

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



Danger of injury!

Contact with eyes or skin may result in injury!

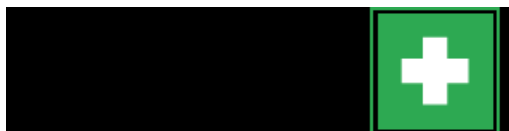
Possible symptoms are:

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



Protective measures/rules of conduct:

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



First aid measures:

- Eye contact: Immediately flush eyes with lots of water for at least 15 minutes. In the case that it is available, use an eye wash bottle. If eye irritation persists, consult a doctor.
- Skin contact: Wash off with soap and water immediately. If irritation persists, consult a doctor.

Note: Do not use solvents/thinners.

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



Danger of poisoning!

Ingesting oil or absorbing through the skin may cause poisoning!

Possible symptoms are:

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



Protective measures/rules of conduct:

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



First aid measures:

- Do not induce vomiting.

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

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

00 Safety instructions for handling oil



Warning!

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

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



Recycling:

Observe country-specific waste disposal regulations.



Measures if oil is unintentionally released:

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

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

27 10 010 Removing and installing the transfer box

PRELIMINARY WORK

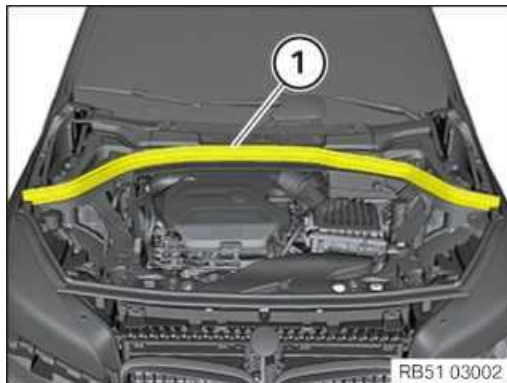
1 – Disconnecting the battery earth lead

► Remove the seal for the rear bonnet

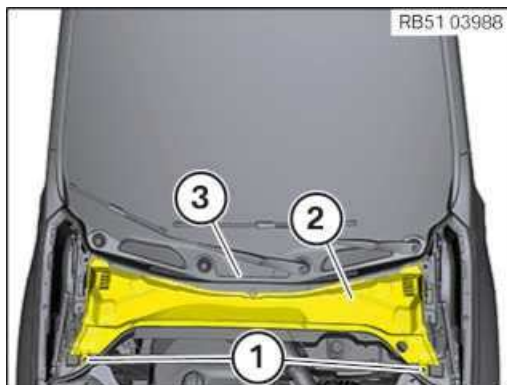


NOTICE

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

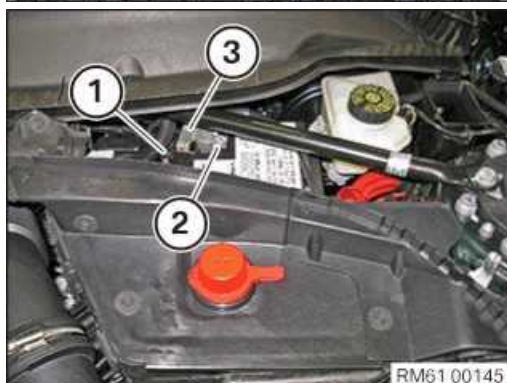


- Pull off rear bonnet seal (1) towards the top and remove.



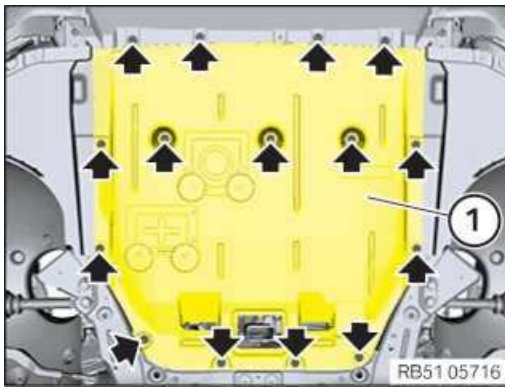
► Removing front cowl panel cover

- Loosen the expanding rivet (1).
- Feed out and remove front cowl panel cover (2) from the rear cowl panel cover(3).

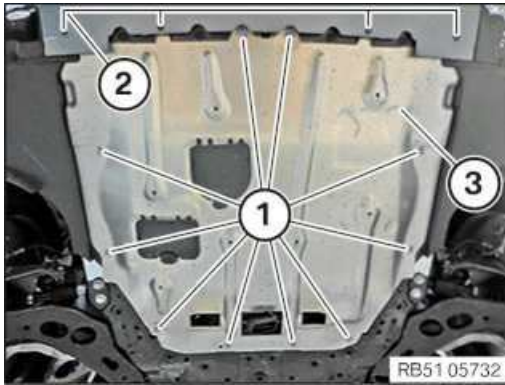


- Unlock and disconnect connector (1).
- Loosen nut (2).
- Remove the battery earth lead (3) and secure to one side.

2 – Removing the front underbody protection

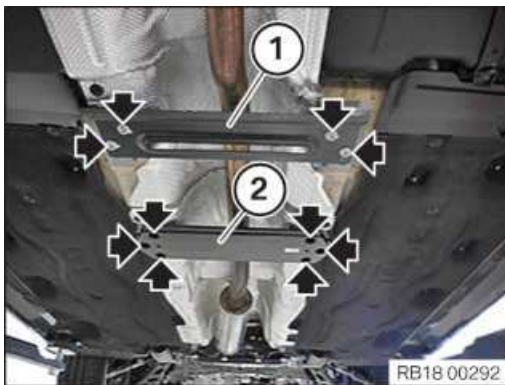


- Remove screws (arrows).
- Thread out and remove the front underbody protection (1) from the bumper panel.



- **Equipment specification with metal underride protection:**
- Loosen screws (1) and (2).
- Thread out and remove the underride protection (3).

3 – Removing the connecting support from the tunnel in front and back



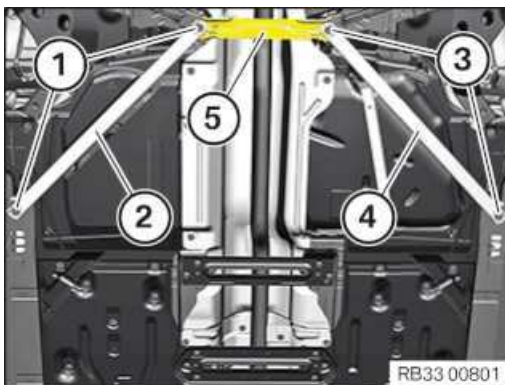
- Unscrew the bolts (arrows) from the connecting support (1).
- Feed out and remove the crossbeam (1).
- Unscrew the bolts (arrows) from the connecting support (2).
- Feed out and remove the crossbeam (2).

4 – Remove the cross strut with the torsion strut



TECHNICAL INFORMATION

Driving without a torsion strut is not permitted.



- Loosen screws (1).
- Thread out torsion strut (2) at left and remove.
- Loosen screws (3).
- Thread out torsion strut (4) at right and remove.
- Feed out and remove the cross-member (5).

5 – Remove exhaust system



WARNING

Hot surfaces.

Risk of burning!

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

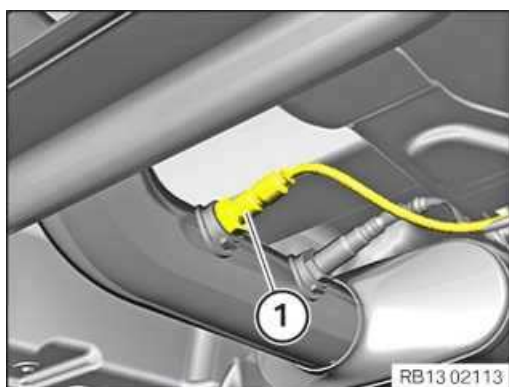


CAUTION

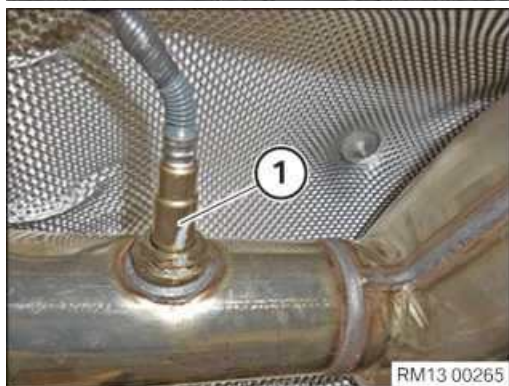
Heavy component.

Heavy components can lead to injury or damage.

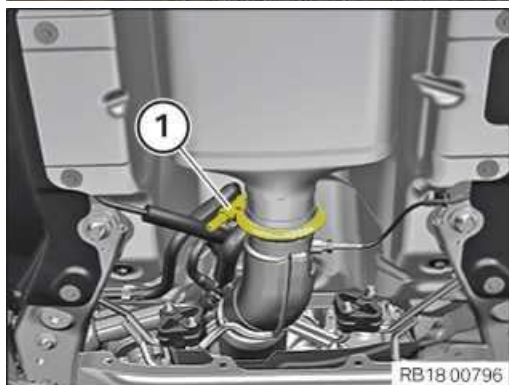
- Remove and install heavy components with the aid of another person/other persons.



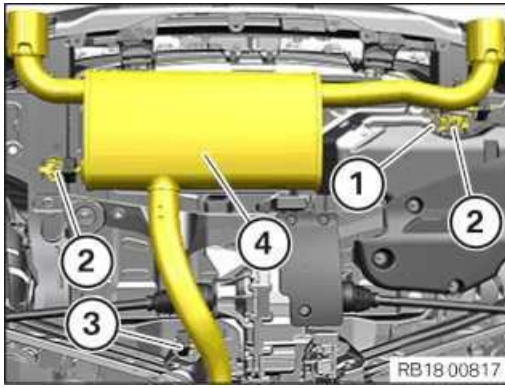
- Release the nitrogen oxide sensor (1) downstream of the SCR catalytic converter, guide it out and set it aside.



- Release the diesel particulate sensor (1), guide it out and set it aside.

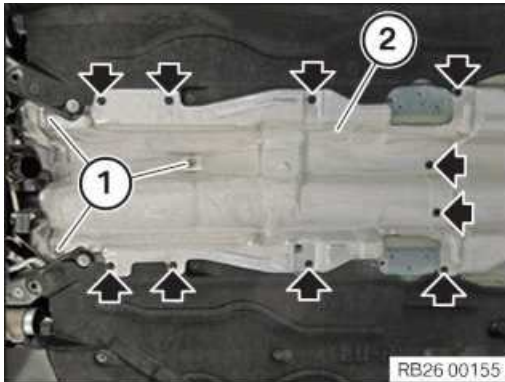


- Loosen V-band clamp (1).



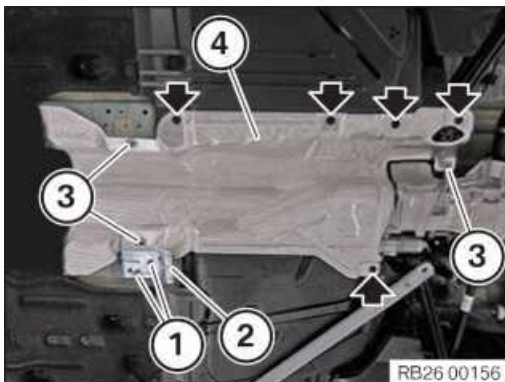
- Loosen screw (1).
- Loosen nuts (2).
- Release the rubber mount (3) of the exhaust system (4).
- Lower and guide out the exhaust system (4) with assistance of a second person and remove it.

6 – Remove front heat shield



- Remove screws (arrows).
- Loosen nuts (1).
- Guide the heat shield (2) out and remove it.

7 – Remove heat shield at rear.



- Loosen screws (1).
- Guide out and remove holder (2).
- Remove screws (arrows).
- Loosen nuts (3).
- Guide the heat shield (4) out and remove it.

8 – Remove propeller shaft



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.



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.

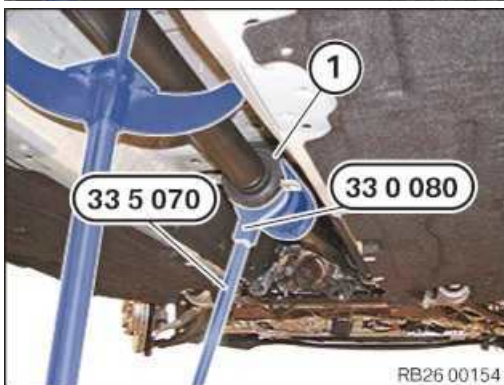
- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened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



- Install the special tool I between the front and rear propeller shaft.
- Make sure that the arrows on the special tool point forward in the direction of travel.



- Always support the propeller shaft (1) with a conventional jack.



- Protect the propeller shaft (1) with the special tools **0 495 554 (33 5 070)** and from twisting.



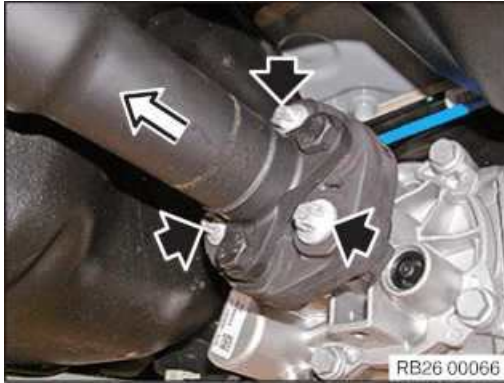
TECHNICAL INFORMATION

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

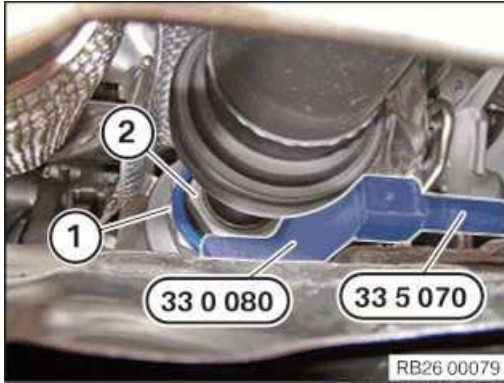
- Mark the installation position of the screw connection (1), the flexible disc (2) and the three-hole flange (3) on the same level.
- Loosen the screw connection (1).



- Loosen screws (1).



- Remove screws (arrows).
- Guide the propeller shaft out in the direction of the arrow and set it aside.



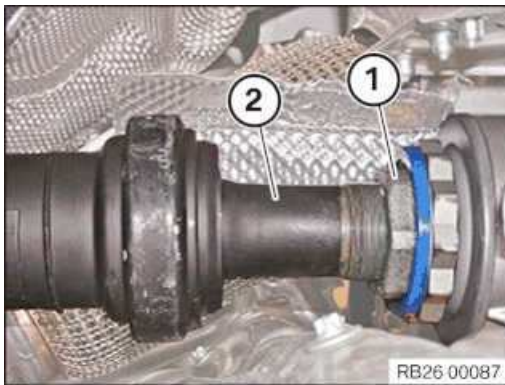
RISK OF DAMAGE

Damage to the transfer box.

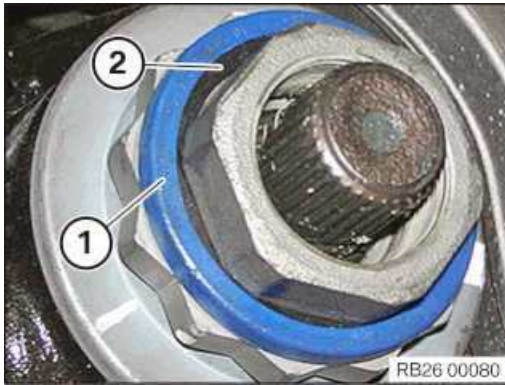
Non-observance of the removal and installation guidelines may cause severe damage to the transfer box.

- Do not use the double hexagon head flange nut as counter support.
- Protect the recessed nut (2) on the transfer box from twisting with the special tools **0 495 554 (33 5 070)** and .
The recessed nut (2) on the transfer box must **not** be used to detach the propeller shaft.
The double hexagon flange nut (1) must **not** be used for counter support.
- Release the front propeller shaft with the special tools **0 495 554 (33 5 070)** and in the direction of the arrow.

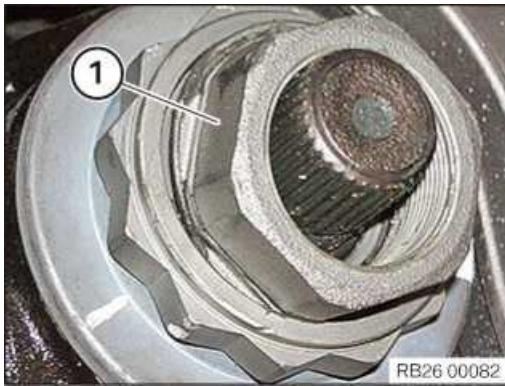




- Thread the propeller shaft (2) out of the recessed nut (1) and remove.



- Thread the retaining clip (1) and the seal (2) out and remove.



- Thread out and remove the recessed nut (1).

9 – Removing the wheel



- If several wheels are removed simultaneously: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
 - Unscrew the wheel bolts (arrows) and remove the wheel.
- Use the matching adapter from tool set (wheel bolt adapter set) to loosen and tighten down the wheel bolt with security code.

10 – Removing the front right wheel arch cover

- Remove the front wheel arch trim



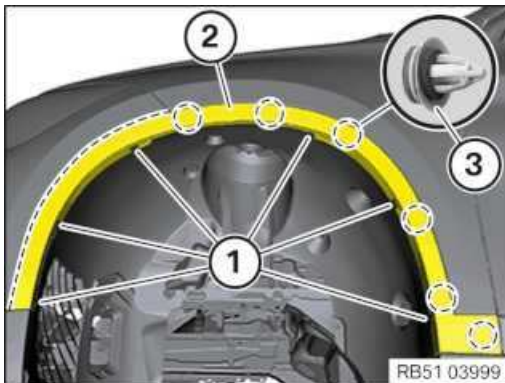
NOTICE

To provide a better overview: Schematic diagram with partially hidden components.

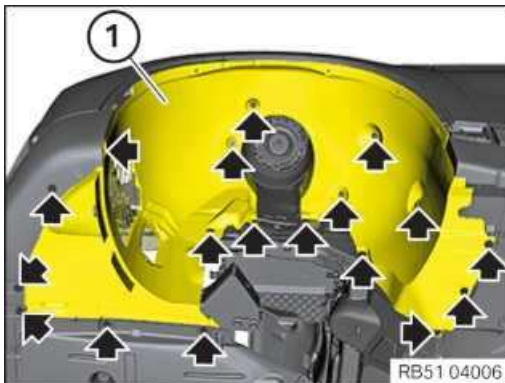


NOTICE

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



- Remove the blind rivets (1).
- Release the wheel arch trim (2) in the area of the side panel from the clips (3).
- Release the wheel arch trim (2) from the latch mechanisms on the bumper and remove.

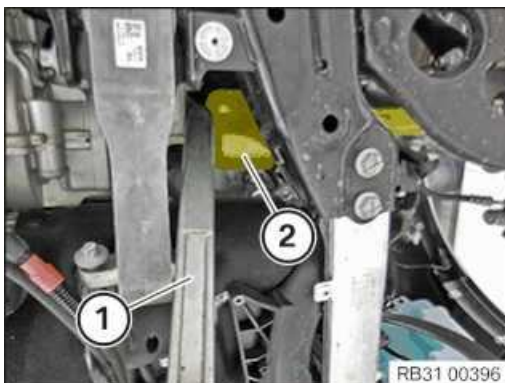


NOTICE

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

- Unscrew all bolts and nuts (arrows).
- Guide the wheel arch cover (1) out.

11 – Partially removing right output shaft



- Lever out the output shaft (2) with a mounting lever (1).
- Tie up output shaft (1).

12 – Removing starter motor



WARNING

Hot surfaces.

Risk of burning!

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



WARNING

Working on 12 V vehicle electrical system.

Risk of short circuits! Risk of fire!

- Detach battery earth lead from battery.
- For additional batteries: Detach all battery earth leads from additional batteries.



RISK OF DAMAGE



Electrostatic discharge.

Damage to or destruction of electrical components.

- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the housings of electrical components. Do not touch pins or multi-pin connectors directly.
- Wear electrically conductive clothing and antistatic shoes (with ESD symbol).
- For additional information see: 61 35 Information on electrostatic discharge (ESD) protection.



- Unlock and loosen connector (1).
- Detach the sealing cap (2) in the direction of the arrow.
- Feed out and remove the sealing cap (2).

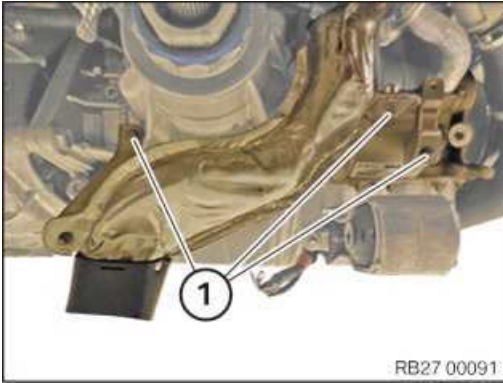


- Unfasten nut (1).
- Feed out the positive battery cable (2) of the starter motor and set it aside.

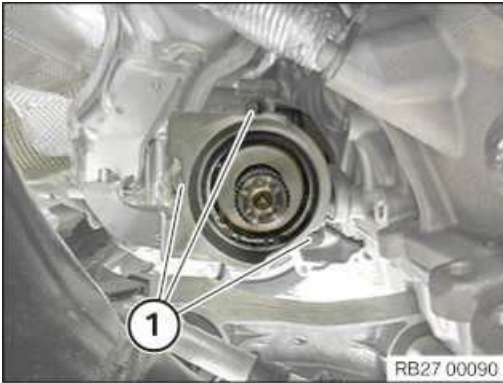


- Loosen screws (1).
- Feed out starter motor and remove.

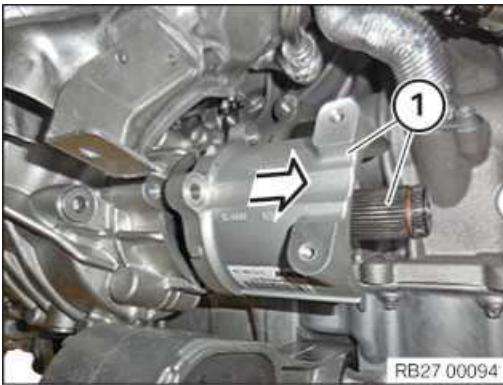
13 – Remove the intermediate shaft with the support tube



- With air duct installation: Loosen screws (1).
- Remove air duct



- Loosen screws (1).



- Pull the intermediate shaft with the support tube (1) out of the transfer box.

14 – Remove bracket with rubber mount

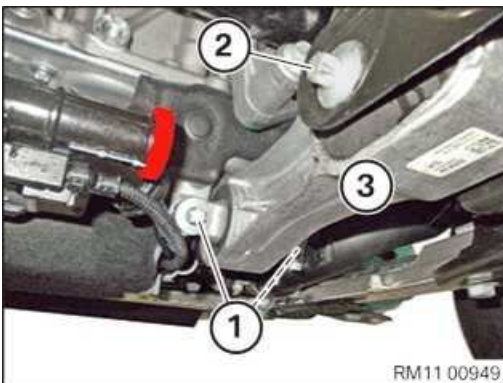


WARNING

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

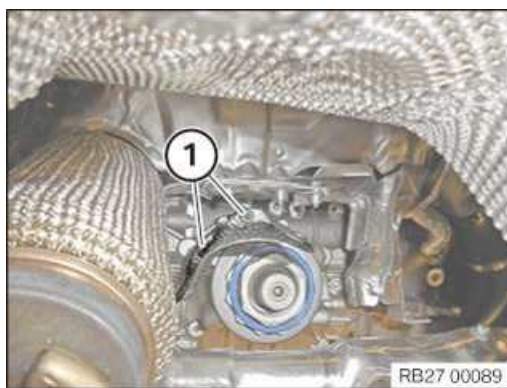
Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

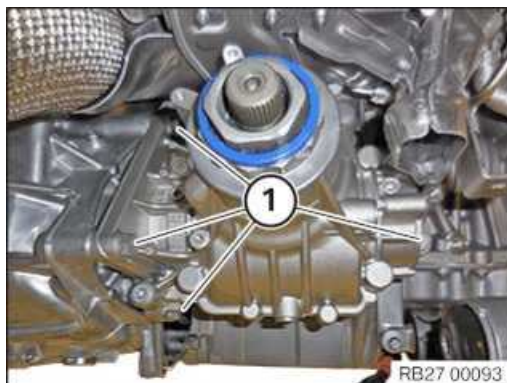


- Support the engine with the jack at a suitable point.
- Loosen screws (1) and (2).
- Guide out and remove holder (3).

15 – Remove transfer box (VTG)

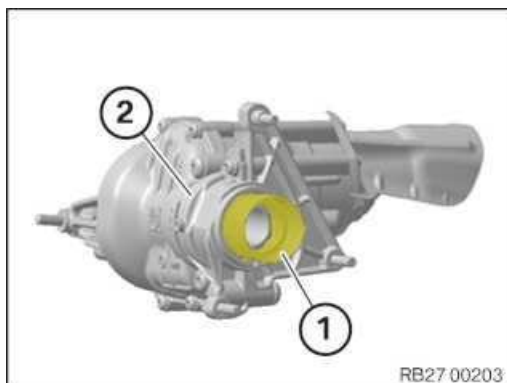


- Loosen screws (1).
- Remove heat shield.



- Loosen screws (1).
- Remove the transfer box (VTG).

16 – Install the transfer box (VTG)



- If intermediate shaft (1) gets caught on transfer box (VTG) (2), renew intermediate shaft (1) and the radial shaft seals in the automatic or manual transmission.



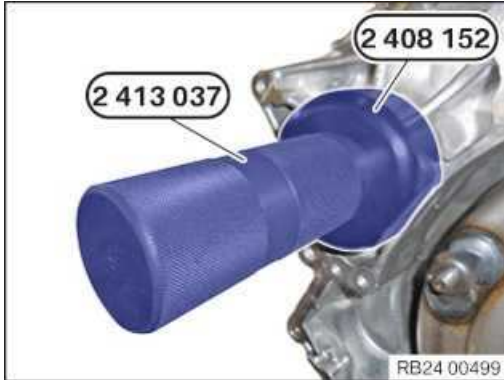
- Screw special tool **2 409 025** into the outer radial shaft seal.
- Turn the screw on the special tool **2 409 025** until the outer radial shaft seal has been pulled out.



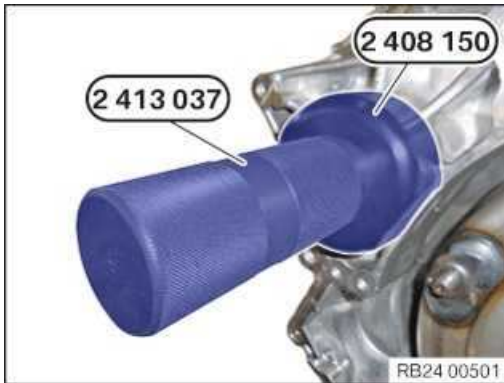
- Insert special tool **2 411 739** into the inner radial shaft seal.



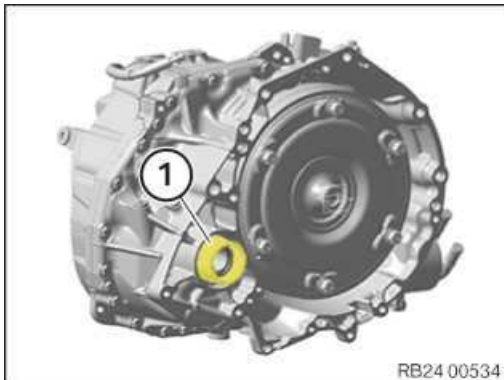
- Screw special tool **2 411 739** into the inner radial shaft seal.
- Turn the screw on the special tool **2 411 739** until the inner radial shaft seal has been pulled out.



- Drive in the inner radial shaft seal using special tools **2 408 152** and **2 413 037** up to the limit position.



- Drive in the outer radial shaft seal using special tools **2 413 037** and **2 408 150** up to the limit position.



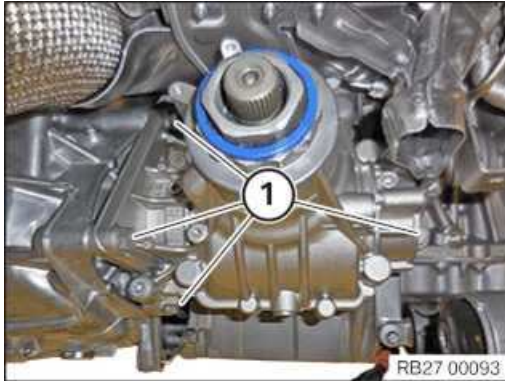
- If necessary, connect the new intermediate shaft (1) to the output flange of the automatic transmission or manual transmission.



- Coat the inside of the output flange (arrows) evenly with approx. 5 g of grease.

Expendable materials

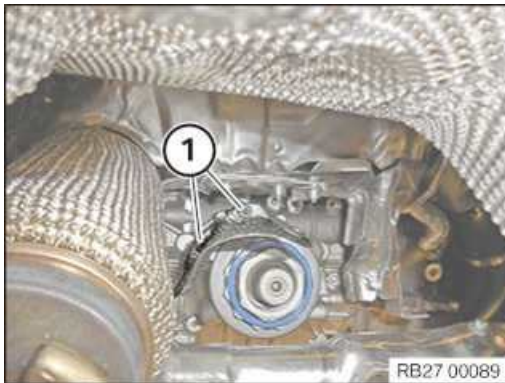
Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754
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- Install the transfer box (VTG).
- Tighten the screws (1).

Transfer box to transmission

M10		Tightening torque	56 Nm
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- Install heat shield.
 - Renew screws (1).
- Parts:** Bolts
- Tighten the screws (1).

Heat shield to transfer box

M6	Renew screws.	Tightening torque	6 Nm
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► Check the transfer box oil level



RISK OF DAMAGE

Damage to the transmission.

Damage to the transmission through unapproved transmission oil.

- Use only the approved transmission oil.
- After completion of repair work, check transmission oil level.



- Check transfer case oil level, correct:
- Open the oil filler plug (1).
- Check transfer box oil level.
- If necessary, top up transmission oil up to the lower edge of the oil filler plug opening (1).

Transmission oil

Technically suitable transfer box and electrical transmission oils

[Main group 27](#)

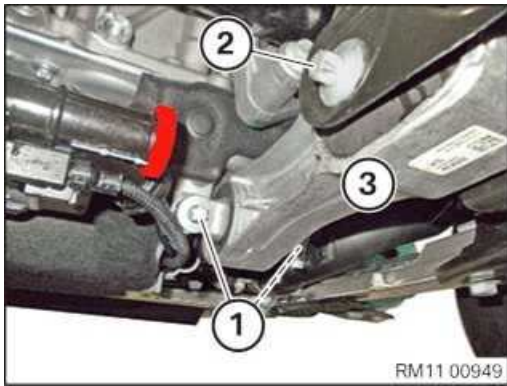
- Tighten the oil filler plug (1).

Oil filler plug on transfer box (VTG)

M18x1.5		Tightening torque	35 Nm
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POSTPROCESSES

17 – Install the holder with the rubber mount



- Insert and install the holder (3).
- Tighten the screws (1) and (2) hand-tight.
- Release jack.
- Tighten down screw (2).

Holder to front axle support

M12		Tightening torque	100 Nm
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- Tighten the screws (1).

Bracket to oil sump

M12		Tightening torque	100 Nm
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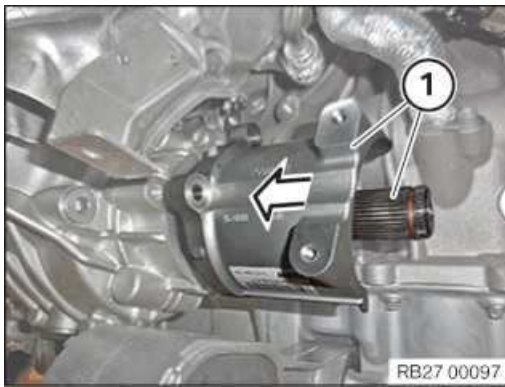
18 – Install the intermediate shaft with the support tube



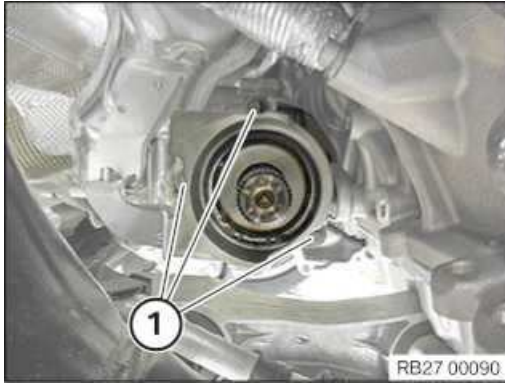
- Coat gearing of the intermediate shaft uniformly with 5 g of grease.

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754
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- Install the intermediate shaft with support tube (1) in the transfer box.



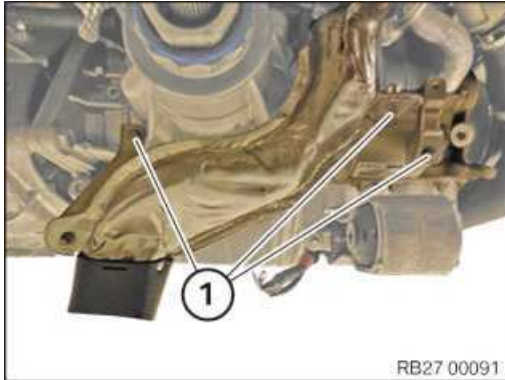
- Position screws (1).

Note: Check for correct screw length! Bolt M8x35 8.8

- Tighten the screws (1).

Intermediate shaft to transfer box

M8x35		Tightening torque	19 Nm
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- If installed: Install air duct.
- Tighten the screws (1).

19 – Installing starter motor



CAUTION

Improper routing of the positive battery cable.

Risk of short circuits!

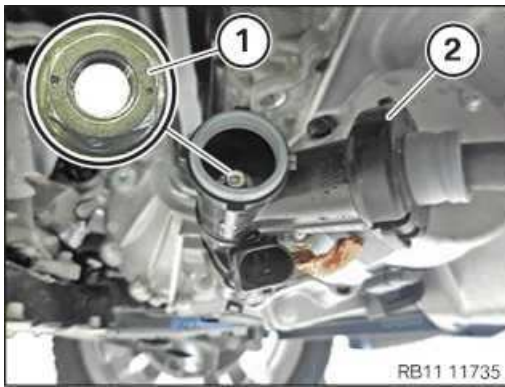
- Route the positive battery cable without abrasions and do not trap.



- Insert and install the starter motor .
- Tighten the screws (1).

Starter motor to transmission

M8x45		Tightening torque	19 Nm
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- Feed the positive battery cable (2) in on the starter and install.
- Tighten nut (1).

Battery positive lead to starter

M8		Tightening torque	13,5 Nm
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- Insert and install the new sealing cap (2).
- Secure the sealing cap (2) in the direction of the arrow.
- Connect and lock the connector (1).
- Make sure the connector (1) engages audibly.

20 – Installing right output shaft partially



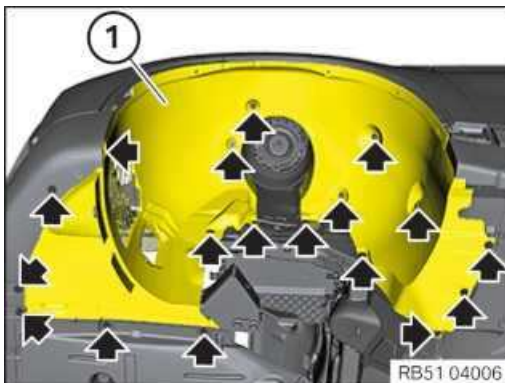
- Renew the circlip (1).
- Parts:** Circlip
- Slide output shaft into the transmission as far as the limit position.
 - Check for secure seat by levering.

21 – Installing the front right wheel arch cover



NOTICE

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



- Guide the wheel arch cover (1) in.
- Tighten all bolts and nuts (arrows).

Wheel arch cover to body

Screw		Tightening torque	2,5 Nm
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Wheel arch cover to body

Plastic nut		Tightening torque	3 Nm
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► Installing front wheel arch trim



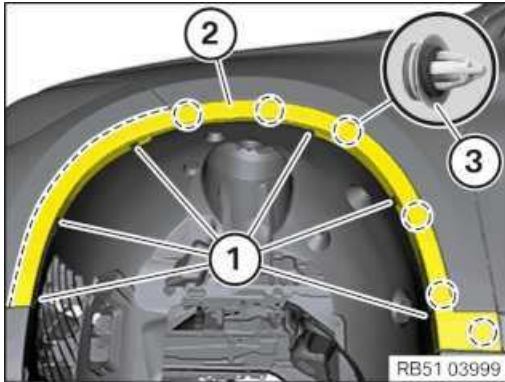
NOTICE

To provide a better overview: Schematic diagram with partially hidden components.



NOTICE

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



- Check the clips (3) for damage and renew where required.
The clips (3) must not be damaged or missing.
- Feed in wheel arch trim (2) and engage on the clips (3).
- Engage wheel arch trim (2) into the latch mechanisms on the bumper panel.
- Mount blind rivet (1) using the special tool **0 496 521 (00 2 230)**.

22 – Mounting the wheel



- Clean the contact surfaces between the brake disc and the wheel rim

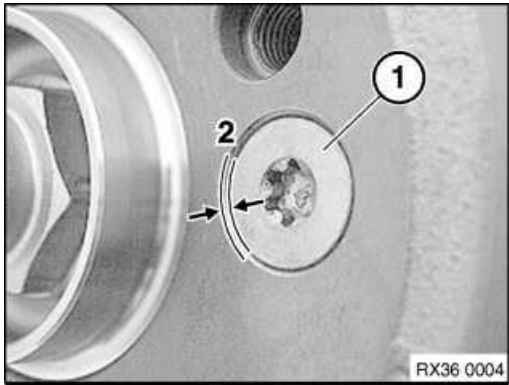


TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool **2 344 011**.
Do not operate special tool **2 344 011** with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool **2 344 011**.
Do not operate special tool **2 344 011** with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).





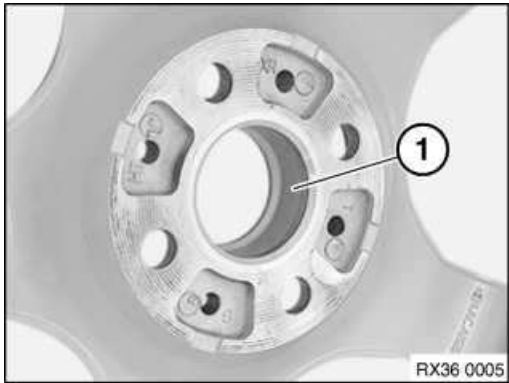
- Renew mounting bolt (1).
- Parts:** Mounting bolt
- Check that the mounting bolt (1) for the brake disc is securely seated.
- The mounting bolt (1) for the brake disc may not protrude under any circumstances on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm
----	--------------	-------------------	-------

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm
----	--------------	-------------------	-------



- Lightly grease the wheel centring (1) in the wheel rim; refer to additional information for grease for the wheel centring (1).



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew corroded wheel bolts.

Parts: Wheel bolts

- Clean the wheel bolts.
- Check the wheel bolts and threads for damage, renew the wheel bolts if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M 14/AF 17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Check	140 Nm

23 – Install propeller shaft.



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.



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 minimum hardening time of two hours after having screwed in the recessed nut. The hardening time may be longer at lower temperatures.

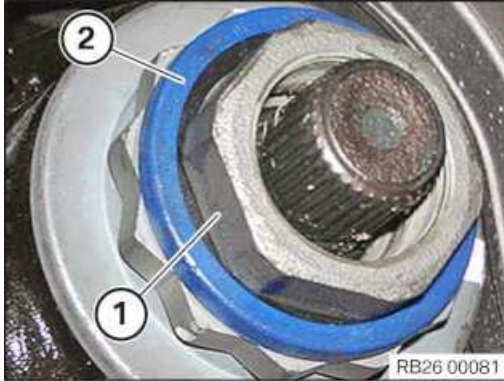


RISK OF DAMAGE

Damage to the transfer box.

Non-observance of the removal and installation guidelines may cause severe damage to the transfer box.

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



- Renew recessed nut (1).

Parts: Insert nut

- Renew the retaining clip (2) and the seal.

Parts: Retaining clip, seal

- Insert the seal with the recessed nut (1) and install.
- Insert the retaining clip (2) and install.
- Make sure that recessed nut (1) is screwed in within 5 min.
- Make sure that the hardening time of **minimum** 2 h for the recessed nut is observed.

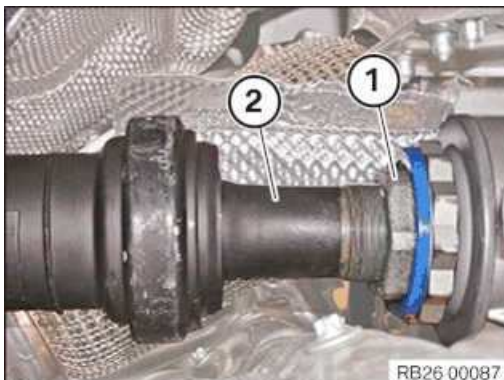
The hardening time must be extended at lower temperatures.



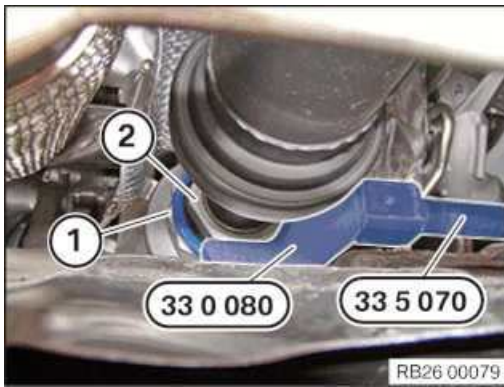
- Insert the propeller shaft (1) and install.
- Always support the propeller shaft (1) with a conventional jack.



- Hand-tighten the bolts (1).



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



RISK OF DAMAGE

Damage to the transfer box.

Non-observance of the removal and installation guidelines may cause severe damage to the transfer box.

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

- Protect the recessed nut (2) on the transfer box from twisting with the special tools **0 495 554 (33 5 070)** and .

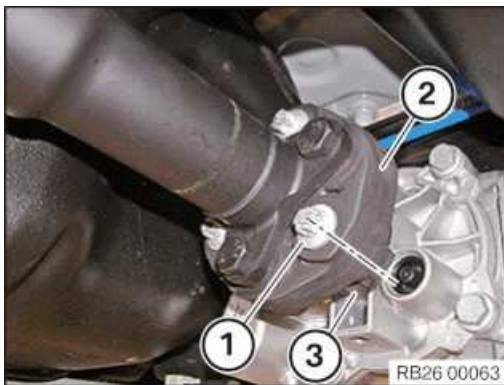
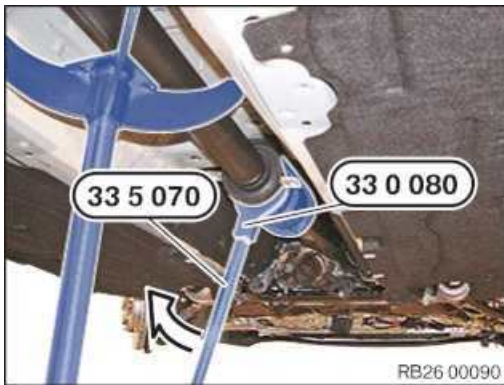
The recessed nut (2) on the transfer box must **not** be used to tighten the propeller shaft.

The double hexagon flange nut (1) must **not** be used for counter support.

- Tighten the front propeller shaft with the special tools **0 495 554 (33 5 070)** and in the direction of the arrow.

Propeller shaft to transfer box

		Tightening torque	80 Nm
--	--	-------------------	-------



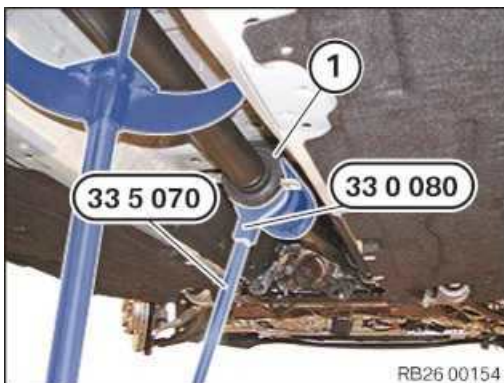
TECHNICAL INFORMATION

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

- Assemble the screw connection (1) of the flexible disc (2) and the three-hole flange (3) according to the mark.
- Renew screws (1).

Parts: Bolts

- Hand-tighten the bolts (1).
- Protect the propeller shaft (1) with the special tools **0 495 554 (33 5 070)** and from twisting.





- Tighten the bolts with the special tools **0 490 504 (00 9 120)** and .

Flexible disc to rear axle final drive

M12x1.5	Renew screws.	Tightening torque	55 Nm
			90 °



- Tighten the screws (1).

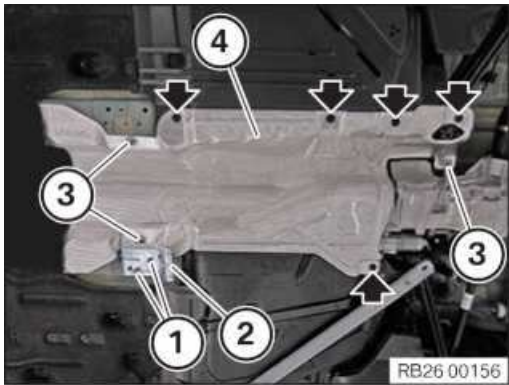
Centre mount to body

M8		Tightening torque	19 Nm
----	--	-------------------	-------



- Guide the special tool out between the front and rear propeller shaft and remove.

24 – Installing the rear heat shield



- Insert and install the heat shield (4).
- Tighten screws (arrows).

Heat shield to body

Bolts/nut		Tightening torque	3 Nm
-----------	--	-------------------	------

- Tighten nuts (3).

Heat shield to body

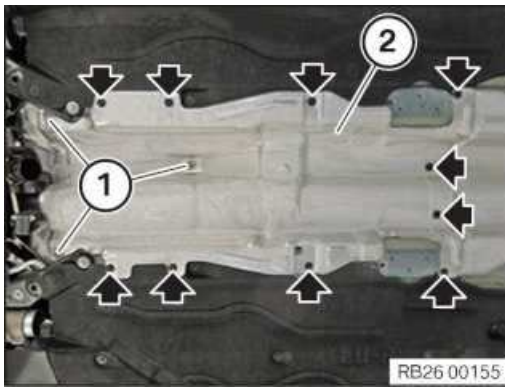
Bolts/nut		Tightening torque	3 Nm
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- Insert and install the holder (2).
- Tighten the screws (1).

Bracket to body

M8		Tightening torque	21 Nm
----	--	-------------------	-------

25 – Install the front heat shield



- Insert and install the heat shield (2).
- Tighten screws (arrows).

Heat shield to body

Bolts/nut		Tightening torque	3 Nm
-----------	--	-------------------	------

- Tighten nuts (1).

Heat shield to body

Bolts/nut		Tightening torque	3 Nm
-----------	--	-------------------	------

26 – Install 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.

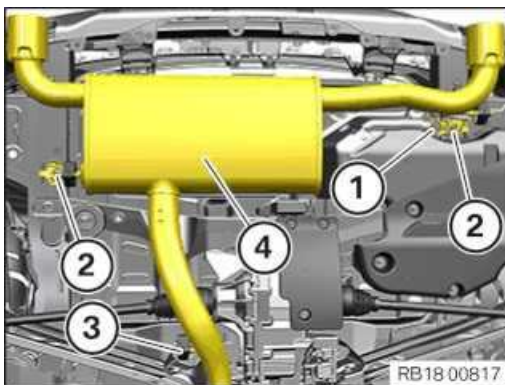


CAUTION

Heavy component.

Heavy components can lead to injury or damage.

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



- Feed in and install the exhaust system (4) with a second person.
- Renew nuts (2).

Parts: Nuts

- Tighten nuts (2).

Exhaust system to body

M8	Replace nuts.	Tightening torque	19 Nm
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- Tighten down screw (1).

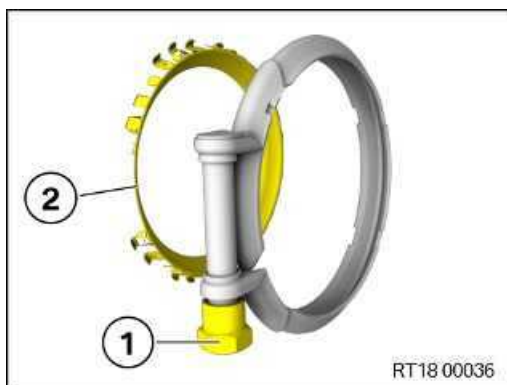
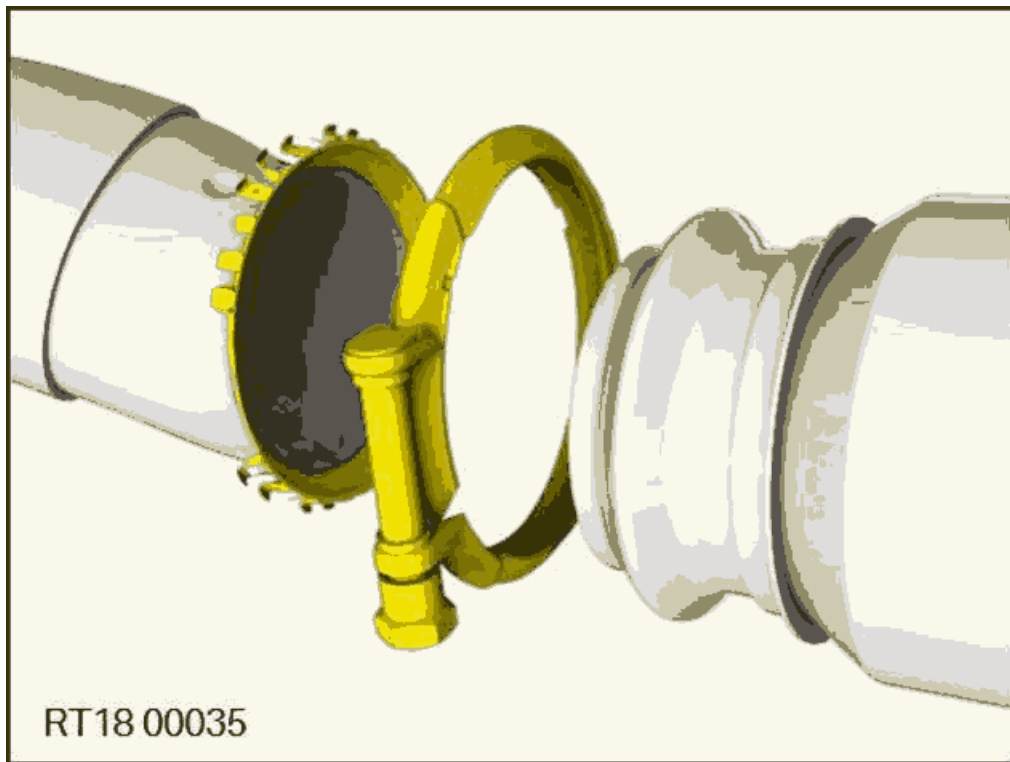
Exhaust bracket on body

Hexagon screw M8x30		Tightening torque	19 Nm
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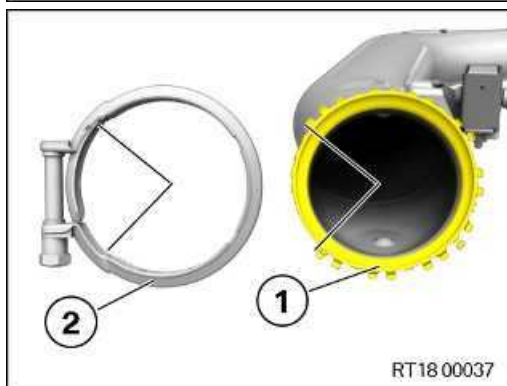
- Check the rubber mount (3) for damage and renew as needed.
- Mount rubber mount (3) on the exhaust system (4).

► **Install the V-clip**

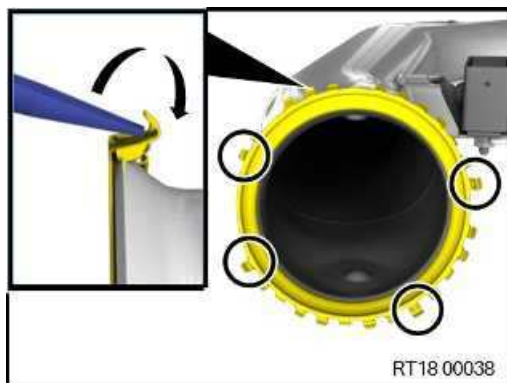
V-band clamp



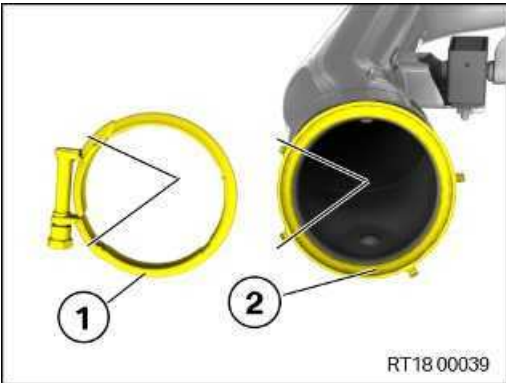
- Unscrew the nut (1) and remove the sealing ring (2).



- Renew the V-clip (2).
- Parts:** V-band clamp
- Mount the sealing ring (1) on the exhaust system.
- Ensure that the sealing ring (1) for the V-clip (2) is positioned correctly.



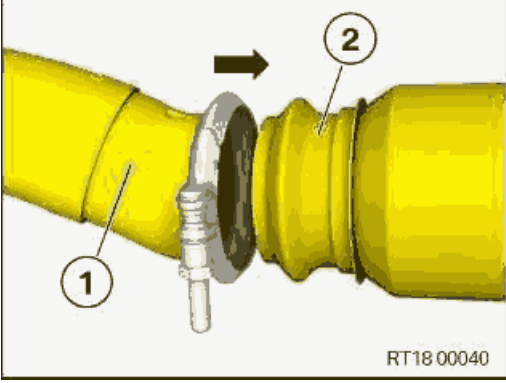
- Bend all sheet metal tabs over with a suitable tool, except those in the marked areas.



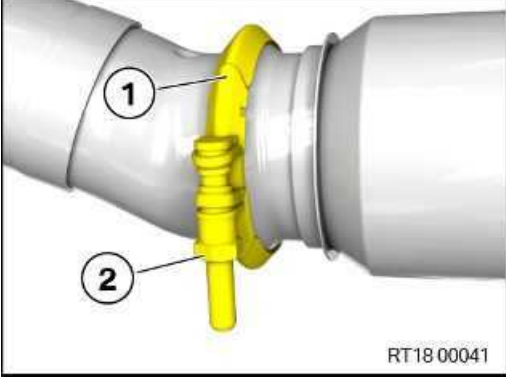
- Mount the V-clip (1) on the sealing ring (2).
- Make sure that the V-clip (1) is positioned correctly on the sealing ring (2).



- Make sure that the V-clip rests against the sheet metal tabs after mounting (marks).



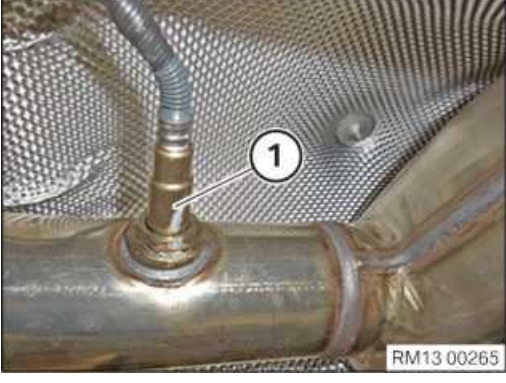
- Connect the exhaust system (1) with the catalytic converter (2) and position correctly.



- Make sure that V-clip (1) is fitted correctly.
- Tighten down screw (2).

V-clip to catalytic converter

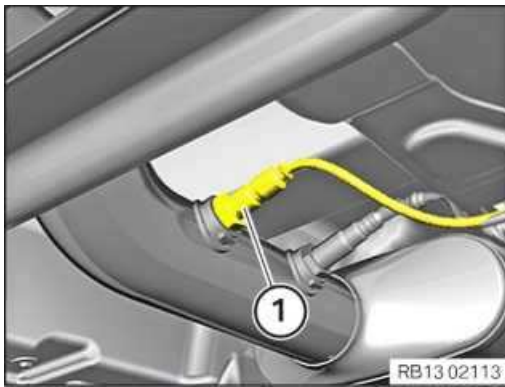
V-band clamp	Renew V-band clamp.	Tightening torque	22 Nm
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- Feed in, install and tighten diesel particulate sensor (1).

Diesel particulate sensor to exhaust system

Sensor		Tightening torque	50 Nm
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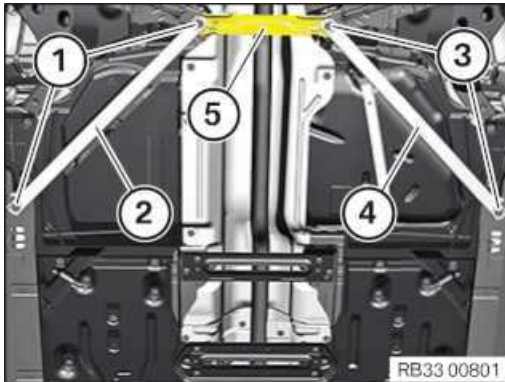


- Feed in, install and tighten nitrogen oxide sensor (1).

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	50 Nm
--------	--	-------------------	-------

27 – Install the cross-member with torsion struts



- Insert and install the cross-member (5).
- Thread in torsion strut (4) at right and install.
- Renew screws (3).

Parts: Bolts

- Tighten down screws (3).

Cross-member/torsion strut to axle support and mounting

M12x48	Renew screws.	Jointing torque	100 Nm
		Angle of rotation	90 °

- Guide in and install the left torsion strut (2).
- Renew screws (1).

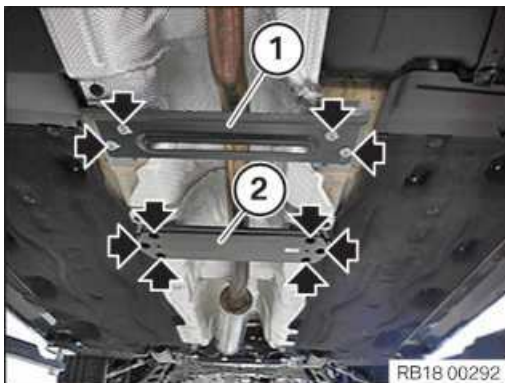
Parts: Bolts

- Tighten the screws (1).

Cross-member/torsion strut to axle support and mounting

M12x48	Renew screws.	Jointing torque	100 Nm
		Angle of rotation	90 °

28 – Install the connecting support on the tunnel in front and back



- Insert and install connecting supports (2).
- Tighten the screws (arrows) from the connecting support (2).

Front connection carrier to body

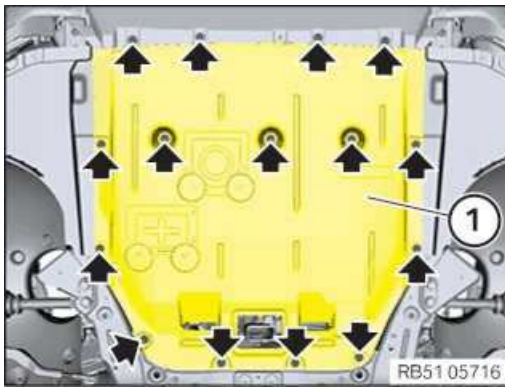
M10x18		Tightening torque	56 Nm
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- Insert and install connecting supports (1).
- Tighten the screws (arrows) from the connecting support (1).

Rear connection carrier to body

M8x18		Tightening torque	28 Nm
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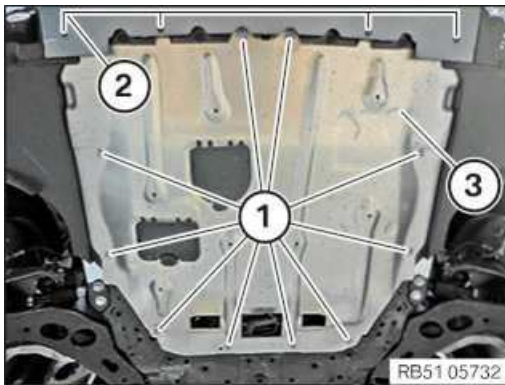
29 – Installing the front underbody protection



- Guide the front underbody protection (1) in under the bumper panel and position it at the screw points.
- Tighten screws (arrows).

Underbody protection front

Screw for thermoplastic plastic		Tightening torque	2,6 Nm
Hexagon screw M6x20		Tightening torque	8 Nm

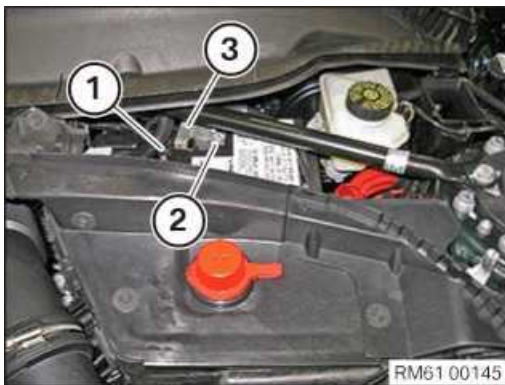


- **Equipment specification with metal underride guard:**
- Guide in and attach the underride guard (3).
- Tighten down screws (1) and (2).

Underbody protection front

Screw for thermoplastic plastic		Tightening torque	2,6 Nm
Hexagon screw M6x20		Tightening torque	8 Nm

30 – Connecting the battery earth lead



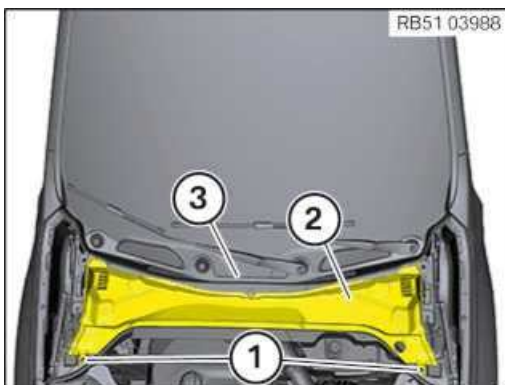
- Mount battery earth lead (3) on the negative battery terminal.
- Tighten nut (2).

Battery terminal with IBS positive battery terminal / negative battery terminal

NutM6			5 Nm
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- Connect the connector (1) to the IBS and lock it audibly.

► Installing front cowl panel cover



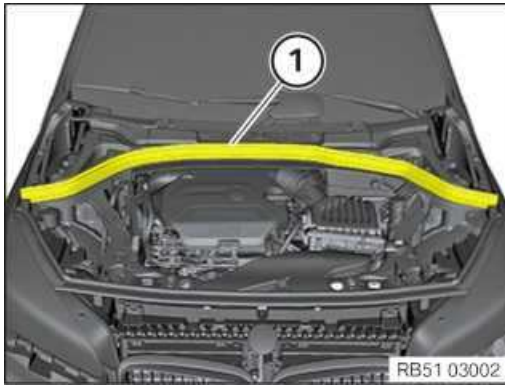
- Insert and install cowl panel cover at front (2) into cowl panel cover at rear (3).
- Check cowl panel cover at front is correctly seated (2).
- Secure expanding rivet (1).

► Install the seal for the bonnet



NOTICE

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



- Install bonnet seal at rear (1).
- Ensure that the rear bonnet seal (1) is fitted correctly.

Additional Information

Overview of Tightening Torques

Transfer box to transmission				Used in step	16
M10		Tightening torque	56 Nm		
Heat shield to transfer box				Used in step	16
M6	Renew screws.	Tightening torque	6 Nm		
Oil filler plug on transfer box (VTG)				Used in step	16
M18x1.5		Tightening torque	35 Nm		
Holder to front axle support				Used in step	17
M12		Tightening torque	100 Nm		
Bracket to oil sump				Used in step	17
M12		Tightening torque	100 Nm		
Intermediate shaft to transfer box				Used in step	18
M8x35		Tightening torque	19 Nm		
Starter motor to transmission				Used in step	19
M8x45		Tightening torque	19 Nm		
Battery positive lead to starter				Used in step	19
M8		Tightening torque	13,5 Nm		
Wheel arch cover to body				Used in step	21
Screw		Tightening torque	2,5 Nm		
Wheel arch cover to body				Used in step	21
Plastic nut		Tightening torque	3 Nm		
Brake disc to rear wheel hub				Used in step	22
M8	Renew screw.	Tightening torque	16 Nm		
Brake disc to front wheel hub				Used in step	22
M8	Renew screw.	Tightening torque	16 Nm		

Wheel boltsUsed in step [22](#)

M 14/AF 17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.	Check	140 Nm
	Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.		

Propeller shaft to transfer boxUsed in step [23](#)

		Tightening torque	80 Nm
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Flexible disc to rear axle final driveUsed in step [23](#)

M12x1.5	Renew screws.	Tightening torque	55 Nm 90 °
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Centre mount to bodyUsed in step [23](#)

M8		Tightening torque	19 Nm
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Heat shield to bodyUsed in step [24](#) [25](#)

Bolts/nut		Tightening torque	3 Nm
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Bracket to bodyUsed in step [24](#)

M8		Tightening torque	21 Nm
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Exhaust system to bodyUsed in step [26](#)

M8	Replace nuts.	Tightening torque	19 Nm
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Exhaust bracket on bodyUsed in step [26](#)

Hexagon screw M8x30		Tightening torque	19 Nm
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V-clip to catalytic converterUsed in step [26](#)

V-band clamp	Renew V-band clamp.	Tightening torque	22 Nm
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Diesel particulate sensor to exhaust systemUsed in step [26](#)

Sensor		Tightening torque	50 Nm
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Nitrogen oxide sensor downstream of SCR catalytic converterUsed in step [26](#)

Sensor		Tightening torque	50 Nm
--------	--	-------------------	-------

Cross-member/torsion strut to axle support and mountingUsed in step [27](#)

M12x48	Renew screws.	Jointing torque	100 Nm
		Angle of rotation	90 °

Front connection carrier to bodyUsed in step [28](#)

M10x18		Tightening torque	56 Nm
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Rear connection carrier to bodyUsed in step [28](#)

M8x18		Tightening torque	28 Nm
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Underbody protection front

Used in step 29

Screw for thermoplastic plastic		Tightening torque	2,6 Nm
Hexagon screw M6x20		Tightening torque	8 Nm

Battery terminal with IBS positive battery terminal / negative battery terminal

Used in step 30

NutM6			5 Nm
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Overview of Special Tools

0 495 554 (33 5 070) Extension



Common

Used in step 8 23

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	

2 409 025 Puller



Common

Used in step 16

Usage	For disassembly of the outer radial shaft seal of the transmission output shaft, right. Contour-graphic silhouette foil is included in the delivery specification. Further information on the contour-graphic silhouette foil is included in service information 00 22 13 (969).
Included in the tool or work	
Storage location	A76
Replaced by	
In connection with	
SI-Number	01 53 14 (211)

2 411 739 Puller



Common

Used in step 16

Usage	For disassembly of the inner radial shaft seal of the output, right. Contour-graphic silhouette foil is included in the delivery specification. Further information on the contour-graphic silhouette foil is included in service information 00 22 13 (969).
Included in the tool or work	
Storage location	C78
Replaced by	
In connection with	
SI-Number	01 53 14 (211)

2 408 152 Striking element



Common

Used in step 16

Usage	For installation of the right radial shaft seal transmission output shaft (inner). Contour-graphic silhouette foil is included in the delivery specification. Further information on the contour-graphic silhouette foil is included in service information 00 22 13 (969).
Included in the tool or work	
Storage location	B78
Replaced by	
In connection with	2413037
SI-Number	01 53 14 (211)

2 413 037 Handle

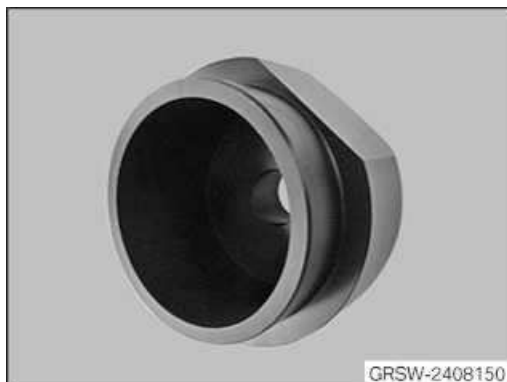


Common

Used in step 16

Usage	Universal drift handle. Contour-graphic silhouette foil is included in the delivery specification. Further information on the contour-graphic silhouette foil is included in service information 00 22 13 (969).
Included in the tool or work	
Storage location	C77
Replaced by	
In connection with	
SI-Number	01 53 14 (211)

2 408 150 Striking element

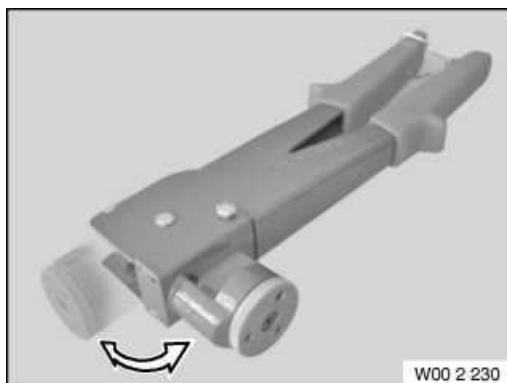


Common

Used in step 16

Usage	For installing the right radial shaft seal transmission output shaft (outer). Contour-graphic silhouette foil is included in the delivery specification. Further information on the contour-graphic silhouette foil is included in service information 00 22 13 (969).
Included in the tool or work	
Storage location	B78
Replaced by	
In connection with	2413037
SI-Number	01 53 14 (211)

0 496 521 (00 2 230) Pliers



Common

Used in step 21

Usage	(Blind rivet pliers for plastic rivets) For shaft diameters of 3.5 mm, 3.9 mm and 4.5 mm
Included in the tool or work	
Storage location	C25
Replaced by	
In connection with	
SI-Number	01 17 08 (478)

2 344 011 Tool

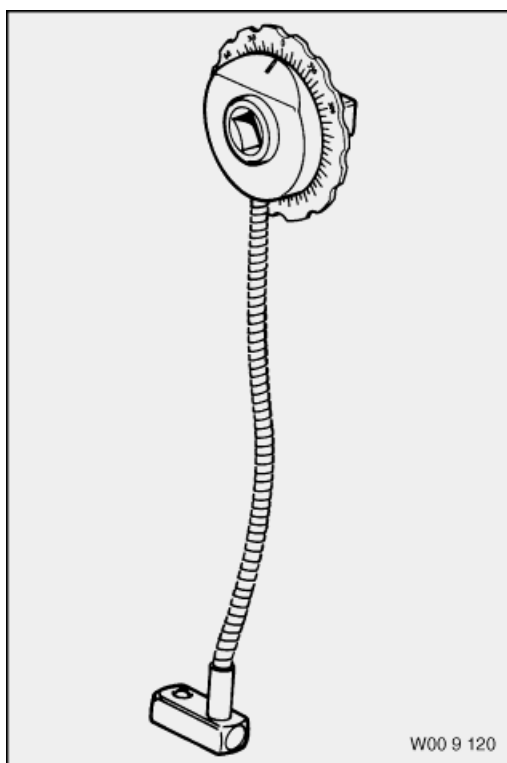


Common

Used in step [22](#)

Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

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



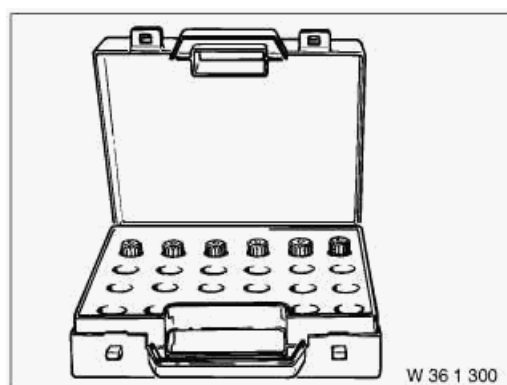
Common

Used in step [23](#)

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	

Replacement tools:

0 495 221 (36 1 323) Wheel stud

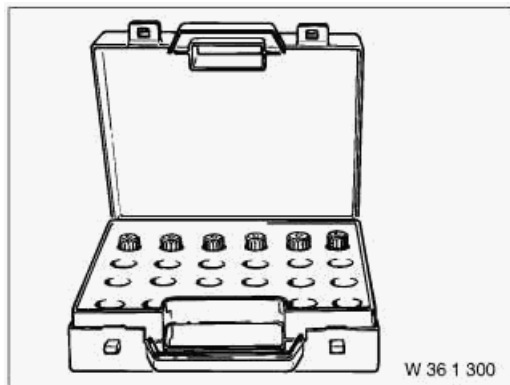


Common

Used in step [9](#)

Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common

Used in step 9

Usage (Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546

Included in the tool or work 0 492 518

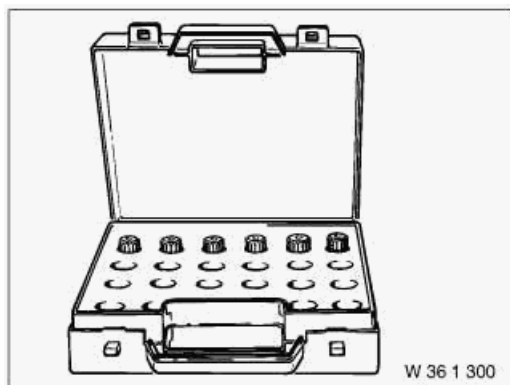
Storage location

Replaced by

In connection with

SI-Number

0 495 225 (36 1 327) Wheel stud



Common

Used in step 9

Usage (Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547

Included in the tool or work 0 492 518

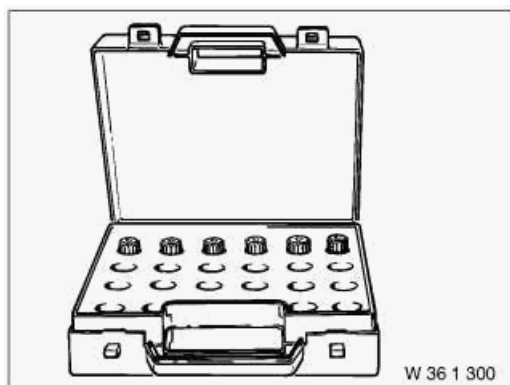
Storage location

Replaced by

In connection with

SI-Number

0 495 226 (36 1 328) Wheel stud



Common

Used in step 9

Usage (Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340

Included in the tool or work 0 492 518

Storage location

Replaced by

In connection with

SI-Number

0 495 227 (36 1 329) Wheel stud



Common

Used in step 9

Usage (Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341

Included in the tool or work 0 492 518

Storage location

Replaced by

In connection with

SI-Number

0 495 228 (36 1 331) Wheel stud



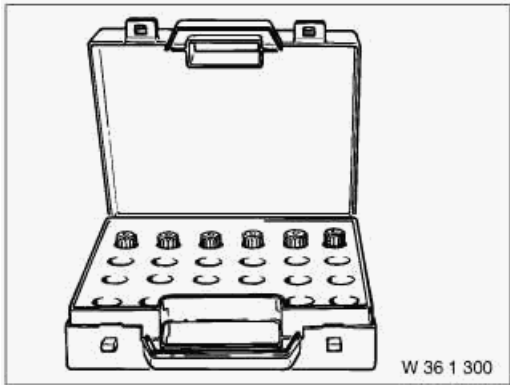
Common		Used in step	9
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342		
Included in the tool or work	0 492 518		
Storage location			
Replaced by			
In connection with			
SI-Number			

0 495 229 (36 1 332) Wheel stud



Common		Used in step	9
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343		
Included in the tool or work	0 492 518		
Storage location			
Replaced by			
In connection with			
SI-Number			

0 495 230 (36 1 333) Wheel stud



Common		Used in step	9
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344		
Included in the tool or work	0 492 518		
Storage location			
Replaced by			
In connection with			
SI-Number			

Links

Operating materials	Used in step
2.0 Grease for wheel centring	22
Operating materials	Used in step

27 10 150 Replace radial shaft seal for output on transfer box

PRELIMINARY WORK

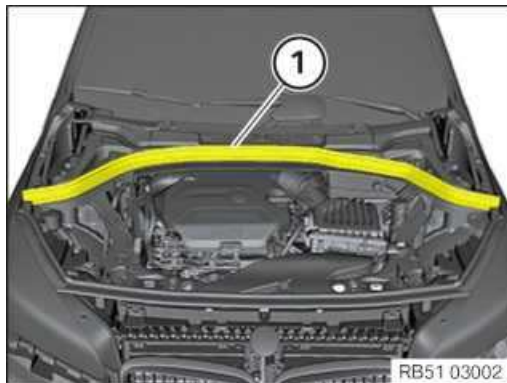
1 – Disconnecting the battery earth lead

► Remove the seal for the rear bonnet

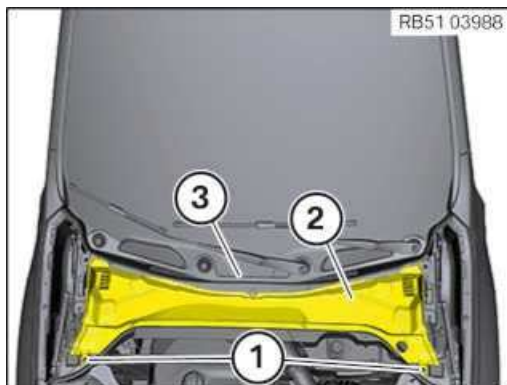


NOTICE

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

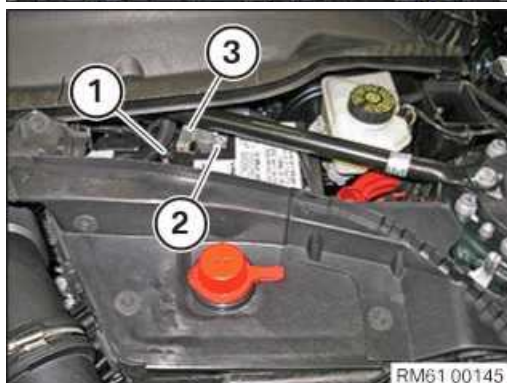


- Pull off rear bonnet seal (1) towards the top and remove.



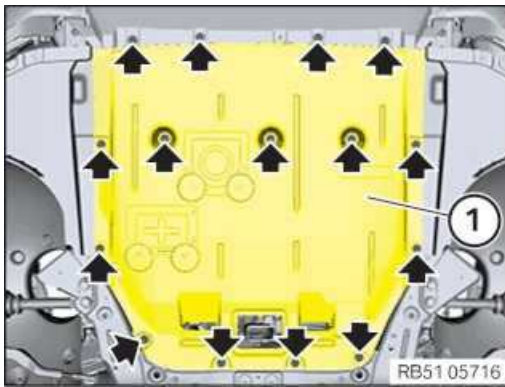
► Removing front cowl panel cover

- Loosen the expanding rivet (1).
- Feed out and remove front cowl panel cover (2) from the rear cowl panel cover(3).

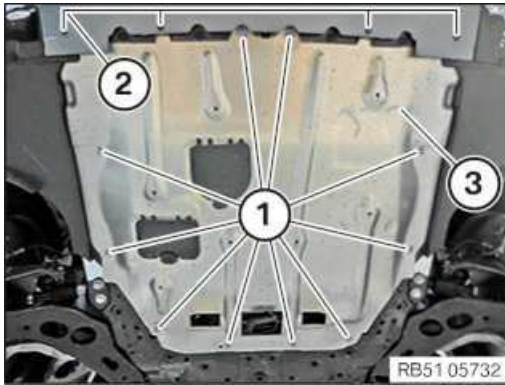


- Unlock and disconnect connector (1).
- Loosen nut (2).
- Remove the battery earth lead (3) and secure to one side.

2 – Removing the front underbody protection

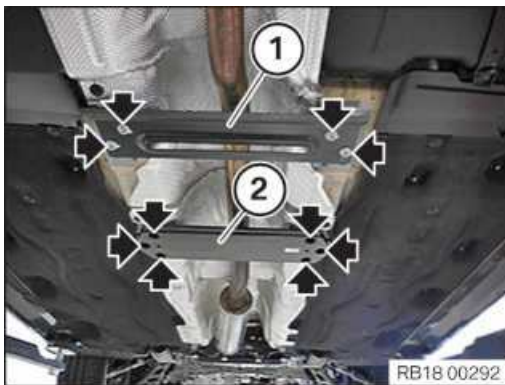


- Remove screws (arrows).
- Thread out and remove the front underbody protection (1) from the bumper panel.



- **Equipment specification with metal underride protection:**
- Loosen screws (1) and (2).
- Thread out and remove the underride protection (3).

3 – Removing the connecting support from the tunnel in front and back



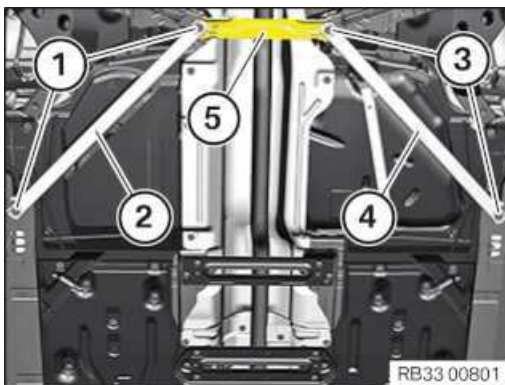
- Unscrew the bolts (arrows) from the connecting support (1).
- Feed out and remove the crossbeam (1).
- Unscrew the bolts (arrows) from the connecting support (2).
- Feed out and remove the crossbeam (2).

4 – Remove the cross strut with the torsion strut



TECHNICAL INFORMATION

Driving without a torsion strut is not permitted.



- Loosen screws (1).
- Thread out torsion strut (2) at left and remove.
- Loosen screws (3).
- Thread out torsion strut (4) at right and remove.
- Feed out and remove the cross-member (5).

5 – Remove exhaust system



WARNING

Hot surfaces.

Risk of burning!

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

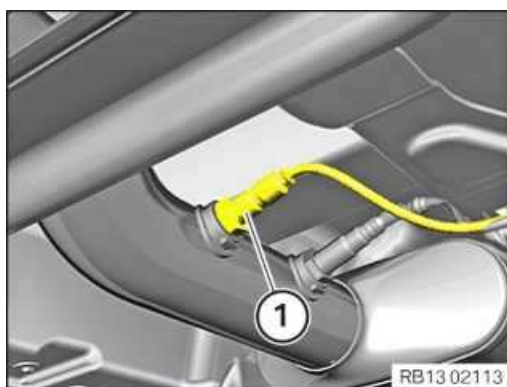


CAUTION

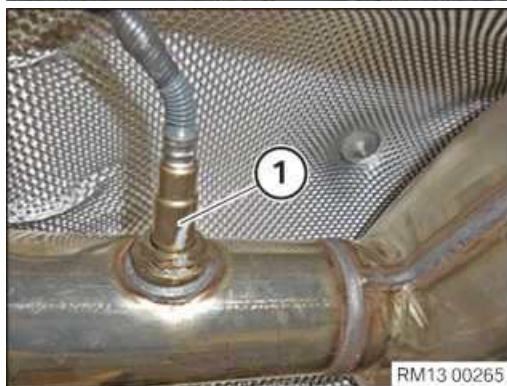
Heavy component.

Heavy components can lead to injury or damage.

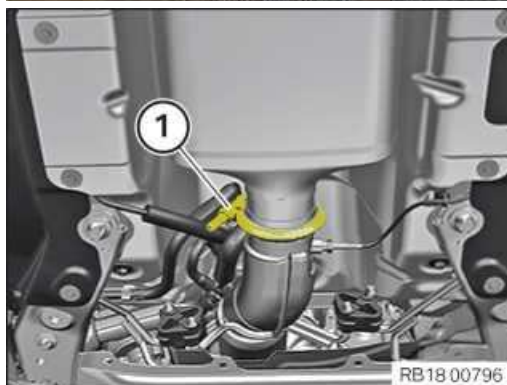
- Remove and install heavy components with the aid of another person/other persons.



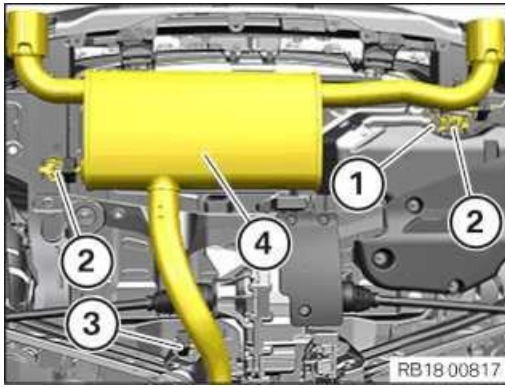
- Release the nitrogen oxide sensor (1) downstream of the SCR catalytic converter, guide it out and set it aside.



- Release the diesel particulate sensor (1), guide it out and set it aside.

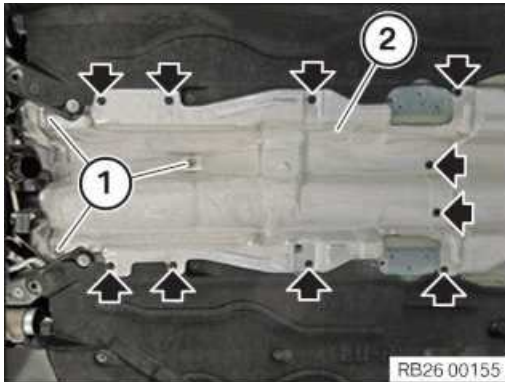


- Loosen V-band clamp (1).



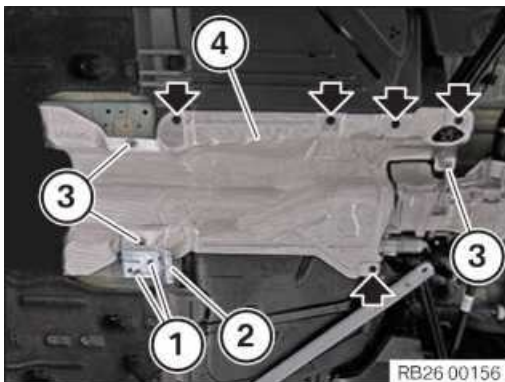
- Loosen screw (1).
- Loosen nuts (2).
- Release the rubber mount (3) of the exhaust system (4).
- Lower and guide out the exhaust system (4) with assistance of a second person and remove it.

6 – Remove front heat shield



- Remove screws (arrows).
- Loosen nuts (1).
- Guide the heat shield (2) out and remove it.

7 – Remove heat shield at rear.



- Loosen screws (1).
- Guide out and remove holder (2).
- Remove screws (arrows).
- Loosen nuts (3).
- Guide the heat shield (4) out and remove it.

8 – Remove propeller shaft



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.



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.

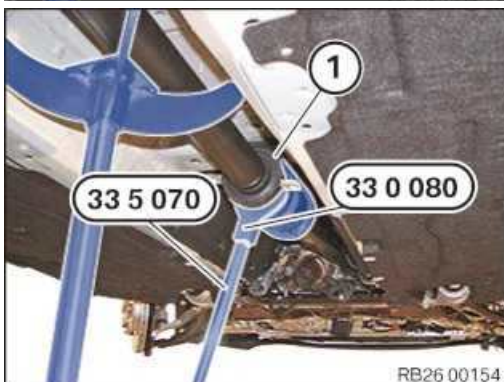
- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened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



- Install the special tool I between the front and rear propeller shaft.
- Make sure that the arrows on the special tool point forward in the direction of travel.



- Always support the propeller shaft (1) with a conventional jack.



- Protect the propeller shaft (1) with the special tools **0 495 554 (33 5 070)** and from twisting.



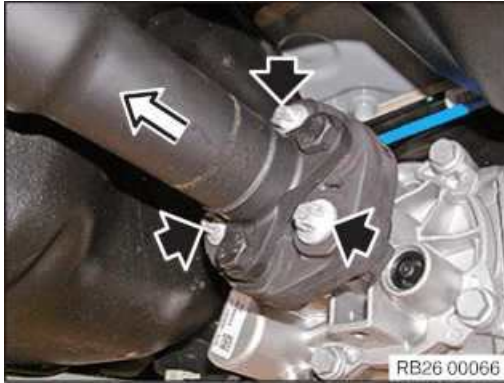
TECHNICAL INFORMATION

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

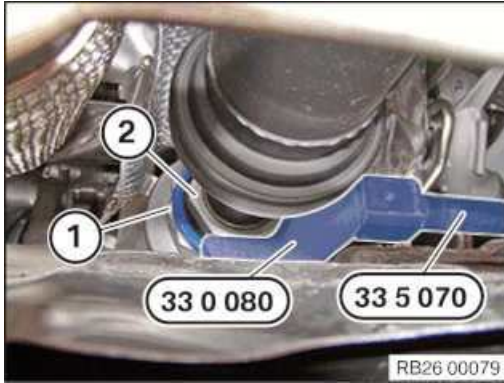
- Mark the installation position of the screw connection (1), the flexible disc (2) and the three-hole flange (3) on the same level.
- Loosen the screw connection (1).



- Loosen screws (1).



- Remove screws (arrows).
- Guide the propeller shaft out in the direction of the arrow and set it aside.



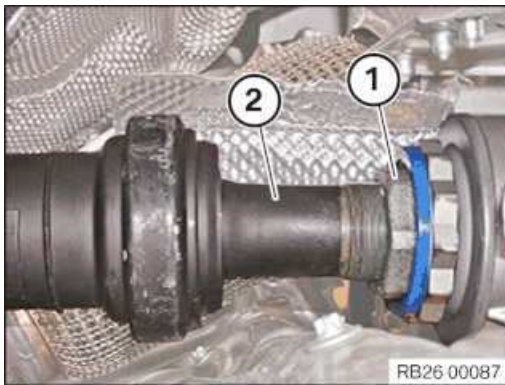
RISK OF DAMAGE

Damage to the transfer box.

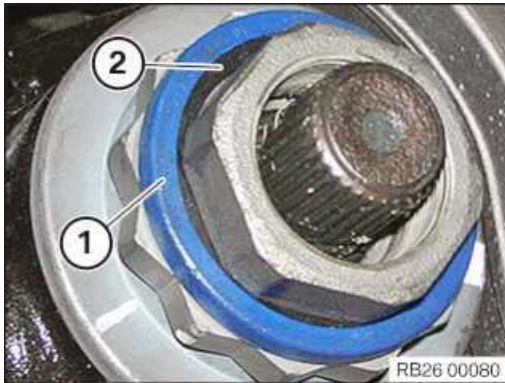
Non-observance of the removal and installation guidelines may cause severe damage to the transfer box.

- Do not use the double hexagon head flange nut as counter support.
- Protect the recessed nut (2) on the transfer box from twisting with the special tools **0 495 554 (33 5 070)** and .
The recessed nut (2) on the transfer box must **not** be used to detach the propeller shaft.
The double hexagon flange nut (1) must **not** be used for counter support.
- Release the front propeller shaft with the special tools **0 495 554 (33 5 070)** and in the direction of the arrow.

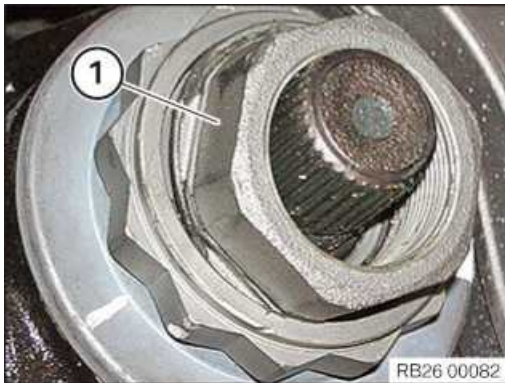




- Thread the propeller shaft (2) out of the recessed nut (1) and remove.



- Thread the retaining clip (1) and the seal (2) out and remove.



- Thread out and remove the recessed nut (1).

9 – Removing the wheel



- If several wheels are removed simultaneously: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
 - Unscrew the wheel bolts (arrows) and remove the wheel.
- Use the matching adapter from tool set (wheel bolt adapter set) to loosen and tighten down the wheel bolt with security code.

10 – Removing the front right wheel arch cover

- Remove the front wheel arch trim



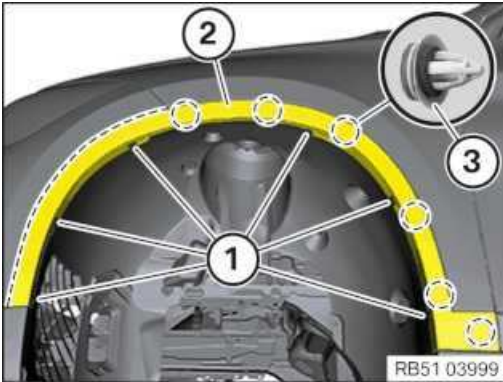
NOTICE

To provide a better overview: Schematic diagram with partially hidden components.

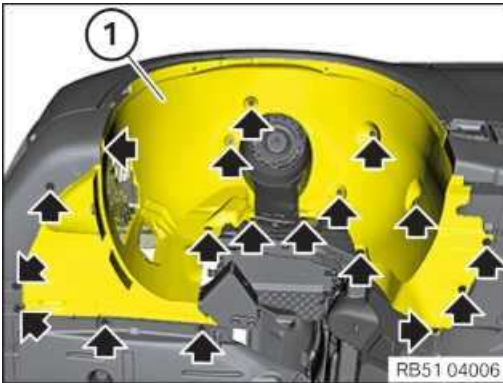


NOTICE

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



- Remove the blind rivets (1).
- Release the wheel arch trim (2) in the area of the side panel from the clips (3).
- Release the wheel arch trim (2) from the latch mechanisms on the bumper and remove.

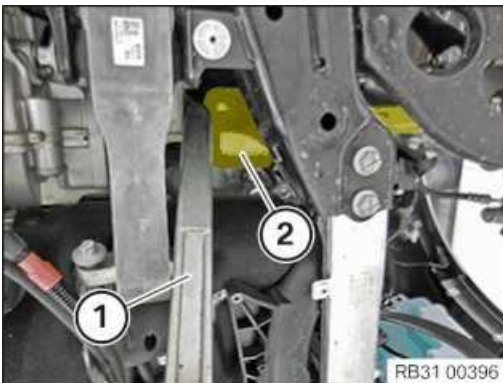


NOTICE

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

- Unscrew all bolts and nuts (arrows).
- Guide the wheel arch cover (1) out.

11 – Partially removing right output shaft



- Lever out the output shaft (2) with a mounting lever (1).
- Tie up output shaft (1).

12 – Removing starter motor



WARNING

Hot surfaces.

Risk of burning!

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



WARNING

Working on 12 V vehicle electrical system.

Risk of short circuits! Risk of fire!

- Detach battery earth lead from battery.
- For additional batteries: Detach all battery earth leads from additional batteries.



RISK OF DAMAGE



Electrostatic discharge.

Damage to or destruction of electrical components.

- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the housings of electrical components. Do not touch pins or multi-pin connectors directly.
- Wear electrically conductive clothing and antistatic shoes (with ESD symbol).
- For additional information see: 61 35 Information on electrostatic discharge (ESD) protection.



- Unlock and loosen connector (1).
- Detach the sealing cap (2) in the direction of the arrow.
- Feed out and remove the sealing cap (2).

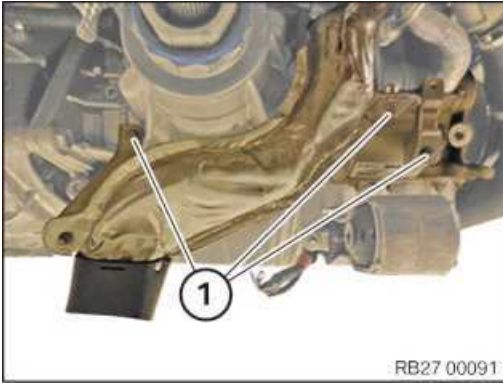


- Unfasten nut (1).
- Feed out the positive battery cable (2) of the starter motor and set it aside.

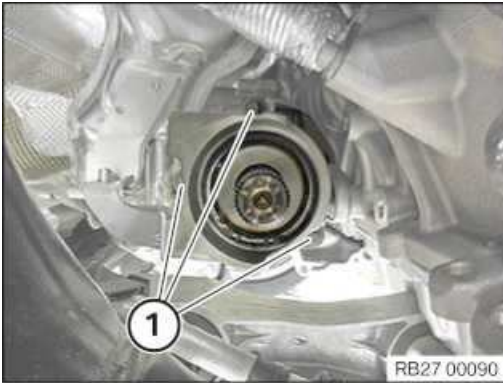


- Loosen screws (1).
- Feed out starter motor and remove.

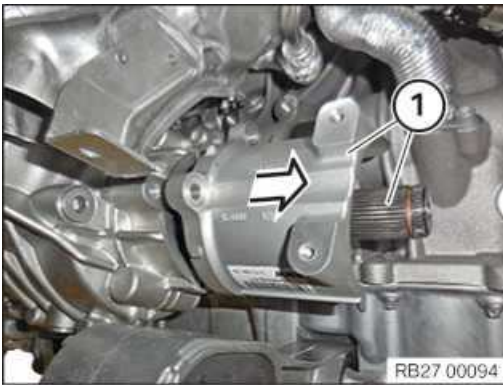
13 – Remove the intermediate shaft with the support tube



- With air duct installation: Loosen screws (1).
- Remove air duct



- Loosen screws (1).



- Pull the intermediate shaft with the support tube (1) out of the transfer box.

14 – Remove bracket with rubber mount

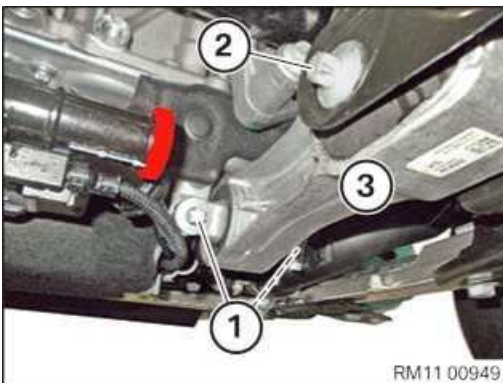


WARNING

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

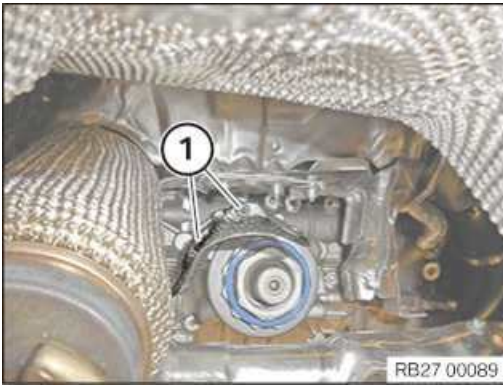
Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

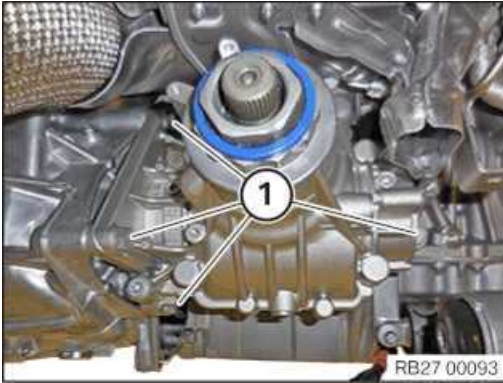


- Support the engine with the jack at a suitable point.
- Loosen screws (1) and (2).
- Guide out and remove holder (3).

15 – Remove transfer box (VTG)



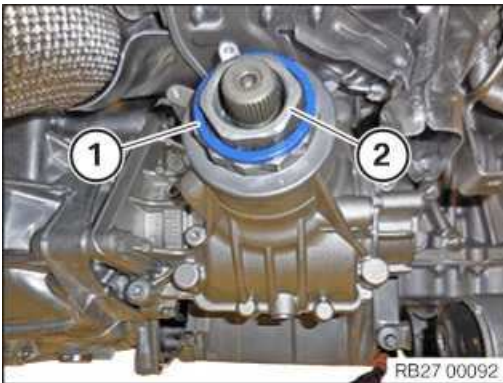
- Loosen screws (1).
- Remove heat shield.



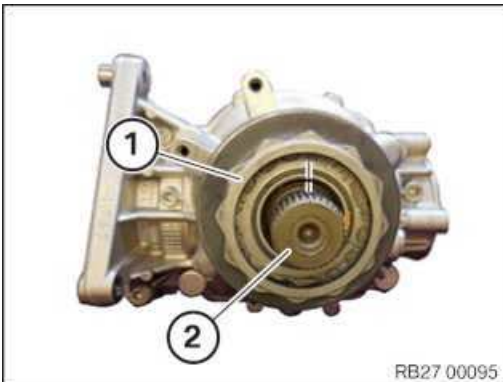
- Loosen screws (1).
- Remove the transfer box (VTG).

MAIN WORK

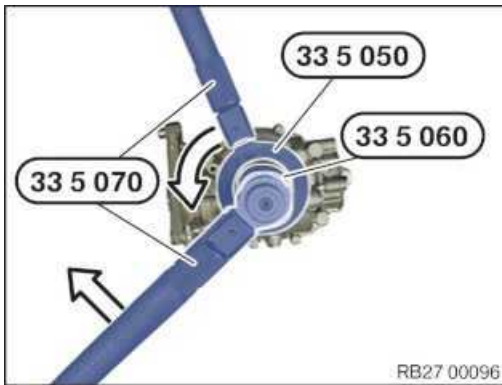
16 – Removing the radial shaft seal for the output on the transfer box (VTG)



- Remove mounting clip (1) and recessed nut (2) with the diaphragm seal.

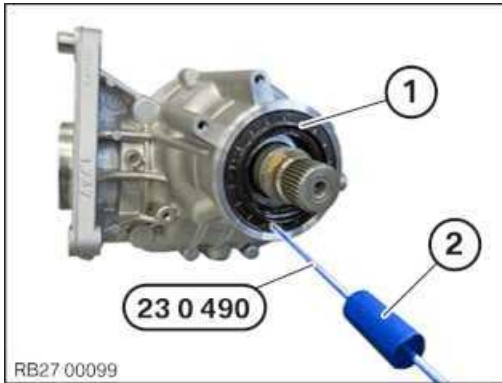


- Mark the position of the flange nut (1) for the bevel pinion (2).



- Release flange nut counter-clockwise using special tools and **0 495 554 (33 5 070)**.

Counter-hold the bevel pinion using special tools and **0 495 554 (33 5 070)**.



i

TECHNICAL INFORMATION

Do not use a drill.

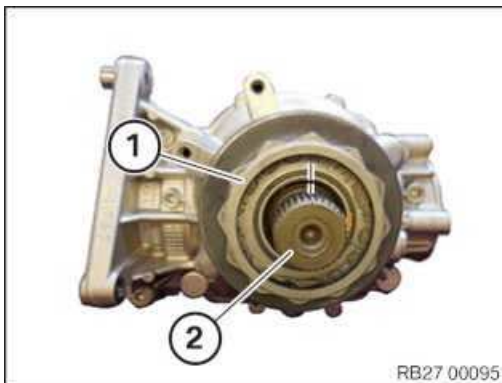
Swarf may damage the transmission and result in a failure of the transmission.

- Drill a hole in the radial shaft seal (1) using a centre punch.
- Screw special tool **0 491 454 (23 0 490)** into radial shaft seal (1).
- Drive out the radial shaft seal (1) with an impact weight (2).

17 – Installing radial shaft seal for the output at the transfer box (VTG)

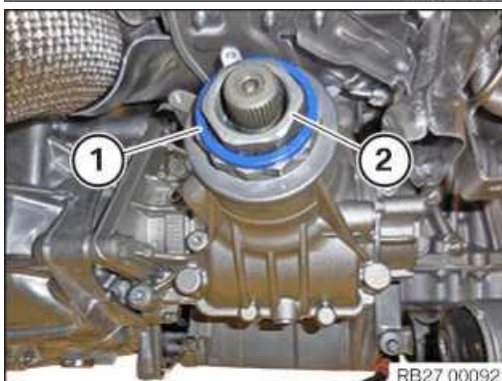


- Apply oil to sealing lip of new radial shaft seal.
- Drive in the radial shaft seal up to the limit position using special tool **2 407 561**.



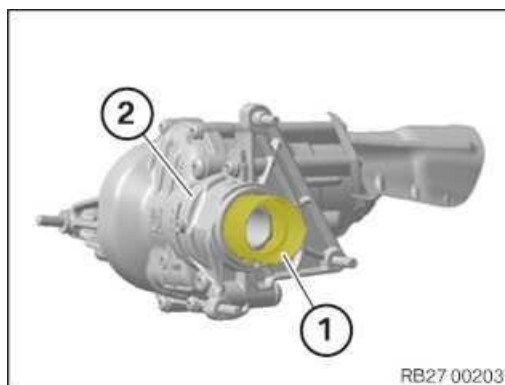
- Under any circumstance, do not tighten down the flange nut (1) beyond the marker point of the bevel pinion (2).

A damage to rear axle differential should be thus prevented.



- Insert recessed nut (2) into flange nut.
- Fix mounting clip (1).

18 – Install the transfer box (VTG)



- If intermediate shaft (1) gets caught on transfer box (VTG) (2), renew intermediate shaft (1) and the radial shaft seals in the automatic or manual transmission.



- Screw special tool **2 409 025** into the outer radial shaft seal.
- Turn the screw on the special tool **2 409 025** until the outer radial shaft seal has been pulled out.



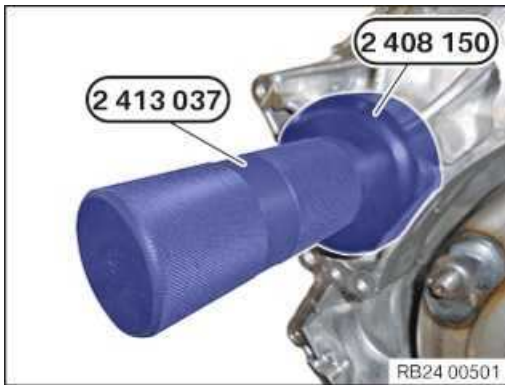
- Insert special tool **2 411 739** into the inner radial shaft seal.



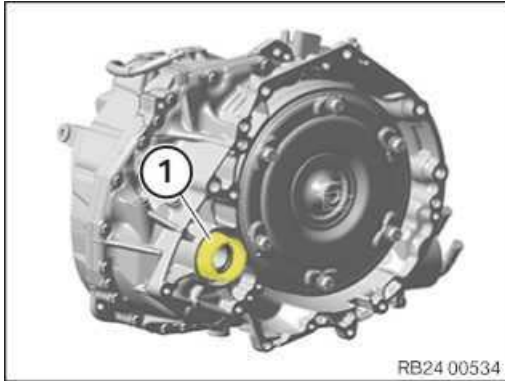
- Screw special tool **2 411 739** into the inner radial shaft seal.
- Turn the screw on the special tool **2 411 739** until the inner radial shaft seal has been pulled out.



- Drive in the inner radial shaft seal using special tools **2 408 152** and **2 413 037** up to the limit position.



- Drive in the outer radial shaft seal using special tools **2 413 037** and **2 408 150** up to the limit position.



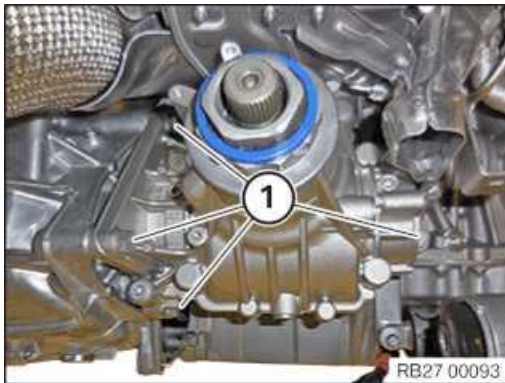
- If necessary, connect the new intermediate shaft (1) to the output flange of the automatic transmission or manual transmission.



- Coat the inside of the output flange (arrows) evenly with approx. 5 g of grease.

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754
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- Install the transfer box (VTG).
- Tighten the screws (1).

Transfer box to transmission

M10		Tightening torque	56 Nm
-----	--	----------------------	-------



- Install heat shield.
 - Renew screws (1).
- Parts:** Bolts
- Tighten the screws (1).

Heat shield to transfer box

M6	Renew screws.	Tightening torque	6 Nm
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► Check the transfer box oil level



RISK OF DAMAGE

Damage to the transmission.

Damage to the transmission through unapproved transmission oil.

- Use only the approved transmission oil.
- After completion of repair work, check transmission oil level.



- Check transfer case oil level, correct:
- Open the oil filler plug (1).
- Check transfer box oil level.
- If necessary, top up transmission oil up to the lower edge of the oil filler plug opening (1).

Transmission oil

Technically suitable transfer box and electrical transmission oils

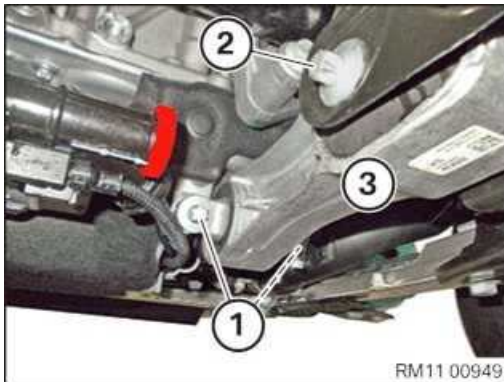
[Main group 27](#)

- Tighten the oil filler plug (1).

Oil filler plug on transfer box (VTG)

M18x1.5		Tightening torque	35 Nm
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19 – Install the holder with the rubber mount



- Insert and install the holder (3).
- Tighten the screws (1) and (2) hand-tight.
- Release jack.
- Tighten down screw (2).

Holder to front axle support

M12		Tightening torque	100 Nm
-----	--	-------------------	--------

- Tighten the screws (1).

Bracket to oil sump

M12		Tightening torque	100 Nm
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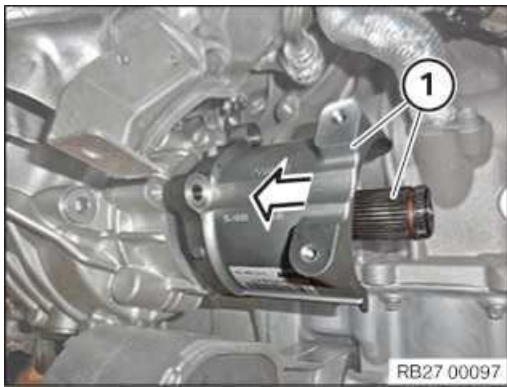
20 – Install the intermediate shaft with the support tube



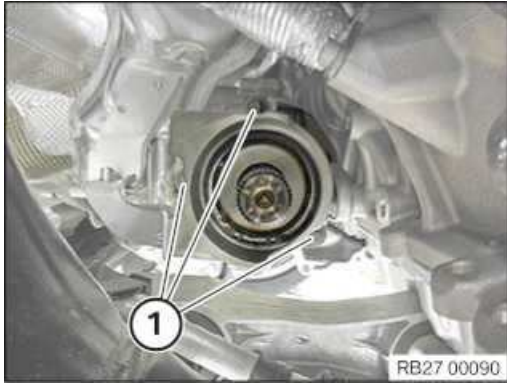
- Coat gearing of the intermediate shaft uniformly with 5 g of grease.

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754
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- Install the intermediate shaft with support tube (1) in the transfer box.



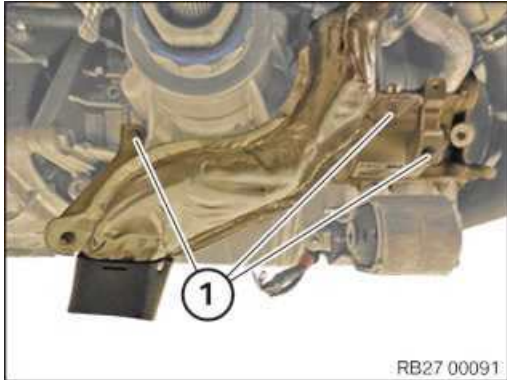
- Position screws (1).

Note: Check for correct screw length! Bolt M8x35 8.8

- Tighten the screws (1).

Intermediate shaft to transfer box

M8x35		Tightening torque	19 Nm
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- If installed: Install air duct.
- Tighten the screws (1).

21 – Installing starter motor



CAUTION

Improper routing of the positive battery cable.

Risk of short circuits!

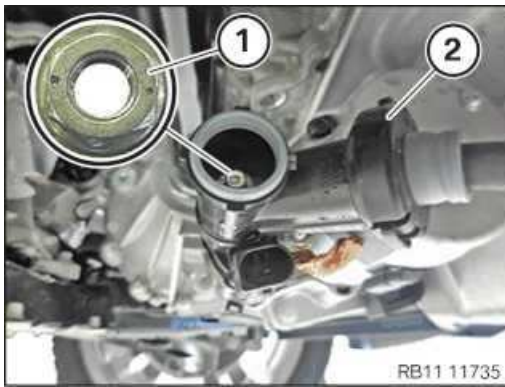
- Route the positive battery cable without abrasions and do not trap.



- Insert and install the starter motor .
- Tighten the screws (1).

Starter motor to transmission

M8x45		Tightening torque	19 Nm
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- Feed the positive battery cable (2) in on the starter and install.
- Tighten nut (1).

Battery positive lead to starter

M8		Tightening torque	13,5 Nm
----	--	-------------------	---------



- Insert and install the new sealing cap (2).
- Secure the sealing cap (2) in the direction of the arrow.
- Connect and lock the connector (1).
- Make sure the connector (1) engages audibly.

22 – Installing right output shaft partially



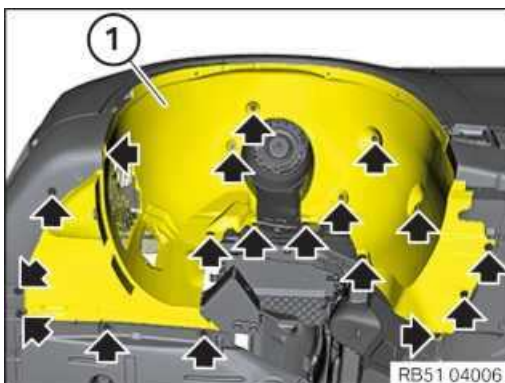
- Renew the circlip (1).
- Parts:** Circlip
- Slide output shaft into the transmission as far as the limit position.
 - Check for secure seat by levering.

23 – Installing the front right wheel arch cover



NOTICE

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



- Guide the wheel arch cover (1) in.
- Tighten all bolts and nuts (arrows).

Wheel arch cover to body

Screw		Tightening torque	2,5 Nm
-------	--	-------------------	--------

Wheel arch cover to body

Plastic nut		Tightening torque	3 Nm
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► Installing front wheel arch trim



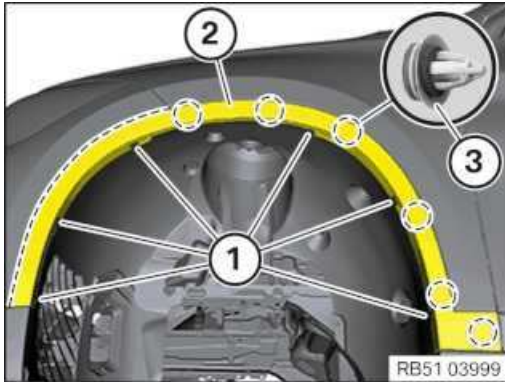
NOTICE

To provide a better overview: Schematic diagram with partially hidden components.



NOTICE

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



- Check the clips (3) for damage and renew where required.
The clips (3) must not be damaged or missing.
- Feed in wheel arch trim (2) and engage on the clips (3).
- Engage wheel arch trim (2) into the latch mechanisms on the bumper panel.
- Mount blind rivet (1) using the special tool **0 496 521 (00 2 230)**.

24 – Mounting the wheel



- Clean the contact surfaces between the brake disc and the wheel rim

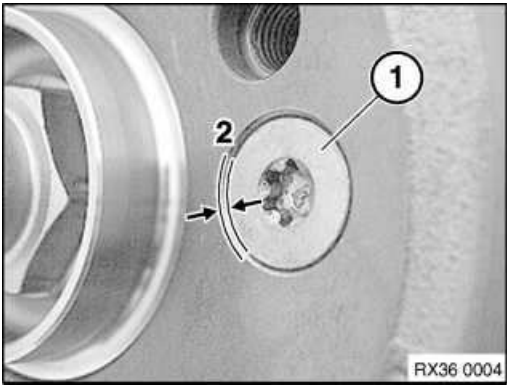


TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool **2 344 011**.
Do not operate special tool **2 344 011** with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool **2 344 011**.
Do not operate special tool **2 344 011** with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).





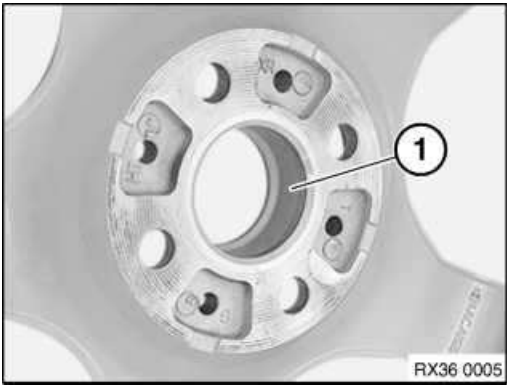
- Renew mounting bolt (1).
- Parts:** Mounting bolt
- Check that the mounting bolt (1) for the brake disc is securely seated.
- The mounting bolt (1) for the brake disc may not protrude under any circumstances on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm
----	--------------	-------------------	-------

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm
----	--------------	-------------------	-------



- Lightly grease the wheel centring (1) in the wheel rim; refer to additional information for grease for the wheel centring (1).



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew corroded wheel bolts.

Parts: Wheel bolts

- Clean the wheel bolts.
- Check the wheel bolts and threads for damage, renew the wheel bolts if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M 14/AF 17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Check	140 Nm

25 – Install propeller shaft.



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.



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 minimum hardening time of two hours after having screwed in the recessed nut. The hardening time may be longer at lower temperatures.

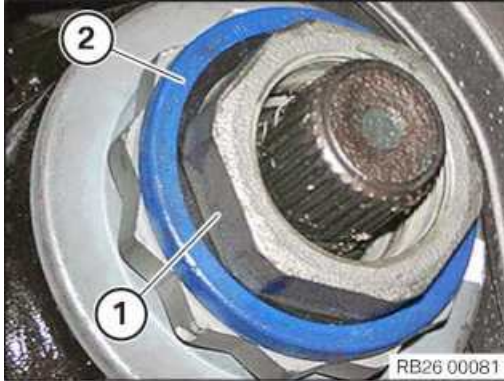


RISK OF DAMAGE

Damage to the transfer box.

Non-observance of the removal and installation guidelines may cause severe damage to the transfer box.

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



- Renew recessed nut (1).

Parts: Insert nut

- Renew the retaining clip (2) and the seal.

Parts: Retaining clip, seal

- Insert the seal with the recessed nut (1) and install.
- Insert the retaining clip (2) and install.
- Make sure that recessed nut (1) is screwed in within 5 min.
- Make sure that the hardening time of **minimum** 2 h for the recessed nut is observed.

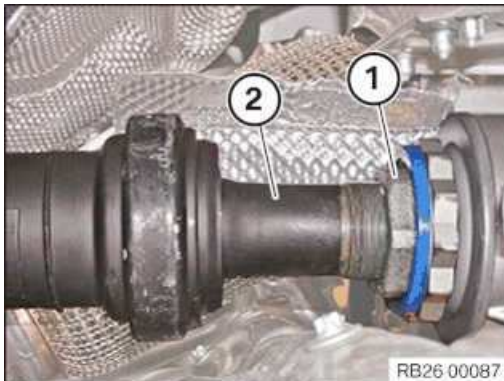
The hardening time must be extended at lower temperatures.



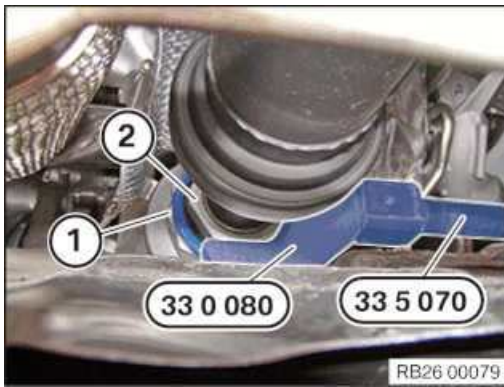
- Insert the propeller shaft (1) and install.
- Always support the propeller shaft (1) with a conventional jack.



- Hand-tighten the bolts (1).



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



RISK OF DAMAGE

Damage to the transfer box.

Non-observance of the removal and installation guidelines may cause severe damage to the transfer box.

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

- Protect the recessed nut (2) on the transfer box from twisting with the special tools **0 495 554 (33 5 070)** and .

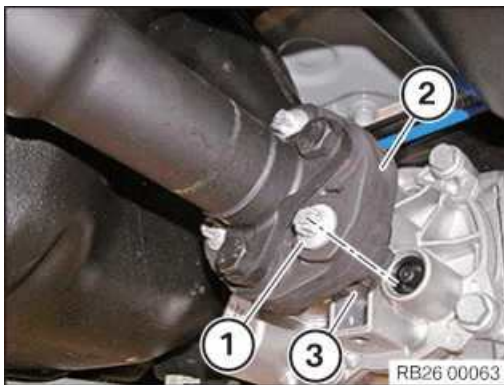
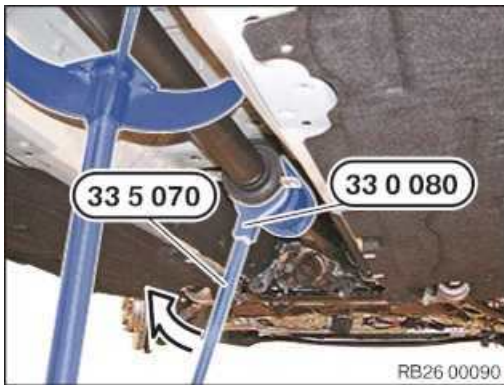
The recessed nut (2) on the transfer box must **not** be used to tighten the propeller shaft.

The double hexagon flange nut (1) must **not** be used for counter support.

- Tighten the front propeller shaft with the special tools **0 495 554 (33 5 070)** and in the direction of the arrow.

Propeller shaft to transfer box

		Tightening torque	80 Nm
--	--	-------------------	-------



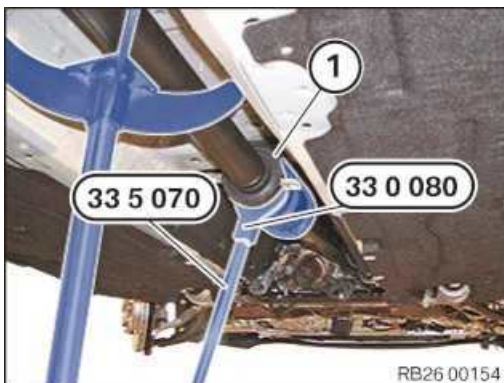
TECHNICAL INFORMATION

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

- Assemble the screw connection (1) of the flexible disc (2) and the three-hole flange (3) according to the mark.
- Renew screws (1).

Parts: Bolts

- Hand-tighten the bolts (1).
- Protect the propeller shaft (1) with the special tools **0 495 554 (33 5 070)** and from twisting.





- Tighten the bolts with the special tools **0 490 504 (00 9 120)** and .

Flexible disc to rear axle final drive

M12x1.5	Renew screws.	Tightening torque	55 Nm
			90 °



- Tighten the screws (1).

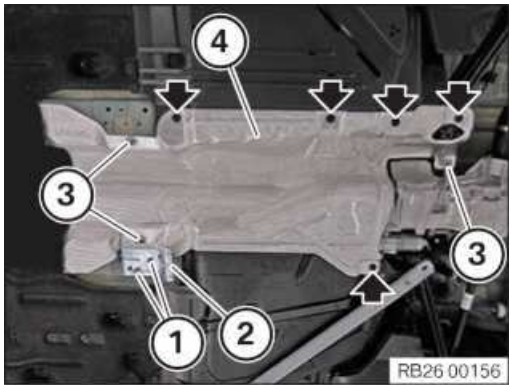
Centre mount to body

M8		Tightening torque	19 Nm
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- Guide the special tool out between the front and rear propeller shaft and remove.

26 – Installing the rear heat shield



- Insert and install the heat shield (4).
- Tighten screws (arrows).

Heat shield to body

Bolts/nut		Tightening torque	3 Nm
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- Tighten nuts (3).

Heat shield to body

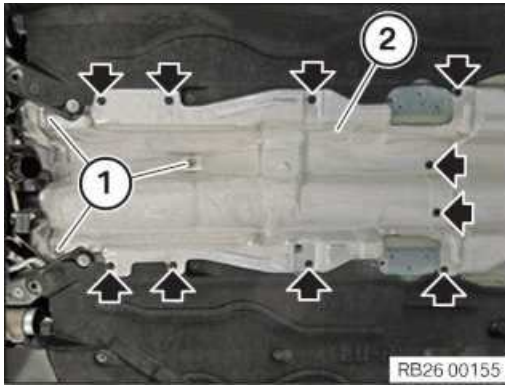
Bolts/nut		Tightening torque	3 Nm
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- Insert and install the holder (2).
- Tighten the screws (1).

Bracket to body

M8		Tightening torque	21 Nm
----	--	-------------------	-------

27 – Install the front heat shield



- Insert and install the heat shield (2).
- Tighten screws (arrows).

Heat shield to body

Bolts/nut		Tightening torque	3 Nm
-----------	--	-------------------	------

- Tighten nuts (1).

Heat shield to body

Bolts/nut		Tightening torque	3 Nm
-----------	--	-------------------	------

28 – Install 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.

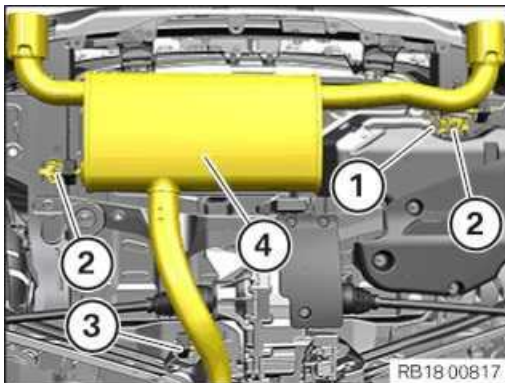


CAUTION

Heavy component.

Heavy components can lead to injury or damage.

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



- Feed in and install the exhaust system (4) with a second person.
- Renew nuts (2).

Parts: Nuts

- Tighten nuts (2).

Exhaust system to body

M8	Replace nuts.	Tightening torque	19 Nm
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- Tighten down screw (1).

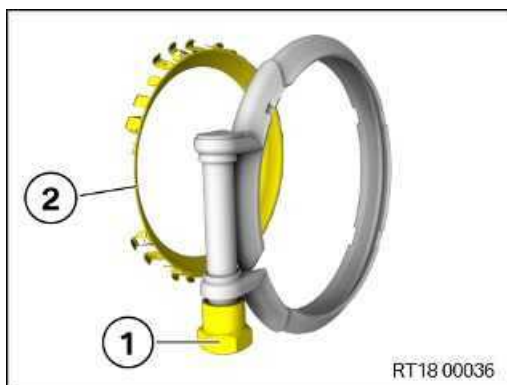
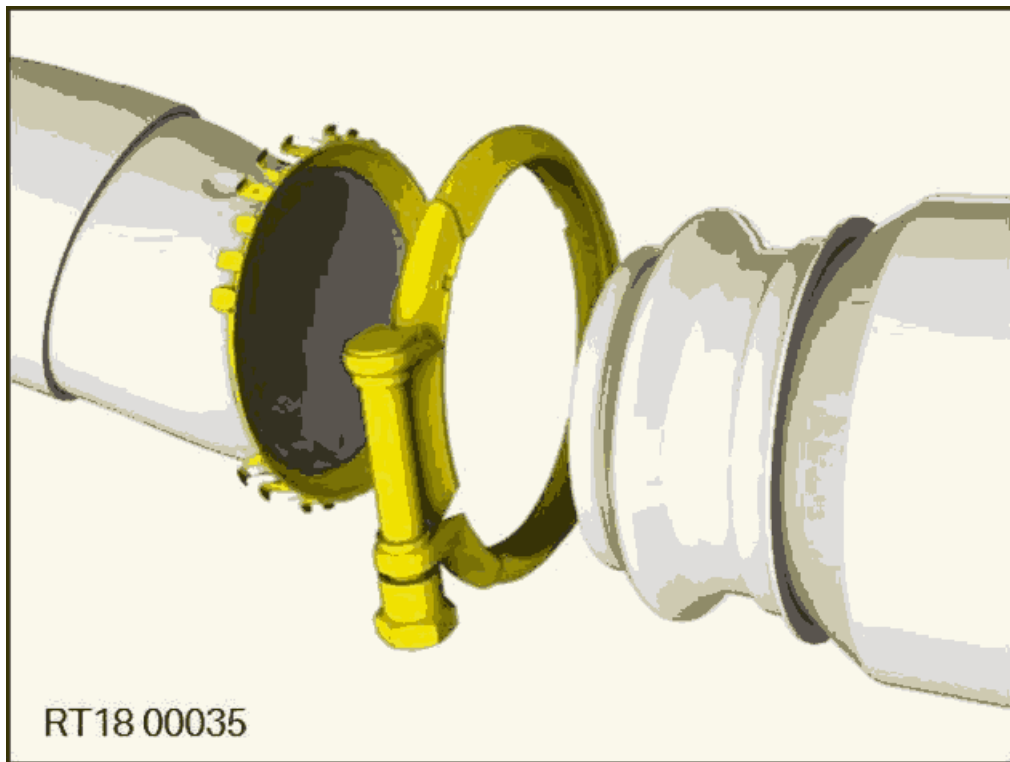
Exhaust bracket on body

Hexagon screw M8x30		Tightening torque	19 Nm
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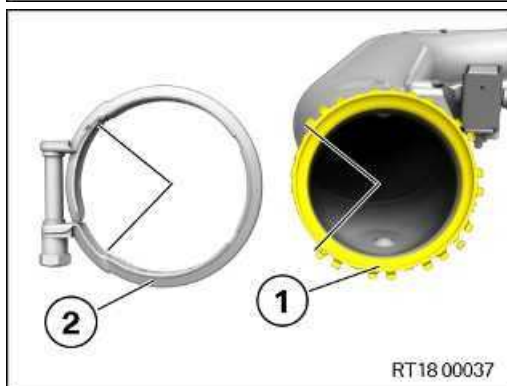
- Check the rubber mount (3) for damage and renew as needed.
- Mount rubber mount (3) on the exhaust system (4).

► **Install the V-clip**

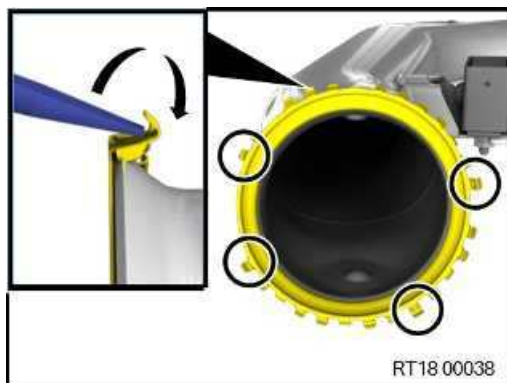
V-band clamp



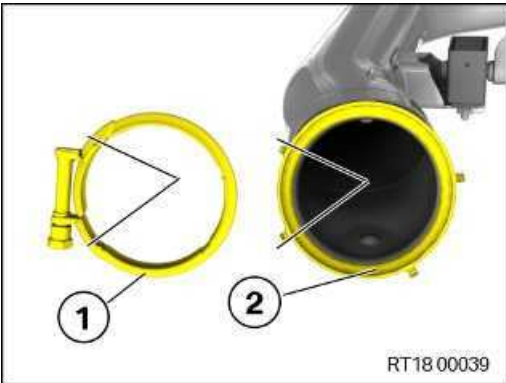
- Unscrew the nut (1) and remove the sealing ring (2).



- Renew the V-clip (2).
- **Parts:** V-band clamp
- Mount the sealing ring (1) on the exhaust system.
- Ensure that the sealing ring (1) for the V-clip (2) is positioned correctly.



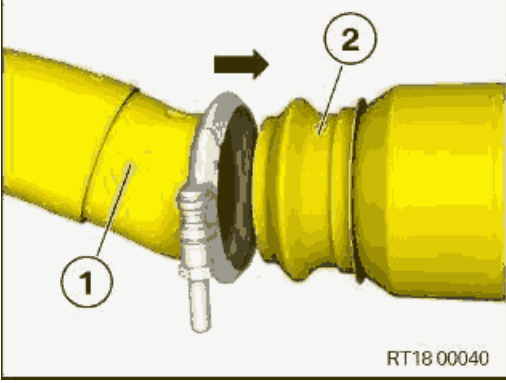
- Bend all sheet metal tabs over with a suitable tool, except those in the marked areas.



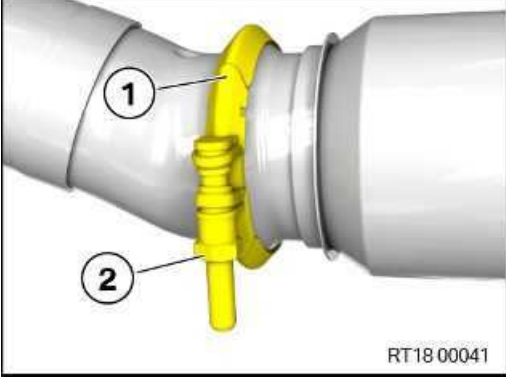
- Mount the V-clip (1) on the sealing ring (2).
- Make sure that the V-clip (1) is positioned correctly on the sealing ring (2).



- Make sure that the V-clip rests against the sheet metal tabs after mounting (marks).



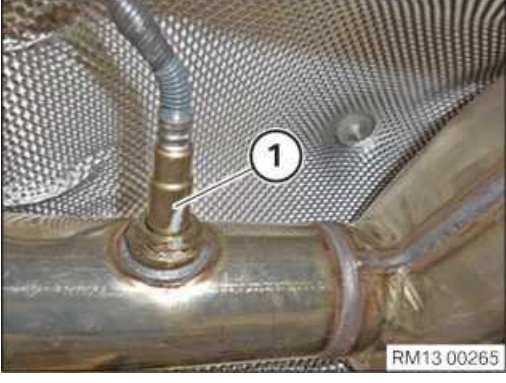
- Connect the exhaust system (1) with the catalytic converter (2) and position correctly.



- Make sure that V-clip (1) is fitted correctly.
- Tighten down screw (2).

V-clip to catalytic converter

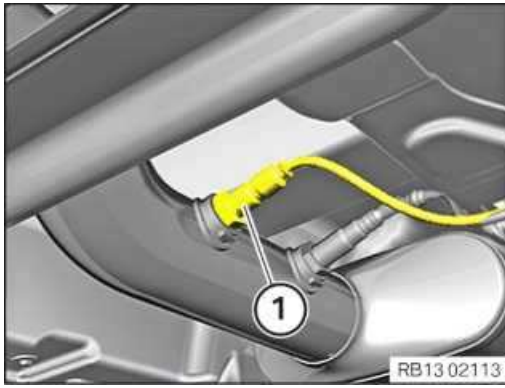
V-band clamp	Renew V-band clamp.	Tightening torque	22 Nm
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- Feed in, install and tighten diesel particulate sensor (1).

Diesel particulate sensor to exhaust system

Sensor		Tightening torque	50 Nm
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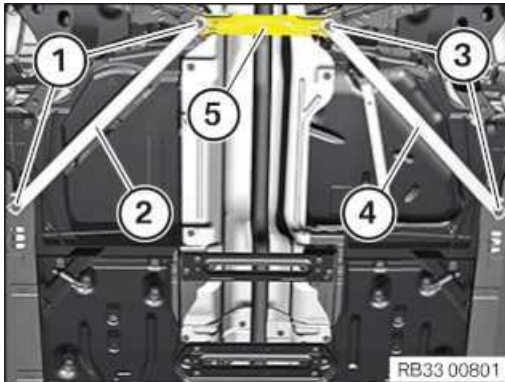


- Feed in, install and tighten nitrogen oxide sensor (1).

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	50 Nm
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29 – Install the cross-member with torsion struts



- Insert and install the cross-member (5).
- Thread in torsion strut (4) at right and install.
- Renew screws (3).

Parts: Bolts

- Tighten down screws (3).

Cross-member/torsion strut to axle support and mounting

M12x48	Renew screws.	Jointing torque	100 Nm
		Angle of rotation	90 °

- Guide in and install the left torsion strut (2).
- Renew screws (1).

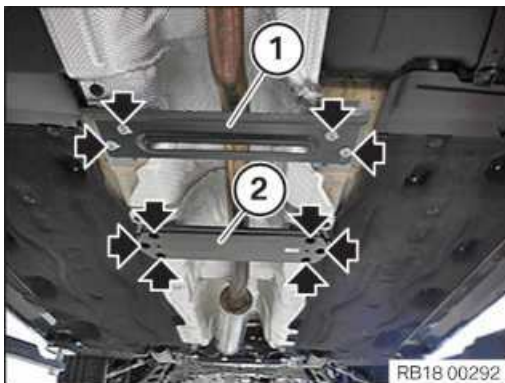
Parts: Bolts

- Tighten the screws (1).

Cross-member/torsion strut to axle support and mounting

M12x48	Renew screws.	Jointing torque	100 Nm
		Angle of rotation	90 °

30 – Install the connecting support on the tunnel in front and back



- Insert and install connecting supports (2).
- Tighten the screws (arrows) from the connecting support (2).

Front connection carrier to body

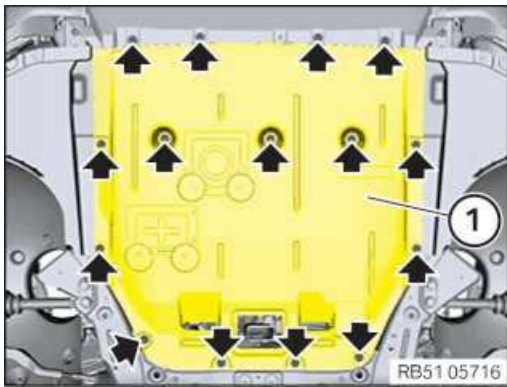
M10x18		Tightening torque	56 Nm
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- Insert and install connecting supports (1).
- Tighten the screws (arrows) from the connecting support (1).

Rear connection carrier to body

M8x18		Tightening torque	28 Nm
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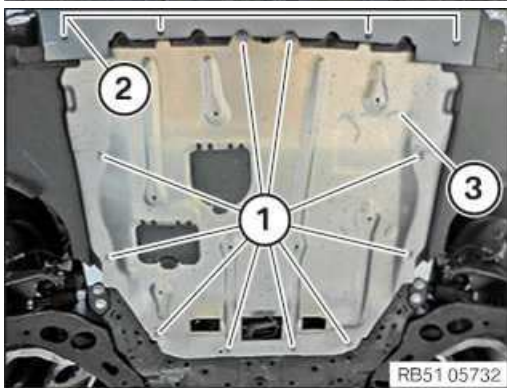
31 – Installing the front underbody protection



- Guide the front underbody protection (1) in under the bumper panel and position it at the screw points.
- Tighten screws (arrows).

Underbody protection front

Screw for thermoplastic plastic		Tightening torque	2,6 Nm
Hexagon screw M6x20		Tightening torque	8 Nm

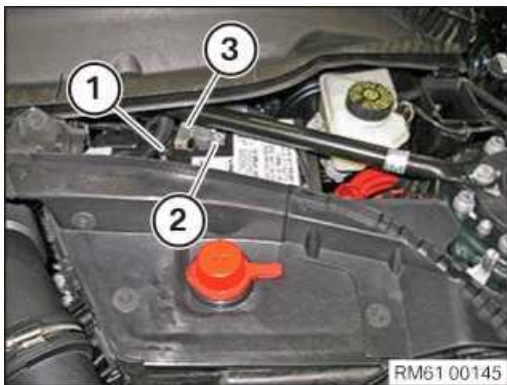


- **Equipment specification with metal underride guard:**
- Guide in and attach the underride guard (3).
- Tighten down screws (1) and (2).

Underbody protection front

Screw for thermoplastic plastic		Tightening torque	2,6 Nm
Hexagon screw M6x20		Tightening torque	8 Nm

32 – Connecting the battery earth lead



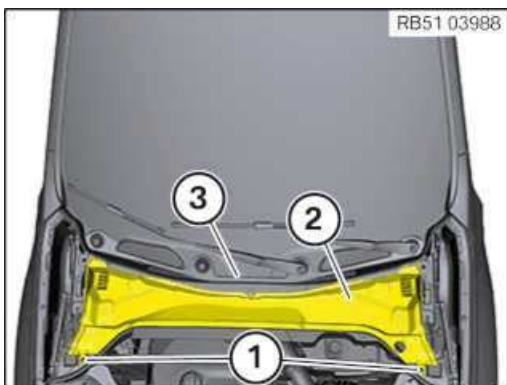
- Mount battery earth lead (3) on the negative battery terminal.
- Tighten nut (2).

Battery terminal with IBS positive battery terminal / negative battery terminal

NutM6			5 Nm
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- Connect the connector (1) to the IBS and lock it audibly.

► Installing front cowl panel cover



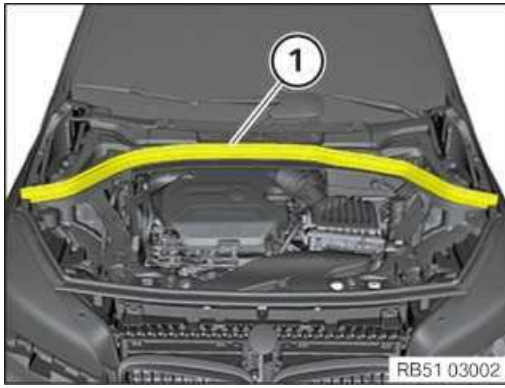
- Insert and install cowl panel cover at front (2) into cowl panel cover at rear (3).
- Check cowl panel cover at front is correctly seated (2).
- Secure expanding rivet (1).

► Install the seal for the bonnet



NOTICE

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



- Install bonnet seal at rear (1).
- Ensure that the rear bonnet seal (1) is fitted correctly.

Additional Information

Overview of Tightening Torques

Transfer box to transmission			Used in step 18
M10		Tightening torque	56 Nm
Heat shield to transfer box			Used in step 18
M6	Renew screws.	Tightening torque	6 Nm
Oil filler plug on transfer box (VTG)			Used in step 18
M18x1.5		Tightening torque	35 Nm
Holder to front axle support			Used in step 19
M12		Tightening torque	100 Nm
Bracket to oil sump			Used in step 19
M12		Tightening torque	100 Nm
Intermediate shaft to transfer box			Used in step 20
M8x35		Tightening torque	19 Nm
Starter motor to transmission			Used in step 21
M8x45		Tightening torque	19 Nm
Battery positive lead to starter			Used in step 21
M8		Tightening torque	13,5 Nm
Wheel arch cover to body			Used in step 23
Screw		Tightening torque	2,5 Nm
Wheel arch cover to body			Used in step 23
Plastic nut		Tightening torque	3 Nm
Brake disc to rear wheel hub			Used in step 24
M8	Renew screw.	Tightening torque	16 Nm
Brake disc to front wheel hub			Used in step 24
M8	Renew screw.	Tightening torque	16 Nm

Wheel boltsUsed in step [24](#)

M 14/AF 17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.	Check	140 Nm
	Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.		

Propeller shaft to transfer boxUsed in step [25](#)

		Tightening torque	80 Nm
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Flexible disc to rear axle final driveUsed in step [25](#)

M12x1.5	Renew screws.	Tightening torque	55 Nm 90 °
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Centre mount to bodyUsed in step [25](#)

M8		Tightening torque	19 Nm
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Heat shield to bodyUsed in step [26](#) [27](#)

Bolts/nut		Tightening torque	3 Nm
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Bracket to bodyUsed in step [26](#)

M8		Tightening torque	21 Nm
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Exhaust system to bodyUsed in step [28](#)

M8	Replace nuts.	Tightening torque	19 Nm
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Exhaust bracket on bodyUsed in step [28](#)

Hexagon screw M8x30		Tightening torque	19 Nm
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V-clip to catalytic converterUsed in step [28](#)

V-band clamp	Renew V-band clamp.	Tightening torque	22 Nm
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Diesel particulate sensor to exhaust systemUsed in step [28](#)

Sensor		Tightening torque	50 Nm
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Nitrogen oxide sensor downstream of SCR catalytic converterUsed in step [28](#)

Sensor		Tightening torque	50 Nm
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Cross-member/torsion strut to axle support and mountingUsed in step [29](#)

M12x48	Renew screws.	Jointing torque	100 Nm
		Angle of rotation	90 °

Front connection carrier to bodyUsed in step [30](#)

M10x18		Tightening torque	56 Nm
--------	--	-------------------	-------

Rear connection carrier to bodyUsed in step [30](#)

M8x18		Tightening torque	28 Nm
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Underbody protection front

Used in step 31

Screw for thermoplastic plastic		Tightening torque	2,6 Nm
Hexagon screw M6x20		Tightening torque	8 Nm

Battery terminal with IBS positive battery terminal / negative battery terminal

Used in step 32

NutM6			5 Nm
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Overview of Special Tools

0 495 554 (33 5 070) Extension



Common

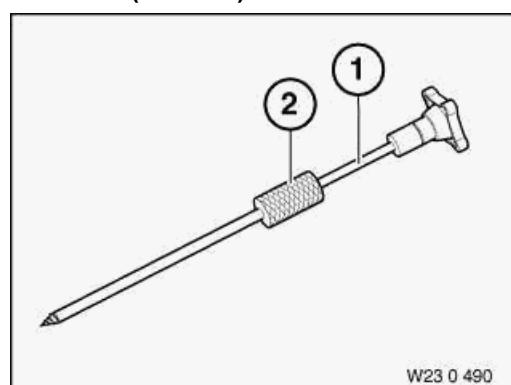
Used in step 8 16 25

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	

0 491 454 (23 0 490) Puller



Common

Used in step 16

Usage	For removing shaft seal
Included in the tool or work	
Storage location	A13
Replaced by	
In connection with	
SI-Number	01 15 96 (106)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 491 455 (23 0 491)		Rod With self-tapping screw Deletion, only available via tool set	
2	0 491 456 (23 0 492)		Weight (Weight)	

2 407 561 Mandrel



Common

Used in step 17

Usage	For installation of the radial shaft seal on the output of the rear axle. Contour-graphic silhouette foil is included in delivery specification. Further information on the contour-graphic silhouette foil can be found in service information 00 22 13 (969).
Included in the tool or work	
Storage location	A75
Replaced by	
In connection with	
SI-Number	01 18 15 (273)

2 409 025 Puller



Common

Used in step 18

Usage	For disassembly of the outer radial shaft seal of the transmission output shaft, right. Contour-graphic silhouette foil is included in the delivery specification. Further information on the contour-graphic silhouette foil is included in service information 00 22 13 (969).
Included in the tool or work	
Storage location	A76
Replaced by	
In connection with	
SI-Number	01 53 14 (211)

2 411 739 Puller



Common

Used in step 18

Usage	For disassembly of the inner radial shaft seal of the output, right. Contour-graphic silhouette foil is included in the delivery specification. Further information on the contour-graphic silhouette foil is included in service information 00 22 13 (969).
Included in the tool or work	
Storage location	C78
Replaced by	
In connection with	
SI-Number	01 53 14 (211)

2 408 152 Striking element



Common

Used in step 18

Usage	For installation of the right radial shaft seal transmission output shaft (inner). Contour-graphic silhouette foil is included in the delivery specification. Further information on the contour-graphic silhouette foil is included in service information 00 22 13 (969).
Included in the tool or work	
Storage location	B78
Replaced by	
In connection with	2413037
SI-Number	01 53 14 (211)

2 413 037 Handle

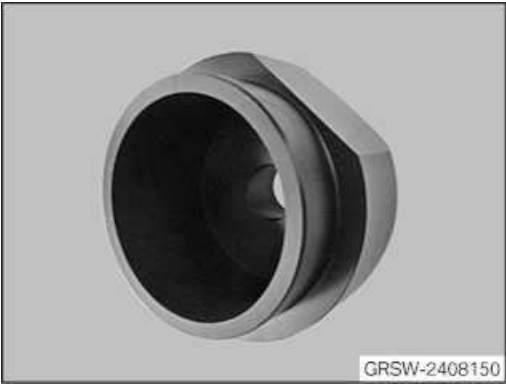


Common

Used in step 18

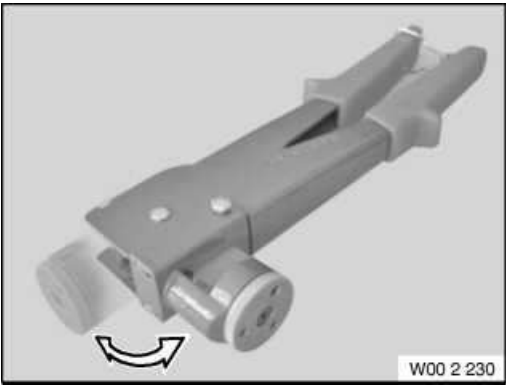
Usage	Universal drift handle. Contour-graphic silhouette foil is included in the delivery specification. Further information on the contour-graphic silhouette foil is included in service information 00 22 13 (969).
Included in the tool or work	
Storage location	C77
Replaced by	
In connection with	
SI-Number	01 53 14 (211)

2 408 150 Striking element



Common		Used in step	18
Usage	For installing the right radial shaft seal transmission output shaft (outer). Contour-graphic silhouette foil is included in the delivery specification. Further information on the contour-graphic silhouette foil is included in service information 00 22 13 (969).		
Included in the tool or work			
Storage location	B78		
Replaced by			
In connection with	2413037		
SI-Number	01 53 14 (211)		

0 496 521 (00 2 230) Pliers



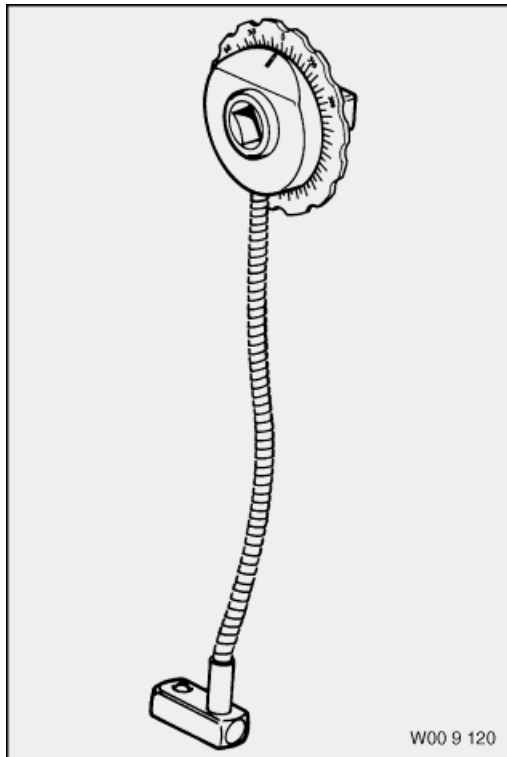
Common		Used in step	23
Usage	(Blind rivet pliers for plastic rivets) For shaft diameters of 3.5 mm, 3.9 mm and 4.5 mm		
Included in the tool or work			
Storage location	C25		
Replaced by			
In connection with			
SI-Number	01 17 08 (478)		

2 344 011 Tool



Common		Used in step	24
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.		
Included in the tool or work			
Storage location			
Replaced by			
In connection with			
SI-Number	08 08 12 (872)		

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



Common

Used in step 25

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	

Replacement tools:

0 495 221 (36 1 323) Wheel stud

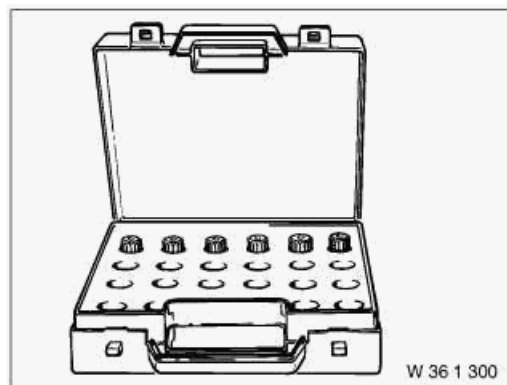


Common

Used in step 9

Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common

Used in step 9

Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 225 (36 1 327) Wheel stud



Common		Used in step	9
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547		
Included in the tool or work	0 492 518		
Storage location			
Replaced by			
In connection with			
SI-Number			

0 495 226 (36 1 328) Wheel stud



Common		Used in step	9
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340		
Included in the tool or work	0 492 518		
Storage location			
Replaced by			
In connection with			
SI-Number			

0 495 227 (36 1 329) Wheel stud



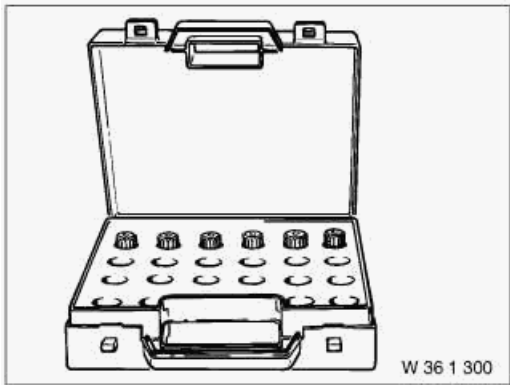
Common		Used in step	9
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341		
Included in the tool or work	0 492 518		
Storage location			
Replaced by			
In connection with			
SI-Number			

0 495 228 (36 1 331) Wheel stud



Common		Used in step
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342	9
Included in the tool or work	0 492 518	
Storage location		
Replaced by		
In connection with		
SI-Number		

0 495 229 (36 1 332) Wheel stud



Common		Used in step
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343	9
Included in the tool or work	0 492 518	
Storage location		
Replaced by		
In connection with		
SI-Number		

0 495 230 (36 1 333) Wheel stud



Common		Used in step
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344	9
Included in the tool or work	0 492 518	
Storage location		
Replaced by		
In connection with		
SI-Number		

Links

Operating materials	Used in step
2.0 Grease for wheel centring	24

27 10 100 Replacing left radial shaft seal for connection shaft

PRELIMINARY WORK

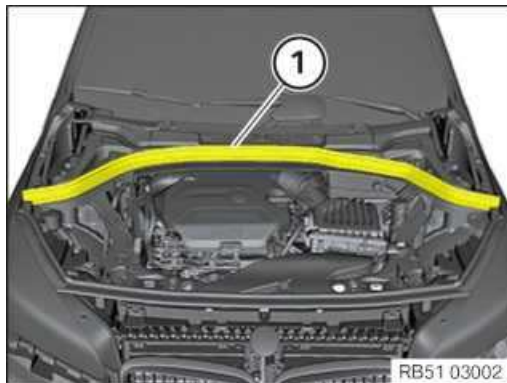
1 – Disconnecting the battery earth lead

- Remove the seal for the rear bonnet

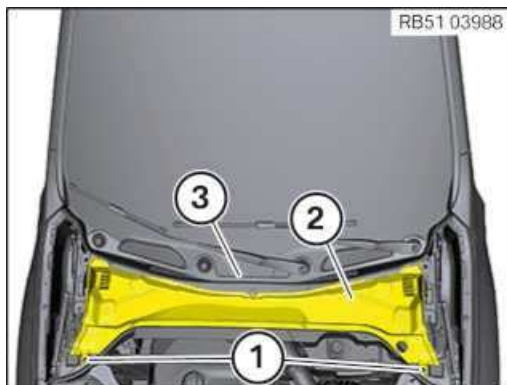


NOTICE

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

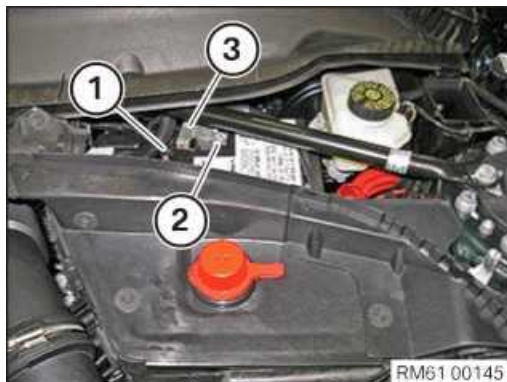


- Pull off rear bonnet seal (1) towards the top and remove.



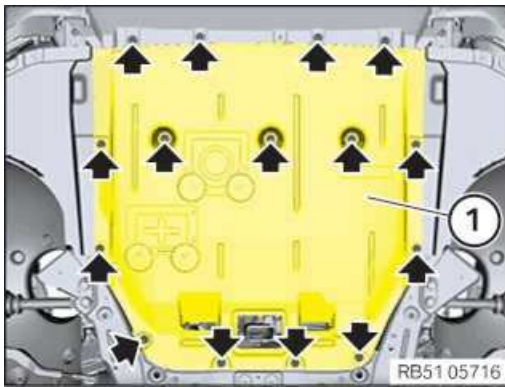
- Removing front cowl panel cover

- Loosen the expanding rivet (1).
- Feed out and remove front cowl panel cover (2) from the rear cowl panel cover (3).

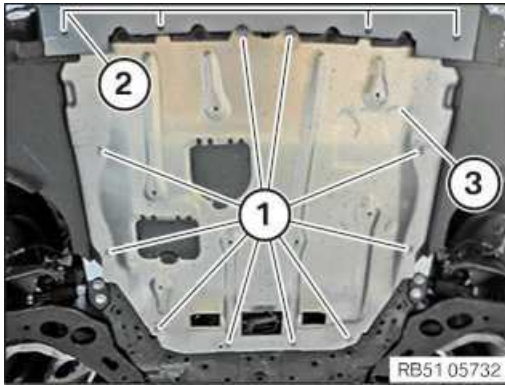


- Unlock and disconnect connector (1).
- Loosen nut (2).
- Remove the battery earth lead (3) and secure to one side.

2 – Removing the front underbody protection

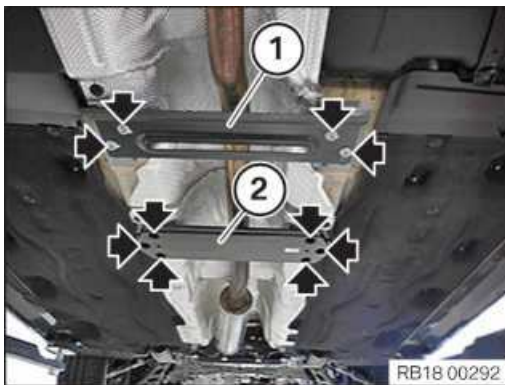


- Remove screws (arrows).
- Thread out and remove the front underbody protection (1) from the bumper panel.



- **Equipment specification with metal underride protection:**
- Loosen screws (1) and (2).
- Thread out and remove the underride protection (3).

3 – Removing the connecting support from the tunnel in front and back



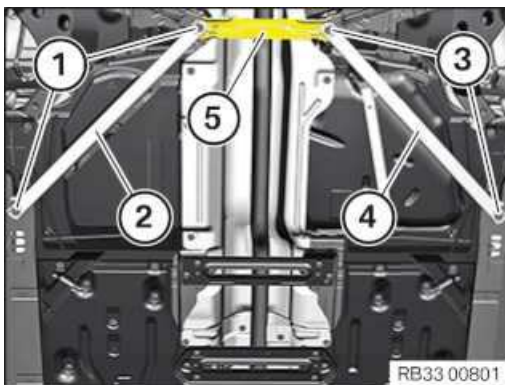
- Unscrew the bolts (arrows) from the connecting support (1).
- Feed out and remove the crossbeam (1).
- Unscrew the bolts (arrows) from the connecting support (2).
- Feed out and remove the crossbeam (2).

4 – Remove the cross strut with the torsion strut



TECHNICAL INFORMATION

Driving without a torsion strut is not permitted.



- Loosen screws (1).
- Thread out torsion strut (2) at left and remove.
- Loosen screws (3).
- Thread out torsion strut (4) at right and remove.
- Feed out and remove the cross-member (5).

5 – Remove exhaust system



WARNING

Hot surfaces.

Risk of burning!

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

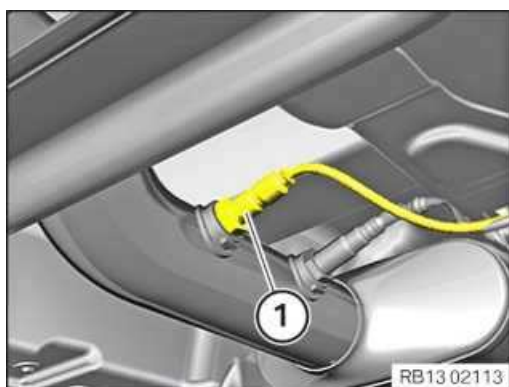


CAUTION

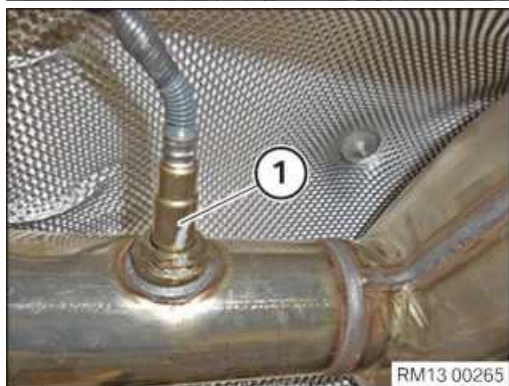
Heavy component.

Heavy components can lead to injury or damage.

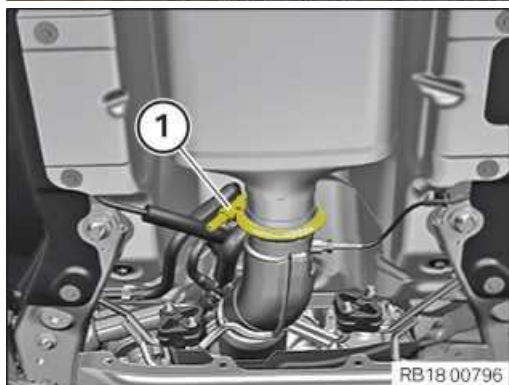
- Remove and install heavy components with the aid of another person/other persons.



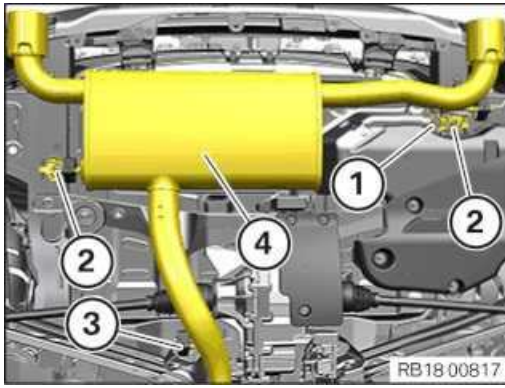
- Release the nitrogen oxide sensor (1) downstream of the SCR catalytic converter, guide it out and set it aside.



- Release the diesel particulate sensor (1), guide it out and set it aside.

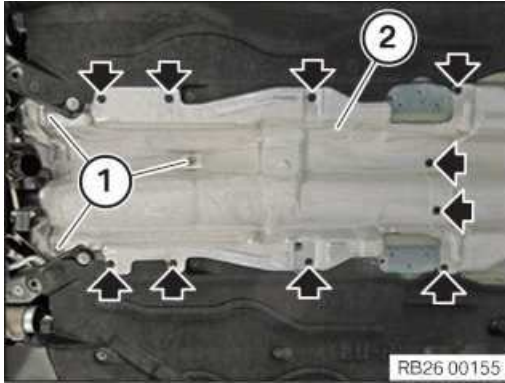


- Loosen V-band clamp (1).



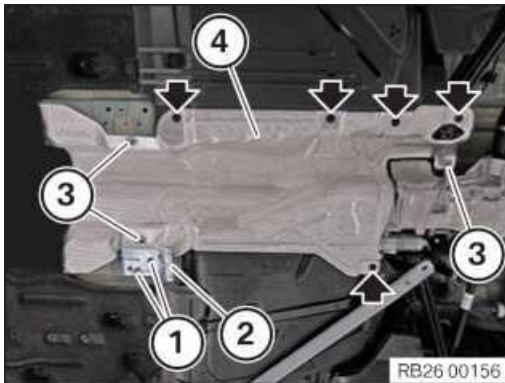
- Loosen screw (1).
- Loosen nuts (2).
- Release the rubber mount (3) of the exhaust system (4).
- Lower and guide out the exhaust system (4) with assistance of a second person and remove it.

6 – Remove front heat shield



- Remove screws (arrows).
- Loosen nuts (1).
- Guide the heat shield (2) out and remove it.

7 – Remove heat shield at rear.



- Loosen screws (1).
- Guide out and remove holder (2).
- Remove screws (arrows).
- Loosen nuts (3).
- Guide the heat shield (4) out and remove it.

8 – Remove propeller shaft



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.



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.

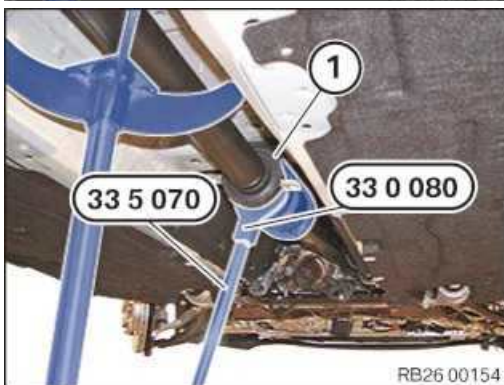
- Do not disassemble the three-hole flange, flexible disc and propeller shaft. The three-hole flange to the rear axle differential is balanced with the flexible disc and propeller shaft.
- Loosen the recessed nut against the direction of travel in clockwise direction. The propeller shaft must be loosened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



- Install the special tool I between the front and rear propeller shaft.
- Make sure that the arrows on the special tool point forward in the direction of travel.



- Always support the propeller shaft (1) with a conventional jack.



- Protect the propeller shaft (1) with the special tools **0 495 554 (33 5 070)** and from twisting.



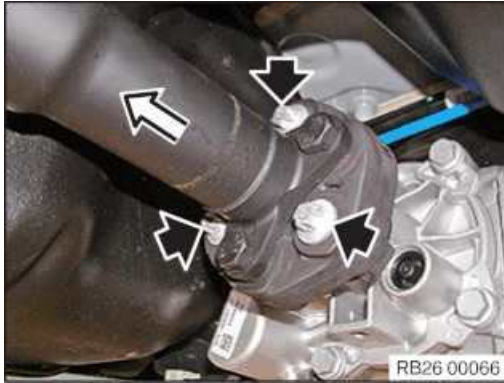
TECHNICAL INFORMATION

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

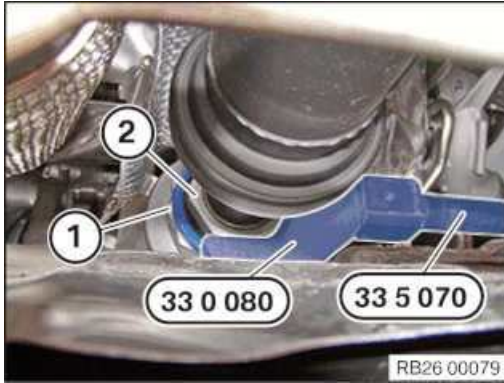
- Mark the installation position of the screw connection (1), the flexible disc (2) and the three-hole flange (3) on the same level.
- Loosen the screw connection (1).



- Loosen screws (1).



- Remove screws (arrows).
- Guide the propeller shaft out in the direction of the arrow and set it aside.

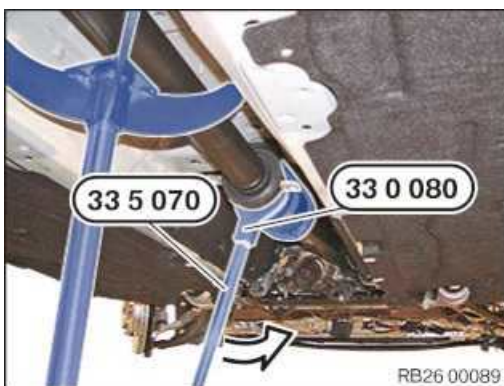


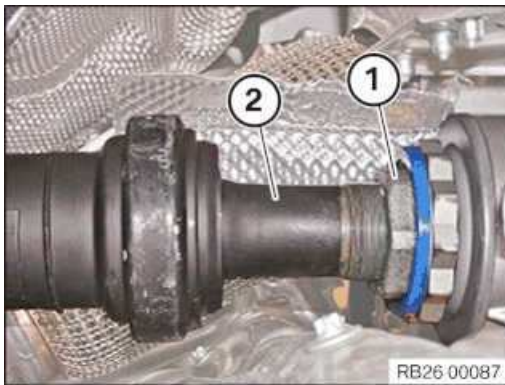
RISK OF DAMAGE

Damage to the transfer box.

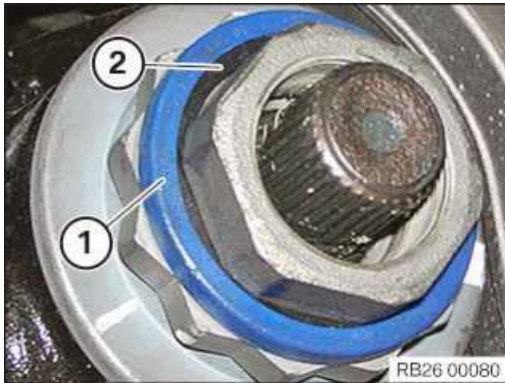
Non-observance of the removal and installation guidelines may cause severe damage to the transfer box.

- Do not use the double hexagon head flange nut as counter support.
- Protect the recessed nut (2) on the transfer box from twisting with the special tools **0 495 554 (33 5 070)** and .
The recessed nut (2) on the transfer box must **not** be used to detach the propeller shaft.
The double hexagon flange nut (1) must **not** be used for counter support.
- Release the front propeller shaft with the special tools **0 495 554 (33 5 070)** and in the direction of the arrow.

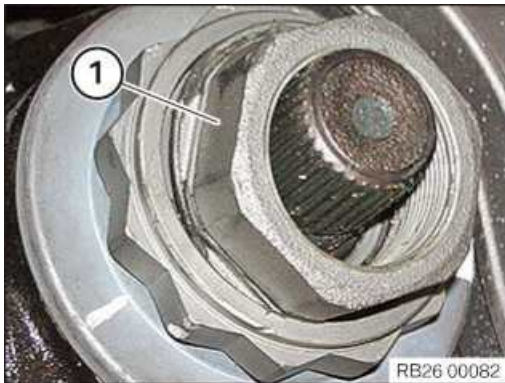




- Thread the propeller shaft (2) out of the recessed nut (1) and remove.



- Thread the retaining clip (1) and the seal (2) out and remove.



- Thread out and remove the recessed nut (1).

9 – Removing the wheel



- If several wheels are removed simultaneously: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
 - Unscrew the wheel bolts (arrows) and remove the wheel.
- Use the matching adapter from tool set (wheel bolt adapter set) to loosen and tighten down the wheel bolt with security code.

10 – Removing the front right wheel arch cover

- Remove the front wheel arch trim



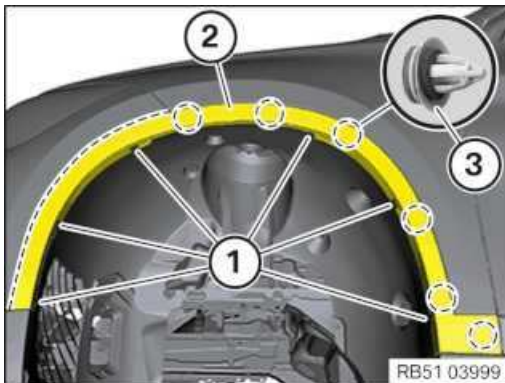
NOTICE

To provide a better overview: Schematic diagram with partially hidden components.

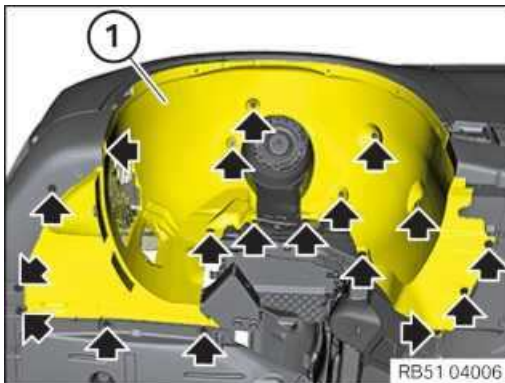


NOTICE

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



- Remove the blind rivets (1).
- Release the wheel arch trim (2) in the area of the side panel from the clips (3).
- Release the wheel arch trim (2) from the latch mechanisms on the bumper and remove.

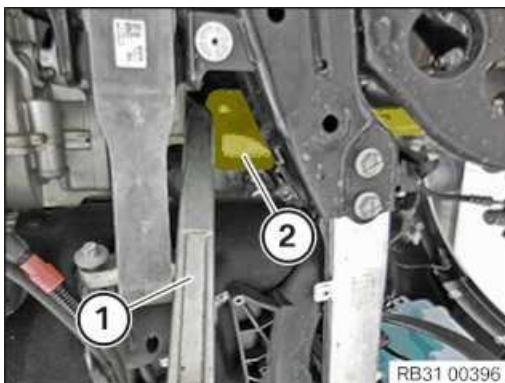


NOTICE

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

- Unscrew all bolts and nuts (arrows).
- Guide the wheel arch cover (1) out.

11 – Partially removing right output shaft



- Lever out the output shaft (2) with a mounting lever (1).
- Tie up output shaft (1).

12 – Removing starter motor



WARNING

Hot surfaces.

Risk of burning!

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



WARNING

Working on 12 V vehicle electrical system.

Risk of short circuits! Risk of fire!

- Detach battery earth lead from battery.
- For additional batteries: Detach all battery earth leads from additional batteries.



RISK OF DAMAGE



Electrostatic discharge.

Damage to or destruction of electrical components.

- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the housings of electrical components. Do not touch pins or multi-pin connectors directly.
- Wear electrically conductive clothing and antistatic shoes (with ESD symbol).
- For additional information see: 61 35 Information on electrostatic discharge (ESD) protection.



- Unlock and loosen connector (1).
- Detach the sealing cap (2) in the direction of the arrow.
- Feed out and remove the sealing cap (2).

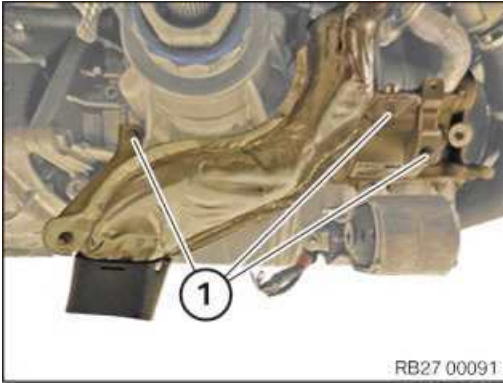


- Unfasten nut (1).
- Feed out the positive battery cable (2) of the starter motor and set it aside.

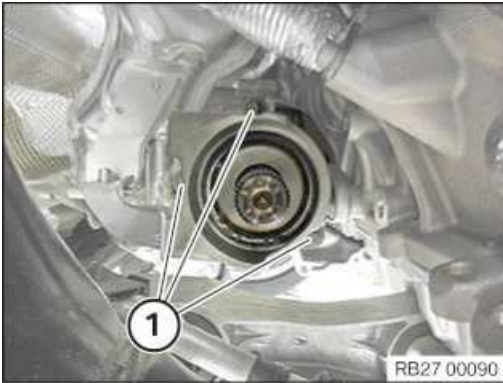


- Loosen screws (1).
- Feed out starter motor and remove.

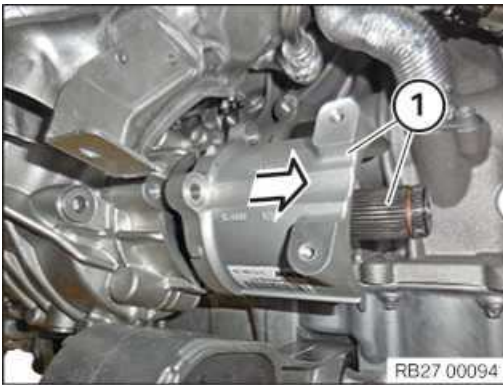
13 – Remove the intermediate shaft with the support tube



- With air duct installation: Loosen screws (1).
- Remove air duct



- Loosen screws (1).



- Pull the intermediate shaft with the support tube (1) out of the transfer box.

14 – Remove bracket with rubber mount

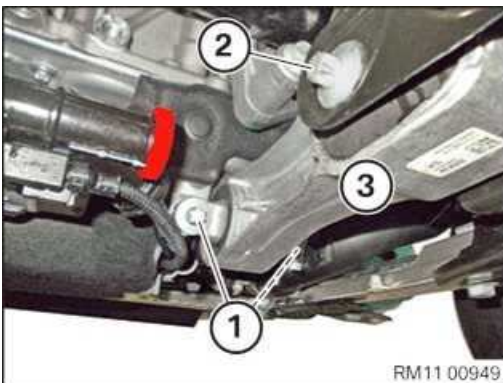


WARNING

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

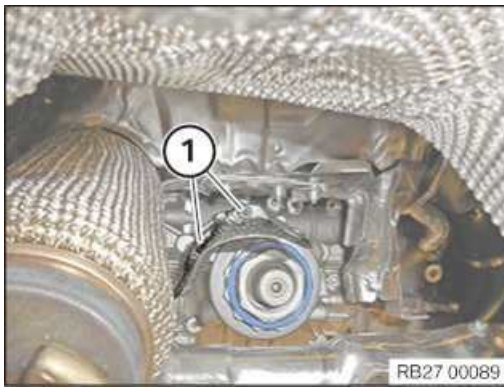
Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.

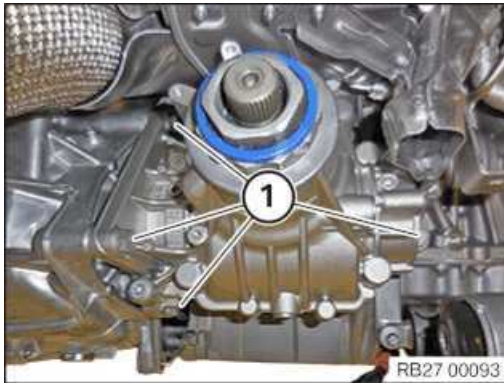


- Support the engine with the jack at a suitable point.
- Loosen screws (1) and (2).
- Guide out and remove holder (3).

15 – Remove transfer box (VTG)



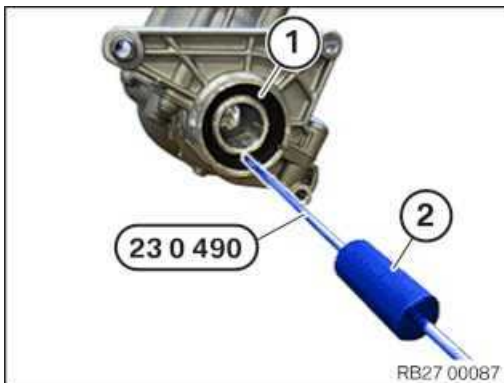
- Loosen screws (1).
- Remove heat shield.



- Loosen screws (1).
- Remove the transfer box (VTG).

MAIN WORK

16 – Removing radial shaft seal for left connecting shaft



TECHNICAL INFORMATION

Do not use a drill.
Swarf may damage the transmission and result in a failure of the transmission.

- Drive a hole into the radial shaft seal (1) with a centre punch.
- Screw the special tool **0 491 454 (23 0 490)** into the radial shaft seal (1).
- Drive out the radial shaft seal (1) with the impact weight (2).

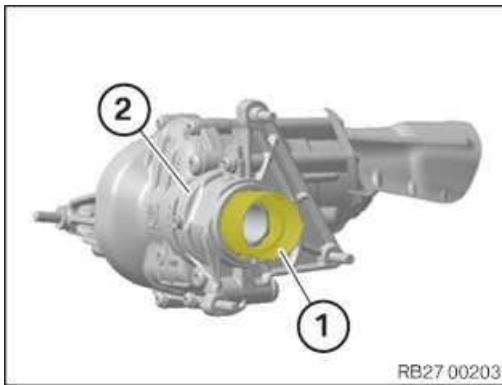
17 – Installing radial shaft seal for left connecting shaft



- Apply oil to sealing lip of new radial shaft seal.
- Drive in the radial shaft seal up to the limit position using special tool .

POSTPROCESSES

18 – Install the transfer box (VTG)



- If intermediate shaft (1) gets caught on transfer box (VTG) (2), renew intermediate shaft (1) and the radial shaft seals in the automatic or manual transmission.



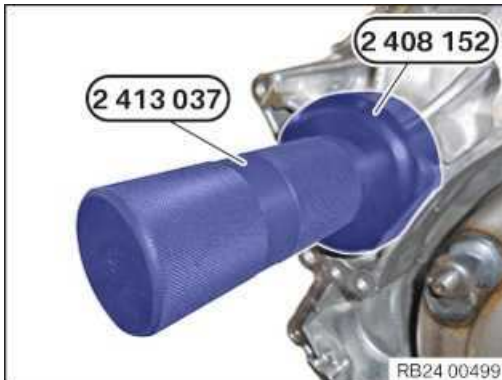
- Screw special tool **2 409 025** into the outer radial shaft seal.
- Turn the screw on the special tool **2 409 025** until the outer radial shaft seal has been pulled out.



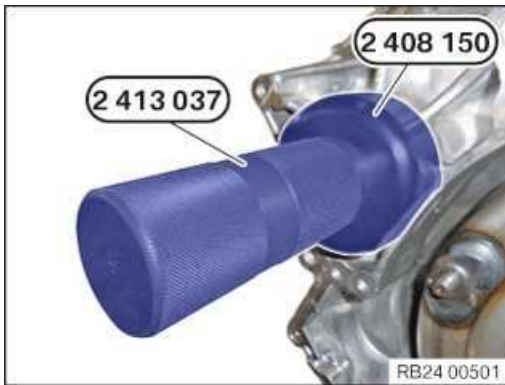
- Insert special tool **2 411 739** into the inner radial shaft seal.



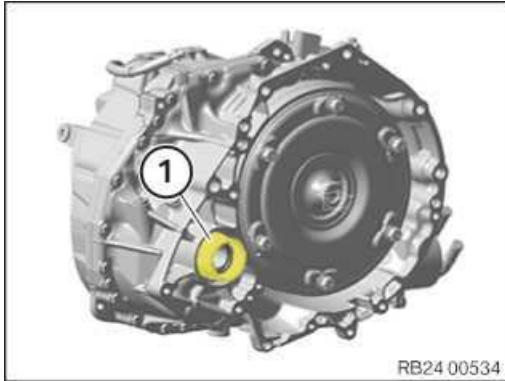
- Screw special tool **2 411 739** into the inner radial shaft seal.
- Turn the screw on the special tool **2 411 739** until the inner radial shaft seal has been pulled out.



- Drive in the inner radial shaft seal using special tools **2 408 152** and **2 413 037** up to the limit position.



- Drive in the outer radial shaft seal using special tools **2 413 037** and **2 408 150** up to the limit position.



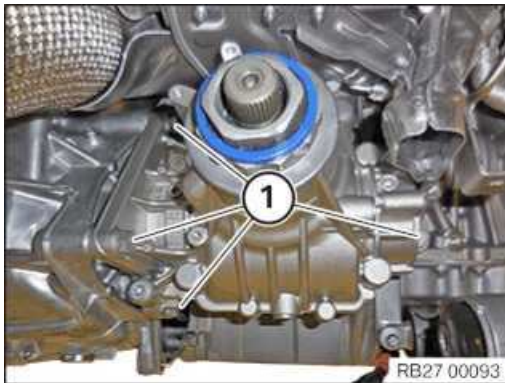
- If necessary, connect the new intermediate shaft (1) to the output flange of the automatic transmission or manual transmission.



- Coat the inside of the output flange (arrows) evenly with approx. 5 g of grease.

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754
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- Install the transfer box (VTG).
- Tighten the screws (1).

Transfer box to transmission

M10		Tightening torque	56 Nm
-----	--	----------------------	-------



- Install heat shield.
 - Renew screws (1).
- Parts:** Bolts
- Tighten the screws (1).

Heat shield to transfer box

M6	Renew screws.	Tightening torque	6 Nm
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► Check the transfer box oil level



RISK OF DAMAGE

Damage to the transmission.

Damage to the transmission through unapproved transmission oil.

- Use only the approved transmission oil.
- After completion of repair work, check transmission oil level.



- Check transfer case oil level, correct:
- Open the oil filler plug (1).
- Check transfer box oil level.
- If necessary, top up transmission oil up to the lower edge of the oil filler plug opening (1).

Transmission oil

Technically suitable transfer box and electrical transmission oils

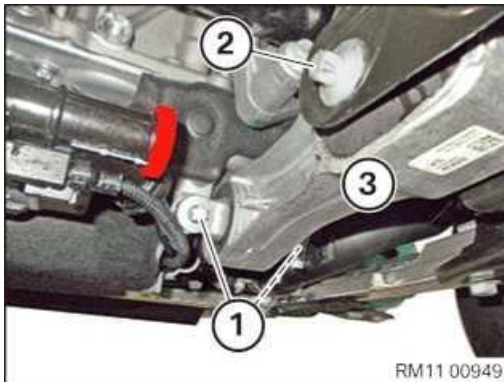
[Main group 27](#)

- Tighten the oil filler plug (1).

Oil filler plug on transfer box (VTG)

M18x1.5		Tightening torque	35 Nm
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19 – Install the holder with the rubber mount



- Insert and install the holder (3).
- Tighten the screws (1) and (2) hand-tight.
- Release jack.
- Tighten down screw (2).

Holder to front axle support

M12		Tightening torque	100 Nm
-----	--	-------------------	--------

- Tighten the screws (1).

Bracket to oil sump

M12		Tightening torque	100 Nm
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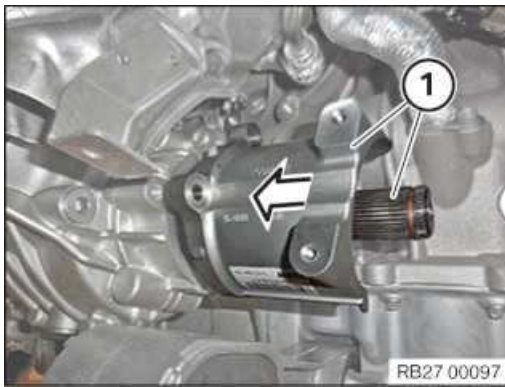
20 – Install the intermediate shaft with the support tube



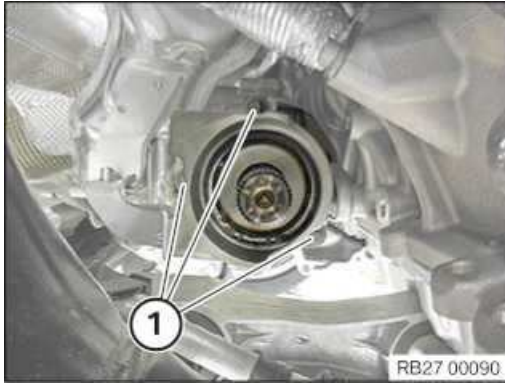
- Coat gearing of the intermediate shaft uniformly with 5 g of grease.

Expendable materials

Lubricating grease Optitemp HT 1 LF	50 g, Tube	83230417754
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- Install the intermediate shaft with support tube (1) in the transfer box.



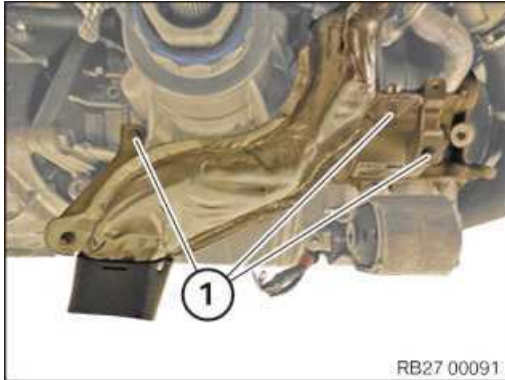
- Position screws (1).

Note: Check for correct screw length! Bolt M8x35 8.8

- Tighten the screws (1).

Intermediate shaft to transfer box

M8x35		Tightening torque	19 Nm
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- If installed: Install air duct.
- Tighten the screws (1).

21 – Installing starter motor



CAUTION

Improper routing of the positive battery cable.

Risk of short circuits!

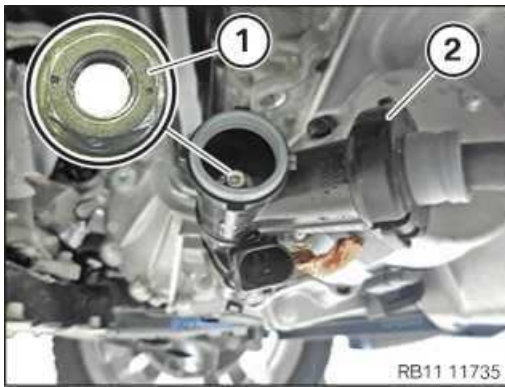
- Route the positive battery cable without abrasions and do not trap.



- Insert and install the starter motor .
- Tighten the screws (1).

Starter motor to transmission

M8x45		Tightening torque	19 Nm
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- Feed the positive battery cable (2) in on the starter and install.
- Tighten nut (1).

Battery positive lead to starter

M8		Tightening torque	13,5 Nm
----	--	-------------------	---------



- Insert and install the new sealing cap (2).
- Secure the sealing cap (2) in the direction of the arrow.
- Connect and lock the connector (1).
- Make sure the connector (1) engages audibly.

22 – Installing right output shaft partially



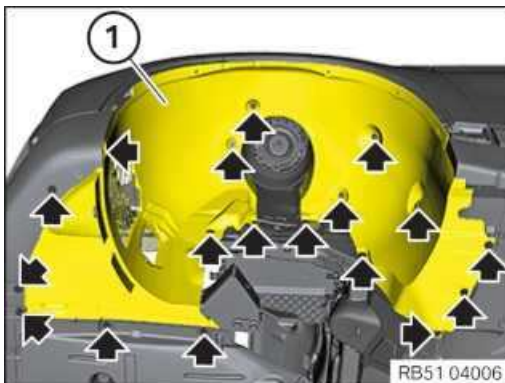
- Renew the circlip (1).
- Parts:** Circlip
- Slide output shaft into the transmission as far as the limit position.
 - Check for secure seat by levering.

23 – Installing the front right wheel arch cover



NOTICE

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



- Guide the wheel arch cover (1) in.
- Tighten all bolts and nuts (arrows).

Wheel arch cover to body

Screw		Tightening torque	2,5 Nm
-------	--	-------------------	--------

Wheel arch cover to body

Plastic nut		Tightening torque	3 Nm
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► Installing front wheel arch trim



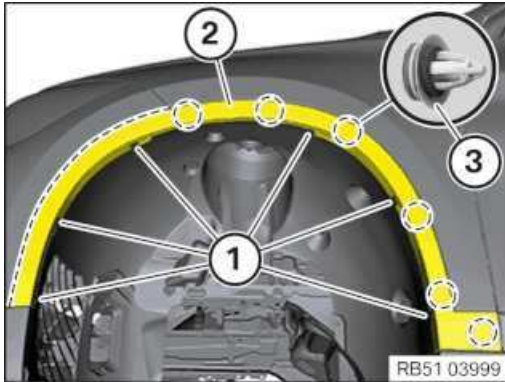
NOTICE

To provide a better overview: Schematic diagram with partially hidden components.



NOTICE

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



- Check the clips (3) for damage and renew where required.
The clips (3) must not be damaged or missing.
- Feed in wheel arch trim (2) and engage on the clips (3).
- Engage wheel arch trim (2) into the latch mechanisms on the bumper panel.
- Mount blind rivet (1) using the special tool **0 496 521 (00 2 230)**.

24 – Mounting the wheel



► Clean the contact surfaces between the brake disc and the wheel rim

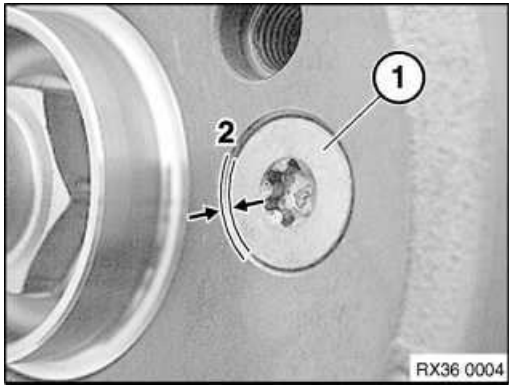


TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool **2 344 011**.
Do not operate special tool **2 344 011** with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool **2 344 011**.
Do not operate special tool **2 344 011** with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).





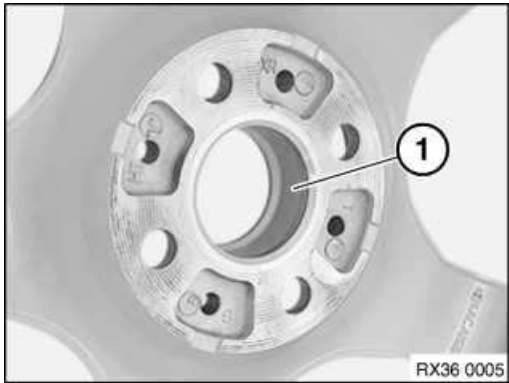
- Renew mounting bolt (1).
- Parts:** Mounting bolt
- Check that the mounting bolt (1) for the brake disc is securely seated.
- The mounting bolt (1) for the brake disc may not protrude under any circumstances on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm
----	--------------	-------------------	-------

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm
----	--------------	-------------------	-------



- Lightly grease the wheel centring (1) in the wheel rim; refer to additional information for grease for the wheel centring (1).



TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew corroded wheel bolts.

Parts: Wheel bolts

- Clean the wheel bolts.
- Check the wheel bolts and threads for damage, renew the wheel bolts if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M 14/AF 17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Check	140 Nm

25 – Install propeller shaft.



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.



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 minimum hardening time of two hours after having screwed in the recessed nut. The hardening time may be longer at lower temperatures.

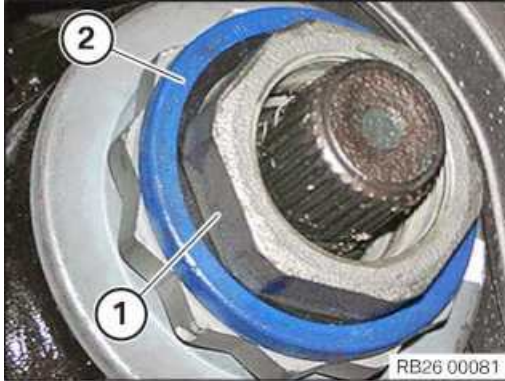


RISK OF DAMAGE

Damage to the transfer box.

Non-observance of the removal and installation guidelines may cause severe damage to the transfer box.

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



- Renew recessed nut (1).

Parts: Insert nut

- Renew the retaining clip (2) and the seal.

Parts: Retaining clip, seal

- Insert the seal with the recessed nut (1) and install.
- Insert the retaining clip (2) and install.
- Make sure that recessed nut (1) is screwed in within 5 min.
- Make sure that the hardening time of **minimum** 2 h for the recessed nut is observed.

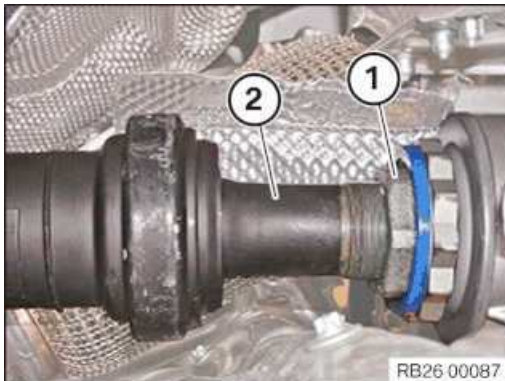
The hardening time must be extended at lower temperatures.



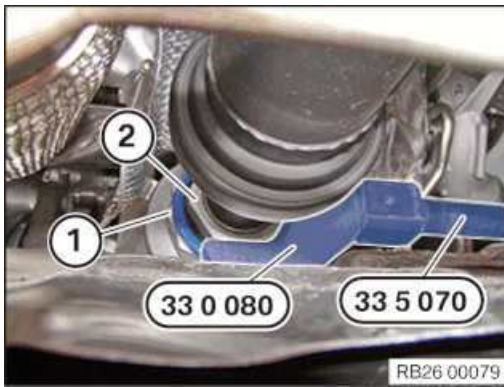
- Insert the propeller shaft (1) and install.
- Always support the propeller shaft (1) with a conventional jack.



- Hand-tighten the bolts (1).



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



RISK OF DAMAGE

Damage to the transfer box.

Non-observance of the removal and installation guidelines may cause severe damage to the transfer box.

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

- Protect the recessed nut (2) on the transfer box from twisting with the special tools **0 495 554 (33 5 070)** and .

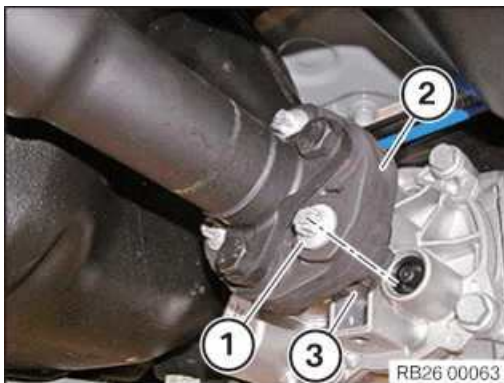
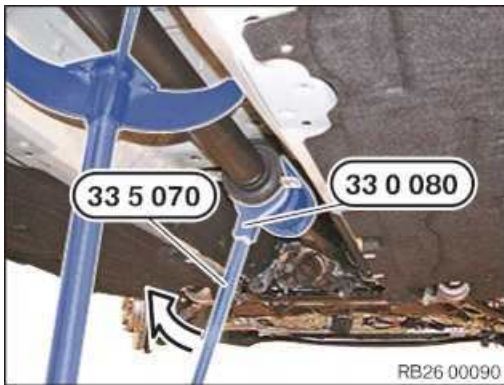
The recessed nut (2) on the transfer box must **not** be used to tighten the propeller shaft.

The double hexagon flange nut (1) must **not** be used for counter support.

- Tighten the front propeller shaft with the special tools **0 495 554 (33 5 070)** and in the direction of the arrow.

Propeller shaft to transfer box

		Tightening torque	80 Nm
--	--	-------------------	-------



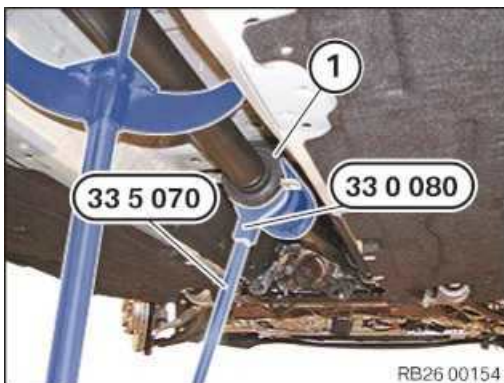
TECHNICAL INFORMATION

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

- Assemble the screw connection (1) of the flexible disc (2) and the three-hole flange (3) according to the mark.
- Renew screws (1).

Parts: Bolts

- Hand-tighten the bolts (1).
- Protect the propeller shaft (1) with the special tools **0 495 554 (33 5 070)** and from twisting.





- Tighten the bolts with the special tools **0 490 504 (00 9 120)** and .

Flexible disc to rear axle final drive

M12x1.5	Renew screws.	Tightening torque	55 Nm
			90 °



- Tighten the screws (1).

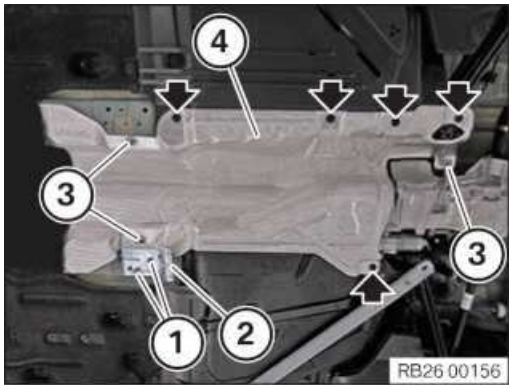
Centre mount to body

M8		Tightening torque	19 Nm
----	--	-------------------	-------



- Guide the special tool out between the front and rear propeller shaft and remove.

26 – Installing the rear heat shield



- Insert and install the heat shield (4).
- Tighten screws (arrows).

Heat shield to body

Bolts/nut		Tightening torque	3 Nm
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- Tighten nuts (3).

Heat shield to body

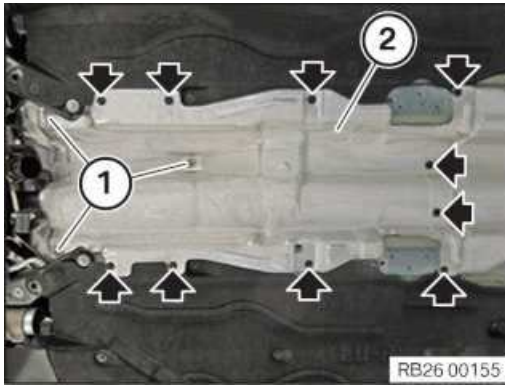
Bolts/nut		Tightening torque	3 Nm
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- Insert and install the holder (2).
- Tighten the screws (1).

Bracket to body

M8		Tightening torque	21 Nm
----	--	-------------------	-------

27 – Install the front heat shield



- Insert and install the heat shield (2).
- Tighten screws (arrows).

Heat shield to body

Bolts/nut		Tightening torque	3 Nm
-----------	--	-------------------	------

- Tighten nuts (1).

Heat shield to body

Bolts/nut		Tightening torque	3 Nm
-----------	--	-------------------	------

28 – Install 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.

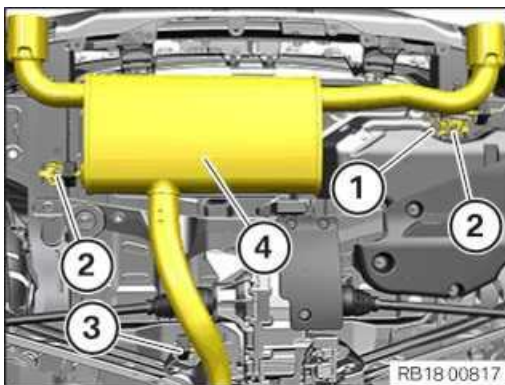


CAUTION

Heavy component.

Heavy components can lead to injury or damage.

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



- Feed in and install the exhaust system (4) with a second person.
- Renew nuts (2).

Parts: Nuts

- Tighten nuts (2).

Exhaust system to body

M8	Replace nuts.	Tightening torque	19 Nm
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- Tighten down screw (1).

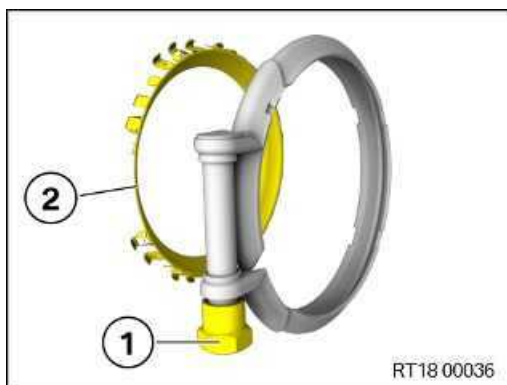
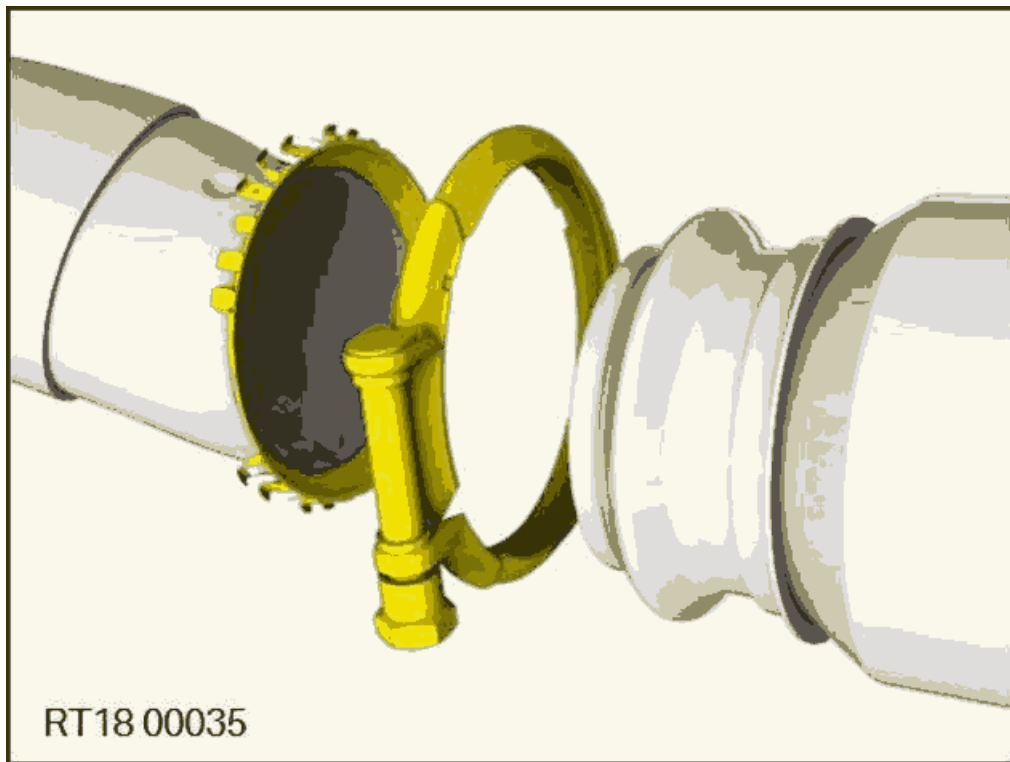
Exhaust bracket on body

Hexagon screw M8x30		Tightening torque	19 Nm
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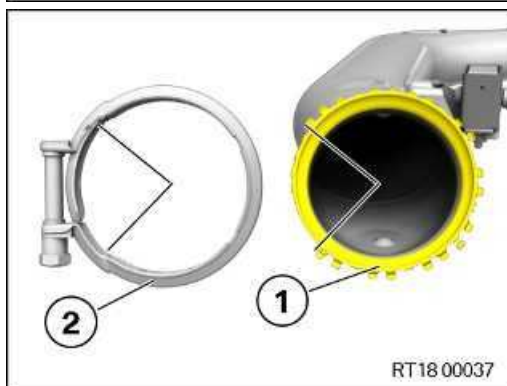
- Check the rubber mount (3) for damage and renew as needed.
- Mount rubber mount (3) on the exhaust system (4).

► **Install the V-clip**

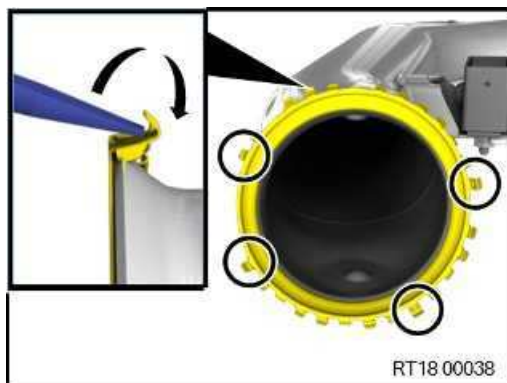
V-band clamp



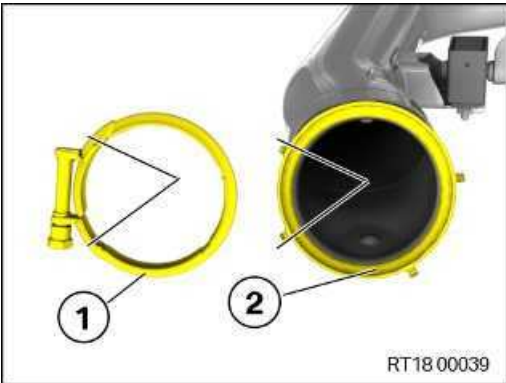
- Unscrew the nut (1) and remove the sealing ring (2).



- Renew the V-clip (2).
- **Parts:** V-band clamp
- Mount the sealing ring (1) on the exhaust system.
- Ensure that the sealing ring (1) for the V-clip (2) is positioned correctly.



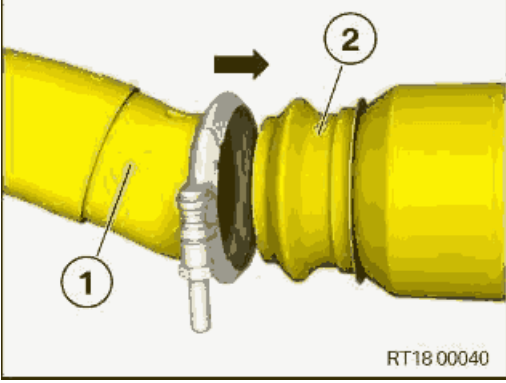
- Bend all sheet metal tabs over with a suitable tool, except those in the marked areas.



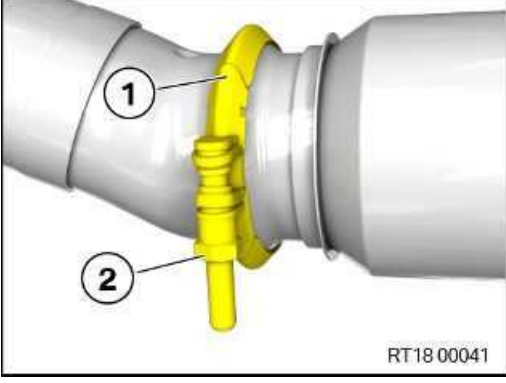
- Mount the V-clip (1) on the sealing ring (2).
- Make sure that the V-clip (1) is positioned correctly on the sealing ring (2).



- Make sure that the V-clip rests against the sheet metal tabs after mounting (marks).



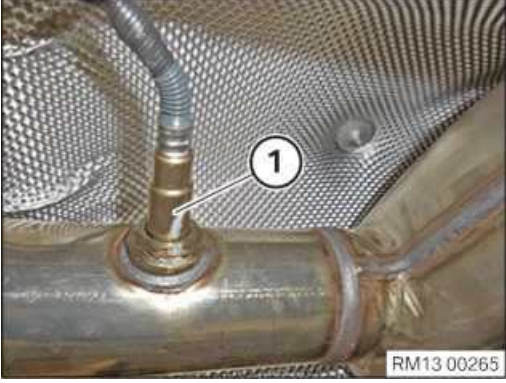
- Connect the exhaust system (1) with the catalytic converter (2) and position correctly.



- Make sure that V-clip (1) is fitted correctly.
- Tighten down screw (2).

V-clip to catalytic converter

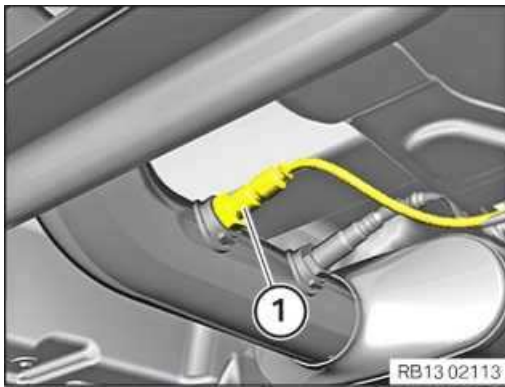
V-band clamp	Renew V-band clamp.	Tightening torque	22 Nm
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- Feed in, install and tighten diesel particulate sensor (1).

Diesel particulate sensor to exhaust system

Sensor		Tightening torque	50 Nm
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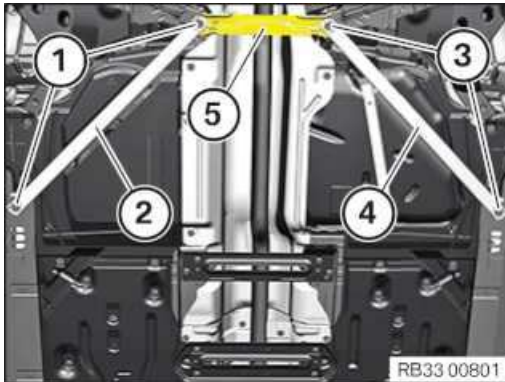


- Feed in, install and tighten nitrogen oxide sensor (1).

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	50 Nm
--------	--	-------------------	-------

29 – Install the cross-member with torsion struts



- Insert and install the cross-member (5).
- Thread in torsion strut (4) at right and install.
- Renew screws (3).

Parts: Bolts

- Tighten down screws (3).

Cross-member/torsion strut to axle support and mounting

M12x48	Renew screws.	Jointing torque	100 Nm
		Angle of rotation	90 °

- Guide in and install the left torsion strut (2).
- Renew screws (1).

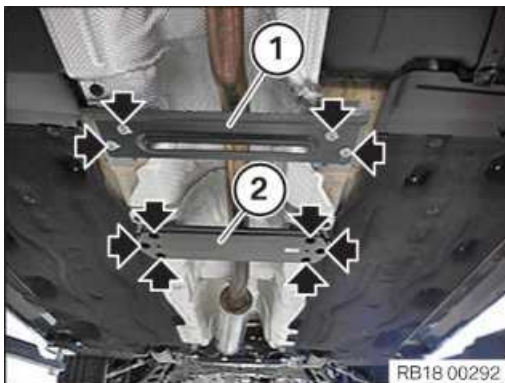
Parts: Bolts

- Tighten the screws (1).

Cross-member/torsion strut to axle support and mounting

M12x48	Renew screws.	Jointing torque	100 Nm
		Angle of rotation	90 °

30 – Install the connecting support on the tunnel in front and back



- Insert and install connecting supports (2).
- Tighten the screws (arrows) from the connecting support (2).

Front connection carrier to body

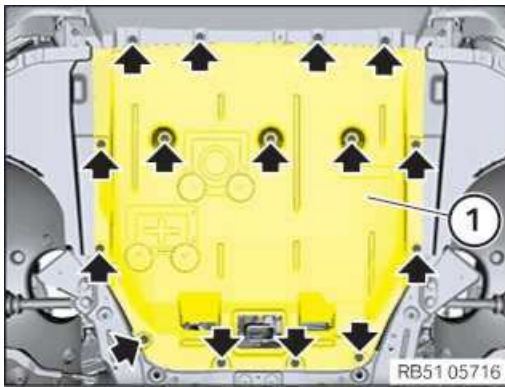
M10x18		Tightening torque	56 Nm
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- Insert and install connecting supports (1).
- Tighten the screws (arrows) from the connecting support (1).

Rear connection carrier to body

M8x18		Tightening torque	28 Nm
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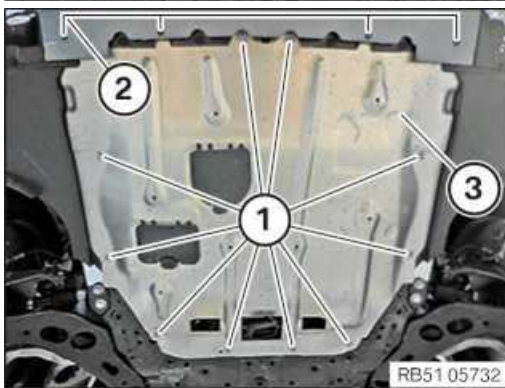
31 – Installing the front underbody protection



- Guide the front underbody protection (1) in under the bumper panel and position it at the screw points.
- Tighten screws (arrows).

Underbody protection front

Screw for thermoplastic plastic		Tightening torque	2,6 Nm
Hexagon screw M6x20		Tightening torque	8 Nm

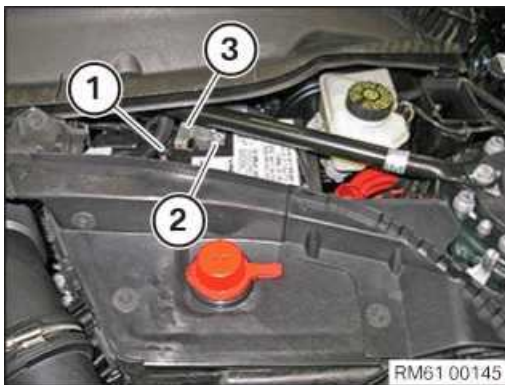


- **Equipment specification with metal underride guard:**
- Guide in and attach the underride guard (3).
- Tighten down screws (1) and (2).

Underbody protection front

Screw for thermoplastic plastic		Tightening torque	2,6 Nm
Hexagon screw M6x20		Tightening torque	8 Nm

32 – Connecting the battery earth lead



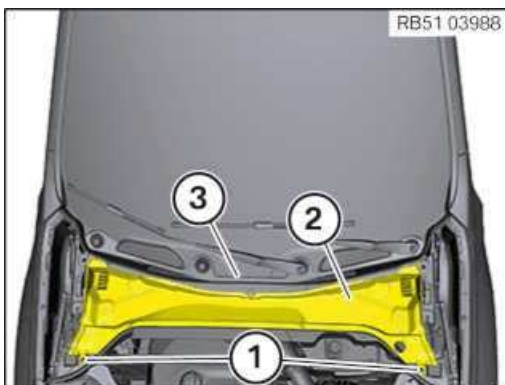
- Mount battery earth lead (3) on the negative battery terminal.
- Tighten nut (2).

Battery terminal with IBS positive battery terminal / negative battery terminal

NutM6			5 Nm
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- Connect the connector (1) to the IBS and lock it audibly.

► Installing front cowl panel cover



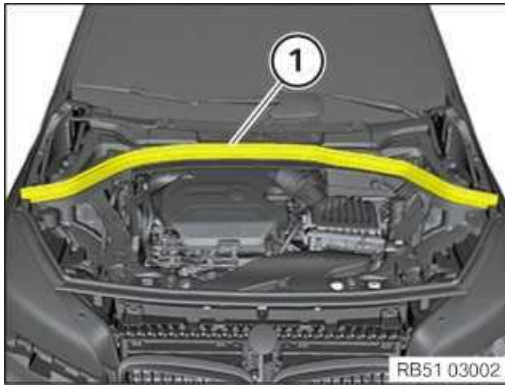
- Insert and install cowl panel cover at front (2) into cowl panel cover at rear (3).
- Check cowl panel cover at front is correctly seated (2).
- Secure expanding rivet (1).

► Install the seal for the bonnet



NOTICE

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



- Install bonnet seal at rear (1).
- Ensure that the rear bonnet seal (1) is fitted correctly.

Additional Information

Overview of Tightening Torques

Transfer box to transmission				Used in step	18
M10		Tightening torque	56 Nm		
Heat shield to transfer box				Used in step	18
M6	Renew screws.	Tightening torque	6 Nm		
Oil filler plug on transfer box (VTG)				Used in step	18
M18x1.5		Tightening torque	35 Nm		
Holder to front axle support				Used in step	19
M12		Tightening torque	100 Nm		
Bracket to oil sump				Used in step	19
M12		Tightening torque	100 Nm		
Intermediate shaft to transfer box				Used in step	20
M8x35		Tightening torque	19 Nm		
Starter motor to transmission				Used in step	21
M8x45		Tightening torque	19 Nm		
Battery positive lead to starter				Used in step	21
M8		Tightening torque	13,5 Nm		
Wheel arch cover to body				Used in step	23
Screw		Tightening torque	2,5 Nm		
Wheel arch cover to body				Used in step	23
Plastic nut		Tightening torque	3 Nm		
Brake disc to rear wheel hub				Used in step	24
M8	Renew screw.	Tightening torque	16 Nm		
Brake disc to front wheel hub				Used in step	24
M8	Renew screw.	Tightening torque	16 Nm		

Wheel boltsUsed in step [24](#)

M 14/AF 17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.	Check	140 Nm
	Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.		

Propeller shaft to transfer boxUsed in step [25](#)

		Tightening torque	80 Nm
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Flexible disc to rear axle final driveUsed in step [25](#)

M12x1.5	Renew screws.	Tightening torque	55 Nm 90 °
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Centre mount to bodyUsed in step [25](#)

M8		Tightening torque	19 Nm
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Heat shield to bodyUsed in step [26](#) [27](#)

Bolts/nut		Tightening torque	3 Nm
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Bracket to bodyUsed in step [26](#)

M8		Tightening torque	21 Nm
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Exhaust system to bodyUsed in step [28](#)

M8	Replace nuts.	Tightening torque	19 Nm
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Exhaust bracket on bodyUsed in step [28](#)

Hexagon screw M8x30		Tightening torque	19 Nm
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V-clip to catalytic converterUsed in step [28](#)

V-band clamp	Renew V-band clamp.	Tightening torque	22 Nm
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Diesel particulate sensor to exhaust systemUsed in step [28](#)

Sensor		Tightening torque	50 Nm
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Nitrogen oxide sensor downstream of SCR catalytic converterUsed in step [28](#)

Sensor		Tightening torque	50 Nm
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Cross-member/torsion strut to axle support and mountingUsed in step [29](#)

M12x48	Renew screws.	Jointing torque	100 Nm
		Angle of rotation	90 °

Front connection carrier to bodyUsed in step [30](#)

M10x18		Tightening torque	56 Nm
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Rear connection carrier to bodyUsed in step [30](#)

M8x18		Tightening torque	28 Nm
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Underbody protection front

Used in step 31

Screw for thermoplastic plastic		Tightening torque	2,6 Nm
Hexagon screw M6x20		Tightening torque	8 Nm

Battery terminal with IBS positive battery terminal / negative battery terminal

Used in step 32

NutM6			5 Nm
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Overview of Special Tools

0 495 554 (33 5 070) Extension



Common

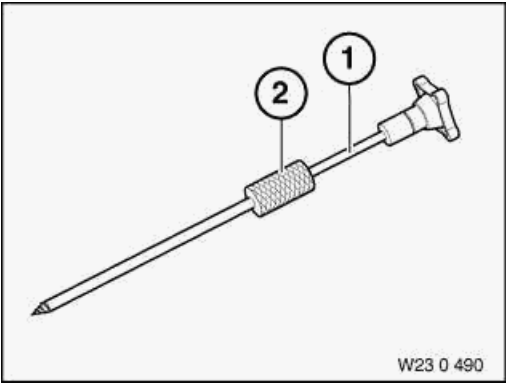
Used in step 8 25

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	

0 491 454 (23 0 490) Puller



Common

Used in step 16

Usage	For removing shaft seal
Included in the tool or work	
Storage location	A13
Replaced by	
In connection with	
SI-Number	01 15 96 (106)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 491 455 (23 0 491)		Rod With self-tapping screw Deletion, only available via tool set	
2	0 491 456 (23 0 492)		Weight (Weight)	

2 409 025 Puller



Common

Used in step 18

Usage	For disassembly of the outer radial shaft seal of the transmission output shaft, right. Contour-graphic silhouette foil is included in the delivery specification. Further information on the contour-graphic silhouette foil is included in service information 00 22 13 (969).
Included in the tool or work	
Storage location	A76
Replaced by	
In connection with	
SI-Number	01 53 14 (211)

2 411 739 Puller



Common

Used in step 18

Usage	For disassembly of the inner radial shaft seal of the output, right. Contour-graphic silhouette foil is included in the delivery specification. Further information on the contour-graphic silhouette foil is included in service information 00 22 13 (969).
Included in the tool or work	
Storage location	C78
Replaced by	
In connection with	
SI-Number	01 53 14 (211)

2 408 152 Striking element



Common

Used in step 18

Usage	For installation of the right radial shaft seal transmission output shaft (inner). Contour-graphic silhouette foil is included in the delivery specification. Further information on the contour-graphic silhouette foil is included in service information 00 22 13 (969).
Included in the tool or work	
Storage location	B78
Replaced by	
In connection with	2413037
SI-Number	01 53 14 (211)

2 413 037 Handle



Common

Used in step [18](#)

Usage	Universal drift handle. Contour-graphic silhouette foil is included in the delivery specification. Further information on the contour-graphic silhouette foil is included in service information 00 22 13 (969).
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Included in the tool or work

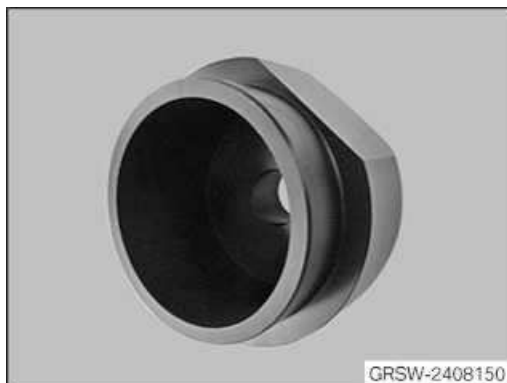
Storage location	C77
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Replaced by

In connection with

SI-Number	01 53 14 (211)
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2 408 150 Striking element



Common

Used in step [18](#)

Usage	For installing the right radial shaft seal transmission output shaft (outer). Contour-graphic silhouette foil is included in the delivery specification. Further information on the contour-graphic silhouette foil is included in service information 00 22 13 (969).
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Included in the tool or work

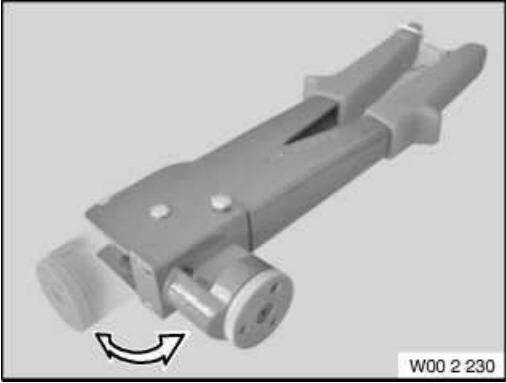
Storage location	B78
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Replaced by

In connection with	2413037
--------------------	---------

SI-Number	01 53 14 (211)
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0 496 521 (00 2 230) Pliers



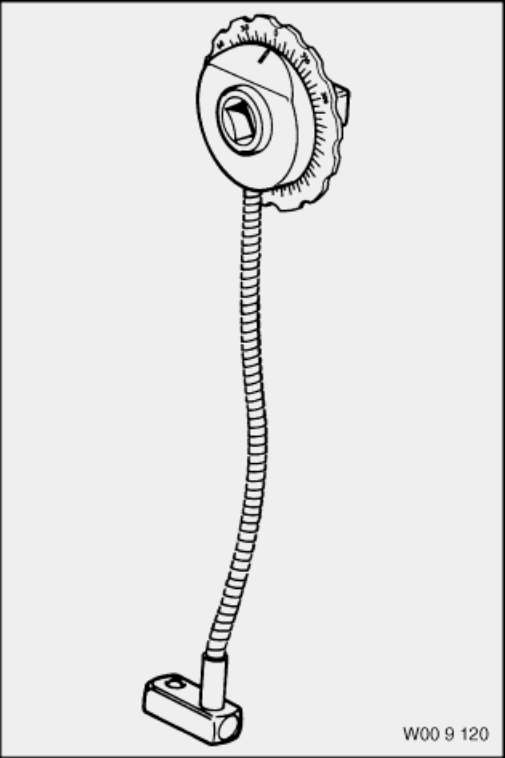
Common		Used in step	23
Usage	(Blind rivet pliers for plastic rivets) For shaft diameters of 3.5 mm, 3.9 mm and 4.5 mm		
Included in the tool or work			
Storage location	C25		
Replaced by			
In connection with			
SI-Number	01 17 08 (478)		

2 344 011 Tool



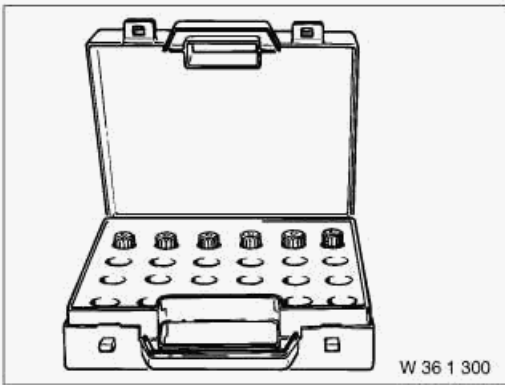
Common		Used in step	24
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.		
Included in the tool or work			
Storage location			
Replaced by			
In connection with			
SI-Number	08 08 12 (872)		

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



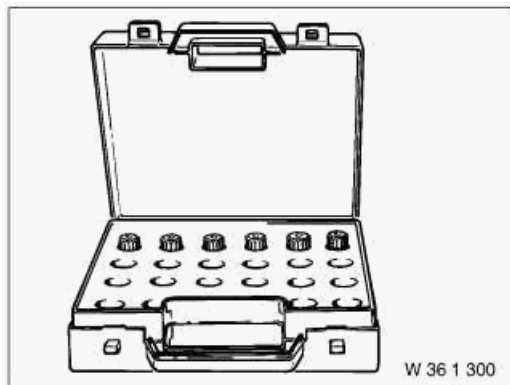
Common		Used in step	25
Usage	For torsion angle adjustment of cylinder head bolts (all engines) And reinforcement plate front axle support E46		
Included in the tool or work			
Storage location	A4		
Replaced by			
In connection with			
SI-Number			

Replacement tools:
0 495 221 (36 1 323) Wheel stud



Common		Used in step	9
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259		
Included in the tool or work	0 492 518		
Storage location			
Replaced by			
In connection with			
SI-Number			

0 495 224 (36 1 326) Wheel stud



Common

Used in step [9](#)

Usage (Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546

Included in the tool or work 0 492 518

Storage location

Replaced by

In connection with

SI-Number

0 495 225 (36 1 327) Wheel stud



Common

Used in step [9](#)

Usage (Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547

Included in the tool or work 0 492 518

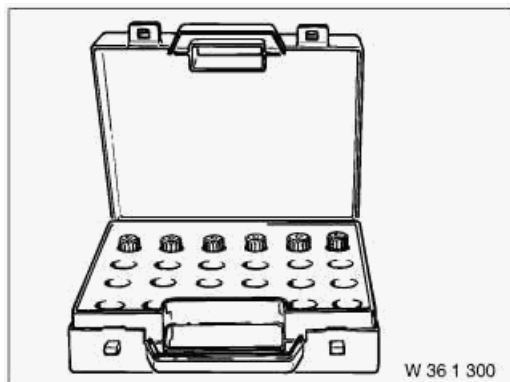
Storage location

Replaced by

In connection with

SI-Number

0 495 226 (36 1 328) Wheel stud



Common

Used in step [9](#)

Usage (Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340

Included in the tool or work 0 492 518

Storage location

Replaced by

In connection with

SI-Number

0 495 227 (36 1 329) Wheel stud



Common

Used in step [9](#)

Usage (Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341

Included in the tool or work 0 492 518

Storage location

Replaced by

In connection with

SI-Number

0 495 228 (36 1 331) Wheel stud



Common		Used in step	9
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342		
Included in the tool or work	0 492 518		
Storage location			
Replaced by			
In connection with			
SI-Number			

0 495 229 (36 1 332) Wheel stud



Common		Used in step	9
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343		
Included in the tool or work	0 492 518		
Storage location			
Replaced by			
In connection with			
SI-Number			

0 495 230 (36 1 333) Wheel stud



Common		Used in step	9
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344		
Included in the tool or work	0 492 518		
Storage location			
Replaced by			
In connection with			
SI-Number			

Links

Operating materials	Used in step
2.0 Grease for wheel centring	24

Operating materials	Used in step
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