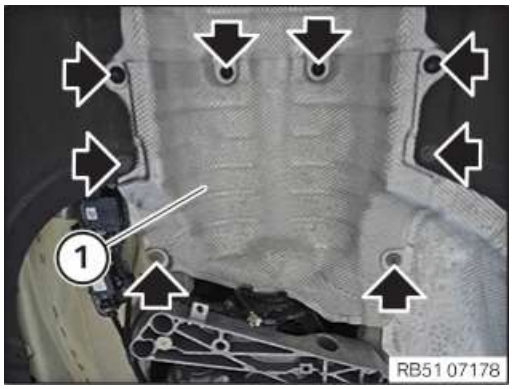
13 – Installing the heat shields



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

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm



- Install the 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.

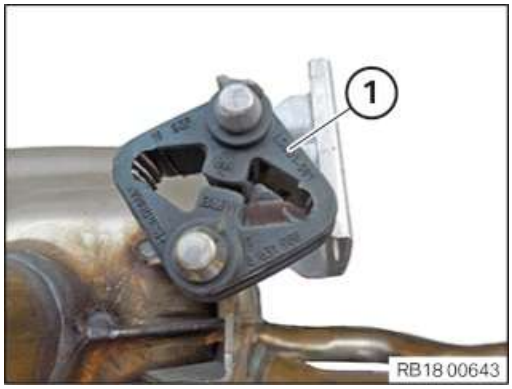
Heavy components can lead to injury or damage.

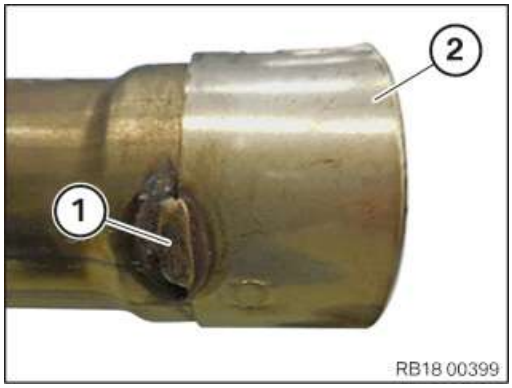
- Remove and install heavy components with the aid of another person/other persons.

TECHNICAL INFORMATION

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

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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

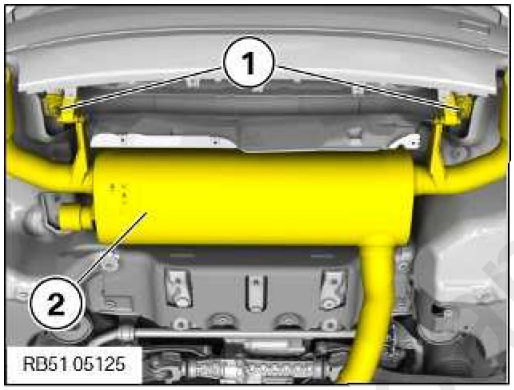
CAUTION

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).

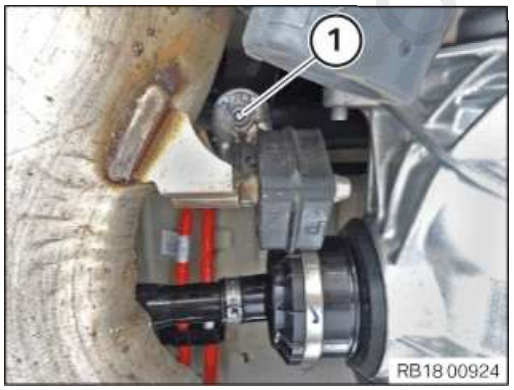


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

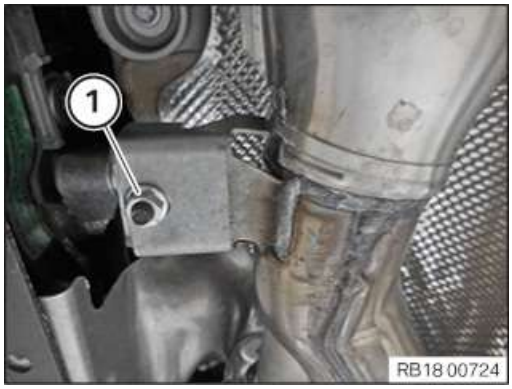


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

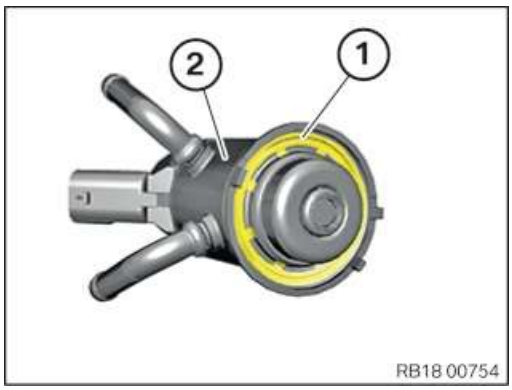
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

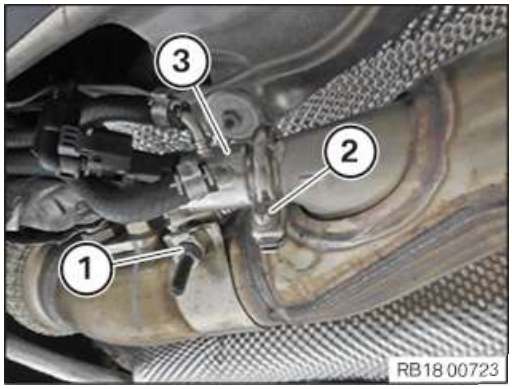
Exhaust system to transmission

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

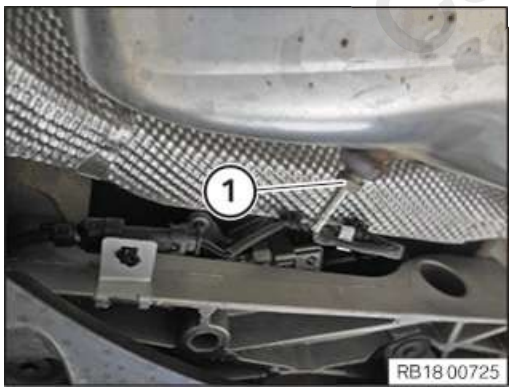
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- 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

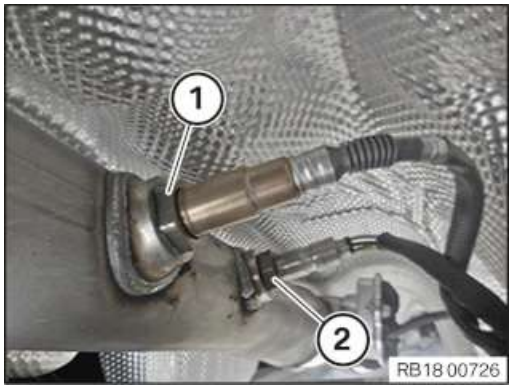


- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm

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

Diesel particulate sensor to exhaust system

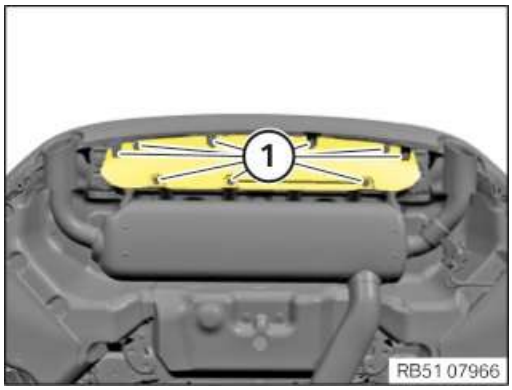
Sensor		Tightening torque	50 Nm

- 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

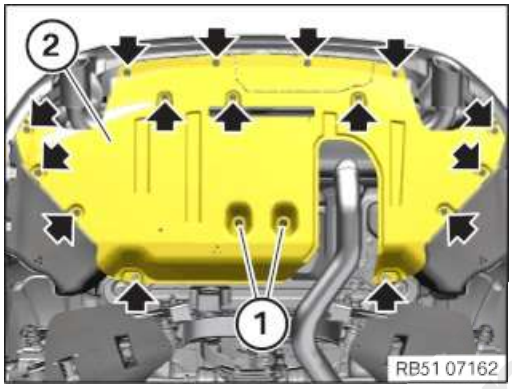
15 – Installing the rear diffuser



- **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

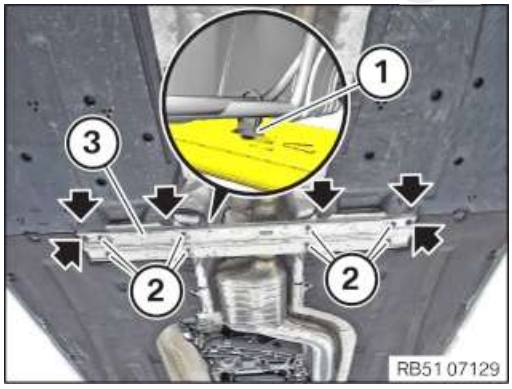
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

16 – 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.

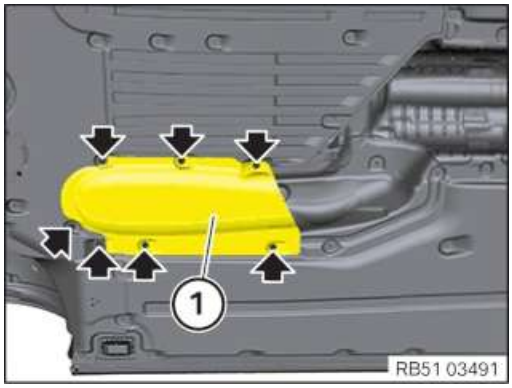
- Secure the clamp (1).

17 – 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

Front flexible disc to propeller shaft — Used in step 10

M12	Renew screws. Comply with jointing torque and angle of rotation. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

Propeller shaft on the rear axle differential — Used in step 10

Insert nut	Replace insert nut.	Tightening torque	100 Nm

Rear flexible disc to three-hole flange — Used in step 10

M12	Renew screws. Jointing torque and angle of rotation must be observed without fail. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

Centre mount to body — Used in step 10

M8		Tightening torque	19 Nm

Transmission cross member to body — Used in step 11

M8		Tightening torque	19 Nm

Transmission cross member to rubber mounts — Used in step 11

M12		Tightening torque	100 Nm

Underbody protection — Used in step 12

Hexagon screw		Tightening torque	3 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

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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 15
Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel			Used in step 16
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

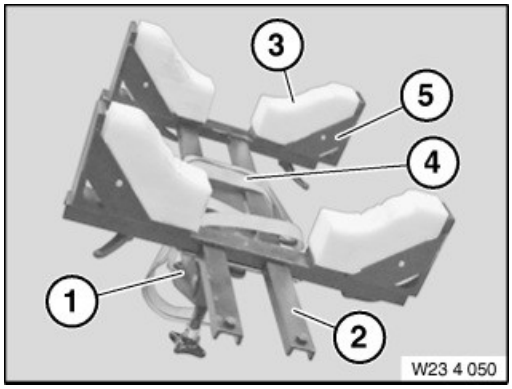
Underbody panelling			Used in step 17
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Overview of Special Tools

0 495 498 (23 4 050) Fixture

Used in step 11

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Common

Usage	(universal gearbox holder) Support for removing and installing manual gearboxes and automatic transmissions for BMW & RR.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 06 (256)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
3	0 495 549 (23 4 053)		**Insert** (foam inserts (1 set = 4 pcs.))	
1	0 495 547 (23 4 051)		**Joint** Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
2	0 495 548 (23 4 052)		**Frame** (Basic frame) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
4	0 495 550 (23 4 054)		**Belt** (Tensioning strap) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
5	0 496 018 (23 4 055)		**Fixture** (Fixture for foam insert) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	

2 219 012 Hydraulic lifter



Common Used in step 11

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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2 464 898 Open-end spanner



Common Used in step 710

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 710

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	

2 450 247 Puller



Common Used in step 8

Usage	Tool for the disassembly of the front and right centring / guide sleeve for propeller shafts
Included in the tool or work	
Storage location	B5
Replaced by	
In connection with	
SI-Number	01 11 17 (494)

cardiagn.com

0 490 504 (00 9 120) Torque angle measuring dial



Common	Used in step 10
Usage	For torsion angle adjustment of cylinder head bolts (all engines) And reinforcement plate front axle support E46
Included in the tool or work	
Storage location	A4
Replaced by	
In connection with	
SI-Number	

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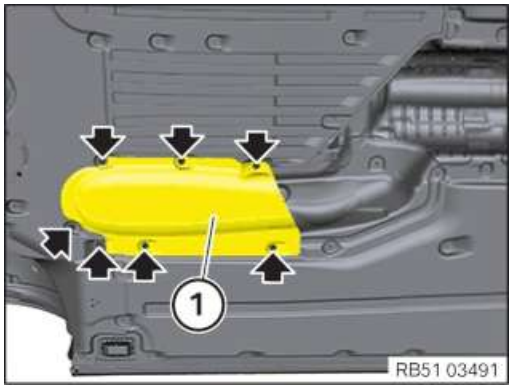
26 11 051 Replacing flexible disc for propeller shaft

PRELIMINARY WORK

1 – Remove the underbody panelling of the transmission on the side

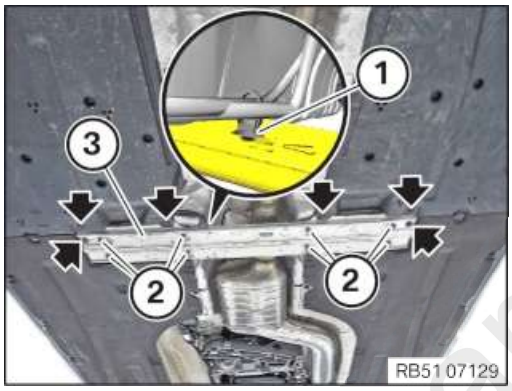
NOTICE

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).

2 – Remove the connecting support from the tunnel



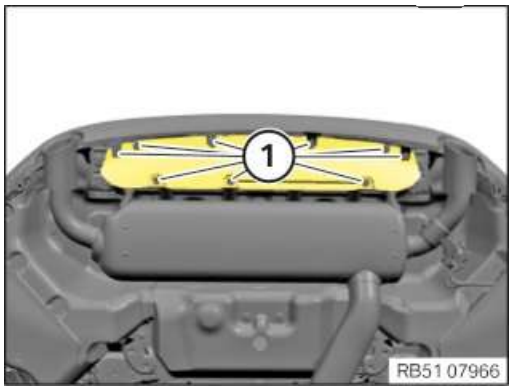
- Remove screws (arrows).

NOTICE

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

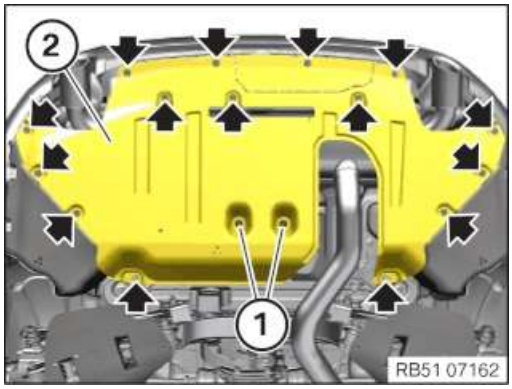
- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

3 – Removing the rear diffuser



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

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

4 – 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!

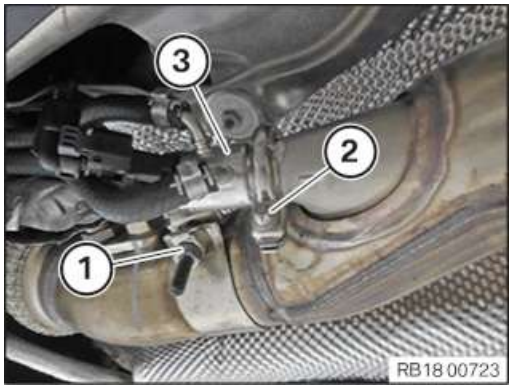
- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

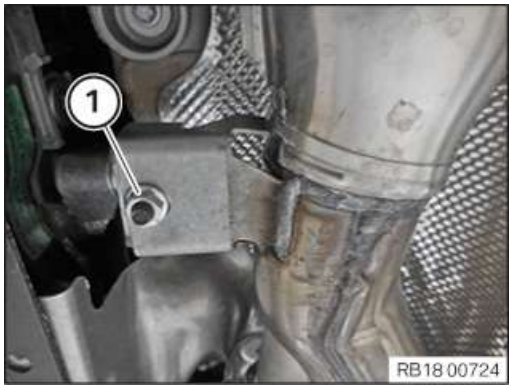
Heavy components can lead to injury or damage.

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

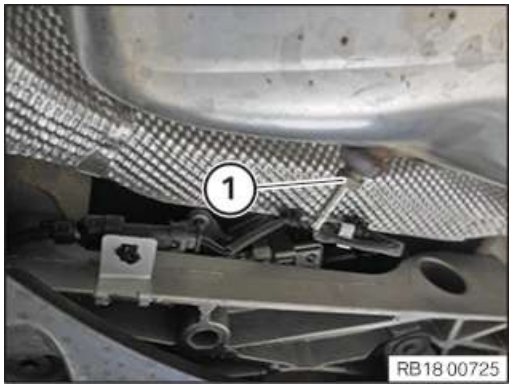


- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3)from the exhaust system and place to one side.

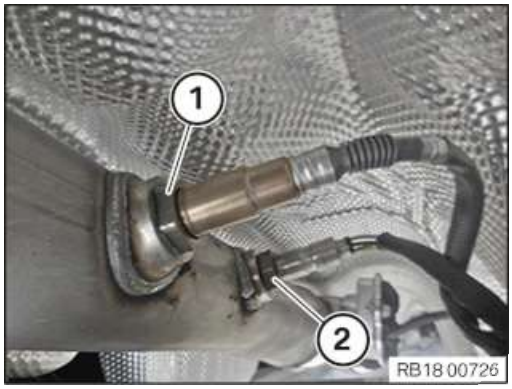
cardiagn.com



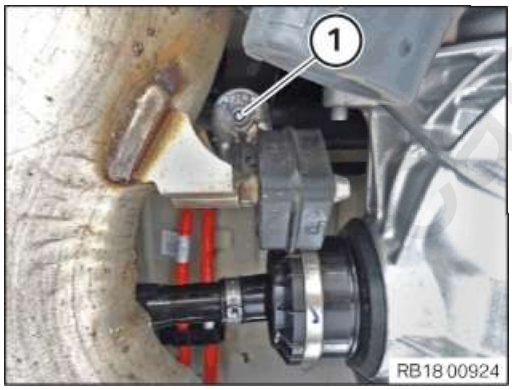
- Loosen nut (1).



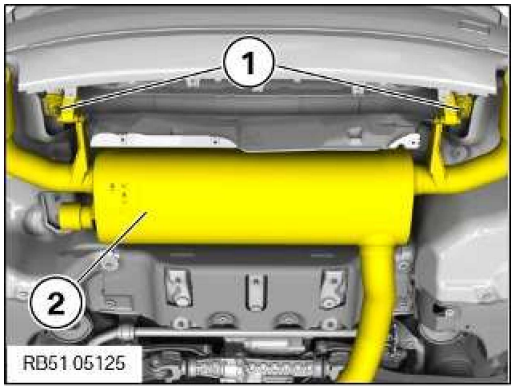
- Detach the exhaust temperature sensor (1) from the exhaust system.



- 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.



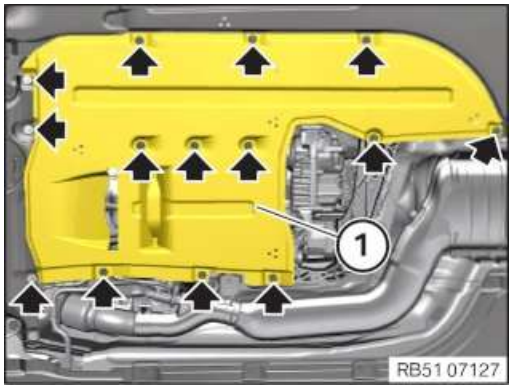
- Release the nut (1) on the rear axle support.



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

5 – Remove rear underbody protection

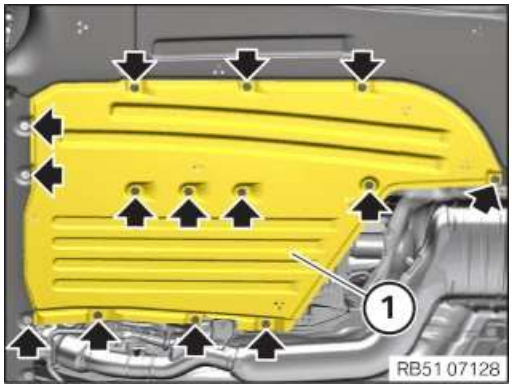
carsdiagn.com



- **Version A:**

  Remove screws (arrows).

  Feed out the rear underbody protection (1).

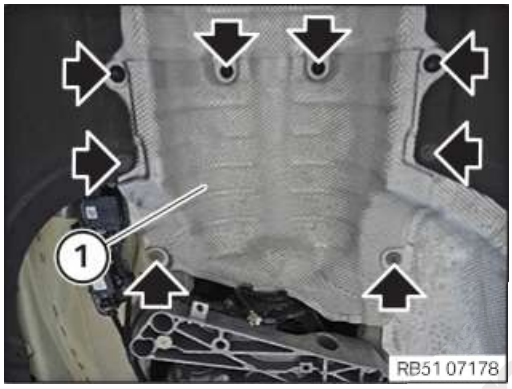


- **Version B:**

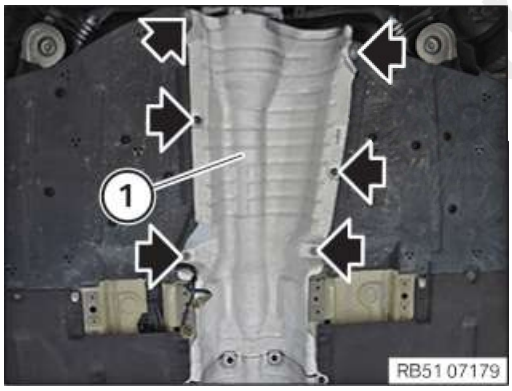
  Remove screws (arrows).

  Guide out rear underbody protection (1) and remove it.

6 – Remove the heat shield



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



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

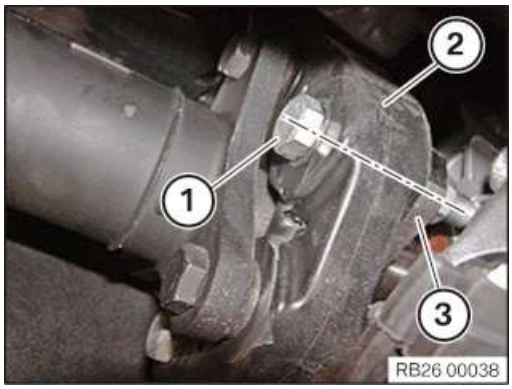
7 – Partially releasing propeller shaft

RISK OF DAMAGE

Damage to propeller shaft during removal.

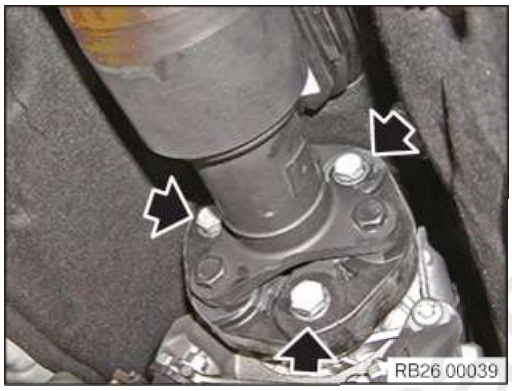
Non-observance of the removal guidelines for the propeller shaft on the rear axle differential may cause severe damage.

- 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.

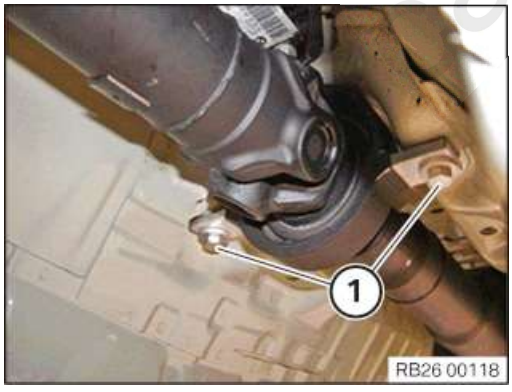


- Mark installation position of screw connection (1) of flexible disc (2) and of three-hole flange (3).

  The mark makes it possible for the propeller shaft to be installed again in the same position. This should prevent a humming noise from the drive train during driving.



- Remove screws (arrows).



- Unscrew the bolts (1) on the centre mount and hold down the propeller shaft.

  Major deflection angles of the propeller shaft may damage the propeller shaft and/or the joints.

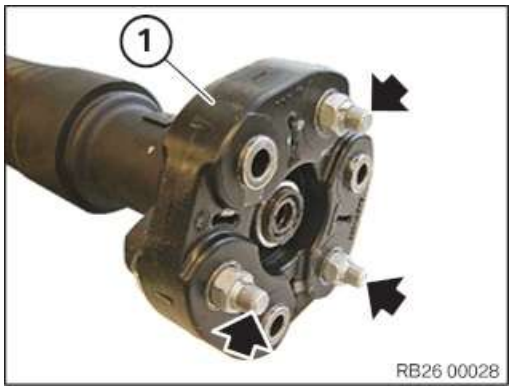
- Tie up propeller shaft to underbody.

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8 – Removing the flexible disc for the front propeller shaft

TECHNICAL INFORMATION

To protect universal joints, tie back propeller shaft in area of centre mount.



- Release screws the (arrows) and remove the flexible disc (1) from the propeller shaft.

9 – Installing the flexible disc for the front propeller shaft



- Check the centring (arrow) for damage and renew it if necessary.

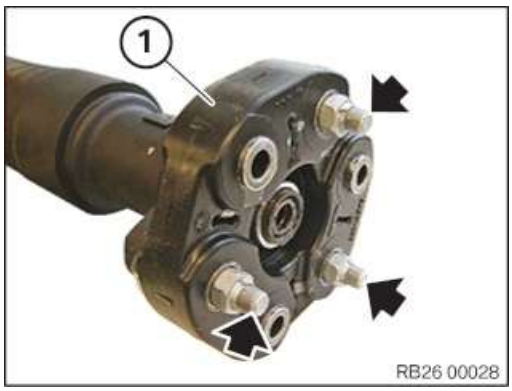


- Apply a thin coat of grease to the soft centring (1), if necessary.

Expendable materials

Lubricating grease Olistamoly 2 LN 584 LO	100 g, Tube	83 19 0 447 919

- Hard centering (2) must **not** be greased.



- Install the flexible disc (1) on the propeller shaft.
- Renew screws and self-locking nuts (arrows).

  Parts: Screws, self-locking nuts
- Insert screws and tighten.

Front flexible disc to propeller shaft

M12	Renew screws. Comply with jointing torque and angle of rotation. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

rdiagn.com

10 – Securing propeller shaft (partially removed)



- Check centring (1) for damage; renew if necessary.

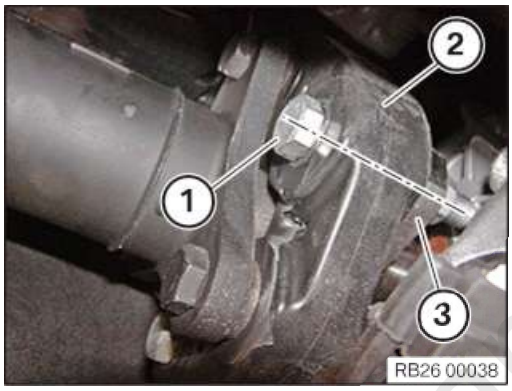


- Apply a thin coat of grease to the soft centring (1), if necessary.

  Do not grease the hard centring (2).

Expendable materials

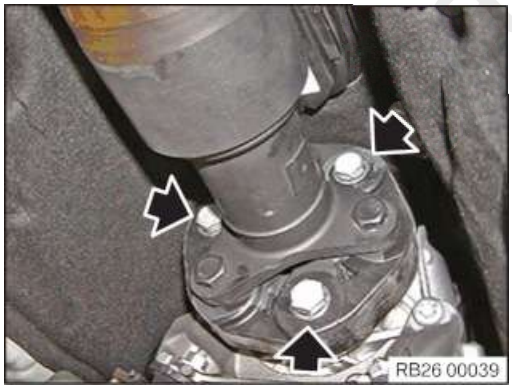
Lubricating grease Olistamoly 2 LN 584 LO	100 g, Tube	83 19 0 447 919



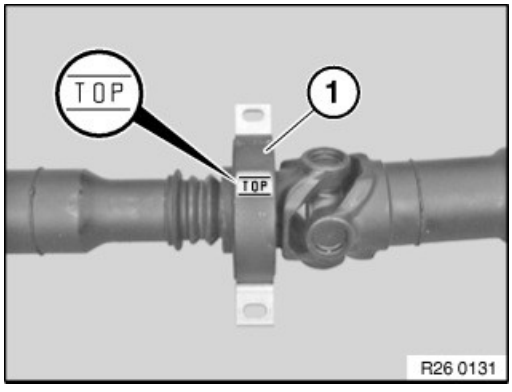
- Renew screws and the self-locking nuts.

  Parts: Screws, self-locking nuts
- Assemble the screw connections (1) of the flexible disc (2) and the three-hole flange (3) according to the self-affixed identification.

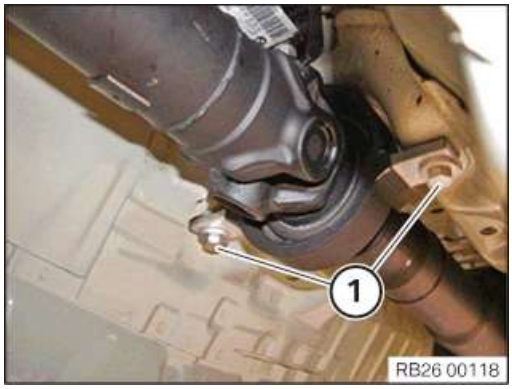
  This should prevent a humming noise from the drive train during driving.



- Hand-tighten the screws and nuts (arrows), but do not tighten fully.



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



- Position centre mount.
- Hand-tighten the bolts (1), but do not tighten fully.



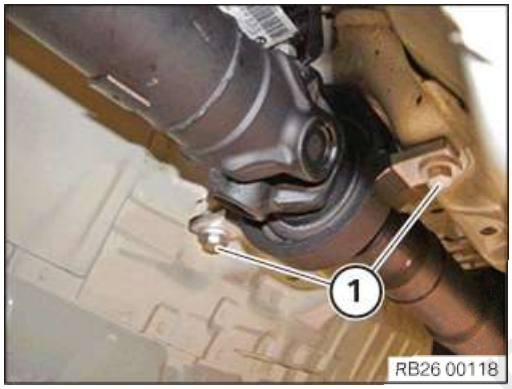
- Renew screws.

  Parts: Screws
- Provide counter support for the bolts of the flexible disc on the nut and tighten with the bolts.

Front flexible disc to propeller shaft

M12	Renew screws. Comply with jointing torque and angle of rotation. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

- Secure the special tool 0 490 504 (00 9 120) with the special tool on the vehicle underbody and continue to screw it in according to the angle of rotation.

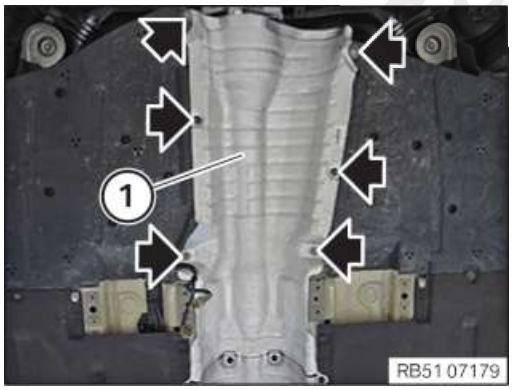


- Tighten the screws (1).

Centre mount to body

M8		Tightening torque	19 Nm

11 – Installing the heat shields

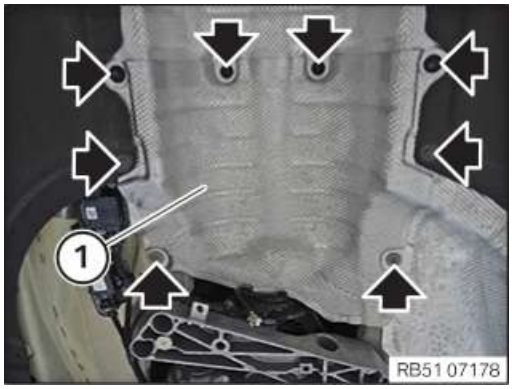


- Install the heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

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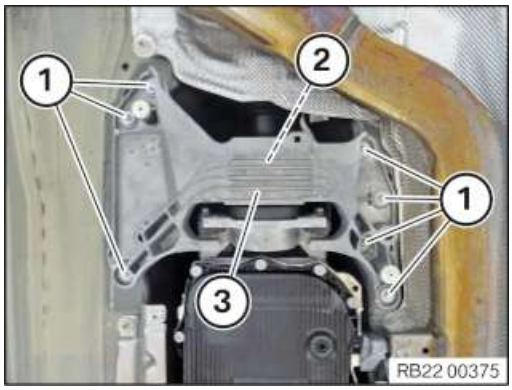


- Install the heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

12 – Install transmission cross member.



- Install the transmission cross member (3).
- Insert screw (2) and tighten until hand-tight.
- Tighten the screws (1).

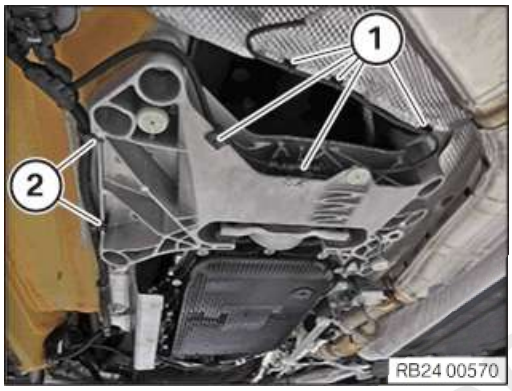
Transmission cross member to body

M8		Tightening torque	19 Nm

- Tighten down screw (2).

Transmission cross member to rubber mounts

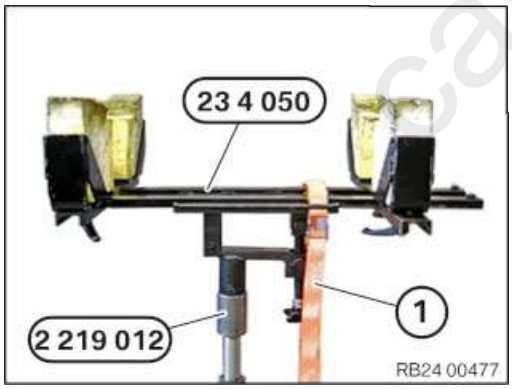
M12		Tightening torque	100 Nm



- **Only B47 and B57:**

  Install the cable.

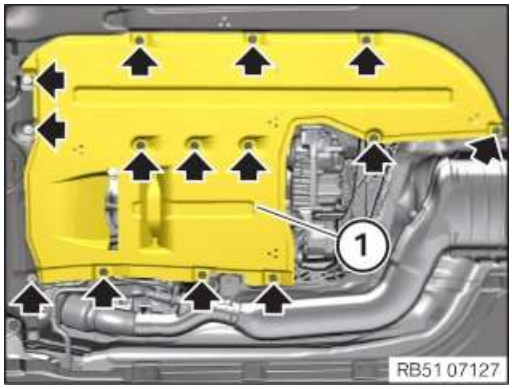
  Fasten the cable with clamps (1) and (2).



- Loosen the tensioning strap (1) from the transmission.
- Remove the special tools 0 495 498 (23 4 050) and 2 219 012 from the transmission.

13 – Installing underbody protection at rear

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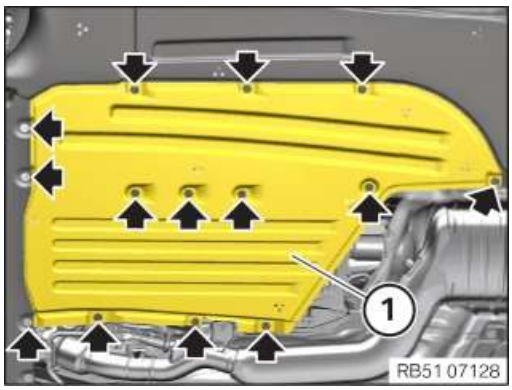
- **Version A:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm



- **Version B:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		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.

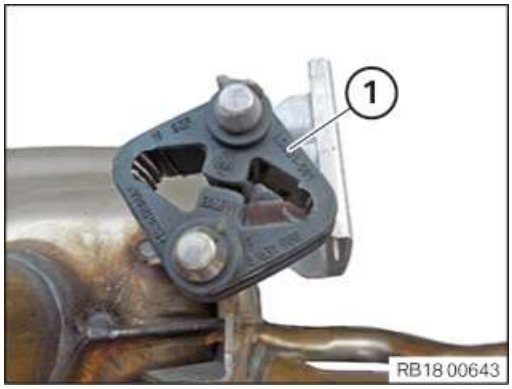
Heavy components can lead to injury or damage.

- 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.

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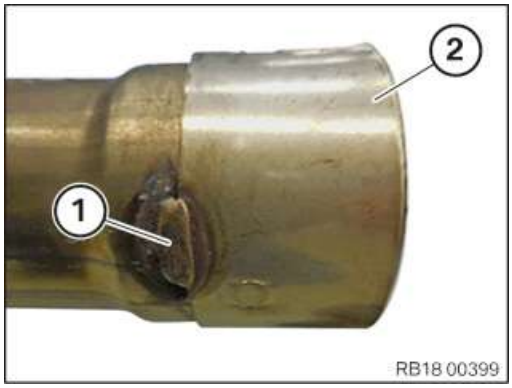


NOTICE

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



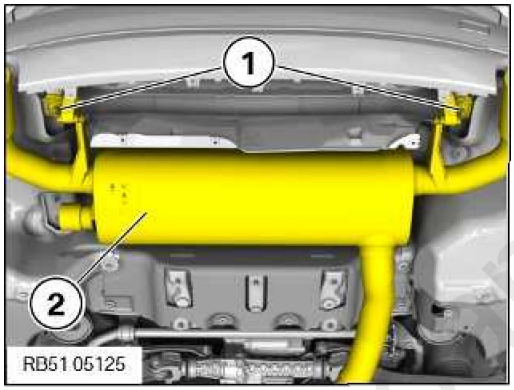
CAUTION

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).

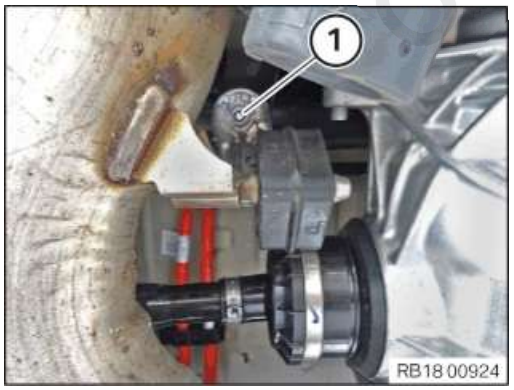


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

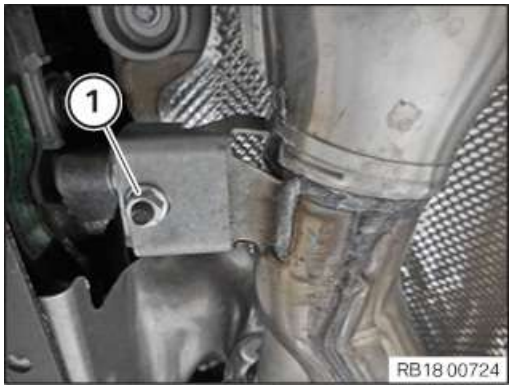


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

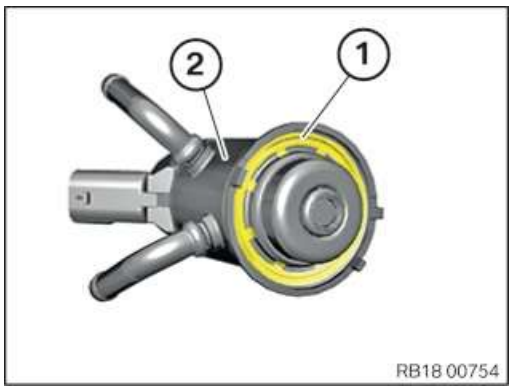
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

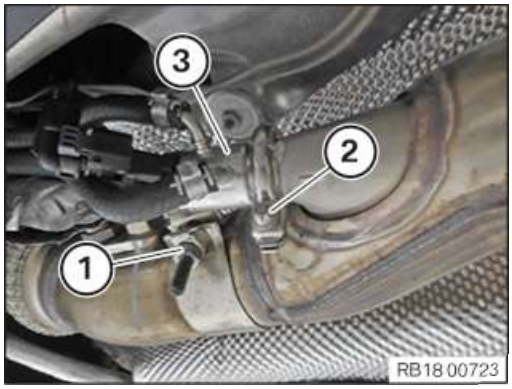
Exhaust system to transmission

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

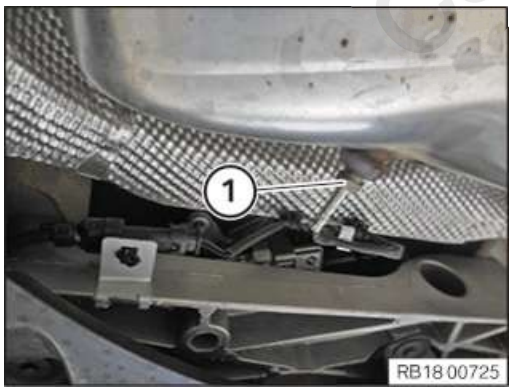
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- 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

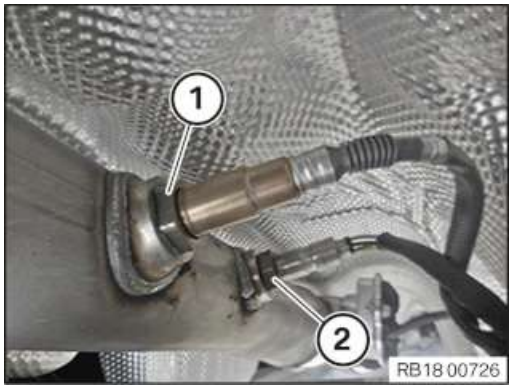


- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm

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

Diesel particulate sensor to exhaust system

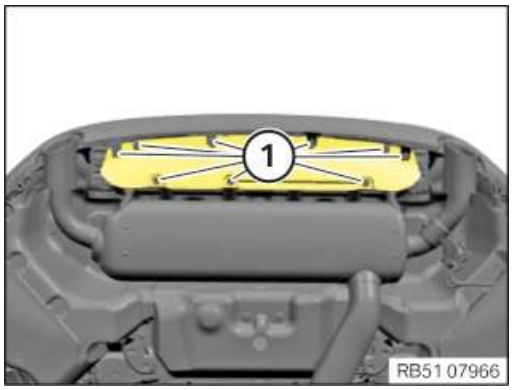
Sensor		Tightening torque	50 Nm

- 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

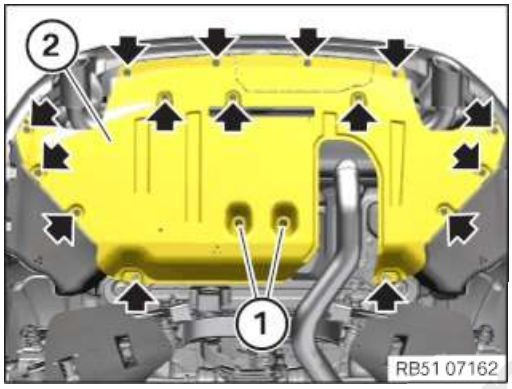
15 – Installing the rear diffuser



- **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

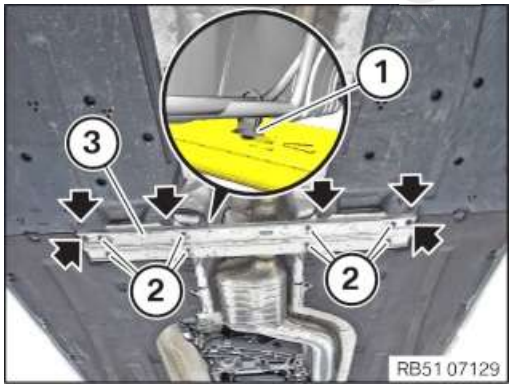
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

16 – 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.

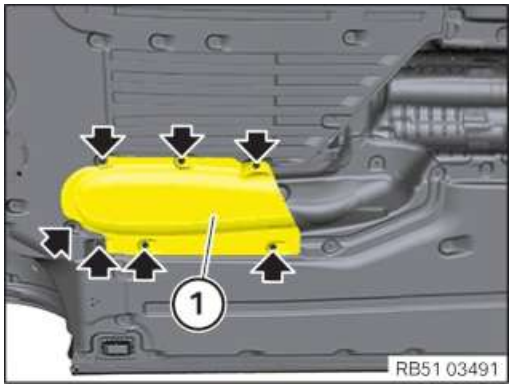
- Secure the clamp (1).

17 – 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

Front flexible disc to propeller shaft — Used in step 910

M12	Renew screws. Comply with jointing torque and angle of rotation. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

Centre mount to body — Used in step 10

M8		Tightening torque	19 Nm

Heat shield to undercarriage — Used in step 11

Screws and nuts		Tightening torque	3 Nm

Transmission cross member to body — Used in step 12

M8		Tightening torque	19 Nm

Transmission cross member to rubber mounts — Used in step 12

M12		Tightening torque	100 Nm

Underbody protection — Used in step 13

Hexagon screw		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

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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 15

Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel Used in step 16

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling Used in step 17

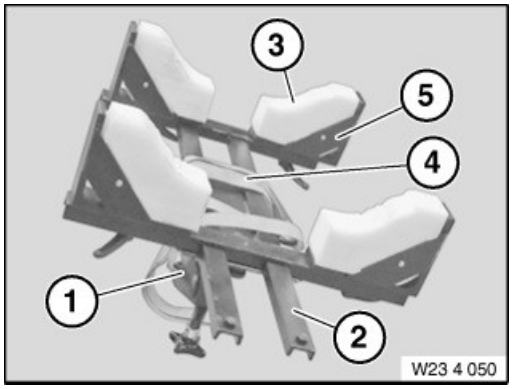
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Overview of Special Tools

0 495 498 (23 4 050) Fixture

Used in step 12

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Common

Usage	(universal gearbox holder) Support for removing and installing manual gearboxes and automatic transmissions for BMW & RR.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 06 (256)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
3	0 495 549 (23 4 053)		**Insert** (foam inserts (1 set = 4 pcs.))	
1	0 495 547 (23 4 051)		**Joint** Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
2	0 495 548 (23 4 052)		**Frame** (Basic frame) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
4	0 495 550 (23 4 054)		**Belt** (Tensioning strap) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
5	0 496 018 (23 4 055)		**Fixture** (Fixture for foam insert) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	

2 219 012 Hydraulic lifter



Common Used in step 12

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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0 490 504 (00 9 120) Torque angle measuring dial



Common	Used in step 10
Usage	For torsion angle adjustment of cylinder head bolts (all engines) And reinforcement plate front axle support E46
Included in the tool or work	
Storage location	A4
Replaced by	
In connection with	
SI-Number	

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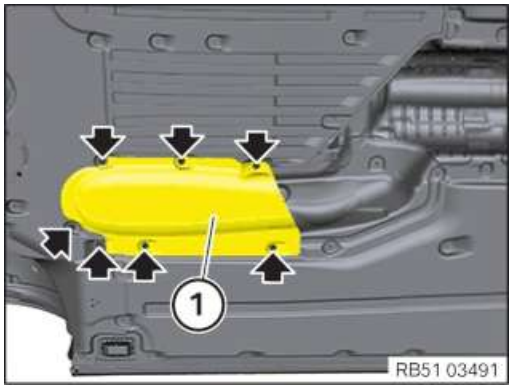
26 11 052 Replacing flexible disc for rear propeller shaft

PRELIMINARY WORK

1 – Remove the underbody panelling of the transmission on the side

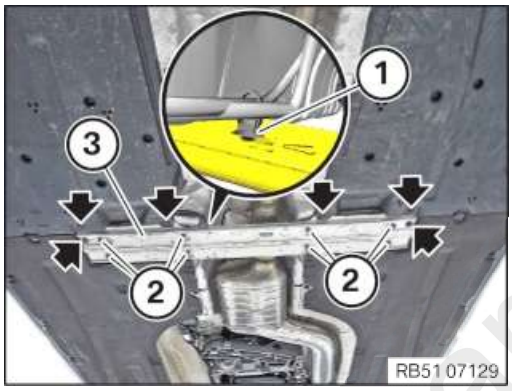
NOTICE

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).

2 – Remove the connecting support from the tunnel



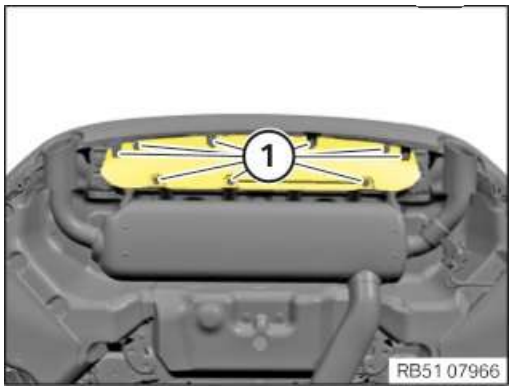
- Remove screws (arrows).

NOTICE

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

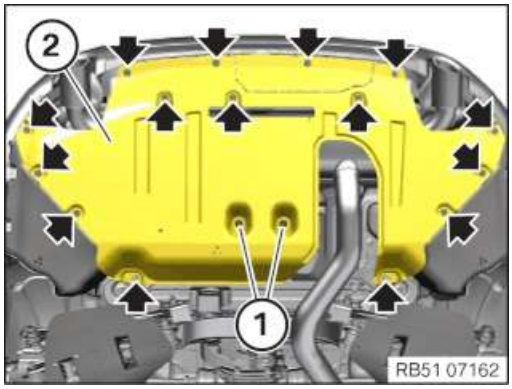
- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

3 – Removing the rear diffuser



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

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

4 – 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!

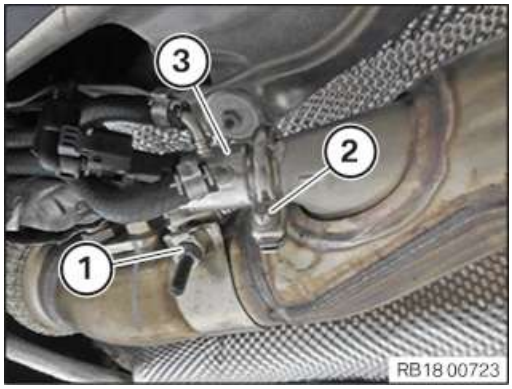
- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

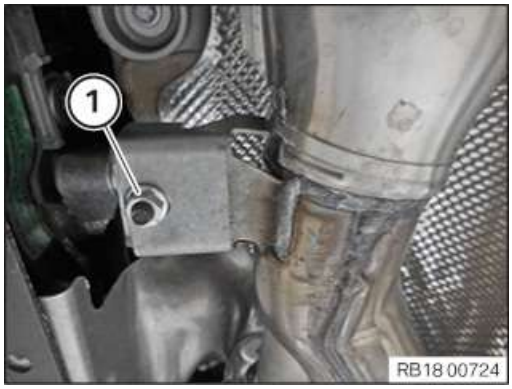
Heavy components can lead to injury or damage.

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

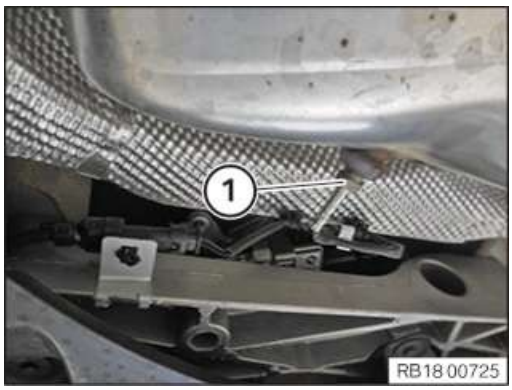


- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3)from the exhaust system and place to one side.

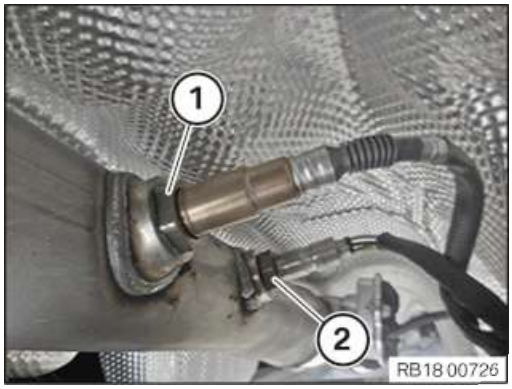
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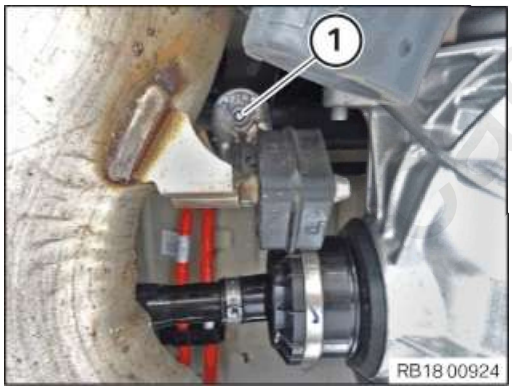
- Loosen nut (1).



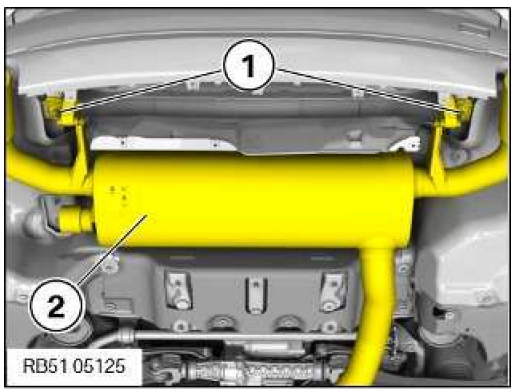
- Detach the exhaust temperature sensor (1) from the exhaust system.



- 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.



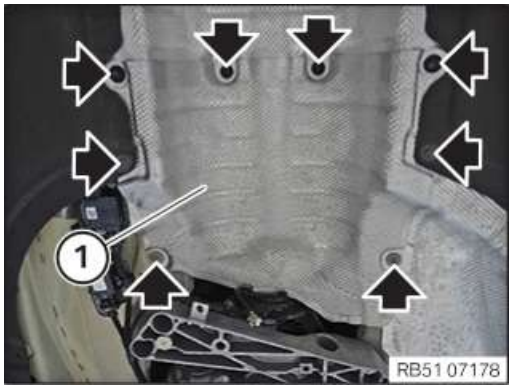
- Release the nut (1) on the rear axle support.



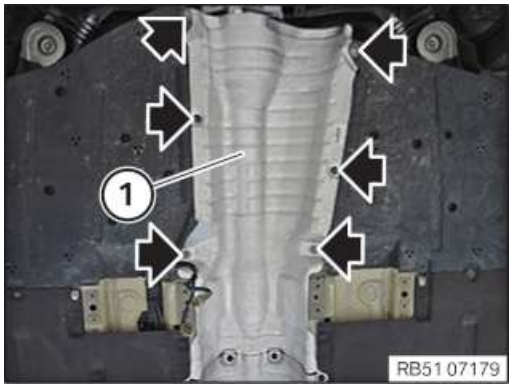
- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

5 – Remove the heat shield

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



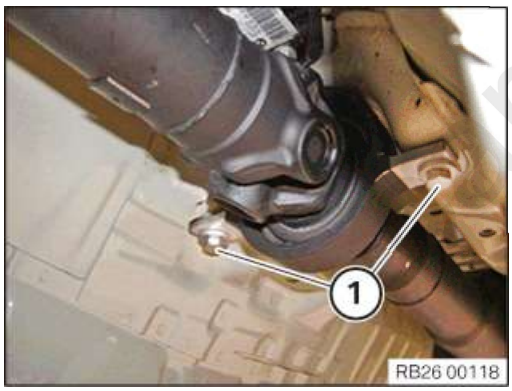
- Loosen bolts and nuts (arrows).
- Remove the heat shield (1).

MAIN WORK

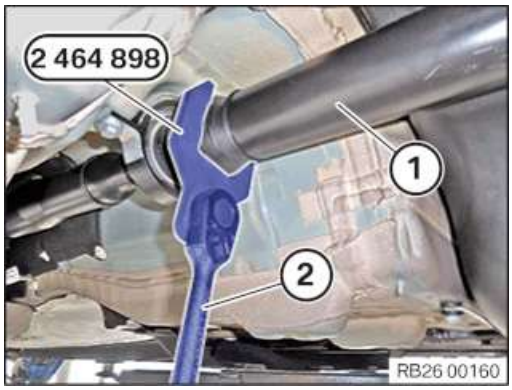
6 – Removing the flexible disc for the rear propeller shaft

TECHNICAL INFORMATION

To protect universal joints, tie back propeller shaft in area of centre mount.

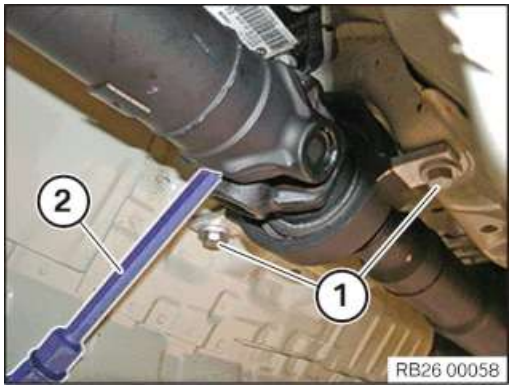


- Loosen screws (1).



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

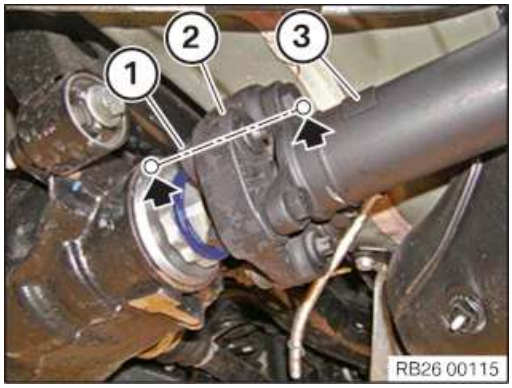
  Secure the propeller shaft (1) against twisting by using the special tool 2 464 898 and a suitable tool (2) at the central universal joint.



- **Vehicles with a broad universal joint:**

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

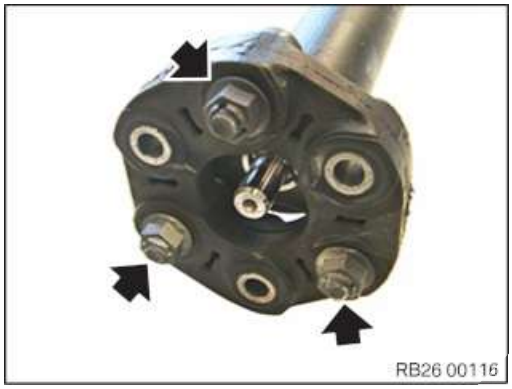
  Remove screws completely (1) only after opening the screws on the 3-hole flange.



- Mark the installation position of the three-hole flange (1), the flexible disc (2) and the propeller shaft (3) on the same level (arrows).

  The identification allows the three-hole flange and the propeller shaft to be installed at the same position. This guarantees that the three-hole punch for the rear axle differential will once again be balanced with the propeller shaft after installation.

- Detach the propeller shaft (3) at the three-hole flange (1) and at the centre mount.



- Release screws (arrows) and remove flexible disc from the propeller shaft.

7 – Install the flexible disc for the rear propeller shaft



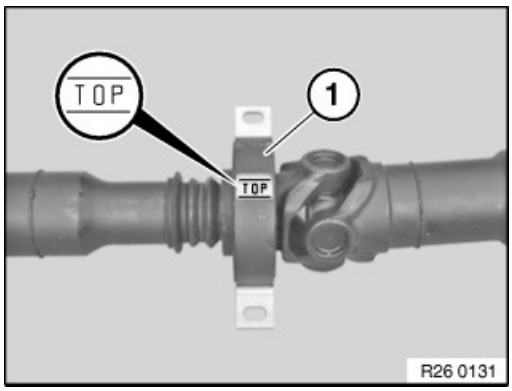
- Renew screws and self-locking nuts.

  Parts: Self-locking nuts and screws

- Mount the flexible disc on the propeller shaft and tighten the bolts (arrows).

Flexible disc, rear, to propeller shaft

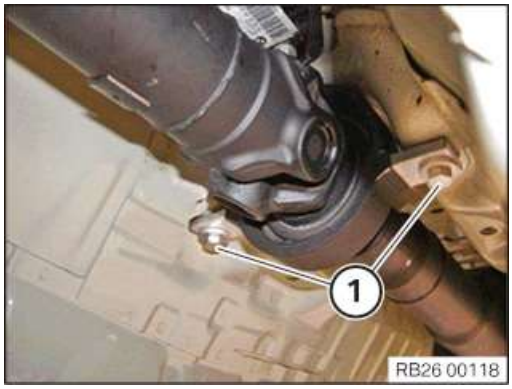
M12	Renew screws and nuts. Jointing torque and angle of rotation must be observed without fail. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °



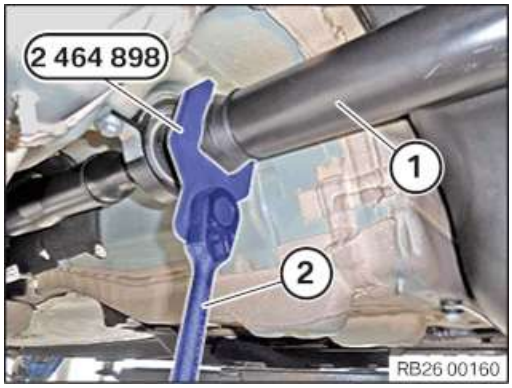
- **Centre mount with TOP marking:**

  Install the centre mount (1) with the marking TOP at the top in the transmission tunnel.

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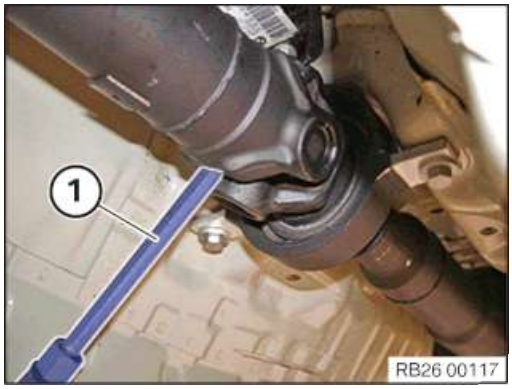


- Position centre mount.
- Position screws (1).



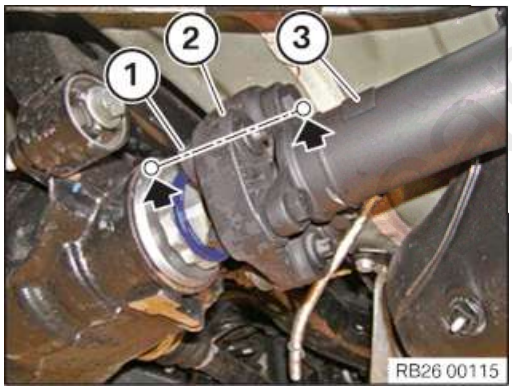
- **Propeller shaft with a narrow universal joint:**

  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.



- **Propeller shaft with a broad universal joint:**

  Secure the propeller shaft with a suitable tool (1) against twisting at the middle universal joint.

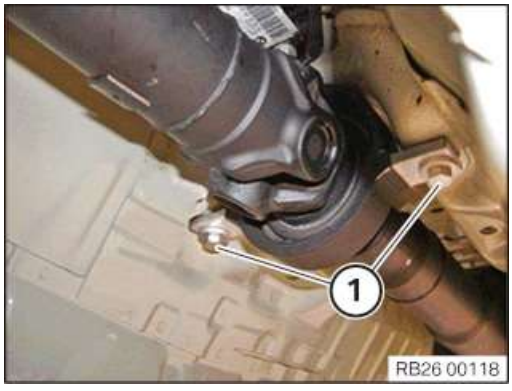


- Assemble the three-hole flange (1), flexible disc (2) and propeller shaft (3) in the same position that was marked during the removal.
- Renew screws.

  Parts: Screws
- Tighten the screws.

Rear flexible disc to three-hole flange

M12	Renew screws. Jointing torque and angle of rotation must be observed without fail. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °



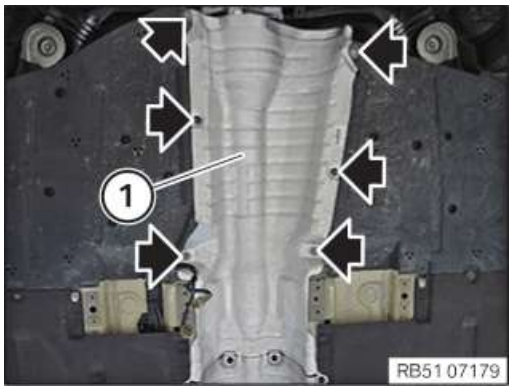
- Tighten the screws (1).

Centre mount to body

M8		Tightening torque	19 Nm

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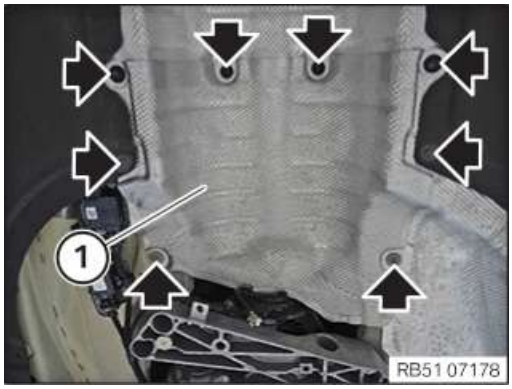
8 – Installing the heat shields



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

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm



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

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

9 – 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.

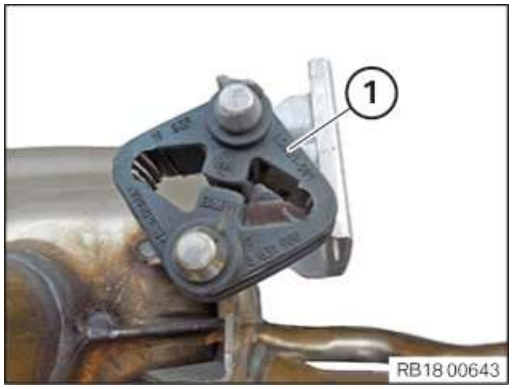
Heavy components can lead to injury or damage.

- 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.

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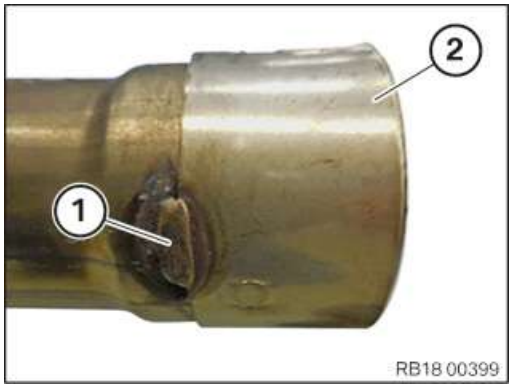


NOTICE

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



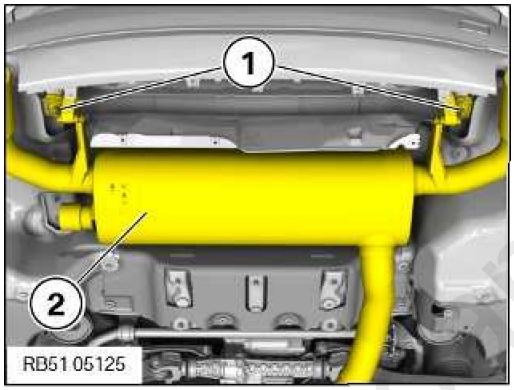
CAUTION

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).

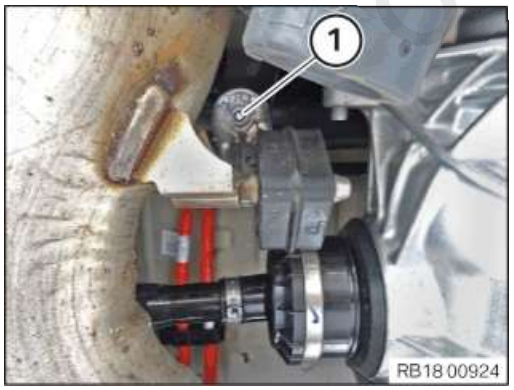


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

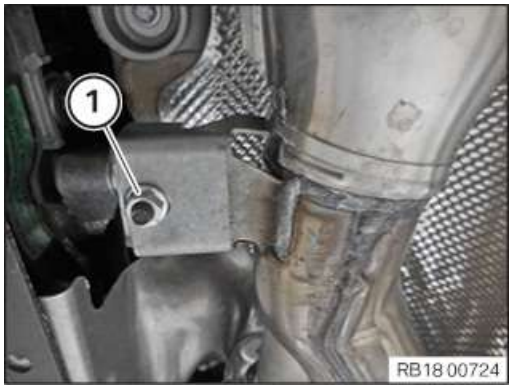


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

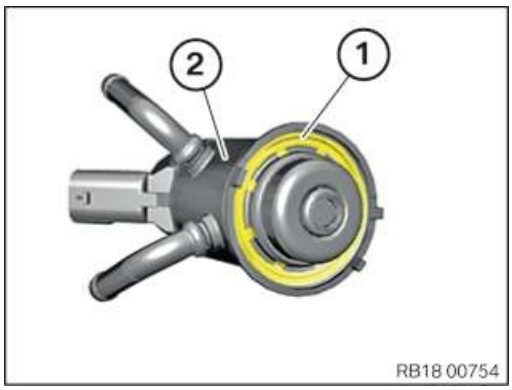
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

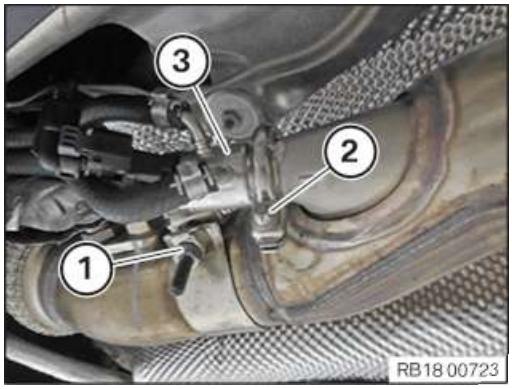
Exhaust system to transmission

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

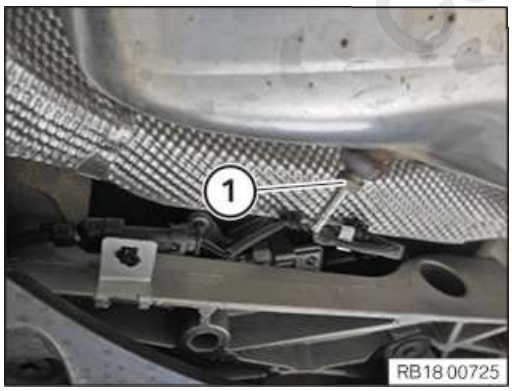
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- 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

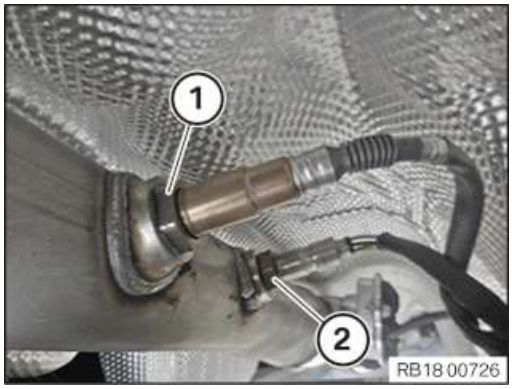


- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm

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

Diesel particulate sensor to exhaust system

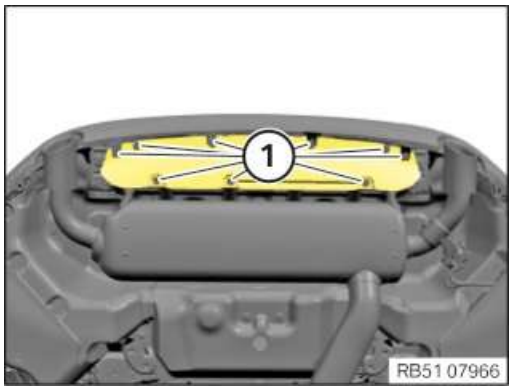
Sensor		Tightening torque	50 Nm

- 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

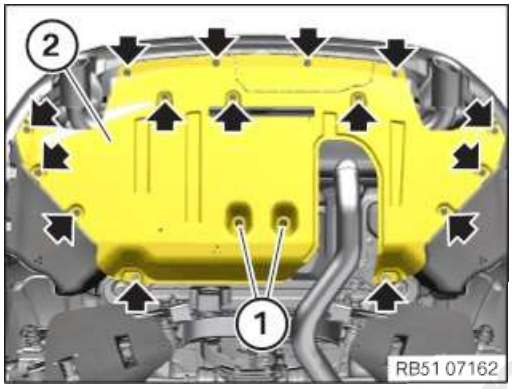
10 – Installing the rear diffuser



- **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

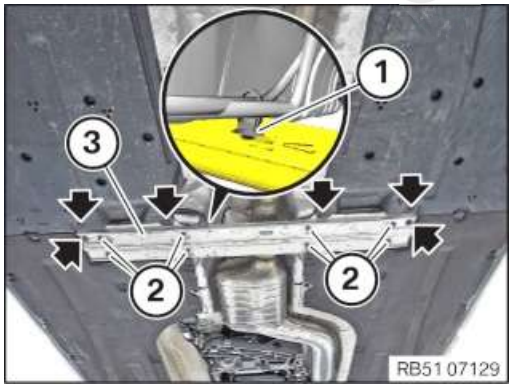
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

11 – 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.

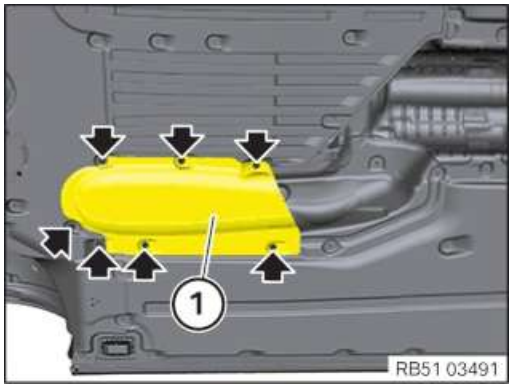
- Secure the clamp (1).

12 – 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

Flexible disc, rear, to propeller shaft — Used in step 7

M12	Renew screws and nuts. Jointing torque and angle of rotation must be observed without fail. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

Rear flexible disc to three-hole flange — Used in step 7

M12	Renew screws. Jointing torque and angle of rotation must be observed without fail. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

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

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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

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 10
Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel			Used in step 11
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling			Used in step 12
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 67
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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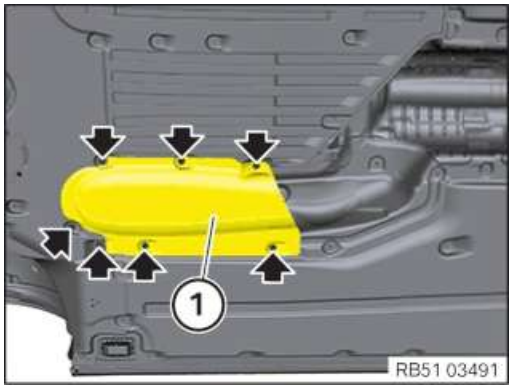
26 12 001 Replacing complete propeller shaft centre bearing

PRELIMINARY WORK

1 – Remove the underbody panelling of the transmission on the side

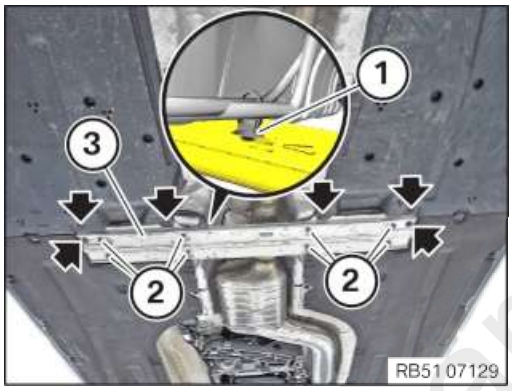
NOTICE

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).

2 – Remove the connecting support from the tunnel



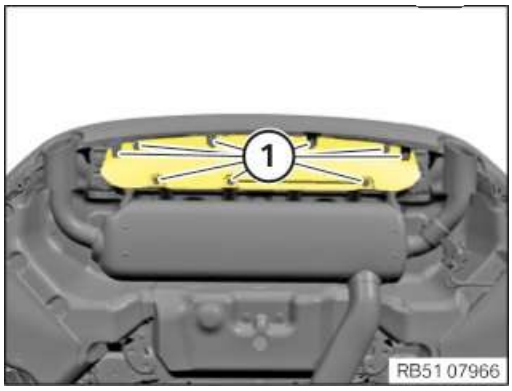
- Remove screws (arrows).

NOTICE

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

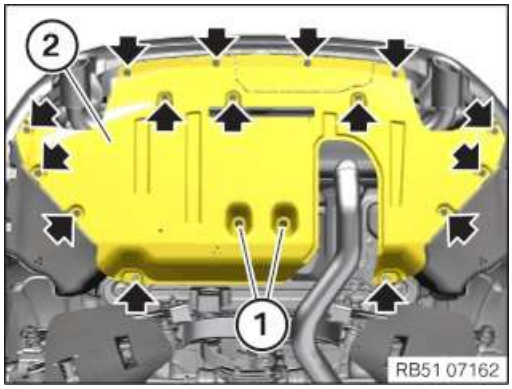
- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

3 – Removing the rear diffuser



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

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

4 – 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!

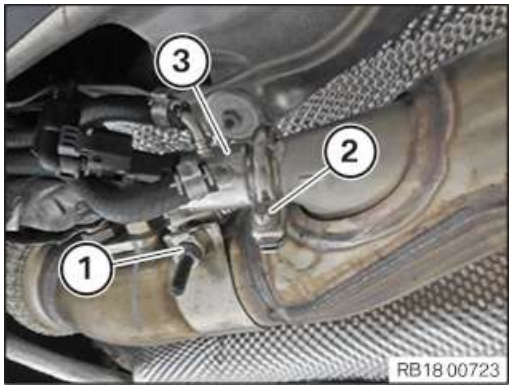
- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

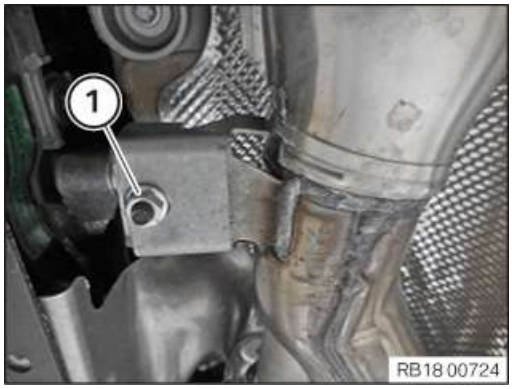
Heavy components can lead to injury or damage.

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

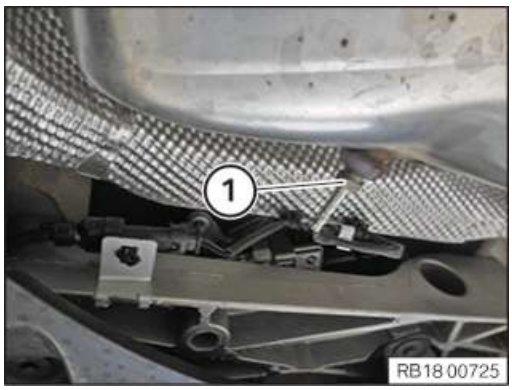


- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3)from the exhaust system and place to one side.

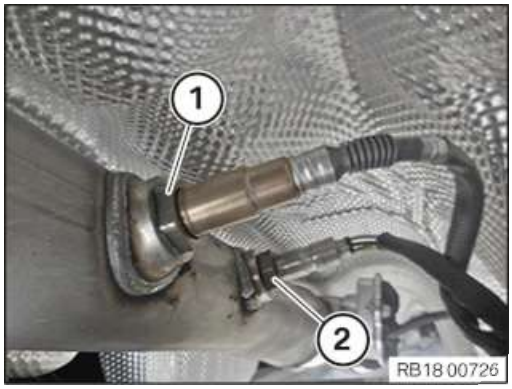
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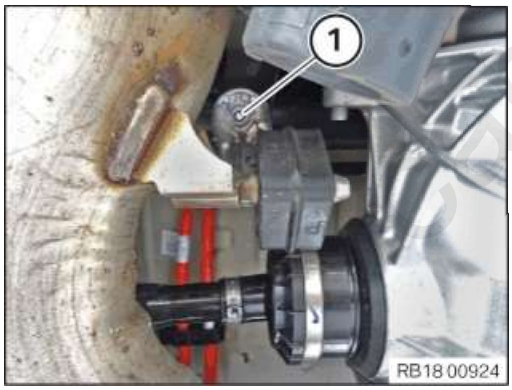
- Loosen nut (1).



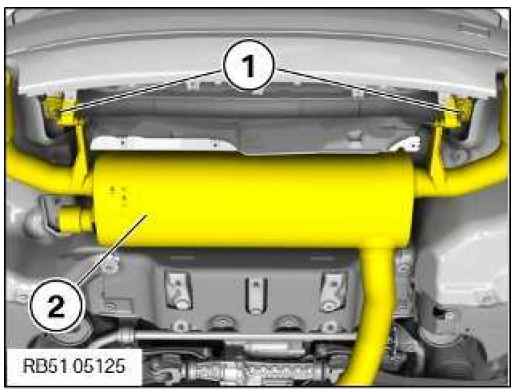
- Detach the exhaust temperature sensor (1) from the exhaust system.



- 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.



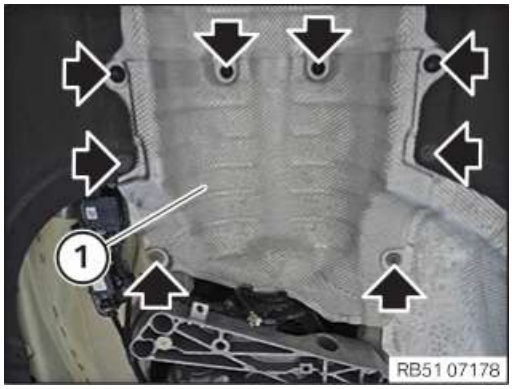
- Release the nut (1) on the rear axle support.



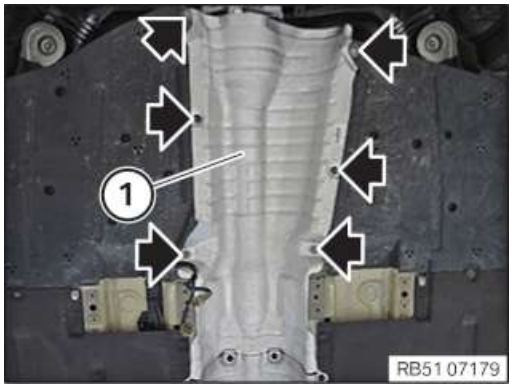
- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

5 – Remove the heat shield

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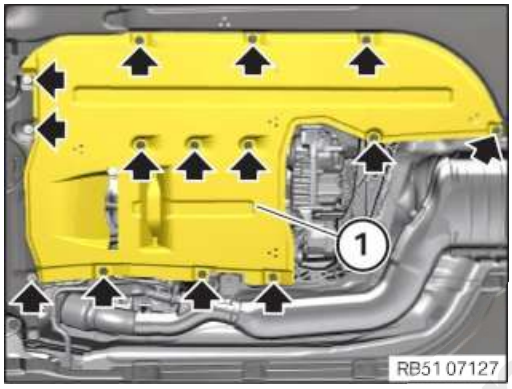


- Loosen bolts and nuts (arrows).
- Remove the heat shield (1).



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

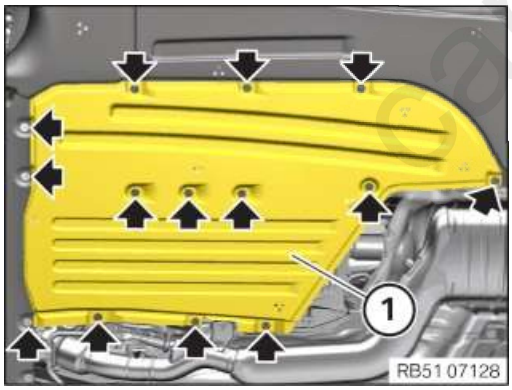
6 – Remove rear underbody protection



- **Version A:**

  Remove screws (arrows).

  Feed out the rear underbody protection (1).



- **Version B:**

  Remove screws (arrows).

  Guide out rear underbody protection (1) and remove it.

7 – Completely removing the propeller shaft (plug-in - rear flexible disc)

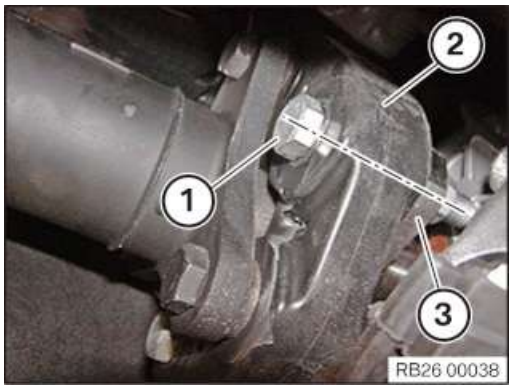
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RISK OF DAMAGE

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.

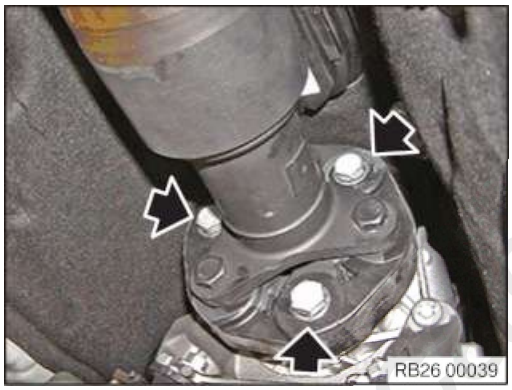
- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened 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.



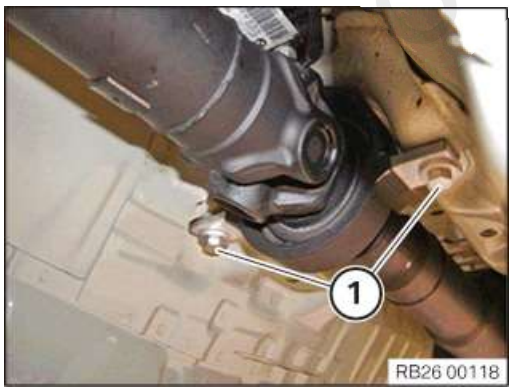
TECHNICAL INFORMATION

Compliance with the following instructions is required to avoid a humming noise from the propeller shaft after refitting the propeller shaft.

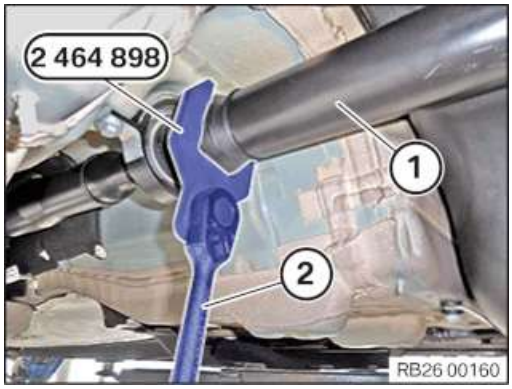
- Before loosening the flexible disc connection (1) at the front of the propeller shaft, it **must** be marked in one plane with the flexible disc (2) and the three-hole flange (3).
- It is essential to reassemble the three-hole flange (3) with the flexible disc (2) in the same position during installation.



- Remove screws (arrows).

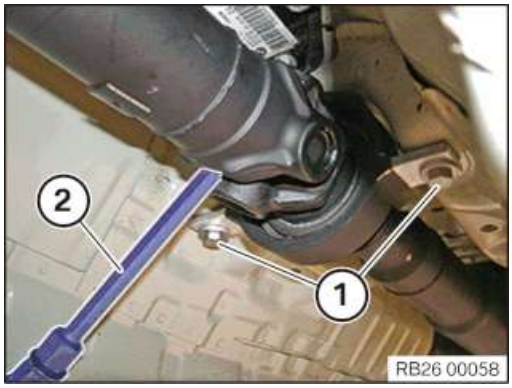


- Loosen screws (1).



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

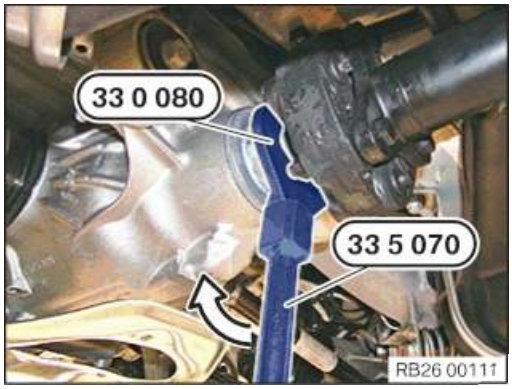
  With the special tool 2 464 898 and a suitable tool (2), secure the propeller shaft (1) on the centre universal joint against twisting.



- **Vehicles with a broad universal joint:**

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

  Remove the screws (1) of the centre mount only after opening the recessed nuts are removed completely.



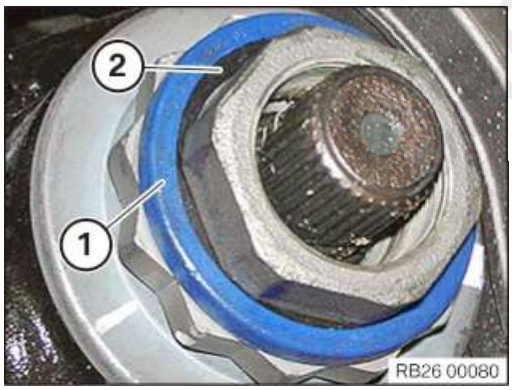
RISK OF DAMAGE

Damage to rear axle differential.

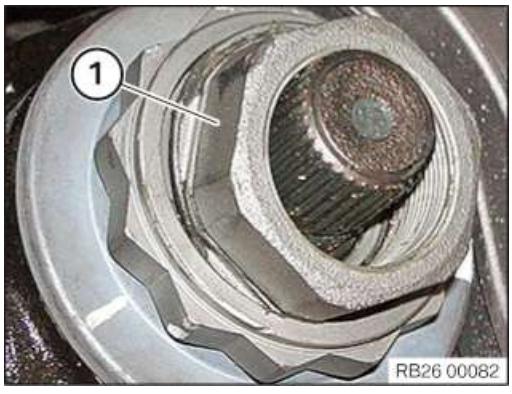
Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

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

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



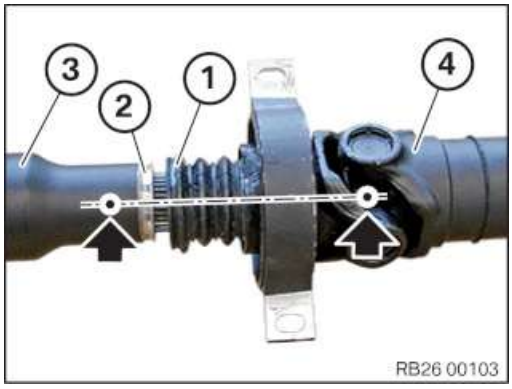
- Remove the mounting clip (1) and the seal (2).



- Remove recessed nut (1).

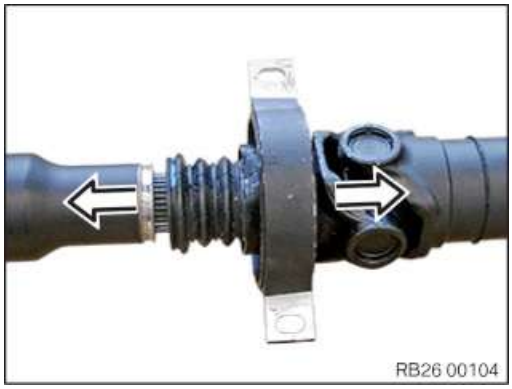
8 – Removing the centre mount of the propeller shaft

▸ Removing the gaiter of the centre mount

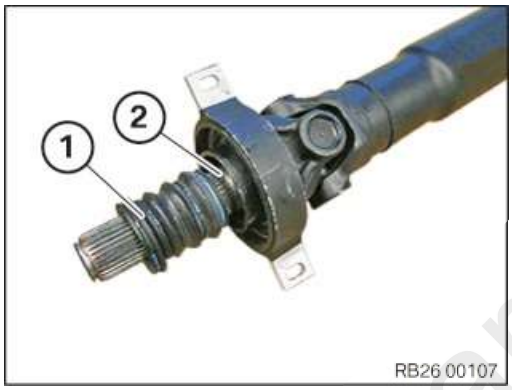


- Pull off the gaiter (1) from the groove (2).
- Mark the alignment of the installation positions of the front propeller shaft (3) and the rear propeller shaft (4).

  The identification allows the front and rear propeller shafts to be installed at the same position. This guarantees that the propeller shaft will once again be balanced within the system following installation.



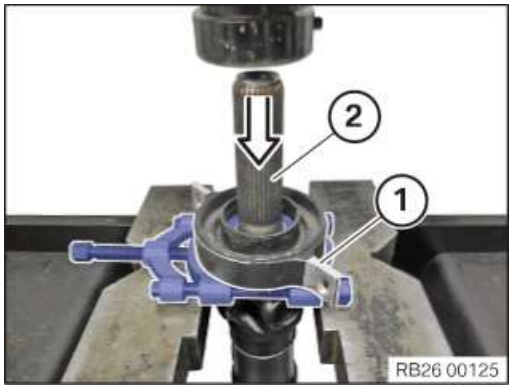
- Pull apart the propeller shaft in the direction of the arrow.



- Release the gaiter (1) from the groove (2) using a screwdriver and pull it off over the longitudinal splines.



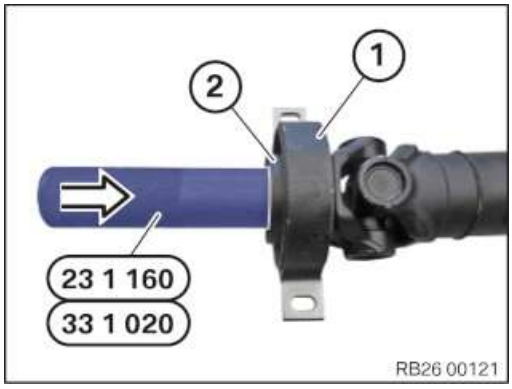
- Install the special tool between the centre mount (1) and the propeller shaft (2).



- Use the hydraulic press to push the centre mount (1) off the propeller shaft (2).

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9 – Installing the centre mount on the propeller shaft



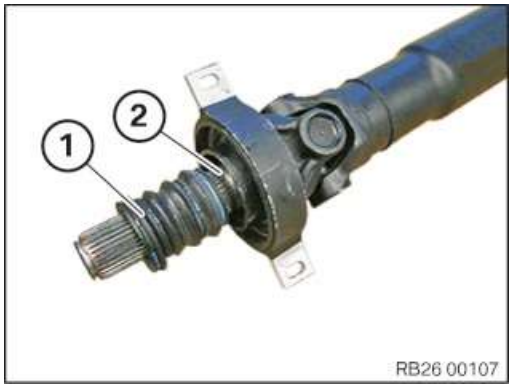
- Push the centre mount (1) onto the propeller shaft.

  The collar (2) must point toward the front propeller shaft in the direction of travel.
- **Centre mount diameter 30 mm (black sealing ring):**

  Push centre mount (1) with special tool as far as it will go.
- **Centre mount diameter 35 mm (blue sealing ring):**

  Push centre mount (1) with special tool as far as it will go.

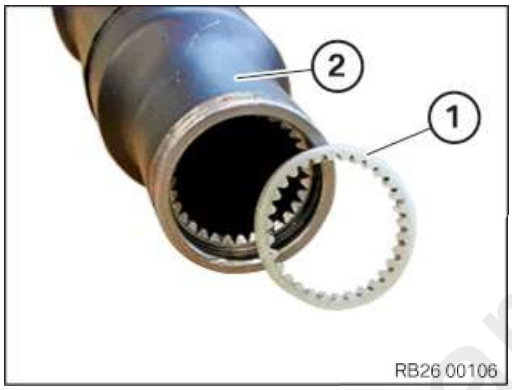
▸ **Installing the gaiter of the centre mount**



- Evenly grease the longitudinal splines of the propeller shaft.
- Push in the gaiter (1) onto the groove (2) and make sure it is securely positioned.

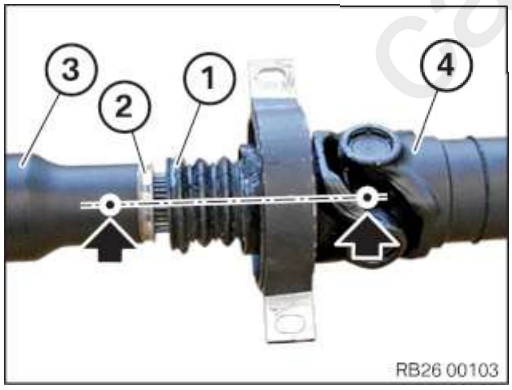
Expendable materials

Lubricating grease Olistamoly 2 LN 584 LO	100 g, Tube	83 19 0 447 919



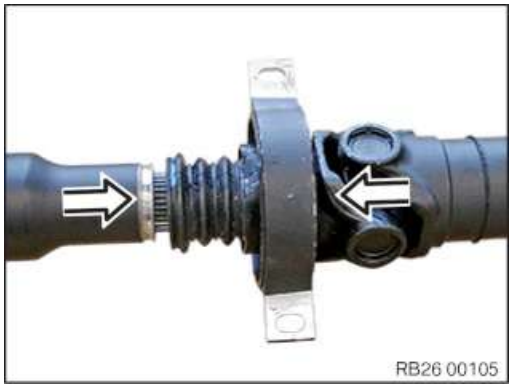
- If applicable, renew the clamping ring (1) and insert it in the front propeller shaft (2).

  Parts: Clamping ring



- Push the front propeller shaft (3) onto the longitudinal splines of the rear propeller shaft (4) as per the individually applied marks.

  The marks (arrows) must be aligned.
- Push in the gaiter (1) onto the groove (2) and make sure it is securely positioned.



- Push the propeller shaft together in the direction of the arrow.

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10 – Completely installing the propeller shaft

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.

- Observe following installation sequence:
  - Position propeller shaft on transmission.
  - Position the propeller shaft at the rear axle differential.
  - Position centre mount.
- Observe the following screwing sequence:
  - Insert nut
  - Flexible disc to transmission
  - Centre mount



- Check the centring (arrow) for damage and renew if necessary.



- Apply a thin coat of grease to the soft centring (1), if necessary.

Expendable materials

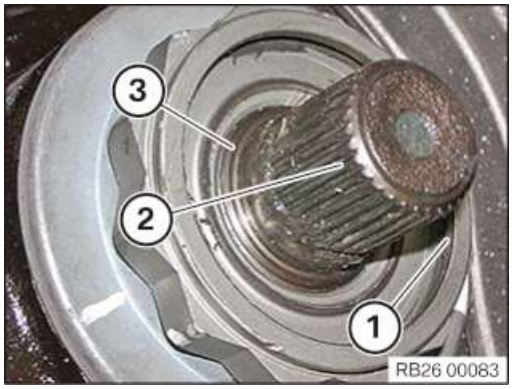
Lubricating grease Olistamoly 2 LN 584 LO	100 g, Tube	83 19 0 447 919

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754

- Hard centring (2) must **not** be greased.

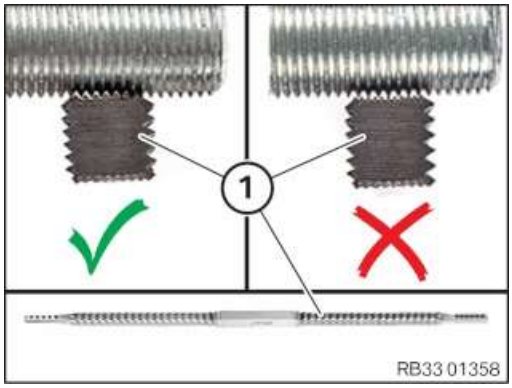
arrdiagn.com



- Clean all residue from the insert collar (1) of the flange nut and the gearing on the bevel pinion (2) and degrease them.
- Top up the collar insert (1)with grease.

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- 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.

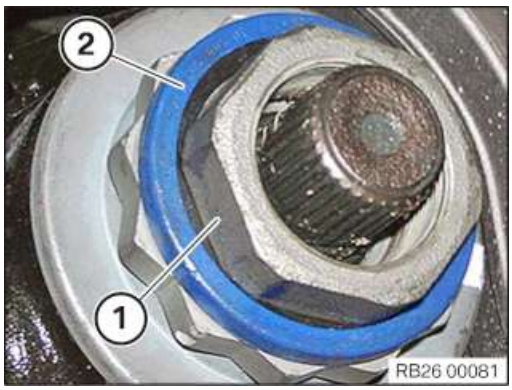
Failure to observe the greasing specifications may lead to damage on the output flange.

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

- Clean thread (1) of flange off adhesive residue.
- Clean gearing (2).
- Grease gearing (2).

Expendable materials

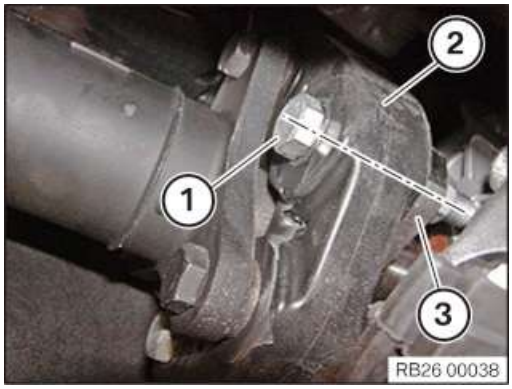
Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



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

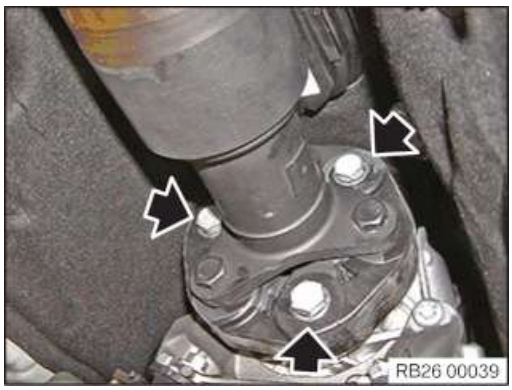
  Parts: Seal, recessed nut, retaining ring
- Insert recessed nut (1) including gasket into collar insert of the flange nut.
- Mount the retaining ring (2).

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- It is imperative to reassemble the three-hole flange (3) with the flexible disc (2) in the same position in order to avoid humming noise of the drivetrain after reinstalling the propeller shaft.
- Renew ZNS screws and the self-locking nuts (1).

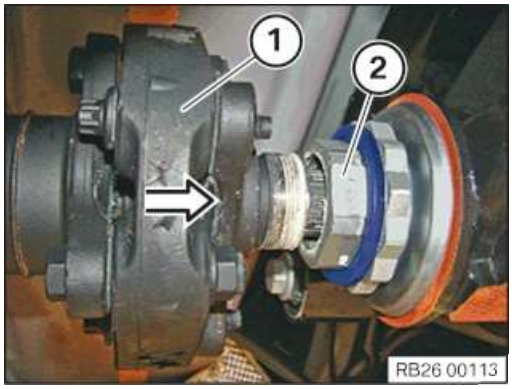
  Parts: ZNS screws, self-locking nuts



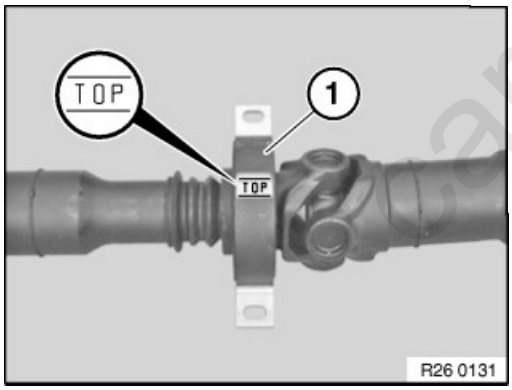
- Position the screws and nuts (arrows).
- Tighten the screws.

Front flexible disc to propeller shaft

M12	Renew screws. Comply with jointing torque and angle of rotation. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

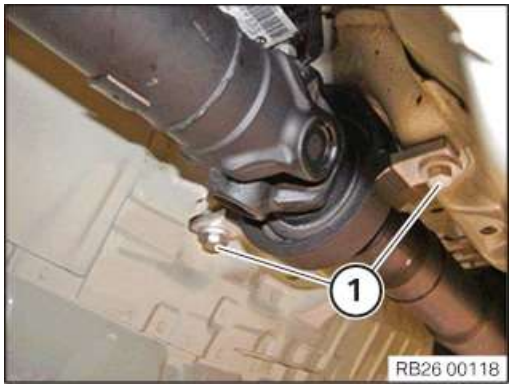


- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Manually screw on and tighten the recessed nut (2) onto the propeller shaft (1) by a minimum of two threads.



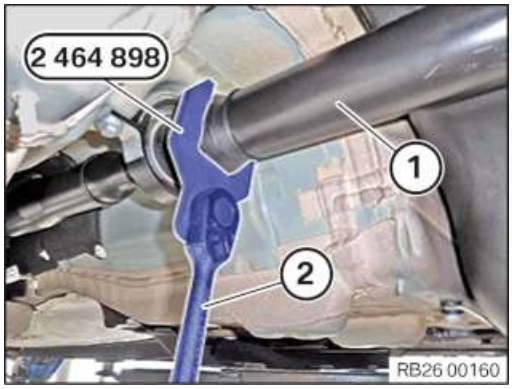
- **Version with the TOP designation:**

  The centre mount (1) must be installed with the TOP marking at the top in the gearbox tunnel.



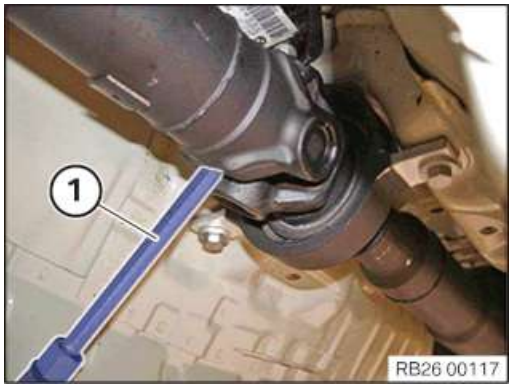
- Position centre mount.
- Position screws (1).

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

  Using the special tool 2 464 898 and a suitable tool (2), secure the propeller shaft (1) to the centre universal joint against twisting.



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

  Secure the propeller shaft against twisting at the central universal joint using a suitable tool (1).



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.

- Screw in the recessed nut **counter-clockwise, see direction of arrow** with special tools 0 495 554 (33 5 070) and .

  The recessed nut must be screwed in within 5 min .

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!



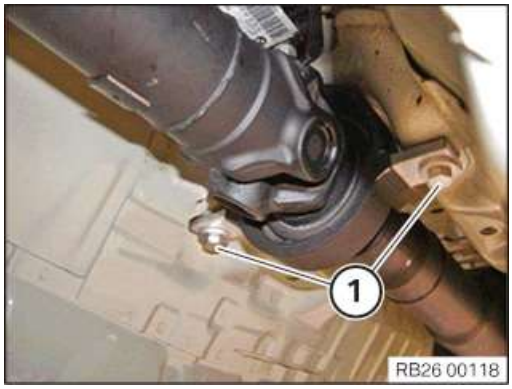
- Brace mounting bolts of flexible disc on nut and tighten by screw.

Rear flexible disc to three-hole flange

M12	Renew screws. Jointing torque and angle of rotation must be observed without fail. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

- Secure the special angle of rotation tool 0 490 504 (00 9 120) with the magnets to the vehicle underbody and screw it further depending on the angle of rotation.

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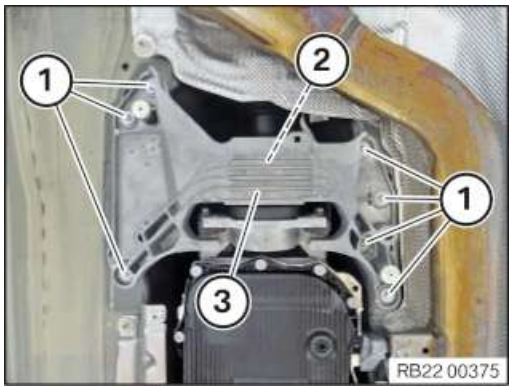


- Tighten the screws (1).

Centre mount to body

M8		Tightening torque	19 Nm

11 – Install transmission cross member.



- Install the transmission cross member (3).
- Insert screw (2) and tighten until hand-tight.
- Tighten the screws (1).

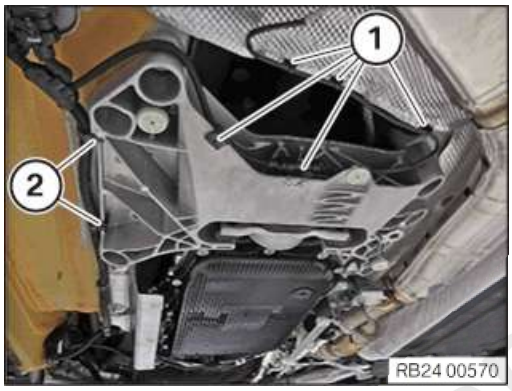
Transmission cross member to body

M8		Tightening torque	19 Nm

- Tighten down screw (2).

Transmission cross member to rubber mounts

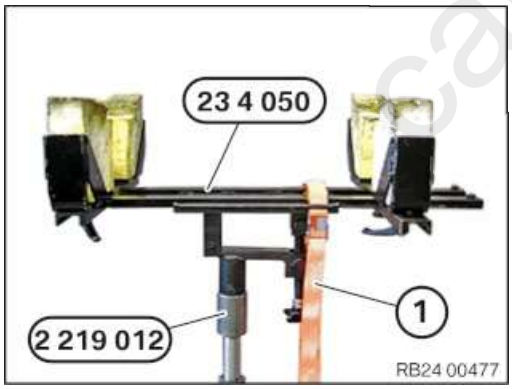
M12		Tightening torque	100 Nm



- **Only B47 and B57:**

  Install the cable.

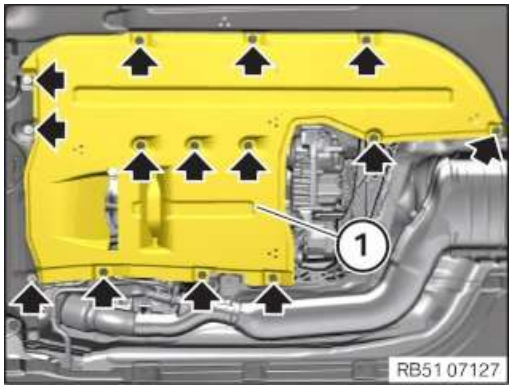
  Fasten the cable with clamps (1) and (2).



- Loosen the tensioning strap (1) from the transmission.
- Remove the special tools 0 495 498 (23 4 050) and 2 219 012 from the transmission.

12 – Installing underbody protection at rear

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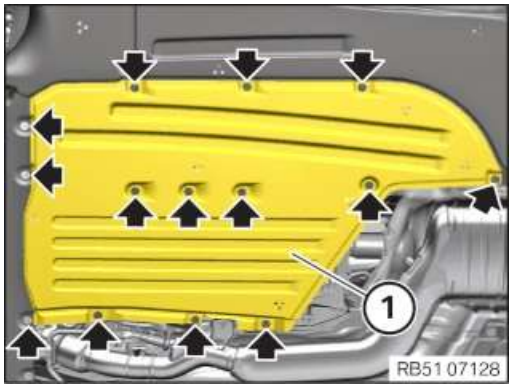
- **Version A:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm



- **Version B:**

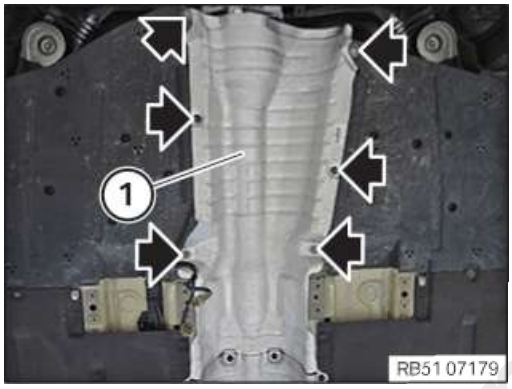
  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm

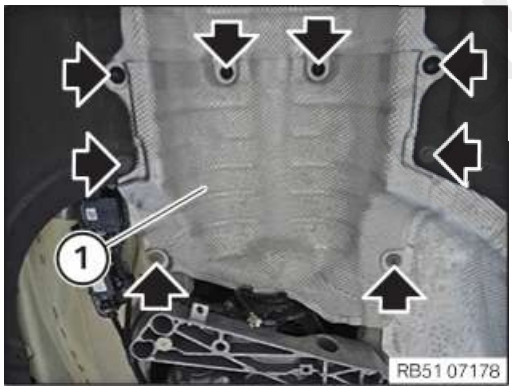
13 – Installing the heat shields



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

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm



- Install the 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

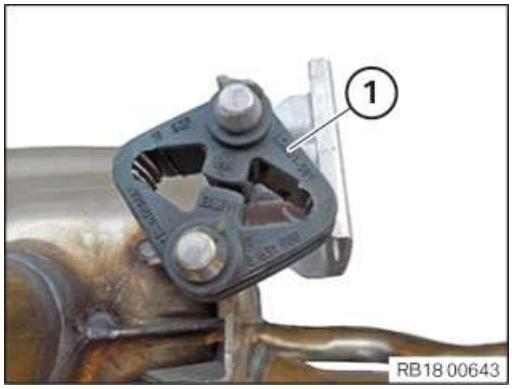
Heavy component.

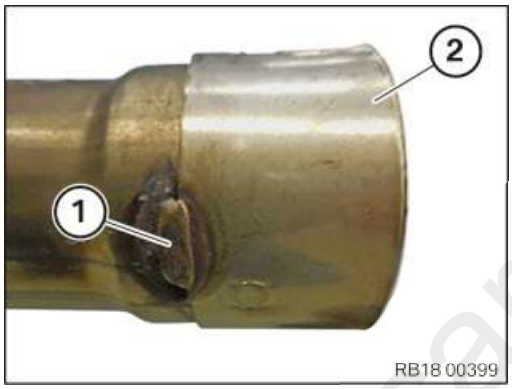
Heavy components can lead to injury or damage.

- 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

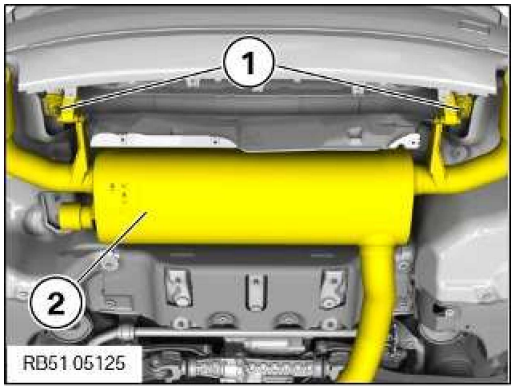
CAUTION

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).



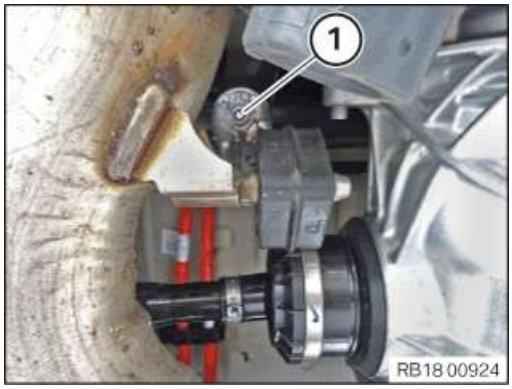
- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

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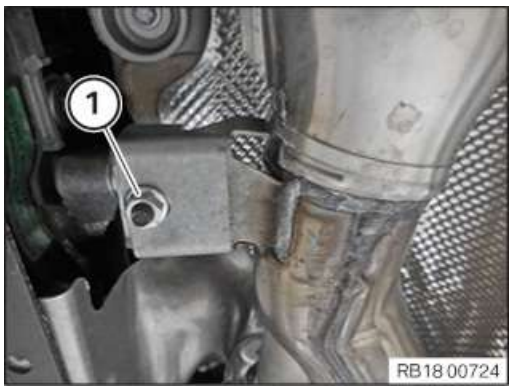


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

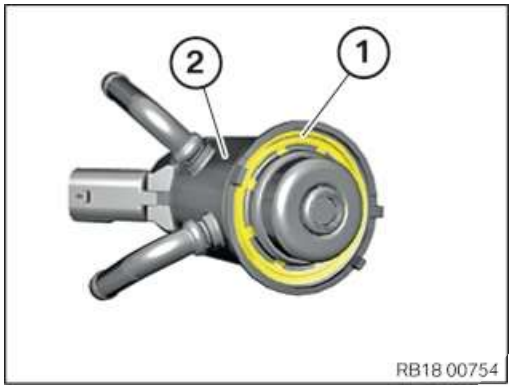
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

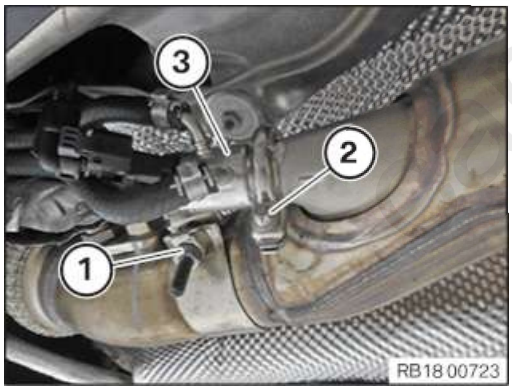
Exhaust system to transmission

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

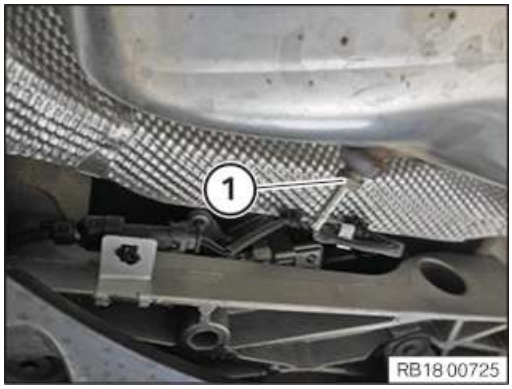
- Renew the V-clip (2).

  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

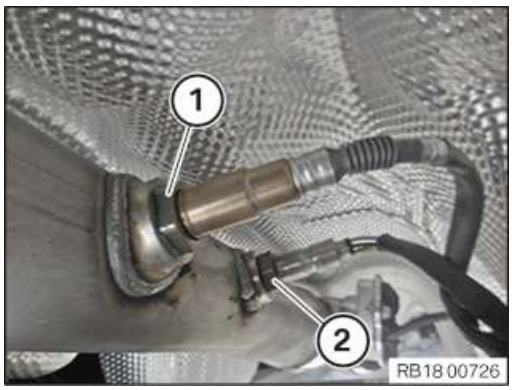
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- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

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

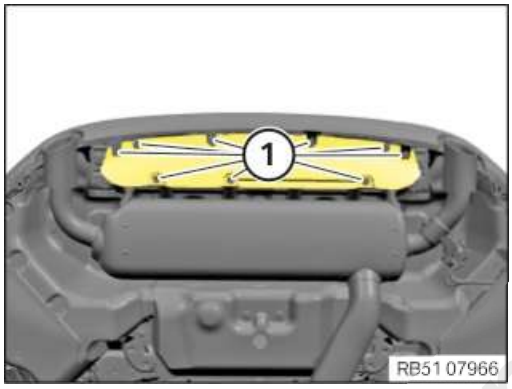
Sensor		Tightening torque	50 Nm

- 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

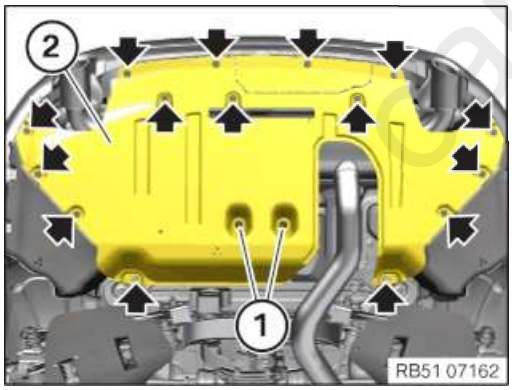
15 – Installing the rear diffuser



- **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

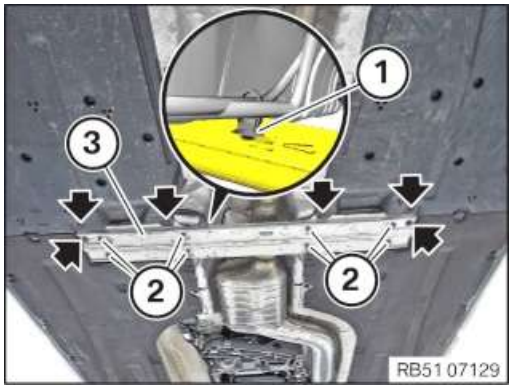
- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

16 – 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

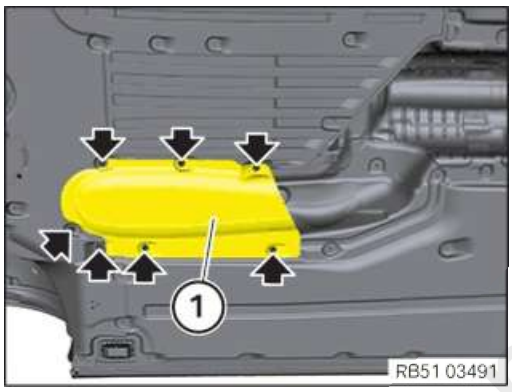
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure the clamp (1).

17 – 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

Front flexible disc to propeller shaft — Used in step 10

M12	Renew screws. Comply with jointing torque and angle of rotation. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

Propeller shaft on the rear axle differential — Used in step 10

Insert nut	Replace insert nut.	Tightening torque	100 Nm

Rear flexible disc to three-hole flange — Used in step 10

M12	Renew screws. Jointing torque and angle of rotation must be observed without fail. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

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Centre mount to body			Used in step 10
M8		Tightening torque	19 Nm

Transmission cross member to body			Used in step 11
M8		Tightening torque	19 Nm

Transmission cross member to rubber mounts			Used in step 11
M12		Tightening torque	100 Nm

Underbody protection			Used in step 12
Hexagon screw		Tightening torque	3 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

Diffuser / underbody panelling			Used in step 15
Nuts and screws		Tightening torque	3 Nm

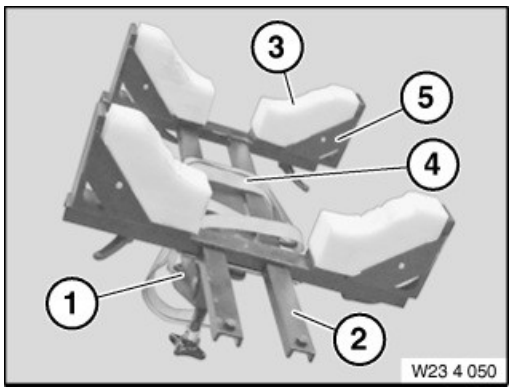
Connecting support to tunnel			Used in step 16
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

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

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Overview of Special Tools

0 495 498 (23 4 050) Fixture



Common Used in step 11

Usage	(universal gearbox holder) Support for removing and installing manual gearboxes and automatic transmissions for BMW & RR.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 06 (256)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
3	0 495 549 (23 4 053)		**Insert** (foam inserts (1 set = 4 pcs.))	
1	0 495 547 (23 4 051)		**Joint** Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
2	0 495 548 (23 4 052)		**Frame** (Basic frame) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
4	0 495 550 (23 4 054)		**Belt** (Tensioning strap) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
5	0 496 018 (23 4 055)		**Fixture** (Fixture for foam insert) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	

2 219 012 Hydraulic lifter



Common Used in step 11

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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2 464 898 Open-end spanner



Common Used in step 710

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 710

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	

0 490 504 (00 9 120) Torque angle measuring dial



Common Used in step 10

Usage	For torsion angle adjustment of cylinder head bolts (all engines) And reinforcement plate front axle support E46
Included in the tool or work	
Storage location	A4
Replaced by	
In connection with	
SI-Number	

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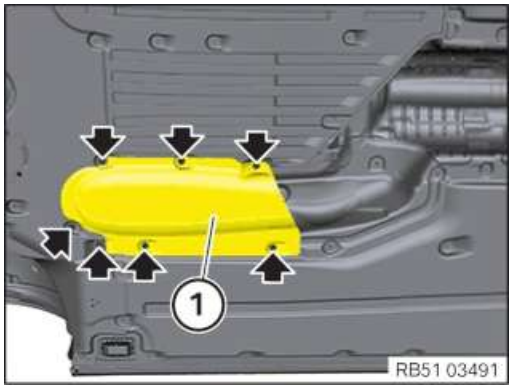
26 12 011 Replacing grooved ball bearing in propeller shaft centre bearing

PRELIMINARY WORK

1 – Remove the underbody panelling of the transmission on the side

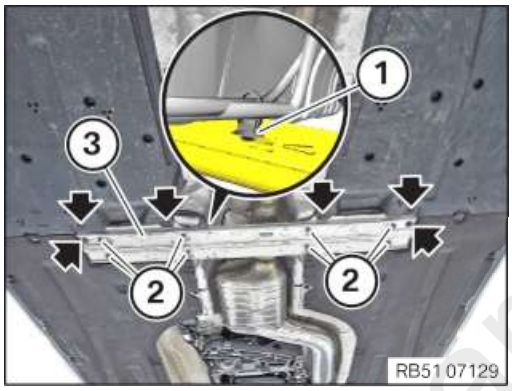
NOTICE

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).

2 – Remove the connecting support from the tunnel



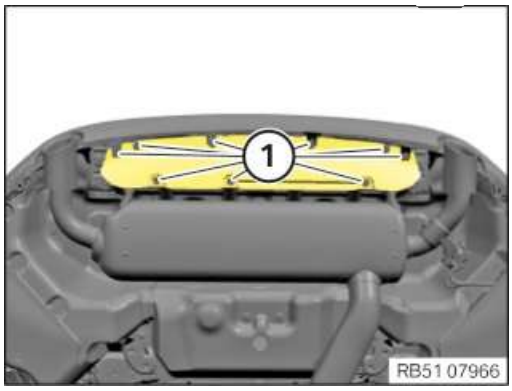
- Remove screws (arrows).

NOTICE

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

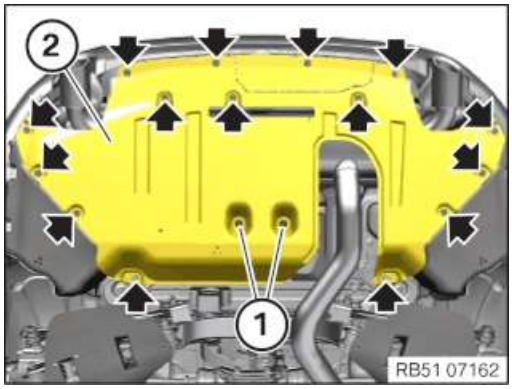
- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

3 – Removing the rear diffuser



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

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

4 – 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!

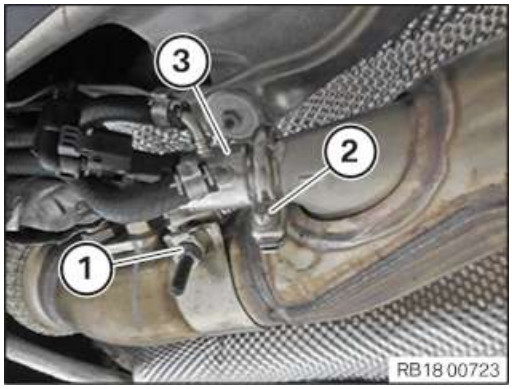
- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

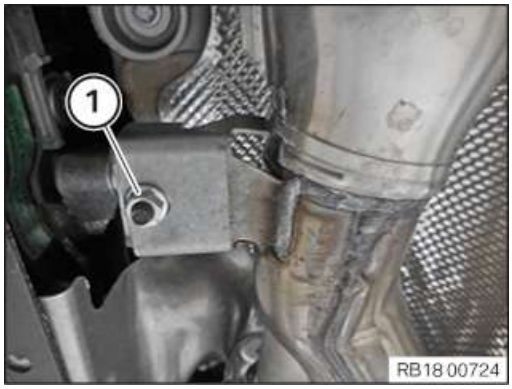
Heavy components can lead to injury or damage.

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

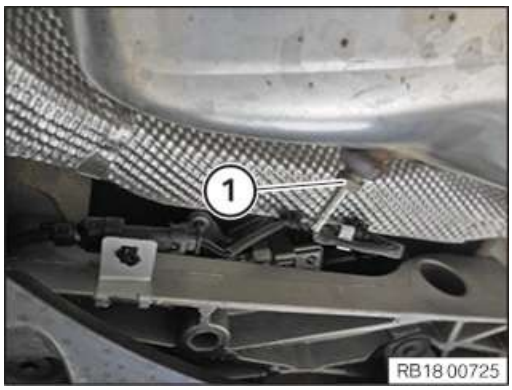


- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3)from the exhaust system and place to one side.

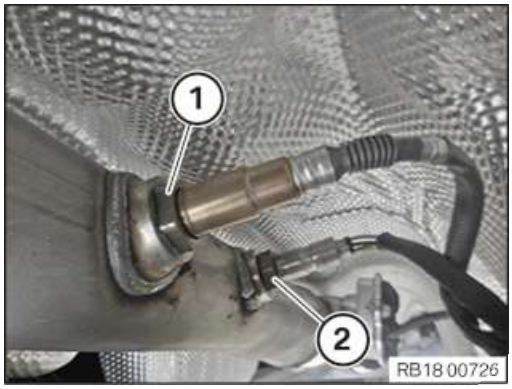
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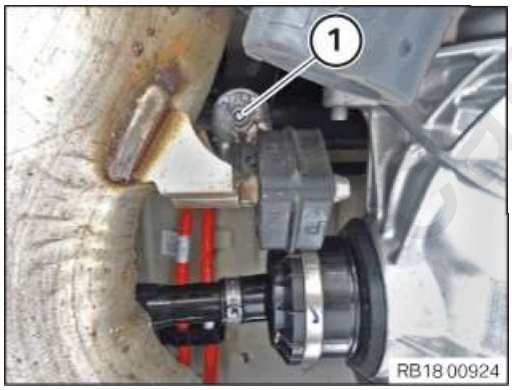
- Loosen nut (1).



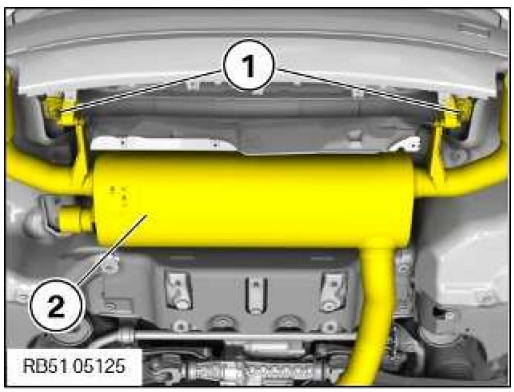
- Detach the exhaust temperature sensor (1) from the exhaust system.



- 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.



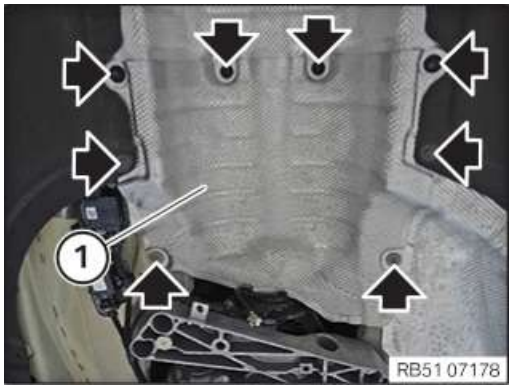
- Release the nut (1) on the rear axle support.



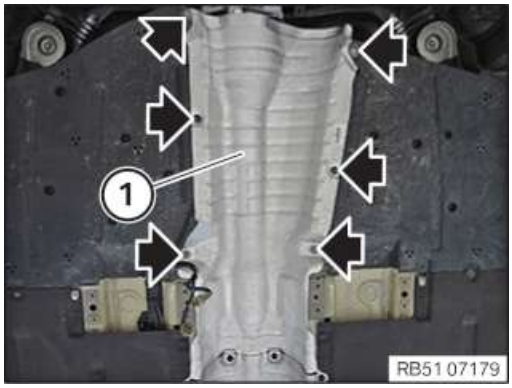
- Loosen nuts (1).
- Lower and remove the exhaust system (2) with the assistance of a second person.

5 – Remove the heat shield

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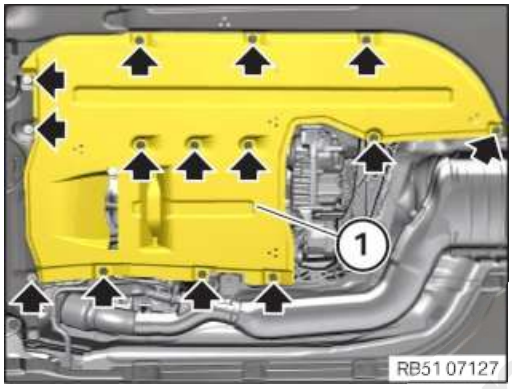


- Loosen bolts and nuts (arrows).
- Remove the heat shield (1).



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

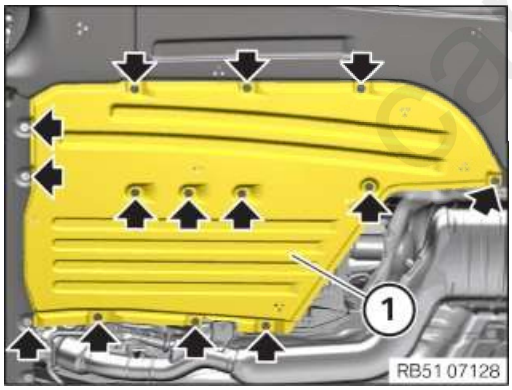
6 – Remove rear underbody protection



- **Version A:**

  Remove screws (arrows).

  Feed out the rear underbody protection (1).



- **Version B:**

  Remove screws (arrows).

  Guide out rear underbody protection (1) and remove it.

7 – Completely removing the propeller shaft (plug-in - rear flexible disc)

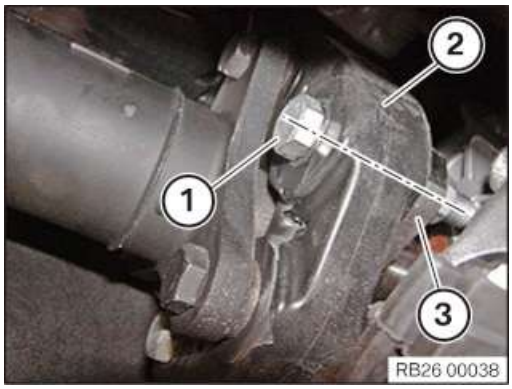
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RISK OF DAMAGE

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.

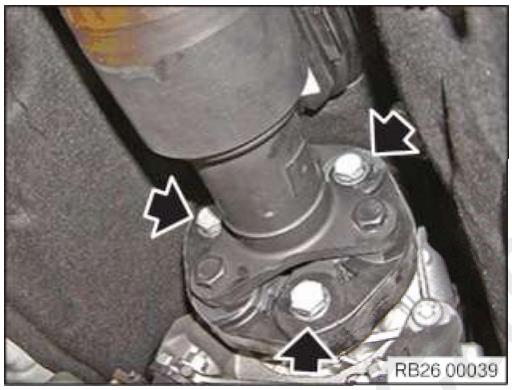
- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened 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.



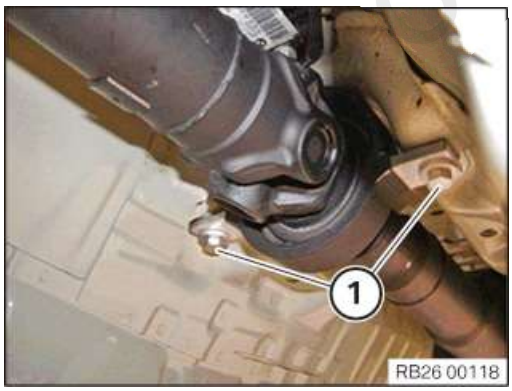
TECHNICAL INFORMATION

Compliance with the following instructions is required to avoid a humming noise from the propeller shaft after refitting the propeller shaft.

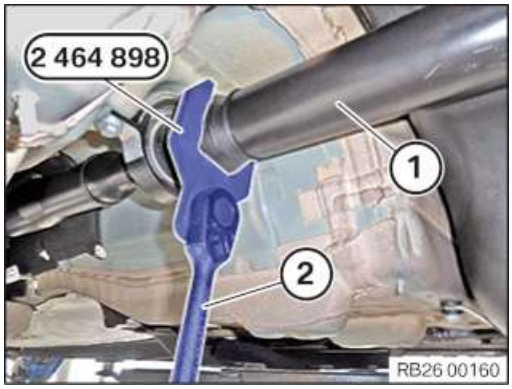
- Before loosening the flexible disc connection (1) at the front of the propeller shaft, it **must** be marked in one plane with the flexible disc (2) and the three-hole flange (3).
- It is essential to reassemble the three-hole flange (3) with the flexible disc (2) in the same position during installation.



- Remove screws (arrows).

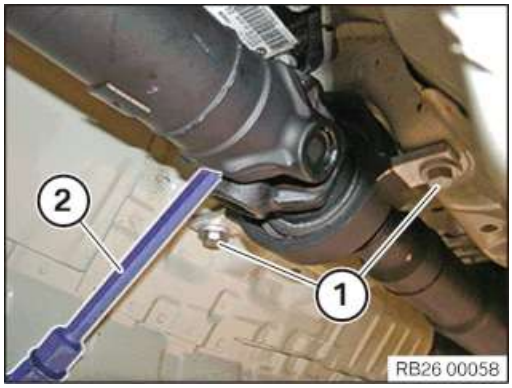


- Loosen screws (1).



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

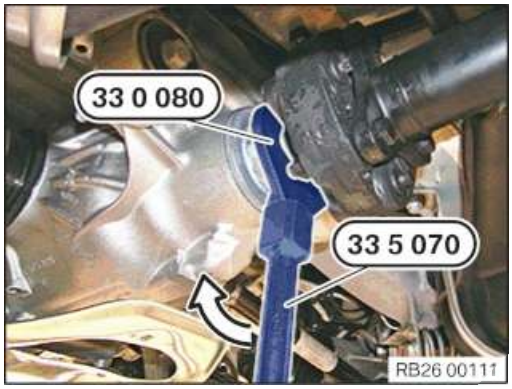
  With the special tool 2 464 898 and a suitable tool (2), secure the propeller shaft (1) on the centre universal joint against twisting.



- **Vehicles with a broad universal joint:**

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

  Remove the screws (1) of the centre mount only after opening the recessed nuts are removed completely.



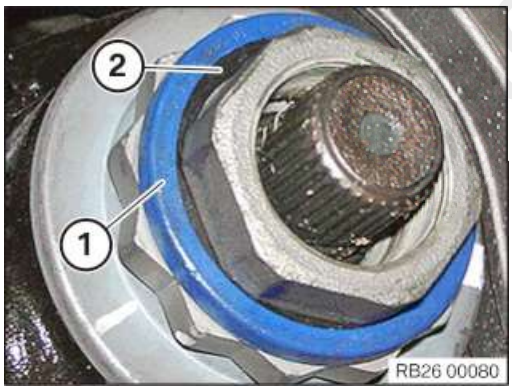
RISK OF DAMAGE

Damage to rear axle differential.

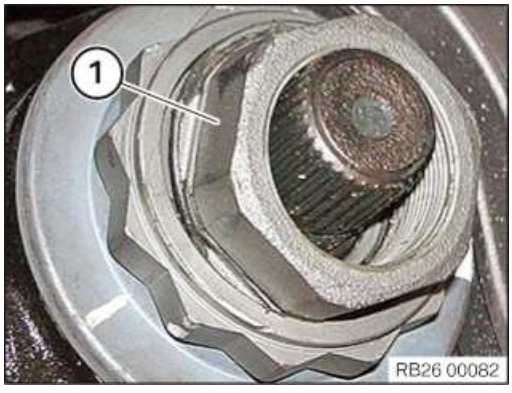
Non-observance of the removal and installation guidelines may cause severe damage to the rear axle differential.

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

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



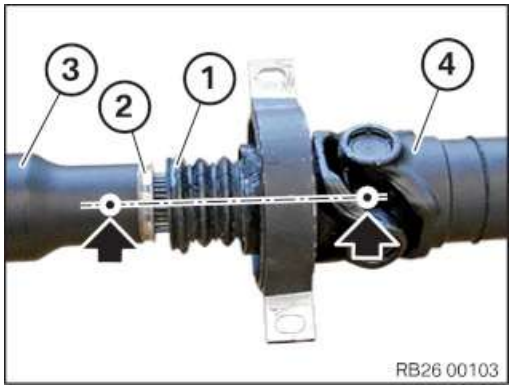
- Remove the mounting clip (1) and the seal (2).



- Remove recessed nut (1).

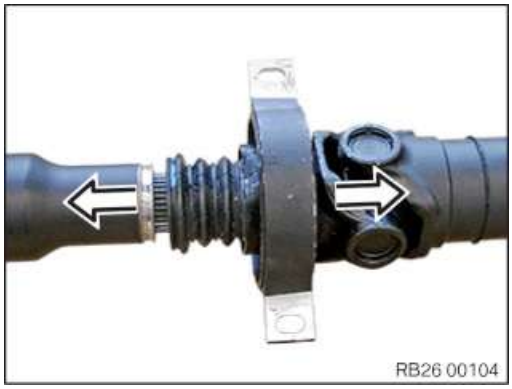
8 – Removing the centre mount of the propeller shaft

▸ **Removing the gaiter of the centre mount**

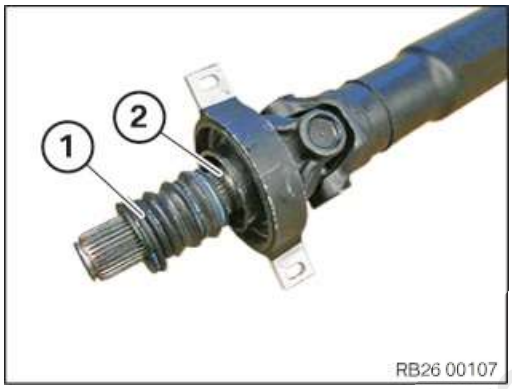


- Pull off the gaiter (1) from the groove (2).
- Mark the alignment of the installation positions of the front propeller shaft (3) and the rear propeller shaft (4).

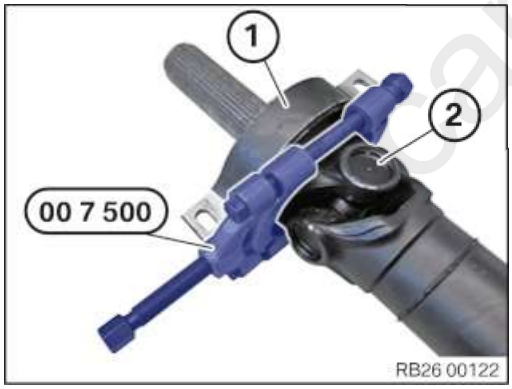
  The identification allows the front and rear propeller shafts to be installed at the same position. This guarantees that the propeller shaft will once again be balanced within the system following installation.



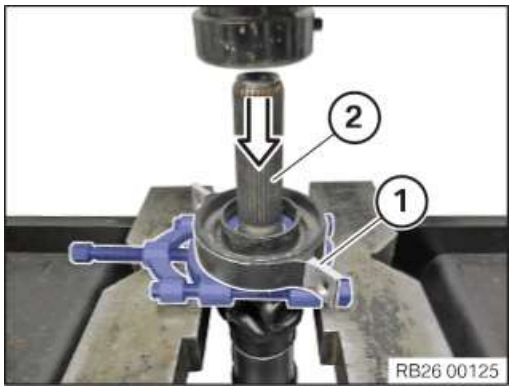
- Pull apart the propeller shaft in the direction of the arrow.



- Release the gaiter (1) from the groove (2) using a screwdriver and pull it off over the longitudinal splines.



- Install the special tool between the centre mount (1) and the propeller shaft (2).

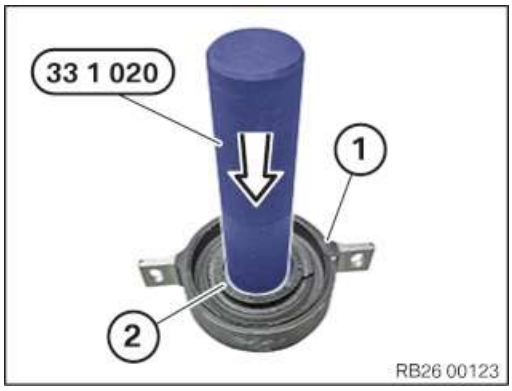


- Use the hydraulic press to push the centre mount (1) off the propeller shaft (2).

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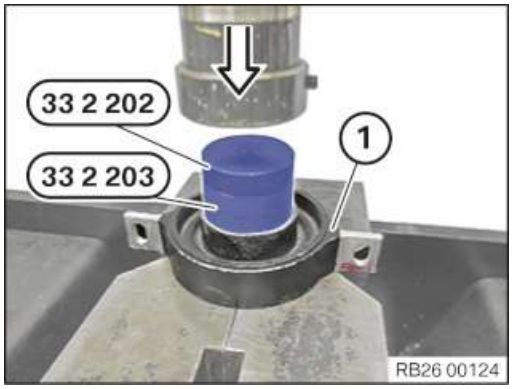
MAIN WORK

9 – Removing the grooved ball bearing in the propeller shaft centre bearing



- Press the grooved ball bearing (2), using the special tool out of the prop shaft centre bearing (1) and remove.

10 – Installing the grooved ball bearing in the propeller shaft centre bearing



- Lubricate the rubber-coated bearing carrier of the propeller shaft centre bearing (1) with lubricant.

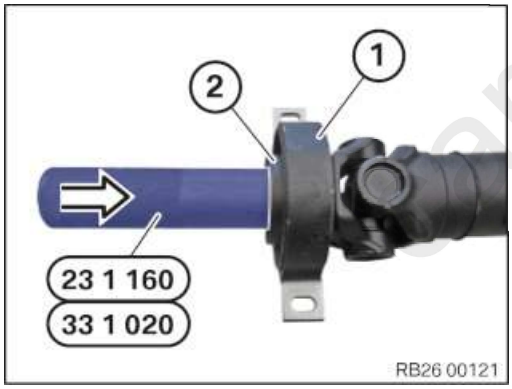
Expendable materials

Fitting aid (Circo Light; lubricant)	250 ml, Bottle	83192405829

- Press in the grooved ball bearing using special tools and into the propeller shaft centre bearing (1).

POSTPROCESSES

11 – Installing the centre mount on the propeller shaft



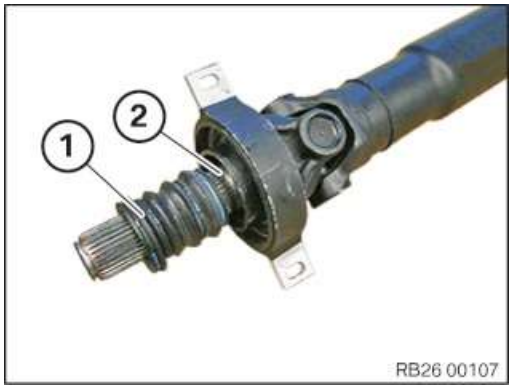
- Push the centre mount (1) onto the propeller shaft.

  The collar (2) must point toward the front propeller shaft in the direction of travel.
- **Centre mount diameter 30 mm (black sealing ring):**

  Push centre mount (1) with special tool as far as it will go.
- **Centre mount diameter 35 mm (blue sealing ring):**

  Push centre mount (1) with special tool as far as it will go.

▸ **Installing the gaiter of the centre mount**

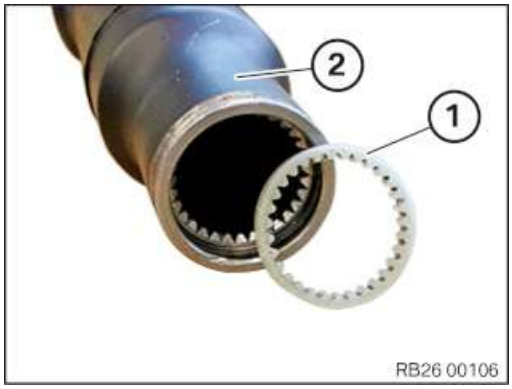


- Evenly grease the longitudinal splines of the propeller shaft.
- Push in the gaiter (1) onto the groove (2) and make sure it is securely positioned.

Expendable materials

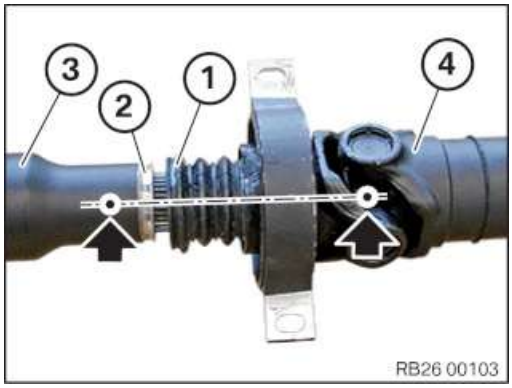
Lubricating grease Olistamoly 2 LN 584 LO	100 g, Tube	83 19 0 447 919

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- If applicable, renew the clamping ring (1) and insert it in the front propeller shaft (2).

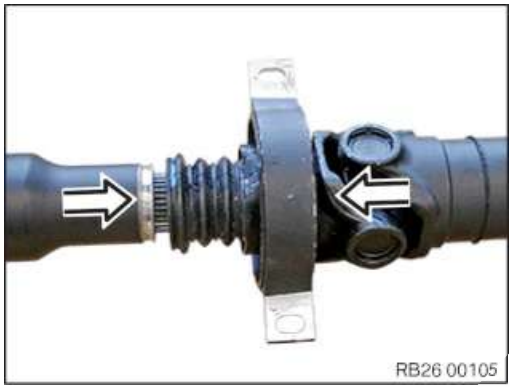
  Parts: Clamping ring



- Push the front propeller shaft (3) onto the longitudinal splines of the rear propeller shaft (4) as per the individually applied marks.

  The marks (arrows) must be aligned.

- Push in the gaiter (1) onto the groove (2) and make sure it is securely positioned.



- Push the propeller shaft together in the direction of the arrow.

12 – Completely installing the propeller shaft

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.

- Observe following installation sequence:
  - Position propeller shaft on transmission.
  - Position the propeller shaft at the rear axle differential.
  - Position centre mount.
- Observe the following screwing sequence:
  - Insert nut
  - Flexible disc to transmission
  - Centre mount

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- Check the centring (arrow) for damage and renew if necessary.



- Apply a thin coat of grease to the soft centring (1), if necessary.

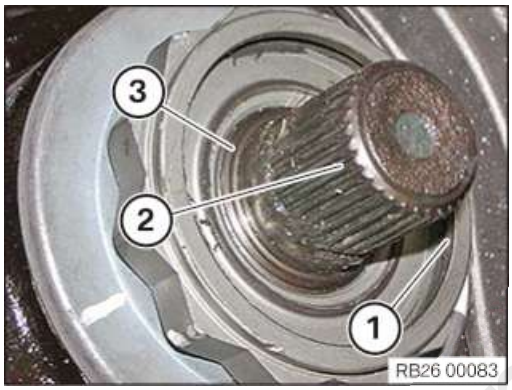
Expendable materials

Lubricating grease Olistamoly 2 LN 584 LO	100 g, Tube	83 19 0 447 919

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754

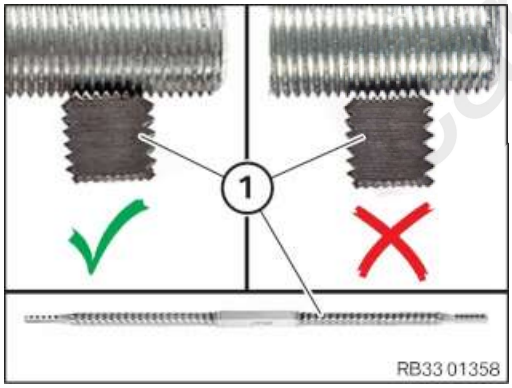
- Hard centring (2) must **not** be greased.



- Clean all residue from the insert collar (1) of the flange nut and the gearing on the bevel pinion (2) and degrease them.
- Top up the collar insert (1)with grease.

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



- 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.

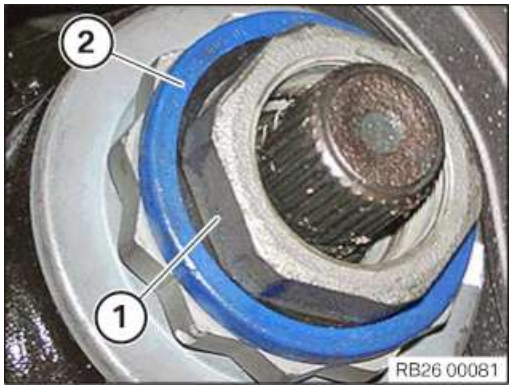
Failure to observe the greasing specifications may lead to damage on the output flange.

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

- Clean thread (1) of flange off adhesive residue.
- Clean gearing (2).
- Grease gearing (2).

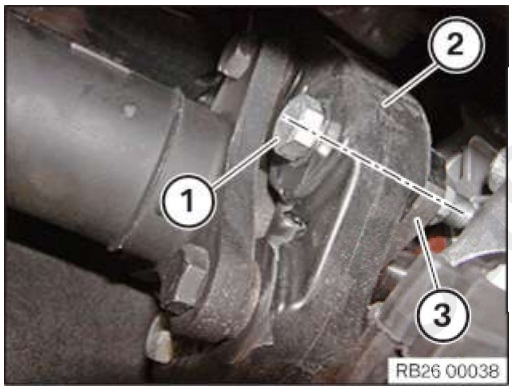
Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754



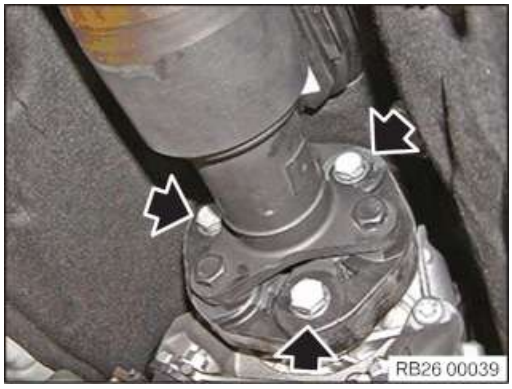
- Renew the seal, recessed nut (1) and the retaining ring (2).

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



- It is imperative to reassemble the three-hole flange (3) with the flexible disc (2) in the same position in order to avoid humming noise of the drivetrain after reinstalling the propeller shaft.
- Renew ZNS screws and the self-locking nuts (1).

  Parts: ZNS screws, self-locking nuts

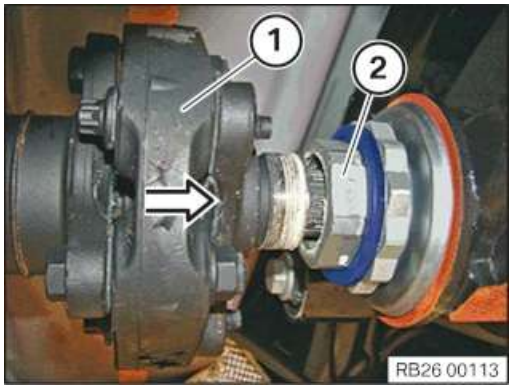


- Position the screws and nuts (arrows).
- Tighten the screws.

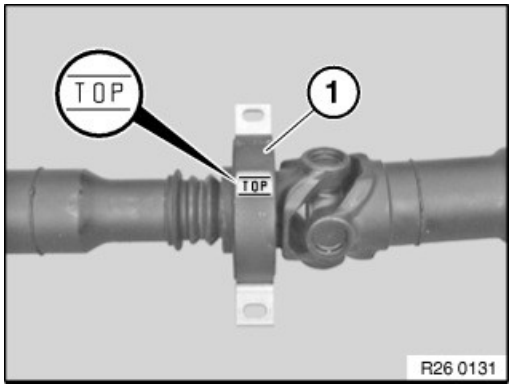
Front flexible disc to propeller shaft

M12	Renew screws. Comply with jointing torque and angle of rotation. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

carsdesign.com

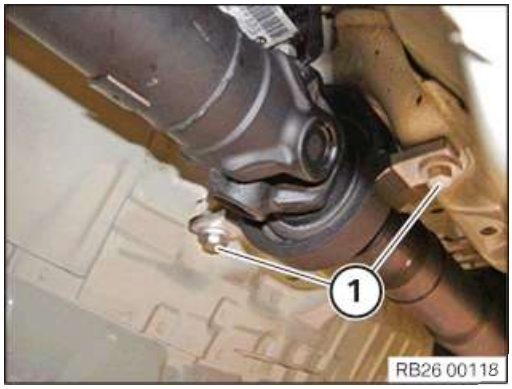


- Push the propeller shaft (1) in the direction of the arrow against the recessed nut (2) up to the limit position.
- Manually screw on and tighten the recessed nut (2) onto the propeller shaft (1) by a minimum of two threads.

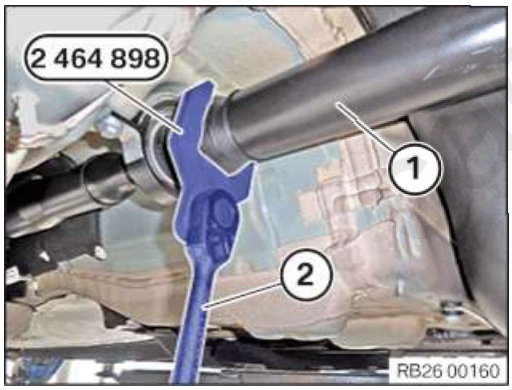


- **Version with the TOP designation:**

  The centre mount (1) must be installed with the TOP marking at the top in the gearbox tunnel.

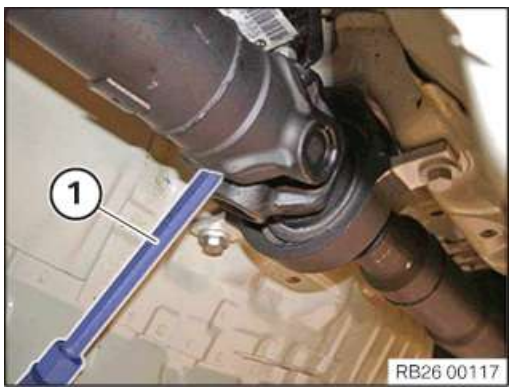


- Position centre mount.
- Position screws (1).



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

  Using the special tool 2 464 898 and a suitable tool (2), secure the propeller shaft (1) to the centre universal joint against twisting.



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

  Secure the propeller shaft against twisting at the central universal joint using a suitable tool (1).

rdiagn.com



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.

- Screw in the recessed nut **counter-clockwise, see direction of arrow** with special tools 0 495 554 (33 5 070) and .

  The recessed nut must be screwed in within 5 min .

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!

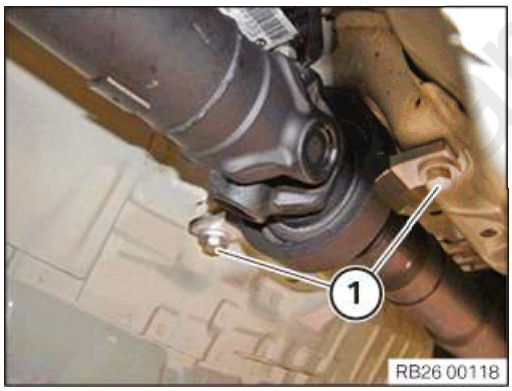


- Brace mounting bolts of flexible disc on nut and tighten by screw.

Rear flexible disc to three-hole flange

M12	Renew screws. Jointing torque and angle of rotation must be observed without fail. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

- Secure the special angle of rotation tool 0 490 504 (00 9 120) with the magnets to the vehicle underbody and screw it further depending on the angle of rotation.

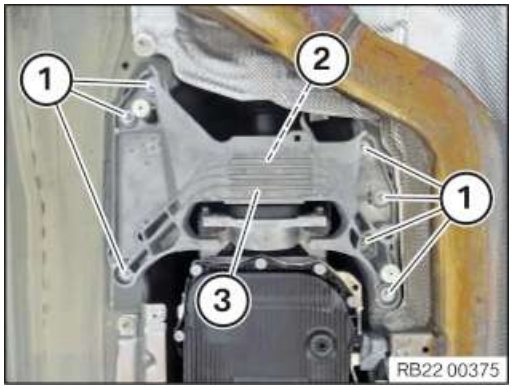


- Tighten the screws (1).

Centre mount to body

M8		Tightening torque	19 Nm

13 – Install transmission cross member.



- Install the transmission cross member (3).
- Insert screw (2) and tighten until hand-tight.
- Tighten the screws (1).

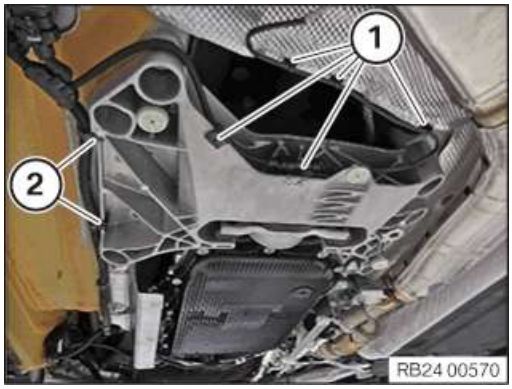
Transmission cross member to body

M8		Tightening torque	19 Nm

- Tighten down screw (2).

Transmission cross member to rubber mounts

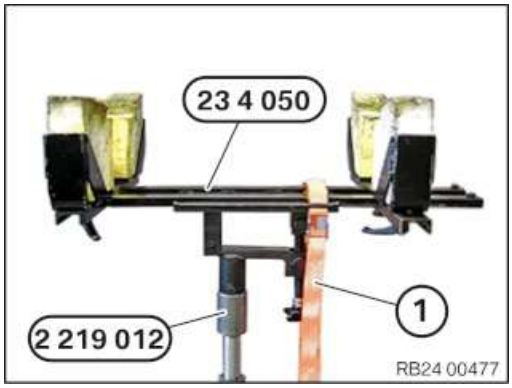
M12		Tightening torque	100 Nm



- **Only B47 and B57:**

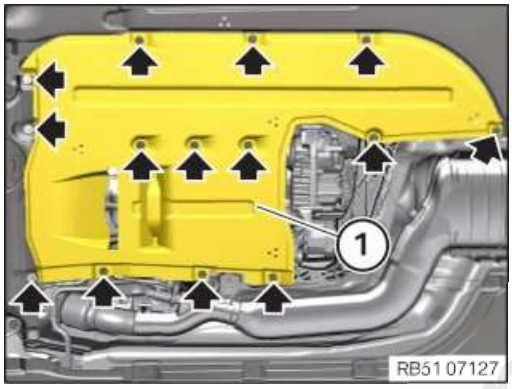
  Install the cable.

  Fasten the cable with clamps (1) and (2).



- Loosen the tensioning strap (1) from the transmission.
- Remove the special tools 0 495 498 (23 4 050) and 2 219 012 from the transmission.

14 – Installing underbody protection at rear



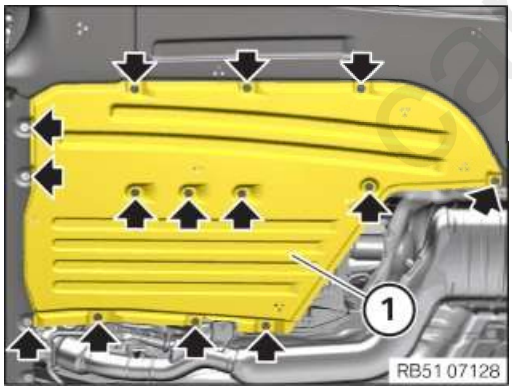
- **Version A:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm



- **Version B:**

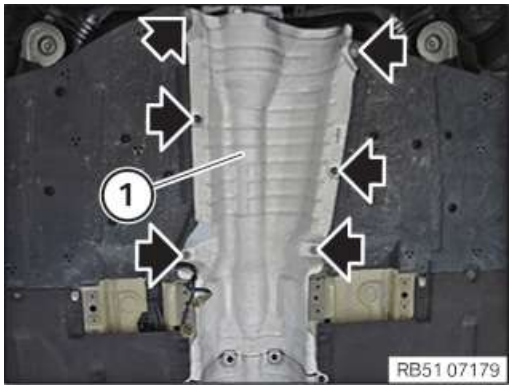
  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm

15 – Installing the heat shields

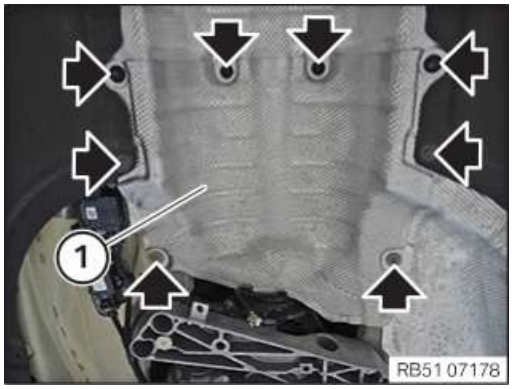


- Install the heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

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

Heat shield to undercarriage

Screws and nuts		Tightening torque	3 Nm

16 – 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

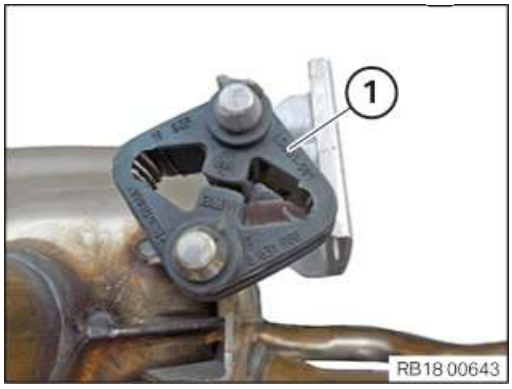
Heavy component.

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.



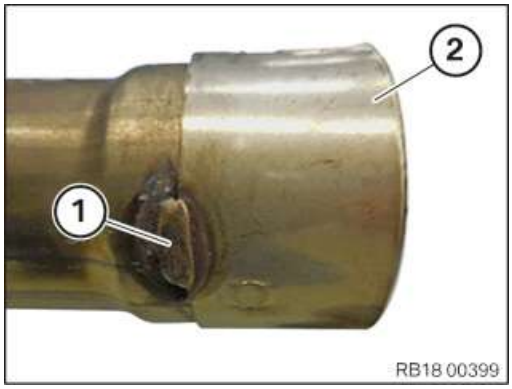
NOTICE

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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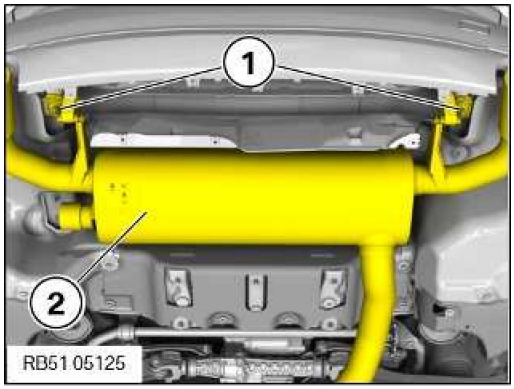
CAUTION

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).

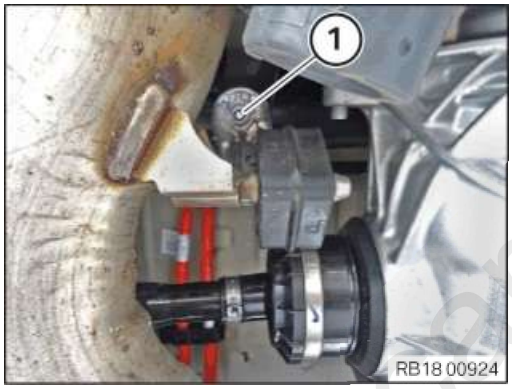


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

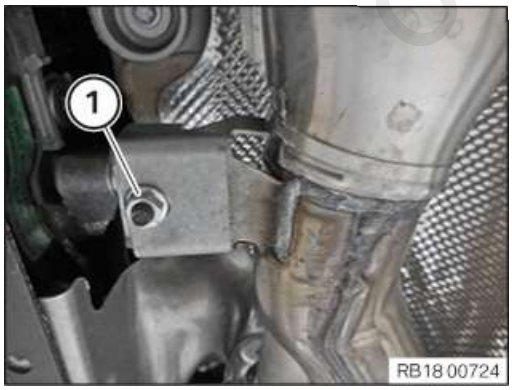


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

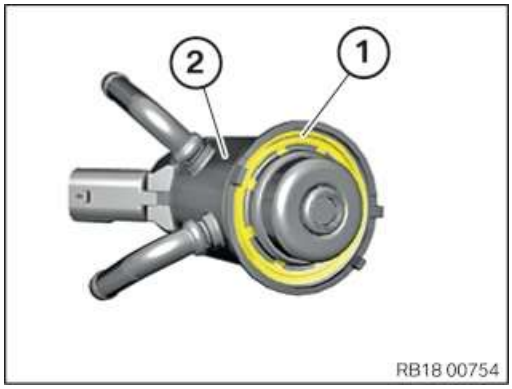
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

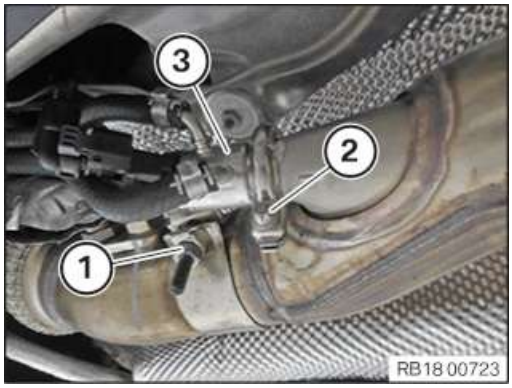
Exhaust system to transmission

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

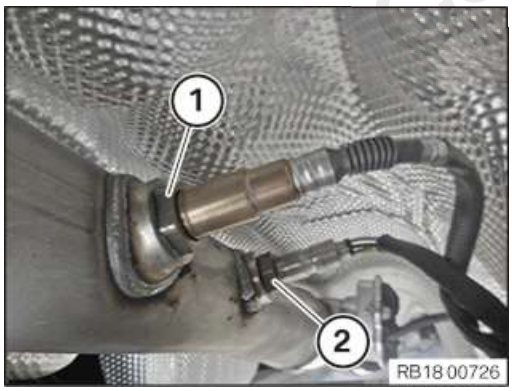
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm



- 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

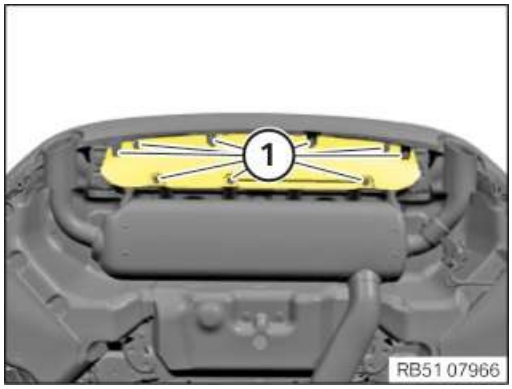
- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

17 – Installing the rear diffuser

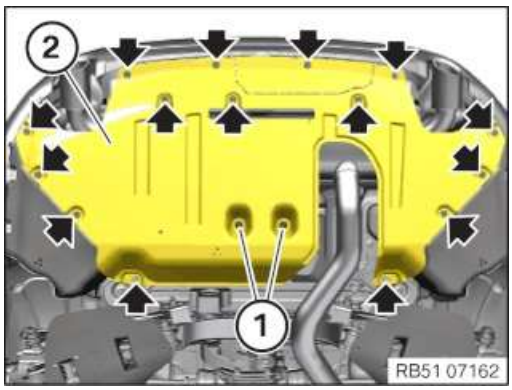
diag.com



- **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

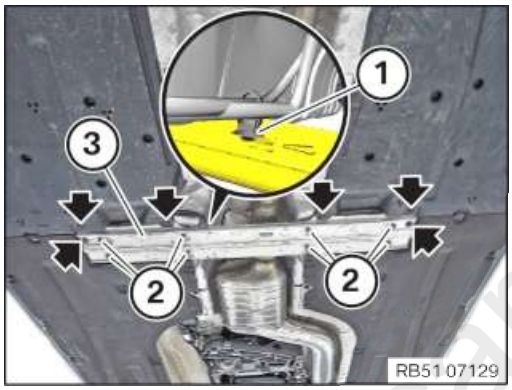
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

18 – 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.

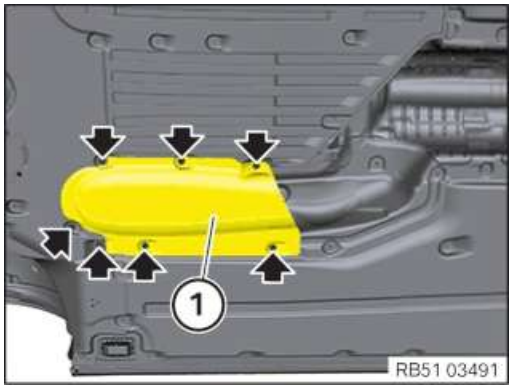
- Secure the clamp (1).

19 – 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.

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- 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

Front flexible disc to propeller shaft — Used in step 12

M12	Renew screws. Comply with jointing torque and angle of rotation. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

Propeller shaft on the rear axle differential — Used in step 12

Insert nut	Replace insert nut.	Tightening torque	100 Nm

Rear flexible disc to three-hole flange — Used in step 12

M12	Renew screws. Jointing torque and angle of rotation must be observed without fail. Tightening via screw.	Jointing torque Angle of rotation	55 Nm 90 °

Centre mount to body — Used in step 12

M8		Tightening torque	19 Nm

Transmission cross member to body — Used in step 13

M8		Tightening torque	19 Nm

Transmission cross member to rubber mounts — Used in step 13

M12		Tightening torque	100 Nm

Underbody protection — Used in step 14

Hexagon screw		Tightening torque	3 Nm

Heat shield to undercarriage — Used in step 15

Screws and nuts		Tightening torque	3 Nm

Rear silencer to body / bumper support — Used in step 16

M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier — Used in step 16

M8 nut		Tightening torque	19 Nm

Exhaust system to transmission — Used in step 16

M8		Tightening torque	19 Nm

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Exhaust system to diesel particle filter — Used in step 16

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

SCR metering module V-clip to exhaust system — Used in step 16

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

Exhaust-gas temperature sensor upstream of SCR catalytic converter — Used in step 16

Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system — Used in step 16

Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter — Used in step 16

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 18

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling — Used in step 19

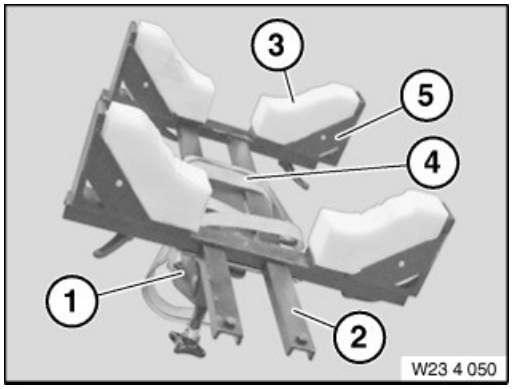
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Overview of Special Tools

0 495 498 (23 4 050) Fixture

Used in step 13

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Common

Usage	(universal gearbox holder) Support for removing and installing manual gearboxes and automatic transmissions for BMW & RR.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 06 (256)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
3	0 495 549 (23 4 053)		**Insert** (foam inserts (1 set = 4 pcs.))	
1	0 495 547 (23 4 051)		**Joint** Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
2	0 495 548 (23 4 052)		**Frame** (Basic frame) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
4	0 495 550 (23 4 054)		**Belt** (Tensioning strap) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	
5	0 496 018 (23 4 055)		**Fixture** (Fixture for foam insert) Available only as a complete tool set 23 4 050 (83 30 0 495 498) - as of 16.07.12.	

2 219 012 Hydraulic lifter



Common Used in step 13

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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2 464 898 Open-end spanner



Common	Used in step 712
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 712
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	

0 490 504 (00 9 120) Torque angle measuring dial



Common	Used in step 12
Usage	For torsion angle adjustment of cylinder head bolts (all engines) And reinforcement plate front axle support E46
Included in the tool or work	
Storage location	A4
Replaced by	
In connection with	
SI-Number	

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