64 00 ... Information on using cleaning agent/paints (personal protection equipment)



Warning!

Use of cleaning agents/paints not compliant with instructions can cause serious injuries or burns!

Handling cleaning agents/paints can trigger allergic skin and respiratory reactions!



Important!

Observe following instructions:

- Store cleaning agents/paints only in a secure cabinet.
- Keep cleaning agents/paints away from naked flames and other sources of ignition.
- Protect cleaning agents/paints from high temperatures and direct sunlight.
- Always keep an eye douche on hand, change the water regularly (once a month).



Important!

Observe following instructions before use:

- Manufacturer's instructions (on container/packaging)
- Hazard warnings (on container/packaging)
- Manufacturer's instructions on package insert
- Material safety data sheet of manufacturer
- Product information in EPC
- National market regulations



Important!

Observe following instructions during use:

- Do not eat, drink or smoke while working with these products.
- Avoid direct contact with skin and eyes.
- Wear personal protective clothing/equipment.
- Ensure that all enclosed areas are well ventilated or extract fumes directly.
- Immediately change working clothes soiled with cleaning agent/paint.
- After finishing work, wash your hands and apply protective skin cream.



Important!

Follow hazard warnings and wear personal protection equipment!

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First Aid:

- If product comes in contact with eyes, immediately flush with running water for about 10 - 15 minutes. Seek the advice of eye specialist.
- In the event of skin contact and where applicable an allergic skin reaction, clean the affected areas immediately with soap and water and then apply silicone-free skin cream. Seek advice of physician.
- If an adhesive product is swallowed, rinse mouth/parts of mouth thoroughly with running water. Drink 1-2 glasses of water. Do not induce vomiting. Consult a doctor.
- After inhaling vapours ensure ample supply of fresh air. Keep calm, keep respiratory tracks clear and call doctor.



Recycling:

Dispose of cleaning agents/paints in a professional manner!

Observe national/country-specific disposal regulations.

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64 00 ... Overview of A/C service station

The following table shows an overview of the currently offered A/C service station depending on the refrigerant.*Note:*

> The different refrigerant connections for C2H2F4 and R1234yf play no role during flushing, as the A/C service station is connected with the refrigerant circuit of the vehicle via the refrigerant line from the air conditioning compressor.

Description	Order number	Refrigerant		Flushing of Refrigerant circuit		Accessories for flushing
		R134a	R1234yf	Yes	No	Order number
Beissbarth 4100a	81 34 2 286 739	x		x		81 34 2 286 908
760R	81 34 2 289 569	x		x		81 34 2 289 571
WAECO AirCon Service Center	81 34 2 147 235	x		x		81 34 2 286 909
WAECO 2500 Low Emission	81 34 2 286 807	x		x		81 34 2 286 909
TEXA 770S	81 34 2 286 318		x		x	
BEISSBARTH 5100yf	81 34 2 286 325		x		x	
WAECO BMW 5000 Low Emission	81 34 2 286 324		x		x	

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64 00 ... Overview of refrigerant oil to be filled

The following table shows an overview of which refrigerant oil may be added to which vehicle.*Note:*

The refrigerant oil to be filled can be found on the type plate on current vehicles.

Depending on the version and country, it may happen that the following table specifies a different refrigerant oil than the factory-filled refrigerant oil. This is permissible in certain cases. Observe notes on the refrigerant and refrigerant oil.

Model series		R134a	R1234yf	ND-8	Sanden SP-A2
E	All vehicles with combustion engines	x		x	
	E72 Hybrid	x		x	
F (BMW and MINI)	All vehicles with combustion engines	x		x	
	All vehicles with combustion engines		x		x
	Hybrid	x		x	
	Hybrid		x	x	
	PHEV	x			x
	PHEV		x		x
G	All vehicles with combustion engines	x			x
	All vehicles with combustion engines		x		x
	PHEV	x			x
	PHEV		x		x
I	All	x			x
	All		x		x
R (MINI)	All vehicles with combustion engines	x		x	
	All vehicles with combustion engines		x		x
RR	RR1, RR2, RR3 before model facelift	x		x	
	RR4 with optional rear air conditioning	x		x	
	All other vehicles	x			x
	All other vehicles		x		x

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00 Safety information for working on vehicles with automatic engine start-stop function (MSA)

Warning!

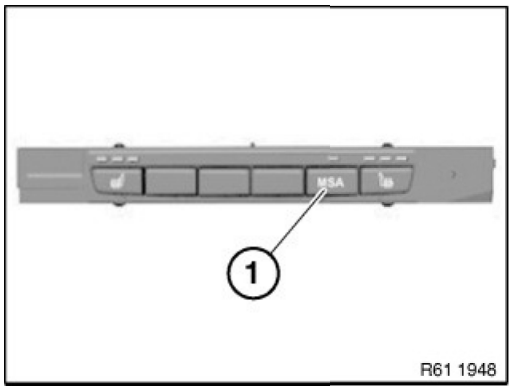
If the engine hood/bonnet contact is pulled upwards (workshop mode), the information "switch closed" is output. The automatic engine start-stop function is active.

An automatic engine start is possible.

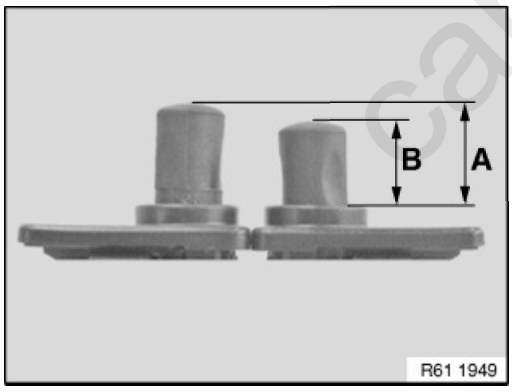
Observe safety precautions when working on MSA vehicles.

Before carrying out practical work on the engine, always ensure that the MSA functionality is deactivated so as to prevent automatic engine starting while work is being carried out in the engine compartment.

MSA function is deactivated by:



- Deactivate MSA by means of button (1) in passenger compartment
- Open seat belt buckle and driver's door



- Open engine bonnet/hood and ensure that engine hood/bonnet contact is not in workshop mode
  - Workshop mode

    A = 10 mm
  - Basic setting (engine hood/bonnet open)

    B = 7 mm

  To make sure that the engine hood/bonnet contact is at the basic setting, if necessary press the hood/bonnet contact up to the limit position before starting work and slowly release.

When working with diagnosis tools:

- Observe instructions in diagnosis tool

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Note:
For further information on automatic engine start-stop function (MSA):

- Refer to the Service Information (bulletin) (for manual transmissions) Service Information (bulletin) 61 01 07 335
- Refer to the Service Information (bulletin) (for automatic transmissions or twin-clutch gearboxes) Service Information (bulletin) 61 01 10 629

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64 11 395 Removing and installing rear passenger compartment control panel

PRELIMINARY WORK

1 – Removing the rear centre console trim

RISK OF DAMAGE

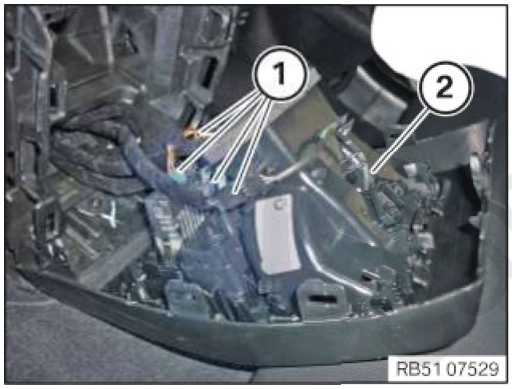
Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



- Release centre console trim (1) backwards from the latch mechanisms at the side and pull it a little way towards the rear.

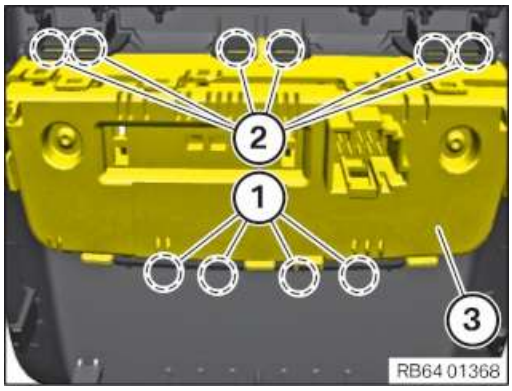


- Unlock and disconnect plug connections (1).
- Remove the centre console trim (2).

bmwfdiagn.com

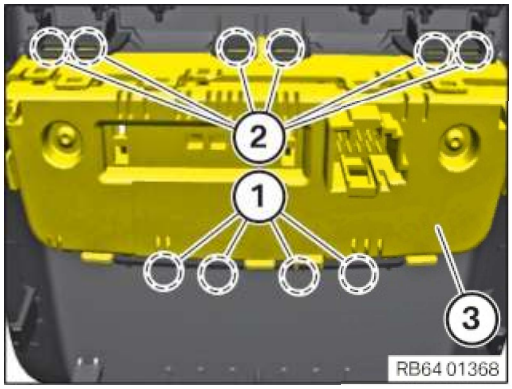
MAIN WORK

2 – Removing air conditioning control panel for the rear passenger compartment



- Detach air conditioning control panel first at the latch mechanisms (1) and then at the latch mechanisms (2).
- Remove air conditioning control panel (3) from the decorative strip.

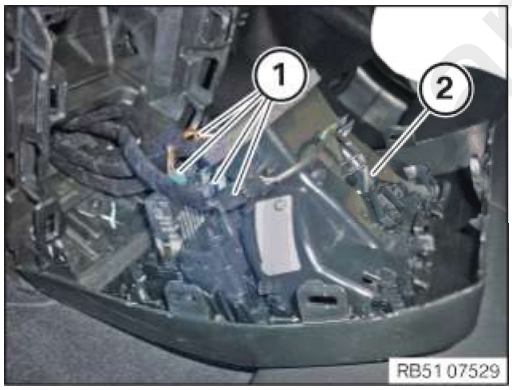
3 – Install air conditioning control panel for the rear side



- Fit the air conditioning control panel (3) on the decorative strip and position it correctly.
- Engage the latch mechanisms (1) and (2).

POSTPROCESSES

4 – Installing the rear centre console trim



- Install the centre console trim (2).
- Connect connectors (1) and lock.



- Position centre console trim (1) and engage at the latch mechanisms at the side.

avdiagn.com

64 11 377 Removing and installing the control panel of the heating and air conditioning system

RISK OF DAMAGE

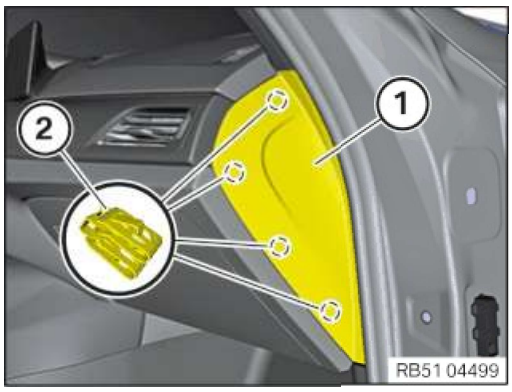
Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

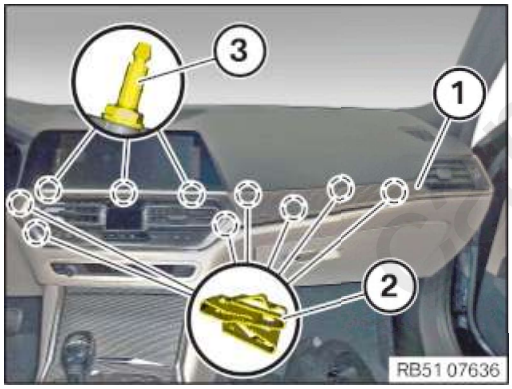
PRELIMINARY WORK

1 – Remove the side panel on the right instrument panel



- Unclip and remove the side panel (1) towards the outside from the clamps (2).
- If necessary, unlock associated plug connection and disconnect.

2 – Remove the finisher on the right instrument panel

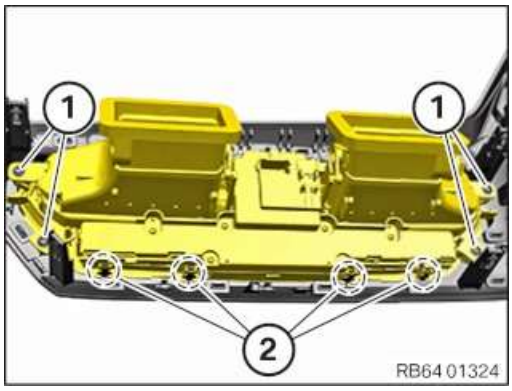


- Unclip the decorative strip (1) towards rear at the clamps (2) and the pins (3).
- Unlock associated plug connection and disconnect.

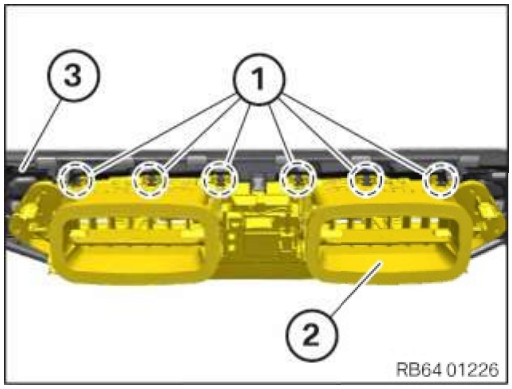
  Remove the decorative strip (1).

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3 – Removing fresh air grille centre with integrated air conditioning control panel

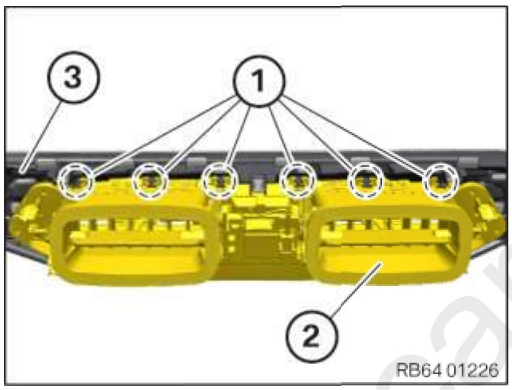


- Loosen screws (1).
- Disengage the latch mechanisms (2).

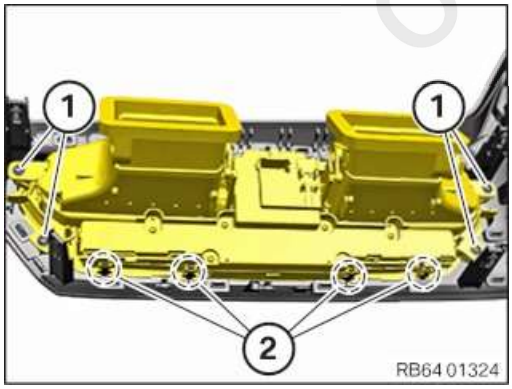


- Disengage the latch mechanism (1) from the fresh air grille (2).
- Remove fresh air grille (2) with the integrated air conditioning control panel from the decorative strip (3).

4 – Installing fresh air grille centre with integrated air conditioning control panel



- Set fresh air grille (2) with the integrated air conditioning control panel on decorative strip (3) and position it correctly.
- Engage latch mechanisms (1) on fresh air grille (2).



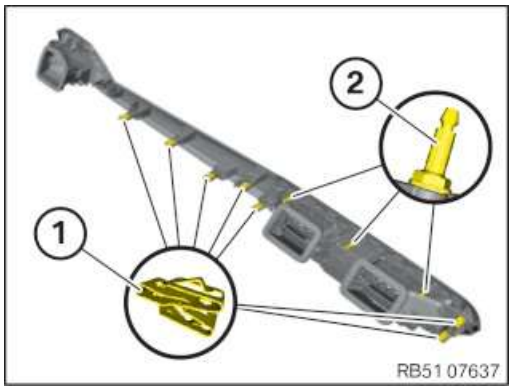
- Engage the latch mechanisms (2).
- Tighten the screws (1).

Fresh air grille on decorative strip / instrument panel

Screw		Tightening torque	1,8 Nm

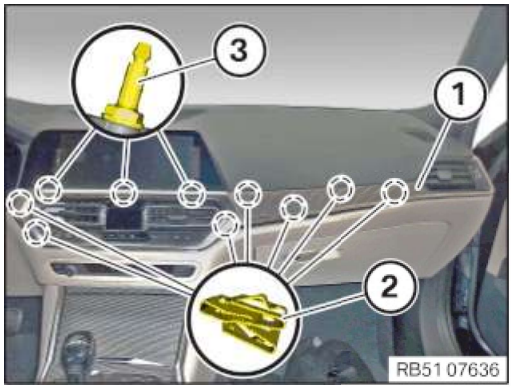
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5 – Install the finisher on the right instrument panel



- Check the clamps (1).

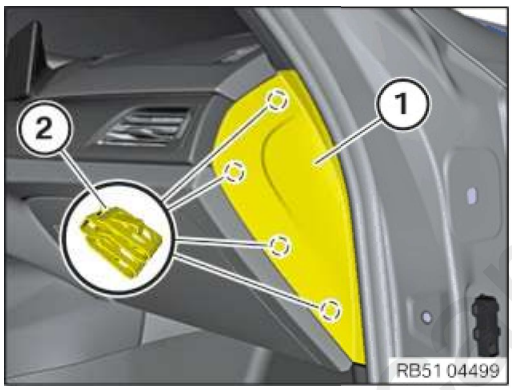
  Replace broken or missing clamps (1).
- Check the pins (2) and the corresponding clamps on the instrument panel trim and renew if necessary.



- Install the decorative strip (1).

  Connect and lock the associated connectors.
- Correctly position the decorative strip (1) and at the clamps (2) and clip in the pins (3).

6 – Install the side panel on instrument panel on the right



- If required, connect the associated connector.
- Feed in the side panel (1) and clip it in at the clamps (2).

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Additional Information

Overview of Tightening Torques

Fresh air grille on decorative strip / instrument panel Used in step 4

Screw		Tightening torque	1,8 Nm

64 11 197 Removing and installing the heating and air-conditioning unit

CAUTION

Refrigerant circuit under high pressure.

Danger of injury!

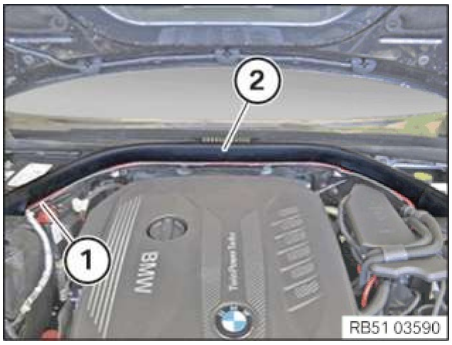
- Note and follow safety information on containers.
- Avoid contact with refrigerant; wear safety goggles and protective gloves.
- For more information see: 64 50 Handling refrigerant and 6450 Notes on repair work on air conditioning

PRELIMINARY WORK

1 – Drawing off the air conditioning

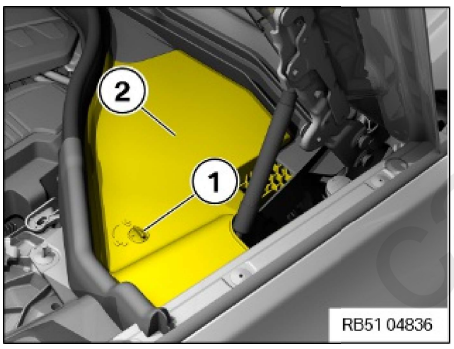
- See additional information.

2 – Remove the seal for the rear bonnet



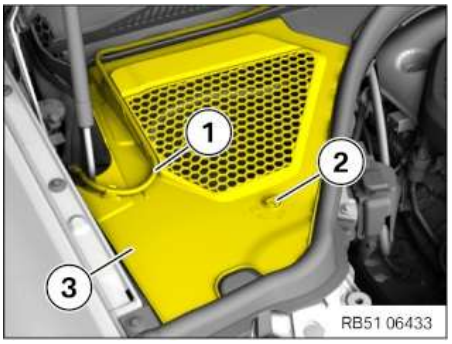
- Feed the cable (1) out of the brackets toward the front.
- Remove the rear bonnet seal (2) from the guide toward the inside.

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



- 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 – Removing both wiper arms

NOTICE

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

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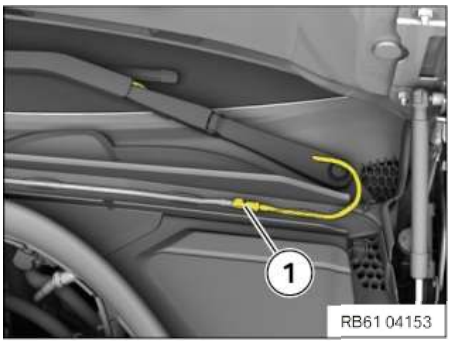
▸ **Remove the wiper arm**

RISK OF DAMAGE

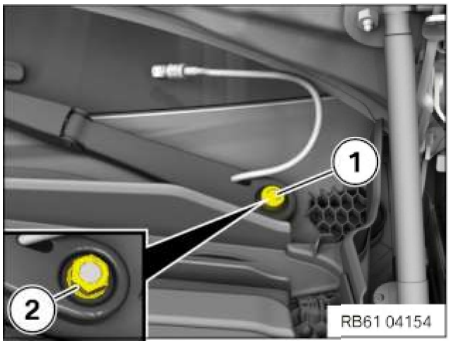
Damage to wiper console

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

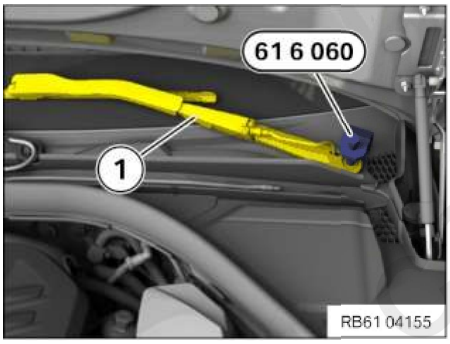
- Removing the wiper arms must be carried out only using the prescribed special tool.
- Do not lift off wiper arm, else the wiper console may break on the predetermined breaking point for the pedestrian protection.



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

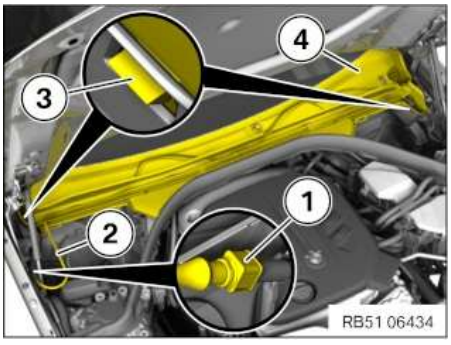


- Remove the protective cap (1).
- Loosen nut (2).



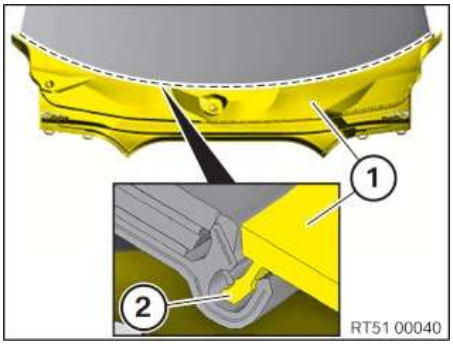
- Pull off the wiper arm (1) using special tool .

6 – 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).

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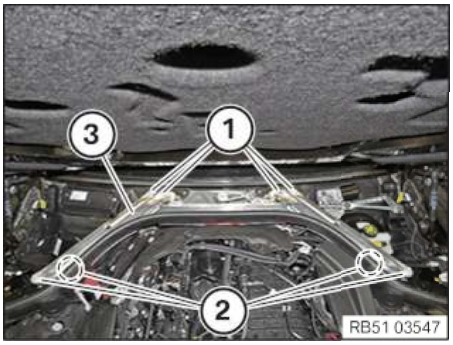


- Pull the cowl panel cover (1) upward out of the latch mechanism (2) beginning on the side.

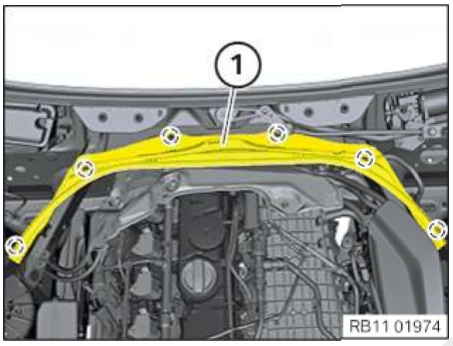
7 – Removing the centre bulkhead upper part

TECHNICAL INFORMATION

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

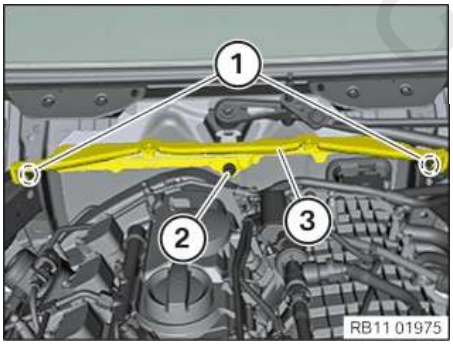


- **If installed:** Remove tension strut on spring strut dome.
- Loosen screws (1) and (2).
- Remove tension strut (3) in the spring strut dome upwards.



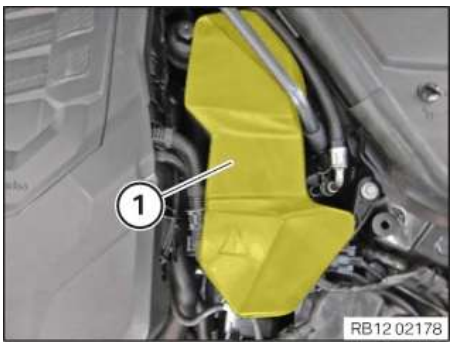
- Unscrew the bolts in the marked areas.
- Remove the centre bulkhead upper part (1).

8 – Removing the centre bulkhead lower section



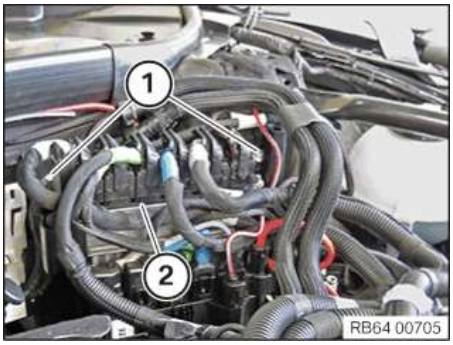
- Loosen screws (1).
- Loosen nut (2).
- Remove the centre bulkhead lower part (3).

9 – Detach the control unit holder



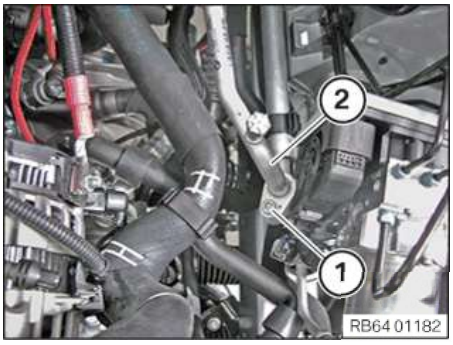
- Pull the cover (1) towards the top and feed out.

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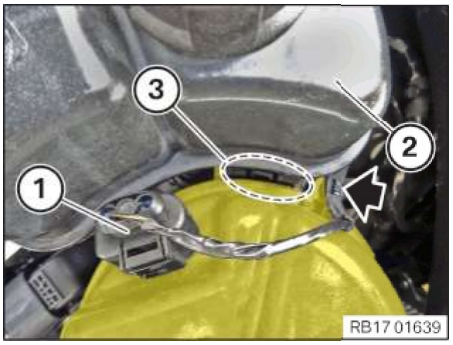
- Loosen screws (1).
- Remove control unit holder with the control units (2) and lay to one side.

10 – Disconnect the refrigerant line on the connecting piece



- Loosen screw (1).
- Remove the refrigerant line (2).

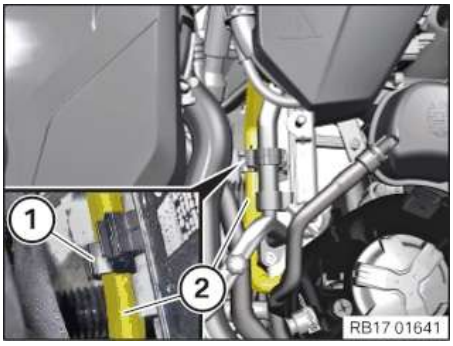
11 – Removing coolant expansion tank of high-temperature coolant circuit partially



- Unlock plug connection (1) and disconnect.
- Loosen the clamp (arrow).
- Unlock coolant expansion tank (2) for the low-temperature coolant circuit in marked area.

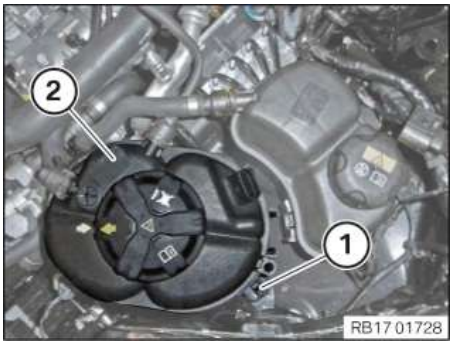


- Feed out and position the coolant expansion tank (1)for the low-temperature coolant circuit from the holders.



- Unlock the holder (1).
- Feed out coolant line (2) and place to one side.

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- Unlock lock (1).
- Thread out the coolant expansion tank (2) for the high-temperature coolant circuit upwards and set aside.

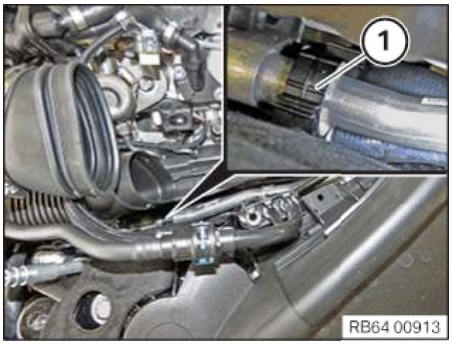
12 – Disconnect the refrigerant line from the expansion valve

CAUTION

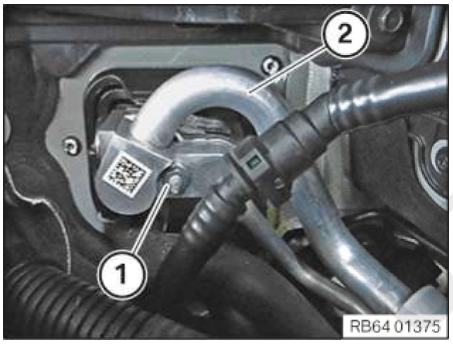
Residual pressure in the air conditioning.

Danger of injury!

- Wear safety goggles and protective gloves when disconnecting the refrigerant line.
- Seal refrigerant lines with seal plugs.

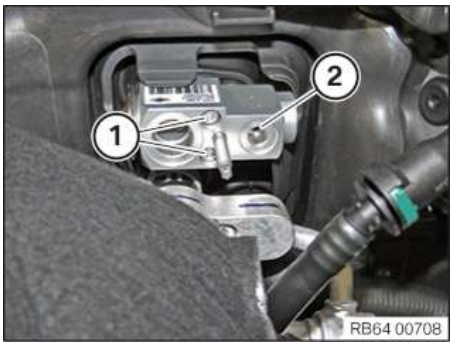


- Open the holder (1).



- Loosen nut (1).
- Remove the refrigerant line (2) and set it aside.

13 – Remove expansion valve



- Loosen screws (1).
- Remove the expansion valve (2).

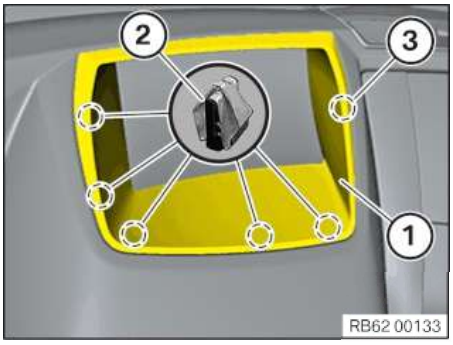
14 – Adjust the steering column position

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- Adjust the length of the steering column to the maximum length in the direction of arrow (1).
- Move the steering column to the lowest steering column position in the direction of arrow (2).

15 – Removing trim for the Head-Up Display



- Unclip trim (1) for the Head-Up Display upwards from clamps (2) and latch mechanism (3).

16 – Remove cupholder

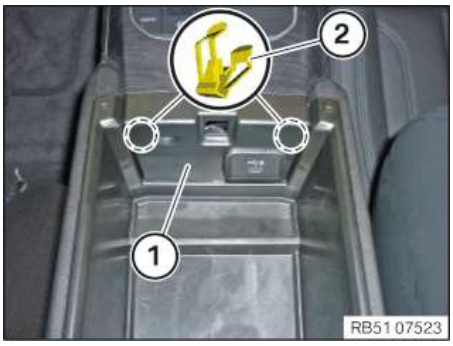


- Remove the insert (1).



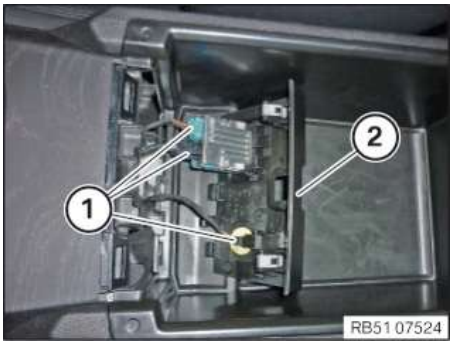
- Loosen screws (1).
- Feed the cup holder (2) out to the top.
- Unlock associated plug connections and disconnect.

17 – Removing the trim in the storage compartment on the centre armrest



- Lever out the trim (1) with the special tool (2) toward the rear from the clamps 2 298 505.

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- Unlock and disconnect the plug connections (1) and remove the trim (2) .

18 – Remove the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



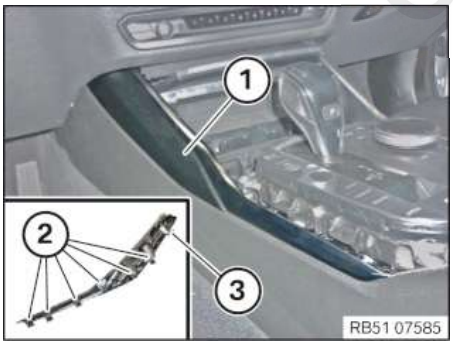
- Release and remove the centre console trim upwards (1) as shown using the special tool 2 298 505 from the latch mechanisms.

19 – Removing the decorative trim on the centre console trim on the left and right

▸ **Remove decorative trim on centre console**

NOTICE

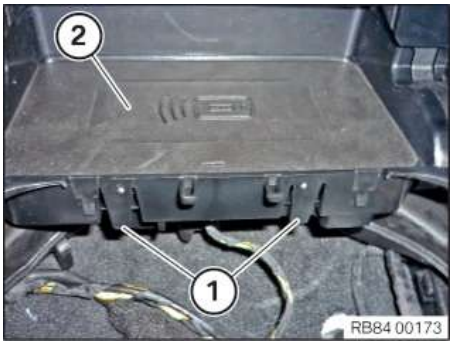
Description is for left component only. Procedure on the right side is identical.



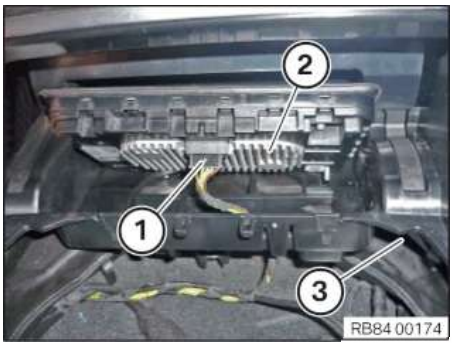
- Lever out the rear decorative trim (1) from the latch mechanisms (2) starting from the top.
- Feed out the decorative trim (1) backwards out of the guide (3) and remove.

20 – Removing the wireless charging station

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- Loosen the latch mechanisms (1) and push out the wireless charging station (2) upwards.



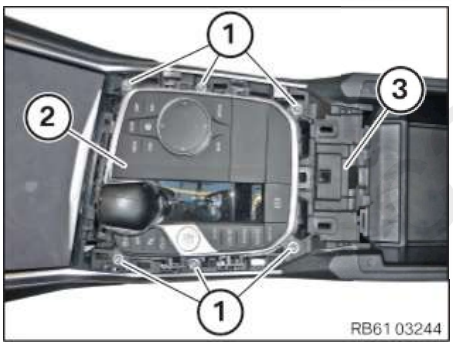
- Disconnect the connector (1) and remove the wireless charging station (2) from the centre console (3).

21 – Remove the operating facility in the centre console

▶ **Disconnecting all battery earth leads**

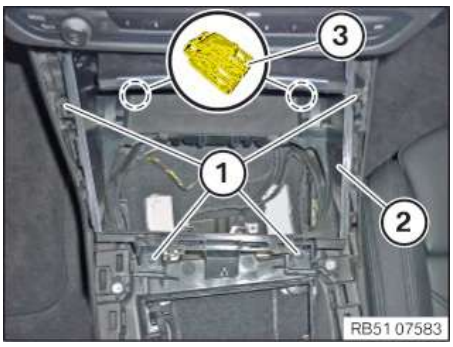


- See additional information.



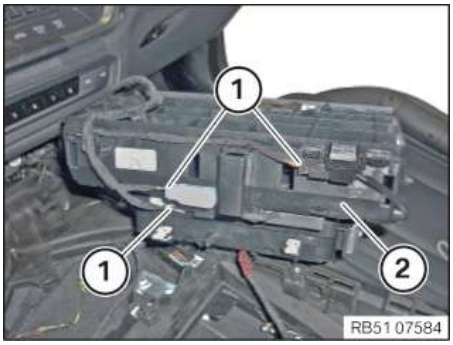
- Loosen screws (1).
- Remove the operating facility in the centre console (2) from the centre console (3).

22 – Removing the storage compartment of the front centre console



- Loosen screws (1).
- Remove storage compartment trim (2) backwards out of clamps (3).

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- Unlock and disconnect all the plug connections (1) and remove the storage compartment (2).

23 – Removing the rear centre console trim

RISK OF DAMAGE

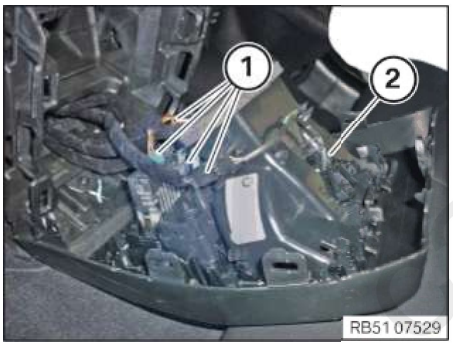
Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



- Release centre console trim (1) backwards from the latch mechanisms at the side and pull it a little way towards the rear.



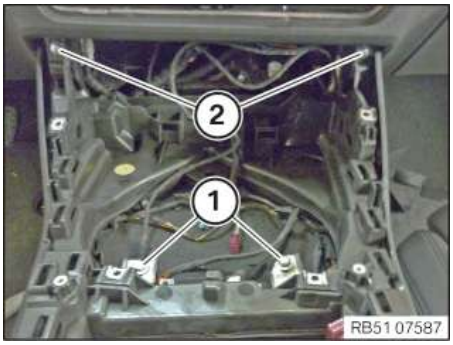
- Unlock and disconnect plug connections (1).
- Remove the centre console trim (2).

24 – Removing the centre console

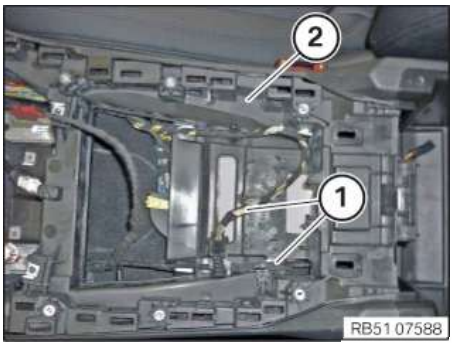


- Loosen screws (1).

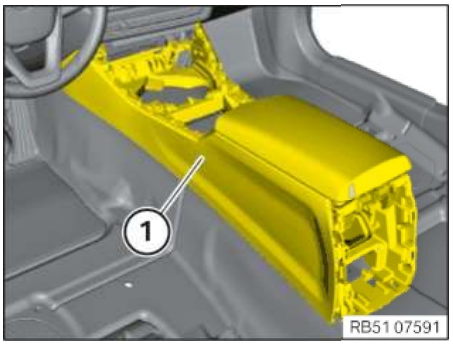
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- Loosen screws (1) and (2).



- Release the wiring harness (1) from the centre console (2).

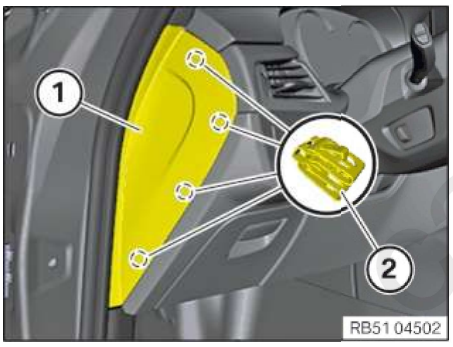


NOTICE

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

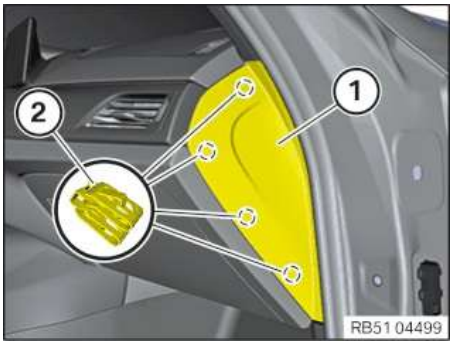
- Carefully raise rear centre console (1).
- Feed out wiring harness from the centre console (1) and unlock and disconnect existing plug connections, if required.
- Feed out and remove the centre console (1) on the instrument panel .

25 – Remove the side panel on the left instrument panel



- Unclip and remove the side panel (1) towards the outside from the clamps (2).

26 – Remove the side panel on the right instrument panel



- Unclip and remove the side panel (1) towards the outside from the clamps (2).
- If necessary, unlock associated plug connection and disconnect.

27 – Remove both A-pillar trim panels

NOTICE

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

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▶ **Remove the A-pillar trim panel**

WARNING

Airbag unit.

Danger! Life-threatening injuries!

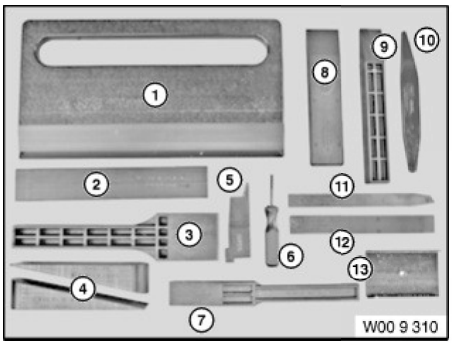
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

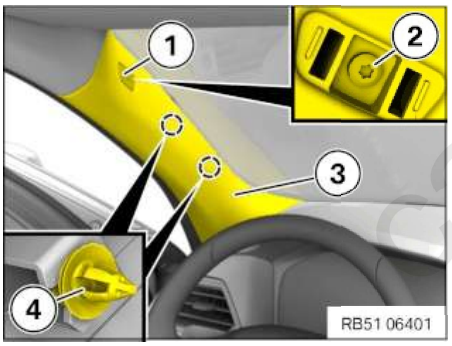
Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.

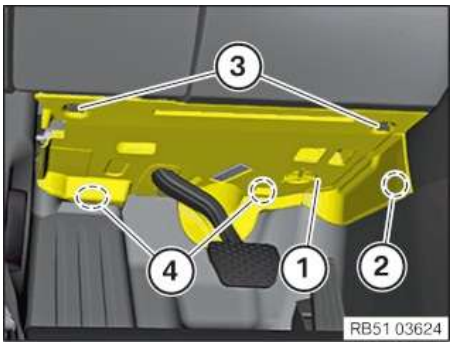


- Have the set of special tools 0 493 752 (00 9 329) ready.



- Unclip the cover (1) with suitable tools.
- Loosen screw (2).
- Unclip A-pillar trim panel (3) with clips (4) and guide it out upwards.

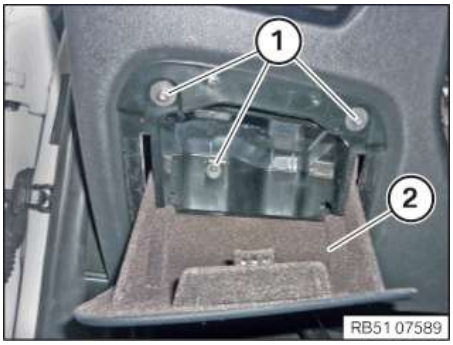
28 – Removing the trim panel for pedal mechanism



- Unclip the trim panel for the pedal mechanism (1) towards the inside in this area (2).
- Turn the locks (3) by 90°.
- Detach the trim panel for the pedal mechanism (1) inwards out of the guides (4).
- Unlock associated plug connection and disconnect.

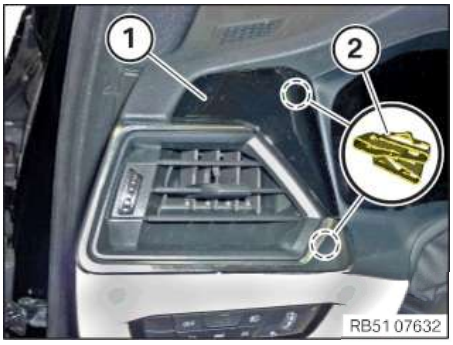
29 – Removing the left fold-down compartment

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- Loosen screws (1).
- Remove the fold-down compartment (2) toward the bottom.

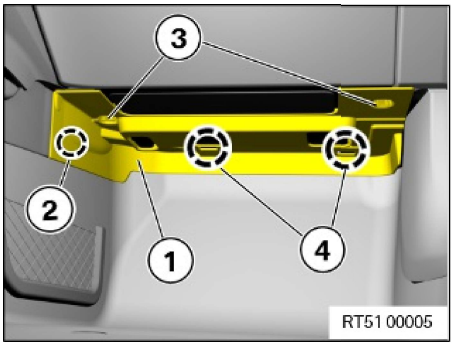
30 – Remove the finisher on the instrument panel on the left



- Unclip decorative strip (1) to the rear out of the clamps (2).
- Unlock associated plug connection and disconnect.

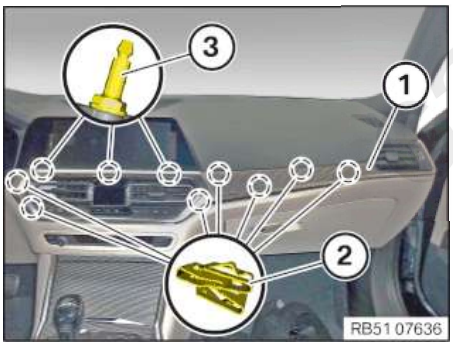
  Remove the decorative strip (1).

31 – Remove the right footwell trim



- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

32 – Remove the finisher on the right instrument panel



- Unclip the decorative strip (1) towards rear at the clamps (2) and the pins (3).
- Unlock associated plug connection and disconnect.

  Remove the decorative strip (1).

33 – Remove Central Information Display (CID)

RISK OF DAMAGE

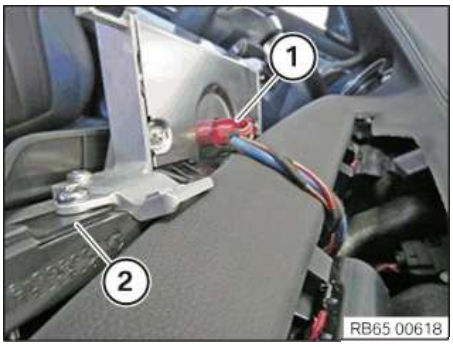
Electrostatic discharge.

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.



- Loosen screws (1).
- Pull out central information display (CID) (2) slightly off the instrument panel.



- Unlock plug connection (1) and disconnect.
- Remove the central information display (CID) (2).

34 – Removing the airbag unit

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

RISK OF DAMAGE

Damage to the steering wheel.

Incorrect handling of the tool may damage the steering wheel.

- Ensure the tool is positioned correctly (angle and inclination).
- When unlocking, do not use "levering" action. Instead, press in the Torx screwdriver toward the centre of steering wheel only.

TECHNICAL INFORMATION

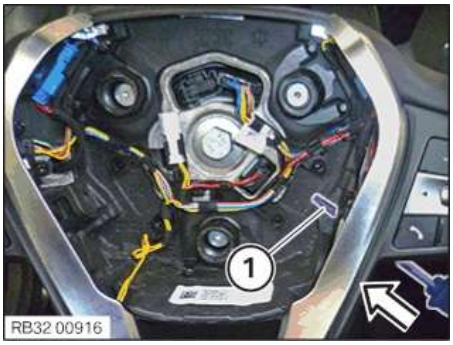
Different variants may be installed depending on the vehicle equipment.

▸ **Version A: Removing the airbag unit (sports steering wheel)**



- Insert Torx screwdriver T25 (1) diagonally upwards in the hidden opening (2) on the rear side of the steering wheel until a spring resistance is felt.

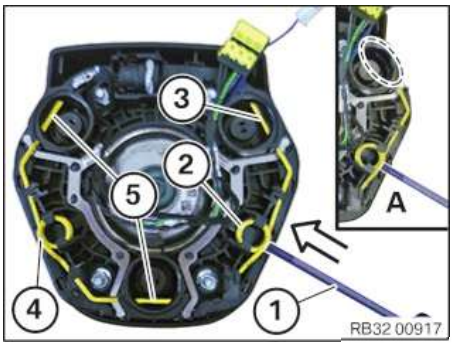
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NOTICE

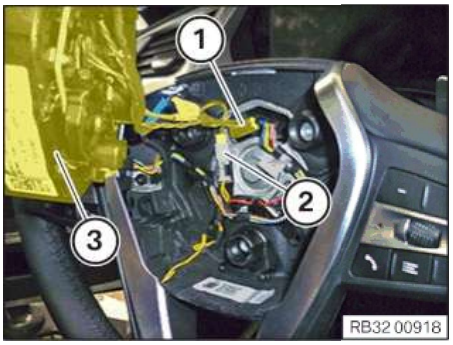
To provide a better overview: Diagram with airbag unit removed.

- To unlock the airbag unit, press Torx screwdriver T25 (1) diagonally upwards in the direction of the arrow to the centre of the steering wheel.



- Press the airbag unit over a large area of the steering wheel.
- Use Torx screwdriver T25 (1) to press wire spring clip (2) in the direction of the arrow towards the centre of the steering wheel and release lock (3).

  (A): Wire spring clip (2) is unlocked.
- Then use Torx screwdriver T25 (1) to press wire spring clip (4) in the direction of the arrow towards the centre of the steering wheel and release locks (5).
- Carefully raise the airbag unit.

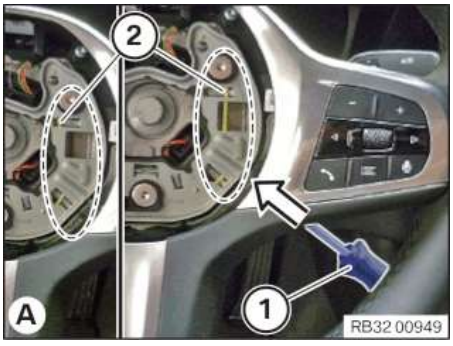


- Unlock and disconnect the plug connections (1) and (2).
- Remove airbag unit (3).

▸ **Version B: Removing airbag unit (M Sport steering wheel)**



- Locate the pre-punched bore hole (1) on the rear side of the steering wheel by touch.
- Insert the Torx screwdriver T27 (2) diagonally upwards in the pre-punched bore hole (1) on the rear side of the steering wheel until a springing kind of resistance can be felt.

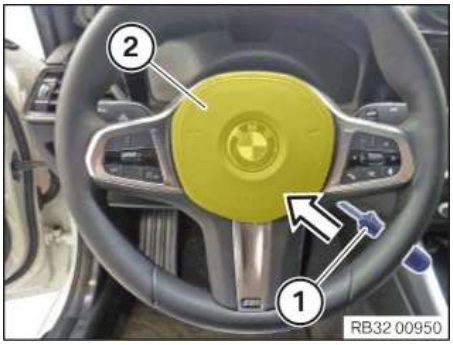


NOTICE

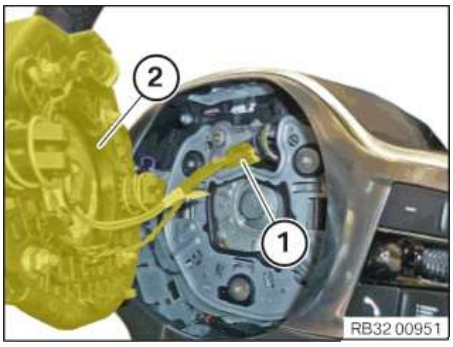
To provide a better overview: Diagram with airbag unit removed.

- Press in Torx screwdriver T27(1) straight in direction of arrow towards the centre of the steering wheel in order to unlock the wire spring clip (2) or to unlock the airbag unit (A).

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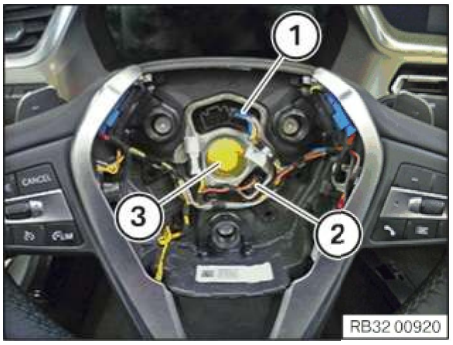


- Press in Torx screwdriver T27 (1) straight in direction of arrow towards the centre of the steering wheel and lift airbag unit (2) on the unlocked side.
- Repeat procedure on left side and carefully remove airbag unit (2) in direction of arrow off the steering wheel.



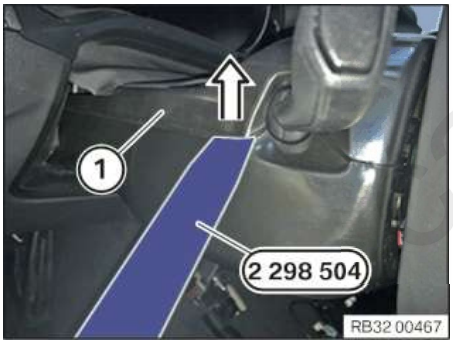
- Unlock and disconnect plug connection (1) and remove the airbag unit (2).

35 – Removing the steering wheel (sports steering wheel)



- Move the steering wheel and wheels to the straight-ahead position.
- Unlock plug connection (1) and disconnect.
- If installed: Unlock plug connection (2) and disconnect.
- Release the screw (3) and pull off and remove the steering wheel.

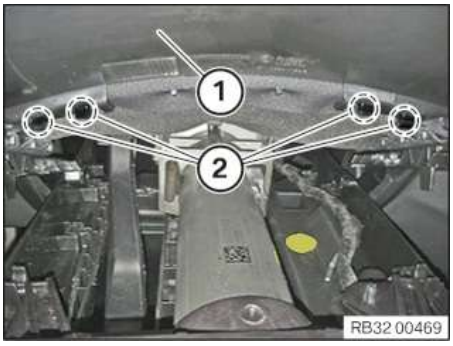
36 – Removing steering column shroud upper section



NOTICE

Perform the operations on the left and right side.

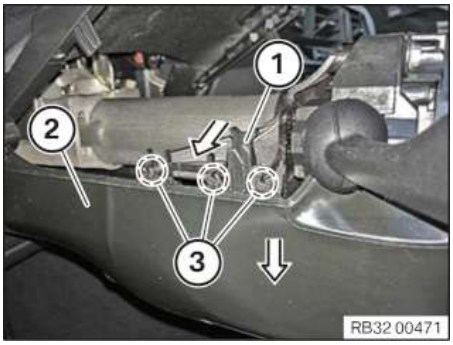
- Unlock the steering column shroud upper section (1) with the special tool 2 298 504 and fold up.



- Unclip the steering column shroud upper section (1) from the brackets (2).
- Remove the steering column shroud upper section (1).

37 – Removing steering column shroud lower section

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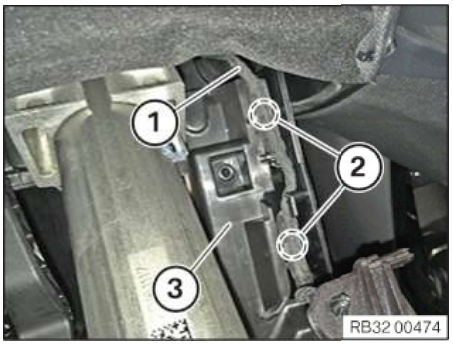
NOTICE

Perform the operations on the left and right side.

- Push the retaining lug (1) to the outside in the direction of the arrow and unclip the steering column shroud lower section (2) from the holders (3) in the direction of the arrow to the bottom at the same time.

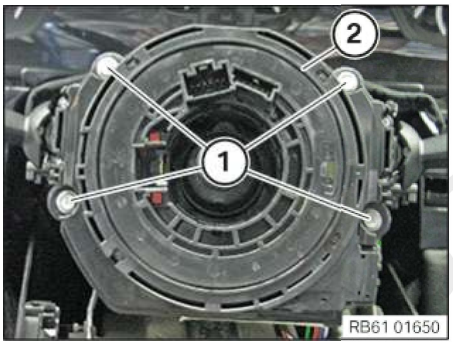


- Fold the steering column shroud lower section down.
- Unlock and disconnect connector (1).

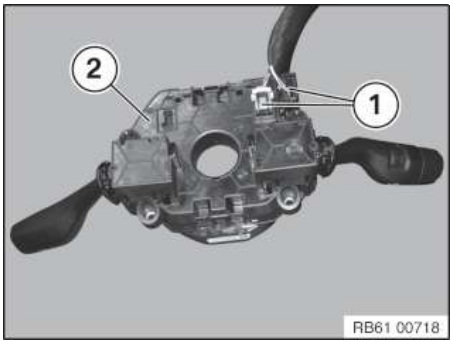


- Detach the cable (1) from the brackets (2).
- Remove the steering column shroud lower section (3).

38 – Removing the steering column switch cluster (SZL)



- Loosen screws (1).
- Remove the steering column switch cluster (SZL) (2).



- Unlock and disconnect the connector (1) on the steering column switch cluster (SZL) (2).

39 – Removing the instrument cluster (KOMBI)

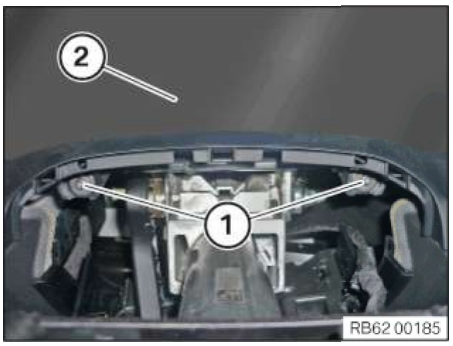
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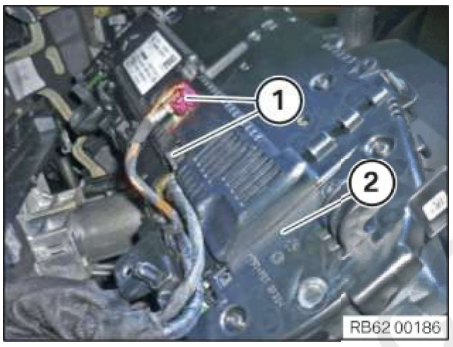
- Loosen screw (1).



- Loosen screw (1).



- Loosen screws (1).
- Feed out instrument cluster (KOMBI) (2).



RISK OF DAMAGE

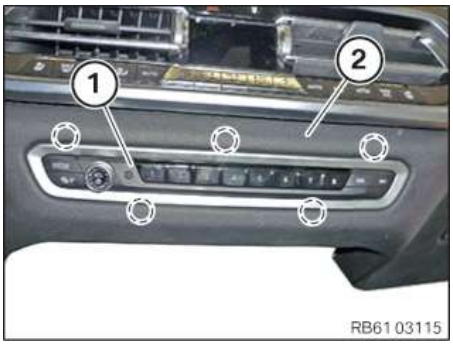
Damage to the instrument cluster (KOMBI)

While releasing and connecting the cable, it could lead to a ground offset. Thereby, currents could arise, that make the instrument cluster (KOMBI) useless.

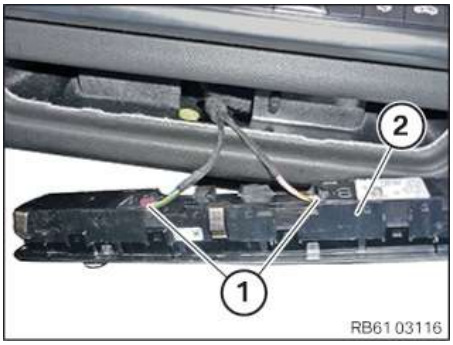
- While releasing: Release APIX data cable (blue) first.
- While connecting: Connect APIX data cable (blue) at the last.

- **If installed:** Release the blue plug connection first.
- Unlock and disconnect plug connections (1) from instrument cluster (KOMBI) (2).
- Remove the instrument cluster (KOMBI) (2).

40 – Remove the audio operating unit

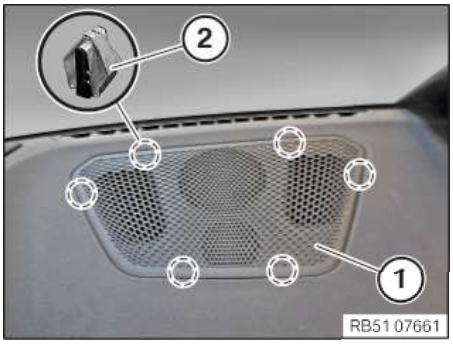


- Unclip the audio operating unit (1) from the instrument panel (2) at the points marked using special tool 0 496 571 (00 9 327).



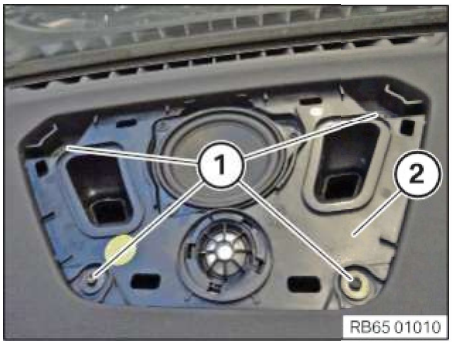
- Disconnect plug connections (1) and remove the audio operating unit (2).

41 – Remove the speaker trim at the instrument panel

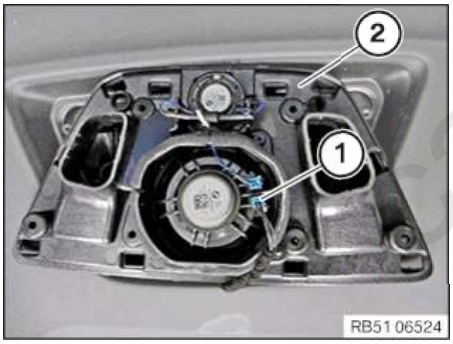


- Lever out the speaker trim (1) with the special tool 0 496 569 (00 9 325) from the clamps (2) toward the top and remove.

42 – Remove the speaker holder at the instrument panel

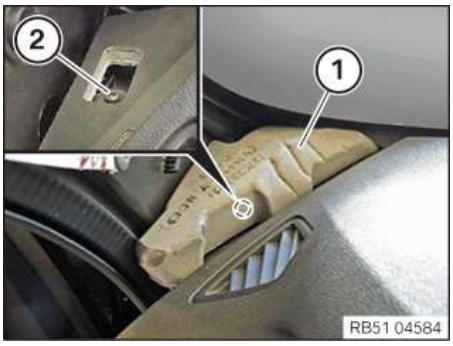


- Loosen screws (1).
- Pull out speaker holder (2) slightly with the loudspeakers and tilt it to the side.



- Unlock plug connection (1) and disconnect.
- Remove the speaker holder (2).

43 – Remove the instrument panel trim panel



NOTICE

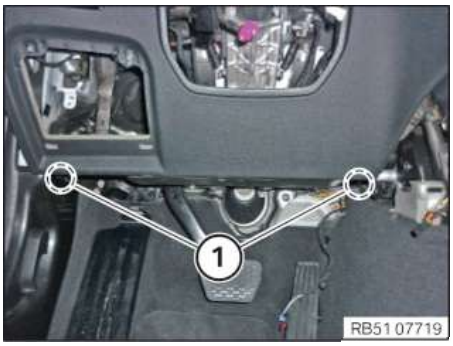
Perform the operations on the left and right side.

- Remove the sound insulation (1).
- Loosen screw (2).

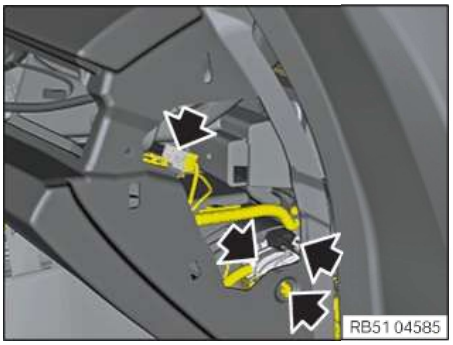
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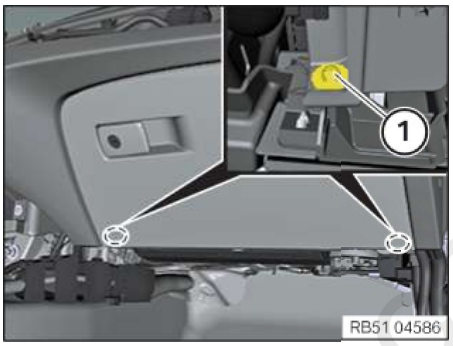
- Loosen screws (1).



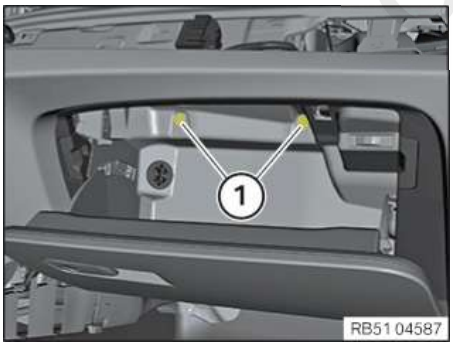
- Loosen screws (1).



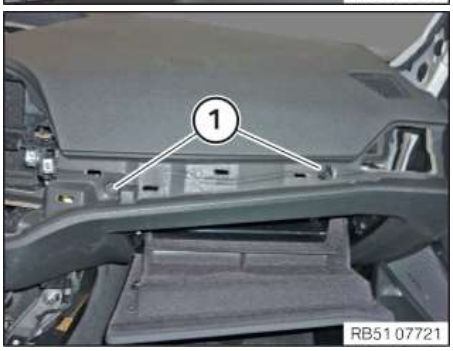
- Release all plug connections and cable clips (arrows) behind the glove box.



- Release the screws (1) on the lower side of the glove box.

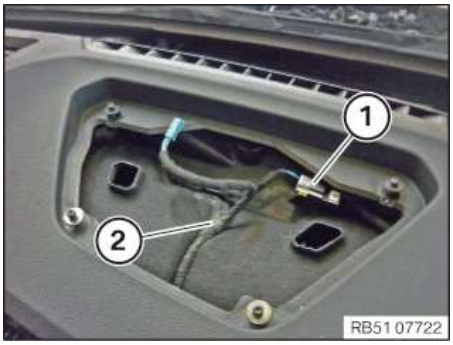


- Open glovebox.
- Loosen screws (1).



- Loosen screws (1).

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- Unlock plug connection (1) and disconnect.
- Release the wiring harness (2) on the holders.



- Unlock the plug connection (1) on the light operating unit and disconnect it.



- Loosen screws (1).

TECHNICAL INFORMATION

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

- Pull the instrument panel trim back slightly.

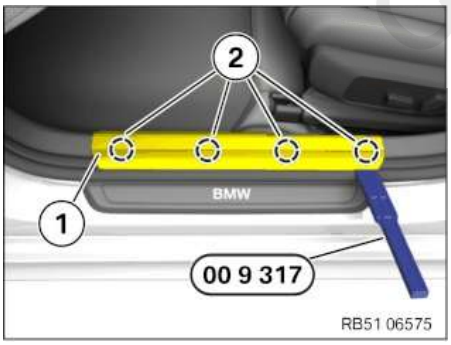
  If necessary, unlock and disconnect additional plug connections.
- Remove the instrument panel trim from the vehicle.

44 – Remove right door sill cover strip

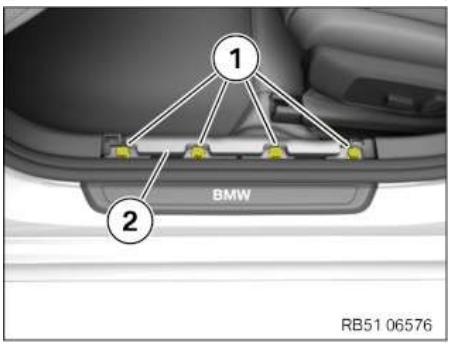
NOTICE

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

▶ **Remove door sill cover strip**



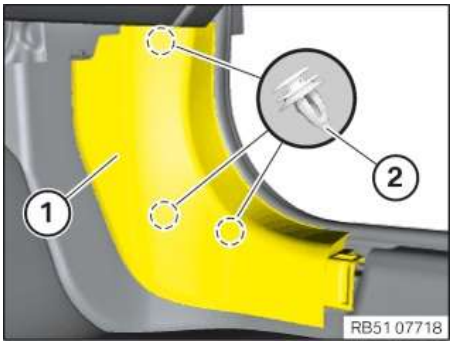
- Detach the door sill cover strip(1) using the special tool 0 490 534 (00 9 317) from the clips (2) in the floor panel.



- If necessary, remove the clips (1) from the floor panel (2) and attach to the door sill cover strip.

45 – Removing the side trim panel in the footwell at the right-hand A-pillar

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- Loosen the side trim panel (1) at the clips (2) and remove it toward the inside.

46 – Removing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

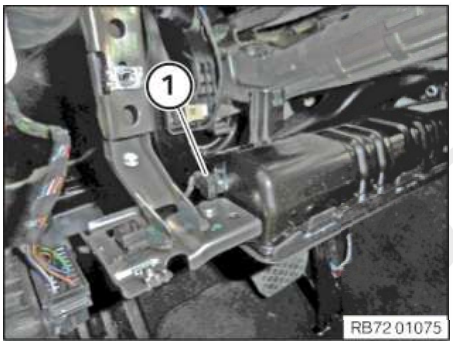
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

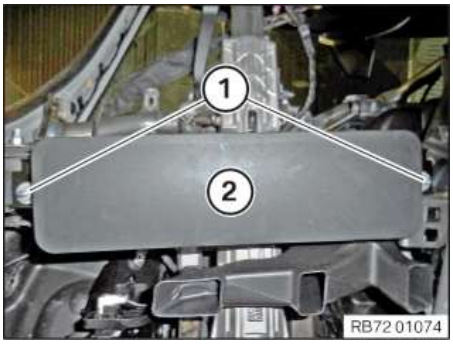
Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.



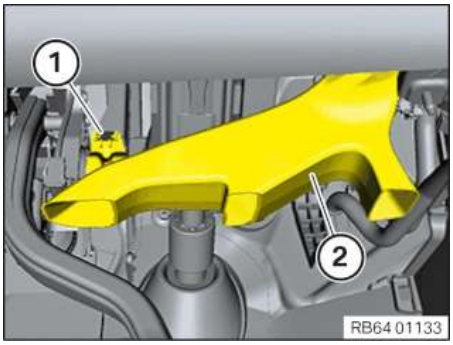
- Unlock plug connection (1) and disconnect.



- Loosen nuts (1).
- Remove knee airbag (2).

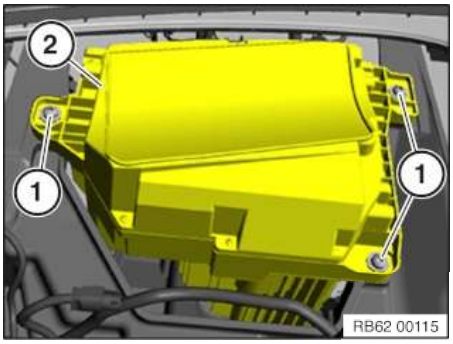
47 – Remove left air duct

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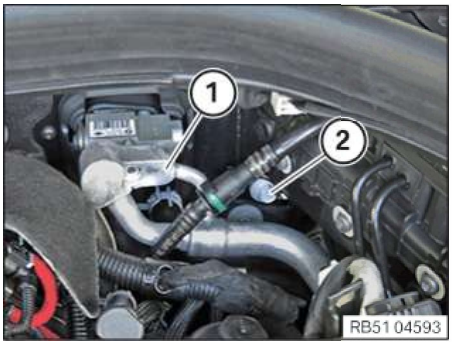
- Unclip the air duct (2) from the air conditioning housing at an angle towards the bottom at the clamp (1).

48 – Removing the Head-Up Display



- Loosen screws (1).
- Remove head-up display (2) from support.
- Unlock associated cable and disconnect.

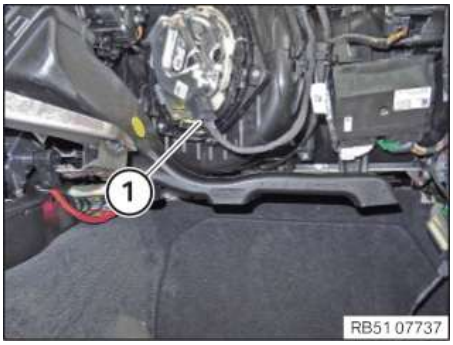
49 – Removing the support for the instrument panel



- Push the refrigerant line (1) slightly to one side and loosen the screw (2).

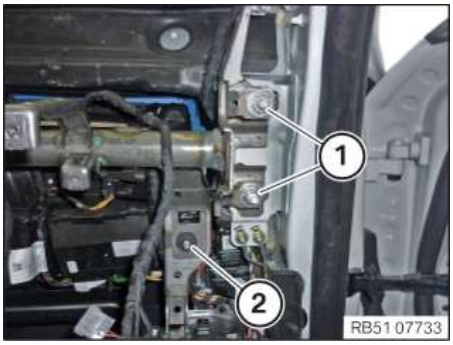


- Push the carpet in the area of the right B-pillar to the side.
- Unlock and disconnect plug connections (1).

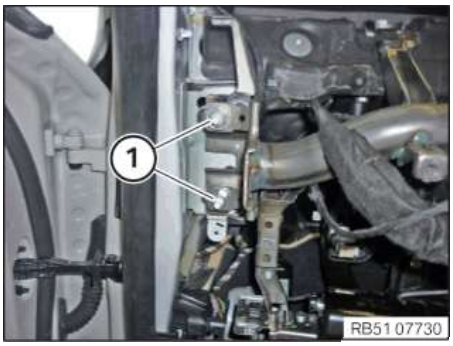


- Unlock and disconnect the plug connection (1) on the blower motor.

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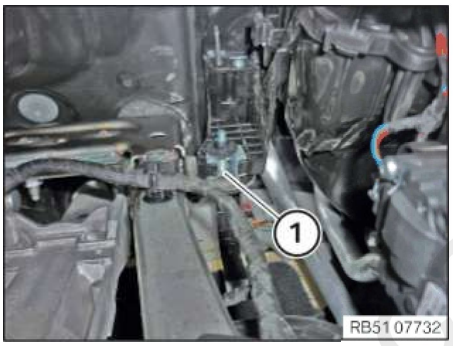
- Loosen nuts (1) and (2).



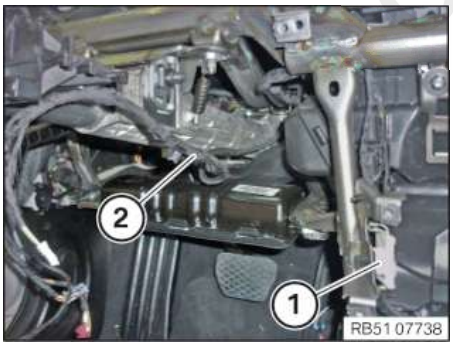
- Loosen nuts (1).



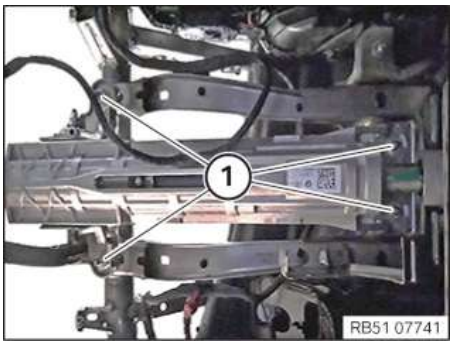
- Loosen screws (1).



- Slacken the nut (1) in the left footwell on the heating and air-conditioning unit.



- Release plug connection (1).
- Release the wiring harness (2) from the steering column.



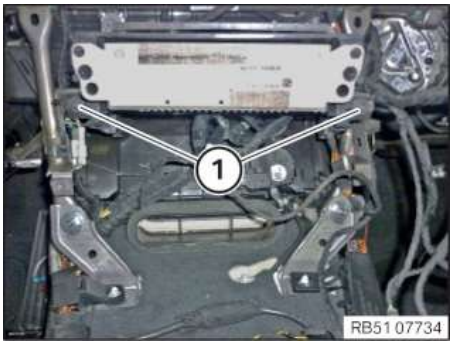
TECHNICAL INFORMATION

Secure component against falling.

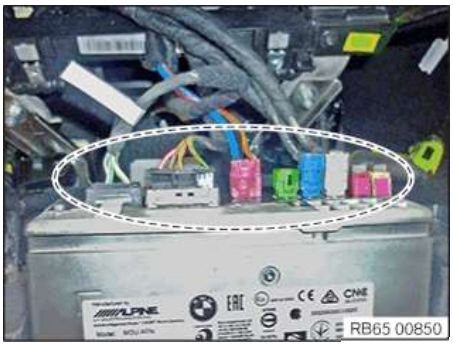
- Release the nuts (1) at the steering column.
- Drop steering column (1) a little away and support it in the footwell.

  Drop steering column not too far away and support it absolutely.

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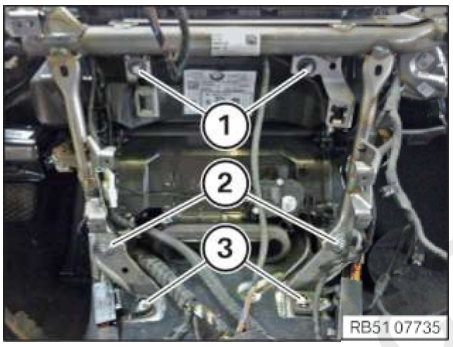
- Loosen screws (1).
- Feed out Head Unit High.



- Unlock and disconnect all connectors in the marked area.
  Remove headunit.



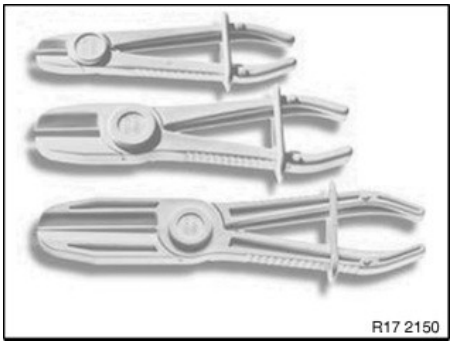
- Unlock and disconnect plug connection (1) from airbag control unit.
- Release the wiring harness (2) on the holders.



- Loosen nuts (1).
- Loosen nuts (2).
- Remove cable clip and release the nuts (3).
  Remove retaining bracket from left and right sides.
- Carefully feed out the support for the instrument panel to the rear.
  If necessary, unlock and disconnect additional plug connections.
- Carefully remove support for the instrument panel from the vehicle.

MAIN WORK

50 – Removing the heating and air-conditioning unit

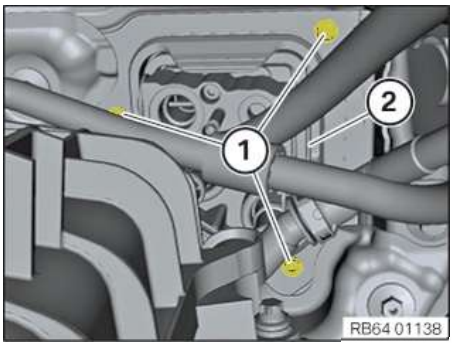


- Use commercially available disconnection tools to pinch off the coolant lines.

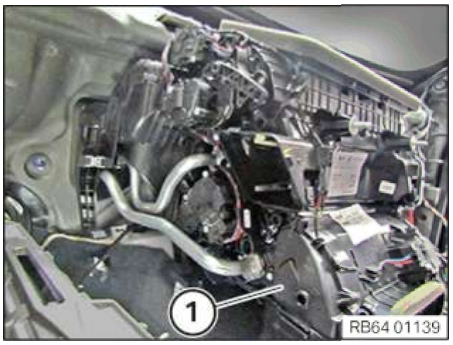
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- Release the hose clamps (1) using special tool and pull off the coolant hoses.

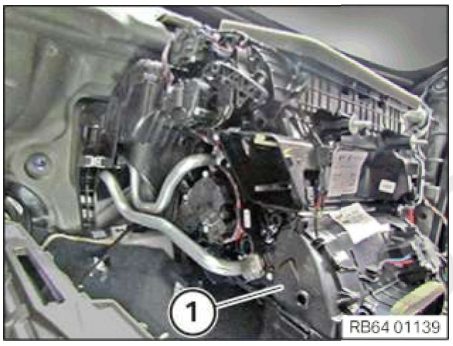


- Release screws (1) from flange (2).
- Protect the carpet in footwell against leaking coolant.

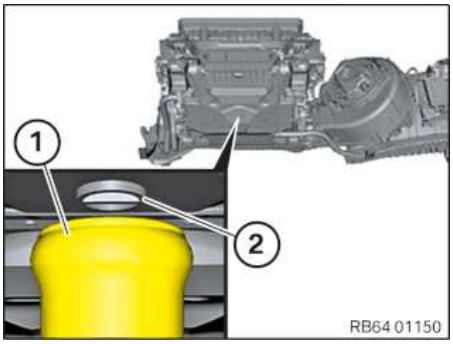


- Unfasten plug connection.
- Remove the heating and air-conditioning unit (1).

51 – Installing the heating and air-conditioning unit



- Position the heating and air-conditioning unit (1).
- Connect connector.



RISK OF DAMAGE

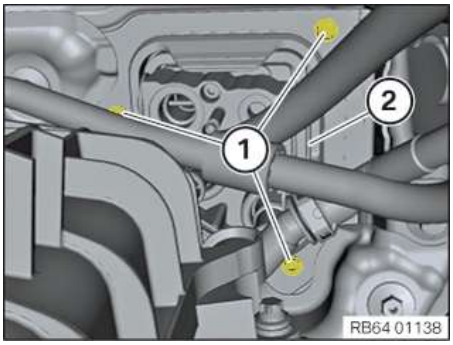
Damage caused by water ingress into the vehicle.

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

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

- Ensure that the condensate drain (2) is correctly fitted onto the grommet (1).
- After installing the heating and air-conditioning unit (2): Perform visual inspection.

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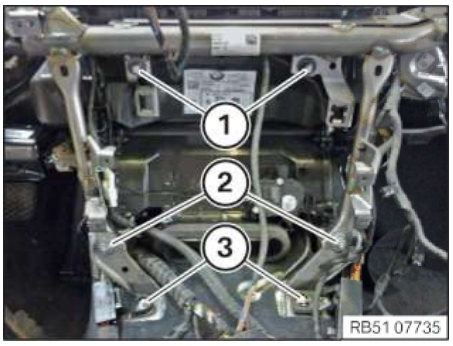
- Tighten the nuts (1) on the flange (2).



- Slide coolant hoses on correctly.
- Secure hose clamps (1) using the special tool .

POSTPROCESSES

52 – Installing the support for instrument panel



- Install the instrument panel support into the vehicle carefully.
- Insert the instrument panel support carefully.
  If necessary, connect and lock the additional connector.
- Tighten nuts (1).

Heating and air-conditioning unit on support

Nut M6		Tightening torque	4 Nm

- Mount retaining bracket on left and right.
  Tighten nuts (2).

Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

- Tighten nuts (3) and fit cable clip .

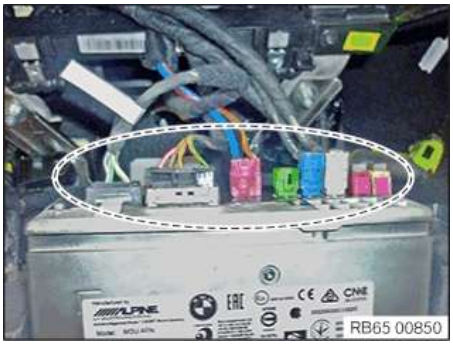
Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm



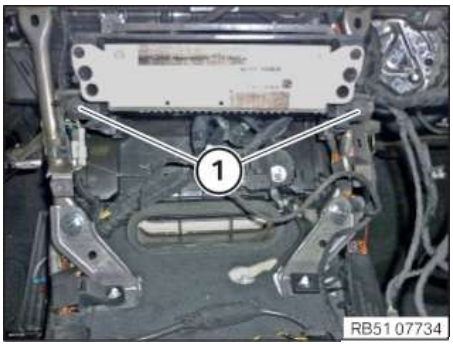
- Connect the connector (1) to the airbag control unit and lock.
- Secure the wiring harness (2) on the holders.

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- Installing head unit.

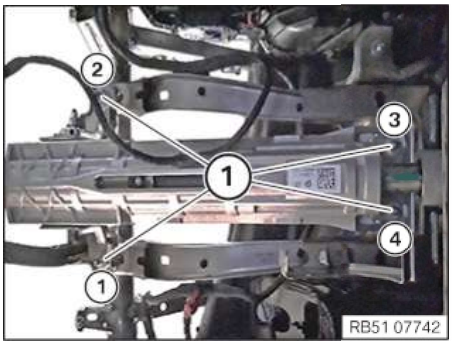
  Connect and lock all connectors in the marked area.



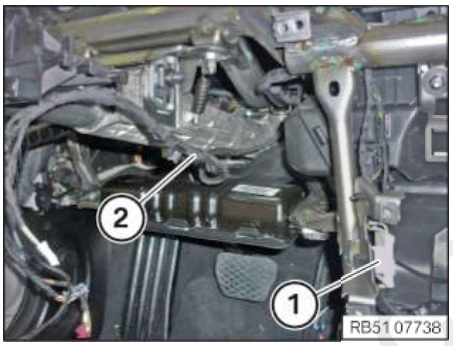
- Feed in the head unit.
- Tighten the screws (1).

Head unit to holder / holder to support

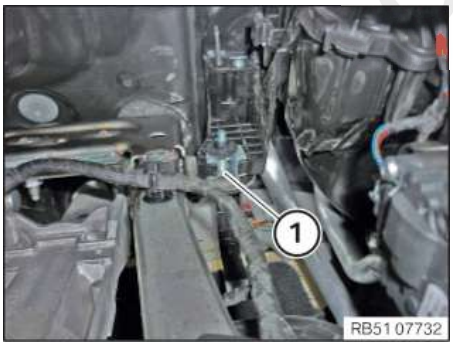
Screw		Tightening torque	1,8 Nm



- Correctly position the steering column (2) and tighten the nuts (1) in the sequence (1), (2), (3) and (4).



- Connect connectors (1) and lock.
- Secure the vehicle wiring harness (2) to the steering column.



- Tighten nut (1) in the left foot well on the heating and air-conditioning unit.

Heating and air-conditioning unit on support

Nut M6		Tightening torque	4 Nm

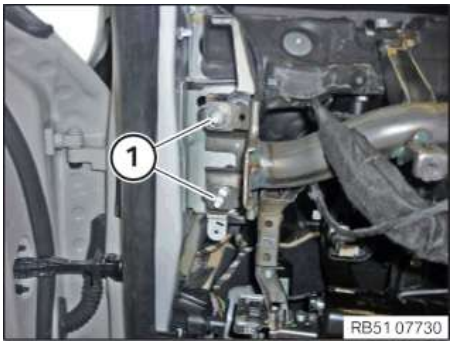


- Tighten the screws (1).

Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

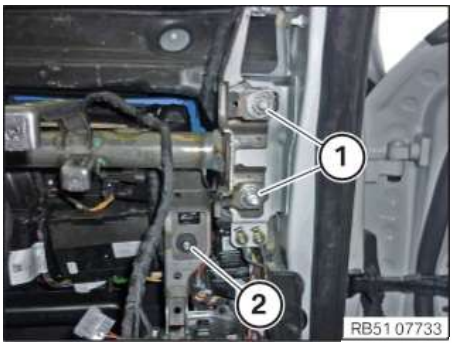
cardiagn.com



- Tighten nuts (1).

Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm



- Tighten nuts (1).

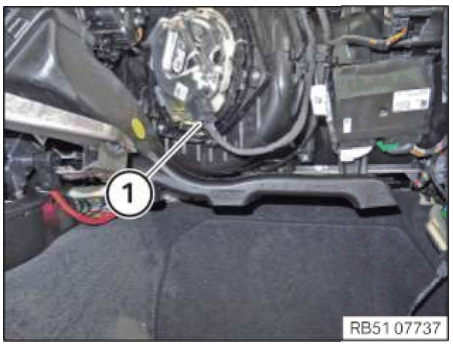
Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

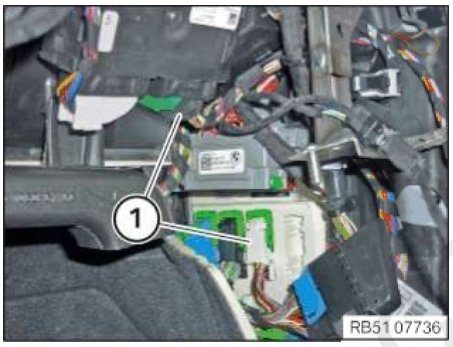
- Tighten nut (2).

Heating and air-conditioning unit on support

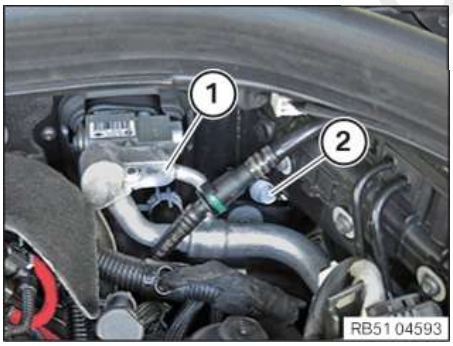
Nut M6		Tightening torque	4 Nm



- Connect the connector (1) to the blower motor and lock.



- Connect connector (1) and lock.
- Correctly position the carpet in the area of B-pillar at the right.



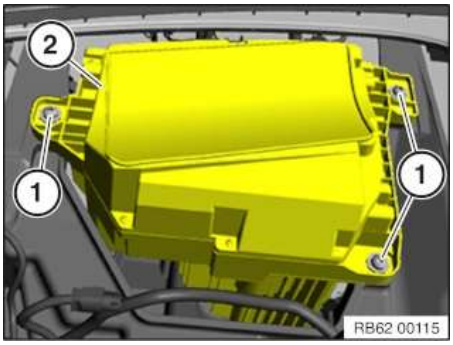
- Push the refrigerant line (1) slightly to one side and tighten the screw (2).

Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

53 – Installing the head-up display

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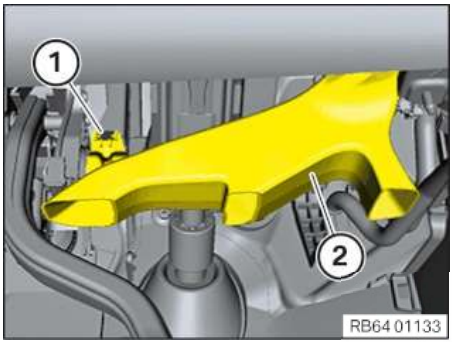


- Connect the associated connector to the Head-Up Display.
- Guide the Head-Up Display (2) into the support.
- Tighten the screws (1).

Head-Up Display to support

M6x25 screw		Tightening torque	13 Nm

54 – Installing the air duct, left



- Clip in the air duct (2) at the clamp (1) in the air conditioning housing at an angle towards the top.

55 – Installing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

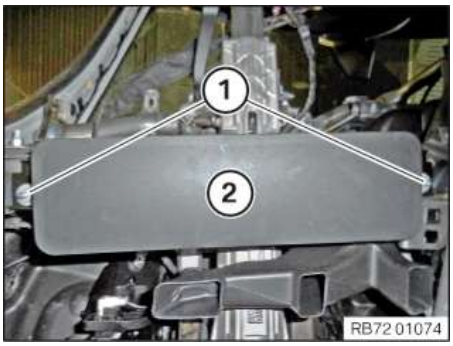
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.

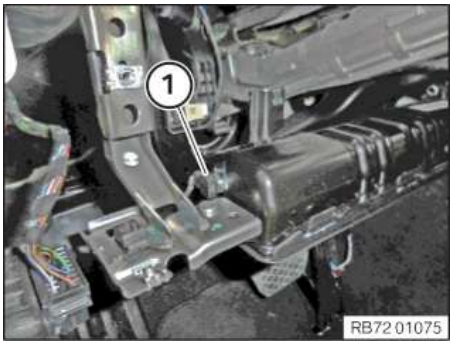


- Position knee airbag (2) correctly.
- Tighten nuts (1).

Knee airbag on support structure

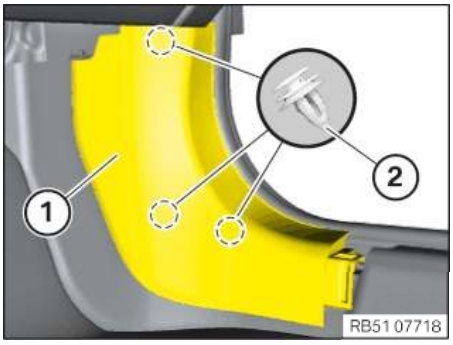
Nut		Tlghtening torque	8 Nm

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- Connect connectors (1) and lock.

56 – Installing side trim panel in footwell on right A-pillar



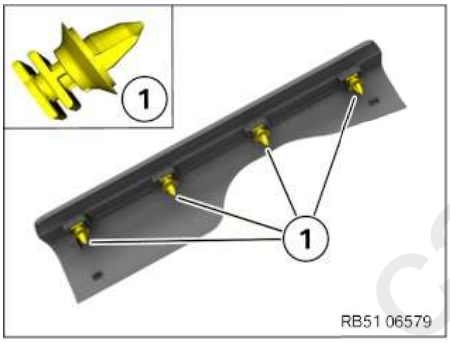
- Check the clips (2) for damage.
  Renew damaged or missing clips (2).
- Correctly position the side trim panel (1) and clip in to the clips (2).
- Make sure that the side trim panel (1) is correctly fitted against edge protection.

57 – Install right door sill cover strip

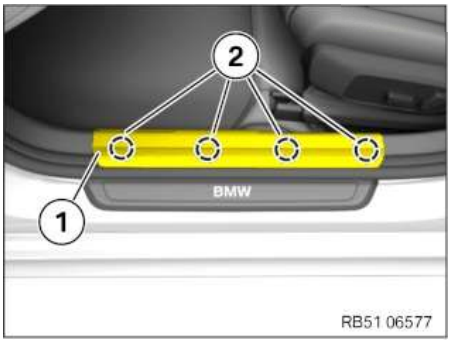
NOTICE

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

▸ **Install the door sill cover strip**



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



- Clip the door sill cover strip (1) into the floor panel with the clips (2).

58 – Install the trim panel for the instrument panel

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TECHNICAL INFORMATION

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

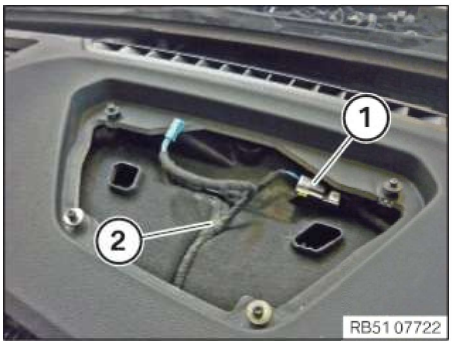
- Insert the instrument panel trim in the vehicle and position it at the support.
- Insert the associated wiring harnesses and connect the connectors.
- Tighten the screws (1).

Dashboard to support

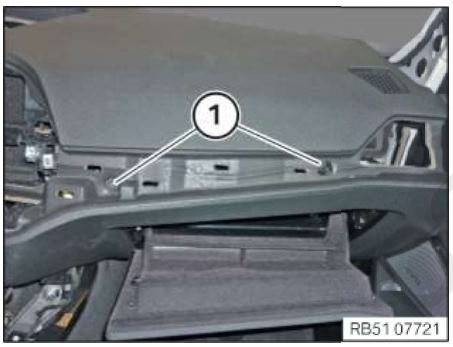
Screw		Tightening torque	2,4 Nm



- Connect connector (1) to the light operating unit and lock.



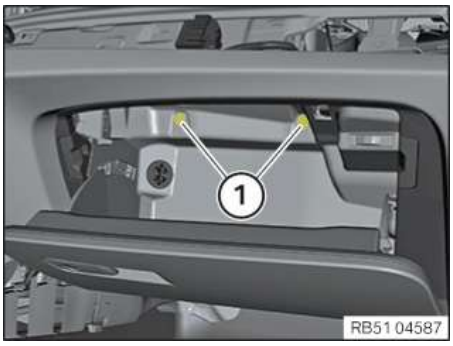
- Secure the wiring harness (2) on the holders.
- Connect plug connection (1) and lock.



- Tighten the screws (1).

Dashboard to support

Screw		Tightening torque	2,4 Nm

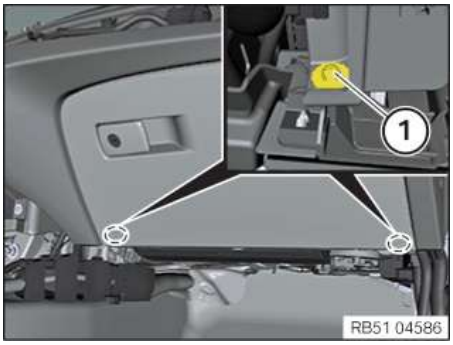


- Open glovebox.
- Tighten the screws (1).

Dashboard to support

Screw		Tightening torque	2,4 Nm

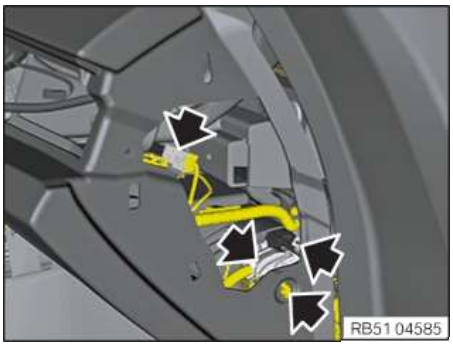
parts4agn.com



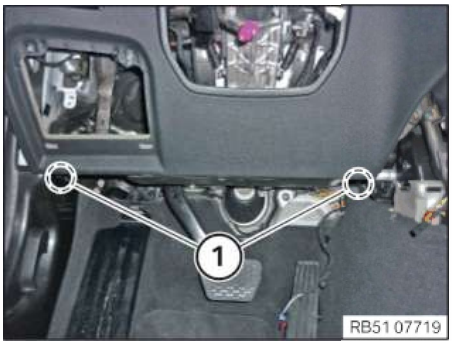
- Tighten the screws (1) on the lower side of the glove box button.

Dashboard to support

Screw		Tightening torque	2,4 Nm



- Connect all plug connections and cable clips (arrows) behind the glove box.



- Tighten the screws (1).

Dashboard to support

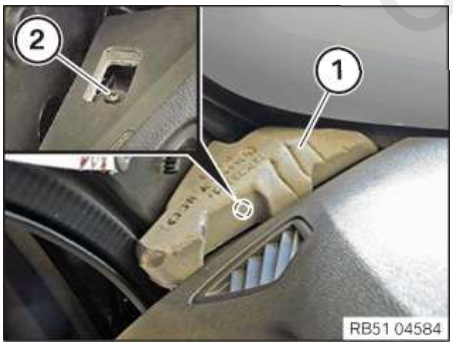
Screw		Tightening torque	2,4 Nm



- Tighten the screws (1).

Dashboard to support

Screw		Tightening torque	2,4 Nm



NOTICE

Perform the operations on the left and right side.

- Tighten down screw (2).

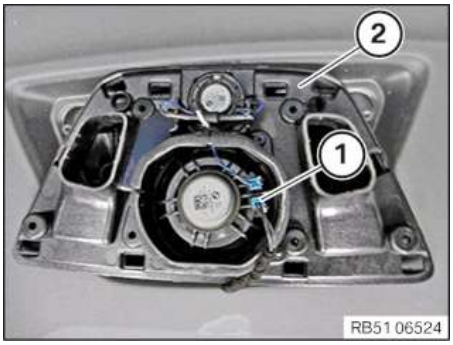
Dashboard to support

Screw		Tightening torque	2,4 Nm

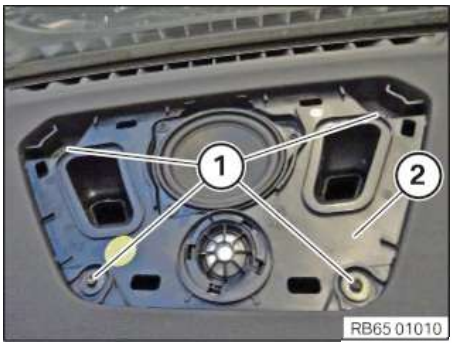
- Use sound insulation (1).

59 – Install the speaker holder at the instrument panel

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- Position the speaker holder (2).
- Connect connector (1).

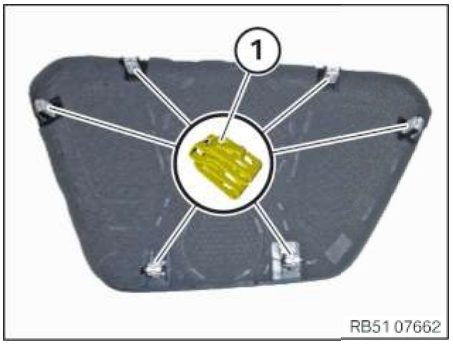


- Install the speaker holder (2).
- Tighten the screws (1).

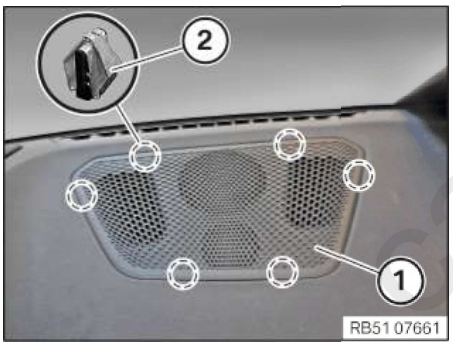
Speaker to support / support to instrument panel / support to body

Screw		Tighten torque	1,8 Nm

60 – Install the speaker trim at the instrument panel

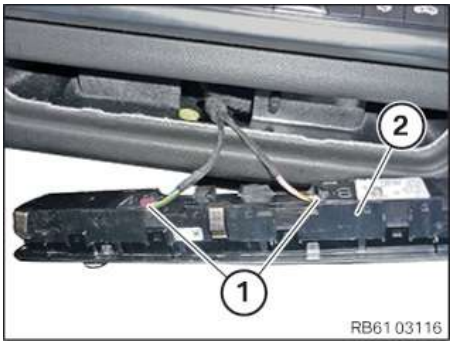


- Check clamps (1) for damage.
- Replace broken or missing clamps (1).



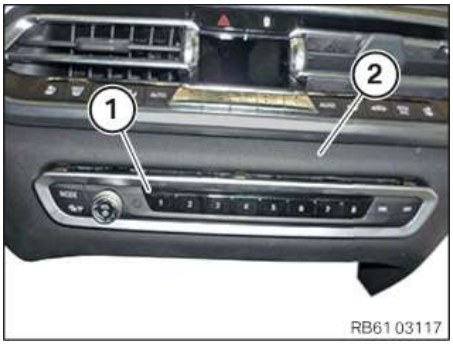
- Position the speaker trim (1) correctly and engage it at the clamps (2).

61 – Install the audio operating unit



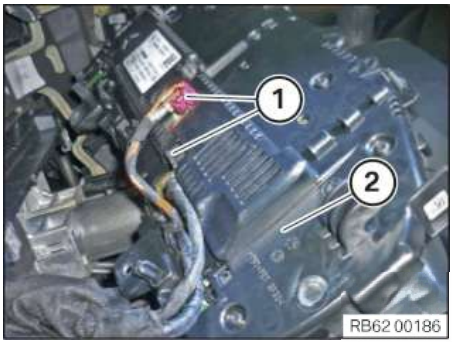
- Connect the connector (1) to the audio operating unit (2).

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- Correctly position the audio operating unit (1) and install in the instrument panel(2).

62 – Installing the instrument cluster (KOMBI)



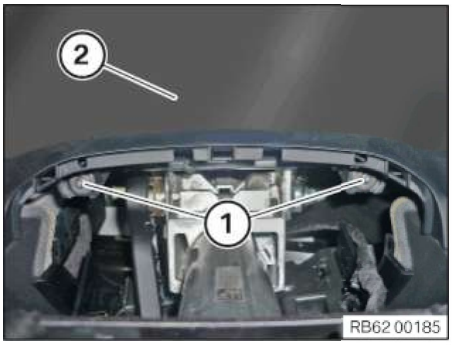
RISK OF DAMAGE

Damage to the instrument cluster (KOMBI)

While releasing and connecting the cable, it could lead to a ground offset. Thereby, currents could arise, that make the instrument cluster (KOMBI) useless.

- While releasing: Release APIX data cable (blue) first.
- While connecting: Connect APIX data cable (blue) at the last.

- **If installed:** Connect the blue connector at the last and lock it.
- Connect and lock connector (1) to the instrument cluster (KOMBI) (2).



- Feed in and position the instrument cluster (KOMBI) (2).
- Tighten the screws (1).

Instrument cluster (KOMBI) to support

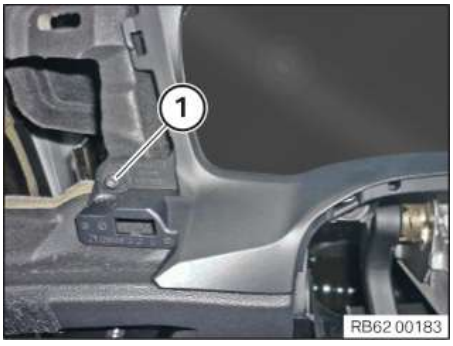
Oval-head screw		Tightening torque	1,8 Nm



- Tighten down screw (1).

Instrument cluster (KOMBI) to support

Oval-head screw		Tightening torque	1,8 Nm



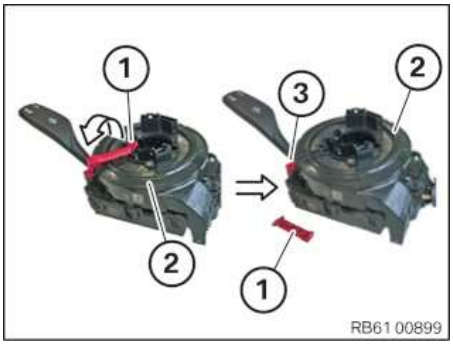
- Tighten down screw (1).

Instrument cluster (KOMBI) to support

Oval-head screw		Tightening torque	1,8 Nm

63 – Installing the steering column switch cluster (SZL)

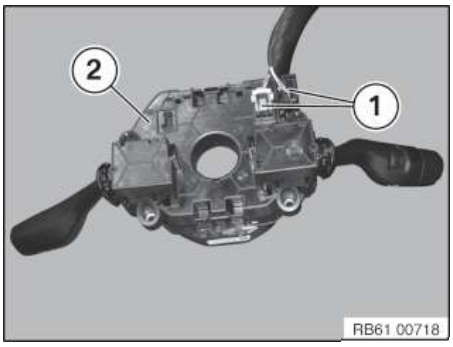
carldiagn.com



- **Replacement:**

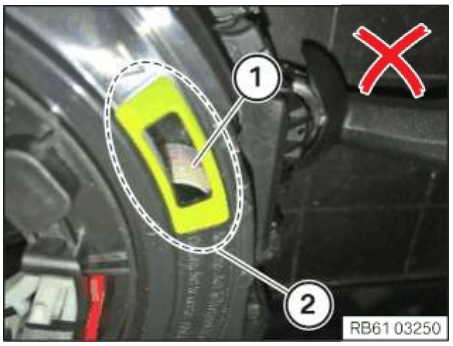
  Break off the transportation retainer (1) on the steering column switch cluster (SZL) (2) in direction of arrow.

  The broken off piece (3) of the transportation retainer (1) remains in the steering column switch cluster (SZL) (2).



- Connect the connector (1) with the steering column switch cluster (SZL) (2).

Check



- **Version A:**

  Check whether the correct marking (1) is seen in inspection glass (2).

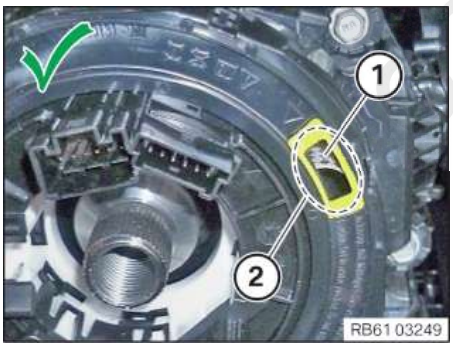
Result

» Ensure that no incorrect marking (1) is seen in inspection glass (2).

Measure

- Turn the coil spring cassette until the right mark (1) becomes visible in the inspection glass (2).

Check



- **Version A:**

  Check whether the correct marking (1) is seen in inspection glass (2).

Result

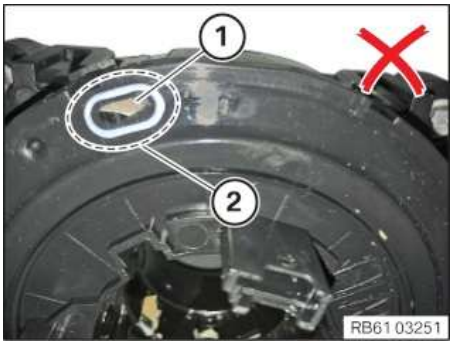
» Correct marking (1) is seen in inspection glass (2).

Measure

- Continue with the next step.

Check

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- **Version B:**

  Check whether the correct marking (1) is seen in inspection glass (2).

Result

» Ensure that no incorrect marking (1) is seen in inspection glass (2).

Measure

- Turn the coil spring cassette until the right mark (1) becomes visible in the inspection glass (2).

Check



- **Version B:**

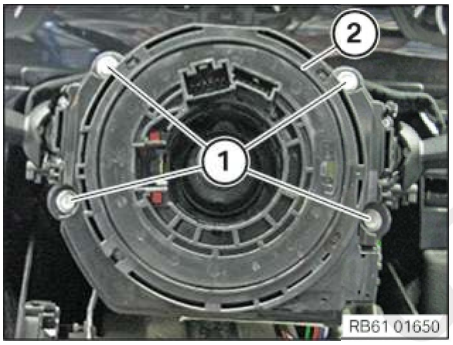
  Check whether the correct marking (1) is seen in inspection glass (2).

Result

» Correct marking (1) is seen in inspection glass (2).

Measure

- Continue with the next step.

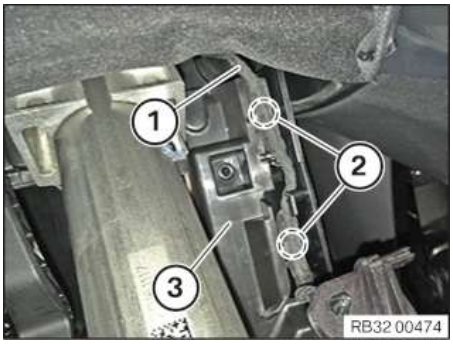


- Position the steering column switch cluster (SZL) (2).
- Tighten the screws (1).

Steering column switch cluster (SZL) on the steering column

Screw TS5x20		Tightening torque	3 Nm

64 – Install steering column shroud lower section

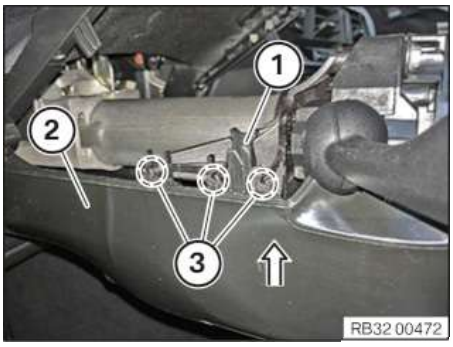


- Position the steering column shroud lower section (3).
- Secure the line (1) on the brackets (2).

carmanuals.com



- Connect the connector (1).

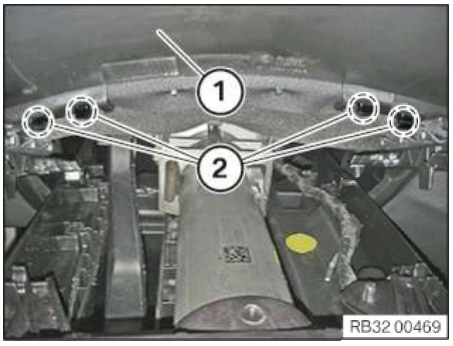


NOTICE

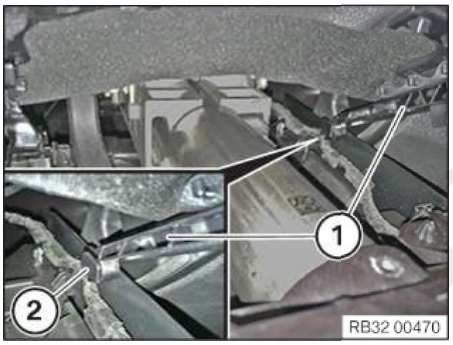
Perform the operations on the left and right side.

- Align the steering column shroud lower section (2) to the steering column using the retaining lug (1).
- Push the steering column shroud lower section (2) up in the direction of the arrow until the brackets (3) engage.

65 – Fit steering column shroud upper section



- Clip in the steering column shroud upper section (1) at the brackets (2).



NOTICE

Perform the operations on the left and right side.

- Clip in the steering column shroud upper section (1)into the guide (2).



NOTICE

Perform the operations on the left and right side.

- Press the upper section of the steering column shroud (1) downwards in direction of arrow.

  The upper section of the steering column shroud must engage audibly and perceptibly.

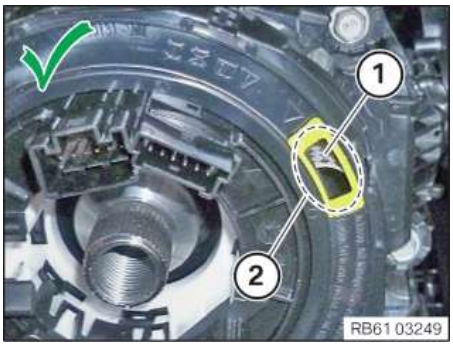
66 – Installing the steering wheel (sports steering wheel)

▸ **Check the neutral position of the clock spring**

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

partiagn.com



Check

- **Version A:**

  Check the mark (1) on the coil spring in the inspection glass (2).

Result

» The mark (1) on the coil spring is not visible.

Measure

- Turn the coil spring cassette until the mark (1) on the coil spring becomes visible in the inspection glass (2).



Check

- **Version B:**

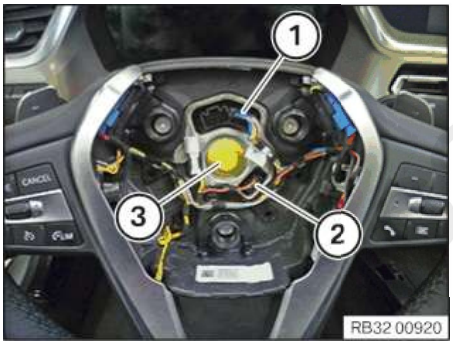
  Check the mark (1) on the coil spring in the inspection glass (2).

Result

» The mark (1) on the coil spring is not visible.

Measure

- Turn the coil spring cassette until the mark (1) on the coil spring becomes visible in the inspection glass (2).



Check

- A micro-encapsulated screw (3) may be fitted.
- Check the screw connection.

Result

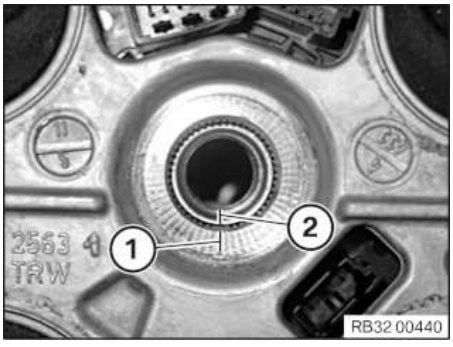
» Screw is (3) micro-encapsulated.

Measure

- Clean thread in the steering column.

  Renew the screw (3).

  Parts: Screw



- Align mark (1) on steering wheel to mark (2) on steering column.
- Connect steering wheel.

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- Connect connectors (1) and lock.
- If installed: Connect connectors (2) and lock.
- Tighten screw (3) .

Steering wheel to steering column

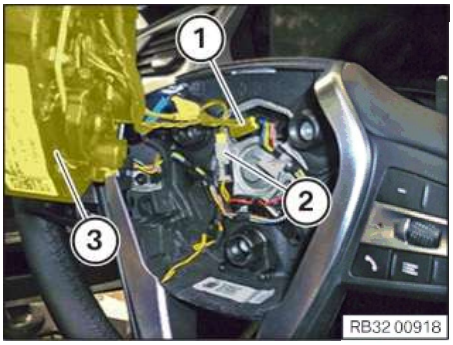
M14	Only for a micro-encapsulated screw: Renew screw.	Tightening torque	62,5 Nm

67 – Installing the airbag unit

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

▸ **Version A: Installing the airbag unit (sports steering wheel)**



- Position airbag unit (3).
- Connect connectors (1) and (2) lock.



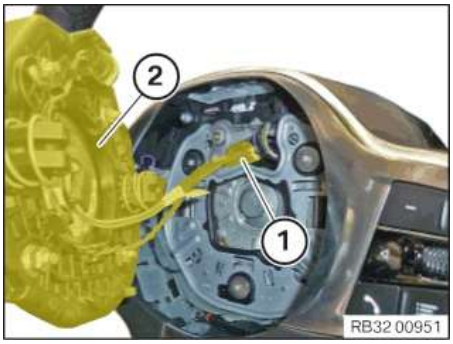
- Press the airbag unit (1) with even pressure in the direction of the arrow into the steering wheel.

  The airbag unit (1) must engage audibly and perceptibly.

▸ **Version B: Installing the airbag unit (M Sport steering wheel)**

TECHNICAL INFORMATION

After replacing the airbag unit (M-sports steering wheel) or after a possible conversion of standard steering wheel and airbag unit to M-sports steering wheel, a software update or a programming/encoding via ISTA must be performed!



- Connect and lock connector (1) of the airbag unit (2).

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- Press the airbag unit (1) with even pressure in the direction of the arrow into the steering wheel.

  The airbag unit (1) must engage audibly and perceptibly.

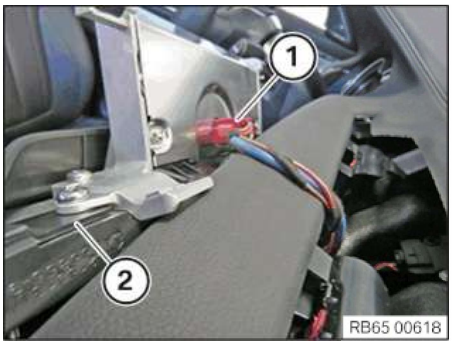
68 – Install the central information display (CID)

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.



- Position Central Information Display (CID) (2).
- Connect plug connection (1) and lock.

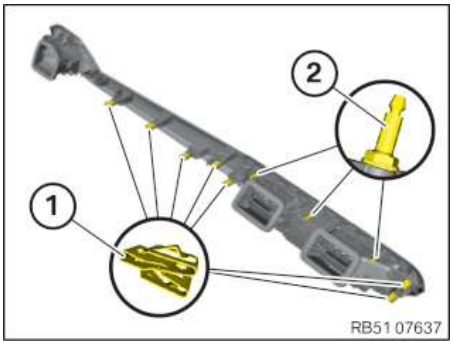


- Insert the central information display (CID) (2) in the instrument panel and position correctly.
- Tighten the screws (1).

Central information display to instrument panel

Screw		Tightening torque	1,8 Nm

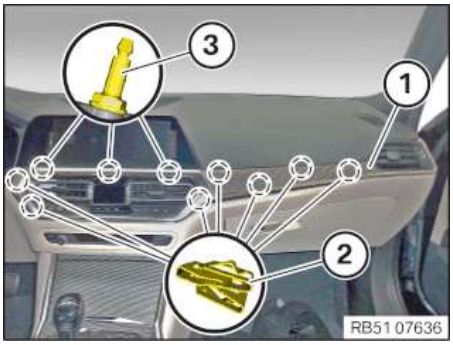
69 – Install the finisher on the right instrument panel



- Check the clamps (1).

  Replace broken or missing clamps (1).
- Check the pins (2) and the corresponding clamps on the instrument panel trim and renew if necessary.

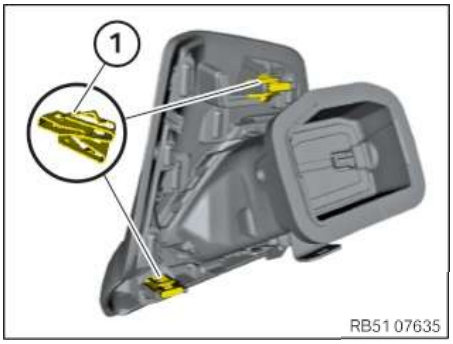
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- Install the decorative strip (1).

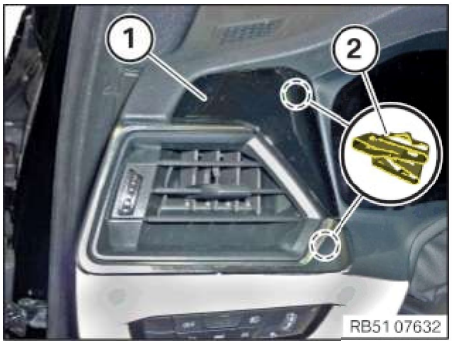
  Connect and lock the associated connectors.
- Correctly position the decorative strip (1) and at the clamps (2) and clip in the pins (3).

70 – Install the finisher on the instrument panel on the left



- Check the clamps (1).

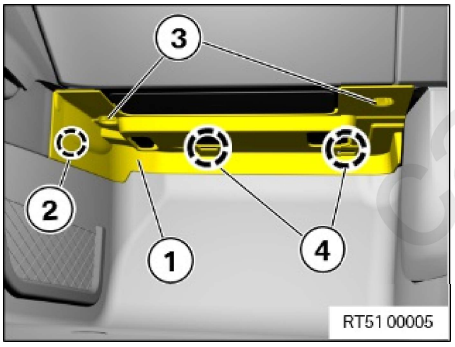
  Replace broken or missing clamps (1).



- Install the decorative strip (1).

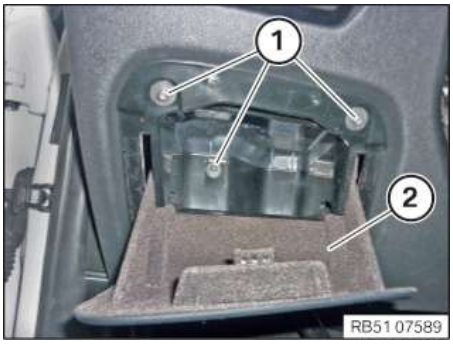
  Connect and lock the associated connectors.
- Clip decorative strip (1) into clamps (2).

71 – Install the right footwell trim panel



- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

72 – Installing the left fold-down compartment



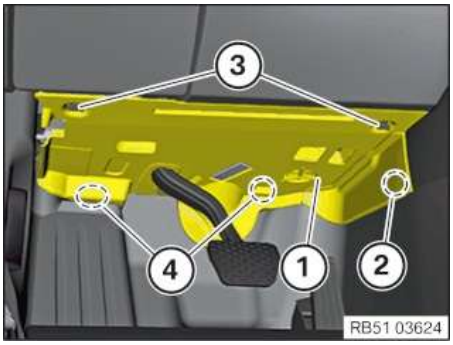
- Install the fold-down compartment (2).
- Tighten the screws (1).

Fold-down compartment to instrument panel

Oval-head screw		Tightening torque	1,8 Nm

73 – Installing the trim panel for the pedal mechanism

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- Connect associated connector.
- Attach the trim panel for the pedal mechanism (1) in the guides (4) and fold it up.
- Clip the trim panel for the pedal mechanism (1) into the centre console in this area (2).
- Insert locks (3) correctly and turn 90°.

74 – Install both A-pillar trim panels

NOTICE

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

▸ **Installing the A-pillar trim panel**

WARNING

Airbag unit.

Danger! Life-threatening injuries!

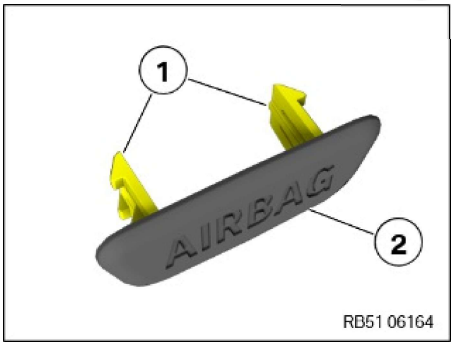
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.



Check

- Check retaining lugs (1) of cover (2) for damage.

Result

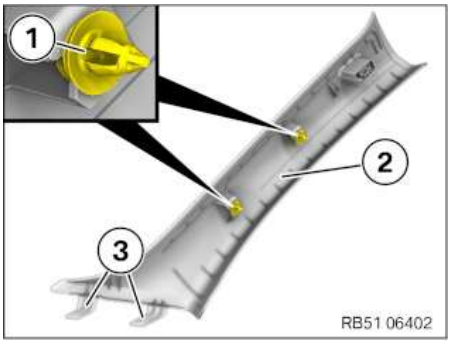
» Retaining lug is damaged.

Measure

- Renew the cover.

Check

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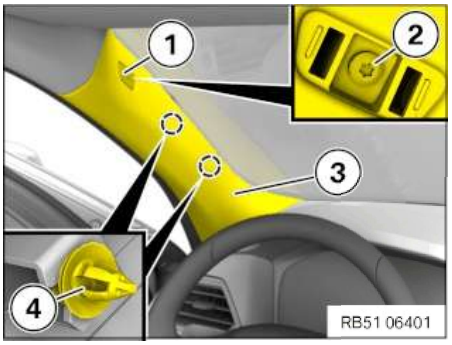
- Check the clips (1) for damage and renew if necessary.
- Check the guides (3) for damage.

Result

» Guide is damaged.

Measure

- Renew the A-pillar trim panel.



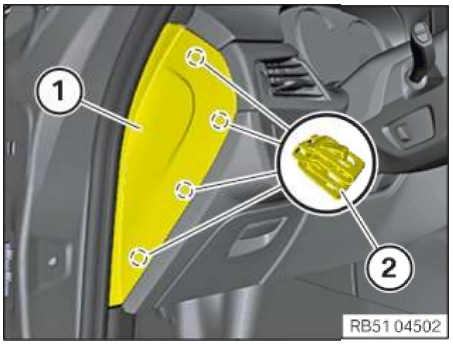
- Guide in A-pillar trim panel (3) downwards and clip it in with clips (4).
- Tighten down screw (2).

A-pillar trim panel to body

Sheet metal screw 4,8x38		Tightening torque	2,6 Nm

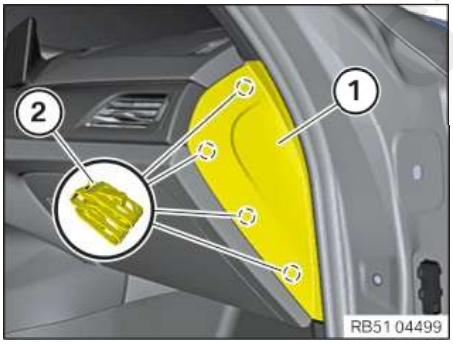
- Clip in the cover (1).

75 – Install the side panel on left instrument panel



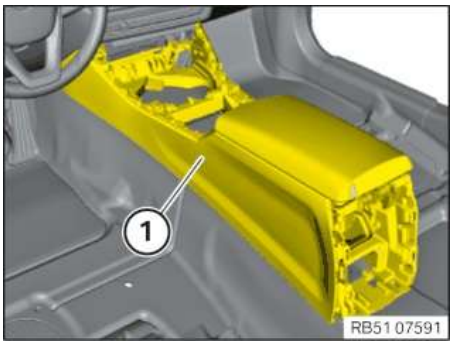
- Feed in the side panel (1) and clip it in at the clamps (2).

76 – Install the side panel on instrument panel on the right



- If required, connect the associated connector.
- Feed in the side panel (1) and clip it in at the clamps (2).

77 – Installing the centre console

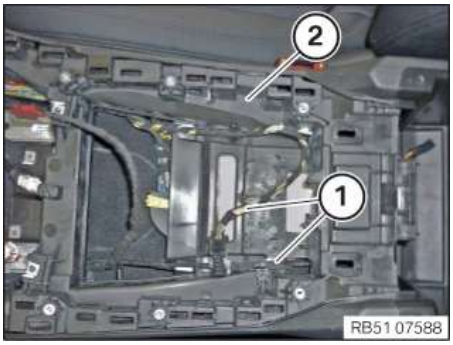


NOTICE

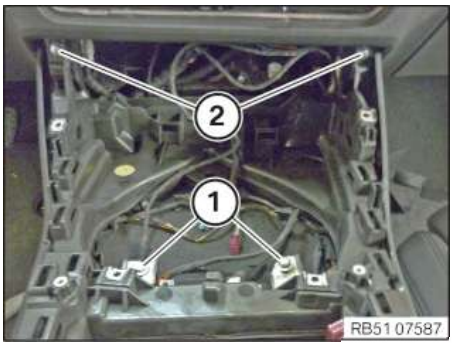
To provide a better overview: Schematic diagram with partially hidden components.

- Install centre console (1) and thereby feed in the wiring harness.
- Feed in the centre console (1) to the instrument panel and position correctly.

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- Secure the wiring harness to the centre console (1) and connect and lock the existing plug connections.



- Tighten the screws (1).

Centre console on tunnel

M6x18 Hexagon screw		Tightening torque	4,6 Nm

- Tighten the screws (2).

Centre console to instrument panel

Oval-head screw		Tightening torque	1,8 Nm

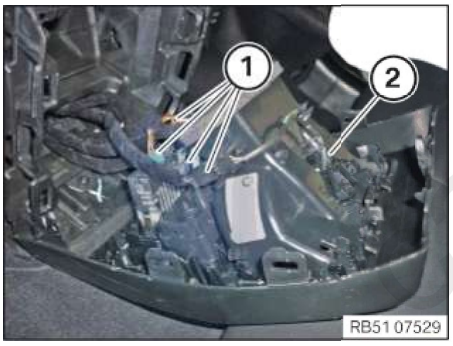


- Tighten the screws (1).

Centre console on tunnel

M6x18 Hexagon screw		Tightening torque	4,6 Nm

78 – Installing the rear centre console trim



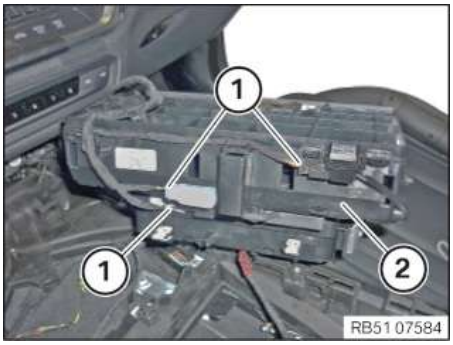
- Install the centre console trim (2).
- Connect connectors (1) and lock.



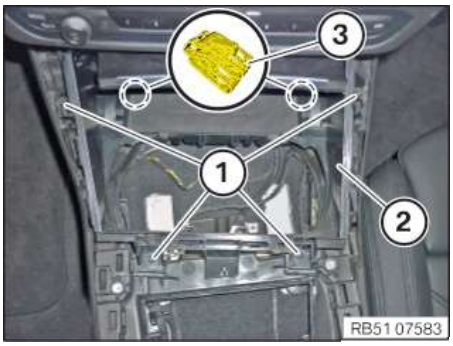
- Position centre console trim (1) and engage at the latch mechanisms at the side.

79 – Installing the storage compartment of the front centre console

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- Mount the storage compartment (2) and connect connectors (1).

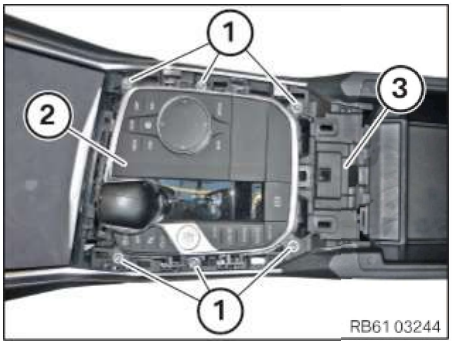


- Engage rear storage compartment trim (2) into clamps (3).
- Tighten the screws (1).

Storage compartment to centre console

Oval-head screw		Tightening torque	1,8 Nm

80 – Install the operating facility in the centre console



- Position operating facility (2) in the centre console (3).
- Tighten the screws (1).

Gear selector switch to centre console trim

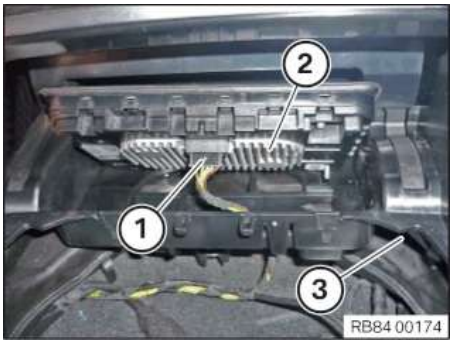
Screw		Tightening torque	1,8 Nm

▸ **Disconnecting all battery earth leads**



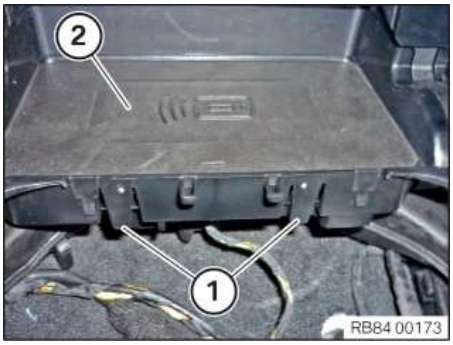
- See additional information.

81 – Installing the wireless charging station



- Connect connector (1).
- Position the wireless charging station (2) in the centre console (3).

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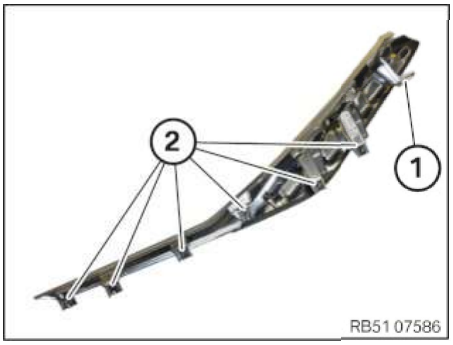
- Press the wireless charging station (2) down till the locking units (1) are engaged correctly.

82 – Install decorative trim on centre console on left and right

▸ **Installing the decorative trim to centre console**

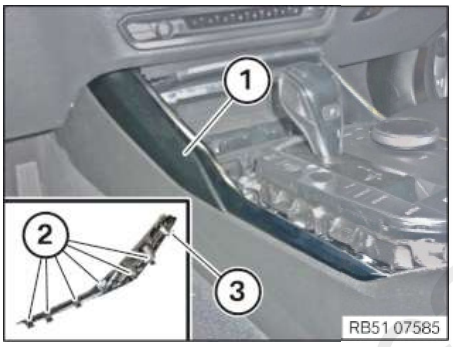
NOTICE

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



- Check guide (1) and the latch mechanisms (2).

  Renew defective decorative trim.



- Feed in the decorative trim (1) forward in the guide (3).
- Engage decorative trim (1) in latch mechanisms (2).

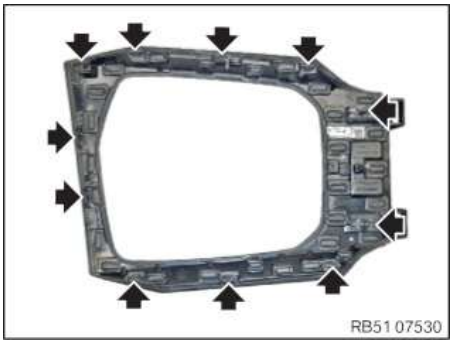
83 – Installing the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



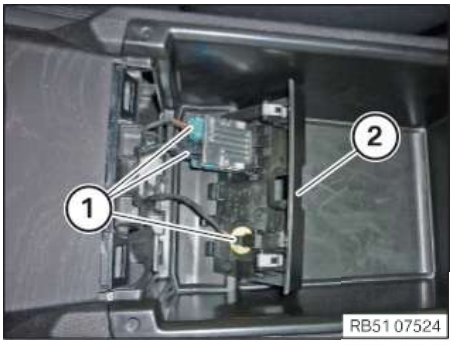
- Check all the latch mechanisms or clamps (arrows).
- In case the latch mechanisms or the clamps (arrows) are faulty, renew the centre console trim .

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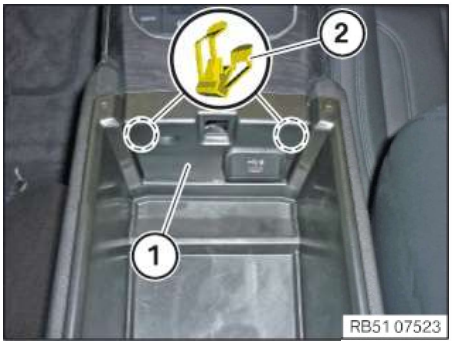


- Correctly position the centre console trim (1) and engage at the latch mechanisms.

84 – Installing the trim in the storage compartment of the centre armrest



- Mount the trim (2) and connect connector (1) and lock.



- Correctly position trim (1) and snap into the clamps (2).

85 – Install the cup holder



- Fix the cup holder (1) and the belonging connectors.
- Correctly position cup holder (1).
- Tighten the screws (2).

Cup holder to centre console

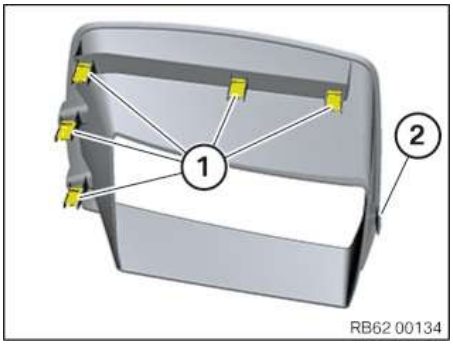
Oval-head screw		Tightening torque	1,8 Nm



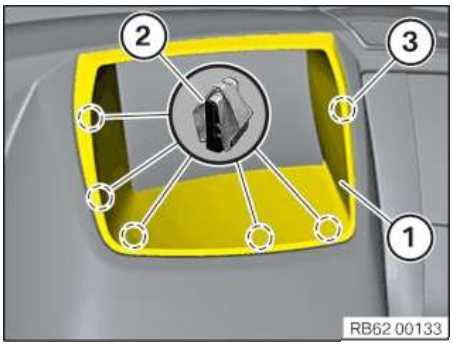
- Insert the insert (1).

86 – Installing the trim for the Head-Up Display

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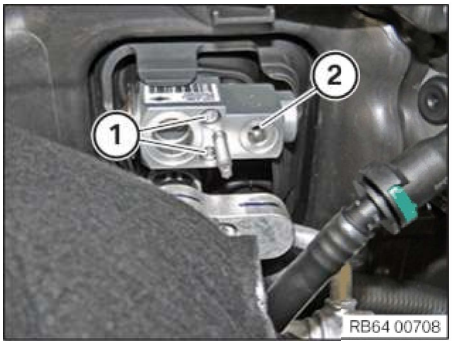


- Check clamps (1) and the latch mechanism (2) for damage, renew if necessary.



- Correctly position the trim (1) for the BMW Head-Up Display and engage it on the clamps (2) and the retaining lug (3).

87 – Install expansion valve



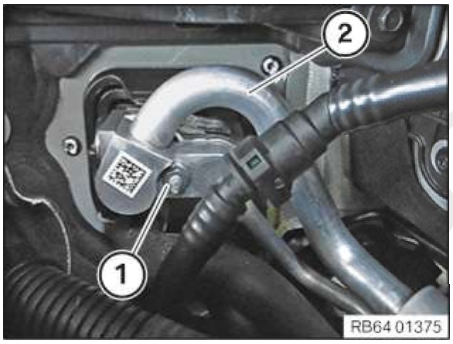
- Replace O-rings.

  Parts: O-rings
- Correctly position the expansion valves (2).
- Tighten the screws (1).

Expansion valve to heater - A/C

M5		Tightening torque	5,5 Nm

88 – Connect the refrigerant line to the expansion valve

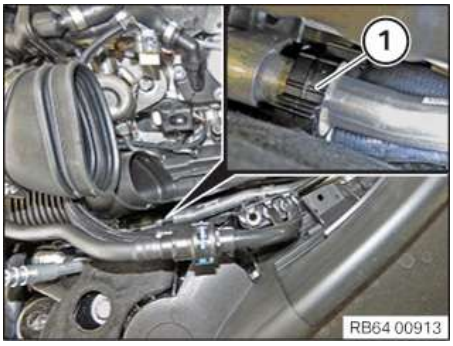


- Replace O-rings.

  Parts: O-rings
- Correctly position the refrigerant line (2).
- Tighten nut (1).

Refrigerant lines to expansion valve

M6		Tightening torque	13 Nm



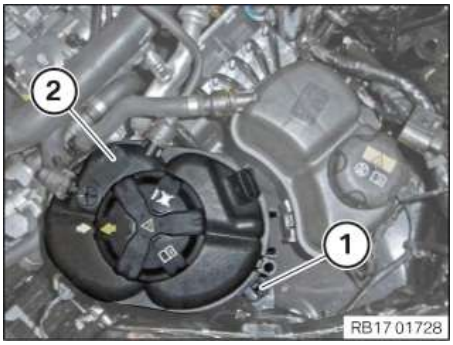
- Close the holder (1).

89 – Install coolant expansion tank of high-temperature coolant circuit, partially

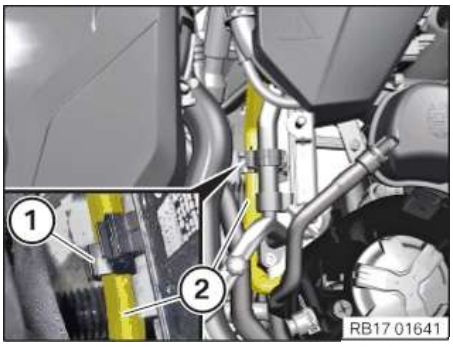
TECHNICAL INFORMATION

Make sure that the connections are locked correctly. The locks must engage audibly.

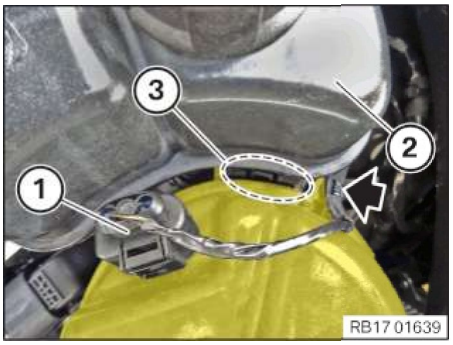
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- Feed in and correctly position the coolant expansion tank (2) for the high-temperature coolant circuit.
- Lock the lock (1).



- Feed in the coolant line to the holder (1) and position.
- Lock holder (1).

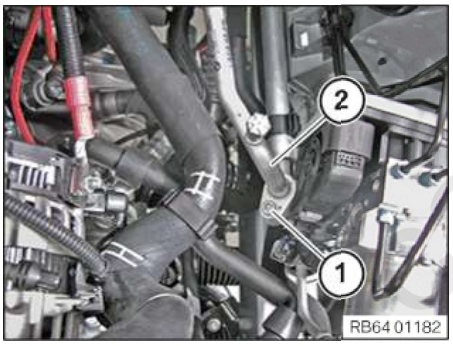


- Feed in and install the coolant expansion tank (2) for the low-temperature coolant circuit to the holders.

  The lock (3) must audibly engage.
- Secure clamp (arrow).
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

90 – Fasten the refrigerant line on the connecting piece



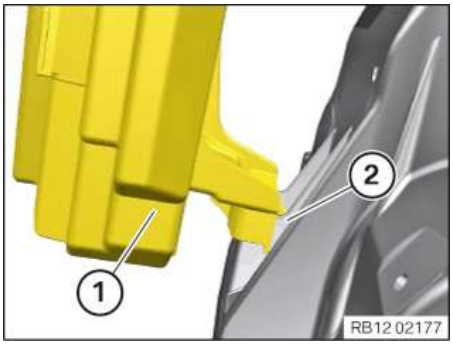
- Renew the sealing ring.

  Parts: Sealing ring
- Correctly position the refrigerant line (2).
- Tighten down screw (1).

Refrigerant line to connecting piece

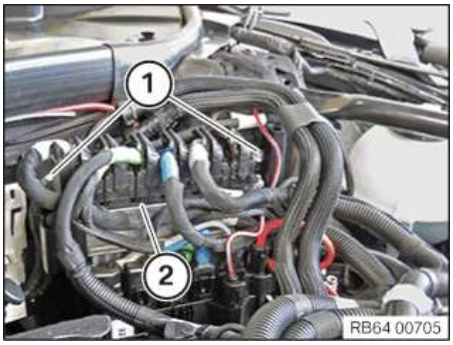
M8		Tightening torque	19 Nm

91 – Fastening control unit holder



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

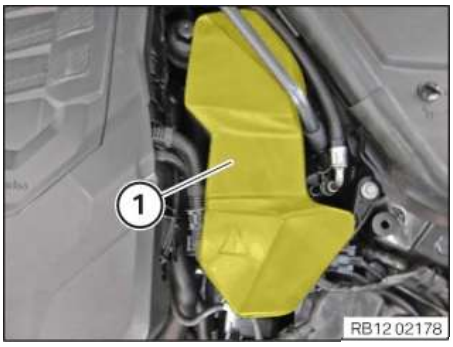
Bentley Publishers



- Position the control unit holder together with the control units (2) and position correctly.
- Tighten the screws (1).

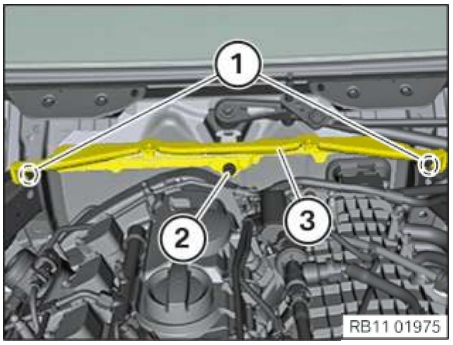
Control unit holder on spring strut dome

Hexagon screw		Tightening torque	8 Nm



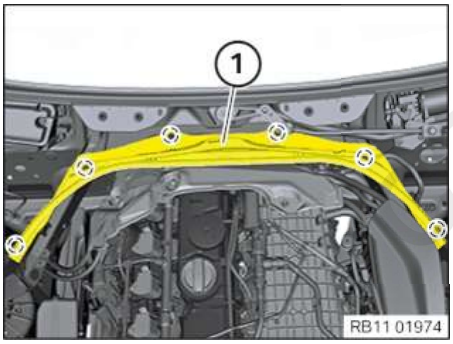
- Insert and install cover (1) into guides.

92 – Installing centre bulkhead lower section



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

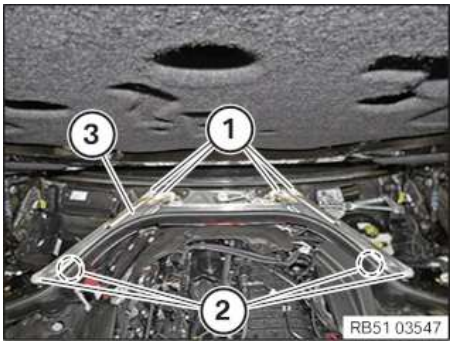
93 – Installing the centre bulkhead upper part



- 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 °

94 – Installing cowl panel cover

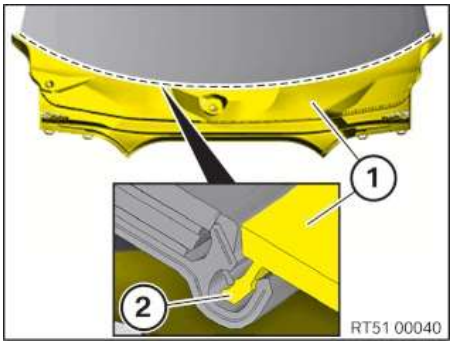
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RISK OF DAMAGE

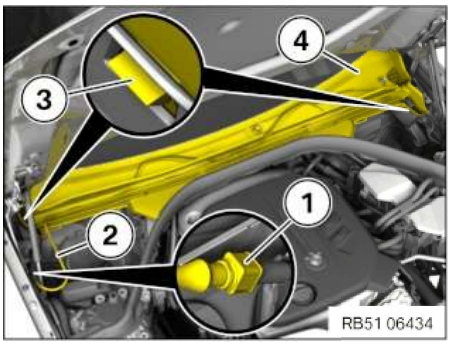
Damage caused by water ingress into the vehicle.

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

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



- 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.

95 – Installing both wiper arms

NOTICE

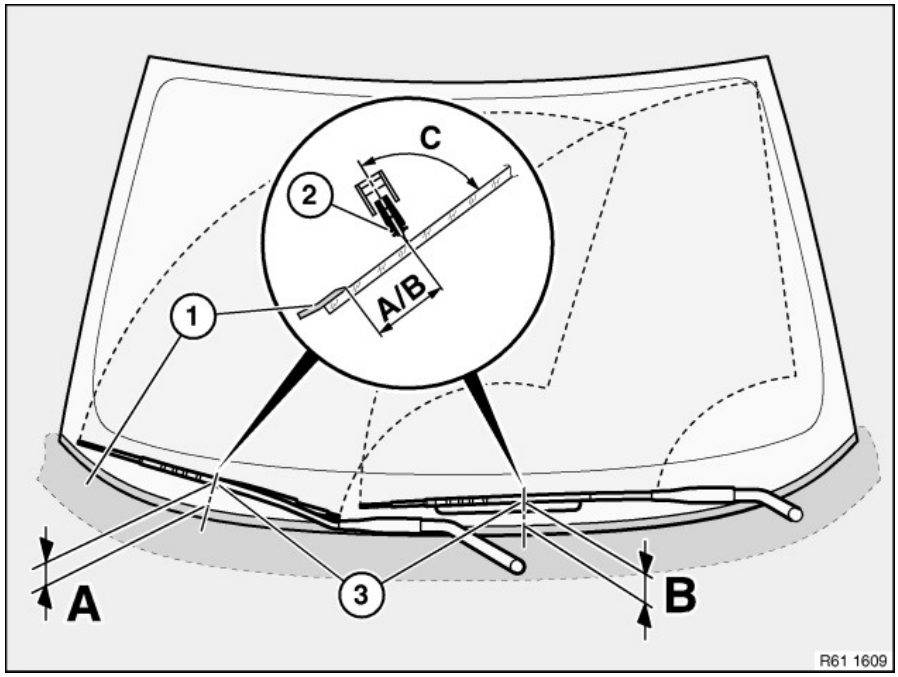
Description is for left component only. Procedure on the right side is identical.

▸ 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.

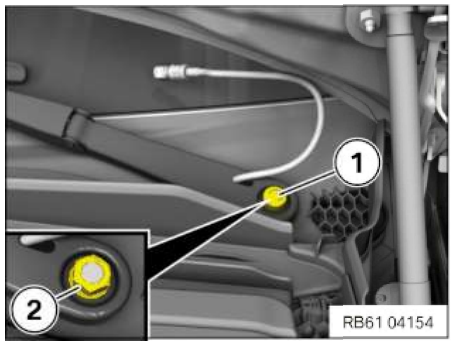
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- Connect the wiper arm (3).
- Correctly position the wiper arm (2) in relation to the window edge (1).

Distance from window pane edge to wiper blade

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

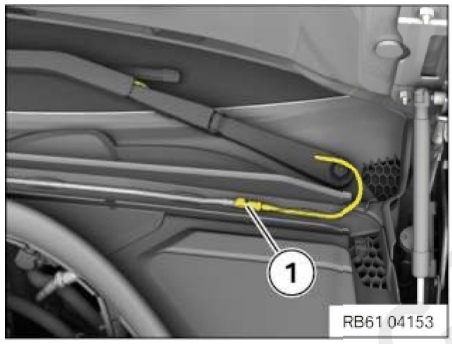


- Tighten nut (2).

Windscreen wiper arm

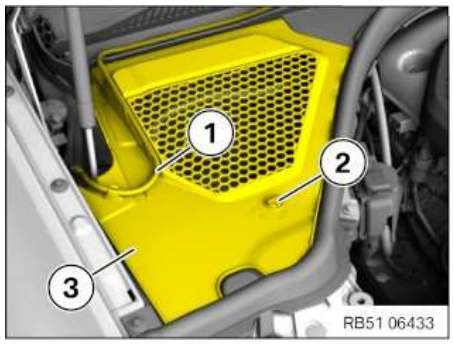
Combination hexagon nut		Tightening torque	35 Nm

- Connect the protective cap (1).



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

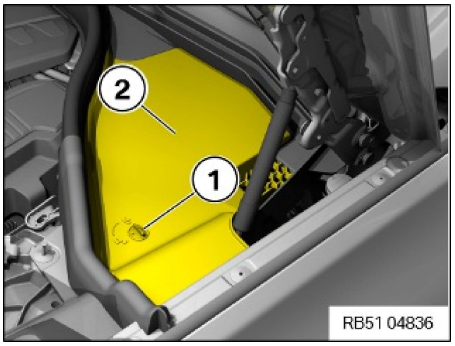
96 – Install the rear right engine compartment cover



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

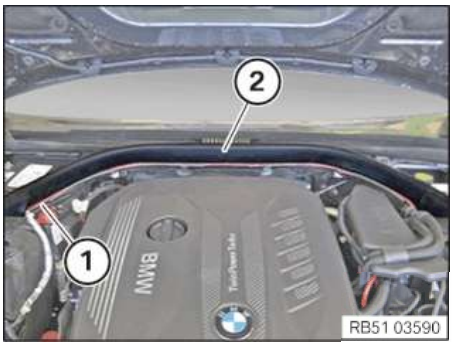
97 – Install the cover of the engine compartment on the rear left

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

98 – 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.

99 – Evacuate and fill air conditioning

- See additional information.

100 – Fill and bleed the coolant circuit

► **Filling and bleed the high-temperature coolant circuit**



- See additional information.

Additional Information

Overview of Tightening Torques

Heating and air-conditioning unit on support			Used in step 52
Nut M6		Tightening torque	4 Nm

Support for instrument panel			Used in step 52
M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

Head unit to holder / holder to support			Used in step 52
Screw		Tightening torque	1,8 Nm

Head-Up Display to support			Used in step 53
M6x25 screw		Tightening torque	13 Nm

Knee airbag on support structure			Used in step 55
Nut		Tlghtening torque	8 Nm

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Dashboard to support			Used in step 58
Screw		Tightening torque	2,4 Nm

Speaker to support / support to instrument panel / support to body			Used in step 59
Screw		Tightening torque	1,8 Nm

Instrument cluster (KOMBI) to support			Used in step 62
Oval-head screw		Tightening torque	1,8 Nm

Steering column switch cluster (SZL) on the steering column			Used in step 63
Screw TS5x20		Tightening torque	3 Nm

Steering wheel to steering column			Used in step 66
M14	Only for a micro-encapsulated screw: Renew screw.	Tightening torque	62,5 Nm

Central information display to instrument panel			Used in step 68
Screw		Tightening torque	1,8 Nm

Fold-down compartment to instrument panel			Used in step 72
Oval-head screw		Tightening torque	1,8 Nm

A-pillar trim panel to body			Used in step 74
Sheet metal screw 4,8x38		Tightening torque	2,6 Nm

Centre console on tunnel			Used in step 77
M6x18 Hexagon screw		Tightening torque	4,6 Nm

Centre console to instrument panel			Used in step 77
Oval-head screw		Tightening torque	1,8 Nm

Storage compartment to centre console			Used in step 79
Oval-head screw		Tightening torque	1,8 Nm

Gear selector switch to centre console trim			Used in step 80
Screw		Tightening torque	1,8 Nm

Cup holder to centre console			Used in step 85
Oval-head screw		Tightening torque	1,8 Nm

Expansion valve to heater - A/C			Used in step 87
M5		Tightening torque	5,5 Nm

Refrigerant lines to expansion valve			Used in step 88
M6		Tightening torque	13 Nm

Refrigerant line to connecting piece			Used in step 90
M8		Tightening torque	19 Nm

Control unit holder on spring strut dome			Used in step 91
Hexagon screw		Tightening torque	8 Nm

Bulkhead upper part to bottom bulkhead			Used in step 93
		Tightening torque	3 Nm

Tension strut on bulkhead			Used in step 93
M10x25 screw		Tightening torque	56 Nm

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Tension strut to spring strut dome — Used in step 93

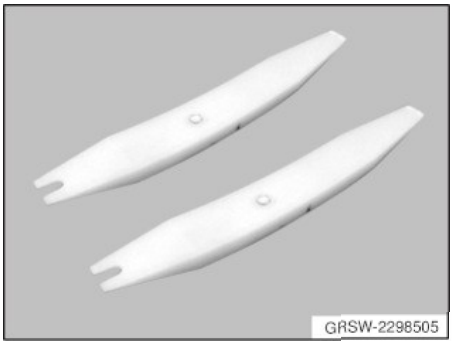
Screw	Renew screws.	Jointing torque	56 Nm
		Angle of rotation	90 °

Windscreen wiper arm — Used in step 95

Combination hexagon nut		Tightening torque	35 Nm

Overview of Special Tools

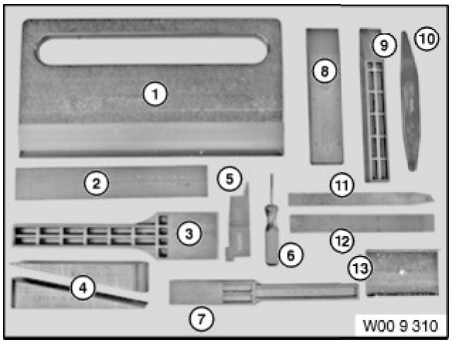
2 298 505 Wedge



Common — Used in step 1718

Usage	Set (delivery of 2 pieces)
Included in the tool or work	
Storage location	C34
Replaced by	
In connection with	
SI-Number	01 03 12 (792)

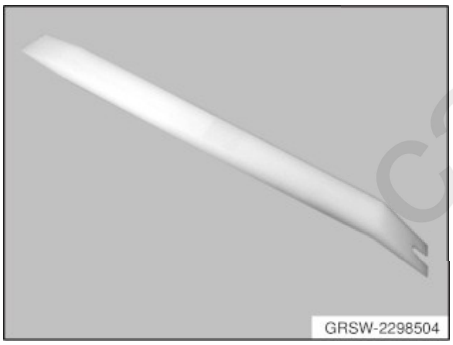
0 493 752 (00 9 329) Case



Common — Used in step 27

Usage	(Case) with insert not incl. panel wedges
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

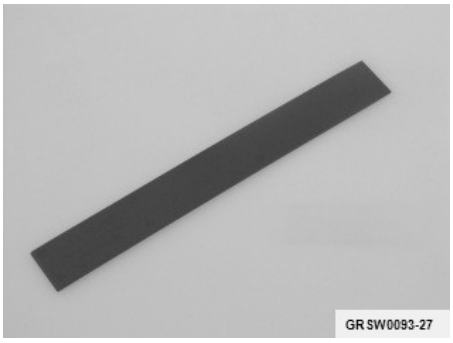
2 298 504 Wedge



Common — Used in step 36

Usage	Wedge with angled lug
Included in the tool or work	
Storage location	C34
Replaced by	
In connection with	
SI-Number	01 03 12 (792)

0 496 571 (00 9 327) Wedge



Common — Used in step 40

Usage	(Cleaning wedge) From 11/2008 this special tool replaces panel wedge 00 9 323 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

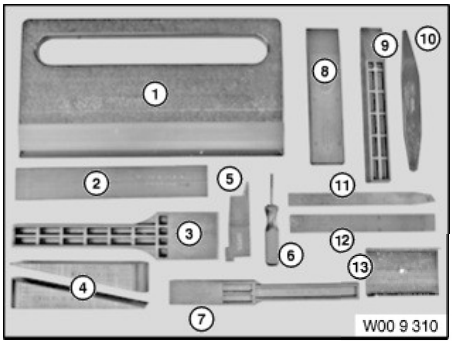
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0 496 569 (00 9 325) Wedge



Common	Used in step 41
Usage	(Panel wedge) From 11/2008 this special tool replaces panel wedge 00 9 317 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	41 01 09 (507)

0 490 534 (00 9 317) Wedge



Common	Used in step 44
Usage	(Trim wedge) Replaced by special tool 00 9 325 from 11/2008 (quality improvement due to new material) Replaced by 00 9 325 (0 496 569)
Included in the tool or work	0 490 527
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

Distance from window pane edge to wiper blade	Used in step 95
Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

Links

General repair instructions	Used in step
72 00 ... Safety regulations for handling components with gas generators	27344655
72 00 ... Safety regulations for handling components with gas generators	27

Repair instructions	Used in step
64 50 010 Extract, evacuate and fill air conditioning system	199
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	199
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	199
64 50 ... Notes on repairs to air conditioning	199
64 50 010 Drawing off, evacuating and filling air conditioning (R1234yf)	199
64 50 ... Safety information for handling refrigerant R1234yf	199
64 50 ... Safety information for handling tetrafluorethane refrigerant R134a	199
64 50 ... Safety informations for handling refrigerant oil	199
61 20 900 Disconnecting and connecting battery earth lead	2180
61 20 900 Disconnecting and connecting battery earth lead	2180
61 20 900 Disconnecting and connecting battery earth lead	2180
61 20 900 Disconnecting and connecting battery earth lead	2180
61 20 900 Disconnecting and connecting battery earth lead	2180
61 20 900 Disconnecting and connecting battery earth lead	2180
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	2180
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	2180
61 20 900 Disconnecting and connecting battery earth lead	2180
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	2180

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61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	2180
61 20 900 Disconnecting and connecting battery earth lead	2180
61 20 900 Disconnecting and connecting battery earth lead	2180
61 20 900 Disconnecting and connecting battery earth lead	2180
61 20 900 Disconnecting and connecting battery earth lead	2180
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61 20 900 Disconnecting and connecting battery earth lead	2180
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61 20 900 Disconnecting and connecting battery earth lead	2180
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	2180
61 20 900 Disconnecting and connecting battery earth lead	2180
61 20 900 Disconnecting and connecting battery earth lead	2180
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61 20 900 Disconnecting and connecting battery earth lead	2180
61 20 900 Disconnecting and connecting battery earth lead	2180
61 20 900 Disconnecting and connecting battery earth lead	2180
61 20 900 Disconnecting and connecting battery earth lead	2180
61 35 ... Notes on ESD protection (Electro Static Discharge)	3368
17 00 008 Draining and topping up coolant for high-temperature circuit	100
17 00 008 Draining and topping up coolant for high-temperature circuit	100
17 00 008 Draining and topping up coolant for high-temperature circuit	100
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	100
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	100
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	100
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	100
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17 00 039 Bleed the cooling system and check it for watertightness with the special tool	100
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	100
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	100
17 00 039 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature)	100
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	100
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	100
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	100
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	100
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	100

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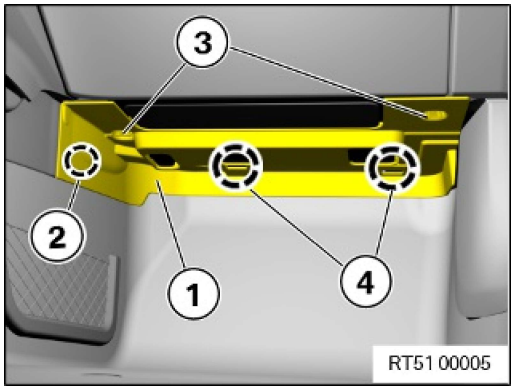
17 00 039 Bleeding the cooling system (B36, B38, B46, B48)	100
17 00 039 Bleeding cooling system (B37, B47)	100
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	100
17 00 039 Filling and bleeding the high-temperature cooling system vacuum filler device (B48)	100
17 00 008 Draining and topping up the high-temperature coolant circuit	100
17 00 008 Draining and topping up the high-temperature coolant circuit	100
17 00 016 Draining and topping up coolant circuit for Range Extender \PREMIUM	100
17 00 008 Draining and topping up the high-temperature coolant circuit	100
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	100
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	100
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	100
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	100
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	100

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64 11 213 Removing and installing/replacing heater/air conditioner fan

PRELIMINARY WORK

1 – Remove the right footwell trim



- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

2 – In vehicles with airbag module: Removing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

NOTICE

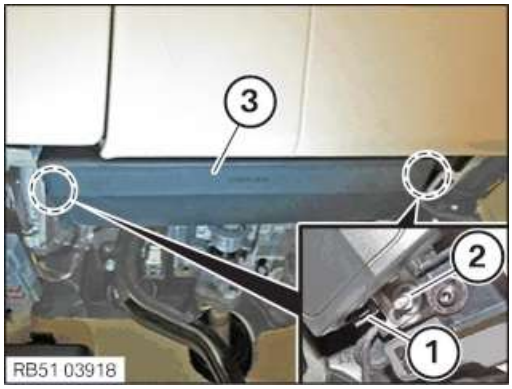
Description is for left component only. Procedure on the right side is identical.

▸ **Disconnecting all battery earth leads**



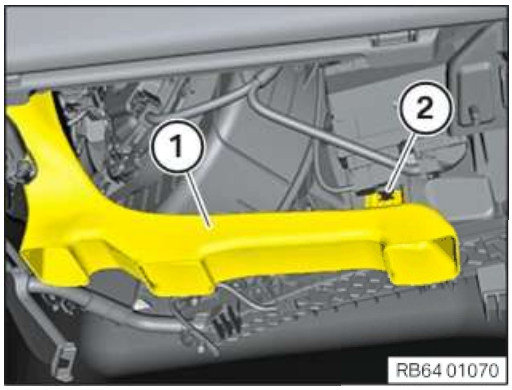
- See additional information.

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- Unlock plug connection (1) and disconnect.
- Loosen the screws (2) on left and right.
- Remove knee airbag (3) towards the bottom.

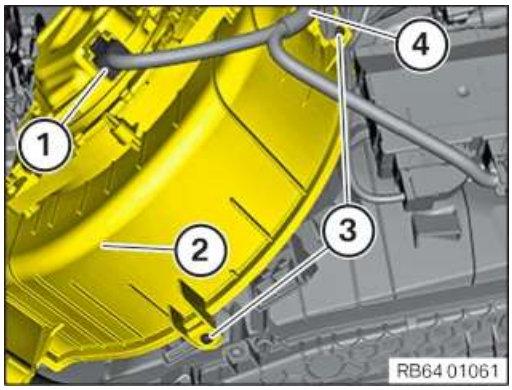
3 – Removing the right air duct



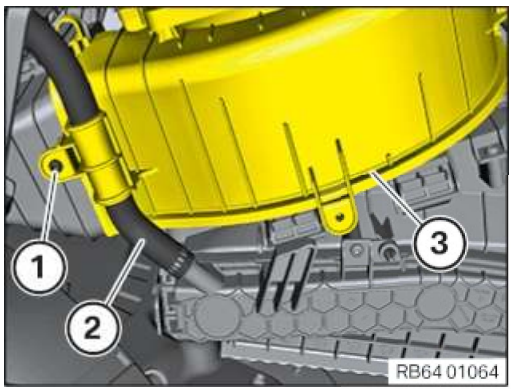
- Unclip the air duct (1) at an angle toward the bottom at the spring clip (2).

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4 – Remove the blower for the heating and air-conditioning unit

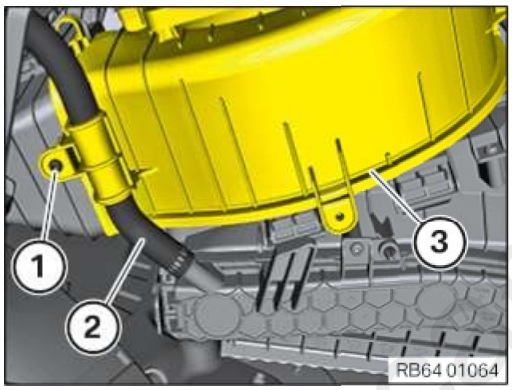


- Unlock and disconnect the plug connection (1) from the blower motor (2).
- Loosen screws (3).
- Pull of the cable clip (4) from the housing of the blower motor (2).



- Loosen screw (1).
- Guide out the hose (2) from the housing of the blower motor (3).
- Remove the housing of the blower motor (3).

5 – Install the blower for the heating and air-conditioning unit

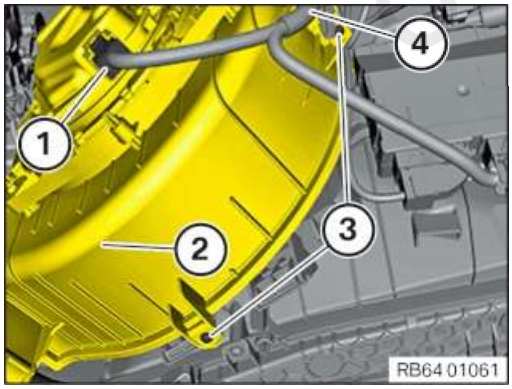


- Position the housing of the blower motor (3).
- Tighten down screw (1).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Feed in the hose (2) at the housing of the blower motor (3).



- Connect and lock plug connection (1) of blower motor (2).
- Tighten down screws (3).

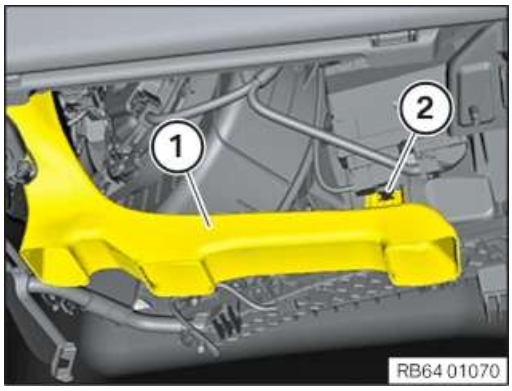
Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Secure the cable clip (4) on the housing of the blower motor (2).

mdiag.com

6 – Installing the air duct, right

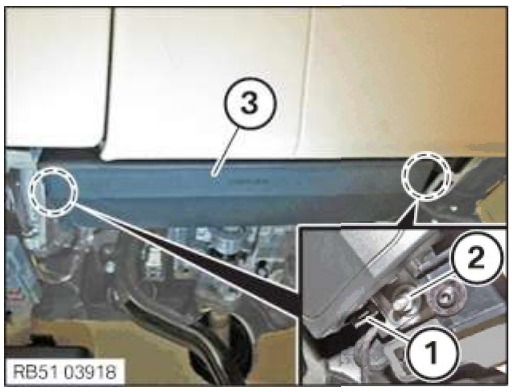


- Clip the air duct (1) in upward at an angle with the spring clip (2) on the heating and air-conditioning unit.

7 – In vehicles with airbag module: Installing knee airbag

NOTICE

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



- Install knee airbag (3).
- Tighten screws (2) on left and right.

Knee airbag

	Tightening torque	8 Nm

- Connect connectors (1) and lock.

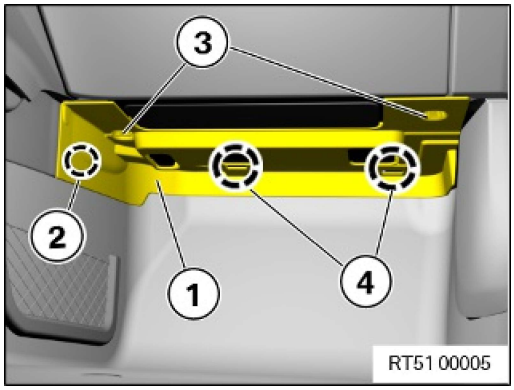
▸ **Disconnecting all battery earth leads**

- See additional information.



8 – Install the right footwell trim panel

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- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

Additional Information

Overview of Tightening Torques

Heater/air conditioner — Used in step 5

Screw		Tightening torque	1,2 Nm

Knee airbag — Used in step 7

		Tightening torque	8 Nm

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	27
61 20 900 Disconnecting and connecting battery earth lead	27
61 20 900 Disconnecting and connecting battery earth lead	27
61 20 900 Disconnecting and connecting battery earth lead	27
61 20 900 Disconnecting and connecting battery earth lead	27
61 20 900 Disconnecting and connecting battery earth lead	27
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	27
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	27
61 20 900 Disconnecting and connecting battery earth lead	27
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	27
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	27
61 20 900 Disconnecting and connecting battery earth lead	27
61 20 900 Disconnecting and connecting battery earth lead	27
61 20 900 Disconnecting and connecting battery earth lead	27
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61 20 900 Disconnecting and connecting battery earth lead	27
61 20 900 Disconnecting and connecting battery earth lead	27
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	27
61 20 900 Disconnecting and connecting battery earth lead	27
61 20 900 Disconnecting and connecting battery earth lead	27

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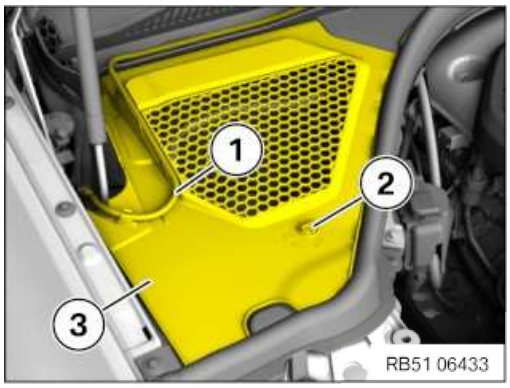
61 20 900 Disconnecting and connecting battery earth lead	27
61 20 900 Disconnecting and connecting battery earth lead	27
61 20 900 Disconnecting and connecting battery earth lead	27
61 20 900 Disconnecting and connecting battery earth lead	27
61 20 900 Disconnecting and connecting battery earth lead	27

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64 11 991 Removing and installing/replacing sensor for automatic air recirculation control

PRELIMINARY WORK

1 – Removing rear right cover of engine compartment and, if necessary, covering any auxiliary battery



▸ **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).

Check

- Check if an auxiliary battery is fitted in the engine compartment.

Result

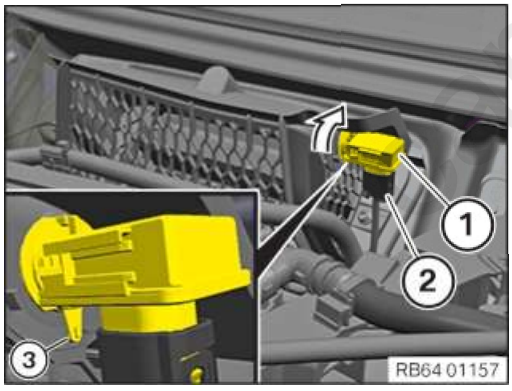
» Auxiliary battery is fitted in the engine compartment.

Measure

- Cover the auxiliary battery.

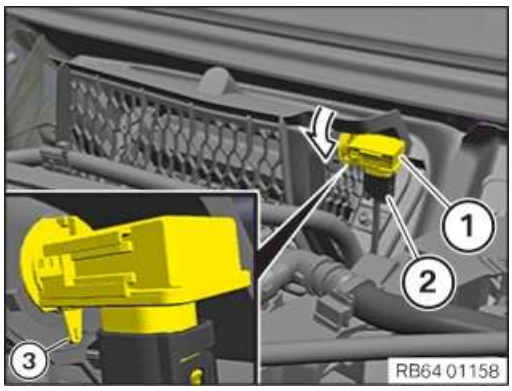
MAIN WORK

2 – Removing the automatic air recirculation control sensor



- Unlock and disconnect connector (2).
- Raise guide pin (3) slightly and turn automatic air recirculation control sensor (1) in direction of arrow.
- Remove automatic air recirculation control sensor (1).

3 – Installing the automatic air recirculation control sensor



- Correctly position the automatic air recirculation control sensor (1) and turn it in the direction of arrow until the guide pin (3) engages.
- Connect connectors (2) and lock.

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4 – Install the cover of rear right engine compartment (if required, remove battery cover).

Check

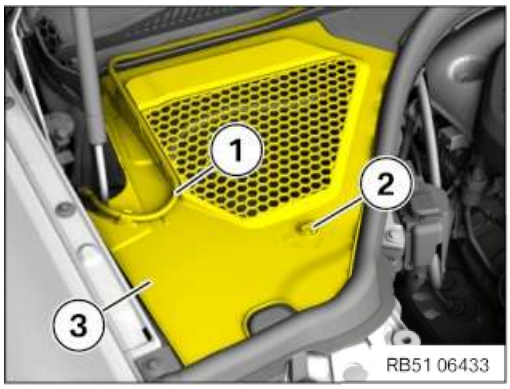
- Check, whether an auxiliary battery is installed in the engine compartment.

Result

» Auxiliary battery is installed in the engine compartment

Measure

- Remove the battery cover



► **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.

Additional Information

Overview of Special Tools

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64 11 879 Replace control panel for heating and air conditioning system

RISK OF DAMAGE

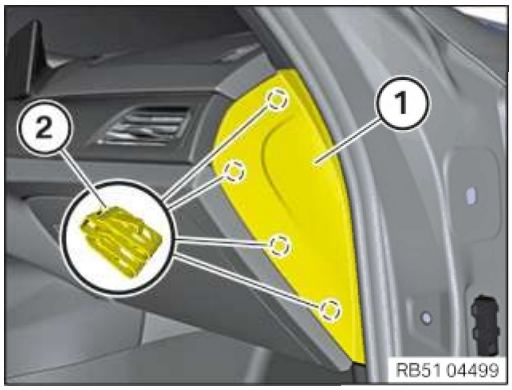
Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

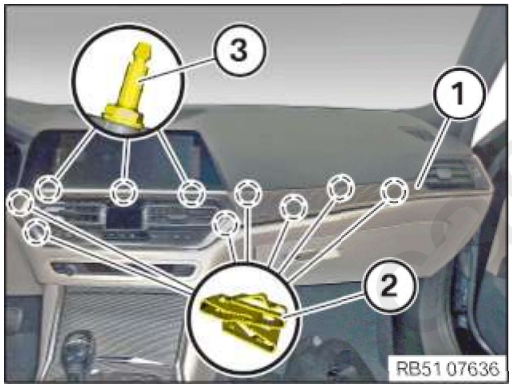
PRELIMINARY WORK

1 – Remove the side panel on the right instrument panel



- Unclip and remove the side panel (1) towards the outside from the clamps (2).
- If necessary, unlock associated plug connection and disconnect.

2 – Remove the finisher on the right instrument panel

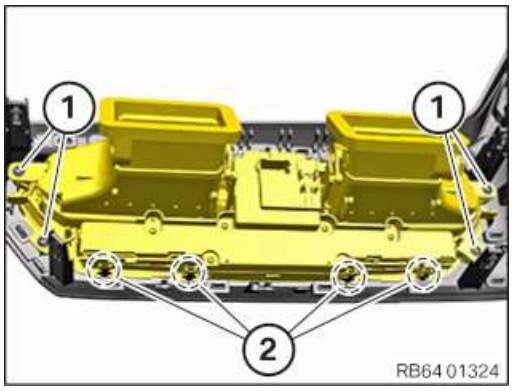


- Unclip the decorative strip (1) towards rear at the clamps (2) and the pins (3).
- Unlock associated plug connection and disconnect.

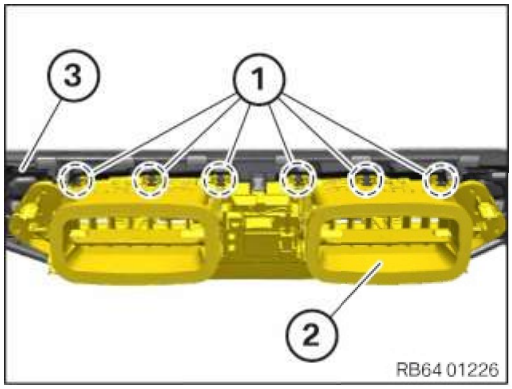
  Remove the decorative strip (1).

MAIN WORK

3 – Removing fresh air grille centre with integrated air conditioning control panel

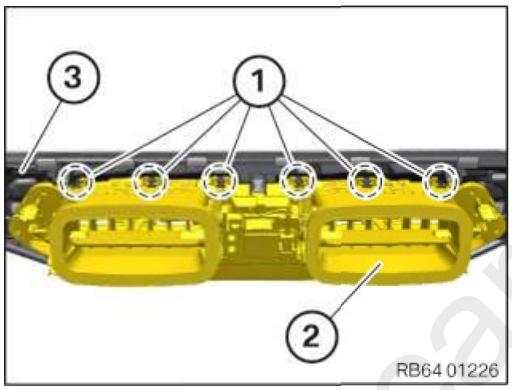


- Loosen screws (1).
- Disengage the latch mechanisms (2).

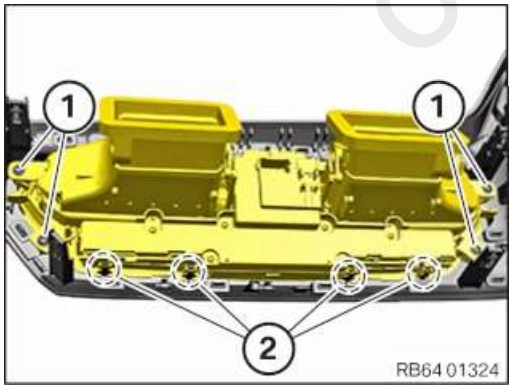


- Disengage the latch mechanism (1) from the fresh air grille (2).
- Remove fresh air grille (2) with the integrated air conditioning control panel from the decorative strip (3).

4 – Installing fresh air grille centre with integrated air conditioning control panel



- Set fresh air grille (2) with the integrated air conditioning control panel on decorative strip (3) and position it correctly.
- Engage latch mechanisms (1) on fresh air grille (2).



- Engage the latch mechanisms (2).
- Tighten the screws (1).

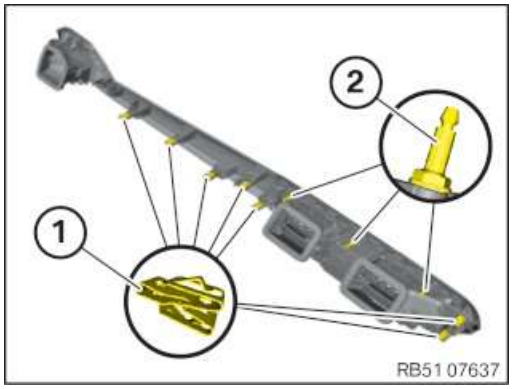
Fresh air grille on decorative strip / instrument panel

Screw		Tightening torque	1,8 Nm

POSTPROCESSES

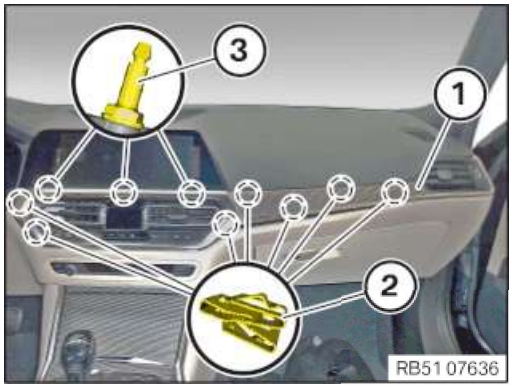
5 – Install the finisher on the right instrument panel

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- Check the clamps (1).

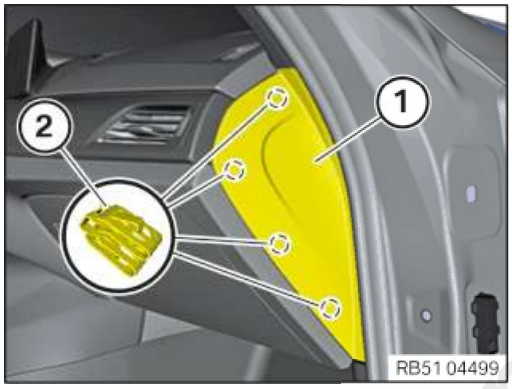
  Replace broken or missing clamps (1).
- Check the pins (2) and the corresponding clamps on the instrument panel trim and renew if necessary.



- Install the decorative strip (1).

  Connect and lock the associated connectors.
- Correctly position the decorative strip (1) and at the clamps (2) and clip in the pins (3).

6 – Install the side panel on instrument panel on the right



- If required, connect the associated connector.
- Feed in the side panel (1) and clip it in at the clamps (2).

7 – Encode/program control unit(s)

- **Replacement.**
- **This task is not included in this flat rate unit item.**

▸ **Encode/program control unit(s)**

Prerequisite

Replacement of component.

TECHNICAL INFORMATION

Use the most recent software version to prevent faults during programming/encoding.
The battery voltage must not fall below 13.0 V during programming.
Use only chargers for a low volt-vehicle electrical system that are recommended by BMW.

TECHNICAL INFORMATION

No high-voltage switch off is required in electric vehicles or hybrid vehicles for programming/encoding.
The high-voltage system will be automatically switched off by the programming system.

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- Connect the battery charger to the vehicle.
- Connect the programming system with the vehicle.
- Determine the action plan.
- Accept and fully process the measures plan.
- If applicable, connect the workshop system to the vehicle, depending on the reworking list.
- Carry out vehicle test.
- Delete the fault memory.
- The information about programming the workshop system and the corresponding notes in the user documentation must be observed.
- Wait until programming/encoding has been completed.
- Disconnect the programming system from the vehicle.
- Disconnect the battery charger from the vehicle.

Additional Information

Overview of Tightening Torques

Fresh air grille on decorative strip / instrument panel Used in step 4

Screw		Tightening torque	1,8 Nm

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64 11 208 Replace heat exchanger

CAUTION

Refrigerant circuit under high pressure.

Danger of injury!

- Note and follow safety information on containers.
- Avoid contact with refrigerant; wear safety goggles and protective gloves.
- For more information see: 64 50 Handling refrigerant and 6450 Notes on repair work on air conditioning

PRELIMINARY WORK

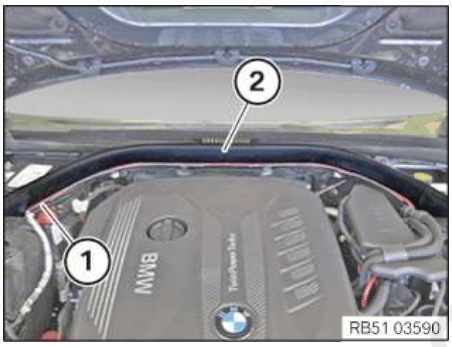
1 – Moving to installation position of flap motors

- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Installation position of flap motors

2 – Drawing off the air conditioning

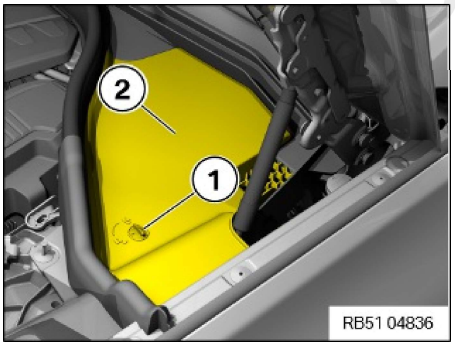
- See additional information.

3 – 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.

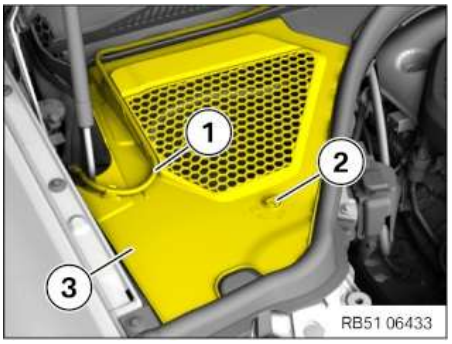
4 – Remove the cover of the engine compartment at the rear left



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

5 – Remove the cover of the rear right engine compartment

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

6 – Removing both wiper arms

NOTICE

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

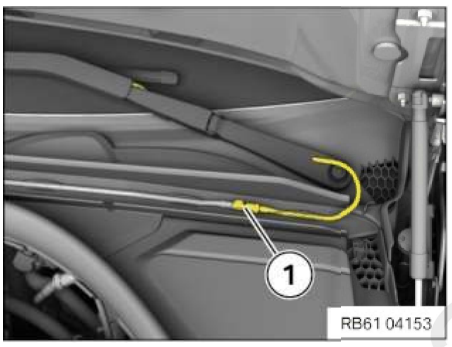
► **Remove the wiper arm**

RISK OF DAMAGE

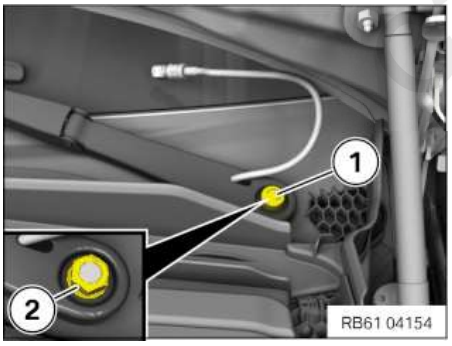
Damage to wiper console

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

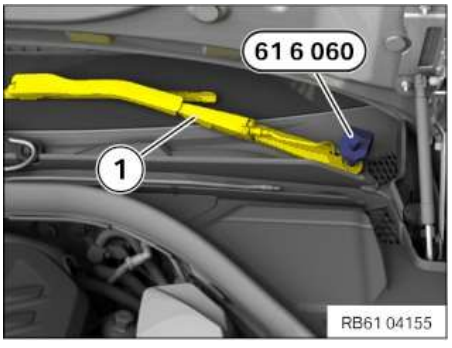
- Removing the wiper arms must be carried out only using the prescribed special tool.
- Do not lift off wiper arm, else the wiper console may break on the predetermined breaking point for the pedestrian protection.



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



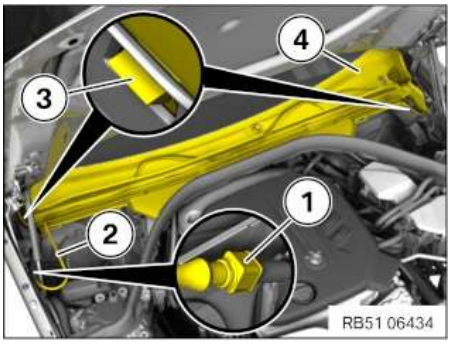
- Remove the protective cap (1).
- Loosen nut (2).



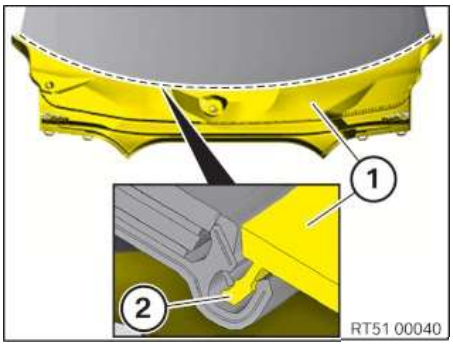
- Pull off the wiper arm (1) using special tool .

7 – Remove cowl panel cover

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- 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).

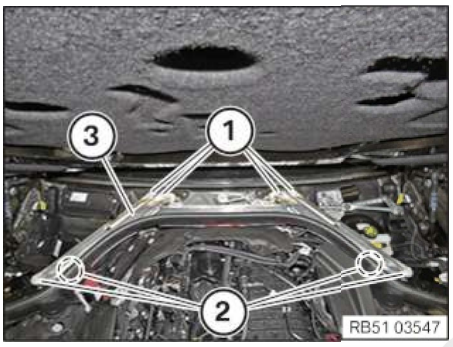


- Pull the cowl panel cover (1) upward out of the latch mechanism (2) beginning on the side.

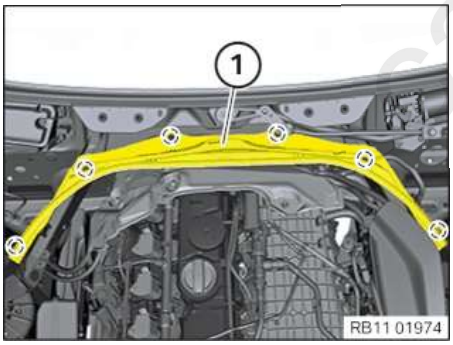
8 – Removing the centre bulkhead upper part

TECHNICAL INFORMATION

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

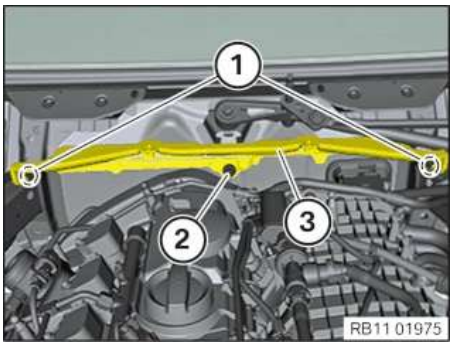


- **If installed:** Remove tension strut on spring strut dome.
- Loosen screws (1) and (2).
- Remove tension strut (3) in the spring strut dome upwards.



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

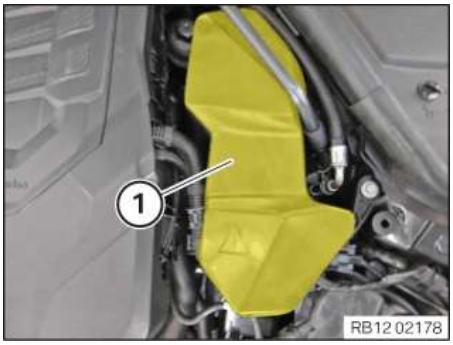
9 – Removing the centre bulkhead lower section



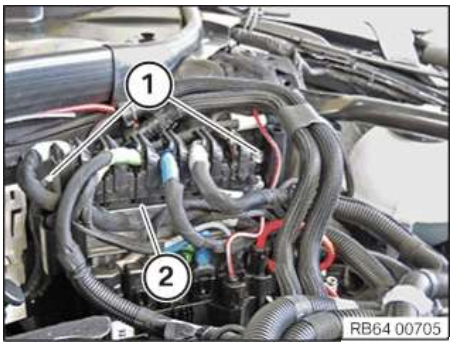
- Loosen screws (1).
- Loosen nut (2).
- Remove the centre bulkhead lower part (3).

10 – Detach the control unit holder

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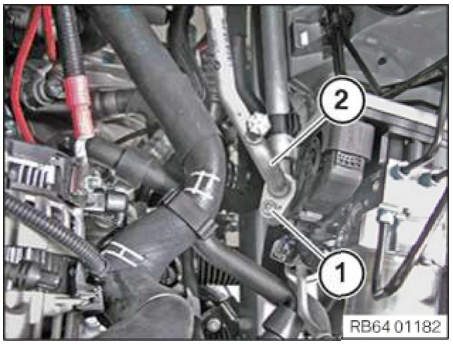


- Pull the cover (1) towards the top and feed out.



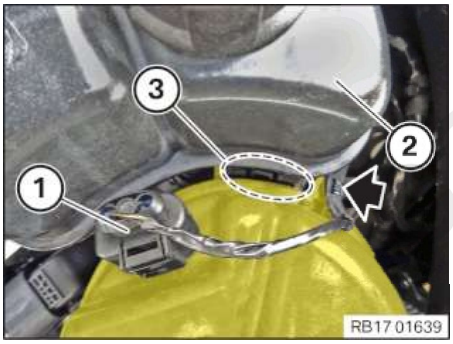
- Loosen screws (1).
- Remove control unit holder with the control units (2) and lay to one side.

11 – Disconnect the refrigerant line on the connecting piece



- Loosen screw (1).
- Remove the refrigerant line (2).

12 – Removing coolant expansion tank of high-temperature coolant circuit partially

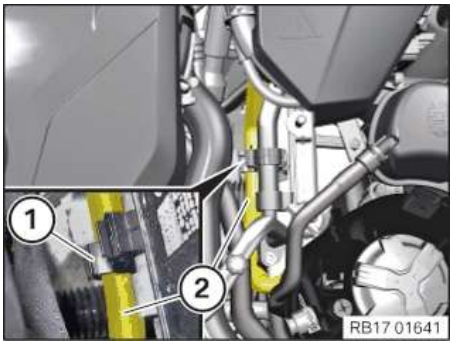


- Unlock plug connection (1) and disconnect.
- Loosen the clamp (arrow).
- Unlock coolant expansion tank (2) for the low-temperature coolant circuit in marked area.

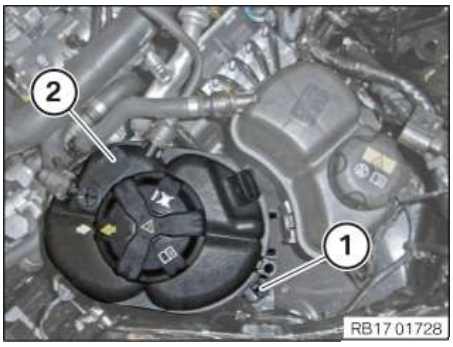


- Feed out and position the coolant expansion tank (1)for the low-temperature coolant circuit from the holders.

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- Unlock the holder (1).
- Feed out coolant line (2) and place to one side.



- Unlock lock (1).
- Thread out the coolant expansion tank (2) for the high-temperature coolant circuit upwards and set aside.

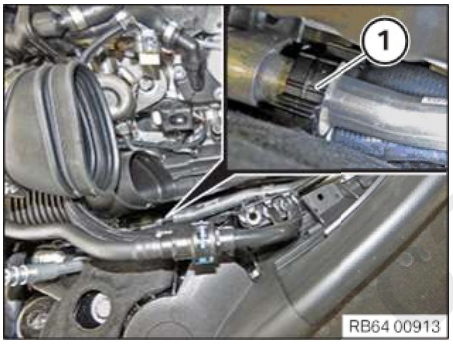
13 – Disconnect the refrigerant line from the expansion valve

CAUTION

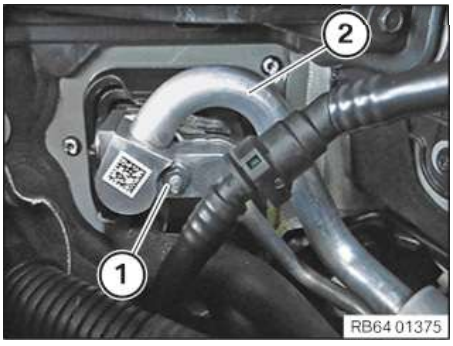
Residual pressure in the air conditioning.

Danger of injury!

- Wear safety goggles and protective gloves when disconnecting the refrigerant line.
- Seal refrigerant lines with seal plugs.



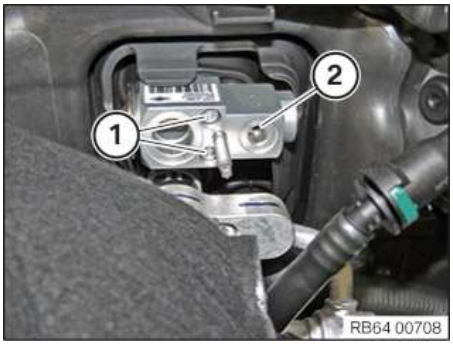
- Open the holder (1).



- Loosen nut (1).
- Remove the refrigerant line (2) and set it aside.

14 – Remove expansion valve

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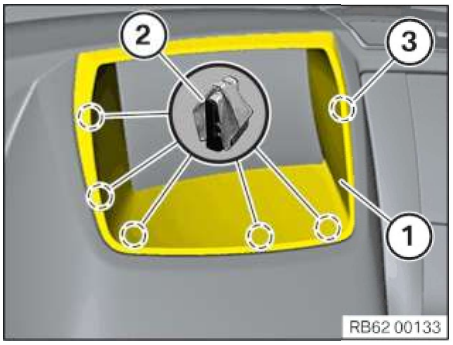
- Loosen screws (1).
- Remove the expansion valve (2).

15 – Adjust the steering column position



- Adjust the length of the steering column to the maximum length in the direction of arrow (1).
- Move the steering column to the lowest steering column position in the direction of arrow (2).

16 – Removing trim for the Head-Up Display



- Unclip trim (1) for the Head-Up Display upwards from clamps (2) and latch mechanism (3).

17 – Remove cupholder



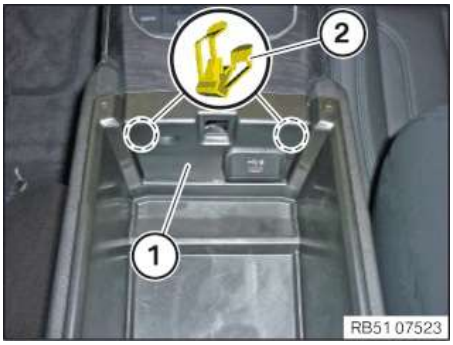
- Remove the insert (1).



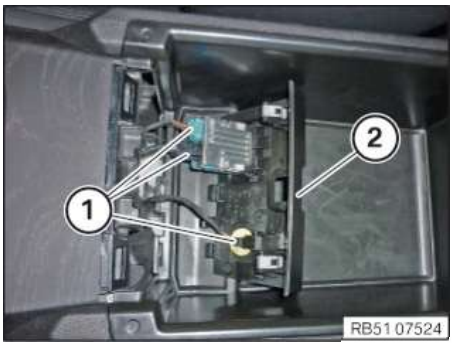
- Loosen screws (1).
- Feed the cup holder (2) out to the top.
- Unlock associated plug connections and disconnect.

18 – Removing the trim in the storage compartment on the centre armrest

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- Lever out the trim (1) with the special tool (2) toward the rear from the clamps 2 298 505.



- Unlock and disconnect the plug connections (1) and remove the trim (2) .

19 – Remove the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



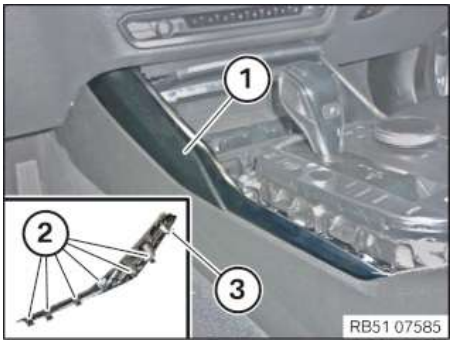
- Release and remove the centre console trim upwards (1) as shown using the special tool 2 298 505 from the latch mechanisms.

20 – Removing the decorative trim on the centre console trim on the left and right

▸ **Remove decorative trim on centre console**

NOTICE

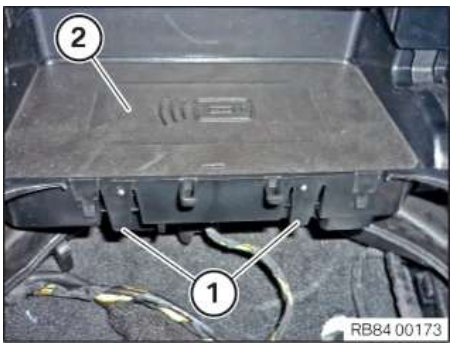
Description is for left component only. Procedure on the right side is identical.



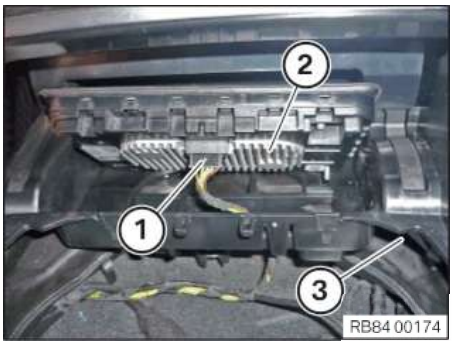
- Lever out the rear decorative trim (1) from the latch mechanisms (2) starting from the top.
- Feed out the decorative trim (1) backwards out of the guide (3) and remove.

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21 – Removing the wireless charging station



- Loosen the latch mechanisms (1) and push out the wireless charging station (2) upwards.



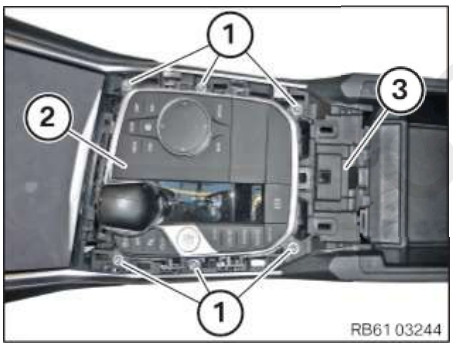
- Disconnect the connector (1) and remove the wireless charging station (2) from the centre console (3).

22 – Remove the operating facility in the centre console

▶ **Disconnecting all battery earth leads**

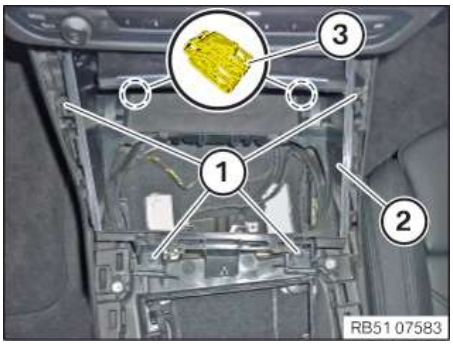


- See additional information.



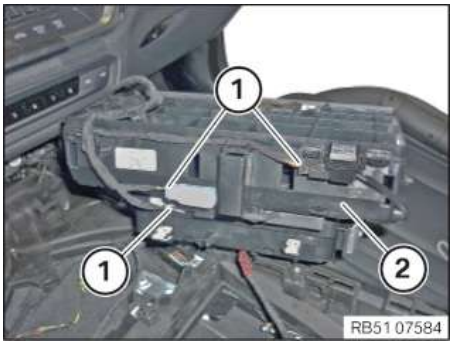
- Loosen screws (1).
- Remove the operating facility in the centre console (2) from the centre console (3).

23 – Removing the storage compartment of the front centre console



- Loosen screws (1).
- Remove storage compartment trim (2) backwards out of clamps (3).

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- Unlock and disconnect all the plug connections (1) and remove the storage compartment (2).

24 – Removing the rear centre console trim

RISK OF DAMAGE

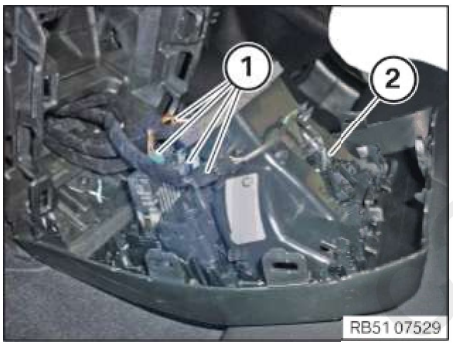
Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



- Release centre console trim (1) backwards from the latch mechanisms at the side and pull it a little way towards the rear.



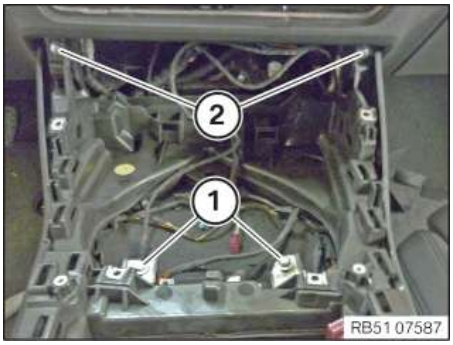
- Unlock and disconnect plug connections (1).
- Remove the centre console trim (2).

25 – Removing the centre console

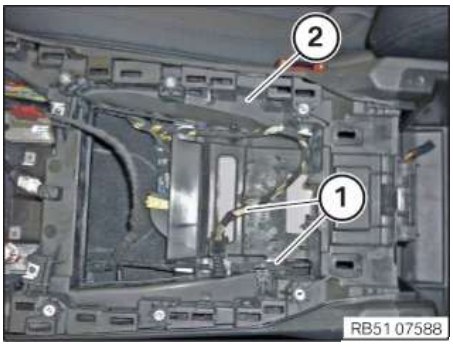


- Loosen screws (1).

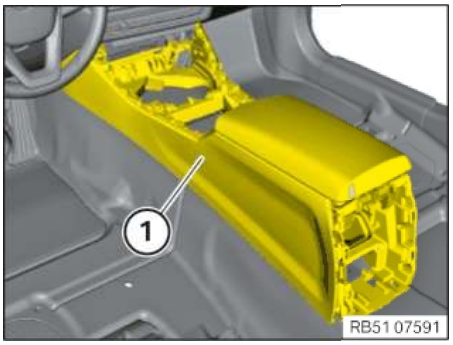
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- Loosen screws (1) and (2).



- Release the wiring harness (1) from the centre console (2).

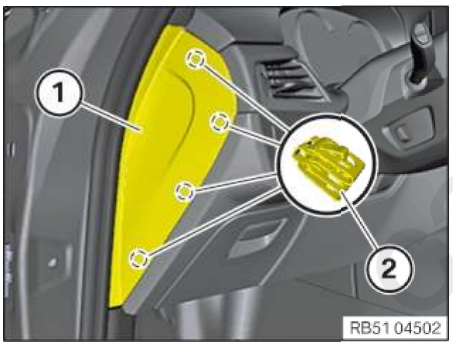


NOTICE

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

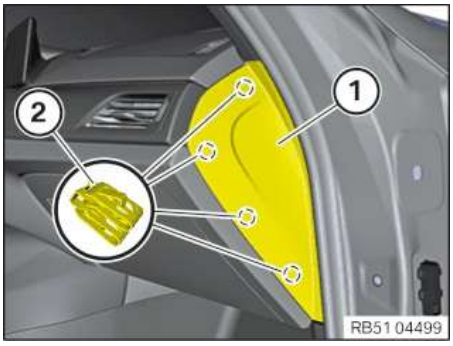
- Carefully raise rear centre console (1).
- Feed out wiring harness from the centre console (1) and unlock and disconnect existing plug connections, if required.
- Feed out and remove the centre console (1) on the instrument panel .

26 – Remove the side panel on the left instrument panel



- Unclip and remove the side panel (1) towards the outside from the clamps (2).

27 – Remove the side panel on the right instrument panel



- Unclip and remove the side panel (1) towards the outside from the clamps (2).
- If necessary, unlock associated plug connection and disconnect.

28 – Remove both A-pillar trim panels

NOTICE

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

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▶ **Remove the A-pillar trim panel**

WARNING

Airbag unit.

Danger! Life-threatening injuries!

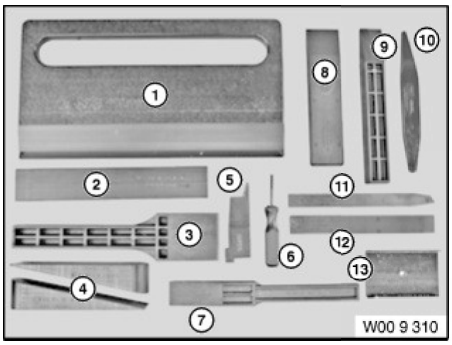
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

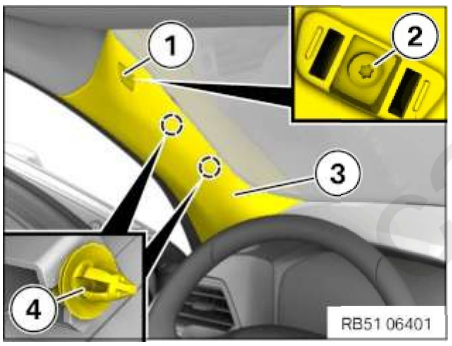
Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.

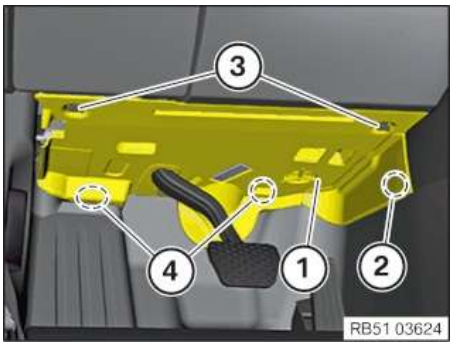


- Have the set of special tools 0 493 752 (00 9 329) ready.



- Unclip the cover (1) with suitable tools.
- Loosen screw (2).
- Unclip A-pillar trim panel (3) with clips (4) and guide it out upwards.

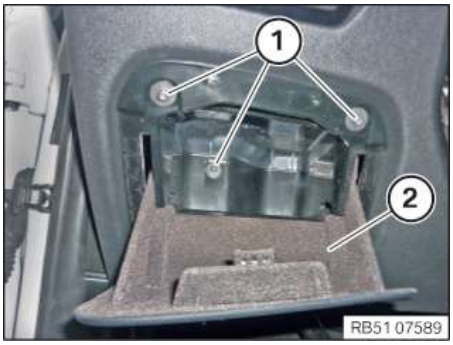
29 – Removing the trim panel for pedal mechanism



- Unclip the trim panel for the pedal mechanism (1) towards the inside in this area (2).
- Turn the locks (3) by 90°.
- Detach the trim panel for the pedal mechanism (1) inwards out of the guides (4).
- Unlock associated plug connection and disconnect.

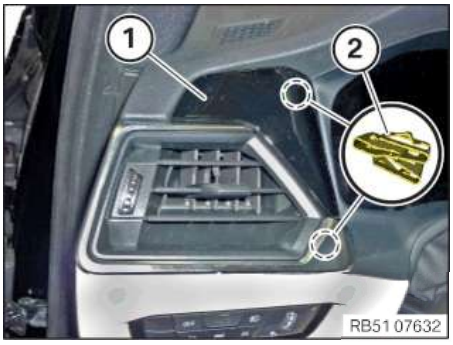
30 – Removing the left fold-down compartment

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- Loosen screws (1).
- Remove the fold-down compartment (2) toward the bottom.

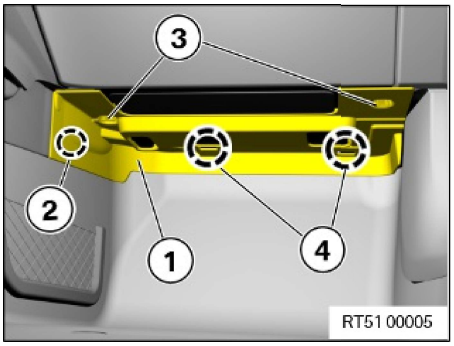
31 – Remove the finisher on the instrument panel on the left



- Unclip decorative strip (1) to the rear out of the clamps (2).
- Unlock associated plug connection and disconnect.

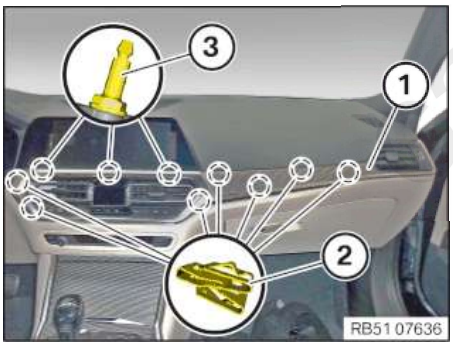
  Remove the decorative strip (1).

32 – Remove the right footwell trim



- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

33 – Remove the finisher on the right instrument panel



- Unclip the decorative strip (1) towards rear at the clamps (2) and the pins (3).
- Unlock associated plug connection and disconnect.

  Remove the decorative strip (1).

34 – Remove Central Information Display (CID)

RISK OF DAMAGE

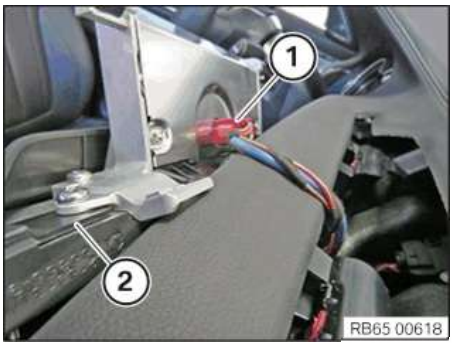
Electrostatic discharge.

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.



- Loosen screws (1).
- Pull out central information display (CID) (2) slightly off the instrument panel.



- Unlock plug connection (1) and disconnect.
- Remove the central information display (CID) (2).

35 – Removing the airbag unit

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

RISK OF DAMAGE

Damage to the steering wheel.

Incorrect handling of the tool may damage the steering wheel.

- Ensure the tool is positioned correctly (angle and inclination).
- When unlocking, do not use "levering" action. Instead, press in the Torx screwdriver toward the centre of steering wheel only.

TECHNICAL INFORMATION

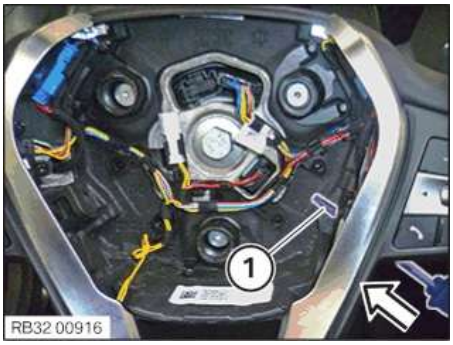
Different variants may be installed depending on the vehicle equipment.

▸ **Version A: Removing the airbag unit (sports steering wheel)**



- Insert Torx screwdriver T25 (1) diagonally upwards in the hidden opening (2) on the rear side of the steering wheel until a spring resistance is felt.

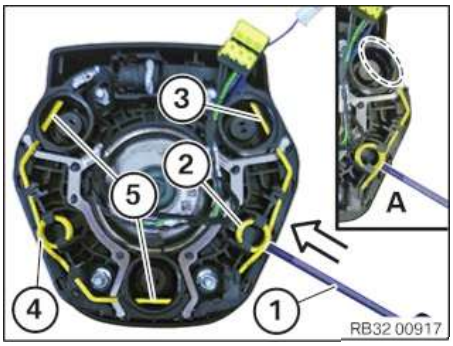
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NOTICE

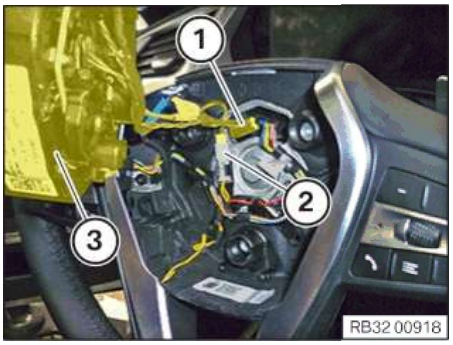
To provide a better overview: Diagram with airbag unit removed.

- To unlock the airbag unit, press Torx screwdriver T25 (1) diagonally upwards in the direction of the arrow to the centre of the steering wheel.



- Press the airbag unit over a large area of the steering wheel.
- Use Torx screwdriver T25 (1) to press wire spring clip (2) in the direction of the arrow towards the centre of the steering wheel and release lock (3).

  (A): Wire spring clip (2) is unlocked.
- Then use Torx screwdriver T25 (1) to press wire spring clip (4) in the direction of the arrow towards the centre of the steering wheel and release locks (5).
- Carefully raise the airbag unit.

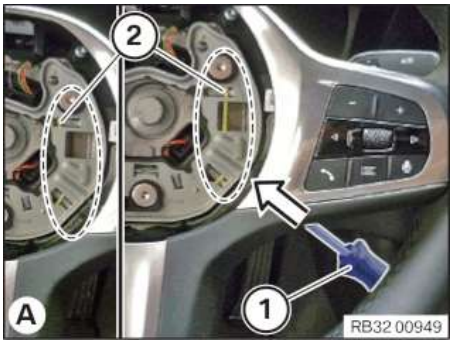


- Unlock and disconnect the plug connections (1) and (2).
- Remove airbag unit (3).

▸ **Version B: Removing airbag unit (M Sport steering wheel)**



- Locate the pre-punched bore hole (1) on the rear side of the steering wheel by touch.
- Insert the Torx screwdriver T27 (2) diagonally upwards in the pre-punched bore hole (1) on the rear side of the steering wheel until a springing kind of resistance can be felt.

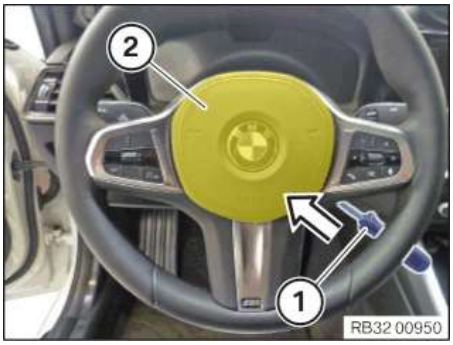


NOTICE

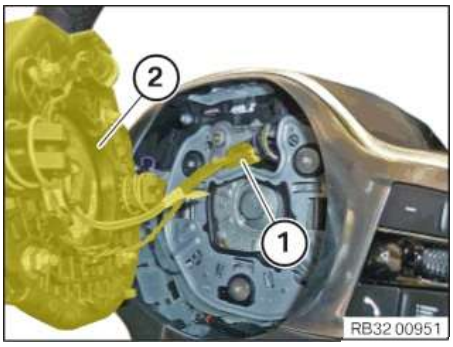
To provide a better overview: Diagram with airbag unit removed.

- Press in Torx screwdriver T27(1) straight in direction of arrow towards the centre of the steering wheel in order to unlock the wire spring clip (2) or to unlock the airbag unit (A).

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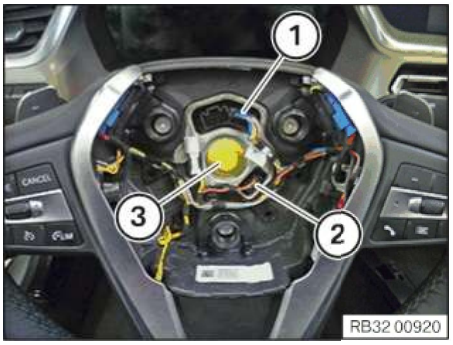


- Press in Torx screwdriver T27 (1) straight in direction of arrow towards the centre of the steering wheel and lift airbag unit (2) on the unlocked side.
- Repeat procedure on left side and carefully remove airbag unit (2) in direction of arrow off the steering wheel.



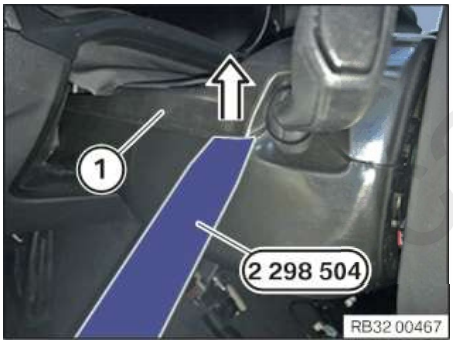
- Unlock and disconnect plug connection (1) and remove the airbag unit (2).

36 – Removing the steering wheel (sports steering wheel)



- Move the steering wheel and wheels to the straight-ahead position.
- Unlock plug connection (1) and disconnect.
- If installed: Unlock plug connection (2) and disconnect.
- Release the screw (3) and pull off and remove the steering wheel.

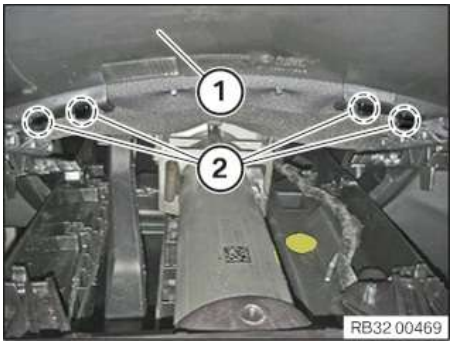
37 – Removing steering column shroud upper section



NOTICE

Perform the operations on the left and right side.

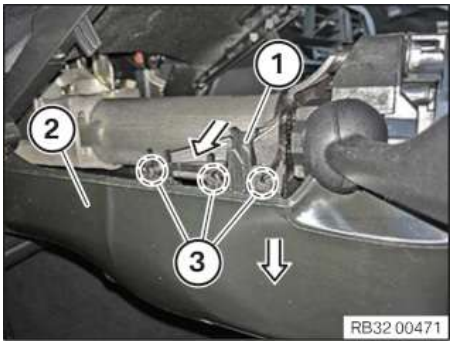
- Unlock the steering column shroud upper section (1) with the special tool 2 298 504 and fold up.



- Unclip the steering column shroud upper section (1) from the brackets (2).
- Remove the steering column shroud upper section (1).

38 – Removing steering column shroud lower section

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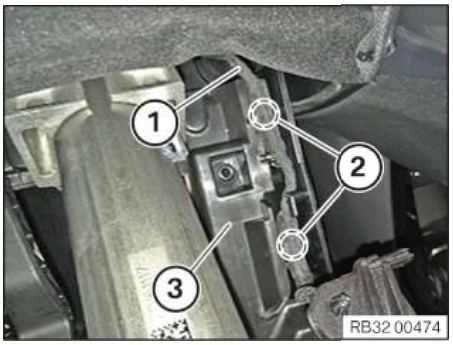
NOTICE

Perform the operations on the left and right side.

- Push the retaining lug (1) to the outside in the direction of the arrow and unclip the steering column shroud lower section (2) from the holders (3) in the direction of the arrow to the bottom at the same time.

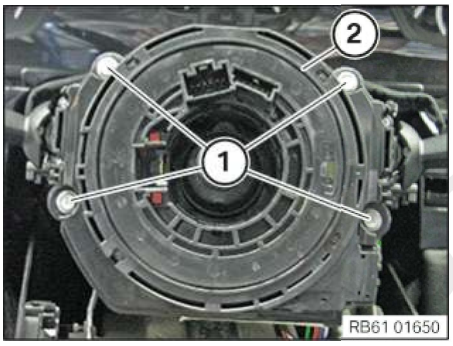


- Fold the steering column shroud lower section down.
- Unlock and disconnect connector (1).

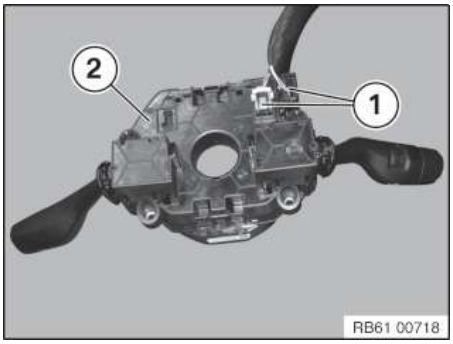


- Detach the cable (1) from the brackets (2).
- Remove the steering column shroud lower section (3).

39 – Removing the steering column switch cluster (SZL)



- Loosen screws (1).
- Remove the steering column switch cluster (SZL) (2).



- Unlock and disconnect the connector (1) on the steering column switch cluster (SZL) (2).

40 – Removing the instrument cluster (KOMBI)

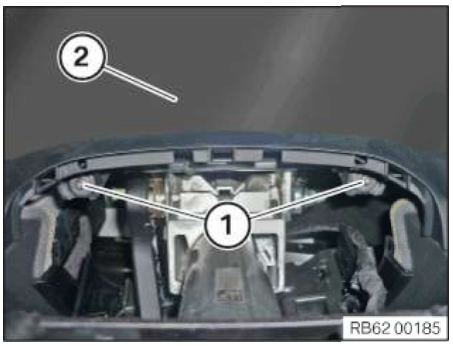
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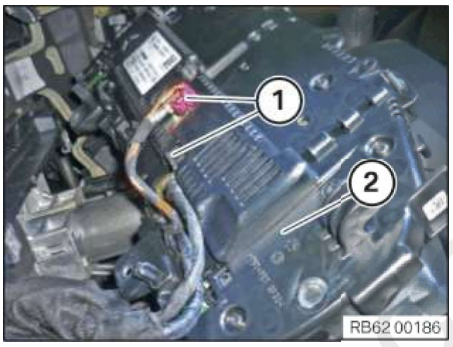
- Loosen screw (1).



- Loosen screw (1).



- Loosen screws (1).
- Feed out instrument cluster (KOMBI) (2).



RISK OF DAMAGE

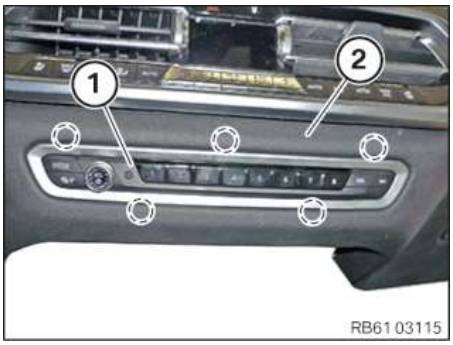
Damage to the instrument cluster (KOMBI)

While releasing and connecting the cable, it could lead to a ground offset. Thereby, currents could arise, that make the instrument cluster (KOMBI) useless.

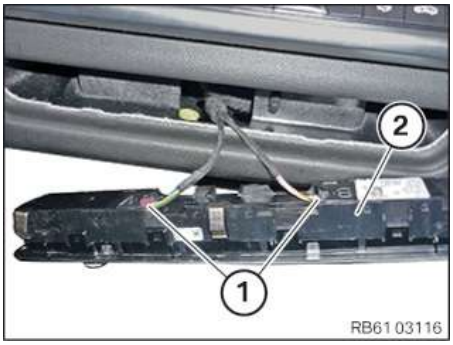
- While releasing: Release APIX data cable (blue) first.
- While connecting: Connect APIX data cable (blue) at the last.

- **If installed:** Release the blue plug connection first.
- Unlock and disconnect plug connections (1) from instrument cluster (KOMBI) (2).
- Remove the instrument cluster (KOMBI) (2).

41 – Remove the audio operating unit

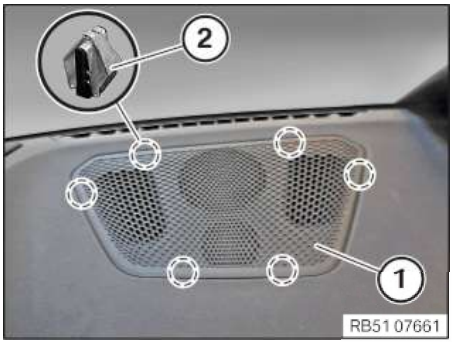


- Unclip the audio operating unit (1) from the instrument panel (2) at the points marked using special tool 0 496 571 (00 9 327).



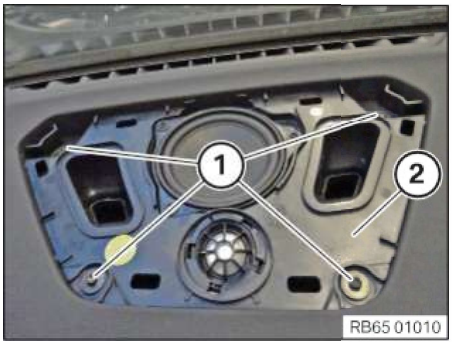
- Disconnect plug connections (1) and remove the audio operating unit (2).

42 – Remove the speaker trim at the instrument panel

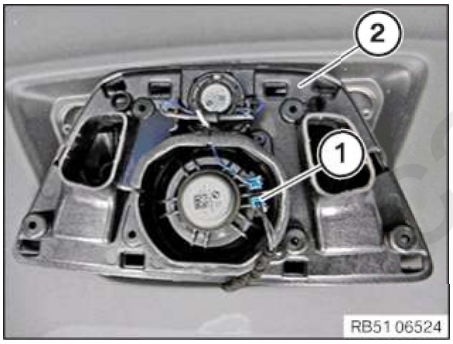


- Lever out the speaker trim (1) with the special tool 0 496 569 (00 9 325) from the clamps (2) toward the top and remove.

43 – Remove the speaker holder at the instrument panel

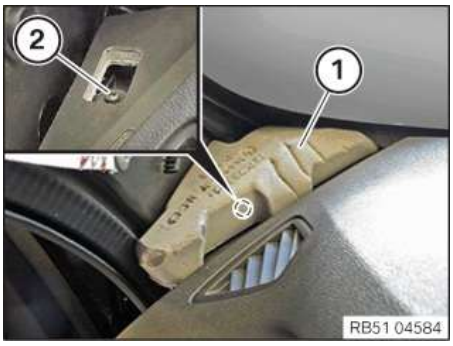


- Loosen screws (1).
- Pull out speaker holder (2) slightly with the loudspeakers and tilt it to the side.



- Unlock plug connection (1) and disconnect.
- Remove the speaker holder (2).

44 – Remove the instrument panel trim panel



NOTICE

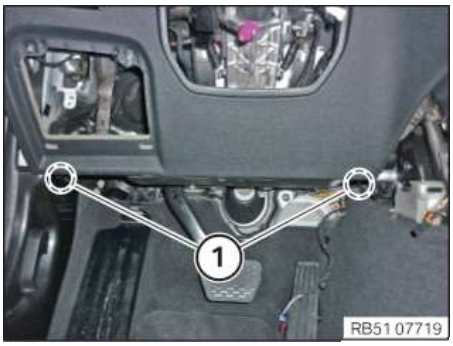
Perform the operations on the left and right side.

- Remove the sound insulation (1).
- Loosen screw (2).

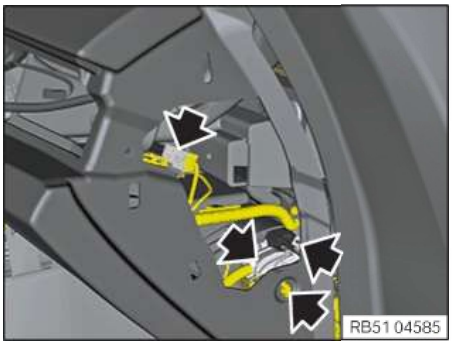
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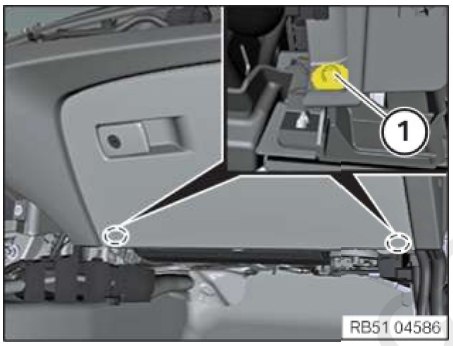
- Loosen screws (1).



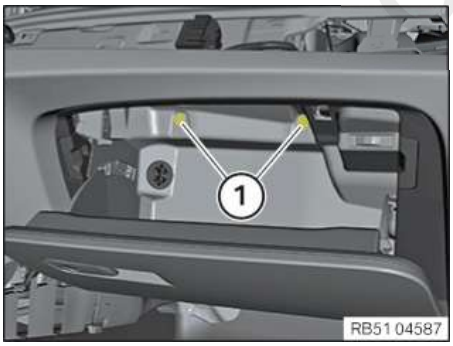
- Loosen screws (1).



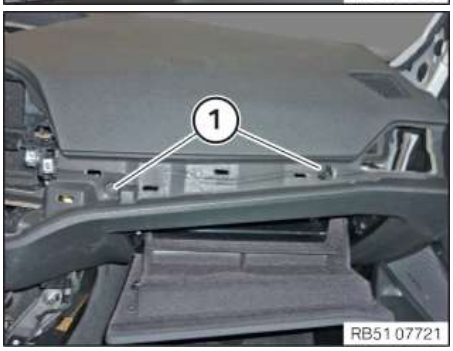
- Release all plug connections and cable clips (arrows) behind the glove box.



- Release the screws (1) on the lower side of the glove box.

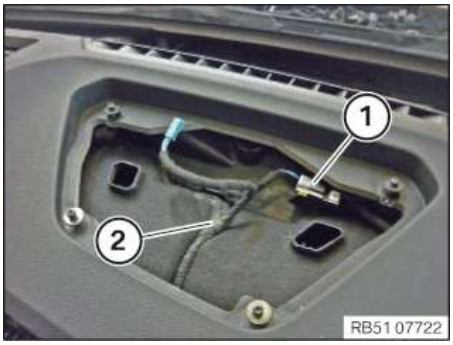


- Open glovebox.
- Loosen screws (1).



- Loosen screws (1).

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- Unlock plug connection (1) and disconnect.
- Release the wiring harness (2) on the holders.



- Unlock the plug connection (1) on the light operating unit and disconnect it.



- Loosen screws (1).

TECHNICAL INFORMATION

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

- Pull the instrument panel trim back slightly.

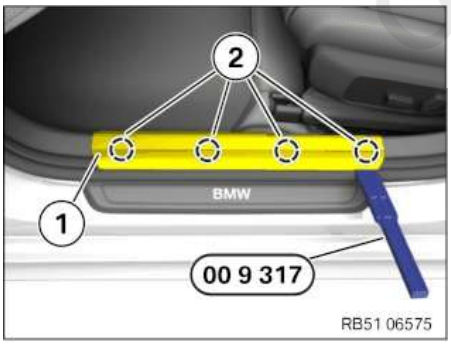
  If necessary, unlock and disconnect additional plug connections.
- Remove the instrument panel trim from the vehicle.

45 – Remove right door sill cover strip

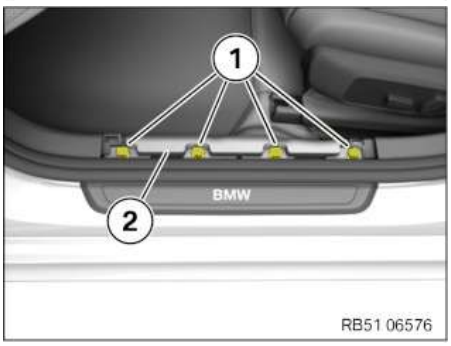
NOTICE

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

▶ **Remove door sill cover strip**



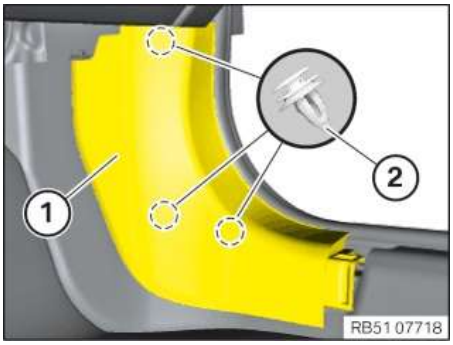
- Detach the door sill cover strip(1) using the special tool 0 490 534 (00 9 317) from the clips (2) in the floor panel.



- If necessary, remove the clips (1) from the floor panel (2) and attach to the door sill cover strip.

46 – Removing the side trim panel in the footwell at the right-hand A-pillar

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- Loosen the side trim panel (1) at the clips (2) and remove it toward the inside.

47 – Removing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

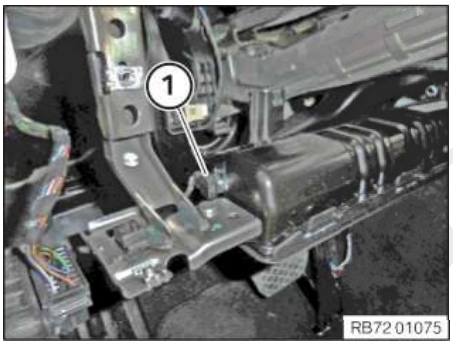
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

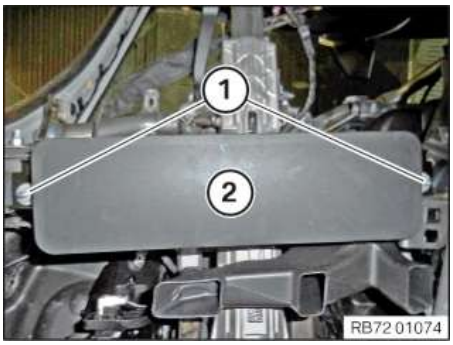
Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.



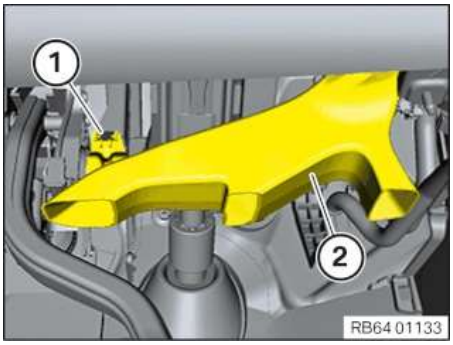
- Unlock plug connection (1) and disconnect.



- Loosen nuts (1).
- Remove knee airbag (2).

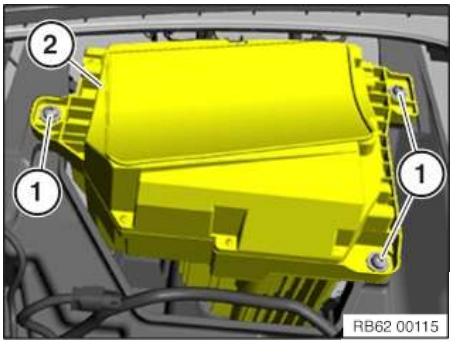
48 – Remove left air duct

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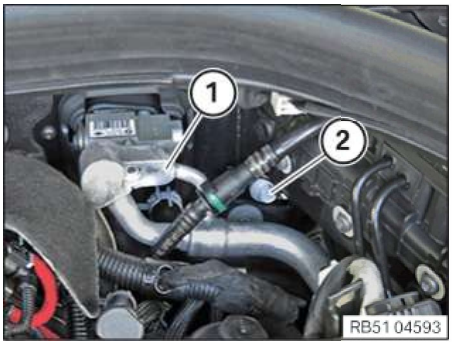
- Unclip the air duct (2) from the air conditioning housing at an angle towards the bottom at the clamp (1).

49 – Removing the Head-Up Display



- Loosen screws (1).
- Remove head-up display (2) from support.
- Unlock associated cable and disconnect.

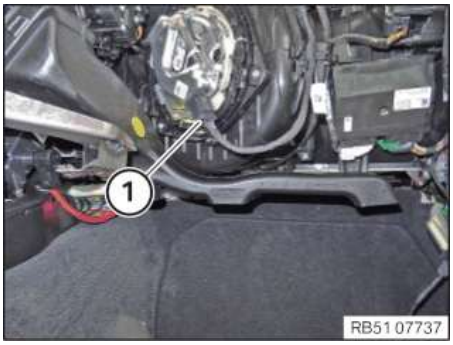
50 – Removing the support for the instrument panel



- Push the refrigerant line (1) slightly to one side and loosen the screw (2).

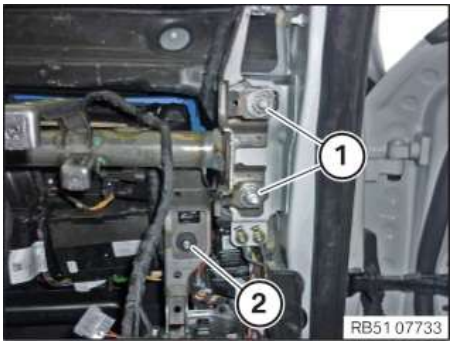


- Push the carpet in the area of the right B-pillar to the side.
- Unlock and disconnect plug connections (1).

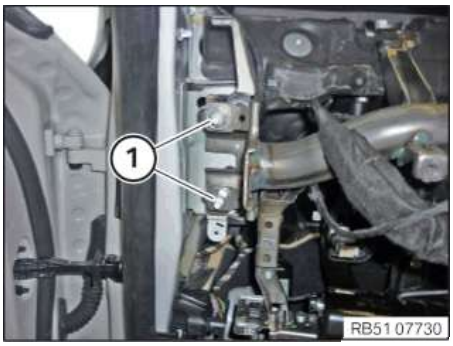


- Unlock and disconnect the plug connection (1) on the blower motor.

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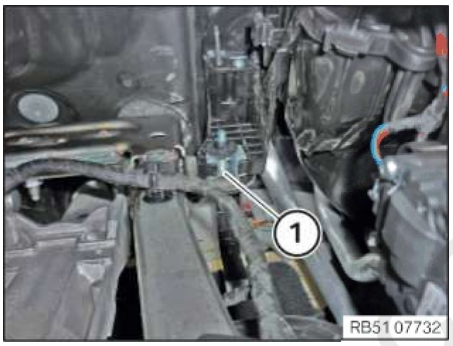
- Loosen nuts (1) and (2).



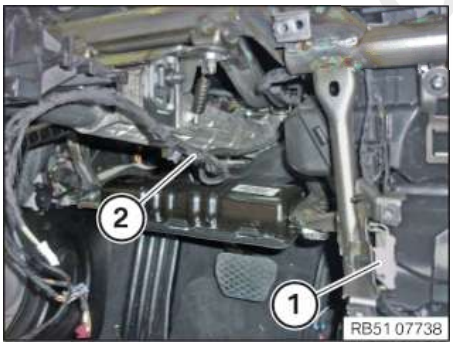
- Loosen nuts (1).



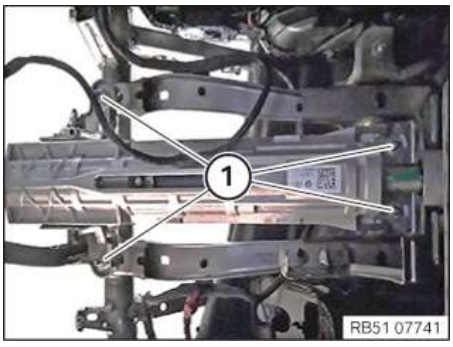
- Loosen screws (1).



- Slacken the nut (1) in the left footwell on the heating and air-conditioning unit.



- Release plug connection (1).
- Release the wiring harness (2) from the steering column.



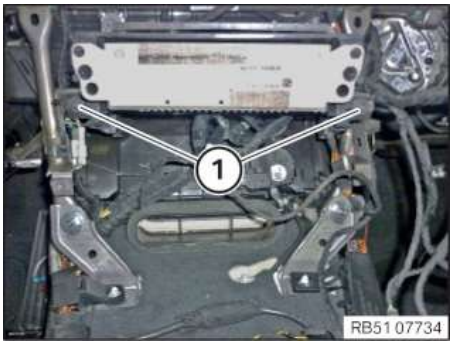
TECHNICAL INFORMATION

Secure component against falling.

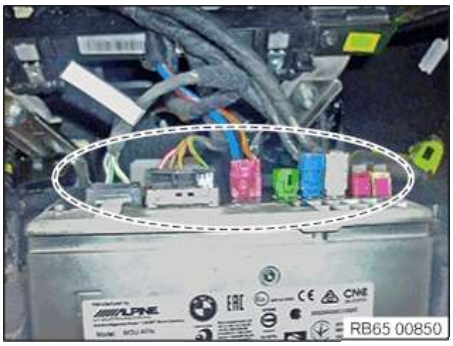
- Release the nuts (1) at the steering column.
- Drop steering column (1) a little away and support it in the footwell.

  Drop steering column not too far away and support it absolutely.

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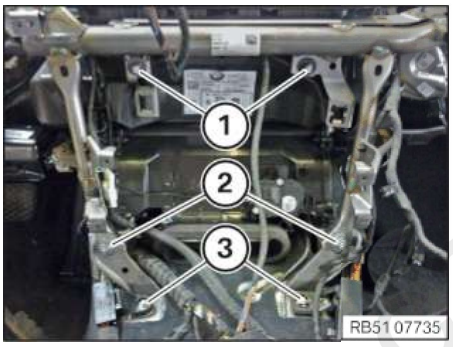
- Loosen screws (1).
- Feed out Head Unit High.



- Unlock and disconnect all connectors in the marked area.
  Remove headunit.

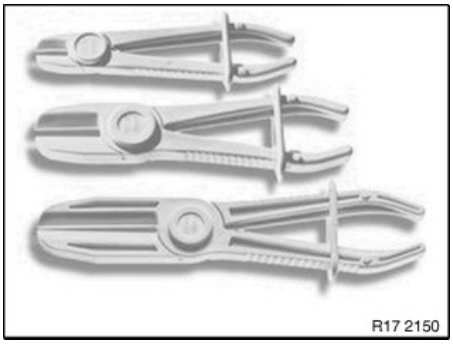


- Unlock and disconnect plug connection (1) from airbag control unit.
- Release the wiring harness (2) on the holders.



- Loosen nuts (1).
- Loosen nuts (2).
- Remove cable clip and release the nuts (3).
  Remove retaining bracket from left and right sides.
- Carefully feed out the support for the instrument panel to the rear.
  If necessary, unlock and disconnect additional plug connections.
- Carefully remove support for the instrument panel from the vehicle.

51 – Removing the heating and air-conditioning unit

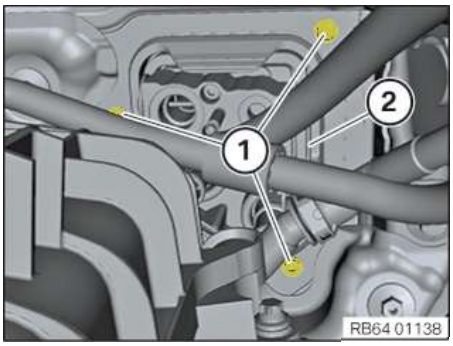


- Use commercially available disconnection tools to pinch off the coolant lines.

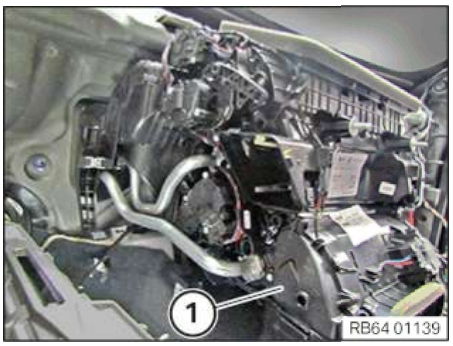
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- Release the hose clamps (1) using special tool and pull off the coolant hoses.

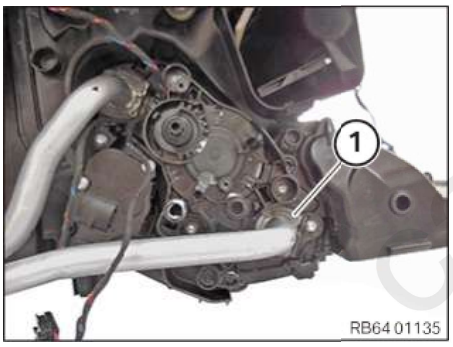


- Release screws (1) from flange (2).
- Protect the carpet in footwell against leaking coolant.

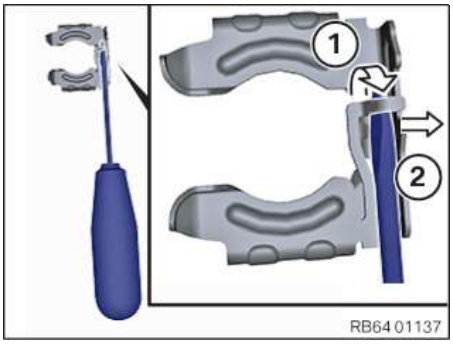


- Unfasten plug connection.
- Remove the heating and air-conditioning unit (1).

52 – Removing lower coolant pipe



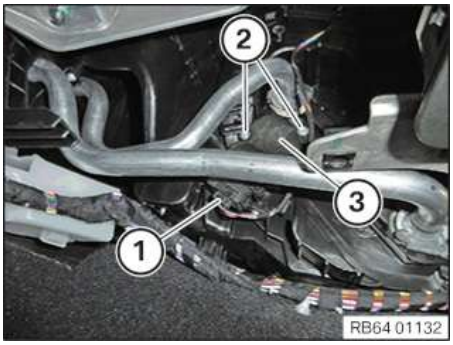
- Disassemble retaining clip (1) as shown in the next work step.



- Unlock the retaining clip in an upward direction (1), using a suitable slotted screwdriver.
- Push the retaining clip to the side (2) with a suitable screwdriver.
- Set the coolant pipe aside.

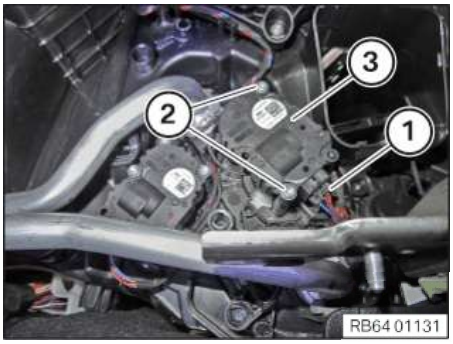
53 – Remove the mixed air flap motor at the front left (M23a)

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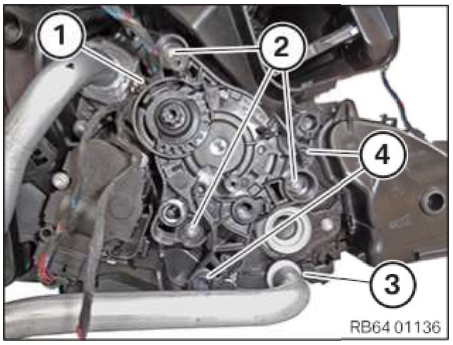
- Disconnect plug connection (1).
- Loosen screws (2).
- Remove front left mixed air flap motor (3).

54 – Install the rear passenger compartment mixed air flap motor (M23b)



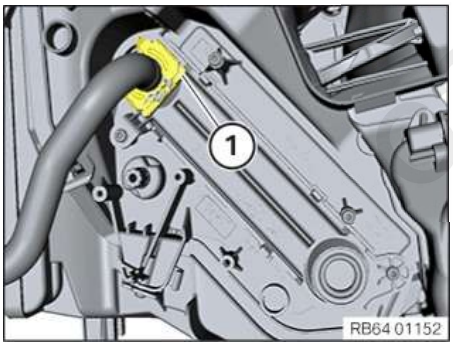
- Disconnect plug connection (1).
- Loosen screws (2).
- Remove mixed air flap motor rear (3).

55 – Removing kinematics, bottom left

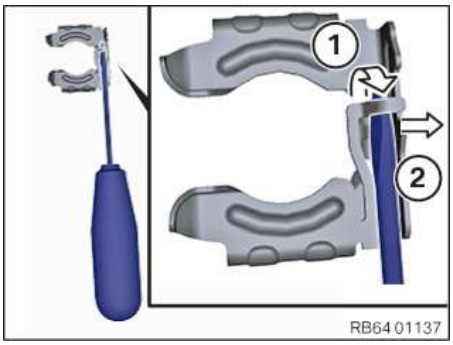


- Detach cable from the line routing (1).
- Slide coolant pipe (3) downwards.
- Disengage relay lever (4).
- Loosen screws (2).
- Remove kinematics.

56 – Removing coolant pipe, top



- Disassemble retaining clip (1) as described in the next step.

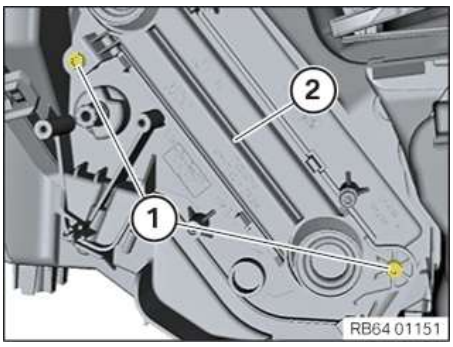


- Unlock the retaining clip in an upward direction, using a suitable screwdriver (1).
- Slide the retaining clip to the side with a suitable screwdriver (2).
- Set the coolant pipe aside.

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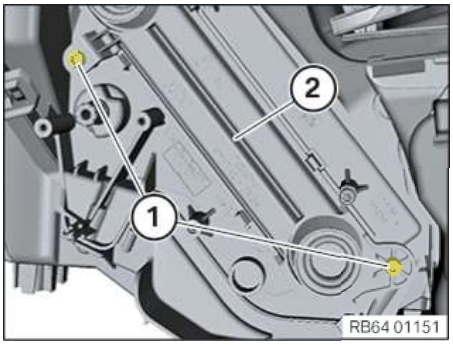
MAIN WORK

57 – Remove heat exchanger



- Loosen screws (1).
- Remove the heat exchanger (2).

58 – Installing heat exchanger



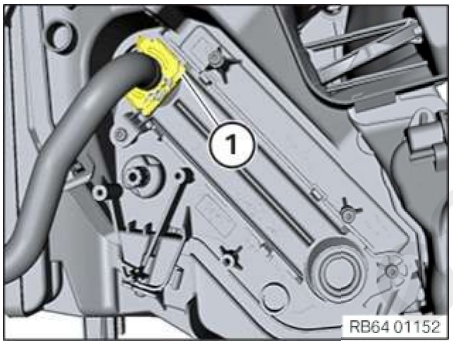
- Position heat exchanger (2).
- Tighten the screws (1).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

POSTPROCESSES

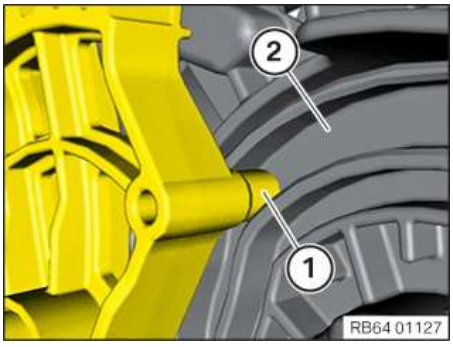
59 – Installing the top coolant pipe



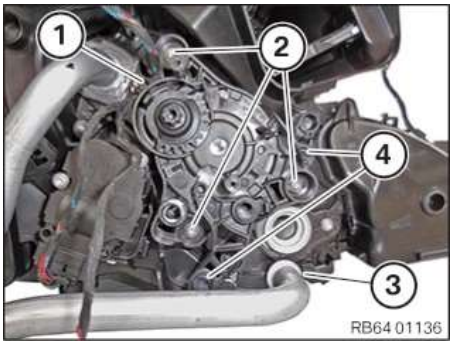
- Renew the sealing ring.

  Parts: Sealing ring
- Position the coolant pipe .
- Secure the coolant pipe with the retaining clip (1).
- Ensure that the coolant pipe is correctly positioned on the heat exchanger for heating system.

60 – Installing the lower left kinematics



- Thread in and position kinematics (2).
- Make sure that the guide pin (1) is correctly positioned in the guide of the gate disc (2).



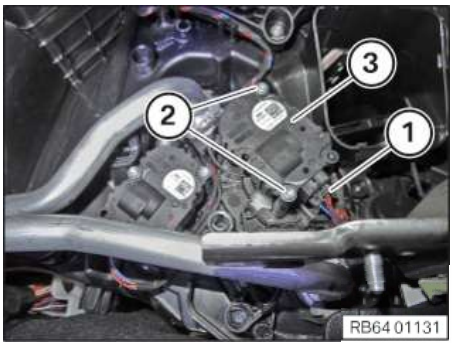
- Position kinematics.
- Tighten down screws (2).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Engage the relay levers (4).
- Ensure that the relay levers (4) engage audibly.
- Position the coolant pipe (3).
- Attach the cable to the line routing (1).

61 – Install the rear passenger compartment mixed air flap motor (M23b)



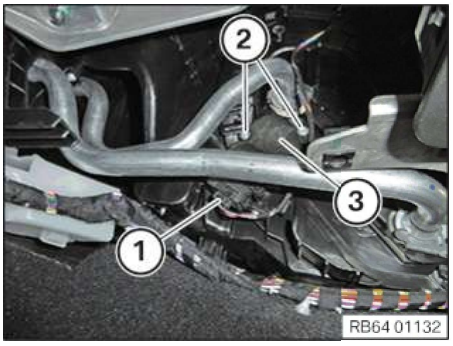
- Position the rear mixed air flap motor (3) .
- Tighten the screws (2).

Controller drive to heating and air-conditioning unit

Screw		Tightening torque	1,2 Nm

- Connect connectors (1) and lock.

62 – Install the mixed air flap motor at the front left (M23a)



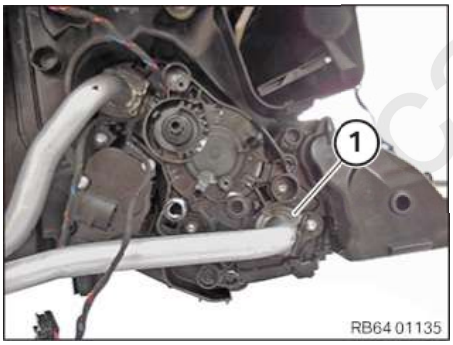
- Front left mixed air flap motor (3).
- Tighten down screws (2).

Controller drive to heating and air-conditioning unit

Screw		Tightening torque	1,2 Nm

- Connect connectors (1) and lock.

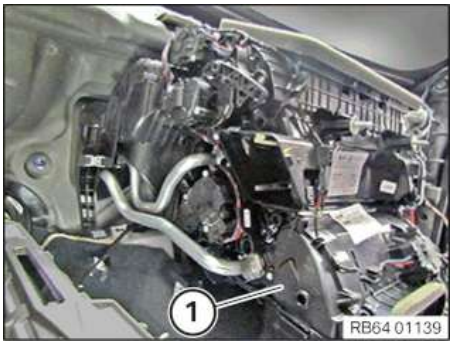
63 – Installing the lower coolant pipe



- Renew the sealing ring.

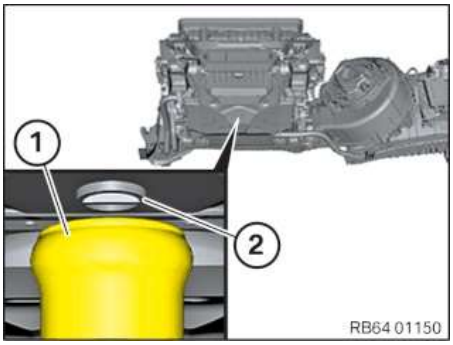
  Parts: Sealing ring
- Position the coolant pipe .
- Secure the coolant pipe with the retaining clip (1).
- Make sure that the coolant pipe is positioned correctly on heat exchanger for heating system.

64 – Installing the heating and air-conditioning unit



- Position the heating and air-conditioning unit (1).
- Connect connector.

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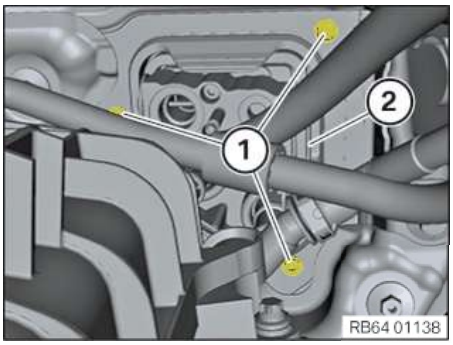
RISK OF DAMAGE

Damage caused by water ingress into the vehicle.

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

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

- Ensure that the condensate drain (2) is correctly fitted onto the grommet (1).
- After installing the heating and air-conditioning unit (2): Perform visual inspection.

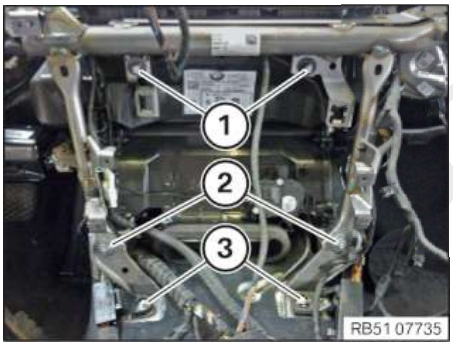


- Tighten the nuts (1) on the flange (2).



- Slide coolant hoses on correctly.
- Secure hose clamps (1) using the special tool .

65 – Installing the support for instrument panel



- Install the instrument panel support into the vehicle carefully.
- Insert the instrument panel support carefully.

  If necessary, connect and lock the additional connector.
- Tighten nuts (1).

Heating and air-conditioning unit on support

Nut M6		Tightening torque	4 Nm

- Mount retaining bracket on left and right.

  Tighten nuts (2).

Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

- Tighten nuts (3) and fit cable clip .

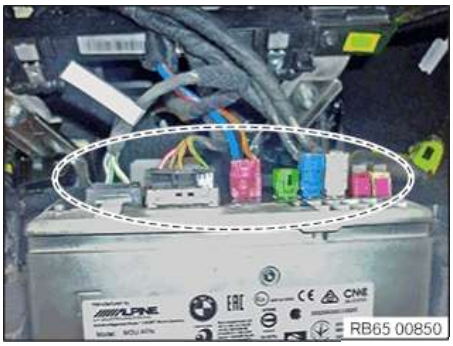
Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

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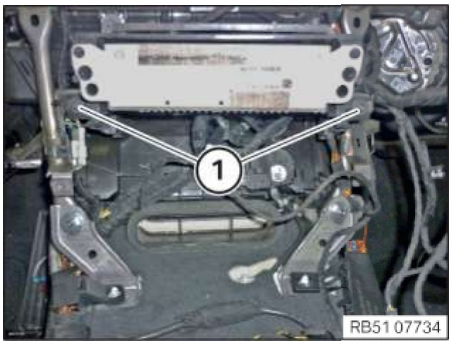


- Connect the connector (1) to the airbag control unit and lock.
- Secure the wiring harness (2) on the holders.



- Installing head unit.

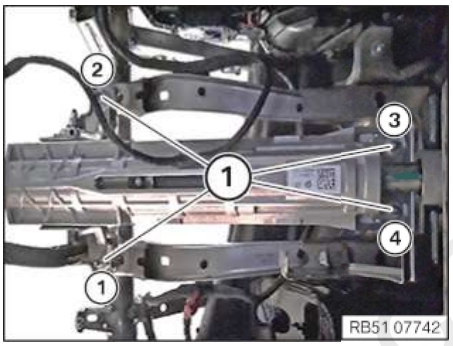
  Connect and lock all connectors in the marked area.



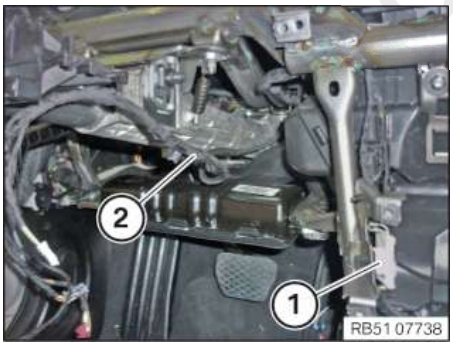
- Feed in the head unit.
- Tighten the screws (1).

Head unit to holder / holder to support

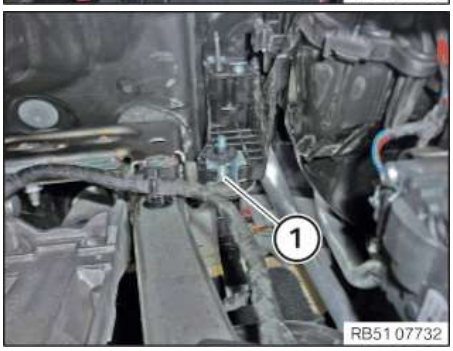
Screw		Tightening torque	1,8 Nm



- Correctly position the steering column (2) and tighten the nuts (1) in the sequence (1), (2), (3) and (4).



- Connect connectors (1) and lock.
- Secure the vehicle wiring harness (2) to the steering column.



- Tighten nut (1) in the left foot well on the heating and air-conditioning unit.

Heating and air-conditioning unit on support

Nut M6		Tightening torque	4 Nm

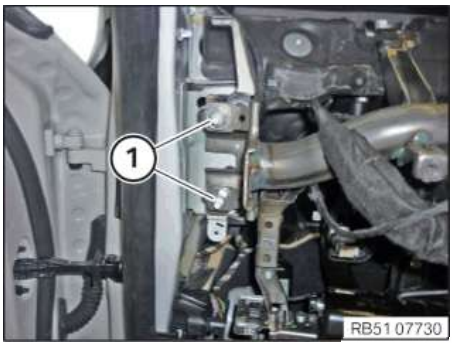
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- Tighten the screws (1).

Support for instrument panel

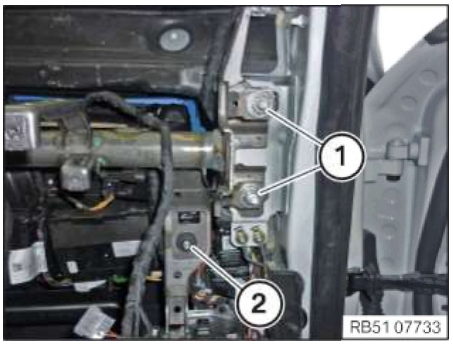
M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm



- Tighten nuts (1).

Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm



- Tighten nuts (1).

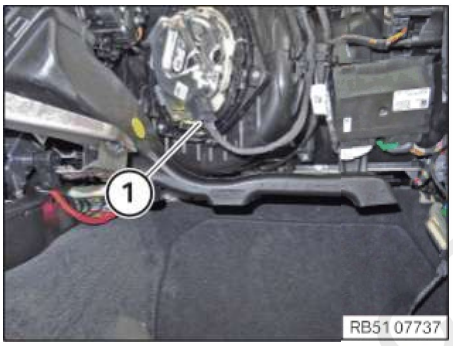
Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

- Tighten nut (2).

Heating and air-conditioning unit on support

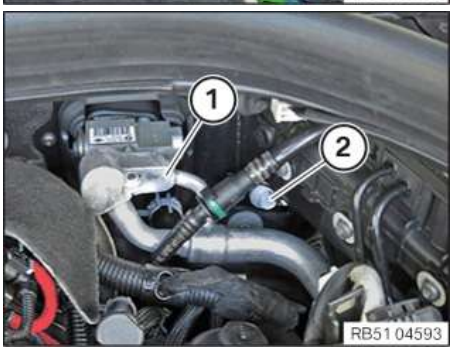
Nut M6		Tightening torque	4 Nm



- Connect the connector (1) to the blower motor and lock.



- Connect connector (1) and lock.
- Correctly position the carpet in the area of B-pillar at the right.



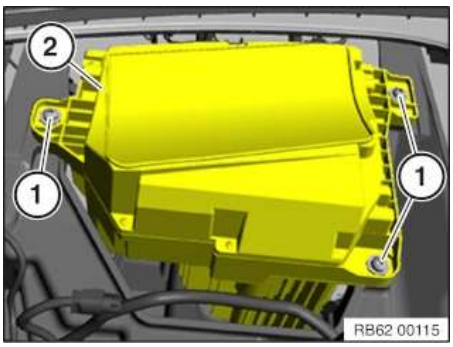
- Push the refrigerant line (1) slightly to one side and tighten the screw (2).

Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

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66 – Installing the head-up display

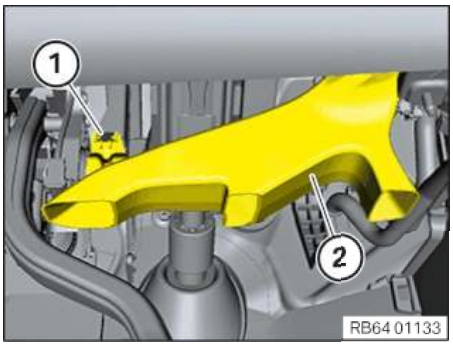


- Connect the associated connector to the Head-Up Display.
- Guide the Head-Up Display (2) into the support.
- Tighten the screws (1).

Head-Up Display to support

M6x25 screw		Tightening torque	13 Nm

67 – Installing the air duct, left



- Clip in the air duct (2) at the clamp (1) in the air conditioning housing at an angle towards the top.

68 – Installing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

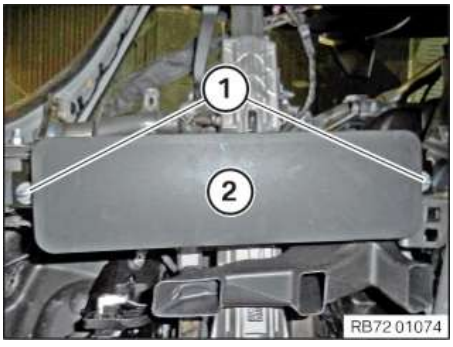
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.

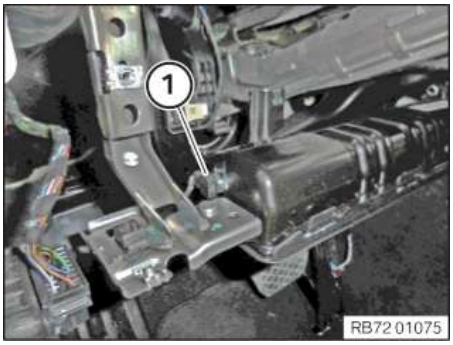


- Position knee airbag (2) correctly.
- Tighten nuts (1).

Knee airbag on support structure

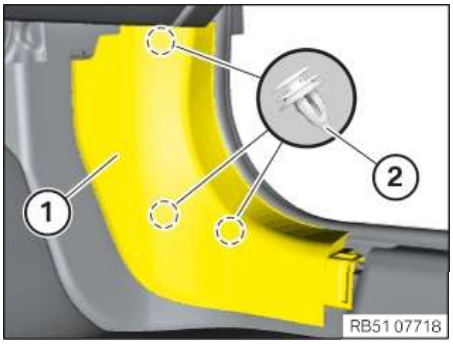
Nut		Tlghtening torque	8 Nm

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- Connect connectors (1) and lock.

69 – Installing side trim panel in footwell on right A-pillar



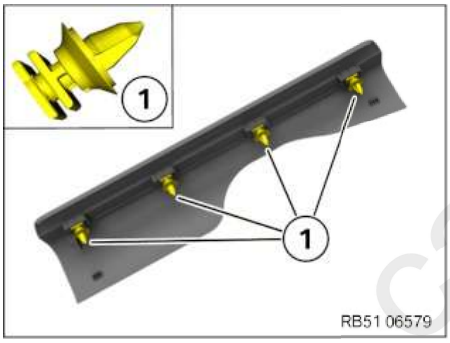
- Check the clips (2) for damage.
  Renew damaged or missing clips (2).
- Correctly position the side trim panel (1) and clip in to the clips (2).
- Make sure that the side trim panel (1) is correctly fitted against edge protection.

70 – Install right door sill cover strip

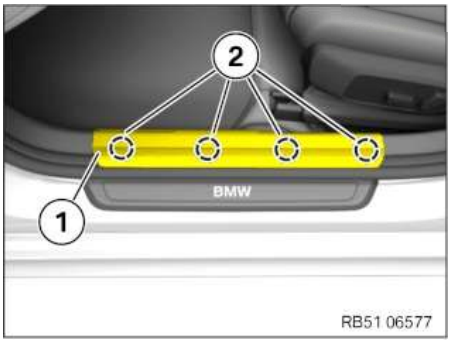
NOTICE

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

▸ **Install the door sill cover strip**



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



- Clip the door sill cover strip (1) into the floor panel with the clips (2).

71 – Install the trim panel for the instrument panel

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TECHNICAL INFORMATION

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

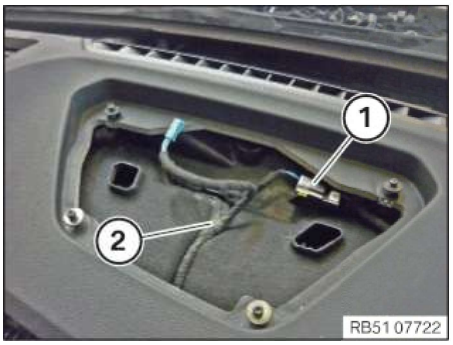
- Insert the instrument panel trim in the vehicle and position it at the support.
- Insert the associated wiring harnesses and connect the connectors.
- Tighten the screws (1).

Dashboard to support

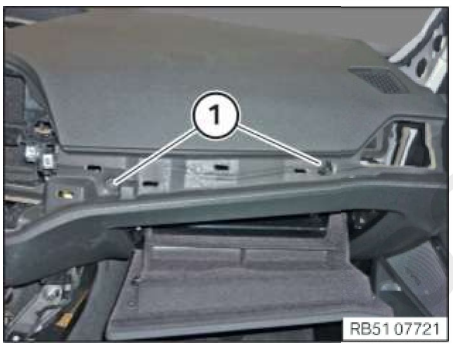
Screw		Tightening torque	2,4 Nm



- Connect connector (1) to the light operating unit and lock.



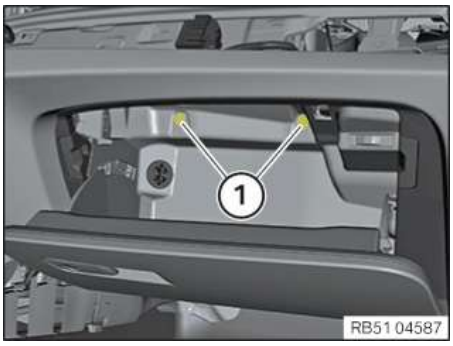
- Secure the wiring harness (2) on the holders.
- Connect plug connection (1) and lock.



- Tighten the screws (1).

Dashboard to support

Screw		Tightening torque	2,4 Nm

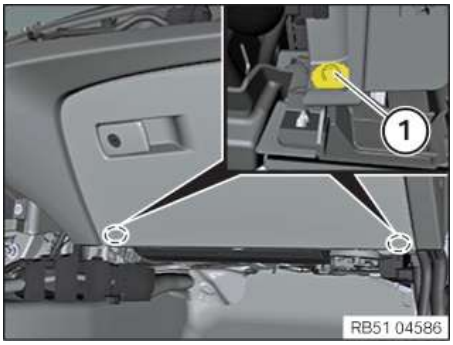


- Open glovebox.
- Tighten the screws (1).

Dashboard to support

Screw		Tightening torque	2,4 Nm

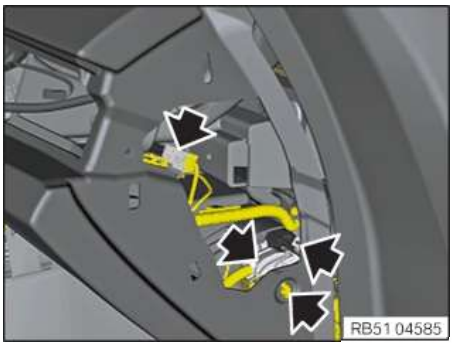
parts4agn.com



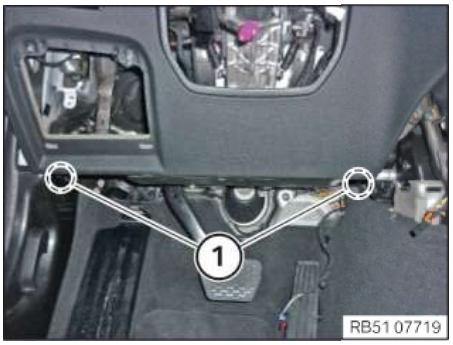
- Tighten the screws (1) on the lower side of the glove box button.

Dashboard to support

Screw		Tightening torque	2,4 Nm



- Connect all plug connections and cable clips (arrows) behind the glove box.



- Tighten the screws (1).

Dashboard to support

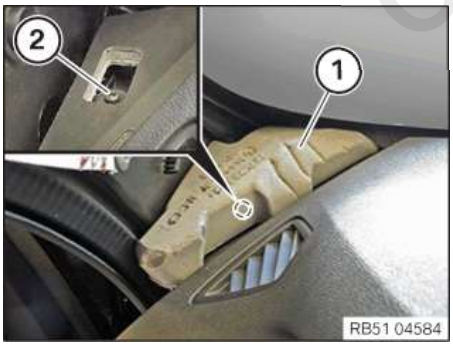
Screw		Tightening torque	2,4 Nm



- Tighten the screws (1).

Dashboard to support

Screw		Tightening torque	2,4 Nm



NOTICE

Perform the operations on the left and right side.

- Tighten down screw (2).

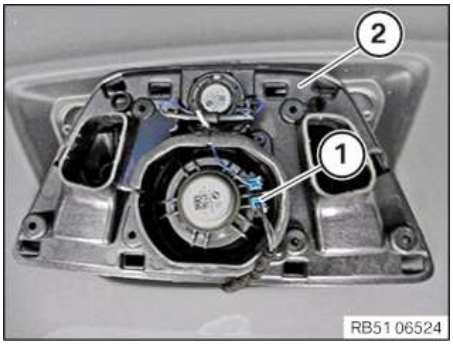
Dashboard to support

Screw		Tightening torque	2,4 Nm

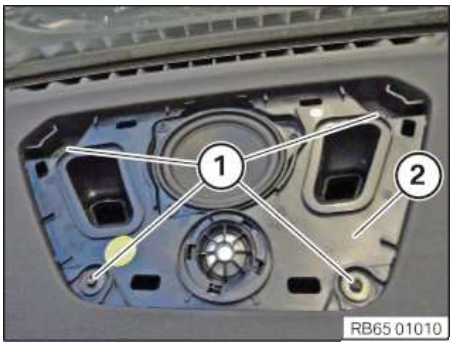
- Use sound insulation (1).

72 – Install the speaker holder at the instrument panel

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- Position the speaker holder (2).
- Connect connector (1).

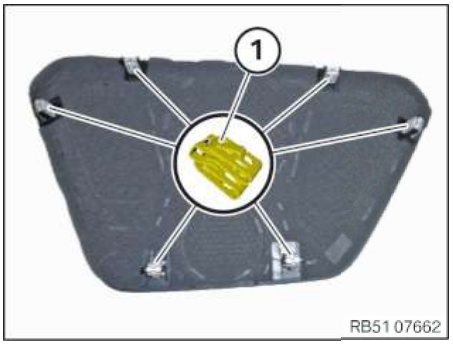


- Install the speaker holder (2).
- Tighten the screws (1).

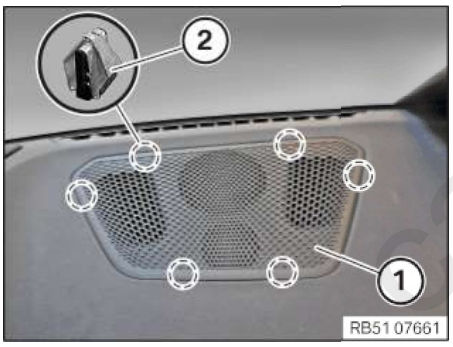
Speaker to support / support to instrument panel / support to body

Screw		Tighten torque	1,8 Nm

73 – Install the speaker trim at the instrument panel

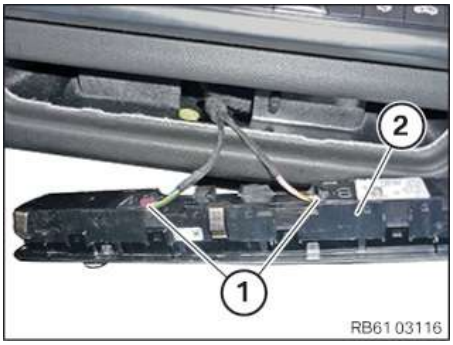


- Check clamps (1) for damage.
- Replace broken or missing clamps (1).



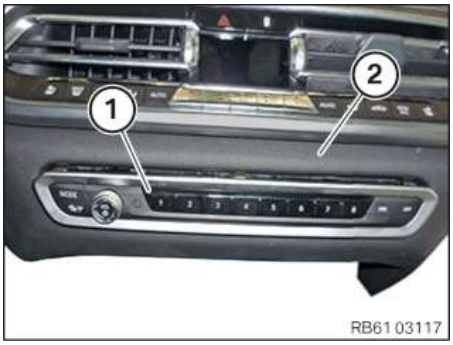
- Position the speaker trim (1) correctly and engage it at the clamps (2).

74 – Install the audio operating unit



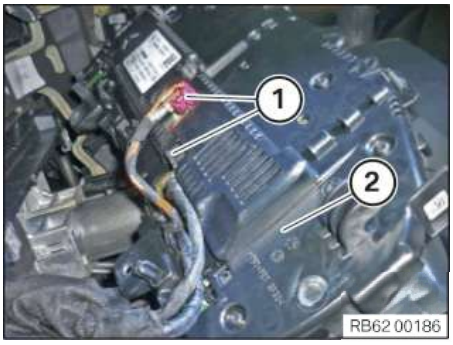
- Connect the connector (1) to the audio operating unit (2).

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- Correctly position the audio operating unit (1) and install in the instrument panel(2).

75 – Installing the instrument cluster (KOMBI)



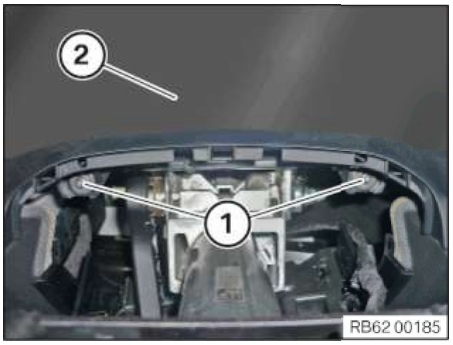
RISK OF DAMAGE

Damage to the instrument cluster (KOMBI)

While releasing and connecting the cable, it could lead to a ground offset. Thereby, currents could arise, that make the instrument cluster (KOMBI) useless.

- While releasing: Release APIX data cable (blue) first.
- While connecting: Connect APIX data cable (blue) at the last.

- **If installed:** Connect the blue connector at the last and lock it.
- Connect and lock connector (1) to the instrument cluster (KOMBI) (2).



- Feed in and position the instrument cluster (KOMBI) (2).
- Tighten the screws (1).

Instrument cluster (KOMBI) to support

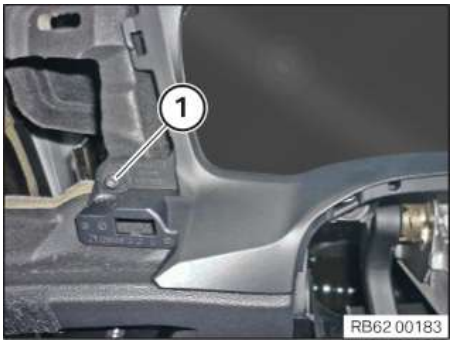
Oval-head screw		Tightening torque	1,8 Nm



- Tighten down screw (1).

Instrument cluster (KOMBI) to support

Oval-head screw		Tightening torque	1,8 Nm

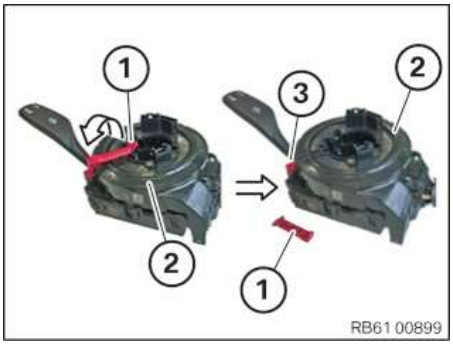


- Tighten down screw (1).

Instrument cluster (KOMBI) to support

Oval-head screw		Tightening torque	1,8 Nm

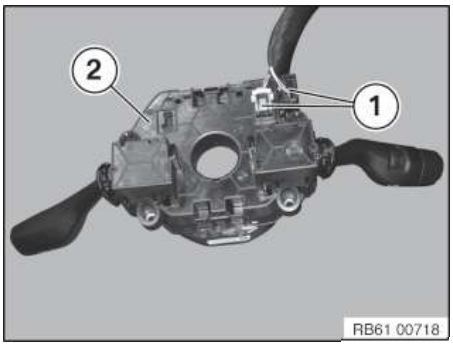
76 – Installing the steering column switch cluster (SZL)



- **Replacement:**

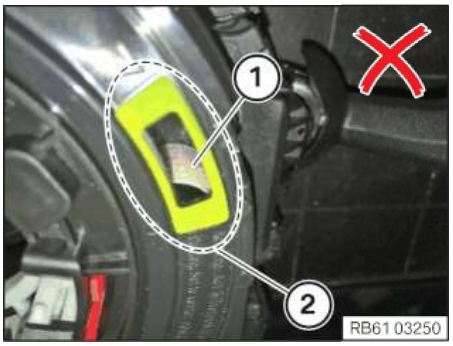
  Break off the transportation retainer (1) on the steering column switch cluster (SZL) (2) in direction of arrow.

  The broken off piece (3) of the transportation retainer (1) remains in the steering column switch cluster (SZL) (2).



- Connect the connector (1) with the steering column switch cluster (SZL) (2).

Check



- **Version A:**

  Check whether the correct marking (1) is seen in inspection glass (2).

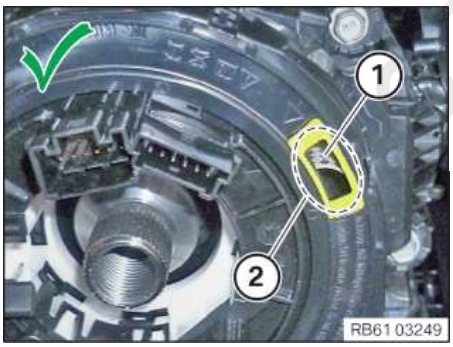
Result

» Ensure that no incorrect marking (1) is seen in inspection glass (2).

Measure

- Turn the coil spring cassette until the right mark (1) becomes visible in the inspection glass (2).

Check



- **Version A:**

  Check whether the correct marking (1) is seen in inspection glass (2).

Result

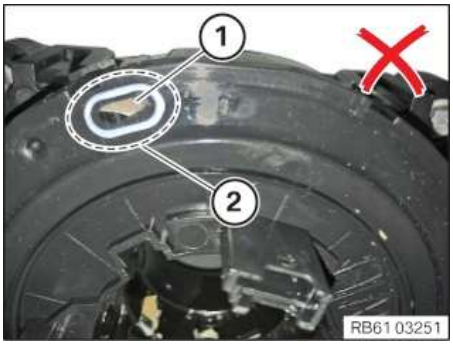
» Correct marking (1) is seen in inspection glass (2).

Measure

- Continue with the next step.

Check

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- **Version B:**

  Check whether the correct marking (1) is seen in inspection glass (2).

Result

» Ensure that no incorrect marking (1) is seen in inspection glass (2).

Measure

- Turn the coil spring cassette until the right mark (1) becomes visible in the inspection glass (2).

Check



- **Version B:**

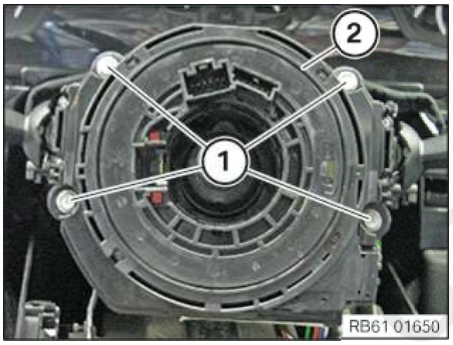
  Check whether the correct marking (1) is seen in inspection glass (2).

Result

» Correct marking (1) is seen in inspection glass (2).

Measure

- Continue with the next step.

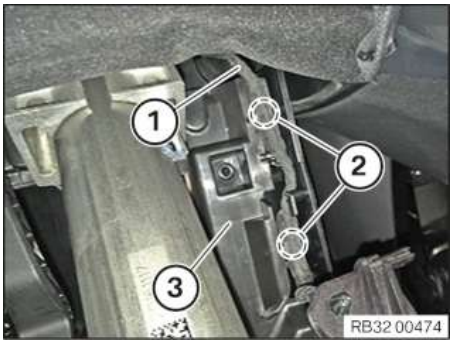


- Position the steering column switch cluster (SZL) (2).
- Tighten the screws (1).

Steering column switch cluster (SZL) on the steering column

Screw TS5x20		Tightening torque	3 Nm

77 – Install steering column shroud lower section

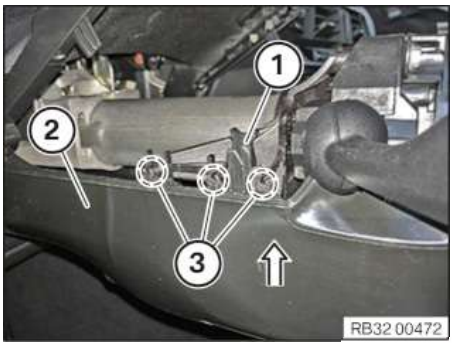


- Position the steering column shroud lower section (3).
- Secure the line (1) on the brackets (2).

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- Connect the connector (1).

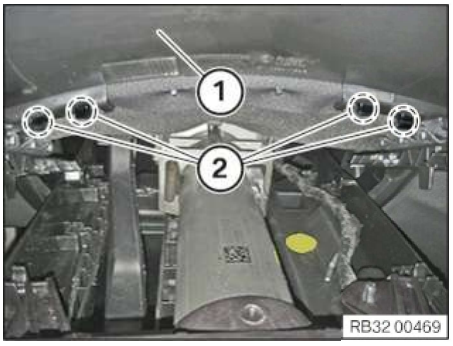


NOTICE

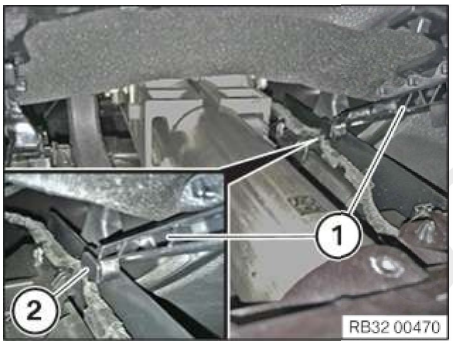
Perform the operations on the left and right side.

- Align the steering column shroud lower section (2) to the steering column using the retaining lug (1).
- Push the steering column shroud lower section (2) up in the direction of the arrow until the brackets (3) engage.

78 – Fit steering column shroud upper section



- Clip in the steering column shroud upper section (1) at the brackets (2).



NOTICE

Perform the operations on the left and right side.

- Clip in the steering column shroud upper section (1)into the guide (2).



NOTICE

Perform the operations on the left and right side.

- Press the upper section of the steering column shroud (1) downwards in direction of arrow.

  The upper section of the steering column shroud must engage audibly and perceptibly.

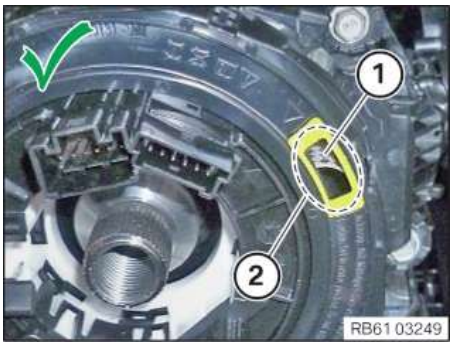
79 – Installing the steering wheel (sports steering wheel)

▸ **Check the neutral position of the clock spring**

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

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Check

- **Version A:**

  Check the mark (1) on the coil spring in the inspection glass (2).

Result

» The mark (1) on the coil spring is not visible.

Measure

- Turn the coil spring cassette until the mark (1) on the coil spring becomes visible in the inspection glass (2).



Check

- **Version B:**

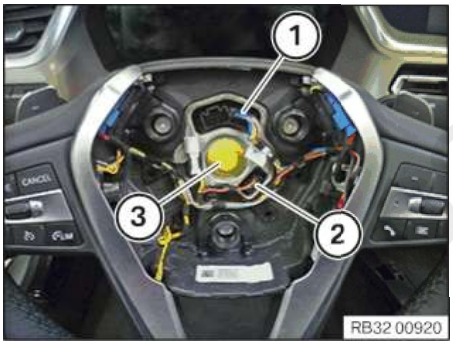
  Check the mark (1) on the coil spring in the inspection glass (2).

Result

» The mark (1) on the coil spring is not visible.

Measure

- Turn the coil spring cassette until the mark (1) on the coil spring becomes visible in the inspection glass (2).



Check

- A micro-encapsulated screw (3) may be fitted.
- Check the screw connection.

Result

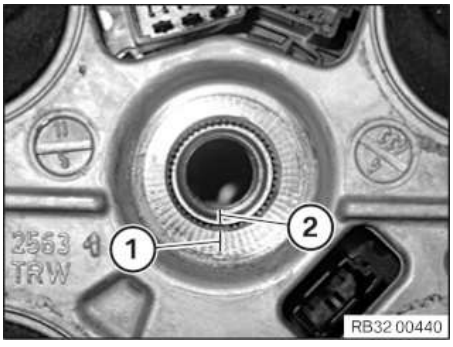
» Screw is (3) micro-encapsulated.

Measure

- Clean thread in the steering column.

  Renew the screw (3).

  Parts: Screw



- Align mark (1) on steering wheel to mark (2) on steering column.
- Connect steering wheel.

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- Connect connectors (1) and lock.
- If installed: Connect connectors (2) and lock.
- Tighten screw (3) .

Steering wheel to steering column

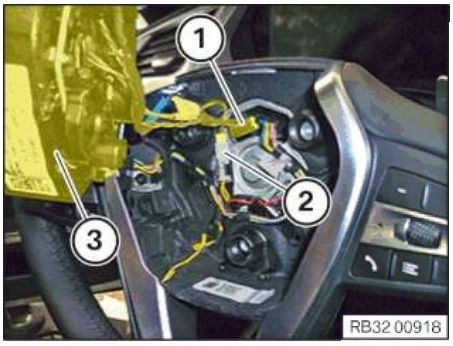
M14	Only for a micro-encapsulated screw: Renew screw.	Tightening torque	62,5 Nm

80 – Installing the airbag unit

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

▸ **Version A: Installing the airbag unit (sports steering wheel)**



- Position airbag unit (3).
- Connect connectors (1) and (2) lock.



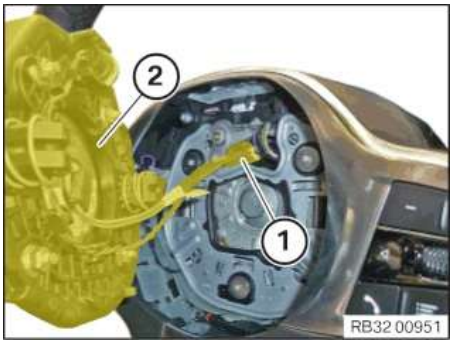
- Press the airbag unit (1) with even pressure in the direction of the arrow into the steering wheel.

  The airbag unit (1) must engage audibly and perceptibly.

▸ **Version B: Installing the airbag unit (M Sport steering wheel)**

TECHNICAL INFORMATION

After replacing the airbag unit (M-sports steering wheel) or after a possible conversion of standard steering wheel and airbag unit to M-sports steering wheel, a software update or a programming/encoding via ISTA must be performed!



- Connect and lock connector (1) of the airbag unit (2).

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- Press the airbag unit (1) with even pressure in the direction of the arrow into the steering wheel.

  The airbag unit (1) must engage audibly and perceptibly.

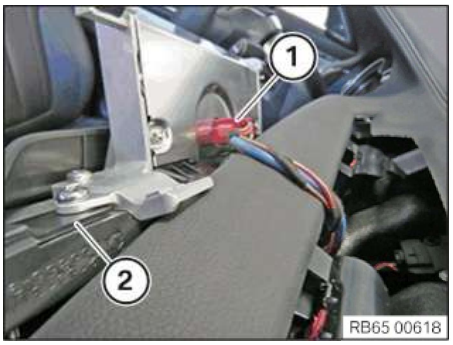
81 – Install the central information display (CID)

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.



- Position Central Information Display (CID) (2).
- Connect plug connection (1) and lock.

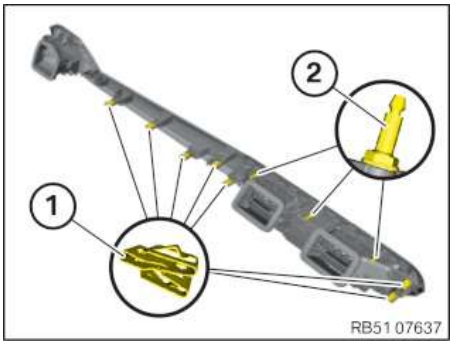


- Insert the central information display (CID) (2) in the instrument panel and position correctly.
- Tighten the screws (1).

Central information display to instrument panel

Screw		Tightening torque	1,8 Nm

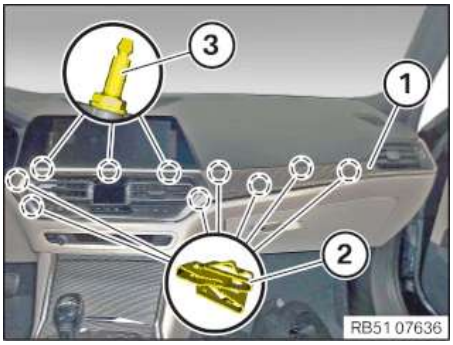
82 – Install the finisher on the right instrument panel



- Check the clamps (1).

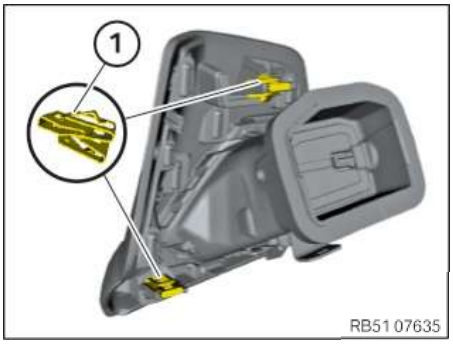
  Replace broken or missing clamps (1).
- Check the pins (2) and the corresponding clamps on the instrument panel trim and renew if necessary.

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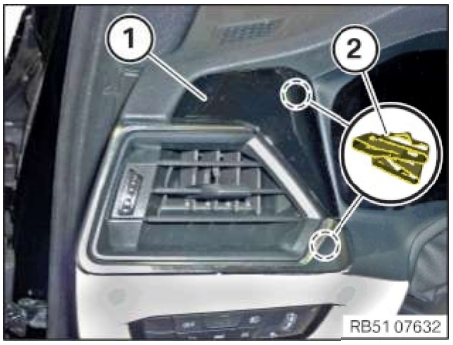


- Install the decorative strip (1).
  Connect and lock the associated connectors.
- Correctly position the decorative strip (1) and at the clamps (2) and clip in the pins (3).

83 – Install the finisher on the instrument panel on the left

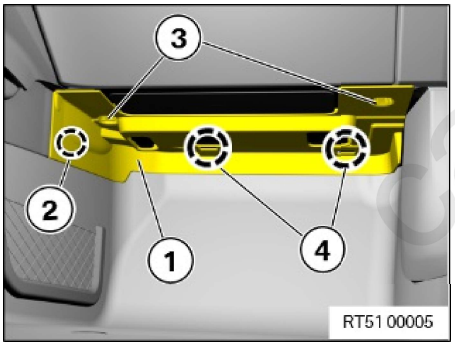


- Check the clamps (1).
  Replace broken or missing clamps (1).



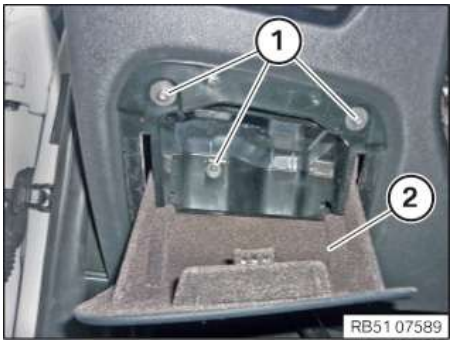
- Install the decorative strip (1).
  Connect and lock the associated connectors.
- Clip decorative strip (1) into clamps (2).

84 – Install the right footwell trim panel



- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

85 – Installing the left fold-down compartment



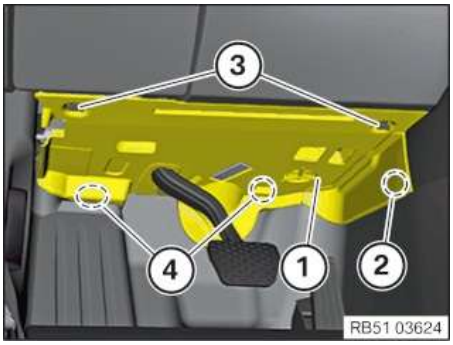
- Install the fold-down compartment (2).
- Tighten the screws (1).

Fold-down compartment to instrument panel

Oval-head screw		Tightening torque	1,8 Nm

86 – Installing the trim panel for the pedal mechanism

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- Connect associated connector.
- Attach the trim panel for the pedal mechanism (1) in the guides (4) and fold it up.
- Clip the trim panel for the pedal mechanism (1) into the centre console in this area (2).
- Insert locks (3) correctly and turn 90°.

87 – Install both A-pillar trim panels

NOTICE

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

▸ **Installing the A-pillar trim panel**

WARNING

Airbag unit.

Danger! Life-threatening injuries!

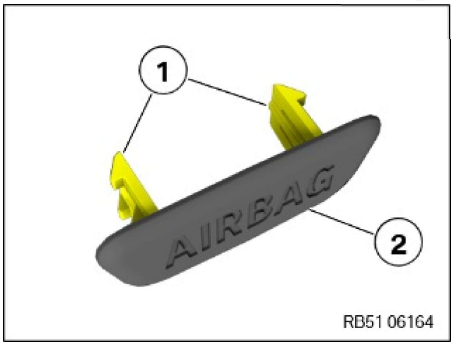
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.



Check

- Check retaining lugs (1) of cover (2) for damage.

Result

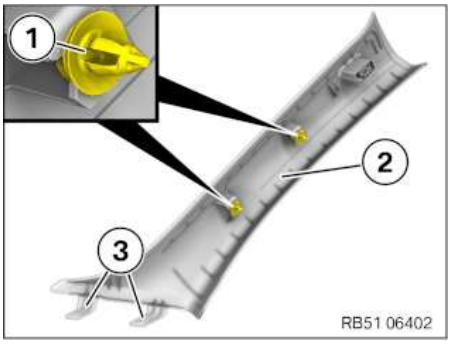
» Retaining lug is damaged.

Measure

- Renew the cover.

Check

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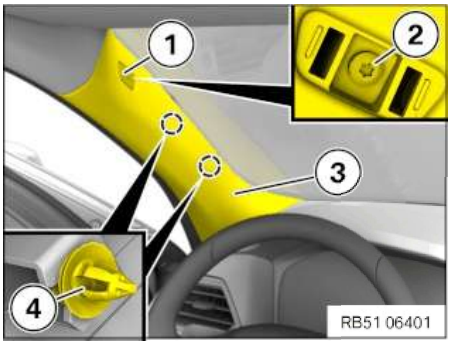
- Check the clips (1) for damage and renew if necessary.
- Check the guides (3) for damage.

Result

» Guide is damaged.

Measure

- Renew the A-pillar trim panel.



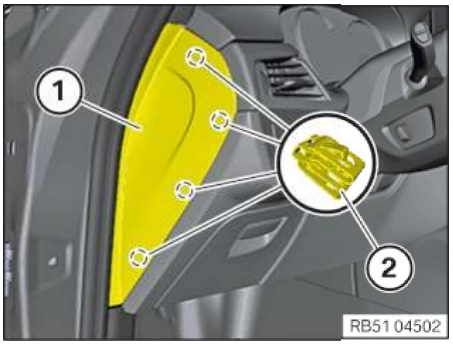
- Guide in A-pillar trim panel (3) downwards and clip it in with clips (4).
- Tighten down screw (2).

A-pillar trim panel to body

Sheet metal screw 4,8x38		Tightening torque	2,6 Nm

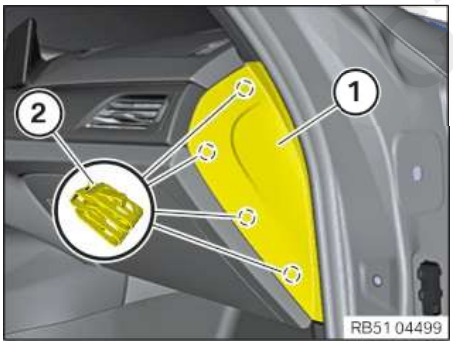
- Clip in the cover (1).

88 – Install the side panel on left instrument panel



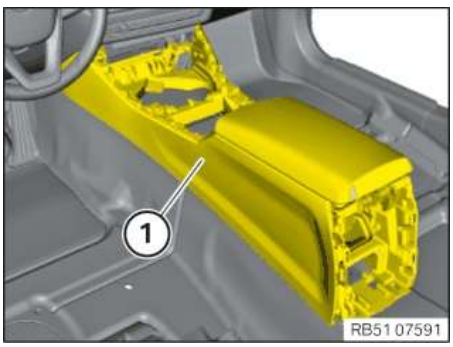
- Feed in the side panel (1) and clip it in at the clamps (2).

89 – Install the side panel on instrument panel on the right



- If required, connect the associated connector.
- Feed in the side panel (1) and clip it in at the clamps (2).

90 – Installing the centre console

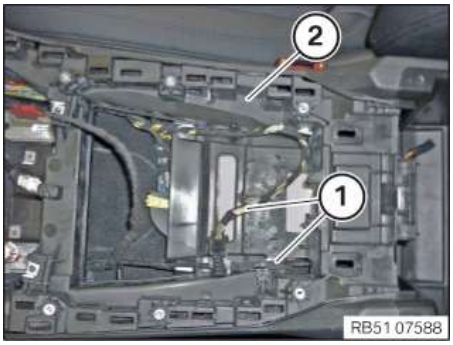


NOTICE

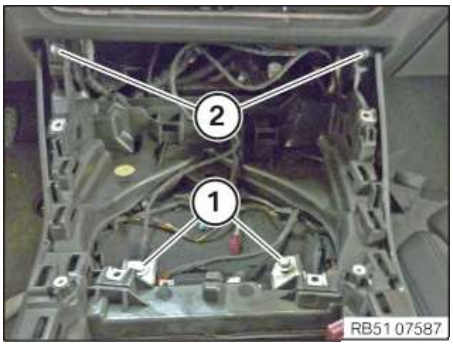
To provide a better overview: Schematic diagram with partially hidden components.

- Install centre console (1) and thereby feed in the wiring harness.
- Feed in the centre console (1) to the instrument panel and position correctly.

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- Secure the wiring harness to the centre console (1) and connect and lock the existing plug connections.



- Tighten the screws (1).

Centre console on tunnel

M6x18 Hexagon screw		Tightening torque	4,6 Nm

- Tighten the screws (2).

Centre console to instrument panel

Oval-head screw		Tightening torque	1,8 Nm

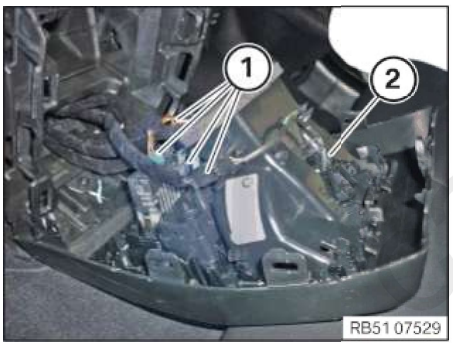


- Tighten the screws (1).

Centre console on tunnel

M6x18 Hexagon screw		Tightening torque	4,6 Nm

91 – Installing the rear centre console trim



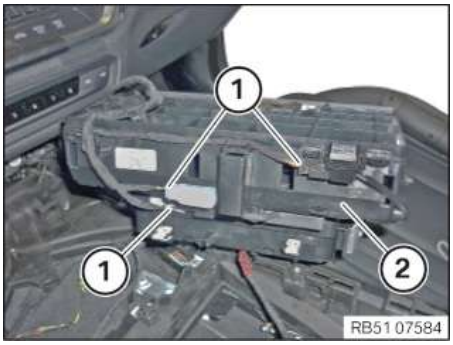
- Install the centre console trim (2).
- Connect connectors (1) and lock.



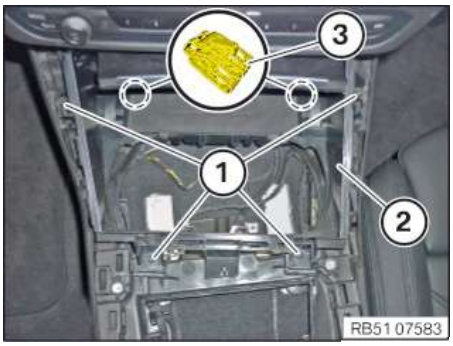
- Position centre console trim (1) and engage at the latch mechanisms at the side.

92 – Installing the storage compartment of the front centre console

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- Mount the storage compartment (2) and connect connectors (1).

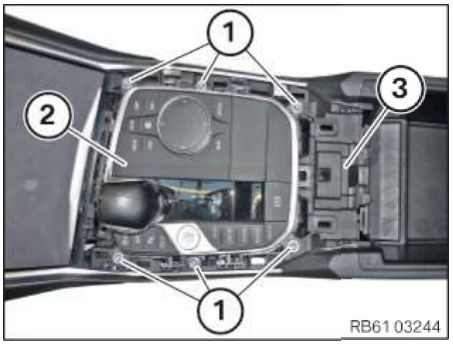


- Engage rear storage compartment trim (2) into clamps (3).
- Tighten the screws (1).

Storage compartment to centre console

Oval-head screw		Tightening torque	1,8 Nm

93 – Install the operating facility in the centre console



- Position operating facility (2) in the centre console (3).
- Tighten the screws (1).

Gear selector switch to centre console trim

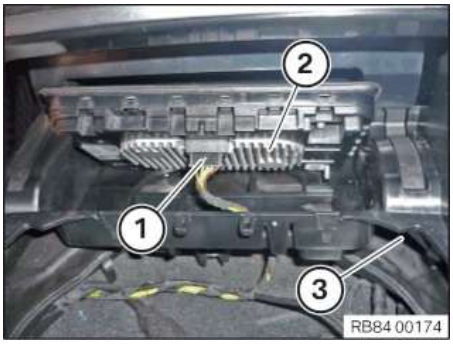
Screw		Tightening torque	1,8 Nm

▶ **Disconnecting all battery earth leads**



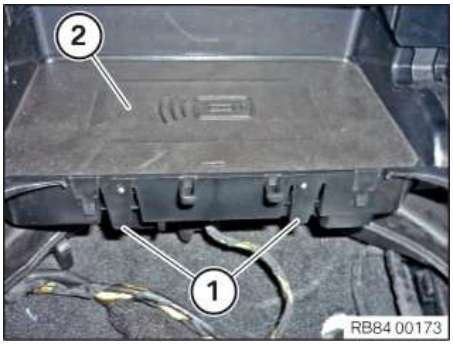
- See additional information.

94 – Installing the wireless charging station



- Connect connector (1).
- Position the wireless charging station (2) in the centre console (3).

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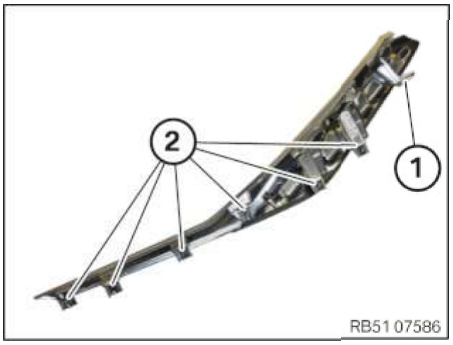
- Press the wireless charging station (2) down till the locking units (1) are engaged correctly.

95 – Install decorative trim on centre console on left and right

▸ **Installing the decorative trim to centre console**

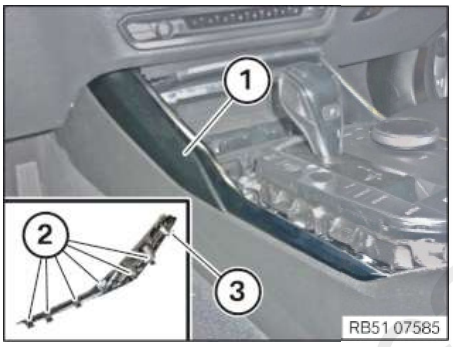
NOTICE

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



- Check guide (1) and the latch mechanisms (2).

  Renew defective decorative trim.



- Feed in the decorative trim (1) forward in the guide (3).
- Engage decorative trim (1) in latch mechanisms (2).

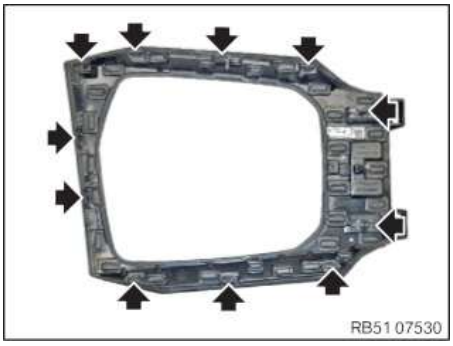
96 – Installing the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



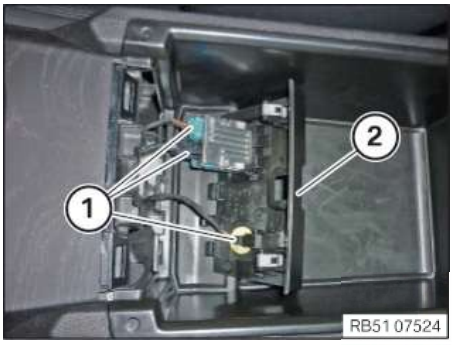
- Check all the latch mechanisms or clamps (arrows).
- In case the latch mechanisms or the clamps (arrows) are faulty, renew the centre console trim .

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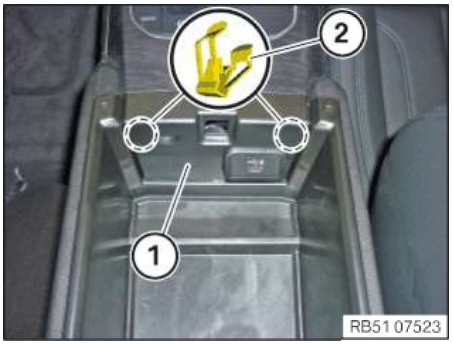


- Correctly position the centre console trim (1) and engage at the latch mechanisms.

97 – Installing the trim in the storage compartment of the centre armrest



- Mount the trim (2) and connect connector (1) and lock.



- Correctly position trim (1) and snap into the clamps (2).

98 – Install the cup holder



- Fix the cup holder (1) and the belonging connectors.
- Correctly position cup holder (1).
- Tighten the screws (2).

Cup holder to centre console

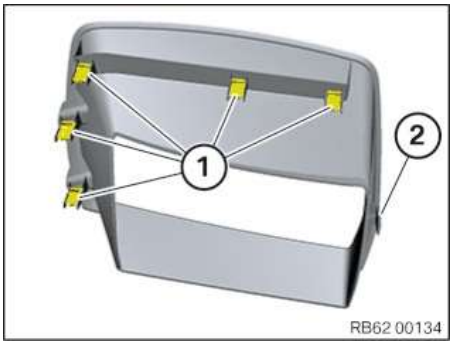
Oval-head screw		Tightening torque	1,8 Nm



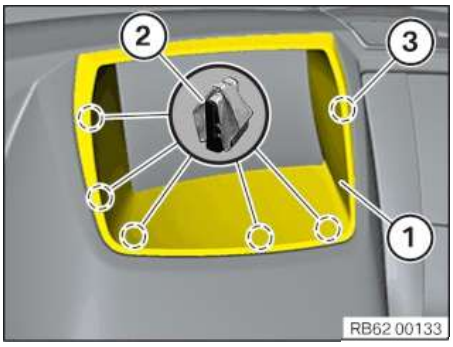
- Insert the insert (1).

99 – Installing the trim for the Head-Up Display

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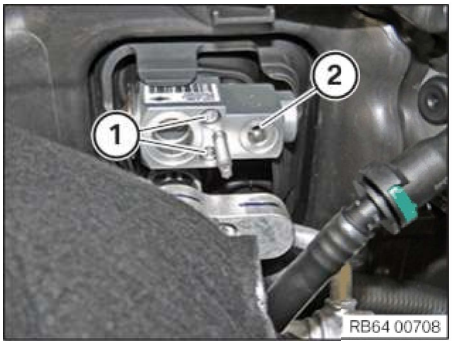


- Check clamps (1) and the latch mechanism (2) for damage, renew if necessary.



- Correctly position the trim (1) for the BMW Head-Up Display and engage it on the clamps (2) and the retaining lug (3).

100 – Install expansion valve



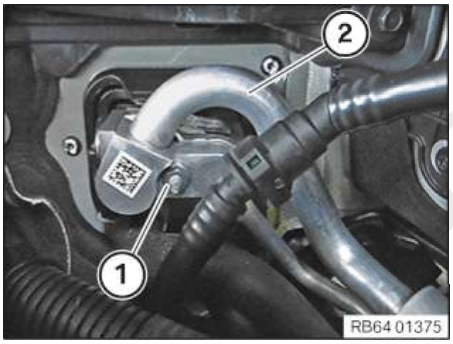
- Replace O-rings.

  Parts: O-rings
- Correctly position the expansion valves (2).
- Tighten the screws (1).

Expansion valve to heater - A/C

M5		Tightening torque	5,5 Nm

101 – Connect the refrigerant line to the expansion valve

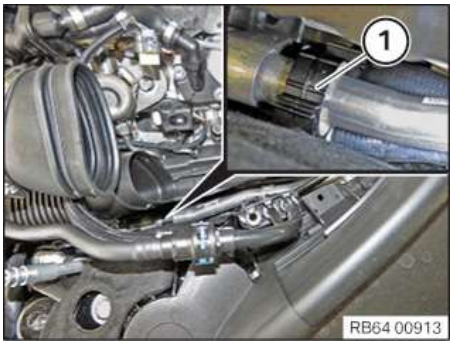


- Replace O-rings.

  Parts: O-rings
- Correctly position the refrigerant line (2).
- Tighten nut (1).

Refrigerant lines to expansion valve

M6		Tightening torque	13 Nm



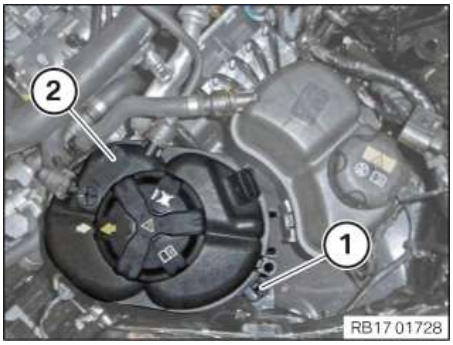
- Close the holder (1).

102 – Install coolant expansion tank of high-temperature coolant circuit, partially

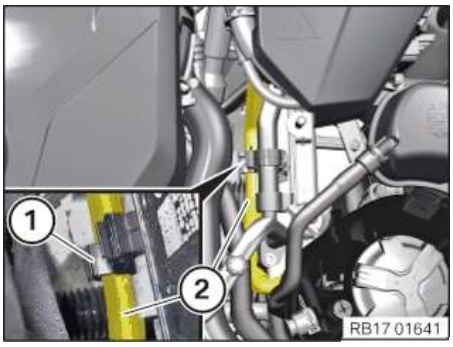
TECHNICAL INFORMATION

Make sure that the connections are locked correctly. The locks must engage audibly.

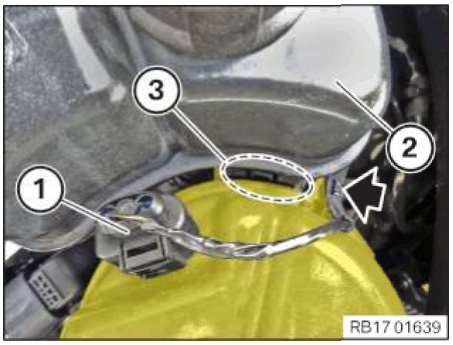
ordiagn.com



- Feed in and correctly position the coolant expansion tank (2) for the high-temperature coolant circuit.
- Lock the lock (1).



- Feed in the coolant line to the holder (1) and position.
- Lock holder (1).

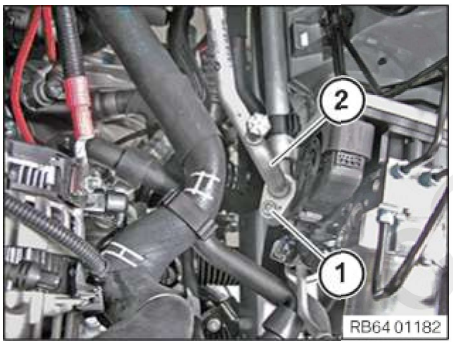


- Feed in and install the coolant expansion tank (2) for the low-temperature coolant circuit to the holders.

  The lock (3) must audibly engage.
- Secure clamp (arrow).
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

103 – Fasten the refrigerant line on the connecting piece



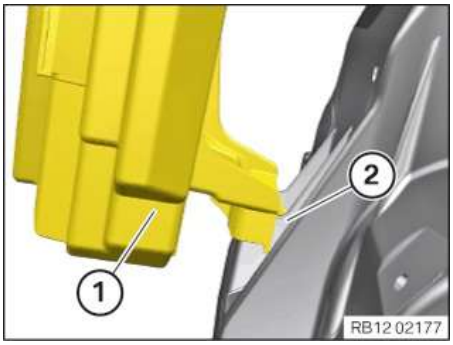
- Renew the sealing ring.

  Parts: Sealing ring
- Correctly position the refrigerant line (2).
- Tighten down screw (1).

Refrigerant line to connecting piece

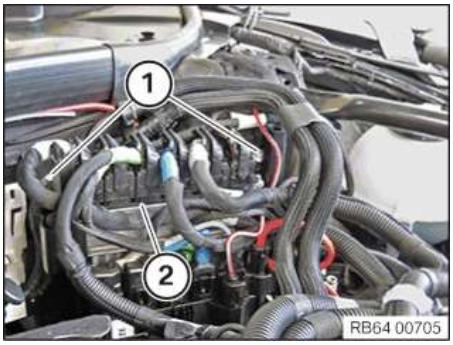
M8		Tightening torque	19 Nm

104 – Fastening control unit holder



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

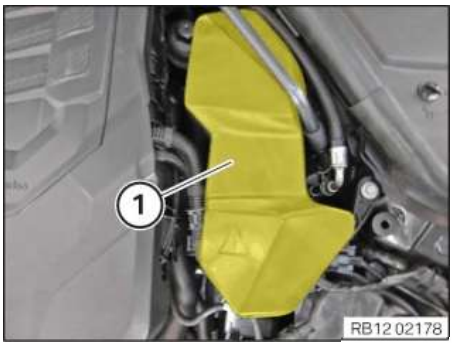
Bentley.com



- Position the control unit holder together with the control units (2) and position correctly.
- Tighten the screws (1).

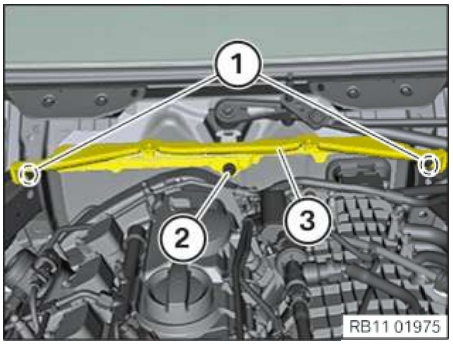
Control unit holder on spring strut dome

Hexagon screw		Tightening torque	8 Nm



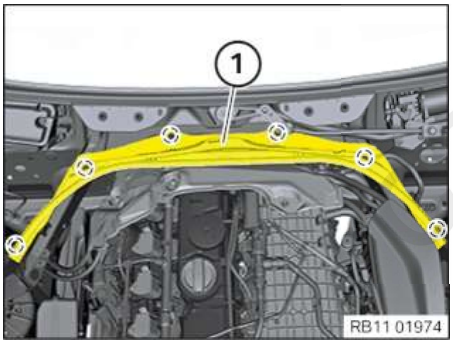
- Insert and install cover (1) into guides.

105 – Installing centre bulkhead lower section



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

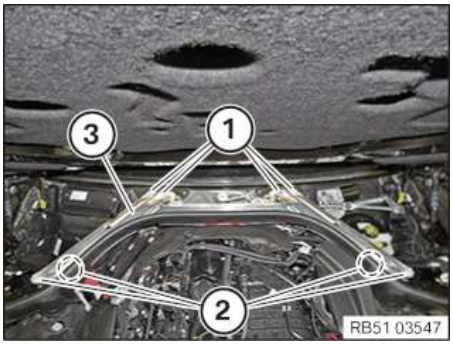
106 – Installing the centre bulkhead upper part



- 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 °

107 – Installing cowl panel cover

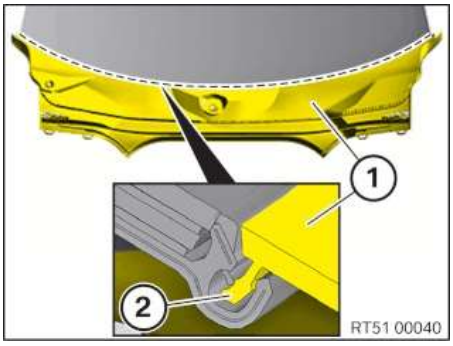
bardiagn.com

RISK OF DAMAGE

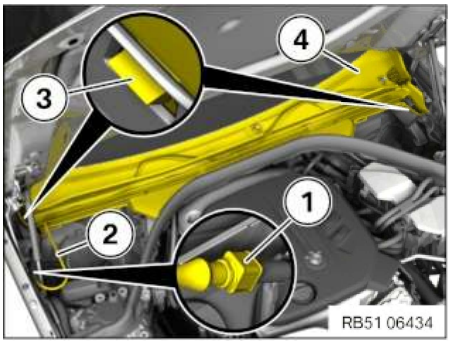
Damage caused by water ingress into the vehicle.

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.

108 – Installing both wiper arms

NOTICE

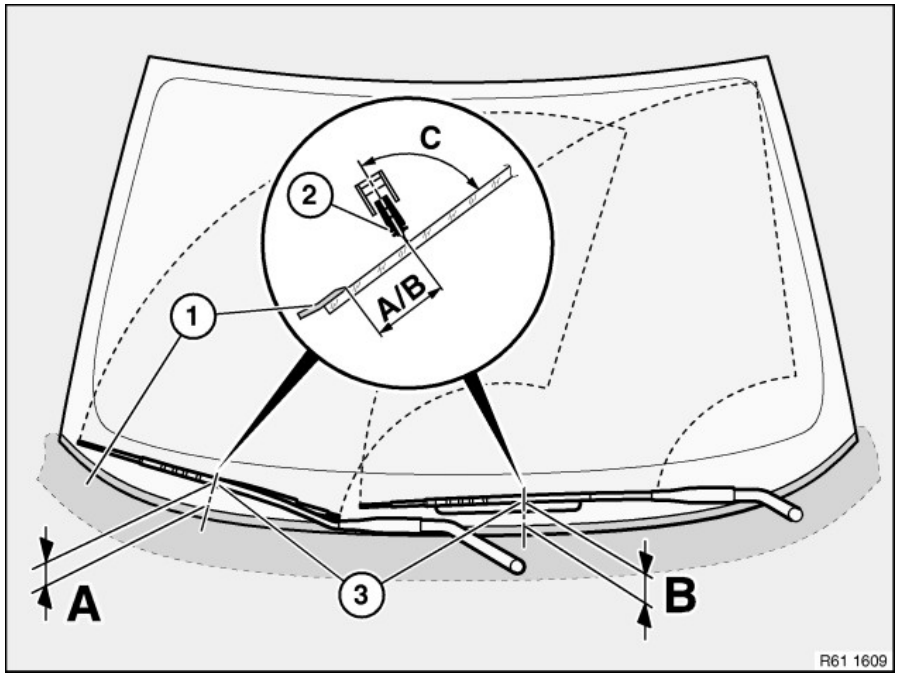
Description is for left component only. Procedure on the right side is identical.

▸ 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.

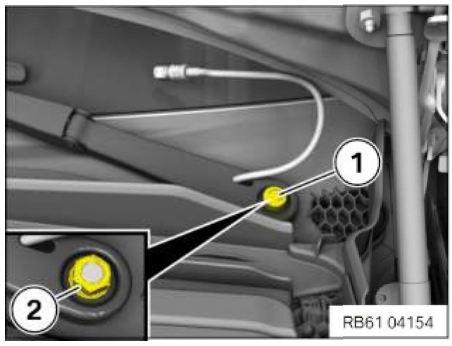
cardiagn.com



- 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

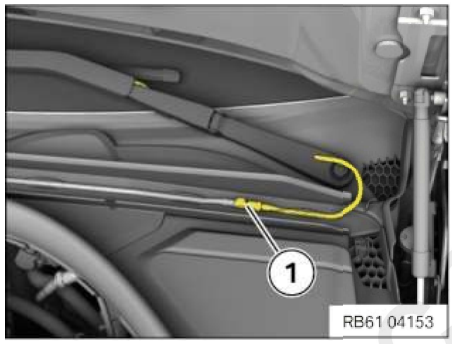


- Tighten nut (2).

Windscreen wiper arm

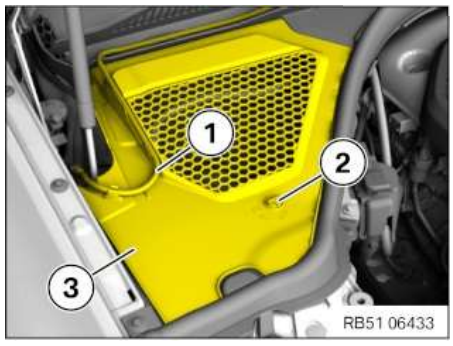
Combination hexagon nut		Tightening torque	35 Nm

- Connect the protective cap (1).



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

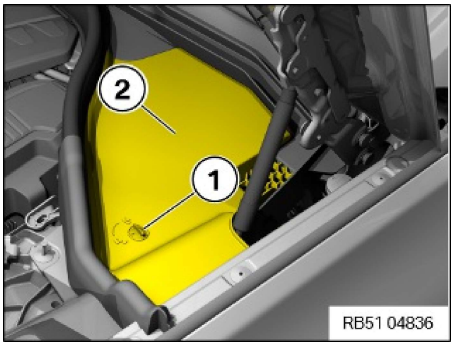
109 – Install the rear right engine compartment cover



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

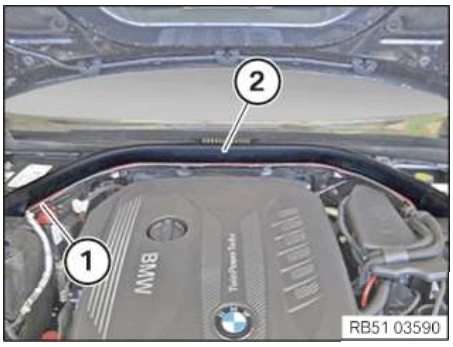
110 – Install the cover of the engine compartment on the rear left

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

111 – 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.

112 – Evacuate and fill air conditioning

- See additional information.

113 – Fill and bleed the coolant circuit

► **Filling and bleed the high-temperature coolant circuit**



- See additional information.

Additional Information

Overview of Tightening Torques

Heater/air conditioner — Used in step 5860

Screw		Tightening torque	1,2 Nm

Controller drive to heating and air-conditioning unit — Used in step 6162

Screw		Tightening torque	1,2 Nm

Heating and air-conditioning unit on support — Used in step 65

Nut M6		Tightening torque	4 Nm

Support for instrument panel — Used in step 65

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

Head unit to holder / holder to support — Used in step 65

Screw		Tightening torque	1,8 Nm

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Head-Up Display to support			Used in step 66
M6x25 screw		Tightening torque	13 Nm

Knee airbag on support structure			Used in step 68
Nut		Tlghtening torque	8 Nm

Dashboard to support			Used in step 71
Screw		Tightening torque	2,4 Nm

Speaker to support / support to instrument panel / support to body			Used in step 72
Screw		Tightening torque	1,8 Nm

Instrument cluster (KOMBI) to support			Used in step 75
Oval-head screw		Tightening torque	1,8 Nm

Steering column switch cluster (SZL) on the steering column			Used in step 76
Screw TS5x20		Tightening torque	3 Nm

Steering wheel to steering column			Used in step 79
M14	Only for a micro-encapsulated screw: Renew screw.	Tightening torque	62,5 Nm

Central information display to instrument panel			Used in step 81
Screw		Tightening torque	1,8 Nm

Fold-down compartment to instrument panel			Used in step 85
Oval-head screw		Tightening torque	1,8 Nm

A-pillar trim panel to body			Used in step 87
Sheet metal screw 4,8x38		Tightening torque	2,6 Nm

Centre console on tunnel			Used in step 90
M6x18 Hexagon screw		Tightening torque	4,6 Nm

Centre console to instrument panel			Used in step 90
Oval-head screw		Tightening torque	1,8 Nm

Storage compartment to centre console			Used in step 92
Oval-head screw		Tightening torque	1,8 Nm

Gear selector switch to centre console trim			Used in step 93
Screw		Tightening torque	1,8 Nm

Cup holder to centre console			Used in step 98
Oval-head screw		Tightening torque	1,8 Nm

Expansion valve to heater - A/C			Used in step 100
M5		Tightening torque	5,5 Nm

Refrigerant lines to expansion valve			Used in step 101
M6		Tightening torque	13 Nm

Refrigerant line to connecting piece			Used in step 103
M8		Tightening torque	19 Nm

Control unit holder on spring strut dome			Used in step 104
Hexagon screw		Tightening torque	8 Nm

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Bulkhead upper part to bottom bulkhead — Used in step 106

		Tightening torque	3 Nm

Tension strut on bulkhead — Used in step 106

M10x25 screw		Tightening torque	56 Nm

Tension strut to spring strut dome — Used in step 106

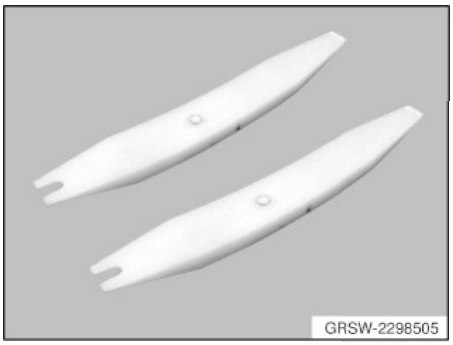
Screw	Renew screws.	Jointing torque	56 Nm
		Angle of rotation	90 °

Windscreen wiper arm — Used in step 108

Combination hexagon nut		Tightening torque	35 Nm

Overview of Special Tools

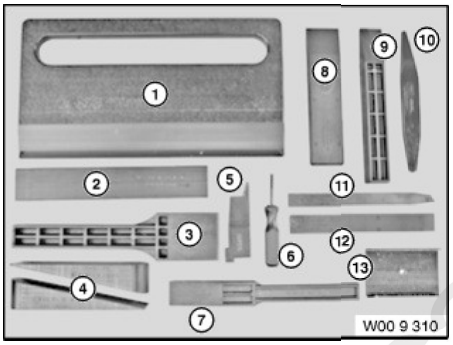
2 298 505 Wedge



Common — Used in step 1819

Usage	Set (delivery of 2 pieces)
Included in the tool or work	
Storage location	C34
Replaced by	
In connection with	
SI-Number	01 03 12 (792)

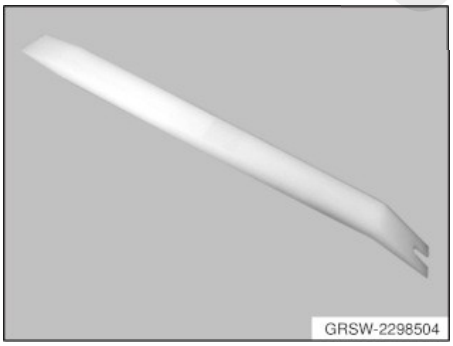
0 493 752 (00 9 329) Case



Common — Used in step 28

Usage	(Case) with insert not incl. panel wedges
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

2 298 504 Wedge

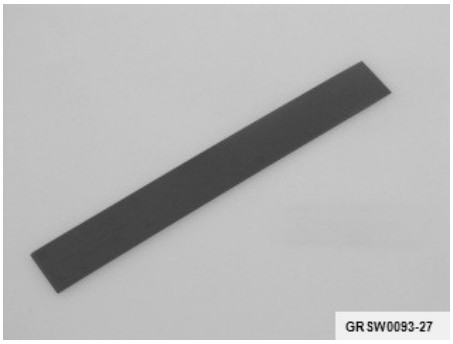


Common — Used in step 37

Usage	Wedge with angled lug
Included in the tool or work	
Storage location	C34
Replaced by	
In connection with	
SI-Number	01 03 12 (792)

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0 496 571 (00 9 327) Wedge



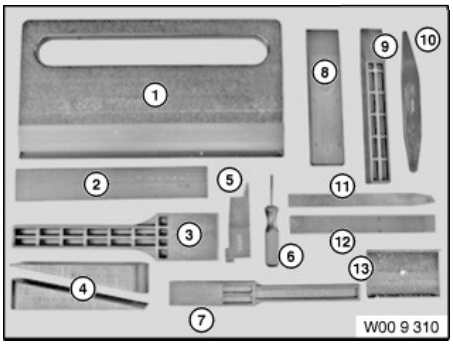
Common	Used in step 41
Usage	(Cleaning wedge) From 11/2008 this special tool replaces panel wedge 00 9 323 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

0 496 569 (00 9 325) Wedge



Common	Used in step 42
Usage	(Panel wedge) From 11/2008 this special tool replaces panel wedge 00 9 317 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	41 01 09 (507)

0 490 534 (00 9 317) Wedge



Common	Used in step 45
Usage	(Trim wedge) Replaced by special tool 00 9 325 from 11/2008 (quality improvement due to new material) Replaced by 00 9 325 (0 496 569)
Included in the tool or work	0 490 527
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

Distance from window pane edge to wiper blade	Used in step 108
Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

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Links

General repair instructions	Used in step
72 00 ... Safety regulations for handling components with gas generators	28354768
72 00 ... Safety regulations for handling components with gas generators	28

Repair instructions	Used in step
64 50 010 Extract, evacuate and fill air conditioning system	2112
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	2112
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	2112
64 50 ... Notes on repairs to air conditioning	2112
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64 11 511 Replace the controller drive for fresh/recirculated air flap

TECHNICAL INFORMATION

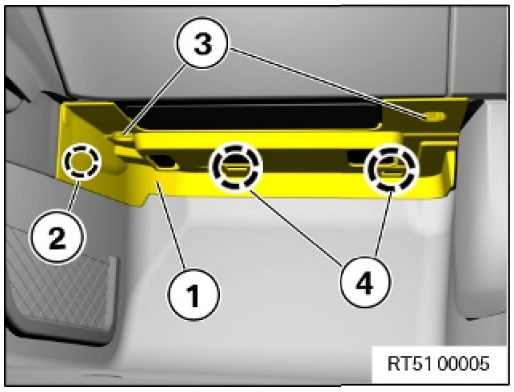
After the replacement, the controller drive must be reconfigured.
The address can only be configured with the diagnosis system.

PRELIMINARY WORK

1 – Moving to installation position of flap motors

- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Installation position of flap motors

2 – Remove the right footwell trim



- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

3 – In vehicles with airbag module: Removing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

NOTICE

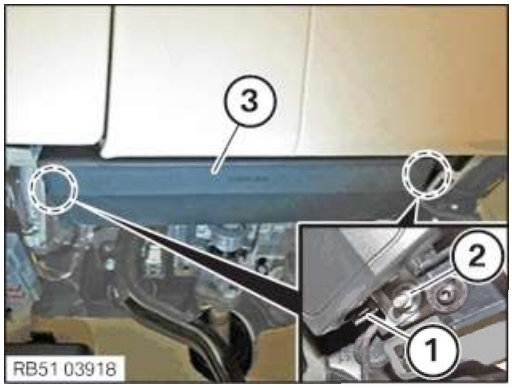
Description is for left component only. Procedure on the right side is identical.

▸ **Disconnecting all battery earth leads**

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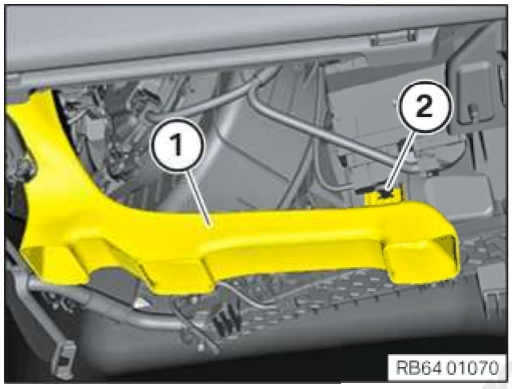


- See additional information.



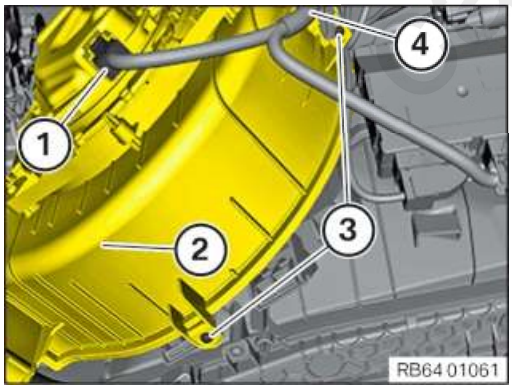
- Unlock plug connection (1) and disconnect.
- Loosen the screws (2) on left and right.
- Remove knee airbag (3) towards the bottom.

4 – Removing the right air duct

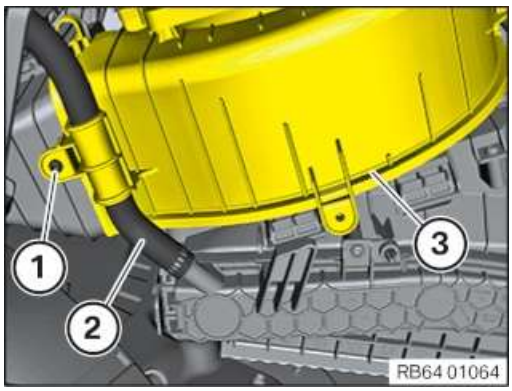


- Unclip the air duct (1) at an angle toward the bottom at the spring clip (2).

5 – Remove the blower for the heating and air-conditioning unit



- Unlock and disconnect the plug connection (1) from the blower motor (2).
- Loosen screws (3).
- Pull of the cable clip (4) from the housing of the blower motor (2).

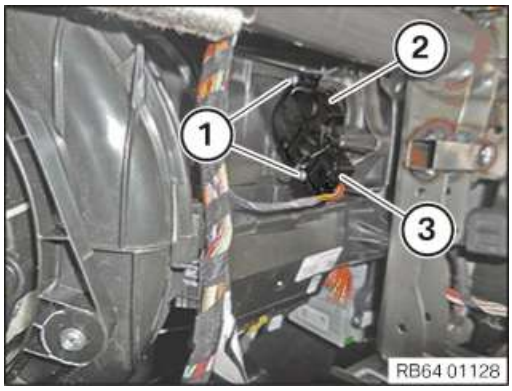


- Loosen screw (1).
- Guide out the hose (2) from the housing of the blower motor (3).
- Remove the housing of the blower motor (3).

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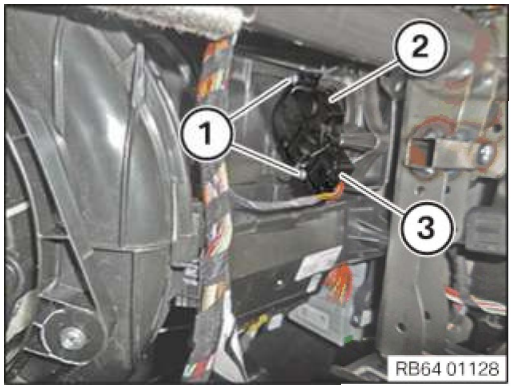
MAIN WORK

6 – Remove the fresh air / recirculated air flap motor (M16)



- Unlock plug connection (3) and disconnect.
- Loosen screws (1).
- Remove the fresh air/recirculated air flap motor (2).

7 – Install the fresh air / recirculated air flap motor (M16)



- Position the fresh air/recirculated air flap motor (2).
- Tighten the screws (1).

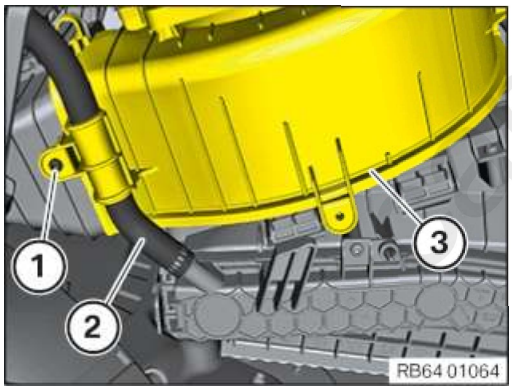
Controller drive to heating and air-conditioning unit

Screw		Tightening torque	1,2 Nm

- Connect connector (3).

POSTPROCESSES

8 – Install the blower for the heating and air-conditioning unit

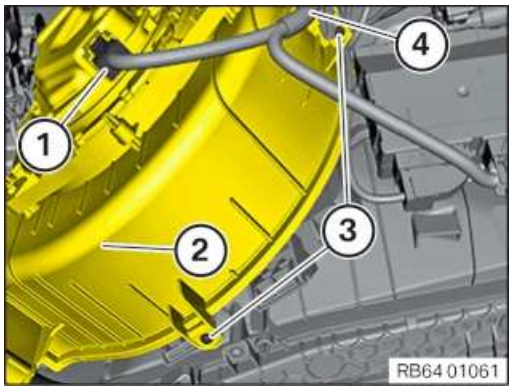


- Position the housing of the blower motor (3).
- Tighten down screw (1).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Feed in the hose (2) at the housing of the blower motor (3).



- Connect and lock plug connection (1) of blower motor (2).
- Tighten down screws (3).

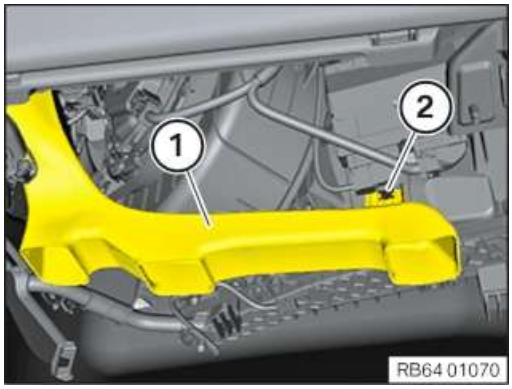
Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Secure the cable clip (4) on the housing of the blower motor (2).

9 – Installing the air duct, right

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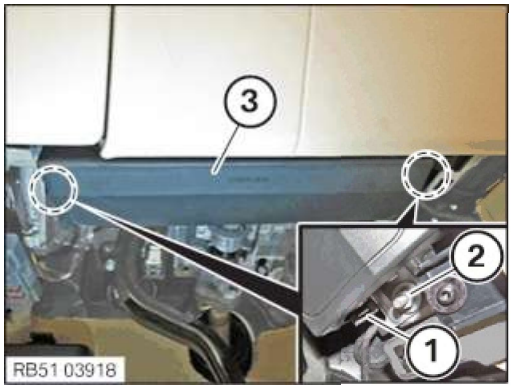


- Clip the air duct (1) in upward at an angle with the spring clip (2) on the heating and air-conditioning unit.

10 – In vehicles with airbag module: Installing knee airbag

NOTICE

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



- Install knee airbag (3).
- Tighten screws (2) on left and right.

Knee airbag

	Tightening torque	8 Nm

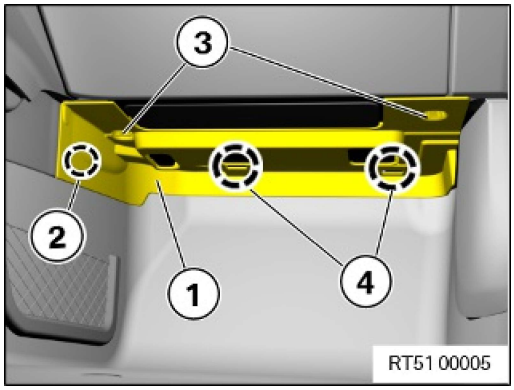
- Connect connectors (1) and lock.

▸ **Disconnecting all battery earth leads**



- See additional information.

11 – Install the right footwell trim panel



- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

12 – Address the controller drive

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- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Address flap motors

Additional Information

Overview of Tightening Torques

Controller drive to heating and air-conditioning unit			Used in step 7
Screw		Tightening torque	1,2 Nm

Heater/air conditioner			Used in step 8
Screw		Tightening torque	1,2 Nm

Knee airbag			Used in step 10
		Tightening torque	8 Nm

Links

Repair instructions	**Used in step**
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
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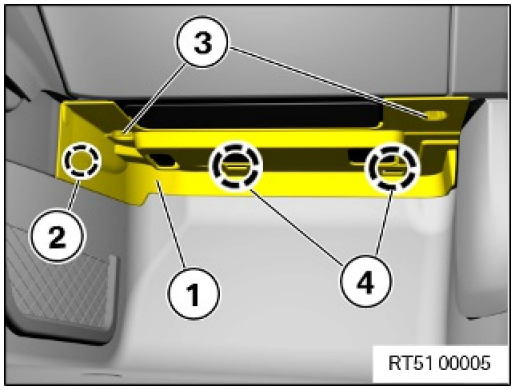
61 20 900 Disconnecting and connecting battery earth lead	310
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64 11 522 Replace the evaporator temperature sensor

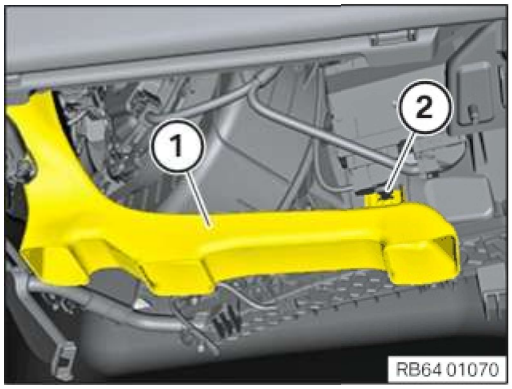
PRELIMINARY WORK

1 – Remove the right footwell trim



- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

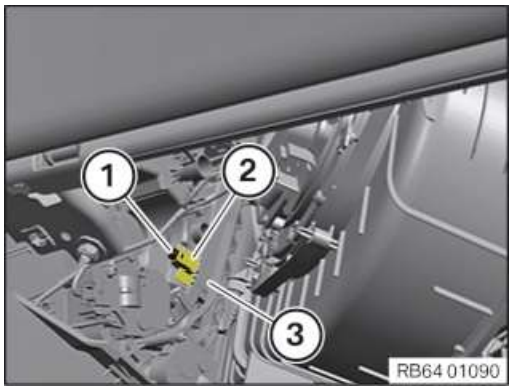
2 – Removing the right air duct



- Unclip the air duct (1) at an angle toward the bottom at the spring clip (2).

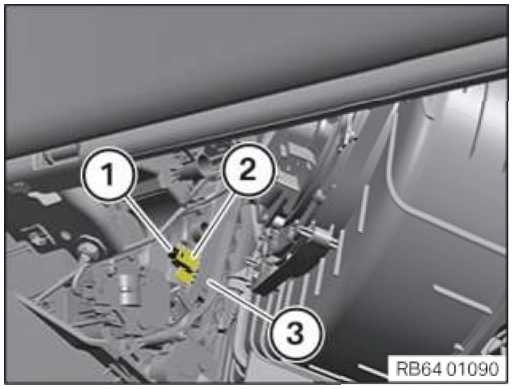
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3 – Remove evaporator temperature sensor



- Disconnect plug connection (1).
- Disengage the evaporator temperature sensor (2) and remove it from the heating and air-conditioning unit (3).

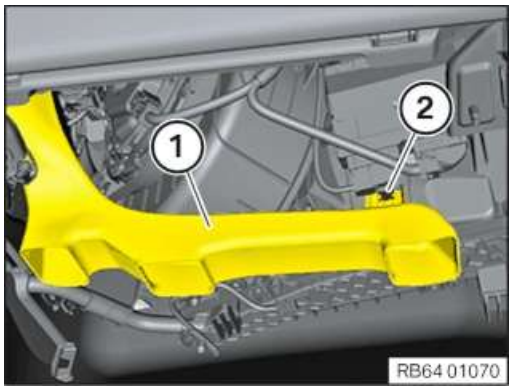
4 – Install evaporator temperature sensor



- Fit the evaporator temperature sensor (2) correctly in the heating and air-conditioning unit (3) and engage.
- Connect the plug connection (1).

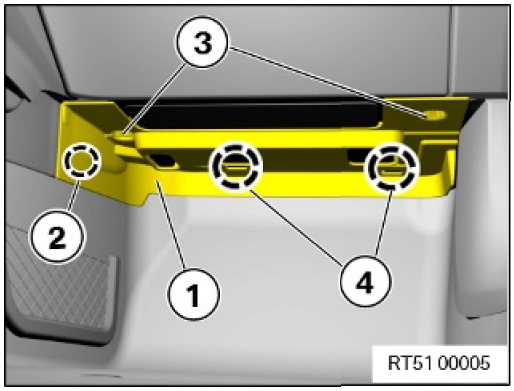
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5 – Installing the air duct, right



- Clip the air duct (1) in upward at an angle with the spring clip (2) on the heating and air-conditioning unit.

6 – Install the right footwell trim panel



- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

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64 11 509 Replacing actuator drive for defroster flap

TECHNICAL INFORMATION

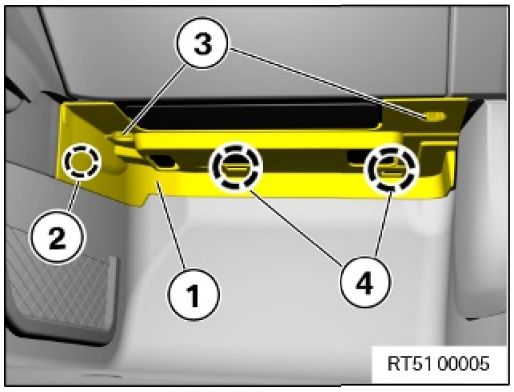
After the replacement, the controller drive must be reconfigured.
The address can only be configured with the diagnosis system.

PRELIMINARY WORK

1 – Moving to installation position of flap motors

- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Installation position of flap motors

2 – Remove the right footwell trim



- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

3 – In vehicles with airbag module: Removing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

NOTICE

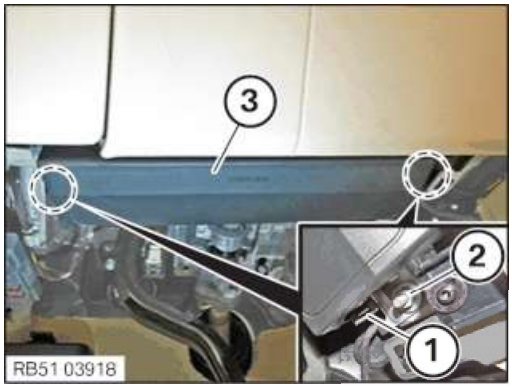
Description is for left component only. Procedure on the right side is identical.

▸ **Disconnecting all battery earth leads**

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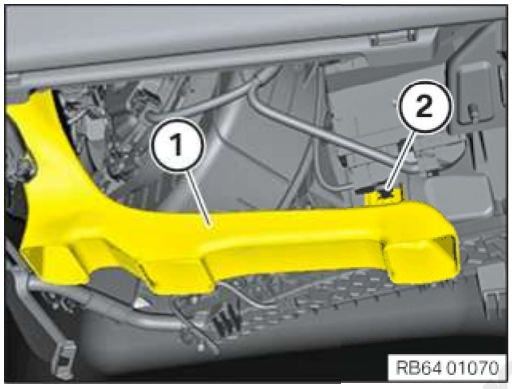


- See additional information.



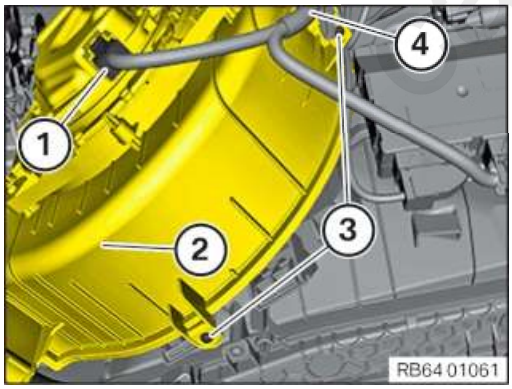
- Unlock plug connection (1) and disconnect.
- Loosen the screws (2) on left and right.
- Remove knee airbag (3) towards the bottom.

4 – Removing the right air duct

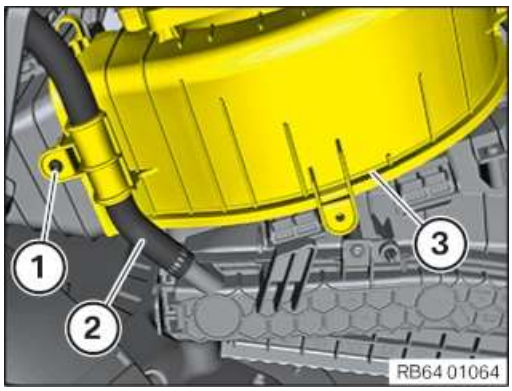


- Unclip the air duct (1) at an angle toward the bottom at the spring clip (2).

5 – Remove the blower for the heating and air-conditioning unit



- Unlock and disconnect the plug connection (1) from the blower motor (2).
- Loosen screws (3).
- Pull of the cable clip (4) from the housing of the blower motor (2).

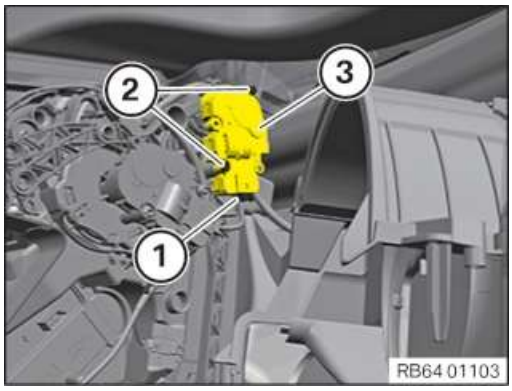


- Loosen screw (1).
- Guide out the hose (2) from the housing of the blower motor (3).
- Remove the housing of the blower motor (3).

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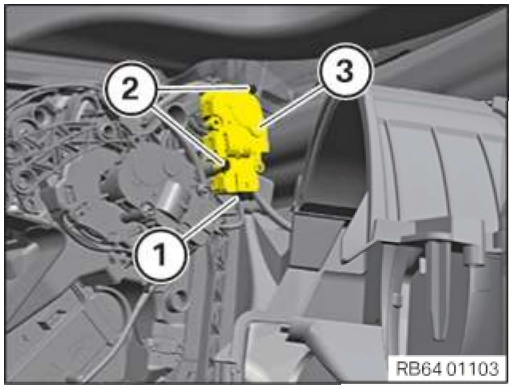
MAIN WORK

6 – Remove the defroster flap motor (M61)



- Unlock and disconnect connector (1).
- Unscrew the bolts (2) and remove the defroster flap motor (3).

7 – Install the defroster flap motor (M61)



- Install the defroster flap motor (3) and position it correctly.
- Tighten down screws (2).

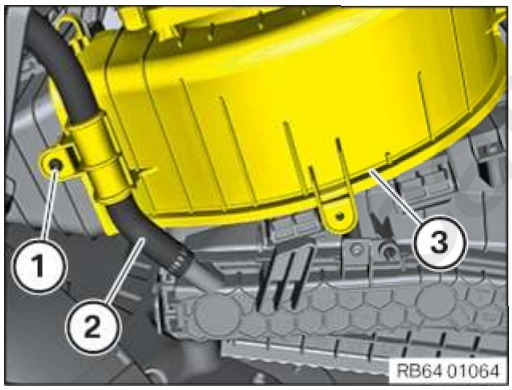
Controller drive to heating and air-conditioning unit

Screw		Tightening torque	1,2 Nm

- Connect connectors (1) and lock.

POSTPROCESSES

8 – Install the blower for the heating and air-conditioning unit

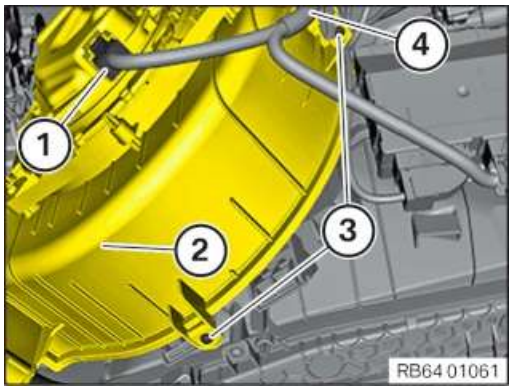


- Position the housing of the blower motor (3).
- Tighten down screw (1).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Feed in the hose (2) at the housing of the blower motor (3).



- Connect and lock plug connection (1) of blower motor (2).
- Tighten down screws (3).

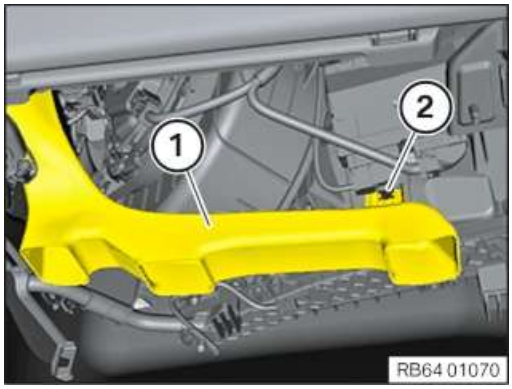
Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Secure the cable clip (4) on the housing of the blower motor (2).

9 – Installing the air duct, right

mobilesign.com

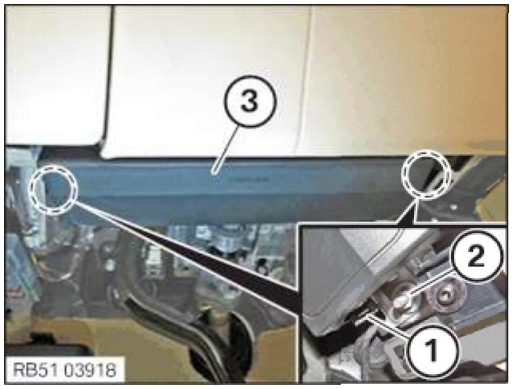


- Clip the air duct (1) in upward at an angle with the spring clip (2) on the heating and air-conditioning unit.

10 – In vehicles with airbag module: Installing knee airbag

NOTICE

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



- Install knee airbag (3).
- Tighten screws (2) on left and right.

Knee airbag

	Tightening torque	8 Nm

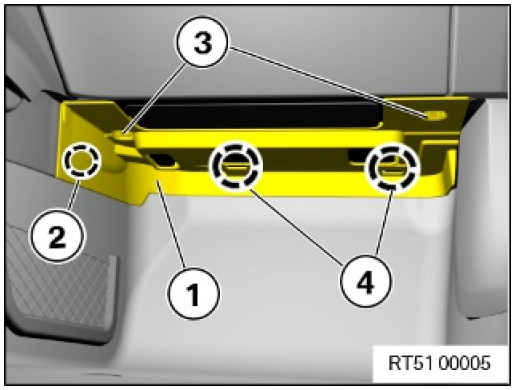
- Connect connectors (1) and lock.

▸ **Disconnecting all battery earth leads**



- See additional information.

11 – Install the right footwell trim panel



- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

12 – Address the controller drive

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- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Address flap motors

Additional Information

Overview of Tightening Torques

Controller drive to heating and air-conditioning unit			Used in step 7
Screw		Tightening torque	1,2 Nm

Heater/air conditioner			Used in step 8
Screw		Tightening torque	1,2 Nm

Knee airbag			Used in step 10
		Tightening torque	8 Nm

Links

Repair instructions	**Used in step**
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	310
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	310
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
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61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310

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61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310

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64 11 501 Replacing actuator drive for front left blend air door

WARNING

Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

TECHNICAL INFORMATION

After the replacement, the controller drive must be reconfigured.
The address can only be configured with the diagnosis system.

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PRELIMINARY WORK

1 – Moving to installation position of flap motors

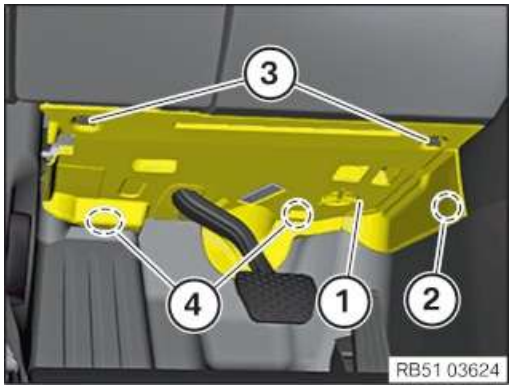
- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Installation position of flap motors

2 – Disconnecting all battery earth leads



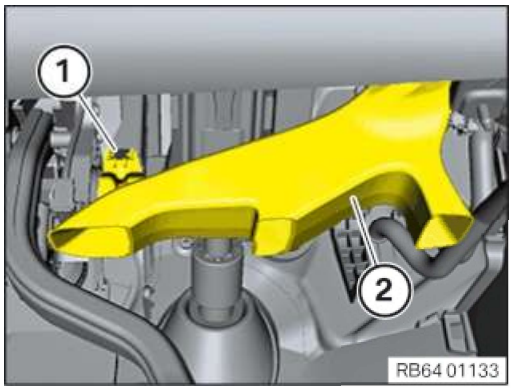
- See additional information.

3 – Removing the trim panel for pedal mechanism



- Unclip the trim panel for the pedal mechanism (1) towards the inside in this area (2).
- Turn the locks (3) by 90°.
- Detach the trim panel for the pedal mechanism (1) inwards out of the guides (4).
- Unlock associated plug connection and disconnect.

4 – Remove left air duct



- Unclip the air duct (2) from the air conditioning housing at an angle towards the bottom at the clamp (1).

5 – Removing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

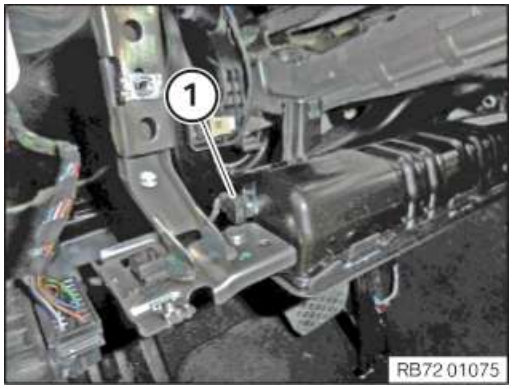
WARNING

Pyrotechnic components.

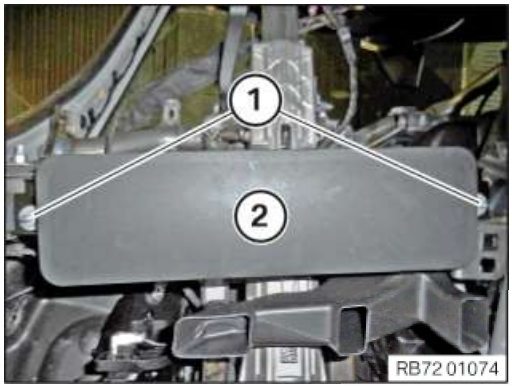
Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.

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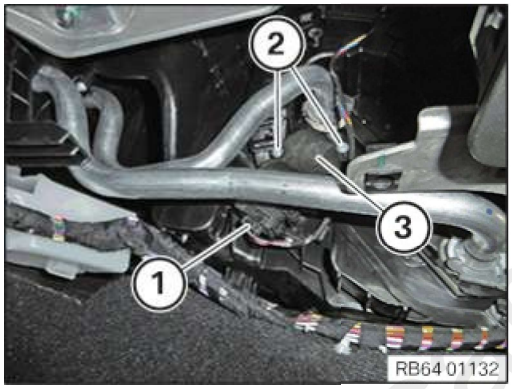
- Unlock plug connection (1) and disconnect.



- Loosen nuts (1).
- Remove knee airbag (2).

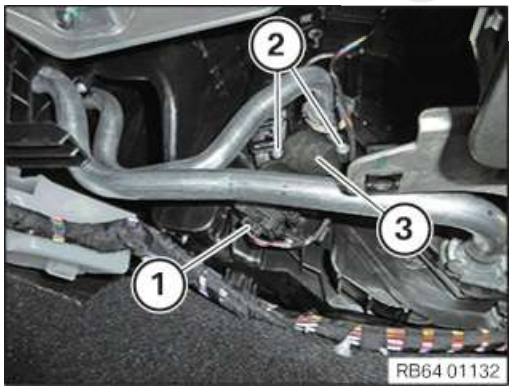
MAIN WORK

6 – Remove the mixed air flap motor at the front left (M23a)



- Disconnect plug connection (1).
- Loosen screws (2).
- Remove front left mixed air flap motor (3).

7 – Install the mixed air flap motor at the front left (M23a)



- Front left mixed air flap motor (3).
- Tighten down screws (2).

Controller drive to heating and air-conditioning unit

Screw		Tightening torque	1,2 Nm

- Connect connectors (1) and lock.

POSTPROCESSES

8 – Installing knee airbag

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WARNING

Airbag unit.

Danger! Life-threatening injuries!

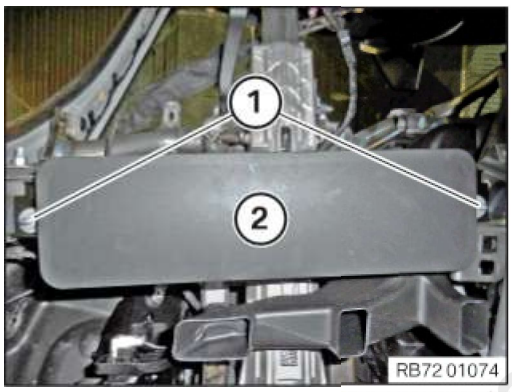
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

Pyrotechnic components.

Danger! Life-threatening injuries!

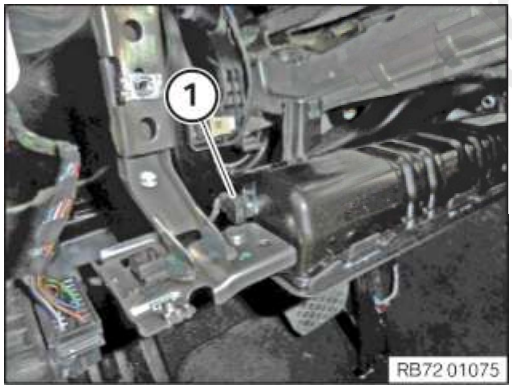
- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.



- Position knee airbag (2) correctly.
- Tighten nuts (1).

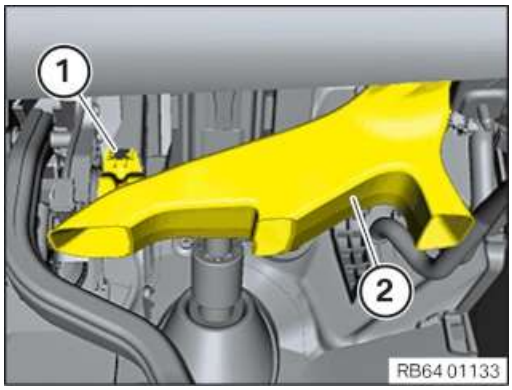
Knee airbag on support structure

Nut		Tlghtening torque	8 Nm



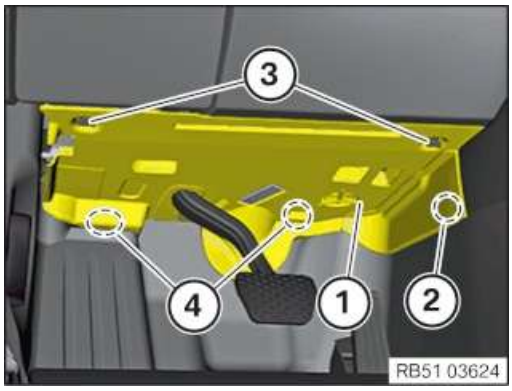
- Connect connectors (1) and lock.

9 – Installing the air duct, left



- Clip in the air duct (2) at the clamp (1) in the air conditioning housing at an angle towards the top.

10 – Installing the trim panel for the pedal mechanism



- Connect associated connector.
- Attach the trim panel for the pedal mechanism (1) in the guides (4) and fold it up.
- Clip the trim panel for the pedal mechanism (1) into the centre console in this area (2).
- Insert locks (3) correctly and turn 90°.

11 – Disconnecting all battery earth leads



- See additional information.

12 – Address the controller drive

- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Address flap motors

Additional Information

Overview of Tightening Torques

Controller drive to heating and air-conditioning unit			Used in step 7
Screw		Tightening torque	1,2 Nm

Knee airbag on support structure			Used in step 8
Nut		Tlghtening torque	8 Nm

Links

General repair instructions	**Used in step**
72 00 ... Safety regulations for handling components with gas generators	58

Repair instructions	**Used in step**
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211

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61 20 900 Disconnecting and connecting battery earth lead	211
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61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	211
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	211
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	211
61 20 900 Disconnecting and connecting battery earth lead	211
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61 20 900 Disconnecting and connecting battery earth lead	211
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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	211
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61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211

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64 11 504 Replacing actuator drive for front left stratification flap

TECHNICAL INFORMATION

After the replacement, the controller drive must be reconfigured.
The address can only be configured with the diagnosis system.

PRELIMINARY WORK

1 – Moving to installation position of flap motors

- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Installation position of flap motors

2 – Disconnecting all battery earth leads



- See additional information.

3 – Adjust the steering column position



- Adjust the length of the steering column to the maximum length in the direction of arrow (1).
- Move the steering column to the lowest steering column position in the direction of arrow (2).

4 – Remove cupholder

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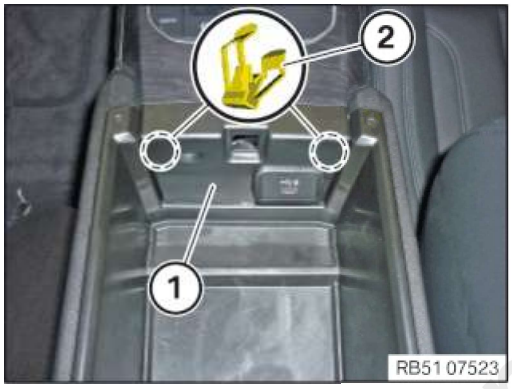


- Remove the insert (1).

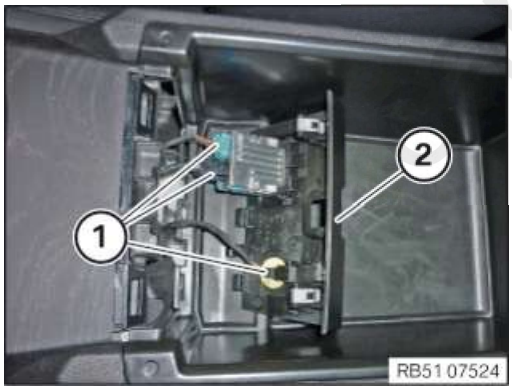


- Loosen screws (1).
- Feed the cup holder (2) out to the top.
- Unlock associated plug connections and disconnect.

5 – Removing the trim in the storage compartment on the centre armrest



- Lever out the trim (1) with the special tool (2) toward the rear from the clamps 2 298 505.



- Unlock and disconnect the plug connections (1) and remove the trim (2) .

6 – Remove the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

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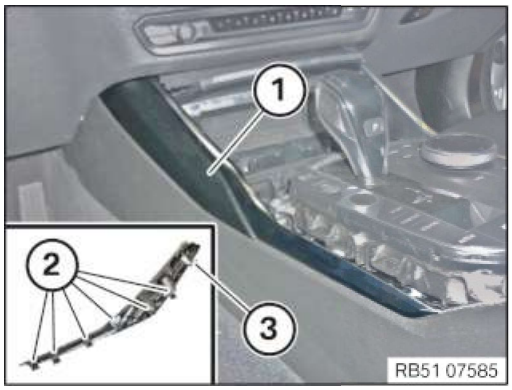
- Release and remove the centre console trim upwards (1) as shown using the special tool 2 298 505 from the latch mechanisms.

7 – Removing the decorative trim on the centre console trim on the left and right

▸ **Remove decorative trim on centre console**

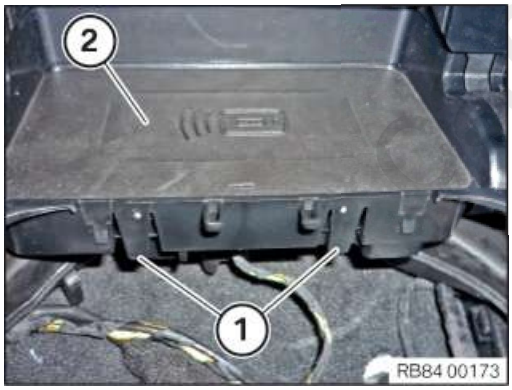
NOTICE

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

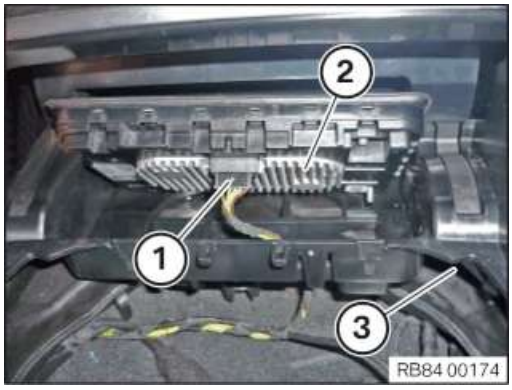


- Lever out the rear decorative trim (1) from the latch mechanisms (2) starting from the top.
- Feed out the decorative trim (1) backwards out of the guide (3) and remove.

8 – Removing the wireless charging station



- Loosen the latch mechanisms (1) and push out the wireless charging station (2) upwards.



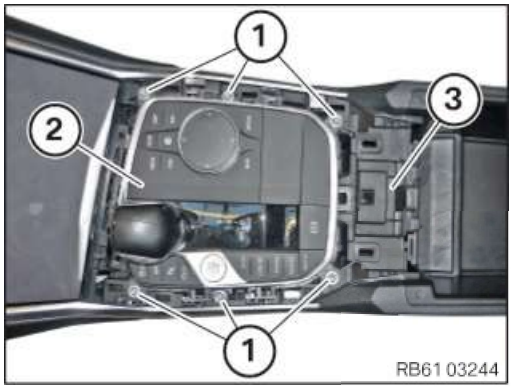
- Disconnect the connector (1) and remove the wireless charging station (2) from the centre console (3).

9 – Remove the operating facility in the centre console

► **Disconnecting all battery earth leads**

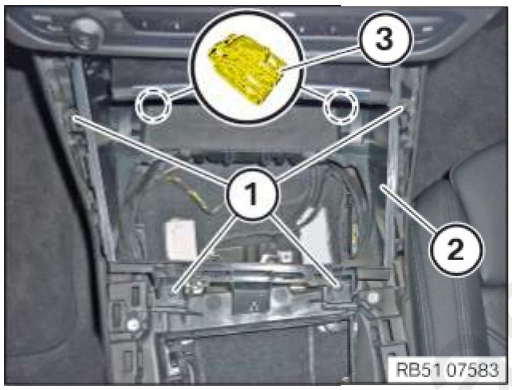


- See additional information.

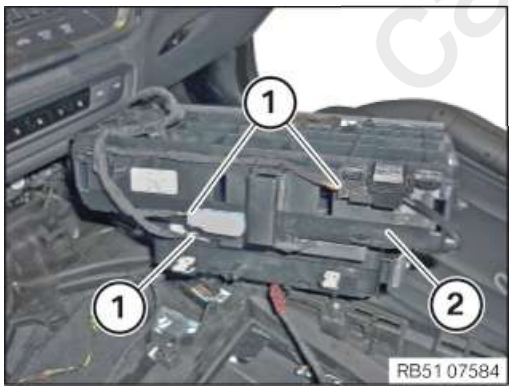


- Loosen screws (1).
- Remove the operating facility in the centre console (2) from the centre console (3).

10 – Removing the storage compartment of the front centre console



- Loosen screws (1).
- Remove storage compartment trim (2) backwards out of clamps (3).



- Unlock and disconnect all the plug connections (1) and remove the storage compartment (2).

11 – Removing the rear centre console trim

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RISK OF DAMAGE

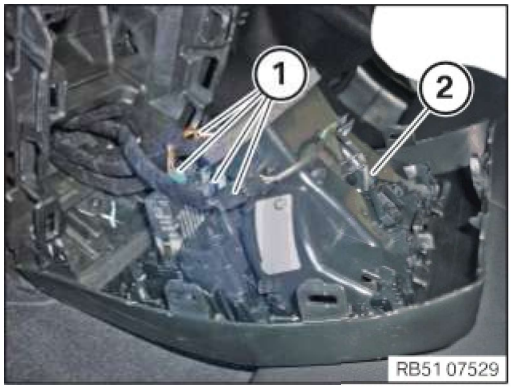
Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



- Release centre console trim (1) backwards from the latch mechanisms at the side and pull it a little way towards the rear.

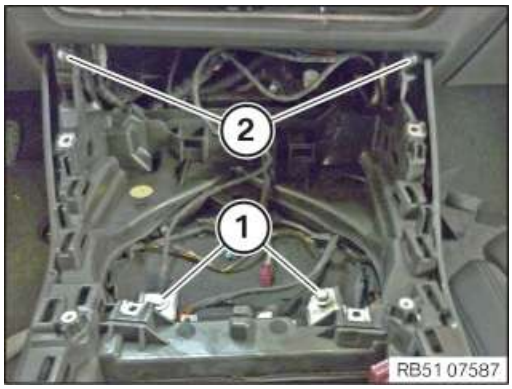


- Unlock and disconnect plug connections (1).
- Remove the centre console trim (2).

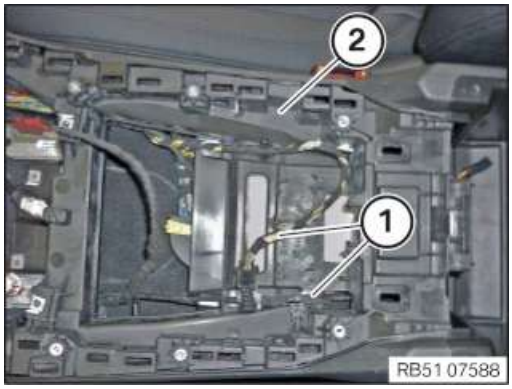
12 – Removing the centre console



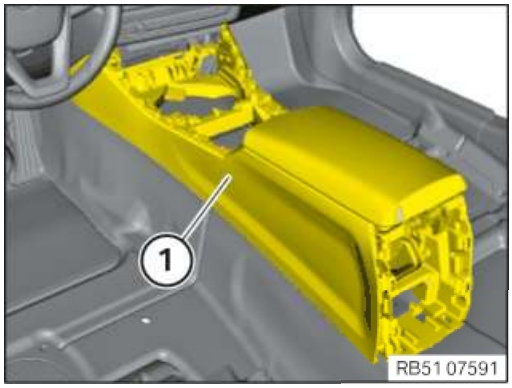
- Loosen screws (1).



- Loosen screws (1) and (2).



- Release the wiring harness (1) from the centre console (2).

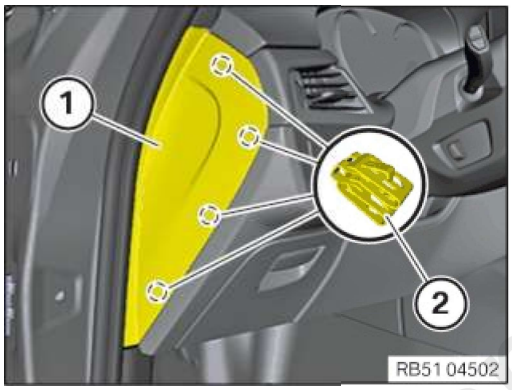


NOTICE

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

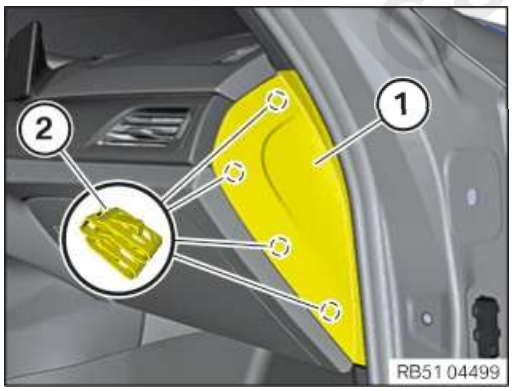
- Carefully raise rear centre console (1).
- Feed out wiring harness from the centre console (1) and unlock and disconnect existing plug connections, if required.
- Feed out and remove the centre console (1) on the instrument panel .

13 – Remove the side panel on the left instrument panel



- Unclip and remove the side panel (1) towards the outside from the clamps (2).

14 – Remove the side panel on the right instrument panel



- Unclip and remove the side panel (1) towards the outside from the clamps (2).
- If necessary, unlock associated plug connection and disconnect.

15 – Remove both A-pillar trim panels

NOTICE

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

▸ **Remove the A-pillar trim panel**

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WARNING

Airbag unit.

Danger! Life-threatening injuries!

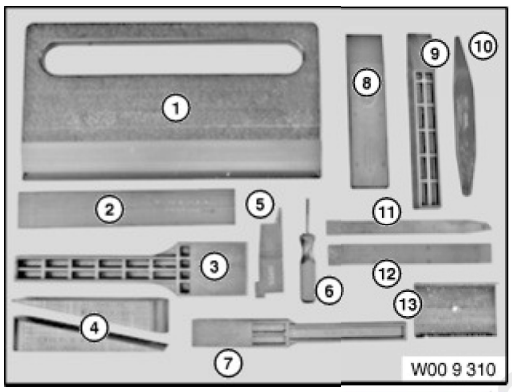
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

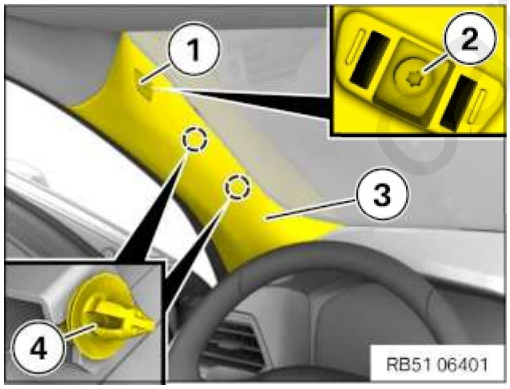
Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.

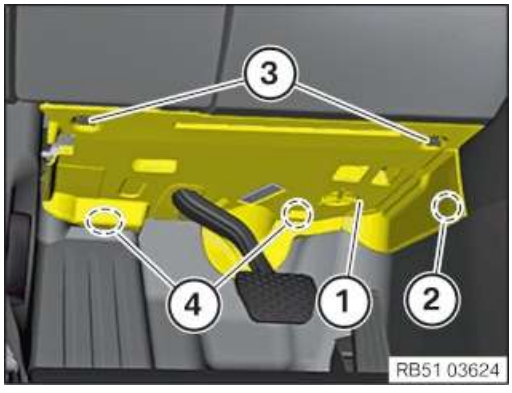


- Have the set of special tools 0 493 752 (00 9 329) ready.



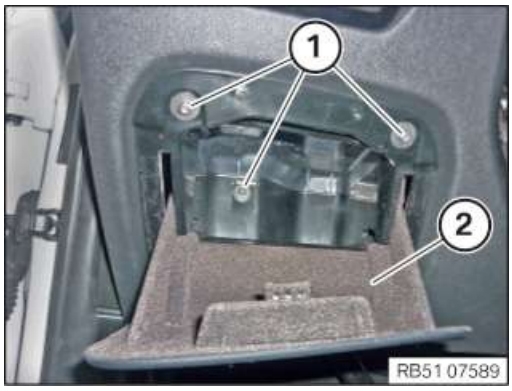
- Unclip the cover (1) with suitable tools.
- Loosen screw (2).
- Unclip A-pillar trim panel (3) with clips (4) and guide it out upwards.

16 – Removing the trim panel for pedal mechanism



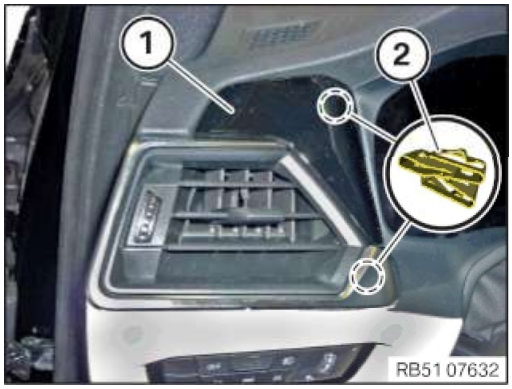
- Unclip the trim panel for the pedal mechanism (1) towards the inside in this area (2).
- Turn the locks (3) by 90°.
- Detach the trim panel for the pedal mechanism (1) inwards out of the guides (4).
- Unlock associated plug connection and disconnect.

17 – Removing the left fold-down compartment



- Loosen screws (1).
- Remove the fold-down compartment (2) toward the bottom.

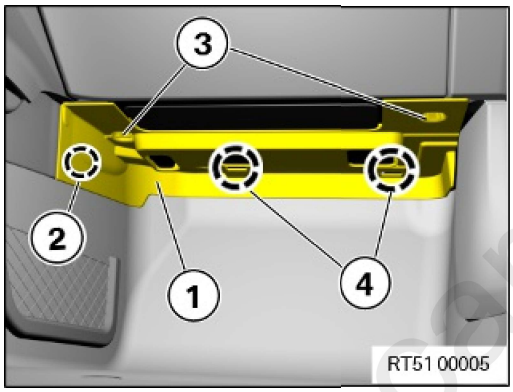
18 – Remove the finisher on the instrument panel on the left



- Unclip decorative strip (1) to the rear out of the clamps (2).
- Unlock associated plug connection and disconnect.

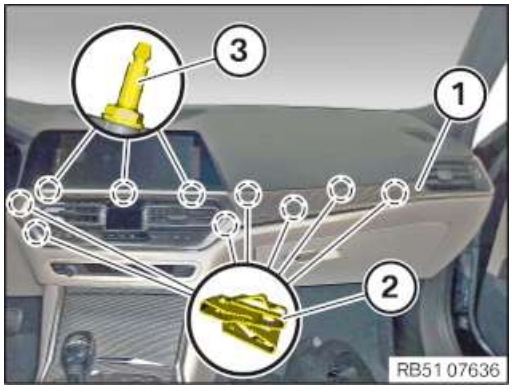
  Remove the decorative strip (1).

19 – Remove the right footwell trim



- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

20 – Remove the finisher on the right instrument panel



- Unclip the decorative strip (1) towards rear at the clamps (2) and the pins (3).
- Unlock associated plug connection and disconnect.

  Remove the decorative strip (1).

21 – Remove Central Information Display (CID)

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RISK OF DAMAGE

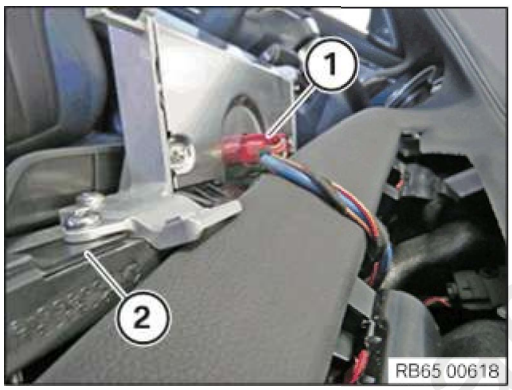
Electrostatic discharge.

Damage to or destruction of electrical components.

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



- Loosen screws (1).
- Pull out central information display (CID) (2) slightly off the instrument panel.



- Unlock plug connection (1) and disconnect.
- Remove the central information display (CID) (2).

22 – Removing the airbag unit

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

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RISK OF DAMAGE

Damage to the steering wheel.

Incorrect handling of the tool may damage the steering wheel.

- Ensure the tool is positioned correctly (angle and inclination).
- When unlocking, do not use "levering" action. Instead, press in the Torx screwdriver toward the centre of steering wheel only.

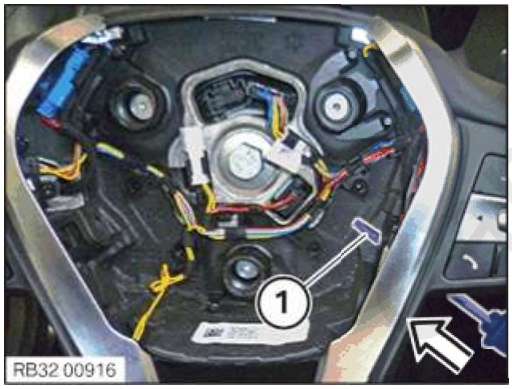
TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

▸ **Version A: Removing the airbag unit (sports steering wheel)**



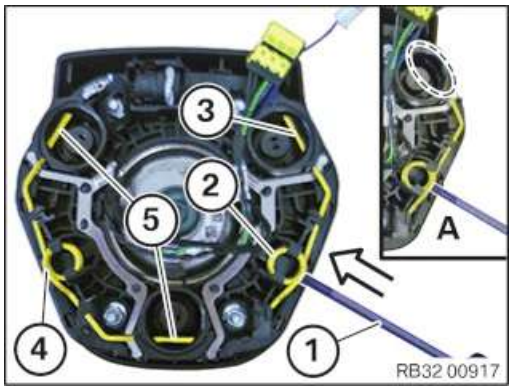
- Insert Torx screwdriver T25 (1) diagonally upwards in the hidden opening (2) on the rear side of the steering wheel until a spring resistance is felt.



NOTICE

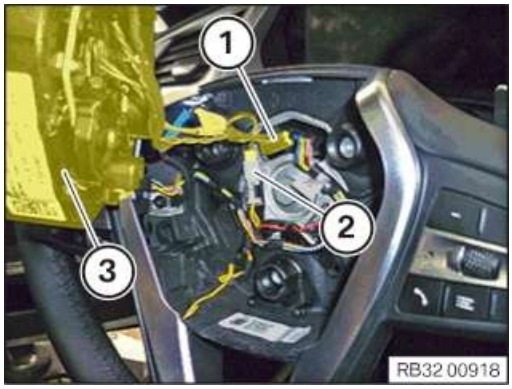
To provide a better overview: Diagram with airbag unit removed.

- To unlock the airbag unit, press Torx screwdriver T25 (1) diagonally upwards in the direction of the arrow to the centre of the steering wheel.



- Press the airbag unit over a large area of the steering wheel.
- Use Torx screwdriver T25 (1) to press wire spring clip (2) in the direction of the arrow towards the centre of the steering wheel and release lock (3).

  (A): Wire spring clip (2) is unlocked.
- Then use Torx screwdriver T25 (1) to press wire spring clip (4) in the direction of the arrow towards the centre of the steering wheel and release locks (5).
- Carefully raise the airbag unit.

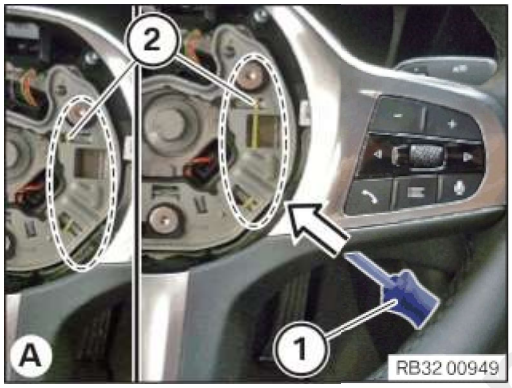


- Unlock and disconnect the plug connections (1) and (2).
- Remove airbag unit (3).

▸ **Version B: Removing airbag unit (M Sport steering wheel)**



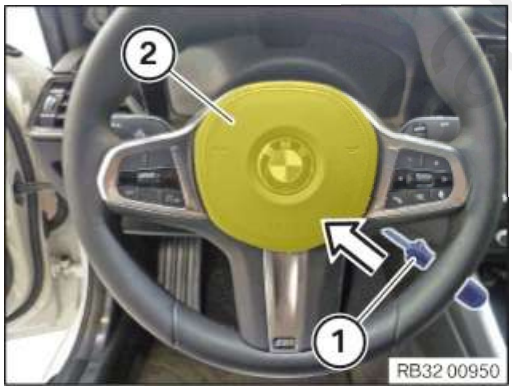
- Locate the pre-punched bore hole (1) on the rear side of the steering wheel by touch.
- Insert the Torx screwdriver T27 (2) diagonally upwards in the pre-punched bore hole (1) on the rear side of the steering wheel until a springing kind of resistance can be felt.



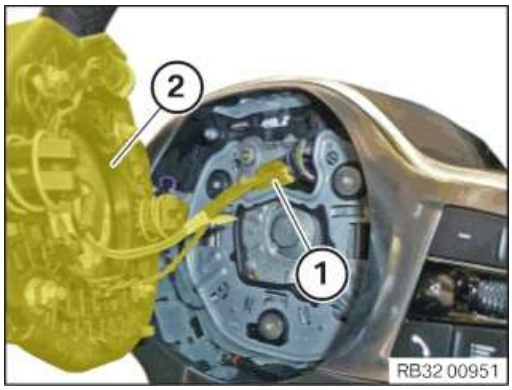
NOTICE

To provide a better overview: Diagram with airbag unit removed.

- Press in Torx screwdriver T27(1) straight in direction of arrow towards the centre of the steering wheel in order to unlock the wire spring clip (2) or to unlock the airbag unit (A).



- Press in Torx screwdriver T27 (1) straight in direction of arrow towards the centre of the steering wheel and lift airbag unit (2) on the unlocked side.
- Repeat procedure on left side and carefully remove airbag unit (2) in direction of arrow off the steering wheel.



- Unlock and disconnect plug connection (1) and remove the airbag unit (2).



- Move the steering wheel and wheels to the straight-ahead position.
- Unlock plug connection (1) and disconnect.
- If installed: Unlock plug connection (2) and disconnect.
- Release the screw (3) and pull off and remove the steering wheel.

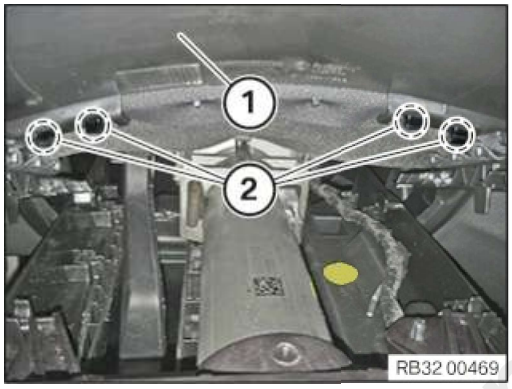
24 – Removing steering column shroud upper section



NOTICE

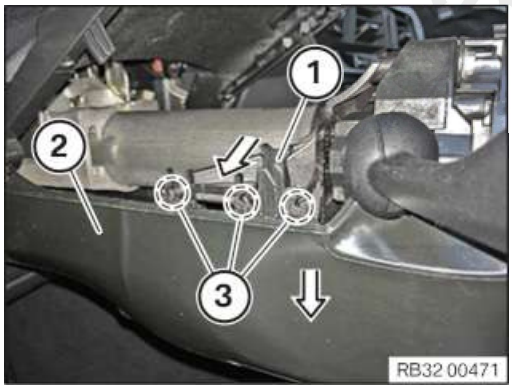
Perform the operations on the left and right side.

- Unlock the steering column shroud upper section (1) with the special tool 2 298 504 and fold up.



- Unclip the steering column shroud upper section (1) from the brackets (2).
- Remove the steering column shroud upper section (1).

25 – Removing steering column shroud lower section



NOTICE

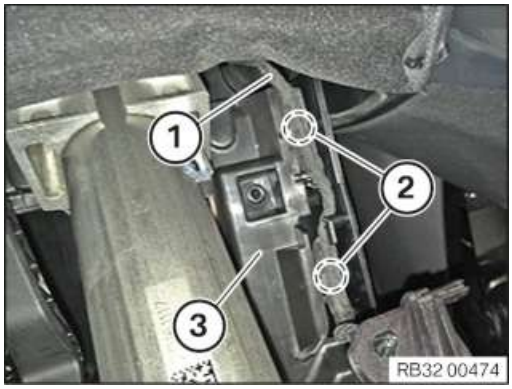
Perform the operations on the left and right side.

- Push the retaining lug (1) to the outside in the direction of the arrow and unclip the steering column shroud lower section (2) from the holders (3) in the direction of the arrow to the bottom at the same time.



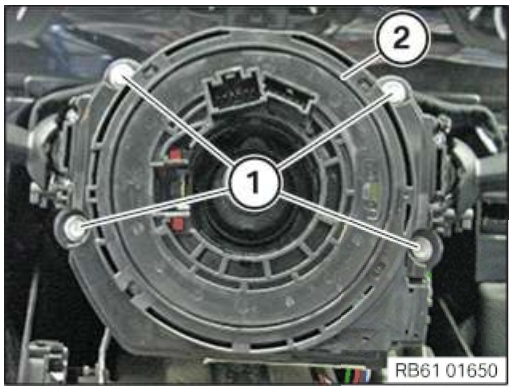
- Fold the steering column shroud lower section down.
- Unlock and disconnect connector (1).

eldiagn.com

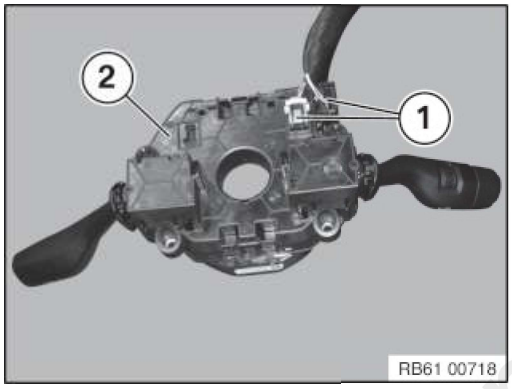


- Detach the cable (1) from the brackets (2).
- Remove the steering column shroud lower section (3).

26 – Removing the steering column switch cluster (SZL)



- Loosen screws (1).
- Remove the steering column switch cluster (SZL) (2).



- Unlock and disconnect the connector (1) on the steering column switch cluster (SZL) (2).

27 – Removing the instrument cluster (KOMBI)

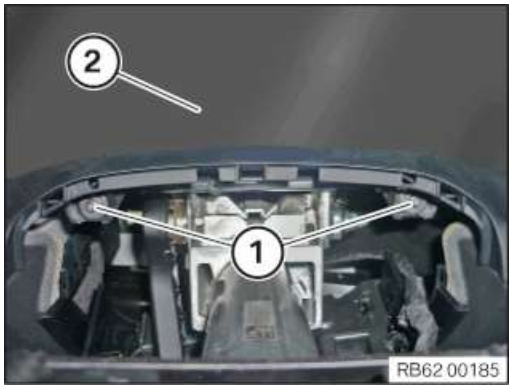


- Loosen screw (1).

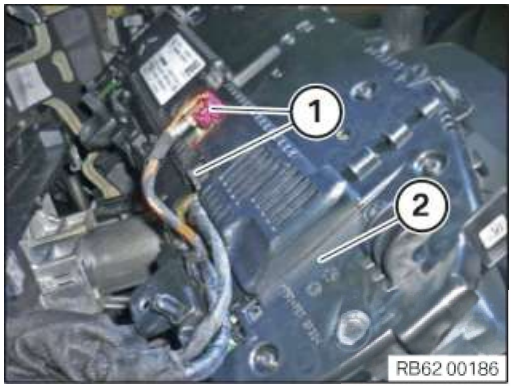


- Loosen screw (1).

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- Loosen screws (1).
- Feed out instrument cluster (KOMBI) (2).



RISK OF DAMAGE

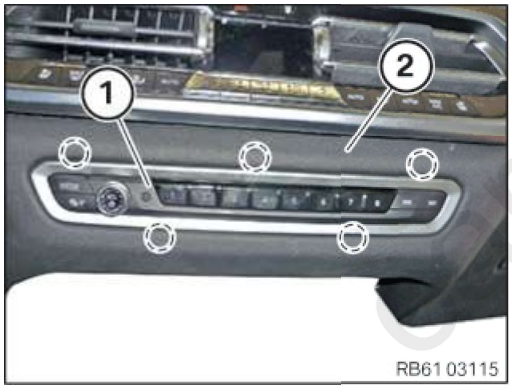
Damage to the instrument cluster (KOMBI)

While releasing and connecting the cable, it could lead to a ground offset. Thereby, currents could arise, that make the instrument cluster (KOMBI) useless.

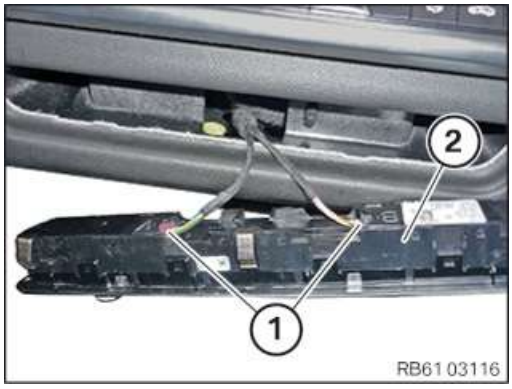
- While releasing: Release APIX data cable (blue) first.
- While connecting: Connect APIX data cable (blue) at the last.

- **If installed:** Release the blue plug connection first.
- Unlock and disconnect plug connections (1) from instrument cluster (KOMBI) (2).
- Remove the instrument cluster (KOMBI) (2).

28 – Remove the audio operating unit



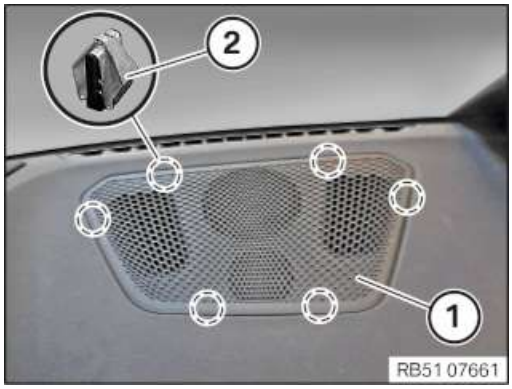
- Unclip the audio operating unit (1) from the instrument panel (2) at the points marked using special tool 0 496 571 (00 9 327).



- Disconnect plug connections (1) and remove the audio operating unit (2).

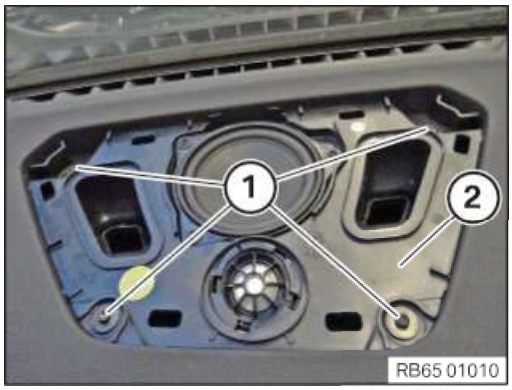
29 – Remove the speaker trim at the instrument panel

carfdiagn.com

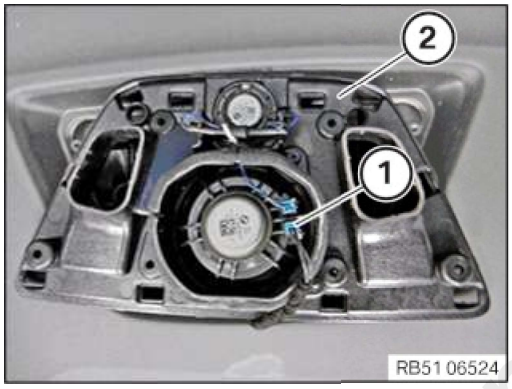


- Lever out the speaker trim (1) with the special tool 0 496 569 (00 9 325) from the clamps (2) toward the top and remove.

30 – Remove the speaker holder at the instrument panel

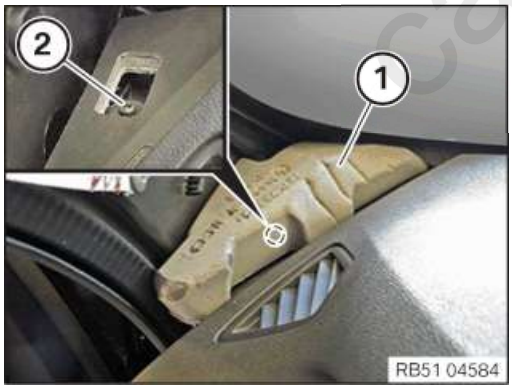


- Loosen screws (1).
- Pull out speaker holder (2) slightly with the loudspeakers and tilt it to the side.



- Unlock plug connection (1) and disconnect.
- Remove the speaker holder (2).

31 – Remove the instrument panel trim panel



NOTICE

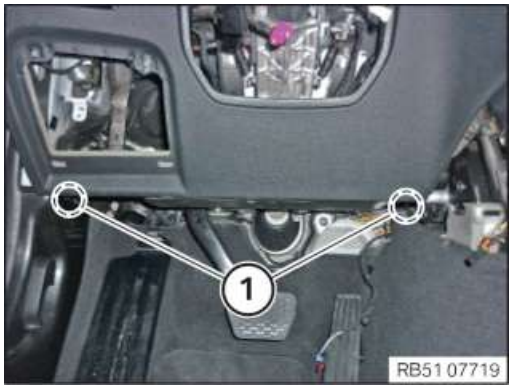
Perform the operations on the left and right side.

- Remove the sound insulation (1).
- Loosen screw (2).

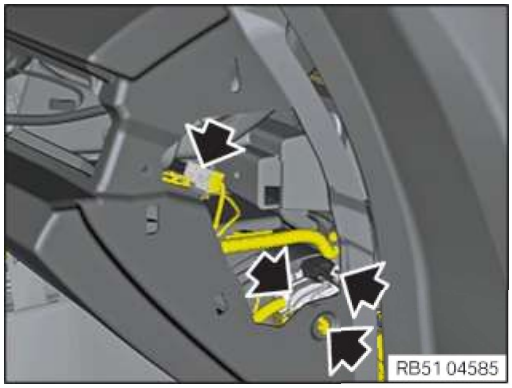


- Loosen screws (1).

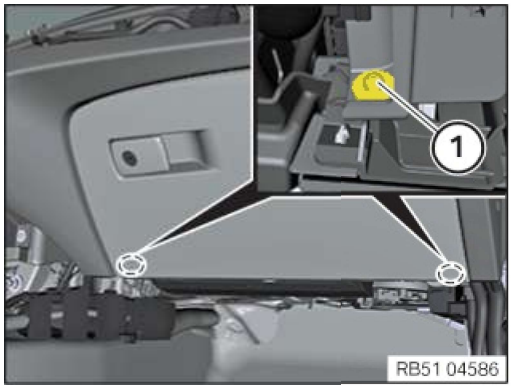
cardiagn.com



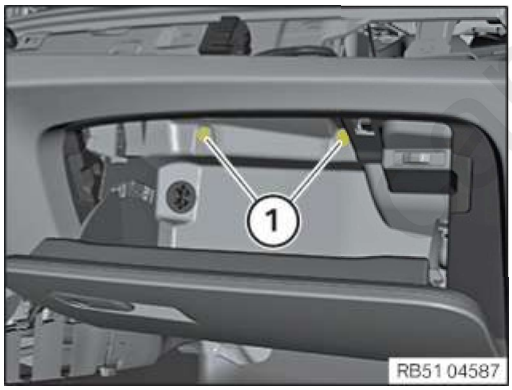
- Loosen screws (1).



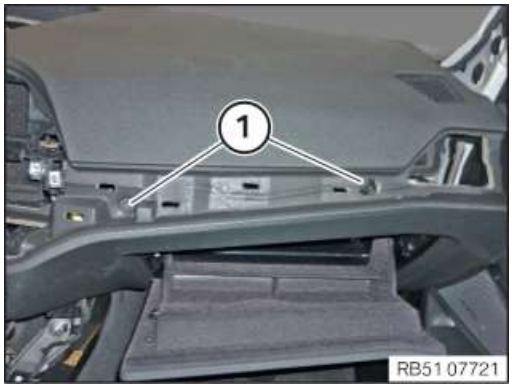
- Release all plug connections and cable clips (arrows) behind the glove box.



- Release the screws (1) on the lower side of the glove box.

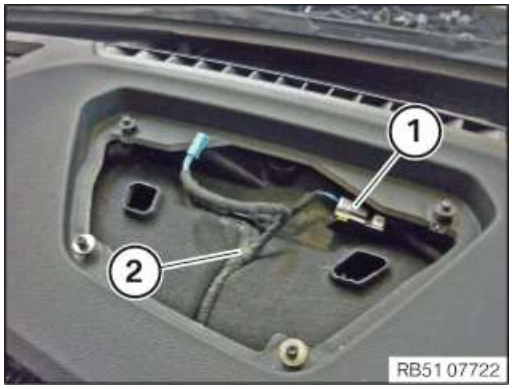


- Open glovebox.
- Loosen screws (1).



- Loosen screws (1).

mrdiagn.com



- Unlock plug connection (1) and disconnect.
- Release the wiring harness (2) on the holders.



- Unlock the plug connection (1) on the light operating unit and disconnect it.



- Loosen screws (1).

TECHNICAL INFORMATION

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

- Pull the instrument panel trim back slightly.

  If necessary, unlock and disconnect additional plug connections.
- Remove the instrument panel trim from the vehicle.

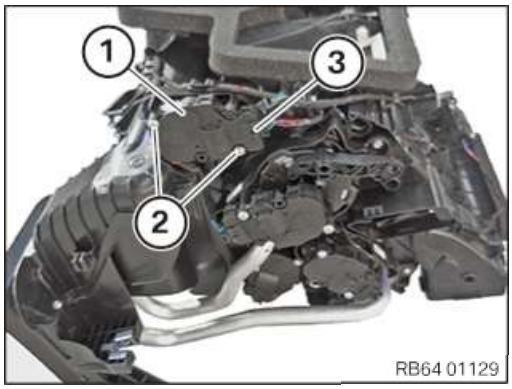
cardiagn.com

MAIN WORK

32 – Remove the front left stratification flap motor (M9)

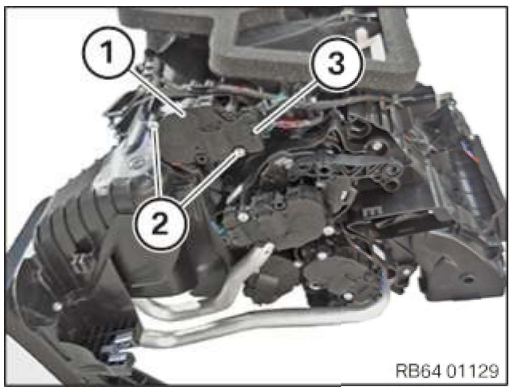
NOTICE

For a better overview the removed condition is shown here.



- Disconnect plug connection (3).
- Loosen screws (2).
- Remove the front left stratification flap motor (1).

33 – Install the front left stratification flap motor (M9)



- Position the front left stratification flap motor (1).
- Tighten down screws (2).

Controller drive to heating and air-conditioning unit

Screw		Tightening torque	1,2 Nm

- Connect connectors (3) and lock.

POSTPROCESSES

34 – Install the trim panel for the instrument panel



TECHNICAL INFORMATION

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

- Insert the instrument panel trim in the vehicle and position it at the support.
- Insert the associated wiring harnesses and connect the connectors.
- Tighten the screws (1).

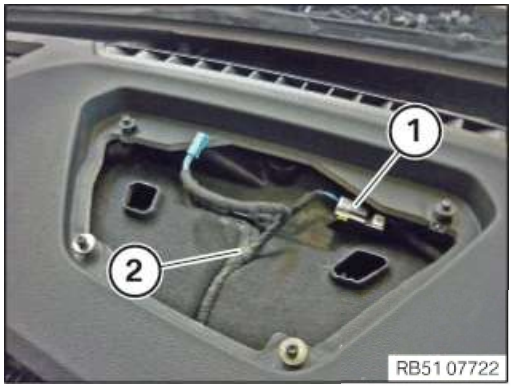
Dashboard to support

Screw		Tightening torque	2,4 Nm

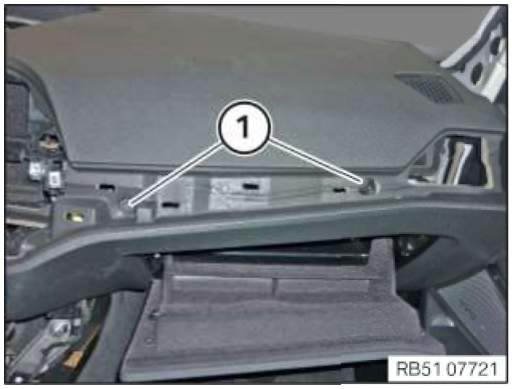
cardiagn.com



- Connect connector (1) to the light operating unit and lock.



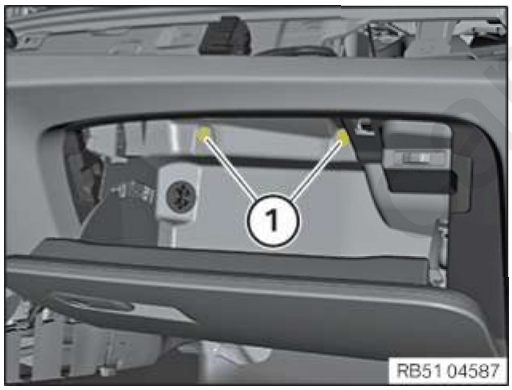
- Secure the wiring harness (2) on the holders.
- Connect plug connection (1) and lock.



- Tighten the screws (1).

Dashboard to support

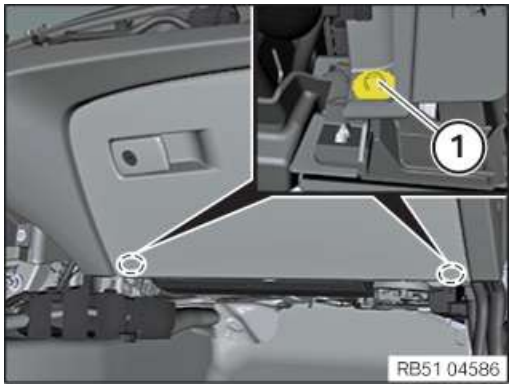
Screw		Tightening torque	2,4 Nm



- Open glovebox.
- Tighten the screws (1).

Dashboard to support

Screw		Tightening torque	2,4 Nm

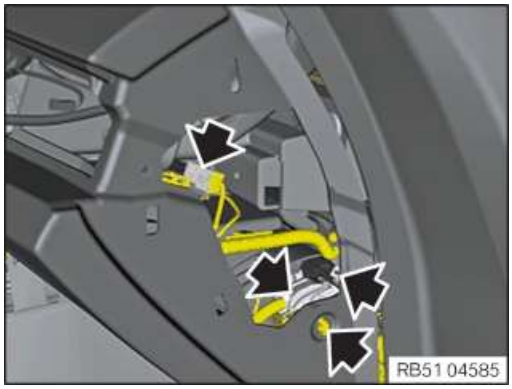


- Tighten the screws (1) on the lower side of the glove box button.

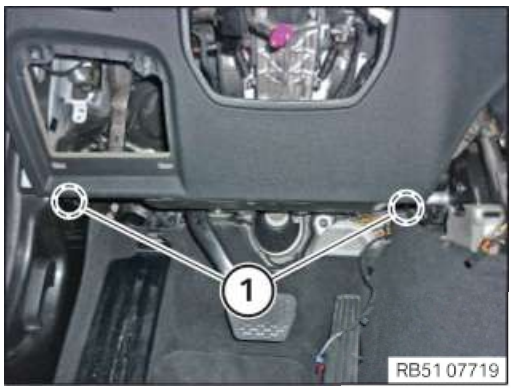
Dashboard to support

Screw		Tightening torque	2,4 Nm

mdiagn.com



- Connect all plug connections and cable clips (arrows) behind the glove box.



- Tighten the screws (1).

Dashboard to support

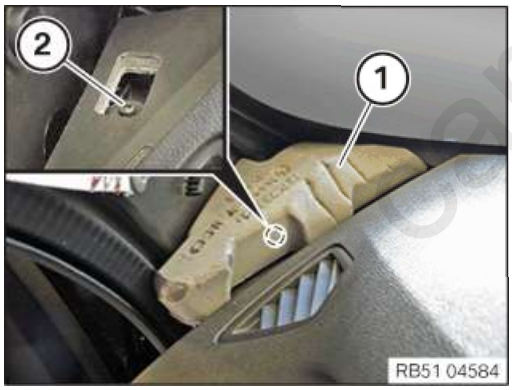
Screw		Tightening torque	2,4 Nm



- Tighten the screws (1).

Dashboard to support

Screw		Tightening torque	2,4 Nm



NOTICE

Perform the operations on the left and right side.

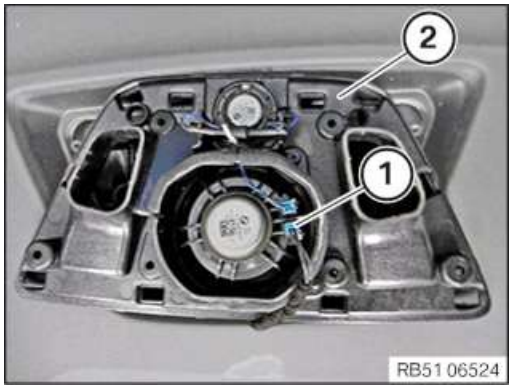
- Tighten down screw (2).

Dashboard to support

Screw		Tightening torque	2,4 Nm

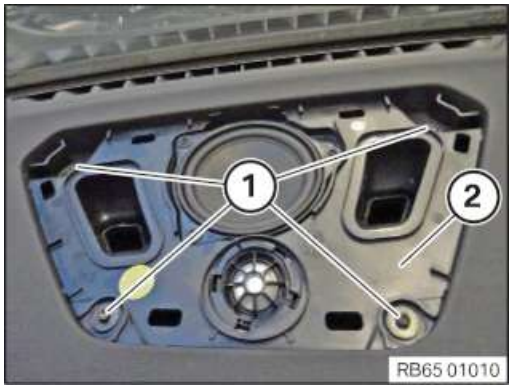
- Use sound insulation (1).

35 – Install the speaker holder at the instrument panel



- Position the speaker holder (2).
- Connect connector (1).

carmanualsdiagn.com

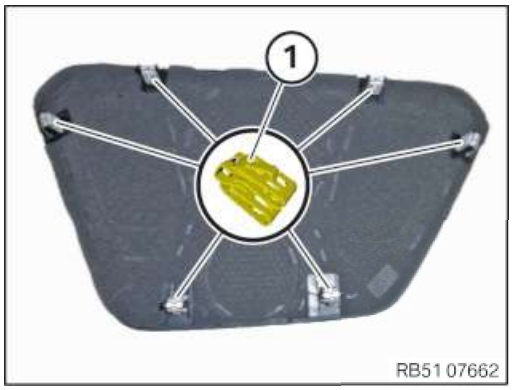


- Install the speaker holder (2).
- Tighten the screws (1).

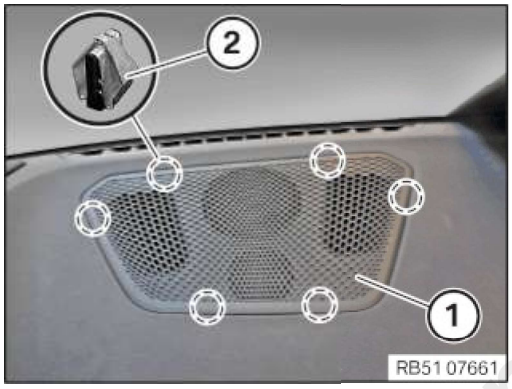
Speaker to support / support to instrument panel / support to body

Screw		Tightening torque	1,8 Nm

36 – Install the speaker trim at the instrument panel

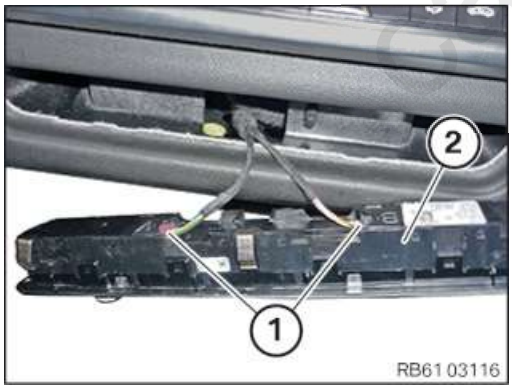


- Check clamps (1) for damage.
- Replace broken or missing clamps (1).

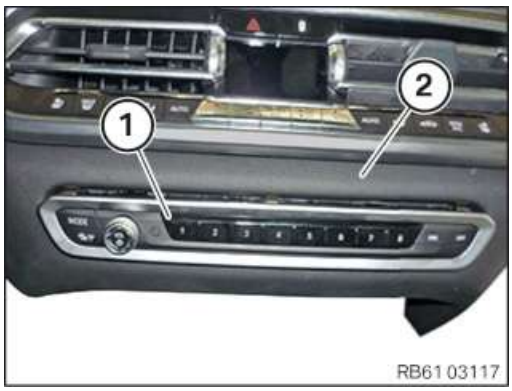


- Position the speaker trim (1) correctly and engage it at the clamps (2).

37 – Install the audio operating unit



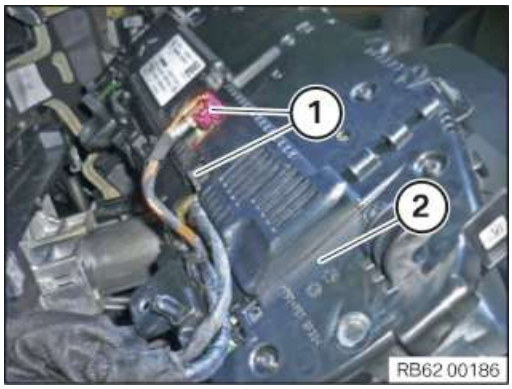
- Connect the connector (1) to the audio operating unit (2).



- Correctly position the audio operating unit (1) and install in the instrument panel(2).

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38 – Installing the instrument cluster (KOMBI)



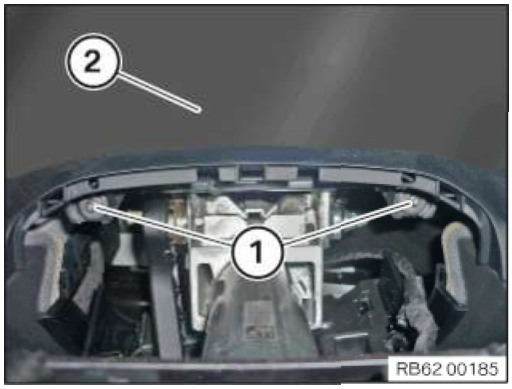
RISK OF DAMAGE

Damage to the instrument cluster (KOMBI)

While releasing and connecting the cable, it could lead to a ground offset. Thereby, currents could arise, that make the instrument cluster (KOMBI) useless.

- While releasing: Release APIX data cable (blue) first.
- While connecting: Connect APIX data cable (blue) at the last.

- **If installed:** Connect the blue connector at the last and lock it.
- Connect and lock connector (1) to the instrument cluster (KOMBI) (2).



- Feed in and position the instrument cluster (KOMBI) (2).
- Tighten the screws (1).

Instrument cluster (KOMBI) to support

Oval-head screw		Tightening torque	1,8 Nm



- Tighten down screw (1).

Instrument cluster (KOMBI) to support

Oval-head screw		Tightening torque	1,8 Nm

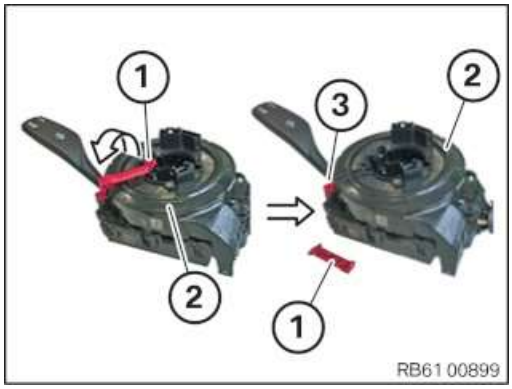


- Tighten down screw (1).

Instrument cluster (KOMBI) to support

Oval-head screw		Tightening torque	1,8 Nm

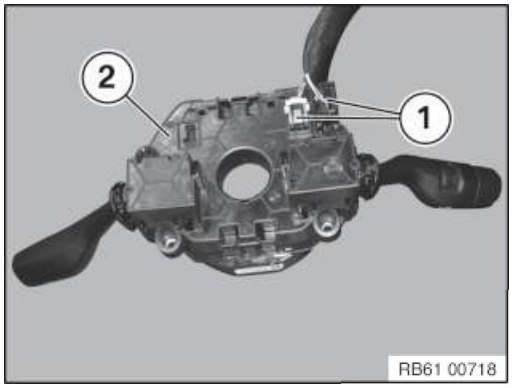
39 – Installing the steering column switch cluster (SZL)



- **Replacement:**

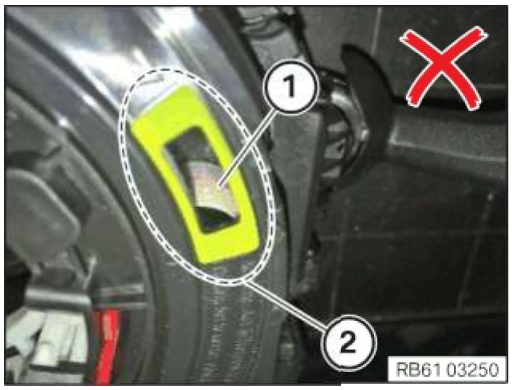
  Break off the transportation retainer (1) on the steering column switch cluster (SZL) (2) in direction of arrow.

  The broken off piece (3) of the transportation retainer (1) remains in the steering column switch cluster (SZL) (2).



- Connect the connector (1) with the steering column switch cluster (SZL) (2).

Check



- **Version A:**

  Check whether the correct marking (1) is seen in inspection glass (2).

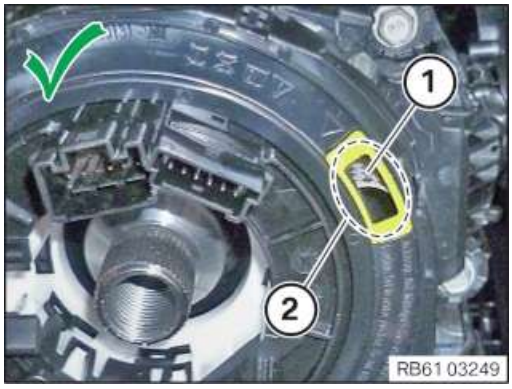
Result

» Ensure that no incorrect marking (1) is seen in inspection glass (2).

Measure

- Turn the coil spring cassette until the right mark (1) becomes visible in the inspection glass (2).

Check



- **Version A:**

  Check whether the correct marking (1) is seen in inspection glass (2).

Result

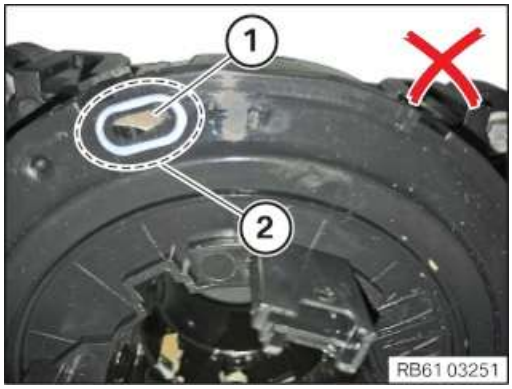
» Correct marking (1) is seen in inspection glass (2).

Measure

- Continue with the next step.

Check

cardiagn.com



- **Version B:**

  Check whether the correct marking (1) is seen in inspection glass (2).

Result

» Ensure that no incorrect marking (1) is seen in inspection glass (2).

Measure

- Turn the coil spring cassette until the right mark (1) becomes visible in the inspection glass (2).

Check



- **Version B:**

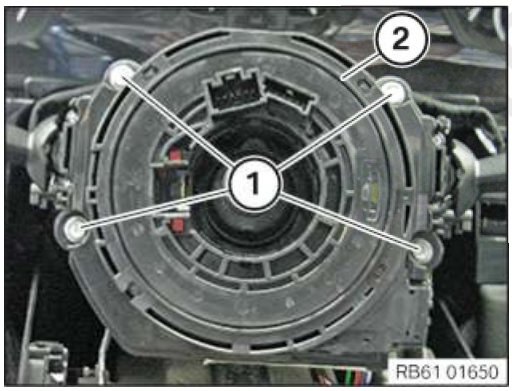
  Check whether the correct marking (1) is seen in inspection glass (2).

Result

» Correct marking (1) is seen in inspection glass (2).

Measure

- Continue with the next step.

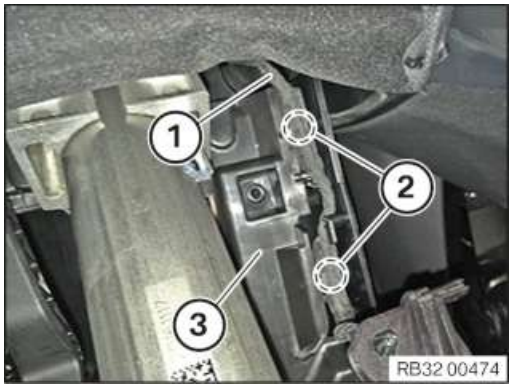


- Position the steering column switch cluster (SZL) (2).
- Tighten the screws (1).

Steering column switch cluster (SZL) on the steering column

Screw TS5x20		Tightening torque	3 Nm

40 – Install steering column shroud lower section

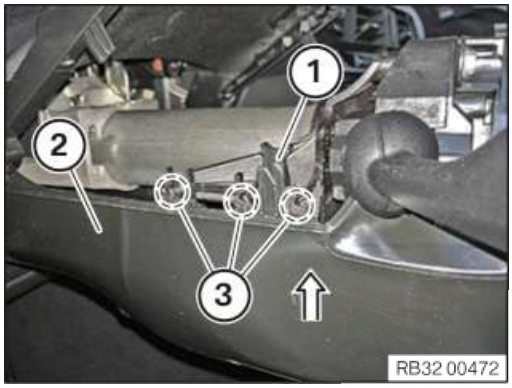


- Position the steering column shroud lower section (3).
- Secure the line (1) on the brackets (2).

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- Connect the connector (1).

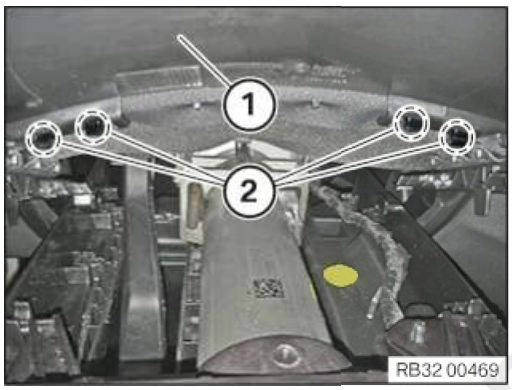


NOTICE

Perform the operations on the left and right side.

- Align the steering column shroud lower section (2) to the steering column using the retaining lug (1).
- Push the steering column shroud lower section (2) up in the direction of the arrow until the brackets (3) engage.

41 – Fit steering column shroud upper section



- Clip in the steering column shroud upper section (1) at the brackets (2).



NOTICE

Perform the operations on the left and right side.

- Clip in the steering column shroud upper section (1)into the guide (2).



NOTICE

Perform the operations on the left and right side.

- Press the upper section of the steering column shroud (1) downwards in direction of arrow.

  The upper section of the steering column shroud must engage audibly and perceptibly.

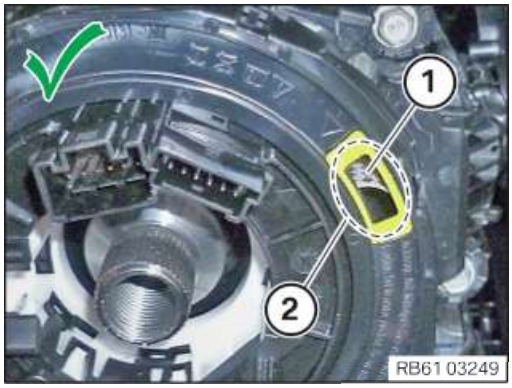
42 – Installing the steering wheel (sports steering wheel)

diag.com

▸ **Check the neutral position of the clock spring**

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.



Check

- **Version A:**

  Check the mark (1) on the coil spring in the inspection glass (2).

Result

» The mark (1) on the coil spring is not visible.

Measure

- Turn the coil spring cassette until the mark (1) on the coil spring becomes visible in the inspection glass (2).



Check

- **Version B:**

  Check the mark (1) on the coil spring in the inspection glass (2).

Result

» The mark (1) on the coil spring is not visible.

Measure

- Turn the coil spring cassette until the mark (1) on the coil spring becomes visible in the inspection glass (2).



Check

- A micro-encapsulated screw (3) may be fitted.
- Check the screw connection.

Result

» Screw is (3) micro-encapsulated.

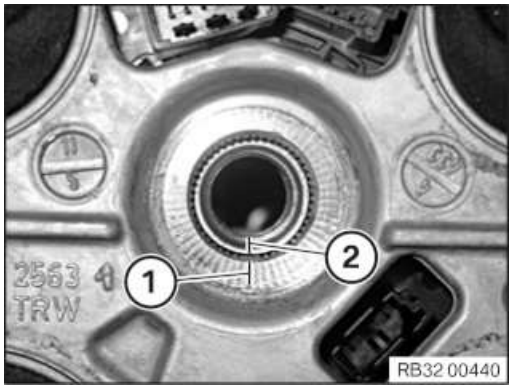
carfdiagn.com

Measure

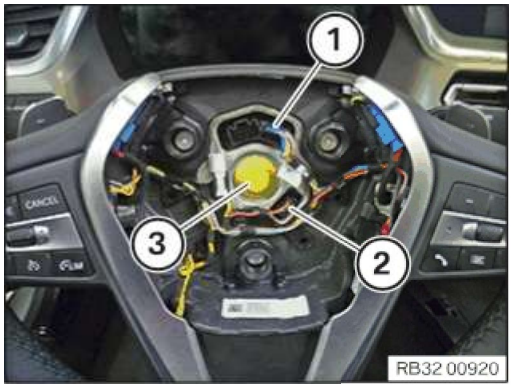
- Clean thread in the steering column.

  Renew the screw (3).

  Parts: Screw



- Align mark (1) on steering wheel to mark (2) on steering column.
- Connect steering wheel.



- Connect connectors (1) and lock.
- If installed: Connect connectors (2) and lock.
- Tighten screw (3) .

Steering wheel to steering column

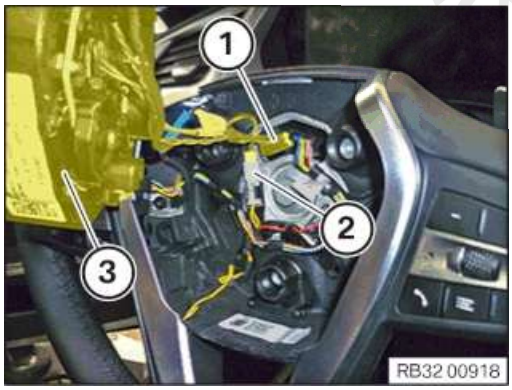
M14	Only for a micro-encapsulated screw: Renew screw.	Tightening torque	62,5 Nm

43 – Installing the airbag unit

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

▸ **Version A: Installing the airbag unit (sports steering wheel)**



- Position airbag unit (3).
- Connect connectors (1) and (2) lock.



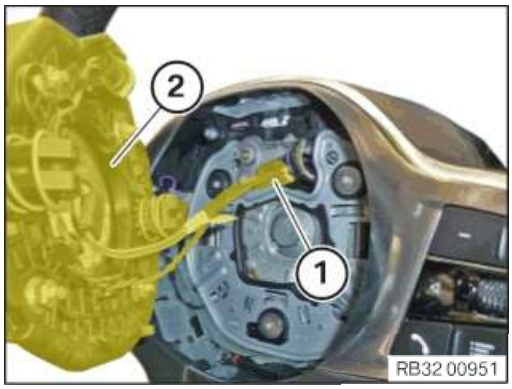
- Press the airbag unit (1) with even pressure in the direction of the arrow into the steering wheel.

  The airbag unit (1) must engage audibly and perceptibly.

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TECHNICAL INFORMATION

After replacing the airbag unit (M-sports steering wheel) or after a possible conversion of standard steering wheel and airbag unit to M-sports steering wheel, a software update or a programming/encoding via ISTA must be performed!



- Connect and lock connector (1) of the airbag unit (2).



- Press the airbag unit (1) with even pressure in the direction of the arrow into the steering wheel.

  The airbag unit (1) must engage audibly and perceptibly.

44 – Install the central information display (CID)

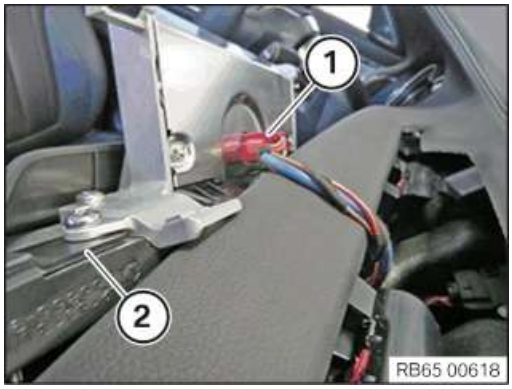
RISK OF DAMAGE

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.

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- Position Central Information Display (CID) (2).
- Connect plug connection (1) and lock.

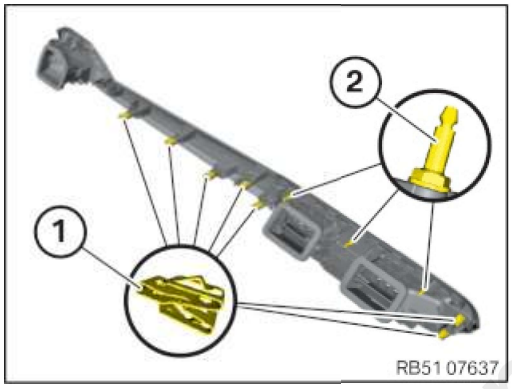


- Insert the central information display (CID) (2) in the instrument panel and position correctly.
- Tighten the screws (1).

Central information display to instrument panel

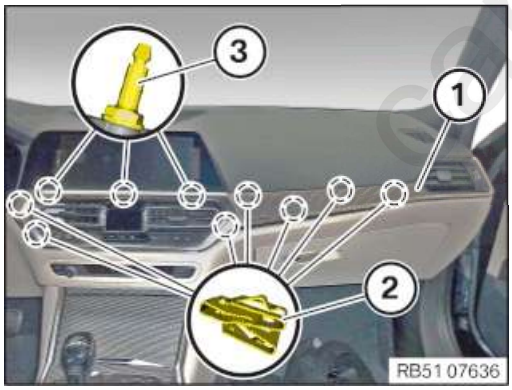
Screw		Tightening torque	1,8 Nm

45 – Install the finisher on the right instrument panel



- Check the clamps (1).

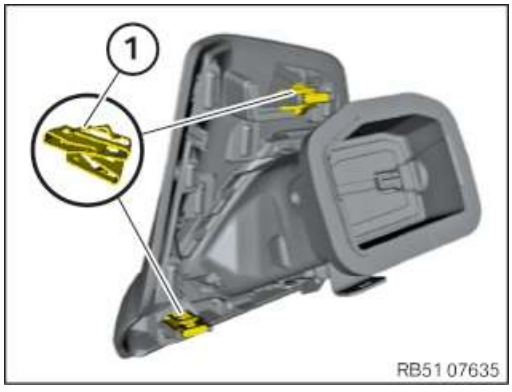
  Replace broken or missing clamps (1).
- Check the pins (2) and the corresponding clamps on the instrument panel trim and renew if necessary.



- Install the decorative strip (1).

  Connect and lock the associated connectors.
- Correctly position the decorative strip (1) and at the clamps (2) and clip in the pins (3).

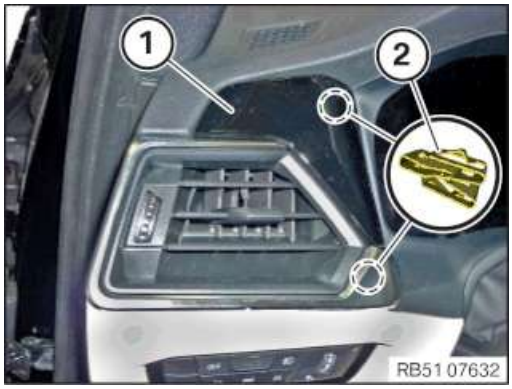
46 – Install the finisher on the instrument panel on the left



- Check the clamps (1).

  Replace broken or missing clamps (1).

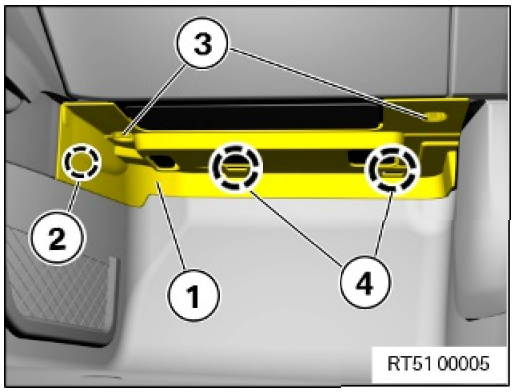
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- Install the decorative strip (1).

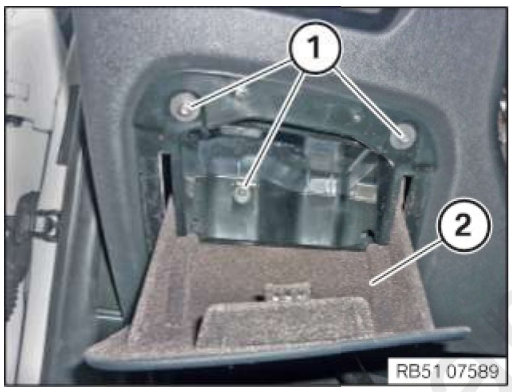
  Connect and lock the associated connectors.
- Clip decorative strip (1) into clamps (2).

47 – Install the right footwell trim panel



- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

48 – Installing the left fold-down compartment

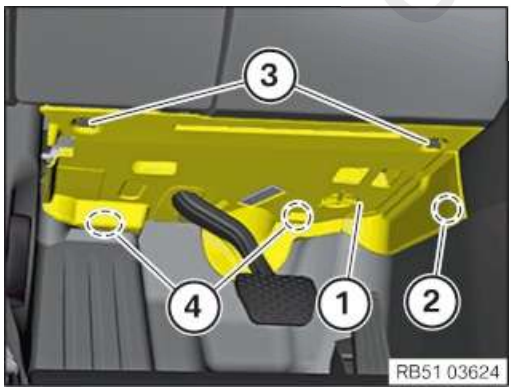


- Install the fold-down compartment (2).
- Tighten the screws (1).

Fold-down compartment to instrument panel

Oval-head screw		Tightening torque	1,8 Nm

49 – Installing the trim panel for the pedal mechanism



- Connect associated connector.
- Attach the trim panel for the pedal mechanism (1) in the guides (4) and fold it up.
- Clip the trim panel for the pedal mechanism (1) into the centre console in this area (2).
- Insert locks (3) correctly and turn 90°.

50 – Install both A-pillar trim panels

NOTICE

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

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▸ **Installing the A-pillar trim panel**

WARNING

Airbag unit.

Danger! Life-threatening injuries!

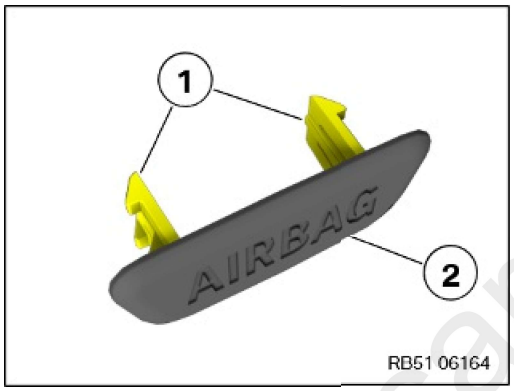
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.



Check

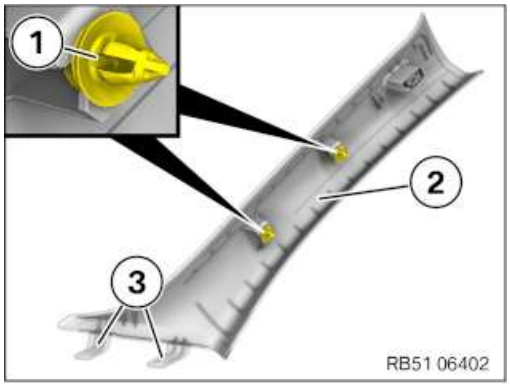
- Check retaining lugs (1) of cover (2) for damage.

Result

» Retaining lug is damaged.

Measure

- Renew the cover.



Check

- Check the clips (1) for damage and renew if necessary.
- Check the guides (3) for damage.

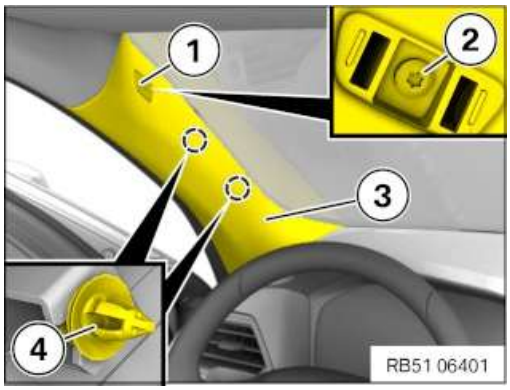
Result

» Guide is damaged.

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Measure

- Renew the A-pillar trim panel.



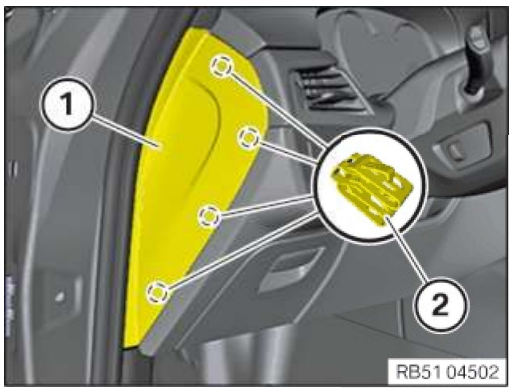
- Guide in A-pillar trim panel (3) downwards and clip it in with clips (4).
- Tighten down screw (2).

A-pillar trim panel to body

Sheet metal screw 4,8x38		Tightening torque	2,6 Nm

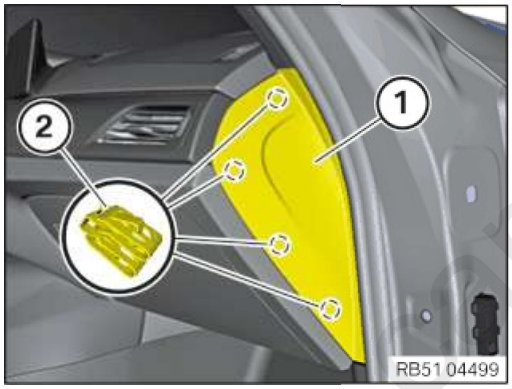
- Clip in the cover (1).

51 – Install the side panel on left instrument panel



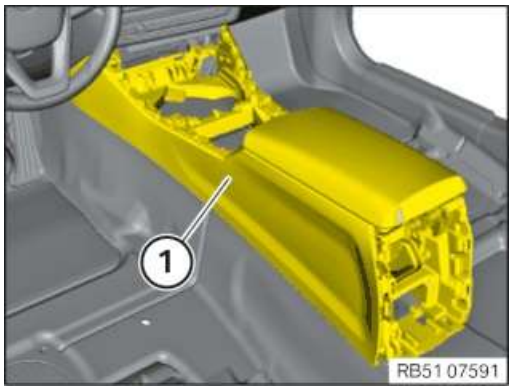
- Feed in the side panel (1) and clip it in at the clamps (2).

52 – Install the side panel on instrument panel on the right



- If required, connect the associated connector.
- Feed in the side panel (1) and clip it in at the clamps (2).

53 – Installing the centre console

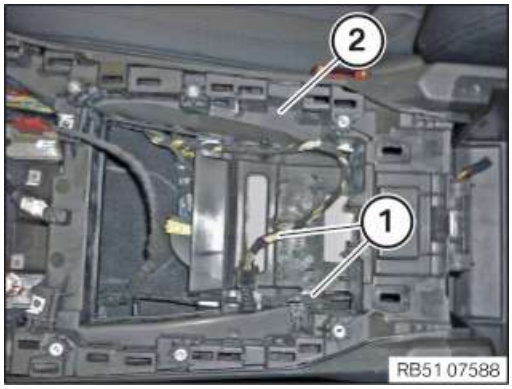


NOTICE

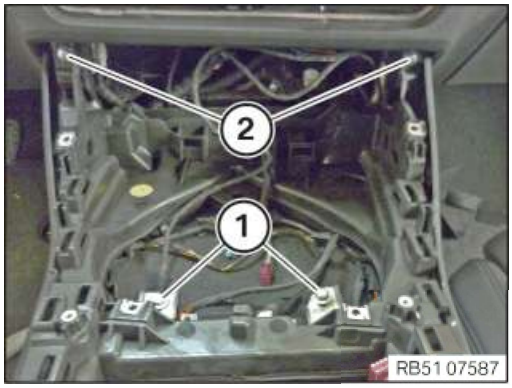
To provide a better overview: Schematic diagram with partially hidden components.

- Install centre console (1) and thereby feed in the wiring harness.
- Feed in the centre console (1) to the instrument panel and position correctly.

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- Secure the wiring harness to the centre console (1) and connect and lock the existing plug connections.



- Tighten the screws (1).

Centre console on tunnel

M6x18 Hexagon screw		Tightening torque	4,6 Nm

- Tighten the screws (2).

Centre console to instrument panel

Oval-head screw		Tightening torque	1,8 Nm

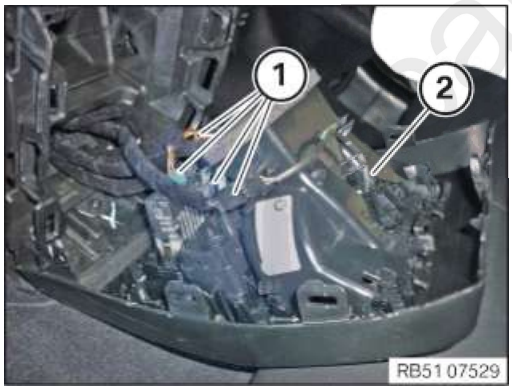


- Tighten the screws (1).

Centre console on tunnel

M6x18 Hexagon screw		Tightening torque	4,6 Nm

54 – Installing the rear centre console trim



- Install the centre console trim (2).
- Connect connectors (1) and lock.

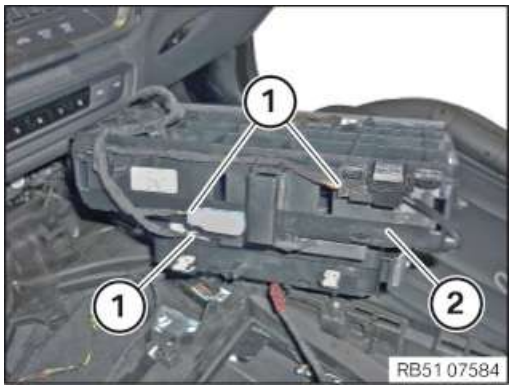


- Position centre console trim (1) and engage at the latch mechanisms at the side.

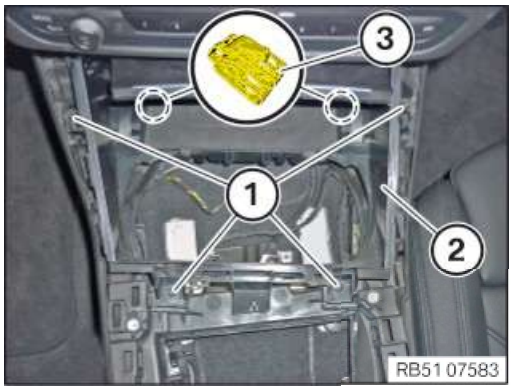
55 – Installing the storage compartment of the front centre console

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55 – Installing the storage compartment of the front centre console



- Mount the storage compartment (2) and connect connectors (1).

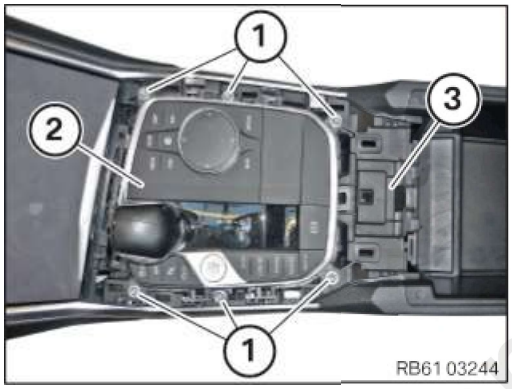


- Engage rear storage compartment trim (2) into clamps (3).
- Tighten the screws (1).

Storage compartment to centre console

Oval-head screw		Tightening torque	1,8 Nm

56 – Install the operating facility in the centre console



- Position operating facility (2) in the centre console (3).
- Tighten the screws (1).

Gear selector switch to centre console trim

Screw	Tightening torque	1,8 Nm

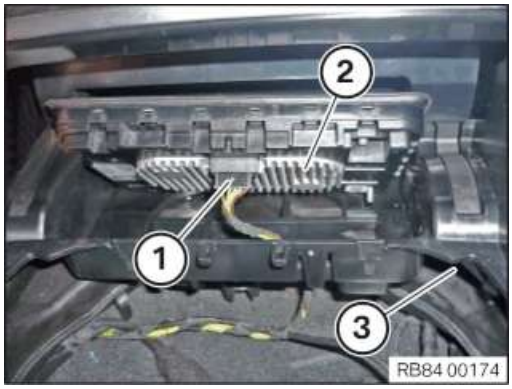
▸ **Disconnecting all battery earth leads**



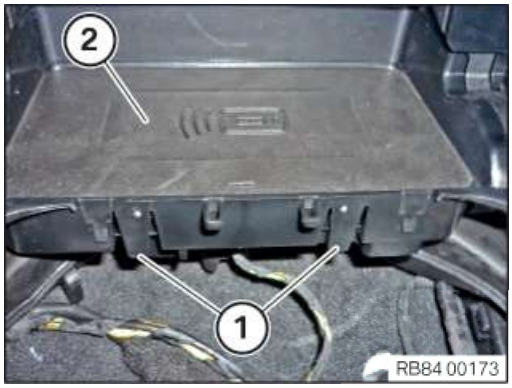
- See additional information.

57 – Installing the wireless charging station

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- Connect connector (1).
- Position the wireless charging station (2) in the centre console (3).



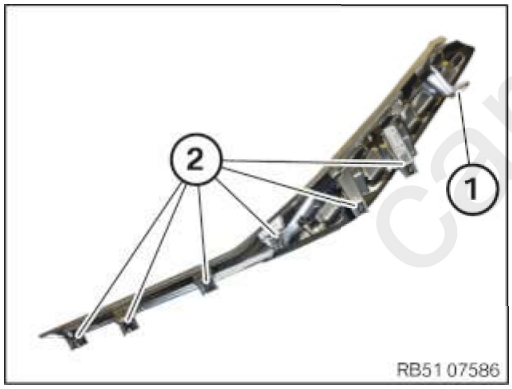
- Press the wireless charging station (2) down till the locking units (1) are engaged correctly.

58 – Install decorative trim on centre console on left and right

▸ Installing the decorative trim to centre console

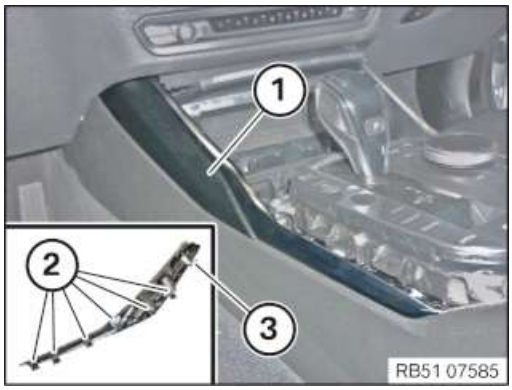
NOTICE

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



- Check guide (1) and the latch mechanisms (2).

  Renew defective decorative trim.



- Feed in the decorative trim (1) forward in the guide (3).
- Engage decorative trim (1) in latch mechanisms (2).

59 – Installing the centre console trim

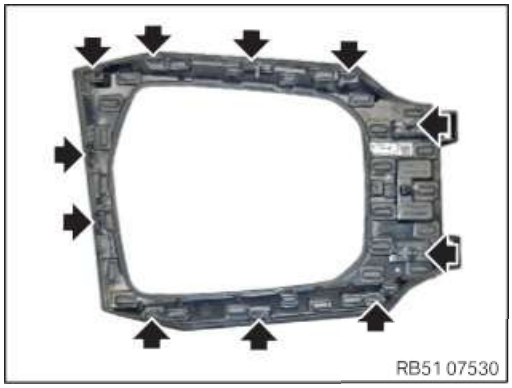
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RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

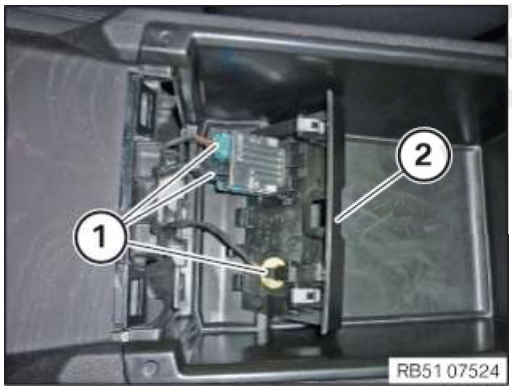


- Check all the latch mechanisms or clamps (arrows).
- In case the latch mechanisms or the clamps (arrows) are faulty, renew the centre console trim .

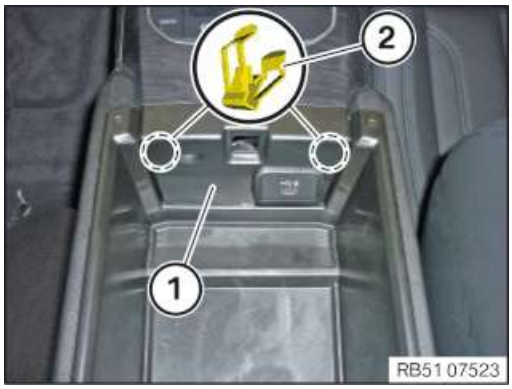


- Correctly position the centre console trim (1) and engage at the latch mechanisms.

60 – Installing the trim in the storage compartment of the centre armrest



- Mount the trim (2) and connect connector (1) and lock.



- Correctly position trim (1) and snap into the clamps (2).

61 – Install the cup holder



- Fix the cup holder (1) and the belonging connectors.
- Correctly position cup holder (1).
- Tighten the screws (2).

Cup holder to centre console

Oval-head screw		Tightening torque	1,8 Nm



- Insert the insert (1).

62 – Disconnecting all battery earth leads



- See additional information.

63 – Address the controller drive

- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Address flap motors

Additional Information

Overview of Tightening Torques

Controller drive to heating and air-conditioning unit Used in step 33

Screw		Tightening torque	1,2 Nm

Dashboard to support Used in step 34

Screw		Tightening torque	2,4 Nm

Speaker to support / support to instrument panel / support to body Used in step 35

Screw		Tightening torque	1,8 Nm

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Instrument cluster (KOMBI) to support			Used in step 38
Oval-head screw		Tightening torque	1,8 Nm

Steering column switch cluster (SZL) on the steering column			Used in step 39
Screw TS5x20		Tightening torque	3 Nm

Steering wheel to steering column			Used in step 42
M14	Only for a micro-encapsulated screw: Renew screw.	Tightening torque	62,5 Nm

Central information display to instrument panel			Used in step 44
Screw		Tightening torque	1,8 Nm

Fold-down compartment to instrument panel			Used in step 48
Oval-head screw		Tightening torque	1,8 Nm

A-pillar trim panel to body			Used in step 50
Sheet metal screw 4,8x38		Tightening torque	2,6 Nm

Centre console on tunnel			Used in step 53
M6x18 Hexagon screw		Tightening torque	4,6 Nm

Centre console to instrument panel			Used in step 53
Oval-head screw		Tightening torque	1,8 Nm

Storage compartment to centre console			Used in step 55
Oval-head screw		Tightening torque	1,8 Nm

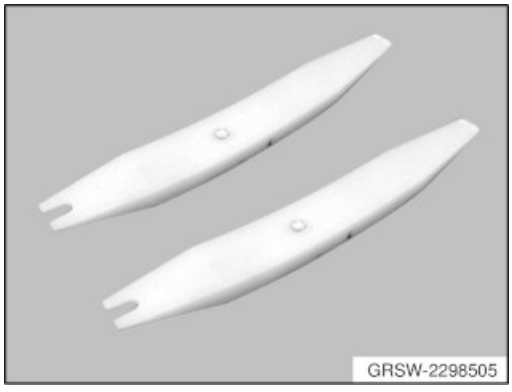
Gear selector switch to centre console trim			Used in step 56
Screw		Tightening torque	1,8 Nm

Cup holder to centre console			Used in step 61
Oval-head screw		Tightening torque	1,8 Nm

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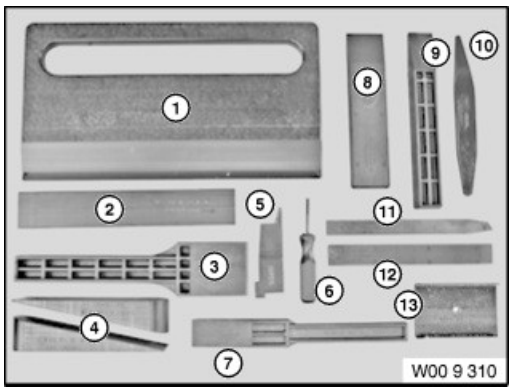
Overview of Special Tools

2 298 505 Wedge



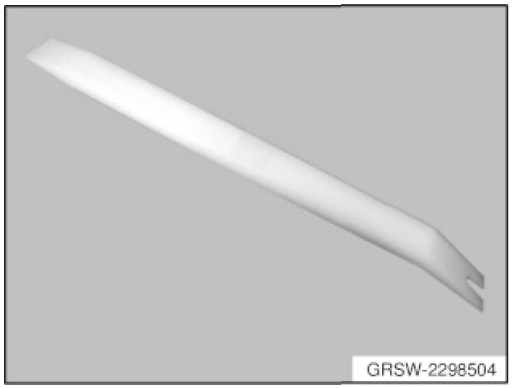
Common		Used in step 56
Usage	Set (delivery of 2 pieces)	
Included in the tool or work		
Storage location	C34	
Replaced by		
In connection with		
SI-Number	01 03 12 (792)	

0 493 752 (00 9 329) Case



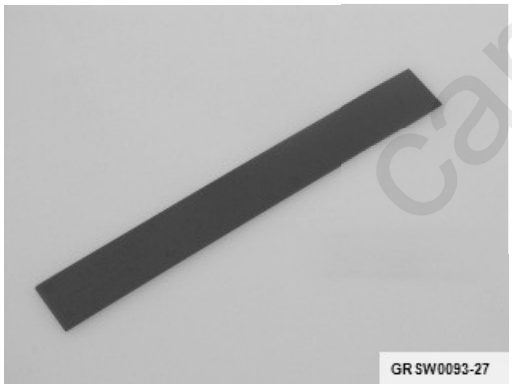
Common	Used in step 15
Usage	(Case) with insert not incl. panel wedges
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

2 298 504 Wedge



Common	Used in step 24
Usage	Wedge with angled lug
Included in the tool or work	
Storage location	C34
Replaced by	
In connection with	
SI-Number	01 03 12 (792)

0 496 571 (00 9 327) Wedge



Common	Used in step 28
Usage	(Cleaning wedge) From 11/2008 this special tool replaces panel wedge 00 9 323 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

0 496 569 (00 9 325) Wedge



Common	Used in step 29
Usage	(Panel wedge) From 11/2008 this special tool replaces panel wedge 00 9 317 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	41 01 09 (507)

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Links

General repair instructions	Used in step
72 00 ... Safety regulations for handling components with gas generators	1522
72 00 ... Safety regulations for handling components with gas generators	15

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	295662
61 20 900 Disconnecting and connecting battery earth lead	295662
61 20 900 Disconnecting and connecting battery earth lead	295662
61 20 900 Disconnecting and connecting battery earth lead	295662
61 20 900 Disconnecting and connecting battery earth lead	295662
61 20 900 Disconnecting and connecting battery earth lead	295662
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	295662
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	295662
61 20 900 Disconnecting and connecting battery earth lead	295662
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	295662
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	295662
61 20 900 Disconnecting and connecting battery earth lead	295662
61 20 900 Disconnecting and connecting battery earth lead	295662
61 20 900 Disconnecting and connecting battery earth lead	295662
61 20 900 Disconnecting and connecting battery earth lead	295662
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61 20 900 Disconnecting and connecting battery earth lead	295662
61 20 900 Disconnecting and connecting battery earth lead	295662
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	295662
61 20 900 Disconnecting and connecting battery earth lead	295662
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61 20 900 Disconnecting and connecting battery earth lead	295662
61 20 900 Disconnecting and connecting battery earth lead	295662
61 20 900 Disconnecting and connecting battery earth lead	295662
61 20 900 Disconnecting and connecting battery earth lead	295662
61 20 900 Disconnecting and connecting battery earth lead	295662
61 35 ... Notes on ESD protection (Electro Static Discharge)	2144

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64 11 507 Replacing actuator drive for front right blend air door

TECHNICAL INFORMATION

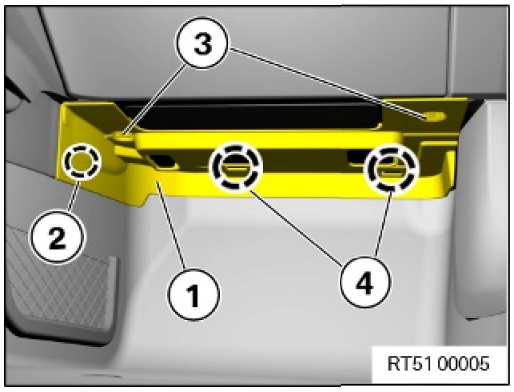
After the replacement, the controller drive must be reconfigured.
The address can only be configured with the diagnosis system.

PRELIMINARY WORK

1 – Moving to installation position of flap motors

- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Installation position of flap motors

2 – Remove the right footwell trim



- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

3 – In vehicles with airbag module: Removing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

NOTICE

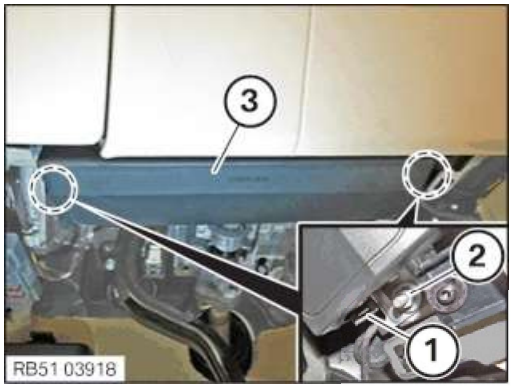
Description is for left component only. Procedure on the right side is identical.

▸ **Disconnecting all battery earth leads**

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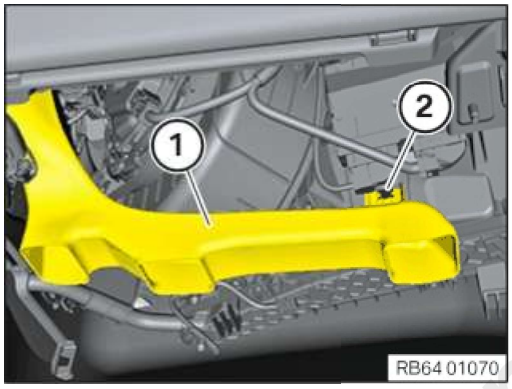


- See additional information.



- Unlock plug connection (1) and disconnect.
- Loosen the screws (2) on left and right.
- Remove knee airbag (3) towards the bottom.

4 – Removing the right air duct

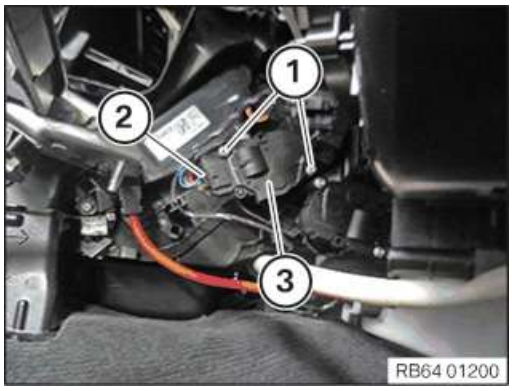


- Unclip the air duct (1) at an angle toward the bottom at the spring clip (2).

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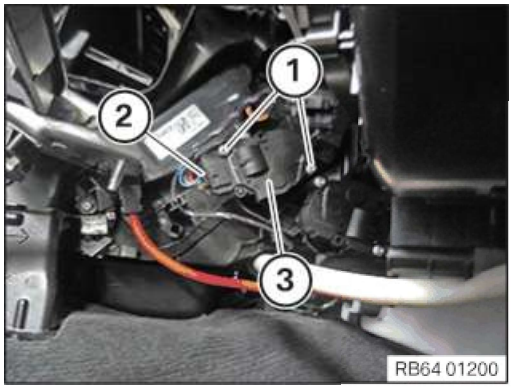
MAIN WORK

5 – Removing the front right mixed air flap motor (M83a)



- Loosen screws (1).
- Disconnect plug connection (2).
- Remove mixed air flap motor, front right:(3).

6 – Installing front right mixed air flap motor (M83a)



- Install and correctly position mixed air flap motor front right (3).
- Connect connector (2).
- Tighten the screws (1).

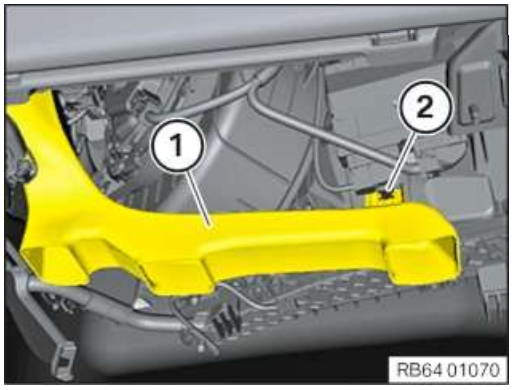
Controller drive to heating and air-conditioning unit

Screw		Tightening torque	1,2 Nm

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POSTPROCESSES

7 – Installing the air duct, right

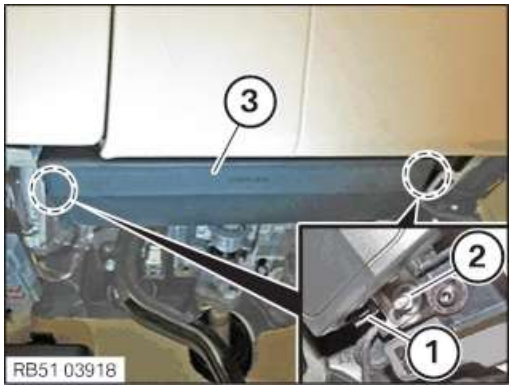


- Clip the air duct (1) in upward at an angle with the spring clip (2) on the heating and air-conditioning unit.

8 – In vehicles with airbag module: Installing knee airbag

NOTICE

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



- Install knee airbag (3).
- Tighten screws (2) on left and right.

Knee airbag

	Tightening torque	8 Nm

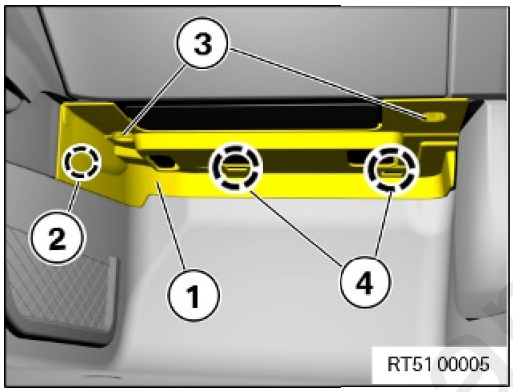
- Connect connectors (1) and lock.

▶ **Disconnecting all battery earth leads**



- See additional information.

9 – Install the right footwell trim panel



- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

10 – Address the controller drive

- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Address flap motors

Additional Information

Overview of Tightening Torques

Controller drive to heating and air-conditioning unit Used in step 6

Screw		Tightening torque	1,2 Nm

Knee airbag Used in step 8

	Tightening torque	8 Nm

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Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	38
61 20 900 Disconnecting and connecting battery earth lead	38
61 20 900 Disconnecting and connecting battery earth lead	38
61 20 900 Disconnecting and connecting battery earth lead	38
61 20 900 Disconnecting and connecting battery earth lead	38
61 20 900 Disconnecting and connecting battery earth lead	38
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	38
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	38
61 20 900 Disconnecting and connecting battery earth lead	38
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	38
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	38
61 20 900 Disconnecting and connecting battery earth lead	38
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61 20 900 Disconnecting and connecting battery earth lead	38
61 20 900 Disconnecting and connecting battery earth lead	38
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61 20 900 Disconnecting and connecting battery earth lead	38
61 20 900 Disconnecting and connecting battery earth lead	38
61 20 900 Disconnecting and connecting battery earth lead	38

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64 11 506 Replacing actuator drive for front right stratification flap

TECHNICAL INFORMATION

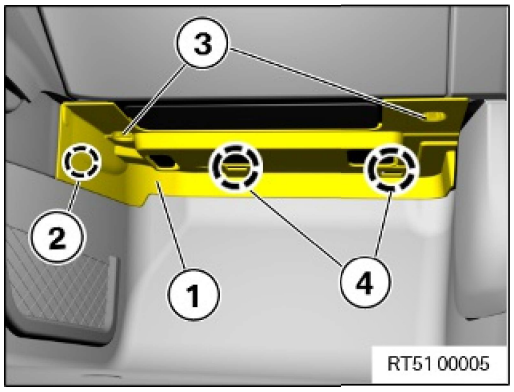
After the replacement, the controller drive must be reconfigured.
The address can only be configured with the diagnosis system.

PRELIMINARY WORK

1 – Moving to installation position of flap motors

- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Installation position of flap motors

2 – Remove the right footwell trim



- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

3 – In vehicles with airbag module: Removing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

NOTICE

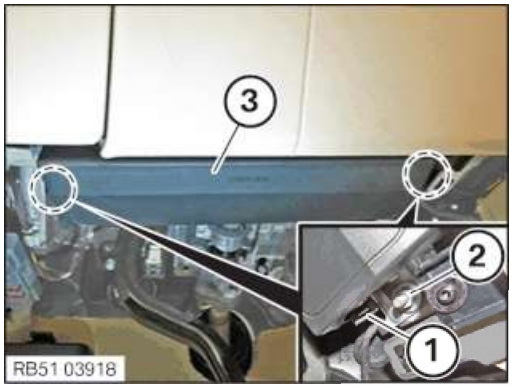
Description is for left component only. Procedure on the right side is identical.

▸ **Disconnecting all battery earth leads**

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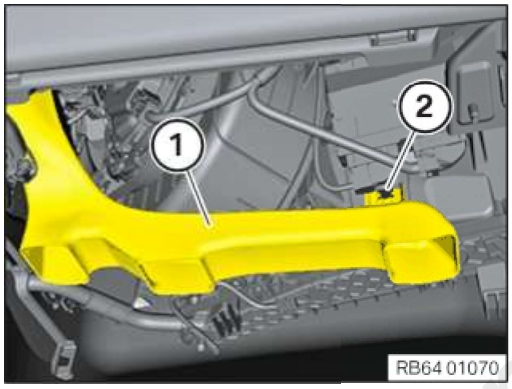


- See additional information.



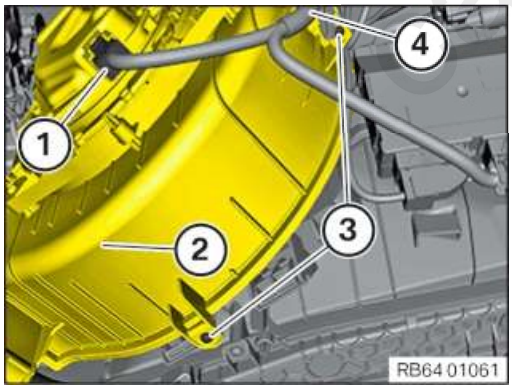
- Unlock plug connection (1) and disconnect.
- Loosen the screws (2) on left and right.
- Remove knee airbag (3) towards the bottom.

4 – Removing the right air duct

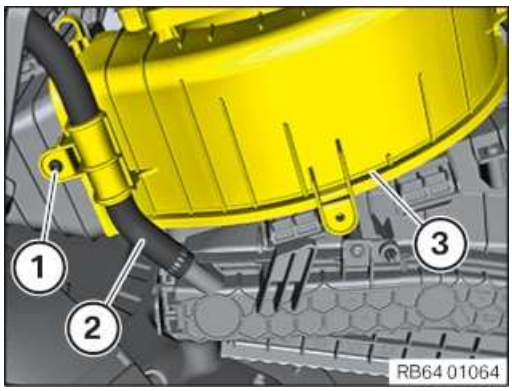


- Unclip the air duct (1) at an angle toward the bottom at the spring clip (2).

5 – Remove the blower for the heating and air-conditioning unit



- Unlock and disconnect the plug connection (1) from the blower motor (2).
- Loosen screws (3).
- Pull of the cable clip (4) from the housing of the blower motor (2).

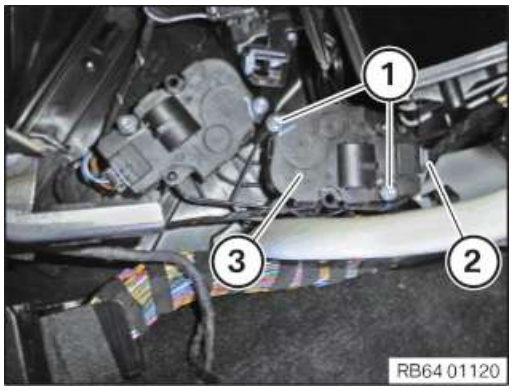


- Loosen screw (1).
- Guide out the hose (2) from the housing of the blower motor (3).
- Remove the housing of the blower motor (3).

erdiagn.com

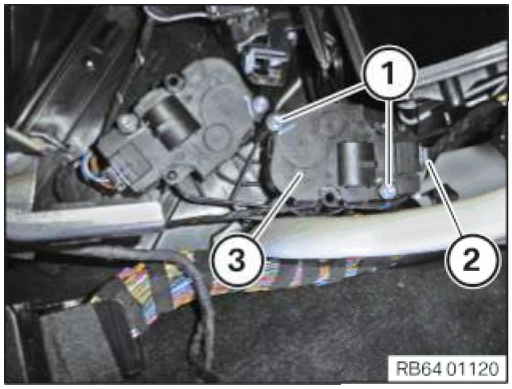
MAIN WORK

6 – Remove the stratification flap motor (M69)



- Disconnect plug connection (2).
- Release the screws (1) and remove the stratification flap motor (3).

7 – Install the stratification flap motor (M69)



- Install the stratification flap motor (3) and correctly position.
- Tighten the screws (1).

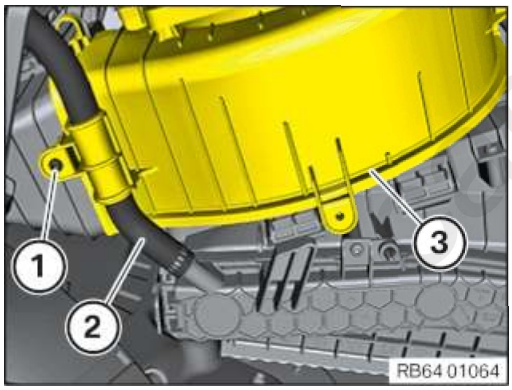
Controller drive to heating and air-conditioning unit

Screw		Tightening torque	1,2 Nm

- Connect connectors (2) and lock.

POSTPROCESSES

8 – Install the blower for the heating and air-conditioning unit

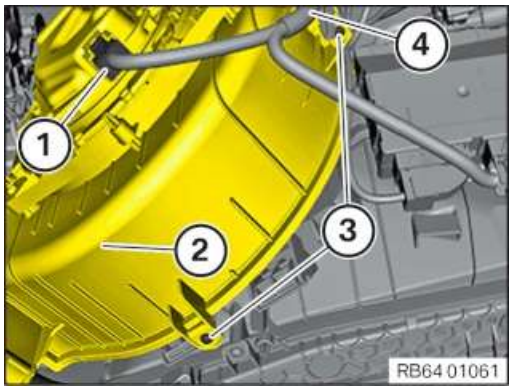


- Position the housing of the blower motor (3).
- Tighten down screw (1).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Feed in the hose (2) at the housing of the blower motor (3).



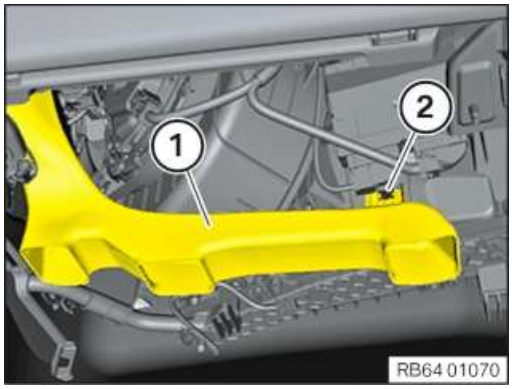
- Connect and lock plug connection (1) of blower motor (2).
- Tighten down screws (3).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Secure the cable clip (4) on the housing of the blower motor (2).

9 – Installing the air duct, right

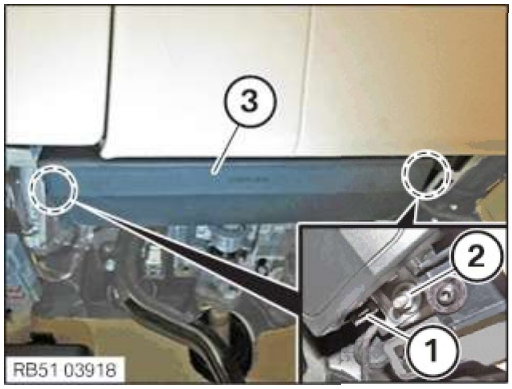


- Clip the air duct (1) in upward at an angle with the spring clip (2) on the heating and air-conditioning unit.

10 – In vehicles with airbag module: Installing knee airbag

NOTICE

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



- Install knee airbag (3).
- Tighten screws (2) on left and right.

Knee airbag

	Tightening torque	8 Nm

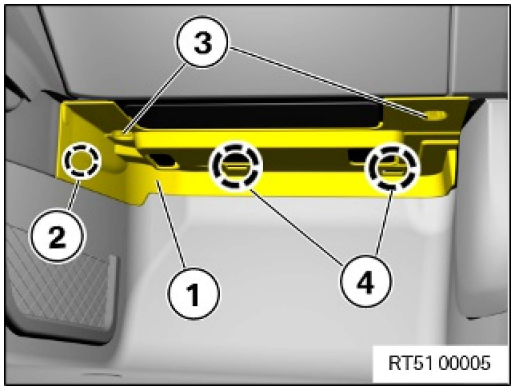
- Connect connectors (1) and lock.

▸ **Disconnecting all battery earth leads**



- See additional information.

11 – Install the right footwell trim panel



- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

12 – Address the controller drive

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- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Address flap motors

Additional Information

Overview of Tightening Torques

Controller drive to heating and air-conditioning unit			Used in step 7
Screw		Tightening torque	1,2 Nm

Heater/air conditioner			Used in step 8
Screw		Tightening torque	1,2 Nm

Knee airbag			Used in step 10
		Tightening torque	8 Nm

Links

Repair instructions	**Used in step**
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	310
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	310
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
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61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310

carujegn.com

61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310

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64 11 503 Replacing actuator drive for left air distribution flap

WARNING

Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

TECHNICAL INFORMATION

After the replacement, the controller drive must be reconfigured.
The address can only be configured with the diagnosis system.

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PRELIMINARY WORK

1 – Moving to installation position of flap motors

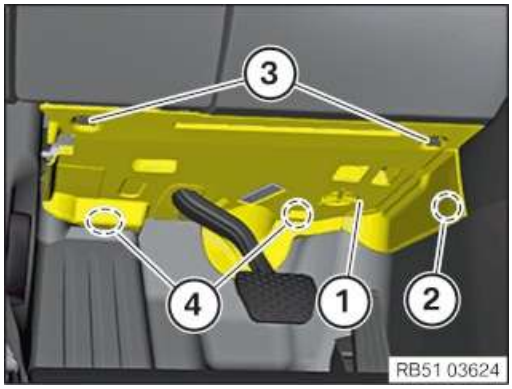
- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Installation position of flap motors

2 – Disconnecting all battery earth leads



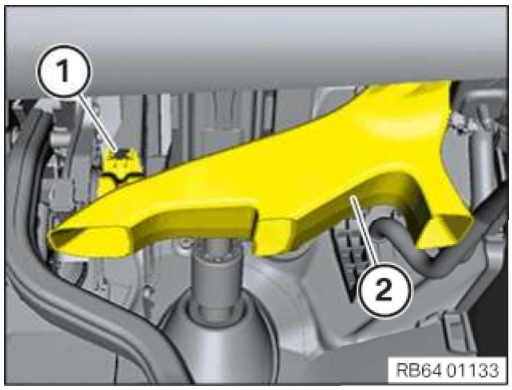
- See additional information.

3 – Removing the trim panel for pedal mechanism



- Unclip the trim panel for the pedal mechanism (1) towards the inside in this area (2).
- Turn the locks (3) by 90°.
- Detach the trim panel for the pedal mechanism (1) inwards out of the guides (4).
- Unlock associated plug connection and disconnect.

4 – Remove left air duct



- Unclip the air duct (2) from the air conditioning housing at an angle towards the bottom at the clamp (1).

5 – Removing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

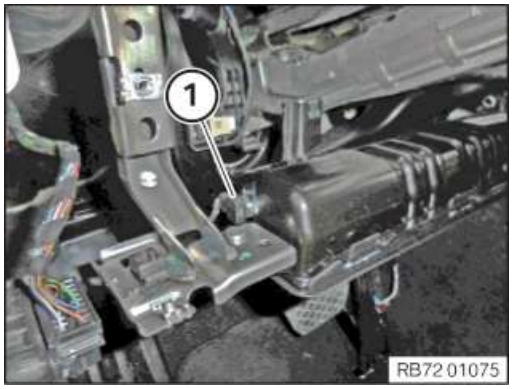
WARNING

Pyrotechnic components.

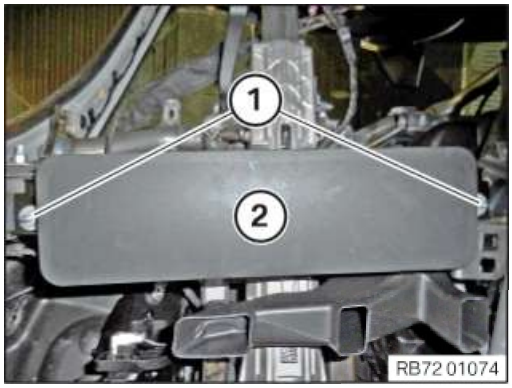
Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.

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- Unlock plug connection (1) and disconnect.



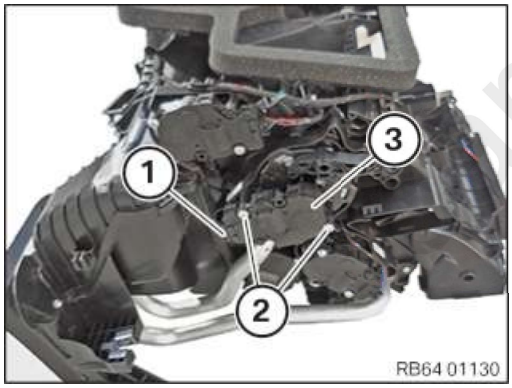
- Loosen nuts (1).
- Remove knee airbag (2).

MAIN WORK

6 – Remove the left air distribution flap motor (M21b)

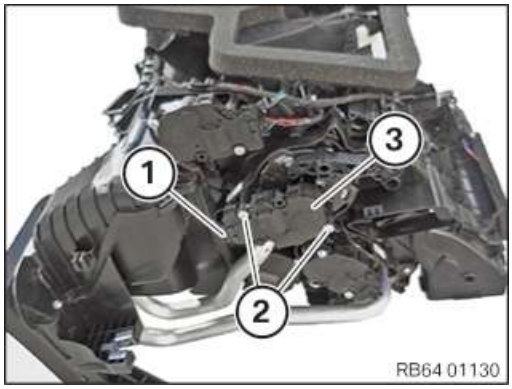
NOTICE

For a better overview the removed condition is shown here.



- Disconnect plug connection (1).
- Loosen screws (2).
- Remove the left-hand air distribution flap motor (3).

7 – Install the left air distribution flap motor (M21b)



- Position the air distribution flap motor on the left (3).
- Tighten down screws (2).

Controller drive to heating and air-conditioning unit

Screw		Tightening torque	1,2 Nm

- Connect connectors (1) and lock.

POSTPROCESSES

mydiagn.com

8 – Installing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

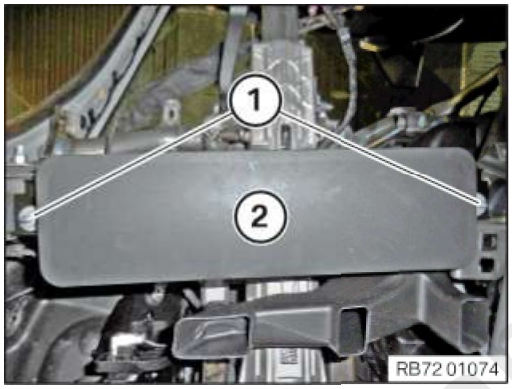
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

Pyrotechnic components.

Danger! Life-threatening injuries!

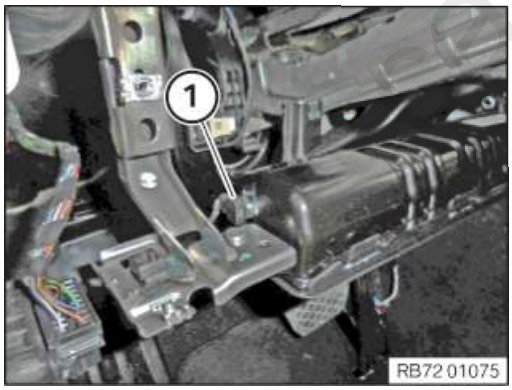
- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.



- Position knee airbag (2) correctly.
- Tighten nuts (1).

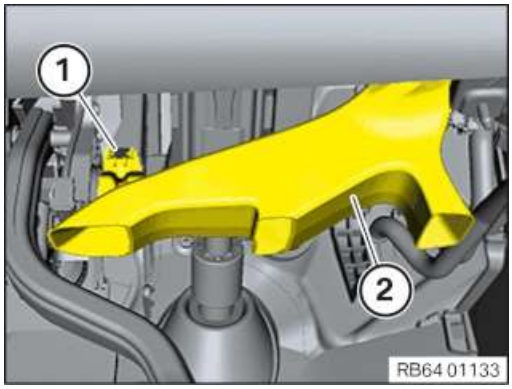
Knee airbag on support structure

Nut	Tlghtening torque	8 Nm



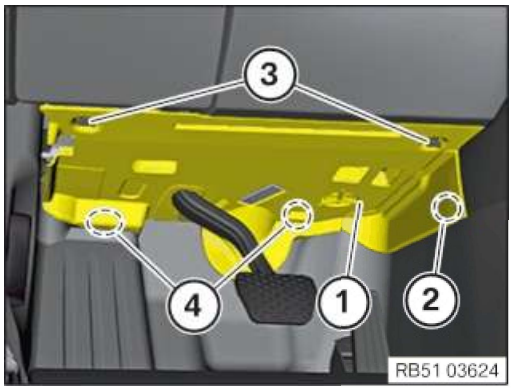
- Connect connectors (1) and lock.

9 – Installing the air duct, left



- Clip in the air duct (2) at the clamp (1) in the air conditioning housing at an angle towards the top.

10 – Installing the trim panel for the pedal mechanism



- Connect associated connector.
- Attach the trim panel for the pedal mechanism (1) in the guides (4) and fold it up.
- Clip the trim panel for the pedal mechanism (1) into the centre console in this area (2).
- Insert locks (3) correctly and turn 90°.

11 – Disconnecting all battery earth leads



- See additional information.

12 – Address the controller drive

- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Address flap motors

Additional Information

Overview of Tightening Torques

Controller drive to heating and air-conditioning unit Used in step 7

Screw		Tightening torque	1,2 Nm

Knee airbag on support structure Used in step 8

Nut		Tlghtening torque	8 Nm

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Links

General repair instructions	Used in step
72 00 ... Safety regulations for handling components with gas generators	58

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	211
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting the battery earth lead (*all battery earth leads*)	211
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211

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64 11 505 Replacing actuator drive for rear passenger compartment flap

TECHNICAL INFORMATION

After the replacement, the controller drive must be reconfigured.
The address can only be configured with the diagnosis system.

PRELIMINARY WORK

1 – Moving to installation position of flap motors

- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Installation position of flap motors

2 – Disconnecting all battery earth leads



- See additional information.

3 – Remove cupholder



- Remove the insert (1).

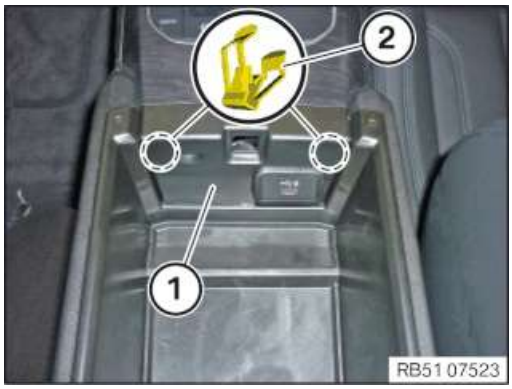


- Loosen screws (1).
- Feed the cup holder (2) out to the top.
- Unlock associated plug connections and disconnect.

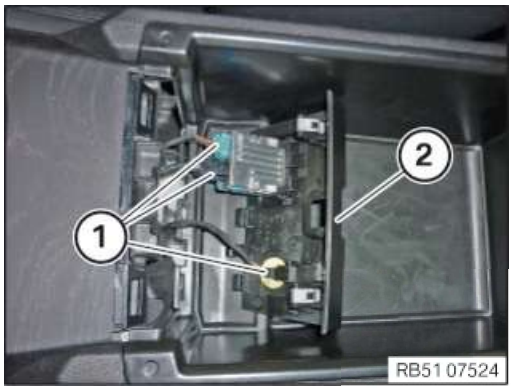
4 – Removing the trim in the storage compartment on the centre armrest

bmwdiagn.com

4 – Removing the trim in the storage compartment on the centre armrest



- Lever out the trim (1) with the special tool (2) toward the rear from the clamps 2 298 505.



- Unlock and disconnect the plug connections (1) and remove the trim (2) .

5 – Remove the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



- Release and remove the centre console trim upwards (1) as shown using the special tool 2 298 505 from the latch mechanisms.

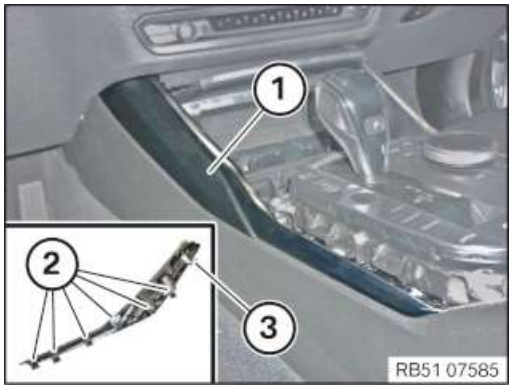
6 – Removing the decorative trim on the centre console trim on the left and right

▸ **Remove decorative trim on centre console**

NOTICE

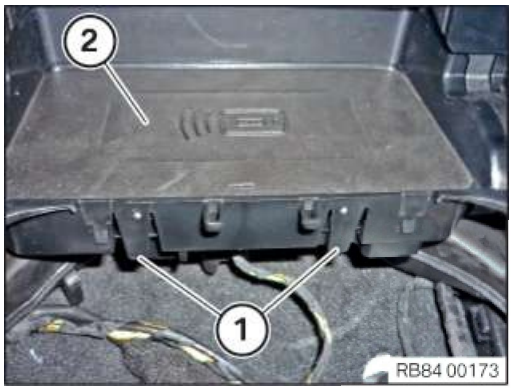
Description is for left component only. Procedure on the right side is identical.

rdiagn.com

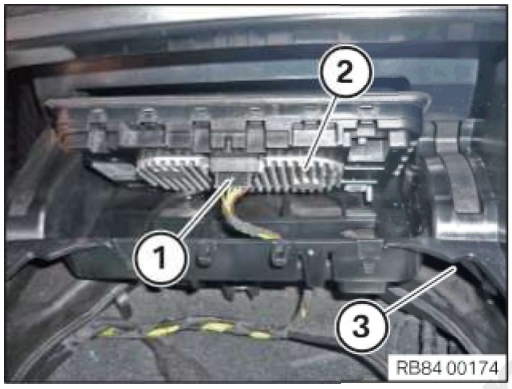


- Lever out the rear decorative trim (1) from the latch mechanisms (2) starting from the top.
- Feed out the decorative trim (1) backwards out of the guide (3) and remove.

7 – Removing the wireless charging station



- Loosen the latch mechanisms (1) and push out the wireless charging station (2) upwards.



- Disconnect the connector (1) and remove the wireless charging station (2) from the centre console (3).

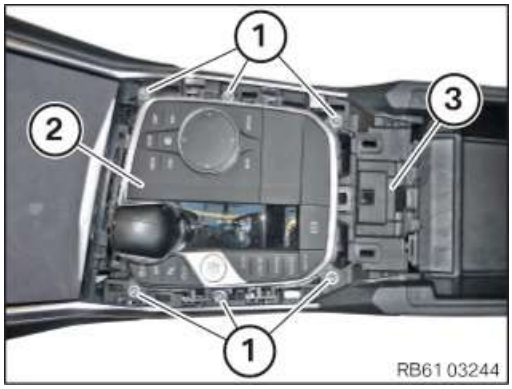
8 – Remove the operating facility in the centre console

▸ **Disconnecting all battery earth leads**



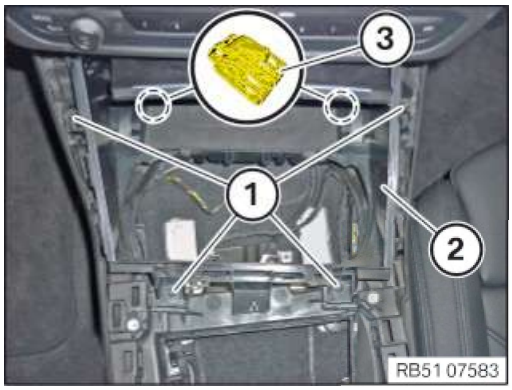
- See additional information.

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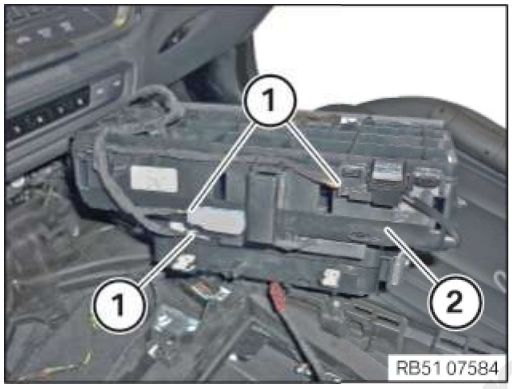


- Loosen screws (1).
- Remove the operating facility in the centre console (2) from the centre console (3).

9 – Removing the storage compartment of the front centre console



- Loosen screws (1).
- Remove storage compartment trim (2) backwards out of clamps (3).

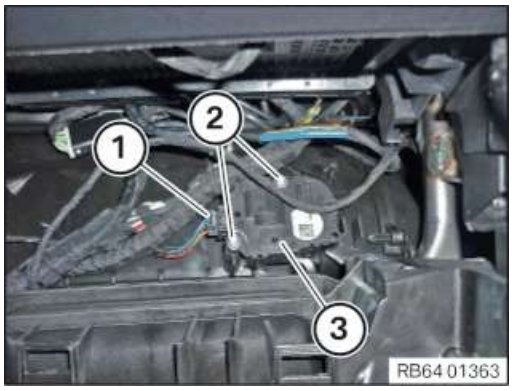


- Unlock and disconnect all the plug connections (1) and remove the storage compartment (2).

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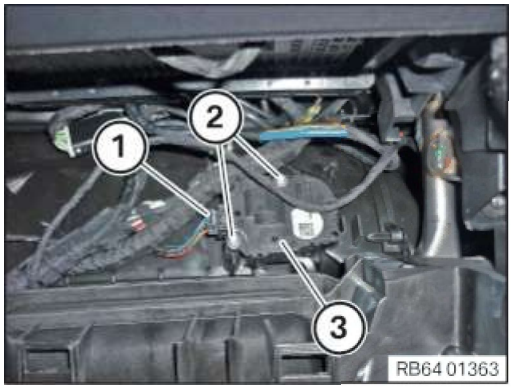
MAIN WORK

10 – Remove the rear compartment flap motor (M8)



- Unlock plug connection (1) and disconnect.
- Loosen screws (2) and remove rear compartment flap motor(3).

11 – Install the rear compartment flap motor (M8)



- Install and correctly position rear compartment flap motor (3) .
- Tighten the screws (2).

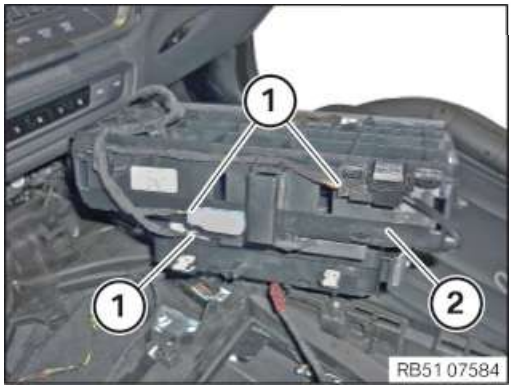
Controller drive to heating and air-conditioning unit

Screw		Tightening torque	1,2 Nm

- Connect connectors (1) and lock.

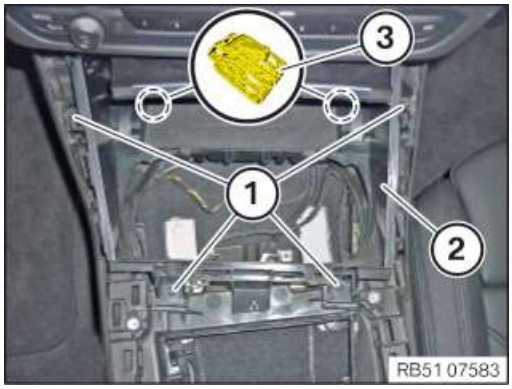
POSTPROCESSES

12 – Installing the storage compartment of the front centre console



- Mount the storage compartment (2) and connect connectors (1).

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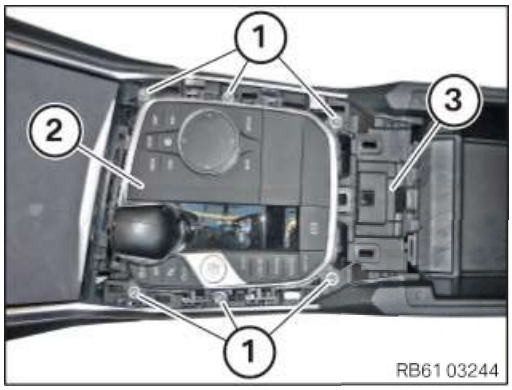


- Engage rear storage compartment trim (2) into clamps (3).
- Tighten the screws (1).

Storage compartment to centre console

Oval-head screw		Tightening torque	1,8 Nm

13 – Install the operating facility in the centre console



- Position operating facility (2) in the centre console (3).
- Tighten the screws (1).

Gear selector switch to centre console trim

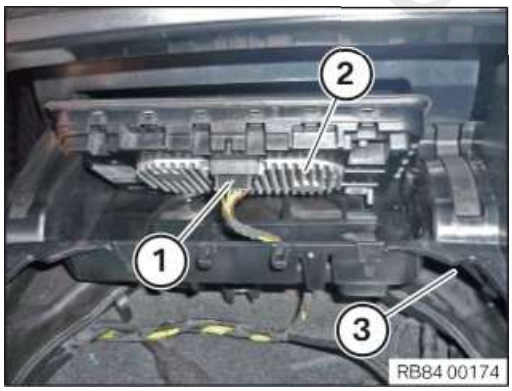
Screw		Tightening torque	1,8 Nm

▶ **Disconnecting all battery earth leads**



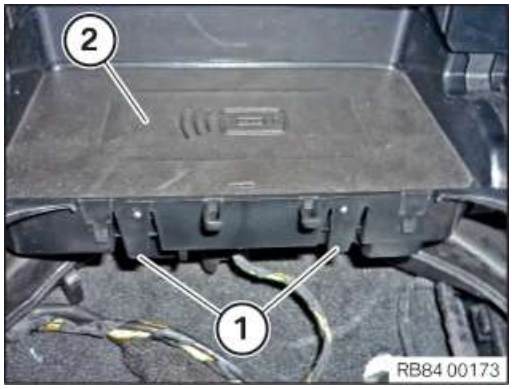
- See additional information.

14 – Installing the wireless charging station



- Connect connector (1).
- Position the wireless charging station (2) in the centre console (3).

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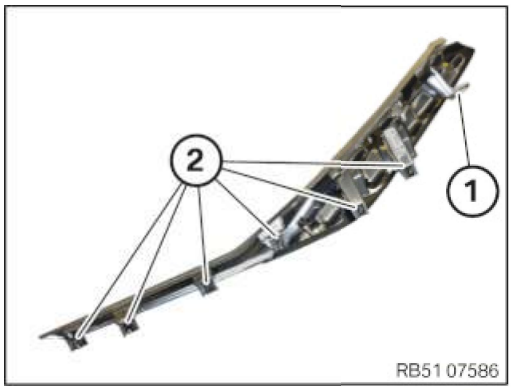
- Press the wireless charging station (2) down till the locking units (1) are engaged correctly.

15 – Install decorative trim on centre console on left and right

▸ **Installing the decorative trim to centre console**

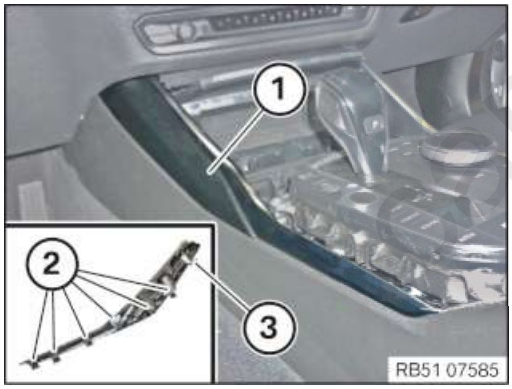
NOTICE

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



- Check guide (1) and the latch mechanisms (2).

  Renew defective decorative trim.



- Feed in the decorative trim (1) forward in the guide (3).
- Engage decorative trim (1) in latch mechanisms (2).

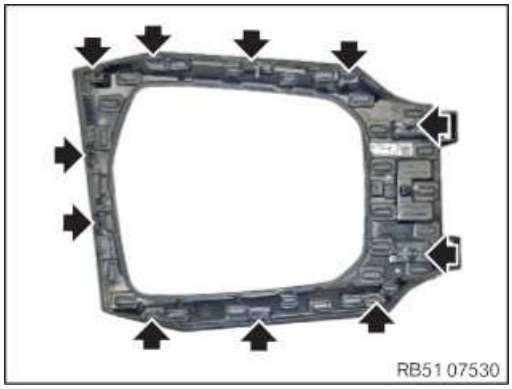
16 – Installing the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

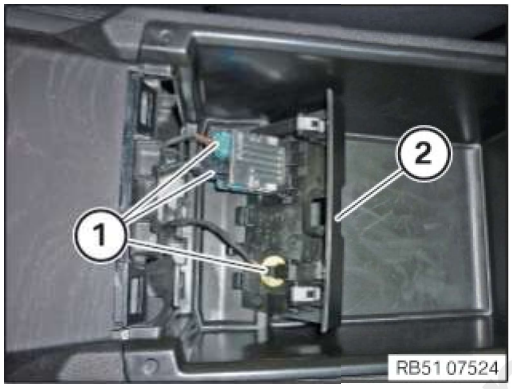


- Check all the latch mechanisms or clamps (arrows).
- In case the latch mechanisms or the clamps (arrows) are faulty, renew the centre console trim .

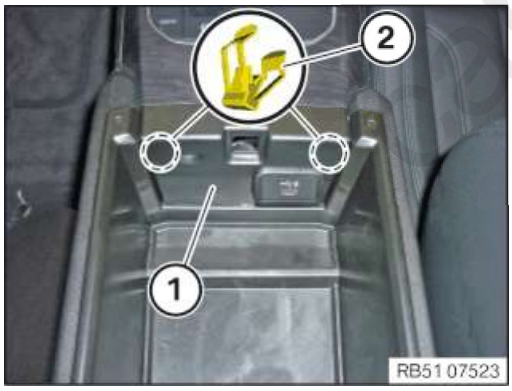


- Correctly position the centre console trim (1) and engage at the latch mechanisms.

17 – Installing the trim in the storage compartment of the centre armrest



- Mount the trim (2) and connect connector (1) and lock.



- Correctly position trim (1) and snap into the clamps (2).

18 – Install the cup holder



- Fix the cup holder (1) and the belonging connectors.
- Correctly position cup holder (1).
- Tighten the screws (2).

Cup holder to centre console

Oval-head screw		Tightening torque	1,8 Nm

diagn.com



- Insert the insert (1).

19 – Disconnecting all battery earth leads



- See additional information.

20 – Address the controller drive

- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Address flap motors

Additional Information

Overview of Tightening Torques

Controller drive to heating and air-conditioning unit			Used in step 11
Screw		Tightening torque	1,2 Nm

Storage compartment to centre console			Used in step 12
Oval-head screw		Tightening torque	1,8 Nm

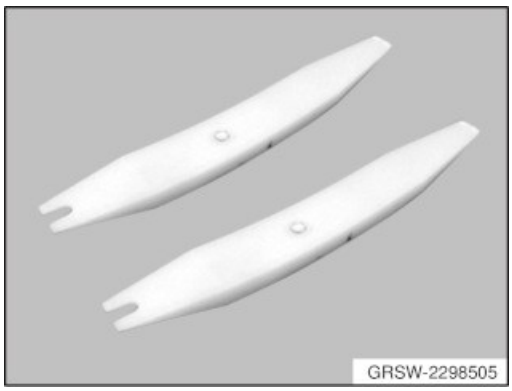
Gear selector switch to centre console trim			Used in step 13
Screw		Tightening torque	1,8 Nm

Cup holder to centre console			Used in step 18
Oval-head screw		Tightening torque	1,8 Nm

Overview of Special Tools

cardiagn.com

2 298 505 Wedge



Common	Used in step 45
Usage	Set (delivery of 2 pieces)
Included in the tool or work	
Storage location	C34
Replaced by	
In connection with	
SI-Number	01 03 12 (792)

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	281319
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	281319
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
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61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting battery earth lead	281319

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61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
61 20 900 Disconnecting and connecting battery earth lead	281319
61 35 ... Notes on ESD protection (Electro Static Discharge)	

cardiagn.com

64 11 508 Replacing actuator drive for right air distribution flap

TECHNICAL INFORMATION

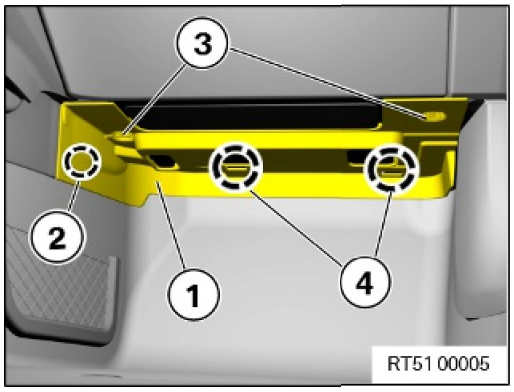
After the replacement, the controller drive must be reconfigured.
The address can only be configured with the diagnosis system.

PRELIMINARY WORK

1 – Moving to installation position of flap motors

- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Installation position of flap motors

2 – Remove the right footwell trim



- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

3 – In vehicles with airbag module: Removing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

NOTICE

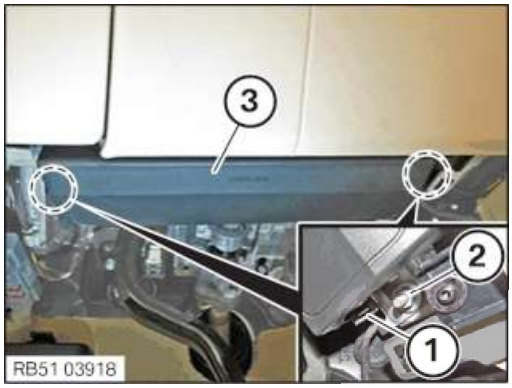
Description is for left component only. Procedure on the right side is identical.

▸ **Disconnecting all battery earth leads**

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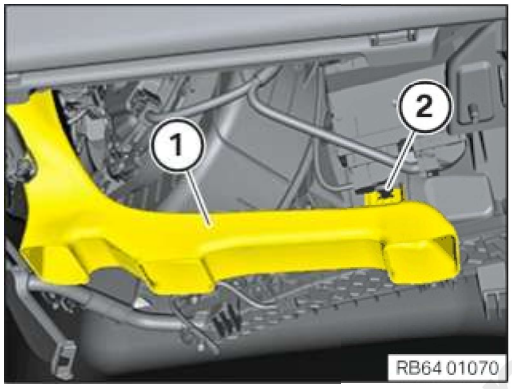


- See additional information.



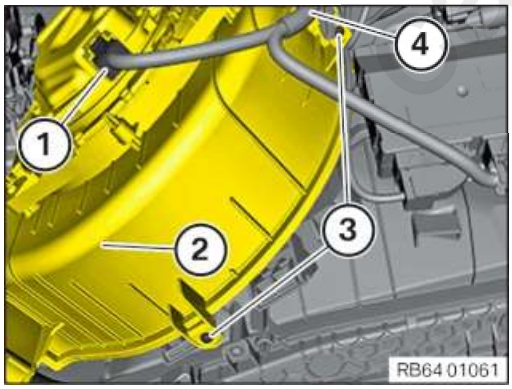
- Unlock plug connection (1) and disconnect.
- Loosen the screws (2) on left and right.
- Remove knee airbag (3) towards the bottom.

4 – Removing the right air duct

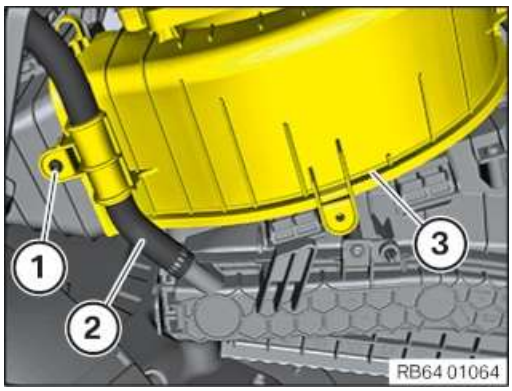


- Unclip the air duct (1) at an angle toward the bottom at the spring clip (2).

5 – Remove the blower for the heating and air-conditioning unit



- Unlock and disconnect the plug connection (1) from the blower motor (2).
- Loosen screws (3).
- Pull of the cable clip (4) from the housing of the blower motor (2).

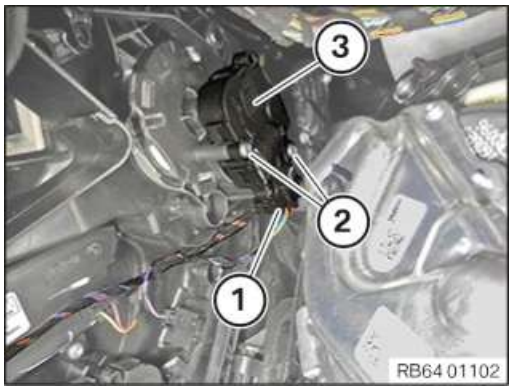


- Loosen screw (1).
- Guide out the hose (2) from the housing of the blower motor (3).
- Remove the housing of the blower motor (3).

erdiagn.com

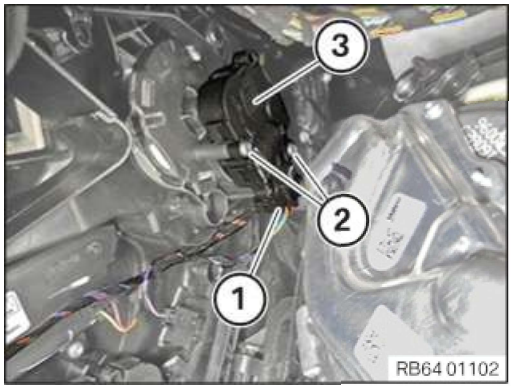
MAIN WORK

6 – Remove the air distribution flap motor on the right (M7a)



- Unlock plug connection (1) and disconnect.
- Loosen screws (2) and remove the air distribution flap motor (3) on the right.

7 – Install the air distribution flap motor on the right (M7a)



- Position the right-hand air distribution flap motor (3) correctly and tighten the screws (2).

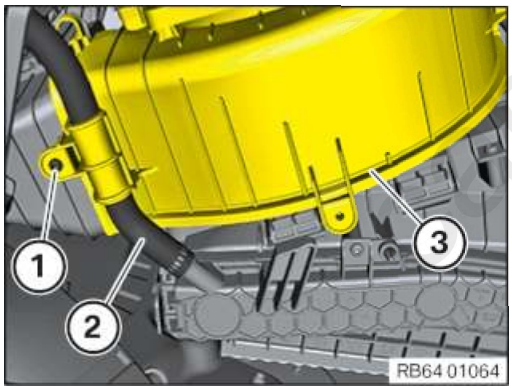
Controller drive to heating and air-conditioning unit

Screw		Tightening torque	1,2 Nm

- Connect and engage the connectors (1).

POSTPROCESSES

8 – Install the blower for the heating and air-conditioning unit

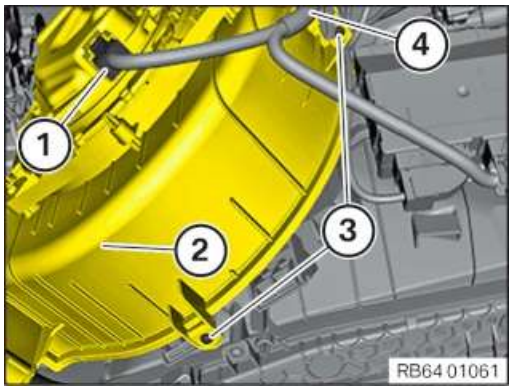


- Position the housing of the blower motor (3).
- Tighten down screw (1).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Feed in the hose (2) at the housing of the blower motor (3).



- Connect and lock plug connection (1) of blower motor (2).
- Tighten down screws (3).

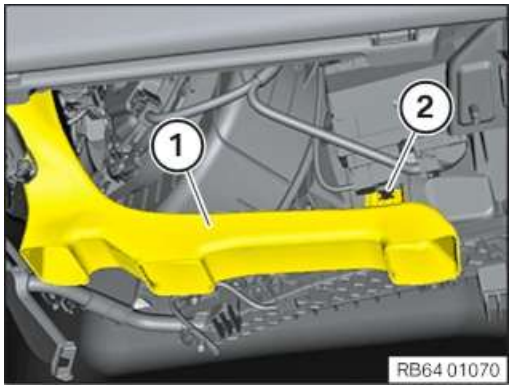
Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Secure the cable clip (4) on the housing of the blower motor (2).

9 – Installing the air duct, right

mdiagn.com

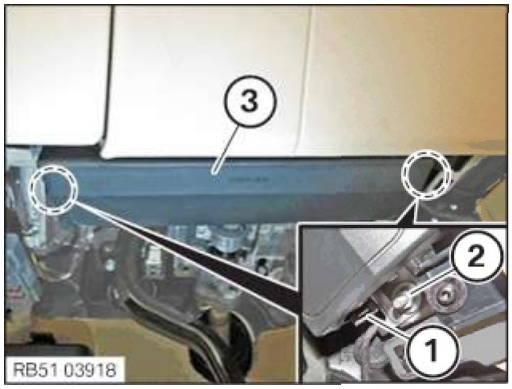


- Clip the air duct (1) in upward at an angle with the spring clip (2) on the heating and air-conditioning unit.

10 – In vehicles with airbag module: Installing knee airbag

NOTICE

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



- Install knee airbag (3).
- Tighten screws (2) on left and right.

Knee airbag

	Tightening torque	8 Nm

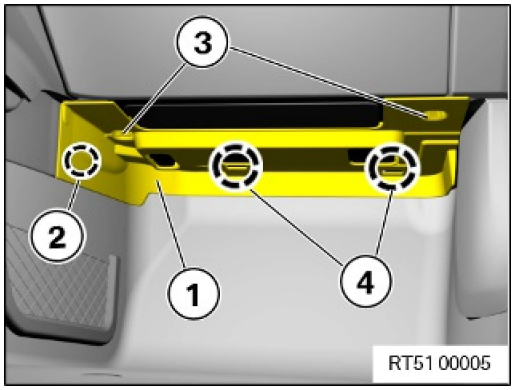
- Connect connectors (1) and lock.

▸ **Disconnecting all battery earth leads**



- See additional information.

11 – Install the right footwell trim panel



- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

12 – Address the controller drive

gardiagn.com

- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Address flap motors

Additional Information

Overview of Tightening Torques

Controller drive to heating and air-conditioning unit			Used in step 7
Screw		Tightening torque	1,2 Nm

Heater/air conditioner			Used in step 8
Screw		Tightening torque	1,2 Nm

Knee airbag			Used in step 10
		Tightening torque	8 Nm

Links

Repair instructions	**Used in step**
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	310
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	310
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	310
61 20 900 Disconnecting and connecting battery earth lead	310
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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	310
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61 20 900 Disconnecting and connecting battery earth lead	310

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61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310
61 20 900 Disconnecting and connecting battery earth lead	310

cardiagn.com

64 11 502 Replacing controller drive for rear blend air door

TECHNICAL INFORMATION

After the replacement, the controller drive must be reconfigured.
The address can only be configured with the diagnosis system.

PRELIMINARY WORK

1 – Moving to installation position of flap motors

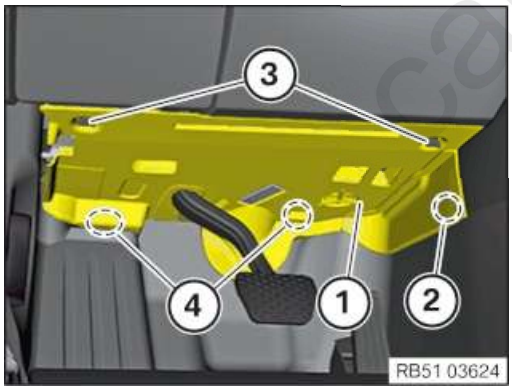
- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Installation position of flap motors

2 – Disconnecting all battery earth leads



- See additional information.

3 – Removing the trim panel for pedal mechanism



- Unclip the trim panel for the pedal mechanism (1) towards the inside in this area (2).
- Turn the locks (3) by 90°.
- Detach the trim panel for the pedal mechanism (1) inwards out of the guides (4).
- Unlock associated plug connection and disconnect.

4 – Removing knee airbag

cardiagn.com

WARNING

Airbag unit.

Danger! Life-threatening injuries!

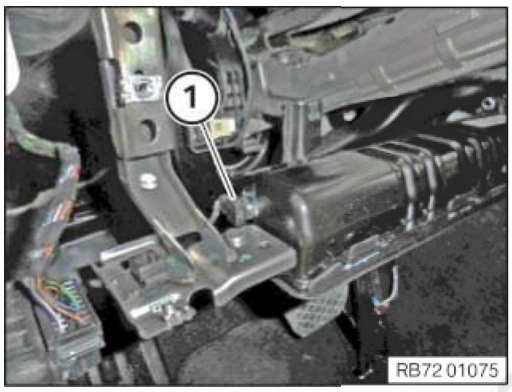
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

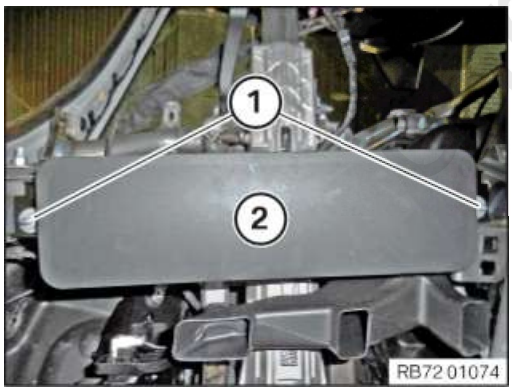
Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.

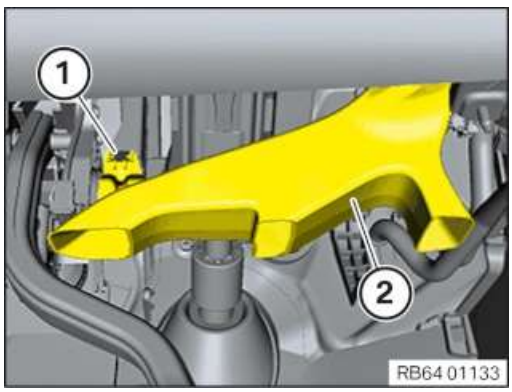


- Unlock plug connection (1) and disconnect.



- Loosen nuts (1).
- Remove knee airbag (2).

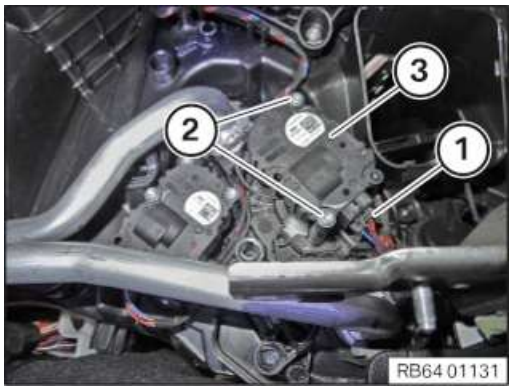
5 – Remove left air duct



- Unclip the air duct (2) from the air conditioning housing at an angle towards the bottom at the clamp (1).

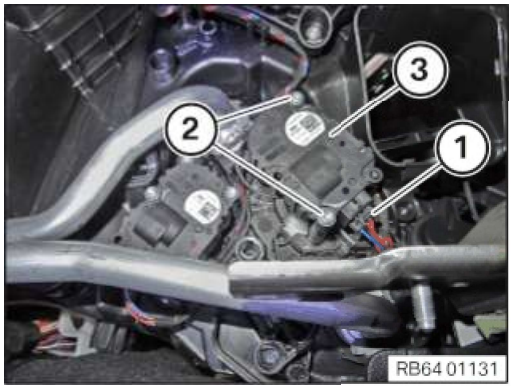
MAIN WORK

6 – Install the rear passenger compartment mixed air flap motor (M23b)



- Disconnect plug connection (1).
- Loosen screws (2).
- Remove mixed air flap motor rear (3).

7 – Install the rear passenger compartment mixed air flap motor (M23b)



- Position the rear mixed air flap motor (3) .
- Tighten the screws (2).

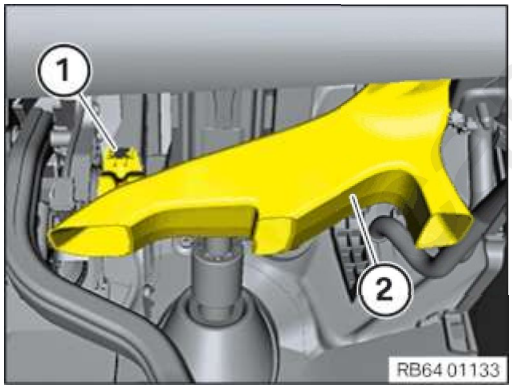
Controller drive to heating and air-conditioning unit

Screw		Tightening torque	1,2 Nm

- Connect connectors (1) and lock.

POSTPROCESSES

8 – Installing the air duct, left



- Clip in the air duct (2) at the clamp (1) in the air conditioning housing at an angle towards the top.

9 – Installing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

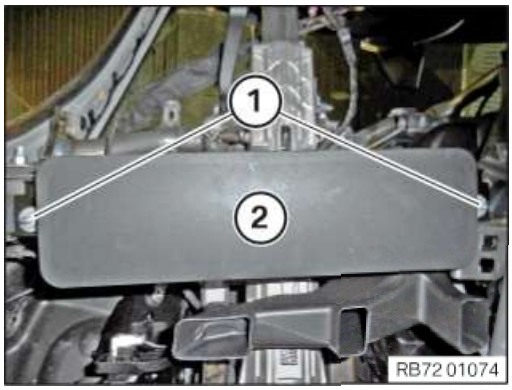
autodiagn.com

WARNING

Pyrotechnic components.

Danger! Life-threatening injuries!

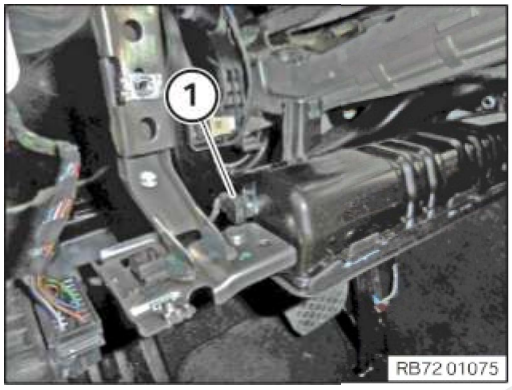
- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.



- Position knee airbag (2) correctly.
- Tighten nuts (1).

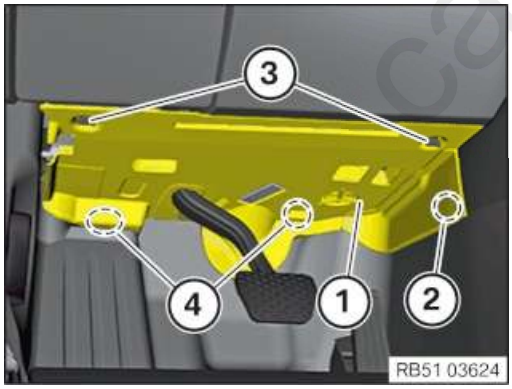
Knee airbag on support structure

Nut		Tlghtening torque	8 Nm



- Connect connectors (1) and lock.

10 – Installing the trim panel for the pedal mechanism



- Connect associated connector.
- Attach the trim panel for the pedal mechanism (1) in the guides (4) and fold it up.
- Clip the trim panel for the pedal mechanism (1) into the centre console in this area (2).
- Insert locks (3) correctly and turn 90°.

11 – Disconnecting all battery earth leads

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- See additional information.

12 – Address the controller drive

- Carry out the service function as follows:
  - Body
  - Heating and air conditioning function
  - Flap motors
  - Address flap motors

Additional Information

Overview of Tightening Torques

Controller drive to heating and air-conditioning unit			Used in step 7
Screw		Tightening torque	1,2 Nm

Knee airbag on support structure			Used in step 9
Nut		Tlghtening torque	8 Nm

Links

General repair instructions	**Used in step**
72 00 ... Safety regulations for handling components with gas generators	49

Repair instructions	**Used in step**
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	211
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	211
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
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61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	211
61 20 900 Disconnecting and connecting battery earth lead	211
61 20 900 Disconnecting and connecting battery earth lead	211
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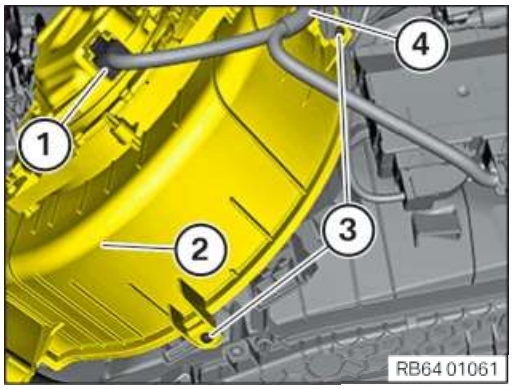
64 11 575 Replacing housing for heating and air-conditioning unit

Prerequisite

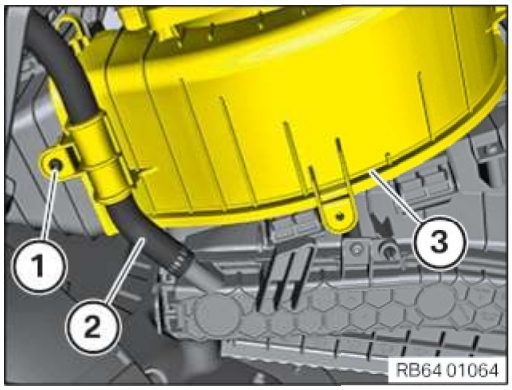
- Heating and air-conditioning unit removed.

1 – Remounting the electric auxiliary heater (heating and air-conditioning unit is removed)

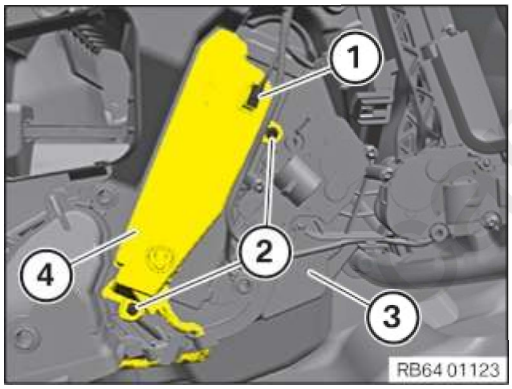
▶ **Remove the blower for the heating and air-conditioning unit**



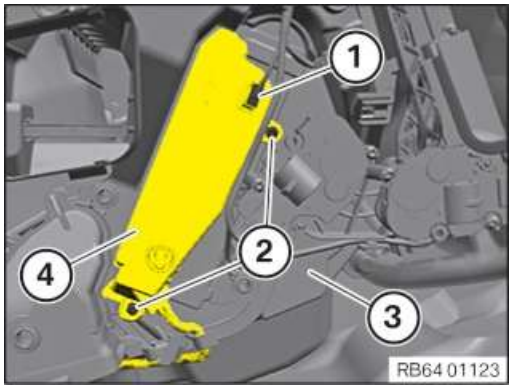
- Unlock and disconnect the plug connection (1) from the blower motor (2).
- Loosen screws (3).
- Pull of the cable clip (4) from the housing of the blower motor (2).



- Loosen screw (1).
- Guide out the hose (2) from the housing of the blower motor (3).
- Remove the housing of the blower motor (3).



- Unlock plug connection (1) and disconnect.
- Loosen screws (2).
- Remove the electric auxiliary heater (4) from the heating and air-conditioning unit (3).



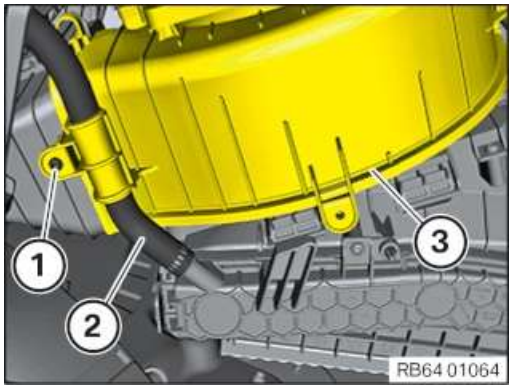
- Position electric auxiliary heater (4) correctly and insert in the heating and air-conditioning unit (3).
- Connect connectors (1) and lock.
- Tighten down screws (2).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

▶ **Install the blower for the heating and air-conditioning unit**

mdiagn.com

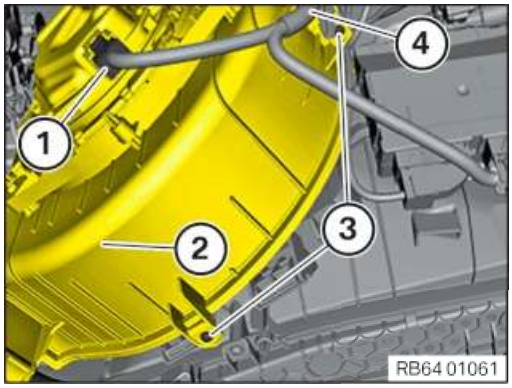


- Position the housing of the blower motor (3).
- Tighten down screw (1).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Feed in the hose (2) at the housing of the blower motor (3).



- Connect and lock plug connection (1) of blower motor (2).
- Tighten down screws (3).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

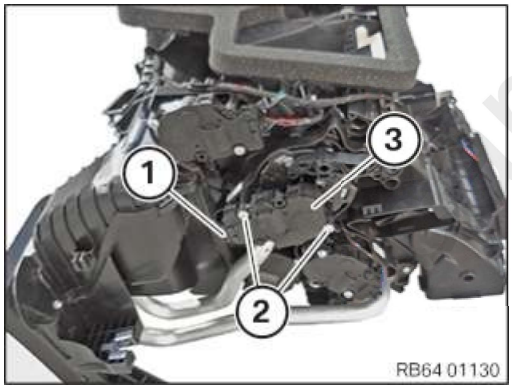
- Secure the cable clip (4) on the housing of the blower motor (2).

2 – Replacing the heat exchanger for heating system (heating and air-conditioning unit removed)

▸ **Remove the left air distribution flap motor (M21b)**

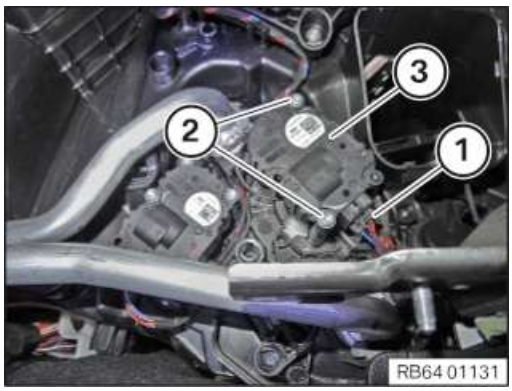
NOTICE

For a better overview the removed condition is shown here.



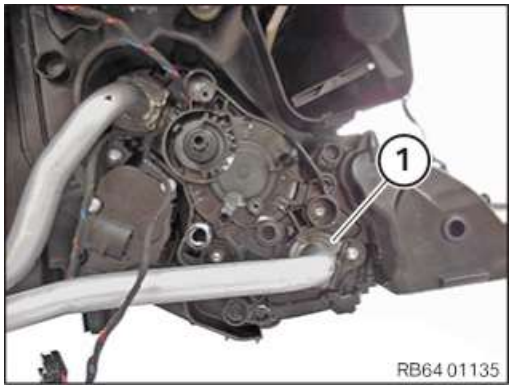
- Disconnect plug connection (1).
- Loosen screws (2).
- Remove the left-hand air distribution flap motor (3).

▸ **Install the rear passenger compartment mixed air flap motor (M23b)**

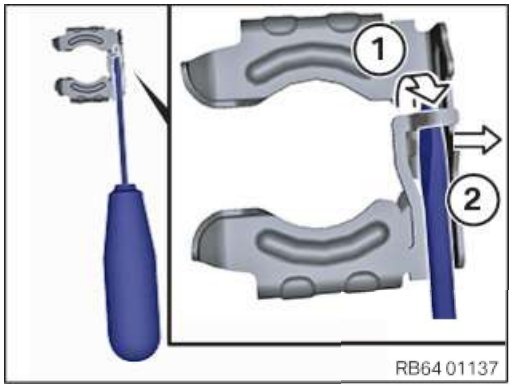


- Disconnect plug connection (1).
- Loosen screws (2).
- Remove mixed air flap motor rear (3).

▸ **Removing lower coolant pipe**

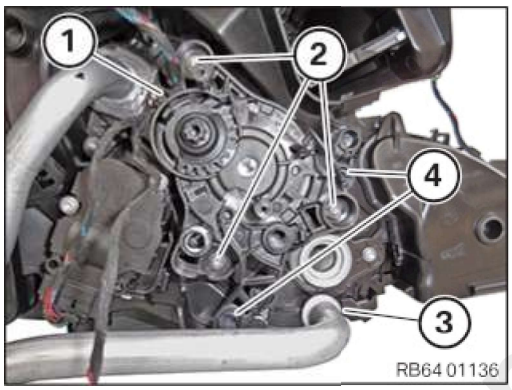


- Disassemble retaining clip (1) as shown in the next work step.



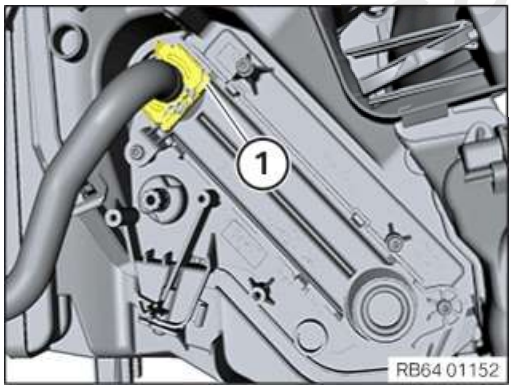
- Unlock the retaining clip in an upward direction (1), using a suitable slotted screwdriver.
- Push the retaining clip to the side (2) with a suitable screwdriver.
- Set the coolant pipe aside.

▸ **Removing kinematics, bottom left**

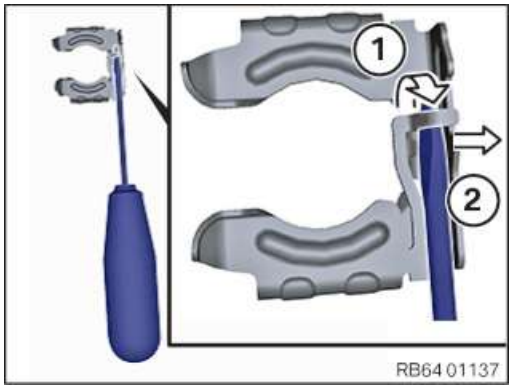


- Detach cable from the line routing (1).
- Slide coolant pipe (3) downwards.
- Disengage relay lever (4).
- Loosen screws (2).
- Remove kinematics.

▸ **Removing coolant pipe, top**

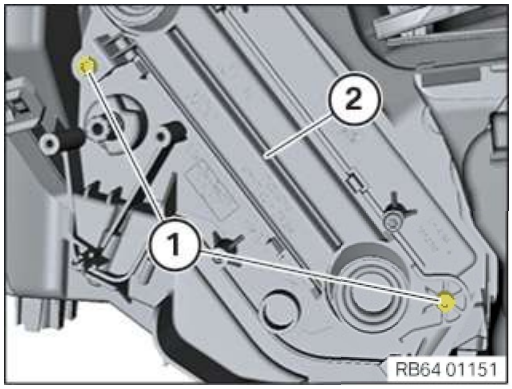


- Disassemble retaining clip (1) as described in the next step.



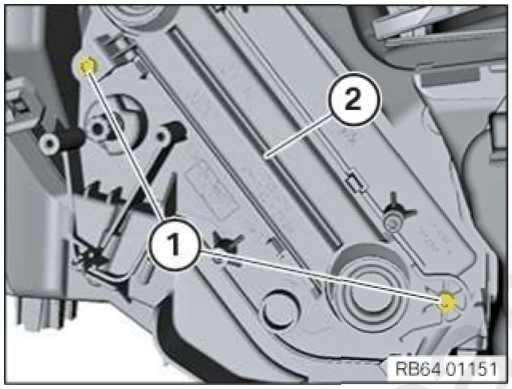
- Unlock the retaining clip in an upward direction, using a suitable screwdriver (1).
- Slide the retaining clip to the side with a suitable screwdriver (2).
- Set the coolant pipe aside.

▸ **Remove heat exchanger**



- Loosen screws (1).
- Remove the heat exchanger (2).

▸ **Installing heat exchanger**

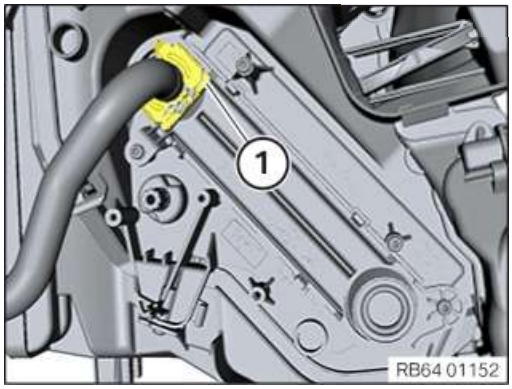


- Position heat exchanger (2).
- Tighten the screws (1).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

▸ **Installing the top coolant pipe**

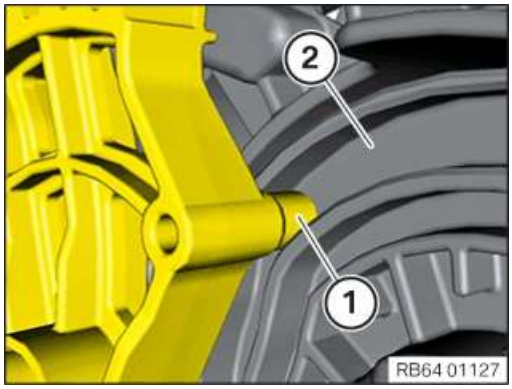


- Renew the sealing ring.

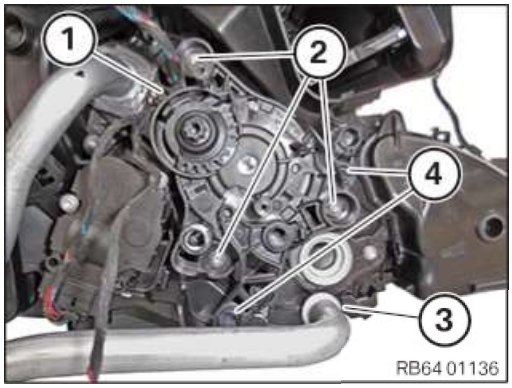
  Parts: Sealing ring
- Position the coolant pipe .
- Secure the coolant pipe with the retaining clip (1).
- Ensure that the coolant pipe is correctly positioned on the heat exchanger for heating system.

▸ **Installing the lower left kinematics**

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- Thread in and position kinematics (2).
- Make sure that the guide pin (1) is correctly positioned in the guide of the gate disc (2).



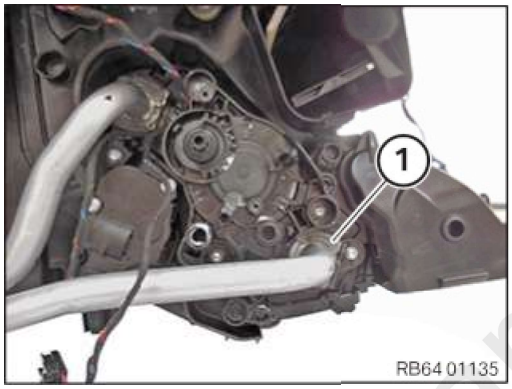
- Position kinematics.
- Tighten down screws (2).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Engage the relay levers (4).
- Ensure that the relay levers (4) engage audibly.
- Position the coolant pipe (3).
- Attach the cable to the line routing (1).

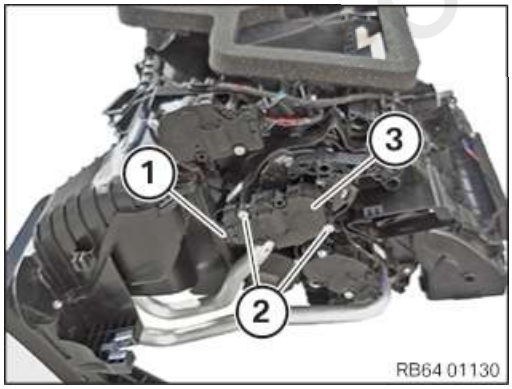
▸ **Installing the lower coolant pipe**



- Renew the sealing ring.

  Parts: Sealing ring
- Position the coolant pipe .
- Secure the coolant pipe with the retaining clip (1).
- Make sure that the coolant pipe is positioned correctly on heat exchanger for heating system.

▸ **Install the left air distribution flap motor (M21b)**



- Position the air distribution flap motor on the left (3).
- Tighten down screws (2).

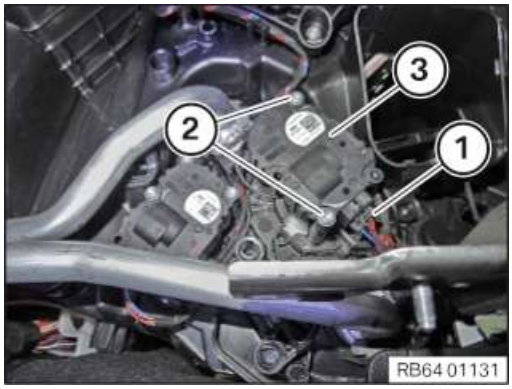
Controller drive to heating and air-conditioning unit

Screw		Tightening torque	1,2 Nm

- Connect connectors (1) and lock.

▸ **Install the rear passenger compartment mixed air flap motor (M23b)**

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- Position the rear mixed air flap motor (3) .
- Tighten the screws (2).

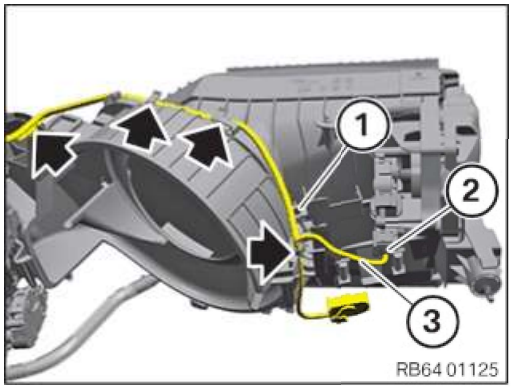
Controller drive to heating and air-conditioning unit

Screw		Tightening torque	1,2 Nm

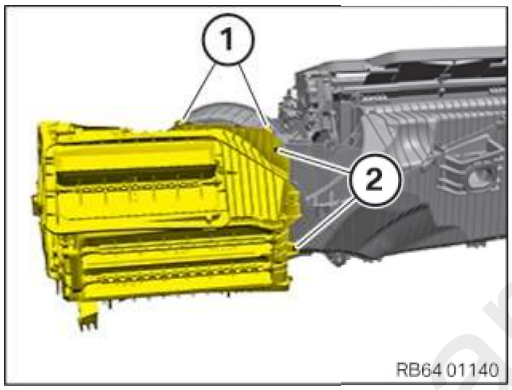
- Connect connectors (1) and lock.

3 – Remount evaporator

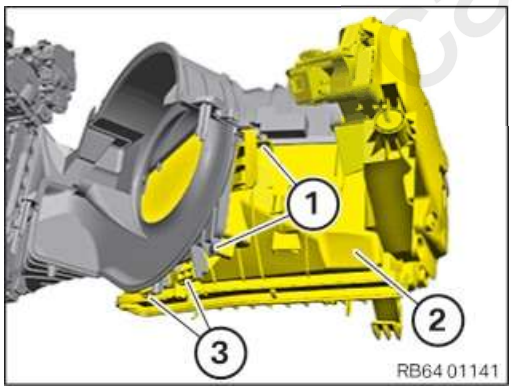
▶ **Removing the evaporator**



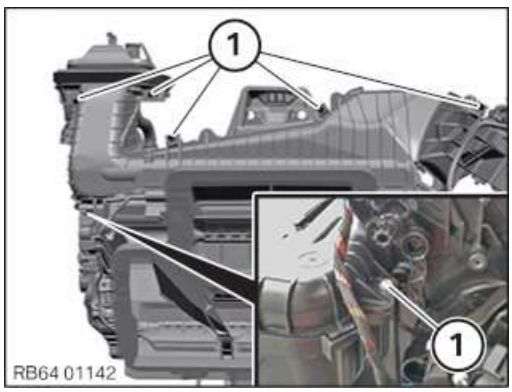
- Loosen screw (1).
- Unlock and disconnect connector (2).
- Remove the cable (3) from the brackets (arrows) and place to one side.



- Disengage the latch mechanisms (1).
- Loosen screws (2).

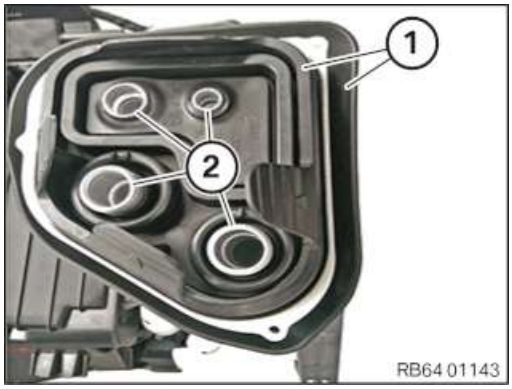


- Loosen screws (1).
- Tilt the housing (2) slightly and detach from the hook (3).

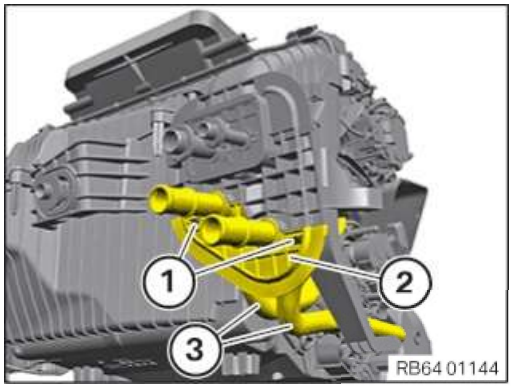


- Loosen screws (1).

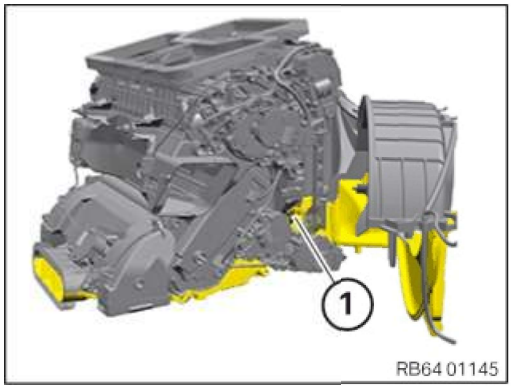
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- Guide out the seal (1) via the lines (2) and remove completely.



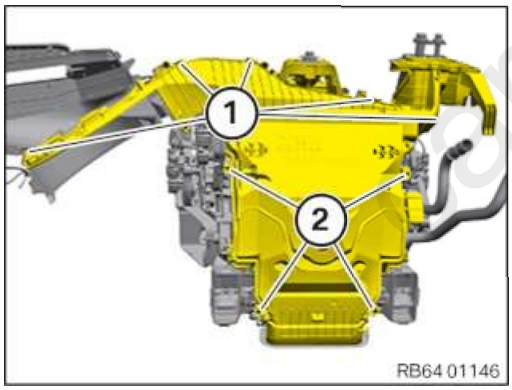
- Disengage the latch mechanisms (1) and remove the cover (2).
- Twist the coolant pipe (3) towards the bottom.



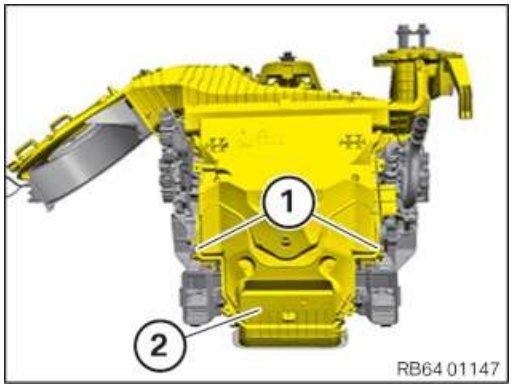
NOTICE

The operations shown only for one side must be carried out on both sides.

- Loosen the latch mechanisms (1).

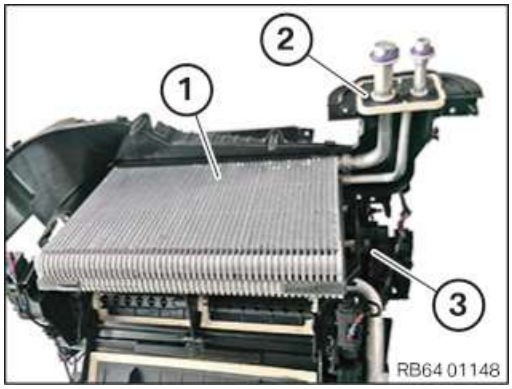


- Turn the heating and air-conditioning unit around.
- Loosen the latch mechanisms (1).
- Loosen screws (2).



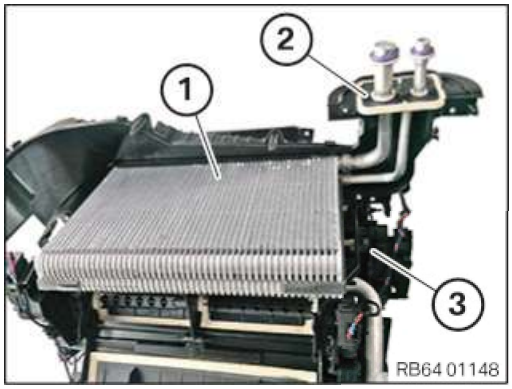
- Unlock the latch mechanism (1) and guide out the housing (2) and remove it.

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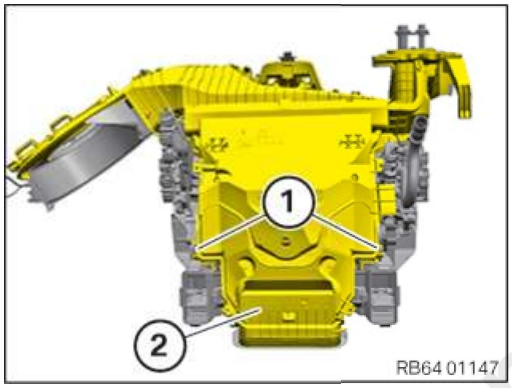


- Remove the evaporator (1) with the seal (2) from the distributor housing (3).

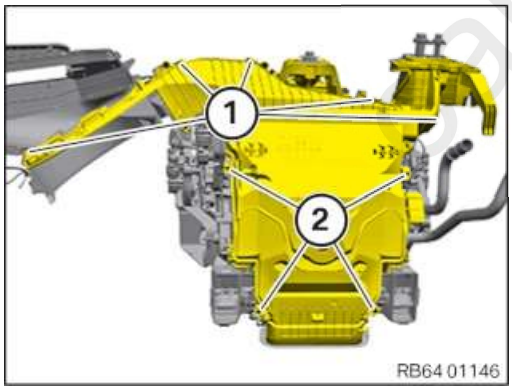
▶ **Installing the evaporator**



- Insert the evaporator (1) in the distributor housing (3) correctly.
- Make sure that the seal (2) is positioned correctly.



- Correctly feed in housing (2) and engage at the latch mechanisms (1).

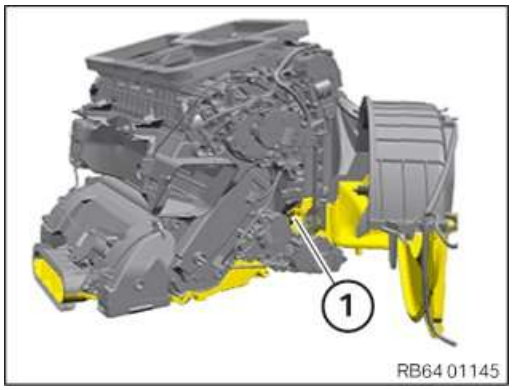


- Engage latch mechanisms (1).

  Tighten down screws (2).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm



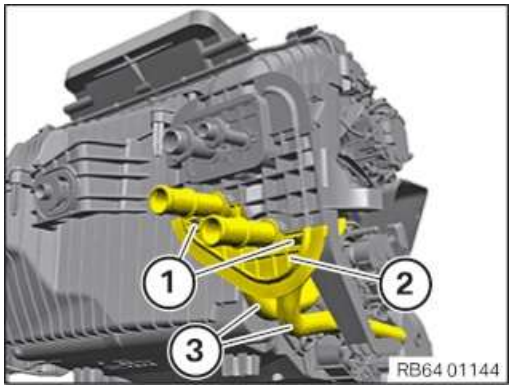
- Turn the heating and air-conditioning unit around.

NOTICE

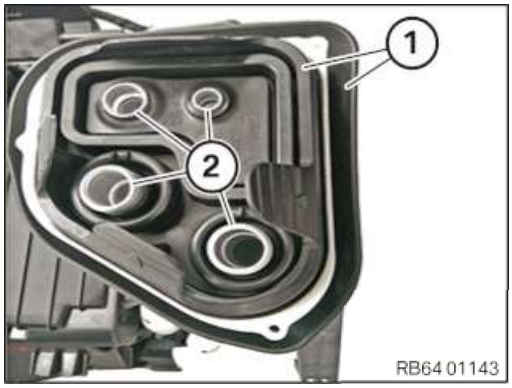
The operations shown only for one side must be carried out on both sides.

- Engage latch mechanisms (1).

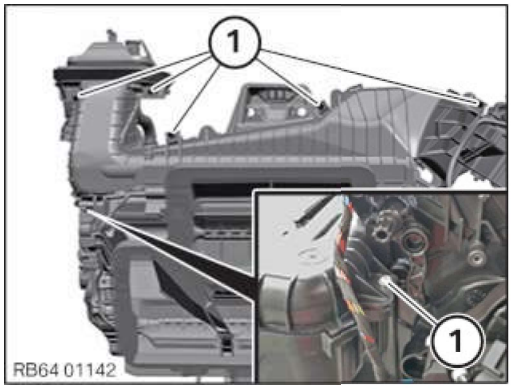
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- Twist coolant pipe (3) towards the front and position correctly.
- Engage the cover (2) at the latch mechanisms (1).



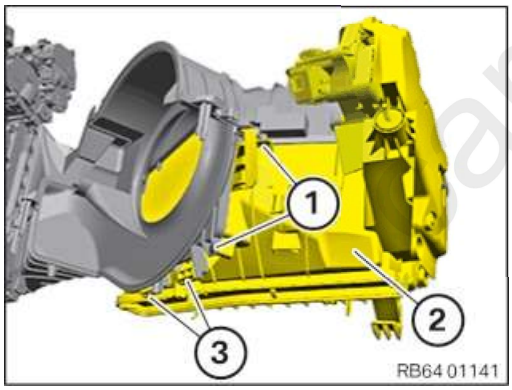
- Feed in seals (1) completely over lines (2) and position correctly.



- Tighten the screws (1).

Heater/air conditioner

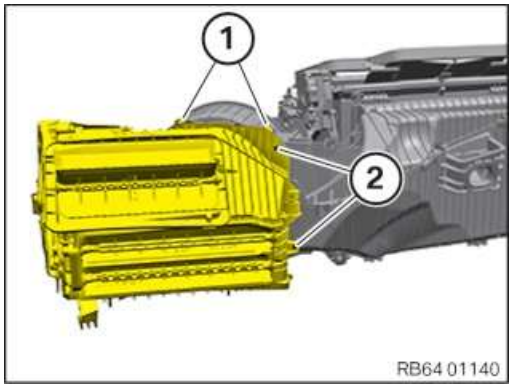
Screw		Tightening torque	1,2 Nm



- Hook housing (2) onto the hook (3) and position correctly.
- Tighten the screws (1).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

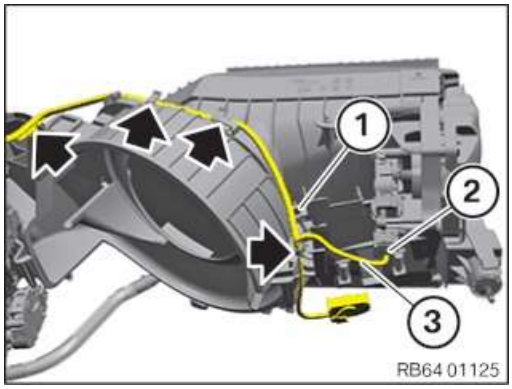


- Engage latch mechanisms (1).
- Tighten down screws (2).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

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- Engage cable (3) at the latch mechanisms (arrows).
- Connect connectors (2) and lock.
- Tighten down screw (1).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

Additional Information

Overview of Tightening Torques

Heater/air conditioner Used in step 123

Screw		Tightening torque	1,2 Nm

Controller drive to heating and air-conditioning unit Used in step 2

Screw		Tightening torque	1,2 Nm

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64 11 520 Replacing left footwell temperature sensor

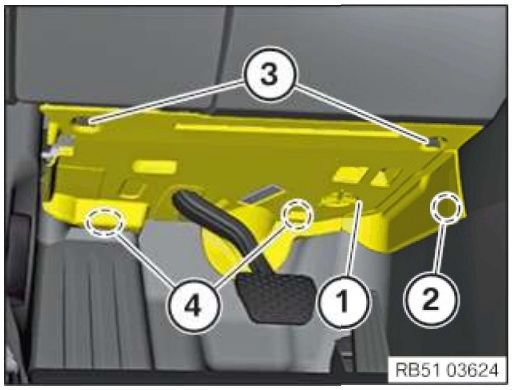
PRELIMINARY WORK

1 – Disconnecting all battery earth leads



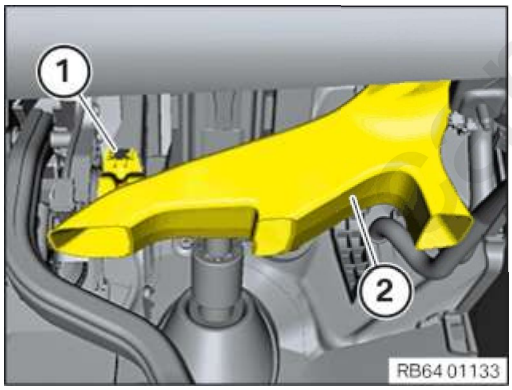
- See additional information.

2 – Removing the trim panel for pedal mechanism



- Unclip the trim panel for the pedal mechanism (1) towards the inside in this area (2).
- Turn the locks (3) by 90°.
- Detach the trim panel for the pedal mechanism (1) inwards out of the guides (4).
- Unlock associated plug connection and disconnect.

3 – Remove left air duct



- Unclip the air duct (2) from the air conditioning housing at an angle towards the bottom at the clamp (1).

4 – Remove cupholder



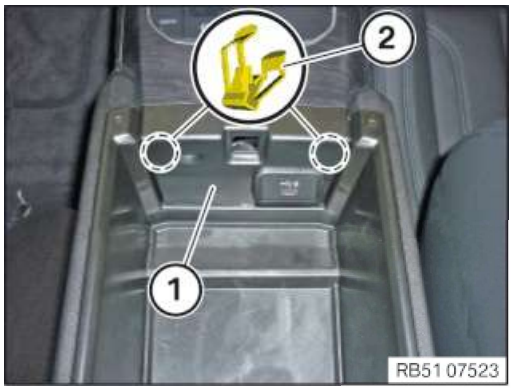
- Remove the insert (1).

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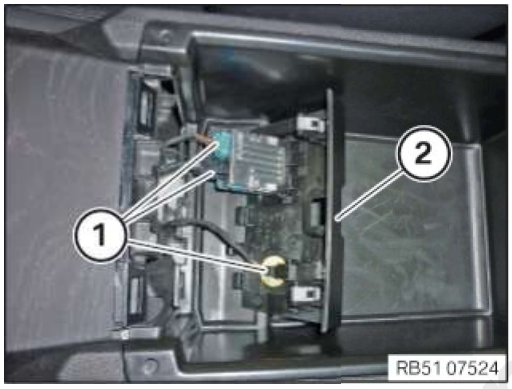


- Loosen screws (1).
- Feed the cup holder (2) out to the top.
- Unlock associated plug connections and disconnect.

5 – Removing the trim in the storage compartment on the centre armrest



- Lever out the trim (1) with the special tool (2) toward the rear from the clamps 2 298 505.



- Unlock and disconnect the plug connections (1) and remove the trim (2) .

6 – Remove the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



- Release and remove the centre console trim upwards (1) as shown using the special tool 2 298 505 from the latch mechanisms.

7 – Removing the decorative trim on the centre console trim on the left and right

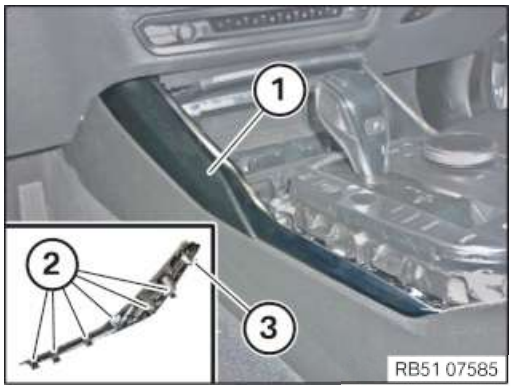
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7 – Removing the decorative trim on the centre console trim on the left and right

▸ **Remove decorative trim on centre console**

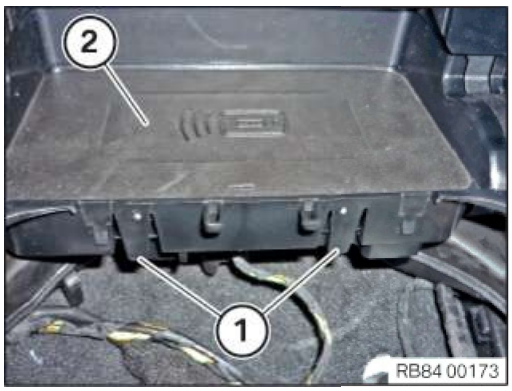
NOTICE

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

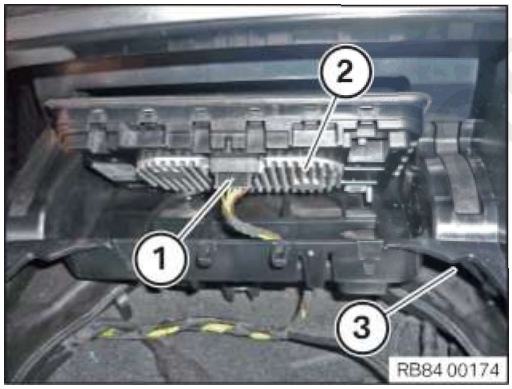


- Lever out the rear decorative trim (1) from the latch mechanisms (2) starting from the top.
- Feed out the decorative trim (1) backwards out of the guide (3) and remove.

8 – Removing the wireless charging station



- Loosen the latch mechanisms (1) and push out the wireless charging station (2) upwards.



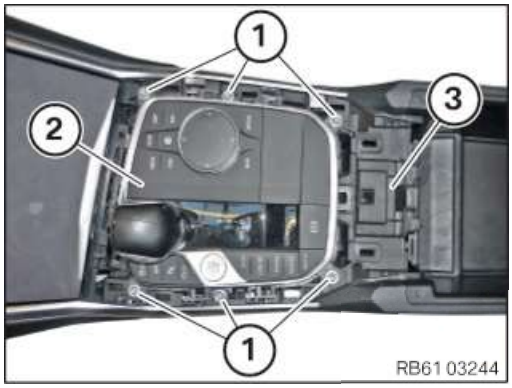
- Disconnect the connector (1) and remove the wireless charging station (2) from the centre console (3).

9 – Remove the operating facility in the centre console

▸ **Disconnecting all battery earth leads**

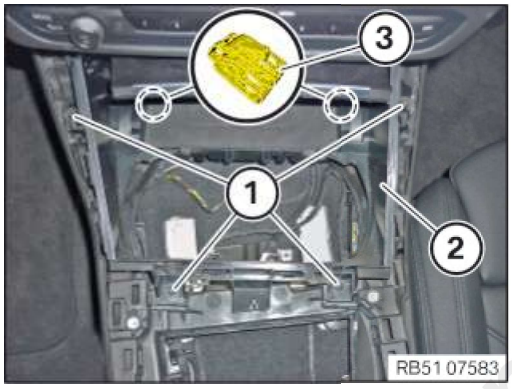


- See additional information.

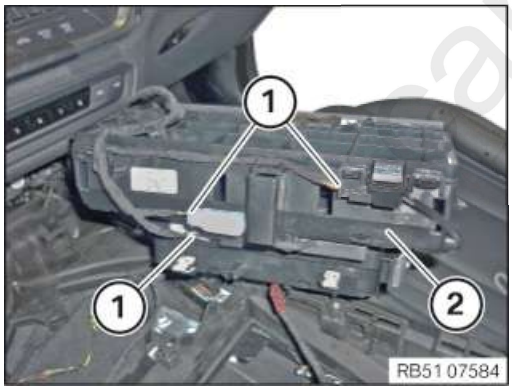


- Loosen screws (1).
- Remove the operating facility in the centre console (2) from the centre console (3).

10 – Removing the storage compartment of the front centre console

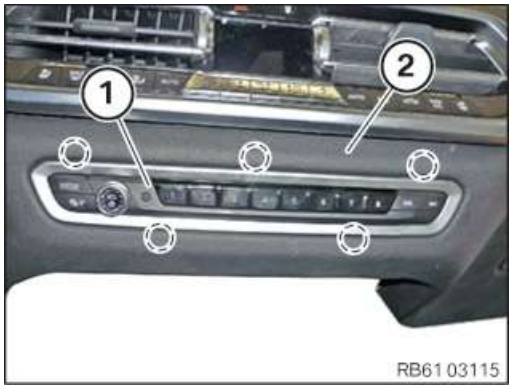


- Loosen screws (1).
- Remove storage compartment trim (2) backwards out of clamps (3).

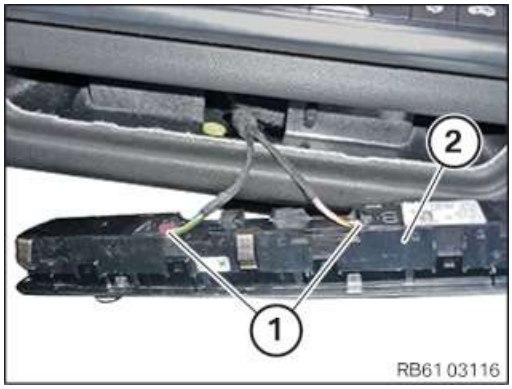


- Unlock and disconnect all the plug connections (1) and remove the storage compartment (2).

11 – Remove the audio operating unit



- Unclip the audio operating unit (1) from the instrument panel (2) at the points marked using special tool 0 496 571 (00 9 327).



- Disconnect plug connections (1) and remove the audio operating unit (2).

12 – Remove Head Unit High (HU-H)

RISK OF DAMAGE

Electrostatic discharge.

Damage to or destruction of electrical components.

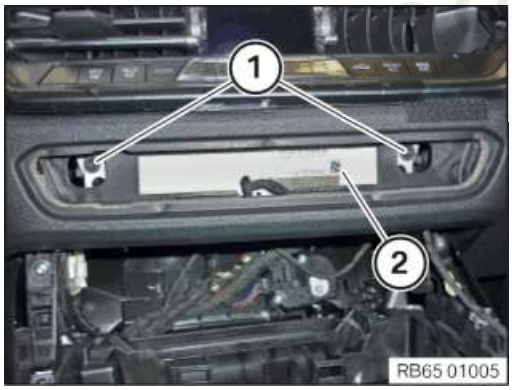
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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

RISK OF DAMAGE

Damage to the head unit.

The hard disk of the head unit can be damaged by vibration.

- Carry out mechanical work on the head unit and adjacent components with care.

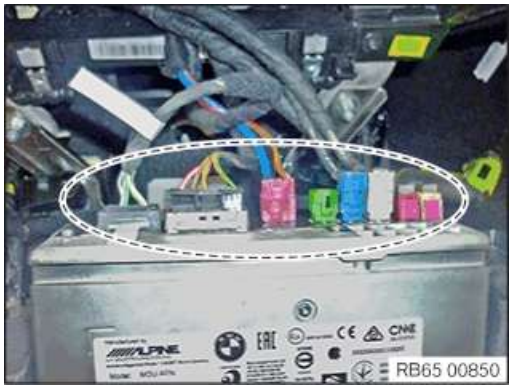


- Release screws (1) on the head unit (2).
- Slightly pull head unit (2) to the rear and tilt downwards.



- Feed out the head unit (1) through the marks as illustrated, until the connectors behind are accessible.

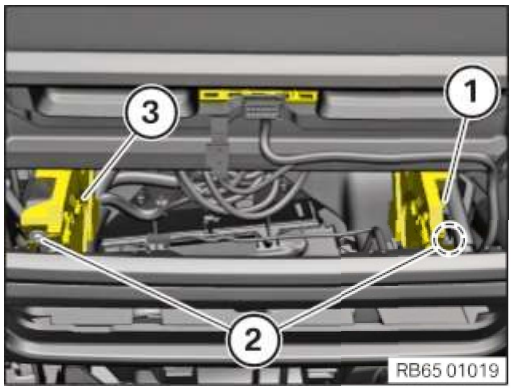
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- Unlock and disconnect all connectors in the marked area.

  Remove headunit.

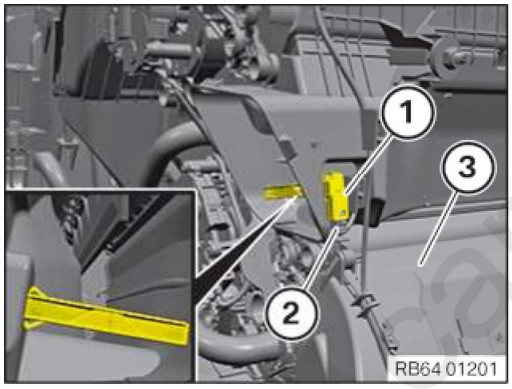
13 – Remove holder for the head unit



- Release cable clip (1) and set aside.
- Loosen screws (2).
- Screw together the holder (3) for the head unit and feed out towards the bottom.

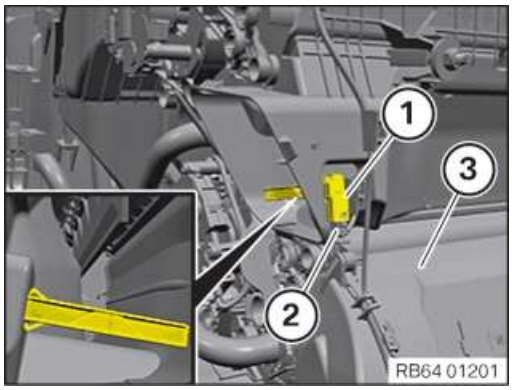
MAIN WORK

14 – Removing the left footwell temperature sensor (B184a)



- Disconnect plug connection (2).
- Disengage and remove the left footwell temperature sensor (1) from the heating and air-conditioning unit (3).

15 – Installing the left footwell temperature sensor (B184a)

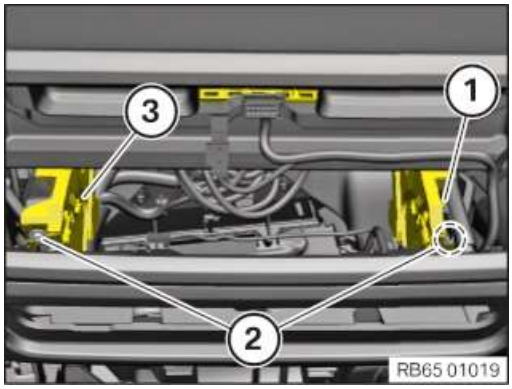


- Insert and lock the footwell temperature sensor (1) in the heating and air-conditioning unit (3).
- Connect the plug connection (2).

POSTPROCESSES

16 – Install holder for the head unit

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- Slightly slide in the holder (3) for the head unit together, feed in from the bottom and position correctly.
- Tighten the screws (2).

Head unit to holder / holder to support

Screw		Tightening torque	1,8 Nm

- Secure the cable clips (1).

17 – Install the Head Unit High (HU-H)

RISK OF DAMAGE

Electrostatic discharge.

Damage to or destruction of electrical components.

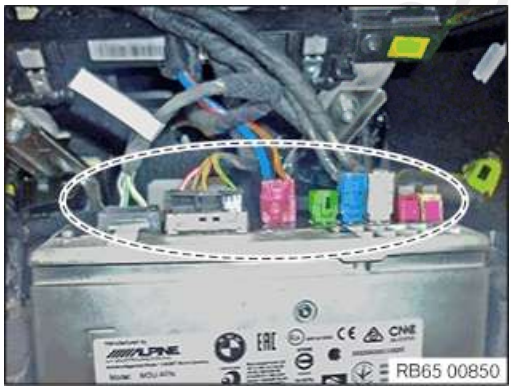
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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

RISK OF DAMAGE

Damage to the head unit.

The hard disk of the head unit can be damaged by vibration.

- Carry out mechanical work on the head unit and adjacent components with care.

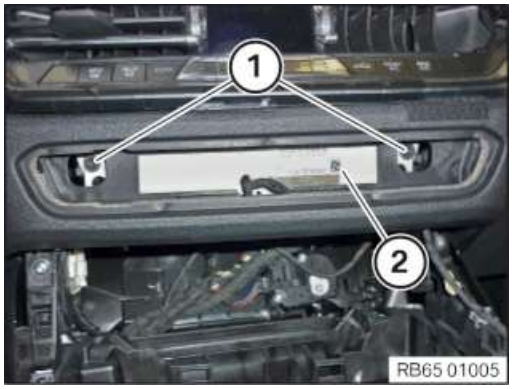


- Position head unit.
- Connect and lock all connectors in the marked area.



- Feed in the headunit (1) through the marked areas upwards.

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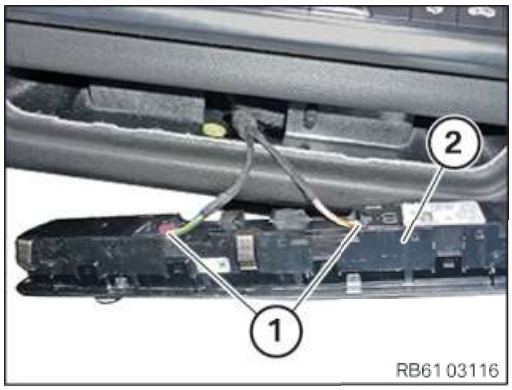


- Slide head unit (2) slightly forward and position it correctly.
- Tighten screws (1) on the head unit (2).

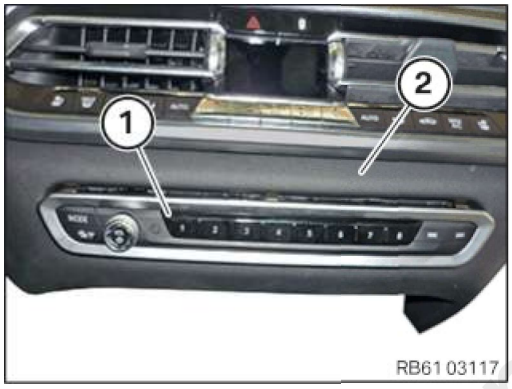
Head unit to holder / holder to support

Screw		Tightening torque	1,8 Nm

18 – Install the audio operating unit

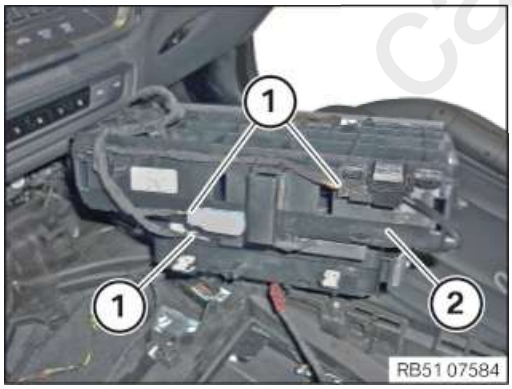


- Connect the connector (1) to the audio operating unit (2).

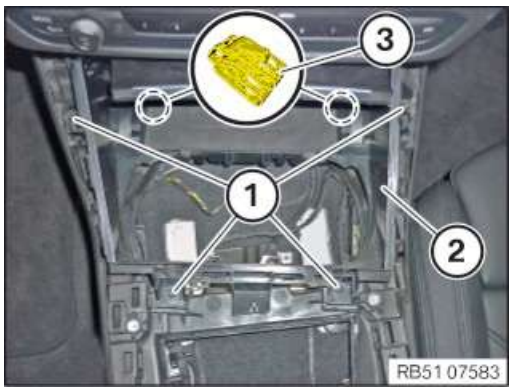


- Correctly position the audio operating unit (1) and install in the instrument panel(2).

19 – Installing the storage compartment of the front centre console



- Mount the storage compartment (2) and connect connectors (1).



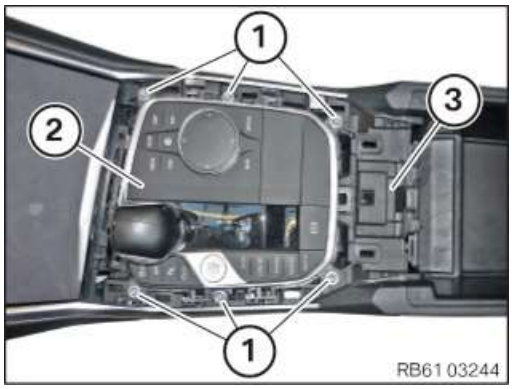
- Engage rear storage compartment trim (2) into clamps (3).
- Tighten the screws (1).

Storage compartment to centre console

Oval-head screw		Tightening torque	1,8 Nm

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20 – Install the operating facility in the centre console



- Position operating facility (2) in the centre console (3).
- Tighten the screws (1).

Gear selector switch to centre console trim

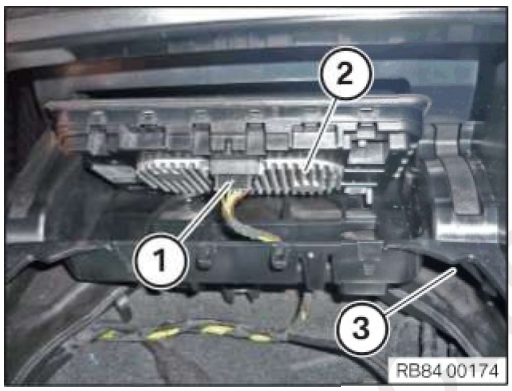
Screw		Tightening torque	1,8 Nm

► **Disconnecting all battery earth leads**



- See additional information.

21 – Installing the wireless charging station



- Connect connector (1).
- Position the wireless charging station (2) in the centre console (3).



- Press the wireless charging station (2) down till the locking units (1) are engaged correctly.

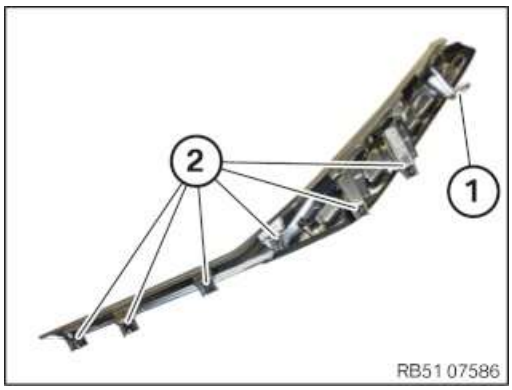
22 – Install decorative trim on centre console on left and right

► **Installing the decorative trim to centre console**

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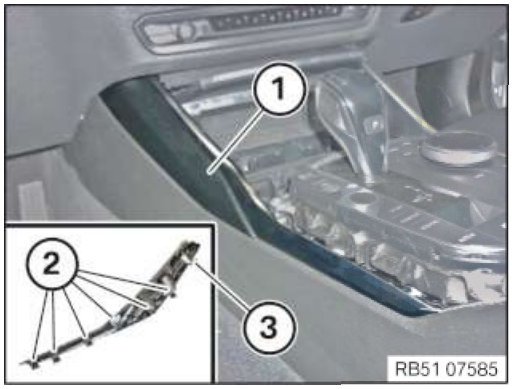
NOTICE

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



- Check guide (1) and the latch mechanisms (2).

  Renew defective decorative trim.



- Feed in the decorative trim (1) forward in the guide (3).
- Engage decorative trim (1) in latch mechanisms (2).

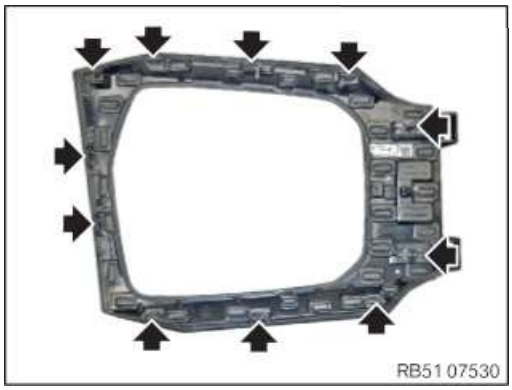
23 – Installing the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



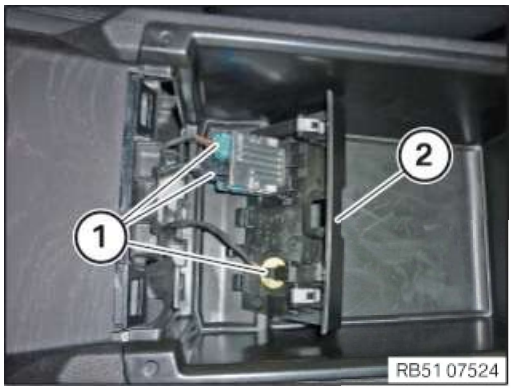
- Check all the latch mechanisms or clamps (arrows).
- In case the latch mechanisms or the clamps (arrows) are faulty, renew the centre console trim .

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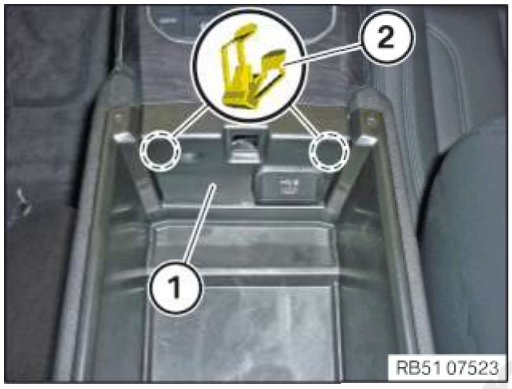


- Correctly position the centre console trim (1) and engage at the latch mechanisms.

24 – Installing the trim in the storage compartment of the centre armrest



- Mount the trim (2) and connect connector (1) and lock.



- Correctly position trim (1) and snap into the clamps (2).

25 – Install the cup holder



- Fix the cup holder (1) and the belonging connectors.
- Correctly position cup holder (1).
- Tighten the screws (2).

Cup holder to centre console

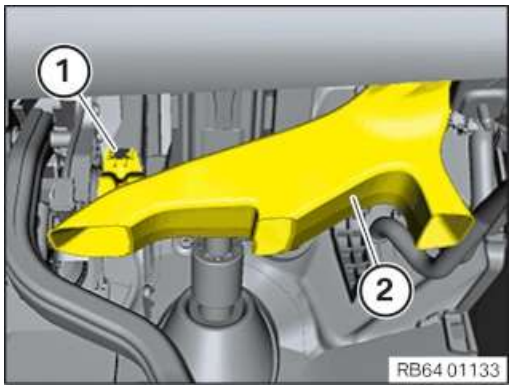
Oval-head screw		Tightening torque	1,8 Nm



- Insert the insert (1).

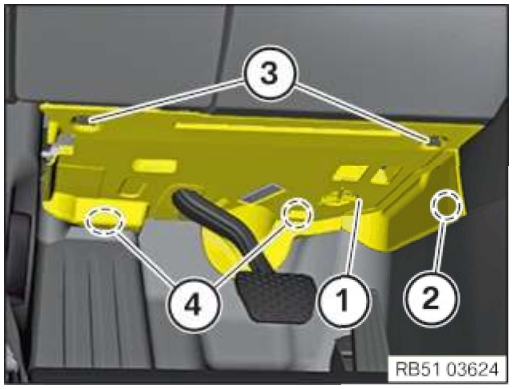
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26 – Installing the air duct, left



- Clip in the air duct (2) at the clamp (1) in the air conditioning housing at an angle towards the top.

27 – Installing the trim panel for the pedal mechanism



- Connect associated connector.
- Attach the trim panel for the pedal mechanism (1) in the guides (4) and fold it up.
- Clip the trim panel for the pedal mechanism (1) into the centre console in this area (2).
- Insert locks (3) correctly and turn 90°.

28 – Disconnecting all battery earth leads



- See additional information.

29 – Initialising component protection

TECHNICAL INFORMATION

Reinitialise the component protection in the head unit after having renewed the BDC **or** having installed a **used** head unit.

- Request an enabling code from Technical Support.
- Re-initialise the component protection with the diagnosis system via the following immediate measure:
  - Vehicle handling
  - Software update
  - Additional software
  - Initialisation of component protection in the head unit (HU)
- Be sure to observe the instructions!

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Additional Information

Overview of Tightening Torques

Head unit to holder / holder to support			Used in step 1617
Screw		Tightening torque	1,8 Nm

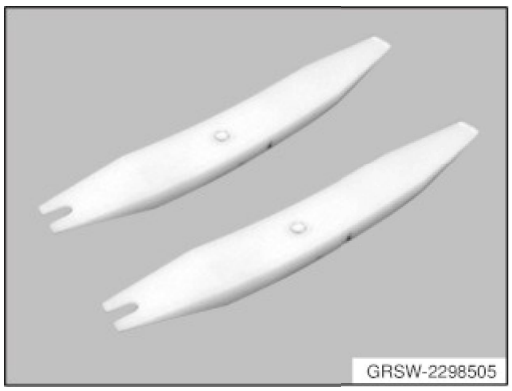
Storage compartment to centre console			Used in step 19
Oval-head screw		Tightening torque	1,8 Nm

Gear selector switch to centre console trim			Used in step 20
Screw		Tightening torque	1,8 Nm

Cup holder to centre console			Used in step 25
Oval-head screw		Tightening torque	1,8 Nm

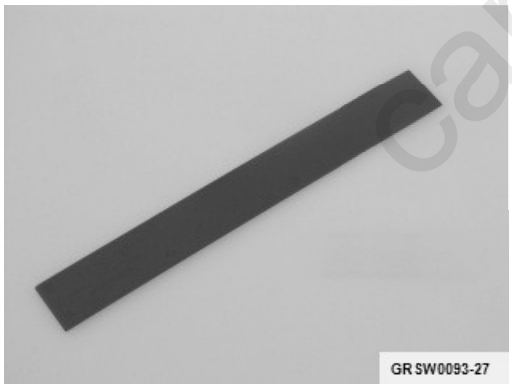
Overview of Special Tools

2 298 505 Wedge



Common	Used in step 56
Usage	Set (delivery of 2 pieces)
Included in the tool or work	
Storage location	C34
Replaced by	
In connection with	
SI-Number	01 03 12 (792)

0 496 571 (00 9 327) Wedge



Common	Used in step 11
Usage	(Cleaning wedge) From 11/2008 this special tool replaces panel wedge 00 9 323 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	192028
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	192028
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	192028
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61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 35 ... Notes on ESD protection (Electro Static Discharge)	1217

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64 11 896 Replacing rear passenger compartment control panel

PRELIMINARY WORK

1 – Removing the rear centre console trim

RISK OF DAMAGE

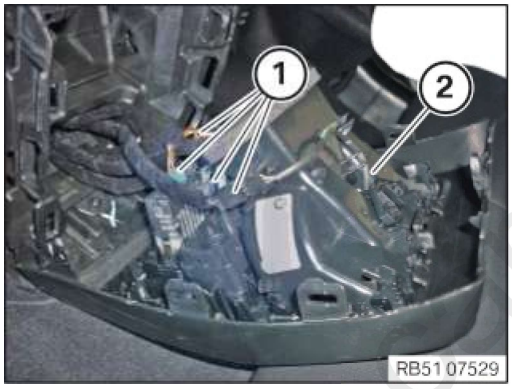
Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



- Release centre console trim (1) backwards from the latch mechanisms at the side and pull it a little way towards the rear.

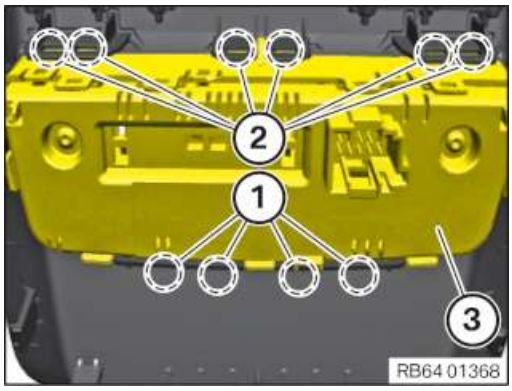


- Unlock and disconnect plug connections (1).
- Remove the centre console trim (2).

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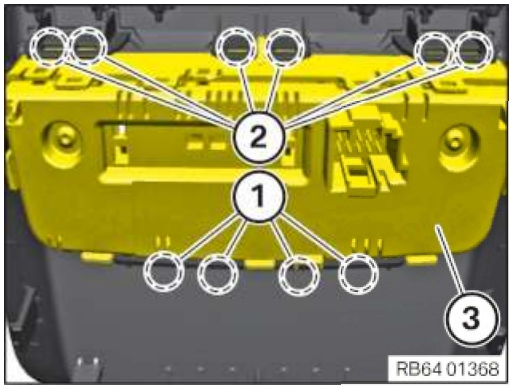
MAIN WORK

2 – Removing air conditioning control panel for the rear passenger compartment



- Detach air conditioning control panel first at the latch mechanisms (1) and then at the latch mechanisms (2).
- Remove air conditioning control panel (3) from the decorative strip.

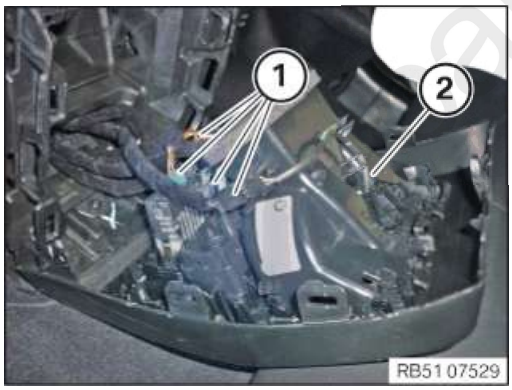
3 – Install air conditioning control panel for the rear side



- Fit the air conditioning control panel (3) on the decorative strip and position it correctly.
- Engage the latch mechanisms (1) and (2).

POSTPROCESSES

4 – Installing the rear centre console trim



- Install the centre console trim (2).
- Connect connectors (1) and lock.



- Position centre console trim (1) and engage at the latch mechanisms at the side.

5 – Encode/program control unit(s)

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- **Replacement**.
- **This task is not included in this flat rate unit item.**

▶ **Encode/program control unit(s)**

Prerequisite

Replacement of component.

TECHNICAL INFORMATION

Use the most recent software version to prevent faults during programming/encoding.
The battery voltage must not fall below 13.0 V during programming.
Use only chargers for a low volt-vehicle electrical system that are recommended by BMW.

TECHNICAL INFORMATION

No high-voltage switch off is required in electric vehicles or hybrid vehicles for programming/encoding.
The high-voltage system will be automatically switched off by the programming system.

- Connect the battery charger to the vehicle.
- Connect the programming system with the vehicle.
- Determine the action plan.
- Accept and fuly process the measures plan.
- If applicable, connect the workshop system to the vehicle, depending on the reworking ist.
- Carry out vehicle test.
- Delete the fault memory.
- The information about programming the workshop system and the corresponding notes in the user documentation must be observed.
- Wait until programming/encoding has been completed.
- Disconnect the programming system from the vehicle.
- Disconnect the battery charger from the vehicle.

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64 11 521 Replacing right footwell temperature sensor

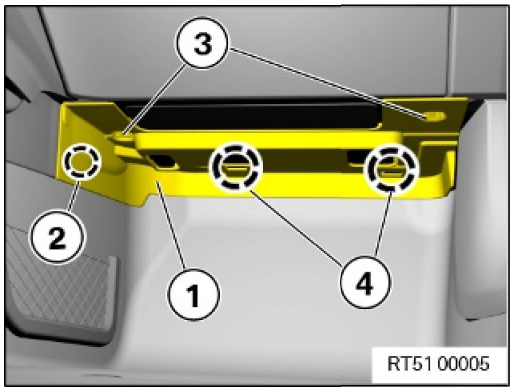
PRELIMINARY WORK

1 – Disconnecting all battery earth leads



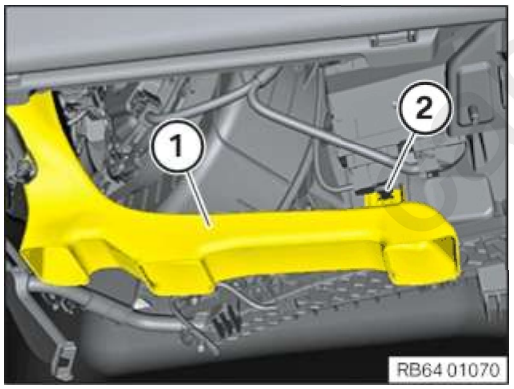
- See additional information.

2 – Remove the right footwell trim



- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

3 – Removing the right air duct



- Unclip the air duct (1) at an angle toward the bottom at the spring clip (2).

4 – Remove cupholder

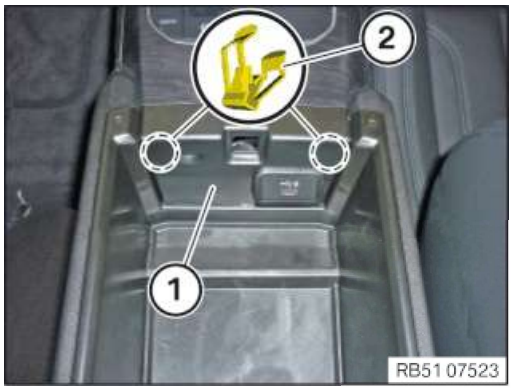


- Remove the insert (1).

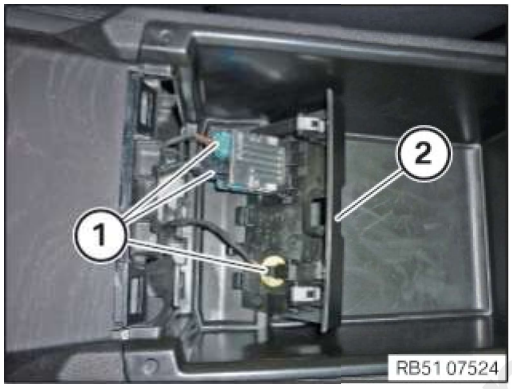


- Loosen screws (1).
- Feed the cup holder (2) out to the top.
- Unlock associated plug connections and disconnect.

5 – Removing the trim in the storage compartment on the centre armrest



- Lever out the trim (1) with the special tool (2) toward the rear from the clamps 2 298 505.



- Unlock and disconnect the plug connections (1) and remove the trim (2) .

6 – Remove the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



- Release and remove the centre console trim upwards (1) as shown using the special tool 2 298 505 from the latch mechanisms.

7 – Removing the decorative trim on the centre console trim on the left and right

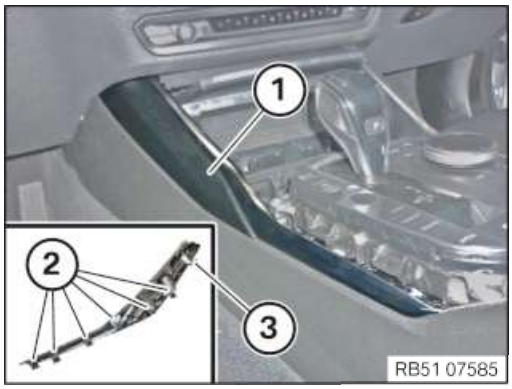
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7 – Removing the decorative trim on the centre console trim on the left and right

▸ **Remove decorative trim on centre console**

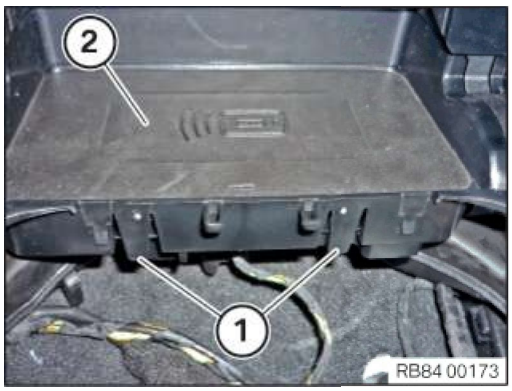
NOTICE

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

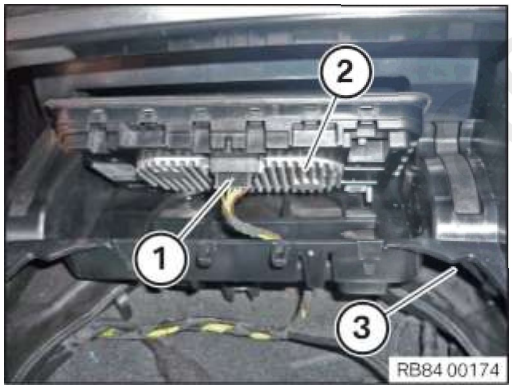


- Lever out the rear decorative trim (1) from the latch mechanisms (2) starting from the top.
- Feed out the decorative trim (1) backwards out of the guide (3) and remove.

8 – Removing the wireless charging station



- Loosen the latch mechanisms (1) and push out the wireless charging station (2) upwards.



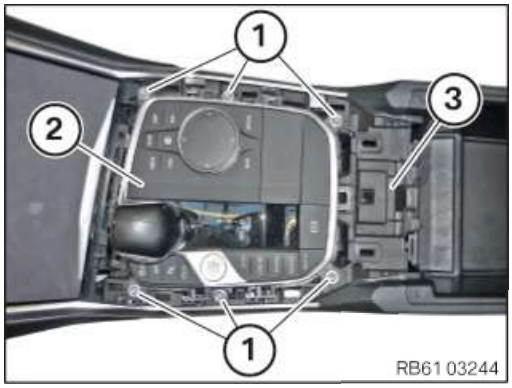
- Disconnect the connector (1) and remove the wireless charging station (2) from the centre console (3).

9 – Remove the operating facility in the centre console

▸ **Disconnecting all battery earth leads**

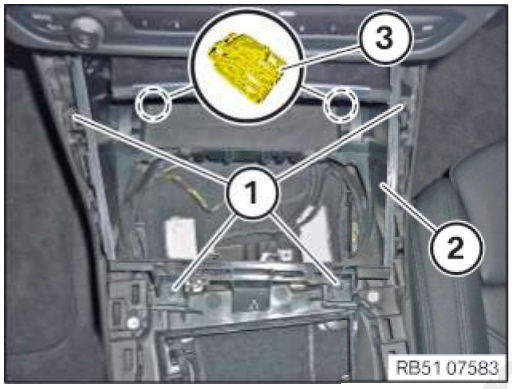


- See additional information.

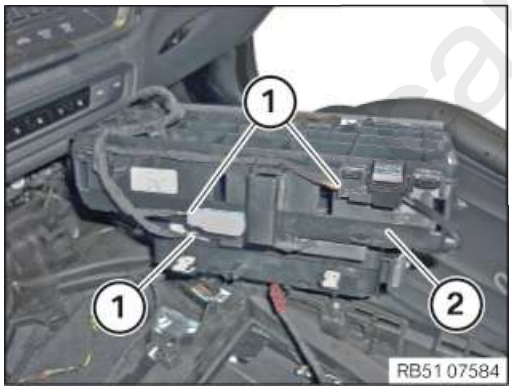


- Loosen screws (1).
- Remove the operating facility in the centre console (2) from the centre console (3).

10 – Removing the storage compartment of the front centre console

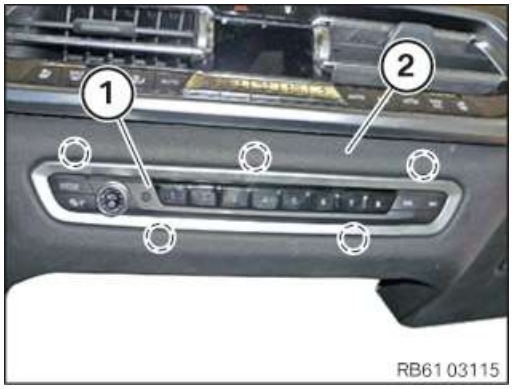


- Loosen screws (1).
- Remove storage compartment trim (2) backwards out of clamps (3).

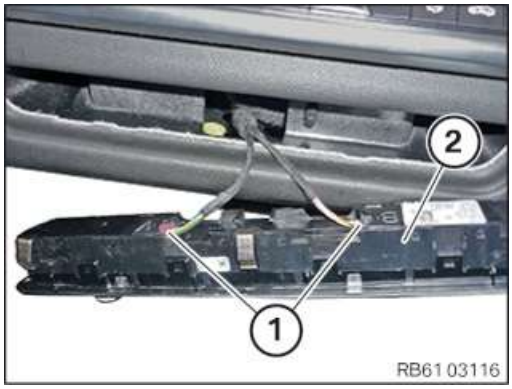


- Unlock and disconnect all the plug connections (1) and remove the storage compartment (2).

11 – Remove the audio operating unit



- Unclip the audio operating unit (1) from the instrument panel (2) at the points marked using special tool 0 496 571 (00 9 327).



- Disconnect plug connections (1) and remove the audio operating unit (2).

12 – Remove Head Unit High (HU-H)

RISK OF DAMAGE

Electrostatic discharge.

Damage to or destruction of electrical components.

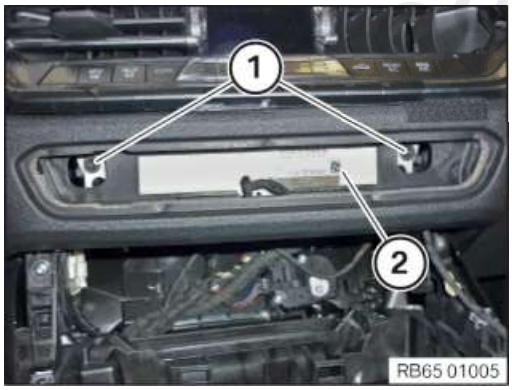
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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

RISK OF DAMAGE

Damage to the head unit.

The hard disk of the head unit can be damaged by vibration.

- Carry out mechanical work on the head unit and adjacent components with care.

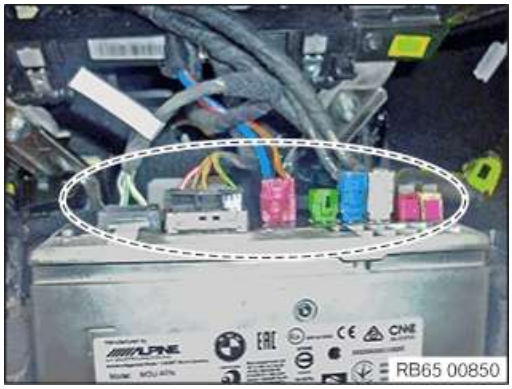


- Release screws (1) on the head unit (2).
- Slightly pull head unit (2) to the rear and tilt downwards.



- Feed out the head unit (1) through the marks as illustrated, until the connectors behind are accessible.

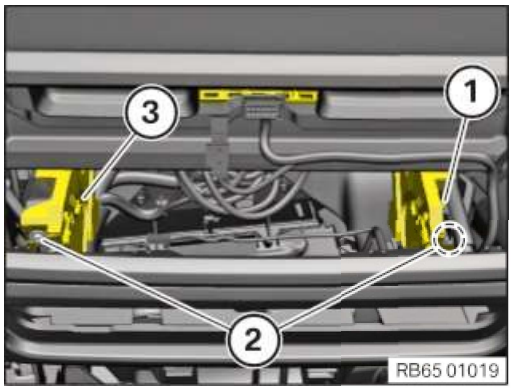
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- Unlock and disconnect all connectors in the marked area.

  Remove headunit.

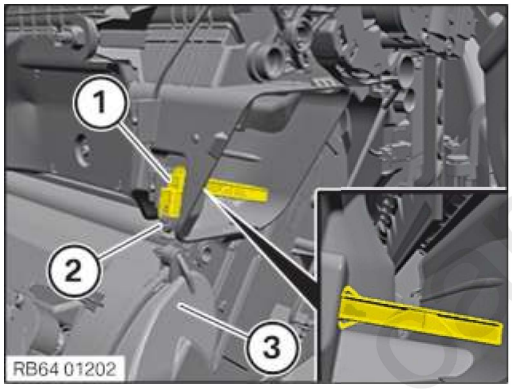
13 – Remove holder for the head unit



- Release cable clip (1) and set aside.
- Loosen screws (2).
- Screw together the holder (3) for the head unit and feed out towards the bottom.

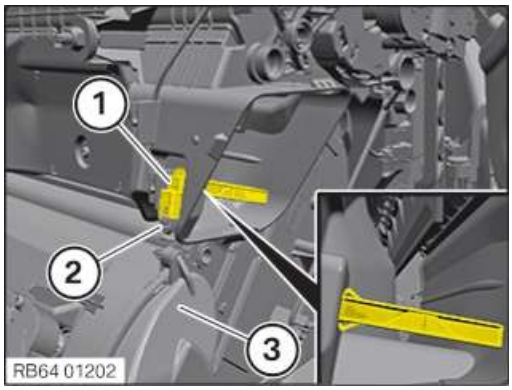
MAIN WORK

14 – Removing the right footwell temperature sensor (B183)



- Disconnect plug connection (2).
- Disengage and remove the footwell temperature sensor (1) from the heating and air-conditioning unit (3).

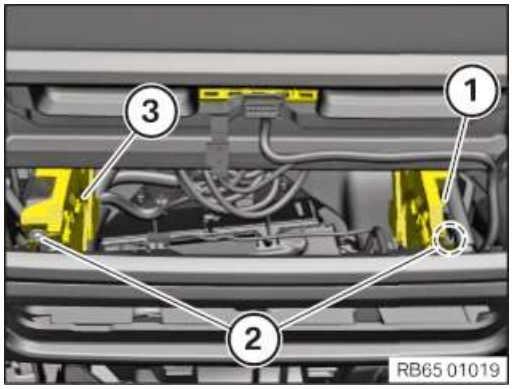
15 – Installing the right footwell temperature sensor (B183)



- Insert and lock the footwell temperature sensor (1) in the heating and air-conditioning unit (3).
- Connect the plug connection (2).

POSTPROCESSES

16 – Install holder for the head unit



- Slightly slide in the holder (3) for the head unit together, feed in from the bottom and position correctly.
- Tighten the screws (2).

Head unit to holder / holder to support

Screw		Tightening torque	1,8 Nm

- Secure the cable clips (1).

17 – Install the Head Unit High (HU-H)

RISK OF DAMAGE

Electrostatic discharge.

Damage to or destruction of electrical components.

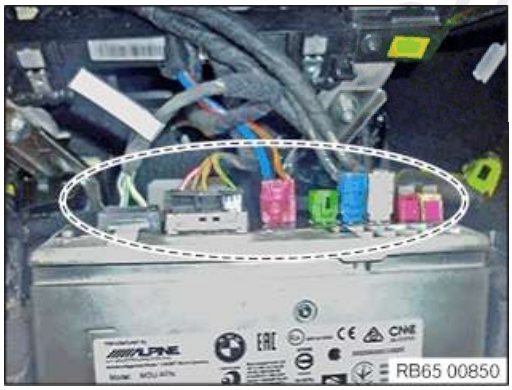
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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

RISK OF DAMAGE

Damage to the head unit.

The hard disk of the head unit can be damaged by vibration.

- Carry out mechanical work on the head unit and adjacent components with care.

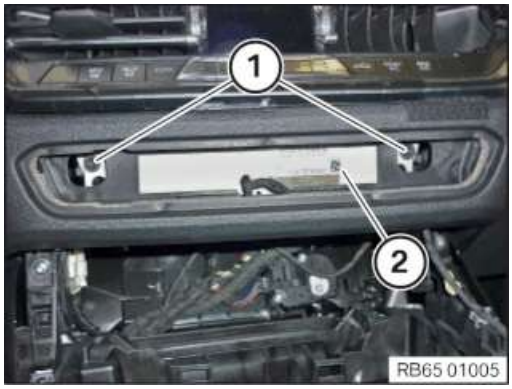


- Position head unit.
- Connect and lock all connectors in the marked area.



- Feed in the headunit (1) through the marked areas upwards.

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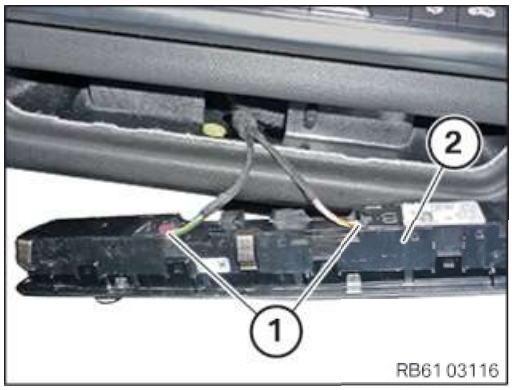


- Slide head unit (2) slightly forward and position it correctly.
- Tighten screws (1) on the head unit (2).

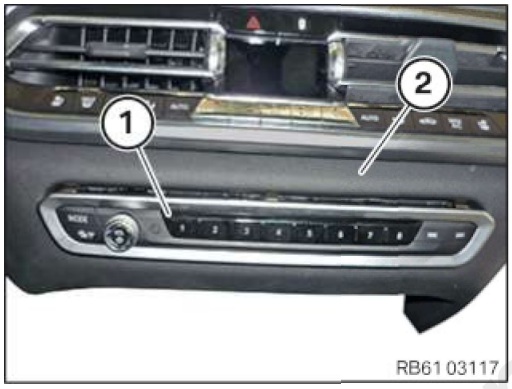
Head unit to holder / holder to support

Screw		Tightening torque	1,8 Nm

18 – Install the audio operating unit

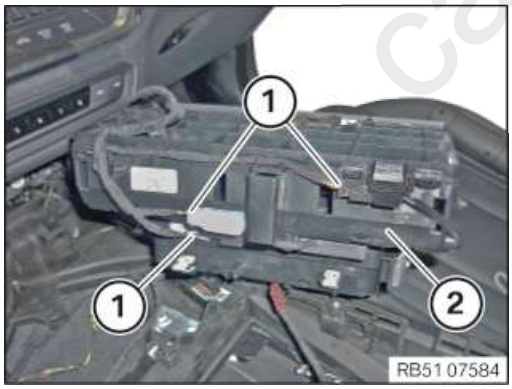


- Connect the connector (1) to the audio operating unit (2).

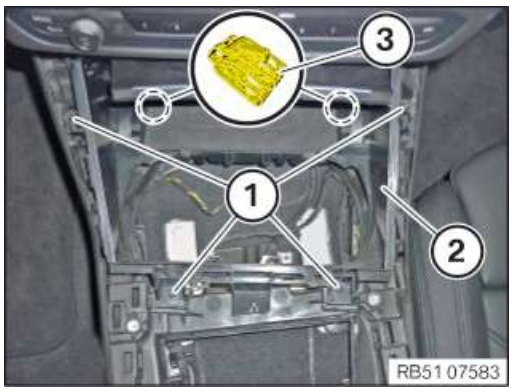


- Correctly position the audio operating unit (1) and install in the instrument panel(2).

19 – Installing the storage compartment of the front centre console



- Mount the storage compartment (2) and connect connectors (1).



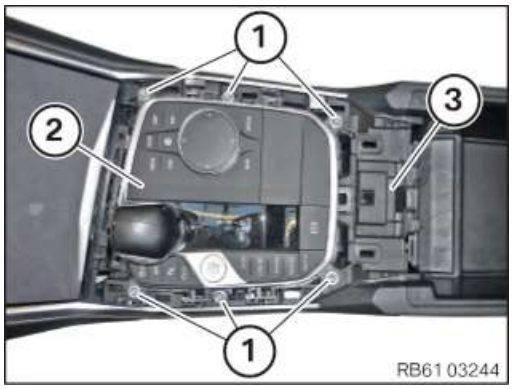
- Engage rear storage compartment trim (2) into clamps (3).
- Tighten the screws (1).

Storage compartment to centre console

Oval-head screw		Tightening torque	1,8 Nm

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20 – Install the operating facility in the centre console



- Position operating facility (2) in the centre console (3).
- Tighten the screws (1).

Gear selector switch to centre console trim

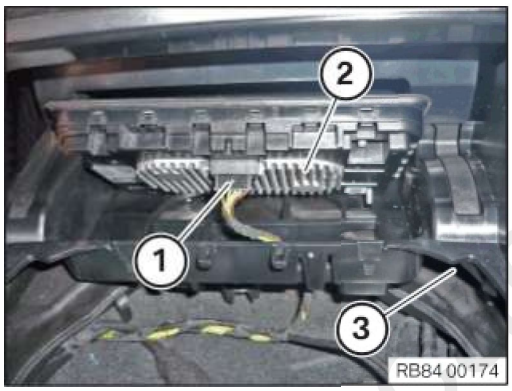
Screw		Tightening torque	1,8 Nm

► **Disconnecting all battery earth leads**



- See additional information.

21 – Installing the wireless charging station



- Connect connector (1).
- Position the wireless charging station (2) in the centre console (3).



- Press the wireless charging station (2) down till the locking units (1) are engaged correctly.

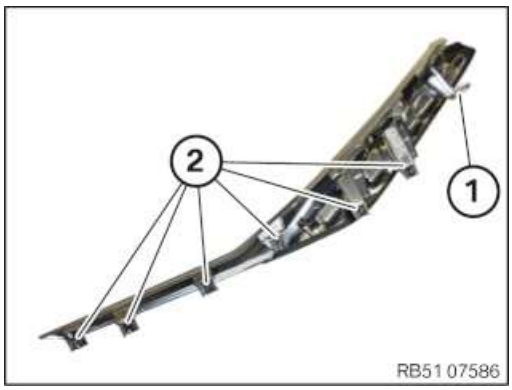
22 – Install decorative trim on centre console on left and right

► **Installing the decorative trim to centre console**

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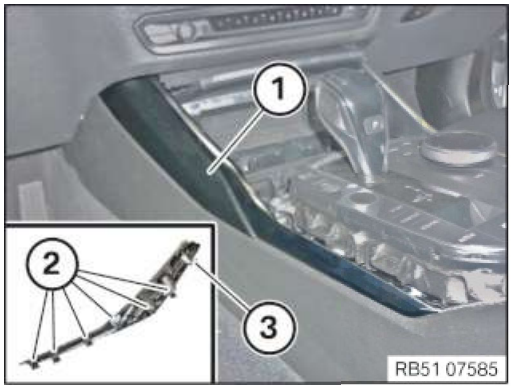
NOTICE

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



- Check guide (1) and the latch mechanisms (2).

  Renew defective decorative trim.



- Feed in the decorative trim (1) forward in the guide (3).
- Engage decorative trim (1) in latch mechanisms (2).

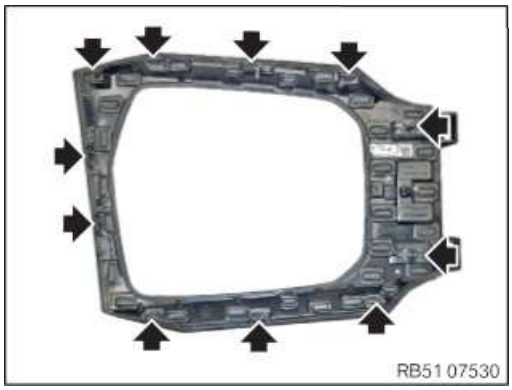
23 – Installing the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



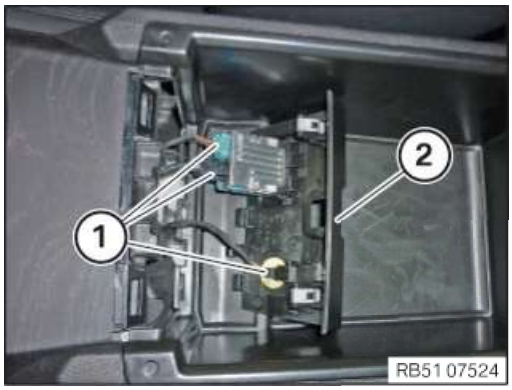
- Check all the latch mechanisms or clamps (arrows).
- In case the latch mechanisms or the clamps (arrows) are faulty, renew the centre console trim .

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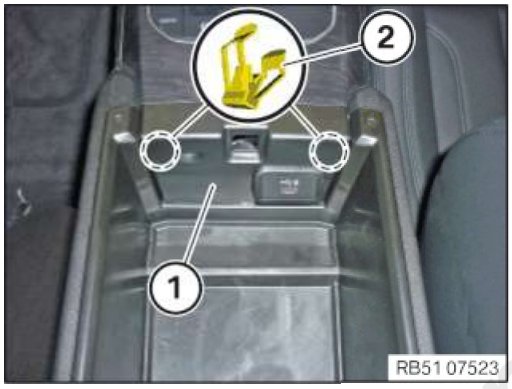


- Correctly position the centre console trim (1) and engage at the latch mechanisms.

24 – Installing the trim in the storage compartment of the centre armrest



- Mount the trim (2) and connect connector (1) and lock.



- Correctly position trim (1) and snap into the clamps (2).

25 – Install the cup holder



- Fix the cup holder (1) and the belonging connectors.
- Correctly position cup holder (1).
- Tighten the screws (2).

Cup holder to centre console

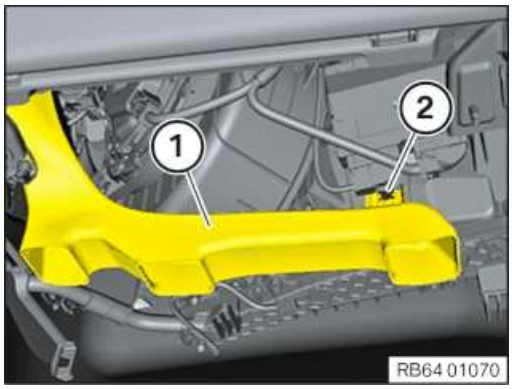
Oval-head screw		Tightening torque	1,8 Nm



- Insert the insert (1).

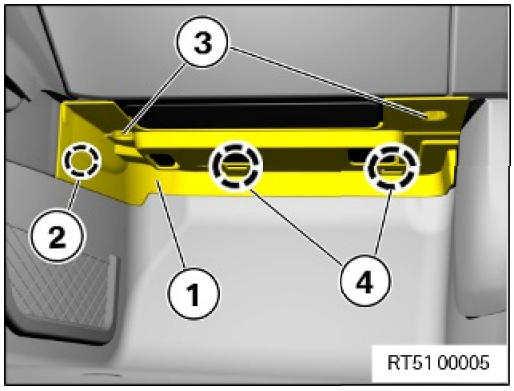
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26 – Installing the air duct, right



- Clip the air duct (1) in upward at an angle with the spring clip (2) on the heating and air-conditioning unit.

27 – Install the right footwell trim panel



- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

28 – Disconnecting all battery earth leads



- See additional information.

29 – Initialising component protection

TECHNICAL INFORMATION

Reinitialise the component protection in the head unit after having renewed the BDC **or** having installed a **used** head unit.

- Request an enabling code from Technical Support.
- Re-initialise the component protection with the diagnosis system via the following immediate measure:
  - Vehicle handling
  - Software update
  - Additional software
  - Initialisation of component protection in the head unit (HU)
- Be sure to observe the instructions!

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Additional Information

Overview of Tightening Torques

Head unit to holder / holder to support			Used in step 1617
Screw		Tightening torque	1,8 Nm

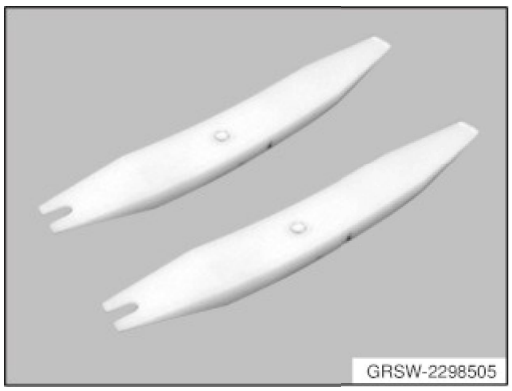
Storage compartment to centre console			Used in step 19
Oval-head screw		Tightening torque	1,8 Nm

Gear selector switch to centre console trim			Used in step 20
Screw		Tightening torque	1,8 Nm

Cup holder to centre console			Used in step 25
Oval-head screw		Tightening torque	1,8 Nm

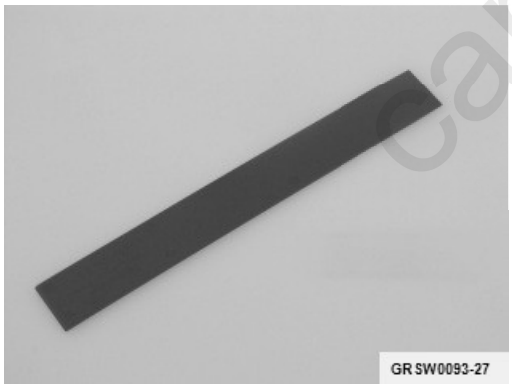
Overview of Special Tools

2 298 505 Wedge



Common	Used in step 56
Usage	Set (delivery of 2 pieces)
Included in the tool or work	
Storage location	C34
Replaced by	
In connection with	
SI-Number	01 03 12 (792)

0 496 571 (00 9 327) Wedge



Common	Used in step 11
Usage	(Cleaning wedge) From 11/2008 this special tool replaces panel wedge 00 9 323 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028

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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	192028
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	192028
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
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61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 20 900 Disconnecting and connecting battery earth lead	192028
61 35 ... Notes on ESD protection (Electro Static Discharge)	1217

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64 11 653 Replacing right rear-cabin footwell-temperature sensor

NOTICE

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

PRELIMINARY WORK

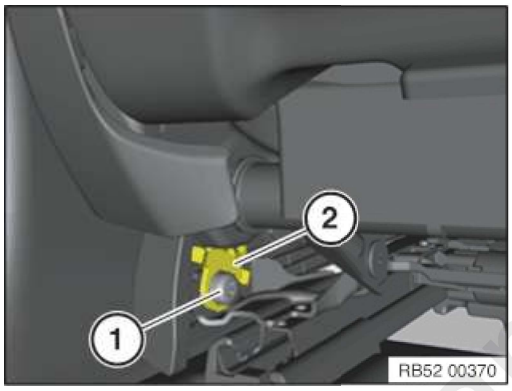
1 – Remove front seat

WARNING

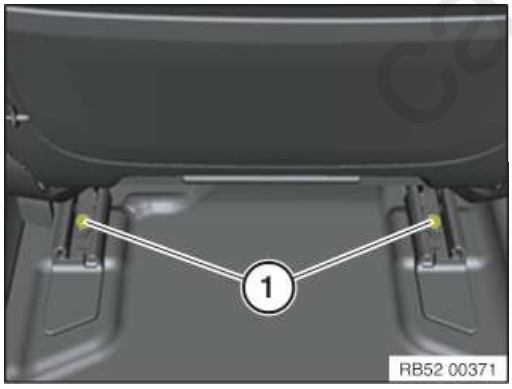
Pyrotechnic components.

Danger! Life-threatening injuries!

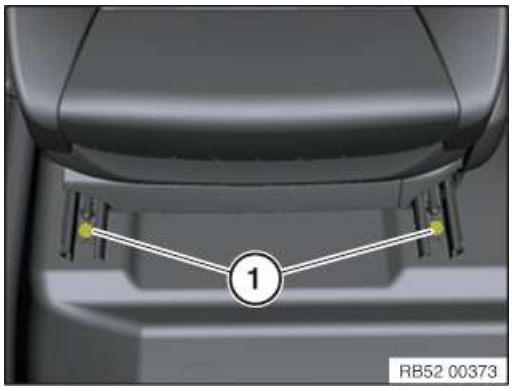
- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.



- Fully adjust the front seat to the front and top.
- Loosen screw (1).
- Remove end fitting (2).



- Loosen screws (1).



- Loosen screws (1).
- Adjust the front seat to the centre position.
- **When removing the driver's seat:**

  Completely retract the steering column

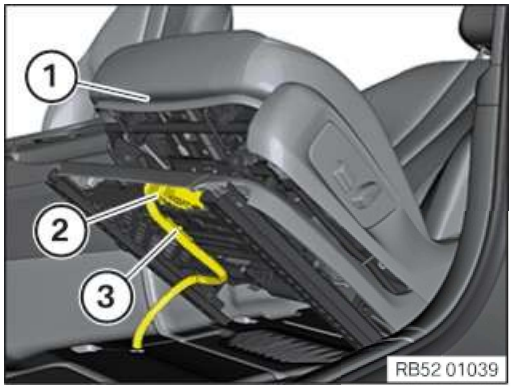
  Adjust the steering column completely upwards.

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▶ **Disconnecting all battery earth leads**



- See additional information.



RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

- Cover the door sill using protective covers.
- Place front seat (1) to the rear.
- Unlock plug connection (2) and disconnect.
- Loosen the cable clip (3).

RISK OF DAMAGE

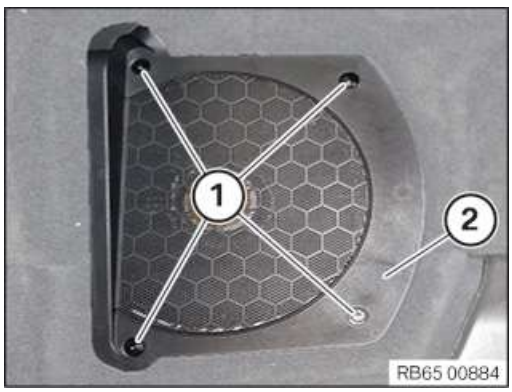
Heavy component.

Heavy components can lead to injury or damage.

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

- Lift out front seat (1) with the assistance of a second person.

2 – Remove the speaker trim for the central bass



- Loosen screws (1).
- Remove the speaker trim for the central bass (2).

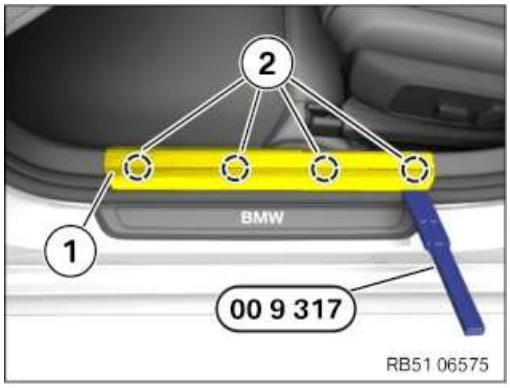
3 – Remove right door sill cover strip

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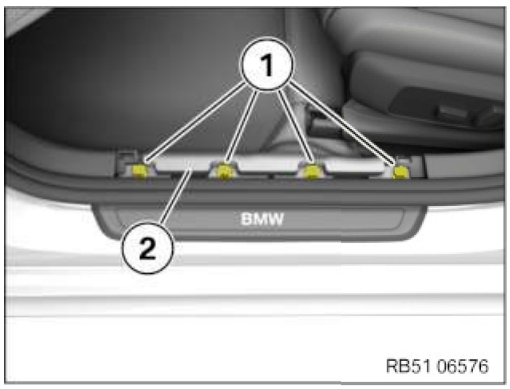
NOTICE

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

▶ **Remove door sill cover strip**



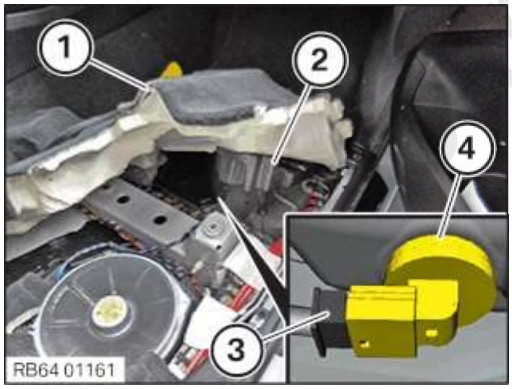
- Detach the door sill cover strip(1) using the special tool 0 490 534 (00 9 317) from the clips (2) in the floor panel.



- If necessary, remove the clips (1) from the floor panel (2) and attach to the door sill cover strip.

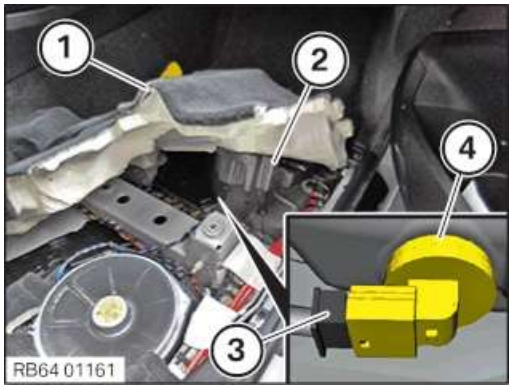
MAIN WORK

4 – Removing rear-cabin footwell-temperature sensor (B512)



- Lift up carpet (1).
- Lift up insert in the front footwell (2).
- Disconnect plug connection (3).
- Turn rear-cabin footwell-temperature sensor (4) in clockwise direction upwards and then remove it.

5 – Install the rear-cabin footwell-temperature sensor (B512)



- Position the rear-cabin footwell-temperature sensor (4) and lock it downwards and anticlockwise.
- Connect connector (3).
- Position the inserts in the front footwell (2).
- Fold back the carpet (1).

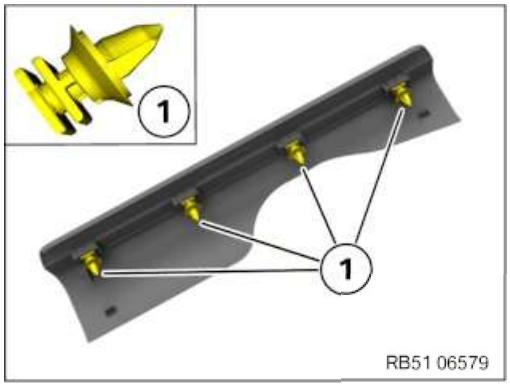
ndiagn.com

6 – Install right door sill cover strip

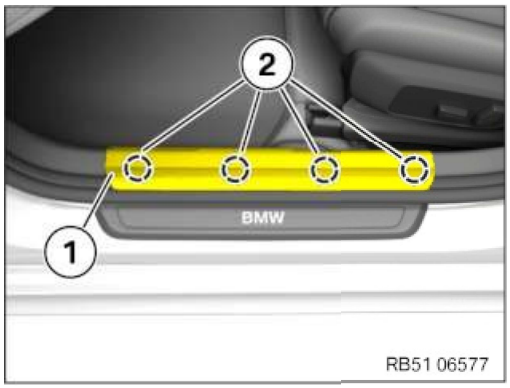
NOTICE

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

▶ **Install the door sill cover strip**

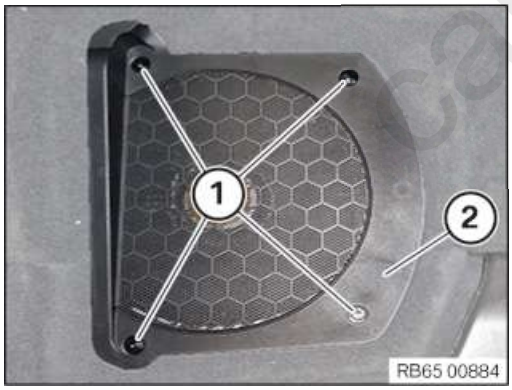


- Check the clips (1) for damage and renew if necessary.



- Clip the door sill cover strip (1) into the floor panel with the clips (2).

7 – Install the speaker trim for the central bass



- Position the speaker trim for the central bass (2).
- Tighten the screws (1).

Central bass speaker trim

Screw		Tightening torque	2 Nm

8 – Install front seat

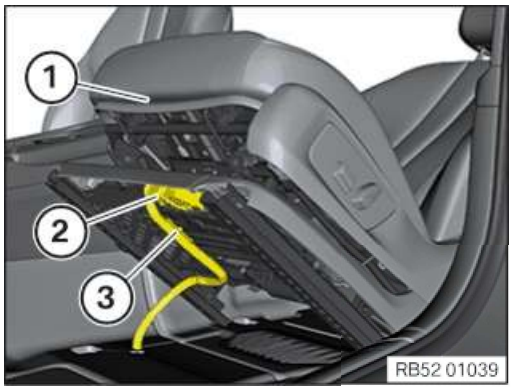
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WARNING

Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.



RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

- Cover the door sill using protective covers.

RISK OF DAMAGE

Heavy component.

Heavy components can lead to injury or damage.

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

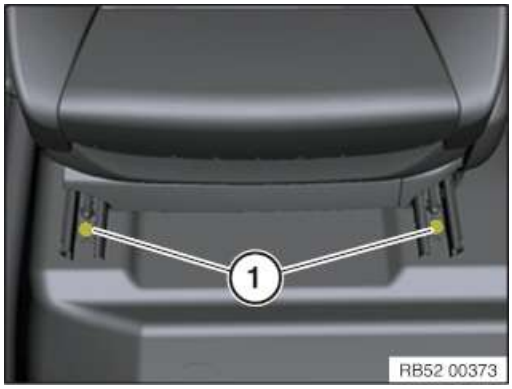
- Lift front seat (1) into the vehicle with the assistance of a second person.
- Place front seat (1) to the rear.
- Connect connector (2).
- Attach the cable clip (3).

▶ **Disconnecting all battery earth leads**

- See additional information.



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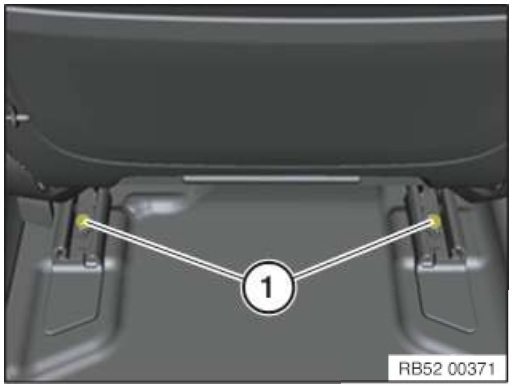


- Adjust the front seat to the rear.
- Renew screws (1).

  Parts: Bolts
- Tighten the screws (1).

Seat to body

M10	Renew screw.	Tightening torque	42 Nm

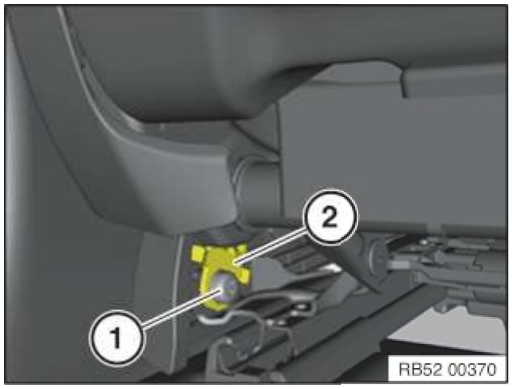


- Move front seat forwards.
- Renew screws (1).

  Parts: Bolts
- Tighten the screws (1).

Seat to body

M10	Renew screw.	Tightening torque	42 Nm



- Fully adjust the front seat to the front and top.
- Insert the end fitting (2).
- Renew the screw (1).

  Parts: Screw
- Tighten down screw (1).

End fitting to seat mechanism

M10	Renew screw.	Tightening torque	42 Nm

Additional Information

Overview of Tightening Torques

Central bass speaker trim Used in step 7

Screw		Tightening torque	2 Nm

Seat to body Used in step 8

M10	Renew screw.	Tightening torque	42 Nm

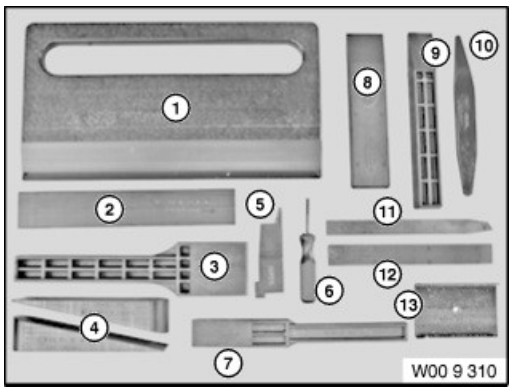
End fitting to seat mechanism Used in step 8

M10	Renew screw.	Tightening torque	42 Nm

Overview of Special Tools

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0 490 534 (00 9 317) Wedge



Common	Used in step 3
Usage	(Trim wedge) Replaced by special tool 00 9 325 from 11/2008 (quality improvement due to new material) Replaced by 00 9 325 (0 496 569)
Included in the tool or work	0 490 527
Storage location	
Replaced by	
In connection with	
SI-Number	

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Links

General repair instructions	Used in step
72 00 ... Safety regulations for handling components with gas generators	18

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	18
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	18
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
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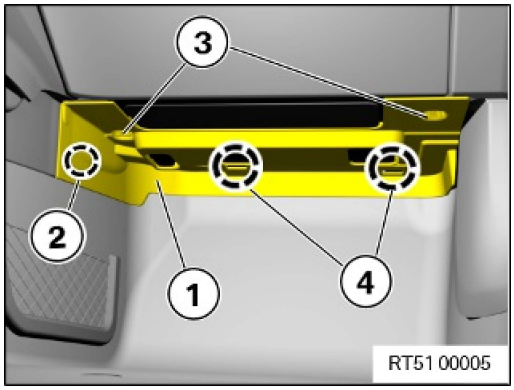
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
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61 20 900 Disconnecting and connecting battery earth lead	18

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64 11 692 Replacing the control unit for the air conditioning

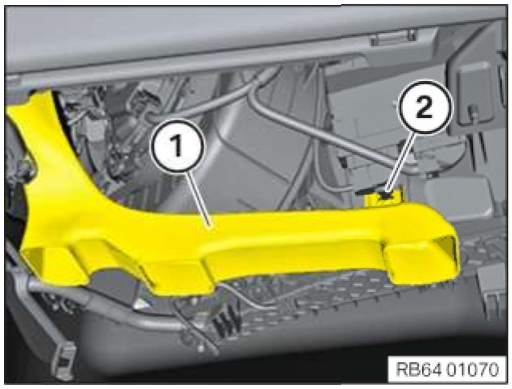
PRELIMINARY WORK

1 – Remove the right footwell trim



- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

2 – Removing the right air duct

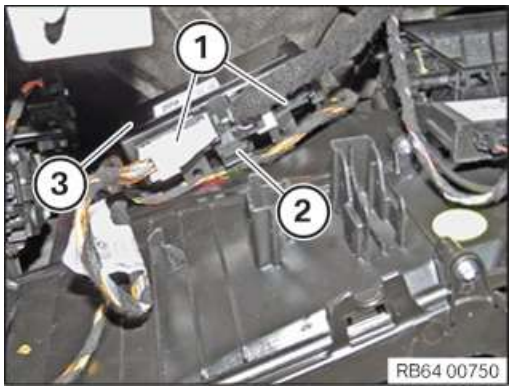


- Unclip the air duct (1) at an angle toward the bottom at the spring clip (2).

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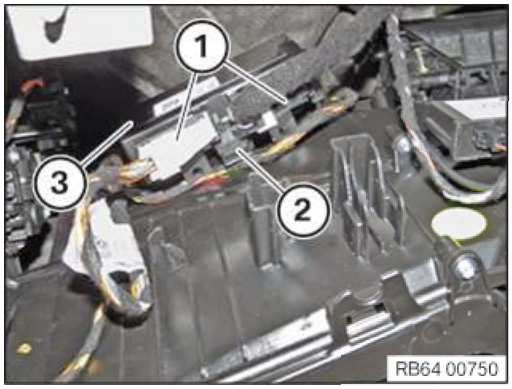
MAIN WORK

3 – Removing the air conditioning control unit



- Unlock and disconnect connector (1).
- Release the lock (2) and remove the control unit (3) towards the bottom.

4 – Installing the control unit for the air conditioning

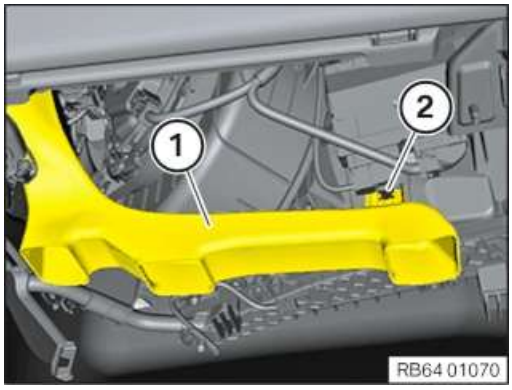


- Position the control unit (3) correctly and push in upward direction until the latch mechanism (2) locks.
- Connect connectors (1) and lock.

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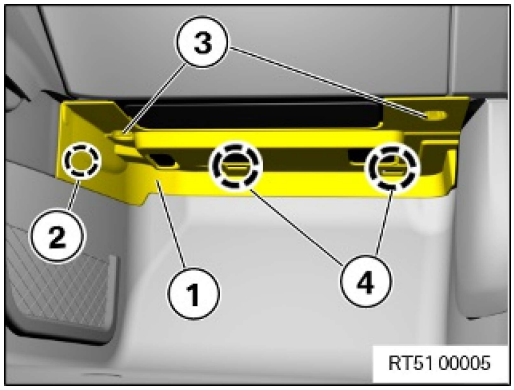
POSTPROCESSES

5 – Installing the air duct, right



- Clip the air duct (1) in upward at an angle with the spring clip (2) on the heating and air-conditioning unit.

6 – Install the right footwell trim panel



- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

7 – Encode/program control unit(s)

- **Replacement**.
- **This task is not included in this flat rate unit item.**

▶ **Encode/program control unit(s)**

Prerequisite

Replacement of component.

TECHNICAL INFORMATION

Use the most recent software version to prevent faults during programming/encoding.
The battery voltage must not fall below 13.0 V during programming.
Use only chargers for a low volt-vehicle electrical system that are recommended by BMW.

TECHNICAL INFORMATION

No high-voltage switch off is required in electric vehicles or hybrid vehicles for programming/encoding.
The high-voltage system will be automatically switched off by the programming system.

- Connect the battery charger to the vehicle.
- Connect the programming system with the vehicle.
- Determine the action plan.
- Accept and fuly process the measures plan.
- If applicable, connect the workshop system to the vehicle, depending on the reworking list.
- Carry out vehicle test.
- Delete the fault memory.
- The information about programming the workshop system and the corresponding notes in the user documentation must be observed.
- Wait until programming/encoding has been completed.
- Disconnect the programming system from the vehicle.
- Disconnect the battery charger from the vehicle.

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64 12 526 Completely replace stationary heating

WARNING

Hot fluids.

Risk of scalding!

- Conduct all work in the vehicle wearing appropriate personal protective equipment only.

CAUTION

Materials harmful to health.

Contact with fluids harmful to health!

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

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

PRELIMINARY WORK

1 – Removing the front left wheel

▸ **Removing the wheel**

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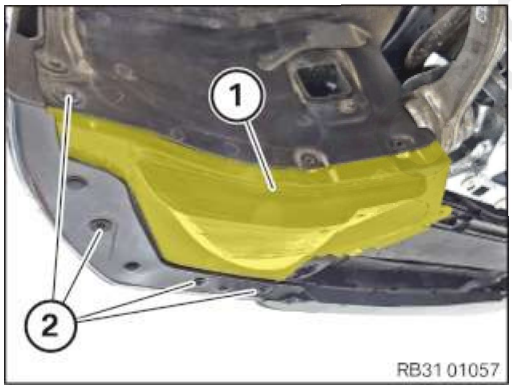
- In vehicles with M Carbon ceramic brake: The wheel assembly jack must be used to remove the wheel (see workshop equipment).

  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 .

2 – Remove bottom wheel arch cover

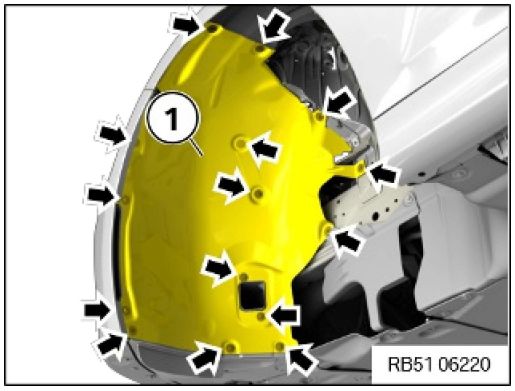


- Loosen screws (2).
- Remove bottom wheel arch cover (1)

3 – Removing the front section of the front wheel arch cover

NOTICE

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



- Remove screws (arrows).
- Remove front section of the front wheel arch cover (1).

MAIN WORK

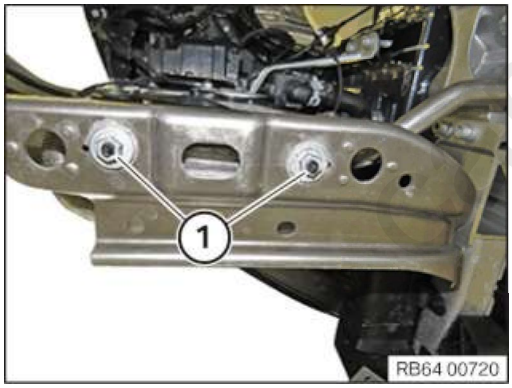
4 – Extend auxiliary heater with holder

TECHNICAL INFORMATION

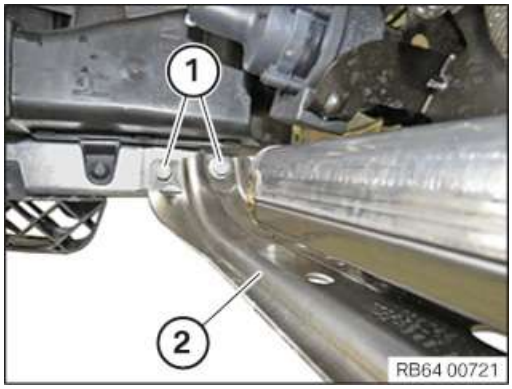
Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.



- Loosen screws (1).
- Loosen nuts (2).
- Unclip the fuel line from the latch mechanisms (arrows).
- Remove upper holder (3) from independent heater.

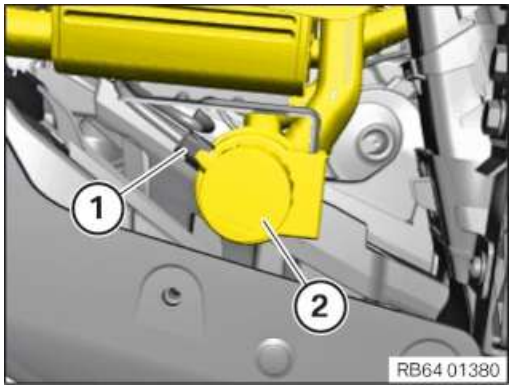


- Release all nuts (1) on lower holder of independent heater.

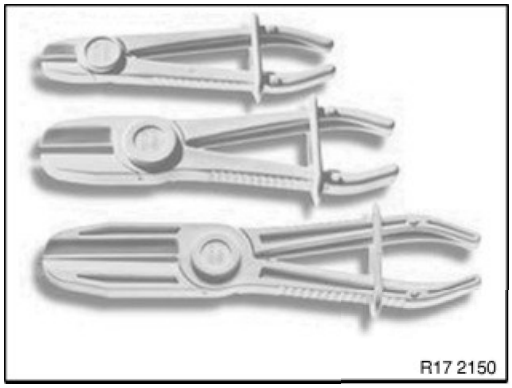


- Loosen screws (1) and remove holder (2).

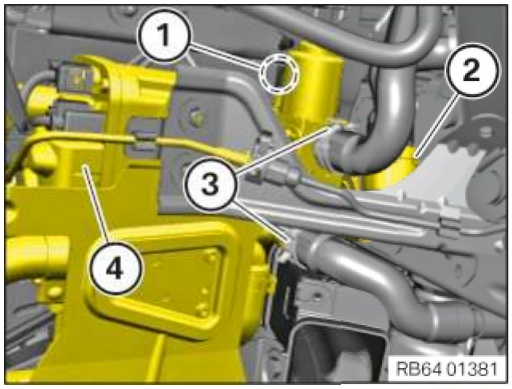
autodiagn.com



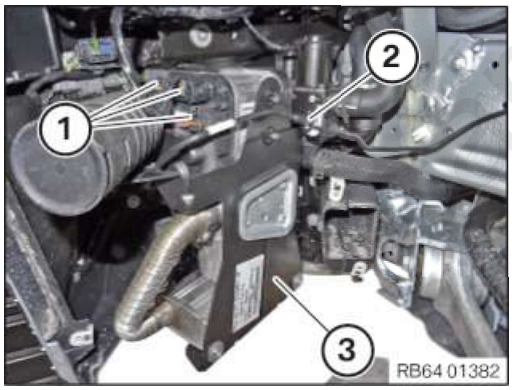
- Unlock and disconnect connector (1) on the auxiliary coolant pump (2) of the stationary heating function.



- Use commercially available disconnection tools to pinch off the coolant lines.



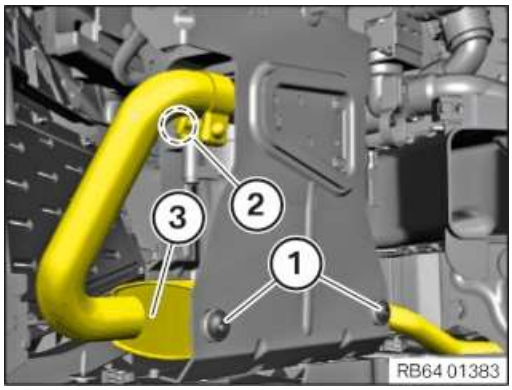
- Unlock and disconnect connector (1).
- Unlock coolant hose (2) and pull off.
- Detach the hose clamps (3) and remove the coolant hoses from the changeover valve.



- Unlock and disconnect connector (1).
- Unlock and pull off fuel line (2).
- Guide out the independent heater (3) with the holder and remove it.

5 – Replace auxiliary heater

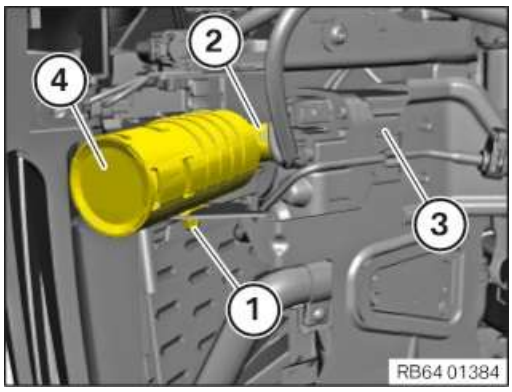
► **Remove the silencer**



- Loosen screws (1).
- Loosen nut (2).
- Remove silencer (3) upwards from the parking heater.
- Slide silencer (3) out and remove.

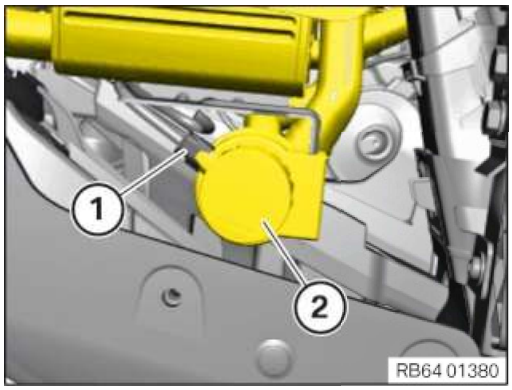
rdiagn.com

▶ **Remove the intake silencer**

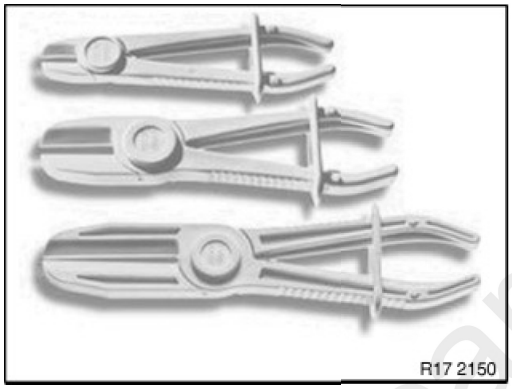


- Unclip latch mechanism (1).
- Remove hose connector (2) from the parking heater (3).
- Feed intake silencer (4) out and remove.

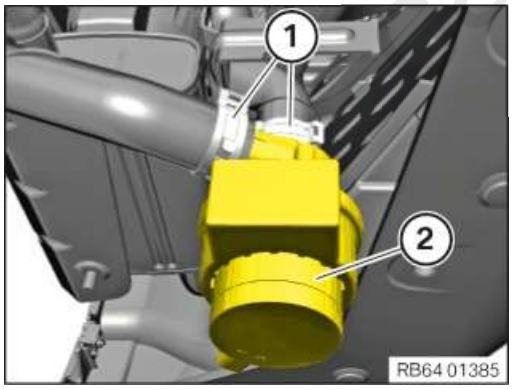
▶ **Removing auxiliary coolant pump for auxiliary heater**



- Unlock and disconnect connector (1) on the auxiliary coolant pump (2) of the stationary heating.
- Pull off the auxiliary coolant pump (2) from the holder to the front and set it aside.



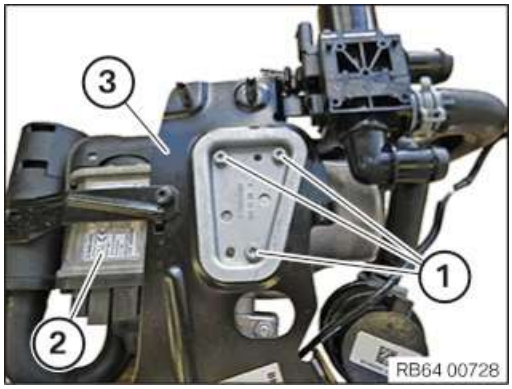
- Use commercially available disconnection tools to pinch off the coolant lines.



- Loosen hose clamps (1) and pull off coolant hoses.
- Remove auxiliary coolant pump (2).

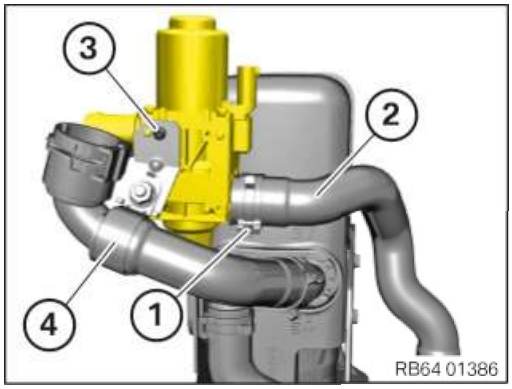
▶ **Remove parking heater from holder**

ardiagn.com

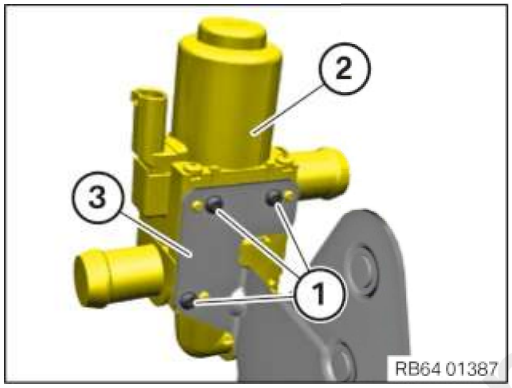


- Loosen screws (1).
- Remove auxiliary heater (2) from holder (3).

▸ **Removing changeover valve**

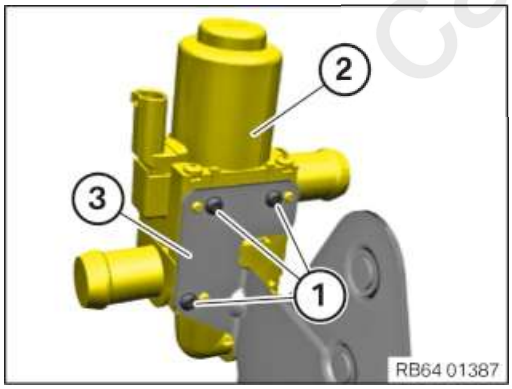


- Loosen hose clamp (1).
- Pull off the coolant hose (2).
- Loosen screw (3).
- Remove coolant hose (4) with the holder.



- Loosen screws (1).
- Remove the changeover valve (2) from the holder (3).

▸ **Installing the changeover valve**

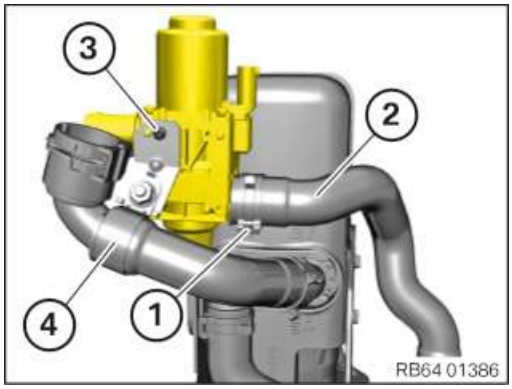


- Position switching valve (2) on bracket (3).
- Tighten the screws (1).

Changeover valve to holder

Screw		Tightening torque	1,8 Nm

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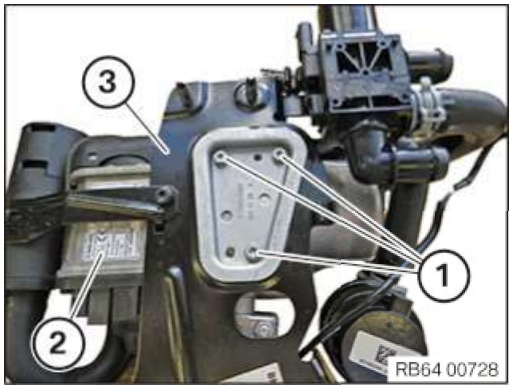
- Position coolant hose (4) with the bracket.
- Tighten down screw (3).

Changeover valve to holder

Screw		Tightening torque	1,8 Nm

- Slide coolant hose (2) on.
- Secure hose clamp (1).

▸ **Removing stationary heating on the holder**

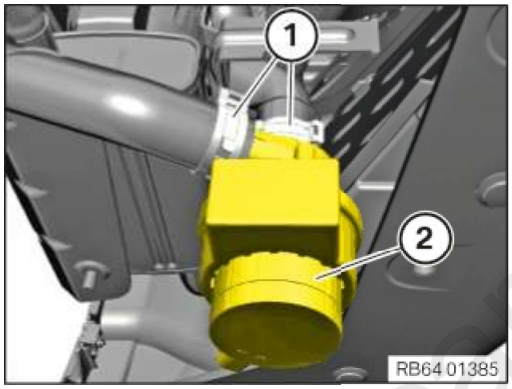


- Position stationary heating (2) on the holder (3).
- Tighten the screws (1).

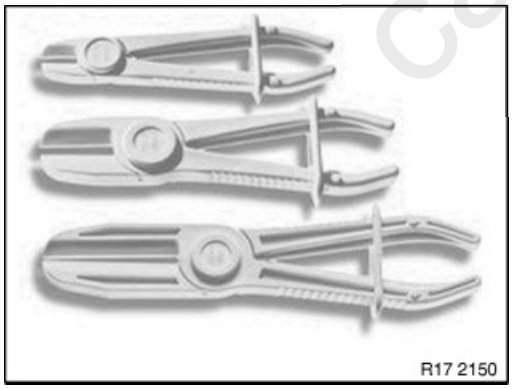
Silencer to holder / holder to body

Screw		Tightening torque	8 Nm
Nut		Tightening torque	8 Nm

▸ **Install auxiliary coolant pump for the auxiliary heater**

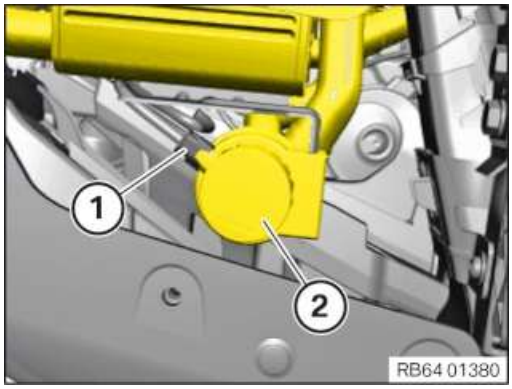


- Position the auxiliary coolant pump (2).
- Slide coolant hoses onto the auxiliary coolant pump (2) and secure the hose clamps (1).



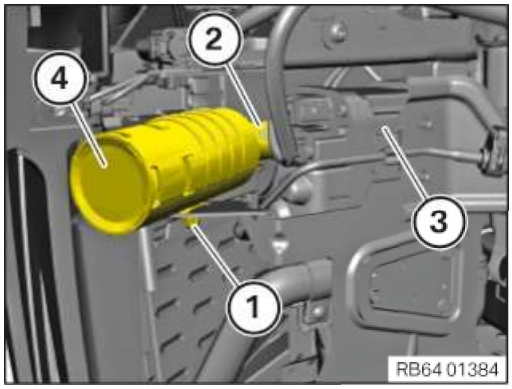
- Remove disconnection tools.

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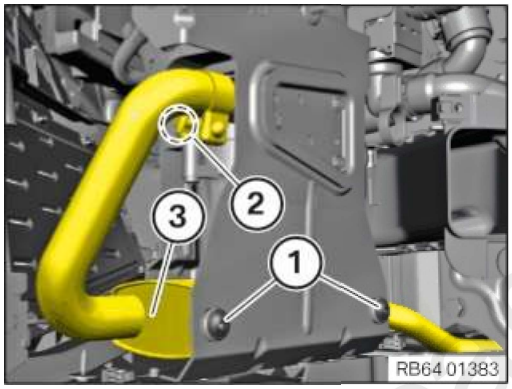
- Slide auxiliary coolant pump (2) to the rear on the holder.
- Connect and lock connector (1) to the auxiliary coolant pump (2) .

▶ **Install intake silencer**



- Feed intake silencer (4) in and install.
- Slide connecting hose (2) onto the parking heater (3).
- Clip in latch mechanism (1).

▶ **Installing the silencer**



- Feed in silencer (3) and install.
- Slide silencer (3) up onto the stationary heating.
- Tighten nut (2).

Silencer to stationary heating

Nut		Tightening torque	6 Nm

- Tighten the screws (1).

Silencer to holder / holder to body

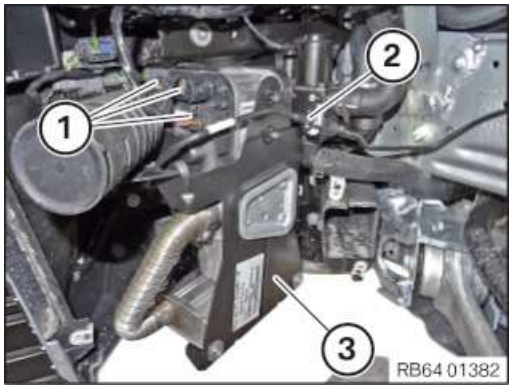
Screw		Tightening torque	8 Nm
Nut		Tightening torque	8 Nm

6 – Install auxiliary heater with holder

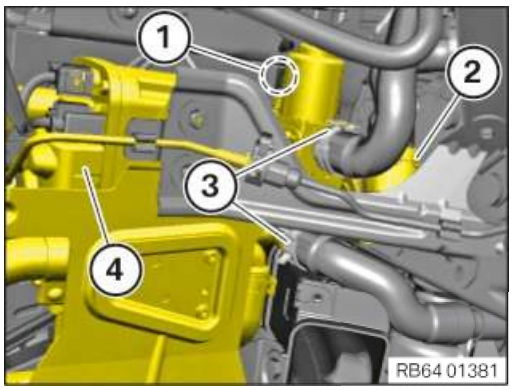
TECHNICAL INFORMATION

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

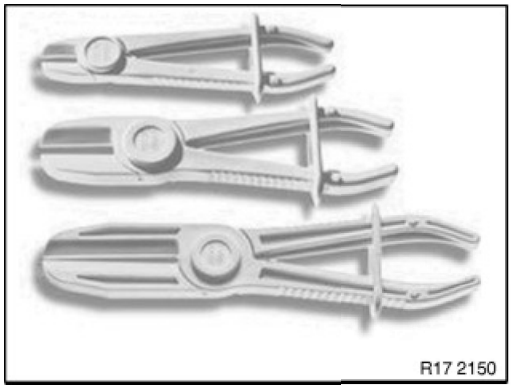
carflagn.com



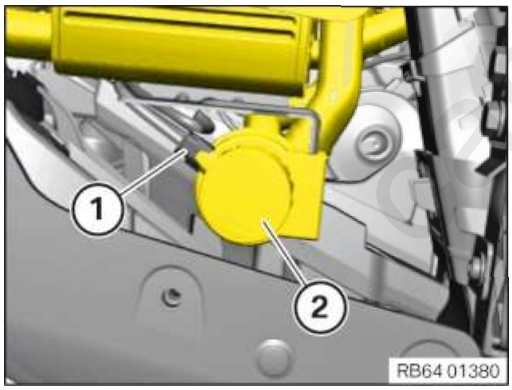
- Guide the stationary heating in (3) with the holder and install it.
- Connect and secure the fuel line (2).
- Connect connectors (1) and lock.



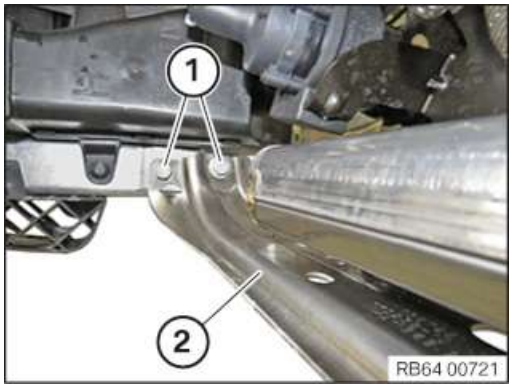
- Mount the coolant hoses on the changeover valve and secure the hose clamps (3).
- Slide on and lock the coolant hose (2).
- Connect connectors (1) and lock.



- Remove disconnection tools.



- Connect and lock connector (1) to the auxiliary coolant pump (2) of the stationary heating.

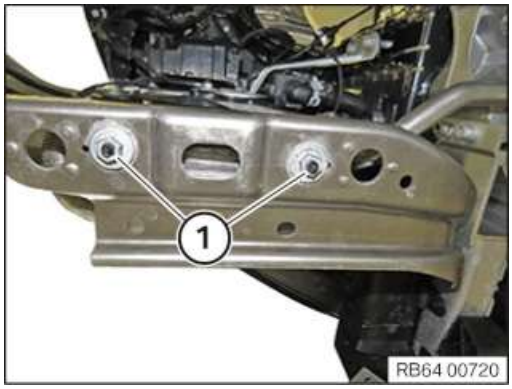


- Position the lower holder (2) of the stationary heating.
- Tighten the screws (1).

Stationary heating to holder/body

Nut		Tightening torque	19 Nm
Screw		Tightening torque	19 Nm

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- Tighten all the nuts (1) on the lower holder of the stationary heating.

Stationary heating to holder/body

Nut		Tightening torque	19 Nm
Screw		Tightening torque	19 Nm



- Guide the upper holder (3) of the stationary heating in and install.
- Tighten nuts (2).

Silencer to holder / holder to body

Screw		Tightening torque	8 Nm
Nut		Tightening torque	8 Nm

- Tighten the screws (1).

Silencer to holder / holder to body

Screw		Tightening torque	8 Nm
Nut		Tightening torque	8 Nm

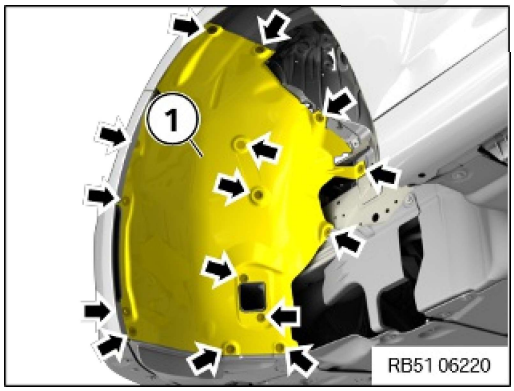
- Clip in the fuel line to the locking units (arrow).

POSTPROCESSES

7 – Install the front section of the front wheel arch cover

NOTICE

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



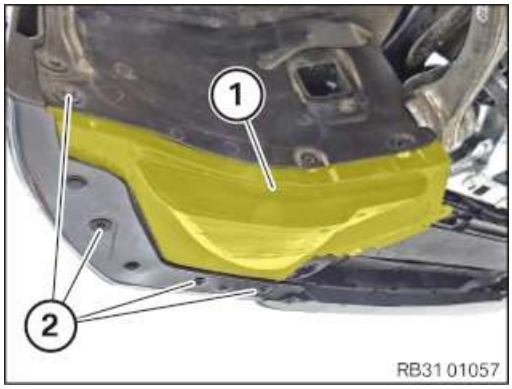
- Install the front section of the front wheel arch cover (1).
- Tighten screws (arrows).

Wheel arch trim panel, front

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

8 – Installing the bottom wheel arch cover

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- Position the bottom wheel arch cover (1).
- Tighten the screws (2).

Cover, front bottom on side

Hexagon screw for thermoplastic		Tightening torque	3 Nm

9 – 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.

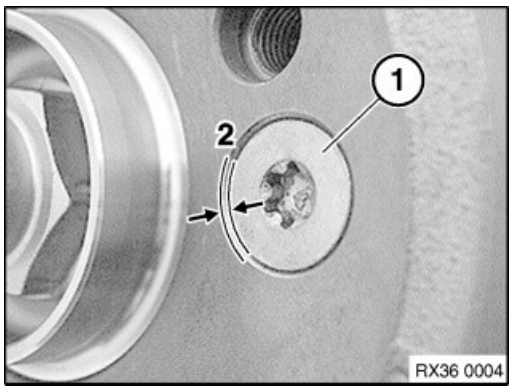
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  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).



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

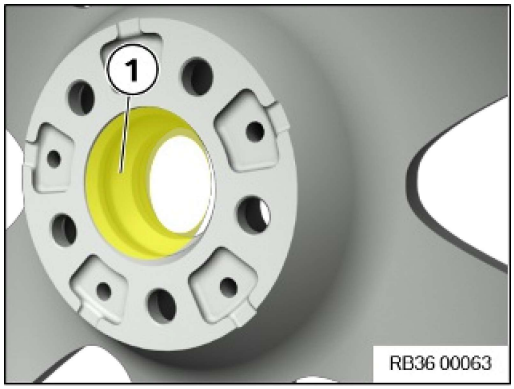
  The mounting bolt (1) for the brake disc may not protrude under any circumstances on the contact surface (2) between the brake disc and the wheel rim.

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.

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TECHNICAL INFORMATION

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

The wheel rim must rest uniformly against the brake disc.

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

Do not apply oil to new wheel bolts.

- Renew 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

10 – Filling and bleed the high-temperature coolant circuit



- See additional information.

11 – Filling and bleed the low-temperature coolant circuit

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- See additional information.

Additional Information

Overview of Tightening Torques

Changeover valve to holder — Used in step 5

Screw		Tightening torque	1,8 Nm

Silencer to holder / holder to body — Used in step 56

Screw		Tightening torque	8 Nm
Nut		Tightening torque	8 Nm

Silencer to stationary heating — Used in step 5

Nut		Tightening torque	6 Nm

Stationary heating to holder/body — Used in step 6

Nut		Tightening torque	19 Nm
Screw		Tightening torque	19 Nm

Wheel arch trim panel, front — Used in step 7

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

Cover, front bottom on side — Used in step 8

Hexagon screw for thermoplastic		Tightening torque	3 Nm

Brake disc to front wheel hub — Used in step 9

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub — Used in step 9

M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts — Used in step 9

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

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Overview of Special Tools

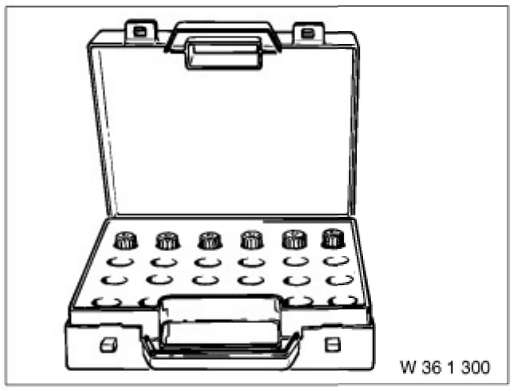
2 344 011 Tool



Common	Used in step 9
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)

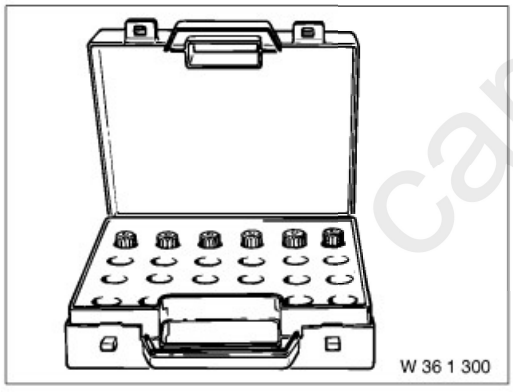
Replacement tools:

0 495 221 (36 1 323) Wheel stud



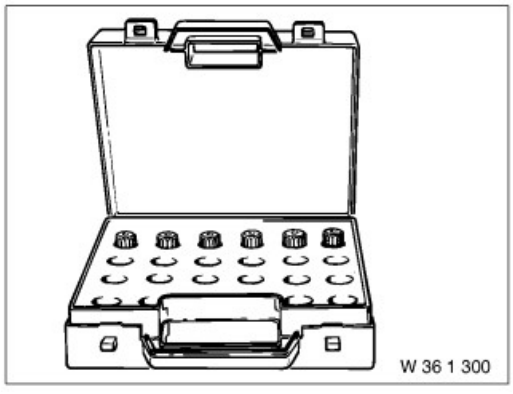
Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
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 1
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	

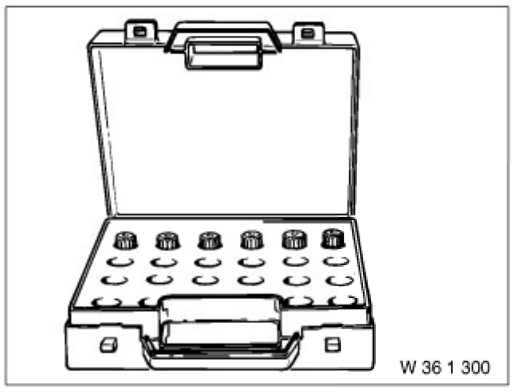
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0 495 226 (36 1 328) Wheel stud



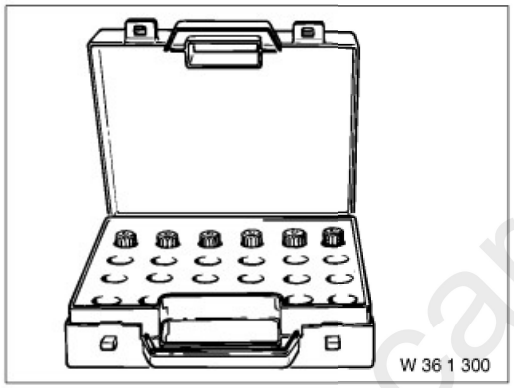
Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



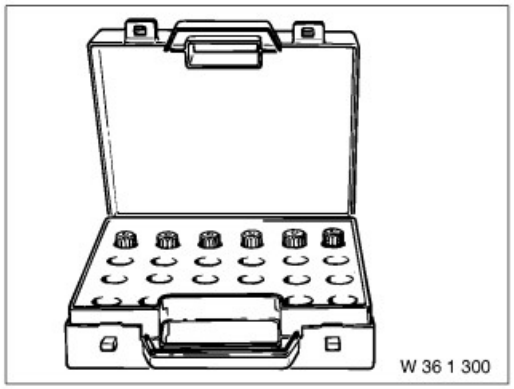
Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
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 1
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	

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0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Links

Repair instructions	Used in step
17 00 008 Draining and topping up coolant for high-temperature circuit	10
17 00 008 Draining and topping up coolant for high-temperature circuit	10
17 00 008 Draining and topping up coolant for high-temperature circuit	10
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	10
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	10
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	10
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	10
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17 00 039 Bleed the cooling system and check it for watertightness with the special tool	10
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	10

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17 00 039 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature)	10
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	10
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	10
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	10
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	10
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	10
17 00 039 Bleeding the cooling system (B36, B38, B46, B48)	10
17 00 039 Bleeding cooling system (B37, B47)	10
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	10
17 00 039 Filling and bleeding the high-temperature cooling system vacuum filler device (B48)	10
17 00 008 Draining and topping up the high-temperature coolant circuit	10
17 00 008 Draining and topping up the high-temperature coolant circuit	10
17 00 016 Draining and topping up coolant circuit for Range Extender \PREMIUM	10
17 00 008 Draining and topping up the high-temperature coolant circuit	10
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	10
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	10
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	10
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	10
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	10
17 11 103 Removing and installing/replacing coolant expansion tank for the low-temperature coolant circuit	11
17 11 103 Removing and installing/replacing coolant expansion tank for the low-temperature coolant circuit	11
17 00 040 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature)	11
17 00 040 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature)	11
17 00 040 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature)	11
17 00 040 Venting cooling system and checking on watertightness	11
17 00 040 Venting high temperature - cooling system and checking for water leaks (N20 hybrid drive)	11
17 00 040 Venting high temperature - cooling system and checking for water leaks (N20 hybrid drive)	11
17 00 040 Bleeding lower-temperature cooling system (B48)	11
17 00 040 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature)	11
17 00 040 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature)	11
17 00 040 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature)	11
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17 00 040 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature)	11
17 00 040 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature)	11
17 00 011 Draining and topping up coolant circuit for low temperature	11

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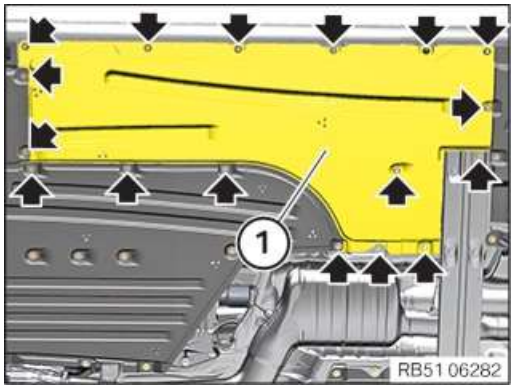
17 00 040 Bleed the low-temperature cooling system and check for watertightness (coolant circuit for low temperature)	11
17 00 040 Bleeding and filling low temperature cooling system using vacuum filler device (B48)	11
17 00 011 Draining and topping up low-temperature coolant circuit	11
17 00 011 Draining and topping up low-temperature coolant circuit	11
17 00 040 Bleeding the low-temperature coolant circuit and checking it for watertightness	11
17 00 040 Bleeding the low-temperature coolant circuit and checking it for watertightness	11
17 00 015 Draining and topping up the coolant circuit for the drive \PREMIUM	11
17 00 011 Draining and topping up low-temperature coolant circuit	11
17 00 040 Bleed the cooling system and check for watertightness with the special tool (low-temperature coolant circuit)	11
17 00 040 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature)	11
17 00 040 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature)	11

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64 12 600 Removing and installing or replacing fuel pump

PRELIMINARY WORK

1 – Removing the underbody panelling on the left-hand side



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

MAIN WORK

2 – Removing the electric fuel pump for the auxiliary heater

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.

WARNING

Contact with hazardous fluids.

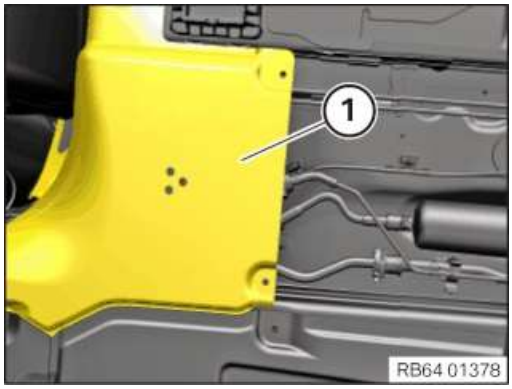
Hazardous to health!

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

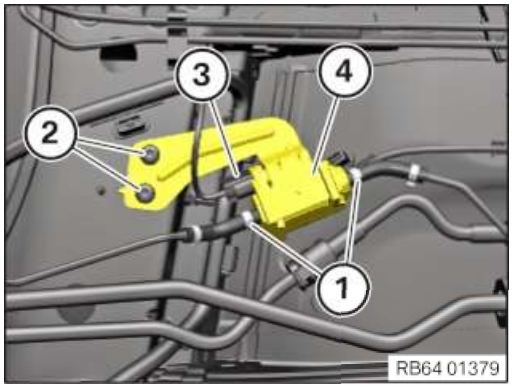
TECHNICAL INFORMATION

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

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- (1)



- Unfasten hose clamps (1).
- Loosen screws (2).
- Unlock and disconnect connector (3).
- Guide out and remove the electric fuel pump (4).

3 – Installing the electric fuel pump for the auxiliary heater

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.

WARNING

Contact with hazardous fluids.

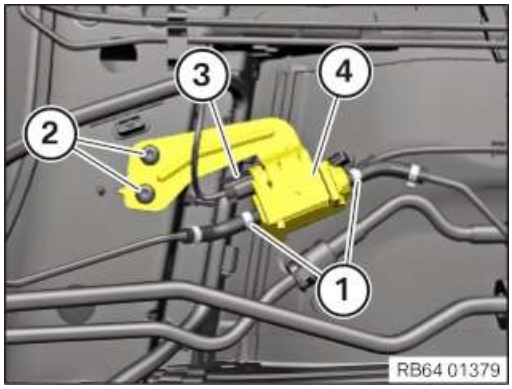
Hazardous to health!

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

TECHNICAL INFORMATION

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

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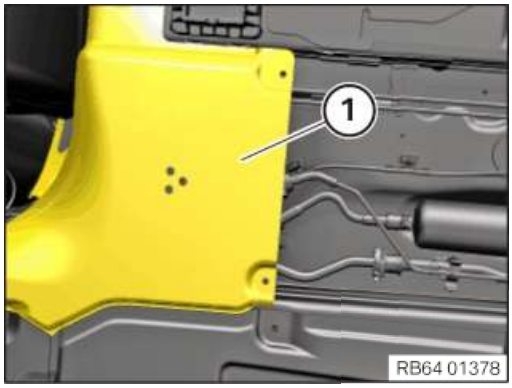
- Guide in and install electric fuel pump (4).
- Connect connectors (3) and lock.
- Tighten the screws (2).

Electric fuel pump to body

Screw		Tightening torque	6 Nm

- Renew and secure hose clamps (1).

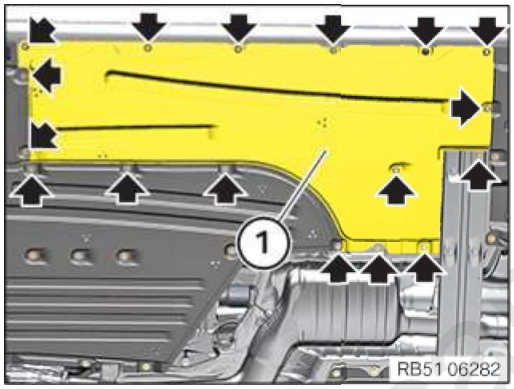
  Parts: Hose clamps



- Position the wheel arch cover (1) correctly.

POSTPROCESSES

4 – Installing the underbody panelling on the sides on left



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

Underbody panelling, side

Hexagon screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

Additional Information

Overview of Tightening Torques

Electric fuel pump to body — Used in step 3

Screw		Tightening torque	6 Nm

Underbody panelling, side — Used in step 4

Hexagon screw		Tightening torque	2,6 Nm
Plastic nut		Tightening torque	2,6 Nm

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64 12 089 Removing and installing or replacing muffler/silencer

WARNING

Hot fluids.

Risk of scalding!

- Conduct all work in the vehicle wearing appropriate personal protective equipment only.

CAUTION

Materials harmful to health.

Contact with fluids harmful to health!

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

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

PRELIMINARY WORK

1 – Removing the front left wheel

▸ **Removing the wheel**

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- 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.

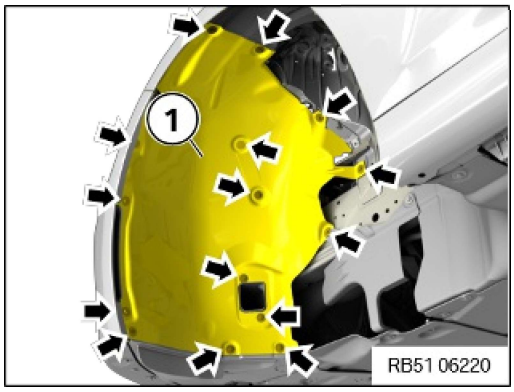


- If several wheels are removed simultaneously: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use a suitable adapter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

2 – Removing the front section of the front wheel arch cover

NOTICE

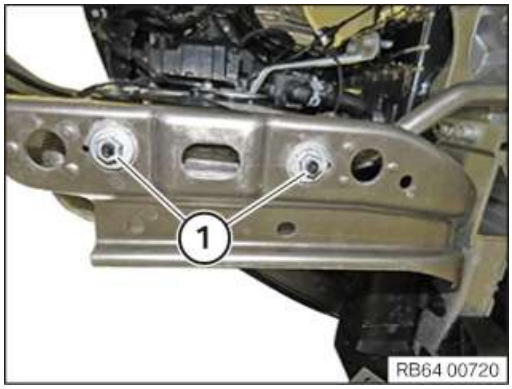
To provide a better overview: Schematic diagram with partially hidden components.



- Remove screws (arrows).
- Remove front section of the front wheel arch cover (1).

3 – Release stationary heating system

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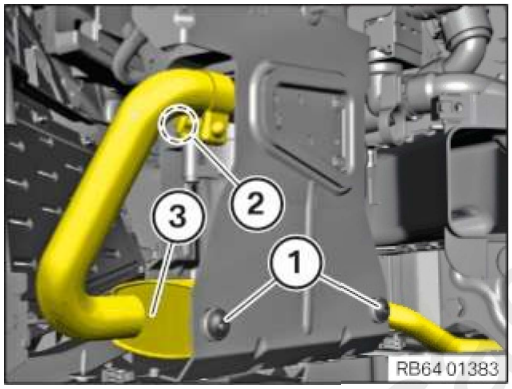
- Release nuts (1) on the lower holder of the stationary heating.



- Loosen screws (1).
- Loosen nuts (2).
- Unclip the fuel line from the latch mechanism (arrow).
- Remove the upper holder (3) of the stationary heating.
- Tilt the stationary heating slightly on the side.

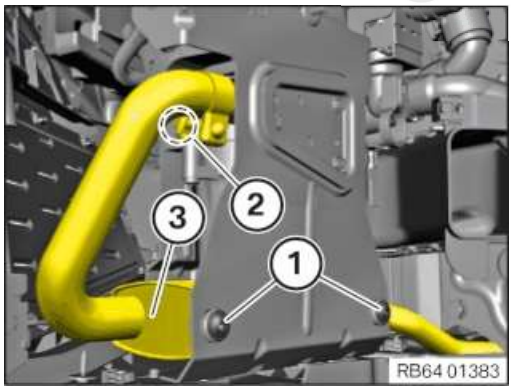
MAIN WORK

4 – Remove the silencer



- Loosen screws (1).
- Loosen nut (2).
- Remove silencer (3) upwards from the parking heater.
- Slide silencer (3) out and remove.

5 – Installing the silencer



- Feed in silencer (3) and install.
- Slide silencer (3) up onto the stationary heating.
- Tighten nut (2).

Silencer to stationary heating

Nut		Tightening torque	6 Nm

- Tighten the screws (1).

Silencer to holder / holder to body

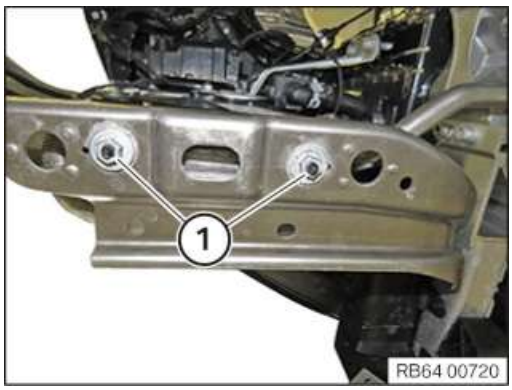
Screw		Tightening torque	8 Nm
Nut		Tightening torque	8 Nm

POSTPROCESSES

6 – Securing the stationary heating

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6 – Securing the stationary heating



- Tighten all nuts (1) on the bottom holder of the stationary heating.

Stationary heating to holder/body

Nut		Tightening torque	19 Nm
Screw		Tightening torque	19 Nm



- Position the stationary heating system.
- Feed in and install the top holder (3) of the stationary heating.
- Tighten nuts (2).

Silencer to holder / holder to body

Screw		Tightening torque	8 Nm
Nut		Tightening torque	8 Nm

- Tighten the screws (1).

Silencer to holder / holder to body

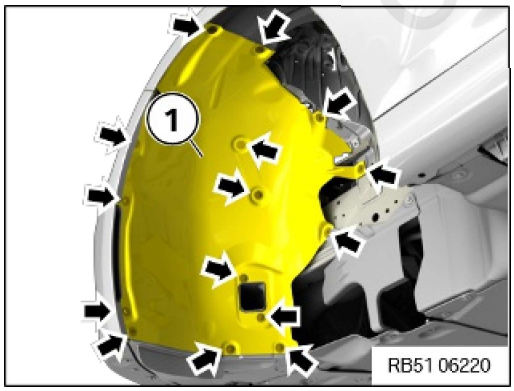
Screw		Tightening torque	8 Nm
Nut		Tightening torque	8 Nm

- Clip in the fuel line at the latch mechanisms (arrows).

7 – Install the front section of the front wheel arch cover

NOTICE

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



- Install the front section of the front wheel arch cover (1).
- Tighten screws (arrows).

Wheel arch trim panel, front

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

8 – Attaching the front left wheel

▸ **Mounting the wheel**

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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.

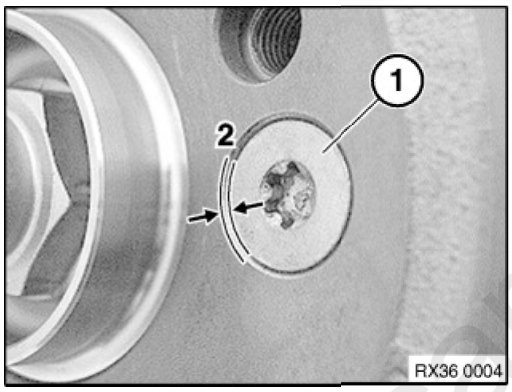
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  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

catalagn.com



- 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.

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TECHNICAL INFORMATION

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

The wheel rim must rest uniformly against the brake disc.

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

Do not apply oil to new wheel bolts.

- Renew 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

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9 – Fill and bleed the coolant circuit

▸ **Filling and bleed the high-temperature coolant circuit**

- See additional information.



Additional Information

Overview of Tightening Torques

Silencer to stationary heating — Used in step 5

Nut		Tightening torque	6 Nm

Silencer to holder / holder to body — Used in step 56

Screw		Tightening torque	8 Nm
Nut		Tightening torque	8 Nm

Stationary heating to holder/body — Used in step 6

Nut		Tightening torque	19 Nm
Screw		Tightening torque	19 Nm

Wheel arch trim panel, front — Used in step 7

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

Brake disc to front wheel hub — Used in step 8

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub — Used in step 8

M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts — Used in step 8

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

Overview of Special Tools

2 344 011 Tool



Common — Used in step 8

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:

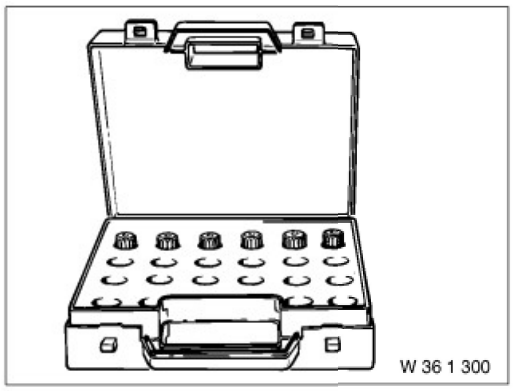
carsign.com

0 495 221 (36 1 323) Wheel stud



Common	Used in step 1
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 1
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 1
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 1
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	

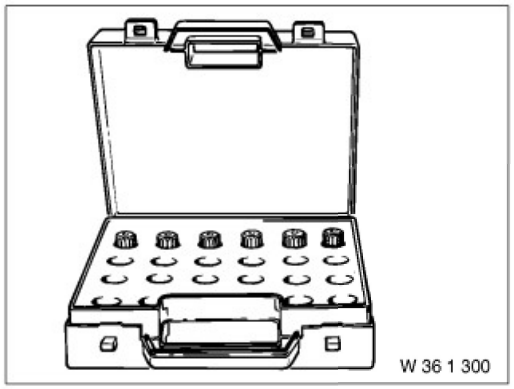
cardiagn.com

0 495 227 (36 1 329) Wheel stud



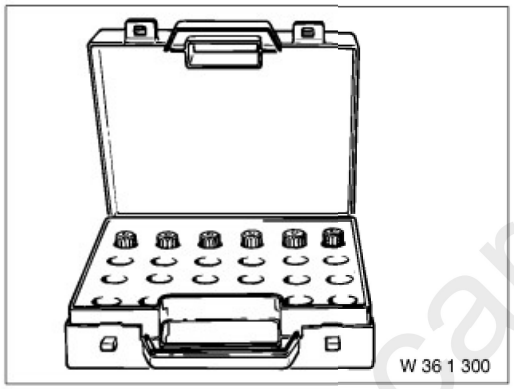
Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 228 (36 1 331) Wheel stud



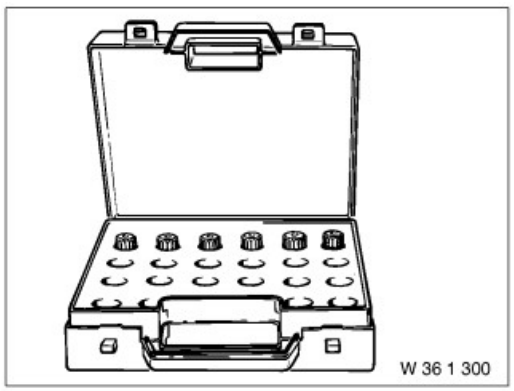
Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
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 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Links

Repair instructions	Used in step
17 00 008 Draining and topping up coolant for high-temperature circuit	9

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17 00 008 Draining and topping up coolant for high-temperature circuit	9
17 00 008 Draining and topping up coolant for high-temperature circuit	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
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17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature)	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleeding the cooling system (B36, B38, B46, B48)	9
17 00 039 Bleeding cooling system (B37, B47)	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Filling and bleeding the high-temperature cooling system vacuum filler device (B48)	9
17 00 008 Draining and topping up the high-temperature coolant circuit	9
17 00 008 Draining and topping up the high-temperature coolant circuit	9
17 00 016 Draining and topping up coolant circuit for Range Extender \PREMIUM	9
17 00 008 Draining and topping up the high-temperature coolant circuit	9
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	9
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	9

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17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures) 9

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64 12 120 Removing and installing/replacing intake silencer for independent/auxiliary heater

WARNING

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

Danger! Life-threatening injuries!

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

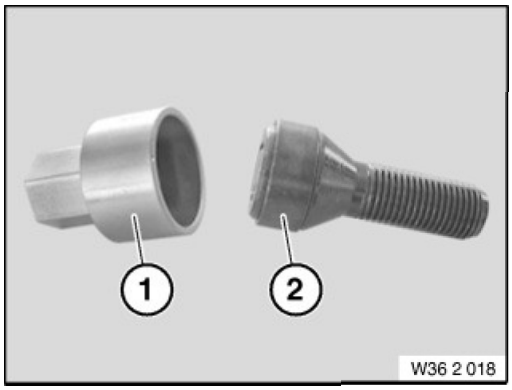
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1 – Removing the wheel



- If several wheels are removed simultaneously, mark each tyre with a piece of chalk to show the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.

▶ **If installed: Remove the locking wheel bolt**

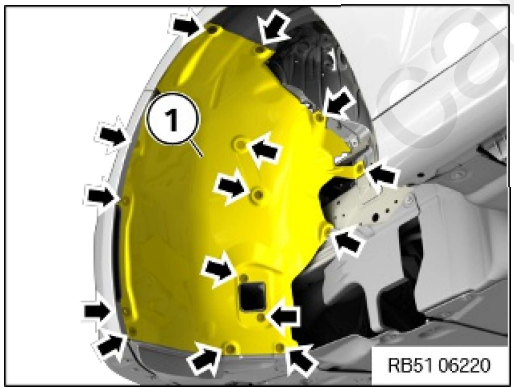


- To unscrew and tighten the wheel bolts with locking wheel bolts (2), use the correct adapter (1) from the set of special tools .

2 – Removing the front section of the front wheel arch cover

NOTICE

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

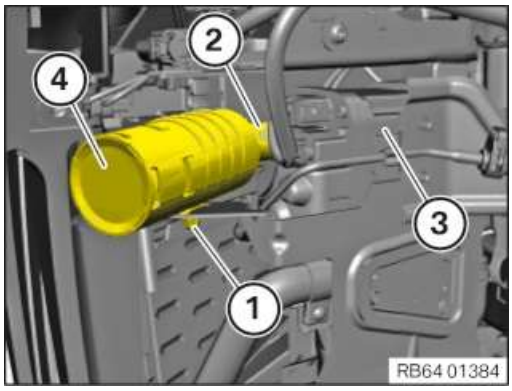


- Remove screws (arrows).
- Remove front section of the front wheel arch cover (1).

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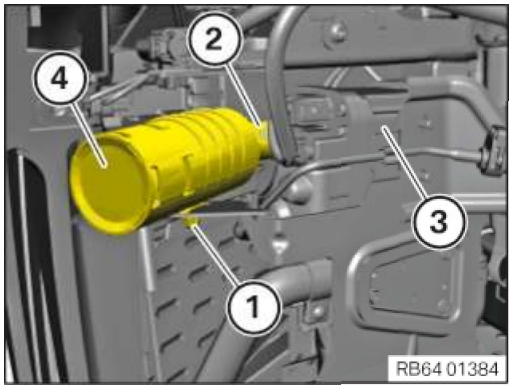
MAIN WORK

3 – Remove the intake silencer



- Unclip latch mechanism (1).
- Remove hose connector (2) from the parking heater (3).
- Feed intake silencer (4) out and remove.

4 – Install intake silencer



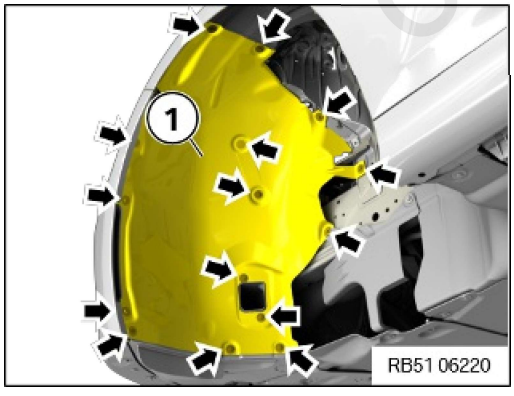
- Feed intake silencer (4) in and install.
- Slide connecting hose (2) onto the parking heater (3).
- Clip in latch mechanism (1).

POSTPROCESSES

5 – Install the front section of the front wheel arch cover

NOTICE

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



- Install the front section of the front wheel arch cover (1).
- Tighten screws (arrows).

Wheel arch trim panel, front

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

6 – Mounting the wheel

▸ **Clean the contact surfaces between the brake disc and the wheel rim**

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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.

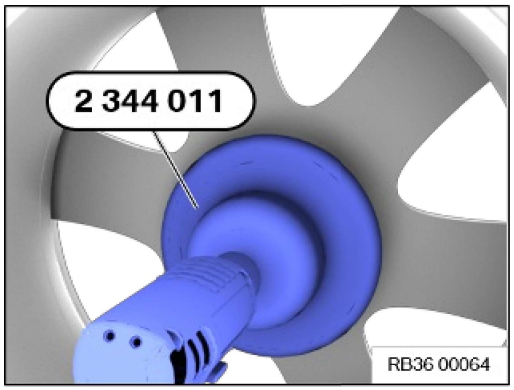
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease contact surfaces.

Expendable materials

Universal cleaner	20 l, Canister	83192360981

- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.

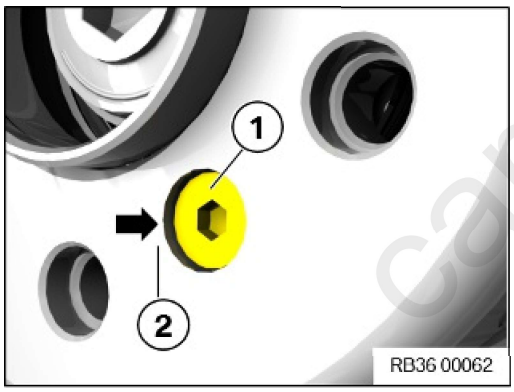


- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease contact surfaces.

Expendable materials

Universal cleaner	20 l, Canister	83192360981

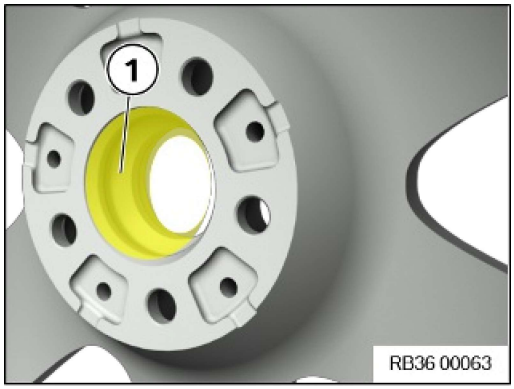


- Check that the mounting bolt (1) for the brake disc is securely seated.

  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 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

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TECHNICAL INFORMATION

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

The wheel rim must rest uniformly against the brake disc.

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

Do not apply oil to new wheel bolts.

- Clean the wheel bolts.
- Check the wheel bolts and threads for damage, renew the wheel bolts if necessary.
- Renew corroded wheel bolts.

  Parts: Wheel bolts
- Tighten the wheel bolts (arrows) as follows:

  Screw in the wheel bolts crosswise by hand.

  Hand-tighten the wheel bolts evenly crosswise to centre the wheel rim.

  Use the torque wrench to tighten the wheel bolts crosswise.

  Tighten all wheel bolts crosswise again to check.

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.		

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Additional Information

Overview of Tightening Torques

Wheel arch trim panel, front — Used in step 5

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

Brake disc to wheel hub — Used in step 6

M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts Used in step 6

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

Overview of Special Tools

2 344 011 Tool

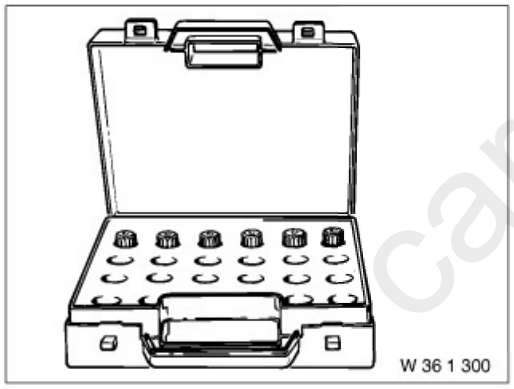


Common Used in step 6

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:

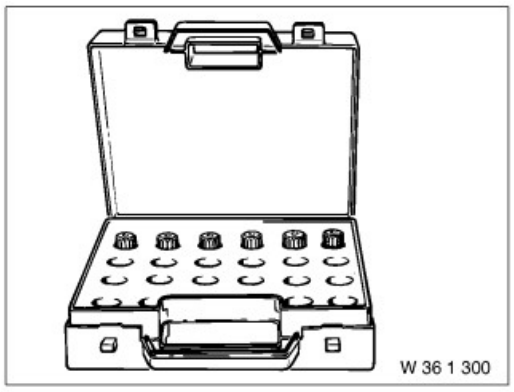
0 495 221 (36 1 323) Wheel stud



Common Used in step 1

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 1

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	

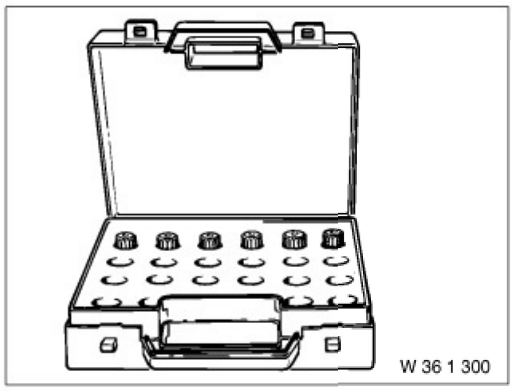
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0 495 225 (36 1 327) Wheel stud



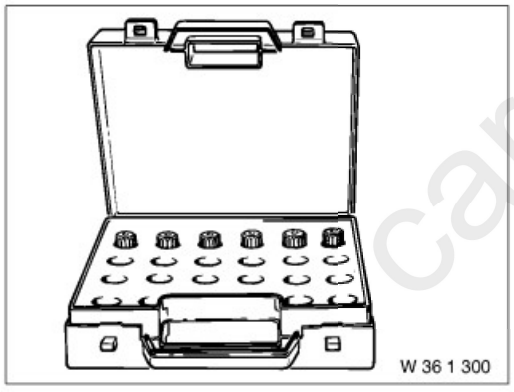
Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



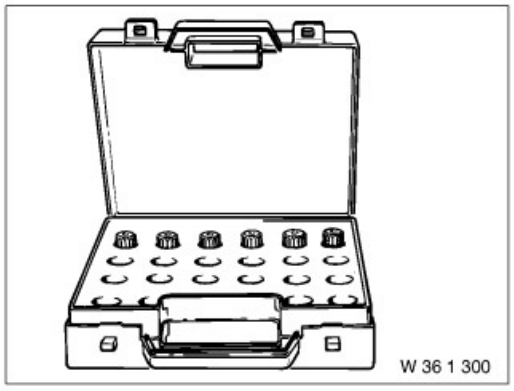
Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
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 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

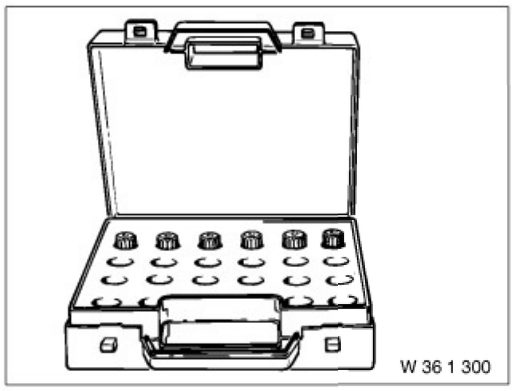
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0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
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 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Links

Repair instructions	Used in step
00 .. ... Raising the vehicle using a vehicle hoist	

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64 12 577 Replacing changeover valve for independent/auxiliary heating

WARNING

Hot fluids.

Risk of scalding!

- Conduct all work in the vehicle wearing appropriate personal protective equipment only.

CAUTION

Materials harmful to health.

Contact with fluids harmful to health!

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

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

PRELIMINARY WORK

1 – Removing the front left wheel

▸ **Removing the wheel**

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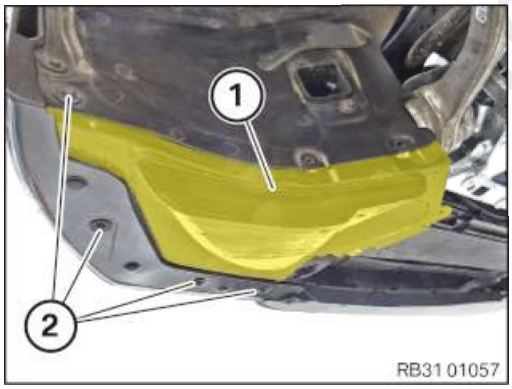
- In vehicles with M Carbon ceramic brake: The wheel assembly jack must be used to remove the wheel (see workshop equipment).

  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 .

2 – Remove bottom wheel arch cover

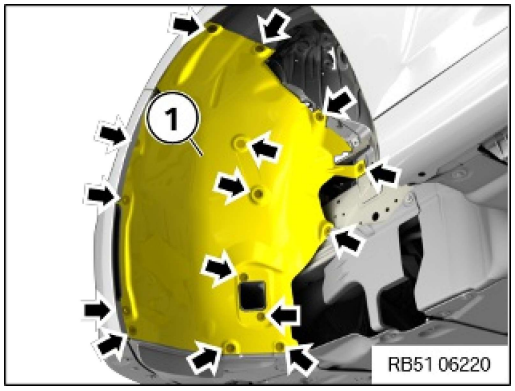


- Loosen screws (2).
- Remove bottom wheel arch cover (1)

3 – Removing the front section of the front wheel arch cover

NOTICE

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

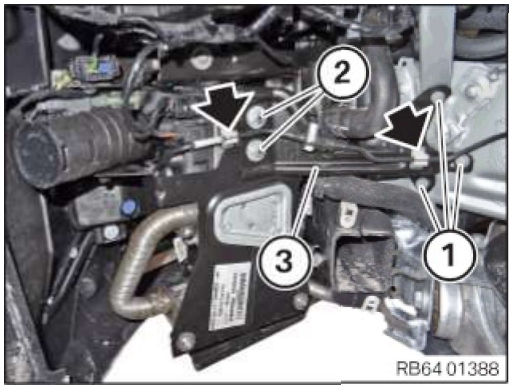


- Remove screws (arrows).
- Remove front section of the front wheel arch cover (1).

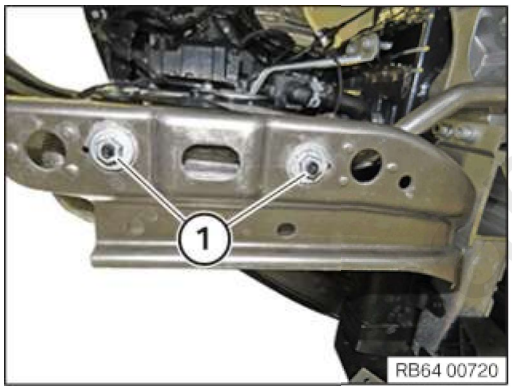
4 – Extend auxiliary heater with holder

TECHNICAL INFORMATION

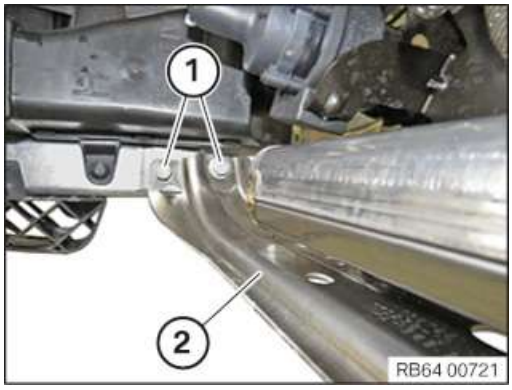
Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.



- Loosen screws (1).
- Loosen nuts (2).
- Unclip the fuel line from the latch mechanisms (arrows).
- Remove upper holder (3) from independent heater.

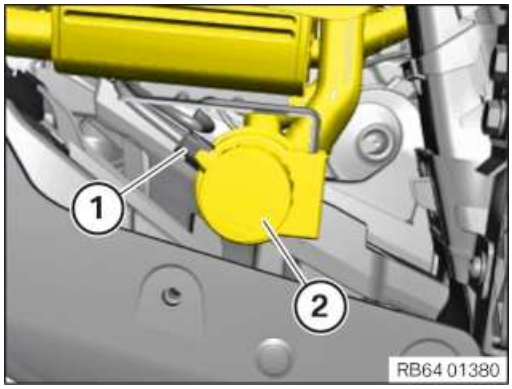


- Release all nuts (1) on lower holder of independent heater.

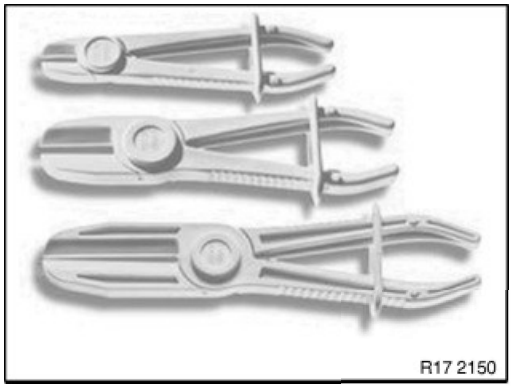


- Loosen screws (1) and remove holder (2).

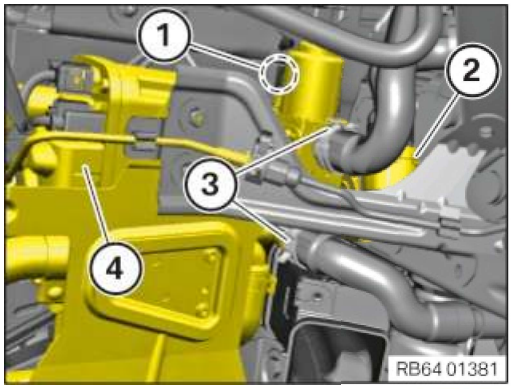
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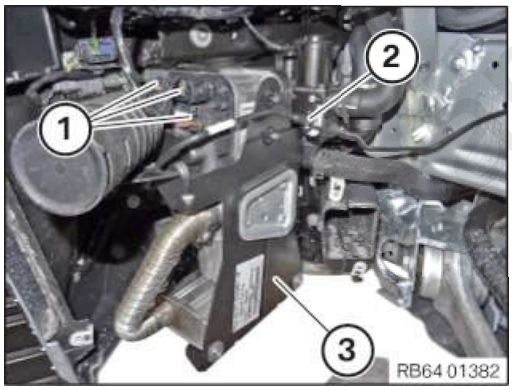
- Unlock and disconnect connector (1) on the auxiliary coolant pump (2) of the stationary heating function.



- Use commercially available disconnection tools to pinch off the coolant lines.

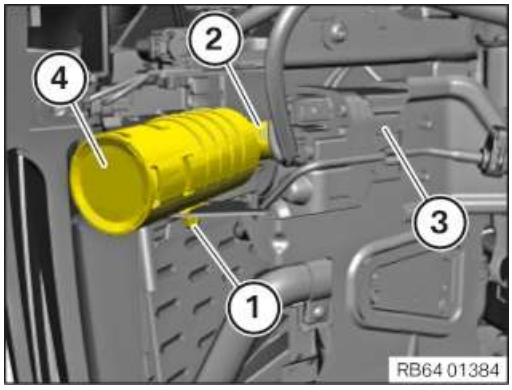


- Unlock and disconnect connector (1).
- Unlock coolant hose (2) and pull off.
- Detach the hose clamps (3) and remove the coolant hoses from the changeover valve.



- Unlock and disconnect connector (1).
- Unlock and pull off fuel line (2).
- Guide out the independent heater (3) with the holder and remove it.

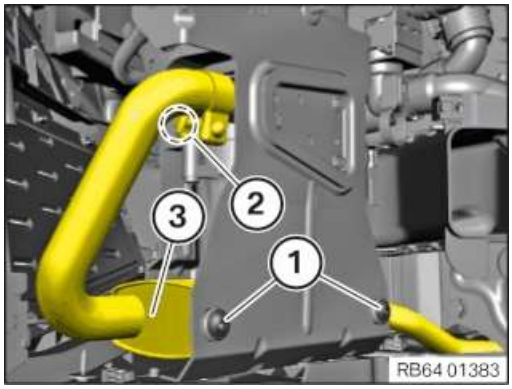
5 – Remove the intake silencer



- Unclip latch mechanism (1).
- Remove hose connector (2) from the parking heater (3).
- Feed intake silencer (4) out and remove.

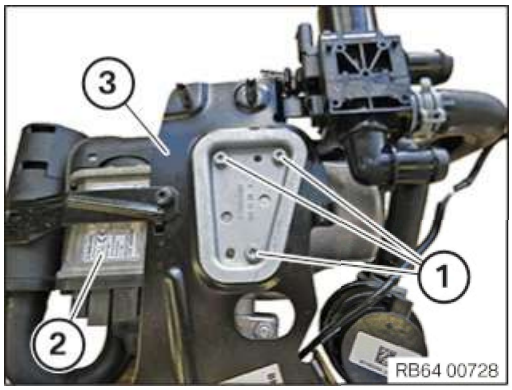
6 – Remove the silencer

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- Loosen screws (1).
- Loosen nut (2).
- Remove silencer (3) upwards from the parking heater.
- Slide silencer (3) out and remove.

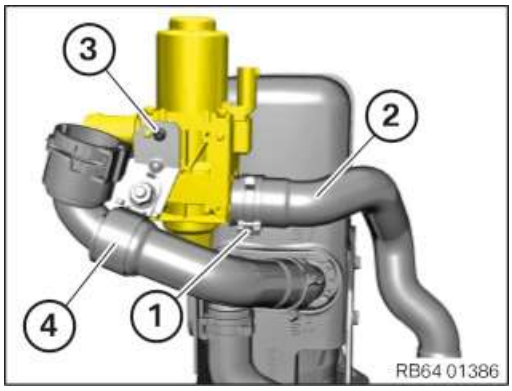
7 – Remove parking heater from holder



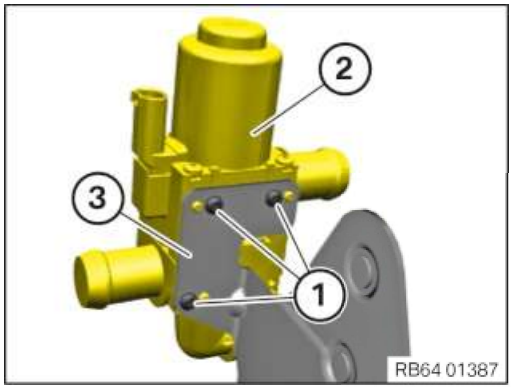
- Loosen screws (1).
- Remove auxiliary heater (2) from holder (3).

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8 – Removing changeover valve

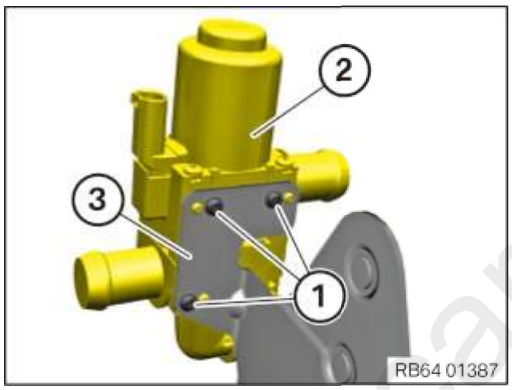


- Loosen hose clamp (1).
- Pull off the coolant hose (2).
- Loosen screw (3).
- Remove coolant hose (4) with the holder.



- Loosen screws (1).
- Remove the changeover valve (2) from the holder (3).

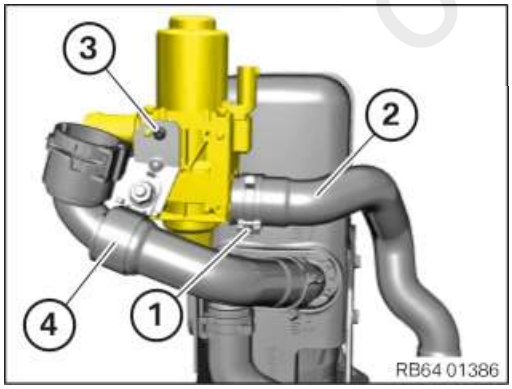
9 – Installing the changeover valve



- Position switching valve (2) on bracket (3).
- Tighten the screws (1).

Changeover valve to holder

Screw		Tightening torque	1,8 Nm



- Position coolant hose (4) with the bracket.
- Tighten down screw (3).

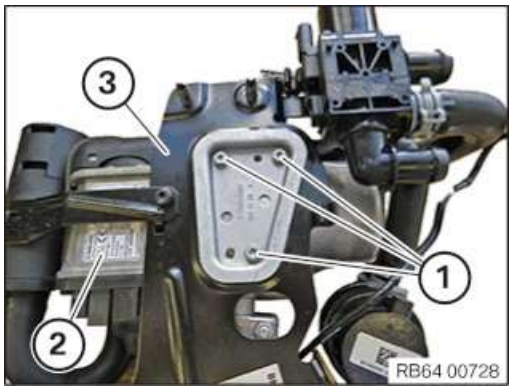
Changeover valve to holder

Screw		Tightening torque	1,8 Nm

- Slide coolant hose (2) on.
- Secure hose clamp (1).

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10 – Removing stationary heating on the holder

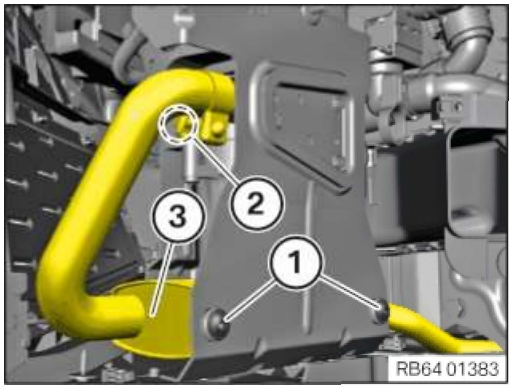


- Position stationary heating (2) on the holder (3).
- Tighten the screws (1).

Silencer to holder / holder to body

Screw		Tightening torque	8 Nm
Nut		Tightening torque	8 Nm

11 – Installing the silencer



- Feed in silencer (3) and install.
- Slide silencer (3) up onto the stationary heating.
- Tighten nut (2).

Silencer to stationary heating

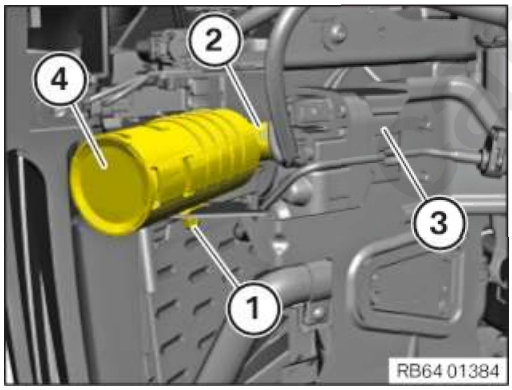
Nut		Tightening torque	6 Nm

- Tighten the screws (1).

Silencer to holder / holder to body

Screw		Tightening torque	8 Nm
Nut		Tightening torque	8 Nm

12 – Install intake silencer



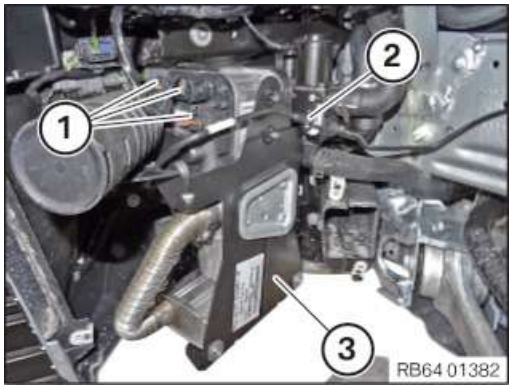
- Feed intake silencer (4) in and install.
- Slide connecting hose (2) onto the parking heater (3).
- Clip in latch mechanism (1).

13 – Install auxiliary heater with holder

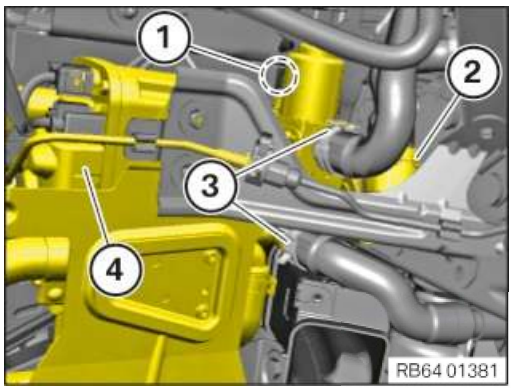
TECHNICAL INFORMATION

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

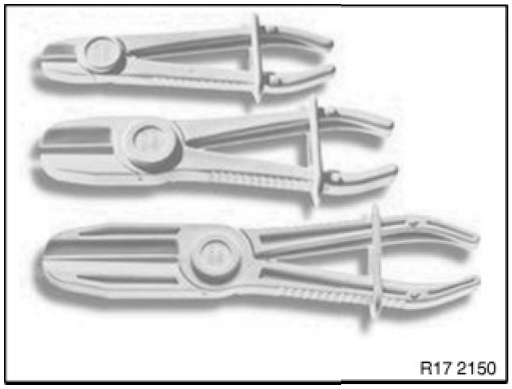
diagn.com



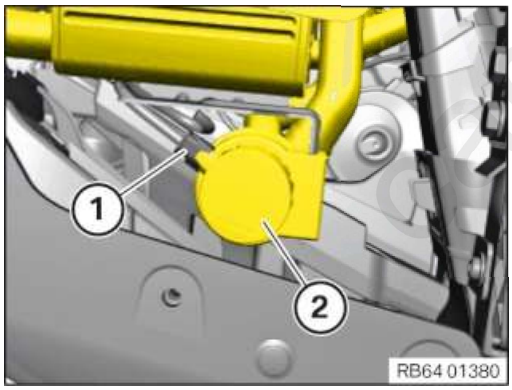
- Guide the stationary heating in (3) with the holder and install it.
- Connect and secure the fuel line (2).
- Connect connectors (1) and lock.



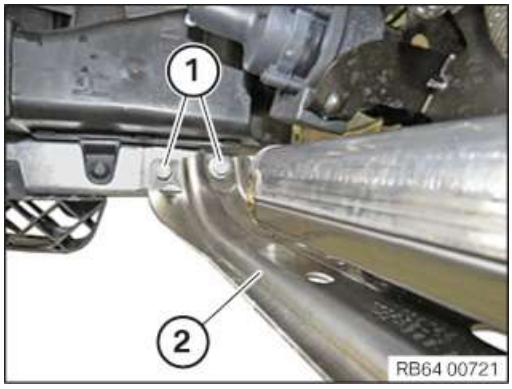
- Mount the coolant hoses on the changeover valve and secure the hose clamps (3).
- Slide on and lock the coolant hose (2).
- Connect connectors (1) and lock.



- Remove disconnection tools.



- Connect and lock connector (1) to the auxiliary coolant pump (2) of the stationary heating.

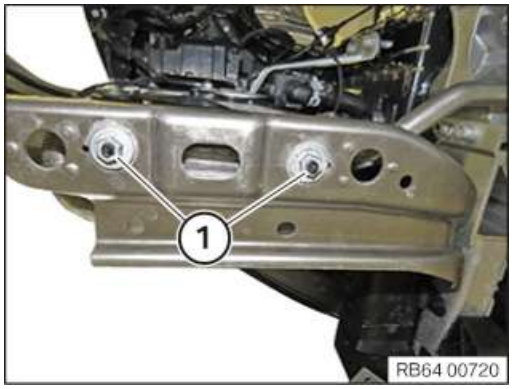


- Position the lower holder (2) of the stationary heating.
- Tighten the screws (1).

Stationary heating to holder/body

Nut		Tightening torque	19 Nm
Screw		Tightening torque	19 Nm

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- Tighten all the nuts (1) on the lower holder of the stationary heating.

Stationary heating to holder/body

Nut		Tightening torque	19 Nm
Screw		Tightening torque	19 Nm



- Guide the upper holder (3) of the stationary heating in and install.
- Tighten nuts (2).

Silencer to holder / holder to body

Screw		Tightening torque	8 Nm
Nut		Tightening torque	8 Nm

- Tighten the screws (1).

Silencer to holder / holder to body

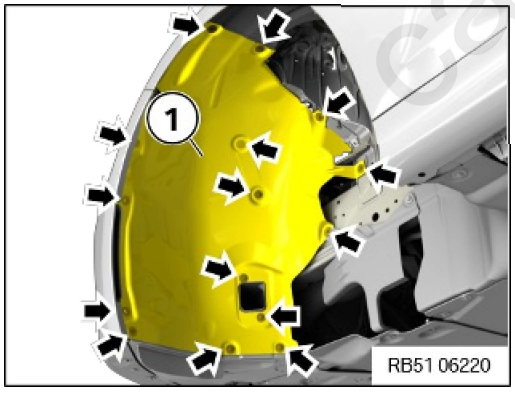
Screw		Tightening torque	8 Nm
Nut		Tightening torque	8 Nm

- Clip in the fuel line to the locking units (arrow).

14 – Install the front section of the front wheel arch cover

NOTICE

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



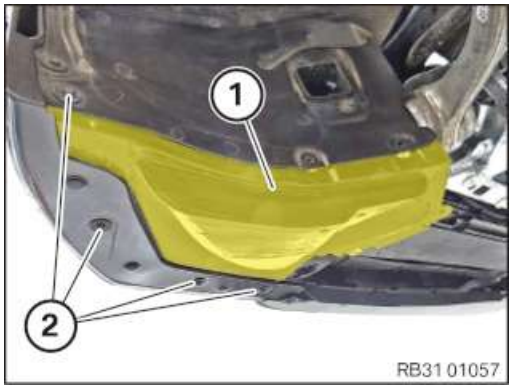
- Install the front section of the front wheel arch cover (1).
- Tighten screws (arrows).

Wheel arch trim panel, front

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

15 – Installing the bottom wheel arch cover

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- Position the bottom wheel arch cover (1).
- Tighten the screws (2).

Cover, front bottom on side

Hexagon screw for thermoplastic		Tightening torque	3 Nm

16 – 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.

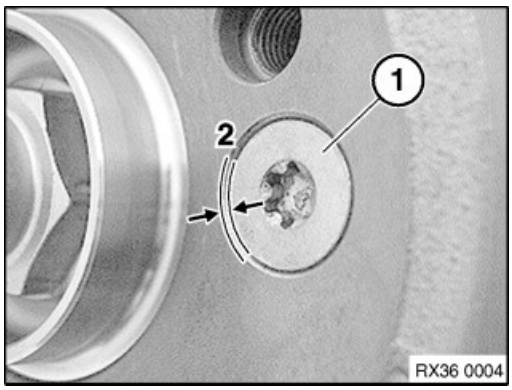
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  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).



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

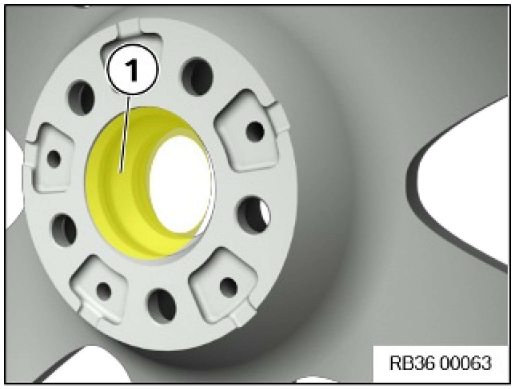
  The mounting bolt (1) for the brake disc may not protrude under any circumstances on the contact surface (2) between the brake disc and the wheel rim.

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.

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TECHNICAL INFORMATION

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

The wheel rim must rest uniformly against the brake disc.

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

Do not apply oil to new wheel bolts.

- Renew 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

17 – Filling and bleed the high-temperature coolant circuit



- See additional information.

Additional Information

Overview of Tightening Torques

Changeover valve to holder Used in step 9

Screw		Tightening torque	1,8 Nm

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Silencer to holder / holder to body — Used in step 101113

Screw		Tightening torque	8 Nm
Nut		Tightening torque	8 Nm

Silencer to stationary heating — Used in step 11

Nut		Tightening torque	6 Nm

Stationary heating to holder/body — Used in step 13

Nut		Tightening torque	19 Nm
Screw		Tightening torque	19 Nm

Wheel arch trim panel, front — Used in step 14

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

Cover, front bottom on side — Used in step 15

Hexagon screw for thermoplastic		Tightening torque	3 Nm

Brake disc to front wheel hub — Used in step 16

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub — Used in step 16

M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts — Used in step 16

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

Overview of Special Tools

2 344 011 Tool



Common — Used in step 16

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:

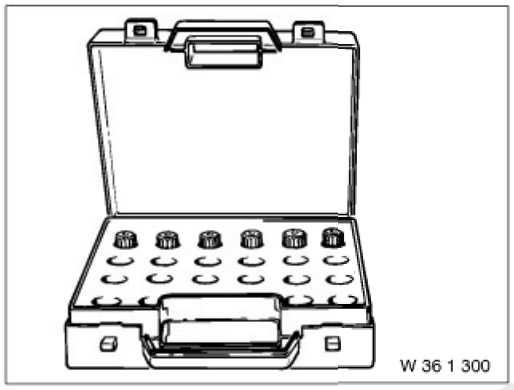
carflash.com

0 495 221 (36 1 323) Wheel stud



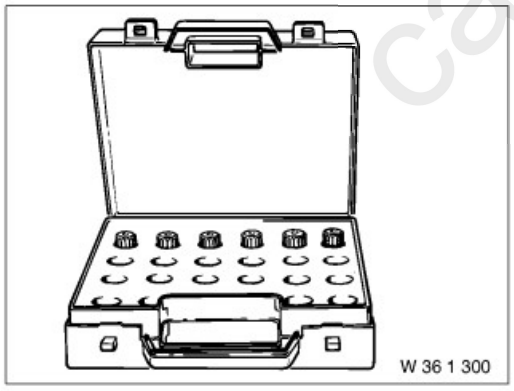
Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
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 1
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	

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0 495 226 (36 1 328) Wheel stud



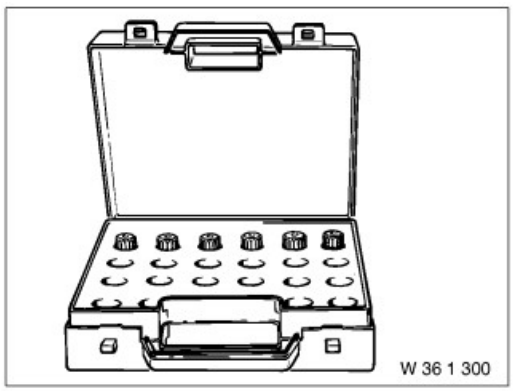
Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
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 1
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	

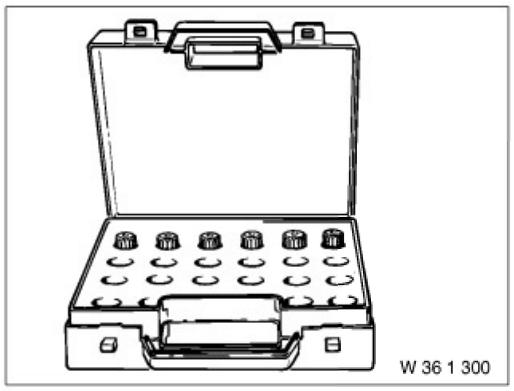
cardiagn.com

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
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 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Links

Repair instructions	Used in step
17 00 008 Draining and topping up coolant for high-temperature circuit	17
17 00 008 Draining and topping up coolant for high-temperature circuit	17
17 00 008 Draining and topping up coolant for high-temperature circuit	17
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	17
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	17
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	17
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17 00 039 Bleed the cooling system and check it for watertightness with the special tool	17
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	17
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	17
17 00 039 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature)	17
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	17
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	17
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	17
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	17
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	17
17 00 039 Bleeding the cooling system (B36, B38, B46, B48)	17
17 00 039 Bleeding cooling system (B37, B47)	17
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	17
17 00 039 Filling and bleeding the high-temperature cooling system vacuum filler device (B48)	17
17 00 008 Draining and topping up the high-temperature coolant circuit	17
17 00 008 Draining and topping up the high-temperature coolant circuit	17
17 00 016 Draining and topping up coolant circuit for Range Extender \PREMIUM	17
17 00 008 Draining and topping up the high-temperature coolant circuit	17
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	17
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	17
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	17
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	17
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	17

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64 12 670 Replacing electric auxiliary heater -front-

Prerequisite

- Air conditioning has been drawn off.

  Refrigerant line at the expansion valve is released.

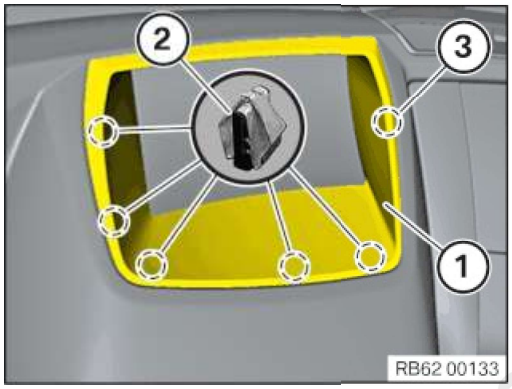
PRELIMINARY WORK

1 – Adjust the steering column position



- Adjust the length of the steering column to the maximum length in the direction of arrow (1).
- Move the steering column to the lowest steering column position in the direction of arrow (2).

2 – Removing trim for the Head-Up Display



- Unclip trim (1) for the Head-Up Display upwards from clamps (2) and latch mechanism (3).

3 – Remove cupholder



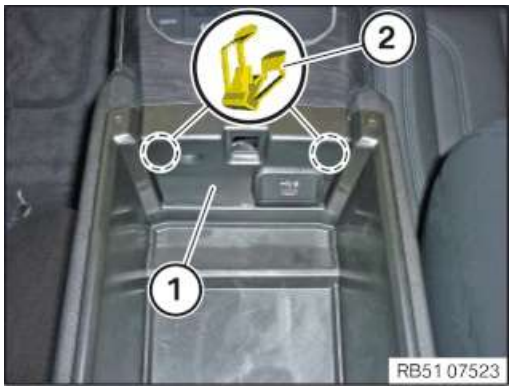
- Remove the insert (1).



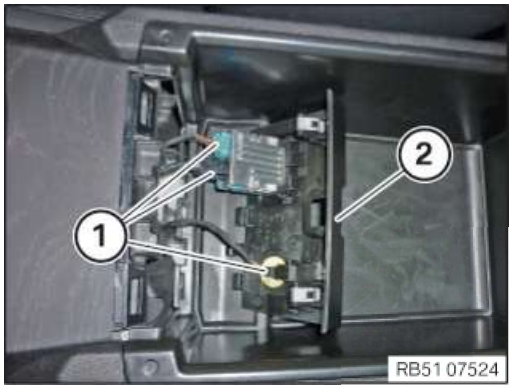
- Loosen screws (1).
- Feed the cup holder (2) out to the top.
- Unlock associated plug connections and disconnect.

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4 – Removing the trim in the storage compartment on the centre armrest



- Lever out the trim (1) with the special tool (2) toward the rear from the clamps 2 298 505.



- Unlock and disconnect the plug connections (1) and remove the trim (2) .

5 – Remove the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



- Release and remove the centre console trim upwards (1) as shown using the special tool 2 298 505 from the latch mechanisms.

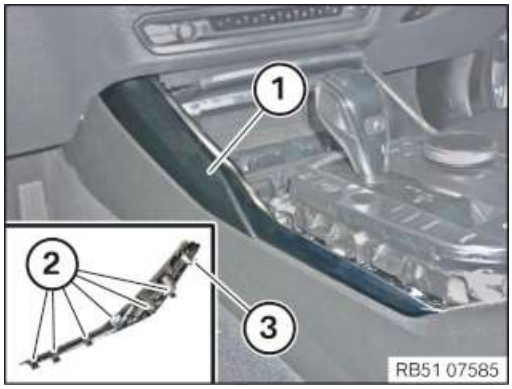
6 – Removing the decorative trim on the centre console trim on the left and right

▸ **Remove decorative trim on centre console**

NOTICE

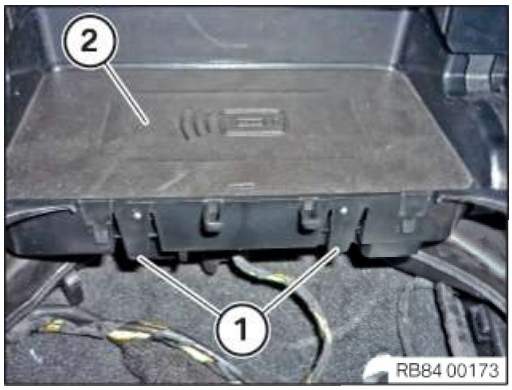
Description is for left component only. Procedure on the right side is identical.

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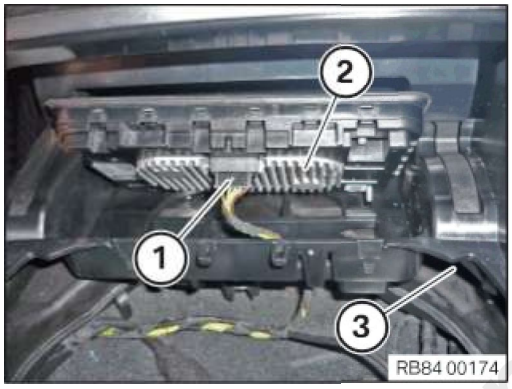


- Lever out the rear decorative trim (1) from the latch mechanisms (2) starting from the top.
- Feed out the decorative trim (1) backwards out of the guide (3) and remove.

7 – Removing the wireless charging station



- Loosen the latch mechanisms (1) and push out the wireless charging station (2) upwards.



- Disconnect the connector (1) and remove the wireless charging station (2) from the centre console (3).

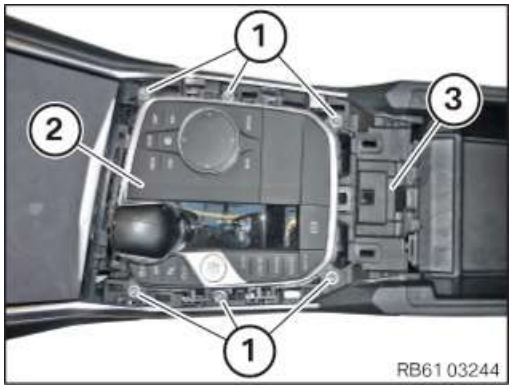
8 – Remove the operating facility in the centre console

▸ **Disconnecting all battery earth leads**



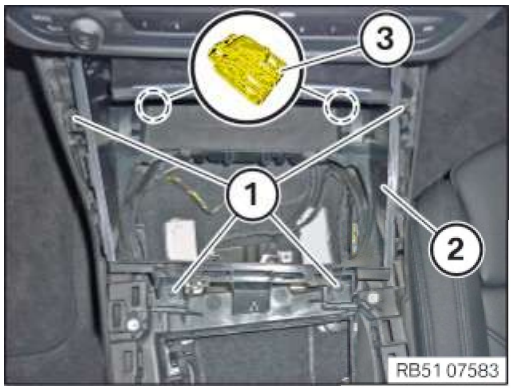
- See additional information.

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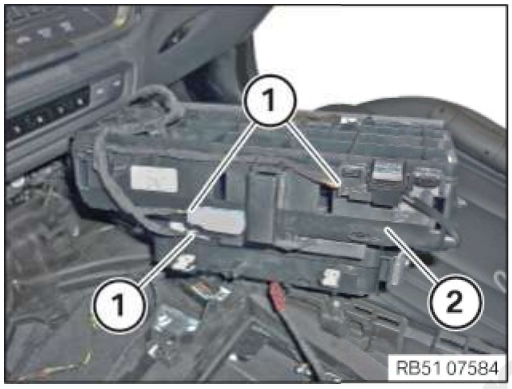


- Loosen screws (1).
- Remove the operating facility in the centre console (2) from the centre console (3).

9 – Removing the storage compartment of the front centre console



- Loosen screws (1).
- Remove storage compartment trim (2) backwards out of clamps (3).



- Unlock and disconnect all the plug connections (1) and remove the storage compartment (2).

10 – Removing the rear centre console trim

RISK OF DAMAGE

Scratches.

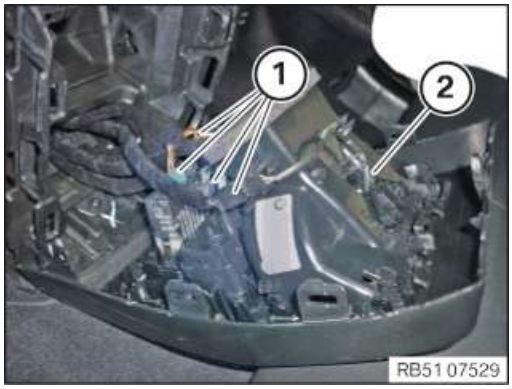
Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



- Release centre console trim (1) backwards from the latch mechanisms at the side and pull it a little way towards the rear.

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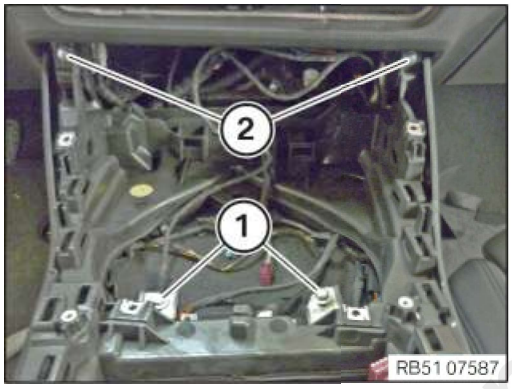


- Unlock and disconnect plug connections (1).
- Remove the centre console trim (2).

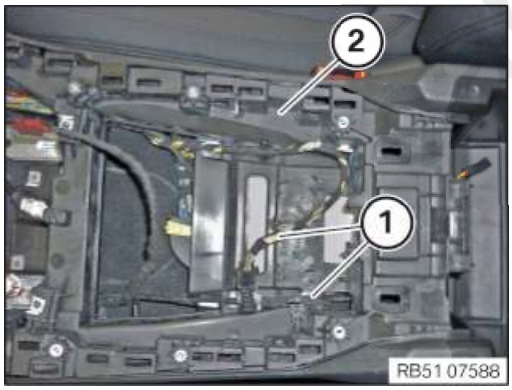
11 – Removing the centre console



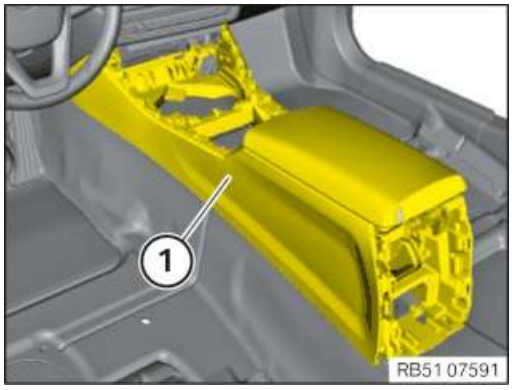
- Loosen screws (1).



- Loosen screws (1) and (2).



- Release the wiring harness (1) from the centre console (2).



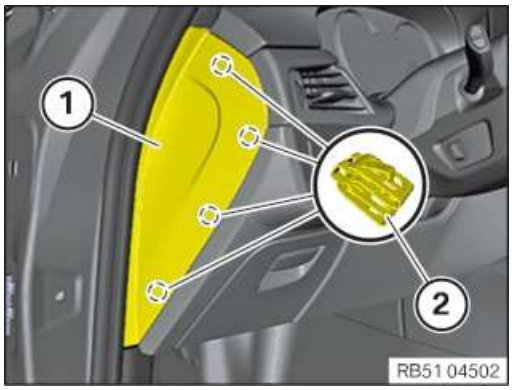
NOTICE

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

- Carefully raise rear centre console (1).
- Feed out wiring harness from the centre console (1) and unlock and disconnect existing plug connections, if required.
- Feed out and remove the centre console (1) on the instrument panel .

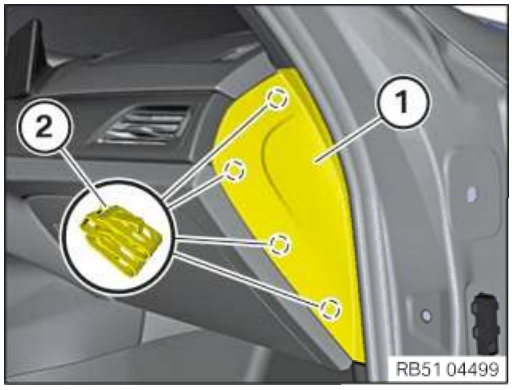
12 – Remove the side panel on the left instrument panel

12 – Remove the side panel on the left instrument panel



- Unclip and remove the side panel (1) towards the outside from the clamps (2).

13 – Remove the side panel on the right instrument panel



- Unclip and remove the side panel (1) towards the outside from the clamps (2).
- If necessary, unlock associated plug connection and disconnect.

14 – Remove both A-pillar trim panels

NOTICE

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

▸ **Remove the A-pillar trim panel**

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

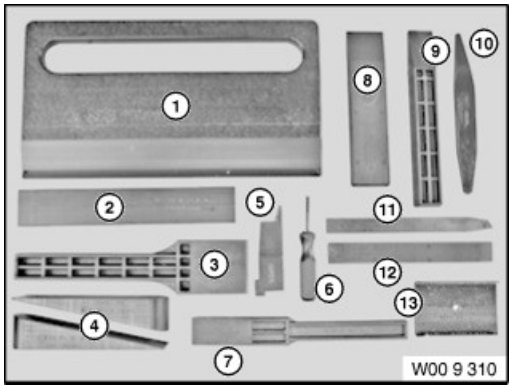
WARNING

Pyrotechnic components.

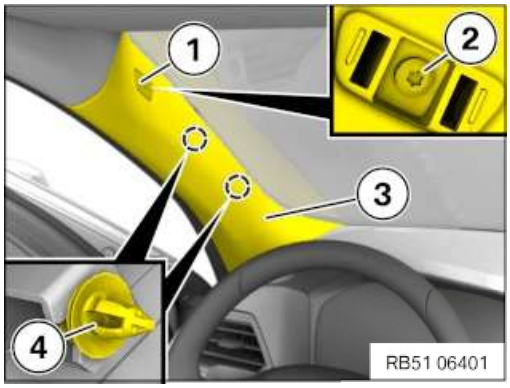
Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.

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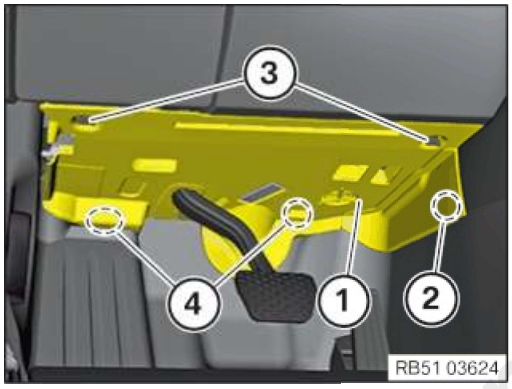


- Have the set of special tools 0 493 752 (00 9 329) ready.



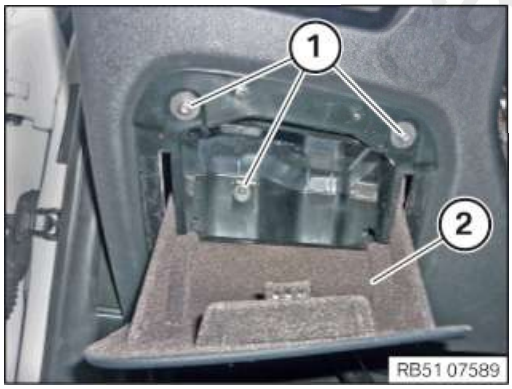
- Unclip the cover (1) with suitable tools.
- Loosen screw (2).
- Unclip A-pillar trim panel (3) with clips (4) and guide it out upwards.

15 – Removing the trim panel for pedal mechanism



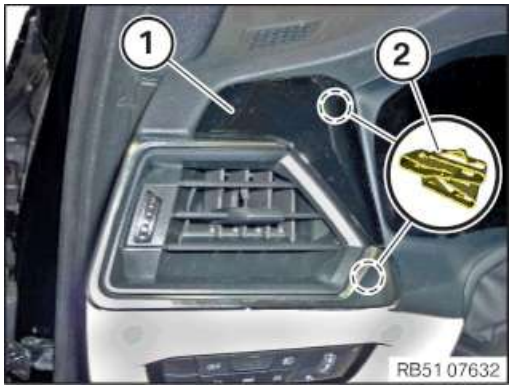
- Unclip the trim panel for the pedal mechanism (1) towards the inside in this area (2).
- Turn the locks (3) by 90°.
- Detach the trim panel for the pedal mechanism (1) inwards out of the guides (4).
- Unlock associated plug connection and disconnect.

16 – Removing the left fold-down compartment



- Loosen screws (1).
- Remove the fold-down compartment (2) toward the bottom.

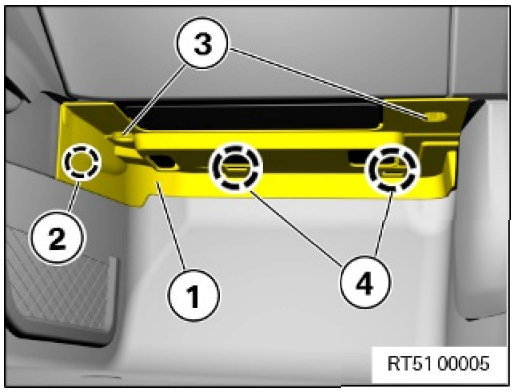
17 – Remove the finisher on the instrument panel on the left



- Unclip decorative strip (1) to the rear out of the clamps (2).
- Unlock associated plug connection and disconnect.

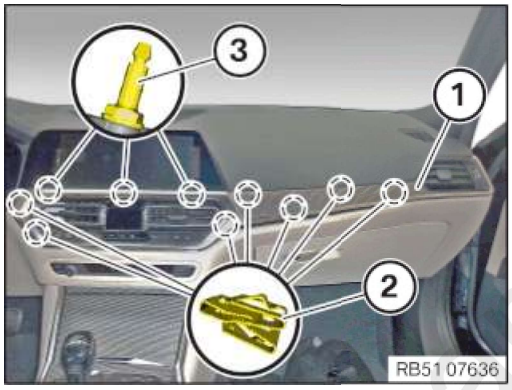
  Remove the decorative strip (1).

18 – Remove the right footwell trim



- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

19 – Remove the finisher on the right instrument panel



- Unclip the decorative strip (1) towards rear at the clamps (2) and the pins (3).
- Unlock associated plug connection and disconnect.

  Remove the decorative strip (1).

20 – Remove Central Information Display (CID)

RISK OF DAMAGE

Electrostatic discharge.

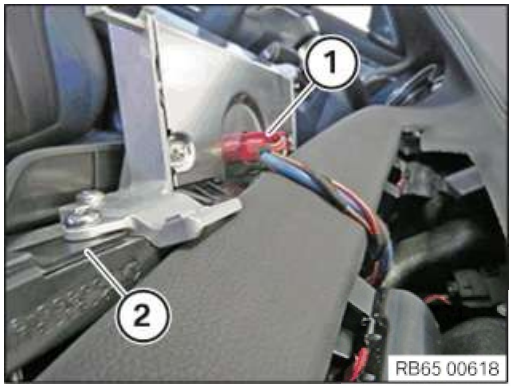
Damage to or destruction of electrical components.

- 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.

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- Loosen screws (1).
- Pull out central information display (CID) (2) slightly off the instrument panel.



- Unlock plug connection (1) and disconnect.
- Remove the central information display (CID) (2).

21 – Removing the airbag unit

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

RISK OF DAMAGE

Damage to the steering wheel.

Incorrect handling of the tool may damage the steering wheel.

- Ensure the tool is positioned correctly (angle and inclination).
- When unlocking, do not use "levering" action. Instead, press in the Torx screwdriver toward the centre of steering wheel only.

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

▸ **Version A: Removing the airbag unit (sports steering wheel)**

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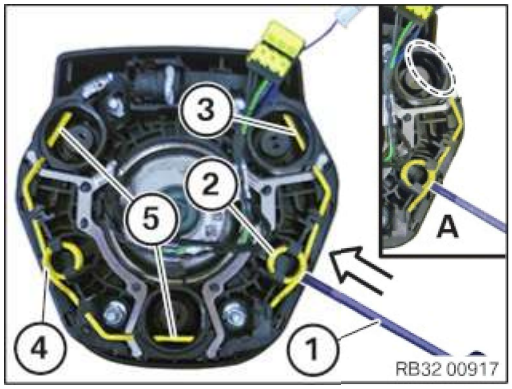
- Insert Torx screwdriver T25 (1) diagonally upwards in the hidden opening (2) on the rear side of the steering wheel until a spring resistance is felt.



NOTICE

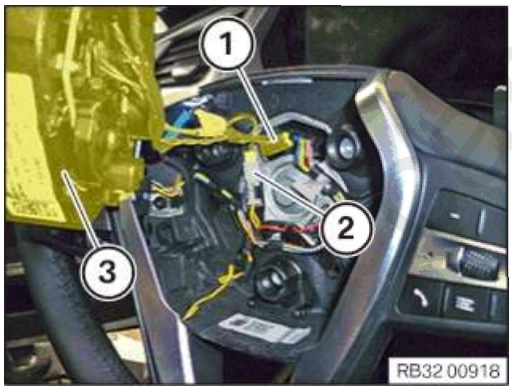
To provide a better overview: Diagram with airbag unit removed.

- To unlock the airbag unit, press Torx screwdriver T25 (1) diagonally upwards in the direction of the arrow to the centre of the steering wheel.



- Press the airbag unit over a large area of the steering wheel.
- Use Torx screwdriver T25 (1) to press wire spring clip (2) in the direction of the arrow towards the centre of the steering wheel and release lock (3).

  (A): Wire spring clip (2) is unlocked.
- Then use Torx screwdriver T25 (1) to press wire spring clip (4) in the direction of the arrow towards the centre of the steering wheel and release locks (5).
- Carefully raise the airbag unit.

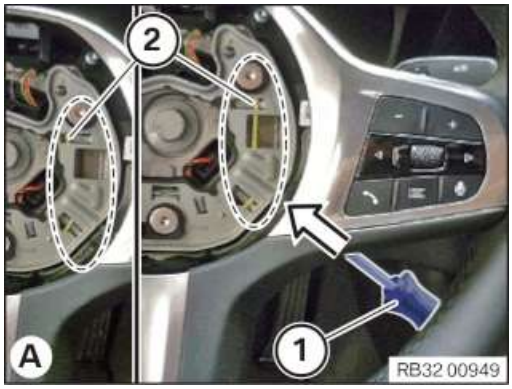


- Unlock and disconnect the plug connections (1) and (2).
- Remove airbag unit (3).

▸ **Version B: Removing airbag unit (M Sport steering wheel)**



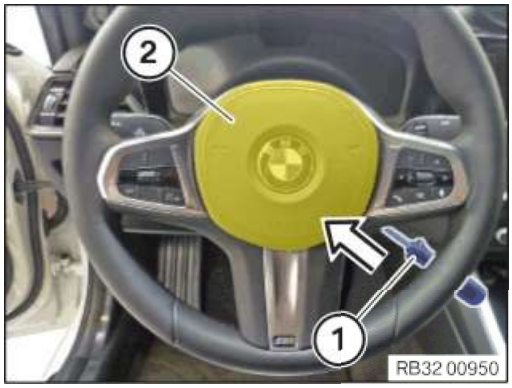
- Locate the pre-punched bore hole (1) on the rear side of the steering wheel by touch.
- Insert the Torx screwdriver T27 (2) diagonally upwards in the pre-punched bore hole (1) on the rear side of the steering wheel until a springing kind of resistance can be felt.



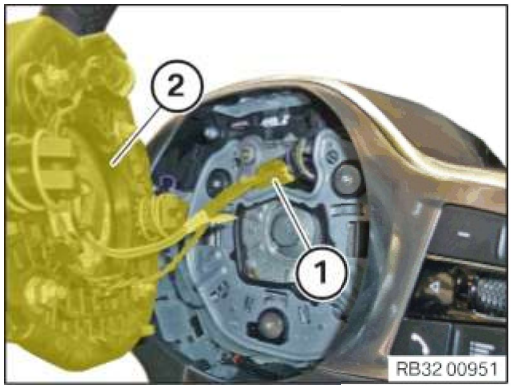
NOTICE

To provide a better overview: Diagram with airbag unit removed.

- Press in Torx screwdriver T27(1) straight in direction of arrow towards the centre of the steering wheel in order to unlock the wire spring clip (2) or to unlock the airbag unit (A).

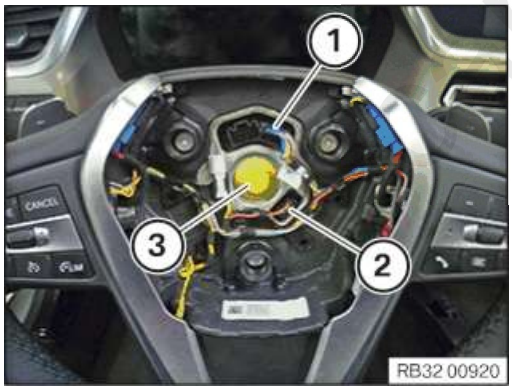


- Press in Torx screwdriver T27 (1) straight in direction of arrow towards the centre of the steering wheel and lift airbag unit (2) on the unlocked side.
- Repeat procedure on left side and carefully remove airbag unit (2) in direction of arrow off the steering wheel.



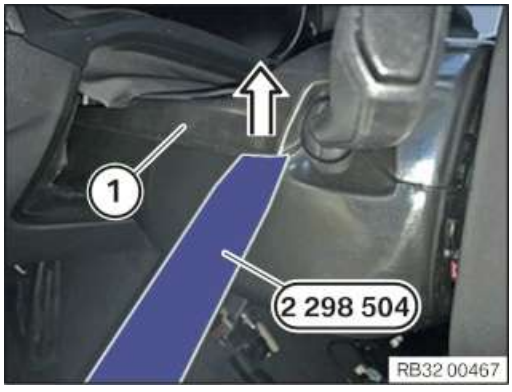
- Unlock and disconnect plug connection (1) and remove the airbag unit (2).

22 – Removing the steering wheel (sports steering wheel)



- Move the steering wheel and wheels to the straight-ahead position.
- Unlock plug connection (1) and disconnect.
- If installed: Unlock plug connection (2) and disconnect.
- Release the screw (3) and pull off and remove the steering wheel.

23 – Removing steering column shroud upper section

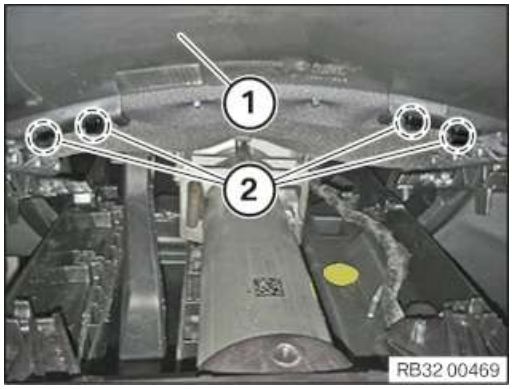


NOTICE

Perform the operations on the left and right side.

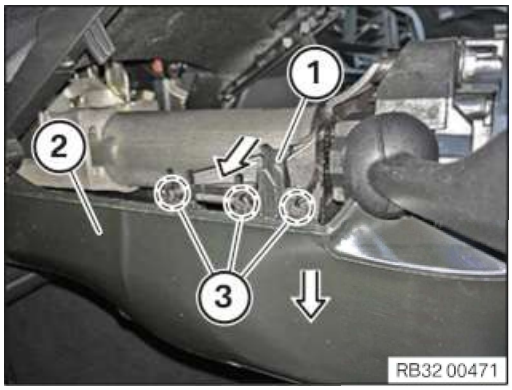
- Unlock the steering column shroud upper section (1) with the special tool 2 298 504 and fold up.

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- Unclip the steering column shroud upper section (1) from the brackets (2).
- Remove the steering column shroud upper section (1).

24 – Removing steering column shroud lower section



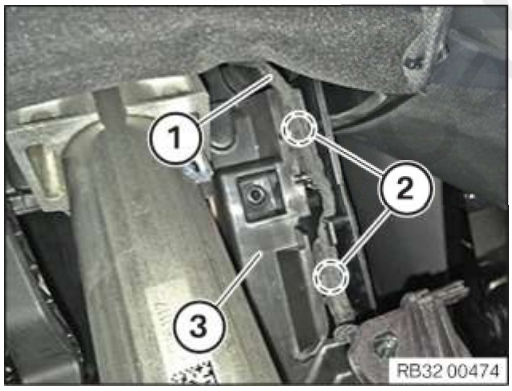
NOTICE

Perform the operations on the left and right side.

- Push the retaining lug (1) to the outside in the direction of the arrow and unclip the steering column shroud lower section (2) from the holders (3) in the direction of the arrow to the bottom at the same time.

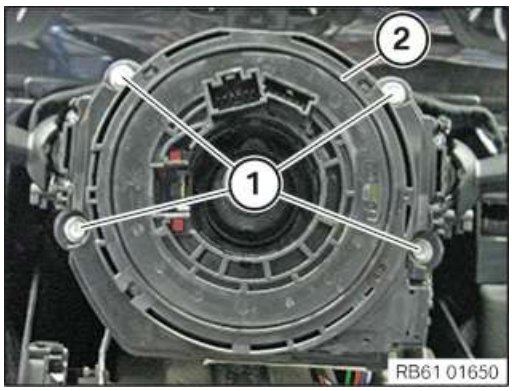


- Fold the steering column shroud lower section down.
- Unlock and disconnect connector (1).

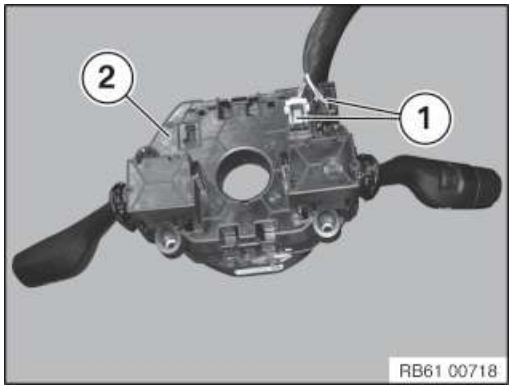


- Detach the cable (1) from the brackets (2).
- Remove the steering column shroud lower section (3).

25 – Removing the steering column switch cluster (SZL)

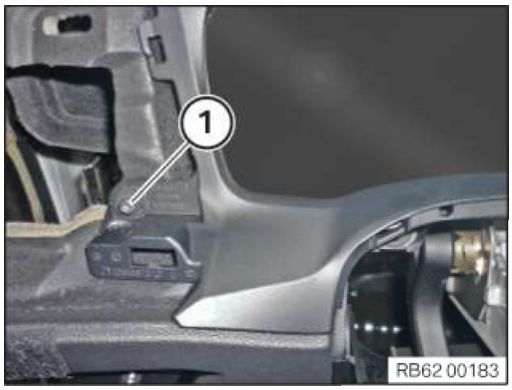


- Loosen screws (1).
- Remove the steering column switch cluster (SZL) (2).



- Unlock and disconnect the connector (1) on the steering column switch cluster (SZL) (2).

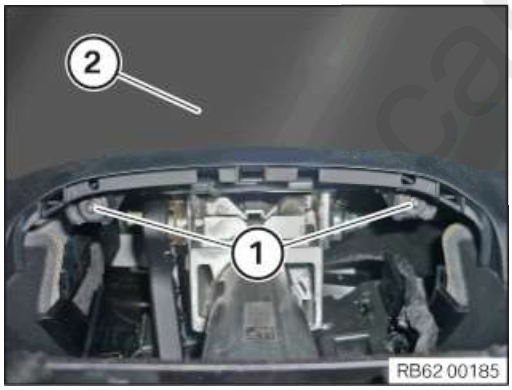
26 – Removing the instrument cluster (KOMBI)



- Loosen screw (1).

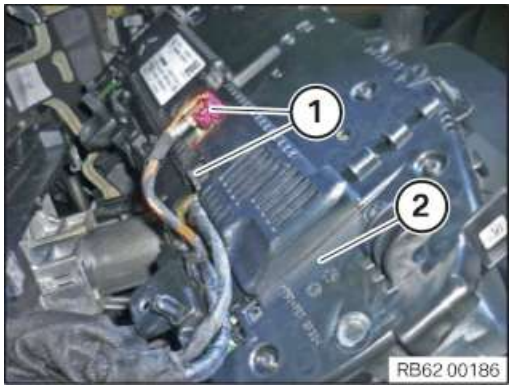


- Loosen screw (1).



- Loosen screws (1).
- Feed out instrument cluster (KOMBI) (2).

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RISK OF DAMAGE

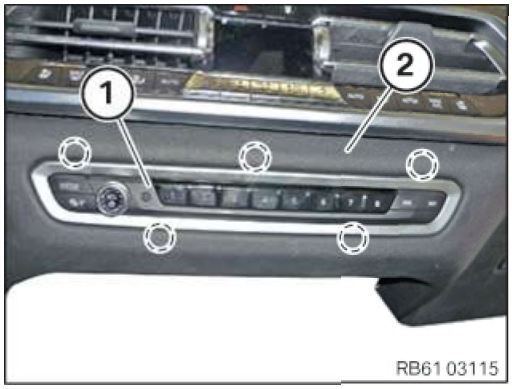
Damage to the instrument cluster (KOMBI)

While releasing and connecting the cable, it could lead to a ground offset. Thereby, currents could arise, that make the instrument cluster (KOMBI) useless.

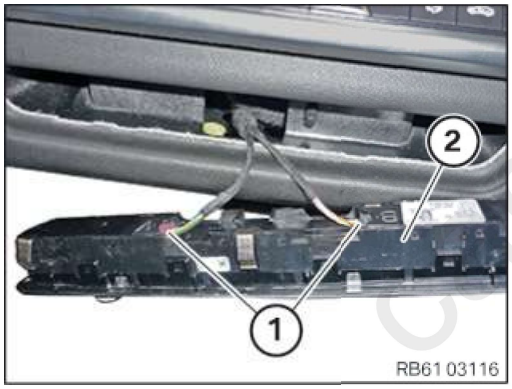
- While releasing: Release APIX data cable (blue) first.
- While connecting: Connect APIX data cable (blue) at the last.

- **If installed:** Release the blue plug connection first.
- Unlock and disconnect plug connections (1) from instrument cluster (KOMBI) (2).
- Remove the instrument cluster (KOMBI) (2).

27 – Remove the audio operating unit

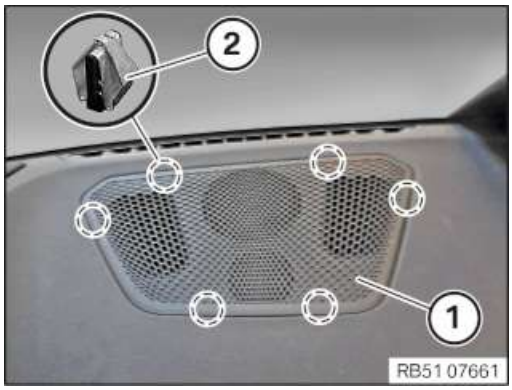


- Unclip the audio operating unit (1) from the instrument panel (2) at the points marked using special tool 0 496 571 (00 9 327).



- Disconnect plug connections (1) and remove the audio operating unit (2).

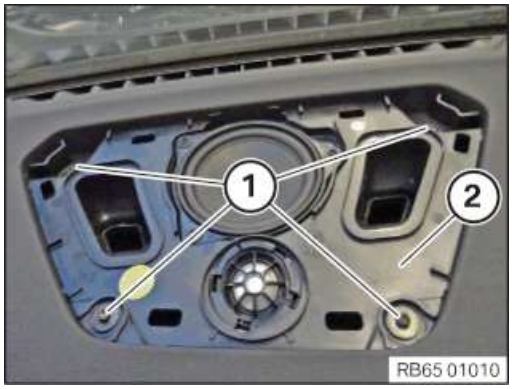
28 – Remove the speaker trim at the instrument panel



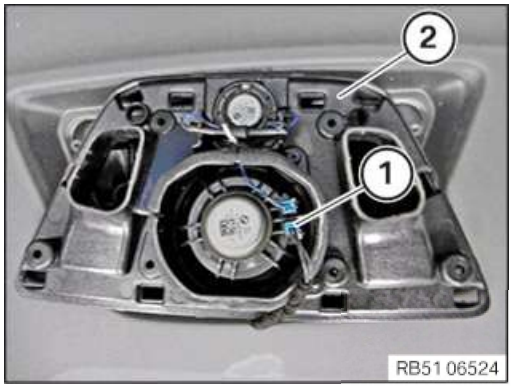
- Lever out the speaker trim (1) with the special tool 0 496 569 (00 9 325) from the clamps (2) toward the top and remove.

29 – Remove the speaker holder at the instrument panel

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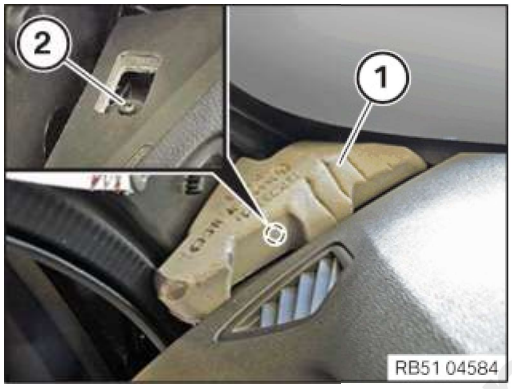


- Loosen screws (1).
- Pull out speaker holder (2) slightly with the loudspeakers and tilt it to the side.



- Unlock plug connection (1) and disconnect.
- Remove the speaker holder (2).

30 – Remove the instrument panel trim panel



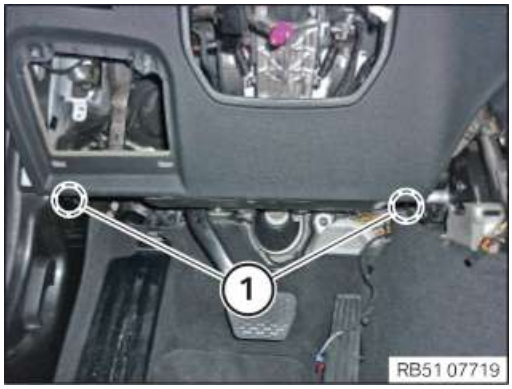
NOTICE

Perform the operations on the left and right side.

- Remove the sound insulation (1).
- Loosen screw (2).

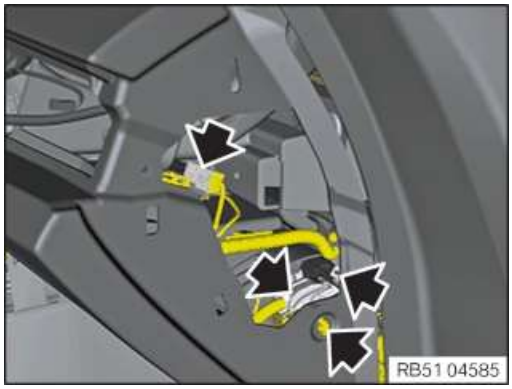


- Loosen screws (1).

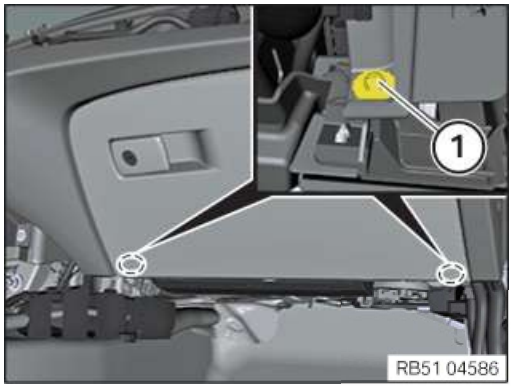


- Loosen screws (1).

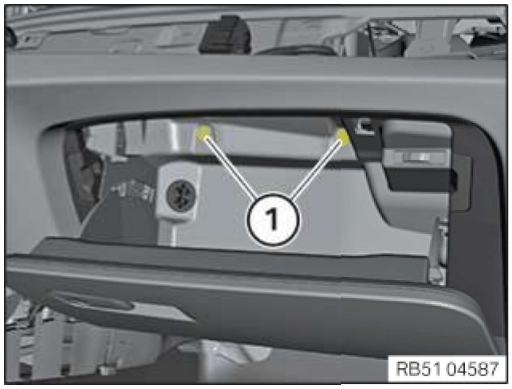
ardiag.com



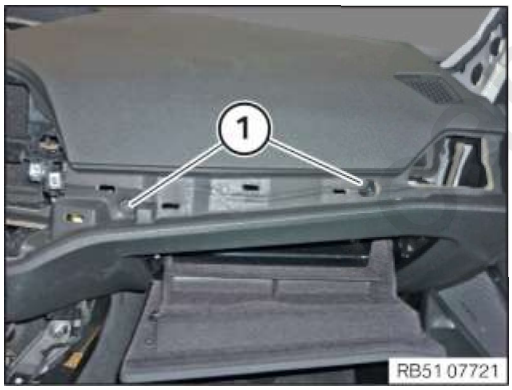
- Release all plug connections and cable clips (arrows) behind the glove box.



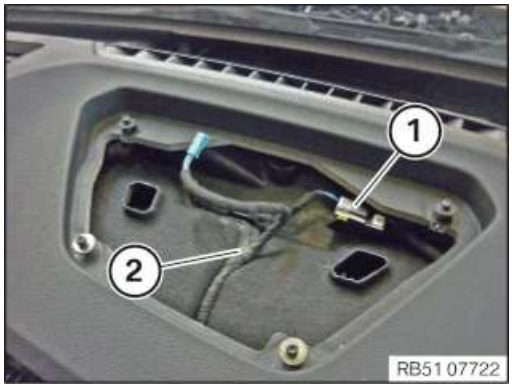
- Release the screws (1) on the lower side of the glove box.



- Open glovebox.
- Loosen screws (1).



- Loosen screws (1).



- Unlock plug connection (1) and disconnect.
- Release the wiring harness (2) on the holders.

rdiagn.com



- Unlock the plug connection (1) on the light operating unit and disconnect it.



- Loosen screws (1).

TECHNICAL INFORMATION

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

- Pull the instrument panel trim back slightly.

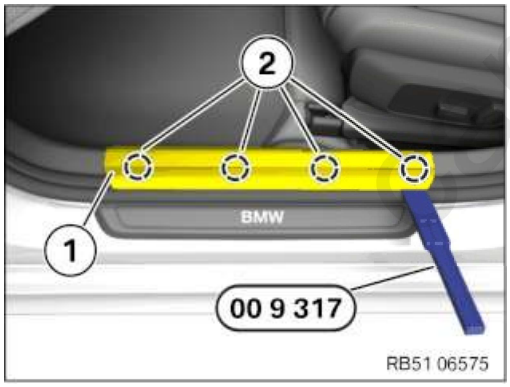
  If necessary, unlock and disconnect additional plug connections.
- Remove the instrument panel trim from the vehicle.

31 – Remove right door sill cover strip

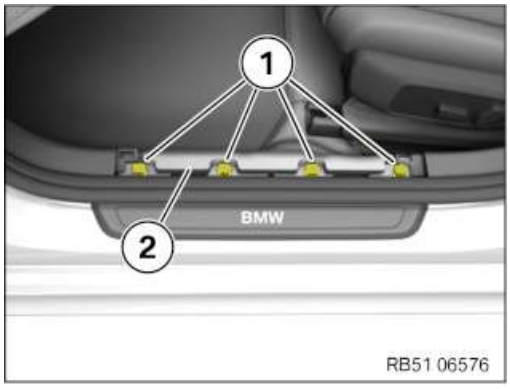
NOTICE

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

▸ **Remove door sill cover strip**



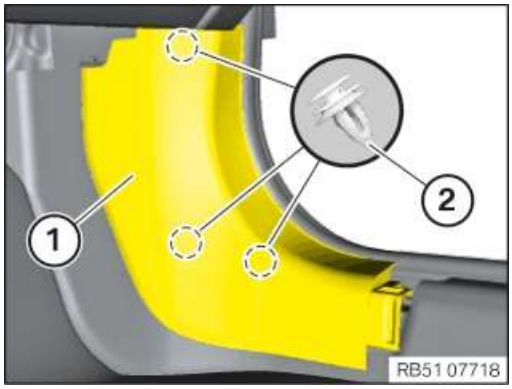
- Detach the door sill cover strip(1) using the special tool 0 490 534 (00 9 317) from the clips (2) in the floor panel.



- If necessary, remove the clips (1) from the floor panel (2) and attach to the door sill cover strip.

32 – Removing the side trim panel in the footwell at the right-hand A-pillar

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- Loosen the side trim panel (1) at the clips (2) and remove it toward the inside.

33 – Removing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

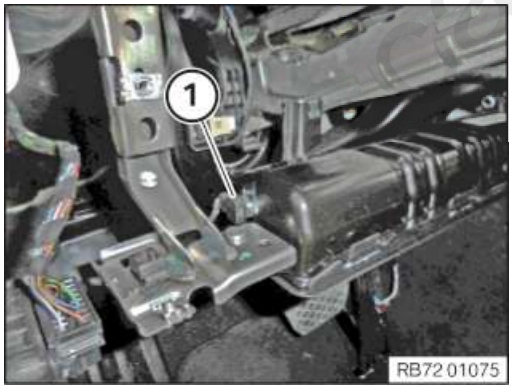
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

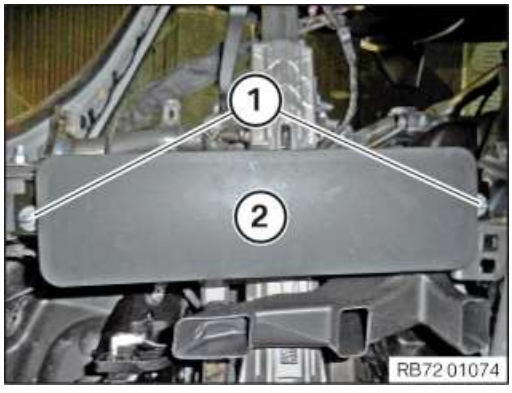
Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.



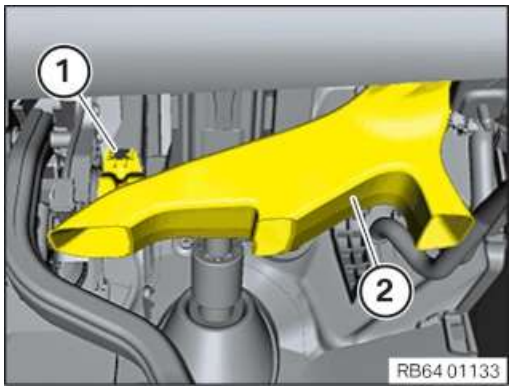
- Unlock plug connection (1) and disconnect.



- Loosen nuts (1).
- Remove knee airbag (2).

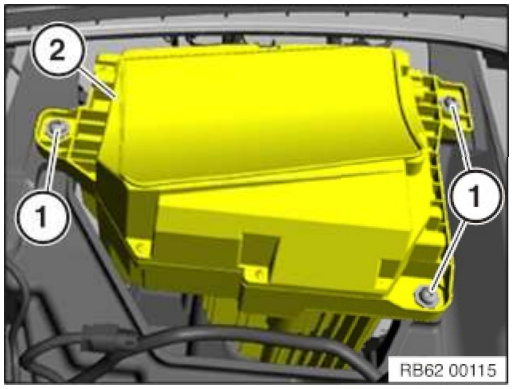
cardiagn.com

34 – Remove left air duct



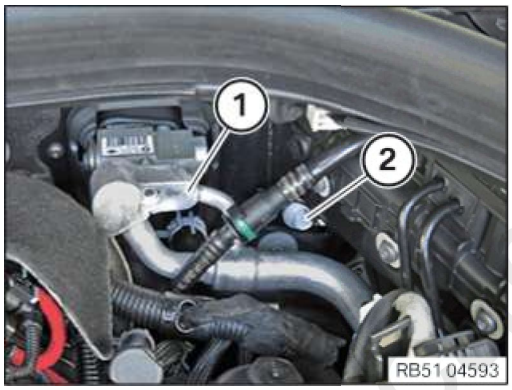
- Unclip the air duct (2) from the air conditioning housing at an angle towards the bottom at the clamp (1).

35 – Removing the Head-Up Display

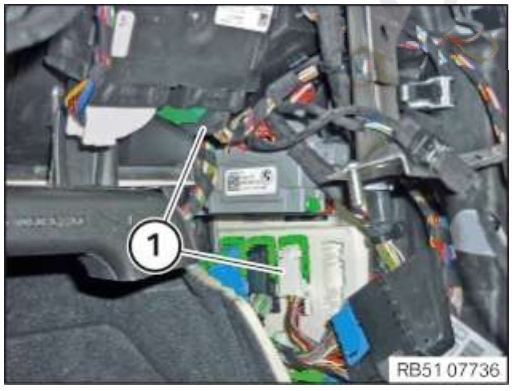


- Loosen screws (1).
- Remove head-up display (2) from support.
- Unlock associated cable and disconnect.

36 – Removing the support for the instrument panel

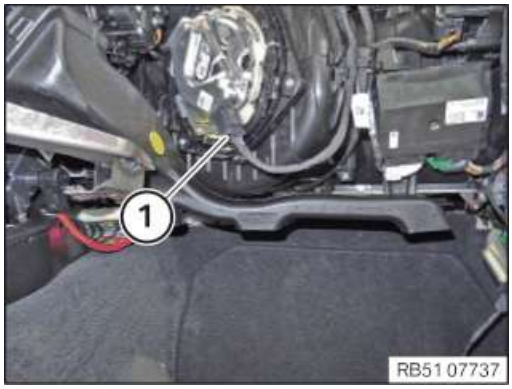


- Push the refrigerant line (1) slightly to one side and loosen the screw (2).

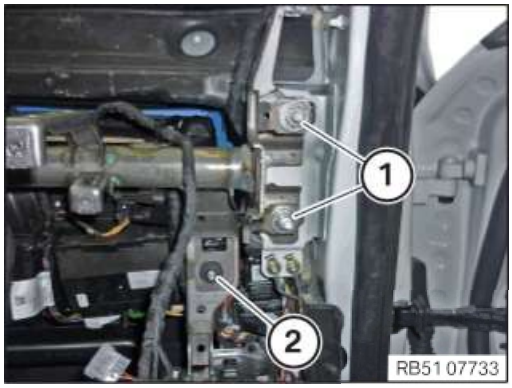


- Push the carpet in the area of the right B-pillar to the side.
- Unlock and disconnect plug connections (1).

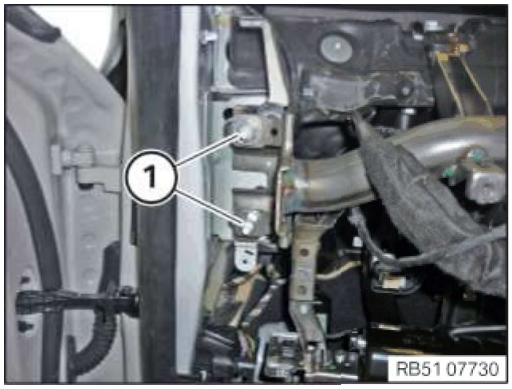
diag.com



- Unlock and disconnect the plug connection (1) on the blower motor.



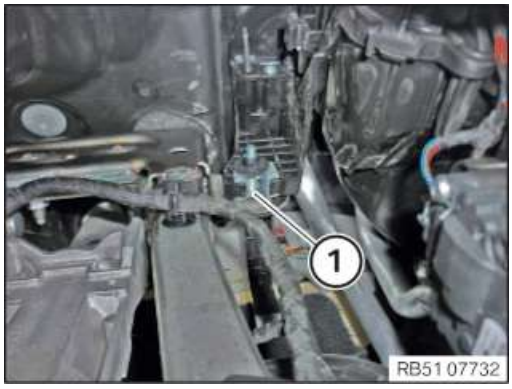
- Loosen nuts (1) and (2).



- Loosen nuts (1).

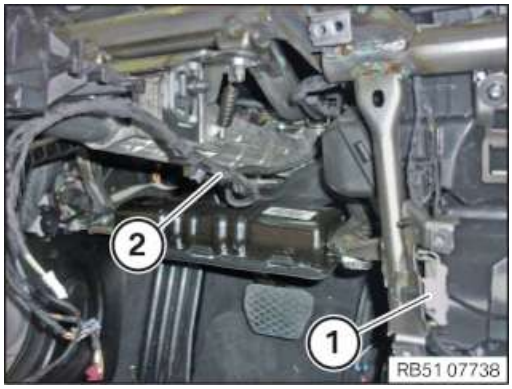


- Loosen screws (1).

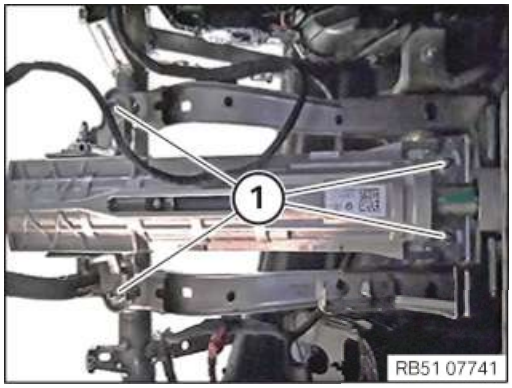


- Slacken the nut (1) in the left footwell on the heating and air-conditioning unit.

rdiagn.com



- Release plug connection (1).
- Release the wiring harness (2) from the steering column.

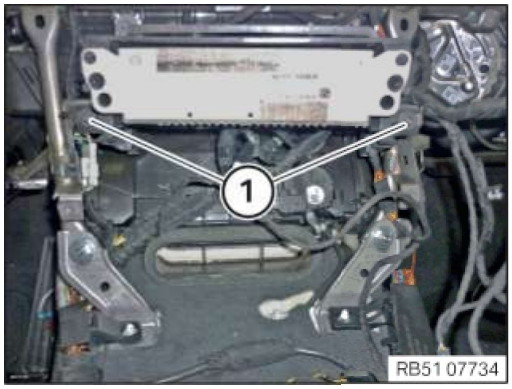


TECHNICAL INFORMATION

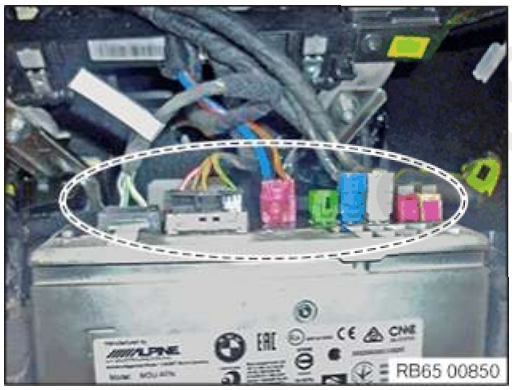
Secure component against falling.

- Release the nuts (1) at the steering column.
- Drop steering column (1) a little away and support it in the footwell.

  Drop steering column not too far away and support it absolutely.



- Loosen screws (1).
- Feed out Head Unit High.



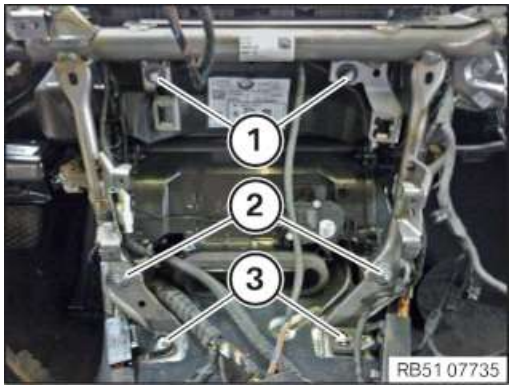
- Unlock and disconnect all connectors in the marked area.

  Remove headunit.



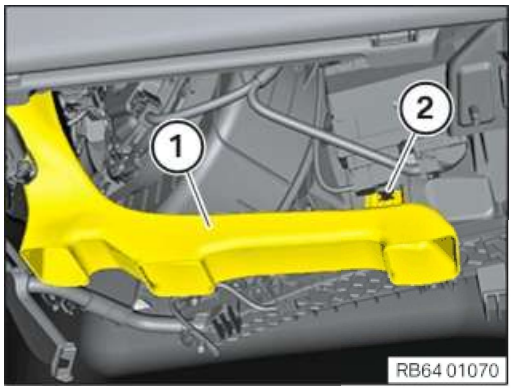
- Unlock and disconnect plug connection (1) from airbag control unit.
- Release the wiring harness (2) on the holders.

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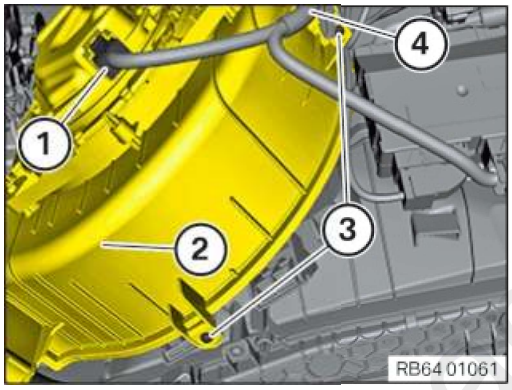
- Loosen nuts (1).
- Loosen nuts (2).
- Remove cable clip and release the nuts (3).
  Remove retaining bracket from left and right sides.
- Carefully feed out the support for the instrument panel to the rear.
  If necessary, unlock and disconnect additional plug connections.
- Carefully remove support for the instrument panel from the vehicle.

37 – Removing the right air duct

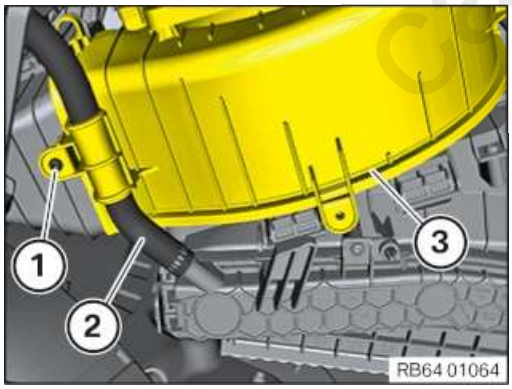


- Unclip the air duct (1) at an angle toward the bottom at the spring clip (2).

38 – Remove the blower for the heating and air-conditioning unit



- Unlock and disconnect the plug connection (1) from the blower motor (2).
- Loosen screws (3).
- Pull of the cable clip (4) from the housing of the blower motor (2).



- Loosen screw (1).
- Guide out the hose (2) from the housing of the blower motor (3).
- Remove the housing of the blower motor (3).

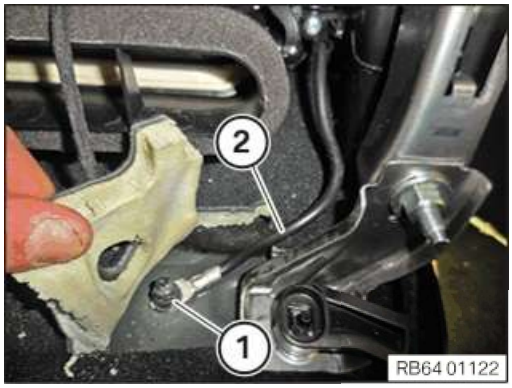
MAIN WORK

39 – Remove electric auxiliary heater

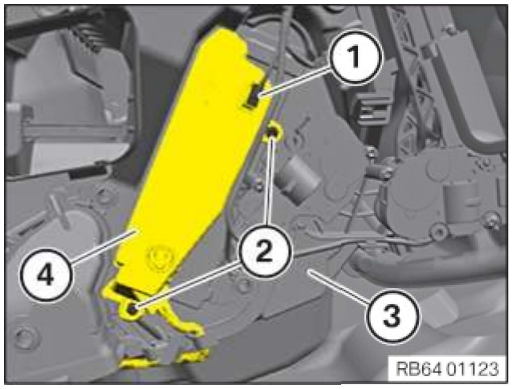
carldiagn.com



- Unlock and disconnect the plug connection (1) from the electric auxiliary heater (2).

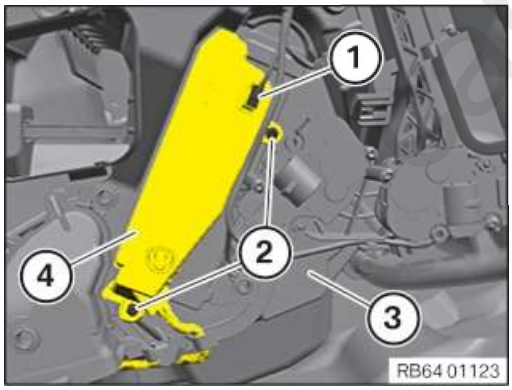


- Release the nut (1) and remove the ground cable (2).



- Unlock plug connection (1) and disconnect.
- Loosen screws (2).
- Remove the electric auxiliary heater (4) from the heating and air-conditioning unit (3).

40 – Installing the electric auxiliary heater



- Position electric auxiliary heater (4) correctly and insert in the heating and air-conditioning unit (3).
- Connect connectors (1) and lock.
- Tighten down screws (2).

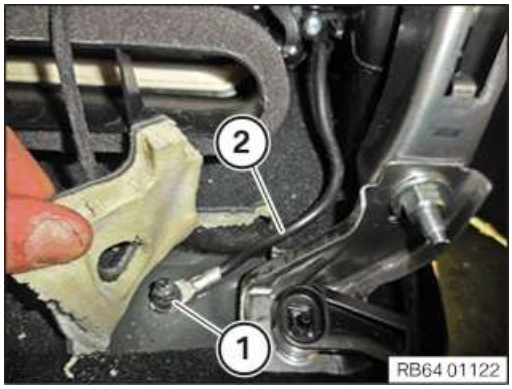
Heater/air conditioner

Screw		Tightening torque	1,2 Nm



- Connect and lock the connector (1) on the electric auxiliary heater (2).

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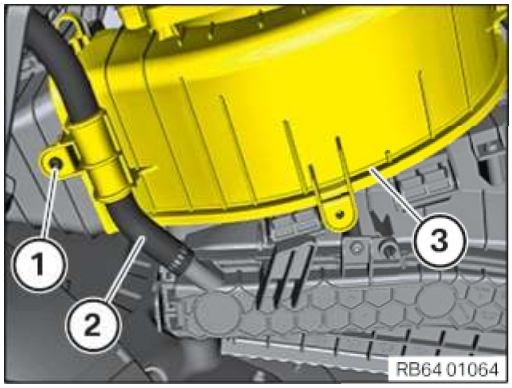
- Correctly position the ground cable (2) and tighten the nut (1).

Ground cable to body

Hexagon nut		Tightening torque	8,0 Nm

POSTPROCESSES

41 – Install the blower for the heating and air-conditioning unit

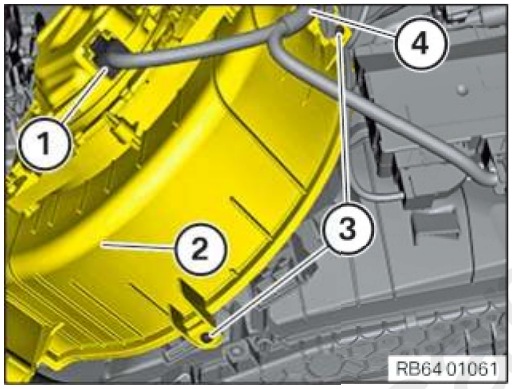


- Position the housing of the blower motor (3).
- Tighten down screw (1).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Feed in the hose (2) at the housing of the blower motor (3).



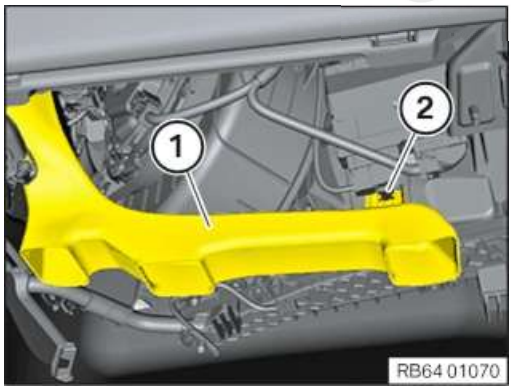
- Connect and lock plug connection (1) of blower motor (2).
- Tighten down screws (3).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Secure the cable clip (4) on the housing of the blower motor (2).

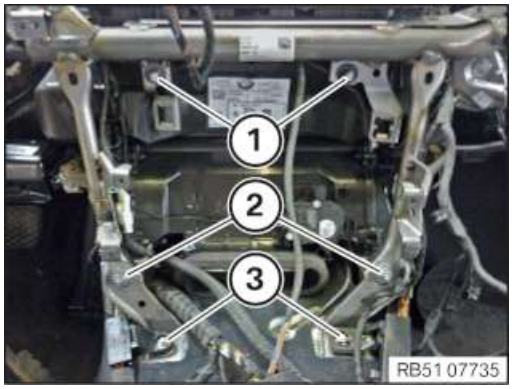
42 – Installing the air duct, right



- Clip the air duct (1) in upward at an angle with the spring clip (2) on the heating and air-conditioning unit.

43 – Installing the support for instrument panel

cardiagn.com



- Install the instrument panel support into the vehicle carefully.
- Insert the instrument panel support carefully.

  If necessary, connect and lock the additional connector.
- Tighten nuts (1).

Heating and air-conditioning unit on support

Nut M6		Tightening torque	4 Nm

- Mount retaining bracket on left and right.

  Tighten nuts (2).

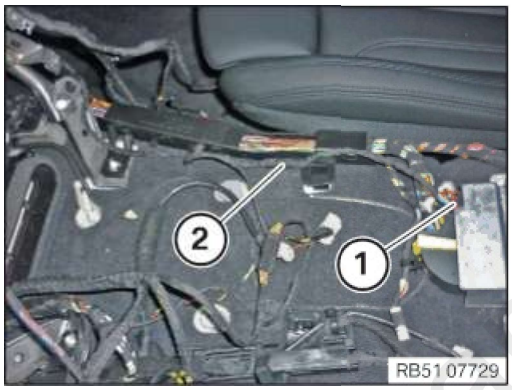
Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

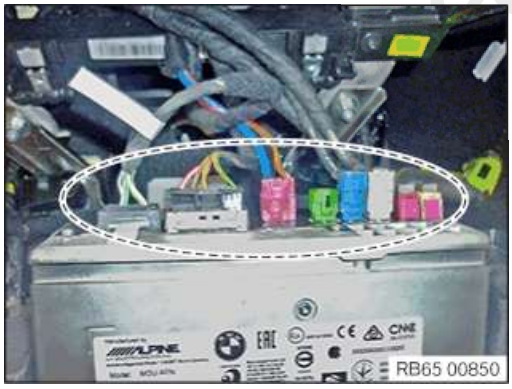
- Tighten nuts (3) and fit cable clip .

Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

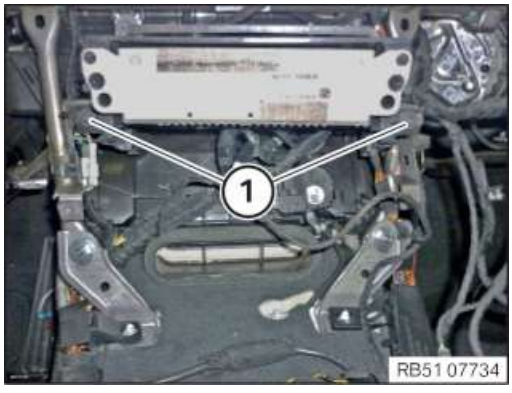


- Connect the connector (1) to the airbag control unit and lock.
- Secure the wiring harness (2) on the holders.



- Installing head unit.

  Connect and lock all connectors in the marked area.

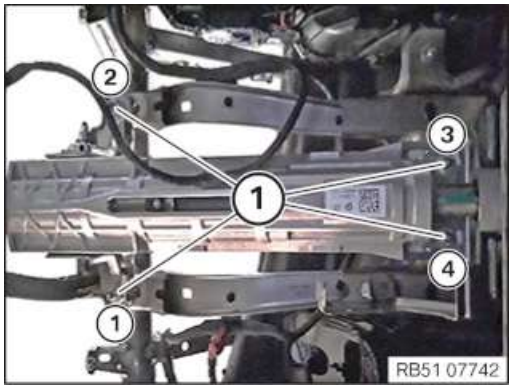


- Feed in the head unit.
- Tighten the screws (1).

Head unit to holder / holder to support

Screw		Tightening torque	1,8 Nm

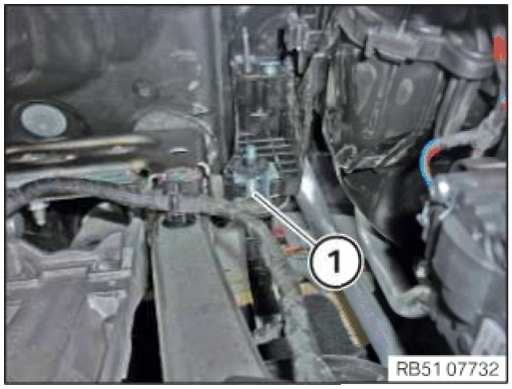
bmwdiagn.com



- Correctly position the steering column (2) and tighten the nuts (1) in the sequence (1), (2), (3) and (4).



- Connect connectors (1) and lock.
- Secure the vehicle wiring harness (2) to the steering column.



- Tighten nut (1) in the left foot well on the heating and air-conditioning unit.

Heating and air-conditioning unit on support

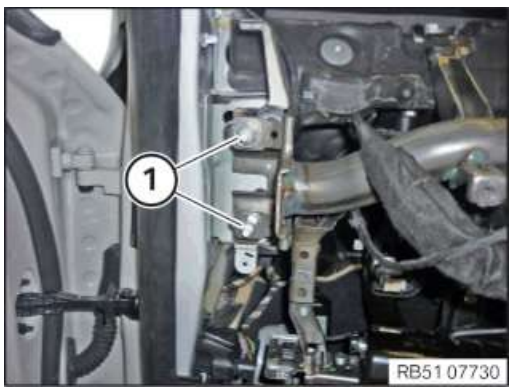
Nut M6		Tightening torque	4 Nm



- Tighten the screws (1).

Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

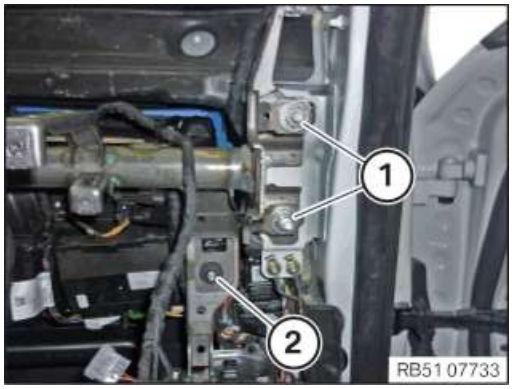


- Tighten nuts (1).

Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

rdiagn.com



- Tighten nuts (1).

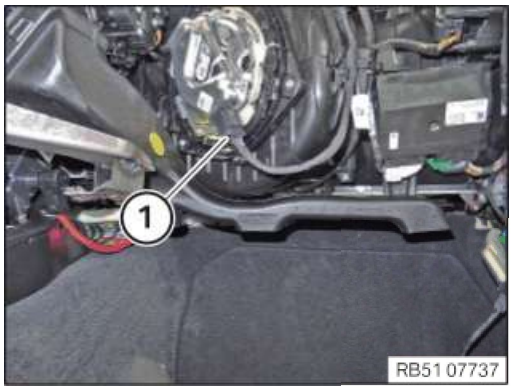
Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

- Tighten nut (2).

Heating and air-conditioning unit on support

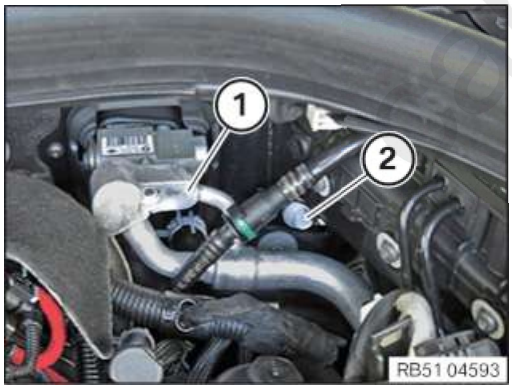
Nut M6		Tightening torque	4 Nm



- Connect the connector (1) to the blower motor and lock.



- Connect connector (1) and lock.
- Correctly position the carpet in the area of B-pillar at the right.

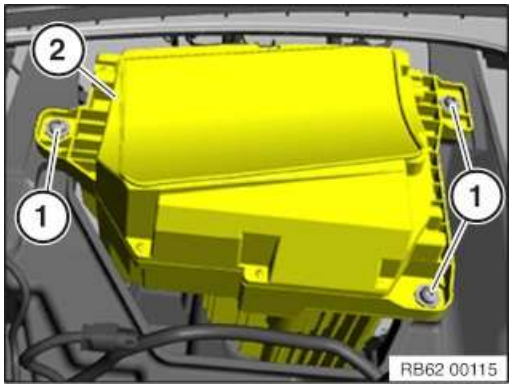


- Push the refrigerant line (1) slightly to one side and tighten the screw (2).

Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

44 – Installing the head-up display



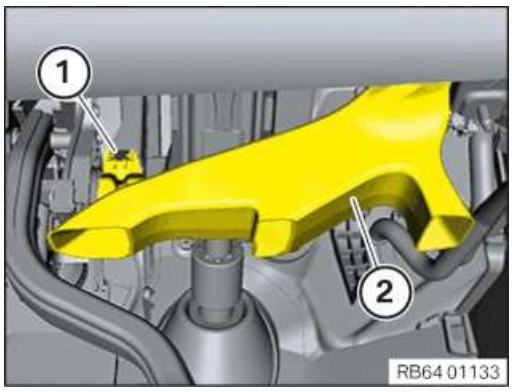
- Connect the associated connector to the Head-Up Display.
- Guide the Head-Up Display (2) into the support.
- Tighten the screws (1).

Head-Up Display to support

M6x25 screw		Tightening torque	13 Nm

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45 – Installing the air duct, left



- Clip in the air duct (2) at the clamp (1) in the air conditioning housing at an angle towards the top.

46 – Installing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

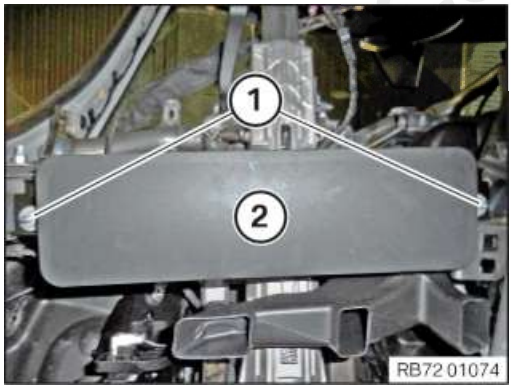
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.

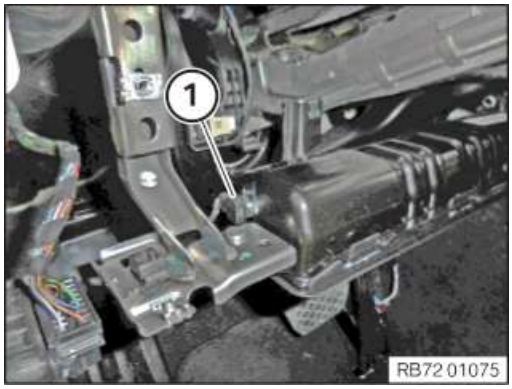


- Position knee airbag (2) correctly.
- Tighten nuts (1).

Knee airbag on support structure

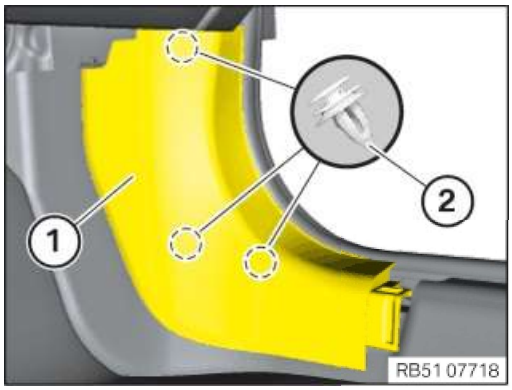
Nut		TIghtening torque	8 Nm

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- Connect connectors (1) and lock.

47 – Installing side trim panel in footwell on right A-pillar



- Check the clips (2) for damage.

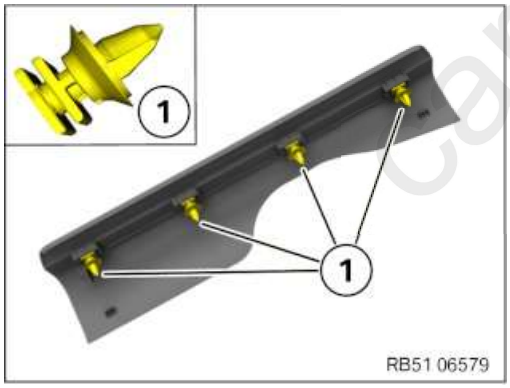
  Renew damaged or missing clips (2).
- Correctly position the side trim panel (1) and clip in to the clips (2).
- Make sure that the side trim panel (1) is correctly fitted against edge protection.

48 – Install right door sill cover strip

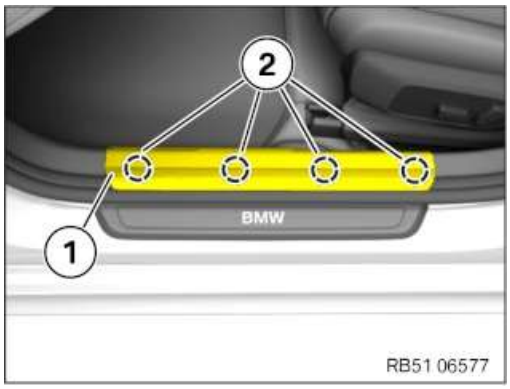
NOTICE

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

▸ **Install the door sill cover strip**



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



- Clip the door sill cover strip (1) into the floor panel with the clips (2).

49 – Install the trim panel for the instrument panel

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TECHNICAL INFORMATION

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

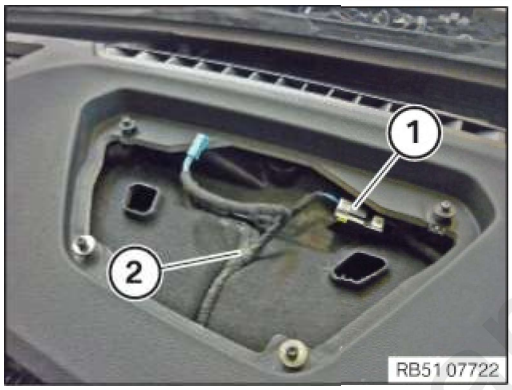
- Insert the instrument panel trim in the vehicle and position it at the support.
- Insert the associated wiring harnesses and connect the connectors.
- Tighten the screws (1).

Dashboard to support

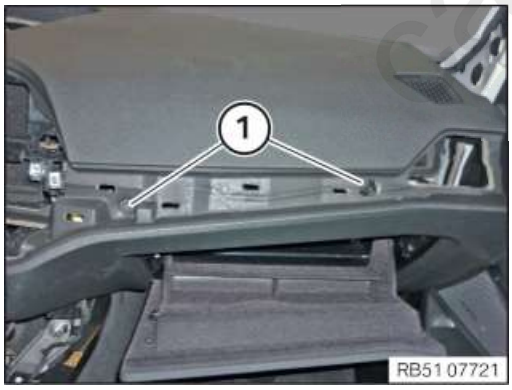
Screw		Tightening torque	2,4 Nm



- Connect connector (1) to the light operating unit and lock.



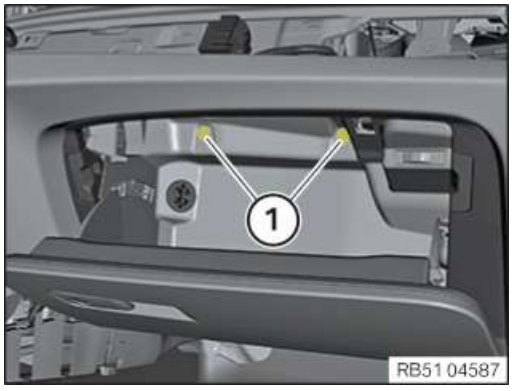
- Secure the wiring harness (2) on the holders.
- Connect plug connection (1) and lock.



- Tighten the screws (1).

Dashboard to support

Screw		Tightening torque	2,4 Nm

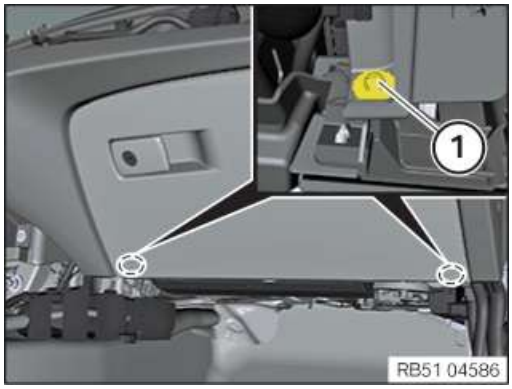


- Open glovebox.
- Tighten the screws (1).

Dashboard to support

Screw		Tightening torque	2,4 Nm

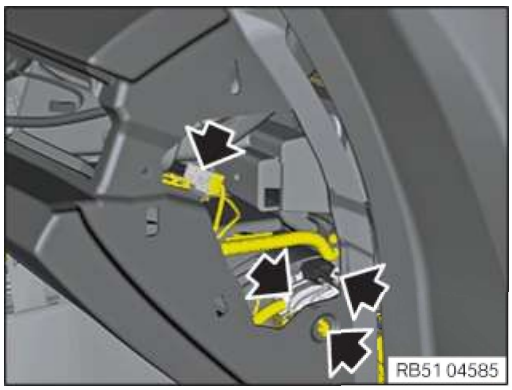
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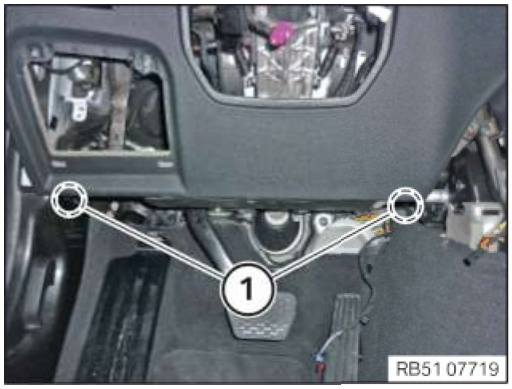
- Tighten the screws (1) on the lower side of the glove box button.

Dashboard to support

Screw		Tightening torque	2,4 Nm



- Connect all plug connections and cable clips (arrows) behind the glove box.



- Tighten the screws (1).

Dashboard to support

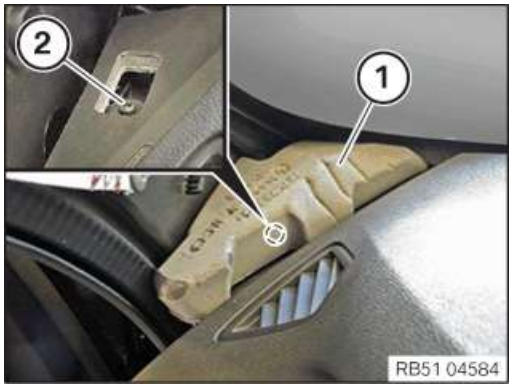
Screw		Tightening torque	2,4 Nm



- Tighten the screws (1).

Dashboard to support

Screw		Tightening torque	2,4 Nm



NOTICE

Perform the operations on the left and right side.

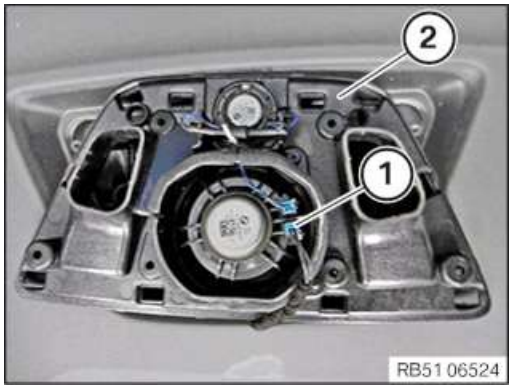
- Tighten down screw (2).

Dashboard to support

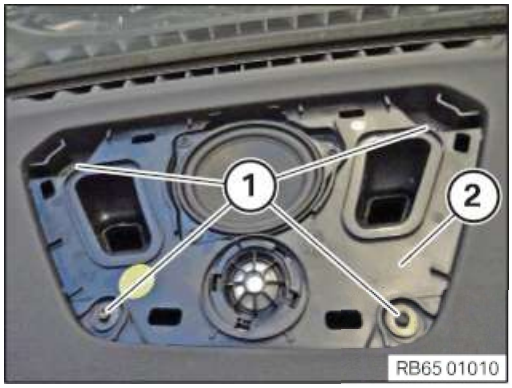
Screw		Tightening torque	2,4 Nm

- Use sound insulation (1).

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- Position the speaker holder (2).
- Connect connector (1).

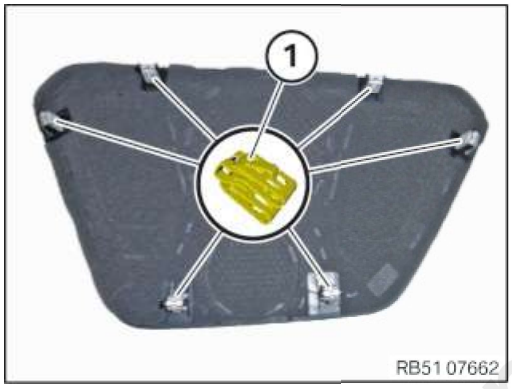


- Install the speaker holder (2).
- Tighten the screws (1).

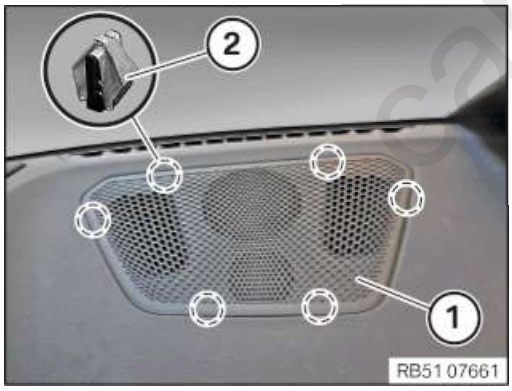
Speaker to support / support to instrument panel / support to body

Screw		Tightening torque	1,8 Nm

51 – Install the speaker trim at the instrument panel

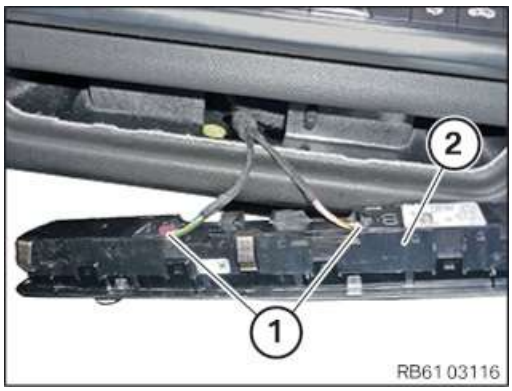


- Check clamps (1) for damage.
- Replace broken or missing clamps (1).



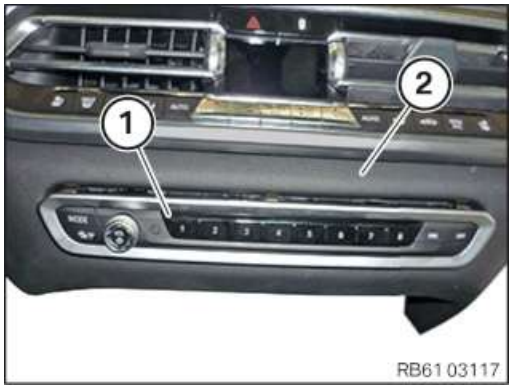
- Position the speaker trim (1) correctly and engage it at the clamps (2).

52 – Install the audio operating unit



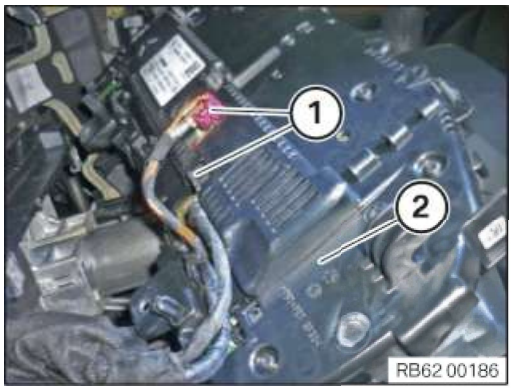
- Connect the connector (1) to the audio operating unit (2).

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- Correctly position the audio operating unit (1) and install in the instrument panel(2).

53 – Installing the instrument cluster (KOMBI)



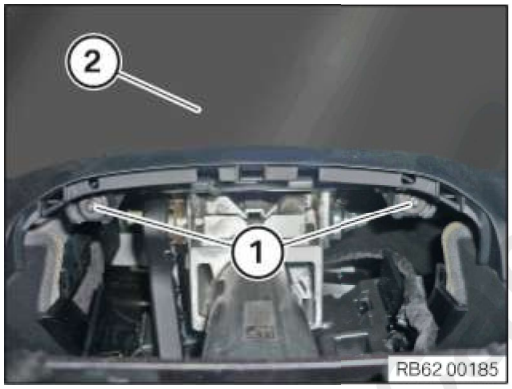
RISK OF DAMAGE

Damage to the instrument cluster (KOMBI)

While releasing and connecting the cable, it could lead to a ground offset. Thereby, currents could arise, that make the instrument cluster (KOMBI) useless.

- While releasing: Release APIX data cable (blue) first.
- While connecting: Connect APIX data cable (blue) at the last.

- **If installed:** Connect the blue connector at the last and lock it.
- Connect and lock connector (1) to the instrument cluster (KOMBI) (2).



- Feed in and position the instrument cluster (KOMBI) (2).
- Tighten the screws (1).

Instrument cluster (KOMBI) to support

Oval-head screw		Tightening torque	1,8 Nm



- Tighten down screw (1).

Instrument cluster (KOMBI) to support

Oval-head screw		Tightening torque	1,8 Nm

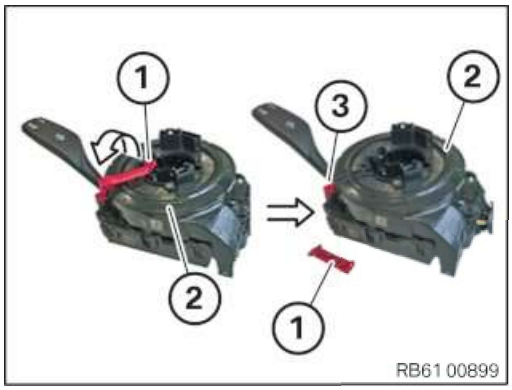


- Tighten down screw (1).

Instrument cluster (KOMBI) to support

Oval-head screw		Tightening torque	1,8 Nm

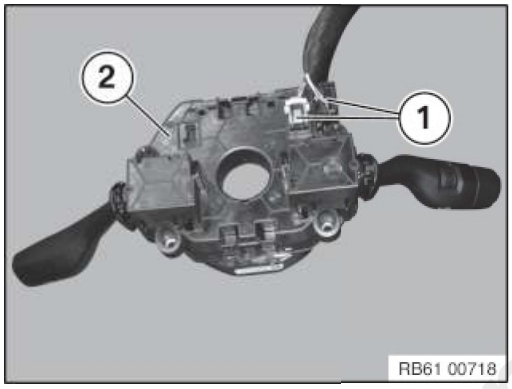
54 – Installing the steering column switch cluster (SZL)



- **Replacement:**

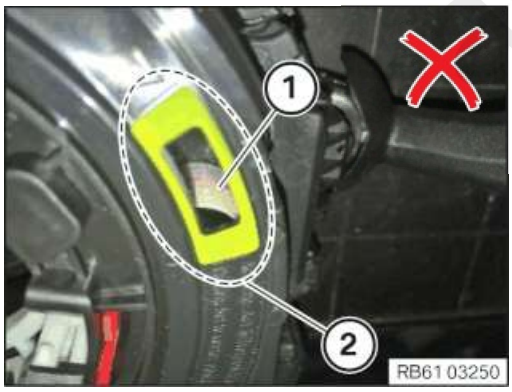
  Break off the transportation retainer (1) on the steering column switch cluster (SZL) (2) in direction of arrow.

  The broken off piece (3) of the transportation retainer (1) remains in the steering column switch cluster (SZL) (2).



- Connect the connector (1) with the steering column switch cluster (SZL) (2).

Check



- **Version A:**

  Check whether the correct marking (1) is seen in inspection glass (2).

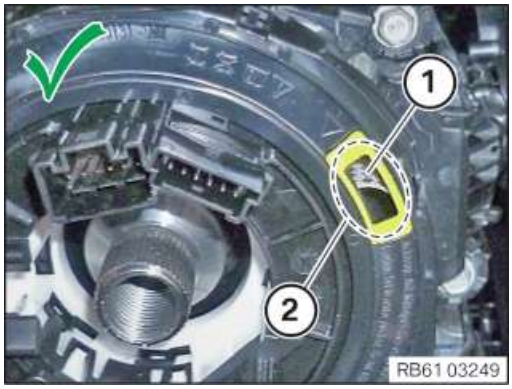
Result

» Ensure that no incorrect marking (1) is seen in inspection glass (2).

Measure

- Turn the coil spring cassette until the right mark (1) becomes visible in the inspection glass (2).

Check



- **Version A:**

  Check whether the correct marking (1) is seen in inspection glass (2).

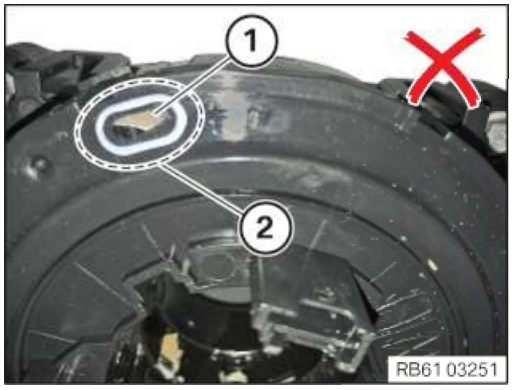
Result

» Correct marking (1) is seen in inspection glass (2).

Measure

- Continue with the next step.

Check



- **Version B:**

  Check whether the correct marking (1) is seen in inspection glass (2).

Result

» Ensure that no incorrect marking (1) is seen in inspection glass (2).

Measure

- Turn the coil spring cassette until the right mark (1) becomes visible in the inspection glass (2).

Check



- **Version B:**

  Check whether the correct marking (1) is seen in inspection glass (2).

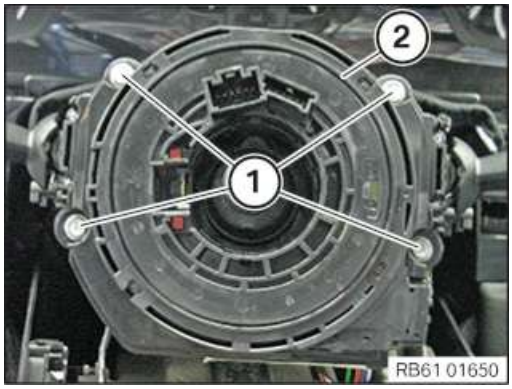
Result

» Correct marking (1) is seen in inspection glass (2).

Measure

- Continue with the next step.

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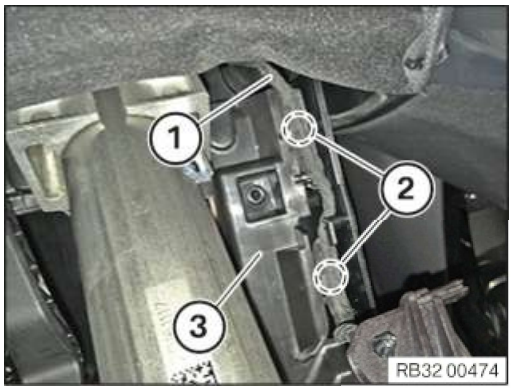


- Position the steering column switch cluster (SZL) (2).
- Tighten the screws (1).

Steering column switch cluster (SZL) on the steering column

Screw TS5x20		Tightening torque	3 Nm

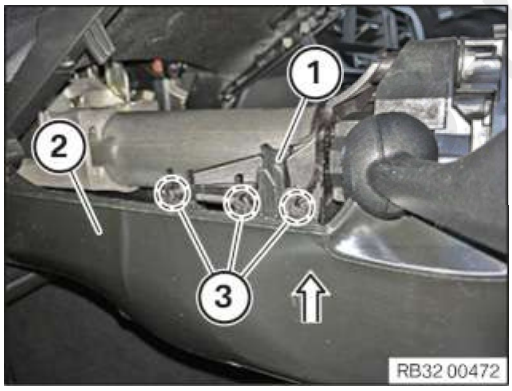
55 – Install steering column shroud lower section



- Position the steering column shroud lower section (3).
- Secure the line (1) on the brackets (2).



- Connect the connector (1).

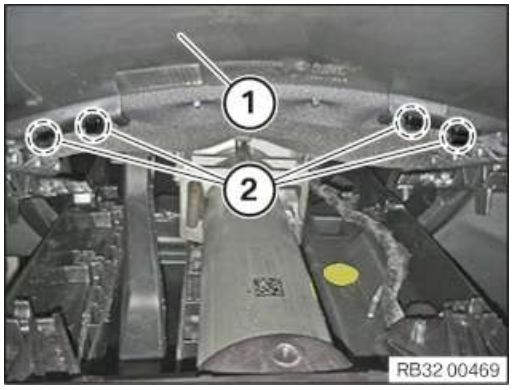


NOTICE

Perform the operations on the left and right side.

- Align the steering column shroud lower section (2) to the steering column using the retaining lug (1).
- Push the steering column shroud lower section (2) up in the direction of the arrow until the brackets (3) engage.

56 – Fit steering column shroud upper section



- Clip in the steering column shroud upper section (1) at the brackets (2).

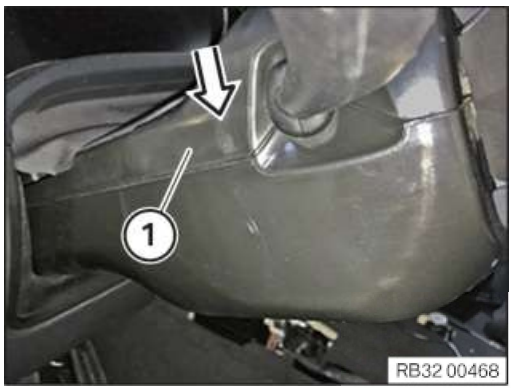
.diagn.com



NOTICE

Perform the operations on the left and right side.

- Clip in the steering column shroud upper section (1)into the guide (2).



NOTICE

Perform the operations on the left and right side.

- Press the upper section of the steering column shroud (1) downwards in direction of arrow.

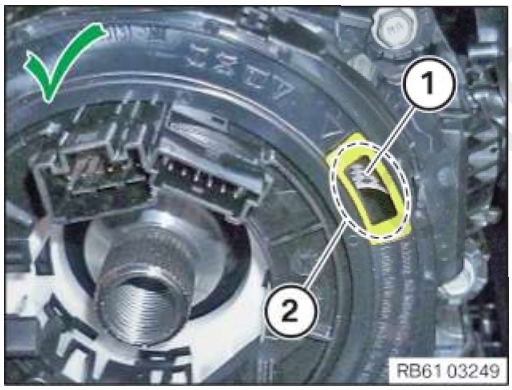
  The upper section of the steering column shroud must engage audibly and perceptibly.

57 – Installing the steering wheel (sports steering wheel)

▸ **Check the neutral position of the clock spring**

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.



Check

- **Version A:**

  Check the mark (1) on the coil spring in the inspection glass (2).

Result

» The mark (1) on the coil spring is not visible.

Measure

- Turn the coil spring cassette until the mark (1) on the coil spring becomes visible in the inspection glass (2).

Check



- **Version B:**

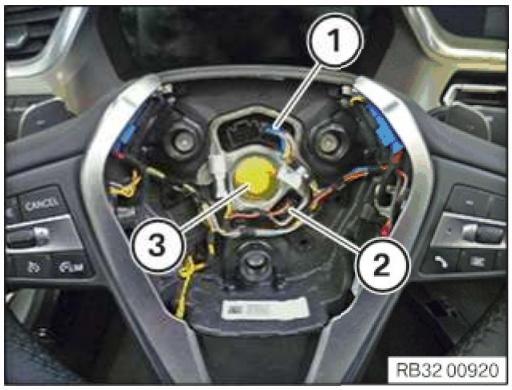
  Check the mark (1) on the coil spring in the inspection glass (2).

Result

» The mark (1) on the coil spring is not visible.

Measure

- Turn the coil spring cassette until the mark (1) on the coil spring becomes visible in the inspection glass (2).



Check

- A micro-encapsulated screw (3) may be fitted.
- Check the screw connection.

Result

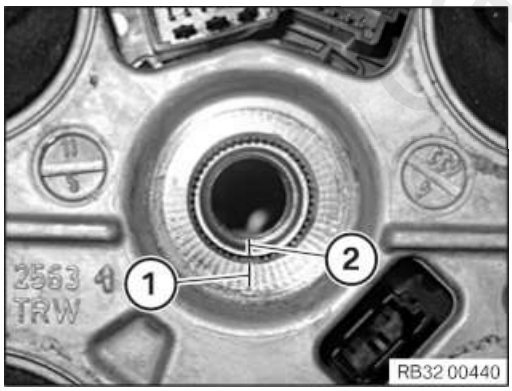
» Screw is (3) micro-encapsulated.

Measure

- Clean thread in the steering column.

  Renew the screw (3).

  Parts: Screw



- Align mark (1) on steering wheel to mark (2) on steering column.
- Connect steering wheel.



- Connect connectors (1) and lock.
- If installed: Connect connectors (2) and lock.
- Tighten screw (3) .

Steering wheel to steering column

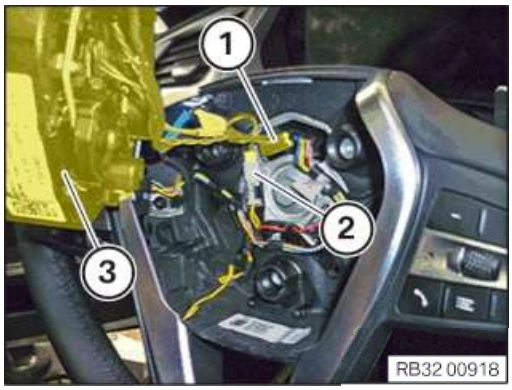
M14	Only for a micro-encapsulated screw: Renew screw.	Tightening torque	62,5 Nm

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TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

▸ **Version A: Installing the airbag unit (sports steering wheel)**



- Position airbag unit (3).
- Connect connectors (1) and (2) lock.



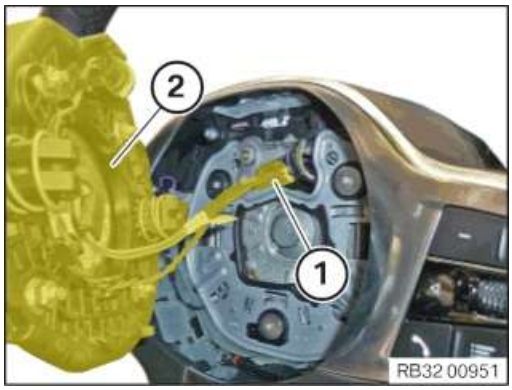
- Press the airbag unit (1) with even pressure in the direction of the arrow into the steering wheel.

  The airbag unit (1) must engage audibly and perceptibly.

▸ **Version B: Installing the airbag unit (M Sport steering wheel)**

TECHNICAL INFORMATION

After replacing the airbag unit (M-sports steering wheel) or after a possible conversion of standard steering wheel and airbag unit to M-sports steering wheel, a software update or a programming/encoding via ISTA must be performed!



- Connect and lock connector (1) of the airbag unit (2).

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- Press the airbag unit (1) with even pressure in the direction of the arrow into the steering wheel.

  The airbag unit (1) must engage audibly and perceptibly.

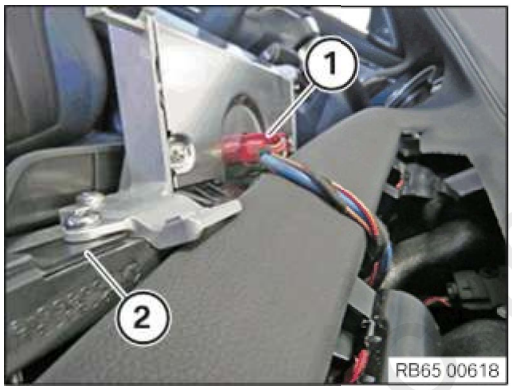
59 – Install the central information display (CID)

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.



- Position Central Information Display (CID) (2).
- Connect plug connection (1) and lock.



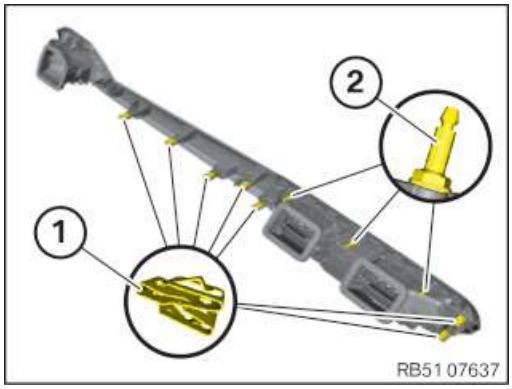
- Insert the central information display (CID) (2) in the instrument panel and position correctly.
- Tighten the screws (1).

Central information display to instrument panel

Screw		Tightening torque	1,8 Nm

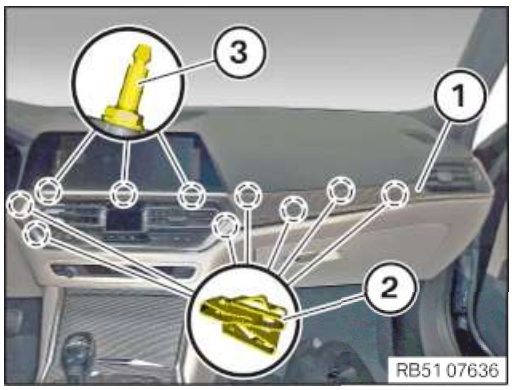
60 – Install the finisher on the right instrument panel

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- Check the clamps (1).

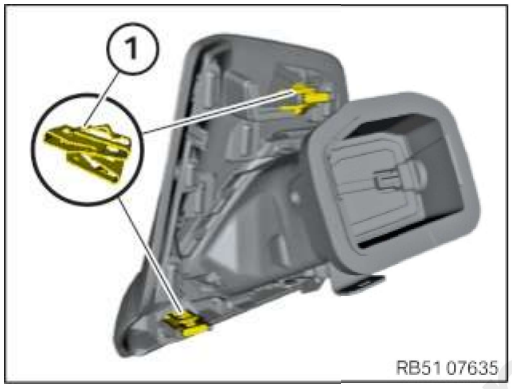
  Replace broken or missing clamps (1).
- Check the pins (2) and the corresponding clamps on the instrument panel trim and renew if necessary.



- Install the decorative strip (1).

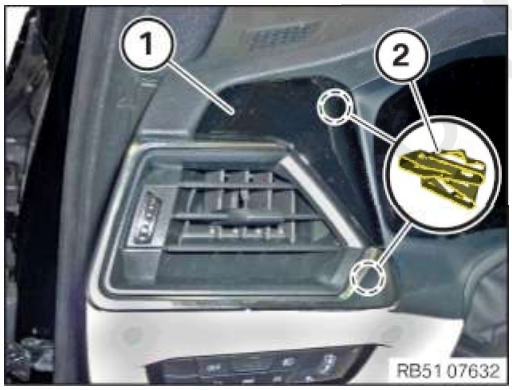
  Connect and lock the associated connectors.
- Correctly position the decorative strip (1) and at the clamps (2) and clip in the pins (3).

61 – Install the finisher on the instrument panel on the left



- Check the clamps (1).

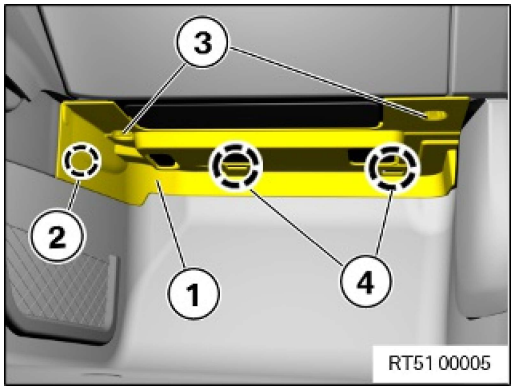
  Replace broken or missing clamps (1).



- Install the decorative strip (1).

  Connect and lock the associated connectors.
- Clip decorative strip (1) into clamps (2).

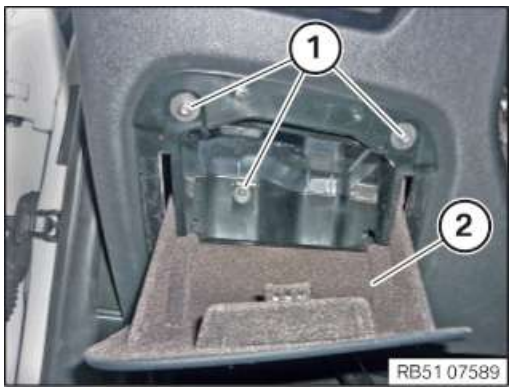
62 – Install the right footwell trim panel



- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

.diagn.com

63 – Installing the left fold-down compartment

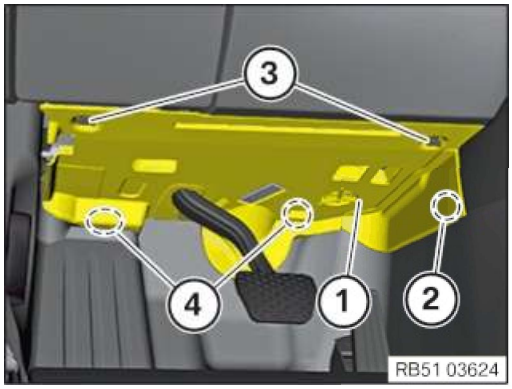


- Install the fold-down compartment (2).
- Tighten the screws (1).

Fold-down compartment to instrument panel

Oval-head screw		Tightening torque	1,8 Nm

64 – Installing the trim panel for the pedal mechanism



- Connect associated connector.
- Attach the trim panel for the pedal mechanism (1) in the guides (4) and fold it up.
- Clip the trim panel for the pedal mechanism (1) into the centre console in this area (2).
- Insert locks (3) correctly and turn 90°.

65 – Install both A-pillar trim panels

NOTICE

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

▸ **Installing the A-pillar trim panel**

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

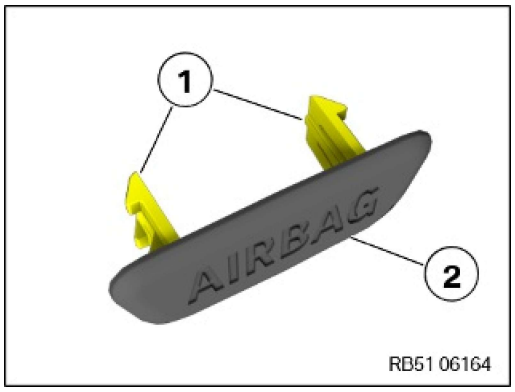
WARNING

Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.

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Check

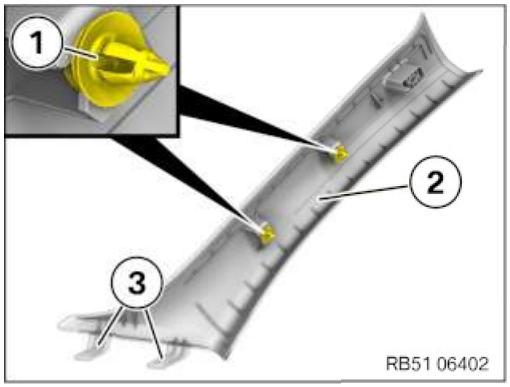
- Check retaining lugs (1) of cover (2) for damage.

Result

» Retaining lug is damaged.

Measure

- Renew the cover.



Check

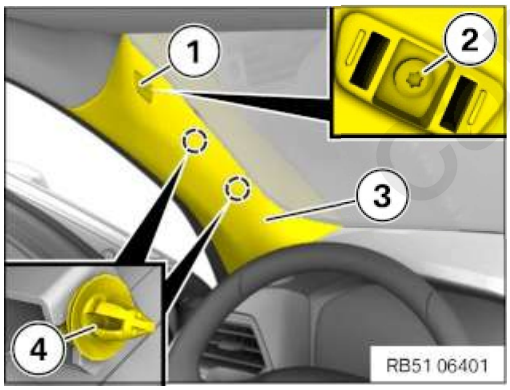
- Check the clips (1) for damage and renew if necessary.
- Check the guides (3) for damage.

Result

» Guide is damaged.

Measure

- Renew the A-pillar trim panel.



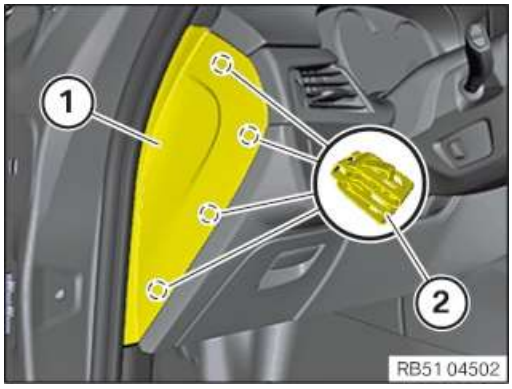
- Guide in A-pillar trim panel (3) downwards and clip it in with clips (4).
- Tighten down screw (2).

A-pillar trim panel to body

Sheet metal screw 4,8x38		Tightening torque	2,6 Nm

- Clip in the cover (1).

66 – Install the side panel on left instrument panel

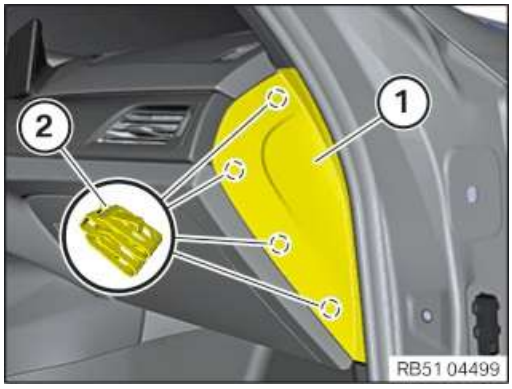


- Feed in the side panel (1) and clip it in at the clamps (2).

67 – Install the side panel on instrument panel on the right

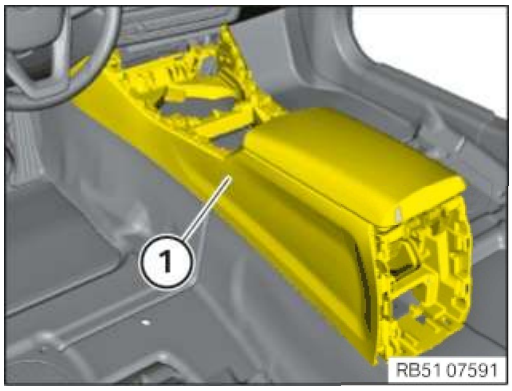
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67 – Install the side panel on instrument panel on the right



- If required, connect the associated connector.
- Feed in the side panel (1) and clip it in at the clamps (2).

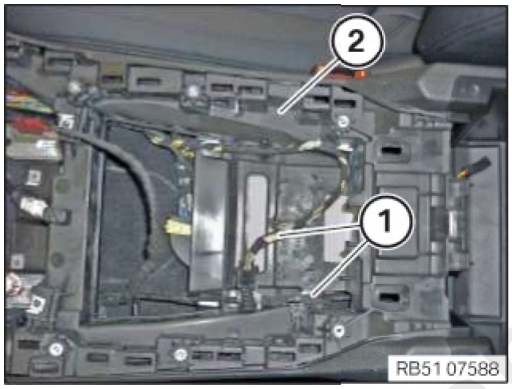
68 – Installing the centre console



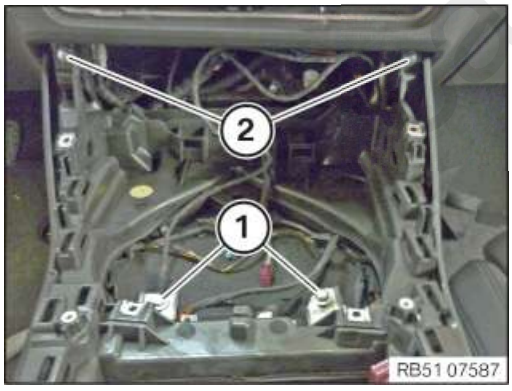
NOTICE

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

- Install centre console (1) and thereby feed in the wiring harness.
- Feed in the centre console (1) to the instrument panel and position correctly.



- Secure the wiring harness to the centre console (1) and connect and lock the existing plug connections.



- Tighten the screws (1).

Centre console on tunnel

M6x18 Hexagon screw		Tightening torque	4,6 Nm

- Tighten the screws (2).

Centre console to instrument panel

Oval-head screw		Tightening torque	1,8 Nm

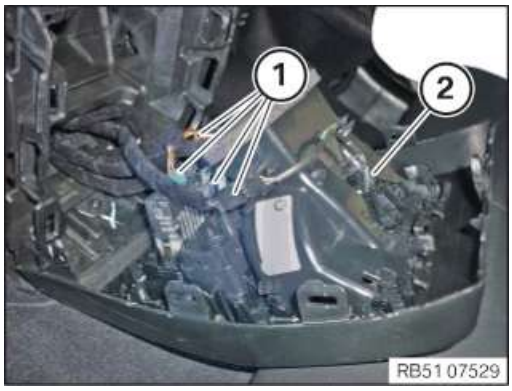


- Tighten the screws (1).

Centre console on tunnel

M6x18 Hexagon screw		Tightening torque	4,6 Nm

69 – Installing the rear centre console trim

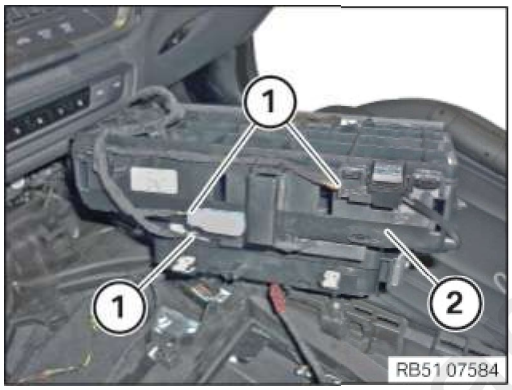


- Install the centre console trim (2).
- Connect connectors (1) and lock.

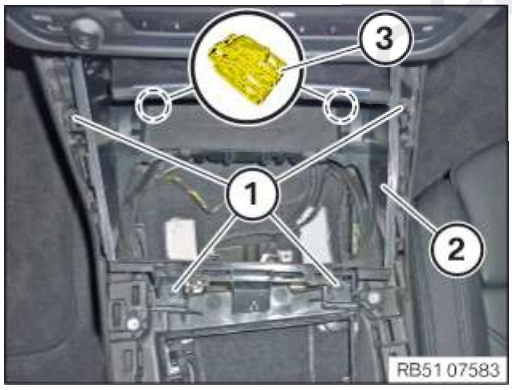


- Position centre console trim (1) and engage at the latch mechanisms at the side.

70 – Installing the storage compartment of the front centre console



- Mount the storage compartment (2) and connect connectors (1).



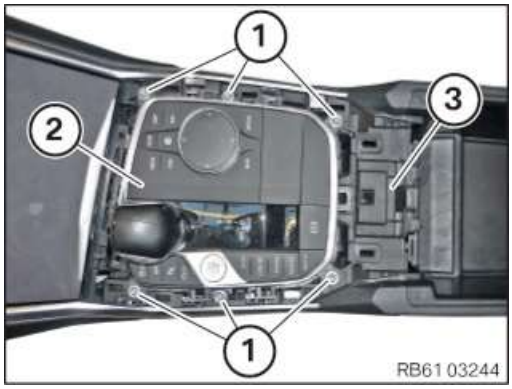
- Engage rear storage compartment trim (2) into clamps (3).
- Tighten the screws (1).

Storage compartment to centre console

Oval-head screw		Tightening torque	1,8 Nm

71 – Install the operating facility in the centre console

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- Position operating facility (2) in the centre console (3).
- Tighten the screws (1).

Gear selector switch to centre console trim

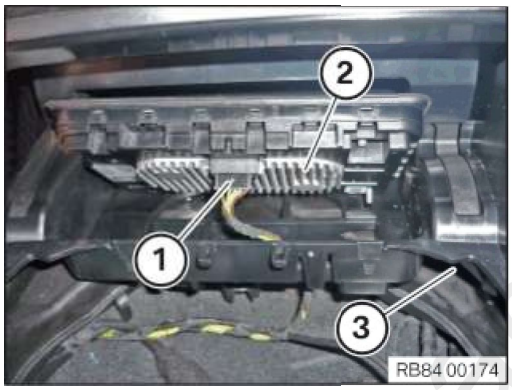
Screw		Tightening torque	1,8 Nm

▸ **Disconnecting all battery earth leads**

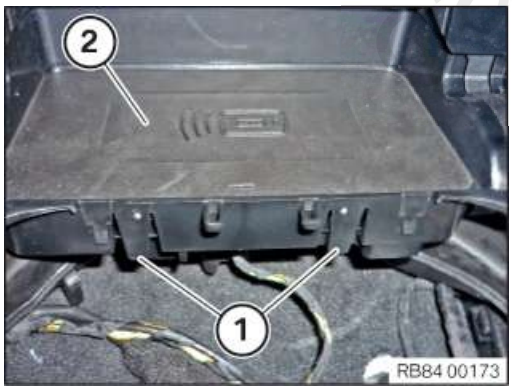


- See additional information.

72 – Installing the wireless charging station



- Connect connector (1).
- Position the wireless charging station (2) in the centre console (3).



- Press the wireless charging station (2) down till the locking units (1) are engaged correctly.

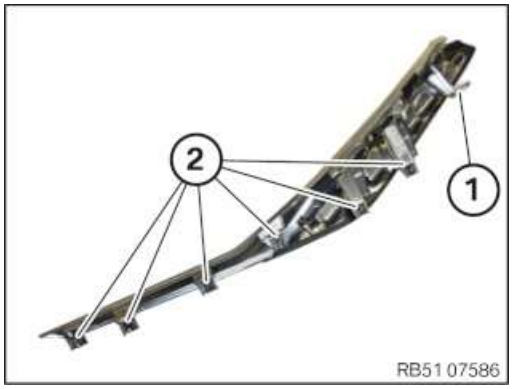
73 – Install decorative trim on centre console on left and right

▸ **Installing the decorative trim to centre console**

NOTICE

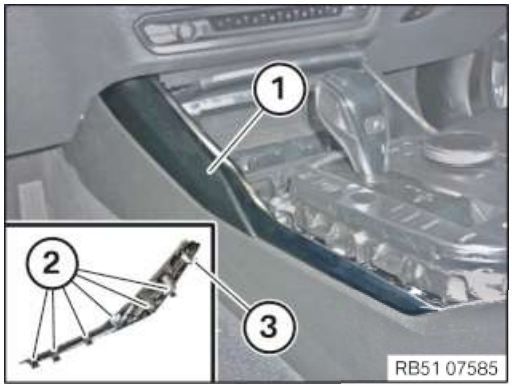
Description is for left component only. Procedure on the right side is identical.

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- Check guide (1) and the latch mechanisms (2).

  Renew defective decorative trim.



- Feed in the decorative trim (1) forward in the guide (3).
- Engage decorative trim (1) in latch mechanisms (2).

74 – Installing the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



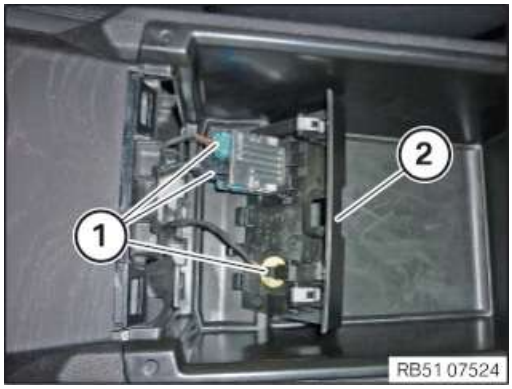
- Check all the latch mechanisms or clamps (arrows).
- In case the latch mechanisms or the clamps (arrows) are faulty, renew the centre console trim .



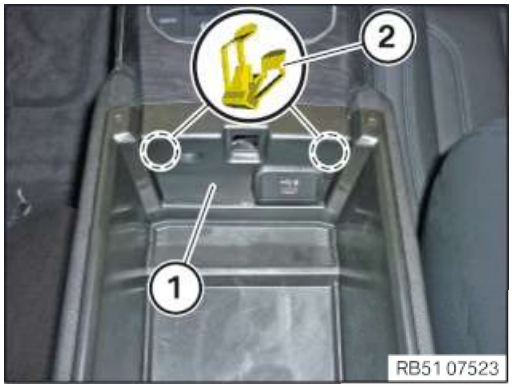
- Correctly position the centre console trim (1) and engage at the latch mechanisms.

75 – Installing the trim in the storage compartment of the centre armrest

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- Mount the trim (2) and connect connector (1) and lock.



- Correctly position trim (1) and snap into the clamps (2).

76 – Install the cup holder



- Fix the cup holder (1) and the belonging connectors.
- Correctly position cup holder (1).
- Tighten the screws (2).

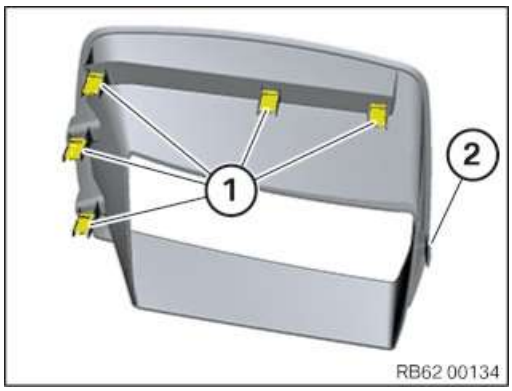
Cup holder to centre console

Oval-head screw	Tightening torque	1,8 Nm

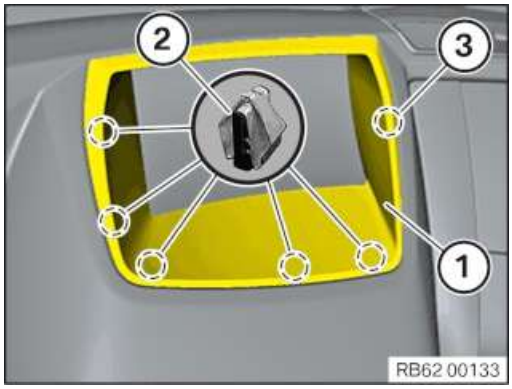


- Insert the insert (1).

77 – Installing the trim for the Head-Up Display



- Check clamps (1) and the latch mechanism (2) for damage, renew if necessary.



- Correctly position the trim (1) for the BMW Head-Up Display and engage it on the clamps (2) and the retaining lug (3).

Additional Information

Overview of Tightening Torques

Heater/air conditioner			Used in step 4041
Screw		Tightening torque	1,2 Nm

Ground cable to body			Used in step 40
Hexagon nut		Tightening torque	8,0 Nm

Heating and air-conditioning unit on support			Used in step 43
Nut M6		Tightening torque	4 Nm

Support for instrument panel			Used in step 43
M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

Head unit to holder / holder to support			Used in step 43
Screw		Tightening torque	1,8 Nm

Head-Up Display to support			Used in step 44
M6x25 screw		Tightening torque	13 Nm

Knee airbag on support structure			Used in step 46
Nut		TIghtening torque	8 Nm

Dashboard to support			Used in step 49
Screw		Tightening torque	2,4 Nm

Speaker to support / support to instrument panel / support to body			Used in step 50
Screw		Tightening torque	1,8 Nm

Instrument cluster (KOMBI) to support			Used in step 53
Oval-head screw		Tightening torque	1,8 Nm

Steering column switch cluster (SZL) on the steering column			Used in step 54
Screw TS5x20		Tightening torque	3 Nm

Steering wheel to steering column			Used in step 57
M14	Only for a micro-encapsulated screw: Renew screw.	Tightening torque	62,5 Nm

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Central information display to instrument panel			Used in step 59
Screw		Tightening torque	1,8 Nm

Fold-down compartment to instrument panel			Used in step 63
Oval-head screw		Tightening torque	1,8 Nm

A-pillar trim panel to body			Used in step 65
Sheet metal screw 4,8x38		Tightening torque	2,6 Nm

Centre console on tunnel			Used in step 68
M6x18 Hexagon screw		Tightening torque	4,6 Nm

Centre console to instrument panel			Used in step 68
Oval-head screw		Tightening torque	1,8 Nm

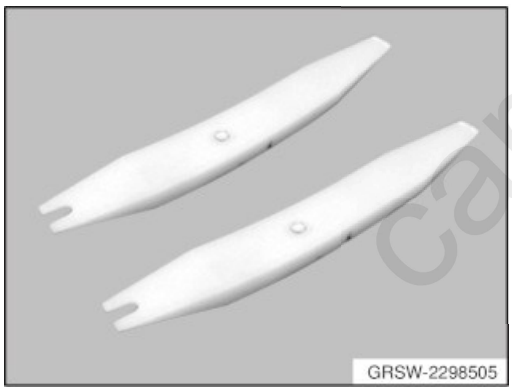
Storage compartment to centre console			Used in step 70
Oval-head screw		Tightening torque	1,8 Nm

Gear selector switch to centre console trim			Used in step 71
Screw		Tightening torque	1,8 Nm

Cup holder to centre console			Used in step 76
Oval-head screw		Tightening torque	1,8 Nm

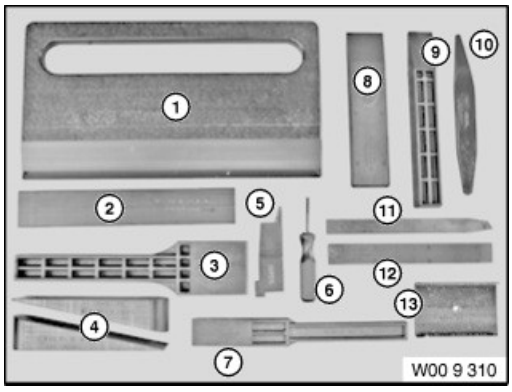
Overview of Special Tools

2 298 505 Wedge



Common	Used in step 45
Usage	Set (delivery of 2 pieces)
Included in the tool or work	
Storage location	C34
Replaced by	
In connection with	
SI-Number	01 03 12 (792)

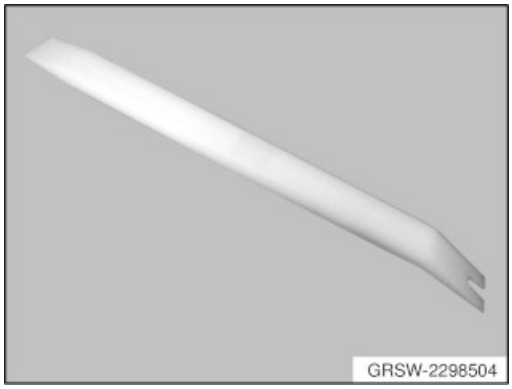
0 493 752 (00 9 329) Case



Common	Used in step 14
Usage	(Case) with insert not incl. panel wedges
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

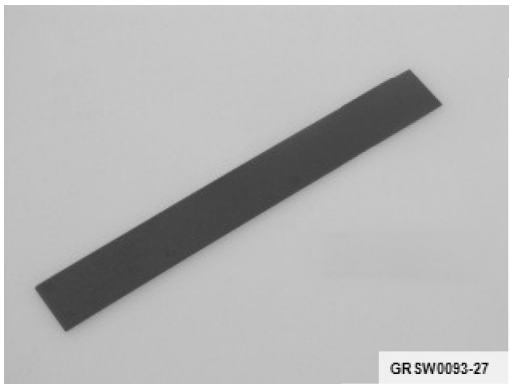
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2 298 504 Wedge



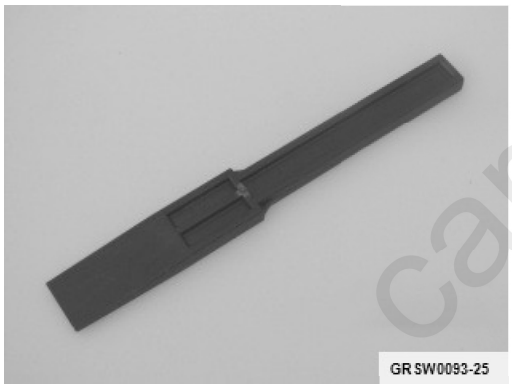
Common	Used in step 23
Usage	Wedge with angled lug
Included in the tool or work	
Storage location	C34
Replaced by	
In connection with	
SI-Number	01 03 12 (792)

0 496 571 (00 9 327) Wedge



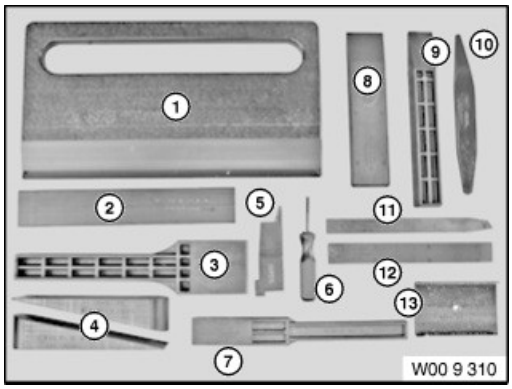
Common	Used in step 27
Usage	(Cleaning wedge) From 11/2008 this special tool replaces panel wedge 00 9 323 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

0 496 569 (00 9 325) Wedge



Common	Used in step 28
Usage	(Panel wedge) From 11/2008 this special tool replaces panel wedge 00 9 317 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	41 01 09 (507)

0 490 534 (00 9 317) Wedge



Common	Used in step 31
Usage	(Trim wedge) Replaced by special tool 00 9 325 from 11/2008 (quality improvement due to new material) Replaced by 00 9 325 (0 496 569)
Included in the tool or work	0 490 527
Storage location	
Replaced by	
In connection with	
SI-Number	

Links

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General repair instructions	Used in step
72 00 ... Safety regulations for handling components with gas generators	14213346
72 00 ... Safety regulations for handling components with gas generators	14

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	871
61 20 900 Disconnecting and connecting battery earth lead	871
61 20 900 Disconnecting and connecting battery earth lead	871
61 20 900 Disconnecting and connecting battery earth lead	871
61 20 900 Disconnecting and connecting battery earth lead	871
61 20 900 Disconnecting and connecting battery earth lead	871
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	871
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	871
61 20 900 Disconnecting and connecting battery earth lead	871
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	871
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61 35 ... Notes on ESD protection (Electro Static Discharge)	2059

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64 12 570 Replacing the auxiliary coolant pump for stationary/auxiliary heating

WARNING

Hot fluids.

Risk of scalding!

- Conduct all work in the vehicle wearing appropriate personal protective equipment only.

CAUTION

Materials harmful to health.

Contact with fluids harmful to health!

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

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

PRELIMINARY WORK

1 – Removing the front left wheel

▸ **Removing the wheel**

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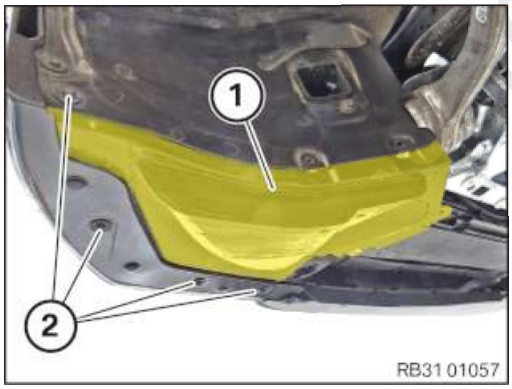
- In vehicles with M Carbon ceramic brake: The wheel assembly jack must be used to remove the wheel (see workshop equipment).

  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 .

2 – Remove bottom wheel arch cover

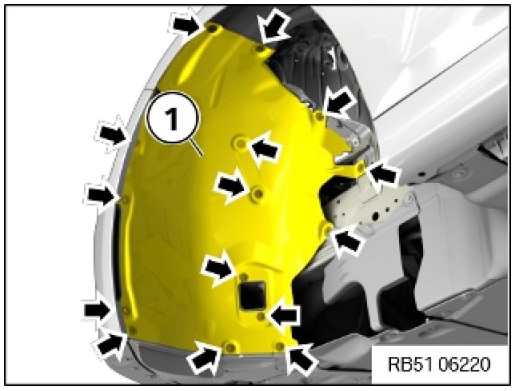


- Loosen screws (2).
- Remove bottom wheel arch cover (1)

3 – Removing the front section of the front wheel arch cover

NOTICE

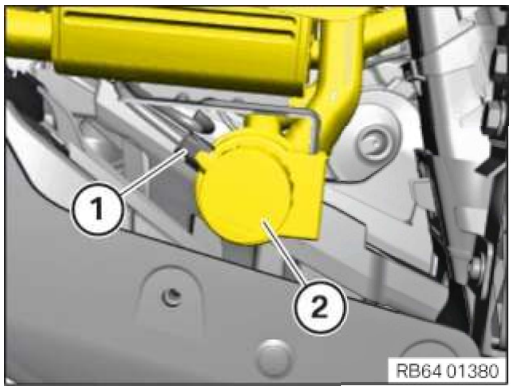
To provide a better overview: Schematic diagram with partially hidden components.



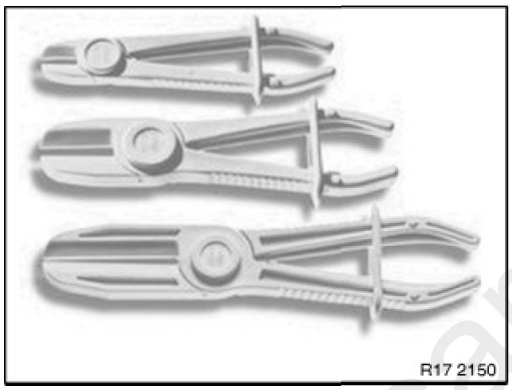
- Remove screws (arrows).
- Remove front section of the front wheel arch cover (1).

MAIN WORK

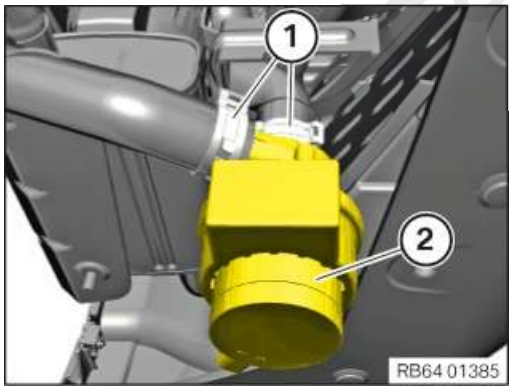
4 – Removing auxiliary coolant pump for auxiliary heater



- Unlock and disconnect connector (1) on the auxiliary coolant pump (2) of the stationary heating.
- Pull off the auxiliary coolant pump (2) from the holder to the front and set it aside.



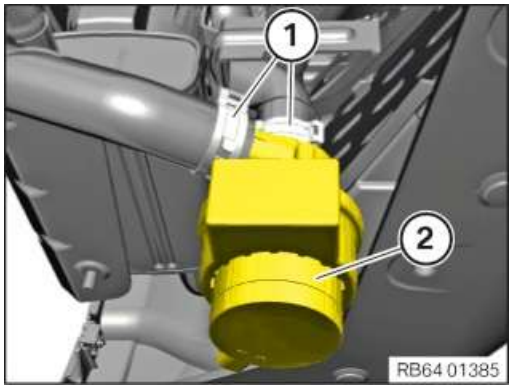
- Use commercially available disconnection tools to pinch off the coolant lines.



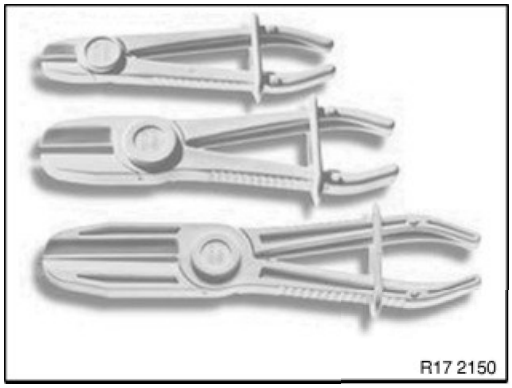
- Loosen hose clamps (1) and pull off coolant hoses.
- Remove auxiliary coolant pump (2).

5 – Install auxiliary coolant pump for the auxiliary heater

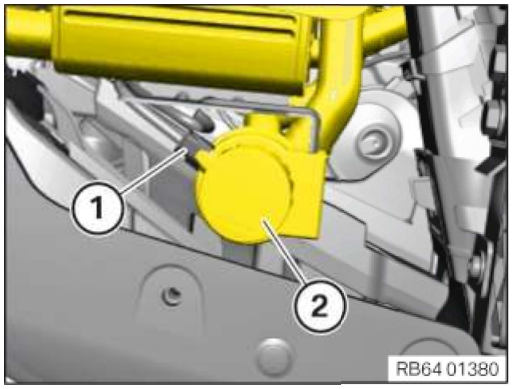
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- Position the auxiliary coolant pump (2).
- Slide coolant hoses onto the auxiliary coolant pump (2) and secure the hose clamps (1).



- Remove disconnection tools.



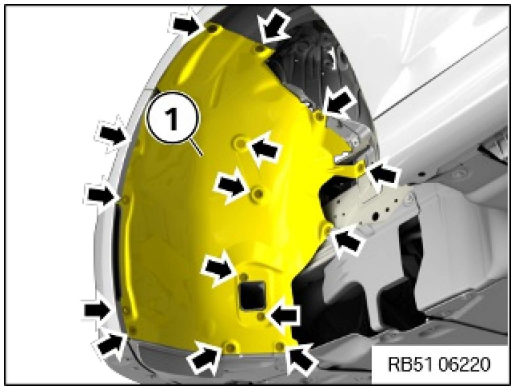
- Slide auxiliary coolant pump (2) to the rear on the holder.
- Connect and lock connector (1) to the auxiliary coolant pump (2) .

POSTPROCESSES

6 – Install the front section of the front wheel arch cover

NOTICE

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



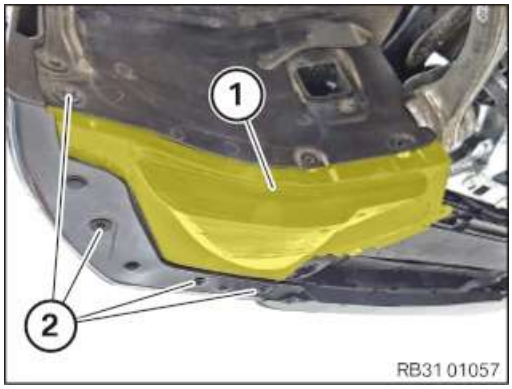
- Install the front section of the front wheel arch cover (1).
- Tighten screws (arrows).

Wheel arch trim panel, front

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

7 – Installing the bottom wheel arch cover

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- Position the bottom wheel arch cover (1).
- Tighten the screws (2).

Cover, front bottom on side

Hexagon screw for thermoplastic		Tightening torque	3 Nm

8 – 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.

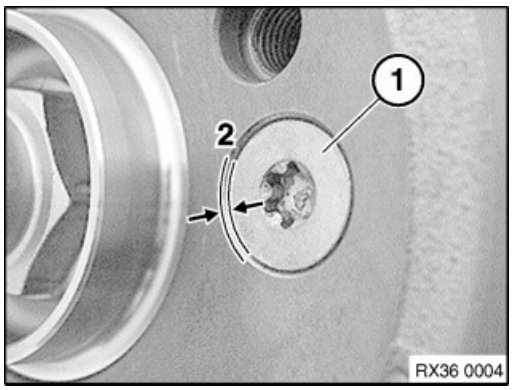
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  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).



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

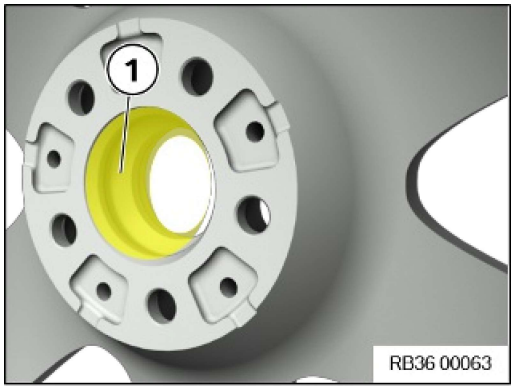
  The mounting bolt (1) for the brake disc may not protrude under any circumstances on the contact surface (2) between the brake disc and the wheel rim.

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.

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TECHNICAL INFORMATION

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

The wheel rim must rest uniformly against the brake disc.

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

Do not apply oil to new wheel bolts.

- Renew 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

9 – Fill and bleed the coolant circuit



► **Filling and bleed the high-temperature coolant circuit**

- See additional information.

Additional Information

Overview of Tightening Torques

Wheel arch trim panel, front — Used in step 6

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

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Cover, front bottom on side — Used in step 7

Hexagon screw for thermoplastic		Tightening torque	3 Nm

Brake disc to front wheel hub — Used in step 8

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub — Used in step 8

M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts — Used in step 8

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

Overview of Special Tools

2 344 011 Tool

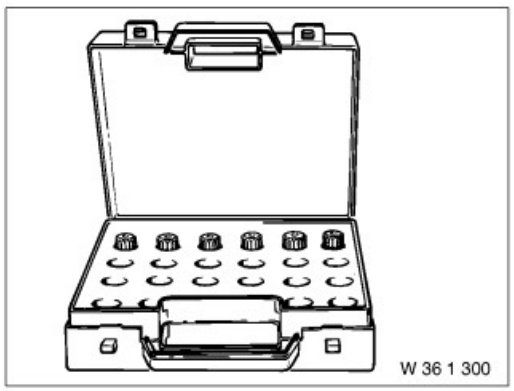


Common — Used in step 8

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 1

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

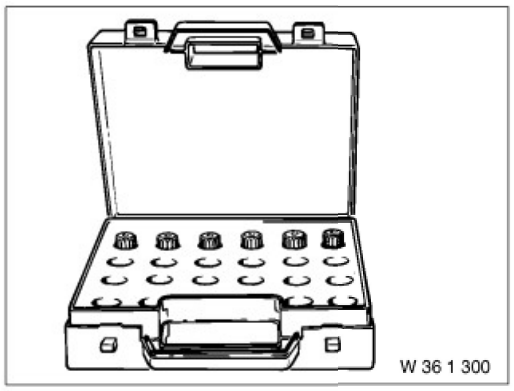
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0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
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 1
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 1
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 1
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	

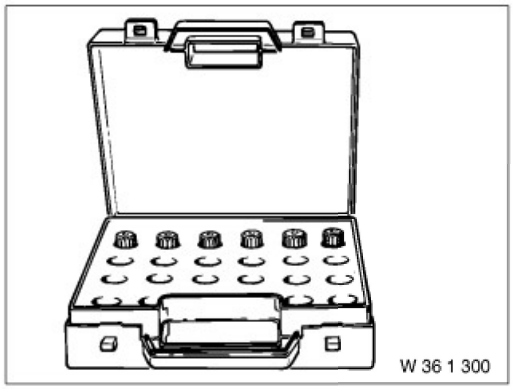
cardiagn.com

0 495 228 (36 1 331) Wheel stud



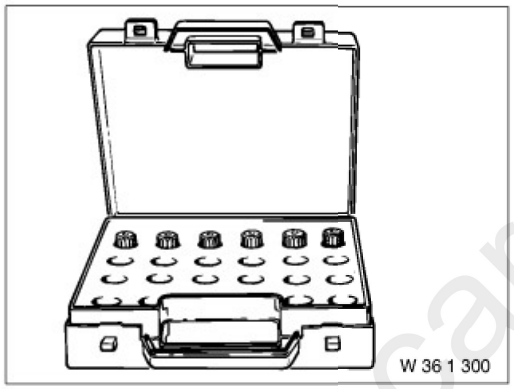
Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
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 1
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	

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Links

Repair instructions	Used in step
17 00 008 Draining and topping up coolant for high-temperature circuit	9
17 00 008 Draining and topping up coolant for high-temperature circuit	9
17 00 008 Draining and topping up coolant for high-temperature circuit	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
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17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature)	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleeding the cooling system (B36, B38, B46, B48)	9
17 00 039 Bleeding cooling system (B37, B47)	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Filling and bleeding the high-temperature cooling system vacuum filler device (B48)	9
17 00 008 Draining and topping up the high-temperature coolant circuit	9
17 00 008 Draining and topping up the high-temperature coolant circuit	9
17 00 016 Draining and topping up coolant circuit for Range Extender \PREMIUM	9
17 00 008 Draining and topping up the high-temperature coolant circuit	9
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	9
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	9
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	9
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	9
17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures)	9

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64 22 160 Removing and installing or replacing middle fresh-air grille

RISK OF DAMAGE

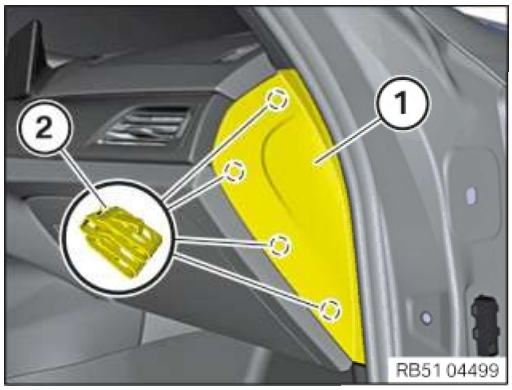
Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

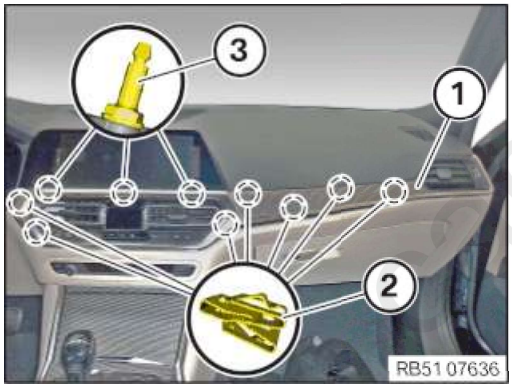
PRELIMINARY WORK

1 – Remove the side panel on the right instrument panel



- Unclip and remove the side panel (1) towards the outside from the clamps (2).
- If necessary, unlock associated plug connection and disconnect.

2 – Remove the finisher on the right instrument panel

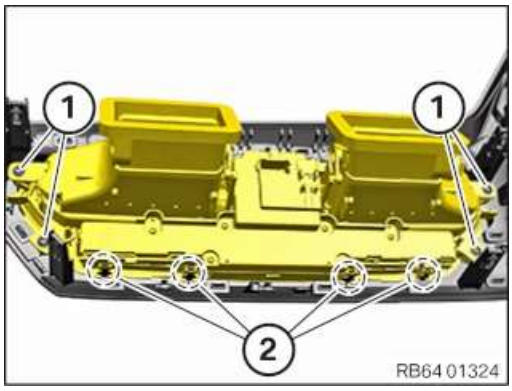


- Unclip the decorative strip (1) towards rear at the clamps (2) and the pins (3).
- Unlock associated plug connection and disconnect.

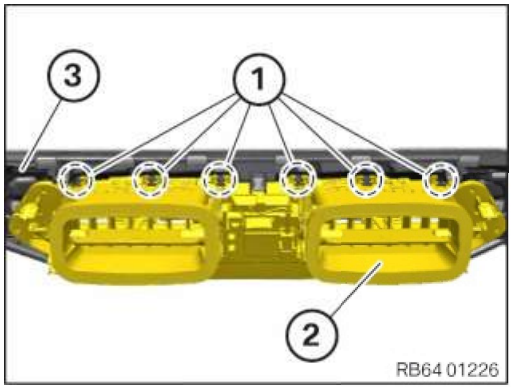
  Remove the decorative strip (1).

MAIN WORK

3 – Removing fresh air grille centre with integrated air conditioning control panel

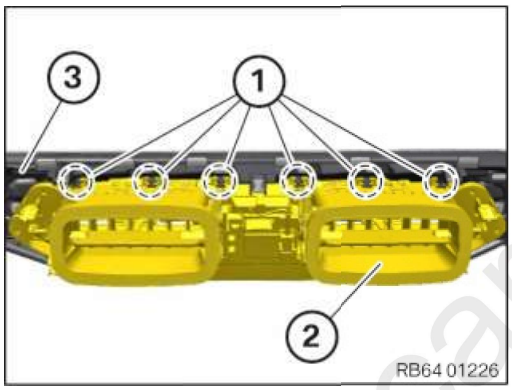


- Loosen screws (1).
- Disengage the latch mechanisms (2).

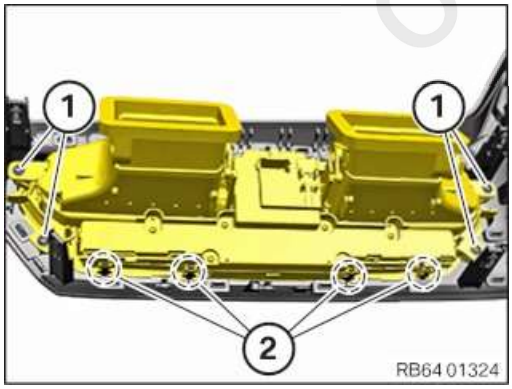


- Disengage the latch mechanism (1) from the fresh air grille (2).
- Remove fresh air grille (2) with the integrated air conditioning control panel from the decorative strip (3).

4 – Installing fresh air grille centre with integrated air conditioning control panel



- Set fresh air grille (2) with the integrated air conditioning control panel on decorative strip (3) and position it correctly.
- Engage latch mechanisms (1) on fresh air grille (2).



- Engage the latch mechanisms (2).
- Tighten the screws (1).

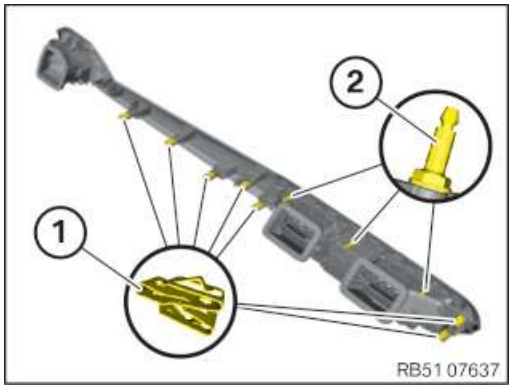
Fresh air grille on decorative strip / instrument panel

Screw		Tightening torque	1,8 Nm

POSTPROCESSES

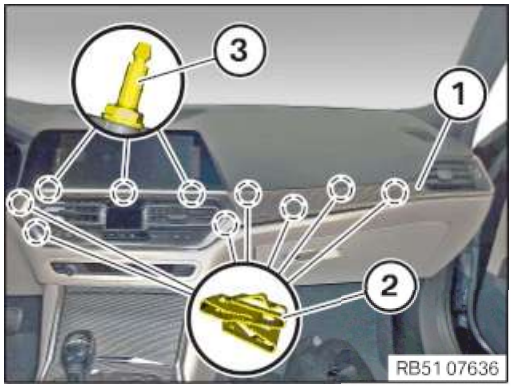
5 – Install the finisher on the right instrument panel

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- Check the clamps (1).

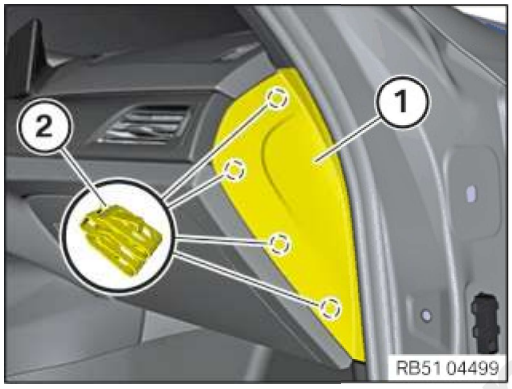
  Replace broken or missing clamps (1).
- Check the pins (2) and the corresponding clamps on the instrument panel trim and renew if necessary.



- Install the decorative strip (1).

  Connect and lock the associated connectors.
- Correctly position the decorative strip (1) and at the clamps (2) and clip in the pins (3).

6 – Install the side panel on instrument panel on the right



- If required, connect the associated connector.
- Feed in the side panel (1) and clip it in at the clamps (2).

7 – Encode/program control unit(s)

- **Replacement.**
- **This task is not included in this flat rate unit item.**

▸ **Encode/program control unit(s)**

Prerequisite

Replacement of component.

TECHNICAL INFORMATION

Use the most recent software version to prevent faults during programming/encoding.
The battery voltage must not fall below 13.0 V during programming.
Use only chargers for a low volt-vehicle electrical system that are recommended by BMW.

TECHNICAL INFORMATION

No high-voltage switch off is required in electric vehicles or hybrid vehicles for programming/encoding.
The high-voltage system will be automatically switched off by the programming system.

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- Connect the battery charger to the vehicle.
- Connect the programming system with the vehicle.
- Determine the action plan.
- Accept and fully process the measures plan.
- If applicable, connect the workshop system to the vehicle, depending on the reworking list.
- Carry out vehicle test.
- Delete the fault memory.
- The information about programming the workshop system and the corresponding notes in the user documentation must be observed.
- Wait until programming/encoding has been completed.
- Disconnect the programming system from the vehicle.
- Disconnect the battery charger from the vehicle.

Additional Information

Overview of Tightening Torques

Fresh air grille on decorative strip / instrument panel Used in step 4

Screw		Tightening torque	1,8 Nm

cardiagn.com

64 22 137 Removing and installing/replacing left fresh-air grille

RISK OF DAMAGE

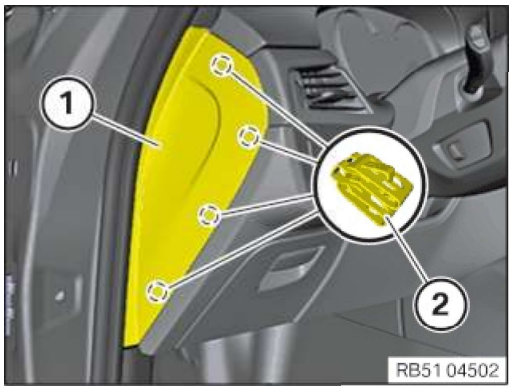
Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

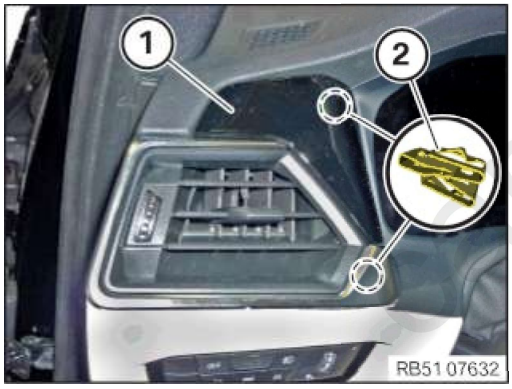
PRELIMINARY WORK

1 – Remove the side panel on the left instrument panel



- Unclip and remove the side panel (1) towards the outside from the clamps (2).

2 – Remove the finisher on the instrument panel on the left

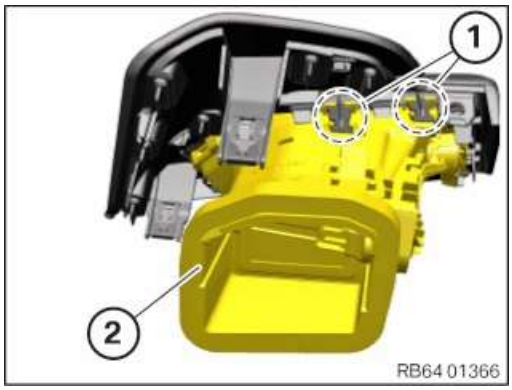


- Unclip decorative strip (1) to the rear out of the clamps (2).
- Unlock associated plug connection and disconnect.

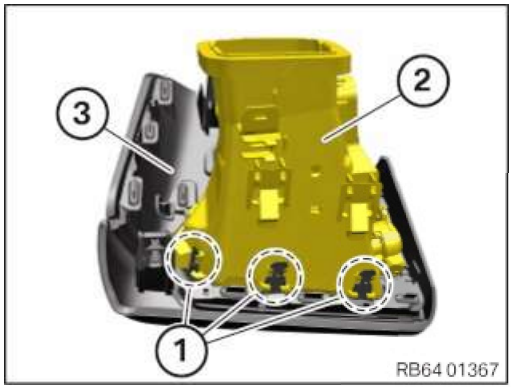
  Remove the decorative strip (1).

partdiagn.com

3 – Removing left fresh air grille

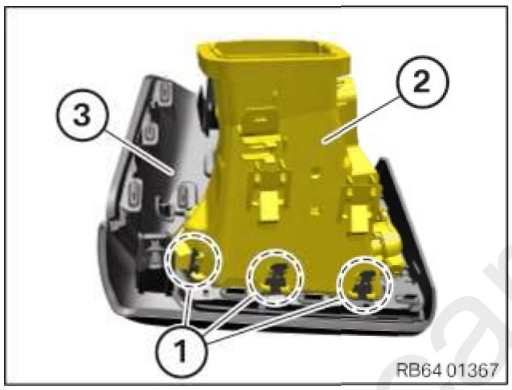


- Disengage the latch mechanisms (1) from the fresh air grille (2).

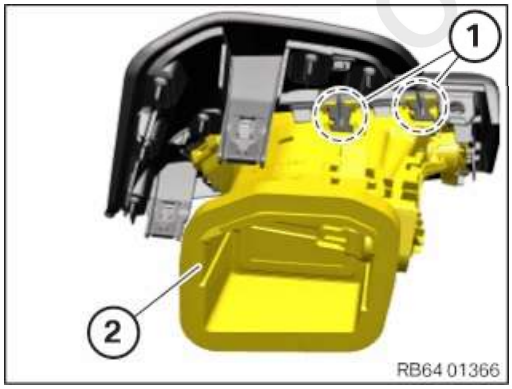


- Disengage the latch mechanisms (1) from the fresh air grille (2).
- Remove the fresh air grille (2) from the decorative strip (3).

4 – Installing the left fresh air grille



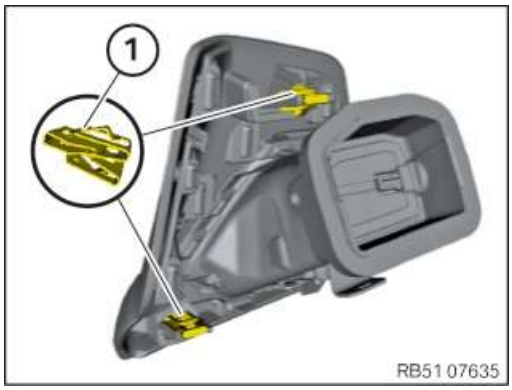
- Set the fresh air grille (2) on the decorative strip (3) and position it correctly.
- Engage latch mechanisms (1) on fresh air grille (2).



- Engage latch mechanisms (1) on fresh air grille (2).

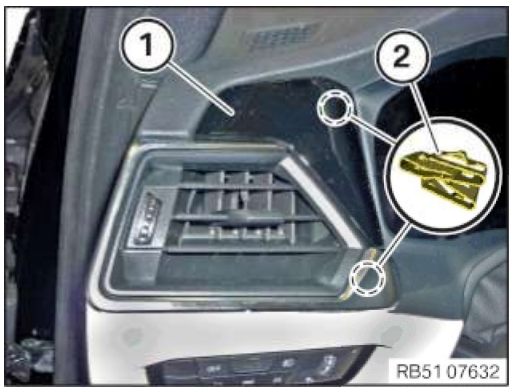
cardiagn.com

5 – Install the finisher on the instrument panel on the left



- Check the clamps (1).

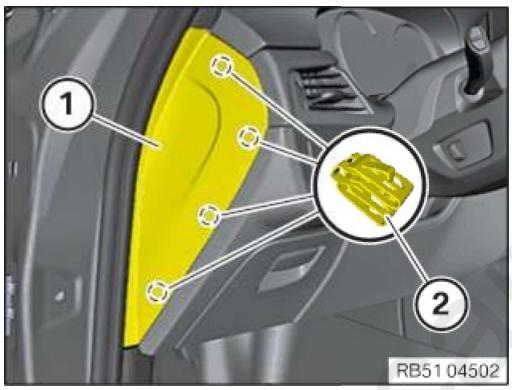
  Replace broken or missing clamps (1).



- Install the decorative strip (1).

  Connect and lock the associated connectors.
- Clip decorative strip (1) into clamps (2).

6 – Install the side panel on left instrument panel



- Feed in the side panel (1) and clip it in at the clamps (2).

obdiagn.com

64 22 191 Removing and installing/replacing rear cabin fresh-air grille

PRELIMINARY WORK

1 – Removing the rear centre console trim

RISK OF DAMAGE

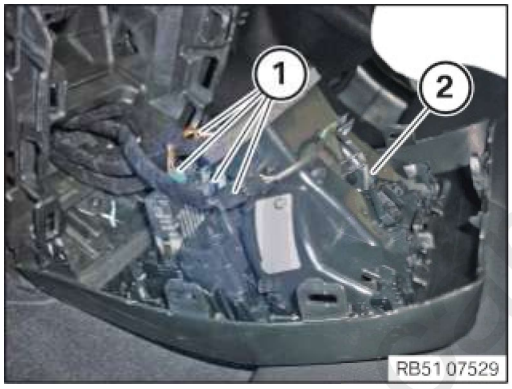
Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



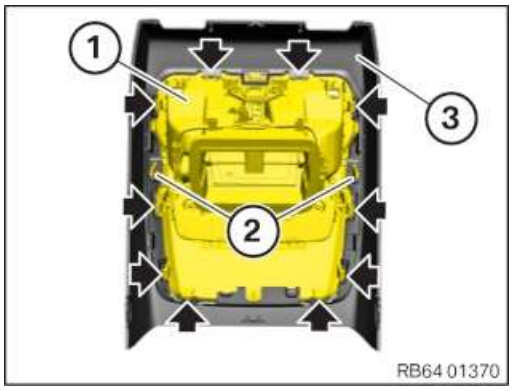
- Release centre console trim (1) backwards from the latch mechanisms at the side and pull it a little way towards the rear.



- Unlock and disconnect plug connections (1).
- Remove the centre console trim (2).

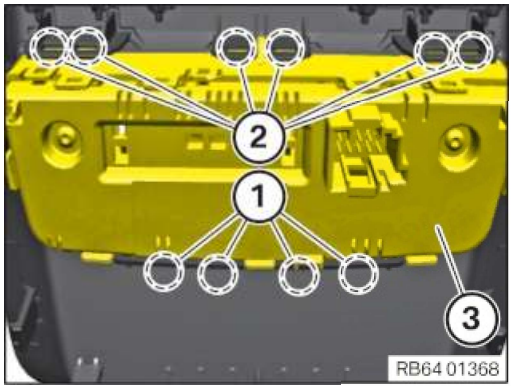
carfdiagn.com

2 – Remove the fresh air grille of the rear passenger compartment



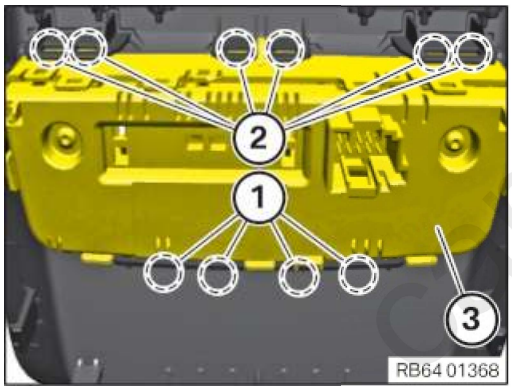
- Release fresh air grille (1) at the latch mechanisms (arrows).
- Feed out fresh air grille (1) on the guides (2) and remove from the decorative strip (3).

3 – Removing air conditioning control panel for the rear passenger compartment



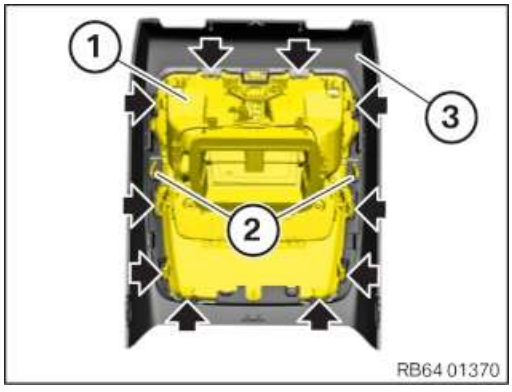
- Detach air conditioning control panel first at the latch mechanisms (1) and then at the latch mechanisms (2).
- Remove air conditioning control panel (3) from the decorative strip.

4 – Install air conditioning control panel for the rear side



- Fit the air conditioning control panel (3) on the decorative strip and position it correctly.
- Engage the latch mechanisms (1) and (2).

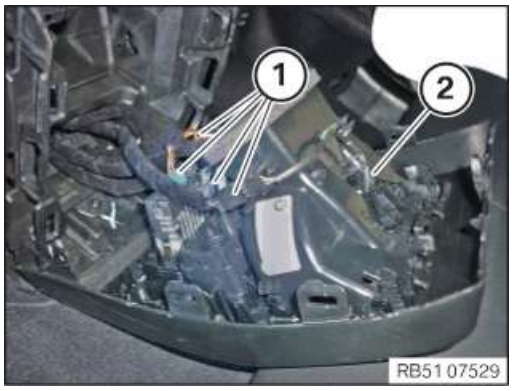
5 – Install the fresh air grille of the rear passenger compartment



- Guide the fresh air grille (1) with the guides (2) into the decorative strip (3) .
- Engage latch mechanisms (arrows) at the decorative strip (3) .

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6 – Installing the rear centre console trim



- Install the centre console trim (2).
- Connect connectors (1) and lock.



- Position centre console trim (1) and engage at the latch mechanisms at the side.

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64 22 138 Removing and installing/replacing right fresh air grille

RISK OF DAMAGE

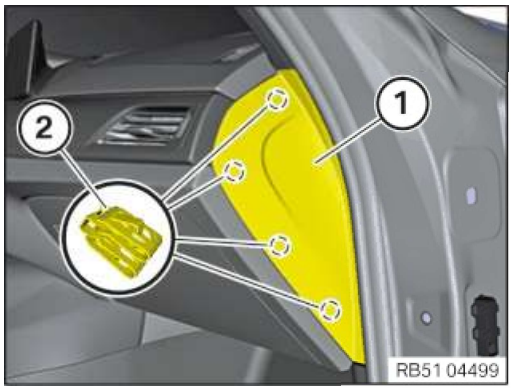
Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

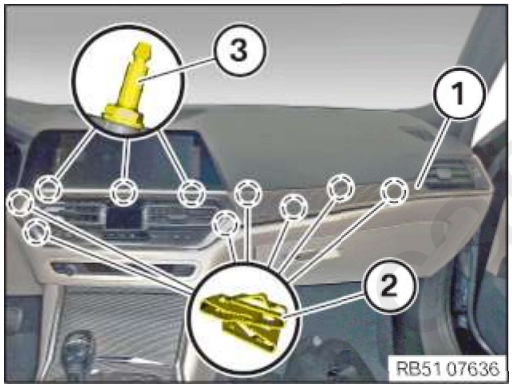
PRELIMINARY WORK

1 – Remove the side panel on the right instrument panel



- Unclip and remove the side panel (1) towards the outside from the clamps (2).
- If necessary, unlock associated plug connection and disconnect.

2 – Remove the finisher on the right instrument panel



- Unclip the decorative strip (1) towards rear at the clamps (2) and the pins (3).
- Unlock associated plug connection and disconnect.

  Remove the decorative strip (1).

MAIN WORK

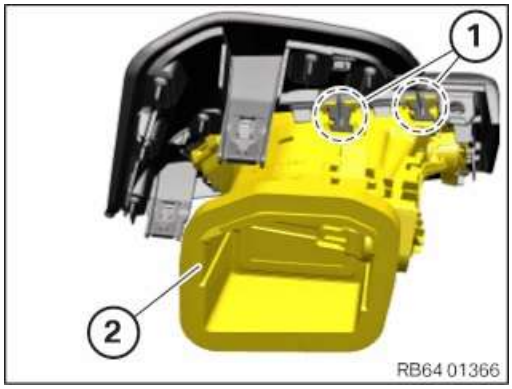
3 – Removing the right fresh air grille

NOTICE

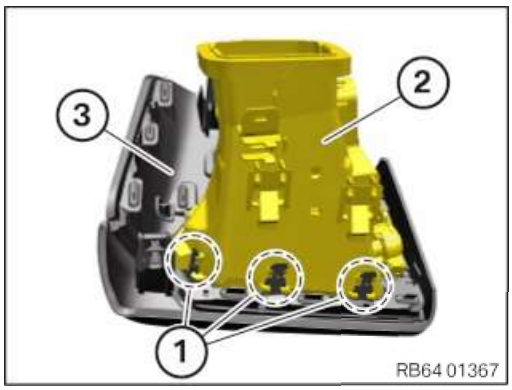
To provide a better overview: Schematic diagram with partially hidden components.

NOTICE

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



- Disengage the latch mechanisms (1) from the fresh air grille (2).



- Disengage the latch mechanisms (1) from the fresh air grille (2).
- Remove fresh air grille (2) from the decorative strip (3) on the right side.

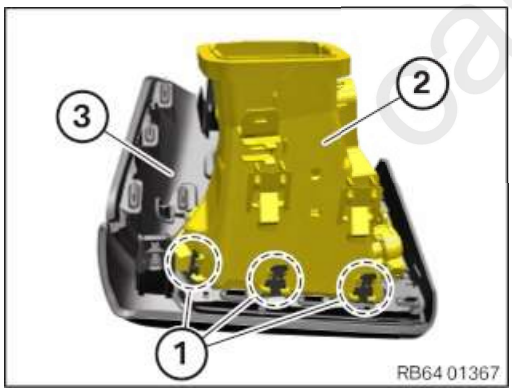
4 – Installing the right fresh-air grille

NOTICE

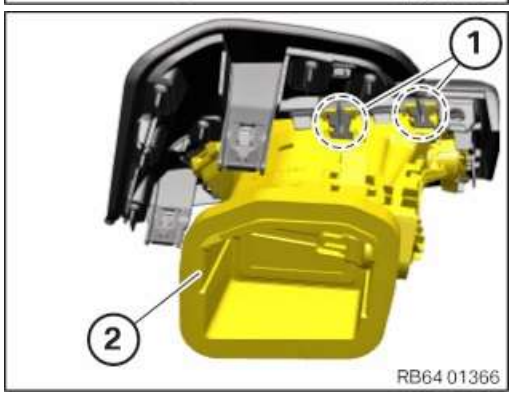
To provide a better overview: Schematic diagram with partially hidden components.

NOTICE

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



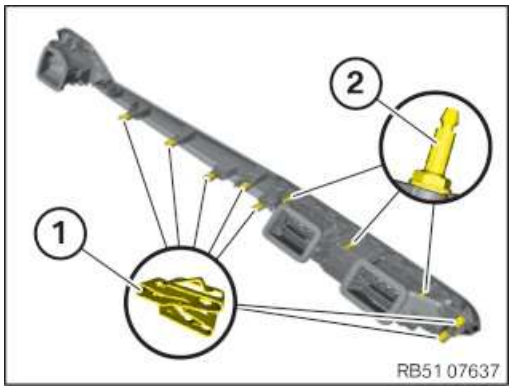
- Set the fresh air grille (2) on the right side of the decorative strip (3) and position it correctly.
- Engage latch mechanisms (1) on fresh air grille (2).



- Engage latch mechanisms (1) on fresh air grille (2).

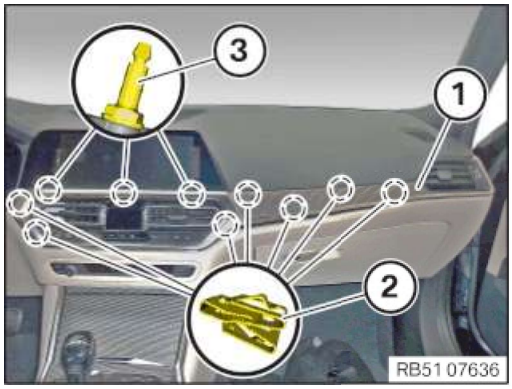
cardiagn.com

5 – Install the finisher on the right instrument panel



- Check the clamps (1).

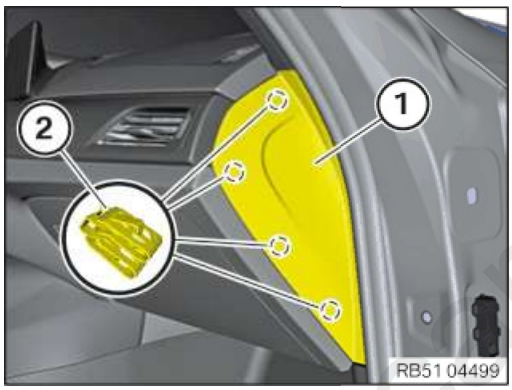
  Replace broken or missing clamps (1).
- Check the pins (2) and the corresponding clamps on the instrument panel trim and renew if necessary.



- Install the decorative strip (1).

  Connect and lock the associated connectors.
- Correctly position the decorative strip (1) and at the clamps (2) and clip in the pins (3).

6 – Install the side panel on instrument panel on the right



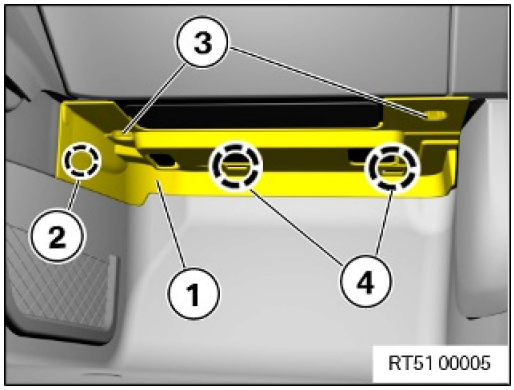
- If required, connect the associated connector.
- Feed in the side panel (1) and clip it in at the clamps (2).

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64 31 502 Replacing microfilter for interior ventilation

PRELIMINARY WORK

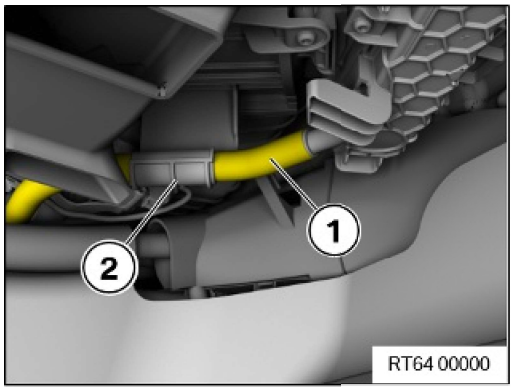
1 – Remove the right footwell trim



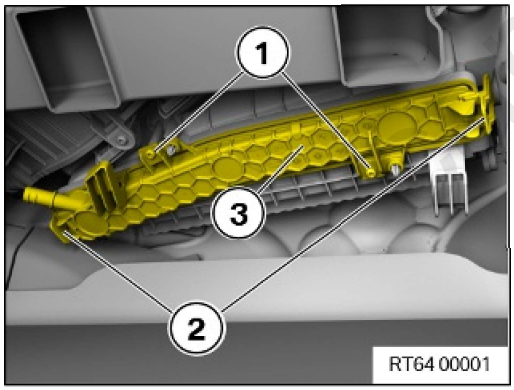
- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

MAIN WORK

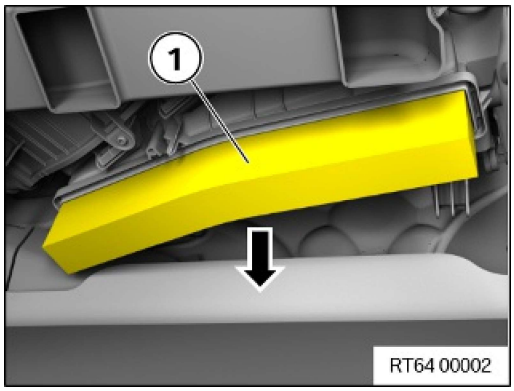
2 – Remove microfilter



- Pull off the water drain hose (1).
- Thread the water drain hose (1) out of the bracket (2).



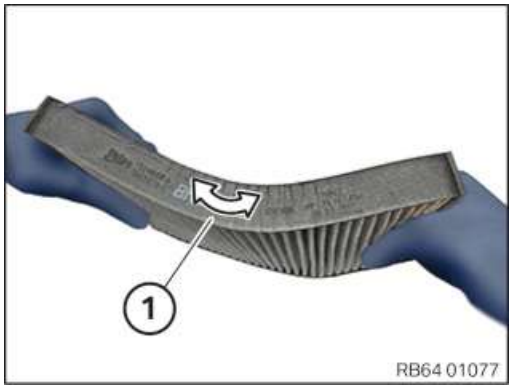
- Loosen screws (1).
- Release latch mechanisms (2) and remove cover (3).



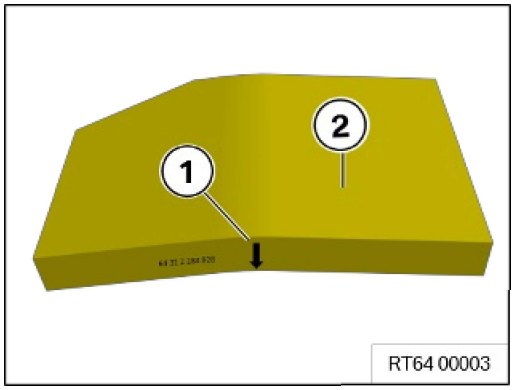
- Remove microfilter (1).

3 – Install microfilter

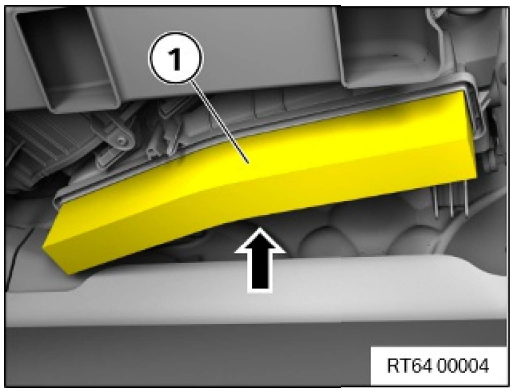
diagn.com



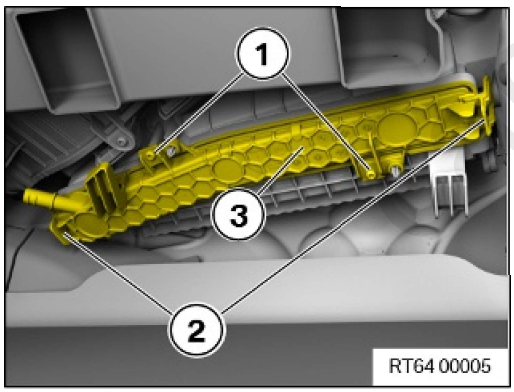
- Pre-bend microfilter (1) slightly as shown in the graphic.



- Please note that the arrow (1) on the microfilter (2) must always point in the direction of travel during installation.



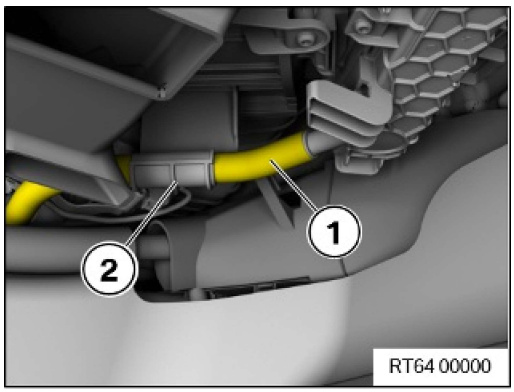
- Push the microfilter (1) up into the blower housing.



- Make sure that the cover (3) is correctly inserted into the latch mechanisms (2) of the blower housing.
- Tighten the screws (1).

Microfilter lid on heating and air-conditioning unit

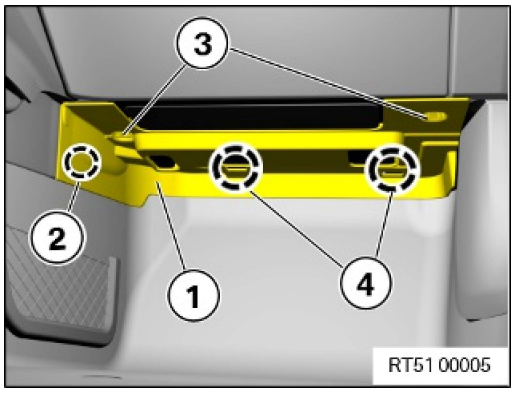
Screw		Tightening torque	2.8 Nm



- Connect water drain hose (1).
- Insert the water drain hose (1) into the holder (2).

xdiagn.com

4 – Install the right footwell trim panel



- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

Additional Information

Overview of Tightening Torques

Microfilter lid on heating and air-conditioning unit Used in step 3

Screw		Tightening torque	2.8 Nm

cardiagn.com

64 50 ... A/C performance test

Observe the following conditions prior to the A/C performance test:

1. Connect diagnosis system. Check of the fault memory (no faults in the fault memory).
2. Attach a thermometer with separate display element to the head restraint. Lay display element outwards out of passenger compartment.
3. Perform the test in a suitable workshop area with an ambient temperature above 18° C.
4. Vehicle temperature should be approximately the same as the ambient temperature in the workshop.
5. Engine must be at operating temperature (does not apply for electric vehicles).
6. ECO PRO mode must not be switched on.

Heat passenger compartment:

- ”A/C button” is **not** activated during the heating process
- Close all side windows and doors
- Set air recirculation function.
- Select air distribution mode for footwell and defrosting.
- *On vehicles with CID*: In A/C menu (CID) in Air distribution index tab: select 100 % footwell for driver and front passenger and 100 % defrosting for driver (this applies here to driver and front passenger)
- Maximum temperature setting
- Maximum blower speed
- Start engine (does not apply for electric vehicles)

Cool down passenger compartment:

Switch on air conditioning compressor with "A/C button" at a vehicle interior temperature of 45 °C (measured at the head restraint).

On vehicles with MAX-AC button:

- Activation of MAX-AC (= maximum cooling power)

On vehicles without MAX-AC button:

- Set maximum cooling power by means of following steps:
  - Setting minimum temperature
  - Blower setting maximum
  - Stratification maximum cold (4 blue bars)
  - Only ventilation open
  - Close remaining flaps (air outlet **only** from centre fresh air grille, left and right)

After 5 min, measure both ventilation temperatures with a thermometer at the same time (centre, left and right fresh air grille). The measured temperature must be ≤ 16 °C and the difference between right and left may not be greater than 2 °C.

If one or both temperature specifications is not reached drain off heating and air conditioning system. Measure the amount of refrigerant drawn off and compare with the nominal fill amount.

Check whether refrigerant loss is present:

- If there is a permissible loss of refrigerant, fill the refrigerant circuit with the nominal fill amount.
- If there is an impermissible loss of refrigerant, check the refrigerant circuit for tightness. After rectifying the leak, fill the refrigerant circuit with the nominal fill amount.
- If there is no refrigerant loss, continue troubleshooting using the pressure measurement (only possible for vehicles with unregulated air conditioning compressor up to series E46/E53).

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64 50 010 Extract, evacuate and fill air conditioning system

1 – Drawing off the air conditioning

Prerequisite

The engine is switched off.

CAUTION

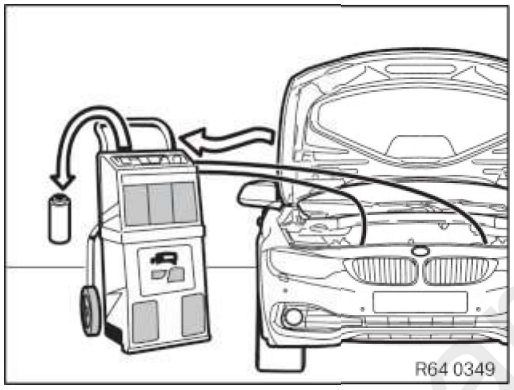
Refrigerant circuit under high pressure.

Danger of injury!

- Note and follow safety information on containers.
- Avoid contact with refrigerant; wear safety goggles and protective gloves.
- For more information see: 64 50 Handling refrigerant and 6450 Notes on repair work on air conditioning

TECHNICAL INFORMATION

If the A/C service station for the R1234yf refrigerant identifies contaminated refrigerant in the refrigerant circuit of the vehicle before evacuation, then a special procedure to draw off and dispose of this refrigerant must be followed (see additional information).



- Let the engine run for a few minutes at a low engine speed (800-1200 rpm) and with the heating and air conditioning system switched on.
- Stop engine.
- Carry out the service function:
  - Body
  - Heating and air conditioning functions
  - Drain / fill up refrigerant circuit
- Remove the sealing caps from the refrigerant filler necks.
- Connect the high pressure line of the A/C service station with the vehicle's high-pressure connection (red).
- Connect the low-pressure line of the A/C service station with the vehicle's low-pressure connection (blue).
- Start the evacuation on the A/C service station.
- During evacuation, allow the blower of the heating and air-conditioning unit to run at middle blower speed.
- Record the amount of evacuated refrigerant and amount of refrigerant oil after having completed evacuation.
- Keep the sheet with the recorded quantities as the values are once again required when filling.
- Disconnect the high pressure line and low pressure line.
- Drain the high pressure line and low pressure line.
- Close the sealing cap of the coolant filler neck.
- Correctly dispose of the drained refrigerant oil.

2 – Drawing off the air conditioning

Prerequisite

The engine is switched off.

cardiagn.com

CAUTION

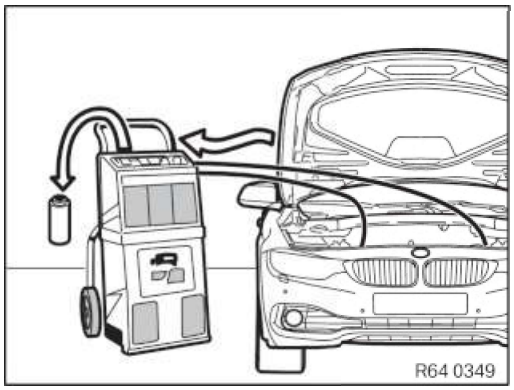
Refrigerant circuit under high pressure.

Danger of injury!

- Note and follow safety information on containers.
- Avoid contact with refrigerant; wear safety goggles and protective gloves.
- For more information see: 64 50 Handling refrigerant and 6450 Notes on repair work on air conditioning

TECHNICAL INFORMATION

If the A/C service station for the R1234yf refrigerant identifies contaminated refrigerant in the refrigerant circuit of the vehicle before evacuation, then a special procedure to draw off and dispose of this refrigerant must be followed (see additional information).



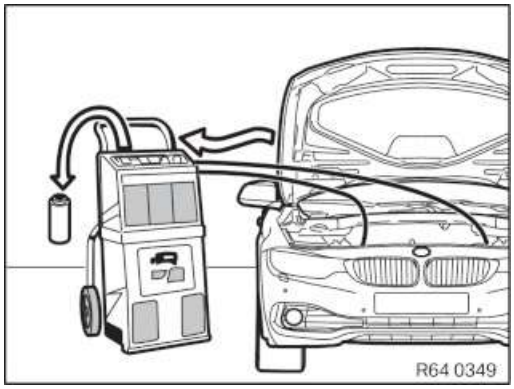
- Let the engine run for a few minutes at a low engine speed (800-1200 rpm) and with the heating and air conditioning system switched on.
- Stop engine.
- Remove the sealing caps from the refrigerant filler necks.
- Connect the high pressure line of the A/C service station with the vehicle's high-pressure connection (red).
- Connect the low-pressure line of the A/C service station with the vehicle's low-pressure connection (blue).
- Start the evacuation on the A/C service station.
- During evacuation, allow the blower of the heating and air-conditioning unit to run at middle blower speed.
- Record the amount of evacuated refrigerant and amount of refrigerant oil after having completed evacuation.
- Keep the sheet with the recorded quantities as the values are once again required when filling.
- Disconnect the high pressure line and low pressure line.
- Drain the high pressure line and low pressure line.
- Close the sealing cap of the coolant filler neck.
- Correctly dispose of the drained refrigerant oil.

3 – Evacuating the air conditioning

Prerequisite

The engine is switched off.

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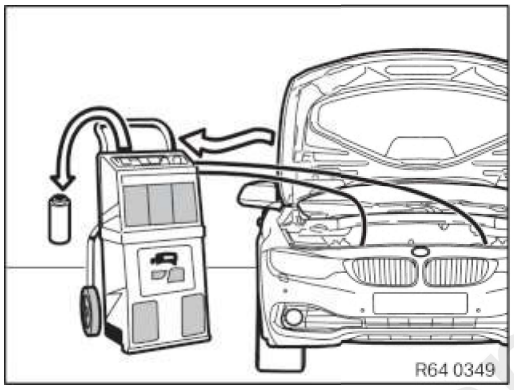


- Carry out the service function:
  - Body
  - Heating and air conditioning functions
  - Drain / fill up refrigerant circuit
- Remove the sealing caps from the refrigerant filler necks.
- Connect the high pressure line of the A/C service station with the vehicle's high-pressure connection (red).
- Connect the low-pressure line of the A/C service station with the vehicle's low-pressure connection (blue).
- Start the evacuation on the A/C service station.
- Adhere to an evacuation time of **at least** 30 min .
- During evacuation, allow the blower of the heating and air-conditioning unit to run at middle blower speed.
- If the vacuum does not remain stable during evacuation:
  - Run the ABL for leaks in the refrigerant circuit.
  - Rectify leaks in the refrigerant circuit.

4 – Evacuating the air conditioning

Prerequisite

The engine is switched off.



- Remove the sealing caps from the refrigerant filler necks.
- Connect the high pressure line of the A/C service station with the vehicle's high-pressure connection (red).
- Connect the low-pressure line of the A/C service station with the vehicle's low-pressure connection (blue).
- Start the evacuation on the A/C service station.
- Adhere to an evacuation time of **at least** 30 min .
- During evacuation, allow the blower of the heating and air-conditioning unit to run at middle blower speed.
- If the vacuum does not remain stable during evacuation:
  - Run the ABL for leaks in the refrigerant circuit.
  - Rectify leaks in the refrigerant circuit.

5 – Filling the air conditioning

Prerequisite

Service function must be active.

The engine is switched off.

Heating and air conditioning system is switched off.

The refrigerant circuit is evacuated and tight.

Vehicle must be positioned on the ground.

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CAUTION

Refrigerant circuit under high pressure.

Danger of injury!

- Note and follow safety information on containers.
- Avoid contact with refrigerant; wear safety goggles and protective gloves.
- For more information see: 64 50 Handling refrigerant and 6450 Notes on repair work on air conditioning

TECHNICAL INFORMATION

Filling a raised vehicle will result in insufficient filling levels.

TECHNICAL INFORMATION

In some cases, Sanden SP-A2 refrigerant oil must be injected into the refrigerant circuit. See further information.

- Determine the quantities of **new** refrigerant oil to be refilled:

  In addition to the drawn off and recorded amount of refrigerant oil, add the following quantities (if applicable):

  - *Top up the refrigerant oil losses over time as per the table*:

  Table 1 indicates the permitted loss of refrigerant after a specific period of time. There is **no** leak. Refrigerant oil must **not** be topped up.

  Table 2 indicates the amount of refrigerant oil which must be **topped up** after a specific period of time with an **impermissible** loss of refrigerant due to a leak.

  Case 1: Refrigerant loss is **not exceeded** as per Table 1:

  - Top up missing refrigerant
  - It is **not permitted** to top up the refrigerant oil

  Case 2: Refrigerant loss is **exceeded** as per Table 1:

  - Top up missing refrigerant
  - Refrigerant oil must be **topped up additionally** as per Table 2

Table 1/case 1					
Number of years since last filling	0-1	1-2	2-3	3-4	4-5
Permissible loss [g] --> **Do not top up refrigerant oil**	≤ 30	≤ 60	≤ 90	≤ 120	≤ 150

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Table 2/case 2		
Number of years since last filling	Loss of refrigerant [g]	Top up quantity refrigerant oil
0-1	< 120	0
0-1	120-150	10
0-1	> 150	20
1-2	< 180	0
1-2	180-210	10
1-2	> 210	20
2-3	< 240	0
2-3	240-270	10
2-3	> 270	20
3-4	< 300	0
3-4	300-330	10
3-4	> 330	20
4-5	< 360	10
4-5	> 360	20

- *Add refrigerant oil as per the table if parts of the refrigerant circuit have been replaced:*

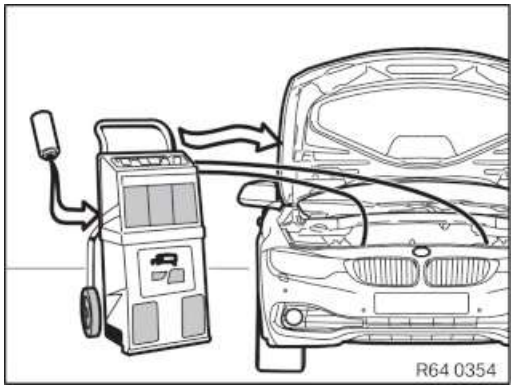
Case 1: Part exchange as preliminary work for additional work and part exchange due to **slow leakage** (minor leak, e.g. hairline crack)

Case 2: Part exchange due to **sudden leakage** (major leak, e.g. line disconnection caused by accident)

	Case 1	Case 2
Air conditioning compressor*	*	*
Evaporator	10 ml	35 ml
Air conditioning condenser without integrated desiccant insert	20 ml	35 ml
Air conditioning condenser with integrated desiccant insert	40 ml	55 ml
Desiccant insert/dryer flask	20 ml	55 ml
Per replaced refrigerant line	10 ml	35 ml
Safety pressure switch, gaskets	0 ml	0 ml

*Air conditioning compressor: see 6452 lubricating the air conditioning compressor

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- Top up determined amount of refrigerant oil into the refrigerant circuit.
- Fill the amount of refrigerant as per the type plate into the refrigerant circuit.
- Disconnect the high pressure line and low pressure line on the vehicle.
- Drain the high pressure line and low pressure line.
- Once again close the refrigerant filler neck on the vehicle with the sealing caps.

6 – Filling the air conditioning

Prerequisite

The engine is switched off.

Heating and air conditioning system is switched off.

The refrigerant circuit is evacuated and tight.

Vehicle must be positioned on the ground.

CAUTION

Refrigerant circuit under high pressure.

Danger of injury!

- Note and follow safety information on containers.
- Avoid contact with refrigerant; wear safety goggles and protective gloves.
- For more information see: 64 50 Handling refrigerant and 6450 Notes on repair work on air conditioning

TECHNICAL INFORMATION

Filling a raised vehicle will result in insufficient filling levels.

TECHNICAL INFORMATION

In some cases, Sanden SP-A2 refrigerant oil must be injected into the refrigerant circuit. See further information.

- Determine the quantities of **new** refrigerant oil to be refilled:

  In addition to the drawn off and recorded amount of refrigerant oil, add the following quantities (if applicable):

  - *Top up the refrigerant oil losses over time as per the table*:

  Table 1 indicates the permitted loss of refrigerant after a specific period of time. There is **no** leak. Refrigerant oil must **not** be topped up.

  Table 2 indicates the amount of refrigerant oil which must be **topped up** after a specific period of time with an **impermissible** loss of refrigerant due to a leak.

  Case 1: Refrigerant loss is **not exceeded** as per Table 1:

  - Top up missing refrigerant
  - It is **not permitted** to top up the refrigerant oil

  Case 2: Refrigerant loss is **exceeded** as per Table 1:

  - Top up missing refrigerant

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- Refrigerant oil must be **topped up additionally** as per Table 2

Table 1/case 1					
Number of years since last filling	0-1	1-2	2-3	3-4	4-5
Permissible loss [g] --> **Do not top up refrigerant oil**	≤ 30	≤ 60	≤ 90	≤ 120	≤ 150

Table 2/case 2		
Number of years since last filling	Loss of refrigerant [g]	Top up quantity refrigerant oil
0-1	< 120	0
0-1	120-150	10
0-1	> 150	20
1-2	< 180	0
1-2	180-210	10
1-2	> 210	20
2-3	< 240	0
2-3	240-270	10
2-3	> 270	20
3-4	< 300	0
3-4	300-330	10
3-4	> 330	20
4-5	< 360	10
4-5	> 360	20

- *Add refrigerant oil as per the table if parts of the refrigerant circuit have been replaced:*

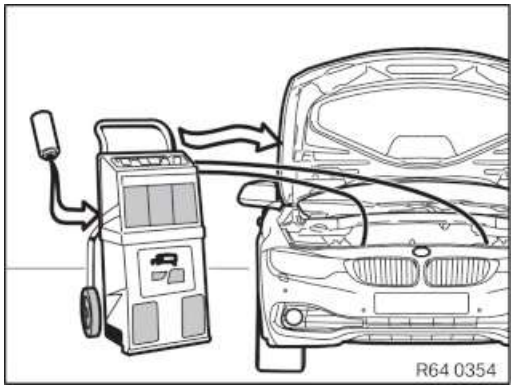
Case 1: Part exchange as preliminary work for additional work and part exchange due to **slow leakage** (minor leak, e.g. hairline crack)

Case 2: Part exchange due to **sudden leakage** (major leak, e.g. line disconnection caused by accident)

	Case 1	**Case 2**
Air conditioning compressor*	*	*
Evaporator	10 ml	35 ml
Air conditioning condenser without integrated desiccant insert	20 ml	35 ml
Air conditioning condenser with integrated desiccant insert	40 ml	55 ml
Desiccant insert/dryer flask	20 ml	55 ml
Per replaced refrigerant line	10 ml	35 ml
Safety pressure switch, gaskets	0 ml	0 ml

*Air conditioning compressor: see 6452 lubricating the air conditioning compressor

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- Top up determined amount of refrigerant oil into the refrigerant circuit.
- Fill the amount of refrigerant as per the type plate into the refrigerant circuit.
- Disconnect the high pressure line and low pressure line on the vehicle.
- Drain the high pressure line and low pressure line.
- Once again close the refrigerant filler neck on the vehicle with the sealing caps.

Additional Information

Overview of Special Tools

Overview Technical Data

Links

Repair instructions (PRE)	Used in step
Draw off the contaminated R1234yf refrigerant and dispose of it	12

General repair instructions	Used in step
64 52 ... Instructions for opening and part exchange in refrigerant circuit	56

Repair instructions	Used in step
64 50 ... Safety information for handling tetrafluorethane refrigerant R134a	1234
64 50 ... Notice of repair work on air conditioning	123456
64 50 ... Notes regarding refrigerant (R134a, R1234yf) and refrigerant oil (Sanden SP-A2)	12
64 50 ... Filling refrigerant oil by means of injection	56
64 50 ... Safety information for handling refrigerant R1234yf	

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64 50 ... Instructions for handling R1234yf refrigerant

Work on the refrigerant circuit may only be carried out by experts!

Avoid all contact with liquid or gaseous R1234yf. Wear protective goggles and gloves when working on the refrigerant circuit.

- Follow safety information for handling refrigerant R1234yf!

Warning!

> Although R1234yf at normal temperature is non-toxic, non-flammable and not explosive in air in any mixture ratio, it is still essential to follow various safety precautions. **At higher temperatures, R1234yf is inflammable.**

As a gas, R1234yf is colourless, odourless and heavier than air. If it enters the atmosphere, this may result in an imperceptible danger of asphyxiation or in cardiac palpitations, especially in workshop pits. Ventilate rooms adequately; if necessary, turn on installed extractor systems.

Store filled refrigerant pressure flasks so that they are not subject to direct sunlight or other heat sources (at maximum 45 °C). Also avoid exposing them to mechanical stress (e.g. by dropping).

Do not weld or solder on to filled air conditioning systems or in rooms into which R1234yf may have leaked. Exposure to flames or high temperatures (≥ 50 °C) may give rise to toxic products of decomposition (hydrofluoric acid). For this reason, do not smoke either.

In the event of fire, carbon dioxide (CO2), extinguishing powder and a sprayed water jet are deemed to be suitable extinguishing agents. Cool reservoirs at risk with a sprayed water jet (risk of bursting!).

If the protective caps on the filler valves are difficult to open, there is a risk of injury from leaking valve inserts (high pressure).

The filled refrigerant circuit of the A/C system is subject to excess pressure. Before carrying out repairs on the A/C system, it is absolutely essential to draw off the refrigerant.

- Before conducting repairs, check the actual pressure drop on the pressure gauge of the A/C service station

R1234yf must be drawn off, cleaned and returned to the A/C system using an A/C service station following the relevant operating instructions.

For a properly functioning A/C system, it is essential to have the greatest possible levels of cleanliness when working on the A/C system and the longest possible evacuation (at least 30 minutes dehumidification from refrigerant circuit) before each filling of the A/C system.

R1234yf easily absorbs moisture. Therefore, seal off opened pipes, air conditioning condenser, evaporator, air conditioning compressor and dryer flask immediately with seal plugs.

- If air conditioning has been completely drained by a leak, accident or repair, the desiccant insert must be replaced as excessive moisture may have entered the system.

With replacement parts, the plugs may only be removed immediately before the lines are connected. In the event of warranty claims, the old parts must be provided with plugs to be able to determine the cause of the damage.

Installation note:

After each refilling of an air conditioning, check that protective caps of filling valves are hand-tight. They serve as additional seals.

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64 52 ... Instructions for opening and part exchange in refrigerant circuit



Special tools required:

- 00 9 030
- 32 1 270

Warning!

- Avoid contact with refrigerant and refrigerant oil
- Follow safety informations for handling refrigerant
- Follow safety information for handling refrigerant oil

Attention!

- Always use new O-rings each time A/C connections are opened (refer to Electronic Parts Catalogue) They must **not** be coated.
  Use special tool 00 9 030 to install sealing rings without damaging them.
- Open the referigerant circuit for as short of a period as possible.
- Close all components and lines in the refrigerant circuit and return parts **immediately** following the removals at openings with special tool 32 1 270 to prevent penetration of moisture or foreign objects.
- If the refrigerant circuit was closed at the openings with special tool 32 1 270 but it remains open for more than 24 h, the dryer insert for the air conditioning must be replaced.

I. **Part replacement as preliminary work fur further repair work and part replacement based on gradual leakage.**
(minor leak, e.g. hairline crack)

Procedure:

- Draw off heating and air conditioning system, then determine drawn-off amount of refrigerant oil
- Carry out part replacement
- Replace removed refrigerant oil and additionally top up with new refrigerant oil according to components replaced:
  - Compressor: refer to Notes on compressor replacement
  - Evaporator: 10 ml
  - Capacitor: 20 ml
  - Desiccant insert / dryer flask: 20 ml
  - Each replaced refrigerant line: 10 ml
  - Condenser with integrated dryer flask: 40 ml
  - Safety pressure switch and gasket: no additional refrigerant oil
  - Only I01: Radiator, high-voltage battery unit: 20 ml
- Evacuate and fill air conditioning system

II. **Part replacement due to sudden leakage**
(major leak, e.g. line disconnection due to accident)

Procedure:

- Draw off heating and air conditioning system, then determine drawn-off amount of refrigerant oil
- Carry out part replacement
- Replace removed refrigerant oil and additionally top up with new refrigerant oil according to components replaced:
  - Compressor: refer to Notes on compressor replacement
  - Evaporator: 35 ml
  - Capacitor: 35 ml
  - Desiccant insert / dryer flask: 55 ml
  - Each replaced refrigerant line: 35 ml

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    - Condenser with integrated dryer flask: 55 ml
    - Safety pressure switch and gasket: no additional refrigerant oil
    - Only I01: Radiator, high-voltage battery unit: 35 ml
- Evacuate and fill A/C system

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64 53 ... Instructions for replacement of air conditioning capacitors and radiator/coolers

Attention!

Even when they are correctly installed or due to normal driving, radiators (oil cooler, radiator, charge air cooler) or air conditioning condensers may show slight impressions or deformations on their discs (1).

A slight sag with a large radius for the air conditioning condenser is also permissible.

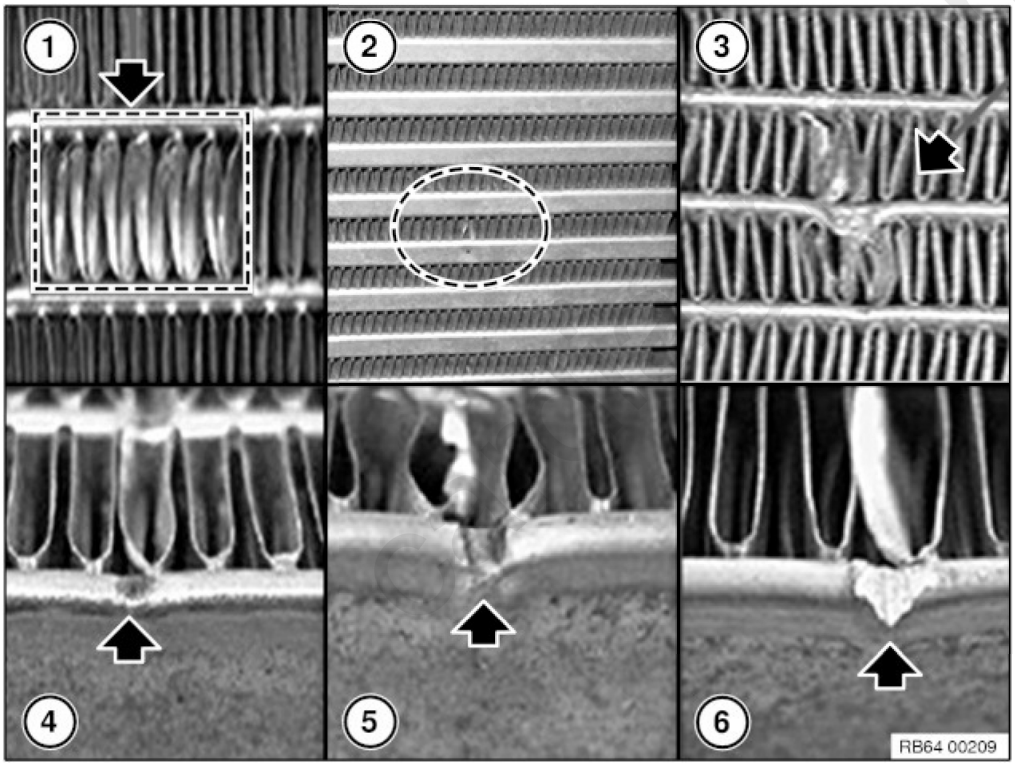
As long as tightness/function are not degraded and an adequate distance of a few mm between the radiator and air conditioning condenser remains in place, **this is not damage in either case.**

Radiators or air conditioning condensers are not to be replaced in these cases!

Note:

The deformations shown in Fig. (1) can be bent back with a standard fin comb..

Damage to lines carrying media or on the flat pipe require exchange of the radiator or air conditioning condenser (2-6).



Dryer flask (integrated in the air conditioning condenser):

Round dents/depressions are permitted.

The air conditioning condenser is not to be replaced in this case.

64 50 ... Leak detection with forming gas

Note:
Leak detection with forming gas replaces the leak detection that is restricted in EU countries using UV.

Observe national regulations in all other countries!

Observe the notes on repair work on the air conditioning!



Important!

Compliance with the manufacturer's operating instructions provided in the equipment case is absolutely mandatory!

Comply with SI 08 08 10 (670)!

Read and comply with the manufacturer's operating instructions provided with the special tool particularly with regard to accident prevention, health protection and environmental protection.

Only the basic procedure is described in the following!



Important!

Wear personal protective clothing/equipment!

Note:
Determine the customer's use behaviour prior to leak detection!

Certain user behaviours can lead to a loss of refrigerant from the refrigerant circuit even if there is no leak. This may occur if the customer has not used the air conditioning for a period of more than six months. This may cause O-rings to harden and refrigerant may escape. In this case, it will be sufficient to fill the refrigerant circuit again and switch on the air conditioning for approximately 10 minutes while the engine is running.

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Necessary preliminary work:

- **If components of the refrigerant circuit are contaminated, clean the engine compartment. Otherwise, the sensor head of the leak detector will become contaminated.**

  Comply with notes and instructions on handling high pressure cleaner.
- Drain off air conditioning system
- Fill the air conditioning with forming gas
- Set pressure to 5 bar

To reach the components of the refrigerant circuit with leak detector, specific parts must be removed depending on the vehicle.

Remove the following parts first immediately before the check of the respective components

- Drive belt from air conditioning compressor
- Centre fresh air grille
- Covers
- Trim panels
- Air duct
- Intake silencer
- Bulkheads
- Parts of the interior equipment (automatic rear air-conditioning system)

In some vehicles it is necessary to open the air flaps of the automatic air flap control.



G12, PHEV:

Before filling the refrigerant circuit with forming gas, perform **test module** "Draining/Filling of refrigerant circuit".



Important!

Always perform the leak detection with a pressure of **5 bar at first**!

This is absolutely necessary to find certain leaks, such as in the area of the O-rings.

If no leak is detected, repeat the leak detection with **10 bar**.

Important!

The leak detection may not be performed **more than 3 h** after filling the refrigerant circuit with forming gas!

Forming gas consists of 95% nitrogen and 5% hydrogen. The leak detector will detect hydrogen. If this is leaking from the refrigerant circuit even though the pressure remains, the leak detection bears no results.

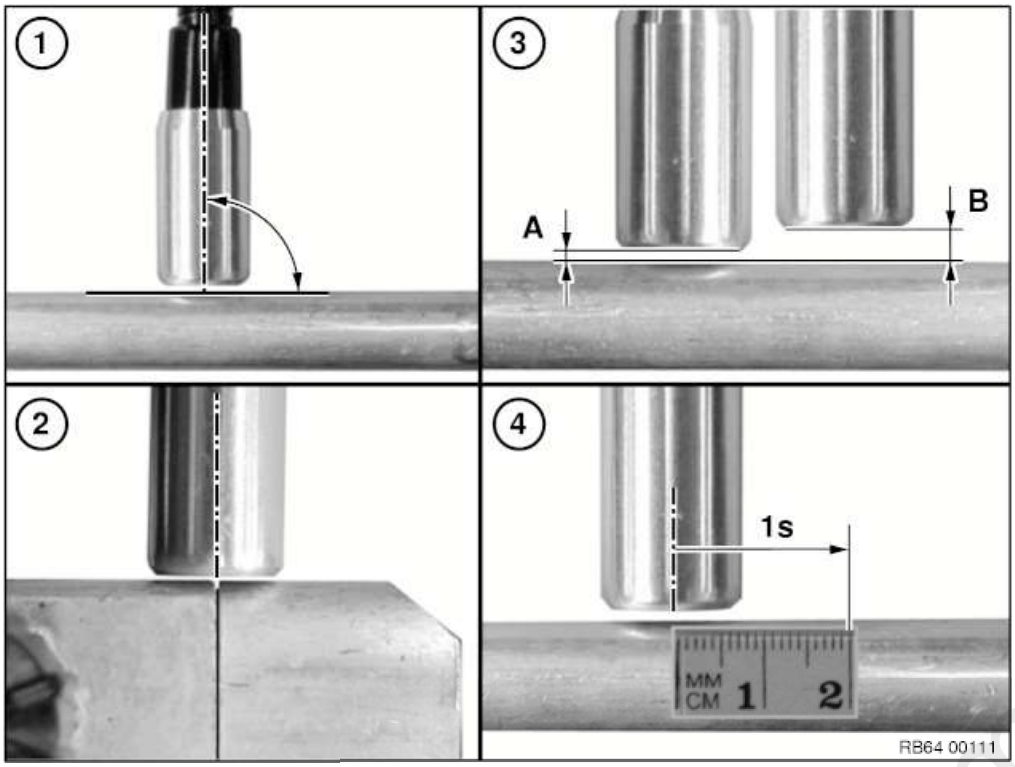
Important!

Risk of damage!

Maximum approved pressure: **10 bar**

Do not start the engine during the entire procedure!

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Notes for handling the leak detector:

1. Sensor head should always stand vertical to the surface to be checked.
2. Sensor head must always be aligned to the centre of the point to be checked. Slowly guide the sensor head around the point (e.g. connection point, sealing surface, etc.).
3. The optimal distance (A) between sensor head and surface to be checked should permanently be approximately 1 mm.

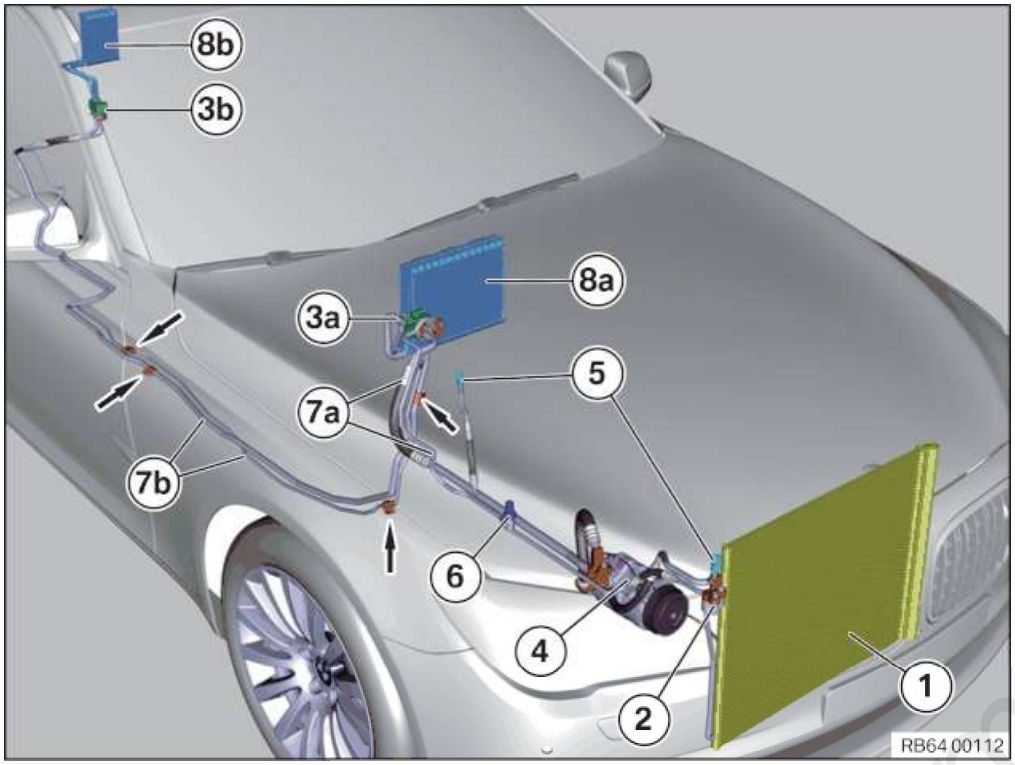
   Maximum distance (B) at points that are difficult to access approximately 5 mm.
4. Checking speed may not be more than maximum 2 cm per s.

Note:
If the leak detector displays a leak, remove the sensor head from the leak for approximately 10 s.
Then check if the leak is still displayed at the same point. Repeat the process up to three times,
to ensure that a leak is actually present at this point.

Note:
Replace the leaking component. Relieve the pressure from the refrigerant circuit prior to replacement.

Important!
Compliance with the instructions above is absolutely mandatory!
Non-compliance will significantly reduce the efficiency of leak detection!

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Note:
The graphic shows the example of the refrigerant circuit on the F02 with the automatic rear air-conditioning system optional equipment .

Refrigerant circuits on other vehicles may differ from the graphic.

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Overview of positions to be checked:

1. Air conditioning condenser
2. Connection point between air conditioning condenser and refrigerant line
3. a) Expansion valve, front (vehicles with and without automatic rear air-conditioning system)

   b) Expansion valve, rear (vehicles with automatic rear air-conditioning system)
4. Air conditioning compressor
5. Filler neck high pressure and low pressure
6. Refrigerant pressure sensor
7. a) Refrigerant line, front (vehicles with and without automatic rear air-conditioning system)

   b) Refrigerant line, rear (vehicles with automatic rear air-conditioning system)
8. a) Evaporator, front (vehicles with and without automatic rear air-conditioning system)

   b) Evaporator, rear (vehicles with automatic rear air-conditioning system)

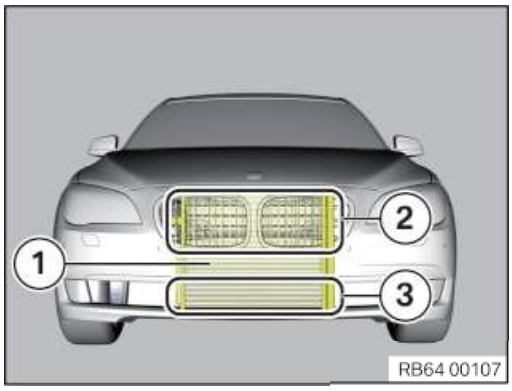
Note:
Refrigerant line connection points are identified by arrows.

Checking sequence:

1. Check of components 1, 2, 3a, 4, 5, 6, 7a and 8a of the automatic front air-conditioning system.

   If no fault found:

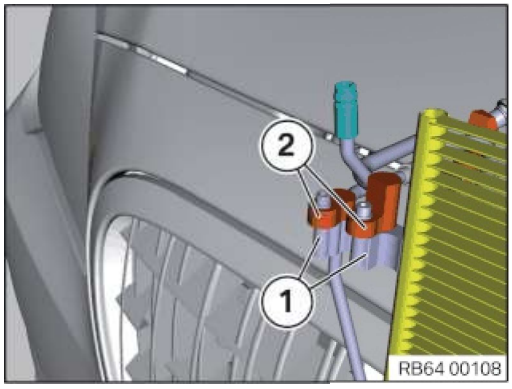
2. Check of components 3b, 7b, 8b and connection points of the automatic rear air-conditioning system.



1. Air conditioning condenser:

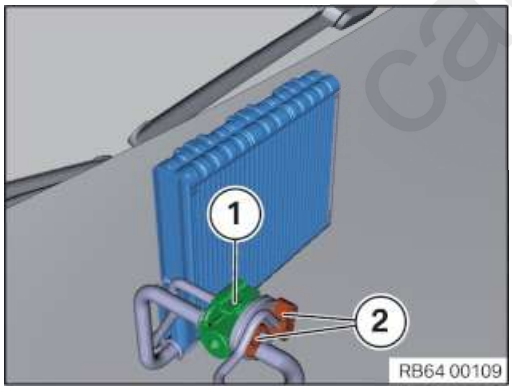
Damage caused by stone chipping, etc. is the most frequent cause of air conditioning condenser leaks (1):

1. Visual inspection in the area of the radiator grille (2) and air inlet grille, centre (3).
2. Check damaged points first.
3. Check the remainder of the air conditioning condenser.



2. Connection point capacitor - refrigerant line

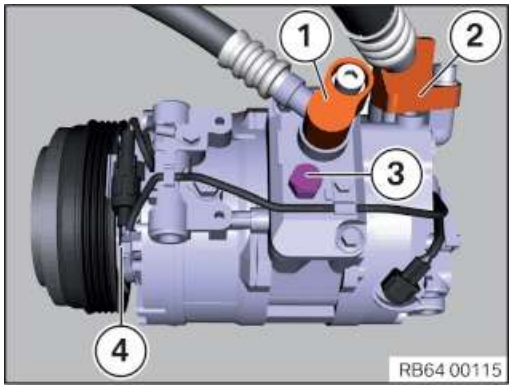
Check the connection point between the connection at the air conditioning condenser (1) and refrigerant lines (2).



3. Expansion valve:

Check the connection point between the expansion valve (1) and refrigerant lines (2).

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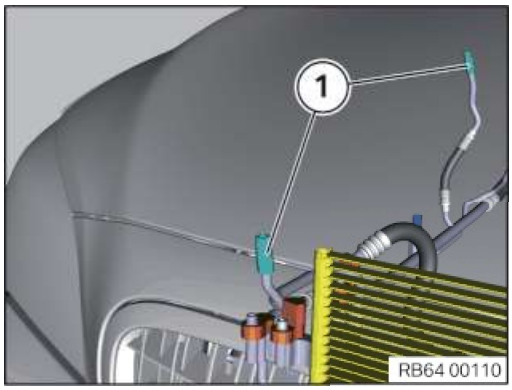


4. A/C compressor:

Remove drive belt from air conditioning compressor.

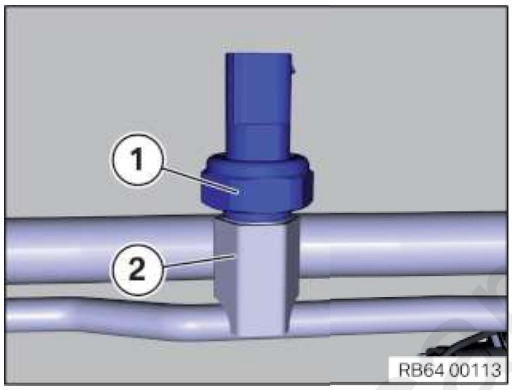
Check the following components on the air conditioning compressor:

1. High-pressure connection
2. Low pressure connection
3. Pressure relief valve
4. Radial shaft seal of the magnetic coupling: Turn the magnetic coupling several times by hand during the leak detection.



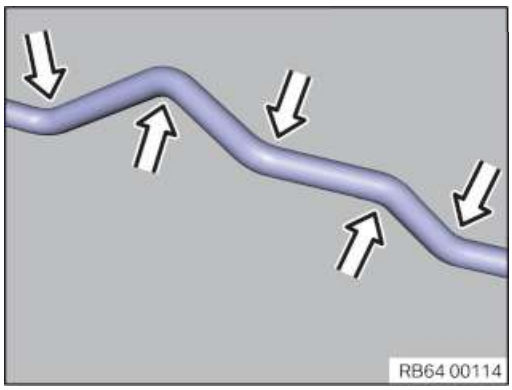
5. Filler neck

Blow out the fuel filler neck (1) prior to checking.



6. Refrigerant pressure sensor

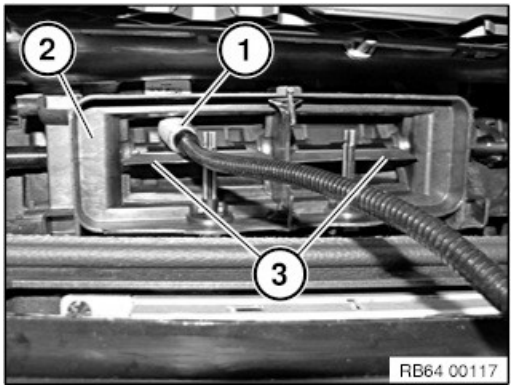
Check the sealing surface between the refrigerant pressure sensor (1) and the refrigerant line (2).



7. Refrigerant lines:

1. Perform visual inspection
2. Check damaged points first.
3. Check bending points at points marked with an arrow. Leaks occur especially frequently at these points.
4. Check the remainder of the refrigerant line.

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8. Evaporator:

Remove the centre fresh air grille.

Compliance with the following settings is **absolutely** required:

- Air recirculation function On
- Lowest blower speed
- Lowest temperature
- Set the air distribution to ventilation (air may only flow out of the centre fresh air grille)

Position sensor head (1) in air duct of middle fresh air grille (2) as illustrated and move slowly from inside to outside above and below air flap (3). Carry out this operation on the left and right fresh air grilles.

Important!

Some vehicles have an expansion valve directly next to the fresh air intake for the passenger compartment.

In this case the expansion valve must be covered!

Following the completed leak detection:

- Evacuate and fill heating and air conditioning system

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64 50 ... Leak detection with ultraviolet additives (UV additives) (BMW leak-testing case)



Leak detection using ultraviolet additives is generally not recommended as the UV additives lead to an uncontrolled over oiling of the refrigerant circuit. This results in a reduction of the cooling power. Leak detection with forming gas is preferable.

Leak detection using ultraviolet additives is permitted for refrigerants R134a and R1234yf.

Attention!

In EU countries it is prohibited by law to fill a knowingly leaking refrigerant circuit with the refrigerants (R134a and R1234yf):

- If a leak is suspected in the refrigerant circuit, refilling with refrigerant and UV additives for the purpose of a subsequent leak detection **is not permitted**

  In this case, carry out the leak detection with forming gas
- UV additives **must be filled only in a tight refrigerant circuit**

Observe national regulations in all other countries!



Attention!

It is absolutely essential to read and comply with the equipment manufacturer's operating instructions provided in the leak testing case!

Read and comply with the manufacturer's operating instructions provided with the leak testing case with regard to accident prevention, health protection and environmental protection.

Use only BMW-approved UV additives (e.g. TRACER).

Only the basic procedure is described in the following!

Attention!

UV additives may not be used in vehicles with electric A/C compressors!



Warning!

Avoid contact with refrigerant.

Follow safety precautions when handling refrigerant.

Attention!

Ultraviolet lamp gets very hot in the radiation area!

Do not use the ultraviolet lamp without the filter glass.

Eyes and skin will suffer damage if the ultraviolet lamp is used without the filter glass.

When using the ultraviolet lamp, wear the safety goggles provided in the leak testing case.

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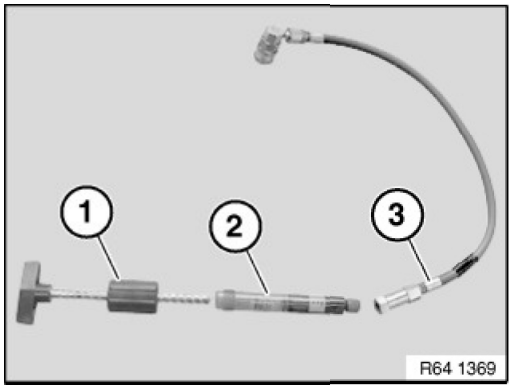
Note:

- Fill the hose system of the hand pump completely with UV additive PRIOR to use
- The UV additive may be used exclusively for BMW-approved refrigerant oils
- Do not operate the air conditioning while the hand pump is connected or in use
- The air conditioning must always be filled with an adequate amount of refrigerant to enable the UV additives to be properly distributed

Necessary preliminary work:

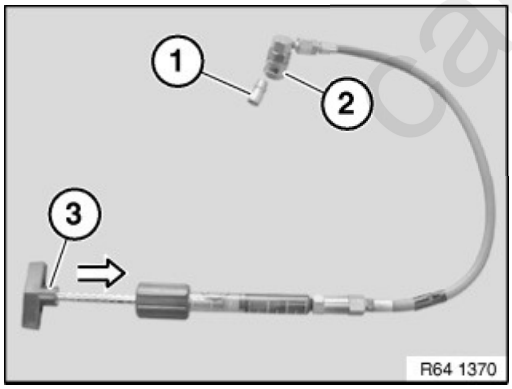
Before actually testing for leaks, check the entire refrigerant circuit using the UV leak detection lamp to ensure that no UV additive is already in the area of the refrigerant circuit.

Leak areas which have already been detected by UV light must carefully cleaned with the cleaning agent provided in the leak testing case.



<u>On initial use:</u>

Connect hand pump (1) to additive cartridge (2) and pipe section (3).



<u>On initial use:</u>

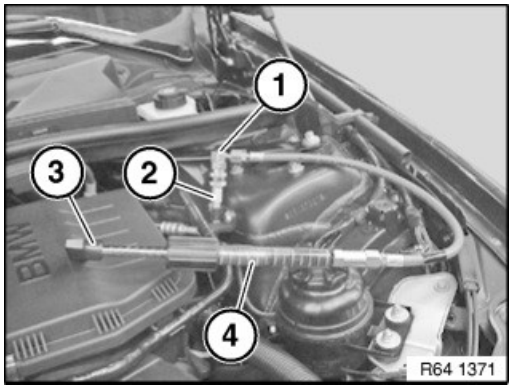
Attach vent valve (1) to quick-release coupling (2).

Turn handle (3) on hand pump to advance the piston until a small amount of UV additive emerges. This vents the hose system.

Attention!

The entire hand pump with hose system must not be disassembled again once filling has been completed.

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Attach quick-release coupling (1) to low-pressure connection (2) of air conditioning system.

Turn handle on hand pump (3) until the required amount of UV additive is added.

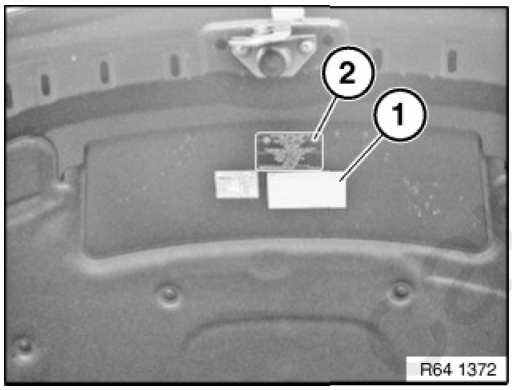
The quantity of UV additive to be added is dependent on the amount of refrigerant in the refrigerant circuit:

- Air conditioning systems with refrigerant filling up to 900 g: one graduation mark (4) on additive cartridge
- Air conditioning systems with refrigerant filling in excess of 900 g: two graduation marks (4) on additive cartridge

Note:
After filling remove the quick-release coupling (1). If necessary, clean the areas with contaminated with UV additive using the cleaning agent contained in the leak testing case.

<u>Further tasks:</u>

- Start engine
- Run air conditioning at highest level for 5 - 10 minutes in order to ensure adequate distribution of dye in the system
- Turn off engine.
- Check all the components of the refrigerant circuit for any leaks
- Possible leaks are displayed in green when using the UV leak detecting lamp and UV-absorbing safety goggles



Complete accompanying information label (1) with the relevant data and attach in an easily visible position next to the type plate (2).

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64 50 ... Notes on repairs to air conditioning



Special tools required:

- 00 9 030
- 32 1 270



Warning!

Only persons in possession of a professional certificate of competence for the maintenance and repair of heating and air conditioning systems are authorised to carry out repair work on the refrigerant circuit. It must be available no later than 04 July 2010 (applies only to EU countries; follow country-specific regulations in non-EU countries).

Refrigerant circuit is under high pressure!

- If the protective caps on the filling valves are difficult to open, there is a danger of injury from leaking valve inserts.

Repairs may only be carried out on a depressurised refrigerant circuit!

- Before conducting repairs, check the actual pressure drop on the pressure gauge of the A/C service station

Avoid contact with refrigerant and refrigerant oil.

- Pay attention to the safety information for dealing with coolant
- Follow safety information for handling refrigerant oil

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Attention!

Risk of damage!

Only refrigerant and refrigerant oil country-specifically approved by BMW may be used.

Restart engine only when air conditioning has been correctly filled.

- Each time air connectors are opened continually **new O-Rings** are used (see electronic parts catalogue).

  They must **not** be coated.

  Use special tool 00 9 030 to mount sealing rings without damaging them.
- Open the refrigerant circuit for as short a period as possible.
- Close all components and lines in the refrigerant circuit and return parts immediately following the removals at openings with special tool 32 1 270 to prevent penetration of moisture or foreign objects.
- If refrigerant circuits are opened with special tool 32 1 270 but left open for more than 24 h, the **air conditioning condenser with desiccant insert** for air conditioning must be replaced.

In a functioning, sealed air conditioning, an **air conditioning condenser with desiccant insert** need **not** be changed at regular inspection intervals.

However, an air conditioning condenser with desiccant insert must be changed in case of:

- the refrigerant being dirty by swarf (e.g. when the air conditioning compressor is clamped).
- With depressurised and/or completely drained refrigerant circuit.



Vehicle-specific notes:

<u>Only G12 and Plug-in Hybrid Electric Vehicle:</u>

To ensure that refrigerant is fully drained from the rear passenger compartment air conditioning or the battery cooling system,

run the following test module:

- Car body service
- Heating and air conditioning functions
- Drain / fill up refrigerant circuit

<u>Only G12, N74 US version:</u>

An adapter is necessary to fill the air conditioning.

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In case of the handling the A/C service station observe the following without fail: Attention!

Risk of damage!

Comply with SI 08 07 10 (669)!

Carefully move the climate service station!

Comply with the operating instructions and service interval for the A/C service station!

Make sure that the hoses of the A/C service station are drained after the drawing off or filling procedure!

The climate service station contains highly sensitive components, such as scales. These components will be damaged due to improper handling, such as fast driving over a bump. This will result in a significant reduction of the measuring accuracy when drawing off and filling.

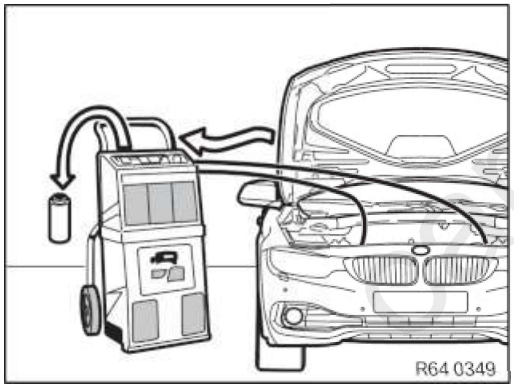
Attention!

During the entire filling procedure the vehicle must stand on the floor.

Filling a raised vehicle will result in insufficient filling levels.

Note:
In the event of complaints, perform A/C performance test!

If the system fails the test, draw off, evacuate and fill the air conditioning in accordance with the operating instructions of the relevant service station.



Instructions for drawing off air conditioning:

To help separation of refrigerant and refrigerant oil, run engine at low speed (800-1200 rpm) and with air conditioning switched on for a few minutes.

The limits the entrainment of refrigerant oil while it is drawn off.

Drawn-off refrigerant oil must be changed and reintroduced via the A/C service station.

During drawing off, set the blower of the heating and air-conditioning unit to the middle blower speed. This ensures that drawing off is more effective since the pressure on the low pressure side increases.

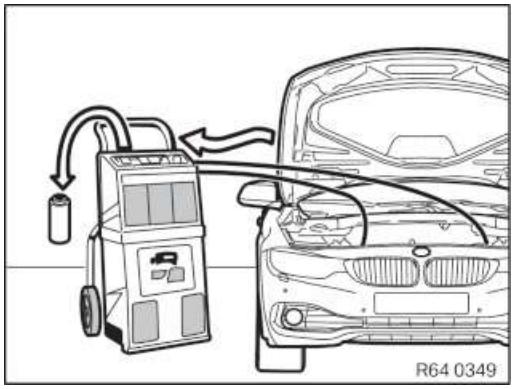
Recycling:

Dispose of drawn-off refrigerant oil as hazardous waste.

Observe country-specific waste disposal regulations.

Note in case of contaminated refrigerant R1234yf:
If the A/C service station for R1234yf refrigerant identifies contaminated refrigerant in the refrigerant circuit of the vehicle before evacuation, then a special procedure to draw off and dispose of this refrigerant must be followed.

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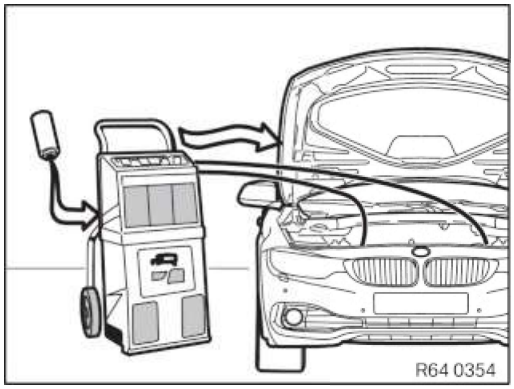
Instructions for evacuating off air conditioning:
Before each filling, evacuate the refrigerant circuit.

Observe an evacuation time of at least 30 minutes.

The evacuation procedure removes all traces of ambient air, water vapour and any other gases present from the heating and air conditioning system. This enables subsequent system filling with refrigerant.

If the vacuum does not remain stable when the system is off, run the procedure for leaks in the refrigerant circuit.

During evacuation, set the blower of the heating and air-conditioning unit to the middle blower speed. This ensures that evacuation is more effective since the pressure on the low pressure side increases.



Notes for filling heating and air conditioning system:
Before filling with refrigerant, replace the refrigerant oil entrained plus losses is to be filled up during drawing off.

Fill up the amount of refrigerant as per type plate.



Remove the capacity and type of the refrigerant from the type plate.

Refrigerant capacities

64 50 ... Notes on the refrigerant (R134a, R1234yf) and refrigerant oil



Attention!

Specific to the country , **2 different refrigerants** (R134a, R1234yf) are used.

Specific to the country, the vehicle and the year of manufacture **2 different refrigerant oils** (ND-8, Sanden SP-A2) are used.

Before carrying out repairs on the refrigerant circuit, always determine which refrigerant/refrigerant oil is used in the vehicle!

Refrigerant: This information can be found on the **type plate** on the bonnet.

Refrigerant oil: This information can be found on the **type plate** on the front flap in vehicles with a production date from 2013.

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R1234yf refrigerant is used **in the following countries**:

Observe notes on handling R1234yf refrigerant!

Europe				Asia	America
Belgium	Great Britain	Malta	Sweden	Israel	USA
Bosnia and Herzegovina	Ireland	Macedonia	Switzerland	Turkey	Canada
Bulgaria	Iceland	The Netherlands	Slovakia	India*	
Denmark	Italy	Norway	Slovenia	South Korea	
Germany	Croatia	Austria	Spain		
Estonia	Latvia	Poland	Czech Republic		
Finland	Liechtenstein	Portugal	Hungary		
France	Lithuania	Romania	Cyprus		
Greece	Luxembourg	Serbia			

*Only applies to vehicle models with Europe version. All other vehicle models have R134a.

Introduction of R1234yf refrigerant:

European countries listed in the table, Turkey and Israel:

- BMW i as of 09/2013
- from 07/2016, BMW, MINI, RR

USA and Canada:

- from 07/2016 BMW, BMW i, MINI

South Korea:

- from 11/2018 BMW, BMW i, MINI

The introduction date may vary slightly according to the specific country and model.

The refrigerant R134a will continue to be used **in all other countries**.

Observe notes on handling R134a refrigerant!

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Refrigerant oil Sanden SP-A2 is used for both, R1234yf and R134a.

Observe notes on handling refrigerant oil!

Attention!

I01, I12 with production date up to 08/2014:

In the national-market version with R134a a **wrong refrigerant oil** is present on the type plate

Always use Sanden SP-A2

(Part number of Sanden SP-A2: 2 339 920)

Attention!

Only vehicles with a production date from 09/2013 and **R1234yf** refrigerant/Sanden **SP-A2** refrigerant oil can be filled using the A/C service station for **R1234yf**.

In addition to vehicles with a production date from 09/2013, also all previous vehicles **without the electric A/C compressor** with **R134a** refrigerant and both **ND-8** and Sanden **SP-A2** refrigerant oil can be filled using the A/C service station for **R134a**.

Exception:

BMW i and hybrid vehicles (with an electric A/C compressor) that are filled with **R134a** refrigerant/Sanden **SP-A2** refrigerant oil. These vehicles must be injected with Sanden **SP-A2** refrigerant oil.

When filling the refrigerant circuit with R134a, always ensure you use the correct, vehicle-specific refrigerant oil type!

The previous ND-8 refrigerant oil must not be mixed with Sanden SP-A2 refrigerant oil!

In other words, the refrigerant oil ND-8 must not be filled in refrigerant circuits which were filled with Sanden SP-A2 in the factory.

Sanden SP-A2 refrigerant oil may be mixed with ND-8 refrigerant oil in vehicles without an electric A/C compressor.

In other words, the refrigerant oil Sanden SP-A2 must be filled in refrigerant circuits which were filled with ND-8 in the factory.

However, this is permitted **only** in vehicles **starting from** F-series.

Note the overview of the refrigerant oil to be filled.

To prevent inadmissibly mixing the different refrigerant oil types, rinse the A/C service station hoses after each drawing off/filling procedure!

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64 50 ... Safety information for handling refrigerant R1234yf



R1234yf is non-toxic at normal temperature, non-flammable and not explosive in conjunction with air at any mixture ratio.

As a gas, R1234yf is colourless, odourless and heavier than air. If it enters the atmosphere, this may result in an imperceptible danger of asphyxiation or in cardiac palpitations, especially in workshop pits. Ventilate rooms adequately; if necessary, turn on installed extractor systems.

Store filled refrigerant pressure flasks so that they are not subject to direct sunlight or other heat sources (at maximum 45 °C). Also avoid exposing them to mechanical stress (e.g. by dropping).

Do not weld or solder on to filled air conditioning systems or in rooms into which R1234yf may have leaked. Exposure to flames or high temperatures (≥ 50 °C) may give rise to toxic products of decomposition (hydrofluoric acid). For this reason, do not smoke either.

In the event of fire, carbon dioxide (CO2), extinguishing powder and a sprayed water jet are deemed to be suitable extinguishing agents. Cool reservoirs at risk with a sprayed water jet (risk of bursting!).

If the protective caps on the filler valves are difficult to open, there is a risk of injury from leaking valve inserts (high pressure).

The filled refrigerant circuit of the A/C system is subject to excess pressure. Before carrying out repairs on the A/C system, it is absolutely essential to draw off the refrigerant.

After each refilling of an air conditioning, check that protective caps of the filling valves are hand-tight. They serve as additional seals.



Warning!

Work on the refrigerant circuit may only be carried out by experts!

Danger of injury!

Refrigerant circuit is under high pressure!

Draw off the refrigerant **before** any repairs on the refrigerant circuit!

The refrigerant circuit is only depressurised **after** drawing off.

- Check the pressure gauge on the A/C service station for actual pressure drops before repair.

The corresponding operating instructions of the A/C service station used must be observed!

Avoid all contact with liquid or gaseous R1234yf.

At high temperatures, R1234yf is inflammable!



Protective measures/rules of conduct:

- Wear safety goggles
- Wear oil-resistant protective gloves
- Do not smoke!
- Observe country-specific safety regulations.

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First aid measures:

- Eye contact: In the event of contact with the eyes, rinse immediately with plenty of running water and consult an ophthalmologist.
- Skin contact: In the event of contact with skin, remove affected clothing immediately and rinse with plenty of water.
- After inhalation: If refrigerant vapours are inhaled in greater concentrations, remove the person affected to an area of fresh air and keep them under supervision. Call for a doctor. If breathing problems are experienced, breathe additional oxygen. If the person affected is breathing with difficulty or has stopped breathing, incline the person's head at the neck and administer the kiss of life.

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64 50 ... Safety informations for handling tetrafluorethane refrigerant R134a



Warning!

Danger of injury!

Refrigerant circuit is under high pressure! Work on the refrigerant circuit may only be carried out by experts!

Draw off refrigerant without fail BEFORE all repair work on the refrigerant circuit.

The refrigerant circuit is depressurised AFTER drawing off.

- The pressure gauge on the A/C service unit must be checked for the actual pressure drop prior to repair work.

It is absolutely essential to read and observe the relevant operating instructions for the A/C service unit used!



Protective measures/rules of conduct:

- Wear safety goggles
- Wear oil-resistant protective gloves
- Do not smoke!
- Observe country-specific safety regulations.



First aid measures:

- Eye contact: In the event of contact with the eyes, rinse immediately with plenty of running water and consult an ophthalmologist.
- Skin contact: In the event of contact with skin, remove affected clothing immediately and rinse with plenty of water.
- After inhalation: If refrigerant vapours are inhaled in greater concentrations, remove the person affected to an area of fresh air and keep them under supervision. Call for a doctor. If breathing problems are experienced, breathe additional oxygen. If the person affected is breathing with difficulty or has stopped breathing, incline the person's head at the neck and administer the kiss of life.

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64 51 001 Cleaning evaporator

RISK OF DAMAGE

Damage to the heating and air conditioning system.

Use of unapproved microfilters may cause impairment of functions in the air conditioning.

- Only operate the heating and air conditioning system with the specified microfilter.

PRELIMINARY WORK

1 – In vehicles with airbag module: Removing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

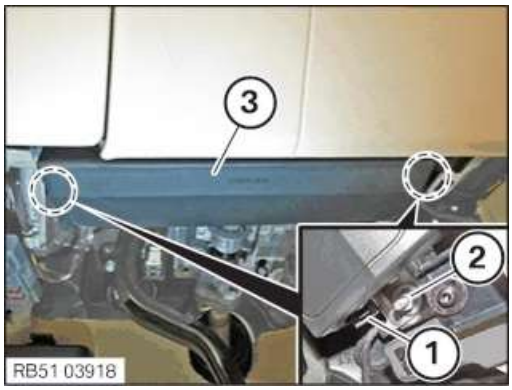
NOTICE

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

▸ **Disconnecting all battery earth leads**

- See additional information.

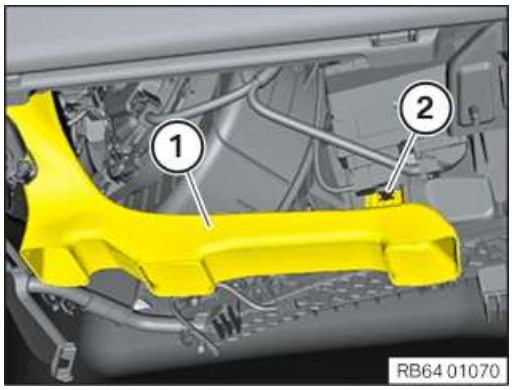




- Unlock plug connection (1) and disconnect.
- Loosen the screws (2) on left and right.
- Remove knee airbag (3) towards the bottom.

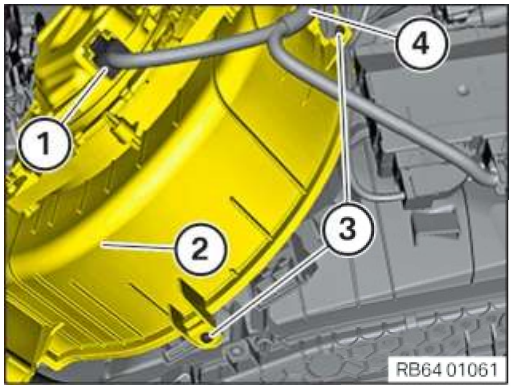
2 – Removing the right air duct

2 – Removing the right air duct

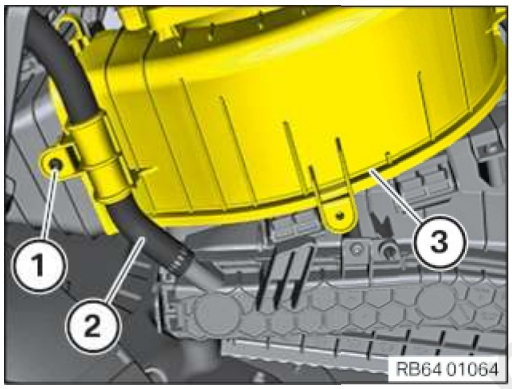


- Unclip the air duct (1) at an angle toward the bottom at the spring clip (2).

3 – Remove the blower for the heating and air-conditioning unit

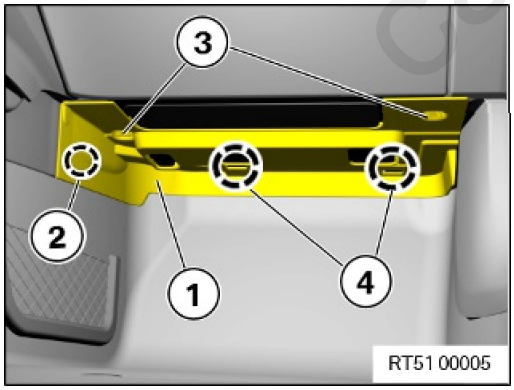


- Unlock and disconnect the plug connection (1) from the blower motor (2).
- Loosen screws (3).
- Pull of the cable clip (4) from the housing of the blower motor (2).



- Loosen screw (1).
- Guide out the hose (2) from the housing of the blower motor (3).
- Remove the housing of the blower motor (3).

4 – Remove the right footwell trim



- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

MAIN WORK

5 – Cleaning evaporator

Prerequisite

Vehicle is parked in a suitable washing bay, as the emerging cleaning agent escapes through the drain openings on the transmission tunnel.

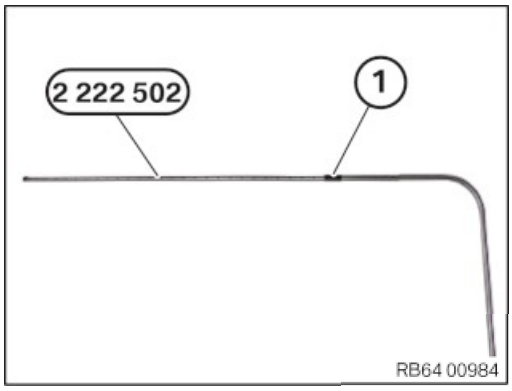
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CAUTION

Materials harmful to health.

Contact with fluids harmful to health!

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



- At the special tool close the last 2 openings (1) with adhesive tape.

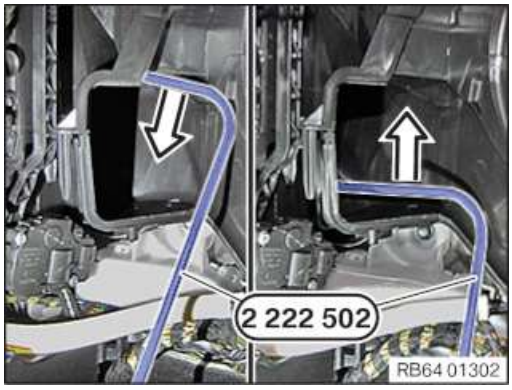
- Pour air conditioning system cleaning agent into the spray gun.

Description	Part number
Heating and air conditioning system cleaning agent	83 19 2 180 507
Spray gun	81 45 9 429 217

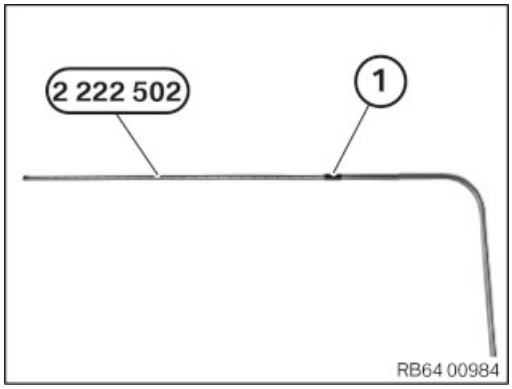
- Connect special tool to spray gun.
- Build pressure in spray gun.



- Close all the ventilation outlets.
- Set air conditioning to air recirculation function.
- Cover carpet in working area.
- Insert special tool into the heater/air conditioning unit as shown.



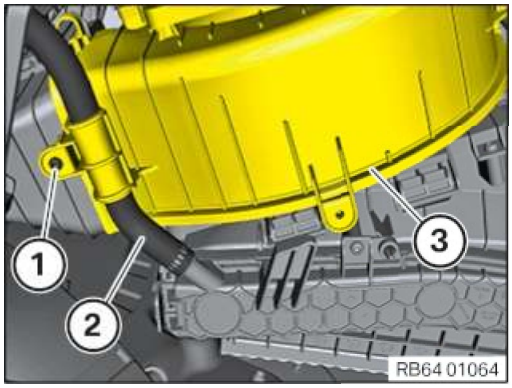
- Position special tool in lower limit position as shown.
- Move special tool back and forth from lower to upper limit position.
- Keep moving the special tool back and forth until the air conditioning system cleaning agent has been fully sprayed.
- After completing cleaning, allow the vehicle to drip-dry for approx. 5 minutes.



- Remove the adhesive tape (1) and the special tool.

POSTPROCESSES

6 – Install the blower for the heating and air-conditioning unit

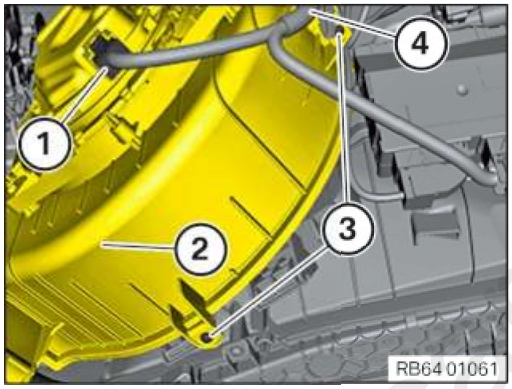


- Position the housing of the blower motor (3).
- Tighten down screw (1).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Feed in the hose (2) at the housing of the blower motor (3).



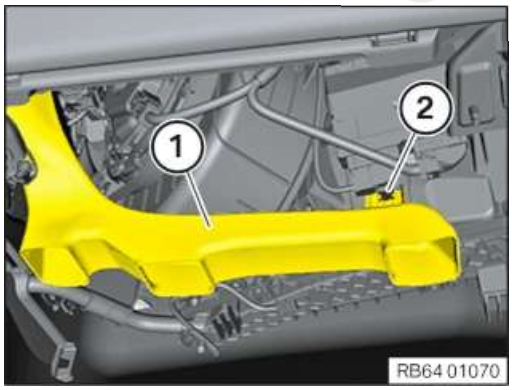
- Connect and lock plug connection (1) of blower motor (2).
- Tighten down screws (3).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

- Secure the cable clip (4) on the housing of the blower motor (2).

7 – Installing the air duct, right



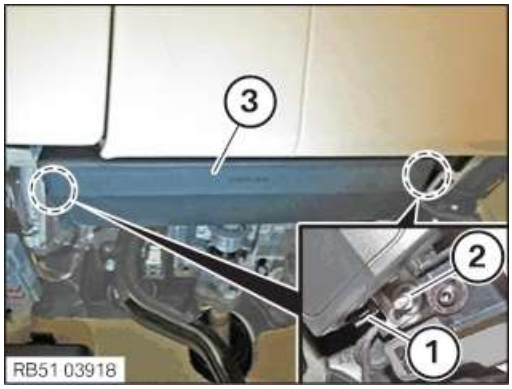
- Clip the air duct (1) in upward at an angle with the spring clip (2) on the heating and air-conditioning unit.

8 – In vehicles with airbag module: Installing knee airbag

NOTICE

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

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- Install knee airbag (3).
- Tighten screws (2) on left and right.

Knee airbag

	Tightening torque	8 Nm

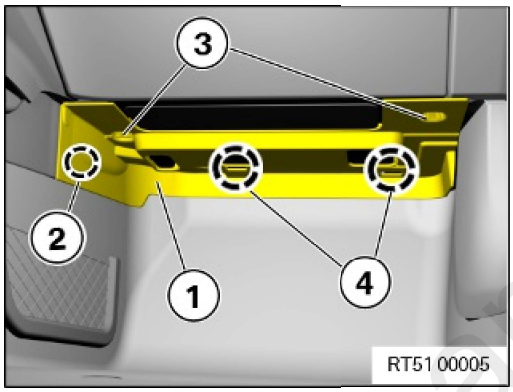
- Connect connectors (1) and lock.

▶ **Disconnecting all battery earth leads**



- See additional information.

9 – Install the right footwell trim panel



- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

Additional Information

Overview of Tightening Torques

Heater/air conditioner Used in step 6

Screw		Tightening torque	1,2 Nm

Knee airbag Used in step 8

	Tightening torque	8 Nm

Overview of Special Tools

Links

General repair instructions	Used in step
72 00 ... Safety regulations for handling components with gas generators	

Repair instructions	Used in step

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61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	18
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	18
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
64 00 ... Information on using cleaning agent/paints (personal protection equipment)	5

Technical service information	**Used in step**
Musty odour from heating and air conditioning system, evaporator cleaning	5

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64 52 ... Instructions for opening and part exchange in refrigerant circuit



Special tools required:

- 00 9 030
- 32 1 270

Warning!

- Avoid contact with refrigerant and refrigerant oil
- Follow safety informations for handling refrigerant
- Follow safety information for handling refrigerant oil

Attention!

- Always use new O-rings each time A/C connections are opened (refer to Electronic Parts Catalogue) They must **not** be coated.
  Use special tool 00 9 030 to install sealing rings without damaging them.
- Open the referigerant circuit for as short of a period as possible.
- Close all components and lines in the refrigerant circuit and return parts **immediately** following the removals at openings with special tool 32 1 270 to prevent penetration of moisture or foreign objects.
- If the refrigerant circuit was closed at the openings with special tool 32 1 270 but it remains open for more than 24 h, the dryer insert for the air conditioning must be replaced.

I. **Part replacement as preliminary work fur further repair work and part replacement based on gradual leakage.**
(minor leak, e.g. hairline crack)

Procedure:

- Draw off heating and air conditioning system, then determine drawn-off amount of refrigerant oil
- Carry out part replacement
- Replace removed refrigerant oil and additionally top up with new refrigerant oil according to components replaced:
  - Compressor: refer to Notes on compressor replacement
  - Evaporator: 10 ml
  - Capacitor: 20 ml
  - Desiccant insert / dryer flask: 20 ml
  - Each replaced refrigerant line: 10 ml
  - Condenser with integrated dryer flask: 40 ml
  - Safety pressure switch and gasket: no additional refrigerant oil
  - Only I01: Radiator, high-voltage battery unit: 20 ml
- Evacuate and fill air conditioning system

II. **Part replacement due to sudden leakage**
(major leak, e.g. line disconnection due to accident)

Procedure:

- Draw off heating and air conditioning system, then determine drawn-off amount of refrigerant oil
- Carry out part replacement
- Replace removed refrigerant oil and additionally top up with new refrigerant oil according to components replaced:
  - Compressor: refer to Notes on compressor replacement
  - Evaporator: 35 ml
  - Capacitor: 35 ml
  - Desiccant insert / dryer flask: 55 ml
  - Each replaced refrigerant line: 35 ml

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    - Condenser with integrated dryer flask: 55 ml
    - Safety pressure switch and gasket: no additional refrigerant oil
    - Only I01: Radiator, high-voltage battery unit: 35 ml
- Evacuate and fill A/C system

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This documentation refers to special tools that were not yet available when going to press.

64 51 580 Perform leakage test for evaporator

WARNING

Hot surfaces.

Risk of burning!

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

CAUTION

Refrigerant circuit under high pressure.

Danger of injury!

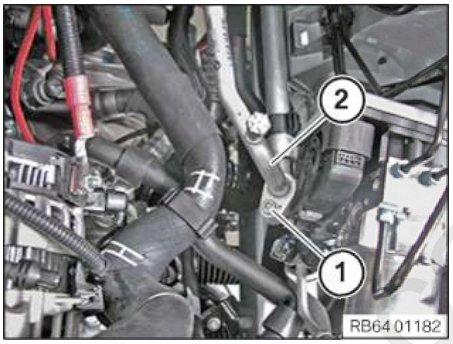
- Note and follow safety information on containers.
- Avoid contact with refrigerant; wear safety goggles and protective gloves.
- For more information see: 64 50 Handling refrigerant and 6450 Notes on repair work on air conditioning

PRELIMINARY WORK

1 – Drawing off the air conditioning

- See additional information.

2 – Disconnect the refrigerant line on the connecting piece



- Loosen screw (1).
- Remove the refrigerant line (2).

3 – Disconnect the refrigerant line from the expansion valve

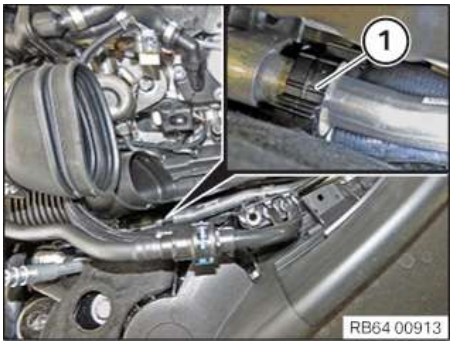
CAUTION

Residual pressure in the air conditioning.

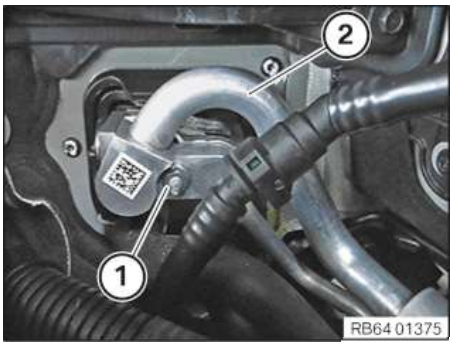
Danger of injury!

- Wear safety goggles and protective gloves when disconnecting the refrigerant line.
- Seal refrigerant lines with seal plugs.

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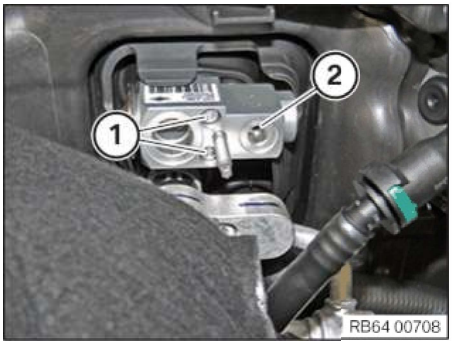


- Open the holder (1).



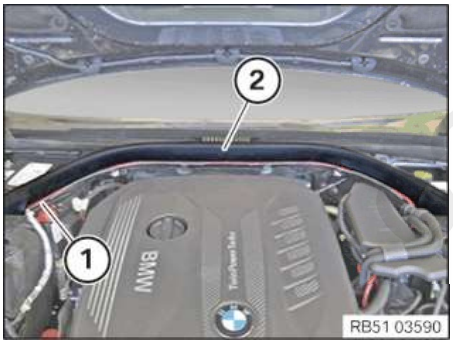
- Loosen nut (1).
- Remove the refrigerant line (2) and set it aside.

4 – Remove expansion valve



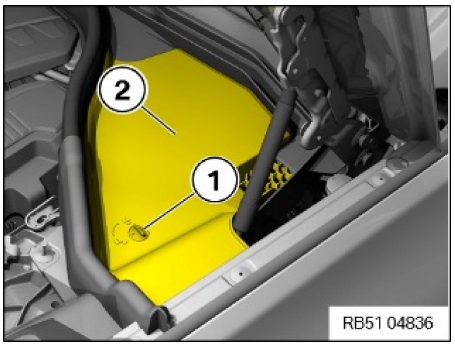
- Loosen screws (1).
- Remove the expansion valve (2).

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.

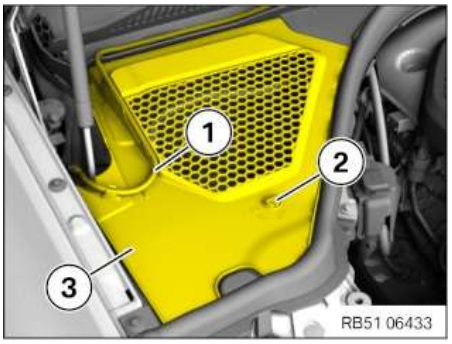
6 – Remove the cover of the engine compartment at the rear left



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

7 – Remove the cover of the rear right engine compartment

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

8 – Removing both wiper arms

NOTICE

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

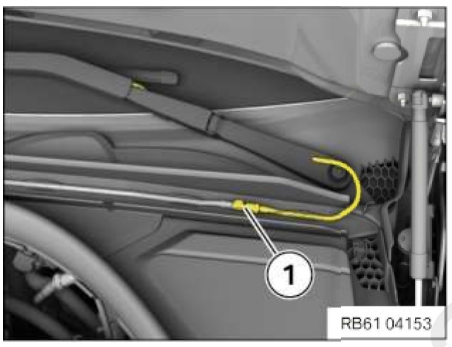
▶ **Remove the wiper arm**

RISK OF DAMAGE

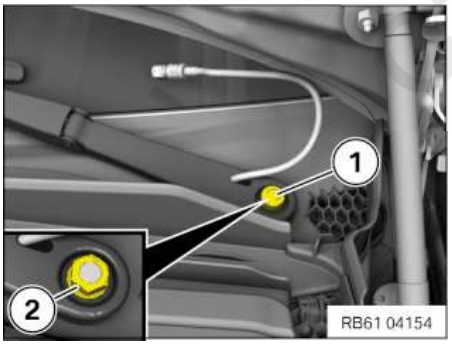
Damage to wiper console

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

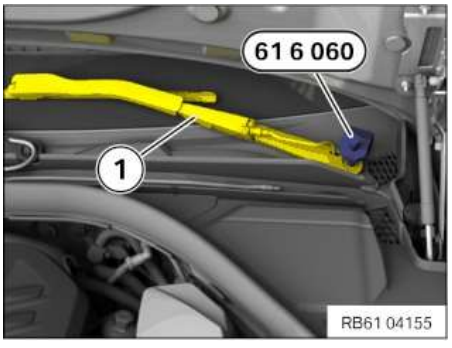
- Removing the wiper arms must be carried out only using the prescribed special tool.
- Do not lift off wiper arm, else the wiper console may break on the predetermined breaking point for the pedestrian protection.



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



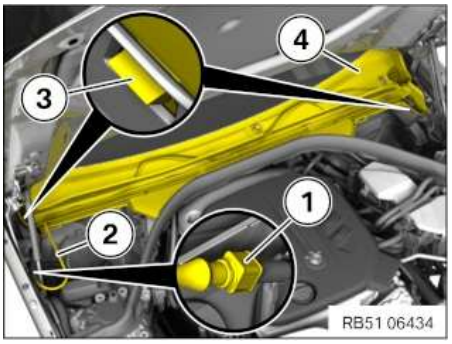
- Remove the protective cap (1).
- Loosen nut (2).



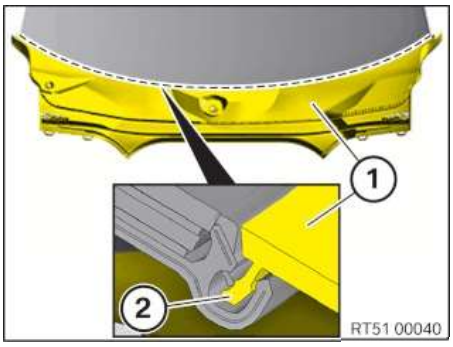
- Pull off the wiper arm (1) using special tool .

9 – Remove cowl panel cover

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- 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).

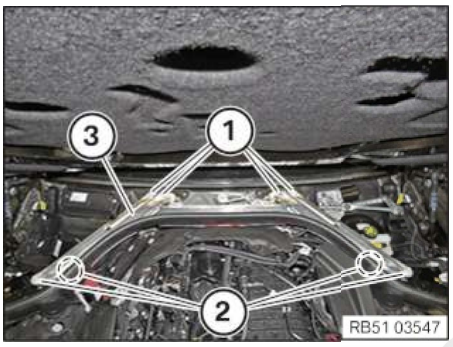


- Pull the cowl panel cover (1) upward out of the latch mechanism (2) beginning on the side.

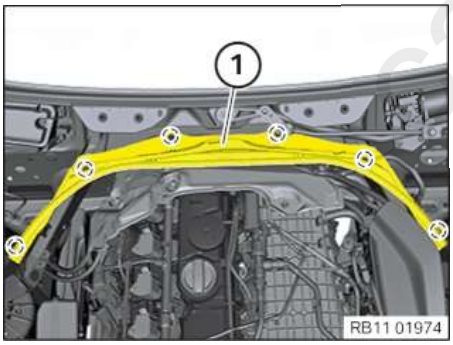
10 – Removing the centre bulkhead upper part

TECHNICAL INFORMATION

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

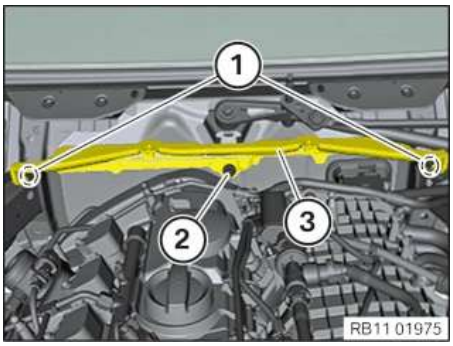


- **If installed:** Remove tension strut on spring strut dome.
- Loosen screws (1) and (2).
- Remove tension strut (3) in the spring strut dome upwards.



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

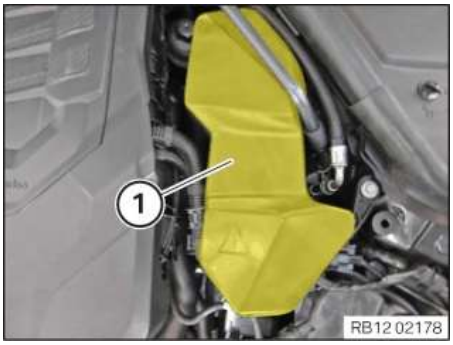
11 – Removing the centre bulkhead lower section



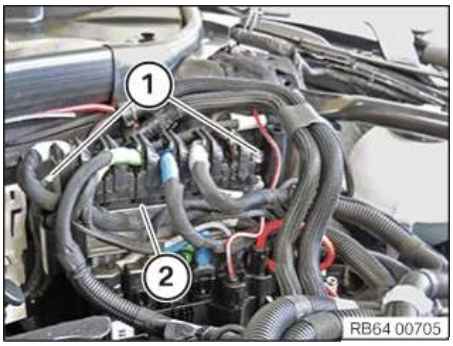
- Loosen screws (1).
- Loosen nut (2).
- Remove the centre bulkhead lower part (3).

12 – Detach the control unit holder

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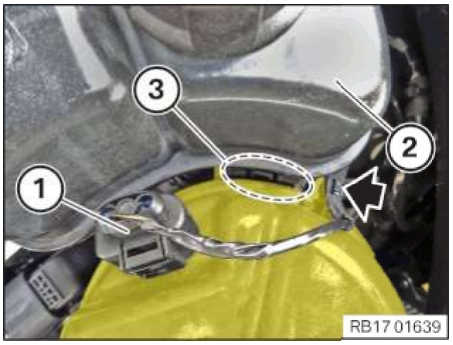


- Pull the cover (1) towards the top and feed out.



- Loosen screws (1).
- Remove control unit holder with the control units (2) and lay to one side.

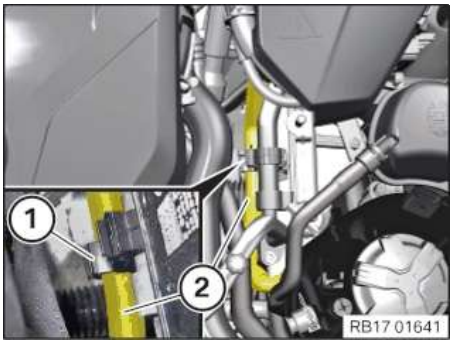
13 – Removing coolant expansion tank of high-temperature coolant circuit partially



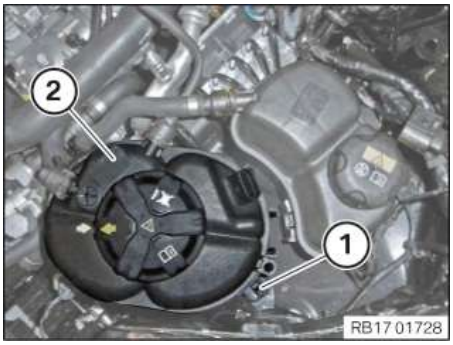
- Unlock plug connection (1) and disconnect.
- Loosen the clamp (arrow).
- Unlock coolant expansion tank (2) for the low-temperature coolant circuit in marked area.



- Feed out and position the coolant expansion tank (1)for the low-temperature coolant circuit from the holders.



- Unlock the holder (1).
- Feed out coolant line (2) and place to one side.



- Unlock lock (1).
- Thread out the coolant expansion tank (2) for the high-temperature coolant circuit upwards and set aside.

MAIN WORK

14 – Perform leakage test for evaporator

Prerequisite

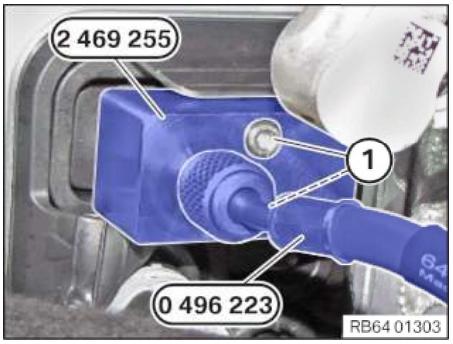
The vehicle must be cooled down. Ambient temperature and temperature of vehicle must not change during the test procedure. The vehicle must not be moved during the test procedure. Testing device must be tight.

WARNING

Pressure vessel with nitrogen.

Danger of injury! Risk of asphyxiation!

- Ensure there us sufficient ventilation in the surrounding area and protect the pressure vessel against overheating.
- Note information in safety data sheet for nitrogen.



- Install the new sealing rings with special tool 0 496 714 (00 9 030) without damaging them.
- Secure special tool with the expansion valve retaining clip with on-board screws (1).

Expansion valve to heater - A/C

M5		Tightening torque	5,5 Nm

- Connect special tool 0 496 223 (64 5 121) to special tool .

- Connect nitrogen pressure cylinder with pressure reducer to pressure gauge.
- Connect special tool 0 496 223 (64 5 121) to pressure reducer.
- Slowly apply test pressure of **maximum 10 bar**.
- Close nitrogen pressure cylinder.

Check

- Check tightness of the testing device and of the connection to the refrigerant circuit by means of e.g. soapy water.

Result

» Leak was detected.

Measure

- Seal the connections prior to the leakage test of the evaporator.

Check

- Evaporator is tight if the adjusted test pressure of 10 bar **drops by 1.5 bar to 8.5 bar** over a test period of 2 h.

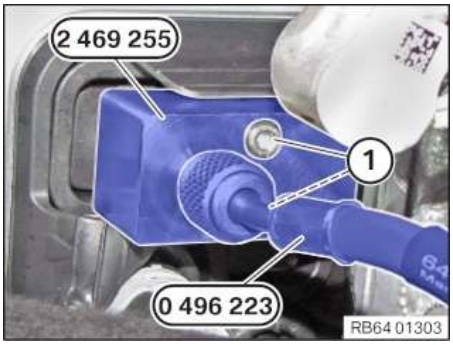
Result

» After a test period of 2 h, the pressure drop is more than 1.5 bar.

Measure

- Renew evaporator.

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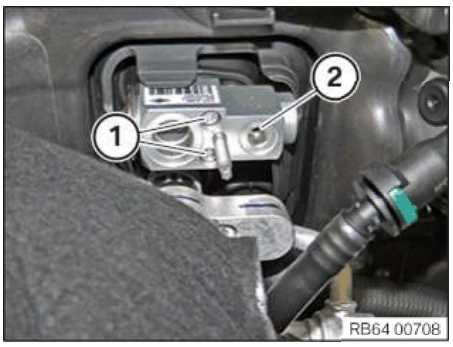
- Slowly unscrew special tool 0 496 223 (64 5 121) **for the pressure drop** from special tool after the leakage test.
- Loosen screws (1).
- Remove special tool .

POSTPROCESSES

15 – Evacuate and fill air conditioning

- See additional information.

16 – Install expansion valve



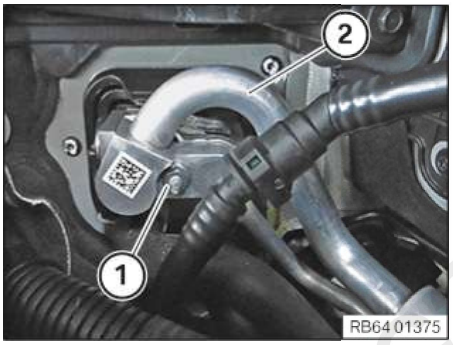
- Replace O-rings.

  Parts: O-rings
- Correctly position the expansion valves (2).
- Tighten the screws (1).

Expansion valve to heater - A/C

M5		Tightening torque	5,5 Nm

17 – Connect the refrigerant line to the expansion valve

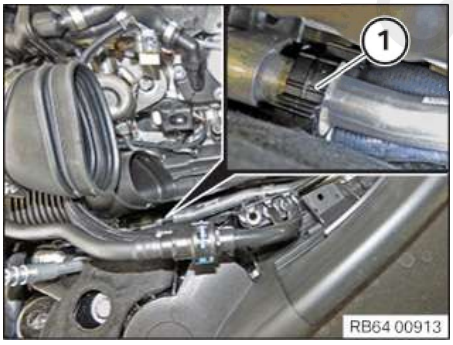


- Replace O-rings.

  Parts: O-rings
- Correctly position the refrigerant line (2).
- Tighten nut (1).

Refrigerant lines to expansion valve

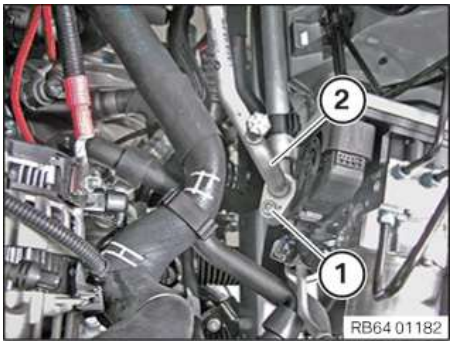
M6		Tightening torque	13 Nm



- Close the holder (1).

18 – Fasten the refrigerant line on the connecting piece

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- Renew the sealing ring.

  Parts: Sealing ring
- Correctly position the refrigerant line (2).
- Tighten down screw (1).

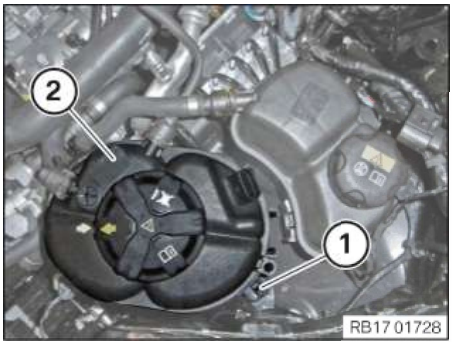
Refrigerant line to connecting piece

M8		Tightening torque	19 Nm

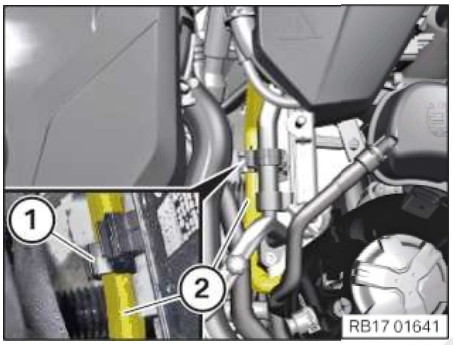
19 – Install coolant expansion tank of high-temperature coolant circuit, partially

TECHNICAL INFORMATION

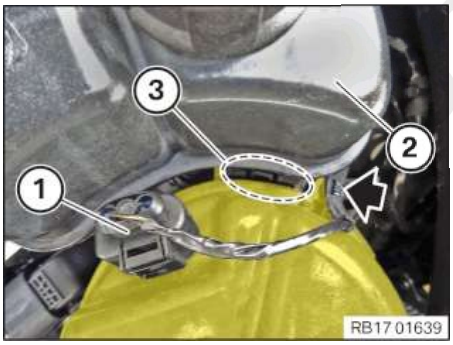
Make sure that the connections are locked correctly. The locks must engage audibly.



- Feed in and correctly position the coolant expansion tank (2) for the high-temperature coolant circuit.
- Lock the lock (1).



- Feed in the coolant line to the holder (1) and position.
- Lock holder (1).

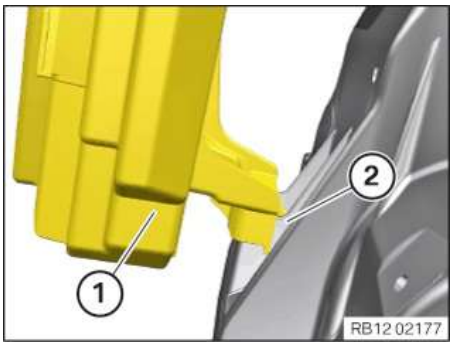


- Feed in and install the coolant expansion tank (2) for the low-temperature coolant circuit to the holders.

  The lock (3) must audibly engage.
- Secure clamp (arrow).
- Connect connectors (1) and lock.

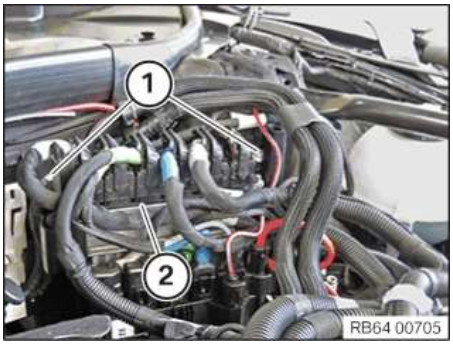
  The connector (1) must engage audibly.

20 – Fastening control unit holder



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

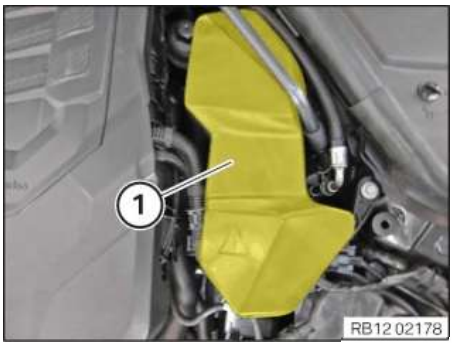
cardiagn.com



- Position the control unit holder together with the control units (2) and position correctly.
- Tighten the screws (1).

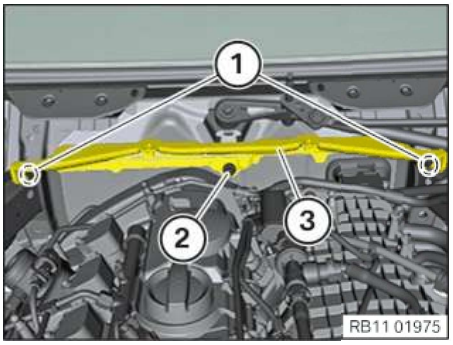
Control unit holder on spring strut dome

Hexagon screw		Tightening torque	8 Nm



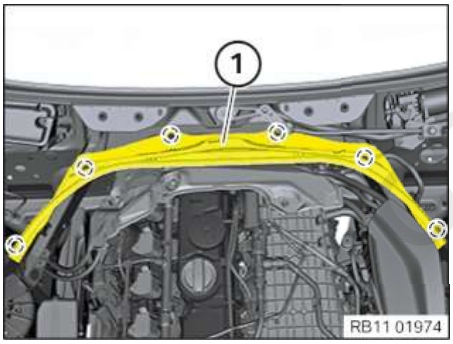
- Insert and install cover (1) into guides.

21 – Installing centre bulkhead lower section



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

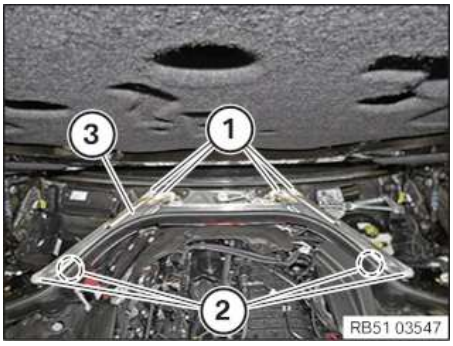
22 – Installing the centre bulkhead upper part



- 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 °

23 – Installing cowl panel cover

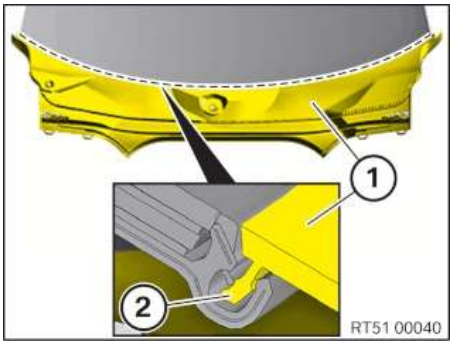
bardiagn.com

RISK OF DAMAGE

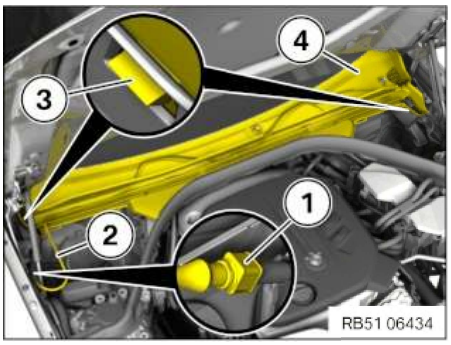
Damage caused by water ingress into the vehicle.

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.

24 – Installing both wiper arms

NOTICE

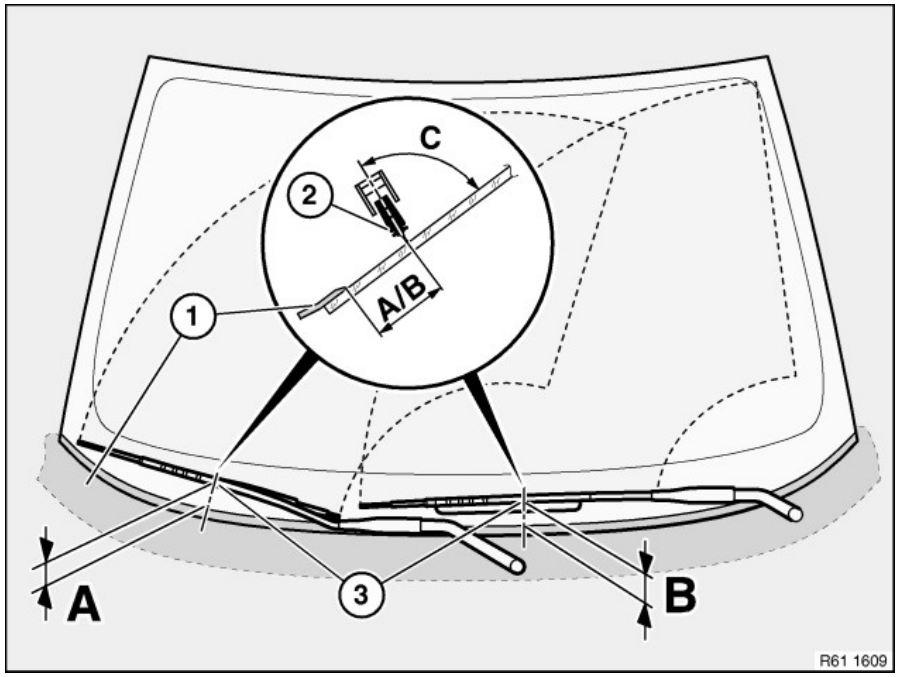
Description is for left component only. Procedure on the right side is identical.

▸ 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.

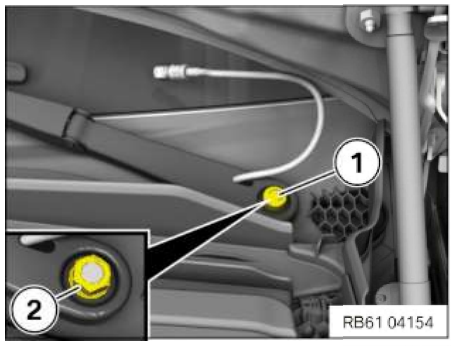
cardiagn.com



- 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

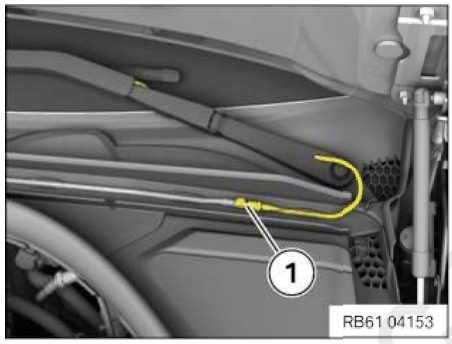


- Tighten nut (2).

Windscreen wiper arm

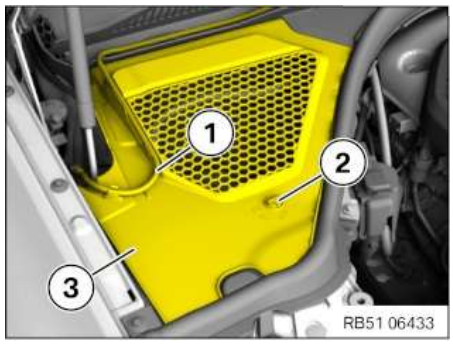
Combination hexagon nut		Tightening torque	35 Nm

- Connect the protective cap (1).



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

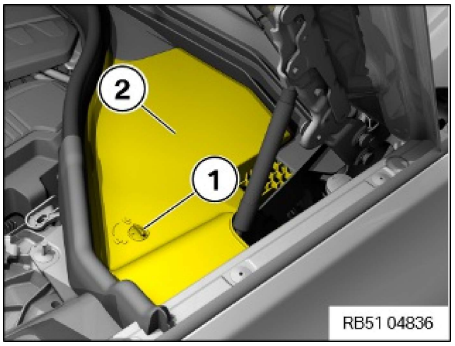
25 – Install the rear right engine compartment cover



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

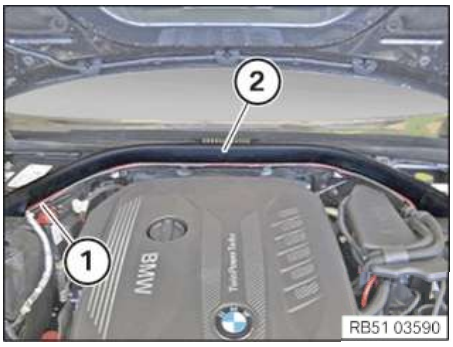
26 – Install the cover of the engine compartment on the rear left

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

27 – 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.

Additional Information

Overview of Tightening Torques

Expansion valve to heater - A/C			Used in step 1416
M5		Tightening torque	5,5 Nm

Refrigerant lines to expansion valve			Used in step 17
M6		Tightening torque	13 Nm

Refrigerant line to connecting piece			Used in step 18
M8		Tightening torque	19 Nm

Control unit holder on spring strut dome			Used in step 20
Hexagon screw		Tightening torque	8 Nm

Bulkhead upper part to bottom bulkhead			Used in step 22
		Tightening torque	3 Nm

Tension strut on bulkhead			Used in step 22
M10x25 screw		Tightening torque	56 Nm

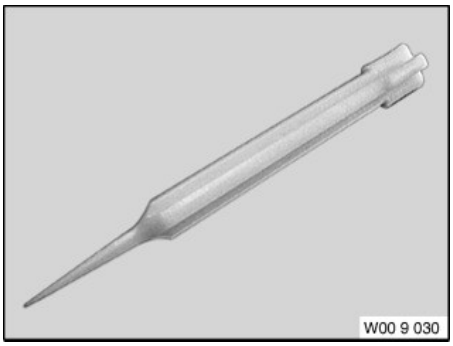
Tension strut to spring strut dome			Used in step 22
Screw	Renew screws.	Jointing torque Angle of rotation	56 Nm 90 °

Windscreen wiper arm			Used in step 24
Combination hexagon nut		Tightening torque	35 Nm

Overview of Special Tools

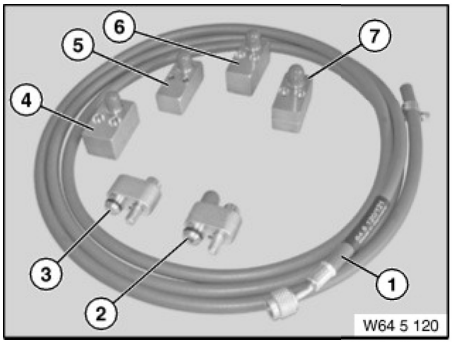
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0 496 714 (00 9 030) Wedge



Common	Used in step 14
Usage	For dismantling O-rings, gaskets and trim panels. This special tool replaces special tool 00 9 316.
Included in the tool or work	
Storage location	A50
Replaced by	
In connection with	
SI-Number	01 20 09 (581)

0 496 223 (64 5 121) Hose



Common	Used in step 14
Usage	(Connection hose with clamp)
Included in the tool or work	0 496 222
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 04 08 (435)

Overview Technical Data

Distance from window pane edge to wiper blade	Used in step 24
Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

Links

Repair instructions	Used in step
64 50 010 Extract, evacuate and fill air conditioning system	115
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	115
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	115
64 50 ... Notes on repairs to air conditioning	115
64 50 010 Drawing off, evacuating and filling air conditioning (R1234yf)	115
64 50 ... Safety information for handling refrigerant R1234yf	115
64 50 ... Safety information for handling tetrafluorethane refrigerant R134a	115
64 50 ... Safety informations for handling refrigerant oil	115

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64 51 525 Removing and installing or replacing expansion valve

WARNING

Hot surfaces.

Risk of burning!

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

CAUTION

Refrigerant circuit under high pressure.

Danger of injury!

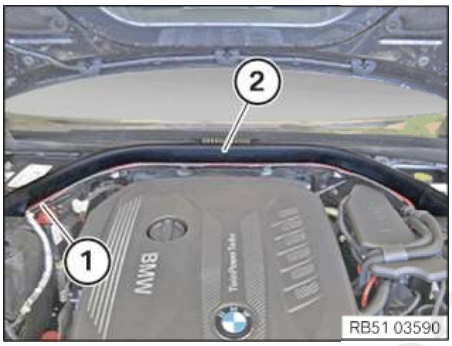
- Note and follow safety information on containers.
- Avoid contact with refrigerant; wear safety goggles and protective gloves.
- For more information see: 64 50 Handling refrigerant and 6450 Notes on repair work on air conditioning

PRELIMINARY WORK

1 – Drawing off the air conditioning

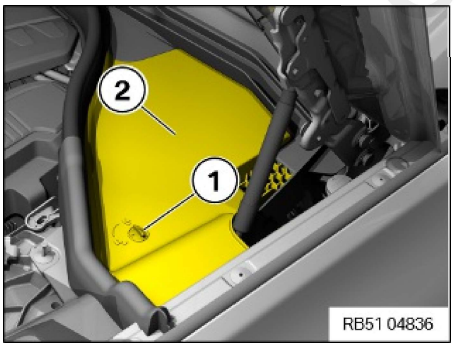
- See additional information.

2 – 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.

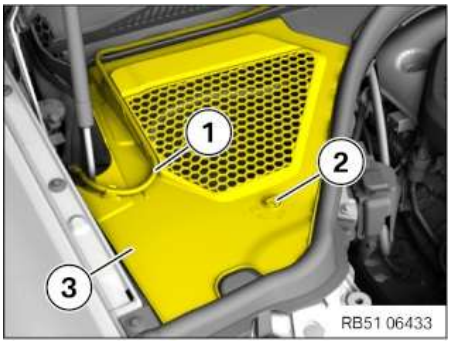
3 – Remove the cover of the engine compartment at the rear left



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

4 – Remove the cover of the rear right engine compartment

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

5 – Removing both wiper arms

NOTICE

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

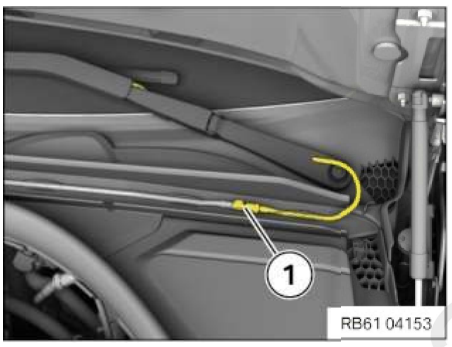
▶ **Remove the wiper arm**

RISK OF DAMAGE

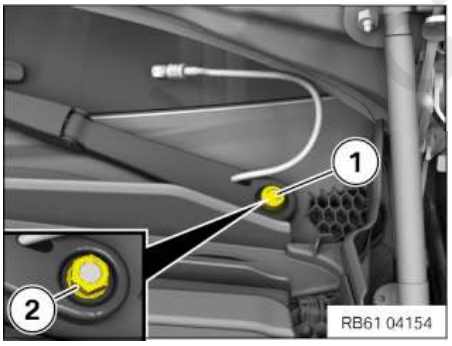
Damage to wiper console

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

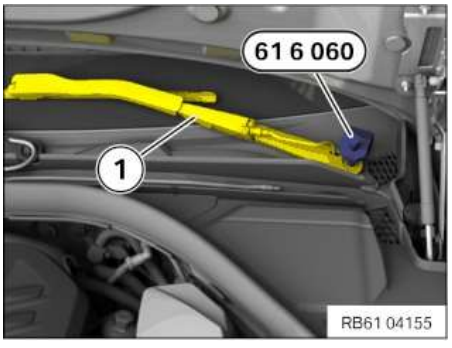
- Removing the wiper arms must be carried out only using the prescribed special tool.
- Do not lift off wiper arm, else the wiper console may break on the predetermined breaking point for the pedestrian protection.



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



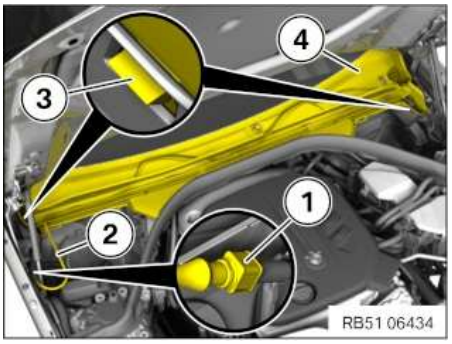
- Remove the protective cap (1).
- Loosen nut (2).



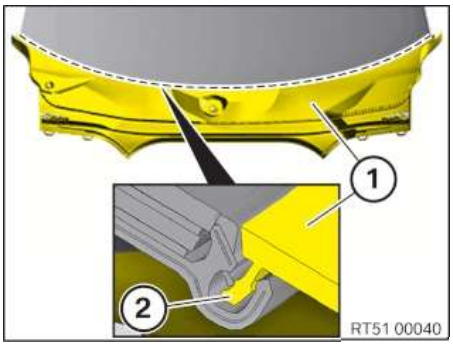
- Pull off the wiper arm (1) using special tool .

6 – Remove cowl panel cover

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- 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).

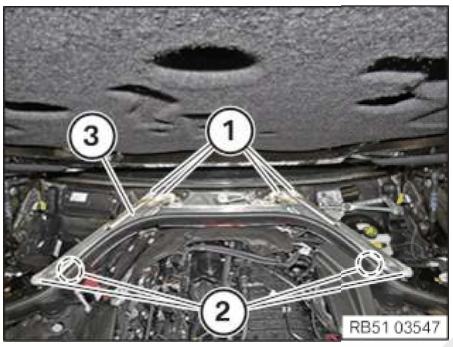


- Pull the cowl panel cover (1) upward out of the latch mechanism (2) beginning on the side.

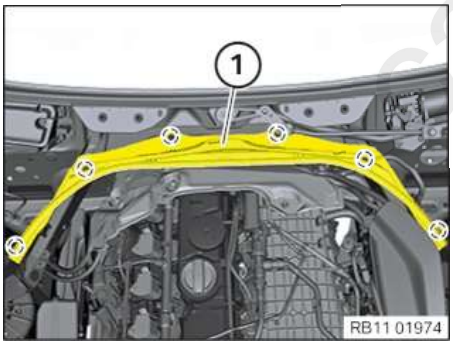
7 – Removing the centre bulkhead upper part

TECHNICAL INFORMATION

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

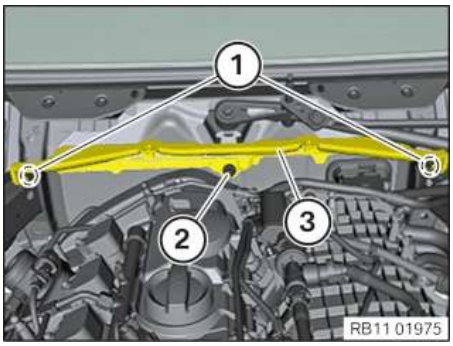


- **If installed:** Remove tension strut on spring strut dome.
- Loosen screws (1) and (2).
- Remove tension strut (3) in the spring strut dome upwards.



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

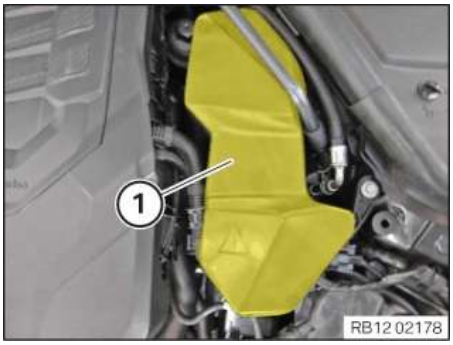
8 – Removing the centre bulkhead lower section



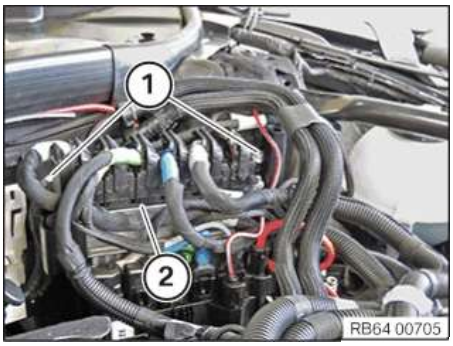
- Loosen screws (1).
- Loosen nut (2).
- Remove the centre bulkhead lower part (3).

9 – Detach the control unit holder

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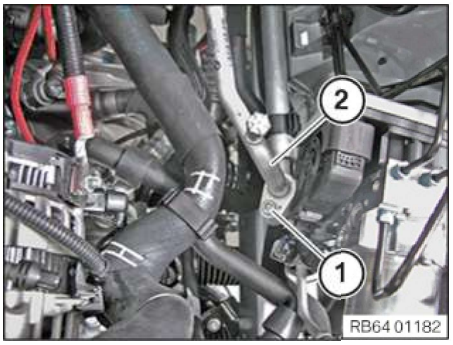


- Pull the cover (1) towards the top and feed out.



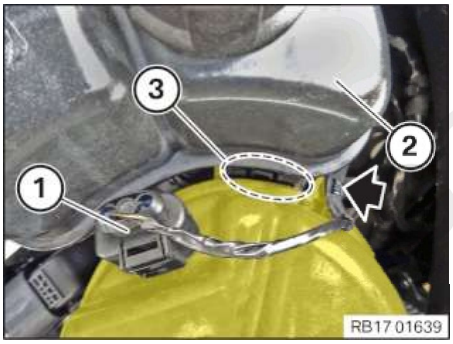
- Loosen screws (1).
- Remove control unit holder with the control units (2) and lay to one side.

10 – Disconnect the refrigerant line on the connecting piece



- Loosen screw (1).
- Remove the refrigerant line (2).

11 – Removing coolant expansion tank of high-temperature coolant circuit partially

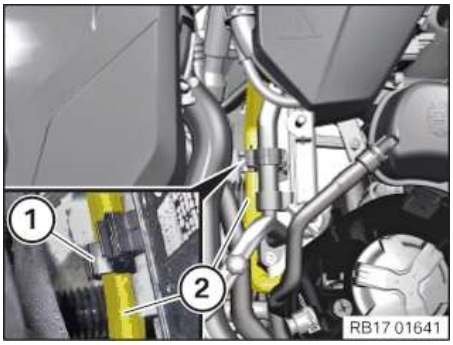


- Unlock plug connection (1) and disconnect.
- Loosen the clamp (arrow).
- Unlock coolant expansion tank (2) for the low-temperature coolant circuit in marked area.

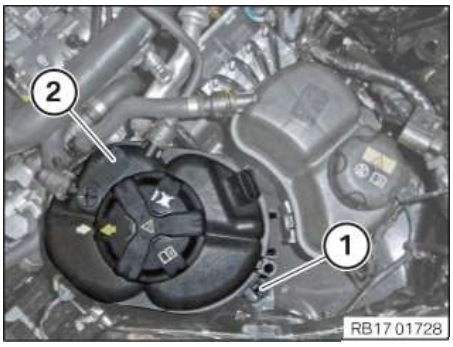


- Feed out and position the coolant expansion tank (1)for the low-temperature coolant circuit from the holders.

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- Unlock the holder (1).
- Feed out coolant line (2) and place to one side.



- Unlock lock (1).
- Thread out the coolant expansion tank (2) for the high-temperature coolant circuit upwards and set aside.

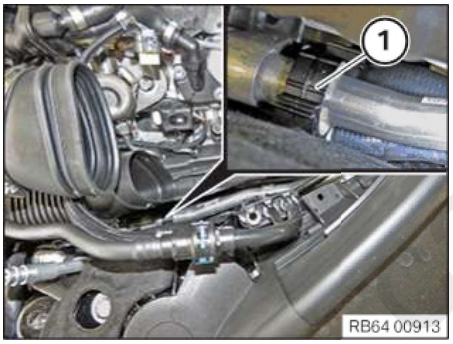
12 – Disconnect the refrigerant line from the expansion valve

CAUTION

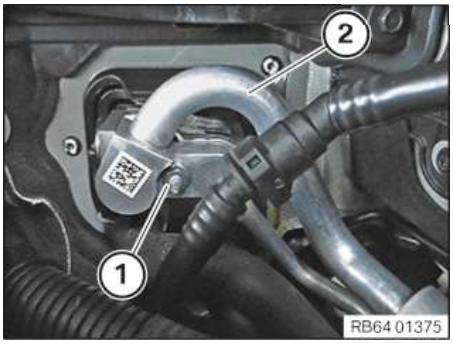
Residual pressure in the air conditioning.

Danger of injury!

- Wear safety goggles and protective gloves when disconnecting the refrigerant line.
- Seal refrigerant lines with seal plugs.



- Open the holder (1).

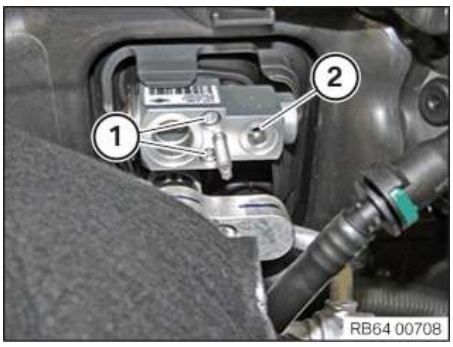


- Loosen nut (1).
- Remove the refrigerant line (2) and set it aside.

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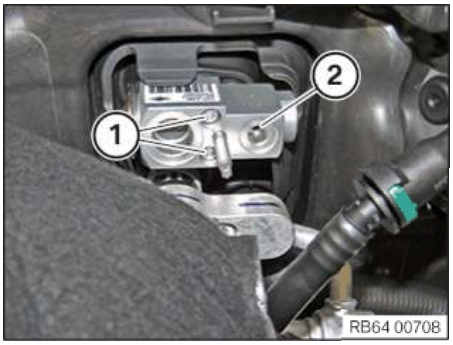
MAIN WORK

13 – Remove expansion valve



- Loosen screws (1).
- Remove the expansion valve (2).

14 – Install expansion valve



- Replace O-rings.

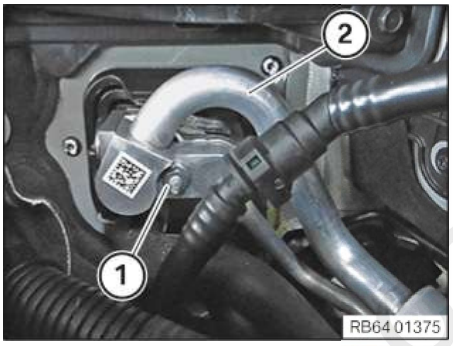
  Parts: O-rings
- Correctly position the expansion valves (2).
- Tighten the screws (1).

Expansion valve to heater - A/C

M5		Tightening torque	5,5 Nm

POSTPROCESSES

15 – Connect the refrigerant line to the expansion valve

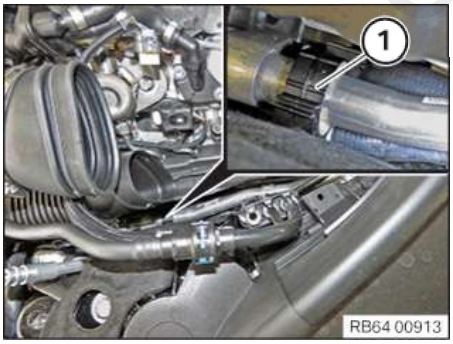


- Replace O-rings.

  Parts: O-rings
- Correctly position the refrigerant line (2).
- Tighten nut (1).

Refrigerant lines to expansion valve

M6		Tightening torque	13 Nm

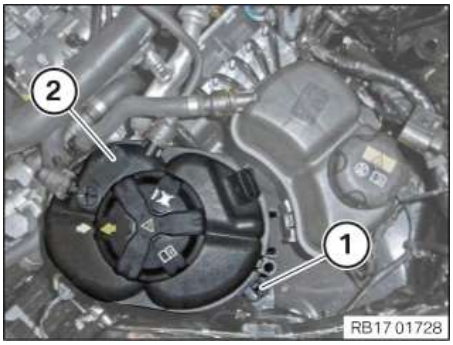


- Close the holder (1).

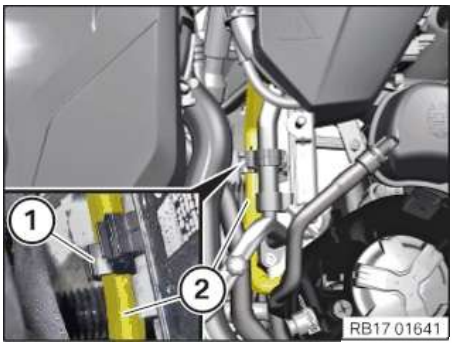
16 – Install coolant expansion tank of high-temperature coolant circuit, partially

TECHNICAL INFORMATION

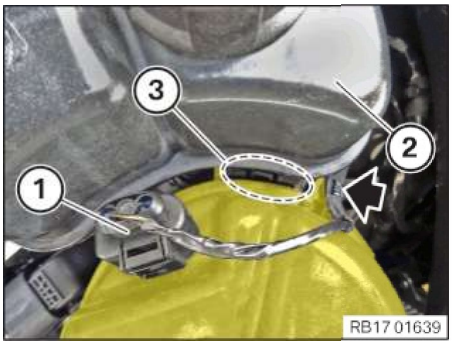
Make sure that the connections are locked correctly. The locks must engage audibly.



- Feed in and correctly position the coolant expansion tank (2) for the high-temperature coolant circuit.
- Lock the lock (1).



- Feed in the coolant line to the holder (1) and position.
- Lock holder (1).

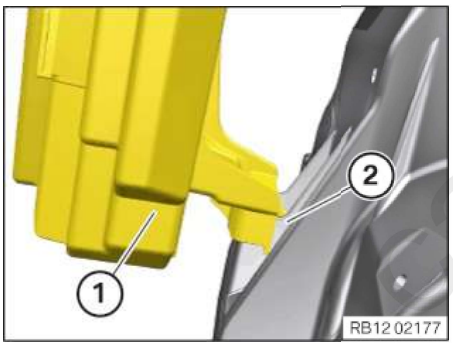


- Feed in and install the coolant expansion tank (2) for the low-temperature coolant circuit to the holders.

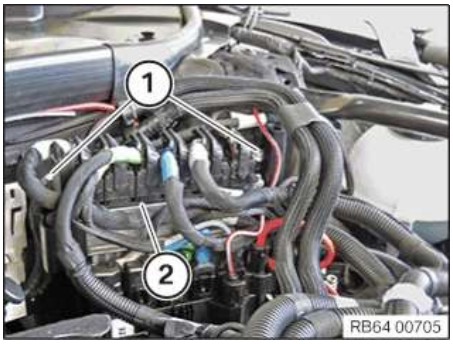
  The lock (3) must audibly engage.
- Secure clamp (arrow).
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

17 – Fastening control unit holder



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

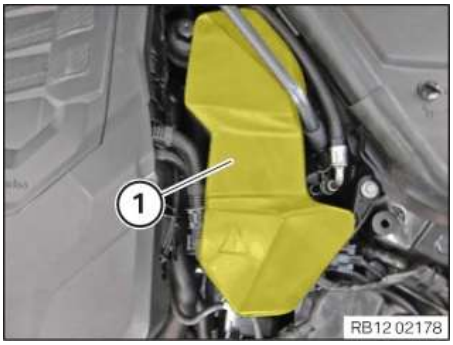


- Position the control unit holder together with the control units (2) and position correctly.
- Tighten the screws (1).

Control unit holder on spring strut dome

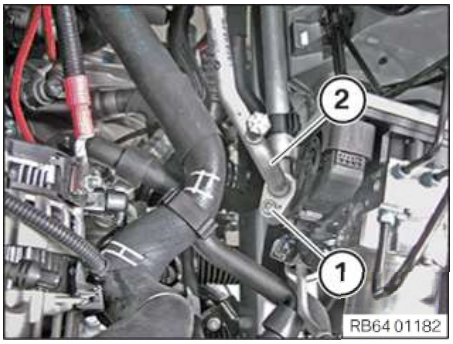
Hexagon screw		Tightening torque	8 Nm

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- Insert and install cover (1) into guides.

18 – Fasten the refrigerant line on the connecting piece

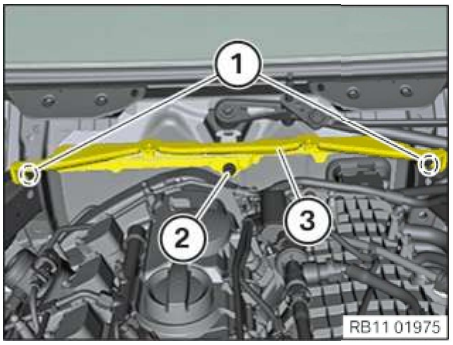


- Renew the sealing ring.
  Parts: Sealing ring
- Correctly position the refrigerant line (2).
- Tighten down screw (1).

Refrigerant line to connecting piece

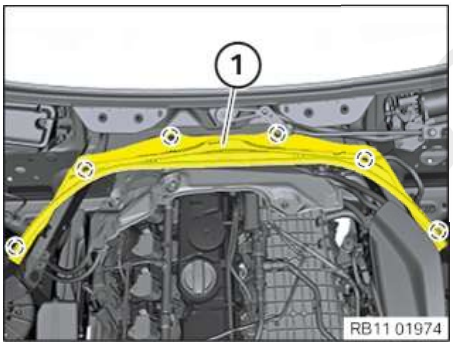
M8		Tightening torque	19 Nm

19 – Installing centre bulkhead lower section



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

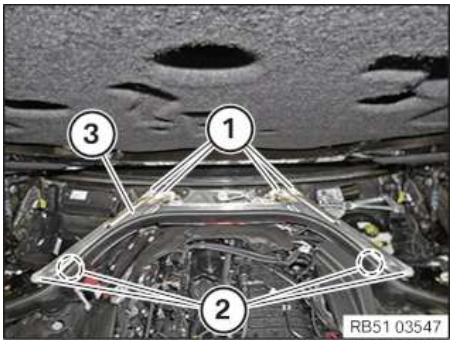
20 – Installing the centre bulkhead upper part



- 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 °

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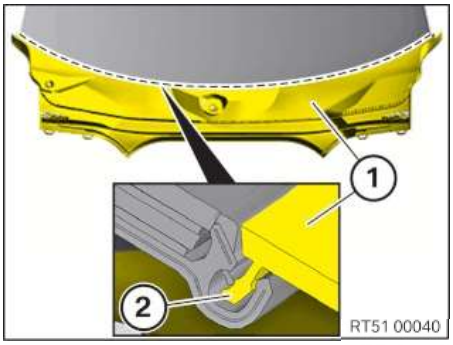
21 – Installing cowl panel cover

RISK OF DAMAGE

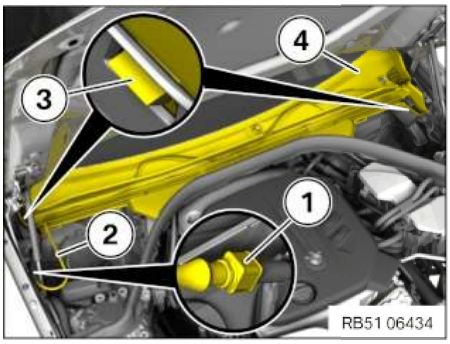
Damage caused by water ingress into the vehicle.

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.



- 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.

22 – Installing both wiper arms

NOTICE

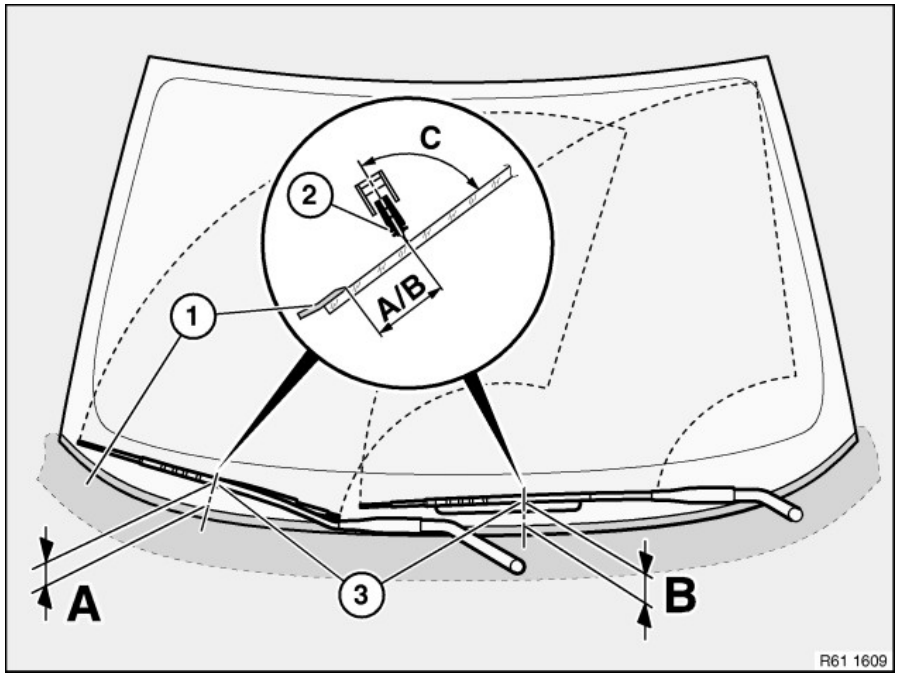
Description is for left component only. Procedure on the right side is identical.

▸ **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.

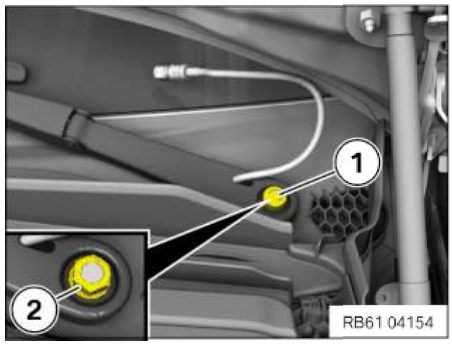
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- Connect the wiper arm (3).
- Correctly position the wiper arm (2) in relation to the window edge (1).

Distance from window pane edge to wiper blade

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

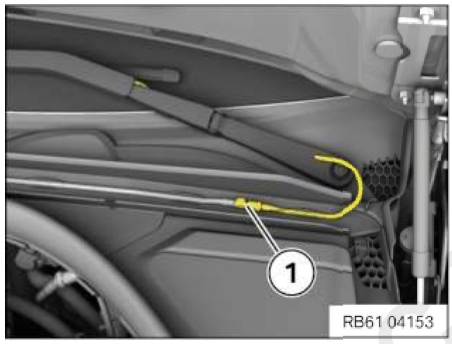


- Tighten nut (2).

Windscreen wiper arm

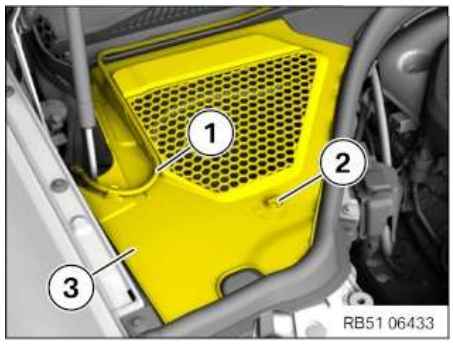
Combination hexagon nut		Tightening torque	35 Nm

- Connect the protective cap (1).



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

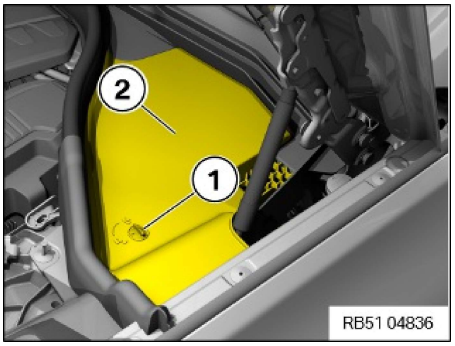
23 – Install the rear right engine compartment cover



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

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

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

25 – 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.

26 – Evacuate and fill air conditioning

- See additional information.

Additional Information

Overview of Tightening Torques

Expansion valve to heater - A/C			Used in step 14
M5		Tightening torque	5,5 Nm

Refrigerant lines to expansion valve			Used in step 15
M6		Tightening torque	13 Nm

Control unit holder on spring strut dome			Used in step 17
Hexagon screw		Tightening torque	8 Nm

Refrigerant line to connecting piece			Used in step 18
M8		Tightening torque	19 Nm

Bulkhead upper part to bottom bulkhead			Used in step 20
		Tightening torque	3 Nm

Tension strut on bulkhead			Used in step 20
M10x25 screw		Tightening torque	56 Nm

Tension strut to spring strut dome			Used in step 20
Screw	Renew screws.	Jointing torque	56 Nm
		Angle of rotation	90 °

Windscreen wiper arm			Used in step 22
Combination hexagon nut		Tightening torque	35 Nm

Overview of Special Tools

Overview Technical Data

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Distance from window pane edge to wiper blade	Used in step 22
Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

Links

Repair instructions	Used in step
64 50 010 Extract, evacuate and fill air conditioning system	126
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	126
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	126
64 50 ... Notes on repairs to air conditioning	126
64 50 010 Drawing off, evacuating and filling air conditioning (R1234yf)	126
64 50 ... Safety information for handling refrigerant R1234yf	126
64 50 ... Safety information for handling tetrafluorethane refrigerant R134a	126
64 50 ... Safety informations for handling refrigerant oil	126

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64 51 591 Removing and installing/renewing evaporator

CAUTION

Refrigerant circuit under high pressure.

Danger of injury!

- Note and follow safety information on containers.
- Avoid contact with refrigerant; wear safety goggles and protective gloves.
- For more information see: 64 50 Handling refrigerant and 6450 Notes on repair work on air conditioning

PRELIMINARY WORK

1 – Drawing off the air conditioning

- See additional information.

2 – Disconnecting all battery earth leads



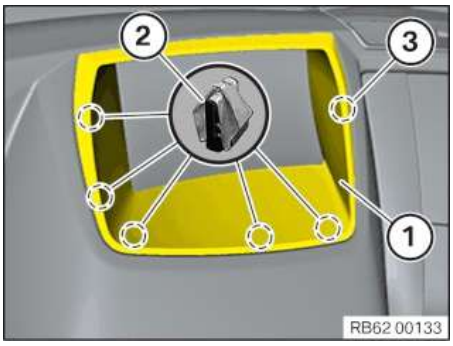
- See additional information.

3 – Adjust the steering column position



- Adjust the length of the steering column to the maximum length in the direction of arrow (1).
- Move the steering column to the lowest steering column position in the direction of arrow (2).

4 – Removing trim for the Head-Up Display



- Unclip trim (1) for the Head-Up Display upwards from clamps (2) and latch mechanism (3).

5 – Remove cupholder

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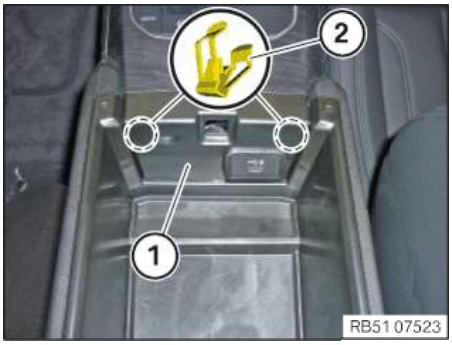


- Remove the insert (1).

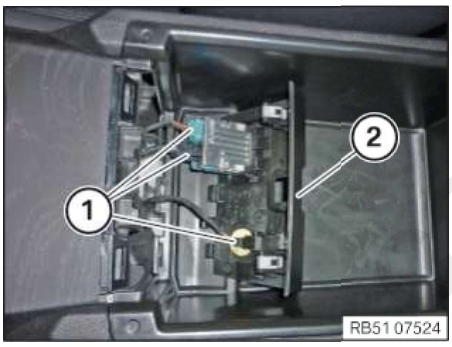


- Loosen screws (1).
- Feed the cup holder (2) out to the top.
- Unlock associated plug connections and disconnect.

6 – Removing the trim in the storage compartment on the centre armrest



- Lever out the trim (1) with the special tool (2) toward the rear from the clamps 2 298 505.



- Unlock and disconnect the plug connections (1) and remove the trim (2) .

7 – Remove the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

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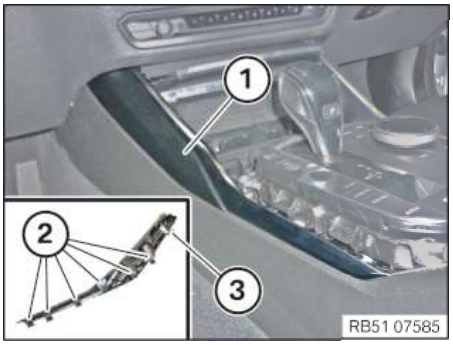
- Release and remove the centre console trim upwards (1) as shown using the special tool 2 298 505 from the latch mechanisms.

8 – Removing the decorative trim on the centre console trim on the left and right

▶ **Remove decorative trim on centre console**

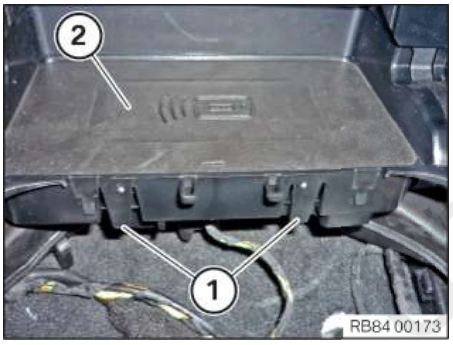
NOTICE

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

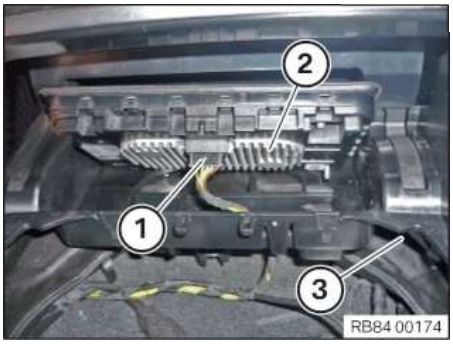


- Lever out the rear decorative trim (1) from the latch mechanisms (2) starting from the top.
- Feed out the decorative trim (1) backwards out of the guide (3) and remove.

9 – Removing the wireless charging station



- Loosen the latch mechanisms (1) and push out the wireless charging station (2) upwards.



- Disconnect the connector (1) and remove the wireless charging station (2) from the centre console (3).

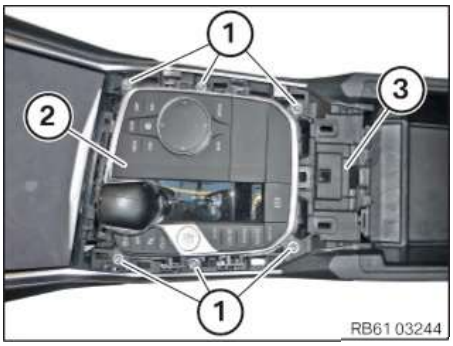
10 – Remove the operating facility in the centre console

▶ **Disconnecting all battery earth leads**

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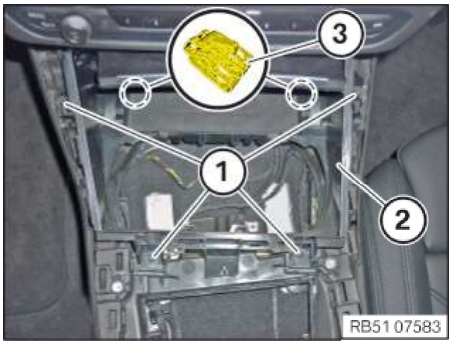


- See additional information.

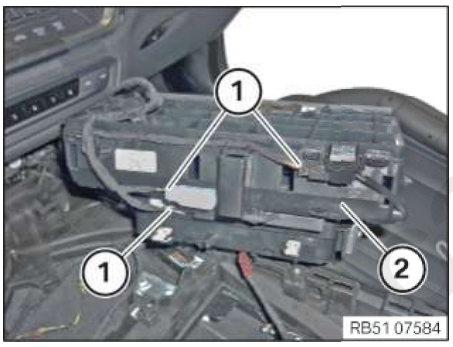


- Loosen screws (1).
- Remove the operating facility in the centre console (2) from the centre console (3).

11 – Removing the storage compartment of the front centre console



- Loosen screws (1).
- Remove storage compartment trim (2) backwards out of clamps (3).



- Unlock and disconnect all the plug connections (1) and remove the storage compartment (2).

12 – Removing the rear centre console trim

RISK OF DAMAGE

Scratches.

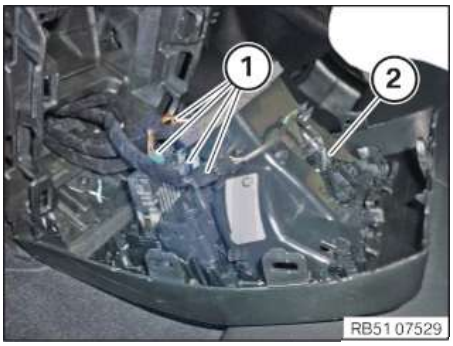
Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

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- Release centre console trim (1) backwards from the latch mechanisms at the side and pull it a little way towards the rear.

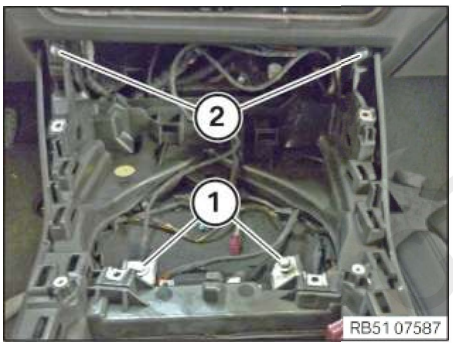


- Unlock and disconnect plug connections (1).
- Remove the centre console trim (2).

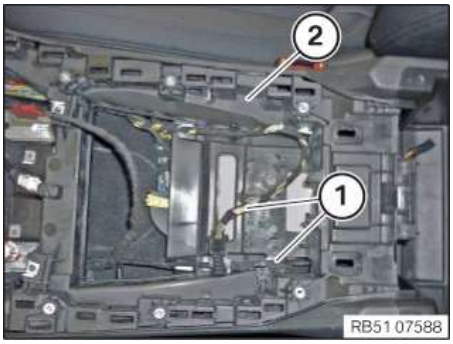
13 – Removing the centre console



- Loosen screws (1).

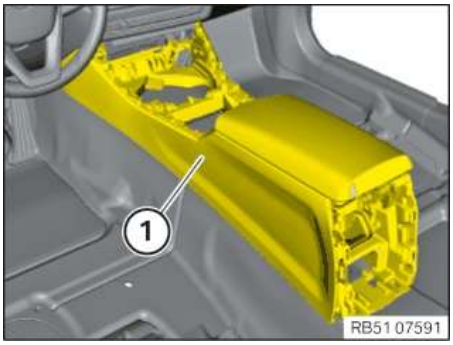


- Loosen screws (1) and (2).



- Release the wiring harness (1) from the centre console (2).

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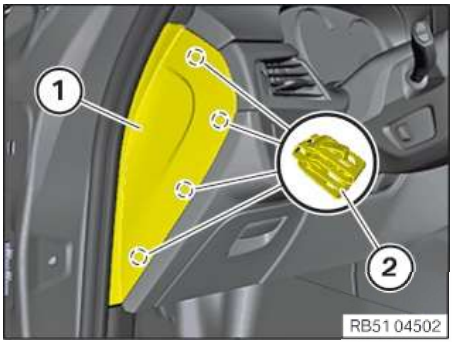


NOTICE

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

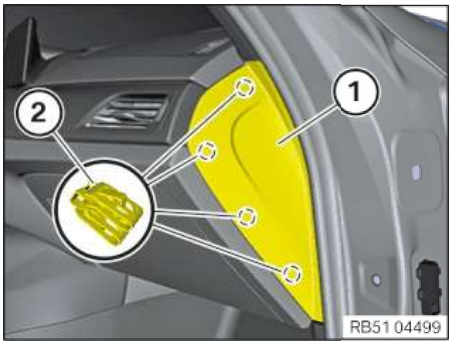
- Carefully raise rear centre console (1).
- Feed out wiring harness from the centre console (1) and unlock and disconnect existing plug connections, if required.
- Feed out and remove the centre console (1) on the instrument panel .

14 – Remove the side panel on the left instrument panel



- Unclip and remove the side panel (1) towards the outside from the clamps (2).

15 – Remove the side panel on the right instrument panel



- Unclip and remove the side panel (1) towards the outside from the clamps (2).
- If necessary, unlock associated plug connection and disconnect.

16 – Remove both A-pillar trim panels

NOTICE

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

▸ **Remove the A-pillar trim panel**

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

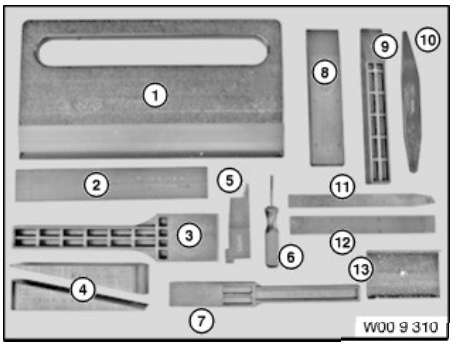
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WARNING

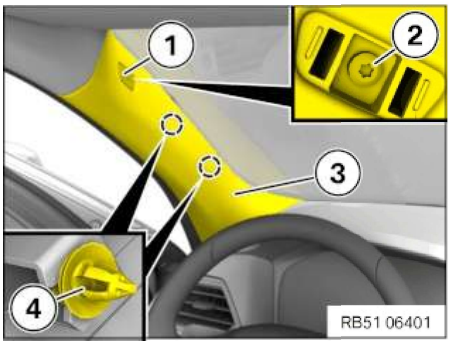
Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.

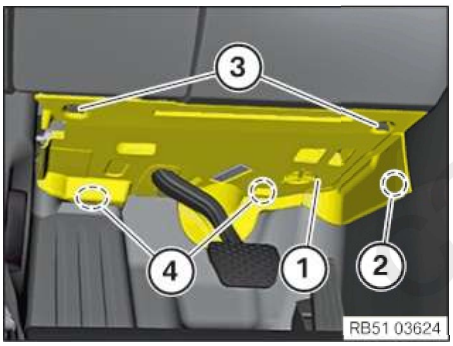


- Have the set of special tools 0 493 752 (00 9 329) ready.



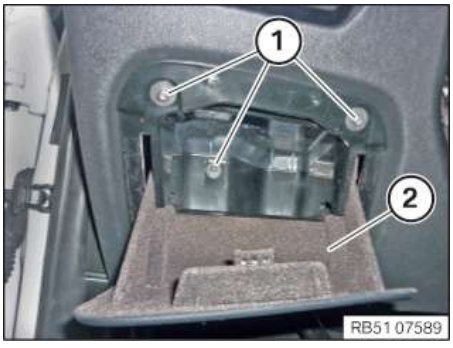
- Unclip the cover (1) with suitable tools.
- Loosen screw (2).
- Unclip A-pillar trim panel (3) with clips (4) and guide it out upwards.

17 – Removing the trim panel for pedal mechanism



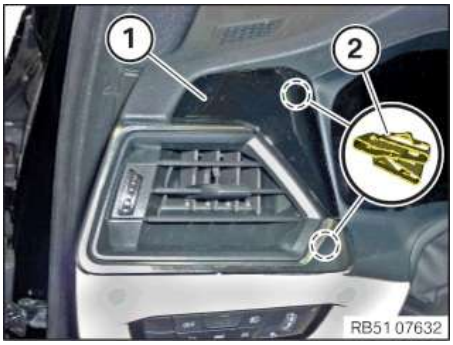
- Unclip the trim panel for the pedal mechanism (1) towards the inside in this area (2).
- Turn the locks (3) by 90°.
- Detach the trim panel for the pedal mechanism (1) inwards out of the guides (4).
- Unlock associated plug connection and disconnect.

18 – Removing the left fold-down compartment



- Loosen screws (1).
- Remove the fold-down compartment (2) toward the bottom.

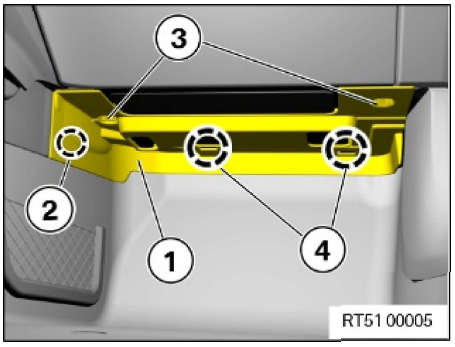
19 – Remove the finisher on the instrument panel on the left



- Unclip decorative strip (1) to the rear out of the clamps (2).
- Unlock associated plug connection and disconnect.

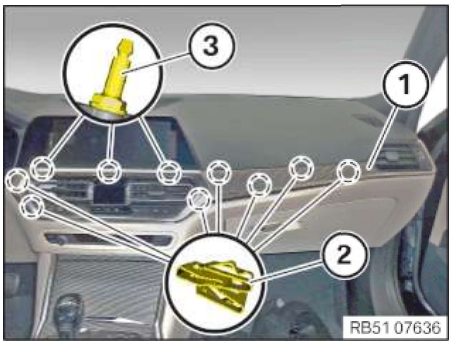
  Remove the decorative strip (1).

20 – Remove the right footwell trim



- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

21 – Remove the finisher on the right instrument panel



- Unclip the decorative strip (1) towards rear at the clamps (2) and the pins (3).
- Unlock associated plug connection and disconnect.

  Remove the decorative strip (1).

22 – Remove Central Information Display (CID)

RISK OF DAMAGE

Electrostatic discharge.

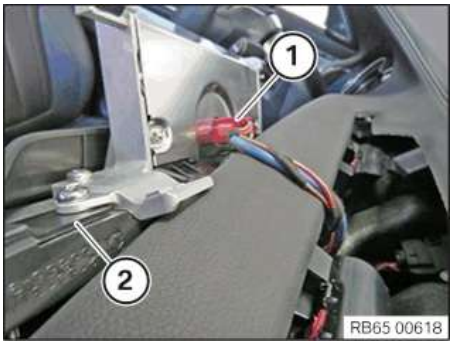
Damage to or destruction of electrical components.

- 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.



- Loosen screws (1).
- Pull out central information display (CID) (2) slightly off the instrument panel.

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- Unlock plug connection (1) and disconnect.
- Remove the central information display (CID) (2).

23 – Removing the airbag unit

WARNING

Airbag unit.

Danger! Life-threatening injuries!

- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

RISK OF DAMAGE

Damage to the steering wheel.

Incorrect handling of the tool may damage the steering wheel.

- Ensure the tool is positioned correctly (angle and inclination).
- When unlocking, do not use "levering" action. Instead, press in the Torx screwdriver toward the centre of steering wheel only.

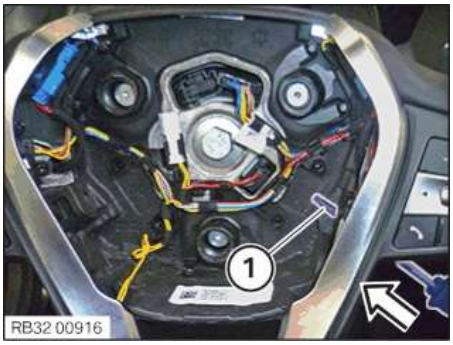
TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

▸ **Version A: Removing the airbag unit (sports steering wheel)**



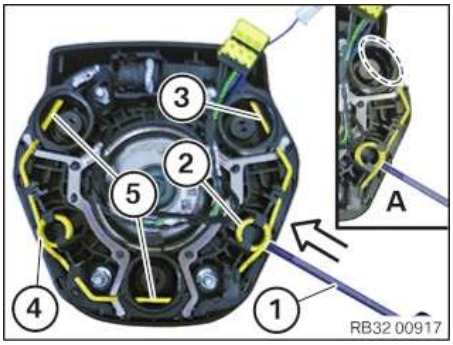
- Insert Torx screwdriver T25 (1) diagonally upwards in the hidden opening (2) on the rear side of the steering wheel until a spring resistance is felt.



NOTICE

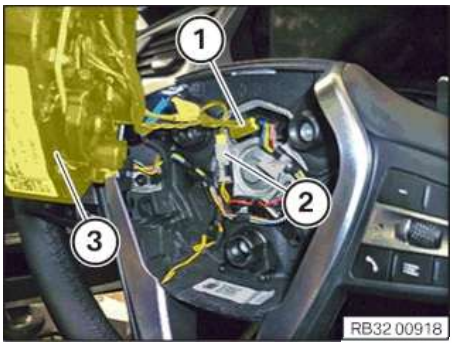
To provide a better overview: Diagram with airbag unit removed.

- To unlock the airbag unit, press Torx screwdriver T25 (1) diagonally upwards in the direction of the arrow to the centre of the steering wheel.



- Press the airbag unit over a large area of the steering wheel.
- Use Torx screwdriver T25 (1) to press wire spring clip (2) in the direction of the arrow towards the centre of the steering wheel and release lock (3).

  (A): Wire spring clip (2) is unlocked.
- Then use Torx screwdriver T25 (1) to press wire spring clip (4) in the direction of the arrow towards the centre of the steering wheel and release locks (5).
- Carefully raise the airbag unit.

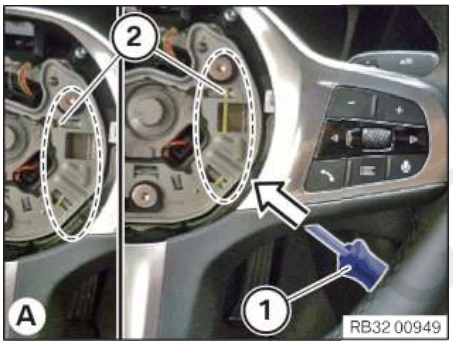


- Unlock and disconnect the plug connections (1) and (2).
- Remove airbag unit (3).

▸ **Version B: Removing airbag unit (M Sport steering wheel)**



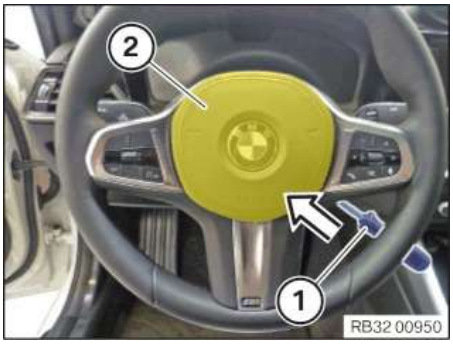
- Locate the pre-punched bore hole (1) on the rear side of the steering wheel by touch.
- Insert the Torx screwdriver T27 (2) diagonally upwards in the pre-punched bore hole (1) on the rear side of the steering wheel until a springing kind of resistance can be felt.



NOTICE

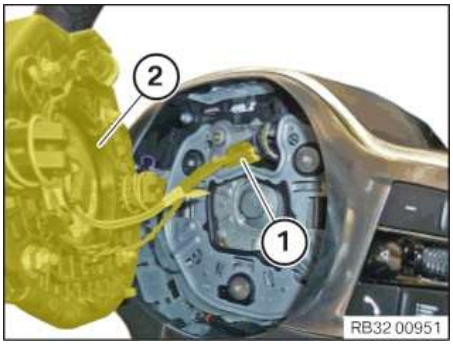
To provide a better overview: Diagram with airbag unit removed.

- Press in Torx screwdriver T27(1) straight in direction of arrow towards the centre of the steering wheel in order to unlock the wire spring clip (2) or to unlock the airbag unit (A).



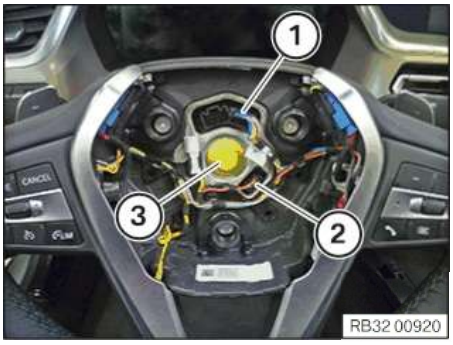
- Press in Torx screwdriver T27 (1) straight in direction of arrow towards the centre of the steering wheel and lift airbag unit (2) on the unlocked side.
- Repeat procedure on left side and carefully remove airbag unit (2) in direction of arrow off the steering wheel.

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- Unlock and disconnect plug connection (1) and remove the airbag unit (2).

24 – Removing the steering wheel (sports steering wheel)



- Move the steering wheel and wheels to the straight-ahead position.
- Unlock plug connection (1) and disconnect.
- If installed: Unlock plug connection (2) and disconnect.
- Release the screw (3) and pull off and remove the steering wheel.

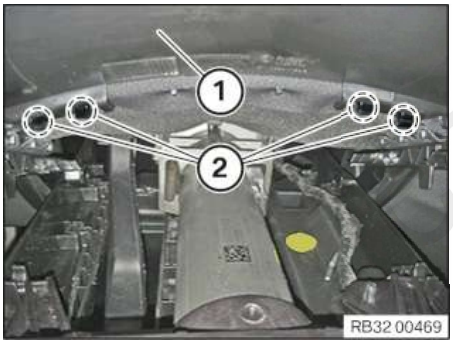
25 – Removing steering column shroud upper section



NOTICE

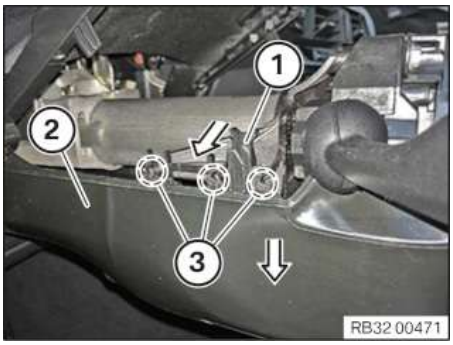
Perform the operations on the left and right side.

- Unlock the steering column shroud upper section (1) with the special tool 2 298 504 and fold up.



- Unclip the steering column shroud upper section (1) from the brackets (2).
- Remove the steering column shroud upper section (1).

26 – Removing steering column shroud lower section



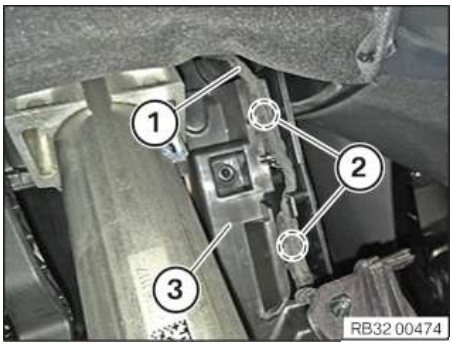
NOTICE

Perform the operations on the left and right side.

- Push the retaining lug (1) to the outside in the direction of the arrow and unclip the steering column shroud lower section (2) from the holders (3) in the direction of the arrow to the bottom at the same time.

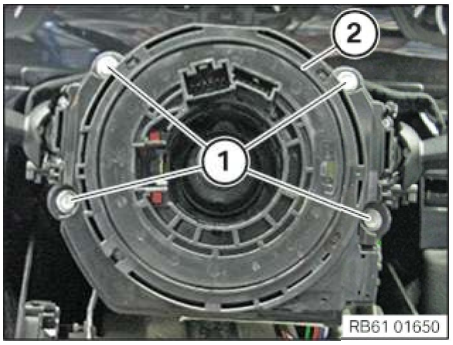


- Fold the steering column shroud lower section down.
- Unlock and disconnect connector (1).

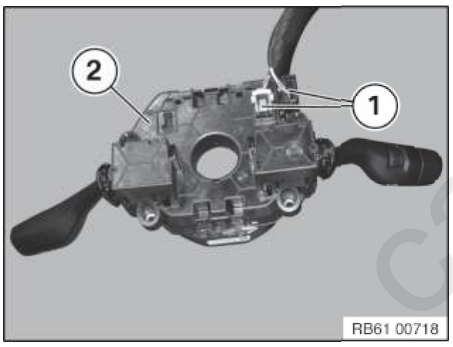


- Detach the cable (1) from the brackets (2).
- Remove the steering column shroud lower section (3).

27 – Removing the steering column switch cluster (SZL)



- Loosen screws (1).
- Remove the steering column switch cluster (SZL) (2).



- Unlock and disconnect the connector (1) on the steering column switch cluster (SZL) (2).

28 – Removing the instrument cluster (KOMBI)

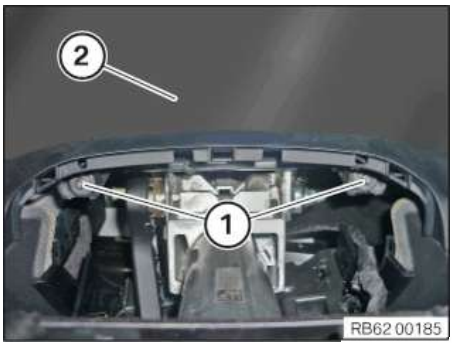


- Loosen screw (1).

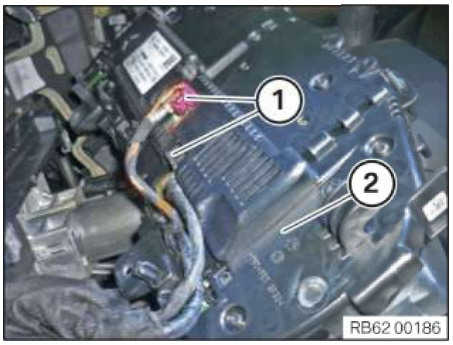
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- Loosen screw (1).



- Loosen screws (1).
- Feed out instrument cluster (KOMBI) (2).



RISK OF DAMAGE

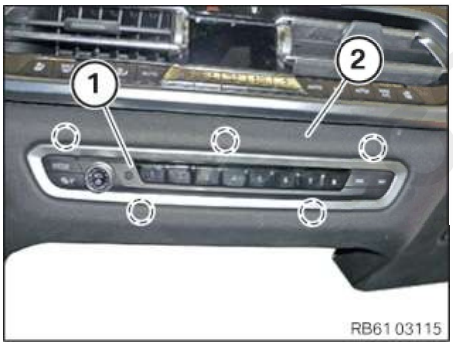
Damage to the instrument cluster (KOMBI)

While releasing and connecting the cable, it could lead to a ground offset. Thereby, currents could arise, that make the instrument cluster (KOMBI) useless.

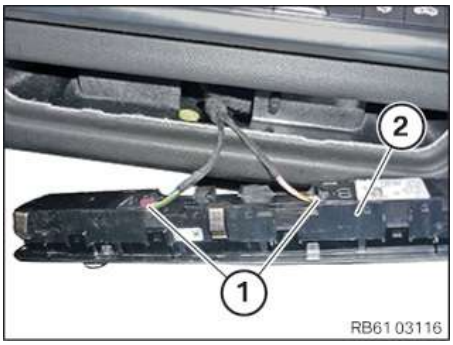
- While releasing: Release APIX data cable (blue) first.
- While connecting: Connect APIX data cable (blue) at the last.

- **If installed:** Release the blue plug connection first.
- Unlock and disconnect plug connections (1) from instrument cluster (KOMBI) (2).
- Remove the instrument cluster (KOMBI) (2).

29 – Remove the audio operating unit

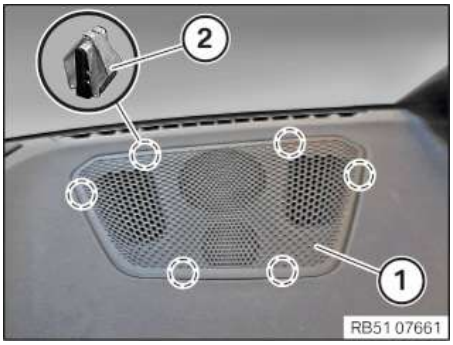


- Unclip the audio operating unit (1) from the instrument panel (2) at the points marked using special tool 0 496 571 (00 9 327).



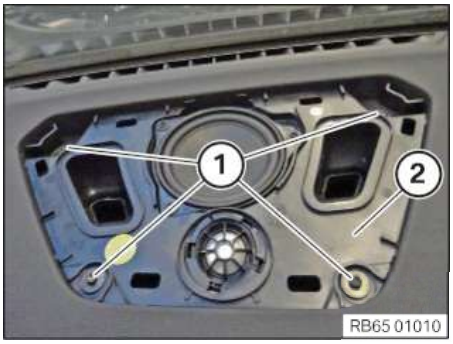
- Disconnect plug connections (1) and remove the audio operating unit (2).

30 – Remove the speaker trim at the instrument panel

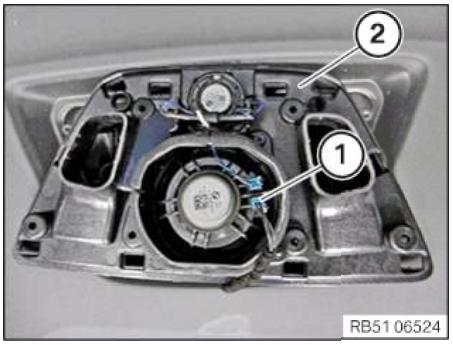


- Lever out the speaker trim (1) with the special tool 0 496 569 (00 9 325) from the clamps (2) toward the top and remove.

31 – Remove the speaker holder at the instrument panel

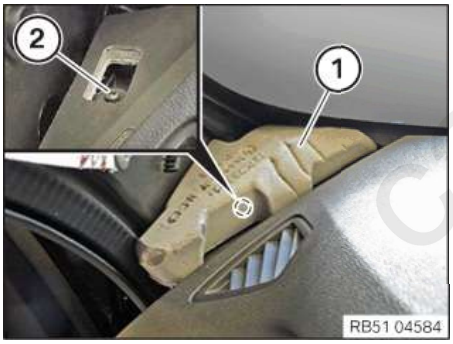


- Loosen screws (1).
- Pull out speaker holder (2) slightly with the loudspeakers and tilt it to the side.



- Unlock plug connection (1) and disconnect.
- Remove the speaker holder (2).

32 – Remove the instrument panel trim panel



NOTICE

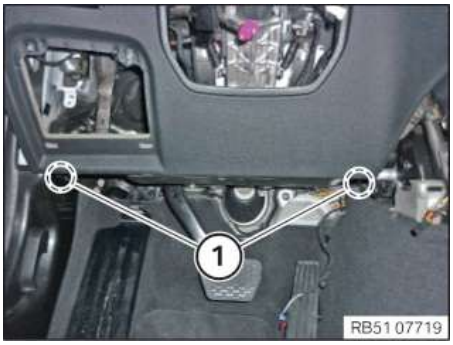
Perform the operations on the left and right side.

- Remove the sound insulation (1).
- Loosen screw (2).

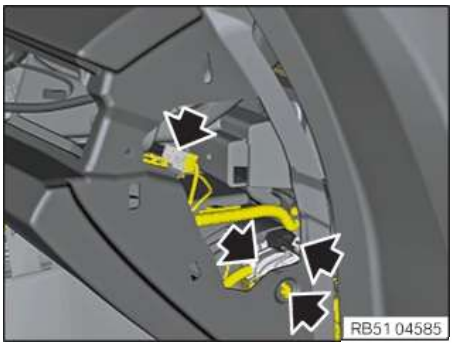


- Loosen screws (1).

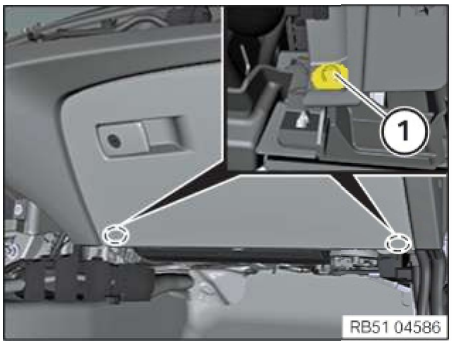
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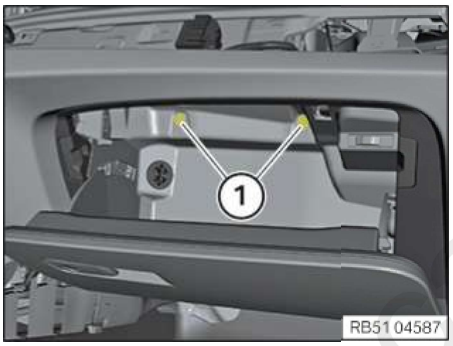
- Loosen screws (1).



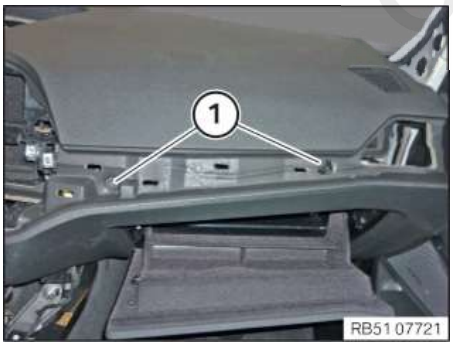
- Release all plug connections and cable clips (arrows) behind the glove box.



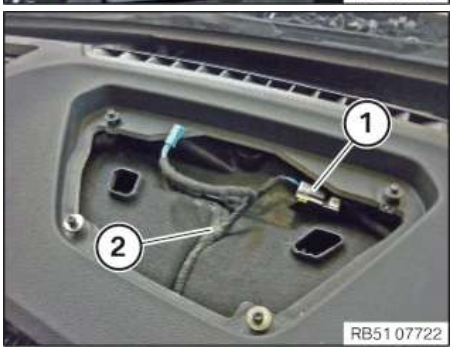
- Release the screws (1) on the lower side of the glove box.



- Open glovebox.
- Loosen screws (1).



- Loosen screws (1).



- Unlock plug connection (1) and disconnect.
- Release the wiring harness (2) on the holders.

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- Unlock the plug connection (1) on the light operating unit and disconnect it.



- Loosen screws (1).

TECHNICAL INFORMATION

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

- Pull the instrument panel trim back slightly.

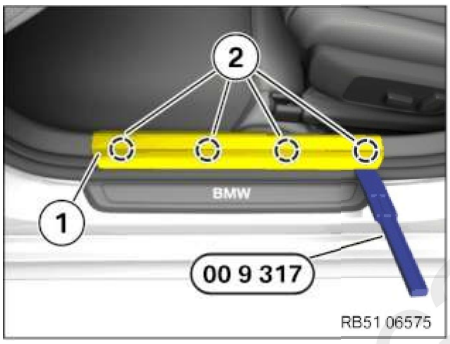
  If necessary, unlock and disconnect additional plug connections.
- Remove the instrument panel trim from the vehicle.

33 – Remove right door sill cover strip

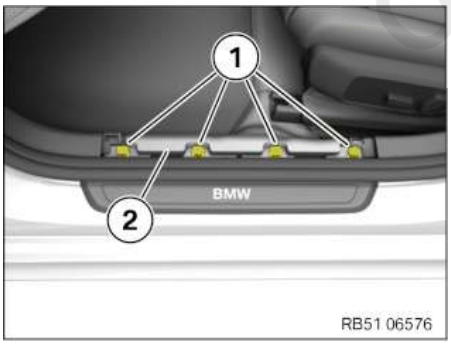
NOTICE

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

▸ **Remove door sill cover strip**



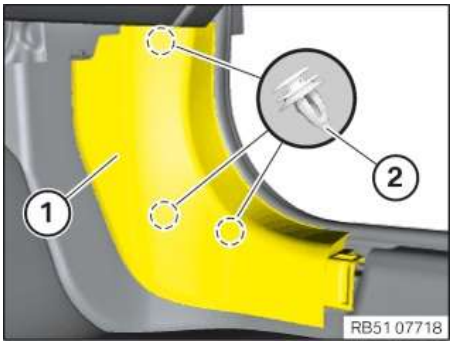
- Detach the door sill cover strip(1) using the special tool 0 490 534 (00 9 317) from the clips (2) in the floor panel.



- If necessary, remove the clips (1) from the floor panel (2) and attach to the door sill cover strip.

34 – Removing the side trim panel in the footwell at the right-hand A-pillar

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- Loosen the side trim panel (1) at the clips (2) and remove it toward the inside.

35 – Removing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

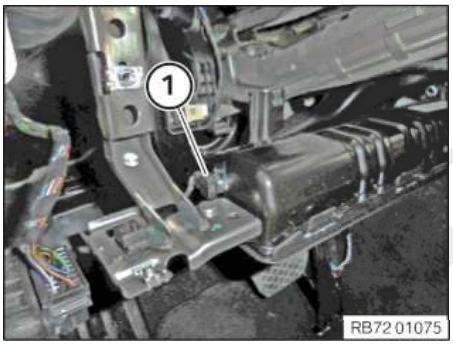
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

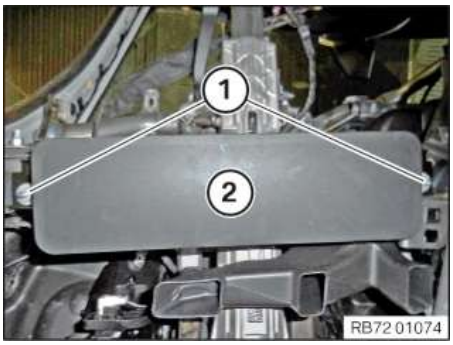
Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.



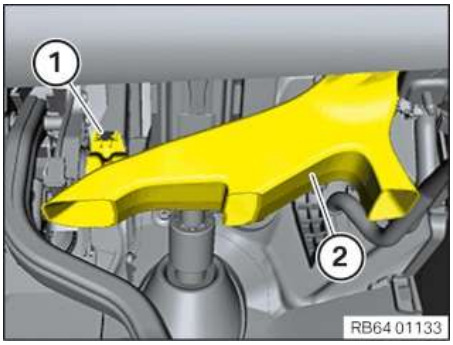
- Unlock plug connection (1) and disconnect.



- Loosen nuts (1).
- Remove knee airbag (2).

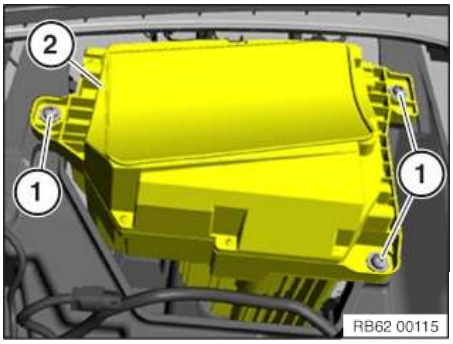
36 – Remove left air duct

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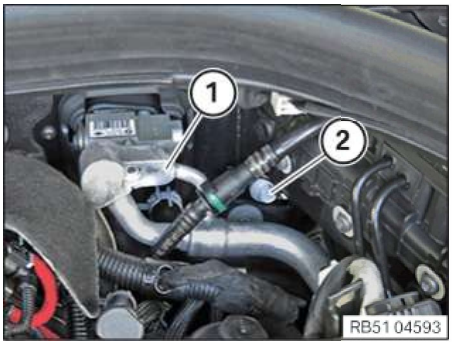
- Unclip the air duct (2) from the air conditioning housing at an angle towards the bottom at the clamp (1).

37 – Removing the Head-Up Display



- Loosen screws (1).
- Remove head-up display (2) from support.
- Unlock associated cable and disconnect.

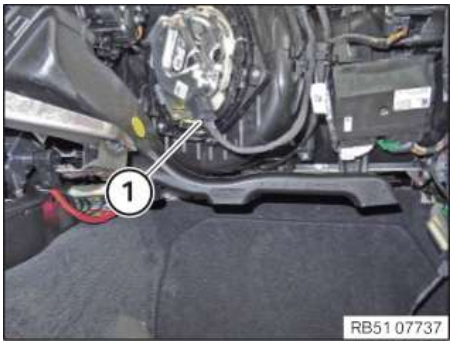
38 – Removing the support for the instrument panel



- Push the refrigerant line (1) slightly to one side and loosen the screw (2).

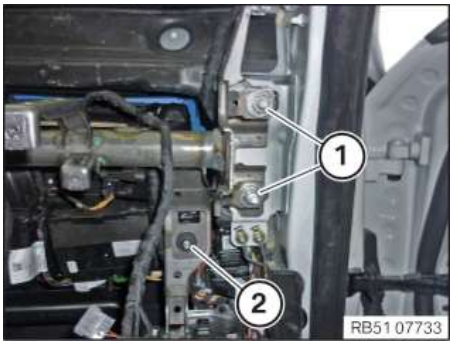


- Push the carpet in the area of the right B-pillar to the side.
- Unlock and disconnect plug connections (1).

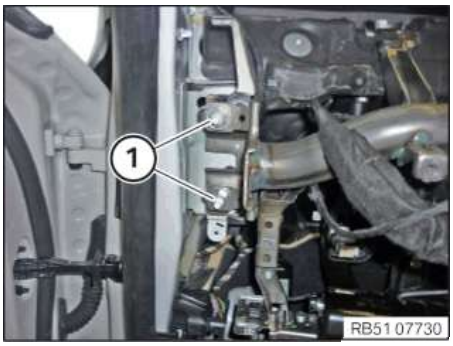


- Unlock and disconnect the plug connection (1) on the blower motor.

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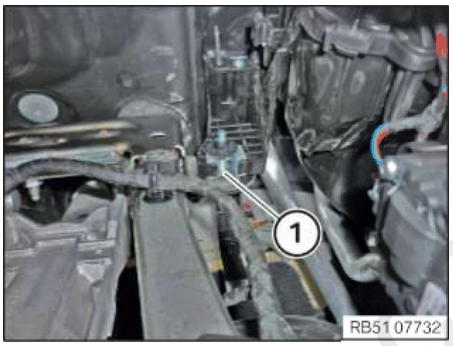
- Loosen nuts (1) and (2).



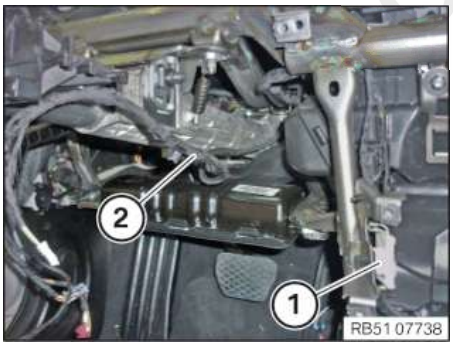
- Loosen nuts (1).



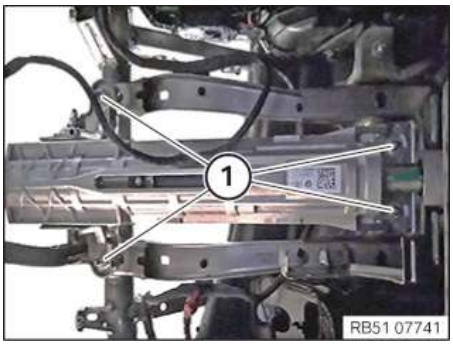
- Loosen screws (1).



- Slacken the nut (1) in the left footwell on the heating and air-conditioning unit.



- Release plug connection (1).
- Release the wiring harness (2) from the steering column.



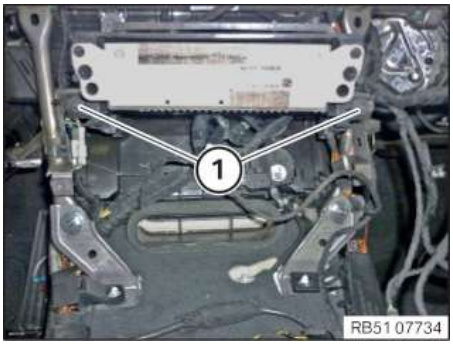
TECHNICAL INFORMATION

Secure component against falling.

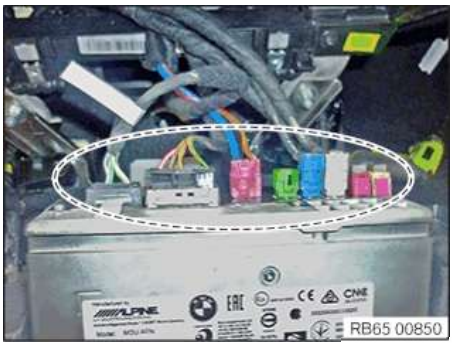
- Release the nuts (1) at the steering column.
- Drop steering column (1) a little away and support it in the footwell.

  Drop steering column not too far away and support it absolutely.

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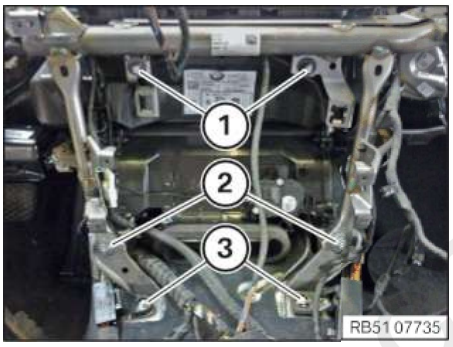
- Loosen screws (1).
- Feed out Head Unit High.



- Unlock and disconnect all connectors in the marked area.
  Remove headunit.



- Unlock and disconnect plug connection (1) from airbag control unit.
- Release the wiring harness (2) on the holders.



- Loosen nuts (1).
- Loosen nuts (2).
- Remove cable clip and release the nuts (3).
  Remove retaining bracket from left and right sides.
- Carefully feed out the support for the instrument panel to the rear.
  If necessary, unlock and disconnect additional plug connections.
- Carefully remove support for the instrument panel from the vehicle.

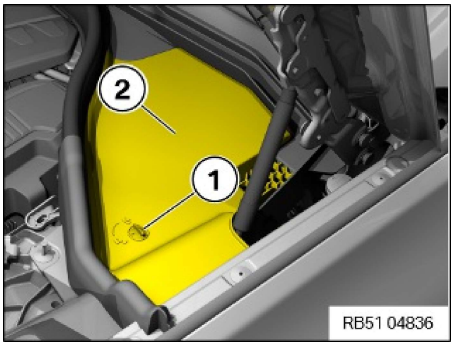
39 – Remove the seal for the rear bonnet



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

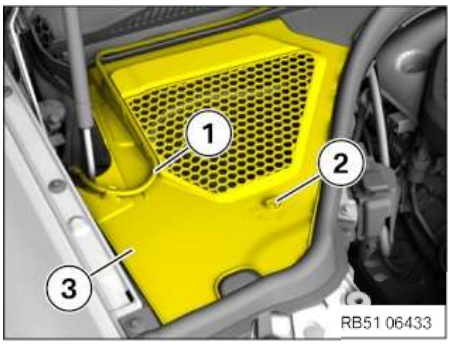
40 – Remove the cover of the engine compartment at the rear left

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

41 – 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).

42 – Removing both wiper arms

NOTICE

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

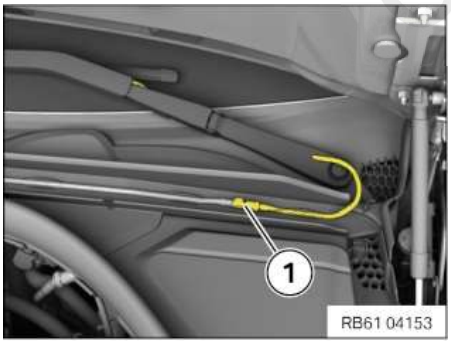
▸ **Remove the wiper arm**

RISK OF DAMAGE

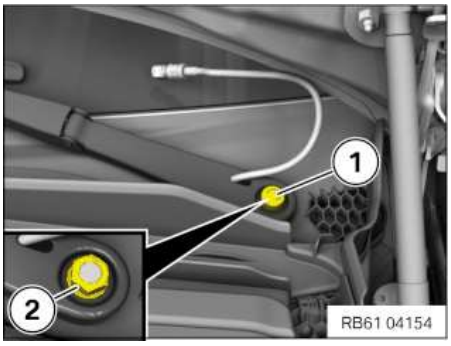
Damage to wiper console

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.

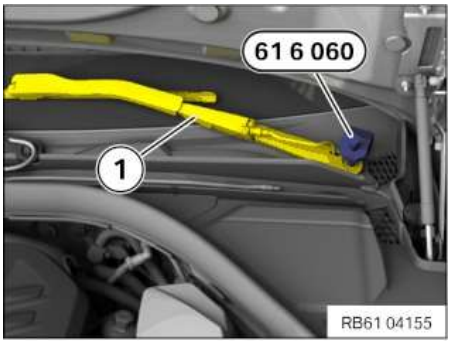


- Disconnect the windscreen wash hose(1) at the separation point and remove from the cowl guide.



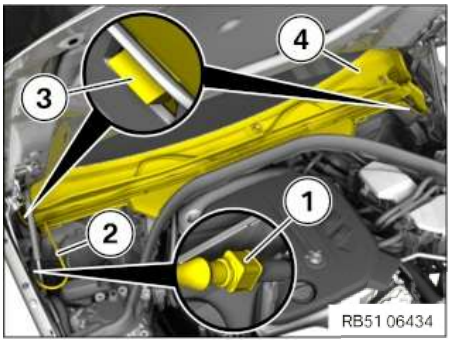
- Remove the protective cap (1).
- Loosen nut (2).

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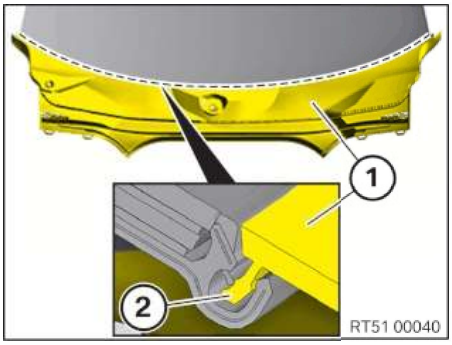


- Pull off the wiper arm (1) using special tool .

43 – 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).

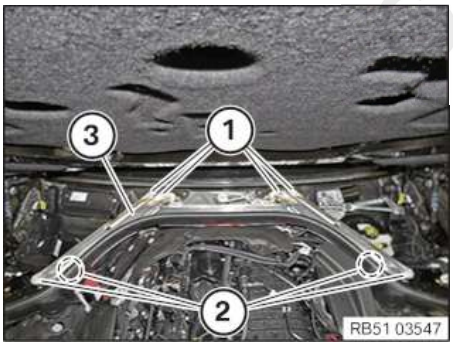


- Pull the cowl panel cover (1) upward out of the latch mechanism (2) beginning on the side.

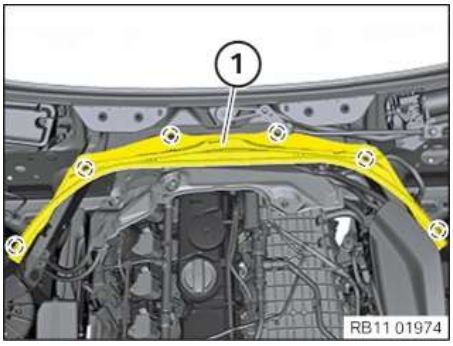
44 – Removing the centre bulkhead upper part

TECHNICAL INFORMATION

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



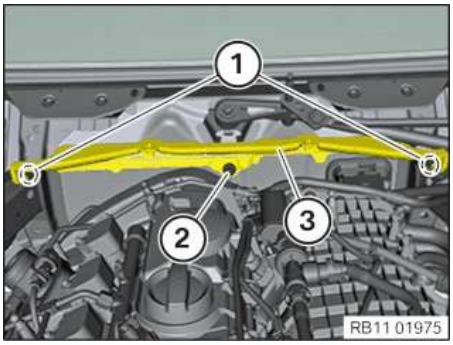
- **If installed:** Remove tension strut on spring strut dome.
- Loosen screws (1) and (2).
- Remove tension strut (3) in the spring strut dome upwards.



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

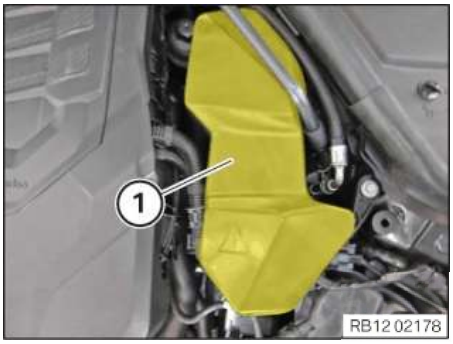
45 – Removing the centre bulkhead lower section

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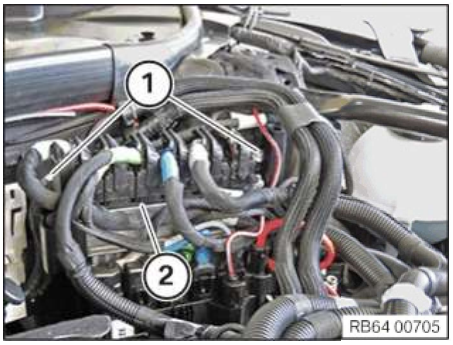


- Loosen screws (1).
- Loosen nut (2).
- Remove the centre bulkhead lower part (3).

46 – Detach the control unit holder

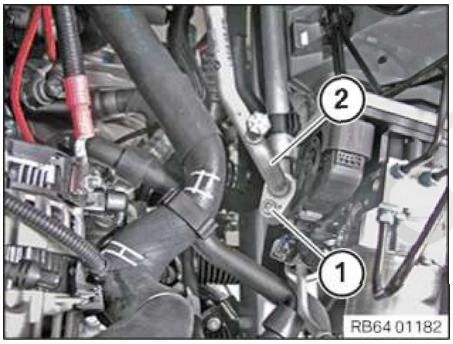


- Pull the cover (1) towards the top and feed out.



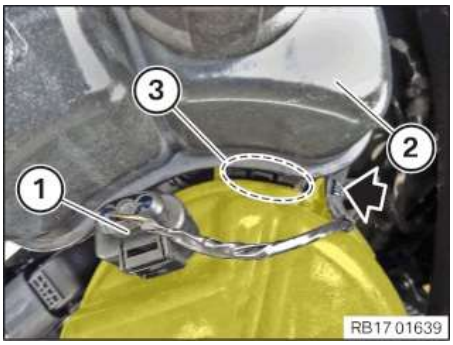
- Loosen screws (1).
- Remove control unit holder with the control units (2) and lay to one side.

47 – Disconnect the refrigerant line on the connecting piece



- Loosen screw (1).
- Remove the refrigerant line (2).

48 – Removing coolant expansion tank of high-temperature coolant circuit partially

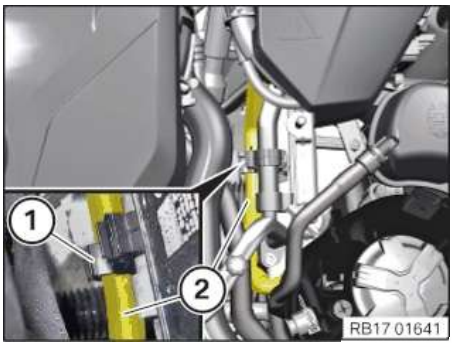


- Unlock plug connection (1) and disconnect.
- Loosen the clamp (arrow).
- Unlock coolant expansion tank (2) for the low-temperature coolant circuit in marked area.

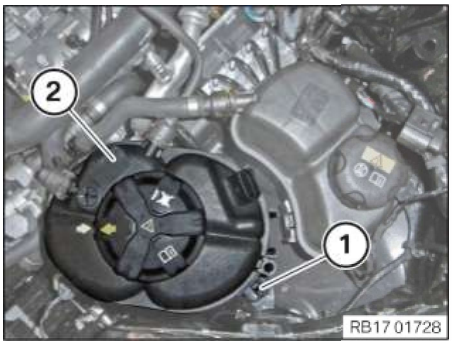
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- Feed out and position the coolant expansion tank (1)for the low-temperature coolant circuit from the holders.



- Unlock the holder (1).
- Feed out coolant line (2) and place to one side.



- Unlock lock (1).
- Thread out the coolant expansion tank (2) for the high-temperature coolant circuit upwards and set aside.

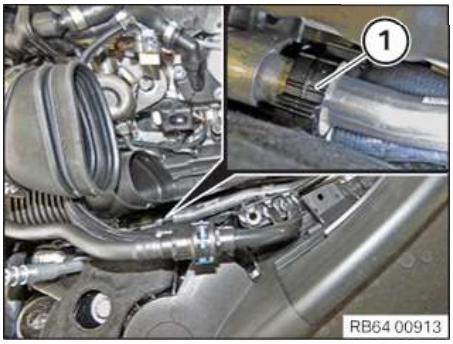
49 – Disconnect the refrigerant line from the expansion valve

CAUTION

Residual pressure in the air conditioning.

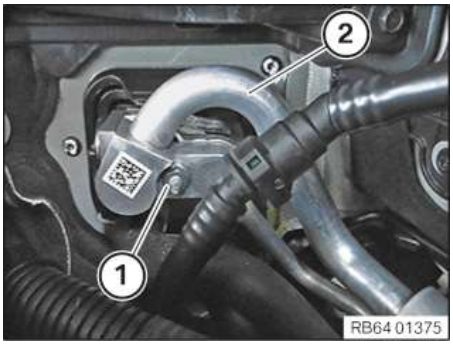
Danger of injury!

- Wear safety goggles and protective gloves when disconnecting the refrigerant line.
- Seal refrigerant lines with seal plugs.



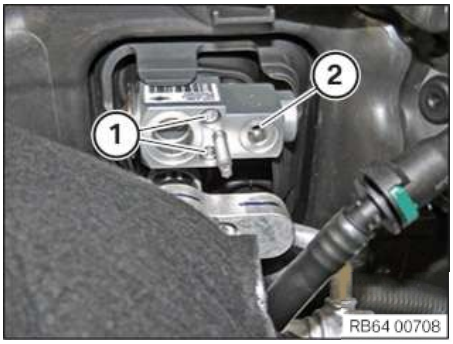
- Open the holder (1).

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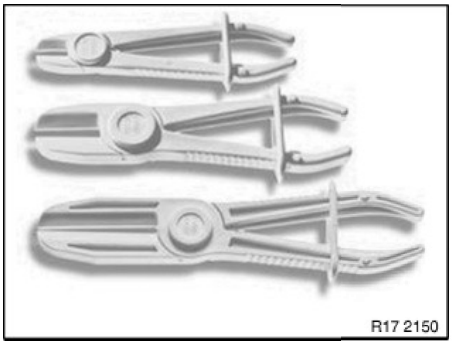
- Loosen nut (1).
- Remove the refrigerant line (2) and set it aside.

50 – Remove expansion valve



- Loosen screws (1).
- Remove the expansion valve (2).

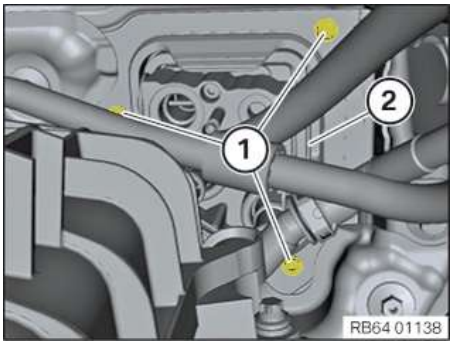
51 – Removing the heating and air-conditioning unit



- Use commercially available disconnection tools to pinch off the coolant lines.

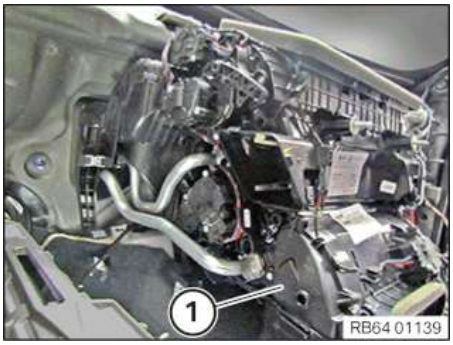


- Release the hose clamps (1) using special tool and pull off the coolant hoses.



- Release screws (1) from flange (2).
- Protect the carpet in footwell against leaking coolant.

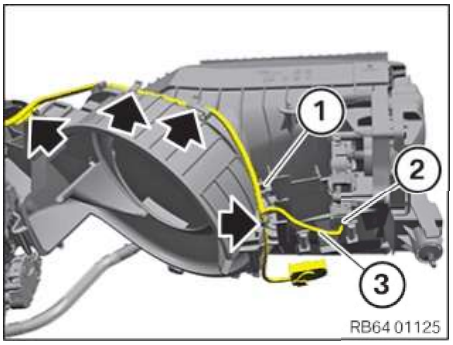
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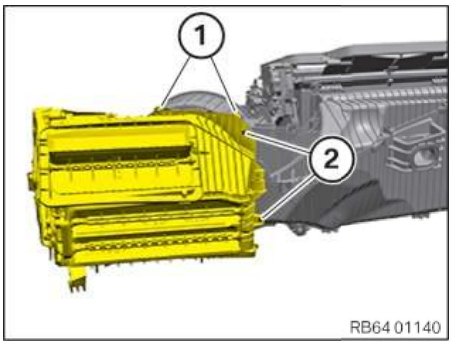
- Unfasten plug connection.
- Remove the heating and air-conditioning unit (1).

MAIN WORK

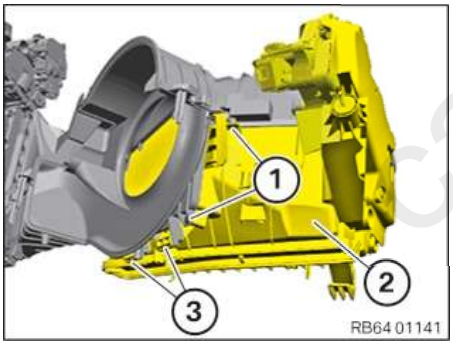
52 – Removing the evaporator



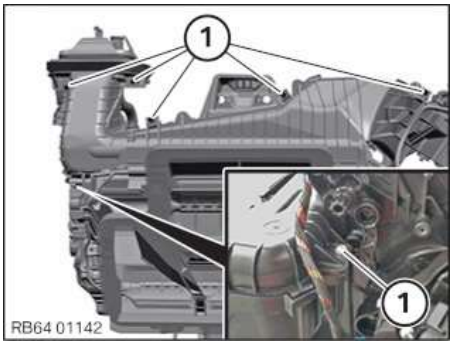
- Loosen screw (1).
- Unlock and disconnect connector (2).
- Remove the cable (3) from the brackets (arrows) and place to one side.



- Disengage the latch mechanisms (1).
- Loosen screws (2).

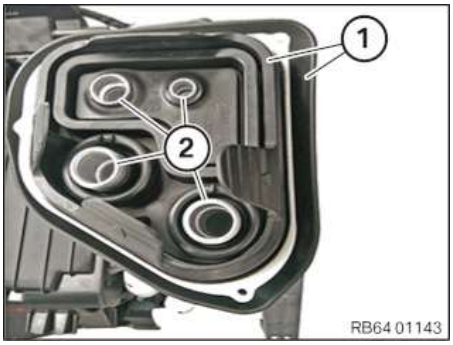


- Loosen screws (1).
- Tilt the housing (2) slightly and detach from the hook (3).

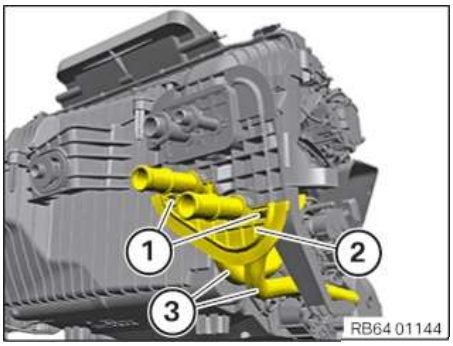


- Loosen screws (1).

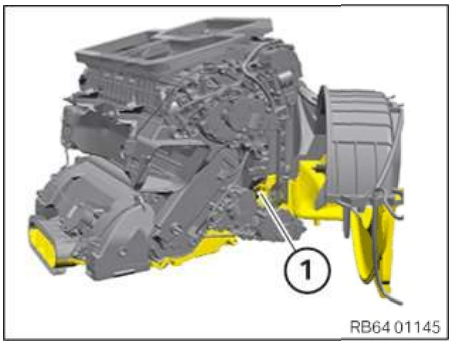
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- Guide out the seal (1) via the lines (2) and remove completely.



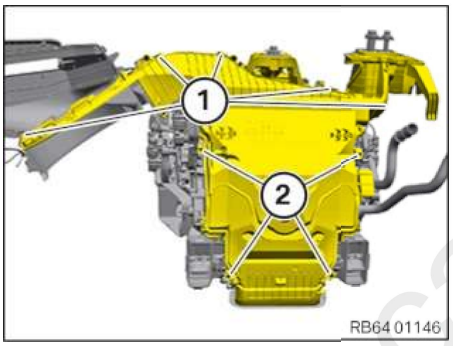
- Disengage the latch mechanisms (1) and remove the cover (2).
- Twist the coolant pipe (3) towards the bottom.



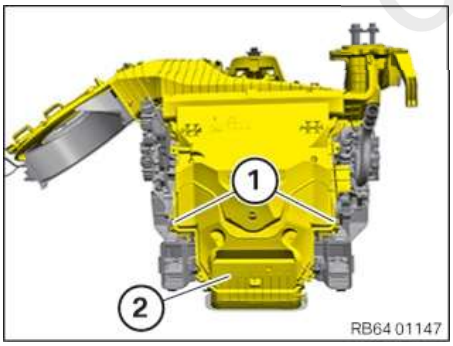
NOTICE

The operations shown only for one side must be carried out on both sides.

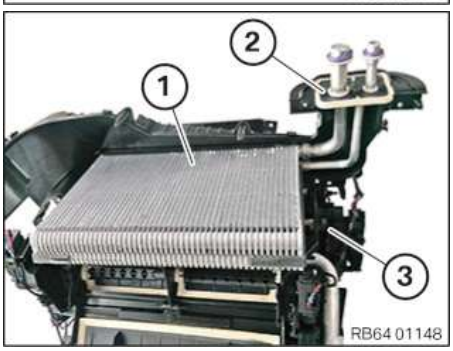
- Loosen the latch mechanisms (1).



- Turn the heating and air-conditioning unit around.
- Loosen the latch mechanisms (1).
- Loosen screws (2).



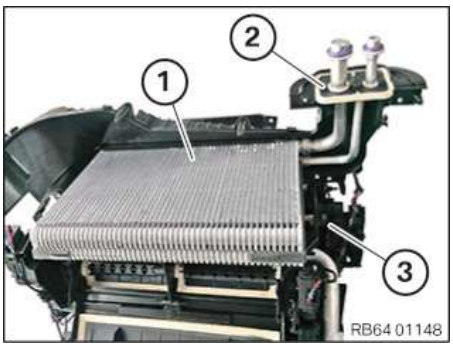
- Unlock the latch mechanism (1) and guide out the housing (2) and remove it.



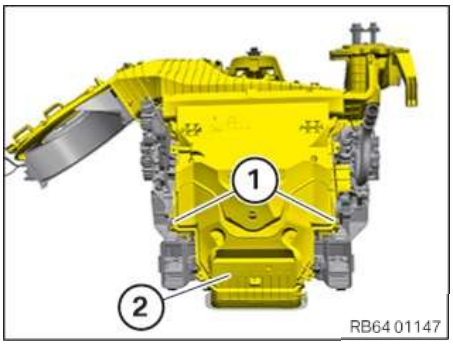
- Remove the evaporator (1) with the seal (2) from the distributor housing (3).

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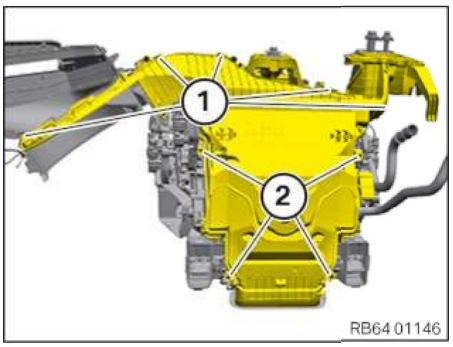
53 – Installing the evaporator



- Insert the evaporator (1) in the distributor housing (3) correctly.
- Make sure that the seal (2) is positioned correctly.



- Correctly feed in housing (2) and engage at the latch mechanisms (1).

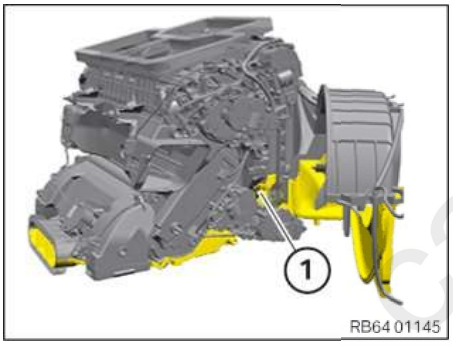


- Engage latch mechanisms (1).

  Tighten down screws (2).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm

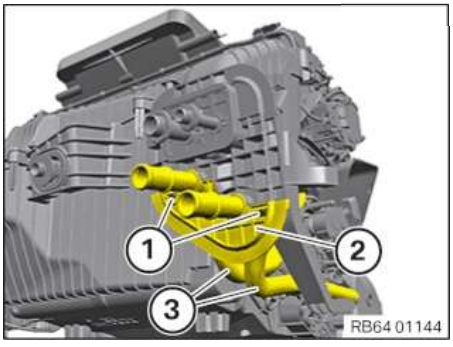


- Turn the heating and air-conditioning unit around.

NOTICE

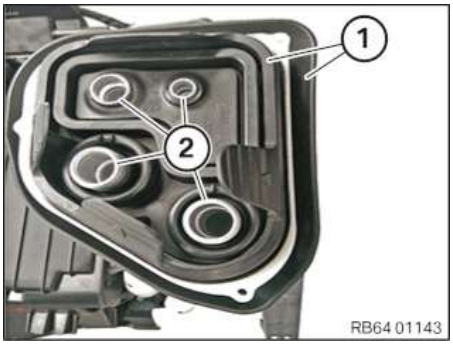
The operations shown only for one side must be carried out on both sides.

- Engage latch mechanisms (1).

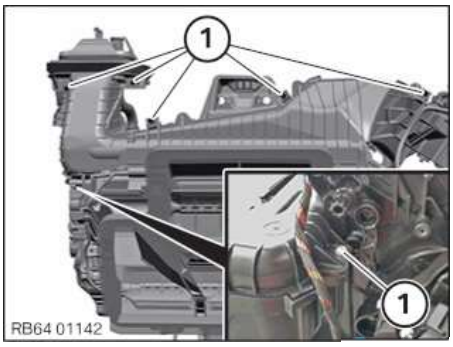


- Twist coolant pipe (3) towards the front and position correctly.
- Engage the cover (2) at the latch mechanisms (1).

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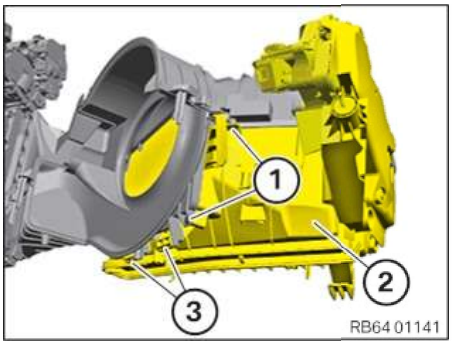
- Feed in seals (1) completely over lines (2) and position correctly.



- Tighten the screws (1).

Heater/air conditioner

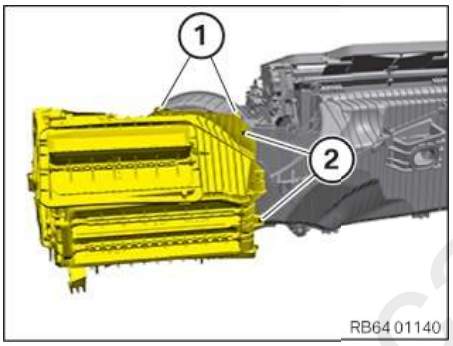
Screw		Tightening torque	1,2 Nm



- Hook housing (2) onto the hook (3) and position correctly.
- Tighten the screws (1).

Heater/air conditioner

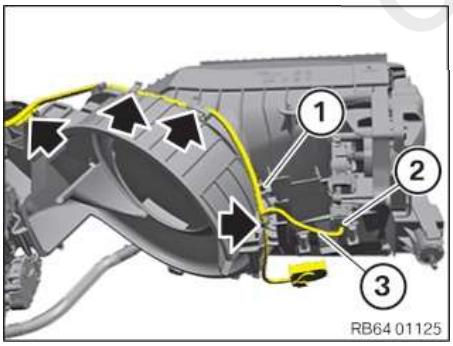
Screw		Tightening torque	1,2 Nm



- Engage latch mechanisms (1).
- Tighten down screws (2).

Heater/air conditioner

Screw		Tightening torque	1,2 Nm



- Engage cable (3) at the latch mechanisms (arrows).
- Connect connectors (2) and lock.
- Tighten down screw (1).

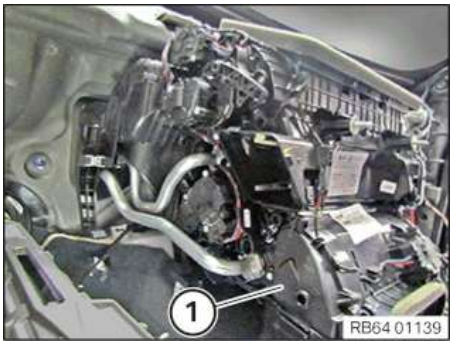
Heater/air conditioner

Screw		Tightening torque	1,2 Nm

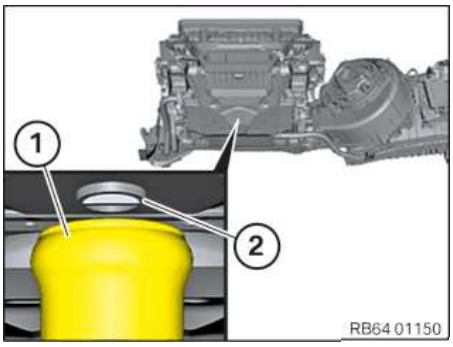
POSTPROCESSES

54 – Installing the heating and air-conditioning unit

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- Position the heating and air-conditioning unit (1).
- Connect connector.



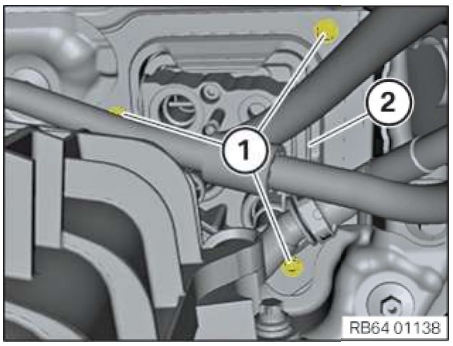
RISK OF DAMAGE

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.

- Ensure that the condensate drain (2) is correctly fitted onto the grommet (1).
- After installing the heating and air-conditioning unit (2): Perform visual inspection.

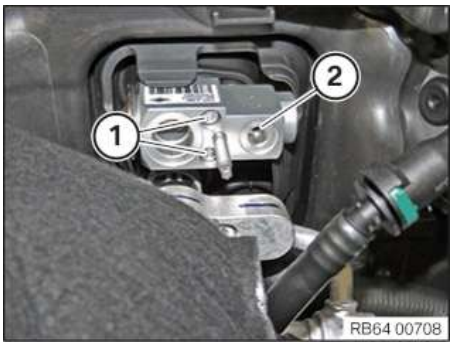


- Tighten the nuts (1) on the flange (2).



- Slide coolant hoses on correctly.
- Secure hose clamps (1) using the special tool .

55 – Install expansion valve



- Replace O-rings.

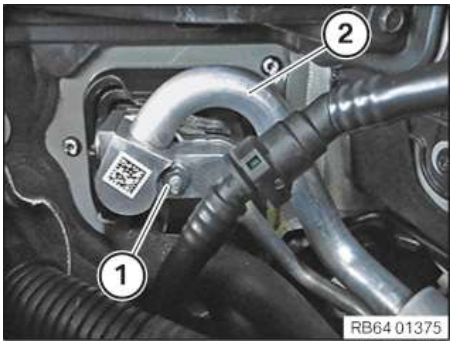
  Parts: O-rings
- Correctly position the expansion valves (2).
- Tighten the screws (1).

Expansion valve to heater - A/C

M5		Tightening torque	5,5 Nm

56 – Connect the refrigerant line to the expansion valve

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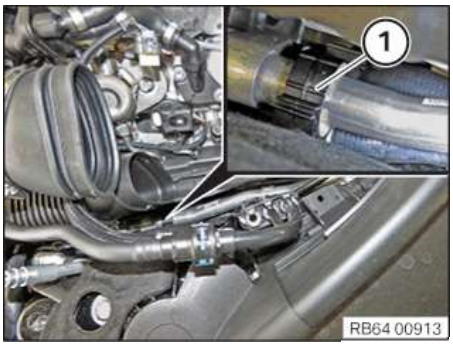


- Replace O-rings.

  Parts: O-rings
- Correctly position the refrigerant line (2).
- Tighten nut (1).

Refrigerant lines to expansion valve

M6		Tightening torque	13 Nm

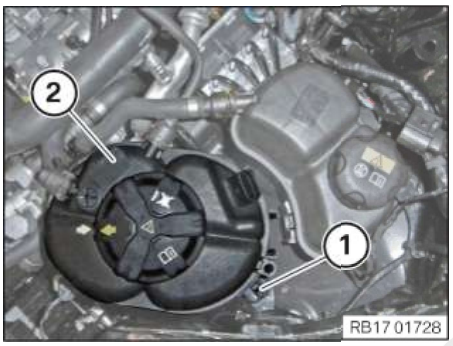


- Close the holder (1).

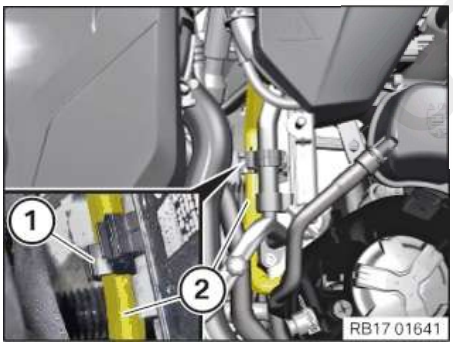
57 – Install coolant expansion tank of high-temperature coolant circuit, partially

TECHNICAL INFORMATION

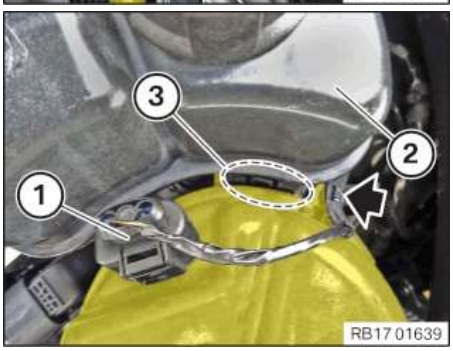
Make sure that the connections are locked correctly. The locks must engage audibly.



- Feed in and correctly position the coolant expansion tank (2) for the high-temperature coolant circuit.
- Lock the lock (1).



- Feed in the coolant line to the holder (1) and position.
- Lock holder (1).



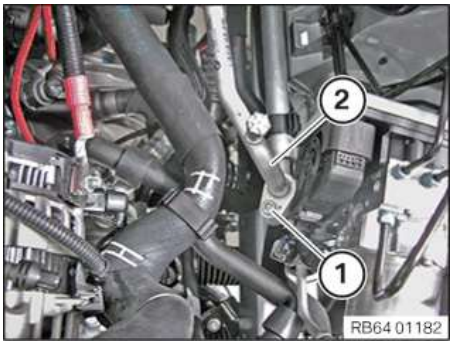
- Feed in and install the coolant expansion tank (2) for the low-temperature coolant circuit to the holders.

  The lock (3) must audibly engage.
- Secure clamp (arrow).
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

58 – Fasten the refrigerant line on the connecting piece

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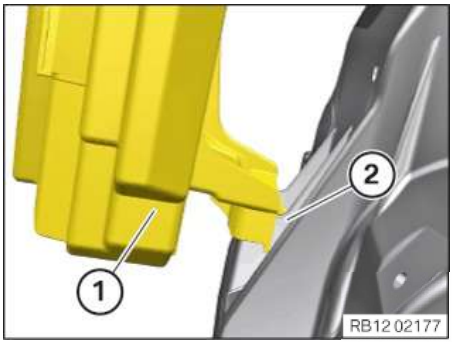
- Renew the sealing ring.

  Parts: Sealing ring
- Correctly position the refrigerant line (2).
- Tighten down screw (1).

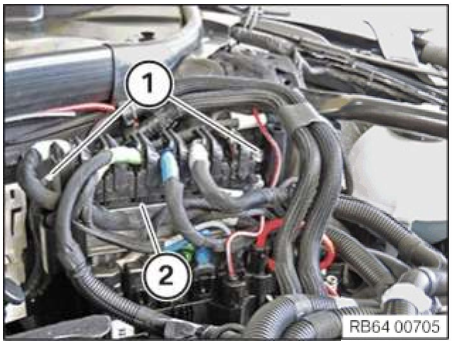
Refrigerant line to connecting piece

M8		Tightening torque	19 Nm

59 – Fastening control unit holder



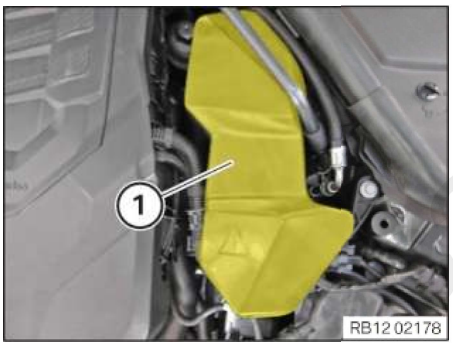
- Make sure the bottom control unit holder (1) is inserted correctly into the fixture (2).



- Position the control unit holder together with the control units (2) and position correctly.
- Tighten the screws (1).

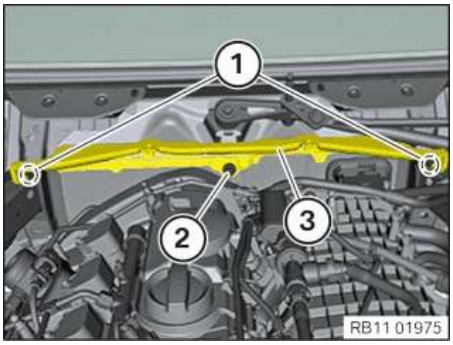
Control unit holder on spring strut dome

Hexagon screw		Tightening torque	8 Nm



- Insert and install cover (1) into guides.

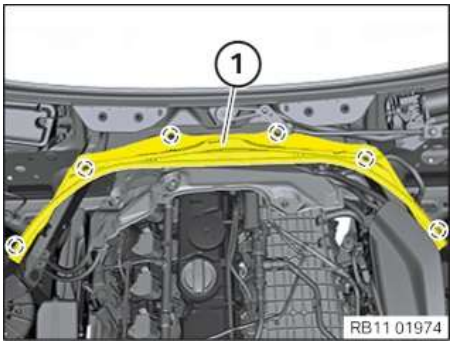
60 – Installing centre bulkhead lower section



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

61 – Installing the centre bulkhead upper part

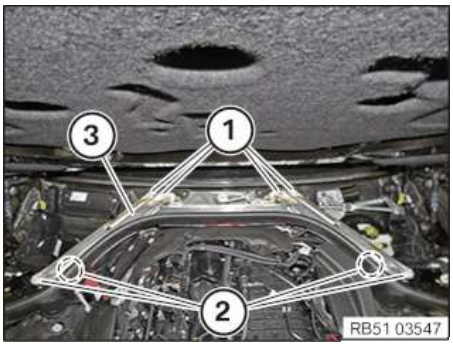
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- Position the centre bulkhead upper part (1).
- Tighten the bolts in the marked areas.

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 °

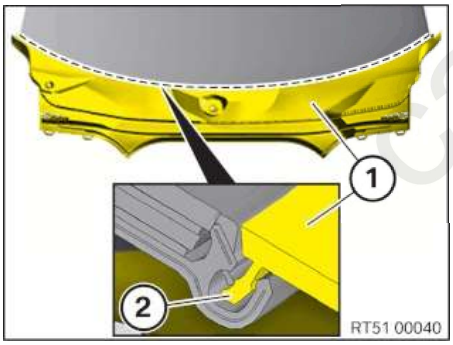
62 – Installing cowl panel cover

RISK OF DAMAGE

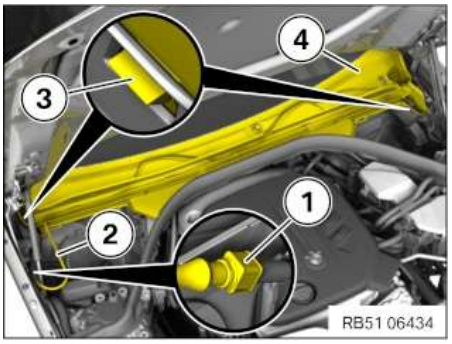
Damage caused by water ingress into the vehicle.

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.



- 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.

63 – Installing both wiper arms

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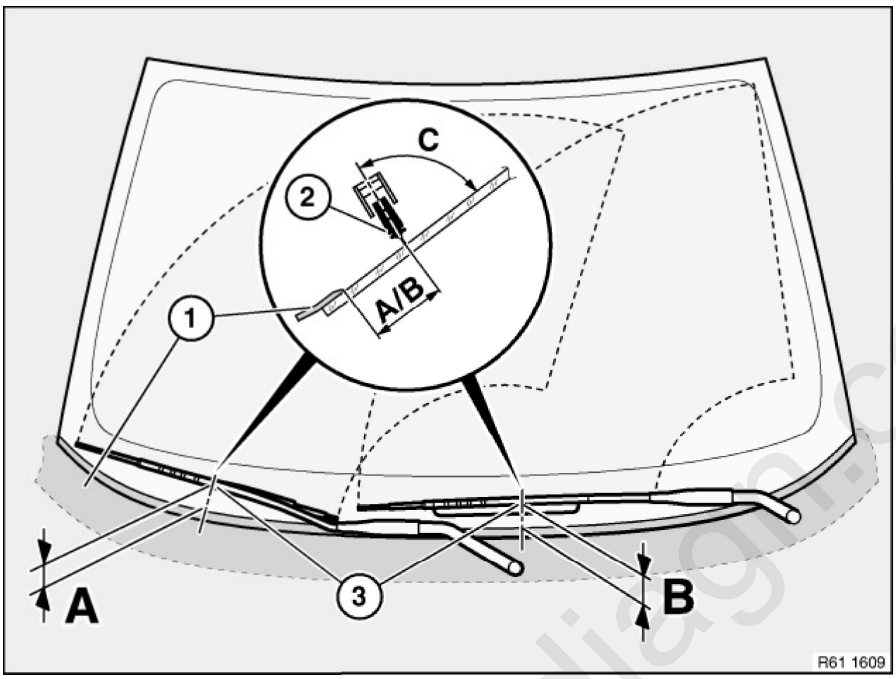
NOTICE

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

▸ **Install the wiper arm**

TECHNICAL INFORMATION

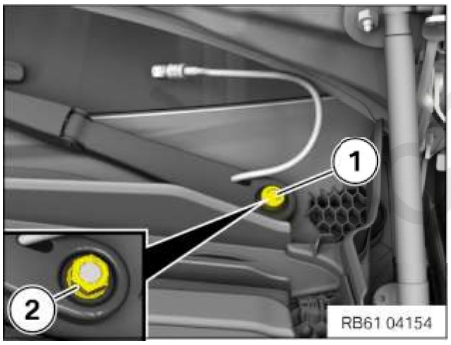
The wiper system must be in zero position.
After installing the cowl panel cover and before fitting the wiper arm:
Activate the wiper system once to ensure that it has the correct installation position.



- 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

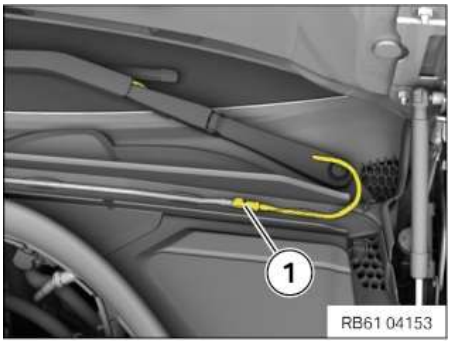


- Tighten nut (2).

Windscreen wiper arm

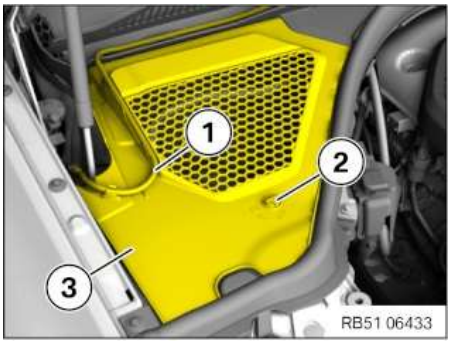
Combination hexagon nut		Tightening torque	35 Nm

- Connect the protective cap (1).



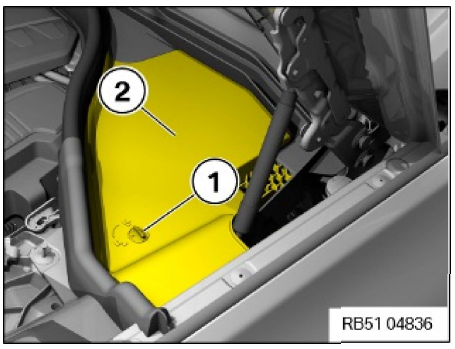
- Insert windscreen wash hose (1) into the cowl and connect at the separating point.

64 – 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.

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



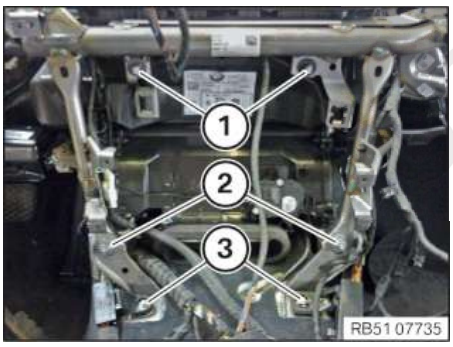
- Position the engine compartment cover at the rear left (2) .
- Close lock (1).

66 – 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.

67 – Installing the support for instrument panel



- Install the instrument panel support into the vehicle carefully.
- Insert the instrument panel support carefully.
  If necessary, connect and lock the additional connector.
- Tighten nuts (1).

Heating and air-conditioning unit on support

Nut M6		Tightening torque	4 Nm

- Mount retaining bracket on left and right.
  Tighten nuts (2).

Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

- Tighten nuts (3) and fit cable clip .

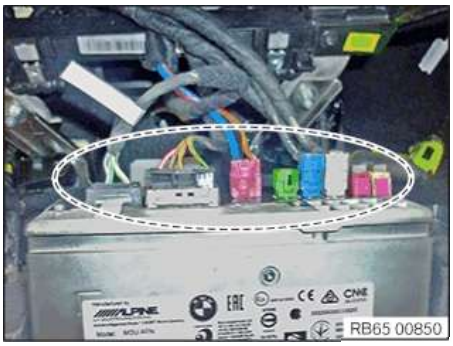
Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

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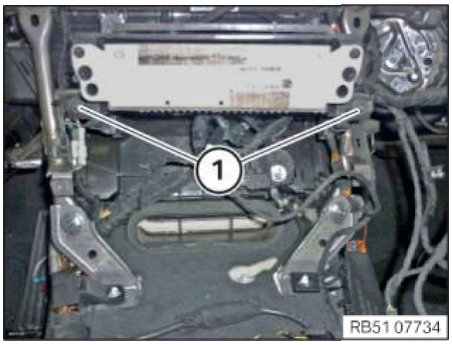


- Connect the connector (1) to the airbag control unit and lock.
- Secure the wiring harness (2) on the holders.



- Installing head unit.

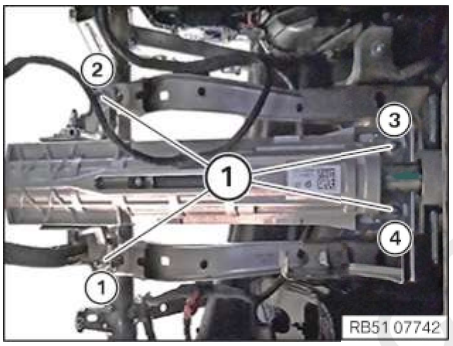
  Connect and lock all connectors in the marked area.



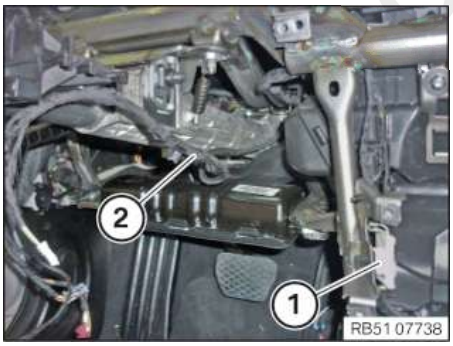
- Feed in the head unit.
- Tighten the screws (1).

Head unit to holder / holder to support

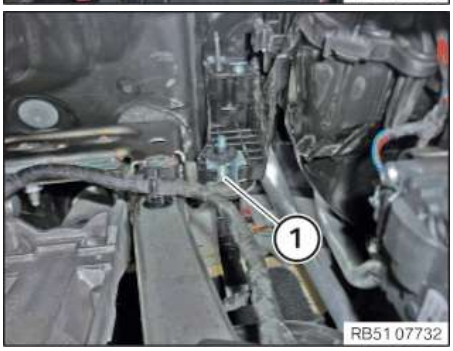
Screw		Tightening torque	1,8 Nm



- Correctly position the steering column (2) and tighten the nuts (1) in the sequence (1), (2), (3) and (4).



- Connect connectors (1) and lock.
- Secure the vehicle wiring harness (2) to the steering column.



- Tighten nut (1) in the left foot well on the heating and air-conditioning unit.

Heating and air-conditioning unit on support

Nut M6		Tightening torque	4 Nm

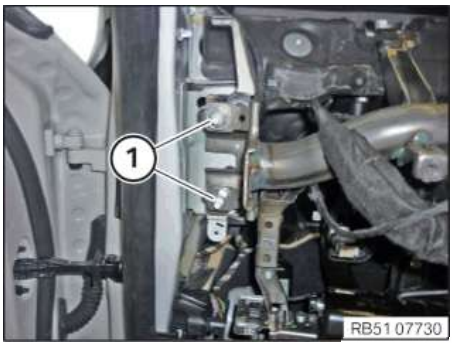
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- Tighten the screws (1).

Support for instrument panel

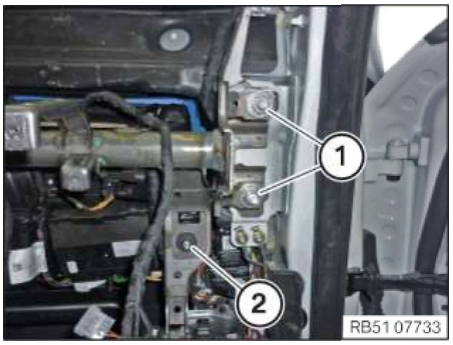
M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm



- Tighten nuts (1).

Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm



- Tighten nuts (1).

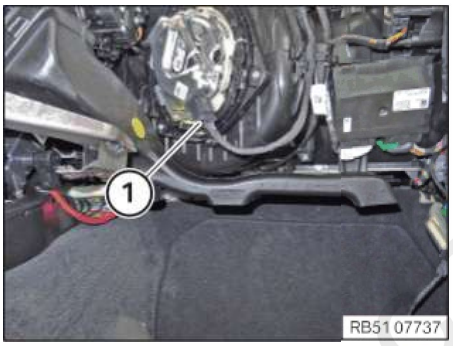
Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

- Tighten nut (2).

Heating and air-conditioning unit on support

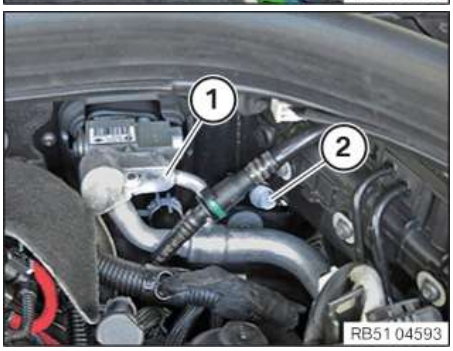
Nut M6		Tightening torque	4 Nm



- Connect the connector (1) to the blower motor and lock.



- Connect connector (1) and lock.
- Correctly position the carpet in the area of B-pillar at the right.



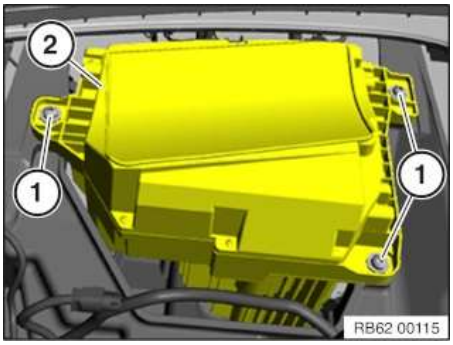
- Push the refrigerant line (1) slightly to one side and tighten the screw (2).

Support for instrument panel

M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

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68 – Installing the head-up display

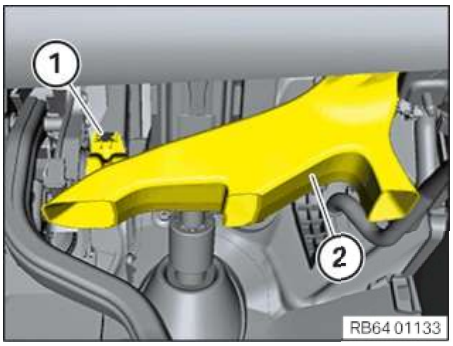


- Connect the associated connector to the Head-Up Display.
- Guide the Head-Up Display (2) into the support.
- Tighten the screws (1).

Head-Up Display to support

M6x25 screw		Tightening torque	13 Nm

69 – Installing the air duct, left



- Clip in the air duct (2) at the clamp (1) in the air conditioning housing at an angle towards the top.

70 – Installing knee airbag

WARNING

Airbag unit.

Danger! Life-threatening injuries!

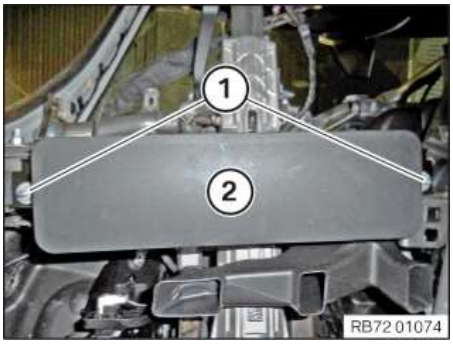
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.

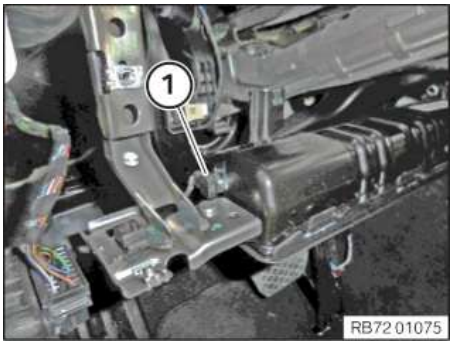


- Position knee airbag (2) correctly.
- Tighten nuts (1).

Knee airbag on support structure

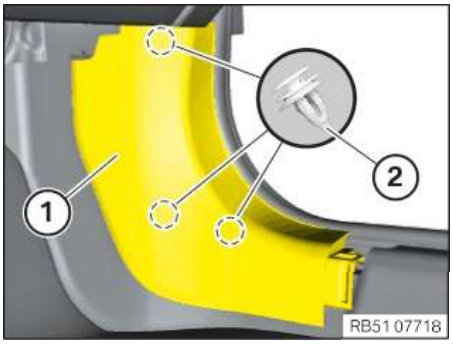
Nut		TIghtening torque	8 Nm

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- Connect connectors (1) and lock.

71 – Installing side trim panel in footwell on right A-pillar



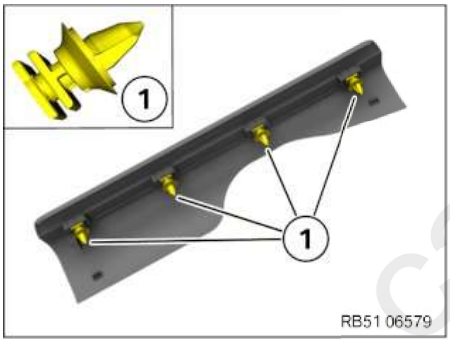
- Check the clips (2) for damage.
  Renew damaged or missing clips (2).
- Correctly position the side trim panel (1) and clip in to the clips (2).
- Make sure that the side trim panel (1) is correctly fitted against edge protection.

72 – Install right door sill cover strip

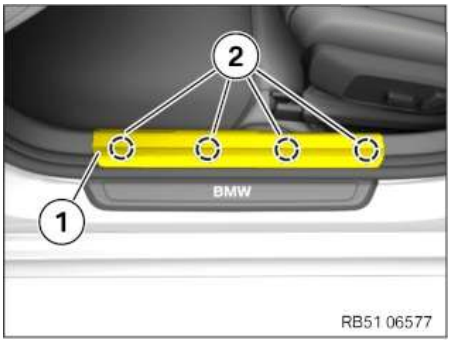
NOTICE

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

▸ **Install the door sill cover strip**



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



- Clip the door sill cover strip (1) into the floor panel with the clips (2).

73 – Install the trim panel for the instrument panel

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TECHNICAL INFORMATION

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

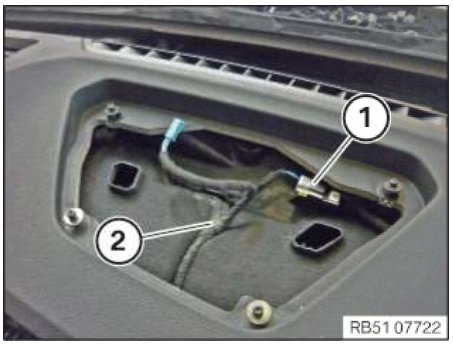
- Insert the instrument panel trim in the vehicle and position it at the support.
- Insert the associated wiring harnesses and connect the connectors.
- Tighten the screws (1).

Dashboard to support

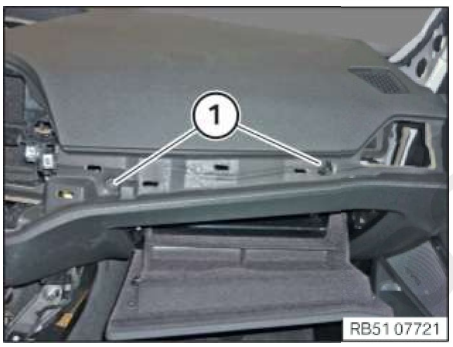
Screw		Tightening torque	2,4 Nm



- Connect connector (1) to the light operating unit and lock.



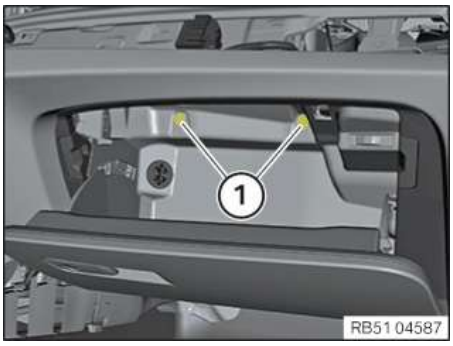
- Secure the wiring harness (2) on the holders.
- Connect plug connection (1) and lock.



- Tighten the screws (1).

Dashboard to support

Screw		Tightening torque	2,4 Nm

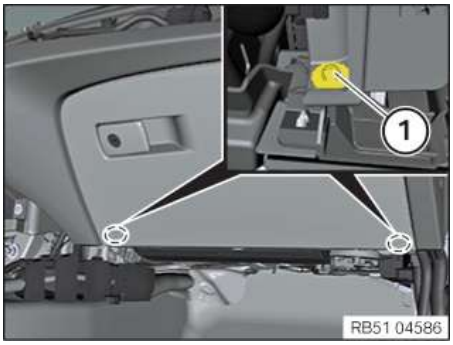


- Open glovebox.
- Tighten the screws (1).

Dashboard to support

Screw		Tightening torque	2,4 Nm

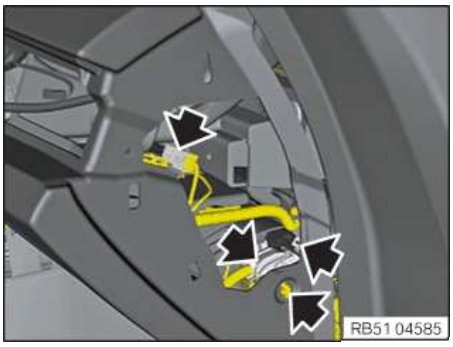
parts4vagn.com



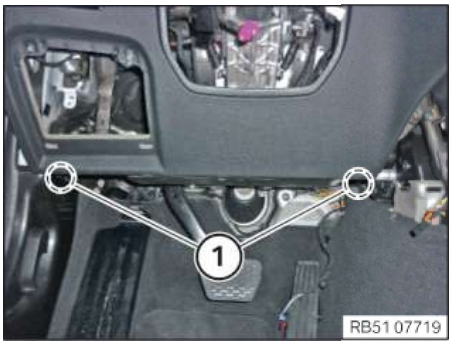
- Tighten the screws (1) on the lower side of the glove box button.

Dashboard to support

Screw		Tightening torque	2,4 Nm



- Connect all plug connections and cable clips (arrows) behind the glove box.



- Tighten the screws (1).

Dashboard to support

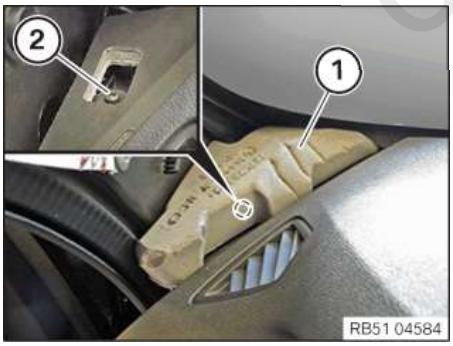
Screw		Tightening torque	2,4 Nm



- Tighten the screws (1).

Dashboard to support

Screw		Tightening torque	2,4 Nm



NOTICE

Perform the operations on the left and right side.

- Tighten down screw (2).

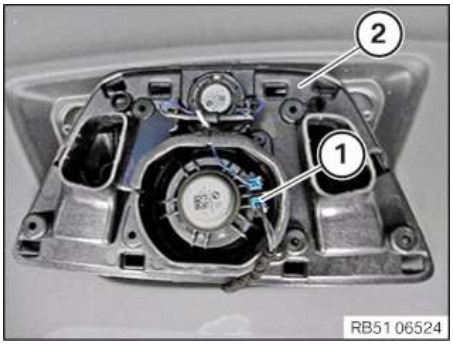
Dashboard to support

Screw		Tightening torque	2,4 Nm

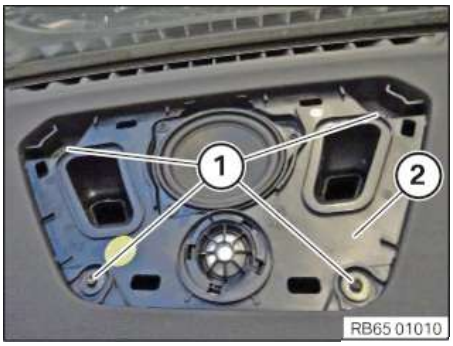
- Use sound insulation (1).

74 – Install the speaker holder at the instrument panel

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- Position the speaker holder (2).
- Connect connector (1).

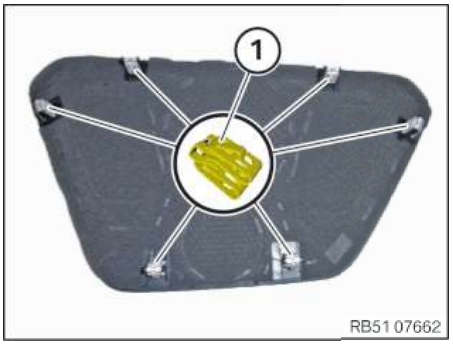


- Install the speaker holder (2).
- Tighten the screws (1).

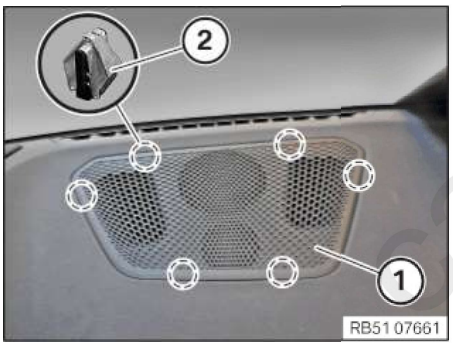
Speaker to support / support to instrument panel / support to body

Screw		Tighten torque	1,8 Nm

75 – Install the speaker trim at the instrument panel

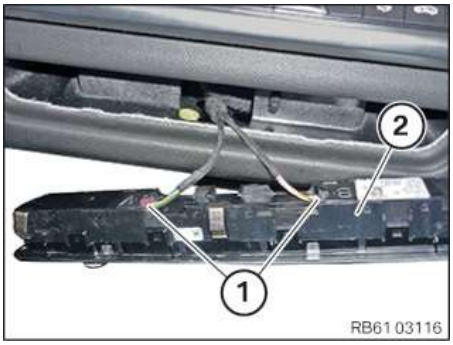


- Check clamps (1) for damage.
- Replace broken or missing clamps (1).



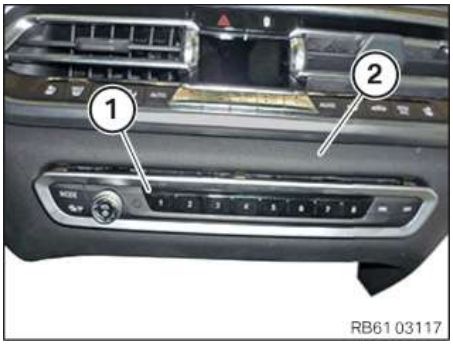
- Position the speaker trim (1) correctly and engage it at the clamps (2).

76 – Install the audio operating unit



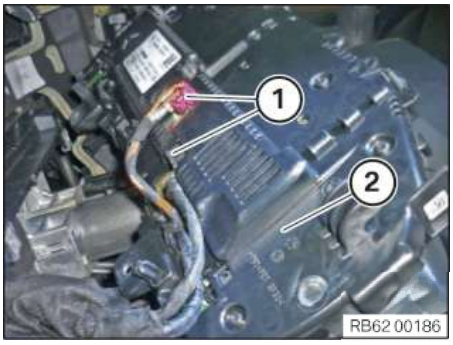
- Connect the connector (1) to the audio operating unit (2).

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- Correctly position the audio operating unit (1) and install in the instrument panel(2).

77 – Installing the instrument cluster (KOMBI)



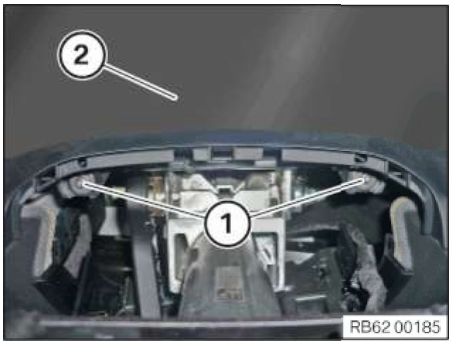
RISK OF DAMAGE

Damage to the instrument cluster (KOMBI)

While releasing and connecting the cable, it could lead to a ground offset. Thereby, currents could arise, that make the instrument cluster (KOMBI) useless.

- While releasing: Release APIX data cable (blue) first.
- While connecting: Connect APIX data cable (blue) at the last.

- **If installed:** Connect the blue connector at the last and lock it.
- Connect and lock connector (1) to the instrument cluster (KOMBI) (2).



- Feed in and position the instrument cluster (KOMBI) (2).
- Tighten the screws (1).

Instrument cluster (KOMBI) to support

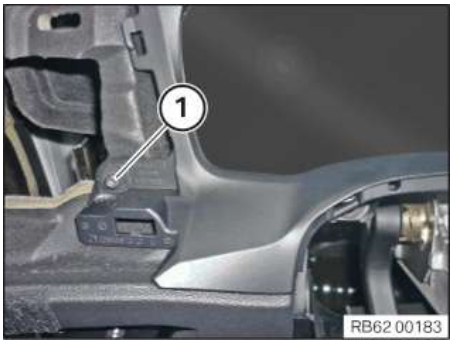
Oval-head screw		Tightening torque	1,8 Nm



- Tighten down screw (1).

Instrument cluster (KOMBI) to support

Oval-head screw		Tightening torque	1,8 Nm

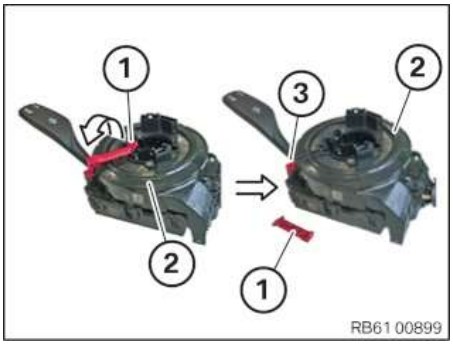


- Tighten down screw (1).

Instrument cluster (KOMBI) to support

Oval-head screw		Tightening torque	1,8 Nm

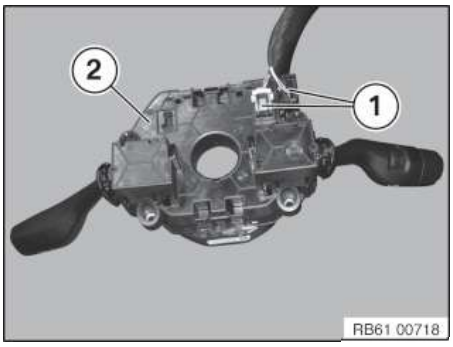
78 – Installing the steering column switch cluster (SZL)



- **Replacement:**

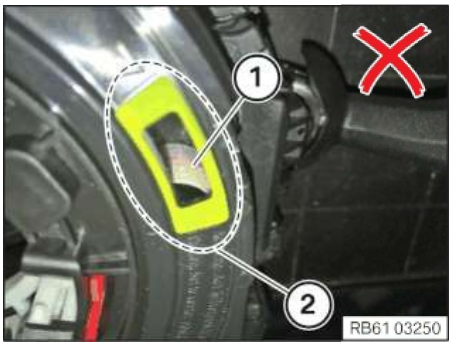
  Break off the transportation retainer (1) on the steering column switch cluster (SZL) (2) in direction of arrow.

  The broken off piece (3) of the transportation retainer (1) remains in the steering column switch cluster (SZL) (2).



- Connect the connector (1) with the steering column switch cluster (SZL) (2).

Check



- **Version A:**

  Check whether the correct marking (1) is seen in inspection glass (2).

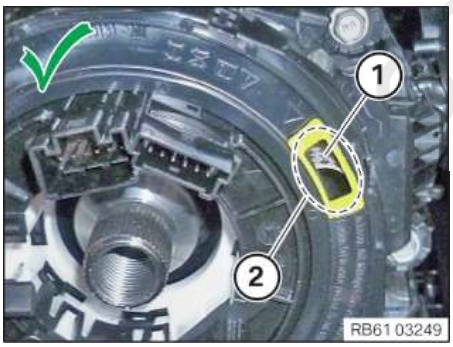
Result

» Ensure that no incorrect marking (1) is seen in inspection glass (2).

Measure

- Turn the coil spring cassette until the right mark (1) becomes visible in the inspection glass (2).

Check



- **Version A:**

  Check whether the correct marking (1) is seen in inspection glass (2).

Result

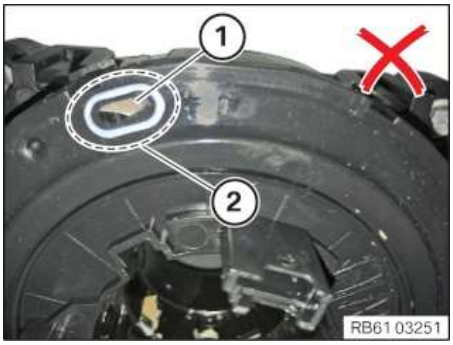
» Correct marking (1) is seen in inspection glass (2).

Measure

- Continue with the next step.

Check

carldiagn.com



- **Version B:**

  Check whether the correct marking (1) is seen in inspection glass (2).

Result

» Ensure that no incorrect marking (1) is seen in inspection glass (2).

Measure

- Turn the coil spring cassette until the right mark (1) becomes visible in the inspection glass (2).

Check



- **Version B:**

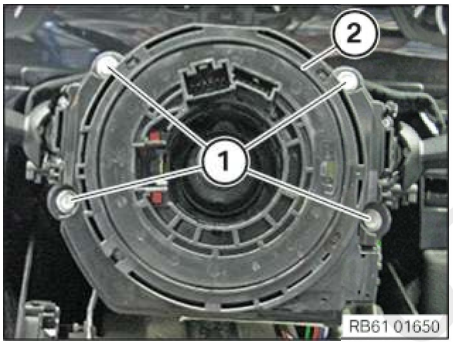
  Check whether the correct marking (1) is seen in inspection glass (2).

Result

» Correct marking (1) is seen in inspection glass (2).

Measure

- Continue with the next step.

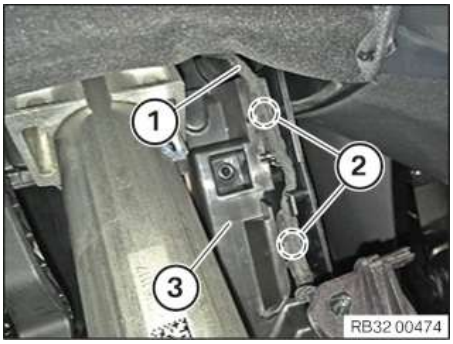


- Position the steering column switch cluster (SZL) (2).
- Tighten the screws (1).

Steering column switch cluster (SZL) on the steering column

Screw TS5x20		Tightening torque	3 Nm

79 – Install steering column shroud lower section

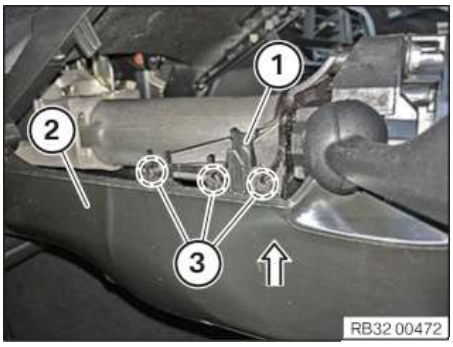


- Position the steering column shroud lower section (3).
- Secure the line (1) on the brackets (2).

carsdiagn.com



- Connect the connector (1).

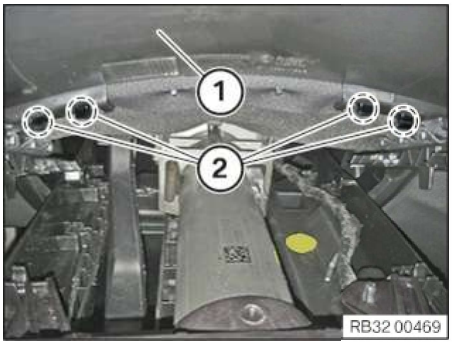


NOTICE

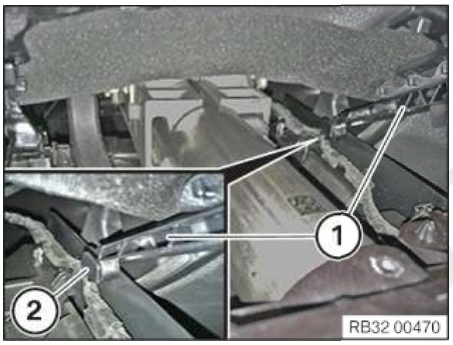
Perform the operations on the left and right side.

- Align the steering column shroud lower section (2) to the steering column using the retaining lug (1).
- Push the steering column shroud lower section (2) up in the direction of the arrow until the brackets (3) engage.

80 – Fit steering column shroud upper section



- Clip in the steering column shroud upper section (1) at the brackets (2).



NOTICE

Perform the operations on the left and right side.

- Clip in the steering column shroud upper section (1)into the guide (2).



NOTICE

Perform the operations on the left and right side.

- Press the upper section of the steering column shroud (1) downwards in direction of arrow.

  The upper section of the steering column shroud must engage audibly and perceptibly.

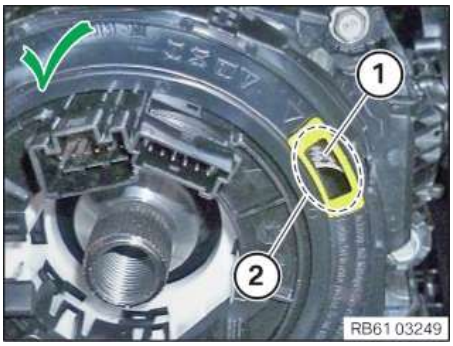
81 – Installing the steering wheel (sports steering wheel)

► **Check the neutral position of the clock spring**

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

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Check

- **Version A:**

  Check the mark (1) on the coil spring in the inspection glass (2).

Result

» The mark (1) on the coil spring is not visible.

Measure

- Turn the coil spring cassette until the mark (1) on the coil spring becomes visible in the inspection glass (2).



Check

- **Version B:**

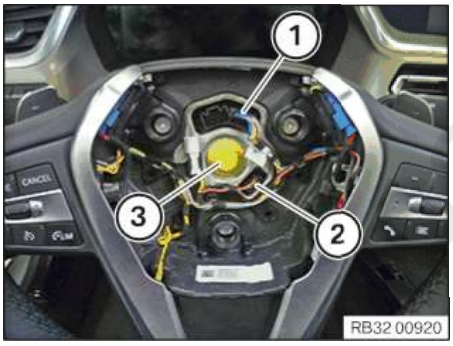
  Check the mark (1) on the coil spring in the inspection glass (2).

Result

» The mark (1) on the coil spring is not visible.

Measure

- Turn the coil spring cassette until the mark (1) on the coil spring becomes visible in the inspection glass (2).



Check

- A micro-encapsulated screw (3) may be fitted.
- Check the screw connection.

Result

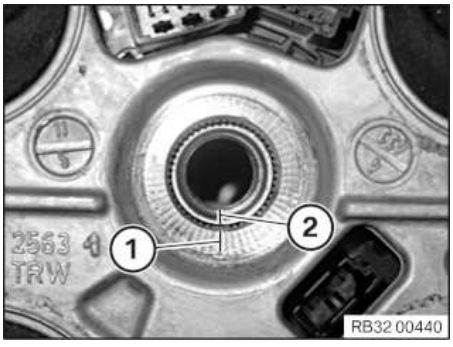
» Screw is (3) micro-encapsulated.

Measure

- Clean thread in the steering column.

  Renew the screw (3).

  Parts: Screw



- Align mark (1) on steering wheel to mark (2) on steering column.
- Connect steering wheel.

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- Connect connectors (1) and lock.
- If installed: Connect connectors (2) and lock.
- Tighten screw (3) .

Steering wheel to steering column

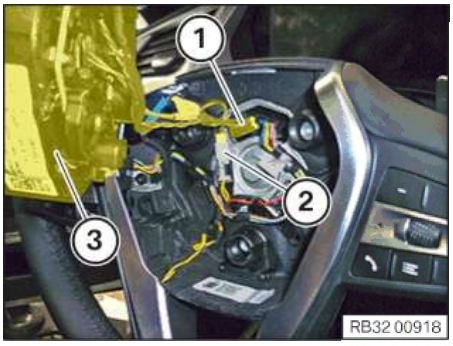
M14	Only for a micro-encapsulated screw: Renew screw.	Tightening torque	62,5 Nm

82 – Installing the airbag unit

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

▸ **Version A: Installing the airbag unit (sports steering wheel)**



- Position airbag unit (3).
- Connect connectors (1) and (2) lock.



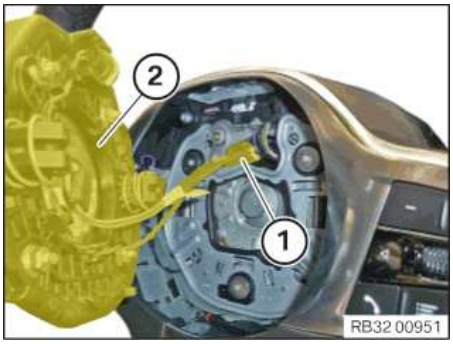
- Press the airbag unit (1) with even pressure in the direction of the arrow into the steering wheel.

  The airbag unit (1) must engage audibly and perceptibly.

▸ **Version B: Installing the airbag unit (M Sport steering wheel)**

TECHNICAL INFORMATION

After replacing the airbag unit (M-sports steering wheel) or after a possible conversion of standard steering wheel and airbag unit to M-sports steering wheel, a software update or a programming/encoding via ISTA must be performed!



- Connect and lock connector (1) of the airbag unit (2).

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- Press the airbag unit (1) with even pressure in the direction of the arrow into the steering wheel.

  The airbag unit (1) must engage audibly and perceptibly.

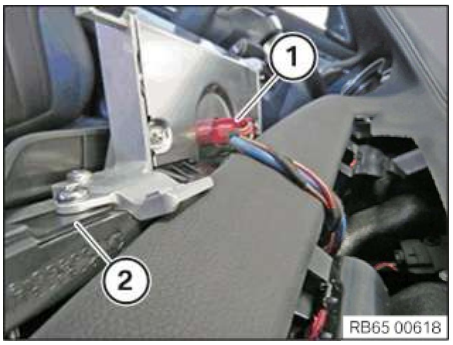
83 – Install the central information display (CID)

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.



- Position Central Information Display (CID) (2).
- Connect plug connection (1) and lock.

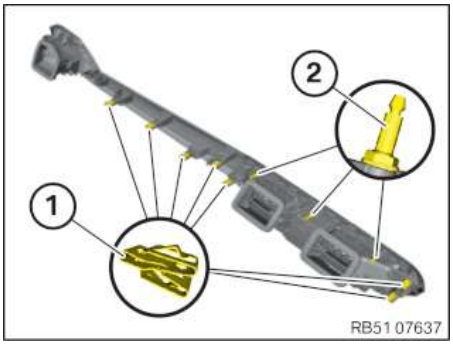


- Insert the central information display (CID) (2) in the instrument panel and position correctly.
- Tighten the screws (1).

Central information display to instrument panel

Screw		Tightening torque	1,8 Nm

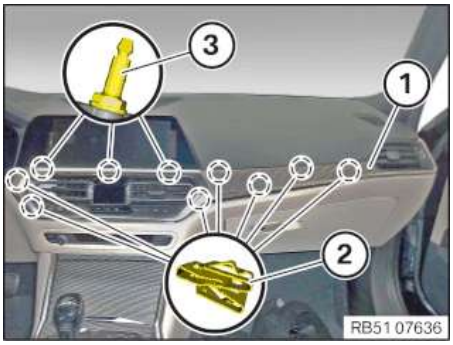
84 – Install the finisher on the right instrument panel



- Check the clamps (1).

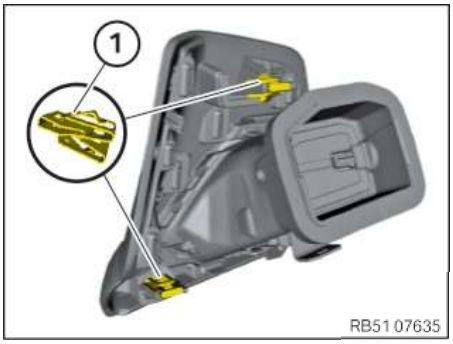
  Replace broken or missing clamps (1).
- Check the pins (2) and the corresponding clamps on the instrument panel trim and renew if necessary.

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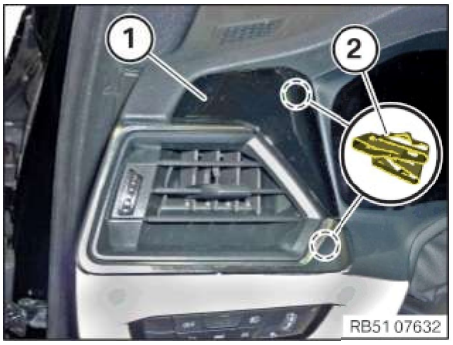


- Install the decorative strip (1).
  Connect and lock the associated connectors.
- Correctly position the decorative strip (1) and at the clamps (2) and clip in the pins (3).

85 – Install the finisher on the instrument panel on the left

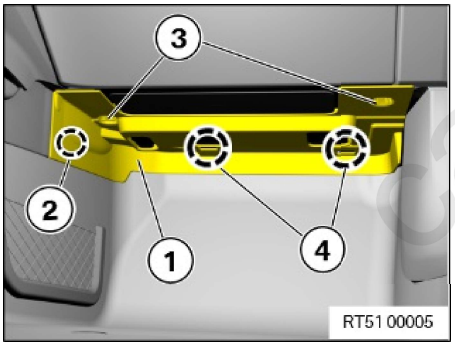


- Check the clamps (1).
  Replace broken or missing clamps (1).



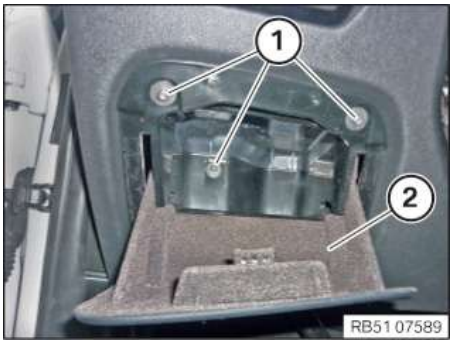
- Install the decorative strip (1).
  Connect and lock the associated connectors.
- Clip decorative strip (1) into clamps (2).

86 – Install the right footwell trim panel



- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

87 – Installing the left fold-down compartment



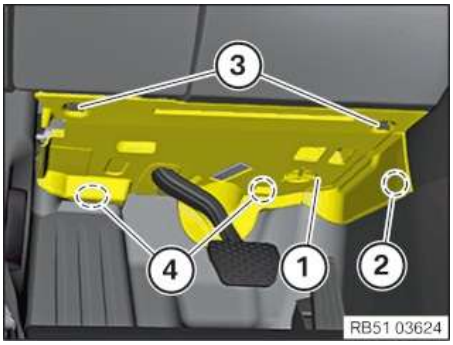
- Install the fold-down compartment (2).
- Tighten the screws (1).

Fold-down compartment to instrument panel

Oval-head screw		Tightening torque	1,8 Nm

88 – Installing the trim panel for the pedal mechanism

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- Connect associated connector.
- Attach the trim panel for the pedal mechanism (1) in the guides (4) and fold it up.
- Clip the trim panel for the pedal mechanism (1) into the centre console in this area (2).
- Insert locks (3) correctly and turn 90°.

89 – Install both A-pillar trim panels

NOTICE

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

▸ **Installing the A-pillar trim panel**

WARNING

Airbag unit.

Danger! Life-threatening injuries!

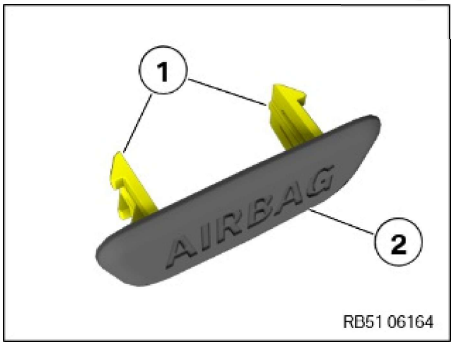
- Before performing any work on the airbag, always disconnect the battery earth lead from the battery.
- Airbag unit may only be set down with the cushion (airbag itself) facing upwards.
- For additional information see: 72 00 ... Safety regulations on handling airbag system components/gas generators

WARNING

Pyrotechnic components.

Danger! Life-threatening injuries!

- All work on pyrotechnic parts may be carried out by technically experienced and appropriately trained personnel only.
- Replace any damaged part or ones that have been dropped.
- For additional information see: 72 00 Safety regulations on handling components with gas generators.



Check

- Check retaining lugs (1) of cover (2) for damage.

Result

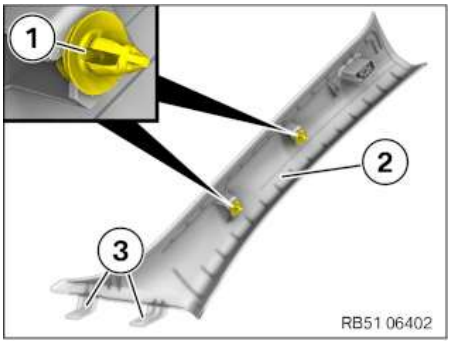
» Retaining lug is damaged.

Measure

- Renew the cover.

Check

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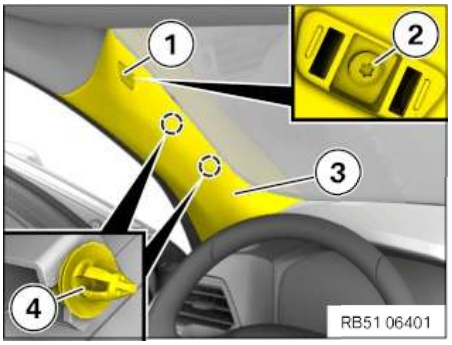
- Check the clips (1) for damage and renew if necessary.
- Check the guides (3) for damage.

Result

» Guide is damaged.

Measure

- Renew the A-pillar trim panel.



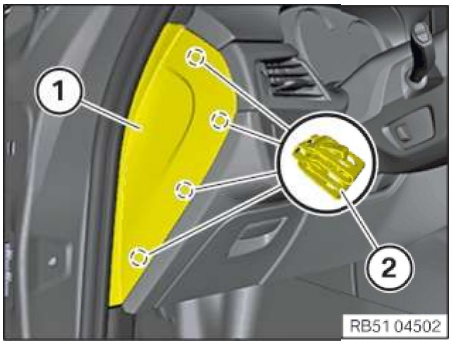
- Guide in A-pillar trim panel (3) downwards and clip it in with clips (4).
- Tighten down screw (2).

A-pillar trim panel to body

Sheet metal screw 4,8x38		Tightening torque	2,6 Nm

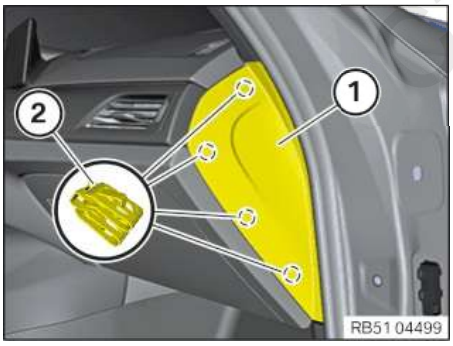
- Clip in the cover (1).

90 – Install the side panel on left instrument panel



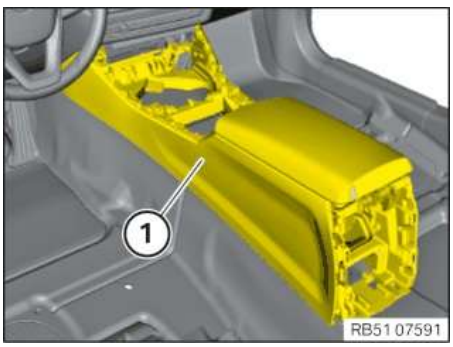
- Feed in the side panel (1) and clip it in at the clamps (2).

91 – Install the side panel on instrument panel on the right



- If required, connect the associated connector.
- Feed in the side panel (1) and clip it in at the clamps (2).

92 – Installing the centre console

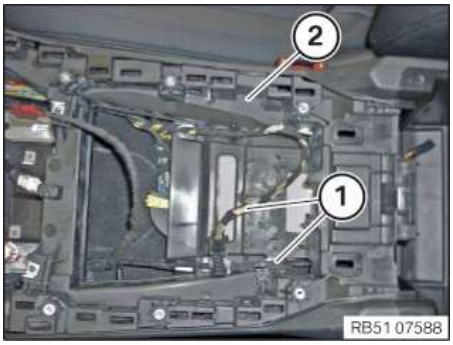


NOTICE

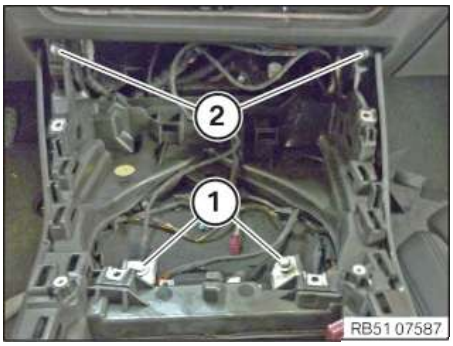
To provide a better overview: Schematic diagram with partially hidden components.

- Install centre console (1) and thereby feed in the wiring harness.
- Feed in the centre console (1) to the instrument panel and position correctly.

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- Secure the wiring harness to the centre console (1) and connect and lock the existing plug connections.



- Tighten the screws (1).

Centre console on tunnel

M6x18 Hexagon screw		Tightening torque	4,6 Nm

- Tighten the screws (2).

Centre console to instrument panel

Oval-head screw		Tightening torque	1,8 Nm

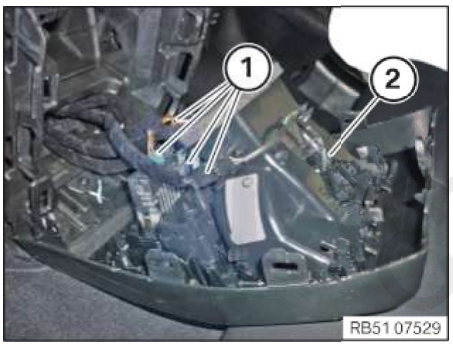


- Tighten the screws (1).

Centre console on tunnel

M6x18 Hexagon screw		Tightening torque	4,6 Nm

93 – Installing the rear centre console trim



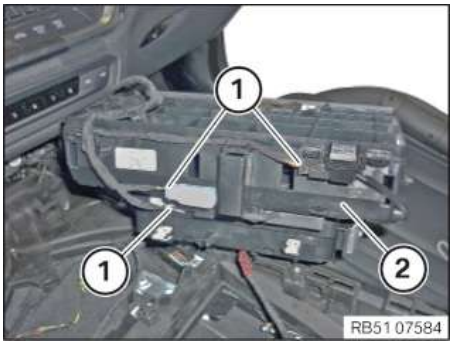
- Install the centre console trim (2).
- Connect connectors (1) and lock.



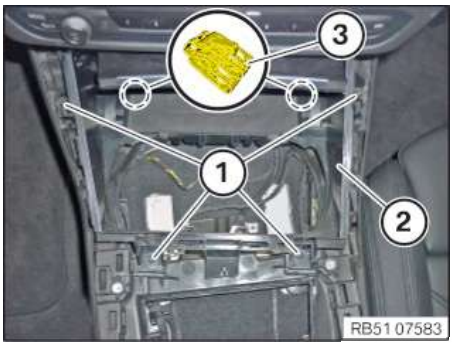
- Position centre console trim (1) and engage at the latch mechanisms at the side.

94 – Installing the storage compartment of the front centre console

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- Mount the storage compartment (2) and connect connectors (1).

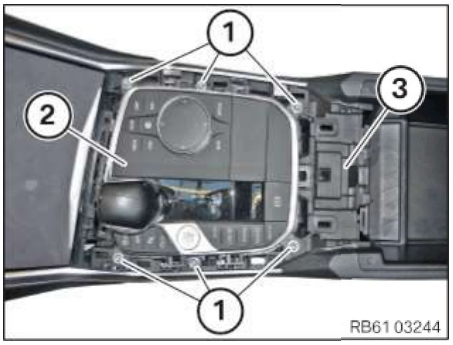


- Engage rear storage compartment trim (2) into clamps (3).
- Tighten the screws (1).

Storage compartment to centre console

Oval-head screw		Tightening torque	1,8 Nm

95 – Install the operating facility in the centre console



- Position operating facility (2) in the centre console (3).
- Tighten the screws (1).

Gear selector switch to centre console trim

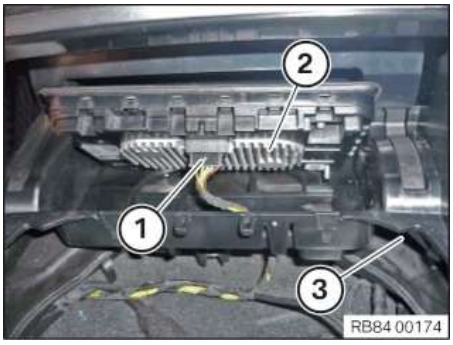
Screw		Tightening torque	1,8 Nm

▶ **Disconnecting all battery earth leads**



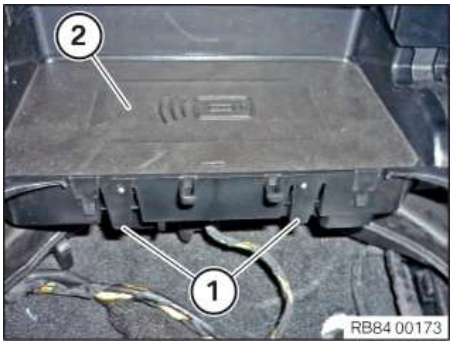
- See additional information.

96 – Installing the wireless charging station



- Connect connector (1).
- Position the wireless charging station (2) in the centre console (3).

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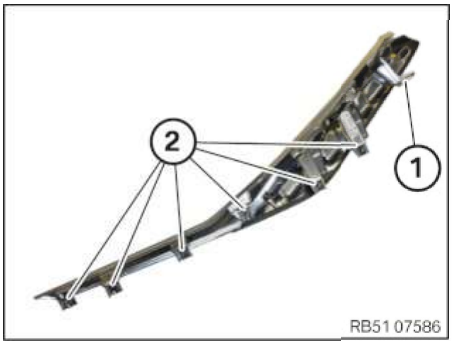
- Press the wireless charging station (2) down till the locking units (1) are engaged correctly.

97 – Install decorative trim on centre console on left and right

▸ **Installing the decorative trim to centre console**

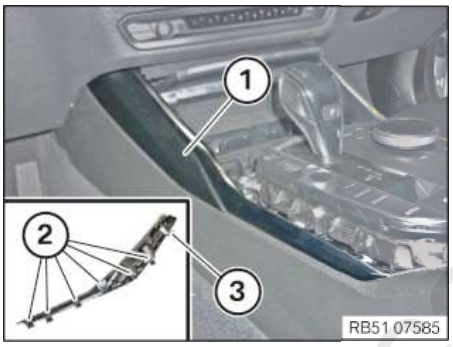
NOTICE

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



- Check guide (1) and the latch mechanisms (2).

  Renew defective decorative trim.



- Feed in the decorative trim (1) forward in the guide (3).
- Engage decorative trim (1) in latch mechanisms (2).

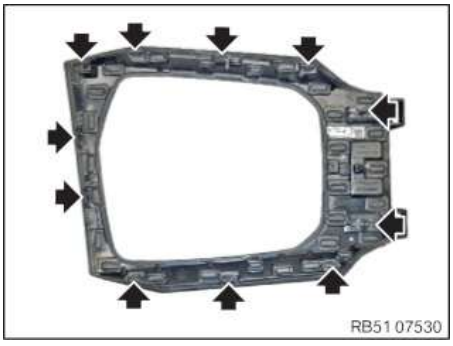
98 – Installing the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



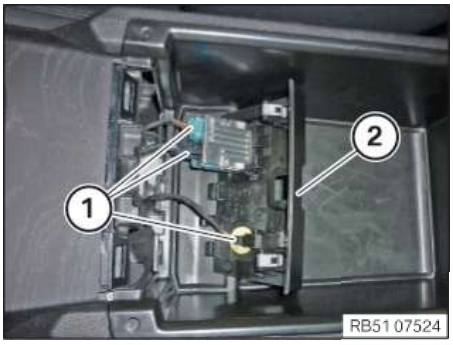
- Check all the latch mechanisms or clamps (arrows).
- In case the latch mechanisms or the clamps (arrows) are faulty, renew the centre console trim .

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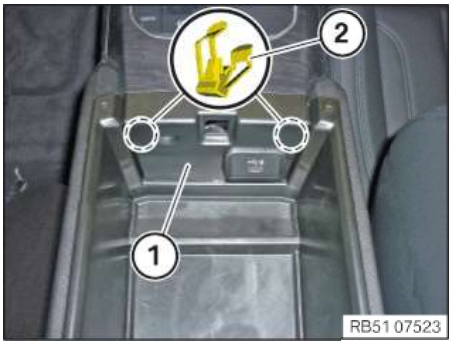


- Correctly position the centre console trim (1) and engage at the latch mechanisms.

99 – Installing the trim in the storage compartment of the centre armrest



- Mount the trim (2) and connect connector (1) and lock.



- Correctly position trim (1) and snap into the clamps (2).

100 – Install the cup holder



- Fix the cup holder (1) and the belonging connectors.
- Correctly position cup holder (1).
- Tighten the screws (2).

Cup holder to centre console

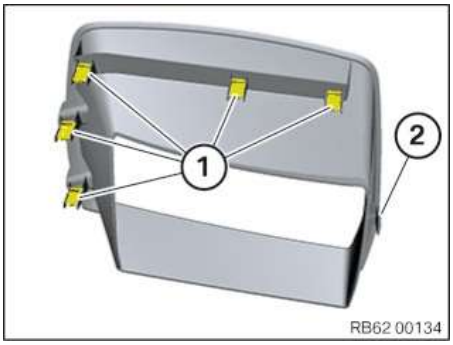
Oval-head screw		Tightening torque	1,8 Nm



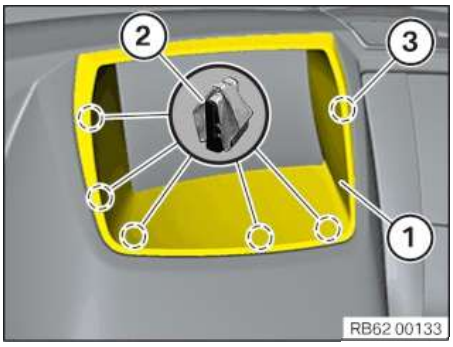
- Insert the insert (1).

101 – Installing the trim for the Head-Up Display

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- Check clamps (1) and the latch mechanism (2) for damage, renew if necessary.



- Correctly position the trim (1) for the BMW Head-Up Display and engage it on the clamps (2) and the retaining lug (3).

102 – Disconnecting all battery earth leads



- See additional information.

103 – Evacuate and fill air conditioning

- See additional information.

104 – Fill and bleed the coolant circuit

- ▸ **Filling and bleed the high-temperature coolant circuit**



- See additional information.

Additional Information

Overview of Tightening Torques

Heater/air conditioner Used in step 53

Screw		Tightening torque	1,2 Nm

Expansion valve to heater - A/C Used in step 55

M5		Tightening torque	5,5 Nm

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Refrigerant lines to expansion valve			Used in step 56
M6		Tightening torque	13 Nm

Refrigerant line to connecting piece			Used in step 58
M8		Tightening torque	19 Nm

Control unit holder on spring strut dome			Used in step 59
Hexagon screw		Tightening torque	8 Nm

Bulkhead upper part to bottom bulkhead			Used in step 61
		Tightening torque	3 Nm

Tension strut on bulkhead			Used in step 61
M10x25 screw		Tightening torque	56 Nm

Tension strut to spring strut dome			Used in step 61
Screw	Renew screws.	Jointing torque	56 Nm
		Angle of rotation	90 °

Windscreen wiper arm			Used in step 63
Combination hexagon nut		Tightening torque	35 Nm

Heating and air-conditioning unit on support			Used in step 67
Nut M6		Tightening torque	4 Nm

Support for instrument panel			Used in step 67
M8 hexagon nut		Tightening torque	21 Nm
Hexagon screw		Tightening torque	21 Nm

Head unit to holder / holder to support			Used in step 67
Screw		Tightening torque	1,8 Nm

Head-Up Display to support			Used in step 68
M6x25 screw		Tightening torque	13 Nm

Knee airbag on support structure			Used in step 70
Nut		TIghtening torque	8 Nm

Dashboard to support			Used in step 73
Screw		Tightening torque	2,4 Nm

Speaker to support / support to instrument panel / support to body			Used in step 74
Screw		Tightening torque	1,8 Nm

Instrument cluster (KOMBI) to support			Used in step 77
Oval-head screw		Tightening torque	1,8 Nm

Steering column switch cluster (SZL) on the steering column			Used in step 78
Screw TS5x20		Tightening torque	3 Nm

Steering wheel to steering column			Used in step 81
M14	Only for a micro-encapsulated screw: Renew screw.	Tightening torque	62,5 Nm

Central information display to instrument panel			Used in step 83
Screw		Tightening torque	1,8 Nm

Fold-down compartment to instrument panel			Used in step 87
Oval-head screw		Tightening torque	1,8 Nm

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A-pillar trim panel to body			Used in step 89
Sheet metal screw 4,8x38		Tightening torque	2,6 Nm

Centre console on tunnel			Used in step 92
M6x18 Hexagon screw		Tightening torque	4,6 Nm

Centre console to instrument panel			Used in step 92
Oval-head screw		Tightening torque	1,8 Nm

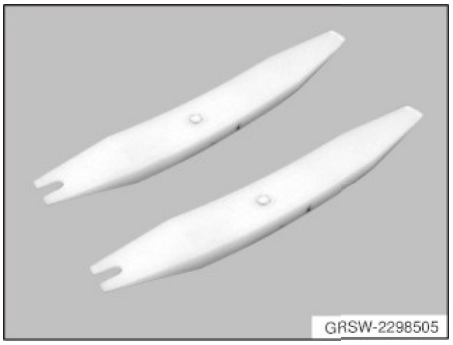
Storage compartment to centre console			Used in step 94
Oval-head screw		Tightening torque	1,8 Nm

Gear selector switch to centre console trim			Used in step 95
Screw		Tightening torque	1,8 Nm

Cup holder to centre console			Used in step 100
Oval-head screw		Tightening torque	1,8 Nm

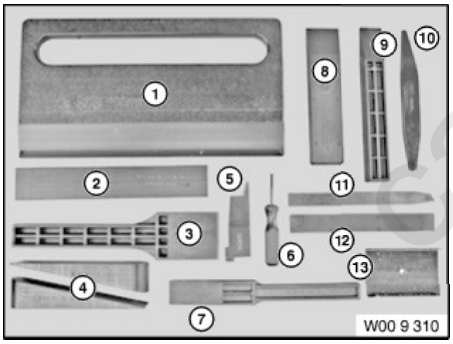
Overview of Special Tools

2 298 505 Wedge



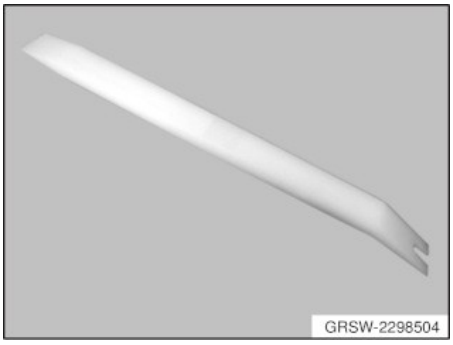
Common	Used in step 67
Usage	Set (delivery of 2 pieces)
Included in the tool or work	
Storage location	C34
Replaced by	
In connection with	
SI-Number	01 03 12 (792)

0 493 752 (00 9 329) Case



Common	Used in step 16
Usage	(Case) with insert not incl. panel wedges
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

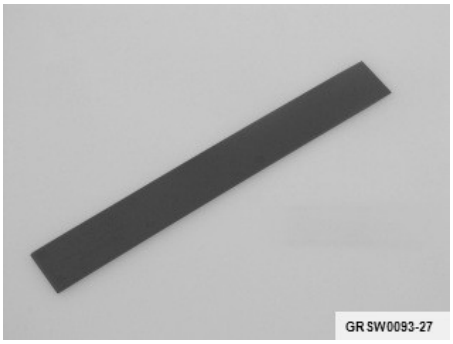
2 298 504 Wedge



Common	Used in step 25
Usage	Wedge with angled lug
Included in the tool or work	
Storage location	C34
Replaced by	
In connection with	
SI-Number	01 03 12 (792)

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0 496 571 (00 9 327) Wedge



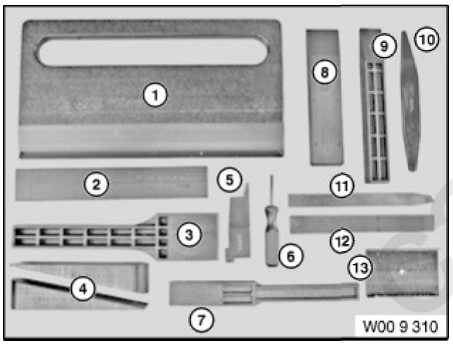
Common	Used in step 29
Usage	(Cleaning wedge) From 11/2008 this special tool replaces panel wedge 00 9 323 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

0 496 569 (00 9 325) Wedge



Common	Used in step 30
Usage	(Panel wedge) From 11/2008 this special tool replaces panel wedge 00 9 317 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	41 01 09 (507)

0 490 534 (00 9 317) Wedge



Common	Used in step 33
Usage	(Trim wedge) Replaced by special tool 00 9 325 from 11/2008 (quality improvement due to new material) Replaced by 00 9 325 (0 496 569)
Included in the tool or work	0 490 527
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

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

Links

General repair instructions	Used in step
72 00 ... Safety regulations for handling components with gas generators	16233570
72 00 ... Safety regulations for handling components with gas generators	16

Repair instructions	Used in step
64 50 010 Extract, evacuate and fill air conditioning system	1103
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	1103

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64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	1103
64 50 ... Notes on repairs to air conditioning	1103
64 50 010 Drawing off, evacuating and filling air conditioning (R1234yf)	1103
64 50 ... Safety information for handling refrigerant R1234yf	1103
64 50 ... Safety information for handling tetrafluorethane refrigerant R134a	1103
64 50 ... Safety informations for handling refrigerant oil	1103
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	21095102
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	21095102
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
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61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 20 900 Disconnecting and connecting battery earth lead	21095102
61 35 ... Notes on ESD protection (Electro Static Discharge)	2283
17 00 008 Draining and topping up coolant for high-temperature circuit	104
17 00 008 Draining and topping up coolant for high-temperature circuit	104
17 00 008 Draining and topping up coolant for high-temperature circuit	104
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	104
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	104
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	104
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	104
17 00 039 Bleed the cooling system and check it for watertightness with the special tool	104
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64 52 ... Instructions for opening and part exchange in refrigerant circuit



Special tools required:

- 00 9 030
- 32 1 270

Warning!

- Avoid contact with refrigerant and refrigerant oil
- Follow safety informations for handling refrigerant
- Follow safety information for handling refrigerant oil

Attention!

- Always use new O-rings each time A/C connections are opened (refer to Electronic Parts Catalogue) They must **not** be coated.
  Use special tool 00 9 030 to install sealing rings without damaging them.
- Open the referigerant circuit for as short of a period as possible.
- Close all components and lines in the refrigerant circuit and return parts **immediately** following the removals at openings with special tool 32 1 270 to prevent penetration of moisture or foreign objects.
- If the refrigerant circuit was closed at the openings with special tool 32 1 270 but it remains open for more than 24 h, the dryer insert for the air conditioning must be replaced.

I. **Part replacement as preliminary work fur further repair work and part replacement based on gradual leakage.**
(minor leak, e.g. hairline crack)

Procedure:

- Draw off heating and air conditioning system, then determine drawn-off amount of refrigerant oil
- Carry out part replacement
- Replace removed refrigerant oil and additionally top up with new refrigerant oil according to components replaced:
  - Compressor: refer to Notes on compressor replacement
  - Evaporator: 10 ml
  - Capacitor: 20 ml
  - Desiccant insert / dryer flask: 20 ml
  - Each replaced refrigerant line: 10 ml
  - Condenser with integrated dryer flask: 40 ml
  - Safety pressure switch and gasket: no additional refrigerant oil
  - Only I01: Radiator, high-voltage battery unit: 20 ml
- Evacuate and fill air conditioning system

II. **Part replacement due to sudden leakage**
(major leak, e.g. line disconnection due to accident)

Procedure:

- Draw off heating and air conditioning system, then determine drawn-off amount of refrigerant oil
- Carry out part replacement
- Replace removed refrigerant oil and additionally top up with new refrigerant oil according to components replaced:
  - Compressor: refer to Notes on compressor replacement
  - Evaporator: 35 ml
  - Capacitor: 35 ml
  - Desiccant insert / dryer flask: 55 ml
  - Each replaced refrigerant line: 35 ml

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    - Condenser with integrated dryer flask: 55 ml
    - Safety pressure switch and gasket: no additional refrigerant oil
    - Only I01: Radiator, high-voltage battery unit: 35 ml
- Evacuate and fill A/C system

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64 52 ... Notes for changing the air conditioning compressor, determining the amount of refrigerant oil (amount of refrigerant oil of new air conditioning compressor known)

Note:
This procedure only applies if the **new air conditioning compressor has a label with the amount of refrigerant oil**.

A different procedure applies for air conditioning compressors **without a label indicating the amount of refrigerant oil**.

Attention!
Risk of damage!

Remove the air conditioning compressor without damaging and without the use of force!

Air conditioning compressors with plastic belt pulleys:

- Avoid impacts/knocks to plastic belt pulley (caused by tools, contact with base).
- Return faulty air conditioning compressors in their original packaging only and with sealed connected branches.

Attention!
In the event of a mechanical air conditioning compressor failure and the resulting ingress of chips into the refrigerant circuit, replace the following parts:

- Air conditioning compressor
- Air conditioning condenser
- Desiccant insert
- Line to the air conditioning condenser
- Refrigerant oil
- BMW i, PHEV: all expansion valves

BMW i, PHEV:

- Rinse the refrigerant circuit

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All vehicles without I01 with heat pump:

The new air conditioning compressor is filled at the factory with refrigerant oil.

The amount of refrigerant oil in the new air conditioning compressor corresponds to the amount of refrigerant oil for the entire new and unfilled refrigerant circuit.

Only I01 with heat pump:

The new air conditioning compressor and new dryer flask are filled at the factory with refrigerant oil.

The amount of refrigerant oil in the new air conditioning compressor and in the new dryer flask corresponds to the amount of refrigerant oil for the entire new and unfilled refrigerant circuit.

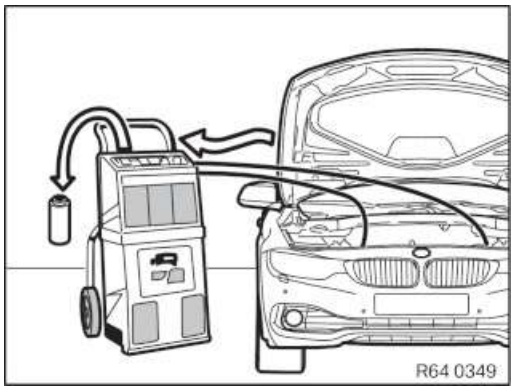
When replacing the air conditioning compressor it is absolutely essential to adapt the amount of refrigerant oil in accordance with the instructions below!

BMW I01with heat pump: An adaptation is also required for the replacement of the dryer flask.

An adaptation of the amount of refrigerant oil is not required in the following cases:

- Replacement of the complete refrigerant circuit.
- If the refrigerant circuit was rinsed (only BMW i, PHEV).

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Step 1:

Determination of the amount of refrigerant oil drawn off from the refrigerant circuit:

- Draw off A/C system.
- Note down the amount of refrigerant oil shown on the A/C service station display.

When evacuating the air conditioning system, refrigerant oil is also extracted and collected in the oil separator of the A/C service station. This amount of refrigerant oil is displayed after the extraction of the air conditioning on the display of the A/C service station.

The refrigerant oil amount specification is located on the label on the air conditioning compressor.

The position of the label can vary depending on the air conditioning compressor.

Information about the amount of refrigerant oil is provided on the label in g, ml or cc.

Ml are specified throughout these repair instructions for adjusting the amount of refrigerant oil, as g or cc closely correspond to ml.

Step 2:

Compare information of amount of refrigerant oil of the present and new air conditioning compressor:

- Read and record amount of refrigerant oil specified on the previous air conditioning compressor.

  (If there is no label, continue with **Step 3, Case 1** .)
- Read and record amount of refrigerant oil specified on the new air conditioning compressor.
- Compare both amounts of refrigerant oil with each other.

Different cases:

1. The information of the amount of refrigerant oil on the present and new air conditioning compressor **is the same**. In this case continue with **Step 3, Case 1**.
2. The information of the amount of refrigerant oil on the present and new air conditioning compressor **is not the same**:

   Different cases:

   1. Information of the amount of refrigerant oil on the present air conditioning compressor **is higher** than the information of the amount of refrigerant oil on the new air conditioning compressor:

      Difference is not taken into account. In this case continue with **Step 3, Case 1**.
   2. Information of the amount of refrigerant oil on the present air conditioning compressor **is lower** than the information of the amount of refrigerant oil on the new air conditioning compressor:

      Generate and record the difference between both amounts of refrigerant oil. After that continue with **Step 3, Case 2**.

Example:

Information of the amount of refrigerant oil of present air conditioning compressor 110 g

Information of the amount of refrigerant oil of new air conditioning compressor 150 g

150 g - 110 g = 40 g correspond to almost 40 ml

Note the difference of 40 ml.

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Step 3:

Determination of the amount of refrigerant oil in the new air conditioning compressor:

- Transfer all of the refrigerant oil remaining in the previous air conditioning compressor into a measuring cup via the oil filler plug.
- Turn the belt pulley during the filling process. This allows more refrigerant oil to flow out of the previous air conditioning compressor.
- Read the amount of refrigerant oil at the measuring cup.

Different cases:

Case 1:

- **Add 10 ml precautionary allowance** to the read amount of refrigerant oil**.**
- Note **at least but a total of 50 ml**.

Example:

20 ml read at measuring cup:

20 ml + 10 ml precautionary allowance = 30 ml < 50 ml

determined amount of refrigerant oil for new air conditioning compressor = 50 ml

Case 2:

- Add the **10 ml precautionary allowance** to the read amount of refrigerant oil.
- Add **the difference to that**.
- Note **at least but a total of 50 ml**.

Example:

Difference = 40 ml

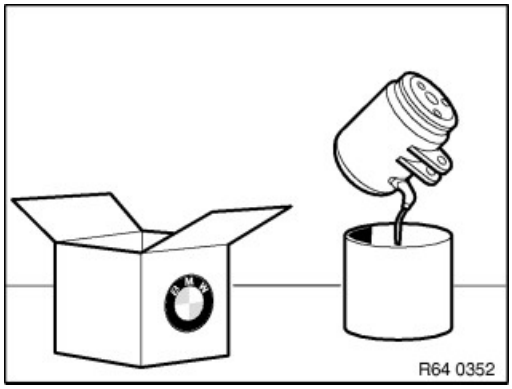
20 ml read at measuring cup:

20 ml + 10 ml precautionary allowance = 30 ml

30 ml + 40 ml difference = 70 ml > 50 ml

determined amount of refrigerant oil for new air conditioning compressor = 70 ml

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Step 4:

Determination of the amount of refrigerant oil to be drained from the new air conditioning compressor:

- Open oil filler plug. Tightening torque 64 52 2AZ.
- Drain the following amount of refrigerant oil from the new air conditioning compressor into a clean measuring cup:

Amount of refrigerant oil to be drained from the new air conditioning compressor = amount of refrigerant oil on the label of the new air conditioning compressor - determined amount of refrigerant oil in the new air conditioning compressor

Example:

Amount of refrigerant oil stated on the label of the new air conditioning compressor: 150 ml

determined amount of refrigerant oil of the new air conditioning compressor: 50 ml

Amount of refrigerant oil to be drained = 150 ml - 50 ml = 100 ml

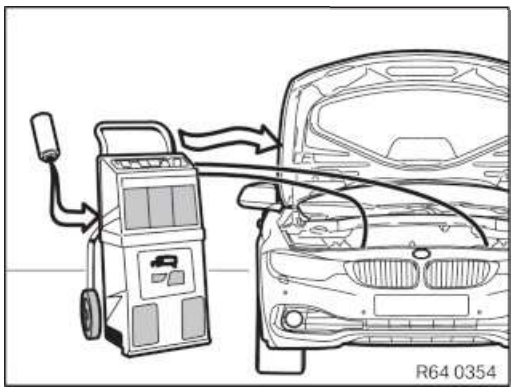
100 ml must be drained from the new air conditioning compressor.

The drained new refrigerant oil can be filled into the expansion tank of the A/C service station after draining.

If the new, drained refrigerant oil is not filled straight away into the expansion tank of the A/C service station, it must be disposed of properly.

On account of its hygroscopic properties, refrigerant oil must not be stored in open collecting vessels.

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Step 5

Fill the refrigerant circuit with the correct amount of refrigerant and refrigerant oil:

- Reassemble the vehicle.
- Evacuate Air conditioning.
- Before filling the air conditioning with refrigerant, again fill in the quantity of refrigerant oil noted in Step 1 as previously drawn off into the system.
- Fill A/C system.

Step 6

Attention!

Risk of damage!

During initial operation of a new air conditioning compressor, it is absolutely essential to carry out the following breaking-in procedure.

Do not exceed idle speed.

Note:
The breaking-in procedure for the new air conditioning compressor can be carried either manually or with the diagnosis system.

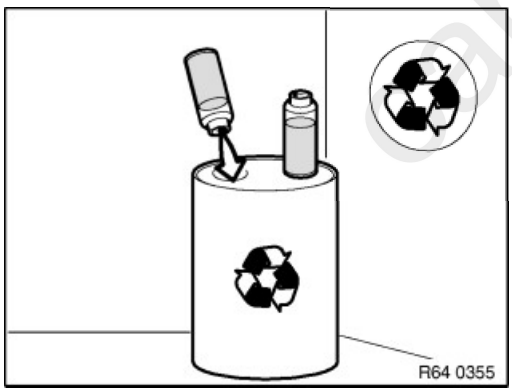
Manual:

- Switch off the air conditioning.
- Set all ventilation outlets in the instrument panel to "OPEN".
- Start engine and let it stabilise at idle speed.
- Set the blower output to a minimum of 75% of the maximum blower output.
- Switch on the air conditioning and allow the engine to run at idle speed for a minimum of 2 minutes.

Carry out the following service function with the diagnosis system:

- Body
- Heating and air conditioning functions
- Run-in protection for A/C compressor

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Step 7

Dispose off the drawn off refrigerant oil:

- The refrigerant oil drawn off from the oil separator of the A/C service station and from the previous air conditioning compressor **must not be reused and must be correctly disposed of.**

Observe country-specific waste disposal regulations.

Installation note:
If the refrigerant circuit is open for longer than 24 hours:

- Replace desiccant insert

64 52 523 Replace the air conditioning compressor

CAUTION

Refrigerant circuit under high pressure.

Danger of injury!

- Note and follow safety information on containers.
- Avoid contact with refrigerant; wear safety goggles and protective gloves.
- For more information see: 64 50 Handling refrigerant and 6450 Notes on repair work on air conditioning

RISK OF DAMAGE

External damage to air conditioning compressor.

Excessive force applied during removal will result in damage to the air conditioning compressor.

- Remove the air conditioning compressor without damaging it and without applying external force.
- Avoid impacts/knocks to plastic belt pulley (caused by tools, contact with base).
- Return faulty air conditioning compressors in their original packaging only.

TECHNICAL INFORMATION

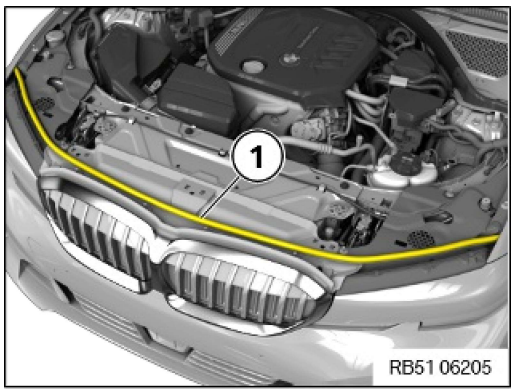
If mechanical failure of the air conditioning compressor occurs resulting in chips entering the refrigerant circuit, replace the following parts: air conditioning compressor, air conditioning condenser with desiccant insert, line to air conditioning condenser and refrigerant oil.

PRELIMINARY WORK

1 – Drawing off the air conditioning

- See additional information.

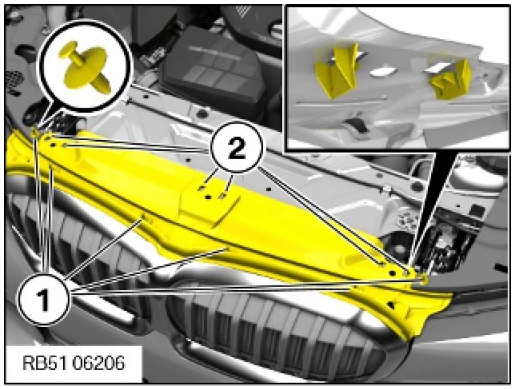
2 – Remove the seal for the bonnet in front



- Pull off front bonnet seal (1) upwards.

3 – Removing the centre engine compartment cover

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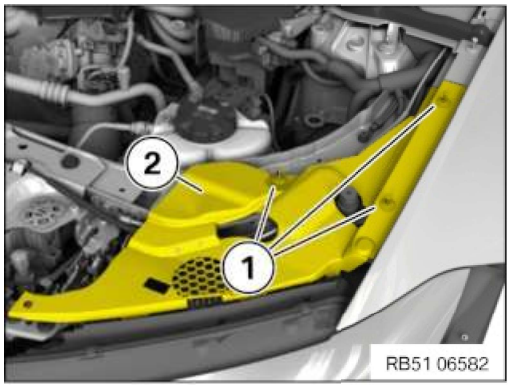
- Detach all expanding rivets (1).
- Release the cover of the centre engine compartment with the latch mechanisms (2) .
- Feed the cover for the centre engine compartment out to the rear.

4 – Partially remove the top left and right cover in the engine compartment

NOTICE

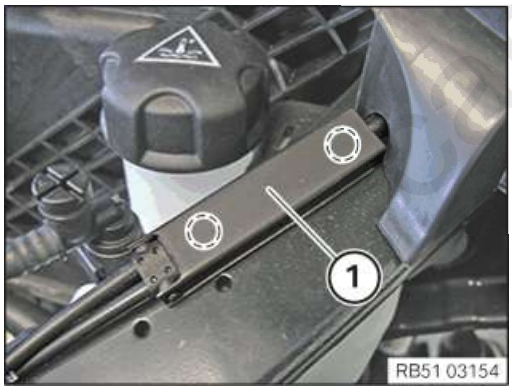
Description is for left component only. Procedure on the right side is identical.

▸ **Removing the cover in the engine compartment on top partially**

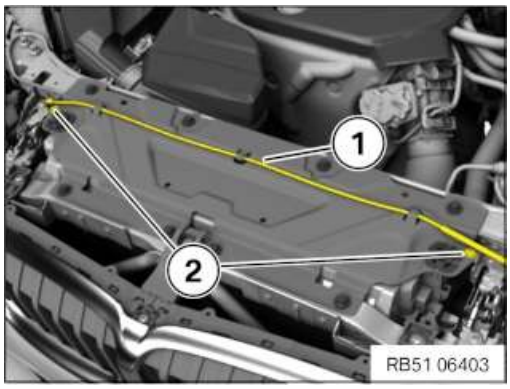


- Loosen the expanding rivet (1).
- Remove the cover in the engine compartment on top (2) partially.

5 – Removing the top cross connection

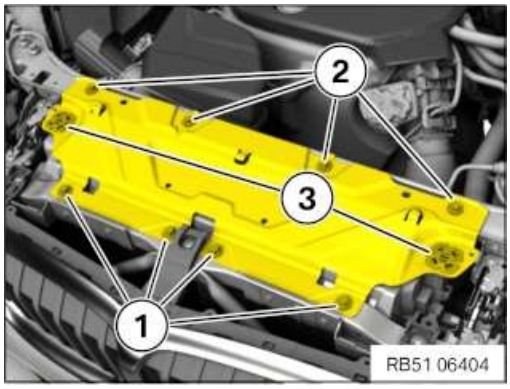


- Release the housing for the coupling of the Bowden cables (1) from the body.



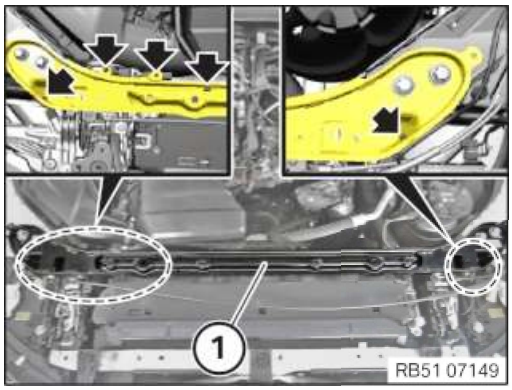
- Detach Bowden cable (1) at the top cross connection.
- Loosen screws (2).

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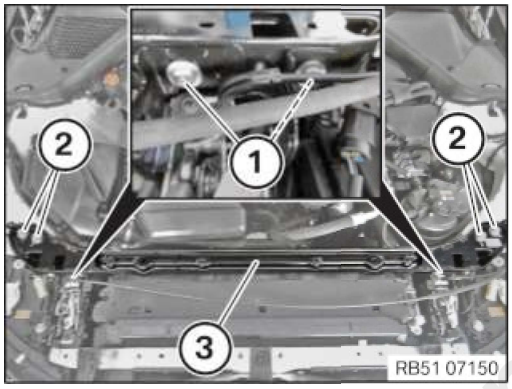


- Loosen screws (1) and (2).
- Remove the top cross connection with the holders(3) towards the top.

6 – Remove the rear top cross connection



- Release the clips (arrows) in the marked areas from the top rear cross connection (1).

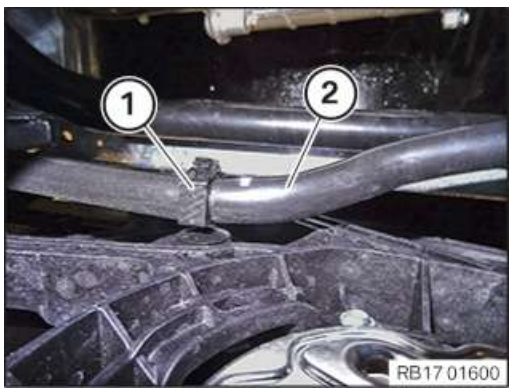


- Loosen screws (1).
- Loosen screws (2).
- Guide out and remove top rear cross connection (3).

7 – Remove fan cowl.

TECHNICAL INFORMATION

- When the engine is stopped after the end of the journey, it may be necessary to run the electric fan. In rare cases, operation of the electric fan can last up to 11 min. This protects the components. In this case, replacing the electric fan will not remedy the problem!

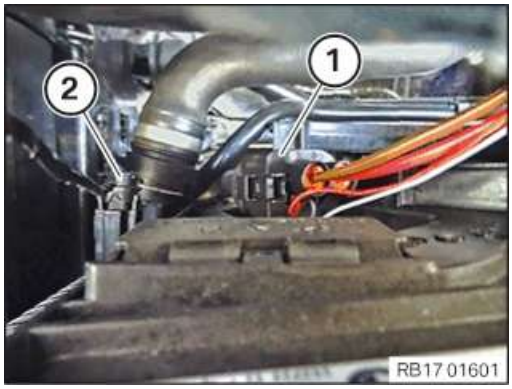


- **If installed:** Release transmission oil line (2).

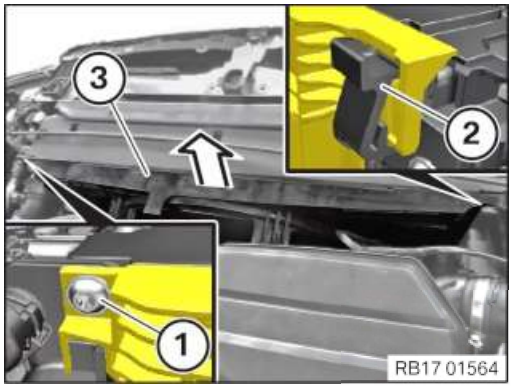
  Unlock the holder (1).

  Thread out transmission oil line (2) and set aside.

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



- Loosen screw (1).
- Unlock lock (2).
- Guide out and remove fan cowl (3) **carefully** in the direction of the arrow.

8 – Removing the drive belt for alternator

CAUTION

Spring preload.

Danger of injury!

- The use of the specified special tool (tool) is mandatory.
- The described operation must be carried out properly.

CAUTION

Component with preload.

Danger of injury!

- Reduce preload as far as possible before disassembly. Relieve component.

TECHNICAL INFORMATION

If the drive belt is reused: Mark direction of travel and reinstall drive belt in same direction of travel.

TECHNICAL INFORMATION

The drive belt must be replaced if contaminated with coolant- and oil residues.

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- Increase the preload on the belt tensioner in **the direction of the arrow** using standard tools (1).
- Secure the belt tensioner with the special tool 0 496 268 (11 0 390).
- Guide out the drive belt for the alternator (2) and remove it.

MAIN WORK

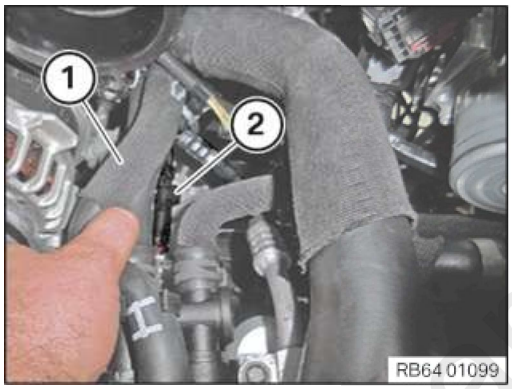
9 – Remove air conditioning compressor

CAUTION

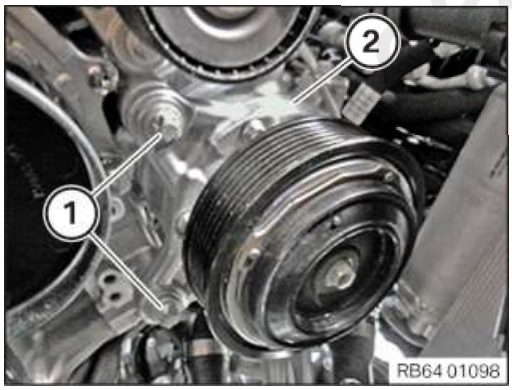
Residual pressure in the air conditioning.

Danger of injury!

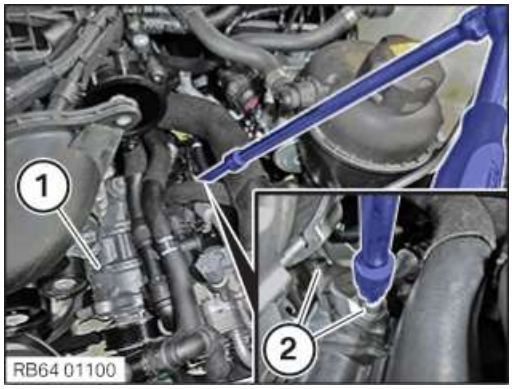
- Wear safety goggles and protective gloves when disconnecting the refrigerant line.
- Seal refrigerant lines with seal plugs.



- Slide the coolant hose (1) slightly to the side.
- Unlock and disconnect connector (1).



- Loosen the screws (1) on the air conditioning compressor (2).
- Push the air conditioning compressor (2) slightly to the side.



TECHNICAL INFORMATION

Secure component against falling.

- Loosen the screws (2) and remove the refrigerant lines.
- Slide the AC compressor (1) upwards and remove.

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10 – Lubricating the air conditioning compressor (amount of refrigerant oil in new air conditioning compressor known)

TECHNICAL INFORMATION

The new air conditioning compressor is filled with refrigerant oil at the factory. The amount of refrigerant oil in the new air conditioning compressor corresponds to the amount of refrigerant oil for the entire new and unfilled refrigerant circuit.

When the air conditioning compressor is replaced, it is essential to adapt the amount of refrigerant oil.

TECHNICAL INFORMATION

The following procedure only applies when the new air conditioning compressor has **a label** with the amount of refrigerant oil.

The refrigerant oil amount specification is located on the label on the air conditioning compressor.

The position of the label can vary depending on the air conditioning compressor.

The refrigerant oil specification on the label is in g, ml or cc.

ml are specified throughout these repair instructions for adjusting the amount of refrigerant oil, as g and cc closely correspond to ml.

- **Step 1**
- Read and record amount of refrigerant oil specified on the previous air conditioning compressor.

  (If no label is present, continue with **step 3, case 1**.)
- Read and record amount of refrigerant oil specified on the new air conditioning compressor.
- Compare both amounts of refrigerant oil with each other:

  Different cases:

  - Amount of refrigerant oil specified on the previous and new air conditioning compressor **is same**. In this case, continue with **step 3, case 1**.
  - Amount of refrigerant oil specified on the previous and new air conditioning compressor **is not the same**:

  Different cases:

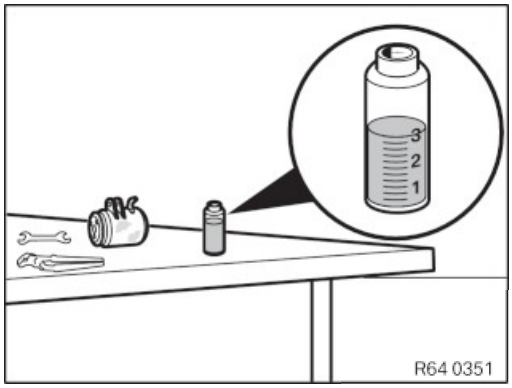
  - Amount of refrigerant oil specified on the previous air conditioning compressor **is higher** than on the new air conditioning compressor. Difference is not taken into account. In this case, continue with **step 3, case 1**.
  - Amount of refrigerant oil specified on the previous air conditioning compressor **is lower** than on the new air conditioning compressor: Generate and record the difference between both amounts of refrigerant oil. Then, continue with **step 3, case 2**.

Example:
Amount of refrigerant oil specified on the *previous* air conditioning compressor 110 g
Amount of refrigerant oil specified on the *new*air conditioning compressor 150 g
150 g - 110 g = 40 g approximately 40 ml
Record the difference 40 ml.

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- **Step 2**
- Open the oil filler plug.
- Transfer all of the refrigerant oil remaining in the **previous** air conditioning compressor into a measuring cup via the oil filler plug.
- Turn the belt pulley during draining.



- **Step 3**
- Read the drained amount of refrigerant oil from the **previous** air conditioning compressor on the measuring cup.

Case 1:

- Add **10 ml extra to the amount of refrigerant oil read as a precautionary allowance.**
- Record **at least but a total of 50 ml**.

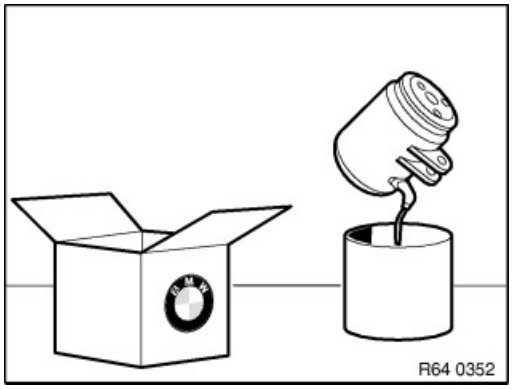
Example:
20 ml read at measuring cup:
20 ml + 10 ml precautionary allowance = 30 ml< 50 ml
Amount of refrigerant oil determined for the new air conditioning compressor = 50 ml

Case 2:

- Add **10 ml extra to the amount of refrigerant oil read as a precautionary allowance.**
- To this **add the difference**.
- Record **at least but a total of 50 ml**.

Example:
Difference = 40 ml
20 ml read at measuring cup:
20 ml + 10 ml precautionary allowance = 30 ml
30 ml + 40 ml difference = 70 ml > 50 ml
Amount of refrigerant oil determined for the new air conditioning compressor = 70 ml

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- **Step 4**
- Open the oil filler plug.
- Drain the following amount of refrigerant oil from the **new** air conditioning compressor into a clean measuring cup:

Amount of refrigerant oil to be drained from the new air conditioning compressor = amount of refrigerant oil on the label for the new air conditioning compressor - amount of refrigerant oil determined for the new air conditioning compressor

Example:
Amount on the new air conditioning compressor refrigerant oil label: 150 ml
Amount of refrigerant oil determined for new air conditioning compressor: 50 ml
Amount of refrigerant oil to be drained = 150 ml - 50 ml = 100 ml
100 ml must be drained from the **new** air conditioning compressor

- Renew the sealing ring.
- Tighten oil filler plug.
- The drained, new refrigerant oil must be filled into the A/C service station expansion tank **immediately** after draining.
- Drained, new refrigerant oil must be disposed of correctly if it is not immediately refilled into the A/C service station expansion tank.
- Refrigerant oil drained from the previous air conditioning compressor **must not be reused and must be disposed of correctly**.

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11 – Lubricating the air conditioning compressor (amount of refrigerant oil in new air conditioning compressor not known)

TECHNICAL INFORMATION

The new air conditioning compressor is filled with refrigerant oil at the factory. The amount of refrigerant oil in the new air conditioning compressor corresponds to the amount of refrigerant oil for the entire new and unfilled refrigerant circuit.

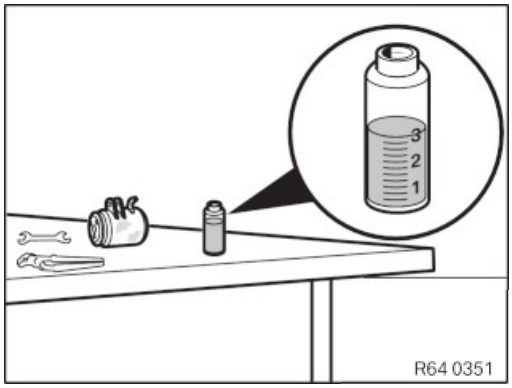
When the air conditioning compressor is replaced, it is essential to adapt the amount of refrigerant oil.

TECHNICAL INFORMATION

The following procedure only applies if the new air conditioning compressor **has** a label indicating the amount of refrigerant oil.

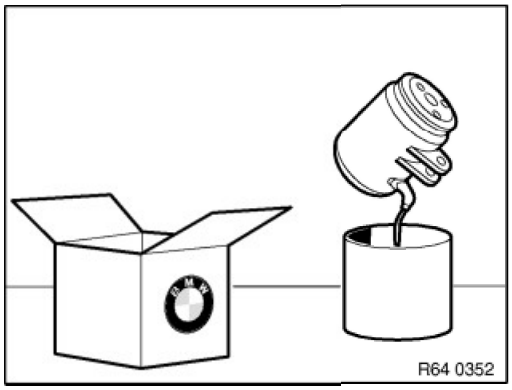


- Open the oil filler plug.
- Transfer all of the refrigerant oil remaining in the **previous** air conditioning compressor into a measuring cup via the oil filler plug.
- Turn the belt pulley during draining.

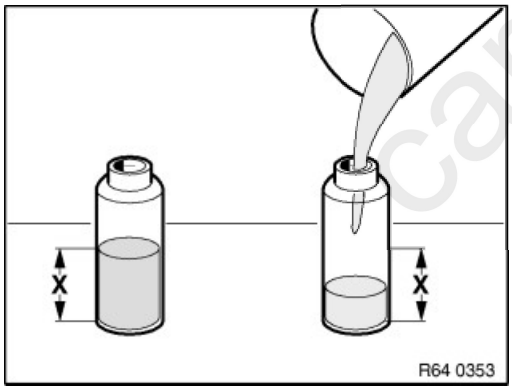


- Read the drained amount of refrigerant oil from the **previous** air conditioning compressor on the measuring cup.
- Add **10 ml extra to the recorded amount of refrigerant oil as a precautionary allowance, but record at least a total of 50 ml.**

Example:
20 ml read at measuring cup:
20 ml + 10 ml precautionary allowance = 30 ml < 50 ml
Amount of refrigerant oil to be filled in the new air conditioning compressor = 50 ml



- Open the oil filler plug.
- Drain the entire refrigerant oil from the **new** air conditioning compressor into a clean collecting vessel.
- Turn the belt pulley during draining.

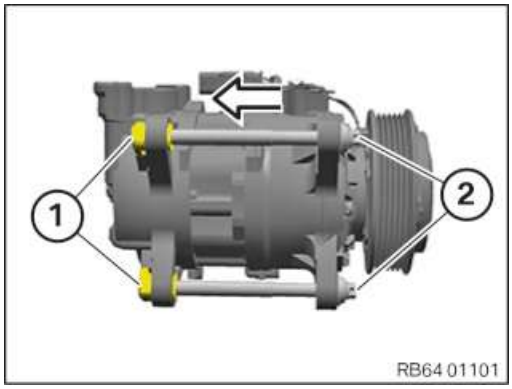


- **Immediately** fill the amount of refrigerant oil to be filled from the collecting vessel into a clean measuring cup.
- Fill the amount of refrigerant oil to be filled from the measuring cup into the new air conditioning compressor.
- Renew the sealing ring.
- Tighten oil filler plug.
- **Immediately** after draining, the remaining, new refrigerant oil must be filled into the A/C service station expansion tank.
- The remaining, new refrigerant oil must be disposed of correctly if it is not immediately filled into the expansion tank of the A/C service station.
- Refrigerant oil drained from the previous air conditioning compressor **must not be reused and must be disposed of correctly**.

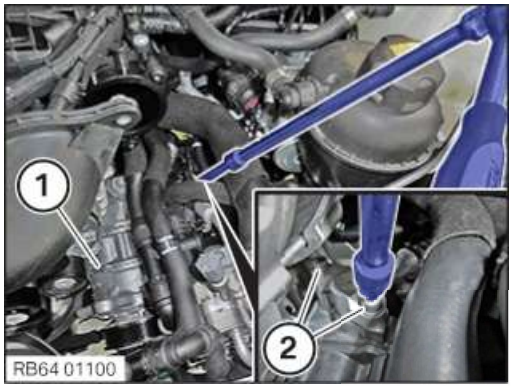
12 – Installing air conditioning compressor

▸ **Prepare for the installation of the air conditioning compressor**

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- Screw the bolts (2) into the threaded support sleeve (1).
- Slightly press back the threaded support sleeve (1) in the direction of the arrow with the bolts (2).
- Unscrew the bolts (2) from the threaded support sleeve (1) again.



TECHNICAL INFORMATION

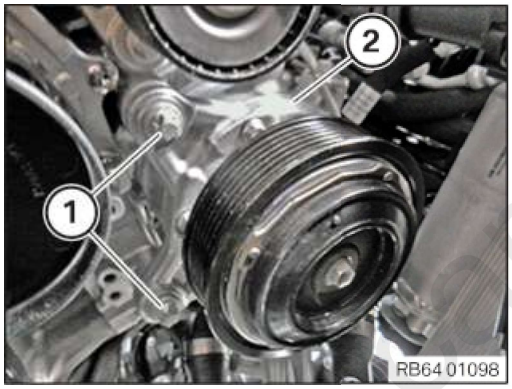
Secure component against falling.

- Replace O-rings.

  Parts: O-rings
- Guide in and position the air conditioning compressor (1) from above.
- Correctly position the refrigerant lines on the air conditioning compressor (1).
- Tighten down screws (2).

Refrigerant line on air conditioning compressor

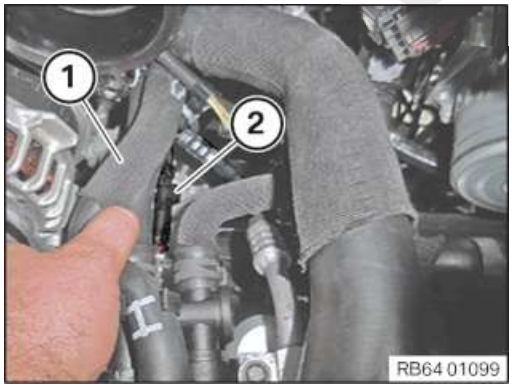
M8		Tightening torque	19 Nm



- Correctly position the air conditioning compressor (2).
- Tighten the screws (1).

Air conditioning compressor in component carrier

M10		Tightening torque	38 Nm



- Slide the coolant hose (1) slightly to the side.
- Connect and lock the plug connection (2).

POSTPROCESSES

13 – Installing the drive belt for alternator

Overview of drive belt for alternator



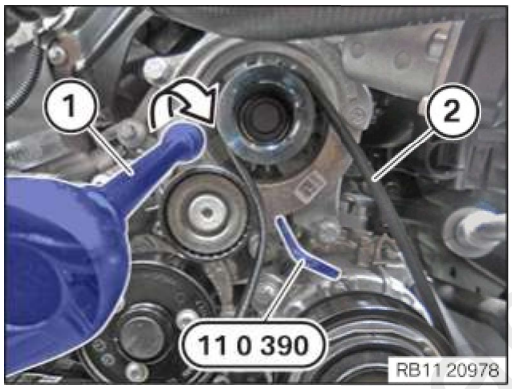
1. Drive belt for alternator

TECHNICAL INFORMATION

If the drive belt is reused: Mark direction of travel and reinstall drive belt in same direction of travel.

TECHNICAL INFORMATION

The drive belt must be replaced if contaminated with coolant- and oil residues.



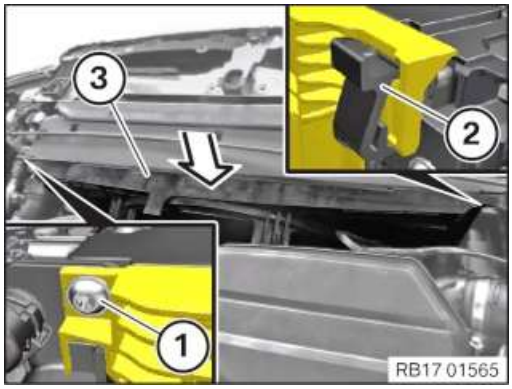
- Position the drive belt for alternator (2) on the ancillary components.
- Increase the preload on the belt tensioner in **the direction of the arrow** using standard tools (1).
- Feed the special tool 0 496 268 (11 0 390) out of the belt tensioner and remove it.

14 – Install fan cowl



- Feed guides (1) into the radiator.
- Feed guides (2) into the charge air cooler.

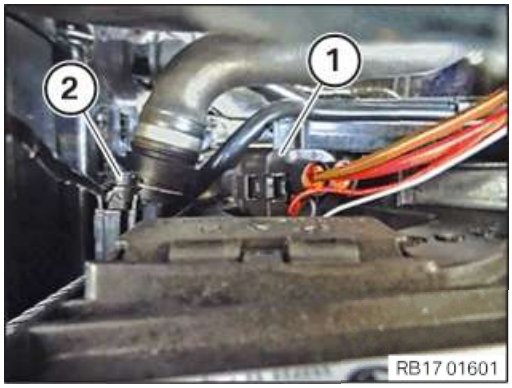
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- Guide in and install fan cowl (3) **carefully** in the direction of the arrow.
- Ensure that the lock (2)engages audibly.
- Tighten down screw (1).

Fan cowl with electric fan on radiator

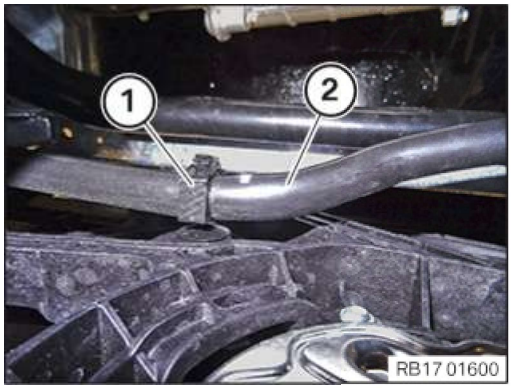
TS6x20		Tightening torque	6,5 Nm



- Connect connectors (2) and lock.

  The connector (2) must engage audibly.
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

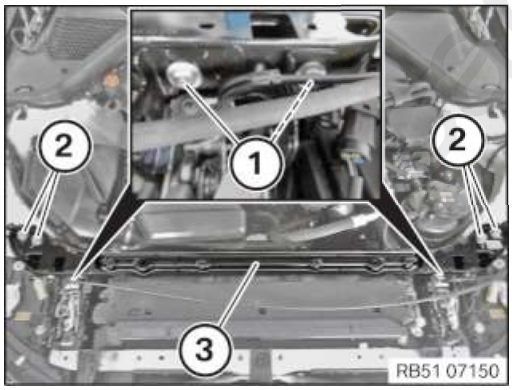


- **If installed:** Secure the transmission oil line (2).

  Insert and install the transmission oil line (2).

  Lock holder (1).

15 – Install the rear top cross connection



- Guide in and position the top rear cross connection (3).
- Tighten the screws (1).

Top rear cross connection to bonnet catch support

Flat-head screw M6x20		Tightening torque	11,8 Nm

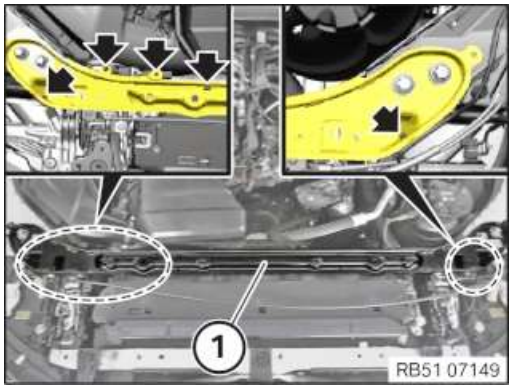
- Renew screws (2).

  Parts: Bolts
- Tighten the screws (2).

Rear top cross connection to wheel arch carrier support

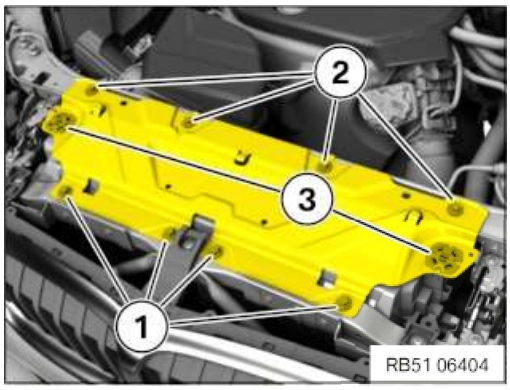
M10x20 screw	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

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- Secure the clips (arrows) in the marked areas to the top rear cross connection (1).

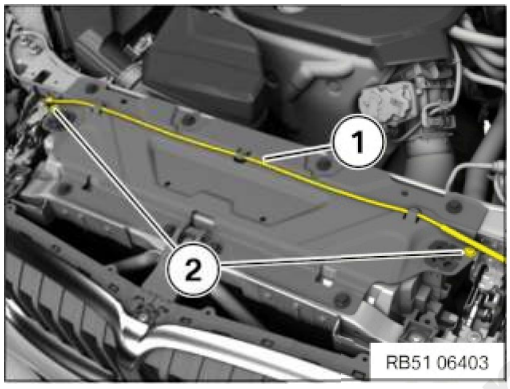
16 – Installing the top cross connection



- Set and position upper cross connection with holders (3) from above.
- Tighten down screws (1) and (2).

Cross connection, top

M8x20		Tightening torque	28 Nm



- Tighten down screws (2).

Cross connection, top

M6x20		Tightening torque	11,8 Nm

- Attach Bowden cable (1) on the upper cross connection.



- Clip in the housing for the coupling of the Bowden cables (1).

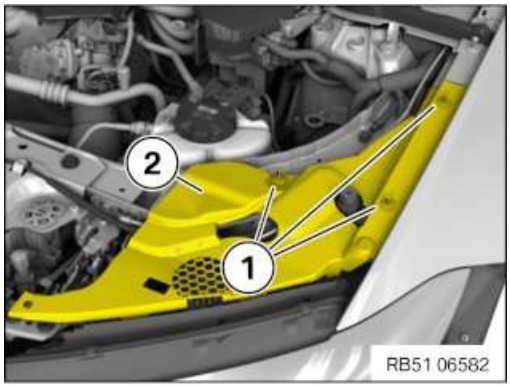
17 – Install the cover in the engine compartment at top left and right partially

NOTICE

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

▸ **Installing the cover in the engine compartment on top partially**

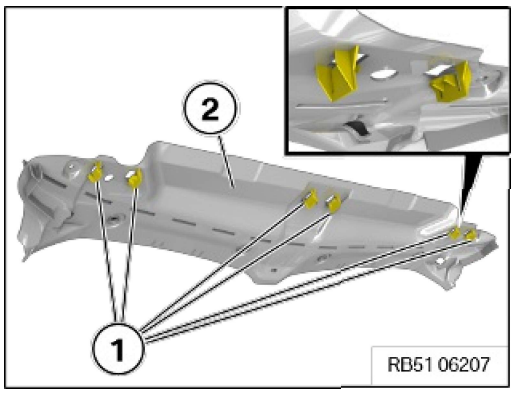
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- Install the cover in the engine compartment on top (2).
- Secure expanding rivet (1).

18 – Installing cover for engine compartment centre

Check



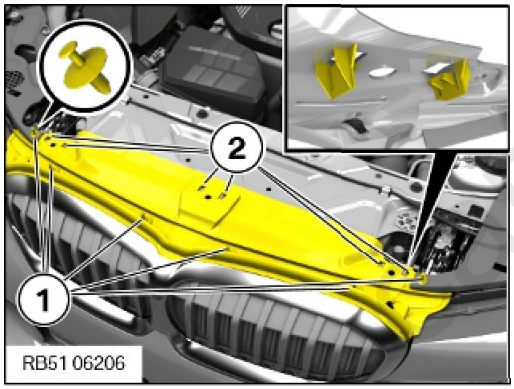
- Check latch mechanisms (1) of cover for engine compartment centre (2) for damage.

Result

» The latch mechanism (1) is damaged.

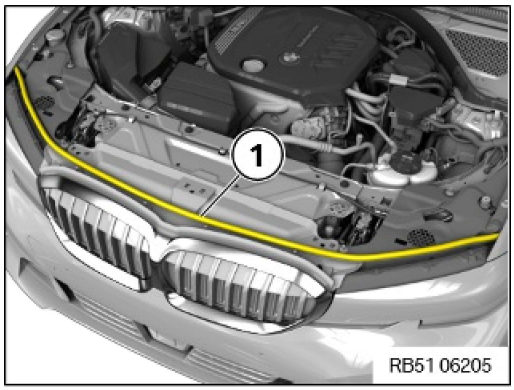
Measure

- Renew cover for engine compartment centre (2).



- Guide in the cover for the engine compartment centre from the rear and position it.
- Clip in the cover for the engine compartment centre with latch mechanisms (2).
- Mount all expanding rivets (1).

19 – Install the seal for the front bonnet



- Position the bonnet seal(1) and connect it on the mounting on the bumper and on the headlights.

20 – Evacuate and fill air conditioning

- See additional information.

21 – Running in the new air conditioning compressor

21 – Running in the new air conditioning compressor

RISK OF DAMAGE

Mechanical damage to the new air conditioning compressor.

An increased quantity of refrigerant oil in the new air conditioning compressor can cause mechanical damage.

- Perform the running-in procedure.
- Do not exceed the idle speed during running in.

TECHNICAL INFORMATION

The running-in procedure for the new air conditioning compressor can either be performed manually or using the diagnosis system.

- **Manual:**
- Switch off the air conditioning.
- Set all ventilation outlets in the instrument panel to "OPEN".
- Start the engine and allow the idle speed to stabilise.
- Set the blower output to a minimum of 75% of the maximum blower output.
- Switch on the air conditioning and allow the engine to run at **idle speed** for a **minimum of 2 minutes**.
- Switch off the air conditioning and blower.
- Stop engine.



- **Carry out the following service function with the diagnosis system:**
  - Body
  - Heating and air conditioning functions
  - Run-in protection for A/C compressor

Additional Information

Overview of Tightening Torques

Refrigerant line on air conditioning compressor			Used in step 12
M8		Tightening torque	19 Nm

Air conditioning compressor in component carrier			Used in step 12
M10		Tightening torque	38 Nm

Fan cowl with electric fan on radiator			Used in step 14
TS6x20		Tightening torque	6,5 Nm

Top rear cross connection to bonnet catch support			Used in step 15
Flat-head screw M6x20		Tightening torque	11,8 Nm

Rear top cross connection to wheel arch carrier support			Used in step 15
M10x20 screw	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

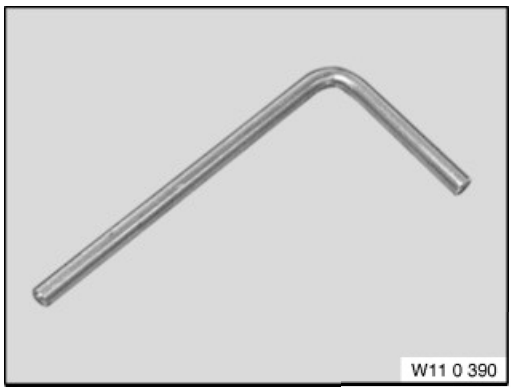
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Cross connection, top			Used in step 16
M8x20		Tightening torque	28 Nm

Cross connection, top			Used in step 16
M6x20		Tightening torque	11,8 Nm

Overview of Special Tools

0 496 268 (11 0 390) Pin



Common	Used in step 813
Usage	(roll pin) For securing new tensioning pulley (poly-V belt)
Included in the tool or work	
Storage location	B24
Replaced by	
In connection with	
SI-Number	01 15 07 (390)

Links

Repair instructions	Used in step
64 50 010 Extract, evacuate and fill air conditioning system	120
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	120
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	120
64 50 ... Notes on repairs to air conditioning	120
64 50 010 Drawing off, evacuating and filling air conditioning (R1234yf)	120
64 50 ... Safety information for handling refrigerant R1234yf	120
64 50 ... Safety information for handling tetrafluorethane refrigerant R134a	120
64 50 ... Safety informations for handling refrigerant oil	120

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61 00 ... Safety information on handling hybrid cars

1. *Qualification:*
   All repair work on high-voltage components may **only be performed by specially trained personnel** (qualification: Work on high-voltage inherently save vehicles) must be performed by qualified technicians. Each hybrid car requires additional vehicle specific training with training achievement controls.
   Required training is offered by the BMW Training Academy.
2. *Identification:*
   Observe **warning notices** on high-voltage components. When replacing individual high-voltage components, check if warning stickers are present. Independently attaching warnings is only allowed on the locations provided for them. Use only approved and appropriately identified original new parts.
3. *Rules of conduct/protective measures:*
   - Note operating instructions for handling high-voltage battery units.
   - Do not under any circumstances touch open high-voltage cables and high-voltage components on damaged vehicle before shutting down the high-voltage electrical system.
   - In the event of damage (mechanical, thermal) transition metal oxides, carbon, electrolyte solvents and their products of decomposition may be released.
     Suitable acid-resistant protective clothing/equipment must therefore be used when handling the vehicle!
     - Hand protection: Gloves
     - Eye protection: Safety goggles

     Damaged high-voltage battery units must be stored in an acid-resistant pan in a location in the open that is protected against the weather (sun, rain) and secured against unauthorised access. Do not inhale escaping gasses.
   - Prevent escaping substances from entering drains, pits and the sewer system.
   - Collect any material that is discharged and have it disposed of according to the work instruction, wear acid-resistant protective clothing when doing so.
   - Notify the fire brigade if fire breaks out, clear the area immediately and make accident scene safe. Attempt to extinguish the fire without putting persons in danger (suitable extinguishant: water and water foam).
   - A cut 2nd emergency separation point must be repaired with a butt connector.
4. *Measures before starting work:*
   - Each job on the vehicle must be assigned by appropriately trained personnel. Before work is started, this electrician must place the vehicle in the operating condition required to perform the relevant activity. The qualified personnel's instructions and directions absolutely must be followed. **No work may be carried out without this qualified personnel being consulted first.**
   - It is **not** permitted to work on the high voltage system or on high voltage components while the engine is running.
   - The readiness to drive must be ended before shutting off the voltage of the high-voltage system. The readiness to drive is ended when the driver is absent only under the following conditions:
     1. seat belt buckle unlocked **and**
     2. the driver's door is open **and**
     3. no brake activated **and**
     4. the accelerator pedal is not activated **and**
     5. speed < 3 km/h (2 mph)
   - Work on live high-voltage components is expressly prohibited. Before each operation on the high-voltage system, the system must be isolated from the power supply by qualified personnel (high-voltage safety connector Off) and secured against unauthorised recommissioning (padlock).
   - After each deactivation of the high-voltage system, it is essential to observe a **waiting period** of at least **10 seconds** prior to further work.
   - Before beginning work, it is mandatory to check that the equipment is de-energised and is protected against being energised again.
     Work is only permitted to begin if:
     1. Corresponding display in the KOMBI **High-voltage system deactivated** or

     When a high-voltage warning is active (indicator light, Check Control, etc.), it is essential to determine and eliminate the cause of this warning via the diagnosis system before continuing with any other work.
     If it cannot be definitively established that the equipment is de-energised, work is not permitted to begin. **Danger to life!** Before work begins, a qualified electrician (1000 V AC) must verify that the

system is de-energised using appropriate measuring devices and procedures.
=> In this case, Technical Support must be contacted!

- Do not perform any work on the vehicle while it is charging. Before starting work, disconnect the charging cable from the vehicle.
  Battery charging may result in heating of the high-voltage battery unit. This heating may lead to sporadic launches of the electric fan (switch-on request from the electric fan). Therefore, work in the vicinity of the electric fan during the charging procedure is prohibited. Ensure freedom of movement of the battery charge lines in the vicinity of the electric fan.

5. *Measures during/after activities:*
   - Identifiable mechanical damage to or tampering with high-voltage components must be reported immediately to the qualified personnel in charge.
   - When carrying out any work on the high-voltage system, it is prohibited to drive externally all the drivetrain components (wheels, gearbox, drive shafts, etc.).
   - *E72 only:* When the "Power Electronic Box Cover" is removed, the high-voltage system is not permitted to be activated. The high-voltage service disconnect must only be used when the "Power Electronics Box Cover" is completely installed.
   - High-voltage cables (orange coating) and their connectors and stop parts **may not** be repaired. If damaged, a cable must always be replaced completely.
   - When working in the vicinity of high-voltage components (identified accordingly with warning stickers and orange-coloured coating), protect these components against damage.
   - The specified work steps in the repair instructions must be adhered to exactly.
   - High-voltage components and their holders must be screwed/bolted to the defined tightening torque. Tightening torques and tightening specifications must be observed.
   - Connecting high-voltage components to body ground is crucial to safety for reasons of equipotential bonding. For this reason, it is prohibited to operate any high-voltage components without them being correctly connected to body ground. The measurements (insulation/potential equalisation measurement) are performed automatically by the vehicle. Manual measurement is not therefore necessary.
     For a correct earthing connection, the retaining elements of high-voltage components must not be painted. Follow further painting notes.
   - Removed high-boltage battery units must be stored in a manner that protects them from misuse and damage.
   - Damaged or warning stickers that are no longer legible on high-voltage components must always be replaced.
6. *Potential compensation:*
   Equipotential bonding lines, high-voltage cables and the battery negative lead to the EME are fitted with safety screws.
   - Clean contact faces and have then checked by a second person.
   - Tighten down screws/bolts to specified torque.
   - Have tightening torque checked by a second person.
   - Both persons must document that the work has been carried out correctly in the vehicle records.

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64 53 ... Instructions for desiccant insert replacement



Special tools required:

- 32 1 270

A desiccant insert that is in a correctly functioning, sealed heating and air conditioning system does **not** have to be changed at regular service-inspection intervals.

However, the dryer flask or desiccant insert must absolutely be replaced in the event of:

- contamination of the refrigerant with swarf (e.g. when the compressor is clamped).
- With depressurised and/or completely drained refrigerant circuit.
- With a refrigerant circuit, which was closed using special tool 32 1 270 but remains open for more than 24 hours.

The desiccant insert cannot be replaced in the following vehicles:

- *1-Series E8x, 3-Series E9x* from 12/2008
- *E84, E89*
- *1-Series F2x, 3-Series F3x*
- *BMW i 01 without heat pump*

In these vehicles, the condenser for the heating and air conditioning system must be replaced.

- *BMW i 01 with heat pump*

On this vehicle the low pressure battery must be replaced.

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64 52 ... Instructions for opening and part exchange in refrigerant circuit



Special tools required:

- 00 9 030
- 32 1 270

Warning!

- Avoid contact with refrigerant and refrigerant oil
- Follow safety informations for handling refrigerant
- Follow safety information for handling refrigerant oil

Attention!

- Always use new O-rings each time A/C connections are opened (refer to Electronic Parts Catalogue) They must **not** be coated.
  Use special tool 00 9 030 to install sealing rings without damaging them.
- Open the referigerant circuit for as short of a period as possible.
- Close all components and lines in the refrigerant circuit and return parts **immediately** following the removals at openings with special tool 32 1 270 to prevent penetration of moisture or foreign objects.
- If the refrigerant circuit was closed at the openings with special tool 32 1 270 but it remains open for more than 24 h, the dryer insert for the air conditioning must be replaced.

I. **Part replacement as preliminary work fur further repair work and part replacement based on gradual leakage.**
(minor leak, e.g. hairline crack)

Procedure:

- Draw off heating and air conditioning system, then determine drawn-off amount of refrigerant oil
- Carry out part replacement
- Replace removed refrigerant oil and additionally top up with new refrigerant oil according to components replaced:
  - Compressor: refer to Notes on compressor replacement
  - Evaporator: 10 ml
  - Capacitor: 20 ml
  - Desiccant insert / dryer flask: 20 ml
  - Each replaced refrigerant line: 10 ml
  - Condenser with integrated dryer flask: 40 ml
  - Safety pressure switch and gasket: no additional refrigerant oil
  - Only I01: Radiator, high-voltage battery unit: 20 ml
- Evacuate and fill air conditioning system

II. **Part replacement due to sudden leakage**
(major leak, e.g. line disconnection due to accident)

Procedure:

- Draw off heating and air conditioning system, then determine drawn-off amount of refrigerant oil
- Carry out part replacement
- Replace removed refrigerant oil and additionally top up with new refrigerant oil according to components replaced:
  - Compressor: refer to Notes on compressor replacement
  - Evaporator: 35 ml
  - Capacitor: 35 ml
  - Desiccant insert / dryer flask: 55 ml
  - Each replaced refrigerant line: 35 ml

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    - Condenser with integrated dryer flask: 55 ml
    - Safety pressure switch and gasket: no additional refrigerant oil
    - Only I01: Radiator, high-voltage battery unit: 35 ml
- Evacuate and fill A/C system

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64 53 ... Instructions for replacement of air conditioning capacitors and radiator/coolers

Attention!

Even when they are correctly installed or due to normal driving, radiators (oil cooler, radiator, charge air cooler) or air conditioning condensers may show slight impressions or deformations on their discs (1).

A slight sag with a large radius for the air conditioning condenser is also permissible.

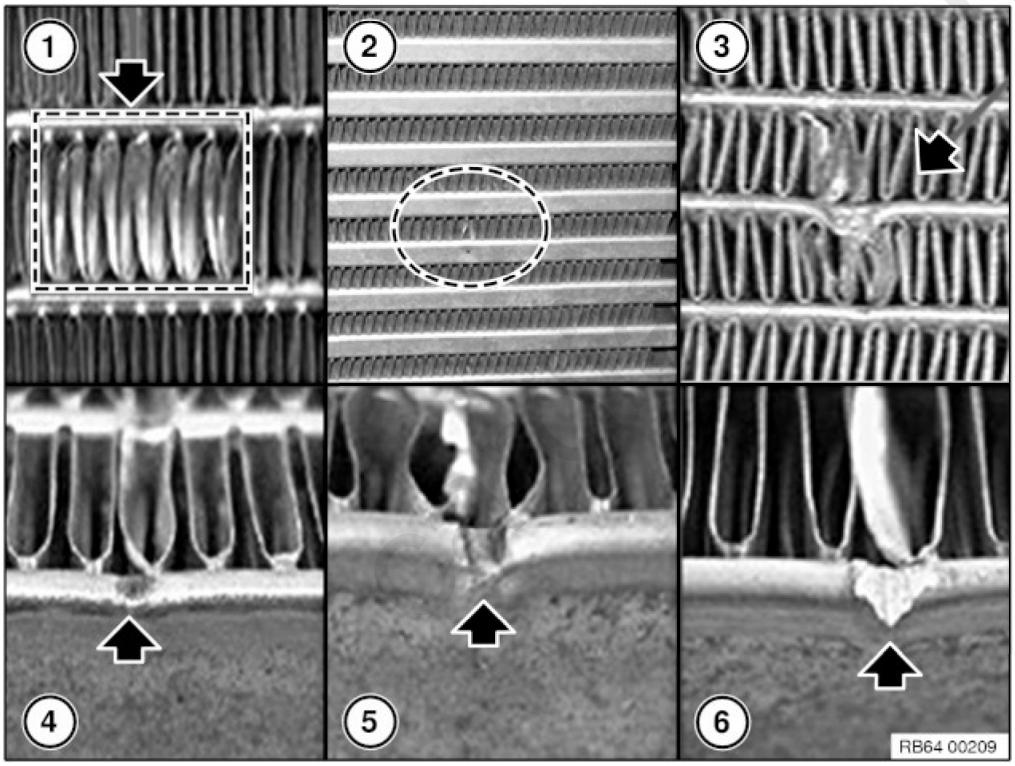
As long as tightness/function are not degraded and an adequate distance of a few mm between the radiator and air conditioning condenser remains in place, **this is not damage in either case.**

Radiators or air conditioning condensers are not to be replaced in these cases!

Note:

The deformations shown in Fig. (1) can be bent back with a standard fin comb..

Damage to lines carrying media or on the flat pipe require exchange of the radiator or air conditioning condenser (2-6).



Dryer flask (integrated in the air conditioning condenser):

Round dents/depressions are permitted.

The air conditioning condenser is not to be replaced in this case.

64 53 551 Removing and installing/replacing air conditioning condenser

Prerequisite

- Ignition is switched off.

WARNING

Hot fluids.

Risk of scalding!

- Conduct all work in the vehicle wearing appropriate personal protective equipment only.

CAUTION

Refrigerant circuit under high pressure.

Danger of injury!

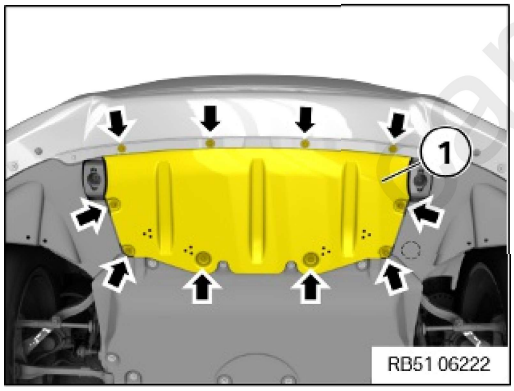
- Note and follow safety information on containers.
- Avoid contact with refrigerant; wear safety goggles and protective gloves.
- For more information see: 64 50 Handling refrigerant and 6450 Notes on repair work on air conditioning

PRELIMINARY WORK

1 – Drawing off the air conditioning

- See additional information.

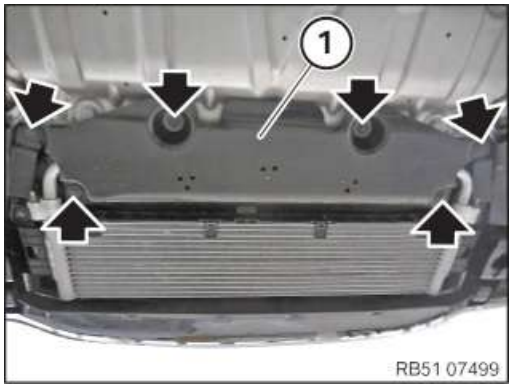
2 – Removing the front underbody protection



- **Version 1:**

  Remove screws (arrows).

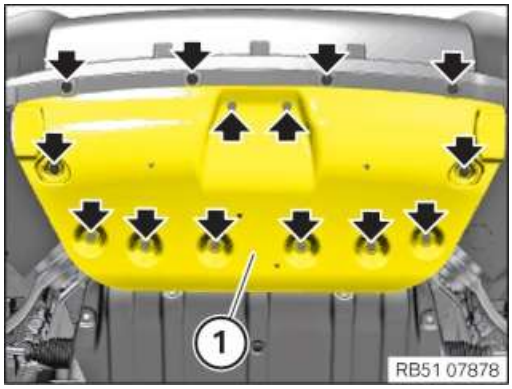
  Feed front underbody protection (1) backwards out of the bumper panel.



- **Version 2:**

  Remove screws (arrows).

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



- **Version 3:**

  Remove screws (arrows).

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

3 – Draining the coolant from the low-temperature cooling system

WARNING

Hot surfaces.

Risk of burning!

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

TECHNICAL INFORMATION

Life-long fill of coolant!

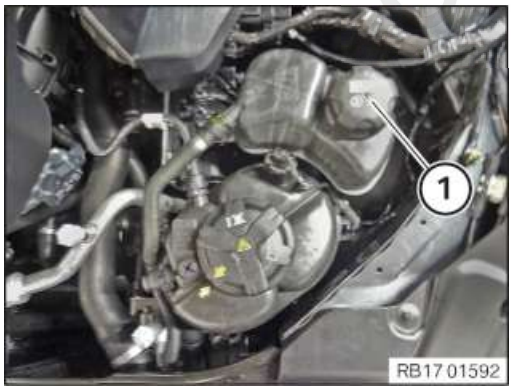
Do not reuse used coolant.

When replacing and removing components which rely on the corrosion protection effect of the coolant, it is essential to change the coolant. The cooling system must therefore be emptied and refilled.

In the case of other removal work involving the draining of part quantities of coolant, the coolant level must be topped up with new coolant.

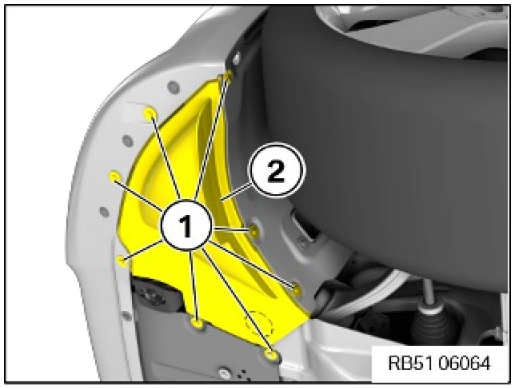
TECHNICAL INFORMATION

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

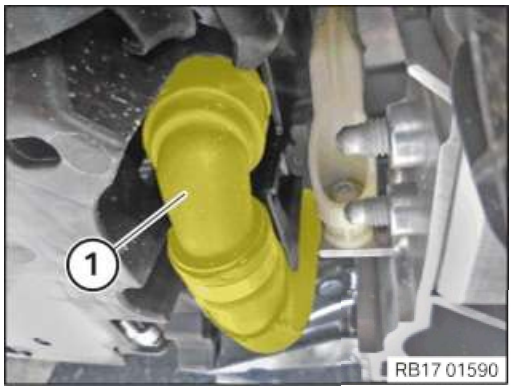


- Loosen sealing cap (1).

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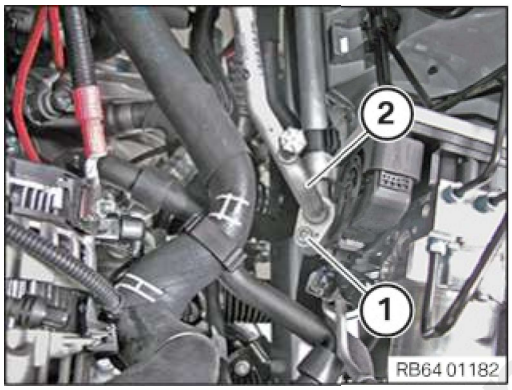


- Loosen screws (1).
- Guide out and remove bottom left cover (2) to the front.



- Unlock and disconnect the coolant line (1).
- Catch and dispose of escaping coolant.

4 – Disconnect the refrigerant line on the connecting piece



- Loosen screw (1).
- Remove the refrigerant line (2).

MAIN WORK

5 – Remove A/C condenser

CAUTION

Residual pressure in the air conditioning.

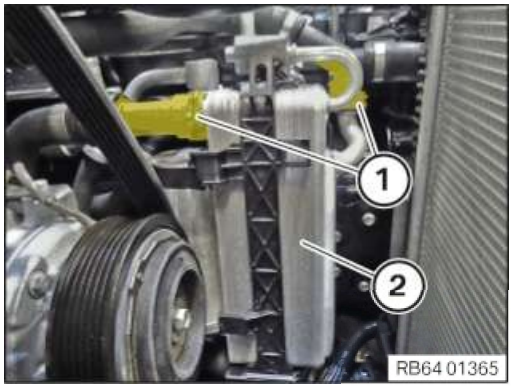
Danger of injury!

- Wear safety goggles and protective gloves when disconnecting the refrigerant line.
- Seal refrigerant lines with seal plugs.

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- Loosen the screws (1) and remove the refrigerant lines.
- Loosen screw (2).



- Unlock coolant hoses (1) and pull off from air conditioning condenser (2).
- Guide out the condenser (2) toward the top and remove it.

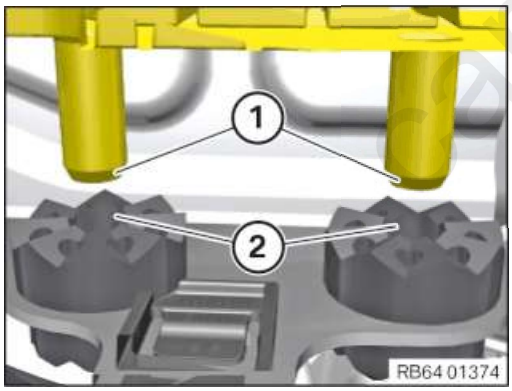
6 – Installing air conditioning condenser

CAUTION

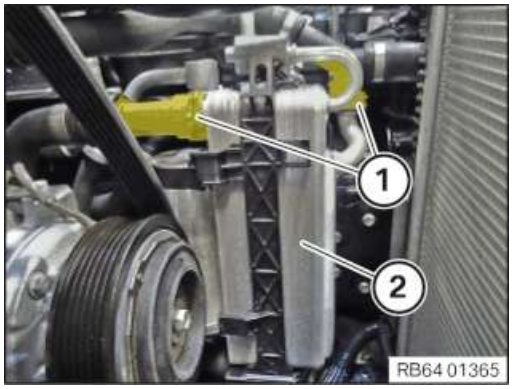
Residual pressure in the air conditioning.

Danger of injury!

- Wear safety goggles and protective gloves when disconnecting the refrigerant line.
- Seal refrigerant lines with seal plugs.



- Ensure that the air conditioning condenser (1) is correctly fed in to the rubber mount (2).



- Guide in the refrigerant line (2) in from above and position it correctly.
- Slide and lock the coolant hoses (1) on the air conditioning condenser (2).

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- Tighten down screw (2).

Air conditioning condenser bracket on body

		Tightening torque	8 Nm

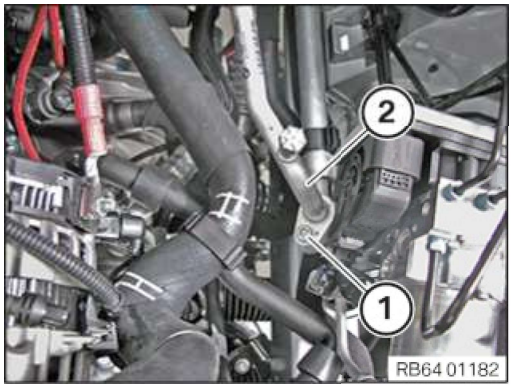
- Position refrigerant lines and tighten screws (1).

Refrigerant lines to condenser

M6		Tightening torque	13 Nm

POSTPROCESSES

7 – Fasten the refrigerant line on the connecting piece



- Renew the sealing ring.

  Parts: Sealing ring
- Correctly position the refrigerant line (2).
- Tighten down screw (1).

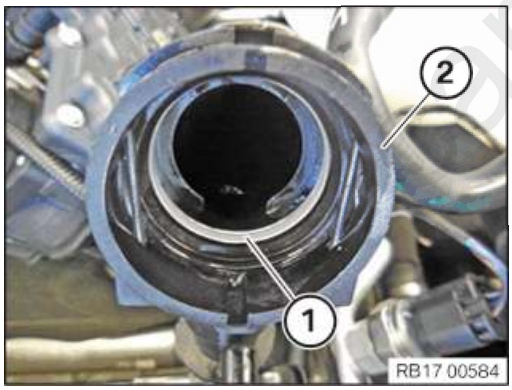
Refrigerant line to connecting piece

M8		Tightening torque	19 Nm

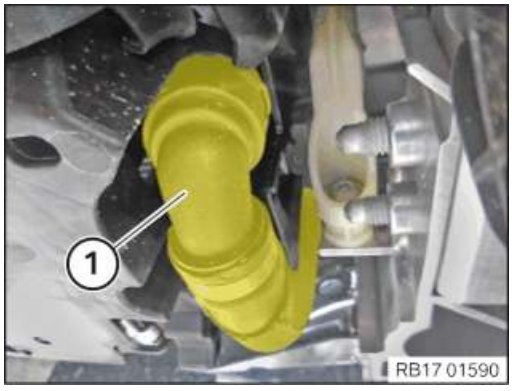
8 – Connecting the coolant lines for the low-temperature coolant circuit

TECHNICAL INFORMATION

Make sure that the connections are locked correctly. The locks must engage audibly.



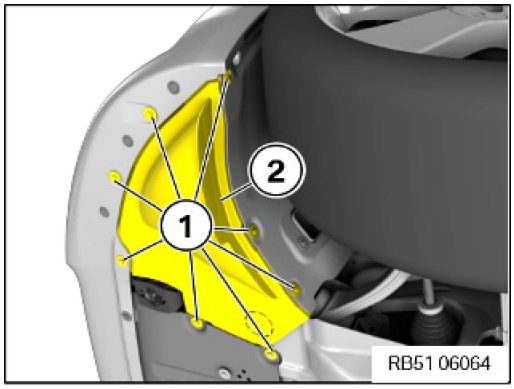
- Check the sealing rings (1) of the coolant lines (2) for damage and renew if necessary.



- Connect and lock the coolant line (1).

  The coolant line (1) must audibly engage.

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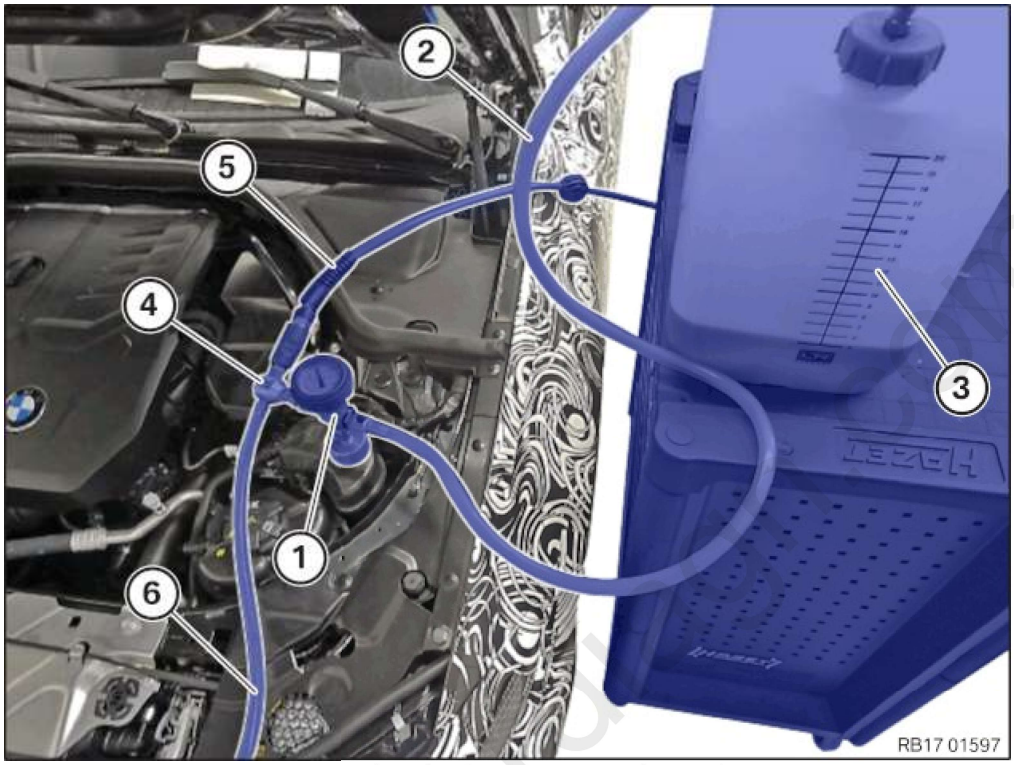
- Feed in and install cover (2) at the bottom front left.
- Tighten the screws (1).

Cover, front bottom on side

Hexagon screw for thermoplastic		Tightening torque	3 Nm

9 – Filling the low-temperature cooling system with the vacuum filler device

Vacuum filler device



Vacuum filler device - connected to the coolant expansion tank

1 Vacuum filler device with pressure gauge and shutoff valves

2 Filling hose

3 Fluid tank with coolant

4 Venturi nozzle

5 Compressed air connection (maximum of 6 bar)

6 Out-going hose (lead out-going hose into a collecting vessel)

Prerequisite

The coolant expansion tank for the cooling system must be empty. The fluid tank of the vacuum filler device must have a sufficient quantity of premixed coolant, 1 l to 2 l more than the specified capacity for the vehicle. The fluid tank of the vacuum filler device must be positioned at the same height as the coolant expansion tank. The compressed air connection must have a pressure of 6 bar. Ignition is switched off.

TECHNICAL INFORMATION

Follow notes for repair work on the cooling system.

For additional information see:

Main group 17

17 00 ... Notes for working on the cooling system

TECHNICAL INFORMATION

Life-long fill of coolant!

Do not reuse used coolant.

When replacing and removing components which rely on the corrosion protection effect of the coolant, it is essential to change the coolant. The cooling system must therefore be emptied and refilled.

In the case of other removal work involving the draining of part quantities of coolant, the coolant level must be topped up with new coolant.

TECHNICAL INFORMATION

Mixing different coolants is not permitted.

TECHNICAL INFORMATION

Filling **without** the vacuum filler device (watering can filling) is **not permitted**.

Non-compliance will result in danger of component damage and/or engine damage.

Filling specification **absolutely must** be adhered to.

The operation of the vehicle is not permitted unless the filling procedure has been completed. Otherwise, functional limitations (degradation) and/or overheating may occur.

A bleeding procedure is required after a part has been exchanged in the cooling system and/or after refilling the cooling system.

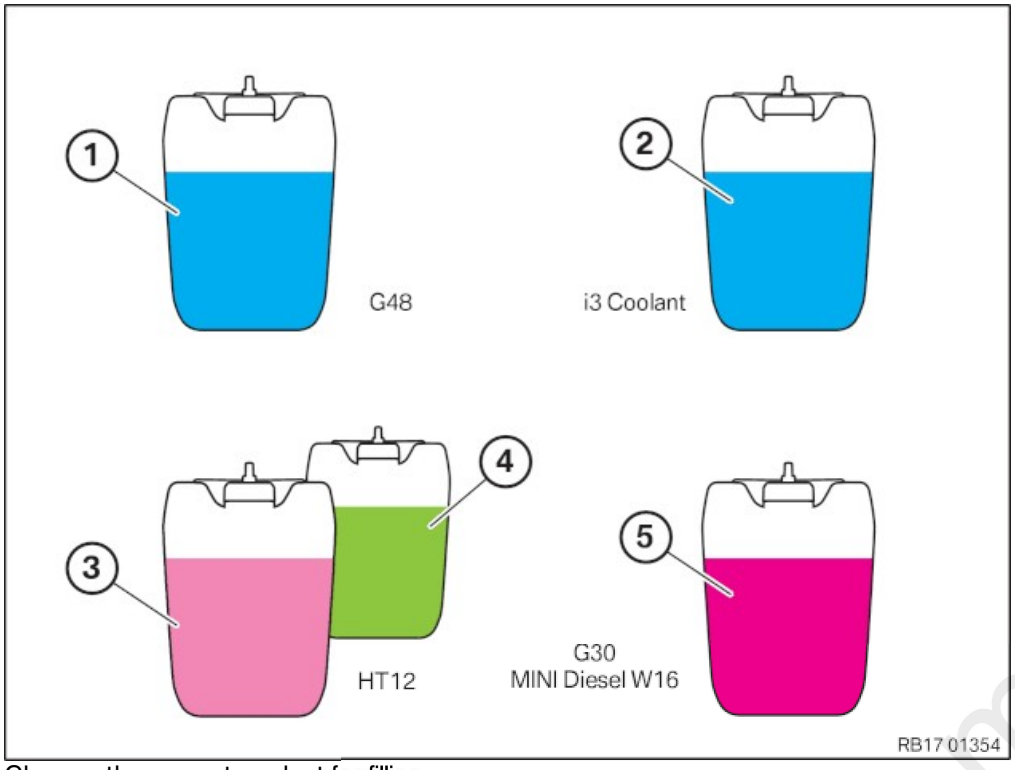
TECHNICAL INFORMATION

Make sure that the ignition (terminal 15) is switched off prior to creating the vacuum with the vacuum filler device.

▸ **Observe the coolant type**

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Coolant in the vacuum filler device container



Choose the correct coolant for filling

A vehicle must be filled with the coolant with which it is delivered ex works

1. G48 (Blue) G48 must not be mixed with the i3Coolant or the G30 MINI diesel fuelW16.

2. i3 coolant (blue) is used only for the i3 heater circuit. i3 coolant must not be filled in the other coolant circuits or mixed with the other coolants.

3. HT12 (Pink) HT12 must not be mixed with the i3 coolant or the G30 MINI diesel fuel W16.

4. HT12 (Green) HT12 must not be mixed with the i3 coolant or the G30 MINI diesel fuel W16.

5. G30 (Pink) must be used only for the **MINI diesel fuel W16**. G30 must not be filled in the other coolant circuits or mixed with the other coolants.

RISK OF DAMAGE

Damage to the engine.

The use of an incorrect coolant may lead to corrosion or gelling in the engine.

- Use only approved coolants for the specific vehicle.
- Fill the vehicle only with the coolant with which it was delivered ex works.
- Mix only compatible coolants. The colour does not allow any assessment about the compatibility of coolants.
- Selection of the correct coolant only by means of the part number.

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- Select a suitable adapter (Y) from the set of special tools 0 494 417 (17 0 100):

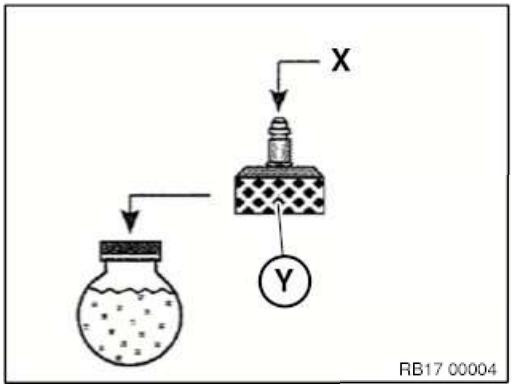
Type	Engine	Adapter (Y) from 17 0 100
G20/G29	B46 / B48 /B58	17 0 109

- The fluid tank of the vacuum filler device must be filled with 1 l to 2 l more than the specified capacity of coolant for the vehicle.

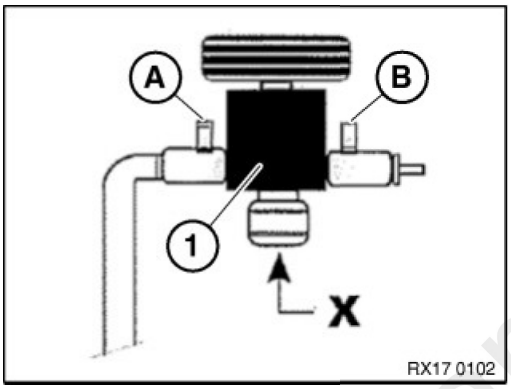
Capacity of low-temperature coolant circuit G20/G29

B58B30O1	4,5 l

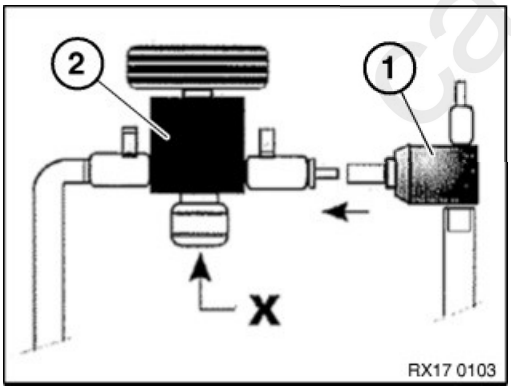
Expendable materials: Technically suitable antifreeze and corrosion inhibitor



- Connect the selected adapter (Y) to the coolant expansion tank.
- Connect vacuum filler device to connection (X) of the adapter.

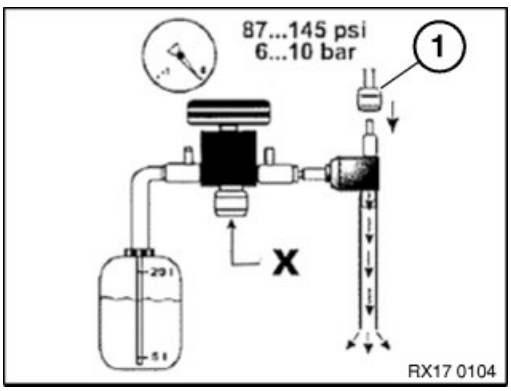


- Check that shutoff valves (A) and (B) of the vacuum filler device (1) are closed.
- Connect and lock connection (X) to the coolant expansion tank.



- Connect Venturi nozzle (1) to the vacuum filler device (2).

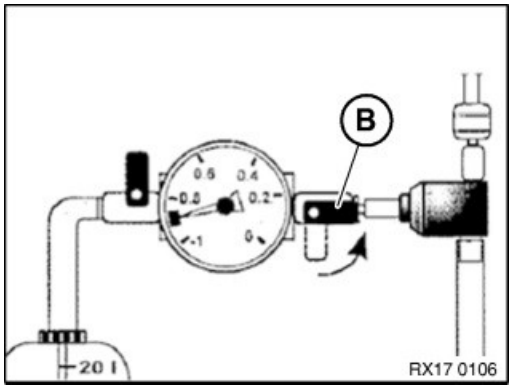
  (X)is the connection on the coolant expansion tank.



- Connect compressed air (1).

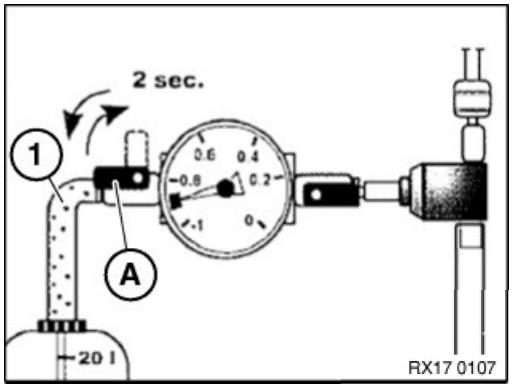
  (X)is the connection on the coolant expansion tank.

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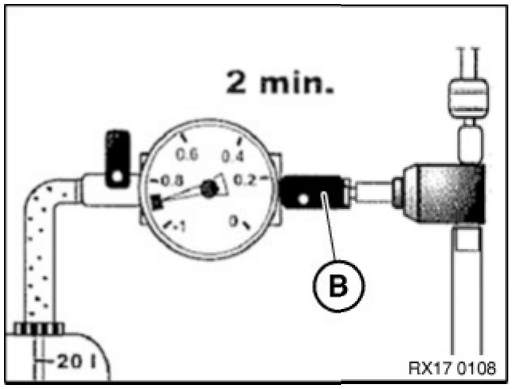
- Open shut-off valve (B).

  The venturi nozzle produces a flow noise.



- Open shutoff valve (A) until the fuel filling hose (1) is full without bubbles.
- Close shutoff valve (A) again.

» The filling hose (1) has now been bled.

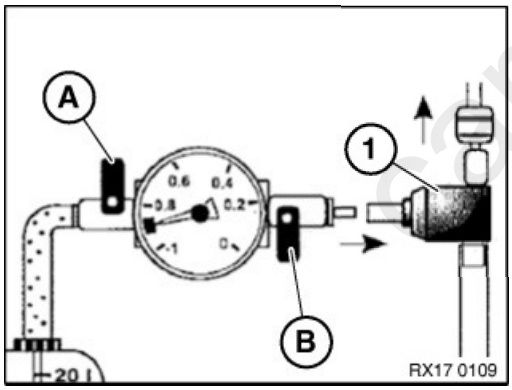


- Check the coolant hoses for porosity and renew porous coolant hoses as required.

TECHNICAL INFORMATION

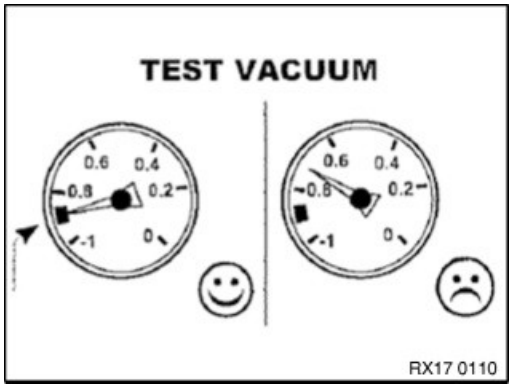
The coolant hoses contract during vacuum build-up.

- After a vacuum of -0.7 to -0.95 bar has been created in the coolant circuit (duration approx. 2 min), shut the shutoff valve (B).



- Check whether the shutoff valves (A) and (B) are closed.
- Disconnect the Venturi nozzle (1).

Check



- The vacuum in the coolant circuit must be maintained for at least 30 seconds.

Result

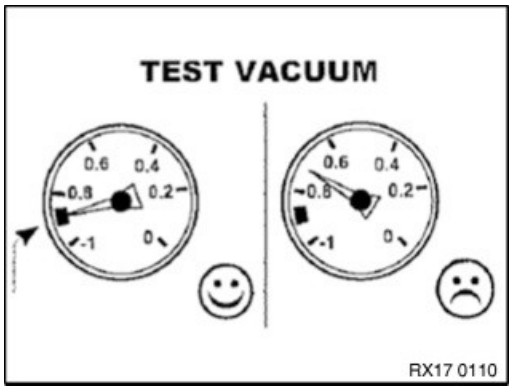
» Vacuum drops.

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Measure

- Look for the leak, repair it and start the filling procedure from the beginning.

Check



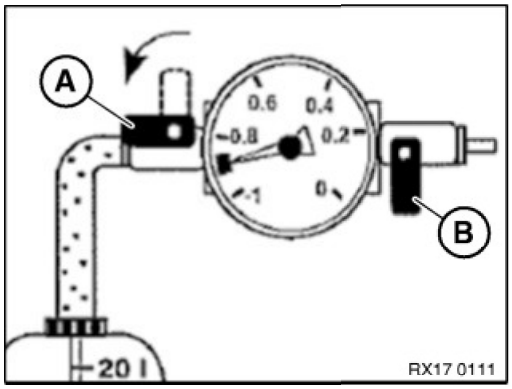
- The vacuum in the coolant circuit must be maintained for at least 30 seconds.

Result

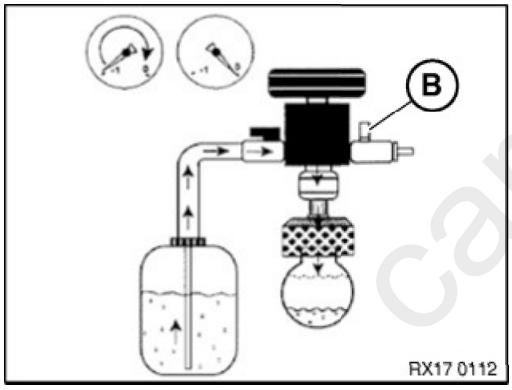
» Vacuum remains constant.

Measure

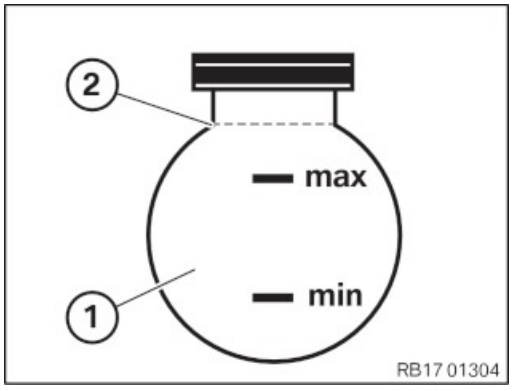
- Continue with filling.



- Keep shutoff valve (B) closed during the filling process.
- To fill the cooling system, open the shutoff valve (A) to the fluid tank of the vacuum filler device.



- Stop the filling procedure when the needle in the pressure measuring device is on 0 bar or it no longer drops.
- If necessary, reduce remaining vacuum. In order to do so, open shutoff valve (B).



- Remove the vacuum filler device with the adapter from the low-temperature coolant expansion tank (1).
- Adjust the coolant level in the low-temperature coolant expansion tank (1) up to the lower edge of the coolant filler neck (2) of the low-temperature coolant expansion tank (1).
- After filling the cooling system with the vacuum filler device, **also** run the cooling system bleeding routine.

10 – Bleeding the low-temperature cooling system

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TECHNICAL INFORMATION

Life-long fill of coolant!

Do not reuse used coolant.

When replacing and removing components which rely on the corrosion protection effect of the coolant, it is essential to change the coolant. The cooling system must therefore be emptied and refilled.

In the case of other removal work involving the draining of part quantities of coolant, the coolant level must be topped up with new coolant.

TECHNICAL INFORMATION

Filling **without** the vacuum filler device (watering can filling) is **not permitted**.

Non-compliance will result in danger of component damage and/or engine damage.

Filling specification **absolutely must** be adhered to.

The operation of the vehicle is not permitted unless the filling procedure has been completed. Otherwise, functional limitations (degradation) and/or overheating may occur.

A bleeding procedure is required after a part has been exchanged in the cooling system and/or after refilling the cooling system.

TECHNICAL INFORMATION

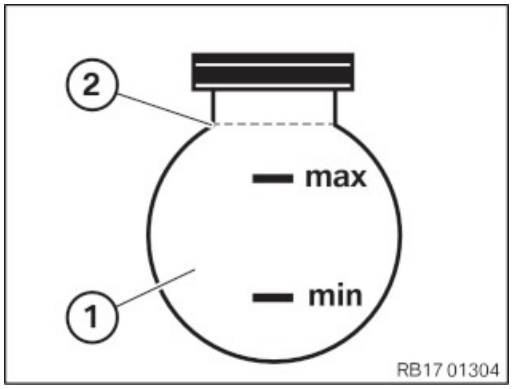
Before starting the automatic cooling system bleeding routine, make sure that **all coolant circuits** are **filled**. If the cooling system bleeding routine is started while one of the coolant circuits is empty, there is a risk of damage to the electric coolant pump when running it dry.

Make sure that terminal 15 is not disconnected for the bleeding procedure. Switch on low-beam headlights and hazard warning lights. If the low-beam headlights and hazard warning lights are not switched on, the ignition (terminal 15) will switch off automatically after a certain period of time and interrupt the bleeding procedure.

TECHNICAL INFORMATION

The driving experience switch must not be set to the ECO PRO switch position.

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- Adjust the coolant level in the low-temperature coolant expansion tank (1) up to lower edge (2) of the coolant filler neck of low-temperature coolant expansion tank (1).
- Close the sealing cap on the coolant expansion tank of the low-temperature coolant circuit.
- Ensure that the bonnet is **open**.
- Connect battery charger.
- Switch on the ignition and ensure that it remains **switched on** (for example, activate the low-beam headlight and the hazard warning lights **at the same time**).
- If the low-beam headlight and the hazard warning light are **not** switched on, the ignition (**terminal 15**) will switch off automatically after some time and interrupts the bleeding procedure.
- Ensure that the Driving Experience Control is **not** in the **"ECO-PRO"** switch position.
- Adjust the heating to **maximum** temperature and adjust the blower to the **lowest** stage.
- Hold the accelerator pedal down to the limit position for at least **10 s** and do **not** press on the brake pedal.
- Do **not** start engine.

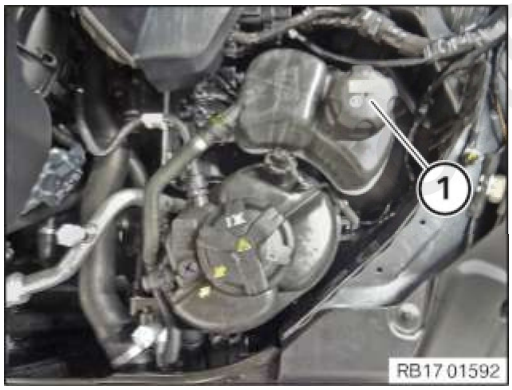
  The cooling system bleeding routine will start.

  The electric coolant pump in the low-temperature coolant circuit is activated for 11 minutes according to a cooling system bleeding routine.

  The cooling system bleeding routine ends after 11 minutes.

  The electric coolant pump is **no** longer activated.
- Note the display in the instrument cluster (KOMBI).

  If the service function is interrupted, the cooling system bleeding routine **must** be repeated.
- Allow the coolant temperature to cool down to **< 50°C**.



- Loosen sealing cap (1).



TECHNICAL INFORMATION

After the cooling system bleeding routine, the cooling system is topped up above the maximum mark.

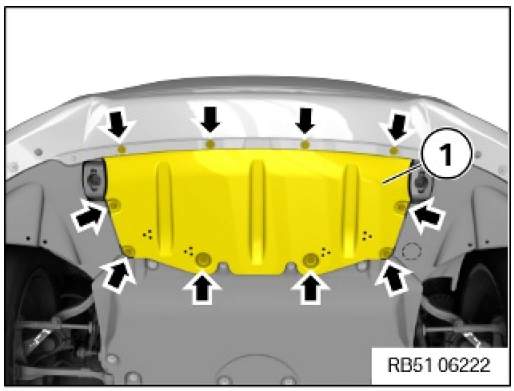
Overfilling the cooling system serves to balance the remaining air in the cooling system.

The normal filling level of the coolant is reached while driving.

- Adjust the filling level in coolant expansion tank (2) of the low-temperature coolant circuit to **100 ml** above the **maximum mark** (1) .
- Close sealing cap (1).

mondial.com

11 – Installing the front underbody protection



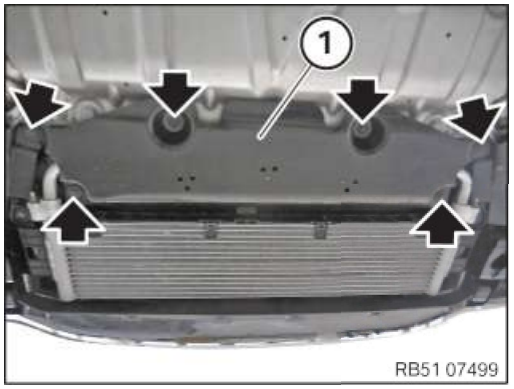
- **Version 1:**

  Feed in the front underbody protection (1) towards the front under the bumper panel and position.

  Tighten screws (arrows).

Underbody protection front

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



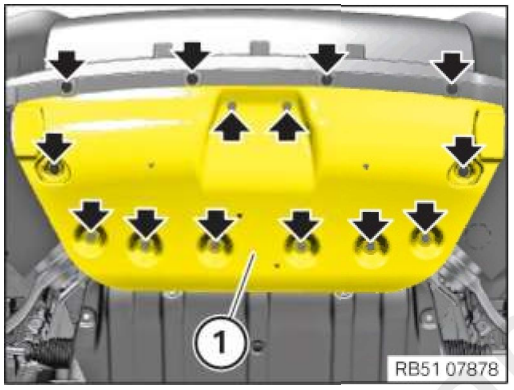
- **Version 2:**

  Feed in and position the front underbody protection (1).

  Tighten screws (arrows).

Underbody protection front

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



- **Version 3:**

  Feed in and install front underbody protection (1).

  Tighten screws (arrows).

Underbody protection front

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

12 – Evacuate and fill air conditioning

- See additional information.

Additional Information

Overview of Tightening Torques

Air conditioning condenser bracket on body — Used in step 6

		Tightening torque	8 Nm

Refrigerant lines to condenser — Used in step 6

M6		Tightening torque	13 Nm

Refrigerant line to connecting piece — Used in step 7

M8		Tightening torque	19 Nm

carmagn.com

Cover, front bottom on side Used in step 8

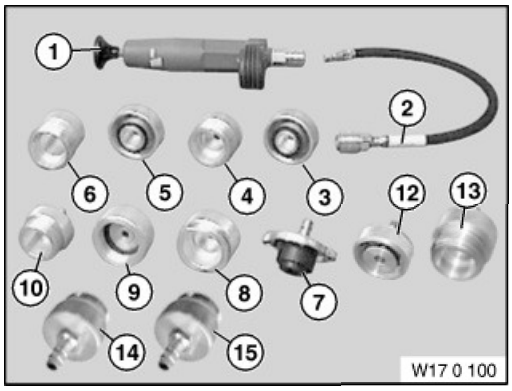
Hexagon screw for thermoplastic		Tightening torque	3 Nm

Underbody protection front Used in step 11

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

Overview of Special Tools

0 494 417 (17 0 100) Tester



Common Used in step 9

Usage	For checking engine cooling system on watertightness. For checking radiator cap.
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 02 (884)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
5	0 494 422 (17 0 105)		**Adapter** For radiator cap (sawtooth thread)	
10	0 494 427 (17 0 111)		**Adapter** For radiator cap R53/W11, R50/W17 adapter replaced 17 0 052.	
1	0 494 418 (17 0 101)		**Pump**	
2	0 494 419 (17 0 102)		**Hose** (hose with quick-release coupling)	
3	0 494 420 (17 0 103)		**Adapter** For radiator cap (normal thread)	
4	0 494 421 (17 0 104)		**Adapter** For radiator cap (normal thread)	
6	0 494 423 (17 0 106)		**Adapter** For radiator cap (sawtooth thread)	
7	0 494 424 (17 0 107)		**Adapter** For radiator cap R50 / W10	
8	0 494 425 (17 0 108)		**Adapter** For radiator cap R50 / W10	

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9	0 494 426 (17 0 109)		**Adapter** For radiator connection R53/W11, R50/W17 adapter corresponds to 17 0 051	
11	0 494 428 (17 0 112)		**Case**	
12	0 494 642 (17 0 113)		**Adapter** For radiator cap Model series: E60, E61, E63, E64 SI no.: 1 08 03 (988)	
13	0 494 643 (17 0 114)		**Adapter** For radiator cap Model series: E60, E61, E63, E64 SI no.: 1 08 03 (988)	
14	0 495 889 (17 0 115)		**Adapter** For radiator cap Model series: N12, N14	

Overview Technical Data

Capacity of low-temperature coolant circuit G20/G29	Used in step 9
B58B30O1	4,5 l

Expendable materials: Technically suitable antifreeze and corrosion inhibitor

Links

Repair instructions	**Used in step**
64 50 010 Extract, evacuate and fill air conditioning system	112
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	112
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	112
64 50 ... Notes on repairs to air conditioning	112
64 50 010 Drawing off, evacuating and filling air conditioning (R1234yf)	112
64 50 ... Safety information for handling refrigerant R1234yf	112
64 50 ... Safety information for handling tetrafluorethane refrigerant R134a	112
64 50 ... Safety informations for handling refrigerant oil	112
17 00 ... Notes for working on cooling system.	9

Operating materials	**Used in step**
Main group 17	9

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64 53 800 Replacing pressure line for air conditioning compressor, air conditioning condenser

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.

CAUTION

Refrigerant circuit under high pressure.

Danger of injury!

- Note and follow safety information on containers.
- Avoid contact with refrigerant; wear safety goggles and protective gloves.
- For more information see: 64 50 Handling refrigerant and 6450 Notes on repair work on air conditioning

RISK OF DAMAGE

Damage to battery terminal, the safety battery terminal or the intelligent battery sensor (IBS).

Damaged battery terminals can lead to malfunctions or vehicle electrical system faults.

- Pull off battery terminal from battery pole by carefully moving to and fro. Do not pry off using a tool.

TECHNICAL INFORMATION



- When the engine is stopped after the end of the journey, it may be necessary to run the electric fan. In rare cases, operation of the electric fan can last up to 11 min. This protects the components. In this case, replacing the electric fan will not remedy the problem!

PRELIMINARY WORK

1 – Drawing off the air conditioning

- See additional information.

2 – Disconnecting all battery earth leads

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- See additional information.

3 – Removing the acoustic cover

WARNING

Hot surfaces.

Risk of burning!

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

RISK OF DAMAGE

Damage to the acoustic cover.

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

- Disassemble or mount the acoustic cover carefully.
- Disassemble or mount snap-lock couplings of the ball pivots one after the other.
- Disassemble or mount acoustic cover only at temperatures >20 °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).

4 – 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.

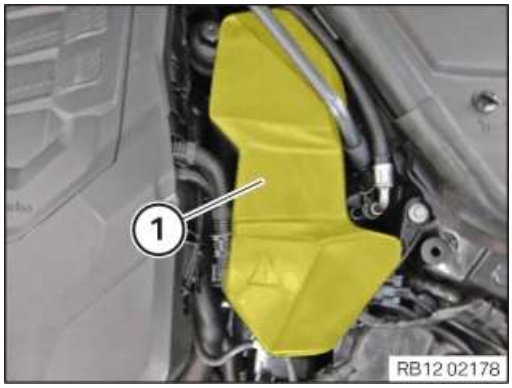
TECHNICAL INFORMATION

Control unit must be programmed after it is replaced.

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

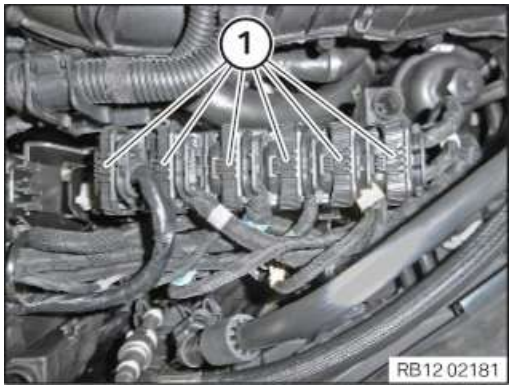
TECHNICAL INFORMATION

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

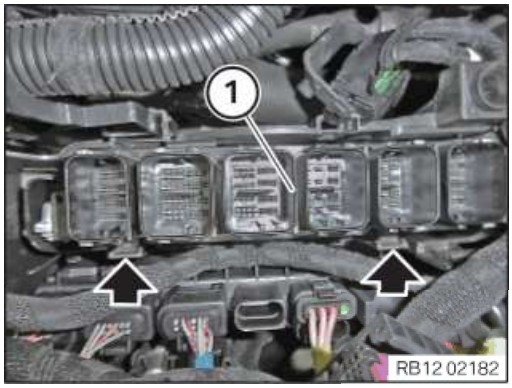


- Pull the cover (1) towards the top and feed out.

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- Unlock and disconnect the plug connection (1).



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

5 – 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.

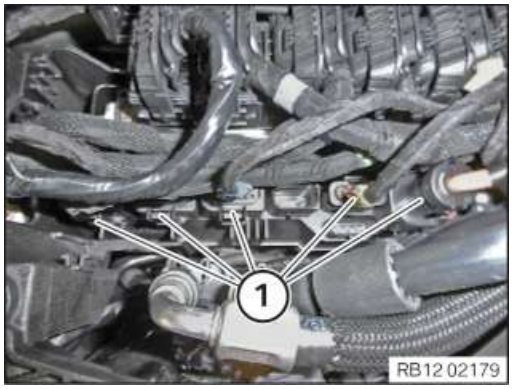
RISK OF DAMAGE

Electrostatic discharge.

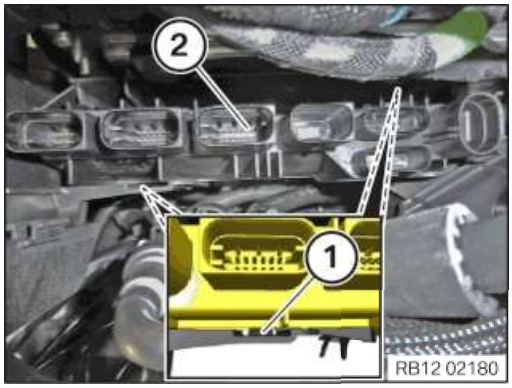
Damage to or destruction of electrical components.

- 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.

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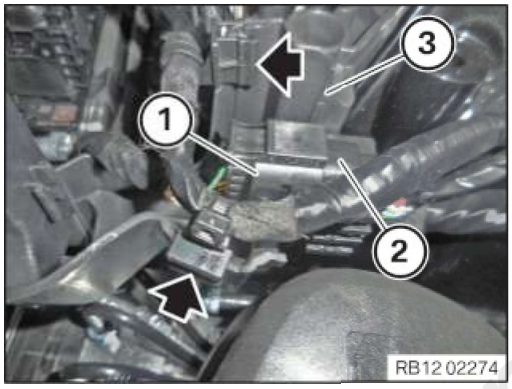


- Unlock and disconnect plug connections (1).

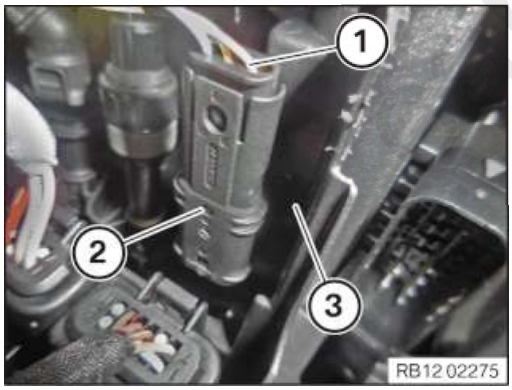


- Unlock the latch mechanisms (1).
- Guide out and remove integrated supply module (PDM) (2) upwards.

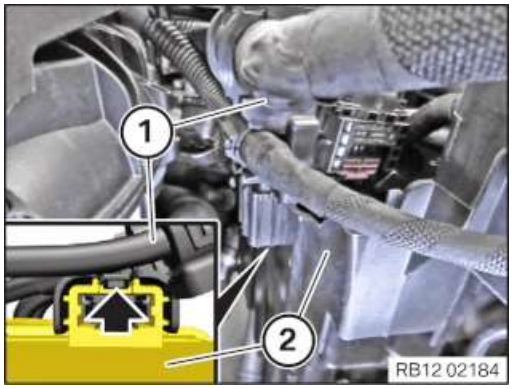
6 – Removing the control unit holder



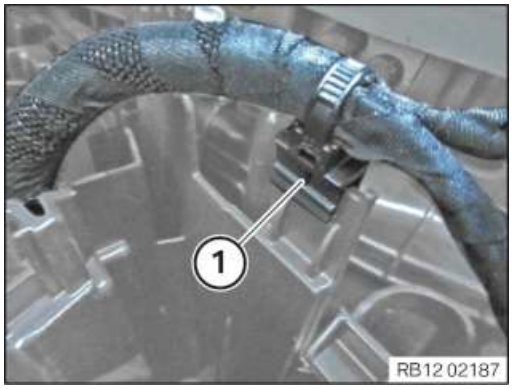
- Unlock plug connection (1) and disconnect.
- Unlock the connector (2) and disconnect from the control unit holder (3).
- Release the clamps (arrows).



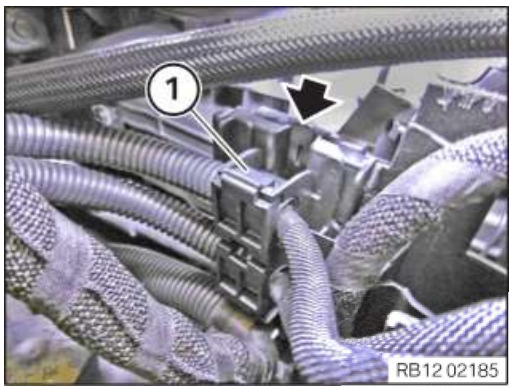
- Unlock plug connection (1) and disconnect.
- Unlock the connector and disconnect from the control unit holder (3).



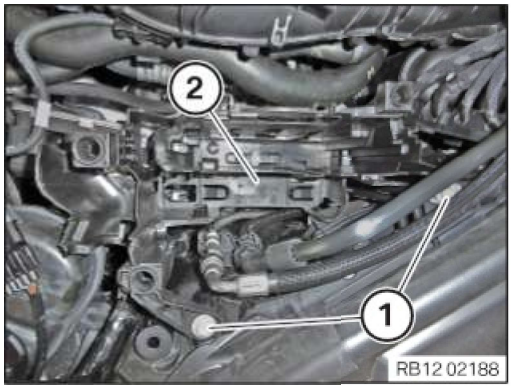
- Unlock the lock (arrow).
- Disconnect the cable holder (1) upwards from the control unit holder (2).



- Loosen clamp (1).

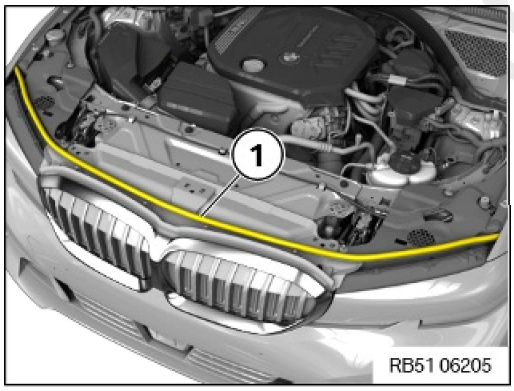


- Unlock the lock (arrow).
- Feed out the cable clip (1) upwards and set it aside.



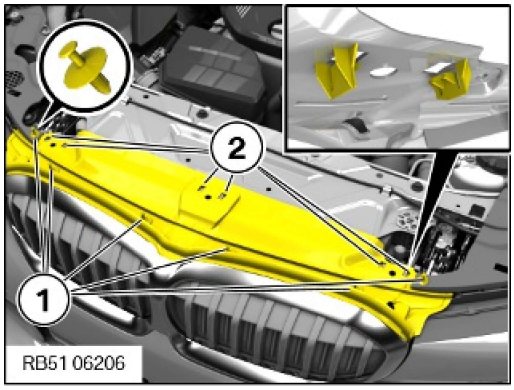
- Loosen screws (1).
- Guide out and remove the control unit holder (2).

7 – Remove the seal for the bonnet in front



- Pull off front bonnet seal (1) upwards.

8 – Removing the centre engine compartment cover



- Detach all expanding rivets (1).
- Release the cover of the centre engine compartment with the latch mechanisms (2) .
- Feed the cover for the centre engine compartment out to the rear.

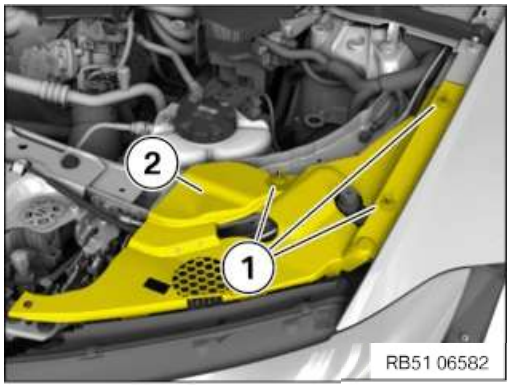
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9 – Partially remove the top left and right cover in the engine compartment

NOTICE

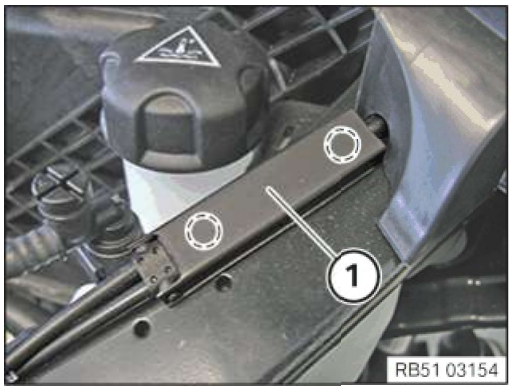
Description is for left component only. Procedure on the right side is identical.

▶ **Removing the cover in the engine compartment on top partially**

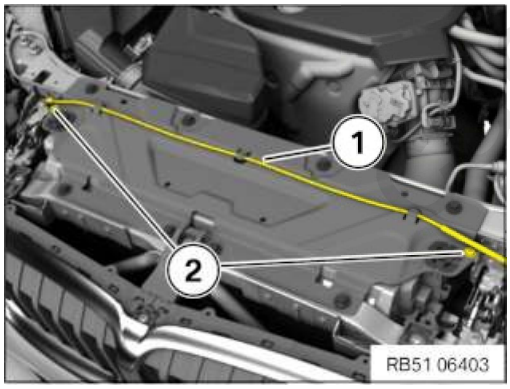


- Loosen the expanding rivet (1).
- Remove the cover in the engine compartment on top (2) partially.

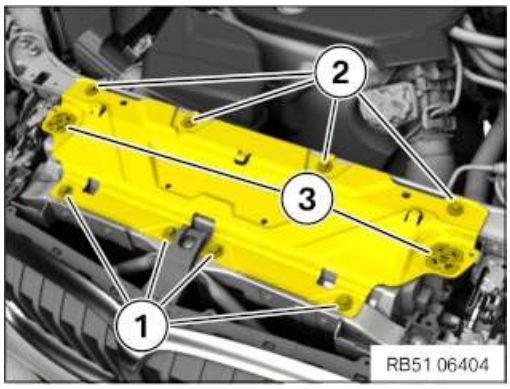
10 – Removing the top cross connection



- Release the housing for the coupling of the Bowden cables (1) from the body.



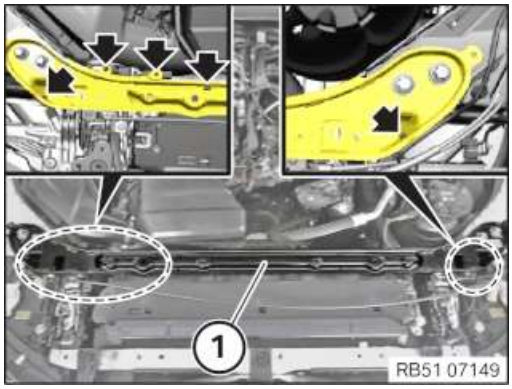
- Detach Bowden cable (1) at the top cross connection.
- Loosen screws (2).



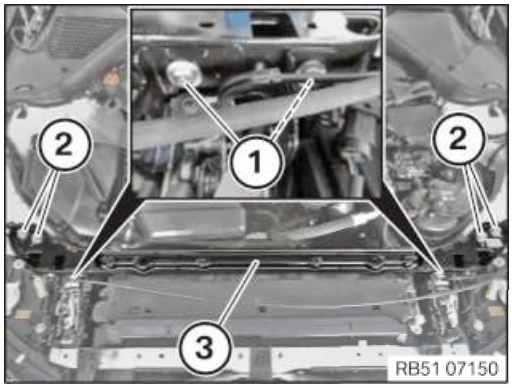
- Loosen screws (1) and (2).
- Remove the top cross connection with the holders(3) towards the top.

11 – Remove the rear top cross connection

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- Release the clips (arrows) in the marked areas from the top rear cross connection (1).

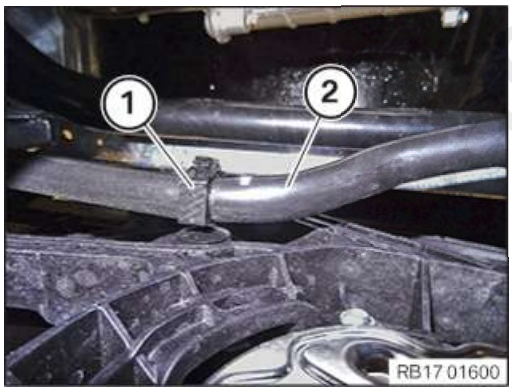


- Loosen screws (1).
- Loosen screws (2).
- Guide out and remove top rear cross connection (3).

12 – Remove fan cowl.

TECHNICAL INFORMATION

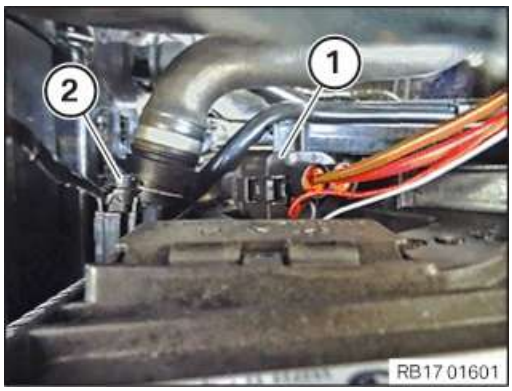
- When the engine is stopped after the end of the journey, it may be necessary to run the electric fan. In rare cases, operation of the electric fan can last up to 11 min. This protects the components. In this case, replacing the electric fan will not remedy the problem!



- **If installed:** Release transmission oil line (2).

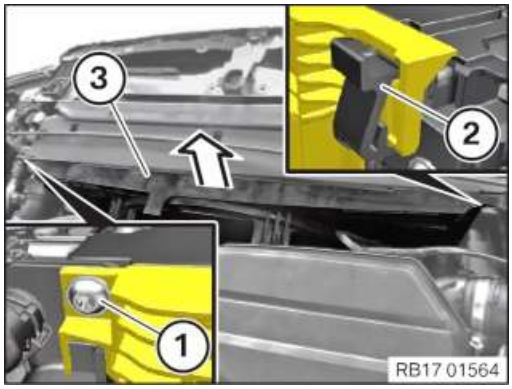
  Unlock the holder (1).

  Thread out transmission oil line (2) and set aside.



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

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- Loosen screw (1).
- Unlock lock (2).
- Guide out and remove fan cowl (3) **carefully** in the direction of the arrow.

13 – Removing the drive belt for alternator

CAUTION

Spring preload.

Danger of injury!

- The use of the specified special tool (tool) is mandatory.
- The described operation must be carried out properly.

CAUTION

Component with preload.

Danger of injury!

- Reduce preload as far as possible before disassembly. Relieve component.

TECHNICAL INFORMATION

If the drive belt is reused: Mark direction of travel and reinstall drive belt in same direction of travel.

TECHNICAL INFORMATION

The drive belt must be replaced if contaminated with coolant- and oil residues.



- Increase the preload on the belt tensioner in **the direction of the arrow** using standard tools (1).
- Secure the belt tensioner with the special tool 0 496 268 (11 0 390).
- Guide out the drive belt for the alternator (2) and remove it.

14 – Removing the air conditioning compressor

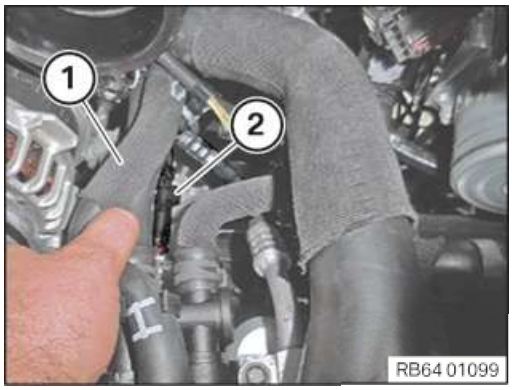
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CAUTION

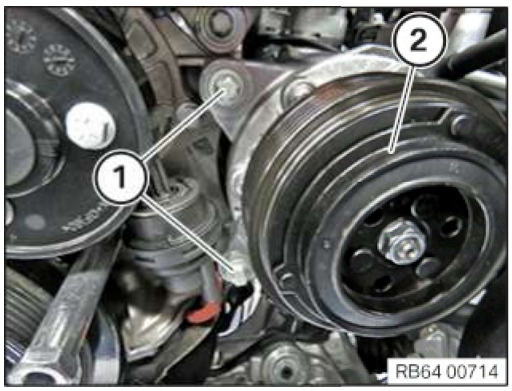
Residual pressure in the air conditioning.

Danger of injury!

- Wear safety goggles and protective gloves when disconnecting the refrigerant line.
- Seal refrigerant lines with seal plugs.



- Slide the coolant hose (1) slightly to the side.
- Unlock and disconnect connector (1).



TECHNICAL INFORMATION

Secure component against falling.

- Loosen screws (1).
- Detach the air conditioning compressor (2) from the component carrier and protect it from falling.

Note: Tie the air conditioning compressor up.

MAIN WORK

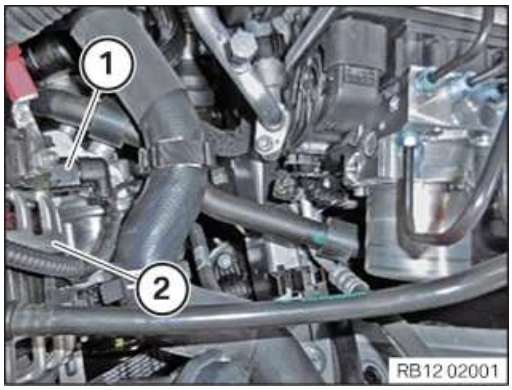
15 – Removing the pressure line between the air conditioning condenser and the condenser

CAUTION

Residual pressure in the air conditioning.

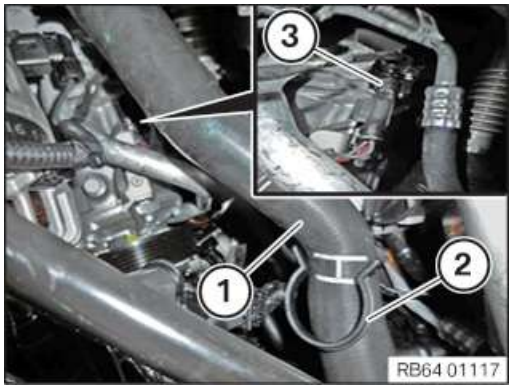
Danger of injury!

- Wear safety goggles and protective gloves when disconnecting the refrigerant line.
- Seal refrigerant lines with seal plugs.

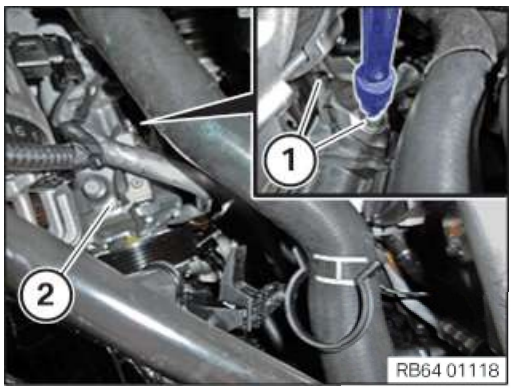


- Unlock and disconnect the plug connection (1) on the alternator (2).

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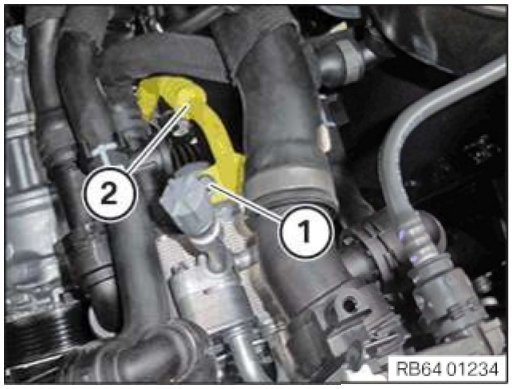
- If necessary, remove coolant hose (1) from holder (2) and slide it slightly to the side.
- Unlock plug connection (3) and disconnect.



TECHNICAL INFORMATION

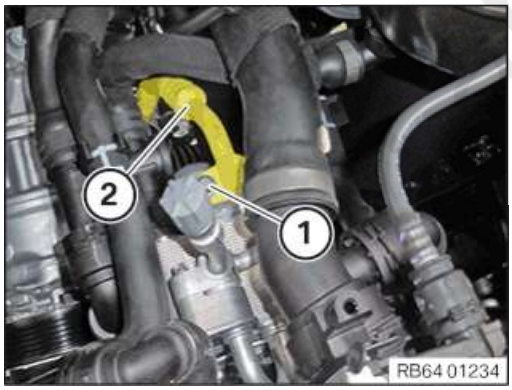
Secure component against falling.

- Loosen screws (1).
- Remove the refrigerant line from air conditioning compressor (2).



- Loosen screw (1).
- Feed out and remove pressure line (2) between the air conditioning condenser and the condenser

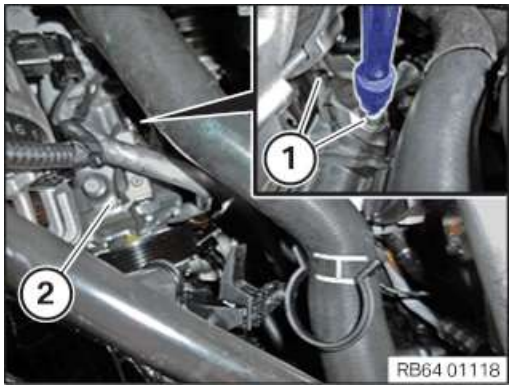
16 – Install the pressure line between the air conditioning compressor and the condenser



- Feed in and correctly position the pressure line (2) between the air conditioning compressor and the condenser.
- Tighten down screw (1).

Refrigerant lines to condenser

M6		Tightening torque	13 Nm



TECHNICAL INFORMATION

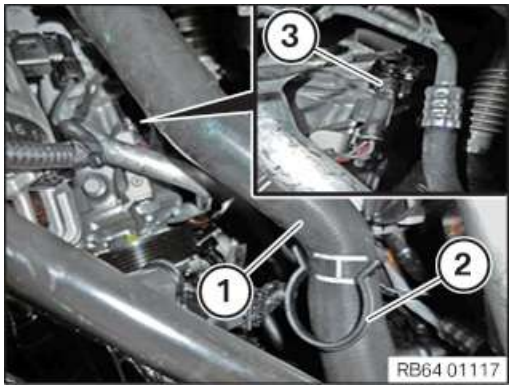
Secure component against falling.

- Position the refrigerant lines on the air conditioning compressor (2).
- Tighten the screws (1).

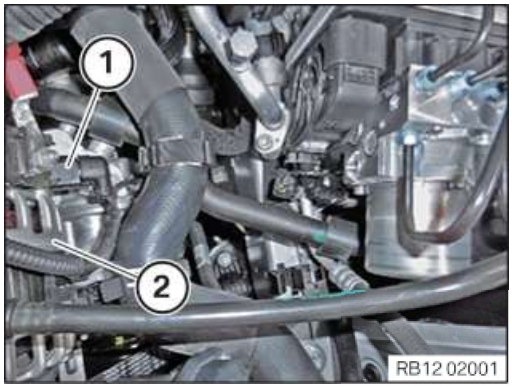
Refrigerant line on air conditioning compressor

M8		Tightening torque	19 Nm

rdiagn.com



- Connect connectors (3) and lock.
- Insert the coolant hose (1) into the holder, if required (2) and correctly position.

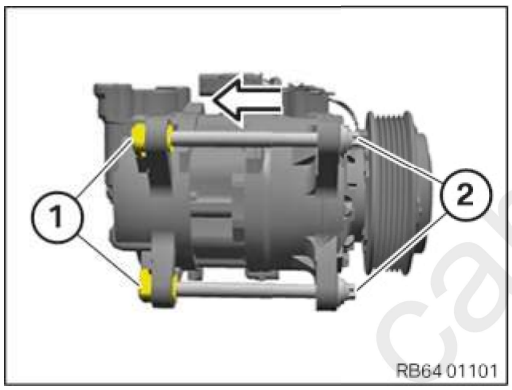


- Connect the connector (1) to the alternator (2) and lock.

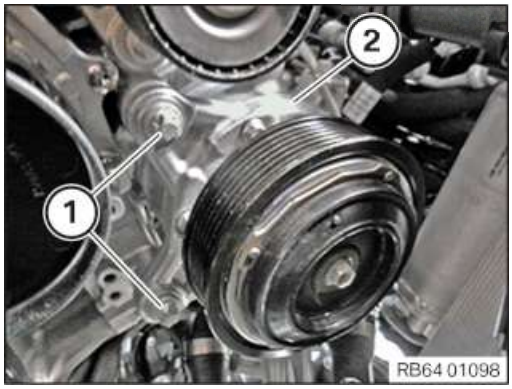
POSTPROCESSES

17 – Partially installing the air conditioning compressor

▸ **Prepare for the installation of the air conditioning compressor**



- Screw the bolts (2) into the threaded support sleeve (1).
- Slightly press back the threaded support sleeve (1) in the direction of the arrow with the bolts (2).
- Unscrew the bolts (2) from the threaded support sleeve (1) again.

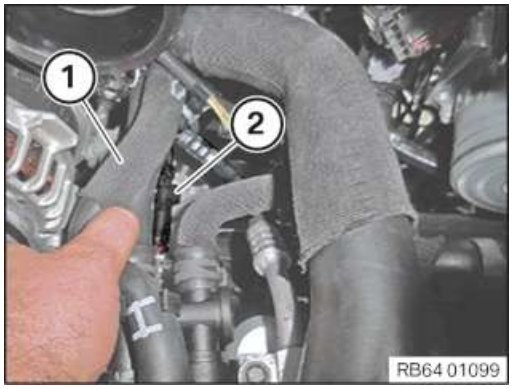


- Correctly position the air conditioning compressor (2).
- Tighten the screws (1).

Air conditioning compressor in component carrier

M10		Tightening torque	38 Nm

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- Slide the coolant hose (1) slightly to the side.
- Connect plug connection (2) and lock.

18 – Installing the drive belt for alternator

Overview of drive belt for alternator



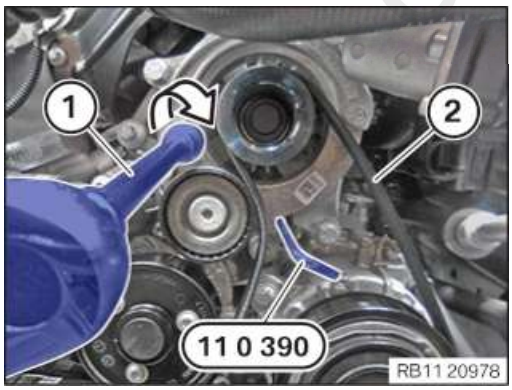
1. Drive belt for alternator

TECHNICAL INFORMATION

If the drive belt is reused: Mark direction of travel and reinstall drive belt in same direction of travel.

TECHNICAL INFORMATION

The drive belt must be replaced if contaminated with coolant- and oil residues.



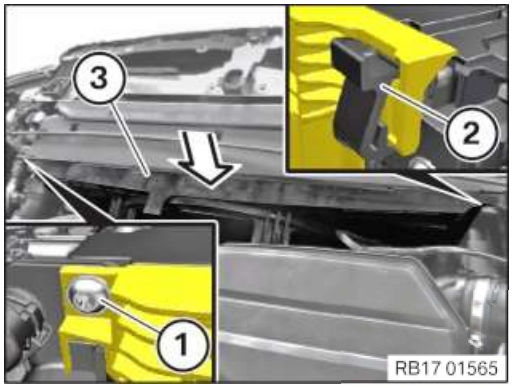
- Position the drive belt for alternator (2) on the ancillary components.
- Increase the preload on the belt tensioner in **the direction of the arrow** using standard tools (1).
- Feed the special tool 0 496 268 (11 0 390) out of the belt tensioner and remove it.

19 – Install fan cowl

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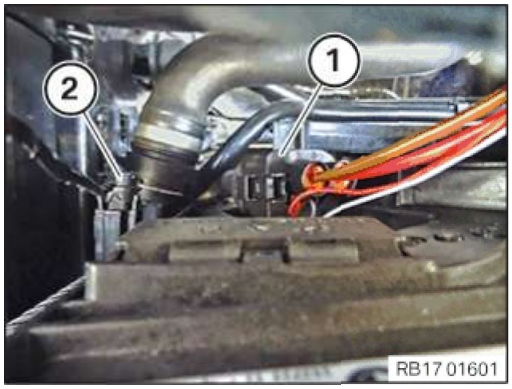
- Feed guides (1) into the radiator.
- Feed guides (2) into the charge air cooler.



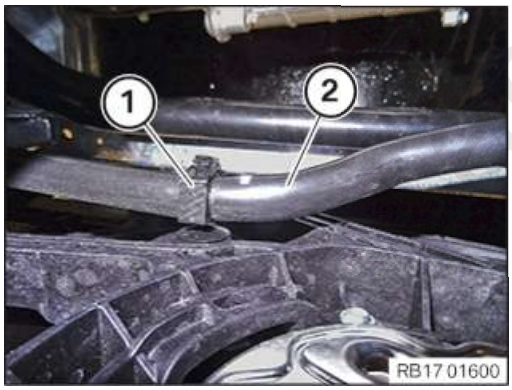
- Guide in and install fan cowl (3) **carefully** in the direction of the arrow.
- Ensure that the lock (2)engages audibly.
- Tighten down screw (1).

Fan cowl with electric fan on radiator

TS6x20		Tightening torque	6,5 Nm



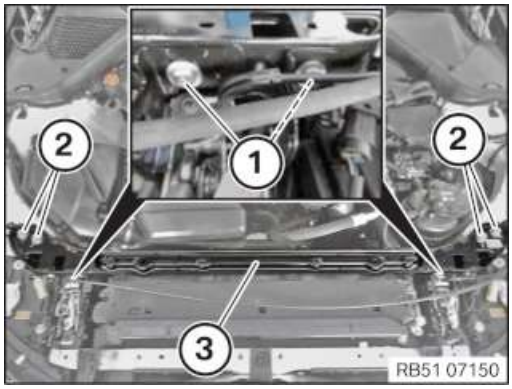
- Connect connectors (2) and lock.
  The connector (2) must engage audibly.
- Connect connectors (1) and lock.
  The connector (1) must engage audibly.



- **If installed:** Secure the transmission oil line (2).
  Insert and install the transmission oil line (2).
  Lock holder (1).

20 – Install the rear top cross connection

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- Guide in and position the top rear cross connection (3).
- Tighten the screws (1).

Top rear cross connection to bonnet catch support

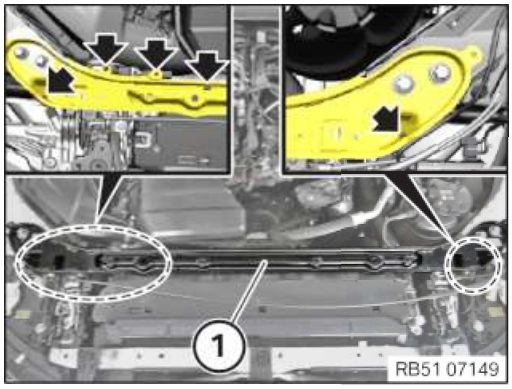
Flat-head screw M6x20		Tightening torque	11,8 Nm

- Renew screws (2).

  Parts: Bolts
- Tighten the screws (2).

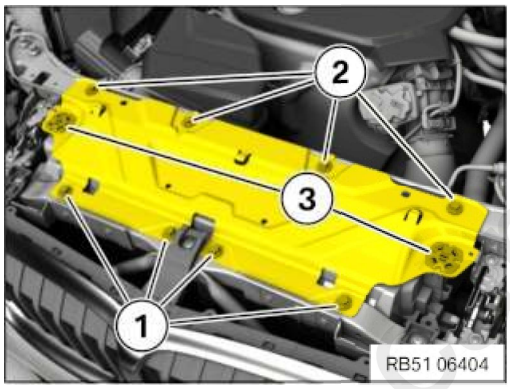
Rear top cross connection to wheel arch carrier support

M10x20 screw	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °



- Secure the clips (arrows) in the marked areas to the top rear cross connection (1).

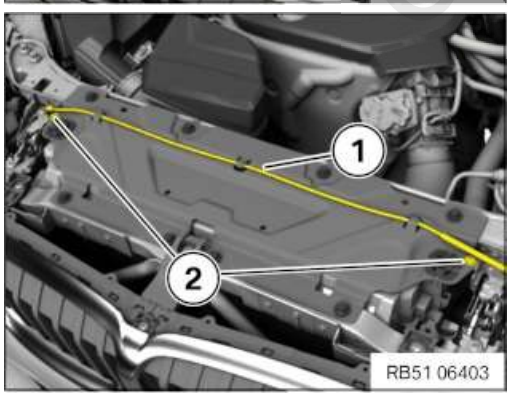
21 – Installing the top cross connection



- Set and position upper cross connection with holders (3) from above.
- Tighten down screws (1) and (2).

Cross connection, top

M8x20		Tightening torque	28 Nm



- Tighten down screws (2).

Cross connection, top

M6x20		Tightening torque	11,8 Nm

- Attach Bowden cable (1) on the upper cross connection.



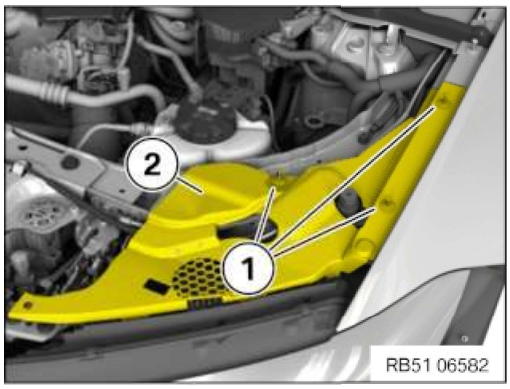
- Clip in the housing for the coupling of the Bowden cables (1).

22 – Install the cover in the engine compartment at top left and right partially

NOTICE

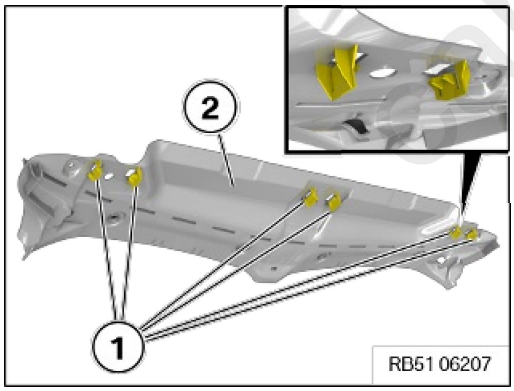
Description is for left component only. Procedure on the right side is identical.

▸ **Installing the cover in the engine compartment on top partially**



- Install the cover in the engine compartment on top (2).
- Secure expanding rivet (1).

23 – Installing cover for engine compartment centre



Check

- Check latch mechanisms (1) of cover for engine compartment centre (2) for damage.

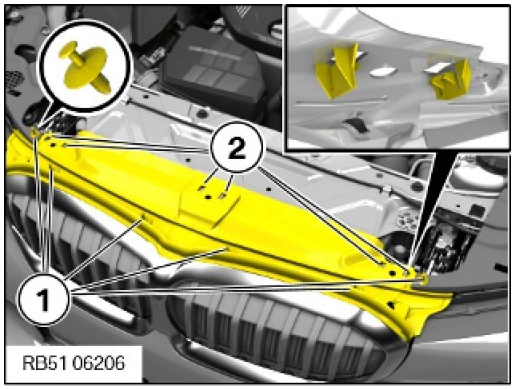
Result

» The latch mechanism (1) is damaged.

Measure

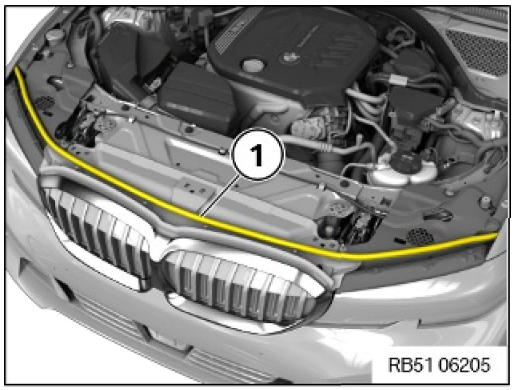
- Renew cover for engine compartment centre (2).

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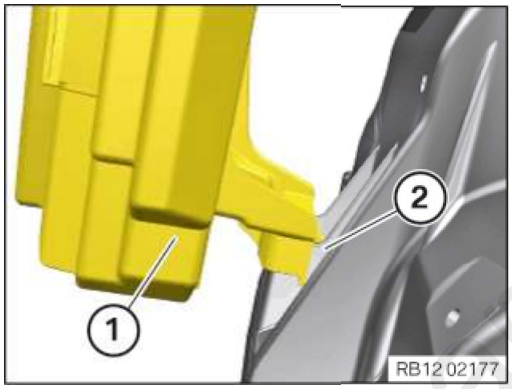
- Guide in the cover for the engine compartment centre from the rear and position it.
- Clip in the cover for the engine compartment centre with latch mechanisms (2).
- Mount all expanding rivets (1).

24 – Install the seal for the front bonnet

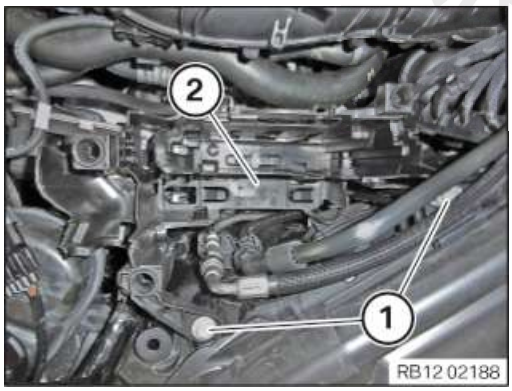


- Position the bonnet seal(1) and connect it on the mounting on the bumper and on the headlights.

25 – Installing the control unit holder



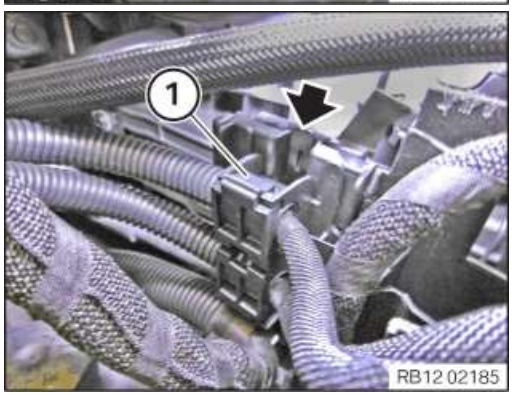
- Make sure the bottom control unit holder (1) is inserted correctly into the fixture (2).



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

Control unit holder on spring strut dome

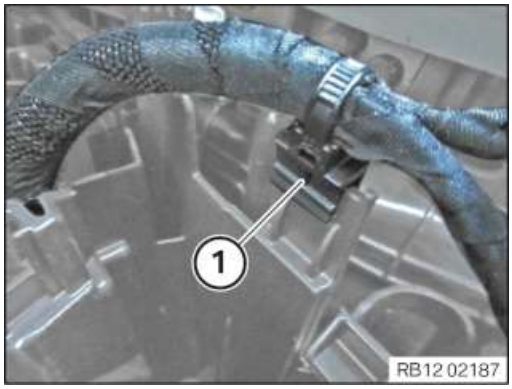
Hexagon screw		Tightening torque	8 Nm



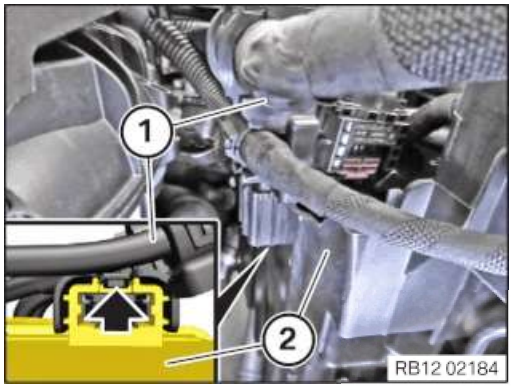
- Feed in and install the cable clip (1).

  Lock (arrow) must audibly engage.

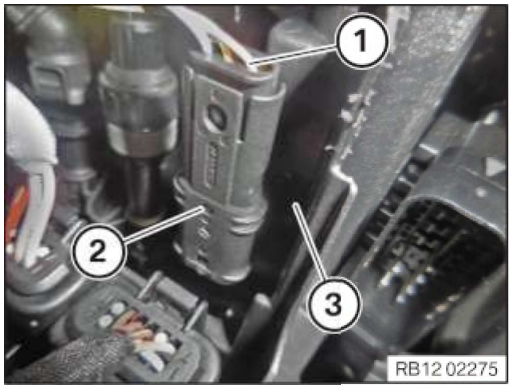
tdiagn.com



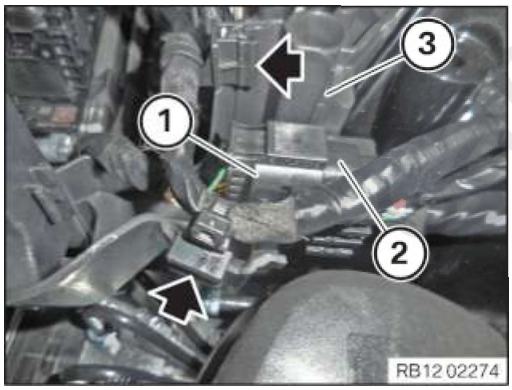
- Secure clamps (1).



- 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).

26 – 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.

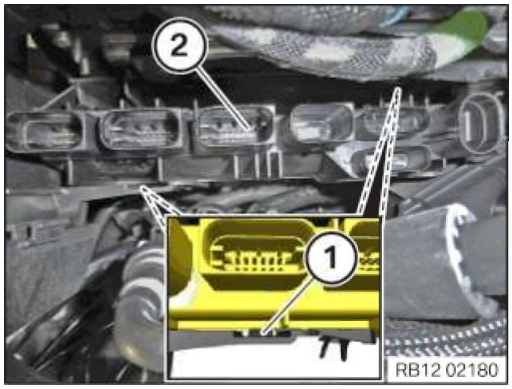
rdiagn.com

RISK OF DAMAGE

Electrostatic discharge.

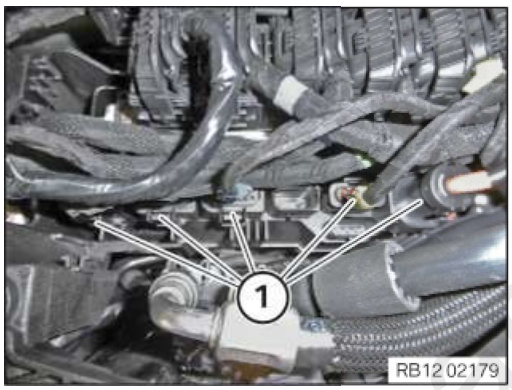
Damage to or destruction of electrical components.

- 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).

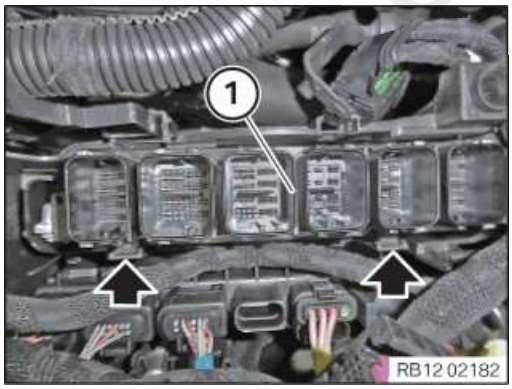
  The latch mechanisms (1) must engage audibly.
- Unlock the latch mechanisms (1).



- Connect connectors (1) and lock.

  The connectors (1) must engage audibly.

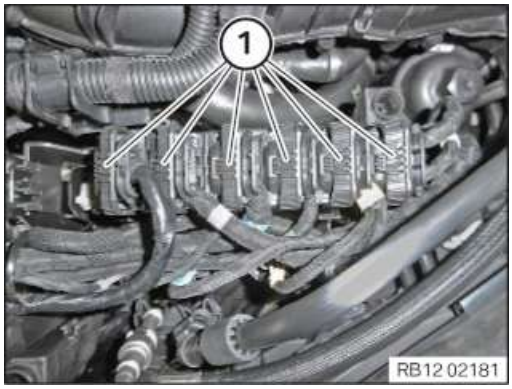
27 – Installing the DME control unit



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

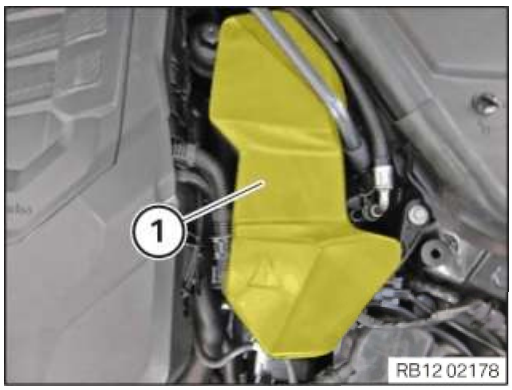
  The locks (arrows) must engage audibly.

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- Connect connectors (1) and lock.

  All connectors (1) must engage audibly.



- Insert and install cover (1) into guides.

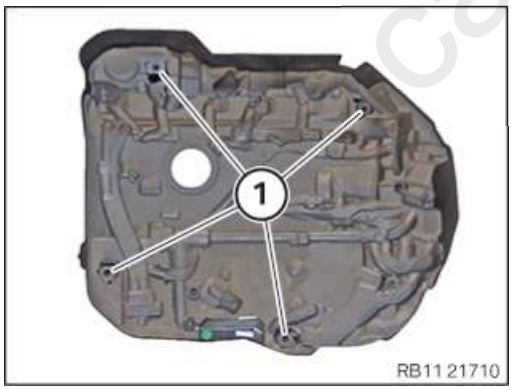
28 – Install acoustic cover

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).

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29 – Disconnecting all battery earth leads



- See additional information.

30 – Evacuate and fill air conditioning

- See additional information.

Additional Information

Overview of Tightening Torques

Refrigerant lines to condenser			Used in step 16
M6		Tightening torque	13 Nm

Refrigerant line on air conditioning compressor			Used in step 16
M8		Tightening torque	19 Nm

Air conditioning compressor in component carrier			Used in step 17
M10		Tightening torque	38 Nm

Fan cowl with electric fan on radiator			Used in step 19
TS6x20		Tightening torque	6,5 Nm

Top rear cross connection to bonnet catch support			Used in step 20
Flat-head screw M6x20		Tightening torque	11,8 Nm

Rear top cross connection to wheel arch carrier support			Used in step 20
M10x20 screw	Renew screw.	Jointing torque	56 Nm
		Angle of rotation	90 °

Cross connection, top			Used in step 21
M8x20		Tightening torque	28 Nm

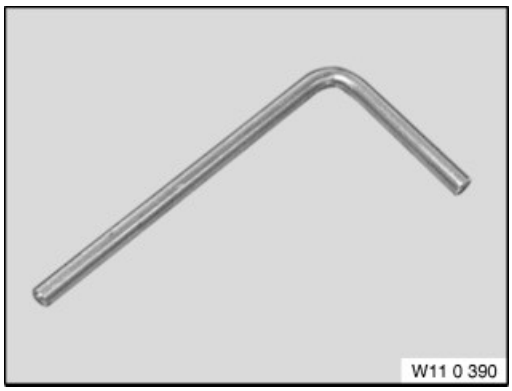
Cross connection, top			Used in step 21
M6x20		Tightening torque	11,8 Nm

Control unit holder on spring strut dome			Used in step 25
Hexagon screw		Tightening torque	8 Nm

Overview of Special Tools

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0 496 268 (11 0 390) Pin



Common	Used in step 1318
Usage	(roll pin) For securing new tensioning pulley (poly-V belt)
Included in the tool or work	
Storage location	B24
Replaced by	
In connection with	
SI-Number	01 15 07 (390)

Links

General repair instructions	Used in step
12 00 ... Instructions for removal and replacement of control units	427

Repair instructions	Used in step
64 50 010 Extract, evacuate and fill air conditioning system	130
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	130
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	130
64 50 ... Notes on repairs to air conditioning	130
64 50 010 Drawing off, evacuating and filling air conditioning (R1234yf)	130
64 50 ... Safety information for handling refrigerant R1234yf	130
64 50 ... Safety information for handling tetrafluorethane refrigerant R134a	130
64 50 ... Safety informations for handling refrigerant oil	130
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	229
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	229
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
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61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 20 900 Disconnecting and connecting battery earth lead	229
61 35 ... Notes on ESD protection (Electro Static Discharge)	4526
61 00 730 Encode/program control unit(s) (after vehicle test)	27

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64 53 521 Replacing safety pressure switch

CAUTION

Refrigerant circuit under high pressure.

Danger of injury!

- Note and follow safety information on containers.
- Avoid contact with refrigerant; wear safety goggles and protective gloves.
- For more information see: 64 50 Handling refrigerant and 6450 Notes on repair work on air conditioning

PRELIMINARY WORK

1 – Drawing off the air conditioning

- See additional information.

MAIN WORK

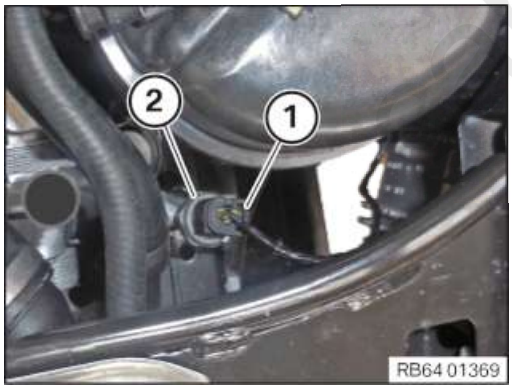
2 – Remove safety pressure switch

CAUTION

Residual pressure in the air conditioning.

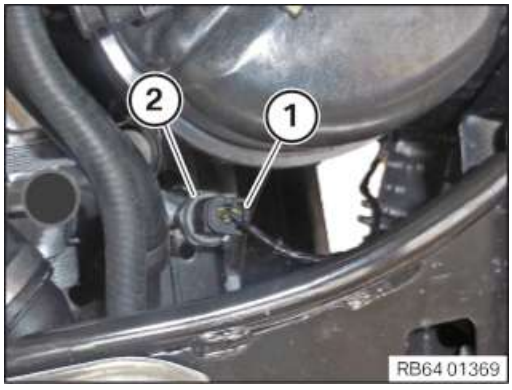
Danger of injury!

- Wear safety goggles and protective gloves when disconnecting the refrigerant line.
- Seal refrigerant lines with seal plugs.



- Unlock and disconnect connector (1).
- Loosen the safety pressure switch (2).

3 – Installing the safety pressure switch



- Correctly position and tighten the safety pressure switch (2).

Safety pressure switch

	Tightening torque	10 Nm

- Insert and connect the connector (1).

rdiagn.com

POSTPROCESSES

4 – Evacuate and fill air conditioning

- See additional information.

Additional Information

Overview of Tightening Torques

Safety pressure switch		Used in step 3
	Tightening torque	10 Nm

Links

Repair instructions	**Used in step**
64 50 010 Extract, evacuate and fill air conditioning system	14
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	14
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	14
64 50 ... Notes on repairs to air conditioning	14
64 50 010 Drawing off, evacuating and filling air conditioning (R1234yf)	14
64 50 ... Safety information for handling refrigerant R1234yf	14
64 50 ... Safety information for handling tetrafluorethane refrigerant R134a	14
64 50 ... Safety informations for handling refrigerant oil	14

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64 53 822 Replacing the front intake pipe

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.

CAUTION

Refrigerant circuit under high pressure.

Danger of injury!

- Note and follow safety information on containers.
- Avoid contact with refrigerant; wear safety goggles and protective gloves.
- For more information see: 64 50 Handling refrigerant and 6450 Notes on repair work on air conditioning

RISK OF DAMAGE

Damage to battery terminal, the safety battery terminal or the intelligent battery sensor (IBS).

Damaged battery terminals can lead to malfunctions or vehicle electrical system faults.

- Pull off battery terminal from battery pole by carefully moving to and fro. Do not pry off using a tool.

PRELIMINARY WORK

1 – Drawing off the air conditioning

- See additional information.

2 – Disconnecting all battery earth leads



- See additional information.

3 – Removing the acoustic cover

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WARNING

Hot surfaces.

Risk of burning!

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

RISK OF DAMAGE

Damage to the acoustic cover.

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

- Disassemble or mount the acoustic cover carefully.
- Disassemble or mount snap-lock couplings of the ball pivots one after the other.
- Disassemble or mount acoustic cover only at temperatures >20 °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).

4 – 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

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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.

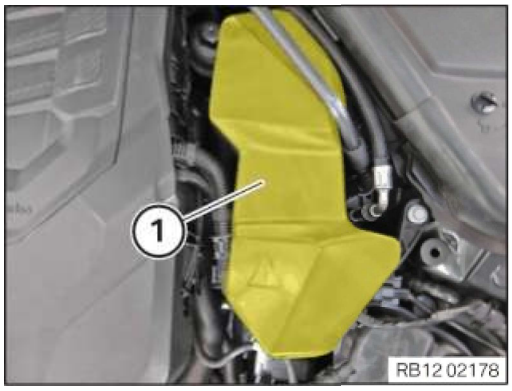
TECHNICAL INFORMATION

Control unit must be programmed after it is replaced.

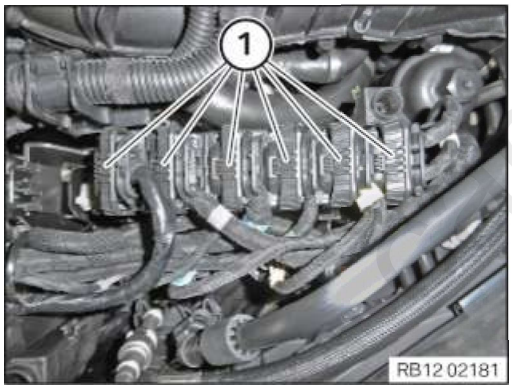
For additional information see: 61 00 ... Programming/encoding control unit(s)

TECHNICAL INFORMATION

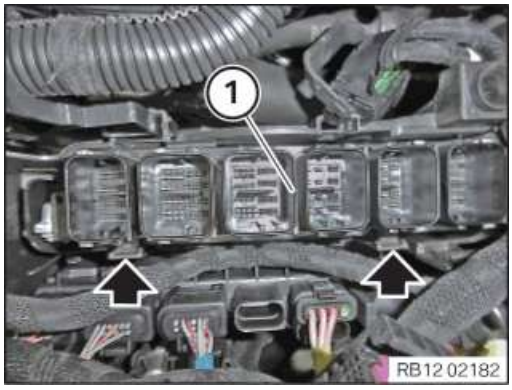
Disconnecting control units may cause fault code entries and functional limitations. Fault code entries must be read out and deleted if necessary.



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



- Unlock and disconnect the plug connection (1).



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

5 – Removing integrated supply module (PDM)

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WARNING

Working on 12 V vehicle electrical system.

Risk of short circuits! Risk of fire!

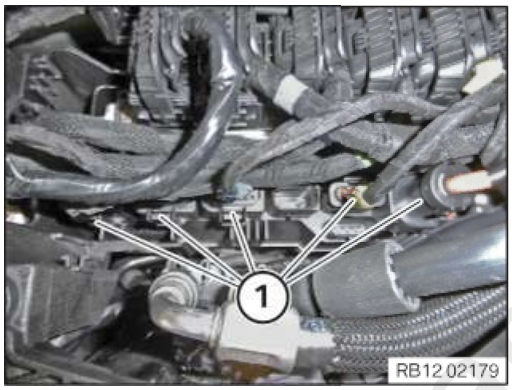
- Detach battery earth lead from battery.
- For additional batteries: Detach all battery earth leads from additional batteries.

RISK OF DAMAGE

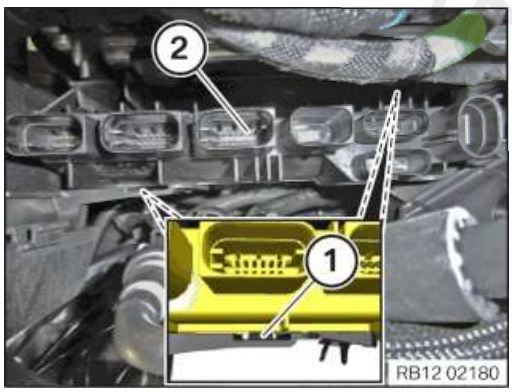
Electrostatic discharge.

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.



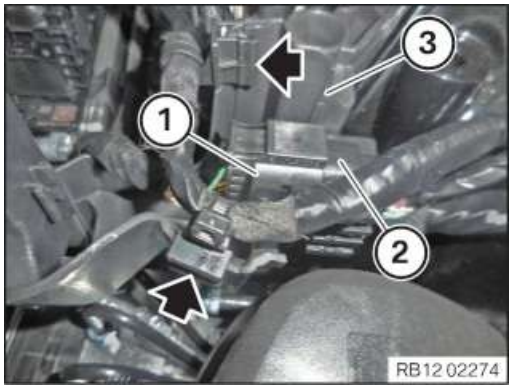
- Unlock and disconnect plug connections (1).



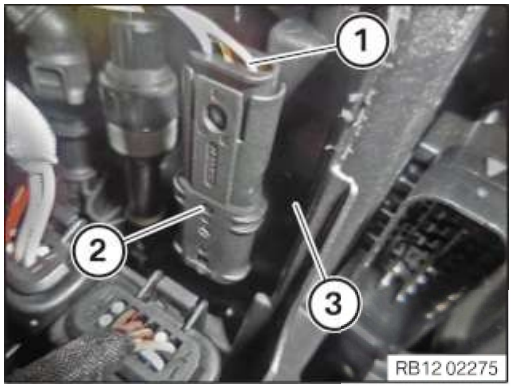
- Unlock the latch mechanisms (1).
- Guide out and remove integrated supply module (PDM) (2) upwards.

6 – Removing the control unit holder

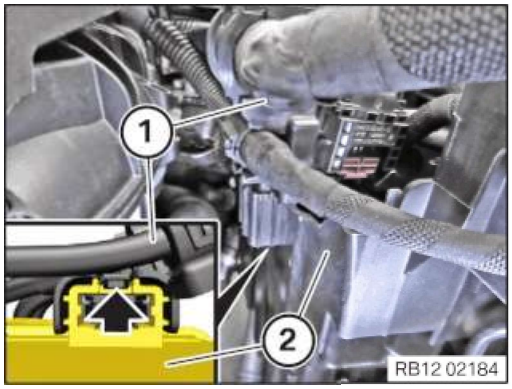
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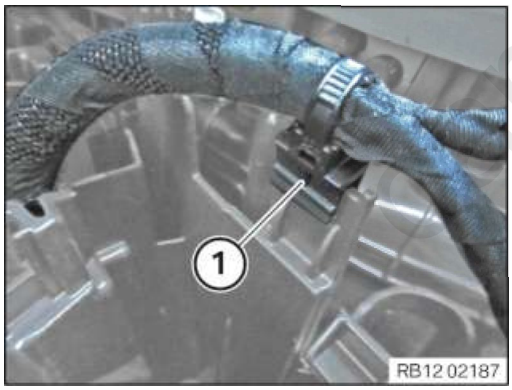
- Unlock plug connection (1) and disconnect.
- Unlock the connector (2) and disconnect from the control unit holder (3).
- Release the clamps (arrows).



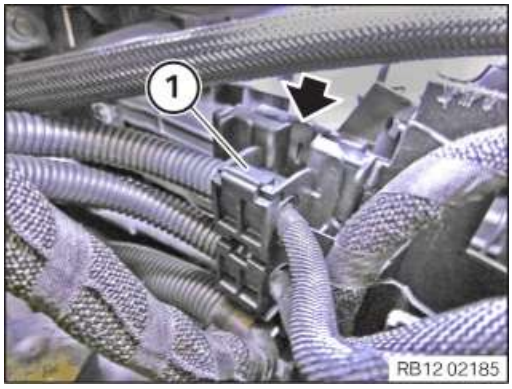
- Unlock plug connection (1) and disconnect.
- Unlock the connector and disconnect from the control unit holder (3).



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

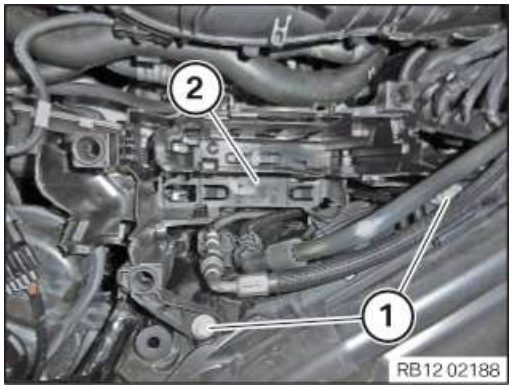


- Loosen clamp (1).



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

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

MAIN WORK

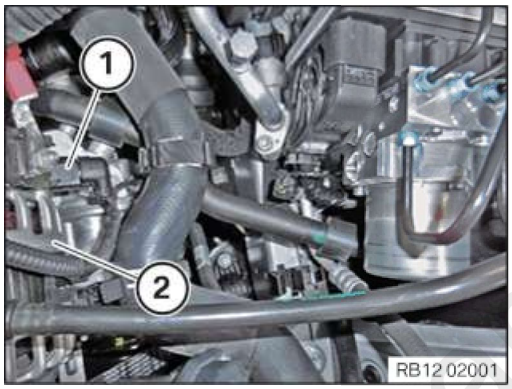
7 – Remove the front intake pipe

CAUTION

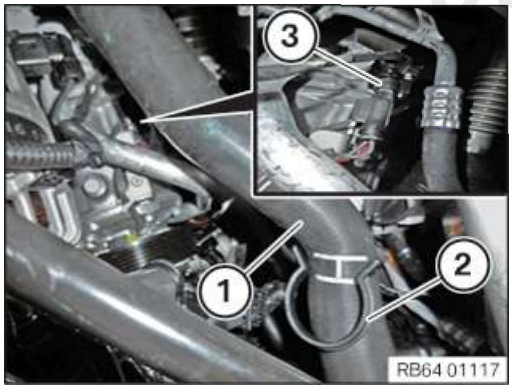
Residual pressure in the air conditioning.

Danger of injury!

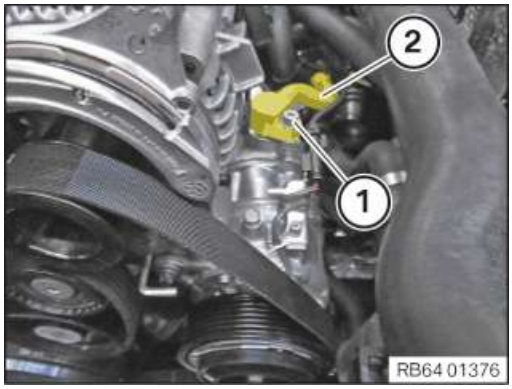
- Wear safety goggles and protective gloves when disconnecting the refrigerant line.
- Seal refrigerant lines with seal plugs.



- Unlock connector (1) on alternator (2) and disconnect it.



- If required, remove the coolant hose (1) from the holder (2) and push it aside.
- Unlock and disconnect connector (3).



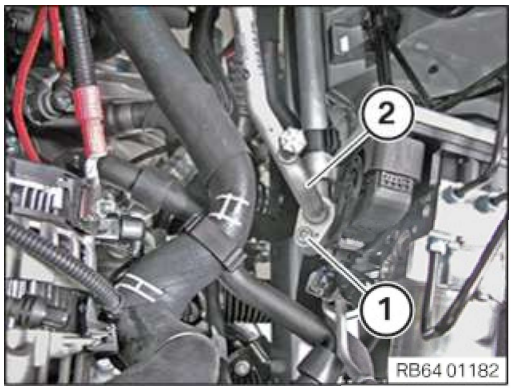
- Loosen screw (1).
- Place intake pipe (2) aside.

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- Loosen screw (1).
- Feed out intake pipe (2) and remove.

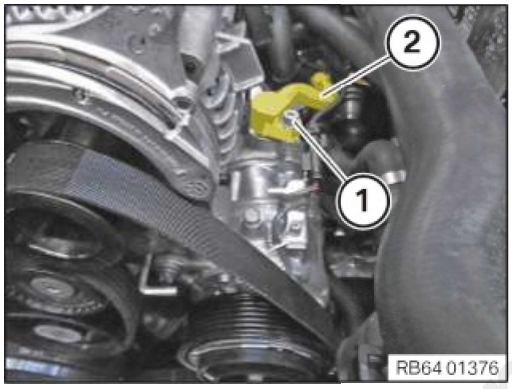
8 – Install the front intake pipe



- Feed in intake pipe (2) and position correctly.
- Tighten down screw (1).

Refrigerant line to connecting piece

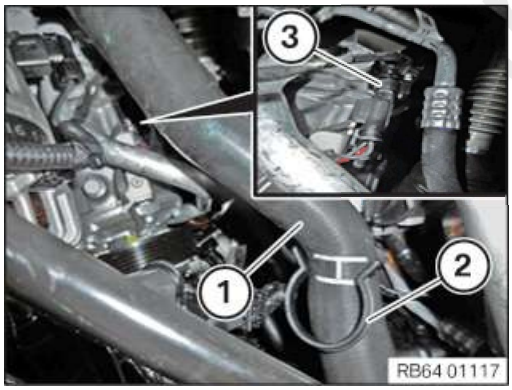
M8		Tightening torque	19 Nm



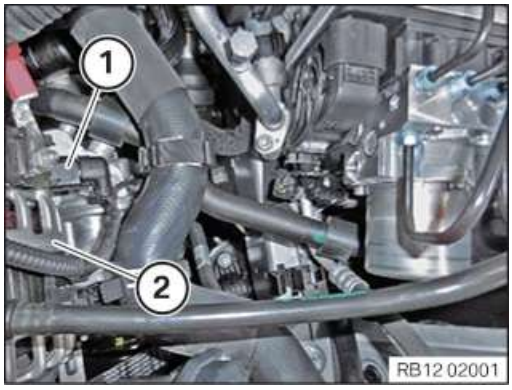
- Place the intake pipe (2) on the air conditioning compressor .
- Tighten down screw (1).

Refrigerant line on air conditioning compressor

M8		Tightening torque	19 Nm



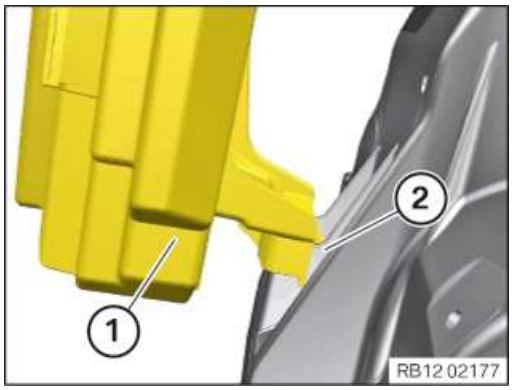
- Insert the coolant hose (1) into the holder (2) if required.
- Connect connectors (3) and lock.



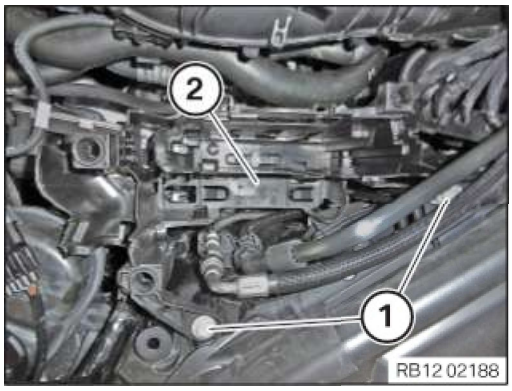
- Connect the connector (1) to the alternator (2) and lock.

POSTPROCESSES

9 – Installing the control unit holder



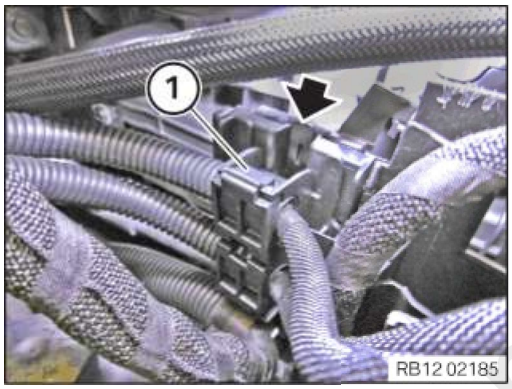
- Make sure the bottom control unit holder (1) is inserted correctly into the fixture (2).



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

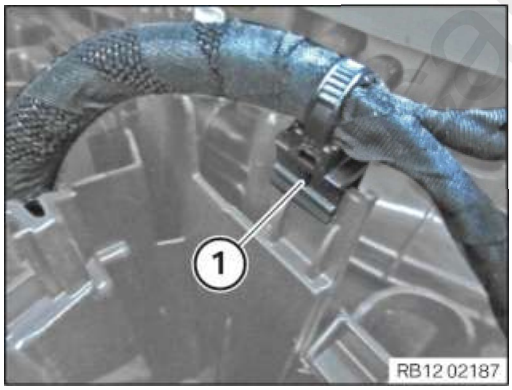
Control unit holder on spring strut dome

Hexagon screw		Tightening torque	8 Nm

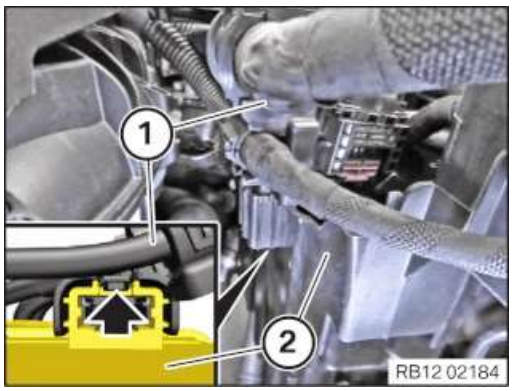


- Feed in and install the cable clip (1).

  Lock (arrow) must audibly engage.



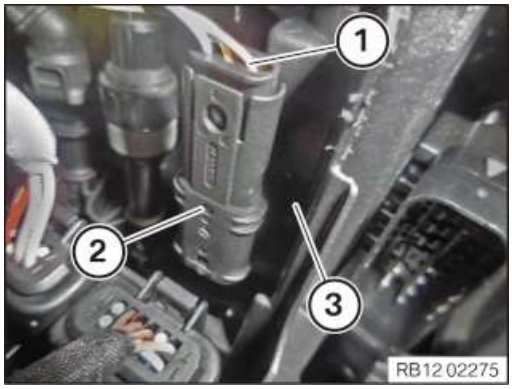
- Secure clamps (1).



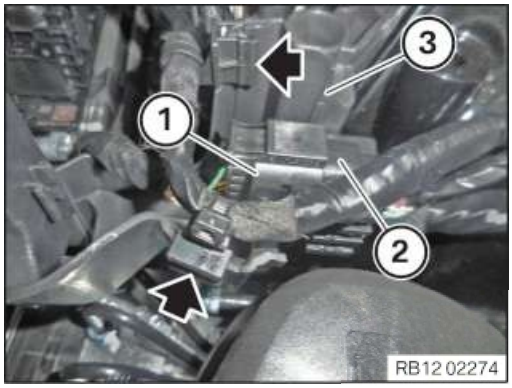
- Connect the cable clip (1) with the control unit holder (2) and lock it.

  Lock (arrow) must audibly engage.

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- 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).

10 – 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.

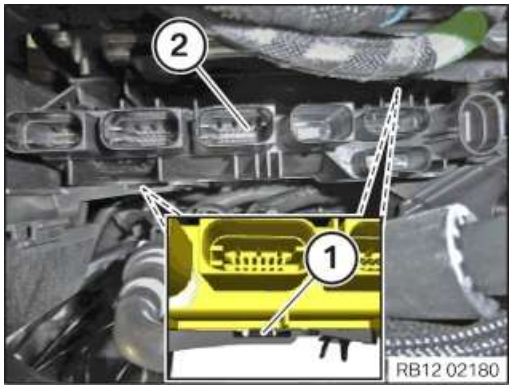
RISK OF DAMAGE

Electrostatic discharge.

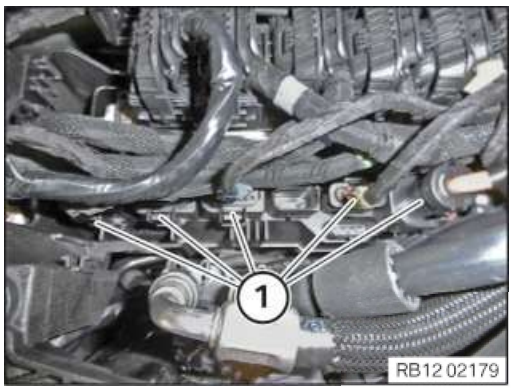
Damage to or destruction of electrical components.

- 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.

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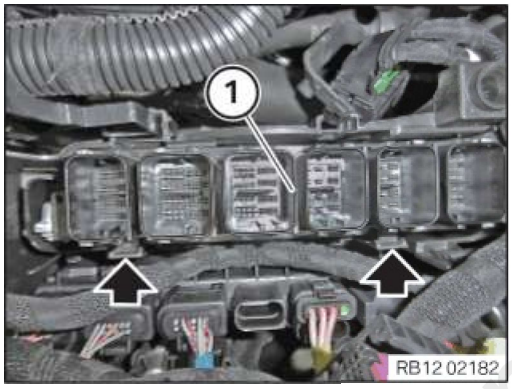


- Insert and install the integrated supply module (PDM) (2).
  The latch mechanisms (1) must engage audibly.
- Unlock the latch mechanisms (1).

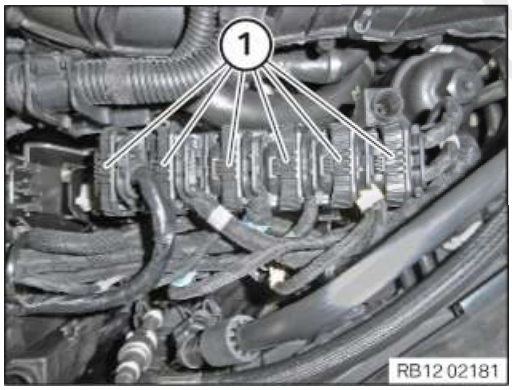


- Connect connectors (1) and lock.
  The connectors (1) must engage audibly.

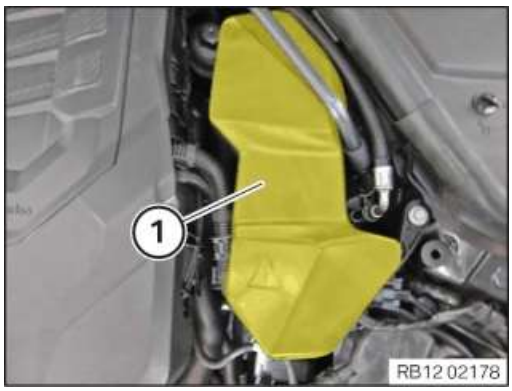
11 – Installing the DME control unit



- 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.

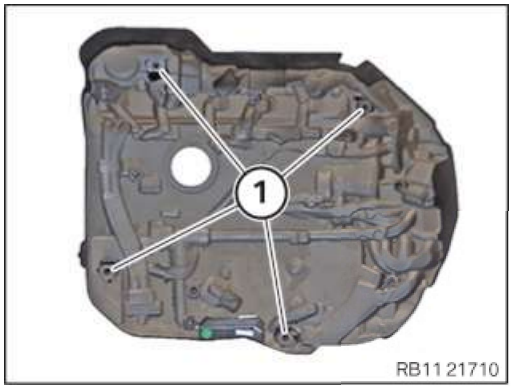
12 – Install acoustic cover

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).

13 – Disconnecting all battery earth leads



- See additional information.

14 – Evacuate and fill air conditioning

- See additional information.

Additional Information

Overview of Tightening Torques

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Refrigerant line to connecting piece			Used in step 8
M8		Tightening torque	19 Nm

Refrigerant line on air conditioning compressor			Used in step 8
M8		Tightening torque	19 Nm

Control unit holder on spring strut dome			Used in step 9
Hexagon screw		Tightening torque	8 Nm

Links

General repair instructions	Used in step
12 00 ... Instructions for removal and replacement of control units	411

Repair instructions	Used in step
64 50 010 Extract, evacuate and fill air conditioning system	114
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	114
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	114
64 50 ... Notes on repairs to air conditioning	114
64 50 010 Drawing off, evacuating and filling air conditioning (R1234yf)	114
64 50 ... Safety information for handling refrigerant R1234yf	114
64 50 ... Safety information for handling tetrafluorethane refrigerant R134a	114
64 50 ... Safety informations for handling refrigerant oil	114
61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	213
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	213
61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	213
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	213
61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting battery earth lead	213
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61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	213
61 20 900 Disconnecting and connecting battery earth lead	213

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61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting battery earth lead	213
61 20 900 Disconnecting and connecting battery earth lead	213
61 35 ... Notes on ESD protection (Electro Static Discharge)	4510
61 00 730 Encode/program control unit(s) (after vehicle test)	11

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64 53 810 Replacing the pressure line between air conditioning condenser and evaporator

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.

CAUTION

Refrigerant circuit under high pressure.

Danger of injury!

- Note and follow safety information on containers.
- Avoid contact with refrigerant; wear safety goggles and protective gloves.
- For more information see: 64 50 Handling refrigerant and 6450 Notes on repair work on air conditioning

RISK OF DAMAGE

Damage to battery terminal, the safety battery terminal or the intelligent battery sensor (IBS).

Damaged battery terminals can lead to malfunctions or vehicle electrical system faults.

- Pull off battery terminal from battery pole by carefully moving to and fro. Do not pry off using a tool.

PRELIMINARY WORK

1 – Drawing off the air conditioning

- See additional information.

2 – Disconnecting all battery earth leads

- See additional information.



3 – Removing the acoustic cover

WARNING

Hot surfaces.

Risk of burning!

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

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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).

4 – 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.

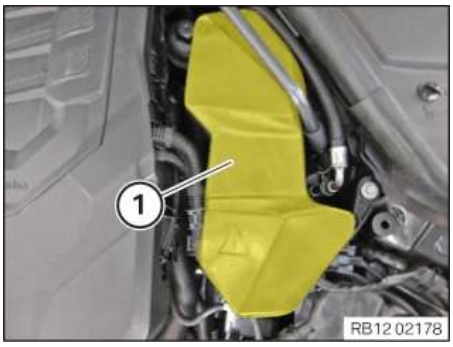
TECHNICAL INFORMATION

Control unit must be programmed after it is replaced.
For additional information see: 61 00 ... Programming/encoding control unit(s)

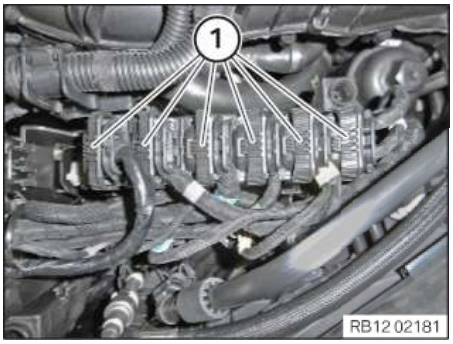
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TECHNICAL INFORMATION

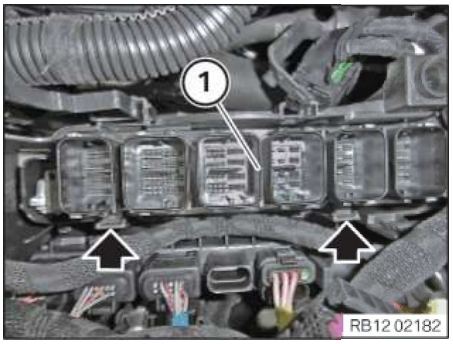
Disconnecting control units may cause fault code entries and functional limitations. Fault code entries must be read out and deleted if necessary.



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



- Unlock and disconnect the plug connection (1).



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

5 – 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.

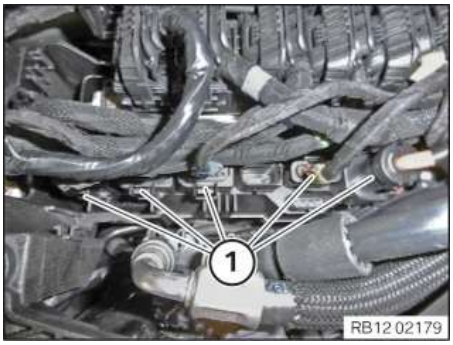
RISK OF DAMAGE

Electrostatic discharge.

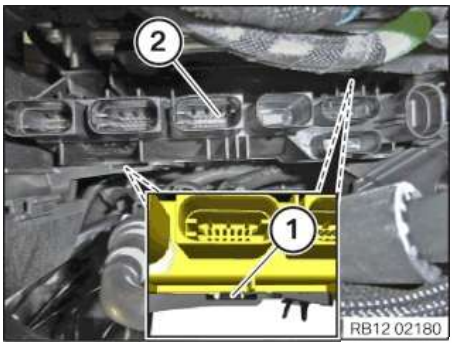
Damage to or destruction of electrical components.

- 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.

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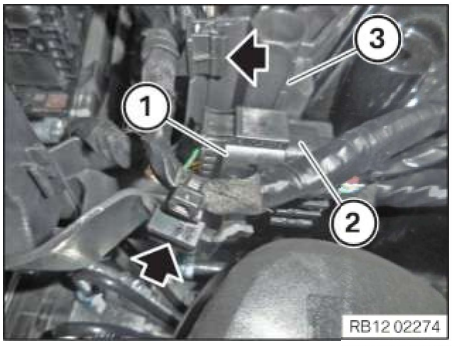


- Unlock and disconnect plug connections (1).

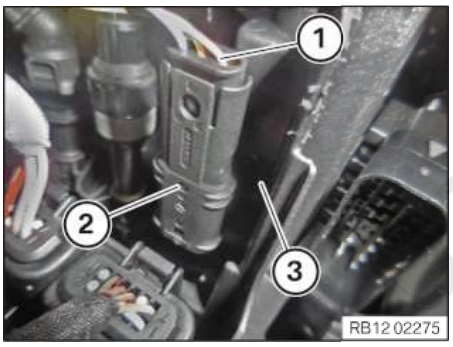


- Unlock the latch mechanisms (1).
- Guide out and remove integrated supply module (PDM) (2) upwards.

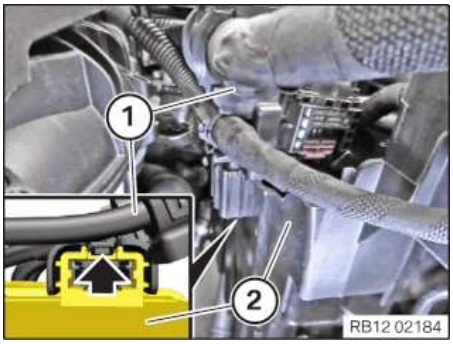
6 – Removing the control unit holder



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

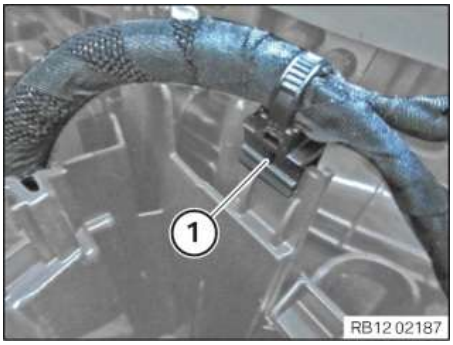


- Unlock plug connection (1) and disconnect.
- Unlock the connector and disconnect from the control unit holder (3).

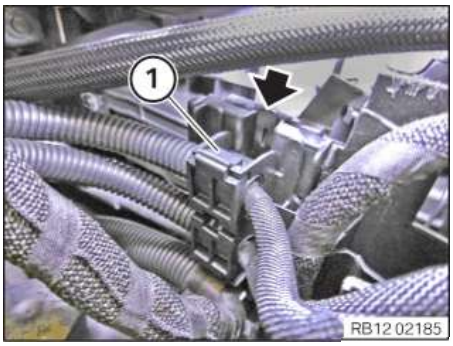


- Unlock the lock (arrow).
- Disconnect the cable holder (1) upwards from the control unit holder (2).

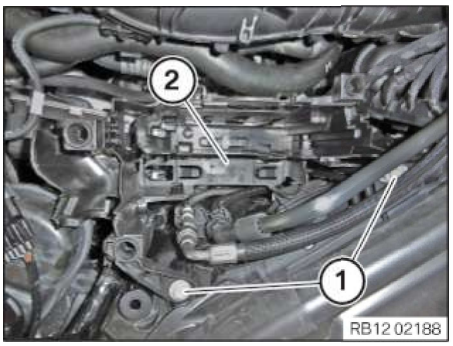
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- Loosen clamp (1).

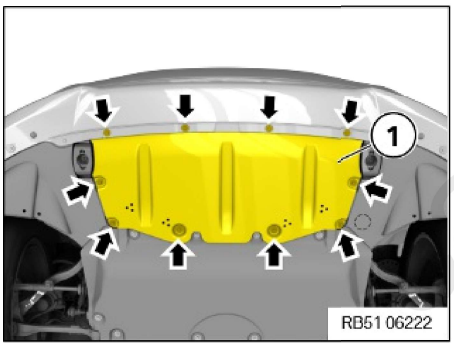


- Unlock the lock (arrow).
- Feed out the cable clip (1) upwards and set it aside.



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

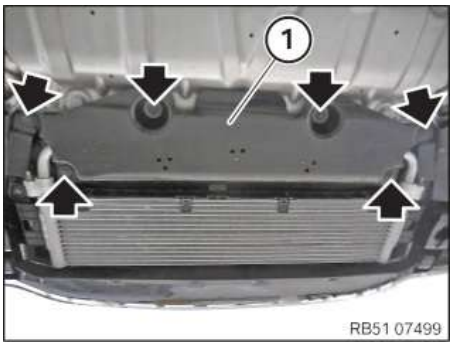
7 – Removing the front underbody protection



- **Version 1:**

  Remove screws (arrows).

  Feed front underbody protection (1) backwards out of the bumper panel.

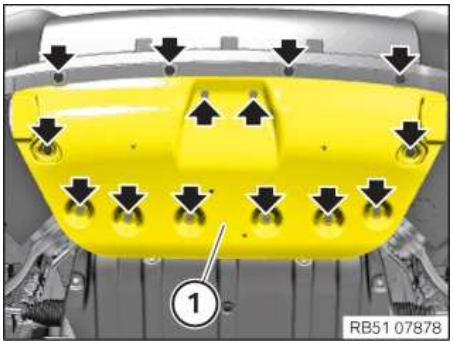


- **Version 2:**

  Remove screws (arrows).

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

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- **Version 3:**

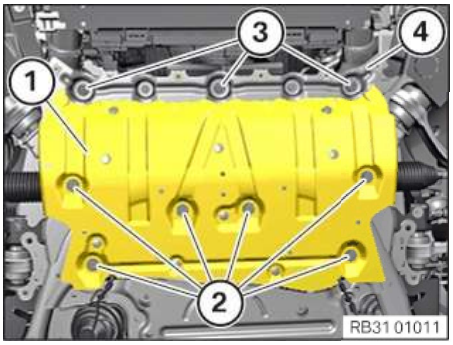
  Remove screws (arrows).

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

8 – Removing the stiffening plate

TECHNICAL INFORMATION

Driving without stiffening plate is not permissible.



- Loosen screws (3).
- Remove the holder of the underride protection (4).
- Loosen screws (2).
- Remove stiffening plate (1).

9 – Removing coolant expansion tank of high-temperature coolant circuit

CAUTION

Materials harmful to health.

Contact with fluids harmful to health!

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

TECHNICAL INFORMATION

Life-long fill of coolant!

Do not reuse used coolant.

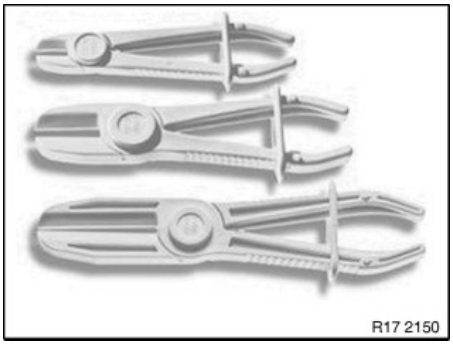
When replacing and removing components which rely on the corrosion protection effect of the coolant, it is essential to change the coolant. The cooling system must therefore be emptied and refilled.

In the case of other removal work involving the draining of part quantities of coolant, the coolant level must be topped up with new coolant.

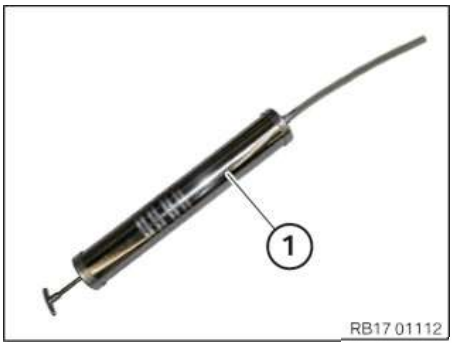
TECHNICAL INFORMATION

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

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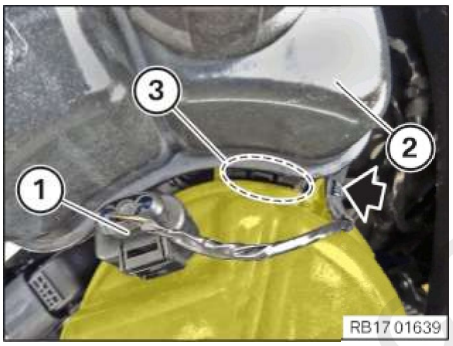
- Use commercially available disconnection tools to pinch off the coolant lines.



- Use commercially available syringe (1) or suitable tool to draw off coolant expansion tank.



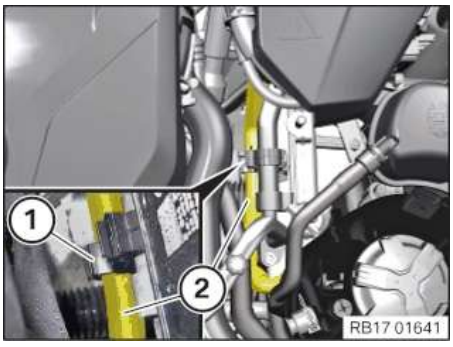
- Open the lid (1) on the coolant expansion tank for the high-temperature coolant circuit.
- Draw off coolant using **standard pump** from the coolant expansion tank for high-temperature coolant circuit and dispose of it.



- Unlock plug connection (1) and disconnect.
- Loosen the clamp (arrow).
- Unlock coolant expansion tank (2) for the low-temperature coolant circuit in marked area.

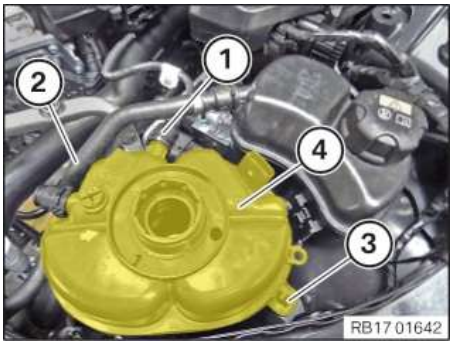


- Feed out and position the coolant expansion tank (1)for the low-temperature coolant circuit from the holders.

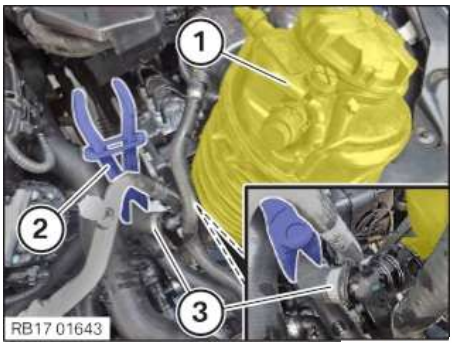


- Unlock the holder (1).
- Feed out coolant line (2) and place to one side.

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- Unlock and disconnect the coolant line (1).
- Release coolant line (2) from coolant expansion tank (4) for the high-temperature coolant circuit.
- Unlock lock (3).



TECHNICAL INFORMATION

Only flexible hose pipes may be disconnected.

- Feed out and position the coolant expansion tank (1)for the high-temperature coolant circuit from the holders, upwards.
- Disconnect the coolant line (3) using standard disconnection tool (2).
- Unlock and disconnect the coolant line (3).
- Removing coolant expansion tank (1) for the high-temperature coolant circuit.

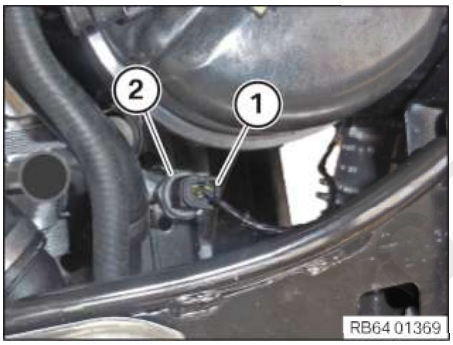
10 – Remove safety pressure switch

CAUTION

Residual pressure in the air conditioning.

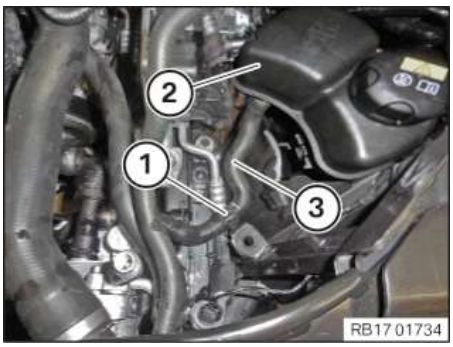
Danger of injury!

- Wear safety goggles and protective gloves when disconnecting the refrigerant line.
- Seal refrigerant lines with seal plugs.



- Unlock and disconnect connector (1).
- Loosen the safety pressure switch (2).

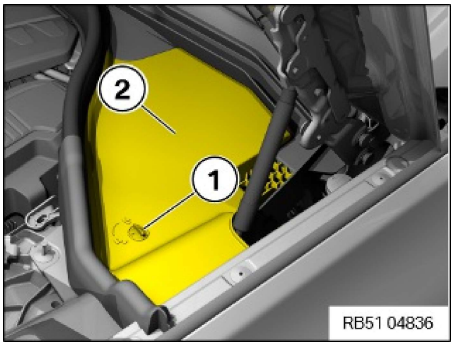
11 – Removing the coolant expansion tank in the low-temperature coolant circuit



- Open hose support (1).
- Remove coolant hose (3) from hose support (1).
- Set aside coolant expansion tank (2) for the low-temperature coolant circuit.

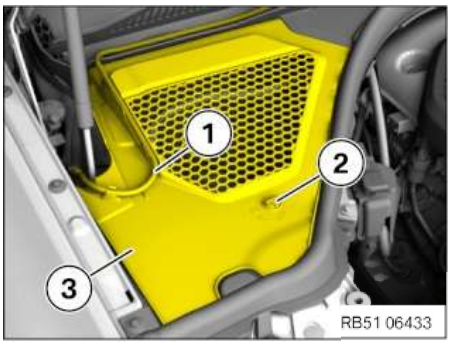
12 – Remove the cover of the engine compartment at the rear left

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

13 – 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).

14 – Removing both wiper arms

NOTICE

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

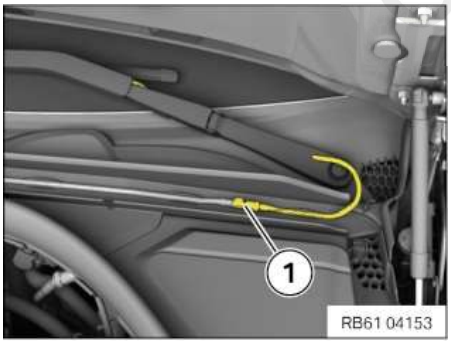
▸ **Remove the wiper arm**

RISK OF DAMAGE

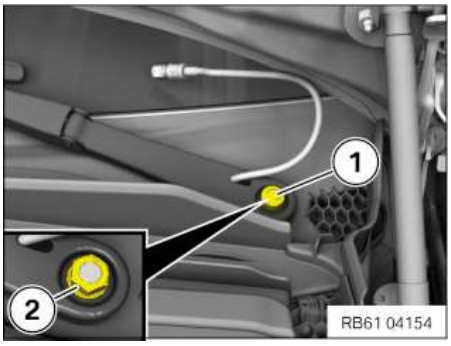
Damage to wiper console

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.

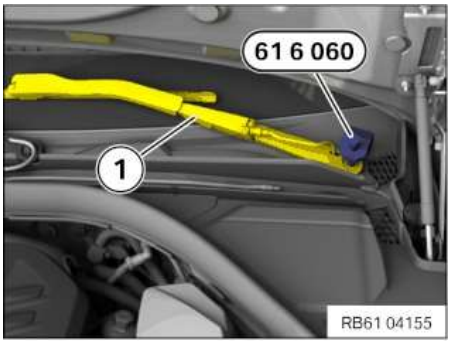


- Disconnect the windscreen wash hose(1) at the separation point and remove from the cowl guide.



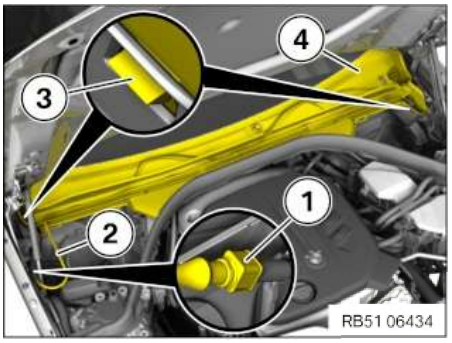
- Remove the protective cap (1).
- Loosen nut (2).

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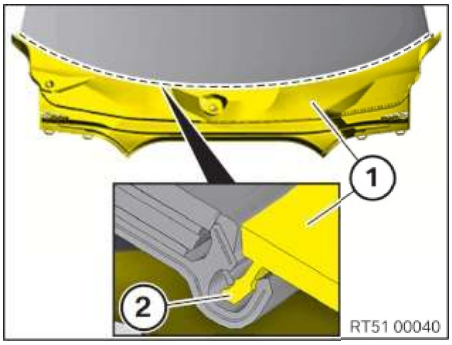


- Pull off the wiper arm (1) using special tool .

15 – 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).

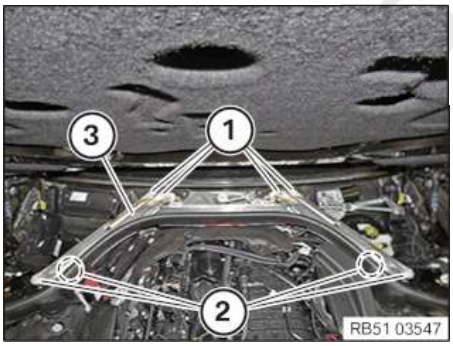


- Pull the cowl panel cover (1) upward out of the latch mechanism (2) beginning on the side.

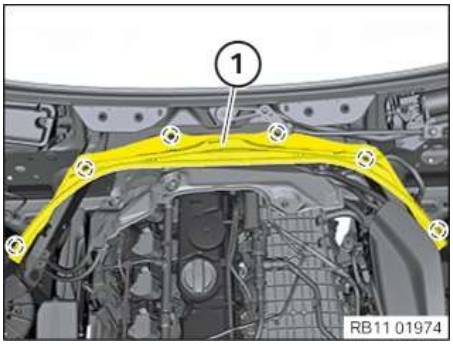
16 – Removing the centre bulkhead upper part

TECHNICAL INFORMATION

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



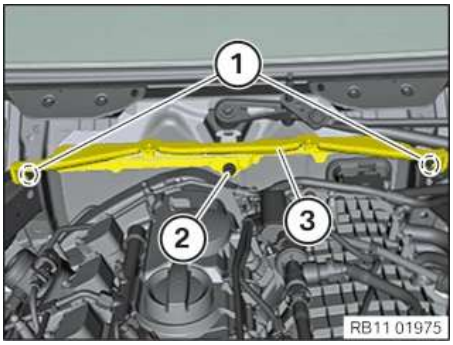
- **If installed:** Remove tension strut on spring strut dome.
- Loosen screws (1) and (2).
- Remove tension strut (3) in the spring strut dome upwards.



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

17 – Removing the centre bulkhead lower section

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

MAIN WORK

18 – Removing the pressure line for the evaporator air conditioning condenser

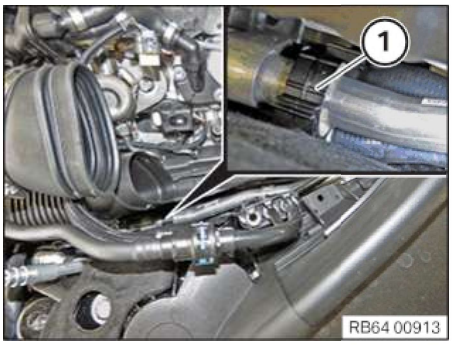
▸ **Disconnect the refrigerant line from the expansion valve**

CAUTION

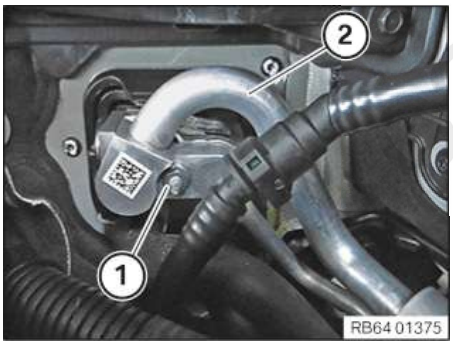
Residual pressure in the air conditioning.

Danger of injury!

- Wear safety goggles and protective gloves when disconnecting the refrigerant line.
- Seal refrigerant lines with seal plugs.



- Open the holder (1).

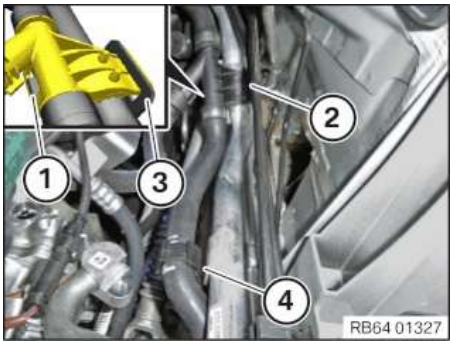


- Loosen nut (1).
- Remove the refrigerant line (2) and set it aside.

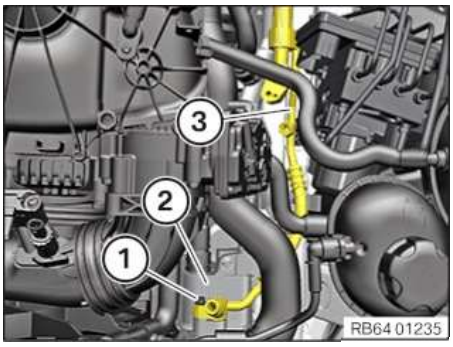


- Unlock and disconnect the vacuum line (1).

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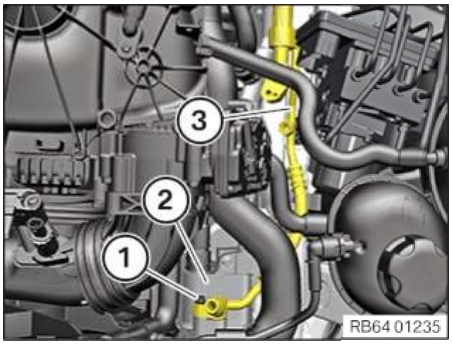


- Unlock the lock (1) below on the pipe neck (2).
- Feed out pipe neck (2) upward out of the guide (3).
- Place pipe neck (2) to one side.
- Disengage the hose support (1).



- Loosen screw (1).
- Remove pressure line (3) from air conditioning condenser (2).
- Guide out pressure line (3) fully and remove it.

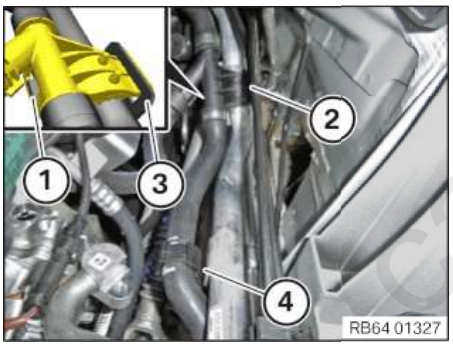
19 – Installing pressure line evaporator air conditioning condenser



- Guide in pressure line (3) fully and position it correctly.
- Fix pressure line (3) on air conditioning condenser (2).
- Tighten down screw (1).

Refrigerant lines to condenser

M6		Tightening torque	13 Nm



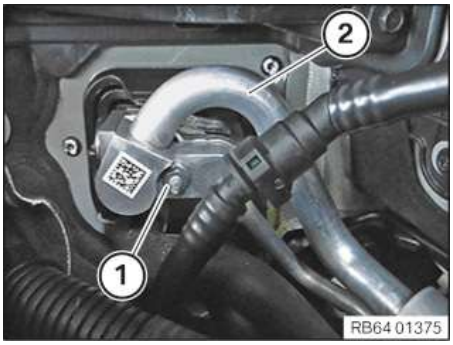
- Engage the hose support (1).
- Feed in pipe neck (2) upward into the guide (3).
- Secure the lock (1) below on the pipe neck (2).



- Connect and lock the vacuum line (1).

▸ **Connect the refrigerant line to the expansion valve**

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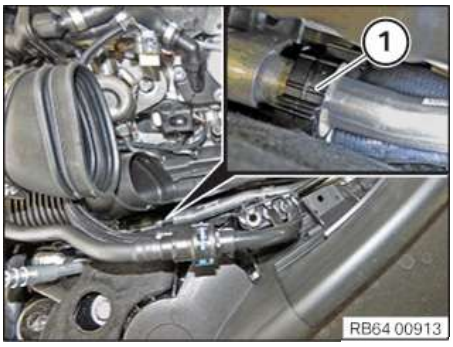


- Replace O-rings.

  Parts: O-rings
- Correctly position the refrigerant line (2).
- Tighten nut (1).

Refrigerant lines to expansion valve

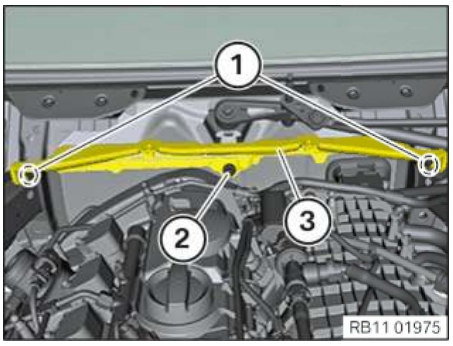
M6		Tightening torque	13 Nm



- Close the holder (1).

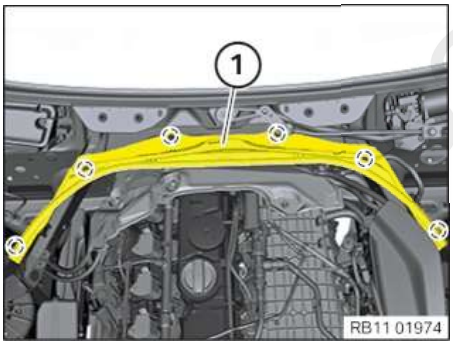
POSTPROCESSES

20 – Installing centre bulkhead lower section



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

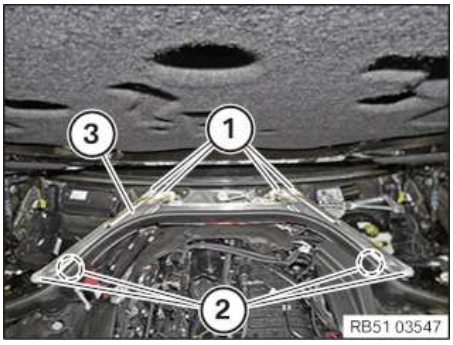
21 – Installing the centre bulkhead upper part



- 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 °

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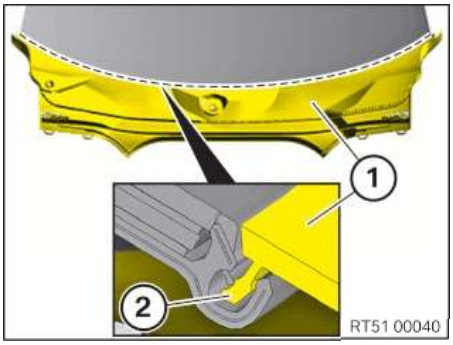
22 – Installing cowl panel cover

RISK OF DAMAGE

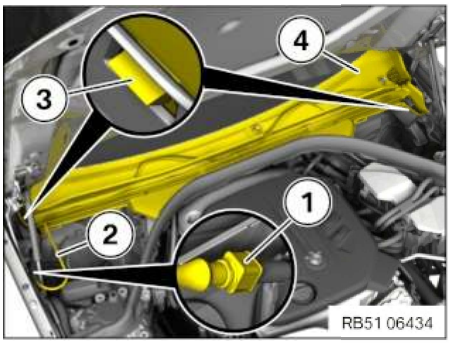
Damage caused by water ingress into the vehicle.

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.



- 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.

23 – Installing both wiper arms

NOTICE

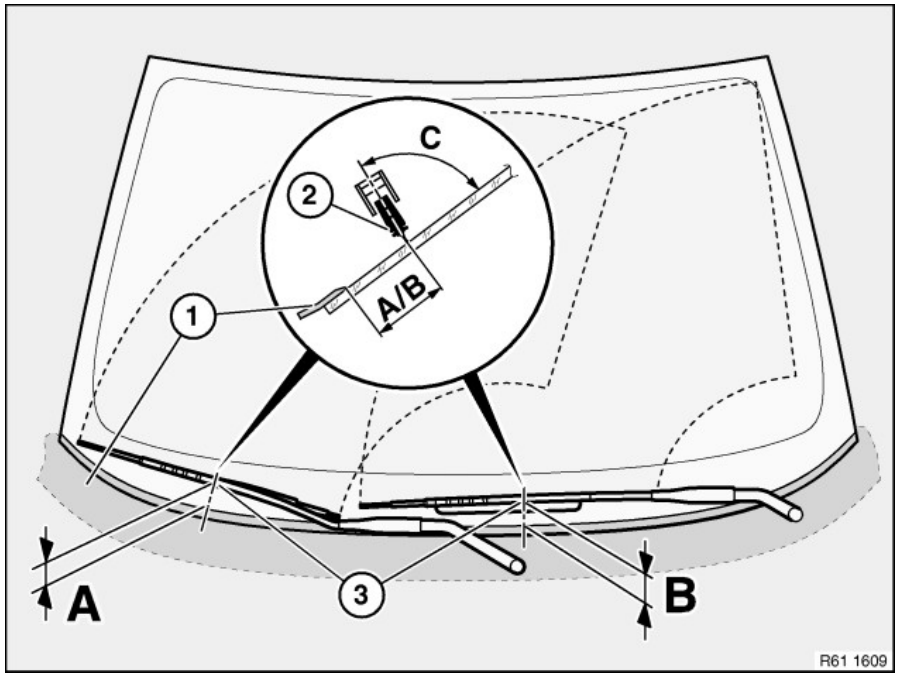
Description is for left component only. Procedure on the right side is identical.

▸ **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.

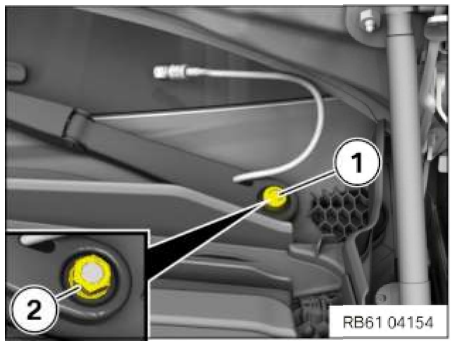
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- Connect the wiper arm (3).
- Correctly position the wiper arm (2) in relation to the window edge (1).

Distance from window pane edge to wiper blade

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

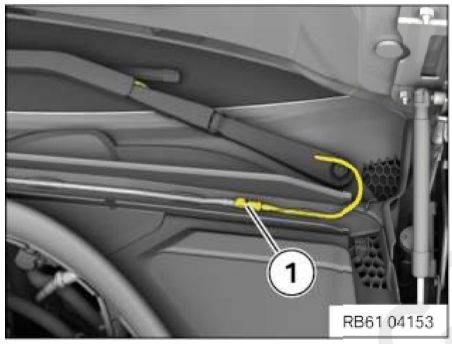


- Tighten nut (2).

Windscreen wiper arm

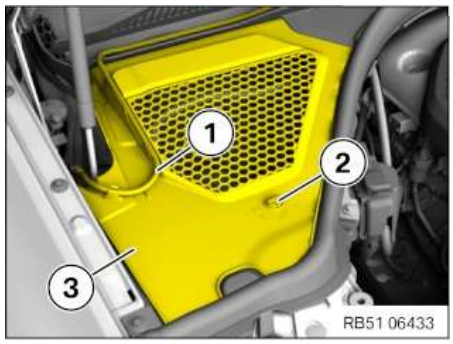
Combination hexagon nut		Tightening torque	35 Nm

- Connect the protective cap (1).



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

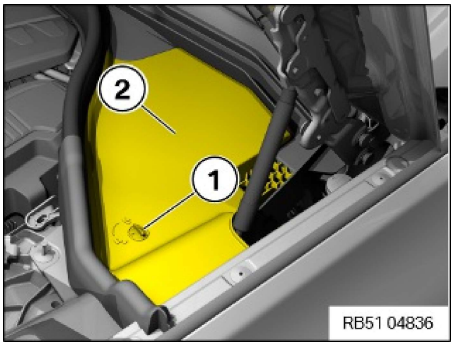
24 – Install the rear right engine compartment cover



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

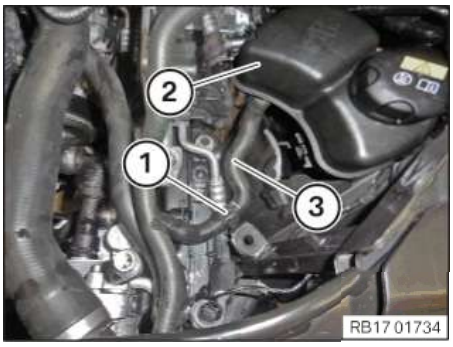
25 – Install the cover of the engine compartment on the rear left

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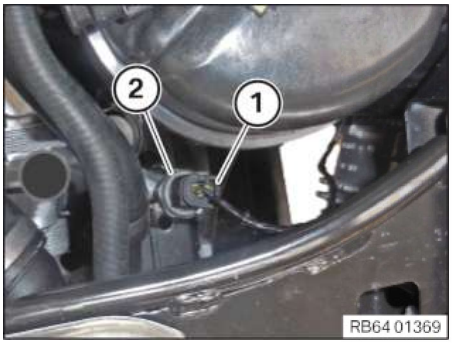
- Position the engine compartment cover at the rear left (2) .
- Close lock (1).

26 – Installing the coolant expansion tank for the low-temperature coolant circuit partially



- Position the coolant expansion tank (2).
- Insert the coolant hose (3) into the hose support (1).
- Connect the hose support (1).

27 – Installing the safety pressure switch



- Correctly position and tighten the safety pressure switch (2).

Safety pressure switch

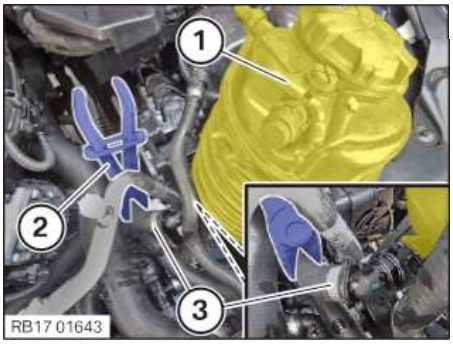
	Tightening torque	10 Nm

- Insert and connect the connector (1).

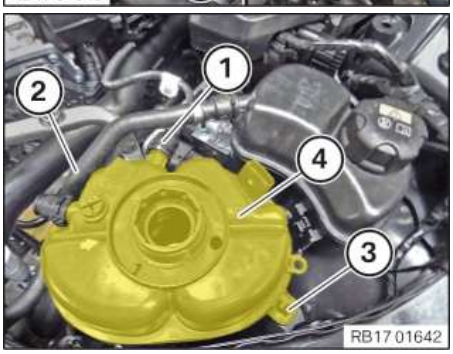
28 – Removing coolant expansion tank of high-temperature coolant circuit

TECHNICAL INFORMATION

Make sure that the connections are locked correctly. The locks must engage audibly.



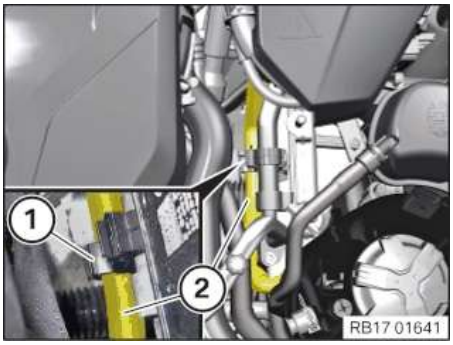
- Feed in and position the coolant expansion tank (1) for the high-temperature coolant circuit.
- Connect and lock the coolant line (3).
- Remove conventional disconnection tool(2).
- Feed in and install the coolant expansion tank (1) for the high-temperature coolant circuit in the holders.



- Ensure that the lock (3)engages audibly.
- Secure coolant line (2) to coolant expansion tank (4) for the high-temperature coolant circuit.
- Connect and lock the coolant line (1).

  The coolant line (1) must audibly engage.

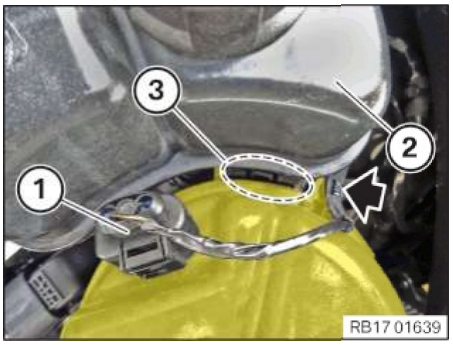
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- Feed in the coolant line to the holder (1) and position.
- Lock holder (1).



- Feed in and position the coolant expansion tank (1) for the low-temperature coolant circuit.



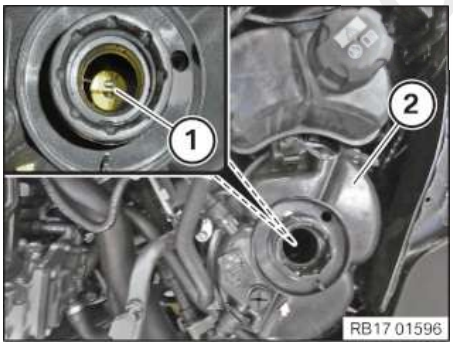
- Feed in and install the coolant expansion tank (2) for the low-temperature coolant circuit to the holders.

  The lock (3) must audibly engage.
- Secure clamp (arrow).
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.



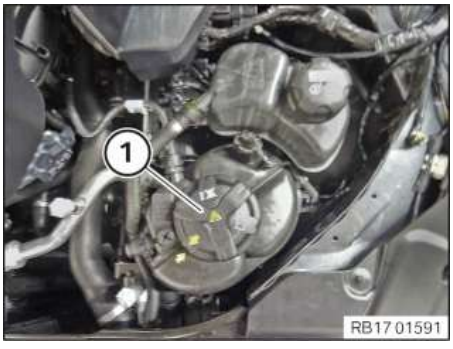
- Loosen sealing cap (1).



TECHNICAL INFORMATION

Follow notes for repair work on the cooling system.
For additional information see:
Main group 17
17 00 ... Notes for working on the cooling system

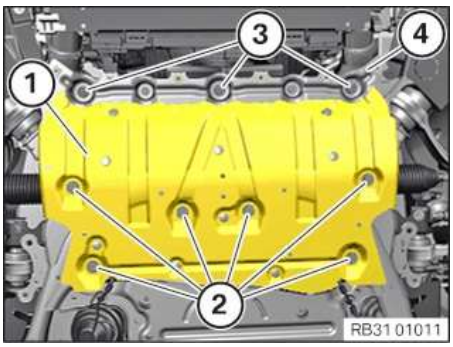
- Adjust the filling level in coolant expansion tank (2) for the high-temperature coolant circuit to **max. mark** (1) .



- Close sealing cap (1).
- Close the sealing cap (1) until the **arrows** are flush.

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29 – Installing the stiffening plate

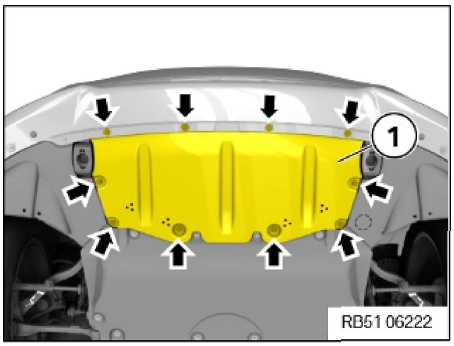


- Position stiffening plate (1).
- Screw screws (2) in.
- Position holder of underride protection (4).
- Screw screws (3) in.
- Tighten down screws (2) and (3).

Stiffening plate to front axle support

M10		Tightening torque	56 Nm

30 – Installing the front underbody protection



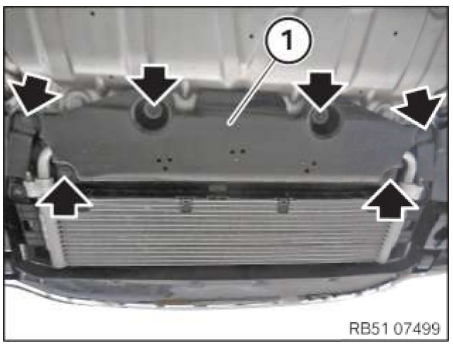
- **Version 1:**

  Feed in the front underbody protection (1) towards the front under the bumper panel and position.

  Tighten screws (arrows).

Underbody protection front

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



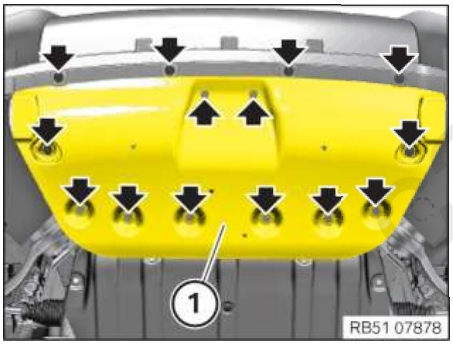
- **Version 2:**

  Feed in and position the front underbody protection (1).

  Tighten screws (arrows).

Underbody protection front

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



- **Version 3:**

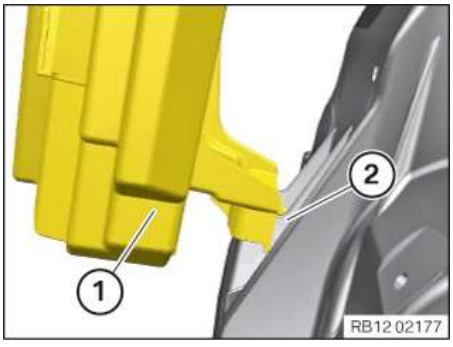
  Feed in and install front underbody protection (1).

  Tighten screws (arrows).

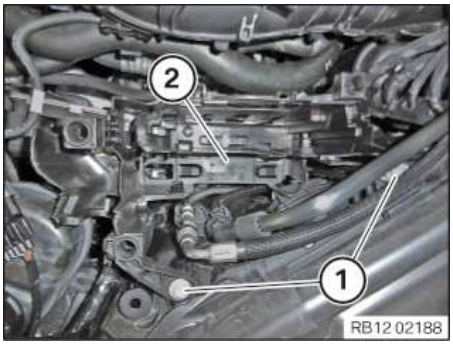
Underbody protection front

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

31 – Installing the control unit holder



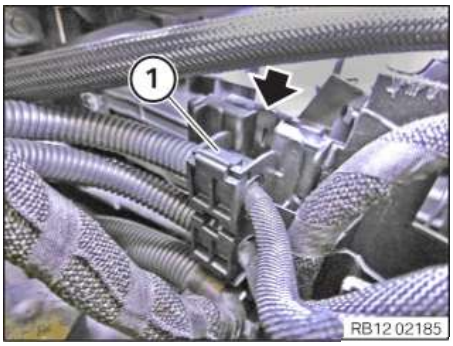
- Make sure the bottom control unit holder (1) is inserted correctly into the fixture (2).



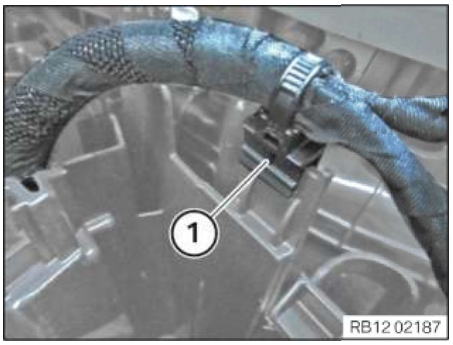
- Guide in and install control unit holder (2).
- Tighten the screws (1).

Control unit holder on spring strut dome

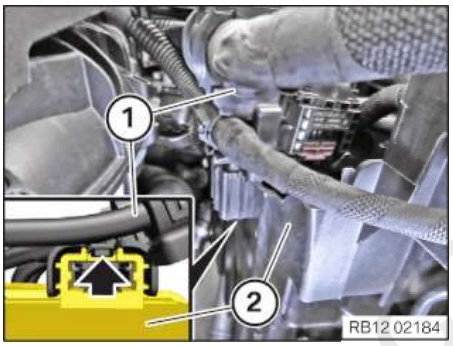
Hexagon screw		Tightening torque	8 Nm



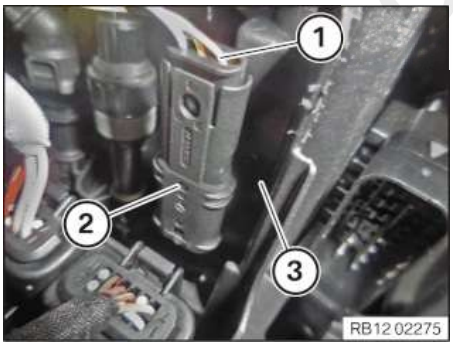
- Feed in and install the cable clip (1).
  Lock (arrow) must audibly engage.



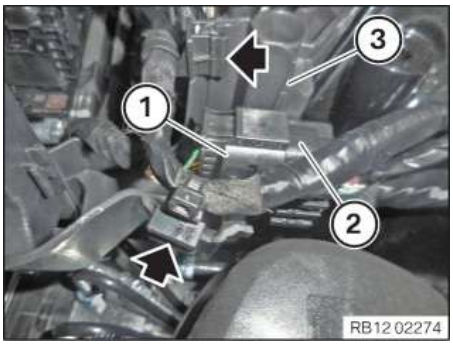
- Secure clamps (1).



- 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).

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32 – Installing the integrated supply module (PDM)

WARNING

Working on 12 V vehicle electrical system.

Risk of short circuits! Risk of fire!

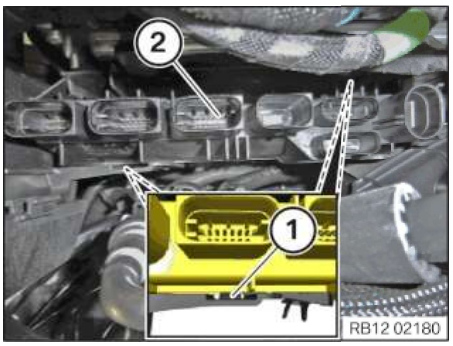
- Detach battery earth lead from battery.
- For additional batteries: Detach all battery earth leads from additional batteries.

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.

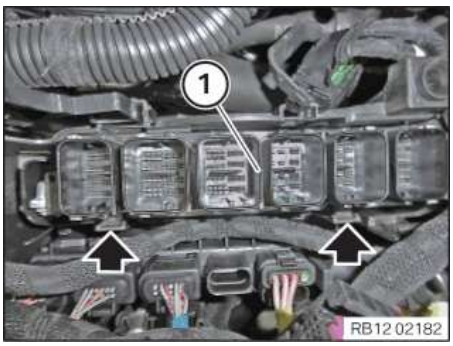


- Insert and install the integrated supply module (PDM) (2).
  The latch mechanisms (1) must engage audibly.
- Unlock the latch mechanisms (1).



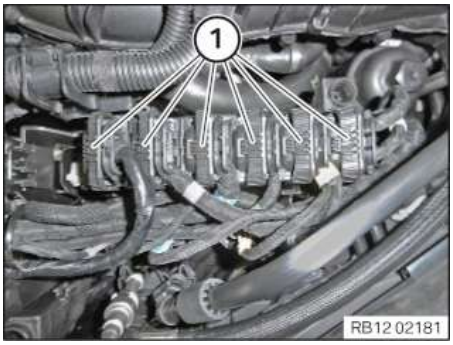
- Connect connectors (1) and lock.
  The connectors (1) must engage audibly.

33 – Installing the DME control unit



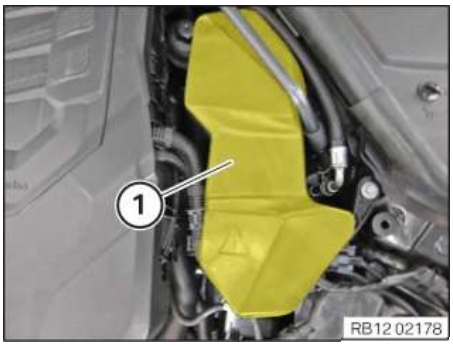
- Feed in and install DME control unit (1).
  The locks (arrows) must engage audibly.

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- Connect connectors (1) and lock.

  All connectors (1) must engage audibly.



- Insert and install cover (1) into guides.

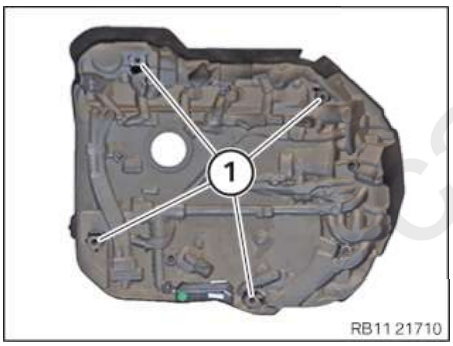
34 – Install acoustic cover

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).

35 – Disconnecting all battery earth leads

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- See additional information.

36 – Evacuate and fill air conditioning

- See additional information.

37 – Fill and bleed the coolant circuit

► **Filling and bleed the high-temperature coolant circuit**



- See additional information.

Additional Information

Overview of Tightening Torques

Refrigerant lines to condenser			Used in step 19
M6		Tightening torque	13 Nm

Refrigerant lines to expansion valve			Used in step 19
M6		Tightening torque	13 Nm

Bulkhead upper part to bottom bulkhead			Used in step 21
		Tightening torque	3 Nm

Tension strut on bulkhead			Used in step 21
M10x25 screw		Tightening torque	56 Nm

Tension strut to spring strut dome			Used in step 21
Screw	Renew screws.	Jointing torque	56 Nm
		Angle of rotation	90 °

Windscreen wiper arm			Used in step 23
Combination hexagon nut		Tightening torque	35 Nm

Safety pressure switch			Used in step 27
		Tightening torque	10 Nm

Stiffening plate to front axle support			Used in step 29
M10		Tightening torque	56 Nm

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Underbody protection front			Used in step 30
Hexagon screw for thermoplastic		Tightening torque	2,6 Nm
Hexagon screw M6x20		Tightening torque	8 Nm

Control unit holder on spring strut dome			Used in step 31
Hexagon screw		Tightening torque	8 Nm

Overview of Special Tools

Overview Technical Data

Distance from window pane edge to wiper blade	Used in step 23
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	433

Repair instructions	Used in step
64 50 010 Extract, evacuate and fill air conditioning system	136
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	136
64 50 010 Drawing off, evacuating and filling air conditioning (R134a)	136
64 50 ... Notes on repairs to air conditioning	136
64 50 010 Drawing off, evacuating and filling air conditioning (R1234yf)	136
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Main group 17	28

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64 00 ... Information on using cleaning agent/paints (personal protection equipment)



Warning!

Use of cleaning agents/paints not compliant with instructions can cause serious injuries or burns!

Handling cleaning agents/paints can trigger allergic skin and respiratory reactions!



Important!

Observe following instructions:

- Store cleaning agents/paints only in a secure cabinet.
- Keep cleaning agents/paints away from naked flames and other sources of ignition.
- Protect cleaning agents/paints from high temperatures and direct sunlight.
- Always keep an eye douche on hand, change the water regularly (once a month).



Important!

Observe following instructions before use:

- Manufacturer's instructions (on container/packaging)
- Hazard warnings (on container/packaging)
- Manufacturer's instructions on package insert
- Material safety data sheet of manufacturer
- Product information in EPC
- National market regulations



Important!

Observe following instructions during use:

- Do not eat, drink or smoke while working with these products.
- Avoid direct contact with skin and eyes.
- Wear personal protective clothing/equipment.
- Ensure that all enclosed areas are well ventilated or extract fumes directly.
- Immediately change working clothes soiled with cleaning agent/paint.
- After finishing work, wash your hands and apply protective skin cream.



Important!

Follow hazard warnings and wear personal protection equipment!

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First Aid:

- If product comes in contact with eyes, immediately flush with running water for about 10 - 15 minutes. Seek the advice of eye specialist.
- In the event of skin contact and where applicable an allergic skin reaction, clean the affected areas immediately with soap and water and then apply silicone-free skin cream. Seek advice of physician.
- If an adhesive product is swallowed, rinse mouth/parts of mouth thoroughly with running water. Drink 1-2 glasses of water. Do not induce vomiting. Consult a doctor.
- After inhaling vapours ensure ample supply of fresh air. Keep calm, keep respiratory tracks clear and call doctor.



Recycling:

Dispose of cleaning agents/paints in a professional manner!

Observe national/country-specific disposal regulations.

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61 00 ... Parking-residing-driving

Vehicles of the G series feature a new type of terminal control:

Functional description of the parking-residing-driving terminal control

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