18 00 018 Remove & install complete exhaust system

TECHNICAL INFORMATION

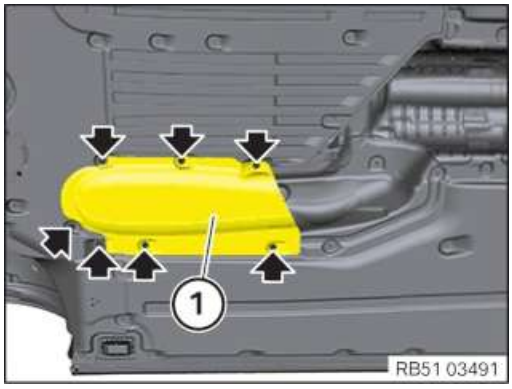
Mount the exhaust system in voltage-free state, maintaining the tightening sequence from the rear silencer towards the exhaust manifold.

PRELIMINARY WORK

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

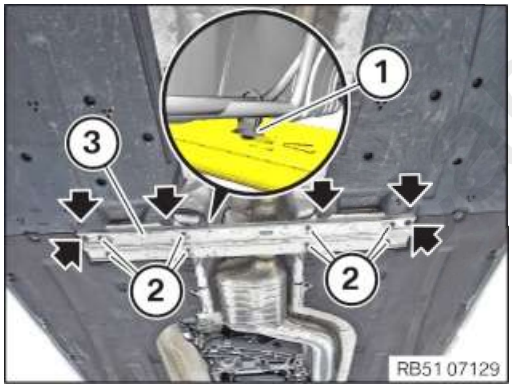
NOTICE

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



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

2 – Remove the connecting support from the tunnel



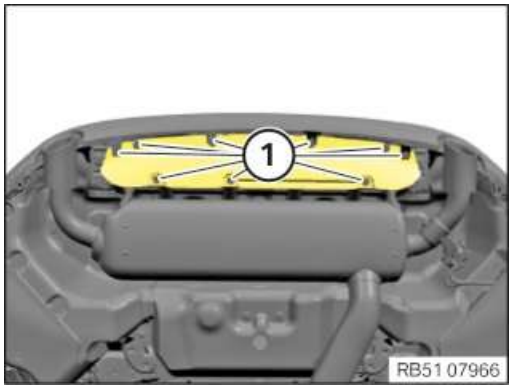
- Remove screws (arrows).

NOTICE

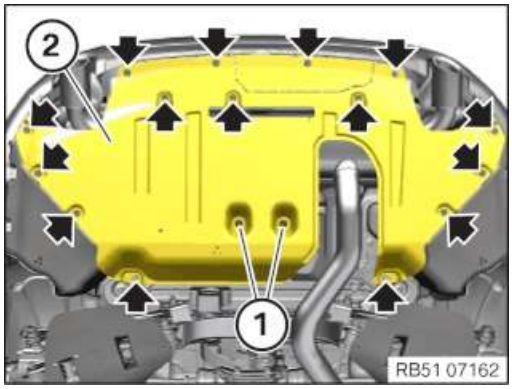
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

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

3 – Removing the rear diffuser



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



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

MAIN WORK

4 – Remove exhaust system

WARNING

Hot surfaces.

Risk of burning!

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

CAUTION

Component with heavy weight.

Danger of injury!

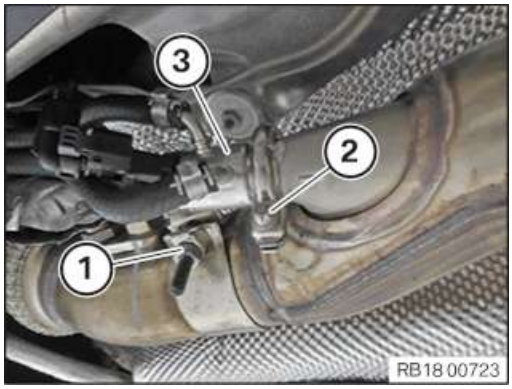
- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

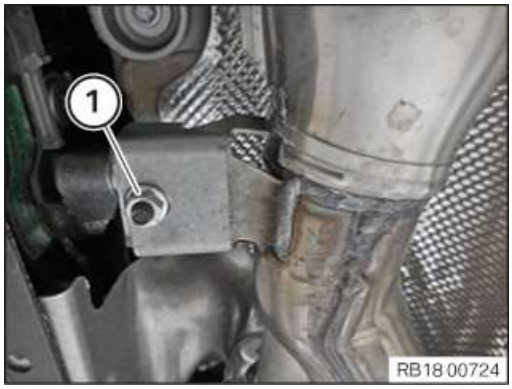
Heavy components can lead to injury or damage.

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

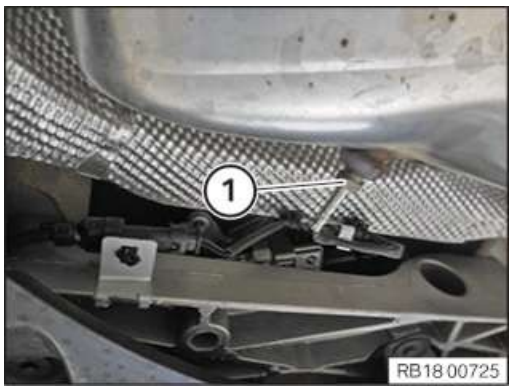


- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3)from the exhaust system and place to one side.

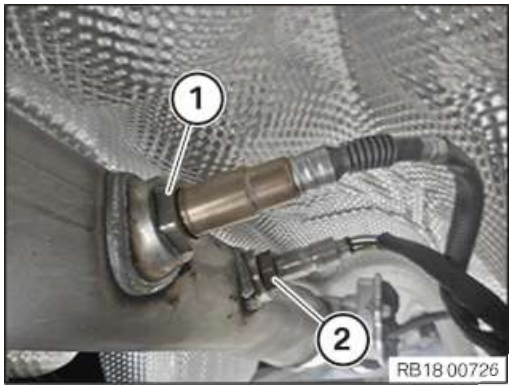
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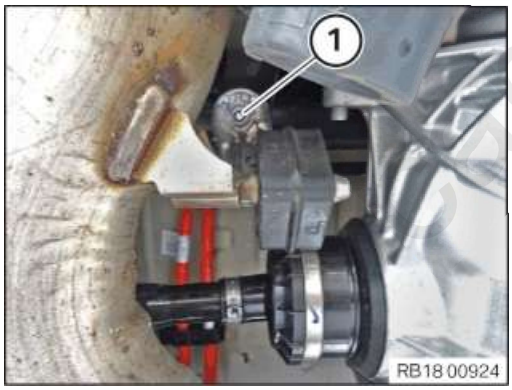
- Loosen nut (1).



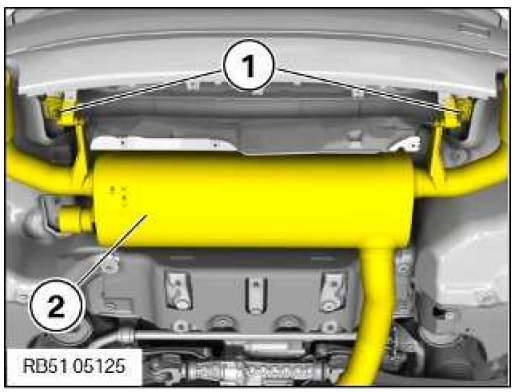
- Detach the exhaust temperature sensor (1) from the exhaust system.



- Release the diesel particulate sensor (1) from the exhaust system and place to one side.
- Release the nitrogen oxide sensor (2) from the exhaust system and place to one side.



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



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

5 – Installing the exhaust system

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CAUTION

Component with heavy weight.

Danger of injury!

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

CAUTION

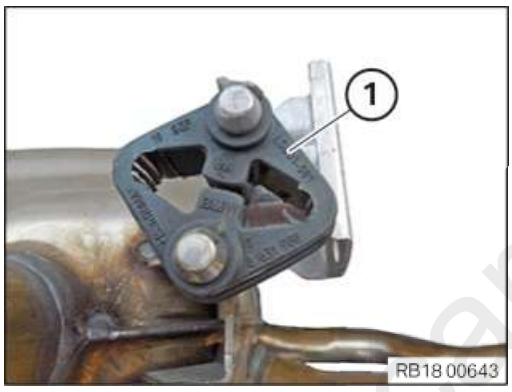
Heavy component.

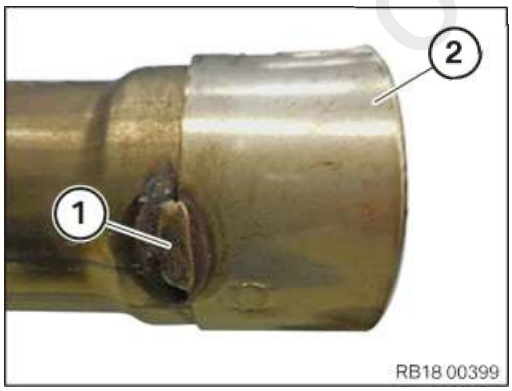
Heavy components can lead to injury or damage.

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

TECHNICAL INFORMATION

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





NOTICE

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

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

  Parts: Rubber mount

CAUTION

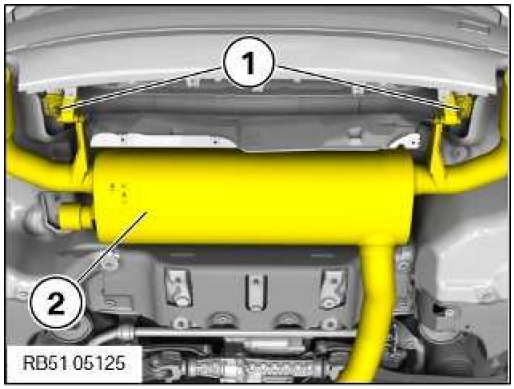
Swarf resulting from sawing or grinding components.

Danger of injury!

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

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

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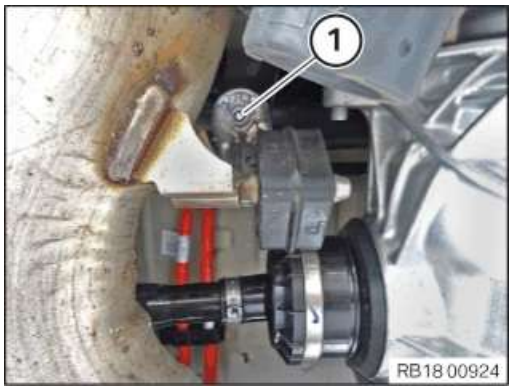


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

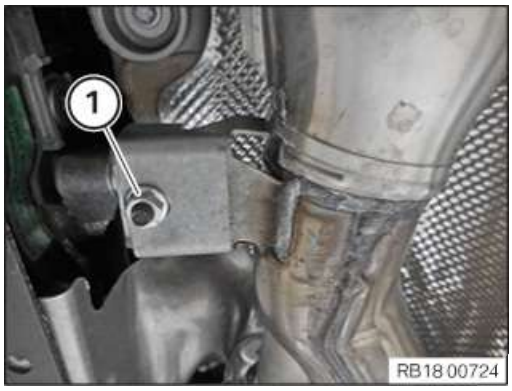


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

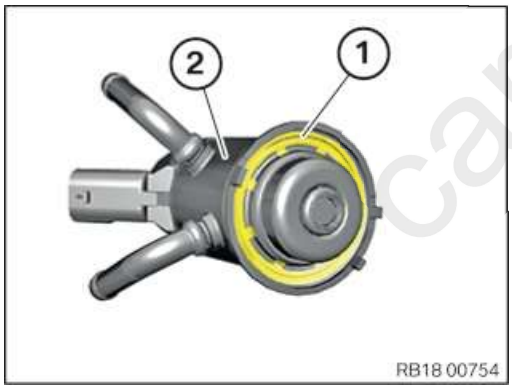
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

Exhaust system to transmission

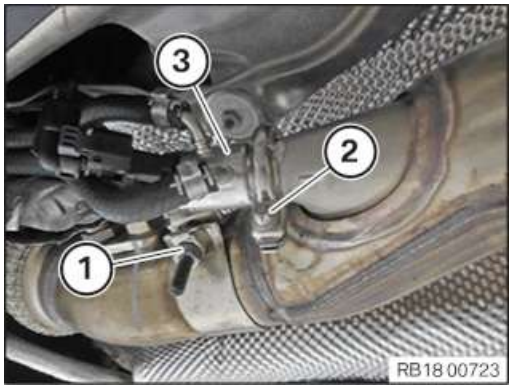
M8		Tightening torque	19 Nm



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

  Parts: Sealing ring

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- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

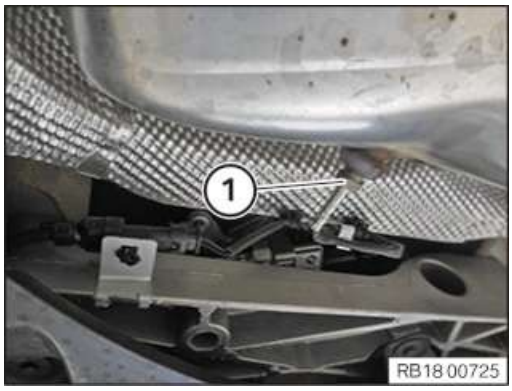
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

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

SCR metering module V-clip to exhaust system

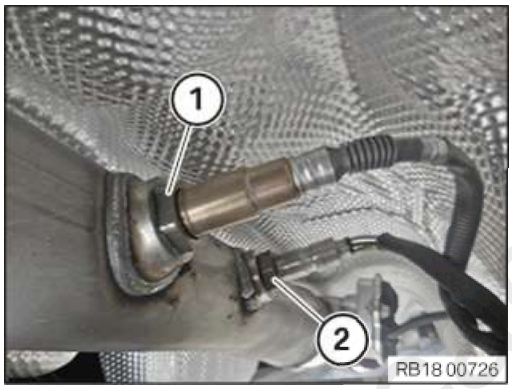
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm



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

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm



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

Diesel particulate sensor to exhaust system

Sensor		Tightening torque	50 Nm

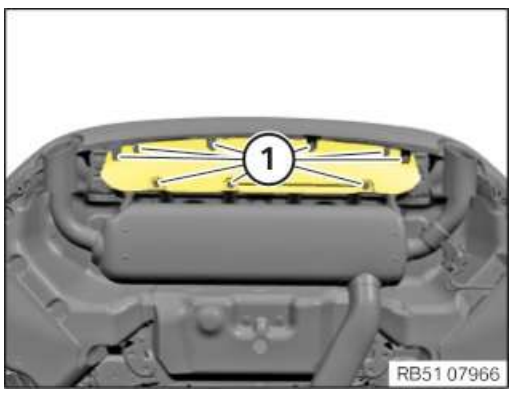
- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

POSTPROCESSES

6 – Installing the rear diffuser

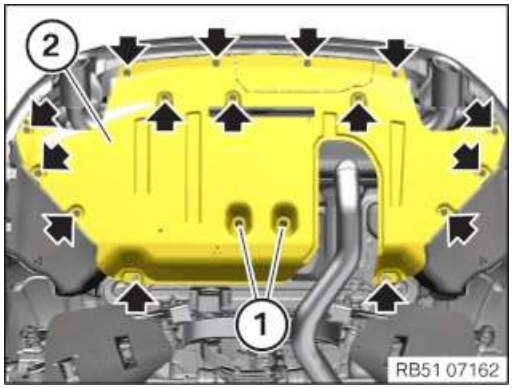


- **Version 1:**
- Install the diffuser and tighten the nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

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

Diffuser / underbody panelling

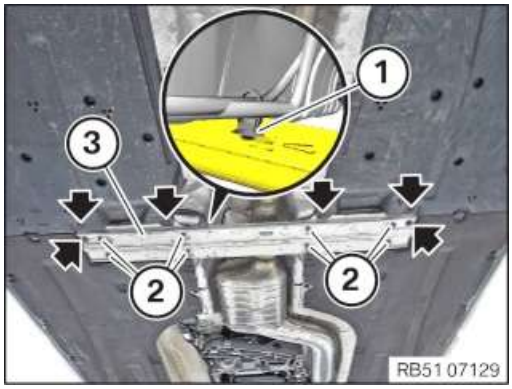
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

7 – Install the connecting supports on the tunnel



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

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

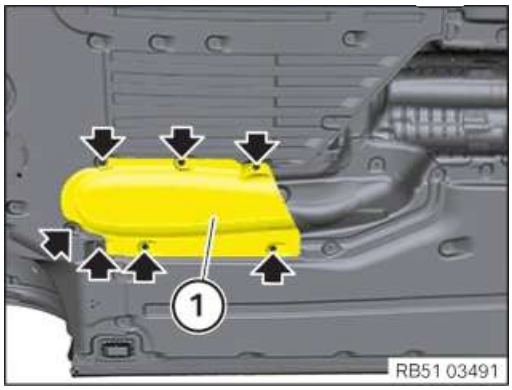
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure the clamp (1).

8 – Install the underbody panelling of the transmission on the side

NOTICE

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



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

Underbody panelling

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

Additional Information

Overview of Tightening Torques

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Rear silencer to body / bumper support			Used in step 5
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 5
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 5
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 5
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 5
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 5
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 5
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 5
Sensor		Tightening torque	55 Nm

Diffuser / underbody panelling			Used in step 6
Nuts and screws		Tightening torque	3 Nm

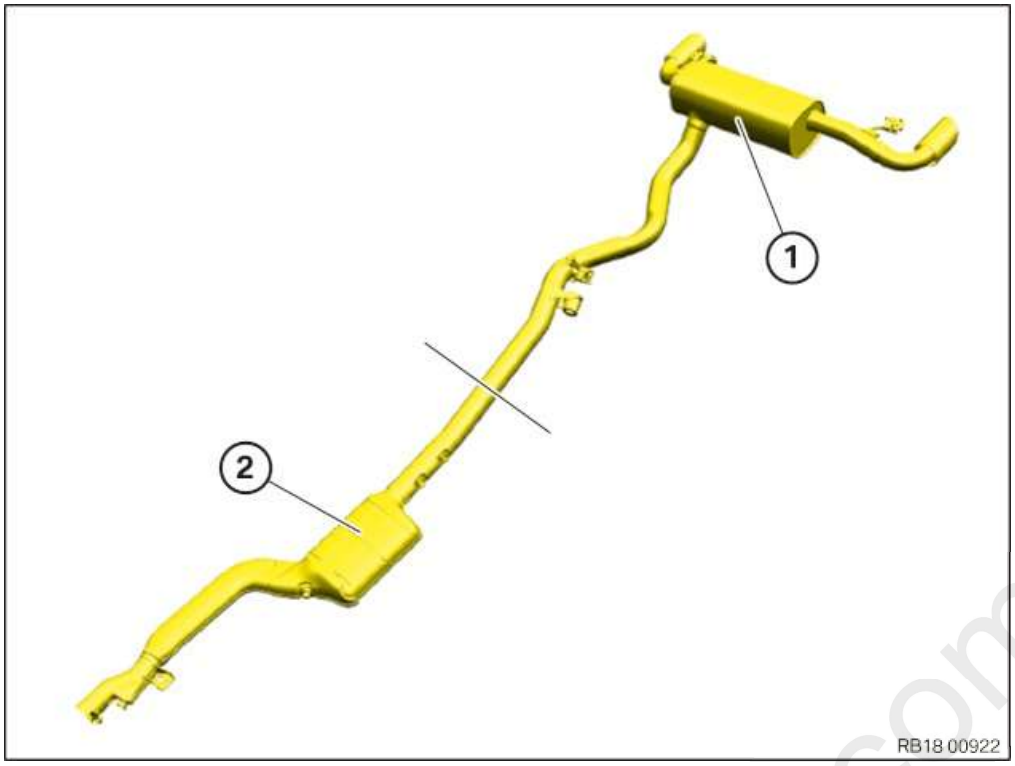
Connecting support to tunnel			Used in step 7
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody panelling			Used in step 8
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

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18 10 031 Replace the rear silencer

Rear silencer/SCR catalytic converter

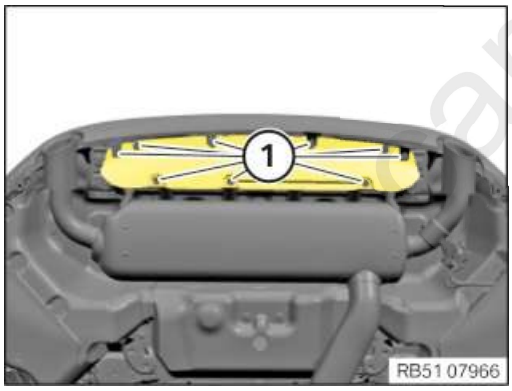


1 Rear silencer

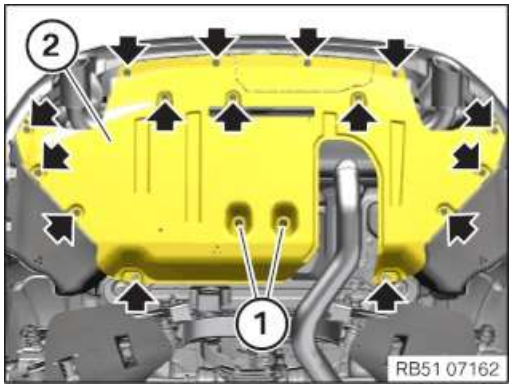
2 SCR catalytic converter

PRELIMINARY WORK

1 – Removing the rear diffuser



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



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

MAIN WORK

2 – Removing the rear silencer

WARNING

Hot surfaces.

Risk of burning!

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

CAUTION

Component with heavy weight.

Danger of injury!

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

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

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

CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

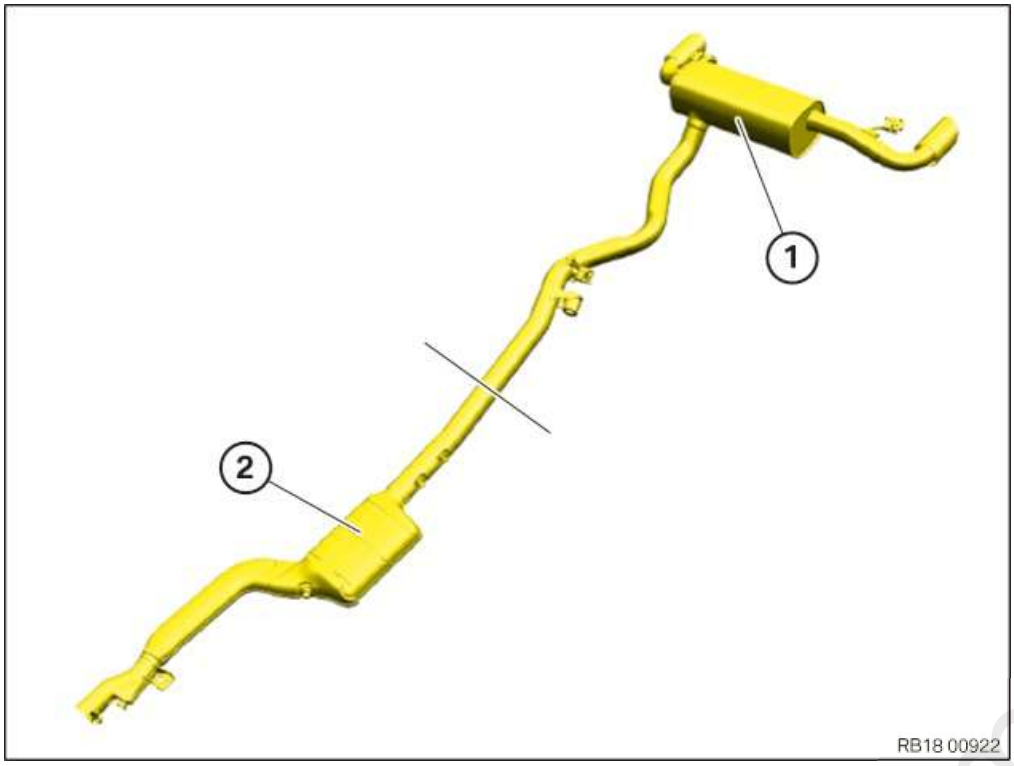


- Conduct all work in appropriate personal protective equipment only.

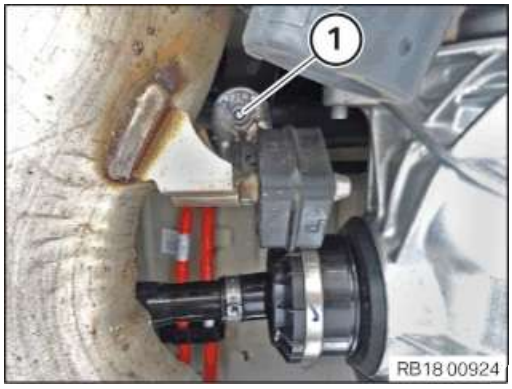


- Wear safety goggles and protective gloves.

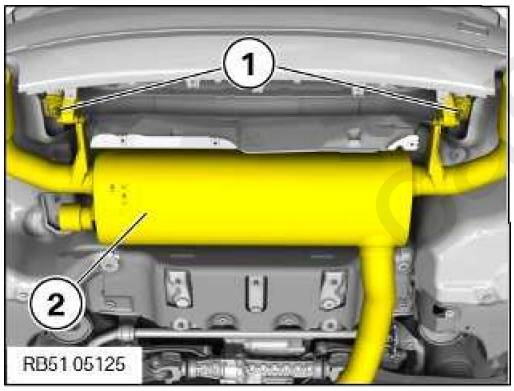
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- If the separation point is not marked by a punch mark in the pipe: Determine the separation point using the length of the pipe on the new component.
- Transfer the separation point to the component to be replaced and mark.
- Cut through the component to be renewed at the marked point using a suitable tool.

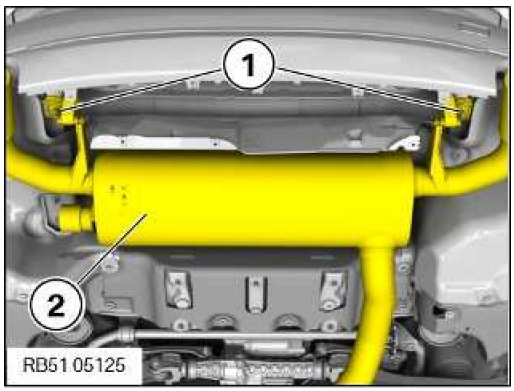


- Release the nut (1) on the rear axle support.



- Loosen nuts (1).
- Guide out the rear silencer (2) with the assistance of a second person and remove it.

3 – Installing the rear silencer



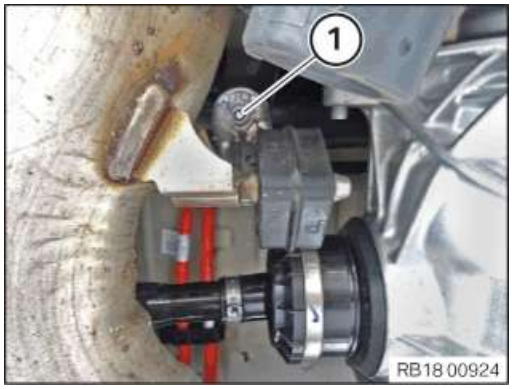
- Feed in and install rear silencer (2) with a second person.
- Renew nuts (1).

  Parts: Nut
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

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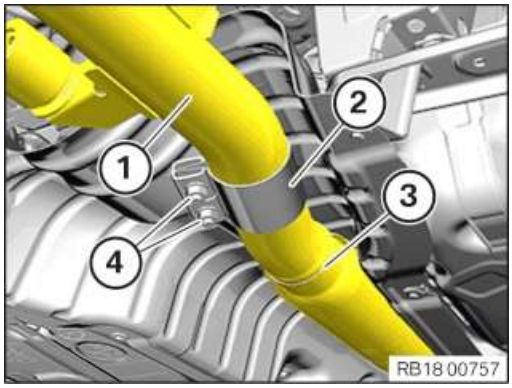
- Renew nut (1) on the rear axle support.

  Parts: Nut

- Tighten nut (1).

Exhaust system to rear axle carrier

M8 nut		Tightening torque	19 Nm



- Connect the rear silencer (1) with a clamp (2) to the front pipe (3) .
- Centre the clamp (2) and tighten the nuts (4).

Clamp with partial replacement of exhaust system

Clamp		Tightening torque	45 Nm

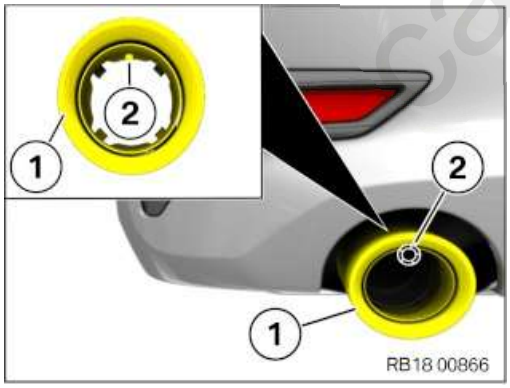
4 – Replacing the exhaust cover

TECHNICAL INFORMATION

It is mandatory to renew the exhaust covers after removal.
The correct stop on the exhaust system can no longer be guaranteed after removal.

NOTICE

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



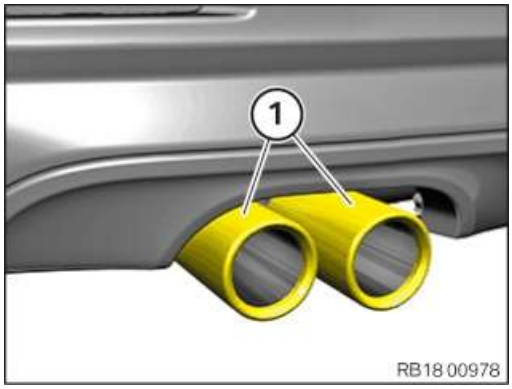
- **Version A:**

  Renew the exhaust cover (1).

  Parts: Exhaust cover

  Correctly position and align the exhaust cover (1) on the exhaust system.

  Slide the exhaust cover (1) with increased effort on to the exhaust system up to the limit position (2) .



- **Version B:**

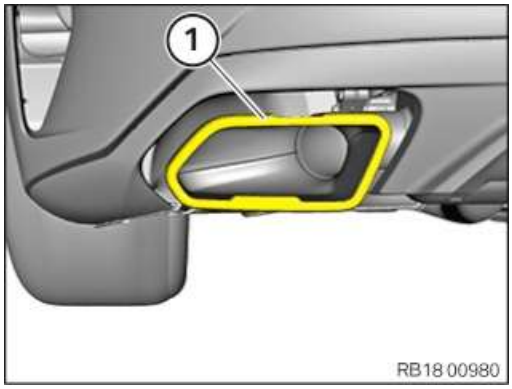
  Renew the exhaust covers (1).

  Parts: Exhaust cover

  Position the exhaust covers (1) on the exhaust system and align correctly.

  Slide the exhaust cover (1) with increased effort on to the exhaust system up to the limit position.

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- **Version C:**

  Renew the exhaust cover (1).

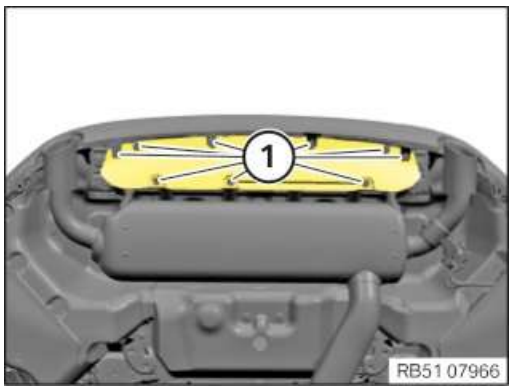
  Parts: Exhaust covers

  Position the exhaust covers (1) on the exhaust system and align correctly.

  Slide the exhaust cover (1) with increased effort on to the exhaust system up to the limit position.

POSTPROCESSES

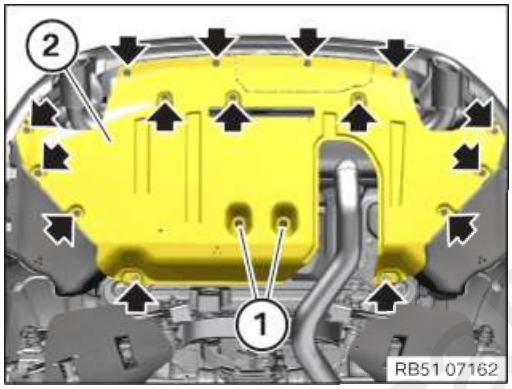
5 – Installing the rear diffuser



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

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



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

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

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Additional Information

Overview of Tightening Torques

Rear silencer to body / bumper support — Used in step 3

M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier — Used in step 3

M8 nut		Tightening torque	19 Nm

Clamp with partial replacement of exhaust system — Used in step 3

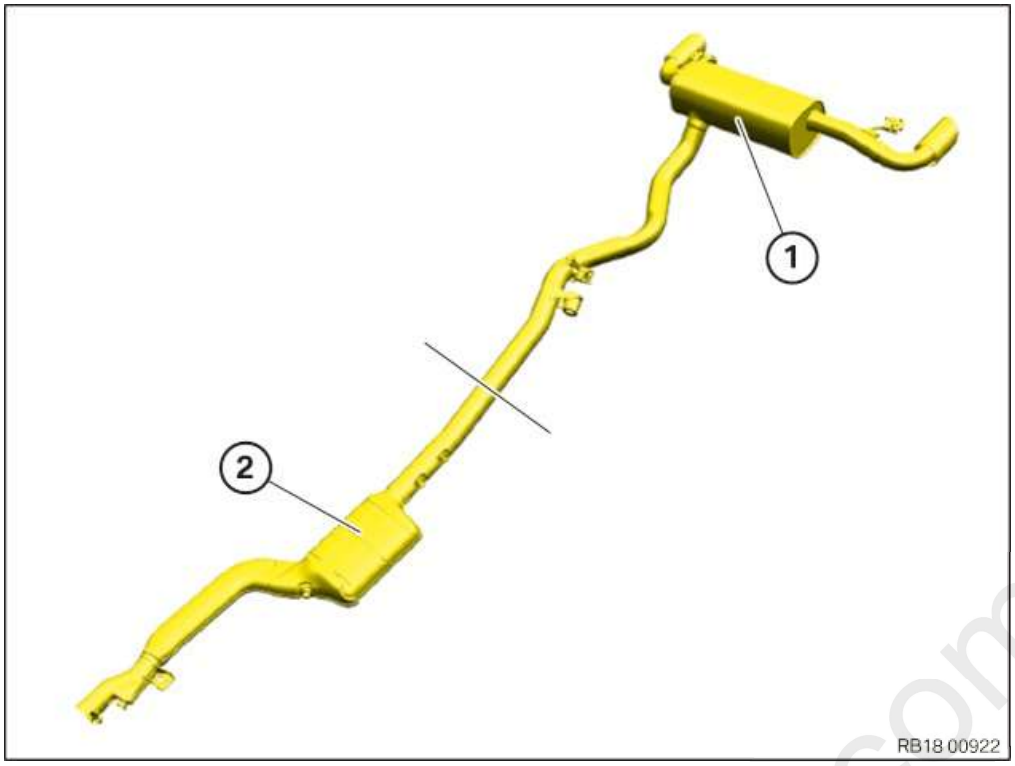
Clamp		Tightening torque	45 Nm

Diffuser / underbody panelling — Used in step 5

Nuts and screws		Tightening torque	3 Nm

18 31 030 Removing and installing/replacing catalytic converter

Rear silencer/SCR catalytic converter



1 Rear silencer

2 SCR catalytic converter

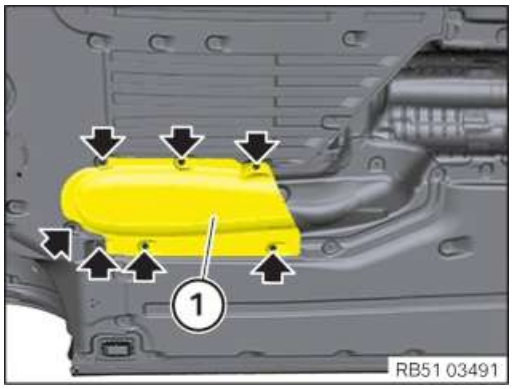
cardiagn.com

PRELIMINARY WORK

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

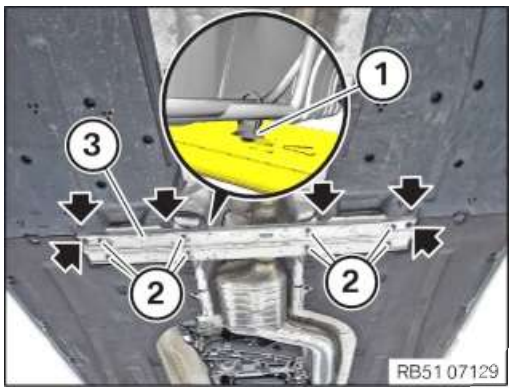
NOTICE

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



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

2 – Remove the connecting support from the tunnel



- Remove screws (arrows).

NOTICE

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

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

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MAIN WORK

3 – Removing the SCR catalytic converter

WARNING

Hot surfaces.

Risk of burning!

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

CAUTION

Component with heavy weight.

Danger of injury!

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

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

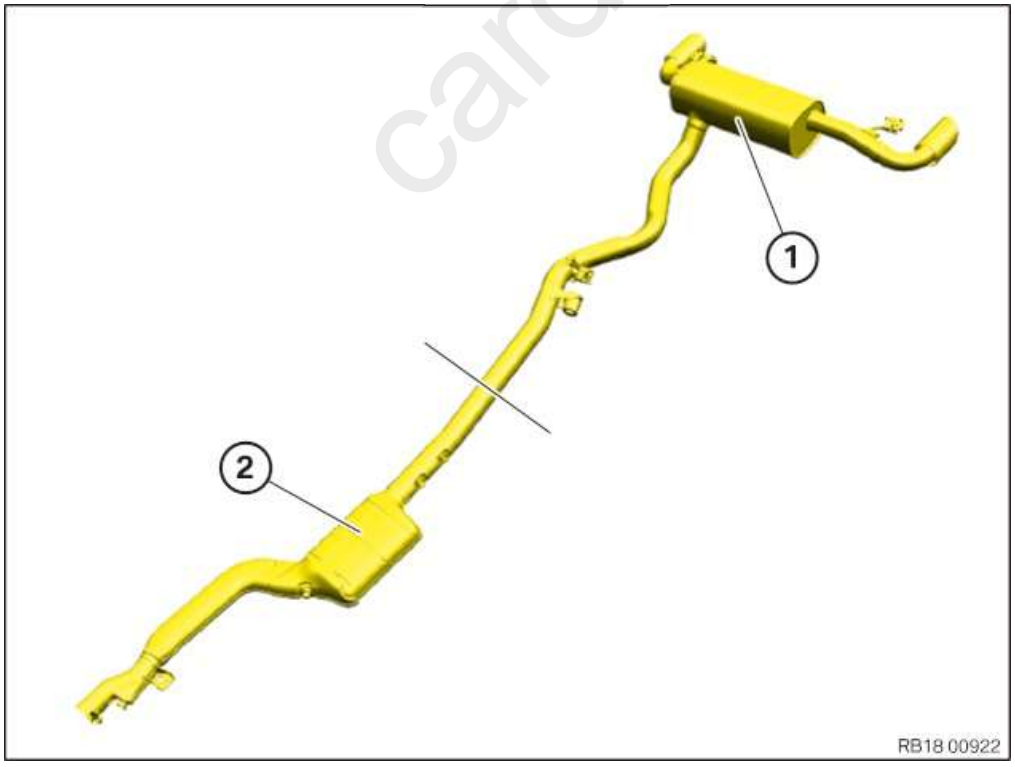
- Remove and install heavy components with the aid of another person/other persons.

CAUTION

Swarf resulting from sawing or grinding components.

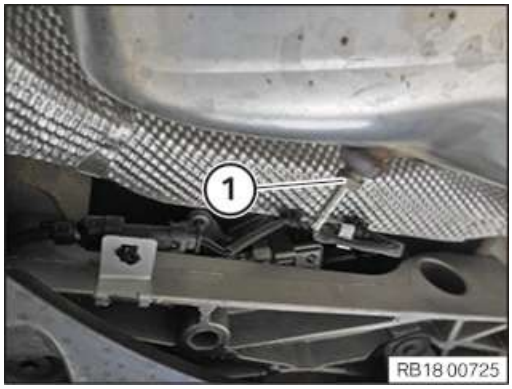
Danger of injury!

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

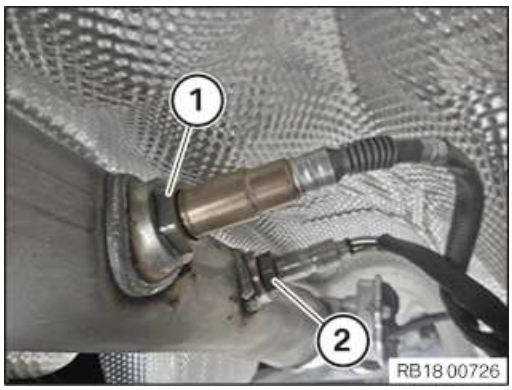


- If the separation point is not marked by a punch mark in the pipe, determine the separation point by means of the pipe length on the new component.
- Transfer the separation point to the component to be replaced and mark.
- Cut through the component to be replaced at the marked point with a suitable tool.

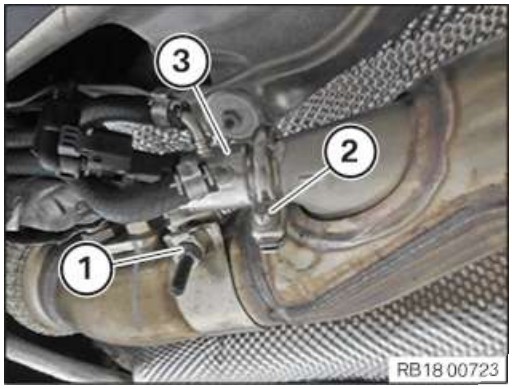
cardiagn.com



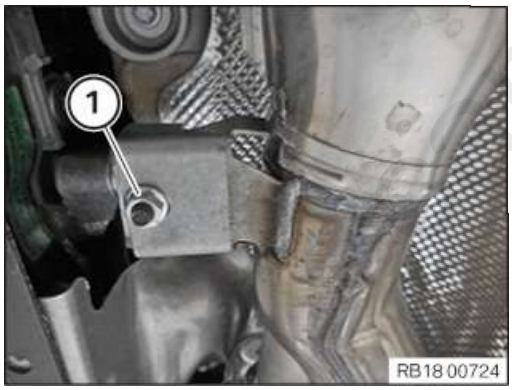
- Detach the exhaust temperature sensor (1) from the exhaust system.



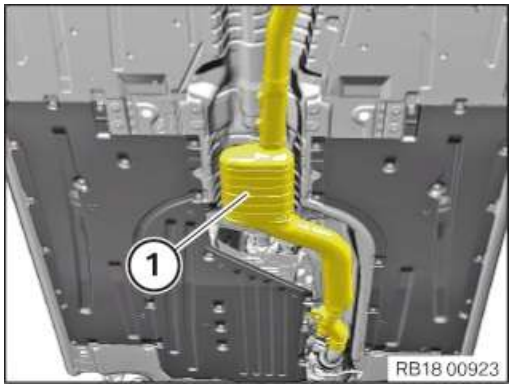
- Detach the diesel particulate sensor (1) from the exhaust system and set it aside.
- Detach the nitrogen oxide sensor (2) from the exhaust system and set it aside.



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



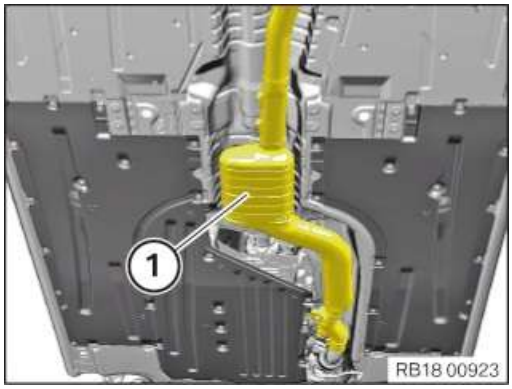
- Loosen nut (1).



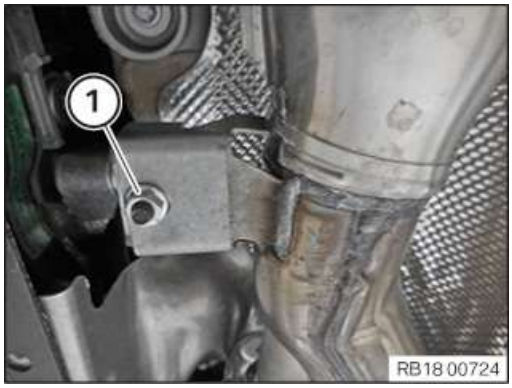
- Guide out and remove the SCR catalytic converter (1) with the help of a second person.

4 – Installing the SCR catalytic converter

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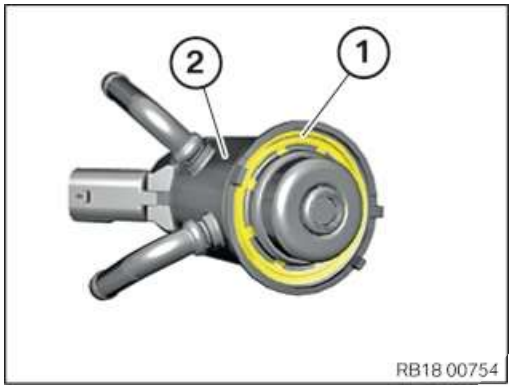
- Guide in and install the SCR catalytic converter (1) with a second person.



- Tighten nut (1).

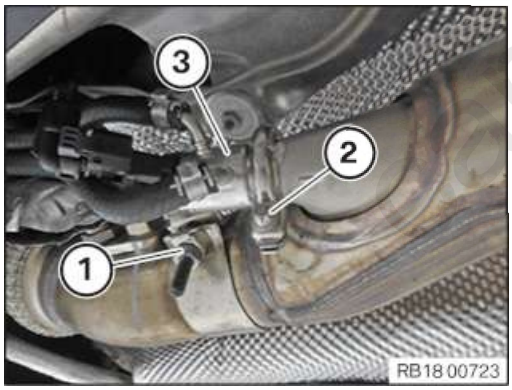
Exhaust system to transmission

M8		Tightening torque	19 Nm



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

  Parts: Sealing ring



- If necessary, renew clamp (1).

  Parts: Clamp
- Guide in the exhaust system with the assistance of a second person and connect it to the diesel particulate filter.
- Tighten clamp (1).

Exhaust system to diesel particle filter

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

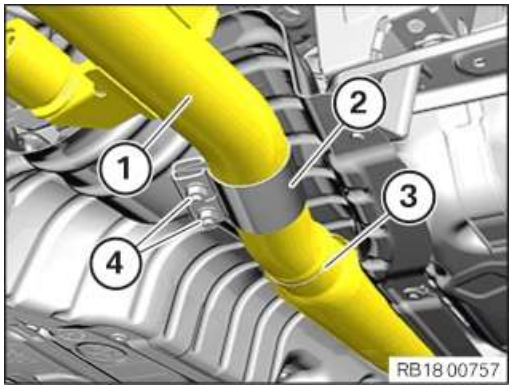
- Renew the V-clip (2).

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

SCR metering module V-clip to exhaust system

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

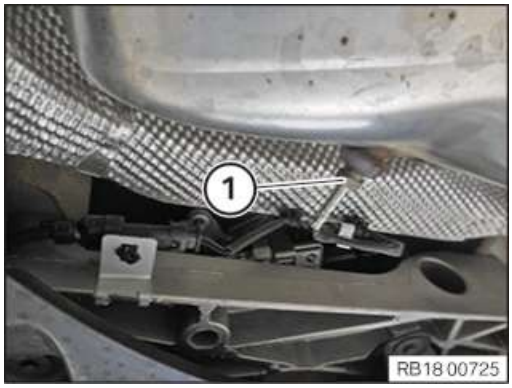
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- Connect the SCR catalytic converter/exhaust gas restriction flap (3) to the rear silencer (2) with a clamp (1).
- Centre the clamp (2) and tighten the nuts (4).

Clamp with partial replacement of exhaust system

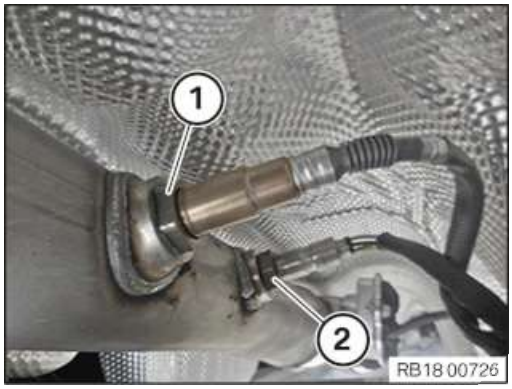
Clamp		Tightening torque	45 Nm



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

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm



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

Diesel particulate sensor to exhaust system

Sensor		Tightening torque	50 Nm

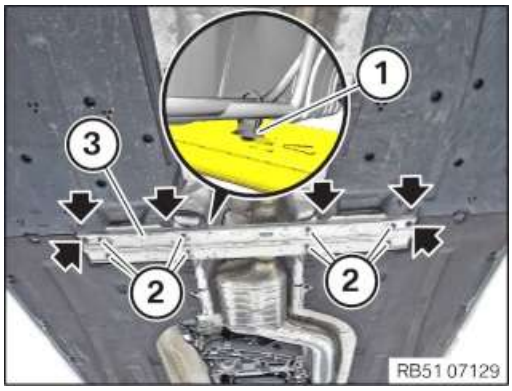
- Install the nitrogen oxide sensor (2) in the exhaust system and tighten.

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

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5 – Install the connecting supports on the tunnel



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

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

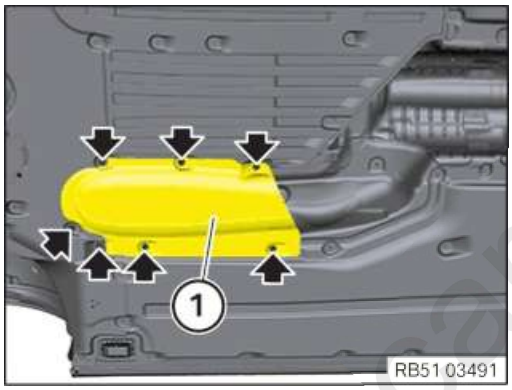
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Secure the clamp (1).

6 – Install the underbody panelling of the transmission on the side

NOTICE

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



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

Underbody panelling

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

Additional Information

Overview of Tightening Torques

Exhaust system to transmission — Used in step 4

M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter — Used in step 4

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

SCR metering module V-clip to exhaust system — Used in step 4

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

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Clamp with partial replacement of exhaust system			Used in step 4
Clamp		Tightening torque	45 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 4
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 4
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 4
Sensor		Tightening torque	55 Nm

Connecting support to tunnel			Used in step 5
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

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

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18 31 080 Removing and installing/replacing diesel particulate filter

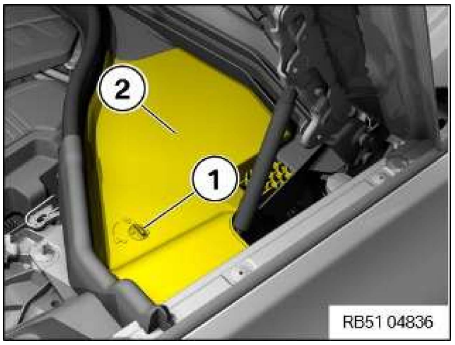
PRELIMINARY WORK

1 – Remove the seal for the rear bonnet



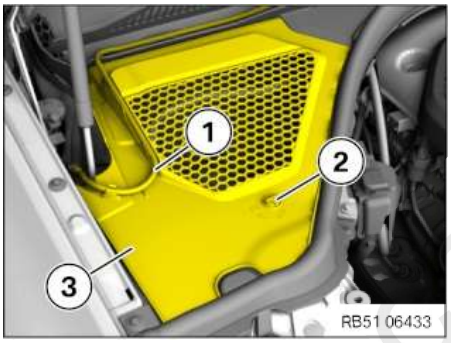
- Feed the cable (1) out of the brackets toward the front.
- Remove the rear bonnet seal (2) from the guide toward the inside.

2 – Remove the cover of the engine compartment at the rear left



- Loosen the lock (1).
- Remove the cover (2) of the rear left engine compartment.

3 – Remove the cover of the rear right engine compartment



- Release washer fluid hose (1) from the guides.
- Loosen the lock (2).
- Remove the cover (3) of the rear right engine compartment.

4 – Removing the wiper arm on the left and right

NOTICE

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

▸ **Remove the wiper arm**

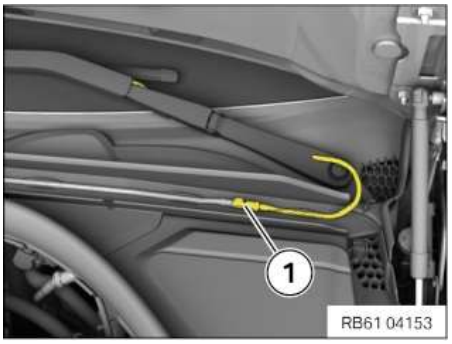
RISK OF DAMAGE

Damage to wiper console.

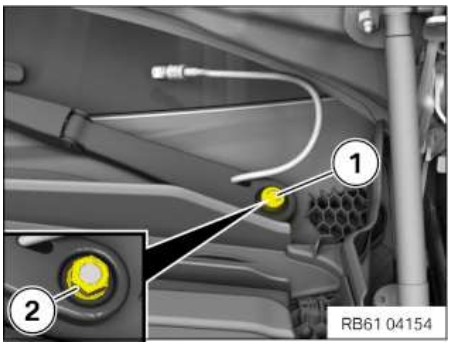
While removing the wiper arms without using special tool, the wiper console can break.

- Removing the wiper arms must be carried out only using the prescribed special tool.
- Do **not** lever off the wiper arm because otherwise the wiper console may break at the predetermined breaking point for active pedestrian protection.

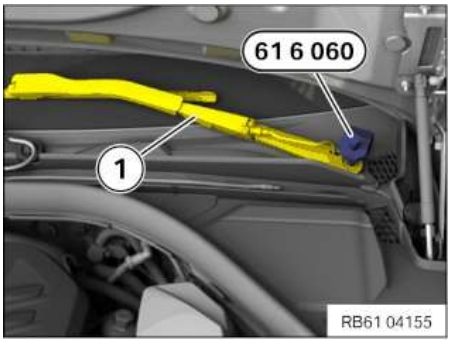
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- Disconnect the washer fluid hose (1) at the separation point and feed out from the cowl panel guide.

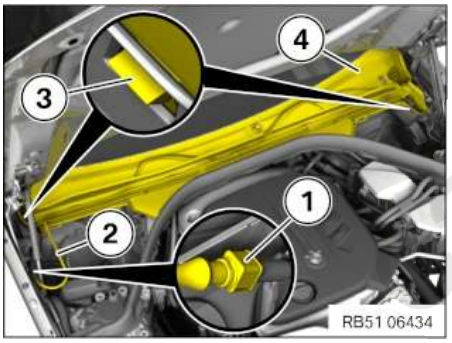


- Remove the protective cap (1).
- Loosen nut (2).

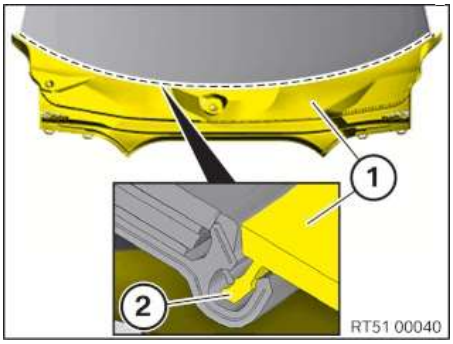


- Pull off the wiper arm (1) using special tool .

5 – Remove cowl panel cover



- Release snap fastener (1) of the washer fluid hose (2) and put the washer fluid hose (2) to one side.
- Unclip clips (3) on the cowl panel cover (4).



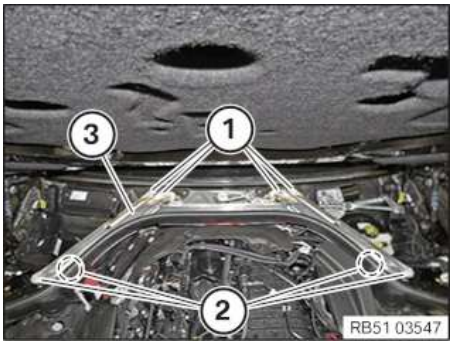
- Pull the cowl panel cover (1) upward out of the latch mechanism (2) beginning on the side.

6 – Removing the centre bulkhead upper part

TECHNICAL INFORMATION

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

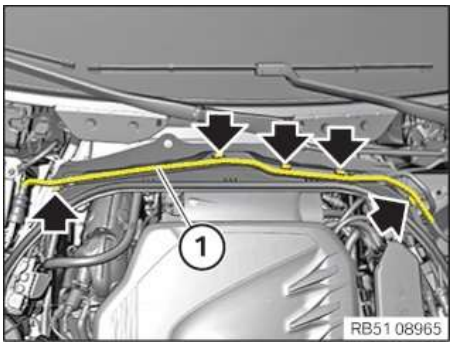
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NOTICE

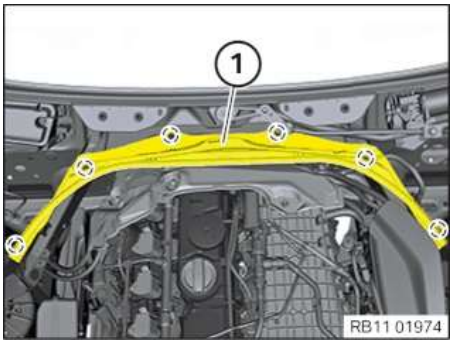
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen screws (1) and (2).
- Remove tension strut (3) in the spring strut dome upwards.



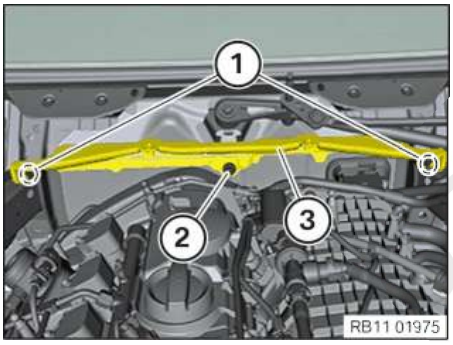
- **Version with mild hybrid technology:**

  Unclip the wire (1) at the holders (arrows).



- Unscrew the bolts in the marked areas.
- Remove the centre bulkhead upper part (1).

7 – Removing the centre bulkhead lower section



- Loosen screws (1).
- Loosen nut (2).
- Remove the centre bulkhead lower part (3).

8 – Remove differential pressure sensor for the diesel particulate filter

WARNING

Hot surfaces.

Risk of burning!

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

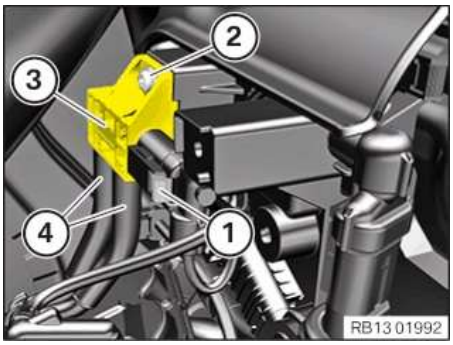
parts4agn.com

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 ... Notes for ESD protection (electrostatic discharge)



- Unlock plug connection (1) and disconnect.
- Loosen screw (2).
- Pull off pressure hose (4).
- Feed out differential pressure sensor (3) and remove.

9 – Remove the exhaust temperature sensor on the diesel particulate filter

WARNING

Hot surfaces.

Risk of burning!

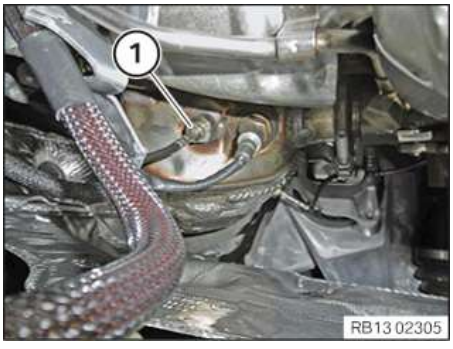
- Perform all work only on components that have cooled down.

RISK OF DAMAGE

Electrostatic discharge.

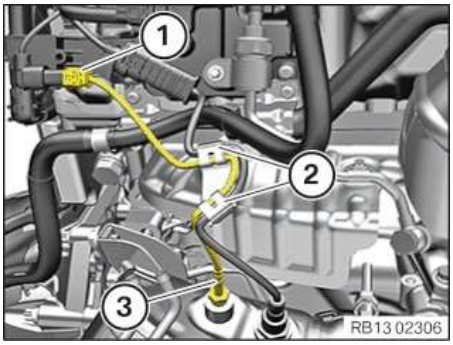
Damage to or destruction of electrical components.

- 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 ... Notes for ESD protection (electrostatic discharge)



- Release exhaust temperature sensor (1) using special tool .

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- Unlock plug connection (1) and disconnect.
- Remove the exhaust temperature sensor (3) from the clamps (2).
- Feed out and remove exhaust temperature sensor (3).

10 – Removing the front oxygen sensor on the diesel particulate filter on top

WARNING

Hot surfaces.

Risk of burning!

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

RISK OF DAMAGE

Electrostatic discharge.

Damage to or destruction of electrical components.

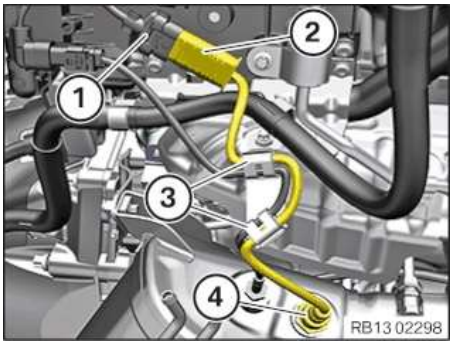
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the 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 ... Notes for ESD protection (electrostatic discharge)

RISK OF DAMAGE

Damage to the front oxygen sensor or monitoring oxygen sensor.

Failure of the front oxygen sensor or monitoring oxygen sensor due to contamination or preliminary mechanical damage.

- Remove the protective cap on the sensor only when screwing the sensor on to the exhaust system.
- Do not use mounting aids, cleaning agents, gaseous and liquid agents in workplaces, storage areas and during transport.
- Contaminations (particles, dust exposure, moisture, etc.) in the area of the plug and socket connection and the sensor must be avoided.
- Mechanical loads (impacts on the sensor or the control unit, tensile loads on the cable, etc.) must be avoided.
- Do not continue using component if these specifications are deviated from.
  - The installation location (exhaust system) must be dry. If necessary, dry the installation location with compressed air.



- Unlock plug connection (1) and disconnect.
- Unlock and disconnect connector (2).
- Pull the front oxygen sensor (4) out from the clamps (3) and remove it.

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- Release the front oxygen sensor (1) with the standard tools and remove it.

11 – Removing the exhaust temperature sensor for the exhaust system downstream the catalytic converter at the diesel particulate filter

WARNING

Hot surfaces.

Risk of burning!

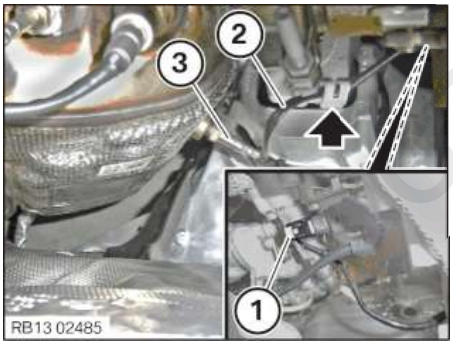
- Perform all work only on components that have cooled down.

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 ... Notes for ESD protection (electrostatic discharge)



- Unlock plug connection (1) and disconnect.

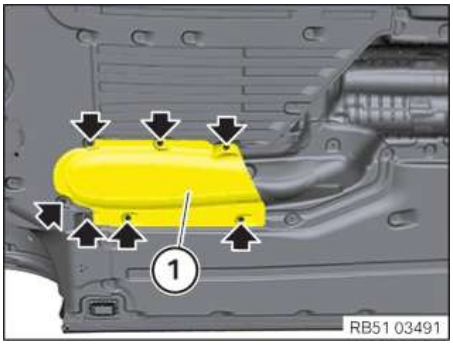
Note: The exhaust temperature sensor is located near the right engine mount.

- Release cable (2) from the clamps (arrow).
- Loosen exhaust temperature sensor (3).
- Feed out and remove exhaust temperature sensor (3).

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

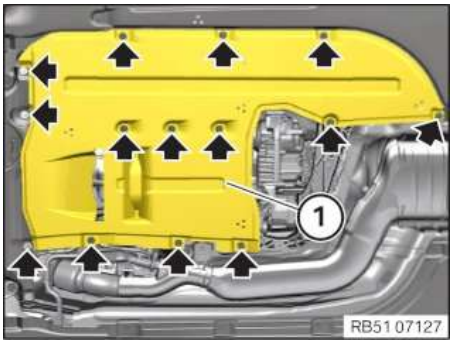
NOTICE

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



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

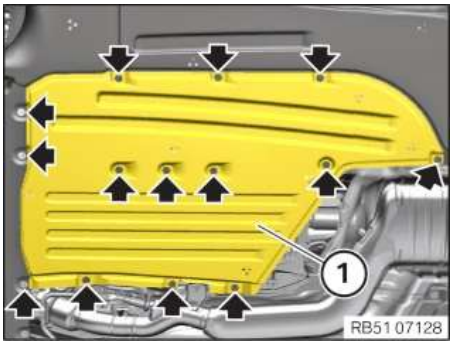
13 – Remove rear underbody protection



- **Version A:**

  Remove screws (arrows).

  Feed out the rear underbody protection (1).

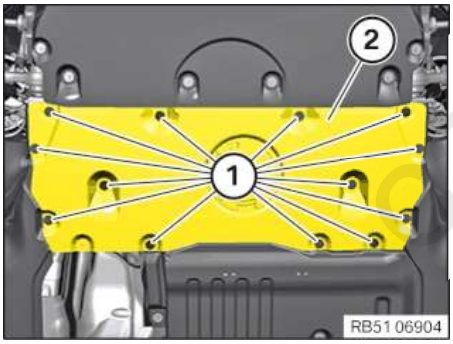


- **Version B:**

  Remove screws (arrows).

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

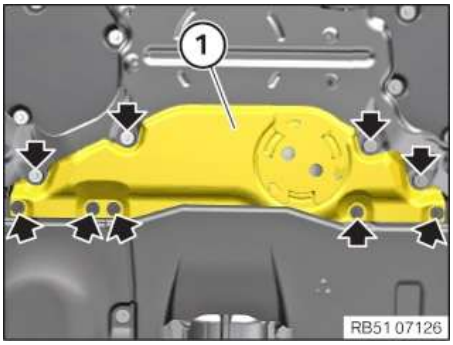
14 – Removing the centre underbody protection



- **Variant with rear wheel drive:**

  Loosen screws (1).

  Remove centre underbody protection (2) .



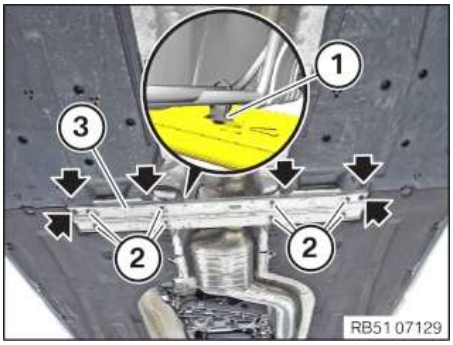
- **Version with all-wheel drive:**

  Remove screws (arrows).

  Feed out and remove the centre underbody protection (1).

15 – Remove the connecting support from the tunnel

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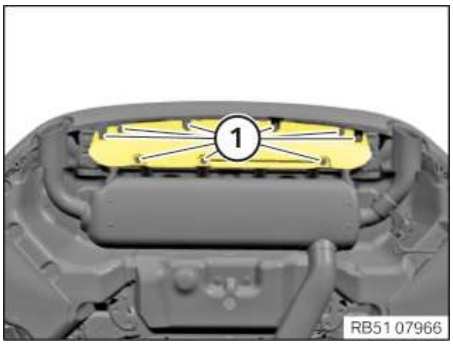
- Remove screws (arrows).

NOTICE

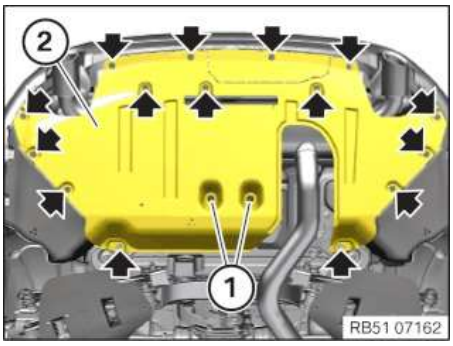
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

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

16 – Removing the rear diffuser



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



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

17 – Remove exhaust system

WARNING

Hot surfaces.

Risk of burning!

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

CAUTION

Component with heavy weight.

Danger of injury!

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

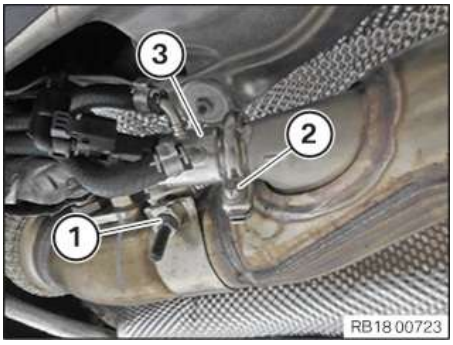
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CAUTION

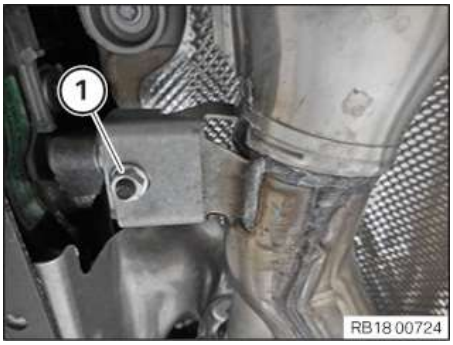
Heavy component.

Heavy components can lead to injury or damage.

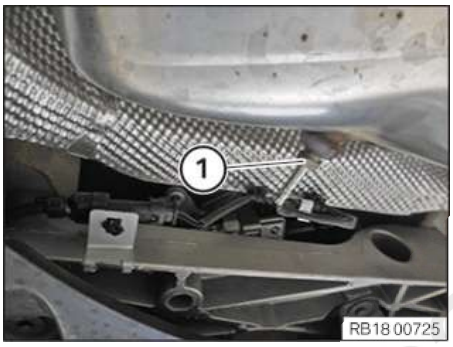
- Remove and install heavy components with the aid of another person/other persons.



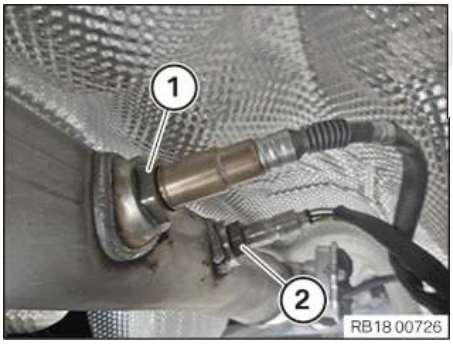
- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3)from the exhaust system and place to one side.



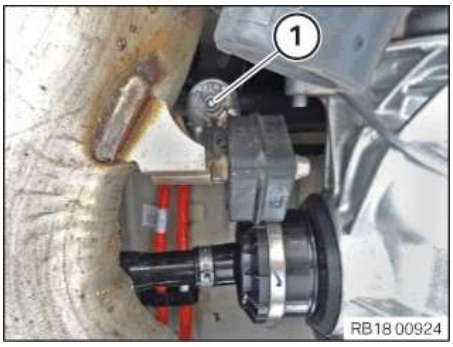
- Loosen nut (1).



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

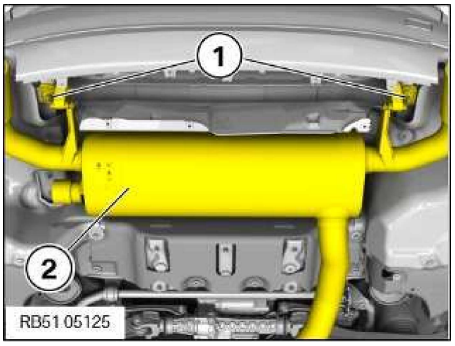


- Release the diesel particulate sensor (1) from the exhaust system and place to one side.
- Release the nitrogen oxide sensor (2) from the exhaust system and place to one side.



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

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

18 – Removing the monitoring oxygen sensor after the diesel particulate filter

WARNING

Hot surfaces.

Risk of burning!

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

RISK OF DAMAGE

Electrostatic discharge.

Damage to or destruction of electrical components.

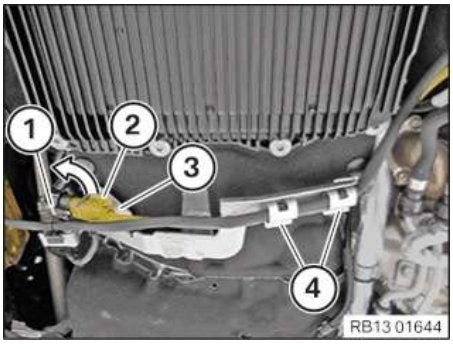
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the 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 ... Notes for ESD protection (electrostatic discharge)

RISK OF DAMAGE

Damage to the front oxygen sensor or monitoring oxygen sensor.

Failure of the front oxygen sensor or monitoring oxygen sensor due to contamination or preliminary mechanical damage.

- Remove the protective cap on the sensor only when screwing the sensor on to the exhaust system.
- Do not use mounting aids, cleaning agents, gaseous and liquid agents in workplaces, storage areas and during transport.
- Contaminations (particles, dust exposure, moisture, etc.) in the area of the plug and socket connection and the sensor must be avoided.
- Mechanical loads (impacts on the sensor or the control unit, tensile loads on the cable, etc.) must be avoided.
- Do not continue using component if these specifications are deviated from.
  - The installation location (exhaust system) must be dry. If necessary, dry the installation location with compressed air.

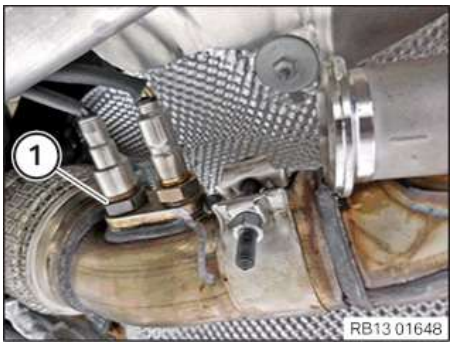


- Unlock and loosen connector (1).
- Loosen connector (2) from the holder (3) in direction of arrow.
- Release the monitoring oxygen sensor from the clamps (4).

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- Release the monitoring oxygen sensor (1) with the standard tools.



- Thread out the monitoring oxygen sensor (1) and remove it.

19 – Removing the nitrogen oxide sensor before SCR catalytic converter

WARNING

Hot surfaces.

Risk of burning!

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

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 ... Notes for ESD protection (electrostatic discharge)

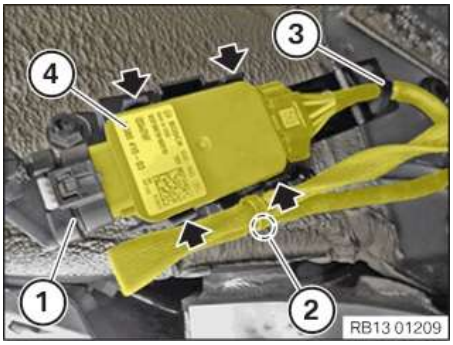
RISK OF DAMAGE

Damage to the nitrogen oxide sensor.

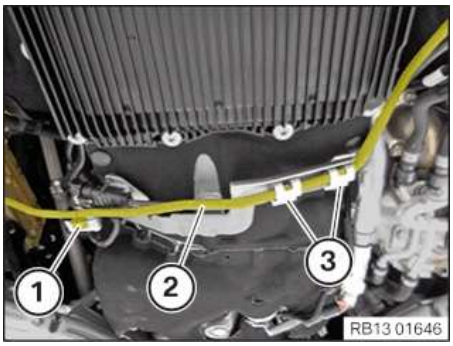
Failure of the nitrogen oxide sensor due to contamination or preliminary mechanical damage.

- Remove the protective cap on the sensor only when screwing the sensor on to the exhaust system.
- Do not use mounting aids, cleaning agents, gaseous and liquid agents in workplaces, storage areas and during transport.
- Contaminations (particles, dust exposure, moisture, etc.) in the area of the plug and socket connection and the sensor must be avoided.
- Mechanical loads (impacts on the sensor or the control unit, tensile loads on the cable, etc.) must be avoided.
- Do not continue using component if these specifications are deviated from.
  - The installation location (exhaust system) must be dry. If necessary, dry the installation location with compressed air.

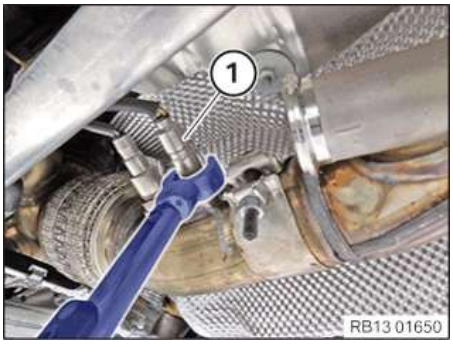
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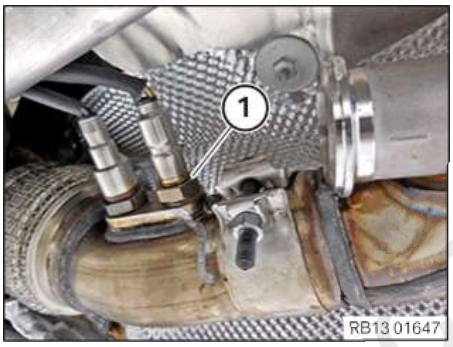
- Unlock plug connection (1) and disconnect.
- Release cable clip in area (2).
- Release line from the holder (3).
- Unclip control unit (4).



- Loosen clamp (1).
- Loosen the cables (2) from the clamps (3).



- Loosen the nitrogen oxide sensor (1) using commercially available tools.



- Feed out and remove the nitrogen oxide sensor (1).

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MAIN WORK

20 – Removing the diesel particulate filter

WARNING

Hot surfaces.

Risk of burning!

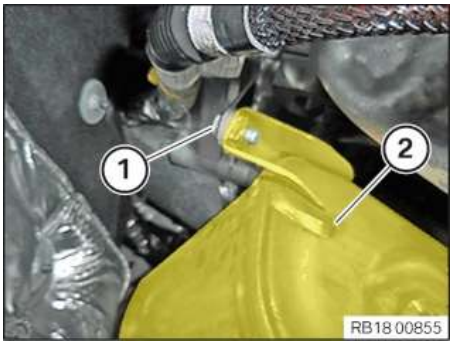
- Perform all work only on components that have cooled down.

CAUTION

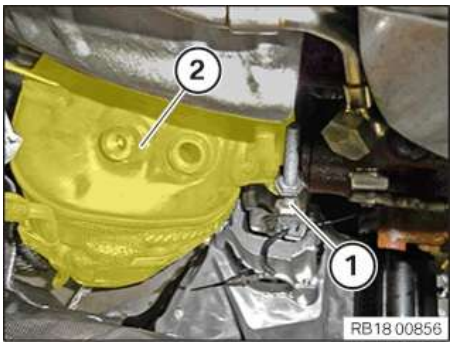
Heavy component.

Heavy components can lead to injury or damage.

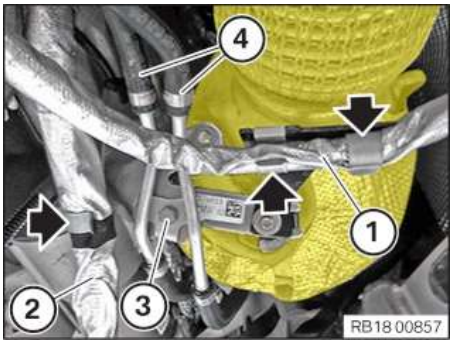
- Remove and install heavy components with the aid of another person/other persons.



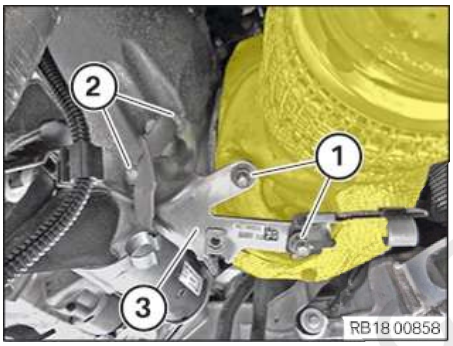
- Release bolt (1) from the holder of diesel particulate filter (2).



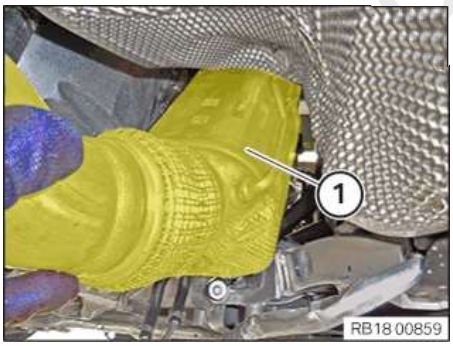
- Loosen V-band clamp (1).
- Feed V-clip (1) out from diesel particulate filter (2) and remove.



- Release the metering line (1) from clamps (Arrows).
- Release positive battery cable (2) from starter motor from clamp (Arrow).
- Loosen screw (3).
- Thread off coolant line (4) and place to the side.



- Loosen nuts (1).
- Loosen screws (2).
- Guide out and remove holder (3).



- Guide out and remove diesel particulate filter (1).

21 – Prepare for the installation of the diesel particulate filter

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- Renew the V-clip (1).

  Parts: V-band clamp



- Renew gasket (1).

  Parts: Gasket

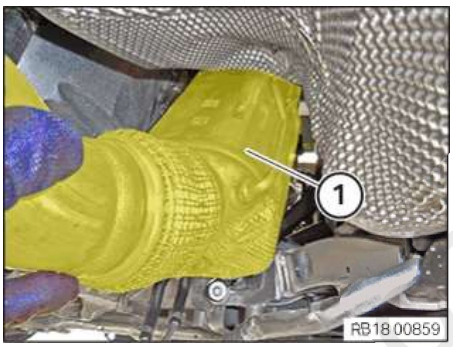
22 – Installing the diesel particulate filter

CAUTION

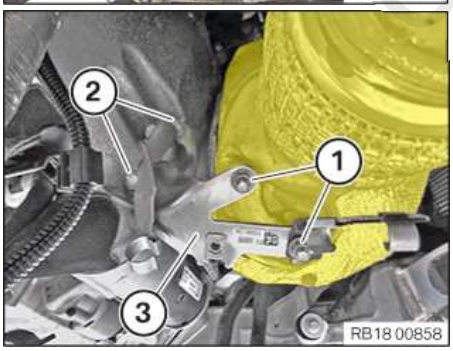
Heavy component.

Heavy components can lead to injury or damage.

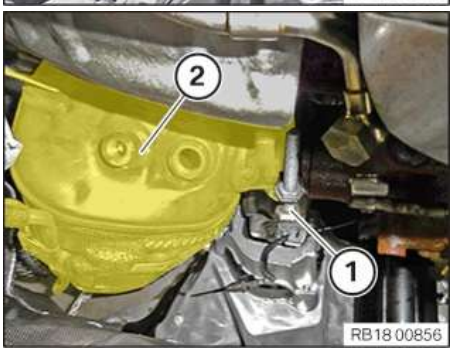
- Remove and install heavy components with the aid of another person/other persons.



- Insert and install the diesel particulate filter (1).



- Insert and install the holder (3).
- **Hand-tighten** the bolts (2).
- Apply the nuts (1) **hand-tight**.



- Renew the V-clip (1).

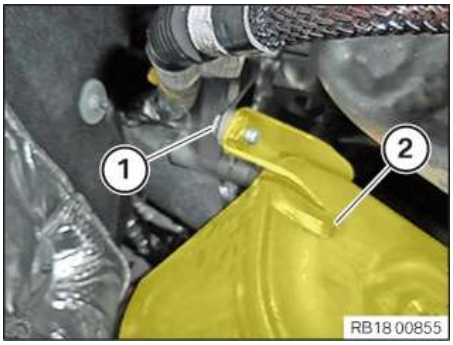
  Parts: V-band clamp

- Feed in and install V-band clamp (1).

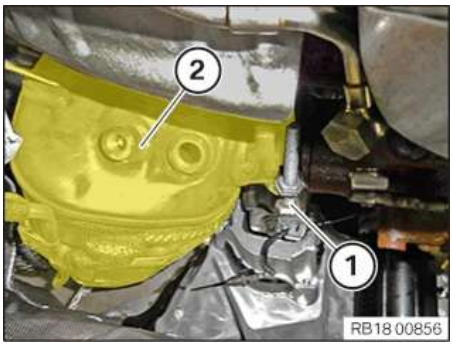
Note: Make sure that the seal between the diesel particulate filter and the exhaust turbocharger is installed correctly.

- Position the diesel particulate filter (2) on the exhaust turbocharger .
- Position V-clip (1).
- Apply the V-clip (1) **hand-tight**.

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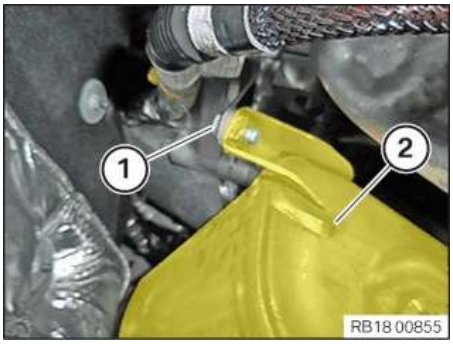
- Feed in screw (1) on the holder of the diesel particulate filter (2) and tighten **hand-tight**.



- Tighten the V-clip (1) of the diesel particulate filter (2).

Diesel particulate filter V-clip to exhaust turbocharger

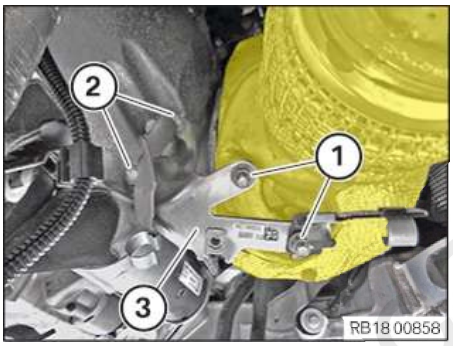
V-band clamp	Renew V-band clamp.	Tightening torque	15 Nm



- Tighten the bolt (1) on the bracket of the diesel particulate filter (2).

Bracket to diesel particulate filter top

M8		Tightening torque	19 Nm



- Tighten the screws (2) on the holder (3).

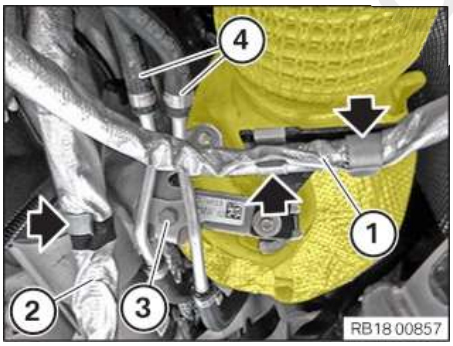
Bracket to transmission for diesel particulate filter holder bottom

M8X20	Tightening torque	19 Nm

- Tighten the nuts (1) on the holder (3).

Lower holder to diesel particulate filter

M8	Tightening torque	19 Nm



- Thread in and install coolant line (4).
- Tighten down screw (3).

Coolant lines for SCR metering module

M6X16	Tightening torque	8 Nm

- Secure the positive battery cable (2) of the starter motor at the clamp (arrow).
- Fasten the metering line (1) on the clamps (arrows).

POSTPROCESSES

23 – Installing the nitrogen oxide sensor upstream of SCR catalytic converter

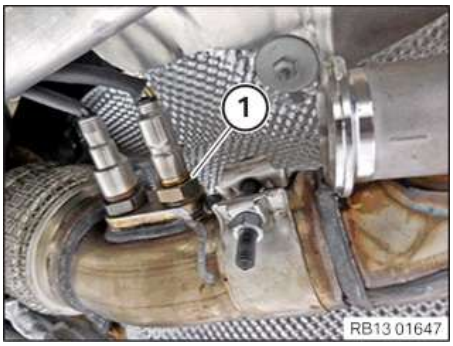
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RISK OF DAMAGE

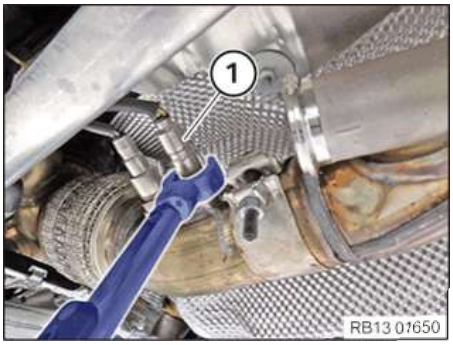
Damage to the nitrogen oxide sensor.

Failure of the nitrogen oxide sensor due to contamination or preliminary mechanical damage.

- Remove the protective cap on the sensor only when screwing the sensor on to the exhaust system.
- Do not use mounting aids, cleaning agents, gaseous and liquid agents in workplaces, storage areas and during transport.
- Contaminations (particles, dust exposure, moisture, etc.) in the area of the plug and socket connection and the sensor must be avoided.
- Mechanical loads (impacts on the sensor or the control unit, tensile loads on the cable, etc.) must be avoided.
- Do not continue using component if these specifications are deviated from.
  - The installation location (exhaust system) must be dry. If necessary, dry the installation location with compressed air.



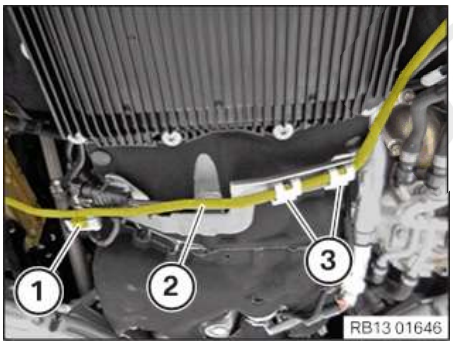
- Feed in and install the nitrogen oxide sensor (1).



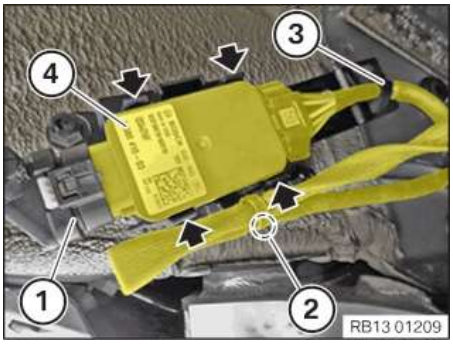
- Tighten the nitrogen oxide sensor (1) using commercially available tools.

Nitrogen oxide sensor before SCR catalytic converter

Sensor		Tightening torque	50 Nm



- Secure the cables (2) to the clamps (3).
- Secure clamps (1).



- Clip in the control unit (4) (arrows).
- Fasten the cable in the holder (3).
- Secure the cable holder (2).
- Plug in the connector (1) and lock audibly.

24 – Installing the monitoring oxygen sensor after the diesel particulate filter

RISK OF DAMAGE

Damage to the front oxygen sensor or monitoring oxygen sensor.

Failure of the front oxygen sensor or monitoring oxygen sensor due to contamination or preliminary mechanical damage.

- Remove the protective cap on the sensor only when screwing the sensor on to the exhaust system.
- Do not use mounting aids, cleaning agents, gaseous and liquid agents in workplaces, storage areas and during transport.
- Contaminations (particles, dust exposure, moisture, etc.) in the area of the plug and socket connection and the sensor must be avoided.
- Mechanical loads (impacts on the sensor or the control unit, tensile loads on the cable, etc.) must be avoided.
- Do not continue using component if these specifications are deviated from.
  - The installation location (exhaust system) must be dry. If necessary, dry the installation location with compressed air.

TECHNICAL INFORMATION

New oxygen sensors are to be greased lightly and evenly on the thread.

For oxygen sensors that are reused, the following should be observed:

Lightly and evenly grease the oxygen sensor only on the thread. Do not clean and grease that part of the oxygen sensor which protrudes in the exhaust branch (sensor ceramics).

For additional information see: 11 00 ... Overview of consumables in Electronic Parts Catalogue



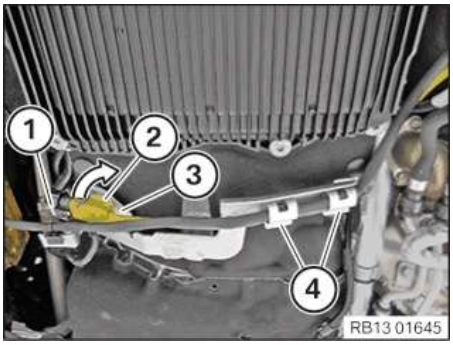
- Insert the monitoring oxygen sensor (1) and install it.



- Tighten the monitoring oxygen sensor (1) with standard tools.

Monitoring oxygen sensor

Sensor		Tightening torque	50 Nm



- Fasten the monitoring oxygen sensor to the clamps (4).
- Secure the connector (2) on the holder (3) in direction of arrow.
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

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CAUTION

Component with heavy weight.

Danger of injury!

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

CAUTION

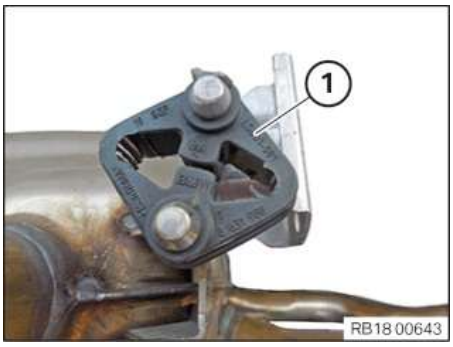
Heavy component.

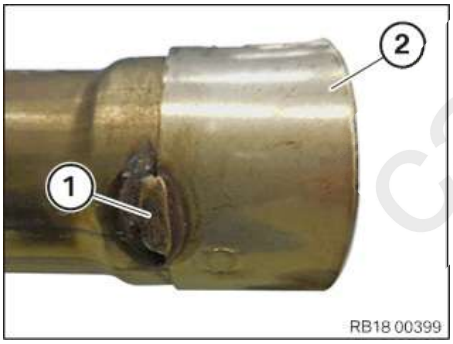
Heavy components can lead to injury or damage.

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

TECHNICAL INFORMATION

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





NOTICE

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

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

  Parts: Rubber mount

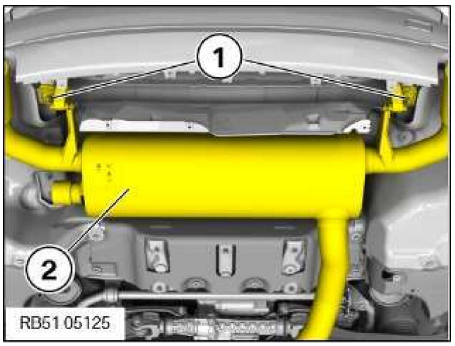
CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

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

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



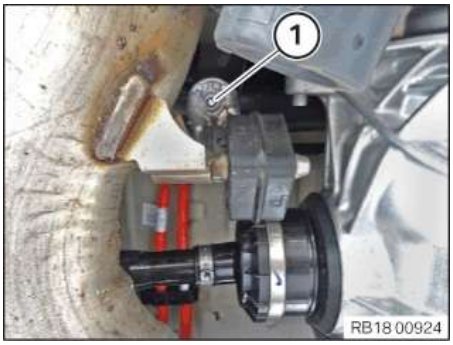
- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

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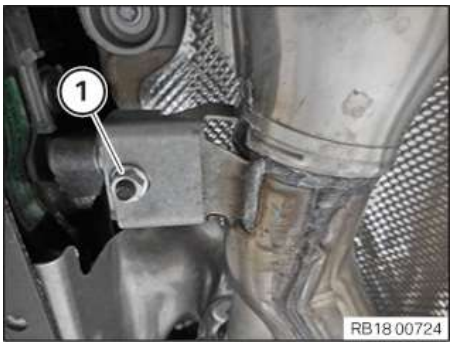


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

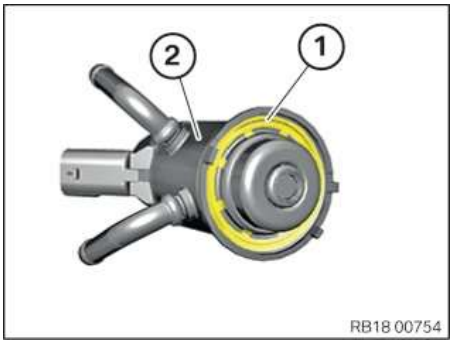
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

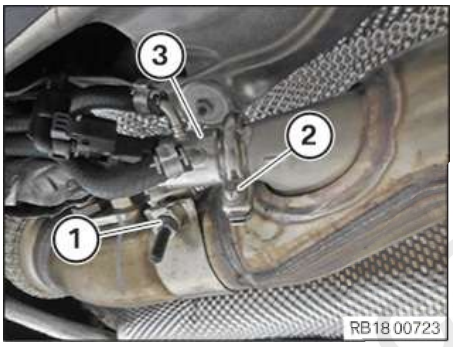
Exhaust system to transmission

M8		Tightening torque	19 Nm



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

  Parts: Sealing ring



- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

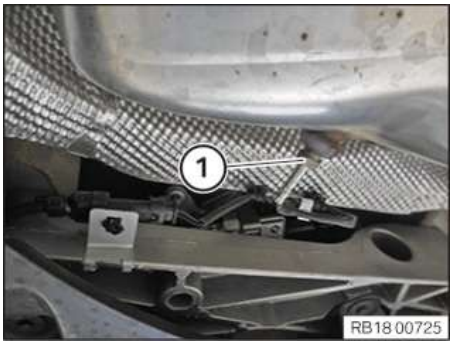
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

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

SCR metering module V-clip to exhaust system

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

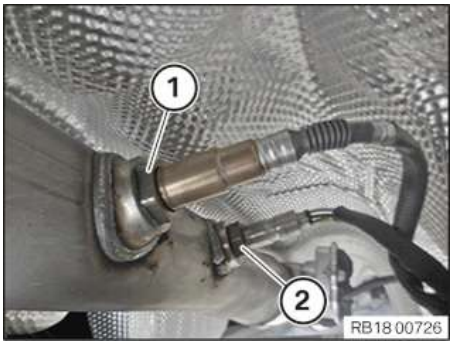


- Install the exhaust temperature sensor (1) in the exhaust system and tighten.

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm

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

Diesel particulate sensor to exhaust system

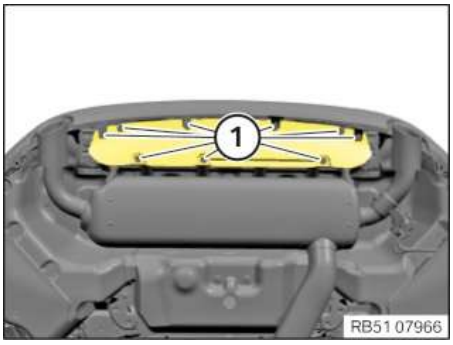
Sensor		Tightening torque	50 Nm

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

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

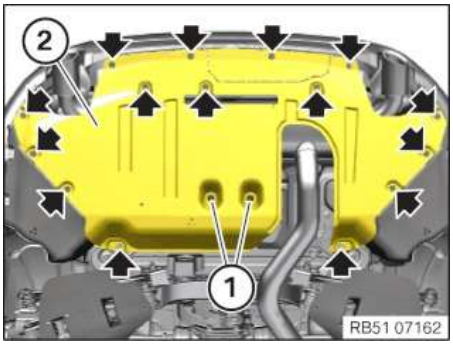
26 – Installing the rear diffuser



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

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



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

Diffuser / underbody panelling

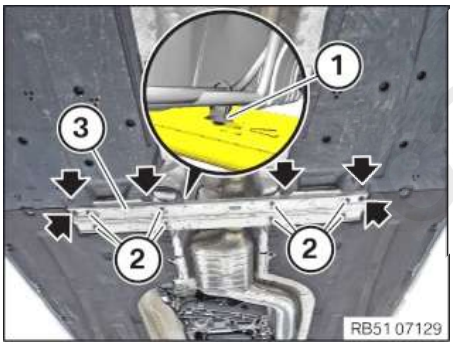
Nuts and screws		Tightening torque	3 Nm

- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

27 – Install the connecting supports on the tunnel



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

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

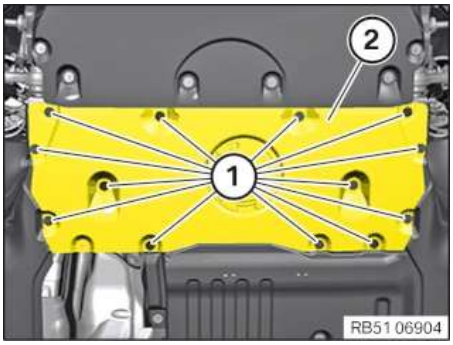
NOTICE

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

- Secure the clamp (1).

28 – Installing the centre underbody protection

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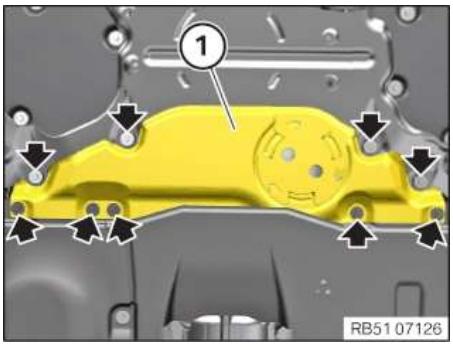
- **Variant with rear wheel drive:**

  Position central underbody protection (2).

  Tighten the screws (1).

Underbody protection

Hexagon screw		Tightening torque	3 Nm



- **Version with all-wheel drive:**

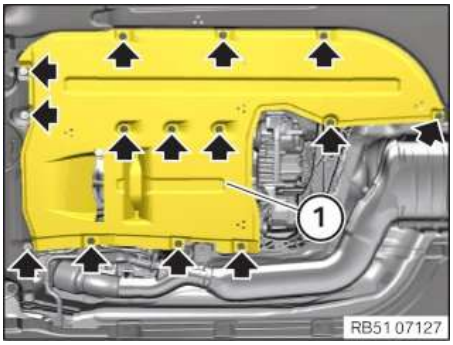
  Guide in centre underbody protection (1) and install.

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm

29 – Installing underbody protection at rear



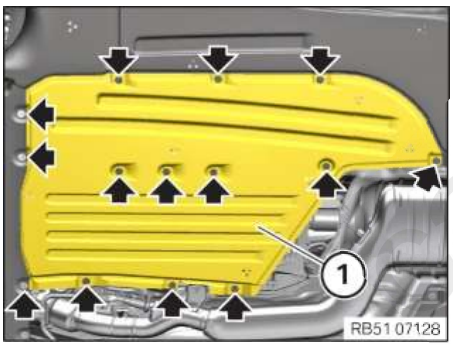
- **Version A:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm



- **Version B:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

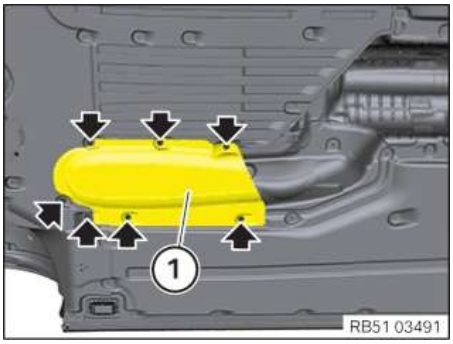
Underbody protection

Hexagon screw		Tightening torque	3 Nm

30 – Install the underbody panelling of the transmission on the side

NOTICE

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



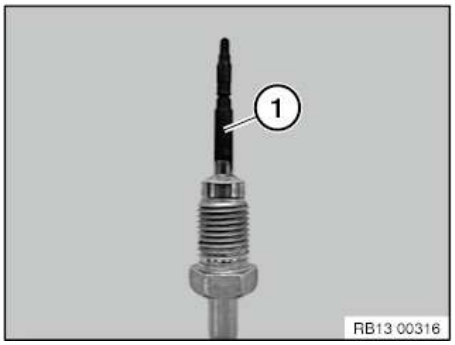
- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

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

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31 – Installing the exhaust temperature sensor for the exhaust system downstream the catalytic converter on the diesel particulate filter



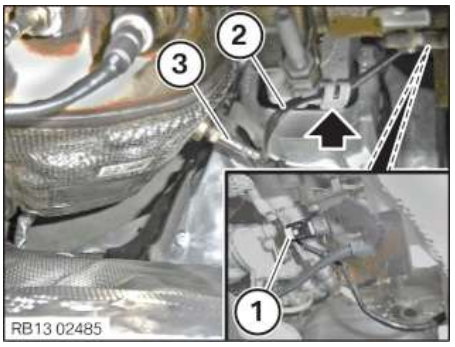
RISK OF DAMAGE

Damage of exhaust temperature sensor.

Damage to exhaust temperature sensors leads to malfunctions.

- Make sure that the gauge tip is not damaged.

- Check the gauge tip (1) for damage.



- Feed in and install the exhaust temperature sensor (3).
- Tighten the exhaust temperature sensor (3).

Exhaust temperature sensor for the exhaust system after catalytic converter before diesel particulate filter

Sensor		Tightening torque	30 Nm

- Secure cable (2) to the clamp (arrow).
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

32 – Installing the front oxygen sensor on the diesel particulate filter

RISK OF DAMAGE

Damage to the front oxygen sensor or monitoring oxygen sensor.

Failure of the front oxygen sensor or monitoring oxygen sensor due to contamination or preliminary mechanical damage.

- Remove the protective cap on the sensor only when screwing the sensor on to the exhaust system.
- Do not use mounting aids, cleaning agents, gaseous and liquid agents in workplaces, storage areas and during transport.
- Contaminations (particles, dust exposure, moisture, etc.) in the area of the plug and socket connection and the sensor must be avoided.
- Mechanical loads (impacts on the sensor or the control unit, tensile loads on the cable, etc.) must be avoided.
- Do not continue using component if these specifications are deviated from.
- The installation location (exhaust system) must be dry. If necessary, dry the installation location with compressed air.

TECHNICAL INFORMATION

New oxygen sensors are to be greased lightly and evenly on the thread.

For oxygen sensors that are reused, the following should be observed:

Lightly and evenly grease the oxygen sensor only on the thread. Do not clean and grease that part of the oxygen sensor which protrudes in the exhaust branch (sensor ceramics).

For additional information see: 11 00 ... Overview of consumables in Electronic Parts Catalogue

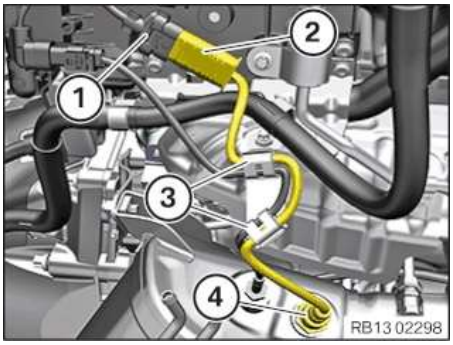


- Insert and install the front oxygen sensor (1).
- Tighten the front oxygen sensor (1) with standard tools.

Front oxygen sensor to top of diesel particulate filter

Sensor		Tightening torque	50 Nm

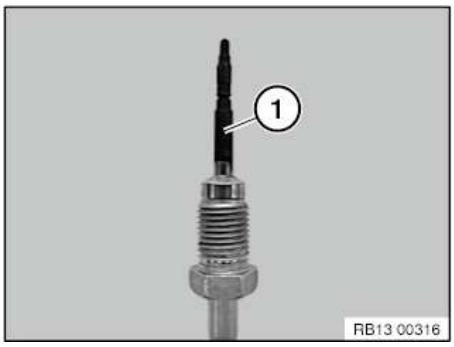
carDiagn.com



- Fasten the front oxygen sensor (4) to the clamps (3).
- Connect connectors (2) and lock.
- Connect connectors (1) and lock.

  The connectors (1) and (2) must audibly engage.

33 – Install the exhaust-gas temperature sensor on the diesel particulate filter



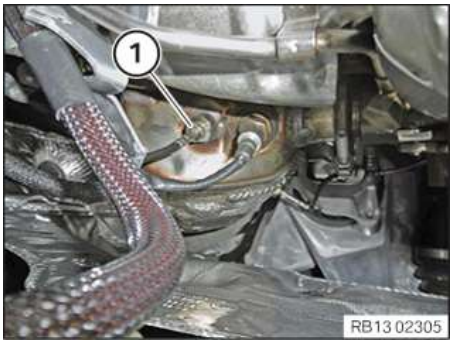
RISK OF DAMAGE

Damage of exhaust temperature sensor.

Damage to exhaust temperature sensors leads to malfunctions.

- Make sure that the gauge tip is not damaged.

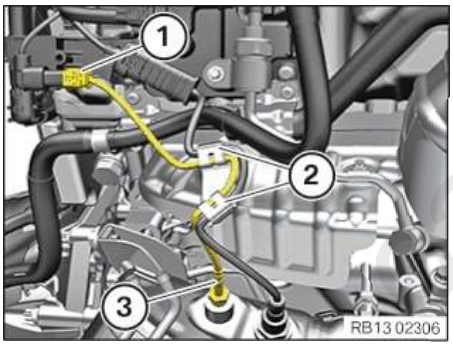
- Check gauge tip (1) for damage.



- Feed in and install the exhaust temperature sensor (1).
- Tighten the exhaust temperature sensor (1) with the special tool .

Exhaust-gas temperature sensor to diesel particulate filter

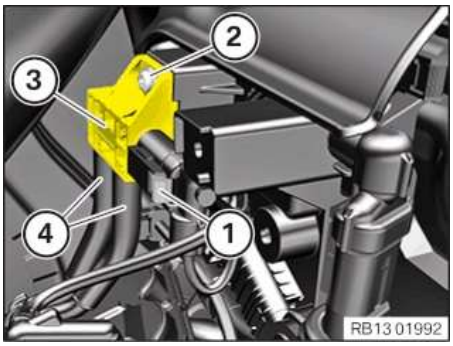
Sensor		Tightening torque	30 Nm



- Secure the exhaust temperature sensor (3) to the clamp (2).
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

34 – Installing the differential pressure sensor for the diesel particulate filter



- Feed in and install the differential pressure sensor (3).
- Tighten down screw (2).

Differential pressure sensor of diesel particulate filter on cylinder head cover

TS5x20		Tightening torque	4 Nm

- Check the pressure hoses (4) for hardening and damage, renew if necessary.
- Connect the pressure hoses (4) and secure them using 15 mm to 19 mm screw clamps.

Clamp for the pressure hose on the differential pressure sensor

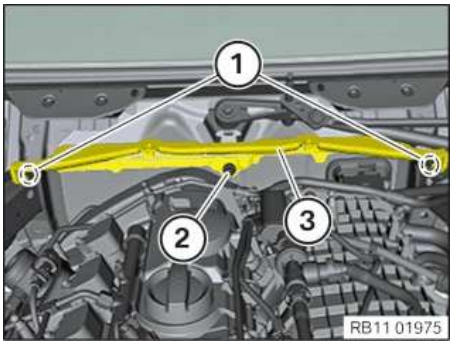
Clamp 15–19mm		Tightening torque	3 Nm

- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

35 – Installing centre bulkhead lower section

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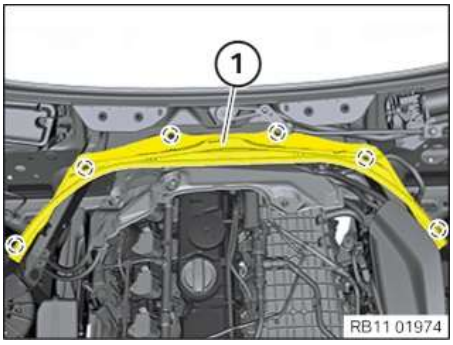


- Position the centre bulkhead lower part (3).
- Tighten nut (2) and screws (1).

Bulkhead lower part to body

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

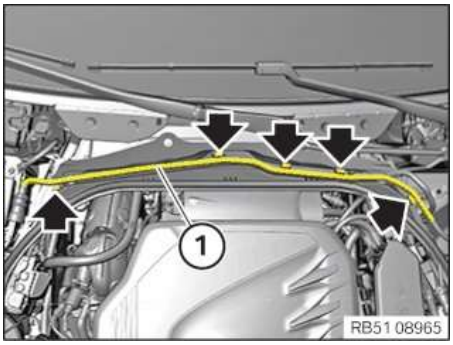
36 – Installing the centre bulkhead upper part



- Position the centre bulkhead upper part (1).
- Tighten the bolts in the marked areas.

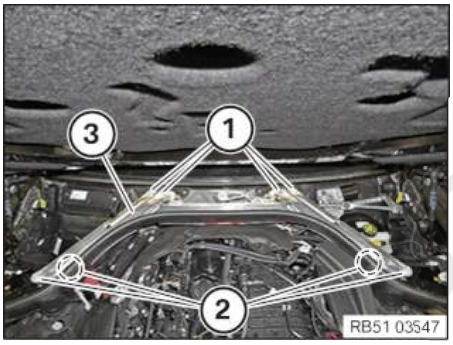
Bulkhead upper part to bottom bulkhead

		Tightening torque	3 Nm



- **Version with mild hybrid technology:**

  Clip in the wire (1) into the holders (arrows).



NOTICE

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

- Install the tension strut (3) on the spring strut dome.
- Tighten the screws (1).

Tension strut on bulkhead

M10x25 screw		Tightening torque	56 Nm

- Renew screws (2).

  Parts: Screws
- Tighten the screws (2).

Tension strut to spring strut dome

Screw	Renew screws.	Jointing torque	56 Nm
		Angle of rotation	90 °

37 – Installing cowl panel cover

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RISK OF DAMAGE

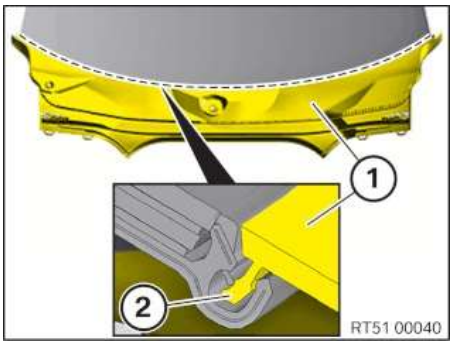
Damage caused by water ingress into the vehicle.

Water ingress into the vehicle may result in damage to components, malfunctions and corrosion.

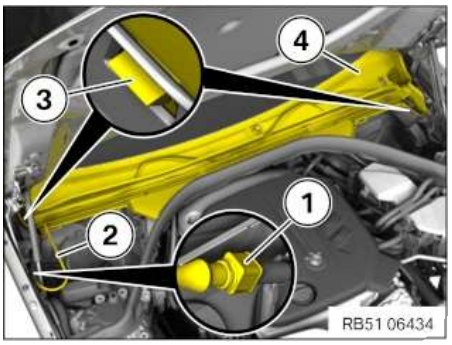
- Ensure correct installation of the components.
- Only use undamaged components.

TECHNICAL INFORMATION

Before installing the cowl panel cover it is **mandatory** to check that the 48 V line is routed correctly and fitted tightly.
An incorrectly laid or attached 48 V line can be damaged by the wiper kinematics.



- Push the cowl panel cover (1) into the latch mechanism (2) beginning on the side.



- Clip cowl panel cover (4)in by means of the latch mechanisms (3).
- Position windscreen wash hose (2) and connect windscreen wash hose (1)quick lock.

38 – Install left and right wiper arm

NOTICE

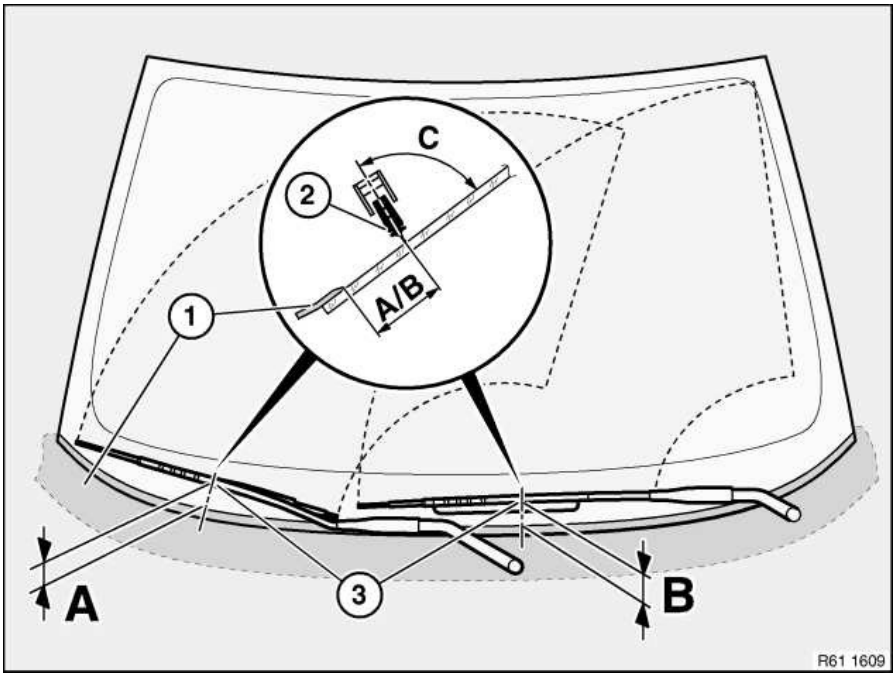
Description is for left component only. Procedure on the right side is identical.

▸ **Installing left and right wiper arm**

TECHNICAL INFORMATION

The wiper system must be in zero position.
After installing the cowl panel cover and before fitting the wiper arm:
Activate the wiper system once to ensure that it has the correct installation position.

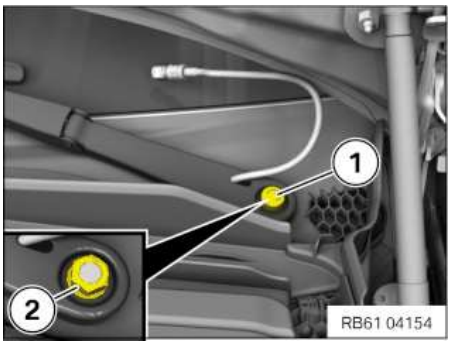
cardiagn.com



- Connect the wiper arm (3).
- Correctly position the wiper arm (2) in relation to the window edge (1).

Distance from window pane edge to wiper blade

Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

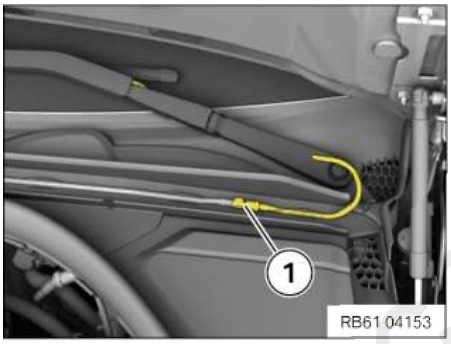


- Tighten nut (2).

Windscreen wiper arm

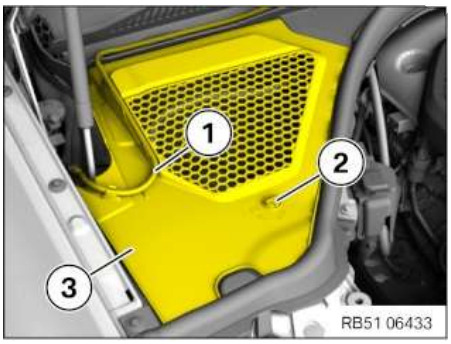
Combination hexagon nut		Tightening torque	35 Nm

- Connect the protective cap (1).



- Feed washer fluid hose (1) into the cowl panel guide and connect at the separation point.

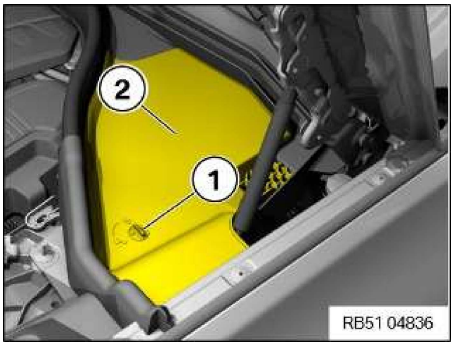
39 – Install the rear right engine compartment cover



- Position the cover of the engine compartment on the rear right (3).
- Close lock (2).
- Insert washer fluid hose (1) into the guides.

40 – Install the cover of the engine compartment on the rear left

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- Position the engine compartment cover at the rear left (2) .
- Close lock (1).

41 – Install the seal for the bonnet



- Press the rear bonnet seal (2) into the guide.
- Feed in cable (1) into the brackets.
- Check that the rear bonnet seal (2) and the cable (1) are seated correctly.

42 – For diesel particulate filter replacements: Reset adaptation values

NOTICE

This job item is not contained in the flat rate 18 31 080 and must be invoiced separately.

▸ **For diesel particulate filter replacements: register the diesel particulate filter**

TECHNICAL INFORMATION



- Registration of the diesel particulate filter **must** be carried out after exchanging the diesel particulate filter and before delivering the vehicle to the customer!



- Register the diesel particulate filter with the diagnosis system.

  The registration of the diesel particulate filter is only possible with the diagnosis system.
  - Service functions
  - Power train
  - DDE
  - Register exchange of diesel particulate filter

Additional Information

Overview of Tightening Torques

Diesel particulate filter V-clip to exhaust turbocharger — Used in step 22

V-band clamp	Renew V-band clamp.	Tightening torque	15 Nm

Bracket to diesel particulate filter top — Used in step 22

M8		Tightening torque	19 Nm

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Bracket to transmission for diesel particulate filter holder bottom			Used in step 22
M8X20		Tightening torque	19 Nm

Lower holder to diesel particulate filter			Used in step 22
M8		Tightening torque	19 Nm

Coolant lines for SCR metering module			Used in step 22
M6X16		Tightening torque	8 Nm

Nitrogen oxide sensor before SCR catalytic converter			Used in step 23
Sensor		Tightening torque	50 Nm

Monitoring oxygen sensor			Used in step 24
Sensor		Tightening torque	50 Nm

Rear silencer to body / bumper support			Used in step 25
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 25
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 25
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 25
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 25
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 25
Sensor		Tightening torque	30 Nm

Diesel particulate sensor to exhaust system			Used in step 25
Sensor		Tightening torque	50 Nm

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 25
Sensor		Tightening torque	55 Nm

Diffuser / underbody panelling			Used in step 26
Nuts and screws		Tightening torque	3 Nm

Connecting support to tunnel			Used in step 27
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody protection			Used in step 2829
Hexagon screw		Tightening torque	3 Nm

Underbody panelling			Used in step 30
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Exhaust temperature sensor for the exhaust system after catalytic converter before diesel particulate filter			Used in step 31
Sensor		Tightening torque	30 Nm

Front oxygen sensor to top of diesel particulate filter			Used in step 32
Sensor		Tightening torque	50 Nm

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Exhaust-gas temperature sensor to diesel particulate filter			Used in step 33
Sensor		Tightening torque	30 Nm

Differential pressure sensor of diesel particulate filter on cylinder head cover			Used in step 34
TS5x20		Tightening torque	4 Nm

Clamp for the pressure hose on the differential pressure sensor			Used in step 34
Clamp 15–19mm		Tightening torque	3 Nm

Bulkhead lower part to body			Used in step 35
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Bulkhead upper part to bottom bulkhead			Used in step 36
		Tightening torque	3 Nm

Tension strut on bulkhead			Used in step 36
M10x25 screw		Tightening torque	56 Nm

Tension strut to spring strut dome			Used in step 36
Screw	Renew screws.	Jointing torque	56 Nm
		Angle of rotation	90 °

Windscreen wiper arm			Used in step 38
Combination hexagon nut		Tightening torque	35 Nm

Overview of Special Tools

Overview Technical Data

Distance from window pane edge to wiper blade	Used in step 38
Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

Links

Repair instructions	Used in step
61 35 ... Notes on ESD protection (Electro Static Discharge)	8910111819
61 35 ... Notes on ESD protection (Electro Static Discharge)	8910111819

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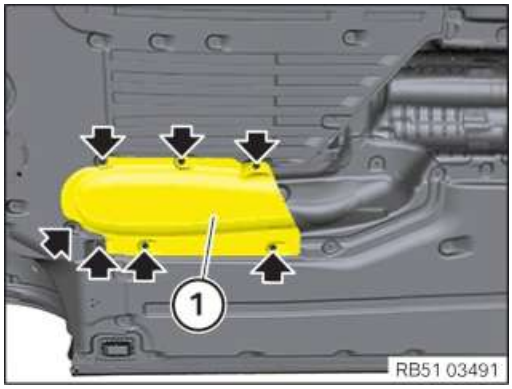
18 31 130 Removing and installing/replacing metering unit

PRELIMINARY WORK

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

NOTICE

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



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

MAIN WORK

2 – Remove the SCR metering module

WARNING

Hot surfaces.

Risk of burning!

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

CAUTION

Materials harmful to health.

Contact with fluids harmful to health!

- Note and follow safety information on containers.
- Conduct all work in appropriate personal protective equipment only.

TECHNICAL INFORMATION

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

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TECHNICAL INFORMATION

After repair work, clean the working area thoroughly with water.
Clean special tools with water after every use.

TECHNICAL INFORMATION

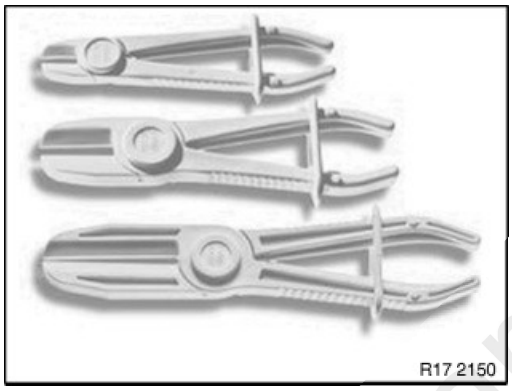
Use only lint-free cloths for cleaning the SCR system: WAYPALL cleaning cloths L20 - see BMW Group Parts.

TECHNICAL INFORMATION

Notes on work at the cooling system form the basis of these repair instructions and must be complied with at all times.
For additional information see: 17 00 ... Instructions for repair work on cooling system

TECHNICAL INFORMATION

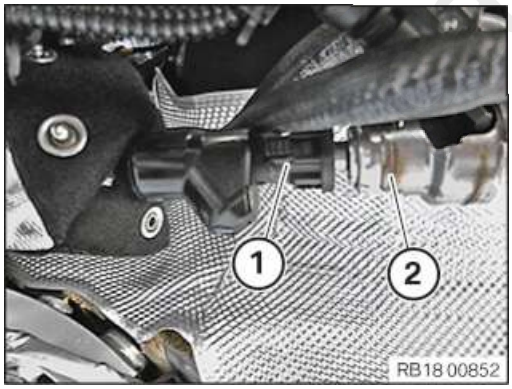
Do not unintentionally swap the coolant hoses and coolant lines. If necessary, mark before removal.



TECHNICAL INFORMATION

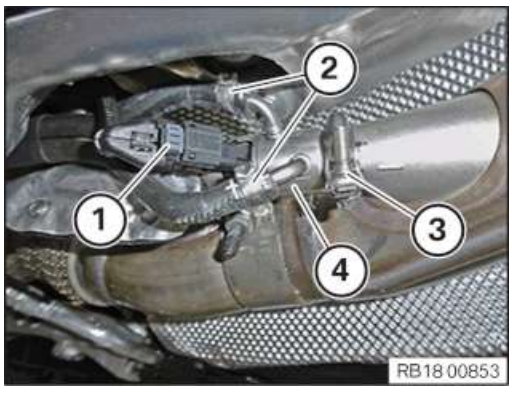
Only flexible hose pipes may be disconnected.

- Use commercially available pinch-off tools to pinch off the coolant hoses.



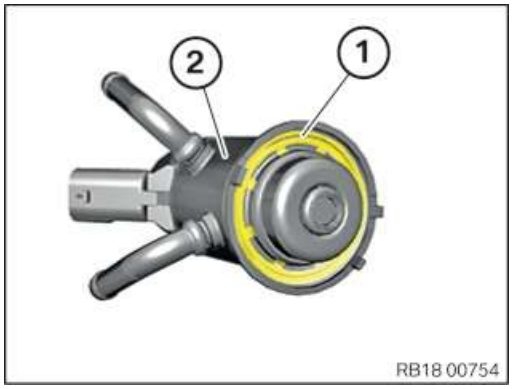
- When releasing the metering line, make sure that **no lateral forces** act on the metering line and the connection.

  The SCR metering module connection can be damaged by lateral forces.
- Unlock the metering line (1) and disconnect it from the SCR metering module (2).



- Unlock plug connection (1) and disconnect.
- Release the clamps (2) and pull off the coolant hoses.
- Loosen V-band clamp (3).
- Guide out and remove the SCR metering module (4).

3 – Installing the SCR metering module



TECHNICAL INFORMATION

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

RISK OF DAMAGE

Improper removal of the seal of the SCR metering module.

Damage to the sealing surface, leak in the SCR metering module.

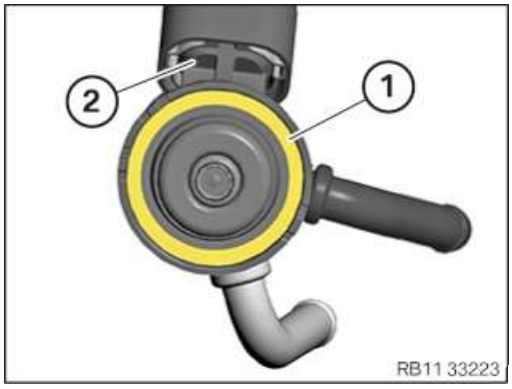
- Carefully remove the seal.

- Remove seal (1) **with care** from SCR metering module (2).

  It is absolutely essential to ensure that sealing surface on SCR metering module (2) **is not damaged.**

Check

- Check sealing surface (1) of the SCR metering module (2) for damage.



Result

» Sealing surface (1) is **damaged**.

» This results in a **leak** at SCR metering module (2).

Measure

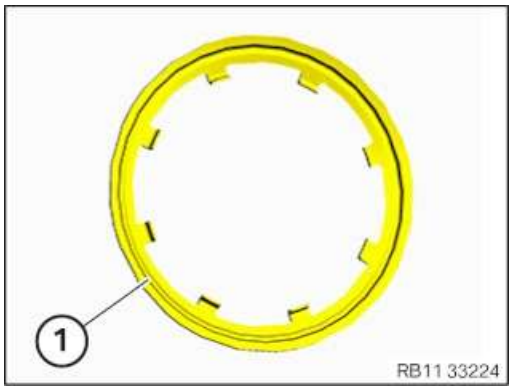
- Renew SCR metering module (2).

Result

» Sealing surface (1) is **not damaged**.

Measure

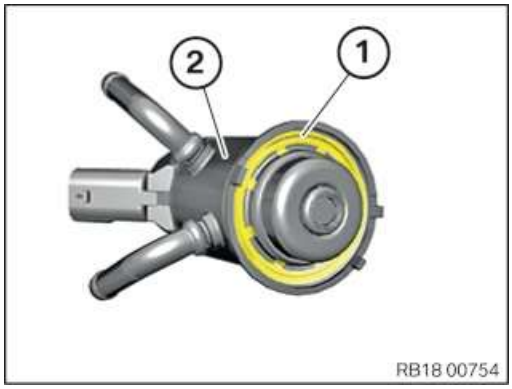
- Continue with the next work step.



- Renew seal (1).

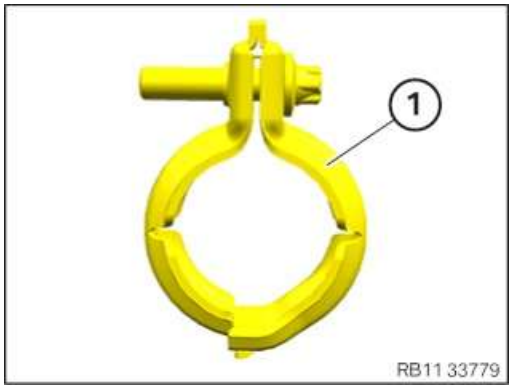
  Parts: Gasket

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- Mount seal (1) on SCR metering module (2).

▸ Checking the screw connection of the V-clips

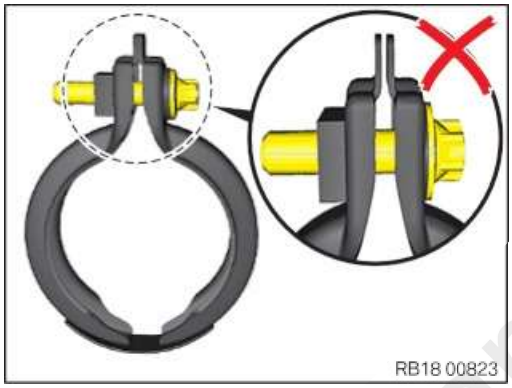


TECHNICAL INFORMATION

The V-clip **must** be renewed! Reuse is not permitted.

- Renew V-clip (1).

  Parts: V-band clamp



Check

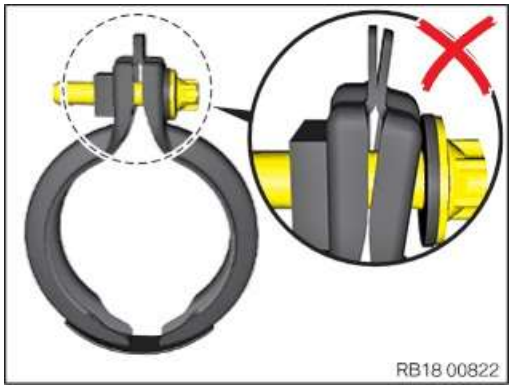
- Check if the screw connection of the V-band clamp is too loose.

Result

» The screw connection is too slack. A gap can be seen between the ends of the V-clips.

Measure

- Loosen the screw and tighten again.



Check

- Check if the screw connection of the V-band clamp is too tight.

Result

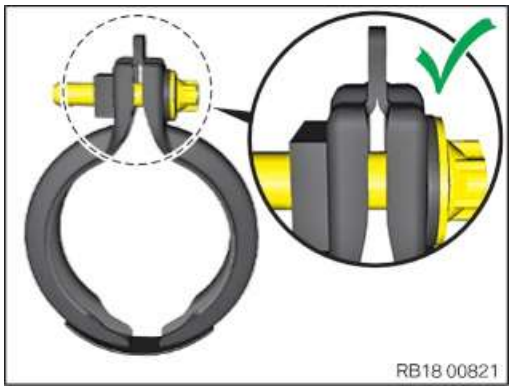
» The screw connection is too tight. The ends of the V-clip are not positioned parallel.

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Measure

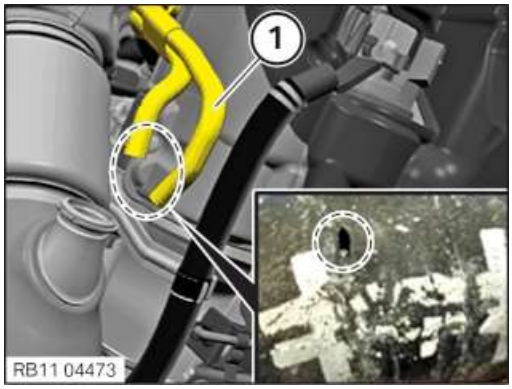
- Release the screw and renew V-clip.

  Parts: V-band clamp



- Make sure that the ends of the V-band clamp are parallel to each other.

Check



- Check the coolant lines (1) in the marked area for damage caused by the clamp.

Note: Bend the coolant lines back and forth slightly to see the damage better.

Result

» Coolant lines (1) are damaged.

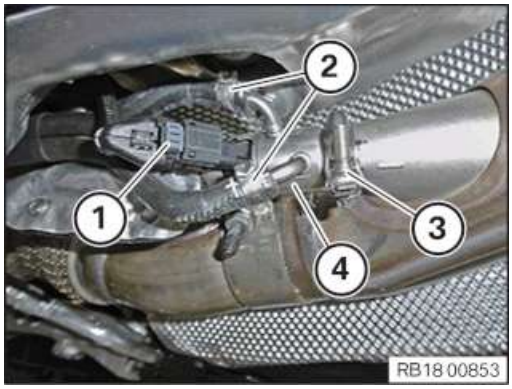
Measure

- Drain the coolant and renew the coolant lines (1) for the SCR metering module.



- In order to mount the clamps onto the SCR metering module, use only the special tool 0 494 152 (32 1 260).
- Compress the clamps on the marked, slightly open side (arrows).

  The clamp is crimped correctly when the gap is **less than** 1 mm.



- Renew V-clip (3).

  Parts: V-band clamp
- Insert and install the SCR metering module (4).
- Tighten V-clip (3).

SCR metering module V-clip to exhaust system

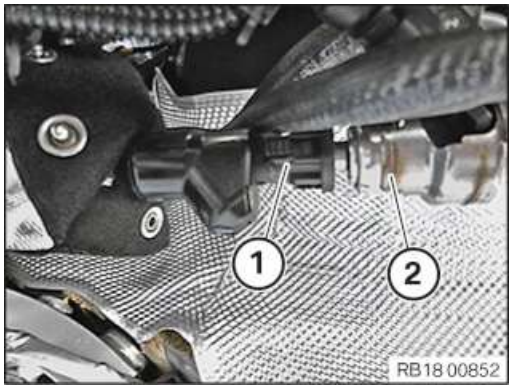
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

- Renew the clamps (2).

  Parts: Clamp
- Connect the coolant hose and tighten the clamps (2).
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

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- Connect metering line (1) to SCR metering module (2) and lock.

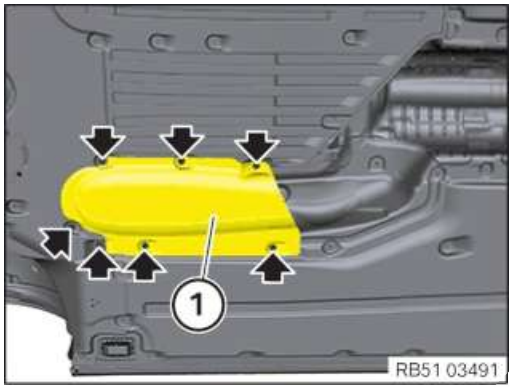
  The metering line (1) must engage audibly.

POSTPROCESSES

4 – Install the underbody panelling of the transmission on the side

NOTICE

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



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

Underbody panelling

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

5 – When replacing the metering unit: Reset the adaptations and adjustments of the SCR system



▸ **Reset the adaptations and adjustments of the SCR system**

- Connect diagnosis system:
  - Service functions
  - Power train
  - Digital Diesel Electronics
  - SCR system
  - SCR system adjustments and adaptations

Additional Information

Overview of Tightening Torques

SCR metering module V-clip to exhaust system — Used in step 3

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

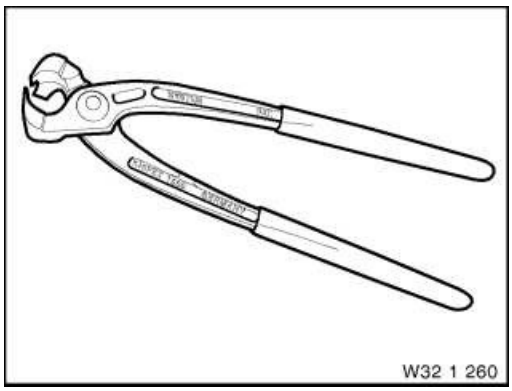
Underbody panelling — Used in step 4

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

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Overview of Special Tools

0 494 152 (32 1 260) Pliers



Common	Used in step 3
Usage	For opening and fastening hose clamps
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 02 01 (667)

Links

Repair instructions	Used in step
17 00 ... Instructions for repair work on cooling system	2

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18 40 040 Removing and installing/replacing the exhaust manifold

WARNING

Hot surfaces.

Risk of burning!

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

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 ... Notes for ESD protection (electrostatic discharge)

RISK OF DAMAGE

Contaminant or foreign body.

Contamination can result in malfunctions, operating failure or leaks.

- Adhere to the utmost cleanliness.
- Protect components from contamination e.g. by covering.
- Close off line connections with seal plugs.

TECHNICAL INFORMATION

Prior to replacing the exhaust turbocharger: Observe the notes on troubleshooting on the exhaust turbocharger.

For additional information see: FUB-FUB-FB-130003-A10 Troubleshooting on the exhaust turbocharger

TECHNICAL INFORMATION

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

TECHNICAL INFORMATION

For exhaust turbocharger damage: Check the pressure pipes, charge air cooler and intake plenum for foreign matter, damage and correct functionality.

If the oil return line is exchanged, then the connecting pipe to the oil sump must ALWAYS be cleaned, as the connecting pipe can coke.

TECHNICAL INFORMATION

With exhaust turbocharger damage, it is imperative to observe the additional information.

For additional information see: 11 65 020 Exhaust turbocharger damage due to plugged oil supply lines

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1 – Bring front compartment lid in the service position

Prerequisite

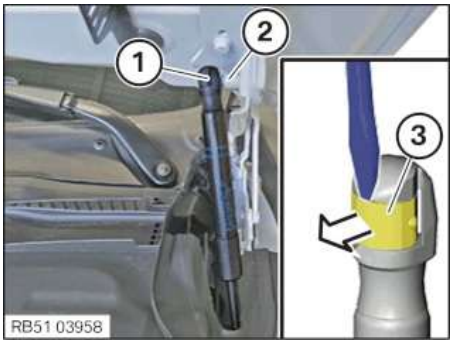
Engine compartment lid is open.

CAUTION

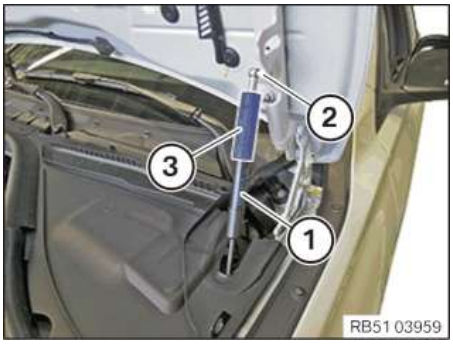
Shutting bonnet or tailgate.

Danger of injury!

- Support bonnet/tailgate in fully open position with the aid of a suitable device.



- Lift clamp (3) slightly using a screwdriver, in the direction of the arrow.
- Lift off ball socket (1) from ball pin (2).
- Repeat the operation on the other side of vehicle.

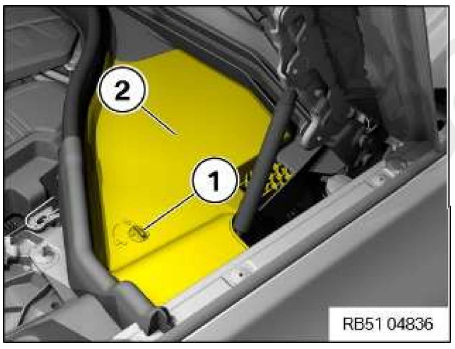


TECHNICAL INFORMATION

Conduct the following operation with the assistance of a second person.

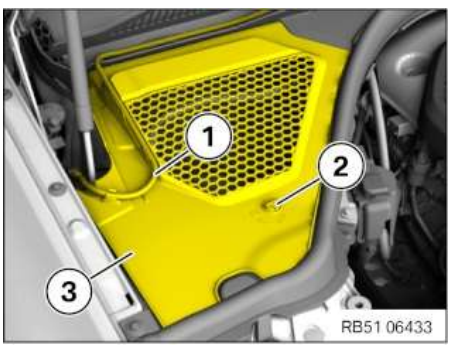
- Remove the bonnet support and open the bonnet further.
- Pull special tool or or (3) over gas pressure spring (1).
- Place special tool on the ball pin (2) and engage using force.
- Repeat the operation on the other side of vehicle.

2 – Remove the cover of the engine compartment at the rear left



- Loosen the lock (1).
- Remove the cover (2) of the rear left engine compartment.

3 – Remove the cover of the rear right engine compartment



- Release washer fluid hose (1) from the guides.
- Loosen the lock (2).
- Remove the cover (3) of the rear right engine compartment.

4 – Deactivating the 48 V electrical system

Prerequisite

Ignition is switched off.

WARNING

Deactivation of the 12 V vehicle electrical system.

Risk of short circuits! Risk of fire!

- Make sure that **no battery charger** is connected to the jump start terminal point in the engine compartment.
- For vehicles with additional electrical systems (48 V electrical system, high-voltage vehicle electrical system), it is mandatory to deactivate them **before** disconnecting the vehicle battery.

WARNING

Deactivation of the 48 V electrical system.

Risk of short circuits! Risk of fire!

- Make sure that **no charger** is connected to the jump start support point in the engine compartment.

RISK OF DAMAGE

Damage to 48-V battery

If a 48-V battery that is disconnected from the electrical system is activated, the battery electronics will be damaged.

- Only carry out activation of the 48V electrical system with a completely connected 48-V battery.

TECHNICAL INFORMATION

Follow notes for 48-V battery. See further information 6120 ... Notes on 48-V battery.



- Deactivate the 48V electrical system by opening the bonnet.

  The deactivation takes place automatically.



Check

TECHNICAL INFORMATION

Zero voltage (48V electrical system is switched off) is displayed only in PAD mode.

- Press the START-STOP button quickly 3 times without stepping on the brake pedal to establish the PAD mode.
- Check isolation from the supply in the instrument cluster in PAD mode.

desired state

- The Check Control message "48V electrical system switched off." (1) is displayed.

Result

» **The absence of voltage** cannot be determined by means of the Check Control message "48V electrical system switched off:" (1). Work is not permitted to be started.

Measure

- Carry out the service function "48 V electrical system deactivation".
  - Vehicle management > Service functions > Voltage supply > Deactivate 48 V electrical system

Only when the Check Control message “48 V electrical system switched off.” (1) is displayed in the instrument cluster is it permitted to disconnect the 12 V battery.

If the absence of voltage is not indicated clearly, contact Technical Support.

Result

» The Check Control message signals that the 48V electrical system has been switched off.

Measure

- Exit PAD mode by pressing the START-STOP button once without depressing the brake pedal.

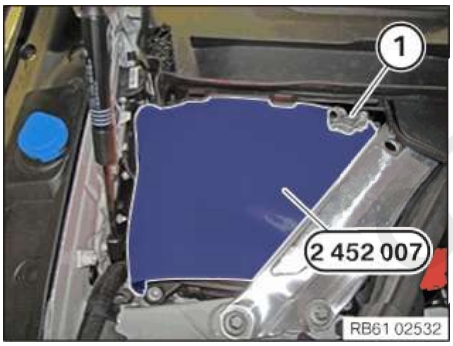
The work “Disconnecting the negative battery cable of the 48-V battery” can be started.



- Unlock and disconnect plug connection (1) of the CAN bus.
- Release the clip (2).



- Loosen nut (1).
- Pull off negative battery cable (2) of the 48-V battery from the negative battery terminal, set it aside and secure it.



WARNING

Unprotected battery terminals.

Risk of short circuits! Risk of fire!

- Cover the vehicle battery.

- Cover the vehicle battery with the special tool as shown.
- Position the battery earth lead (1) as shown.

5 – Disconnecting all battery earth leads



- See additional information.

6 – Removing the wiper arm on the left and right

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NOTICE

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

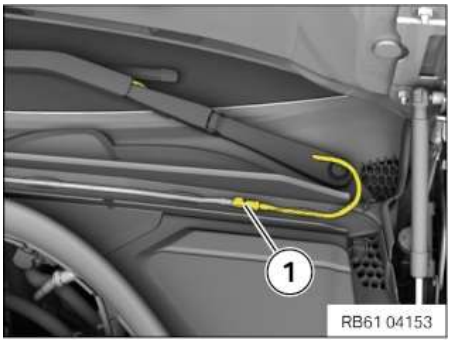
▸ **Remove the wiper arm**

RISK OF DAMAGE

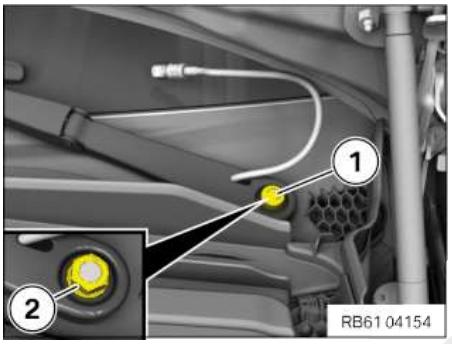
Damage to wiper console.

While removing the wiper arms without using special tool, the wiper console can break.

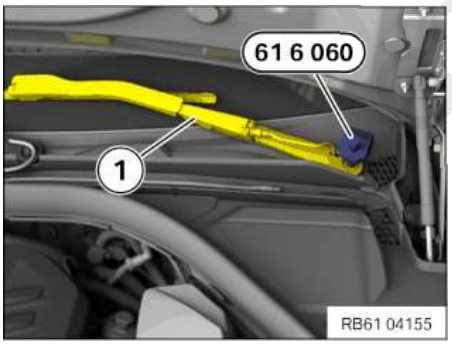
- Removing the wiper arms must be carried out only using the prescribed special tool.
- Do **not** lever off the wiper arm because otherwise the wiper console may break at the predetermined breaking point for active pedestrian protection.



- Disconnect the washer fluid hose (1) at the separation point and feed out from the cowl panel guide.

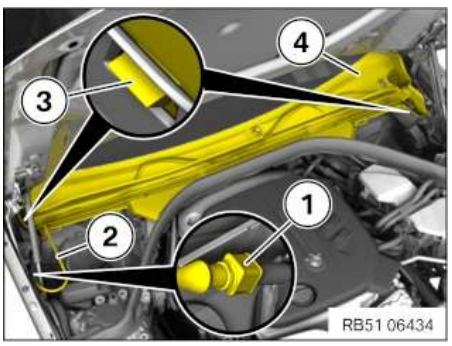


- Remove the protective cap (1).
- Loosen nut (2).



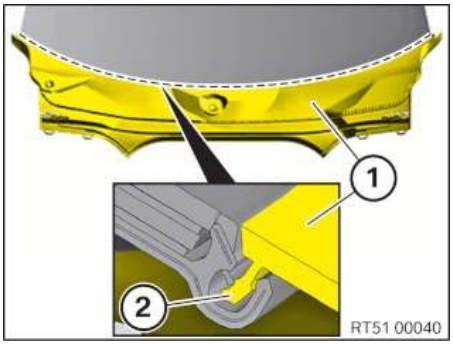
- Pull off the wiper arm (1) using special tool .

7 – Remove cowl panel cover



- Release snap fastener (1) of the washer fluid hose (2) and put the washer fluid hose (2) to one side.
- Unclip clips (3) on the cowl panel cover (4).

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- Pull the cowl panel cover (1) upward out of the latch mechanism (2) beginning on the side.

8 – Remove the seal for the rear bonnet

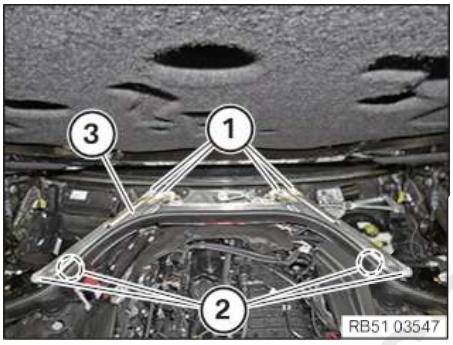


- Feed the cable (1) out of the brackets toward the front.
- Remove the rear bonnet seal (2) from the guide toward the inside.

9 – Removing the centre bulkhead upper part

TECHNICAL INFORMATION

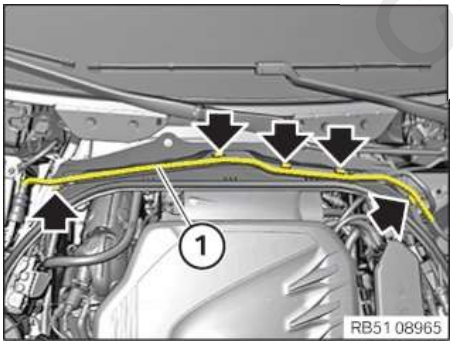
Driving without the strut brace/front-end strut or tension strut is not permitted.



NOTICE

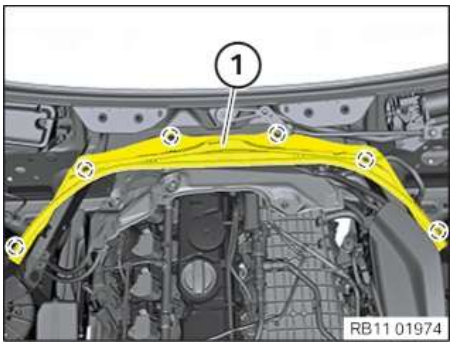
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.

- Loosen screws (1) and (2).
- Remove tension strut (3) in the spring strut dome upwards.



- **Version with mild hybrid technology:**

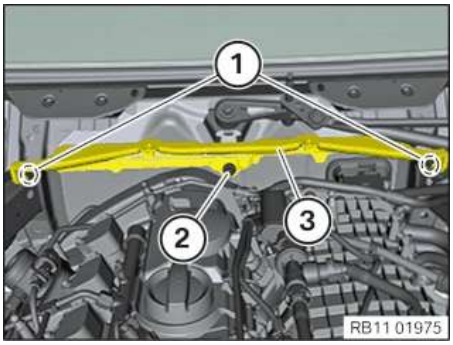
  Unclip the wire (1) at the holders (arrows).



- Unscrew the bolts in the marked areas.
- Remove the centre bulkhead upper part (1).

10 – Removing the centre bulkhead lower section

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- Loosen screws (1).
- Loosen nut (2).
- Remove the centre bulkhead lower part (3).

11 – Removing the acoustic cover

RISK OF DAMAGE

Damage to the acoustic cover/design cover.

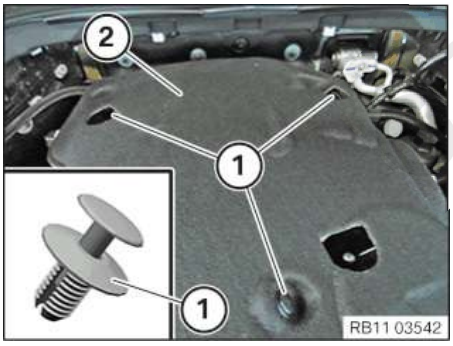
Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover/design cover.

- Disassemble or mount the acoustic cover/design cover carefully.
- Disassemble or mount snap-lock couplings of the ball pivots one after the other.
- Disassemble or mount acoustic cover/design cover only at temperatures >20 °C.
- Use only distilled water as an auxiliary material during installation, no lubricants.



- Unclip the acoustic cover (1) from the holders in the indicated area towards the top.

12 – Remove the acoustic cover for the injectors



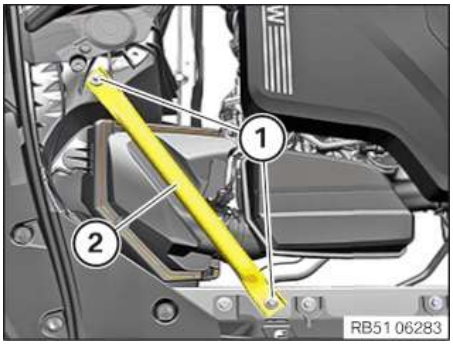
- **If installed:** Release the expanding rivet (1).
- Guide the acoustic cover (2) out and remove.

13 – Remove right front-end strut

TECHNICAL INFORMATION

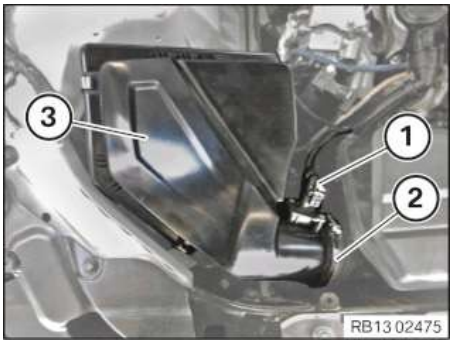
Driving without the strut brace/front-end strut or tension strut is not permitted.

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- Loosen screws (1).
- Remove the front-end strut (2).

14 – Removing intake silencer housing



- Unlock plug connection (1) and disconnect.
- Unfasten clamp (2).
- Pull out and remove the intake silencer housing (3) from the rubber mounts towards the top.

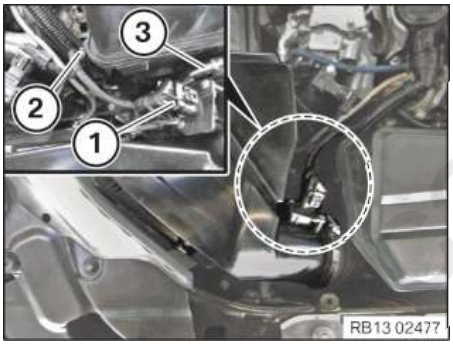
15 – Removing the clean air pipe with the resonator

WARNING

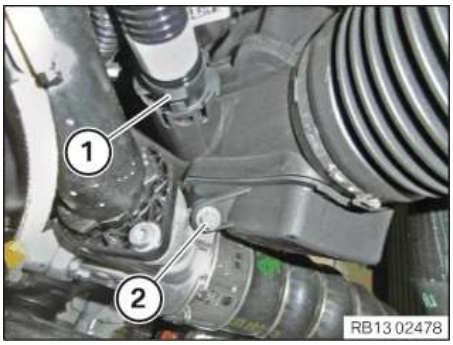
Hot surfaces.

Risk of burning!

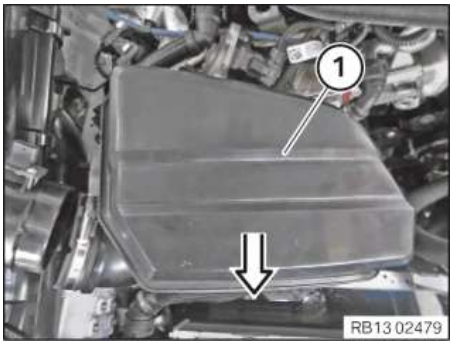
- Perform all work only on components that have cooled down.



- Unlock plug connection (1) and disconnect.
- Loosen clamp (2).
- Unfasten clamp (3).
- Separate the clean air pipe with resonator from the intake filter housing.



- Unlock engine ventilation line (1), disconnect it and place it aside.
- Loosen screw (2).



- Press and hold clean air pipe with resonator (1) in the direction of the arrow.



- Unlock and loosen clamp (1).



- Feed out and remove clean air pipe with resonator (1) in the direction of the arrow.

16 – Remove differential pressure sensor for the diesel particulate filter

WARNING

Hot surfaces.

Risk of burning!

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

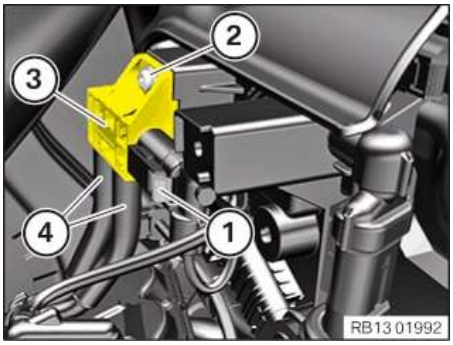
RISK OF DAMAGE

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 ... Notes for ESD protection (electrostatic discharge)

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- Unlock plug connection (1) and disconnect.
- Loosen screw (2).
- Pull off pressure hose (4).
- Feed out differential pressure sensor (3) and remove.

17 – Remove the exhaust temperature sensor on the diesel particulate filter

WARNING

Hot surfaces.

Risk of burning!

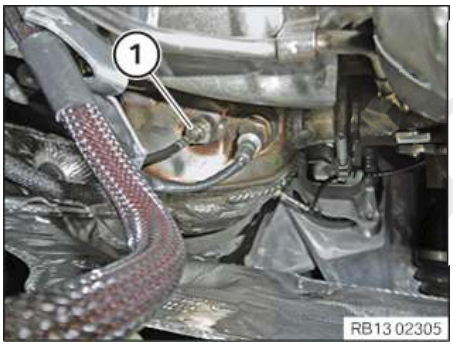
- Perform all work only on components that have cooled down.

RISK OF DAMAGE

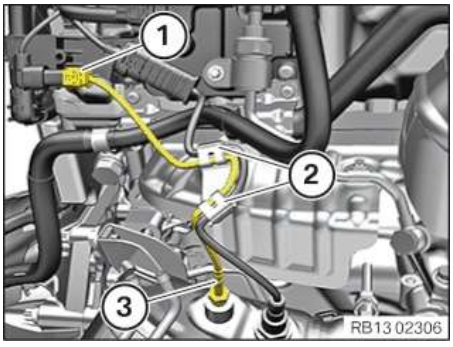
Electrostatic discharge.

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 ... Notes for ESD protection (electrostatic discharge)



- Release exhaust temperature sensor (1) using special tool .



- Unlock plug connection (1) and disconnect.
- Remove the exhaust temperature sensor (3) from the clamps (2).
- Feed out and remove exhaust temperature sensor (3).

18 – Removing the front oxygen sensor on the diesel particulate filter on top

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WARNING

Hot surfaces.

Risk of burning!

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

RISK OF DAMAGE

Electrostatic discharge.

Damage to or destruction of electrical components.

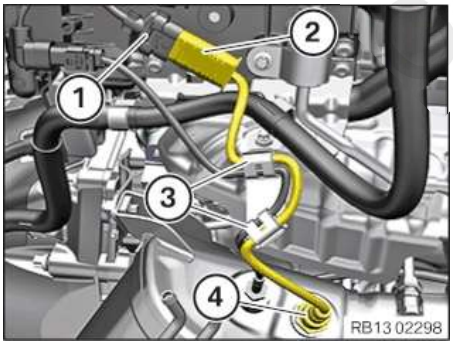
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the 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 ... Notes for ESD protection (electrostatic discharge)

RISK OF DAMAGE

Damage to the front oxygen sensor or monitoring oxygen sensor.

Failure of the front oxygen sensor or monitoring oxygen sensor due to contamination or preliminary mechanical damage.

- Remove the protective cap on the sensor only when screwing the sensor on to the exhaust system.
- Do not use mounting aids, cleaning agents, gaseous and liquid agents in workplaces, storage areas and during transport.
- Contaminations (particles, dust exposure, moisture, etc.) in the area of the plug and socket connection and the sensor must be avoided.
- Mechanical loads (impacts on the sensor or the control unit, tensile loads on the cable, etc.) must be avoided.
- Do not continue using component if these specifications are deviated from.
  - The installation location (exhaust system) must be dry. If necessary, dry the installation location with compressed air.



- Unlock plug connection (1) and disconnect.
- Unlock and disconnect connector (2).
- Pull the front oxygen sensor (4) out from the clamps (3) and remove it.



- Release the front oxygen sensor (1) with the standard tools and remove it.

particulate filter

WARNING

Hot surfaces.

Risk of burning!

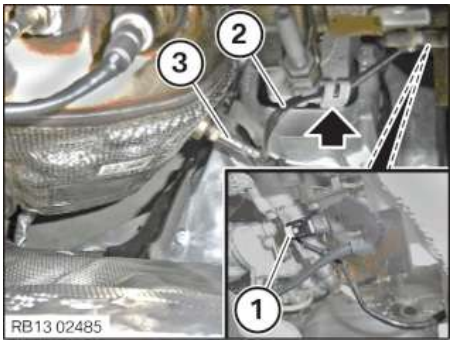
- Perform all work only on components that have cooled down.

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 ... Notes for ESD protection (electrostatic discharge)



- Unlock plug connection (1) and disconnect.

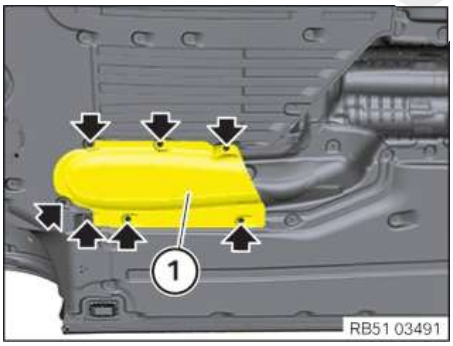
Note: The exhaust temperature sensor is located near the right engine mount.

- Release cable (2) from the clamps (arrow).
- Loosen exhaust temperature sensor (3).
- Feed out and remove exhaust temperature sensor (3).

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

NOTICE

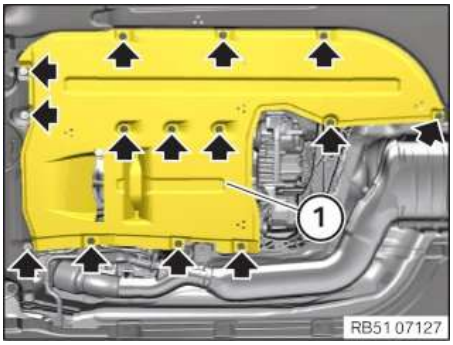
The following work step(s) is / are to be carried out if the specified component(s) is/are fitted.



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

21 – Remove rear underbody protection

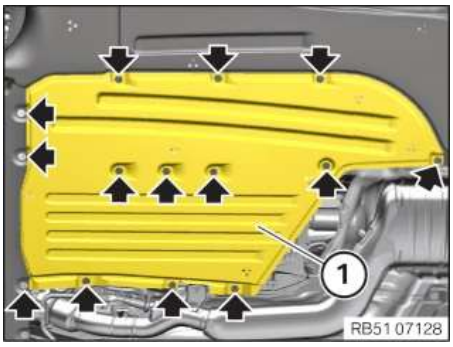
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- **Version A:**

  Remove screws (arrows).

  Feed out the rear underbody protection (1).

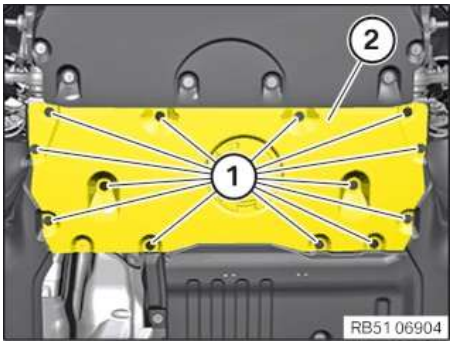


- **Version B:**

  Remove screws (arrows).

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

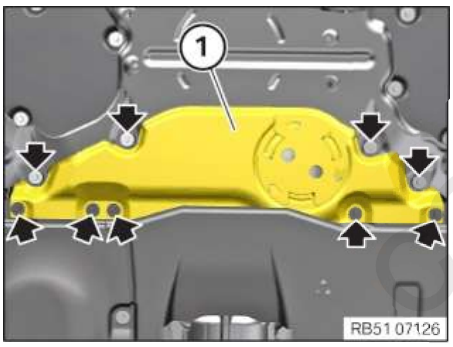
22 – Removing the centre underbody protection



- **Variant with rear wheel drive:**

  Loosen screws (1).

  Remove centre underbody protection (2) .

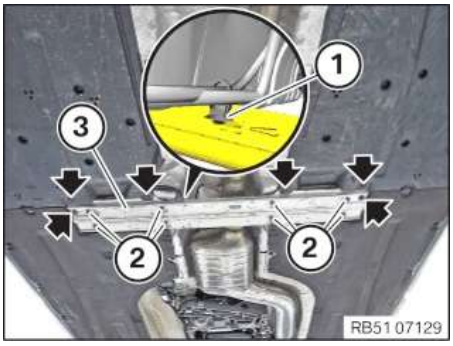


- **Version with all-wheel drive:**

  Remove screws (arrows).

  Feed out and remove the centre underbody protection (1).

23 – Remove the connecting support from the tunnel



- Remove screws (arrows).

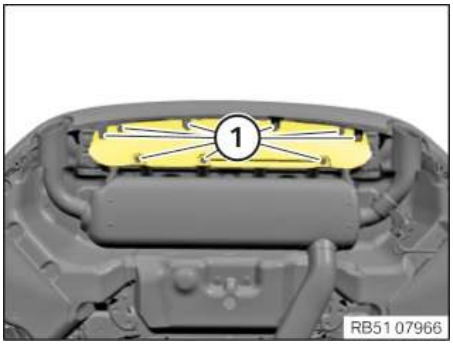
NOTICE

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

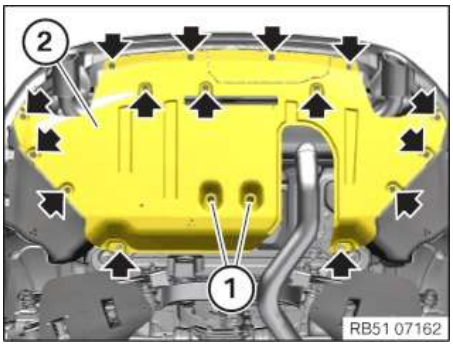
- Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

24 – Removing the rear diffuser

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



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

25 – Remove exhaust system

WARNING

Hot surfaces.

Risk of burning!

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

CAUTION

Component with heavy weight.

Danger of injury!

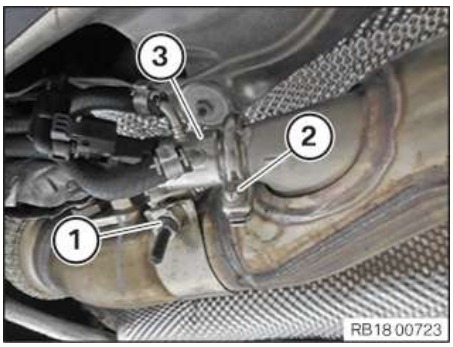
- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

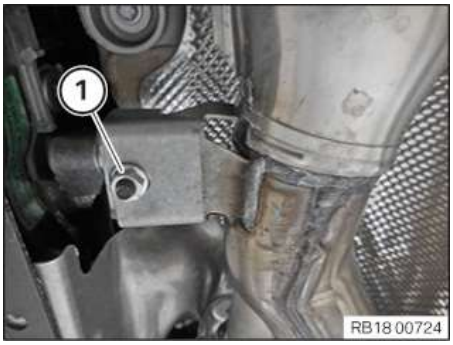
Heavy components can lead to injury or damage.

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

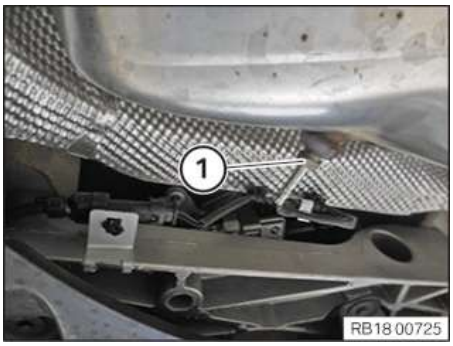


- Unfasten clamp (1).
- Detach the clamp (2) of the SCR metering module (3).
- Detach the SCR metering module (3)from the exhaust system and place to one side.

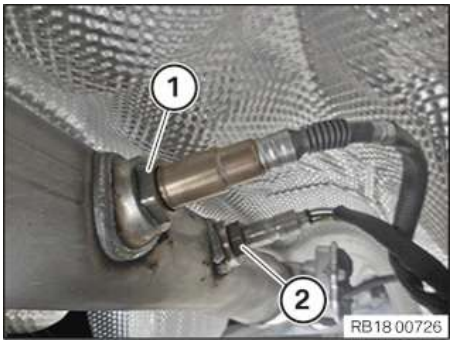
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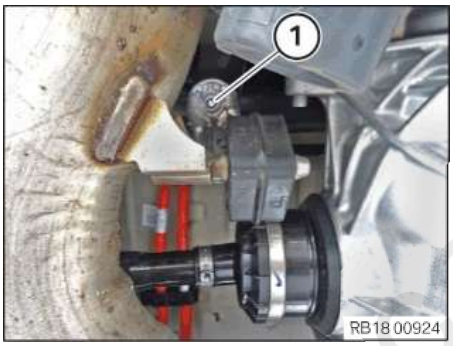
- Loosen nut (1).



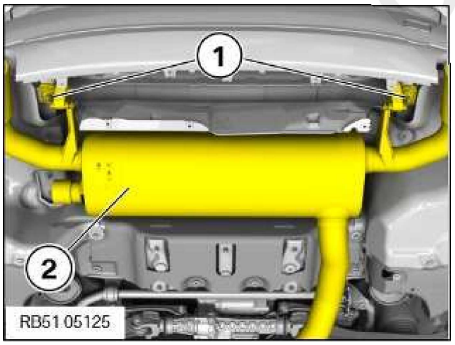
- Detach the exhaust temperature sensor (1) from the exhaust system.



- Release the diesel particulate sensor (1) from the exhaust system and place to one side.
- Release the nitrogen oxide sensor (2) from the exhaust system and place to one side.



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



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

26 – Removing the monitoring oxygen sensor after the diesel particulate filter

WARNING

Hot surfaces.

Risk of burning!

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

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RISK OF DAMAGE

Electrostatic discharge.

Damage to or destruction of electrical components.

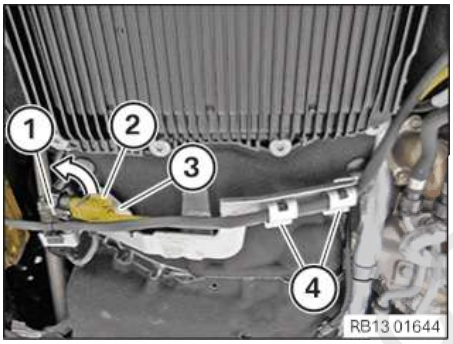
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the 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 ... Notes for ESD protection (electrostatic discharge)

RISK OF DAMAGE

Damage to the front oxygen sensor or monitoring oxygen sensor.

Failure of the front oxygen sensor or monitoring oxygen sensor due to contamination or preliminary mechanical damage.

- Remove the protective cap on the sensor only when screwing the sensor on to the exhaust system.
- Do not use mounting aids, cleaning agents, gaseous and liquid agents in workplaces, storage areas and during transport.
- Contaminations (particles, dust exposure, moisture, etc.) in the area of the plug and socket connection and the sensor must be avoided.
- Mechanical loads (impacts on the sensor or the control unit, tensile loads on the cable, etc.) must be avoided.
- Do not continue using component if these specifications are deviated from.
  - The installation location (exhaust system) must be dry. If necessary, dry the installation location with compressed air.



- Unlock and loosen connector (1).
- Loosen connector (2) from the holder (3) in direction of arrow.
- Release the monitoring oxygen sensor from the clamps (4).



- Release the monitoring oxygen sensor (1) with the standard tools.



- Thread out the monitoring oxygen sensor (1) and remove it.

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27 – Removing the nitrogen oxide sensor before SCR catalytic converter

WARNING

Hot surfaces.

Risk of burning!

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

RISK OF DAMAGE

Electrostatic discharge.

Damage to or destruction of electrical components.

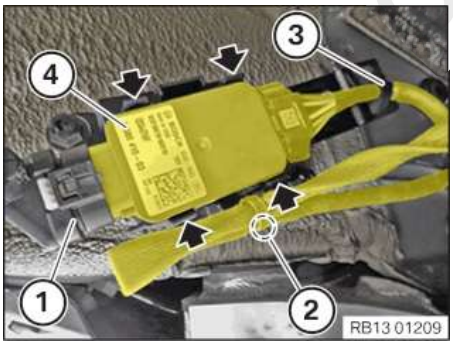
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the 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 ... Notes for ESD protection (electrostatic discharge)

RISK OF DAMAGE

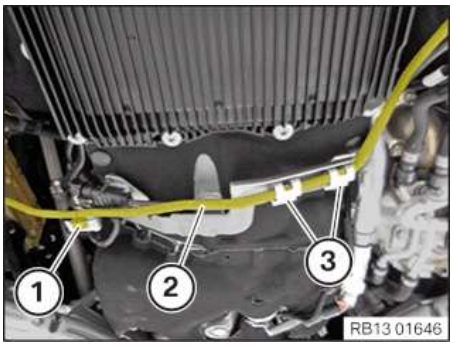
Damage to the nitrogen oxide sensor.

Failure of the nitrogen oxide sensor due to contamination or preliminary mechanical damage.

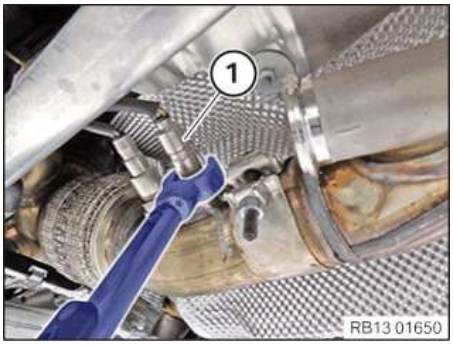
- Remove the protective cap on the sensor only when screwing the sensor on to the exhaust system.
- Do not use mounting aids, cleaning agents, gaseous and liquid agents in workplaces, storage areas and during transport.
- Contaminations (particles, dust exposure, moisture, etc.) in the area of the plug and socket connection and the sensor must be avoided.
- Mechanical loads (impacts on the sensor or the control unit, tensile loads on the cable, etc.) must be avoided.
- Do not continue using component if these specifications are deviated from.
- The installation location (exhaust system) must be dry. If necessary, dry the installation location with compressed air.



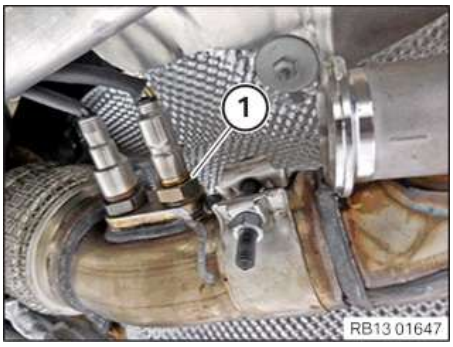
- Unlock plug connection (1) and disconnect.
- Release cable clip in area (2).
- Release line from the holder (3).
- Unclip control unit (4).



- Loosen clamp (1).
- Loosen the cables (2) from the clamps (3).



- Loosen the nitrogen oxide sensor (1) using commercially available tools.



- Feed out and remove the nitrogen oxide sensor (1).

28 – Removing the diesel particulate filter

WARNING

Hot surfaces.

Risk of burning!

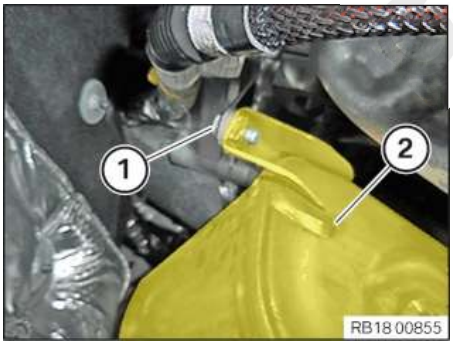
- Perform all work only on components that have cooled down.

CAUTION

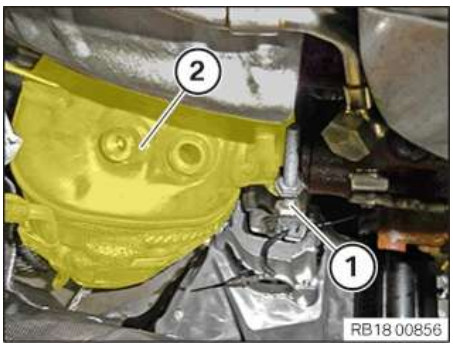
Heavy component.

Heavy components can lead to injury or damage.

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

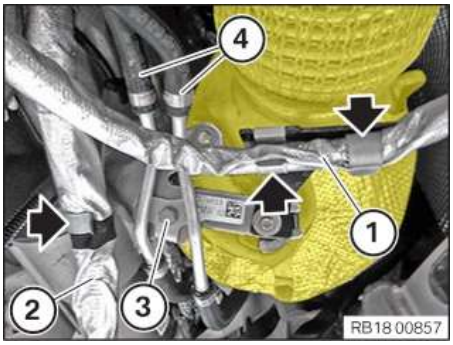


- Release bolt (1) from the holder of diesel particulate filter (2).

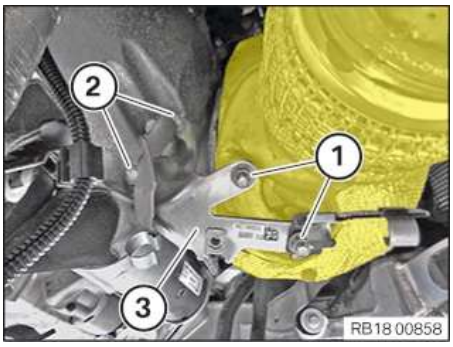


- Loosen V-band clamp (1).
- Feed V-clip (1) out from diesel particulate filter (2) and remove.

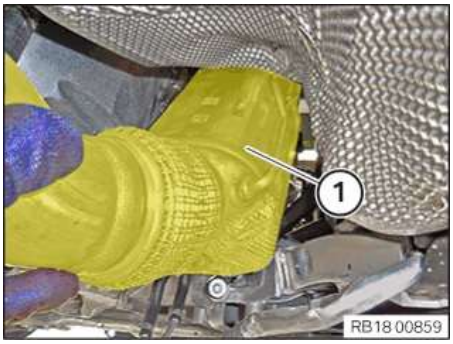
boardiagn.com



- Release the metering line (1) from clamps (Arrows).
- Release positive battery cable (2) from starter motor from clamp (Arrow).
- Loosen screw (3).
- Thread off coolant line (4) and place to the side.



- Loosen nuts (1).
- Loosen screws (2).
- Guide out and remove holder (3).



- Guide out and remove diesel particulate filter (1).

29 – Remove front right wheel

▸ **Removing the wheel**



TECHNICAL INFORMATION

A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to remove the wheel.**

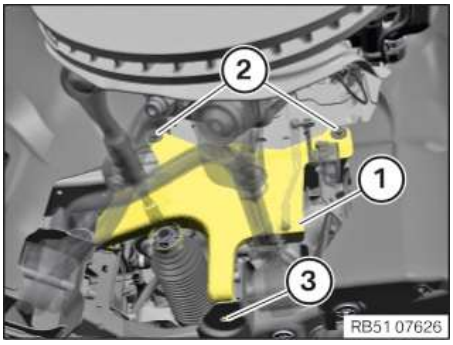
  This process is intended to prevent damage to the brake disc.

carsdiagn.com



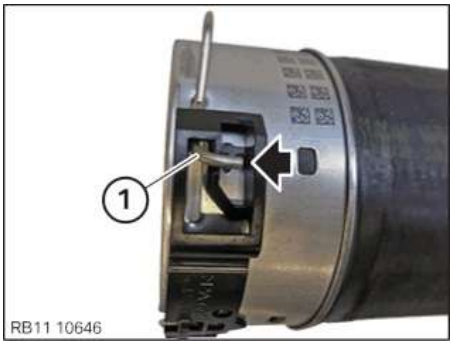
- If several wheels are removed at the same time: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use the correct adapter from the set of special tools .

30 – Remove the cover of the steering assembly



- Loosen screws (2) and (3).
- Remove the cover (1).

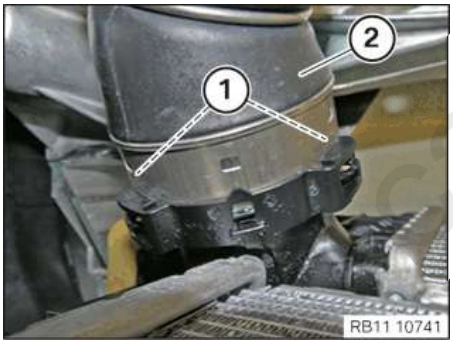
31 – Remove pressure pipe between exhaust turbocharger and charge air cooler



- **Version A:**

  Unlock lock (1).

  The lock (1) must snap audibly into place when unlocked (see arrow).



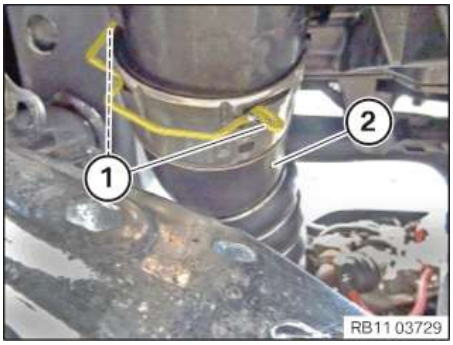
- Unlock the locks (1) on both sides and snap into place.
- Pull off pressure pipe (2) from charge air cooler.



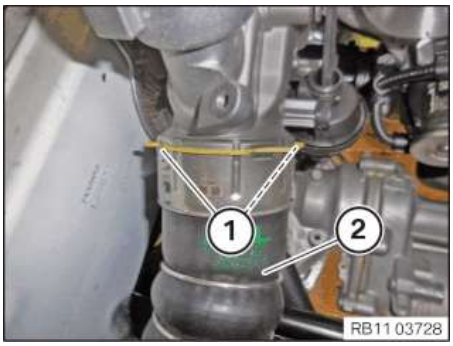
- **Version B:**

  Unlock clamp (1) and engage in this position.

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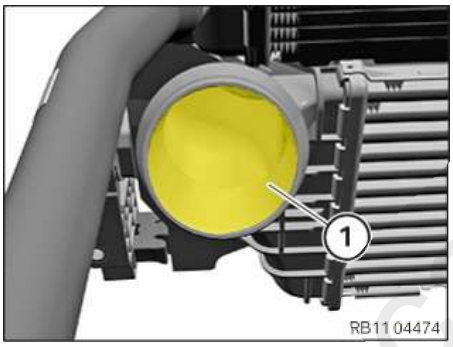
- Unlock the locks (1) and snap into place.
- Pull off pressure pipe (2) from charge air cooler.



- Unlock the lock (1) and engage.
- Pull off pressure pipe (2) from the compressor bypass.



- Remove pressure pipe (1) in upward direction.



NOTICE

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

- Lock the opening (1) of the charge air cooler with a suitable auxiliary material.

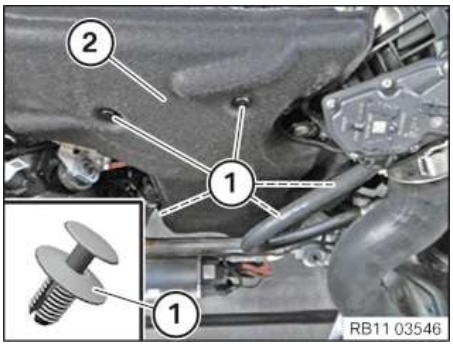
32 – Remove acoustic cover of the front engine

WARNING

Hot surfaces.

Risk of burning!

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



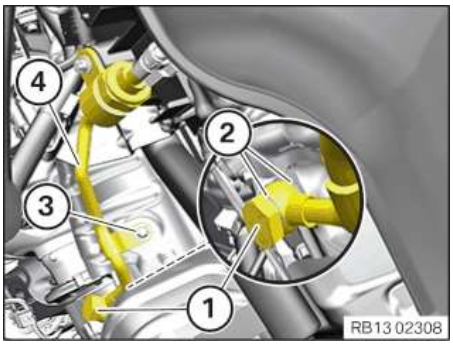
- Release and remove expanding rivet (1).
- Guide the acoustic cover (2) out and remove.

carolagn.com

33 – Remove the exhaust gas pressure pipe



- Unlock plug connection (1) and disconnect.
- Loosen screw (2).



- Unscrew the banjo bolt (1).
- Feed out and remove the sealing rings (2).
- Loosen screw (3).
- Feed out and remove the exhaust gas pressure pipe (4).

34 – Removing the sensor bracket on the cylinder head cover

RISK OF DAMAGE

Damage to wires when disconnecting connectors and plug connections.

Sheared wires can cause a short circuit.

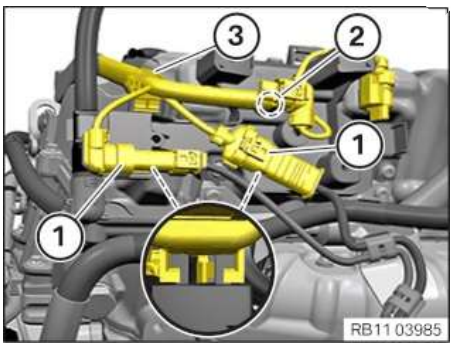
- Do not pull on the wires when disconnecting connectors and plug connections.

RISK OF DAMAGE

Contaminant or foreign body.

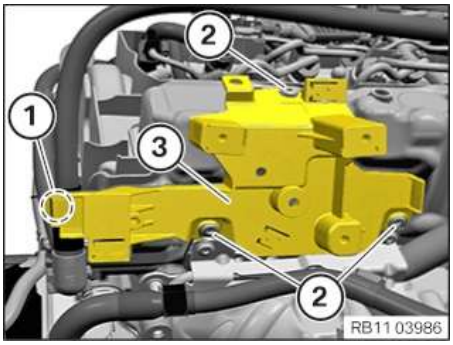
Contamination can result in malfunctions, operating failure or leaks.

- Adhere to the utmost cleanliness.
- Protect components from contamination e.g. by covering.
- Close off line connections with seal plugs.



- Unlock plug connection (1) and disconnect.
- Unlock the plug connection (1) and release it from the sensor bracket.
- Release the cable clip in the area (2) from the sensor bracket.
- Release the clamps (3) and set the wiring harness section aside.

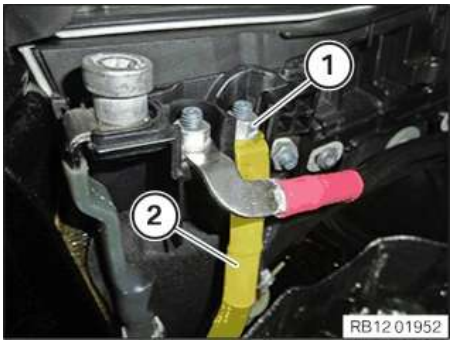
cardiagn.com



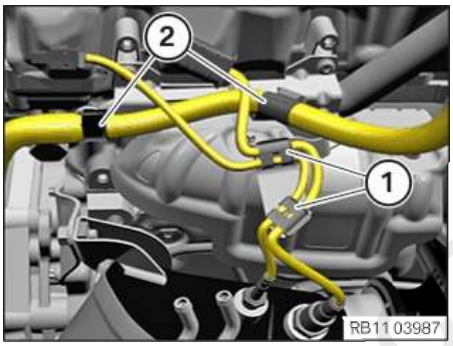
- Release the positive battery cable in the area (1) from the clamp and set it aside.
- Loosen screws (2).
- Feed out holder (3) for the sensor system and remove.



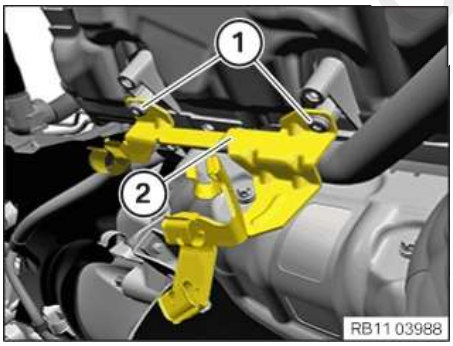
- Unlock the locks (1).
- Guide and remove cover (2) in direction of arrow.



- Loosen nut (1).
- Feed out positive battery cable (2) and put to one side.



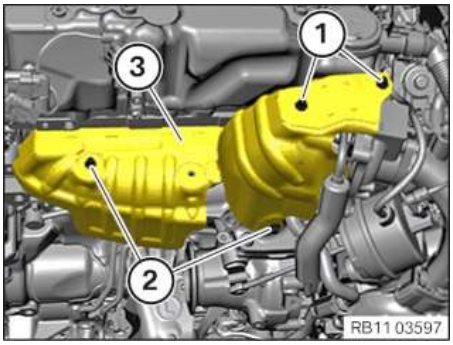
- Release the cable of the exhaust gas sensor system from the clamps (1).
- Release the positive battery cable from the clamps (2).



- Loosen screws (1).
- Guide out and remove holder (2).

35 – Removing heat shield

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- Loosen screws (1).
- Loosen screws (2).
- Feed out and remove the heat shield (3).

MAIN WORK

36 – Remove exhaust manifold

▸ Removing the high-pressure stage exhaust turbocharger and low-pressure stage turbocharger

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

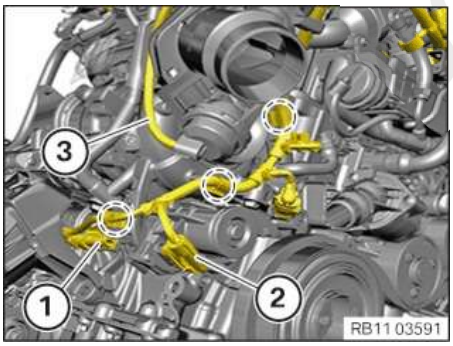
- Remove and install heavy components with the aid of another person/other persons.

TECHNICAL INFORMATION

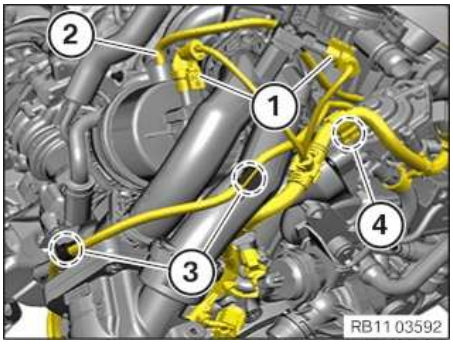
Prior to replacing the exhaust turbocharger: Observe the notes on troubleshooting on the exhaust turbocharger.
For additional information see: FUB-FUB-FB-130003-A10 Troubleshooting on the exhaust turbocharger

TECHNICAL INFORMATION

With exhaust turbocharger damage, it is imperative to observe the additional information.
For additional information see: 11 65 020 Exhaust turbocharger damage due to plugged oil supply lines



- Release plug connection in area (1) from holder.
- Unlock plug connection (2) and disconnect.
- Release the wiring harness in the marked areas from the exhaust turbochargers.
- Pull off the vacuum hose (3).



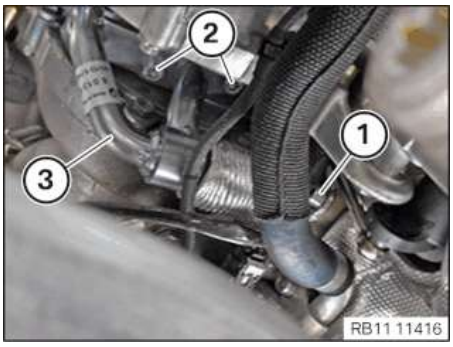
- Unlock plug connections (1) and disconnect.
- Pull off the vacuum hose (2).
- Release the vacuum hose in marked areas (3) from the exhaust turbochargers.
- Release the wiring harness in area (4) from the exhaust-gas recirculation cooler and set it aside.



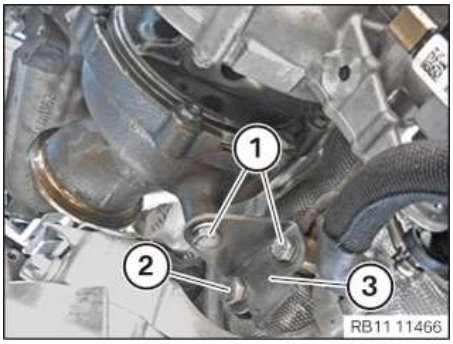
TECHNICAL INFORMATION

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

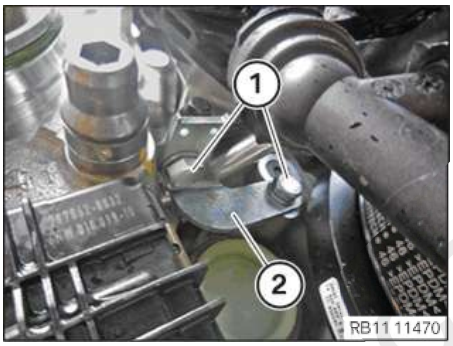
- Release the screws of the oil return line on the crankcase from the right wheel arch.



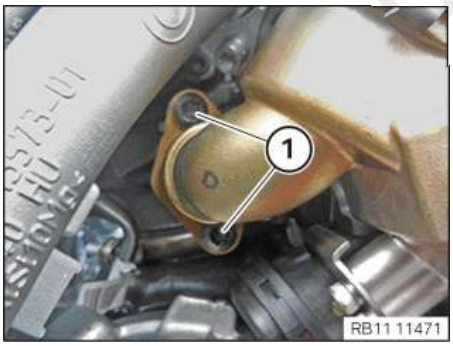
- Release the screw (1).
- Loosen screws (2).
- Remove oil return line (3) from the crankcase.
- Catch and dispose of emerging engine oil.



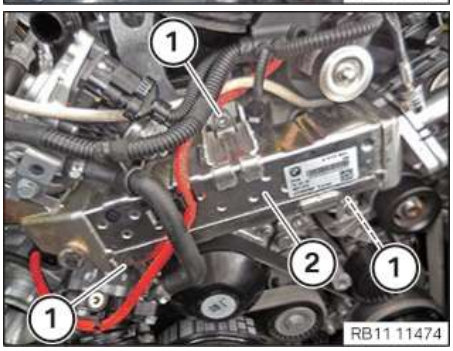
- Unscrew and remove the bolts (1) on the holder (3).
- Slacken screw (2) on holder (3), but do **not** remove.



- Loosen screws (1).
- Guide out and remove holder (2).

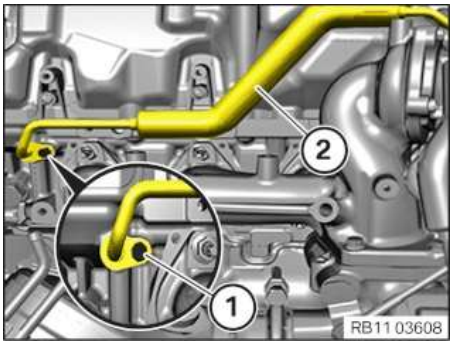


- Loosen screws (1).

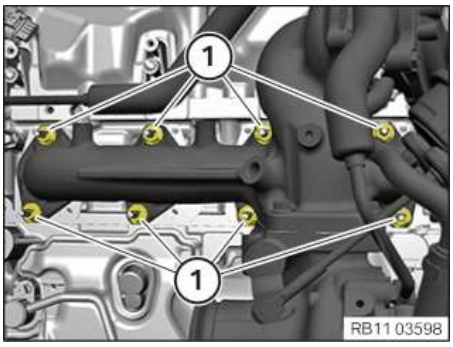


- Slacken screws (1), but do **not** remove.
- Release exhaust-gas recirculation cooler (2) slightly.

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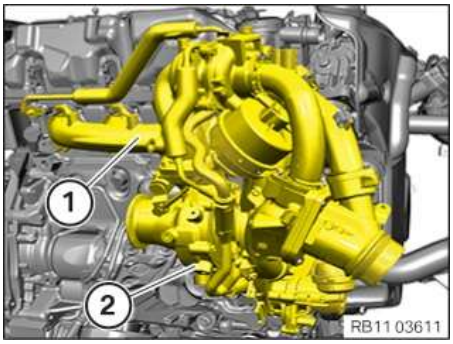
- Loosen screw (1).
- Remove oil feed line (2) for the high-pressure stage exhaust turbocharger from the cylinder head and set it aside.
- Catch and dispose of emerging engine oil.



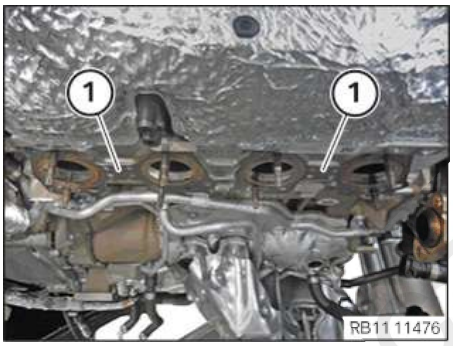
TECHNICAL INFORMATION

Conduct the following operation with the assistance of a second person.

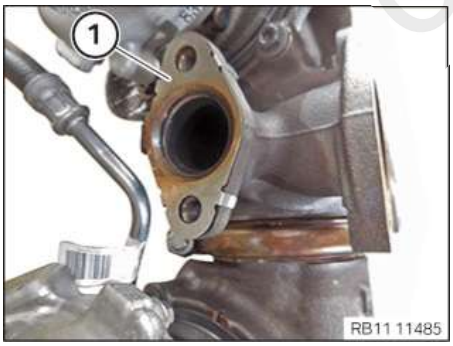
- Loosen nuts (1).



- Guide out exhaust manifold (1) with the high-pressure stage exhaust turbocharger and the low-pressure stage exhaust turbocharger (2) forward towards the top and remove.



- Guide out and remove gaskets (1).



- Guide out and remove gasket (1).

37 – Replace the exhaust manifold

▸ **Replace the high-pressure stage exhaust turbocharger**

TECHNICAL INFORMATION

Prior to replacing the exhaust turbocharger: Observe the notes on troubleshooting on the exhaust turbocharger.

For additional information see: FUB-FUB-FB-130003-A10 Troubleshooting on the exhaust turbocharger

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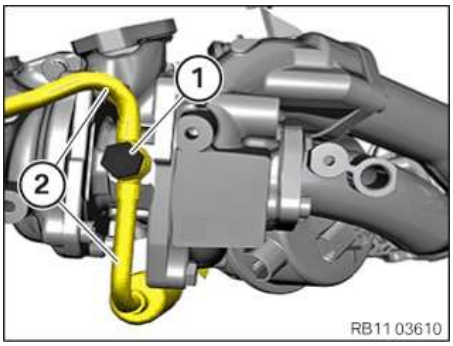
TECHNICAL INFORMATION

- It is imperative to perform certain test steps to prevent subsequent damage in the event of exhaust turbocharger damage. See further information.

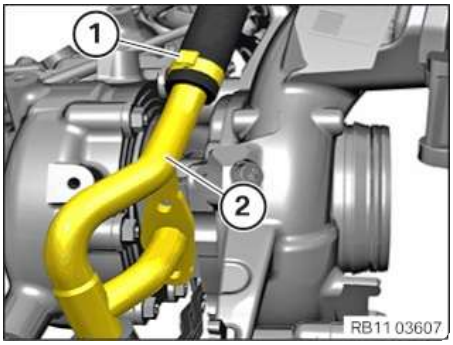
TECHNICAL INFORMATION

For exhaust turbocharger damage: Check the pressure pipes, charge air cooler and intake plenum for foreign matter, damage and correct functionality.

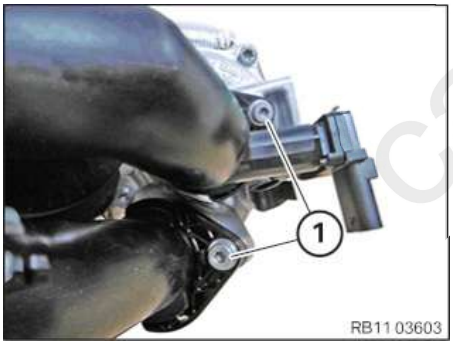
If the oil return line is exchanged, then the connecting pipe to the oil sump must ALWAYS be cleaned, as the connecting pipe can coke.



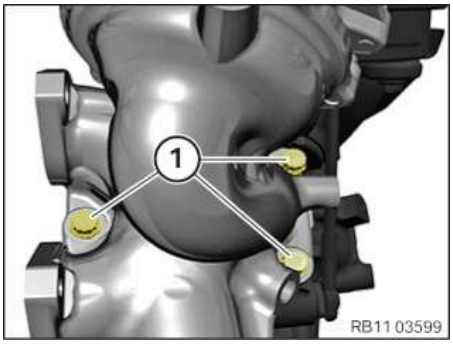
- Loosen screw (1).
- Place oil feed lines (2) to one side.



- Unfasten clamp (1).
- Feed out and remove the oil return line (2) for the low-pressure stage turbocharger.



- Release screws (1) of the connecting pipe to the high-pressure stage exhaust turbocharger.

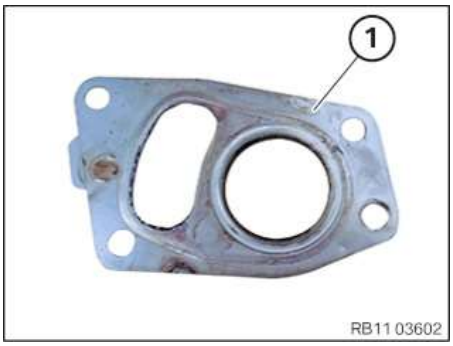


- Loosen screws (1).

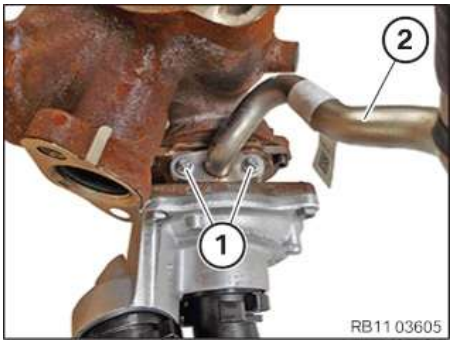
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- Loosen screw (1).
- Disconnect exhaust turbocharger.



- Remove seal (1).

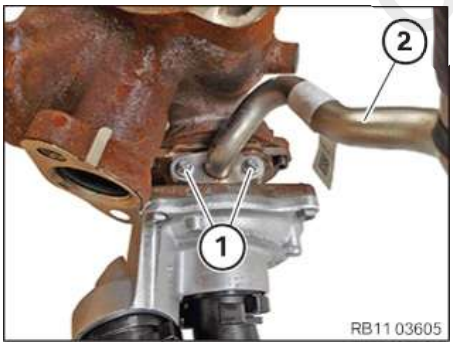


- Loosen screws (1).
- Guide out and remove the oil return line (2).



- Renew the seal (1).

  Parts: Gasket



- Renew exhaust turbocharger high-pressure stage.

  Parts: Exhaust turbocharger high-pressure stage
- Position oil return line (2) with the seal on the high-pressure stage exhaust turbocharger.
- Tighten the screws (1).

Oil return line to turbocharger

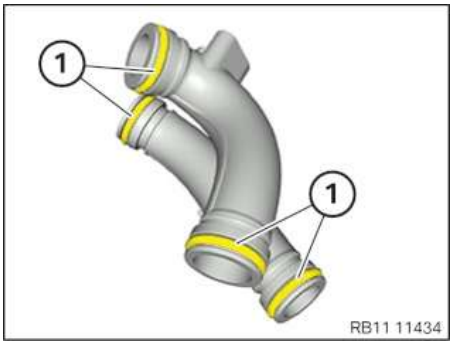
M6x12	Renew gasket.	Tightening torque	8 Nm



- Renew the seal (1).

  Parts: Gasket

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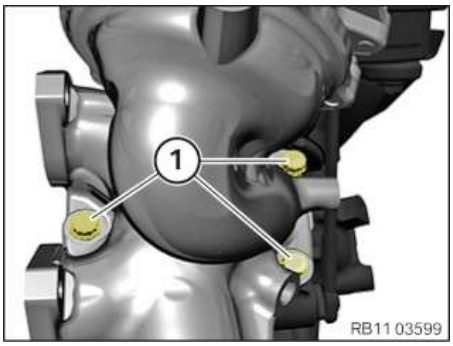
- Renew the sealing rings (1) on the connecting pipes with the special tool 0 496 714 (00 9 030).

  Parts: Sealing ring
- Grease sealing rings (1) with lubricating grease.

Expendable materials

Lubricating grease SYNTHESO GLEP 1	100 g, Tube	83239407778

Overview of consumables (Electronic Parts Catalogue)



- Feed in connecting pipes when positioning the high-pressure stage exhaust turbocharger.
- Position the high-pressure stage exhaust turbocharger with the seal.
- Tighten the screws (1).

High-pressure stage exhaust turbocharger to exhaust manifold

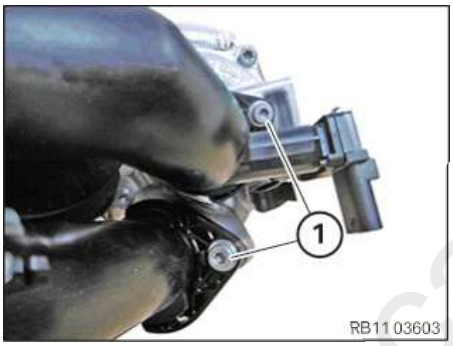
M8x20		Tightening torque	25 Nm



- Tighten down screw (1).

High-pressure stage exhaust turbocharger to exhaust manifold

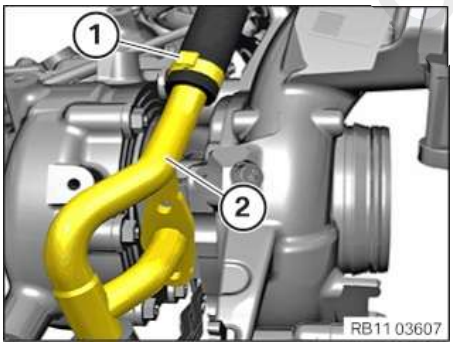
M8x20		Tightening torque	25 Nm



- Tighten screws (1) of the connecting pipe to the high-pressure stage exhaust turbocharger.

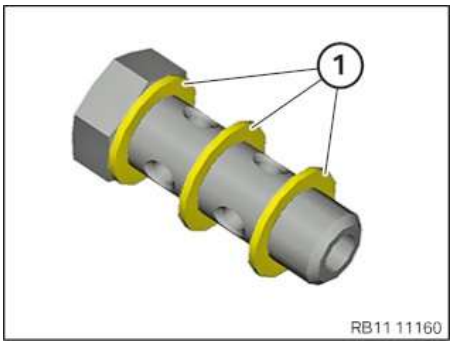
Connecting pipe with bypass flap to exhaust turbocharger low-pressure stage / high-pressure stage

M6		Tightening torque	8 Nm



- If necessary, renew clamp (1).

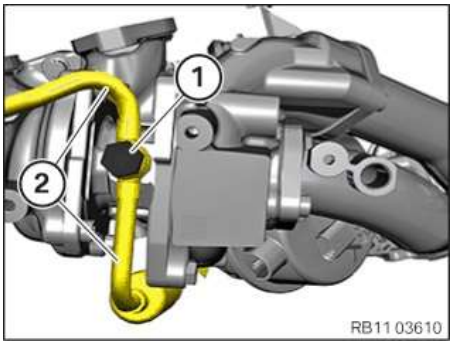
  Parts: Clamp
- Connect oil return line for the low-pressure stage turbocharger (2) with the clamp (1) and position it.
- Fasten clamp (1).



- Renew banjo bolt and sealing rings (1).

  Parts: Sealing rings, banjo bolt

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- Connect oil feed lines (2) with the sealing rings and the banjo bolt on the high-pressure stage exhaust turbocharger.
- Position oil feed lines (2) as illustrated.
- Tighten down screw (1).

Oil feed line for the exhaust turbocharger high-pressure stage

Hollow bolt		Jointing torque	10 Nm
		Angle of rotation	70 °

38 – Installing exhaust manifold

▸ Installing the high-pressure stage exhaust turbocharger and the low-pressure stage turbocharger

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

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

RISK OF DAMAGE

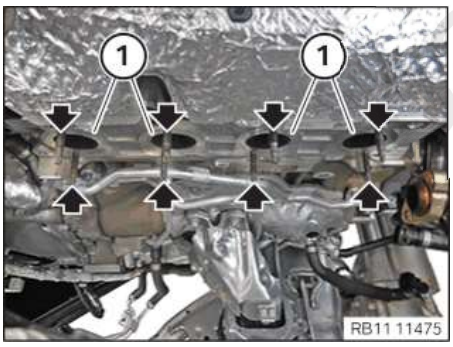
Damage to the surface.

The use of metal-cutting tools (e.g. emery cloth) to clean the surfaces can damage them and lead to leaks or engine damage.

- Do not use any metal-cutting tools.

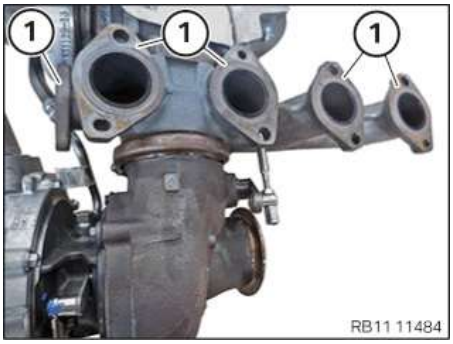
TECHNICAL INFORMATION

The sealing surfaces must be free from oils, grease and cleaning agents.

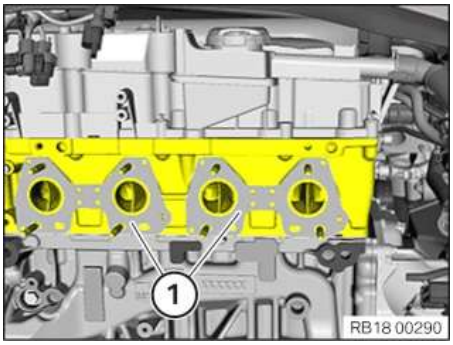


- Check the stud bolts (arrows) on the cylinder head for **correct** fit.
- Clean the connection points (1) with the special tool 0 495 102 (11 4 470).
- Renew gaskets.

  Parts: Seals



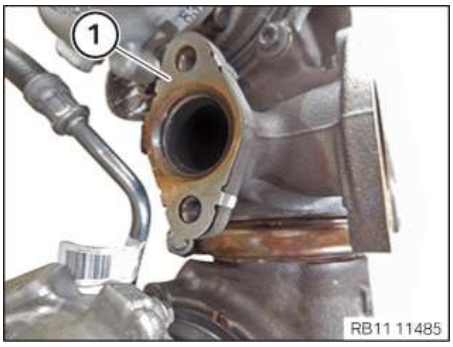
- Clean the connection points (1) on the exhaust manifold with the special tool 0 495 102 (11 4 470).



TECHNICAL INFORMATION

The **coated side** of the seal must be on the side of the exhaust manifold.

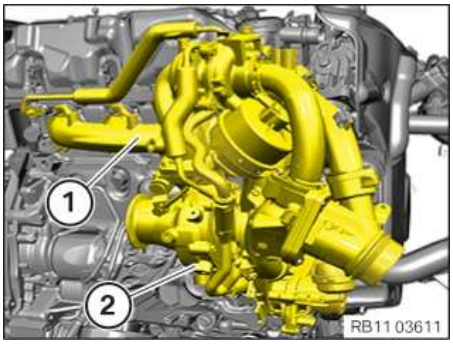
- Insert and install the gaskets (1).



- Renew the seal (1).

  Parts: Gasket

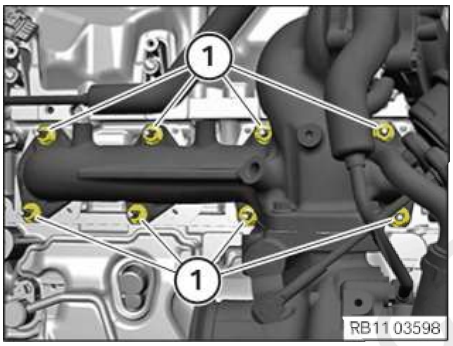
- Insert and install the seal (1).



TECHNICAL INFORMATION

Conduct the following operation with the assistance of a second person.

- Feed in the exhaust manifold (1) with the high-pressure stage exhaust turbocharger and the low-pressure stage turbocharger (2) from the top front and install.



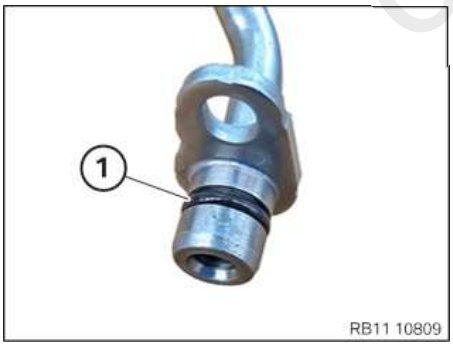
- Renew nuts (1).

  Parts: Nuts

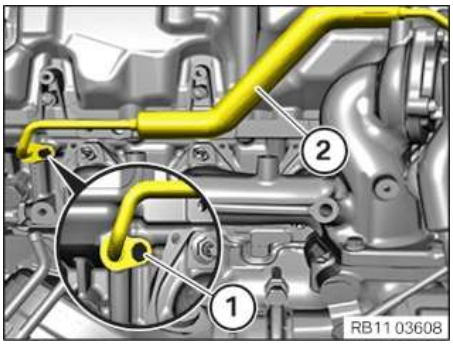
- Tighten the nuts (1) evenly from the inside out.

Exhaust manifold to cylinder head

M7	**If necessary, renew loose stud bolts.**	Tightening torque	11 Nm
	Renew nuts.	Tightening torque	13 Nm



- Check the seal (1) for damage, if necessary, renew the oil feed line.

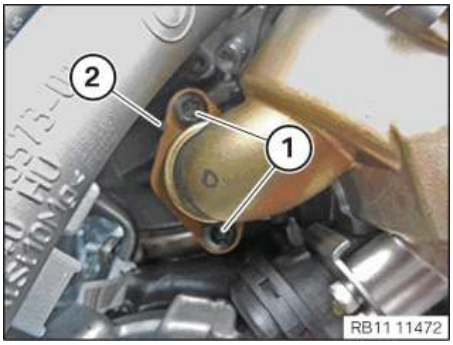


- Feed in and install the oil feed line (2) for the high-pressure stage exhaust turbocharger.
- Tighten down screw (1).

Oil feed line on cylinder head

M6x12		Tightening torque	8 Nm

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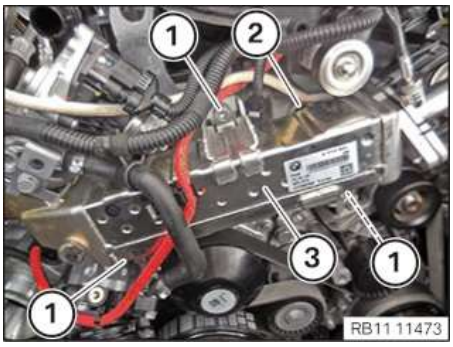


- Tighten the screws (1).

Exhaust-gas recirculation cooler to exhaust manifold

M8x28	Replace screws	Tightening torque	32 Nm

- Ensure that seal (2) is installed.

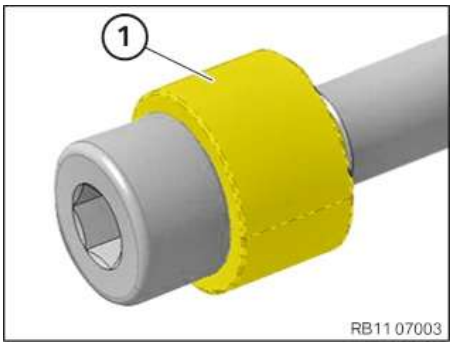


- Position the exhaust-gas recirculation cooler (3).
- Make sure the pipe neck (2) is fitted correctly.
- Tighten the screws (1).

Exhaust-gas recirculation cooler to cylinder head

M8x20 / M8x28		Tightening torque	19 Nm

Check



- Check whether the screws **with the** sleeves (1) (10 mm) are available.

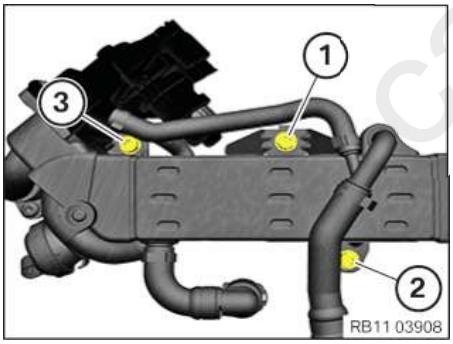
Result

» Screws **without** sleeves (1) are available.

Measure

- Renew screws.

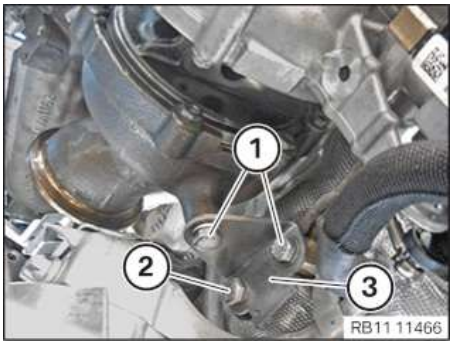
  Parts: Screws (part number 9 886 429)



- Tighten the screws (1) to (3).

Exhaust-gas recirculation cooler to cylinder head

M8x20 / M8x28		Tightening torque	19 Nm

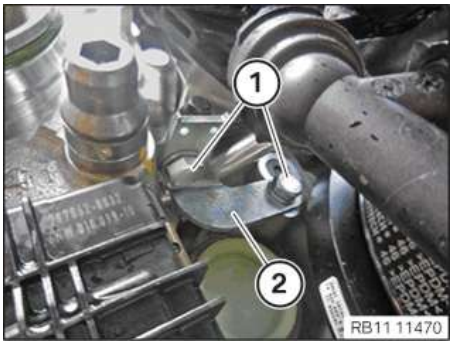


- Tighten the bolts (1) and (2) on the bracket (3).

Exhaust turbocharger low-pressure stage to crankcase

M8X16		Tightening torque	22 Nm

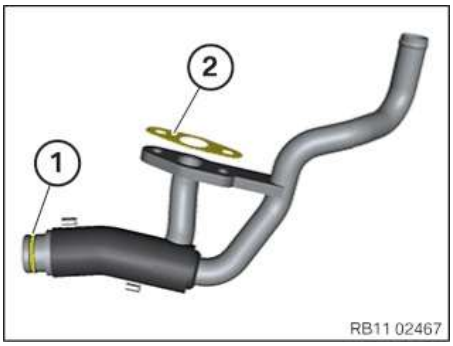
cardiagn.com



- Insert and install the holder (2).
- Tighten the screws (1).

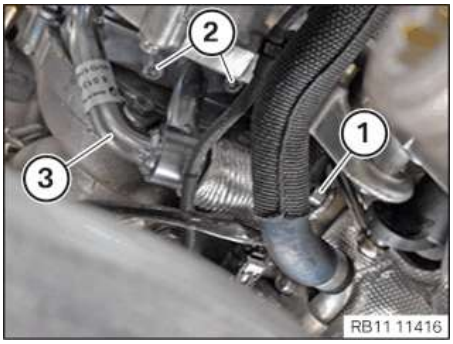
Exhaust turbocharger low-pressure stage to crankcase

M8X16		Tightening torque	22 Nm



- Renew the gasket (2).

  Parts: Gasket
- Check the O-ring (1) for damage and renew the oil return line as needed.



- Install oil return line (3) into crankcase.
- Position oil return line (3) with the seal on the low-pressure stage exhaust turbocharger.
- Tighten the screws (2).

Oil return line to turbocharger

M6x12	Renew gasket.	Tightening torque	8 Nm

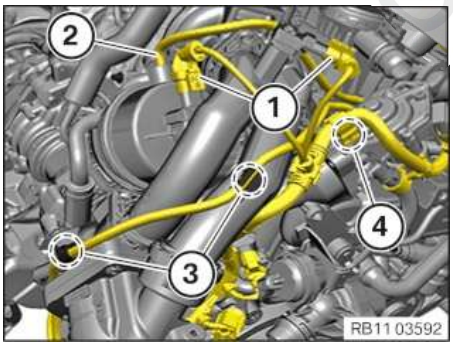
- Install the bolt (1).



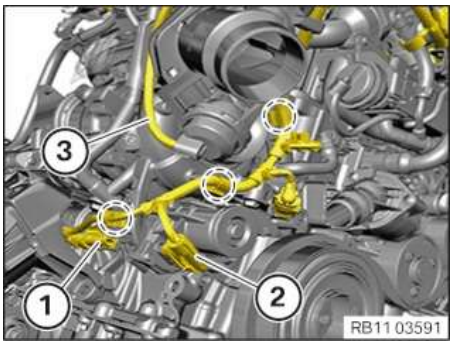
- Tighten the screws of the oil return line on the crankcase from the right wheel arch.

Oil return line to crankcase

M6x12	Check gasket. Renew the seal or line if necessary.	Tightening torque	8 Nm



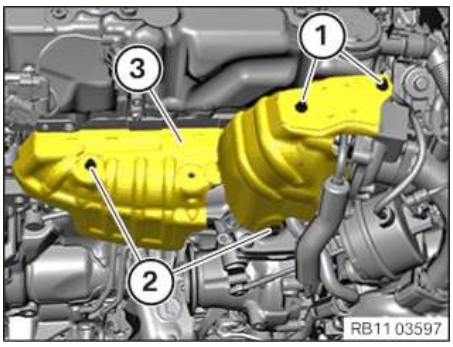
- Secure the vehicle wiring harness in area (4) to the exhaust-gas recirculation cooler.
- Secure the vacuum hose in the marked areas (3) to the exhaust turbochargers.
- Connect vacuum hose (2).
- Connect all connectors (1) and lock audibly.



- Connect vacuum hose (3).
- Secure the wiring harness in the marked areas to the exhaust turbochargers.
- Plug in the connector (2) and lock audibly.
- Secure the connector in area (1) to the holder.

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39 – Installing heat shield



- Feed in and install the heat shield (3).
- Tighten down screws (1) and (2).

Heat shield to exhaust manifold

M6x12			10 Nm

40 – Installing the sensor bracket on the cylinder head cover

RISK OF DAMAGE

Contaminant or foreign body.

Contamination can result in malfunctions, operating failure or leaks.

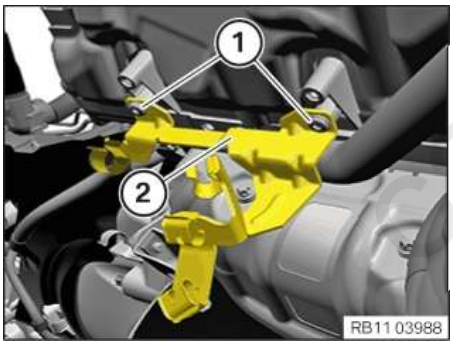
- Adhere to the utmost cleanliness.
- Protect components from contamination e.g. by covering.
- Close off line connections with seal plugs.

RISK OF DAMAGE

Improper routing of cables and wiring harnesses.

Trapped, crushed or damaged cables may cause short circuits and malfunctions.

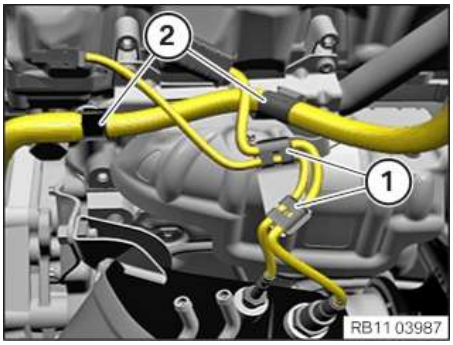
- Route all cables without abrasions, do not trap and crush.



- Insert and install the holder (2).
- Tighten the screws (1).

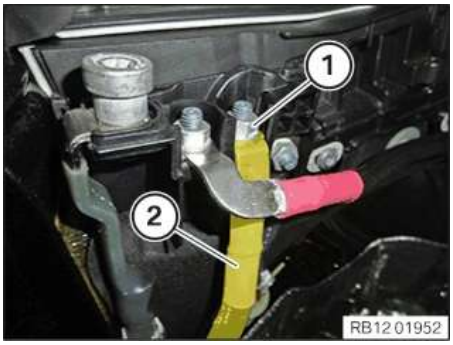
Bracket on cylinder head cover

	Tightening torque	5 Nm



- Secure the positive battery cable in the clamps (2).
- Mount the cable of the exhaust gas sensor system in the clamps (1).

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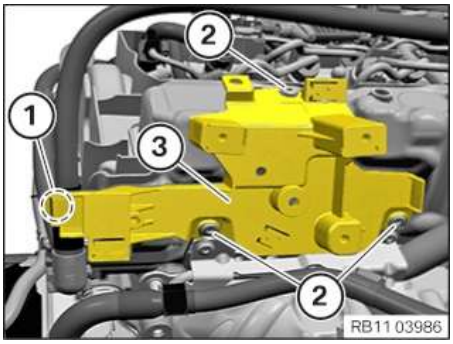
- Insert the positive battery cable (2) and install it.
- Tighten nut (1).

Battery positive lead to battery positive terminal

M8		Tightening torque	19 Nm



- Insert and install the cover (2) in the direction of the arrow.
  The locks (1) must engage audibly.

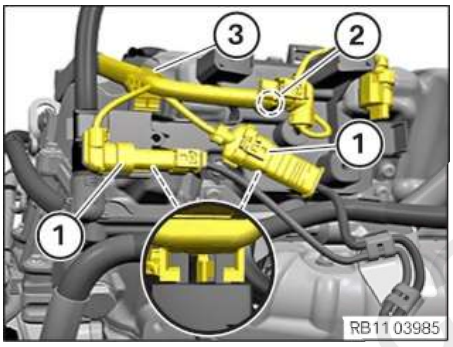


- Feed in and install the sensor bracket (3).
- Tighten the screws (2).

Bracket on cylinder head cover

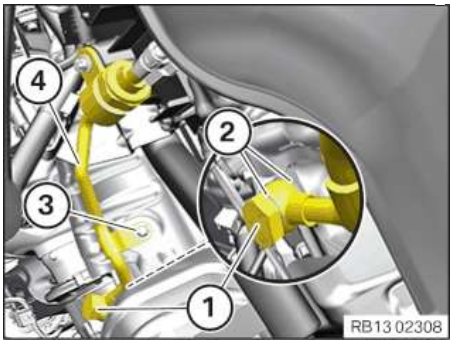
		Tightening torque	5 Nm

- Fasten the positive battery cable in the area (1) in the clamp.



- Feed in the wiring harness section and fasten it with the clamp (3).
- Fasten the cable clip in the area (2) in the sensor bracket.
- Feed in the connector (1) into the sensor bracket and lock it audibly.
- Plug in the connector (1) and lock audibly.

41 – Install the exhaust gas pressure pipe



- Insert and install the exhaust gas pressure pipe (4).
- Replace the sealing rings (2).
  Parts: Sealing ring
- Apply the banjo bolt (1) hand-tight.
- Tighten down screw (3).

Heat shield to exhaust manifold

M6x12		Tightening torque	10 Nm

- Tighten the banjo bolt (1).

Banjo bolt for exhaust pressure pipe to exhaust manifold

Hollow bolt	Renew sealing rings.	Tightening torque	30 Nm

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- Tighten down screw (2).

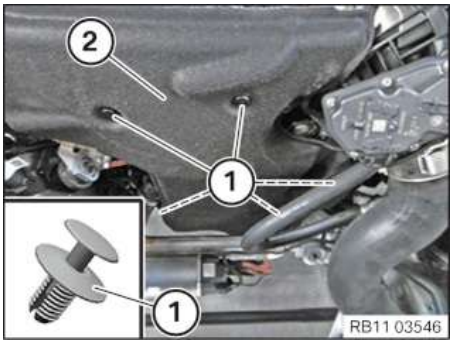
Exhaust gas pressure pipe to sensor system holder

TS6x20		Tightening torque	5,7 Nm

- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

42 – Install acoustic cover for the engine, front



- Feed the acoustic cover (2) in and install.
- Secure the acoustic cover (2) with the expanding rivets (1).

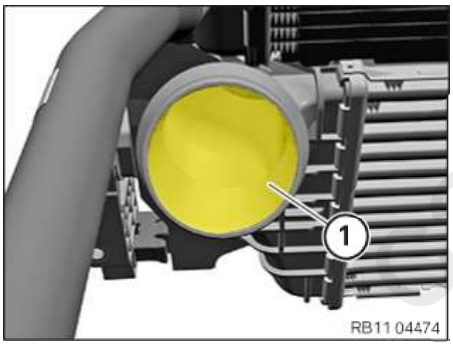
43 – Install pressure pipe between exhaust turbocharger and charge air cooler

RISK OF DAMAGE

Damage to the exhaust turbocharger.

A leak at the pressure pipe can damage the exhaust turbocharger.

- Replace the gaskets and pressure pipe if necessary.



RISK OF DAMAGE

Contaminant or foreign body.

Contamination can result in malfunctions, operating failure or leaks.

- Adhere to the utmost cleanliness.
- Protect components from contamination e.g. by covering.
- Close off line connections with seal plugs.

- Remove the auxiliary materials for sealing the opening (1) of the charge air cooler.



- Check the seal (1) for damage and renew if necessary.

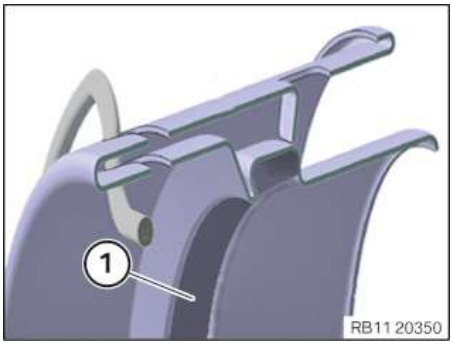
  Parts: Gasket

▸ **Replacing damaged seal**

TECHNICAL INFORMATION

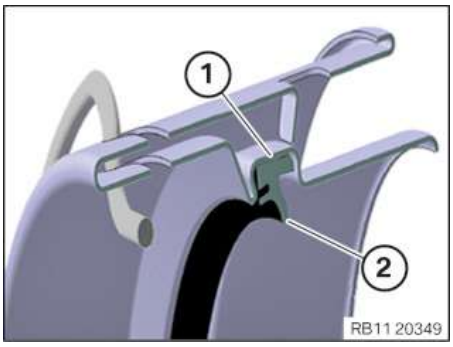
Do not use pointed or sharp-edged tools for the installation and/or removal.

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- Remove damaged seal.
- Clean gasket groove (1) with a dry towel.

  The gasket groove (1) must be clean.



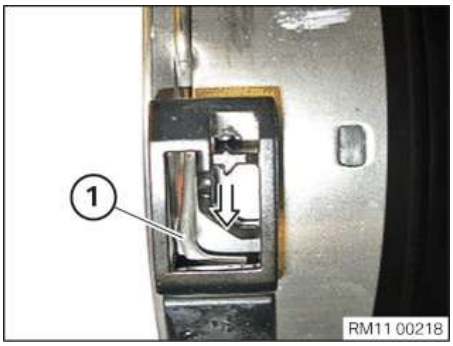
- Renew gasket.

  Parts: Gasket
- Install seal dry without lubricant or mounting agent.

TECHNICAL INFORMATION

Incorrect assembly is possible. Ensure correct installation position.

- Feed in and install the seal.
- Make sure the seal is correctly installed in the gasket groove (1).
- Make sure that the sealing lip (2) is directed inwards as shown.



- **Version A:**

  Lock the lock (1).

  The lock (1) on the pressure pipe must engage audibly.



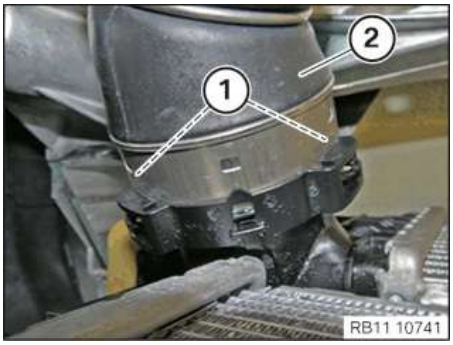
- Pay attention to the installation position:

  The pressure pipe fits on charge air cooler in one installation position only.

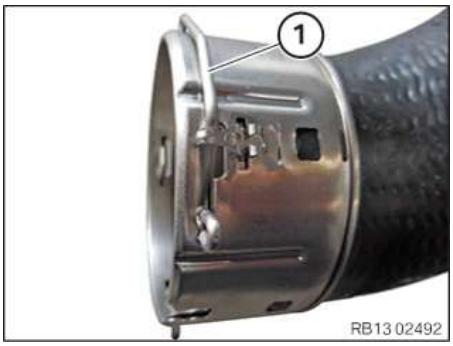


- Install the pressure pipe (1) from the top.

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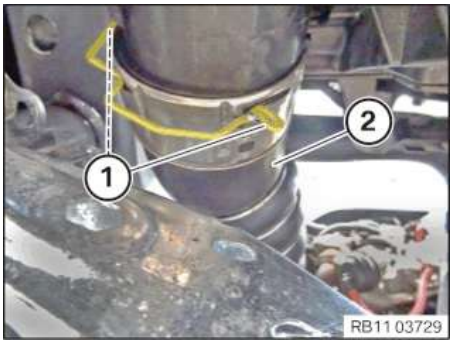
- Connect pressure pipe (2) to charge air cooler.
- Lock the lock (1) on both sides.



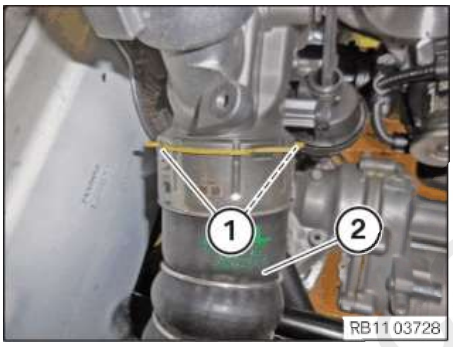
- **Version B:**

  Lock the lock (1).

  The lock (1) on the pressure pipe must engage audibly.



- Attach the pressure pipe (2) to the charge air cooler until the lock (1) engages on both sides.

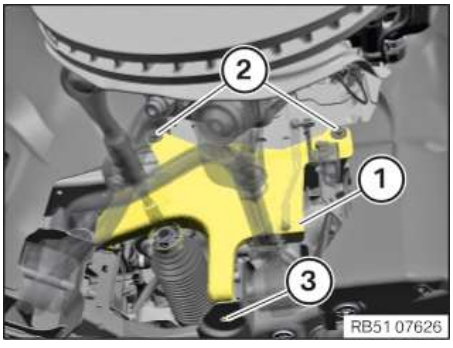


- Place the pressure pipe (2) onto the compressor bypass and ensure that the lock (1) engages audibly.

44 – Install the cover of the steering assembly

TECHNICAL INFORMATION

When tightening the screws, the cover can twist and cause chafe marks on the anti-roll bar (risk of corrosion).
Hold the cover while tightening the screws. Then check the position of the cover.



- Position the cover (1).
- Tighten down screws (2) and (3).

Cover, steering unit

Screw		Tightening torque	3 Nm

45 – Installing the front right wheel

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▶ **Mounting the wheel**



TECHNICAL INFORMATION

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

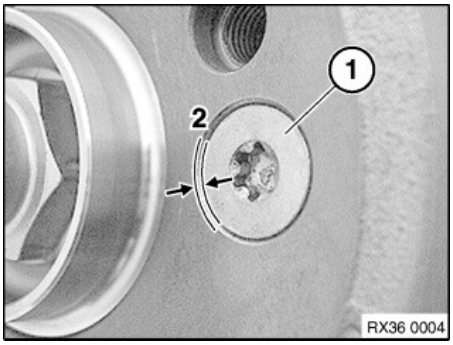
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

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



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).



- Check that the mounting bolt (1) for the brake disc is securely seated.

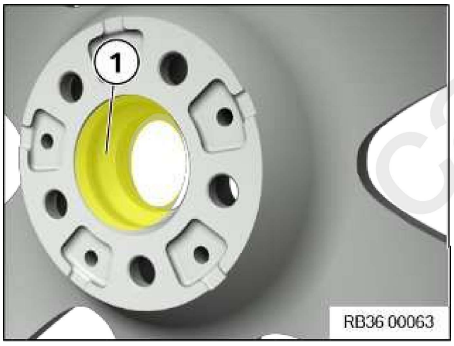
  The mounting bolt (1) for the brake disc **may not** protrude on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm



TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233

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TECHNICAL INFORMATION

Wheel hubs and wheel centering on the models G80, G82 and G83 **must not** be greased.

- Apply a thin layer of grease to the front and rear wheel hubs (1) to protect against corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



TECHNICAL INFORMATION

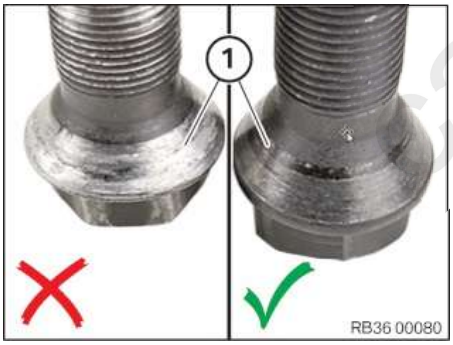
A wheel lift is recommended for easier wheel removal and installation without exertion (see Retailer Equipment Catalogue).

- **In vehicles with M Carbon ceramic brake: The wheel lift must be used to install the wheel.**

  This process is intended to prevent damage to the brake disc.

Check

- **Check wheel bolts for wear.**



Result

» Places (> 30%) of the bearing surfaces (1) of the taper on the screw head show a silver wear.

Measure

- Replace wheel bolts.

  Parts: Wheel bolts

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TECHNICAL INFORMATION

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

The wheel rim must rest uniformly against the brake disc.

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

Do not apply oil to new wheel bolts.

- Renew the corroded wheel bolts (arrows).

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

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

46 – Prepare for the installation of the diesel particulate filter



- Renew the V-clip (1).

  Parts: V-band clamp



- Renew gasket (1).

  Parts: Gasket

47 – Installing the diesel particulate filter

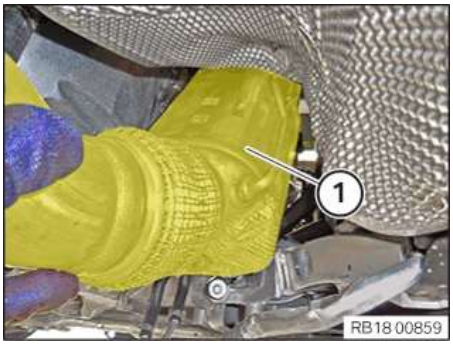
CAUTION

Heavy component.

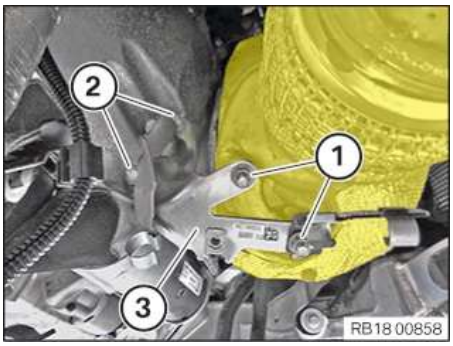
Heavy components can lead to injury or damage.

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

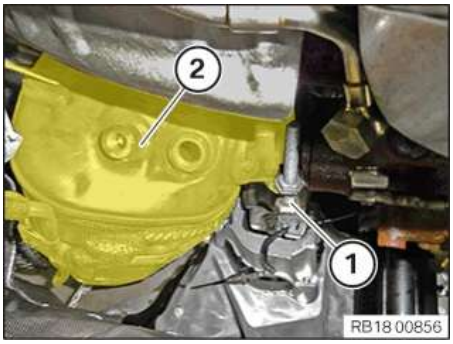
cardiagn.com



- Insert and install the diesel particulate filter (1).



- Insert and install the holder (3).
- **Hand-tighten** the bolts (2).
- Apply the nuts (1) **hand-tight**.

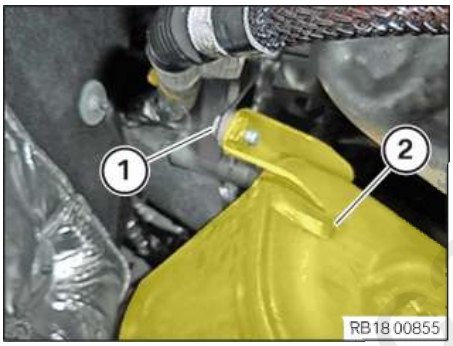


- Renew the V-clip (1).

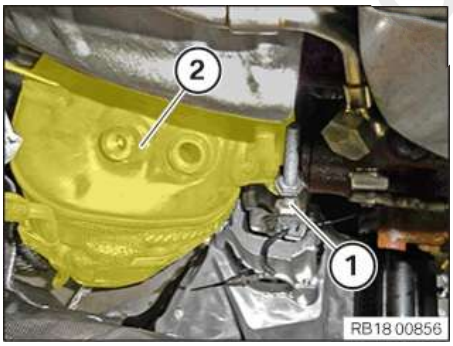
  Parts: V-band clamp
- Feed in and install V-band clamp (1).

Note: Make sure that the seal between the diesel particulate filter and the exhaust turbocharger is installed correctly.

- Position the diesel particulate filter (2) on the exhaust turbocharger .
- Position V-clip (1).
- Apply the V-clip (1) **hand-tight**.



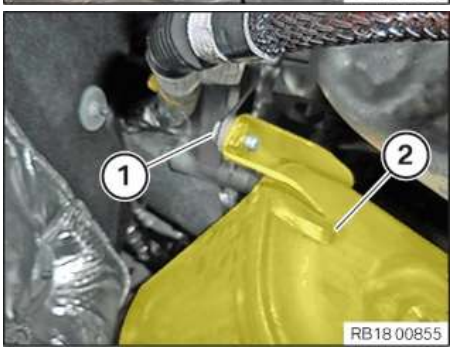
- Feed in screw (1) on the holder of the diesel particulate filter (2) and tighten **hand-tight**.



- Tighten the V-clip (1) of the diesel particulate filter (2).

Diesel particulate filter V-clip to exhaust turbocharger

V-band clamp	Renew V-band clamp.	Tightening torque	15 Nm

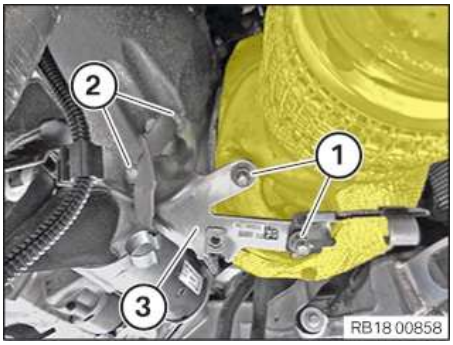


- Tighten the bolt (1) on the bracket of the diesel particulate filter (2).

Bracket to diesel particulate filter top

M8		Tightening torque	19 Nm

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- Tighten the screws (2) on the holder (3).

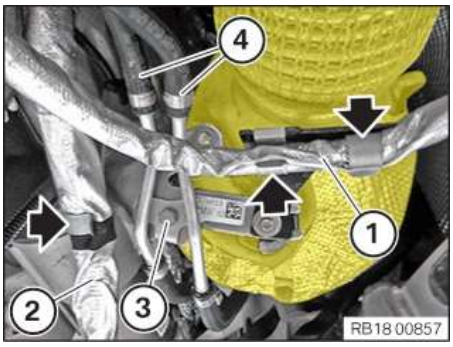
Bracket to transmission for diesel particulate filter holder bottom

M8X20		Tightening torque	19 Nm

- Tighten the nuts (1) on the holder (3).

Lower holder to diesel particulate filter

M8		Tightening torque	19 Nm



- Thread in and install coolant line (4).
- Tighten down screw (3).

Coolant lines for SCR metering module

M6X16		Tightening torque	8 Nm

- Secure the positive battery cable (2) of the starter motor at the clamp (arrow).
- Fasten the metering line (1) on the clamps (arrows).

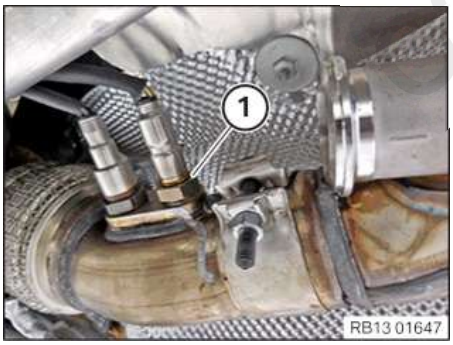
48 – Installing the nitrogen oxide sensor upstream of SCR catalytic converter

RISK OF DAMAGE

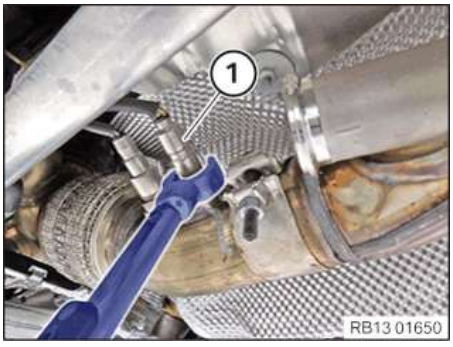
Damage to the nitrogen oxide sensor.

Failure of the nitrogen oxide sensor due to contamination or preliminary mechanical damage.

- Remove the protective cap on the sensor only when screwing the sensor on to the exhaust system.
- Do not use mounting aids, cleaning agents, gaseous and liquid agents in workplaces, storage areas and during transport.
- Contaminations (particles, dust exposure, moisture, etc.) in the area of the plug and socket connection and the sensor must be avoided.
- Mechanical loads (impacts on the sensor or the control unit, tensile loads on the cable, etc.) must be avoided.
- Do not continue using component if these specifications are deviated from.
- The installation location (exhaust system) must be dry. If necessary, dry the installation location with compressed air.



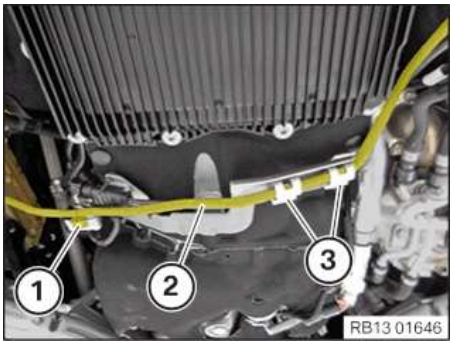
- Feed in and install the nitrogen oxide sensor (1).



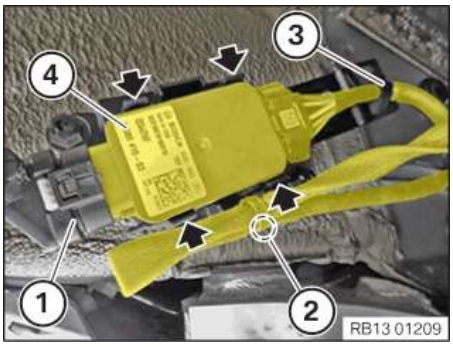
- Tighten the nitrogen oxide sensor (1) using commercially available tools.

Nitrogen oxide sensor before SCR catalytic converter

Sensor		Tightening torque	50 Nm



- Secure the cables (2) to the clamps (3).
- Secure clamps (1).



- Clip in the control unit (4) (arrows).
- Fasten the cable in the holder (3).
- Secure the cable holder (2).
- Plug in the connector (1) and lock audibly.

49 – Installing the monitoring oxygen sensor after the diesel particulate filter

RISK OF DAMAGE

Damage to the front oxygen sensor or monitoring oxygen sensor.

Failure of the front oxygen sensor or monitoring oxygen sensor due to contamination or preliminary mechanical damage.

- Remove the protective cap on the sensor only when screwing the sensor on to the exhaust system.
- Do not use mounting aids, cleaning agents, gaseous and liquid agents in workplaces, storage areas and during transport.
- Contaminations (particles, dust exposure, moisture, etc.) in the area of the plug and socket connection and the sensor must be avoided.
- Mechanical loads (impacts on the sensor or the control unit, tensile loads on the cable, etc.) must be avoided.
- Do not continue using component if these specifications are deviated from.
  - The installation location (exhaust system) must be dry. If necessary, dry the installation location with compressed air.

TECHNICAL INFORMATION

New oxygen sensors are to be greased lightly and evenly on the thread.

For oxygen sensors that are reused, the following should be observed:

Lightly and evenly grease the oxygen sensor only on the thread. Do not clean and grease that part of the oxygen sensor which protrudes in the exhaust branch (sensor ceramics).

For additional information see: 11 00 ... Overview of consumables in Electronic Parts Catalogue



- Insert the monitoring oxygen sensor (1) and install it.

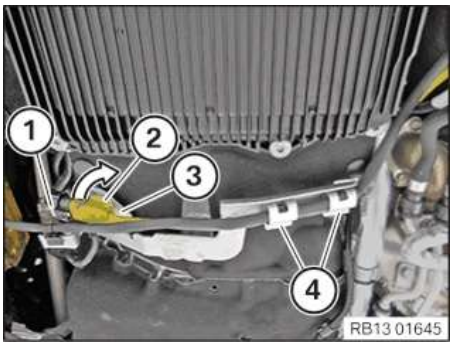
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- Tighten the monitoring oxygen sensor (1) with standard tools.

Monitoring oxygen sensor

Sensor		Tightening torque	50 Nm



- Fasten the monitoring oxygen sensor to the clamps (4).
- Secure the connector (2) on the holder (3) in direction of arrow.
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

50 – Installing the exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

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

CAUTION

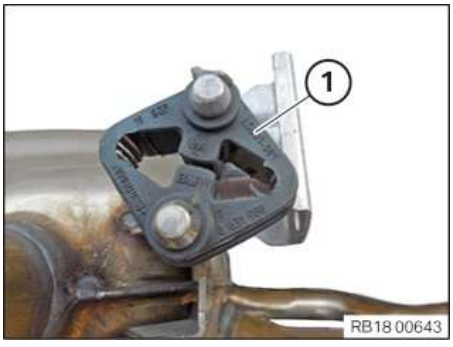
Heavy component.

Heavy components can lead to injury or damage.

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

TECHNICAL INFORMATION

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



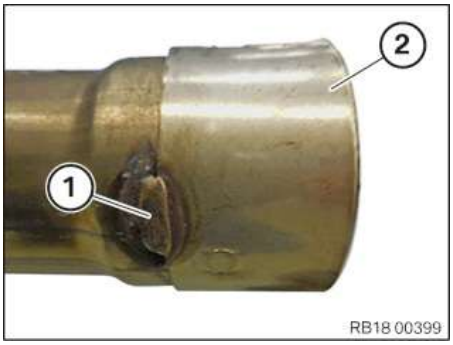
NOTICE

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

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

  Parts: Rubber mount

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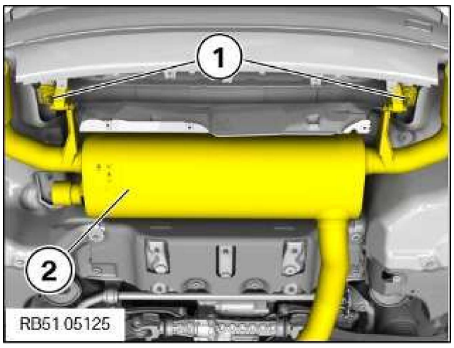
CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

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

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

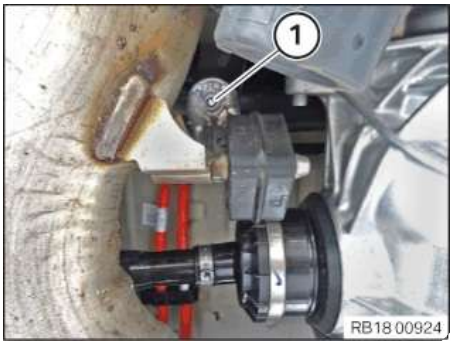


- Insert and install the exhaust system (2).
- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

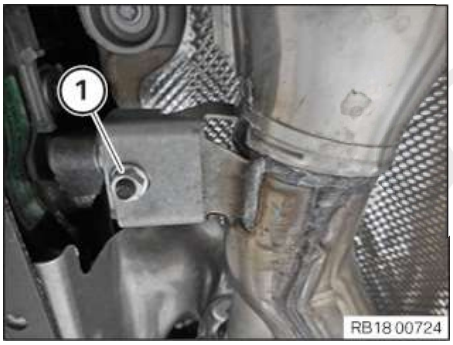


- Renew nut (1) on the rear axle support.

  Parts: Nut
- Tighten nut (1).

Exhaust system to rear axle carrier

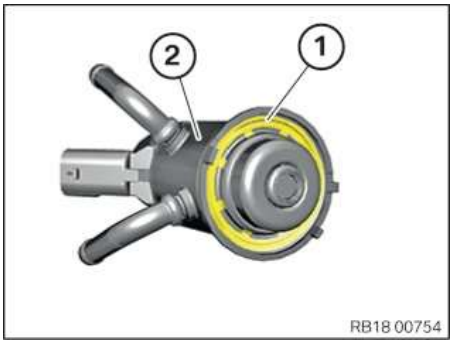
M8 nut		Tightening torque	19 Nm



- Tighten nut (1).

Exhaust system to transmission

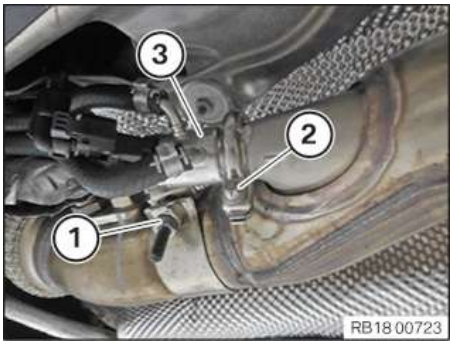
M8		Tightening torque	19 Nm



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

  Parts: Sealing ring

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- If necessary, renew clamp (1).

  Parts: Clamp
- Tighten clamp (1).

Exhaust system to diesel particle filter

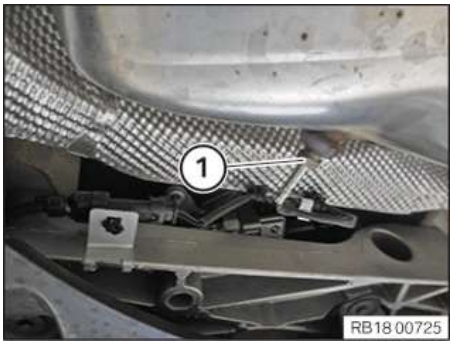
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

- Renew the V-clip (2).

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

SCR metering module V-clip to exhaust system

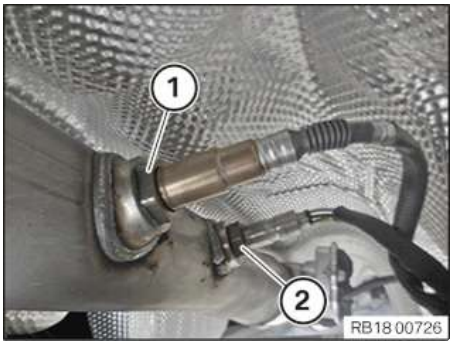
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm



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

Exhaust-gas temperature sensor upstream of SCR catalytic converter

Sensor		Tightening torque	30 Nm



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

Diesel particulate sensor to exhaust system

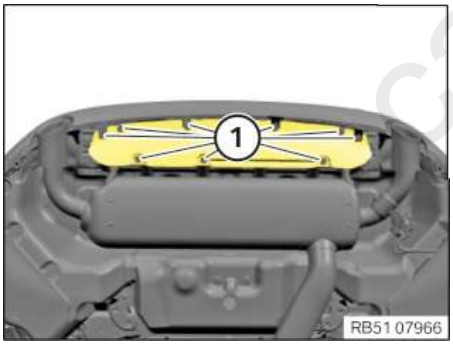
Sensor		Tightening torque	50 Nm

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

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	55 Nm

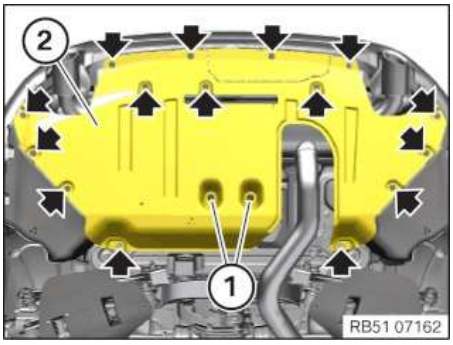
51 – Installing the rear diffuser



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

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm



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

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

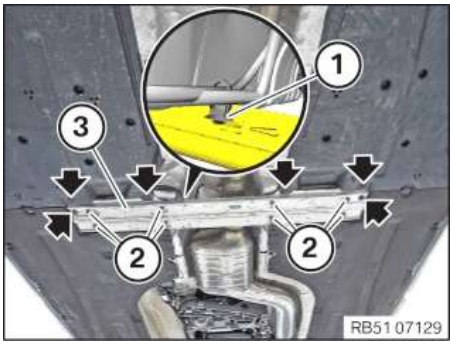
- Tighten nuts (1).

Diffuser / underbody panelling

Nuts and screws		Tightening torque	3 Nm

52 – Install the connecting supports on the tunnel

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

Connecting support to tunnel

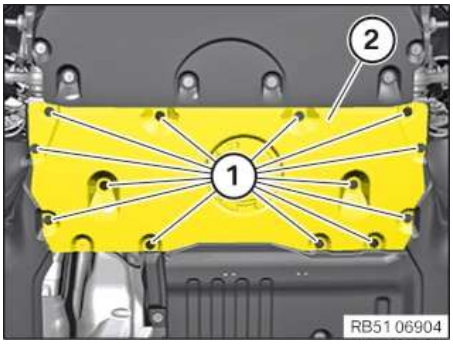
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

NOTICE

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

- Secure the clamp (1).

53 – Installing the centre underbody protection



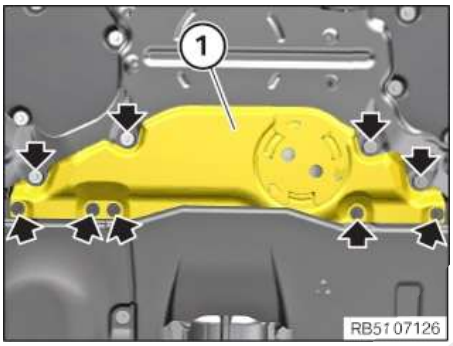
- **Variant with rear wheel drive:**

  Position central underbody protection (2).

  Tighten the screws (1).

Underbody protection

Hexagon screw		Tightening torque	3 Nm



- **Version with all-wheel drive:**

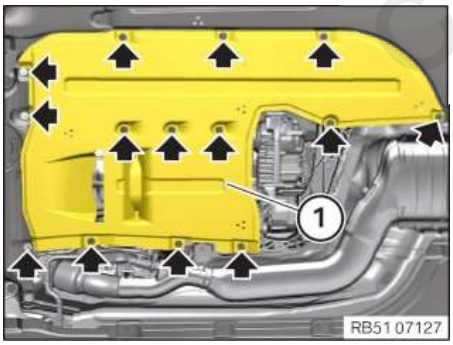
  Guide in centre underbody protection (1) and install.

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm

54 – Installing underbody protection at rear



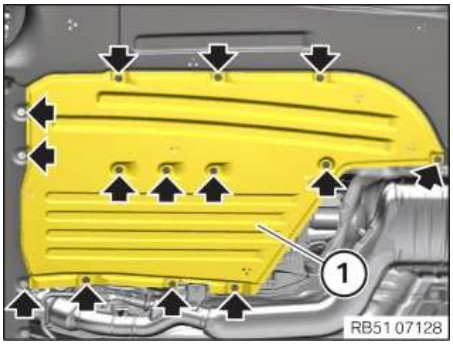
- **Version A:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm



- **Version B:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

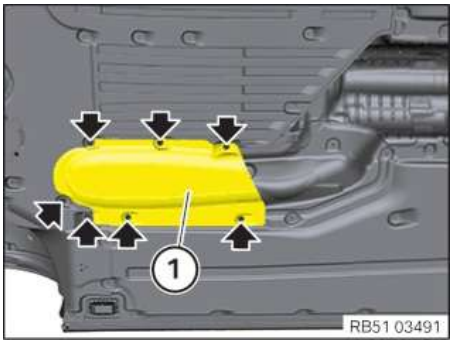
Hexagon screw		Tightening torque	3 Nm

55 – Install the underbody panelling of the transmission on the side

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NOTICE

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

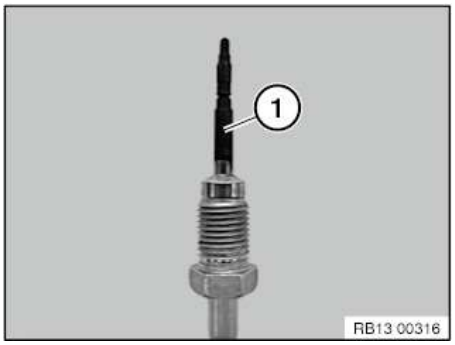


- Insert the underbody panelling (1).
- Tighten screws (arrows).

Underbody panelling

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

56 – Installing the exhaust temperature sensor for the exhaust system downstream the catalytic converter on the diesel particulate filter



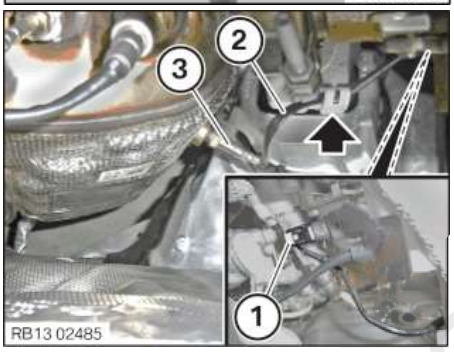
RISK OF DAMAGE

Damage of exhaust temperature sensor.

Damage to exhaust temperature sensors leads to malfunctions.

- Make sure that the gauge tip is not damaged.

- Check the gauge tip (1) for damage.



- Feed in and install the exhaust temperature sensor (3).
- Tighten the exhaust temperature sensor (3).

Exhaust temperature sensor for the exhaust system after catalytic converter before diesel particulate filter

Sensor		Tightening torque	30 Nm

- Secure cable (2) to the clamp (arrow).
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

57 – Installing the front oxygen sensor on the diesel particulate filter

RISK OF DAMAGE



Damage to the front oxygen sensor or monitoring oxygen sensor.

Failure of the front oxygen sensor or monitoring oxygen sensor due to contamination or preliminary mechanical damage.

- Remove the protective cap on the sensor only when screwing the sensor on to the exhaust system.
- Do not use mounting aids, cleaning agents, gaseous and liquid agents in workplaces, storage areas and during transport.
- Contaminations (particles, dust exposure, moisture, etc.) in the area of the plug and socket connection and the sensor must be avoided.
- Mechanical loads (impacts on the sensor or the control unit, tensile loads on the cable, etc.) must be avoided.
- Do not continue using component if these specifications are deviated from.
  - The installation location (exhaust system) must be dry. If necessary, dry the installation location with compressed air.

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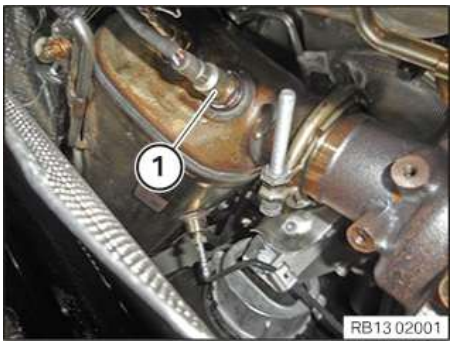
TECHNICAL INFORMATION

New oxygen sensors are to be greased lightly and evenly on the thread.

For oxygen sensors that are reused, the following should be observed:

Lightly and evenly grease the oxygen sensor only on the thread. Do not clean and grease that part of the oxygen sensor which protrudes in the exhaust branch (sensor ceramics).

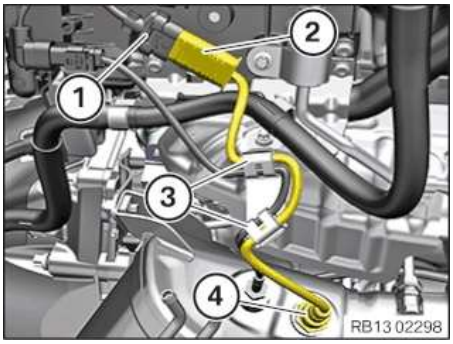
For additional information see: 11 00 ... Overview of consumables in Electronic Parts Catalogue



- Insert and install the front oxygen sensor (1).
- Tighten the front oxygen sensor (1) with standard tools.

Front oxygen sensor to top of diesel particulate filter

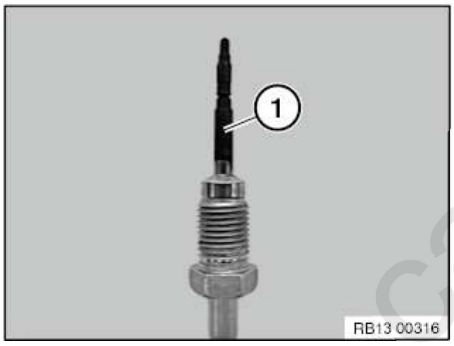
Sensor		Tightening torque	50 Nm



- Fasten the front oxygen sensor (4) to the clamps (3).
- Connect connectors (2) and lock.
- Connect connectors (1) and lock.

  The connectors (1) and (2) must audibly engage.

58 – Install the exhaust-gas temperature sensor on the diesel particulate filter



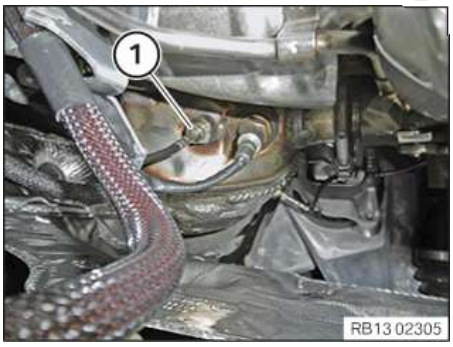
RISK OF DAMAGE

Damage of exhaust temperature sensor.

Damage to exhaust temperature sensors leads to malfunctions.

- Make sure that the gauge tip is not damaged.

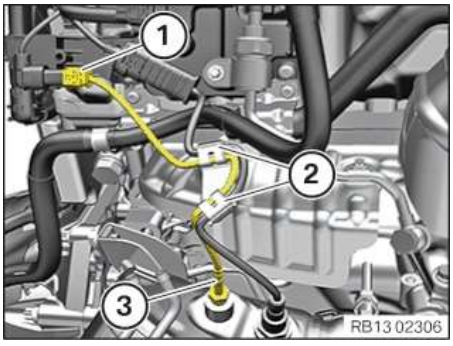
- Check gauge tip (1) for damage.



- Feed in and install the exhaust temperature sensor (1).
- Tighten the exhaust temperature sensor (1) with the special tool .

Exhaust-gas temperature sensor to diesel particulate filter

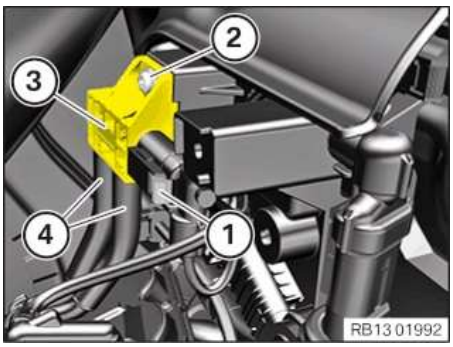
Sensor		Tightening torque	30 Nm



- Secure the exhaust temperature sensor (3) to the clamp (2).
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

59 – Installing the differential pressure sensor for the diesel particulate filter



- Feed in and install the differential pressure sensor (3).
- Tighten down screw (2).

Differential pressure sensor of diesel particulate filter on cylinder head cover

TS5x20		Tightening torque	4 Nm

- Check the pressure hoses (4) for hardening and damage, renew if necessary.
- Connect the pressure hoses (4) and secure them using 15 mm to 19 mm screw clamps.

Clamp for the pressure hose on the differential pressure sensor

Clamp 15–19mm		Tightening torque	3 Nm

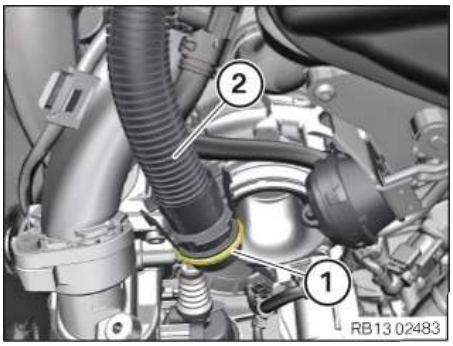
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

60 – Installing the clean air pipe with resonator



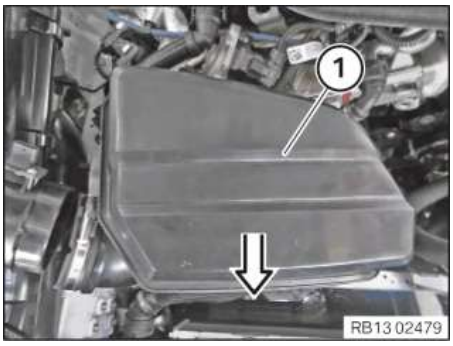
- Check the sealing ring (1) on the exhaust turbocharger for damage and renew if necessary.



- Check the sealing ring (1) for the engine ventilation line (2) for damage and renew where required.



- Feed in and install clean air pipe with resonator (1) in the direction of the arrow.



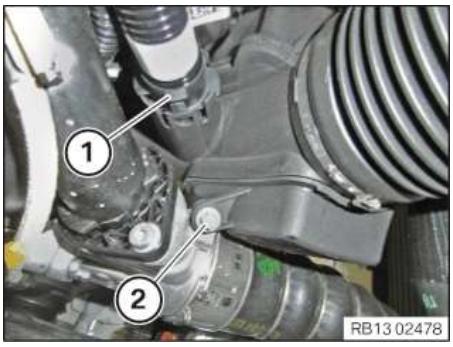
- Press and hold clean air pipe with resonator (1) in the direction of the arrow.

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- Attach and lock the clamp (1).

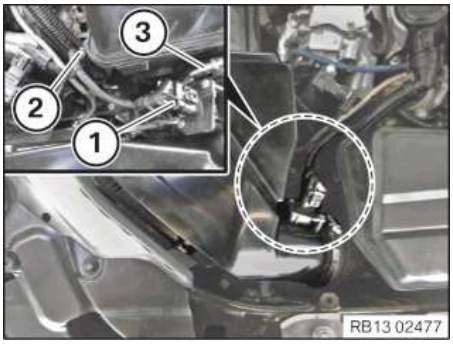
  The clamp (1) must engage audibly.



- Tighten down screw (2).

Clean air pipe to exhaust turbocharger

M6X20		Tightening torque	8 Nm



- Connect the clean air pipe with resonator to the intake filter housing.
- Tighten clamp (3).

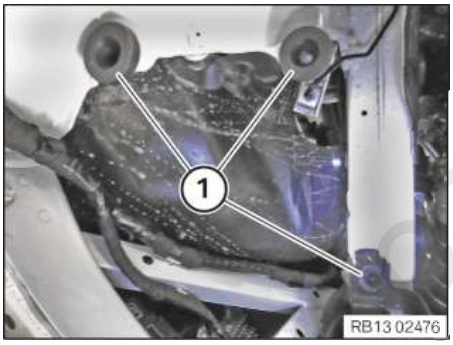
Clean air pipe to upper section of intake filter housing

Clamp		Tightening torque	3 Nm

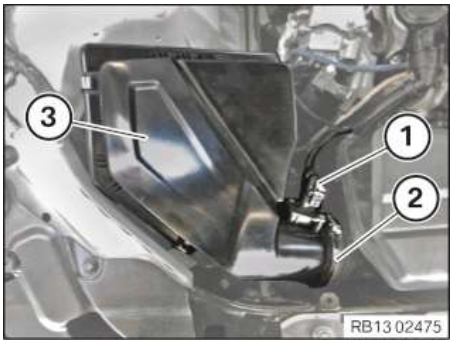
- Secure clamps (2).
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

61 – Installing intake silencer housing



- Check the rubber mount (1) for correct fit.



- Feed the intake filter housing (3) in and engage it in the rubber mounts.
- Tighten clamp (2).

Clean air pipe to upper section of intake filter housing

Clamp		Tightening torque	3 Nm

- Connect connectors (1) and lock.

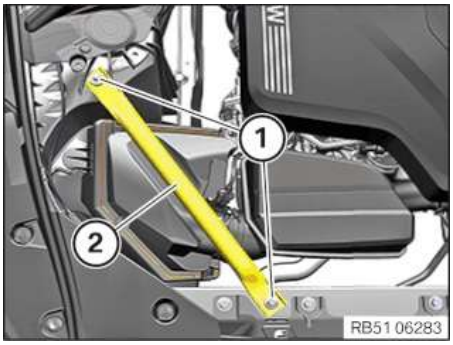
  The connector (1) must engage audibly.

62 – Install the right front-end strut

TECHNICAL INFORMATION

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

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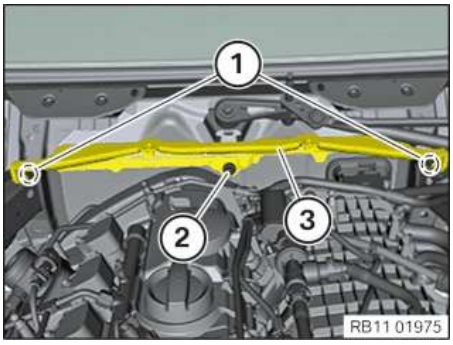
- Install the front-end strut (2).
- Renew screws (1).

  Parts: Screws
- Tighten the screws (1).

Front end strut

Screw		Tightening torque	56 Nm

63 – Installing centre bulkhead lower section

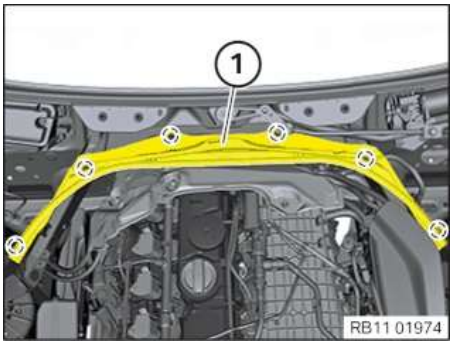


- Position the centre bulkhead lower part (3).
- Tighten nut (2) and screws (1).

Bulkhead lower part to body

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

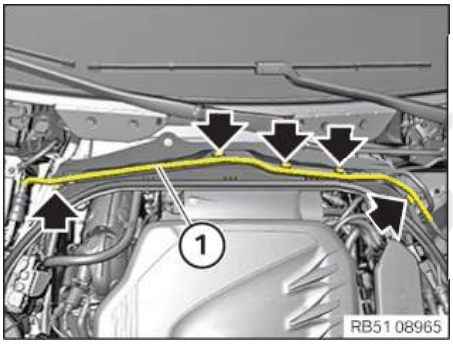
64 – Installing the centre bulkhead upper part



- Position the centre bulkhead upper part (1).
- Tighten the bolts in the marked areas.

Bulkhead upper part to bottom bulkhead

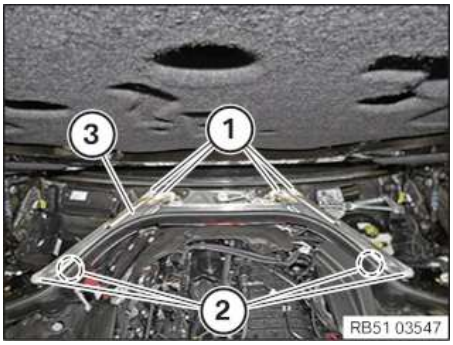
		Tightening torque	3 Nm



- **Version with mild hybrid technology:**

  Clip in the wire (1) into the holders (arrows).

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NOTICE

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

- Install the tension strut (3) on the spring strut dome.
- Tighten the screws (1).

Tension strut on bulkhead

M10x25 screw		Tightening torque	56 Nm

- Renew screws (2).

  Parts: Screws
- Tighten the screws (2).

Tension strut to spring strut dome

Screw	Renew screws.	Jointing torque	56 Nm
		Angle of rotation	90 °

65 – Install the seal for the bonnet



- Press the rear bonnet seal (2) into the guide.
- Feed in cable (1) into the brackets.
- Check that the rear bonnet seal (2) and the cable (1) are seated correctly.

66 – Installing cowl panel cover

RISK OF DAMAGE

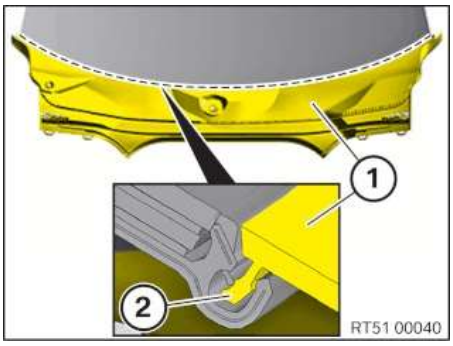
Damage caused by water ingress into the vehicle.

Water ingress into the vehicle may result in damage to components, malfunctions and corrosion.

- Ensure correct installation of the components.
- Only use undamaged components.

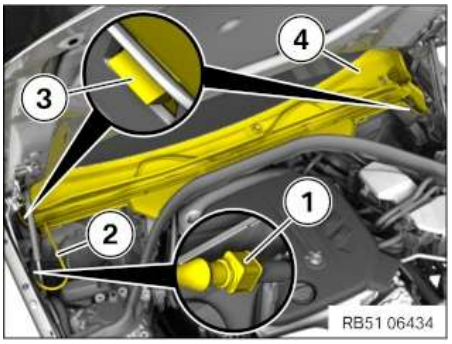
TECHNICAL INFORMATION

Before installing the cowl panel cover it is **mandatory** to check that the 48 V line is routed correctly and fitted tightly.
An incorrectly laid or attached 48 V line can be damaged by the wiper kinematics.



- Push the cowl panel cover (1) into the latch mechanism (2) beginning on the side.

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- Clip cowl panel cover (4)in by means of the latch mechanisms (3).
- Position windscreen wash hose (2) and connect windscreen wash hose (1)quick lock.

67 – Install left and right wiper arm

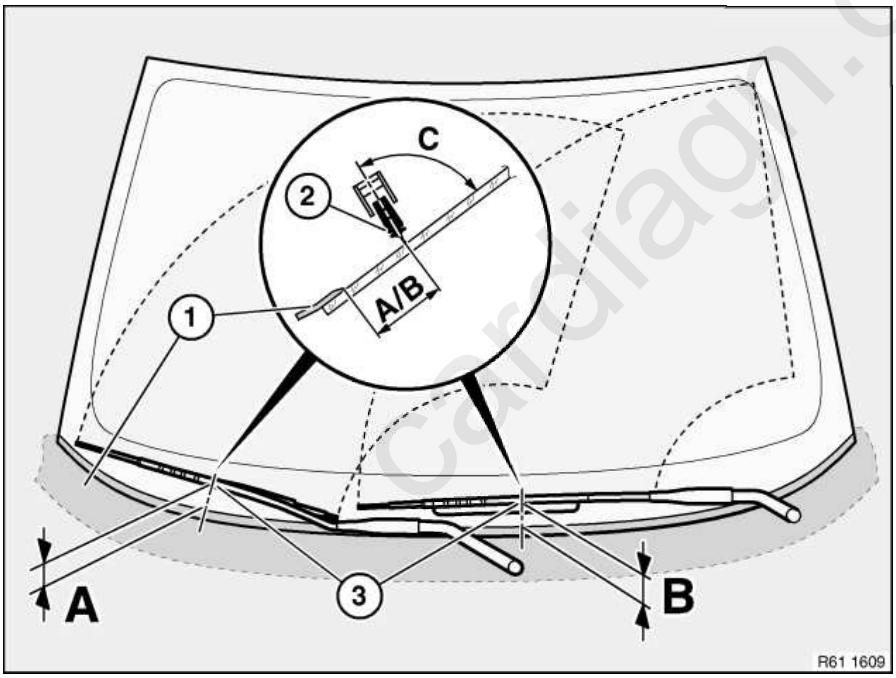
NOTICE

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

▸ **Installing left and right wiper arm**

TECHNICAL INFORMATION

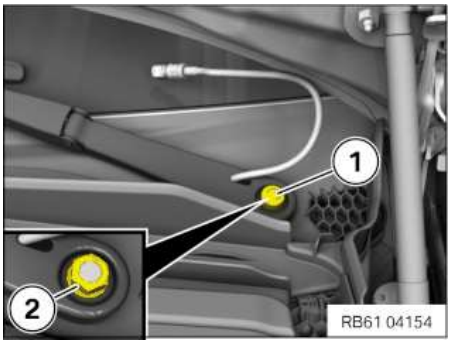
The wiper system must be in zero position.
After installing the cowl panel cover and before fitting the wiper arm:
Activate the wiper system once to ensure that it has the correct installation position.



- Connect the wiper arm (3).
- Correctly position the wiper arm (2) in relation to the window edge (1).

Distance from window pane edge to wiper blade

Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm



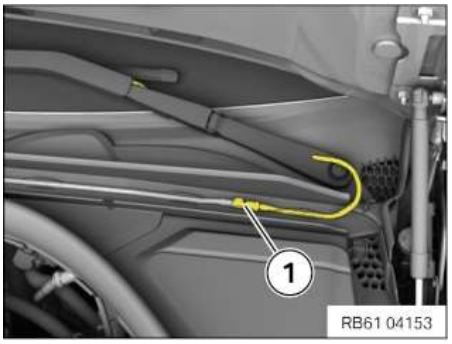
- Tighten nut (2).

Windscreen wiper arm

Combination hexagon nut		Tightening torque	35 Nm

- Connect the protective cap (1).

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- Feed washer fluid hose (1) into the cowl panel guide and connect at the separation point.

68 – Connecting all battery earth leads



- See additional information.

69 – Activating the 48 V electrical system

Prerequisite

Ignition is switched off.

RISK OF DAMAGE

Damage to 48-V battery

If a 48-V battery that is disconnected from the electrical system is activated, the battery electronics will be damaged.

- Only carry out activation of the 48V electrical system with a completely connected 48-V battery.



- Lift battery earth lead (1).
- Remove special tool .



- Release the negative battery cable (2) of the 48-V battery from the mounting.
- Position the negative battery cable (2) of the 48-V battery on the negative battery terminal.
- Tighten nut (1).

Negative battery cable to 48-V battery

Nut M8		Tightening torque	19 Nm

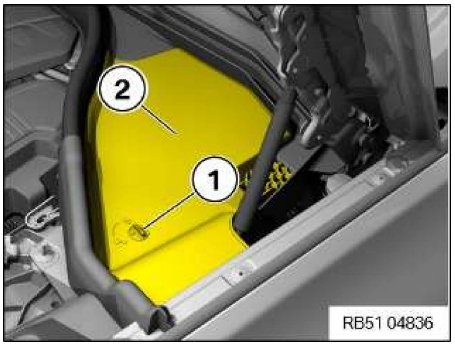


- Connect the connector (1) of the CAN bus and lock it.
- Clip in clip (2).



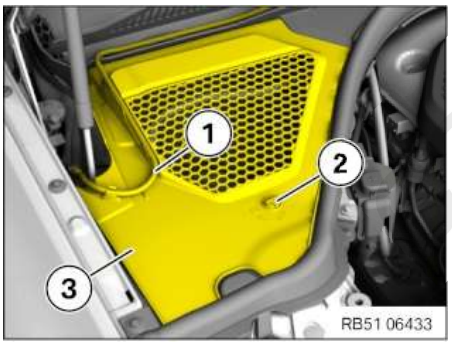
- Activate the 48V electrical system by closing the bonnet.
  The activation takes place automatically.

70 – Install the cover of the engine compartment on the rear left



- Position the engine compartment cover at the rear left (2) .
- Close lock (1).

71 – Install the rear right engine compartment cover



- Position the cover of the engine compartment on the rear right (3).
- Close lock (2).
- Insert washer fluid hose (1) into the guides.

72 – Check engine oil level

Prerequisite

Vehicle is in a horizontal position.

TECHNICAL INFORMATION

Please comply with instructions in Owner's Handbook.

- Carry out an electronic oil measurement.
- Top up engine oil if necessary.

▸ **Check engine oil level**

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TECHNICAL INFORMATION

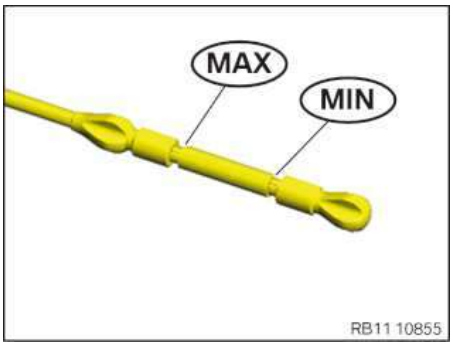
Always check the engine oil level when the engine is at operating temperature (engine oil temperature > 70°C).

- Park vehicle on a horizontal surface.
- Stop the engine and wait for 5 minutes.
- Pull out the oil dipstick and wipe off using a lint-free cloth.

TECHNICAL INFORMATION

Do not pull out or insert the oil dipstick into the guide tube too quickly or slowly.

- Push the oil dipstick into the guide tube up to the limit position and pull it out again.



TECHNICAL INFORMATION

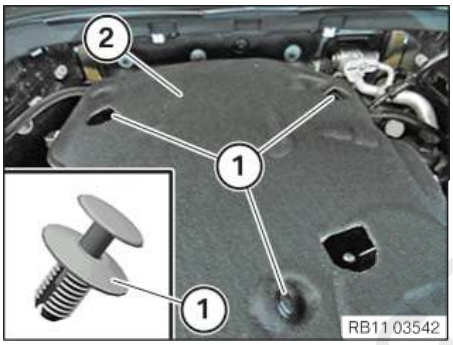
The engine oil level must be between the minimum mark and the maximum mark of the oil dipstick.

- Read the engine oil level on the oil dipstick.
- Top up engine oil if necessary.

Oil quantity between the two markings MIN and MAX of the oil dipstick

1.0 l

73 – Install the acoustic cover for the injectors



- Feed the acoustic cover (2) in and install.
- **If installed:** Secure the acoustic cover (2) with the expanding rivets (1) .

74 – Install acoustic cover

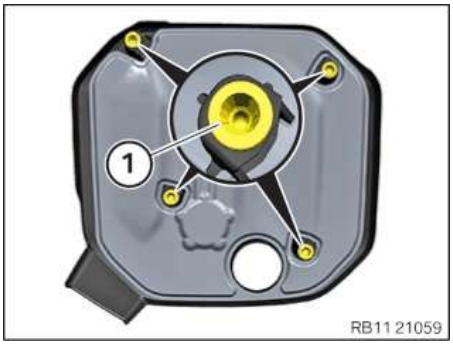
RISK OF DAMAGE

Damage to the acoustic cover/design cover.

Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover/design cover.

- Disassemble or mount the acoustic cover/design cover carefully.
- Disassemble or mount snap-lock couplings of the ball pivots one after the other.
- Disassemble or mount acoustic cover/design cover only at temperatures >20 °C.
- Use only distilled water as an auxiliary material during installation, no lubricants.

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- Check the acoustic cover for correct fit of the rubber mounts (1).



- Clip in the acoustic cover (1) into the holders in the indicated areas.

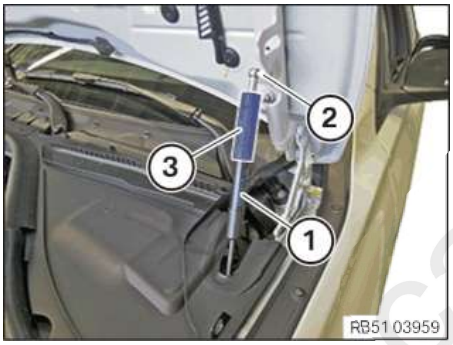
75 – Take bonnet out of the service position

CAUTION

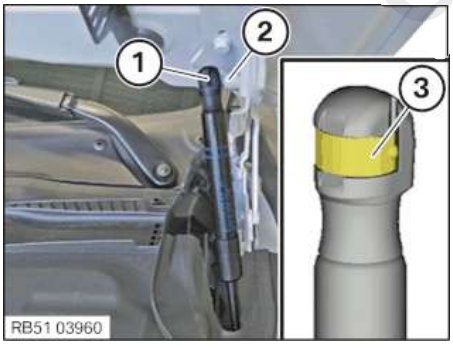
Shutting bonnet or tailgate.

Danger of injury!

- Support bonnet/tailgate in fully open position with the aid of a suitable device.



- Support the bonnet by hand.
- Remove the special tool (3) from the ball pin (2).
- Pull off the special tool (3) from the gas pressure spring (1).
- Continue to support the bonnet and repeat the operation on the other side of vehicle.



- Check the clamp (3) is fitted correctly.
- Connect ball socket (1) to ball pin (2).
- Continue to support the bonnet and repeat the operation on the other side of vehicle.

Additional Information

Overview of Tightening Torques

Oil return line to turbocharger — Used in step 3738

M6x12	Renew gasket.	Tightening torque	8 Nm

High-pressure stage exhaust turbocharger to exhaust manifold — Used in step 37

M8x20		Tightening torque	25 Nm

Connecting pipe with bypass flap to exhaust turbocharger low-pressure stage / high-pressure stage			Used in step 37
M6		Tightening torque	8 Nm

Oil feed line for the exhaust turbocharger high-pressure stage			Used in step 37
Hollow bolt		Jointing torque	10 Nm
		Angle of rotation	70 °

Exhaust manifold to cylinder head			Used in step 38
M7	**If necessary, renew loose stud bolts.**	Tightening torque	11 Nm
	Renew nuts.	Tightening torque	13 Nm

Oil feed line on cylinder head			Used in step 38
M6x12		Tightening torque	8 Nm

Exhaust-gas recirculation cooler to exhaust manifold			Used in step 38
M8x28	Replace screws	Tightening torque	32 Nm

Exhaust-gas recirculation cooler to cylinder head			Used in step 38
M8x20 / M8x28		Tightening torque	19 Nm

Exhaust turbocharger low-pressure stage to crankcase			Used in step 38
M8X16		Tightening torque	22 Nm

Oil return line to crankcase			Used in step 38
M6x12	Check gasket. Renew the seal or line if necessary.	Tightening torque	8 Nm

Heat shield to exhaust manifold			Used in step 39
M6x12			10 Nm

Bracket on cylinder head cover			Used in step 40
		Tightening torque	5 Nm

Battery positive lead to battery positive terminal			Used in step 40
M8		Tightening torque	19 Nm

Heat shield to exhaust manifold			Used in step 41
M6x12		Tightening torque	10 Nm

Banjo bolt for exhaust pressure pipe to exhaust manifold			Used in step 41
Hollow bolt	Renew sealing rings.	Tightening torque	30 Nm

Exhaust gas pressure pipe to sensor system holder			Used in step 41
TS6x20		Tightening torque	5,7 Nm

Cover, steering unit			Used in step 44
Screw		Tightening torque	3 Nm

Brake disc to front wheel hub			Used in step 45
M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub			Used in step 45
M8	Renew screw.	Tightening torque	16 Nm

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Wheel bolts			Used in step 45
M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Diesel particulate filter V-clip to exhaust turbocharger			Used in step 47
V-band clamp	Renew V-band clamp.	Tightening torque	15 Nm

Bracket to diesel particulate filter top			Used in step 47
M8		Tightening torque	19 Nm

Bracket to transmission for diesel particulate filter holder bottom			Used in step 47
M8X20		Tightening torque	19 Nm

Lower holder to diesel particulate filter			Used in step 47
M8		Tightening torque	19 Nm

Coolant lines for SCR metering module			Used in step 47
M6X16		Tightening torque	8 Nm

Nitrogen oxide sensor before SCR catalytic converter			Used in step 48
Sensor		Tightening torque	50 Nm

Monitoring oxygen sensor			Used in step 49
Sensor		Tightening torque	50 Nm

Rear silencer to body / bumper support			Used in step 50
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 50
M8 nut		Tightening torque	19 Nm

Exhaust system to transmission			Used in step 50
M8		Tightening torque	19 Nm

Exhaust system to diesel particle filter			Used in step 50
M8	If necessary, renew clamp.	Tightening torque	26 ±2 Nm

SCR metering module V-clip to exhaust system			Used in step 50
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm

Exhaust-gas temperature sensor upstream of SCR catalytic converter			Used in step 50
Sensor		Tightening torque	30 Nm

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

Nitrogen oxide sensor downstream of SCR catalytic converter			Used in step 50
Sensor		Tightening torque	55 Nm

Diffuser / underbody panelling			Used in step 51
Nuts and screws		Tightening torque	3 Nm

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Connecting support to tunnel			Used in step 52
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody protection			Used in step 5354
Hexagon screw		Tightening torque	3 Nm

Underbody panelling			Used in step 55
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Exhaust temperature sensor for the exhaust system after catalytic converter before diesel particulate filter			Used in step 56
Sensor		Tightening torque	30 Nm

Front oxygen sensor to top of diesel particulate filter			Used in step 57
Sensor		Tightening torque	50 Nm

Exhaust-gas temperature sensor to diesel particulate filter			Used in step 58
Sensor		Tightening torque	30 Nm

Differential pressure sensor of diesel particulate filter on cylinder head cover			Used in step 59
TS5x20		Tightening torque	4 Nm

Clamp for the pressure hose on the differential pressure sensor			Used in step 59
Clamp 15–19mm		Tightening torque	3 Nm

Clean air pipe to exhaust turbocharger			Used in step 60
M6X20		Tightening torque	8 Nm

Clean air pipe to upper section of intake filter housing			Used in step 6061
Clamp		Tightening torque	3 Nm

Front end strut			Used in step 62
Screw		Tightening torque	56 Nm

Bulkhead lower part to body			Used in step 63
Screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Bulkhead upper part to bottom bulkhead			Used in step 64
		Tightening torque	3 Nm

Tension strut on bulkhead			Used in step 64
M10x25 screw		Tightening torque	56 Nm

Tension strut to spring strut dome			Used in step 64
Screw	Renew screws.	Jointing torque	56 Nm
		Angle of rotation	90 °

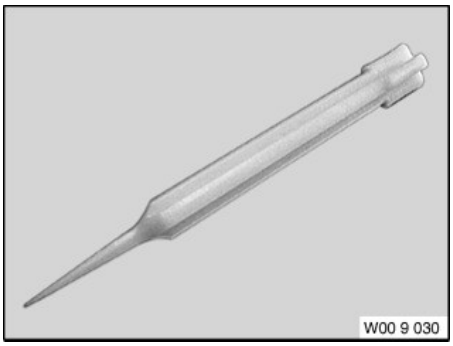
Windscreen wiper arm			Used in step 67
Combination hexagon nut		Tightening torque	35 Nm

Negative battery cable to 48-V battery			Used in step 69
Nut M8		Tightening torque	19 Nm

Overview of Special Tools

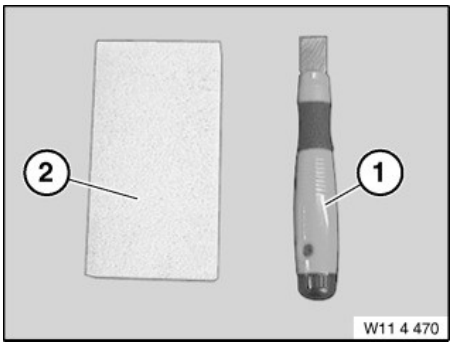
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0 496 714 (00 9 030) Wedge



Common	Used in step 37
Usage	For dismantling O-rings, gaskets and trim panels. This special tool replaces special tool 00 9 316.
Included in the tool or work	
Storage location	A50
Replaced by	
In connection with	
SI-Number	01 20 09 (581)

0 495 102 (11 4 470) Tool



Common	Used in step 38
Usage	(cleaning kit) For cleaning sealing surfaces on magnesium crankcase/cylinder head.
Included in the tool or work	
Storage location	C52
Replaced by	
In connection with	
SI-Number	01 17 04 (130)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 495 103 (11 4 471)		**Scraper**	
2	0 495 104 (11 4 472)		**Extractor** (grindstone)	

2 344 011 Tool



Common	Used in step 45
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common	Used in step 29
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 224 (36 1 326) Wheel stud



Common	Used in step 29
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 29
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 29
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 29
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 29
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	

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0 495 229 (36 1 332) Wheel stud



Common	Used in step 29
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 29
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

Distance from window pane edge to wiper blade	Used in step 67
Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

Oil quantity between the two markings MIN and MAX of the oil dipstick	Used in step 72
	1.0 l

Links

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61 35 ... Notes on ESD protection (Electro Static Discharge)	161718192627
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61 20 900 Disconnecting and connecting battery earth lead	568
61 20 900 Disconnecting and connecting battery earth lead	568
61 20 900 Disconnecting and connecting battery earth lead	568
61 20 900 Disconnecting and connecting battery earth lead	568
61 20 900 Disconnecting and connecting battery earth lead	568
61 20 900 Disconnecting and connecting battery earth lead	568
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	568
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	568

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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads) 568
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