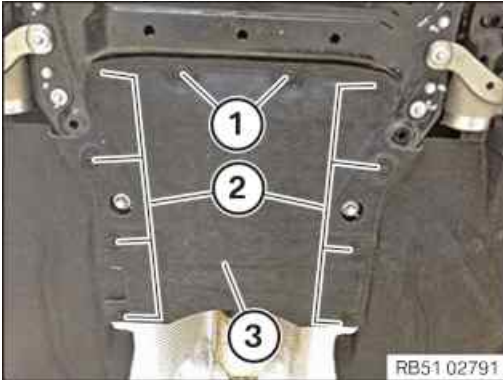


18 00 018 Remove & install complete exhaust system

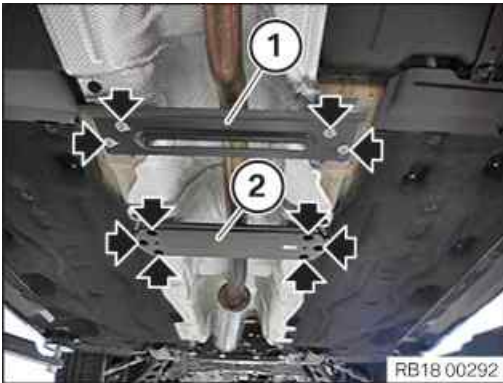
PRELIMINARY WORK

1 – If installed: Removing rear underbody protection



- Loosen screws (1) and (2).
- Remove underbody protection (3).

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



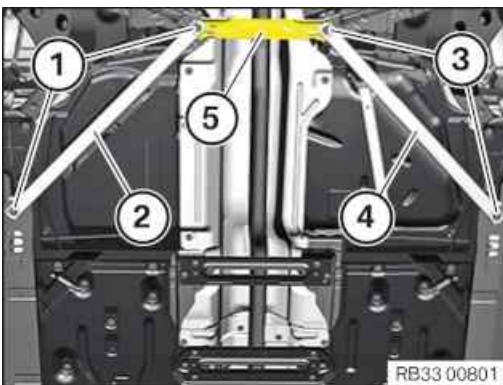
- Unscrew the bolts (arrows) from the connecting support (1).
- Feed out and remove the crossbeam (1).
- Unscrew the bolts (arrows) from the connecting support (2).
- Feed out and remove the crossbeam (2).

3 – Remove the cross strut with the torsion strut



TECHNICAL INFORMATION

Driving without a torsion strut is not permitted.



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

MAIN WORK

4 – Remove exhaust system



WARNING

Hot surfaces.

Risk of burning!

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

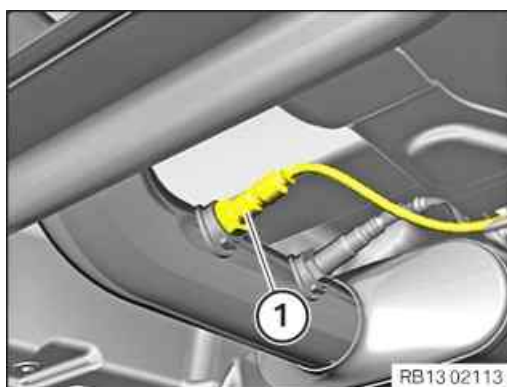


CAUTION

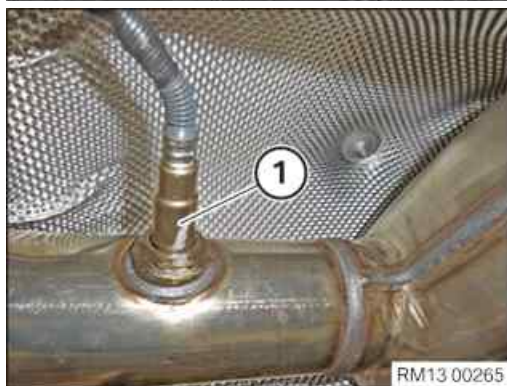
Heavy component.

Heavy components can lead to injury or damage.

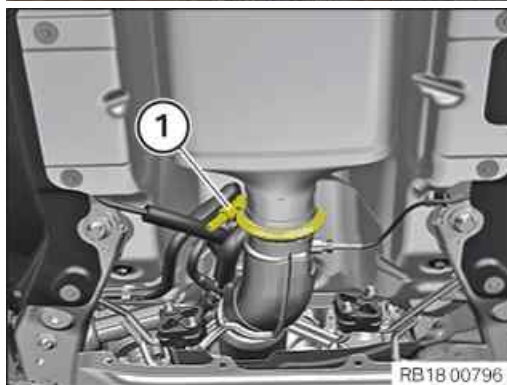
- Remove and install heavy components with the aid of another person/other persons.



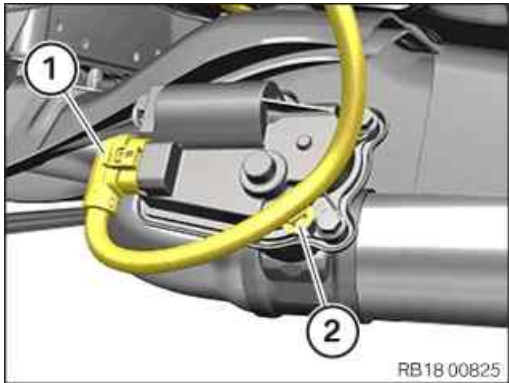
- Release the nitrogen oxide sensor (1) downstream of the SCR catalytic converter, guide it out and set it aside.



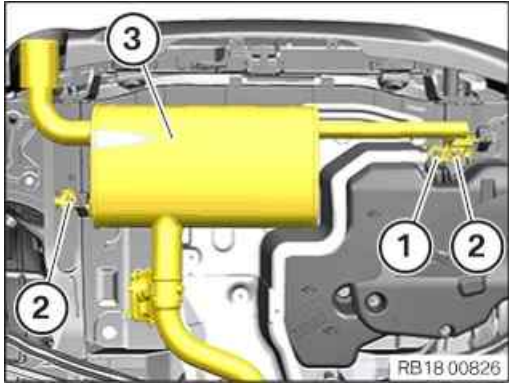
- Release the diesel particulate sensor (1), guide it out and set it aside.



- Loosen V-band clamp (1).



- Unlock and disconnect connector (1).
- Loosen clamp (2).



- Loosen screw (1).
- Loosen nuts (2).
- Lower the exhaust system (3) with an auxiliary person, guide out and remove.

5 – Install exhaust system



CAUTION

Component with heavy weight.

Danger of injury!

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

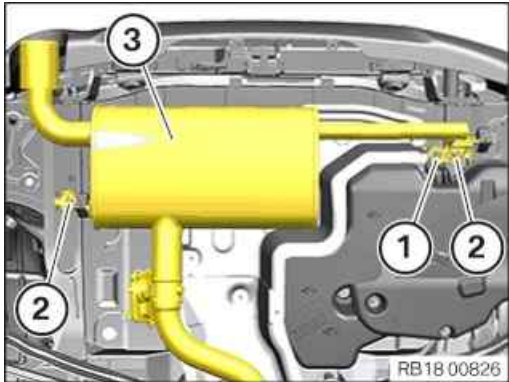


CAUTION

Heavy component.

Heavy components can lead to injury or damage.

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



- Insert and install the exhaust system (3) with the help of another person.
- Renew nuts (2).

Parts: Nuts

- Tighten nuts (2).

Exhaust system to body

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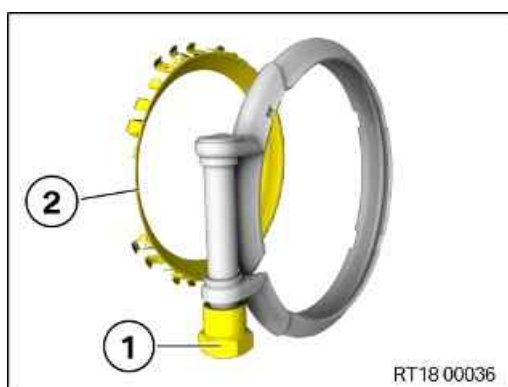
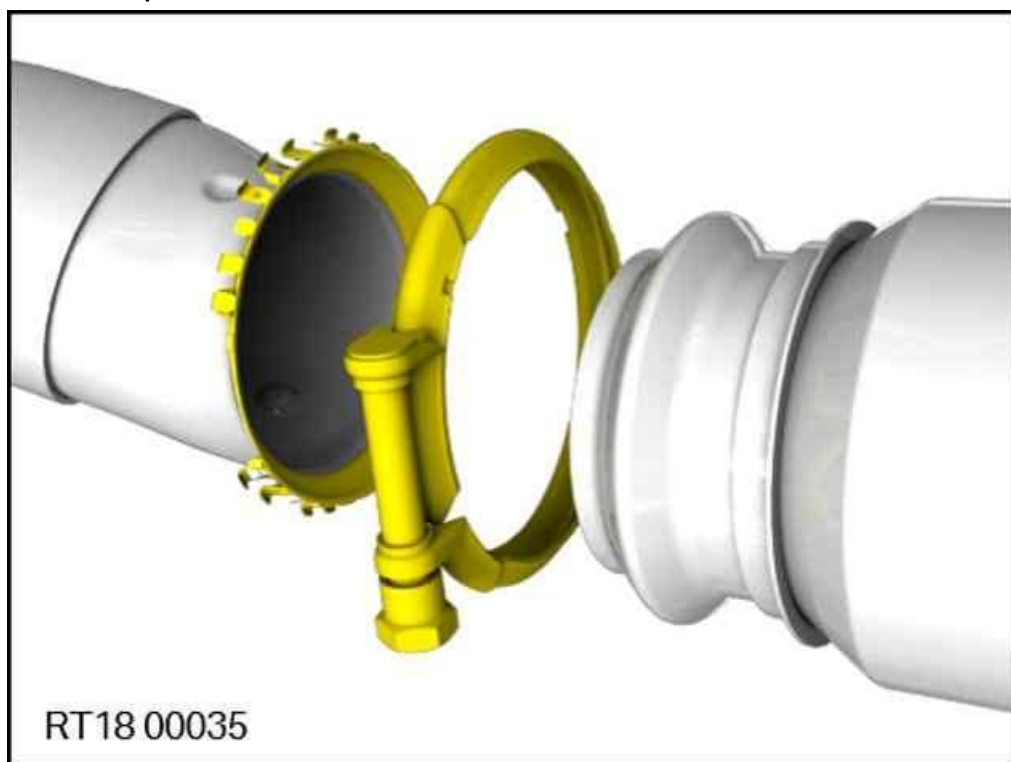
- Tighten down screw (1).

Exhaust bracket on body

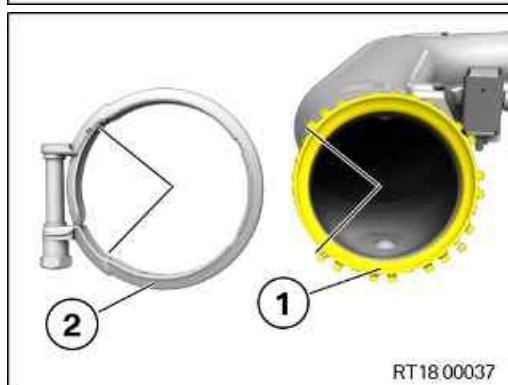
Hexagon screw M8x30		Tightening torque	19 Nm
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► Install the V-clip

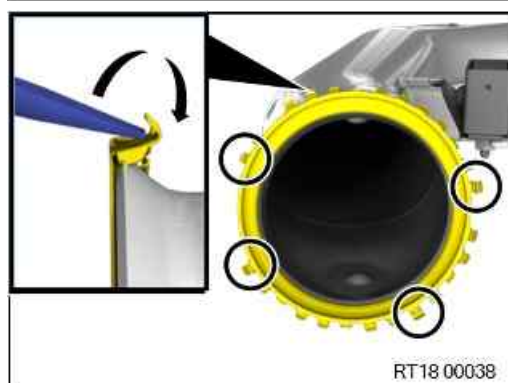
V-band clamp



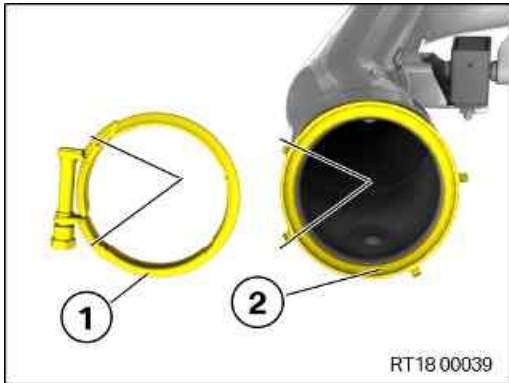
- Unscrew the nut (1) and remove the sealing ring (2).



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



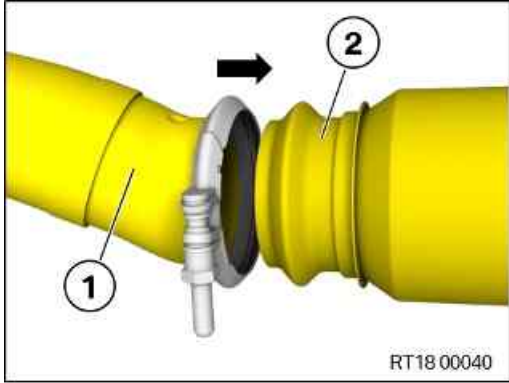
- Bend all sheet metal tabs over with a suitable tool, except those in the marked areas.



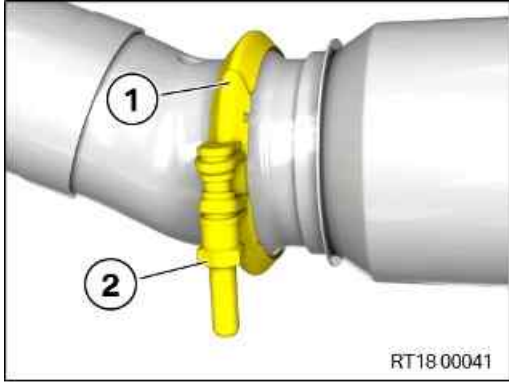
- Mount the V-clip (1) on the sealing ring (2).
- Make sure that the V-clip (1) is positioned correctly on the sealing ring (2).



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



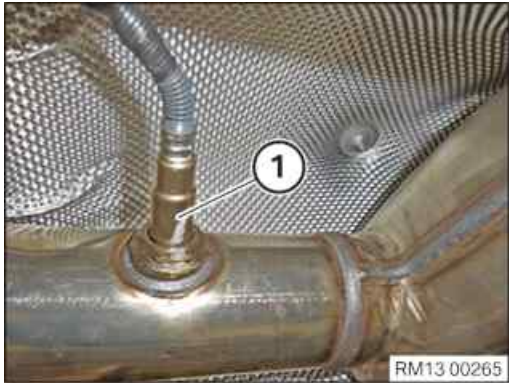
- Connect the exhaust system (1) with the catalytic converter (2) and position correctly.



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

V-clip to catalytic converter

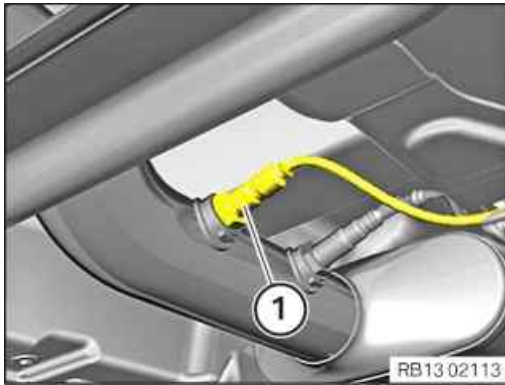
V-band clamp	Renew V-band clamp.	Tightening torque	22 Nm
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- Guide in, position and tighten the diesel particulate sensor (1).

Diesel particulate sensor to exhaust system

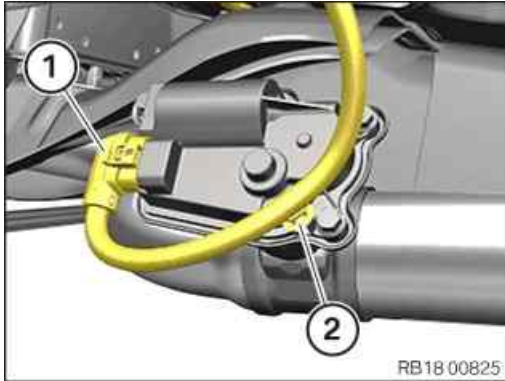
Sensor		Tightening torque	50 Nm
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- Guide in, position and tighten the nitrogen oxide sensor (1).

Nitrogen oxide sensor downstream of SCR catalytic converter

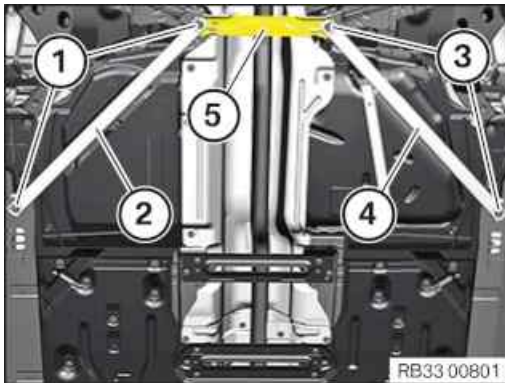
Sensor		Tightening torque	50 Nm
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- Secure clamps (2).
- Connect connectors (1) and lock.
The connector (1) must engage audibly.

POSTPROCESSES

6 – Install the cross-member with torsion struts



- Insert and install the cross-member (5).
 - Thread in torsion strut (4) at right and install.
 - Renew screws (3).
- Parts:** Bolts
- Tighten down screws (3).

Cross-member/torsion strut to axle support and mounting

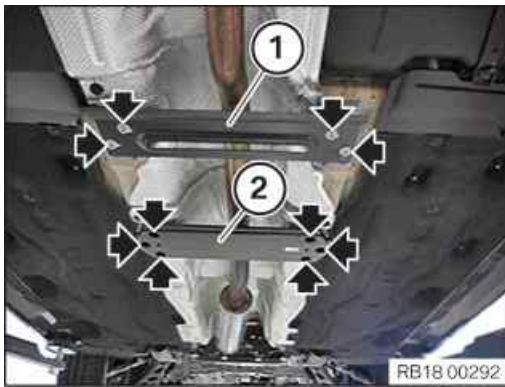
M12x48	Renew screws.	Jointing torque	100 Nm
		Angle of rotation	90 °

- Guide in and install the left torsion strut (2).
 - Renew screws (1).
- Parts:** Bolts
- Tighten the screws (1).

Cross-member/torsion strut to axle support and mounting

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

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



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

Front connection carrier to body

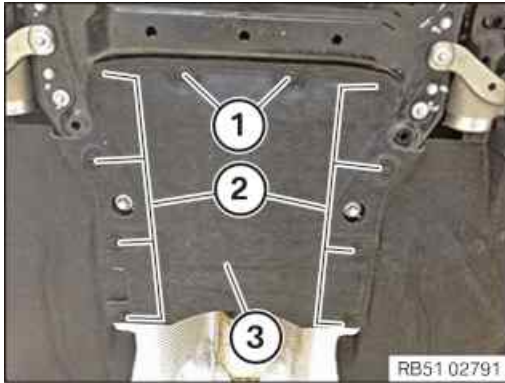
M10x18		Tightening torque	56 Nm
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- Insert and install connecting supports (1).
- Tighten the screws (arrows) from the connecting support (1).

Rear connection carrier to body

M8x18		Tightening torque	28 Nm
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8 – If installed: Installing underbody protection at rear



- Install the underbody protection (3).
- Tighten down screws (1) and (2).

Underbody protection to body

Screw		Tightening torque	3 Nm
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Additional Information

Overview of Tightening Torques

Exhaust system to body Used in step 5

M8	Replace nuts.	Tightening torque	19 Nm
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Exhaust bracket on body Used in step 5

Hexagon screw M8x30		Tightening torque	19 Nm
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V-clip to catalytic converter Used in step 5

V-band clamp	Renew V-band clamp.	Tightening torque	22 Nm
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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	50 Nm
--------	--	-------------------	-------

Cross-member/torsion strut to axle support and mounting Used in step 6

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

Front connection carrier to body Used in step 7

M10x18		Tightening torque	56 Nm
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Rear connection carrier to body Used in step 7

M8x18		Tightening torque	28 Nm
-------	--	-------------------	-------

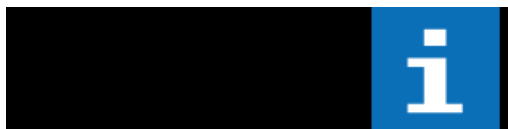
Screw		Tightening torque	3 Nm
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**Warning!**

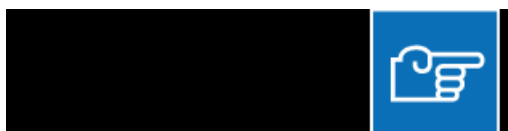
Danger of burning and other injuries!

This repair work may only be carried out on an exhaust system which has cooled down.

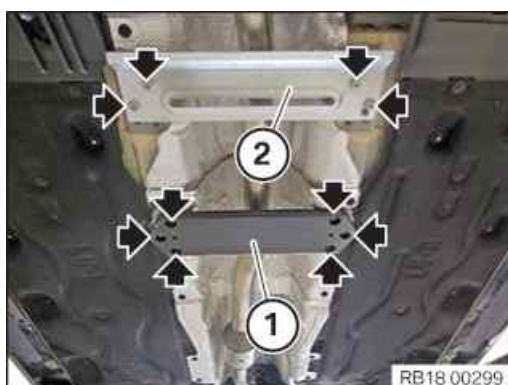
Removal of the exhaust system must be carried out with the assistance of a second person.

**Necessary preliminary tasks:**

- Remove [rear underbody protection](#). (B37)
- Use a suitable jack to support and secure the exhaust system against falling.

**Removal:**

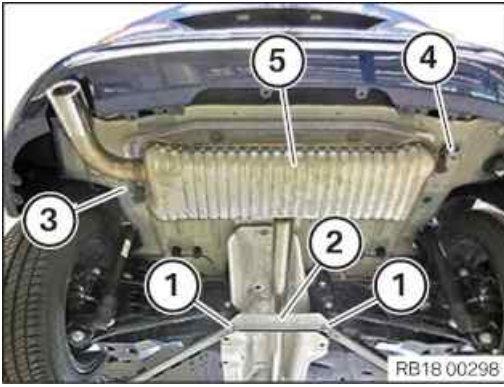
Release clamp (1).



Loosen the screws along the arrows.

Remove connection carrier (1) at the front.

Remove connection carrier (2) at the rear.



Loosen screws (1).

Remove connection carrier (2).

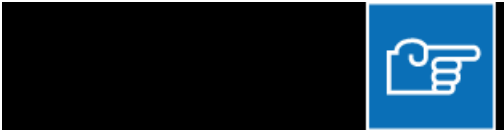
Release nut (3) on rear left holder.

Release nut (4) on rear right holder.

Remove exhaust system (5).

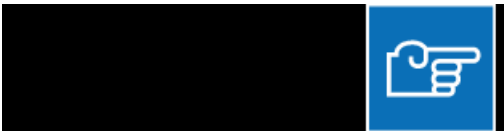
Parts: Rubber mount

Lower and remove exhaust system with assistance of a second person.

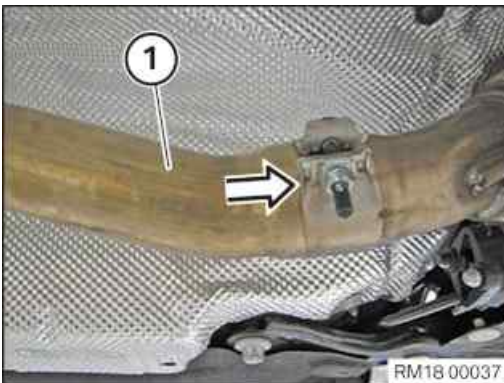


Preparation for installation:

Check rubber mount for damage, replace if necessary.



Installation:



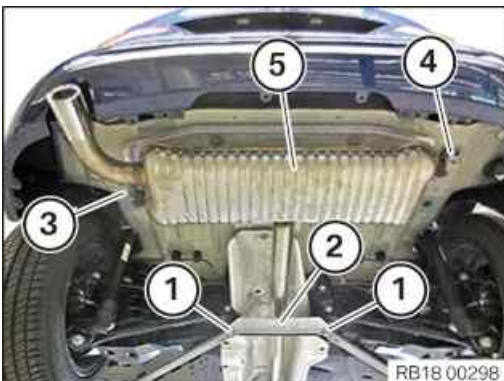
Install exhaust system and connect to diesel particulate filter with assistance of a second person.

Replace clamp (1).

Parts: Clamp.

Tighten clamp (1).

Tightening torque [18 30 1AZ](#).



Tighten nut (3) on rear left holder.

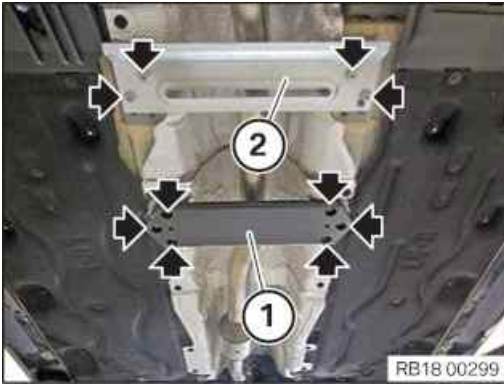
Tighten nut (4) on rear right holder.

Tightening torque [18 20 5AZ](#).

Install connection carrier (2).

Tighten down screws (1).

Tightening torque [33 31 2AZ](#).



Install connection carrier (1) at the front.

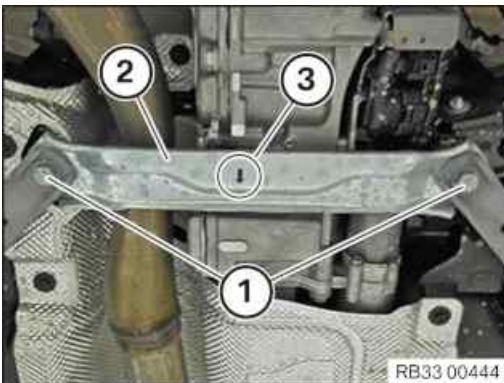
Tighten screws along arrows.

Tightening torque [18 20 2AZ](#).

Install connection carrier (2) at the rear.

Tightening torque [18 20 3AZ](#).

Tighten screws along arrows.



With four-wheel drive only

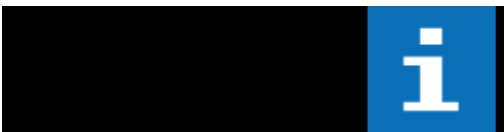
Position cross member (2) on rear axle support.

- Ensure correct installation position: Arrow (3) on cross member points in direction of travel!

Part: Renew screws (1).

Tighten down screws (1).

Tightening torque [33 31 2AZ](#).



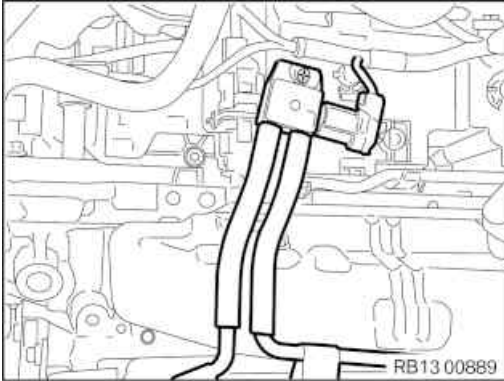
Required follow-up work:

- Install the [rear underbody protection](#). (B37 only)
- Check exhaust system for leak tightness.

**Warning!**

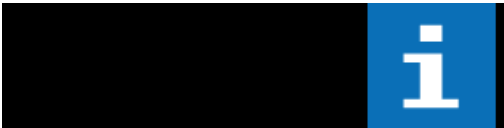
Risk of burning!

This repair work may only be carried out on an exhaust system which has cooled down.

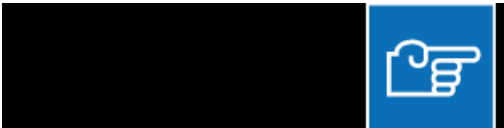
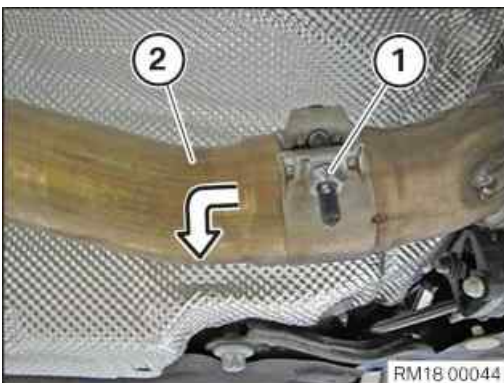
**Attention!**

The pressure hoses between the diesel particulate filter and the differential pressure sensor must be replaced when the diesel particulate filter or the differential pressure sensor is removed.

Note: Some engine versions have only one pressure hose.

**Necessary preliminary work:**

- Remove [oxygen sensor](#).
- Remove [monitoring sensor](#).
- Remove the [exhaust-gas temperature sensors](#).
- Remove [differential pressure sensor](#).
- Remove exhaust-gas recirculation cooler
- **Four-wheel drive vehicles only:**
Remove [propeller shaft](#).

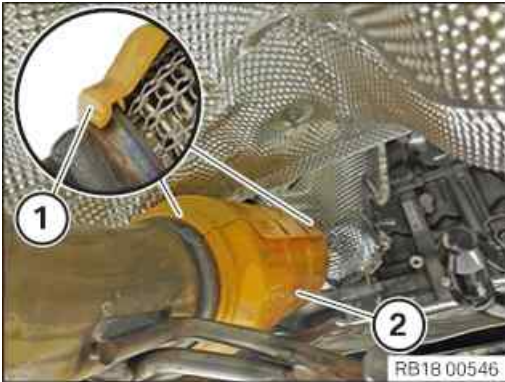
**Removal:**

Release clamp (1).

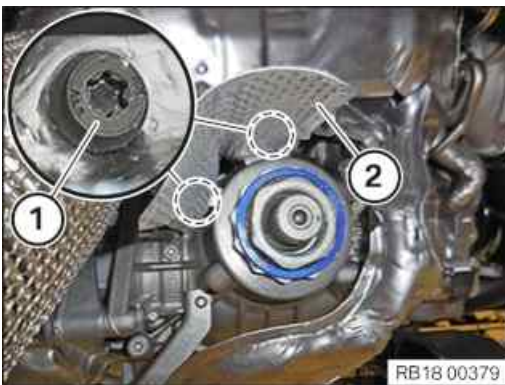
Release exhaust system (2) from diesel particulate filter.



Release rubber mount (1) from diesel particulate filter.



Mount assembly protection (2) before removing diesel particulate filter.
When mounting assembly protection, make sure that the assembly protection is correctly positioned at the edges (1) of the flexible tube.

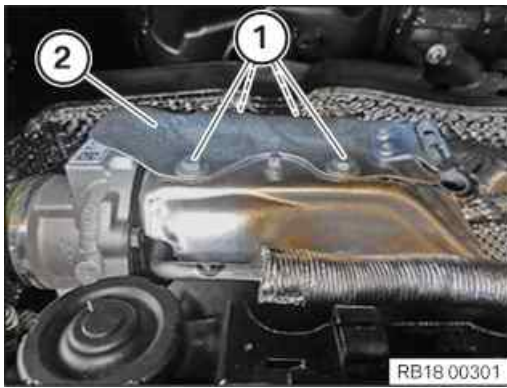


Four-wheel drive vehicles only:

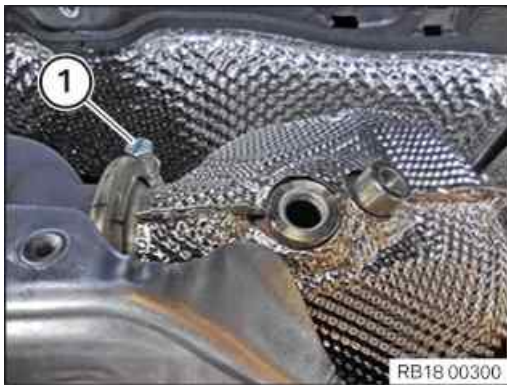
Release screws (1).
Remove heat shield (2).



Release screw (1) at bottom on crankcase.
Slacken nut (2).
Remove strut (3).
Unscrew nuts (4).



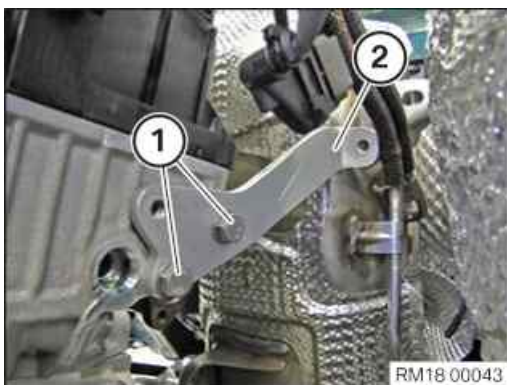
Loosen screws (1).
Remove heat shield (2).



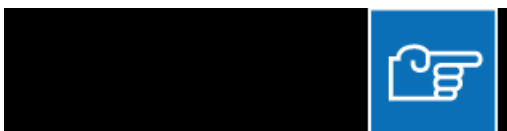
Release V-band clamp (1) between exhaust turbocharger and diesel particulate filter.



Release screw (1) on left of diesel particulate filter.



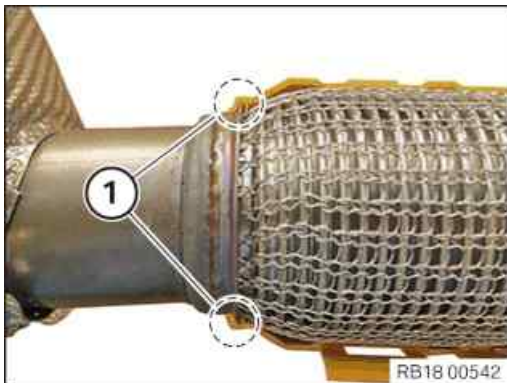
Release screws (1) and holder (2).
Feed out diesel particulate filter upwards and remove.



Installation:



Mount assembly protection (1) for the flexible tube before installing diesel particulate filter.



When mounting assembly protection, make sure that the assembly protection is correctly positioned at the edges (1) of the flexible tube.

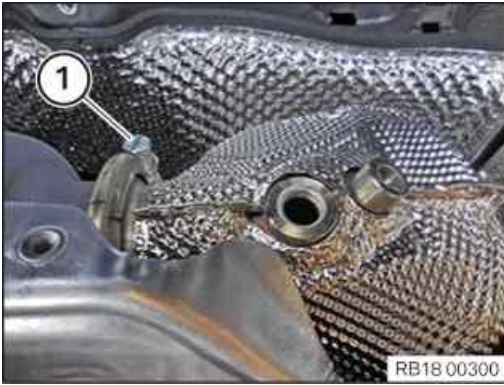


Install diesel particulate filter (1) with the assembly protection for the flexible tube.



Feed in diesel particulate filter (1) with the assembly protection for the flexible tube behind the cylinder head.

Dismount assembly protection for the flexible tube.



Install and position diesel particulate filter.

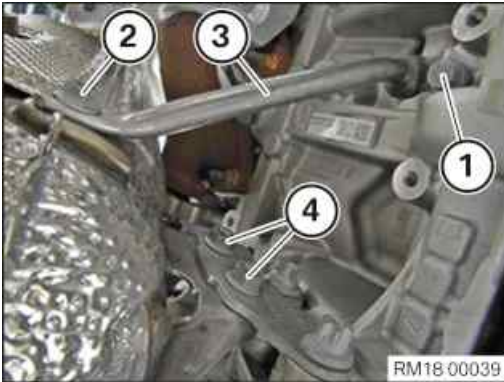
Replace V-band clamp and gasket.

Parts: V-band clamp and gasket.

Install V-band clamp and gasket.

Tighten V-band clamp.

Tightening torque [18 30 2AZ](#).



Install strut (3).

Tighten screw (1) on crankcase.

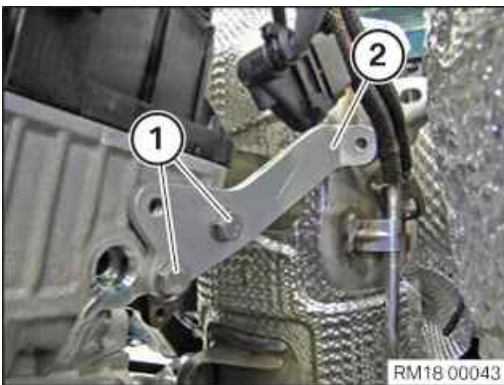
Tightening torque [18 30 4AZ](#).

Tighten nut (2).

Tightening torque [18 30 3AZ](#).

Tighten down nuts (4).

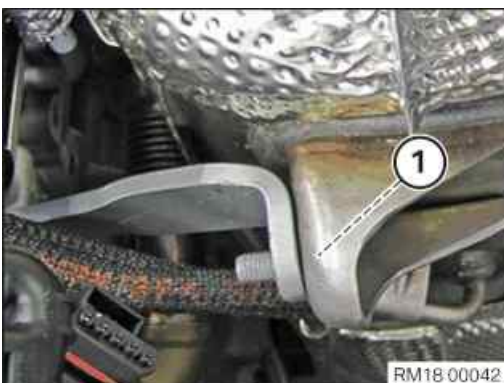
Tightening torque [18 30 3AZ](#).



Install holder (2).

Tighten down screws (1).

Tightening torque [18 30 4AZ](#).



Tighten screw (1) on left of diesel particulate filter.

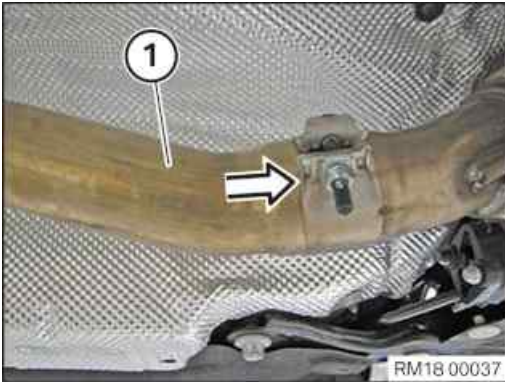
Tightening torque [18 30 3AZ](#).



Check rubber mounts for damage, replace damaged rubber mounts.

Parts: Rubber mount.

Slide on rubber mount (1) onto diesel particulate filter.



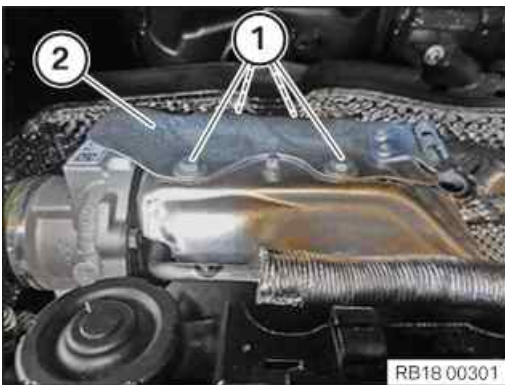
Connect exhaust system (2) to diesel particulate filter.

If necessary, renew clamp.

Parts: Clamp.

Tighten clamp (1).

Tightening torque [18 30 1AZ](#).



Install heat shield (2).

Tighten down screws (1).

Tightening torque [18 30 10AZ](#).



Four-wheel drive vehicles only:

Install heat shield (2).

Tighten down screws (1).

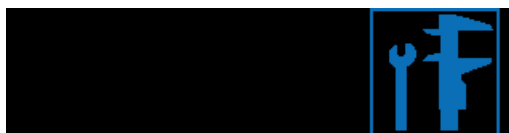
Tightening torque [18 30 11AZ](#).



Required reworking:

- Install [differential pressure sensor](#).
- Install [oxygen sensor](#).
- Install [monitoring sensor](#).
- Install [exhaust temperature sensors](#).
- Install [exhaust-gas recirculation cooler](#).
- **Four-wheel drive vehicles only:**
Remove [propeller shaft](#).

18 31 700 Clean diesel particulate filter



Special tools required:

- 83 19 2 211 603
- 83 19 2 211 602



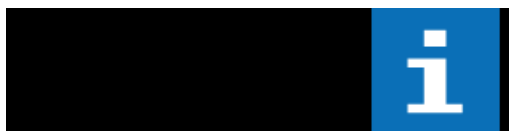
Warning!

Only clean an engine that has cooled down.

In order to achieve good cleaning results, the diesel particulate filter should be no more than warm to the touch.



Follow diagnosis instruction.



Necessary preliminary tasks:

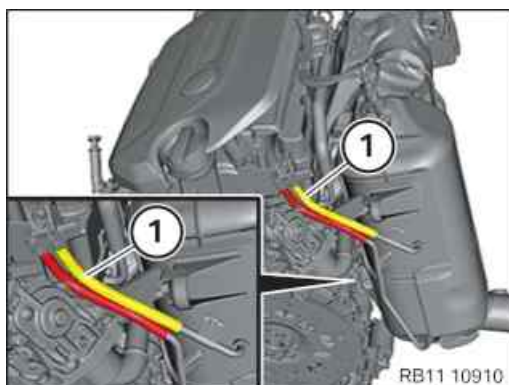
- Remove [clean air pipe](#).



Note:

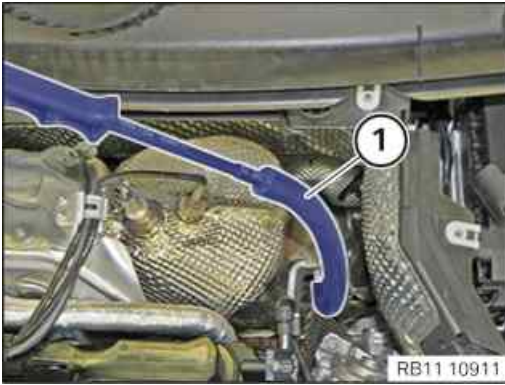
Starter kit for diesel particulate filter cleaner 83 19 2 211 603 (includes agitator cup gun with lance and 1x DPF solvent cleaner)

Fill agitator cup gun (1) with DPF-solvent cleaner 83 19 2 211 602 (2).

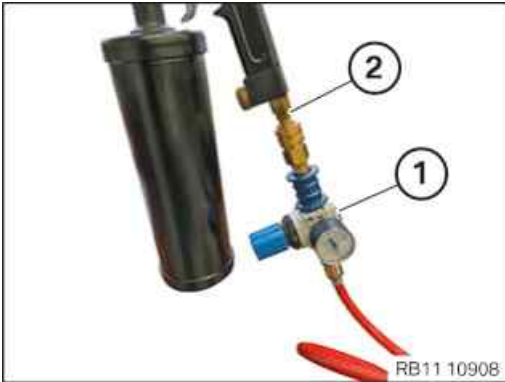


Important!

Note: Always use the pressure hose (1) before the diesel particulate filter (engine version Bx7 shown).



Connect the special sensor (1) directly to the diesel particulate filter.



Important!

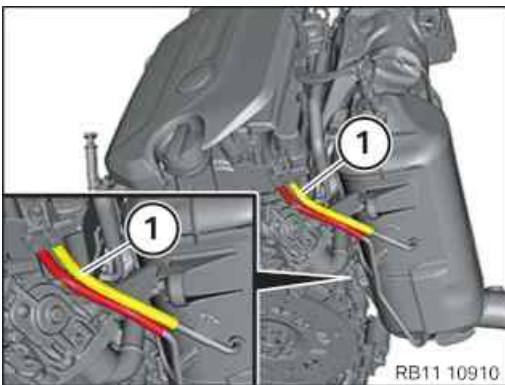
Note:

Only use supplied agitator cup gun.

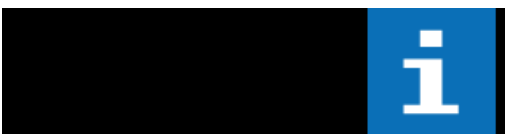
Operate the agitator cup gun with no more than 2 bar.

If necessary, use a pressure reducer (1). Connect the pressure canister gun (2) to the compressed air.

Spray DPF solvent cleaner in the direction of honeycomb structure with no more than 2 bar at intervals.



Re-fasten differential pressure hose (1).



Required follow-up work:

- Install [clean air pipe](#).
- Check oil level:
- Delete the fault memory and perform regeneration.

**Prerequisite:**

To carry out this repair work, the mechatronics technician must be trained in the use of welders.

Identify the part number of the diesel particulate filter fitted in the vehicle! The right replacement part can only be selected from the Electronic Parts Catalogue based on that number.

Additionally required:

- MAG (metal active gas) welder
- **Stainless steel welding wire** (European material number 1.4370)
(Wire cannot be obtained from the BMW dealer organisation)
- Mixed gas (82 % argon, 18 % carbon dioxide)

**Warning!****Risk of burning!**

Only perform this repair work on an engine that has cooled down.

**Necessary preliminary work:**

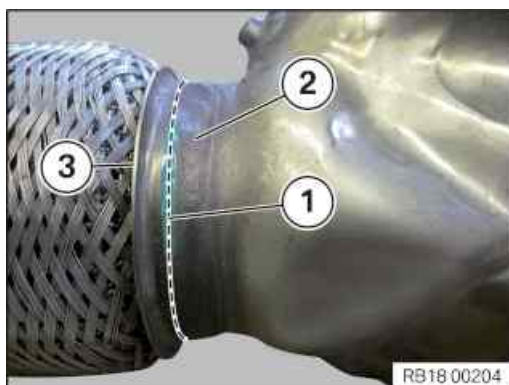
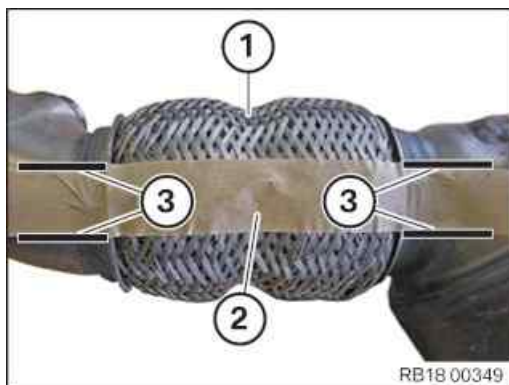
- Remove [diesel particulate filter](#)

Removing faulty flexible tube:**Note:**

Marks must be made to prevent changes to the installation position of the exhaust system.

Align (1) flexible tube and affix adhesive tape (2) as shown.

Carry over reference marks (3) along the adhesive tape (2) to diesel particulate filter and exhaust pipe.



Cut in marking (1) along the weld seam (2) by 2 to 3 mm.

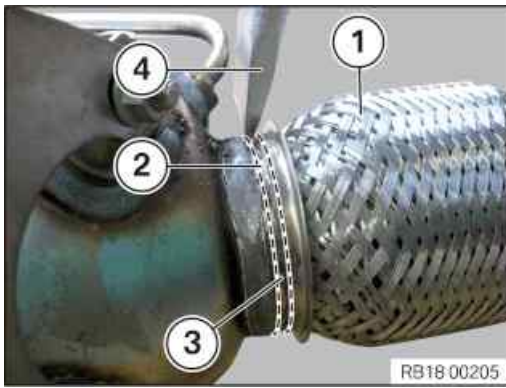
Attention!

Exclusively separate the outer shell.

Do not completely cut through flexible tube; inner pipe must remain intact.

Make sure that cut lines (1) are parallel to flexible tube edge (3).

Perform process in the same way at other end of flexible tube.



Cut uniformly all around until the flexible tube (1) can be disconnected from the weld seam (2) with a suitable tool (4).

Inner pipe (3) must stay on the weld seam (2).

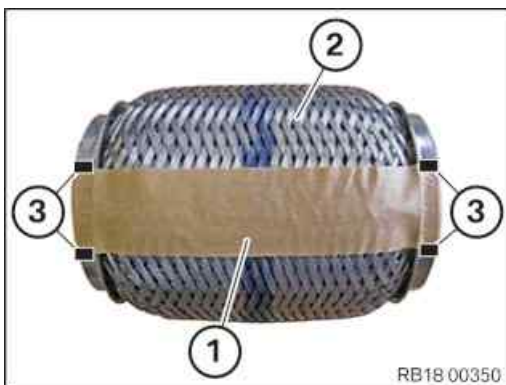
Perform process in the same way at other end of flexible tube.



Note:

Inner pipe (1) on diesel particulate filter must remain intact.

Inner pipe (2) on exhaust pipe must remain intact.

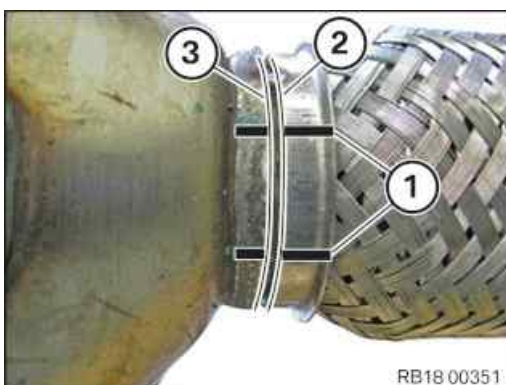


Installing new flexible tube:

Align adhesive tape (1) as shown and affix to new flexible tube (2).

Carry over reference marks (3) along the adhesive tape (1) to flexible tube.

Remove adhesive tape (1).



Connect new flexible tube to the inner pipe of the diesel particulate filter and align.

Note:

Marks (1) must be aligned.

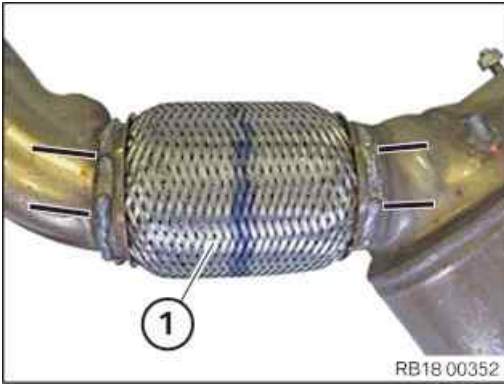
Make sure that flexible tube (2) is parallel to cutting edge (3).

Observe distance of approx. 1-2 mm between flexible tube (2) and weld seam (3).

Use stainless steel welding wire.

Attach flexible tube with several welding spots.

Procedure identical on the opposite side.



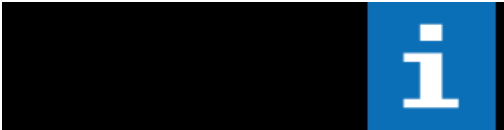
Note:

All layers of the connection must be welded completely.

Use stainless steel welding wire.

Align marks and staple three times on each side.

Weld flexible tube (1) all around on both sides.

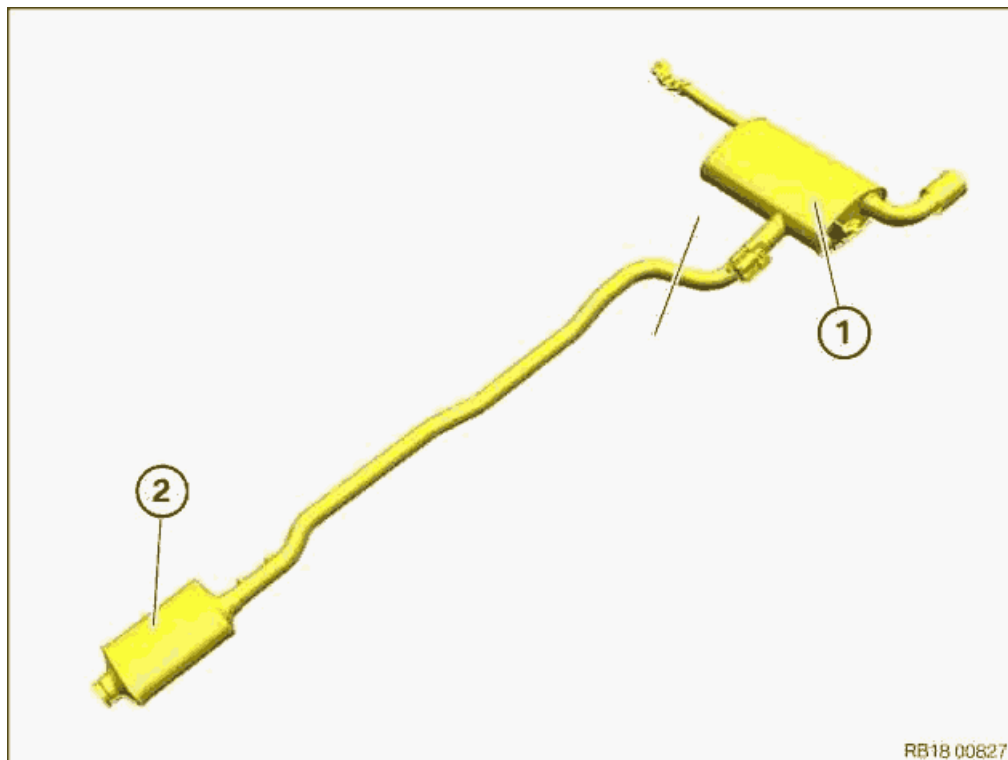


Required follow-up work:

- Install [diesel particulate filter](#)
- Check exhaust system for leaks.

18 12 030 Removing and installing/replacing rear silencer

Replacing the rear silencer



1 Rear silencer

2 SCR catalytic converter

1 – 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.

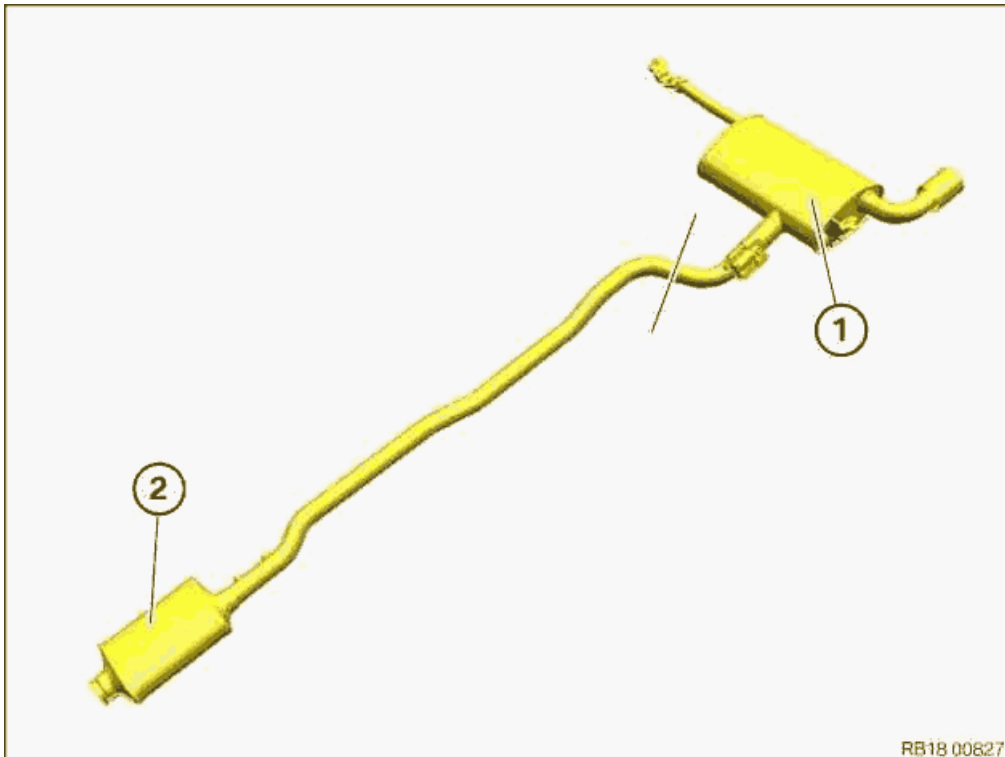
Danger of injury!



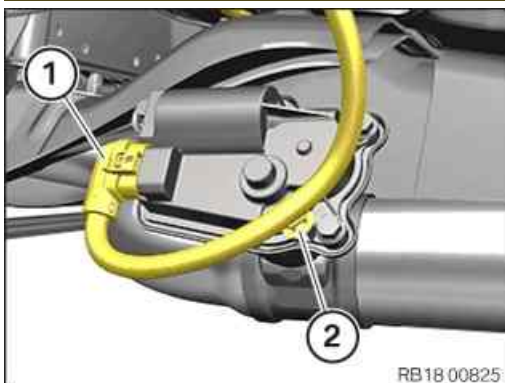
- Conduct all work in appropriate personal protective equipment only.



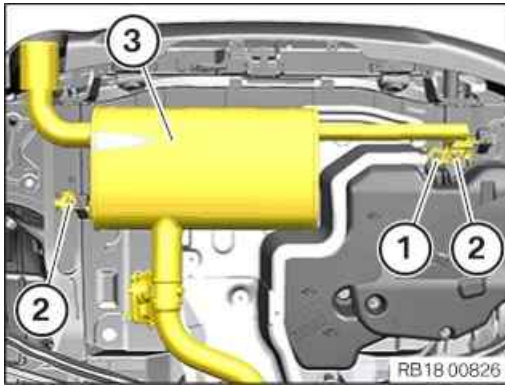
- Wear safety goggles and protective gloves.



- 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.



- Unlock and disconnect connector (1).
- Loosen clamp (2).



- Loosen screw (1).
- Loosen nuts (2).
- Guide out the rear silencer (3) with the assistance of a second person and remove it.

2 – Installing the rear silencer



CAUTION

Heavy component.

Heavy components can lead to injury or damage.

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

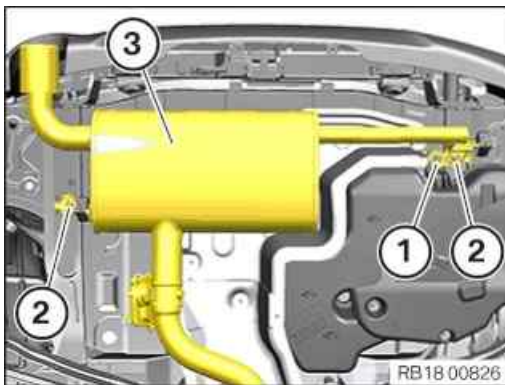


CAUTION

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.



- Feed in and install rear silencer (3) with a second person.

- Renew nuts (2).

Parts: Nuts

- Tighten nuts (2).

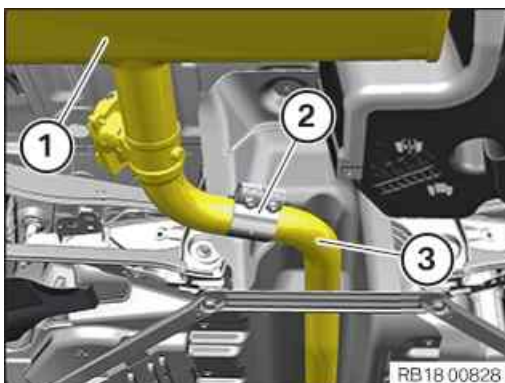
Exhaust system to body

M8	Replace nuts.	Tightening torque	19 Nm
----	---------------	-------------------	-------

- Tighten down screw (1).

Exhaust bracket on body

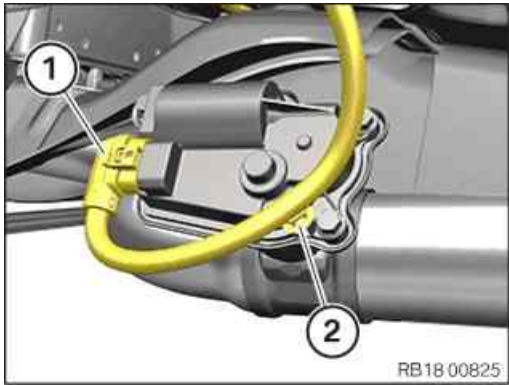
Hexagon screw M8x30		Tightening torque	19 Nm
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- Connect the new rear silencer (1) to the front pipe (3) using the clamp (2).
- Centre and tighten clamp (2).

Clamp with partial replacement of exhaust system

Clamp		Tightening torque	45 Nm
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- Secure clamps (2).
 - Connect connectors (1) and lock.
- The connector (1) must engage audibly.

Additional Information

Overview of Tightening Torques

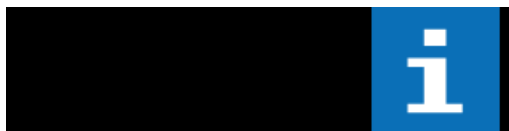
Exhaust system to body			Used in step 2
M8	Replace nuts.	Tightening torque	19 Nm
Exhaust bracket on body			Used in step 2
Hexagon screw M8x30		Tightening torque	19 Nm
Clamp with partial replacement of exhaust system			Used in step 2
Clamp		Tightening torque	45 Nm

**Warning!****Risk of burning!**

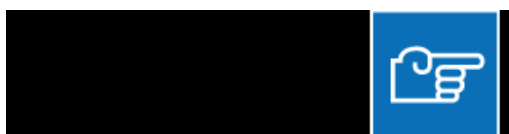
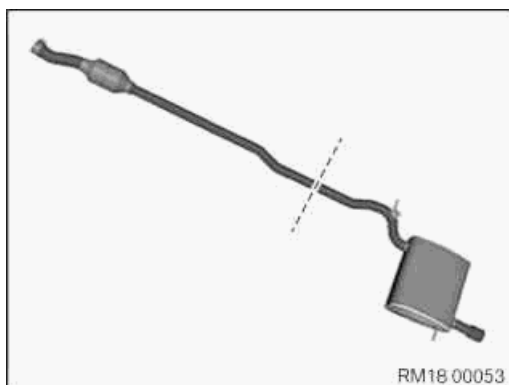
Only perform this repair work after engine has cooled down.

Danger of injury!

Call on the assistance of a second person to remove the rear silencer.

**Necessary preliminary tasks:**

- Support rear silencer with a suitable jack and secure against falling down.

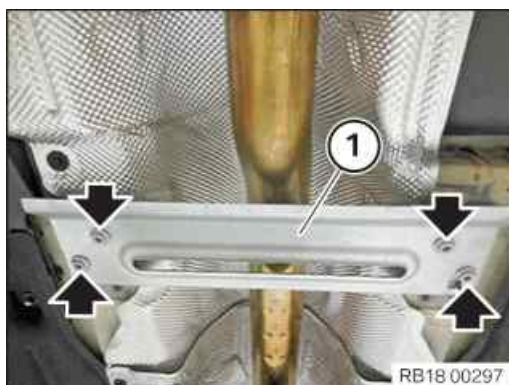
**Removal:****Note:**

If the separation point line is not marked by a punch mark in the pipe, determine the separation point by means of the pipe length on the new rear silencer.

Carry over separation point to faulty rear silencer and mark.

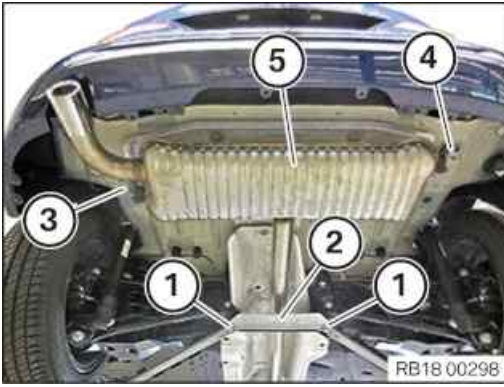
Secure rear silencer against falling off.

Cut through exhaust pipes at marked point with a suitable tool.



Release screws along the arrows.

Remove connection carrier (1).



Loosen screws (1).

Remove connection carrier (2).

Release nut (3) on rear left holder.

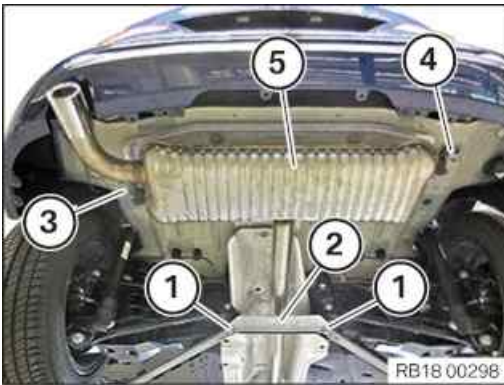
Release nut (4) on rear right holder.

Remove rear silencer (5).

Parts: Rubber mount

Lower and remove rear silencer (5) with assistance of a second person.

Installation:



Install rear silencer (5).

Tighten nut (3) on rear left holder.

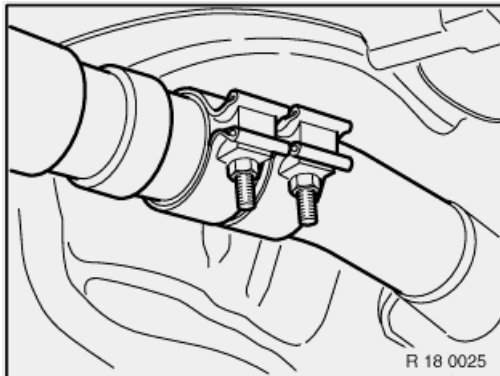
Tighten nut (4) on rear right holder.

Tightening torque [18 20 5AZ](#).

Install connection carrier (2).

Tighten down screws (1).

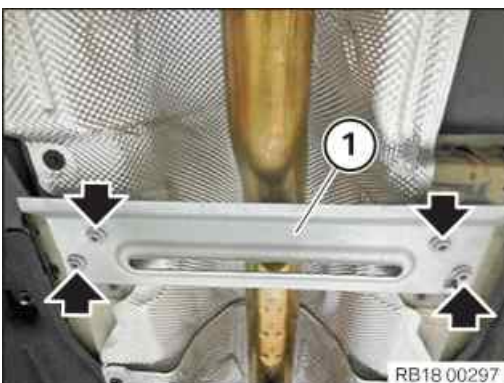
Tightening torque [33 31 2AZ](#).



Adjust new rear silencer and connect by clamp to centre silencer.

Centre clamp and tighten down.

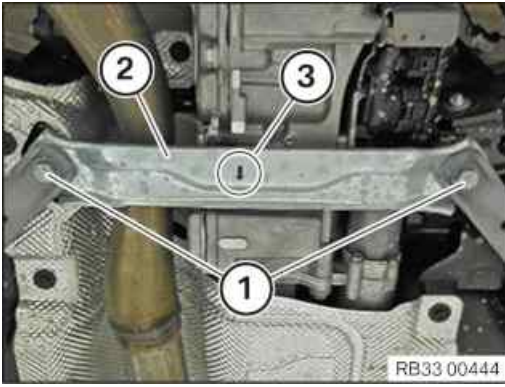
Tightening torque [18 20 6AZ](#).



Install connection carrier (1).

Tighten screws along the arrows.

Tightening torque [18 20 3AZ](#).



With four-wheel drive only

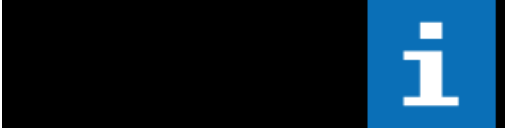
Position cross member (2) on rear axle support.

- Ensure correct installation position: Arrow (3) on cross member points in direction of travel!

Part: Renew screws (1).

Tighten down screws (1).

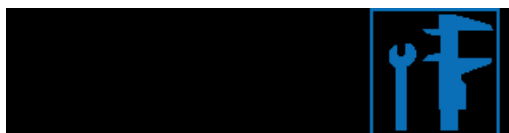
Tightening torque [33 31 2AZ](#).



Required follow-up work:

- Check exhaust system for leak tightness.

18 31 700 Clean diesel particulate filter



Special tools required:

- 83 19 2 211 603
- 83 19 2 211 602



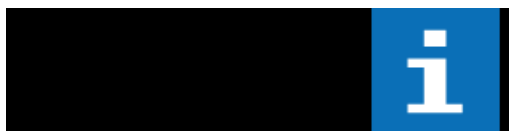
Warning!

Only clean an engine that has cooled down.

In order to achieve good cleaning results, the diesel particulate filter should be no more than warm to the touch.



Follow diagnosis instruction.



Necessary preliminary tasks:

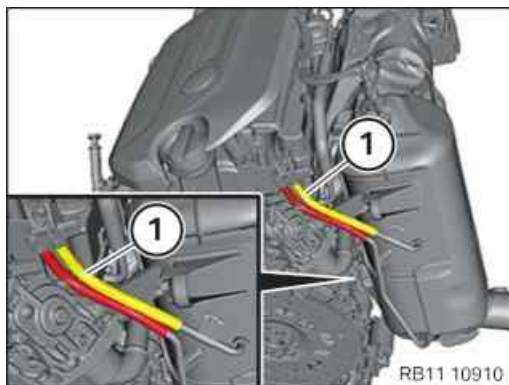
- Remove [clean air pipe](#).



Note:

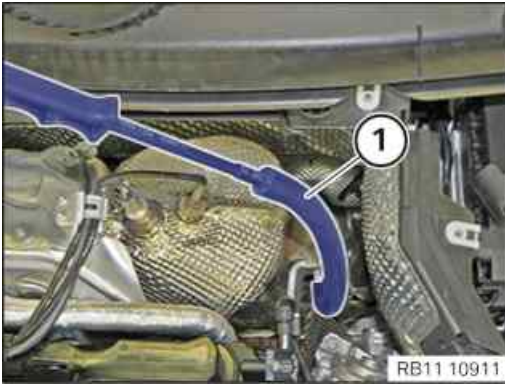
Starter kit for diesel particulate filter cleaner 83 19 2 211 603 (includes agitator cup gun with lance and 1x DPF solvent cleaner)

Fill agitator cup gun (1) with DPF-solvent cleaner 83 19 2 211 602 (2).

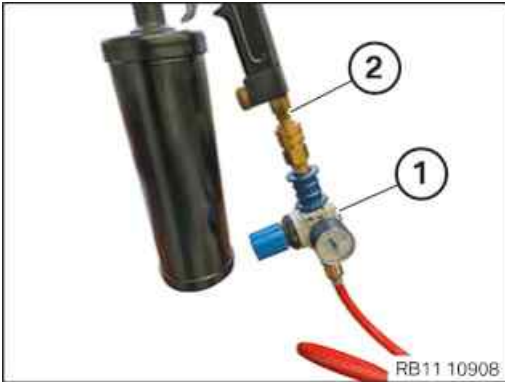


Important!

Note: Always use the pressure hose (1) before the diesel particulate filter (engine version Bx7 shown).



Connect the special sensor (1) directly to the diesel particulate filter.



Important!

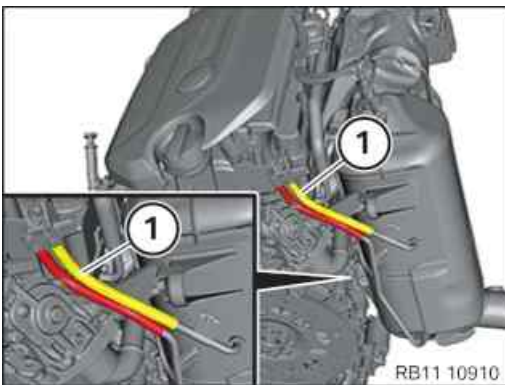
Note:

Only use supplied agitator cup gun.

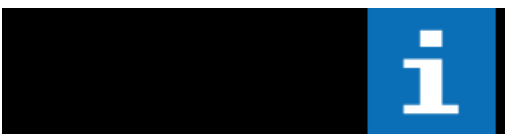
Operate the agitator cup gun with no more than 2 bar.

If necessary, use a pressure reducer (1). Connect the pressure canister gun (2) to the compressed air.

Spray DPF solvent cleaner in the direction of honeycomb structure with no more than 2 bar at intervals.



Re-fasten differential pressure hose (1).



Required follow-up work:

- Install [clean air pipe](#).
- Check oil level:
- Delete the fault memory and perform regeneration.

18 31 080 Removing and installing/replacing diesel particulate filter



WARNING

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

Danger! Life-threatening injuries!

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



WARNING

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

Danger! Life-threatening injuries!

- Secure the vehicle hoist against lowering and lifting.



WARNING

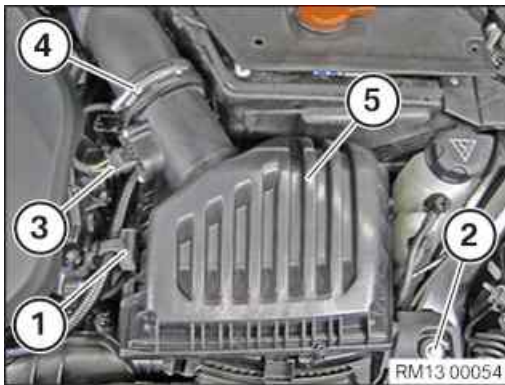
Motor vehicle may slip off the vehicle hoist if the weight is distributed unevenly.

Danger! Life-threatening injuries!

- Ensure there is a specific weight compensation on the motor vehicle.

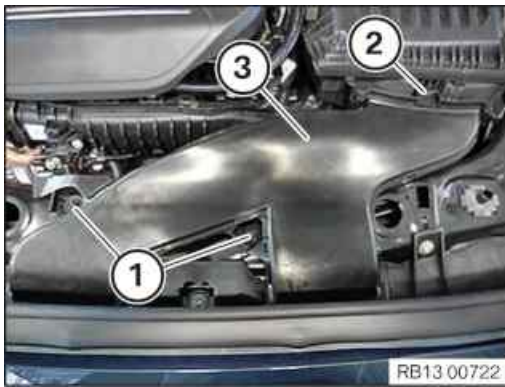
PRELIMINARY WORK

1 – Removing intake silencer housing



- Loosen the holder (1).
- Loosen screw (2).
- Unlock and loosen connector (3).
- Unfasten clamp (4).
- Pull out and remove the intake silencer housing (5) from the rubber mounts towards the top.

2 – Remove the intake neck for intake silencer housing



- Loosen nuts (1).
- Loosen the lock (2).
- Guide the intake neck (3) out and remove it.

3 – Remove vehicle battery



WARNING

Working on 12 V vehicle electrical system.

Risk of short circuits! Risk of fire!

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



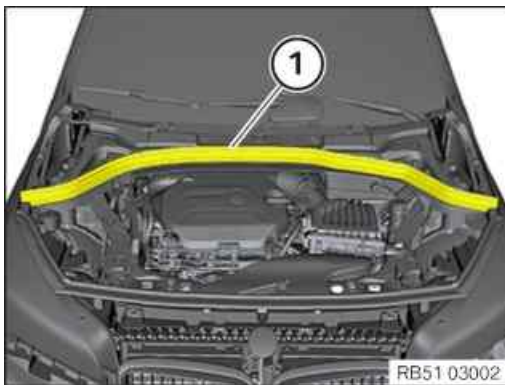
TECHNICAL INFORMATION

For additional information see:

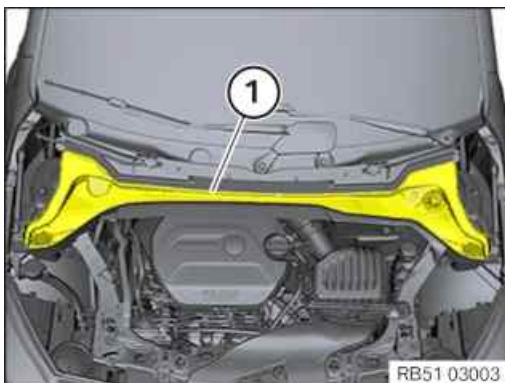
61 00 ... Safety information on handling the vehicle battery

61 00 / 12 00 ... Notes on disconnecting and connecting the vehicle battery

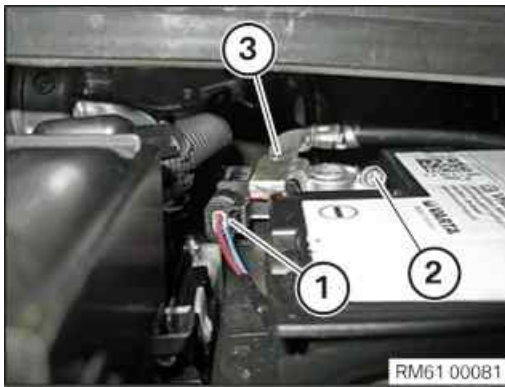
61 12 ... Notes on the intelligent battery sensor (IBS)



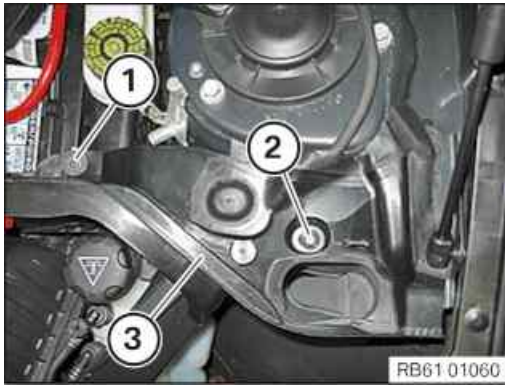
- pull off gasket (1) upwards.



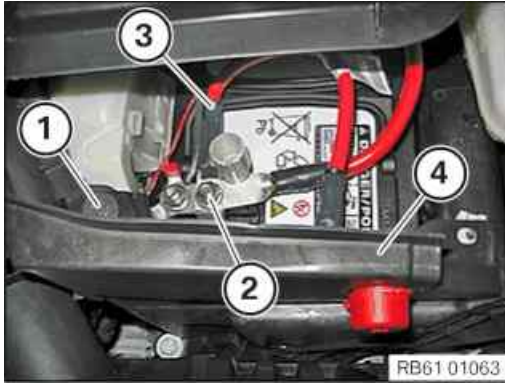
- Remove the cowl panel cover (1) to the top.



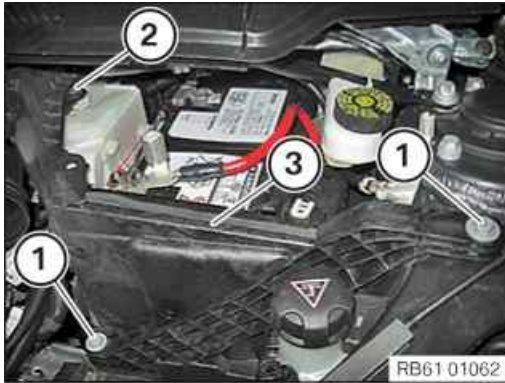
- Unlock and disconnect connector (1).
- Slacken nut (2).
- Disconnect the negative battery terminal (3).



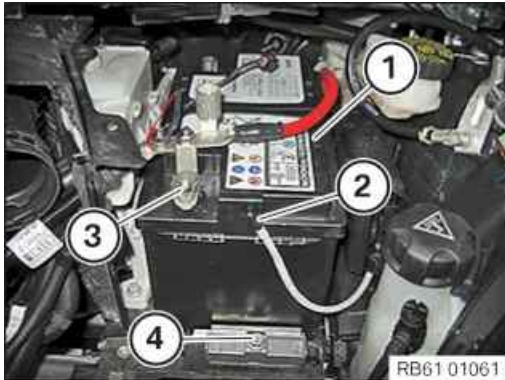
- Release the screw (1) and the expanding rivet (2).
- Remove the fixture for the gasket (3).



- Loosen screw (1).
- Unscrew the nut (2) and remove the positive battery cable (3) with the cover of the remote positive terminal (4).
- Tighten nuts (2) on the positive terminal hand-tight.



- Loosen screws (1).
- Unscrew the bolt (2) and guide the tension strut (3) out.



- Pull off the vent hose (2).
- Slacken the nut (3) on the positive terminal and remove the positive terminal.



WARNING

Unprotected battery terminals.

Risk of short circuits! Risk of fire!

- Cover the vehicle battery.

- Loosen the screw (4) and remove the holder.
- Remove vehicle battery (1).

4 – Remove left and right wiper arm



NOTICE

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

► Remove the wiper arm

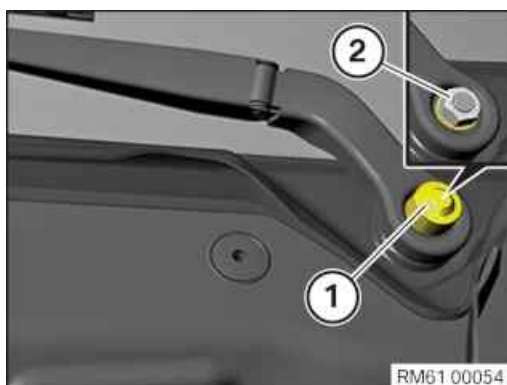


RISK OF DAMAGE

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 lift off wiper arm, else the wiper console may break on the predetermined breaking point for the pedestrian protection.



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



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

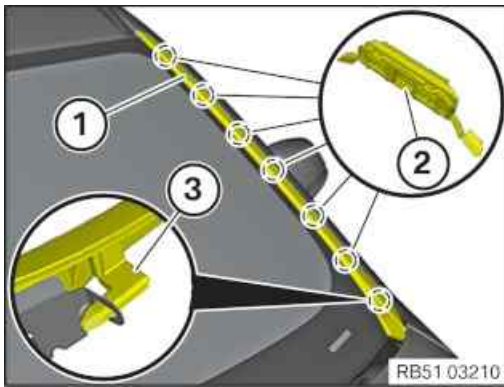
5 – Remove the gutter strip on the windscreen on the left and right



NOTICE

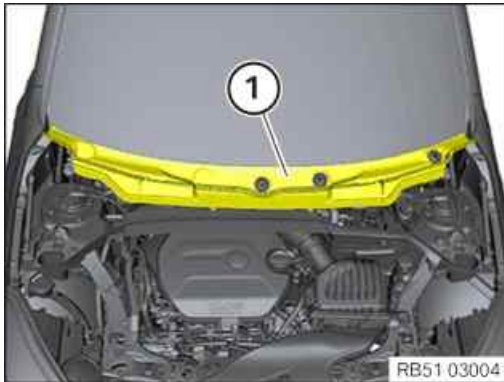
Description is for left component only. Procedure on the right side is identical.

► Remove the gutter strip on the windscreen



- Unclip the gutter strip (1) from the clips (2) beginning at the roof to the top.
- Feed the gutter strip (1) out of the guide (3).

6 – Remove the rear cowl panel cover

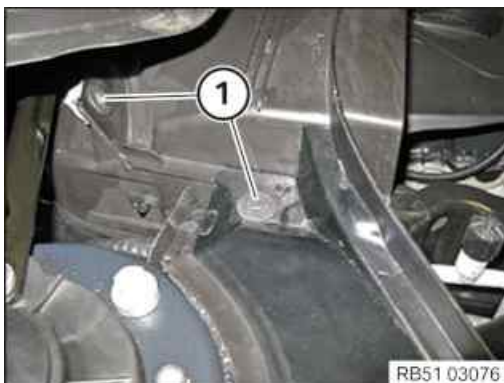


- Disengage and guide out the rear cowl panel cover (1) towards the top.

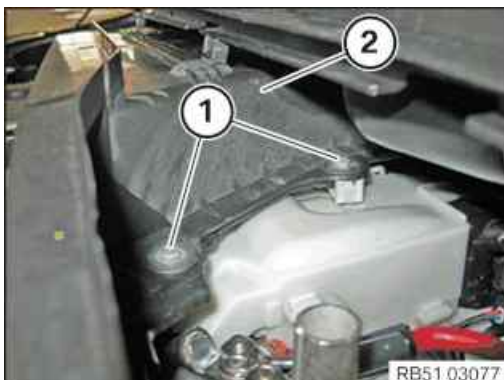
7 – Removing the upper bulkhead cover



- Loosen screws (1).



- Loosen screws (1).



- Loosen screws (1).
- Feed out and remove the upper bulkhead cover (2).

8 – Removing the acoustic cover



WARNING

Hot surfaces.

Risk of burning!

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



RISK OF DAMAGE

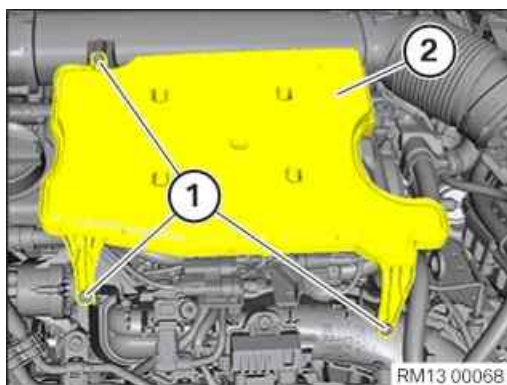
Damage to the acoustic cover.

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

- Disassemble or mount the acoustic cover carefully.
- Disassemble or mount snap-lock couplings of the ball pivots one after the other.
- Disassemble or mount acoustic cover only at temperatures $>20\text{ }^{\circ}\text{C}$.
- Use only distilled water as an auxiliary material during installation, no lubricants.

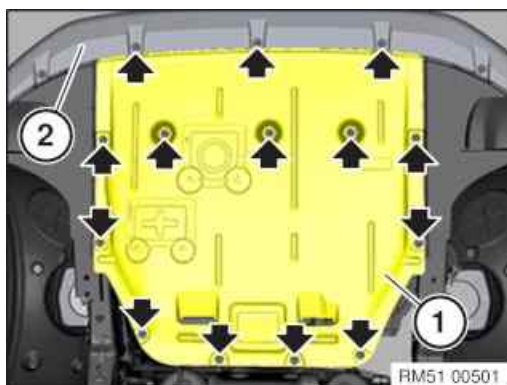
- Unclip the acoustic cover from the marked areas towards the top.

9 – Remove resonator



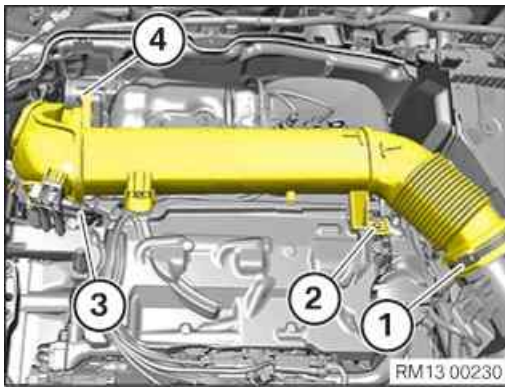
- Loosen screws (1).
- Guide out and remove the resonator (2).

10 – Removing the front underbody protection

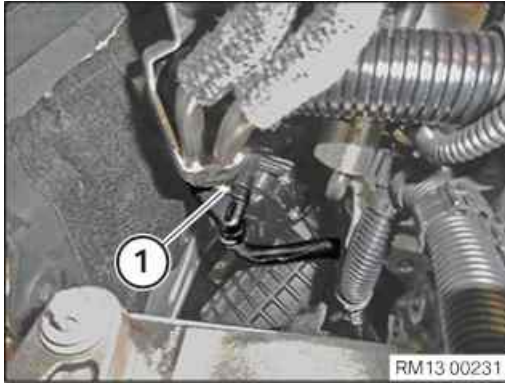


- Remove screws (arrows).
- Pull out and remove front underbody protection (1) under the bumper panel (2).

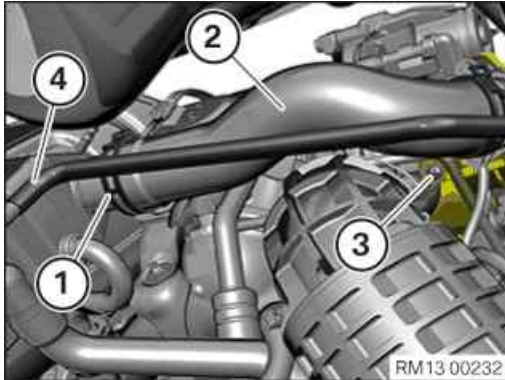
11 – Removing clean air pipe



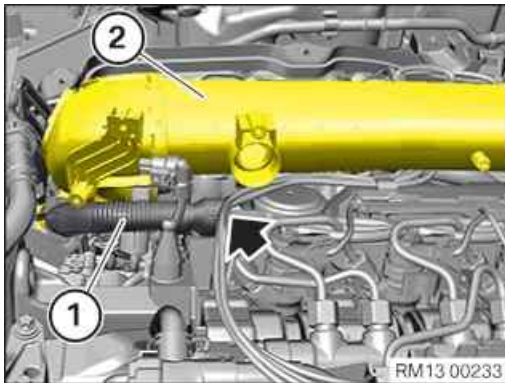
- Release the screw clamp (1).
- Loosen screw (2).
- Unlock and loosen connector (3).
- Loosen screw (4).



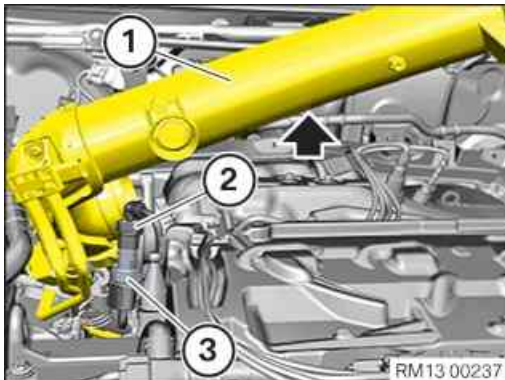
- Unlock and loosen connector (1).



- Unfasten clamp (1).
- Feed out pressure hose (2) and set it aside.
- Loosen screw (3).
- Pull off pressure hose (4) and set it aside.



- Detach ventilation line (1) from clean air pipe (2) and set it aside.
- Detach ventilation line (1) from cylinder head cover (arrow).
- Remove the ventilation line (1).



- Thread out clean air pipe (1) upwards in direction of arrow and set it aside.
- Unlock and loosen connector (2).
- Detach exhaust gas pressure sensor (3).
- Guide out and remove the exhaust gas pressure sensor (3).
- Feed out clean air pipe and remove (1).

12 – Remove electronics box

Prerequisite

Battery earth lead is disconnected.



RISK OF DAMAGE



Electrostatic discharge.

Damage to or destruction of electrical components.

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



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.



TECHNICAL INFORMATION

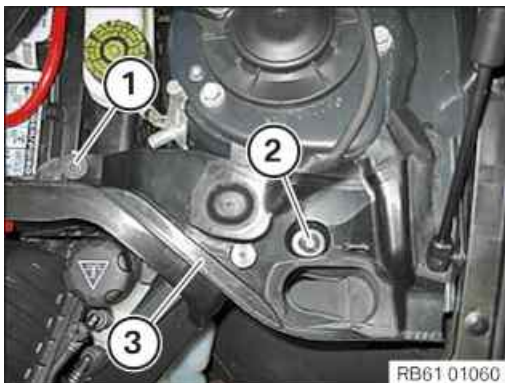
Follow instructions for removing and installing control units.

For additional information see: 12 00 ... Notes on removal and installation of control units



TECHNICAL INFORMATION

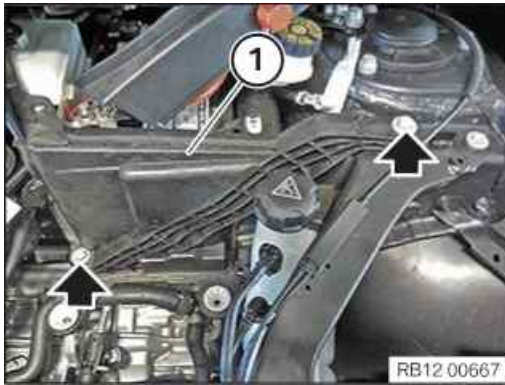
Disconnecting control units may cause fault code entries and functional limitations. Fault code entries must be read out and deleted if necessary.



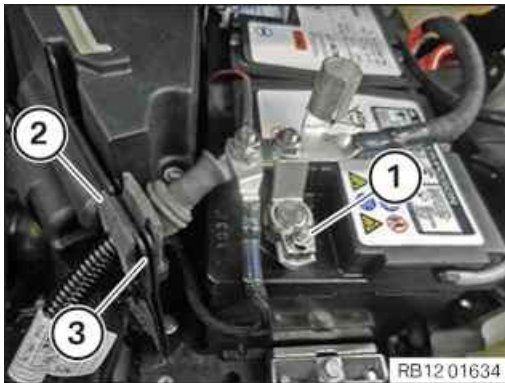
- Release the screw (1) and the expanding rivet (2).
- Remove the fixture for the gasket (3).



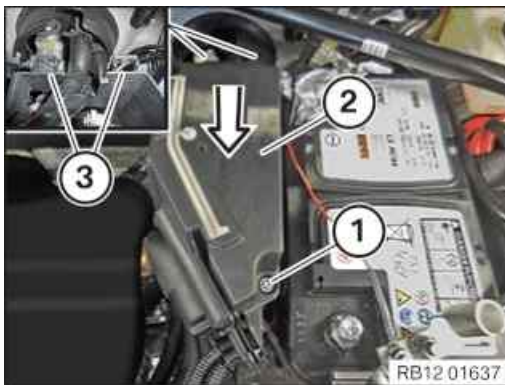
- Loosen screw (1).
- Place cover (2) of the positive battery connection point to one side.



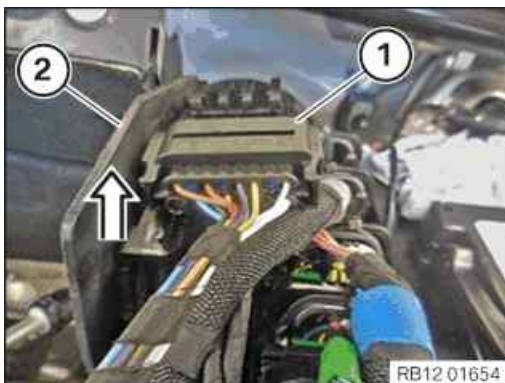
- Remove screws (arrows).
- Guide out tension strut (1) and remove.



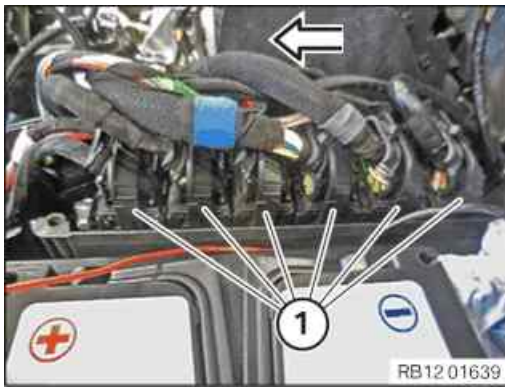
- Undo positive battery terminal (1).
- Feed out positive battery terminal (1) and set aside.
- Guide the positive battery cable (2) out of the holder (3) and lay to one side.



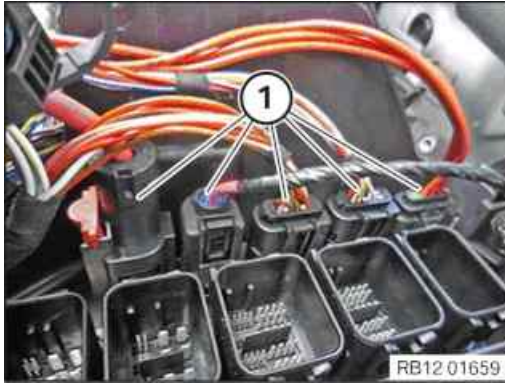
- Loosen screw (1).
- Unlock cover (2) and feed out and remove from the guides (3) in the direction of arrow.



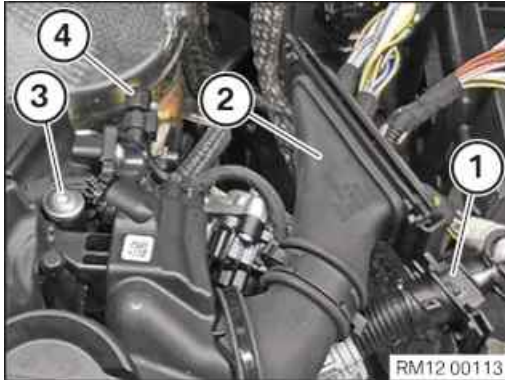
- Feed out connector (1) from the electronics box (2) and remove in the direction of arrow.
- Unlock and loosen connector (1).



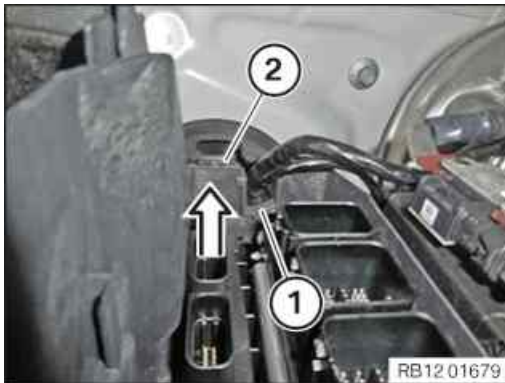
- Unlock and remove the connector (1) in the direction of the arrow.
- Feed out connector (1) and place to one side.



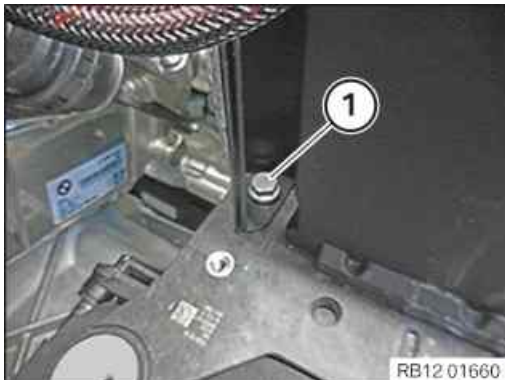
- Unlock and loosen connector (1).



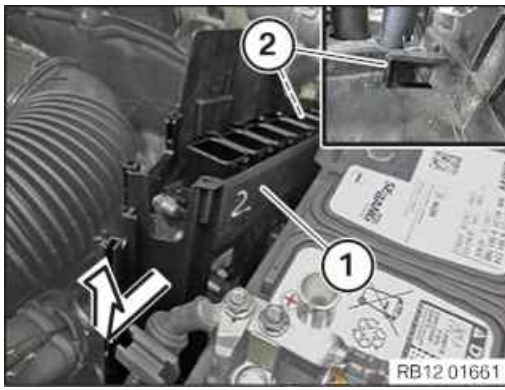
- Detach the wiring harness (1) from the electronics box.
- Detach the wiring harnesses (2) from electronics box.
- Loosen screw (3).
- Set wiring harnesses (1) and (2) aside.
- Unlock the connector (4) and disconnect it from the differential pressure sensor.



- Unlock and loosen holder (1).
- Guide the holder (1) out of the electronics box (2) in direction of arrow and set it aside.

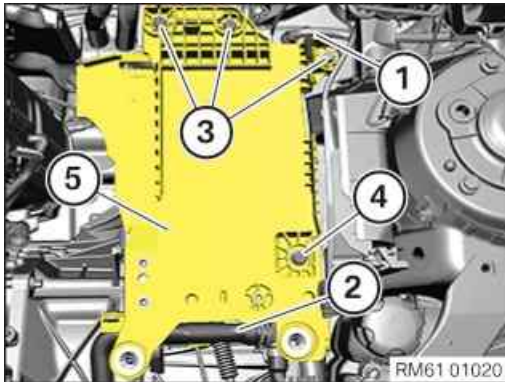


- Loosen screw (1).



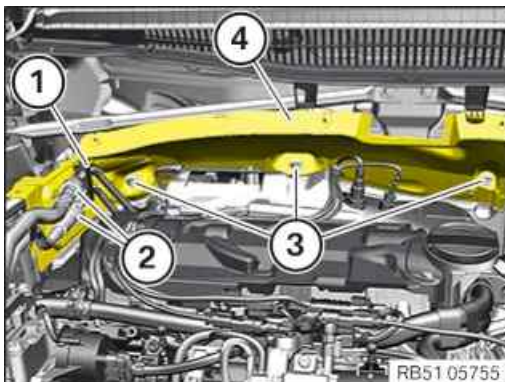
- Guide the electronics box (1) out of the guide (2) in direction of arrow and remove.

13 – Remove battery holder



- Detach the cable clip (1) from the battery holder (5).
- Detach the coolant line (2) from the battery holder (5).
- Loosen screws (3).
- Loosen screw (4).
- Thread out and remove the battery holder (5).

14 – Remove the rear bulkhead upper part



- Unlock the holder (1) and disconnect.
- Guide out and remove the fuel lines (2).
- Loosen screws (3).
- Guide out the rear bulkhead upper part (4) and remove.

15 – Removing heat shield from top exhaust turbocharger

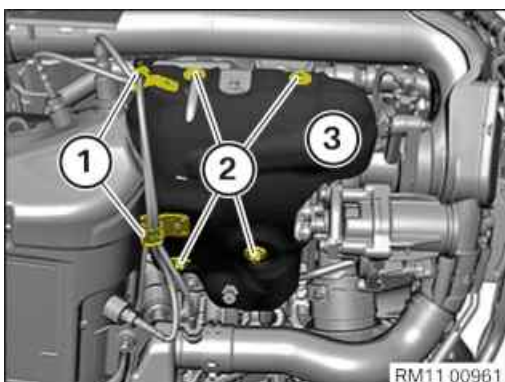


WARNING

Hot surfaces.

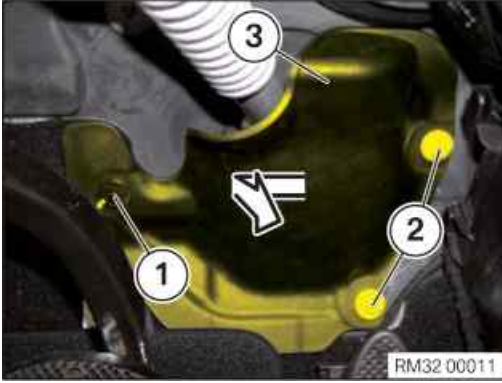
Risk of burning!

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

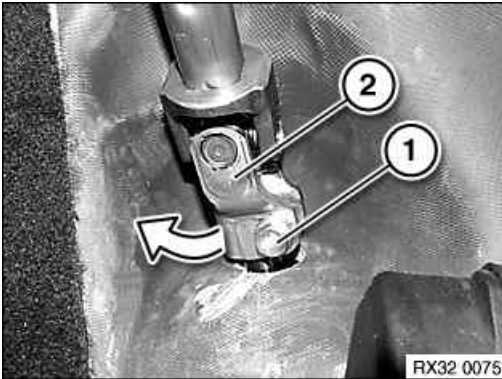


- Release cable from brackets (1).
- Loosen screws (2).
- Feed out and remove the heat shield (3).

16 – Releasing lower steering shaft from steering gear

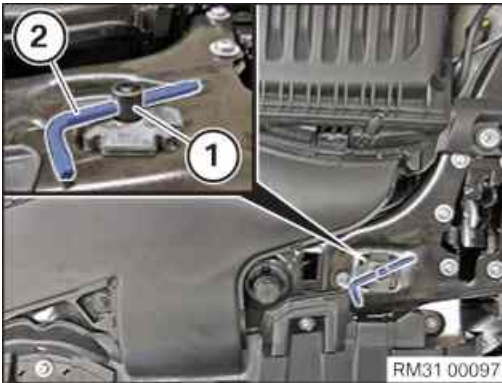


- **If installed:**
- Unfasten nut (1).
- Unscrew the nuts (2) by 1 rotation.
Do not remove the nuts (2) !
- Remove the cover (3) on the steering column in the direction of the arrow.
The side footwell trim must not be disassembled!



- Loosen screw (1).
- Swivel out the universal joint (2) of the bottom steering shaft from the steering gear in the direction of the arrow.

17 – Securing radiator on left and right



NOTICE

Perform the operations on the left and right side.

- Fasten radiator at centring pin (1) with suitable tool (2).

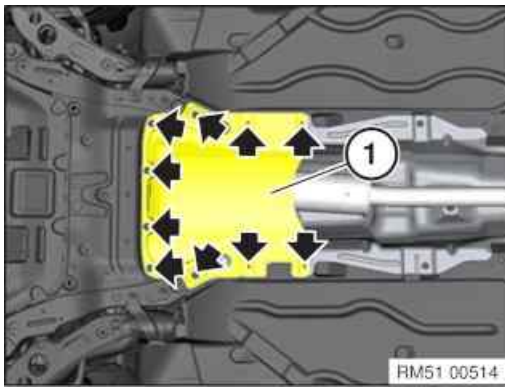
18 – Remove the front left and right wheel



► Removing the wheel

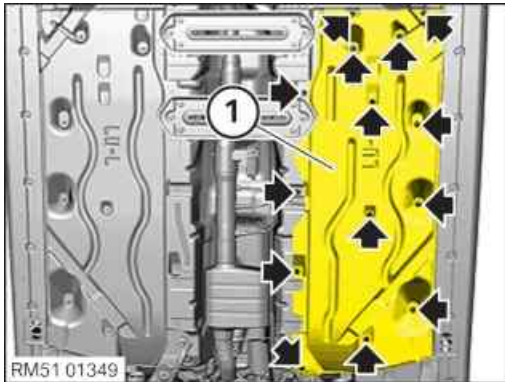
- If several wheels are removed simultaneously: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Unscrew the wheel bolts (arrows) and remove the wheel.
Use the matching adapter from tool set (wheel bolt adapter set) to loosen and tighten down the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

19 – If installed: Removing rear underbody protection



- Remove screws (arrows).
- Remove the rear underbody protection (1).

20 – Removing right underbody panelling



- Unscrew all bolts and nuts (arrows).
- Remove the underbody panelling (1).

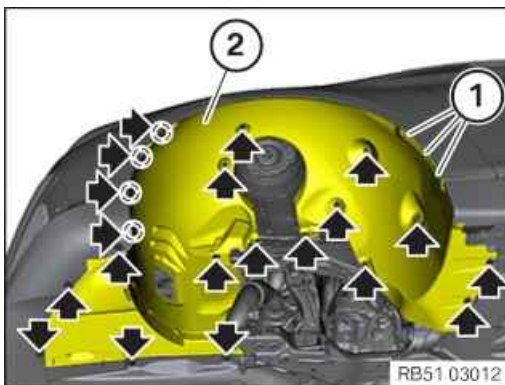
21 – Removing front left and right wheel arch cover



NOTICE

Perform the operations on the left and right side.

► Remove front wheel arch cover



- Loosen the expanding rivet (1).
- Unscrew all bolts and nuts (arrows).
- Feed out front wheel arch cover (2).

22 – With right installation: Detaching ride height sensor cable



- Unlock plug connection (1) and disconnect.
- Release cable clip (2) from deformation element adapter.

23 – Detaching anti-roll bar on left and right from anti-roll bar link

23 – Releasing anti-roll bar on left and right from anti-roll bar link



NOTICE

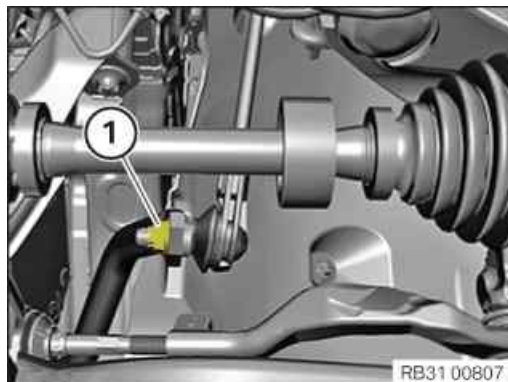
Perform the operations on the left and right side.

► Detach the anti-roll bar from the anti-roll bar link

- Unfasten nut (1).

Note: Use the Torx socket for counter support.

- Loosen the anti-roll bar link from the anti-roll bar .



24 – Detaching rubber mount from front axle support

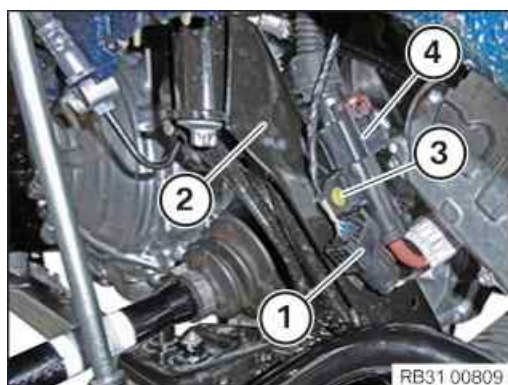


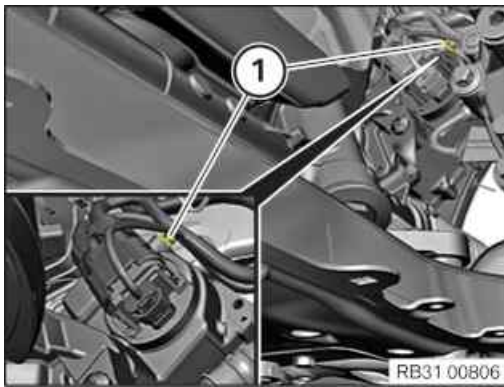
- Spray rubber mount (1) with lubricant and release from holder on front axle support.

25 – Disconnecting plug connections from steering gear

► If installed: Detach connectors from the front axle carrier

- Release the plug connection (1) from the front axle support (2).
- Loosen screw (3).
- Release the plug connection (4) from the front axle support (2).

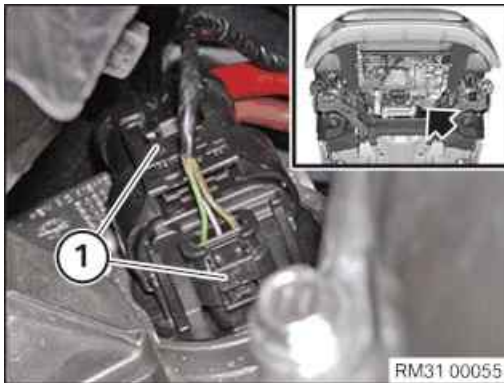




- Disconnect wiring harness (1) from steering gear.

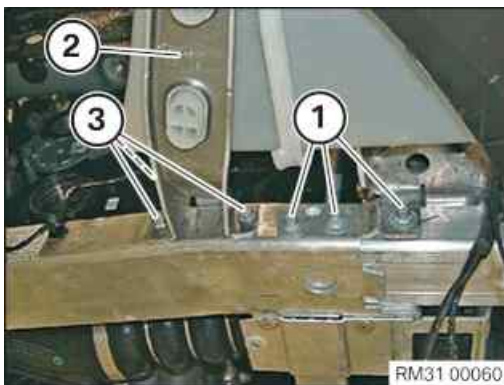


- To unlock the plug connections (see the following work step): unlock plug connections (arrow) with the right hand.
The plug connections can be reached via the left-hand output shaft.



- Unlock plug connections (arrow) (1) and disconnect from the steering gear.
- Make sure when lowering the front axle that the cables are not damaged!

26 – Releasing the mounted part from the front axle support



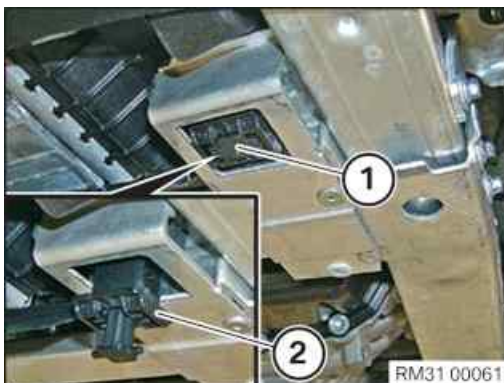
- **Only on right side:** Loosen screws (3) and remove holder for washer fluid reservoir (2).



NOTICE

Perform the operations on the left and right side.

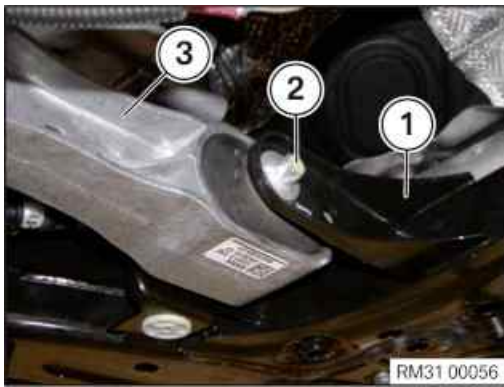
- Loosen screws (1).



NOTICE

Perform the operations on the left and right side.

- Unlock safety catch (1) of the lock (2) from the holder for the charge air cooler.
- Completely remove locks (2).



- Loosen screw (2) of the engine support (3) on the front axle (1).

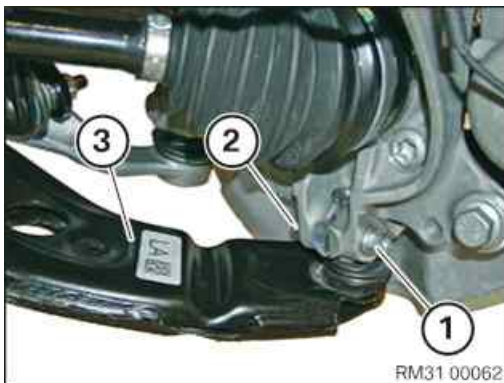


NOTICE

Perform the operations on the left and right side.

- Loosen screws (1).

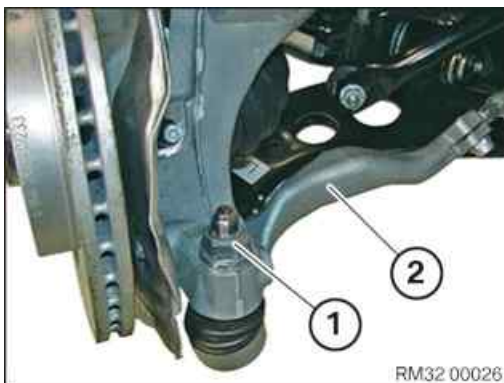
27 – Detaching and removing front axle completely



NOTICE

Perform the operations on the left and right side.

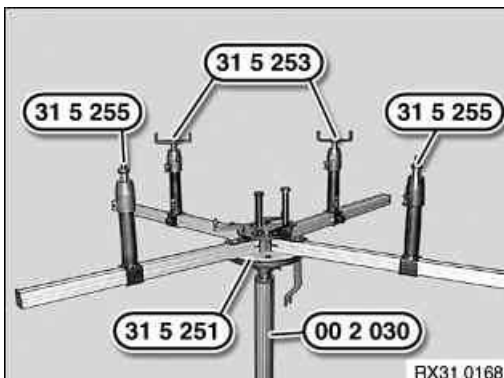
- Unfasten nut (1).
- (2) Pull out screw.
- Detach the wishbone (3) from the swivel bearing .



NOTICE

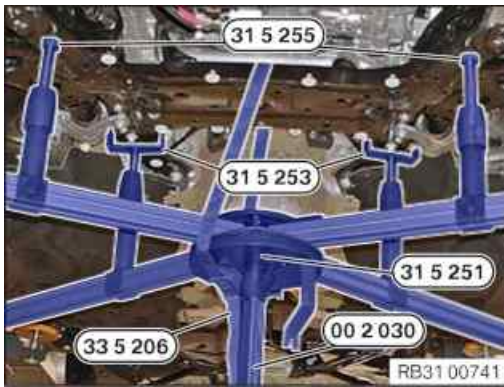
Perform the operations on the left and right side.

- Unfasten nut (1).
- Detach the track rod (2) from the swivel bearing.

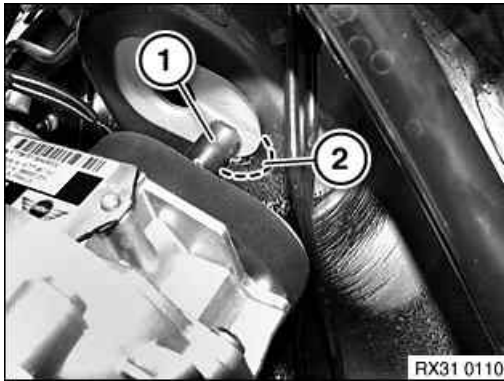


- Fit the special tool **0 495 817 (31 5 251)** completely onto the workshop jack **0 490 133 (00 2 030)** with an auxiliary person.
- Insert special tools **0 495 821 (31 5 255)** in telescopic supports of a profile rail pair.
- Insert special tools **0 495 819 (31 5 253)** in telescopic supports of other profile rail pair.

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



- Align special tools **0 495 821 (31 5 255)** and **0 495 819 (31 5 253)** to front axle support.
 - Support front axle support by operating workshop jack **0 490 133 (00 2 030)**.
- Note:** The centre of gravity of the front axle support must be positioned centrally over the workshop jack!
- Secure front axle support with special tool **0 496 080 (33 5 206)** to special tool **0 495 817 (31 5 251)**.



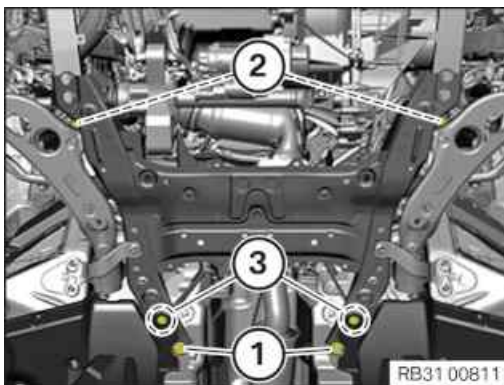
i

TECHNICAL INFORMATION

Non-compliance with the regulations for installation and disassembly may result in component damage. All work must be performed with care and in compliance with the regulations.

- When raising and lowering the front axle support, make sure that the torsion bar (1) of the electromechanical steering gear (EPS) in area (2) does not collide with the bulkhead!

Note: Collision with the bulkhead may result in damage to the electromechanical steering gear (EPS)!



- If applicable, release the screws in area (3).
- Release screws (1) (front axle support, rear).
- Release screws (2) (front axle support, front).
- Bend the underbody panelling to the side in area (3).
- When lowering, release charge air cooler from its rubber mounts.
- Completely lower and remove the front axle.

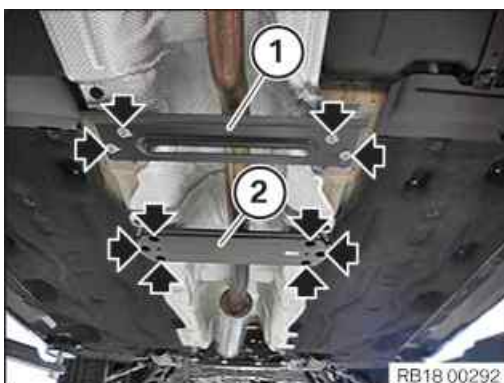
i

TECHNICAL INFORMATION

Note the information on thread repairs using Helicoil thread inserts.
For more information see: 41 00 ... Notes on repairing threads

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

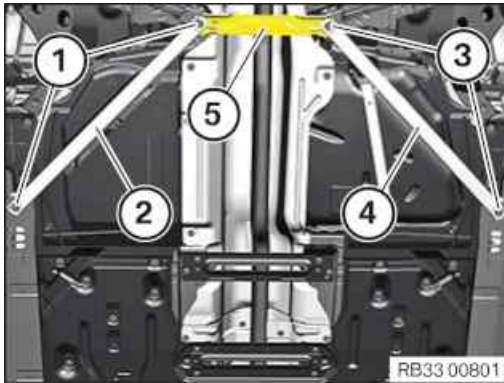
28 – Removing the connecting support from the tunnel in front and back



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

29 – Remove the cross strut with the torsion strut

Driving without a torsion strut is not permitted.



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

30 – Remove exhaust system



WARNING

Hot surfaces.

Risk of burning!

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

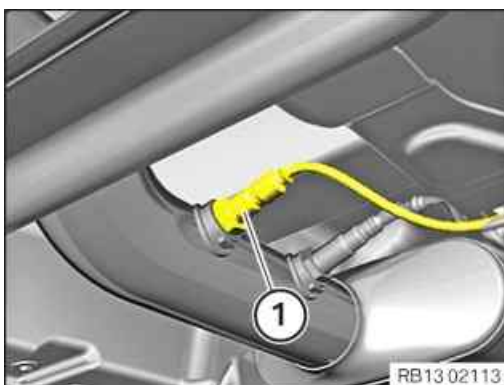


CAUTION

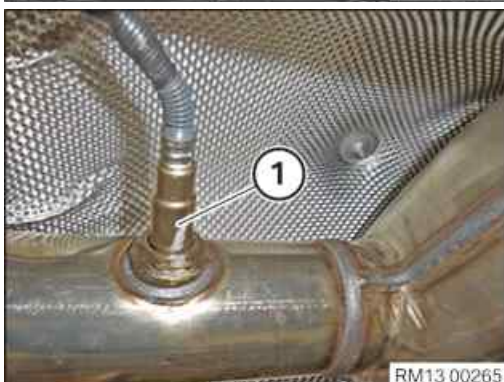
Heavy component.

Heavy components can lead to injury or damage.

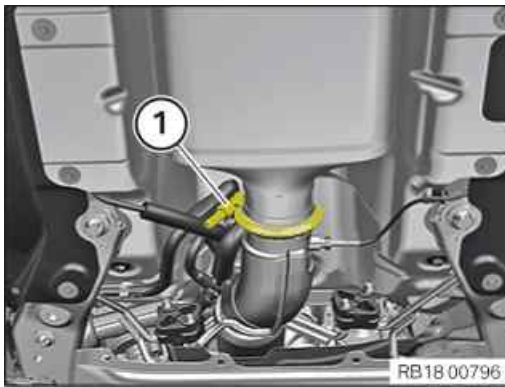
- Remove and install heavy components with the aid of another person/other persons.



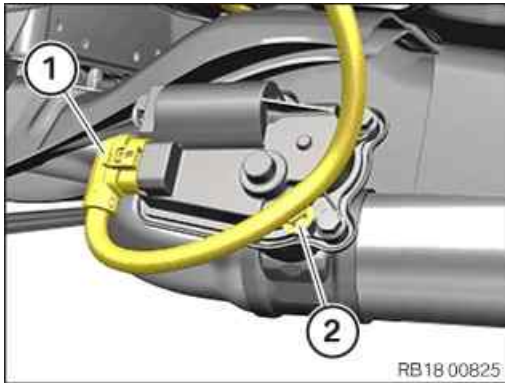
- Release the nitrogen oxide sensor (1) downstream of the SCR catalytic converter, guide it out and set it aside.



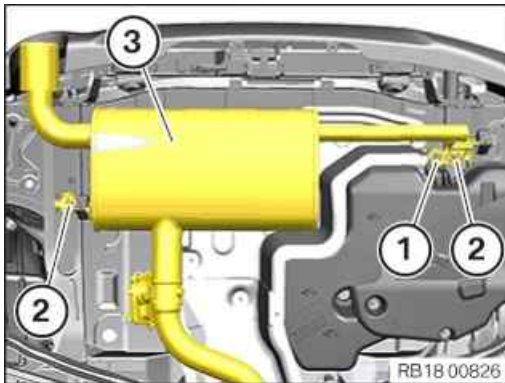
- Release the diesel particulate sensor (1), guide it out and set it aside.



- Loosen V-band clamp (1).



- Unlock and disconnect connector (1).
- Loosen clamp (2).



- Loosen screw (1).
- Loosen nuts (2).
- Lower the exhaust system (3) with an auxiliary person, guide out and remove.

31 – Remove the monitoring oxygen sensor



WARNING

Hot surfaces.

Risk of burning!

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



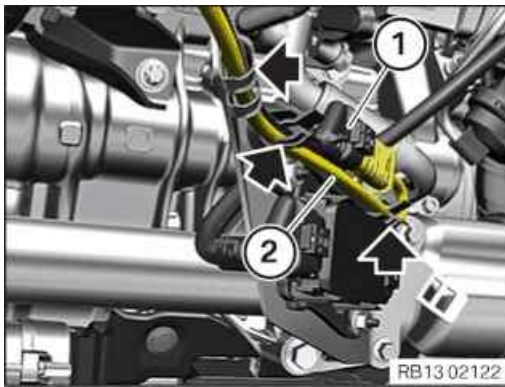
RISK OF DAMAGE



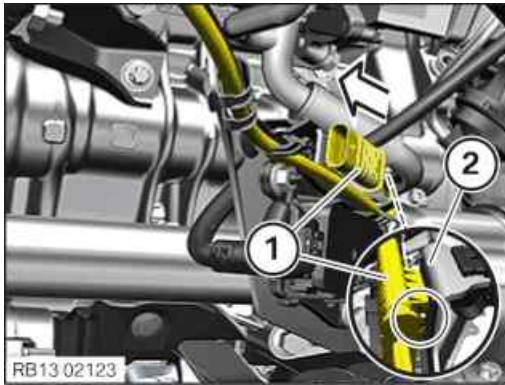
Electrostatic discharge.

Damage to or destruction of electrical components.

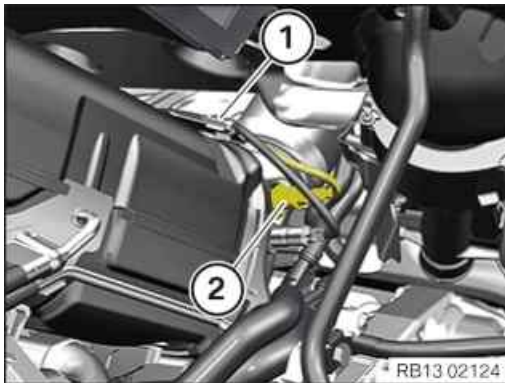
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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



- Unlock plug connection (1) and disconnect.
- Feed oxygen monitor sensor cable (1) out of the clamps (arrows).



- Unlock the connector (1) in the marked area and disconnect it from the holder (2) in the direction of arrow.



- Guide the cable of the monitoring oxygen sensor (2) out of the clamp (1).
- Release the monitoring oxygen sensor (2) using special tool **0 491 074 (11 7 020)**.
- Remove the monitoring oxygen sensor (2).

32 – 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.



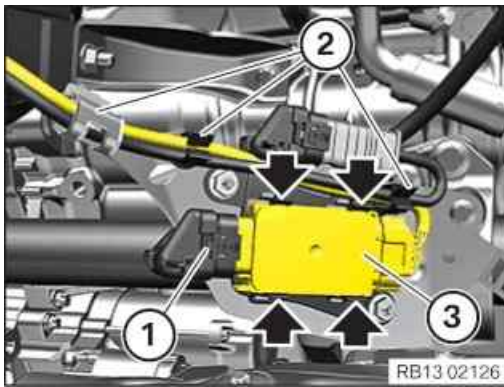
RISK OF DAMAGE



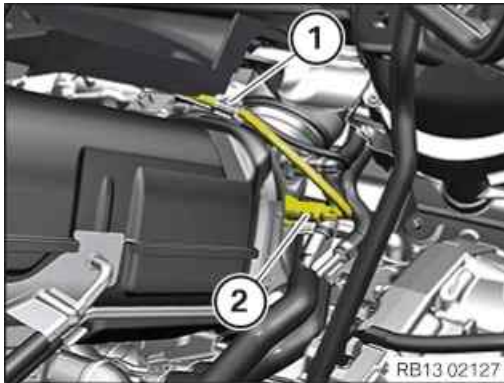
Electrostatic discharge.

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 Information on electrostatic discharge (ESD) protection.

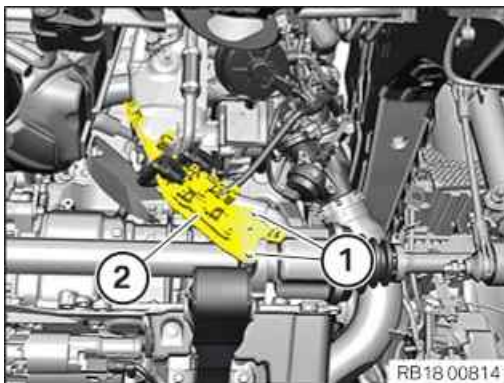


- Unlock plug connection (1) and disconnect.
- Slide the cable of the nitrogen oxide sensor evaluation electronics (3) out of the clamps (2) and remove.
- Unlock (arrows) and remove the evaluation electronics for the nitrogen oxide sensor (3).



- Slide the cable of the nitrogen oxide sensor before the SCR catalytic converter (2) out of the clamps (1) and remove.
- Detach the nitrogen oxide sensor before the SCR catalytic converter (2) using the special tool **0 491 074 (11 7 020)**.
- Guide out and remove the nitrogen oxide sensor upstream of the SCR catalytic converter (2).

33 – Remove holder for oxygen sensor



- Loosen screws (1).
- Thread out the holder (2) for the oxygen sensor and remove.

34 – Remove the exhaust temperature sensor on the catalytic converter



WARNING

Hot surfaces.

Risk of burning!

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



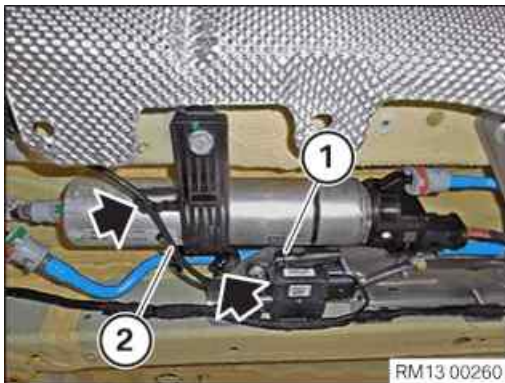
RISK OF DAMAGE



Electrostatic discharge.

Damage to or destruction of electrical components.

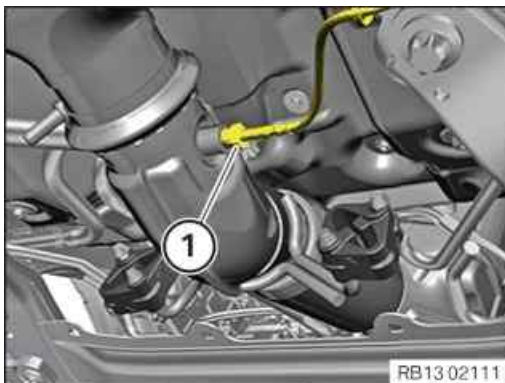
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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



- Unlock and loosen connector (1).
- Feed out the cable (2) of the exhaust temperature sensor from the clamps (arrows) and remove.



- Loosen the cable clip (1).



- Loosen exhaust temperature sensor (1).
- Feed out and remove exhaust temperature sensor (1).

35 – Removing the exhaust temperature sensor downstream from the catalytic converter 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 Information on electrostatic discharge (ESD) protection.



- Unlock and disconnect the plug connection (1).
- Feed the cable (2) from the temperature sensor out of the clamps (arrows) and remove it.



- Release the exhaust temperature sensor (1) with conventional tools (2).



- Feed out and remove exhaust temperature sensor (1).



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 Information on electrostatic discharge (ESD) protection.



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



- Guide cable (1) of the exhaust temperature sensor out of the clamp (arrow) and remove it.
- Loosen exhaust temperature sensor (2).
- Feed out and remove exhaust temperature sensor (2).

37 – Remove the control sensor



WARNING

Hot surfaces.

Risk of burning!

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



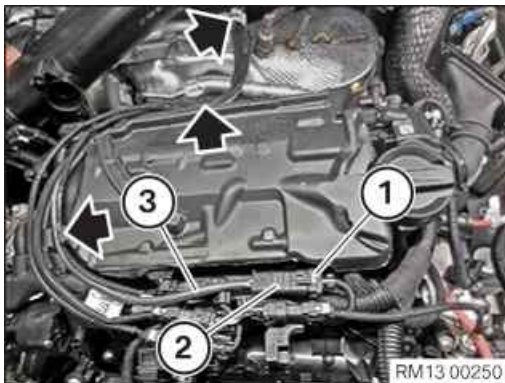
RISK OF DAMAGE



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 Information on electrostatic discharge (ESD) protection.



- Unlock and disconnect the plug connection (1).
- Detach the connector (2) from the holder .
- Feed out and remove cable (3) out of the oxygen control sensor from the clamps (arrows).



- Release the front oxygen control sensor (1) using special tool **0 491 075 (11 7 030)**.
- Feed out and remove the control sensor (1).

38 – Remove differential pressure sensor



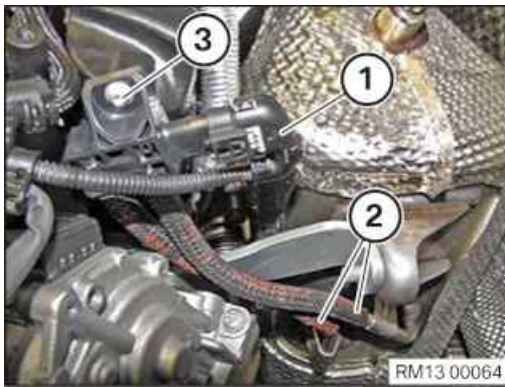
RISK OF DAMAGE



Electrostatic discharge.

Damage to or destruction of electrical components.

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



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

MAIN WORK

39 – 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.

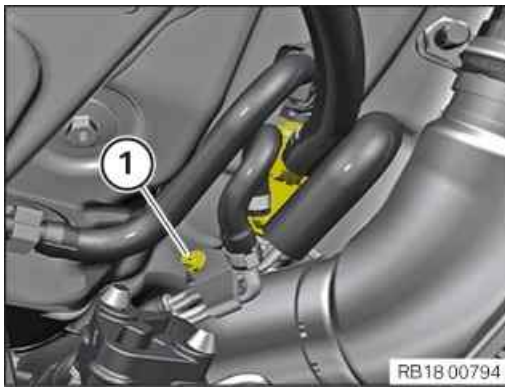
- Remove and install heavy components with the aid of another person/other persons.



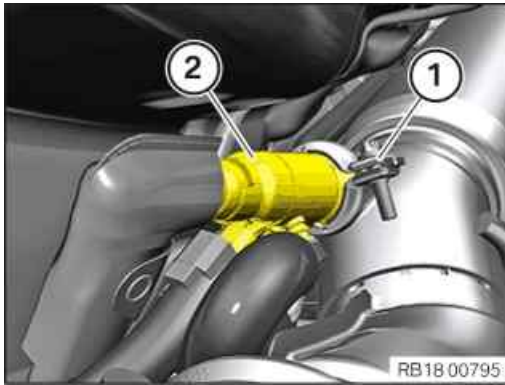
- Loosen V-band clamp (1).
- Feed out V-band clamp (1) and remove.



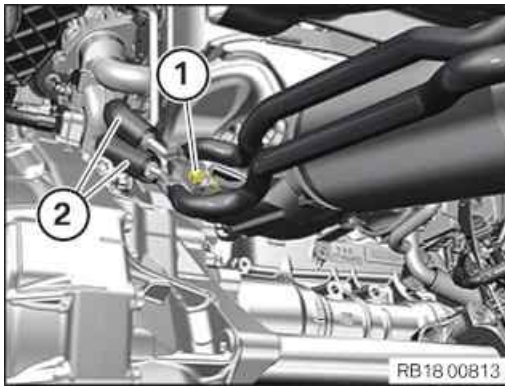
- Loosen nuts (1).



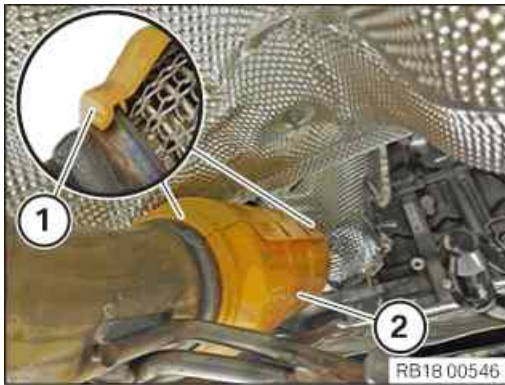
- Loosen screw (1).



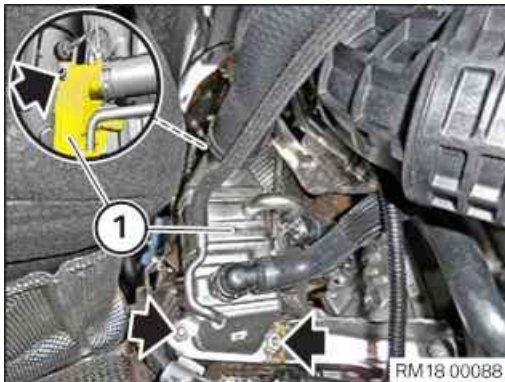
- Loosen V-band clamp (1).
- Remove the SCR metering module (2) and set it aside.



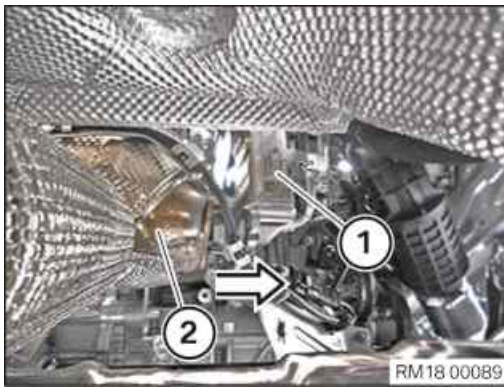
- Loosen screw (1).
- Thread out the coolant lines (2) of the SCR metering module and set aside.



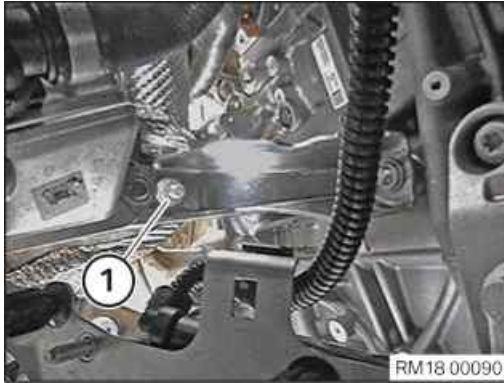
- Mount fitting aid (2).
- Make sure that the fitting aid is correctly position on the edges (1) of the flexible tube.



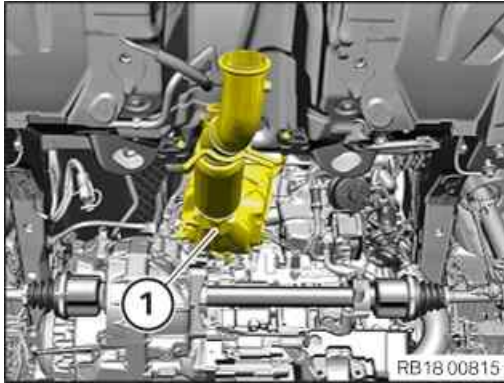
- Detach nuts (arrows) from low pressure exhaust-gas recirculation cooler (1).



- Feed out low pressure exhaust-gas recirculation cooler (1) from diesel particulate filter (2) in direction of arrow and set aside.



- Unfasten nut (1).



- Feed out diesel particulate filter (1) toward the bottom and remove.

40 – 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.



- Renew the V-clip (1).

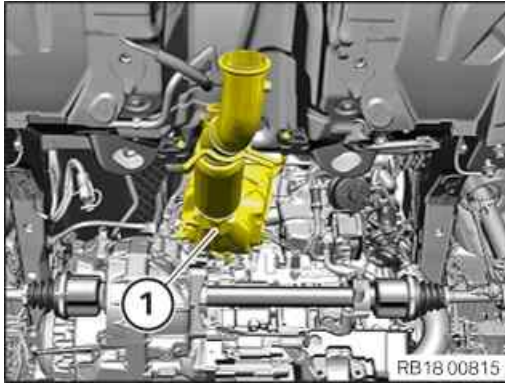
Parts: V-band clamp

- Renew the gasket (2).

Parts: Gasket



- Before installing the diesel particulate filter: Mount fitting aid (1) for the flexible tube.



- Carefully insert and install the diesel particulate filter (1).



- Feed in and install V-band clamp (1).
- Make sure that the seal between the diesel particulate filter and the exhaust turbocharger is installed correctly.
- Align the diesel particulate filter on the exhaust turbocharger.
- Position V-clip (1).
- Hand-tighten the V-clip (1).



- Tighten nuts (1) by hand.



- Tighten the nut (1) hand-tight.



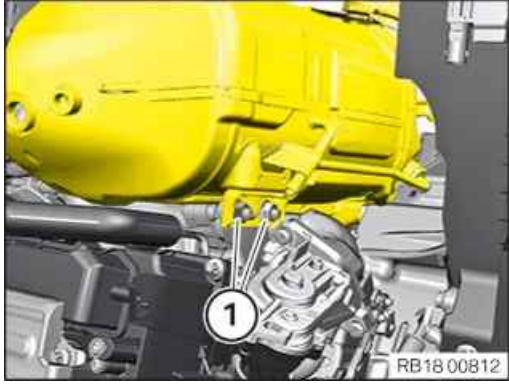
- Remove fitting aid (1) for the flexible tube.



- Tighten V-band clamp (1).

Diesel particulate filter V-clip to exhaust turbocharger

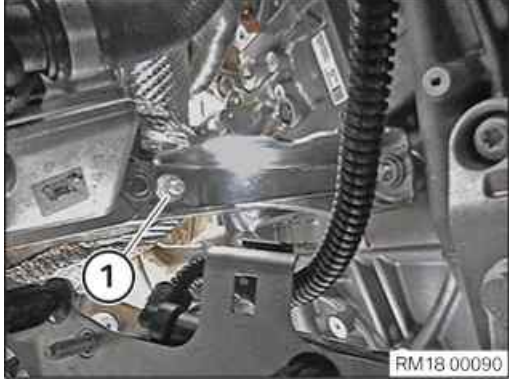
V-band clamp	Renew V-band clamp.	Tightening torque	15 Nm
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- Tighten nuts (1).

Diesel particle filter to holder

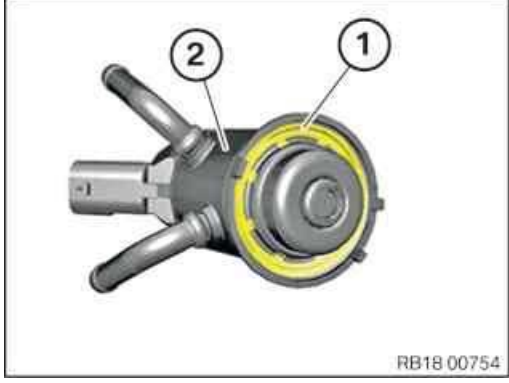
M8 hexagon nut		Tightening torque	19 Nm
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- Tighten nut (1).

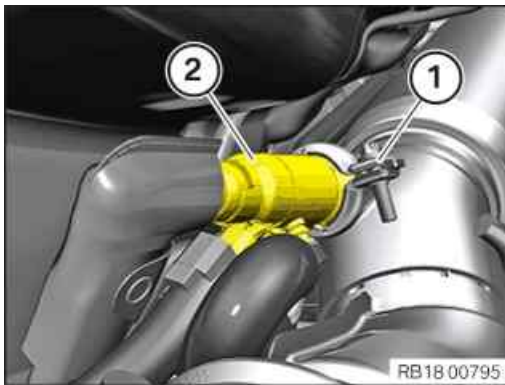
Diesel particle filter to holder

M8 hexagon nut		Tightening torque	19 Nm
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- Renew sealing ring (1) of the SCR metering module (2).

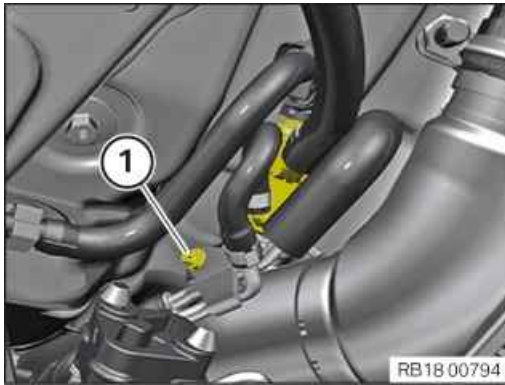
Parts: Sealing ring



- Insert and install the SCR metering module (2).
 - Renew the V-clip (1).
- Parts:** V-band clamp
- Tighten V-band clamp (1).

SCR metering module V-clip to exhaust system

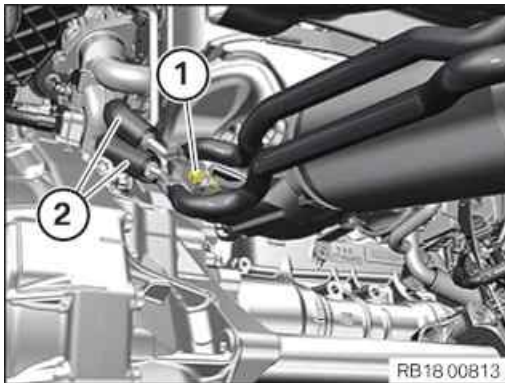
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm
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- Tighten down screw (1).

Holder for coolant lines to diesel particulate filter

Torx bolt BM6x16		Tightening torque	8 Nm
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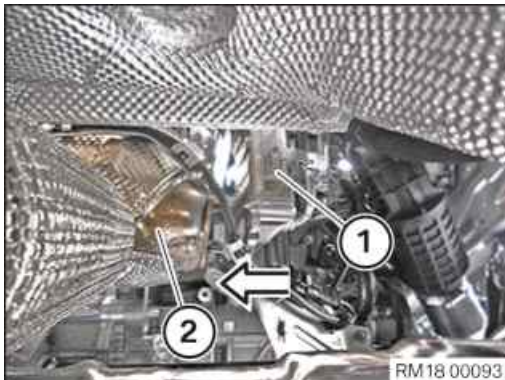
- Thread in and install coolant line (2) of the SCR metering module.
- Tighten down screw (1).

Holder for coolant lines to diesel particulate filter

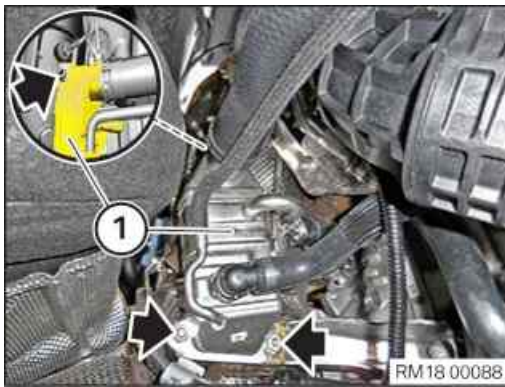
Torx bolt BM6x16		Tightening torque	8 Nm
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- Replace seal (1) of the low pressure exhaust-gas recirculation cooler (2).
- Parts:** Gasket



- Feed in and install the low pressure exhaust-gas recirculation cooler (1) in at the diesel particulate filter (2) in the direction of arrow.



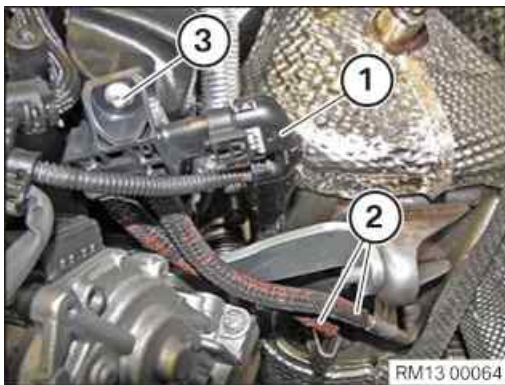
- Tighten nuts (arrows) of the low pressure exhaust-gas recirculation coolers (1).

Low-pressure exhaust-gas recirculation cooler to diesel particulate filter

Flange nutM8		Tightening torque	19 Nm
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POSTPROCESSES

41 – Installing differential pressure sensor



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

Differential pressure sensor to holder

Screw		Tightening torque	4 Nm
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- Check pressure hoses (2).
- Renew any hardened pressure hoses (2).

Parts: Pressure hoses

- Connect the pressure hoses (2) 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
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- Connect and lock the connector (1).
The connector (1) must engage audibly.

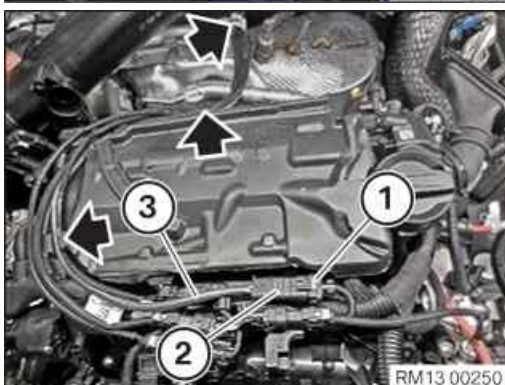
42 – Install the control sensor



- Feed in front oxygen sensor (1) and install.
- Tighten the front oxygen sensor (1) with the special tool **0 491 075 (11 7 030)**.

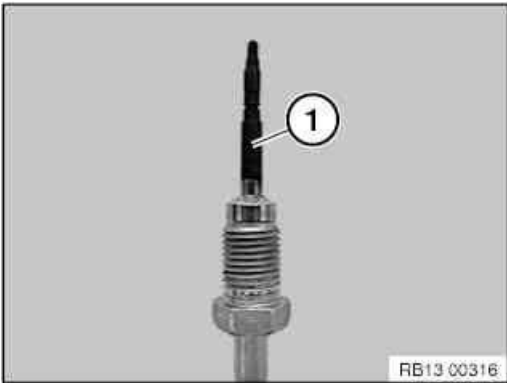
Control sensor

Control sensor		Tightening torque	50 Nm
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- Feed in and install cable (3) from the oxygen control sensor into the clamps (arrows).
- Secure connector (2) on holder.
- Connect and lock the connector (1).
The connector (1) must engage audibly.

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



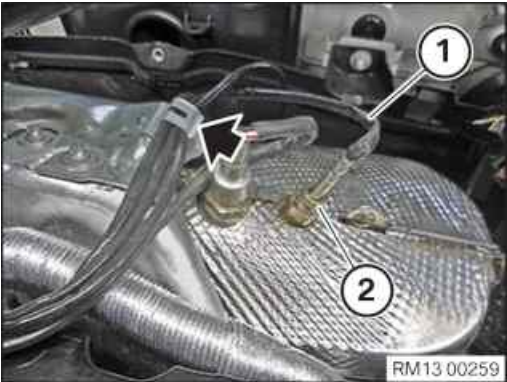
RISK OF DAMAGE

Damage of exhaust temperature sensor.

Damage to exhaust temperature sensors leads to malfunctions.

- Make sure that the gauge tip is not damaged.

- Check the gauge tip (1) for damage and renew the exhaust temperature sensor as needed.



- Feed in and install the exhaust temperature sensor (2).
- Tighten the exhaust temperature sensor (2).

Exhaust temperature sensor to diesel particulate filter

Exhaust-gas temperature sensor		Tightening torque	28 Nm
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- Insert and install cable (1) of the exhaust temperature sensor in the clamp (arrow).
- Insert and install the cable (2) of the exhaust temperature sensor in the clamps (arrows).
- Connect and lock the connector (1).
The connector (1) must engage audibly.



44 – Installing the exhaust temperature sensor downstream from the catalytic converter on the diesel particulate filter

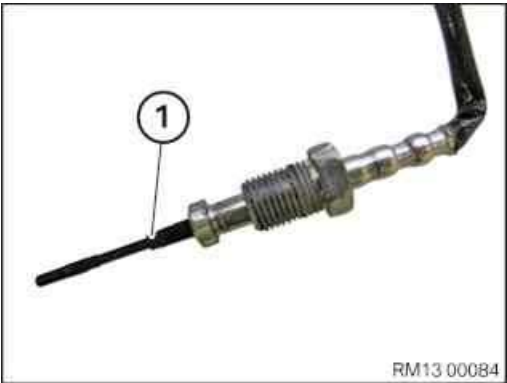
RISK OF DAMAGE

Damage of exhaust temperature sensor.

Damage to exhaust temperature sensors leads to malfunctions.

- Make sure that the gauge tip is not damaged.

- Make sure the gauge tip (1) is not damaged during installation.





- Feed in and install the exhaust temperature sensor (1).



- Tighten the exhaust temperature sensor (1) with conventional tools (2).

Exhaust temperature sensor to diesel particulate filter

Exhaust-gas temperature sensor		Tightening torque	28 Nm
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- Insert and install the cable (2) of the exhaust temperature sensor in the clamps (arrows).
- Connect and lock the connector (1).
The connector (1) must engage audibly.

45 – Installing exhaust temperature sensor on catalytic converter



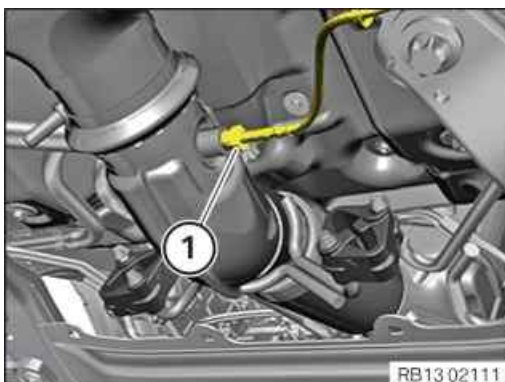
RISK OF DAMAGE

Damage of exhaust temperature sensor.

Damage to exhaust temperature sensors leads to malfunctions.

- Make sure that the gauge tip is not damaged.

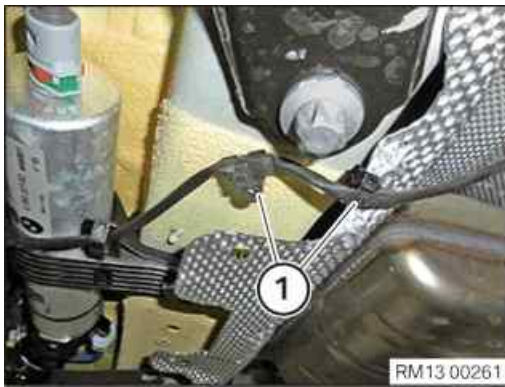
- Check the gauge tip (1) for damage and replace the exhaust temperature sensor as needed.



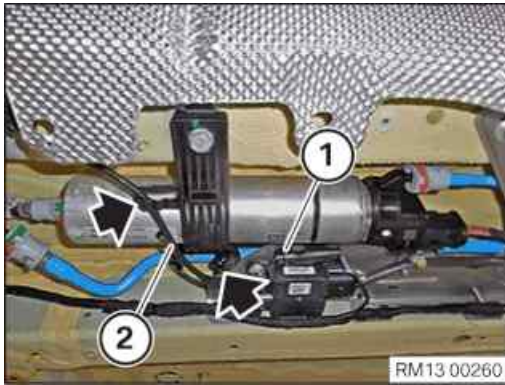
- Feed in and install the exhaust temperature sensor (1).
- Tighten the exhaust temperature sensor (1).

Exhaust-gas temperature sensor to exhaust system

Exhaust-gas temperature sensor		Tightening torque	28 Nm
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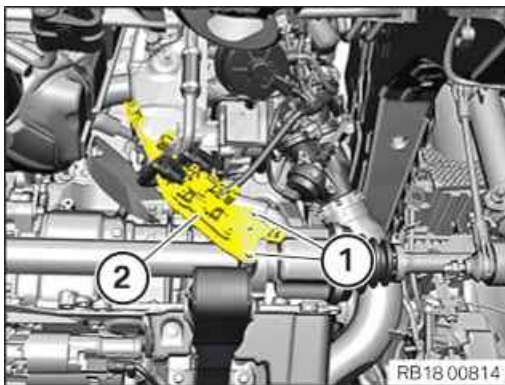


- Secure the cable clips (1).



- Feed cable (2) from exhaust temperature sensor into the clamps (arrows) and install.
- Connect and lock the connector (1).
The connector (1) must engage audibly.

46 – Install holder for oxygen sensor

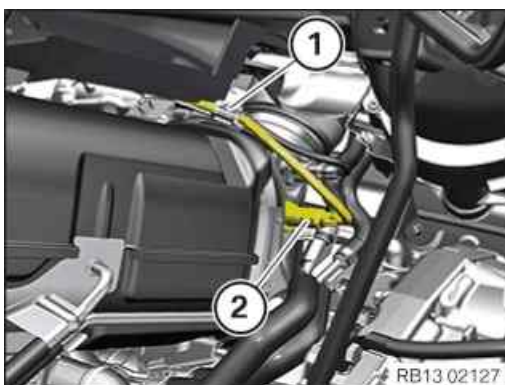


- Insert and install the holder (2).
- Tighten the screws (1).

Oxygen sensor holder to intermediate shaft

Hexagon screw M6x16		Tightening torque	8 Nm
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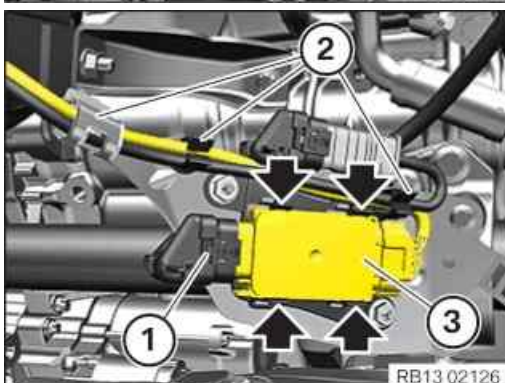
47 – Installing the nitrogen oxide sensor before SCR catalytic converter



- Insert nitrogen oxide sensor before the SCR catalytic converter (2) and install.
- Tighten the nitrogen oxide sensor upstream of the SCR catalytic converter (2).

Nitrogen oxide sensor before SCR catalytic converter

Sensor		Tightening torque	50 Nm
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- Install and lock the evaluation electronics for the nitrogen oxide sensor (3) (arrows).
- Insert the evaluation electronics cable for the nitrogen oxide sensor (3) into the clamps (2) and install.
- Connect connectors (1) and lock.
The connector (1) must engage audibly.

48 – Install the monitoring sensor



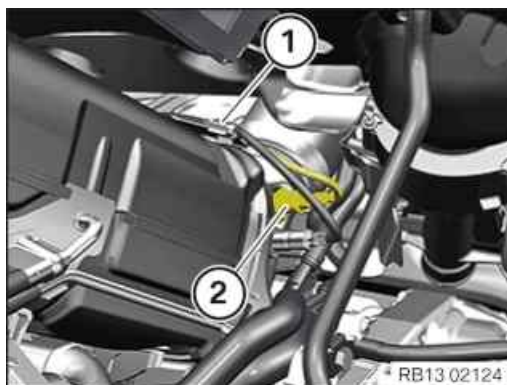
TECHNICAL INFORMATION

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

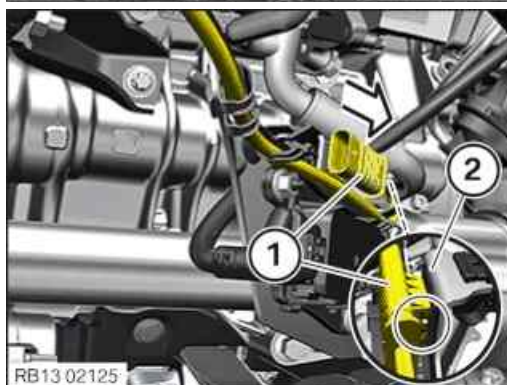


- Feed in the monitoring oxygen sensor (2) and install.
- Tighten the monitoring oxygen sensor (2) with special tool **0 491 074 (11 7 020)**.

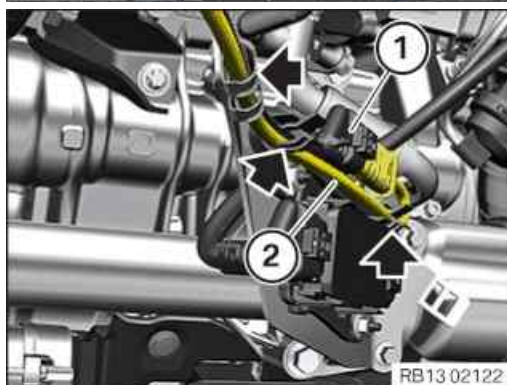
Monitoring sensor

Sensor	Tightening torque
	50 Nm

- Insert the cable of the monitoring oxygen sensor (2) into the clamp (1) and secure it.



- Connect the connector (1) with the bracket (2) in the direction of arrow.
- Make sure that the connector (1) is locked correctly in the marked area.
The connector (1) must engage audibly.



- Insert and attach the cable of the monitoring oxygen sensor (2) to the clamps (arrows).
- Connect connectors (1) and lock.
The connector (1) must engage audibly.

49 – Install exhaust system



CAUTION

Component with heavy weight.

Danger of injury!

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

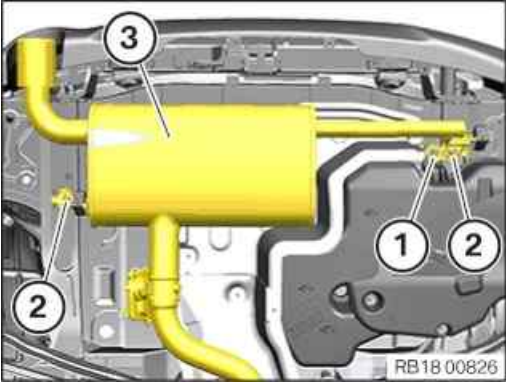


CAUTION

Heavy component.

Heavy components can lead to injury or damage.

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



- Insert and install the exhaust system (3) with the help of another person.
 - Renew nuts (2).
- Parts:** Nuts
- Tighten nuts (2).

Exhaust system to body

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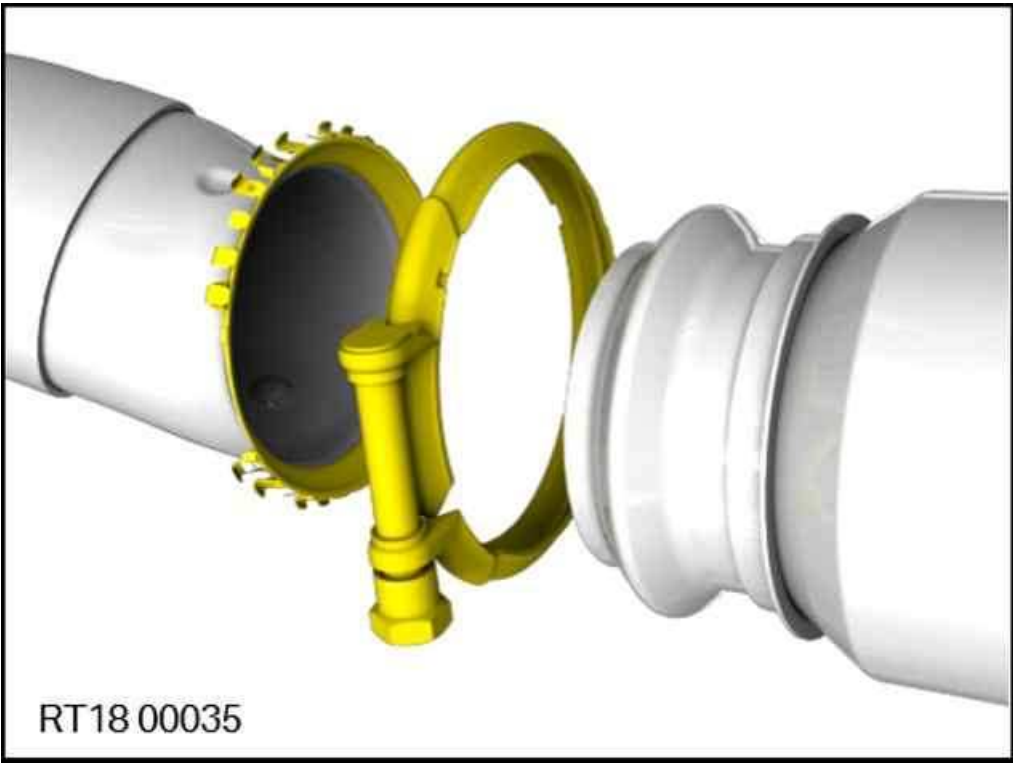
- Tighten down screw (1).

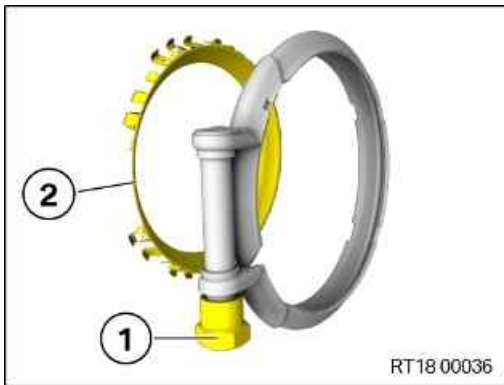
Exhaust bracket on body

Hexagon screw M8x30		Tightening torque	19 Nm
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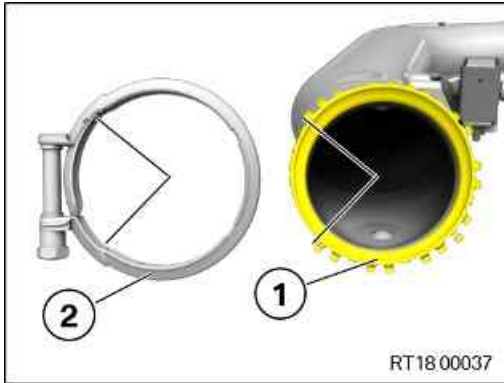
► Install the V-clip

V-band clamp

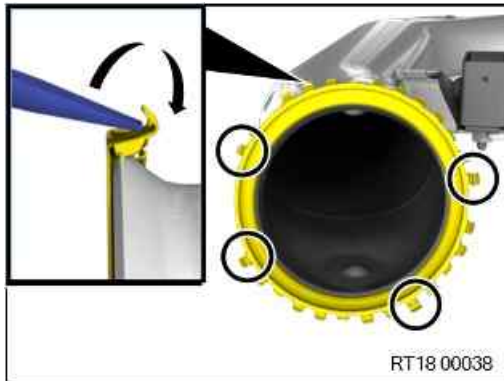




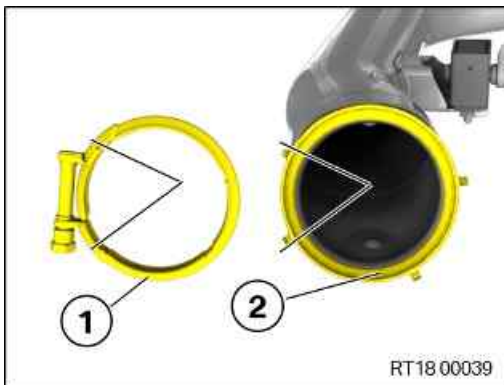
- Unscrew the nut (1) and remove the sealing ring (2).



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



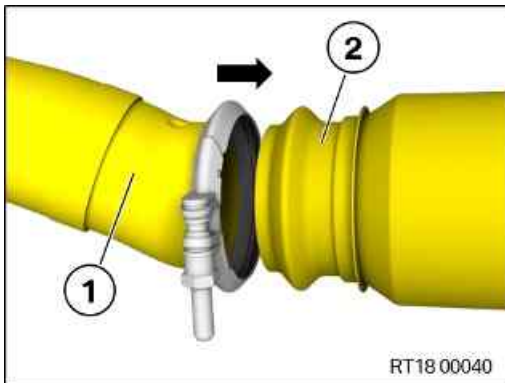
- Bend all sheet metal tabs over with a suitable tool, except those in the marked areas.



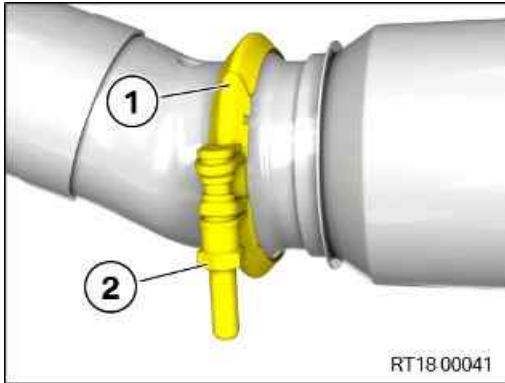
- Mount the V-clip (1) on the sealing ring (2).
- Make sure that the V-clip (1) is positioned correctly on the sealing ring (2).



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



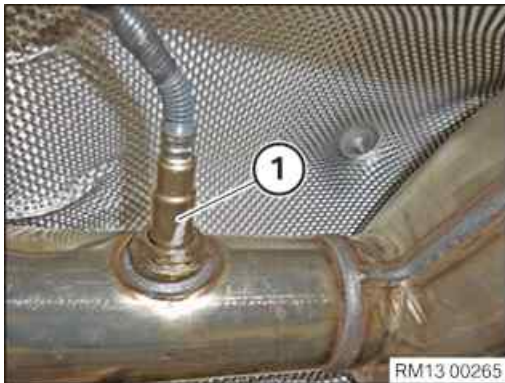
- Connect the exhaust system (1) with the catalytic converter (2) and position correctly.



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

V-clip to catalytic converter

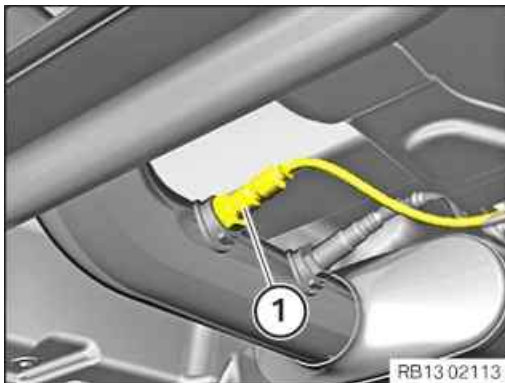
V-band clamp	Renew V-band clamp.	Tightening torque	22 Nm
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- Guide in, position and tighten the diesel particulate sensor (1).

Diesel particulate sensor to exhaust system

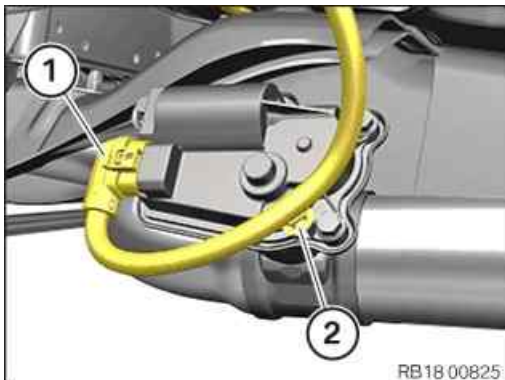
Sensor		Tightening torque	50 Nm
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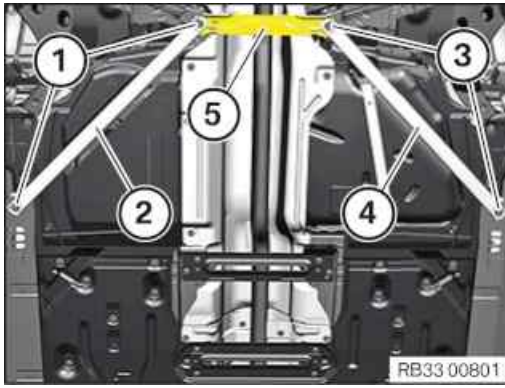
- Guide in, position and tighten the nitrogen oxide sensor (1).

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	50 Nm
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- Secure clamps (2).
- Connect connectors (1) and lock.
The connector (1) must engage audibly.



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

Parts: Bolts

- Tighten down screws (3).

Cross-member/torsion strut to axle support and mounting

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

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

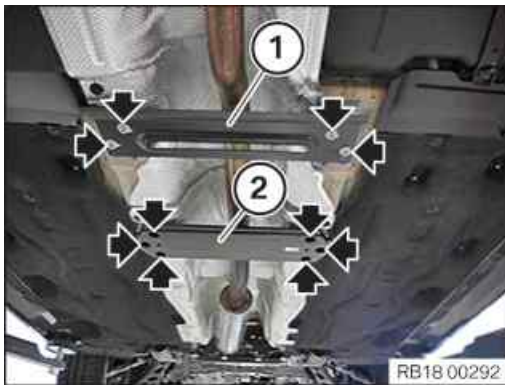
Parts: Bolts

- Tighten the screws (1).

Cross-member/torsion strut to axle support and mounting

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

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



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

Front connection carrier to body

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

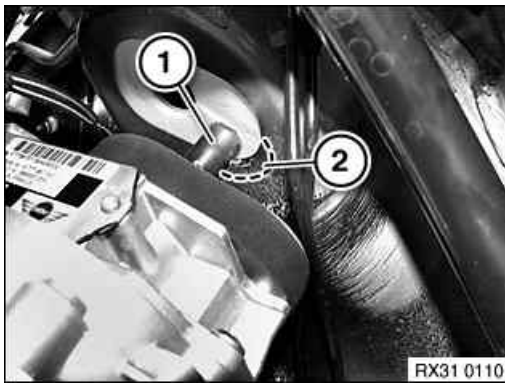
Rear connection carrier to body

M8x18		Tightening torque	28 Nm
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52 – Mount and secure the complete front axle



- Remove the seal (1).
 - Clean surface on steering gear.
 - Renew gasket (1).
- Parts:** Gasket
- Position the seal (1) and glue it on.

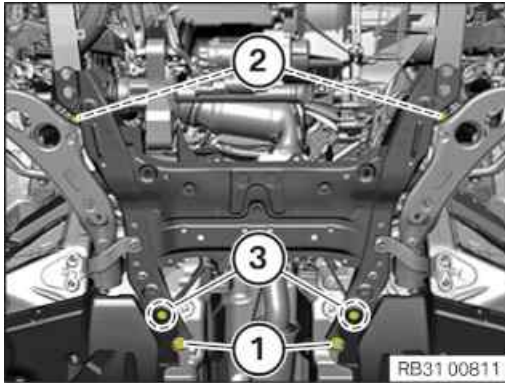


TECHNICAL INFORMATION

Non-compliance with the regulations for installation and disassembly may result in component damage. All work must be performed with care and in compliance with the regulations.

- When raising and lowering the front axle support, make sure that the torsion bar (1) of the electromechanical steering gear (EPS) in area (2) does not collide with the bulkhead!

Note: Collision with the bulkhead may result in damage to the electromechanical steering gear (EPS)!



- Position front axle support.
- Bend underbody panellings in the areas (3) to one side.
- Raise front axle support.
- When raising, insert charge air cooler into the rubber mount of the charge air cooler on cross member.
- Renew screws (1) and (2).

Parts: Bolts

- Tighten the screws (1).

Rear end of front axle support to body

M14 screw	Renew screw.	Tightening torque	175 Nm
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- Tighten down screws (2).

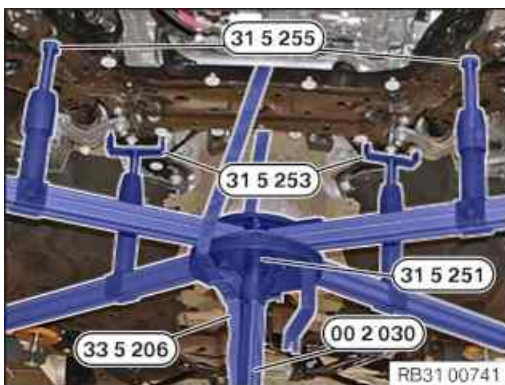
Front axle support, front to body

M12 screw	Renew screw.	Tightening torque	108 Nm
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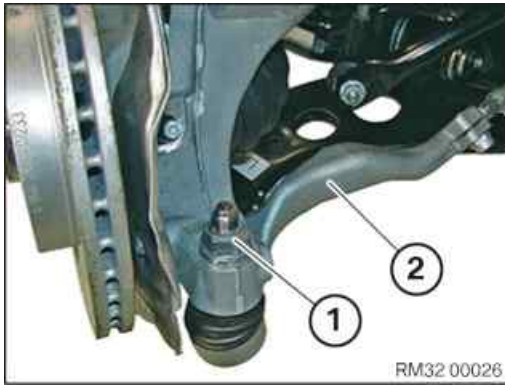
- If necessary, tighten the screws in the areas (3).

Underbody protection to body

Screw		Tightening torque	3 Nm
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- Remove special tool **0 496 080 (33 5 206)** from special tool **0 495 817 (31 5 251)**.
- Lower universal jack **0 490 133 (00 2 030)** with the special tool **0 495 817 (31 5 251)** and place it to the side.



NOTICE

Perform the operations on the left and right side.

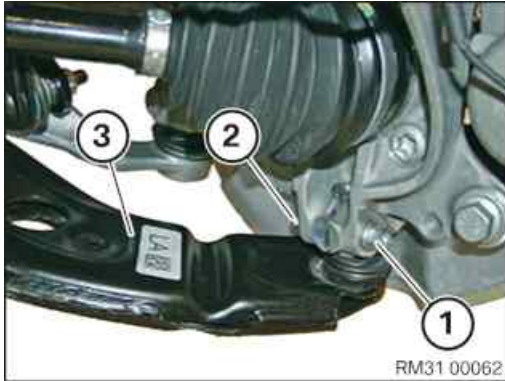
- Position the track rod (2) on the swivel bearing .
- Renew nut (1).

Parts: Nut

- Tighten nut (1).

Track rod end to swivel bearing

M14	Renew nut.	Tightening torque	175 Nm
-----	------------	-------------------	--------



NOTICE

Perform the operations on the left and right side.

- Position the wishbone (3) on the swivel bearing .
- Renew the bolt (2) and the nut (1).

Parts: Bolt, nut

- Insert screw (2).
- Tighten nut (1).

Wishbone to swivel bearing

M10	Exclusively use the screw to tighten! Renew screw and nut.	Tightening torque	60 Nm
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53 – Install the mounted parts on the front axle support



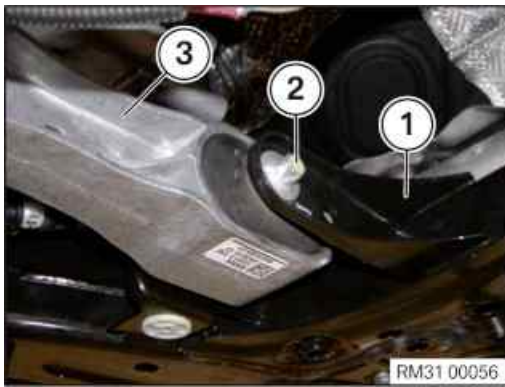
NOTICE

Perform the operations on the left and right side.

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

Holder, wishbone rubber mount, to body

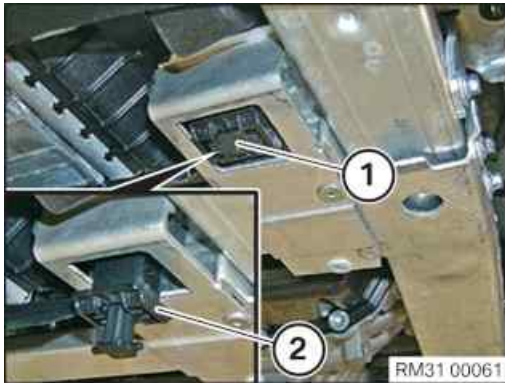
M10 screw	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °



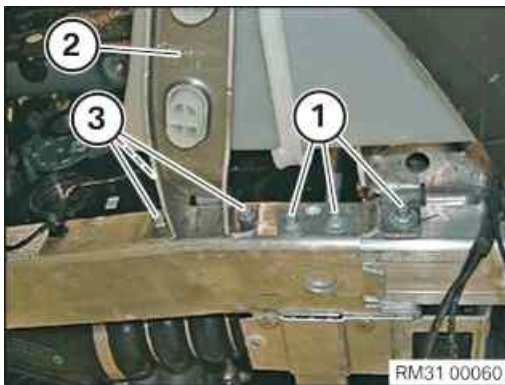
- Position the engine support (3) on the front axle support (1).
- Tighten down screw (2).

Holder with rubber mount to front axle support

M12 screw		100 Nm
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- Position the lock (2).
- Lock the bracket (1) of the lock (2) of the holder for the charge air cooler.



- **Only on right side:** Position the holder for the washer fluid reservoir (2).
- Tighten down screws (3).

Washer fluid reservoir holder to front axle support adapter plate

	Tightening torque	10 Nm
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- Tighten the screws (1).

Deformation element, bottom, to adapter plate, front axle carrier

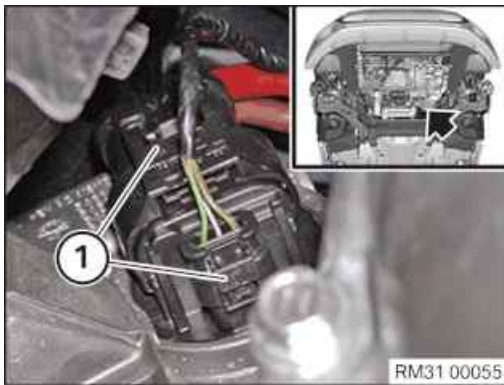
	Tightening torque	11,8 Nm
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54 – Attaching connector at steering gear

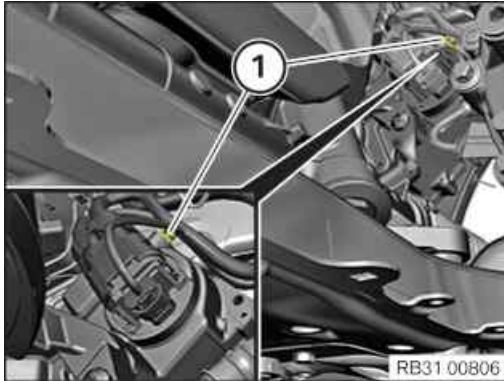


- To connect the connector (see the following step): Connect the connector with the right hand.

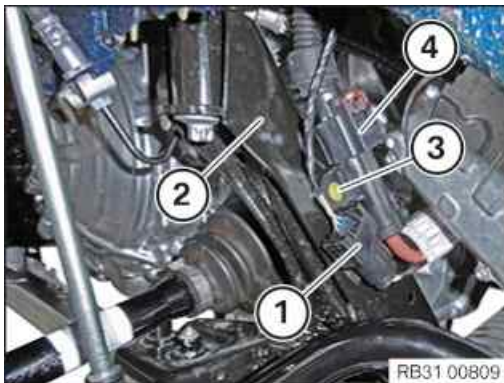
The connectors can be accessed via the left output shaft.



- Connect and lock connector (arrow) (1) with the steering gear.



- Fasten the wiring harness (1) on the steering gear.



► **If installed: Fasten the plug connections at the front axle support**

- Position the plug connection (4) at the front axle support (2).
- Tighten down screw (3).

Holder to front axle support

Oval-head screw TS5 x 16		Tightening torque	2,6 Nm
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- Fasten the plug connection (1) at the front axle support (2).

55 – Securing rubber mount on front axle support



- Check rubber mount (1), replace if necessary.

Parts: Rubber mount

- Spray rubber mount (1) with lubricant and slide onto holder on front axle support.

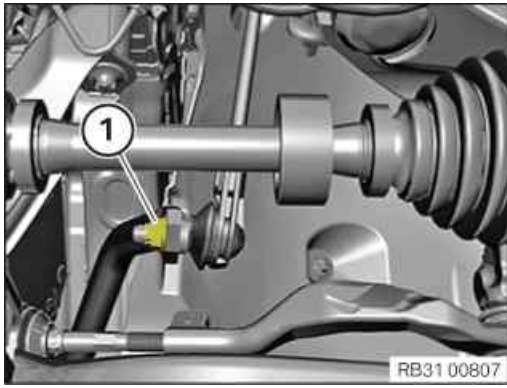
56 – Securing anti-roll bar on left and right on the anti-roll bar link



NOTICE

Perform the operations on the left and right side.

► **Fastening anti-roll bar on the anti-roll bar link**

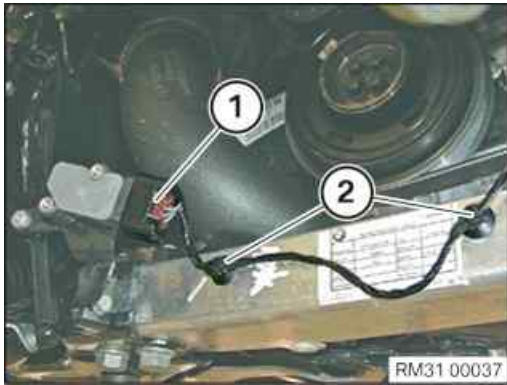


- Position the anti-roll bar link on the anti-roll bar .
 - Renew nut (1).
- Parts:** Nut
- Tighten nut (1).
- Note:** Use the Torx socket for counter support.

Anti-roll bar link to anti-roll bar

M10	Renew nut.	Tightening torque	56 Nm
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57 – With right installation: Securing the cable for the ride height sensor



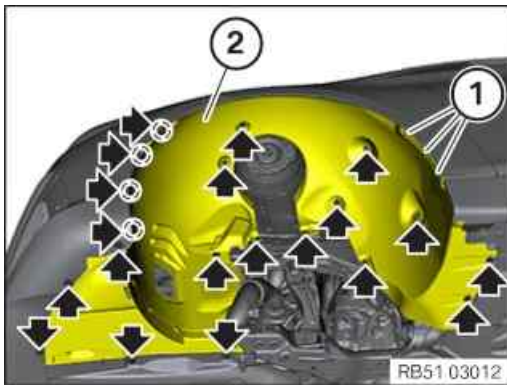
- Secure the cable clip (2) on the adapter of the deformation element.
- Connect connectors (1) and lock.

58 – Installing front left and right wheel arch cover



NOTICE

Perform the operations on the left and right side.



► Installing the front wheel arch cover

- Guide the wheel arch cover (2) in.
- Tighten all bolts and nuts (arrows).

Wheel arch cover to body

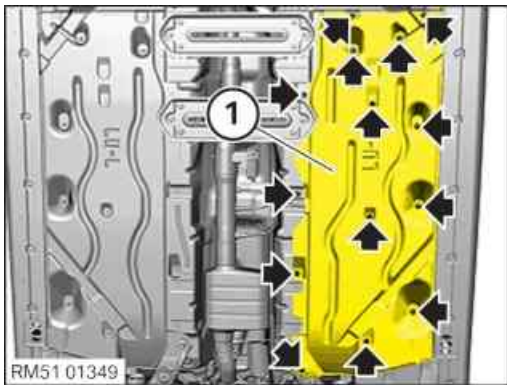
Screw		Tightening torque	2,5 Nm
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Wheel arch cover to body

Plastic nut		Tightening torque	3 Nm
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- Secure expanding rivet (1).

59 – Installing underbody panelling , right



- Correctly position the underbody panelling (1).
- Tighten all bolts and nuts (arrows).

Underbody panelling, side

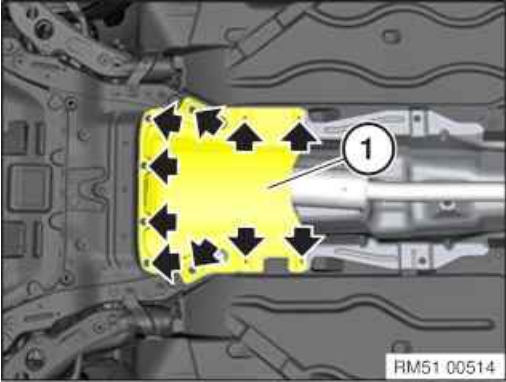
Hexagon screw		Tightening torque	2,6 Nm
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Underbody panelling, side

Plastic nut		Tightening torque	2,6 Nm
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60 – If installed: Installing underbody protection at rear

60 – If installed: installing underbody protection at rear



- Position rear underbody protection (1).
- Tighten screws (arrows).

Underbody protection to body

Screw		Tightening torque	3 Nm
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61 – Mount the front left and right wheels

► Mounting the wheel

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



i

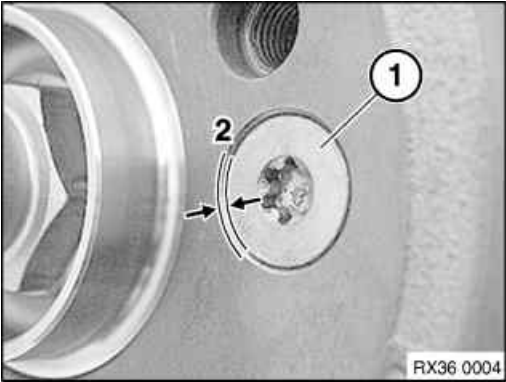
TECHNICAL INFORMATION

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 around 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).



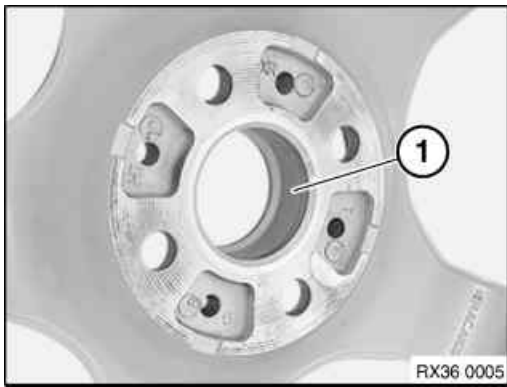
- Check the mounting bolt for the brake disc (1) for secure fit.
The mounting bolt for the brake disc (1) must not protrude under any circumstances on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.		16 Nm
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Brake disc to rear wheel hub

M8	Renew screw.		16 Nm
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- Lightly grease the wheel centring (1) in the wheel rim; refer to additional information for grease for the wheel centring.

◀



TECHNICAL INFORMATION

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

The wheel rim must rest uniformly against the brake disc.

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

Do not apply oil to new wheel bolts.

- Renew corroded wheel bolts.

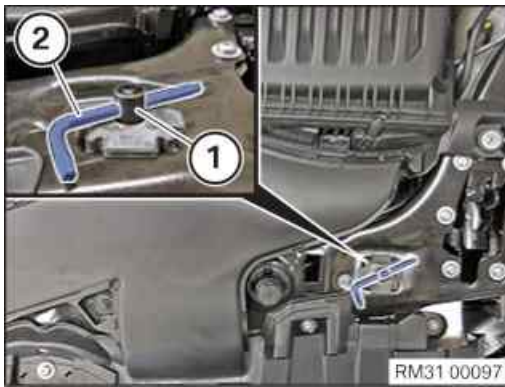
Parts: Wheel bolts

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

Wheel bolts

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

62 – Removing fastener for left and right radiator

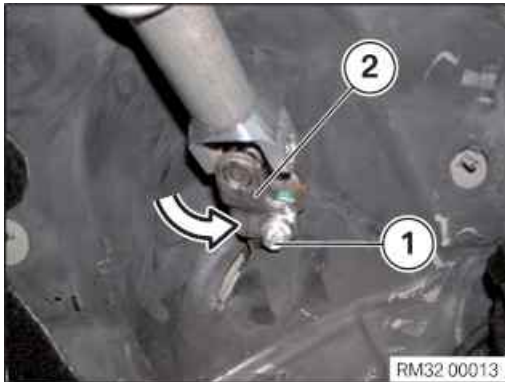


NOTICE

Perform the operations on the left and right side.

- Remove suitable tool (2) from the centering pin (1).

63 – Secure the steering shaft at the bottom on the steering gear



- Clean the screw lock residue from the screw thread in the universal joint (2).
- Pivot the universal joint (2) in the direction of the arrow to the steering gear.
- Renew the screw (1).

Parts: Screw

- Tighten down screw (1).

Lower steering shaft to steering gear

M10	Clean screw thread and remove remains of screw locking agent. Renew screw.	Tightening torque	28 Nm
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- **If installed:**
- Position the cover on the steering column (2).
- Tighten nuts (1).

Steering column cover to bulkhead

Plastic nut		Tightening torque	3 Nm
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64 – Install the heat shield on the exhaust turbocharger

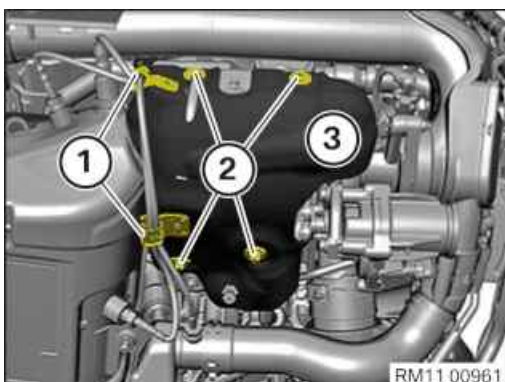


WARNING

Hot surfaces.

Risk of burning!

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



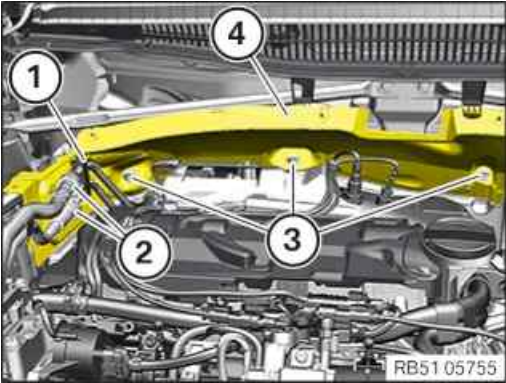
- Feed in and install the heat shield (3).
- Tighten down screws (2).

Heat shield for exhaust turbocharger

Torx screw BM 6x12		Tightening torque	10 Nm
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- Secure cable in holders (1).

65 – Installing rear bulkhead upper part



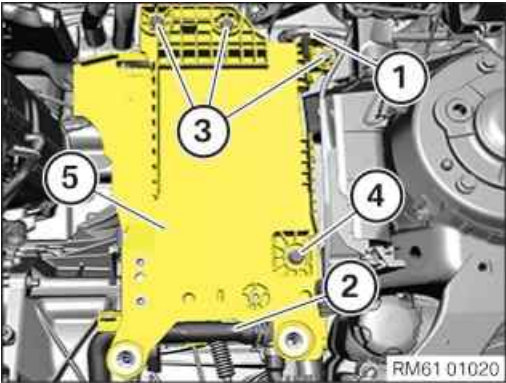
- Feed in and install the rear bulkhead upper part (4).
- Tighten down screws (3).

Rear bulkhead upper part to lower section of bulkhead

Oval-head screw		Tightening torque	5 Nm
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- Feed the fuel line (2) into the holder (1) and install.
- Connect and lock the holder (1).
The holder (1) must engage audibly.

66 – Install the battery holder



- Feed in and install the battery holder (5).
- Hand-tighten the bolt (4).
- Hand-tighten the bolts (3).
- Tighten down screw (4).

Battery holder to engine support

Hexagon screw M8x30		Tightening torque	19 Nm
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- Tighten down screws (3).

Battery holder to engine support

Hexagon screw M8x30		Tightening torque	19 Nm
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- Fasten the coolant line (2) on the battery holder (5).
- Fasten the cable clip (1) on the battery holder (5).

67 – Install electronics box

Prerequisite

Battery earth lead is disconnected.

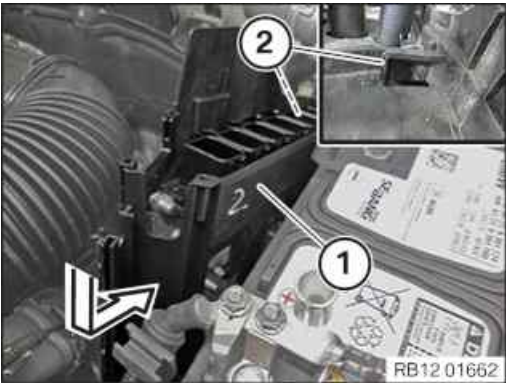


RISK OF DAMAGE

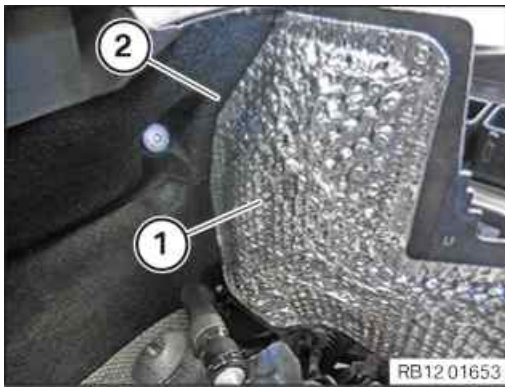
Improper routing of cables and wiring harnesses.

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

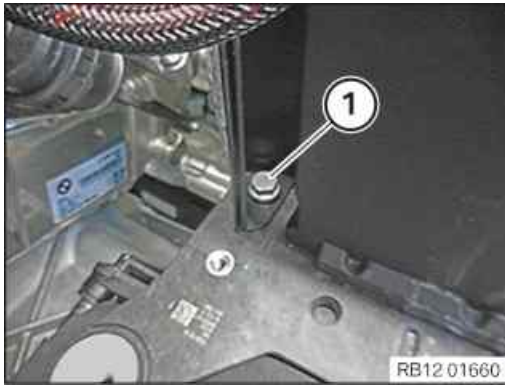
- Route all cables without abrasions, do not trap and crush.



- Guide in and install the electronics box (1) into the guide (2) in direction of arrow.



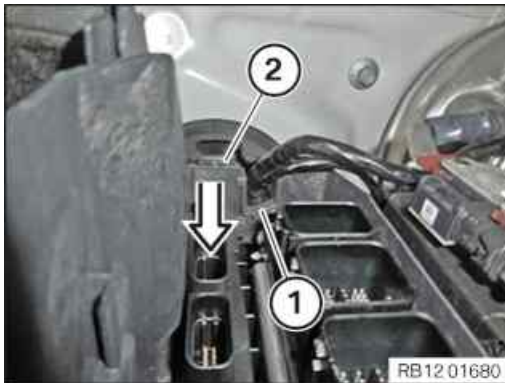
- Make sure that the electronics box (1) is positioned correctly on the bulkhead (2).



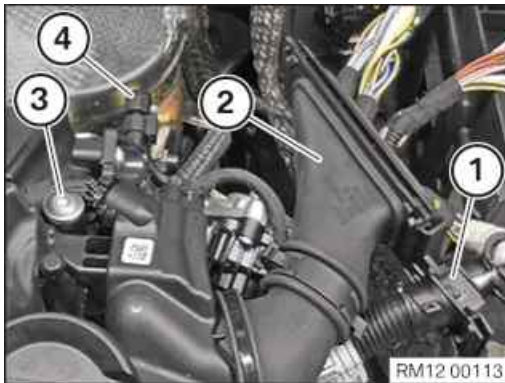
- Tighten down screw (1).

Electronics box to battery tray

M8X16		Tightening torque	15 Nm
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- Guide in and install the holder (1) in the electronics box (2) in direction of arrow.
- Make sure the bracket (1) engages audibly.

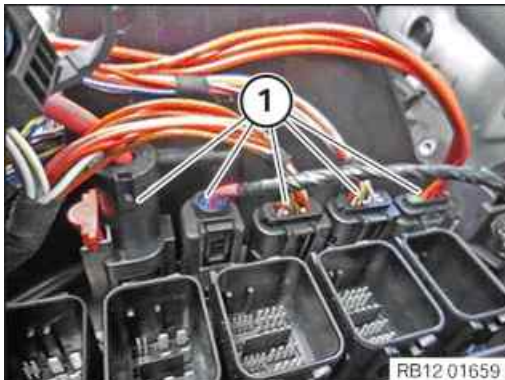


- Lay vehicle wiring harnesses (1) and (2) and mount on electronics box.
- Tighten down screw (3).

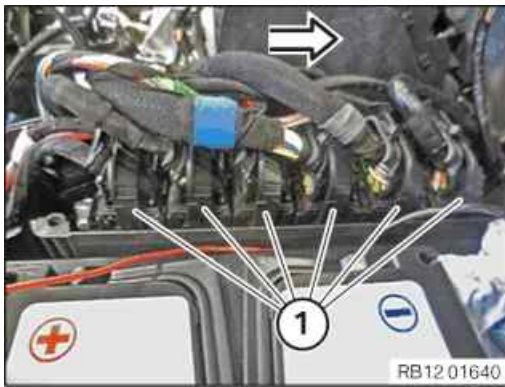
Wiring harness to cylinder head cover

TS5x20		Tightening torque	3,5 Nm
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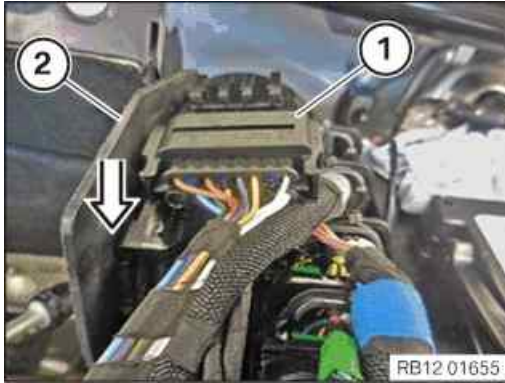
- Attach connector (4) to the differential pressure sensor and lock it audibly.



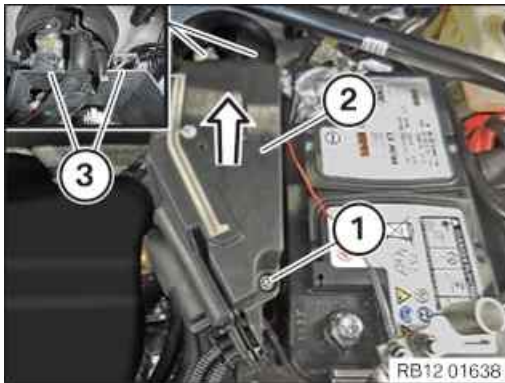
- Connect and lock the connector (1).
- Make sure the connectors (1) engage audibly.



- Connect connector (1) in direction of arrow and lock.
- Make sure the connectors (1) engage audibly.



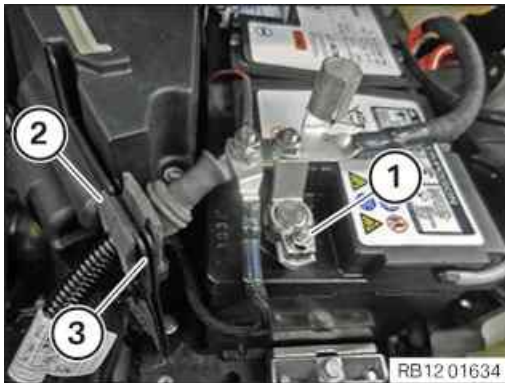
- Connect and lock the connector (1).
- Make sure the connector (1) engages audibly.
- Insert the connector (1) in the direction of arrow at the electronics box (2) and install.



- Insert the cover (2) into the guides (3) in the direction of arrow and install.
- Make sure the cover audibly engages (2) in the guides (3).
- Tighten down screw (1).

Cover to electronics box

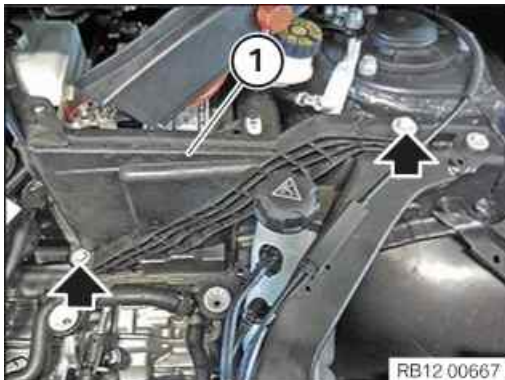
RF5x26.5		Tightening torque	2,5 Nm
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- Thread in positive battery cable (2) on holder (3) and install.
- Feed in and install positive battery terminal (1).
- Tighten positive battery terminal (1).

Positive battery terminal to battery

NutM6		Tightening torque	5 Nm
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- Feed in and install tension strut (1).
- Tighten screws (arrows).

Tension strut to spring strut dome/battery tray

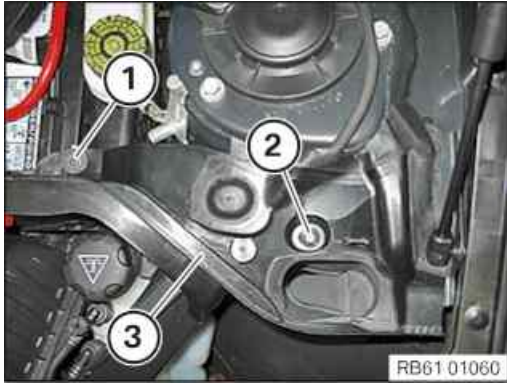
M8		Tightening torque	19 Nm
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- Feed in and install cover (2) at the positive battery connection point.
- Tighten down screw (1).

Positive battery connection point cover to engine compartment partition wall

		Tightening torque	3 Nm
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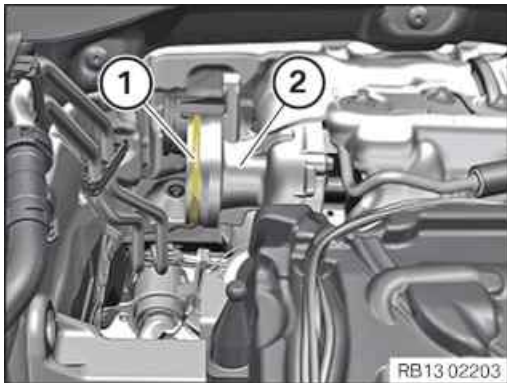


- Position the fixture for the gasket (3) and secure with the expanding rivet (2).
- Tighten down screw (1).

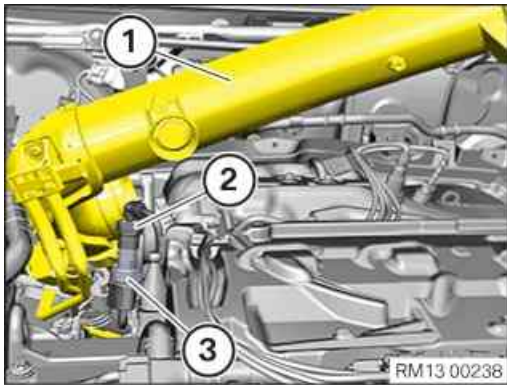
Battery cover

Screw			2,8 Nm
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68 – Installing clean air pipe



- Check the sealing ring (1) of the exhaust turbocharger (2) for damage and renew it if necessary.

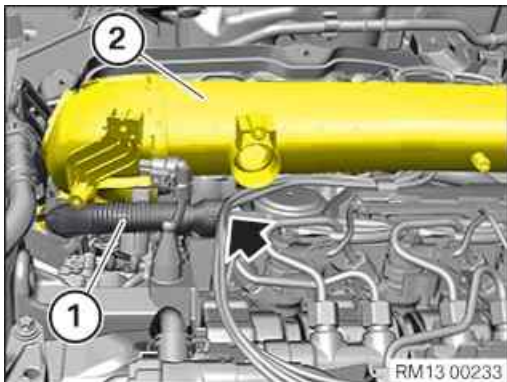


- Feed in clean air pipe (1) and lay it down as shown.
- Insert and install the exhaust gas pressure sensor (3).
- Tighten the exhaust gas pressure sensor (3).

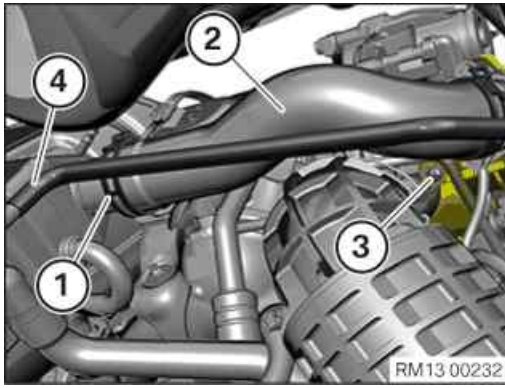
Exhaust gas pressure sensor

Exhaust gas pressure sensor		Tightening torque	13,5 Nm
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- Connect and lock the connector (2).
The connector (2) must engage audibly.
- Install the clean air pipe (1).



- Feed in ventilation line (1) at clean air pipe (2) and install.
- Feed in ventilation line (1) at cylinder head cover (arrow) and install.



- Tighten down screw (3).

Clean air pipe to exhaust turbocharger

Torx bolt BM8x25		Tightening torque	8 Nm
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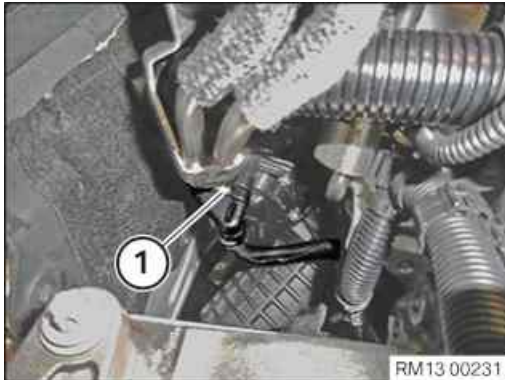
- Feed the pressure hose (2) in and install.
- Position and secure the clamp (1).
- Check pressure hose (4).
- Renew hardened pressure hoses (4).

Parts: Pressure hose

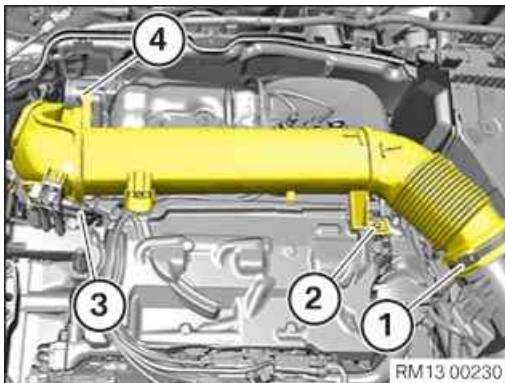
- Connect pressure hose (4) and secure with 15 mm to 19 mm screw clamps.

Clamp for the pressure hose on the differential pressure sensor

Clamp 15– 19mm		Tightening torque	3 Nm
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- Connect and lock the connector (1).
The connector (1) must lock audibly.



- Tighten down screw (4).

Clean air pipe to exhaust turbocharger

Torx bolt BM8x25		Tightening torque	8 Nm
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- Connect and lock the connector (3).
The connector (3) must engage audibly.
- Renew the screw (2).

Parts: Screw

- Tighten down screw (2).

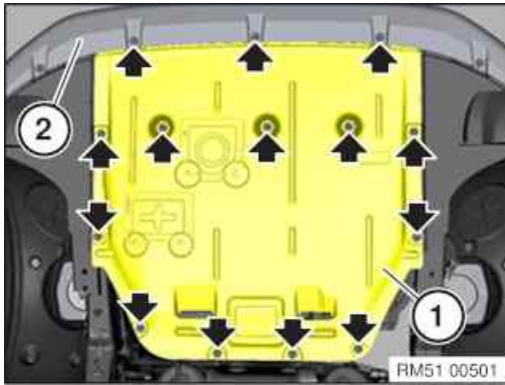
Clean air pipe to cylinder head cover

Oval-head screw	Renew screw.	Tightening torque	8 Nm
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- Tighten the screw clamp (1).

Clean air pipe to intake silencer housing

Clamp		Tightening torque	3 Nm
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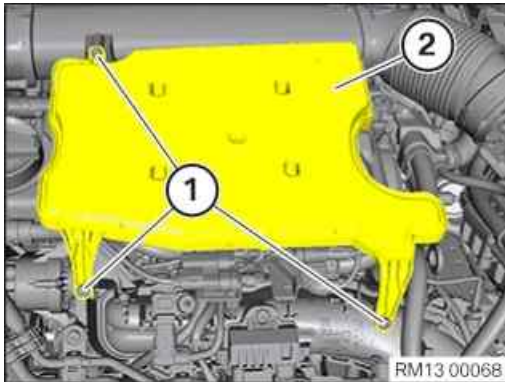


- Guide the front underbody protection (1) in under the bumper panel (2) and position it at the screw points.
- Tighten screws (arrows).

Underbody protection front

			3 Nm
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70 – Install resonator



- Insert and install the resonator (2).
 - Renew screws (1).
- Parts:** Bolts
- Tighten the screws (1).

Resonator to manifold and clean air pipe

Screw TS6	Renew screw.	Tightening torque	5 Nm
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71 – Install acoustic cover



RISK OF DAMAGE

Damage to the acoustic cover.

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

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

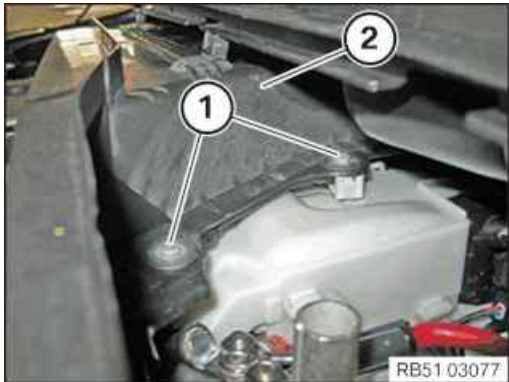


- Check for correct installation of all rubber mounts in the acoustic cover (1).



- Clip in the acoustic cover into the holders in the indicated areas.
- Make sure that the acoustic cover engages audibly.

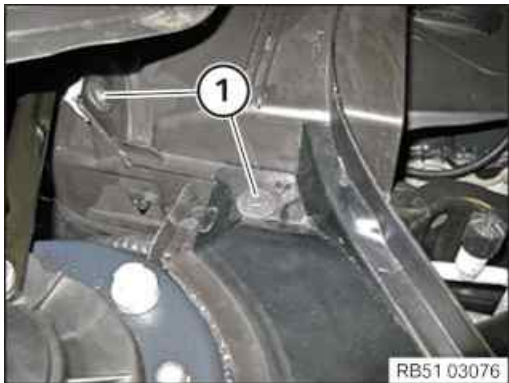
72 – Installing the upper bulkhead cover



- Feed in and install cover (2) of the bulkhead at the top.
- Tighten the screws (1).

Bulkhead cover, top

Screw		Tightening torque	3 Nm
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- Tighten the screws (1).

Bulkhead cover, top

Screw		Tightening torque	3 Nm
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- Tighten the screws (1).

Bulkhead cover, top

Screw		Tightening torque	3 Nm
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73 – Install vehicle battery

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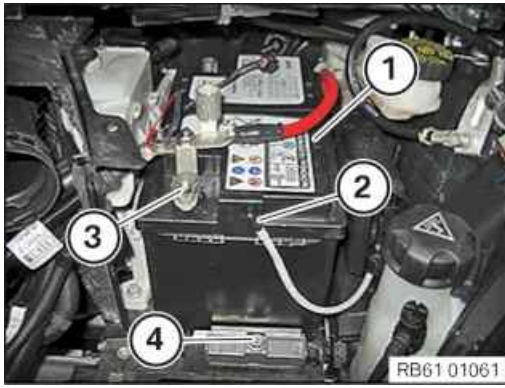
TECHNICAL INFORMATION

For additional information see:

61 00 ... Safety information on handling the vehicle battery

61 00 / 12 00 ... Notes on disconnecting and connecting the vehicle battery

61 12 ... Notes on the intelligent battery sensor (IBS)



- Install vehicle battery (1).
- Tighten the holder with the bolt (4).

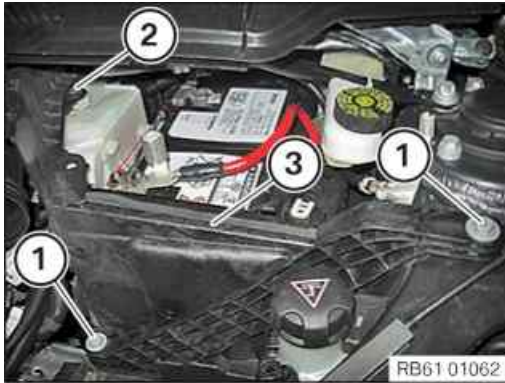
Battery terminal rail to battery tray

M8 screw		19 Nm
----------	--	-------

- Position the vent hose (2).
- Position the positive terminal.
- Tighten the nut (3) on the positive terminal.

Positive battery terminal

NutM6		5 Nm
-------	--	------



- Insert the tension strut (3).
- Tighten down screw (2).

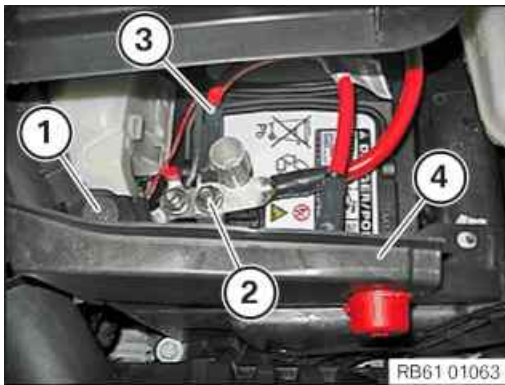
Battery cover

Screw		2,8 Nm
-------	--	--------

- Tighten the screws (1).

Trailing link

M8 screw		19 Nm
----------	--	-------



- Position the positive battery cable (3) with the cover of the remote positive terminal (4).
- Tighten down screw (1).

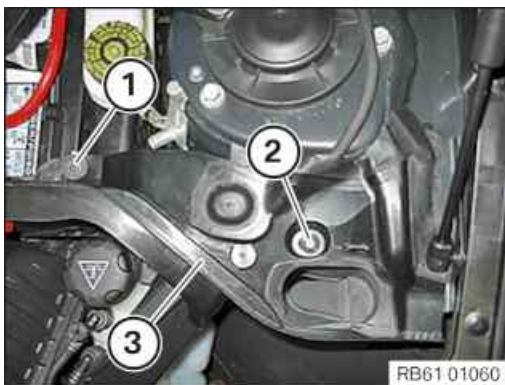
Battery cover

Screw		2,8 Nm
-------	--	--------

- Tighten the nut (2) on the positive terminal.

Positive battery cable to battery terminal

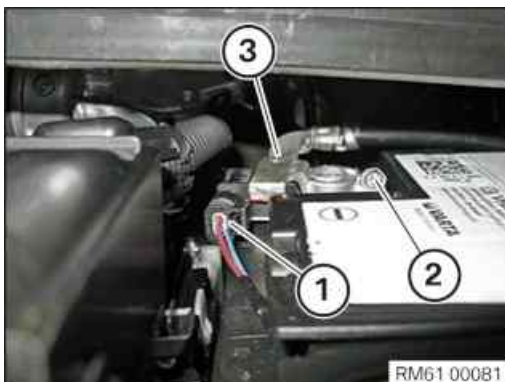
Nut M8		15,2 Nm
--------	--	---------



- Position the fixture for the gasket (3) and secure with the expanding rivet (2).
- Tighten down screw (1).

Battery cover

Screw		2,8 Nm
-------	--	--------

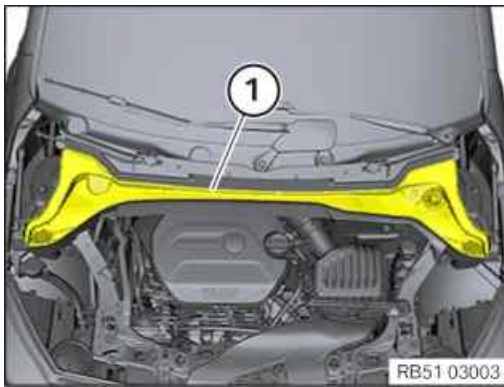


- Position the negative battery terminal (3).
- Tighten nut (2).

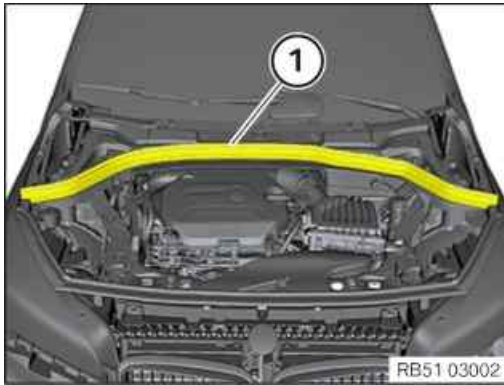
Negative battery terminal (with IBS)

NutM6		5 Nm
-------	--	------

- Connect connectors (1) and lock.

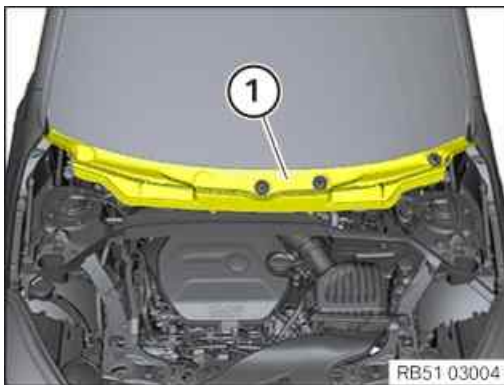


- Feed in the cowl panel cover (1).



- Press the gasket (1) in a downwards direction.

74 – Install the rear cowl panel cover



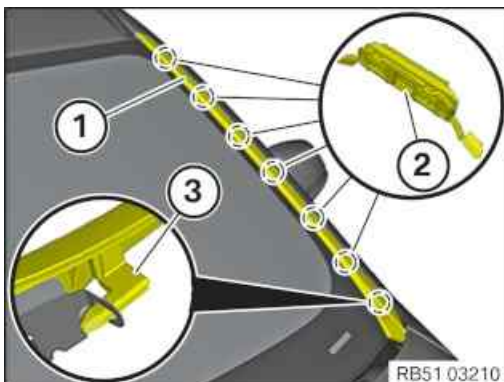
- Feed in and engage the rear cowl panel cover (1).

75 – Install the gutter strip on the windscreen on the left and right



NOTICE

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



► Install the gutter strip on the windscreen

- Check the clamps (2) for damage and renew if necessary.
- Insert the gutter strip (1) with the guide (3).
- Align the gutter strip (1) at the roof and clip it in.

76 – Install left and right wiper arm



NOTICE

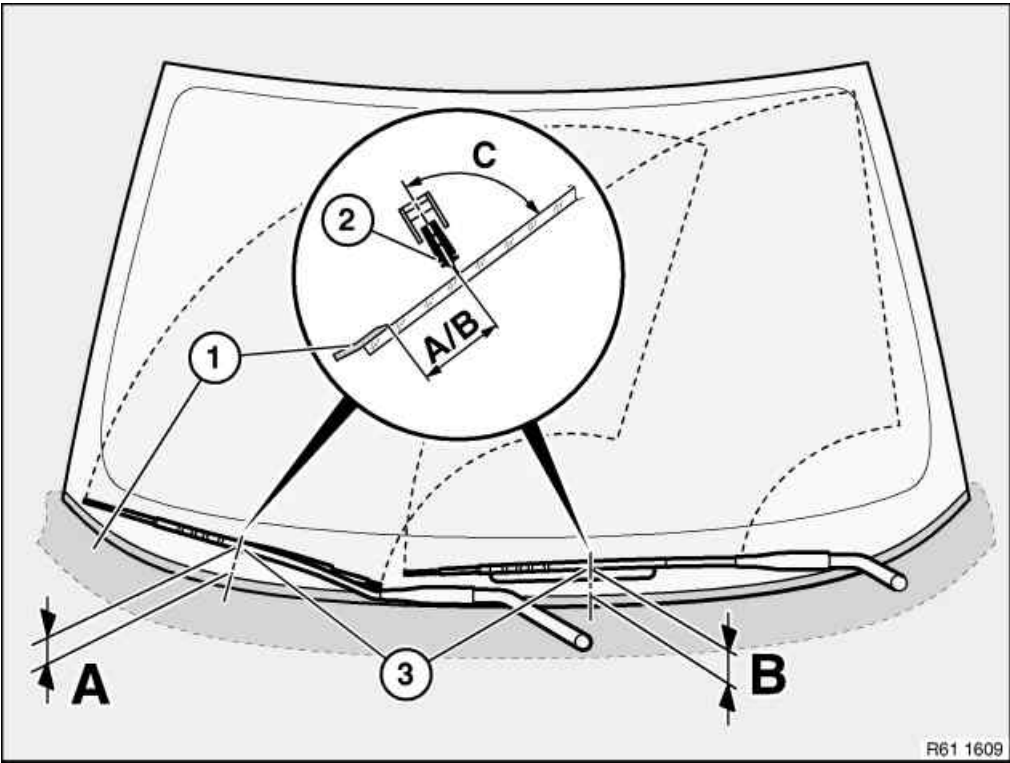
Description is for left component only. Procedure on the right side is identical.

► Install the wiper arm

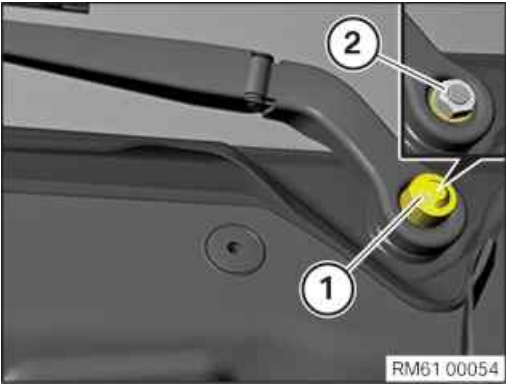


TECHNICAL INFORMATION

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).



NOTICE

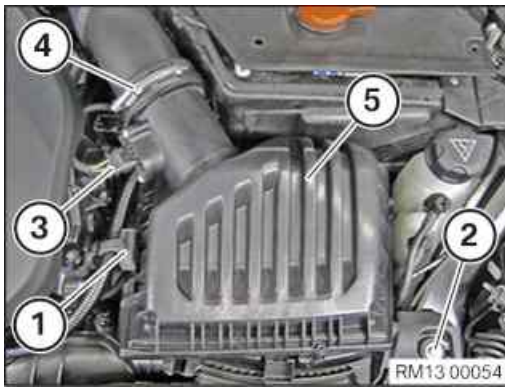
Description is for left component only. Procedure on the right side is identical.

- Tighten nut (2).

Windscreen wiper arm

Combination hexagon nut		Tightening torque	35 Nm
-------------------------	--	-------------------	-------

- Connect the protective cap (1).



- Insert the intake silencer housing (5) into the rubber mounts and install it. Intake filter housing (5) must engage audibly.
- Tighten down screw (2).

Intake silencer housing to lock bridge

M6X30		Tightening torque	8 Nm
-------	--	-------------------	------

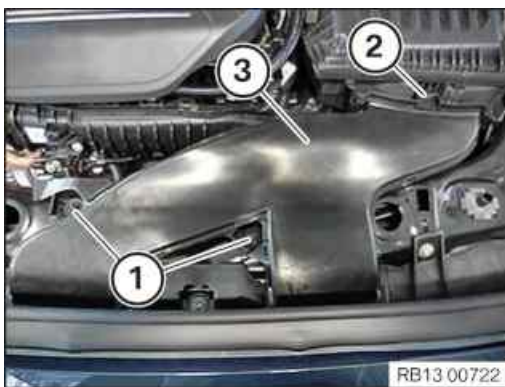
- Tighten clamp (4).

Clean air pipe to intake silencer housing

Clamp		Tightening torque	3 Nm
-------	--	-------------------	------

- Connect and lock the connector (3). The connector (3) must engage audibly.
- Insert and install the holder (1).

78 – Install the intake neck for the intake filter housing



- Insert and install the intake neck (3). The lock (2) must engage audibly.
- Tighten nuts (1).

Intake neck to cross connection

M6		Tightening torque	8 Nm
----	--	-------------------	------

79 – 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 [40](#)

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

Diesel particle filter to holder

Used in step [40](#)

M8 hexagon nut		Tightening torque	19 Nm
----------------	--	-------------------	-------

SCR metering module V-clip to exhaust system

Used in step [40](#)

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

Holder for coolant lines to diesel particulate filter

Used in step [40](#)

Torx bolt BM6x16		Tightening torque	8 Nm
------------------	--	-------------------	------

Low-pressure exhaust-gas recirculation cooler to diesel particulate filter

Used in step [40](#)

Flange nutM8		Tightening torque	19 Nm
--------------	--	-------------------	-------

Differential pressure sensor to holder

Used in step [41](#)

Screw		Tightening torque	4 Nm
-------	--	-------------------	------

Clamp for the pressure hose on the differential pressure sensor

Used in step [41](#) [68](#)

Clamp 15–19mm		Tightening torque	3 Nm
---------------	--	-------------------	------

Control sensor

Used in step [42](#)

Control sensor		Tightening torque	50 Nm
----------------	--	-------------------	-------

Exhaust temperature sensor to diesel particulate filter

Used in step [43](#) [44](#)

Exhaust-gas temperature sensor		Tightening torque	28 Nm
--------------------------------	--	-------------------	-------

Exhaust-gas temperature sensor to exhaust system

Used in step [45](#)

Exhaust-gas temperature sensor		Tightening torque	28 Nm
--------------------------------	--	-------------------	-------

Oxygen sensor holder to intermediate shaft

Used in step [46](#)

Hexagon screw M6x16		Tightening torque	8 Nm
---------------------	--	-------------------	------

Nitrogen oxide sensor before SCR catalytic converter

Used in step [47](#)

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

Monitoring sensor Used in step [48](#)

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

Exhaust system to body Used in step [49](#)

M8	Replace nuts.	Tightening torque	19 Nm
----	---------------	-------------------	-------

Exhaust bracket on body Used in step [49](#)

Hexagon screw M8x30		Tightening torque	19 Nm
---------------------	--	-------------------	-------

V-clip to catalytic converter Used in step [49](#)

V-band clamp	Renew V-band clamp.	Tightening torque	22 Nm
--------------	---------------------	-------------------	-------

Diesel particulate sensor to exhaust system Used in step [49](#)

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

Nitrogen oxide sensor downstream of SCR catalytic converter Used in step [49](#)

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

Cross-member/torsion strut to axle support and mounting Used in step [50](#)

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

Front connection carrier to body Used in step [51](#)

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

Rear connection carrier to body Used in step [51](#)

M8x18		Tightening torque	28 Nm
-------	--	-------------------	-------

Rear end of front axle support to body Used in step [52](#)

M14 screw	Renew screw.	Tightening torque	175 Nm
-----------	--------------	-------------------	--------

Front axle support, front to body Used in step [52](#)

M12 screw	Renew screw.	Tightening torque	108 Nm
-----------	--------------	-------------------	--------

Underbody protection to body Used in step [52](#) [60](#)

Screw		Tightening torque	3 Nm
-------	--	-------------------	------

Track rod end to swivel bearing Used in step [52](#)

M14	Renew nut.	Tightening torque	175 Nm
-----	------------	-------------------	--------

Wishbone to swivel bearing Used in step [52](#)

M10	Exclusively use the screw to tighten!	Tightening torque	60 Nm
	Renew screw and nut.		

Holder, wishbone rubber mount, to body Used in step [53](#)

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

Holder with rubber mount to front axle support Used in step [53](#)

M12 screw			100 Nm
-----------	--	--	--------

Washer fluid reservoir holder to front axle support adapter plateUsed in step [53](#)

		Tightening torque	10 Nm
--	--	-------------------	-------

Deformation element, bottom, to adapter plate, front axle carrierUsed in step [53](#)

		Tightening torque	11,8 Nm
--	--	-------------------	---------

Holder to front axle supportUsed in step [54](#)

Oval-head screw TS5 x 16		Tightening torque	2,6 Nm
--------------------------	--	-------------------	--------

Anti-roll bar link to anti-roll barUsed in step [56](#)

M10	Renew nut.	Tightening torque	56 Nm
-----	------------	-------------------	-------

Wheel arch cover to bodyUsed in step [58](#)

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

Wheel arch cover to bodyUsed in step [58](#)

Plastic nut		Tightening torque	3 Nm
-------------	--	-------------------	------

Underbody panelling, sideUsed in step [59](#)

Hexagon screw		Tightening torque	2,6 Nm
---------------	--	-------------------	--------

Underbody panelling, sideUsed in step [59](#)

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

Brake disc to front wheel hubUsed in step [61](#)

M8	Renew screw.		16 Nm
----	--------------	--	-------

Brake disc to rear wheel hubUsed in step [61](#)

M8	Renew screw.		16 Nm
----	--------------	--	-------

Wheel boltsUsed in step [61](#)

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

Lower steering shaft to steering gearUsed in step [63](#)

M10	Clean screw thread and remove remains of screw locking agent. Renew screw.	Tightening torque	28 Nm
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Steering column cover to bulkheadUsed in step [63](#)

Plastic nut		Tightening torque	3 Nm
-------------	--	-------------------	------

Heat shield for exhaust turbochargerUsed in step [64](#)

Torx screw BM 6x12		Tightening torque	10 Nm
--------------------	--	-------------------	-------

Rear bulkhead upper part to lower section of bulkheadUsed in step [65](#)

Oval-head screw		Tightening torque	5 Nm
-----------------	--	-------------------	------

Battery holder to engine supportUsed in step [66](#)

Hexagon screw M8x30		Tightening torque	19 Nm
---------------------	--	-------------------	-------

Electronics box to battery trayUsed in step [67](#)

M8X16		Tightening torque	15 Nm
-------	--	-------------------	-------

Wiring harness to cylinder head coverUsed in step [67](#)

TS5x20		Tightening torque	3,5 Nm
--------	--	-------------------	--------

Cover to electronics boxUsed in step [67](#)

RF5x26.5		Tightening torque	2,5 Nm
----------	--	-------------------	--------

Positive battery terminal to batteryUsed in step [67](#)

NutM6		Tightening torque	5 Nm
-------	--	-------------------	------

Tension strut to spring strut dome/battery trayUsed in step [67](#)

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

Positive battery connection point cover to engine compartment partition wallUsed in step [67](#)

		Tightening torque	3 Nm
--	--	-------------------	------

Battery coverUsed in step [67](#) [73](#)

Screw			2,8 Nm
-------	--	--	--------

Exhaust gas pressure sensorUsed in step [68](#)

Exhaust gas pressure sensor		Tightening torque	13,5 Nm
-----------------------------	--	-------------------	---------

Clean air pipe to exhaust turbochargerUsed in step [68](#)

Torx bolt BM8x25		Tightening torque	8 Nm
------------------	--	-------------------	------

Clean air pipe to cylinder head coverUsed in step [68](#)

Oval-head screw	Renew screw.	Tightening torque	8 Nm
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Clean air pipe to intake silencer housingUsed in step [68](#) [77](#)

Clamp		Tightening torque	3 Nm
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Underbody protection frontUsed in step [69](#)

			3 Nm
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Resonator to manifold and clean air pipeUsed in step [70](#)

Screw TS6	Renew screw.	Tightening torque	5 Nm
-----------	--------------	-------------------	------

Bulkhead cover, topUsed in step [72](#)

Screw		Tightening torque	3 Nm
-------	--	-------------------	------

Battery terminal rail to battery trayUsed in step [73](#)

M8 screw			19 Nm
----------	--	--	-------

Positive battery terminal		Used in step	73
NutM6			5 Nm

Trailing link		Used in step	73
M8 screw			19 Nm

Positive battery cable to battery terminal		Used in step	73
Nut M8			15,2 Nm

Negative battery terminal (with IBS)		Used in step	73
NutM6			5 Nm

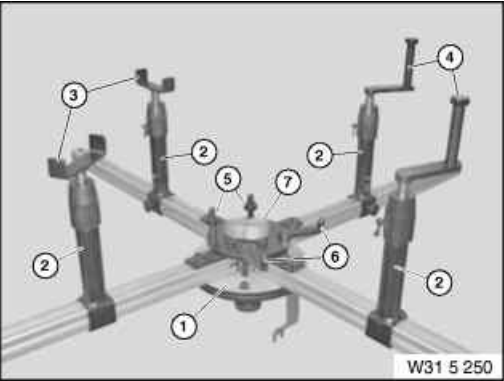
Windscreen wiper arm		Used in step	76
Combination hexagon nut		Tightening torque	35 Nm

Intake silencer housing to lock bridge		Used in step	77
M6X30		Tightening torque	8 Nm

Intake neck to cross connection		Used in step	78
M6		Tightening torque	8 Nm

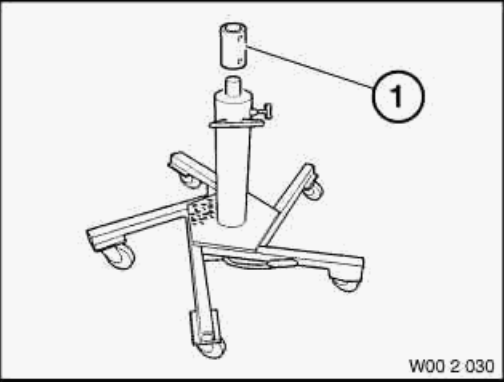
Overview of Special Tools

0 495 817 (31 5 251) Basic body



Common		Used in step	27	52
Usage	(Basic body) No longer available separately, only via special tool set 31 5 250 (83 30 0 495 567)			
Included in the tool or work	0 495 567			
Storage location				
Replaced by				
In connection with				
SI-Number	01 24 06 (309)			

0 490 133 (00 2 030) Device



Common

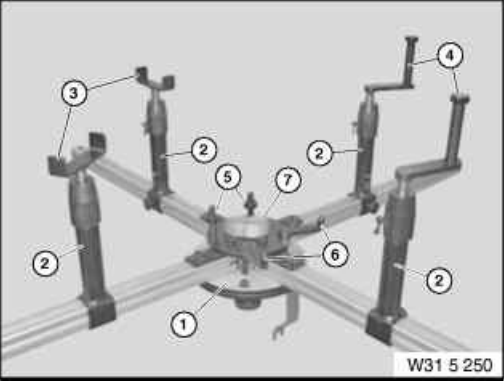
Used in step 27 52

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

Consisting of

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

0 495 821 (31 5 255) Adapter

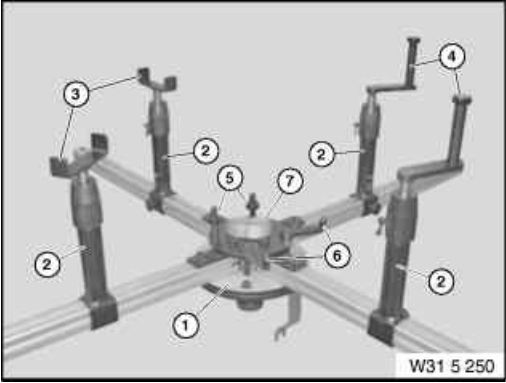


Common

Used in step 27

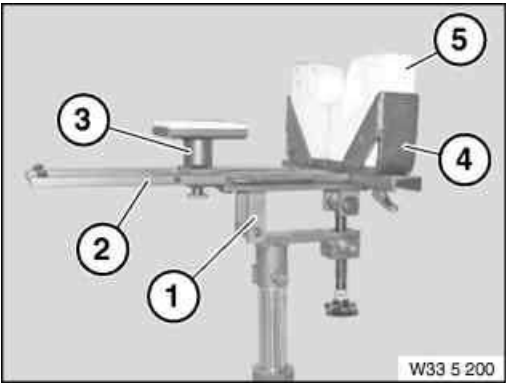
Usage	(take-up adapter for bore holes (2 x))
Included in the tool or work	0 495 567
Storage location	
Replaced by	
In connection with	
SI-Number	01 24 06 (309)

0 495 819 (31 5 253) Adapter



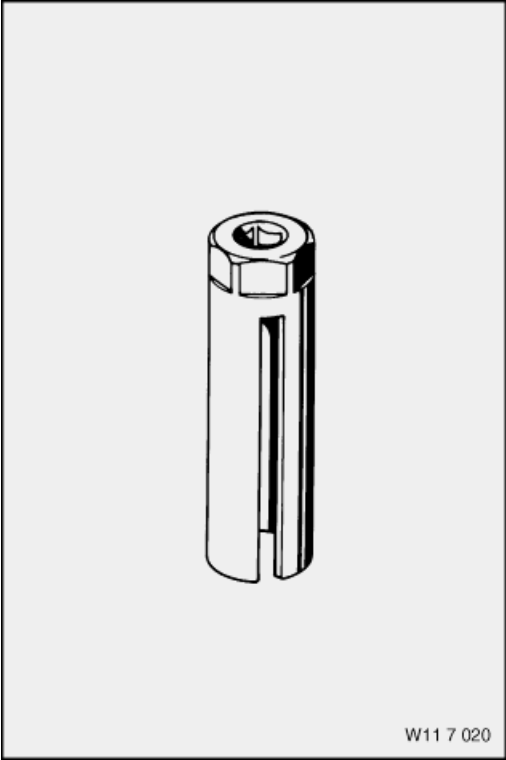
Common		Used in step	27
Usage	(take-up adapter U-section (2 x))		
Included in the tool or work	0 495 567		
Storage location			
Replaced by			
In connection with			
SI-Number	01 24 06 (309)		

0 496 080 (33 5 206) Belt



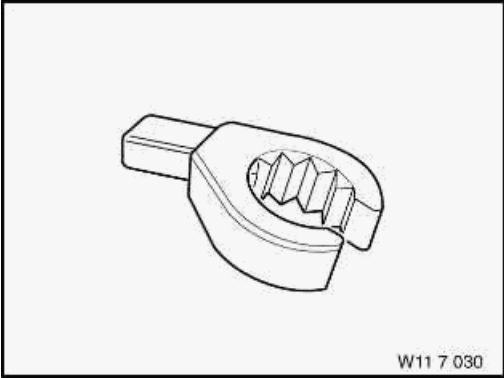
Common		Used in step	27	52
Usage	(Tensioning strap)			
Included in the tool or work	0 496 009			
Storage location				
Replaced by				
In connection with				
SI-Number				

0 491 074 (11 7 020) Socket wrench insert



Common		Used in step	31	32	48
Usage	(Socket wrench insert 22 mm) For loosening and tightening the oxygen sensor				
Included in the tool or work					
Storage location	A9				
Replaced by					
In connection with					
SI-Number					

0 491 075 (11 7 030) Socket wrench insert



Common		Used in step	37	42
Usage	(Socket wrench insert 22 mm) For loosening and tightening the oxygen sensor			
Included in the tool or work				
Storage location	A9			
Replaced by				
In connection with				
SI-Number	01 06 95 (963)			

2 344 011 Tool



Common		Used in step	61
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



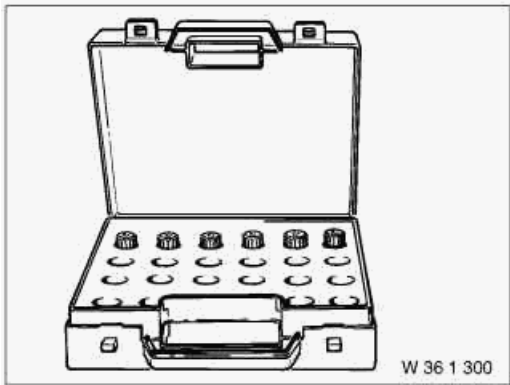
Common		Used in step	18
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259		
Included in the tool or work	0 492 518		
Storage location			
Replaced by			
In connection with			
SI-Number			

0 495 224 (36 1 326) Wheel stud



Common		Used in step	18
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	18
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	18
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	18
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	18
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342		
Included in the tool or work	0 492 518		
Storage location			
Replaced by			
In connection with			
SI-Number			

0 495 229 (36 1 332) Wheel stud



Common		Used in step	18
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	18
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

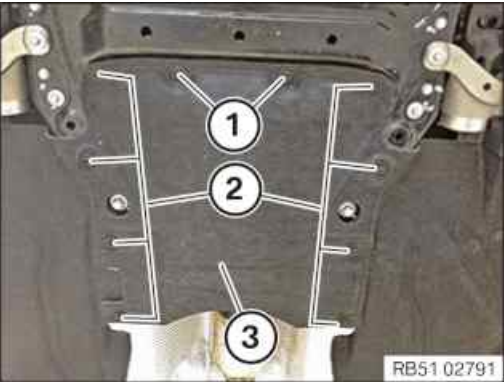
Links

General repair instructions	Used in step
61 20 ... Notes on AGM battery	3 73
61 12 ... Notes on intelligent battery sensor (IBS)	3 73
61 00 ... Notes for disconnecting and connecting battery	3 73
41 00 ... Notes on repairing threads	
Repair instructions	Used in step
61 35 ... Notes on ESD protection (Electro Static Discharge)	12 31 32 34 35 36 37 38
00 ... Raising the vehicle using a vehicle hoist	
Operating materials	Used in step
2.0 Grease for wheel centring	61

18 31 130 Removing and installing/replacing metering unit

PRELIMINARY WORK

1 – If installed: Removing rear underbody protection



- Loosen screws (1) and (2).
- Remove underbody protection (3).

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.



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.



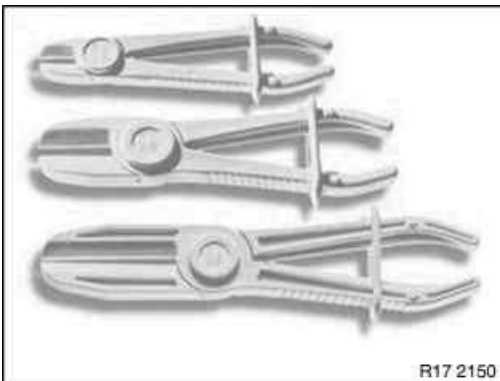
TECHNICAL INFORMATION

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

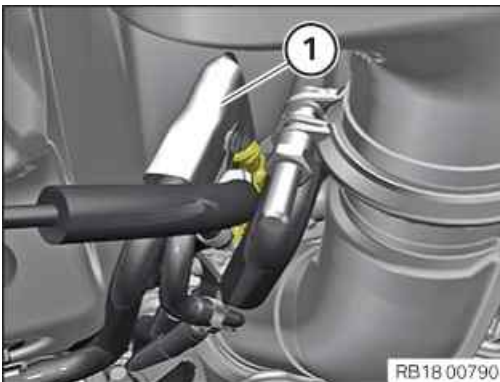


TECHNICAL INFORMATION

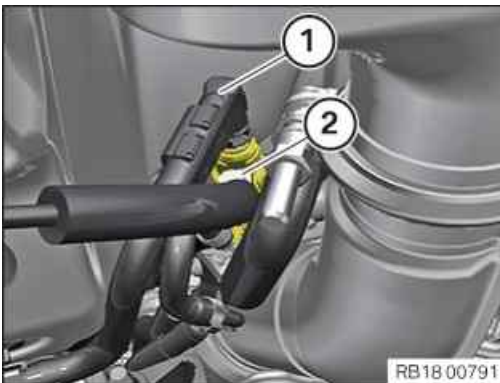
Do not unintentionally swap the coolant hoses and coolant lines. If necessary, mark before removal.



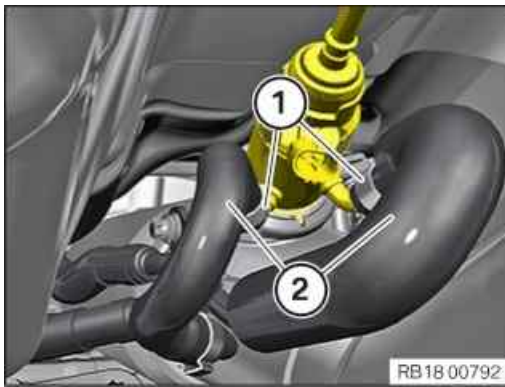
- Use commercially available pinch-off tools to pinch off the coolant hoses.



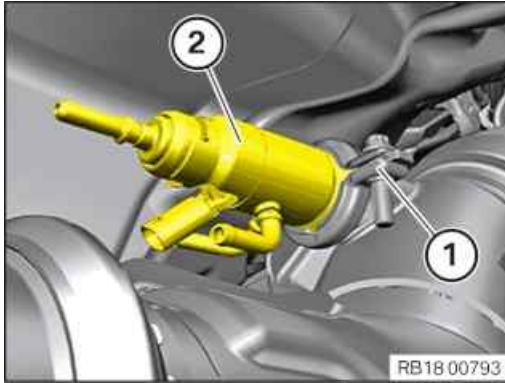
- Guide the heat protection cap (1) out and remove.



- 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 and disconnect the metering line (1).
- Unlock and disconnect connector (2).

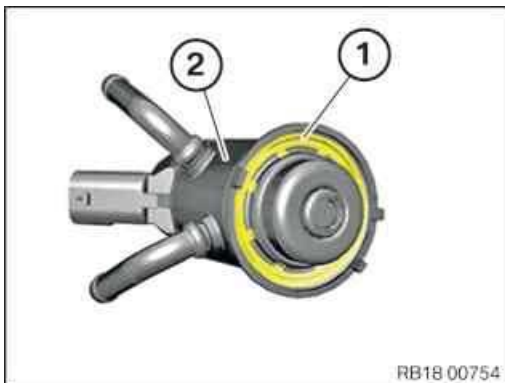


- Loosen clamps (1).
- Disconnect coolant lines (2).



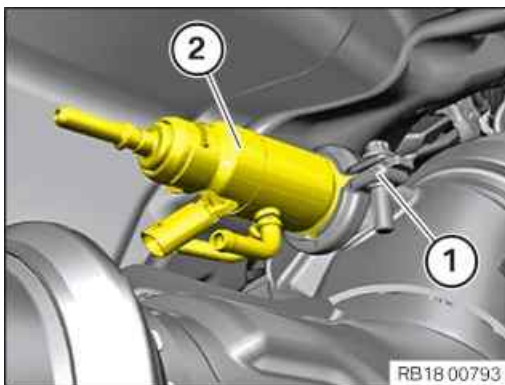
- Loosen V-band clamp (1).
- Guide out and remove the SCR metering module (2).

3 – Install the SCR metering module



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

Parts: Sealing ring

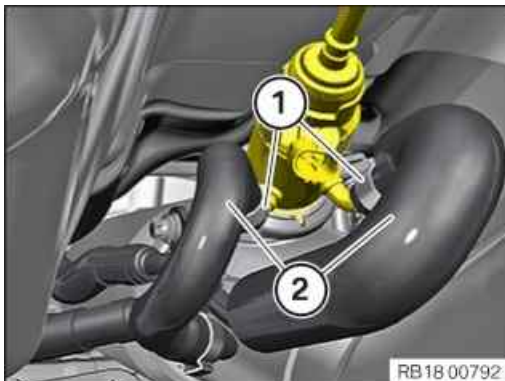


- Insert and install the SCR metering module (2).
- Renew the V-clip (1).
- Tighten V-band clamp (1).

Parts: V-band clamp

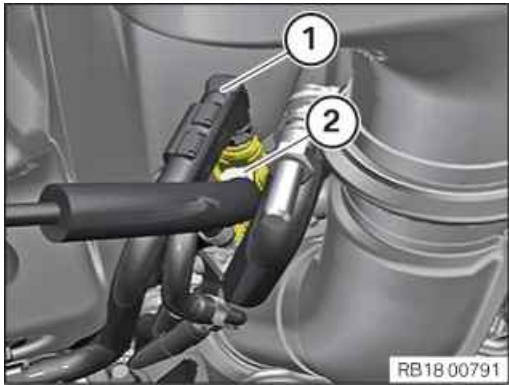
SCR metering module V-clip to exhaust system

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

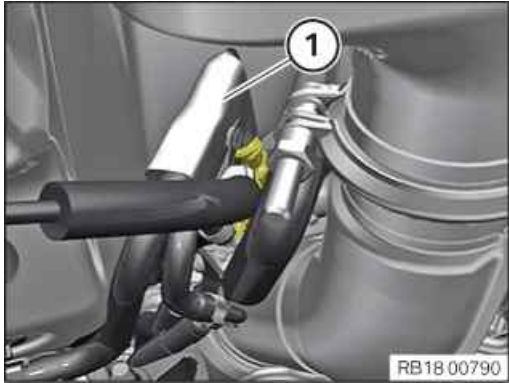


- Connect the coolant lines (2).
- Renew the clamps (1).
- Fasten the clamps (1).

Parts: Clamps



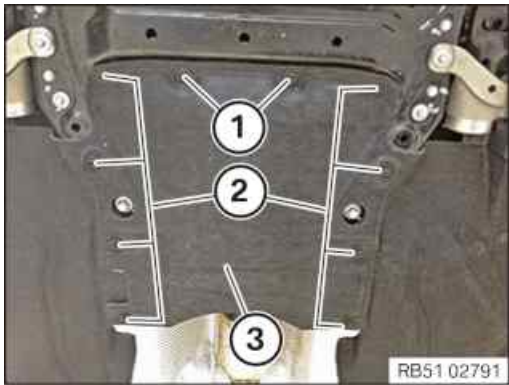
- Connect connectors (2) and lock.
The connector (2) must engage audibly.
- Connect and lock the metering line (1).
Metering line (1) must engage audibly.



- Insert and install the heat protection cap (1).

POSTPROCESSES

4 – If installed: Installing underbody protection at rear



- Install the underbody protection (3).
- Tighten down screws (1) and (2).

Underbody protection to body

Screw		Tightening torque	3 Nm
-------	--	-------------------	------

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
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Underbody protection to body Used in step 4

Screw		Tightening torque	3 Nm
-------	--	-------------------	------

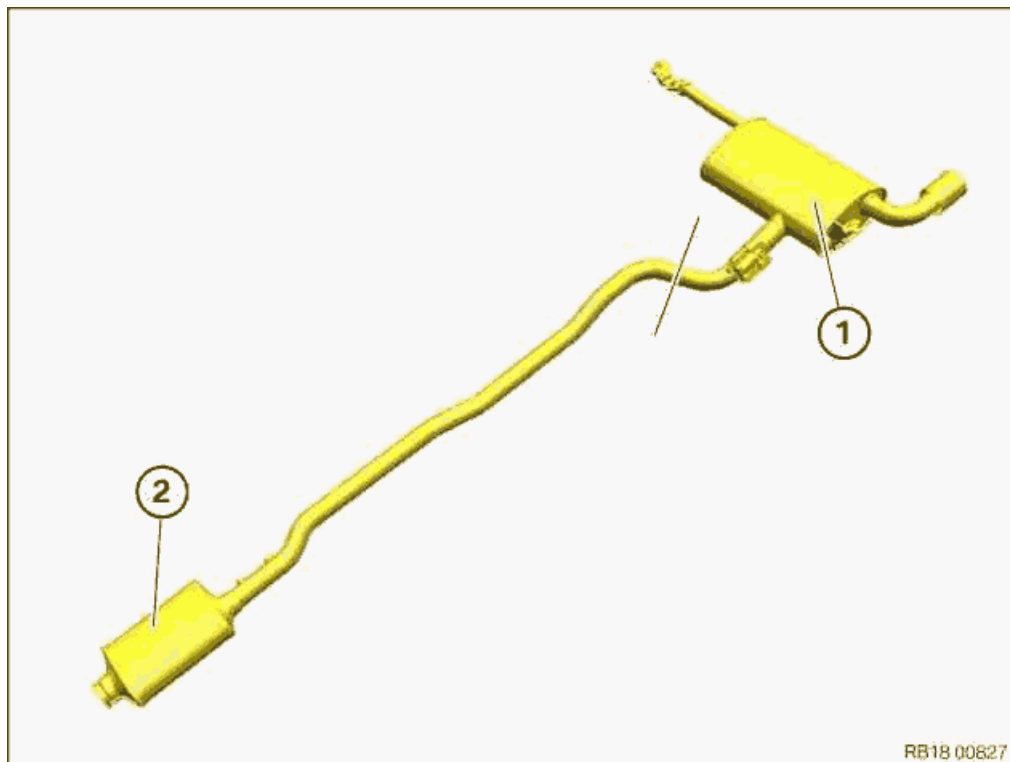
Links

Repair instructions Used in step

17 00 ... Instructions for repair work on cooling system	2
--	---

18 31 170 Removing and installing/replacing the exhaust pipe with the catalytic converter

Replacing the exhaust pipe including catalytic converter



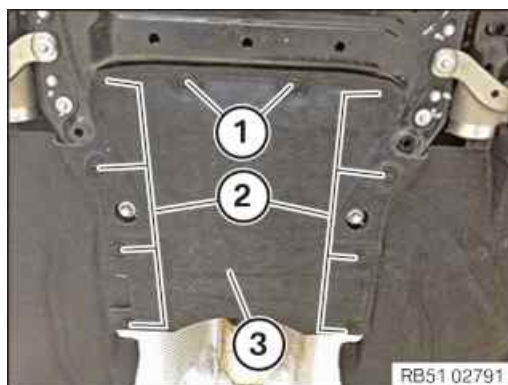
1 Rear silencer

2 SCR catalytic converter

RB18 00827

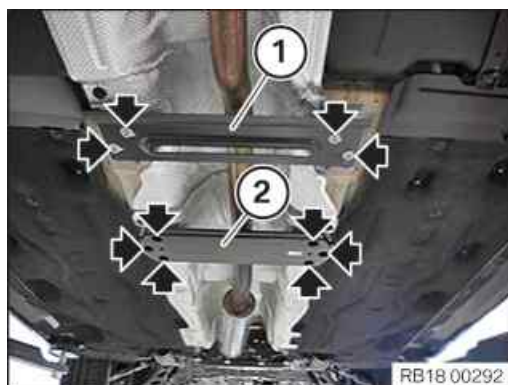
PRELIMINARY WORK

1 – If installed: Removing rear underbody protection



- Loosen screws (1) and (2).
- Remove underbody protection (3).

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



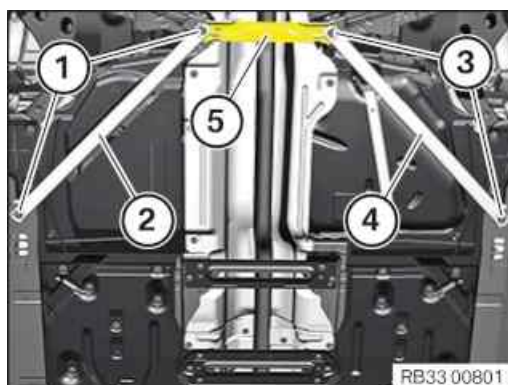
- Unscrew the bolts (arrows) from the connecting support (1).
- Feed out and remove the crossbeam (1).
- Unscrew the bolts (arrows) from the connecting support (2).
- Feed out and remove the crossbeam (2).

3 – Remove the cross strut with the torsion strut



TECHNICAL INFORMATION

Driving without a torsion strut is not permitted.



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

MAIN WORK

4 – Removing the exhaust pipe with the 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.

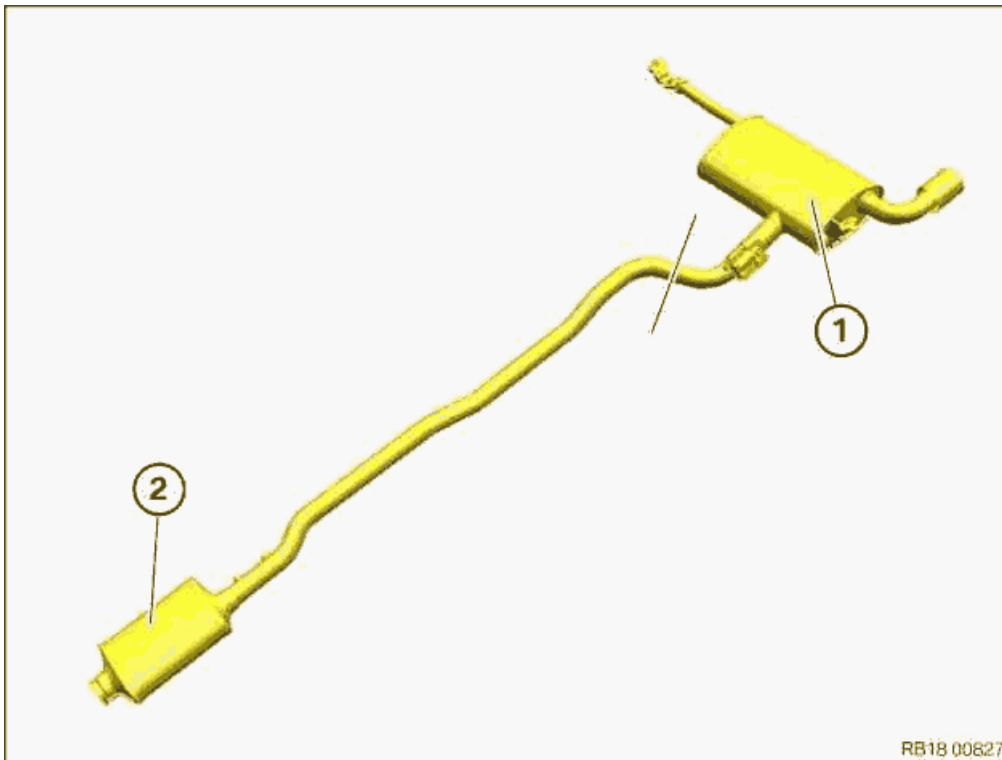
Danger of injury!



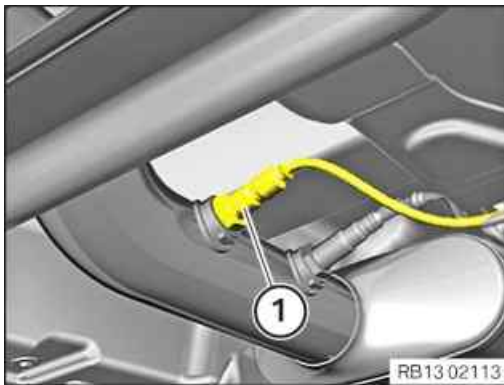
- Conduct all work in appropriate personal protective equipment only.



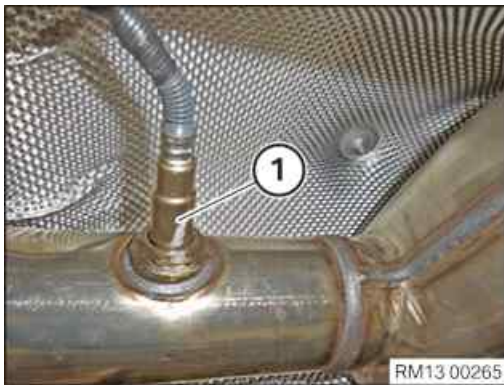
- Wear safety goggles and protective gloves.



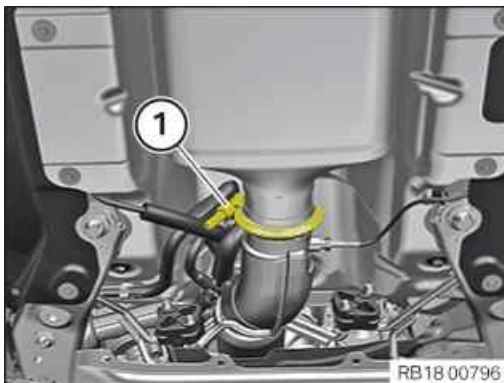
- If the separation point is not marked by a punch mark in the pipe, determine the separation point by means of the pipe length on the new component.
- Transfer the separation point to the component to be replaced and mark.
- Cut through the component to be replaced at the marked point with a suitable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



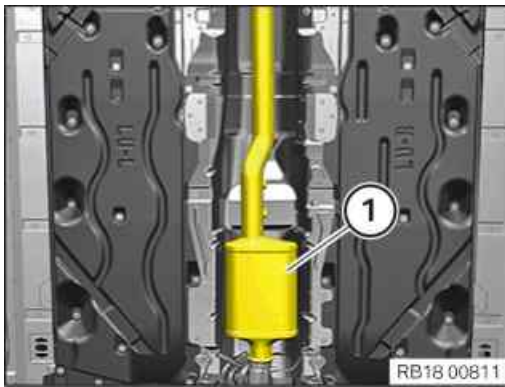
- Release the nitrogen oxide sensor (1) downstream of the SCR catalytic converter, guide it out and set it aside.



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



- Loosen V-band clamp (1).



- Guide out the exhaust pipe on the catalytic converter (1) with the assistance of a second person and remove it.

5 – Installing the exhaust pipe with the catalytic converter



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.

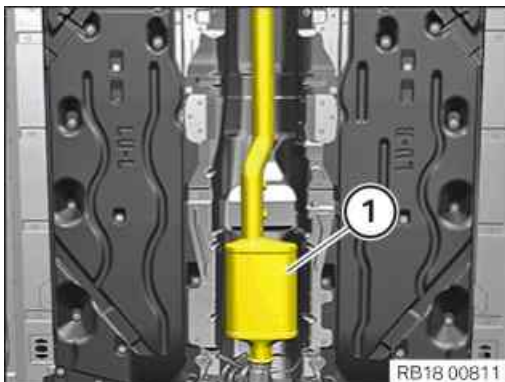


CAUTION

Heavy component.

Heavy components can lead to injury or damage.

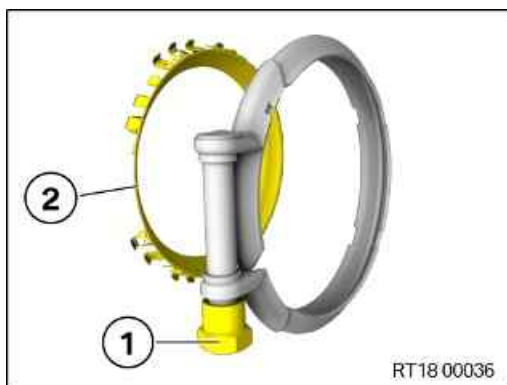
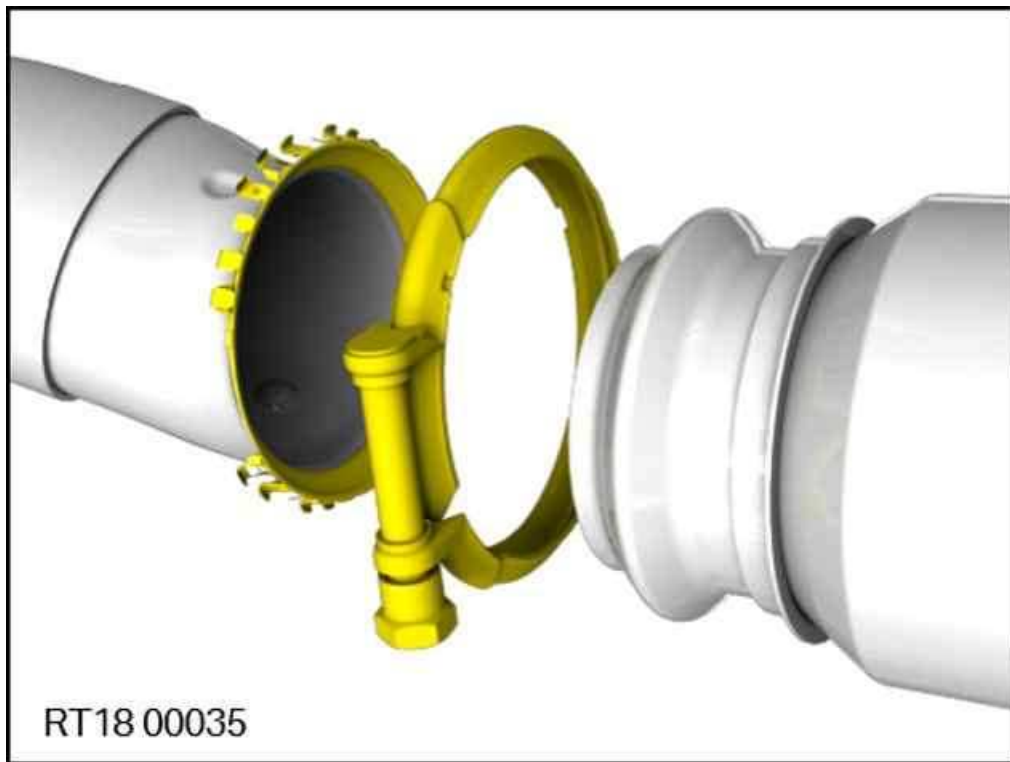
- Remove and install heavy components with the aid of another person/other persons.



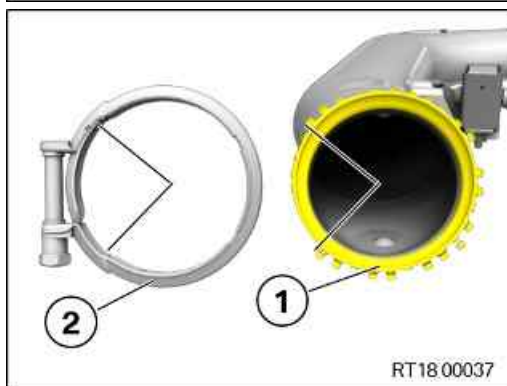
- Insert and install the exhaust pipe on the catalytic converter (1) with the assistance of a second person.

► Install the V-clip

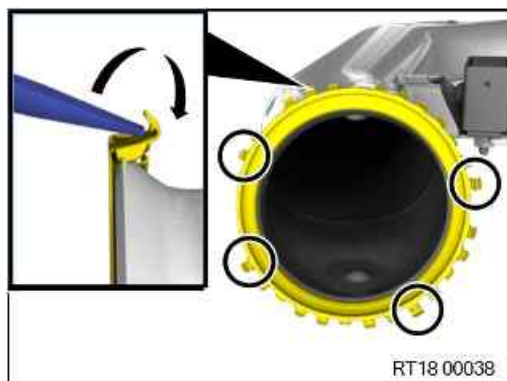
V-band clamp



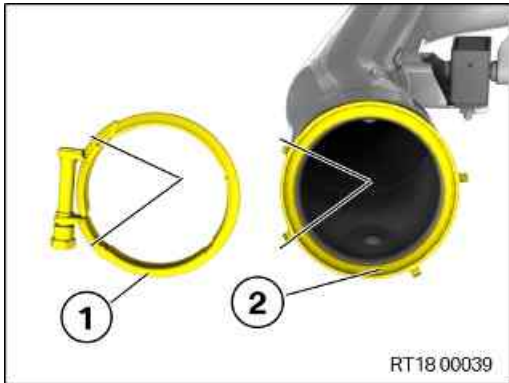
- Unscrew the nut (1) and remove the sealing ring (2).



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



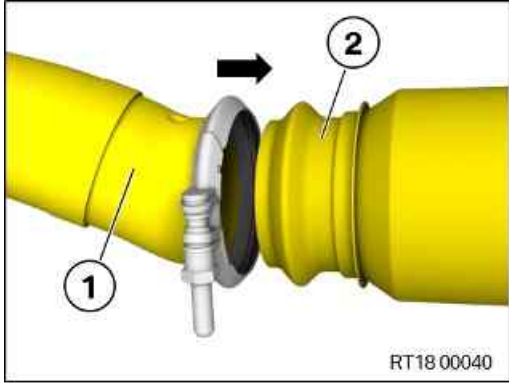
- Bend all sheet metal tabs over with a suitable tool, except those in the marked areas.



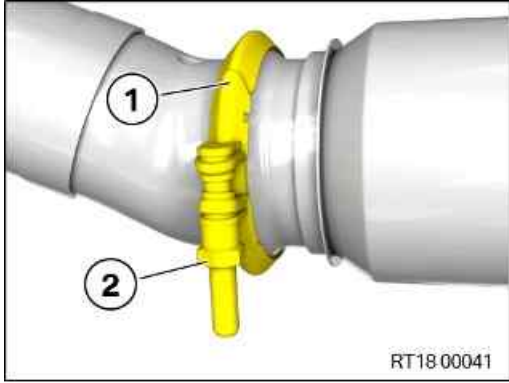
- Mount the V-clip (1) on the sealing ring (2).
- Make sure that the V-clip (1) is positioned correctly on the sealing ring (2).



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



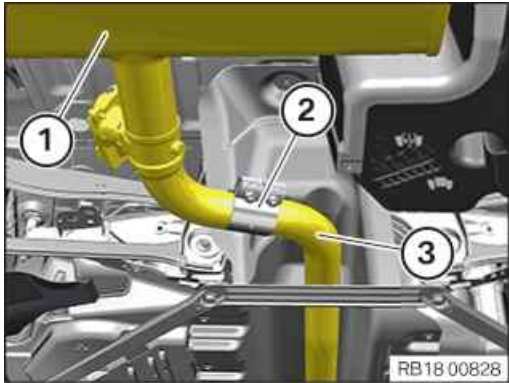
- Connect the exhaust system (1) with the catalytic converter (2) and position correctly.



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

V-clip to catalytic converter

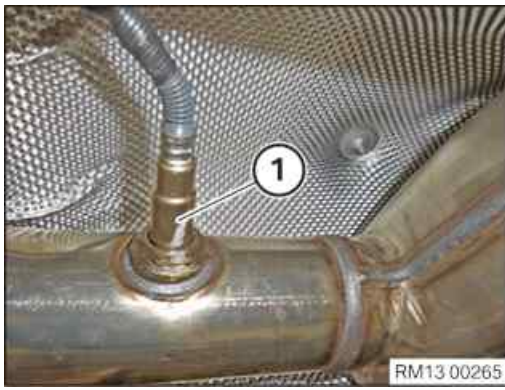
V-band clamp	Renew V-band clamp.	Tightening torque	22 Nm
--------------	---------------------	-------------------	-------



- Connect new exhaust pipe with catalytic converter (3) using clamp (2) with the rear silencer (1).
- Centre and tighten clamp (2).

Clamp with partial replacement of exhaust system

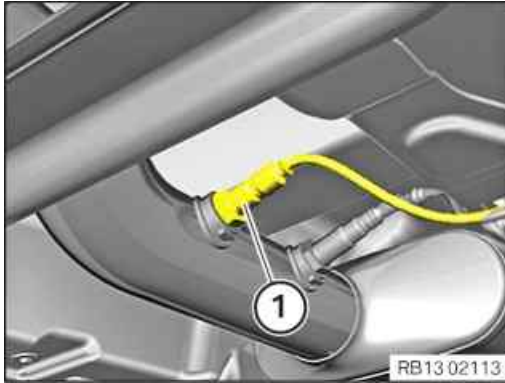
Clamp		Tightening torque	45 Nm
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- Feed in and install diesel particulate sensor (1), tighten.

Diesel particulate sensor to exhaust system

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



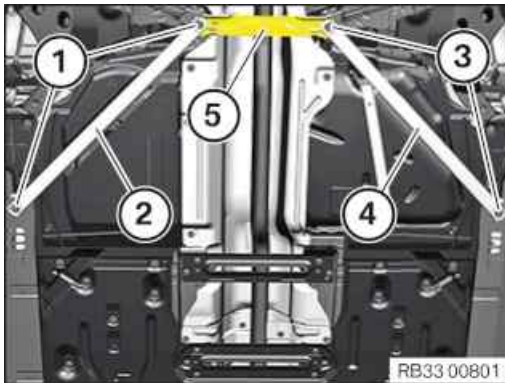
- Feed in, install and tighten the nitrogen oxide sensor (1).

Nitrogen oxide sensor downstream of SCR catalytic converter

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

POSTPROCESSES

6 – Install the cross-member with torsion struts



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

Parts: Bolts

- Tighten down screws (3).

Cross-member/torsion strut to axle support and mounting

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

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

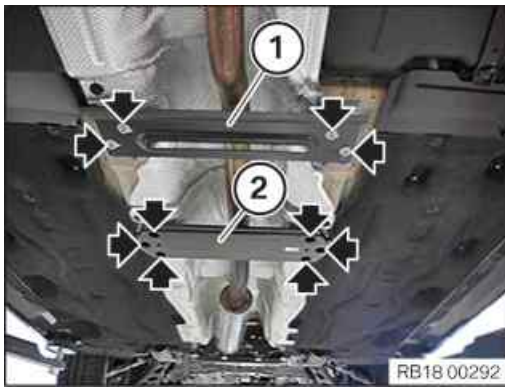
Parts: Bolts

- Tighten the screws (1).

Cross-member/torsion strut to axle support and mounting

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

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



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

Front connection carrier to body

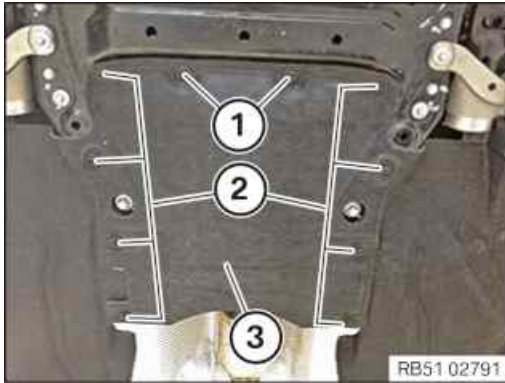
M10x18		Tightening torque	56 Nm
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- Insert and install connecting supports (1).
- Tighten the screws (arrows) from the connecting support (1).

Rear connection carrier to body

M8x18		Tightening torque	28 Nm
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8 – If installed: Installing underbody protection at rear



- Install the underbody protection (3).
- Tighten down screws (1) and (2).

Underbody protection to body

Screw		Tightening torque	3 Nm
-------	--	-------------------	------

Additional Information

Overview of Tightening Torques

V-clip to catalytic converter

Used in step 5

V-band clamp	Renew V-band clamp.	Tightening torque	22 Nm
--------------	---------------------	-------------------	-------

Clamp with partial replacement of exhaust system

Used in step 5

Clamp		Tightening torque	45 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	50 Nm
--------	--	-------------------	-------

Cross-member/torsion strut to axle support and mounting

Used in step 6

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

Front connection carrier to body

Used in step 7

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

Rear connection carrier to body

Used in step 7

M8x18		Tightening torque	28 Nm
-------	--	-------------------	-------

Underbody protection to body

Used in step 8

Screw		Tightening torque	3 Nm
-------	--	-------------------	------

18 31 661 Rep. exhaust gas restric flap servomotor

1 – Remove the servomotor for the exhaust gas restriction flap



WARNING

Hot surfaces.

Risk of burning!

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



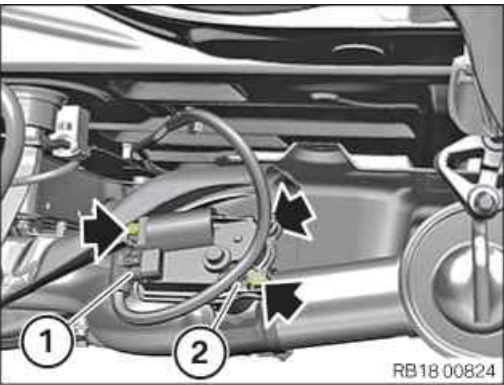
RISK OF DAMAGE



Electrostatic discharge.

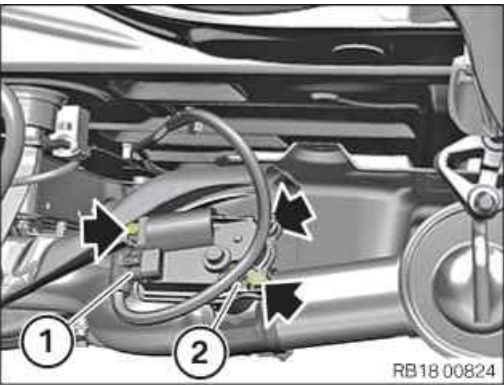
Damage to or destruction of electrical components.

- 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 Information on electrostatic discharge (ESD) protection.



- Unlock and loosen connector (1).
- Loosen clamp (2).
- Remove screws (arrows).
- Guide out and remove the servomotor for the exhaust gas restriction flap.

2 – Install the servomotor for the exhaust gas restriction flap



- Insert and install the servomotor for the exhaust gas restriction flap.
- Ensure correct installation position of the servomotor.
- Tighten screws (arrows).

Exhaust gas restriction flap servomotor

Hexagon screw M6	Renew screws.	Tightening torque	8 Nm
---------------------	---------------	-------------------	------

- Secure clamps (2).
 - Connect and lock the connector (1).
- The connector (1) must engage audibly.

Additional Information

Overview of Tightening Torques

Exhaust gas restriction flap servomotor			Used in step
Hexagon screw M6	Renew screws.	Tightening torque	8 Nm

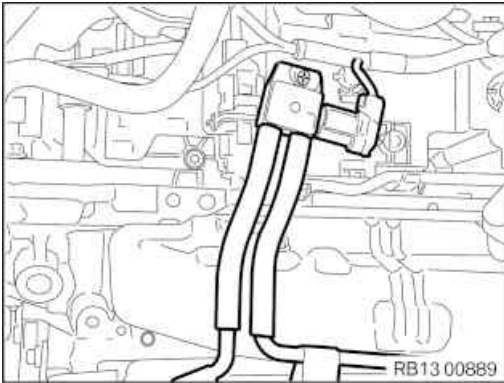
Links

Repair instructions	Used in step
61 35 ... Notes on ESD protection (Electro Static Discharge)	1

**Warning!**

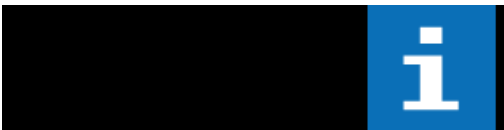
Risk of burning!

This repair work may only be carried out on an exhaust system which has cooled down.

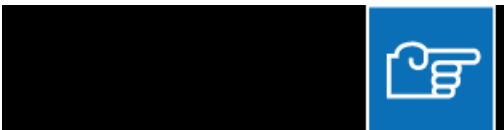
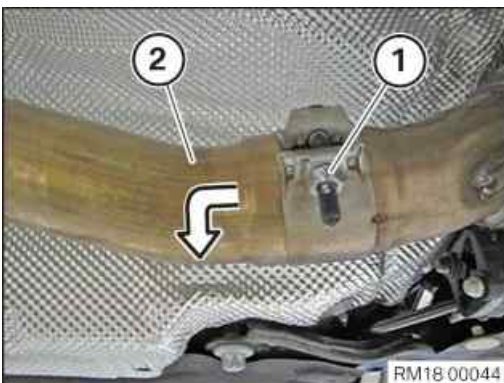
**Attention!**

The pressure hoses between the diesel particulate filter and the differential pressure sensor must be replaced when the diesel particulate filter or the differential pressure sensor is removed.

Note: Some engine versions have only one pressure hose.

**Necessary preliminary work:**

- Remove [oxygen sensor](#).
- Remove [monitoring sensor](#).
- Remove the [exhaust-gas temperature sensors](#).
- Remove [differential pressure sensor](#).
- Remove exhaust-gas recirculation cooler
- **Four-wheel drive vehicles only:**
Remove [propeller shaft](#).

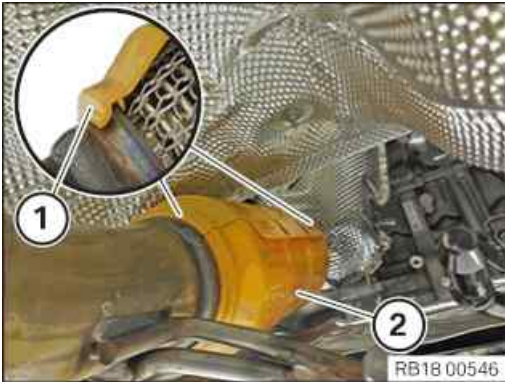
**Removal:**

Release clamp (1).

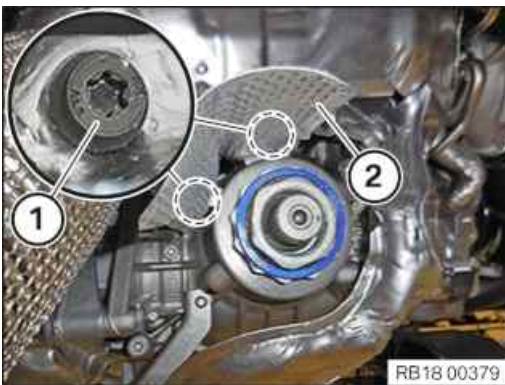
Release exhaust system (2) from diesel particulate filter.



Release rubber mount (1) from diesel particulate filter.



Mount assembly protection (2) before removing diesel particulate filter.
When mounting assembly protection, make sure that the assembly protection is correctly positioned at the edges (1) of the flexible tube.

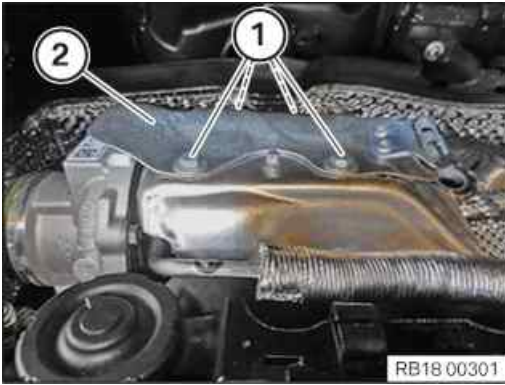


Four-wheel drive vehicles only:

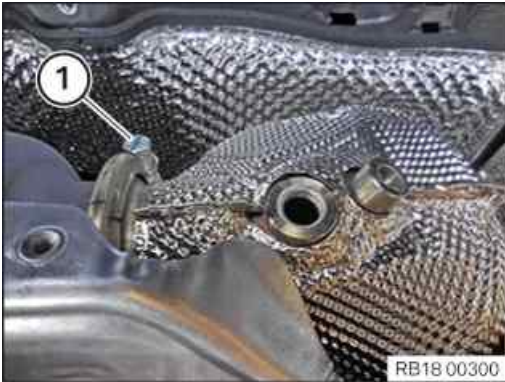
Release screws (1).
Remove heat shield (2).



Release screw (1) at bottom on crankcase.
Slacken nut (2).
Remove strut (3).
Unscrew nuts (4).



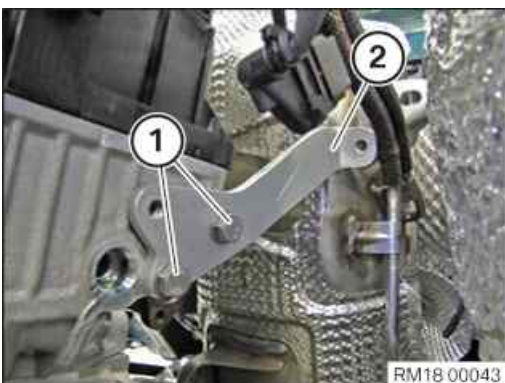
Loosen screws (1).
Remove heat shield (2).



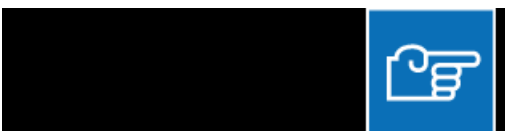
Release V-band clamp (1) between exhaust turbocharger and diesel particulate filter.



Release screw (1) on left of diesel particulate filter.



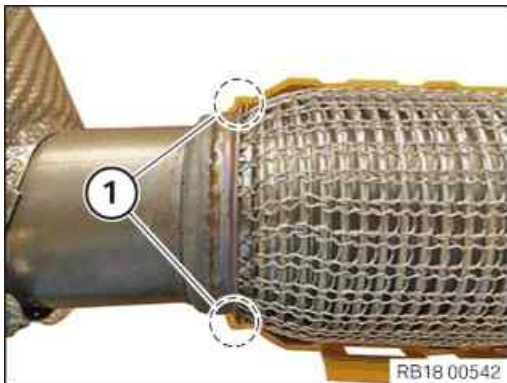
Release screws (1) and holder (2).
Feed out diesel particulate filter upwards and remove.



Installation:



Mount assembly protection (1) for the flexible tube before installing diesel particulate filter.



When mounting assembly protection, make sure that the assembly protection is correctly positioned at the edges (1) of the flexible tube.

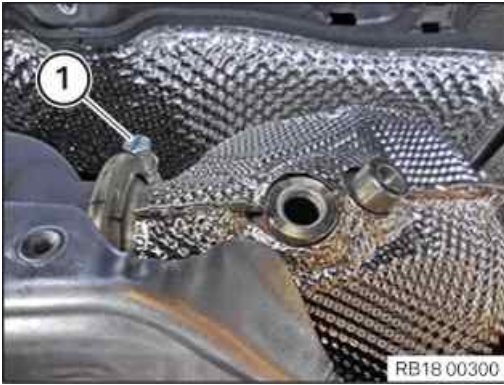


Install diesel particulate filter (1) with the assembly protection for the flexible tube.



Feed in diesel particulate filter (1) with the assembly protection for the flexible tube behind the cylinder head.

Dismount assembly protection for the flexible tube.



Install and position diesel particulate filter.

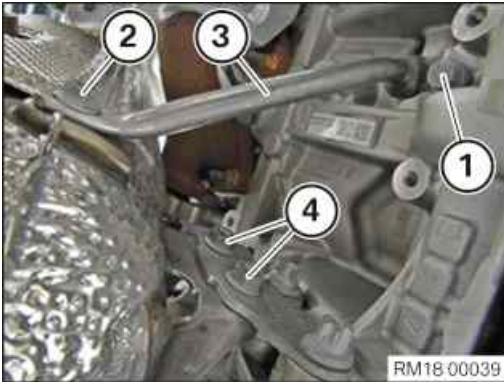
Replace V-band clamp and gasket.

Parts: V-band clamp and gasket.

Install V-band clamp and gasket.

Tighten V-band clamp.

Tightening torque [18 30 2AZ](#).



Install strut (3).

Tighten screw (1) on crankcase.

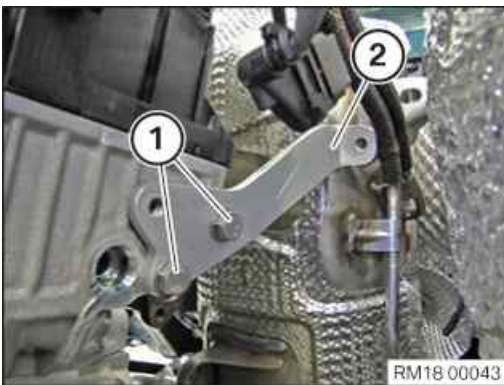
Tightening torque [18 30 4AZ](#).

Tighten nut (2).

Tightening torque [18 30 3AZ](#).

Tighten down nuts (4).

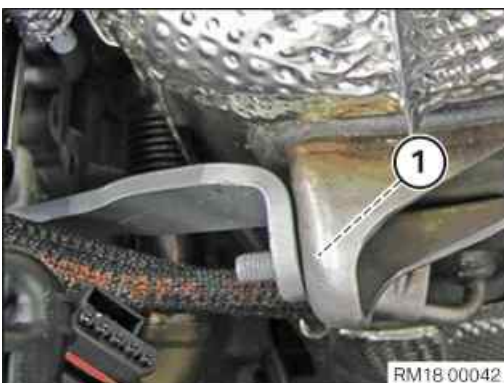
Tightening torque [18 30 3AZ](#).



Install holder (2).

Tighten down screws (1).

Tightening torque [18 30 4AZ](#).



Tighten screw (1) on left of diesel particulate filter.

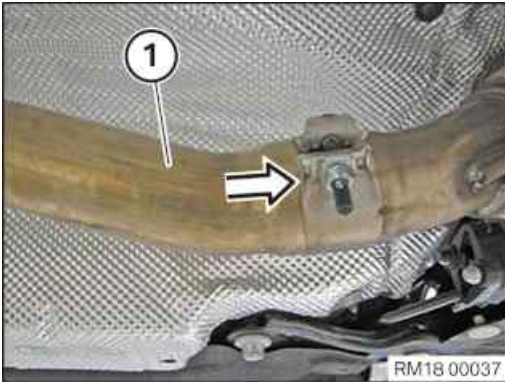
Tightening torque [18 30 3AZ](#).



Check rubber mounts for damage, replace damaged rubber mounts.

Parts: Rubber mount.

Slide on rubber mount (1) onto diesel particulate filter.



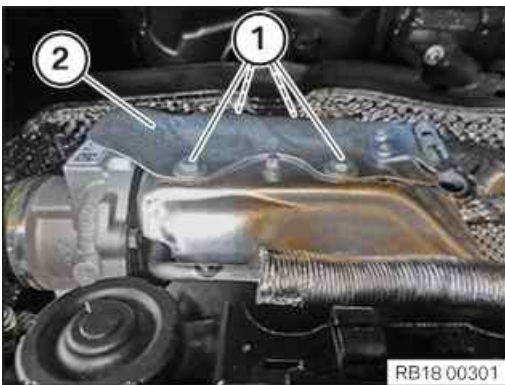
Connect exhaust system (2) to diesel particulate filter.

If necessary, renew clamp.

Parts: Clamp.

Tighten clamp (1).

Tightening torque [18 30 1AZ](#).



Install heat shield (2).

Tighten down screws (1).

Tightening torque [18 30 10AZ](#).



Four-wheel drive vehicles only:

Install heat shield (2).

Tighten down screws (1).

Tightening torque [18 30 11AZ](#).



Required reworking:

- Install [differential pressure sensor](#).
- Install [oxygen sensor](#).
- Install [monitoring sensor](#).
- Install [exhaust temperature sensors](#).
- Install [exhaust-gas recirculation cooler](#).
- **Four-wheel drive vehicles only:**
Remove [propeller shaft](#).

**Prerequisite:**

To carry out this repair work, the mechatronics technician must be trained in the use of welders.

Identify the part number of the diesel particulate filter fitted in the vehicle! The right replacement part can only be selected from the Electronic Parts Catalogue based on that number.

Additionally required:

- MAG (metal active gas) welder
- **Stainless steel welding wire** (European material number 1.4370)
(Wire cannot be obtained from the BMW dealer organisation)
- Mixed gas (82 % argon, 18 % carbon dioxide)

**Warning!****Risk of burning!**

Only perform this repair work on an engine that has cooled down.

**Necessary preliminary work:**

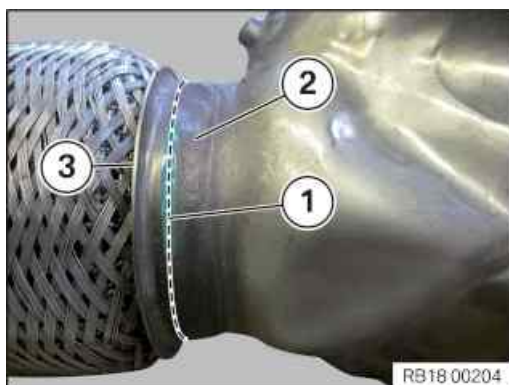
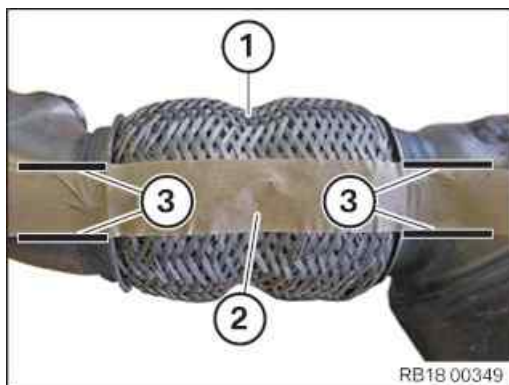
- Remove [diesel particulate filter](#)

Removing faulty flexible tube:**Note:**

Marks must be made to prevent changes to the installation position of the exhaust system.

Align (1) flexible tube and affix adhesive tape (2) as shown.

Carry over reference marks (3) along the adhesive tape (2) to diesel particulate filter and exhaust pipe.



Cut in marking (1) along the weld seam (2) by 2 to 3 mm.

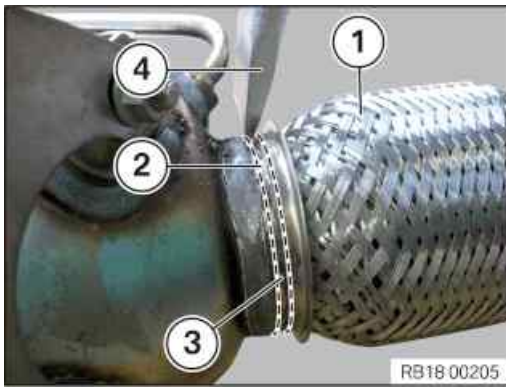
Attention!

Exclusively separate the outer shell.

Do not completely cut through flexible tube; inner pipe must remain intact.

Make sure that cut lines (1) are parallel to flexible tube edge (3).

Perform process in the same way at other end of flexible tube.



Cut uniformly all around until the flexible tube (1) can be disconnected from the weld seam (2) with a suitable tool (4).

Inner pipe (3) must stay on the weld seam (2).

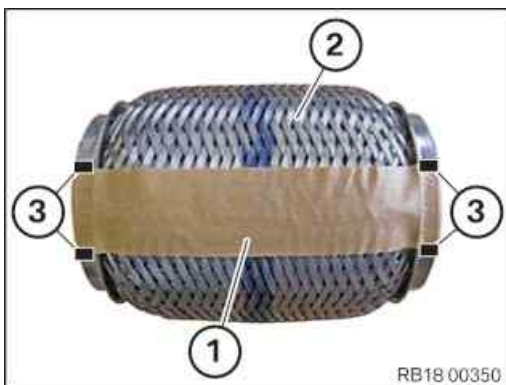
Perform process in the same way at other end of flexible tube.



Note:

Inner pipe (1) on diesel particulate filter must remain intact.

Inner pipe (2) on exhaust pipe must remain intact.

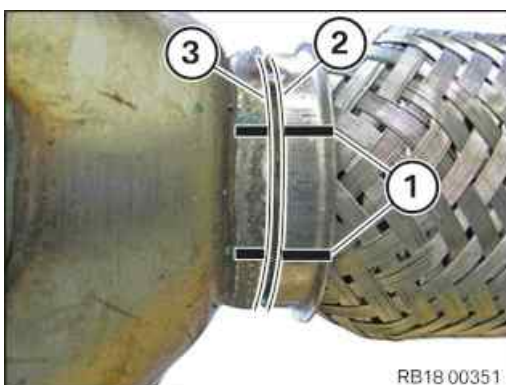


Installing new flexible tube:

Align adhesive tape (1) as shown and affix to new flexible tube (2).

Carry over reference marks (3) along the adhesive tape (1) to flexible tube.

Remove adhesive tape (1).



Connect new flexible tube to the inner pipe of the diesel particulate filter and align.

Note:

Marks (1) must be aligned.

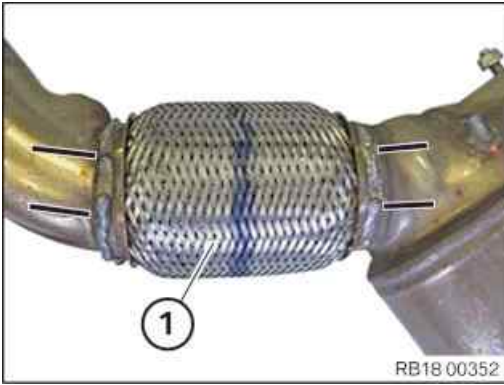
Make sure that flexible tube (2) is parallel to cutting edge (3).

Observe distance of approx. 1-2 mm between flexible tube (2) and weld seam (3).

Use stainless steel welding wire.

Attach flexible tube with several welding spots.

Procedure identical on the opposite side.



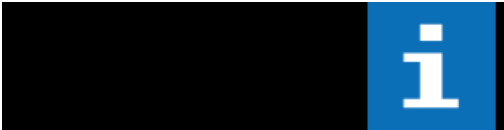
Note:

All layers of the connection must be welded completely.

Use stainless steel welding wire.

Align marks and staple three times on each side.

Weld flexible tube (1) all around on both sides.



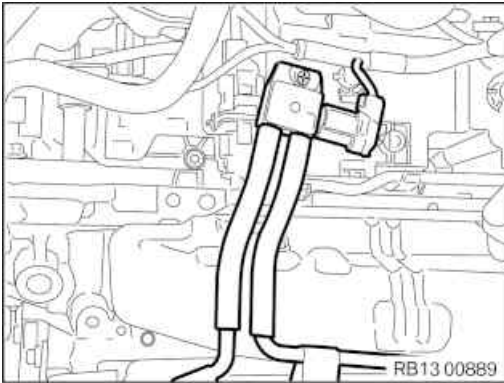
Required follow-up work:

- Install [diesel particulate filter](#)
- Check exhaust system for leaks.

**Warning!**

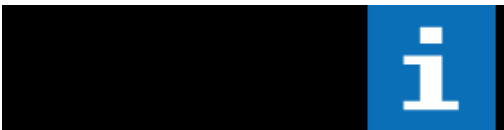
Risk of burning!

This repair work may only be carried out on an exhaust system which has cooled down.

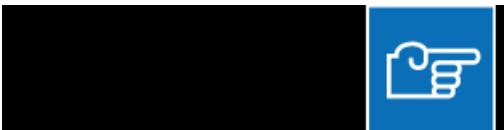
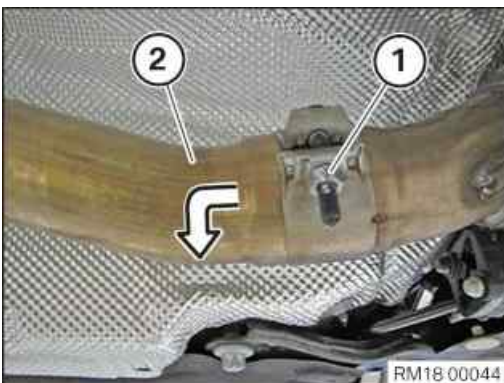
**Attention!**

The pressure hoses between the diesel particulate filter and the differential pressure sensor must be replaced when the diesel particulate filter or the differential pressure sensor is removed.

Note: Some engine versions have only one pressure hose.

**Necessary preliminary work:**

- Remove [oxygen sensor](#).
- Remove [monitoring sensor](#).
- Remove the [exhaust-gas temperature sensors](#).
- Remove [differential pressure sensor](#).
- Remove exhaust-gas recirculation cooler
- **Four-wheel drive vehicles only:**
Remove [propeller shaft](#).

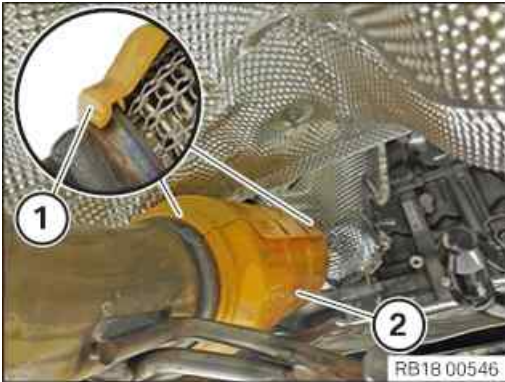
**Removal:**

Release clamp (1).

Release exhaust system (2) from diesel particulate filter.



Release rubber mount (1) from diesel particulate filter.



Mount assembly protection (2) before removing diesel particulate filter.
When mounting assembly protection, make sure that the assembly protection is correctly positioned at the edges (1) of the flexible tube.

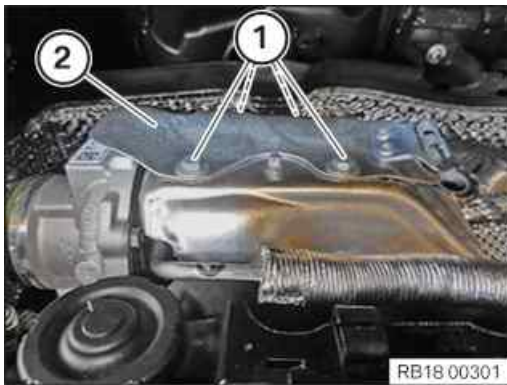


Four-wheel drive vehicles only:

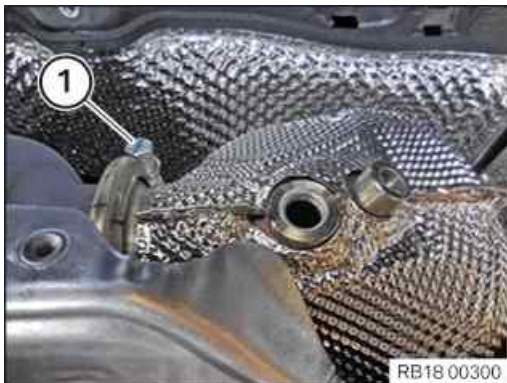
Release screws (1).
Remove heat shield (2).



Release screw (1) at bottom on crankcase.
Slacken nut (2).
Remove strut (3).
Unscrew nuts (4).



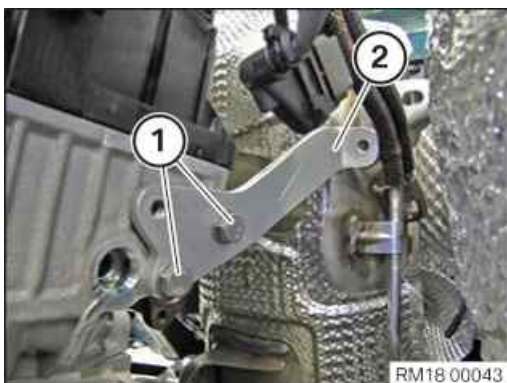
Loosen screws (1).
Remove heat shield (2).



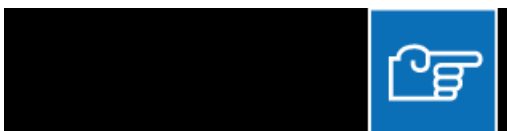
Release V-band clamp (1) between exhaust turbocharger and diesel particulate filter.



Release screw (1) on left of diesel particulate filter.



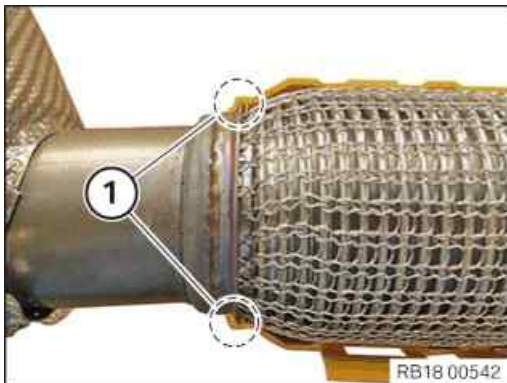
Release screws (1) and holder (2).
Feed out diesel particulate filter upwards and remove.



Installation:



Mount assembly protection (1) for the flexible tube before installing diesel particulate filter.



When mounting assembly protection, make sure that the assembly protection is correctly positioned at the edges (1) of the flexible tube.

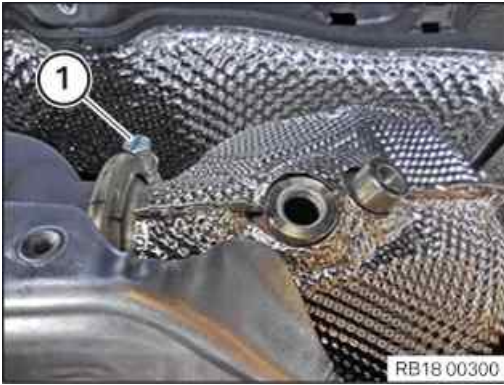


Install diesel particulate filter (1) with the assembly protection for the flexible tube.



Feed in diesel particulate filter (1) with the assembly protection for the flexible tube behind the cylinder head.

Dismount assembly protection for the flexible tube.



Install and position diesel particulate filter.

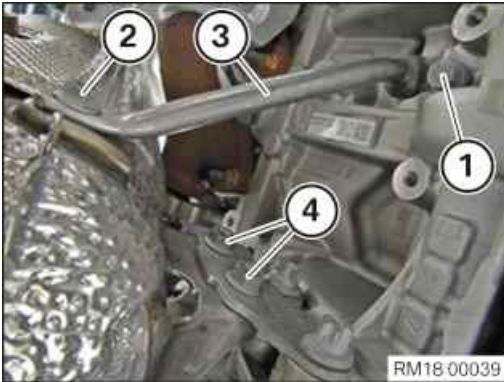
Replace V-band clamp and gasket.

Parts: V-band clamp and gasket.

Install V-band clamp and gasket.

Tighten V-band clamp.

Tightening torque [18 30 2AZ](#).



Install strut (3).

Tighten screw (1) on crankcase.

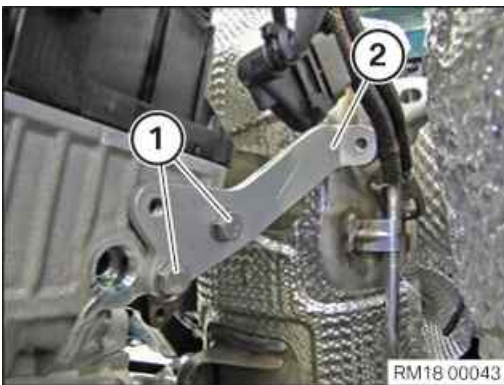
Tightening torque [18 30 4AZ](#).

Tighten nut (2).

Tightening torque [18 30 3AZ](#).

Tighten down nuts (4).

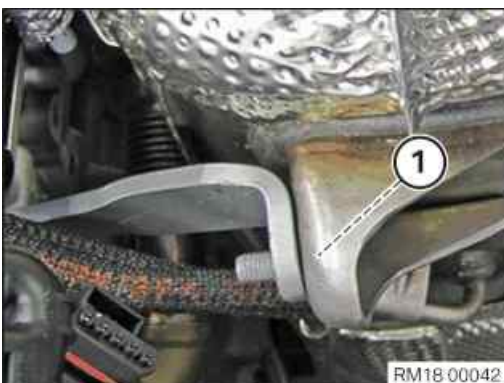
Tightening torque [18 30 3AZ](#).



Install holder (2).

Tighten down screws (1).

Tightening torque [18 30 4AZ](#).



Tighten screw (1) on left of diesel particulate filter.

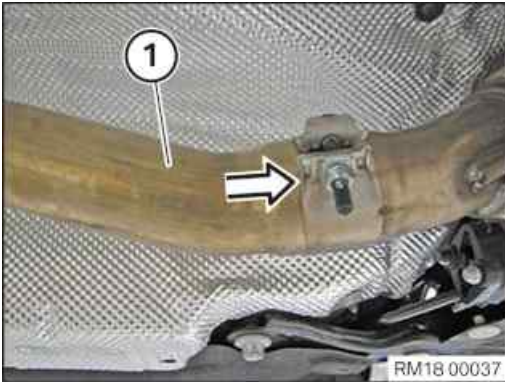
Tightening torque [18 30 3AZ](#).



Check rubber mounts for damage, replace damaged rubber mounts.

Parts: Rubber mount.

Slide on rubber mount (1) onto diesel particulate filter.



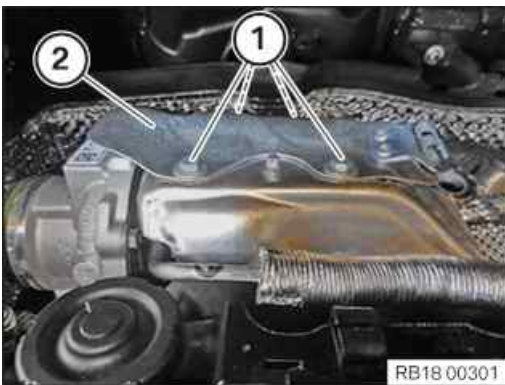
Connect exhaust system (2) to diesel particulate filter.

If necessary, renew clamp.

Parts: Clamp.

Tighten clamp (1).

Tightening torque [18 30 1AZ](#).



Install heat shield (2).

Tighten down screws (1).

Tightening torque [18 30 10AZ](#).



Four-wheel drive vehicles only:

Install heat shield (2).

Tighten down screws (1).

Tightening torque [18 30 11AZ](#).



Required reworking:

- Install [differential pressure sensor](#).
- Install [oxygen sensor](#).
- Install [monitoring sensor](#).
- Install [exhaust temperature sensors](#).
- Install [exhaust-gas recirculation cooler](#).
- **Four-wheel drive vehicles only:**
Remove [propeller shaft](#).

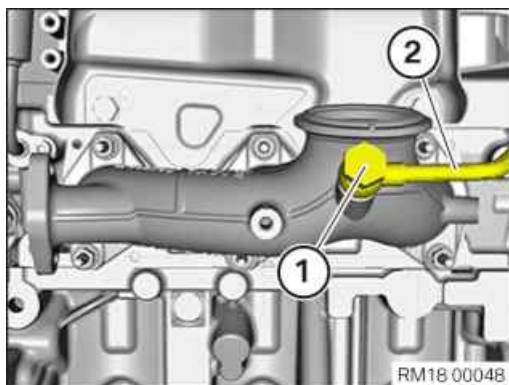
**Warning!**

Risk of burning!

Only perform this repair work on an engine that has cooled down.

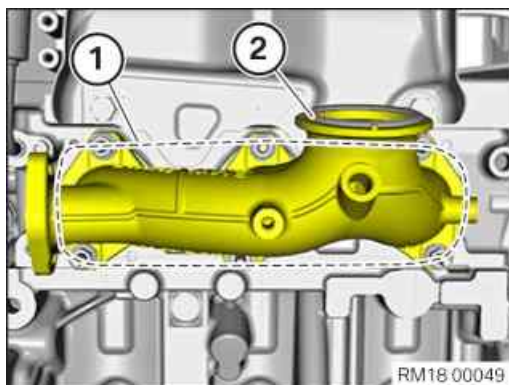
**Necessary preliminary tasks:**

- Remove [exhaust turbocharger](#).
- Remove [diesel particulate filter](#).

**Removal:**

Release banjo bolt (1).

Place exhaust pressure pipe (2) on one side.



Release nuts along dashed line (1).

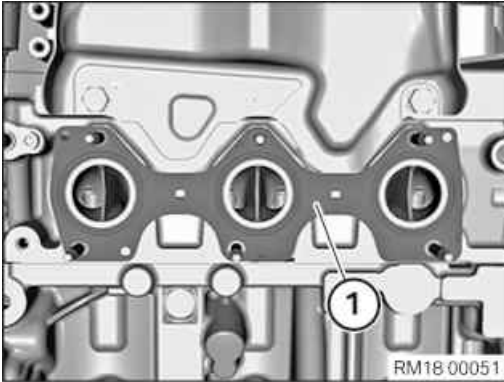
Release exhaust manifold (2) from cylinder head and remove.

**Preparation for installation:**

Clean connection points.



Installation:



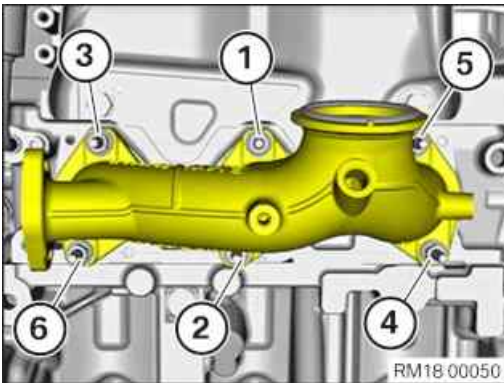
Replace gasket (1).

Part: Gasket

Important!

Gasket (1) is coated with graphite on one side.

The graphite coating must be fitted on the exhaust manifold side.

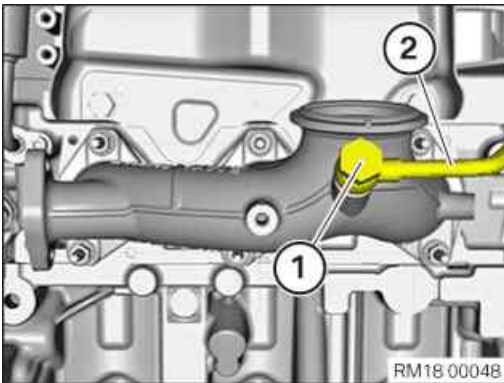


Mount exhaust manifold.

Position nuts and tighten in sequence.

Observe tightening specification!

Tightening torque [18 30 9AZ](#).



Renew sealing rings.

Parts: Sealing rings

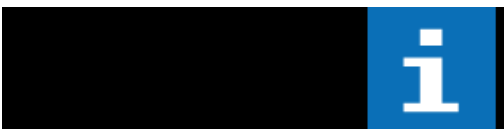
Important!

To ensure operational reliability, use stainless steel sealing washers.

Mount exhaust pressure pipe (2).

Tighten banjo bolt (1).

Tightening torque [18 30 8AZ](#).



Required follow-up work:

- Install [exhaust turbocharger](#).
- Install [diesel particulate filter](#).

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 Information on electrostatic discharge (ESD) protection.



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



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

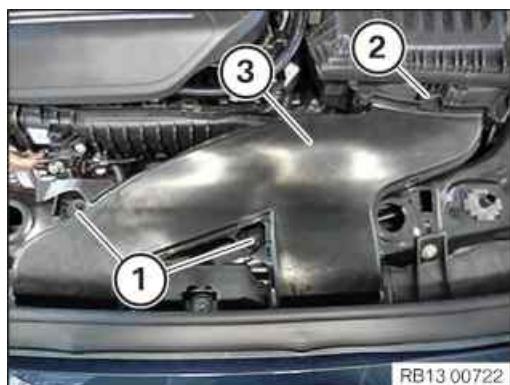
Maintain conditions of absolute cleanliness.

1 – Removing intake silencer housing



- Loosen the holder (1).
- Loosen screw (2).
- Unlock and loosen connector (3).
- Unfasten clamp (4).
- Pull out and remove the intake silencer housing (5) from the rubber mounts towards the top.

2 – Remove the intake neck for intake silencer housing



- Loosen nuts (1).
- Loosen the lock (2).
- Guide the intake neck (3) out and remove it.

3 – Remove vehicle battery



WARNING

Working on 12 V vehicle electrical system.

Risk of short circuits! Risk of fire!

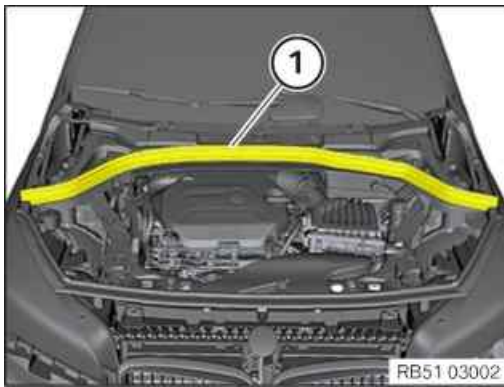
- Detach battery earth lead from battery.
- For additional batteries: Detach all battery earth leads from additional batteries.



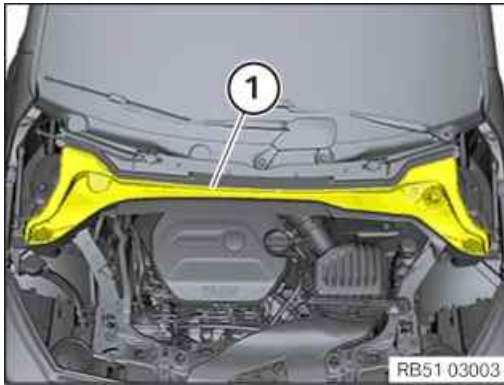
TECHNICAL INFORMATION

For additional information see:

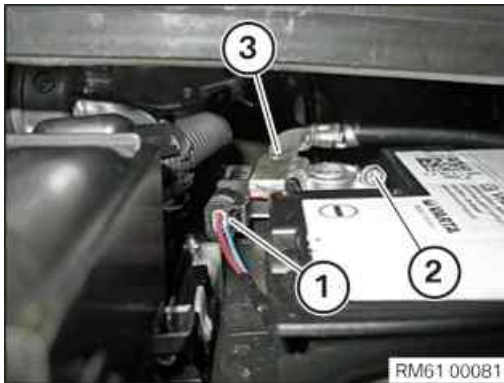
- 61 00 ... Safety information on handling the vehicle battery
- 61 00 / 12 00 ... Notes on disconnecting and connecting the vehicle battery
- 61 12 ... Notes on the intelligent battery sensor (IBS)



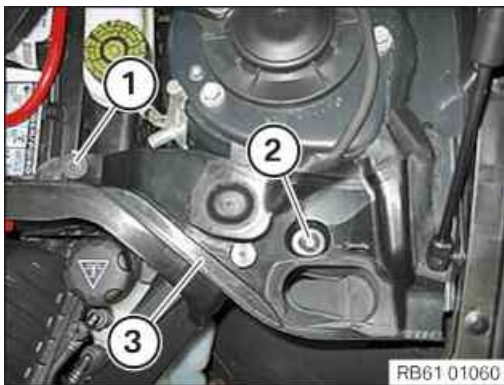
- pull off gasket (1) upwards.



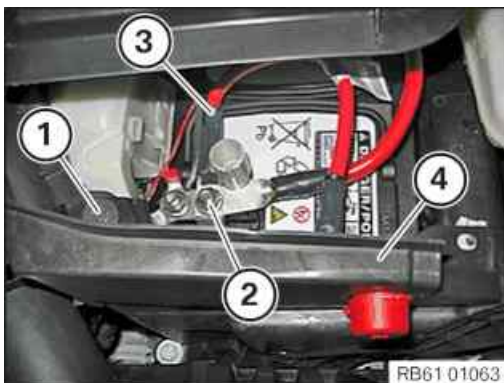
- Remove the cowl panel cover (1) to the top.



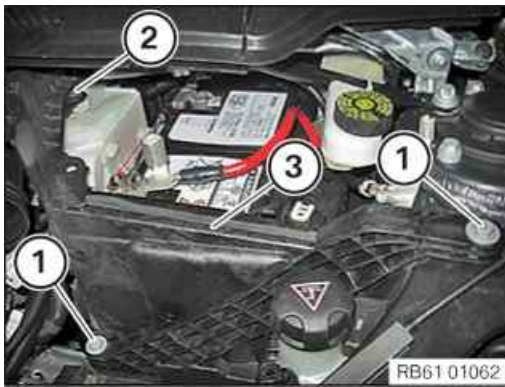
- Unlock and disconnect connector (1).
- Slacken nut (2).
- Disconnect the negative battery terminal (3).



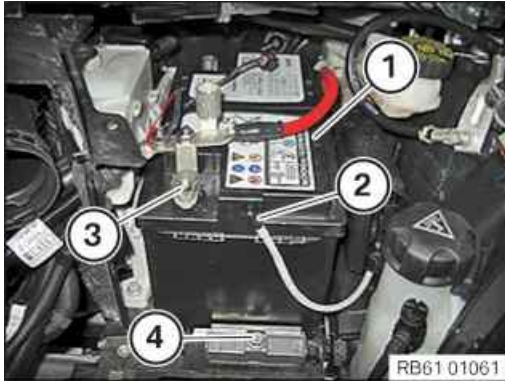
- Release the screw (1) and the expanding rivet (2).
- Remove the fixture for the gasket (3).



- Loosen screw (1).
- Unscrew the nut (2) and remove the positive battery cable (3) with the cover of the remote positive terminal (4).
- Tighten nuts (2) on the positive terminal hand-tight.



- Loosen screws (1).
- Unscrew the bolt (2) and guide the tension strut (3) out.



- Pull off the vent hose (2).
- Slacken the nut (3) on the positive terminal and remove the positive terminal.



WARNING

Unprotected battery terminals.

Risk of short circuits! Risk of fire!

- Cover the vehicle battery.

- Loosen the screw (4) and remove the holder.
- Remove vehicle battery (1).

4 – Remove left and right wiper arm



NOTICE

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

► Remove the wiper arm

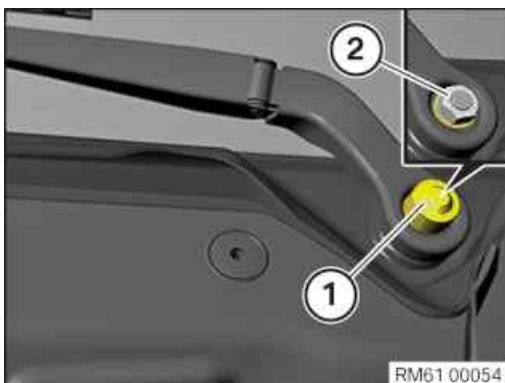


RISK OF DAMAGE

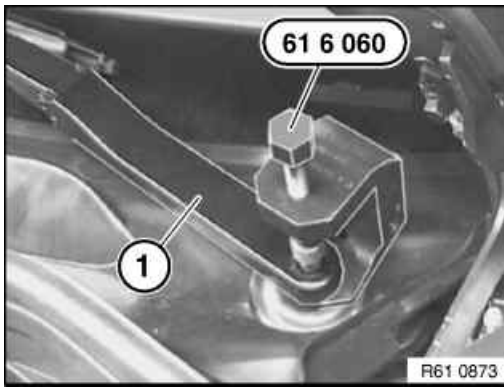
Damage to wiper console

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 lift off wiper arm, else the wiper console may break on the predetermined breaking point for the pedestrian protection.



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



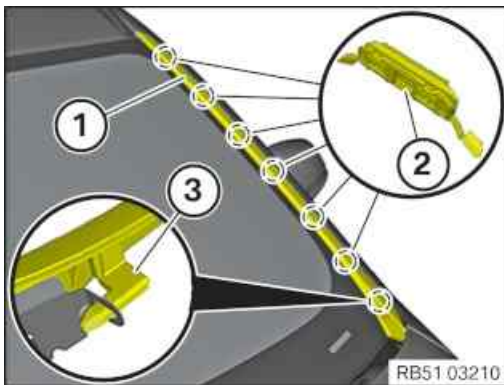
- Pull off the wiper arm (1) using special tool .

5 – Remove the gutter strip on the windscreen on the left and right



NOTICE

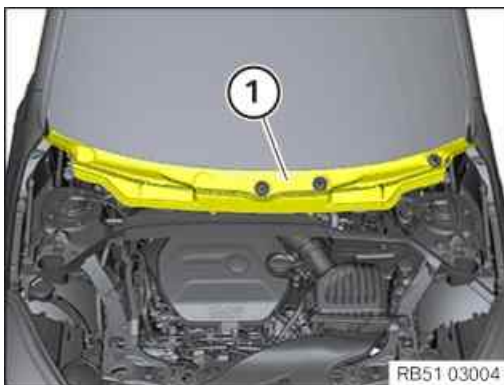
Description is for left component only. Procedure on the right side is identical.



► Remove the gutter strip on the windscreen

- Unclip the gutter strip (1) from the clips (2) beginning at the roof to the top.
- Feed the gutter strip (1) out of the guide (3).

6 – Remove the rear cowl panel cover

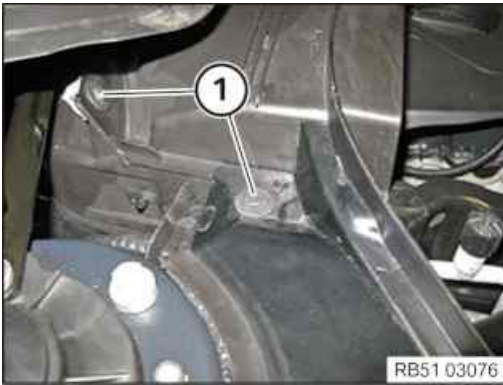


- Disengage and guide out the rear cowl panel cover (1) towards the top.

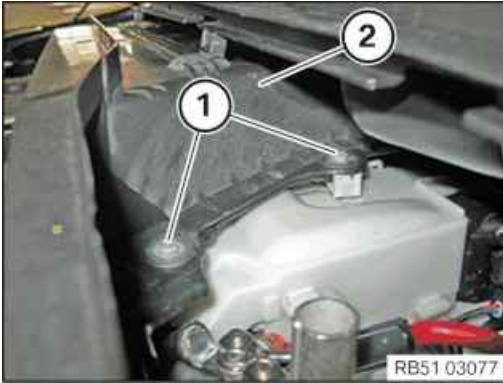
7 – Removing the upper bulkhead cover



- Loosen screws (1).



- Loosen screws (1).



- Loosen screws (1).
- Feed out and remove the upper bulkhead cover (2).

8 – Removing the acoustic cover



WARNING

Hot surfaces.

Risk of burning!

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



RISK OF DAMAGE

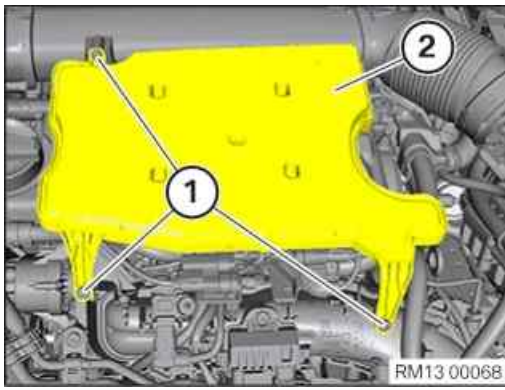
Damage to the acoustic cover.

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

- Disassemble or mount the acoustic cover carefully.
- Disassemble or mount snap-lock couplings of the ball pivots one after the other.
- Disassemble or mount acoustic cover only at temperatures $>20\text{ }^{\circ}\text{C}$.
- Use only distilled water as an auxiliary material during installation, no lubricants.

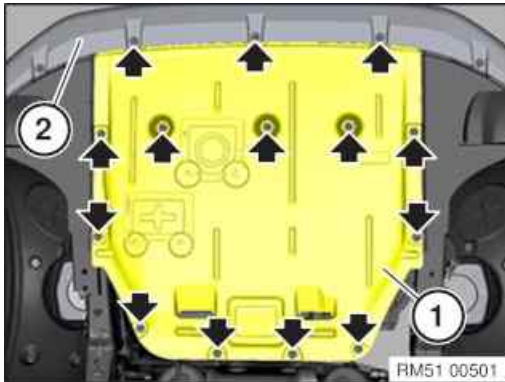
- Unclip the acoustic cover from the marked areas towards the top.

9 – Remove resonator



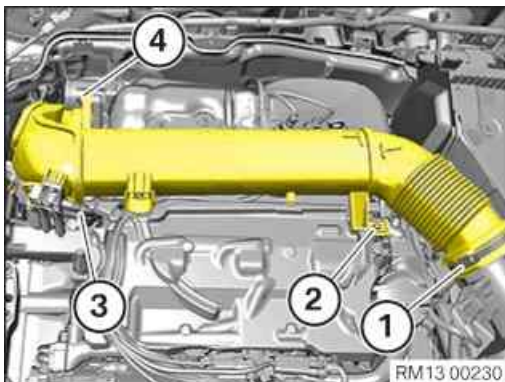
- Loosen screws (1).
- Guide out and remove the resonator (2).

10 – Removing the front underbody protection

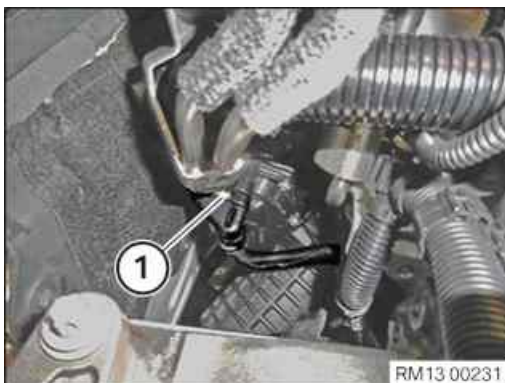


- Remove screws (arrows).
- Pull out and remove front underbody protection (1) under the bumper panel (2).

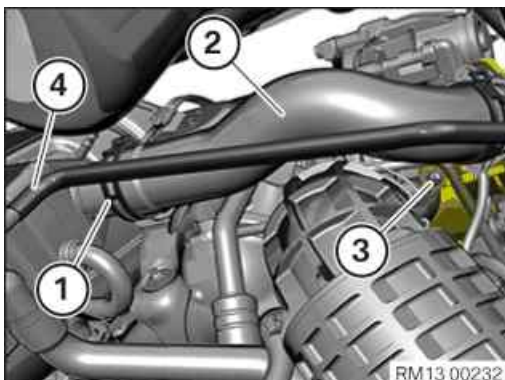
11 – Removing clean air pipe



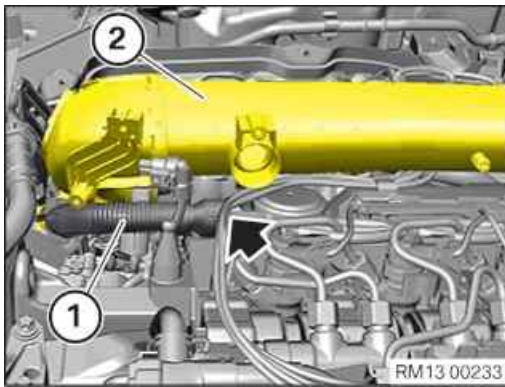
- Release the screw clamp (1).
- Loosen screw (2).
- Unlock and loosen connector (3).
- Loosen screw (4).



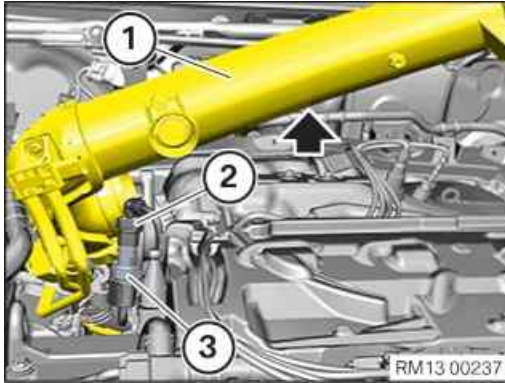
- Unlock and loosen connector (1).



- Unfasten clamp (1).
- Feed out pressure hose (2) and set it aside.
- Loosen screw (3).
- Pull off pressure hose (4) and set it aside.



- Detach ventilation line (1) from clean air pipe (2) and set it aside.
- Detach ventilation line (1) from cylinder head cover (arrow).
- Remove the ventilation line (1).



- Thread out clean air pipe (1) upwards in direction of arrow and set it aside.
- Unlock and loosen connector (2).
- Detach exhaust gas pressure sensor (3).
- Guide out and remove the exhaust gas pressure sensor (3).
- Feed out clean air pipe and remove (1).

12 – Remove electronics box

Prerequisite

Battery earth lead is disconnected.



RISK OF DAMAGE



Electrostatic discharge.

Damage to or destruction of electrical components.

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



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.

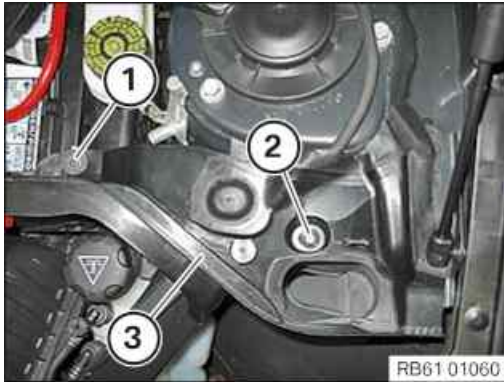


TECHNICAL INFORMATION

Follow instructions for removing and installing control units.

For additional information see: 12 00 ... Notes on removal and installation of control units

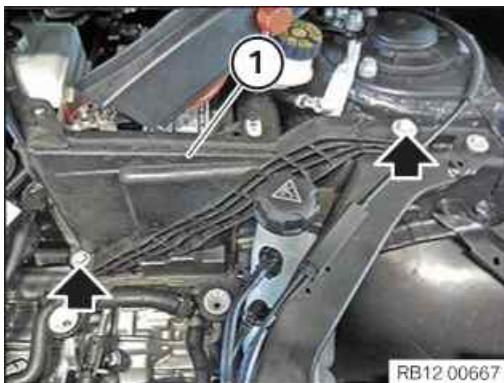
Disconnecting control units may cause fault code entries and functional limitations. Fault code entries must be read out and deleted if necessary.



- Release the screw (1) and the expanding rivet (2).
- Remove the fixture for the gasket (3).



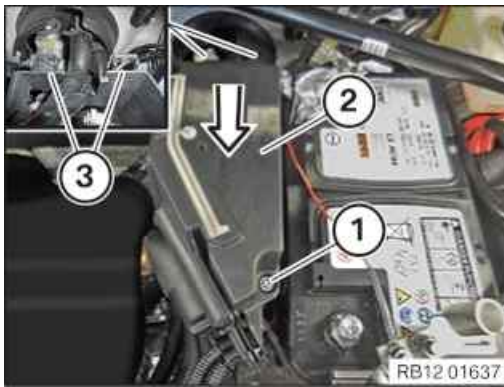
- Loosen screw (1).
- Place cover (2) of the positive battery connection point to one side.



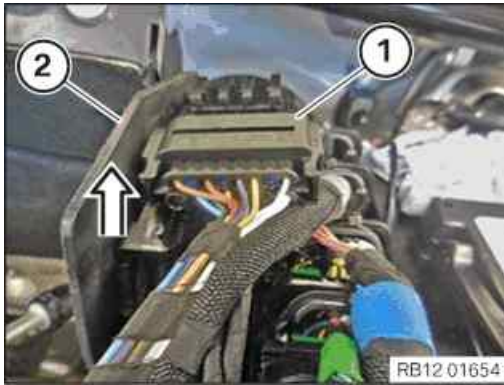
- Remove screws (arrows).
- Guide out tension strut (1) and remove.



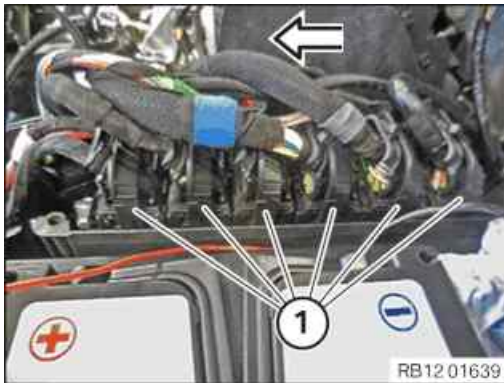
- Undo positive battery terminal (1).
- Feed out positive battery terminal (1) and set aside.
- Guide the positive battery cable (2) out of the holder (3) and lay to one side.



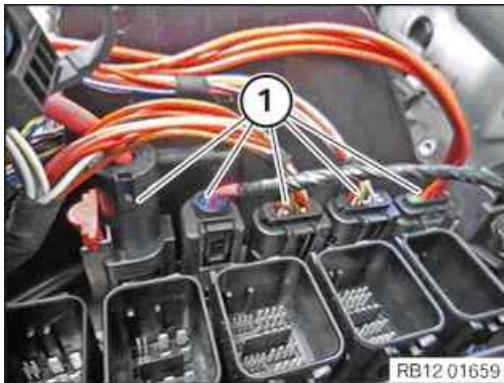
- Loosen screw (1).
- Unlock cover (2) and feed out and remove from the guides (3) in the direction of arrow.



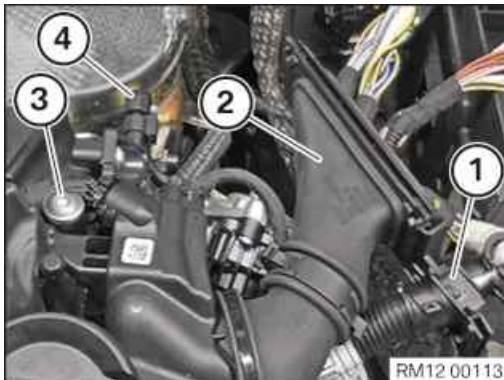
- Feed out connector (1) from the electronics box (2) and remove in the direction of arrow.
- Unlock and loosen connector (1).



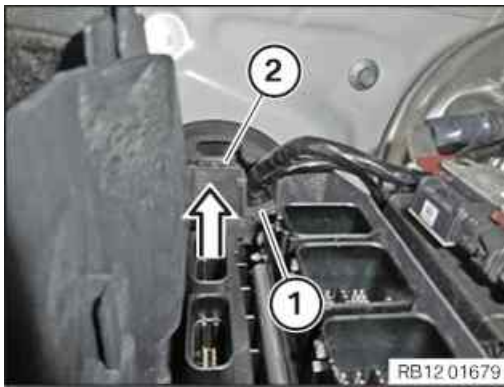
- Unlock and remove the connector (1) in the direction of the arrow.
- Feed out connector (1) and place to one side.



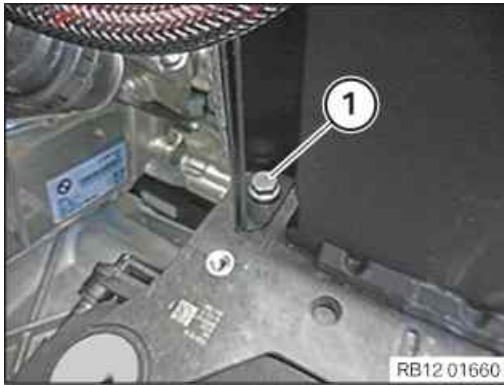
- Unlock and loosen connector (1).



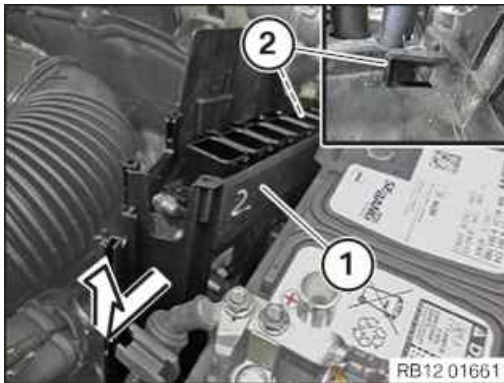
- Detach the wiring harness (1) from the electronics box.
- Detach the wiring harnesses (2) from electronics box.
- Loosen screw (3).
- Set wiring harnesses (1) and (2) aside.
- Unlock the connector (4) and disconnect it from the differential pressure sensor.



- Unlock and loosen holder (1).
- Guide the holder (1) out of the electronics box (2) in direction of arrow and set it aside.

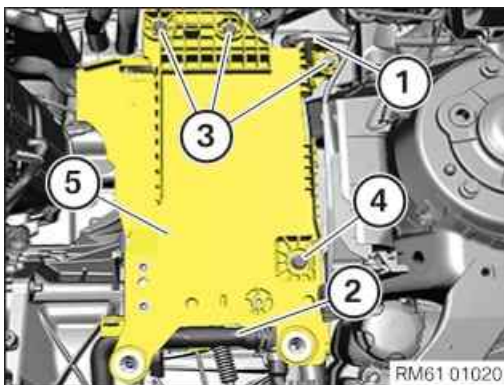


- Loosen screw (1).



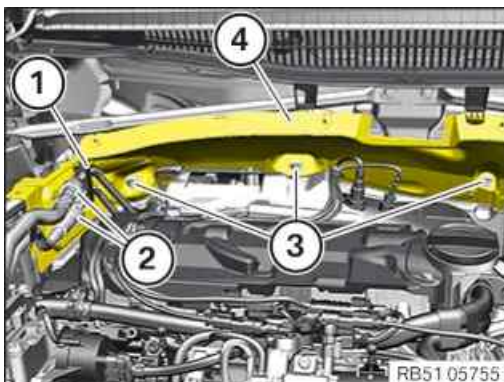
- Guide the electronics box (1) out of the guide (2) in direction of arrow and remove.

13 – Remove battery holder



- Detach the cable clip (1) from the battery holder (5).
- Detach the coolant line (2) from the battery holder (5).
- Loosen screws (3).
- Loosen screw (4).
- Thread out and remove the battery holder (5).

14 – Remove the rear bulkhead upper part



- Unlock the holder (1) and disconnect.
- Guide out and remove the fuel lines (2).
- Loosen screws (3).
- Guide out the rear bulkhead upper part (4) and remove.

15 – Removing heat shield from top exhaust turbocharger

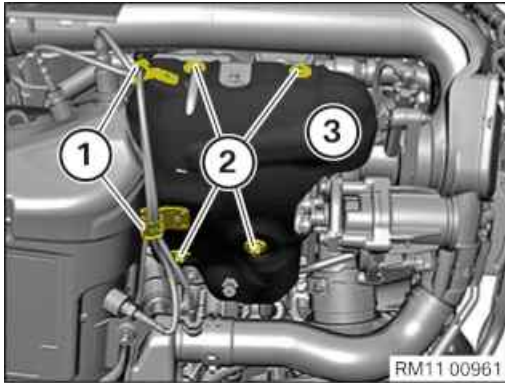


WARNING

Hot surfaces.

Risk of burning!

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

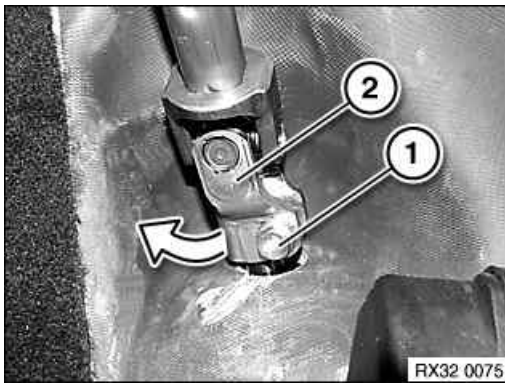


- Release cable from brackets (1).
- Loosen screws (2).
- Feed out and remove the heat shield (3).

16 – Releasing lower steering shaft from steering gear

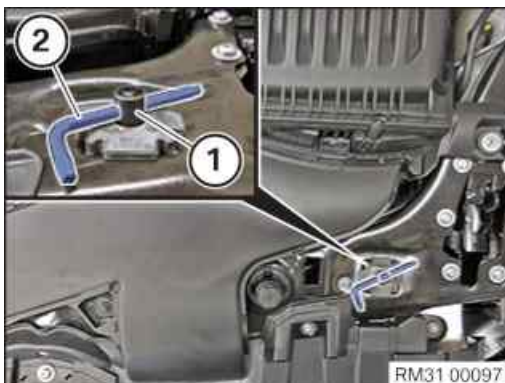


- **If installed:**
- Unfasten nut (1).
- Unscrew the nuts (2) by 1 rotation.
Do not remove the nuts (2) !
- Remove the cover (3) on the steering column in the direction of the arrow.
The side footwell trim must not be disassembled!



- Loosen screw (1).
- Swivel out the universal joint (2) of the bottom steering shaft from the steering gear in the direction of the arrow.

17 – Securing radiator on left and right



NOTICE

Perform the operations on the left and right side.

- Fasten radiator at centring pin (1) with suitable tool (2).

18 – Remove the front left and right wheel

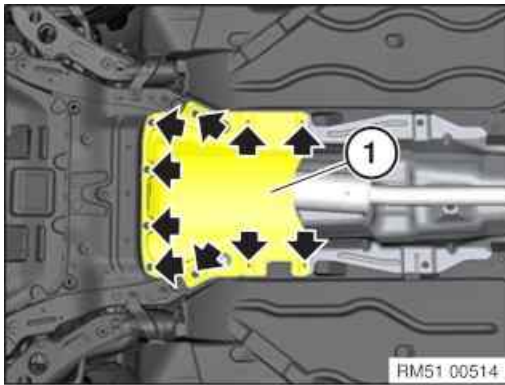


► Removing the wheel

- If several wheels are removed simultaneously: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Unscrew the wheel bolts (arrows) and remove the wheel.

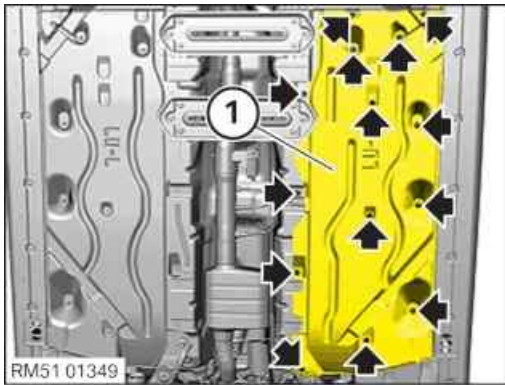
Use the matching adapter from tool set (wheel bolt adapter set) to loosen and tighten down the wheel bolt with security code.

19 – If installed: Removing rear underbody protection



- Remove screws (arrows).
- Remove the rear underbody protection (1).

20 – Removing right underbody panelling



- Unscrew all bolts and nuts (arrows).
- Remove the underbody panelling (1).

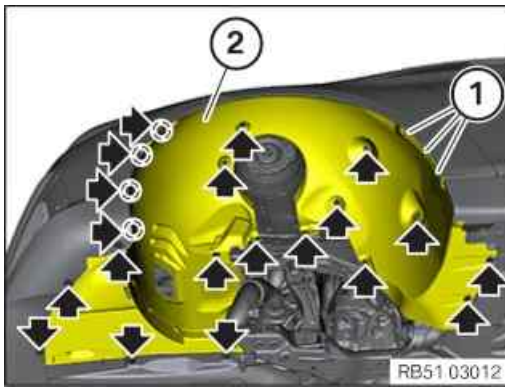
21 – Removing front left and right wheel arch cover



NOTICE

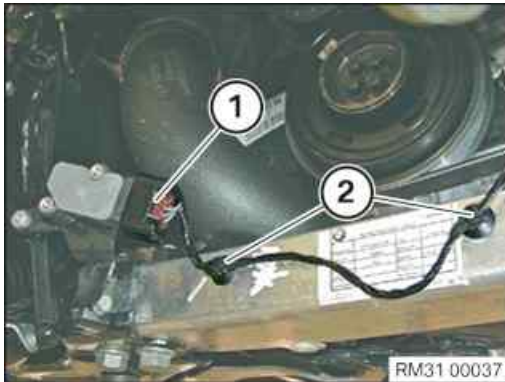
Perform the operations on the left and right side.

► Remove front wheel arch cover



- Loosen the expanding rivet (1).
- Unscrew all bolts and nuts (arrows).
- Feed out front wheel arch cover (2).

22 – With right installation: Detaching ride height sensor cable



- Unlock plug connection (1) and disconnect.
- Release cable clip (2) from deformation element adapter.

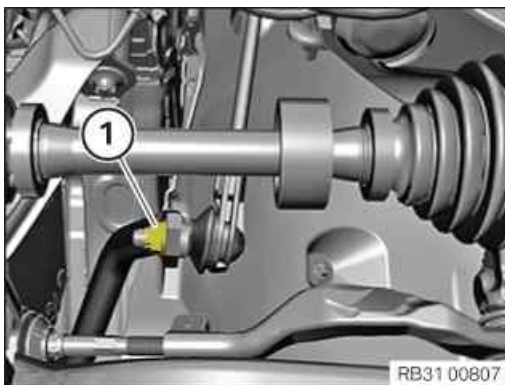
23 – Releasing anti-roll bar on left and right from anti-roll bar link



NOTICE

Perform the operations on the left and right side.

► Detach the anti-roll bar from the anti-roll bar link



- Unfasten nut (1).
- Note:** Use the Torx socket for counter support.
- Loosen the anti-roll bar link from the anti-roll bar .

24 – Detaching rubber mount from front axle support



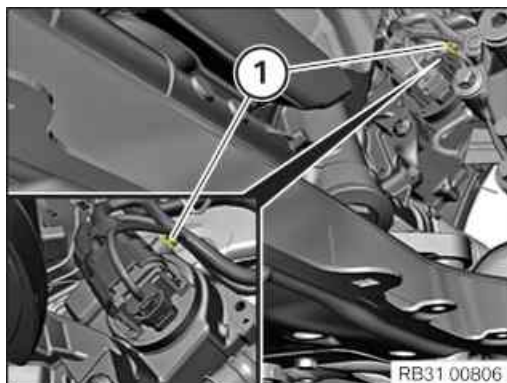
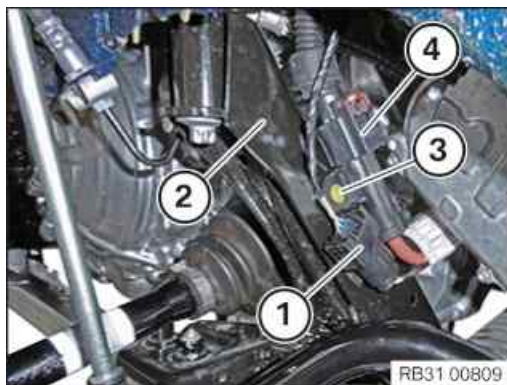
- Spray rubber mount (1) with lubricant and release from holder on front axle support.

25 – Disconnecting plug connections from steering gear

25 – Disconnecting plug connections from steering gear

► If installed: Detach connectors from the front axle carrier

- Release the plug connection (1) from the front axle support (2).
- Loosen screw (3).
- Release the plug connection (4) from the front axle support (2).

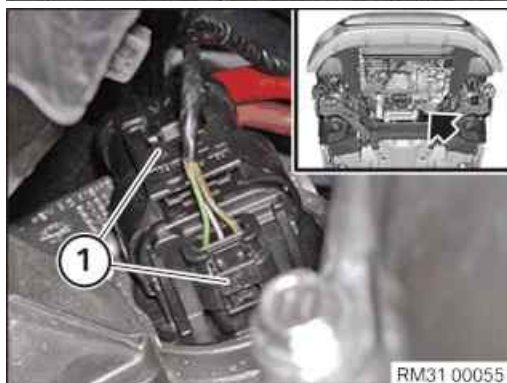


- Disconnect wiring harness (1) from steering gear.



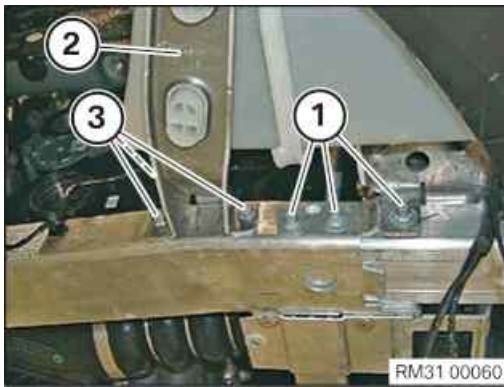
- To unlock the plug connections (see the following work step): unlock plug connections (arrow) with the right hand.

The plug connections can be reached via the left-hand output shaft.



- Unlock plug connections (arrow) (1) and disconnect from the steering gear.
- Make sure when lowering the front axle that the cables are not damaged!

26 – Releasing the mounted part from the front axle support



- **Only on right side:** Loosen screws (3) and remove holder for washer fluid reservoir (2).



NOTICE

Perform the operations on the left and right side.

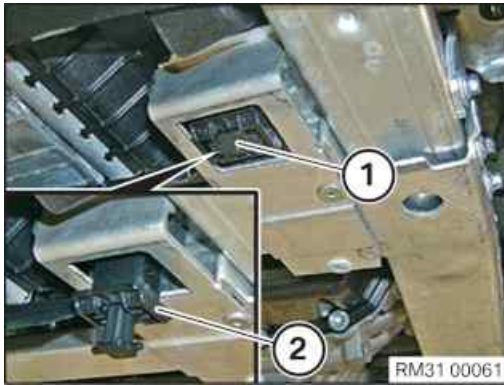
- Loosen screws (1).



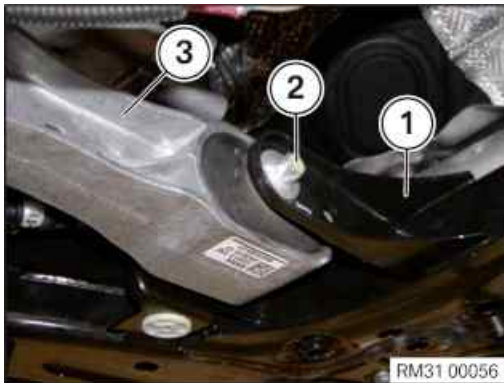
NOTICE

Perform the operations on the left and right side.

- Unlock safety catch (1) of the lock (2) from the holder for the charge air cooler.
- Completely remove locks (2).



- Loosen screw (2) of the engine support (3) on the front axle (1).



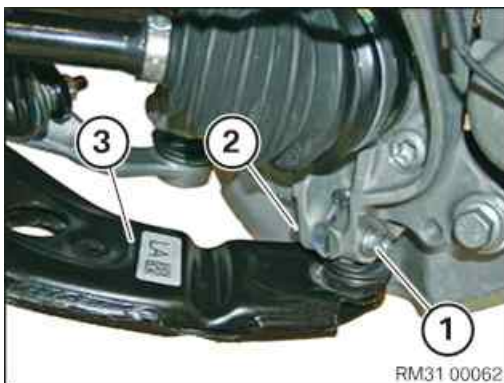
NOTICE

Perform the operations on the left and right side.

- Loosen screws (1).



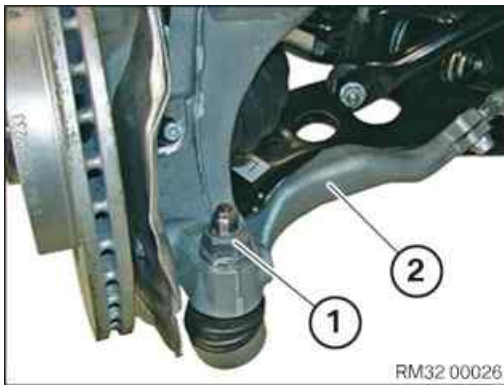
27 – Detaching and removing front axle completely



NOTICE

Perform the operations on the left and right side.

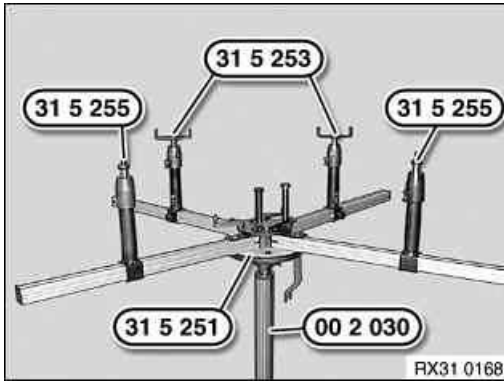
- Unfasten nut (1).
- (2) Pull out screw.
- Detach the wishbone (3) from the swivel bearing .



NOTICE

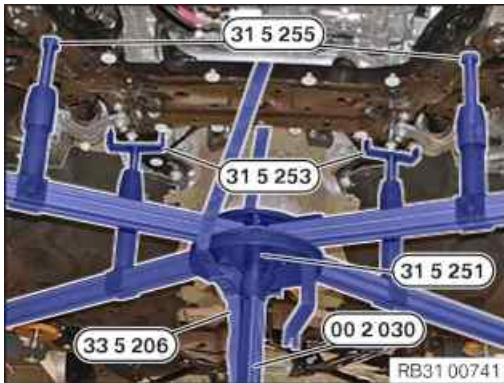
Perform the operations on the left and right side.

- Unfasten nut (1).
- Detach the track rod (2) from the swivel bearing.



- Fit the special tool **0 495 817 (31 5 251)** completely onto the workshop jack **0 490 133 (00 2 030)** with an auxiliary person.
- Insert special tools **0 495 821 (31 5 255)** in telescopic supports of a profile rail pair.
- Insert special tools **0 495 819 (31 5 253)** in telescopic supports of other profile rail pair.

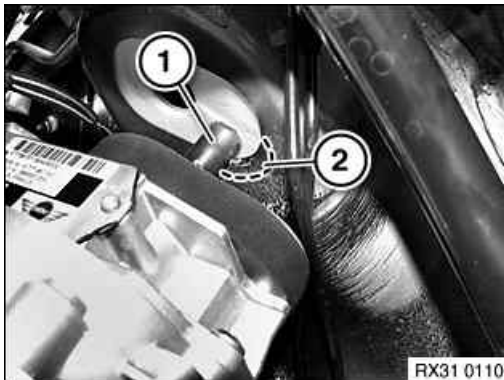
Note: In a profile rail pair, two profile rails are connected to one another by gearing.



- Align special tools **0 495 821 (31 5 255)** and **0 495 819 (31 5 253)** to front axle support.
- Support front axle support by operating workshop jack **0 490 133 (00 2 030)**.

Note: The centre of gravity of the front axle support must be positioned centrally over the workshop jack!

- Secure front axle support with special tool **0 496 080 (33 5 206)** to special tool **0 495 817 (31 5 251)**.

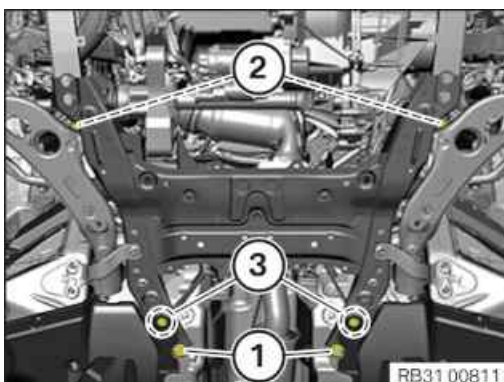


TECHNICAL INFORMATION

Non-compliance with the regulations for installation and disassembly may result in component damage. All work must be performed with care and in compliance with the regulations.

- When raising and lowering the front axle support, make sure that the torsion bar (1) of the electromechanical steering gear (EPS) in area (2) does not collide with the bulkhead!

Note: Collision with the bulkhead may result in damage to the electromechanical steering gear (EPS)!



- If applicable, release the screws in area (3).
- Release screws (1) (front axle support, rear).
- Release screws (2) (front axle support, front).
- Bend the underbody panelling to the side in area (3).
- When lowering, release charge air cooler from its rubber mounts.
- Completely lower and remove the front axle.

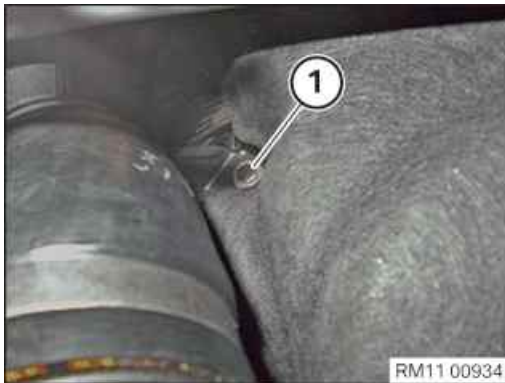
Note the information on thread repairs using Helicoil thread inserts.
For more information see: 41 00 ... Notes on repairing threads

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

28 – Remove right charge-air line



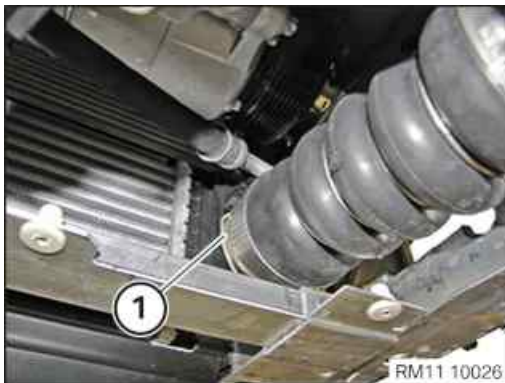
- Release charge air duct screws (1) on oil sump.



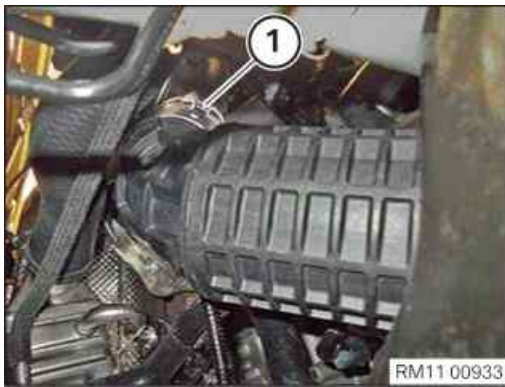
- Detach charge air duct screw connection (1) on crankcase.



- Unfasten lock (1) on exhaust turbocharger and charge air cooler.
- Let the lock (1) engage at the holder (arrow).



- Ensure that lock (1) on charge air cooler is unlocked on both sides.
- Detach charge air duct from charge air cooler.

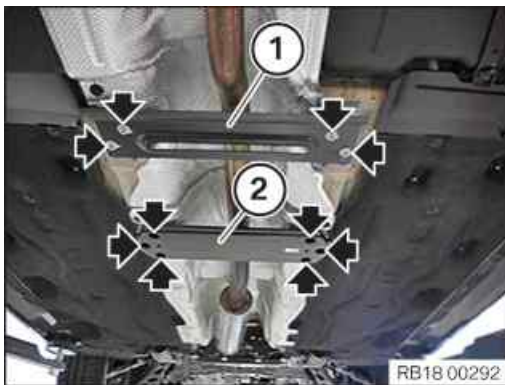


- Ensure that locks (1) from exhaust turbocharger are both unlocked.
- Pull charge air line from exhaust turbocharger.



- Feed out and remove charge air line between side member and front axle support through the wheel arch downwards and to the side.

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



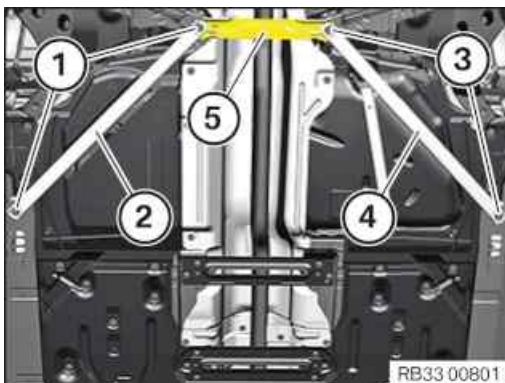
- Unscrew the bolts (arrows) from the connecting support (1).
- Feed out and remove the crossbeam (1).
- Unscrew the bolts (arrows) from the connecting support (2).
- Feed out and remove the crossbeam (2).

30 – Remove the cross strut with the torsion strut



TECHNICAL INFORMATION

Driving without a torsion strut is not permitted.



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

31 – Remove exhaust system



WARNING

Hot surfaces.

Risk of burning!

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

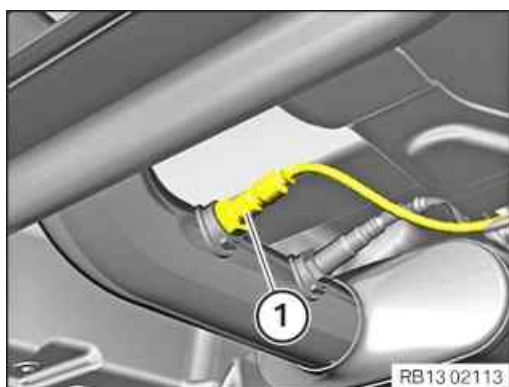


CAUTION

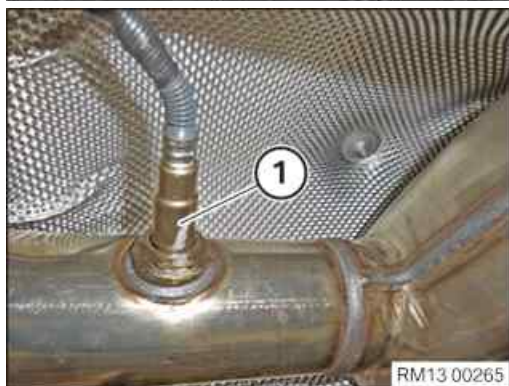
Heavy component.

Heavy components can lead to injury or damage.

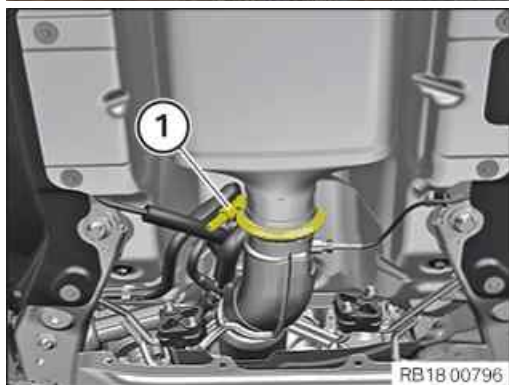
- Remove and install heavy components with the aid of another person/other persons.



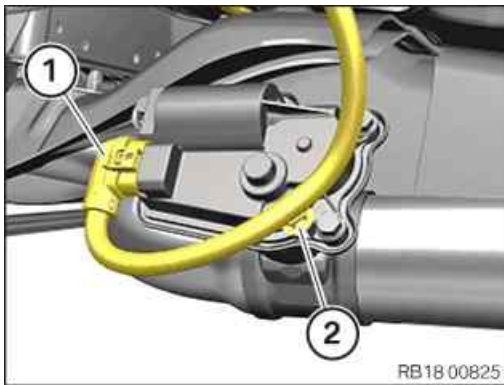
- Release the nitrogen oxide sensor (1) downstream of the SCR catalytic converter, guide it out and set it aside.



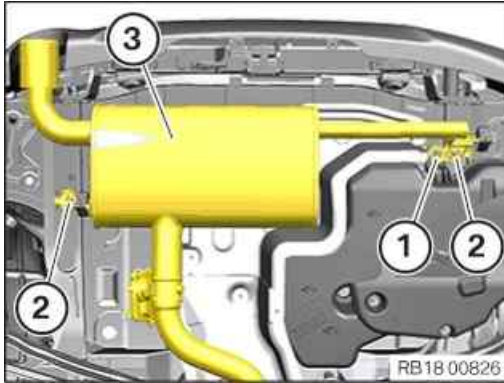
- Release the diesel particulate sensor (1), guide it out and set it aside.



- Loosen V-band clamp (1).



- Unlock and disconnect connector (1).
- Loosen clamp (2).



- Loosen screw (1).
- Loosen nuts (2).
- Lower the exhaust system (3) with an auxiliary person, guide out and remove.

32 – Removing starter motor



WARNING

Hot surfaces.

Risk of burning!

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



WARNING

Working on 12 V vehicle electrical system.

Risk of short circuits! Risk of fire!

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



RISK OF DAMAGE



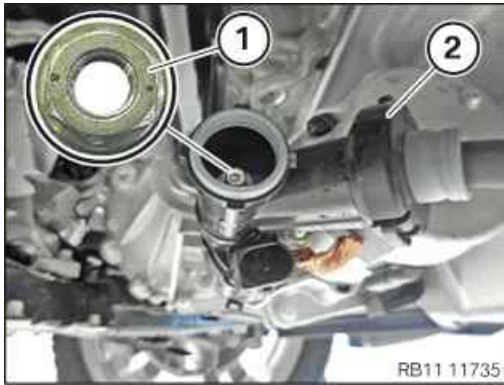
Electrostatic discharge.

Damage to or destruction of electrical components.

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



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



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



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

33 – Remove the monitoring oxygen sensor



WARNING

Hot surfaces.

Risk of burning!

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



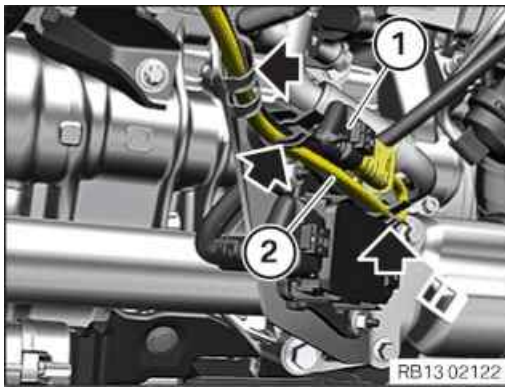
RISK OF DAMAGE



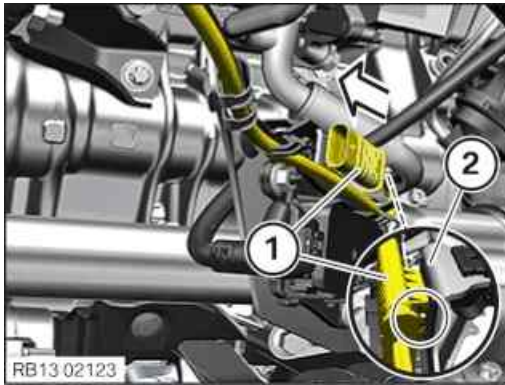
Electrostatic discharge.

Damage to or destruction of electrical components.

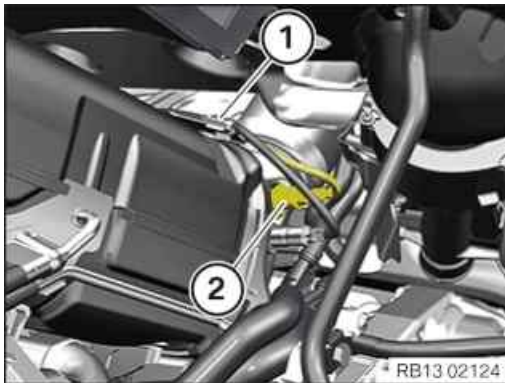
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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



- Unlock plug connection (1) and disconnect.
- Feed oxygen monitor sensor cable (1) out of the clamps (arrows).



- Unlock the connector (1) in the marked area and disconnect it from the holder (2) in the direction of arrow.



- Guide the cable of the monitoring oxygen sensor (2) out of the clamp (1).
- Release the monitoring oxygen sensor (2) using special tool **0 491 074 (11 7 020)**.
- Remove the monitoring oxygen sensor (2).

34 – 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.



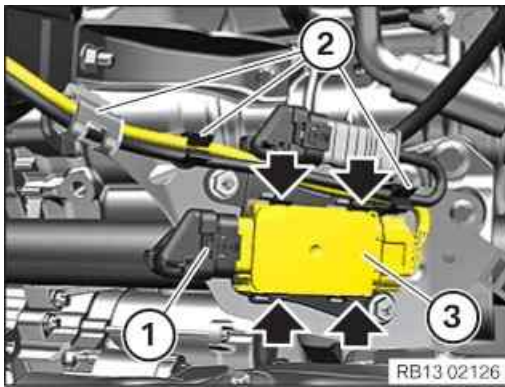
RISK OF DAMAGE



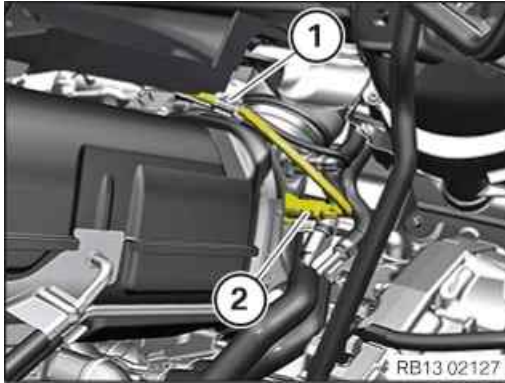
Electrostatic discharge.

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 Information on electrostatic discharge (ESD) protection.

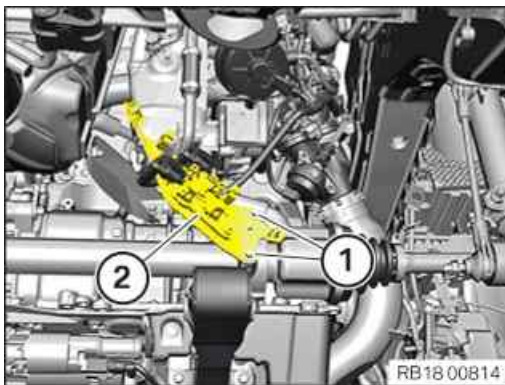


- Unlock plug connection (1) and disconnect.
- Slide the cable of the nitrogen oxide sensor evaluation electronics (3) out of the clamps (2) and remove.
- Unlock (arrows) and remove the evaluation electronics for the nitrogen oxide sensor (3).



- Slide the cable of the nitrogen oxide sensor before the SCR catalytic converter (2) out of the clamps (1) and remove.
- Detach the nitrogen oxide sensor before the SCR catalytic converter (2) using the special tool **0 491 074 (11 7 020)**.
- Guide out and remove the nitrogen oxide sensor upstream of the SCR catalytic converter (2).

35 – Remove holder for oxygen sensor



- Loosen screws (1).
- Thread out the holder (2) for the oxygen sensor and remove.

36 – Remove the exhaust temperature sensor on the catalytic converter



WARNING

Hot surfaces.

Risk of burning!

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



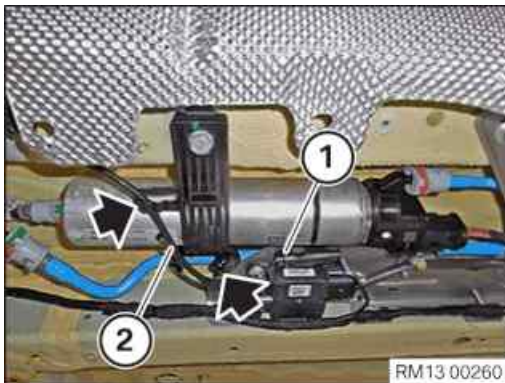
RISK OF DAMAGE



Electrostatic discharge.

Damage to or destruction of electrical components.

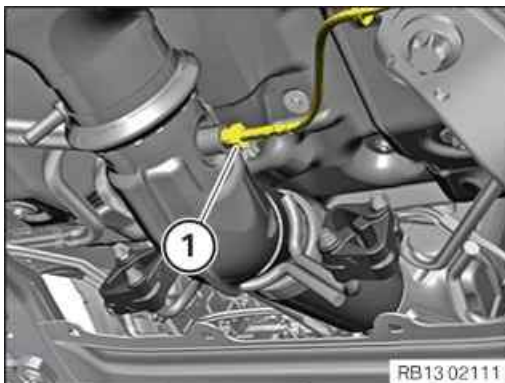
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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



- Unlock and loosen connector (1).
- Feed out the cable (2) of the exhaust temperature sensor from the clamps (arrows) and remove.



- Loosen the cable clip (1).



- Loosen exhaust temperature sensor (1).
- Feed out and remove exhaust temperature sensor (1).

37 – Removing the exhaust temperature sensor downstream from the catalytic converter on the diesel particulate filter



WARNING

Hot surfaces.

Risk of burning!

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



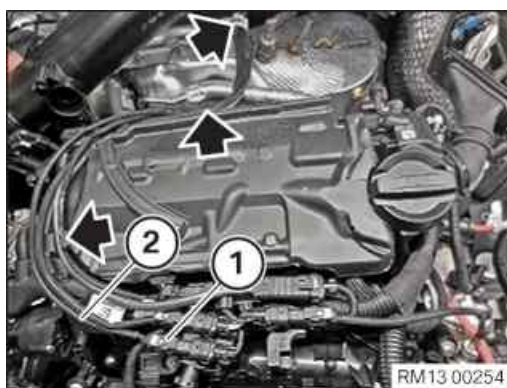
RISK OF DAMAGE



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 Information on electrostatic discharge (ESD) protection.



- Unlock and disconnect the plug connection (1).
- Feed the cable (2) from the temperature sensor out of the clamps (arrows) and remove it.



- Release the exhaust temperature sensor (1) with conventional tools (2).



- Feed out and remove exhaust temperature sensor (1).



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 Information on electrostatic discharge (ESD) protection.



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



- Guide cable (1) of the exhaust temperature sensor out of the clamp (arrow) and remove it.
- Loosen exhaust temperature sensor (2).
- Feed out and remove exhaust temperature sensor (2).

39 – Remove the control sensor



WARNING

Hot surfaces.

Risk of burning!

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



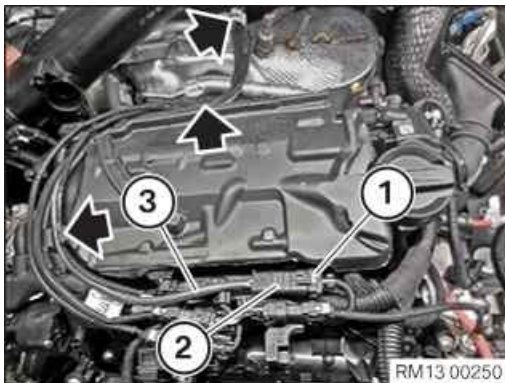
RISK OF DAMAGE



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 Information on electrostatic discharge (ESD) protection.



- Unlock and disconnect the plug connection (1).
- Detach the connector (2) from the holder .
- Feed out and remove cable (3) out of the oxygen control sensor from the clamps (arrows).



- Release the front oxygen control sensor (1) using special tool **0 491 075 (11 7 030)**.
- Feed out and remove the control sensor (1).

40 – Remove differential pressure sensor



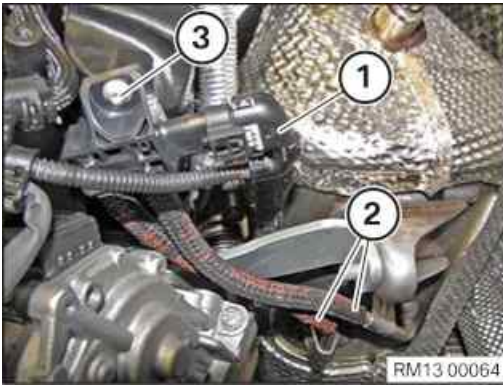
RISK OF DAMAGE



Electrostatic discharge.

Damage to or destruction of electrical components.

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



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

41 – 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.

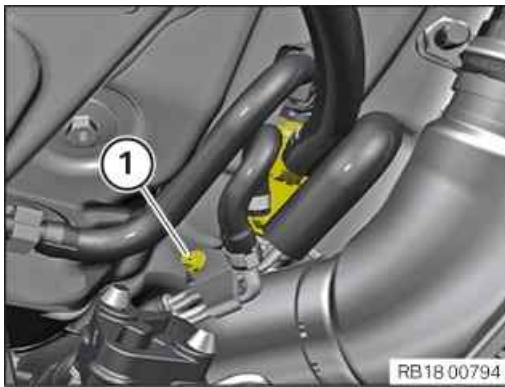
- Remove and install heavy components with the aid of another person/other persons.



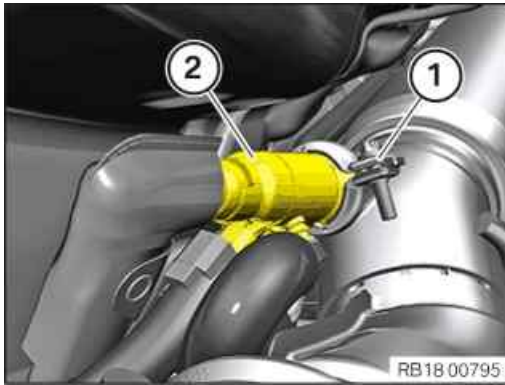
- Loosen V-band clamp (1).
- Feed out V-band clamp (1) and remove.



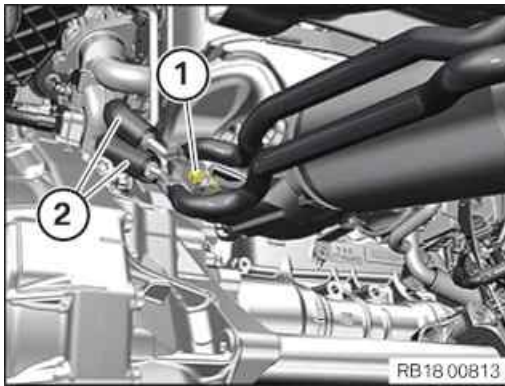
- Loosen nuts (1).



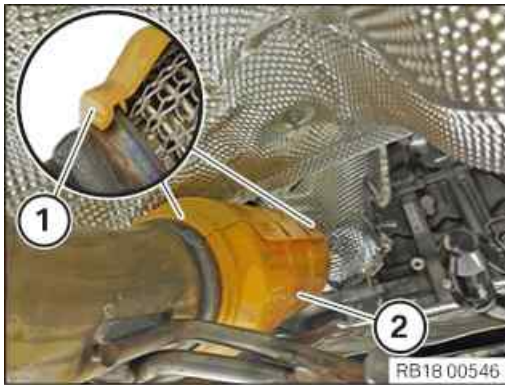
- Loosen screw (1).



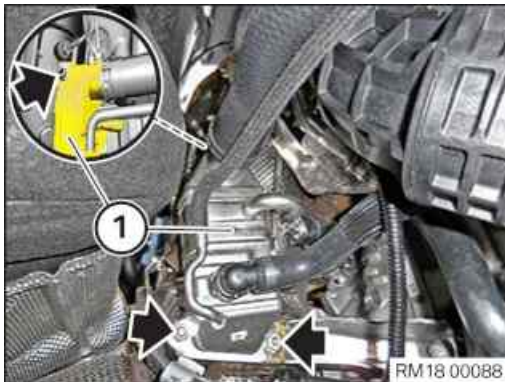
- Loosen V-band clamp (1).
- Remove the SCR metering module (2) and set it aside.



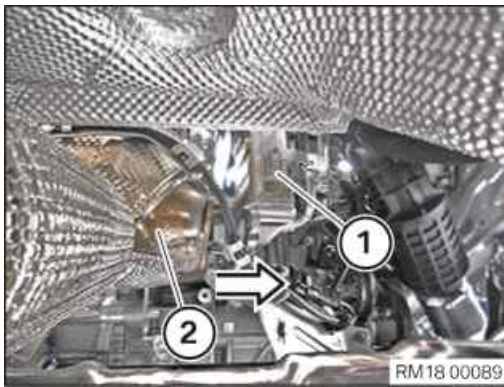
- Loosen screw (1).
- Thread out the coolant lines (2) of the SCR metering module and set aside.



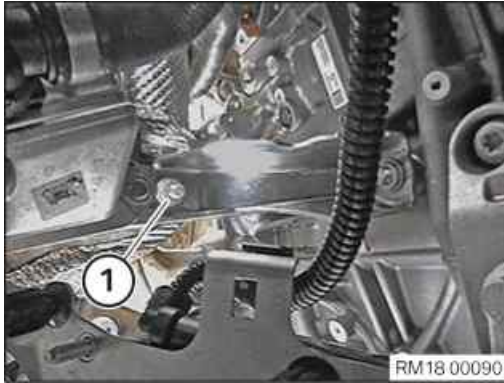
- Mount fitting aid (2).
- Make sure that the fitting aid is correctly position on the edges (1) of the flexible tube.



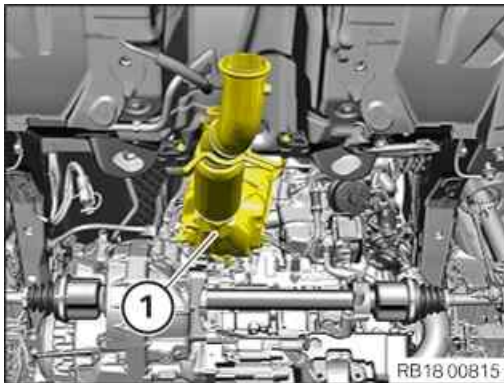
- Detach nuts (arrows) from low pressure exhaust-gas recirculation cooler (1).



- Feed out low pressure exhaust-gas recirculation cooler (1) from diesel particulate filter (2) in direction of arrow and set aside.



- Unfasten nut (1).



- Feed out diesel particulate filter (1) toward the bottom and remove.

42 – Remove the heat shield from the exhaust turbocharger at the bottom

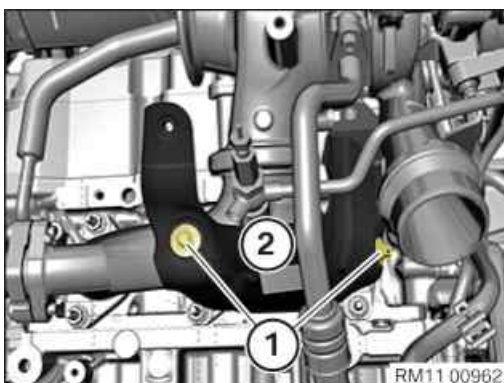


WARNING

Hot surfaces.

Risk of burning!

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



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

43 – Removing heat shield from rear exhaust turbocharger

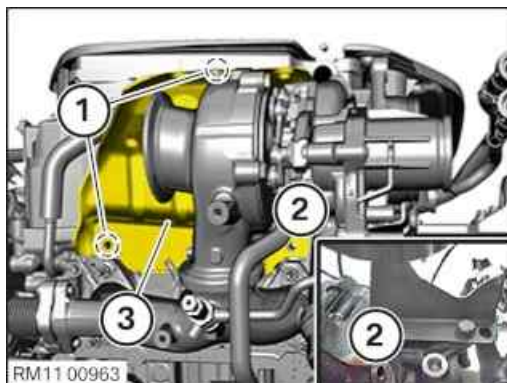


WARNING

Hot surfaces.

Risk of burning!

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



- Loosen screws (1).

- Loosen screw (2).

Rear screw of the bracket on the exhaust turbocharger.

- Feed out and remove the heat shield (3).

44 – Remove exhaust turbocharger



- Release screw (1) from beneath with a long extension.



TECHNICAL INFORMATION

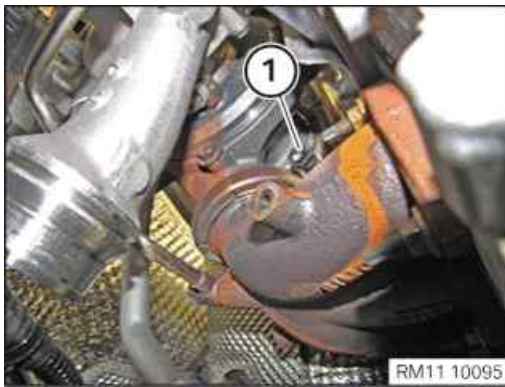
Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

- Loosen screws (1).

- Disconnect the oil return line (2) toward the bottom and set it aside.



- Release banjo bolt (1) of oil feed line from exhaust turbocharger and place to one side.



- Release screw (1) and remove V-clip.
- Pull exhaust turbocharger up and remove.
- Remove seal between exhaust turbocharger and exhaust manifold.

MAIN WORK

45 – Remove exhaust manifold

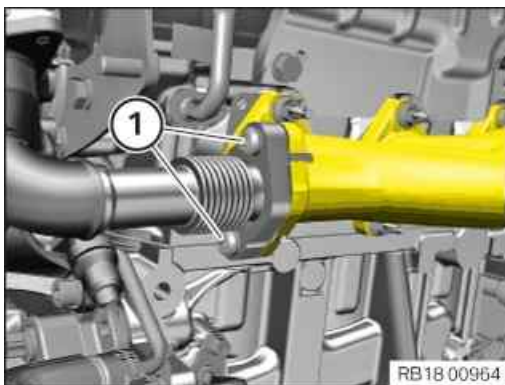


WARNING

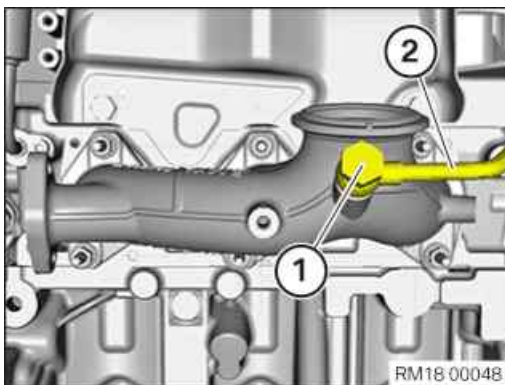
Hot surfaces.

Risk of burning!

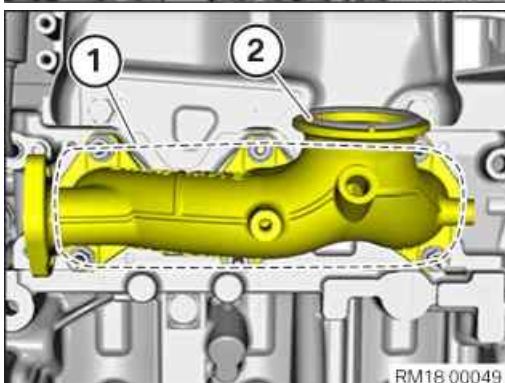
- Perform all work only on components that have cooled down.



- Loosen screws (1).



- Unscrew the banjo bolt (1).
- Feed out exhaust gas pressure pipe (2) and place to one side.



- Evenly release nuts along the dashed line (1) from outer to inner side.
- Feed out exhaust manifold (2) and remove.

46 – Installing exhaust manifold



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

Damage to the surface.

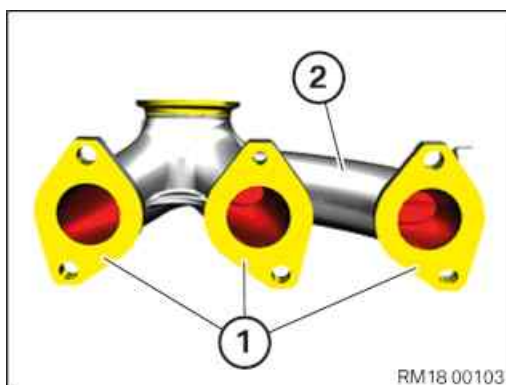
The use of metal-cutting tools (e.g. emery cloth) to clean the surfaces can damage them and lead to leaks or engine damage.

- Do not use any metal-cutting tools.

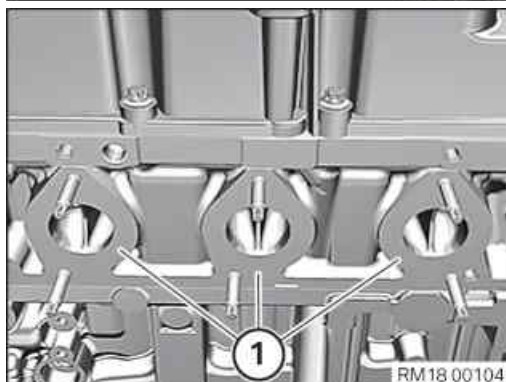


TECHNICAL INFORMATION

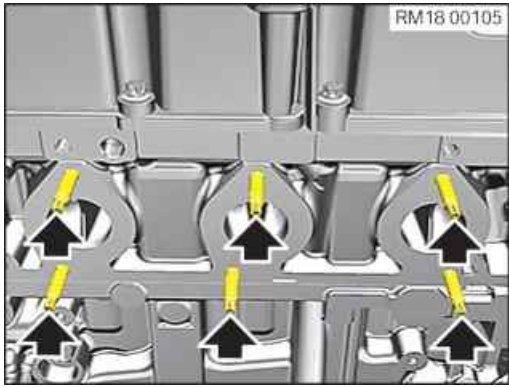
The sealing surfaces must be free from oils, grease and cleaning agents.



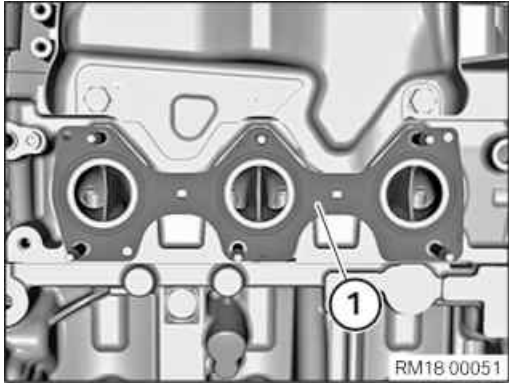
- Clean the connection points (1) on the exhaust manifold (2) with the special tool **0 495 102 (11 4 470)**.



- Clean the connection points (1) on the cylinder head with the special tool **0 495 102 (11 4 470)**.



- Check the stud bolts (arrows) on the cylinder head for **correct** fit.

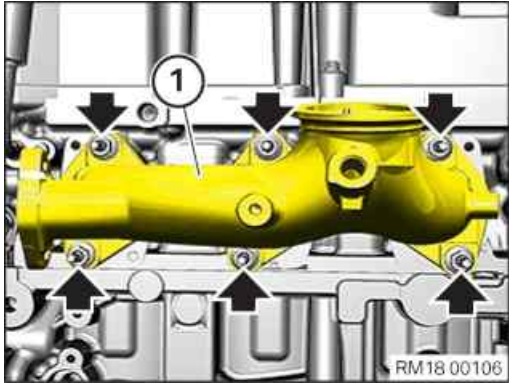


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TECHNICAL INFORMATION

The **coated side of the** seal must be mounted facing towards the exhaust manifold.

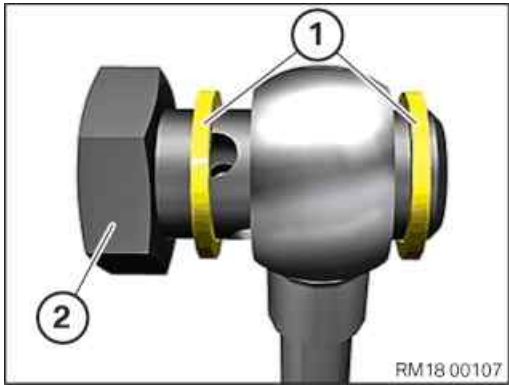
- Renew the gasket (1).
- Parts:** Gasket
- Insert and install the gasket (1).
- Insert and install the exhaust manifold (1).
- Renew the nuts (arrows).



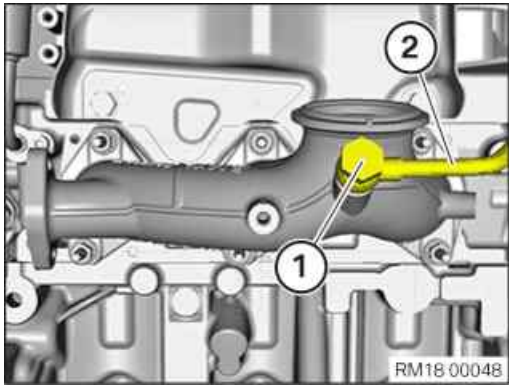
- Parts:** Nuts
- Hand-tighten the nuts (arrows) on the exhaust manifold (1) evenly from the inside to the outside.
- Tighten the nuts (arrows) on the exhaust manifold (1) evenly from the inside to the outside.

Exhaust manifold to cylinder head

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



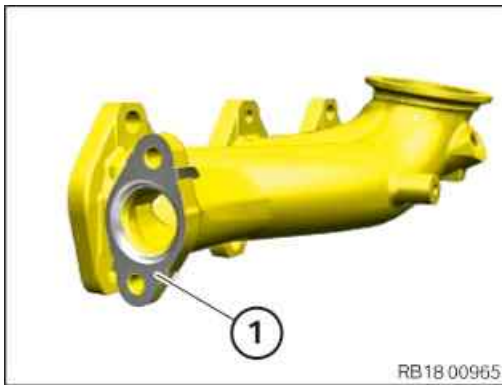
- Renew the sealing rings (1) from the banjo bolt (2).
- Parts:** Sealing ring



- Insert and install the exhaust gas pressure pipe (2).
- Tighten the banjo bolt (1).

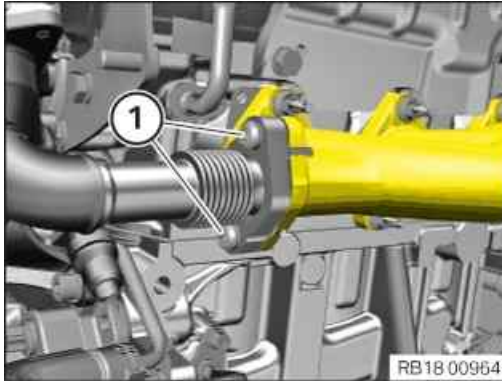
Banjo bolt for exhaust pressure pipe to exhaust manifold

Hollow bolt		Renew sealing rings.	30 Nm
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- Renew seal (1) between exhaust-gas recirculation cooler and exhaust manifold.

Parts: Gasket



- Renew screws (1).

Parts: Bolts

- Tighten the screws (1).

Exhaust-gas recirculation cooler to exhaust manifold

M8x28	Replace screws	Tightening torque	32 Nm
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POSTPROCESSES

47 – Prepare for the installation of the exhaust turbocharger

- Check the oil feed lines and the oil return lines for contamination or obstruction, clean or renew if necessary.
- If the oil feed lines and/or oil return lines are heavily contaminated, we recommend changing the engine oil and the oil filter.
- If installed: Check the coolant feed lines and the coolant return lines for the exhaust turbocharger for contamination or obstruction, clean or renew if necessary.
- Check that the screw connections and the plug connections of all the lines are correct.
- Check air cleaner for contamination and clean or renew as needed.
- Check correct functioning of crankcase ventilation.
- Replace all gaskets.

Parts: Seals

48 – Installing exhaust turbocharger



WARNING

Hot surfaces.

Risk of burning!

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



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

Damage to the exhaust turbocharger

Inadequate initial filling of exhaust turbocharger leads to dry running.

- Make sure the initial filling is correct when replacing exhaust turbocharger.
- Fill the exhaust turbocharger with the suitable additive (see electronic Parts Catalogue).



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



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.

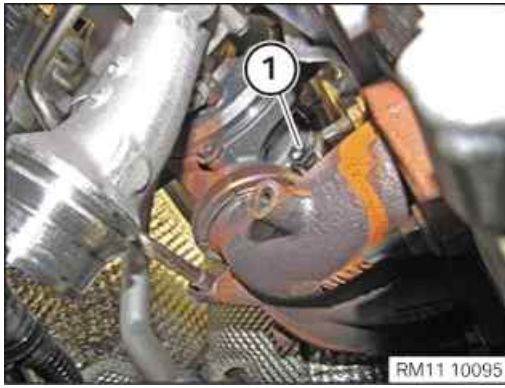
If the oil return line is exchanged, then the connecting pipe to the oil sump must ALWAYS be cleaned, as the connecting pipe can coke.



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



- Renew gasket.
- Parts:** Gasket
- Position seal on exhaust manifold.
- Guide the exhaust turbocharger in from the top and position it.
- **Ensure that gasket is correctly seated.**
- Renew V-band clamp.
- Parts:** V-band clamp
- Install V-clip and tighten screw (1).

Exhaust turbocharger to exhaust manifold

V-band clamp		Tightening torque	19 Nm
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- Renew sealing rings.
- Parts:** Sealing ring
- Position oil feed line with banjo bolt (1) and sealing rings and tighten hand-tight. There are 2 sealing rings fitted on the banjo bolt (1).
- Align oil feed line and tighten banjo bolt (1).

The oil feed line must not sit on the exhaust turbocharger.

Oil feed line to exhaust turbocharger

Hollow bolt	Renew sealing rings.	Jointing torque	10 Nm
		Angle of rotation	45 °



- Renew gasket.
- Parts:** Gasket
- Position oil return line (2) with **seal** on exhaust turbocharger.
- Tighten the screws (1).

Oil return line to turbocharger

M6x12		Tightening torque	8 Nm
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- Feed in and tighten screw (1).

Holder to exhaust turbocharger and crankcase

M8x16		Tightening torque	22 Nm
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49 – Installing heat shield on exhaust turbocharger at the rear

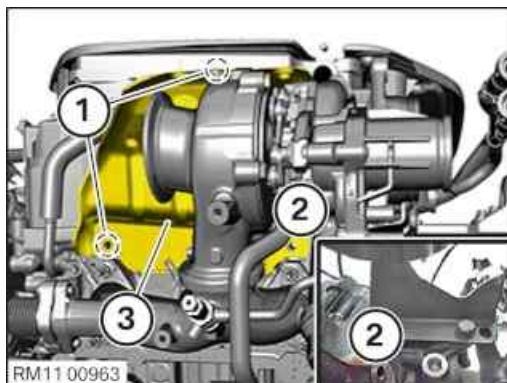


WARNING

Hot surfaces.

Risk of burning!

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



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

Heat shield for exhaust turbocharger

Torx screw BM 6x12		Tightening torque	10 Nm
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- Tighten down screw (2).

Exhaust turbocharger bracket to cylinder head

Hexagon screw M 8x16		Tightening torque	19 Nm
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50 – Installing heat shield on exhaust turbocharger at bottom

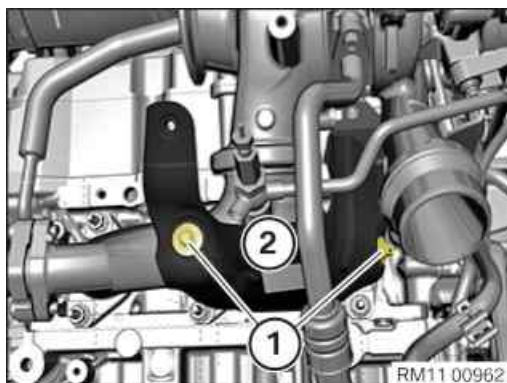


WARNING

Hot surfaces.

Risk of burning!

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



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

Heat shield for exhaust turbocharger

Torx screw BM 6x12		Tightening torque	10 Nm
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51 – Installing the diesel particulate filter

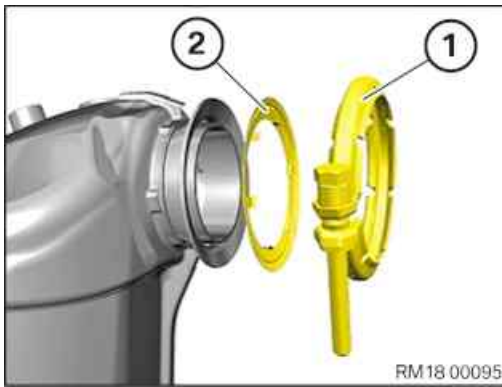


CAUTION

Heavy component.

Heavy components can lead to injury or damage.

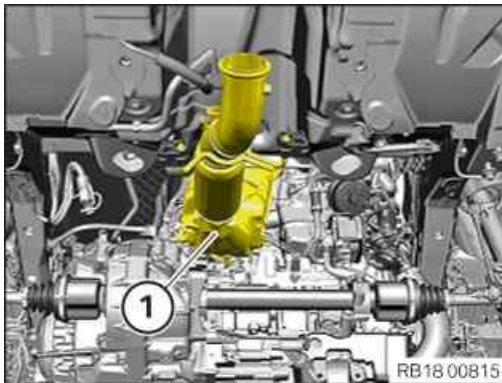
- Remove and install heavy components with the aid of another person/other persons.



- Renew the V-clip (1).
- Parts:** V-band clamp
- Renew the gasket (2).
- Parts:** Gasket



- Before installing the diesel particulate filter: Mount fitting aid (1) for the flexible tube.



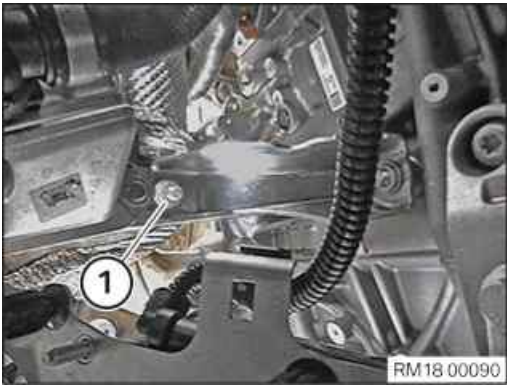
- Carefully insert and install the diesel particulate filter (1).



- Feed in and install V-band clamp (1).
- Make sure that the seal between the diesel particulate filter and the exhaust turbocharger is installed correctly.
- Align the diesel particulate filter on the exhaust turbocharger.
- Position V-clip (1).
- Hand-tighten the V-clip (1).



- Tighten nuts (1) by hand.



- Tighten the nut (1) hand-tight.



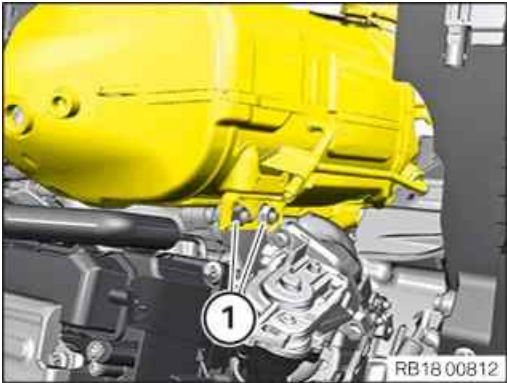
- Remove fitting aid (1) for the flexible tube.



- Tighten V-band clamp (1).

Diesel particulate filter V-clip to exhaust turbocharger

V-band clamp	Renew V-band clamp.	Tightening torque	15 Nm
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- Tighten nuts (1).

Diesel particle filter to holder

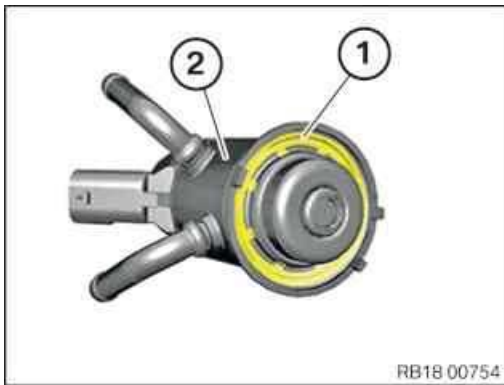
M8 hexagon nut		Tightening torque	19 Nm
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- Tighten nut (1).

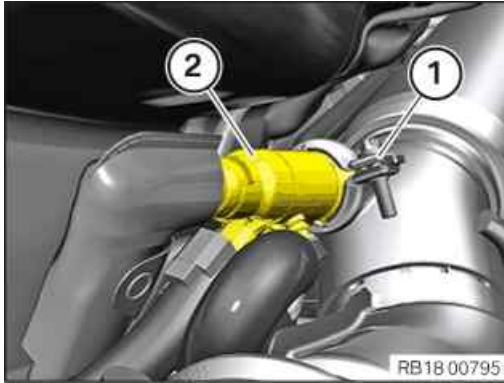
Diesel particle filter to holder

M8 hexagon nut		Tightening torque	19 Nm
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- Renew sealing ring (1) of the SCR metering module (2).

Parts: Sealing ring

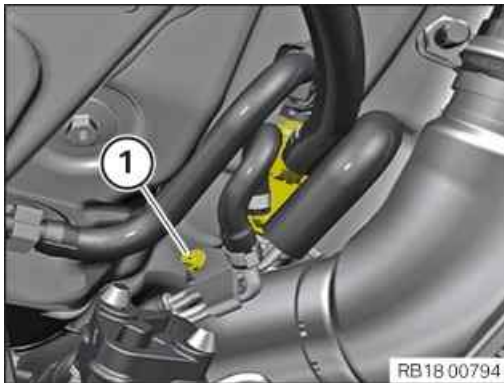


- Insert and install the SCR metering module (2).
- Renew the V-clip (1).
- Tighten V-band clamp (1).

Parts: V-band clamp

SCR metering module V-clip to exhaust system

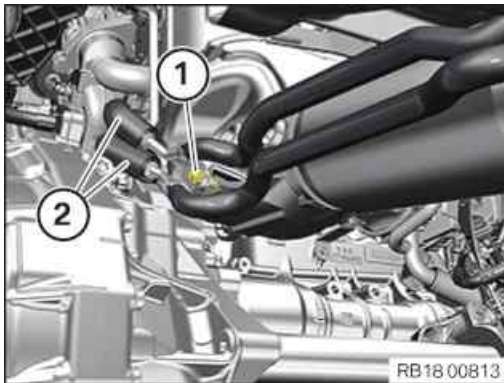
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm
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- Tighten down screw (1).

Holder for coolant lines to diesel particulate filter

Torx bolt BM6x16		Tightening torque	8 Nm
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- Thread in and install coolant line (2) of the SCR metering module.
- Tighten down screw (1).

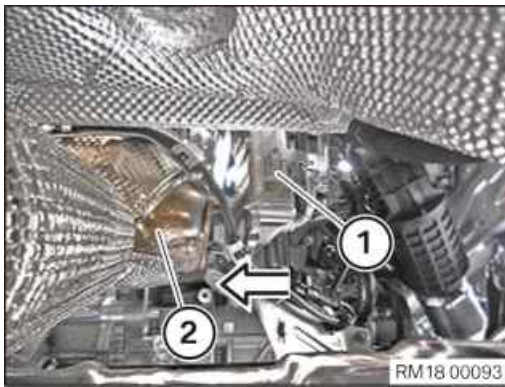
Holder for coolant lines to diesel particulate filter

Torx bolt BM6x16		Tightening torque	8 Nm
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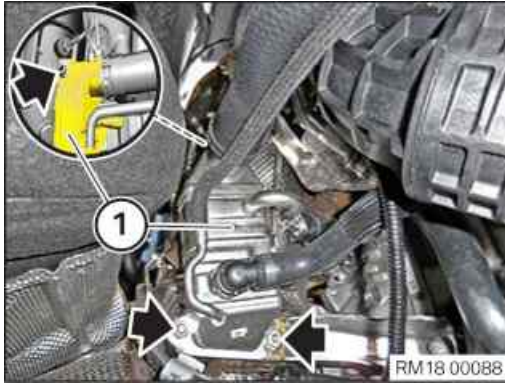


- Replace seal (1) of the low pressure exhaust-gas recirculation cooler (2).

Parts: Gasket



- Feed in and install the low pressure exhaust-gas recirculation cooler (1) in at the diesel particulate filter (2) in the direction of arrow.

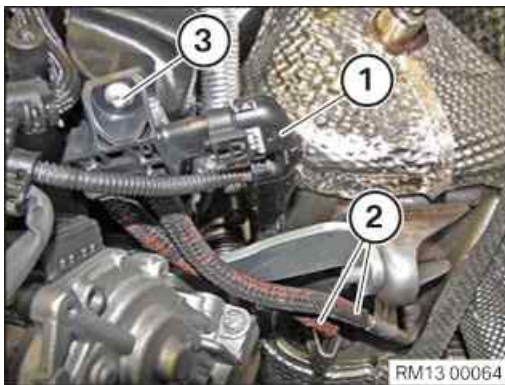


- Tighten nuts (arrows) of the low pressure exhaust-gas recirculation coolers (1).

Low-pressure exhaust-gas recirculation cooler to diesel particulate filter

Flange nutM8		Tightening torque	19 Nm
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52 – Installing differential pressure sensor



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

Differential pressure sensor to holder

Screw		Tightening torque	4 Nm
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- Check pressure hoses (2).
- Renew any hardened pressure hoses (2).

Parts: Pressure hoses

- Connect the pressure hoses (2) 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
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- Connect and lock the connector (1).
The connector (1) must engage audibly.

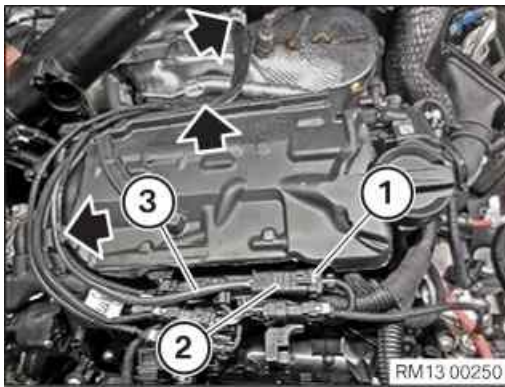
53 – Install the control sensor



- Feed in front oxygen sensor (1) and install.
- Tighten the front oxygen sensor (1) with the special tool **0 491 075 (11 7 030)**.

Control sensor

Control sensor		Tightening torque	50 Nm
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- Feed in and install cable (3) from the oxygen control sensor into the clamps (arrows).
 - Secure connector (2) on holder.
 - Connect and lock the connector (1).
- The connector (1) must engage audibly.

54 – 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 the gauge tip (1) for damage and renew the exhaust temperature sensor as needed.



- Feed in and install the exhaust temperature sensor (2).
- Tighten the exhaust temperature sensor (2).

Exhaust temperature sensor to diesel particulate filter

Exhaust-gas temperature sensor		Tightening torque	28 Nm
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- Insert and install cable (1) of the exhaust temperature sensor in the clamp (arrow).
 - Insert and install the cable (2) of the exhaust temperature sensor in the clamps (arrows).
 - Connect and lock the connector (1).
- The connector (1) must engage audibly.



55 – Installing the exhaust temperature sensor downstream from the catalytic converter on the diesel particulate filter

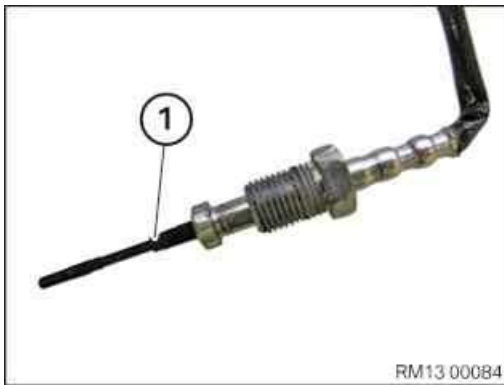


RISK OF DAMAGE

Damage of exhaust temperature sensor.

Damage to exhaust temperature sensors leads to malfunctions.

- Make sure that the gauge tip is not damaged.



- Make sure the gauge tip (1) is not damaged during installation.



- Feed in and install the exhaust temperature sensor (1).



- Tighten the exhaust temperature sensor (1) with conventional tools (2).

Exhaust temperature sensor to diesel particulate filter

Exhaust-gas temperature sensor	Tightening torque	28 Nm



- Insert and install the cable (2) of the exhaust temperature sensor in the clamps (arrows).
- Connect and lock the connector (1).
The connector (1) must engage audibly.

56 – Installing exhaust temperature sensor on catalytic converter

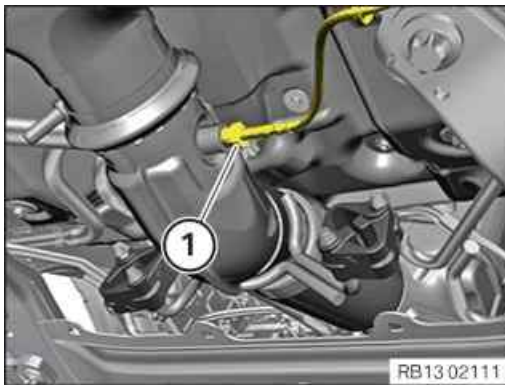


RISK OF DAMAGE

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 and replace the exhaust temperature sensor as needed.



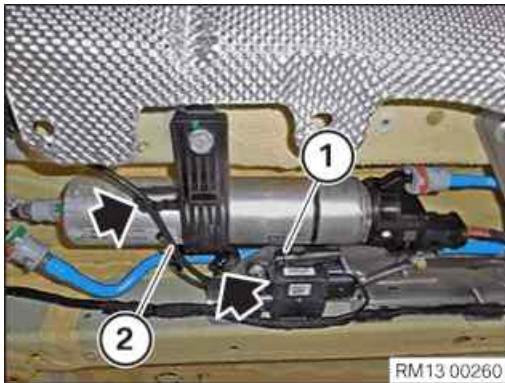
- Feed in and install the exhaust temperature sensor (1).
- Tighten the exhaust temperature sensor (1).

Exhaust-gas temperature sensor to exhaust system

Exhaust-gas temperature sensor		Tightening torque	28 Nm
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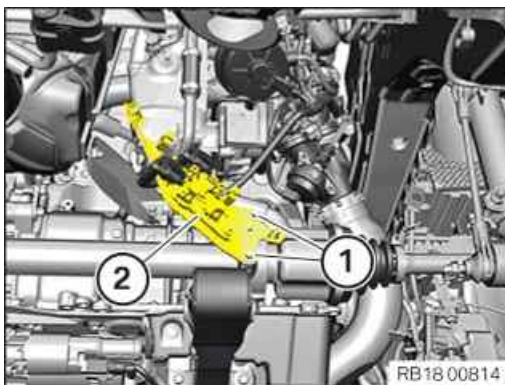


- Secure the cable clips (1).



- Feed cable (2) from exhaust temperature sensor into the clamps (arrows) and install.
- Connect and lock the connector (1).
The connector (1) must engage audibly.

57 – Install holder for oxygen sensor

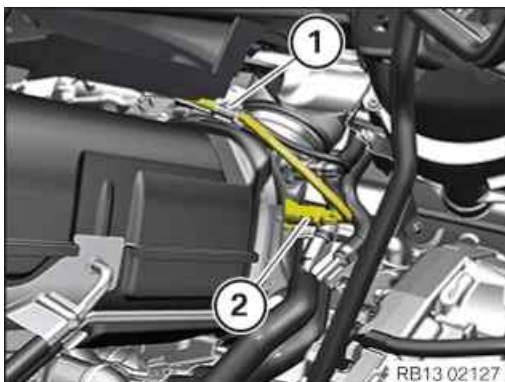


- Insert and install the holder (2).
- Tighten the screws (1).

Oxygen sensor holder to intermediate shaft

Hexagon screw M6x16		Tightening torque	8 Nm
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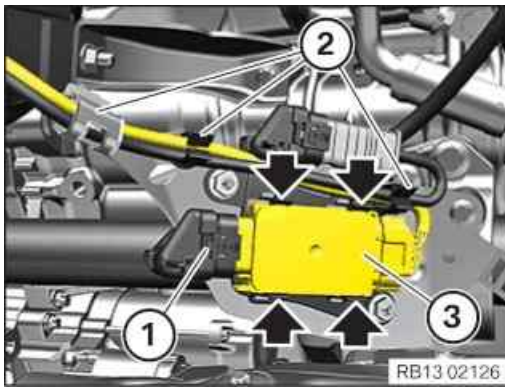
58 – Installing the nitrogen oxide sensor before SCR catalytic converter



- Insert nitrogen oxide sensor before the SCR catalytic converter (2) and install.
- Tighten the nitrogen oxide sensor upstream of the SCR catalytic converter (2).

Nitrogen oxide sensor before SCR catalytic converter

Sensor		Tightening torque	50 Nm
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- Install and lock the evaluation electronics for the nitrogen oxide sensor (3) (arrows).
- Insert the evaluation electronics cable for the nitrogen oxide sensor (3) into the clamps (2) and install.
- Connect connectors (1) and lock.
The connector (1) must engage audibly.

59 – Install the monitoring sensor



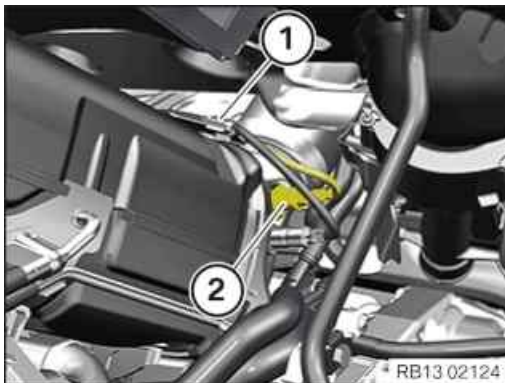
TECHNICAL INFORMATION

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

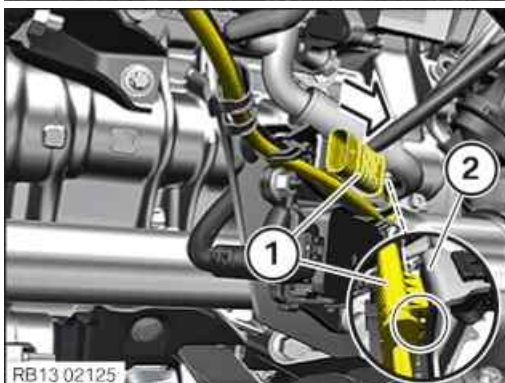


- Feed in the monitoring oxygen sensor (2) and install.
- Tighten the monitoring oxygen sensor (2) with special tool **0 491 074 (11 7 020)**.

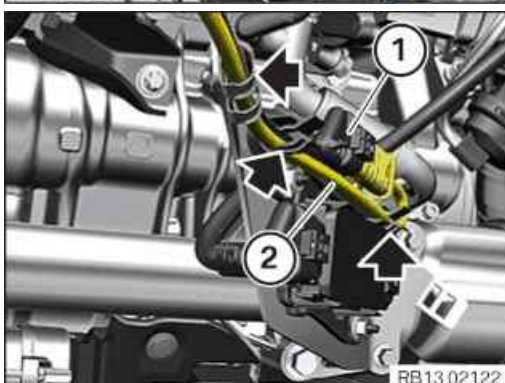
Monitoring sensor

Sensor	Tightening torque
	50 Nm

- Insert the cable of the monitoring oxygen sensor (2) into the clamp (1) and secure it.



- Connect the connector (1) with the bracket (2) in the direction of arrow.
- Make sure that the connector (1) is locked correctly in the marked area.
The connector (1) must engage audibly.



- Insert and attach the cable of the monitoring oxygen sensor (2) to the clamps (arrows).
- Connect connectors (1) and lock.
The connector (1) must engage audibly.

60 – Installing starter motor



CAUTION

Improper routing of the positive battery cable.

Risk of short circuits!

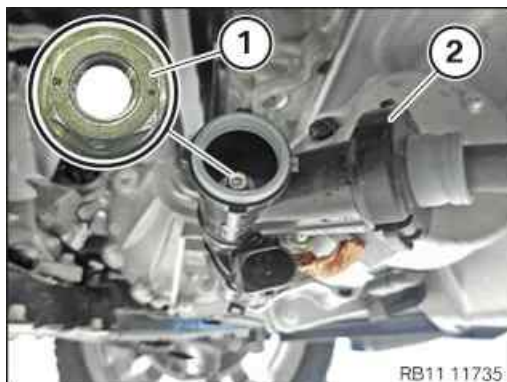
- Route the positive battery cable without abrasions and do not trap.



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

Starter motor to transmission

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

Battery positive lead to starter

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



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

61 – Install exhaust system



CAUTION

Component with heavy weight.

Danger of injury!

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

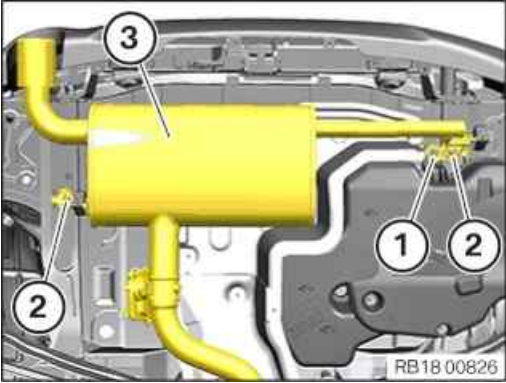


CAUTION

Heavy component.

Heavy components can lead to injury or damage.

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



- Insert and install the exhaust system (3) with the help of another person.
 - Renew nuts (2).
- Parts:** Nuts
- Tighten nuts (2).

Exhaust system to body

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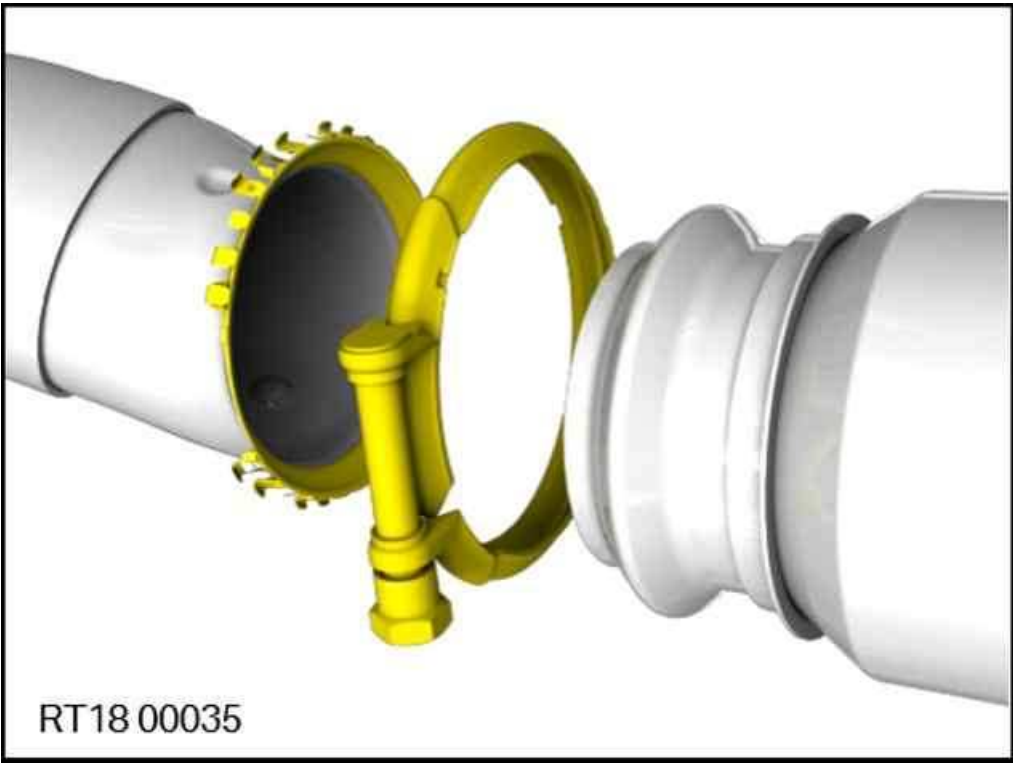
- Tighten down screw (1).

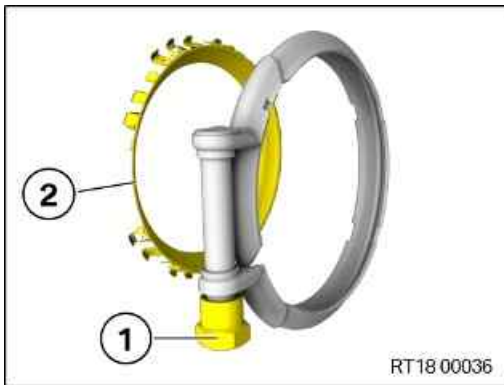
Exhaust bracket on body

Hexagon screw M8x30		Tightening torque	19 Nm
------------------------	--	-------------------	-------

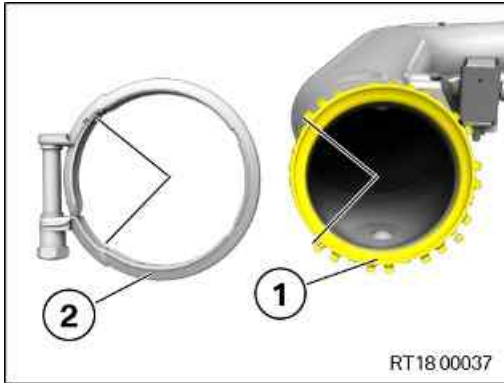
► Install the V-clip

V-band clamp

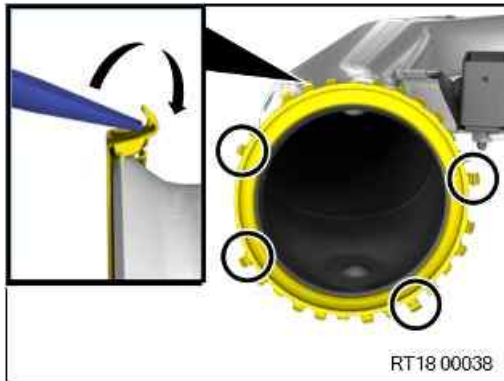




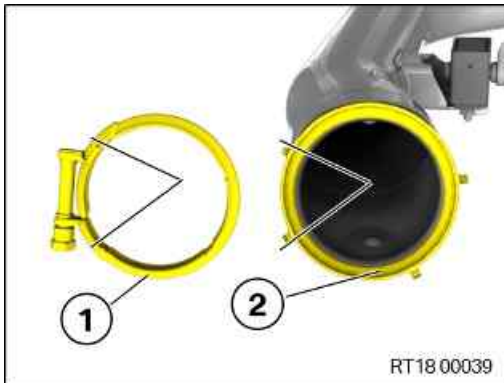
- Unscrew the nut (1) and remove the sealing ring (2).



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



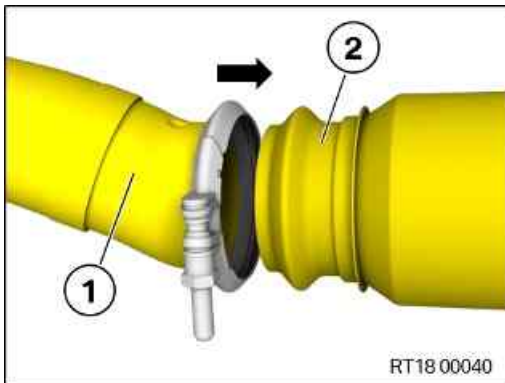
- Bend all sheet metal tabs over with a suitable tool, except those in the marked areas.



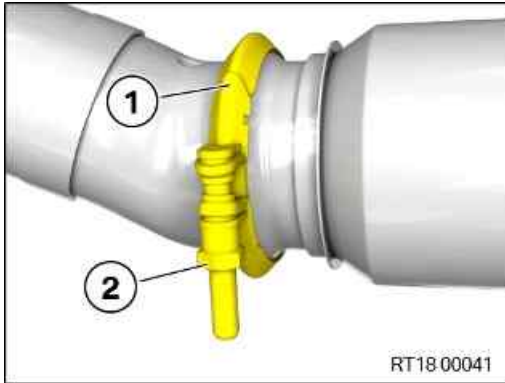
- Mount the V-clip (1) on the sealing ring (2).
- Make sure that the V-clip (1) is positioned correctly on the sealing ring (2).



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



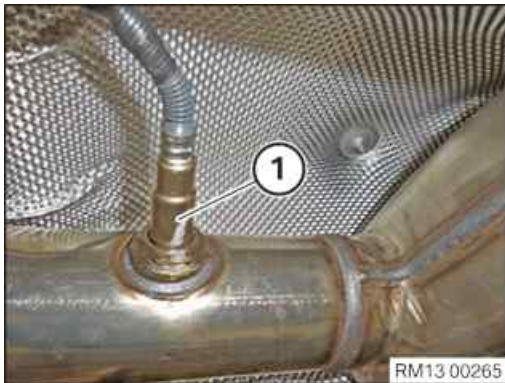
- Connect the exhaust system (1) with the catalytic converter (2) and position correctly.



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

V-clip to catalytic converter

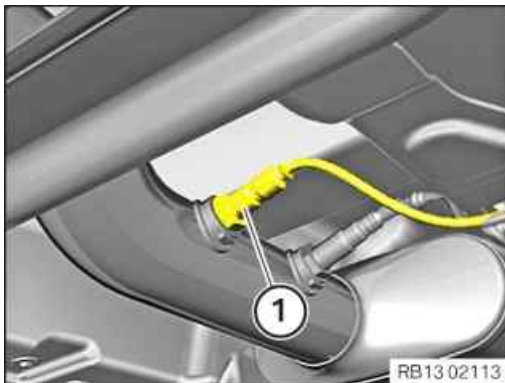
V-band clamp	Renew V-band clamp.	Tightening torque	22 Nm
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- Guide in, position and tighten the diesel particulate sensor (1).

Diesel particulate sensor to exhaust system

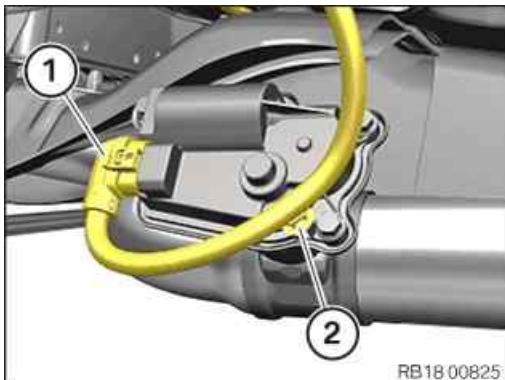
Sensor		Tightening torque	50 Nm
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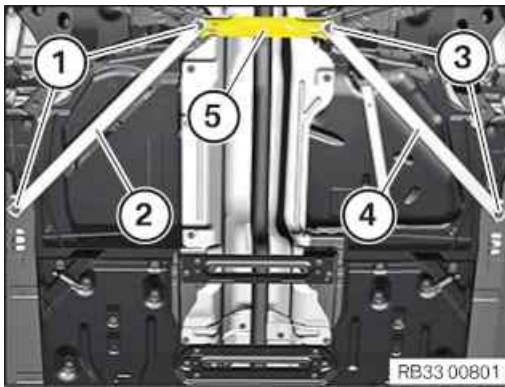
- Guide in, position and tighten the nitrogen oxide sensor (1).

Nitrogen oxide sensor downstream of SCR catalytic converter

Sensor		Tightening torque	50 Nm
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- Secure clamps (2).
- Connect connectors (1) and lock.
The connector (1) must engage audibly.



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

Parts: Bolts

- Tighten down screws (3).

Cross-member/torsion strut to axle support and mounting

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

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

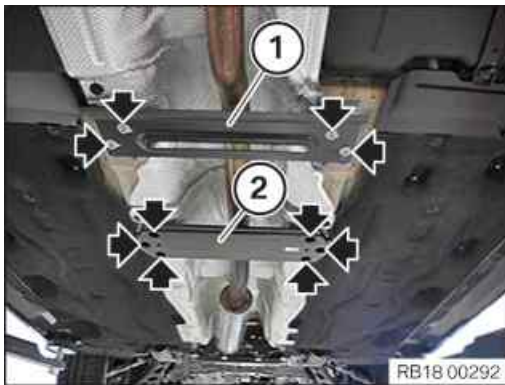
Parts: Bolts

- Tighten the screws (1).

Cross-member/torsion strut to axle support and mounting

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

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



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

Front connection carrier to body

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

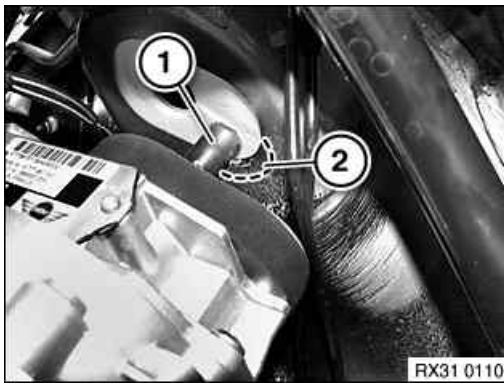
Rear connection carrier to body

M8x18		Tightening torque	28 Nm
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64 – Mount and secure the complete front axle



- Remove the seal (1).
 - Clean surface on steering gear.
 - Renew gasket (1).
- Parts:** Gasket
- Position the seal (1) and glue it on.

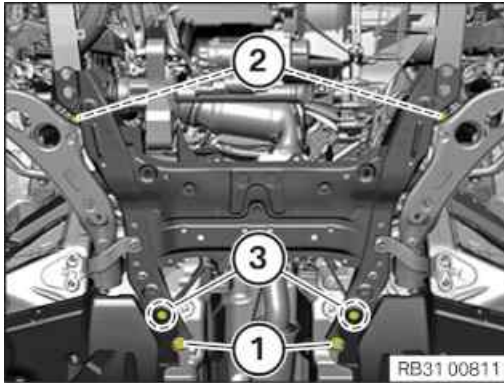


TECHNICAL INFORMATION

Non-compliance with the regulations for installation and disassembly may result in component damage. All work must be performed with care and in compliance with the regulations.

- When raising and lowering the front axle support, make sure that the torsion bar (1) of the electromechanical steering gear (EPS) in area (2) does not collide with the bulkhead!

Note: Collision with the bulkhead may result in damage to the electromechanical steering gear (EPS)!



- Position front axle support.
- Bend underbody panellings in the areas (3) to one side.
- Raise front axle support.
- When raising, insert charge air cooler into the rubber mount of the charge air cooler on cross member.
- Renew screws (1) and (2).

Parts: Bolts

- Tighten the screws (1).

Rear end of front axle support to body

M14 screw	Renew screw.	Tightening torque	175 Nm
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- Tighten down screws (2).

Front axle support, front to body

M12 screw	Renew screw.	Tightening torque	108 Nm
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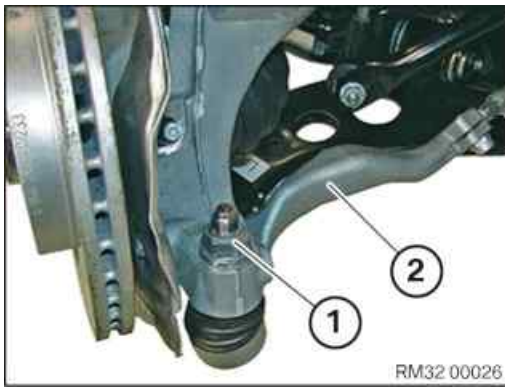
- If necessary, tighten the screws in the areas (3).

Underbody protection to body

Screw		Tightening torque	3 Nm
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- Remove special tool **0 496 080 (33 5 206)** from special tool **0 495 817 (31 5 251)**.
- Lower universal jack **0 490 133 (00 2 030)** with the special tool **0 495 817 (31 5 251)** and place it to the side.



NOTICE

Perform the operations on the left and right side.

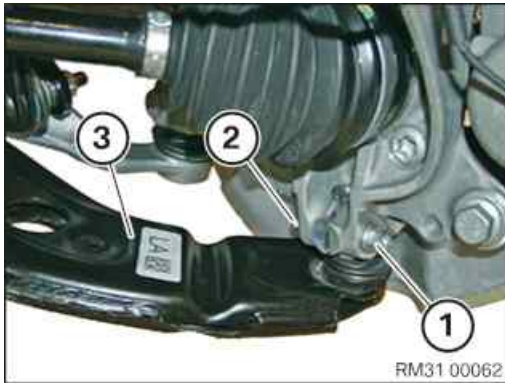
- Position the track rod (2) on the swivel bearing .
- Renew nut (1).

Parts: Nut

- Tighten nut (1).

Track rod end to swivel bearing

M14	Renew nut.	Tightening torque	175 Nm
-----	------------	-------------------	--------



NOTICE

Perform the operations on the left and right side.

- Position the wishbone (3) on the swivel bearing .
- Renew the bolt (2) and the nut (1).

Parts: Bolt, nut

- Insert screw (2).
- Tighten nut (1).

Wishbone to swivel bearing

M10	Exclusively use the screw to tighten! Renew screw and nut.	Tightening torque	60 Nm
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65 – Install the mounted parts on the front axle support



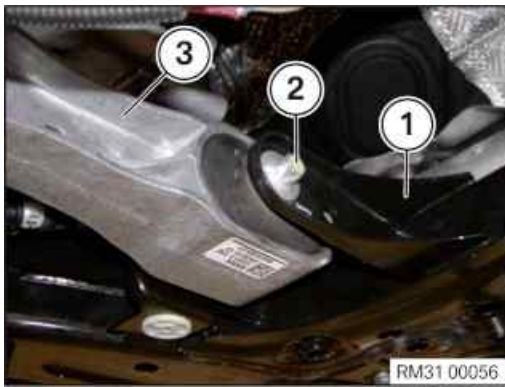
NOTICE

Perform the operations on the left and right side.

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

Holder, wishbone rubber mount, to body

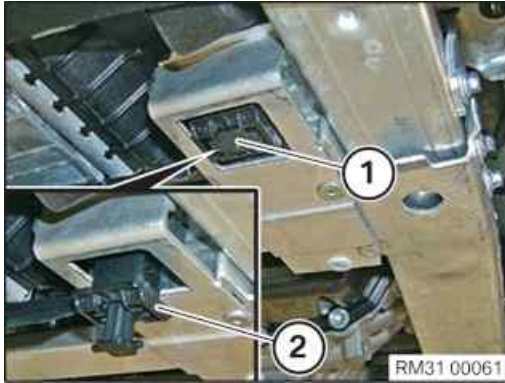
M10 screw	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °



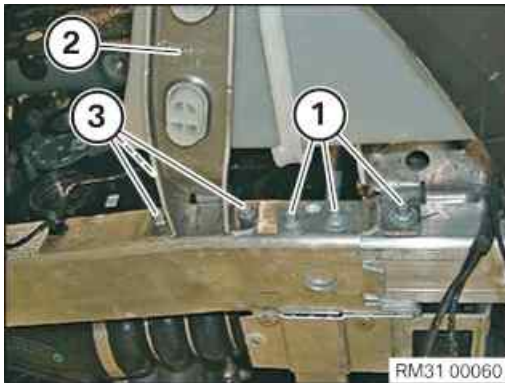
- Position the engine support (3) on the front axle support (1).
- Tighten down screw (2).

Holder with rubber mount to front axle support

M12 screw		100 Nm
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- Position the lock (2).
- Lock the bracket (1) of the lock (2) of the holder for the charge air cooler.



- **Only on right side:** Position the holder for the washer fluid reservoir (2).
- Tighten down screws (3).

Washer fluid reservoir holder to front axle support adapter plate

	Tightening torque	10 Nm
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- Tighten the screws (1).

Deformation element, bottom, to adapter plate, front axle carrier

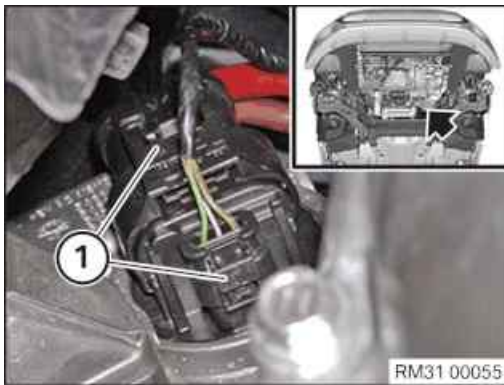
	Tightening torque	11,8 Nm
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66 – Attaching connector at steering gear

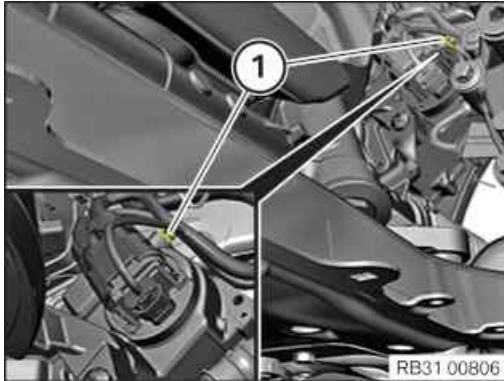


- To connect the connector (see the following step): Connect the connector with the right hand.

The connectors can be accessed via the left output shaft.

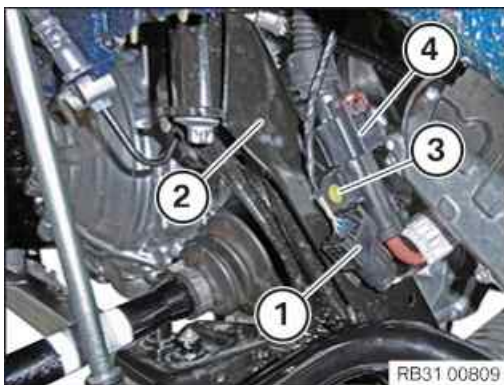


- Connect and lock connector (arrow) (1) with the steering gear.



- Fasten the wiring harness (1) on the steering gear.

► **If installed: Fasten the plug connections at the front axle support**



- Position the plug connection (4) at the front axle support (2).
- Tighten down screw (3).

Holder to front axle support

Oval-head screw TS5 x 16		Tightening torque	2,6 Nm
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- Fasten the plug connection (1) at the front axle support (2).

67 – Securing rubber mount on front axle support



- Check rubber mount (1), replace if necessary.

Parts: Rubber mount

- Spray rubber mount (1) with lubricant and slide onto holder on front axle support.

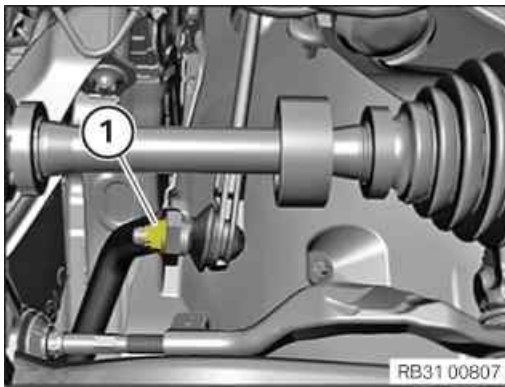
68 – Securing anti-roll bar on left and right on the anti-roll bar link



NOTICE

Perform the operations on the left and right side.

► **Fastening anti-roll bar on the anti-roll bar link**

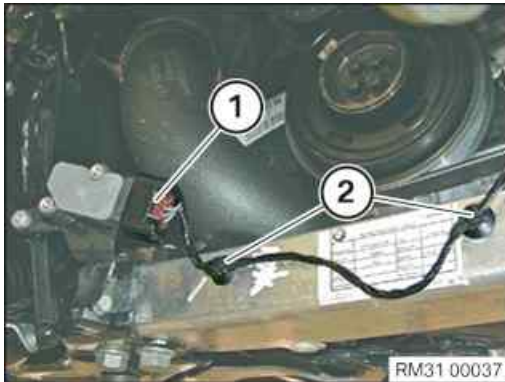


- Position the anti-roll bar link on the anti-roll bar .
 - Renew nut (1).
- Parts:** Nut
- Tighten nut (1).
- Note:** Use the Torx socket for counter support.

Anti-roll bar link to anti-roll bar

M10	Renew nut.	Tightening torque	56 Nm
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69 – With right installation: Securing the cable for the ride height sensor



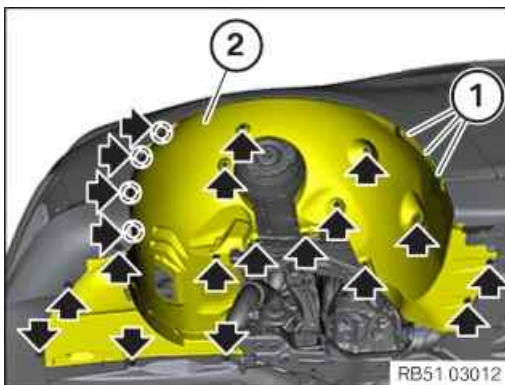
- Secure the cable clip (2) on the adapter of the deformation element.
- Connect connectors (1) and lock.

70 – Installing front left and right wheel arch cover



NOTICE

Perform the operations on the left and right side.



► Installing the front wheel arch cover

- Guide the wheel arch cover (2) in.
- Tighten all bolts and nuts (arrows).

Wheel arch cover to body

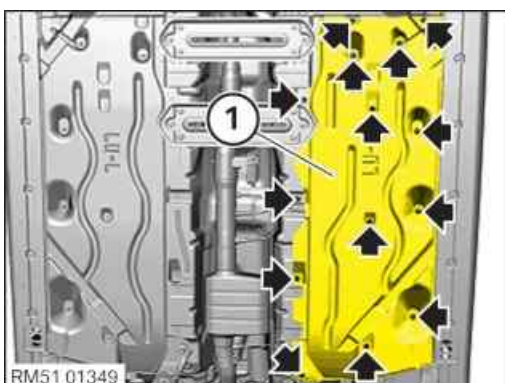
Screw		Tightening torque	2,5 Nm
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Wheel arch cover to body

Plastic nut		Tightening torque	3 Nm
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- Secure expanding rivet (1).

71 – Installing underbody panelling , right



- Correctly position the underbody panelling (1).
- Tighten all bolts and nuts (arrows).

Underbody panelling, side

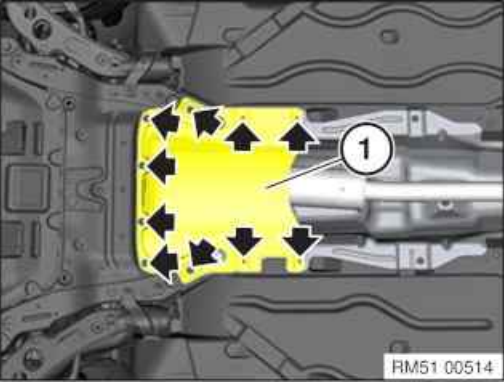
Hexagon screw		Tightening torque	2,6 Nm
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Underbody panelling, side

Plastic nut		Tightening torque	2,6 Nm
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72 – If installed: Installing underbody protection at rear

72 – If installed: installing underbody protection at rear



- Position rear underbody protection (1).
- Tighten screws (arrows).

Underbody protection to body

Screw		Tightening torque	3 Nm
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73 – Mount the front left and right wheels

► Mounting the wheel

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



i

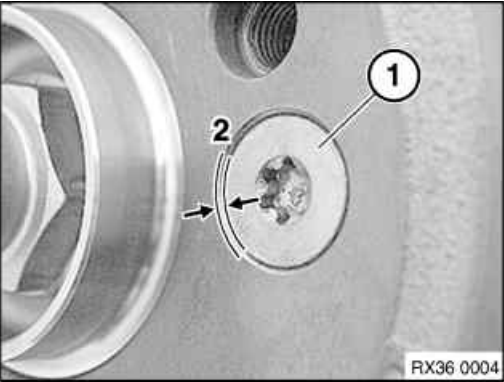
TECHNICAL INFORMATION

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 around 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).



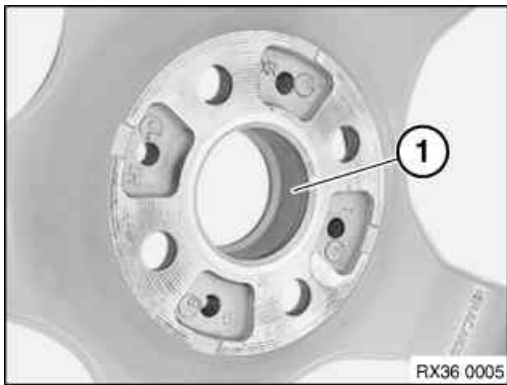
- Check the mounting bolt for the brake disc (1) for secure fit.
The mounting bolt for the brake disc (1) must not protrude under any circumstances on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.		16 Nm
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Brake disc to rear wheel hub

M8	Renew screw.		16 Nm
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- Lightly grease the wheel centring (1) in the wheel rim; refer to additional information for grease for the wheel centring.

◀



TECHNICAL INFORMATION

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

The wheel rim must rest uniformly against the brake disc.

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

Do not apply oil to new wheel bolts.

- Renew corroded wheel bolts.

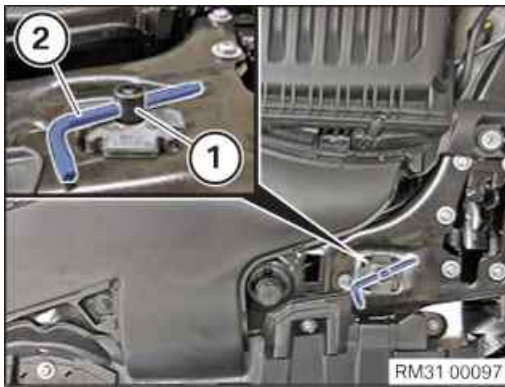
Parts: Wheel bolts

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

Wheel bolts

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

74 – Removing fastener for left and right radiator

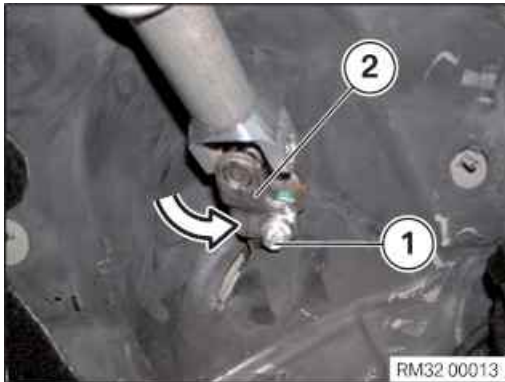


NOTICE

Perform the operations on the left and right side.

- Remove suitable tool (2) from the centering pin (1).

75 – Secure the steering shaft at the bottom on the steering gear



- Clean the screw lock residue from the screw thread in the universal joint (2).
- Pivot the universal joint (2) in the direction of the arrow to the steering gear.
- Renew the screw (1).

Parts: Screw

- Tighten down screw (1).

Lower steering shaft to steering gear

M10	Clean screw thread and remove remains of screw locking agent. Renew screw.	Tightening torque	28 Nm
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- **If installed:**
- Position the cover on the steering column (2).
- Tighten nuts (1).

Steering column cover to bulkhead

Plastic nut		Tightening torque	3 Nm
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76 – Install the heat shield on the exhaust turbocharger

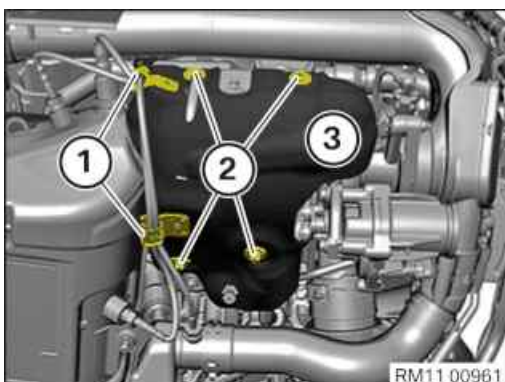


WARNING

Hot surfaces.

Risk of burning!

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



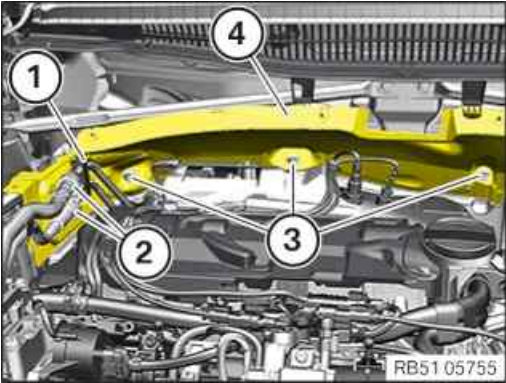
- Feed in and install the heat shield (3).
- Tighten down screws (2).

Heat shield for exhaust turbocharger

Torx screw BM 6x12		Tightening torque	10 Nm
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- Secure cable in holders (1).

77 – Installing rear bulkhead upper part



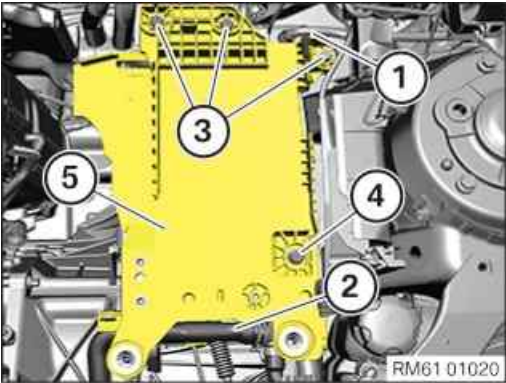
- Feed in and install the rear bulkhead upper part (4).
- Tighten down screws (3).

Rear bulkhead upper part to lower section of bulkhead

Oval-head screw		Tightening torque	5 Nm
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- Feed the fuel line (2) into the holder (1) and install.
- Connect and lock the holder (1).
The holder (1) must engage audibly.

78 – Install the battery holder



- Feed in and install the battery holder (5).
- Hand-tighten the bolt (4).
- Hand-tighten the bolts (3).
- Tighten down screw (4).

Battery holder to engine support

Hexagon screw M8x30		Tightening torque	19 Nm
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- Tighten down screws (3).

Battery holder to engine support

Hexagon screw M8x30		Tightening torque	19 Nm
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- Fasten the coolant line (2) on the battery holder (5).
- Fasten the cable clip (1) on the battery holder (5).

79 – Install electronics box

Prerequisite

Battery earth lead is disconnected.

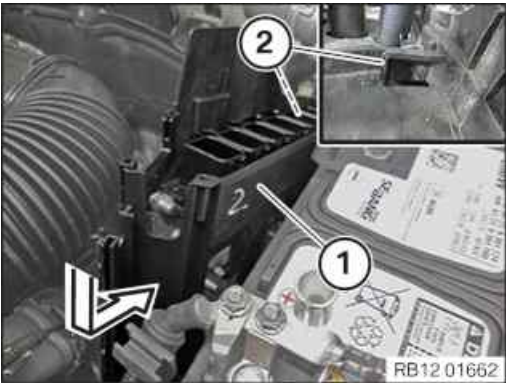


RISK OF DAMAGE

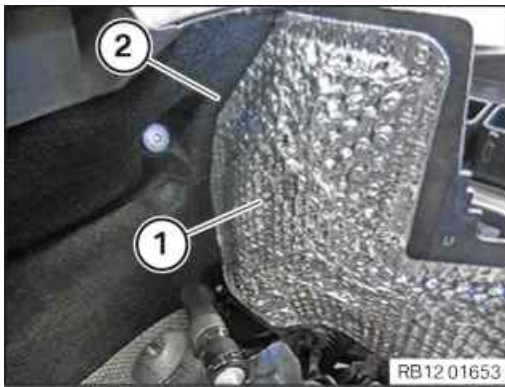
Improper routing of cables and wiring harnesses.

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

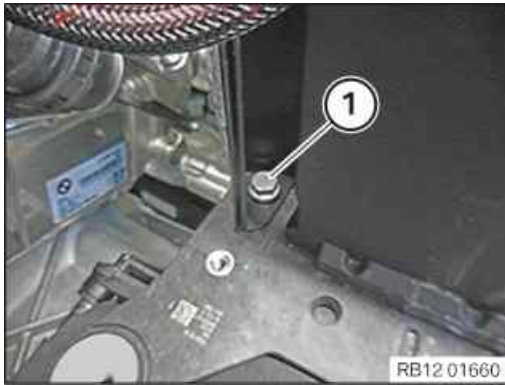
- Route all cables without abrasions, do not trap and crush.



- Guide in and install the electronics box (1) into the guide (2) in direction of arrow.



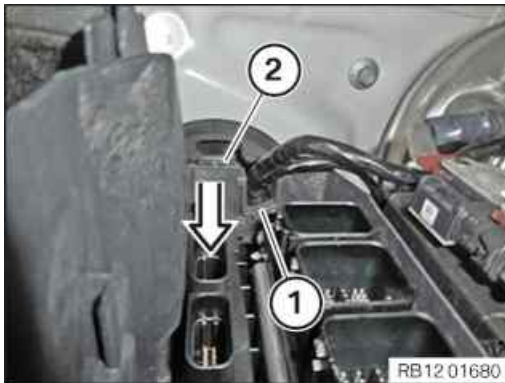
- Make sure that the electronics box (1) is positioned correctly on the bulkhead (2).



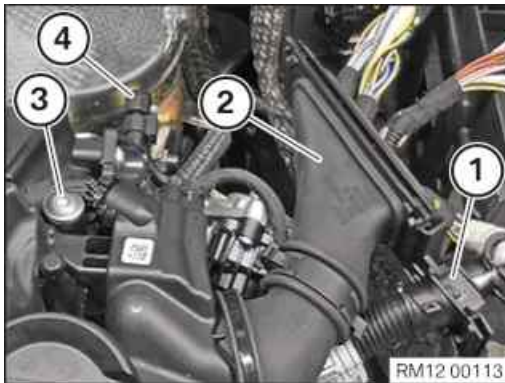
- Tighten down screw (1).

Electronics box to battery tray

M8X16		Tightening torque	15 Nm
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- Guide in and install the holder (1) in the electronics box (2) in direction of arrow.
- Make sure the bracket (1) engages audibly.

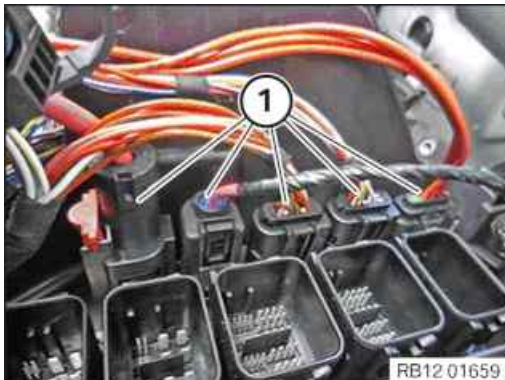


- Lay vehicle wiring harnesses (1) and (2) and mount on electronics box.
- Tighten down screw (3).

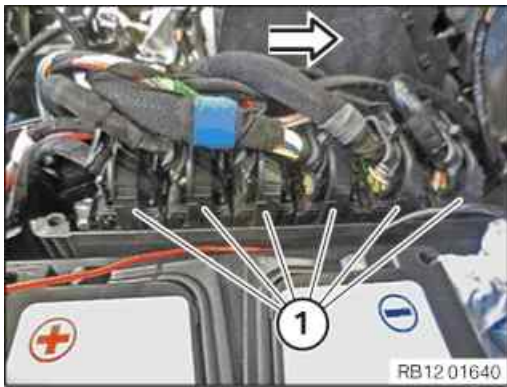
Wiring harness to cylinder head cover

TS5x20		Tightening torque	3,5 Nm
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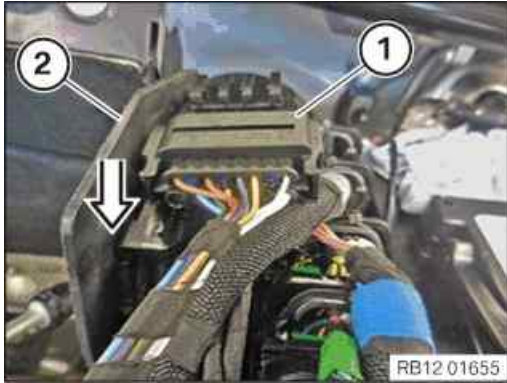
- Attach connector (4) to the differential pressure sensor and lock it audibly.



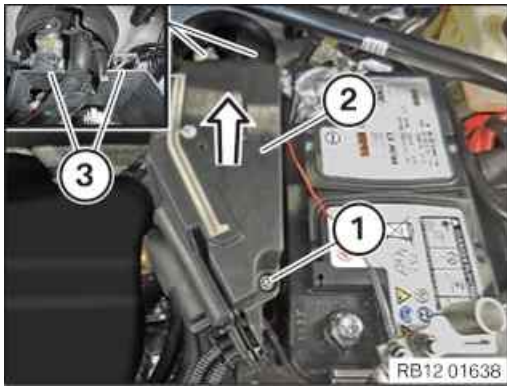
- Connect and lock the connector (1).
- Make sure the connectors (1) engage audibly.



- Connect connector (1) in direction of arrow and lock.
- Make sure the connectors (1) engage audibly.



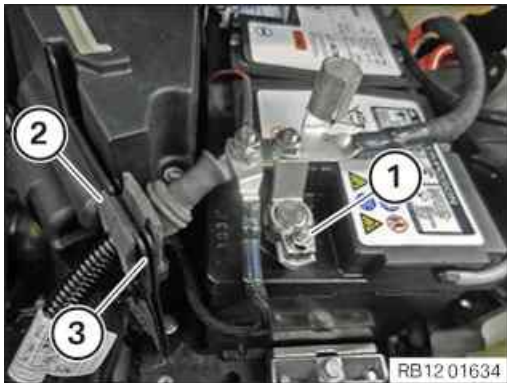
- Connect and lock the connector (1).
- Make sure the connector (1) engages audibly.
- Insert the connector (1) in the direction of arrow at the electronics box (2) and install.



- Insert the cover (2) into the guides (3) in the direction of arrow and install.
- Make sure the cover audibly engages (2) in the guides (3).
- Tighten down screw (1).

Cover to electronics box

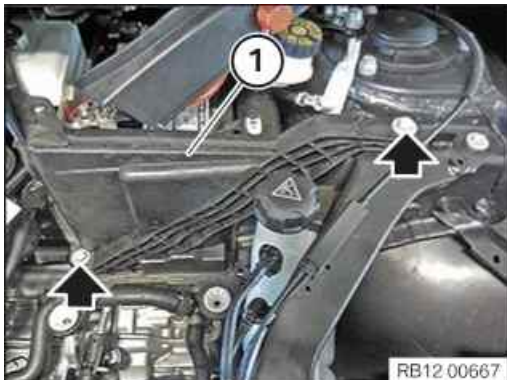
RF5x26.5		Tightening torque	2,5 Nm
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- Thread in positive battery cable (2) on holder (3) and install.
- Feed in and install positive battery terminal (1).
- Tighten positive battery terminal (1).

Positive battery terminal to battery

NutM6		Tightening torque	5 Nm
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- Feed in and install tension strut (1).
- Tighten screws (arrows).

Tension strut to spring strut dome/battery tray

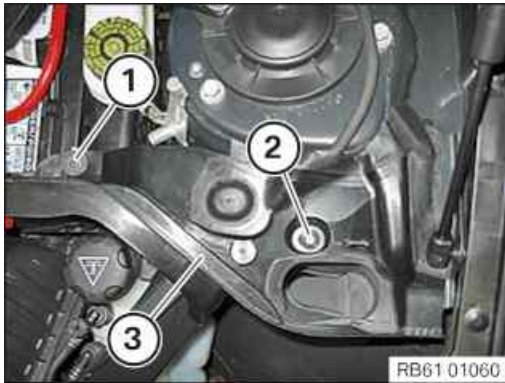
M8		Tightening torque	19 Nm
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- Feed in and install cover (2) at the positive battery connection point.
- Tighten down screw (1).

Positive battery connection point cover to engine compartment partition wall

		Tightening torque	3 Nm
--	--	-------------------	------

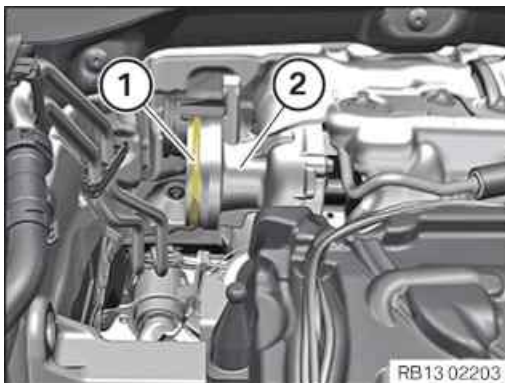


- Position the fixture for the gasket (3) and secure with the expanding rivet (2).
- Tighten down screw (1).

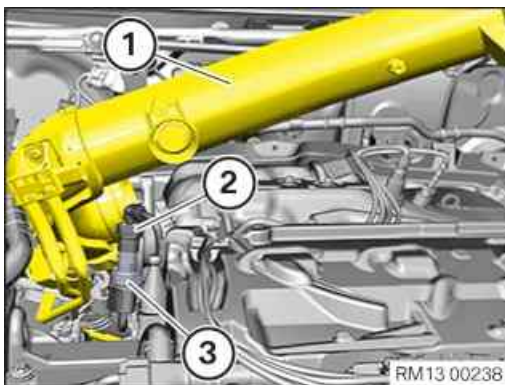
Battery cover

Screw			2,8 Nm
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80 – Installing clean air pipe



- Check the sealing ring (1) of the exhaust turbocharger (2) for damage and renew it if necessary.

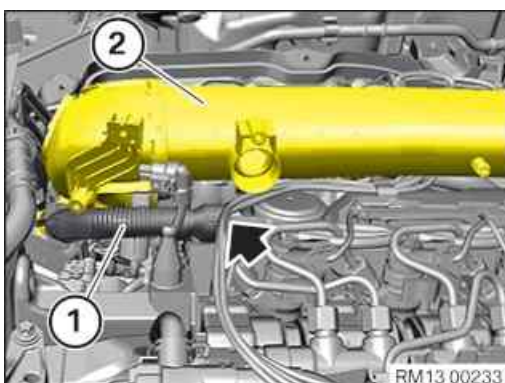


- Feed in clean air pipe (1) and lay it down as shown.
- Insert and install the exhaust gas pressure sensor (3).
- Tighten the exhaust gas pressure sensor (3).

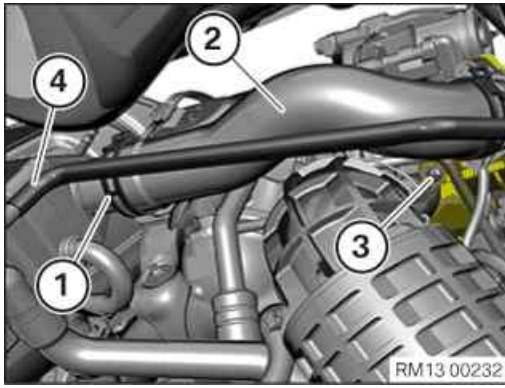
Exhaust gas pressure sensor

Exhaust gas pressure sensor		Tightening torque	13,5 Nm
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- Connect and lock the connector (2).
The connector (2) must engage audibly.
- Install the clean air pipe (1).



- Feed in ventilation line (1) at clean air pipe (2) and install.
- Feed in ventilation line (1) at cylinder head cover (arrow) and install.



- Tighten down screw (3).

Clean air pipe to exhaust turbocharger

Torx bolt BM8x25		Tightening torque	8 Nm
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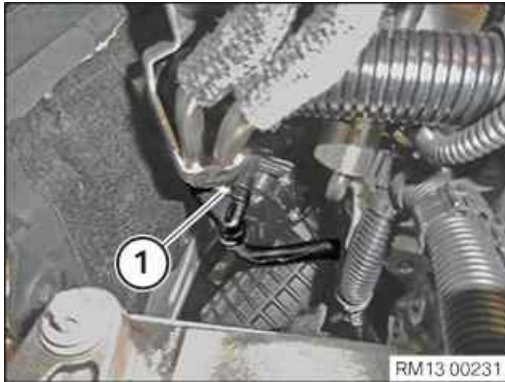
- Feed the pressure hose (2) in and install.
- Position and secure the clamp (1).
- Check pressure hose (4).
- Renew hardened pressure hoses (4).

Parts: Pressure hose

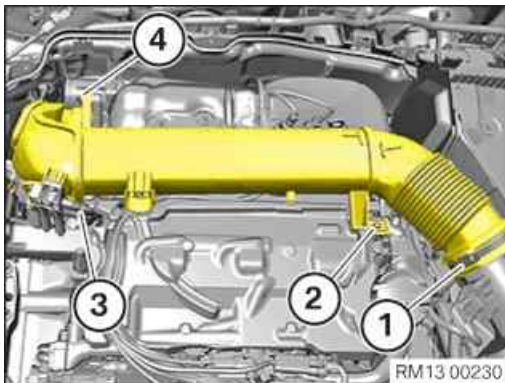
- Connect pressure hose (4) and secure with 15 mm to 19 mm screw clamps.

Clamp for the pressure hose on the differential pressure sensor

Clamp 15– 19mm		Tightening torque	3 Nm
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- Connect and lock the connector (1).
The connector (1) must lock audibly.



- Tighten down screw (4).

Clean air pipe to exhaust turbocharger

Torx bolt BM8x25		Tightening torque	8 Nm
---------------------	--	-------------------	------

- Connect and lock the connector (3).
The connector (3) must engage audibly.
- Renew the screw (2).

Parts: Screw

- Tighten down screw (2).

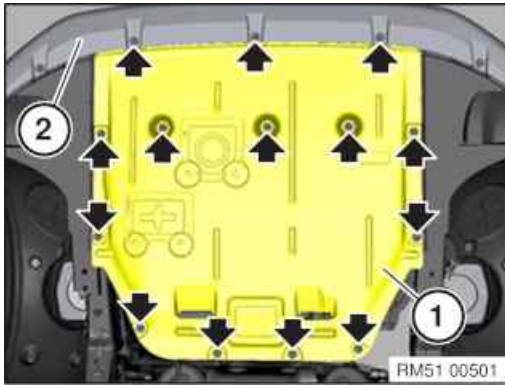
Clean air pipe to cylinder head cover

Oval-head screw	Renew screw.	Tightening torque	8 Nm
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- Tighten the screw clamp (1).

Clean air pipe to intake silencer housing

Clamp		Tightening torque	3 Nm
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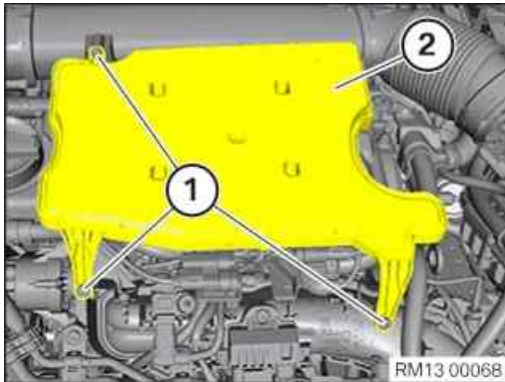


- Guide the front underbody protection (1) in under the bumper panel (2) and position it at the screw points.
- Tighten screws (arrows).

Underbody protection front

			3 Nm
--	--	--	------

82 – Install resonator



- Insert and install the resonator (2).
 - Renew screws (1).
- Parts:** Bolts
- Tighten the screws (1).

Resonator to manifold and clean air pipe

Screw TS6	Renew screw.	Tightening torque	5 Nm
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83 – Install acoustic cover



RISK OF DAMAGE

Damage to the acoustic cover.

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

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

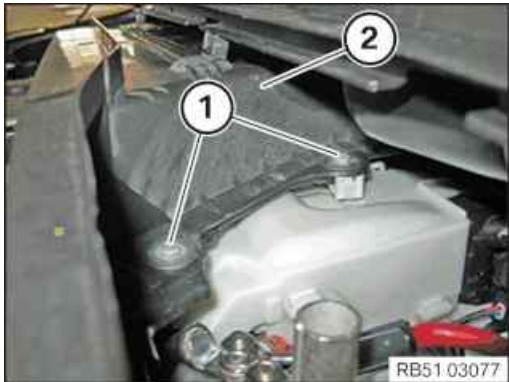


- Check for correct installation of all rubber mounts in the acoustic cover (1).



- Clip in the acoustic cover into the holders in the indicated areas.
- Make sure that the acoustic cover engages audibly.

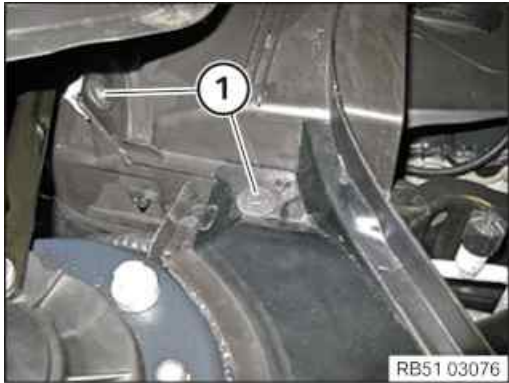
84 – Installing the upper bulkhead cover



- Feed in and install cover (2) of the bulkhead at the top.
- Tighten the screws (1).

Bulkhead cover, top

Screw		Tightening torque	3 Nm
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- Tighten the screws (1).

Bulkhead cover, top

Screw		Tightening torque	3 Nm
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- Tighten the screws (1).

Bulkhead cover, top

Screw		Tightening torque	3 Nm
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85 – Install vehicle battery

i

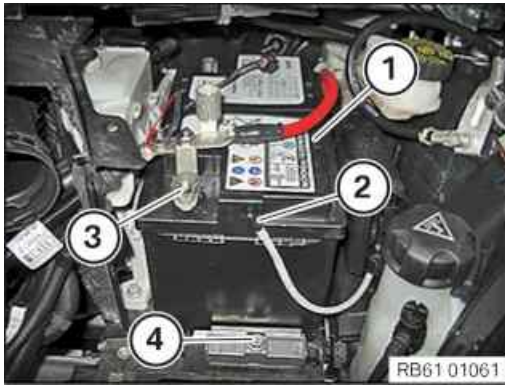
TECHNICAL INFORMATION

For additional information see:

61 00 ... Safety information on handling the vehicle battery

61 00 / 12 00 ... Notes on disconnecting and connecting the vehicle battery

61 12 ... Notes on the intelligent battery sensor (IBS)



- Install vehicle battery (1).
- Tighten the holder with the bolt (4).

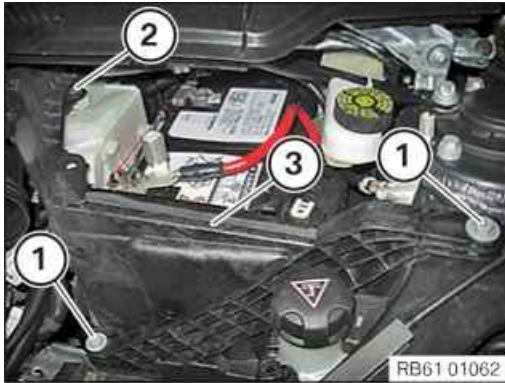
Battery terminal rail to battery tray

M8 screw		19 Nm
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- Position the vent hose (2).
- Position the positive terminal.
- Tighten the nut (3) on the positive terminal.

Positive battery terminal

NutM6		5 Nm
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- Insert the tension strut (3).
- Tighten down screw (2).

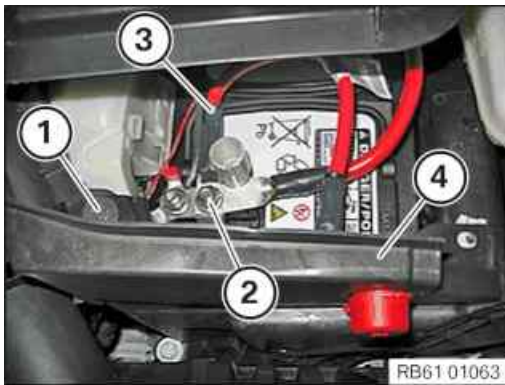
Battery cover

Screw		2,8 Nm
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- Tighten the screws (1).

Trailing link

M8 screw		19 Nm
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- Position the positive battery cable (3) with the cover of the remote positive terminal (4).
- Tighten down screw (1).

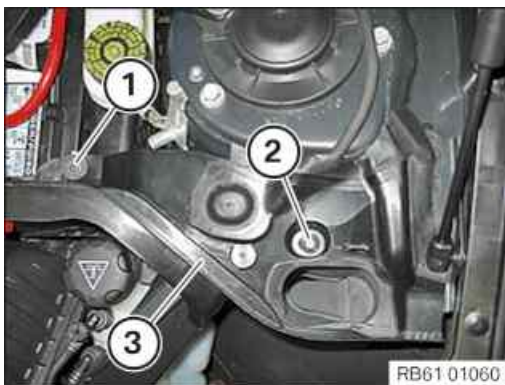
Battery cover

Screw		2,8 Nm
-------	--	--------

- Tighten the nut (2) on the positive terminal.

Positive battery cable to battery terminal

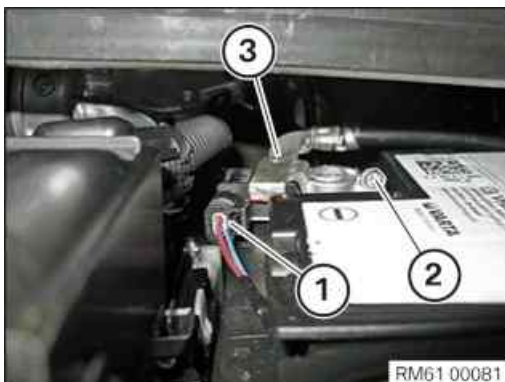
Nut M8		15,2 Nm
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- Position the fixture for the gasket (3) and secure with the expanding rivet (2).
- Tighten down screw (1).

Battery cover

Screw		2,8 Nm
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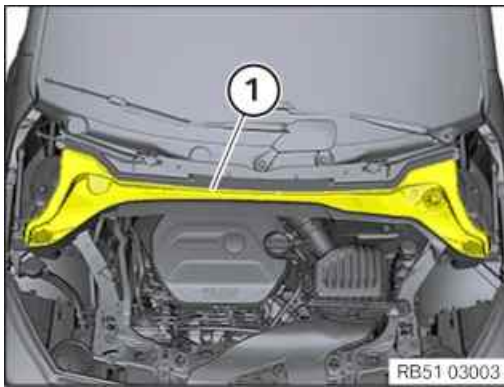


- Position the negative battery terminal (3).
- Tighten nut (2).

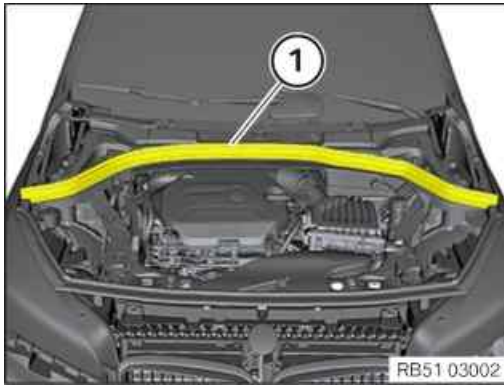
Negative battery terminal (with IBS)

NutM6		5 Nm
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- Connect connectors (1) and lock.

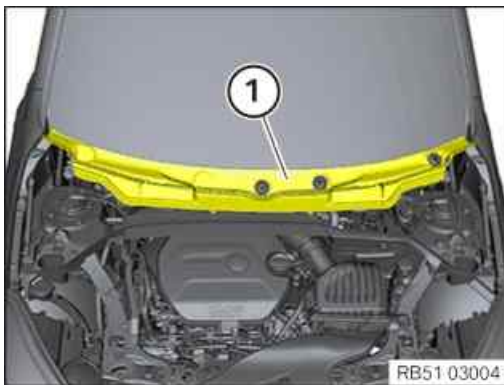


- Feed in the cowl panel cover (1).



- Press the gasket (1) in a downwards direction.

86 – Install the rear cowl panel cover



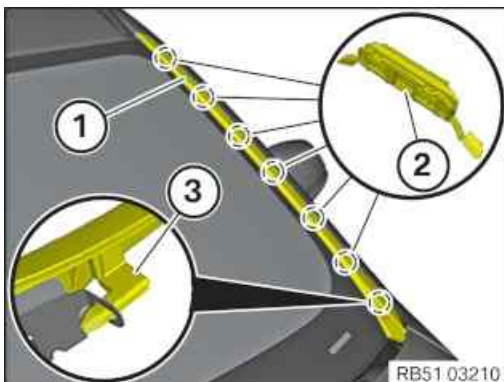
- Feed in and engage the rear cowl panel cover (1).

87 – Install the gutter strip on the windscreen on the left and right



NOTICE

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



► Install the gutter strip on the windscreen

- Check the clamps (2) for damage and renew if necessary.
- Insert the gutter strip (1) with the guide (3).
- Align the gutter strip (1) at the roof and clip it in.

88 – Install left and right wiper arm



NOTICE

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

► Install the wiper arm

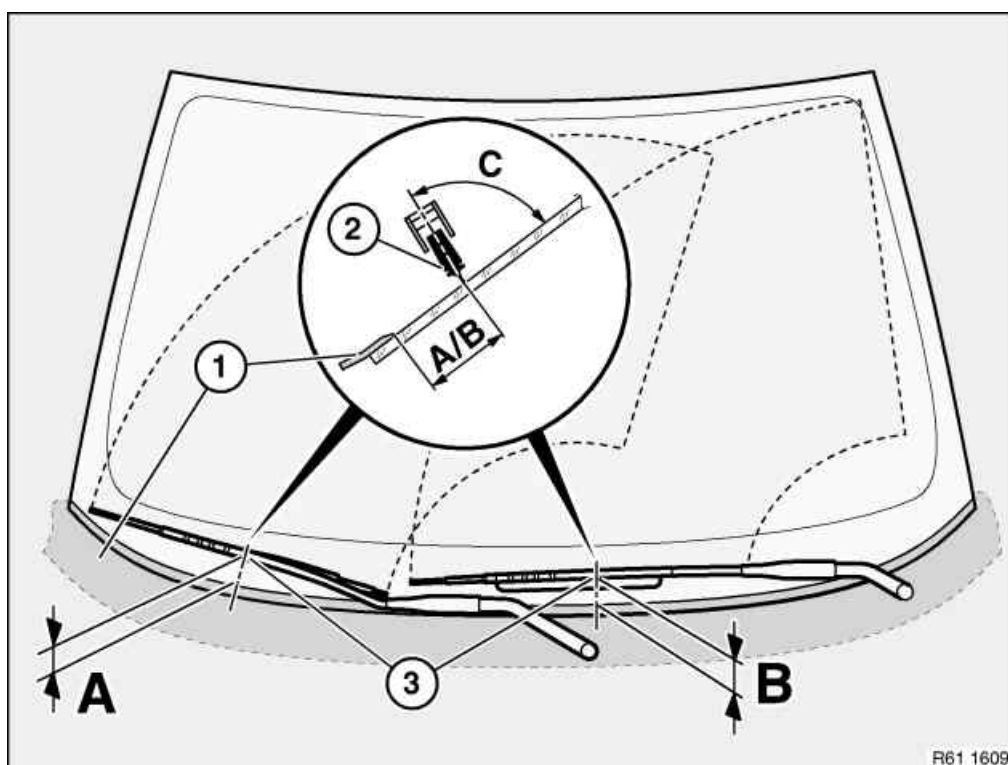


TECHNICAL INFORMATION

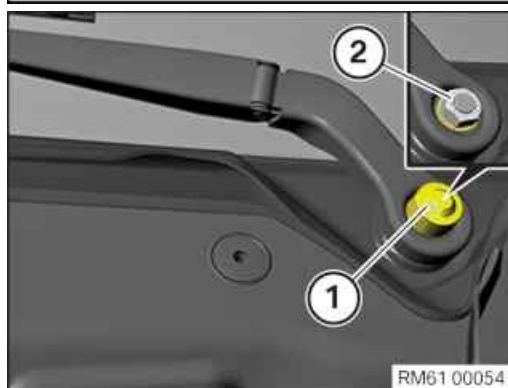
The wiper system must be in zero position.

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).



NOTICE

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

- Tighten nut (2).

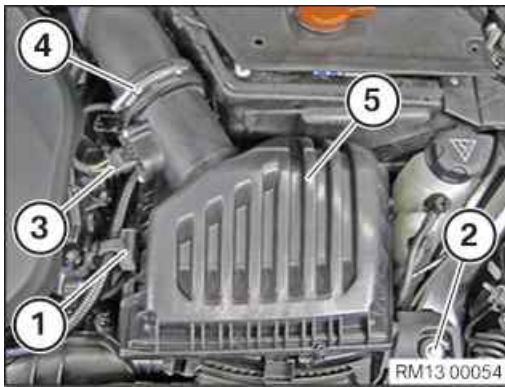
Windscreen wiper arm

Combination
hexagon nut

Tightening torque

35 Nm

- Connect the protective cap (1).



- Insert the intake silencer housing (5) into the rubber mounts and install it.
Intake filter housing (5) must engage audibly.
- Tighten down screw (2).

Intake silencer housing to lock bridge

M6X30		Tightening torque	8 Nm
-------	--	-------------------	------

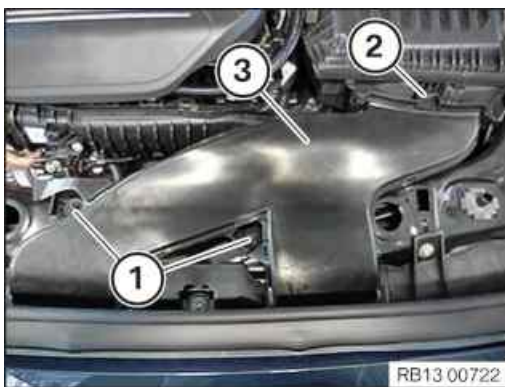
- Tighten clamp (4).

Clean air pipe to intake silencer housing

Clamp		Tightening torque	3 Nm
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- Connect and lock the connector (3).
The connector (3) must engage audibly.
- Insert and install the holder (1).

90 – Install the intake neck for the intake filter housing



- Insert and install the intake neck (3).
The lock (2) must audibly engage.
- Tighten nuts (1).

Intake neck to cross connection

M6		Tightening torque	8 Nm
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Additional Information

Overview of Tightening Torques

Exhaust manifold to cylinder head

Used in step [46](#)

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

Banjo bolt for exhaust pressure pipe to exhaust manifold

Used in step [46](#)

Hollow bolt		Renew sealing rings.	30 Nm
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Exhaust-gas recirculation cooler to exhaust manifold

Used in step [46](#)

M8x28	Replace screws	Tightening torque	32 Nm
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Exhaust turbocharger to exhaust manifold

Used in step [48](#)

V-band clamp		Tightening torque	19 Nm
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Oil feed line to exhaust turbocharger

Used in step [48](#)

Hollow bolt	Renew sealing rings.	Jointing torque	10 Nm
		Angle of rotation	45 °

Oil return line to turbocharger

Used in step [48](#)

M6x12		Tightening torque	8 Nm
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Holder to exhaust turbocharger and crankcaseUsed in step [48](#)

M8x16		Tightening torque	22 Nm
-------	--	-------------------	-------

Heat shield for exhaust turbochargerUsed in step [49](#) [50](#) [76](#)

Torx screw BM 6x12		Tightening torque	10 Nm
--------------------	--	-------------------	-------

Exhaust turbocharger bracket to cylinder headUsed in step [49](#)

Hexagon screw M 8x16		Tightening torque	19 Nm
----------------------	--	-------------------	-------

Diesel particulate filter V-clip to exhaust turbochargerUsed in step [51](#)

V-band clamp	Renew V-band clamp.	Tightening torque	15 Nm
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Diesel particle filter to holderUsed in step [51](#)

M8 hexagon nut		Tightening torque	19 Nm
----------------	--	-------------------	-------

SCR metering module V-clip to exhaust systemUsed in step [51](#)

V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm
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Holder for coolant lines to diesel particulate filterUsed in step [51](#)

Torx bolt BM6x16		Tightening torque	8 Nm
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Low-pressure exhaust-gas recirculation cooler to diesel particulate filterUsed in step [51](#)

Flange nutM8		Tightening torque	19 Nm
--------------	--	-------------------	-------

Differential pressure sensor to holderUsed in step [52](#)

Screw		Tightening torque	4 Nm
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Clamp for the pressure hose on the differential pressure sensorUsed in step [52](#) [80](#)

Clamp 15–19mm		Tightening torque	3 Nm
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Control sensorUsed in step [53](#)

Control sensor		Tightening torque	50 Nm
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Exhaust temperature sensor to diesel particulate filterUsed in step [54](#) [55](#)

Exhaust-gas temperature sensor		Tightening torque	28 Nm
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Exhaust-gas temperature sensor to exhaust systemUsed in step [56](#)

Exhaust-gas temperature sensor		Tightening torque	28 Nm
--------------------------------	--	-------------------	-------

Oxygen sensor holder to intermediate shaftUsed in step [57](#)

Hexagon screw M6x16		Tightening torque	8 Nm
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Nitrogen oxide sensor before SCR catalytic converterUsed in step [58](#)

Sensor		Tightening torque	50 Nm
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Monitoring sensorUsed in step [59](#)

Sensor		Tightening torque	50 Nm
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Starter motor to transmissionUsed in step [60](#)

M8x45		Tightening torque	19 Nm
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Battery positive lead to starterUsed in step [60](#)

M8		Tightening torque	13,5 Nm
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Exhaust system to bodyUsed in step [61](#)

M8	Replace nuts.	Tightening torque	19 Nm
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Exhaust bracket on bodyUsed in step [61](#)

Hexagon screw M8x30		Tightening torque	19 Nm
---------------------	--	-------------------	-------

V-clip to catalytic converterUsed in step [61](#)

V-band clamp	Renew V-band clamp.	Tightening torque	22 Nm
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Diesel particulate sensor to exhaust systemUsed in step [61](#)

Sensor		Tightening torque	50 Nm
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Nitrogen oxide sensor downstream of SCR catalytic converterUsed in step [61](#)

Sensor		Tightening torque	50 Nm
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Cross-member/torsion strut to axle support and mountingUsed in step [62](#)

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

Front connection carrier to bodyUsed in step [63](#)

M10x18		Tightening torque	56 Nm
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Rear connection carrier to bodyUsed in step [63](#)

M8x18		Tightening torque	28 Nm
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Rear end of front axle support to bodyUsed in step [64](#)

M14 screw	Renew screw.	Tightening torque	175 Nm
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Front axle support, front to bodyUsed in step [64](#)

M12 screw	Renew screw.	Tightening torque	108 Nm
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Underbody protection to bodyUsed in step [64](#) [72](#)

Screw		Tightening torque	3 Nm
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Track rod end to swivel bearingUsed in step [64](#)

M14	Renew nut.	Tightening torque	175 Nm
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Wishbone to swivel bearingUsed in step [64](#)

M10	Exclusively use the screw to tighten! Renew screw and nut.	Tightening torque	60 Nm
-----	---	-------------------	-------

Holder, wishbone rubber mount, to bodyUsed in step [65](#)

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

Holder with rubber mount to front axle supportUsed in step [65](#)

M12 screw			100 Nm
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Washer fluid reservoir holder to front axle support adapter plateUsed in step [65](#)

		Tightening torque	10 Nm
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Deformation element, bottom, to adapter plate, front axle carrierUsed in step [65](#)

		Tightening torque	11,8 Nm
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Holder to front axle supportUsed in step [66](#)

Oval-head screw TS5 x 16		Tightening torque	2,6 Nm
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Anti-roll bar link to anti-roll barUsed in step [68](#)

M10	Renew nut.	Tightening torque	56 Nm
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Wheel arch cover to bodyUsed in step [70](#)

Screw		Tightening torque	2,5 Nm
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Wheel arch cover to bodyUsed in step [70](#)

Plastic nut		Tightening torque	3 Nm
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Underbody panelling, sideUsed in step [71](#)

Hexagon screw		Tightening torque	2,6 Nm
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Underbody panelling, sideUsed in step [71](#)

Plastic nut		Tightening torque	2,6 Nm
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Brake disc to front wheel hubUsed in step [73](#)

M8	Renew screw.		16 Nm
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Brake disc to rear wheel hubUsed in step [73](#)

M8	Renew screw.		16 Nm
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Wheel boltsUsed in step [73](#)

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

Lower steering shaft to steering gearUsed in step [75](#)

M10	Clean screw thread and remove remains of screw locking agent. Renew screw.	Tightening torque	28 Nm
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Steering column cover to bulkheadUsed in step [75](#)

Plastic nut		Tightening torque	3 Nm
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Rear bulkhead upper part to lower section of bulkheadUsed in step [77](#)

Oval-head screw		Tightening torque	5 Nm
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Battery holder to engine support Used in step [78](#)

Hexagon screw M8x30		Tightening torque	19 Nm
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Electronics box to battery tray Used in step [79](#)

M8X16		Tightening torque	15 Nm
-------	--	-------------------	-------

Wiring harness to cylinder head cover Used in step [79](#)

TS5x20		Tightening torque	3,5 Nm
--------	--	-------------------	--------

Cover to electronics box Used in step [79](#)

RF5x26.5		Tightening torque	2,5 Nm
----------	--	-------------------	--------

Positive battery terminal to battery Used in step [79](#)

NutM6		Tightening torque	5 Nm
-------	--	-------------------	------

Tension strut to spring strut dome/battery tray Used in step [79](#)

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

Positive battery connection point cover to engine compartment partition wall Used in step [79](#)

		Tightening torque	3 Nm
--	--	-------------------	------

Battery cover Used in step [79](#) [85](#)

Screw			2,8 Nm
-------	--	--	--------

Exhaust gas pressure sensor Used in step [80](#)

Exhaust gas pressure sensor		Tightening torque	13,5 Nm
-----------------------------	--	-------------------	---------

Clean air pipe to exhaust turbocharger Used in step [80](#)

Torx bolt BM8x25		Tightening torque	8 Nm
------------------	--	-------------------	------

Clean air pipe to cylinder head cover Used in step [80](#)

Oval-head screw	Renew screw.	Tightening torque	8 Nm
-----------------	--------------	-------------------	------

Clean air pipe to intake silencer housing Used in step [80](#) [89](#)

Clamp		Tightening torque	3 Nm
-------	--	-------------------	------

Underbody protection front Used in step [81](#)

			3 Nm
--	--	--	------

Resonator to manifold and clean air pipe Used in step [82](#)

Screw TS6	Renew screw.	Tightening torque	5 Nm
-----------	--------------	-------------------	------

Bulkhead cover, top Used in step [84](#)

Screw		Tightening torque	3 Nm
-------	--	-------------------	------

Battery terminal rail to battery tray Used in step [85](#)

M8 screw			19 Nm
----------	--	--	-------

Positive battery terminal Used in step [85](#)

NutM6			5 Nm
-------	--	--	------

Trailing link

Used in step [85](#)

M8 screw		19 Nm
----------	--	-------

Positive battery cable to battery terminal

Used in step [85](#)

Nut M8		15,2 Nm
--------	--	---------

Negative battery terminal (with IBS)

Used in step [85](#)

Nut M6		5 Nm
--------	--	------

Windscreen wiper arm

Used in step [88](#)

Combination hexagon nut	Tightening torque	35 Nm
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Intake silencer housing to lock bridge

Used in step [89](#)

M6X30	Tightening torque	8 Nm
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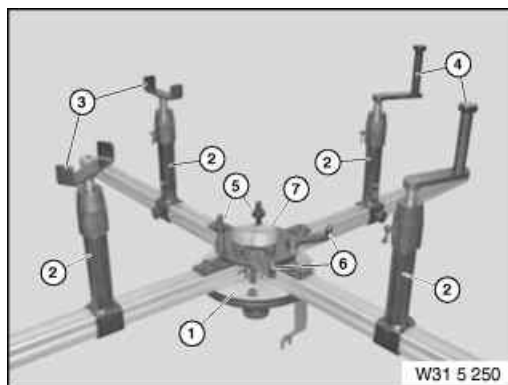
Intake neck to cross connection

Used in step [90](#)

M6	Tightening torque	8 Nm
----	-------------------	------

Overview of Special Tools

0 495 817 (31 5 251) Basic body

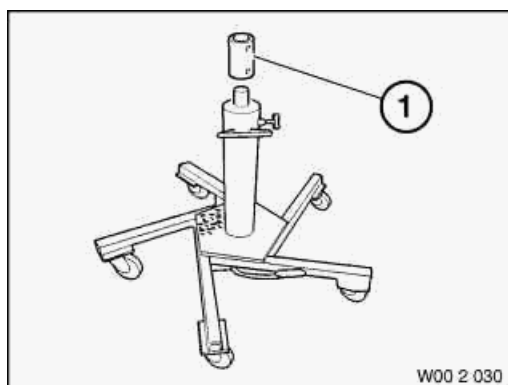


Common

Used in step [27](#) [64](#)

Usage	(Basic body) No longer available separately, only via special tool set 31 5 250 (83 30 0 495 567)
Included in the tool or work	0 495 567
Storage location	
Replaced by	
In connection with	
SI-Number	01 24 06 (309)

0 490 133 (00 2 030) Device



Common

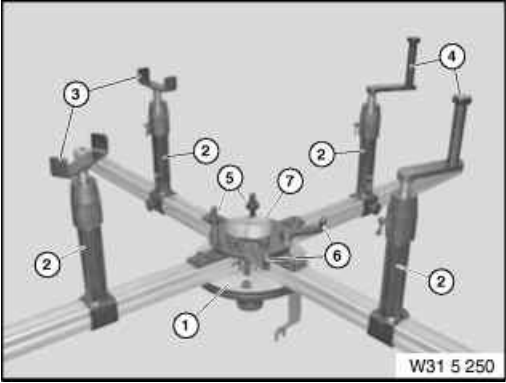
Used in step [27](#) [64](#)

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

Consisting of

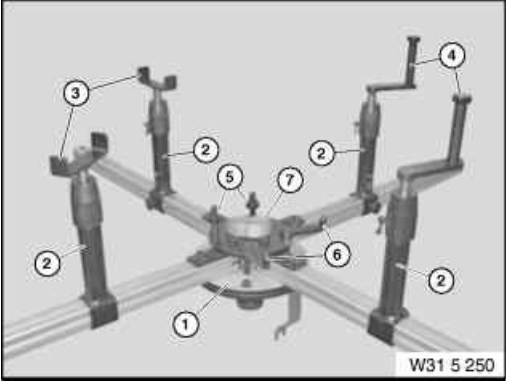
Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 490 134 (00 2 031)		Adapter (adapter for gearbox holder) Model series: E30, E31, E32, E34, E36	

0 495 821 (31 5 255) Adapter



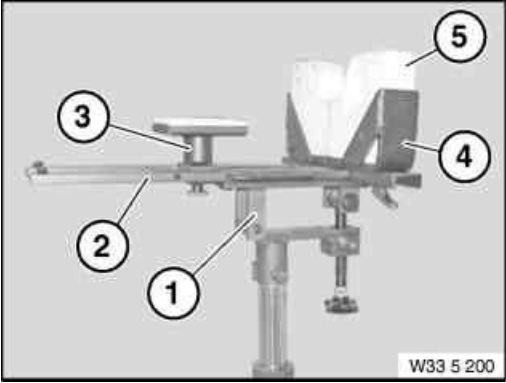
Common		Used in step	27
Usage	(take-up adapter for bore holes (2 x))		
Included in the tool or work	0 495 567		
Storage location			
Replaced by			
In connection with			
SI-Number	01 24 06 (309)		

0 495 819 (31 5 253) Adapter



Common		Used in step	27
Usage	(take-up adapter U-section (2 x))		
Included in the tool or work	0 495 567		
Storage location			
Replaced by			
In connection with			
SI-Number	01 24 06 (309)		

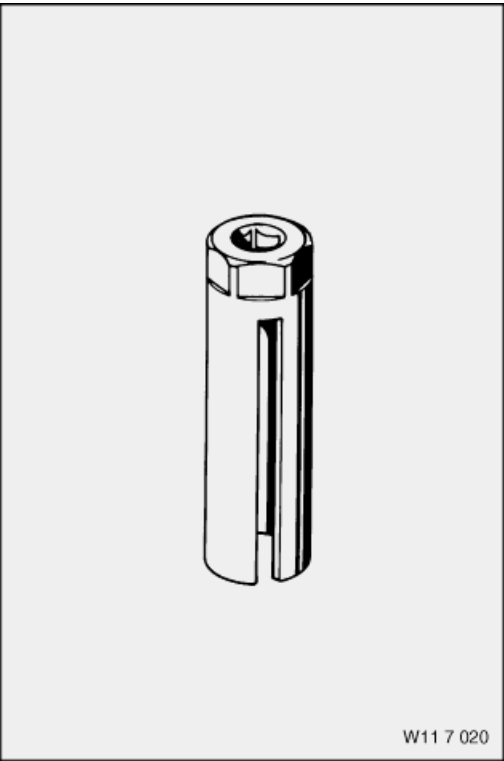
0 496 080 (33 5 206) Belt



Common		Used in step	27	64
Usage	(Tensioning strap)			
Included in the tool or work	0 496 009			
Storage location				
Replaced by				
In connection with				
SI-Number				

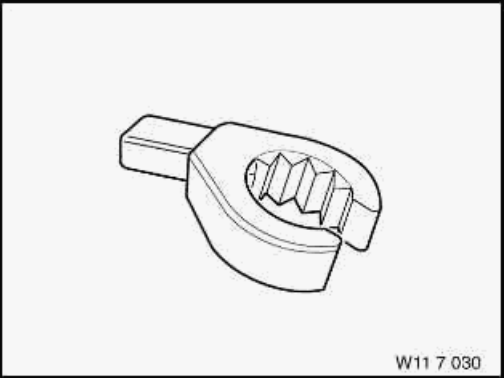
0 491 074 (11 7 020) Socket wrench insert

Used in step 33 34 59



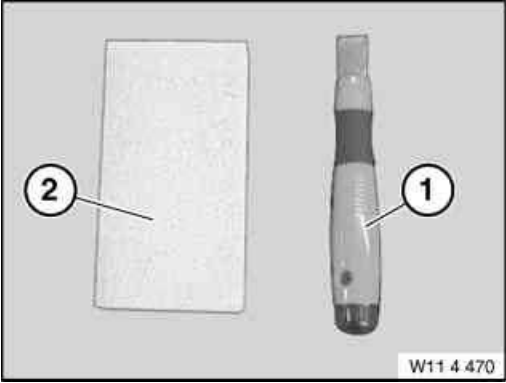
Common	
Usage	(Socket wrench insert 22 mm) For loosening and tightening the oxygen sensor
Included in the tool or work	
Storage location	A9
Replaced by	
In connection with	
SI-Number	

0 491 075 (11 7 030) Socket wrench insert



Common		Used in step	39	53
Usage	(Socket wrench insert 22 mm) For loosening and tightening the oxygen sensor			
Included in the tool or work				
Storage location	A9			
Replaced by				
In connection with				
SI-Number	01 06 95 (963)			

0 495 102 (11 4 470) Tool



Common		Used in step	46
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	73
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	18
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259		
Included in the tool or work	0 492 518		
Storage location			
Replaced by			
In connection with			
SI-Number			

0 495 224 (36 1 326) Wheel stud



Common		Used in step 18
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 18
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 18
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



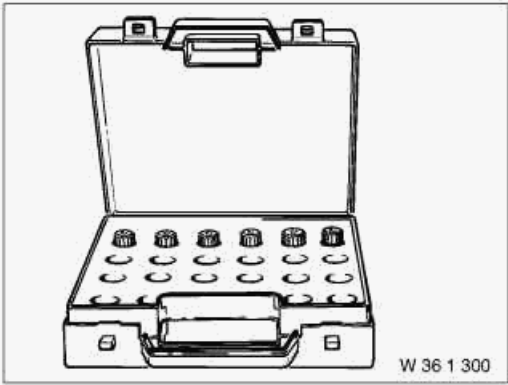
Common		Used in step	18
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341		
Included in the tool or work	0 492 518		
Storage location			
Replaced by			
In connection with			
SI-Number			

0 495 228 (36 1 331) Wheel stud



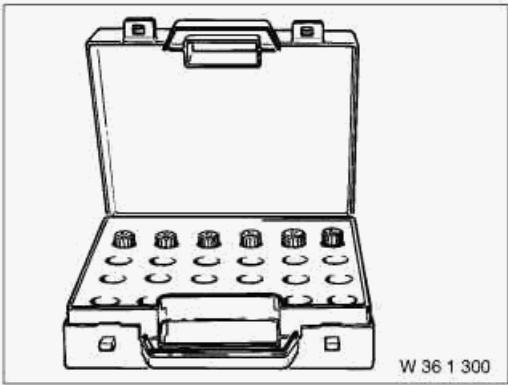
Common		Used in step	18
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342		
Included in the tool or work	0 492 518		
Storage location			
Replaced by			
In connection with			
SI-Number			

0 495 229 (36 1 332) Wheel stud



Common		Used in step	18
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	18
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

Links

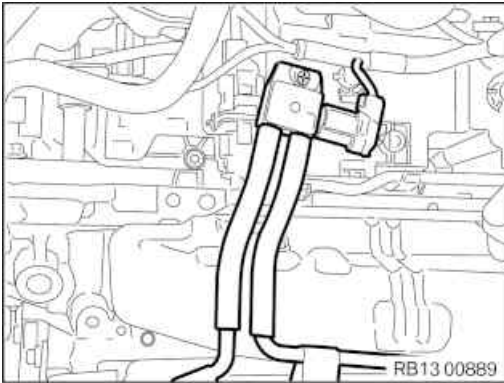
Functional descriptions	Used in step
Troubleshooting on the exhaust turbocharger	48
General repair instructions	Used in step

61 20 ... Notes on AGM battery	3 85
61 12 ... Notes on intelligent battery sensor (IBS)	3 85
61 00 ... Notes for disconnecting and connecting battery	3 85
Repair instructions	Used in step
61 35 ... Notes on ESD protection (Electro Static Discharge)	12 33 34 36 37 38 39 40
11 65 020 Turbocharger damage due to blocked oil supply lines	48
11 65 ... Test steps in the event of turbocharger damage	48
Operating materials	Used in step
2.0 Grease for wheel centring	73

**Warning!**

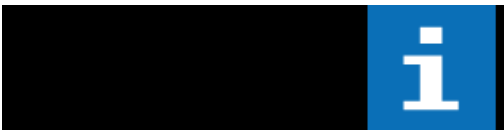
Risk of burning!

This repair work may only be carried out on an exhaust system which has cooled down.

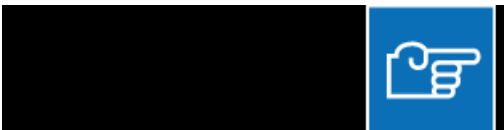
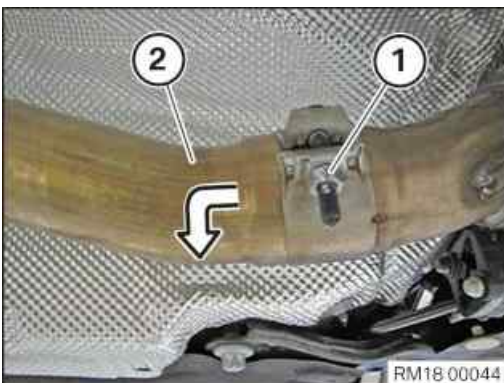
**Attention!**

The pressure hoses between the diesel particulate filter and the differential pressure sensor must be replaced when the diesel particulate filter or the differential pressure sensor is removed.

Note: Some engine versions have only one pressure hose.

**Necessary preliminary work:**

- Remove [oxygen sensor](#).
- Remove [monitoring sensor](#).
- Remove the [exhaust-gas temperature sensors](#).
- Remove [differential pressure sensor](#).
- Remove exhaust-gas recirculation cooler
- **Four-wheel drive vehicles only:**
Remove [propeller shaft](#).

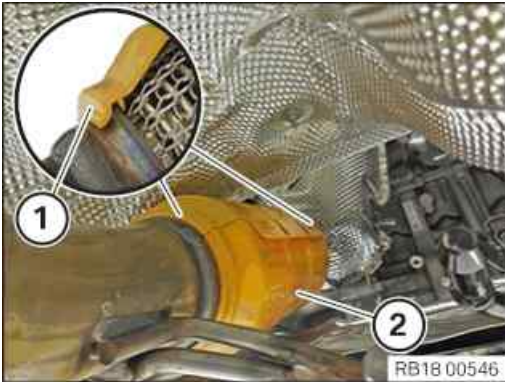
**Removal:**

Release clamp (1).

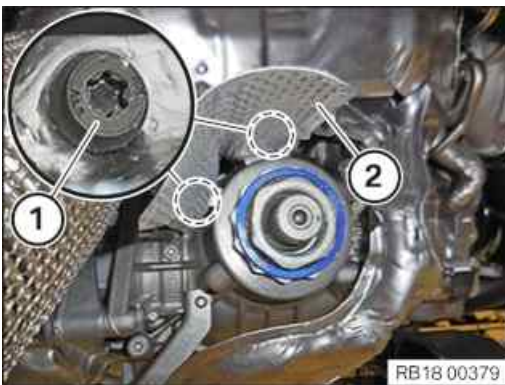
Release exhaust system (2) from diesel particulate filter.



Release rubber mount (1) from diesel particulate filter.



Mount assembly protection (2) before removing diesel particulate filter.
When mounting assembly protection, make sure that the assembly protection is correctly positioned at the edges (1) of the flexible tube.

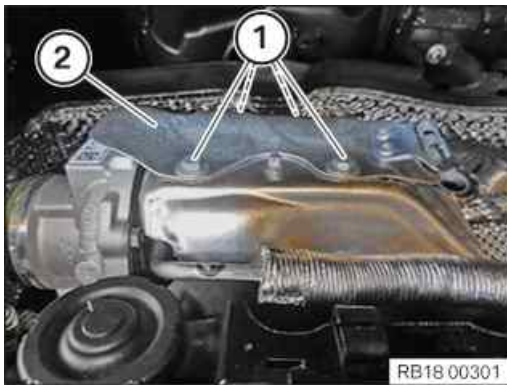


Four-wheel drive vehicles only:

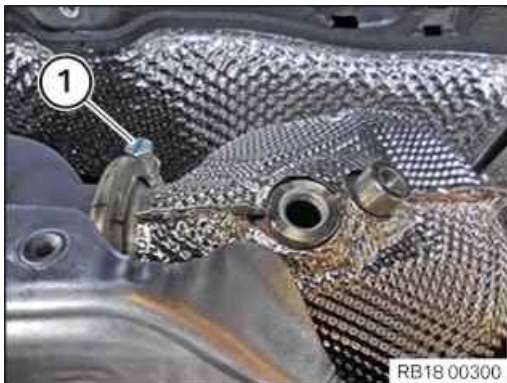
Release screws (1).
Remove heat shield (2).



Release screw (1) at bottom on crankcase.
Slacken nut (2).
Remove strut (3).
Unscrew nuts (4).



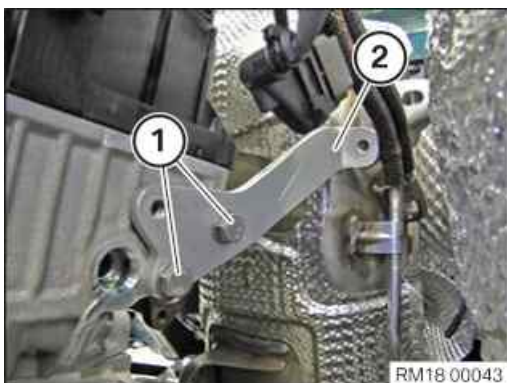
Loosen screws (1).
Remove heat shield (2).



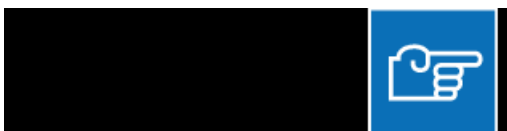
Release V-band clamp (1) between exhaust turbocharger and diesel particulate filter.



Release screw (1) on left of diesel particulate filter.



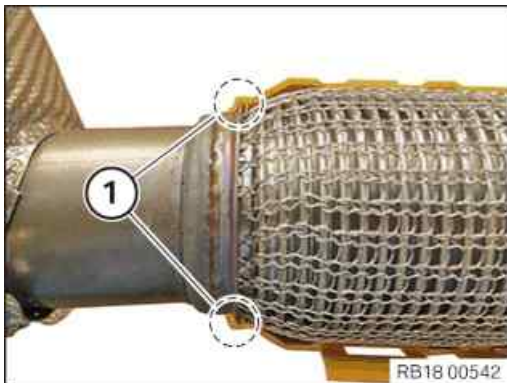
Release screws (1) and holder (2).
Feed out diesel particulate filter upwards and remove.



Installation:



Mount assembly protection (1) for the flexible tube before installing diesel particulate filter.



When mounting assembly protection, make sure that the assembly protection is correctly positioned at the edges (1) of the flexible tube.

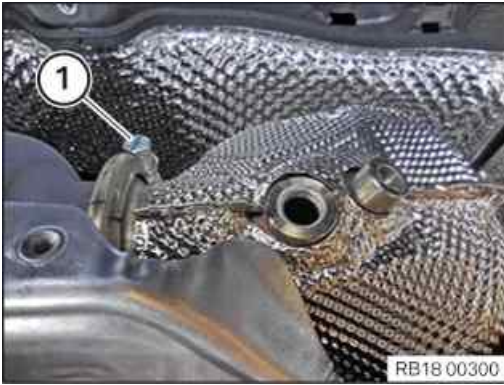


Install diesel particulate filter (1) with the assembly protection for the flexible tube.



Feed in diesel particulate filter (1) with the assembly protection for the flexible tube behind the cylinder head.

Dismount assembly protection for the flexible tube.



Install and position diesel particulate filter.

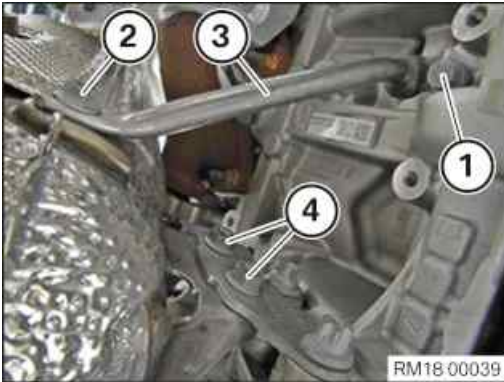
Replace V-band clamp and gasket.

Parts: V-band clamp and gasket.

Install V-band clamp and gasket.

Tighten V-band clamp.

Tightening torque [18 30 2AZ](#).



Install strut (3).

Tighten screw (1) on crankcase.

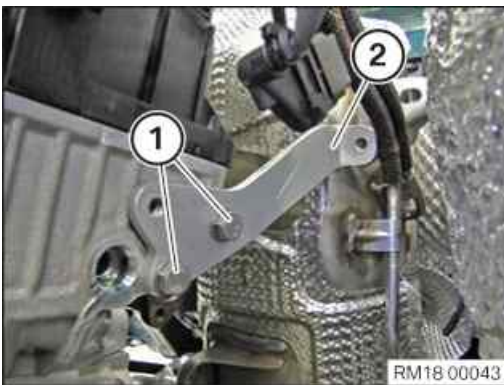
Tightening torque [18 30 4AZ](#).

Tighten nut (2).

Tightening torque [18 30 3AZ](#).

Tighten down nuts (4).

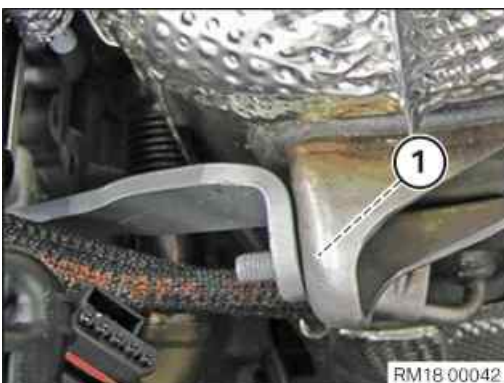
Tightening torque [18 30 3AZ](#).



Install holder (2).

Tighten down screws (1).

Tightening torque [18 30 4AZ](#).



Tighten screw (1) on left of diesel particulate filter.

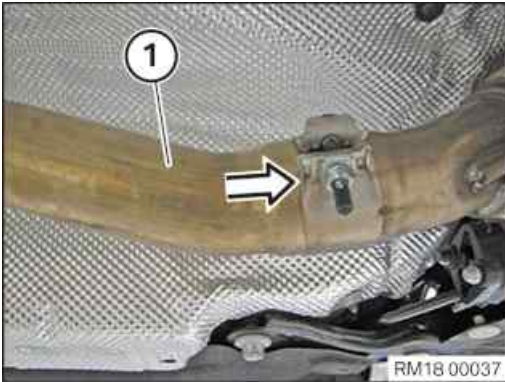
Tightening torque [18 30 3AZ](#).



Check rubber mounts for damage, replace damaged rubber mounts.

Parts: Rubber mount.

Slide on rubber mount (1) onto diesel particulate filter.



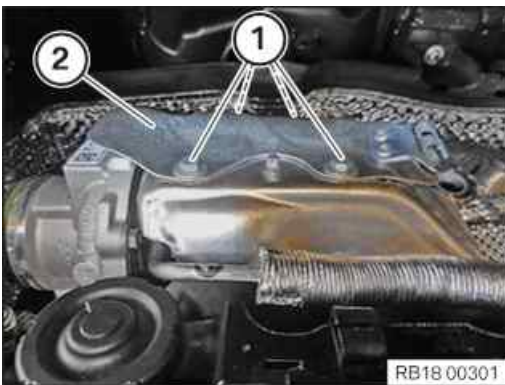
Connect exhaust system (2) to diesel particulate filter.

If necessary, renew clamp.

Parts: Clamp.

Tighten clamp (1).

Tightening torque [18 30 1AZ](#).



Install heat shield (2).

Tighten down screws (1).

Tightening torque [18 30 10AZ](#).



Four-wheel drive vehicles only:

Install heat shield (2).

Tighten down screws (1).

Tightening torque [18 30 11AZ](#).



Required reworking:

- Install [differential pressure sensor](#).
- Install [oxygen sensor](#).
- Install [monitoring sensor](#).
- Install [exhaust temperature sensors](#).
- Install [exhaust-gas recirculation cooler](#).
- **Four-wheel drive vehicles only:**
Remove [propeller shaft](#).