22 11 011 Replacing left engine mount

PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

2 – Bring front compartment lid in the service position

Prerequisite

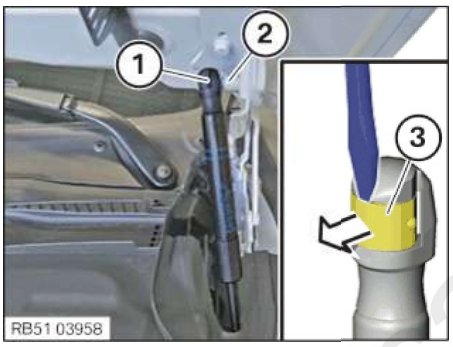
Engine compartment lid is open.

CAUTION

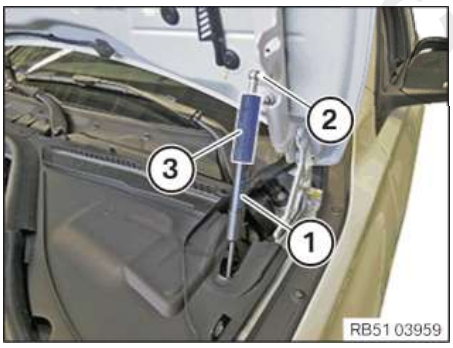
Shutting bonnet or tailgate.

Danger of injury!

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



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



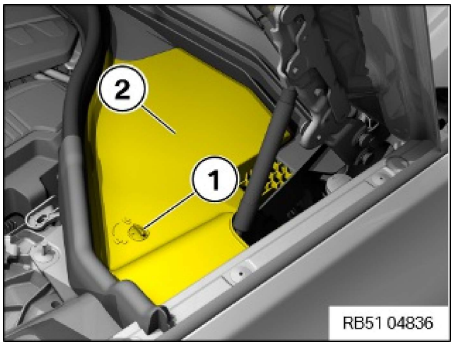
TECHNICAL INFORMATION

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

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

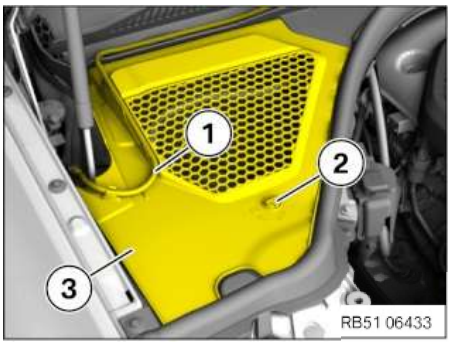
3 – Remove the cover of the engine compartment at the rear left

cardiagn.com



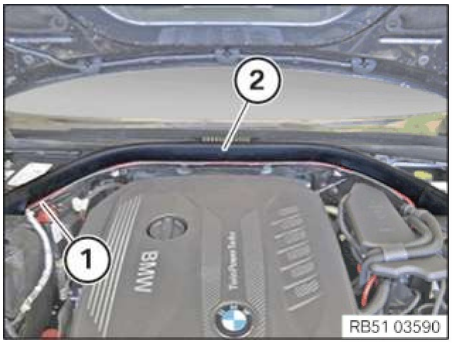
- Loosen the lock (1).
- Remove rear left cover of engine compartment (2).

4 – Remove the cover of the rear right engine compartment



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

5 – Remove the seal for the rear bonnet



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

6 – Removing both wiper arms

NOTICE

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

▶ **Remove the wiper arm**

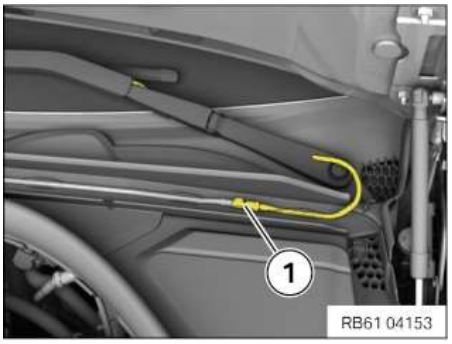
RISK OF DAMAGE

Damage to wiper console

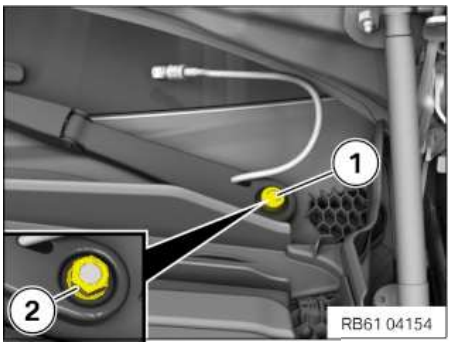
While removing the wiper arms without using special tool, the wiper console can break.

- 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.

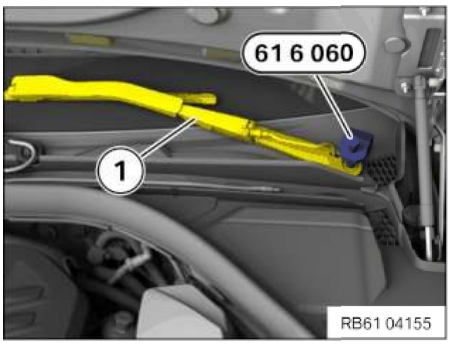
cardiagn.com



- Disconnect the windscreen wash hose(1) at the separation point and remove from the cowl guide.

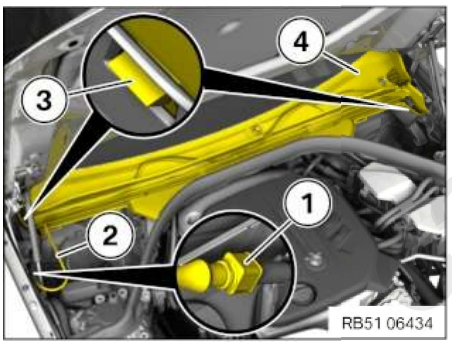


- Remove the protective cap (1).
- Loosen nut (2).

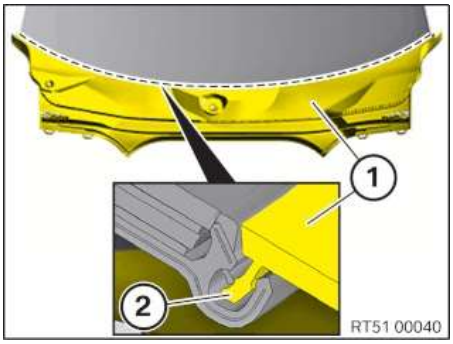


- Pull off the wiper arm (1) using special tool .

7 – Remove cowl panel cover



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



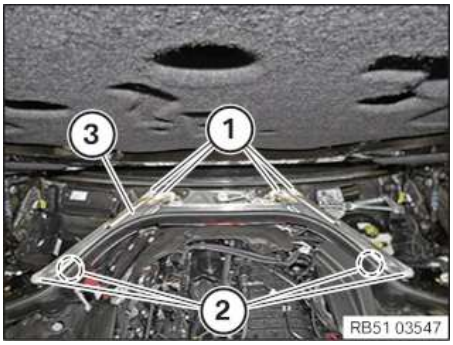
- Pull the cowl panel cover (1) upward out of the latch mechanism (2) beginning on the side.

8 – Removing the centre bulkhead upper part

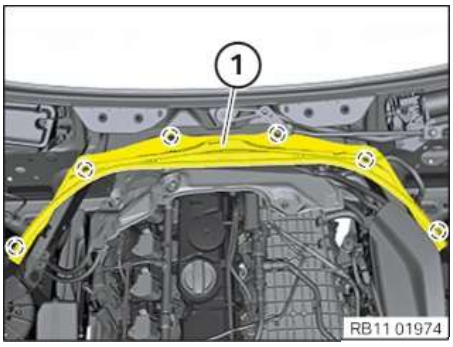
TECHNICAL INFORMATION

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

cardiagn.com



- **If installed:** Remove tension strut on spring strut dome.
- Loosen screws (1) and (2).
- Remove tension strut (3) in the spring strut dome upwards.

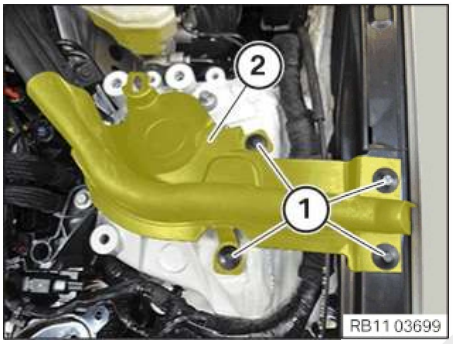


- Unscrew the bolts in the marked areas.
- Remove the centre bulkhead upper part (1).

9 – Removing side bonnet gaskets

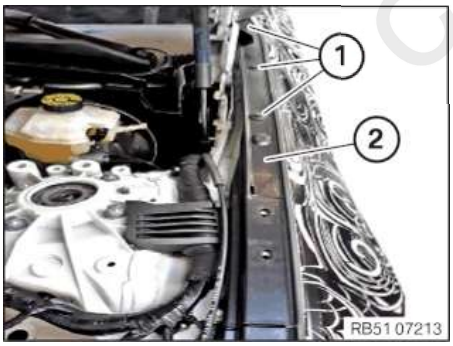
NOTICE

Perform the operations on the left and right side.



- Loosen the rivet (1).
- Remove side bonnet seal (2) from spring strut dome.

10 – Remove sealing of the side panel



NOTICE

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

- Loosen the expanding rivet (1).
- Guide out seal (2) and remove.

11 – Removing the acoustic cover

WARNING

Hot surfaces.

Risk of burning!

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

cardiagn.com

RISK OF DAMAGE

Damage to the acoustic cover.

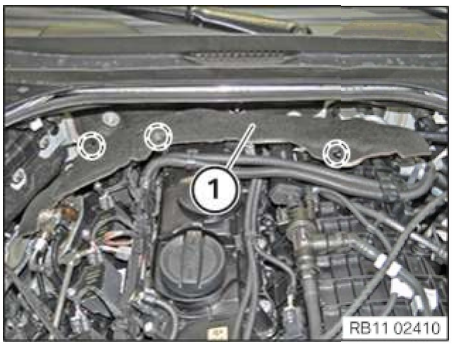
Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover.

- 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.



- Release the acoustic cover (1) towards the top from the rubber mounts (marks).

12 – Removing acoustic cover at rear



- Unclip the acoustic cover (1) in the marked areas and remove it to the top.

13 – Remove all ignition coils.

NOTICE

The description is for one component only. The procedure is identical for all further components.

▶ **Removing the ignition coil**

WARNING

Hot surfaces.

Risk of burning!

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

RISK OF DAMAGE

Damage to the ignition coil.

The silicone hose of the ignition coil must not be contaminated by fuel as this can lead to failure of the ignition coil.

- Cover ignition coils using suitable covers when working on the fuel system, if necessary remove them.
- Do not oil or grease the silicone tube of the spark plug connector. The silicone tube is coated with talc to reduce the pulling forces.

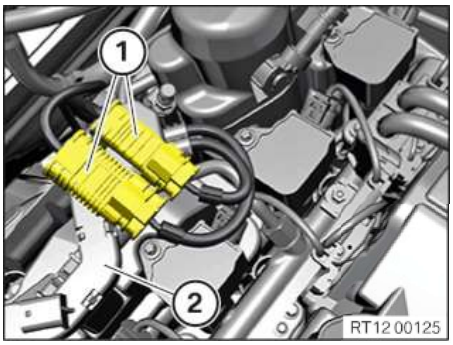
cardiagn.com

RISK OF DAMAGE

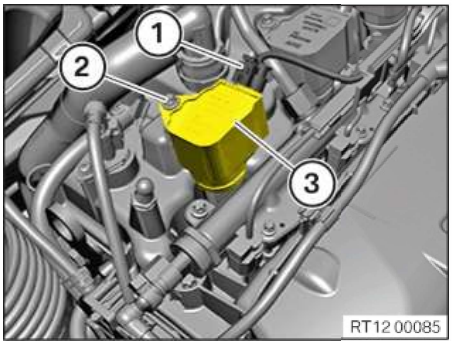
Electrostatic discharge.

Damage to or destruction of electrical components.

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



- Disconnect the connector (1) of the front oxygen sensor and the monitoring oxygen sensor from the cable channel (2) and set aside.



- Unlock plug connection (1) and disconnect.
- Loosen screw (2).
- Remove ignition coil (3).

14 – Remove fuel delivery line

WARNING

Working on fuel system.

Risk of fire! Danger of explosion!

- When working on the fuel system, make sure that the workbay is sufficiently ventilated, e.g. using extraction unit.
- Tightly seal off open lines and connections; collect any escaping fuel directly at the point of exit.
- No fire, sparks, open flames or smoking.

CAUTION

On releasing high pressure line, fuel may emerge at high speed.

Danger of injury!

- Wear suitable personal protective equipment.
- Allow the cooling system to cool down to a temperature below 40°C before starting installation work.
- Note warnings on cylinder head cover.

cardiagn.com

RISK OF DAMAGE

Damage to the ignition coil.

The silicone hose of the ignition coil must not be contaminated by fuel as this can lead to failure of the ignition coil.

- Cover ignition coils using suitable covers when working on the fuel system, if necessary remove them.
- Do not oil or grease the silicone tube of the spark plug connector. The silicone tube is coated with talc to reduce the pulling forces.

RISK OF DAMAGE

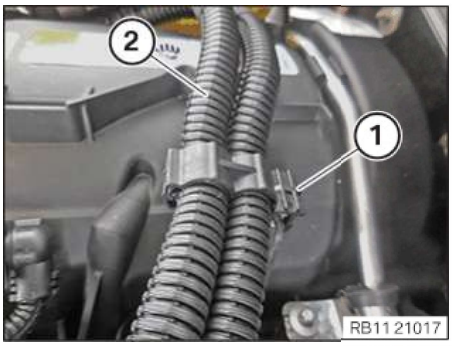
Contaminant or foreign body.

Contamination can result in malfunctions, operating failure or leaks.

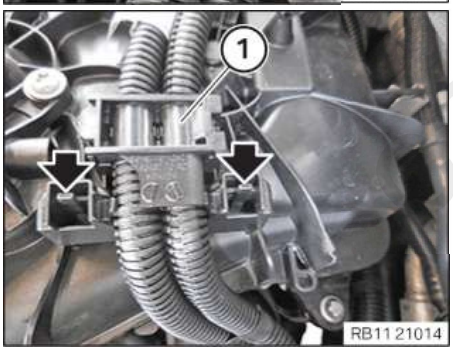
- Adhere to the utmost cleanliness.
- Protect components from contamination e.g. by covering.
- Close off line connections with seal plugs.

TECHNICAL INFORMATION

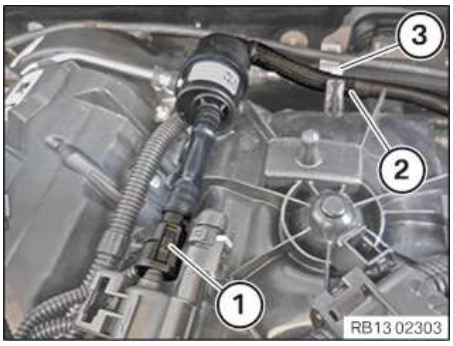
Reset special tool in early to avoid bending pressure lines.



- Loosen clamp (1).
- Guide out wiring harness section (2) for the injectors and ignition coils and place it aside.

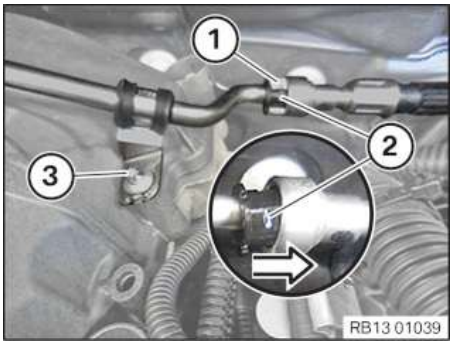


- Unlock the locks (arrows).
- Guide out wiring harness section (1) for the injectors and ignition coils and place it aside.

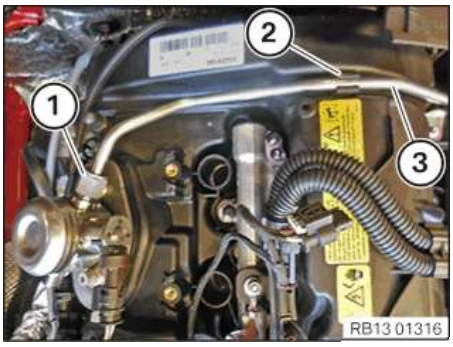


- Unlock and loosen lock (1).
- Guide tank ventilation line (2) out of clamp (3) and place it aside.

bardiagn.com



- Unlock and loosen clamp (1).
- Unlock and remove the snap fastener (2) in the direction of the arrow.
- Catch and dispose of escaping fuel.
- Seal the fuel lines with special tools 0 496 567 (13 5 161) and 0 496 568 (13 5 162) from the set of special tools 0 496 565 (13 5 160).
- Loosen screw (3).



- Slacken the union nut (1) on the high pressure pump.
- Catch and dispose of escaping fuel.
- Seal all openings with the special tool .
- Guide the fuel feed line (3) out and remove.
- Make sure that the rubber damper (2) is not lost.

15 – Removing intake silencer housing

RISK OF DAMAGE

Damage to the clean air line. Damage to the air filter.

For changing the air filter insert, if the upper section of intake filter housing is only raised and not completely removed, the clean air line and the air filter insert may be damaged.

- Do not lift upper section of intake filter housing by force.
- Unfasten clamp.
- Remove upper section of intake filter housing completely.



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

16 – Removing the front left wheel

▸ **Removing the wheel**

carlagn.com



- In vehicles with M Carbon ceramic brake: The wheel assembly jack must be used to remove the wheel (see workshop equipment).

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

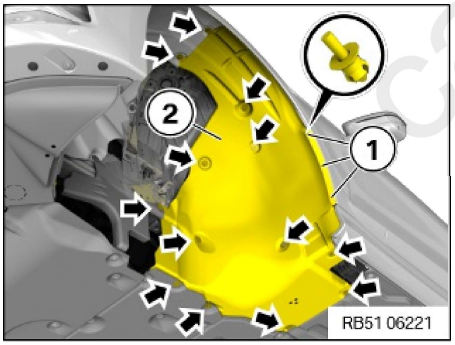


- If several wheels are removed simultaneously: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use a suitable adapter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

17 – Removing the rear section of the front wheel arch cover front

NOTICE

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

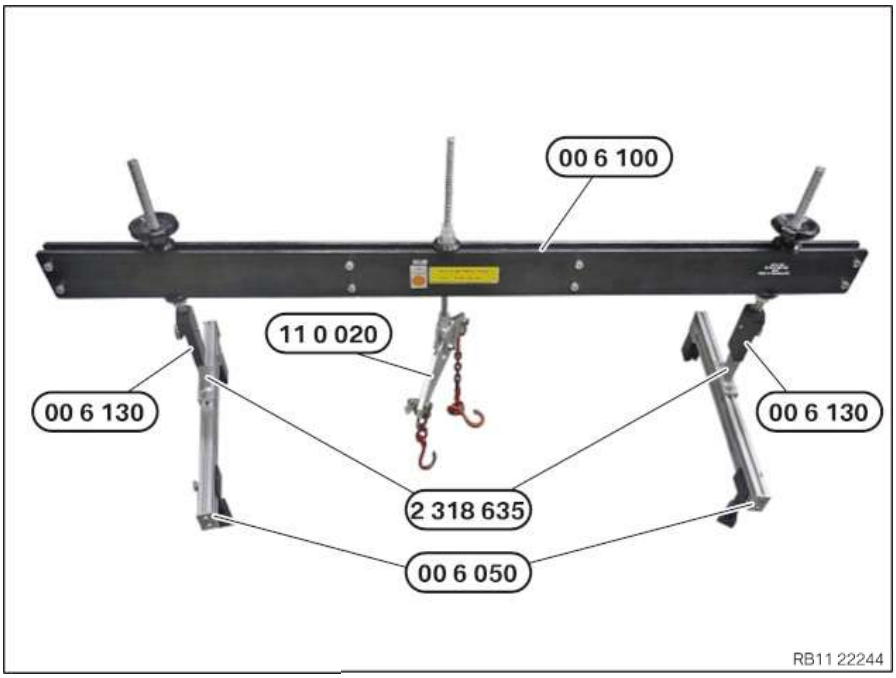


- Loosen the expanding rivet (1).
- Remove screws (arrows).
- Remove the rear section of the front wheel arch cover (2).

18 – Securing engine in installation position

carDiagn.com

Overview: prepared engine bridge



CAUTION

Components connected to the engine joint or cross member.

Danger of injury!

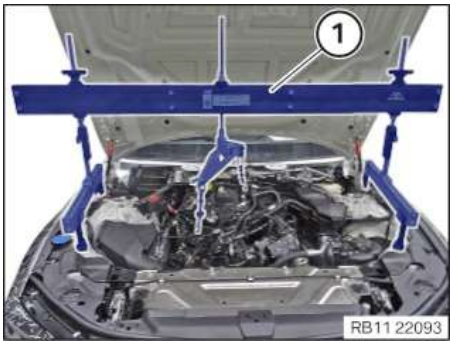
- Check lifting eyes and engine mounting brackets for damage, e.g. cracks.
- Attach the component to correctly mounted engine joints or cross members only.
- Exclusively lift the component, do not move it forwards, backwards or in transverse direction.



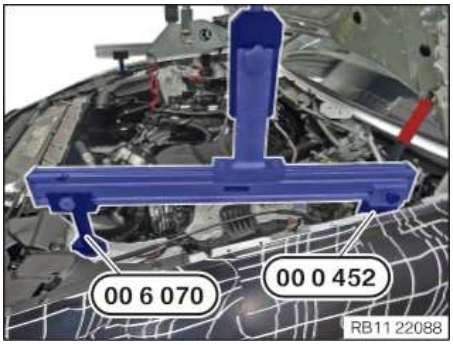
- Guide in and position special tool on cylinder head.
- Tighten the screws (1) of special tool .

Special tool to cylinder head

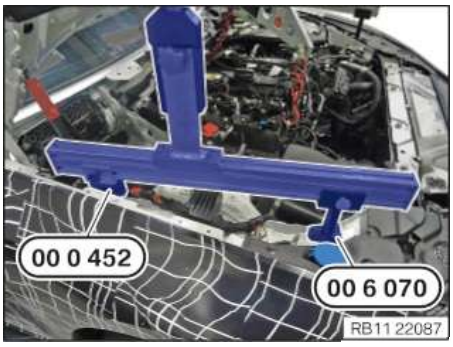
M8		Tightening torque	21,5 Nm



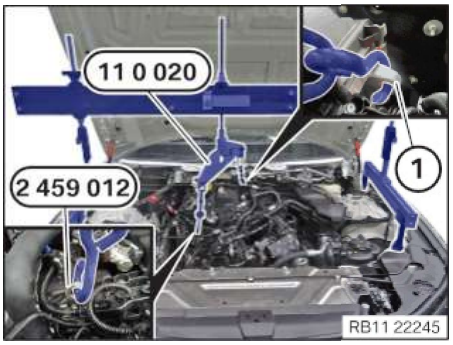
- **Carefully** position engine bridge (1) with help from an auxiliary person.



- Make sure that special tool on the left is **correctly** positioned on the front end.
- Make sure that special tool 0 495 850 (00 0 452) on the left is **correctly** positioned on the carrier support.



- Make sure that special tool on the right is **correctly** positioned on the front end.
- Make sure that special tool 0 495 850 (00 0 452) on the right is **correctly** positioned on the carrier support.



- Align the engine bridge by moving it on the profile strips of the special tool above the engine mounting bracket and screw it down.
- Connect special tool 0 490 567 (11 0 020) to special tool .
- Connect the special tool 0 490 567 (11 0 020) above the engine mounting bracket (1) at the rear.



- Check whether the special tool on the right is **correctly** positioned on the front end.



- Check whether the special tool 0 495 850 (00 0 452) on the right is **correctly** positioned on the carrier support.



- Check whether the special tool on the left is **correctly** positioned on the front end.

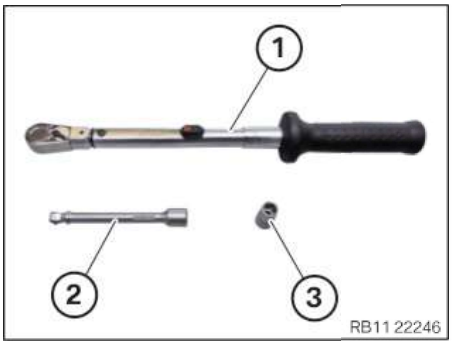
cardiagn.com



- Check whether the special tool 0 495 850 (00 0 452) on the left is **correctly** positioned on the carrier support.

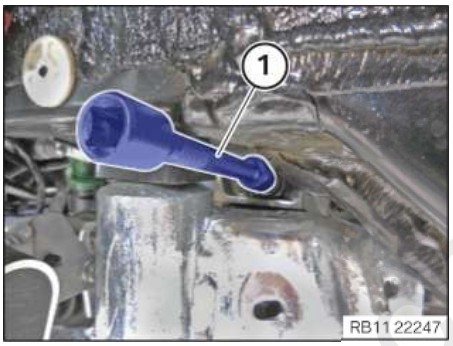


- Release screw (1) on the right engine mount from the top with a commercially available tool.

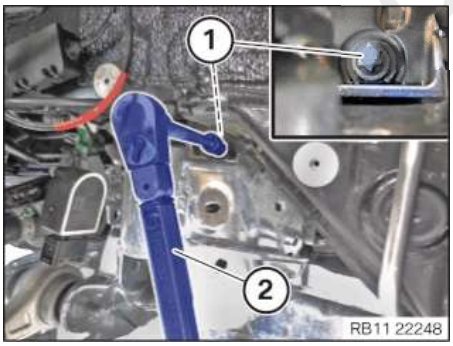


- Have all suitable tools ready.

Number	Description
1	Commercial available torque spanner
2	Swivel mounted extension
3	External Torx E14



- Position the suitable tool (1).



- Release screw (1) of the left engine mount with standard tool (2) sideways.



- Raise the engine by turning the special tool 2 361 506 (00 6 103) (spindle) by 10 mm.

cardiagn.com

19 – Removing the DME control unit

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

Follow instructions for removing and installing control units.

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

TECHNICAL INFORMATION

In a warranty case, you must always provide a fault memory printout with the defective part, even if the fault memory does not contain an entry.

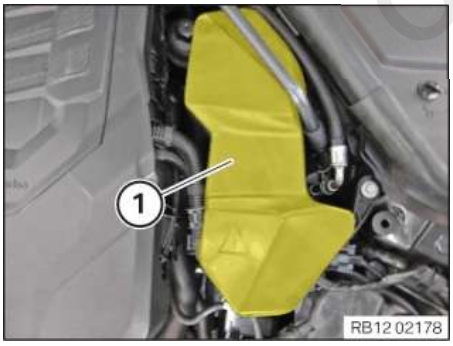
TECHNICAL INFORMATION

Control unit must be programmed after it is replaced.

For additional information see: 61 00 ... Programming/encoding control unit(s)

TECHNICAL INFORMATION

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

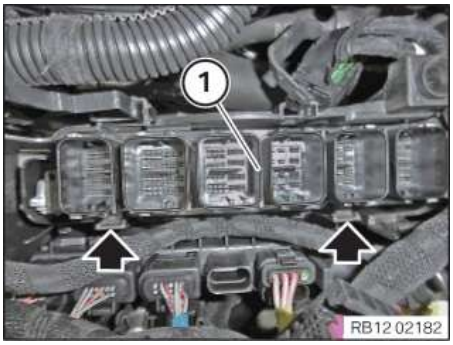


- Pull the cover (1) towards the top and feed out.



- Unlock and disconnect the plug connection (1).

cardiagn.com



- Unlock the locks (arrows).
- Guide out and remove DME control unit (1).

20 – Removing integrated supply module (PDM)

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

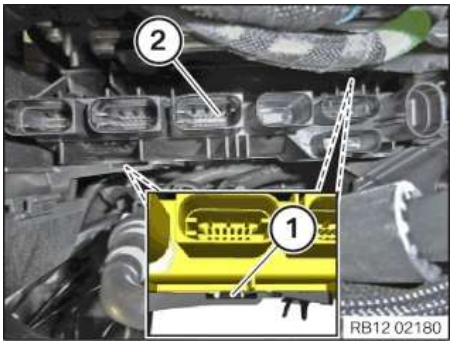
Electrostatic discharge.

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.



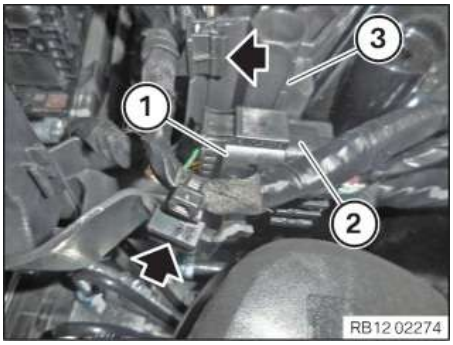
- Unlock and disconnect plug connections (1).



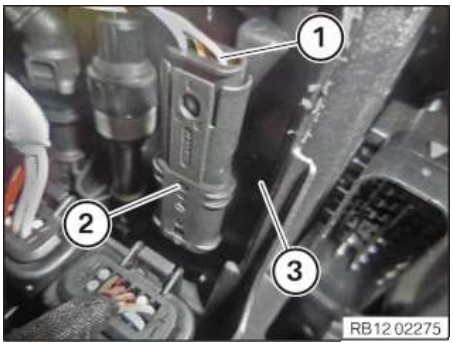
- Unlock the latch mechanisms (1).
- Guide out and remove integrated supply module (PDM) (2) upwards.

21 – Removing the control unit holder

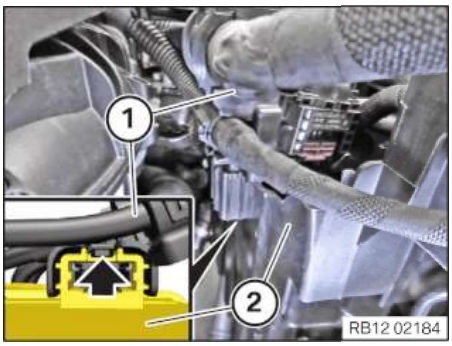
boardiagn.com



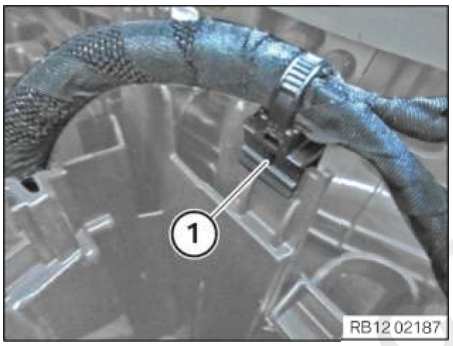
- Unlock plug connection (1) and disconnect.
- Unlock the connector (2) and disconnect from the control unit holder (3).
- Release the clamps (arrows).



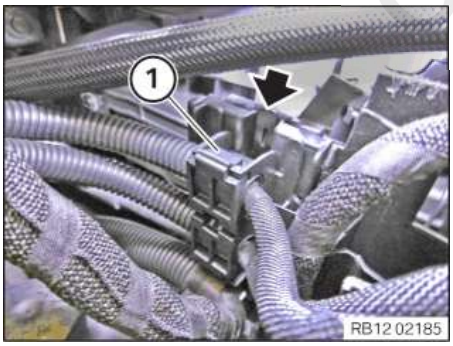
- Unlock plug connection (1) and disconnect.
- Unlock the connector and disconnect from the control unit holder (3).



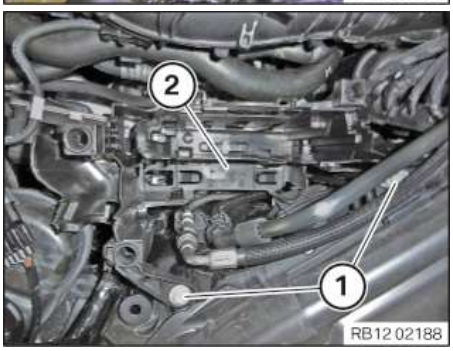
- Unlock the lock (arrow).
- Disconnect the cable holder (1) upwards from the control unit holder (2).



- Loosen clamp (1).



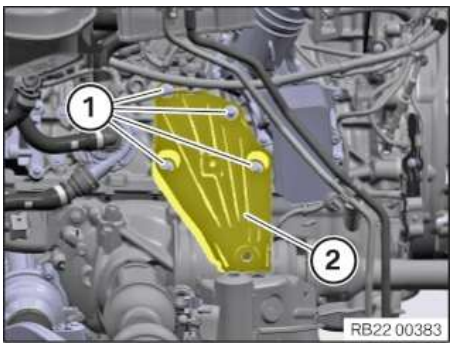
- Unlock the lock (arrow).
- Feed out the cable clip (1) upwards and set it aside.



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

cardiagn.com

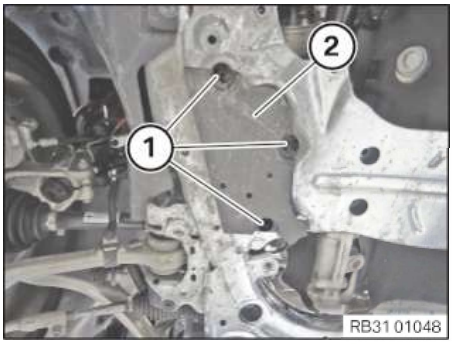
22 – Remove left engine support arm



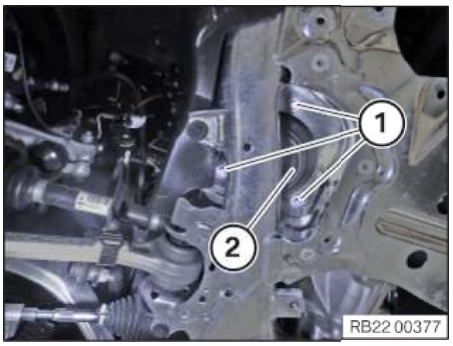
- Loosen screws (1).
- Remove the engine support arm (2).

MAIN WORK

23 – Remove left engine mount

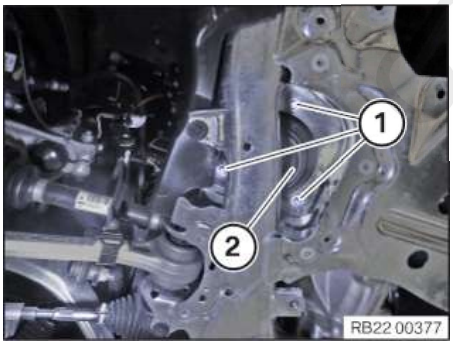


- Loosen screws (1).
- Remove protective cap (2).



- Loosen screws (1).
- Remove engine mount (2).

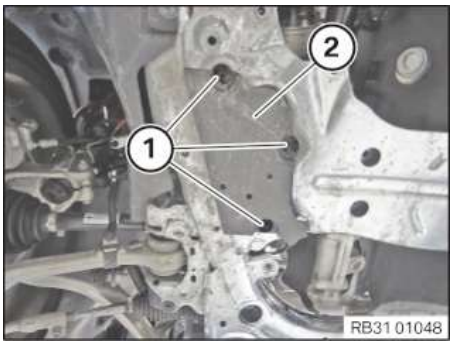
24 – Installing the engine mount on the left



- Install the engine mount (2).
- Tighten the screws (1).

Engine mount to front axle support

M8		Tightening torque	19 Nm



- Install the protective cap (2).
- Tighten the screws (1).

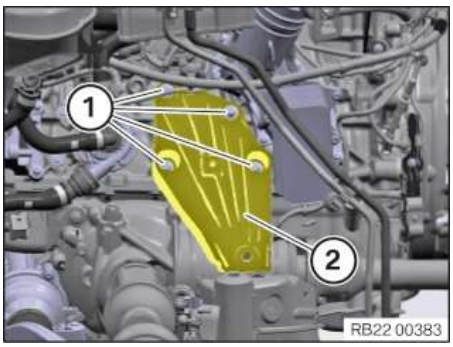
Protective cap

Hexagon screw		Tightening torque	3 Nm

POSTPROCESSES

ardiagn.com

25 – Install left engine support arm

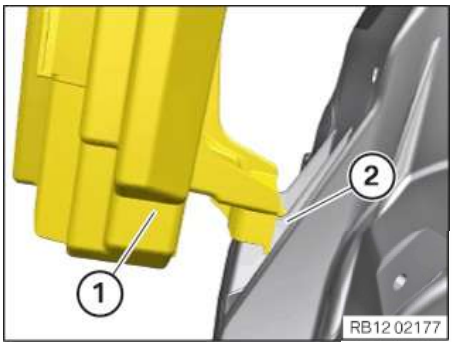


- Install the engine support arm (2).
- Tighten the screws (1).

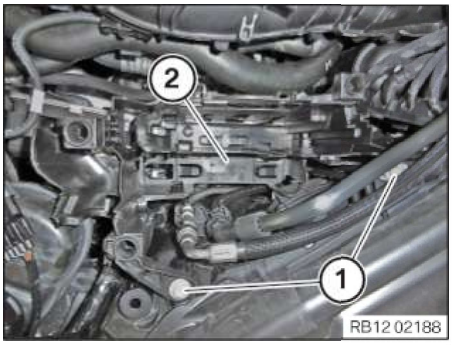
Engine support arm to engine

M10		Tightening torque	38 Nm

26 – Installing the control unit holder



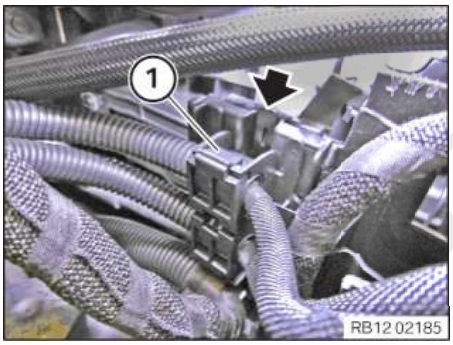
- Make sure the bottom control unit holder (1) is inserted correctly into the fixture (2).



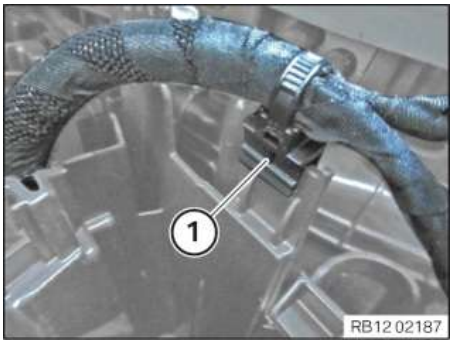
- Guide in and install control unit holder (2).
- Tighten the screws (1).

Control unit holder on spring strut dome

Hexagon screw		Tightening torque	8 Nm

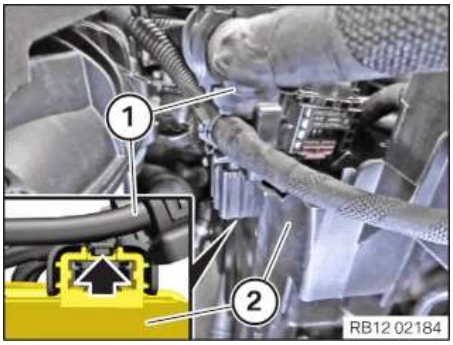


- Feed in and install the cable clip (1).
  Lock (arrow) must audibly engage.

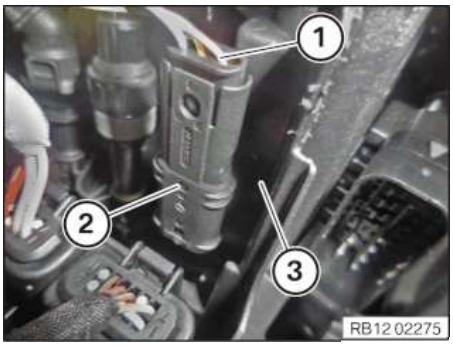


- Secure clamps (1).

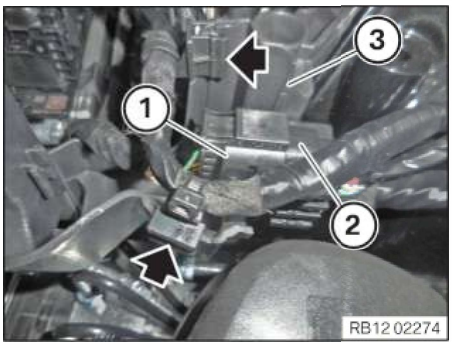
cardiagn.com



- Connect the cable clip (1) with the control unit holder (2) and lock it.
  Lock (arrow) must audibly engage.



- Connect connector (2) to the control unit holder (3) and lock it.
  The connector (2) must engage audibly.
- Connect connectors (1) and lock.
  The connector (1) must engage audibly.



- Connect and lock the connector (2) with the control unit holder (3).
  The connector (2) must engage audibly.
- Connect connectors (1) and lock.
  The connector (1) must engage audibly.
- Secure the clamps (arrows).

27 – Installing the integrated supply module (PDM)

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.

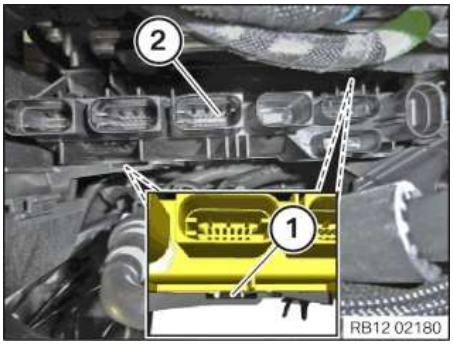
RISK OF DAMAGE

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.

cardiagn.com

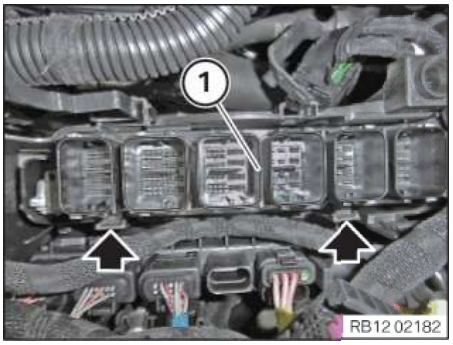


- Insert and install the integrated supply module (PDM) (2).
  The latch mechanisms (1) must engage audibly.
- Unlock the latch mechanisms (1).



- Connect connectors (1) and lock.
  The connectors (1) must engage audibly.

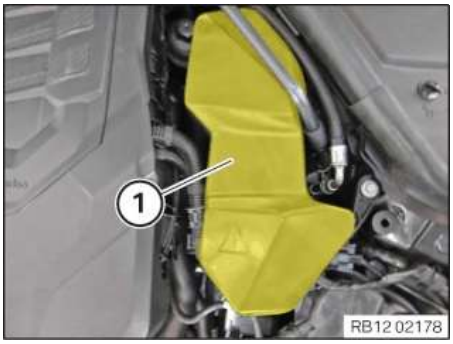
28 – Installing the DME control unit



- Feed in and install DME control unit (1).
  The locks (arrows) must engage audibly.



- Connect connectors (1) and lock.
  All connectors (1) must engage audibly.



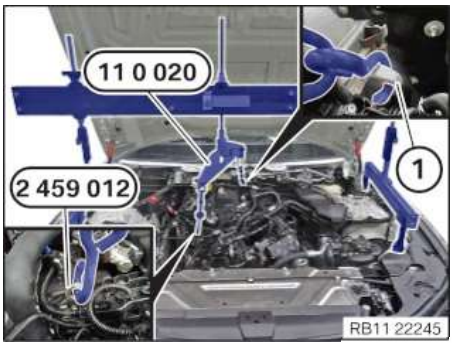
- Insert and install cover (1) into guides.

29 – Loosen the attachment of the engine in installation position

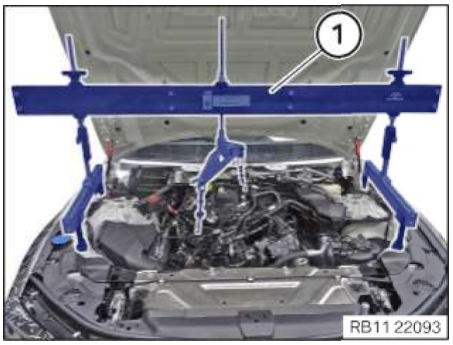
bardiagn.com



- Lower engine by turning the spindle 2 361 506 (00 6 103) until the engine lies completely on the engine supports.



- Feed out special tool 0 490 567 (11 0 020) on the special tool and set aside.
- Feed out special tool 0 490 567 (11 0 020) on the engine mounting bracket (1) and set aside.



TECHNICAL INFORMATION

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

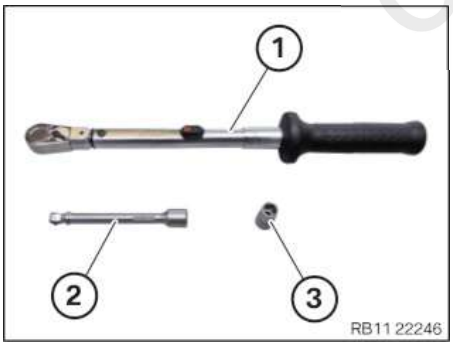
- Remove the engine bridge (1) with an auxiliary person.



- Tighten bolt (1) of the right engine mount from the top using a standard tool.

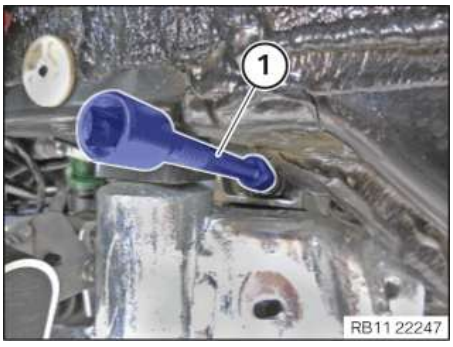
Engine mount to engine mounting bracket

M12	Tightening torque	100 Nm



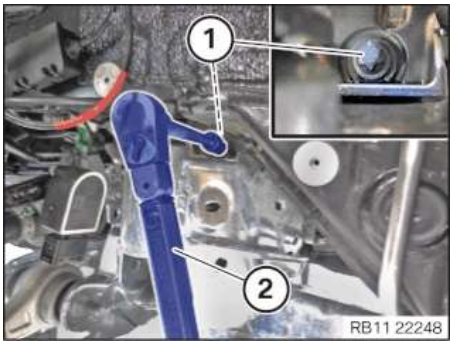
- Have all suitable tools available.

Number	Description
1	Commercial available torque spanner
2	Swivelling extension
3	External TorxE14



- Position suitable tools (1).

cardiagn.com



- Tighten bolt (1) of the left engine mount using a standard tool (2) sideways.

Engine mount to engine mounting bracket

M12		Tightening torque	100 Nm

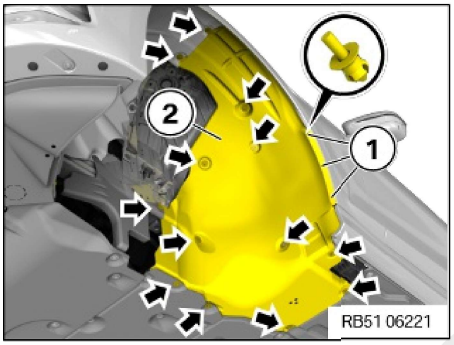


- Unscrew the bolts (1) of the special tool .
- Feed out the special tool at the cylinder head and remove.

30 – Install the rear section of the front wheel arch cover

NOTICE

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



- Install the rear section of the front wheel arch cover(2) .
- Tighten screws (arrows).

Wheel arch trim panel, front

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

- Secure expanding rivet (1).

31 – Attaching the front left wheel

▶ **Mounting the wheel**



TECHNICAL INFORMATION

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

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

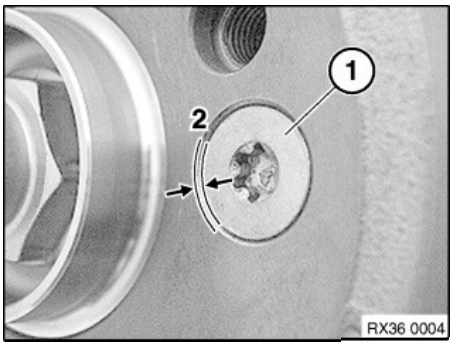
  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.

cardiagn.com



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

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



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

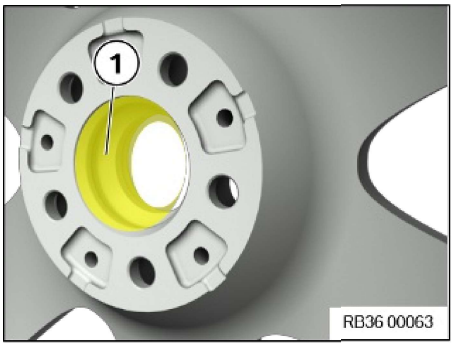
  The mounting bolt (1) for the brake disc may not protrude under any circumstances on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

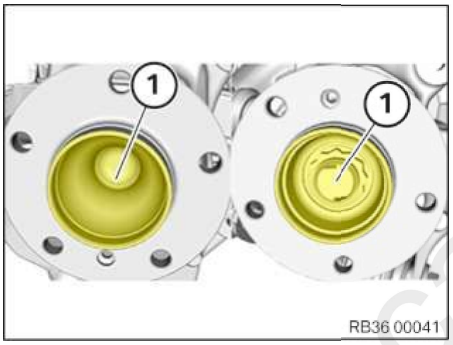
M8	Renew screw.	Tightening torque	16 Nm



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

Expendable materials

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



- Lightly grease the front and rear wheel hubs in this area (1) to protect from corrosion.

Expendable materials

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



- In vehicles with M Carbon ceramic brake: The wheel assembly jack must be used to install the wheel (see workshop equipment).

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

carsign.com



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.

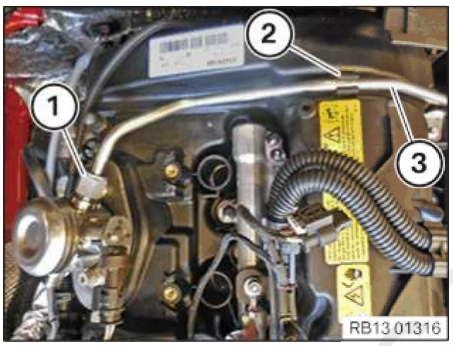
- Renew corroded wheel bolts.

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

Wheel bolts

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

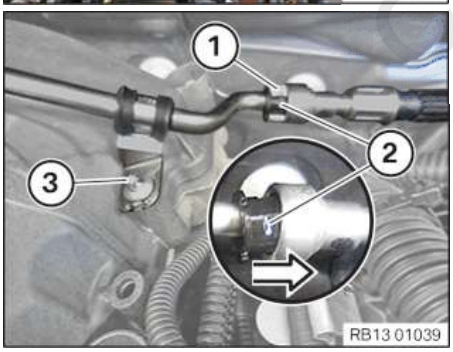
32 – Installing fuel delivery line



- Guide the fuel delivery line (3) in and install.
- Install rubber damper (2).
- Check the rubber damper (2) for the correct fit.
- Tighten the union nut (1) hand-tight.
- Tighten union nut (1).

Fuel delivery line to high pressure pump

M14		Tightening torque	31 Nm

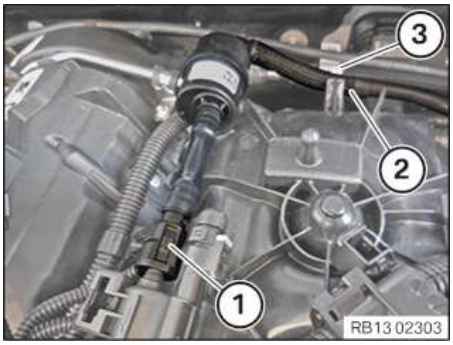


- Slide in and lock the fuel feed line in the direction of the arrow in the snap fastener (2).

  The fuel feed line must be audibly engage in the snap fastener (2).
- Secure clamps (1).
- Tighten down screw (3).

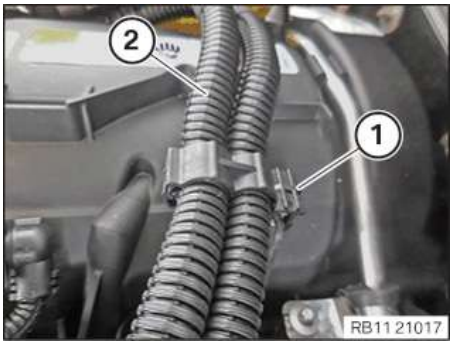
Fuel line to cylinder head cover

6x18		Tightening torque	6,5 Nm

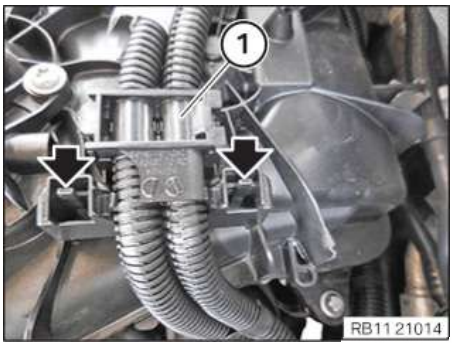


- Insert and install the tank ventilation line (2).
- Lock (1) must engage audibly.
- Secure the tank ventilation line (2) to the clamp (3).

carlagn.com



- Insert and install wiring harness section (2) for injectors and ignition coils.
- Secure clamps (1).



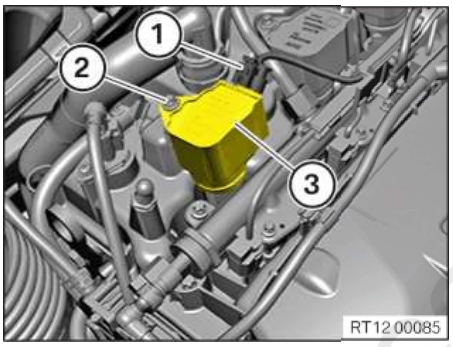
- Insert and install wiring harness section (1) for injectors and ignition coils.
- The locks (arrows) must engage audibly.

33 – Install all ignition coils

NOTICE

The description is for one component only. The procedure is identical for all further components.

▶ **Install ignition coil.**



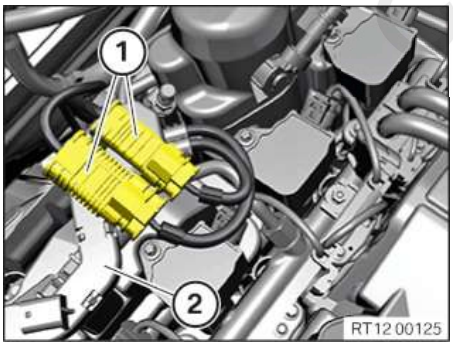
- Install ignition coil (3).
- Tighten down screw (2).

Ignition coil

Screw	Tightening torque	8 Nm

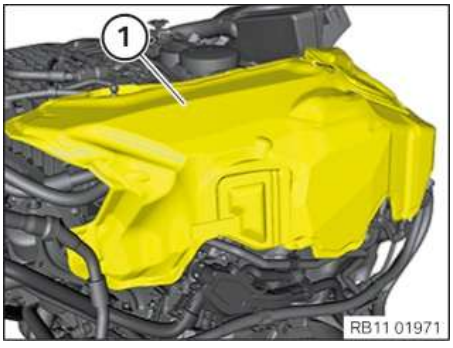
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.



- Connect the connector (1) of the front oxygen sensor and the monitoring oxygen sensor on the cable shaft (2).

34 – Installing acoustic cover at rear

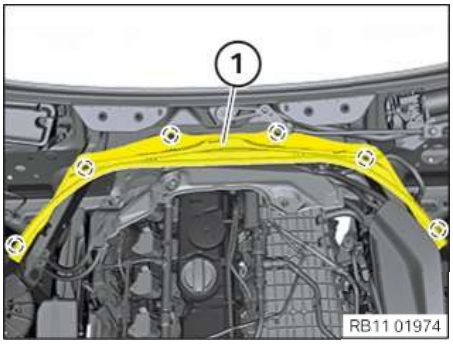


- Make sure the acoustic cover (1) is correctly positioned on the rear side of the engine.



- Install the acoustic cover (1) from the top and clip it in into the marked areas.

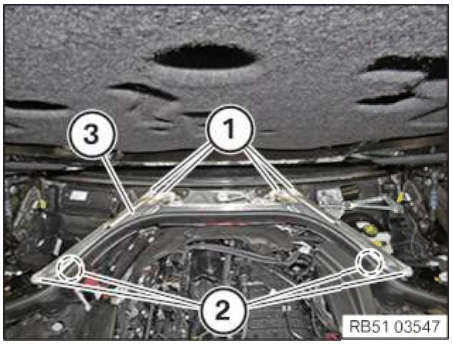
35 – Installing the centre bulkhead upper part



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

Bulkhead upper part to bottom bulkhead

		Tightening torque	3 Nm



- **If installed:** Install tension strut on spring strut dome.
- Install the tension strut (3) on the spring strut dome.
- Tighten the screws (1).

Tension strut on bulkhead

M10x25 screw		Tightening torque	56 Nm

- Renew screws (2).

  Parts: Bolts
- Tighten the screws (2).

Tension strut to spring strut dome

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

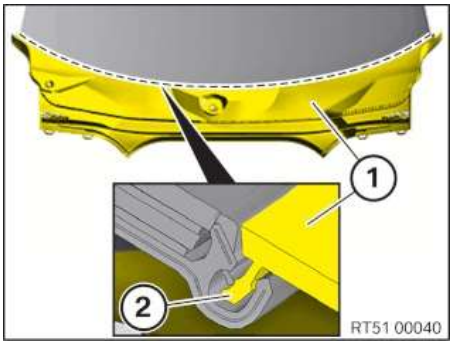
36 – Installing cowl panel cover

RISK OF DAMAGE

Damage caused by water ingress into the vehicle.

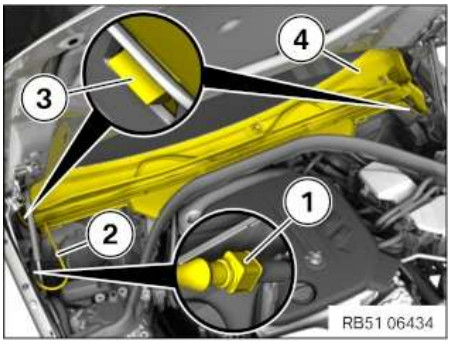
Water ingress into the vehicle may result in damage to components, malfunctions and corrosion.

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



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

cardiagn.com



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

37 – Installing both wiper arms

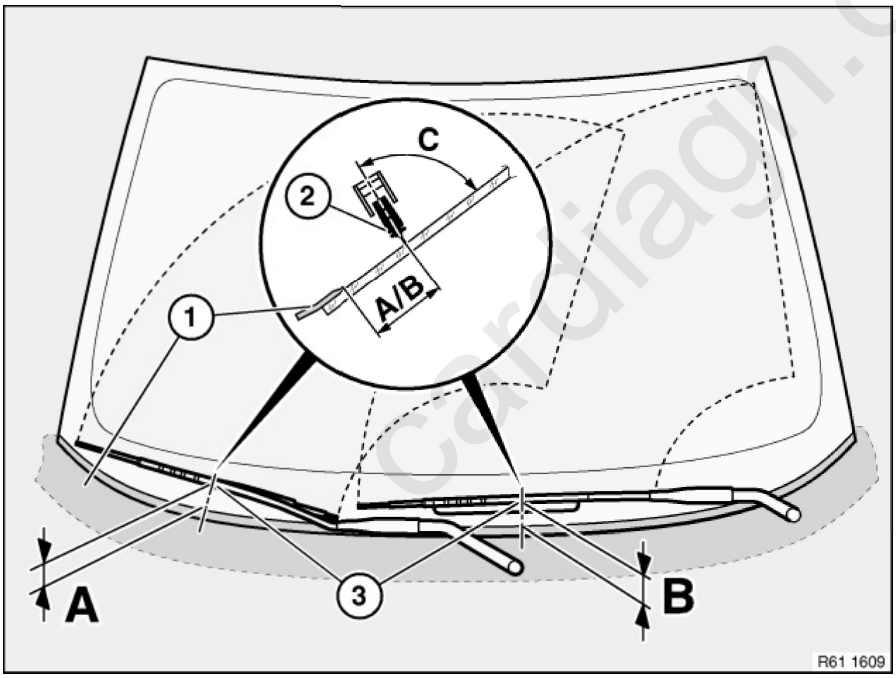
NOTICE

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

▸ **Install the wiper arm**

TECHNICAL INFORMATION

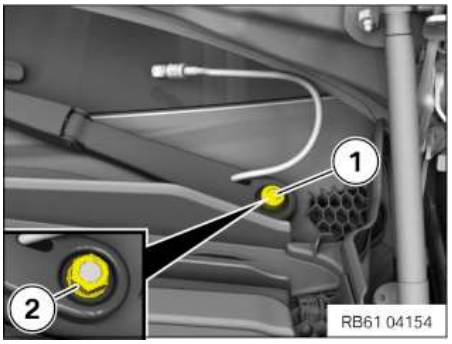
The wiper system must be in zero position.
After installing the cowl panel cover and before fitting the wiper arm:
Activate the wiper system once to ensure that it has the correct installation position.



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

Distance from window pane edge to wiper blade

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



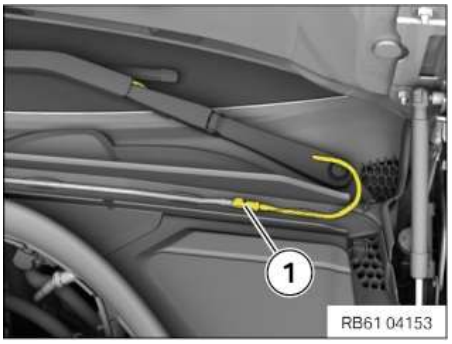
- Tighten nut (2).

Windscreen wiper arm

Combination hexagon nut		Tightening torque	35 Nm

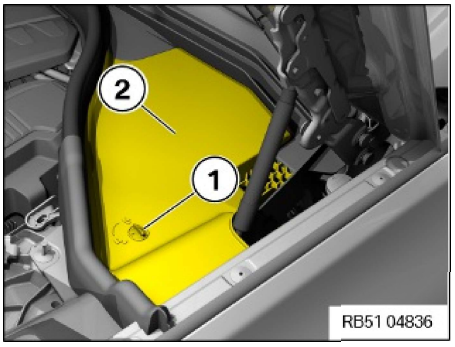
- Connect the protective cap (1).

cardiagn.com



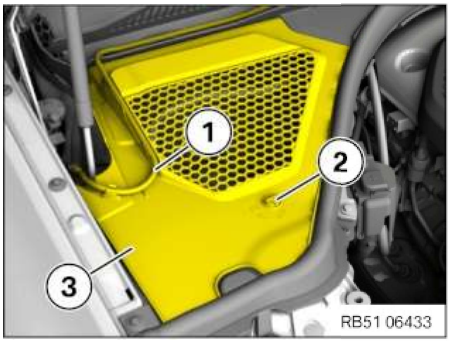
- Insert windscreen wash hose (1) into the cowl and connect at the separating point.

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



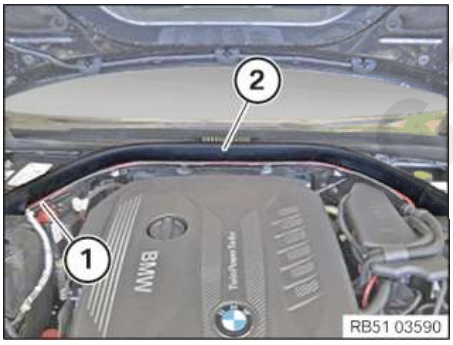
- Position the engine compartment cover at the rear left (2) .
- Close lock (1).

39 – Install the rear right engine compartment cover



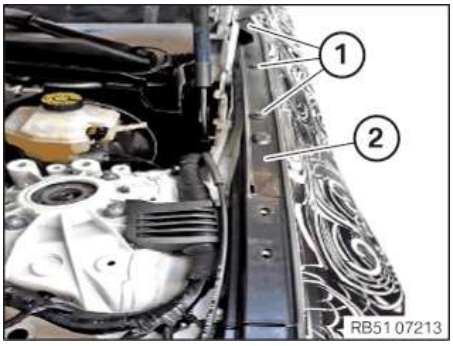
- Position the cover of the engine compartment on the rear right (3).
- Close lock (2).
- Insert washer fluid hose (1) into the guides.

40 – Install the seal for the bonnet



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

41 – Installation of side panel sealing.



NOTICE

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

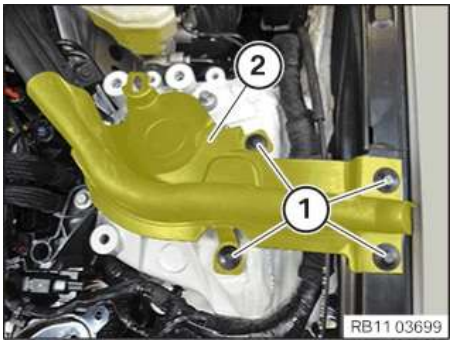
- Guide the sealing (2) in and install it.
- Mount the expanding rivets (1).

42 – Install side bonnet seals

cardiagn.com

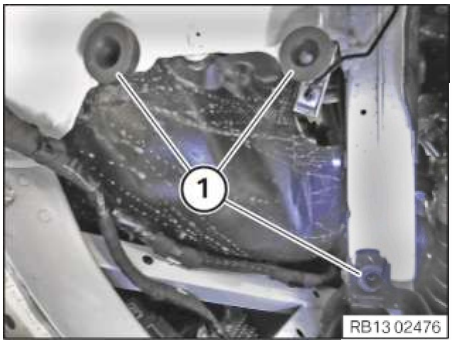
NOTICE

Perform the operations on the left and right side.

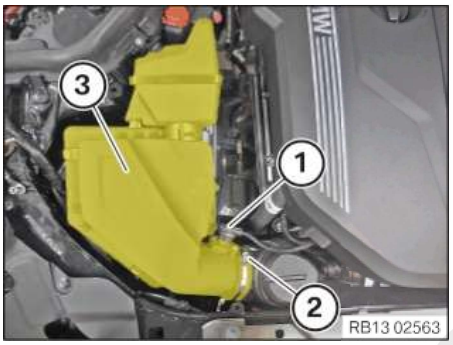


- Position the side bonnet seal (2) on the spring strut dome.
- Secure the rivet (1).

43 – Installing intake silencer housing



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



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

Clean air pipe to upper section of intake filter housing

Clamp	Tightening torque	3 Nm

- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

44 – Install acoustic cover

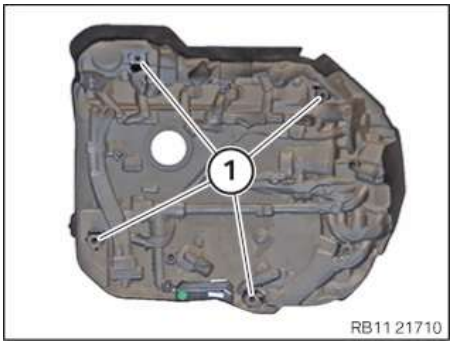
RISK OF DAMAGE

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.

cardiagn.com

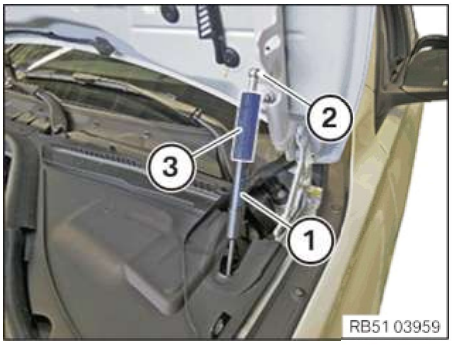


- Check the rubber mount (1) for correct fit in the acoustic cover.

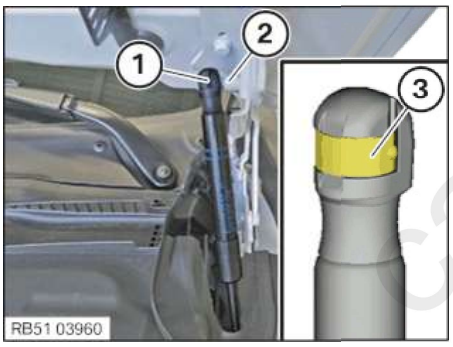


- Install acoustic cover (1) and fix in the rubber mounts (marks).

45 – Take bonnet out of the service position



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



CAUTION

Shutting bonnet or tailgate.

Danger of injury!

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

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

46 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Overview of Tightening Torques

cardiagn.com

Special tool to cylinder head			Used in step 18
M8		Tightening torque	21,5 Nm

Engine mount to front axle support			Used in step 24
M8		Tightening torque	19 Nm

Protective cap			Used in step 24
Hexagon screw		Tightening torque	3 Nm

Engine support arm to engine			Used in step 25
M10		Tightening torque	38 Nm

Control unit holder on spring strut dome			Used in step 26
Hexagon screw		Tightening torque	8 Nm

Engine mount to engine mounting bracket			Used in step 29
M12		Tightening torque	100 Nm

Wheel arch trim panel, front			Used in step 30
Thermoplastic hexagon screw		Tightening torque	2,6 Nm

Brake disc to front wheel hub			Used in step 31
M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub			Used in step 31
M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts			Used in step 31
M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Fuel delivery line to high pressure pump			Used in step 32
M14		Tightening torque	31 Nm

Fuel line to cylinder head cover			Used in step 32
6x18		Tightening torque	6,5 Nm

Ignition coil			Used in step 33
Screw		Tightening torque	8 Nm

Bulkhead upper part to bottom bulkhead			Used in step 35
		Tightening torque	3 Nm

Tension strut on bulkhead			Used in step 35
M10x25 screw		Tightening torque	56 Nm

Tension strut to spring strut dome			Used in step 35
Screw	Renew screws.	Jointing torque Angle of rotation	56 Nm 90 °

Windscreen wiper arm			Used in step 37
Combination hexagon nut		Tightening torque	35 Nm

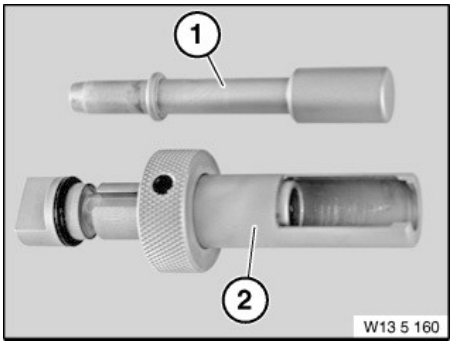
cardiagn.com

Clean air pipe to upper section of intake filter housing Used in step 43

Clamp		Tightening torque	3 Nm

Overview of Special Tools

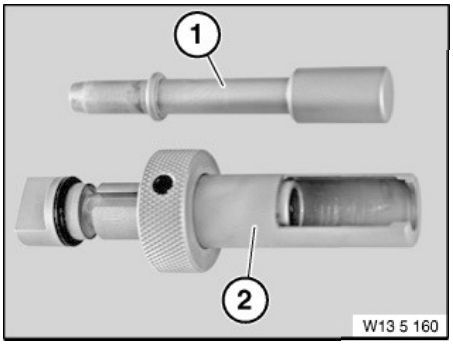
0 496 567 (13 5 161) Fastener



Common Used in step 14

Usage	(Cap (2 piece)) For sealing the quick connectors Deletion, only available via tool set
Included in the tool or work	0 496 565
Storage location	
Replaced by	
In connection with	
SI-Number	

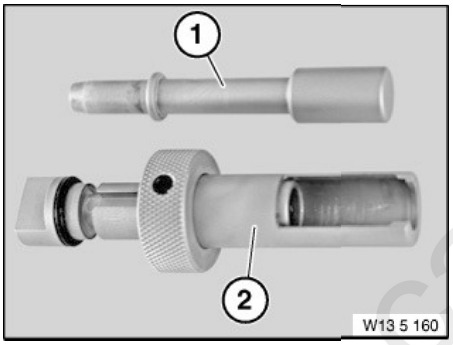
0 496 568 (13 5 162) Fastener



Common Used in step 14

Usage	(Cap (2 x)) To close off the fuel lines. Discontinued, can only be ordered using complete tool
Included in the tool or work	0 496 565
Storage location	
Replaced by	
In connection with	
SI-Number	

0 496 565 (13 5 160) Fastener



Common Used in step 14

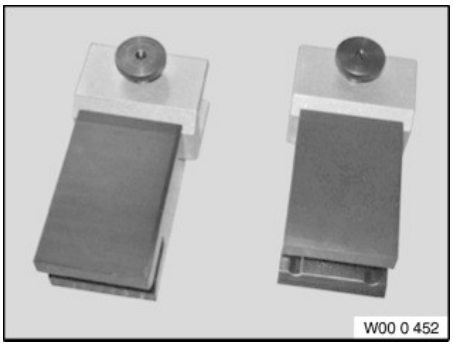
Usage	(Caps (2x)) To close off the fuel lines when removing and installing the engine.
Included in the tool or work	
Storage location	B26
Replaced by	
In connection with	
SI-Number	01 22 08 (498)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 496 567 (13 5 161)		**Fastener** (Cap (2 piece)) For sealing the quick connectors Deletion, only available via tool set	
2	0 496 568 (13 5 162)		**Fastener** (Cap (2 x)) To close off the fuel lines. Discontinued, can only be ordered using complete tool	

cardiagn.com

0 495 850 (00 0 452) Upholstery



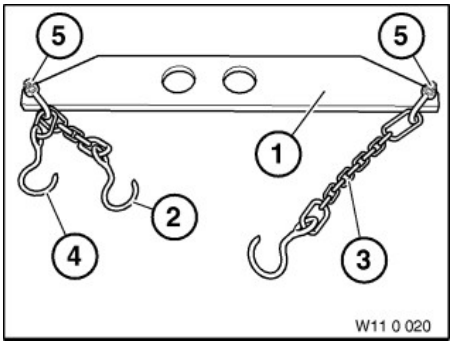
Common Used in step 18

Usage	(Pads (2 x)) Series: E70 Replaced by 00 6 042
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 22 06 (307)

0 490 567 (11 0 020) Lifting gear

Used in step 1829

cardiagn.com



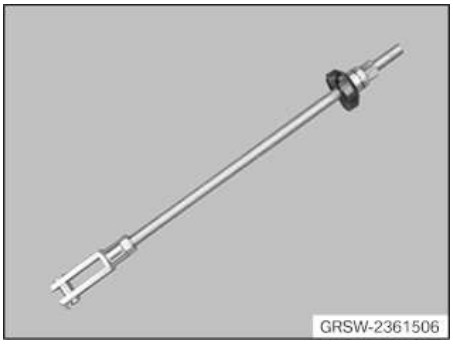
Common

Usage	For removing and installing the engines. 08/2011 only available as a complete set. Delivered with TÜV inspection certificate and operating instructions. No delivery of separate parts.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 13 94 (888)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
5	0 490 572 (11 0 029)		**Shackle** (Shackle) 2 pieces As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	
1	0 490 568 (11 0 021)		**Lifting gear** (Cross member) As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	
2	0 490 569 (11 0 022)		**Chain** (Chain) As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	
3	0 490 570 (11 0 023)		**Chain** (Chain) Version: long As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	
4	0 490 571 (11 0 024)		**Chain** (Chain) Version: short As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	

2 361 506 (00 6 103) Spindle



Common Used in step 1829

Usage	Spindle (central spindle) for Traverse 00 6 100.
Included in the tool or work	0 496 852
Storage location	
Replaced by	
In connection with	
SI-Number	01 17 10 (659)

cardiagn.com

2 344 011 Tool



Common	Used in step 31
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



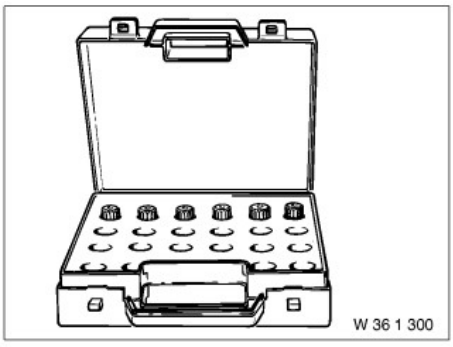
Common	Used in step 16
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common	Used in step 16
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 16
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	

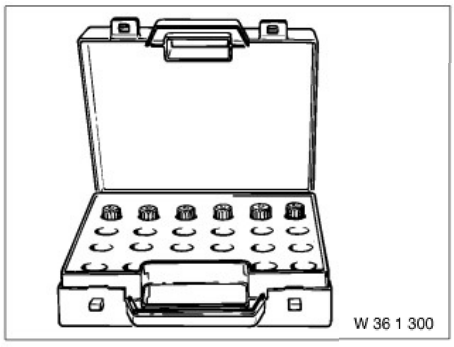
cardiagn.com

0 495 226 (36 1 328) Wheel stud



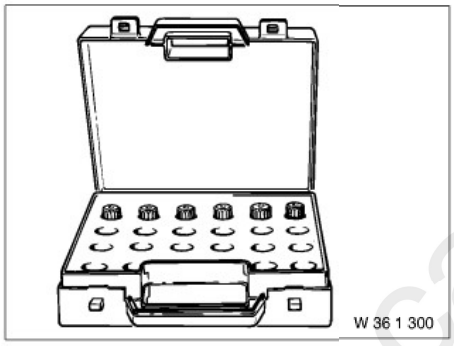
Common	Used in step 16
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



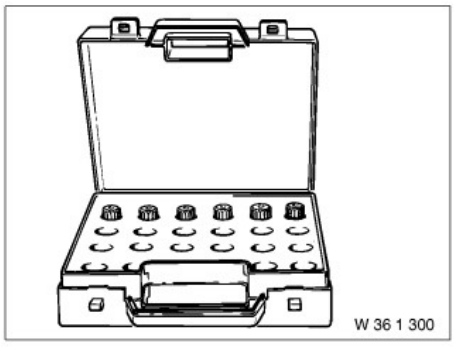
Common	Used in step 16
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 228 (36 1 331) Wheel stud



Common	Used in step 16
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 16
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	

cardiagn.com

0 495 230 (36 1 333) Wheel stud



Common	Used in step 16
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

Distance from window pane edge to wiper blade	Used in step 37
Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

Links

General repair instructions	Used in step
12 00 ... Instructions for removal and replacement of control units	1928

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	146
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	146
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146

cardiagn.com

61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 35 ... Notes on ESD protection (Electro Static Discharge)	13192027
61 00 730 Encode/program control unit(s) (after vehicle test)	28

cardiagn.com

22 11 110 Replacing left engine support bracket

PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

2 – Bring front compartment lid in the service position

Prerequisite

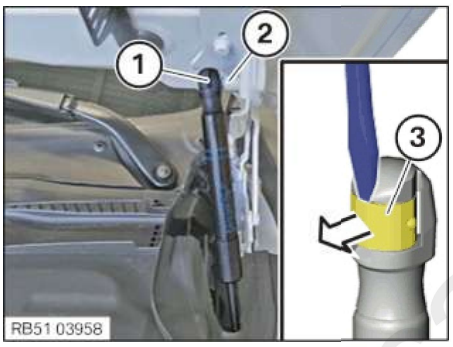
Engine compartment lid is open.

CAUTION

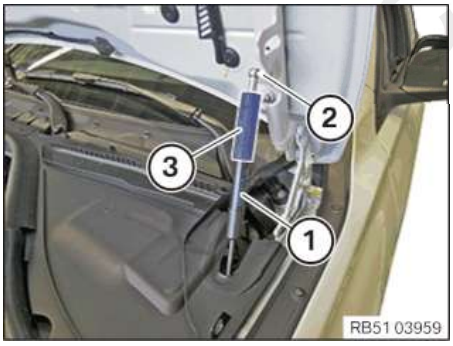
Shutting bonnet or tailgate.

Danger of injury!

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



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



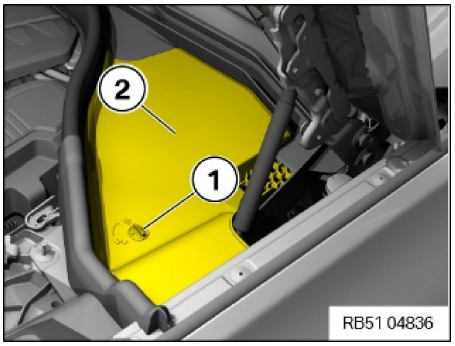
TECHNICAL INFORMATION

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

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

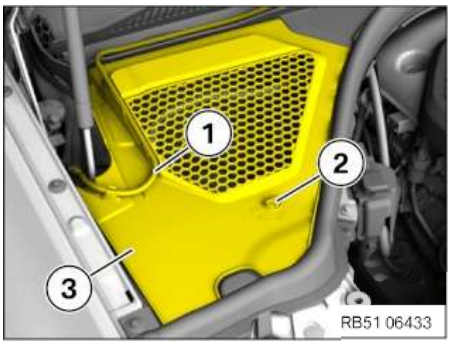
3 – Remove the cover of the engine compartment at the rear left

cardiagn.com



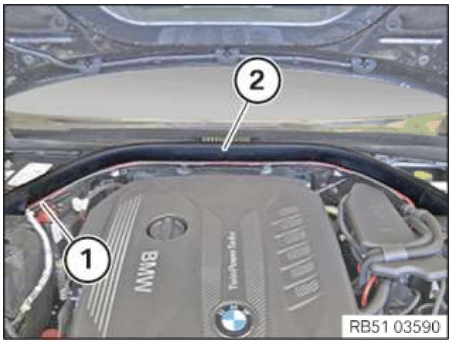
- Loosen the lock (1).
- Remove rear left cover of engine compartment (2).

4 – Remove the cover of the rear right engine compartment



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

5 – Remove the seal for the rear bonnet



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

6 – Removing both wiper arms

NOTICE

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

▶ **Remove the wiper arm**

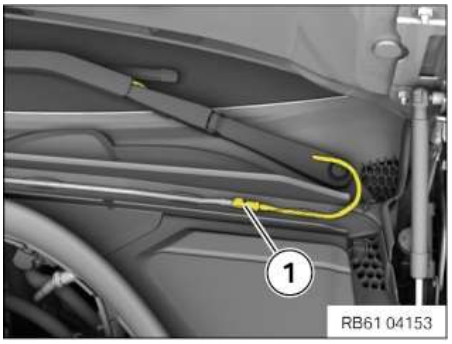
RISK OF DAMAGE

Damage to wiper console

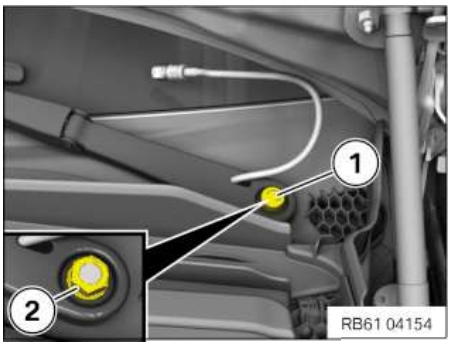
While removing the wiper arms without using special tool, the wiper console can break.

- 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.

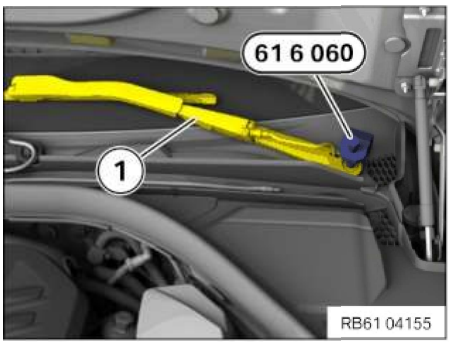
cardiagn.com



- Disconnect the windscreen wash hose(1) at the separation point and remove from the cowl guide.

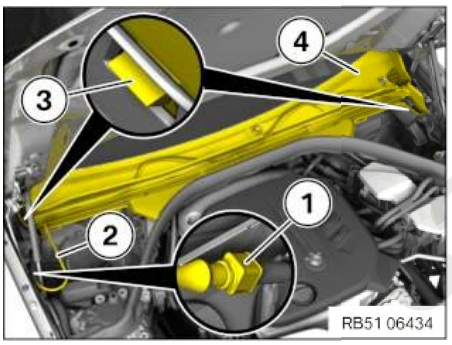


- Remove the protective cap (1).
- Loosen nut (2).

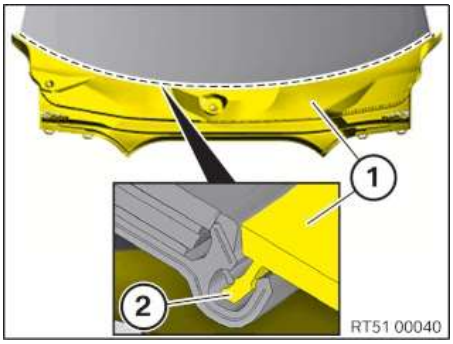


- Pull off the wiper arm (1) using special tool .

7 – Remove cowl panel cover



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



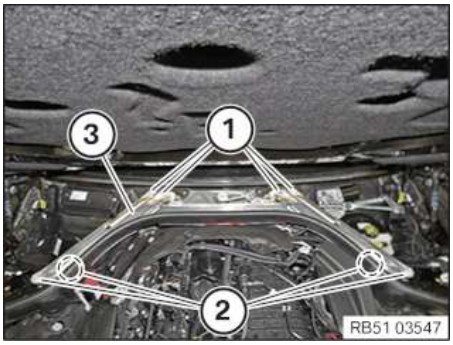
- Pull the cowl panel cover (1) upward out of the latch mechanism (2) beginning on the side.

8 – Removing the centre bulkhead upper part

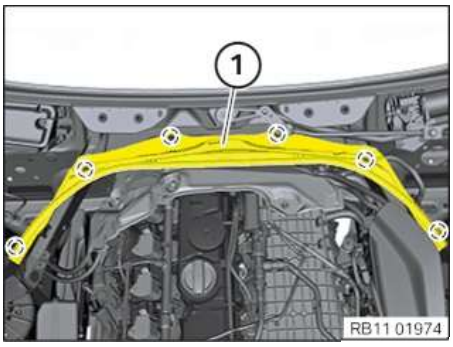
TECHNICAL INFORMATION

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

cardiagn.com



- **If installed:** Remove tension strut on spring strut dome.
- Loosen screws (1) and (2).
- Remove tension strut (3) in the spring strut dome upwards.

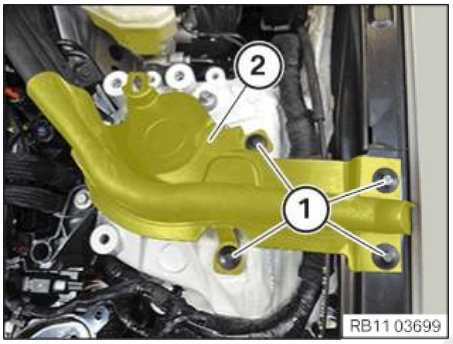


- Unscrew the bolts in the marked areas.
- Remove the centre bulkhead upper part (1).

9 – Removing side bonnet gaskets

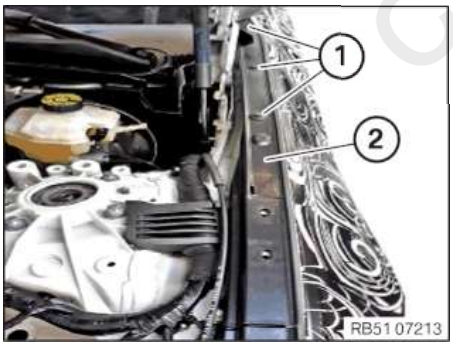
NOTICE

Perform the operations on the left and right side.



- Loosen the rivet (1).
- Remove side bonnet seal (2) from spring strut dome.

10 – Remove sealing of the side panel



NOTICE

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

- Loosen the expanding rivet (1).
- Guide out seal (2) and remove.

11 – Removing the acoustic cover

WARNING

Hot surfaces.

Risk of burning!

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

cardiagn.com

RISK OF DAMAGE

Damage to the acoustic cover.

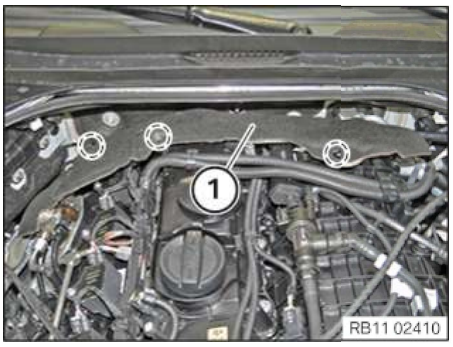
Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover.

- 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.



- Release the acoustic cover (1) towards the top from the rubber mounts (marks).

12 – Removing acoustic cover at rear



- Unclip the acoustic cover (1) in the marked areas and remove it to the top.

13 – Remove all ignition coils.

NOTICE

The description is for one component only. The procedure is identical for all further components.

▶ **Removing the ignition coil**

WARNING

Hot surfaces.

Risk of burning!

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

RISK OF DAMAGE

Damage to the ignition coil.

The silicone hose of the ignition coil must not be contaminated by fuel as this can lead to failure of the ignition coil.

- Cover ignition coils using suitable covers when working on the fuel system, if necessary remove them.
- Do not oil or grease the silicone tube of the spark plug connector. The silicone tube is coated with talc to reduce the pulling forces.

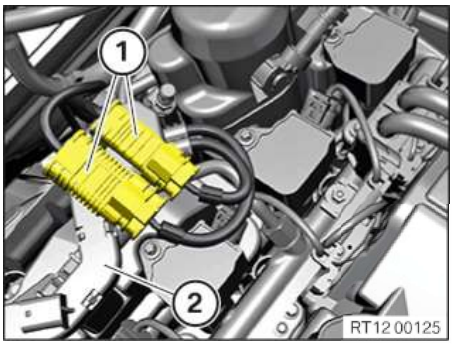
cardiagn.com

RISK OF DAMAGE

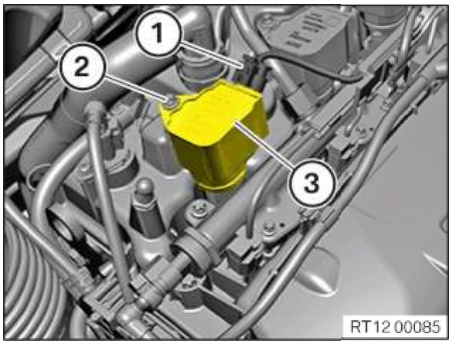
Electrostatic discharge.

Damage to or destruction of electrical components.

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



- Disconnect the connector (1) of the front oxygen sensor and the monitoring oxygen sensor from the cable channel (2) and set aside.



- Unlock plug connection (1) and disconnect.
- Loosen screw (2).
- Remove ignition coil (3).

14 – Remove fuel delivery line

WARNING

Working on fuel system.

Risk of fire! Danger of explosion!

- When working on the fuel system, make sure that the workbay is sufficiently ventilated, e.g. using extraction unit.
- Tightly seal off open lines and connections; collect any escaping fuel directly at the point of exit.
- No fire, sparks, open flames or smoking.

CAUTION

On releasing high pressure line, fuel may emerge at high speed.

Danger of injury!

- Wear suitable personal protective equipment.
- Allow the cooling system to cool down to a temperature below 40°C before starting installation work.
- Note warnings on cylinder head cover.

cardiagn.com

RISK OF DAMAGE

Damage to the ignition coil.

The silicone hose of the ignition coil must not be contaminated by fuel as this can lead to failure of the ignition coil.

- Cover ignition coils using suitable covers when working on the fuel system, if necessary remove them.
- Do not oil or grease the silicone tube of the spark plug connector. The silicone tube is coated with talc to reduce the pulling forces.

RISK OF DAMAGE

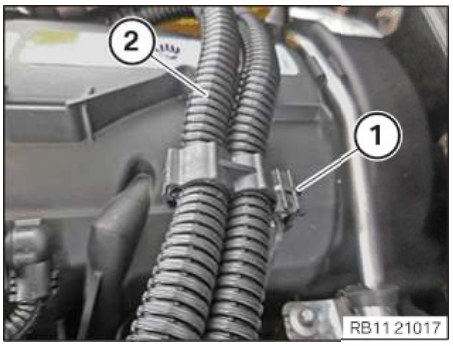
Contaminant or foreign body.

Contamination can result in malfunctions, operating failure or leaks.

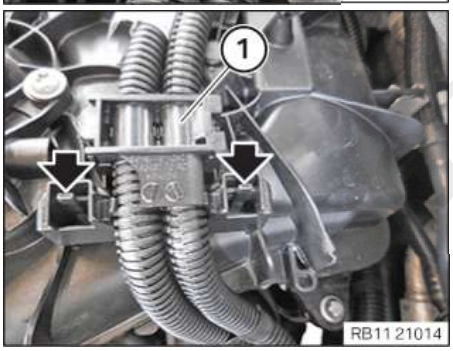
- Adhere to the utmost cleanliness.
- Protect components from contamination e.g. by covering.
- Close off line connections with seal plugs.

TECHNICAL INFORMATION

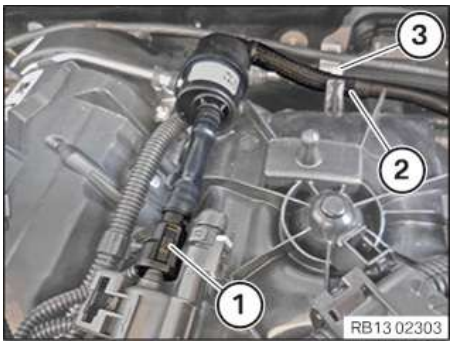
Reset special tool in early to avoid bending pressure lines.



- Loosen clamp (1).
- Guide out wiring harness section (2) for the injectors and ignition coils and place it aside.

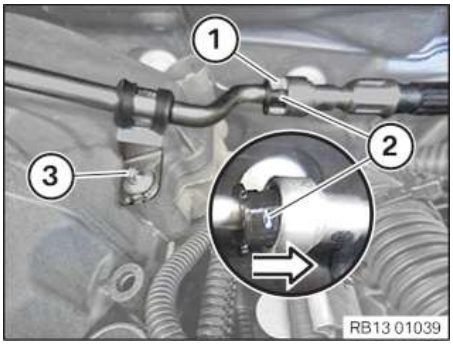


- Unlock the locks (arrows).
- Guide out wiring harness section (1) for the injectors and ignition coils and place it aside.

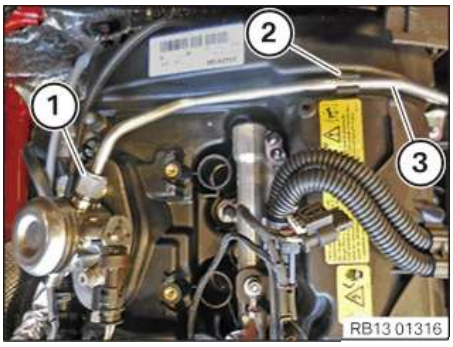


- Unlock and loosen lock (1).
- Guide tank ventilation line (2) out of clamp (3) and place it aside.

bardiagn.com



- Unlock and loosen clamp (1).
- Unlock and remove the snap fastener (2) in the direction of the arrow.
- Catch and dispose of escaping fuel.
- Seal the fuel lines with special tools 0 496 567 (13 5 161) and 0 496 568 (13 5 162) from the set of special tools 0 496 565 (13 5 160).
- Loosen screw (3).



- Slacken the union nut (1) on the high pressure pump.
- Catch and dispose of escaping fuel.
- Seal all openings with the special tool .
- Guide the fuel feed line (3) out and remove.
- Make sure that the rubber damper (2) is not lost.

15 – Removing intake silencer housing

RISK OF DAMAGE

Damage to the clean air line. Damage to the air filter.

For changing the air filter insert, if the upper section of intake filter housing is only raised and not completely removed, the clean air line and the air filter insert may be damaged.

- Do not lift upper section of intake filter housing by force.
- Unfasten clamp.
- Remove upper section of intake filter housing completely.



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

16 – Removing the front left wheel

▸ **Removing the wheel**

carlagn.com



- In vehicles with M Carbon ceramic brake: The wheel assembly jack must be used to remove the wheel (see workshop equipment).

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

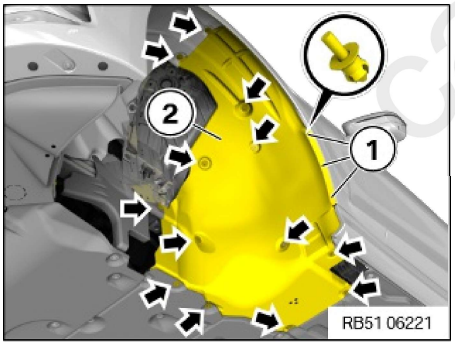


- If several wheels are removed simultaneously: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use a suitable adapter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

17 – Removing the rear section of the front wheel arch cover front

NOTICE

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

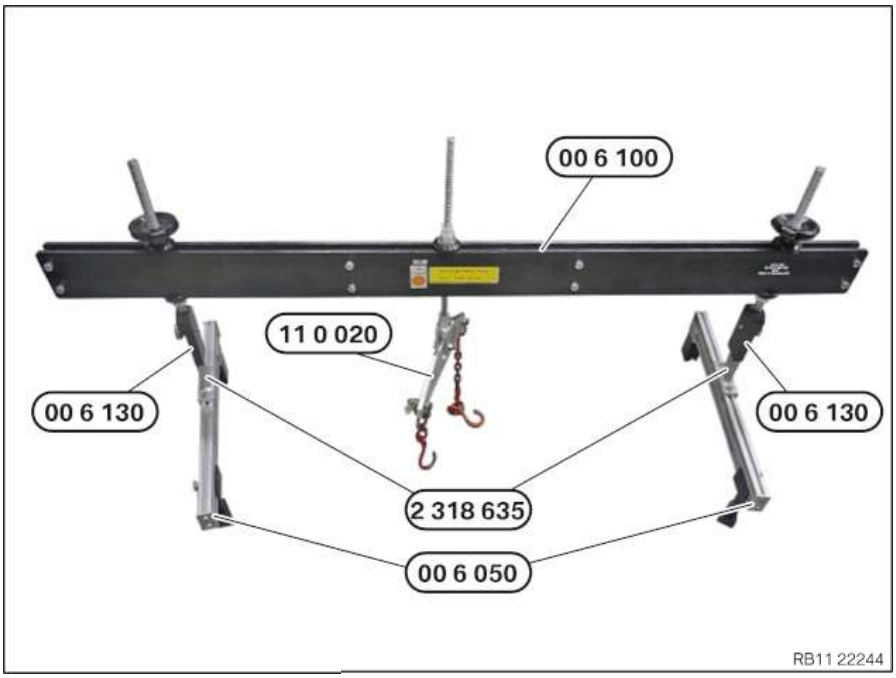


- Loosen the expanding rivet (1).
- Remove screws (arrows).
- Remove the rear section of the front wheel arch cover (2).

18 – Securing engine in installation position

carDiagn.com

Overview: prepared engine bridge



CAUTION

Components connected to the engine joint or cross member.

Danger of injury!

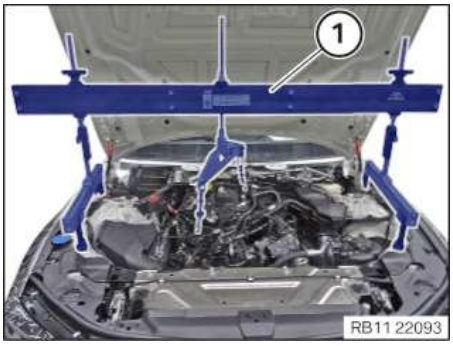
- Check lifting eyes and engine mounting brackets for damage, e.g. cracks.
- Attach the component to correctly mounted engine joints or cross members only.
- Exclusively lift the component, do not move it forwards, backwards or in transverse direction.



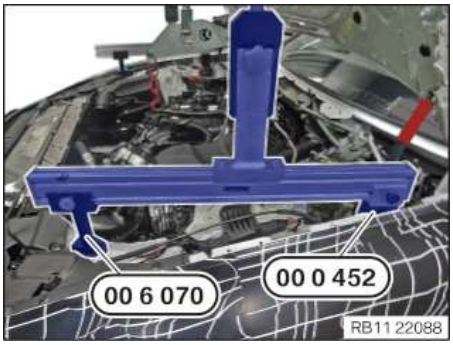
- Guide in and position special tool on cylinder head.
- Tighten the screws (1) of special tool .

Special tool to cylinder head

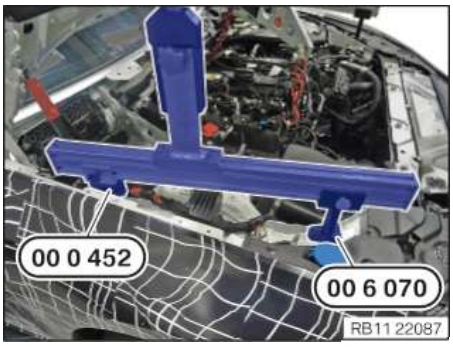
M8		Tightening torque	21,5 Nm



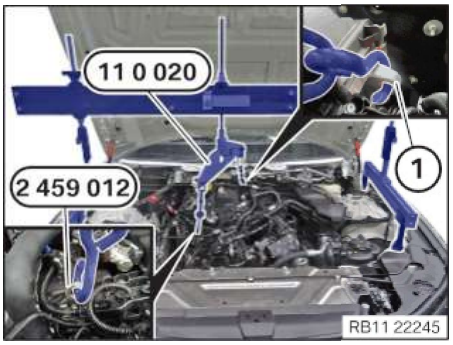
- **Carefully** position engine bridge (1) with help from an auxiliary person.



- Make sure that special tool on the left is **correctly** positioned on the front end.
- Make sure that special tool 0 495 850 (00 0 452) on the left is **correctly** positioned on the carrier support.



- Make sure that special tool on the right is **correctly** positioned on the front end.
- Make sure that special tool 0 495 850 (00 0 452) on the right is **correctly** positioned on the carrier support.



- Align the engine bridge by moving it on the profile strips of the special tool above the engine mounting bracket and screw it down.
- Connect special tool 0 490 567 (11 0 020) to special tool .
- Connect the special tool 0 490 567 (11 0 020) above the engine mounting bracket (1) at the rear.



- Check whether the special tool on the right is **correctly** positioned on the front end.



- Check whether the special tool 0 495 850 (00 0 452) on the right is **correctly** positioned on the carrier support.



- Check whether the special tool on the left is **correctly** positioned on the front end.

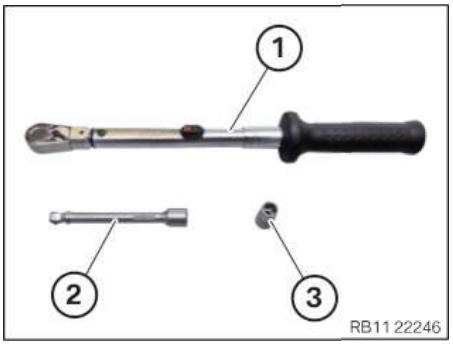
cardiagn.com



- Check whether the special tool 0 495 850 (00 0 452) on the left is **correctly** positioned on the carrier support.

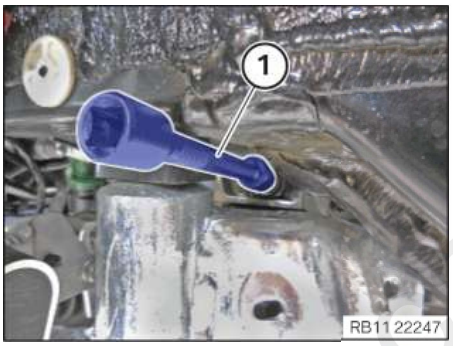


- Release screw (1) on the right engine mount from the top with a commercially available tool.

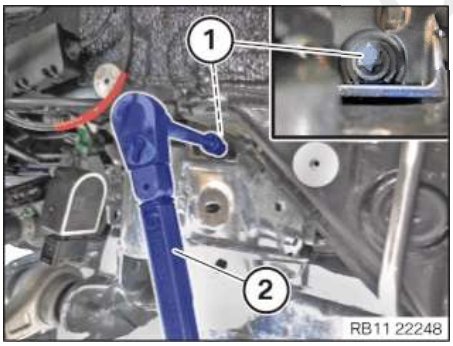


- Have all suitable tools ready.

Number	Description
1	Commercial available torque spanner
2	Swivel mounted extension
3	External Torx E14



- Position the suitable tool (1).



- Release screw (1) of the left engine mount with standard tool (2) sideways.



- Raise the engine by turning the special tool 2 361 506 (00 6 103) (spindle) by 10 mm.

cardiagn.com

19 – Removing the DME control unit

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

Follow instructions for removing and installing control units.

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

TECHNICAL INFORMATION

In a warranty case, you must always provide a fault memory printout with the defective part, even if the fault memory does not contain an entry.

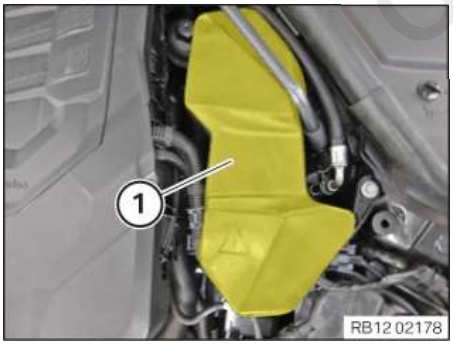
TECHNICAL INFORMATION

Control unit must be programmed after it is replaced.

For additional information see: 61 00 ... Programming/encoding control unit(s)

TECHNICAL INFORMATION

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

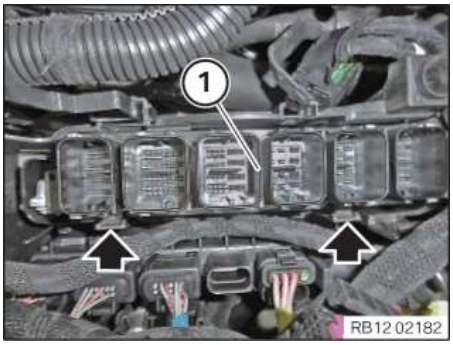


- Pull the cover (1) towards the top and feed out.



- Unlock and disconnect the plug connection (1).

cardiagn.com



- Unlock the locks (arrows).
- Guide out and remove DME control unit (1).

20 – Removing integrated supply module (PDM)

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

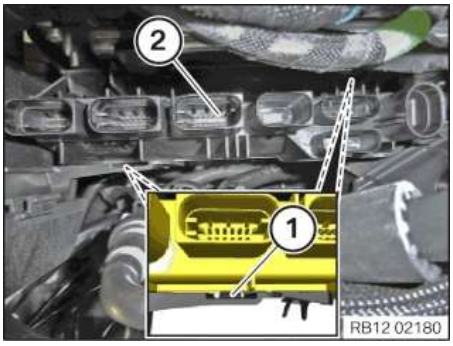
Electrostatic discharge.

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.



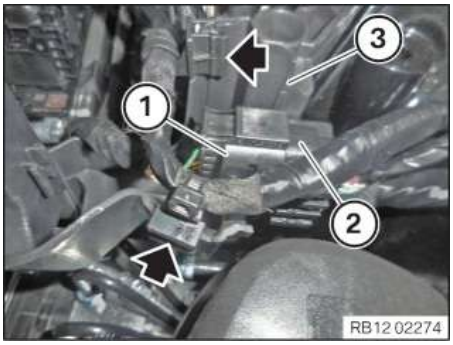
- Unlock and disconnect plug connections (1).



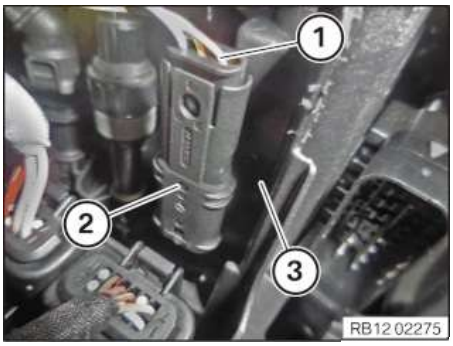
- Unlock the latch mechanisms (1).
- Guide out and remove integrated supply module (PDM) (2) upwards.

21 – Removing the control unit holder

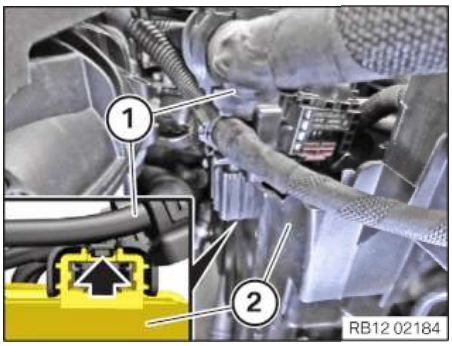
boardiagn.com



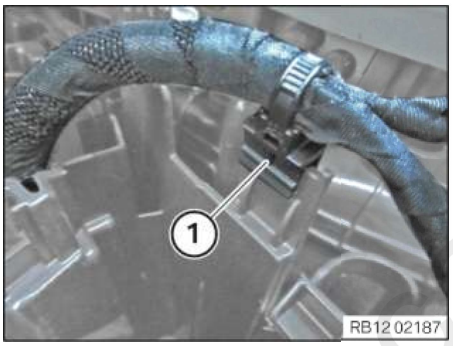
- Unlock plug connection (1) and disconnect.
- Unlock the connector (2) and disconnect from the control unit holder (3).
- Release the clamps (arrows).



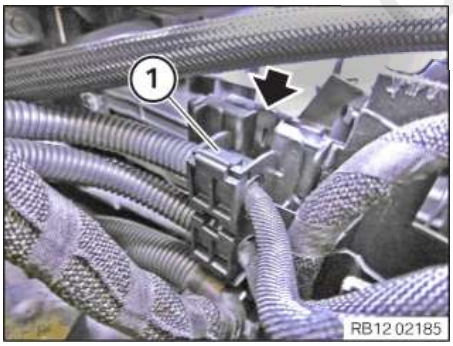
- Unlock plug connection (1) and disconnect.
- Unlock the connector and disconnect from the control unit holder (3).



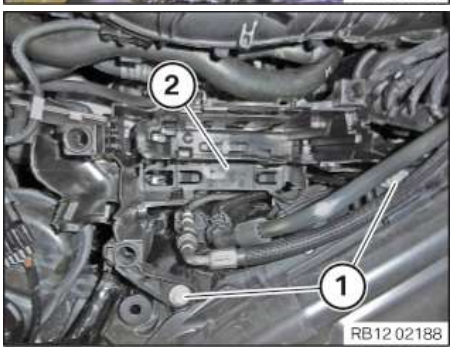
- Unlock the lock (arrow).
- Disconnect the cable holder (1) upwards from the control unit holder (2).



- Loosen clamp (1).



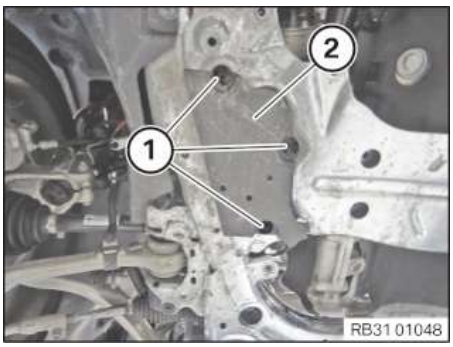
- Unlock the lock (arrow).
- Feed out the cable clip (1) upwards and set it aside.



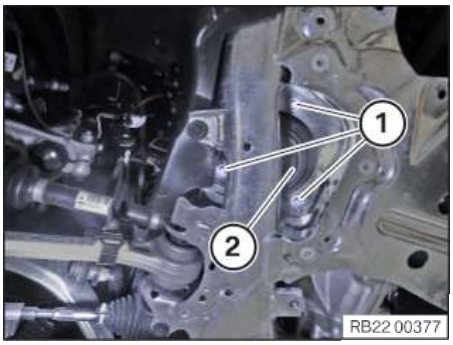
- Loosen screws (1).
- Guide out and remove the control unit holder (2).

cardiagn.com

22 – Remove left engine mount



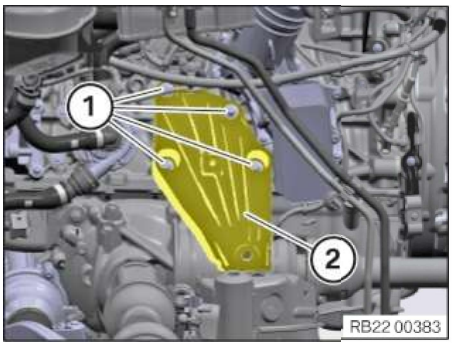
- Loosen screws (1).
- Remove protective cap (2).



- Loosen screws (1).
- Remove engine mount (2).

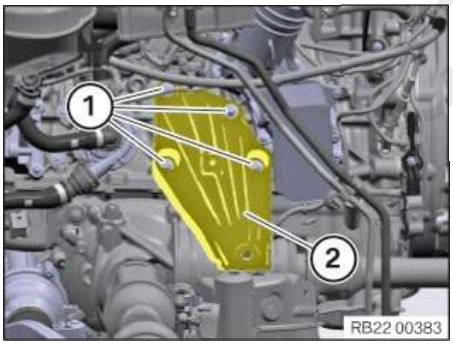
MAIN WORK

23 – Remove left engine support arm



- Loosen screws (1).
- Remove the engine support arm (2).

24 – Install left engine support arm



- Install the engine support arm (2).
- Tighten the screws (1).

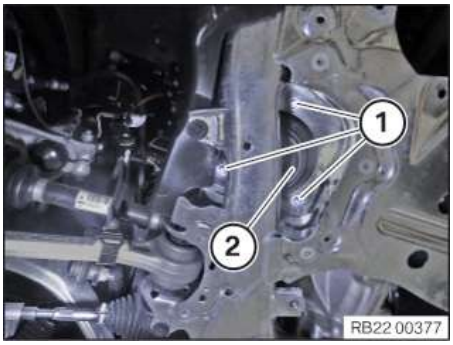
Engine support arm to engine

M10		Tightening torque	38 Nm

POSTPROCESSES

25 – Installing the engine mount on the left

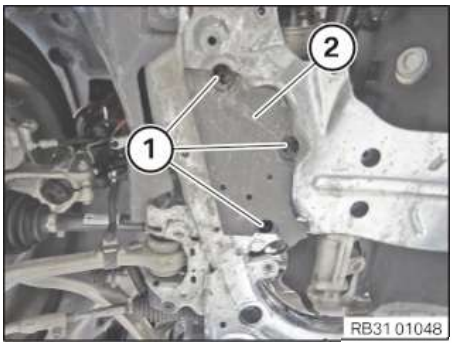
cardiagn.com



- Install the engine mount (2).
- Tighten the screws (1).

Engine mount to front axle support

M8		Tightening torque	19 Nm

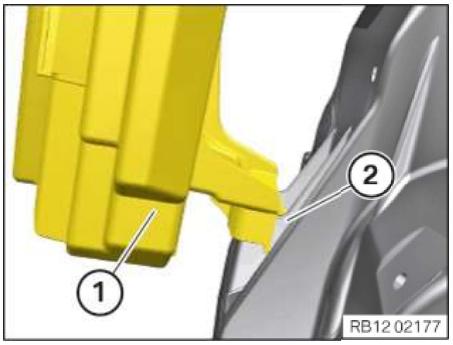


- Install the protective cap (2).
- Tighten the screws (1).

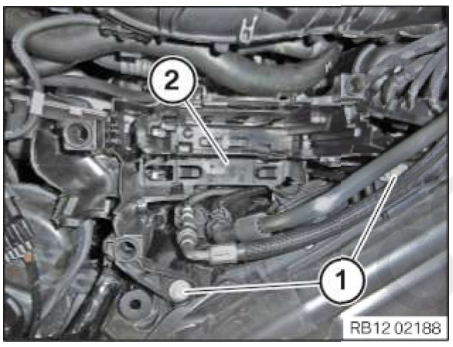
Protective cap

Hexagon screw		Tightening torque	3 Nm

26 – Installing the control unit holder



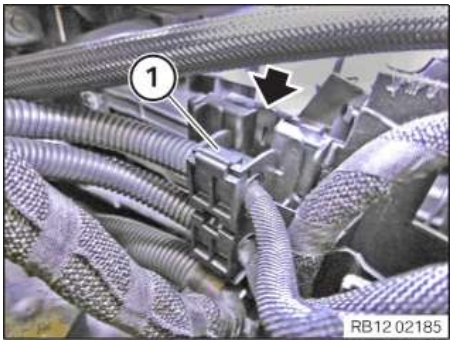
- Make sure the bottom control unit holder (1) is inserted correctly into the fixture (2).



- Guide in and install control unit holder (2).
- Tighten the screws (1).

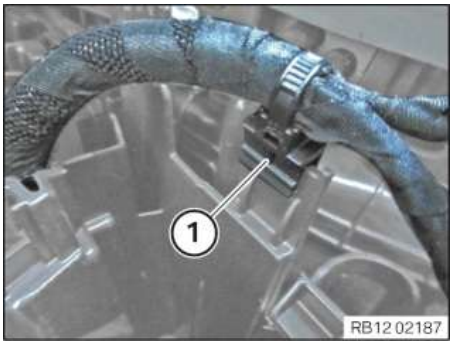
Control unit holder on spring strut dome

Hexagon screw		Tightening torque	8 Nm

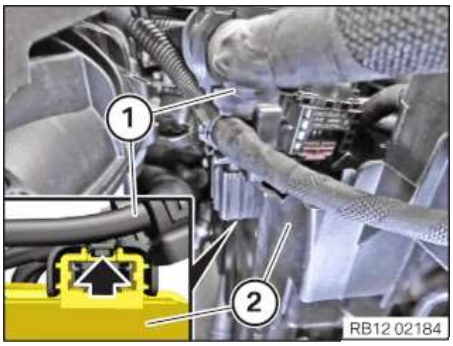


- Feed in and install the cable clip (1).
  Lock (arrow) must audibly engage.

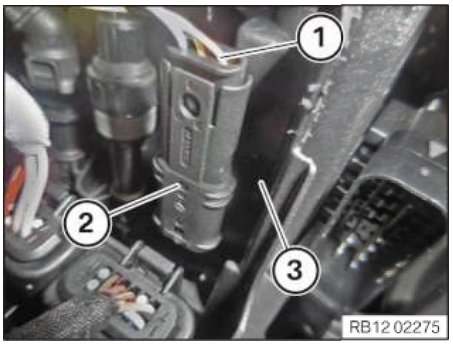
partsvagn.com



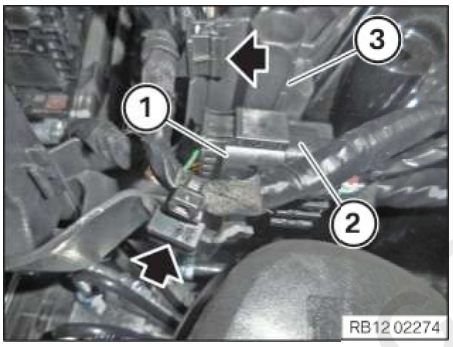
- Secure clamps (1).



- Connect the cable clip (1) with the control unit holder (2) and lock it.
  Lock (arrow) must audibly engage.



- Connect connector (2) to the control unit holder (3) and lock it.
  The connector (2) must engage audibly.
- Connect connectors (1) and lock.
  The connector (1) must engage audibly.



- Connect and lock the connector (2) with the control unit holder (3).
  The connector (2) must engage audibly.
- Connect connectors (1) and lock.
  The connector (1) must engage audibly.
- Secure the clamps (arrows).

27 – Installing the integrated supply module (PDM)

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.

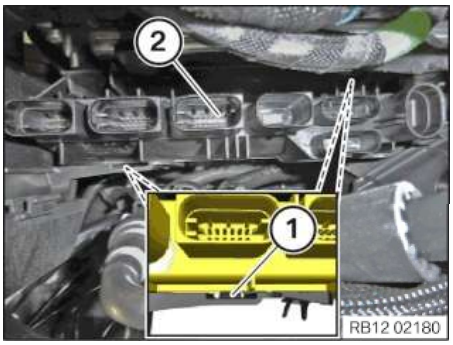
cardiagn.com

RISK OF DAMAGE

Electrostatic discharge.

Damage to or destruction of electrical components.

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



- Insert and install the integrated supply module (PDM) (2).

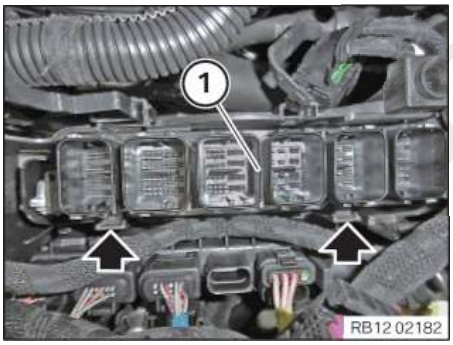
  The latch mechanisms (1) must engage audibly.
- Unlock the latch mechanisms (1).



- Connect connectors (1) and lock.

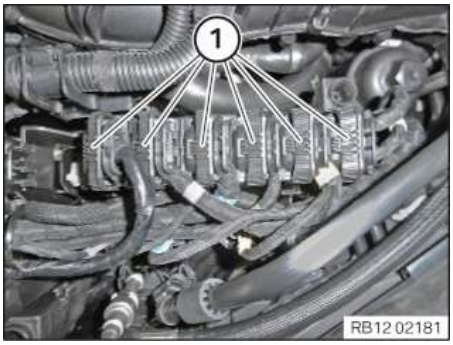
  The connectors (1) must engage audibly.

28 – Installing the DME control unit



- Feed in and install DME control unit (1).

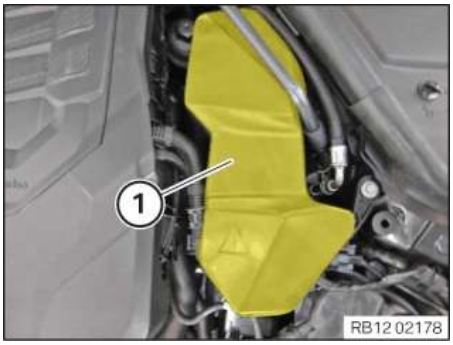
  The locks (arrows) must engage audibly.



- Connect connectors (1) and lock.

  All connectors (1) must engage audibly.

bardiagn.com

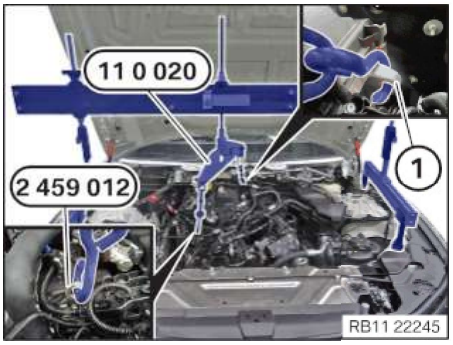


- Insert and install cover (1) into guides.

29 – Loosen the attachment of the engine in installation position



- Lower engine by turning the spindle 2 361 506 (00 6 103) until the engine lies completely on the engine supports.



- Feed out special tool 0 490 567 (11 0 020) on the special tool and set aside.
- Feed out special tool 0 490 567 (11 0 020) on the engine mounting bracket (1) and set aside.



TECHNICAL INFORMATION

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

- Remove the engine bridge (1) with an auxiliary person.

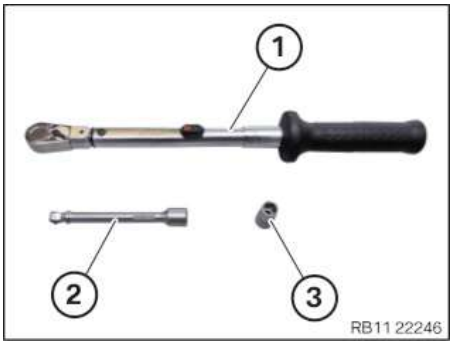


- Tighten bolt (1) of the right engine mount from the top using a standard tool.

Engine mount to engine mounting bracket

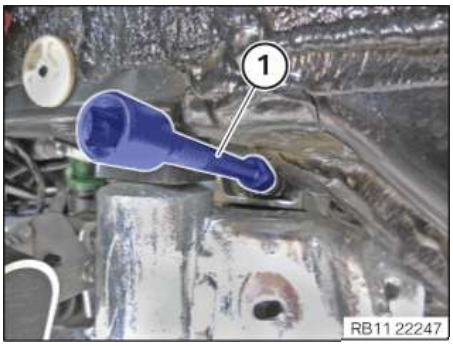
M12		Tightening torque	100 Nm

cardiagn.com

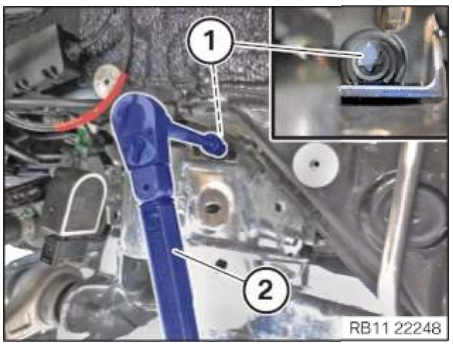


- Have all suitable tools available.

Number	Description
1	Commercial available torque spanner
2	Swivelling extension
3	External TorxE14



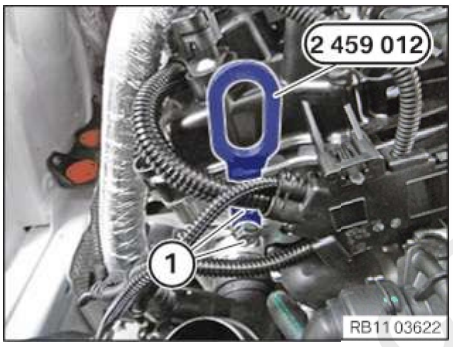
- Position suitable tools (1).



- Tighten bolt (1) of the left engine mount using a standard tool (2) sideways.

Engine mount to engine mounting bracket

M12		Tightening torque	100 Nm

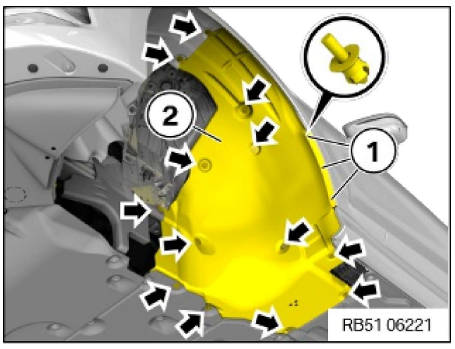


- Unscrew the bolts (1) of the special tool .
- Feed out the special tool at the cylinder head and remove.

30 – Install the rear section of the front wheel arch cover

NOTICE

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



- Install the rear section of the front wheel arch cover(2) .
- Tighten screws (arrows).

Wheel arch trim panel, front

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

- Secure expanding rivet (1).

31 – Attaching the front left wheel

▸ **Mounting the wheel**

cardiagn.com



TECHNICAL INFORMATION

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

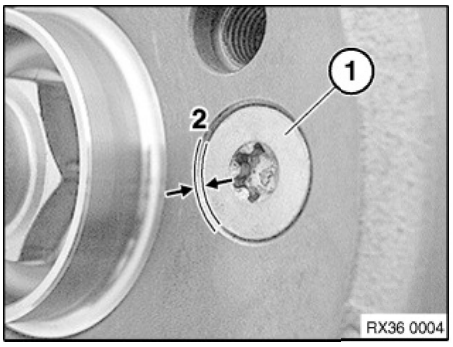
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

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



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

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



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

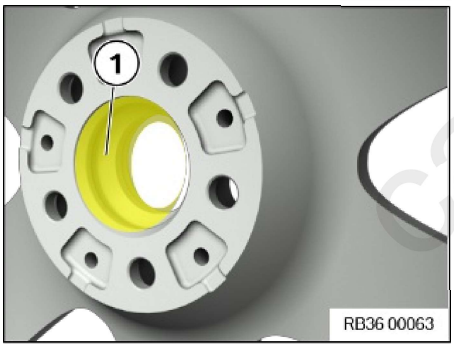
  The mounting bolt (1) for the brake disc may not protrude under any circumstances on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm



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

Expendable materials

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



- Lightly grease the front and rear wheel hubs in this area (1) to protect from corrosion.

Expendable materials

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

cardiagn.com



- In vehicles with M Carbon ceramic brake: The wheel assembly jack must be used to install the wheel (see workshop equipment).

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



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.

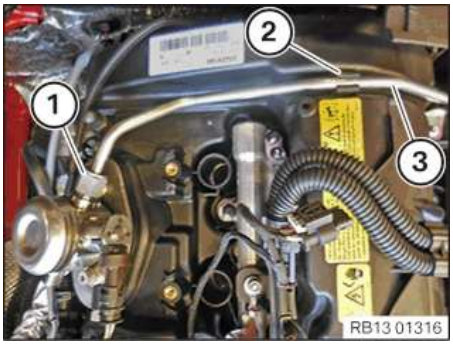
- Renew corroded wheel bolts.

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

Wheel bolts

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

32 – Installing fuel delivery line

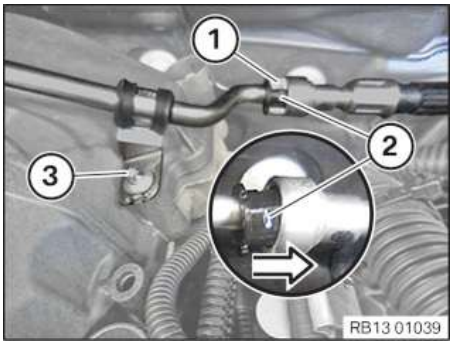


- Guide the fuel delivery line (3) in and install.
- Install rubber damper (2).
- Check the rubber damper (2) for the correct fit.
- Tighten the union nut (1) hand-tight.
- Tighten union nut (1).

Fuel delivery line to high pressure pump

M14		Tightening torque	31 Nm

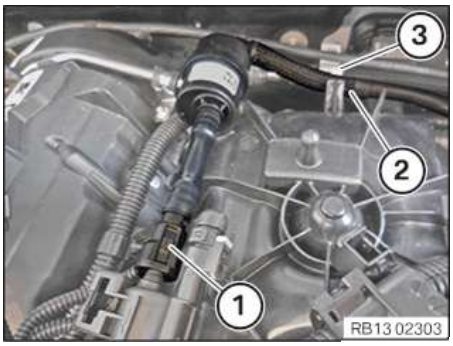
carcliagn.com



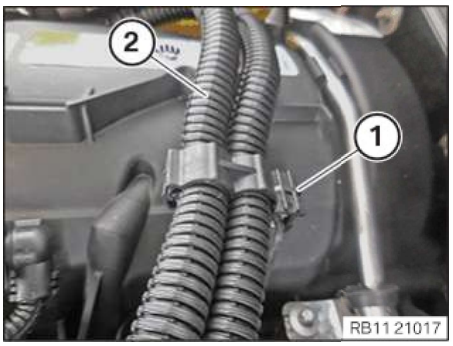
- Slide in and lock the fuel feed line in the direction of the arrow in the snap fastener (2).
  The fuel feed line must be audibly engage in the snap fastener (2).
- Secure clamps (1).
- Tighten down screw (3).

Fuel line to cylinder head cover

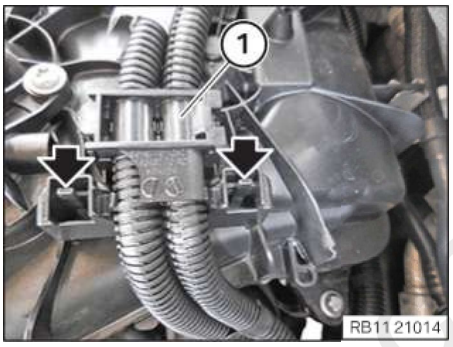
6x18		Tightening torque	6,5 Nm



- Insert and install the tank ventilation line (2).
- Lock (1) must engage audibly.
- Secure the tank ventilation line (2) to the clamp (3).



- Insert and install wiring harness section (2) for injectors and ignition coils.
- Secure clamps (1).



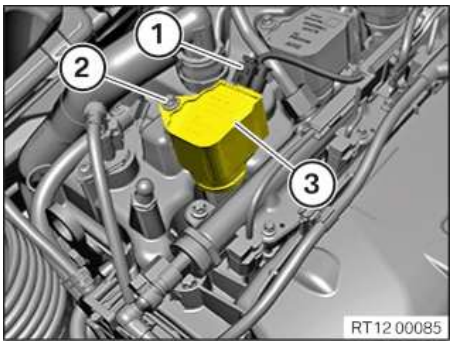
- Insert and install wiring harness section (1) for injectors and ignition coils.
- The locks (arrows) must engage audibly.

33 – Install all ignition coils

NOTICE

The description is for one component only. The procedure is identical for all further components.

▸ **Install ignition coil.**



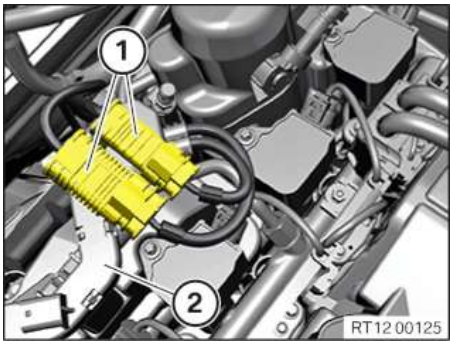
- Install ignition coil (3).
- Tighten down screw (2).

Ignition coil

Screw		Tightening torque	8 Nm

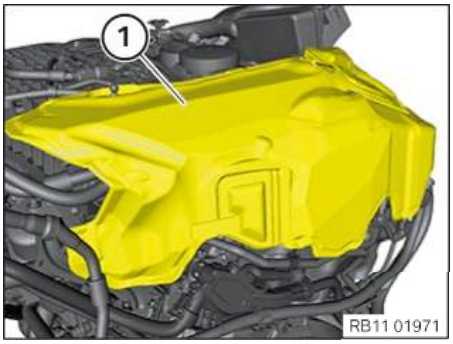
- Connect connectors (1) and lock.
  The connector (1) must engage audibly.

cardiagn.com



- Connect the connector (1) of the front oxygen sensor and the monitoring oxygen sensor on the cable shaft (2).

34 – Installing acoustic cover at rear

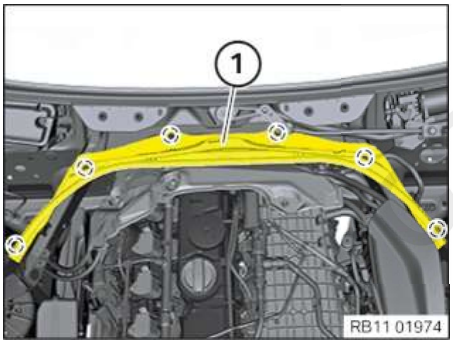


- Make sure the acoustic cover (1) is correctly positioned on the rear side of the engine.



- Install the acoustic cover (1) from the top and clip it in into the marked areas.

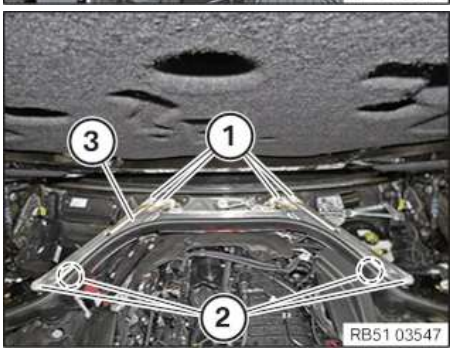
35 – Installing the centre bulkhead upper part



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

Bulkhead upper part to bottom bulkhead

	Tightening torque	3 Nm



- **If installed:** Install tension strut on spring strut dome.
- Install the tension strut (3) on the spring strut dome.
- Tighten the screws (1).

Tension strut on bulkhead

M10x25 screw		Tightening torque	56 Nm

- Renew screws (2).

  Parts: Bolts
- Tighten the screws (2).

Tension strut to spring strut dome

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

36 – Installing cowl panel cover

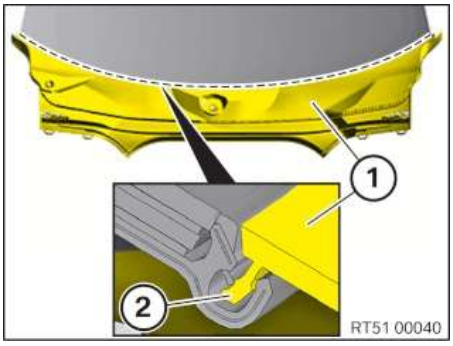
cardiagn.com

RISK OF DAMAGE

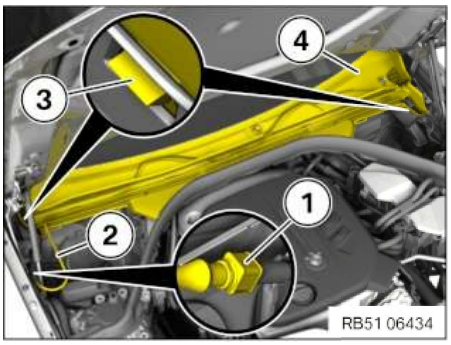
Damage caused by water ingress into the vehicle.

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

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



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



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

37 – Installing both wiper arms

NOTICE

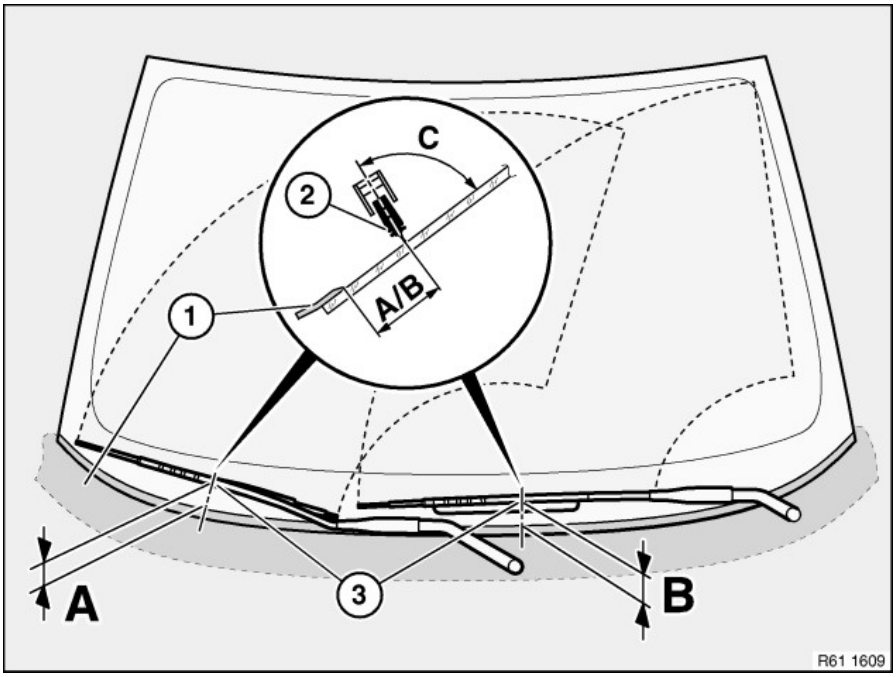
Description is for left component only. Procedure on the right side is identical.

▸ 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.

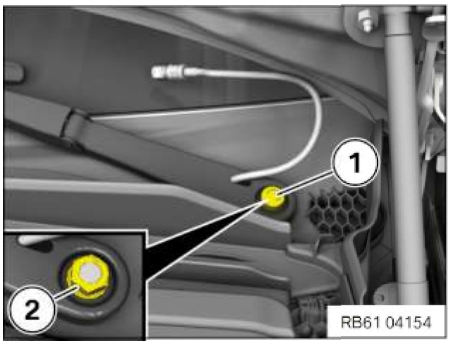
cardiagn.com



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

Distance from window pane edge to wiper blade

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

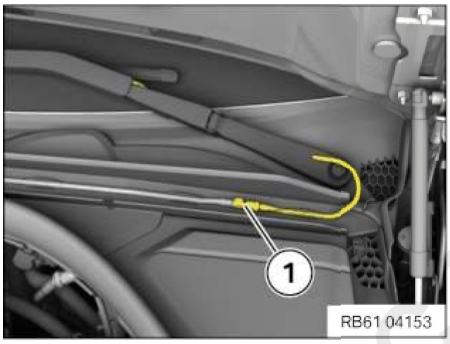


- Tighten nut (2).

Windscreen wiper arm

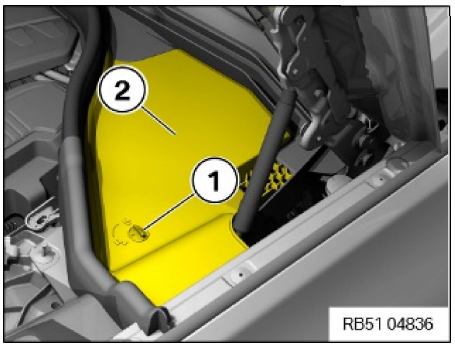
Combination hexagon nut		Tightening torque	35 Nm

- Connect the protective cap (1).



- Insert windscreen wash hose (1) into the cowl and connect at the separating point.

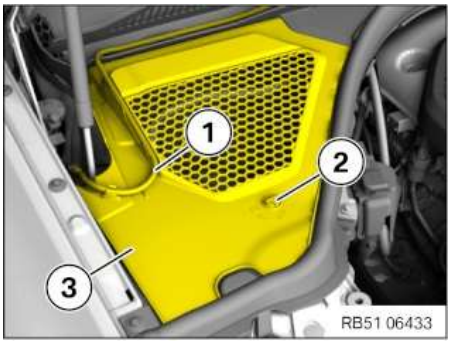
38 – Install the cover of the engine compartment on the rear left



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

39 – Install the rear right engine compartment cover

cardiagn.com



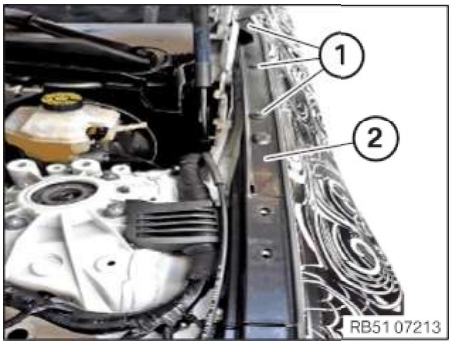
- Position the cover of the engine compartment on the rear right (3).
- Close lock (2).
- Insert washer fluid hose (1) into the guides.

40 – Install the seal for the bonnet



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

41 – Installation of side panel sealing.



NOTICE

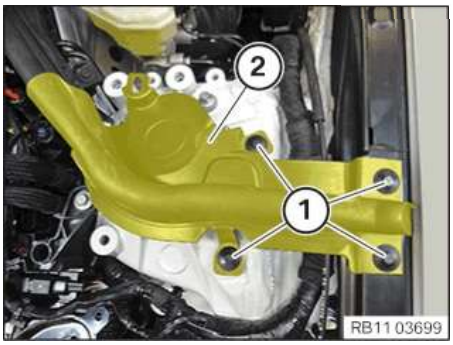
Description is for left component only. Procedure on the right side is identical.

- Guide the sealing (2) in and install it.
- Mount the expanding rivets (1).

42 – Install side bonnet seals

NOTICE

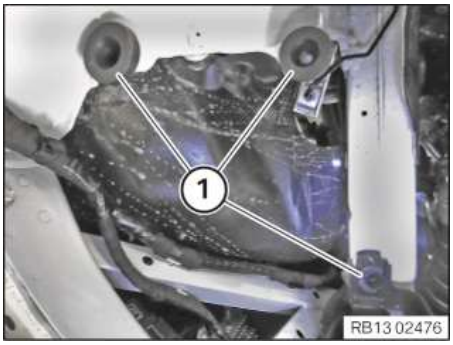
Perform the operations on the left and right side.



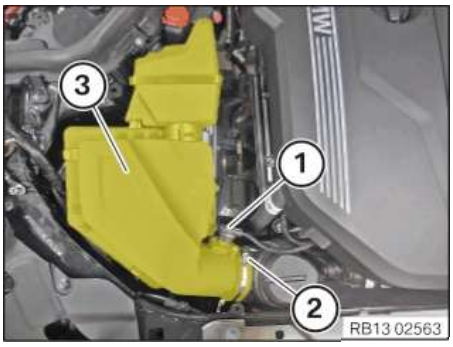
- Position the side bonnet seal (2) on the spring strut dome.
- Secure the rivet (1).

43 – Installing intake silencer housing

cardiagn.com



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



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

Clean air pipe to upper section of intake filter housing

Clamp		Tightening torque	3 Nm

- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

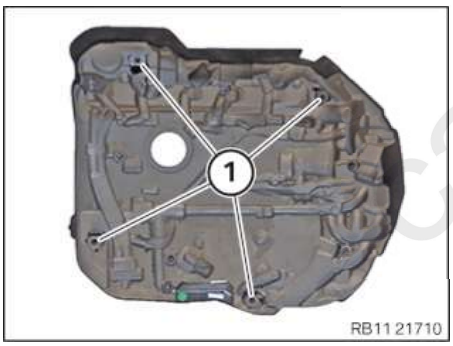
44 – Install acoustic cover

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.



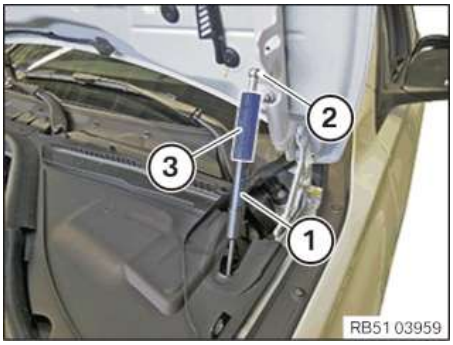
- Check the rubber mount (1) for correct fit in the acoustic cover.



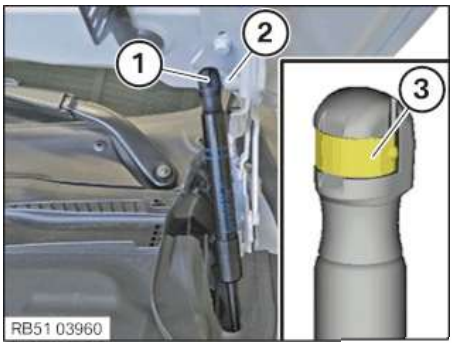
- Install acoustic cover (1) and fix in the rubber mounts (marks).

45 – Take bonnet out of the service position

cardiagn.com



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



CAUTION

Shutting bonnet or tailgate.

Danger of injury!

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

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

46 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Overview of Tightening Torques

Special tool to cylinder head			Used in step 18
M8		Tightening torque	21,5 Nm

Engine support arm to engine			Used in step 24
M10		Tightening torque	38 Nm

Engine mount to front axle support			Used in step 25
M8		Tightening torque	19 Nm

Protective cap			Used in step 25
Hexagon screw		Tightening torque	3 Nm

Control unit holder on spring strut dome			Used in step 26
Hexagon screw		Tightening torque	8 Nm

Engine mount to engine mounting bracket			Used in step 29
M12		Tightening torque	100 Nm

Wheel arch trim panel, front			Used in step 30
Thermoplastic hexagon screw		Tightening torque	2,6 Nm

cardiagn.com

Brake disc to front wheel hub			Used in step 31
M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub			Used in step 31
M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts			Used in step 31
M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Fuel delivery line to high pressure pump			Used in step 32
M14		Tightening torque	31 Nm

Fuel line to cylinder head cover			Used in step 32
6x18		Tightening torque	6,5 Nm

Ignition coil			Used in step 33
Screw		Tightening torque	8 Nm

Bulkhead upper part to bottom bulkhead			Used in step 35
		Tightening torque	3 Nm

Tension strut on bulkhead			Used in step 35
M10x25 screw		Tightening torque	56 Nm

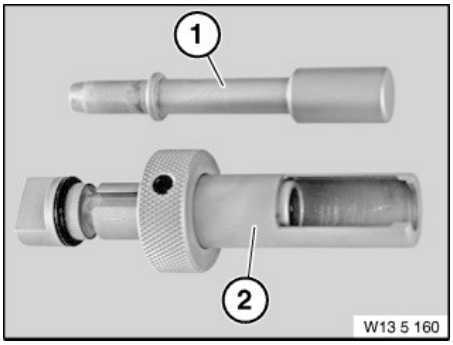
Tension strut to spring strut dome			Used in step 35
Screw	Renew screws.	Jointing torque Angle of rotation	56 Nm 90 °

Windscreen wiper arm			Used in step 37
Combination hexagon nut		Tightening torque	35 Nm

Clean air pipe to upper section of intake filter housing			Used in step 43
Clamp		Tightening torque	3 Nm

Overview of Special Tools

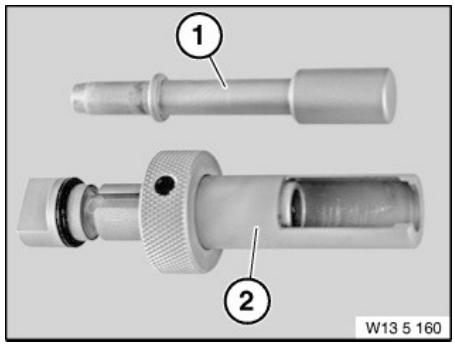
0 496 567 (13 5 161) Fastener



Common		Used in step 14
Usage	(Cap (2 piece)) For sealing the quick connectors Deletion, only available via tool set	
Included in the tool or work	0 496 565	
Storage location		
Replaced by		
In connection with		
SI-Number		

cardiagn.com

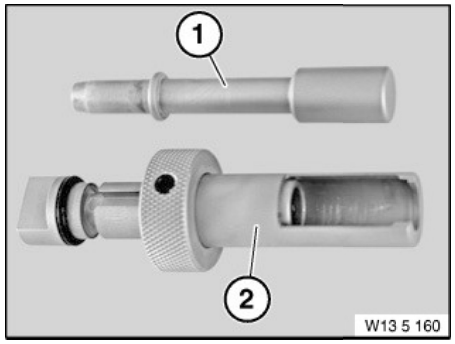
0 496 568 (13 5 162) Fastener



Common Used in step 14

Usage	(Cap (2 x)) To close off the fuel lines. Discontinued, can only be ordered using complete tool
Included in the tool or work	0 496 565
Storage location	
Replaced by	
In connection with	
SI-Number	

0 496 565 (13 5 160) Fastener



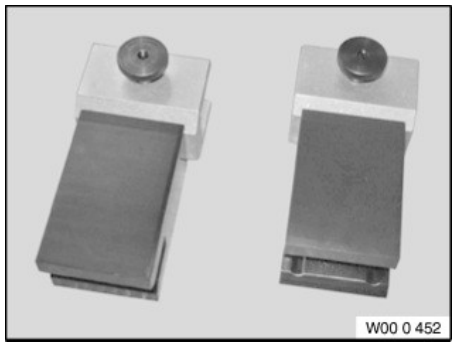
Common Used in step 14

Usage	(Caps (2x)) To close off the fuel lines when removing and installing the engine.
Included in the tool or work	
Storage location	B26
Replaced by	
In connection with	
SI-Number	01 22 08 (498)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 496 567 (13 5 161)		**Fastener** (Cap (2 piece)) For sealing the quick connectors Deletion, only available via tool set	
2	0 496 568 (13 5 162)		**Fastener** (Cap (2 x)) To close off the fuel lines. Discontinued, can only be ordered using complete tool	

0 495 850 (00 0 452) Upholstery

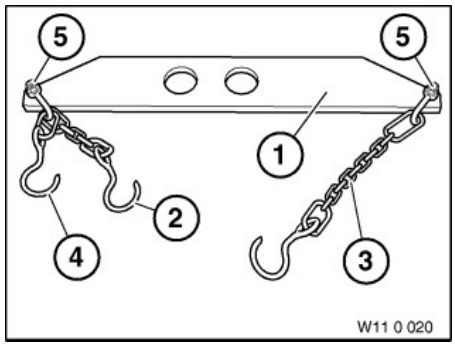


Common Used in step 18

Usage	(Pads (2 x)) Series: E70 Replaced by 00 6 042
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 22 06 (307)

cardiagn.com

0 490 567 (11 0 020) Lifting gear



Common Used in step 1829

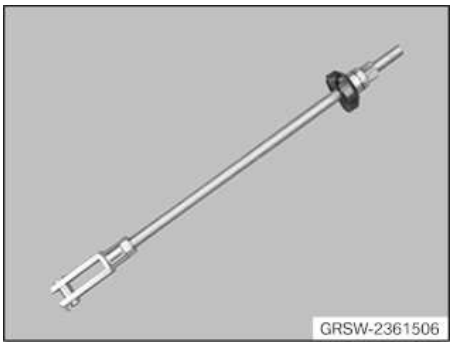
Usage	For removing and installing the engines. 08/2011 only available as a complete set. Delivered with TÜV inspection certificate and operating instructions. No delivery of separate parts.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 13 94 (888)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
5	0 490 572 (11 0 029)		**Shackle** (Shackle) 2 pieces As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	
1	0 490 568 (11 0 021)		**Lifting gear** (Cross member) As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	
2	0 490 569 (11 0 022)		**Chain** (Chain) As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	
3	0 490 570 (11 0 023)		**Chain** (Chain) Version: long As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	
4	0 490 571 (11 0 024)		**Chain** (Chain) Version: short As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	

cardiagn.com

2 361 506 (00 6 103) Spindle



Common	Used in step 1829
Usage	Spindle (central spindle) for Traverse 00 6 100.
Included in the tool or work	0 496 852
Storage location	
Replaced by	
In connection with	
SI-Number	01 17 10 (659)

2 344 011 Tool



Common	Used in step 31
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 16
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	

cardiagn.com

0 495 224 (36 1 326) Wheel stud



Common	Used in step 16
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



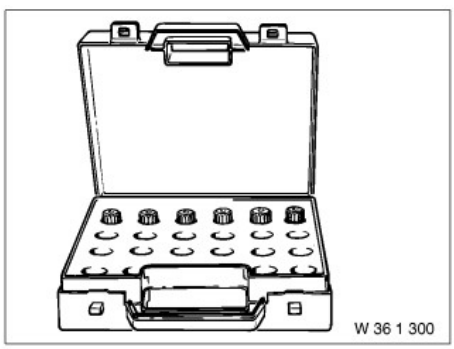
Common	Used in step 16
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 16
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 16
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	

cardiagn.com

0 495 228 (36 1 331) Wheel stud



Common	Used in step 16
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 16
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 16
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	

cardiagn.com

Overview Technical Data

Distance from window pane edge to wiper blade	Used in step 37
Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

Links

General repair instructions	Used in step
12 00 ... Instructions for removal and replacement of control units	1928

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146

61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	146
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	146
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 20 900 Disconnecting and connecting battery earth lead	146
61 35 ... Notes on ESD protection (Electro Static Discharge)	13192027
61 00 730 Encode/program control unit(s) (after vehicle test)	28

cardiagn.com

22 11 001 Replacing right engine mount

PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

2 – Bring front compartment lid in the service position

Prerequisite

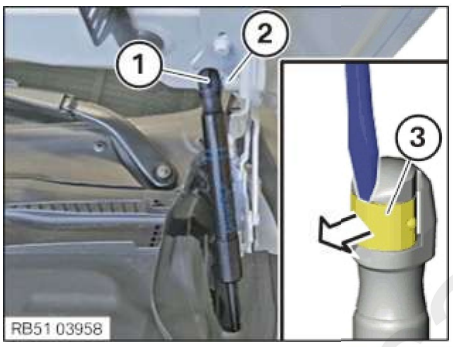
Engine compartment lid is open.

CAUTION

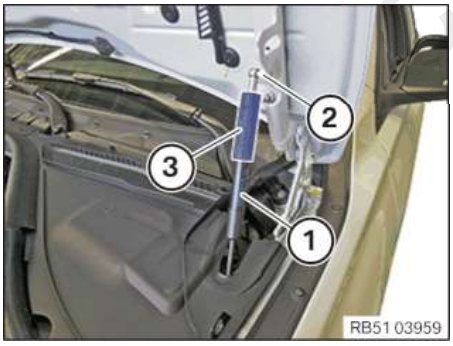
Shutting bonnet or tailgate.

Danger of injury!

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



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



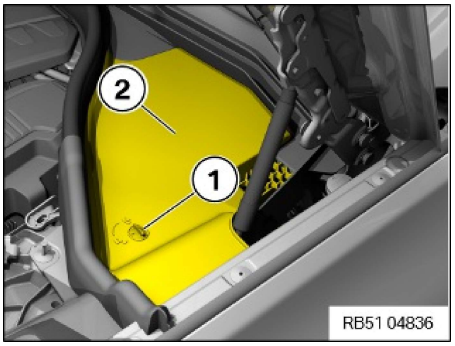
TECHNICAL INFORMATION

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

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

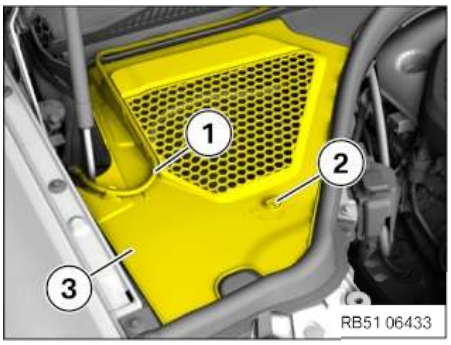
3 – Remove the cover of the engine compartment at the rear left

cardiagn.com



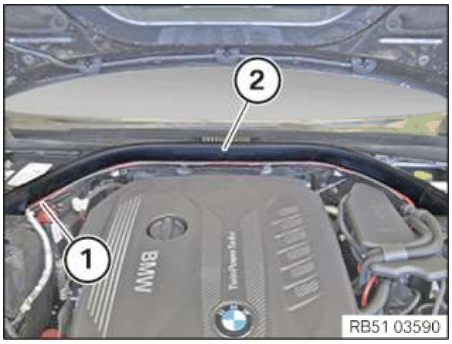
- Loosen the lock (1).
- Remove rear left cover of engine compartment (2).

4 – Remove the cover of the rear right engine compartment



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

5 – Remove the seal for the rear bonnet



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

6 – Removing both wiper arms

NOTICE

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

▶ **Remove the wiper arm**

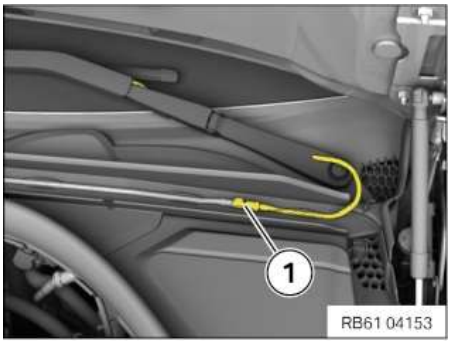
RISK OF DAMAGE

Damage to wiper console

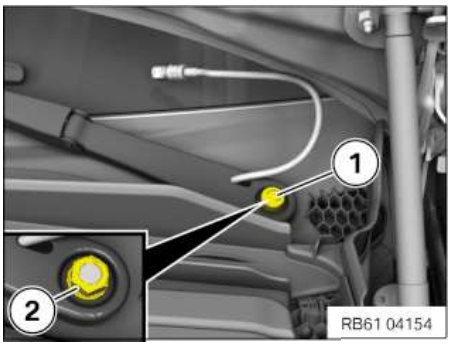
While removing the wiper arms without using special tool, the wiper console can break.

- 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.

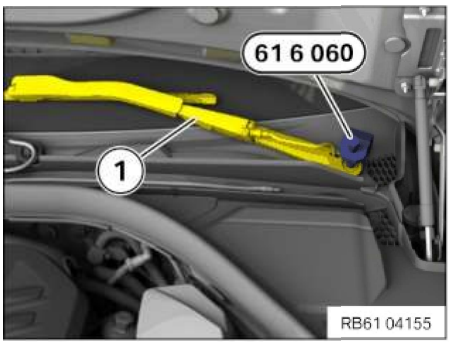
cardiagn.com



- Disconnect the windscreen wash hose(1) at the separation point and remove from the cowl guide.

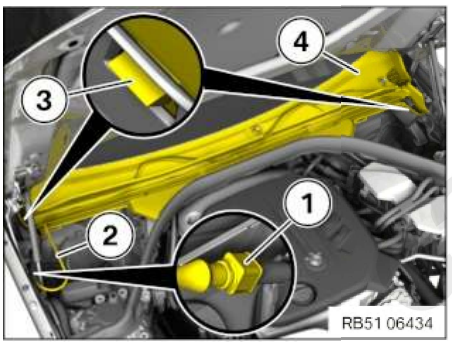


- Remove the protective cap (1).
- Loosen nut (2).

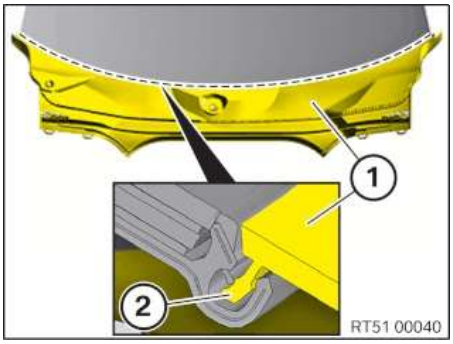


- Pull off the wiper arm (1) using special tool .

7 – Remove cowl panel cover



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



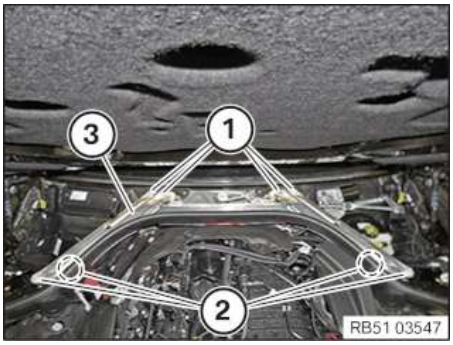
- Pull the cowl panel cover (1) upward out of the latch mechanism (2) beginning on the side.

8 – Removing the centre bulkhead upper part

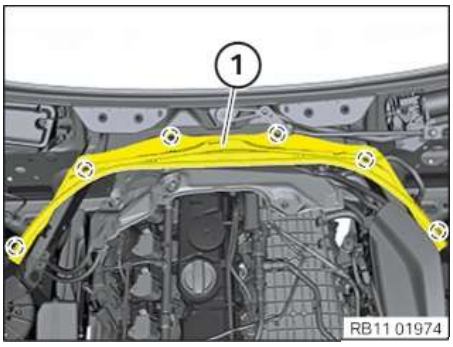
TECHNICAL INFORMATION

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

cardiagn.com



- **If installed:** Remove tension strut on spring strut dome.
- Loosen screws (1) and (2).
- Remove tension strut (3) in the spring strut dome upwards.

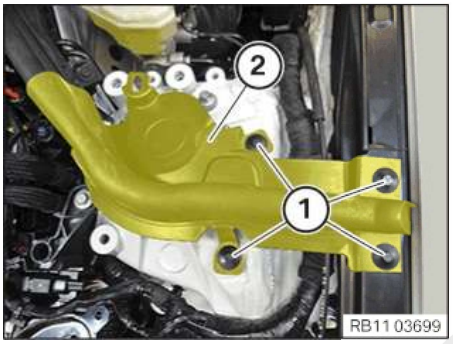


- Unscrew the bolts in the marked areas.
- Remove the centre bulkhead upper part (1).

9 – Removing side bonnet gaskets

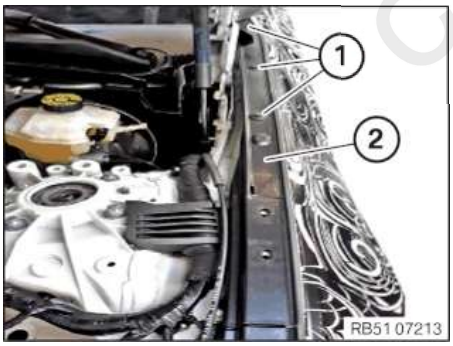
NOTICE

Perform the operations on the left and right side.



- Loosen the rivet (1).
- Remove side bonnet seal (2) from spring strut dome.

10 – Remove sealing of the side panel



NOTICE

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

- Loosen the expanding rivet (1).
- Guide out seal (2) and remove.

11 – Removing the acoustic cover

WARNING

Hot surfaces.

Risk of burning!

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

cardiagn.com

RISK OF DAMAGE

Damage to the acoustic cover.

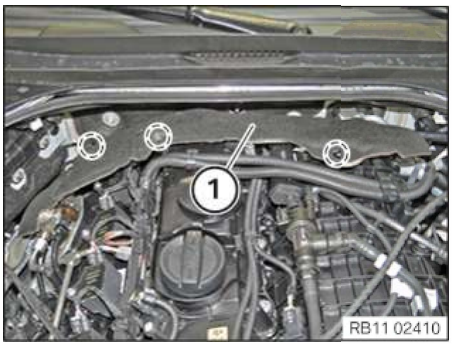
Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover.

- 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.



- Release the acoustic cover (1) towards the top from the rubber mounts (marks).

12 – Removing acoustic cover at rear



- Unclip the acoustic cover (1) in the marked areas and remove it to the top.

13 – Remove all ignition coils.

NOTICE

The description is for one component only. The procedure is identical for all further components.

▶ **Removing the ignition coil**

WARNING

Hot surfaces.

Risk of burning!

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

RISK OF DAMAGE

Damage to the ignition coil.

The silicone hose of the ignition coil must not be contaminated by fuel as this can lead to failure of the ignition coil.

- Cover ignition coils using suitable covers when working on the fuel system, if necessary remove them.
- Do not oil or grease the silicone tube of the spark plug connector. The silicone tube is coated with talc to reduce the pulling forces.

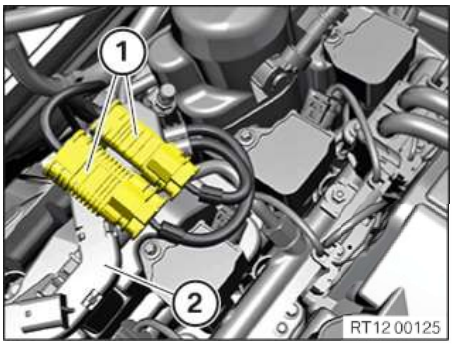
cardiagn.com

RISK OF DAMAGE

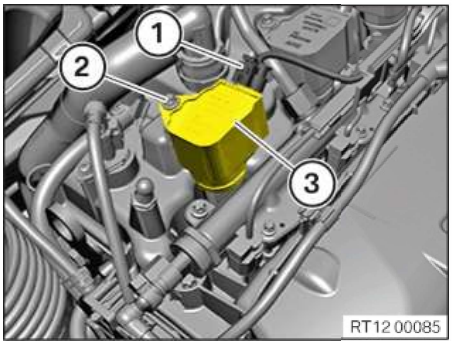
Electrostatic discharge.

Damage to or destruction of electrical components.

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



- Disconnect the connector (1) of the front oxygen sensor and the monitoring oxygen sensor from the cable channel (2) and set aside.



- Unlock plug connection (1) and disconnect.
- Loosen screw (2).
- Remove ignition coil (3).

14 – Remove fuel delivery line

WARNING

Working on fuel system.

Risk of fire! Danger of explosion!

- When working on the fuel system, make sure that the workbay is sufficiently ventilated, e.g. using extraction unit.
- Tightly seal off open lines and connections; collect any escaping fuel directly at the point of exit.
- No fire, sparks, open flames or smoking.

CAUTION

On releasing high pressure line, fuel may emerge at high speed.

Danger of injury!

- Wear suitable personal protective equipment.
- Allow the cooling system to cool down to a temperature below 40°C before starting installation work.
- Note warnings on cylinder head cover.

cardiagn.com

RISK OF DAMAGE

Damage to the ignition coil.

The silicone hose of the ignition coil must not be contaminated by fuel as this can lead to failure of the ignition coil.

- Cover ignition coils using suitable covers when working on the fuel system, if necessary remove them.
- Do not oil or grease the silicone tube of the spark plug connector. The silicone tube is coated with talc to reduce the pulling forces.

RISK OF DAMAGE

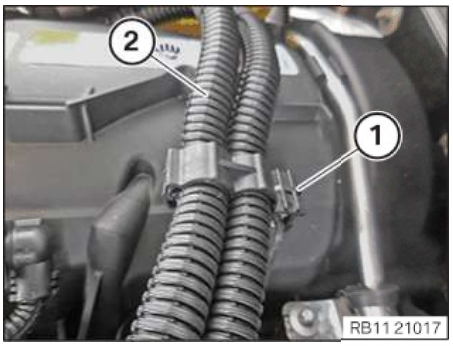
Contaminant or foreign body.

Contamination can result in malfunctions, operating failure or leaks.

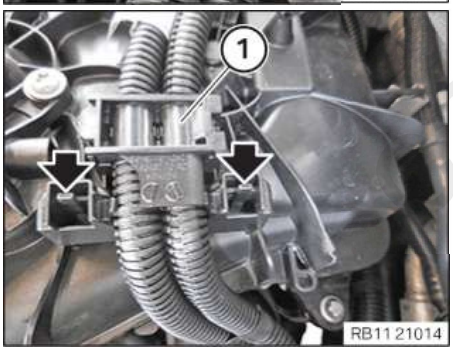
- Adhere to the utmost cleanliness.
- Protect components from contamination e.g. by covering.
- Close off line connections with seal plugs.

TECHNICAL INFORMATION

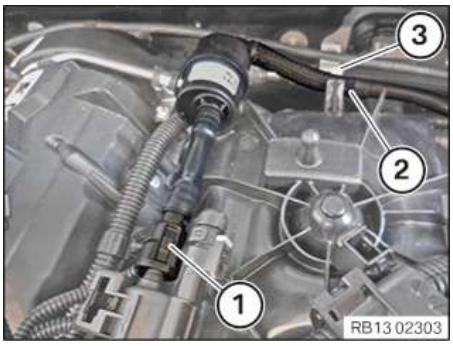
Reset special tool in early to avoid bending pressure lines.



- Loosen clamp (1).
- Guide out wiring harness section (2) for the injectors and ignition coils and place it aside.

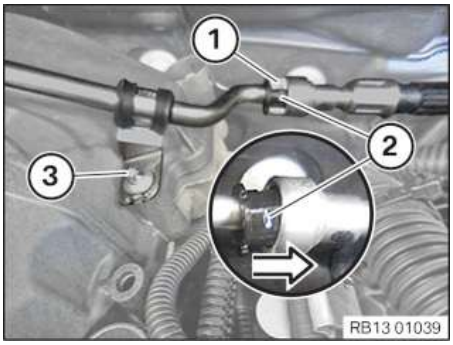


- Unlock the locks (arrows).
- Guide out wiring harness section (1) for the injectors and ignition coils and place it aside.

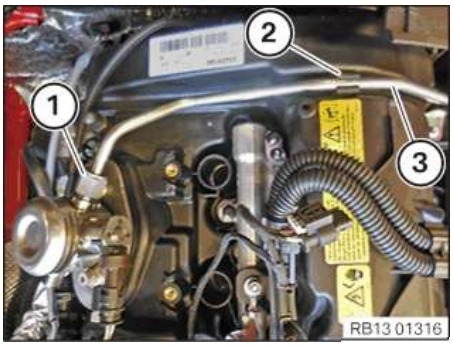


- Unlock and loosen lock (1).
- Guide tank ventilation line (2) out of clamp (3) and place it aside.

bardiagn.com



- Unlock and loosen clamp (1).
- Unlock and remove the snap fastener (2) in the direction of the arrow.
- Catch and dispose of escaping fuel.
- Seal the fuel lines with special tools 0 496 567 (13 5 161) and 0 496 568 (13 5 162) from the set of special tools 0 496 565 (13 5 160).
- Loosen screw (3).



- Slacken the union nut (1) on the high pressure pump.
- Catch and dispose of escaping fuel.
- Seal all openings with the special tool .
- Guide the fuel feed line (3) out and remove.
- Make sure that the rubber damper (2) is not lost.

15 – Removing intake silencer housing

RISK OF DAMAGE

Damage to the clean air line. Damage to the air filter.

For changing the air filter insert, if the upper section of intake filter housing is only raised and not completely removed, the clean air line and the air filter insert may be damaged.

- Do not lift upper section of intake filter housing by force.
- Unfasten clamp.
- Remove upper section of intake filter housing completely.



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

16 – Removing the front left wheel

▸ **Removing the wheel**

carlagn.com



- In vehicles with M Carbon ceramic brake: The wheel assembly jack must be used to remove the wheel (see workshop equipment).

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

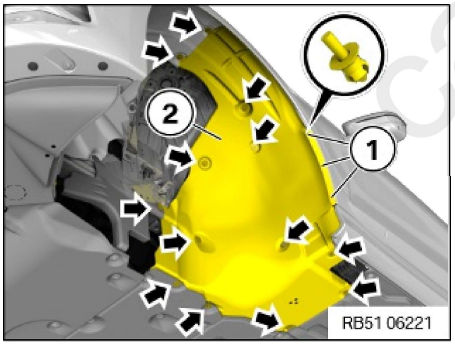


- If several wheels are removed simultaneously: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use a suitable adapter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

17 – Removing the rear section of the front wheel arch cover front

NOTICE

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

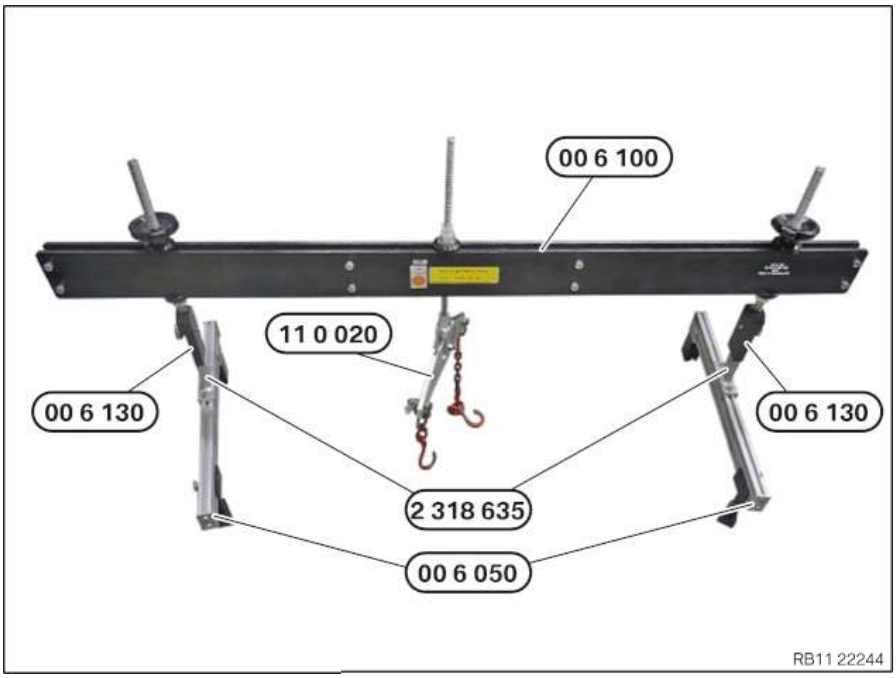


- Loosen the expanding rivet (1).
- Remove screws (arrows).
- Remove the rear section of the front wheel arch cover (2).

18 – Securing engine in installation position

carDiagn.com

Overview: prepared engine bridge



CAUTION

Components connected to the engine joint or cross member.

Danger of injury!

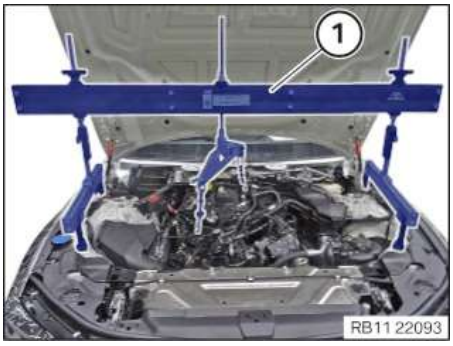
- Check lifting eyes and engine mounting brackets for damage, e.g. cracks.
- Attach the component to correctly mounted engine joints or cross members only.
- Exclusively lift the component, do not move it forwards, backwards or in transverse direction.



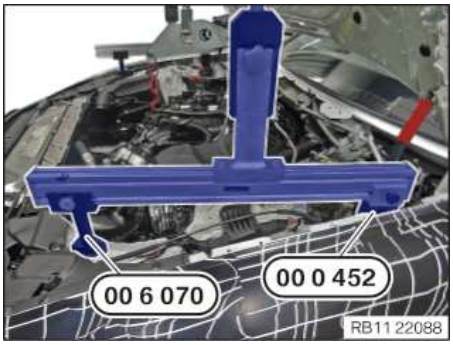
- Guide in and position special tool on cylinder head.
- Tighten the screws (1) of special tool .

Special tool to cylinder head

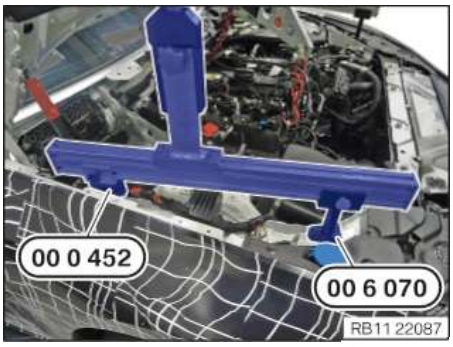
M8		Tightening torque	21,5 Nm



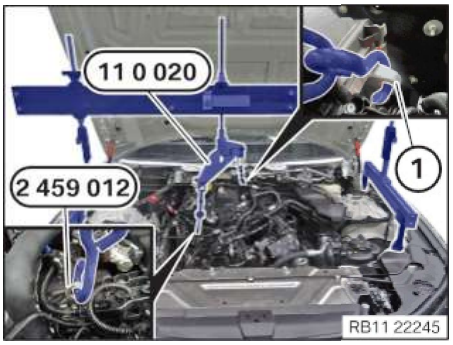
- **Carefully** position engine bridge (1) with help from an auxiliary person.



- Make sure that special tool on the left is **correctly** positioned on the front end.
- Make sure that special tool 0 495 850 (00 0 452) on the left is **correctly** positioned on the carrier support.



- Make sure that special tool on the right is **correctly** positioned on the front end.
- Make sure that special tool 0 495 850 (00 0 452) on the right is **correctly** positioned on the carrier support.



- Align the engine bridge by moving it on the profile strips of the special tool above the engine mounting bracket and screw it down.
- Connect special tool 0 490 567 (11 0 020) to special tool .
- Connect the special tool 0 490 567 (11 0 020) above the engine mounting bracket (1) at the rear.



- Check whether the special tool on the right is **correctly** positioned on the front end.



- Check whether the special tool 0 495 850 (00 0 452) on the right is **correctly** positioned on the carrier support.



- Check whether the special tool on the left is **correctly** positioned on the front end.

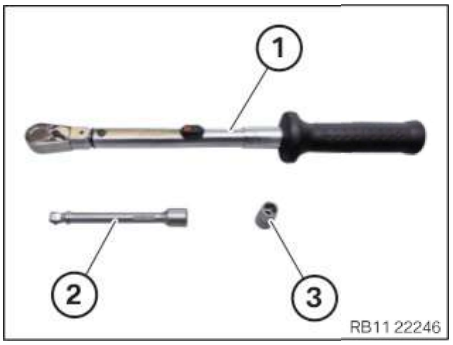
cardiagn.com



- Check whether the special tool 0 495 850 (00 0 452) on the left is **correctly** positioned on the carrier support.

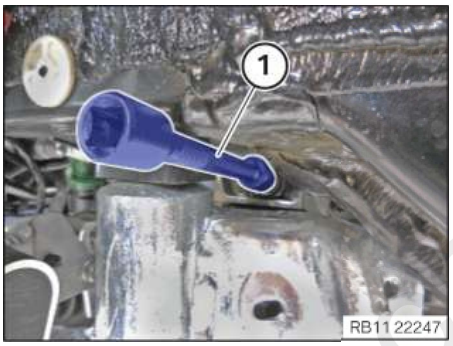


- Release screw (1) on the right engine mount from the top with a commercially available tool.

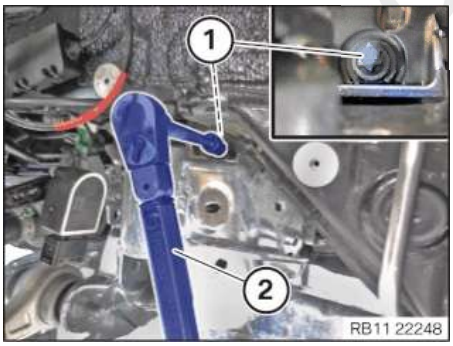


- Have all suitable tools ready.

Number	Description
1	Commercial available torque spanner
2	Swivel mounted extension
3	External Torx E14



- Position the suitable tool (1).



- Release screw (1) of the left engine mount with standard tool (2) sideways.



- Raise the engine by turning the special tool 2 361 506 (00 6 103) (spindle) by 10 mm.

cardiagn.com

19 – Remove the front oxygen sensor

WARNING

Hot surfaces.

Risk of burning!

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

RISK OF DAMAGE

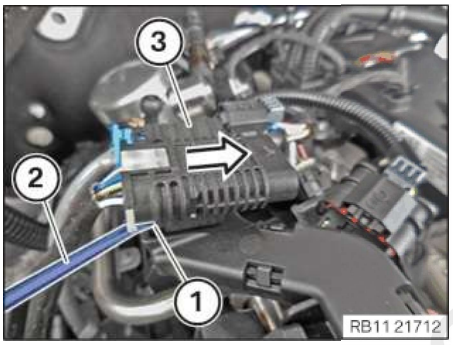
Damage to wires when disconnecting connectors and plug connections.

Sheared wires can cause a short circuit.

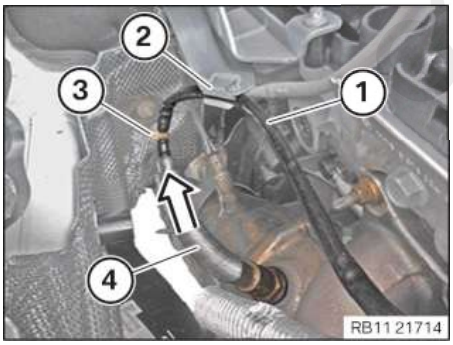
- Do not pull on the wires when disconnecting connectors and plug connections.



- Unlock and loosen connector (1).



- Unlock the locks (1) with a conventional screwdriver (2) and release.
- Feed out the connector (3) in **the direction of arrow** and set aside.



- Detach the line of the front oxygen sensor (1) from the holder (2).
- Unfasten cable strap (3).
- Feed out the heat shield (4) **in direction of arrow** and set it aside.



- Release and remove the control sensor (1) with the special tool .

20 – Remove the monitoring oxygen sensor

bardiagn com

WARNING

Hot surfaces.

Risk of burning!

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

RISK OF DAMAGE

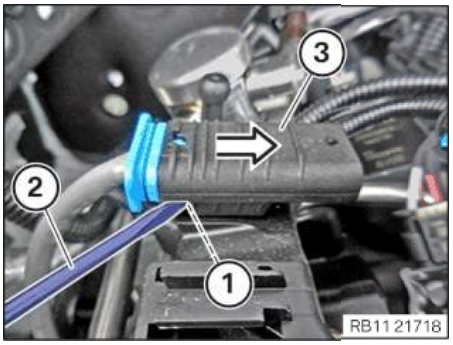
Damage to wires when disconnecting connectors and plug connections.

Sheared wires can cause a short circuit.

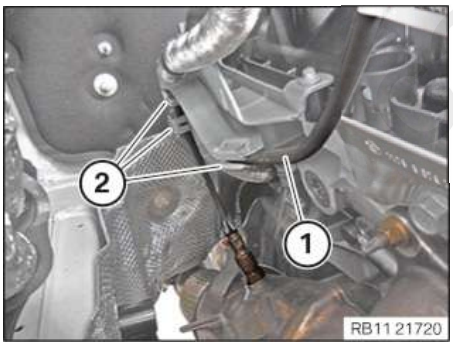
- Do not pull on the wires when disconnecting connectors and plug connections.



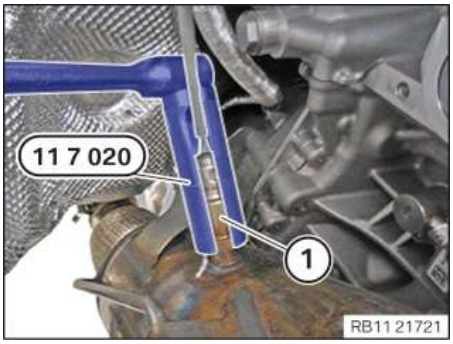
- Unlock and loosen connector (1).



- Unlock the lock (1) with a suitable screwdriver (2).
- Feed out the connector (3) in the direction of the **arrow** and set it aside.

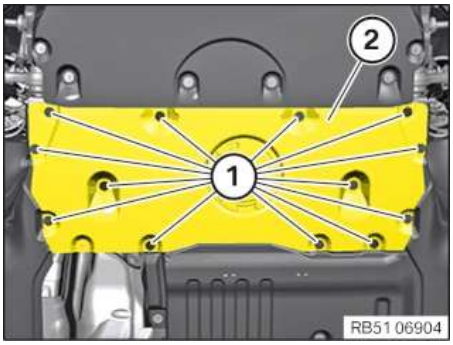


- Detach the line of the monitoring oxygen sensor (1) from the holder (2).



- Release the monitoring oxygen sensor (1) using special tool .
- Remove the monitoring sensor (1).

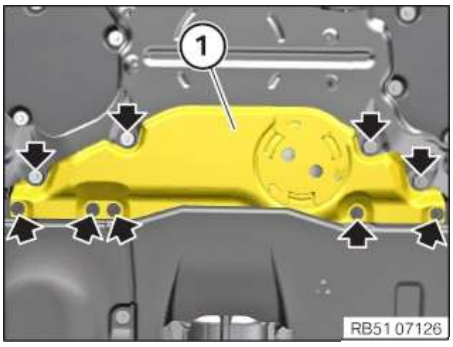
21 – Removing the centre underbody protection



- **Version with rear-wheel drive:**

  Loosen screws (1).

  Remove centre underbody protection (2) .

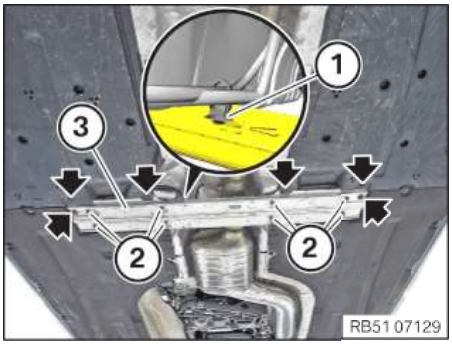


- **Version with all-wheel drive:**

  Remove screws (arrows).

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

22 – Remove the connecting support from the tunnel



- Remove screws (arrows).
- **If installed:** Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

23 – Remove complete exhaust system

WARNING

Hot surfaces.

Risk of burning!

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

CAUTION

Component with heavy weight.

Danger of injury!

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

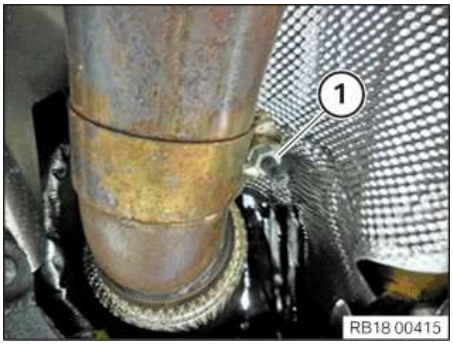
CAUTION

Heavy component.

Heavy components can lead to injury or damage.

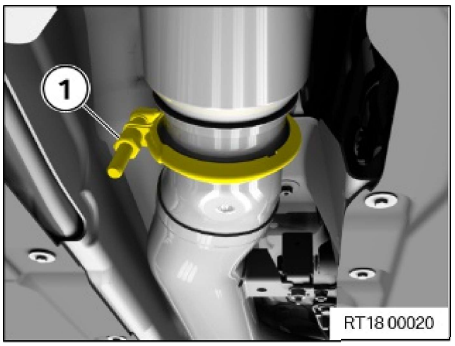
- Remove and install heavy components with the aid of another person/other persons.

cardiagn.com



- **Equipment specification 1 (ribbon clamp)**

  Detach the ribbon clamp (1).

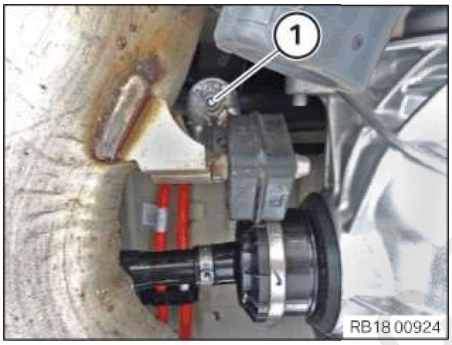


- **Equipment specification 2 (V-clips)**

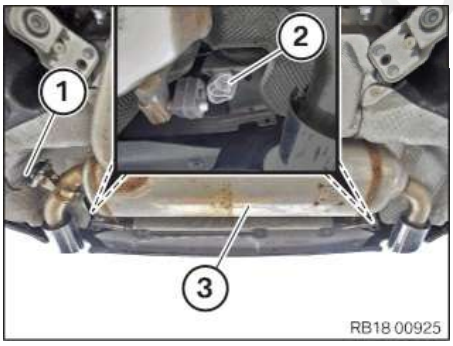
  Unfasten clamp (1).



- Loosen nut (1).



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



- Unlock plug connection (1) and disconnect.
- Loosen nuts (2).
- Lower and remove the exhaust system (3) with the assistance of a second person.

24 – Remove catalytic converter

WARNING

Hot surfaces.

Risk of burning!

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

cardiagn.com

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

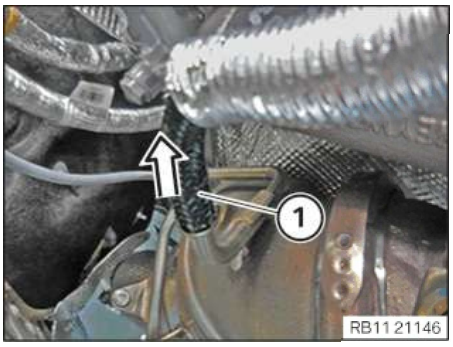
- Remove and install heavy components with the aid of another person/other persons.

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.

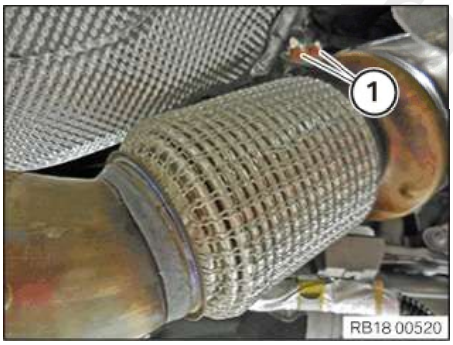


- **If installed: Disconnect pressure hose.**

  Pull off pressure hose (1) in direction of arrow and set it aside.



- Loosen V-band clamp (1).

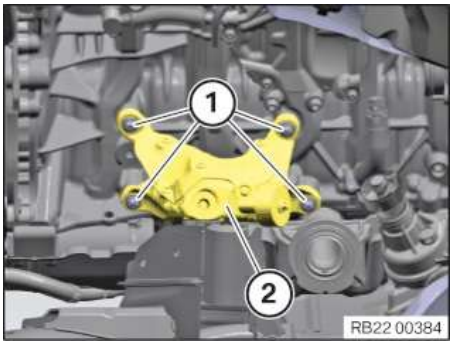


- Loosen nuts (1).



- Unlock and loosen clamp (1).
- Feed out catalytic converter and remove.

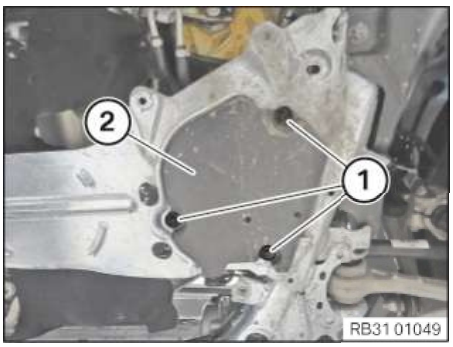
25 – Remove right engine support arm



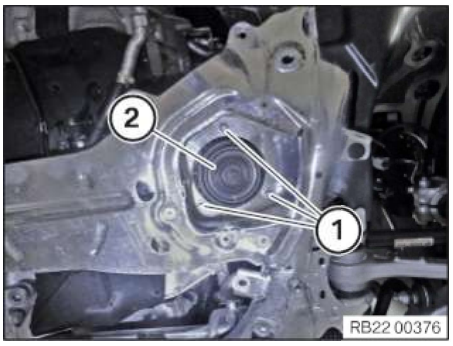
- Loosen screws (1).
- Remove the engine support arm (2).

MAIN WORK

26 – Remove right engine mount

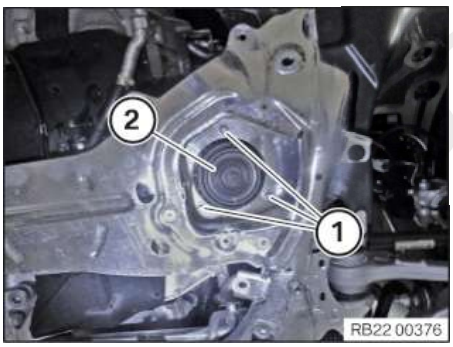


- Loosen screws (1).
- Remove protective cap (2).



- Loosen screws (1).
- Remove engine mount (2).

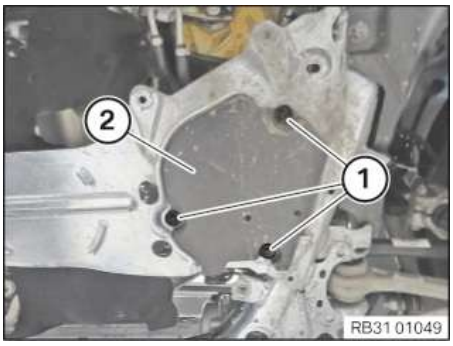
27 – Installing the right engine mount



- Install the engine mount (2).
- Tighten the screws (1).

Engine mount to front axle support

M8		Tightening torque	19 Nm



- Install the protective cap (2).
- Tighten the screws (1).

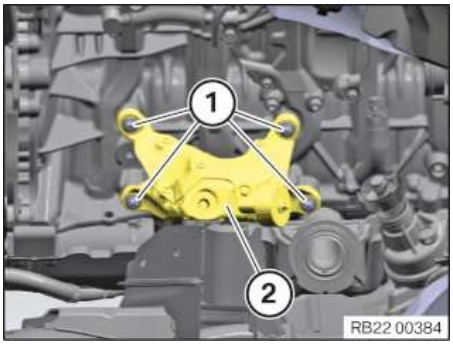
Protective cap

Hexagon screw		Tightening torque	3 Nm

POSTPROCESSES

28 – Install right engine support arm

ordiagn.com



- Install the engine support arm (2).
- Tighten the screws (1).

Engine support arm to engine

M10		Tightening torque	38 Nm

29 – Install catalytic converter



- Renew the V-clip (1).

  Parts: V-band clamp



- Renew the gasket (1).

  Parts: Gasket



- Feed in and install catalytic converter.
- Lock clamp (1).

  The clamp (1) must engage audibly.

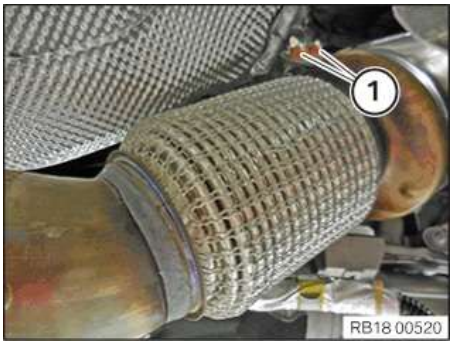


- Tighten V-band clamp (1).

Catalytic converter to turbocharger

V-band clamp	Replace V-band clamp.	Tightening torque	19 Nm

arotagn.com

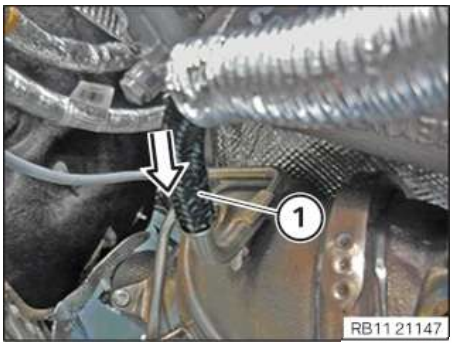


- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Catalytic converter to holder

M8 nut	Renew nut.	Tightening torque	28 Nm



- **If installed: Connect pressure hose.**

  Renew pressure hose (1).

  Parts: Pressure hose
- Connect the pressure hose (1) in direction of arrow to the limit position.

30 – Installing the complete exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

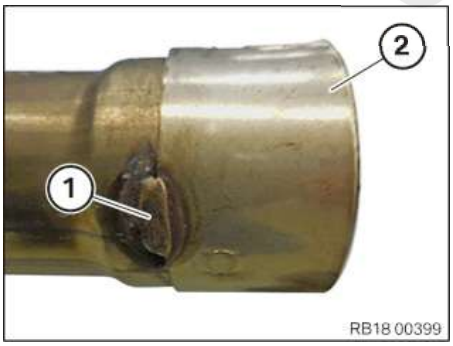
- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

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



CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

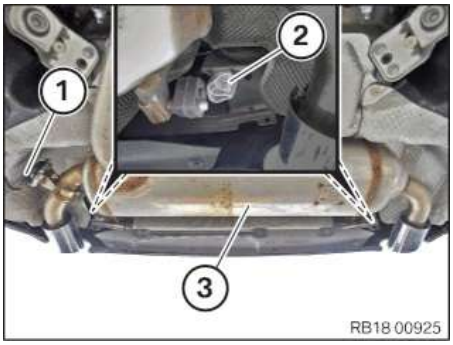
- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- **Equipment specification 1 (ribbon clamp)**

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

  Parts: Ribbon cable clamp

cardiagn.com



- Feed in and install the exhaust system (3) with a second person.
- Renew nuts (2).

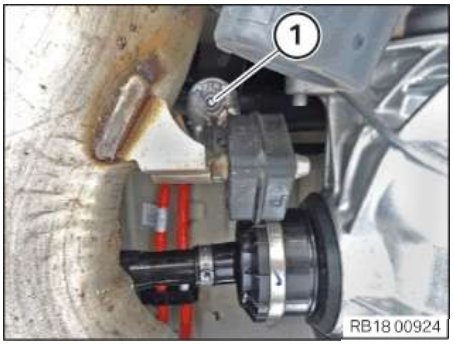
  Parts: Nuts
- Tighten nuts (2).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

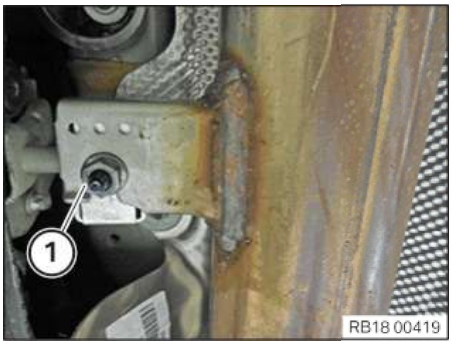


- Renew nut (1).

  Parts: Nut
- Tighten the bolt (1) on the rear axle support.

Exhaust system to rear axle carrier

Nut M8	Renew nut.	Tightening torque	19 Nm

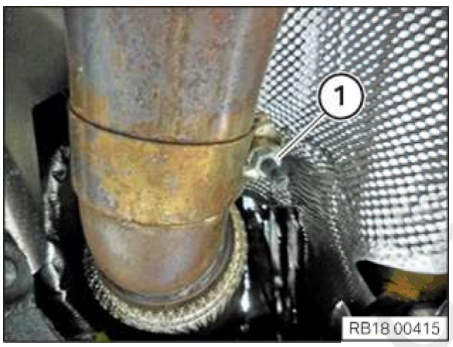


- Renew nut (1).

  Parts: Nut
- Tighten nut (1).

Front pipe / petrol particulate filter on transmission holder

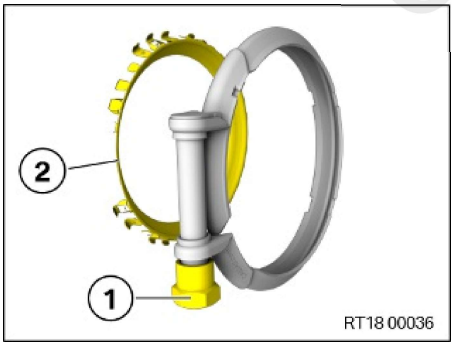
M8	Renew nut.	Tightening torque	19 Nm



- Tighten the ribbon clamp (1).

Exhaust system to catalytic converter

Ribbon cable clamp	Renew flat band clip.	Tightening torque	26 Nm

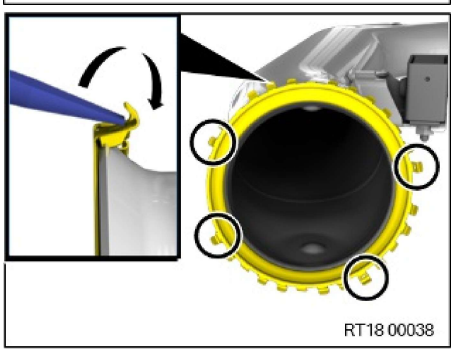


- **Equipment specification 2 (V-clips)**

  Renew V-band clamp.

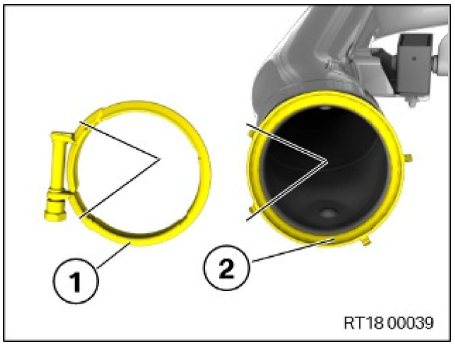
  Parts: V-band clamp

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

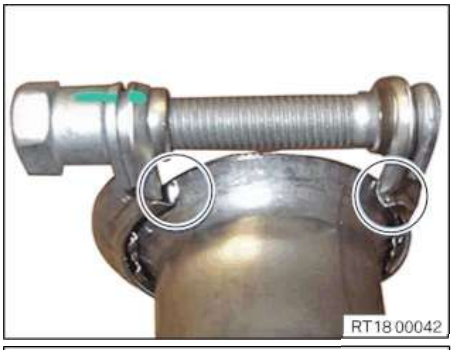


- Bend all sheet metal tabs over with a suitable tool, except those in the marked areas.

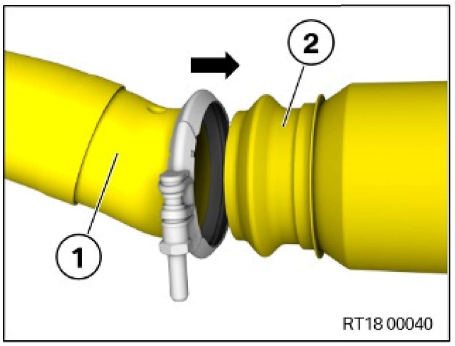
cardiag.com



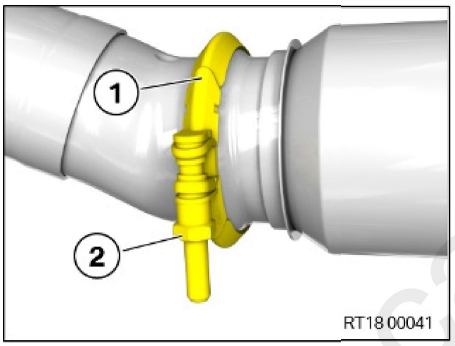
- Mount the V-clip (1) on the sealing ring (2).
- Make sure that the V-clip (1) is positioned correctly on the sealing ring (2).



- Ensure that the V-clip rests against the sheet metal tabs in the marked areas after mounting.



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

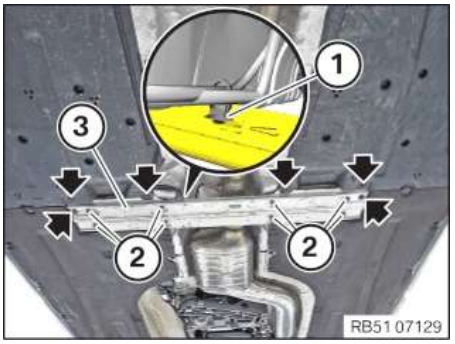


- Make sure that V-clip (1) is fitted correctly.
- Tighten down screw (2).

V-clip to catalytic converter

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

31 – Install the connecting supports on the tunnel



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

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

- Tighten screws (arrows).

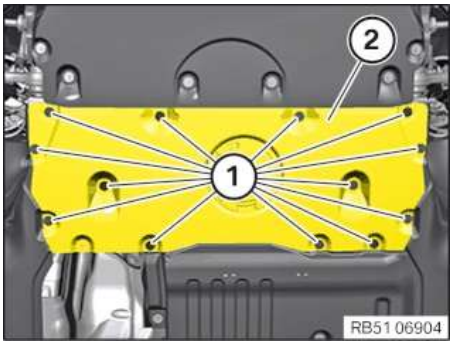
Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

- **If installed:** Secure clamps (1).

32 – Installing the centre underbody protection

cardiagn.com



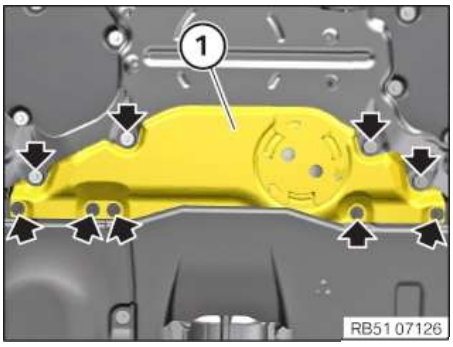
- **Version with rear-wheel drive:**

  Position central underbody protection (2).

  Tighten the screws (1).

Underbody protection

Hexagon screw		Tightening torque	3 Nm



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

  Guide in and install the centre of underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm

33 – Install the monitoring oxygen sensor

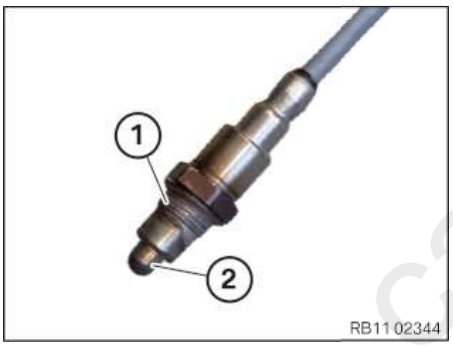
TECHNICAL INFORMATION

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



- Prepare the oxygen sensor.

  Do not damage the sensor ceramics.

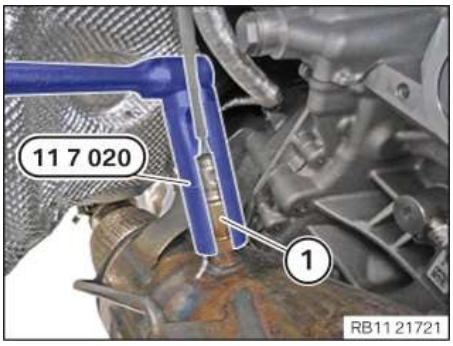
  (1) = Thread

  (2) = Sensor ceramics

- Grease the thread (1) of the Lambda monitoring oxygen sensor thinly and evenly.

Expendable materials

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

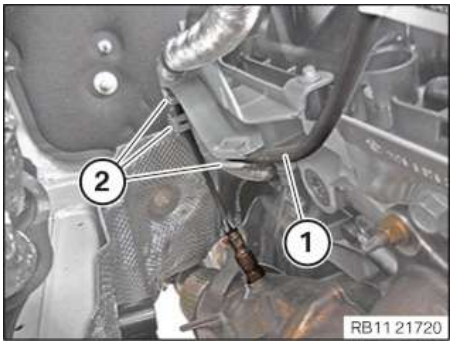


- Feed in the monitoring oxygen sensor (1) and install.
- Tighten monitoring oxygen sensor (1) using special tools 0 493 751 (11 9 150) and 0 491 075 (11 7 030) .

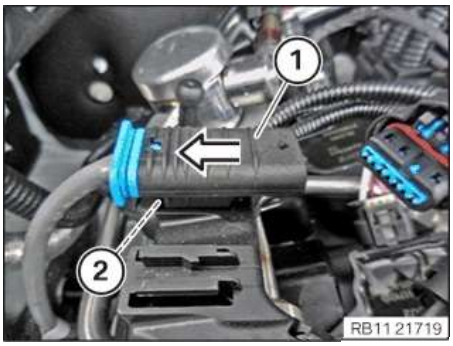
Monitoring oxygen sensor to catalytic converter

M18X1.5		Tightening torque	50 Nm

carlagn.com



- Guide monitoring oxygen sensor line (1) into holder (2) and install it.



- Insert and install the connector (1) in the **direction of arrow**.
- Ensure that the lock (2)engages audibly.



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

34 – Install the front oxygen sensor

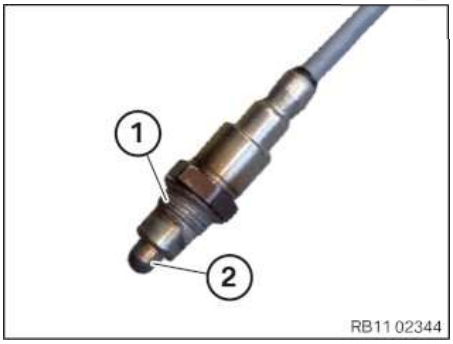
TECHNICAL INFORMATION

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



- Prepare the oxygen sensor.

  Do not damage the sensor ceramics.

  (1) = Thread

  (2) = Sensor ceramics
- Apply a thin and even coat of grease to the thread (1) of the front oxygen sensor.

Expendable materials

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

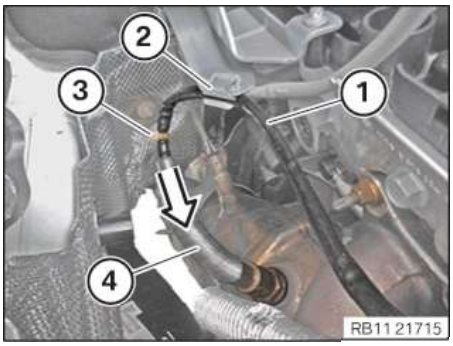
cardiagn.com



- Screw the control sensor (1) in and tighten it with the special tool .

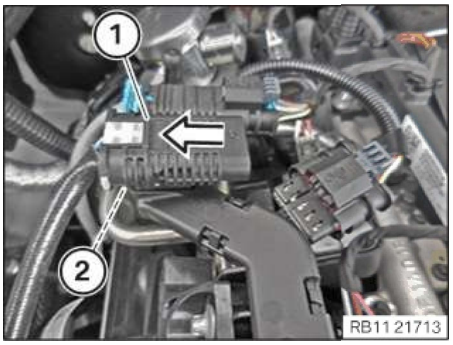
Front oxygen sensor to catalytic converter

M18X1.5		Tightening torque	50 Nm



- Guide in the heat protection (4) in the **direction of arrow** and install.
- Renew the cable straps (3).

  Parts: Cable strap
- Guide in and install the cable strap (3).
- Feed in and install the line of the front oxygen sensor (1) in the holder (2).



- Insert and install the connector (1) in the **direction of arrow**.
- Ensure that the lock (2)engages audibly.



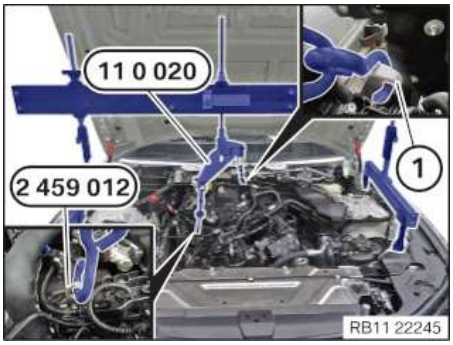
- Connect and lock the connector (1).
- Make sure the connector (1) engages audibly.

35 – Loosen the attachment of the engine in installation position



- Lower engine by turning the spindle 2 361 506 (00 6 103) until the engine lies completely on the engine supports.

cardiagn.com



- Feed out special tool 0 490 567 (11 0 020) on the special tool and set aside.
- Feed out special tool 0 490 567 (11 0 020) on the engine mounting bracket (1) and set aside.



TECHNICAL INFORMATION

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

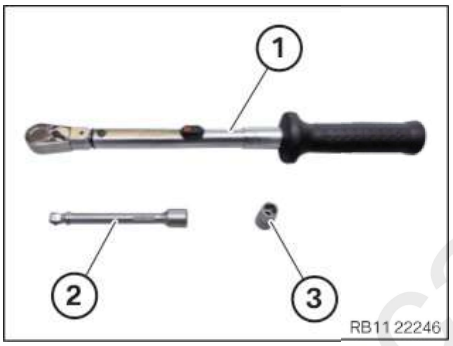
- Remove the engine bridge (1) with an auxiliary person.



- Tighten bolt (1) of the right engine mount from the top using a standard tool.

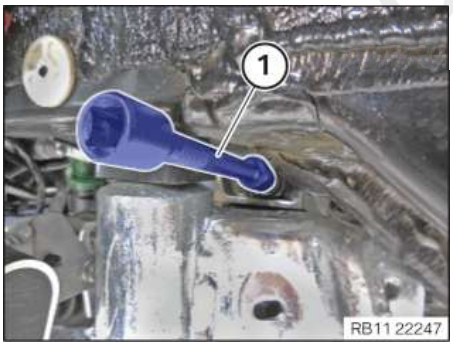
Engine mount to engine mounting bracket

M12		Tightening torque	100 Nm

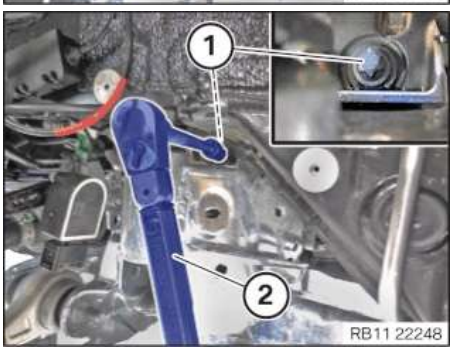


- Have all suitable tools available.

Number	Description
1	Commercial available torque spanner
2	Swivelling extension
3	External TorxE14



- Position suitable tools (1).



- Tighten bolt (1) of the left engine mount using a standard tool (2) sideways.

Engine mount to engine mounting bracket

M12		Tightening torque	100 Nm

cardiagn.com

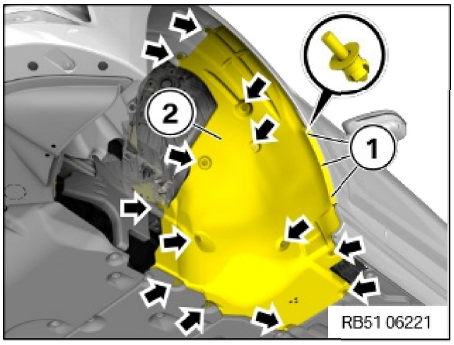


- Unscrew the bolts (1) of the special tool .
- Feed out the special tool at the cylinder head and remove.

36 – Install the rear section of the front wheel arch cover

NOTICE

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



- Install the rear section of the front wheel arch cover(2) .
- Tighten screws (arrows).

Wheel arch trim panel, front

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

- Secure expanding rivet (1).

37 – Attaching the front left wheel

▸ **Mounting the wheel**



TECHNICAL INFORMATION

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

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

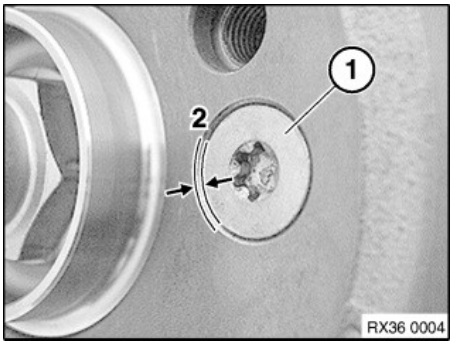
  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



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

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

bmwdiagn.com



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

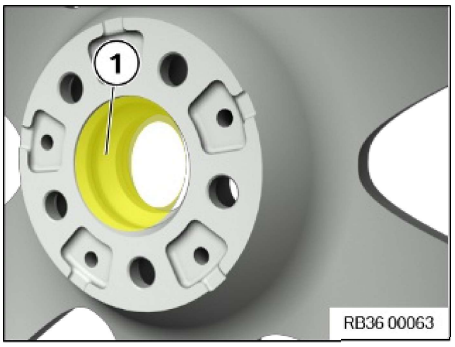
  The mounting bolt (1) for the brake disc may not protrude under any circumstances on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

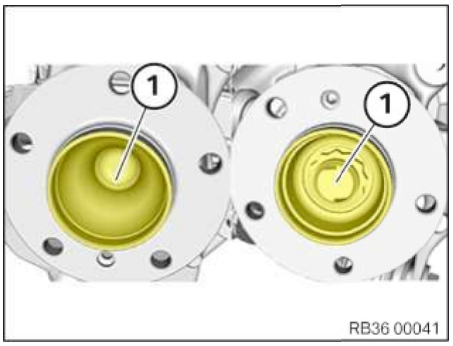
M8	Renew screw.	Tightening torque	16 Nm



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

Expendable materials

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



- Lightly grease the front and rear wheel hubs in this area (1) to protect from corrosion.

Expendable materials

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



- In vehicles with M Carbon ceramic brake: The wheel assembly jack must be used to install the wheel (see workshop equipment).

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

cardiagn.com



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.

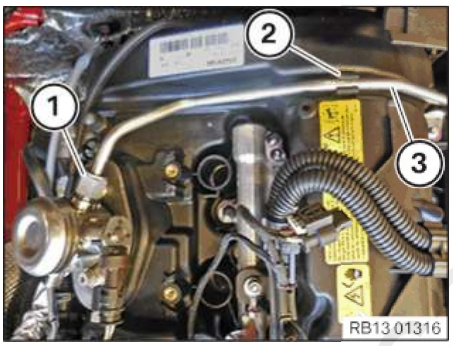
- Renew corroded wheel bolts.

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

Wheel bolts

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

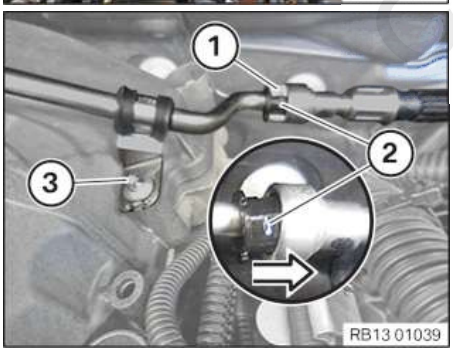
38 – Installing fuel delivery line



- Guide the fuel delivery line (3) in and install.
- Install rubber damper (2).
- Check the rubber damper (2) for the correct fit.
- Tighten the union nut (1) hand-tight.
- Tighten union nut (1).

Fuel delivery line to high pressure pump

M14		Tightening torque	31 Nm

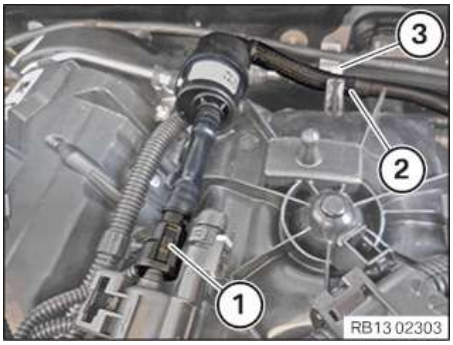


- Slide in and lock the fuel feed line in the direction of the arrow in the snap fastener (2).

  The fuel feed line must be audibly engage in the snap fastener (2).
- Secure clamps (1).
- Tighten down screw (3).

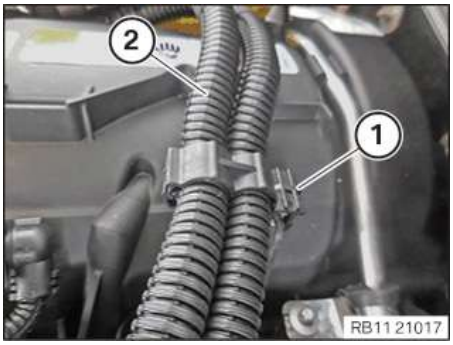
Fuel line to cylinder head cover

6x18		Tightening torque	6,5 Nm

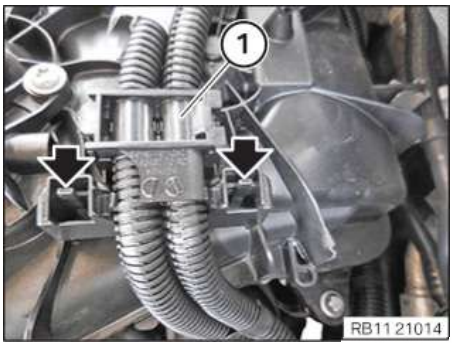


- Insert and install the tank ventilation line (2).
- Lock (1) must engage audibly.
- Secure the tank ventilation line (2) to the clamp (3).

carlagn.com



- Insert and install wiring harness section (2) for injectors and ignition coils.
- Secure clamps (1).



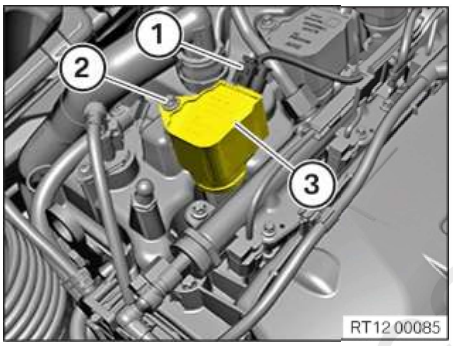
- Insert and install wiring harness section (1) for injectors and ignition coils.
- The locks (arrows) must engage audibly.

39 – Install all ignition coils

NOTICE

The description is for one component only. The procedure is identical for all further components.

▶ **Install ignition coil.**



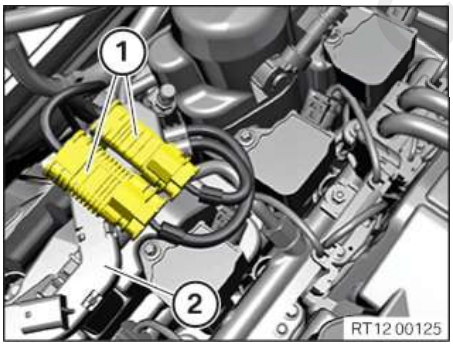
- Install ignition coil (3).
- Tighten down screw (2).

Ignition coil

Screw	Tightening torque	8 Nm

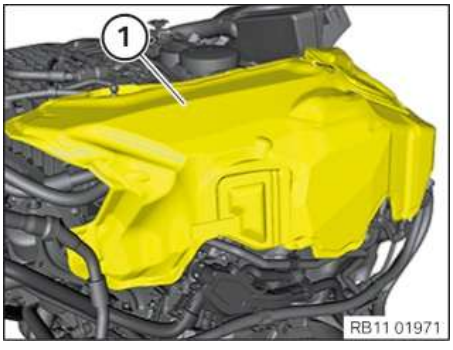
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.



- Connect the connector (1) of the front oxygen sensor and the monitoring oxygen sensor on the cable shaft (2).

40 – Installing acoustic cover at rear

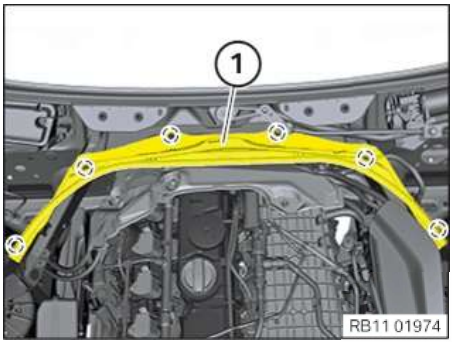


- Make sure the acoustic cover (1) is correctly positioned on the rear side of the engine.



- Install the acoustic cover (1) from the top and clip it in into the marked areas.

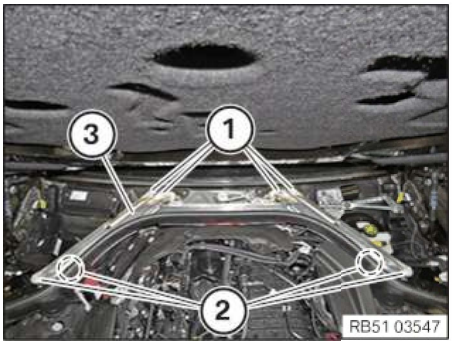
41 – Installing the centre bulkhead upper part



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

Bulkhead upper part to bottom bulkhead

		Tightening torque	3 Nm



- **If installed:** Install tension strut on spring strut dome.
- Install the tension strut (3) on the spring strut dome.
- Tighten the screws (1).

Tension strut on bulkhead

M10x25 screw		Tightening torque	56 Nm

- Renew screws (2).
  Parts: Bolts
- Tighten the screws (2).

Tension strut to spring strut dome

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

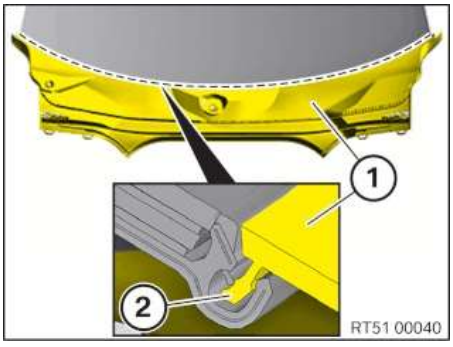
42 – Installing cowl panel cover

RISK OF DAMAGE

Damage caused by water ingress into the vehicle.

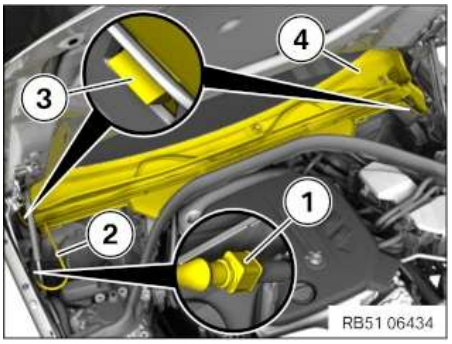
Water ingress into the vehicle may result in damage to components, malfunctions and corrosion.

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



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

cardiagn.com



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

43 – Installing both wiper arms

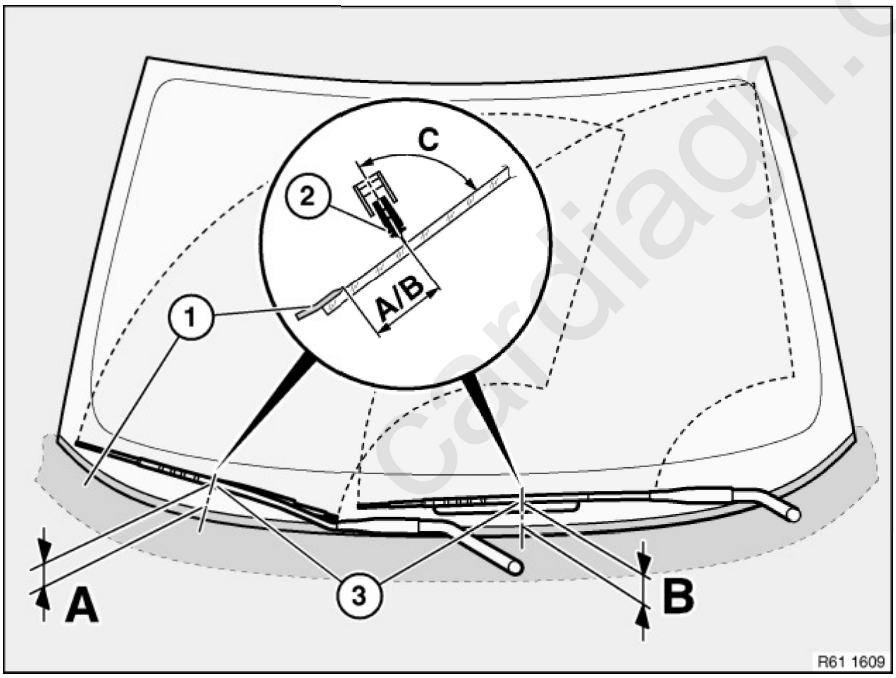
NOTICE

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

▸ **Install the wiper arm**

TECHNICAL INFORMATION

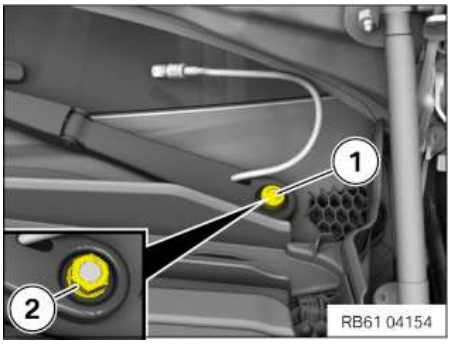
The wiper system must be in zero position.
After installing the cowl panel cover and before fitting the wiper arm:
Activate the wiper system once to ensure that it has the correct installation position.



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

Distance from window pane edge to wiper blade

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



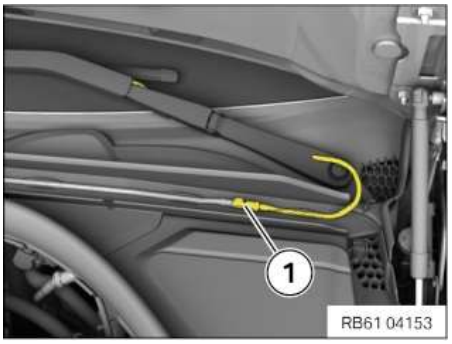
- Tighten nut (2).

Windscreen wiper arm

Combination hexagon nut		Tightening torque	35 Nm

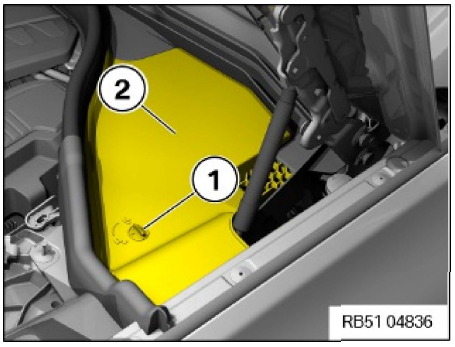
- Connect the protective cap (1).

cardiagn.com



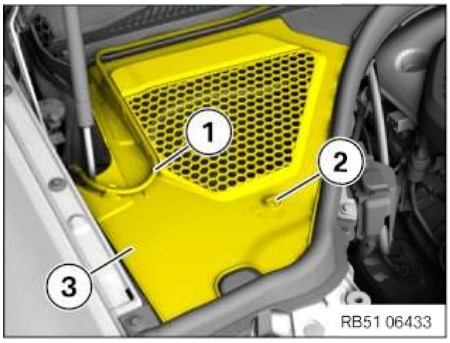
- Insert windscreen wash hose (1) into the cowl and connect at the separating point.

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



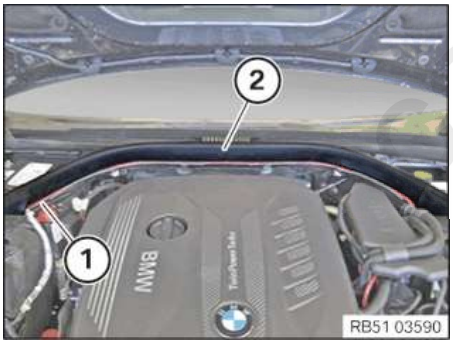
- Position the engine compartment cover at the rear left (2) .
- Close lock (1).

45 – Install the rear right engine compartment cover



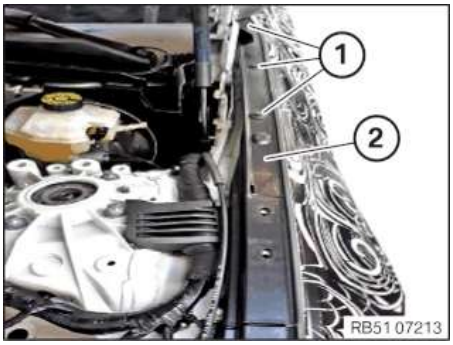
- Position the cover of the engine compartment on the rear right (3).
- Close lock (2).
- Insert washer fluid hose (1) into the guides.

46 – Install the seal for the bonnet



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

47 – Installation of side panel sealing.



NOTICE

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

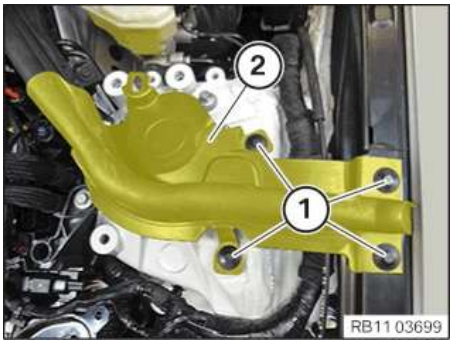
- Guide the sealing (2) in and install it.
- Mount the expanding rivets (1).

48 – Install side bonnet seals

cardiagn.com

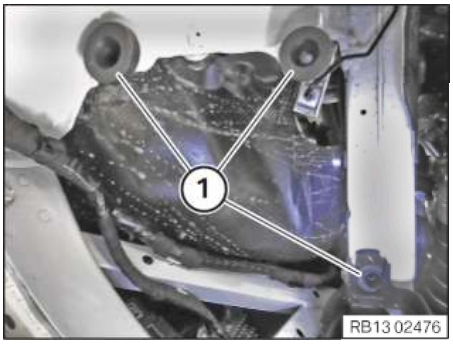
NOTICE

Perform the operations on the left and right side.

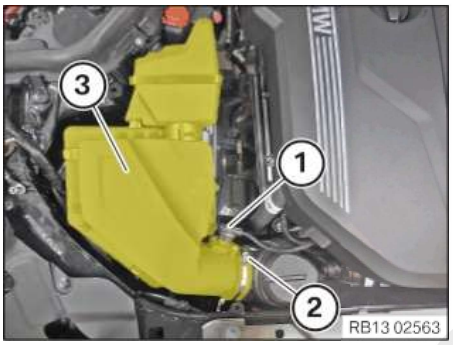


- Position the side bonnet seal (2) on the spring strut dome.
- Secure the rivet (1).

49 – Installing intake silencer housing



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



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

Clean air pipe to upper section of intake filter housing

Clamp	Tightening torque	3 Nm

- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

50 – Install acoustic cover

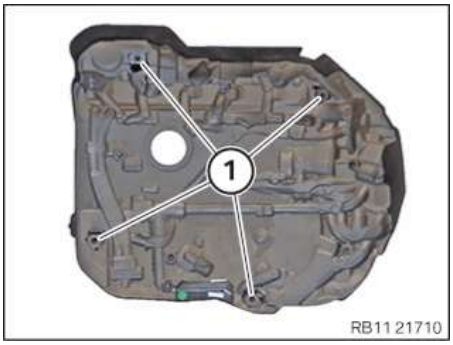
RISK OF DAMAGE

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.

cardiagn.com

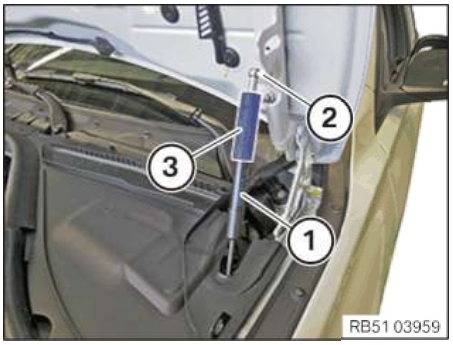


- Check the rubber mount (1) for correct fit in the acoustic cover.

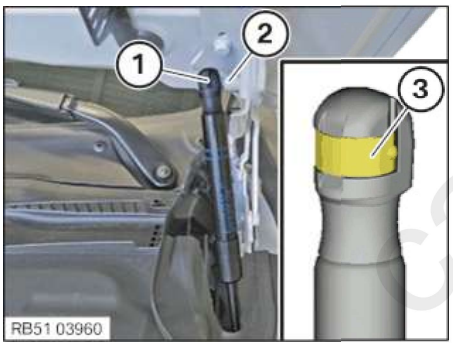


- Install acoustic cover (1) and fix in the rubber mounts (marks).

51 – Take bonnet out of the service position



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



CAUTION

Shutting bonnet or tailgate.

Danger of injury!

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

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

52 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Overview of Tightening Torques

cardiagn.com

Special tool to cylinder head			Used in step 18
M8		Tightening torque	21,5 Nm
Engine mount to front axle support			Used in step 27
M8		Tightening torque	19 Nm
Protective cap			Used in step 27
Hexagon screw		Tightening torque	3 Nm
Engine support arm to engine			Used in step 28
M10		Tightening torque	38 Nm
Catalytic converter to turbocharger			Used in step 29
V-band clamp	Replace V-band clamp.	Tightening torque	19 Nm
Catalytic converter to holder			Used in step 29
M8 nut	Renew nut.	Tightening torque	28 Nm
Rear silencer to body / bumper support			Used in step 30
M8	Replace nuts.	Tightening torque	19 Nm
Exhaust system to rear axle carrier			Used in step 30
Nut M8	Renew nut.	Tightening torque	19 Nm
Front pipe / petrol particulate filter on transmission holder			Used in step 30
M8	Renew nut.	Tightening torque	19 Nm
Exhaust system to catalytic converter			Used in step 30
Ribbon cable clamp	Renew flat band clip.	Tightening torque	26 Nm
V-clip to catalytic converter			Used in step 30
V-band clamp	Renew V-band clamp.	Tightening torque	22 Nm
Connecting support to tunnel			Used in step 31
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm
Underbody protection			Used in step 32
Hexagon screw		Tightening torque	3 Nm
Monitoring oxygen sensor to catalytic converter			Used in step 33
M18X1.5		Tightening torque	50 Nm
Front oxygen sensor to catalytic converter			Used in step 34
M18X1.5		Tightening torque	50 Nm
Engine mount to engine mounting bracket			Used in step 35
M12		Tightening torque	100 Nm
Wheel arch trim panel, front			Used in step 36
Thermoplastic hexagon screw		Tightening torque	2,6 Nm
Brake disc to front wheel hub			Used in step 37
M8	Renew screw.	Tightening torque	16 Nm

cardiagn.com

Brake disc to rear wheel hub			Used in step 37
M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts			Used in step 37
M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Fuel delivery line to high pressure pump			Used in step 38
M14		Tightening torque	31 Nm

Fuel line to cylinder head cover			Used in step 38
6x18		Tightening torque	6,5 Nm

Ignition coil			Used in step 39
Screw		Tightening torque	8 Nm

Bulkhead upper part to bottom bulkhead			Used in step 41
		Tightening torque	3 Nm

Tension strut on bulkhead			Used in step 41
M10x25 screw		Tightening torque	56 Nm

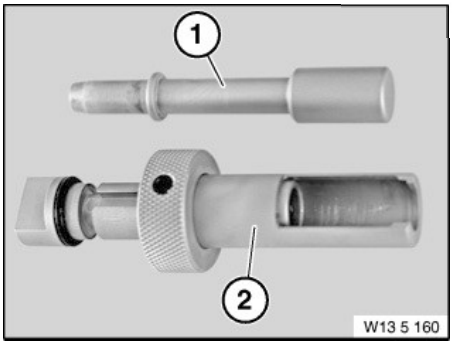
Tension strut to spring strut dome			Used in step 41
Screw	Renew screws.	Jointing torque Angle of rotation	56 Nm 90 °

Windscreen wiper arm			Used in step 43
Combination hexagon nut		Tightening torque	35 Nm

Clean air pipe to upper section of intake filter housing			Used in step 49
Clamp		Tightening torque	3 Nm

Overview of Special Tools

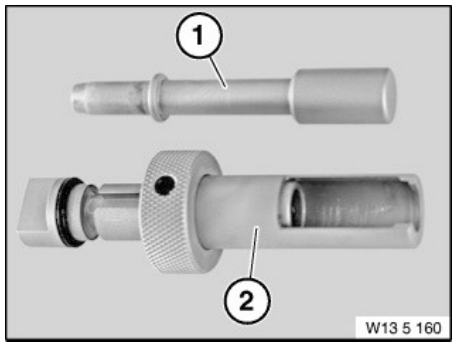
0 496 567 (13 5 161) Fastener



Common		Used in step 14
Usage	(Cap (2 piece)) For sealing the quick connectors Deletion, only available via tool set	
Included in the tool or work	0 496 565	
Storage location		
Replaced by		
In connection with		
SI-Number		

cardiagn.com

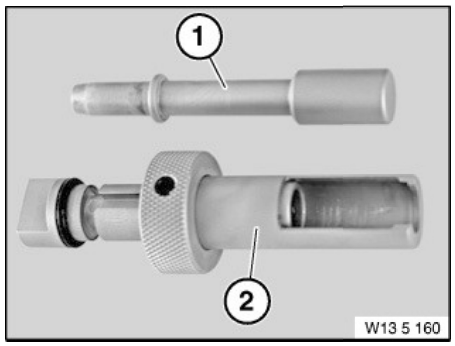
0 496 568 (13 5 162) Fastener



Common Used in step 14

Usage	(Cap (2 x)) To close off the fuel lines. Discontinued, can only be ordered using complete tool
Included in the tool or work	0 496 565
Storage location	
Replaced by	
In connection with	
SI-Number	

0 496 565 (13 5 160) Fastener



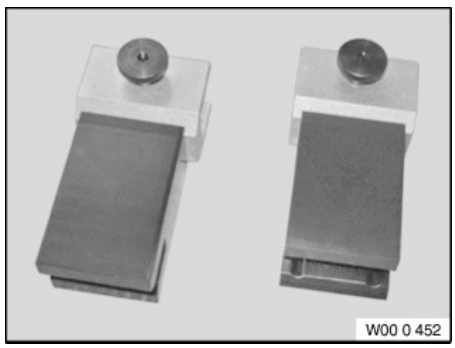
Common Used in step 14

Usage	(Caps (2x)) To close off the fuel lines when removing and installing the engine.
Included in the tool or work	
Storage location	B26
Replaced by	
In connection with	
SI-Number	01 22 08 (498)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 496 567 (13 5 161)		**Fastener** (Cap (2 piece)) For sealing the quick connectors Deletion, only available via tool set	
2	0 496 568 (13 5 162)		**Fastener** (Cap (2 x)) To close off the fuel lines. Discontinued, can only be ordered using complete tool	

0 495 850 (00 0 452) Upholstery

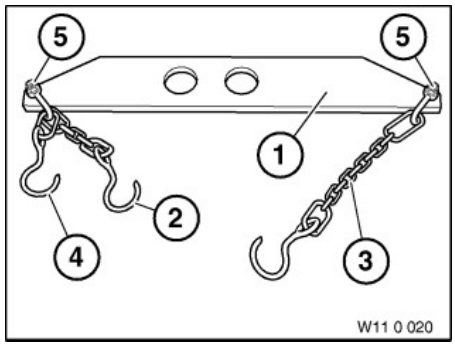


Common Used in step 18

Usage	(Pads (2 x)) Series: E70 Replaced by 00 6 042
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 22 06 (307)

carflagn.com

0 490 567 (11 0 020) Lifting gear



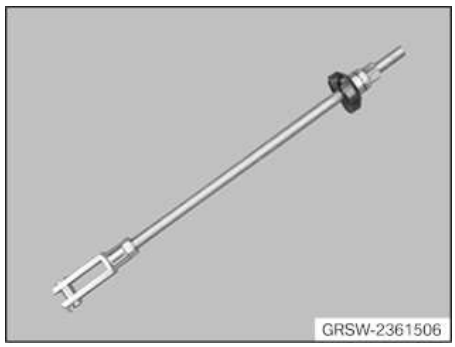
Common Used in step 1835

Usage	For removing and installing the engines. 08/2011 only available as a complete set. Delivered with TÜV inspection certificate and operating instructions. No delivery of separate parts.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 13 94 (888)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
5	0 490 572 (11 0 029)		**Shackle** (Shackle) 2 pieces As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	
1	0 490 568 (11 0 021)		**Lifting gear** (Cross member) As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	
2	0 490 569 (11 0 022)		**Chain** (Chain) As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	
3	0 490 570 (11 0 023)		**Chain** (Chain) Version: long As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	
4	0 490 571 (11 0 024)		**Chain** (Chain) Version: short As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	

2 361 506 (00 6 103) Spindle

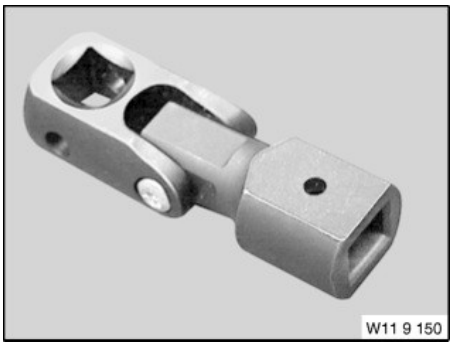


Common Used in step 1835

Usage	Spindle (central spindle) for Traverse 00 6 100.
Included in the tool or work	0 496 852
Storage location	
Replaced by	
In connection with	
SI-Number	01 17 10 (659)

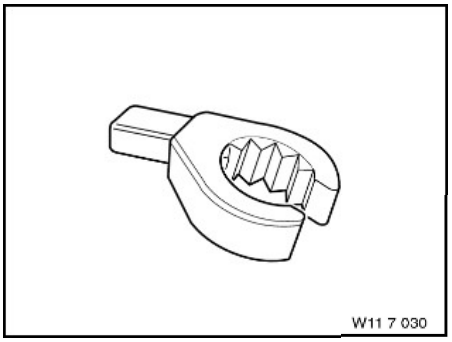
cardiagn.com

0 493 751 (11 9 150) Extension



Common	Used in step 33
Usage	(Socket wrench extension) For loosening and tightening the oxygen sensor
Included in the tool or work	
Storage location	C41
Replaced by	
In connection with	
SI-Number	01 15 00 (609)

0 491 075 (11 7 030) Socket wrench insert



Common	Used in step 33
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 37
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 16
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	

cardiagn.com

0 495 224 (36 1 326) Wheel stud



Common	Used in step 16
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 16
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 16
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	

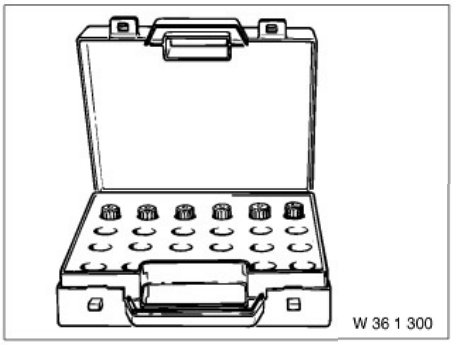
cardiagn.com

0 495 227 (36 1 329) Wheel stud



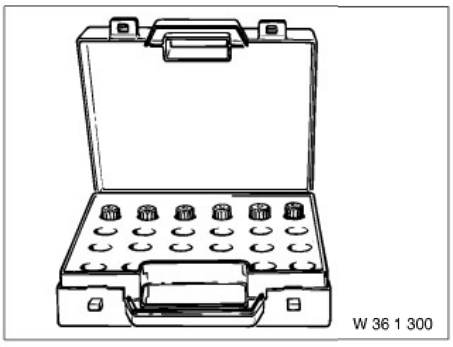
Common	Used in step 16
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 228 (36 1 331) Wheel stud



Common	Used in step 16
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 16
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 16
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

Distance from window pane edge to wiper blade	Used in step 43
Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

Links

General repair instructions	Used in step

cardiagn.com

11 00 ... Overview of consumables (Electronic Parts Catalogue)	3334

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	152
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	152
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 35 ... Notes on ESD protection (Electro Static Discharge)	13

carflagn.com

22 11 100 Replacing right engine mounting bracket

PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

2 – Bring front compartment lid in the service position

Prerequisite

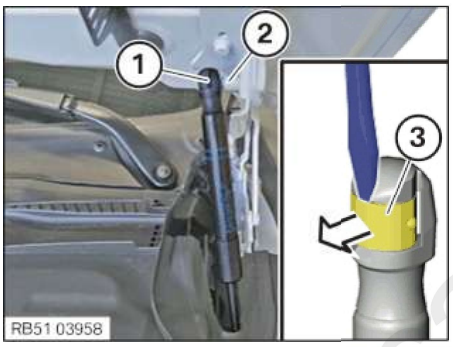
Engine compartment lid is open.

CAUTION

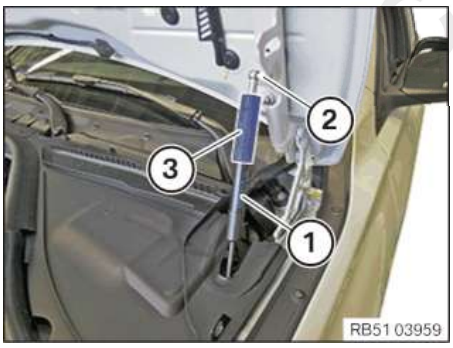
Shutting bonnet or tailgate.

Danger of injury!

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



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



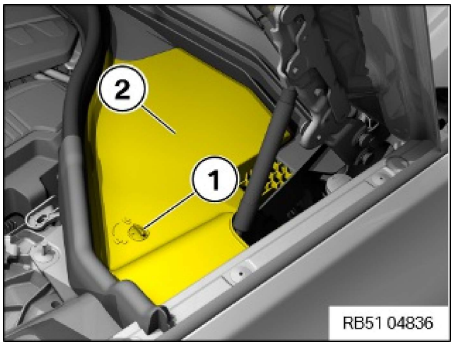
TECHNICAL INFORMATION

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

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

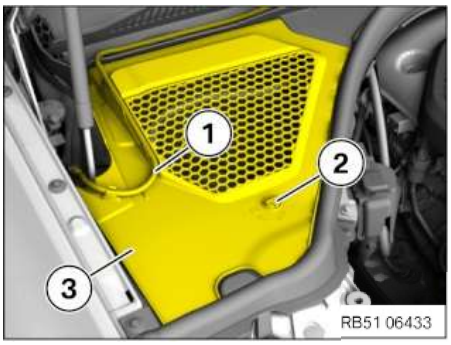
3 – Remove the cover of the engine compartment at the rear left

cardiagn.com



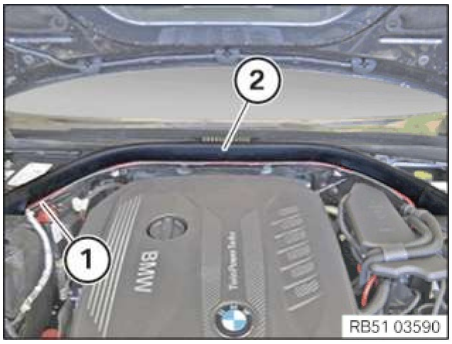
- Loosen the lock (1).
- Remove rear left cover of engine compartment (2).

4 – Remove the cover of the rear right engine compartment



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

5 – Remove the seal for the rear bonnet



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

6 – Removing both wiper arms

NOTICE

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

▶ **Remove the wiper arm**

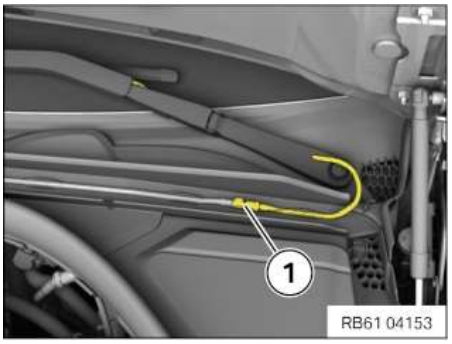
RISK OF DAMAGE

Damage to wiper console

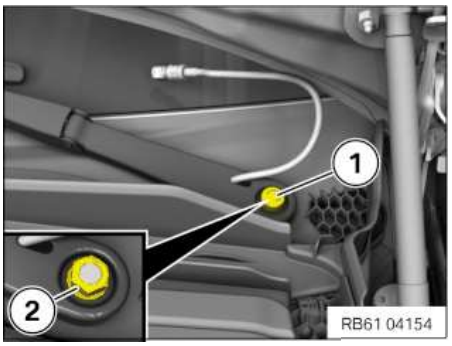
While removing the wiper arms without using special tool, the wiper console can break.

- 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.

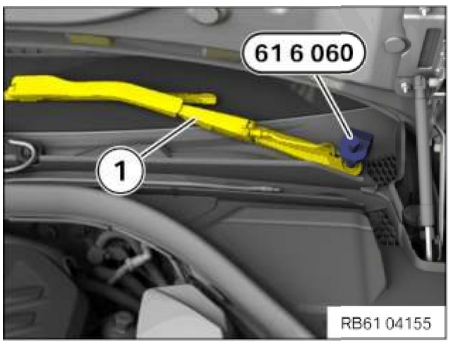
cardiagn.com



- Disconnect the windscreen wash hose(1) at the separation point and remove from the cowl guide.

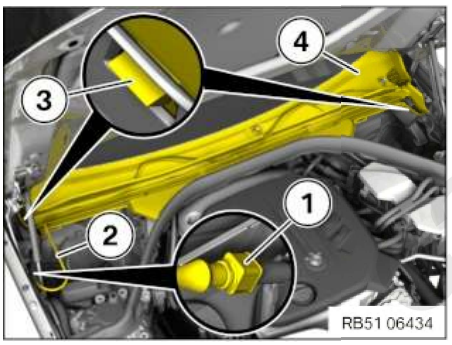


- Remove the protective cap (1).
- Loosen nut (2).

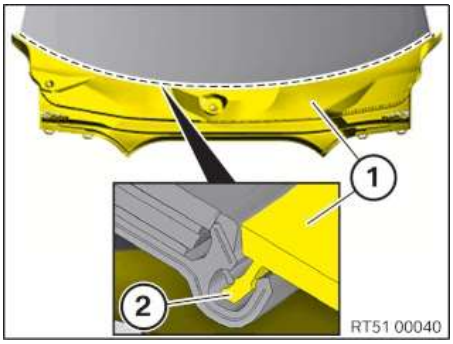


- Pull off the wiper arm (1) using special tool .

7 – Remove cowl panel cover



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



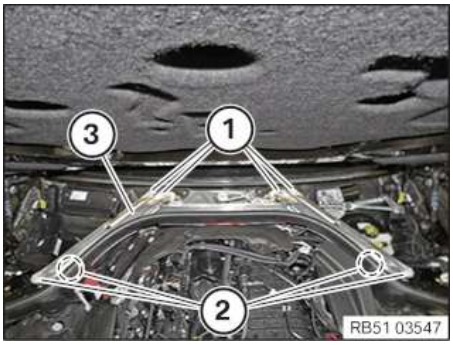
- Pull the cowl panel cover (1) upward out of the latch mechanism (2) beginning on the side.

8 – Removing the centre bulkhead upper part

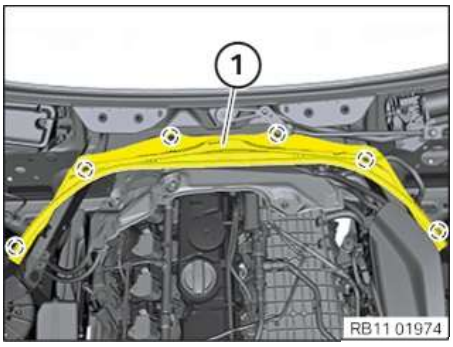
TECHNICAL INFORMATION

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

cardiagn.com



- **If installed:** Remove tension strut on spring strut dome.
- Loosen screws (1) and (2).
- Remove tension strut (3) in the spring strut dome upwards.

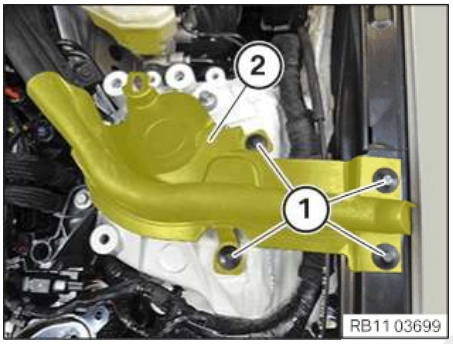


- Unscrew the bolts in the marked areas.
- Remove the centre bulkhead upper part (1).

9 – Removing side bonnet gaskets

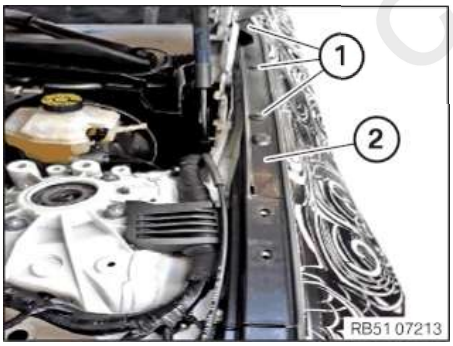
NOTICE

Perform the operations on the left and right side.



- Loosen the rivet (1).
- Remove side bonnet seal (2) from spring strut dome.

10 – Remove sealing of the side panel



NOTICE

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

- Loosen the expanding rivet (1).
- Guide out seal (2) and remove.

11 – Removing the acoustic cover

WARNING

Hot surfaces.

Risk of burning!

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

cardiagn.com

RISK OF DAMAGE

Damage to the acoustic cover.

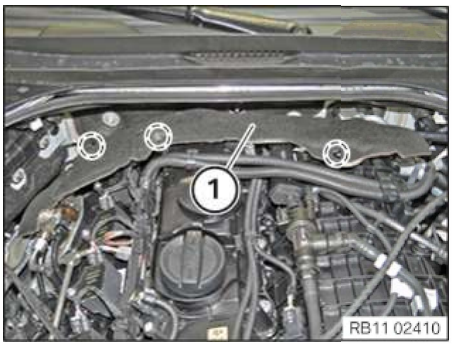
Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover.

- 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.



- Release the acoustic cover (1) towards the top from the rubber mounts (marks).

12 – Removing acoustic cover at rear



- Unclip the acoustic cover (1) in the marked areas and remove it to the top.

13 – Remove all ignition coils.

NOTICE

The description is for one component only. The procedure is identical for all further components.

▶ **Removing the ignition coil**

WARNING

Hot surfaces.

Risk of burning!

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

RISK OF DAMAGE

Damage to the ignition coil.

The silicone hose of the ignition coil must not be contaminated by fuel as this can lead to failure of the ignition coil.

- Cover ignition coils using suitable covers when working on the fuel system, if necessary remove them.
- Do not oil or grease the silicone tube of the spark plug connector. The silicone tube is coated with talc to reduce the pulling forces.

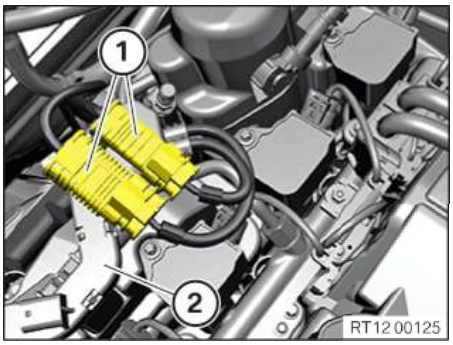
cardiagn.com

RISK OF DAMAGE

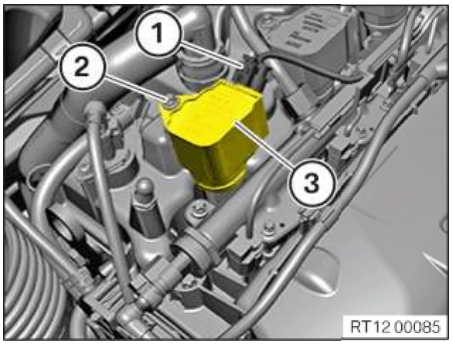
Electrostatic discharge.

Damage to or destruction of electrical components.

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



- Disconnect the connector (1) of the front oxygen sensor and the monitoring oxygen sensor from the cable channel (2) and set aside.



- Unlock plug connection (1) and disconnect.
- Loosen screw (2).
- Remove ignition coil (3).

14 – Remove fuel delivery line

WARNING

Working on fuel system.

Risk of fire! Danger of explosion!

- When working on the fuel system, make sure that the workbay is sufficiently ventilated, e.g. using extraction unit.
- Tightly seal off open lines and connections; collect any escaping fuel directly at the point of exit.
- No fire, sparks, open flames or smoking.

CAUTION

On releasing high pressure line, fuel may emerge at high speed.

Danger of injury!

- Wear suitable personal protective equipment.
- Allow the cooling system to cool down to a temperature below 40°C before starting installation work.
- Note warnings on cylinder head cover.

cardiagn.com

RISK OF DAMAGE

Damage to the ignition coil.

The silicone hose of the ignition coil must not be contaminated by fuel as this can lead to failure of the ignition coil.

- Cover ignition coils using suitable covers when working on the fuel system, if necessary remove them.
- Do not oil or grease the silicone tube of the spark plug connector. The silicone tube is coated with talc to reduce the pulling forces.

RISK OF DAMAGE

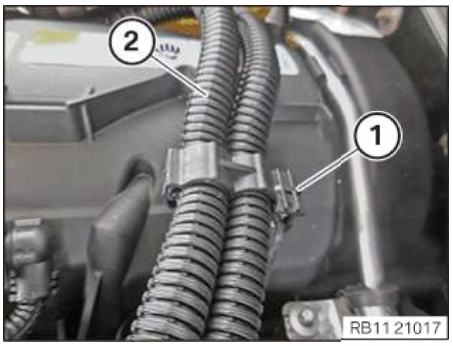
Contaminant or foreign body.

Contamination can result in malfunctions, operating failure or leaks.

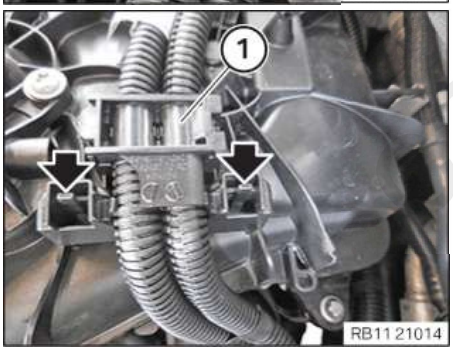
- Adhere to the utmost cleanliness.
- Protect components from contamination e.g. by covering.
- Close off line connections with seal plugs.

TECHNICAL INFORMATION

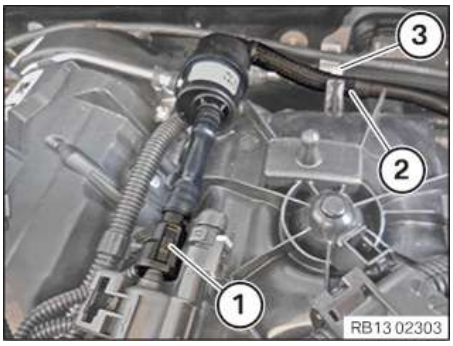
Reset special tool in early to avoid bending pressure lines.



- Loosen clamp (1).
- Guide out wiring harness section (2) for the injectors and ignition coils and place it aside.

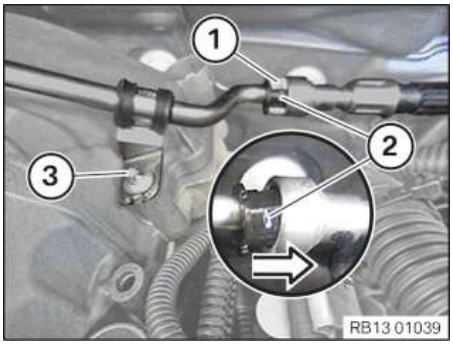


- Unlock the locks (arrows).
- Guide out wiring harness section (1) for the injectors and ignition coils and place it aside.

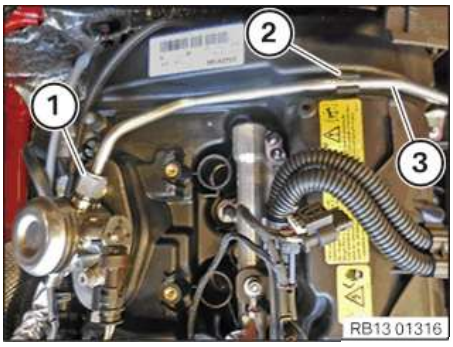


- Unlock and loosen lock (1).
- Guide tank ventilation line (2) out of clamp (3) and place it aside.

bardiagn.com



- Unlock and loosen clamp (1).
- Unlock and remove the snap fastener (2) in the direction of the arrow.
- Catch and dispose of escaping fuel.
- Seal the fuel lines with special tools 0 496 567 (13 5 161) and 0 496 568 (13 5 162) from the set of special tools 0 496 565 (13 5 160).
- Loosen screw (3).



- Slacken the union nut (1) on the high pressure pump.
- Catch and dispose of escaping fuel.
- Seal all openings with the special tool .
- Guide the fuel feed line (3) out and remove.
- Make sure that the rubber damper (2) is not lost.

15 – Removing intake silencer housing

RISK OF DAMAGE

Damage to the clean air line. Damage to the air filter.

For changing the air filter insert, if the upper section of intake filter housing is only raised and not completely removed, the clean air line and the air filter insert may be damaged.

- Do not lift upper section of intake filter housing by force.
- Unfasten clamp.
- Remove upper section of intake filter housing completely.



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

16 – Removing the front left wheel

▸ **Removing the wheel**

carlagn.com



- In vehicles with M Carbon ceramic brake: The wheel assembly jack must be used to remove the wheel (see workshop equipment).

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

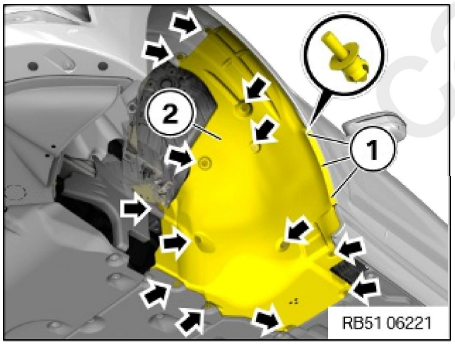


- If several wheels are removed simultaneously: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use a suitable adapter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

17 – Removing the rear section of the front wheel arch cover front

NOTICE

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

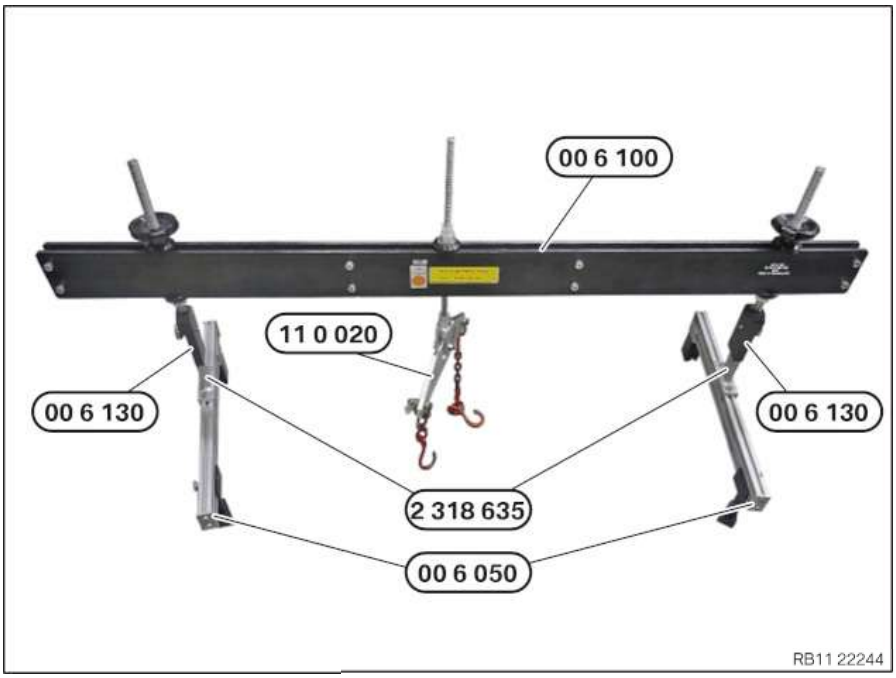


- Loosen the expanding rivet (1).
- Remove screws (arrows).
- Remove the rear section of the front wheel arch cover (2).

18 – Securing engine in installation position

carDiagn.com

Overview: prepared engine bridge



CAUTION

Components connected to the engine joint or cross member.

Danger of injury!

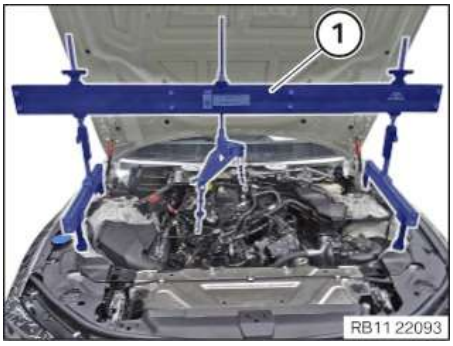
- Check lifting eyes and engine mounting brackets for damage, e.g. cracks.
- Attach the component to correctly mounted engine joints or cross members only.
- Exclusively lift the component, do not move it forwards, backwards or in transverse direction.



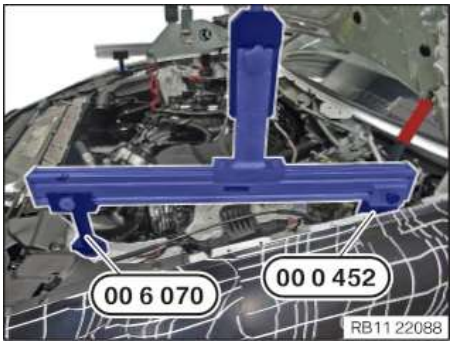
- Guide in and position special tool on cylinder head.
- Tighten the screws (1) of special tool .

Special tool to cylinder head

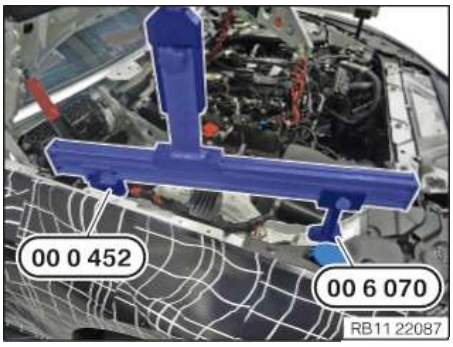
M8		Tightening torque	21,5 Nm



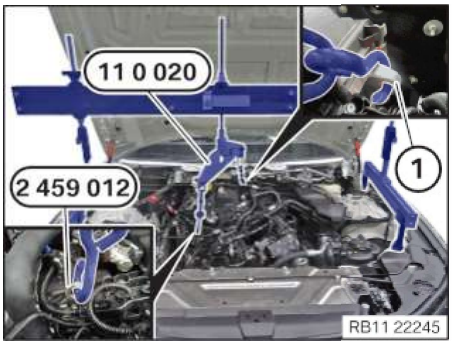
- **Carefully** position engine bridge (1) with help from an auxiliary person.



- Make sure that special tool on the left is **correctly** positioned on the front end.
- Make sure that special tool 0 495 850 (00 0 452) on the left is **correctly** positioned on the carrier support.



- Make sure that special tool on the right is **correctly** positioned on the front end.
- Make sure that special tool 0 495 850 (00 0 452) on the right is **correctly** positioned on the carrier support.



- Align the engine bridge by moving it on the profile strips of the special tool above the engine mounting bracket and screw it down.
- Connect special tool 0 490 567 (11 0 020) to special tool .
- Connect the special tool 0 490 567 (11 0 020) above the engine mounting bracket (1) at the rear.



- Check whether the special tool on the right is **correctly** positioned on the front end.



- Check whether the special tool 0 495 850 (00 0 452) on the right is **correctly** positioned on the carrier support.



- Check whether the special tool on the left is **correctly** positioned on the front end.

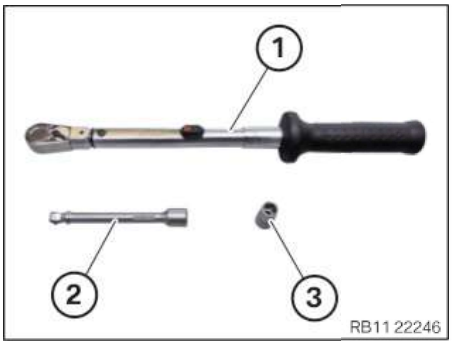
cardiagn.com



- Check whether the special tool 0 495 850 (00 0 452) on the left is **correctly** positioned on the carrier support.

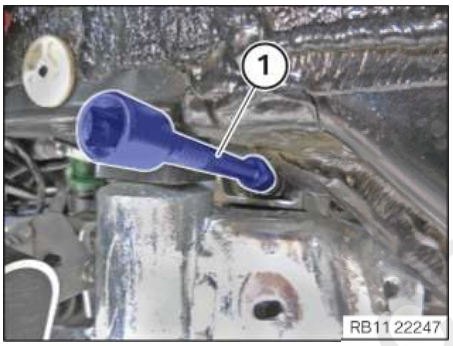


- Release screw (1) on the right engine mount from the top with a commercially available tool.

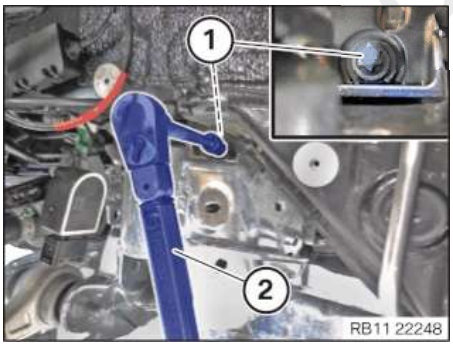


- Have all suitable tools ready.

Number	Description
1	Commercial available torque spanner
2	Swivel mounted extension
3	External Torx E14



- Position the suitable tool (1).



- Release screw (1) of the left engine mount with standard tool (2) sideways.



- Raise the engine by turning the special tool 2 361 506 (00 6 103) (spindle) by 10 mm.

cardiagn.com

19 – Remove the front oxygen sensor

WARNING

Hot surfaces.

Risk of burning!

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

RISK OF DAMAGE

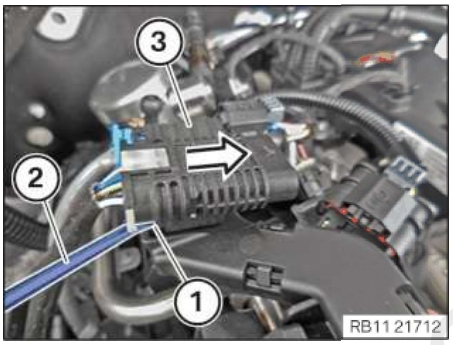
Damage to wires when disconnecting connectors and plug connections.

Sheared wires can cause a short circuit.

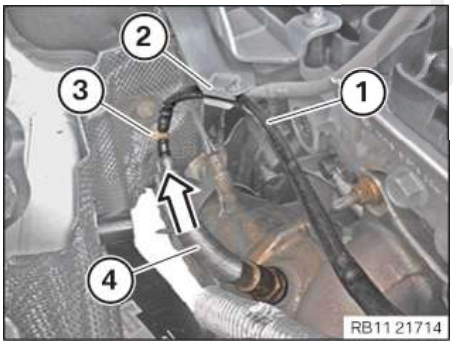
- Do not pull on the wires when disconnecting connectors and plug connections.



- Unlock and loosen connector (1).



- Unlock the locks (1) with a conventional screwdriver (2) and release.
- Feed out the connector (3) in **the direction of arrow** and set aside.



- Detach the line of the front oxygen sensor (1) from the holder (2).
- Unfasten cable strap (3).
- Feed out the heat shield (4) **in direction of arrow** and set it aside.



- Release and remove the control sensor (1) with the special tool .

20 – Remove the monitoring oxygen sensor

bardiagn com

WARNING

Hot surfaces.

Risk of burning!

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

RISK OF DAMAGE

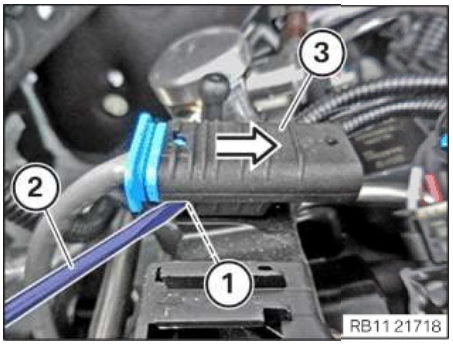
Damage to wires when disconnecting connectors and plug connections.

Sheared wires can cause a short circuit.

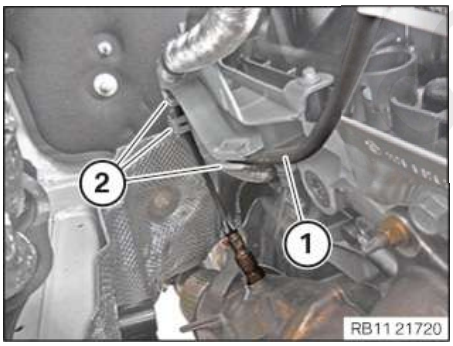
- Do not pull on the wires when disconnecting connectors and plug connections.



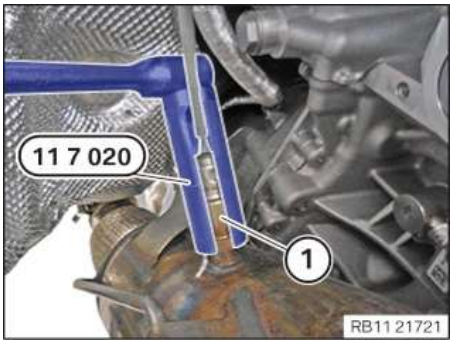
- Unlock and loosen connector (1).



- Unlock the lock (1) with a suitable screwdriver (2).
- Feed out the connector (3) in the direction of the **arrow** and set it aside.

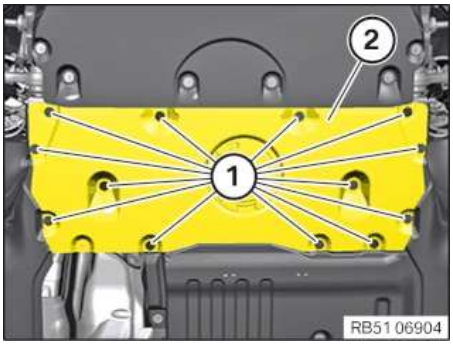


- Detach the line of the monitoring oxygen sensor (1) from the holder (2).



- Release the monitoring oxygen sensor (1) using special tool .
- Remove the monitoring sensor (1).

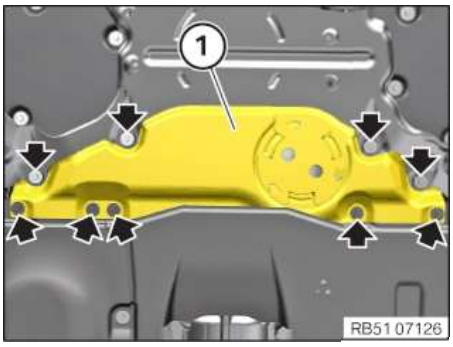
21 – Removing the centre underbody protection



- **Version with rear-wheel drive:**

  Loosen screws (1).

  Remove centre underbody protection (2) .

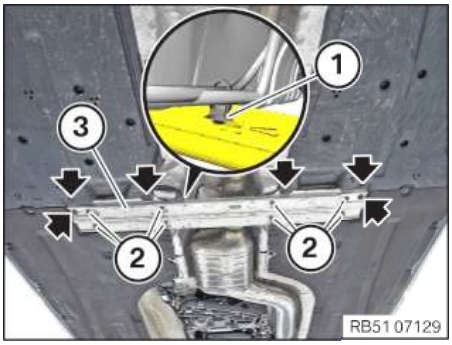


- **Version with all-wheel drive:**

  Remove screws (arrows).

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

22 – Remove the connecting support from the tunnel



- Remove screws (arrows).
- **If installed:** Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

23 – Remove complete exhaust system

WARNING

Hot surfaces.

Risk of burning!

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

CAUTION

Component with heavy weight.

Danger of injury!

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

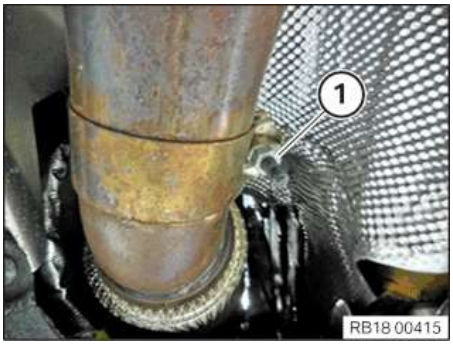
CAUTION

Heavy component.

Heavy components can lead to injury or damage.

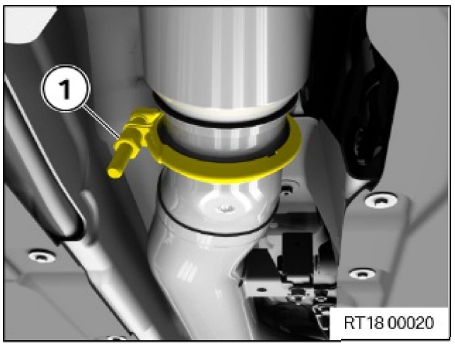
- Remove and install heavy components with the aid of another person/other persons.

cardiagn.com



- **Equipment specification 1 (ribbon clamp)**

  Detach the ribbon clamp (1).

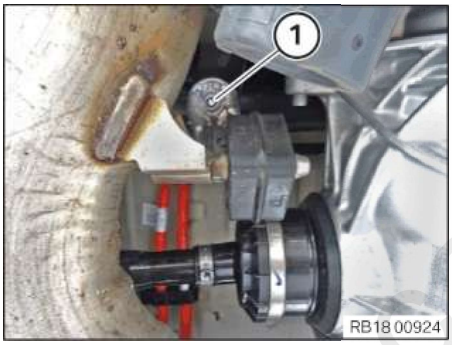


- **Equipment specification 2 (V-clips)**

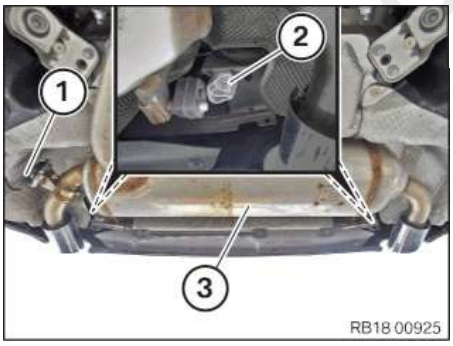
  Unfasten clamp (1).



- Loosen nut (1).



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



- Unlock plug connection (1) and disconnect.
- Loosen nuts (2).
- Lower and remove the exhaust system (3) with the assistance of a second person.

24 – Remove catalytic converter

WARNING

Hot surfaces.

Risk of burning!

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

cardiagn.com

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

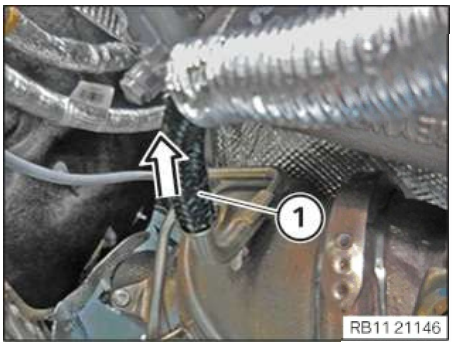
- Remove and install heavy components with the aid of another person/other persons.

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.

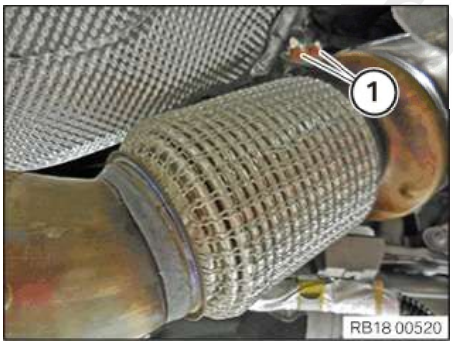


- **If installed: Disconnect pressure hose.**

  Pull off pressure hose (1) in direction of arrow and set it aside.



- Loosen V-band clamp (1).

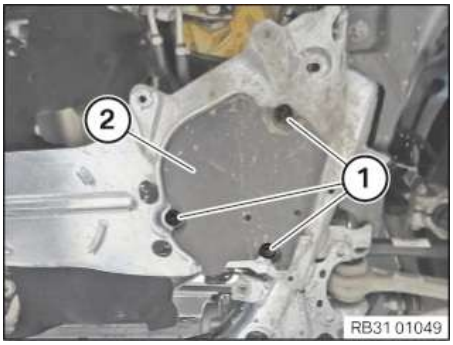


- Loosen nuts (1).

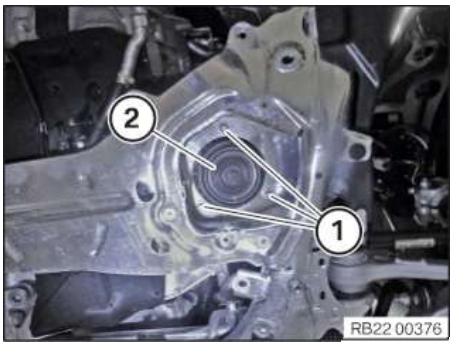


- Unlock and loosen clamp (1).
- Feed out catalytic converter and remove.

25 – Remove right engine mount



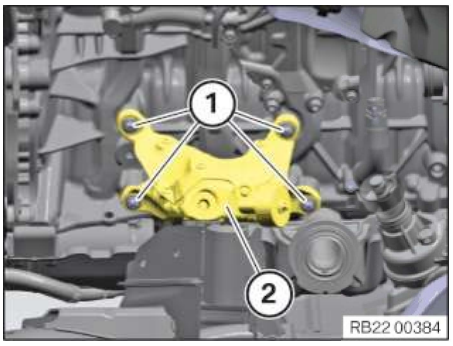
- Loosen screws (1).
- Remove protective cap (2).



- Loosen screws (1).
- Remove engine mount (2).

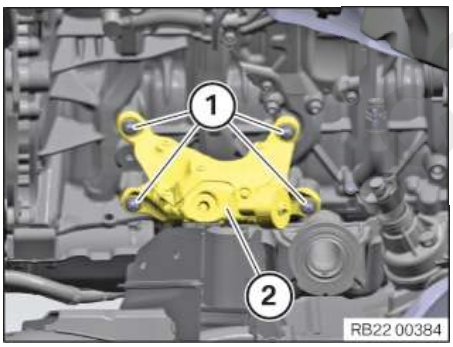
MAIN WORK

26 – Remove right engine support arm



- Loosen screws (1).
- Remove the engine support arm (2).

27 – Install right engine support arm



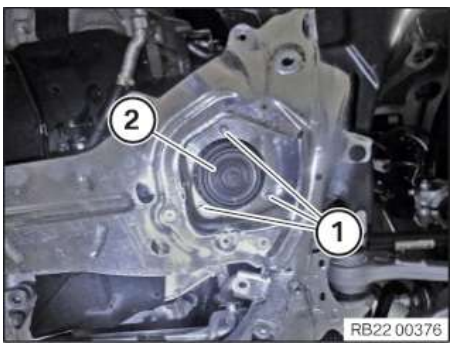
- Install the engine support arm (2).
- Tighten the screws (1).

Engine support arm to engine

M10		Tightening torque	38 Nm

POSTPROCESSES

28 – Installing the right engine mount

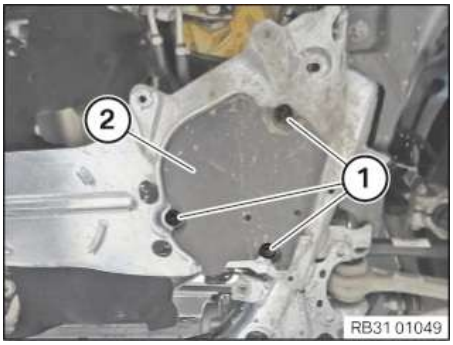


- Install the engine mount (2).
- Tighten the screws (1).

Engine mount to front axle support

M8		Tightening torque	19 Nm

@ordiagn.com



- Install the protective cap (2).
- Tighten the screws (1).

Protective cap

Hexagon screw		Tightening torque	3 Nm

29 – Install catalytic converter



- Renew the V-clip (1).

  Parts: V-band clamp



- Renew the gasket (1).

  Parts: Gasket



- Feed in and install catalytic converter.
- Lock clamp (1).

  The clamp (1) must engage audibly.

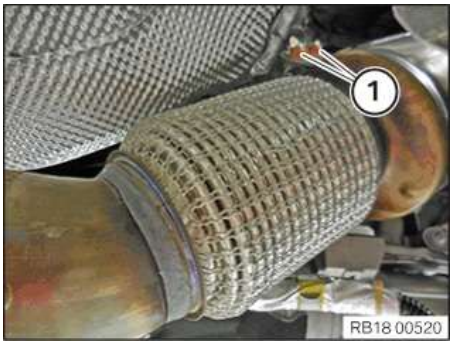


- Tighten V-band clamp (1).

Catalytic converter to turbocharger

V-band clamp	Replace V-band clamp.	Tightening torque	19 Nm

arotiagn.com

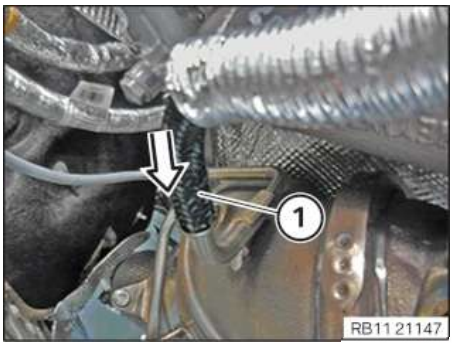


- Renew nuts (1).

  Parts: Nuts
- Tighten nuts (1).

Catalytic converter to holder

M8 nut	Renew nut.	Tightening torque	28 Nm



- **If installed: Connect pressure hose.**

  Renew pressure hose (1).

  Parts: Pressure hose
- Connect the pressure hose (1) in direction of arrow to the limit position.

30 – Installing the complete exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

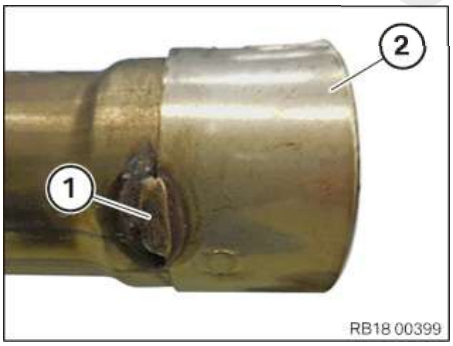
- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

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



CAUTION

Swarf resulting from sawing or grinding components.

Danger of injury!

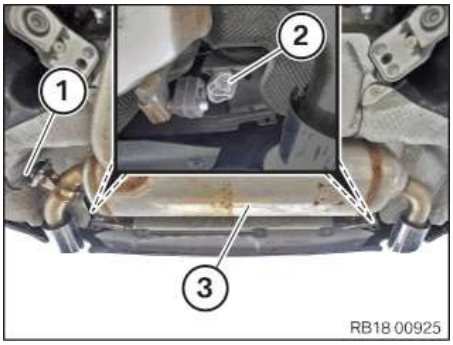
- Conduct all work in appropriate personal protective equipment only.
- Wear safety goggles and protective gloves.

- **Equipment specification 1 (ribbon clamp)**

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

  Parts: Ribbon cable clamp

cardiagn.com



- Feed in and install the exhaust system (3) with a second person.
- Renew nuts (2).

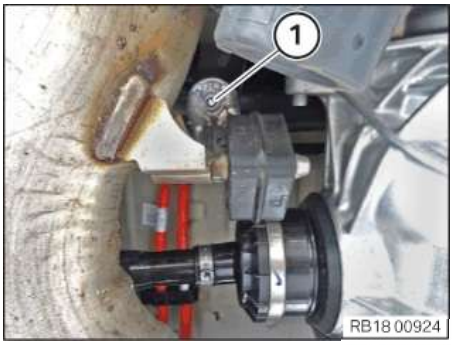
  Parts: Nuts
- Tighten nuts (2).

Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

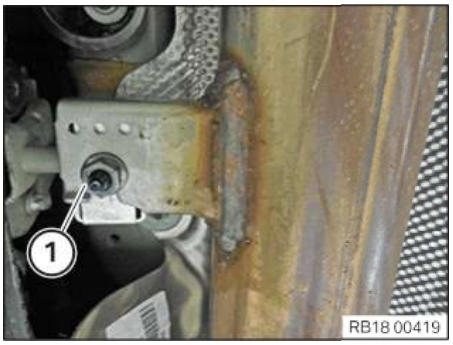


- Renew nut (1).

  Parts: Nut
- Tighten the bolt (1) on the rear axle support.

Exhaust system to rear axle carrier

Nut M8	Renew nut.	Tightening torque	19 Nm

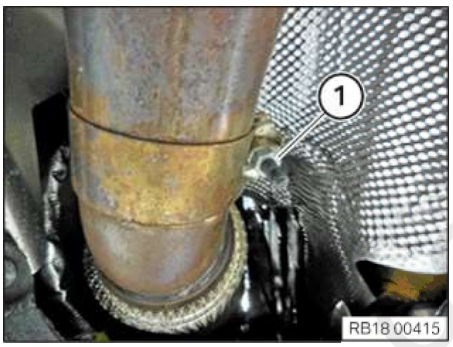


- Renew nut (1).

  Parts: Nut
- Tighten nut (1).

Front pipe / petrol particulate filter on transmission holder

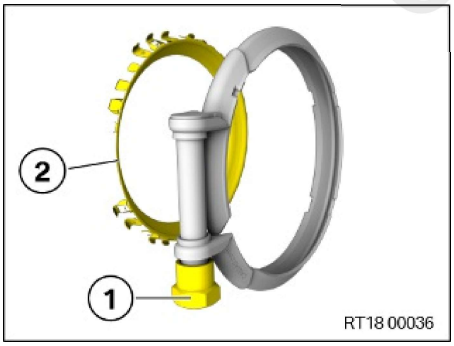
M8	Renew nut.	Tightening torque	19 Nm



- Tighten the ribbon clamp (1).

Exhaust system to catalytic converter

Ribbon cable clamp	Renew flat band clip.	Tightening torque	26 Nm

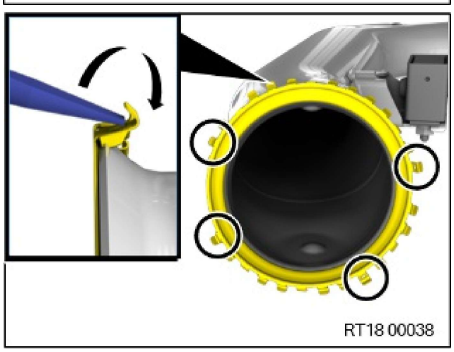


- **Equipment specification 2 (V-clips)**

  Renew V-band clamp.

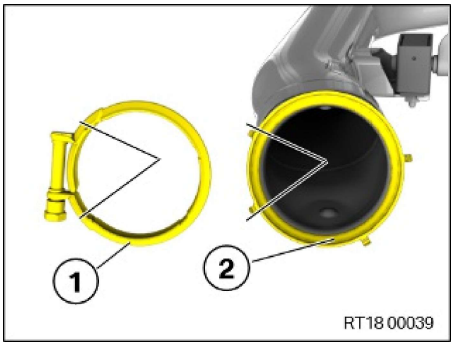
  Parts: V-band clamp

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

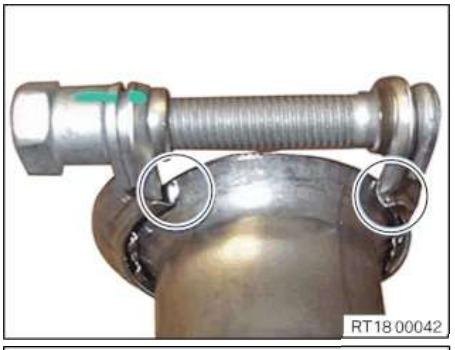


- Bend all sheet metal tabs over with a suitable tool, except those in the marked areas.

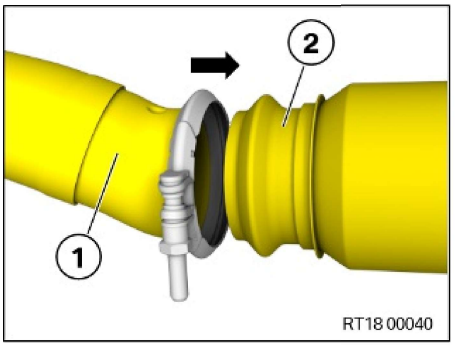
cardiag.com



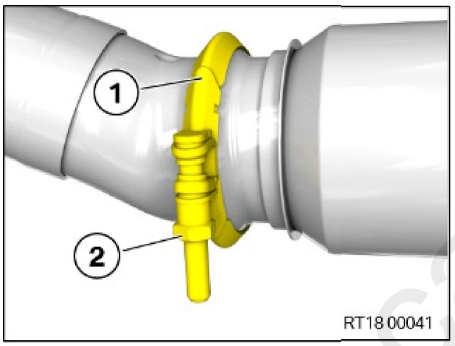
- Mount the V-clip (1) on the sealing ring (2).
- Make sure that the V-clip (1) is positioned correctly on the sealing ring (2).



- Ensure that the V-clip rests against the sheet metal tabs in the marked areas after mounting.



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

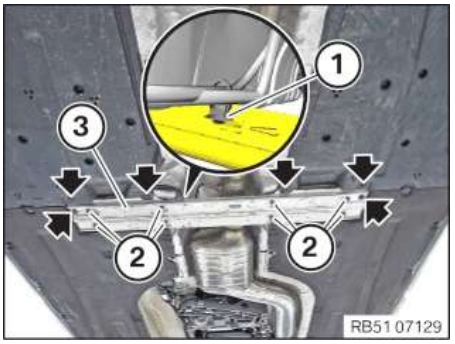


- Make sure that V-clip (1) is fitted correctly.
- Tighten down screw (2).

V-clip to catalytic converter

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

31 – Install the connecting supports on the tunnel



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

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

- Tighten screws (arrows).

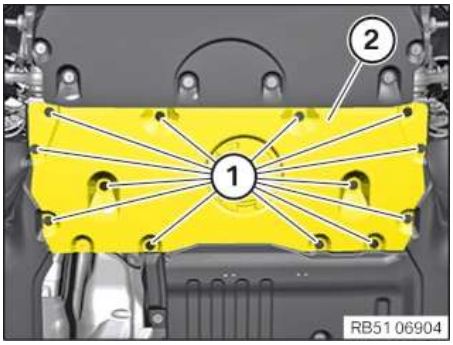
Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

- **If installed:** Secure clamps (1).

32 – Installing the centre underbody protection

cardiagn.com



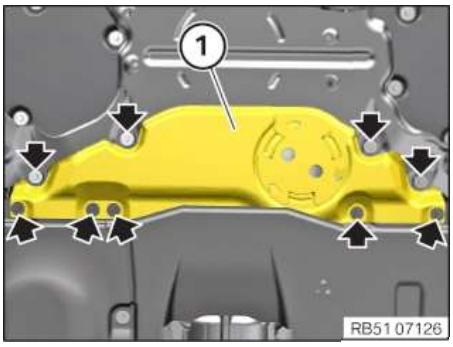
- **Version with rear-wheel drive:**

  Position central underbody protection (2).

  Tighten the screws (1).

Underbody protection

Hexagon screw		Tightening torque	3 Nm



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

  Guide in and install the centre of underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm

33 – Install the monitoring oxygen sensor

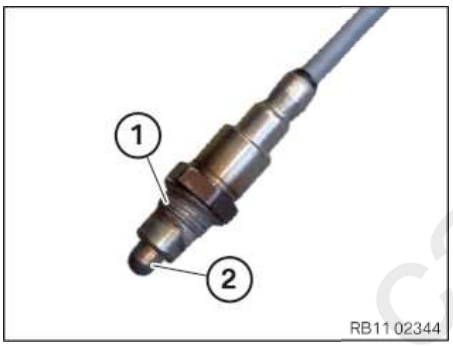
TECHNICAL INFORMATION

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



- Prepare the oxygen sensor.

  Do not damage the sensor ceramics.

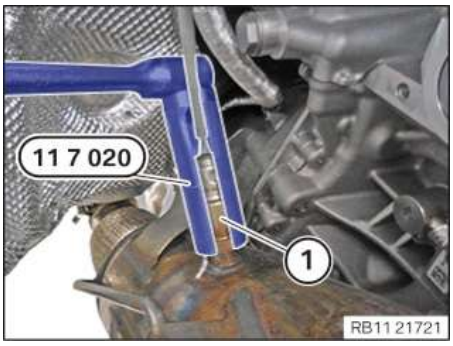
  (1) = Thread

  (2) = Sensor ceramics

- Grease the thread (1) of the Lambda monitoring oxygen sensor thinly and evenly.

Expendable materials

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

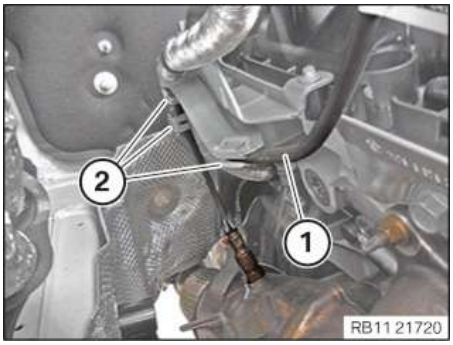


- Feed in the monitoring oxygen sensor (1) and install.
- Tighten monitoring oxygen sensor (1) using special tools 0 493 751 (11 9 150) and 0 491 075 (11 7 030) .

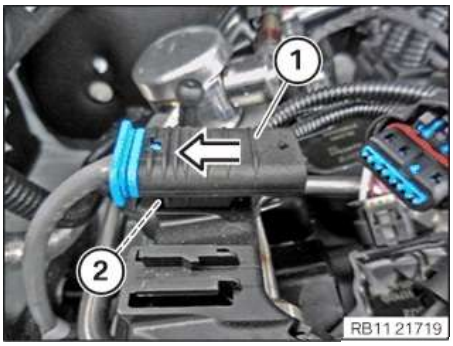
Monitoring oxygen sensor to catalytic converter

M18X1.5		Tightening torque	50 Nm

carlagn.com



- Guide monitoring oxygen sensor line (1) into holder (2) and install it.



- Insert and install the connector (1) in the **direction of arrow**.
- Ensure that the lock (2)engages audibly.



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

34 – Install the front oxygen sensor

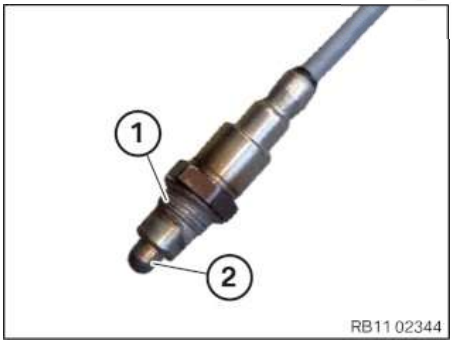
TECHNICAL INFORMATION

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



- Prepare the oxygen sensor.

  Do not damage the sensor ceramics.

  (1) = Thread

  (2) = Sensor ceramics
- Apply a thin and even coat of grease to the thread (1) of the front oxygen sensor.

Expendable materials

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

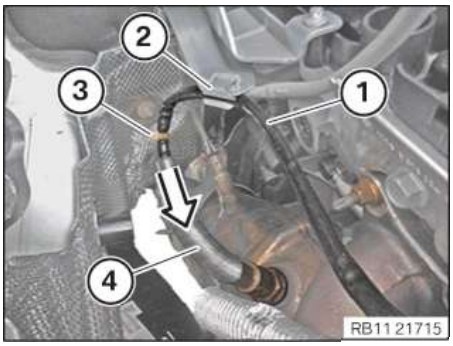
cardiagn.com



- Screw the control sensor (1) in and tighten it with the special tool .

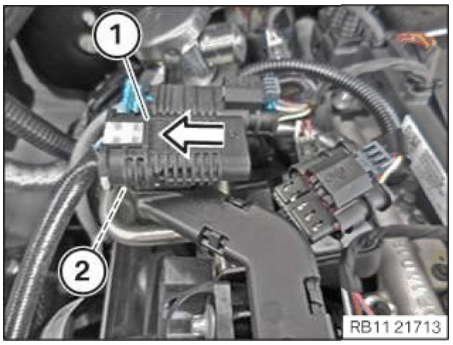
Front oxygen sensor to catalytic converter

M18X1.5		Tightening torque	50 Nm



- Guide in the heat protection (4) in the **direction of arrow** and install.
- Renew the cable straps (3).

  Parts: Cable strap
- Guide in and install the cable strap (3).
- Feed in and install the line of the front oxygen sensor (1) in the holder (2).



- Insert and install the connector (1) in the **direction of arrow**.
- Ensure that the lock (2)engages audibly.



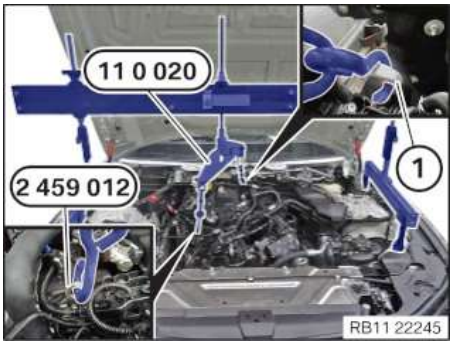
- Connect and lock the connector (1).
- Make sure the connector (1) engages audibly.

35 – Loosen the attachment of the engine in installation position



- Lower engine by turning the spindle 2 361 506 (00 6 103) until the engine lies completely on the engine supports.

cardiagn.com



- Feed out special tool 0 490 567 (11 0 020) on the special tool and set aside.
- Feed out special tool 0 490 567 (11 0 020) on the engine mounting bracket (1) and set aside.



TECHNICAL INFORMATION

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

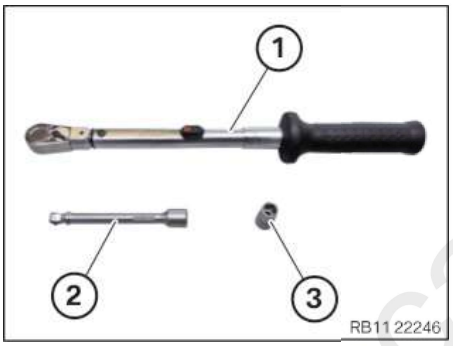
- Remove the engine bridge (1) with an auxiliary person.



- Tighten bolt (1) of the right engine mount from the top using a standard tool.

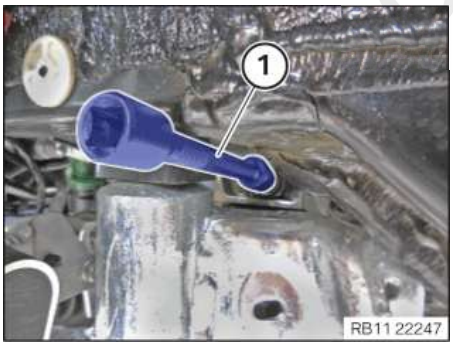
Engine mount to engine mounting bracket

M12		Tightening torque	100 Nm

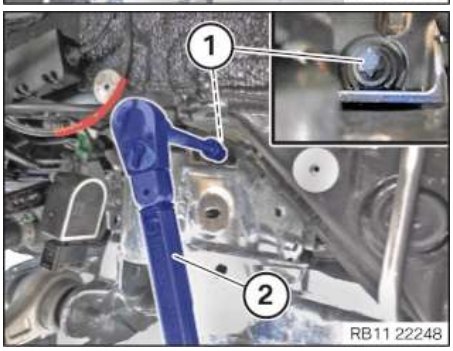


- Have all suitable tools available.

Number	Description
1	Commercial available torque spanner
2	Swivelling extension
3	External TorxE14



- Position suitable tools (1).



- Tighten bolt (1) of the left engine mount using a standard tool (2) sideways.

Engine mount to engine mounting bracket

M12		Tightening torque	100 Nm

cardiagn.com

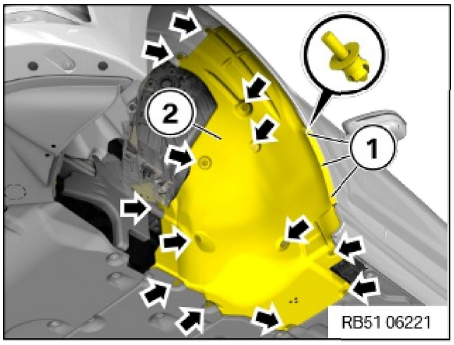


- Unscrew the bolts (1) of the special tool .
- Feed out the special tool at the cylinder head and remove.

36 – Install the rear section of the front wheel arch cover

NOTICE

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



- Install the rear section of the front wheel arch cover(2) .
- Tighten screws (arrows).

Wheel arch trim panel, front

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

- Secure expanding rivet (1).

37 – Attaching the front left wheel

▸ **Mounting the wheel**



TECHNICAL INFORMATION

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

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

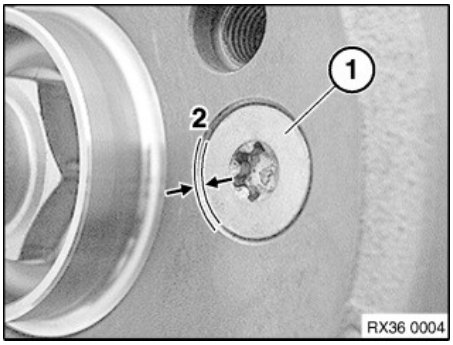
  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



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

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

bmwdiagn.com



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

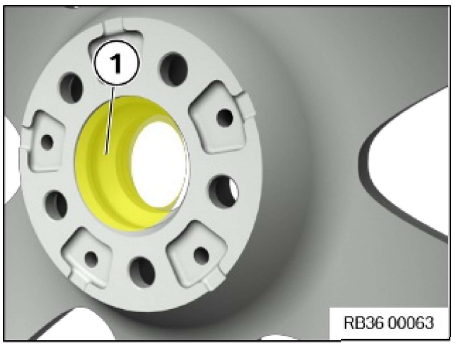
  The mounting bolt (1) for the brake disc may not protrude under any circumstances on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

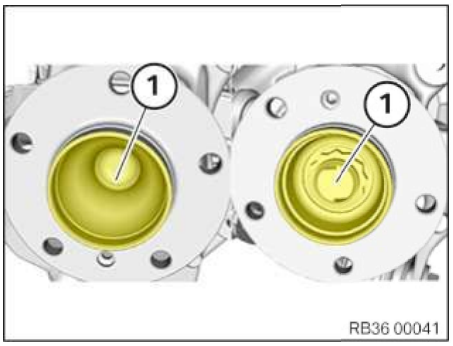
M8	Renew screw.	Tightening torque	16 Nm



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

Expendable materials

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



- Lightly grease the front and rear wheel hubs in this area (1) to protect from corrosion.

Expendable materials

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



- In vehicles with M Carbon ceramic brake: The wheel assembly jack must be used to install the wheel (see workshop equipment).

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

cardiagn.com



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.

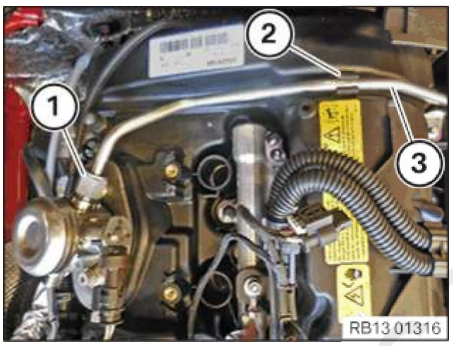
- Renew corroded wheel bolts.

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

Wheel bolts

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

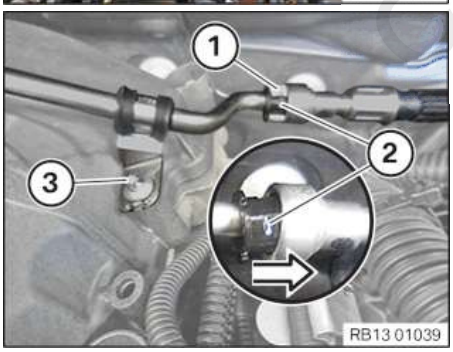
38 – Installing fuel delivery line



- Guide the fuel delivery line (3) in and install.
- Install rubber damper (2).
- Check the rubber damper (2) for the correct fit.
- Tighten the union nut (1) hand-tight.
- Tighten union nut (1).

Fuel delivery line to high pressure pump

M14		Tightening torque	31 Nm

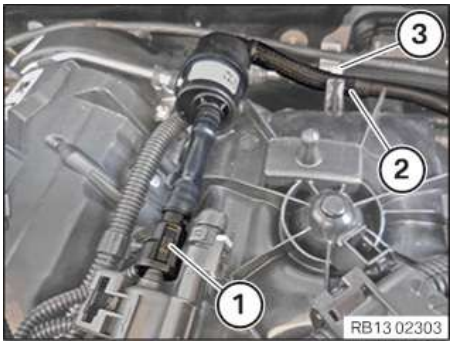


- Slide in and lock the fuel feed line in the direction of the arrow in the snap fastener (2).

  The fuel feed line must be audibly engage in the snap fastener (2).
- Secure clamps (1).
- Tighten down screw (3).

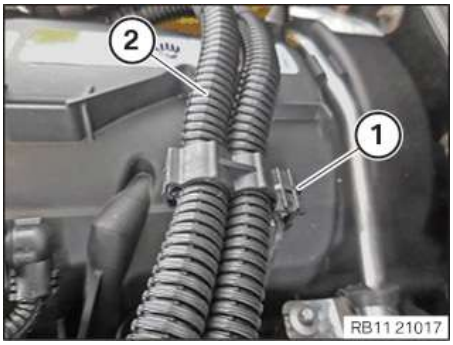
Fuel line to cylinder head cover

6x18		Tightening torque	6,5 Nm

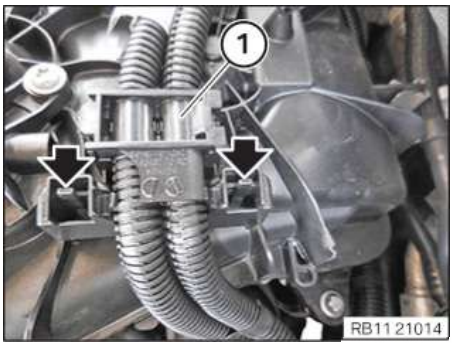


- Insert and install the tank ventilation line (2).
- Lock (1) must engage audibly.
- Secure the tank ventilation line (2) to the clamp (3).

carlagn.com



- Insert and install wiring harness section (2) for injectors and ignition coils.
- Secure clamps (1).



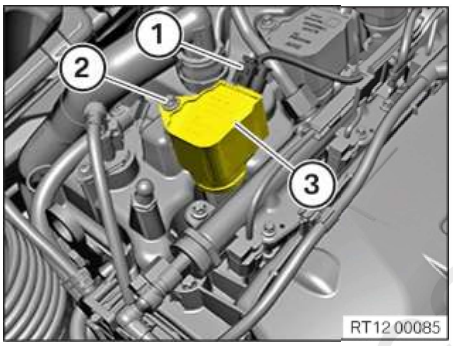
- Insert and install wiring harness section (1) for injectors and ignition coils.
- The locks (arrows) must engage audibly.

39 – Install all ignition coils

NOTICE

The description is for one component only. The procedure is identical for all further components.

▶ **Install ignition coil.**



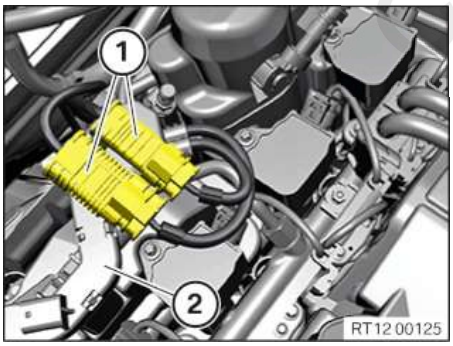
- Install ignition coil (3).
- Tighten down screw (2).

Ignition coil

Screw	Tightening torque	8 Nm

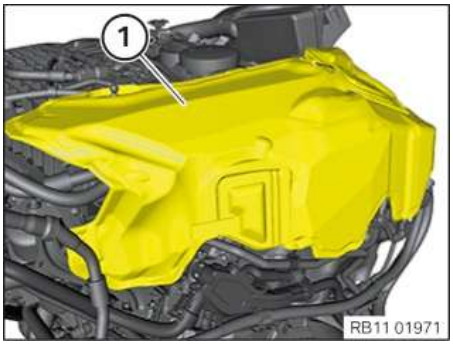
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.



- Connect the connector (1) of the front oxygen sensor and the monitoring oxygen sensor on the cable shaft (2).

40 – Installing acoustic cover at rear

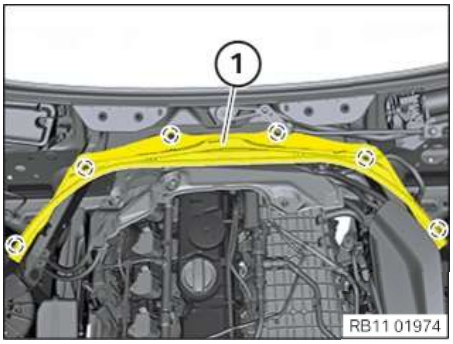


- Make sure the acoustic cover (1) is correctly positioned on the rear side of the engine.



- Install the acoustic cover (1) from the top and clip it in into the marked areas.

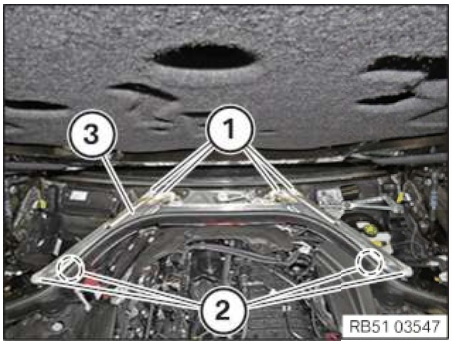
41 – Installing the centre bulkhead upper part



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

Bulkhead upper part to bottom bulkhead

		Tightening torque	3 Nm



- **If installed:** Install tension strut on spring strut dome.
- Install the tension strut (3) on the spring strut dome.
- Tighten the screws (1).

Tension strut on bulkhead

M10x25 screw		Tightening torque	56 Nm

- Renew screws (2).
  Parts: Bolts
- Tighten the screws (2).

Tension strut to spring strut dome

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

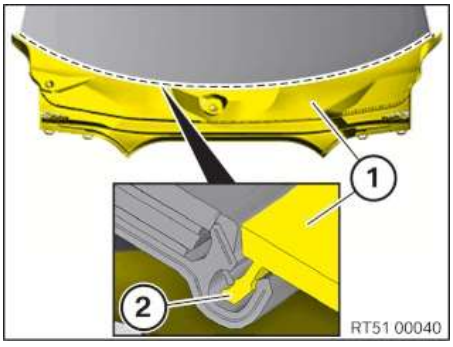
42 – Installing cowl panel cover

RISK OF DAMAGE

Damage caused by water ingress into the vehicle.

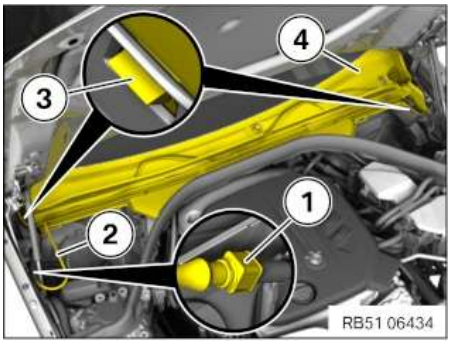
Water ingress into the vehicle may result in damage to components, malfunctions and corrosion.

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



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

cardiagn.com



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

43 – Installing both wiper arms

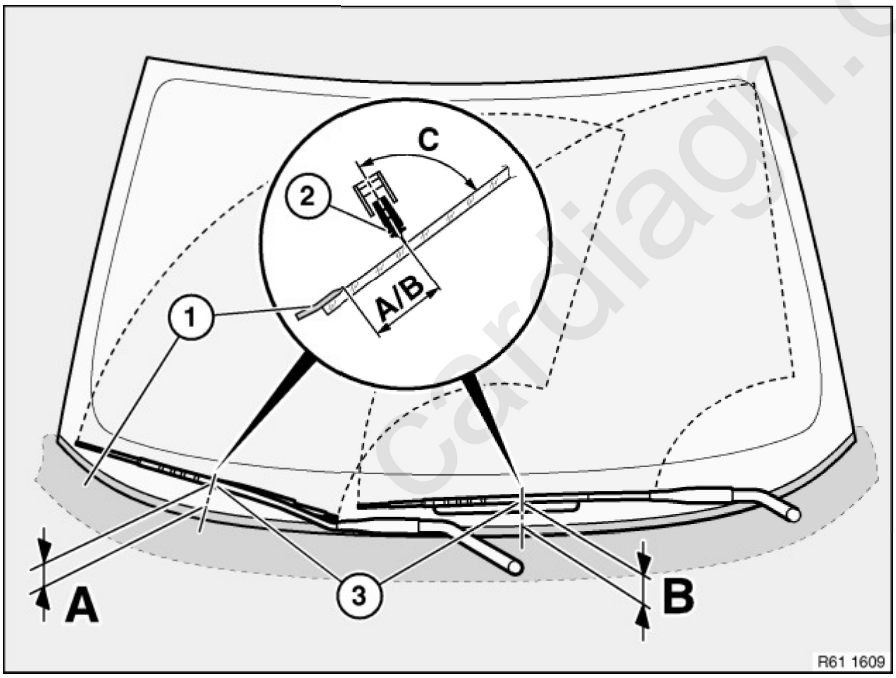
NOTICE

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

▸ **Install the wiper arm**

TECHNICAL INFORMATION

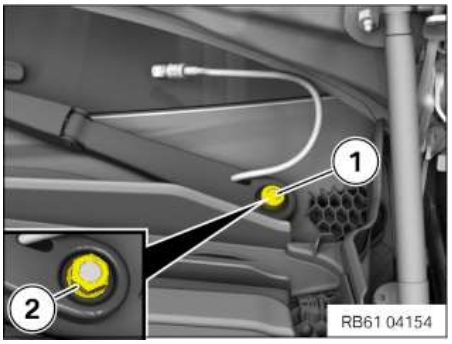
The wiper system must be in zero position.
After installing the cowl panel cover and before fitting the wiper arm:
Activate the wiper system once to ensure that it has the correct installation position.



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

Distance from window pane edge to wiper blade

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



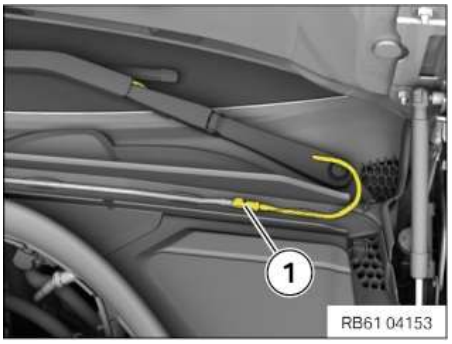
- Tighten nut (2).

Windscreen wiper arm

Combination hexagon nut		Tightening torque	35 Nm

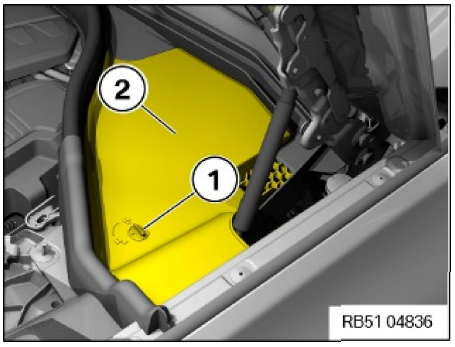
- Connect the protective cap (1).

cardiagn.com



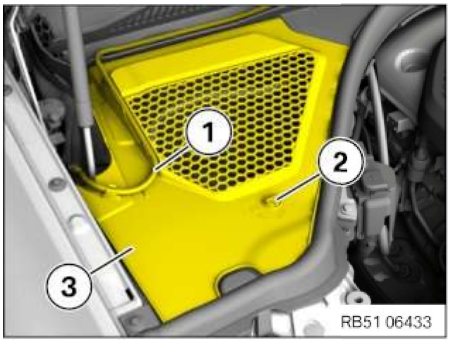
- Insert windscreen wash hose (1) into the cowl and connect at the separating point.

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



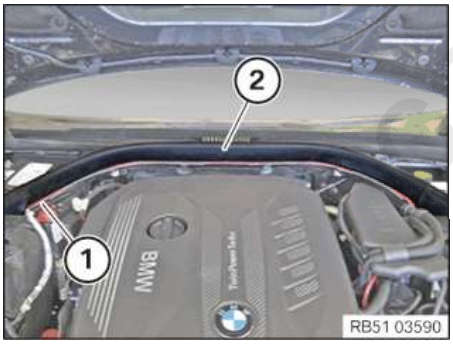
- Position the engine compartment cover at the rear left (2) .
- Close lock (1).

45 – Install the rear right engine compartment cover



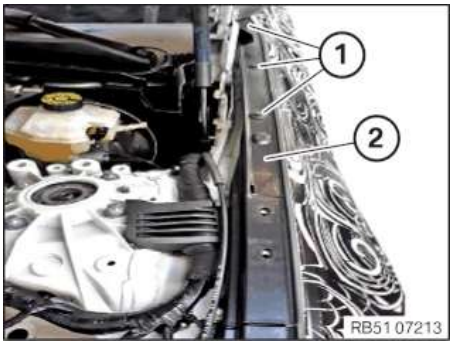
- Position the cover of the engine compartment on the rear right (3).
- Close lock (2).
- Insert washer fluid hose (1) into the guides.

46 – Install the seal for the bonnet



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

47 – Installation of side panel sealing.



NOTICE

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

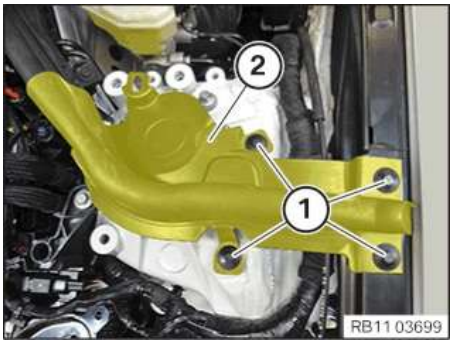
- Guide the sealing (2) in and install it.
- Mount the expanding rivets (1).

48 – Install side bonnet seals

cardiagn.com

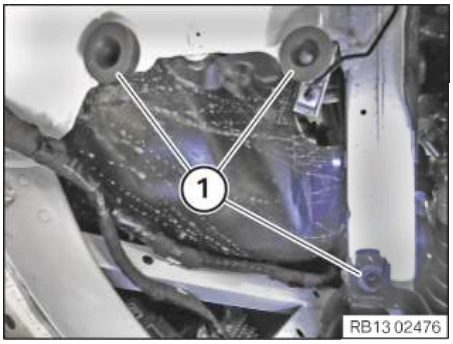
NOTICE

Perform the operations on the left and right side.

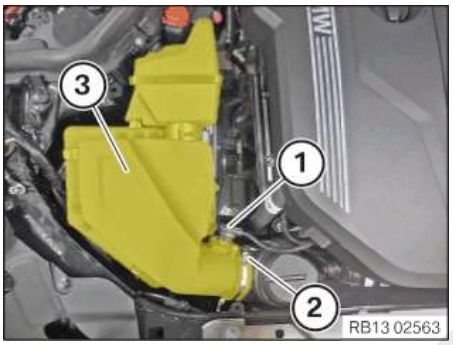


- Position the side bonnet seal (2) on the spring strut dome.
- Secure the rivet (1).

49 – Installing intake silencer housing



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



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

Clean air pipe to upper section of intake filter housing

Clamp	Tightening torque	3 Nm

- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

50 – Install acoustic cover

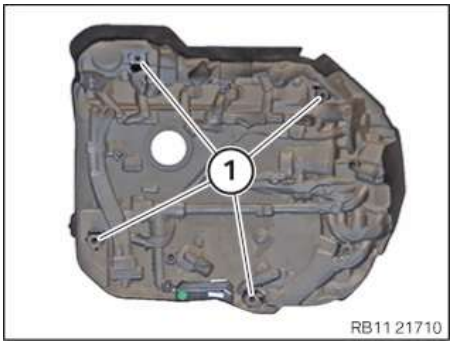
RISK OF DAMAGE

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.

cardiagn.com

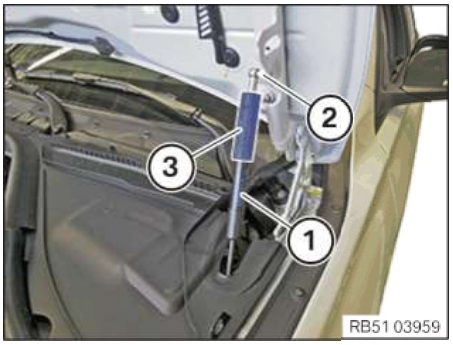


- Check the rubber mount (1) for correct fit in the acoustic cover.

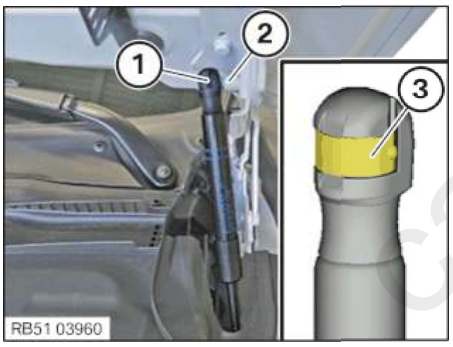


- Install acoustic cover (1) and fix in the rubber mounts (marks).

51 – Take bonnet out of the service position



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



CAUTION

Shutting bonnet or tailgate.

Danger of injury!

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

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

52 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Overview of Tightening Torques

cardiagn.com

Special tool to cylinder head			Used in step 18
M8		Tightening torque	21,5 Nm

Engine support arm to engine			Used in step 27
M10		Tightening torque	38 Nm

Engine mount to front axle support			Used in step 28
M8		Tightening torque	19 Nm

Protective cap			Used in step 28
Hexagon screw		Tightening torque	3 Nm

Catalytic converter to turbocharger			Used in step 29
V-band clamp	Replace V-band clamp.	Tightening torque	19 Nm

Catalytic converter to holder			Used in step 29
M8 nut	Renew nut.	Tightening torque	28 Nm

Rear silencer to body / bumper support			Used in step 30
M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier			Used in step 30
Nut M8	Renew nut.	Tightening torque	19 Nm

Front pipe / petrol particulate filter on transmission holder			Used in step 30
M8	Renew nut.	Tightening torque	19 Nm

Exhaust system to catalytic converter			Used in step 30
Ribbon cable clamp	Renew flat band clip.	Tightening torque	26 Nm

V-clip to catalytic converter			Used in step 30
V-band clamp	Renew V-band clamp.	Tightening torque	22 Nm

Connecting support to tunnel			Used in step 31
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Underbody protection			Used in step 32
Hexagon screw		Tightening torque	3 Nm

Monitoring oxygen sensor to catalytic converter			Used in step 33
M18X1.5		Tightening torque	50 Nm

Front oxygen sensor to catalytic converter			Used in step 34
M18X1.5		Tightening torque	50 Nm

Engine mount to engine mounting bracket			Used in step 35
M12		Tightening torque	100 Nm

Wheel arch trim panel, front			Used in step 36
Thermoplastic hexagon screw		Tightening torque	2,6 Nm

Brake disc to front wheel hub			Used in step 37
M8	Renew screw.	Tightening torque	16 Nm

cardiagn.com

Brake disc to rear wheel hub			Used in step 37
M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts			Used in step 37
M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Fuel delivery line to high pressure pump			Used in step 38
M14		Tightening torque	31 Nm

Fuel line to cylinder head cover			Used in step 38
6x18		Tightening torque	6,5 Nm

Ignition coil			Used in step 39
Screw		Tightening torque	8 Nm

Bulkhead upper part to bottom bulkhead			Used in step 41
		Tightening torque	3 Nm

Tension strut on bulkhead			Used in step 41
M10x25 screw		Tightening torque	56 Nm

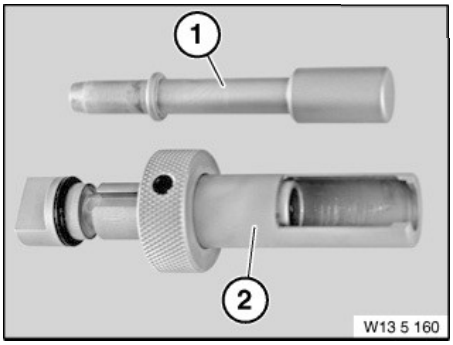
Tension strut to spring strut dome			Used in step 41
Screw	Renew screws.	Jointing torque Angle of rotation	56 Nm 90 °

Windscreen wiper arm			Used in step 43
Combination hexagon nut		Tightening torque	35 Nm

Clean air pipe to upper section of intake filter housing			Used in step 49
Clamp		Tightening torque	3 Nm

Overview of Special Tools

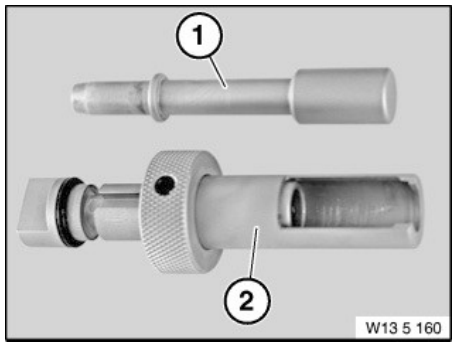
0 496 567 (13 5 161) Fastener



Common		Used in step 14
Usage	(Cap (2 piece)) For sealing the quick connectors Deletion, only available via tool set	
Included in the tool or work	0 496 565	
Storage location		
Replaced by		
In connection with		
SI-Number		

cardiagn.com

0 496 568 (13 5 162) Fastener

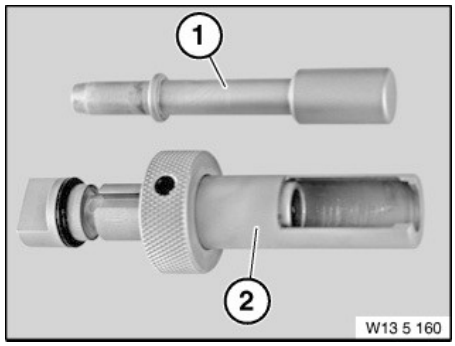


Common Used in step 14

Usage	(Cap (2 x)) To close off the fuel lines. Discontinued, can only be ordered using complete tool
Included in the tool or work	0 496 565
Storage location	
Replaced by	
In connection with	
SI-Number	

cardiagn.com

0 496 565 (13 5 160) Fastener



Common Used in step 14

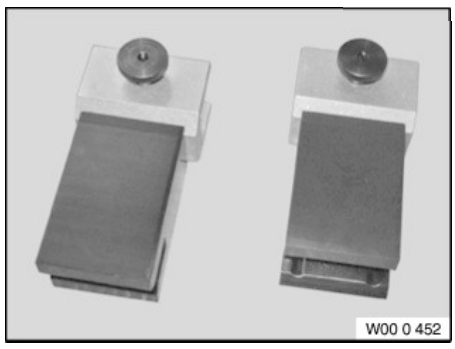
Usage	(Caps (2x)) To close off the fuel lines when removing and installing the engine.
Included in the tool or work	
Storage location	B26
Replaced by	
In connection with	
SI-Number	01 22 08 (498)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 496 567 (13 5 161)		**Fastener** (Cap (2 piece)) For sealing the quick connectors Deletion, only available via tool set	
2	0 496 568 (13 5 162)		**Fastener** (Cap (2 x)) To close off the fuel lines. Discontinued, can only be ordered using complete tool	

cardiagn.com

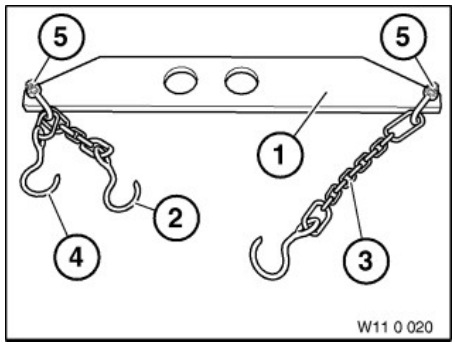
0 495 850 (00 0 452) Upholstery



Common Used in step 18

Usage	(Pads (2 x)) Series: E70 Replaced by 00 6 042
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 22 06 (307)

0 490 567 (11 0 020) Lifting gear



Common Used in step 1835

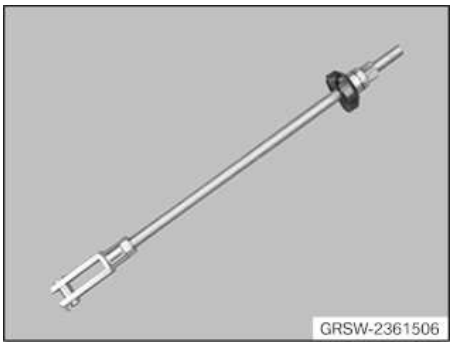
Usage	For removing and installing the engines. 08/2011 only available as a complete set. Delivered with TÜV inspection certificate and operating instructions. No delivery of separate parts.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 13 94 (888)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
5	0 490 572 (11 0 029)		**Shackle** (Shackle) 2 pieces As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	
1	0 490 568 (11 0 021)		**Lifting gear** (Cross member) As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	
2	0 490 569 (11 0 022)		**Chain** (Chain) As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	
3	0 490 570 (11 0 023)		**Chain** (Chain) Version: long As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	
4	0 490 571 (11 0 024)		**Chain** (Chain) Version: short As of 08/2011, only available as a complete set via 11 0 020 = 0490567. Delivered with TÜV inspection certificate and operating instructions.	

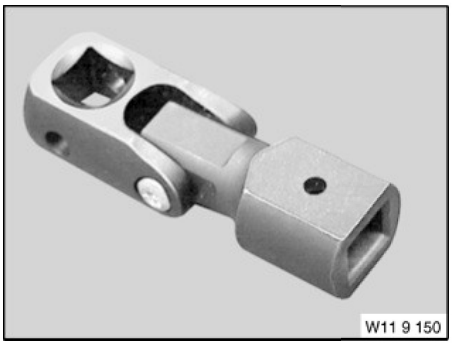
cardiagn.com

2 361 506 (00 6 103) Spindle



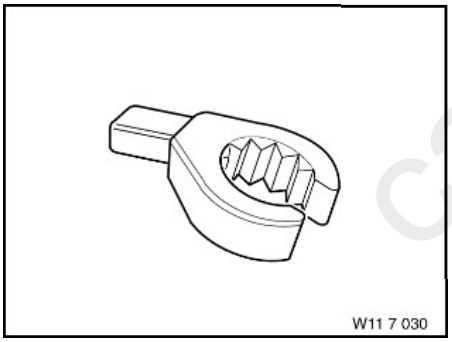
Common	Used in step 1835
Usage	Spindle (central spindle) for Traverse 00 6 100.
Included in the tool or work	0 496 852
Storage location	
Replaced by	
In connection with	
SI-Number	01 17 10 (659)

0 493 751 (11 9 150) Extension



Common	Used in step 33
Usage	(Socket wrench extension) For loosening and tightening the oxygen sensor
Included in the tool or work	
Storage location	C41
Replaced by	
In connection with	
SI-Number	01 15 00 (609)

0 491 075 (11 7 030) Socket wrench insert



Common	Used in step 33
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 37
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:

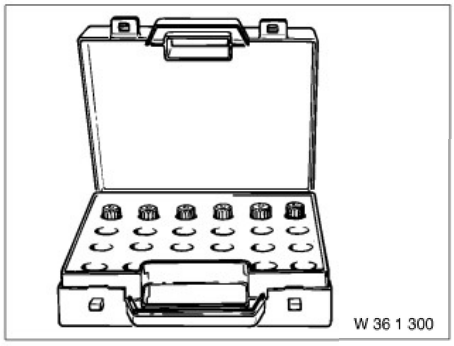
cardiagn.com

0 495 221 (36 1 323) Wheel stud



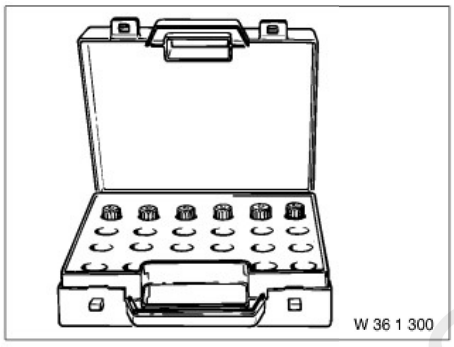
Common	Used in step 16
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



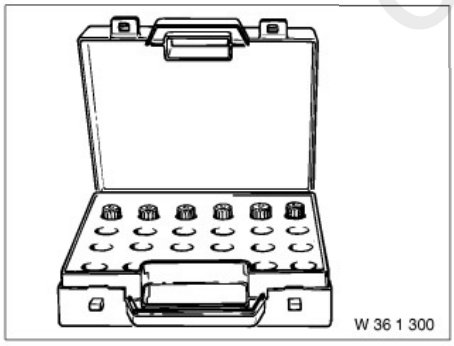
Common	Used in step 16
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 225 (36 1 327) Wheel stud



Common	Used in step 16
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 16
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	

carsiagn.com

0 495 227 (36 1 329) Wheel stud



Common	Used in step 16
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 16
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 16
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	

cardiagn.com

0 495 230 (36 1 333) Wheel stud



Common	Used in step 16
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

Distance from window pane edge to wiper blade	Used in step 43
Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

Links

General repair instructions	Used in step
11 00 ... Overview of consumables (Electronic Parts Catalogue)	3334

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	152
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	152
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152
61 20 900 Disconnecting and connecting battery earth lead	152

cardiagn.com

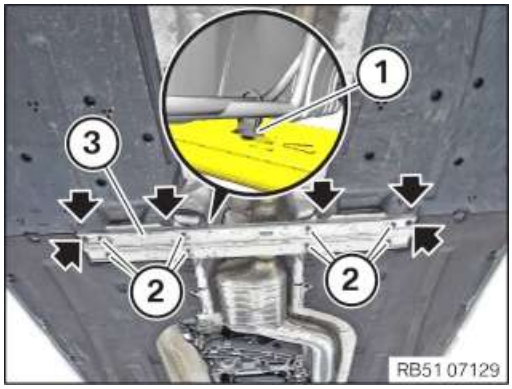
61 20 900 Disconnecting and connecting battery earth lead 152
61 20 900 Disconnecting and connecting battery earth lead 152
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads) 152
61 20 900 Disconnecting and connecting battery earth lead 152
61 20 900 Disconnecting and connecting battery earth lead 152
61 20 900 Disconnecting and connecting battery earth lead 152
61 20 900 Disconnecting and connecting battery earth lead 152
61 20 900 Disconnecting and connecting battery earth lead 152
61 20 900 Disconnecting and connecting battery earth lead 152
61 20 900 Disconnecting and connecting battery earth lead 152
61 35 ... Notes on ESD protection (Electro Static Discharge) 13

cardiagn.com

22 32 055 Removing and installing/replacing transmission bearing block

PRELIMINARY WORK

1 – Remove the connecting support from the tunnel



- Remove screws (arrows).
- **If installed:** Loosen clamp (1).
- Loosen screws (2).
- Guide out and remove connecting support (3) on the tunnel.

2 – Remove complete exhaust system

WARNING

Hot surfaces.

Risk of burning!

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

CAUTION

Component with heavy weight.

Danger of injury!

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

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

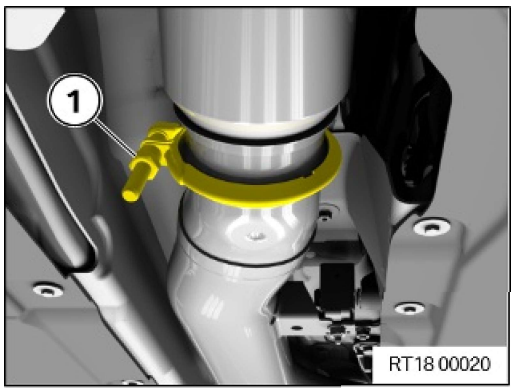
- Remove and install heavy components with the aid of another person/other persons.

cardiagn.com



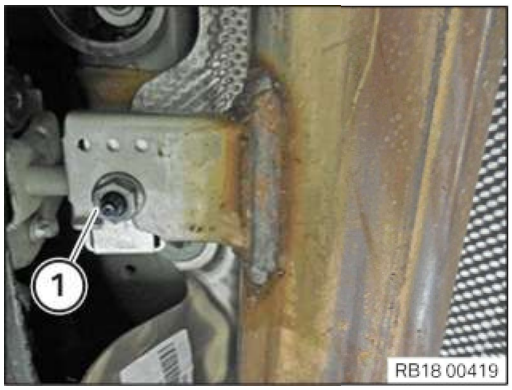
- **Equipment specification 1 (ribbon clamp)**

  Detach the ribbon clamp (1).

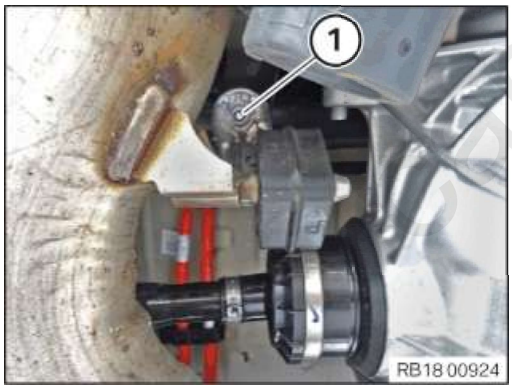


- **Equipment specification 2 (V-clips)**

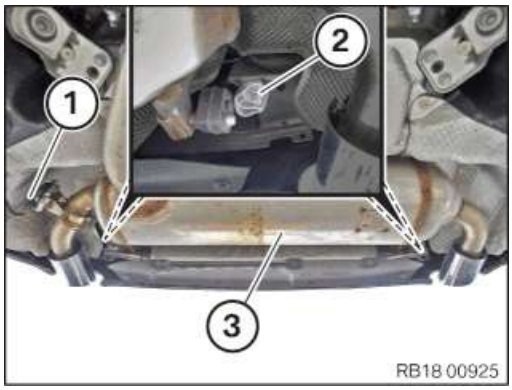
  Unfasten clamp (1).



- Loosen nut (1).



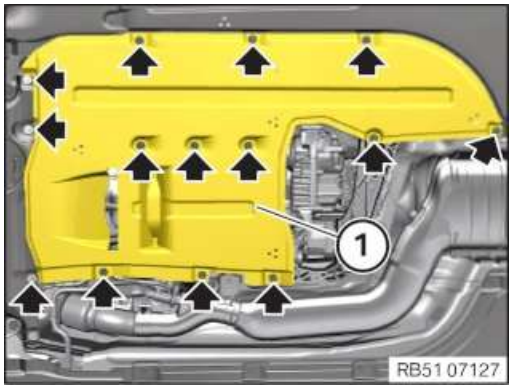
- Release nut (1) on the rear axle support.



- Unlock plug connection (1) and disconnect.
- Loosen nuts (2).
- Lower and remove the exhaust system (3) with the assistance of a second person.

3 – Remove rear underbody protection

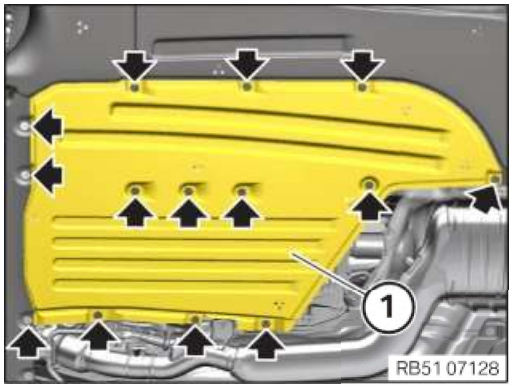
partdiagn.com



- **Version 1:**

  Remove screws (arrows).

  Feed out the rear underbody protection (1).

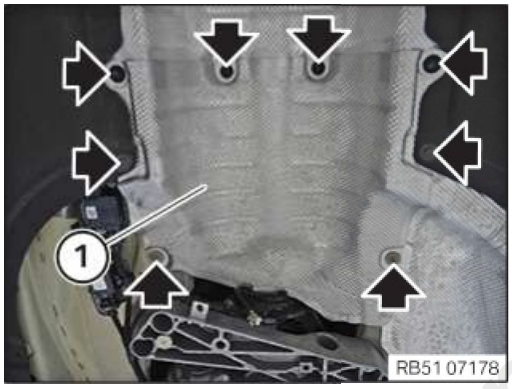


- **Version 2:**

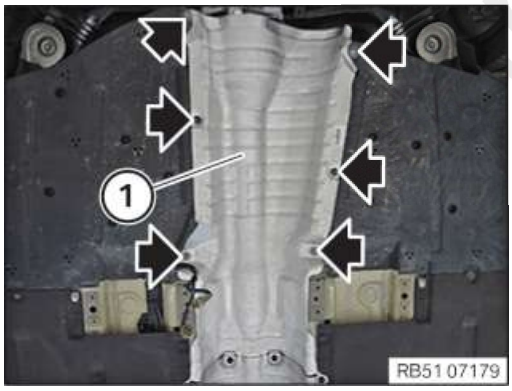
  Remove screws (arrows).

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

4 – Remove heat shields



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



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

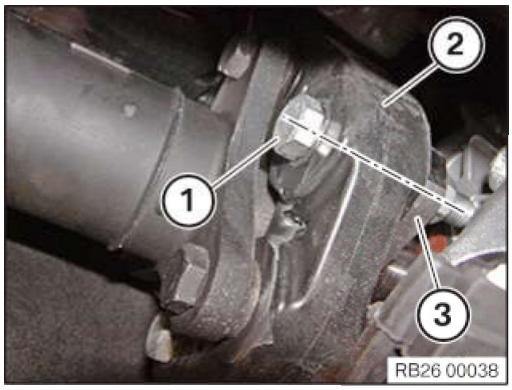
5 – Partially release propeller shaft

RISK OF DAMAGE

Damage to propeller shaft during removal.

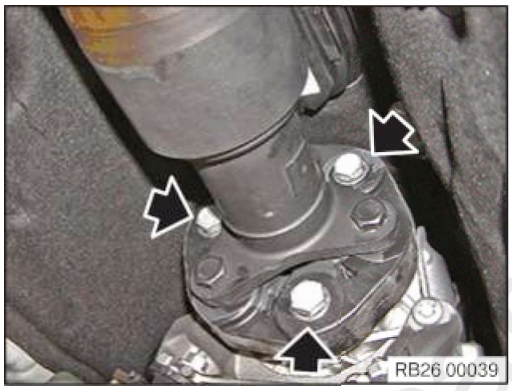
Non-observance of the removal guidelines for the propeller shaft on the rear axle differential may cause severe damage.

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

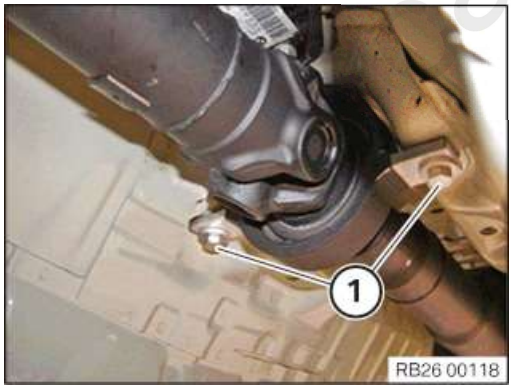


- Mark the installation position of the screw connection (1) of the flexible disc (2) and the three-hole flange (3).

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



- Remove screws (arrows).



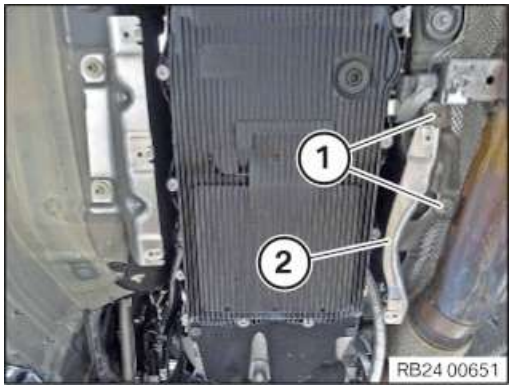
- Unscrew the bolts (1) on the centre mount and hold down the propeller shaft.

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

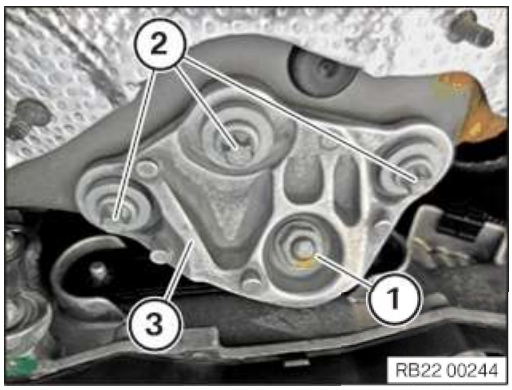
- Tie up propeller shaft to underbody.

6 – Remove transmission support bracket

carfdiagn.com

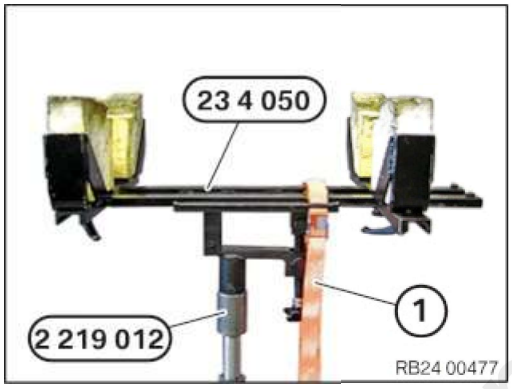


- Loosen nuts (1).
- Remove retaining plate (2).

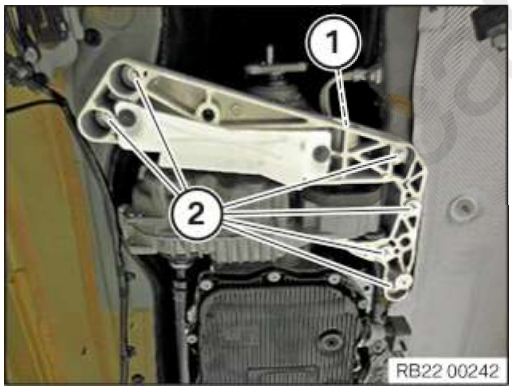


- Loosen nut (1).
- Loosen screws (2).
- Remove transmission support bracket (3).

7 – Remove transmission cross-member.



- Support the transmission using special tools 0 495 498 (23 4 050) and 2 219 012.
- Secure the transmission with the tensioning strap (1).

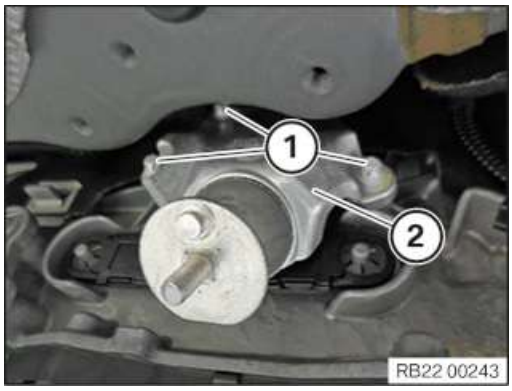


- Loosen screw (1).
- Loosen screws (2).
- Remove transmission cross-member.

carsdiagn.com

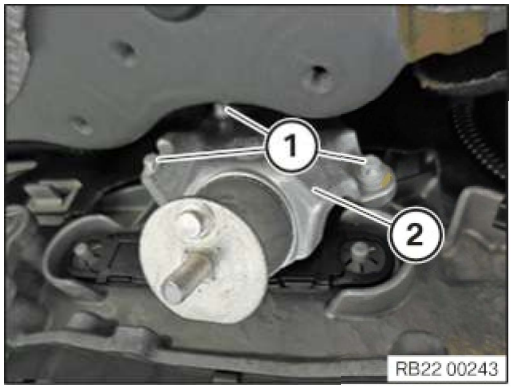
MAIN WORK

8 – Remove transmission mounting bracket (all-wheel drive vehicle)



- Loosen screws (1).
- Remove transmission mounting bracket (2) on the right transmission side.

9 – Install transmission mounting bracket (all-wheel drive vehicle)



- Remove transmission mounting bracket (2) on the right transmission side.
- Tighten the screws (1).

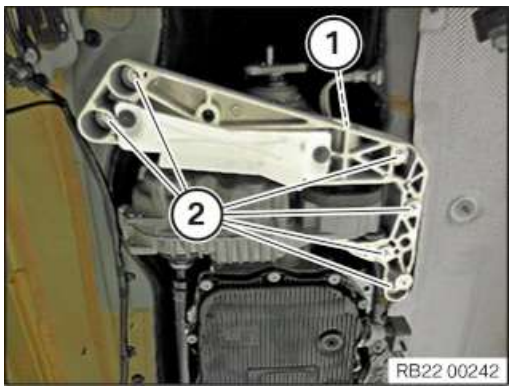
Transmission mounting bracket to transmission

M8		Tightening torque	19 Nm

cardiagn.com

POSTPROCESSES

10 – Install transmission cross member.



- Install transmission cross-member.
- Tighten down screw (1).

Transmission cross member to rubber mounts

M12	Renew screw.	Tightening torque	68 Nm

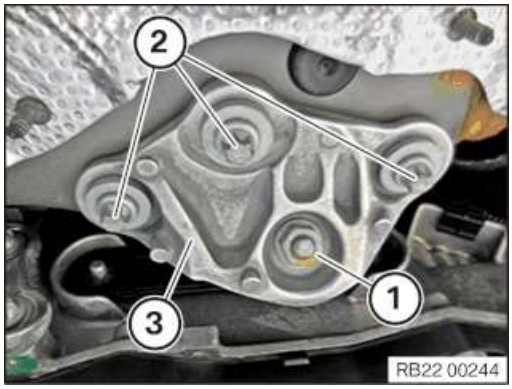
- Tighten down screws (2).

Transmission cross member to body

M8	Renew screws.	Tightening torque	19 Nm

- Remove the transmission jack.

11 – Installing the transmission bearing support



- Install transmission support bracket (3).
- Tighten the screws (2).

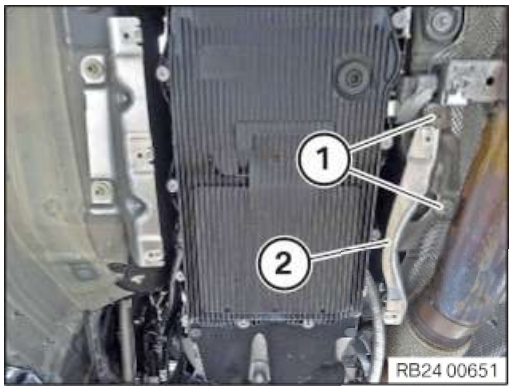
Transmission bearing support to body

M8	Renew screws.	Tightening torque	19 Nm

- Tighten nut (1).

Rubber mount to transmission bearing support

M8	Renew nut.	Tightening torque	19 Nm

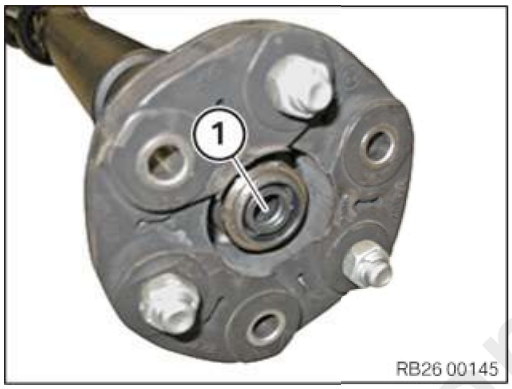


- Install the retaining plate (2).
- Tighten nuts (1).

Retaining plates for vehicle underbody cover

Sheet metal nut	Replace nuts.	Tightening torque	3 Nm

12 – Partially installing the propeller shaft



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

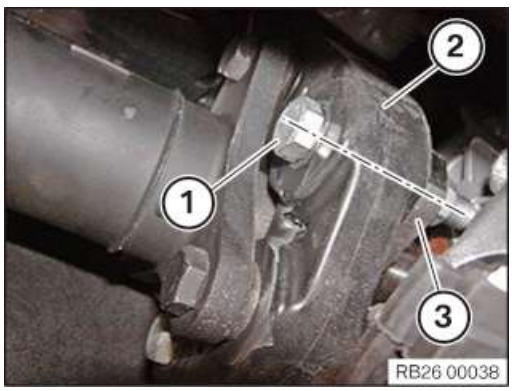


- Apply a thin coat of grease to the soft centring (1), if necessary.

  Do not grease the hard centring (2).

Expendable materials

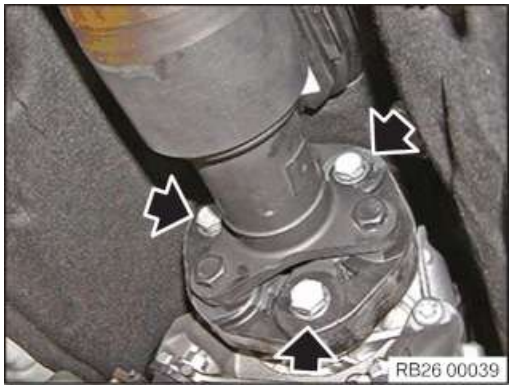
Lubricating grease Olistamoly 2 LN 584 LO	100 g, Tube	83 19 0 447 919



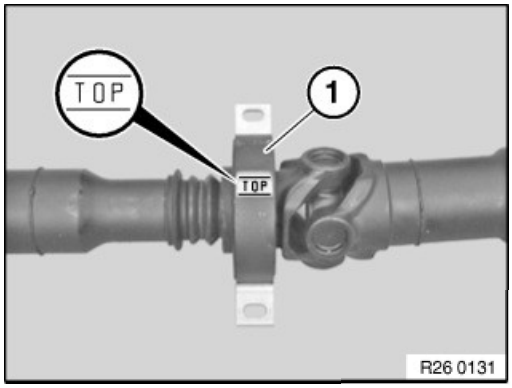
- Renew screws and the self-locking nuts.

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

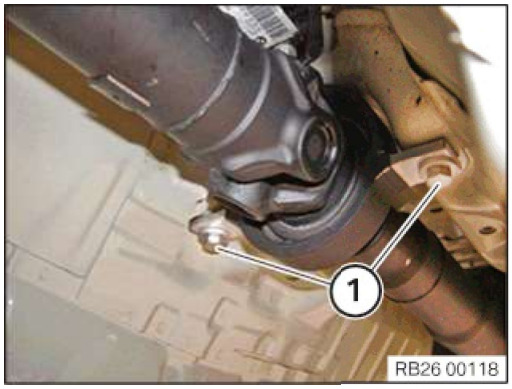
  This should prevent a humming noise from the drive train during driving.



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



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



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



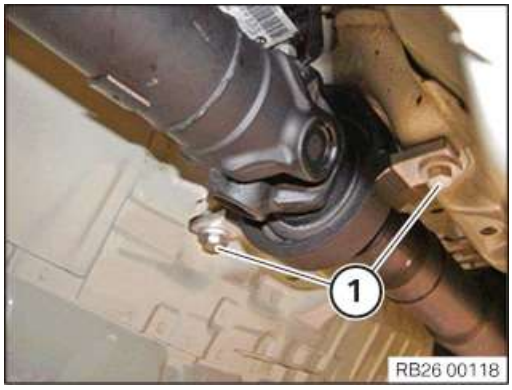
- Renew screws.

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

Front flexible disc to propeller shaft

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

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



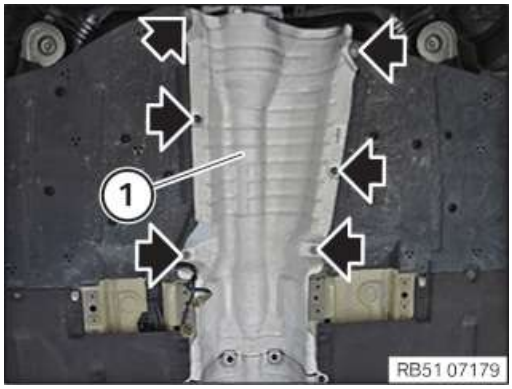
- Tighten the screws (1).

Centre mount to body

M8		Tightening torque	19 Nm

rdiagn.com

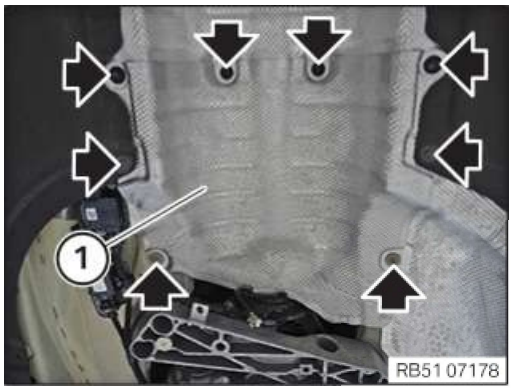
13 – Install the heat shields



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

Heat shield to vehicle underbody

Screws and nuts		Tightening torque	3 Nm

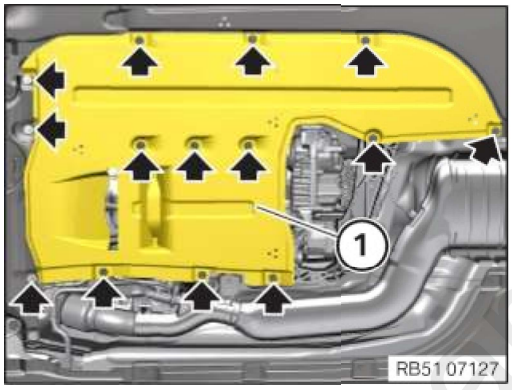


- Install heat shield (1).
- Tighten the nuts and bolts (arrows).

Heat shield to vehicle underbody

Screws and nuts		Tightening torque	3 Nm

14 – Installing underbody protection at rear



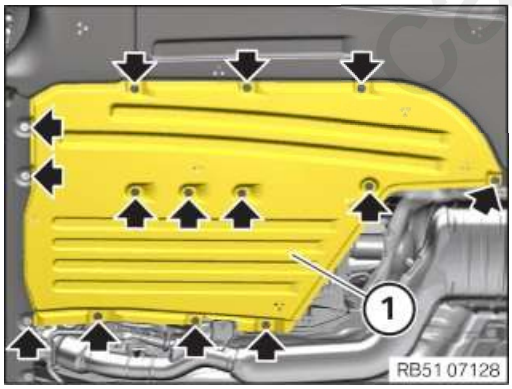
- **Version 1:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm



- **Version 2:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm

15 – Installing the complete exhaust system

CAUTION

Component with heavy weight.

Danger of injury!

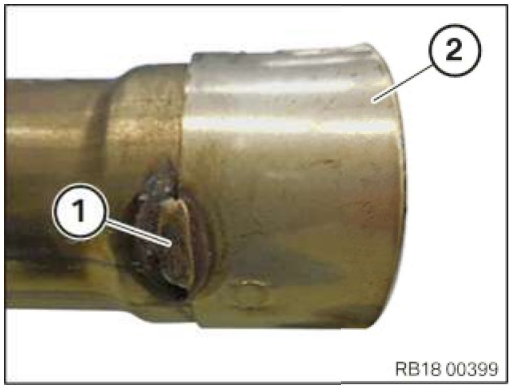
- Note component's centre of gravity.
- Support component using a jack.
- Secure component against falling off the jack.

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

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



CAUTION

Swarf resulting from sawing or grinding components.

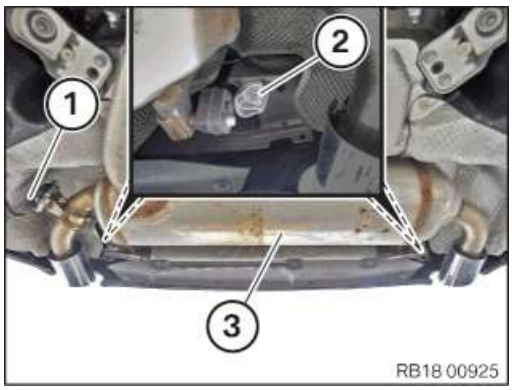
Danger of injury!

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

- **Equipment specification 1 (ribbon clamp)**

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

  Parts: Ribbon cable clamp



- Feed in and install the exhaust system (3) with a second person.
- Renew nuts (2).

  Parts: Nuts
- Tighten nuts (2).

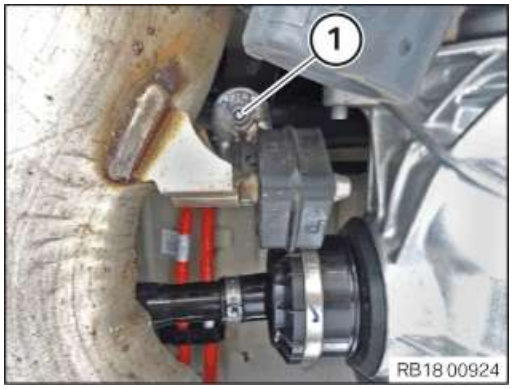
Rear silencer to body / bumper support

M8	Replace nuts.	Tightening torque	19 Nm

- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

cardiagn.com



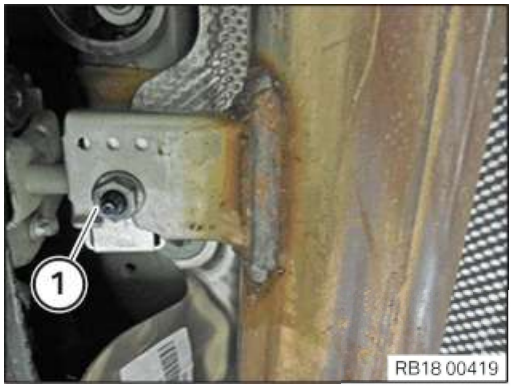
- Renew nut (1).

  Parts: Nut

- Tighten the bolt (1) on the rear axle support.

Exhaust system to rear axle carrier

Nut M8	Renew nut.	Tightening torque	19 Nm



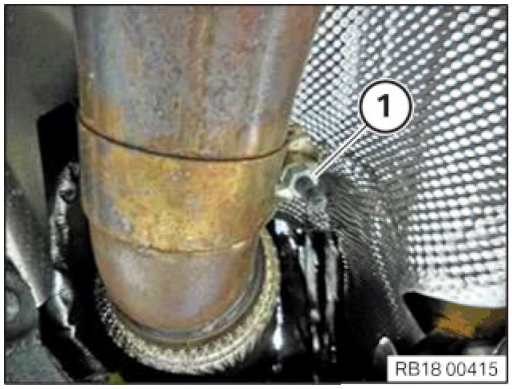
- Renew nut (1).

  Parts: Nut

- Tighten nut (1).

Front pipe / petrol particulate filter on transmission holder

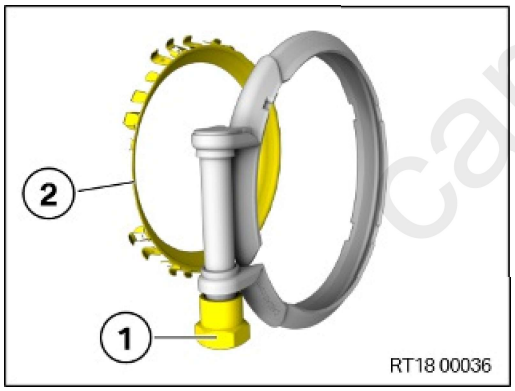
M8	Renew nut.	Tightening torque	19 Nm



- Tighten the ribbon clamp (1).

Exhaust system to catalytic converter

Ribbon cable clamp	Renew flat band clip.	Tightening torque	26 Nm

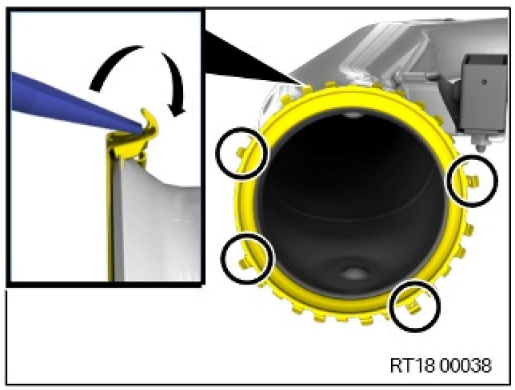


- **Equipment specification 2 (V-clips)**

  Renew V-band clamp.

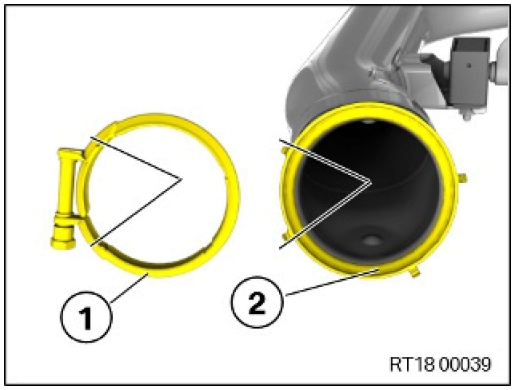
  Parts: V-band clamp

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

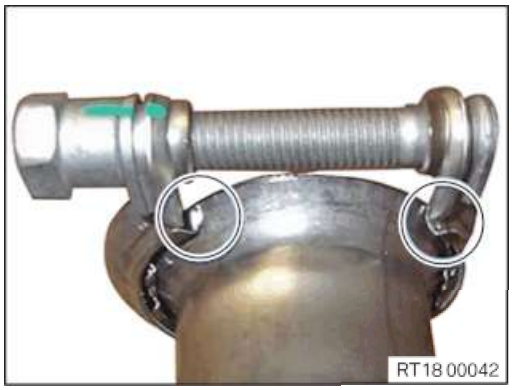


- Bend all sheet metal tabs over with a suitable tool, except those in the marked areas.

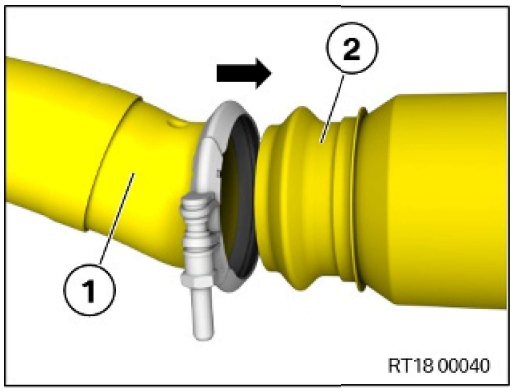
cardiagn.com



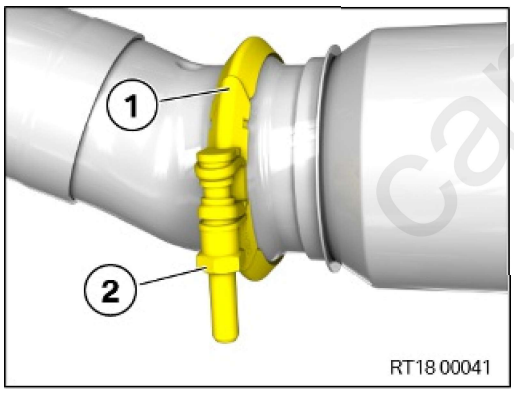
- Mount the V-clip (1) on the sealing ring (2).
- Make sure that the V-clip (1) is positioned correctly on the sealing ring (2).



- Ensure that the V-clip rests against the sheet metal tabs in the marked areas after mounting.



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



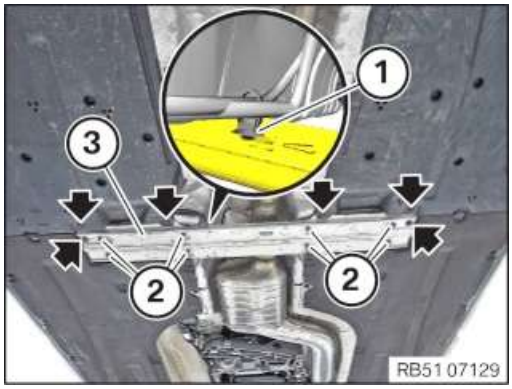
- Make sure that V-clip (1) is fitted correctly.
- Tighten down screw (2).

V-clip to catalytic converter

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

16 – Install the connecting supports on the tunnel

cardiagn.com



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

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

- Tighten screws (arrows).

Connecting support to tunnel

M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

- **If installed:** Secure clamps (1).

Additional Information

Overview of Tightening Torques

Transmission mounting bracket to transmission — Used in step 9

M8		Tightening torque	19 Nm

Transmission cross member to rubber mounts — Used in step 10

M12	Renew screw.	Tightening torque	68 Nm

Transmission cross member to body — Used in step 10

M8	Renew screws.	Tightening torque	19 Nm

Transmission bearing support to body — Used in step 11

M8	Renew screws.	Tightening torque	19 Nm

Rubber mount to transmission bearing support — Used in step 11

M8	Renew nut.	Tightening torque	19 Nm

Retaining plates for vehicle underbody cover — Used in step 11

Sheet metal nut	Replace nuts.	Tightening torque	3 Nm

Front flexible disc to propeller shaft — Used in step 12

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

Centre mount to body — Used in step 12

M8		Tightening torque	19 Nm

Heat shield to vehicle underbody — Used in step 13

Screws and nuts		Tightening torque	3 Nm

cardiagn.com

Underbody protection Used in step 14

Hexagon screw		Tightening torque	3 Nm

Rear silencer to body / bumper support Used in step 15

M8	Replace nuts.	Tightening torque	19 Nm

Exhaust system to rear axle carrier Used in step 15

Nut M8	Renew nut.	Tightening torque	19 Nm

Front pipe / petrol particulate filter on transmission holder Used in step 15

M8	Renew nut.	Tightening torque	19 Nm

Exhaust system to catalytic converter Used in step 15

Ribbon cable clamp	Renew flat band clip.	Tightening torque	26 Nm

V-clip to catalytic converter Used in step 15

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

Connecting support to tunnel Used in step 16

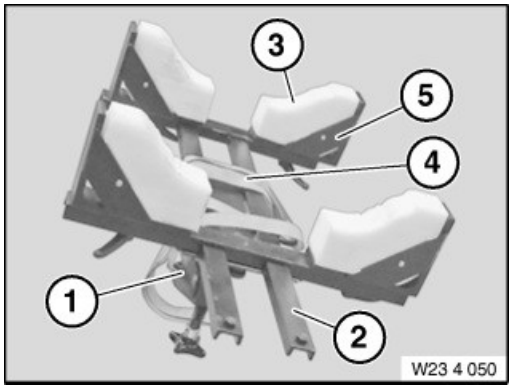
M8x25 screw		Tightening torque	20 Nm
Screw		Tightening torque	3 Nm

Overview of Special Tools

0 495 498 (23 4 050) Support

Used in step 7

cardiagn.com



Common

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

Consisting of

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

cardiagn.com

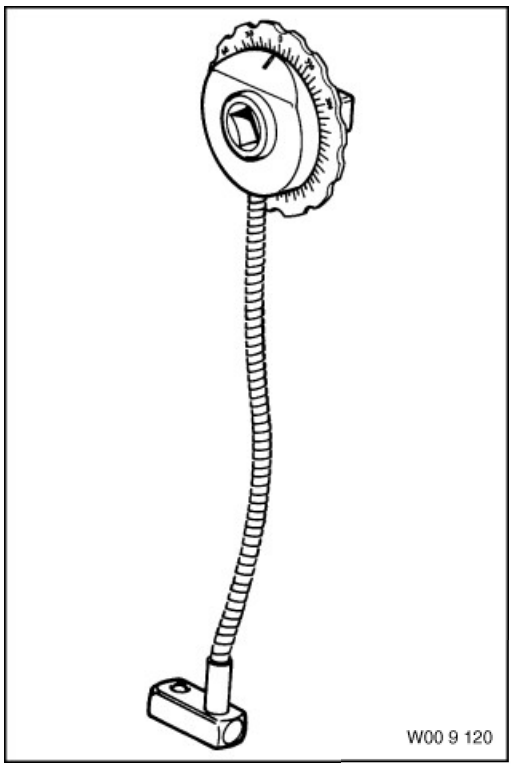
2 219 012 Hydraulic lifter



Common Used in step 7

Usage	For raising and lowering various vehicle components.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

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



Common Used in step 12

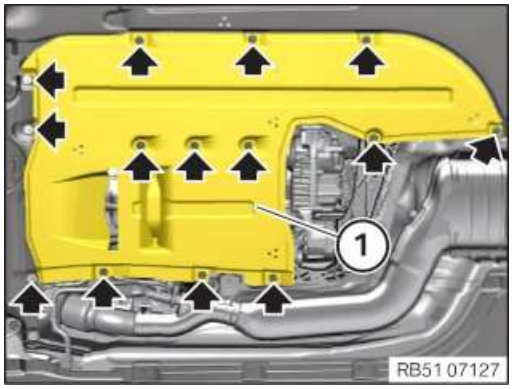
Usage	For torsion angle adjustment of cylinder head bolts (all engines) And reinforcement plate front axle support E46
Included in the tool or work	
Storage location	A4
Replaced by	
In connection with	
SI-Number	

cardiagn.com

22 32 070 Removing and installing/replacing transmission support bracket

PRELIMINARY WORK

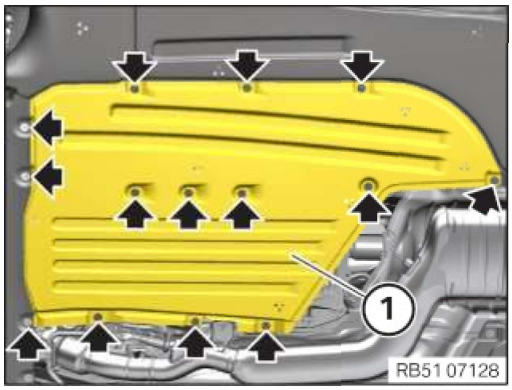
1 – Remove rear underbody protection



- **Version 1:**

  Remove screws (arrows).

  Feed out the rear underbody protection (1).



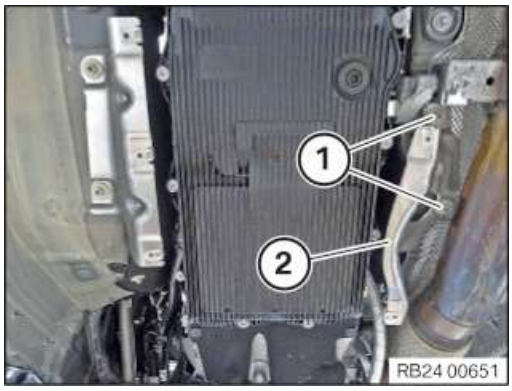
- **Version 2:**

  Remove screws (arrows).

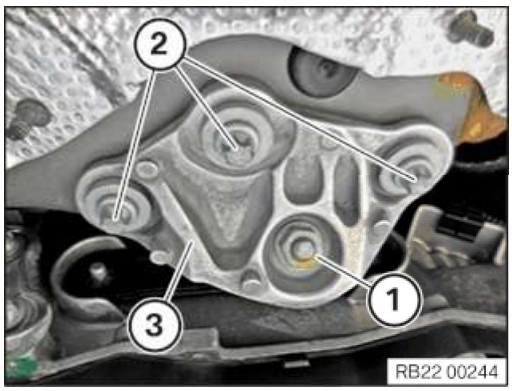
  Guide out rear underbody protection (1) and remove it.

cardiagn.com

2 – Remove transmission support bracket

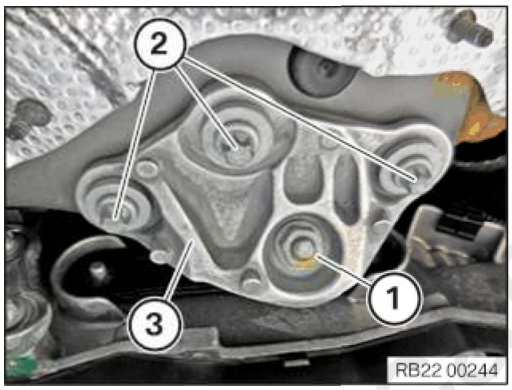


- Loosen nuts (1).
- Remove retaining plate (2).



- Loosen nut (1).
- Loosen screws (2).
- Remove transmission support bracket (3).

3 – Installing the transmission bearing support



- Install transmission support bracket (3).
- Tighten the screws (2).

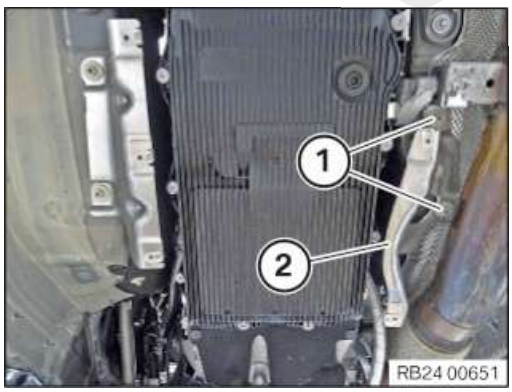
Transmission bearing support to body

M8	Renew screws.	Tightening torque	19 Nm

- Tighten nut (1).

Rubber mount to transmission bearing support

M8	Renew nut.	Tightening torque	19 Nm



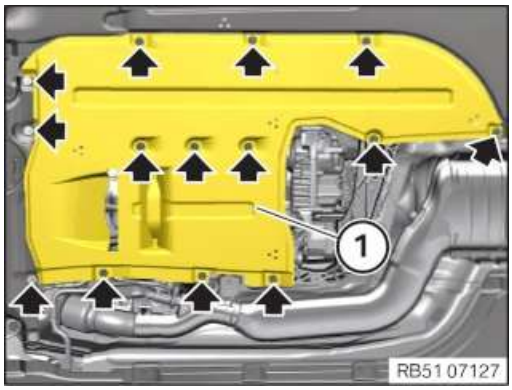
- Install the retaining plate (2).
- Tighten nuts (1).

Retaining plates for vehicle underbody cover

Sheet metal nut	Replace nuts.	Tightening torque	3 Nm

carldiag.com

4 – Installing underbody protection at rear



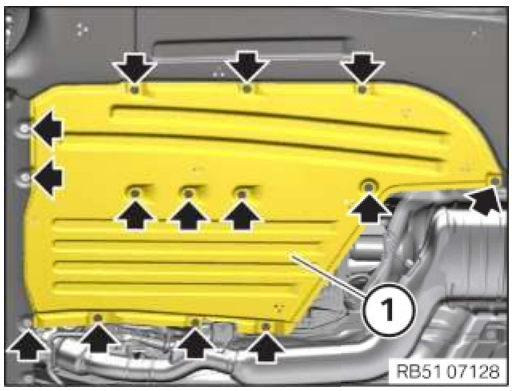
- **Version 1:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm



- **Version 2:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm

Additional Information

Overview of Tightening Torques

Transmission bearing support to body — Used in step 3

M8	Renew screws.	Tightening torque	19 Nm

Rubber mount to transmission bearing support — Used in step 3

M8	Renew nut.	Tightening torque	19 Nm

Retaining plates for vehicle underbody cover — Used in step 3

Sheet metal nut	Replace nuts.	Tightening torque	3 Nm

Underbody protection — Used in step 4

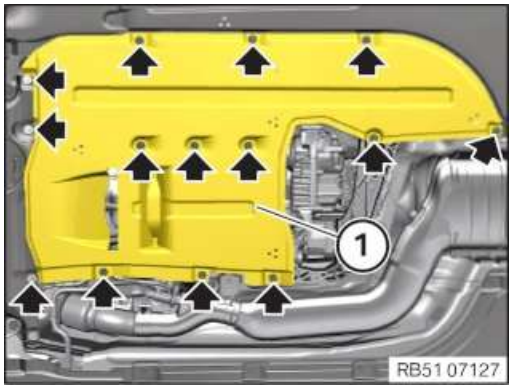
Hexagon screw		Tightening torque	3 Nm

cardiagn.com

22 32 050 Replacing cross member for transmission mounting

PRELIMINARY WORK

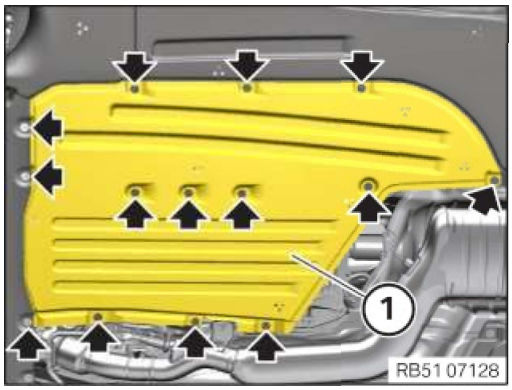
1 – Remove rear underbody protection



- **Version 1:**

  Remove screws (arrows).

  Feed out the rear underbody protection (1).



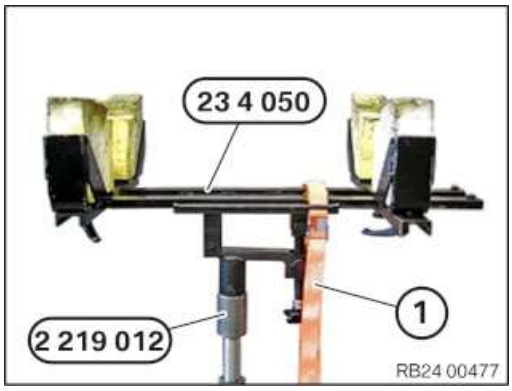
- **Version 2:**

  Remove screws (arrows).

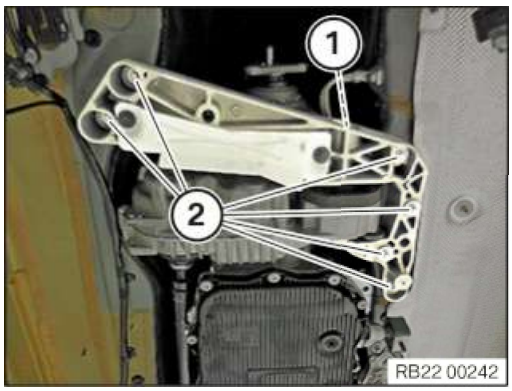
  Guide out rear underbody protection (1) and remove it.

cardiagn.com

2 – Remove transmission cross-member.

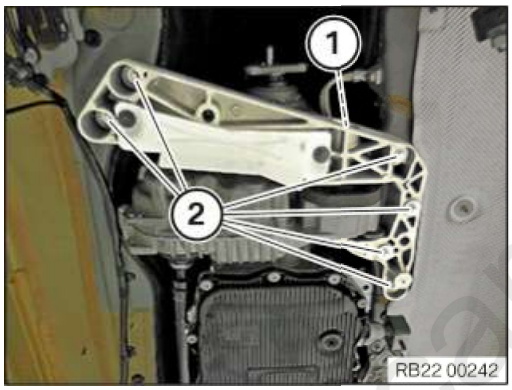


- Support the transmission using special tools 0 495 498 (23 4 050) and 2 219 012.
- Secure the transmission with the tensioning strap (1).



- Loosen screw (1).
- Loosen screws (2).
- Remove transmission cross-member.

3 – Install transmission cross member.



- Install transmission cross-member.
- Tighten down screw (1).

Transmission cross member to rubber mounts

M12	Renew screw.	Tightening torque	68 Nm

- Tighten down screws (2).

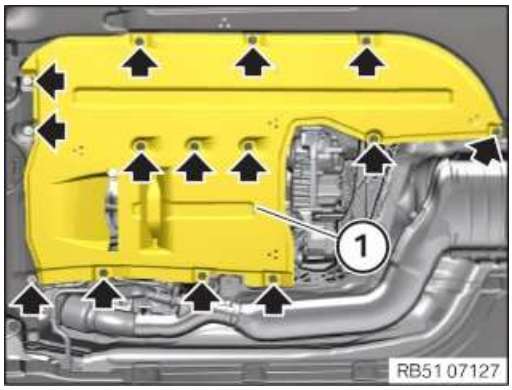
Transmission cross member to body

M8	Renew screws.	Tightening torque	19 Nm

- Remove the transmission jack.

cardiag.com

4 – Installing underbody protection at rear



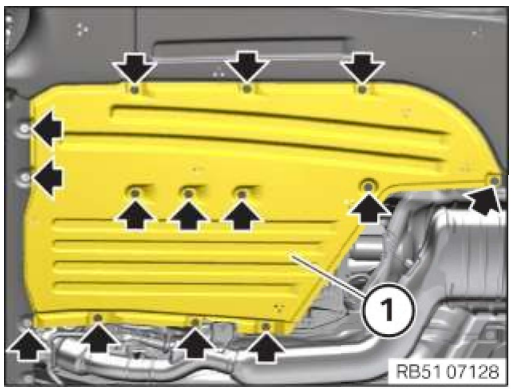
- **Version 1:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm



- **Version 2:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm

Additional Information

Overview of Tightening Torques

Transmission cross member to rubber mounts — Used in step 3

M12	Renew screw.	Tightening torque	68 Nm

Transmission cross member to body — Used in step 3

M8	Renew screws.	Tightening torque	19 Nm

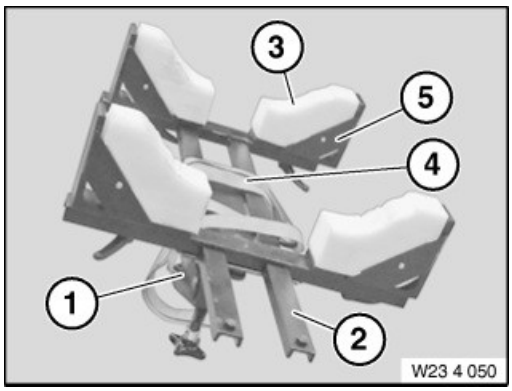
Underbody protection — Used in step 4

Hexagon screw		Tightening torque	3 Nm

Overview of Special Tools

cardiagn.com

0 495 498 (23 4 050) Support



Common Used in step 2

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

Consisting of

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

cardiagn.com

2 219 012 Hydraulic lifter



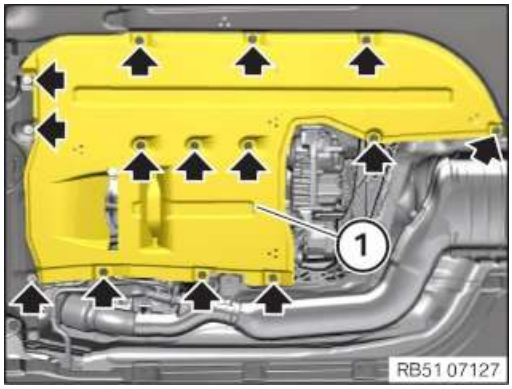
Common	Used in step 2
Usage	For raising and lowering various vehicle components.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

cardiagn.com

22 32 001 Replacing rubber mount for transmission mounting

PRELIMINARY WORK

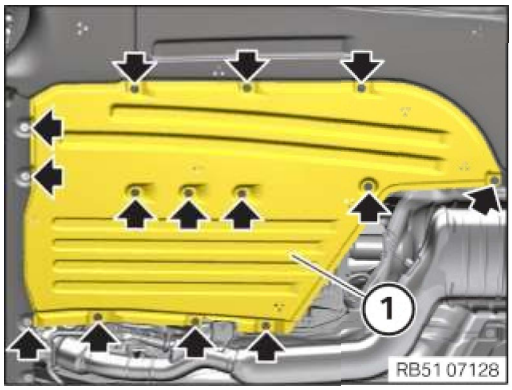
1 – Remove rear underbody protection



- **Version 1:**

  Remove screws (arrows).

  Feed out the rear underbody protection (1).

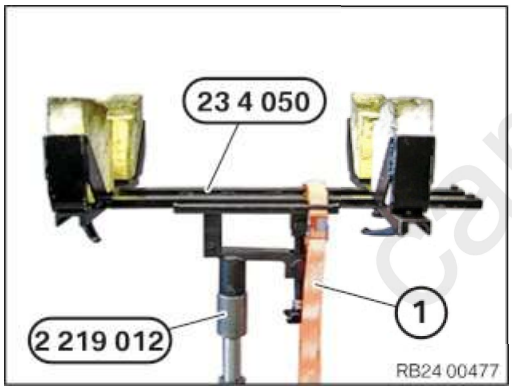


- **Version 2:**

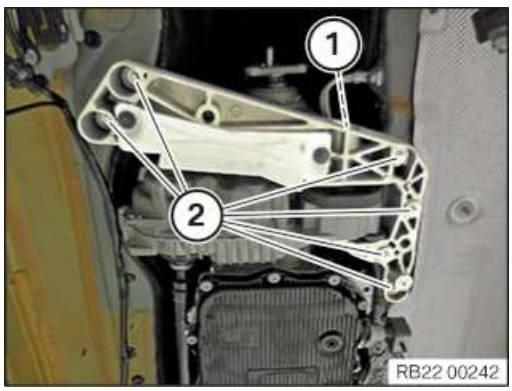
  Remove screws (arrows).

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

2 – Remove transmission cross-member.



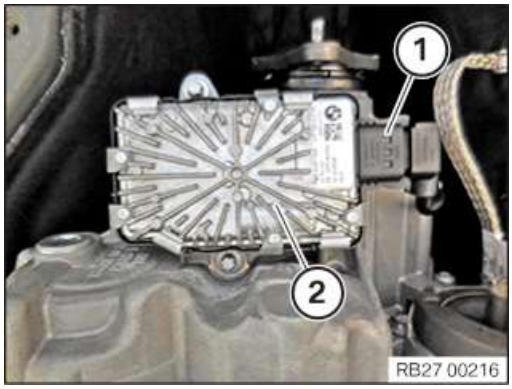
- Support the transmission using special tools 0 495 498 (23 4 050) and 2 219 012.
- Secure the transmission with the tensioning strap (1).



- Loosen screw (1).
- Loosen screws (2).
- Remove transmission cross-member.

3 – Disconnecting the connector from the VTG control unit

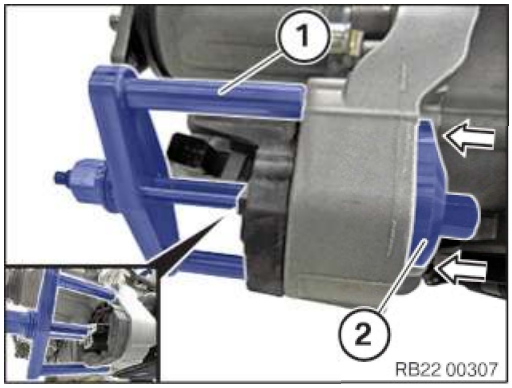
carmagn.com



- Disconnect connector (1) from the VTG control unit for the longitudinal torque distribution (2).

MAIN WORK

4 – Removing rubber mount for the transmission bearing (all-wheel drive vehicle)

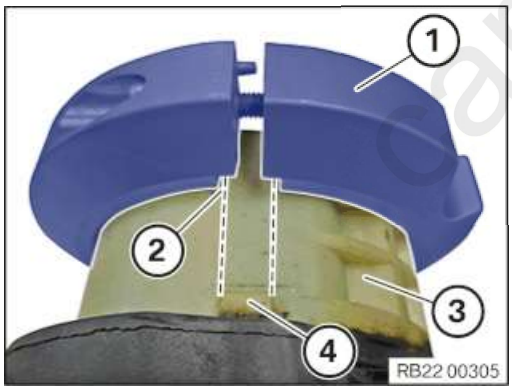


- Use special tools 2 445 327 and 0 496 552 (33 3 010).
- Fit bridge (1) and align pressure disc (2) in the centre with the retaining lugs towards the top on the rubber mount.
- Install bridge (1) with pressure disc (2) and press out the rubber mount in the direction of the arrow.

5 – Installing the rubber mount for the transmission bearing (all-wheel drive vehicle)

TECHNICAL INFORMATION

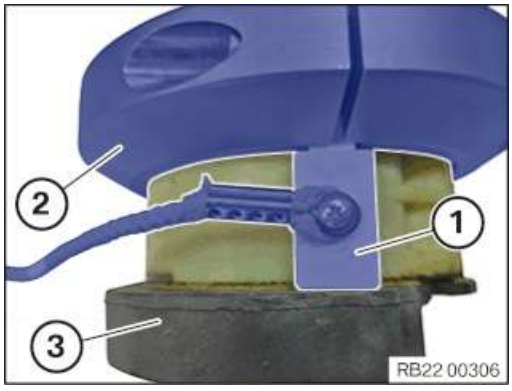
Rubber mount variants 1 and 2 may be installed.



- **Version 1:**

  Use special tools 2 445 327 and 0 496 552 (33 3 010).

  Align pliers (1) centrally on the guide lug (4) of the rubber mount (3) and the recess (2).

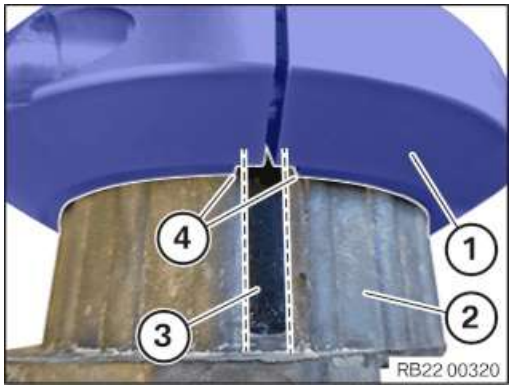


- **Version 1:**

  Install the shaped element (1) between the pliers (2) and the rubber mount (3).

  Screw pliers (2) tightly on rubber mount (3) remove shaped element (1).

cardiagn.com

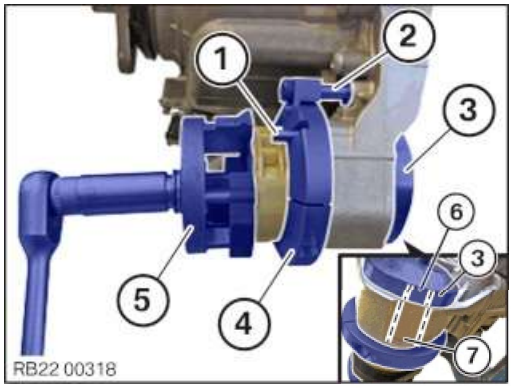


- **Version 2:**

  Use special tools 2 445 327 and 0 496 552 (33 3 010).

  Align pliers (1) centrally on the mark (3) on the rubber mount (2) and the recess (4) on the pliers (1).

  Screw pliers (1) tightly on rubber mount (2).

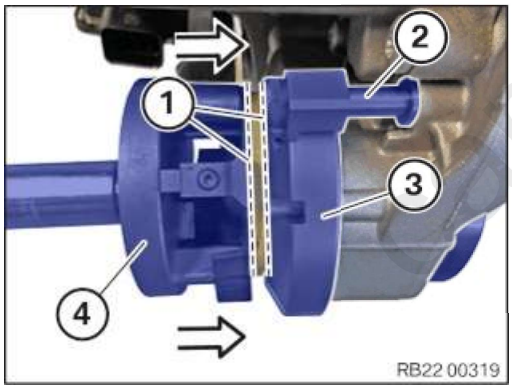


- Depending on the rubber mount, determine and use the appropriate pressure disc (3).

  Pressure discs are available in two versions A and B.

Rubber mount	Thrust washer
A	A
F	A
G	A
H	B
M	B
Y	B

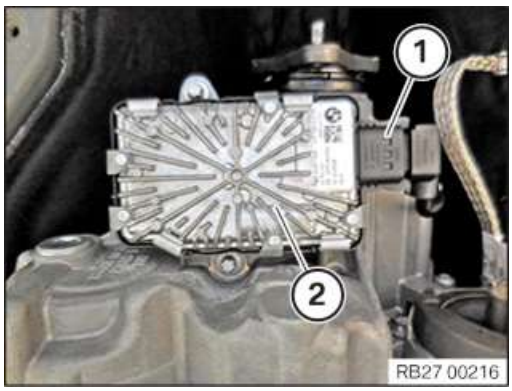
- Position pliers (4) over the pin (1).
- Using the screw connection (2) fix the pliers (4) to the rubber mount on the transfer box (VTG).
- Remove the pin (1).
- Align the surface (6) of the pressure disc (3) centrally to the surface (7) on the transfer box (VTG).



- Pull in the rubber mount to a distance (1) of about 10 mm.
- Release the screw connection of the pliers (3) along with the screw connection (2).
- Remove pliers (3).
- Pull in the rubber mount with the thrust piece (4) up to the limit position on the transfer box (VTG).
- Remove special tools 2 445 327 and 0 496 552 (33 3 010).

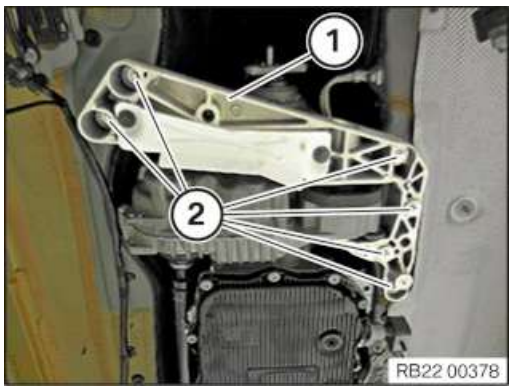
POSTPROCESSES

6 – Connecting the connector with the VTG control unit



- Connect the connector (1) to the VTG control unit for the longitudinal torque distribution (2).

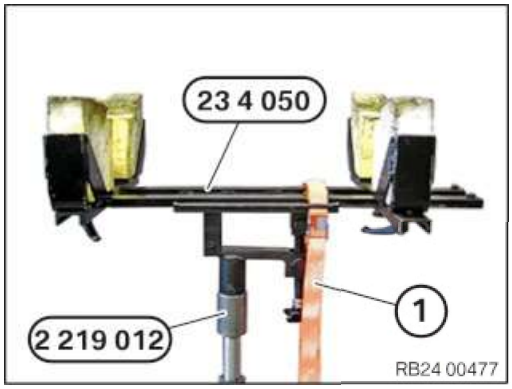
7 – Install transmission cross member.



- Install the transmission cross member (1).
- Tighten the screws (2).

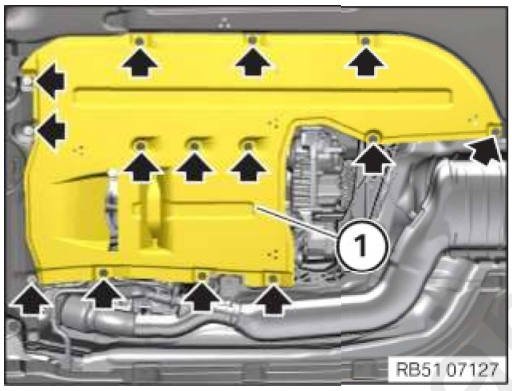
Transmission cross member to body

M8	Renew screws.	Tightening torque	19 Nm



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

8 – Installing underbody protection at rear



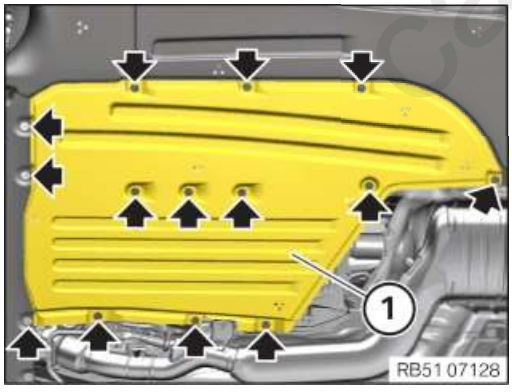
- **Version 1:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm



- **Version 2:**

  Insert and install the rear underbody protection (1).

  Tighten screws (arrows).

Underbody protection

Hexagon screw		Tightening torque	3 Nm

Additional Information

Overview of Tightening Torques

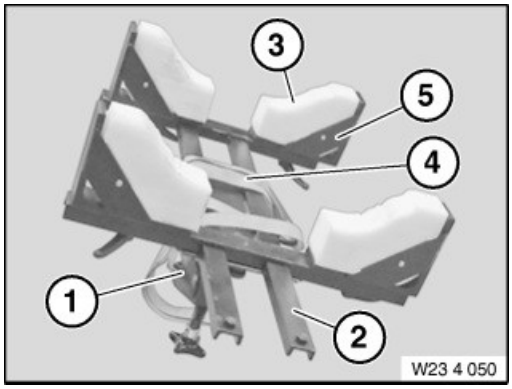
Transmission cross member to body Used in step 7

M8	Renew screws.	Tightening torque	19 Nm

Hexagon screw		Tightening torque	3 Nm

Overview of Special Tools

0 495 498 (23 4 050) Support



Common Used in step 27

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

Consisting of

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

cardiagn.com

2 219 012 Hydraulic lifter



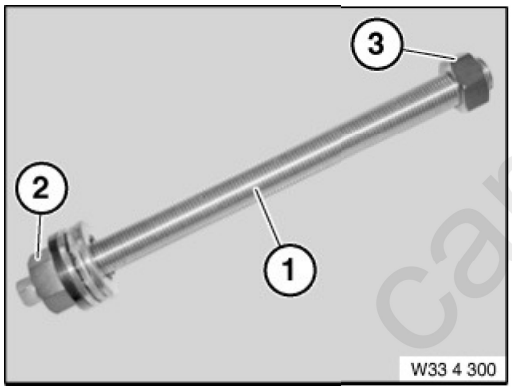
Common	Used in step 27
Usage	For raising and lowering various vehicle components.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 05 90 (207)

2 445 327 Removal and installation kit



Common	Used in step 45
Usage	For the removal/installation of the transmission cross member bearing in the transfer box. Contour-graphic silhouette foil is included in the delivery specification. Further information on the contour-graphic silhouette foil is included in service information 00 22 13 (969).
Included in the tool or work	
Storage location	A77
Replaced by	
In connection with	0496552
SI-Number	01 05 16 (380)

0 496 552 (33 3 010) Spindle



Common	Used in step 45
Usage	(spindle TR12 with nut) For installing and removing rubber mounts, see "In conjunction with".
Included in the tool or work	
Storage location	C9
Replaced by	
In connection with	
SI-Number	01 16 08 (476)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 496 553 (33 3 011)		**Spindle** (spindle TR12)	
2	0 496 554 (33 3 012)		**Nut** (nut TR12 with thrust bearing)	
3	0 496 555 (33 3 013)		**Nut** (nut M12x1.5 (high wall))	

cardiagn.com