61 00 ... Battery charging calendar

Battery charging calendar 2016 (PDF file)

Battery charging calendar 2017 (PDF file)

Battery charging calendar 2018 (PDF file)

Battery charging calendar 2019 (PDF file)

Information for the battery charging calendar

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61 00 ... Battery log form

Battery log form 2016

Battery log form 2017

Battery log form 2018

Battery log form 2019

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61 00 730 Encode/program control unit (s) (After vehicle test)

1 Encode/program control unit(s)

Prerequisite

Replacement of the control unit.

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.
Exception:
BMW I01: Note Product and Measures Management Aftersales measure 55176388.

- 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.

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61 12 ... Information on intelligent battery sensor (IBS)

Notice! Do not connect the charger to the 12 V charging socket

The 12 V charging socket is supplied with voltage by the rear power distribution box via relay. This relay drops out after terminal 15 OFF. This means that a trickle charger connected at the 12 V charging socket will be disconnected from the battery. Only charge the battery via the jump start terminal point. Only then can the voltage supply be registered by the vehicle.

Warning! Danger of destruction in event of mechanical strain

- Do not introduce any additional connections at the battery negative terminal.
- Do not modify the grounding cable. The ground cable also serves heat dissipation.
- Do not establish any connection between the IBS and the sensor screw.
- Do not use force when disconnecting the pole shoe from the battery terminal:
  - Do not pull on the ground cable.
  - Do not place any tools under the IBS to lever off the pole shoe.
- Do not use IBS connections as levers.
- Use a torque wrench and set tightening torque in accordance with repair instructions.
- Do not release or tighten down sensor screw (Torx screw).
- Avoid contact between IBS and ground.

Warning! Danger of destruction to IBS and wiring upon battery replacement

- The IBS and wiring can be destroyed by mechanical strain upon battery replacement. Therefore avoid mechanical strain.
- The size (capacity) of the battery required for the car is coded in the Car Access System (CAS).
- Use the battery size (capacity) installed as standard upon battery replacement.
- Recode the Car Access System (CAS) when installing a battery with a different capacity.
- Register battery replacement via Service functions in diagnosis system.
- Delete fault code entries in the Digital Engine Electronics (DME) associated with battery replacement.
- Always proceed in accordance with the repair instructions.

Note: Battery draining possible in spite of the intelligent battery sensor IBS being fault-free.

- A battery can be drained (e.g. with lights or radio switched on) even when the IBS functions perfectly in conjunction with power management.
- **For this reason, only exchange the IBS when there is a corresponding fault code entry!**

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61 00 ... Information on removing, connecting and changing the battery

Observe safety informations for handling vehicle battery.

Disconnecting the battery

Before disconnecting battery:

Turn off the ignition and other electrical loads/consumers to prevent sparking when reconnecting.

Note:

If the ignition is not turned off when the battery is disconnected, fault memories may be set in some control units.

Important!

- There is a danger of mixing up battery cables: If the battery positive and negative leads are the same colour and you are in doubt, follow the polarity to the battery, then mark and cover the leads.
- The on-board computer and clock may lose your data.

General notes on disconnecting battery:

- Do not disconnect battery leads and leads from alternator and starter motor while engine is running.
- Disconnect terminal of battery earth lead from the battery. Cover battery negative terminal(s) and secure.
- Disconnect both battery earth leads in versions with an auxiliary battery. Cover battery negative terminal(s) and secure.
- When work is carried out on the electrical system, faults may be caused in the fault memories of some control units when the battery is connected.
- When installing battery terminal: Tightening torque 61 21 1AZ.

AGM battery only:

- On vehicles with IBS at negative battery terminal:
  Do not under any circumstances pull/lever off pole shoes by force.
  Do not under any circumstances release the hexagon socket screw of the IBS.

Connected battery

After connecting battery:

Important!

The scope of application of some systems may be restricted after an open circuit.

Personal Profiles may also be lost.

Settings or activations must be carried out, depending on the equipment specification.

For example:

- Activate slide/tilt sunroof, if necessary
- Activate power window, if necessary

Refer to the diagnosis system for further vehicle-specific information.

Battery replacement

A vehicle battery is constructed for the installation location and the individual power requirements of the particular vehicle. These individual power requirements depend on the motorisation and different types of

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equipment. The individually assigned vehicle battery is the ideal compromise between the power requirements of the vehicle electrical system and the weight and service life of the vehicle battery.

Vehicles with the automatic engine start-stop function or particular engine types and optional equipment are equipped with a special vehicle battery (AGM battery), since only this battery type can provide elevated power requirements over the extended service life. Installing a different vehicle battery can cause problems with vehicle electronics, can reduce functions or can cause leakage of battery acid.

In the event of an accident where the airbags are deployed in vehicles with a vehicle battery in the luggage compartment, the electrical connection between the vehicle battery and the trigger is automatically disconnected through pyrotechnics. This prevents possible short-circuiting.

Proper operation of all of these safety and convenience functions requires a battery that conforms with specifications and that is properly registered in vehicles with energy management systems (IBS, power module).

Vehicles with energy management systems (IBS, power module): Register battery replacement.

The vehicle electrical system is informed about the vehicle battery characteristic data, such as type, size, age and current power capacity. Therefore, there will always be only one work scope provided that is permitted by the current status of information.

If performance readiness drops below a defined minimum, a Check Control message will be generated to advise the driver that the battery must be replaced.

When installing a new vehicle battery, the battery must be registered and thus must also be registered with the vehicle electrical system.

Note:

> Only this registration/logon will ensure that the corresponding Check Control message will go out again.

Diagnosis system:

Registering the battery replacement:

- Service functions
- Body
- Voltage supply
- Register battery replacement

When retrofitting, a more powerful battery may be used. Standard batteries may always be replaced by AGM batteries with the same specifications.

When installing a battery of a different size or a different battery type, this change in vehicle data must be programmed into the vehicle data in accordance with specifications.

Programming system:

- Battery retrofitting

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61 00 ... Notes on handling optical fibres



Important!

To avoid damage when handling optical fibres, comply with the following points:

- The minimum permitted bending radius is 25 mm
- Do not subject optical fibres to compressive and tensile load
- Protect optical fibres against the effects of heat ≥85 °C (e.g. during welding work, drying work with infrared beams or hot air blower)
- Fibre-optic cables are permitted to show only one junction point (bridge), replace fibre-optic cables if necessary



Note:
The optical fibres are coloured differently as follows:

- Green = **MOST** (**M**edia **O**riented **S**ystems **T**ransport) optical fibre
- Yellow = **ISIS** (**I**ntelligent **S**afety and **I**ntegration **S**ystem) optical fibre
- Orange=repair fibre-optic cables

Follow notes for processing cables and optical fibres.

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61 00 ... Notes on handling the high pressure cleaner



Warning!

Only used a high pressure cleaner approved by BMW!

Only specially trained persons of 16 years of age or older may work with the high pressure cleaner.

Check the high pressure cleaner and electrical wiring for visible damage.

Only use at a suitable location.



Attention!

Pay attention to following hazard warnings:

- Danger of injury due to water jet
- Contact with hazardous substances in spray
- Risk of skidding on wet floor
- Risk of stumbling due to hoses and cables
- Comply with notes and instructions on handling cleaning agents !
- Risk of scalding when cleaning with hot water.
- On electric or hybrid cars, the safety instructions for handling with hybrid cars are to be complied with.



Warning!

The following personal protective equipment is to be used:

- Safety goggles/face guard
- Suitable gloves
- Apron
- Rubber boots
- Ear protectors
- Safety shoes



Attention!

Notes on washing a vehicle with a high pressure cleaner:

- Do not wash directly on gaskets and control units during engine

  washes.
- A minimum distance of 30 cm must be adhered to for tyres and tyre valves.
- A minimum distance of 30 cm must be adhered to for the soft top and painted parts.
- Do not use if engine is still hot.
- Do not exceed maximum water temperature of 60 degrees.
- Do not spray directly onto cameras/sensors.

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Attention!

- For your own safety, we recommend that you do not wash on the high-voltage components in electric or hybrid vehicles.

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61 00 ... Notes on handling wiring harnesses and cables



The following applies in general:

To avoid damage, observe the following instructions:

- Avoid compressive and tensile loads
- To ensure professional repairs, perform repair work only with BMW-approved or recommended special tools and spare parts
- Make sure cables are laid without kinks or abrasions
- Ensure non-contacting routing at sharp-edged body parts; use edge protection if necessary
- Secure additionally laid cables/leads with cable ties

The following additionally applies:

Shielded lines

Interference radiation and interference resistance can lead to neutral zones at contact points in the shielding. Consequently, distinctions have to be drawn between the following types:

Coaxial lines

- Shielded coaxial cables RTK031 may only be repaired with a special crimping tool.
- For aerial lines only the bushing contact may be repaired.
- RG174 Lines and the bushing contact may not be repaired.

CVBS lines

- CVBS cables may not be repaired.
- CVBS cables must be replaced in their entirety.

HSD lines

- HSD cables may not be repaired.
- HSD cables must be replaced in their entirety.

Optical fibre cable:

Note:
Fibre-optic cables are coloured differently as follows:

- Green = **MOST** (**M**edia **O**riented **S**ystems **T**ransport) optical fibres
- Yellow = **ISIS** (**I**ntelligent **S**afety and **I**ntegration **S**ystem) optical fibres
- Orange=repair fibre-optic cables

Attention!

- Optical fibres are permitted to show only one junction point (bridge). Replace optical fibres if necessary
- Smallest permissible bending radius is 25 mm
- Avoid effects of heat ≥ 85 °

Treating cables and fibre-optic cables

FlexRay (twisted cables):

It is possible to repair the FlexRay. In the event of damage, the cables can be joined with conventional butt connectors and heat-shrink tubing.

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Note:

- FlexRay lines may only reveal one separation point (bride); renew complete line if necessary.
- If possible, maintain twisted cable after repair.
- After repairs, twist cables as close as possible to the connector/separation point.
- Twisting must be as symmetrical as possible.

Airbag lines:

Repairing airbag cables

Ribbon cables:

Repairing ribbon cables

Replacing wiring harnesses

Repair wiring harnesses mainly cover the full equipment of the vehicle. If certain optional equipment is not installed in the vehicle, note the following:

- If necessary, secure the remaining connectors.
- If necessary, seal the remaining connectors outside the vehicle interior, for example, with butyl tape in such a way that moisture ingress can be eliminated permanently.
- If necessary, repin the connector of the repair wiring harness.

Note:
Repair wiring harnesses can be equipped with an **additional socket housing** (30-pin, for example), **which was not provided on the previous vehicle-side wiring harness**. This socket housing also cannot be found in the wiring diagram.

Procedure

The separation point between the vehicle-side wiring harness and the repair wiring harness is located **in the vehicle interior** (in the footwell, for example):

- Cut the additional socket housing and connect the lines to the vehicle-side wiring harness using a butt connector.
- Alternatively, a suitable pin housing can be fitted on the vehicle-side wiring harness and connected to the additional socket housing.

  However, this is permitted only if the following conditions are met:
  - Carpets must not protrude visibly or become deformed due to the installation of the additional plug connection.
  - It must be possible to install the adjacent components (for example, trims, trim panels, etc.) correctly after installing the additional plug connection.
  - All the attachment points of the adjacent components (for example, trims, trim panels, etc.) must engage correctly.
  - There must be no rattling noise due to the installation of the additional plug connection.
  - The additional plug connection must not damage the adjacent components/wiring harnesses, etc..

The separation point between the vehicle-side wiring harness and the repair wiring harness is located **outside the vehicle interior** (in the

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wheel arch, for example):

- Cut the additional socket housing and connect the lines to the vehicle-side wiring harness using a butt connector.
- **Using the additional socket housing is not permitted with a separation point outside the vehicle interior.**

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12 00 ... Notes/information on start assistance (jump starting)

Do not start the engine with help of starting sprays.

Preparation:

Conform with the following when starting the engine with a jump starting cable.

- Ensure that the jump starting cable wires are of appropriate cross-section size.
- Only use fuse-protected jump starting cables.
- Check whether the current-supplying battery has 12 V voltage.
- If the engine is started from the battery of another vehicle, ensure that there is no contact between the bodies of both vehicles.

Important!

Never touch electrically live ignition system components: high voltage - danger of injury!

If the battery in the vehicle supplying power is weak, start the engine of this vehicle and let it run at idling speed.

Operation:

It is essential to conform to the procedures so as to avoid injury to persons or damage to parts.

- Automatic transmission: select drive position ”P”, apply parking brake.
- Manual transmission: move gear lever to neutral position, apply parking brake.
- Ensure that the jump leads cannot get caught in rotating parts, e.g. fan.
- First connect both positive poles of the batteries with one jump starting cable (red).
- Use the battery positive terminal in the engine compartment for vehicles with the battery in the luggage compartment.
- Then use the second jump starting cable (black) to connect the negative post of the current-supplying battery with the earth/ground point (not the negative pole or the body) of the vehicle to be started.

Important!

Do not connect the second jump starting cable (black) with the negative pole of the battery in the vehicle to be started. Produced gas could be ignited by sparks.

Risk of explosion!

After the engine of the vehicle to be started has fired, first disconnect the jump starting cable between the negative pole and the earth/ground point. Then remove the starting cable from the positive poles.

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

Warning!

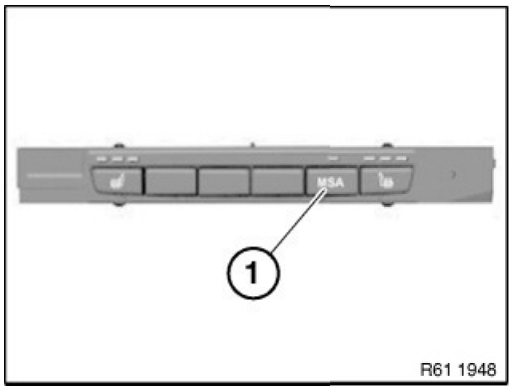
If the engine hood/bonnet contact is pulled upwards (workshop mode), the information "switch closed" is output. The automatic engine start-stop function is active.

An automatic engine start is possible.

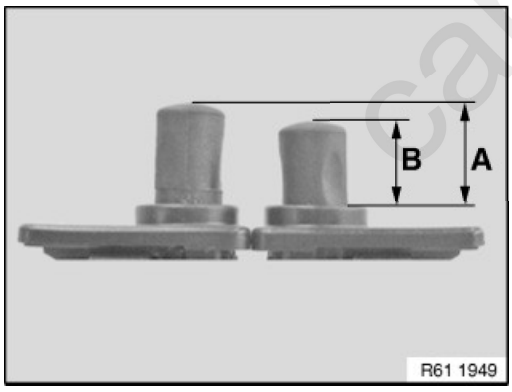
Observe safety precautions when working on MSA vehicles.

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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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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61 00 ... Safety instructions for handling vehicle battery

Do not allow any battery acid to come into contact with the eyes, the skin or clothing. Therefore wear protective clothing, gloves and eye protection.

Do not tilt the battery, acid may emerge from the vent hole.

If acid is splashed into the eyes, rinse them immediately for several minutes with clear water. You must then consult a doctor without delay.

If acid is splashed onto the skin or clothing, neutralise it immediately with a soap solutionand rinse with lots of water.

Seek medical attention immediately if battery acid is accidentally swallowed.

Strictly no flames, sparks, naked light or smoking!

A highly explosive detonating gas is created when batteries are charged. The rooms where charging is carried out must therefore always be well ventilated.

Avoid the formation of sparks when handling cables, wiring and electrical devices.

Turn the ignition lock to the 0 position before disconnecting or connecting the battery.

Do not place tools or any similar object on the battery (danger of short circuit and explosion hazard!).

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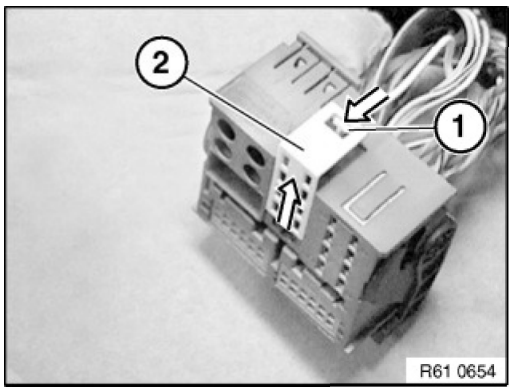
61 13 ... Socket housing (radio connector), Hybrid System MQS/MPQ

Special tools required:

- 61 0 314

Manufactured by AMP: The following contact types without strand sealing can be fitted in the connector housings:

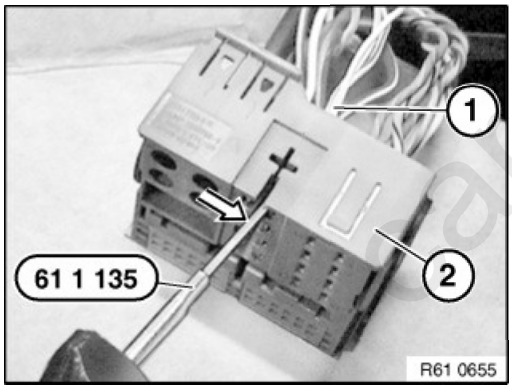
- MQS (Micro Quadlock System)
- MPQ, width 2.8 mm (Micro Power Quadlock)
- MPQ, width 5.2 mm (Micro Power Quadlock)



Removing MPQ contacts from radio connector:

Press lock (1) in direction of arrow.

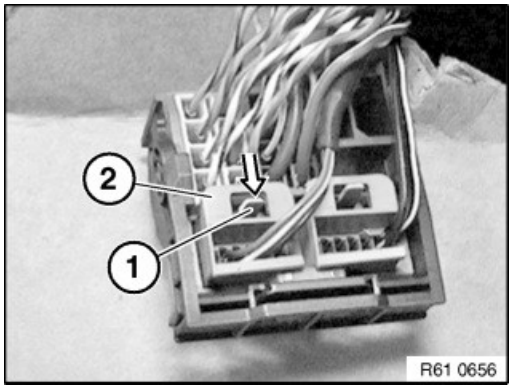
Detach secondary lock (2) from radio plug.



Feed special tool 61 0 314 (61 1 135) past side of contact.

Press special tool 61 0 314 (61 1 135) in direction of arrow.

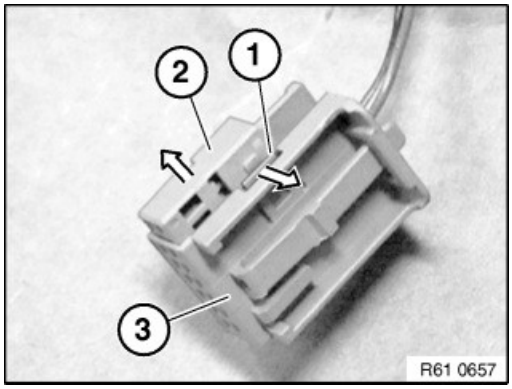
Pull wire (1) with socket contact out of radio connector (2).



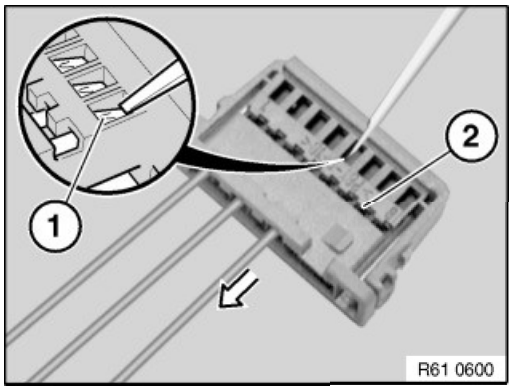
Removing MQS contacts from contact carrier:

Press lock (1) in direction of arrow and pull housing (2) out of radio connector.

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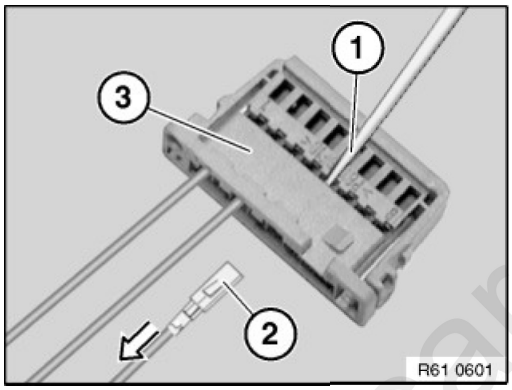
Press lock (1) in direction of arrow. Pull contact carrier (2) out of housing (3).*Note:*
When the contact carrier is pulled out, the secondary locks of the socket contacts are raised.



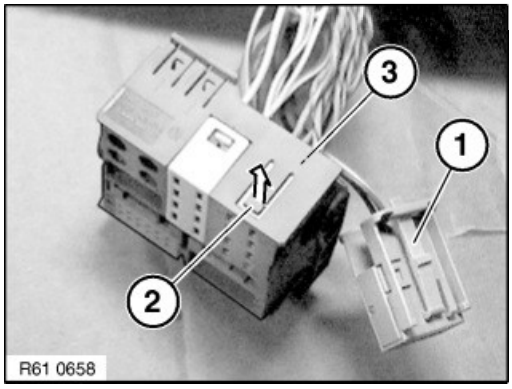
Note:
Schematic diagram shows the 8-pin socket housing by way of example.

Hold down retaining hook (1) of socket contact in opening of contact carrier with a small screwdriver.

Pull wire with socket contact in direction of arrow as far as secondary lock (2).



Hold down retaining hook in secondary lock (1) again. Pull wire with socket contact (2) out of contact carrier (3).



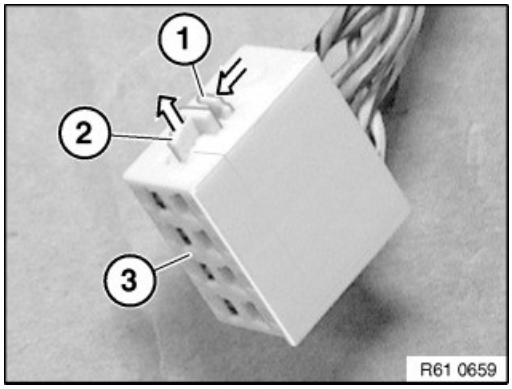
Removing MPQ contacts from contact carrier:

Remove contact carrier (1) with MQS contacts from radio connector.

Raise lock (2) on radio connector.

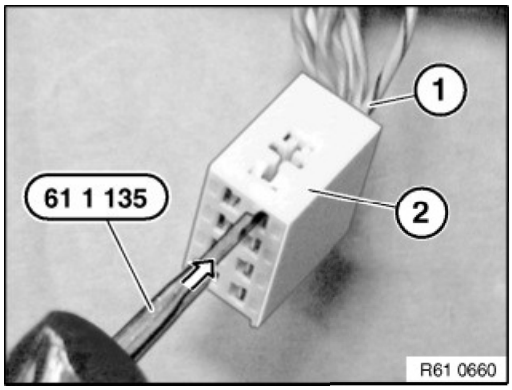
Pull contact carrier (3) out of radio connector.

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Press lock (1) in direction of arrow.

Pull secondary lock (2) in direction of arrow completely out of contact carrier (3).



Press special tool 61 0 314 (61 1 135) on inside of contact into contact carrier (2).

Pull wire with socket contact (1) out of contact carrier (2).

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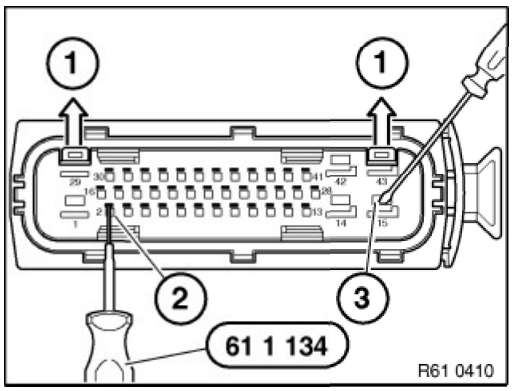
61 13 ... Socket housing 42-, 43-, 46-pin, Hybrid System MQS / MPQ

Special tools required:

- 61 0 312

Manufactured by AMP: The following contact types without strand sealing can be fitted in the socket housings:

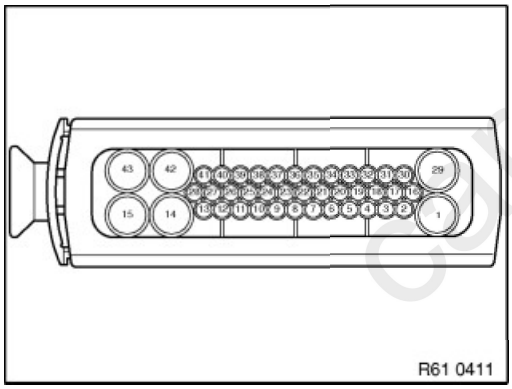
- MQS (Micro Quadlock System)
- MPQ, width 2.8 mm (Micro Power Quadlock)
- MPQ, width 5.2 mm (Micro Power Quadlock)



Open secondary locks (1) on socket housing.

Press back retaining hook of MQS contacts (2) with special tool 61 0 312 61 1 134 and pull out cable with contact.

Press back retaining hook of MPQ contacts (3) with screwdriver and pull out cable with contact.



Installation note:
Bend open retaining hook of contacts gently before inserting into connector housing.

For installation of contacts, observe chamber numbers on reverse side of socket housing.

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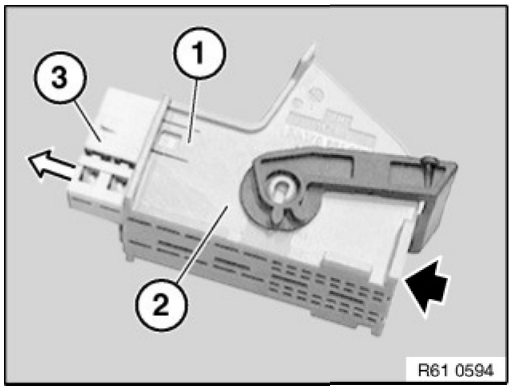
61 13 ... Socket housings, 2x21-, 2x27-pin, Hybrid Systems MQS/MPQ, Elo/Elo Power

Manufactured by AMP: The following contact types without strand sealing can be fitted in the socket housings:

- MQS (Micro Quadlock System)
- MPQ, width 2.8 mm (Micro Power Quadlock)
- MPQ, width 5.2 mm (Micro Power Quadlock)

Manufactured by Siemens: The following contact types without strand sealing can be fitted in the socket housings:

- Elo (electrical contact)
- Elo Power 2.8 mm width (electrical contact for heavy loads)
- Elo Power 5.2 mm width (electrical contact for heavy loads)

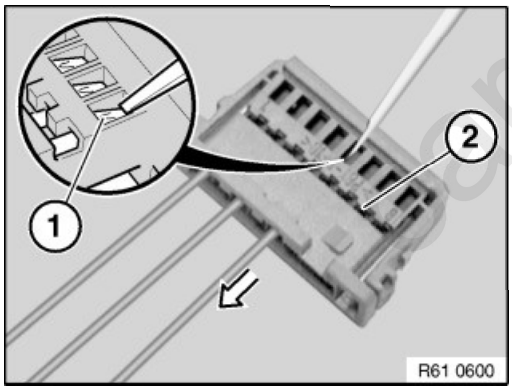


Raise lock (1) on housing (2).

Push contact carrier (3) from rear out of housing.

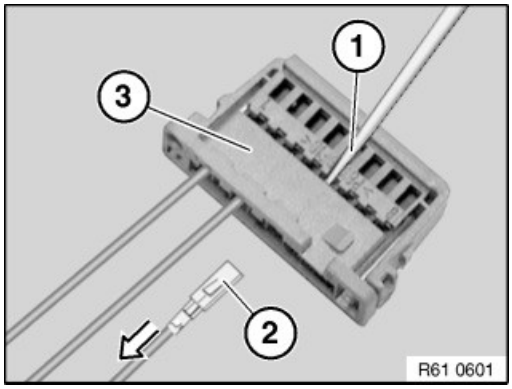
Note:
The second contact carrier is pushed out in the same way.

Pushing out the contact carrier releases the secondary locks of the socket contacts.



Hold down retaining hook (1) of socket contact in opening of contact carrier with a small screwdriver.

Pull wire with socket contact in direction of arrow as far as secondary lock (2).



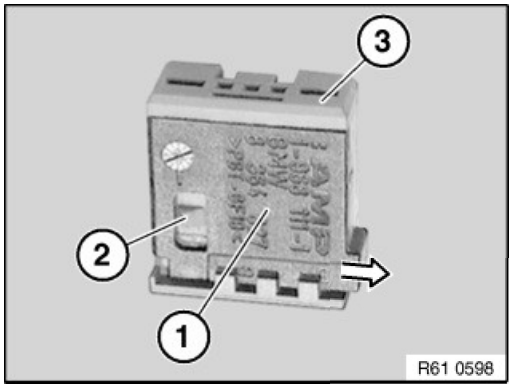
Hold down retaining hook in secondary lock (1) again and pull cable with socket contact (2) completely out of contact carrier (3).

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61 13 ... Socket housings, 5-pin, 8-pin, System MQS/MPQ

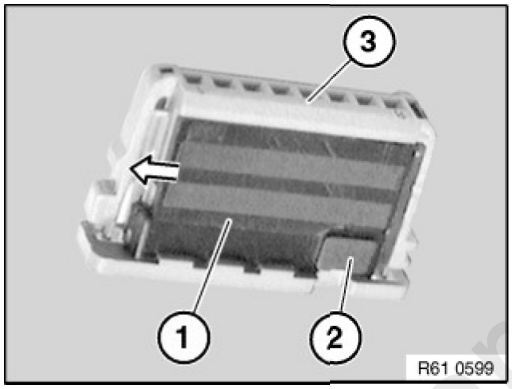
Manufactured by AMP: The following contact types without strand sealing can be fitted in the connector housings:

- MQS (Micro Quadlock System)
- MPQ, width 2.8 mm (Micro Power Quadlock)
- MPQ, width 5.2 mm (Micro Power Quadlock)



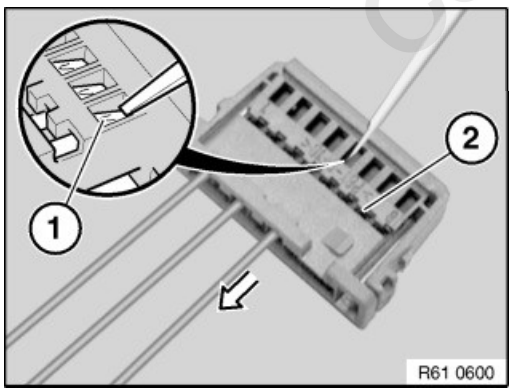
Socket housing, 5-pin (Hybrid System MQS/MPQ)

Raise fastener (1) over retaining lug (2) and pull off from contact carrier (3).



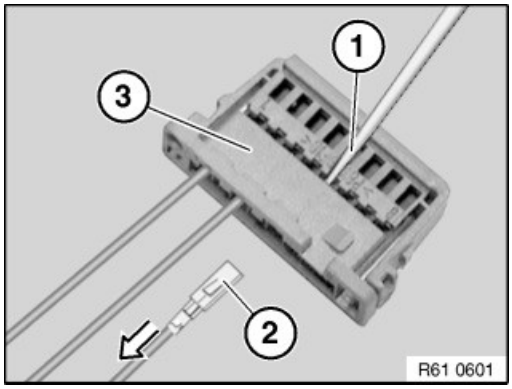
Socket housing, 8-pin (MQS):

Raise fastener (1) over retaining lug (2) and pull off from contact carrier (3).



Hold down retaining hook (1) of contact and pull cable with contact as far as secondary lock (2).

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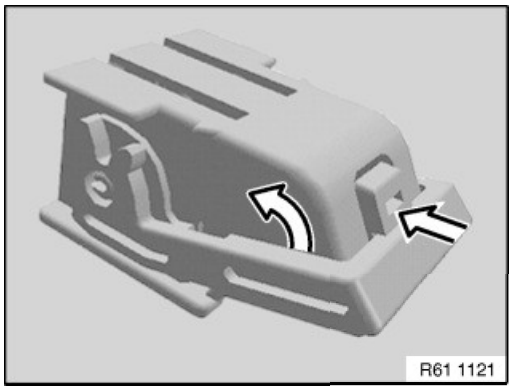
Hold down retaining hook in secondary lock (1) again and pull cable with contact (2) completely out of contact carrier (3).

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61 13 ... Unlocking and disconnecting different plug connections

Note:
The document describes unlocking and disconnecting different types of plug connections.

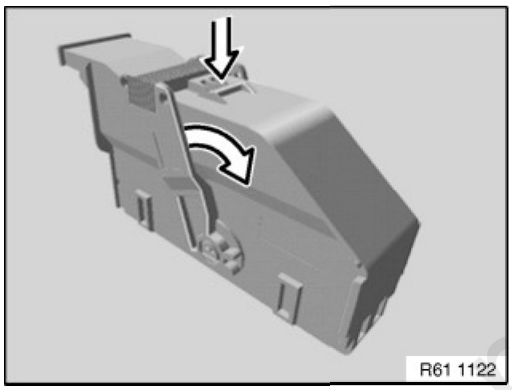
Differences in the details of the size and shape of the plug connections are possible.



1.

Press lock and open release clip in direction of arrow.

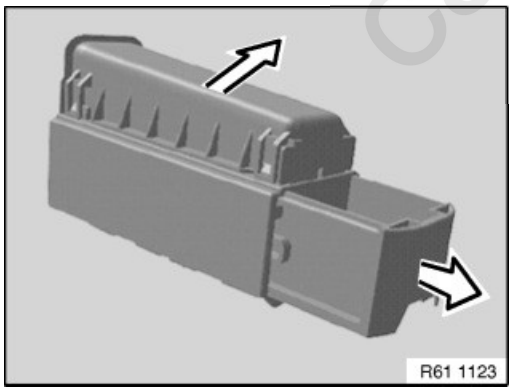
Disconnect plug connection.



2.

Press lock and open release clip in direction of arrow.

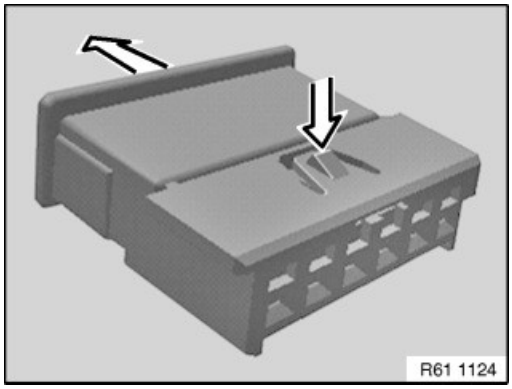
Disconnect plug connection.



3.

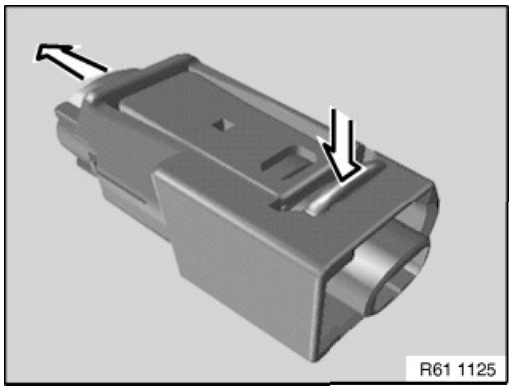
Open release clip in direction of arrow and disconnect plug connection in direction of arrow.

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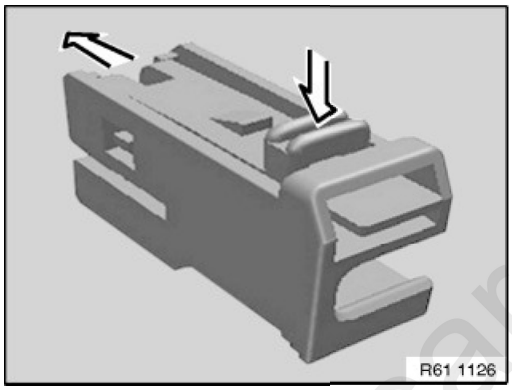
4.

Press lock and disconnect plug connection in direction of arrow.



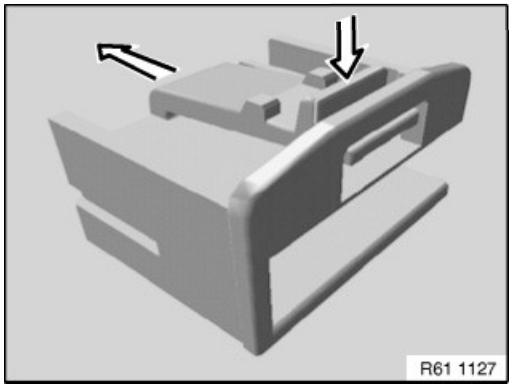
5.

Press lock and disconnect plug connection in direction of arrow.



6.

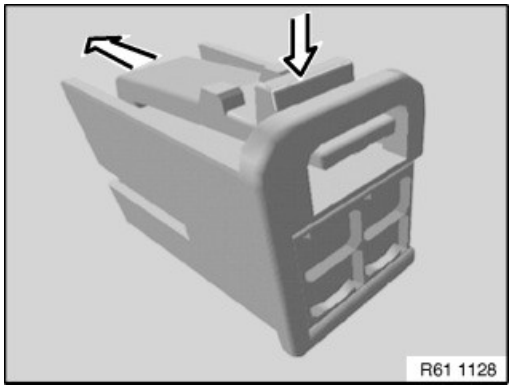
Press lock and disconnect plug connection in direction of arrow.



7.

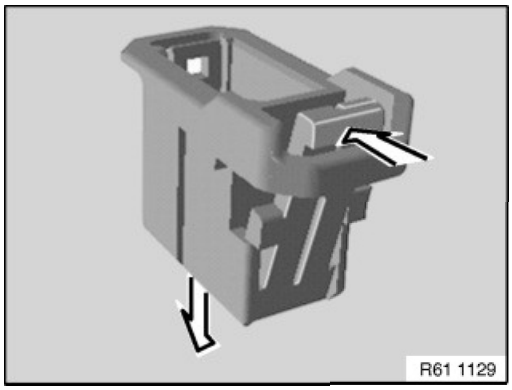
Press lock and disconnect plug connection in direction of arrow.

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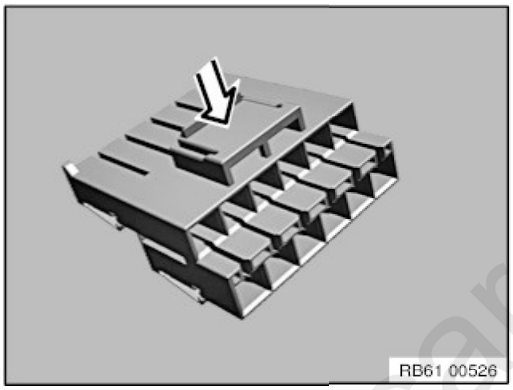
8.

Press lock and disconnect plug connection in direction of arrow.



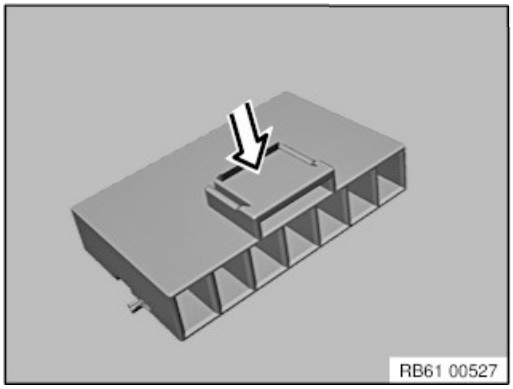
9.

Press lock and disconnect plug connection in direction of arrow.



10.

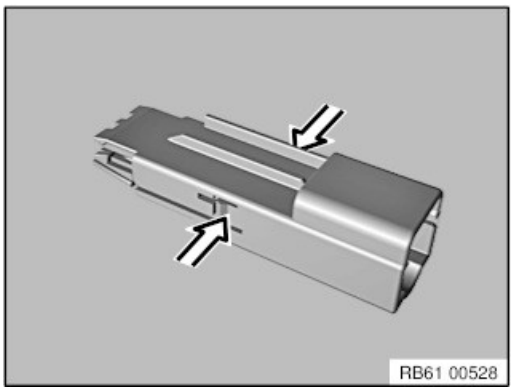
Press the lock and detach plug connection.



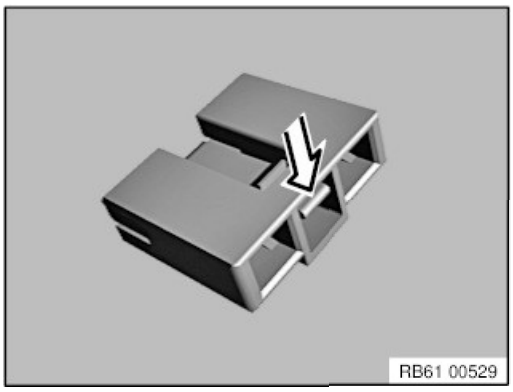
11.

Press the lock and detach plug connection.

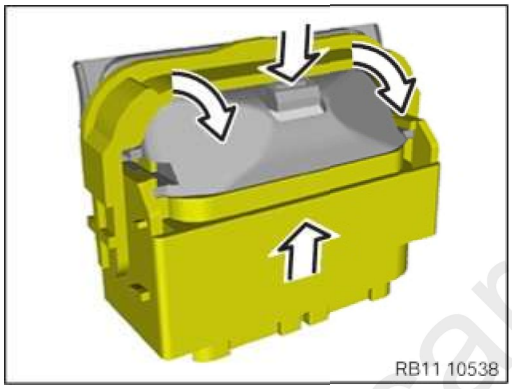
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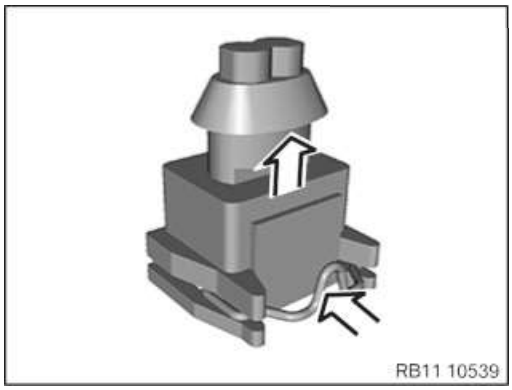
12.
Press the lock on both sides and detach plug connection.



13.
Press the lock and detach plug connection.

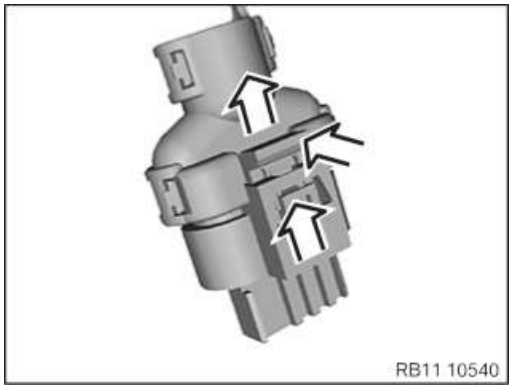


14.
Press lock and open release clip in direction of arrow.
Disconnect plug connection.

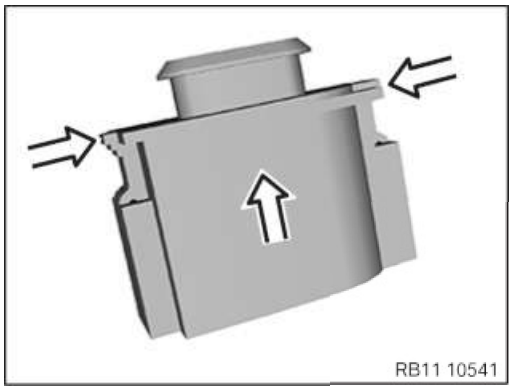


15.
Press the lock and detach plug connection.

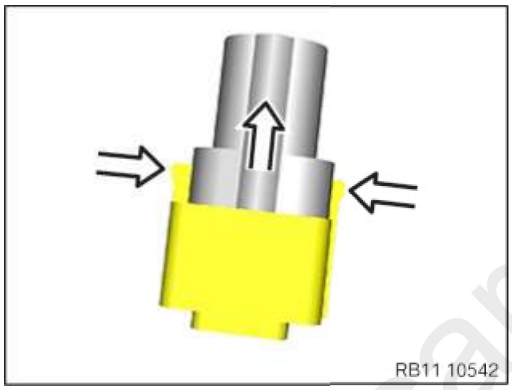
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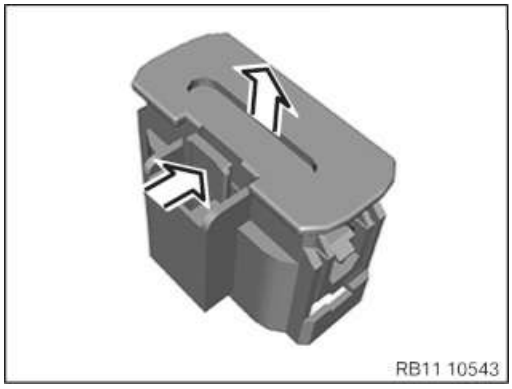
16.
Pull out lock and press.
Disconnect plug connection.



17.
Press the lock and detach plug connection.

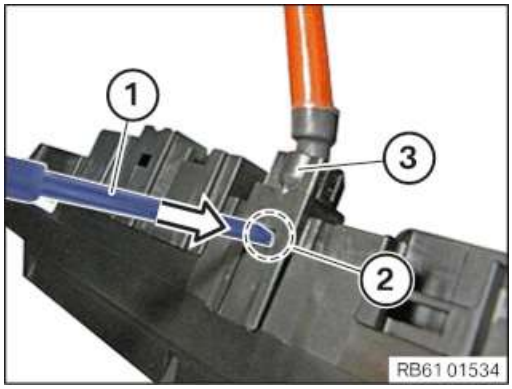


18.
Press the lock and detach plug connection.



19.
Press the lock and detach plug connection.

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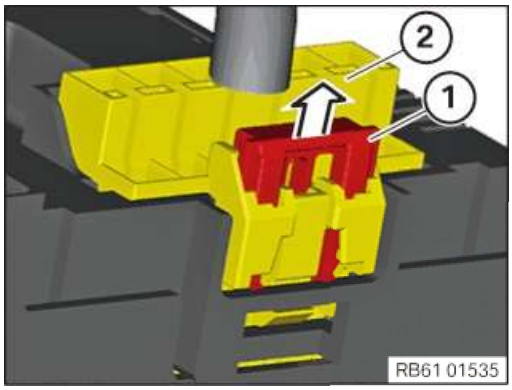


20.

Plug connection, e.g. on the power distribution box:

Press into the opening (2) using a suitable tool (1).

Pull off plug connection (3) upwards.



21.

Plug connection, e.g. on the power distribution box:

Lift lock (1) with a suitable tool.

Pull off plug connection (2) upwards.



22.

Vibration resistant high power engine contacts:

Caution!

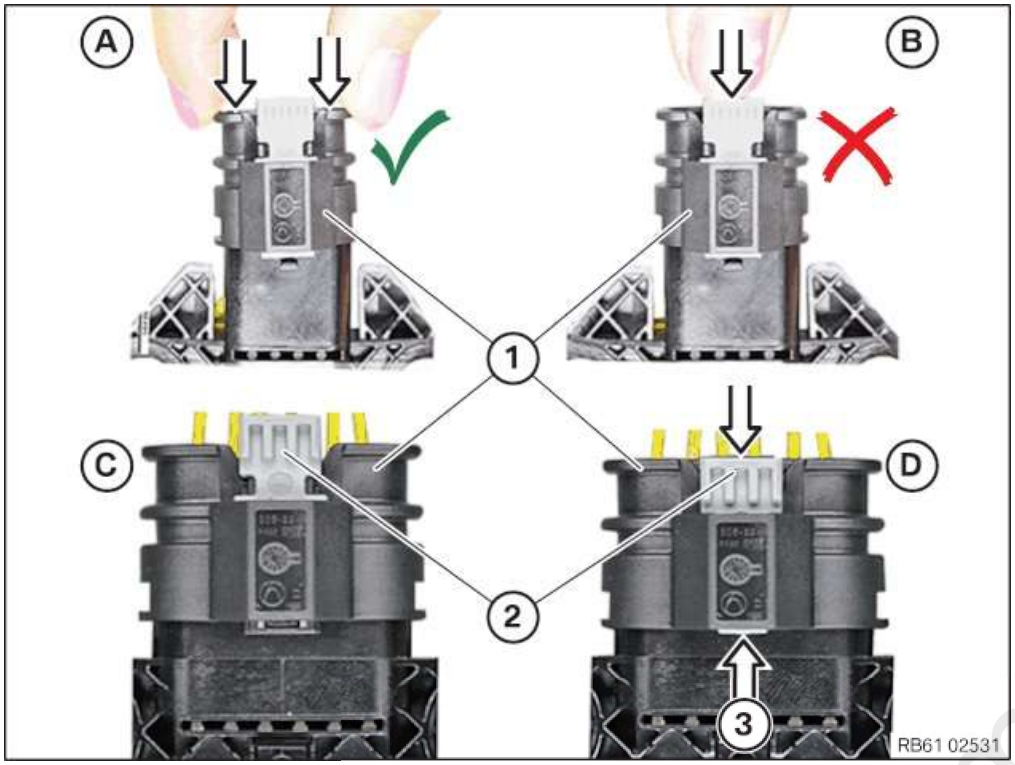
For this connector type, increased forces come into play when disconnecting and closing.

Disconnect:

Pull out lock (1) downward in direction of arrow first.

Then press lock (1) down in direction of arrow and pull off connector.

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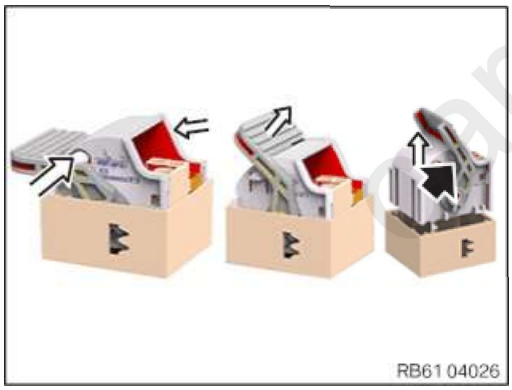


23.

Close:

A. Press the connector (1) down at the points indicated by the arrow **until it reaches the end position**
B. **Do** not press the connector (1) further than the lock
C. Connector (1) is in the end position, but lock (2) is not yet locked
D. Press lock (2) down in the direction of the arrow until the tip of lock (2) is visible at point (3)

Unlock / lock front light combination plug connection & replace housing after damage:

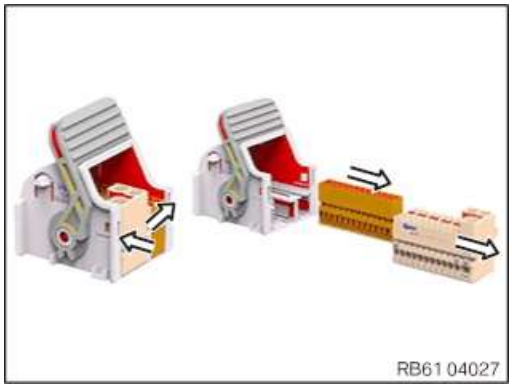


24.

Press in locking lever at both sides until the lever is unlocked and can be moved.

Move lever upwards until it latches into place in the end position.

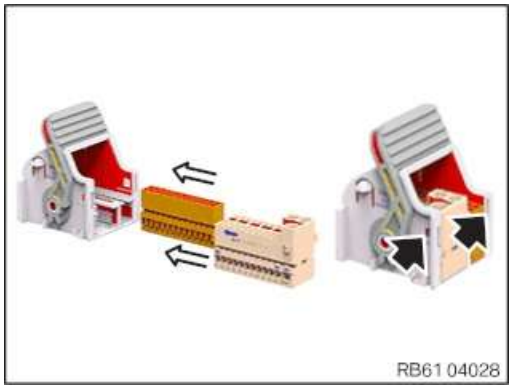
Once the lever is locked in the end position, remove plug connection upwards.



Unlock socket housing by lifting up each of the locking tabs.

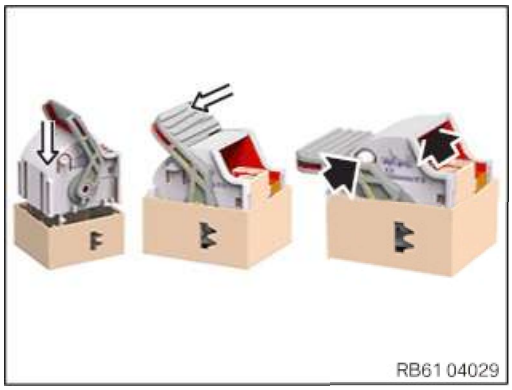
Slide out after unlocking the socket housing.

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Slide in socket housing up to limit position.

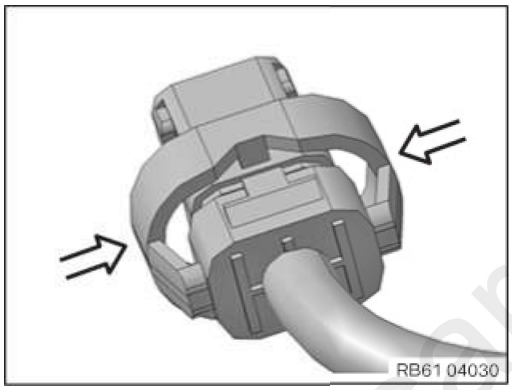
Lock socket housing into place in end position.



Sliding in up to limit position.

Activate plug-inn procedure by moving lever downwards.

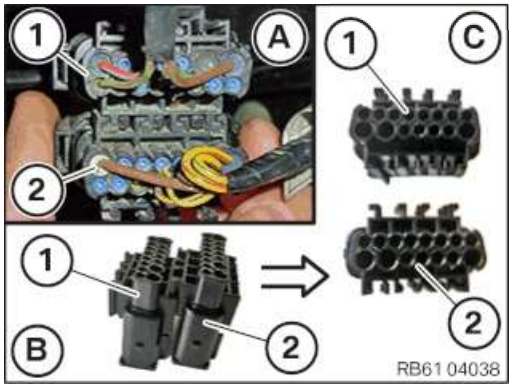
IMPORTANT: the latch mechanism on both sides only works for a completed plug-in procedure.



25.

Rosenberger D4S20G-400A5-Y

Press to unlock on both sides.

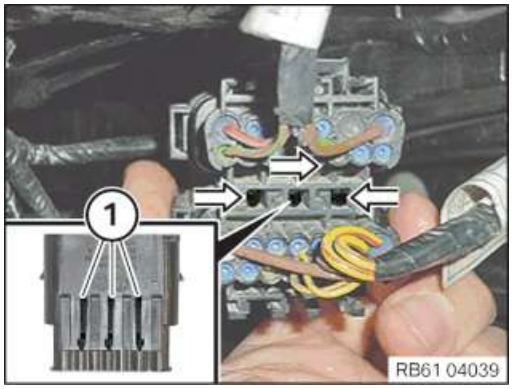


26.

Pin housing, 15-pinMLK1

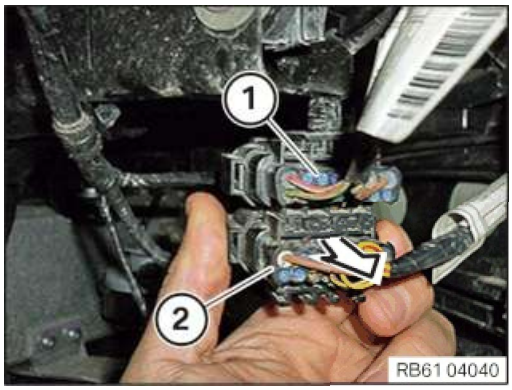
- A & B. To avoid any damage to individual connectors, the given connector assembly consisting of several individual connectors (1) & (2) must be released before disconnecting the plug connection.
- C: released connector assembly

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Disconnecting connector assembly:

Release retaining hooks (1) in direction of arrow (detail image shows retaining hooks of individual connector).



Release connector (2) in direction of arrow from connector (1).

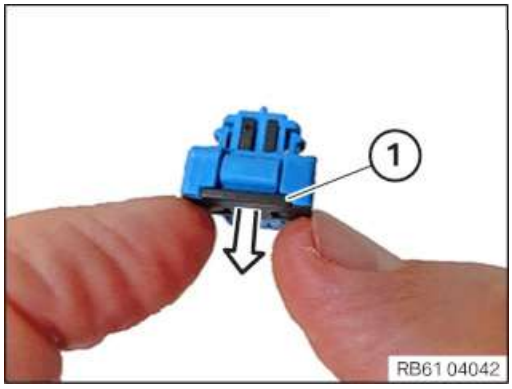


27.

Airbag ignition circuit connector

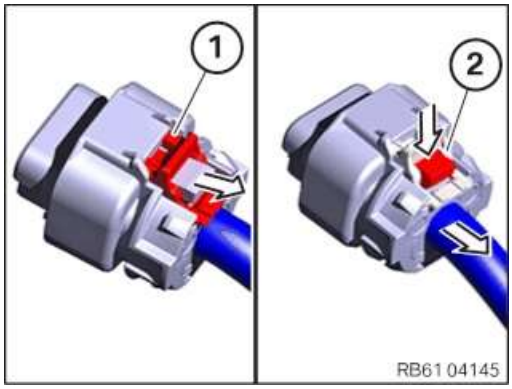
Warning!

Note the safety information for working on vehicles with airbag systems prior to disconnecting the plug connection.



Pull the cap (1) in the direction of the arrow to unlock

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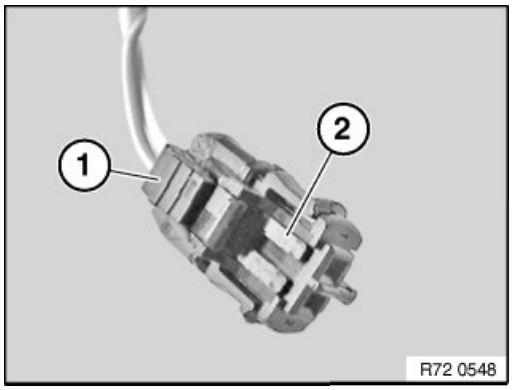


28.

Connector e.g. on front and rear lighting unit

Open safety catch (1) in direction of arrow using appropriate tool.

Push safety catch (2) in direction of arrow and disconnect plug connection.



29.

Plug, e.g. in airbag ignition circuits

Press the lock (1) and pull out the connector (2) up to initial engagement position.

Pull off connector (2).

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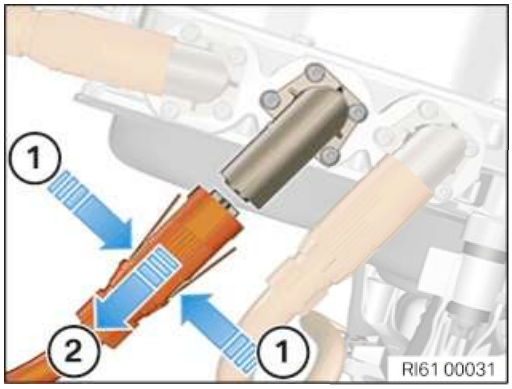
61 13 ... Unlocking and disconnecting various plug connections in electrical and hybrid vehicles



Attention!

Observe the following instructions for handling high-voltage plug connections:

- Damaged high-voltage plug connections must be replaced completely. Repair is not permitted.
- Dirt contamination must be removed before opening the plug connection.



Disconnect the Hirschmann high-voltage connector:

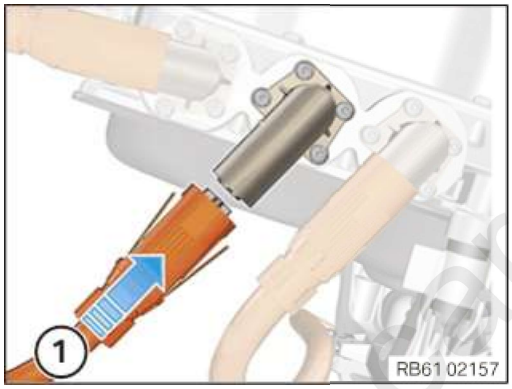
Press the lock (1) on the left and right on the connector in the direction of the arrow.

Pull off connector (2) in direction of arrow.

Attention!

Connector (2) is difficult to pull off.

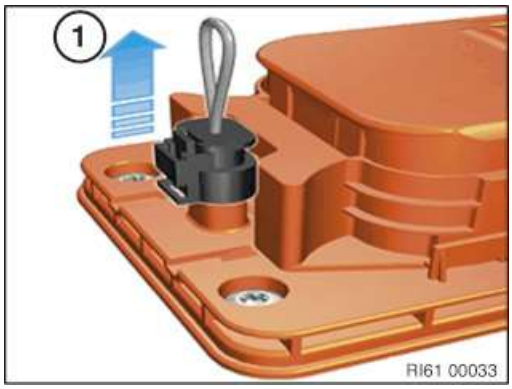
In the event of damage to high-voltage connector (2), the complete high-voltage cable must be replaced!



Connect the Hirschmann high-voltage connectors:

Slide the connector (1) on in the direction of the arrow.

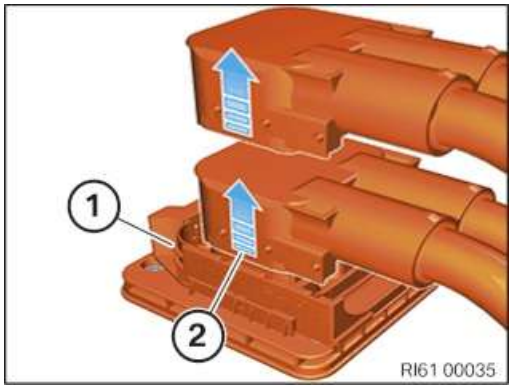
Note:
Connector (2) must lock audibly.



Disconnect the Kostal high-voltage connector:

Unlock and disconnect high-voltage interlock loop (1).

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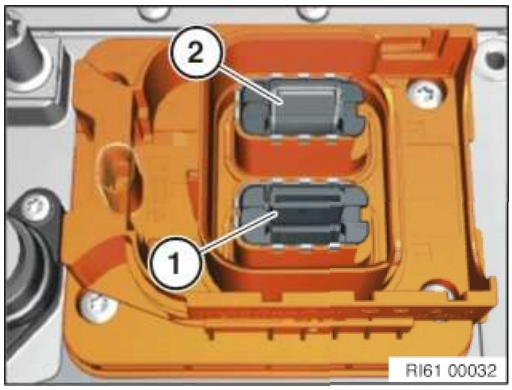
Push the lock (1) fully to the front.

Lift the connector (2) and remove it entirely.

Attention!

Plug connection (3) is difficult to pull off.

The connector (2) must be completely pulled off the opposite housing in one step. Damage may be caused to contact protection if connector is only partly pulled off and then closed again!



Check the Kostal high-voltage connector and connection for damage:

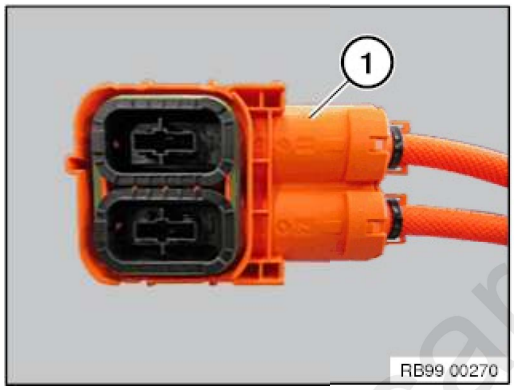
Check the touch protection for damage and correct positioning (1).

Warning!

Do not touch unprotected connector (2)!

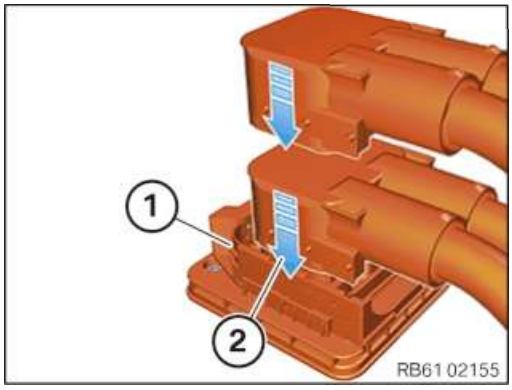
If the contact protection (1) has been pushed to the bottom (2), the high-voltage connector must be refitted.

If contact protection (1) remains in bottom position (2) after reinstallation, the contact protection is faulty and the component must be replaced!



Check the high-voltage connector (1) for damage.**Warning!**

In the event of damage to the high-voltage connector (1), the complete high-voltage cable must be replaced!



Connect the Kostal high-voltage connector:

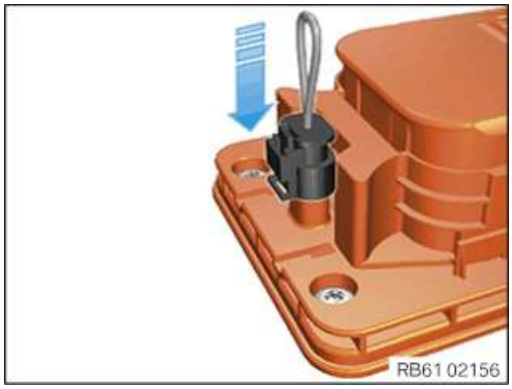
Connect the connector (2) in one single movement to the counter-housing.

Push the lock (1) fully to the rear.

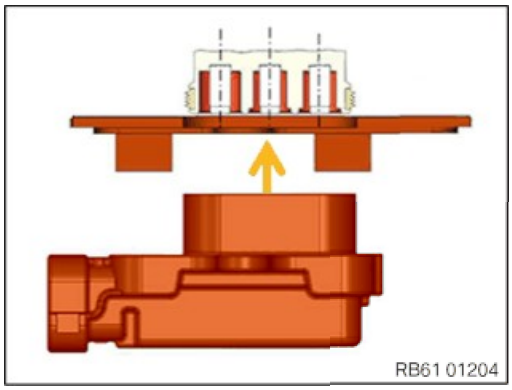
Attention!

Plug connection (3) must be correctly locked by lock (2), otherwise there is a risk of damage.

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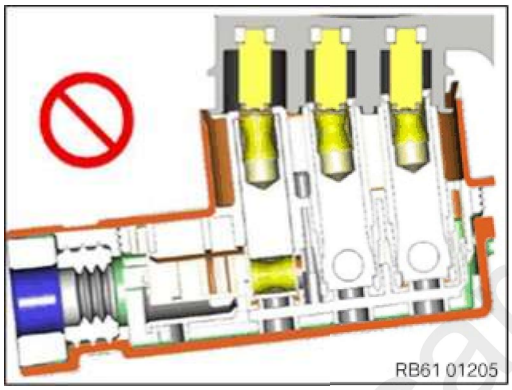


Connect the connector for the high-voltage interlock.



Three-phase high-voltage connector:

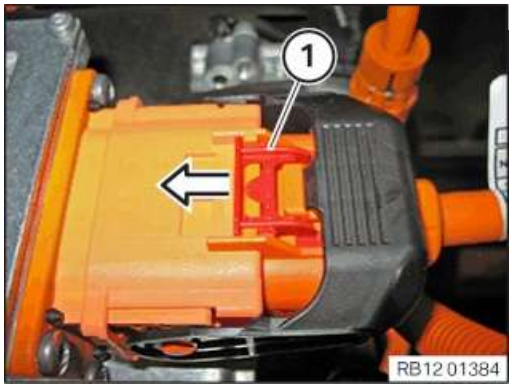
Connect and disconnect the connector straight.



Attention!

The system is designed to only offer limited protection against damage caused by connectors that are inserted at an angle.

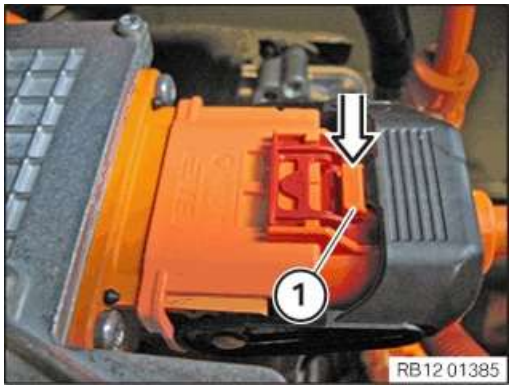
Increased tilted connections will increase the connecting force and the risk of danger.



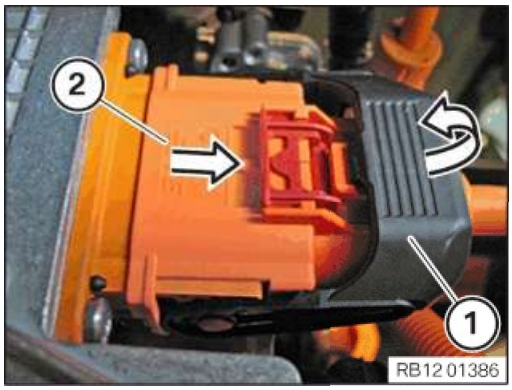
Disconnect the high-voltage connector from the high-voltage connection of the KLE:

Slide lock (1) in direction of arrow up to stop.

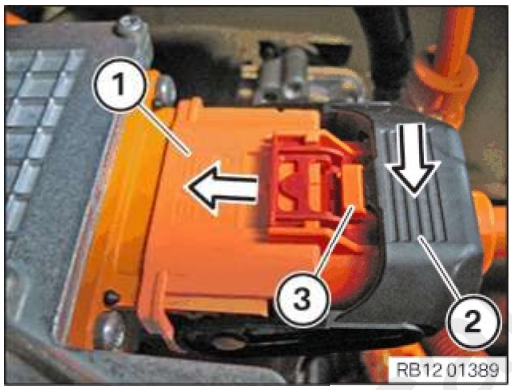
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Press lock (1).



Open the lock (1) completely and disconnect the connector (2).



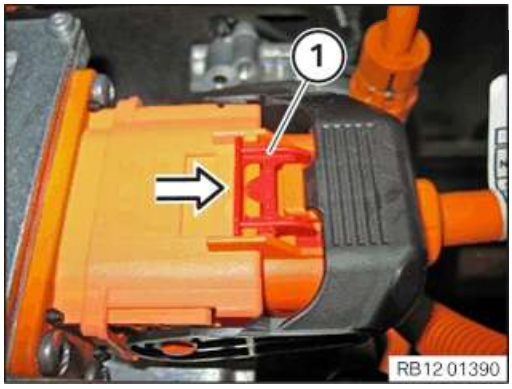
Connect the high-voltage connector to the high-voltage connection of the KLE:

Connect the connector (1) to the limit position and close the lock (2).

Attention!

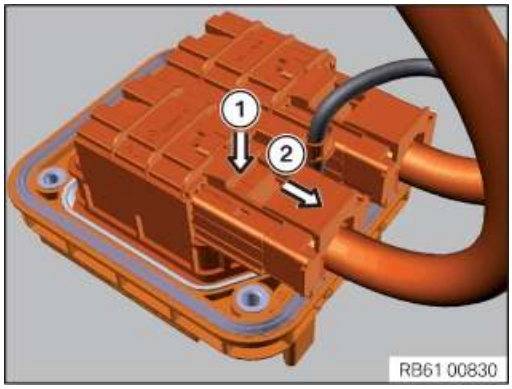
Lock (2) must snap audibly into place.

The retaining lug of the lock (2) must be positioned completely under the lock (2).



Slide the lock (1) on to the stop in the direction of the arrow.

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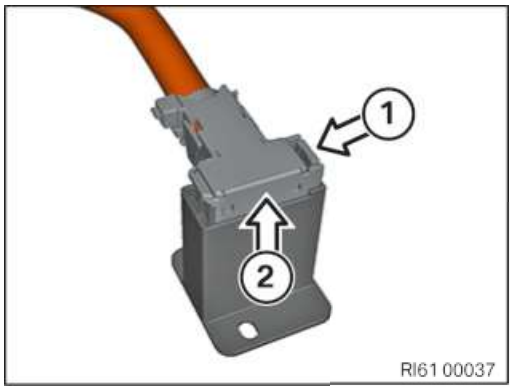
High-voltage connector on the high-voltage connection of the high-voltage battery unit:

Press down unlocking (1) in direction of arrow and pull off connector in direction of arrow (2).

Attention!

Contact protection is no longer provided in the event of a damaged connector housing.

In this case, contact technical support.



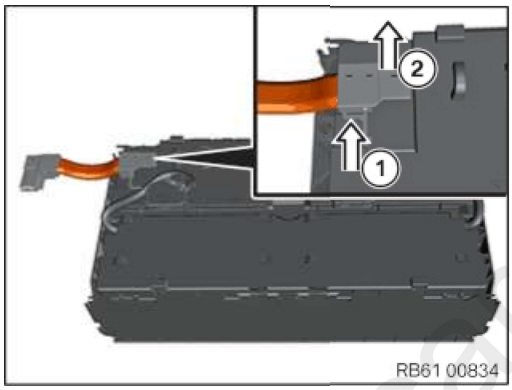
High-voltage connector on the cell module I01:

Press unlocking device (1) together and pull off connector upwards (2).

Attention!

Contact protection is no longer provided in the event of a damaged connector housing.

In this case, contact technical support.



High-voltage connector on the cell module (cell module connecting line):

Press unlocking (1) in direction of arrow and pull off connector in direction of arrow (2).

Attention!

Contact protection is no longer provided in the event of a damaged connector housing.

In this case, contact technical support.

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61 11 ... Cutting to length and stripping insulation from cables



Special tools required:

- 0 494 159
- 0 496 849
- 0 496 833
- 2 407 379
- 61 4 320
- 61 4 340
- 61 4 328
- 61 0 210
- 61 0 220
- 61 0 230



New parts for vehicle electrical system (stops, housing):

- Sourcing reference: BMW Group Parts



For cutting cables to length and stripping insulation, refer to Service Information.

Stripped length:

Wire cross-section (mm^2)	Stripped length (mm)
0,35 ... 0,50	4,0
0,75 ... 1,00	4.5
1,00 ... 2,50	5,0



Crimping on NanoMQS stop parts

Crimping of NanoMQS contacts (MQS).

- Special tool handle 0 494 159 or 0 496 849
- Special tool (die-plate) 0 496 833
- Stripping tool2 407 379

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2. Crimping of stops up to 2.5 mm

Crimping Micro Quadlock System contacts (MQS).

- Special tool61 4 320

Crimping Micro Power Quadlock contacts (MPQ).

- Special tool61 4 320

Crimping miscellaneous stop parts up to 2.5 mm^2

- Special tool 61 4 340 (up to 03/2010 special tool 61 4 328)
- Refer to Service Information bulletin

Crimping of stops above 2.5 mm^2

Crimping load current contacts (LSK 8).

- Special tool61 0 210

Crimping load current contact 2.8.

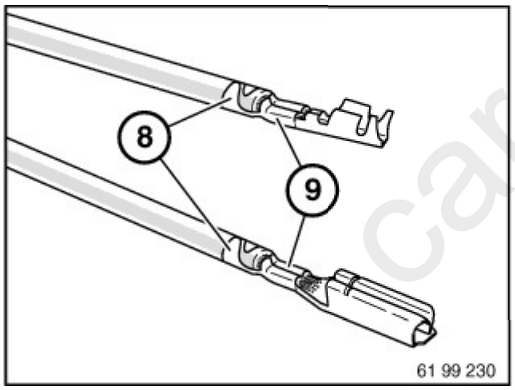
- Special tool61 0 220

Refer to Service Information SI 2 02 05 194

Crimping double spring contact (DFK 40)

Crimping MAK 8

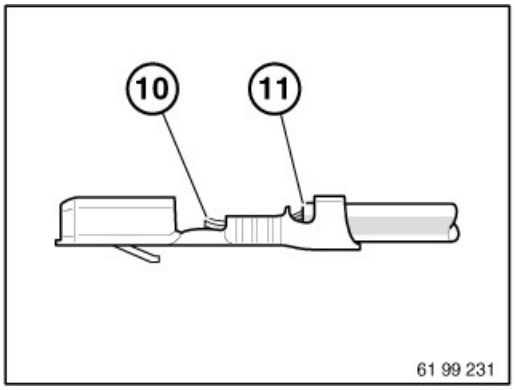
- Special tool61 0 230
- Refer to Service Information bulletin



Checking crimping

Check insulation crimping (8) and wire crimp (9) against following illustrations to ensure crimps are correctly located.

Note:
Illustration shows butt connectors and contact sleeves for comb connectors knocked on one side. The crimping procedure is identical here.

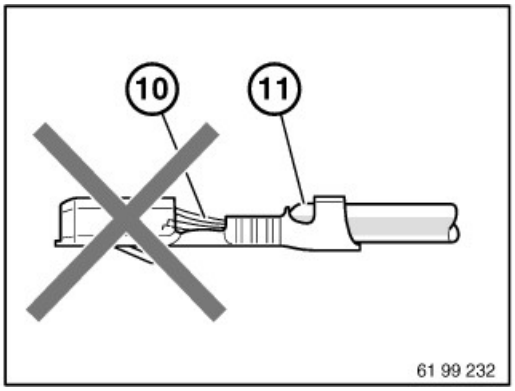


Correct crimping:

Visible conductor end (10).

Visible insulation end (11).

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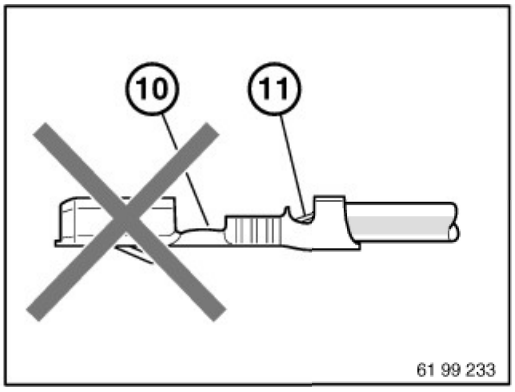


Incorrect crimping:

Conductor end (10) inserted too far.

Insulation end (11) in wire crimp.

If necessary, repeat crimping with a new contact.



Incorrect crimping:

Conductor end (10) not visible.

Insulation end (11) not visible.

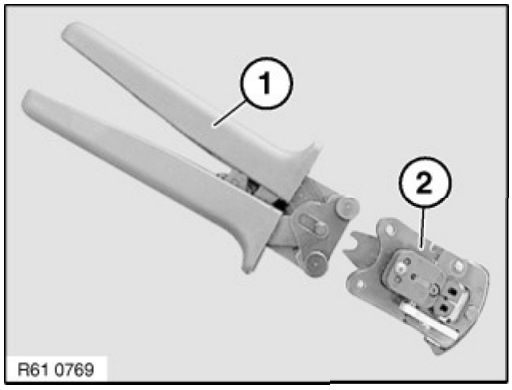
If necessary, repeat crimping with a new contact.

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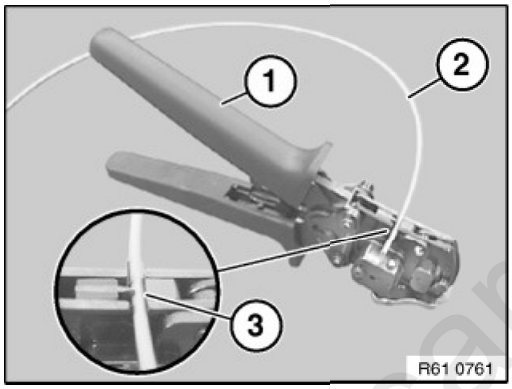
61 13 ... Cutting, strip insulation and crimping optical fibres

Special tools required:

- 61 4 321
- 61 4 329
- 61 4 320
- 61 4 323



The hand pliers 61 4 321 (1) in connection with the crimping head 61 4 329 (2) from crimp kit 61 4 320 are used for cutting, strip insulation and cutting optical fibres to size.*Note:*
Hand pliers (1) open automatically until limit position when handles are pressed together.

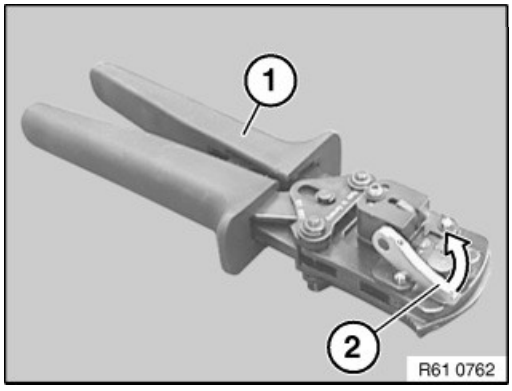


Cutting optical fibre

Open hand pliers (1).

Place optical fibre (2) in cutting device (3).

Close pliers (1) and remove optical fibre (2).

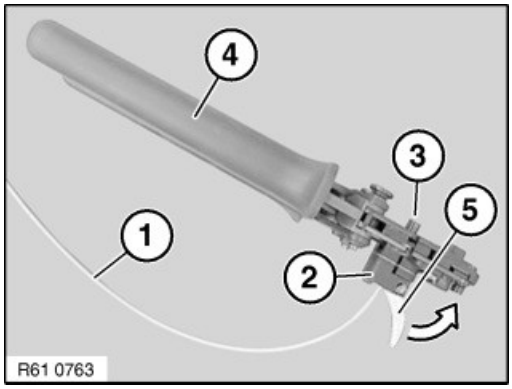


Stripping insulation from optical fibre

Open hand pliers (1).

Open lever (2) in direction of arrow.

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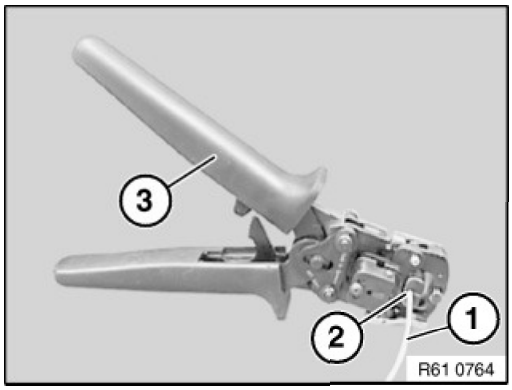
Push the optical fibre (1) into the strip insulation equipment (2) until it is flush in this area (3).

Close hand pliers (4) fully.

Close the operating lever (5) in the direction of the arrow.

Open hand pliers (4) by one tooth notch.

Re-open the operating lever (5) against the direction of the arrow and remove the optical fibre (1).



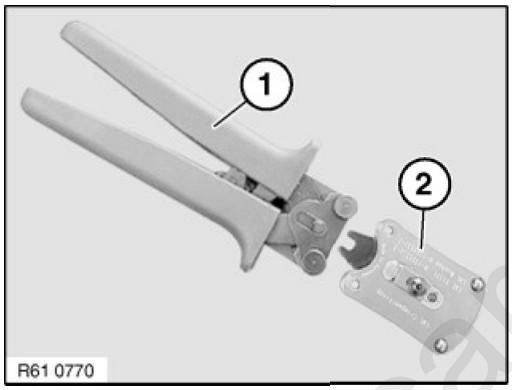
Cutting optical fibre to length

Open hand pliers (3).

Push the optical fibre (1) into the cutting equipment (2) until the insulation of the optical fibre (1) comes into contact with the clamping fixture.

Close hand pliers (3) fully and keep closed.

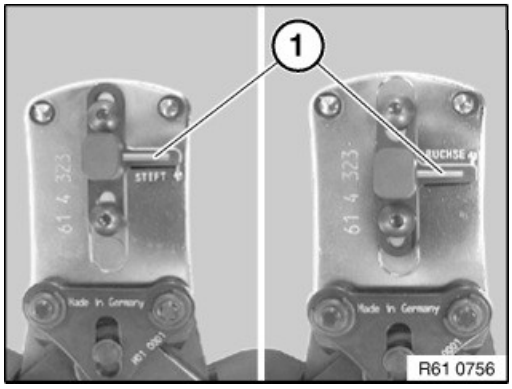
Remove optical fibre (1).



Crimp optical fibre

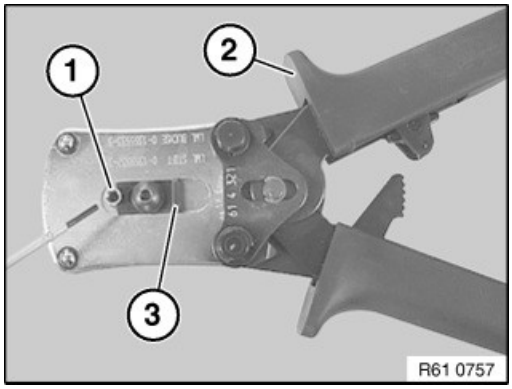
The hand pliers 61 4 321 (1) in connection with the crimping head 61 4 323 (2) from crimping kit 61 4 320 are used for crimping the optical fibres to size.

Note:
Hand pliers (1) open automatically until limit position when handles are pressed together.



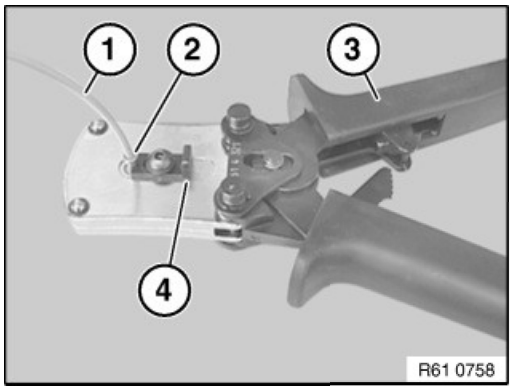
Move contact guide by means of stop lever (1) into corresponding position (pin contact or jack).

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Open hand pliers (2).

Place pin contact or jack (1) in crimping head and secure with locking lever (3).

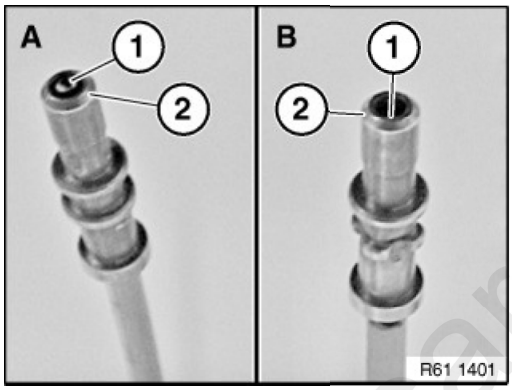


Insert stripped optical fibre(1) until limit position into pin contact or jack (2).

Close hand pliers (3) fully.

Open hand pliers (3) and locking lever (4).

Remove optical fibre (1).



Caution!

Make sure optical fibre is correctly seated in jack.

Right (A)

End of optical fibre (1) must be flush with tip of pin contact (2).

Wrong (B)

End of optical fibre (1) is not flush with tip of pin contact (2).

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61 00 ... Notes on handling wiring harnesses and cables



The following applies in general:

To avoid damage, observe the following instructions:

- Avoid compressive and tensile loads
- To ensure professional repairs, perform repair work only with BMW-approved or recommended special tools and spare parts
- Make sure cables are laid without kinks or abrasions
- Ensure non-contacting routing at sharp-edged body parts; use edge protection if necessary
- Secure additionally laid cables/leads with cable ties

The following additionally applies:

Shielded lines

Interference radiation and interference resistance can lead to neutral zones at contact points in the shielding. Consequently, distinctions have to be drawn between the following types:

Coaxial lines

- Shielded coaxial cables RTK031 may only be repaired with a special crimping tool.
- For aerial lines only the bushing contact may be repaired.
- RG174 Lines and the bushing contact may not be repaired.

CVBS lines

- CVBS cables may not be repaired.
- CVBS cables must be replaced in their entirety.

HSD lines

- HSD cables may not be repaired.
- HSD cables must be replaced in their entirety.

Optical fibre cable:

Note:
Fibre-optic cables are coloured differently as follows:

- Green = **MOST** (**M**edia **O**riented **S**ystems **T**ransport) optical fibres
- Yellow = **ISIS** (**I**ntelligent **S**afety and **I**ntegration **S**ystem) optical fibres
- Orange=repair fibre-optic cables

Attention!

- Optical fibres are permitted to show only one junction point (bridge). Replace optical fibres if necessary
- Smallest permissible bending radius is 25 mm
- Avoid effects of heat ≥ 85 °

Treating cables and fibre-optic cables

FlexRay (twisted cables):

It is possible to repair the FlexRay. In the event of damage, the cables can be joined with conventional butt connectors and heat-shrink tubing.

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Note:

- FlexRay lines may only reveal one separation point (bride); renew complete line if necessary.
- If possible, maintain twisted cable after repair.
- After repairs, twist cables as close as possible to the connector/separation point.
- Twisting must be as symmetrical as possible.

Airbag lines:

Repairing airbag cables

Ribbon cables:

Repairing ribbon cables

Replacing wiring harnesses

Repair wiring harnesses mainly cover the full equipment of the vehicle. If certain optional equipment is not installed in the vehicle, note the following:

- If necessary, secure the remaining connectors.
- If necessary, seal the remaining connectors outside the vehicle interior, for example, with butyl tape in such a way that moisture ingress can be eliminated permanently.
- If necessary, repin the connector of the repair wiring harness.

Note:
Repair wiring harnesses can be equipped with an **additional socket housing** (30-pin, for example), **which was not provided on the previous vehicle-side wiring harness**. This socket housing also cannot be found in the wiring diagram.

Procedure

The separation point between the vehicle-side wiring harness and the repair wiring harness is located **in the vehicle interior** (in the footwell, for example):

- Cut the additional socket housing and connect the lines to the vehicle-side wiring harness using a butt connector.
- Alternatively, a suitable pin housing can be fitted on the vehicle-side wiring harness and connected to the additional socket housing.

  However, this is permitted only if the following conditions are met:
  - Carpets must not protrude visibly or become deformed due to the installation of the additional plug connection.
  - It must be possible to install the adjacent components (for example, trims, trim panels, etc.) correctly after installing the additional plug connection.
  - All the attachment points of the adjacent components (for example, trims, trim panels, etc.) must engage correctly.
  - There must be no rattling noise due to the installation of the additional plug connection.
  - The additional plug connection must not damage the adjacent components/wiring harnesses, etc..

The separation point between the vehicle-side wiring harness and the repair wiring harness is located **outside the vehicle interior** (in the

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wheel arch, for example):

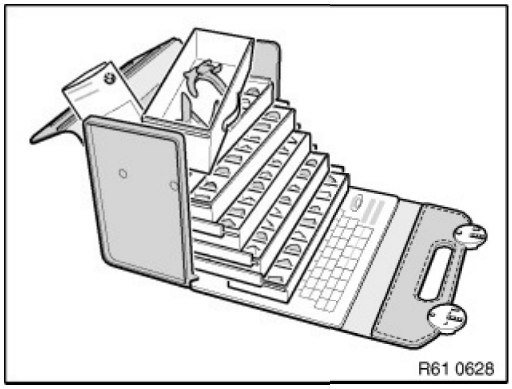
- Cut the additional socket housing and connect the lines to the vehicle-side wiring harness using a butt connector.
- **Using the additional socket housing is not permitted with a separation point outside the vehicle interior.**

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61 13 ... Special tools for wiring harness repairs

Special tools required:

- 61 0 300
- 61 0 400
- 61 1 100
- 61 4 320
- 61 0 200
- 61 0 210
- 61 0 220
- 61 0 230
- 61 0 240



Repair range, vehicle electrical system:

Single parts for wiring harness repairs*

* Sourcing reference: BMW Parts Department

Note:

- Refer to Service Information:
  SI 2 04 07 341



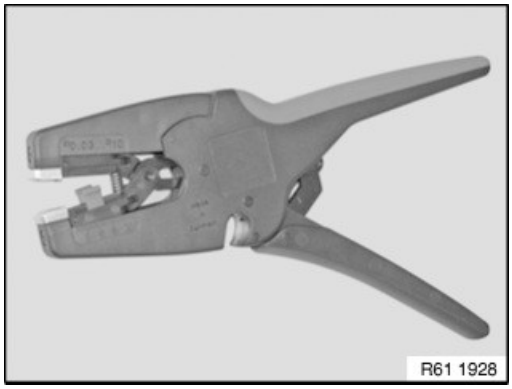
Release and press-out tool:

- Special tool61 0 300
- Special tool 61 0 400 (MINI N12/N14)
- Special tool 61 1 100 (engine)

Handling:

- Notes for opening contacts and locks of different connector contact systems

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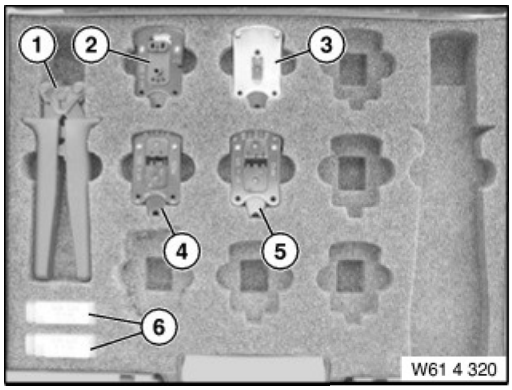
Cutting to length and stripping insulation from cables:

Wire stripper MultiStrip10*

*Sourcing reference BMW Workshop Equipment Catalogue

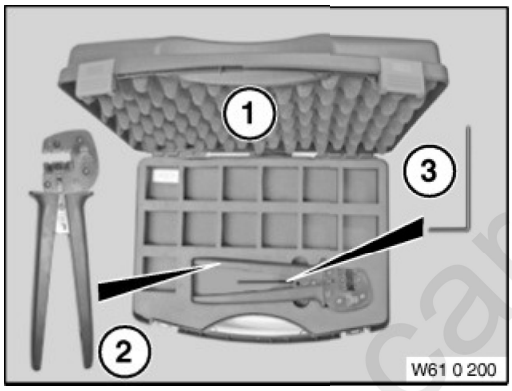
Handling:

- Cutting cables to length and strip insulation



Crimping stop parts (small contacts) and butt connectors:

- Special tool61 4 320
  1. Tool without crimping head
  2. Crimping head (stripping insulation and cutting fibre-optic cables to length)
  3. Crimping head (crimping fibre-optic cable contacts)
  4. Crimping head (crimping MQS contacts)
  5. Crimping head (crimping MPQ contacts)
  6. Replacement blade (face-cutting fibre-optic cables)
  7. Replacement blade with tool (insulation stripping unit)
  8. Universal crimping head (SI 2 04 06 293)



Crimping stop parts (large contacts) and butt connectors:

- Special tool 61 0 200 (crimping set)
- Special tool 61 0 210 (matrix set SLK 8)
- Special tool 61 0 220 (matrix set SLK 2.8)
- Special tool 61 0 230 (matrix set MAK 8 / DFK4)
- Special tool 61 0 240 (butt connector 4.0 - 6.0 mm²)

Handling:

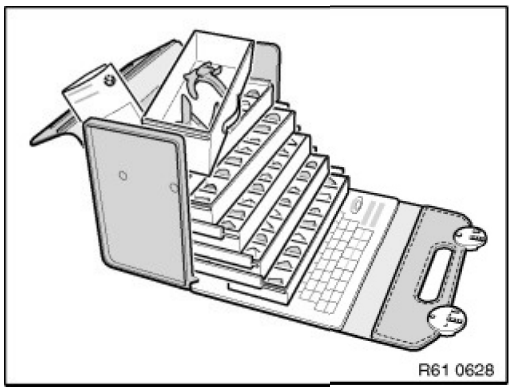
- Refer to Service Information:
  SI 2 02 05 194
  SI 2 07 05 233

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61 13 ... Wiring harness repair (special tools, butt connectors)

Special tools required:

- 61 0 300
- 61 0 400
- 61 1 100
- 61 4 320
- 61 0 200
- 61 0 210
- 61 0 220
- 61 0 230
- 61 0 240
- 61 4 340



Repair range for vehicle electrical system:

Single parts for wiring harness repairs*

* sourcing reference BMW Group Parts Department

Note:

- Refer to Service Information bulletin



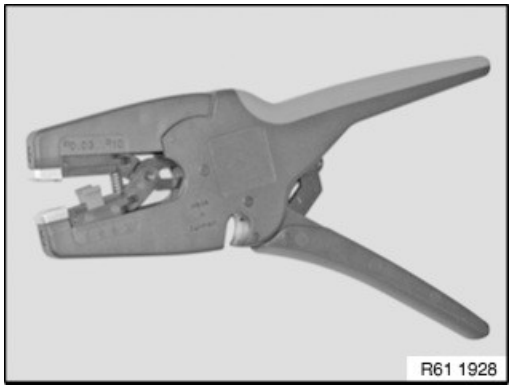
Release and press-out tool:

- Special tool61 0 300
- Special tool61 0 400
- Special tool 61 1 100 (*engine*)

<u>Handling:</u>

- Notes on opening contacts and locks of various connector systems

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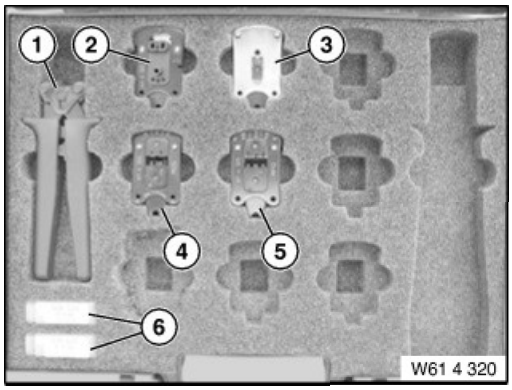
Cutting to length and stripping insulation from cables:

Wire stripper MultiStrip10*

*Sourcing reference BMW Workshop Equipment Catalogue

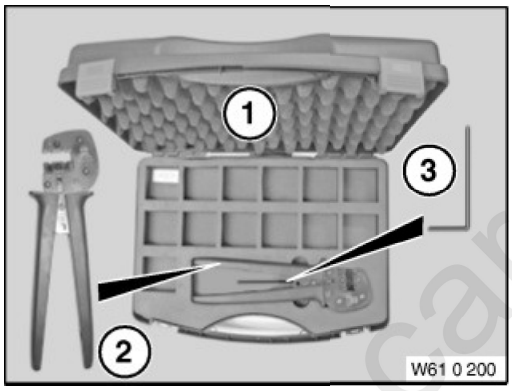
Handling:

- Cutting cables to length and strip insulation



Crimping stop parts (small contacts) and butt connectors:

- Special tool61 4 320
  1. Tool without crimping head
  2. Crimping head (stripping insulation and cutting fibre-optic cables to length)
  3. Crimping head (crimping fibre-optic cable contacts)
  4. Crimping head (crimping MQS contacts)
  5. Crimping head (crimping MPQ contacts)
  6. Replacement blade (face-cutting fibre-optic cables)
  7. Replacement blade with tool (insulation stripping unit)
  8. Universal crimping head (SI 2 04 06 293)



Crimping stop parts (large contacts) and butt connectors:

- Special tool 61 0 200 (crimping set)
- Special tool 61 0 210 (matrix set SLK 8)
- Special tool 61 0 220 (matrix set SLK 2.8)
- Special tool 61 0 230 (matrix set MAK 8 / DFK4)
- Special tool 61 0 240 (butt connector 4.0 - 6.0 mm²)

Handling:

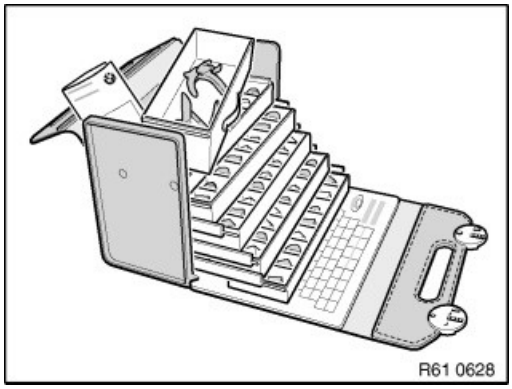
- Service Information bulletins
- Service Information bulletins



Important!

1. Identify cause of damage (e.g. sharp-edged body components, faulty electrical loads, jammed mechanisms, corrosion caused by ingress of water, etc.).
2. Reading out the fault memory
3. Eliminate cause of damage.
4. Disconnect battery negative terminal
5. Check the wiring diagram to make sure that no safety systems (e.g. antilock braking system, active rear axle kinematics, airbag, etc.) are influenced. Otherwise replace faulty wiring harness or use repair cable (sourcing reference: BMW Group Parts)
6. Carry out function check and read out fault memories again
7. Eliminate new faults if applicable and clear fault memories

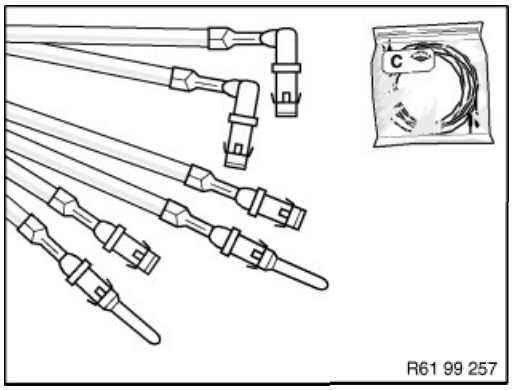
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Note:
The repair range IV for the vehicle electrical system contained the required special tools and separate components for retrofitting and repair work with the aid of comb connectors.

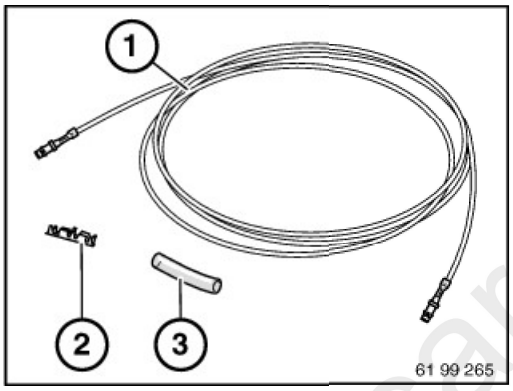
The case can no longer be ordered. Order separate components for wiring harness repair via BMW Group Parts.

- Refer to Service Information:



Choose repair kit.

Example: Repair kit, circular connector system D 2.5.

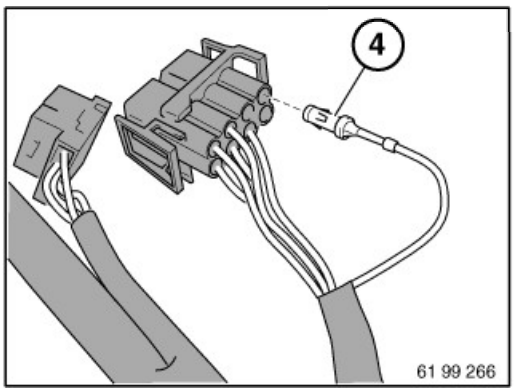


Remove following parts:

(1) Pre-packaged end of cable with requisite wire cross-section

(2) Crimp connector for selected wire cross-section

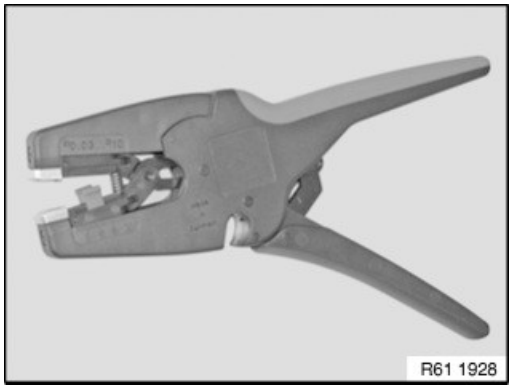
(3) Shrink-fit hose



Open secondary lock on housing.

Mark damaged contact (4) with socket number of housing and press it out of housing using appropriate special tool contained in special tool set61 0 300).

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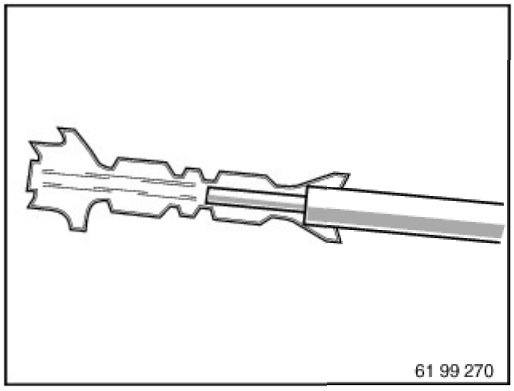
Important!

- Check maximum length of repair cable
- If more than one wire is to be repaired, the individual interfaces must be offset so that the wiring harness is not too thick at the repaired point.

Adhere to following procedure:

- Cut off wire with faulty contact at point which is easily accessible
- Strip insulation from end of wire at wiring harness end
- Cut preassembled wire end to length and strip insulation

Refer also to repair instruction:
Cutting to length and stripping insulation from cables

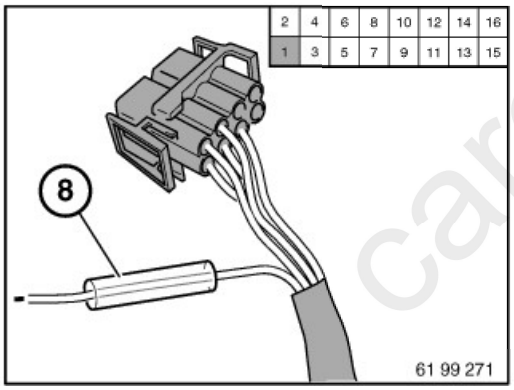


Crimp butt connector on preassembled wire end.

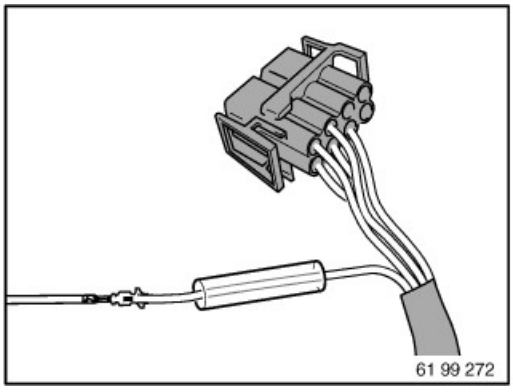
Special tools:

- 61 4 340 (0.35 - 2.5 sq mm)
- 61 0 240 (4.0 - 6.0 sq mm)

See repair instructions
Crimping on stop parts

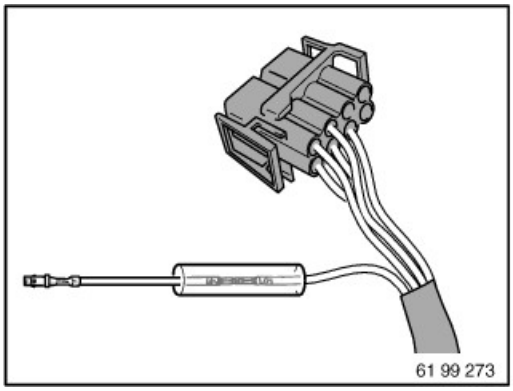


Push shrink-fit hose (8) onto free wire end.

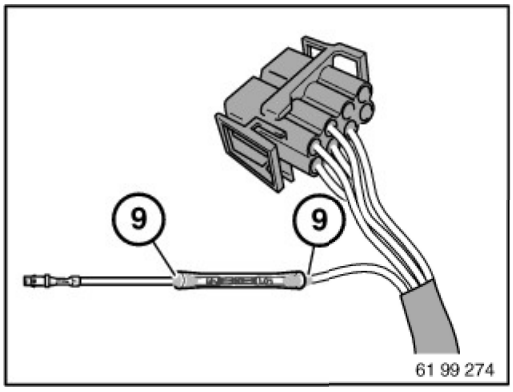


Crimp unused wire end using butt connector.

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Pull shrink-on sleeve over butt connector.



Important!

Do not burn shrink-on sleeve.

Using hot air blower, shrink heat-shrink tubing until adhesive is discharged uniformly at both ends (9) of heat-shrink tubing.

Insert contact *in* housing.

Close secondary lock on housing.

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61 11 ... Cutting to length and stripping insulation from cables



Special tools required:

- 0 494 159
- 0 496 849
- 0 496 833
- 2 407 379
- 61 4 320
- 61 4 340
- 61 4 328
- 61 0 210
- 61 0 220
- 61 0 230



New parts for vehicle electrical system (stops, housing):

- Sourcing reference: BMW Group Parts



For cutting cables to length and stripping insulation, refer to Service Information.

Stripped length:

Wire cross-section (mm^2)	Stripped length (mm)
0,35 ... 0,50	4,0
0,75 ... 1,00	4.5
1,00 ... 2,50	5,0



Crimping on NanoMQS stop parts

Crimping of NanoMQS contacts (MQS).

- Special tool handle 0 494 159 or 0 496 849
- Special tool (die-plate) 0 496 833
- Stripping tool2 407 379

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2. Crimping of stops up to 2.5 mm

Crimping Micro Quadlock System contacts (MQS).

- Special tool61 4 320

Crimping Micro Power Quadlock contacts (MPQ).

- Special tool61 4 320

Crimping miscellaneous stop parts up to 2.5 mm^2

- Special tool 61 4 340 (up to 03/2010 special tool 61 4 328)
- Refer to Service Information bulletin

Crimping of stops above 2.5 mm^2

Crimping load current contacts (LSK 8).

- Special tool61 0 210

Crimping load current contact 2.8.

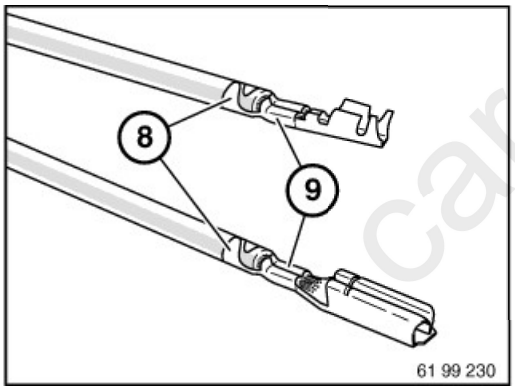
- Special tool61 0 220

Refer to Service Information SI 2 02 05 194

Crimping double spring contact (DFK 40)

Crimping MAK 8

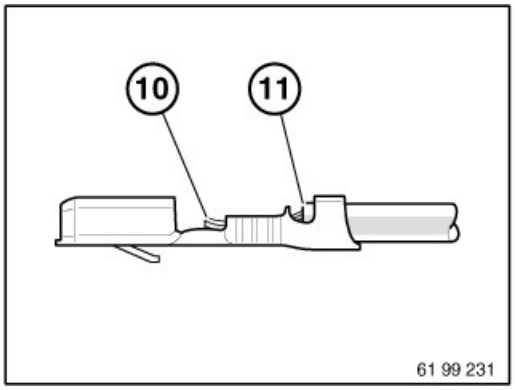
- Special tool61 0 230
- Refer to Service Information bulletin



Checking crimping

Check insulation crimping (8) and wire crimp (9) against following illustrations to ensure crimps are correctly located.

Note:
Illustration shows butt connectors and contact sleeves for comb connectors knocked on one side. The crimping procedure is identical here.

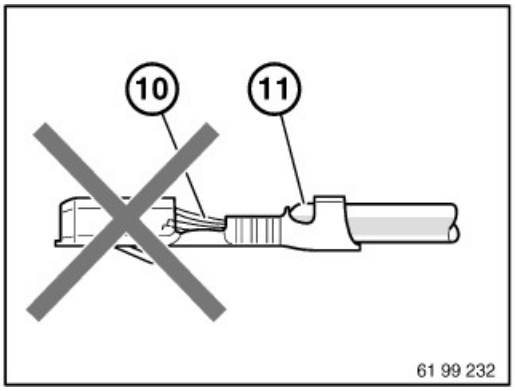


Correct crimping:

Visible conductor end (10).

Visible insulation end (11).

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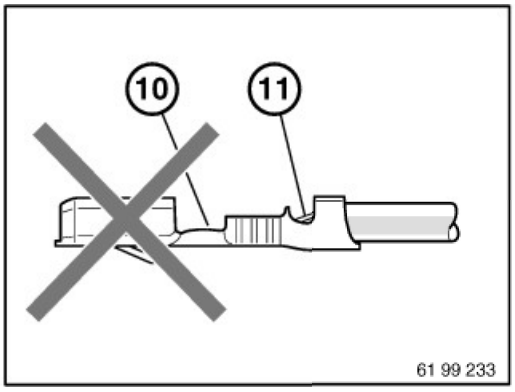


Incorrect crimping:

Conductor end (10) inserted too far.

Insulation end (11) in wire crimp.

If necessary, repeat crimping with a new contact.



Incorrect crimping:

Conductor end (10) not visible.

Insulation end (11) not visible.

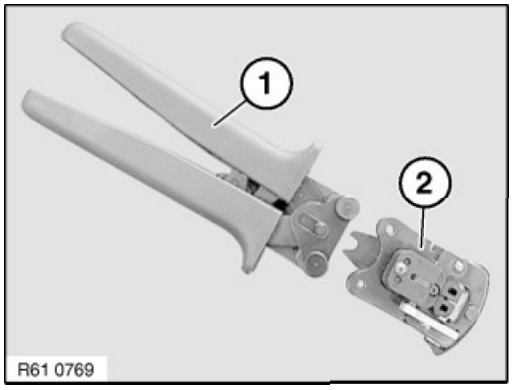
If necessary, repeat crimping with a new contact.

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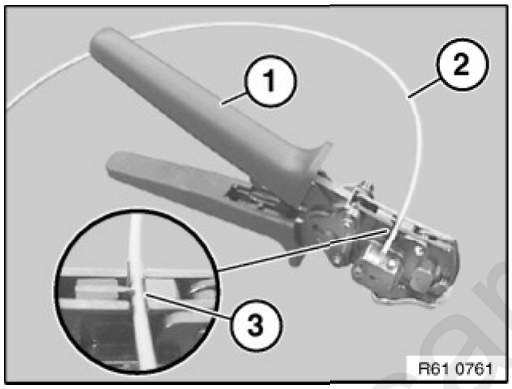
61 13 ... Cutting, strip insulation and crimping optical fibres

Special tools required:

- 61 4 321
- 61 4 329
- 61 4 320
- 61 4 323



The hand pliers 61 4 321 (1) in connection with the crimping head 61 4 329 (2) from crimp kit 61 4 320 are used for cutting, strip insulation and cutting optical fibres to size.*Note:*
Hand pliers (1) open automatically until limit position when handles are pressed together.

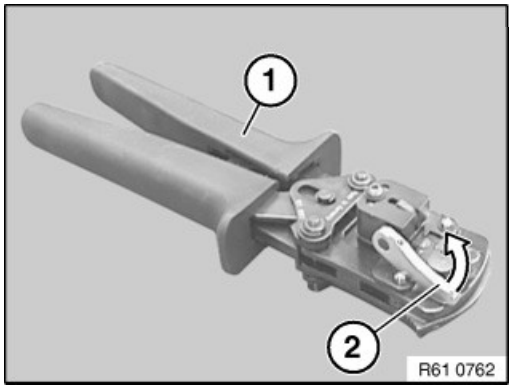


Cutting optical fibre

Open hand pliers (1).

Place optical fibre (2) in cutting device (3).

Close pliers (1) and remove optical fibre (2).

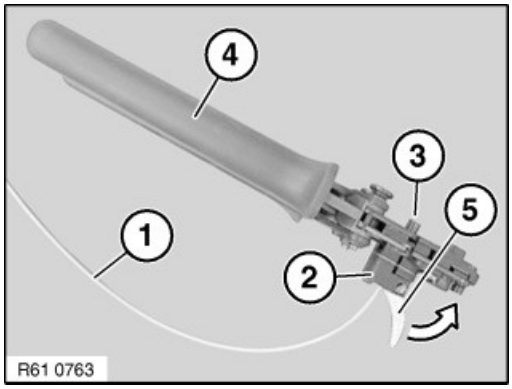


Stripping insulation from optical fibre

Open hand pliers (1).

Open lever (2) in direction of arrow.

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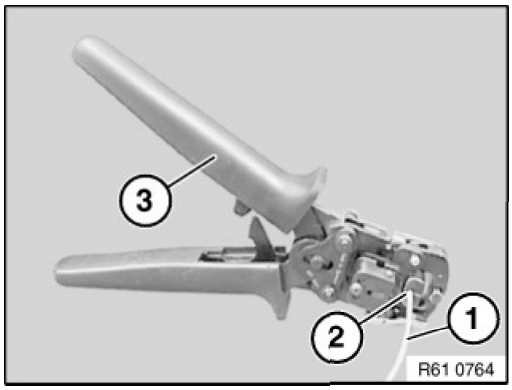
Push the optical fibre (1) into the strip insulation equipment (2) until it is flush in this area (3).

Close hand pliers (4) fully.

Close the operating lever (5) in the direction of the arrow.

Open hand pliers (4) by one tooth notch.

Re-open the operating lever (5) against the direction of the arrow and remove the optical fibre (1).



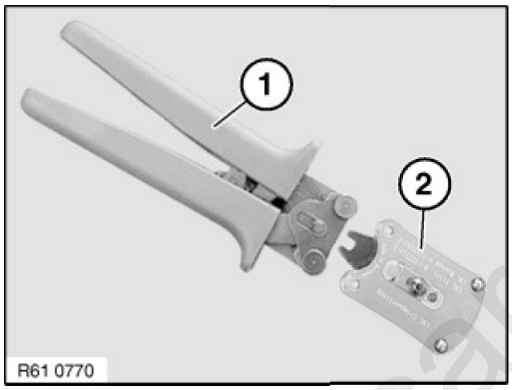
Cutting optical fibre to length

Open hand pliers (3).

Push the optical fibre (1) into the cutting equipment (2) until the insulation of the optical fibre (1) comes into contact with the clamping fixture.

Close hand pliers (3) fully and keep closed.

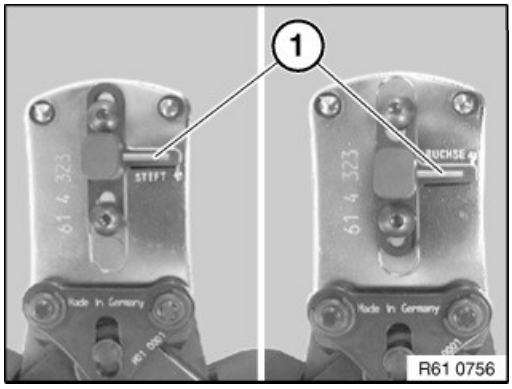
Remove optical fibre (1).



Crimp optical fibre

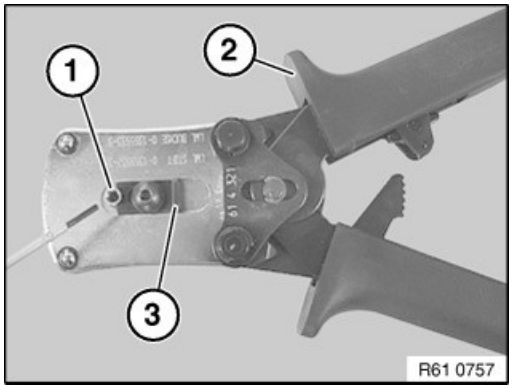
The hand pliers 61 4 321 (1) in connection with the crimping head 61 4 323 (2) from crimping kit 61 4 320 are used for crimping the optical fibres to size.

Note:
Hand pliers (1) open automatically until limit position when handles are pressed together.



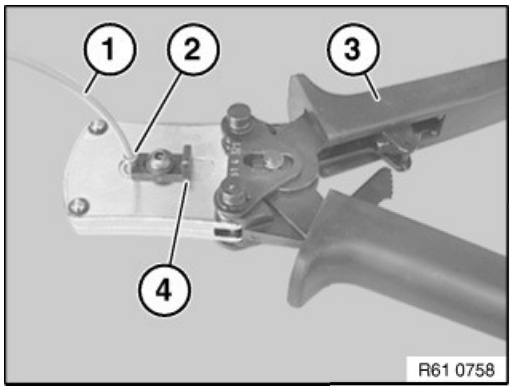
Move contact guide by means of stop lever (1) into corresponding position (pin contact or jack).

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Open hand pliers (2).

Place pin contact or jack (1) in crimping head and secure with locking lever (3).

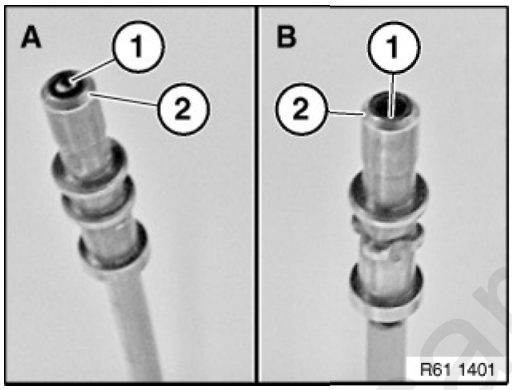


Insert stripped optical fibre(1) until limit position into pin contact or jack (2).

Close hand pliers (3) fully.

Open hand pliers (3) and locking lever (4).

Remove optical fibre (1).



Caution!

Make sure optical fibre is correctly seated in jack.

Right (A)

End of optical fibre (1) must be flush with tip of pin contact (2).

Wrong (B)

End of optical fibre (1) is not flush with tip of pin contact (2).

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61 12 ... Information on intelligent battery sensor (IBS)

Notice! Do not connect the charger to the 12 V charging socket

The 12 V charging socket is supplied with voltage by the rear power distribution box via relay. This relay drops out after terminal 15 OFF. This means that a trickle charger connected at the 12 V charging socket will be disconnected from the battery. Only charge the battery via the jump start terminal point. Only then can the voltage supply be registered by the vehicle.

Warning! Danger of destruction in event of mechanical strain

- Do not introduce any additional connections at the battery negative terminal.
- Do not modify the grounding cable. The ground cable also serves heat dissipation.
- Do not establish any connection between the IBS and the sensor screw.
- Do not use force when disconnecting the pole shoe from the battery terminal:
  - Do not pull on the ground cable.
  - Do not place any tools under the IBS to lever off the pole shoe.
- Do not use IBS connections as levers.
- Use a torque wrench and set tightening torque in accordance with repair instructions.
- Do not release or tighten down sensor screw (Torx screw).
- Avoid contact between IBS and ground.

Warning! Danger of destruction to IBS and wiring upon battery replacement

- The IBS and wiring can be destroyed by mechanical strain upon battery replacement. Therefore avoid mechanical strain.
- The size (capacity) of the battery required for the car is coded in the Car Access System (CAS).
- Use the battery size (capacity) installed as standard upon battery replacement.
- Recode the Car Access System (CAS) when installing a battery with a different capacity.
- Register battery replacement via Service functions in diagnosis system.
- Delete fault code entries in the Digital Engine Electronics (DME) associated with battery replacement.
- Always proceed in accordance with the repair instructions.

Note: Battery draining possible in spite of the intelligent battery sensor IBS being fault-free.

- A battery can be drained (e.g. with lights or radio switched on) even when the IBS functions perfectly in conjunction with power management.
- **For this reason, only exchange the IBS when there is a corresponding fault code entry!**

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61 12 002 Replacing positive battery cable (safety battery terminal) (from battery to rear B+ power distribution box)

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.

PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

MAIN WORK

2 – Removing the safety battery terminal

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

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.

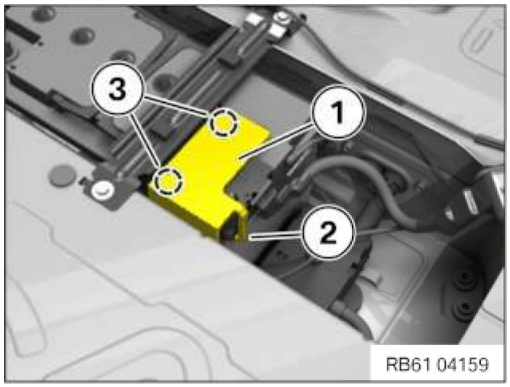
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RISK OF DAMAGE

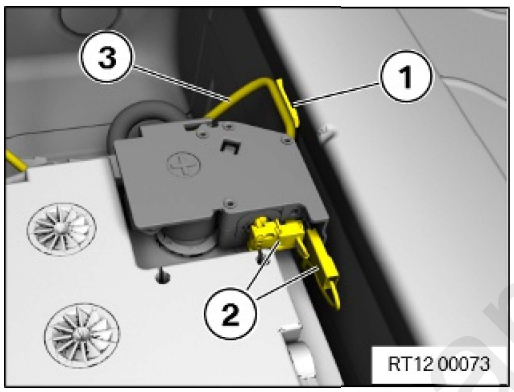
Electrostatic discharge.

Damage to or destruction of electrical components.

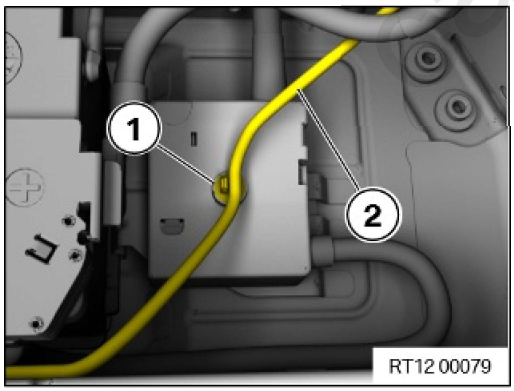
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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



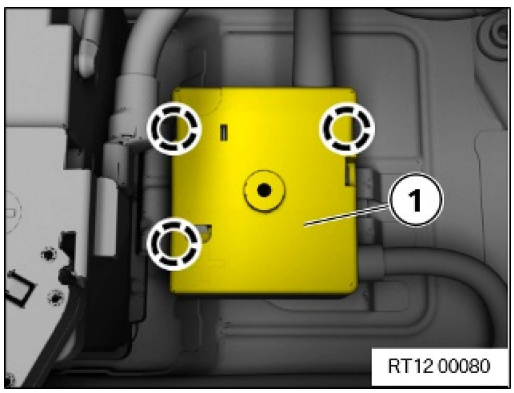
- Release latch mechanism (2) of the protective cap (1).
- Feed out protective cap (1) to the top and remove it from the guides (3).



- Loosen the holder (1).
- Unlock and disconnect plug connections (2).
- Put the cable (3) to one side.

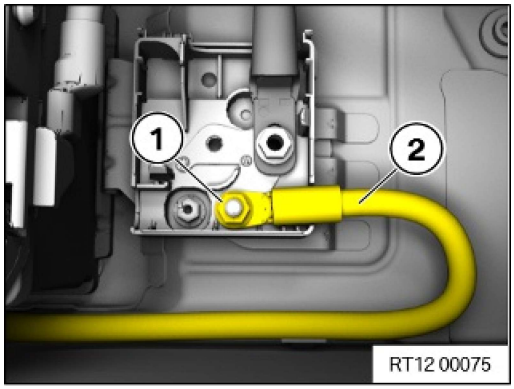


- Loosen the holder (1).
- Put the cable (2) to one side.

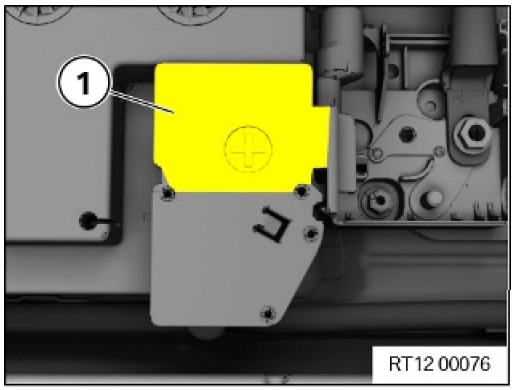


- Unclip the cover (1) in the marked areas.
- Release and remove the cover (1).

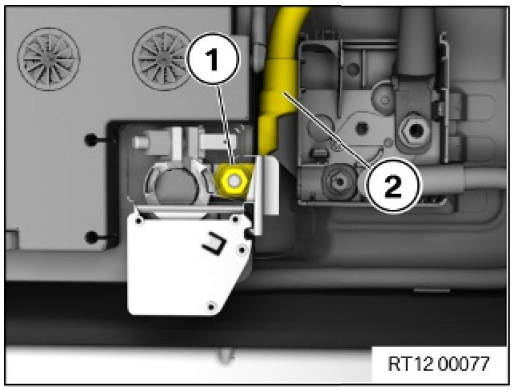
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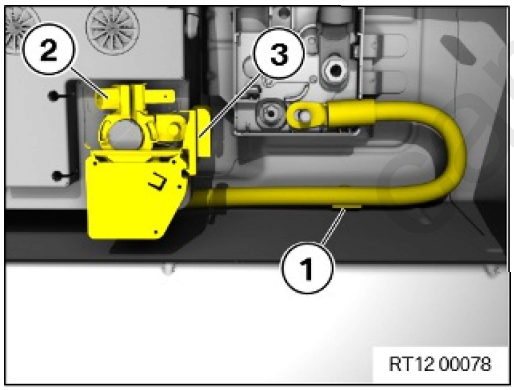
- Unfasten nut (1).
- Remove positive battery cable (2).



- Remove the cover for the positive battery terminal (1).

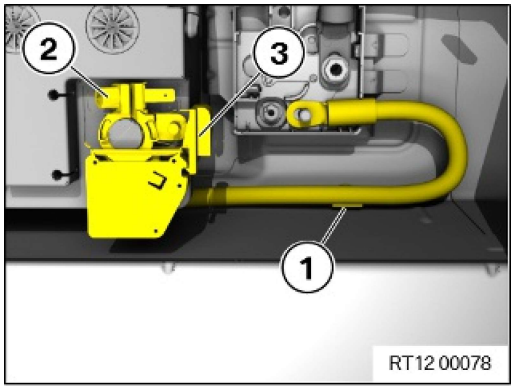


- Release the nut (1) and put the positive battery cable (2) aside.



- Open the holder (1).
- Release nut (2) and remove the safety battery terminal (3).

3 – Installing the safety battery terminal

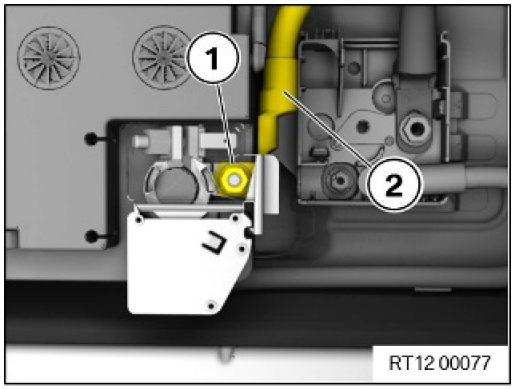


- Position the safety battery terminal (3) on the positive battery terminal.
- Close the holder (1).
- Tighten nut (2).

Positive battery terminal

Nut		Tightening torque	5 Nm

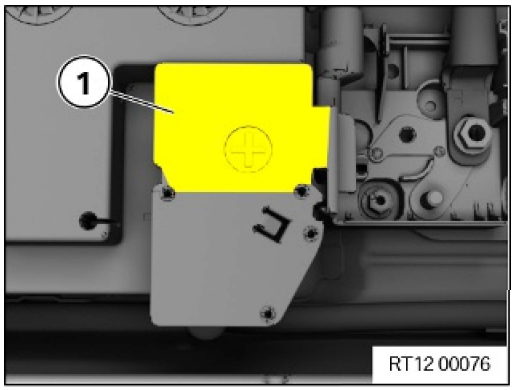
emdiagn.com



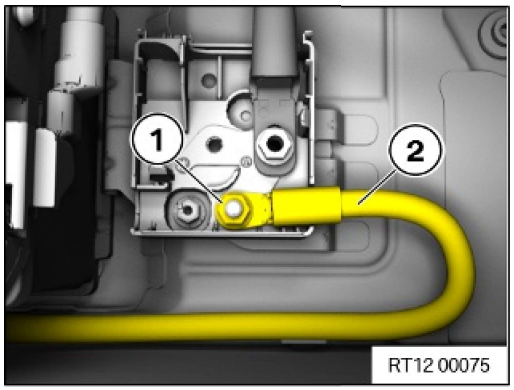
- Position the positive battery cable (2) on the safety battery terminal.
- Tighten nut (1).

Positive battery cable to safety battery terminal

Flange nutM8		Tightening torque	15 Nm



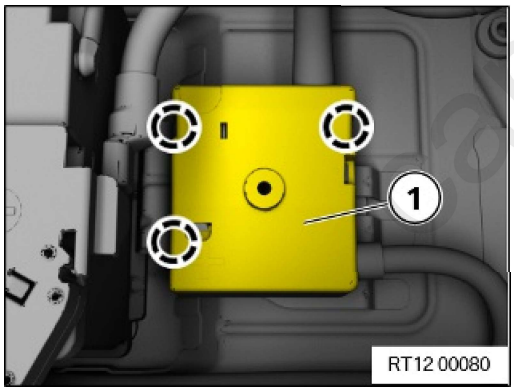
- Close the positive terminal cover (1).



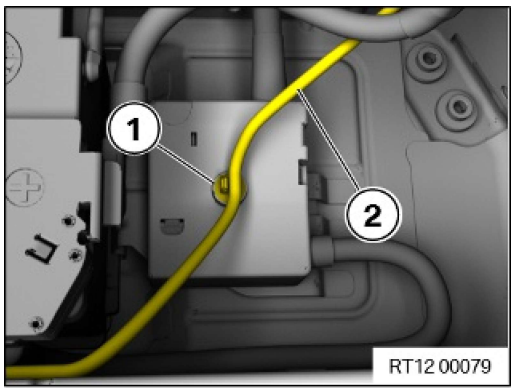
- Position the positive battery cable (2) on the power distribution box.
- Tighten nut (1).

Positive battery cable to power distribution box

Flange nutM8		Tightening torque	15 Nm

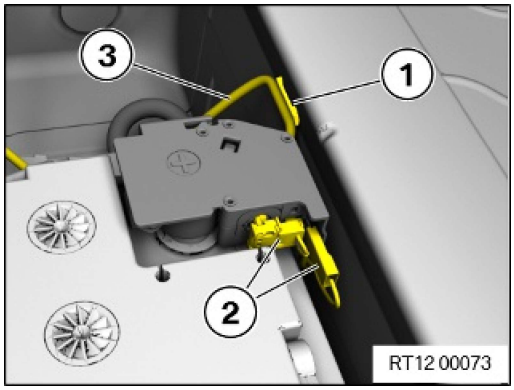


- Position the cover (1) and clip it in at the marked areas.

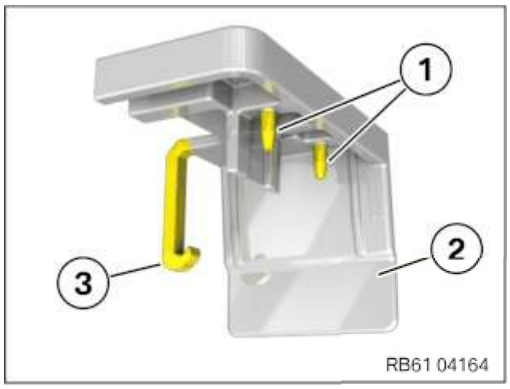


- Position cable (2).
- Clip in the holder (1).

autodiagn.com



- Position the cable (3) and clip in the holder (1).
- Connect connectors (2) and lock.



Check

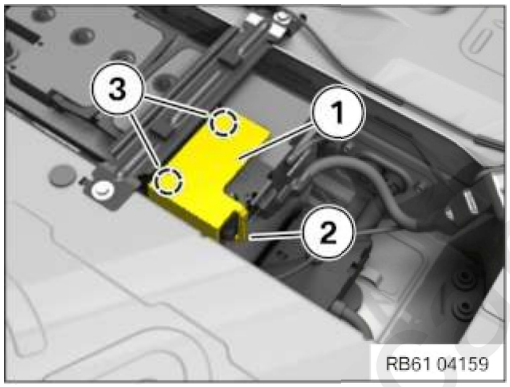
- Check guides (1) and latch mechanism (3) on protective cap (2) for damage.

Result

» The guides (1) or the latch mechanism (3) are damaged.

Measure

- Renew protective cap (2).



- Clip in the guides (3) of the protective cap (1) into the associated openings on the positive battery terminal in arrow direction.
- Clip in protective cap (1) with latch mechanism (2).

POSTPROCESSES

4 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Overview of Tightening Torques

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Overview of Tightening Torques

Positive battery terminal			Used in step 3
Nut		Tightening torque	5 Nm

Positive battery cable to safety battery terminal			Used in step 3
Flange nutM8		Tightening torque	15 Nm

Positive battery cable to power distribution box			Used in step 3
Flange nutM8		Tightening torque	15 Nm

Links

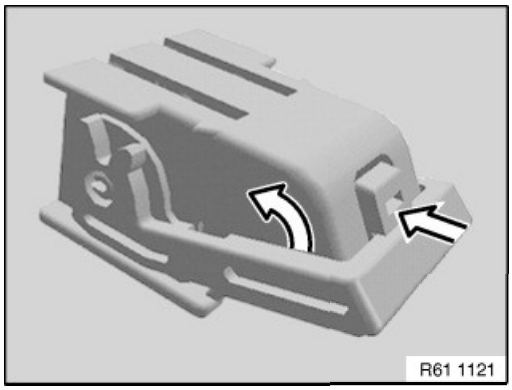
Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	14
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	14
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
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61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 35 ... Notes on ESD protection (Electro Static Discharge)	2

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61 13 ... Unlocking and disconnecting different plug connections

Note:
The document describes unlocking and disconnecting different types of plug connections.

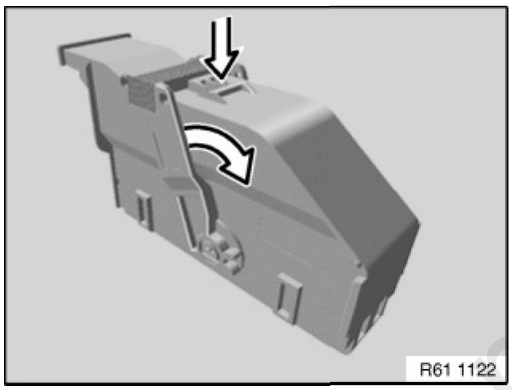
Differences in the details of the size and shape of the plug connections are possible.



1.

Press lock and open release clip in direction of arrow.

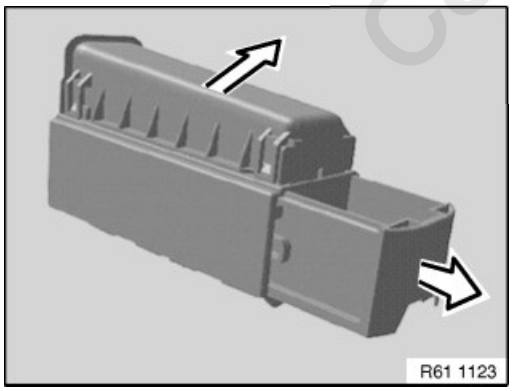
Disconnect plug connection.



2.

Press lock and open release clip in direction of arrow.

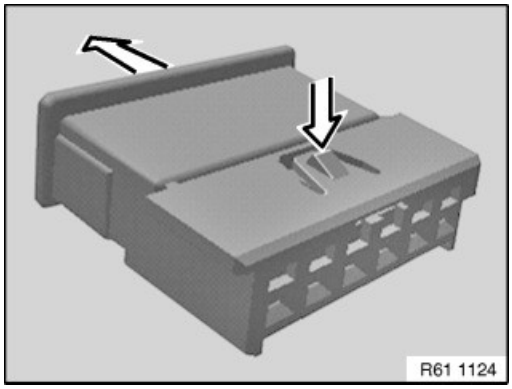
Disconnect plug connection.



3.

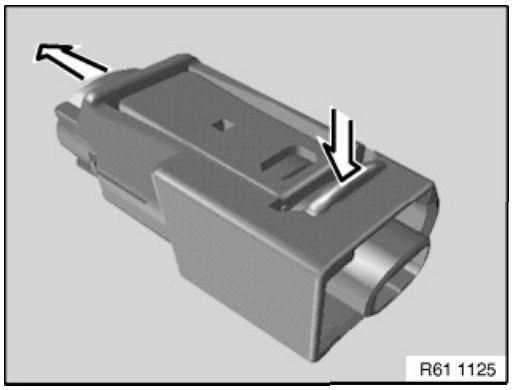
Open release clip in direction of arrow and disconnect plug connection in direction of arrow.

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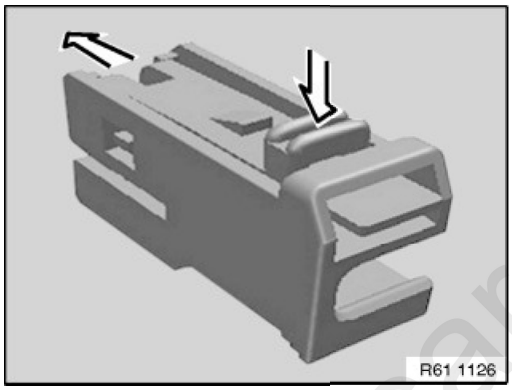
4.

Press lock and disconnect plug connection in direction of arrow.



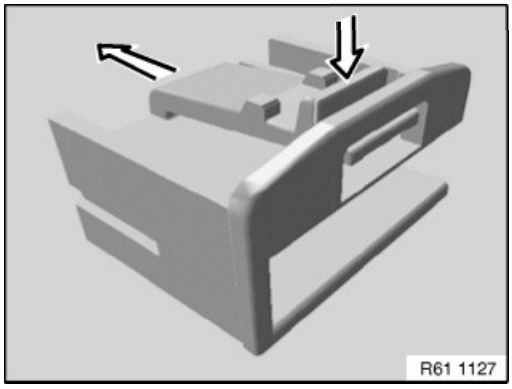
5.

Press lock and disconnect plug connection in direction of arrow.



6.

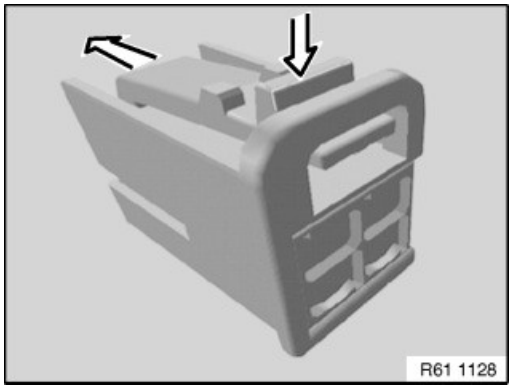
Press lock and disconnect plug connection in direction of arrow.



7.

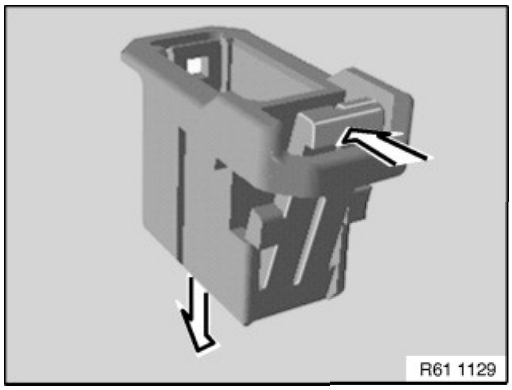
Press lock and disconnect plug connection in direction of arrow.

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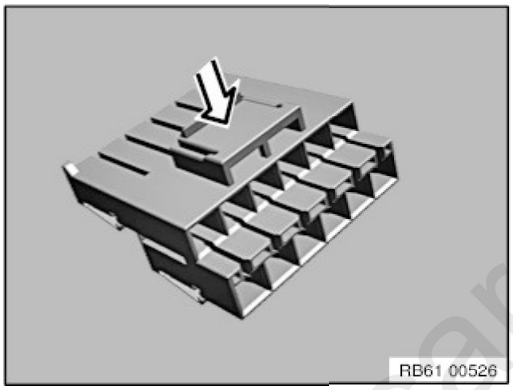
8.

Press lock and disconnect plug connection in direction of arrow.



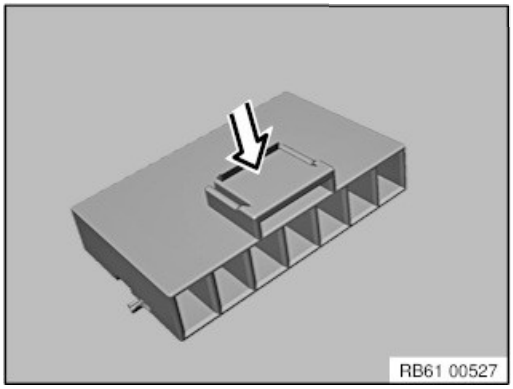
9.

Press lock and disconnect plug connection in direction of arrow.



10.

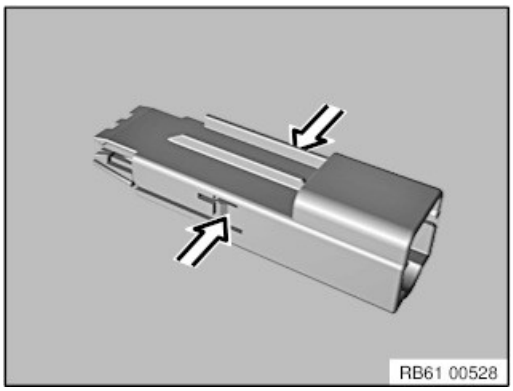
Press the lock and detach plug connection.



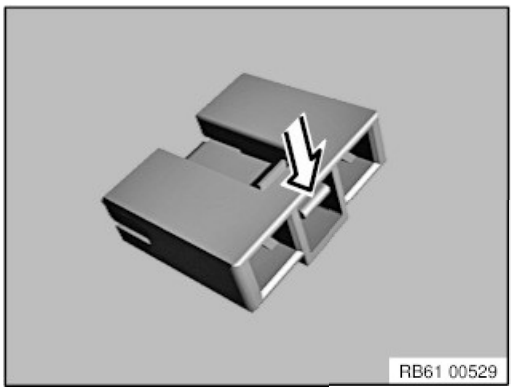
11.

Press the lock and detach plug connection.

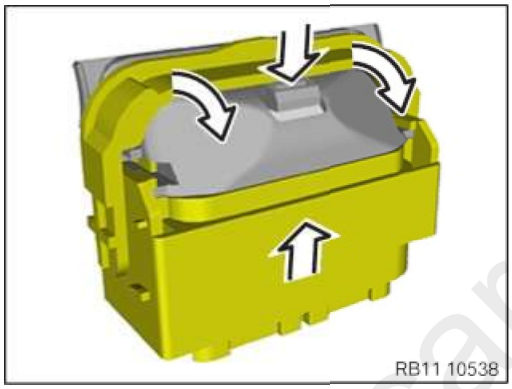
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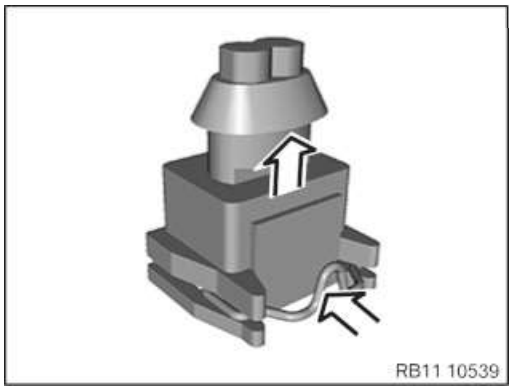
12.
Press the lock on both sides and detach plug connection.



13.
Press the lock and detach plug connection.

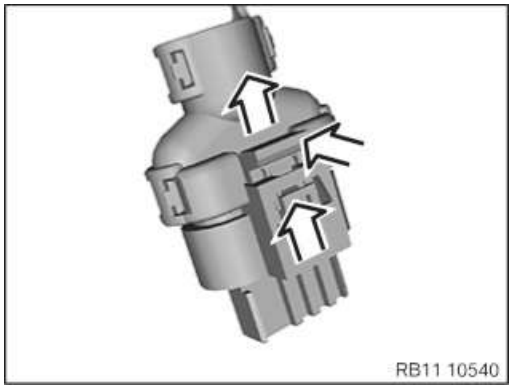


14.
Press lock and open release clip in direction of arrow.
Disconnect plug connection.

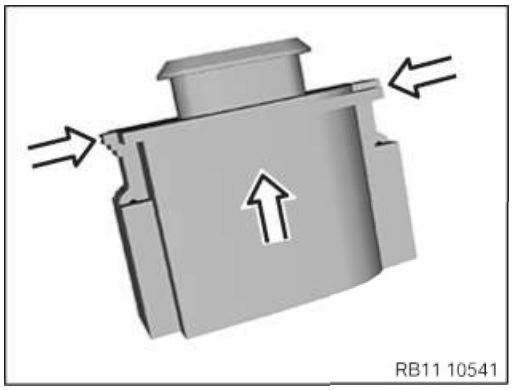


15.
Press the lock and detach plug connection.

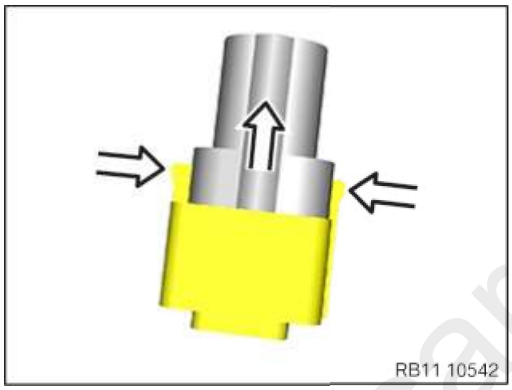
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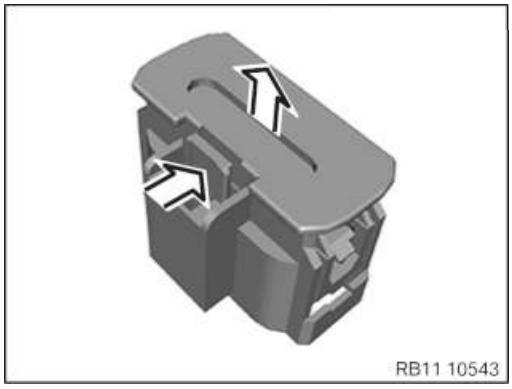
16.
Pull out lock and press.
Disconnect plug connection.



17.
Press the lock and detach plug connection.

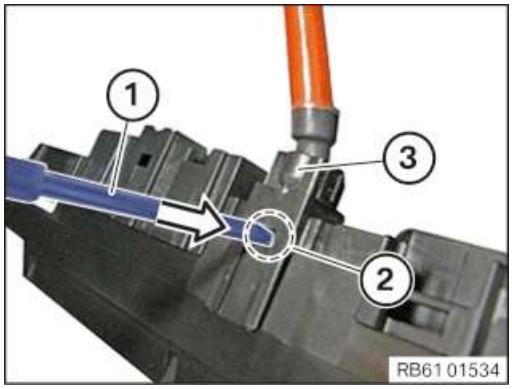


18.
Press the lock and detach plug connection.



19.
Press the lock and detach plug connection.

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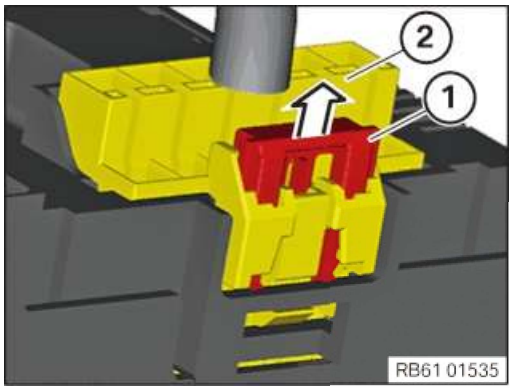


20.

Plug connection, e.g. on the power distribution box:

Press into the opening (2) using a suitable tool (1).

Pull off plug connection (3) upwards.



21.

Plug connection, e.g. on the power distribution box:

Lift lock (1) with a suitable tool.

Pull off plug connection (2) upwards.



22.

Vibration resistant high power engine contacts:

Caution!

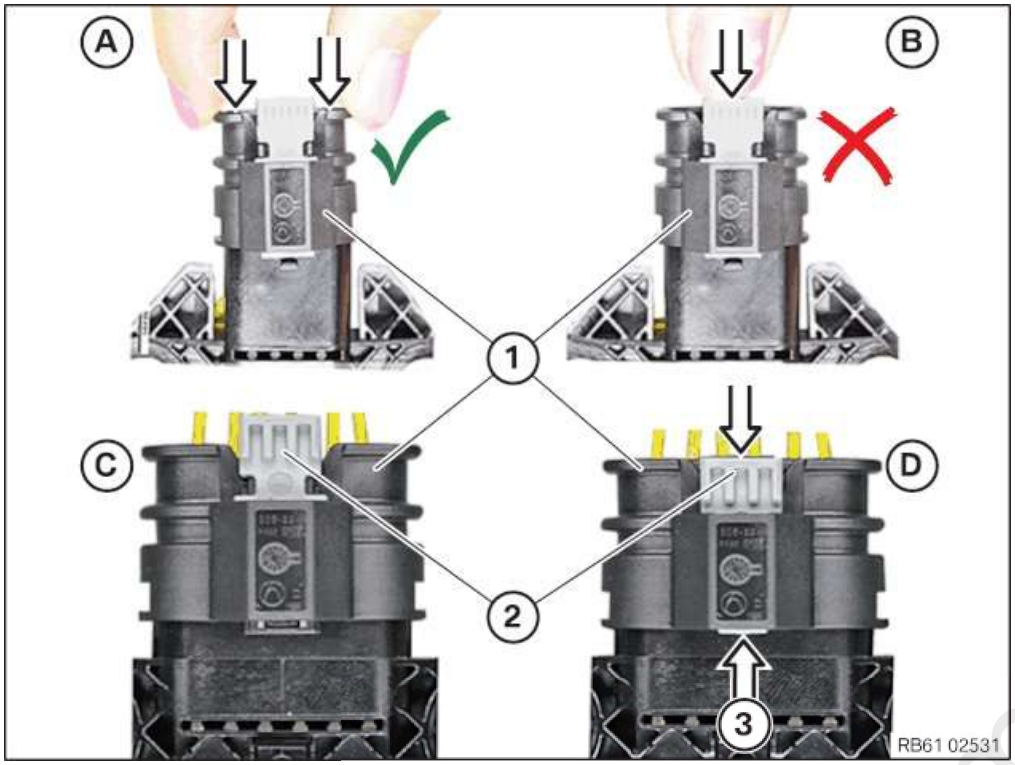
For this connector type, increased forces come into play when disconnecting and closing.

Disconnect:

Pull out lock (1) downward in direction of arrow first.

Then press lock (1) down in direction of arrow and pull off connector.

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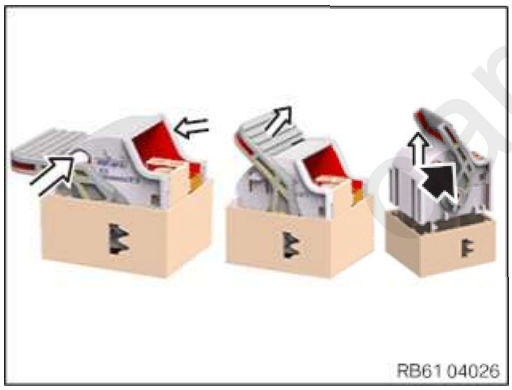


23.

Close:

A. Press the connector (1) down at the points indicated by the arrow **until it reaches the end position**
B. **Do** not press the connector (1) further than the lock
C. Connector (1) is in the end position, but lock (2) is not yet locked
D. Press lock (2) down in the direction of the arrow until the tip of lock (2) is visible at point (3)

Unlock / lock front light combination plug connection & replace housing after damage:

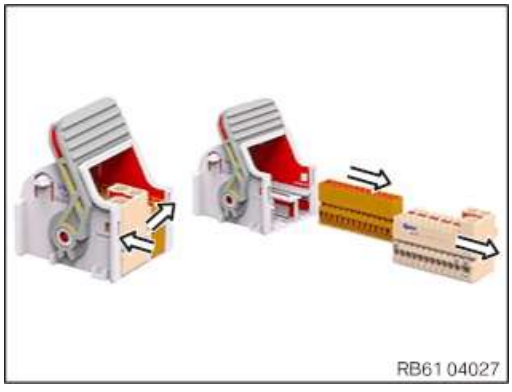


24.

Press in locking lever at both sides until the lever is unlocked and can be moved.

Move lever upwards until it latches into place in the end position.

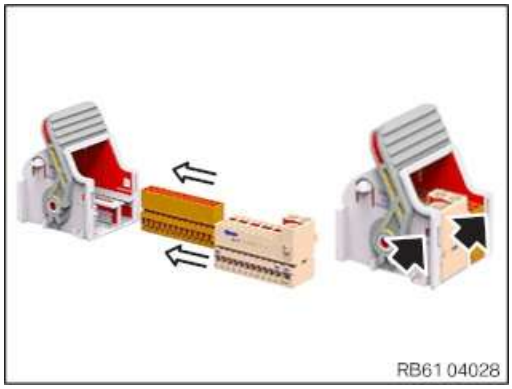
Once the lever is locked in the end position, remove plug connection upwards.



Unlock socket housing by lifting up each of the locking tabs.

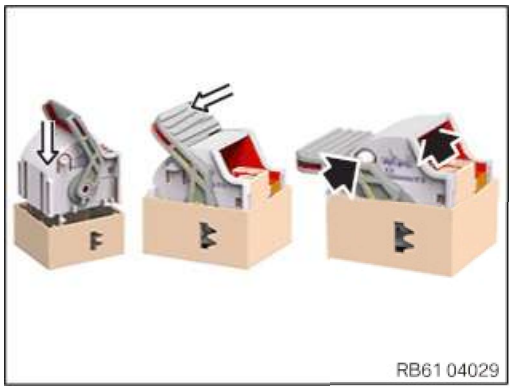
Slide out after unlocking the socket housing.

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Slide in socket housing up to limit position.

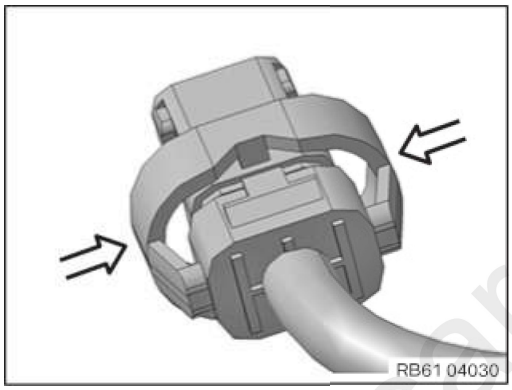
Lock socket housing into place in end position.



Sliding in up to limit position.

Activate plug-inn procedure by moving lever downwards.

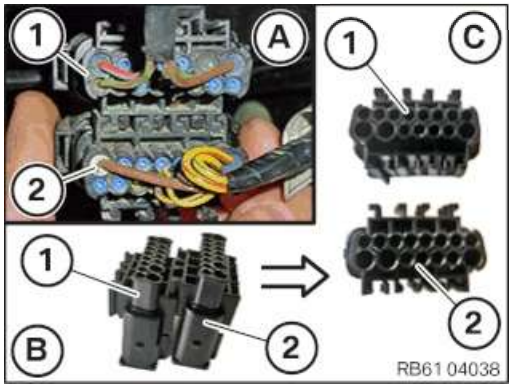
IMPORTANT: the latch mechanism on both sides only works for a completed plug-in procedure.



25.

Rosenberger D4S20G-400A5-Y

Press to unlock on both sides.

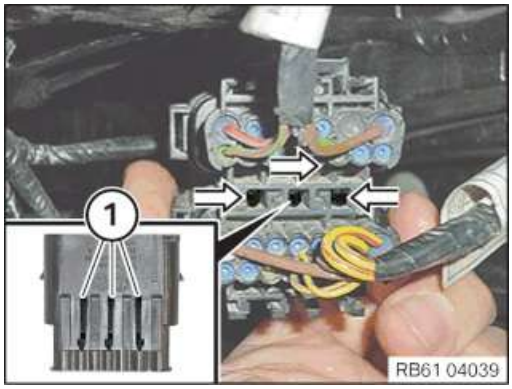


26.

Pin housing, 15-pinMLK1

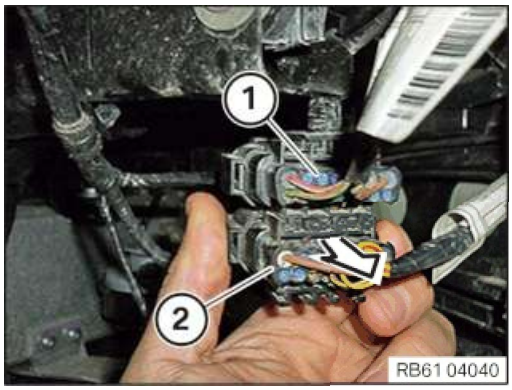
- A & B. To avoid any damage to individual connectors, the given connector assembly consisting of several individual connectors (1) & (2) must be released before disconnecting the plug connection.
- C: released connector assembly

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Disconnecting connector assembly:

Release retaining hooks (1) in direction of arrow (detail image shows retaining hooks of individual connector).



Release connector (2) in direction of arrow from connector (1).

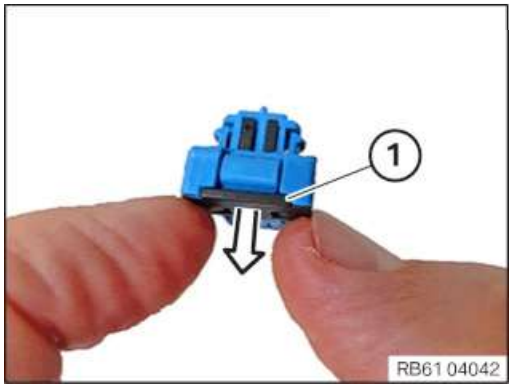


27.

Airbag ignition circuit connector

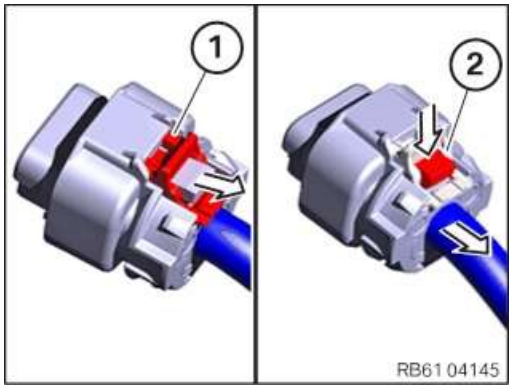
Warning!

Note the safety information for working on vehicles with airbag systems prior to disconnecting the plug connection.



Pull the cap (1) in the direction of the arrow to unlock

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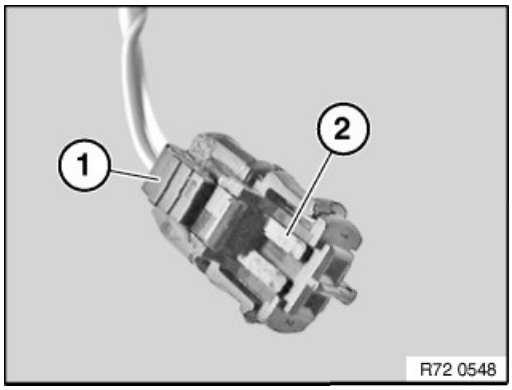


28.

Connector e.g. on front and rear lighting unit

Open safety catch (1) in direction of arrow using appropriate tool.

Push safety catch (2) in direction of arrow and disconnect plug connection.



29.

Plug, e.g. in airbag ignition circuits

Press the lock (1) and pull out the connector (2) up to initial engagement position.

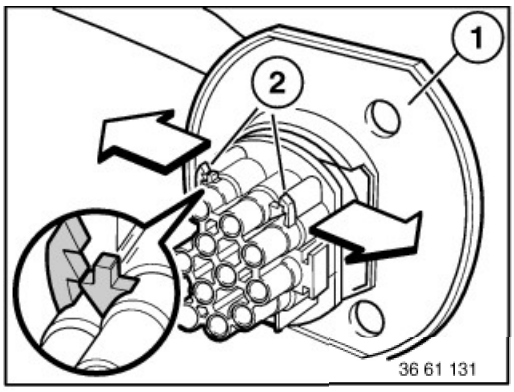
Pull off connector (2).

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61 13 ... Circular connector, 13-pin, system D2.5

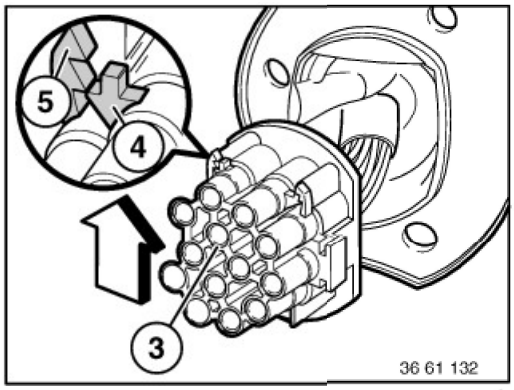
Special tools required:

- 61 0 303

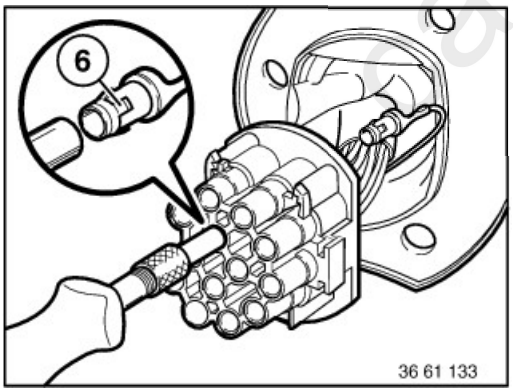


Pull off rubber grommet (1).

Carefully pull out lock (2) in direction of arrow.



Move lower section of connector (3) in direction of arrow until retaining lugs (4) snap into release groove (5).



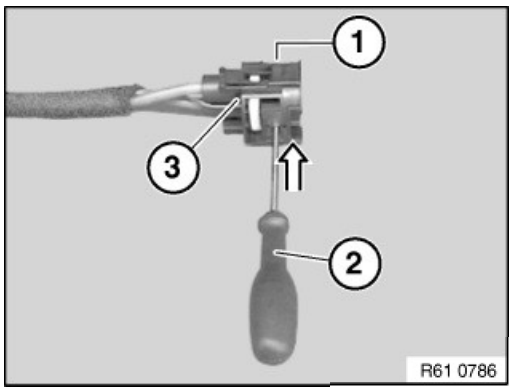
With special tool 61 0 303 , press down retaining lugs (6) of corresponding contact and pull out cable.

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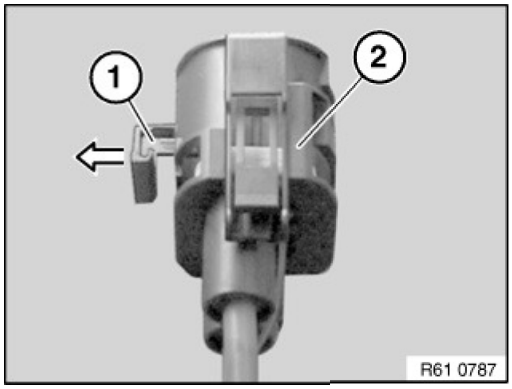
61 13 ... Connector housing, LCC contact (load current contact)

Special tools required:

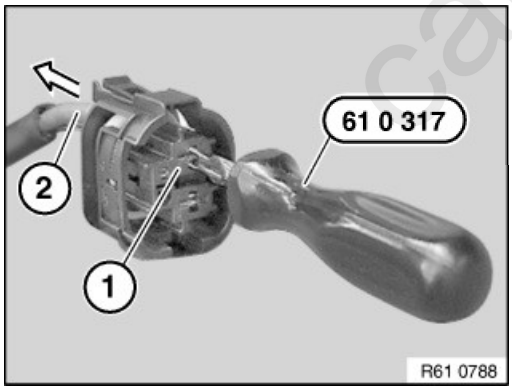
- 61 0 317



Socket housing:
Press lock (1) with suitable tool (2) in direction of arrow out of socket housing (3).

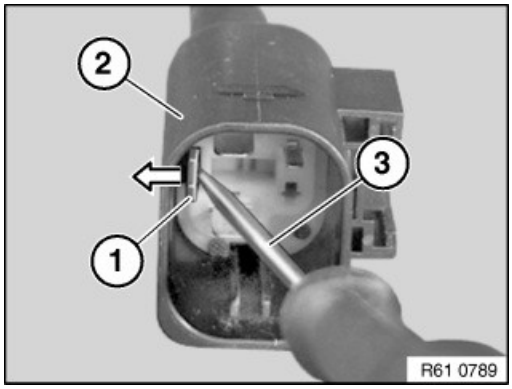


Pull lock (1) out of socket housing (2).

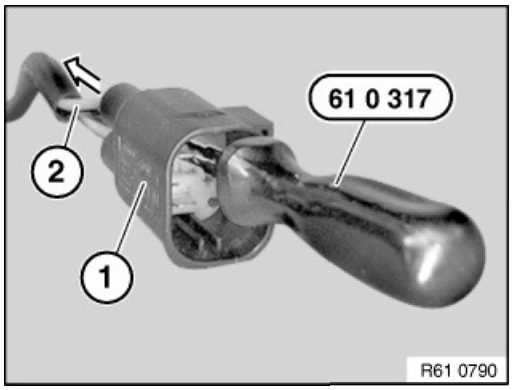


Insert special tool 61 0 317 into socket housing (1) and pull out wiring with LCC contact (2) in direction of arrow.

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Pin housing:
Unlock locking slide (1) of pin housing (2) with suitable tool (3) in direction of arrow.



Insert special tool 61 0 317 into pin housing (1) and pull out wiring with LCC contact (2) in direction of arrow.

cardiagn.com

61 13 ... Crimping annular contacts



Special tools required:

- 61 4 320



Crimping annular contacts:

Special tool61 4 320

Handling:

Refer to Service Information:

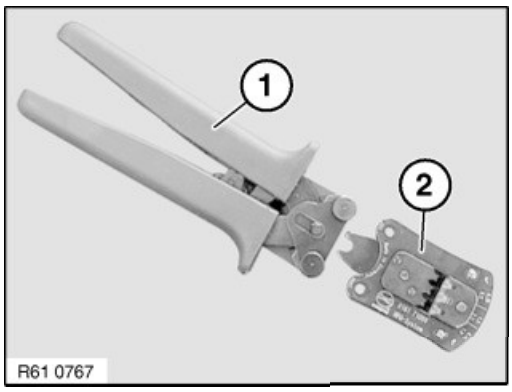
- SI 2 04 06 2939

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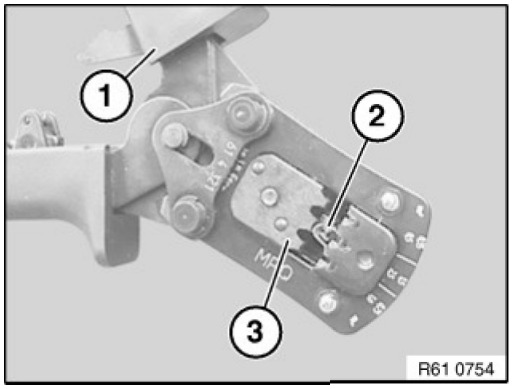
61 13 ... Crimping Micro Power Quadlock contacts (MPQ)

Special tools required:

- 61 4 320



To crimp MPQ contacts, use hand pliers 61 4 321 (1) in conjunction with crimping head 61 4 325 (2) from crimping set 61 4 320 .*Note:*
Hand pliers (1) open automatically until limit position when handles are pressed together.

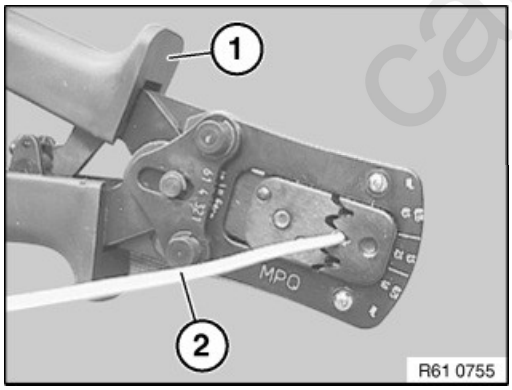


Open hand pliers (1).

Note:
Place contact (2) with utmost care in designated nest (observe line cross-section) in crimping head (3). Make sure it is exactly positioned.

Place MPQ contact (2) in crimping head (3).

Close hand pliers (1) one notch.



Note:
Follow procedure for cutting and stripping insulation from cables.

Insert stripped cable (2).

Close hand pliers (1) fully.

Open hand pliers (1) and remove cable (2).

Important!

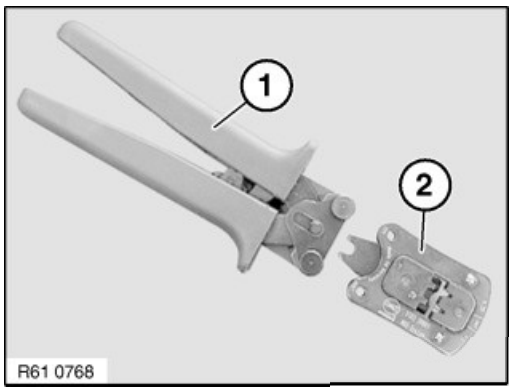
Check contact for correct crimping.

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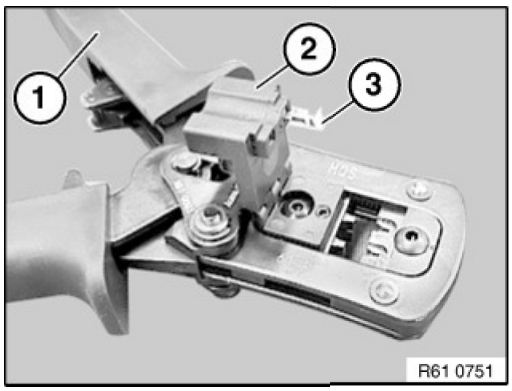
61 13 ... Crimping Micro Quadlock System contacts (MQS)

Special tools required:

- 61 4 320



To crimp MPQ contacts, use hand pliers 61 4 321 (1) in conjunction with crimping head 61 4 324 (2) from crimping set 61 4 320 .*Note:*
Hand pliers (1) open automatically until limit position when handles are pressed together.

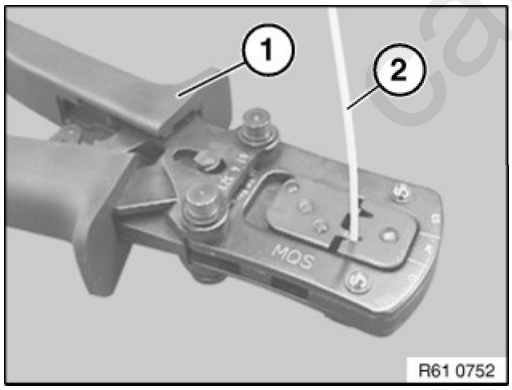


Open hand pliers (1).

Fold up contact carrier (2).

Insert MQS contact (3) in contact carrier (2).

Fold back contact carrier (2).



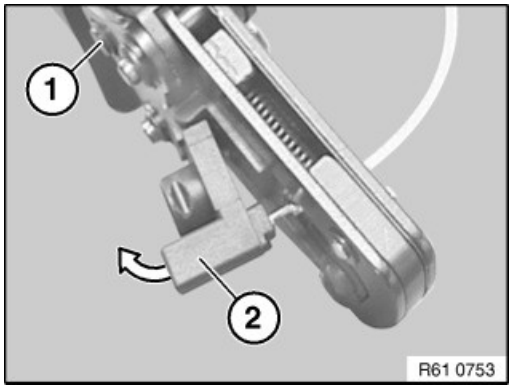
Note:
Follow procedure for cutting and stripping insulation from cables.

Close hand pliers (1) one notch.

Insert stripped cable (2).

Close hand pliers (1) fully.

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Open hand pliers (1).

Open contact carrier (2) gently and carefully remove MQS contact.

Important!

Check contact for correct crimping.

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61 13 ... Crimping stop parts

Special tools required:

- 12 1 080
- 12 1 081
- 12 1 083

Spare parts for in-car electronics (housing and contacts):

Refer to Service Information:

SI 2 04 07 341

1. Crimping butt connectors and contact sleeves for comb connectors up to 2.5 mm

Refer to Service Information:

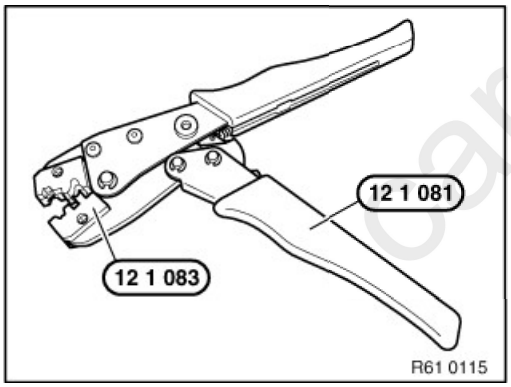
SI 2 04 06 293

2. Crimping butt connectors and contact sleeves for comb connectors larger than 2.5 mm ^{2}

Refer to Service Information:

SI 2 02 05 194

SI 2 07 05 233

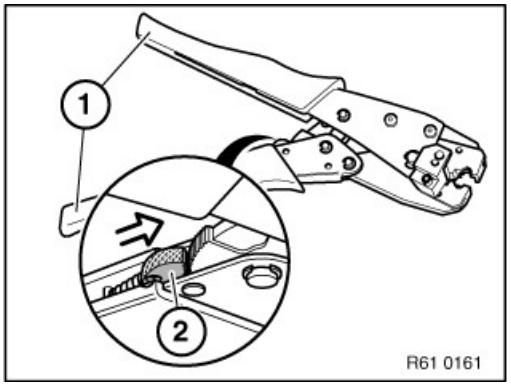


3. Crimping contact sleeves for 4 mm^2 comb connectors and ignition cable contacts

Use special tool kit 12 1 080 to attach ignition cable contacts and crimp 4 mm^2 contact sleeves for comb connectors.

- 12 1 081 (hand pliers)
- 12 1 083 (nest)

See repair instructions
Special tools for wiring harness repairs.



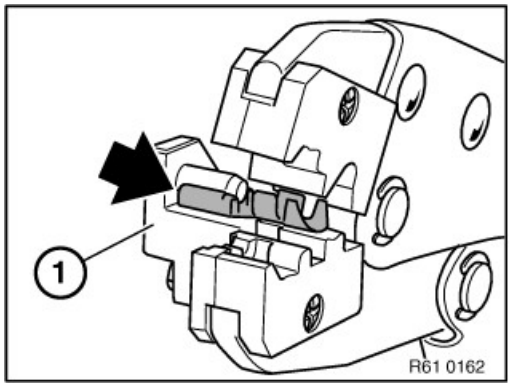
Release special tool 12 1 081 :

Squeeze grips (1) lightly and push release lever (2) in direction of arrow.

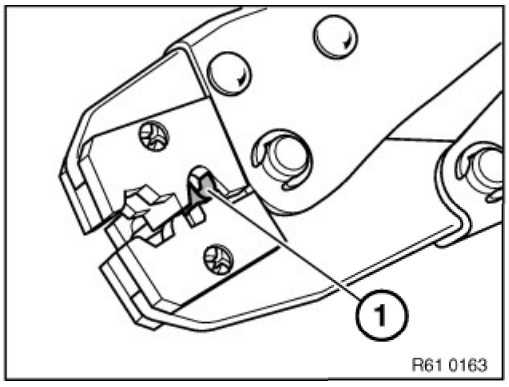
Or:

Compress handles until limit position, hand pliers unlock automatically.

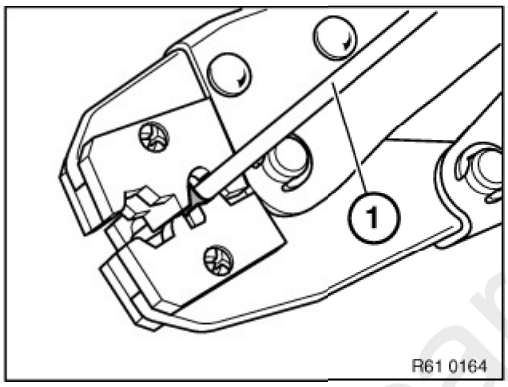
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Place 4 mm² contact sleeve in nest with anti-twist safeguard (1) as far as possible.



Preload contact by squeezing matrix in crimping tool. Grip contact (1) firmly only, do not crimp.



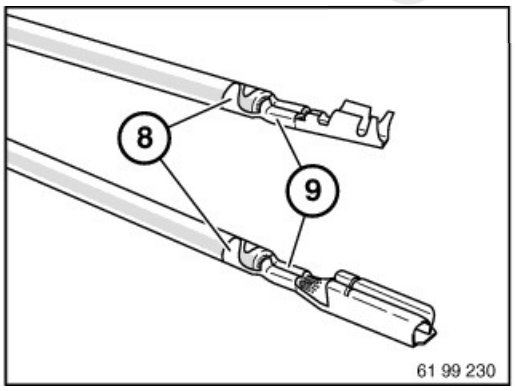
Note:
Follow procedure for cutting and stripping insulation from cables.

Insert stripped end of wire (7) in the contact. Ensure insulation and stripped wire end are correctly laid in contact.

Compress crimping tool to limit position.

Crimping tool unlocks automatically.

Take contact out of crimping tool.

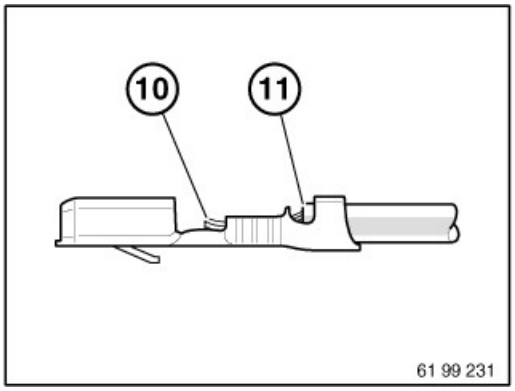


4. Checking crimping

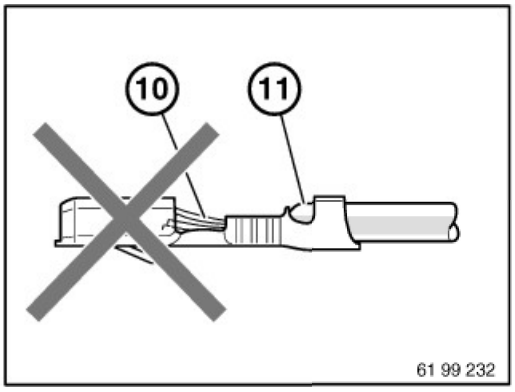
Check insulation crimping (8) and wire crimp (9) against following illustrations to ensure crimps are correctly located.

Note:
Illustration shows butt connectors and contact sleeves for comb connectors knocked on one side. The crimping procedure is identical here.

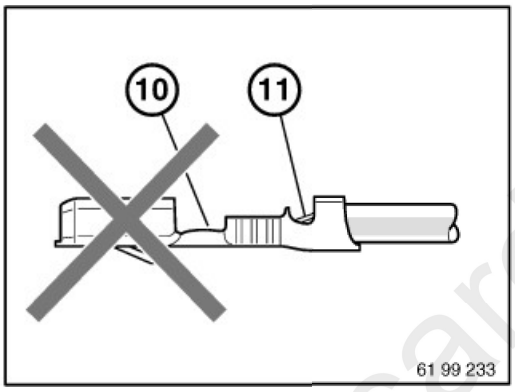
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Correct crimping:
Visible conductor end (10).
Visible insulation end (11).



Incorrect crimping:
Conductor end (10) inserted too far.
Insulation end (11) in wire crimp.
If necessary, repeat crimping with a new contact.



Incorrect crimping:
Conductor end (10) not visible.
Insulation end (11) not visible.
If necessary, repeat crimping with a new contact.

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61 11 ... Cutting to length and stripping insulation from cables



Special tools required:

- 0 494 159
- 0 496 849
- 0 496 833
- 2 407 379
- 61 4 320
- 61 4 340
- 61 4 328
- 61 0 210
- 61 0 220
- 61 0 230



New parts for vehicle electrical system (stops, housing):

- Sourcing reference: BMW Group Parts



For cutting cables to length and stripping insulation, refer to Service Information.

Stripped length:

Wire cross-section (mm^2)	Stripped length (mm)
0,35 ... 0,50	4,0
0,75 ... 1,00	4.5
1,00 ... 2,50	5,0



Crimping on NanoMQS stop parts

Crimping of NanoMQS contacts (MQS).

- Special tool handle 0 494 159 or 0 496 849
- Special tool (die-plate) 0 496 833
- Stripping tool2 407 379

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2. Crimping of stops up to 2.5 mm

Crimping Micro Quadlock System contacts (MQS).

- Special tool61 4 320

Crimping Micro Power Quadlock contacts (MPQ).

- Special tool61 4 320

Crimping miscellaneous stop parts up to 2.5 mm^2

- Special tool 61 4 340 (up to 03/2010 special tool 61 4 328)
- Refer to Service Information bulletin

Crimping of stops above 2.5 mm^2

Crimping load current contacts (LSK 8).

- Special tool61 0 210

Crimping load current contact 2.8.

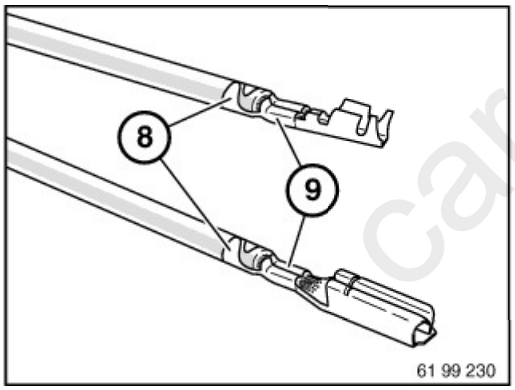
- Special tool61 0 220

Refer to Service Information SI 2 02 05 194

Crimping double spring contact (DFK 40)

Crimping MAK 8

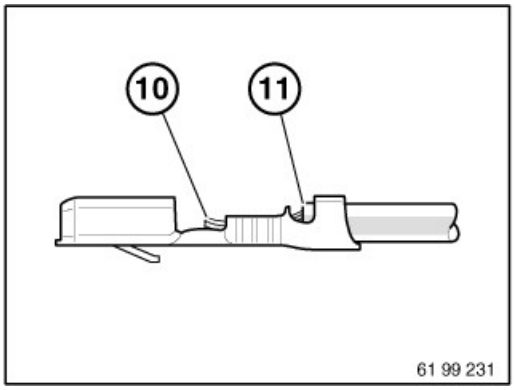
- Special tool61 0 230
- Refer to Service Information bulletin



Checking crimping

Check insulation crimping (8) and wire crimp (9) against following illustrations to ensure crimps are correctly located.

Note:
Illustration shows butt connectors and contact sleeves for comb connectors knocked on one side. The crimping procedure is identical here.

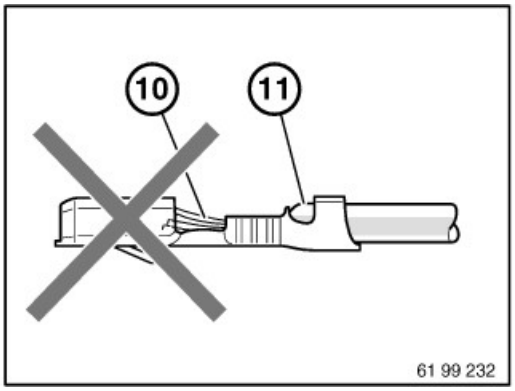


Correct crimping:

Visible conductor end (10).

Visible insulation end (11).

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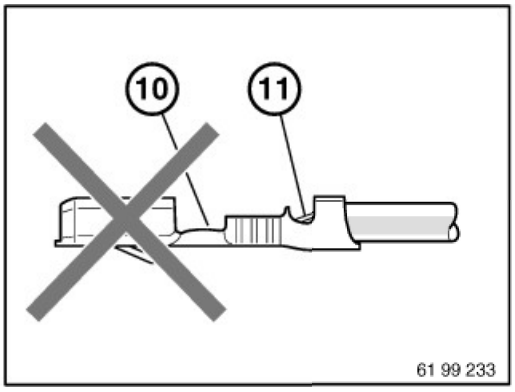


Incorrect crimping:

Conductor end (10) inserted too far.

Insulation end (11) in wire crimp.

If necessary, repeat crimping with a new contact.



Incorrect crimping:

Conductor end (10) not visible.

Insulation end (11) not visible.

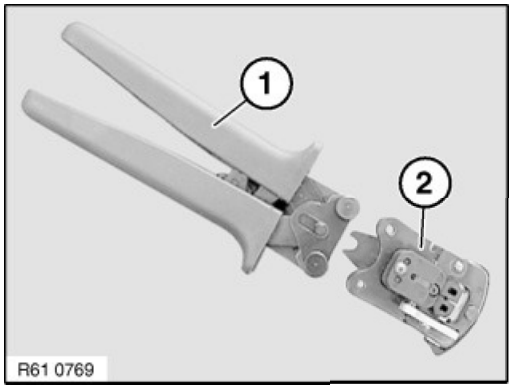
If necessary, repeat crimping with a new contact.

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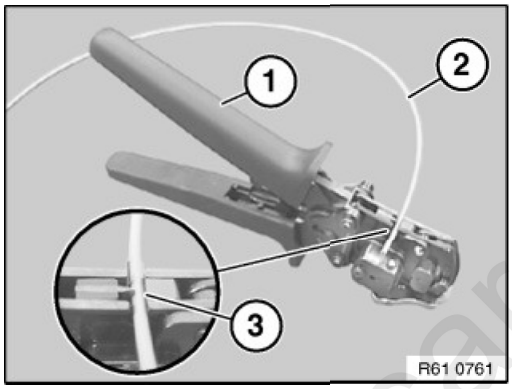
61 13 ... Cutting, strip insulation and crimping optical fibres

Special tools required:

- 61 4 321
- 61 4 329
- 61 4 320
- 61 4 323



The hand pliers 61 4 321 (1) in connection with the crimping head 61 4 329 (2) from crimp kit 61 4 320 are used for cutting, strip insulation and cutting optical fibres to size.*Note:*
Hand pliers (1) open automatically until limit position when handles are pressed together.

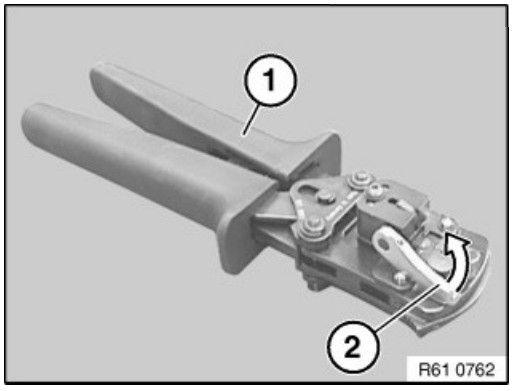


Cutting optical fibre

Open hand pliers (1).

Place optical fibre (2) in cutting device (3).

Close pliers (1) and remove optical fibre (2).

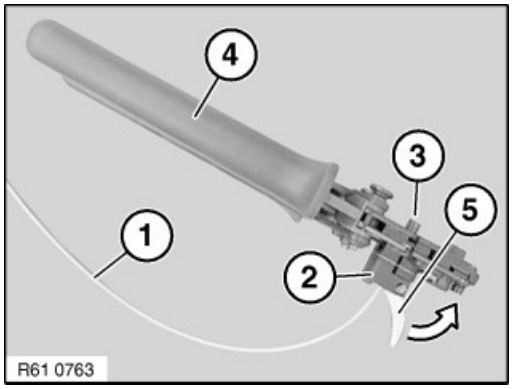


Stripping insulation from optical fibre

Open hand pliers (1).

Open lever (2) in direction of arrow.

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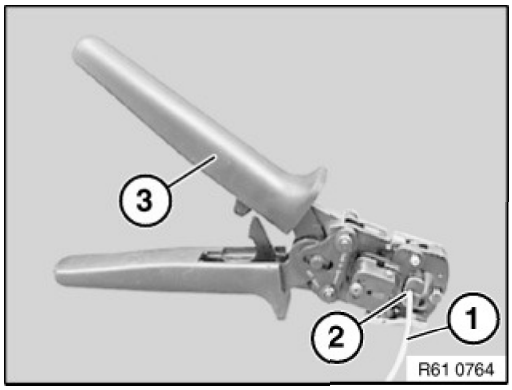
Push the optical fibre (1) into the strip insulation equipment (2) until it is flush in this area (3).

Close hand pliers (4) fully.

Close the operating lever (5) in the direction of the arrow.

Open hand pliers (4) by one tooth notch.

Re-open the operating lever (5) against the direction of the arrow and remove the optical fibre (1).



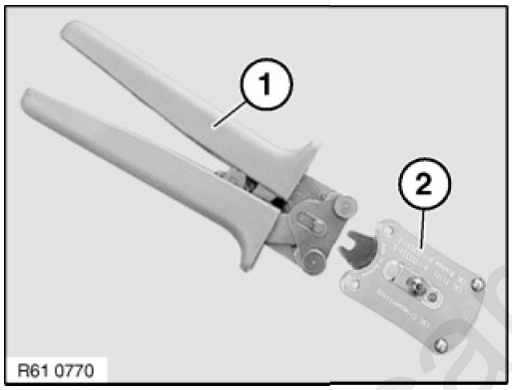
Cutting optical fibre to length

Open hand pliers (3).

Push the optical fibre (1) into the cutting equipment (2) until the insulation of the optical fibre (1) comes into contact with the clamping fixture.

Close hand pliers (3) fully and keep closed.

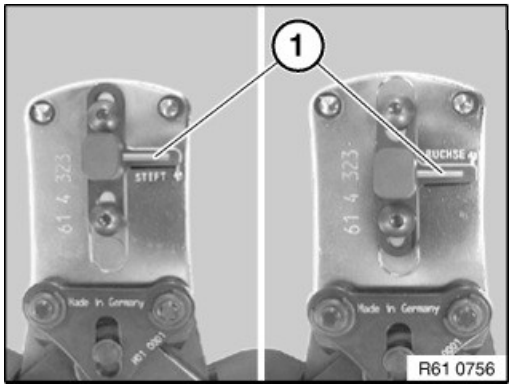
Remove optical fibre (1).



Crimp optical fibre

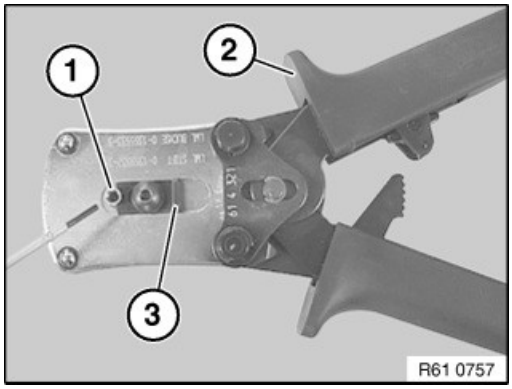
The hand pliers 61 4 321 (1) in connection with the crimping head 61 4 323 (2) from crimping kit 61 4 320 are used for crimping the optical fibres to size.

Note:
Hand pliers (1) open automatically until limit position when handles are pressed together.



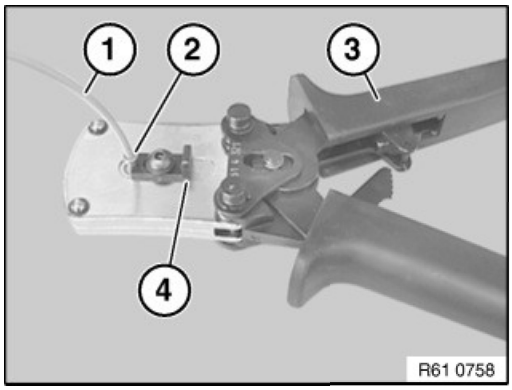
Move contact guide by means of stop lever (1) into corresponding position (pin contact or jack).

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Open hand pliers (2).

Place pin contact or jack (1) in crimping head and secure with locking lever (3).

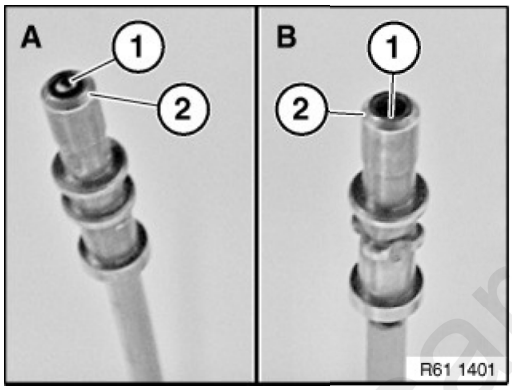


Insert stripped optical fibre(1) until limit position into pin contact or jack (2).

Close hand pliers (3) fully.

Open hand pliers (3) and locking lever (4).

Remove optical fibre (1).



Caution!

Make sure optical fibre is correctly seated in jack.

Right (A)

End of optical fibre (1) must be flush with tip of pin contact (2).

Wrong (B)

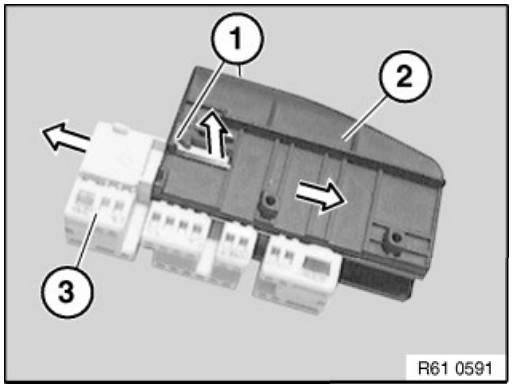
End of optical fibre (1) is not flush with tip of pin contact (2).

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61 13 ... In-line connectors, 24-/44-pin, Hybrid System MQS/MPQ

Manufactured by AMP: The following contact types without strand sealing can be fitted in the connector housings:

- MQS (Micro Quadlock System)
- MPQ, width 2.8 mm (Micro Power Quadlock)
- MPQ, width 5.2 mm (Micro Power Quadlock)

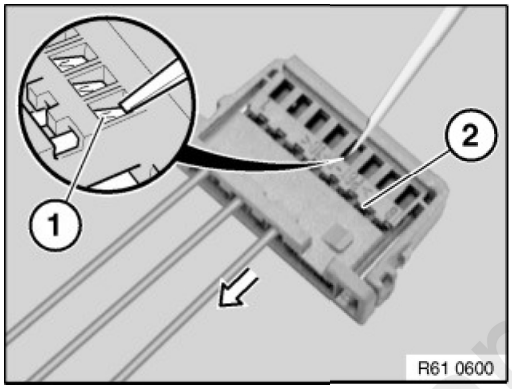


Socket housing:

Press locks (1) on protective cap (2) upwards on both sides.

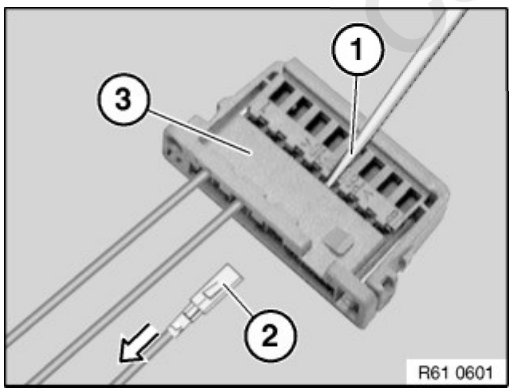
Detach protective cap from contact carrier (3).

Note:
Detaching the protective cap releases the secondary locks of the socket contacts.



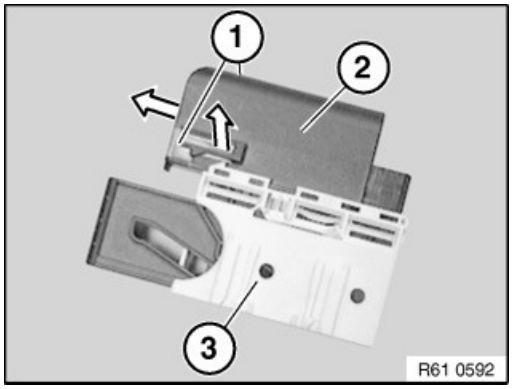
Hold down retaining hook (1) of socket contact in opening of contact carrier with a small screwdriver.

Pull wire with socket contact in direction of arrow as far as secondary lock (2).



Hold down retaining hook in secondary lock (1) again and pull cable with socket contact (2) completely out of contact carrier (3).

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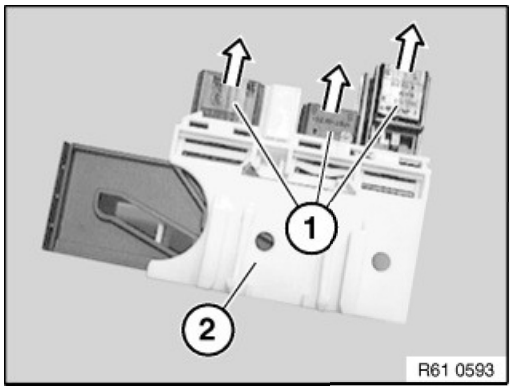


Pin housing:

Press locks (1) on protective cap (2) upwards on both sides.

Detach protective cap from housing carrier (3).

Note:
Detaching the protective cap releases the secondary locks of the pin contacts in the contact carriers.



Pull contact carrier (1) out of housing carrier (2).

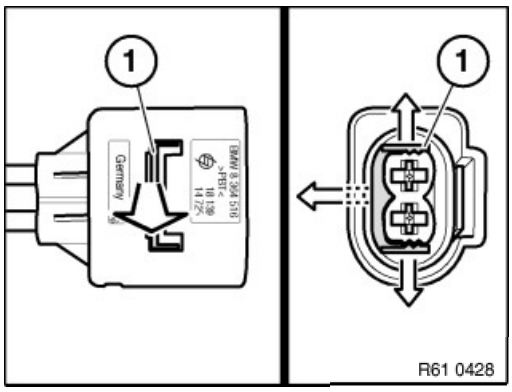
The pin contacts are pulled out of a contact carrier as described under ”Socket housing”.

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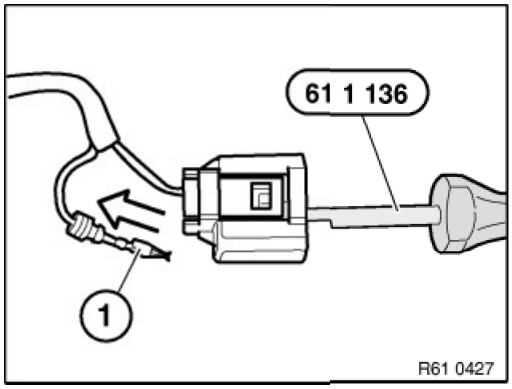
61 13 ... In-line plugs, 2-pin, System MDK 3 plus 2.8

Special tools required:

- 61 0 316



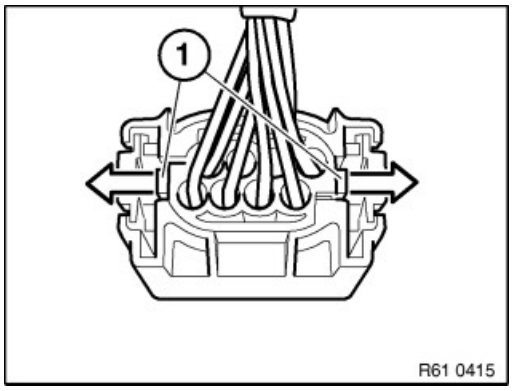
Unlock lock (1) on outside at retaining hook and slide out lock (1) to side.



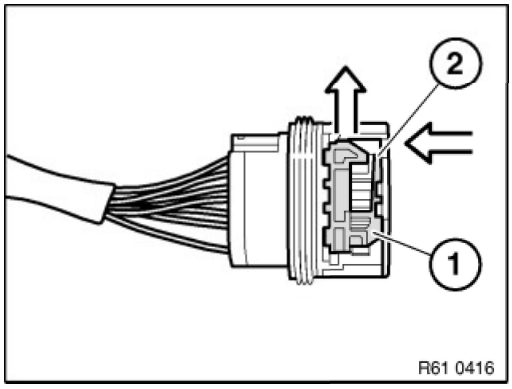
With special tool 61 0 316 (61 1 136), unlock contact and pull out cable with contact (1) towards rear.

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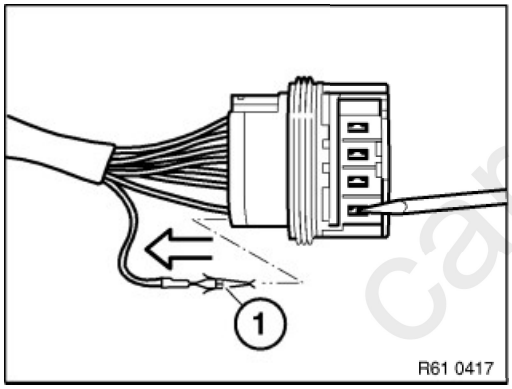
61 13 ... Inline connectors, 6-, 8-pin, System MQS



Press lock (1) in direction of arrow and slide connector forward.



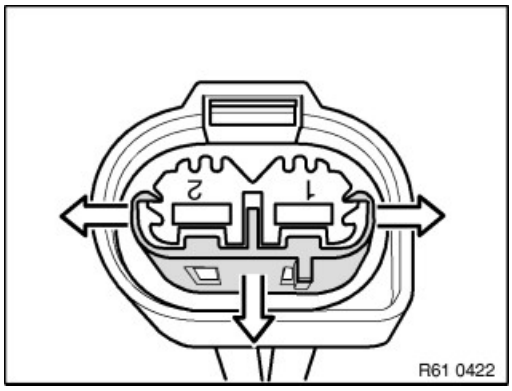
Press locking hook (2) downward and slide lock (1) out.



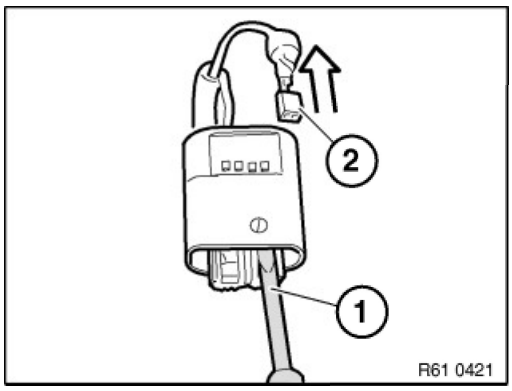
Press down retaining hook (1) with screwdriver and pull out cable with contact towards rear.

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61 13 ... Inline plugs, 2-pin, System MPQ 2.8



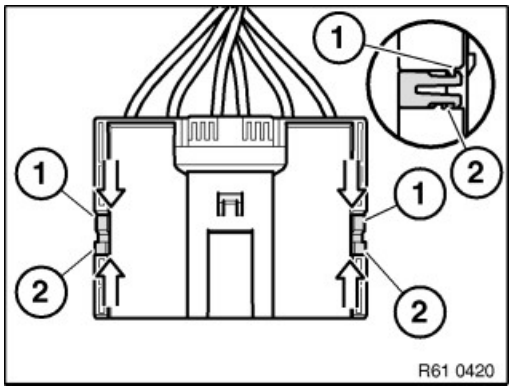
Press catch on outside in direction of arrow and remove towards top.



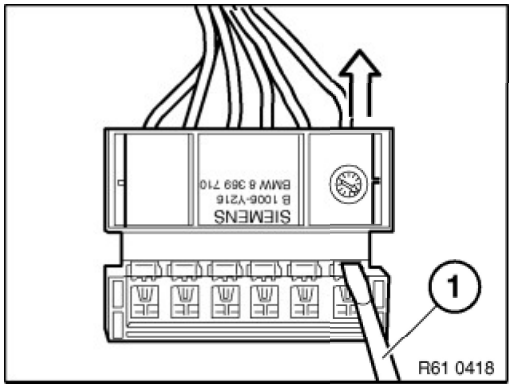
Press down retaining hook (1) with screwdriver and pull out cable and contact (2) towards rear.

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61 13 ... Inline plugs, 3-, 6-pin, System Elo-Power 2.8



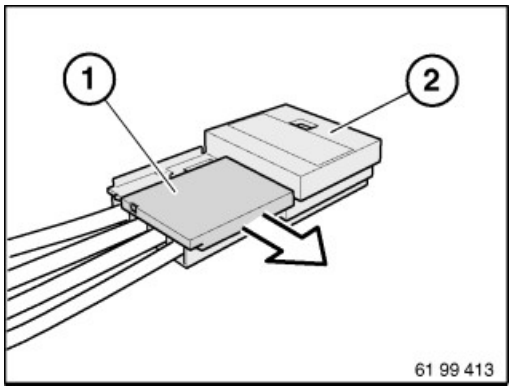
Press locking hook (1) in direction of arrow and disengage. Then unlock locking hook (2) and remove lock.



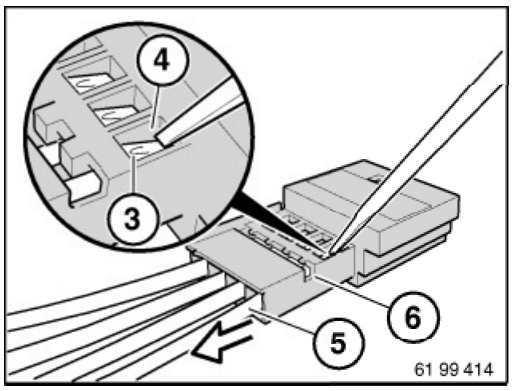
Press down retaining hook with screwdriver (1) and pull out cable with contact towards rear.

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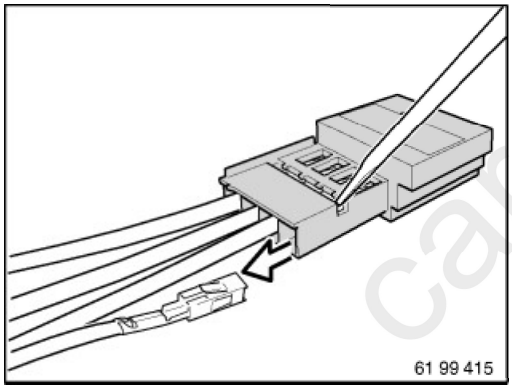
61 13 ... Inline plugs, 4-, 10-pin, System Elo



Detach fastener (1) from contact carrier (2).



Hold down retaining hook (3) of defective contact and pull cable and contact up to secondary lock (6).



Hold down retaining hook once again in secondary lock and pull cable and contact completely out of contact carrier.

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61 00 ... Notes on handling optical fibres



Important!

To avoid damage when handling optical fibres, comply with the following points:

- The minimum permitted bending radius is 25 mm
- Do not subject optical fibres to compressive and tensile load
- Protect optical fibres against the effects of heat ≥85 °C (e.g. during welding work, drying work with infrared beams or hot air blower)
- Fibre-optic cables are permitted to show only one junction point (bridge), replace fibre-optic cables if necessary



Note:
The optical fibres are coloured differently as follows:

- Green = **MOST** (**M**edia **O**riented **S**ystems **T**ransport) optical fibre
- Yellow = **ISIS** (**I**ntelligent **S**afety and **I**ntegration **S**ystem) optical fibre
- Orange=repair fibre-optic cables

Follow notes for processing cables and optical fibres.

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61 00 ... Notes on handling wiring harnesses and cables



The following applies in general:

To avoid damage, observe the following instructions:

- Avoid compressive and tensile loads
- To ensure professional repairs, perform repair work only with BMW-approved or recommended special tools and spare parts
- Make sure cables are laid without kinks or abrasions
- Ensure non-contacting routing at sharp-edged body parts; use edge protection if necessary
- Secure additionally laid cables/leads with cable ties

The following additionally applies:

Shielded lines

Interference radiation and interference resistance can lead to neutral zones at contact points in the shielding. Consequently, distinctions have to be drawn between the following types:

Coaxial lines

- Shielded coaxial cables RTK031 may only be repaired with a special crimping tool.
- For aerial lines only the bushing contact may be repaired.
- RG174 Lines and the bushing contact may not be repaired.

CVBS lines

- CVBS cables may not be repaired.
- CVBS cables must be replaced in their entirety.

HSD lines

- HSD cables may not be repaired.
- HSD cables must be replaced in their entirety.

Optical fibre cable:

Note:
Fibre-optic cables are coloured differently as follows:

- Green = **MOST** (**M**edia **O**riented **S**ystems **T**ransport) optical fibres
- Yellow = **ISIS** (**I**ntelligent **S**afety and **I**ntegration **S**ystem) optical fibres
- Orange=repair fibre-optic cables

Attention!

- Optical fibres are permitted to show only one junction point (bridge). Replace optical fibres if necessary
- Smallest permissible bending radius is 25 mm
- Avoid effects of heat ≥ 85 °

Treating cables and fibre-optic cables

FlexRay (twisted cables):

It is possible to repair the FlexRay. In the event of damage, the cables can be joined with conventional butt connectors and heat-shrink tubing.

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Note:

- FlexRay lines may only reveal one separation point (bride); renew complete line if necessary.
- If possible, maintain twisted cable after repair.
- After repairs, twist cables as close as possible to the connector/separation point.
- Twisting must be as symmetrical as possible.

Airbag lines:

Repairing airbag cables

Ribbon cables:

Repairing ribbon cables

Replacing wiring harnesses

Repair wiring harnesses mainly cover the full equipment of the vehicle. If certain optional equipment is not installed in the vehicle, note the following:

- If necessary, secure the remaining connectors.
- If necessary, seal the remaining connectors outside the vehicle interior, for example, with butyl tape in such a way that moisture ingress can be eliminated permanently.
- If necessary, repin the connector of the repair wiring harness.

Note:
Repair wiring harnesses can be equipped with an **additional socket housing** (30-pin, for example), **which was not provided on the previous vehicle-side wiring harness**. This socket housing also cannot be found in the wiring diagram.

Procedure

The separation point between the vehicle-side wiring harness and the repair wiring harness is located **in the vehicle interior** (in the footwell, for example):

- Cut the additional socket housing and connect the lines to the vehicle-side wiring harness using a butt connector.
- Alternatively, a suitable pin housing can be fitted on the vehicle-side wiring harness and connected to the additional socket housing.

  However, this is permitted only if the following conditions are met:
  - Carpets must not protrude visibly or become deformed due to the installation of the additional plug connection.
  - It must be possible to install the adjacent components (for example, trims, trim panels, etc.) correctly after installing the additional plug connection.
  - All the attachment points of the adjacent components (for example, trims, trim panels, etc.) must engage correctly.
  - There must be no rattling noise due to the installation of the additional plug connection.
  - The additional plug connection must not damage the adjacent components/wiring harnesses, etc..

The separation point between the vehicle-side wiring harness and the repair wiring harness is located **outside the vehicle interior** (in the

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wheel arch, for example):

- Cut the additional socket housing and connect the lines to the vehicle-side wiring harness using a butt connector.
- **Using the additional socket housing is not permitted with a separation point outside the vehicle interior.**

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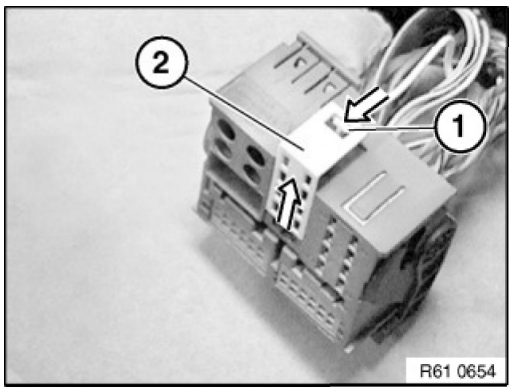
61 13 ... Socket housing (radio connector), Hybrid System MQS/MPQ

Special tools required:

- 61 0 314

Manufactured by AMP: The following contact types without strand sealing can be fitted in the connector housings:

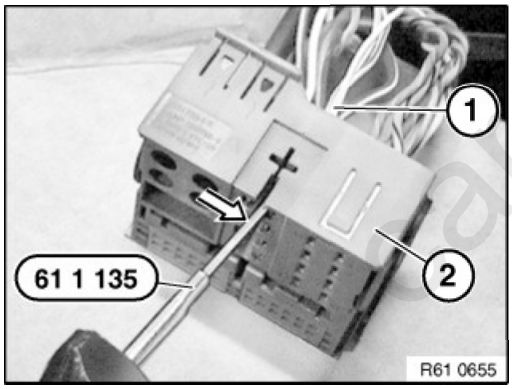
- MQS (Micro Quadlock System)
- MPQ, width 2.8 mm (Micro Power Quadlock)
- MPQ, width 5.2 mm (Micro Power Quadlock)



Removing MPQ contacts from radio connector:

Press lock (1) in direction of arrow.

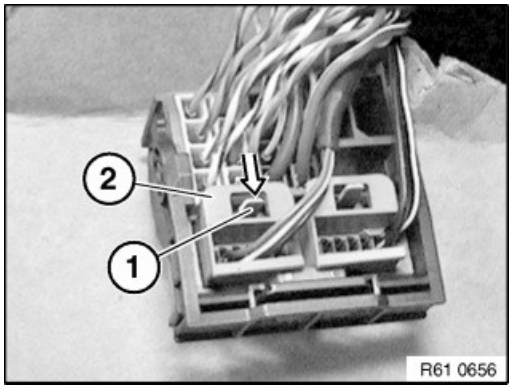
Detach secondary lock (2) from radio plug.



Feed special tool 61 0 314 (61 1 135) past side of contact.

Press special tool 61 0 314 (61 1 135) in direction of arrow.

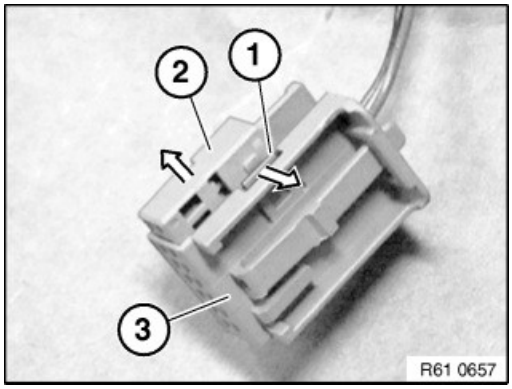
Pull wire (1) with socket contact out of radio connector (2).



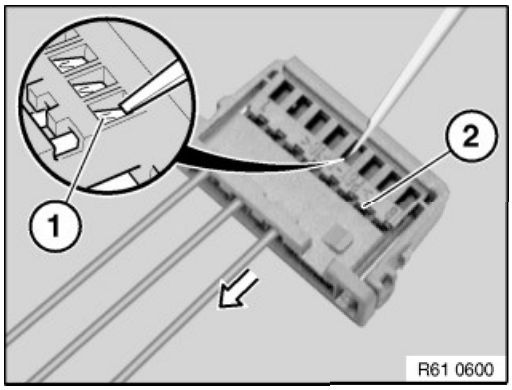
Removing MQS contacts from contact carrier:

Press lock (1) in direction of arrow and pull housing (2) out of radio connector.

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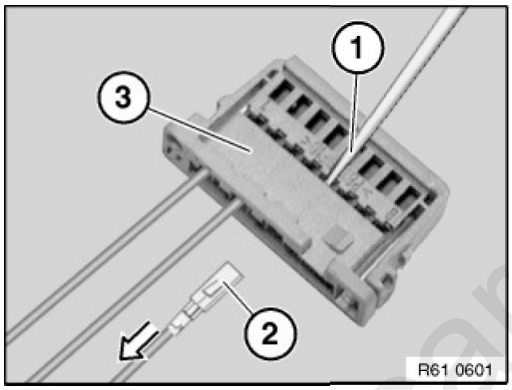
Press lock (1) in direction of arrow. Pull contact carrier (2) out of housing (3).*Note:*
When the contact carrier is pulled out, the secondary locks of the socket contacts are raised.



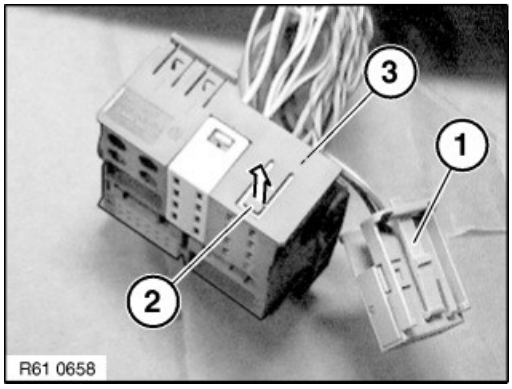
Note:
Schematic diagram shows the 8-pin socket housing by way of example.

Hold down retaining hook (1) of socket contact in opening of contact carrier with a small screwdriver.

Pull wire with socket contact in direction of arrow as far as secondary lock (2).



Hold down retaining hook in secondary lock (1) again. Pull wire with socket contact (2) out of contact carrier (3).



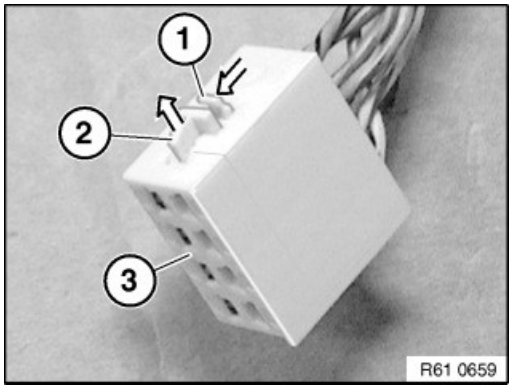
Removing MPQ contacts from contact carrier:

Remove contact carrier (1) with MQS contacts from radio connector.

Raise lock (2) on radio connector.

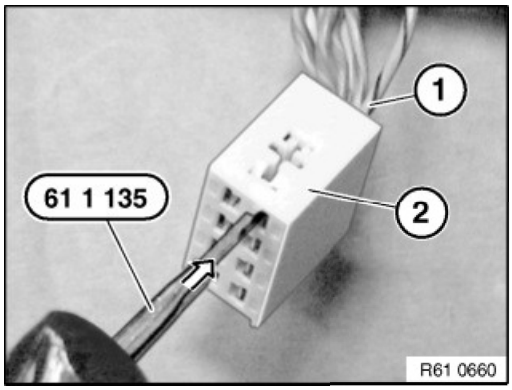
Pull contact carrier (3) out of radio connector.

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Press lock (1) in direction of arrow.

Pull secondary lock (2) in direction of arrow completely out of contact carrier (3).



Press special tool 61 0 314 (61 1 135) on inside of contact into contact carrier (2).

Pull wire with socket contact (1) out of contact carrier (2).

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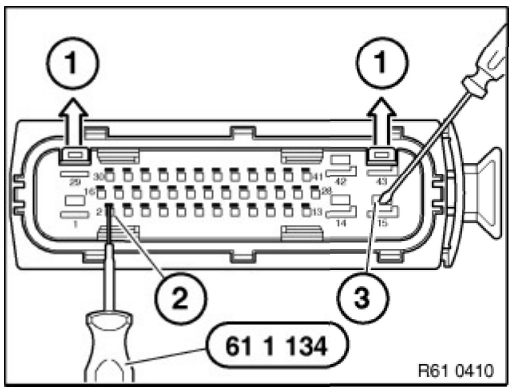
61 13 ... Socket housing 42-, 43-, 46-pin, Hybrid System MQS / MPQ

Special tools required:

- 61 0 312

Manufactured by AMP: The following contact types without strand sealing can be fitted in the socket housings:

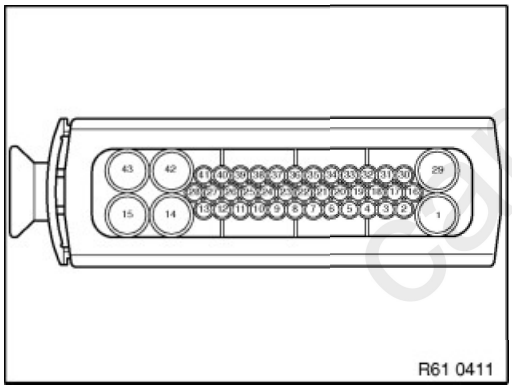
- MQS (Micro Quadlock System)
- MPQ, width 2.8 mm (Micro Power Quadlock)
- MPQ, width 5.2 mm (Micro Power Quadlock)



Open secondary locks (1) on socket housing.

Press back retaining hook of MQS contacts (2) with special tool 61 0 312 61 1 134 and pull out cable with contact.

Press back retaining hook of MPQ contacts (3) with screwdriver and pull out cable with contact.



Installation note:
Bend open retaining hook of contacts gently before inserting into connector housing.

For installation of contacts, observe chamber numbers on reverse side of socket housing.

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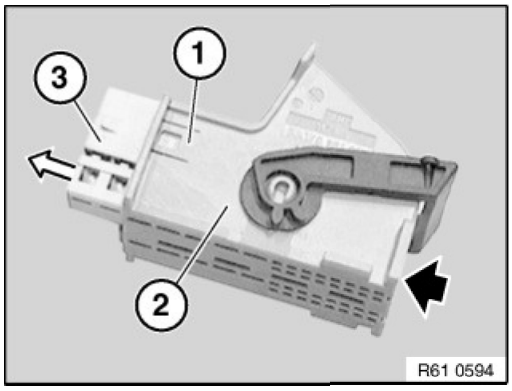
61 13 ... Socket housings, 2x21-, 2x27-pin, Hybrid Systems MQS/MPQ, Elo/Elo Power

Manufactured by AMP: The following contact types without strand sealing can be fitted in the socket housings:

- MQS (Micro Quadlock System)
- MPQ, width 2.8 mm (Micro Power Quadlock)
- MPQ, width 5.2 mm (Micro Power Quadlock)

Manufactured by Siemens: The following contact types without strand sealing can be fitted in the socket housings:

- Elo (electrical contact)
- Elo Power 2.8 mm width (electrical contact for heavy loads)
- Elo Power 5.2 mm width (electrical contact for heavy loads)

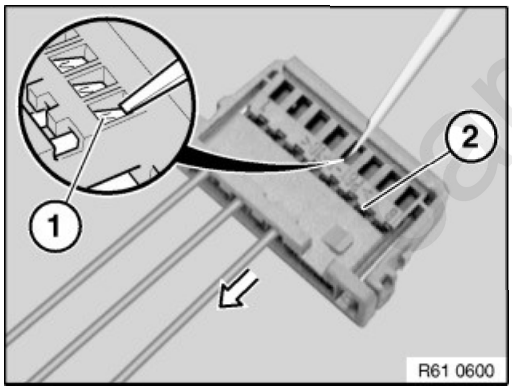


Raise lock (1) on housing (2).

Push contact carrier (3) from rear out of housing.

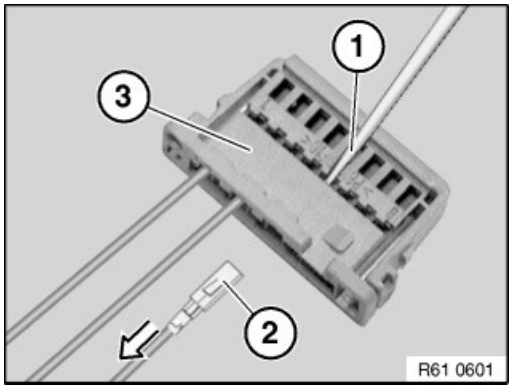
Note:
The second contact carrier is pushed out in the same way.

Pushing out the contact carrier releases the secondary locks of the socket contacts.



Hold down retaining hook (1) of socket contact in opening of contact carrier with a small screwdriver.

Pull wire with socket contact in direction of arrow as far as secondary lock (2).



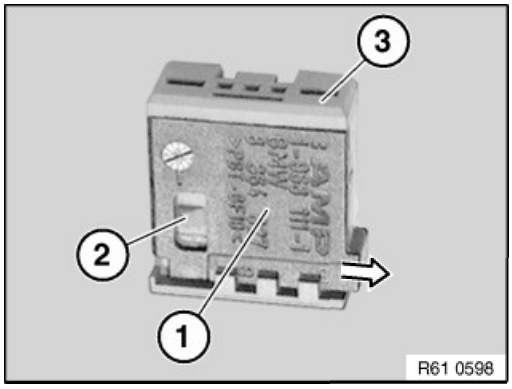
Hold down retaining hook in secondary lock (1) again and pull cable with socket contact (2) completely out of contact carrier (3).

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61 13 ... Socket housings, 5-pin, 8-pin, System MQS/MPQ

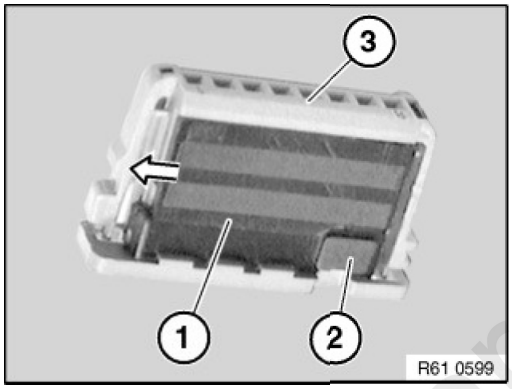
Manufactured by AMP: The following contact types without strand sealing can be fitted in the connector housings:

- MQS (Micro Quadlock System)
- MPQ, width 2.8 mm (Micro Power Quadlock)
- MPQ, width 5.2 mm (Micro Power Quadlock)



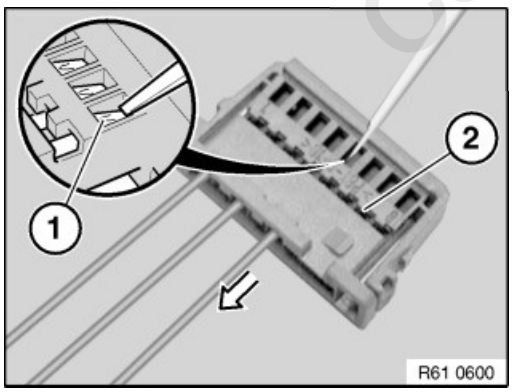
Socket housing, 5-pin (Hybrid System MQS/MPQ)

Raise fastener (1) over retaining lug (2) and pull off from contact carrier (3).



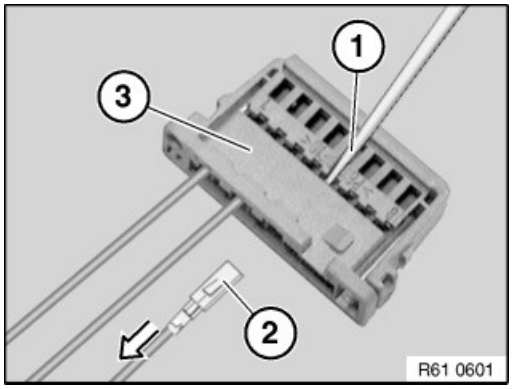
Socket housing, 8-pin (MQS):

Raise fastener (1) over retaining lug (2) and pull off from contact carrier (3).



Hold down retaining hook (1) of contact and pull cable with contact as far as secondary lock (2).

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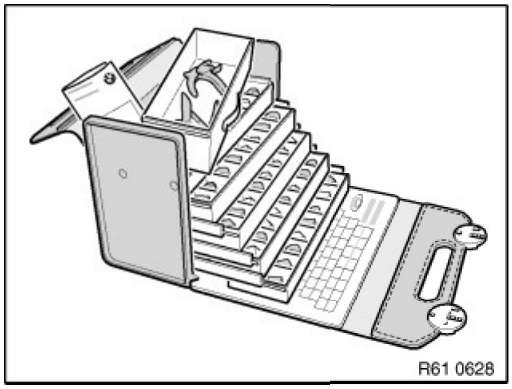
Hold down retaining hook in secondary lock (1) again and pull cable with contact (2) completely out of contact carrier (3).

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61 13 ... Special tools for wiring harness repairs

Special tools required:

- 61 0 300
- 61 0 400
- 61 1 100
- 61 4 320
- 61 0 200
- 61 0 210
- 61 0 220
- 61 0 230
- 61 0 240



Repair range, vehicle electrical system:

Single parts for wiring harness repairs*

* Sourcing reference: BMW Parts Department

Note:

- Refer to Service Information:
  SI 2 04 07 341



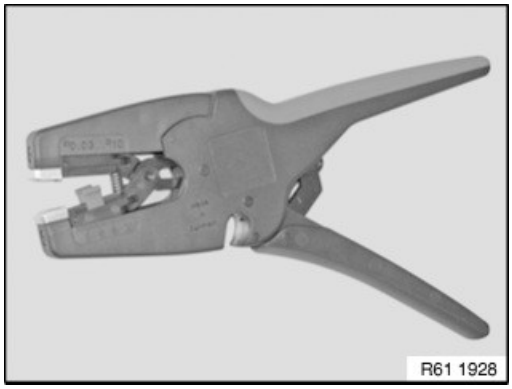
Release and press-out tool:

- Special tool61 0 300
- Special tool 61 0 400 (MINI N12/N14)
- Special tool 61 1 100 (engine)

Handling:

- Notes for opening contacts and locks of different connector contact systems

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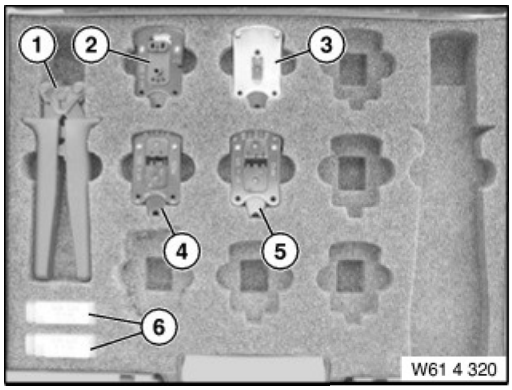
Cutting to length and stripping insulation from cables:

Wire stripper MultiStrip10*

*Sourcing reference BMW Workshop Equipment Catalogue

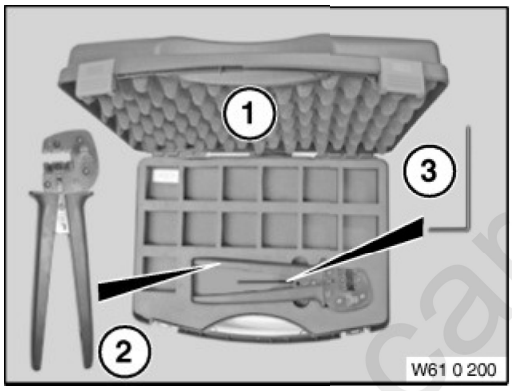
Handling:

- Cutting cables to length and strip insulation



Crimping stop parts (small contacts) and butt connectors:

- Special tool61 4 320
  1. Tool without crimping head
  2. Crimping head (stripping insulation and cutting fibre-optic cables to length)
  3. Crimping head (crimping fibre-optic cable contacts)
  4. Crimping head (crimping MQS contacts)
  5. Crimping head (crimping MPQ contacts)
  6. Replacement blade (face-cutting fibre-optic cables)
  7. Replacement blade with tool (insulation stripping unit)
  8. Universal crimping head (SI 2 04 06 293)



Crimping stop parts (large contacts) and butt connectors:

- Special tool 61 0 200 (crimping set)
- Special tool 61 0 210 (matrix set SLK 8)
- Special tool 61 0 220 (matrix set SLK 2.8)
- Special tool 61 0 230 (matrix set MAK 8 / DFK4)
- Special tool 61 0 240 (butt connector 4.0 - 6.0 mm²)

Handling:

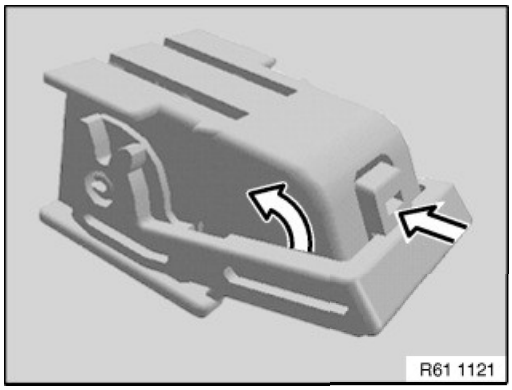
- Refer to Service Information:
  SI 2 02 05 194
  SI 2 07 05 233

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61 13 ... Unlocking and disconnecting different plug connections

Note:
The document describes unlocking and disconnecting different types of plug connections.

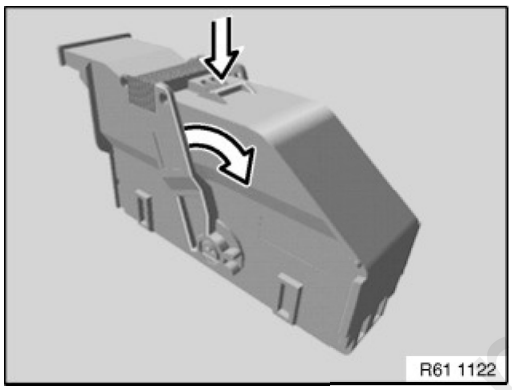
Differences in the details of the size and shape of the plug connections are possible.



1.

Press lock and open release clip in direction of arrow.

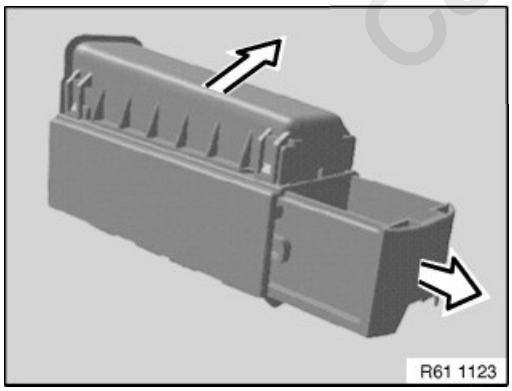
Disconnect plug connection.



2.

Press lock and open release clip in direction of arrow.

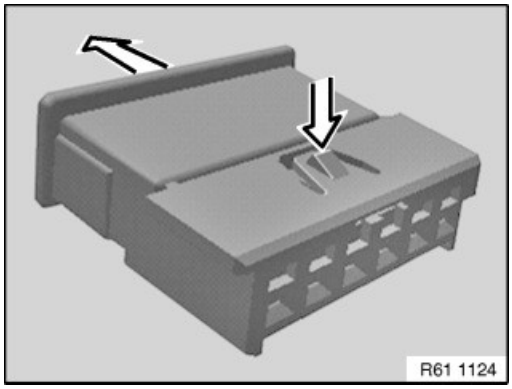
Disconnect plug connection.



3.

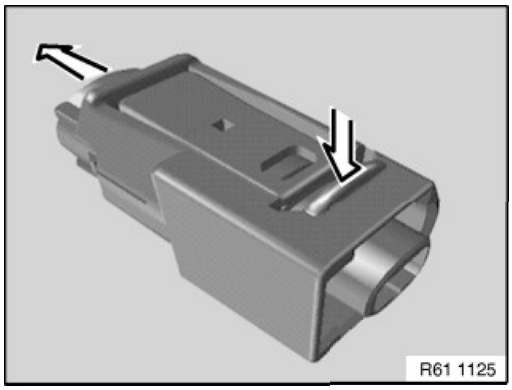
Open release clip in direction of arrow and disconnect plug connection in direction of arrow.

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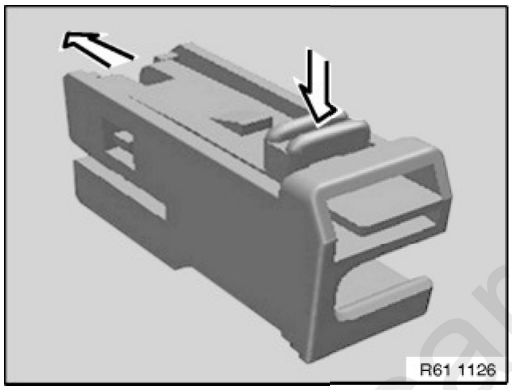
4.

Press lock and disconnect plug connection in direction of arrow.



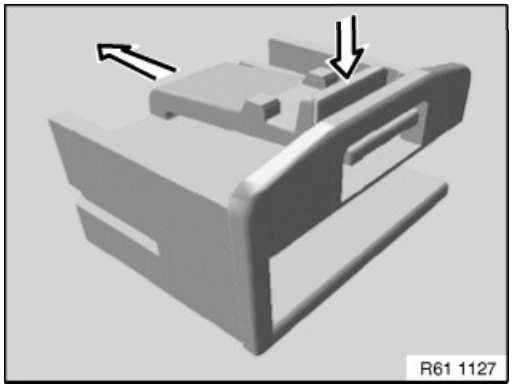
5.

Press lock and disconnect plug connection in direction of arrow.



6.

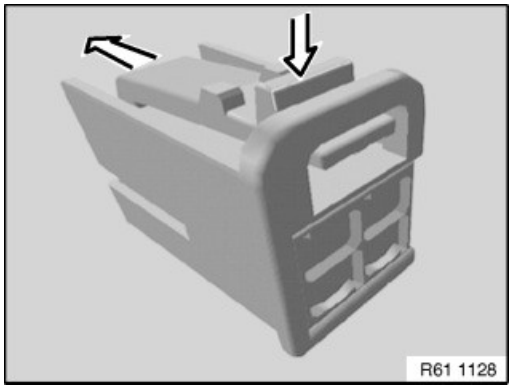
Press lock and disconnect plug connection in direction of arrow.



7.

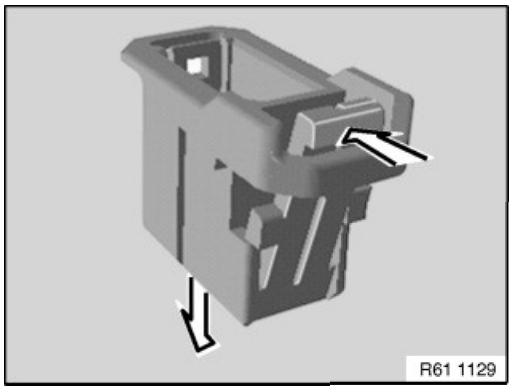
Press lock and disconnect plug connection in direction of arrow.

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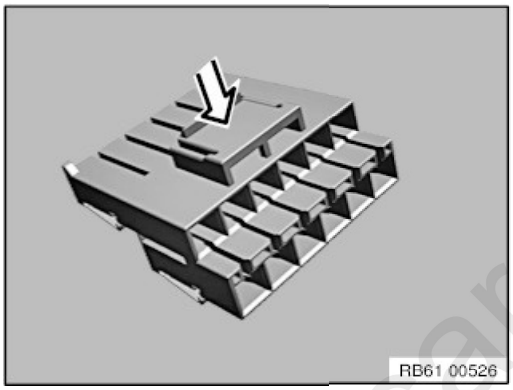
8.

Press lock and disconnect plug connection in direction of arrow.



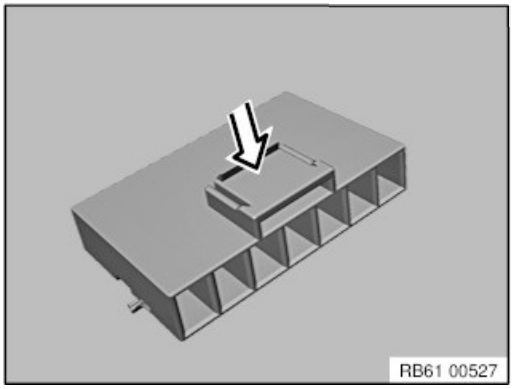
9.

Press lock and disconnect plug connection in direction of arrow.



10.

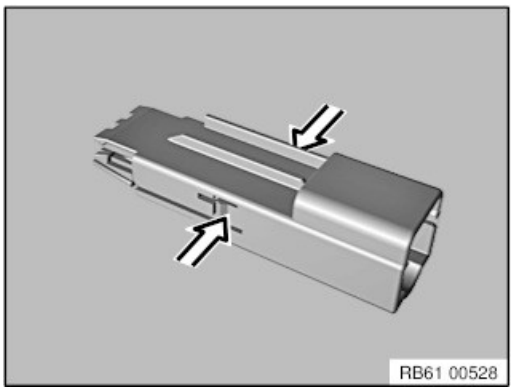
Press the lock and detach plug connection.



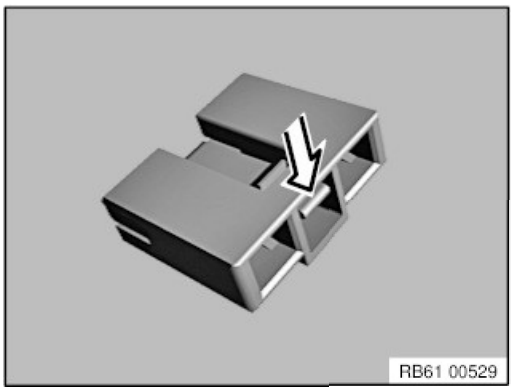
11.

Press the lock and detach plug connection.

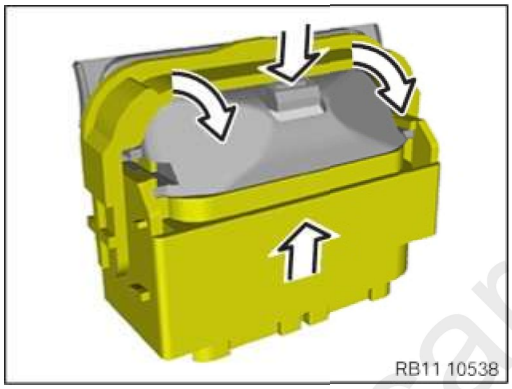
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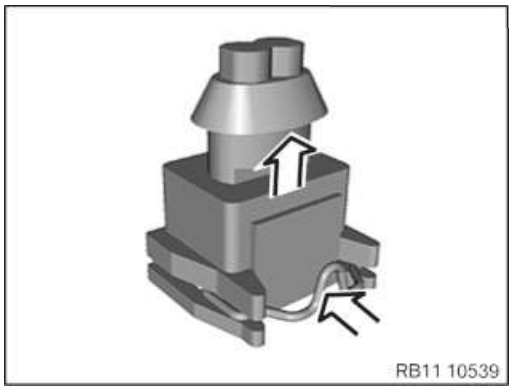
12.
Press the lock on both sides and detach plug connection.



13.
Press the lock and detach plug connection.

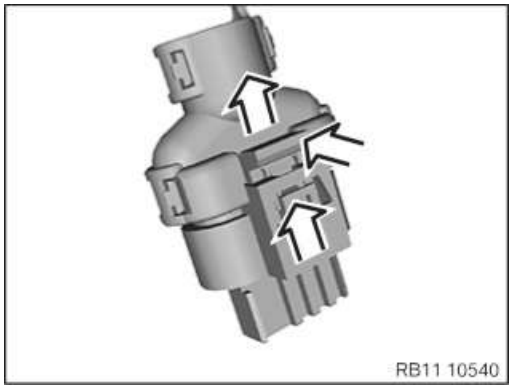


14.
Press lock and open release clip in direction of arrow.
Disconnect plug connection.

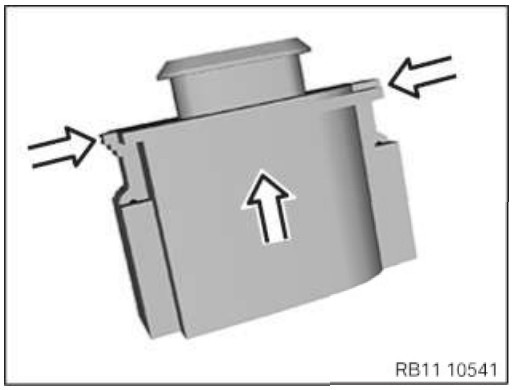


15.
Press the lock and detach plug connection.

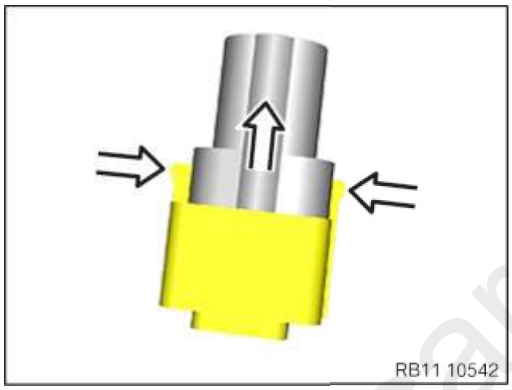
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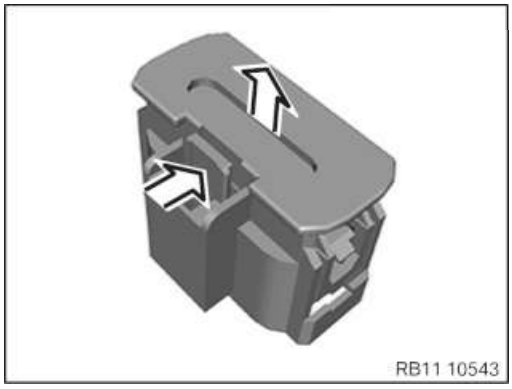
16.
Pull out lock and press.
Disconnect plug connection.



17.
Press the lock and detach plug connection.

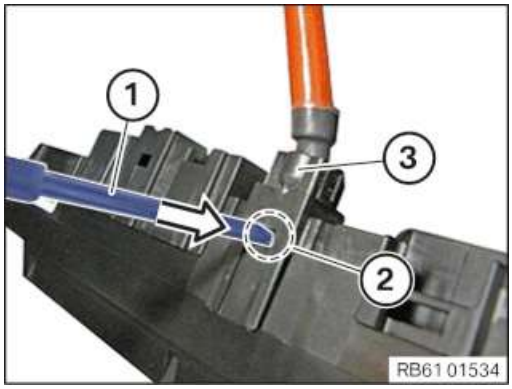


18.
Press the lock and detach plug connection.



19.
Press the lock and detach plug connection.

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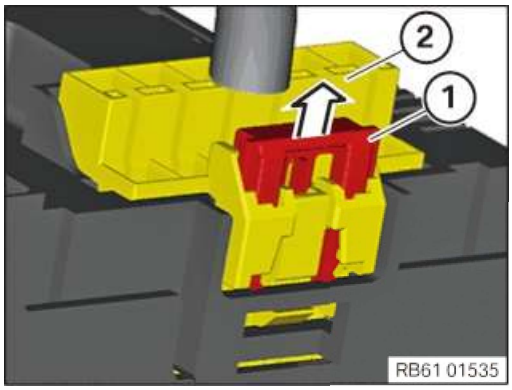


20.

Plug connection, e.g. on the power distribution box:

Press into the opening (2) using a suitable tool (1).

Pull off plug connection (3) upwards.



21.

Plug connection, e.g. on the power distribution box:

Lift lock (1) with a suitable tool.

Pull off plug connection (2) upwards.



22.

Vibration resistant high power engine contacts:

Caution!

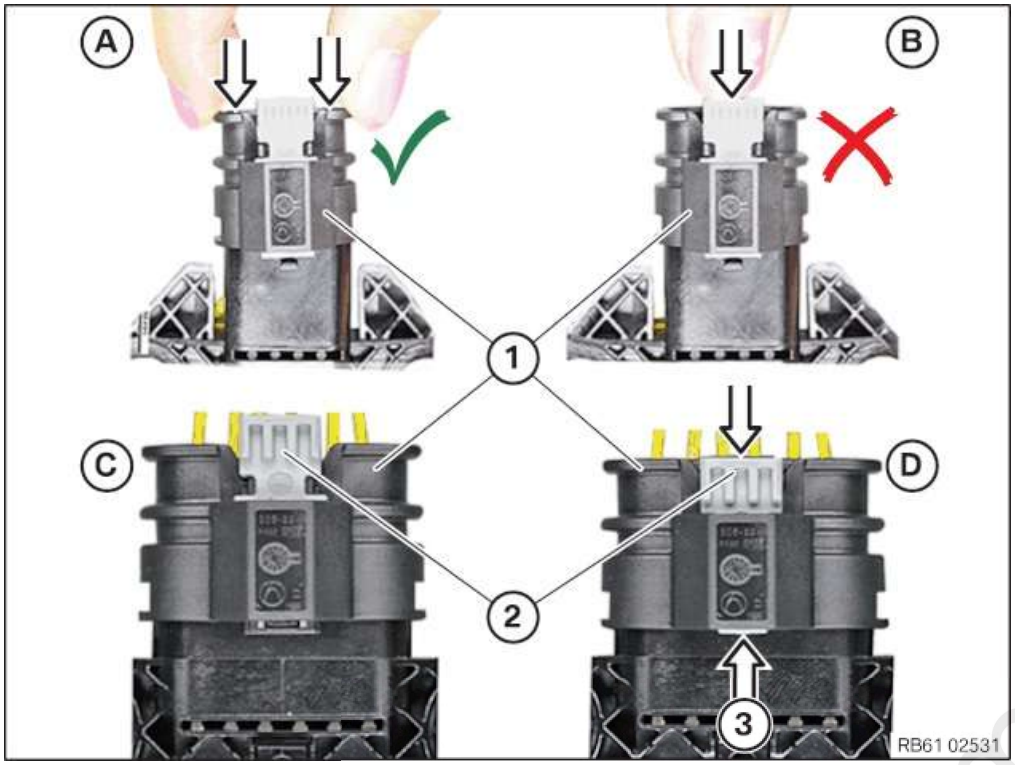
For this connector type, increased forces come into play when disconnecting and closing.

Disconnect:

Pull out lock (1) downward in direction of arrow first.

Then press lock (1) down in direction of arrow and pull off connector.

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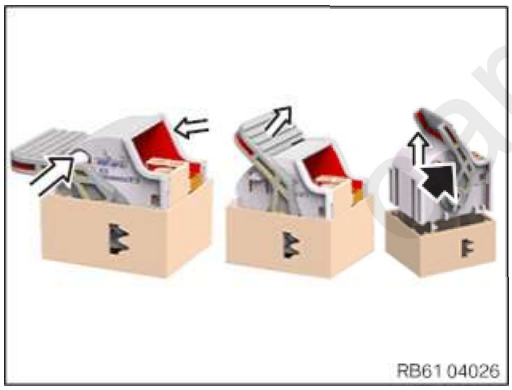


23.

Close:

A. Press the connector (1) down at the points indicated by the arrow **until it reaches the end position**
B. **Do** not press the connector (1) further than the lock
C. Connector (1) is in the end position, but lock (2) is not yet locked
D. Press lock (2) down in the direction of the arrow until the tip of lock (2) is visible at point (3)

Unlock / lock front light combination plug connection & replace housing after damage:

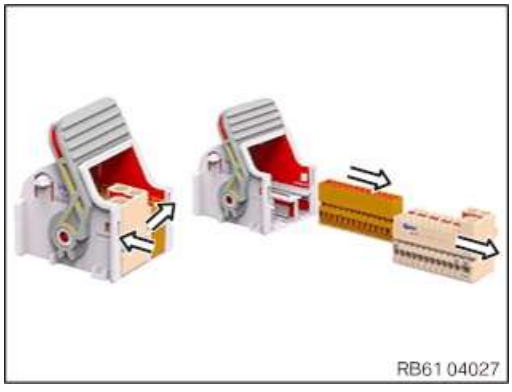


24.

Press in locking lever at both sides until the lever is unlocked and can be moved.

Move lever upwards until it latches into place in the end position.

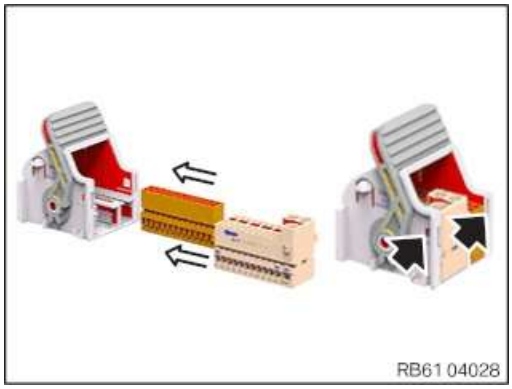
Once the lever is locked in the end position, remove plug connection upwards.



Unlock socket housing by lifting up each of the locking tabs.

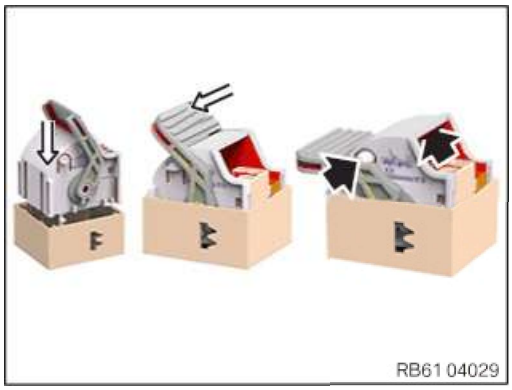
Slide out after unlocking the socket housing.

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Slide in socket housing up to limit position.

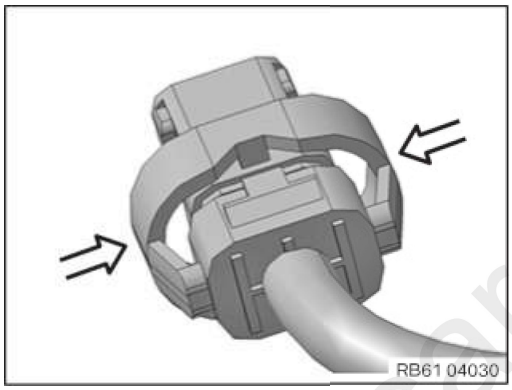
Lock socket housing into place in end position.



Sliding in up to limit position.

Activate plug-inn procedure by moving lever downwards.

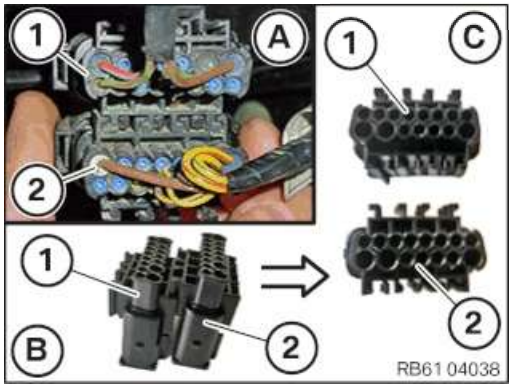
IMPORTANT: the latch mechanism on both sides only works for a completed plug-in procedure.



25.

Rosenberger D4S20G-400A5-Y

Press to unlock on both sides.

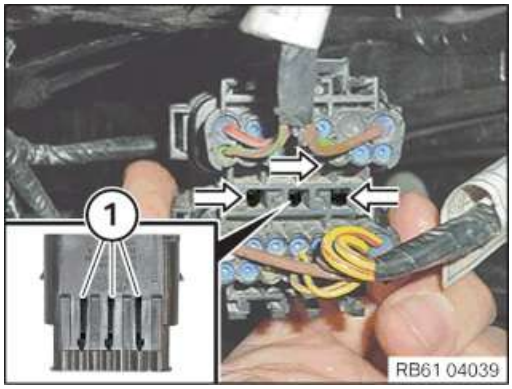


26.

Pin housing, 15-pinMLK1

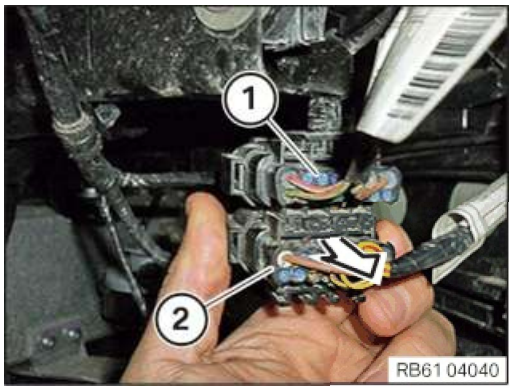
- A & B. To avoid any damage to individual connectors, the given connector assembly consisting of several individual connectors (1) & (2) must be released before disconnecting the plug connection.
- C: released connector assembly

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Disconnecting connector assembly:

Release retaining hooks (1) in direction of arrow (detail image shows retaining hooks of individual connector).



Release connector (2) in direction of arrow from connector (1).

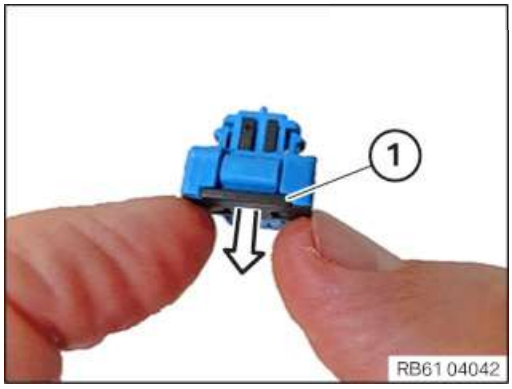


27.

Airbag ignition circuit connector

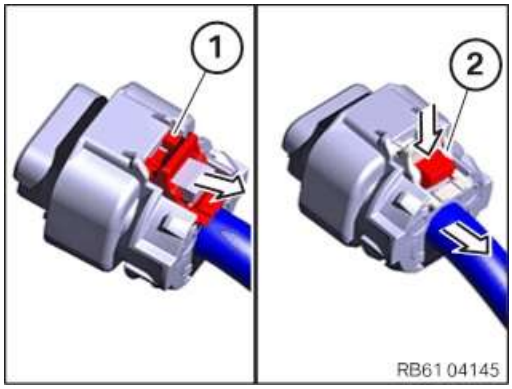
Warning!

Note the safety information for working on vehicles with airbag systems prior to disconnecting the plug connection.



Pull the cap (1) in the direction of the arrow to unlock

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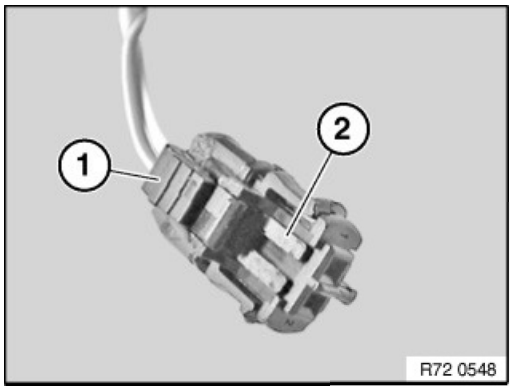


28.

Connector e.g. on front and rear lighting unit

Open safety catch (1) in direction of arrow using appropriate tool.

Push safety catch (2) in direction of arrow and disconnect plug connection.



29.

Plug, e.g. in airbag ignition circuits

Press the lock (1) and pull out the connector (2) up to initial engagement position.

Pull off connector (2).

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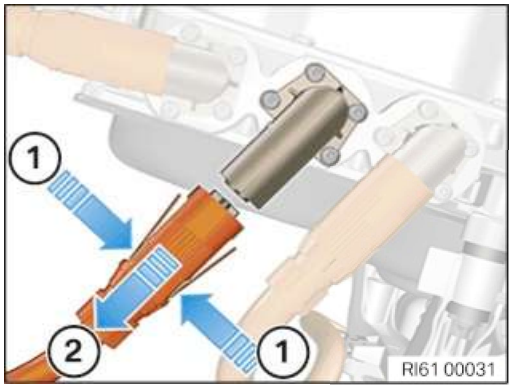
61 13 ... Unlocking and disconnecting various plug connections in electrical and hybrid vehicles



Attention!

Observe the following instructions for handling high-voltage plug connections:

- Damaged high-voltage plug connections must be replaced completely. Repair is not permitted.
- Dirt contamination must be removed before opening the plug connection.



Disconnect the Hirschmann high-voltage connector:

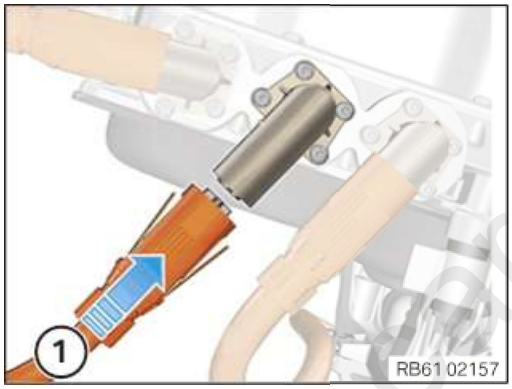
Press the lock (1) on the left and right on the connector in the direction of the arrow.

Pull off connector (2) in direction of arrow.

Attention!

Connector (2) is difficult to pull off.

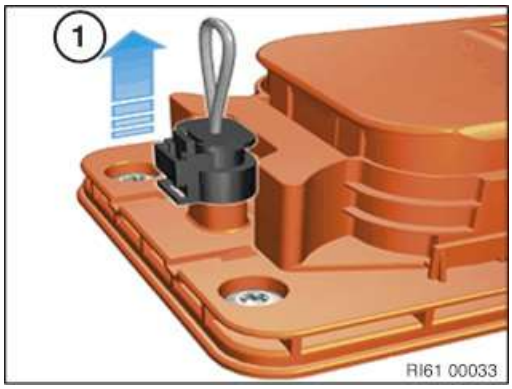
In the event of damage to high-voltage connector (2), the complete high-voltage cable must be replaced!



Connect the Hirschmann high-voltage connectors:

Slide the connector (1) on in the direction of the arrow.

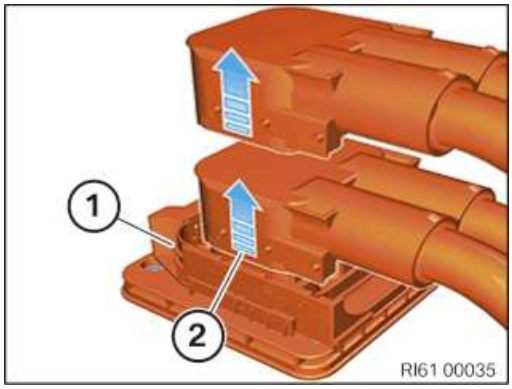
Note:
Connector (2) must lock audibly.



Disconnect the Kostal high-voltage connector:

Unlock and disconnect high-voltage interlock loop (1).

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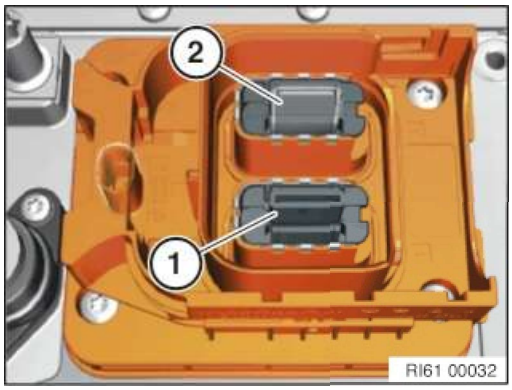
Push the lock (1) fully to the front.

Lift the connector (2) and remove it entirely.

Attention!

Plug connection (3) is difficult to pull off.

The connector (2) must be completely pulled off the opposite housing in one step. Damage may be caused to contact protection if connector is only partly pulled off and then closed again!



Check the Kostal high-voltage connector and connection for damage:

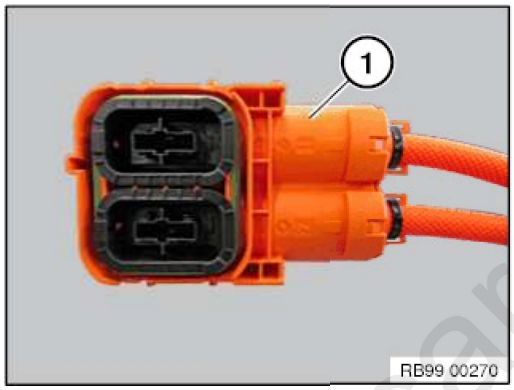
Check the touch protection for damage and correct positioning (1).

Warning!

Do not touch unprotected connector (2)!

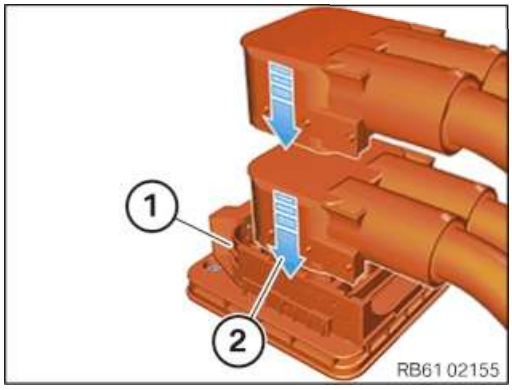
If the contact protection (1) has been pushed to the bottom (2), the high-voltage connector must be refitted.

If contact protection (1) remains in bottom position (2) after reinstallation, the contact protection is faulty and the component must be replaced!



Check the high-voltage connector (1) for damage.**Warning!**

In the event of damage to the high-voltage connector (1), the complete high-voltage cable must be replaced!



Connect the Kostal high-voltage connector:

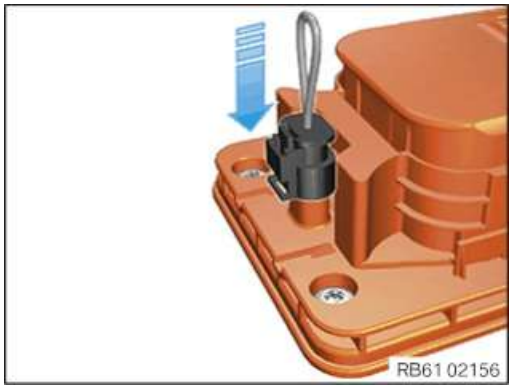
Connect the connector (2) in one single movement to the counter-housing.

Push the lock (1) fully to the rear.

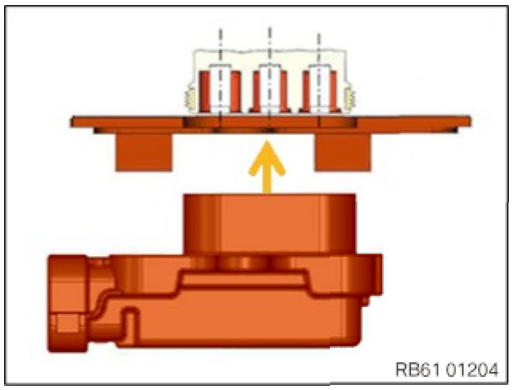
Attention!

Plug connection (3) must be correctly locked by lock (2), otherwise there is a risk of damage.

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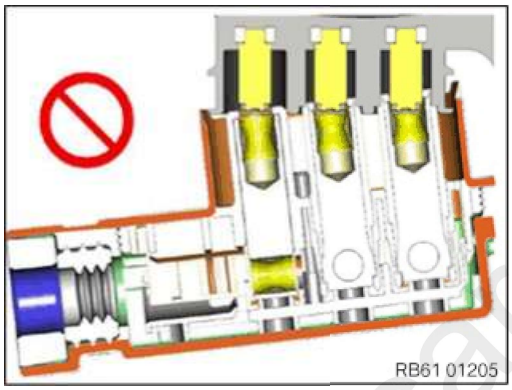


Connect the connector for the high-voltage interlock.



Three-phase high-voltage connector:

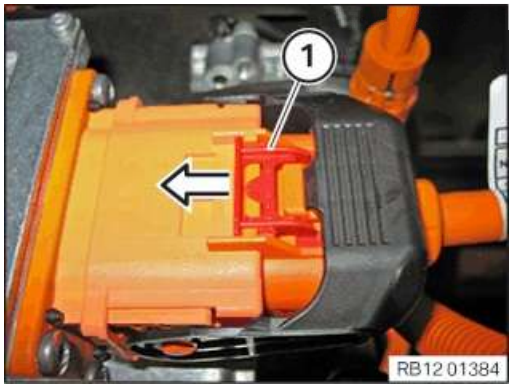
Connect and disconnect the connector straight.



Attention!

The system is designed to only offer limited protection against damage caused by connectors that are inserted at an angle.

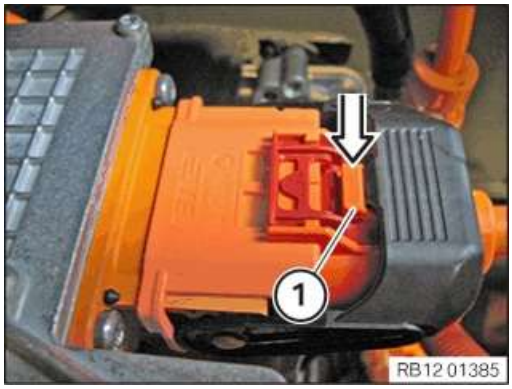
Increased tilted connections will increase the connecting force and the risk of danger.



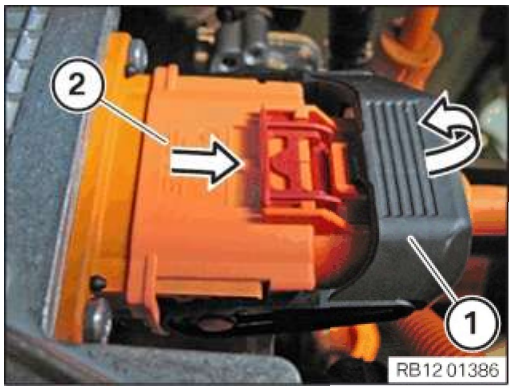
Disconnect the high-voltage connector from the high-voltage connection of the KLE:

Slide lock (1) in direction of arrow up to stop.

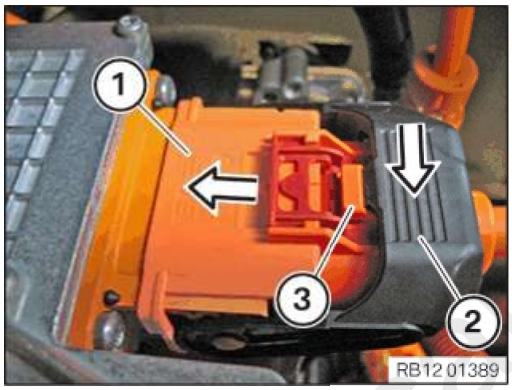
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Press lock (1).



Open the lock (1) completely and disconnect the connector (2).



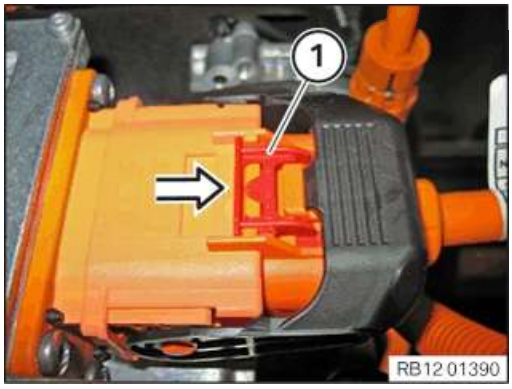
Connect the high-voltage connector to the high-voltage connection of the KLE:

Connect the connector (1) to the limit position and close the lock (2).

Attention!

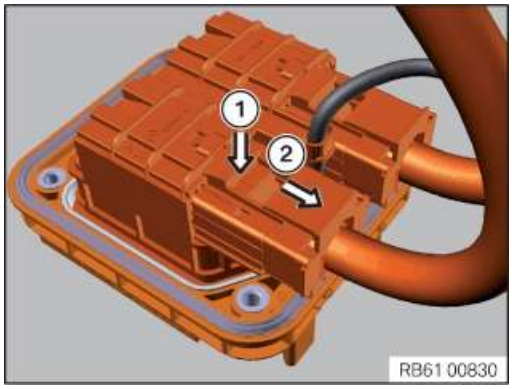
Lock (2) must snap audibly into place.

The retaining lug of the lock (2) must be positioned completely under the lock (2).



Slide the lock (1) on to the stop in the direction of the arrow.

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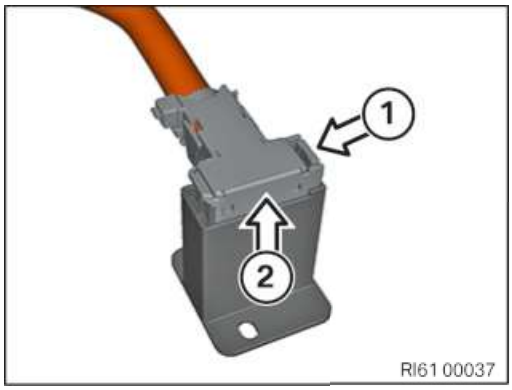
High-voltage connector on the high-voltage connection of the high-voltage battery unit:

Press down unlocking (1) in direction of arrow and pull off connector in direction of arrow (2).

Attention!

Contact protection is no longer provided in the event of a damaged connector housing.

In this case, contact technical support.



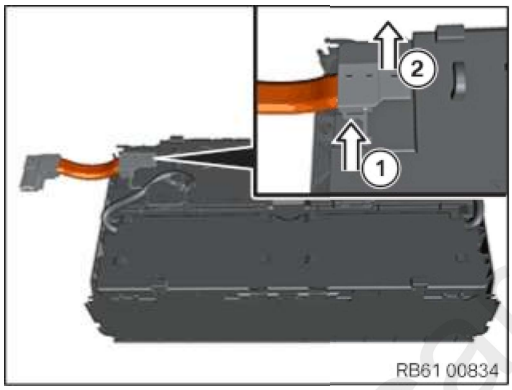
High-voltage connector on the cell module I01:

Press unlocking device (1) together and pull off connector upwards (2).

Attention!

Contact protection is no longer provided in the event of a damaged connector housing.

In this case, contact technical support.



High-voltage connector on the cell module (cell module connecting line):

Press unlocking (1) in direction of arrow and pull off connector in direction of arrow (2).

Attention!

Contact protection is no longer provided in the event of a damaged connector housing.

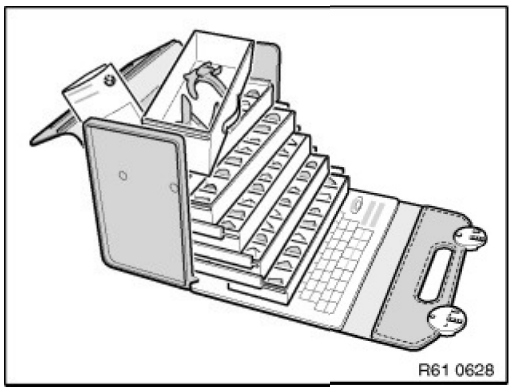
In this case, contact technical support.

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61 13 ... Wiring harness repair (special tools, butt connectors)

Special tools required:

- 61 0 300
- 61 0 400
- 61 1 100
- 61 4 320
- 61 0 200
- 61 0 210
- 61 0 220
- 61 0 230
- 61 0 240
- 61 4 340



Repair range for vehicle electrical system:

Single parts for wiring harness repairs*

* sourcing reference BMW Group Parts Department

Note:

- Refer to Service Information bulletin



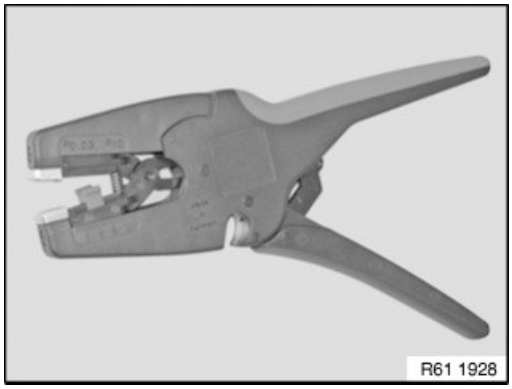
Release and press-out tool:

- Special tool61 0 300
- Special tool61 0 400
- Special tool 61 1 100 (*engine*)

<u>Handling:</u>

- Notes on opening contacts and locks of various connector systems

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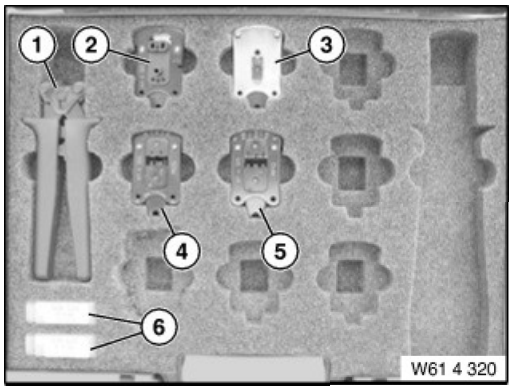
Cutting to length and stripping insulation from cables:

Wire stripper MultiStrip10*

*Sourcing reference BMW Workshop Equipment Catalogue

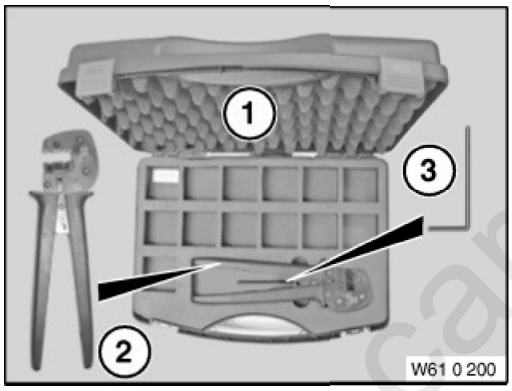
Handling:

- Cutting cables to length and strip insulation



Crimping stop parts (small contacts) and butt connectors:

- Special tool61 4 320
  1. Tool without crimping head
  2. Crimping head (stripping insulation and cutting fibre-optic cables to length)
  3. Crimping head (crimping fibre-optic cable contacts)
  4. Crimping head (crimping MQS contacts)
  5. Crimping head (crimping MPQ contacts)
  6. Replacement blade (face-cutting fibre-optic cables)
  7. Replacement blade with tool (insulation stripping unit)
  8. Universal crimping head (SI 2 04 06 293)



Crimping stop parts (large contacts) and butt connectors:

- Special tool 61 0 200 (crimping set)
- Special tool 61 0 210 (matrix set SLK 8)
- Special tool 61 0 220 (matrix set SLK 2.8)
- Special tool 61 0 230 (matrix set MAK 8 / DFK4)
- Special tool 61 0 240 (butt connector 4.0 - 6.0 mm²)

Handling:

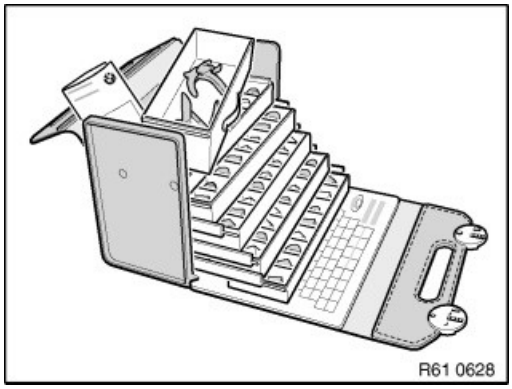
- Service Information bulletins
- Service Information bulletins



Important!

1. Identify cause of damage (e.g. sharp-edged body components, faulty electrical loads, jammed mechanisms, corrosion caused by ingress of water, etc.).
2. Reading out the fault memory
3. Eliminate cause of damage.
4. Disconnect battery negative terminal
5. Check the wiring diagram to make sure that no safety systems (e.g. antilock braking system, active rear axle kinematics, airbag, etc.) are influenced. Otherwise replace faulty wiring harness or use repair cable (sourcing reference: BMW Group Parts)
6. Carry out function check and read out fault memories again
7. Eliminate new faults if applicable and clear fault memories

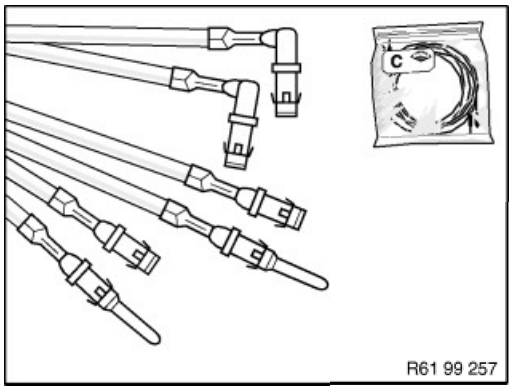
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Note:
The repair range IV for the vehicle electrical system contained the required special tools and separate components for retrofitting and repair work with the aid of comb connectors.

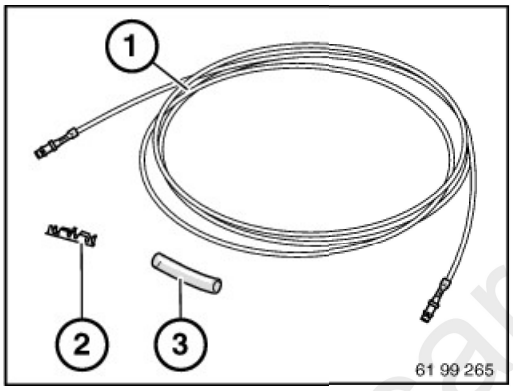
The case can no longer be ordered. Order separate components for wiring harness repair via BMW Group Parts.

- Refer to Service Information:



Choose repair kit.

Example: Repair kit, circular connector system D 2.5.

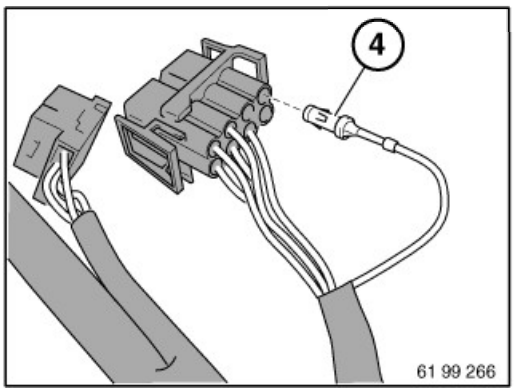


Remove following parts:

(1) Pre-packaged end of cable with requisite wire cross-section

(2) Crimp connector for selected wire cross-section

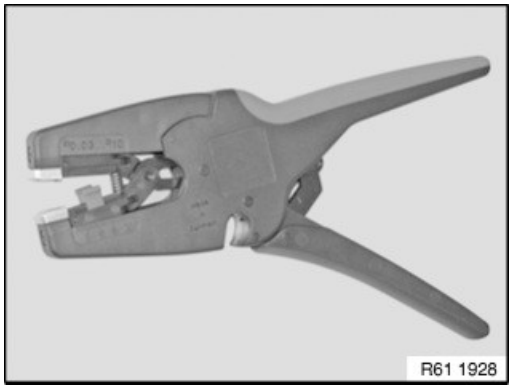
(3) Shrink-fit hose



Open secondary lock on housing.

Mark damaged contact (4) with socket number of housing and press it out of housing using appropriate special tool contained in special tool set61 0 300).

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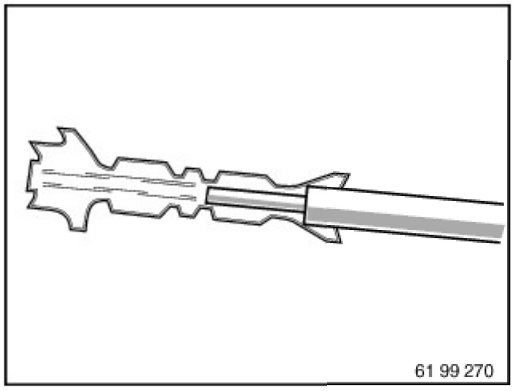
Important!

- Check maximum length of repair cable
- If more than one wire is to be repaired, the individual interfaces must be offset so that the wiring harness is not too thick at the repaired point.

Adhere to following procedure:

- Cut off wire with faulty contact at point which is easily accessible
- Strip insulation from end of wire at wiring harness end
- Cut preassembled wire end to length and strip insulation

Refer also to repair instruction:
Cutting to length and stripping insulation from cables

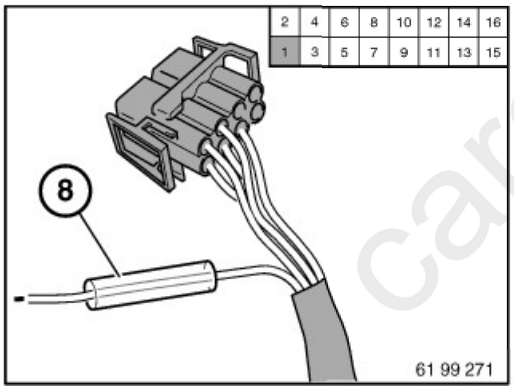


Crimp butt connector on preassembled wire end.

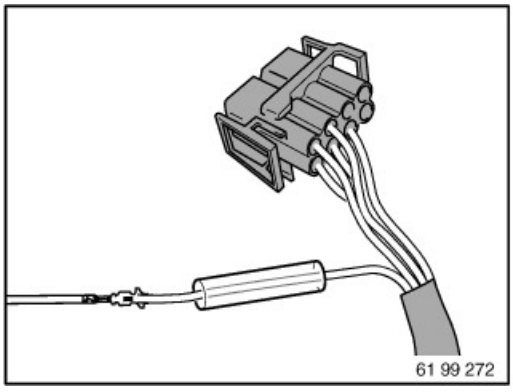
Special tools:

- 61 4 340 (0.35 - 2.5 sq mm)
- 61 0 240 (4.0 - 6.0 sq mm)

See repair instructions
Crimping on stop parts

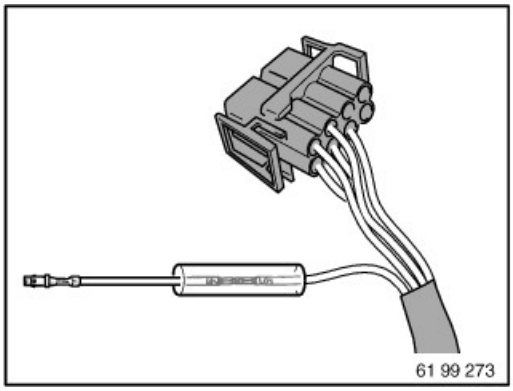


Push shrink-fit hose (8) onto free wire end.

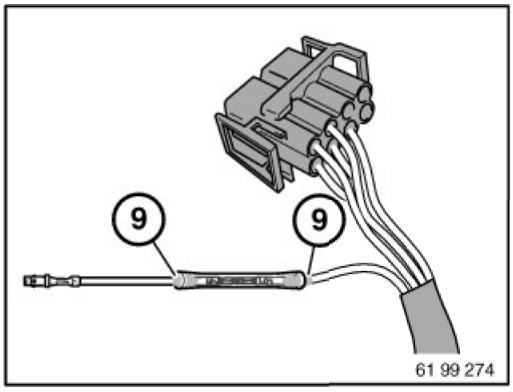


Crimp unused wire end using butt connector.

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Pull shrink-on sleeve over butt connector.



Important!

Do not burn shrink-on sleeve.

Using hot air blower, shrink heat-shrink tubing until adhesive is discharged uniformly at both ends (9) of heat-shrink tubing.

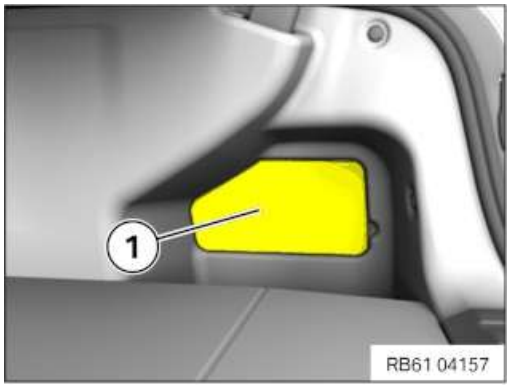
Insert contact *in* housing.

Close secondary lock on housing.

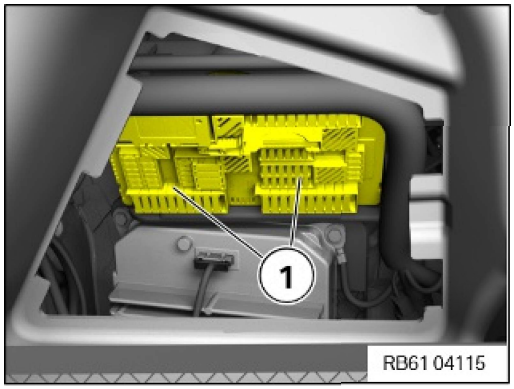
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61 14 002 Check/replace fuse

1 Checking the rear fuse on the power distribution box



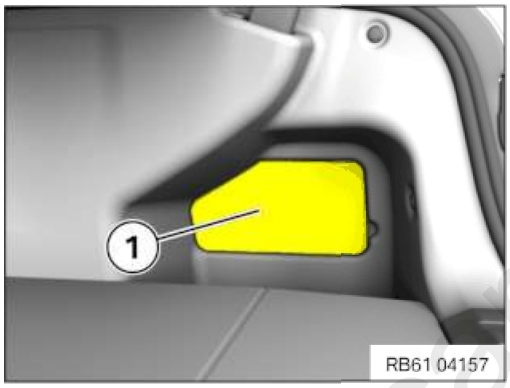
- Remove service flap (1) on the right side in the luggage compartment.



NOTICE

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

- Check and, if necessary, renew the rear fuse on power distribution box (1).



- Install the service flap (1).

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61 14 035 Rem.& install/replace power distribution box front positive battery cable

NOTICE

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

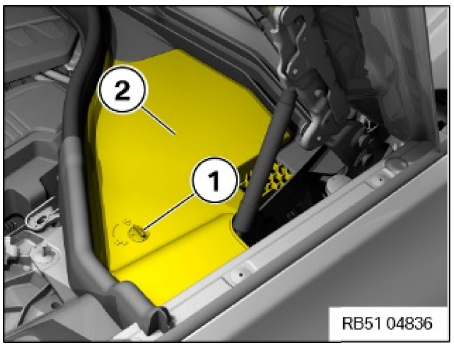
PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

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



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

3 – Removing both wiper arms

NOTICE

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

▸ **Remove the wiper arm**

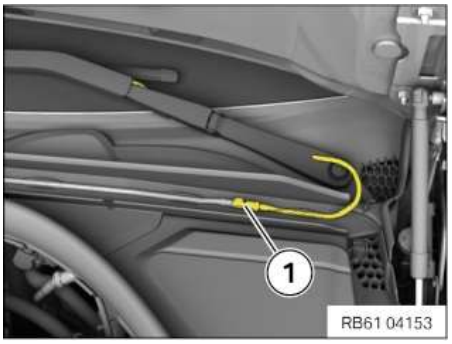
RISK OF DAMAGE

Damage to wiper console

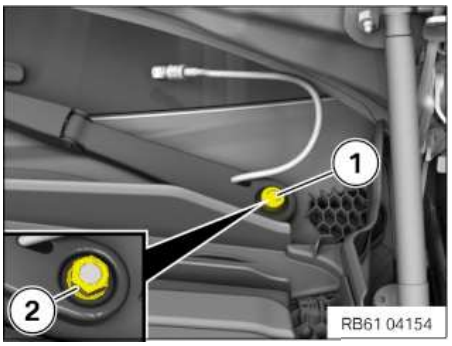
While removing the wiper arms without using special tool, the wiper console can break.

- 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.

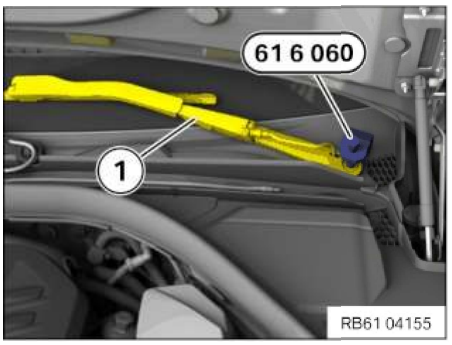
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- Disconnect the windscreen wash hose(1) at the separation point and remove from the cowl guide.

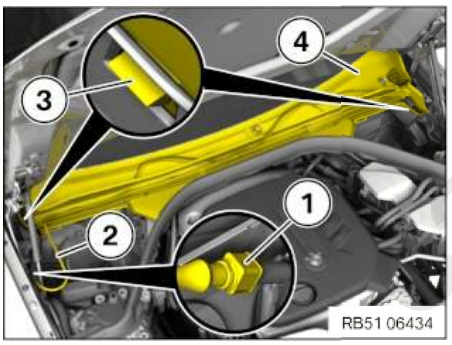


- Remove the protective cap (1).
- Loosen nut (2).

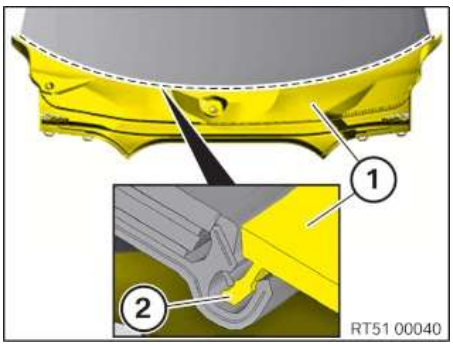


- Pull off the wiper arm (1) using special tool .

4 – 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.

5 – Remove the seal for the rear bonnet

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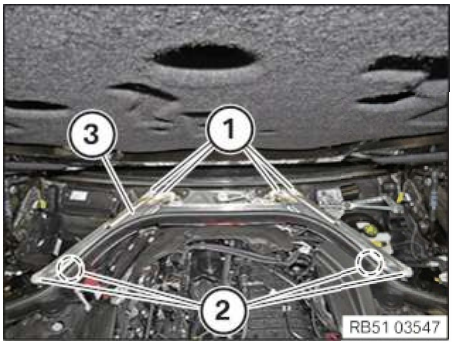


- Feed the cable (1) out of the brackets toward the front.
- Remove the rear bonnet seal (2) from the guide toward the inside.

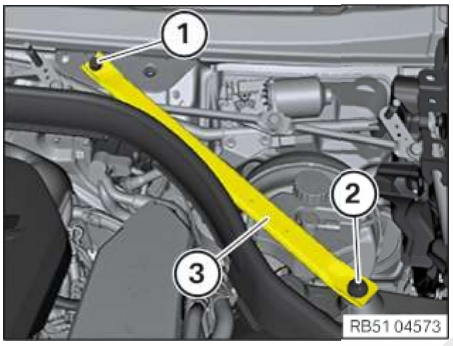
6 – Removing the centre bulkhead upper part

TECHNICAL INFORMATION

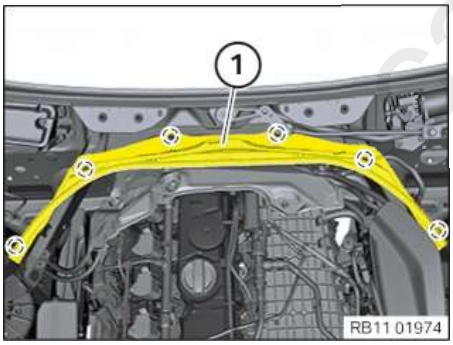
Driving without the strut brace/front end or tension strut is not permitted.



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



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

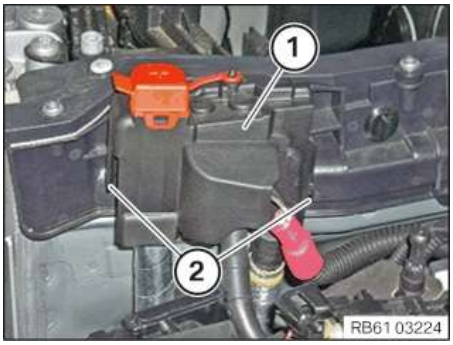


- Release the screws at the marked points.
- Remove the centre bulkhead upper part (1).

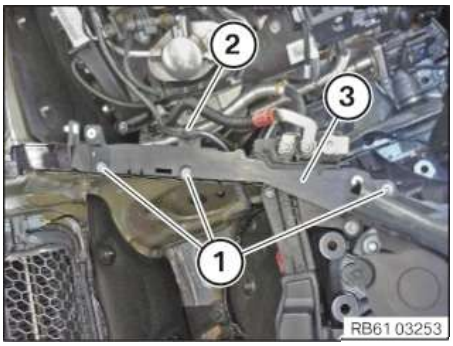
MAIN WORK

7 – Removing the power distribution box of the positive battery cable at the front

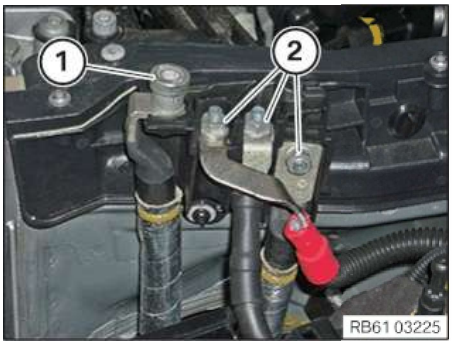
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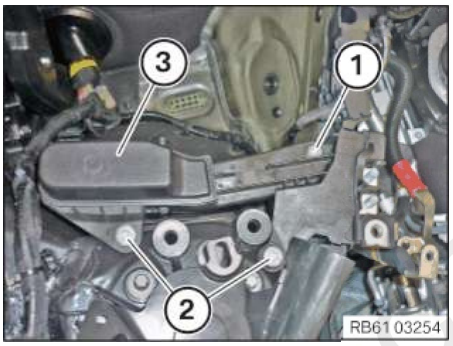
- Release cover (1) at the latch mechanisms (2).
- Remove the cover (1) in an upwards direction.



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



- Release the screw (1) and feed out the corresponding cable.
- Release nuts (2) and feed out the corresponding cable.



- Loosen screw (1).
- Loosen screws (2).
- Feed out the power distribution box (3) in an upwards direction.



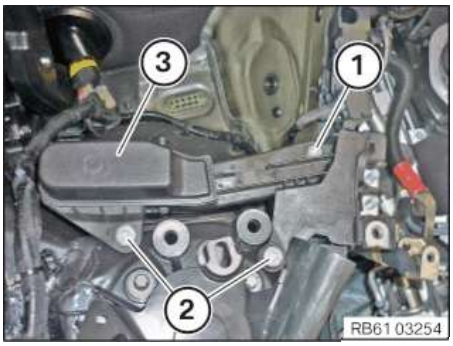
- Unlock and disconnect connector (1).
- Remove power distribution box (2).

8 – Installing the front power distribution box

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- Connect connector (1) to power distribution box (2) and lock.



- Position power distribution box (3) and thread in toward the bottom.
- Tighten the screws (2).

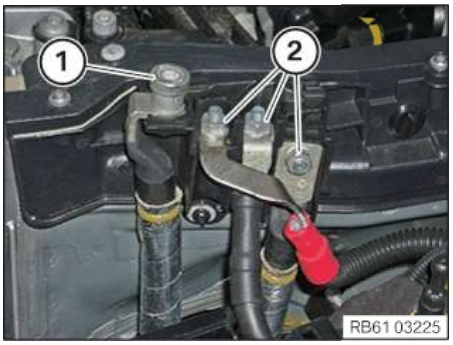
Power distribution box, front

M8x35 screw		Tightening torque	13 Nm

- Tighten down screw (1).

Power distribution box, front

Screw TS5x16			2.5 Nm



- Insert the corresponding cable and tighten the nuts (2).

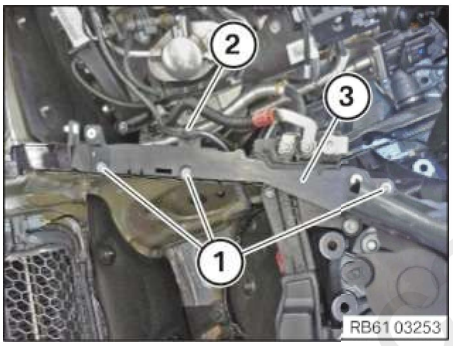
Positive battery cable

Flange nutM8		Tightening torque	15 Nm

- Insert the corresponding cable and tighten the bolt (1).
-

Positive battery connection point

Positive pole screw		Tightening torque	15 Nm

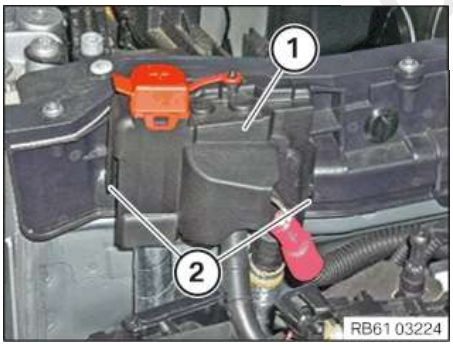


- Correctly position the cover (3) and tighten the screws (1).

Front power distribution box sealing frame

Bolt RF5x25		Tightening torque	2.5 Nm

- Secure the cable clips (2).



- Feed in the cover (2) in a downwards direction.
- The latch mechanisms (1) must be correctly locked.

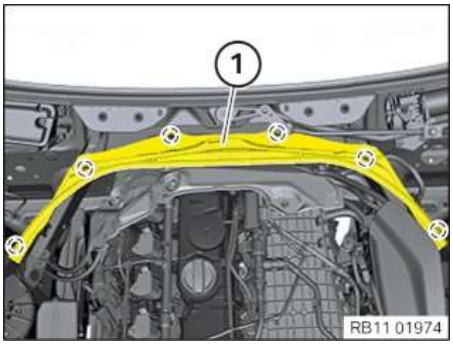
POSTPROCESSES

9 – Installing the centre bulkhead upper part

TECHNICAL INFORMATION

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

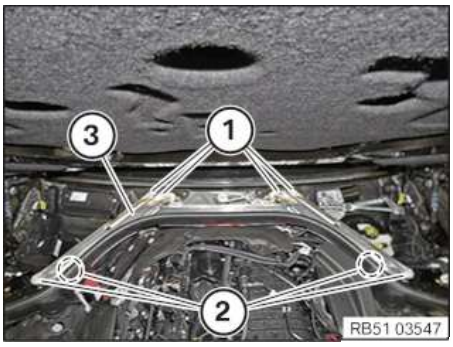
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- Position the centre bulkhead upper part (1).
- Tighten the screws in the marked area.

Bulkhead upper part to bottom bulkhead

		Tightening torque	3 Nm



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

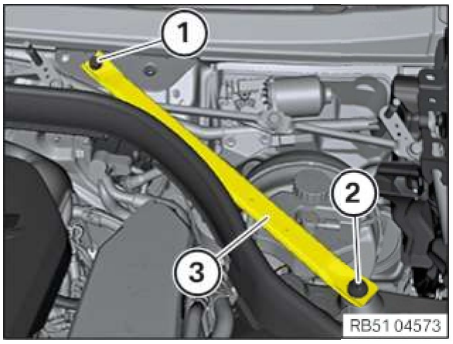
Tension strut on bulkhead

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 °



- **If installed:** Install tension strut on spring strut dome.
- **Version 2:**
- Install tension strut on spring strut dome (3).
- Tighten down screw (1).

Tension strut on bulkhead

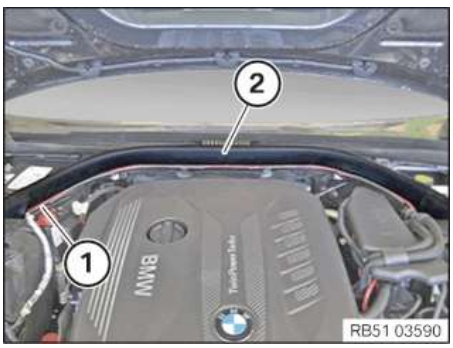
M10x25 screw		Tightening torque	56 Nm

- Renew the screw (2).
  Parts: Screw
- Tighten down screw (2).

Tension strut to spring strut dome

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

10 – 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.

11 – Installing cowl panel cover

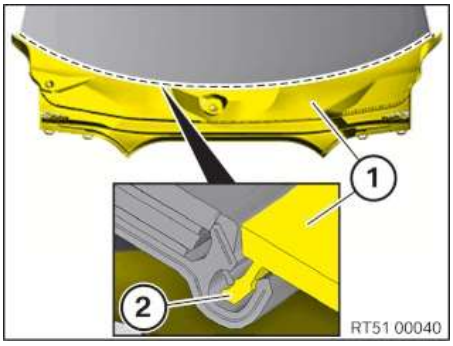
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RISK OF DAMAGE

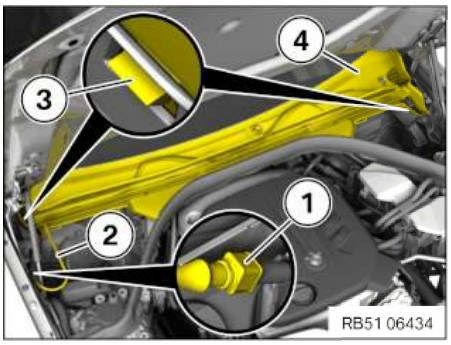
Damage caused by water ingress into the vehicle.

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.

12 – Installing both wiper arms

NOTICE

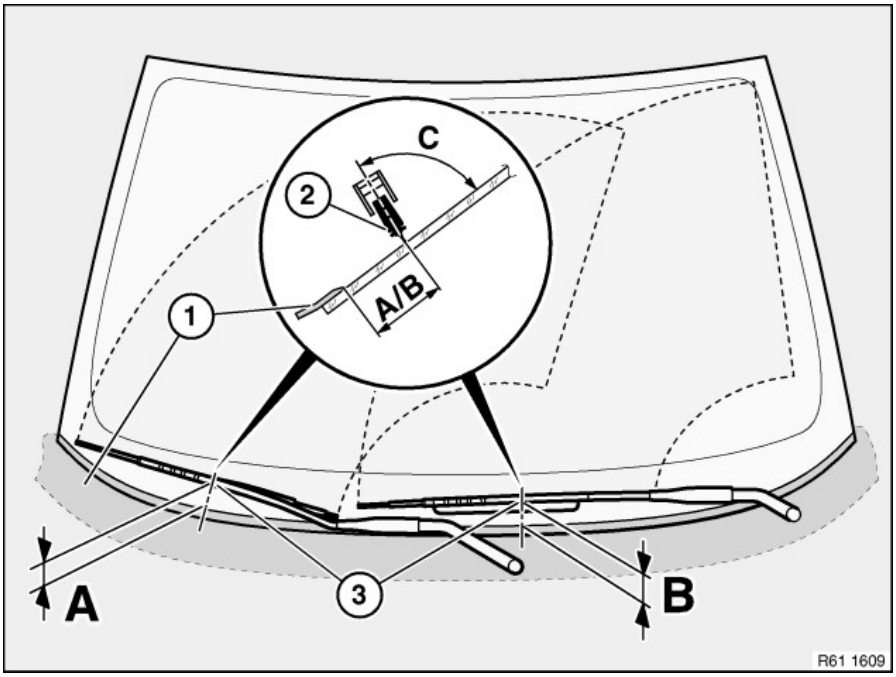
Description is for left component only. Procedure on the right side is identical.

▸ 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.

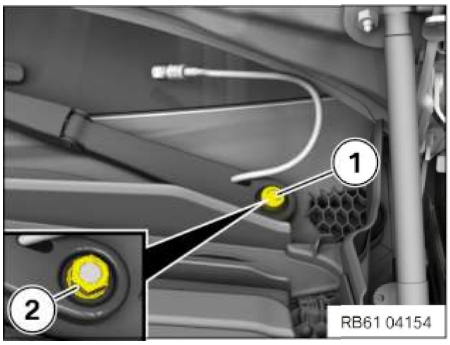
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- Connect the wiper arm (3).
- Correctly position the wiper arm (2) in relation to the window edge (1).

Distance from window pane edge to wiper blade

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

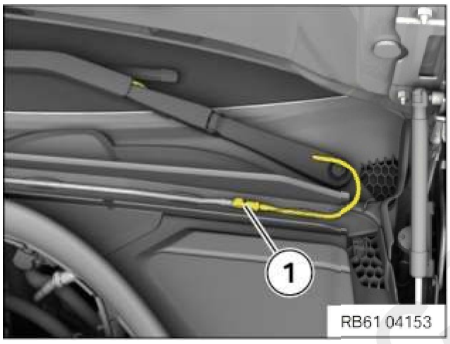


- Tighten nut (2).

Windscreen wiper arm

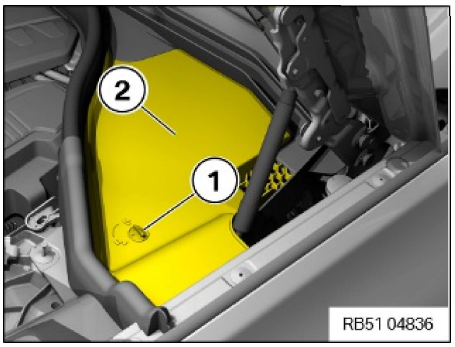
Combination hexagon nut		Tightening torque	35 Nm

- Connect the protective cap (1).



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

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



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

14 – Disconnecting all battery earth leads

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- See additional information.

Additional Information

Overview of Tightening Torques

Power distribution box, front			Used in step 8
M8x35 screw		Tightening torque	13 Nm

Power distribution box, front			Used in step 8
Screw TS5x16			2.5 Nm

Positive battery cable			Used in step 8
Flange nutM8		Tightening torque	15 Nm

Positive battery connection point			Used in step 8
Positive pole screw		Tightening torque	15 Nm

Front power distribution box sealing frame			Used in step 8
Bolt RF5x25		Tightening torque	2.5 Nm

Bulkhead upper part to bottom bulkhead			Used in step 9
		Tightening torque	3 Nm

Tension strut on bulkhead			Used in step 9
M10x25 screw		Tightening torque	56 Nm

Tension strut to spring strut dome			Used in step 9
Screw	Renew screws.	Jointing torque	56 Nm
		Angle of rotation	90 °

Windscreen wiper arm			Used in step 12
Combination hexagon nut		Tightening torque	35 Nm

Overview of Special Tools

Overview Technical Data

Distance from window pane edge to wiper blade	Used in step 12
Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	114
61 20 900 Disconnecting and connecting battery earth lead	114
61 20 900 Disconnecting and connecting battery earth lead	114

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61 20 900 Disconnecting and connecting battery earth lead 114
61 20 900 Disconnecting and connecting battery earth lead 114
61 20 900 Disconnecting and connecting battery earth lead 114
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads) 114
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads) 114
61 20 900 Disconnecting and connecting battery earth lead 114
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads) 114
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle) 114
61 20 900 Disconnecting and connecting battery earth lead 114
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61 14 010 Remove and install/replace power distribution box

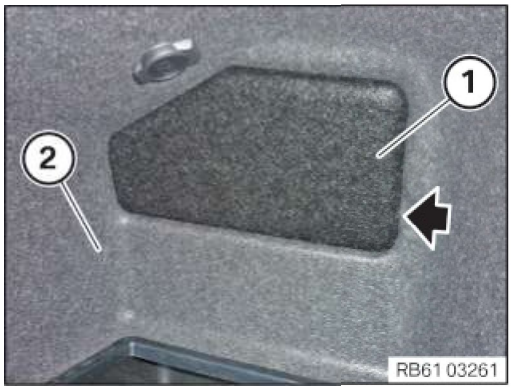
PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

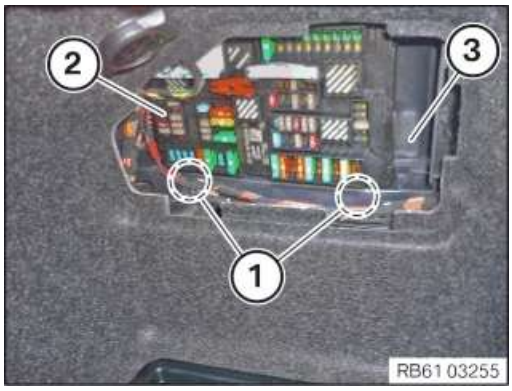
2 – Removing the flap in the luggage compartment wheel arch trim panel on the right



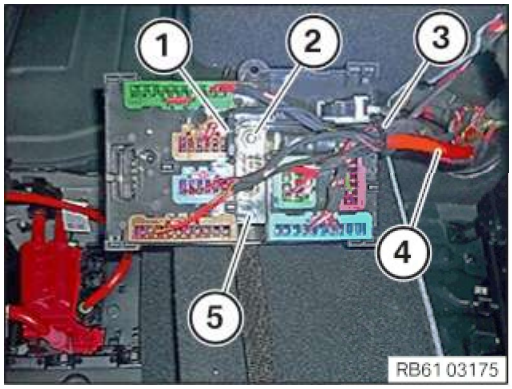
- Remove the flap (1) from the luggage compartment wheel arch trim panel on the right (2)

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3 – Removing the rear power distribution box

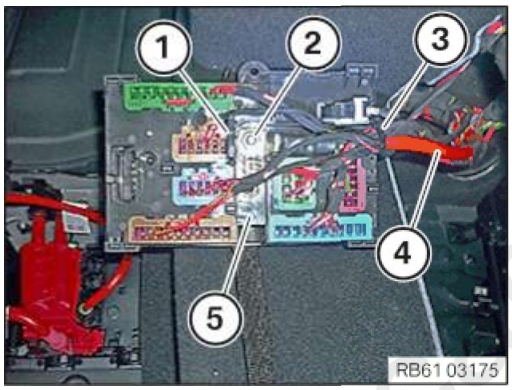


- Unlock latch mechanisms (1) and remove power distribution box (2) from holder (3).



- Open lid (1).
- Loosen nut (2).
- Release cable strap (3) on positive battery cable (4).
- Remove positive battery cable (4).
- Unlock and disconnect all connectors.
- Remove power distribution box (5).

4 – Installing the rear power distribution box

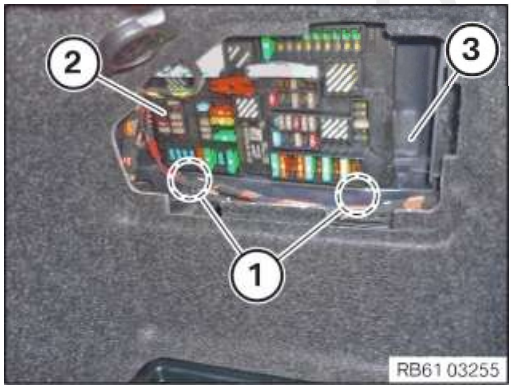


- Position the positive battery cable (4) on the power distribution box (5).
- Tighten nut (2).

Positive battery cable

Flange nutM8		Tightening torque	15 Nm

- Close lid (1).
- Renew the cable strap (3) on the positive battery cable (4).
- Connect all connectors and lock.

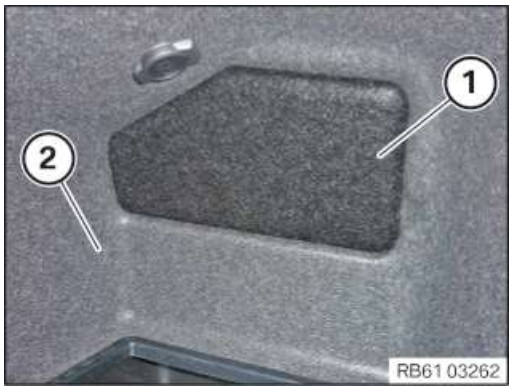


- Position power distribution box (2) correctly and engage it in bracket (3).

  The latch mechanisms (1) must engage correctly.

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5 – Installing the flap in the luggage compartment wheel arch trim panel on the right



- Position the flap (1) correctly in the right luggage compartment wheel arch trim panel (2) and install.

6 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Overview of Tightening Torques

Positive battery cable			Used in step 4
Flange nutM8		Tightening torque	15 Nm

Links

Repair instructions	**Used in step**
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	16
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	16

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61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
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61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
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61 20 900 Disconnecting and connecting battery earth lead	16

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61 14 040 Removing and installing/replacing rear power distribution box positive battery cable

PRELIMINARY WORK

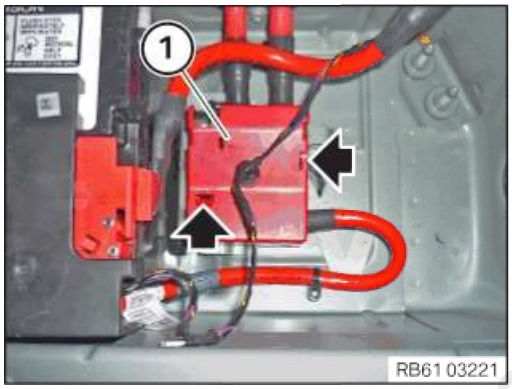
1 – Disconnecting all battery earth leads



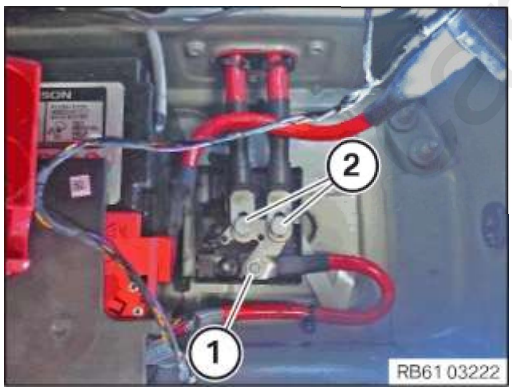
- See additional information.

MAIN WORK

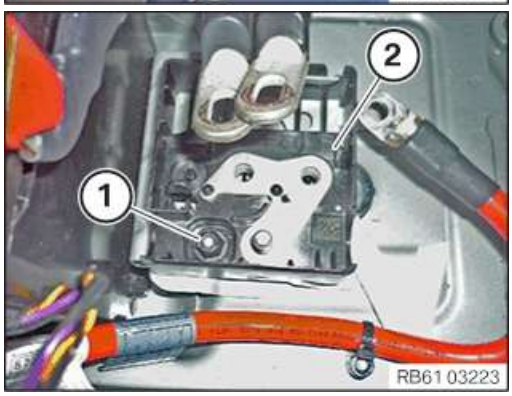
2 – Removing the low power distribution box



- Unclip the cover (1) from the latch mechanisms and put it aside.



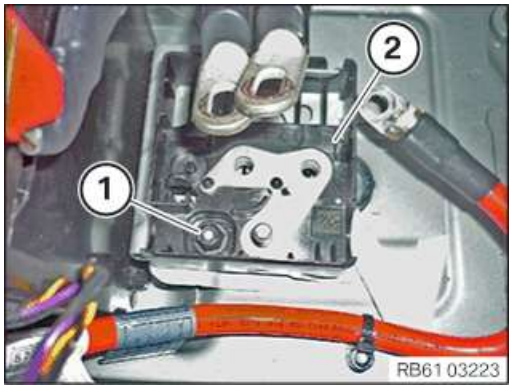
- Loosen nut (1).
- Remove positive battery cable and secure at side.
- Loosen screws (2).
- Remove positive battery cables and secure at side.



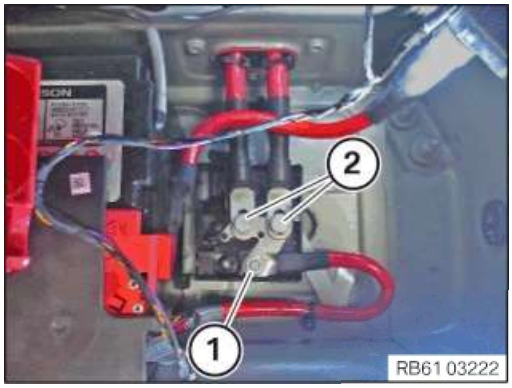
- Release the plastic nut (1).
- Remove the power distribution box (2).

3 – Installing the low power distribution box

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- Insert the power distribution box (2).
- Tighten plastic nut (1).

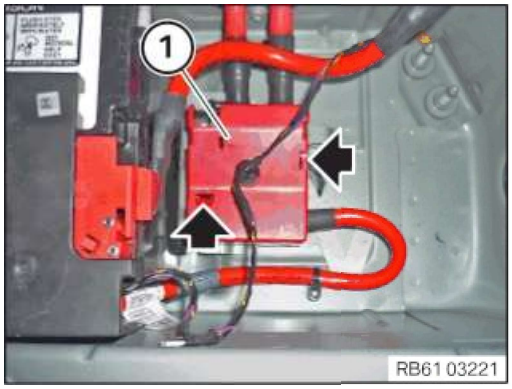


- Tighten the positive battery cable using the nut (1).

Positive battery cable

Flange nutM8		Tightening torque	15 Nm

- Tighten the positive battery cables using the screws (2).



- Clip in the cover (1).

POSTPROCESSES

4 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Overview of Tightening Torques

Positive battery cable Used in step 3

Flange nutM8		Tightening torque	15 Nm

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Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
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61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	14
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	14
61 20 900 Disconnecting and connecting battery earth lead	14
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61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
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61 20 900 Disconnecting and connecting battery earth lead	14

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61 14 041 Removing and installing/replacing rear power distribution box positive battery cable

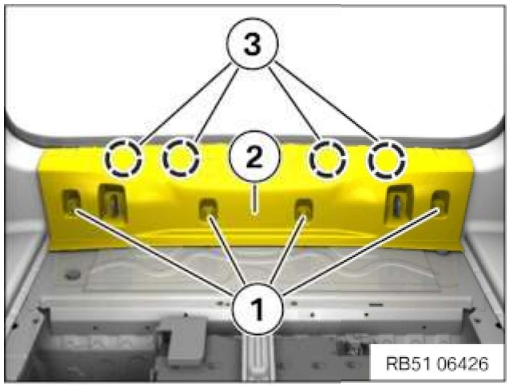
PRELIMINARY WORK

1 – Disconnecting all battery earth leads



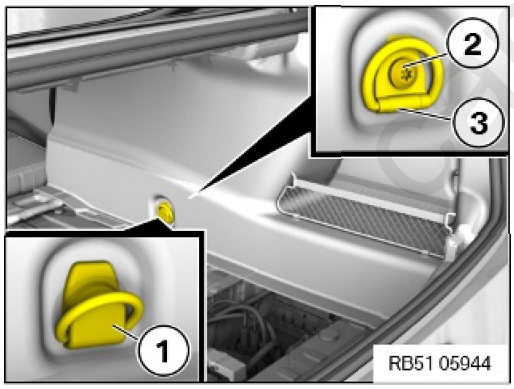
- See additional information.

2 – Removing the loading edge trim



- Loosen the expanding rivet (1).
- Unclip loading edge trim(2) upwards from latch mechanisms (3).
- Guide out and remove loading edge trim (2) under the sealing lip of the tailgate seal.

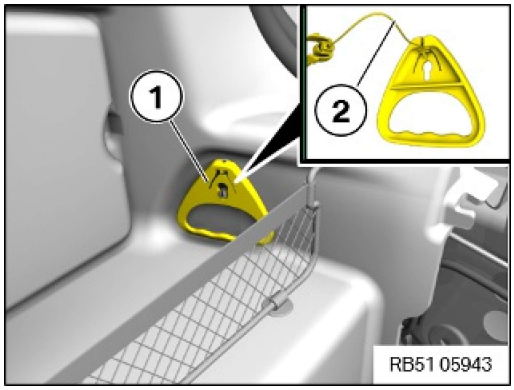
3 – Removing right luggage compartment wheel arch trim panel



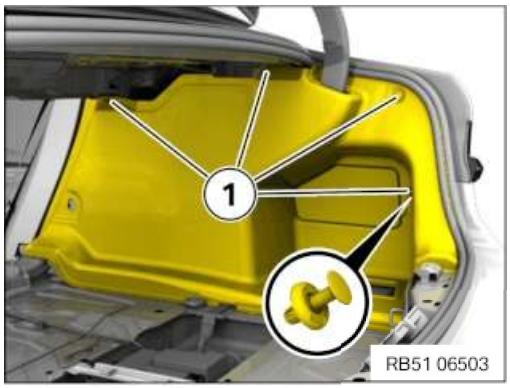
- Remove the cover (1).
- Loosen screw (2).
- Remove the lashing eye (3).

▸ If installed: Remove the emergency release handle for the tailgate (additional work in the US version)

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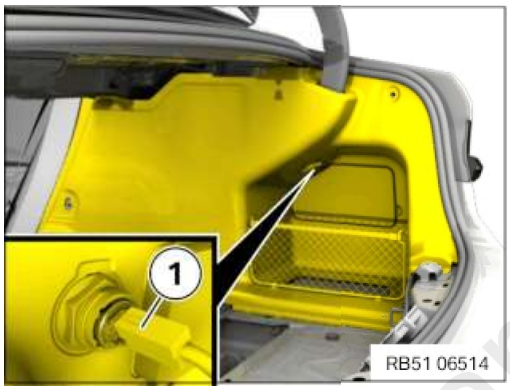


- Release the emergency release handle for tailgate (1) from the holder.
- Detach Bowden cable (2) and remove the emergency release handle for tailgate (1).

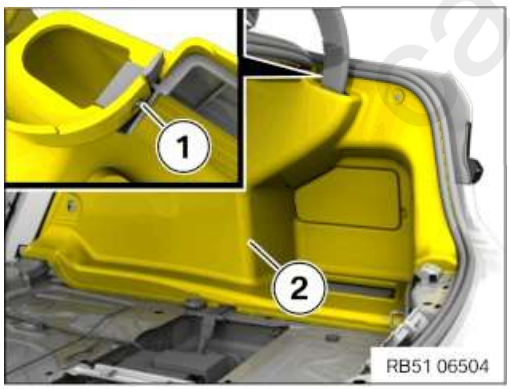


- Reposition the right rear seat backrest.
- Loosen the expanding rivet (1).

▸ If installed: Disconnect plug connection of the 12 V connection (additional work with storage package equipment specification)



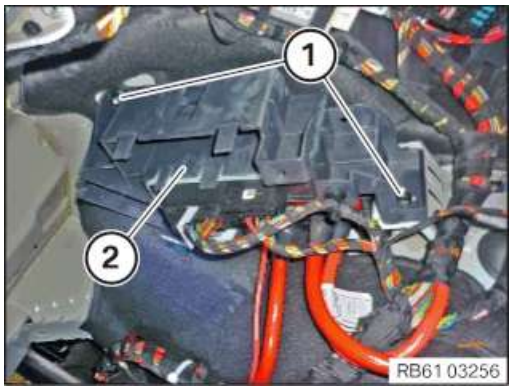
- Unlock and disconnect the plug connection (1) of the 12 V power socket.



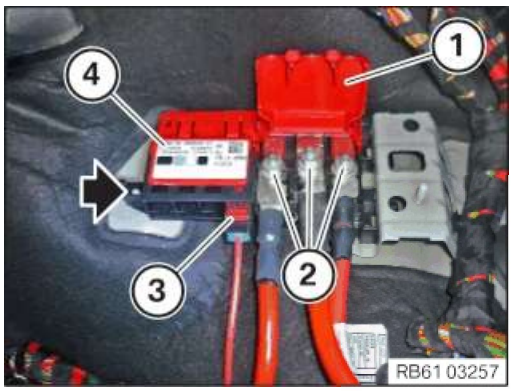
- Press the tab for luggage compartment wheel arch trim panel (2) on the outer side of the hinge to the front using the stop on trim (1).
- Guide out luggage compartment wheel arch trim panel (2) under the sealing lip for the tailgate and the side trim panel in the rear passenger compartment.
- Remove luggage compartment wheel arch trim panel (2).

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4 – Removing the rear power distribution box for the rear positive battery cable

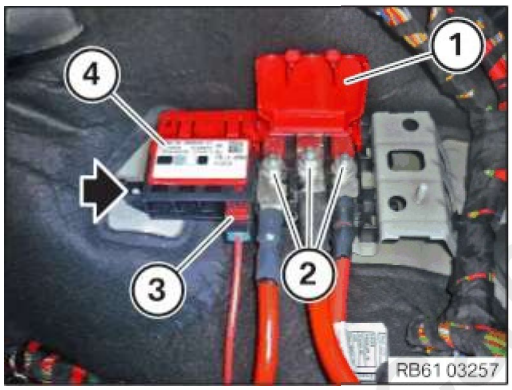


- Loosen nuts (1).
- Remove control unit holder (2).



- Unfold the cover (1).
- Release nut (2) and remove the associated positive battery cables.
- Unlock and disconnect connector (3).
- Release latch mechanism on marked point and remove the power distribution box (4).

5 – Installing the power distribution box for the positive battery cable at the rear

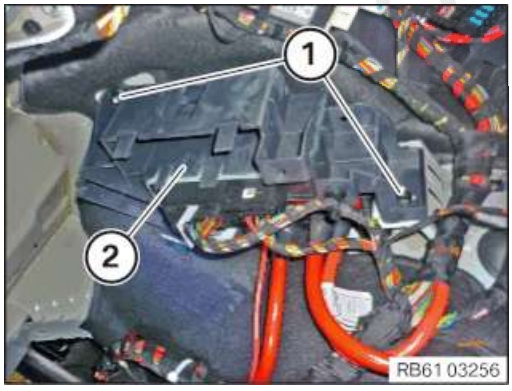


- Correctly position the power distribution box (4) and clip it in with the latch mechanism where marked.
- Connect connectors (3) and lock.
- Position the power distributor and tighten the nuts (2).

Positive battery cable

Flange nutM8		Tightening torque	15 Nm

- Close the cover (1).



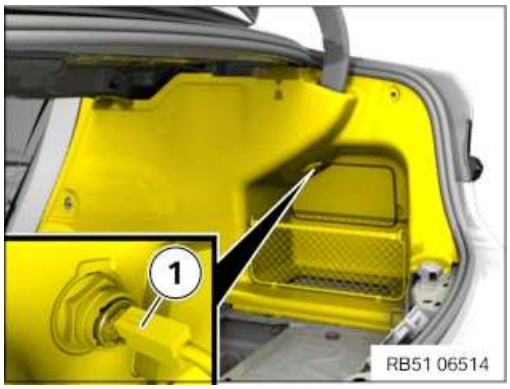
- Position the control unit holder (2).
- Tighten nuts (1).

Control unit holder

Plastic nut with flange		2,6 Nm

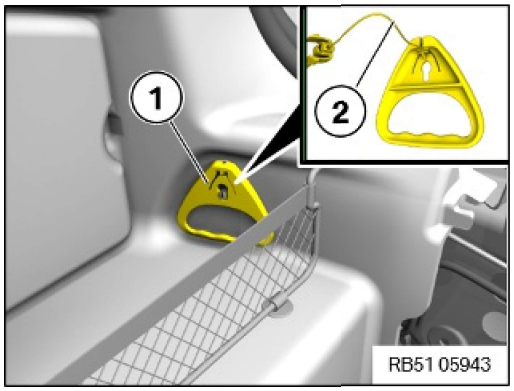
6 – Installing the luggage compartment wheel arch trim panel on the right

▶ If installed: Connecting plug of the 12 V power socket (additional work for equipment specification with storage package)

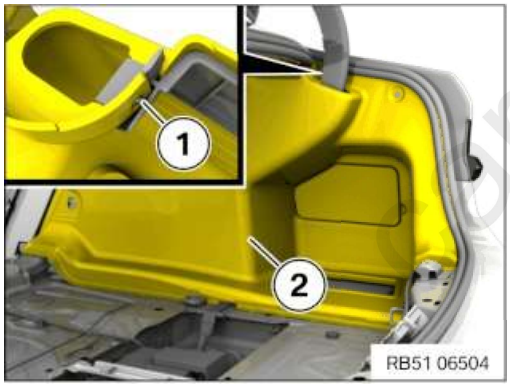


- Connect and lock connector (1) of the 12 V power socket.

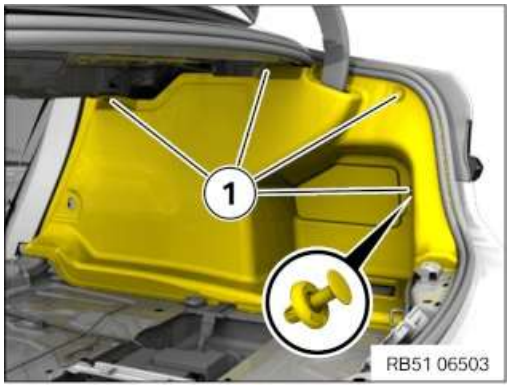
▶ If installed: Installing the emergency tailgate release handle (additional work for US version)



- Attach the Bowden cable (2).
- Fasten emergency tailgate release handle (1) to the bracket.

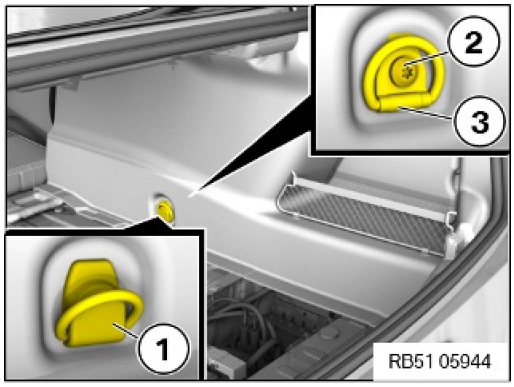


- Feed luggage compartment wheel arch trim panel (2) under the side trim panel in the rear passenger compartment and the sealing lip for the tailgate.
- Feed the tab of the luggage compartment wheel arch trim panel (2) on the outer side of the hinge into the stop on the trim (1).



- Secure expanding rivet (1).
- Raise the right rear seat backrest.

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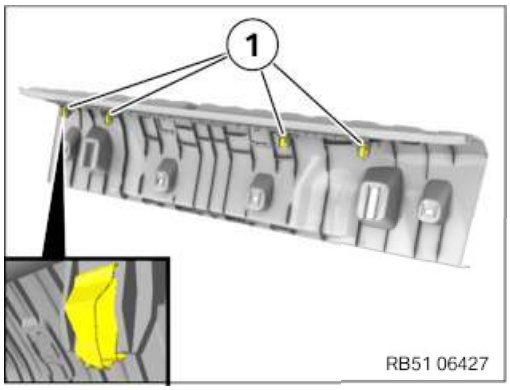
- Position the lashing eye (3).
- Tighten down screw (2).

Lashing eye to body

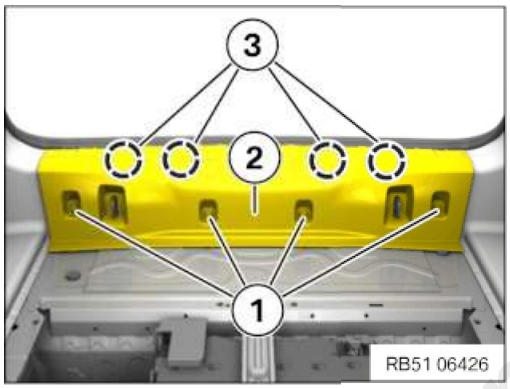
	Tightening torque	19 Nm

- Install the cover (1).

7 – Installing loading edge trim



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



- Insert the loading edge trim (2) under the sealing lip of the tailgate seal.
- Fit the trim of the loading edge (2) at the latch mechanisms (3) and clip it in to the bottom.
- Secure expanding rivet (1).

8 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Overview of Tightening Torques

Positive battery cable Used in step 5

Flange nutM8		Tightening torque	15 Nm

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Control unit holder		Used in step 5
Plastic nut with flange		2,6 Nm

Lashing eye to body		Used in step 6
	Tightening torque	19 Nm

Links

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
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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 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

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61 25 ... Assessment of the transportability of the 12 V lithium ion starter / auxiliary battery in service workshops

Initiating:

For analysis and disposal purposes, it is necessary to transport the already used starter batteries. These lithium ion based starter batteries are to be classified as hazardous material according to UN 38.3, and may only be transported under particular prerequisites.

Obtaining the certified transportability between the assessment and delivery of the starter / auxiliary battery to the disposal/transportation company is the responsibility of a qualified person. For shipping one also needs to take into account the influence of the storage requirements and other possible occurring events for the determined transportability. If there is a possibility that previously certified transportability is no longer valid, it must be reassessed using the guideline.

The transport in the sense of the hazardous goods legislation is organised in three areas:

1. Assessment of the transportability
2. Transport preparation
3. Performing the transport

This document contains all the necessary information in order to assess the transportability of a used 12 V lithium ion starter / auxiliary battery. The transport preparation and execution is **not** an element of this document.

Further information on this can be found in the information bulletin in the ASAP.

It will be explained which measures are necessary in order to assess the transportability. How these measures are to be performed individually depends on the particular situation at the location and is not an element of this document. These procedures are to be defined according to the local regulations / laws and recorded as valid local work instructions.

Prerequisites from a security perspective:

It should be noted that working on the open battery is prohibited.

The analysis , assessment and certification of the transportability of the 12 V lithium ion starter / auxiliary battery is the responsibility of a qualified person.

The following specifications for work safety must also be observed:

Storage of the lithium ion starter / auxiliary battery

The following points should be noted for reasons work safety point:

The battery must always protected against short circuit (cover the terminals).

The information for this can be found in the information bulletin in the ASAP.

Note: For better traceability, this document must be printed out and archived with the vehicle data.

Assessment of the 12 V lithium ion starter / auxiliary battery

NAME	Date	Serial no.	VIN

Signature: ----------

The electrical assessment of the 12 V lithium ion starter / auxiliary battery takes place via the diagnosis and test module.

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Transport preventing faults according to the diagnosis or the test module	Yes	No

Visual assessment:

Smoke	Yes	No
Evidence of fire damage	Yes	No
Heat development	Yes	No
Deformations, changes (scratches up to 0.5 mm deep or 5 cm long are permitted)	Yes	No
Cracked or broken housing	Yes	No
Electrolyte odour	Yes	No
Noise generation	Yes	No
Loose connections, loose or damaged	Yes	No
Serial number/label safety information cannot be read	Yes	No
DMC code is not readable or no functional LIN communication can be established	Yes	No
Suspected water damage	Yes	No

The serial number must be clearly legible. If the type plate can no longer be read, the housing of the 12 V lithium ion starter / auxiliary battery must be clearly marked with the serial number.

The label of the safety information must be replaced if it is illegible.

The electrical and visual assessment must be set down in writing!

If one or more points is/are answered with yes the following procedure must be clarified by technical support! Furthermore, the removed 12 V lithium ion starter / auxiliary battery must be blocked off with high-voltage barrier tapes. If a 12 V lithium ion starter / auxiliary battery is still located in the vehicle, the vehicle must be parked in the open.

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61 00 ... Battery charging calendar

Battery charging calendar 2016 (PDF file)

Battery charging calendar 2017 (PDF file)

Battery charging calendar 2018 (PDF file)

Battery charging calendar 2019 (PDF file)

Information for the battery charging calendar

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61 00 ... Battery log form

Battery log form 2016

Battery log form 2017

Battery log form 2018

Battery log form 2019

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61 20 908 Carrying out vehicle battery "power reset"

1 Carrying out a voltage interruption of the 12-V battery

TECHNICAL INFORMATION

The voltage interruption is carried out with the diagnosis system via the specified path.

- 03 Body
- Voltage supply
- Activate rest state
- Power-down command

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61 20 900 Disconnecting and connecting battery earth lead

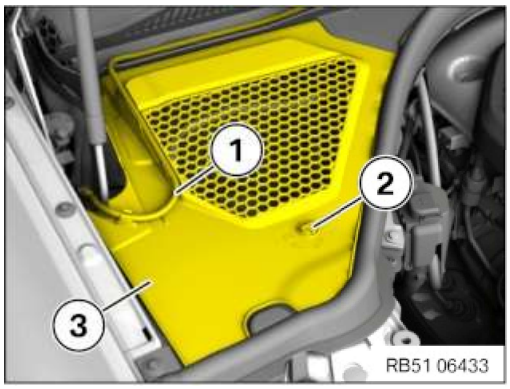
WARNING

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.

1 – 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).

2 – Disconnecting the negative auxiliary battery lead in the engine compartment

Check

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

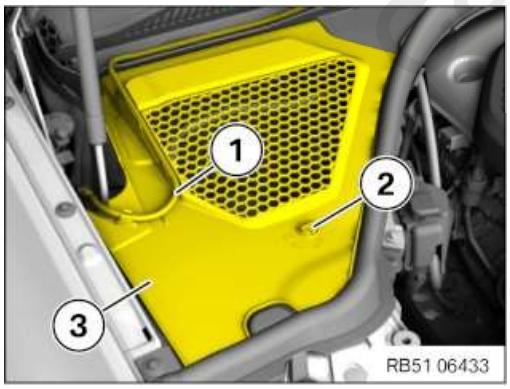
Result

» Auxiliary battery is not installed in the engine compartment

Measure

- Install the rear right engine compartment 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.

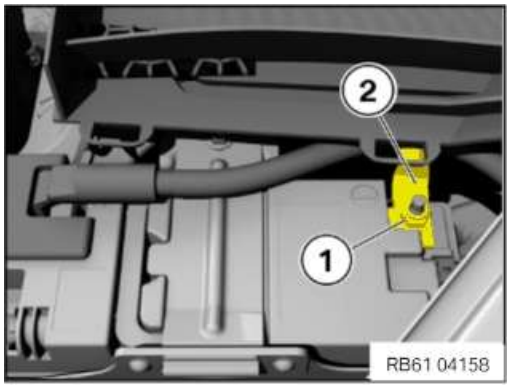
Result

» 12-V dual storage system is installed.

Measure

- Disconnect the negative battery cable of the 12 V dual storage system

▸ Disconnect the negative battery cable of the 12V dual storage system



TECHNICAL INFORMATION

Follow notes for 12 V dual storage system.

See additional information 6120 ... Notes on the 12 V dual storage system.

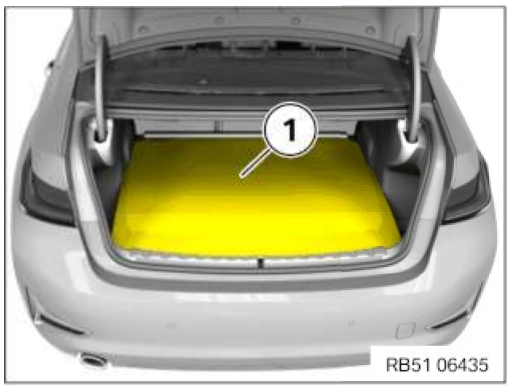
NOTICE

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

- Unfasten nut (1).

  The nut (1) is non-detachable and connected with the negative battery cable of the 12-V dual storage battery (2).
- Disconnect negative battery lead of the 12-V dual storage battery (2) from the negative battery terminal, set to one side and secure.

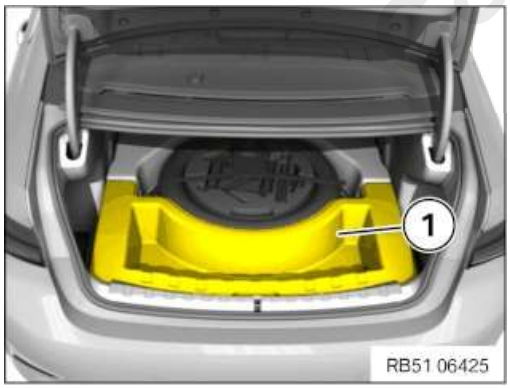
3 – Removing the luggage compartment floor trim panel



- Remove luggage compartment floor trim panel (1).

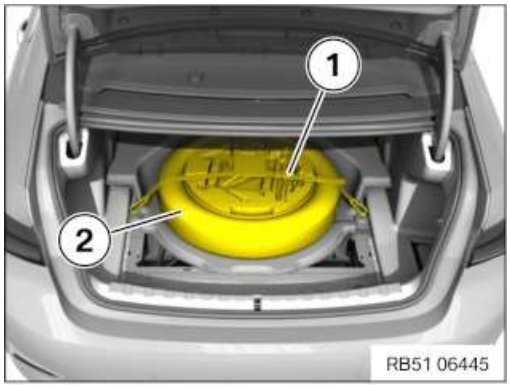
4 – If installed: Removing the compact spare wheel

▶ **Removing rear luggage compartment well**



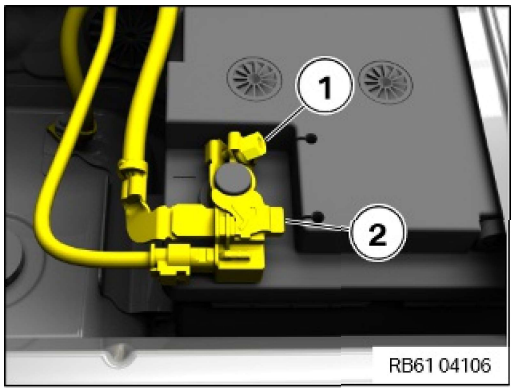
- Remove rear luggage compartment well (1).

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- Open buckle on seat belt strap (1) and set it aside.
- Remove emergency wheel (2) with the insert.

5 – Disconnecting the negative battery cable of the system battery



RISK OF DAMAGE

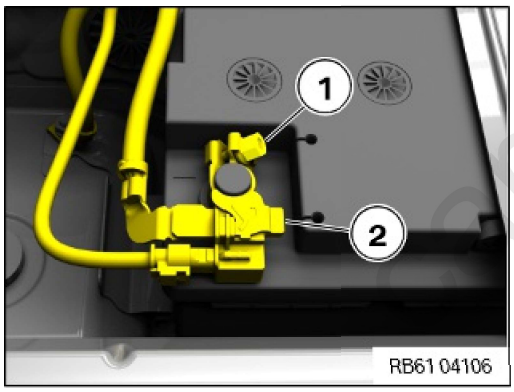
Damage to battery terminal, the safety battery terminal or the intelligent battery sensor (IBS).

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.

- Loosen nut (1).
- Remove negative on-board electrical system battery lead (2) from the negative battery terminal, place to one side and secure.

6 – Connecting the negative battery cable of the system battery

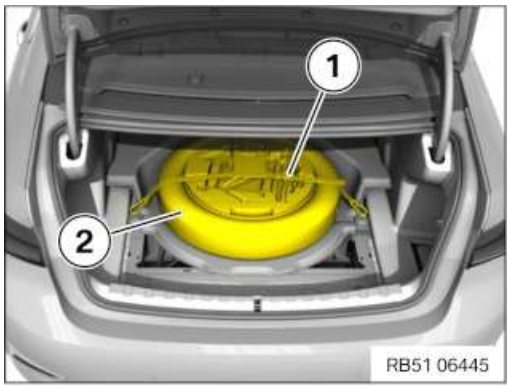


- Position negative battery cable of the system battery (2) on the negative battery terminal as shown.
- Tighten nut (1).

Negative battery terminal

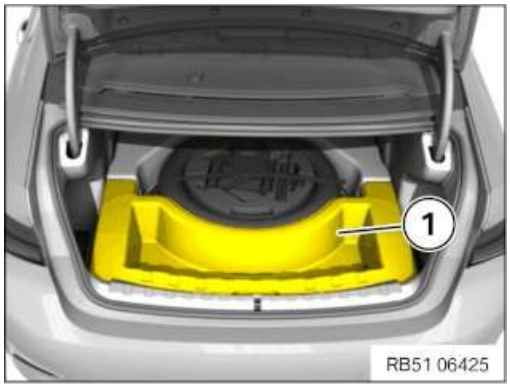
Nut		Tightening torque	5 Nm

7 – If installed: Install the emergency wheel



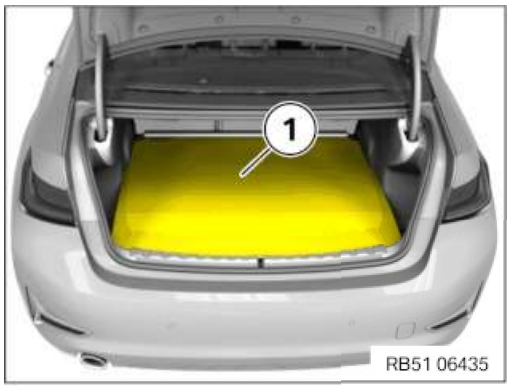
- Install the emergency wheel (2) with the insert.
- Position the seat belt strap above the emergency wheel and close the buckle on the seat belt strap (1).

▸ **Installing rear luggage compartment well**



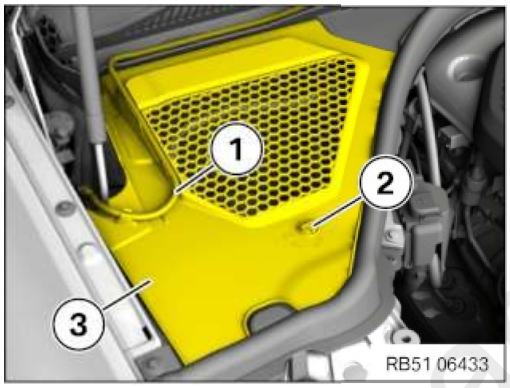
- Install rear luggage compartment well (1).

8 – Installing the luggage compartment floor trim panel



- Insert the luggage compartment floor trim panel (1).

9 – 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).

10 – Connect the negative battery lead of the auxiliary battery in the engine compartment

Check

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

Result

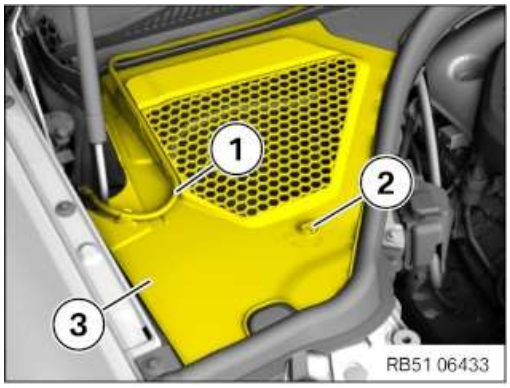
» Auxiliary battery is not installed in the engine compartment.

Measure

- Install the rear right engine compartment cover.

▸ Install the rear right engine compartment cover

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

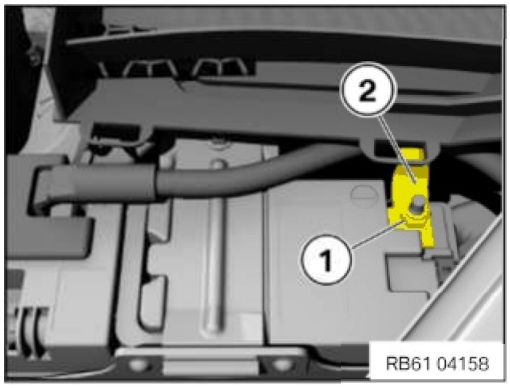
Result

» 12 V dual storage system is installed.

Measure

- Connecting negative battery cable of 12-V dual storage system

▸ **Connecting negative battery cable of 12-V dual storage system**



TECHNICAL INFORMATION

Follow notes for 12 V dual storage system.

See additional information 6120 ... Notes on the 12 V dual storage system.

NOTICE

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

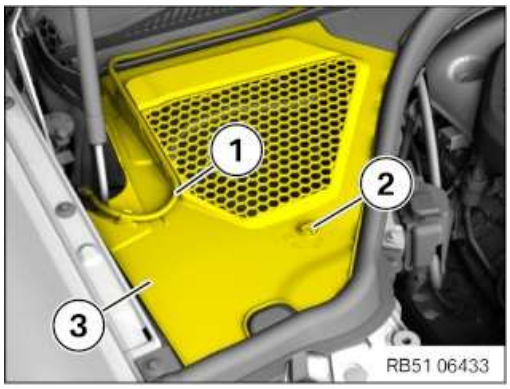
- Release negative battery cable of the 12- V - dual storage system (2) release from the fixture.
- Position the negative battery cable of 12-V dual storage system (2) as shown on the negative battery terminal.

  The nut (1) is connected to the negative battery cable of the dual storage battery (2) in a way that it cannot be lost.
- Tighten nut (1).

Negative battery terminal 12V dual storage system

Nut		Tightening torque	19 Nm

11 – 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.

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Additional Information

Overview of Tightening Torques

Negative battery terminal			Used in step 6
Nut		Tightening torque	5 Nm

Negative battery terminal 12V dual storage system			Used in step 10
Nut		Tightening torque	19 Nm

Links

Repair instructions (PRE)	Used in step
Instructions for 12 V dual storage system	210

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61 12 ... Information on intelligent battery sensor (IBS)

Notice! Do not connect the charger to the 12 V charging socket

The 12 V charging socket is supplied with voltage by the rear power distribution box via relay. This relay drops out after terminal 15 OFF. This means that a trickle charger connected at the 12 V charging socket will be disconnected from the battery. Only charge the battery via the jump start terminal point. Only then can the voltage supply be registered by the vehicle.

Warning! Danger of destruction in event of mechanical strain

- Do not introduce any additional connections at the battery negative terminal.
- Do not modify the grounding cable. The ground cable also serves heat dissipation.
- Do not establish any connection between the IBS and the sensor screw.
- Do not use force when disconnecting the pole shoe from the battery terminal:
  - Do not pull on the ground cable.
  - Do not place any tools under the IBS to lever off the pole shoe.
- Do not use IBS connections as levers.
- Use a torque wrench and set tightening torque in accordance with repair instructions.
- Do not release or tighten down sensor screw (Torx screw).
- Avoid contact between IBS and ground.

Warning! Danger of destruction to IBS and wiring upon battery replacement

- The IBS and wiring can be destroyed by mechanical strain upon battery replacement. Therefore avoid mechanical strain.
- The size (capacity) of the battery required for the car is coded in the Car Access System (CAS).
- Use the battery size (capacity) installed as standard upon battery replacement.
- Recode the Car Access System (CAS) when installing a battery with a different capacity.
- Register battery replacement via Service functions in diagnosis system.
- Delete fault code entries in the Digital Engine Electronics (DME) associated with battery replacement.
- Always proceed in accordance with the repair instructions.

Note: Battery draining possible in spite of the intelligent battery sensor IBS being fault-free.

- A battery can be drained (e.g. with lights or radio switched on) even when the IBS functions perfectly in conjunction with power management.
- **For this reason, only exchange the IBS when there is a corresponding fault code entry!**

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61 00 ... Information on removing, connecting and changing the battery

Observe safety informations for handling vehicle battery.

Disconnecting the battery

Before disconnecting battery:

Turn off the ignition and other electrical loads/consumers to prevent sparking when reconnecting.

Note:

If the ignition is not turned off when the battery is disconnected, fault memories may be set in some control units.

Important!

- There is a danger of mixing up battery cables: If the battery positive and negative leads are the same colour and you are in doubt, follow the polarity to the battery, then mark and cover the leads.
- The on-board computer and clock may lose your data.

General notes on disconnecting battery:

- Do not disconnect battery leads and leads from alternator and starter motor while engine is running.
- Disconnect terminal of battery earth lead from the battery. Cover battery negative terminal(s) and secure.
- Disconnect both battery earth leads in versions with an auxiliary battery. Cover battery negative terminal(s) and secure.
- When work is carried out on the electrical system, faults may be caused in the fault memories of some control units when the battery is connected.
- When installing battery terminal: Tightening torque 61 21 1AZ.

AGM battery only:

- On vehicles with IBS at negative battery terminal:
  Do not under any circumstances pull/lever off pole shoes by force.
  Do not under any circumstances release the hexagon socket screw of the IBS.

Connected battery

After connecting battery:

Important!

The scope of application of some systems may be restricted after an open circuit.

Personal Profiles may also be lost.

Settings or activations must be carried out, depending on the equipment specification.

For example:

- Activate slide/tilt sunroof, if necessary
- Activate power window, if necessary

Refer to the diagnosis system for further vehicle-specific information.

Battery replacement

A vehicle battery is constructed for the installation location and the individual power requirements of the particular vehicle. These individual power requirements depend on the motorisation and different types of

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equipment. The individually assigned vehicle battery is the ideal compromise between the power requirements of the vehicle electrical system and the weight and service life of the vehicle battery.

Vehicles with the automatic engine start-stop function or particular engine types and optional equipment are equipped with a special vehicle battery (AGM battery), since only this battery type can provide elevated power requirements over the extended service life. Installing a different vehicle battery can cause problems with vehicle electronics, can reduce functions or can cause leakage of battery acid.

In the event of an accident where the airbags are deployed in vehicles with a vehicle battery in the luggage compartment, the electrical connection between the vehicle battery and the trigger is automatically disconnected through pyrotechnics. This prevents possible short-circuiting.

Proper operation of all of these safety and convenience functions requires a battery that conforms with specifications and that is properly registered in vehicles with energy management systems (IBS, power module).

Vehicles with energy management systems (IBS, power module): Register battery replacement.

The vehicle electrical system is informed about the vehicle battery characteristic data, such as type, size, age and current power capacity. Therefore, there will always be only one work scope provided that is permitted by the current status of information.

If performance readiness drops below a defined minimum, a Check Control message will be generated to advise the driver that the battery must be replaced.

When installing a new vehicle battery, the battery must be registered and thus must also be registered with the vehicle electrical system.

Note:

> Only this registration/logon will ensure that the corresponding Check Control message will go out again.

Diagnosis system:

Registering the battery replacement:

- Service functions
- Body
- Voltage supply
- Register battery replacement

When retrofitting, a more powerful battery may be used. Standard batteries may always be replaced by AGM batteries with the same specifications.

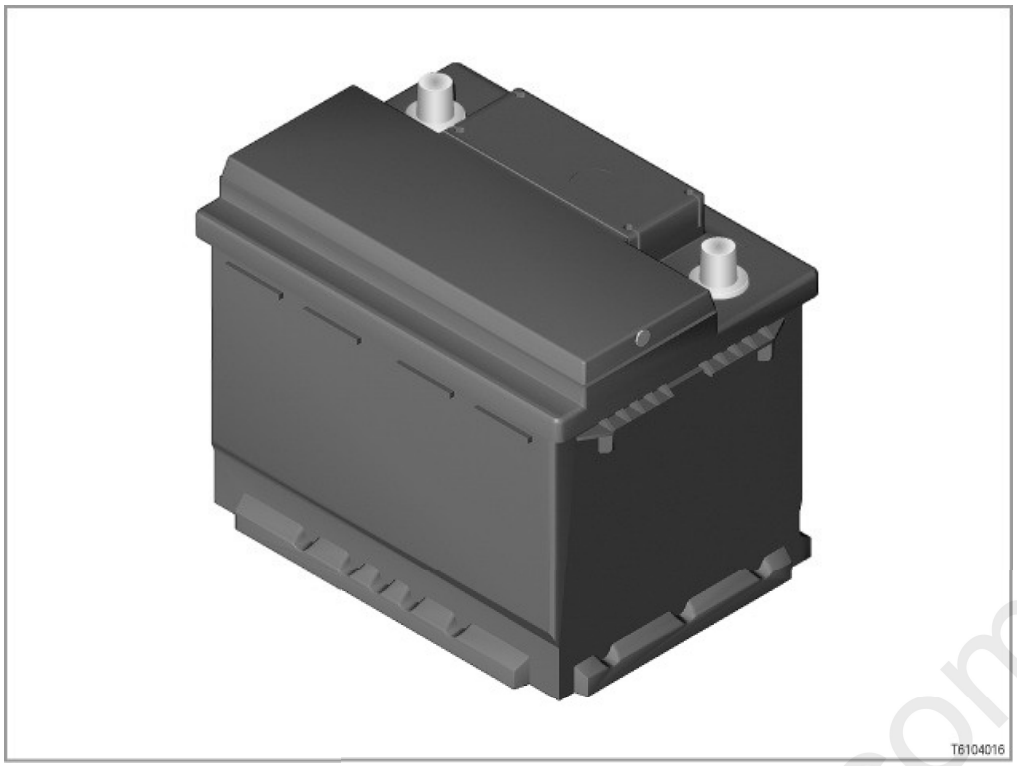
When installing a battery of a different size or a different battery type, this change in vehicle data must be programmed into the vehicle data in accordance with specifications.

Programming system:

- Battery retrofitting

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61 20 ... Notes on AGM battery



Introduction

In September 2002, the first so-called VRLA batteries, better known as **AGM batteries** came into use. (VRLA stands for **V**alve **R**egulated **L**ead **A**cid, i.e. lead-acid battery with pressure relief valve; **AGM stands for A**bsorbent **G**lass **M**at, i.e. absorbent glass-fibre fleece).

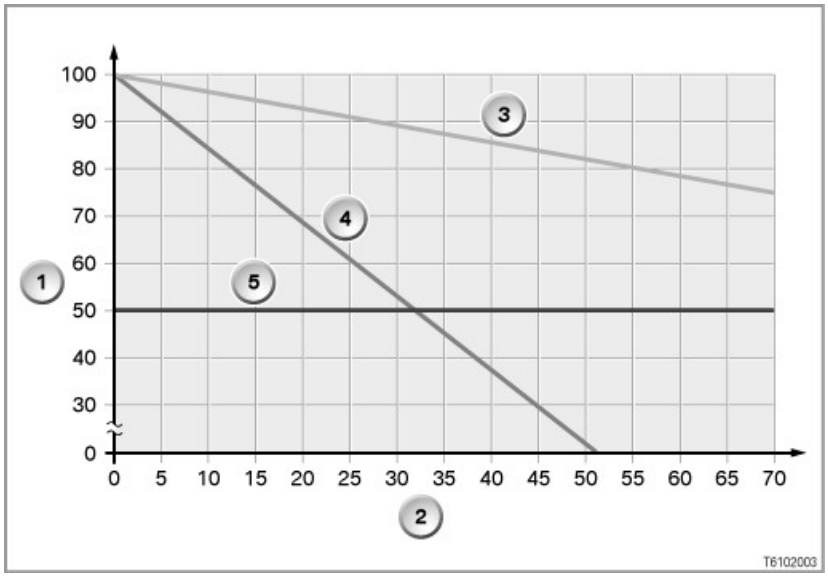
The constantly increasing energy demand of modern vehicle electrical systems calls for ever more powerful battery solutions. A modern luxury-class vehicle has some 100 actuator motors that have to be fed with electrical current. Added to these are safety, environmental and comfort elements which are increasingly becoming standard features, such as e.g. Antilock Brake System (ABS), Dynamic Stability Control (DSC), steering assistance (EPS), electronic chassis and suspension control, air conditioning and navigation system. Current consumption is considerable even when the vehicle is not in use.

The somewhat higher price compared with a battery of similar size is fully balanced by the following benefits:

- greatly longer service life
- improved starting reliability at low temperatures
- reliable starting of engines with high starting current requirements, e.g. high-performance diesel engines
- 100 % freedom from maintenance
- low risk in the event of an accident (reduced environmental risk)

Service life of AGM batteries

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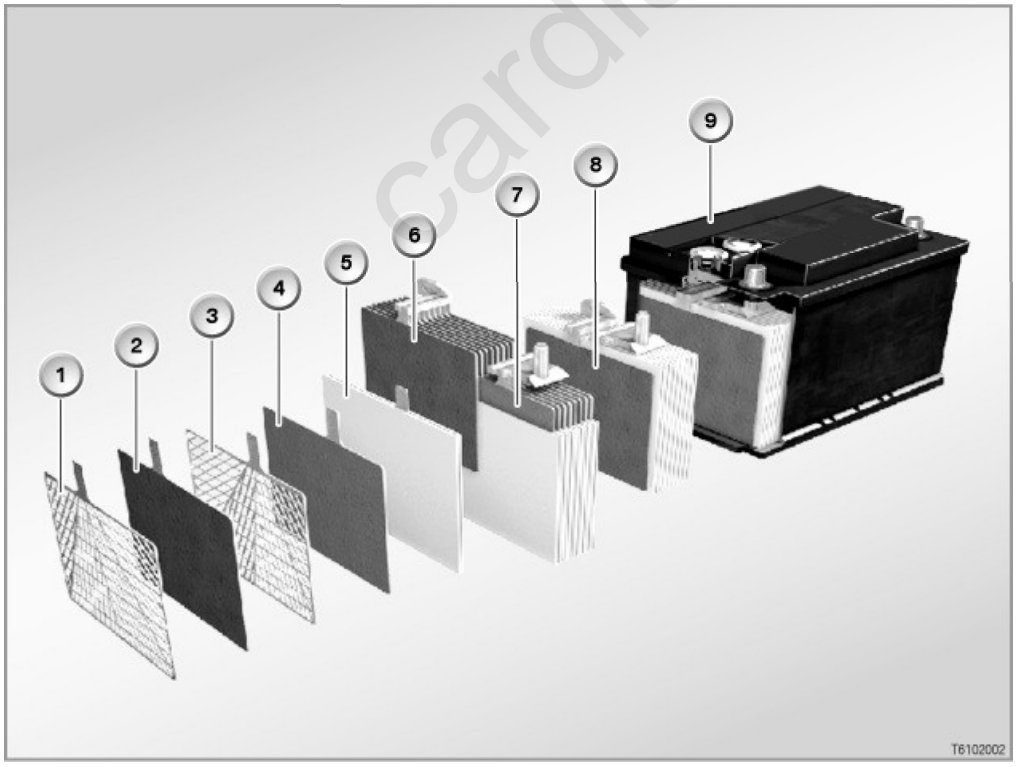


Item	Explanation	Item	Explanation
1	Available capacity [%]	2	Mileage [thousand km]
3	AGM battery	4	Lead-calcium battery
5	50 % capacity limit		

In contrast to conventional lead-calcium batteries, the sulphuric acid in a battery with fleece technology is not held freely in the battery housing. Rather, 100% of the sulphuric acid is bound into the mats of the glass-fibre fleece (separators). For this reason, no battery acid can escape if the battery housing is damaged. In addition, the AGM battery is sealed to be airtight. This is possible because the gases are converted back into water by the permeability of the separators.

Brief component description

The AGM battery has a black housing and the so-called "Magic Eye" is missing.



Item	Explanation	Item	Explanation

1	Positive grille with silver alloy	2	Positive plate
3	Negative grille	4	Negative plate
5	Separator made of glass-fibre fleece	6	Set of positive plates
7	Set of negative plates	8	Block of plates
9	Block box with base strips		

Construction

The AGM battery differs from the conventional lead calcium battery as follows:

- larger plates: Larger plates allow a 25% larger power density.
- Separators made of glass-fibre fleece: These can cause an up to 3-times higher cycle stability to be reached. This improves the cold starting capability, the power consumption and service life.
- Airtight housing with pressure relief valve (please refer to "How it works"):
  The inspection plugs are sealed and can not be opened.
- Battery acid bound in glass-fibre fleece: Battery acid is not found free in the housing as before, but is rather bound 100% in the glass-fibre fleece. This gives increased security against the acid escaping and thus reduces the environmental risk.

How it works

The AGM battery differs from conventional batteries in its non-polluting and substance-retaining behaviour during charging.

When a battery is charged, the electrolysis process emits the gases oxygen and hydrogen.

- In a conventional wet lead calcium battery, the two gases hydrogen and oxygen are dissipated into the atmosphere.
- In an AGM battery, the two gases are converted back into water: The oxygen which is created at the positive electrode during charging passes through the permeable glass fibre fleece to the negative electrode. At the negative electrode the oxygen reacts with the arriving hydrogen ions in the electrolyte to form water (oxygen cycle).

In this manner, the gas and thus also the electrolyte are not lost.

Only in the event of an excessively heavy build-up of gas, i.e. excessively high pressure build-up (20 to 200 mbar), does the pressure relief valve discharge the gas. In this process, the pressure relief valve does not allow any oxygen in the air to enter. Because the pressure in the battery is regulated by a valve, the AGM battery is also known as the VRLA battery (valve-regulated lead acid).

Notes for Service department

It is necessary when handling an AGM battery to observe some particular points pertaining to battery changing and installation location.

Charging

Warning! Do not charge the AGM battery with > 14.8 V. Do not use rapid-charging programs!

> When charging removed batteries (so-called stand-alone batteries), do not exceed the maximum charging voltage of 14.8 V at room temperature. Also, for charging via the external start connection point, the maximum charging voltage of 14.8 V at room temperature must not be exceeded. The battery can be damaged even if the AGM battery is only briefly charged with a charging voltage higher than 14.8 V. A charging voltage of more than 14.8 V is usually used in quick-charging routines.

Installation location

Warning! Do not install the AGM battery in the engine compartment.

> The AGM battery must not be installed in the engine compartment on account of the high spatial temperature differences, otherwise its service life will be significantly shortened.

Housing

Warning! Do not open AGM batteries.

On no account may AGM batteries be opened, as the ingress of oxygen from the atmosphere would cause the battery to lose its chemical balance, rendering it unserviceable.

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12 00 ... Notes/information on start assistance (jump starting)

Do not start the engine with help of starting sprays.

Preparation:

Conform with the following when starting the engine with a jump starting cable.

- Ensure that the jump starting cable wires are of appropriate cross-section size.
- Only use fuse-protected jump starting cables.
- Check whether the current-supplying battery has 12 V voltage.
- If the engine is started from the battery of another vehicle, ensure that there is no contact between the bodies of both vehicles.

Important!

Never touch electrically live ignition system components: high voltage - danger of injury!

If the battery in the vehicle supplying power is weak, start the engine of this vehicle and let it run at idling speed.

Operation:

It is essential to conform to the procedures so as to avoid injury to persons or damage to parts.

- Automatic transmission: select drive position ”P”, apply parking brake.
- Manual transmission: move gear lever to neutral position, apply parking brake.
- Ensure that the jump leads cannot get caught in rotating parts, e.g. fan.
- First connect both positive poles of the batteries with one jump starting cable (red).
- Use the battery positive terminal in the engine compartment for vehicles with the battery in the luggage compartment.
- Then use the second jump starting cable (black) to connect the negative post of the current-supplying battery with the earth/ground point (not the negative pole or the body) of the vehicle to be started.

Important!

Do not connect the second jump starting cable (black) with the negative pole of the battery in the vehicle to be started. Produced gas could be ignited by sparks.

Risk of explosion!

After the engine of the vehicle to be started has fired, first disconnect the jump starting cable between the negative pole and the earth/ground point. Then remove the starting cable from the positive poles.

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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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61 00 ... Safety instructions for handling vehicle battery

Do not allow any battery acid to come into contact with the eyes, the skin or clothing. Therefore wear protective clothing, gloves and eye protection.

Do not tilt the battery, acid may emerge from the vent hole.

If acid is splashed into the eyes, rinse them immediately for several minutes with clear water. You must then consult a doctor without delay.

If acid is splashed onto the skin or clothing, neutralise it immediately with a soap solutionand rinse with lots of water.

Seek medical attention immediately if battery acid is accidentally swallowed.

Strictly no flames, sparks, naked light or smoking!

A highly explosive detonating gas is created when batteries are charged. The rooms where charging is carried out must therefore always be well ventilated.

Avoid the formation of sparks when handling cables, wiring and electrical devices.

Turn the ignition lock to the 0 position before disconnecting or connecting the battery.

Do not place tools or any similar object on the battery (danger of short circuit and explosion hazard!).

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61 20 503 Vehicle battery - closed-circuit current monitoring

Necessary preliminary tasks:

To access the battery earth lead, perform the necessary preliminary work described in the document Disconnecting battery earth lead.

Do not disconnect the battery earth lead!

Note:
If several 12 V batteries are installed in the vehicle:

Closed-circuit current check is possible **on the vehicle battery only**.



Connect diagnosis system.

Connect the clip-on probe to the battery earth lead of the vehicle battery. The arrow on the clip-on probe must point towards the vehicle battery.

Measure closed-circuit current.

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61 25 ... Assessment of the transportability of the 12 V lithium ion starter / auxiliary battery in service workshops

Initiating:

For analysis and disposal purposes, it is necessary to transport the already used starter batteries. These lithium ion based starter batteries are to be classified as hazardous material according to UN 38.3, and may only be transported under particular prerequisites.

Obtaining the certified transportability between the assessment and delivery of the starter / auxiliary battery to the disposal/transportation company is the responsibility of a qualified person. For shipping one also needs to take into account the influence of the storage requirements and other possible occurring events for the determined transportability. If there is a possibility that previously certified transportability is no longer valid, it must be reassessed using the guideline.

The transport in the sense of the hazardous goods legislation is organised in three areas:

1. Assessment of the transportability
2. Transport preparation
3. Performing the transport

This document contains all the necessary information in order to assess the transportability of a used 12 V lithium ion starter / auxiliary battery. The transport preparation and execution is **not** an element of this document.

Further information on this can be found in the information bulletin in the ASAP.

It will be explained which measures are necessary in order to assess the transportability. How these measures are to be performed individually depends on the particular situation at the location and is not an element of this document. These procedures are to be defined according to the local regulations / laws and recorded as valid local work instructions.

Prerequisites from a security perspective:

It should be noted that working on the open battery is prohibited.

The analysis , assessment and certification of the transportability of the 12 V lithium ion starter / auxiliary battery is the responsibility of a qualified person.

The following specifications for work safety must also be observed:

Storage of the lithium ion starter / auxiliary battery

The following points should be noted for reasons work safety point:

The battery must always protected against short circuit (cover the terminals).

The information for this can be found in the information bulletin in the ASAP.

Note: For better traceability, this document must be printed out and archived with the vehicle data.

Assessment of the 12 V lithium ion starter / auxiliary battery

NAME	Date	Serial no.	VIN

Signature: ----------

The electrical assessment of the 12 V lithium ion starter / auxiliary battery takes place via the diagnosis and test module.

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Transport preventing faults according to the diagnosis or the test module	Yes	No

Visual assessment:

Smoke	Yes	No
Evidence of fire damage	Yes	No
Heat development	Yes	No
Deformations, changes (scratches up to 0.5 mm deep or 5 cm long are permitted)	Yes	No
Cracked or broken housing	Yes	No
Electrolyte odour	Yes	No
Noise generation	Yes	No
Loose connections, loose or damaged	Yes	No
Serial number/label safety information cannot be read	Yes	No
DMC code is not readable or no functional LIN communication can be established	Yes	No
Suspected water damage	Yes	No

The serial number must be clearly legible. If the type plate can no longer be read, the housing of the 12 V lithium ion starter / auxiliary battery must be clearly marked with the serial number.

The label of the safety information must be replaced if it is illegible.

The electrical and visual assessment must be set down in writing!

If one or more points is/are answered with yes the following procedure must be clarified by technical support! Furthermore, the removed 12 V lithium ion starter / auxiliary battery must be blocked off with high-voltage barrier tapes. If a 12 V lithium ion starter / auxiliary battery is still located in the vehicle, the vehicle must be parked in the open.

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61 00 ... Battery charging calendar

Battery charging calendar 2016 (PDF file)

Battery charging calendar 2017 (PDF file)

Battery charging calendar 2018 (PDF file)

Battery charging calendar 2019 (PDF file)

Information for the battery charging calendar

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61 00 ... Battery log form

Battery log form 2016

Battery log form 2017

Battery log form 2018

Battery log form 2019

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61 21 028 Charging battery



Warning!

Read and comply with safety informations pertaining to vehicle battery.



Attention!

Lead-acid battery, AGM battery:

To prevent the intelligent battery sensor from malfunctioning, use the charging points in the engine compartment.

Observe instructions on intelligent battery sensor/battery electronics.



Note:
Use BMW-recommended charging computers* to charge the battery.

*Sourcing reference BMW Workshop Equipment Catalogue



Pay attention when charging the lithium ion battery!

The charging voltage generated by existing chargers designed for the lead-acid or AGM batteries is **too high** for the lithium-ion battery.

In the event of excessive charging voltage, the Li-ion battery isolating switch can open, generating among things a ccm message in the cluster.

Before charging a lithium ion battery, adjust the charging voltage of existing charger adapters once.

Follow notes on lithium ion battery.

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61 21 028 Recharge vehicle battery

1 – Charging battery

TECHNICAL INFORMATION

Observe the notes on handling the vehicle battery.
For additional information see:
61 00 ... Safety information on handling the vehicle battery
61 00 / 12 00 ... Notes on disconnecting and connecting the vehicle battery
61 12 ... Notes on the intelligent battery sensor (IBS)

▸ **Charging lead-acid batteries and AGM batteries**

- Connect to a charger approved by BMW.
- If the battery is charged while it is still installed: always connect the charger to the jump start terminal point in the engine compartment.
- Fully charge the battery.

  The battery is fully loaded once the charge current drops below a certain value:

Battery temperature	Charge current
15° C - 25° C	<2.5 A
< 15°C	<1.5 A

- Disconnect the charger after having completed charging.

▸ **Charging the lithium ion battery**

TECHNICAL INFORMATION

Comply with notes on handling lithium ion batteries.
For more information see:
08 08 14 (094) Charging parameters for lithium ion batteries
61 12 ... Notes regarding intelligent battery electronics (lithium ion battery)

- Adapt the charging voltage on the charger to the lithium ion batteries.

  Too high charging voltage can lead to opening of the electronic disconnect switch.
- Connect to a charger approved by BMW.
- Fully charge the battery.
- Disconnect the charger after having completed charging.

Additional Information

Links

General repair instructions	Used in step
61 20 ... Notes on AGM battery	1
61 20 ... Notes regarding the lithium ion battery	1

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61 12 ... Notes on intelligent battery sensor (IBS)	1
61 12 ... Notes regarding the battery electronics (lithium ion battery)	1

Special tool service information	Used in step
Description of the manual Li parameter setting for DEUTRONIC DBL800/1200/1600	1
Description of the manual Li parameter setting for ELEKTRON HS-1000	1
Description of the manual Li parameter setting for ELTEK MultiCharger 750/900/1500	1

Special tool service information	Used in step
Charging parameters for lithium ion batteries	1
Note for the workshop equipment catalogue BMW, MINI	1

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61 21 010 Remove and install the vehicle battery

WARNING

Working on 12 V vehicle electrical system.

Risk of short circuits! Risk of fire!

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

WARNING

Unprotected battery terminals.

Risk of short circuits! Risk of fire!

- Cover the vehicle battery.

PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

MAIN WORK

2 – Removing system battery

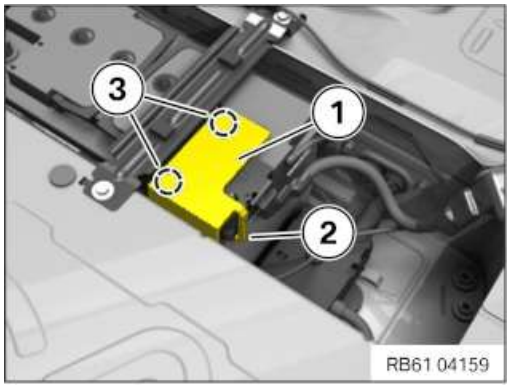
WARNING

Working on 12 V vehicle electrical system.

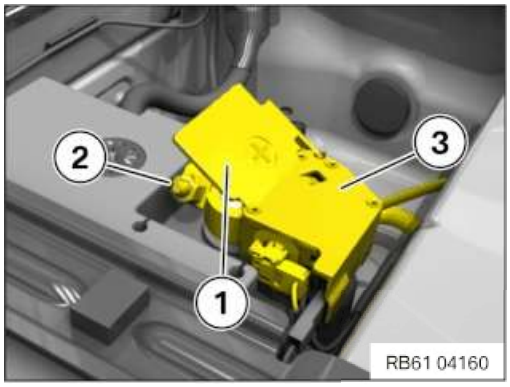
Risk of short circuits! Risk of fire!

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

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- Release latch mechanism (2) of the protective cap (1).
- Feed out protective cap (1) to the top and remove it from the guides (3).



- Remove the cover for the positive battery terminal (1).
- Loosen nut (2).

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.

- Pull off the positive battery terminal (3) from the positive battery terminal.

WARNING

Unprotected battery terminals.

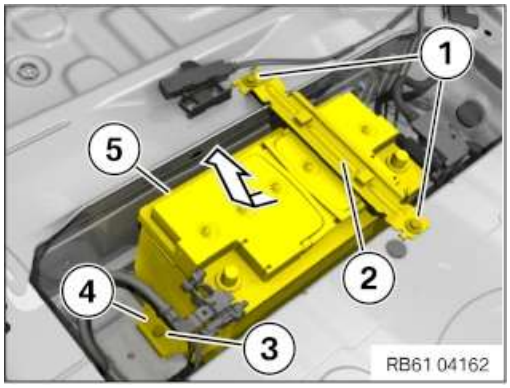
Risk of short circuits! Risk of fire!

- Cover the vehicle battery.

- Locate positive battery terminal (3) laterally.

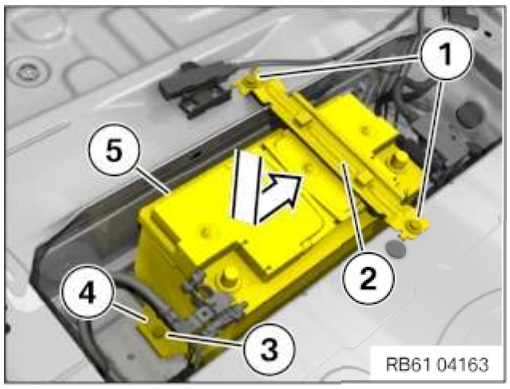


- Pull off vent hose (1) on the system battery.



- Loosen screws (1).
- Remove battery rollover protection bracket (2).
- Loosen screw (3).
- Remove the battery holder (4).
- Release vehicle battery (5) in direction of arrow and remove by the grab handles.

3 – Installing system battery



- Insert system battery (5) in the direction of the arrow.
- Install the battery holder (4).
- Tighten down screw (3).

Battery holder to body

M8 screw		Tightening torque	15 Nm

- Position battery rollover protection bracket (2).
- Tighten the screws (1).

Battery rollover protection bracket to luggage compartment floor

Screw		Tightening torque	8 Nm



- Insert vent hose (1) in the opening on the system battery.

▸ **Check the vent holes of the battery**

WARNING

Gas emission.

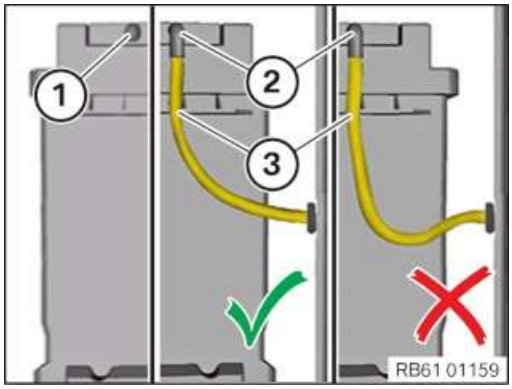
Danger of injury! Danger of explosion!

- Assign the vent holes correctly.
- Route the vent hose correctly.

TECHNICAL INFORMATION

The battery has two vent holes, opposite:
One vent hole (1) must be closed correctly with a dummy plug.
The vent hose (3) must be correctly connected and routed at the other vent hole (2).

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Check

- Check if the vent hole (1) is correctly closed with a dummy plug.

Result

» No dummy plug.

Measure

- Close the vent hole (1) correctly with a dummy plug.

Check

- Check if the vent hole (2) has a correctly connected vent hose (3).

Result

» The vent hose (3) is not correctly connected.

Measure

- At the vent hole (2), connect the vent hose (3) correctly.

Check

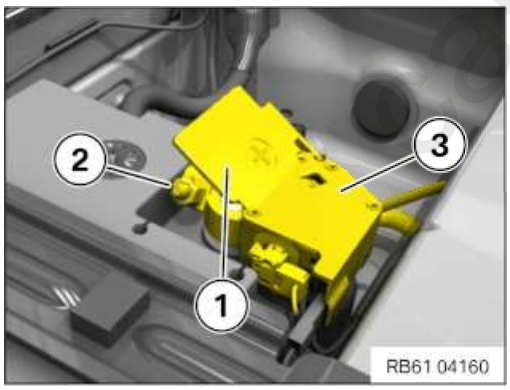
- Check if the vent hose (3) is routed to the outside with a downhill gradient (**no siphon formation!**).

Result

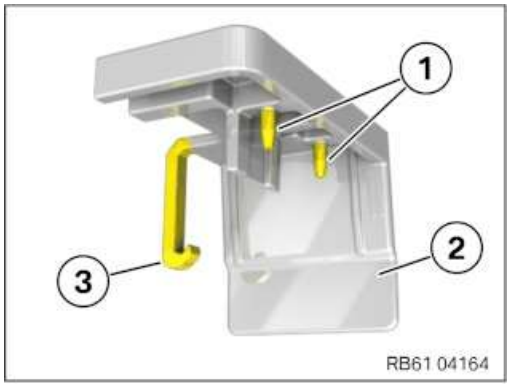
» The vent hose (3) is not correctly routed as shown in the image on the right.

Measure

- Route the vent hose (3) correctly as shown in the centre image.



- Position the positive battery cable (3) on the positive terminal.
- Tighten nut (2).
- Close the positive terminal cover (1).



Check

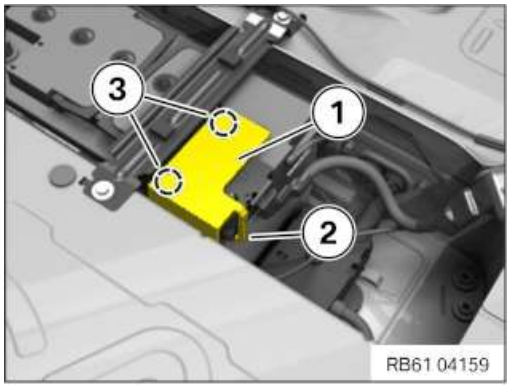
- Check guides (1) and latch mechanism (3) on protective cap (2) for damage.

Result

» The guides (1) or the latch mechanism (3) are damaged.

Measure

- Renew protective cap (2).



- Insert guides (3) of protective cap (1) into the associated openings on the positive battery terminal.
- Clip in protective cap (1) with latch mechanism (2).

POSTPROCESSES

4 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Overview of Tightening Torques

Battery holder to body — Used in step 3

M8 screw		Tightening torque	15 Nm

Battery rollover protection bracket to luggage compartment floor — Used in step 3

Screw		Tightening torque	8 Nm

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	14
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	14

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61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	14
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
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61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	14
61 20 900 Disconnecting and connecting battery earth lead	14
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61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting battery earth lead	14

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61 21 003 Removing and installing the 12-V dual storage battery

WARNING

Working on 12 V vehicle electrical system.

Risk of short circuits! Risk of fire!

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

WARNING

Unprotected battery terminals.

Risk of short circuits! Risk of fire!

- Cover the vehicle battery.

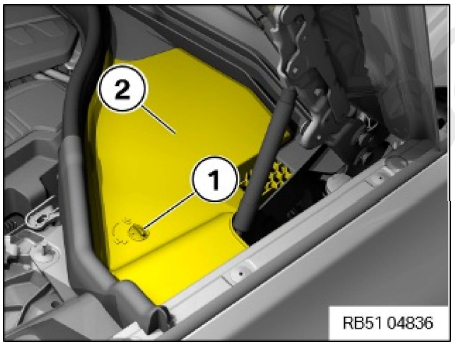
PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

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



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

3 – Removing both wiper arms

NOTICE

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

▸ **Remove the wiper arm**

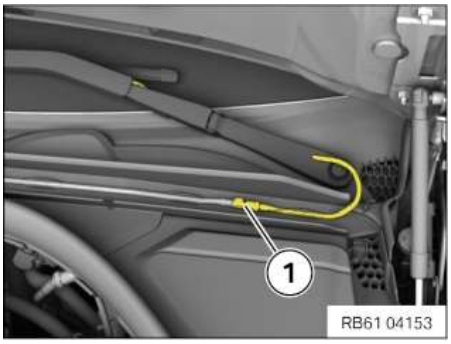
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RISK OF DAMAGE

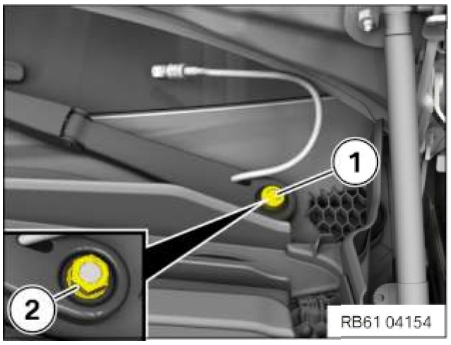
Damage to wiper console

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

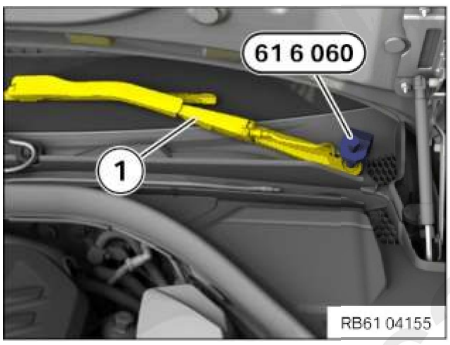
- Removing the wiper arms must be carried out only using the prescribed special tool.
- Do not lift off wiper arm, else the wiper console may break on the predetermined breaking point for the pedestrian protection.



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

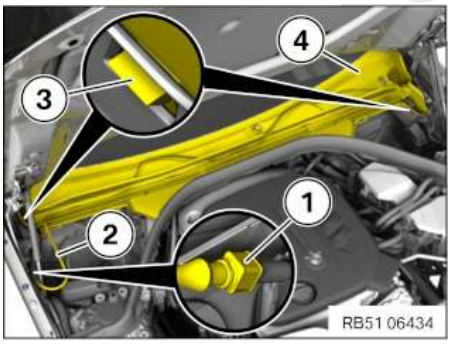


- Remove the protective cap (1).
- Loosen nut (2).

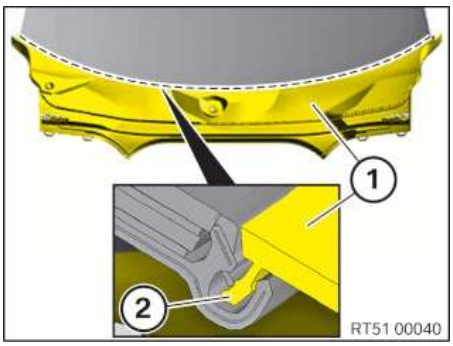


- Pull off the wiper arm (1) using special tool .

4 – 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).



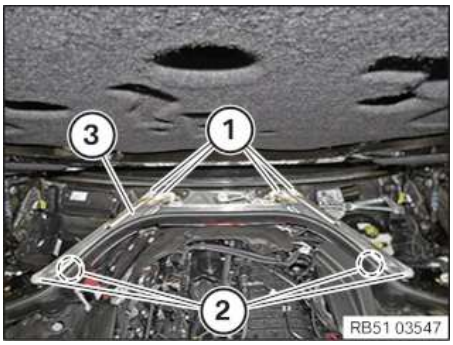
- Pull the cowl panel cover (1) upward out of the latch mechanism (2) beginning on the side.

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5 – If installed: Removing the strut brace from the back of the engine compartment

TECHNICAL INFORMATION

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



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

MAIN WORK

6 – Removing 12 V dual storage system

WARNING

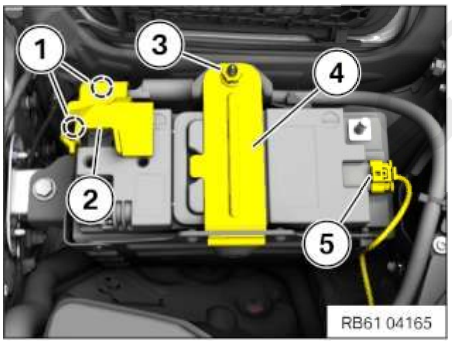
Working on 12 V vehicle electrical system.

Risk of short circuits! Risk of fire!

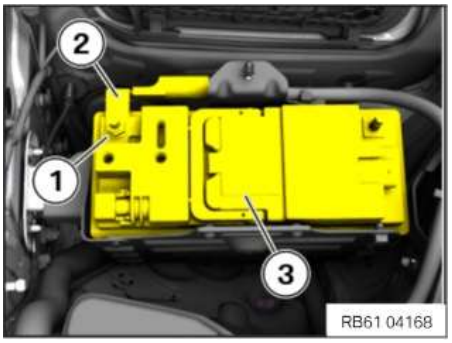
- Detach battery earth lead from battery.
- For additional batteries: Detach all battery earth leads from additional batteries.

TECHNICAL INFORMATION

Follow notes for 12 V dual storage system.
See additional information 6120 ... Notes on the 12 V dual storage system.



- Loosen the latch mechanisms (1).
- Remove positive terminal cover (2).
- Loosen nut (3).
- Remove battery rollover protection bracket (4).
- Unlock plug connection (5) and disconnect.



- Loosen nut (1).
- Pull off positive battery cable (2) from the positive terminal and secure at side.

WARNING

Unprotected battery terminals.

Risk of short circuits! Risk of fire!

- Cover the vehicle battery.

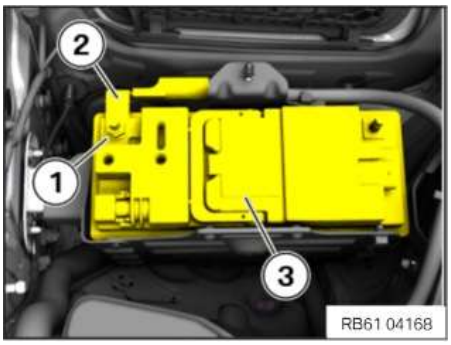
- Fold back grab handle and remove the 12-V dual storage battery (3).

7 – Install 12-V dual storage battery

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TECHNICAL INFORMATION

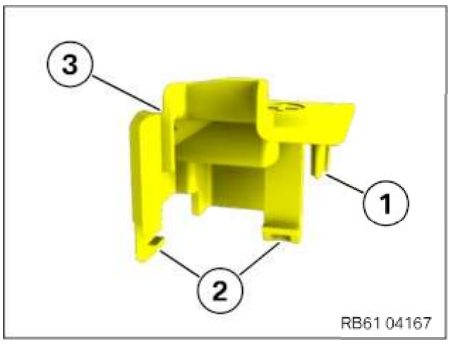
Follow notes for 12 V dual storage system.
See additional information 6120 ... Notes on the 12 V dual storage system.



- Install the 12 V dual storage system (3).
- Release the fixing element on the positive battery cable (2).
- Position the positive battery cable (2) on the positive terminal.
- Tighten nut (1).

Positive battery terminal

Nut		Tightening torque	5 Nm



Check

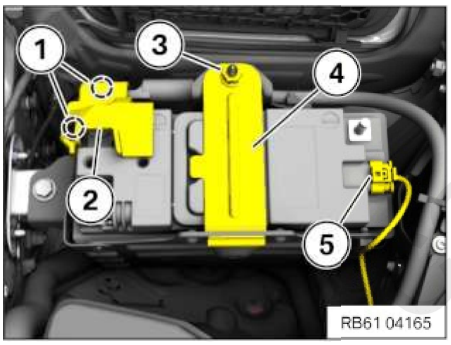
- Check guide (1) and retaining lugs (2) on the positive terminal cover (3) for damage.

Result

» Guides (1) or retaining lugs (2) are damaged.

Measure

- Renew positive terminal cover (3).



- Connect connectors (5) and lock.
- Install battery rollover protection bracket (4).
- Tighten nut (3).

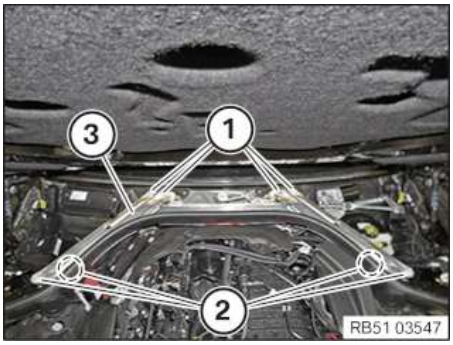
Rollover protection bar auxiliary battery on holder

Nut M8		Tightening torque	15 Nm

- Insert positive terminal cover (2).
- Clip in latch mechanisms (1) on the positive terminal cover (2).

POSTPROCESSES

8 – If installed: Install strut brace in rear of engine compartment



- Install the strut brace (3).
- Renew screws (1).

  Parts: Bolts
- Tighten the screws (1).

Cross-brace to bulkhead

Hexagon screw M10x25	Renew screws.	Tightening torque Angle of rotation	56 Nm 90 °

- Renew screws (2).

  Parts: Bolts
- Tighten down screws (2).

Cross-brace to spring strut dome

Hexagon screw M10x55	Renew screws.	Tightening torque Angle of rotation	56 Nm 90 °

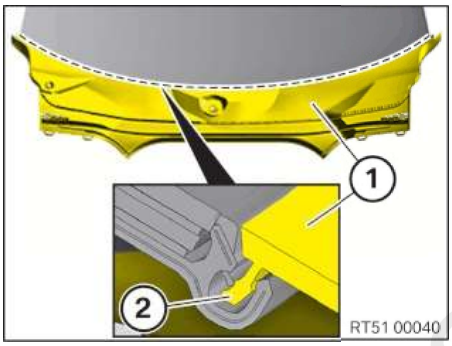
9 – Installing cowl panel cover

RISK OF DAMAGE

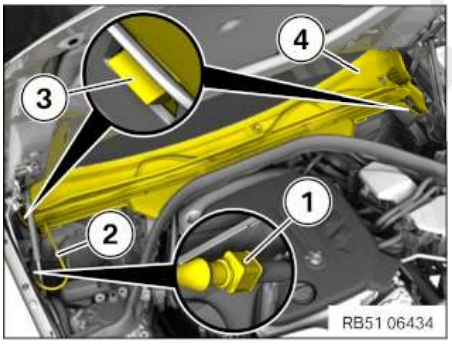
Damage caused by water ingress into the vehicle.

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.

10 – Installing both wiper arms

NOTICE

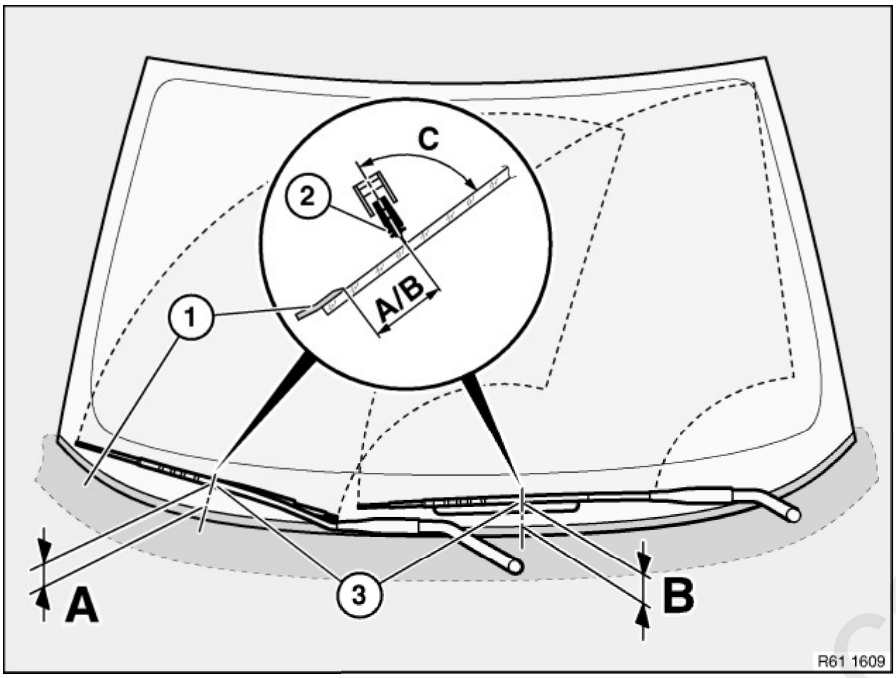
Description is for left component only. Procedure on the right side is identical.

▸ **Install the wiper arm**

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TECHNICAL INFORMATION

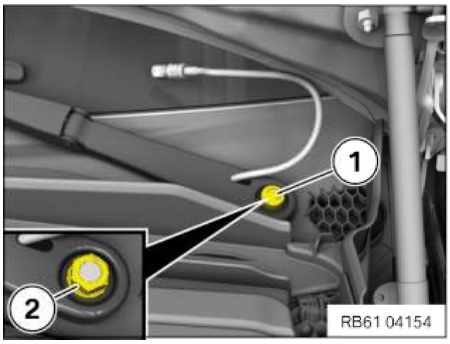
The wiper system must be in zero position.
After installing the cowl panel cover and before fitting the wiper arm:
Activate the wiper system once to ensure that it has the correct installation position.



- 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

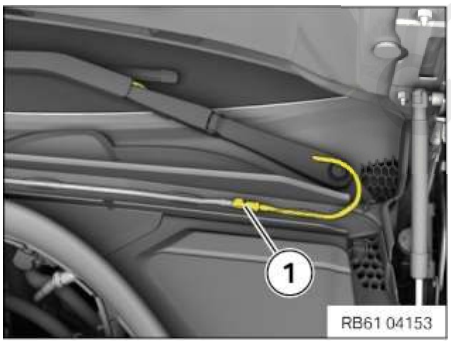


- Tighten nut (2).

Windscreen wiper arm

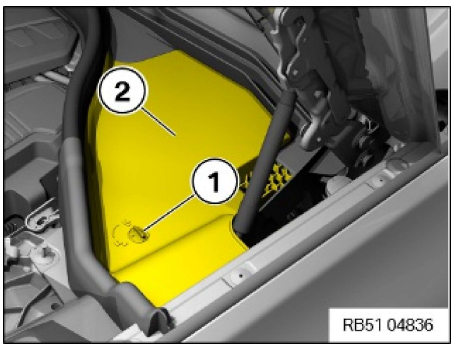
Combination hexagon nut		Tightening torque	35 Nm

- Connect the protective cap (1).



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

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



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

12 – Disconnecting all battery earth leads

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- See additional information.

Additional Information

Overview of Tightening Torques

Positive battery terminal			Used in step 7
Nut		Tightening torque	5 Nm

Rollover protection bar auxiliary battery on holder			Used in step 7
Nut M8		Tightening torque	15 Nm

Cross-brace to bulkhead			Used in step 8
Hexagon screw M10x25	Renew screws.	Tightening torque	56 Nm
		Angle of rotation	90 °

Cross-brace to spring strut dome			Used in step 8
Hexagon screw M10x55	Renew screws.	Tightening torque	56 Nm
		Angle of rotation	90 °

Windscreen wiper arm			Used in step 10
Combination hexagon nut		Tightening torque	35 Nm

Overview of Special Tools

Overview Technical Data

Distance from window pane edge to wiper blade	Used in step 10
Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

Links

Repair instructions (PRE)	Used in step
Instructions for 12 V dual storage system	67

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	112
61 20 900 Disconnecting and connecting battery earth lead	112
61 20 900 Disconnecting and connecting battery earth lead	112
61 20 900 Disconnecting and connecting battery earth lead	112
61 20 900 Disconnecting and connecting battery earth lead	112
61 20 900 Disconnecting and connecting battery earth lead	112
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	112
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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads) 112

61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle) 112
61 20 900 Disconnecting and connecting battery earth lead 112
61 20 900 Disconnecting and connecting battery earth lead 112
61 20 900 Disconnecting and connecting battery earth lead 112
61 20 900 Disconnecting and connecting battery earth lead 112
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61 20 900 Disconnecting and connecting battery earth lead 112

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61 21 017 Replacing vehicle battery - including registering battery exchange-

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.

WARNING

Unprotected battery terminals.

Risk of short circuits! Risk of fire!

- Cover the vehicle battery.

PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

MAIN WORK

2 – Removing system battery

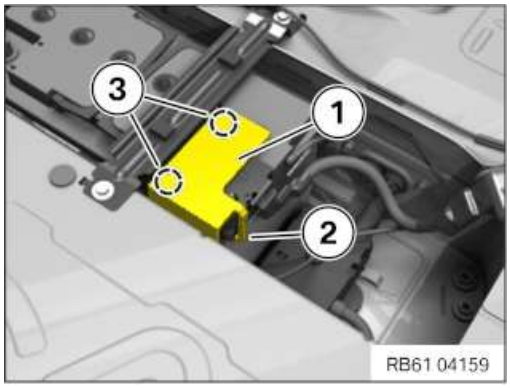
WARNING

Working on 12 V vehicle electrical system.

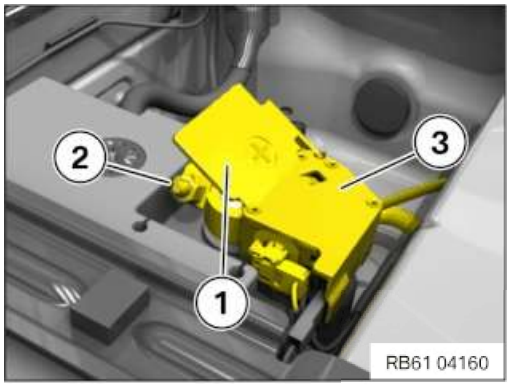
Risk of short circuits! Risk of fire!

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

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- Release latch mechanism (2) of the protective cap (1).
- Feed out protective cap (1) to the top and remove it from the guides (3).



- Remove the cover for the positive battery terminal (1).
- Loosen nut (2).

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.

- Pull off the positive battery terminal (3) from the positive battery terminal.

WARNING

Unprotected battery terminals.

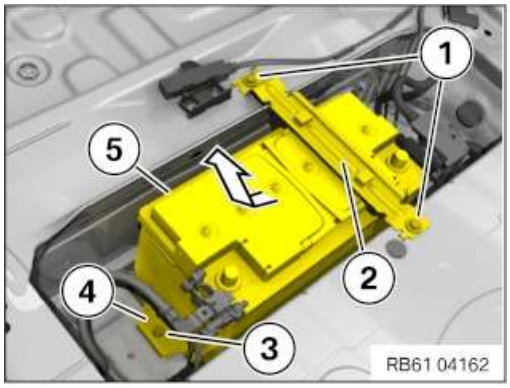
Risk of short circuits! Risk of fire!

- Cover the vehicle battery.

- Locate positive battery terminal (3) laterally.

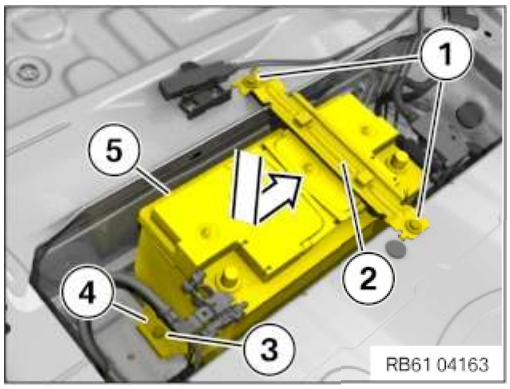


- Pull off vent hose (1) on the system battery.



- Loosen screws (1).
- Remove battery rollover protection bracket (2).
- Loosen screw (3).
- Remove the battery holder (4).
- Release vehicle battery (5) in direction of arrow and remove by the grab handles.

3 – Installing system battery



- Insert system battery (5) in the direction of the arrow.
- Install the battery holder (4).
- Tighten down screw (3).

Battery holder to body

M8 screw		Tightening torque	15 Nm

- Position battery rollover protection bracket (2).
- Tighten the screws (1).

Battery rollover protection bracket to luggage compartment floor

Screw		Tightening torque	8 Nm



- Insert vent hose (1) in the opening on the system battery.

▸ **Check the vent holes of the battery**

WARNING

Gas emission.

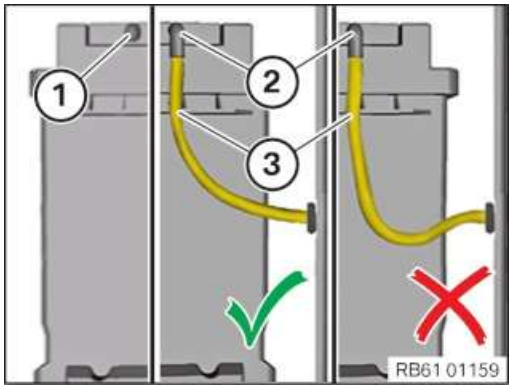
Danger of injury! Danger of explosion!

- Assign the vent holes correctly.
- Route the vent hose correctly.

TECHNICAL INFORMATION

The battery has two vent holes, opposite:
One vent hole (1) must be closed correctly with a dummy plug.
The vent hose (3) must be correctly connected and routed at the other vent hole (2).

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Check

- Check if the vent hole (1) is correctly closed with a dummy plug.

Result

» No dummy plug.

Measure

- Close the vent hole (1) correctly with a dummy plug.

Check

- Check if the vent hole (2) has a correctly connected vent hose (3).

Result

» The vent hose (3) is not correctly connected.

Measure

- At the vent hole (2), connect the vent hose (3) correctly.

Check

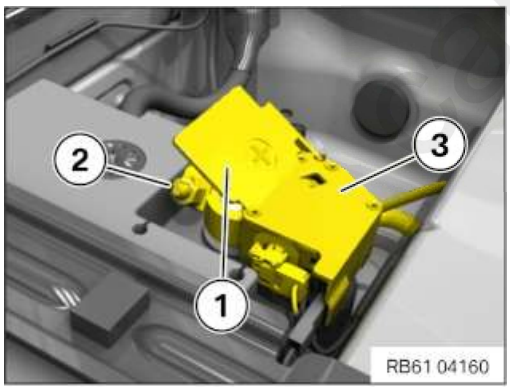
- Check if the vent hose (3) is routed to the outside with a downhill gradient (**no siphon formation!**).

Result

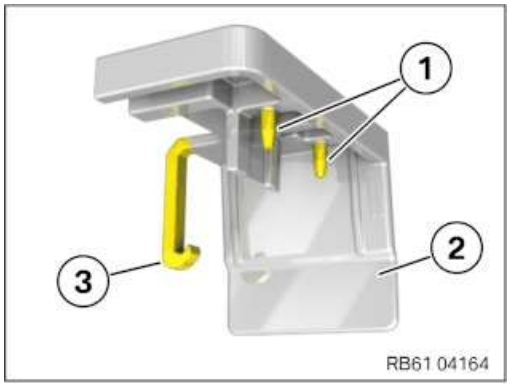
» The vent hose (3) is not correctly routed as shown in the image on the right.

Measure

- Route the vent hose (3) correctly as shown in the centre image.



- Position the positive battery cable (3) on the positive terminal.
- Tighten nut (2).
- Close the positive terminal cover (1).



Check

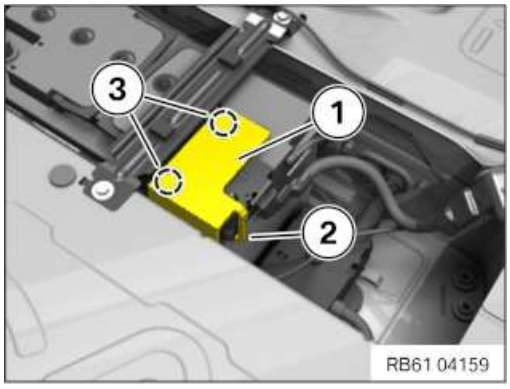
- Check guides (1) and latch mechanism (3) on protective cap (2) for damage.

Result

» The guides (1) or the latch mechanism (3) are damaged.

Measure

- Renew protective cap (2).



- Insert guides (3) of protective cap (1) into the associated openings on the positive battery terminal.
- Clip in protective cap (1) with latch mechanism (2).

POSTPROCESSES

4 – Disconnecting all battery earth leads



- See additional information.

5 – Register battery exchange



- After replacing the battery, register the battery exchange (see further information).

Additional Information

Overview of Tightening Torques

Battery holder to body			Used in step 3
M8 screw		Tightening torque	15 Nm

Battery rollover protection bracket to luggage compartment floor			Used in step 3
Screw		Tightening torque	8 Nm

Links

Repair instructions (PRE)	**Used in step**
Battery replacement information	5

Repair instructions	**Used in step**
61 20 900 Disconnecting and connecting battery earth lead	14

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61 20 900 Disconnecting and connecting battery earth lead	14
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61 20 900 Disconnecting and connecting battery earth lead	14
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	14
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61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	14
61 20 900 Disconnecting and connecting battery earth lead	14
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61 20 900 Disconnecting and connecting battery earth lead	14

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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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61 25 ... Assessing the transport capability of cell block in service workshops



Warning!

High-voltage system - danger to life!

The following points must be strictly observed **prior to starting work**:

- Safety information for handling electric / hybrid vehicles.
- Visual check of the high-voltage battery unit following an accident

Initiating:

For analysis and disposal purposes, it is necessary to transport an already used cell module. These lithium-ion based cell blocks are to be classified as hazardous material according to UN 38.3, and may only be transported under particular prerequisites.

Obtaining the certified transportability between the assessment and delivery of the cell block to the disposal / transportation company is the responsibility of a qualified person. For shipping one also needs to take into account the influence of the storage requirements and other possible occurring events for the determined transportability.

The transport in the sense of the hazardous goods legislation is organised in three areas:

1. Assessment of the transportability
2. Transport preparation
3. Performing the transport

This document contains all the necessary information in order to assess the transportability of a used cell block. The transport preparation and execution is **not** an element of this document.

Further information on this can be found in the information bulletin in the ASAP.

It will be explained which measures are necessary in order to assess the transportability. How these measures are to be performed individually depends on the particular situation at the location and is not an element of this document. These procedures are to be defined according to the local regulations / laws and recorded as valid local work instructions.

Prerequisites from a security perspective:

The analysis and assessment of the cell block is to be performed by an "expert for working on HV intrinsically safe vehicles".

The certificate of the transportability is the responsibility of the qualified person.

The following specifications for work safety must also be observed:

Storage of cell blocks

For dual-cell modules, the module connector should be disconnected.

The information for this can be found in the information bulletin in the ASAP.

Note:	This document must be printed out and archived with the vehicle data.

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Assessment cell block

NAME	Date	Serial no.	VIN

Signature: ----------

The electrical assessment of the cell module takes place via the **diagnosis and test module**.

The de-energised state of the high-voltage battery unit is to be determined **before** it is removed from the vehicle.

De-energise the high-voltage system.

Transport preventing faults according to the diagnosis or the test module	Yes	No

Visual assessment:

Smoke	Yes	No
Evidence of fire damage	Yes	No
Heat development	Yes	No
Crack or opening on the housing	Yes	No
Dents on the housing, deformation, damage	Yes	No
Loose connections, loose or damaged	Yes	No
Serial number not readable	Yes	No
Suspected water damage	Yes	No

Cell module, transport capable	**No**	**Yes**

The serial number must be clearly legible. If the serial number can no longer be read, the housing of the cell block must be clearly marked with the serial number.

The electrical and visual assessment must be set down in writing!

If one or more points is/are answered with yes the following procedure must be clarified with technical support! Furthermore, the high-voltage battery unit that has been removed must be blocked off with high-voltage barrier tape. If the high-voltage battery unit is still in the vehicle, the vehicle must be made inaccessible and blocked off.

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61 25 ... Assessment of the transportability of the 12 V lithium ion starter / auxiliary battery in service workshops

Initiating:

For analysis and disposal purposes, it is necessary to transport the already used starter batteries. These lithium ion based starter batteries are to be classified as hazardous material according to UN 38.3, and may only be transported under particular prerequisites.

Obtaining the certified transportability between the assessment and delivery of the starter / auxiliary battery to the disposal/transportation company is the responsibility of a qualified person. For shipping one also needs to take into account the influence of the storage requirements and other possible occurring events for the determined transportability. If there is a possibility that previously certified transportability is no longer valid, it must be reassessed using the guideline.

The transport in the sense of the hazardous goods legislation is organised in three areas:

1. Assessment of the transportability
2. Transport preparation
3. Performing the transport

This document contains all the necessary information in order to assess the transportability of a used 12 V lithium ion starter / auxiliary battery. The transport preparation and execution is **not** an element of this document.

Further information on this can be found in the information bulletin in the ASAP.

It will be explained which measures are necessary in order to assess the transportability. How these measures are to be performed individually depends on the particular situation at the location and is not an element of this document. These procedures are to be defined according to the local regulations / laws and recorded as valid local work instructions.

Prerequisites from a security perspective:

It should be noted that working on the open battery is prohibited.

The analysis , assessment and certification of the transportability of the 12 V lithium ion starter / auxiliary battery is the responsibility of a qualified person.

The following specifications for work safety must also be observed:

Storage of the lithium ion starter / auxiliary battery

The following points should be noted for reasons work safety point:

The battery must always protected against short circuit (cover the terminals).

The information for this can be found in the information bulletin in the ASAP.

Note: For better traceability, this document must be printed out and archived with the vehicle data.

Assessment of the 12 V lithium ion starter / auxiliary battery

NAME	Date	Serial no.	VIN

Signature: ----------

The electrical assessment of the 12 V lithium ion starter / auxiliary battery takes place via the diagnosis and test module.

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Transport preventing faults according to the diagnosis or the test module	Yes	No

Visual assessment:

Smoke	Yes	No
Evidence of fire damage	Yes	No
Heat development	Yes	No
Deformations, changes (scratches up to 0.5 mm deep or 5 cm long are permitted)	Yes	No
Cracked or broken housing	Yes	No
Electrolyte odour	Yes	No
Noise generation	Yes	No
Loose connections, loose or damaged	Yes	No
Serial number/label safety information cannot be read	Yes	No
DMC code is not readable or no functional LIN communication can be established	Yes	No
Suspected water damage	Yes	No

The serial number must be clearly legible. If the type plate can no longer be read, the housing of the 12 V lithium ion starter / auxiliary battery must be clearly marked with the serial number.

The label of the safety information must be replaced if it is illegible.

The electrical and visual assessment must be set down in writing!

If one or more points is/are answered with yes the following procedure must be clarified by technical support! Furthermore, the removed 12 V lithium ion starter / auxiliary battery must be blocked off with high-voltage barrier tapes. If a 12 V lithium ion starter / auxiliary battery is still located in the vehicle, the vehicle must be parked in the open.

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61 00 ... Battery charging calendar

Battery charging calendar 2016 (PDF file)

Battery charging calendar 2017 (PDF file)

Battery charging calendar 2018 (PDF file)

Battery charging calendar 2019 (PDF file)

Information for the battery charging calendar

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61 00 ... Battery log form

Battery log form 2016

Battery log form 2017

Battery log form 2018

Battery log form 2019

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61 25 ... Notes on repair of high-voltage battery unit

1. Prerequisite

Various organisational prerequisites need to be fulfilled before the repair of a high-voltage battery unit is permitted and can be carried out in an expedient way. These prerequisites concern both, the commercial company and the service employee.

The repair of a high-voltage battery unit is intended to be carried out exclusively by commercial companies featuring the service format BMW i Service Extended Battery or BMW i Service Full.

A commercial company featuring the service format BMW i Service Basic is able to remove and install a high-voltage battery unit but cannot perform any repair work on or in the high-voltage battery unit. If a repair is required according to the test schedule in the diagnosis system, the vehicle or the high-voltage battery unit must be transported to a commercial company featuring the service format BMW i Service Extended Battery or BMW i Service Full. The repair is to be carried out in such a workshop.

The commercial company must make available the required special tools and a suitable workbay for the repair.

The most important special tools are the following:

- Mobile lift table MHT 1200 + set of adapters to remove and install the high-voltage battery unit
- Charger for cell blocks of high-voltage battery unit
- Diagnosis system for the repaired high-voltage battery unit
- Lifting tackle to remove and install cell blocks
- Panel wedges made of plastic to remove clips within the high-voltage battery unit
- Lifting traverse for the complete high-voltage battery unit
- High-voltage barrier tape
- Yellow cones relating to high-voltage recommended

Sourcing reference:

See Aftersales Assistance Portal (ASAP) - Service/Technical - Workshop Equipment (Start BMW) - Shop Workshop Equipment or at www.bmwgroup.com

Only service employees being qualified for the repair of the high-voltage battery unit may carry out this procedure.

This includes training for "experts for work on high-voltage-intrinsically safe vehicles".

Before removing and opening the high-voltage battery unit, troubleshooting is to be carried out by means of the relative diagnosis system. Only if determined by the test schedule and if the prerequisite „no mechanical damage on the outside“ is satisfied, the high-voltage battery unit may be opened and the faulty component identified by the test schedule can be replaced. No other repair work relating to the high-voltage battery unit than the replacement of faulty components is planned.

It is essential to observe the operational steps specified in the repair instructions very precisely in order to carry out the replacement of a faulty component. The use of the special tools listed therein is absolutely essential as well.

2. Safety rules

- The first step after opening the housing cover to repair the high-voltage battery unit is a visual inspection for mechanical damage.
- A thorough visual inspection of the components inside the working area is required during and/or before and after every operation. When removing one component, all other involved components being accessible need to be checked for damages. If the housing or other internal high-voltage components are damaged, a qualified electrician or Technical Support must be contacted. All repair works relating to the high-voltage battery unit must be stopped immediately for safety reasons
- Check the correct latch mechanism of the connector of the insulation monitoring line at the control unit of the high-voltage battery unit. If this is not fully locked, an isolation fault may not have been detected.
- The separation of the high-voltage cable between the two cell modules mounted on the inside of the housing (across from the connection side of the high-voltage battery unit) is to be always carried out before working on the opened high-voltage battery unit. This procedure ensures the interrupt of the series connection (additional safety)
- The workbay required for the repair of the high-voltage battery unit must be clean (free of grease, dirt and

swarf), dry (no leaking fluid) and free of flying sparks. Therefore, avoid close vicinity to areas intended for cleaning of vehicles and to workbays intended for repair work relating to the body. Use movable walls for separation, if needed

- High-voltage barrier tape is required to secure the workbay against unauthorised access (insufficient qualification, customers, visitors, etc.). It is also required in case the high-voltage intrinsic safety is not established or the status is not determined yet. Placing yellow cones with lightning bolt to indicate high-voltage when leaving the working area is recommended
- Do not use tools or other objects with pointed and sharp blades/edges when working on high-voltage components or high-voltage cables and/or in their close vicinity. Diagonal cutting pliers, knives etc. are prohibited. Cable straps inside the low-voltage wiring harness may be opened by means of diagonal cutting pliers
  Allowed: Plastic wedges
- Cable straps relating to high-voltage cable may not be cut open. Damaged clips remain on the high-voltage cable. The remaining, damaged clip must be pushed to a position on the high-voltage line where the clip can not rub. A new clip must then be installed
- Defective or damaged high-voltage cables must be made unusable to ensure they are not reused
- No tools must be forgotten inside the high-voltage battery unit. Check whether all tools are present in the tool box before closing the housing cover
- It is absolutely essential to remove all small parts/screws that fell into the high-voltage battery unit. The use of magnetized screws is generally recommended in order not to lose any screws in the high-voltage battery unit during the repair
- When interruptions of work occur: Secure housing cover against unintended opening by screwing in several screws. Enclose the working area by means of high-voltage barrier tape
- Due to the very slim construction of the radiator, the risk of damage during disassembly and installation is high. Careful handling is absolutely necessary as the cooling of the cell blocks may not be guaranteed when the radiator is damaged (bent, dented). The consequence is a major loss of the electrical range and of the power of the vehicle. In extreme cases, even a breakdown may occur
- Very careful handling is necessary when disconnecting and connecting the insulation detector line at the control unit of the high-voltage battery unit (safety box coming) since high-voltage is present in the thin orange lines. Do not pull on the lines (e.g. to unplug the connector etc.)! The connector must be locked securely when plugged in
- Make sure the plastic lids of the modules are not removed when working on the cell modules (loosing screws, raising and lifting, …). The live cell contacting system is located thereunder. Continuing to work with the lid being removed is not permitted. A qualified electrician or Technical Support must be contacted
- A schematic diagram with limiting sample examples in the training is necessary to get to know the limits. These show when the further work for the "experts for intrinsically safe vehicles" is no longer possible due to absent intrinsic safety, and the Technical Support or a qualified electrician must be contacted
- Remove residual moisture and coarse contamination around the lid of the high-voltage battery unit before beginning the disassembly
- Clean gaskets and sealing surfaces (venting unit, high-voltage connector, signal connector, radiator connection) with a specified cleaning agent before reassembly
- If contamination is present in the high-voltage battery unit, check the cause and carefully clean the affected areas
  Approved cleaning agent:
  - Spirit
  - Windscreen cleaner
  - Glass cleaner
  - Distilled water
  - Vacuum cleaner with plastic top
- Visual inspection for contamination and damage of housing as well as of connections and degassing unit when installed (underfloor). A damaged diaphragm within the venting unit may indicate damaged storage cells. In this case, special carefulness is required when checking and opening the high-voltage battery unit
- Electrolyte
  The majority of the electrolyte is a mixture of lithium-nickel-manganese-cobalt oxide in bound state The quantity of free electrolyte in the high-voltage battery unit is very small. It is a noxious and irritant fluid. Absolutely avoid direct contact of skin with leaking fluid as acid burns may occur. In case of contact with eyes or skin, flush with plenty of clear water and consult a doctor immediately. Burning or evaporating electrolyte is also hazardous. CAREFUL: do not inhale! Ensure sufficient fresh air supply. If breathing ceases, apply artificial respiration and immediately consult a doctor. Notify fire brigade in case of fire. Clear the area immediately and make accident scene safe. Attempt to extinguish the fire without putting persons in danger and use suitable extinguishant, e.g. water

3. Repairing removed high-voltage battery units

- The high-voltage battery unit is a component of large dimensions and heavy weight. Only the combination of the housing and the cell blocks mounted therein provides the high-voltage battery unit with complete stability (rigidity), as required for driving. Therefore, it is necessary to ensure that the housing is positioned on the relative mounting/adapter of the lifting table during replacement and fixation of cell blocks. In this way, one can prevent the housing from bracing during the repair work and ensure the high-voltage battery unit is not installed in the BMW I01 in this condition
- It is extremely important to enter the serial numbers and the installation positions of the replaced components in the SME via the testing device, as well as to carry out the transmission into the diagnosis system. Otherwise, the new installation position will be assigned automatically by the SME. The consequence is an incorrect location data, as the SME does not set correct positions. For a renewed repair of the high-voltage battery unit, the diagnosed faults for the incorrect installation position will be displayed. The consequence is that replacement is done at the wrong location
- In diagnosis, it is not possible to enter the serial numbers of the cell supervision circuits. The serial numbers are transmitted from the cell supervision circuit to the SME using the CAN bus. The SME then sets a corresponding position assignment. This assignment is not always fault-free. That is why the serial number and installation position of the exchanged cell supervision circuit must be checked in the diagnosis after completed repair. If the positions do not match, a position change can be performed with diagnosis. A new serial number of a cell supervision circuit is not entered
- Attention: Do not use powered wrenches as the screws/threads located in the high-voltage battery unit may break due to the low torques!
- The seal must be renewed every time the housing cover is removed to guarantee tightness of the high-voltage battery unit
- The screws are thread-tapping, so pre-insert them manually before tightening them with a tool. Otherwise, the threads of the lower housing section may be damaged!

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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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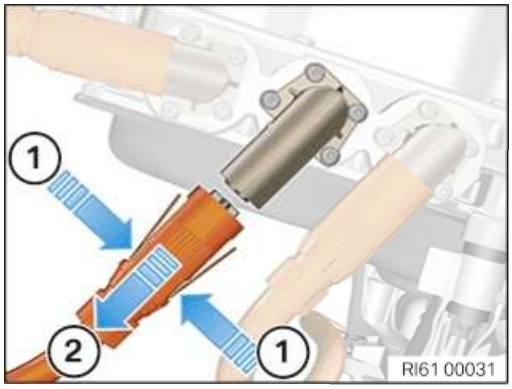
61 13 ... Unlocking and disconnecting various plug connections in electrical and hybrid vehicles



Attention!

Observe the following instructions for handling high-voltage plug connections:

- Damaged high-voltage plug connections must be replaced completely. Repair is not permitted.
- Dirt contamination must be removed before opening the plug connection.



Disconnect the Hirschmann high-voltage connector:

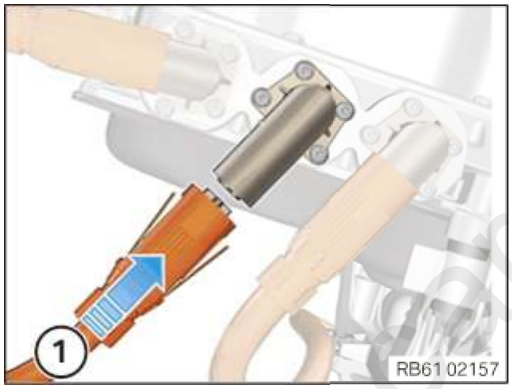
Press the lock (1) on the left and right on the connector in the direction of the arrow.

Pull off connector (2) in direction of arrow.

Attention!

Connector (2) is difficult to pull off.

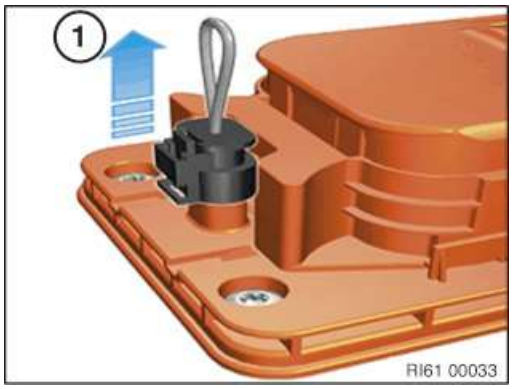
In the event of damage to high-voltage connector (2), the complete high-voltage cable must be replaced!



Connect the Hirschmann high-voltage connectors:

Slide the connector (1) on in the direction of the arrow.

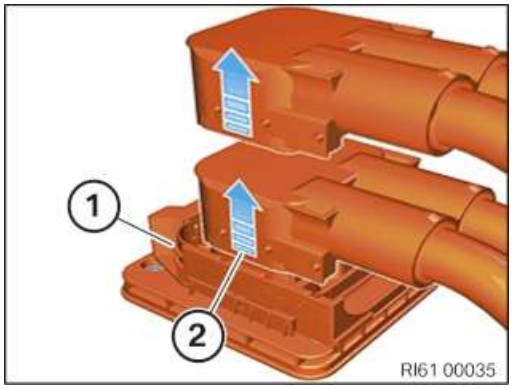
Note:
Connector (2) must lock audibly.



Disconnect the Kostal high-voltage connector:

Unlock and disconnect high-voltage interlock loop (1).

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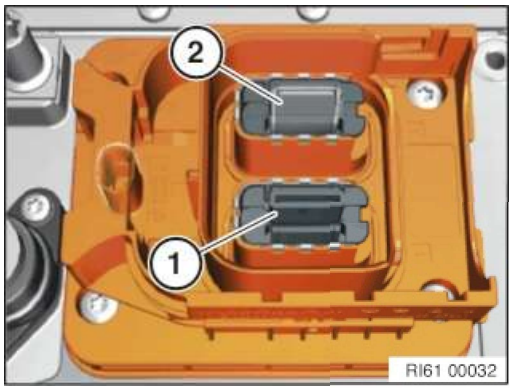
Push the lock (1) fully to the front.

Lift the connector (2) and remove it entirely.

Attention!

Plug connection (3) is difficult to pull off.

The connector (2) must be completely pulled off the opposite housing in one step. Damage may be caused to contact protection if connector is only partly pulled off and then closed again!



Check the Kostal high-voltage connector and connection for damage:

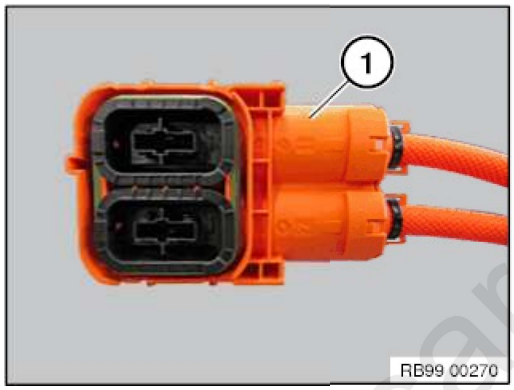
Check the touch protection for damage and correct positioning (1).

Warning!

Do not touch unprotected connector (2)!

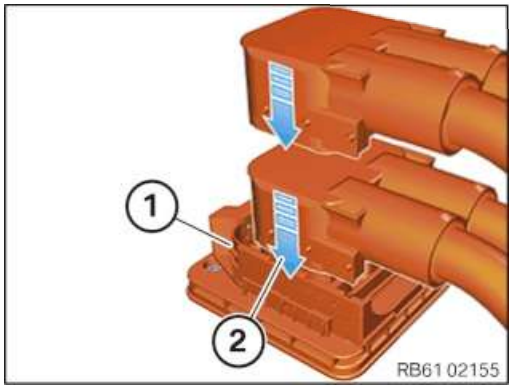
If the contact protection (1) has been pushed to the bottom (2), the high-voltage connector must be refitted.

If contact protection (1) remains in bottom position (2) after reinstallation, the contact protection is faulty and the component must be replaced!



Check the high-voltage connector (1) for damage.**Warning!**

In the event of damage to the high-voltage connector (1), the complete high-voltage cable must be replaced!



Connect the Kostal high-voltage connector:

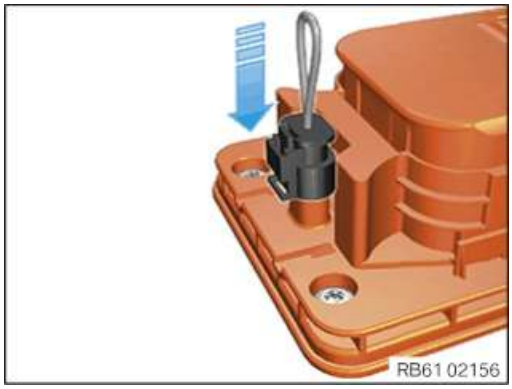
Connect the connector (2) in one single movement to the counter-housing.

Push the lock (1) fully to the rear.

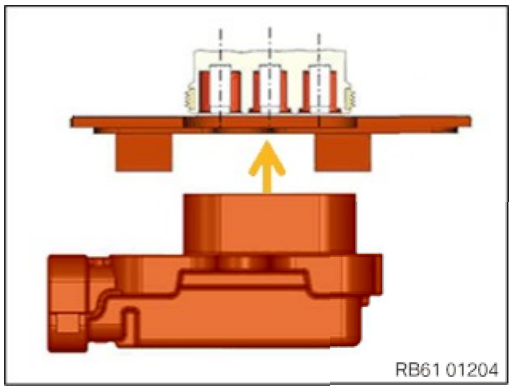
Attention!

Plug connection (3) must be correctly locked by lock (2), otherwise there is a risk of damage.

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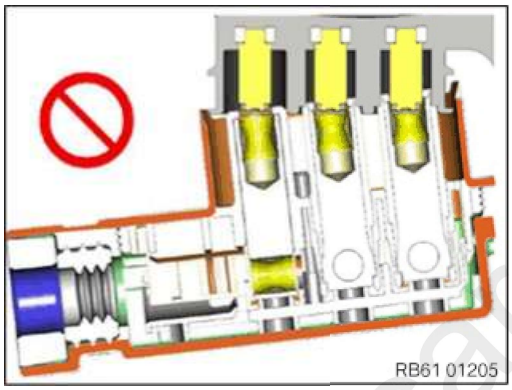


Connect the connector for the high-voltage interlock.



Three-phase high-voltage connector:

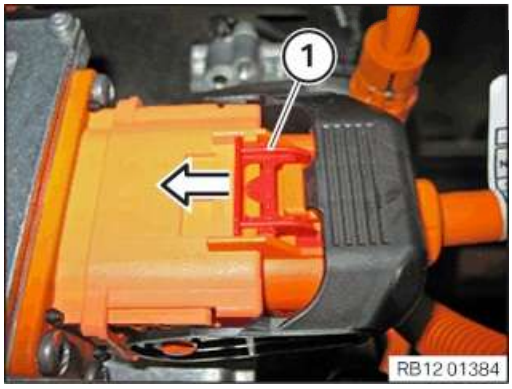
Connect and disconnect the connector straight.



Attention!

The system is designed to only offer limited protection against damage caused by connectors that are inserted at an angle.

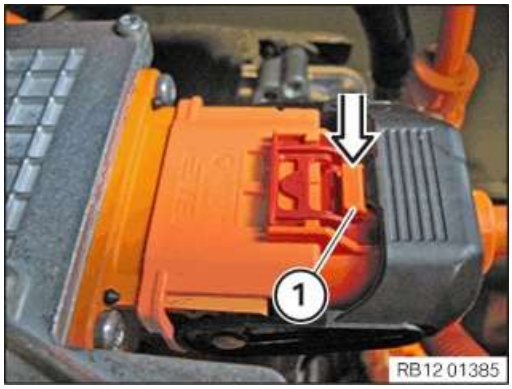
Increased tilted connections will increase the connecting force and the risk of danger.



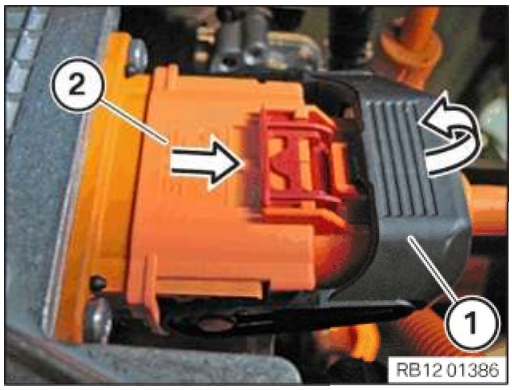
Disconnect the high-voltage connector from the high-voltage connection of the KLE:

Slide lock (1) in direction of arrow up to stop.

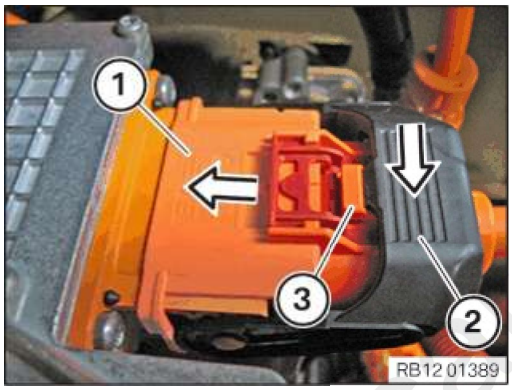
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Press lock (1).



Open the lock (1) completely and disconnect the connector (2).



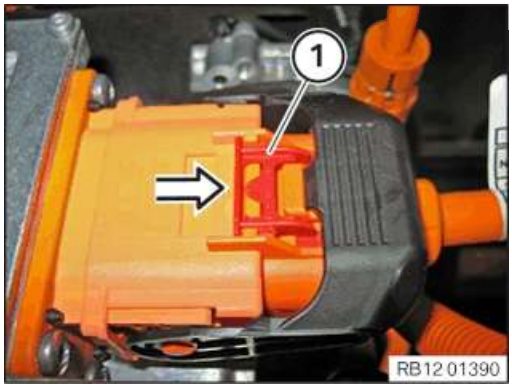
Connect the high-voltage connector to the high-voltage connection of the KLE:

Connect the connector (1) to the limit position and close the lock (2).

Attention!

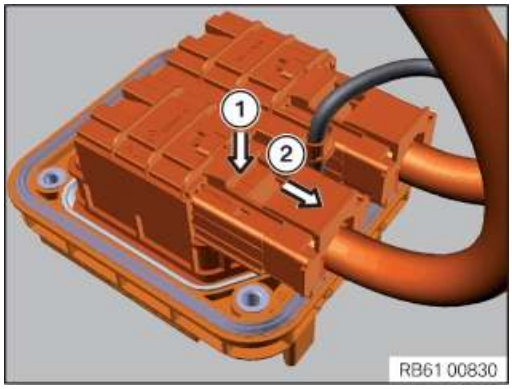
Lock (2) must snap audibly into place.

The retaining lug of the lock (2) must be positioned completely under the lock (2).



Slide the lock (1) on to the stop in the direction of the arrow.

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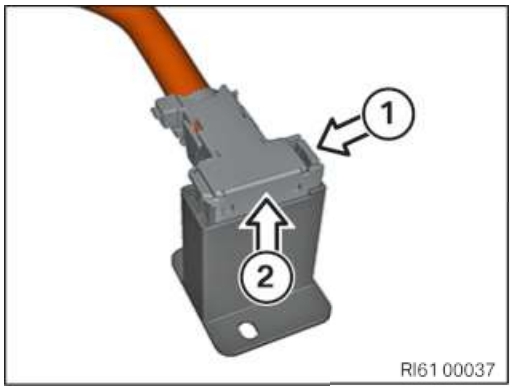
High-voltage connector on the high-voltage connection of the high-voltage battery unit:

Press down unlocking (1) in direction of arrow and pull off connector in direction of arrow (2).

Attention!

Contact protection is no longer provided in the event of a damaged connector housing.

In this case, contact technical support.



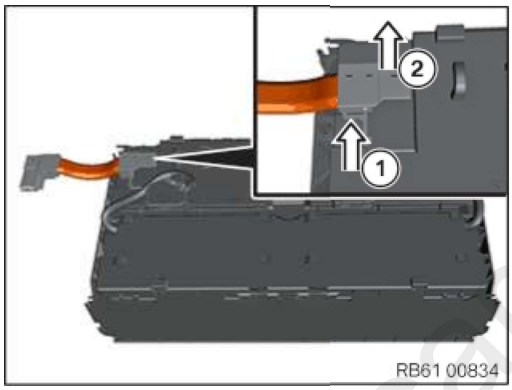
High-voltage connector on the cell module I01:

Press unlocking device (1) together and pull off connector upwards (2).

Attention!

Contact protection is no longer provided in the event of a damaged connector housing.

In this case, contact technical support.



High-voltage connector on the cell module (cell module connecting line):

Press unlocking (1) in direction of arrow and pull off connector in direction of arrow (2).

Attention!

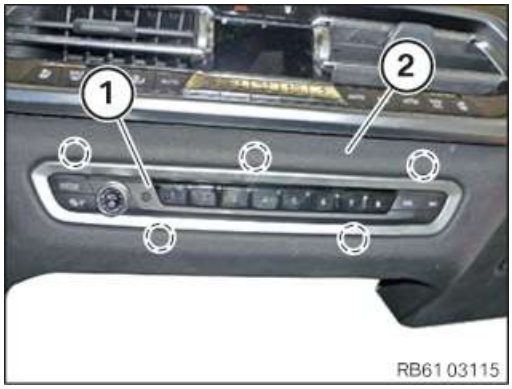
Contact protection is no longer provided in the event of a damaged connector housing.

In this case, contact technical support.

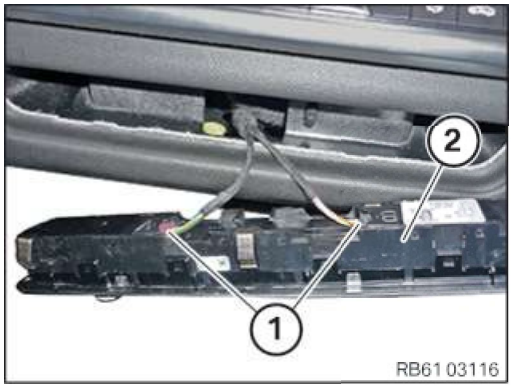
cardiagn.com

61 31 251 Rem. & install audio operating facility

1 – Remove the audio operating unit

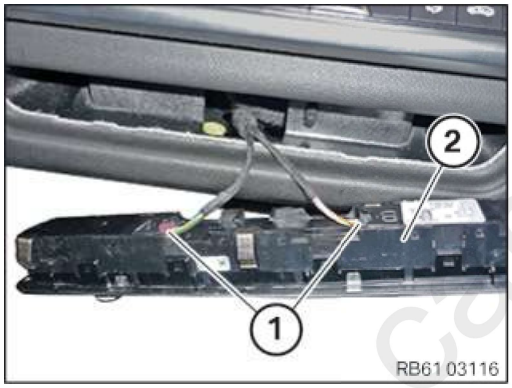


- Unclip the audio operating unit (1) from the instrument panel (2) at the points marked using special tool 0 496 571 (00 9 327).

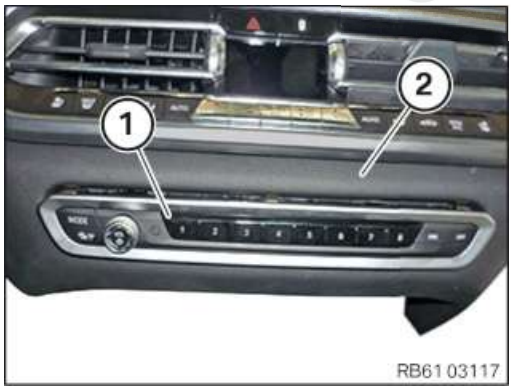


- Disconnect plug connections (1) and remove the audio operating unit (2).

2 – Install the audio operating unit



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



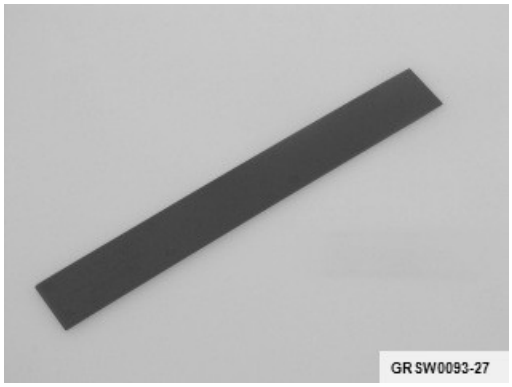
- Correctly position the audio operating unit (1) and install in the instrument panel(2).

Additional Information

Overview of Special Tools

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0 496 571 (00 9 327) Wedge



Common	Used in step 1
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)

cardiagn.com

61 31 021 Remove and install/replace ring aerial

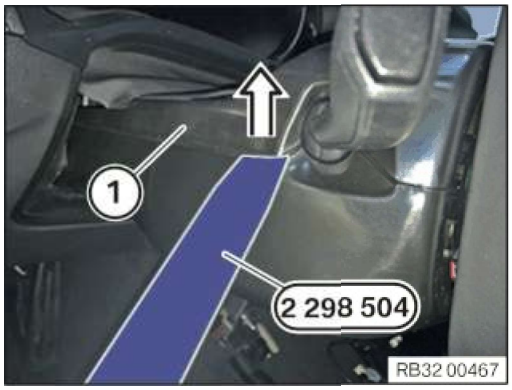
PRELIMINARY WORK

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).

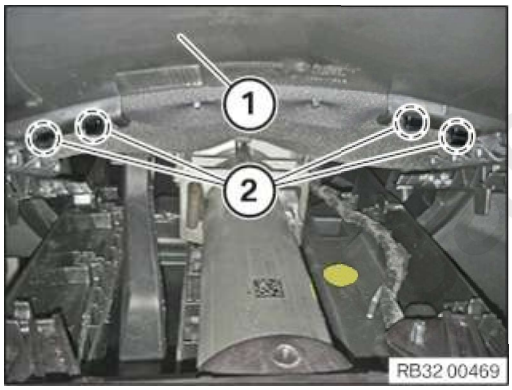
2 – Removing steering column shroud upper section



NOTICE

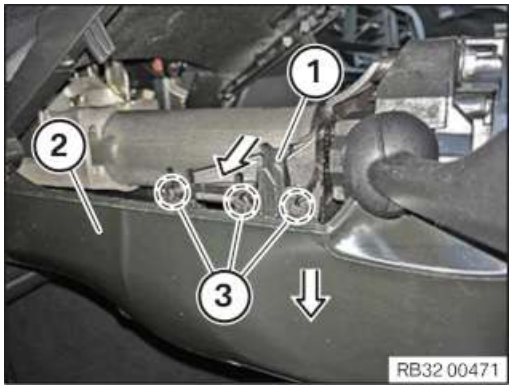
Perform the operations on the left and right side.

- 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).

3 – Removing steering column shroud lower section



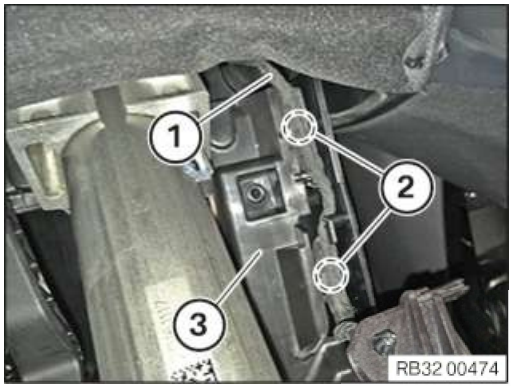
NOTICE

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.



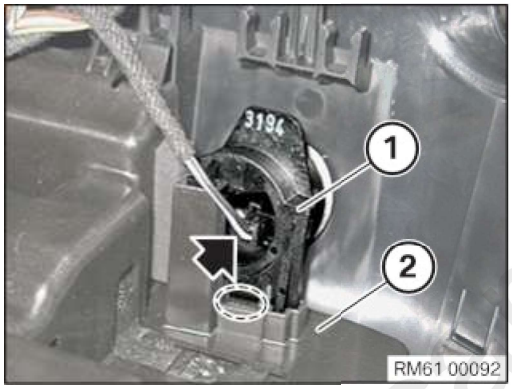
- Fold the steering column shroud lower section down.
- Unlock and disconnect connector (1).



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

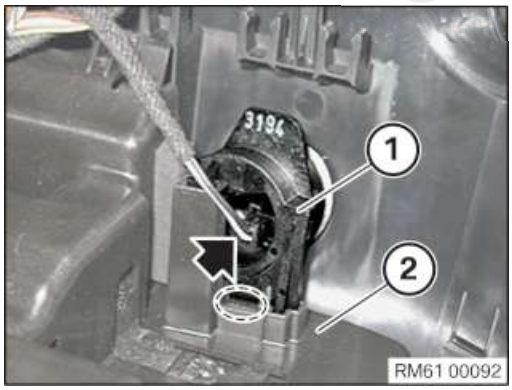
MAIN WORK

4 – Removing the ring aerial



- Unlock connector (arrow) and disconnect.
- Pull ring aerial (1) out of the lower section of the steering column shroud (2).

5 – Installing the ring aerial

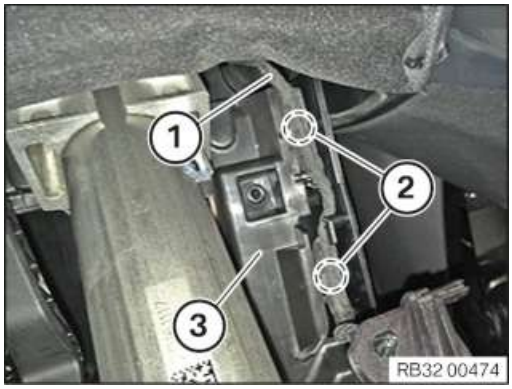


- Join the ring aerial (1) into the steering column shroud lower section (2).
- Connect the connector (arrow).

POSTPROCESSES

6 – Install steering column shroud lower section

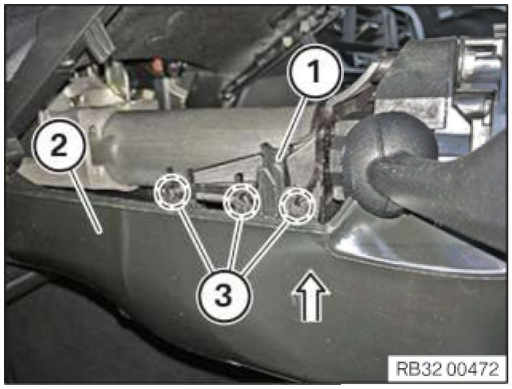
cardiagn.com



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



- Connect the connector (1).

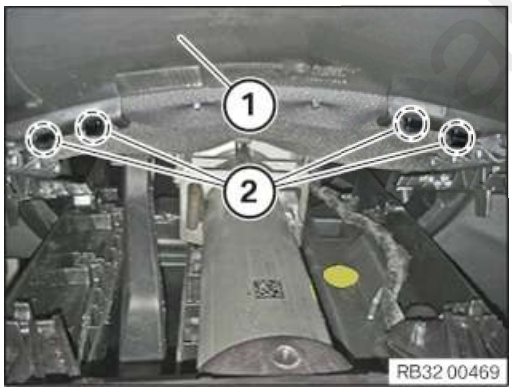


NOTICE

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.

7 – 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).

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NOTICE

Perform the operations on the left and right side.

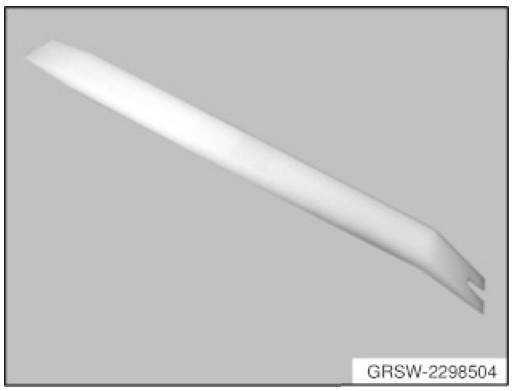
- Press the upper section of the steering column shroud (1) downwards in direction of arrow.

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

Additional Information

Overview of Special Tools

2 298 504 Wedge



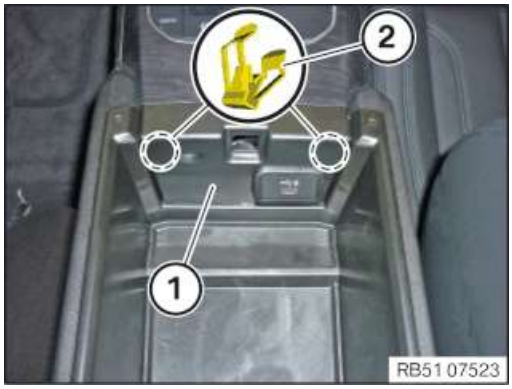
Common	Used in step 2
Usage	Wedge with angled lug
Included in the tool or work	
Storage location	C34
Replaced by	
In connection with	
SI-Number	01 03 12 (792)

cardiagn.com

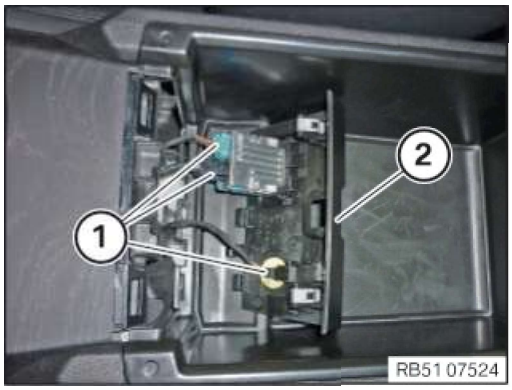
61 31 195 Removing and installing front controller

PRELIMINARY WORK

1 – 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) .

2 – 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.

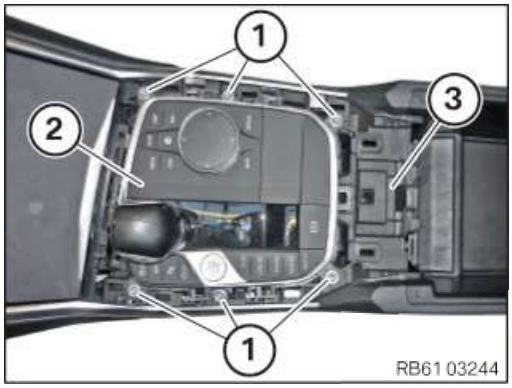
3 – Remove the operating facility in the centre console

▸ **Disconnecting all battery earth leads**

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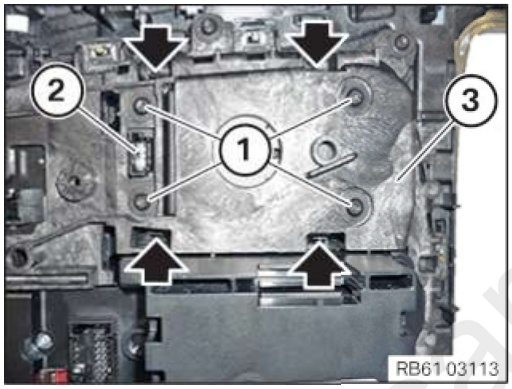
- See additional information.



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

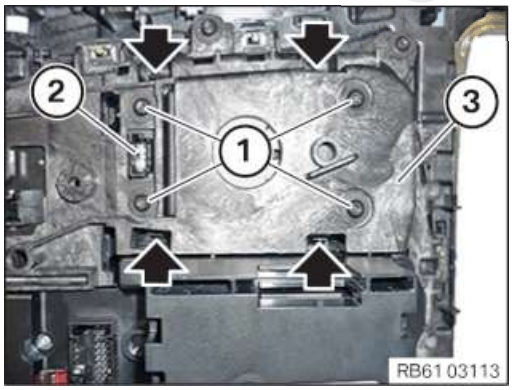
MAIN WORK

4 – Remove controller



- Loosen screws (1).
- Release the latch mechanisms (arrows).
- Remove controller (2) from the gear selector switch(GWS) (3).

5 – Install controller



- Position the controller (2) on gear selector switch (GWS) (3) and engage in the latch mechanisms (arrow).
- Tighten the screws (1).

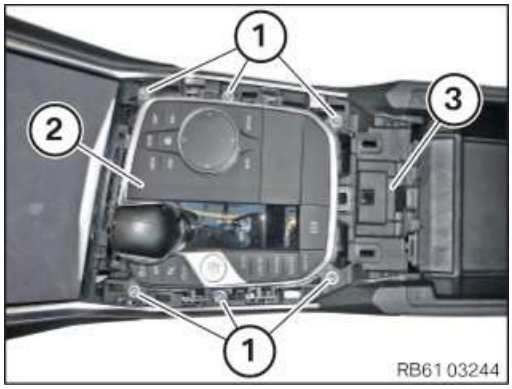
Controller to gear selector switch

Screw		Tightening torque	1,8 Nm

POSTPROCESSES

6 – 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.

7 – 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.



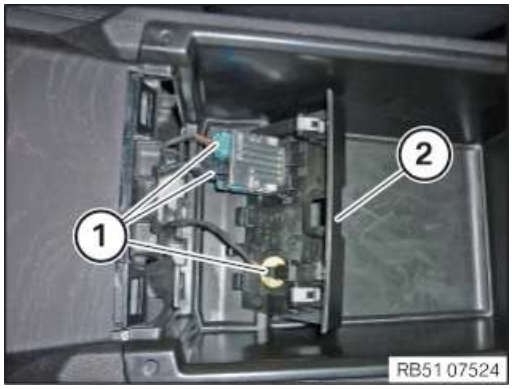
- Check all the latch mechanisms or clamps (arrows).
- In case the latch mechanisms or the clamps (arrows) are faulty, renew the centre console trim .



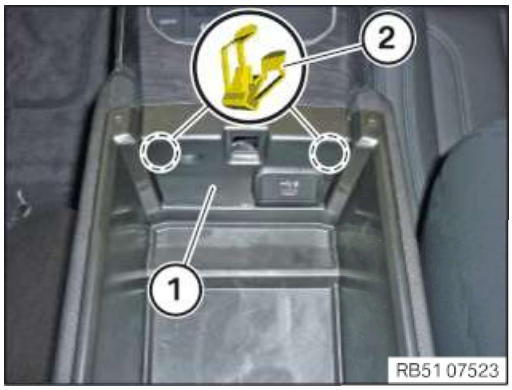
- Correctly position the centre console trim (1) and engage at the latch mechanisms.

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8 – 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).

Additional Information

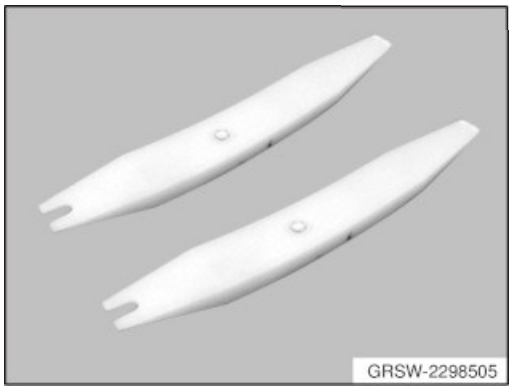
Overview of Tightening Torques

Controller to gear selector switch			Used in step 5
Screw		Tightening torque	1,8 Nm

Gear selector switch to centre console trim			Used in step 6
Screw		Tightening torque	1,8 Nm

Overview of Special Tools

2 298 505 Wedge



Common	Used in step 12
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	36
61 20 900 Disconnecting and connecting battery earth lead	36

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61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	36
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	36
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
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61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36

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61 31 197 Removing and installing operating facility for centre console

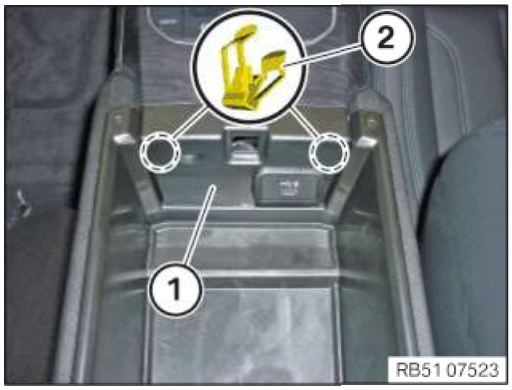
PRELIMINARY WORK

1 – Disconnecting all battery earth leads

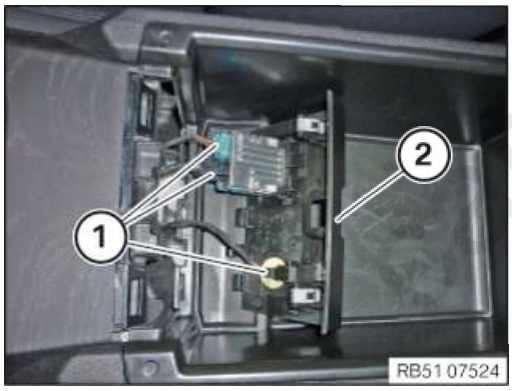


- See additional information.

2 – 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) .

3 – 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.

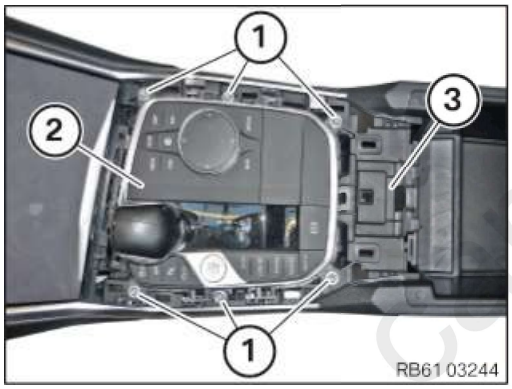
MAIN WORK

4 – Remove the operating facility in the centre console

▸ **Disconnecting all battery earth leads**

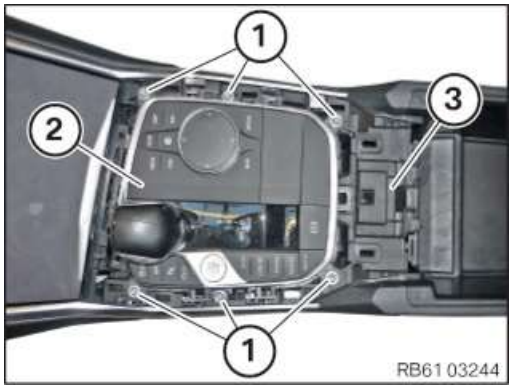


- See additional information.



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

5 – 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**

carfdiagn.com



- See additional information.

POSTPROCESSES

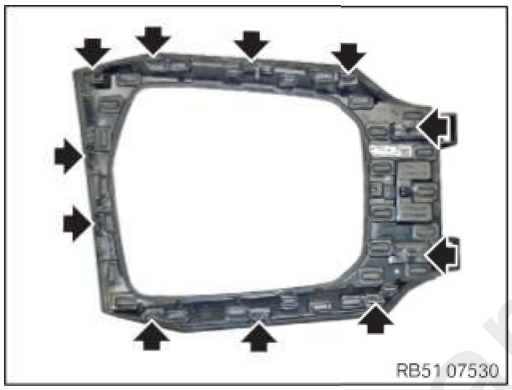
6 – Installing the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

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

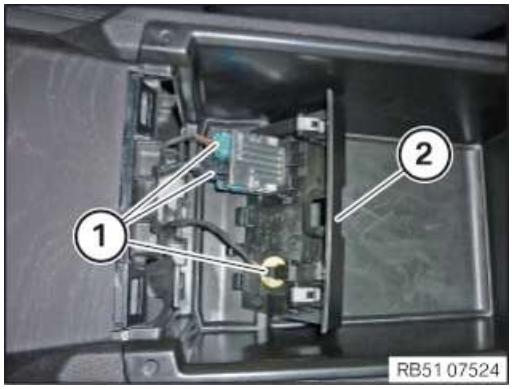


- Check all the latch mechanisms or clamps (arrows).
- In case the latch mechanisms or the clamps (arrows) are faulty, renew the centre console trim .

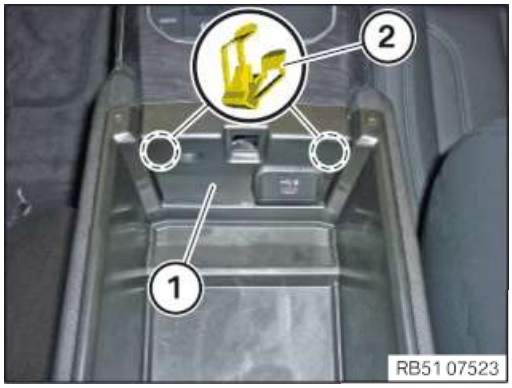


- Correctly position the centre console trim (1) and engage at the latch mechanisms.

7 – 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).

8 – Disconnecting all battery earth leads



- See additional information.

Additional Information

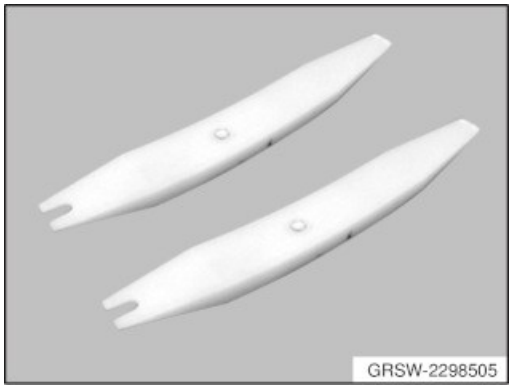
Overview of Tightening Torques

Gear selector switch to centre console trim Used in step 5

Screw		Tightening torque	1,8 Nm

Overview of Special Tools

2 298 505 Wedge



Common Used in step 23

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)

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Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	1458
61 20 900 Disconnecting and connecting battery earth lead	1458
61 20 900 Disconnecting and connecting battery earth lead	1458
61 20 900 Disconnecting and connecting battery earth lead	1458
61 20 900 Disconnecting and connecting battery earth lead	1458
61 20 900 Disconnecting and connecting battery earth lead	1458
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1458
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1458
61 20 900 Disconnecting and connecting battery earth lead	1458
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1458
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	1458
61 20 900 Disconnecting and connecting battery earth lead	1458
61 20 900 Disconnecting and connecting battery earth lead	1458
61 20 900 Disconnecting and connecting battery earth lead	1458
61 20 900 Disconnecting and connecting battery earth lead	1458
61 20 900 Disconnecting and connecting battery earth lead	1458
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61 20 900 Disconnecting and connecting battery earth lead	1458
61 20 900 Disconnecting and connecting battery earth lead	1458
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1458
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61 20 900 Disconnecting and connecting battery earth lead	1458
61 20 900 Disconnecting and connecting battery earth lead	1458

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61 31 008 Removing and installing steering column switch cluster

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.

TECHNICAL INFORMATION

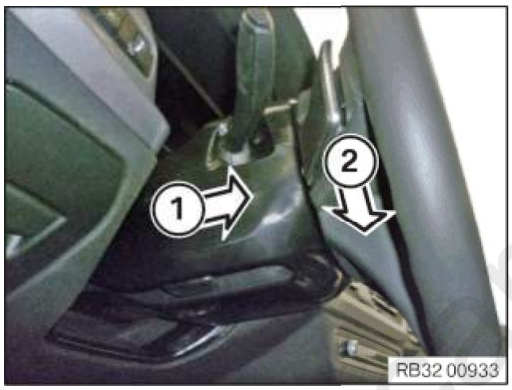
Steering wheel must be replaced if airbag unit has been deployed.

Only with M Sport steering wheel: Impact plate must be replaced if airbag unit has been deployed.

For additional information see: 72 12 ... Procedure after airbag deployment as result of an accident

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 – Disconnecting all battery earth leads



- See additional information.

3 – Removing the airbag unit

obdiag.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

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)**



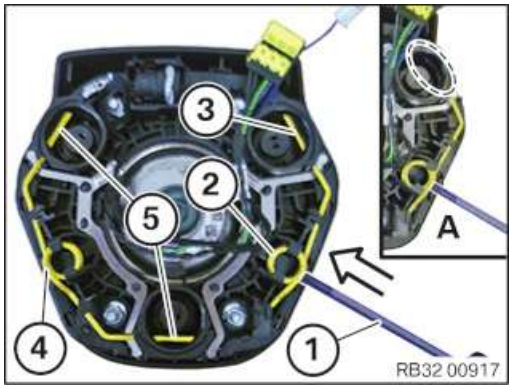
- Insert Torx screwdriver T25 (1) diagonally upwards in the hidden opening (2) on the rear side of the steering wheel until a spring resistance is felt.



NOTICE

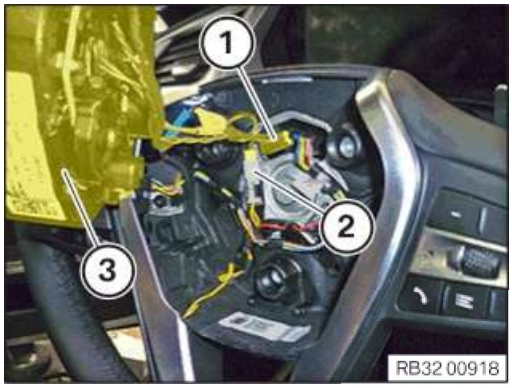
To provide a better overview: Diagram with airbag unit removed.

- 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.

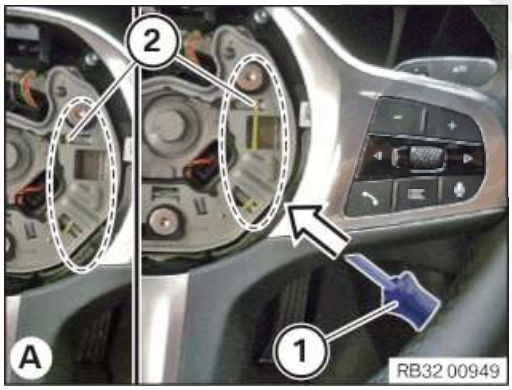


- Unlock and disconnect the plug connections (1) and (2).
- Remove airbag unit (3).

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



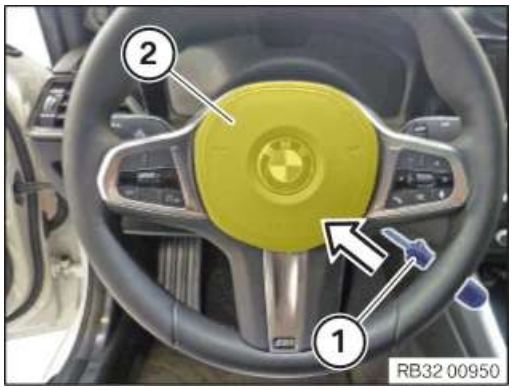
- Locate the pre-punched bore hole (1) on the rear side of the steering wheel by touch.
- Insert the Torx screwdriver T27 (2) diagonally upwards in the pre-punched bore hole (1) on the rear side of the steering wheel until a springing kind of resistance can be felt.



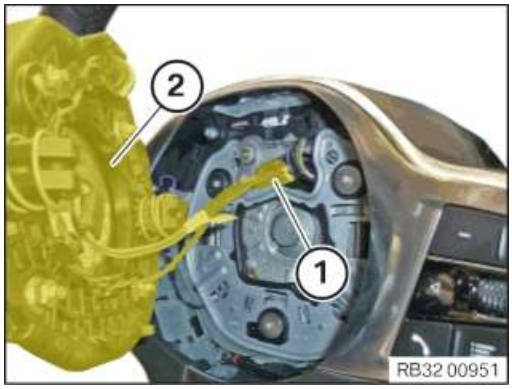
NOTICE

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).

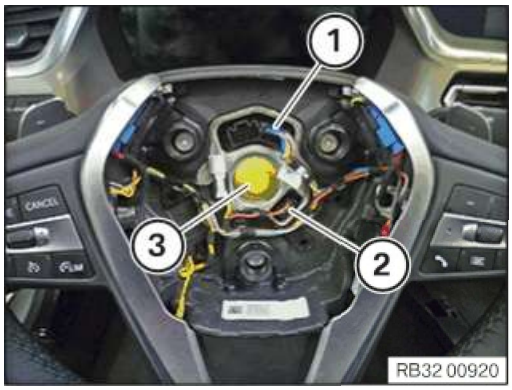


- Press in Torx screwdriver T27 (1) straight in direction of arrow towards the centre of the steering wheel and lift airbag unit (2) on the unlocked side.
- Repeat procedure on left side and carefully remove airbag unit (2) in direction of arrow off the steering wheel.



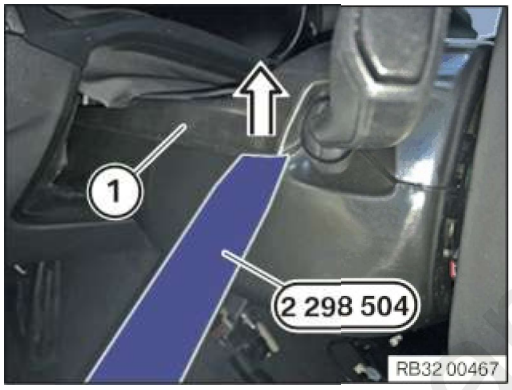
- Unlock and disconnect plug connection (1) and remove the airbag unit (2).

4 – 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.

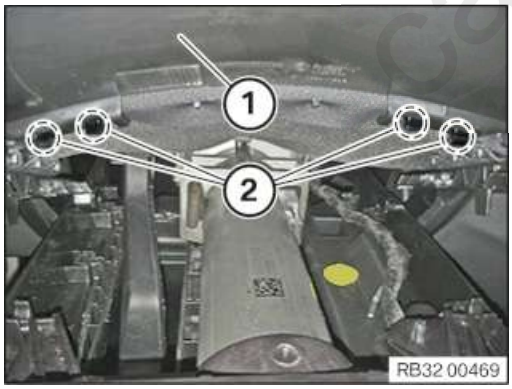
5 – Removing steering column shroud upper section



NOTICE

Perform the operations on the left and right side.

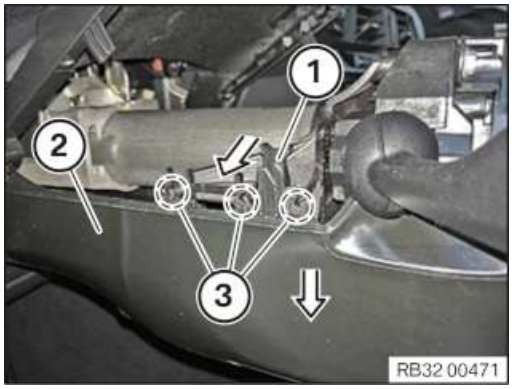
- Unlock the steering column shroud upper section (1) with the special tool 2 298 504 and fold up.



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

6 – Removing steering column shroud lower section

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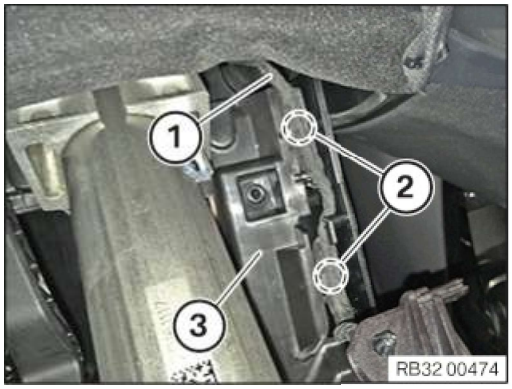
NOTICE

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.



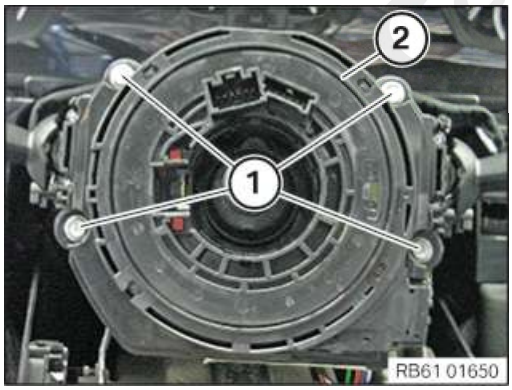
- Fold the steering column shroud lower section down.
- Unlock and disconnect connector (1).



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

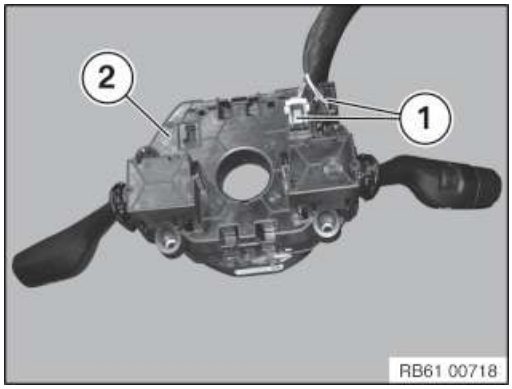
MAIN WORK

7 – Removing the steering column switch cluster (SZL)



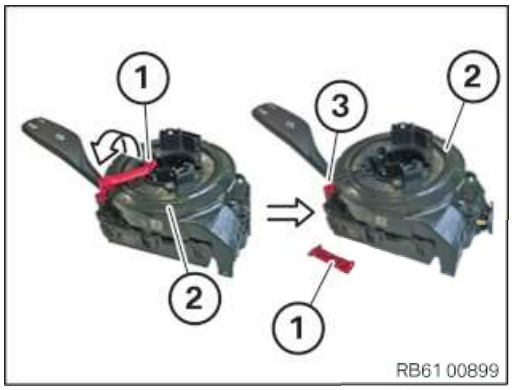
- Loosen screws (1).
- Remove the steering column switch cluster (SZL) (2).

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

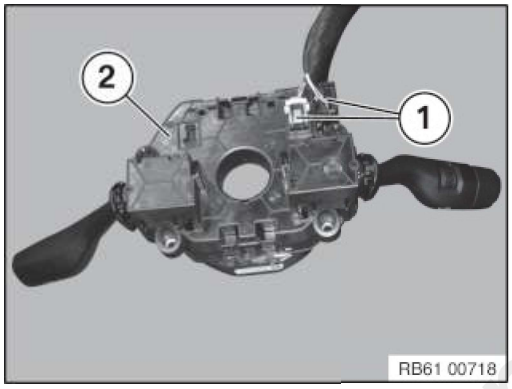
8 – Installing the steering column switch cluster (SZL)



- **Replacement:**

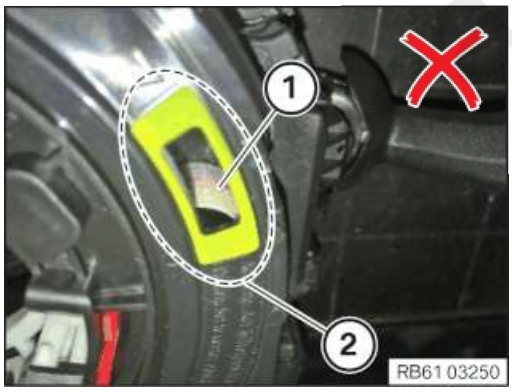
  Break off the transportation retainer (1) on the steering column switch cluster (SZL) (2) in direction of arrow.

  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).

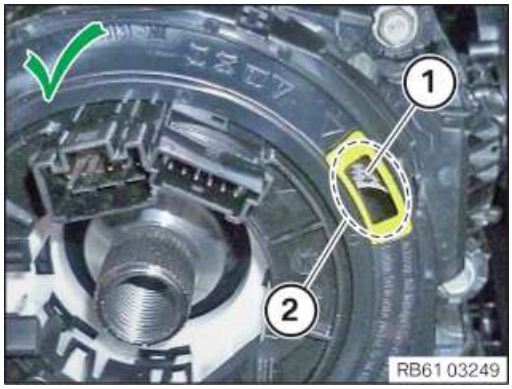
Result

» 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).

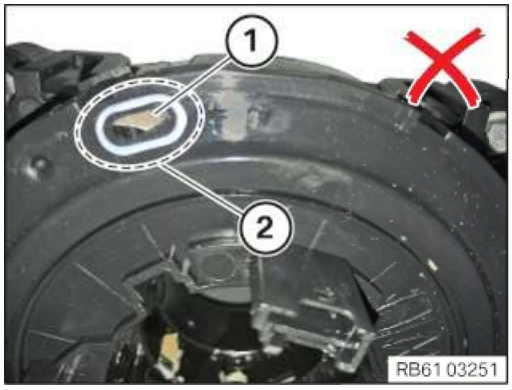
Result

» 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).

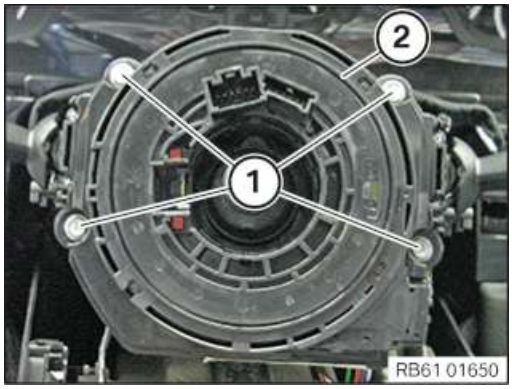
Result

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

Measure

- Continue with the next step.

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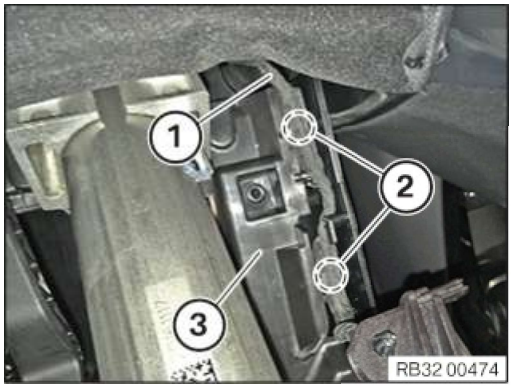
- Position the steering column switch cluster (SZL) (2).
- Tighten the screws (1).

Steering column switch cluster (SZL) on the steering column

Screw TS5x20		Tightening torque	3 Nm

POSTPROCESSES

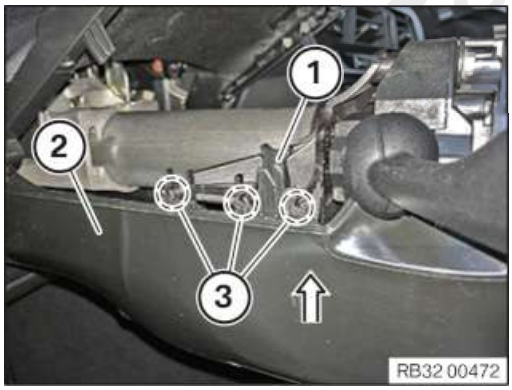
9 – Install steering column shroud lower section



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



- Connect the connector (1).



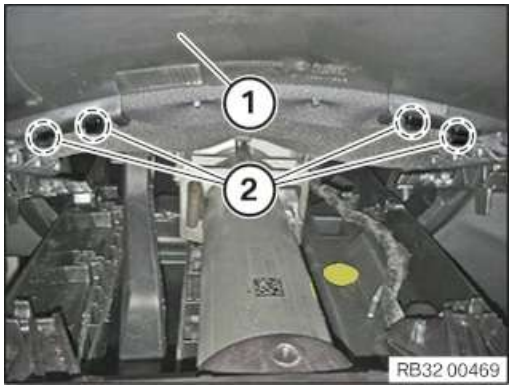
NOTICE

Perform the operations on the left and right side.

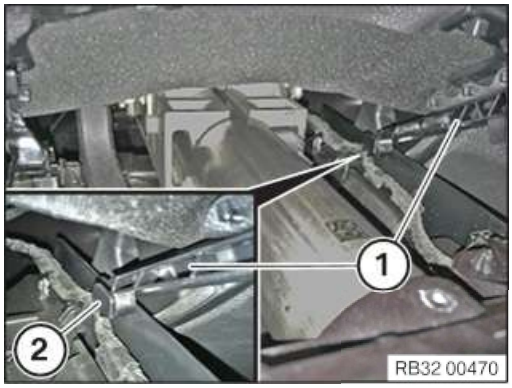
- Align the steering column shroud lower section (2) to the steering column using the retaining lug (1).
- Push the steering column shroud lower section (2) up in the direction of the arrow until the brackets (3) engage.

10 – Fit steering column shroud upper section

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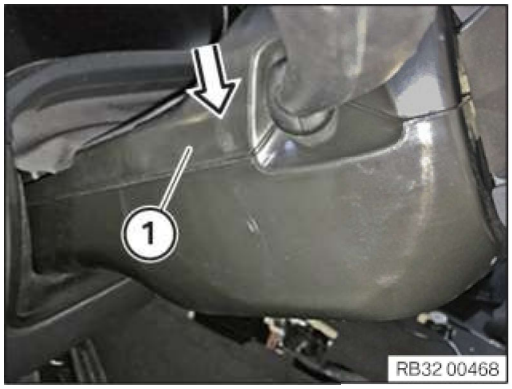
- Clip in the steering column shroud upper section (1) at the brackets (2).



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.

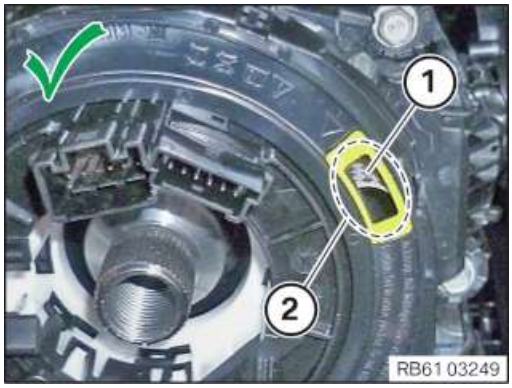
  The upper section of the steering column shroud must engage audibly and perceptibly.

11 – 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.

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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).

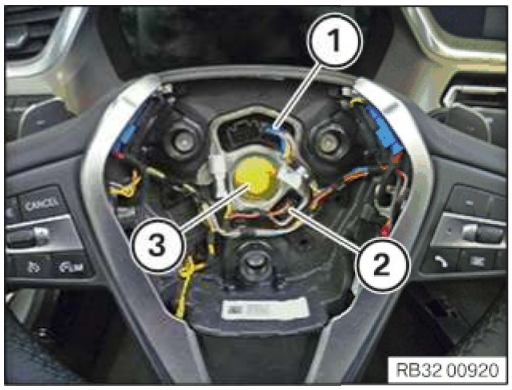
Result

» 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

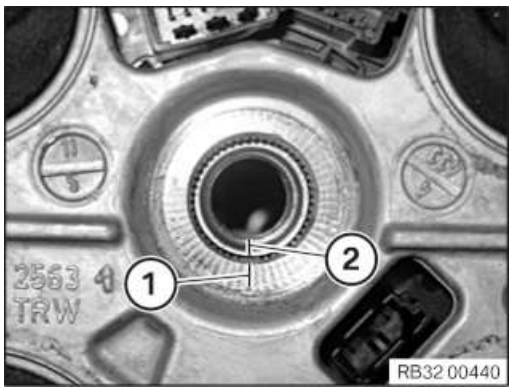
» Screw is (3) micro-encapsulated.

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

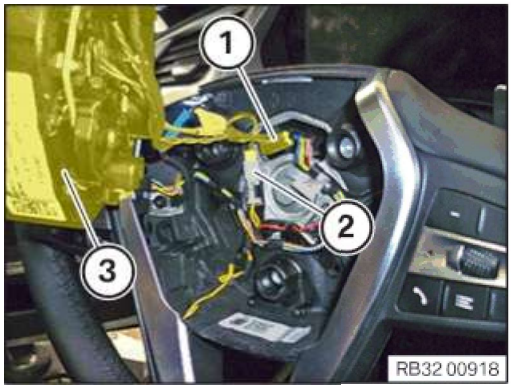
M14	Only for a micro-encapsulated screw: Renew screw.	Tightening torque	62,5 Nm

12 – 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.



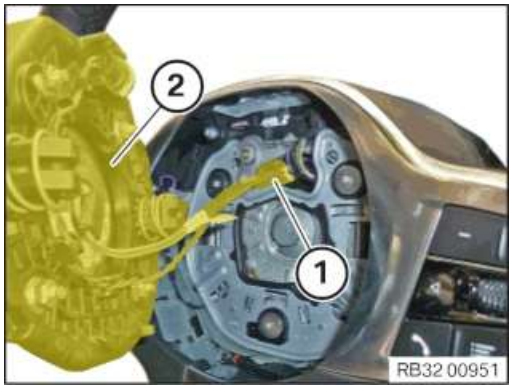
- Press the airbag unit (1) with even pressure in the direction of the arrow into the steering wheel.

  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).



- 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.

13 – Disconnecting all battery earth leads



- See additional information.

14 – Checking the airbag for function

Check

- Turn steering wheel in both directions to the limit position.

Result

» The airbag indicator light lights up.

Measure

- Renew the coil spring cassette.

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Additional Information

Overview of Tightening Torques

Steering column switch cluster (SZL) on the steering column Used in step 8

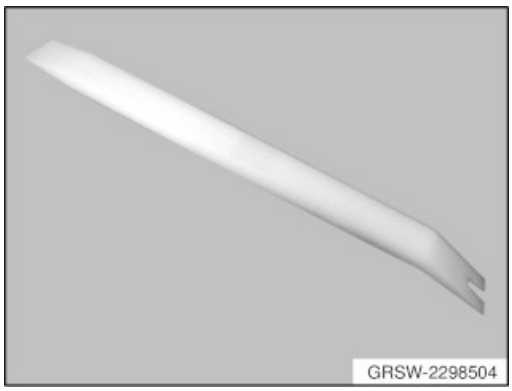
Screw TS5x20		Tightening torque	3 Nm

Steering wheel to steering column Used in step 11

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

Overview of Special Tools

2 298 504 Wedge



Common		Used in step 5
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)	

Links

General repair instructions	Used in step
72 00 ... Safety regulations for handling components with gas generators	3

Repair instructions	Used in step
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
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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

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61 31 043 Removing and installing the FZD

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

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

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

With the optional equipment SA6UA, the camera for gesture control is integrated in the roof control module. Separate exchange of this camera in the event of a fault is not possible.

1 – Removing the roof function centre (FZD)



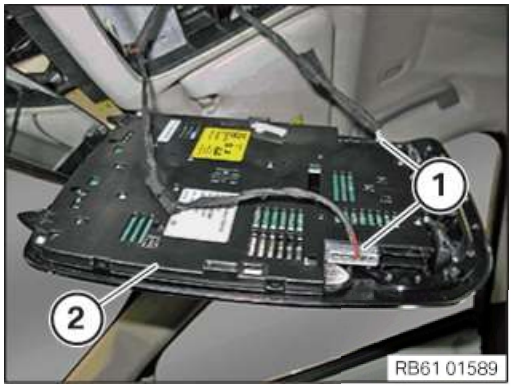
- Unclip the cover (1).



- Loosen screws (1).

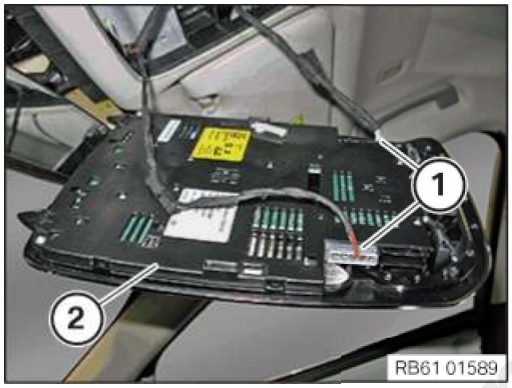


- Unclip the roof function centre (FZD) (1) from the clamps (2).
- Thread the roof function centre (FZD) (1) out of the guides (3).

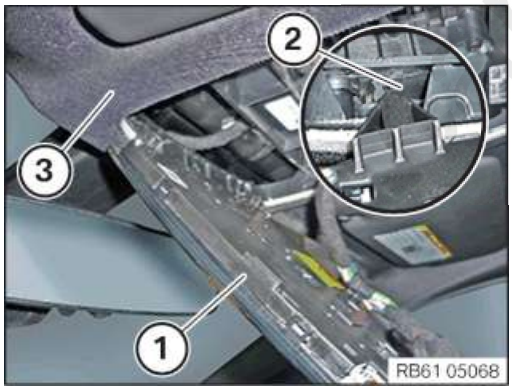


- Unlock and disconnect plug connections (1).
- Unclip the cable for the roof function centre (FZD) (2) from the cable clip.

2 – Installing roof function centre (FZD)



- Connect connectors (1) and lock.
- Clip in the cable for the roof function centre (FZD) (2) in the cable clip.



- Thread the roof function centre (FZD) (1) as shown at a steep angle into the two guides (2) on the headlining (3).

  Make sure the headlining is not deformed during this operation.



- Clip the roof function centre (FZD) (1) upwards into the clamps (2).

rdiagn.com



- Pass through the FZD frame and headlining with the special tool 2 298 505 and adjust the headlining correctly.



- Tighten the screws (1).

Roof function centre

	Tightening torque	1,2 Nm



- Clip in the cover (1).

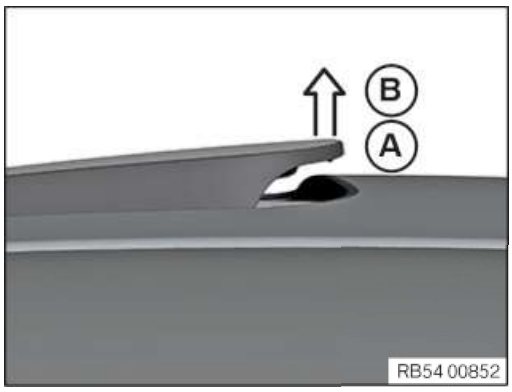
cardiagn.com

3 – Initialising the glass slide/tilt sunroof panel



- Press and hold the switch in the "Vent Position" direction.

  The glass slide/tilt sunroof moves to vent position.
- In the event of a delayed start or sudden stop of the glass slide/tilt sunroof, continue operating the switch in the "Vent Position" direction.



- Continue to operate the switch during the entire ABL.
- After having reached the vent position (A) continue to operate the switch for approximately 30 s (initialisation starts).
  - The glass slide/tilt sunroof moves from vent position (A) toward position (B).
  - Screen (sliding headliner) fully closes.
  - Screen (sliding headliner) fully opens.
  - Glass slide/tilt sunroof moves to "closed" position.
  - The glass slide/tilt sunroof moves to the "Open" position and immediately returns to the "Closed" position.
  - After a brief pause, the screen fully closes.

  The initialisation is completed once the glass slide/tilt sunroof and the screen have completely closed.
- Release the switch.

TECHNICAL INFORMATION

If the switch is released in the meantime, the initialisation must be repeated. Following successful initialisation, the corresponding messages in the Check Control and on the control display go out.

- Carry out function check (one-touch function, anti-trapping protection and, if necessary, comfort function).

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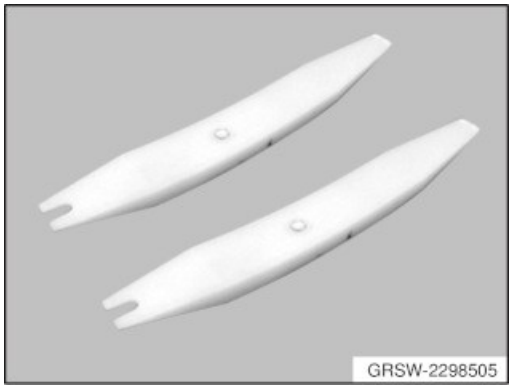
Additional Information

Overview of Tightening Torques

Roof function centre		Used in step 2
	Tightening torque	1,2 Nm

Overview of Special Tools

2 298 505 Wedge



Common		Used in step 2
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 35 ... Notes on ESD protection (Electro Static Discharge)	

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61 31 362 Removing and installing the radio remote control receiver

PRELIMINARY WORK

1 – Removing seat bench



- Disengage the seat bench (1) in area (2) in an upward direction.
- Feed out the seat belt buckle (3) from the seat bench.

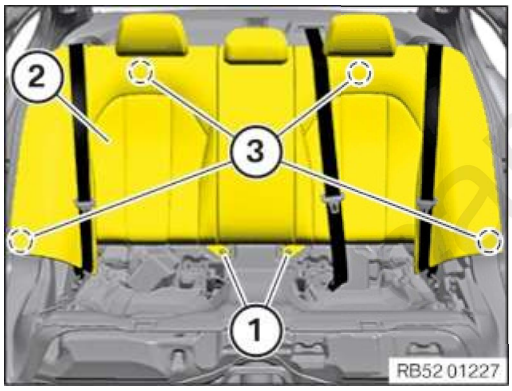


- Pull the seat bench (1) further forward.
- Release screw (2) on the end fitting and guide out belt (3).

Note: If there is a belt lock on the belt, the screw on the end fitting must not be released.

- If necessary, disconnect the present plug connections.
- Lift the seat bench (1) out of the vehicle.

2 – Remove rear seat backrest



- Loosen screws (1).
- Detach the rear seat backrest (2) upwards out of the guides (3).
- Guide the rear seat backrest (2) out of the seat belts and remove it.

3 – Remove both C-pillar trim panels

NOTICE

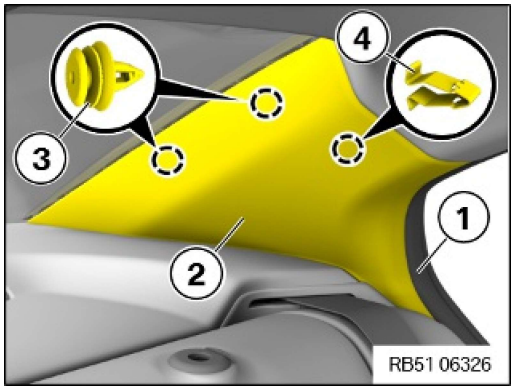
Description is for left component only. Procedure on the right side is identical.

▸ **Remove C-pillar trim panel**

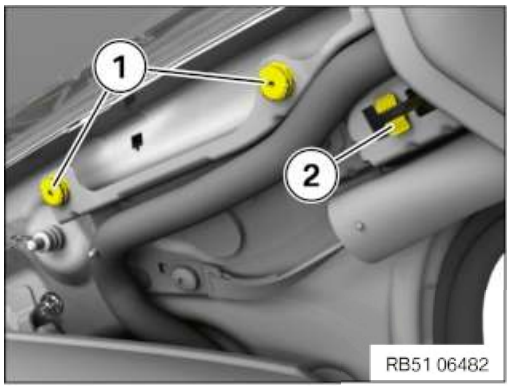
NOTICE

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

erdiagn.com

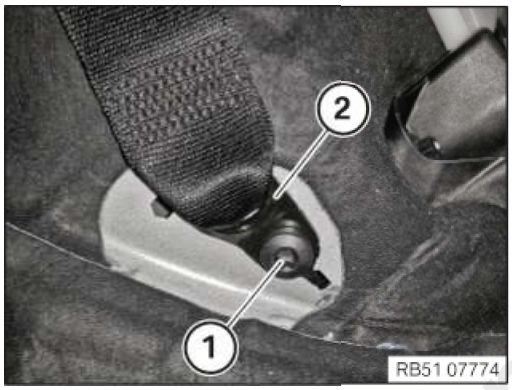


- Unclip clamp (4).
- Unclip clips (3).
- Feed out C-pillar trim panel (2) from the guides to the front.
- Thread out C-pillar trim panel (2) from the lip of edge protection (1).



- If required, remove the clips (1) and the clamp (2) and connect it to the trim panel.

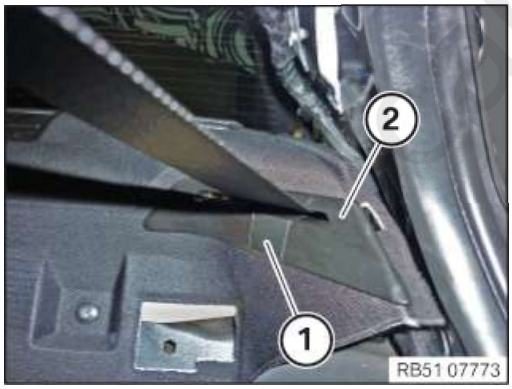
4 – Remove the trim panel for the storage shelf



NOTICE

Perform the operations on the left and right side.

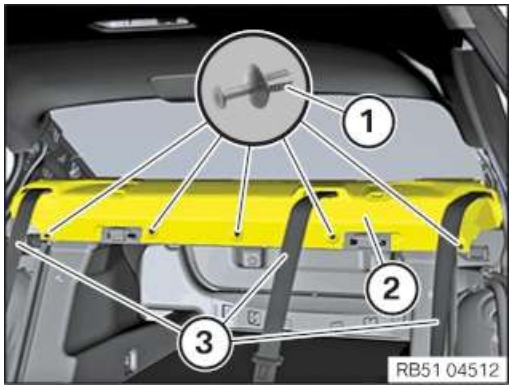
- Release screws (1) on end fitting (2) at rear left and right.
- Feed out the end fitting (2) from the body at rear left and right.



NOTICE

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

- Unclip the cover (1) forwards.
- Unclip the outer belt feed trim (2) starting from front and feed it out.

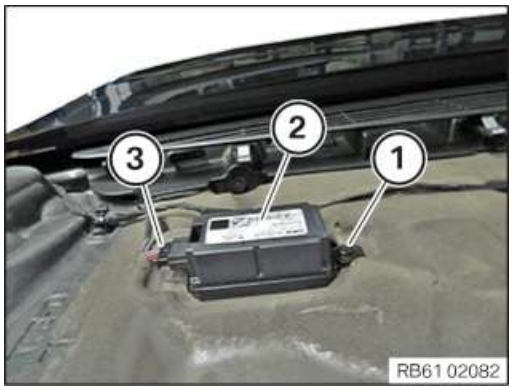


- Loosen the expanding rivet (1).
- Lift the trim panel for the storage shelf (2) a little and disconnect the underlying plug connections.
- Remove the trim panel for the storage shelf (2) to the front and feed out the seat belt (3).

mdiag.com

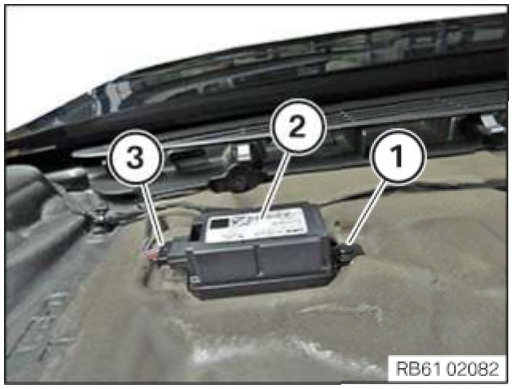
MAIN WORK

5 – Remove the remote control receiver



- Loosen expanding rivet (1).
- Remove the remote control receiver (2).
- Unlock plug connection (3) and disconnect.

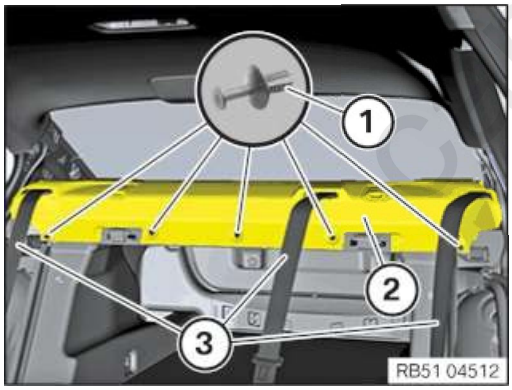
6 – Install the remote control receiver



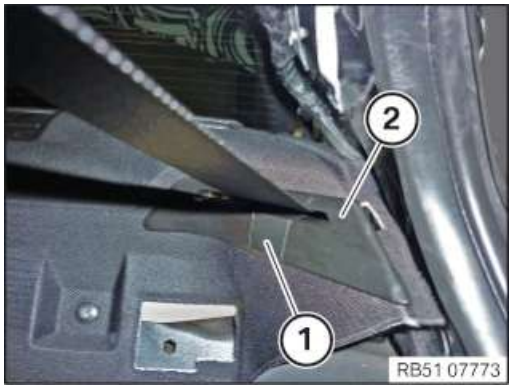
- Connect connector (3).
- Position remote control receiver (2).
- Fasten expanding rivet (1).

POSTPROCESSES

7 – Install the trim panel for the storage shelf



- Install the trim panel for the storage shelf (2) and feed in the seat belts (3).
- Lift the trim panel for the storage shelf (2) a little and connect the underlying connectors.
- Feed in the trim panel for the storage shelf (2) on the rear guide and position it correctly.
- Mount the expanding rivets (1).

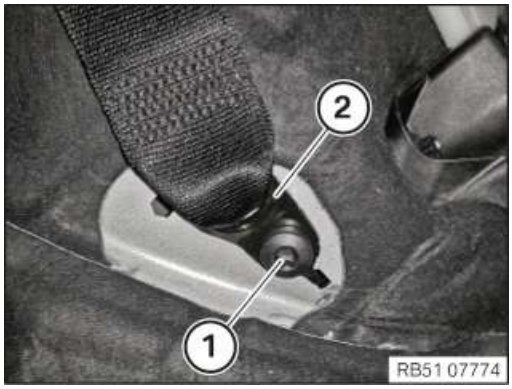


NOTICE

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

- Insert the belt feed trim (2).
- Clip in the cover (1).

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NOTICE

Perform the operations on the left and right side.

- Insert the end fitting (2) on the left and right into the body.
- Renew screws (1).

  Parts: Bolts
- Tighten screws (1) on left and right.

End fitting to body

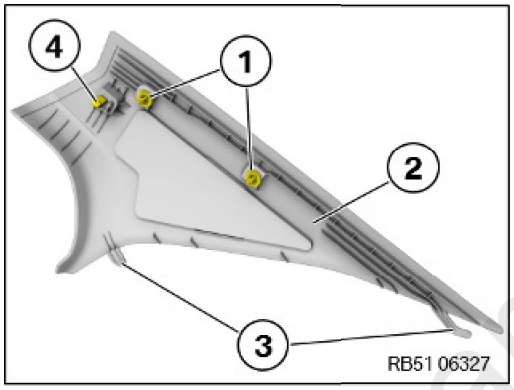
M10	Renew screw.		42 Nm

8 – Install both C-pillar trim panels

NOTICE

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

▸ **Installing C-pillar trim panel**



Check

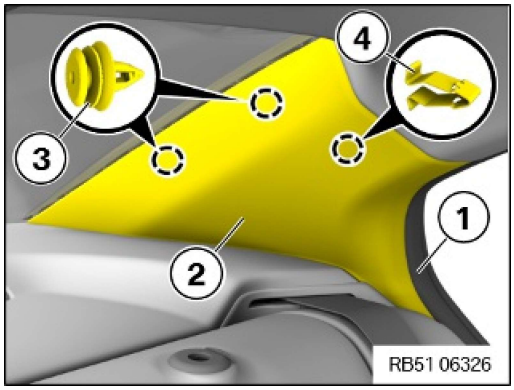
- Check clips (1) and clamp (4) for damage, renew if necessary.
- Check the guides (3) for damage.

Result

» Guide is damaged.

Measure

- Renew the C-pillar trim panel .



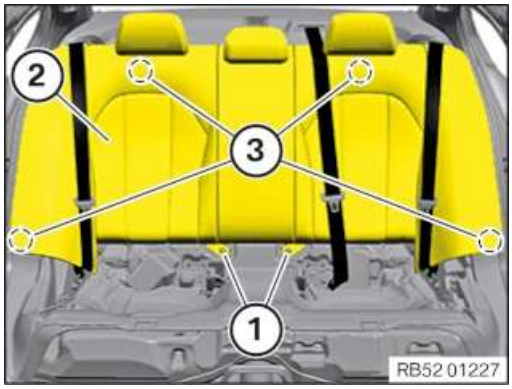
NOTICE

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

- Feed C-pillar trim panel (2) into guides towards the rear.
- Clip in clips (3).
- Clip in clamp (4).
- Guide in C-pillar trim panel (2) under the lip of edge protection (1).

9 – Remove rear seat backrest

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- Guide the rear seat backrest (2) into the seat belts and position it.
- Attach the rear seat backrest (2) in the guides (3) from the top.
- Renew screws (1).

  Parts: Bolts
- Tighten the screws (1).

Rear seat backrest on body

Screw	Renew screw.	Tightening torque	42 Nm

10 – Installing rear seat bench



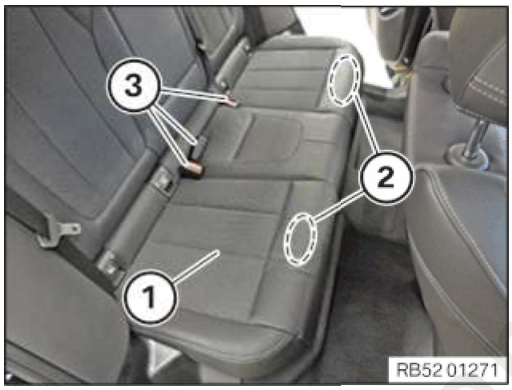
- Lift the seat bench (1) into the vehicle.
- Insert the seat belt (3).
- Renew the screw (2).

  Parts: Screw
- Tighten down screw (2).

Rear upper seat belt to bottom body

Screw	Renew screw.	Tightening torque	42 Nm

- Connect available connectors.



- Insert seat bench (1).
- Thread seat belt buckles (3) into the seat bench.
- Engage the seat bench (1) in the area (2).

Additional Information

Overview of Tightening Torques

End fitting to body — Used in step 7

M10	Renew screw.		42 Nm

Rear seat backrest on body — Used in step 9

Screw	Renew screw.	Tightening torque	42 Nm

Rear upper seat belt to bottom body — Used in step 10

Screw	Renew screw.	Tightening torque	42 Nm

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61 31 221 Removing and installing/replacing both multifunction steering wheel switches

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.

TECHNICAL INFORMATION

Steering wheel must be replaced if airbag unit has been deployed.

Only with M Sport steering wheel: Impact plate must be replaced if airbag unit has been deployed.

For additional information see: 72 12 ... Procedure after airbag deployment as result of an accident

PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

2 – Removing the airbag unit (sports steering wheel)

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

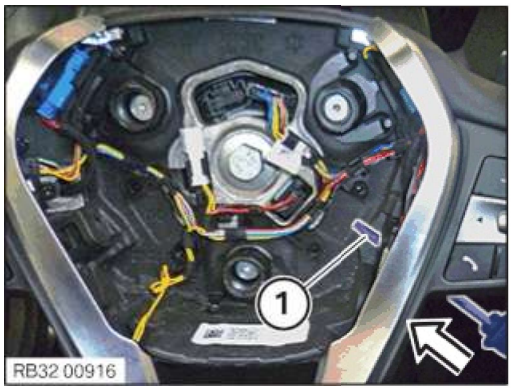
Damage to the steering wheel.

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.



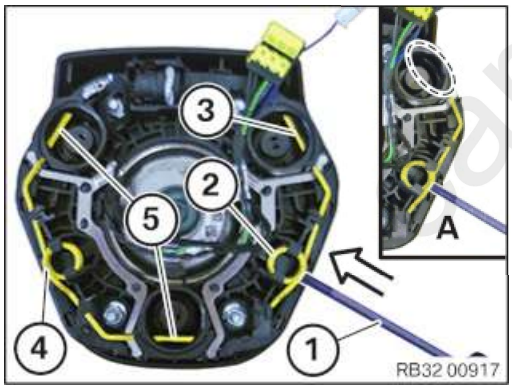
- Insert Torx screwdriver T25 (1) diagonally upwards in the hidden opening (2) on the rear side of the steering wheel until a spring resistance is felt.



NOTICE

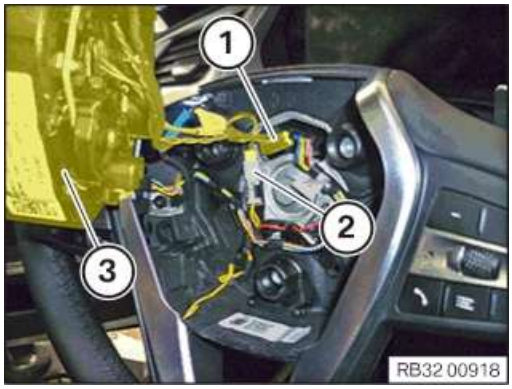
To provide a better overview: Diagram with airbag unit removed.

- 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.



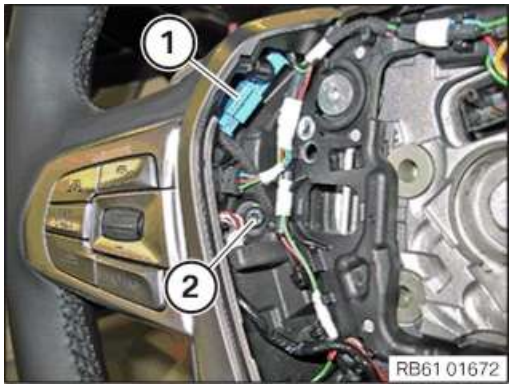
- Unlock and disconnect the plug connections (1) and (2).
- Remove airbag unit (3).

3 – Removing the shift paddle for the automatic transmission

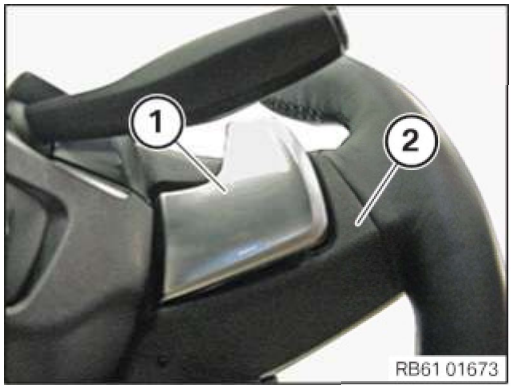
cardiagn.com

NOTICE

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



- Disconnect connector (1) and remove cable to shift paddle.
- Loosen screw (2).



- Remove shift paddle (1) from steering wheel (2) and remove associated access line.

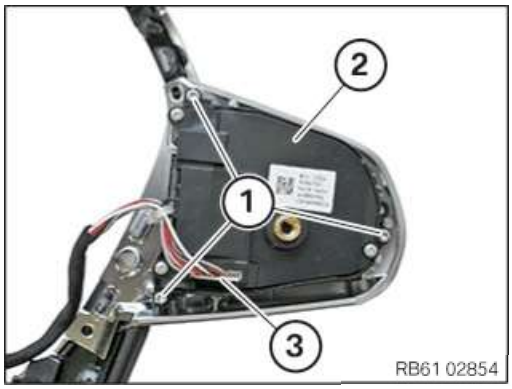
cardiagn.com

MAIN WORK

4 – Remove both leather sports steering wheel switches

NOTICE

The operations shown only for one side must be carried out on both sides.

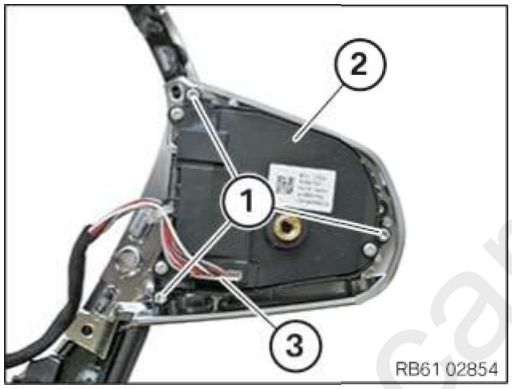


- Loosen screws (1) on the switch (2).
- Remove switch (2) from the design trim.
- Unlock plug connection (3) and disconnect.

5 – Install both sport leather steering wheel switches

NOTICE

The operations shown only for one side must be carried out on both sides.



- Position the switch (2) into design trim and tighten with screws (1).
- Connect connectors (3) and lock.

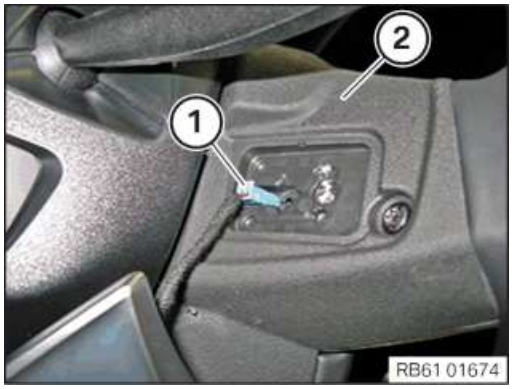
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POSTPROCESSES

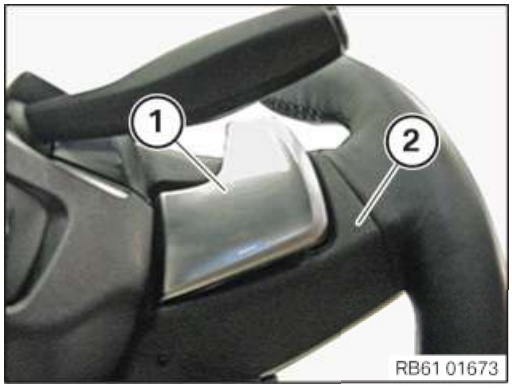
6 – Installing the shift paddle for the automatic transmission

NOTICE

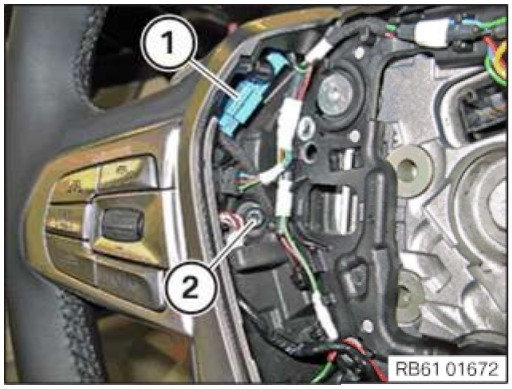
Description is for left component only. Procedure on the right side is identical.



- Insert the access line (1) into the rear of the steering wheel (2).



- Position the shift paddle (1) on the steering wheel (2).



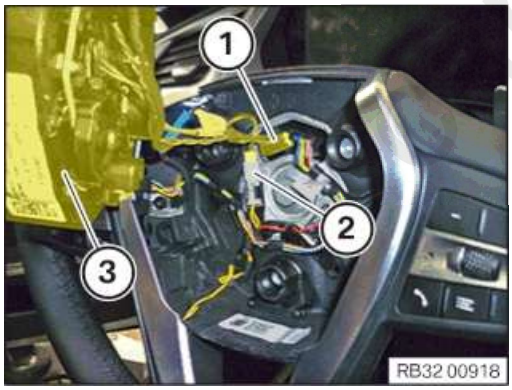
- Tighten down screw (2).

Shift paddle to steering wheel

Screw TS5x12		Tightening torque	2 Nm

- Insert the cable and connect the connector (1).

7 – 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.

8 – Disconnecting all battery earth leads

bmwdiagn.com



- See additional information.

Additional Information

Overview of Tightening Torques

Shift paddle to steering wheel			Used in step 6
Screw TS5x12		Tightening torque	2 Nm

Links

General repair instructions	Used in step
72 00 ... Safety regulations for handling components with gas generators	2
72 12 ... Procedure after airbag deployment as result of an accident	

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
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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

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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

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61 31 011 Removing and installing/replacing coil spring cassette

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.

TECHNICAL INFORMATION

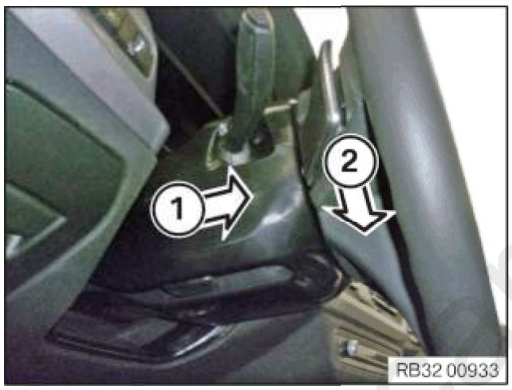
Steering wheel must be replaced if airbag unit has been deployed.

Only with M Sport steering wheel: Impact plate must be replaced if airbag unit has been deployed.

For additional information see: 72 12 ... Procedure after airbag deployment as result of an accident

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 – Disconnecting all battery earth leads



- See additional information.

3 – Removing the airbag unit

ordiag.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

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)**



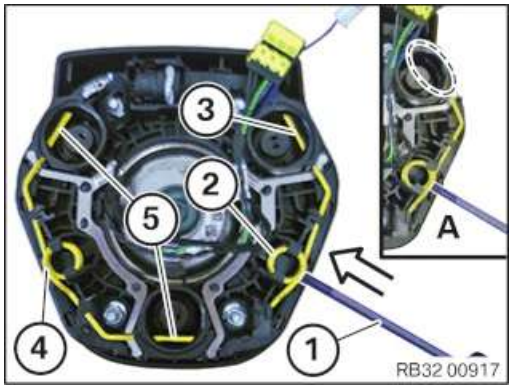
- Insert Torx screwdriver T25 (1) diagonally upwards in the hidden opening (2) on the rear side of the steering wheel until a spring resistance is felt.



NOTICE

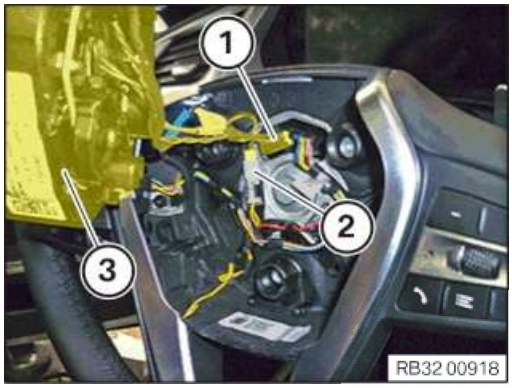
To provide a better overview: Diagram with airbag unit removed.

- 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.

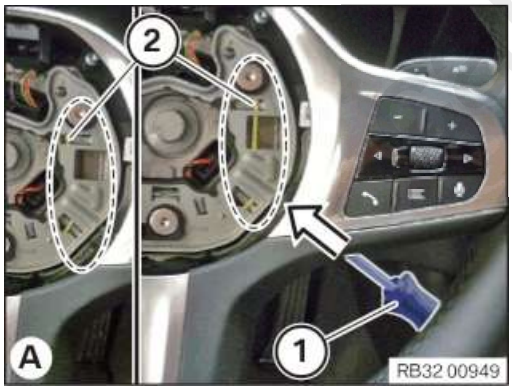


- Unlock and disconnect the plug connections (1) and (2).
- Remove airbag unit (3).

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



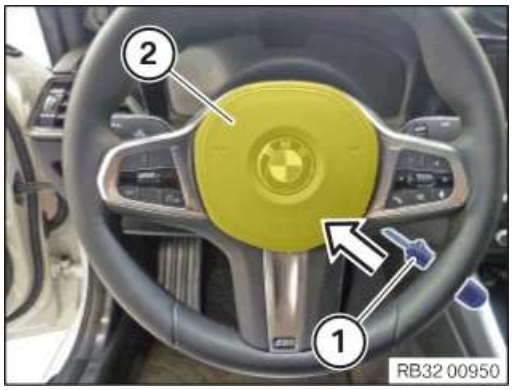
- Locate the pre-punched bore hole (1) on the rear side of the steering wheel by touch.
- Insert the Torx screwdriver T27 (2) diagonally upwards in the pre-punched bore hole (1) on the rear side of the steering wheel until a springing kind of resistance can be felt.



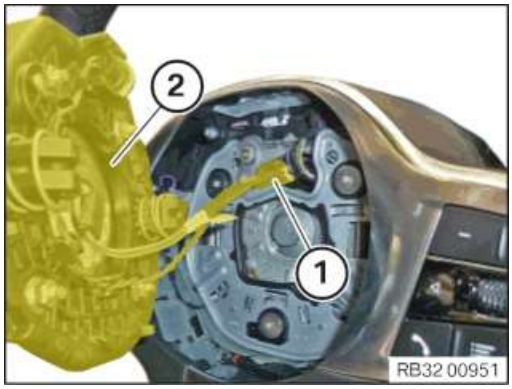
NOTICE

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).

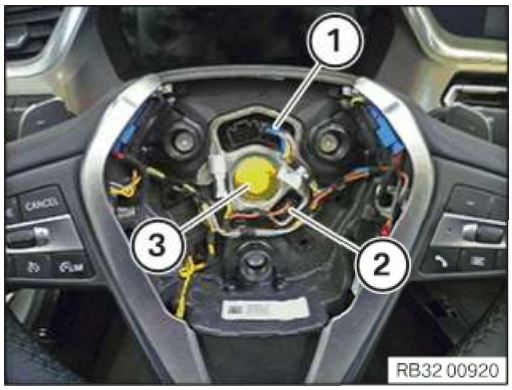


- Press in Torx screwdriver T27 (1) straight in direction of arrow towards the centre of the steering wheel and lift airbag unit (2) on the unlocked side.
- Repeat procedure on left side and carefully remove airbag unit (2) in direction of arrow off the steering wheel.



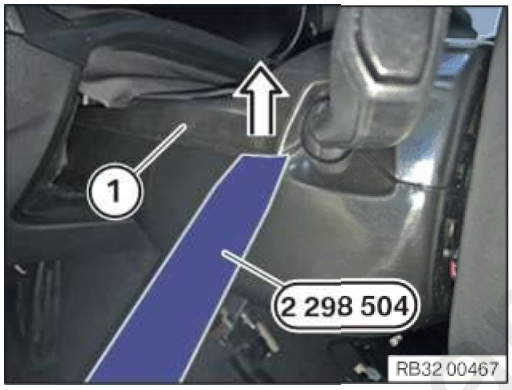
- Unlock and disconnect plug connection (1) and remove the airbag unit (2).

4 – 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.

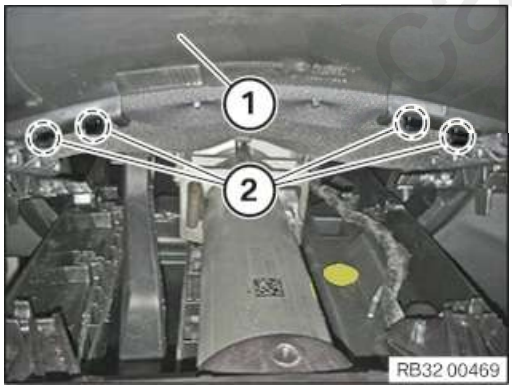
5 – Removing steering column shroud upper section



NOTICE

Perform the operations on the left and right side.

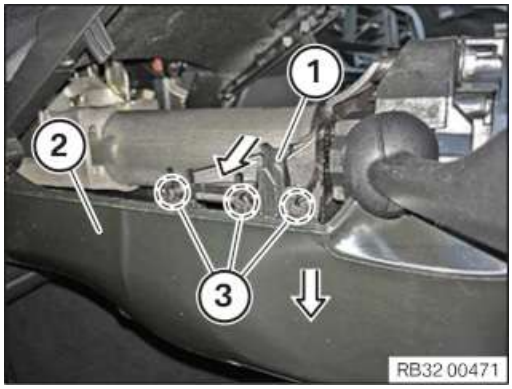
- Unlock the steering column shroud upper section (1) with the special tool 2 298 504 and fold up.



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

6 – Removing steering column shroud lower section

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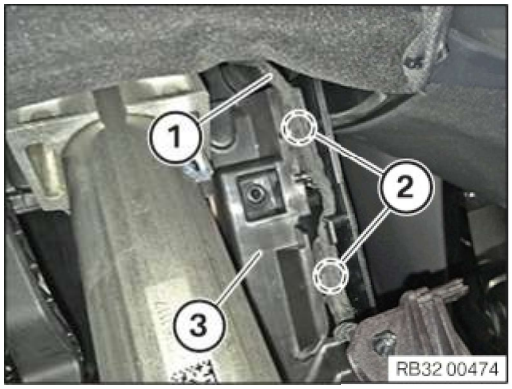
NOTICE

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.

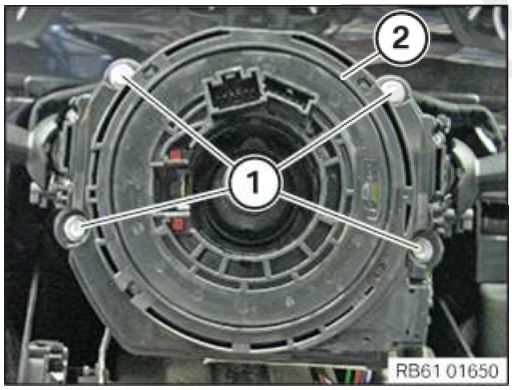


- Fold the steering column shroud lower section down.
- Unlock and disconnect connector (1).

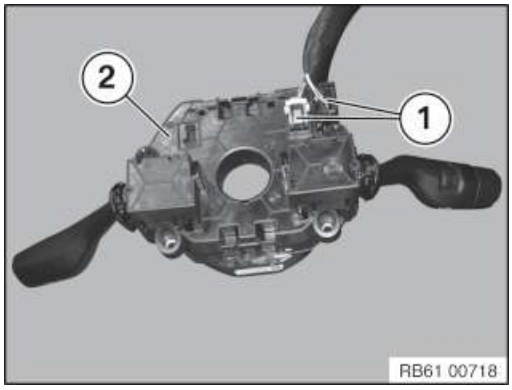


- Detach the cable (1) from the brackets (2).
- Remove the steering column shroud lower section (3).

7 – 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).

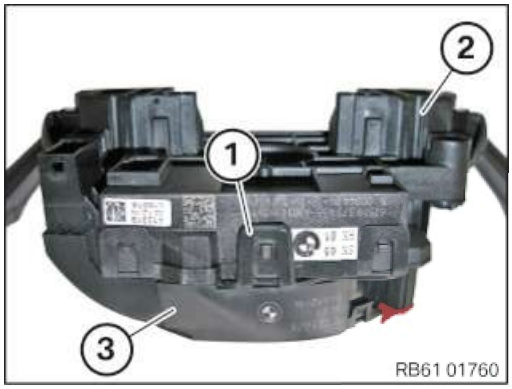
rdiagn.com

MAIN WORK

8 – Remove coil spring cassette

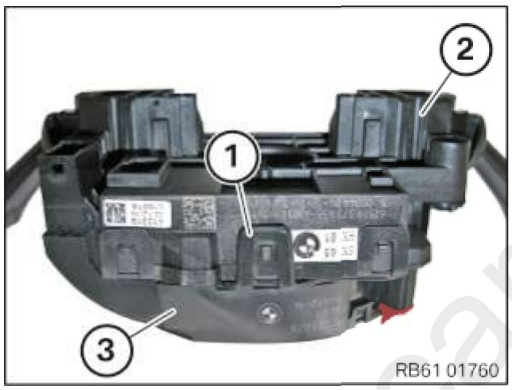


- Loosen both latch mechanisms (1) on the steering column switch cluster (2).



- Loosen the central latch mechanism (1) on the steering column switch cluster (2).
- Remove the coil spring cassette (3) from the steering column switch cluster (2).

9 – Installing the coil spring cassette



- Unclip the coil spring cassette (3) from the steering column switch cluster (sw/clsr) (2).
- Check central latch mechanism (1) on the steering column switch cluster (sw/clsr) (2).

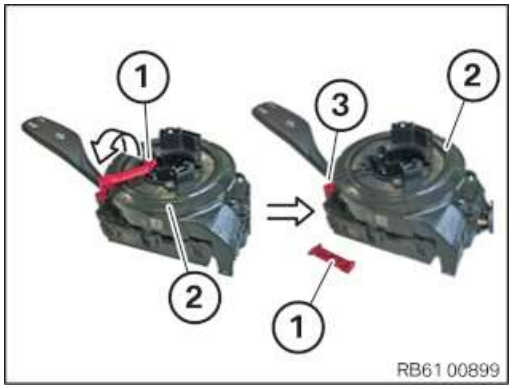


- Check both latch mechanisms (1) on the steering column switch cluster (sw/clsr) (2).

POSTPROCESSES

10 – Installing the steering column switch cluster (SZL)

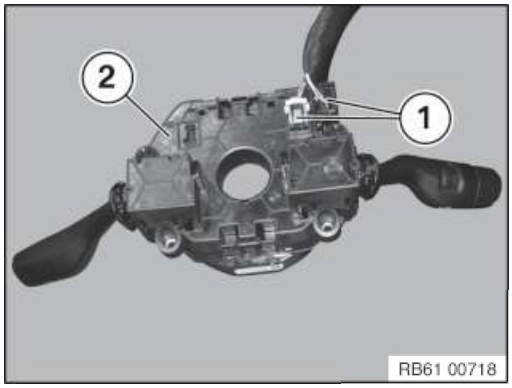
cardiagn.com



- **Replacement:**

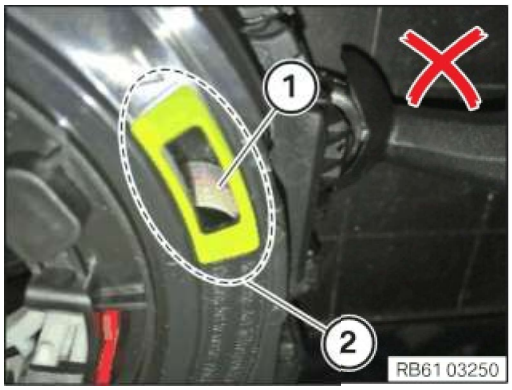
  Break off the transportation retainer (1) on the steering column switch cluster (SZL) (2) in direction of arrow.

  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).

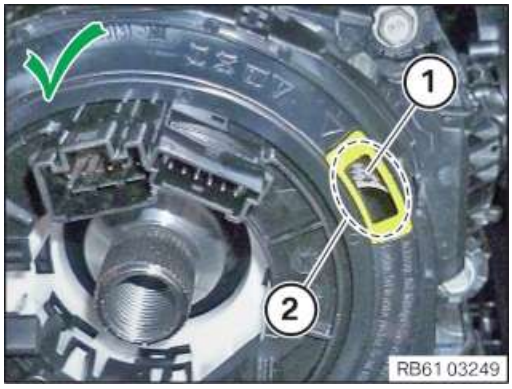
Result

» 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

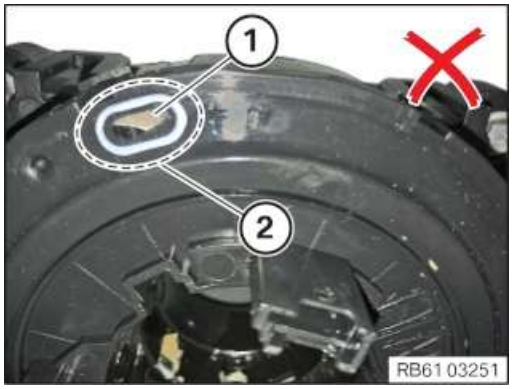
» Correct marking (1) is seen in inspection glass (2).

Measure

- Continue with the next step.

Check

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:**

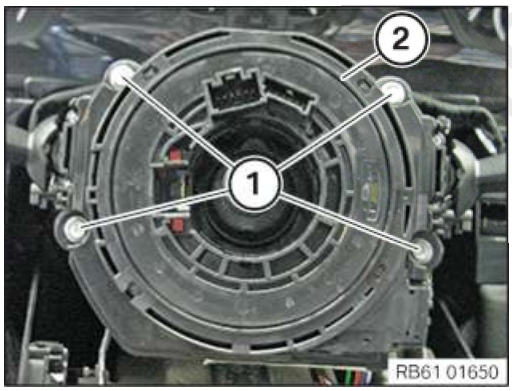
  Check whether the correct marking (1) is seen in inspection glass (2).

Result

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

Measure

- Continue with the next step.

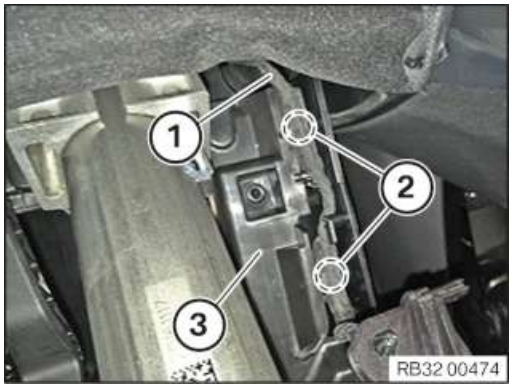


- Position the steering column switch cluster (SZL) (2).
- Tighten the screws (1).

Steering column switch cluster (SZL) on the steering column

Screw TS5x20		Tightening torque	3 Nm

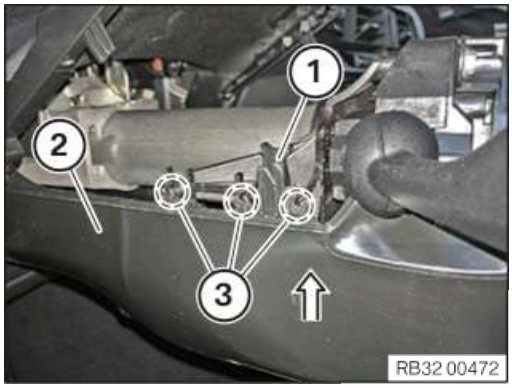
11 – Install steering column shroud lower section



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



- Connect the connector (1).

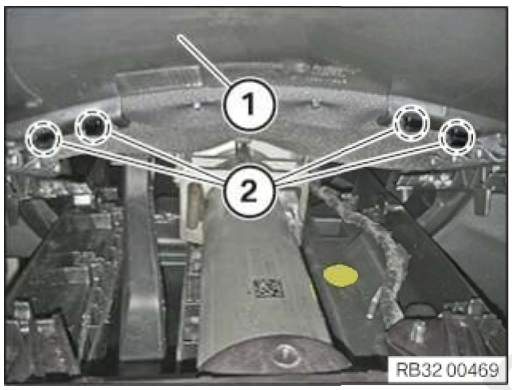


NOTICE

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.

12 – 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.

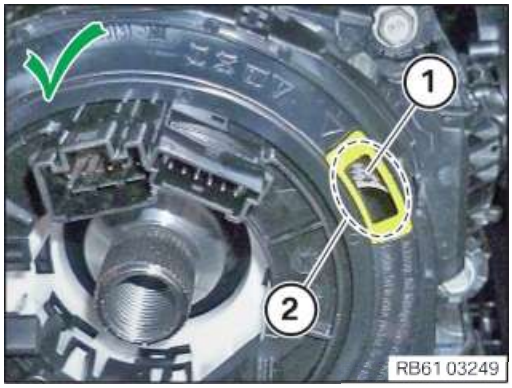
13 – Installing the steering wheel (sports steering wheel)

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.

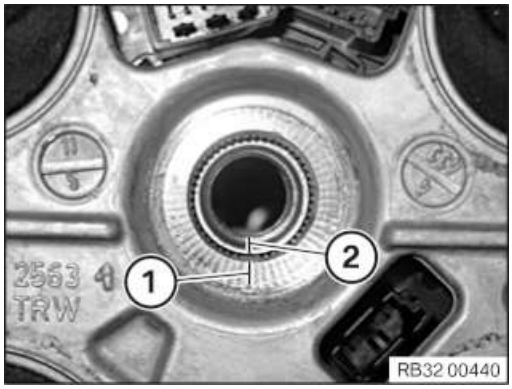
carfdiagn.com

Measure

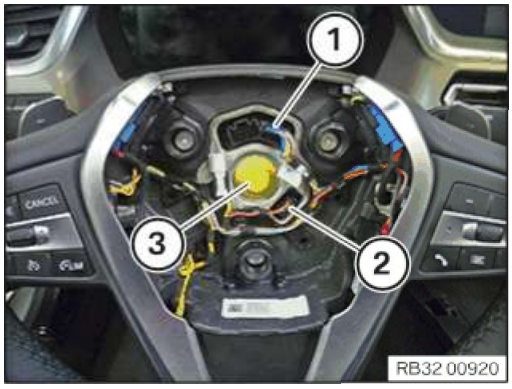
- Clean thread in the steering column.

  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

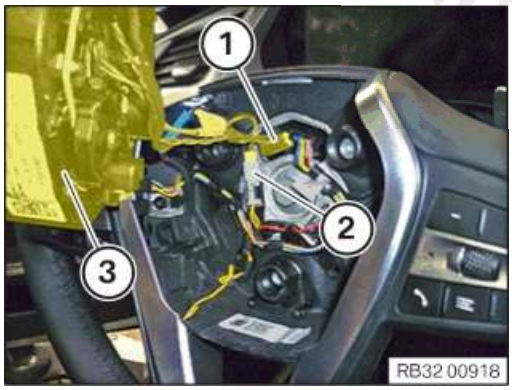
M14	Only for a micro-encapsulated screw: Renew screw.	Tightening torque	62,5 Nm

14 – 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.

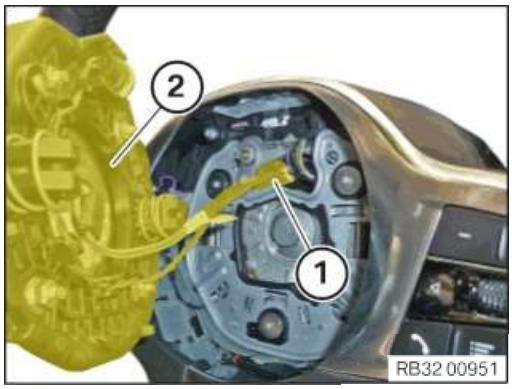
  The airbag unit (1) must engage audibly and perceptibly.

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▸ **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).



- 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.

15 – Disconnecting all battery earth leads



- See additional information.

16 – Checking the airbag for function

Check

- Turn steering wheel in both directions to the limit position.

Result

» The airbag indicator light lights up.

Measure

- Renew the coil spring cassette.

Additional Information

Overview of Tightening Torques

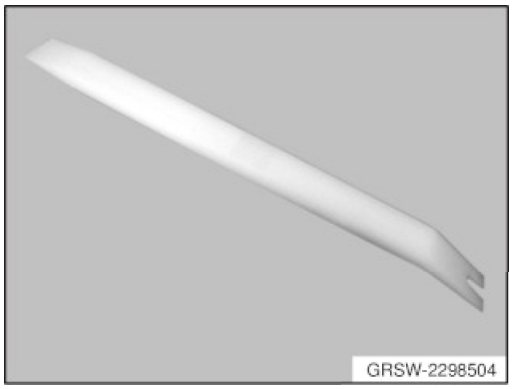
cardiagn.com

Steering column switch cluster (SZL) on the steering column			Used in step 10
Screw TS5x20		Tightening torque	3 Nm

Steering wheel to steering column			Used in step 13
M14	Only for a micro-encapsulated screw: Renew screw.	Tightening torque	62,5 Nm

Overview of Special Tools

2 298 504 Wedge



Common		Used in step 5
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)	

Links

General repair instructions	Used in step
72 00 ... Safety regulations for handling components with gas generators	3

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	215
61 20 900 Disconnecting and connecting battery earth lead	215
61 20 900 Disconnecting and connecting battery earth lead	215
61 20 900 Disconnecting and connecting battery earth lead	215
61 20 900 Disconnecting and connecting battery earth lead	215
61 20 900 Disconnecting and connecting battery earth lead	215
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	215
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	215
61 20 900 Disconnecting and connecting battery earth lead	215
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	215
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	215
61 20 900 Disconnecting and connecting battery earth lead	215
61 20 900 Disconnecting and connecting battery earth lead	215
61 20 900 Disconnecting and connecting battery earth lead	215
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carsign.com

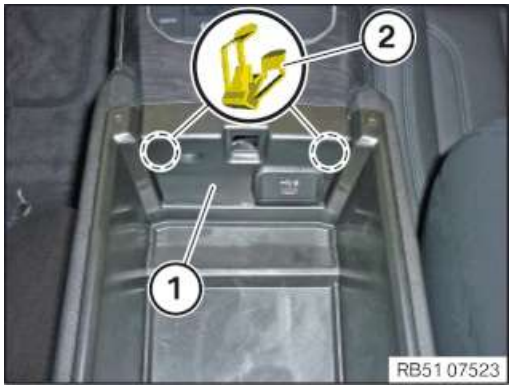
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads) 215
61 20 900 Disconnecting and connecting battery earth lead 215
61 20 900 Disconnecting and connecting battery earth lead 215
61 20 900 Disconnecting and connecting battery earth lead 215
61 20 900 Disconnecting and connecting battery earth lead 215
61 20 900 Disconnecting and connecting battery earth lead 215
61 20 900 Disconnecting and connecting battery earth lead 215
61 20 900 Disconnecting and connecting battery earth lead 215

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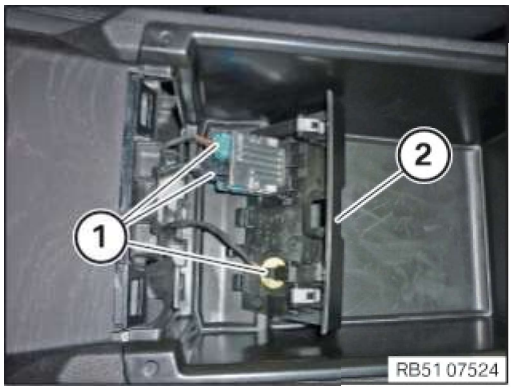
61 31 001 Removing and installing/replacing HDC button

PRELIMINARY WORK

1 – 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) .

2 – 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.

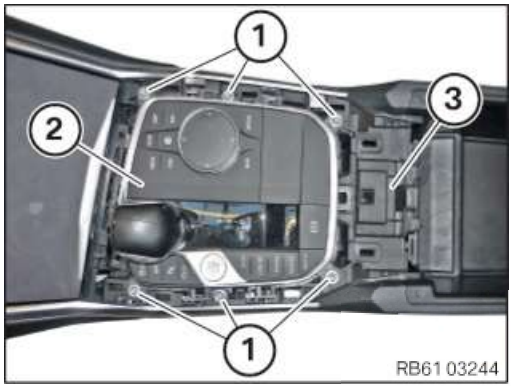
3 – Remove the operating facility in the centre console

▸ **Disconnecting all battery earth leads**

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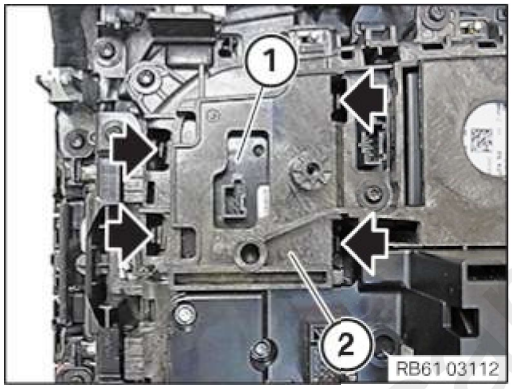
- See additional information.



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

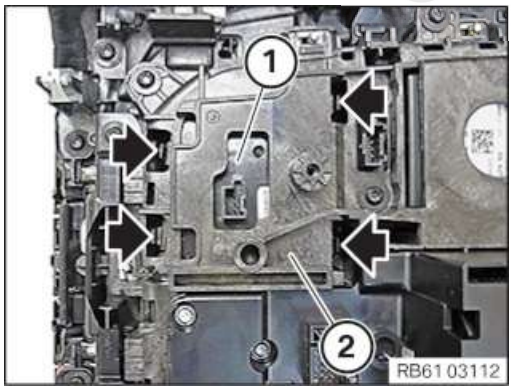
MAIN WORK

4 – Removing the HDC button



- Release the latch mechanisms (arrows).
- Remove HDC button (1) from gear selector switch (GWS) (2).

5 – Installing the HDC button



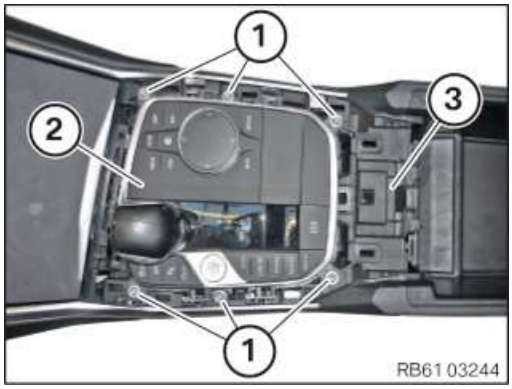
- Position HDC button (1) on gear selector switch (GWS) (2).

  The latch mechanisms (arrows) must engage audibly.

POSTPROCESSES

6 – 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.

7 – 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.



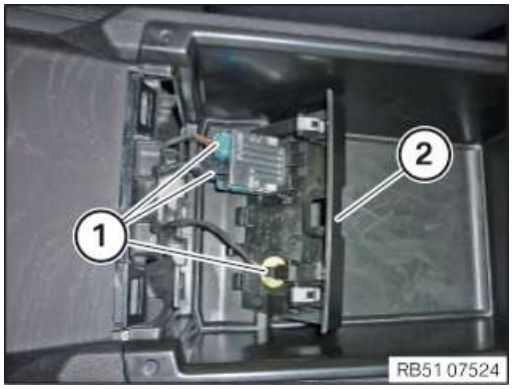
- Check all the latch mechanisms or clamps (arrows).
- In case the latch mechanisms or the clamps (arrows) are faulty, renew the centre console trim .



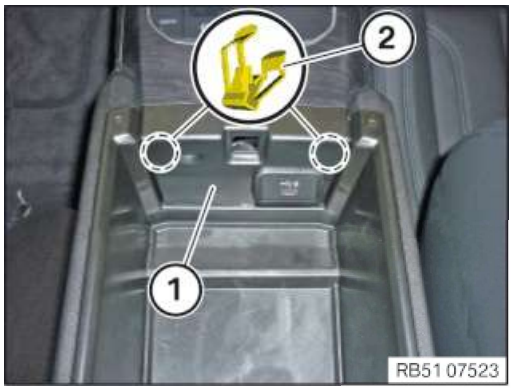
- Correctly position the centre console trim (1) and engage at the latch mechanisms.

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8 – 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).

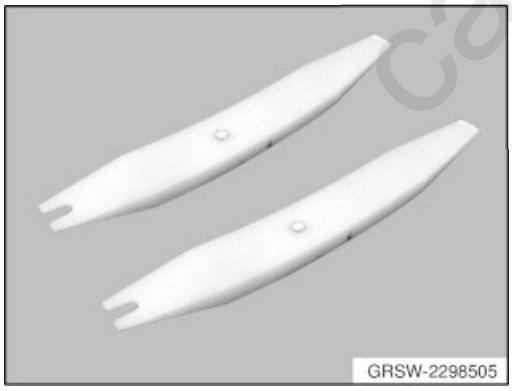
Additional Information

Overview of Tightening Torques

Gear selector switch to centre console trim			Used in step 6
Screw		Tightening torque	1,8 Nm

Overview of Special Tools

2 298 505 Wedge



Common		Used in step 12
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	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36

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61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	36
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	36
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
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61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36

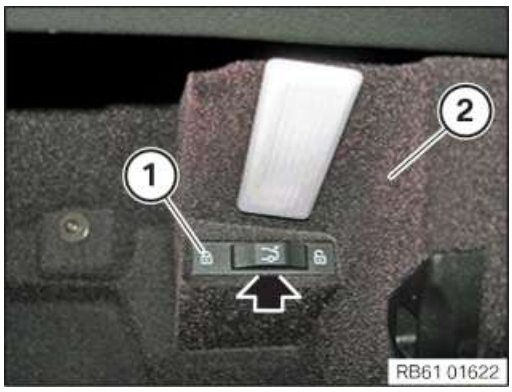
cardiagn.com

61 31 066 Removing and installing/replacing hotel position switch

Prerequisite

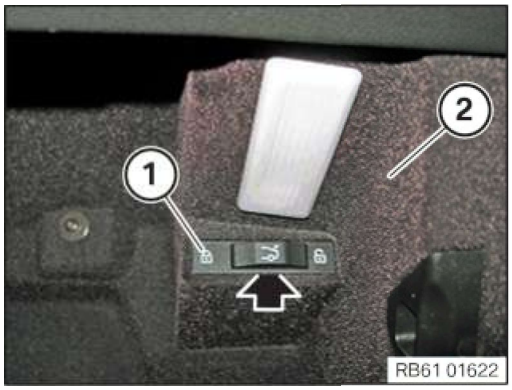
- Glove box open.

1 – Removing the hotel position switch



- Lever out the hotel position switch (1) using special tool 0 496 571 (00 9 327) from the housing (2) in the indicated area.
- Disconnect associated connector.

2 – Installing the hotel position switch

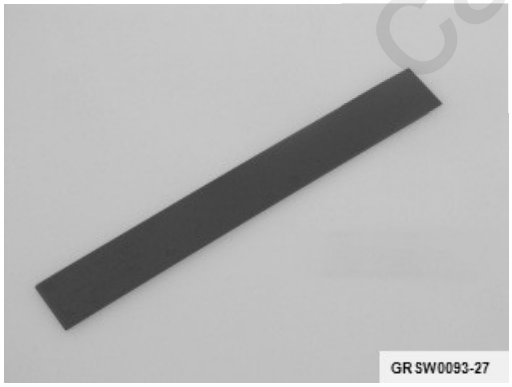


- Connect associated connector with the hotel position switch (1).
- Install hotel position switch (1) in the housing (2).

Additional Information

Overview of Special Tools

0 496 571 (00 9 327) Wedge



Common	Used in step 1
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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61 31 037 Removing and installing/replacing light control unit

RISK OF DAMAGE

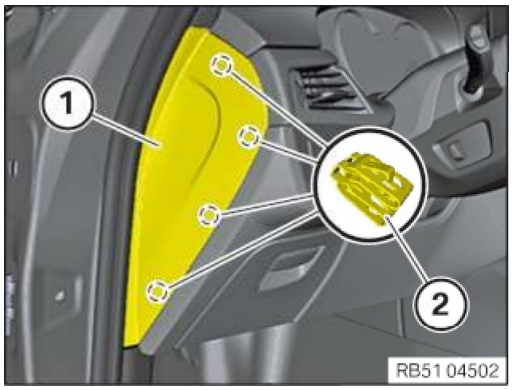
Scratches.

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



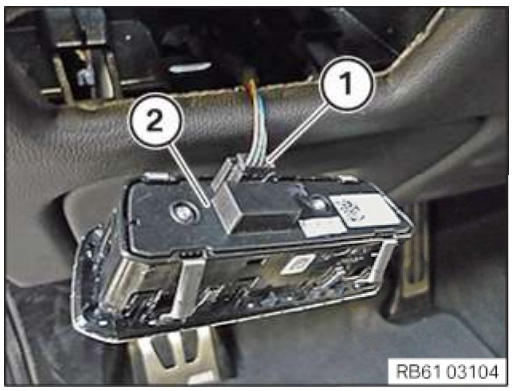
- Unclip and remove the side panel (1) towards the outside from the clamps (2).

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2 – Removing the light operating unit

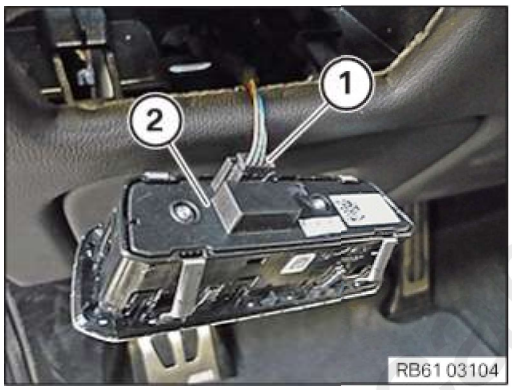


- Unclip light operating unit (1) at the marked positions of the rear.



- Unlock the plug connection (1) on the light operating unit (2) and disconnect it.

3 – Installing the light operating unit



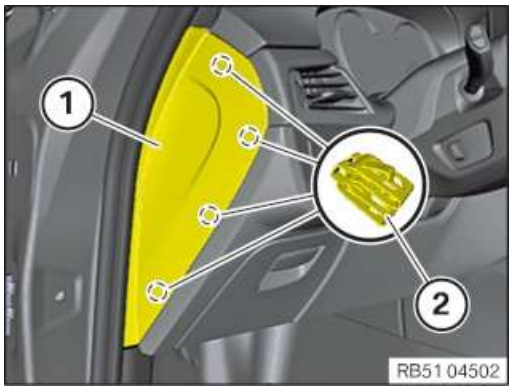
- Connect the connector (1) to the light operating unit (2).



- Correctly position the light operating unit (1) and clip in at the marked points.

rdiag.com

4 – Install the side panel on left instrument panel



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

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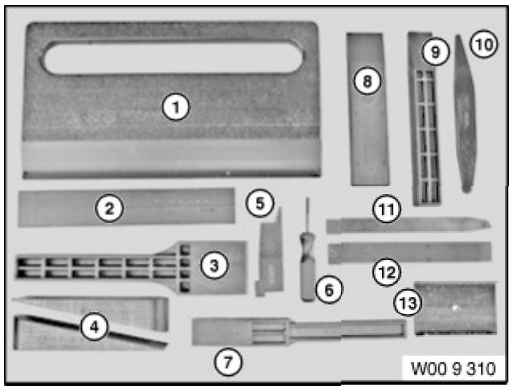
61 31 118 Removing and installing/replacing power window switch on passenger's side

NOTICE

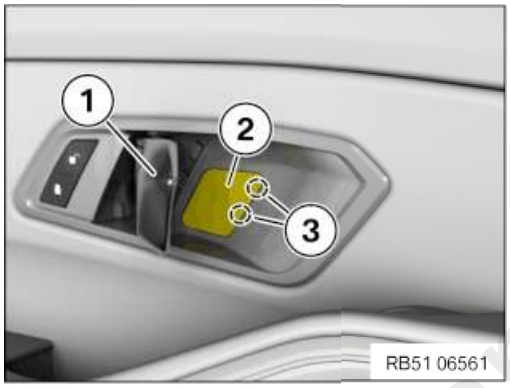
Description is for left component only. Procedure on the right side is identical.

PRELIMINARY WORK

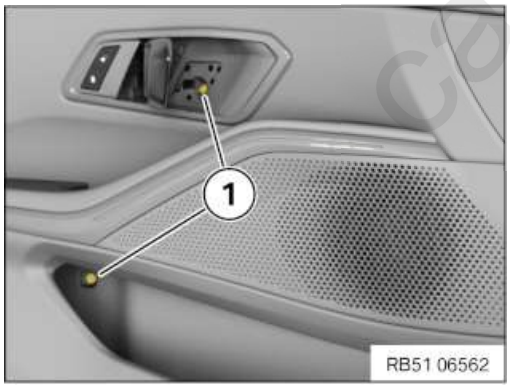
1 – Remove door trim panel



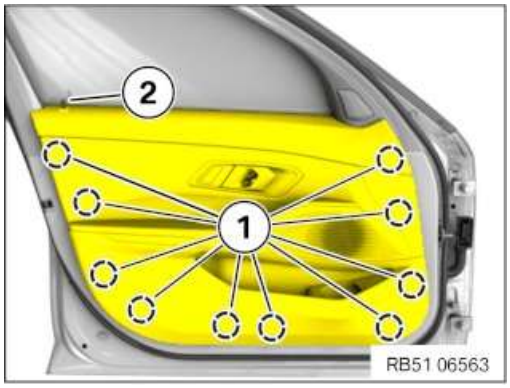
- Have the set of special tools 0 493 752 (00 9 329) ready.



- Pull door opener (1).
- Release latch mechanisms (3) of the trim (2) with suitable special tool.
- Remove trim (2).

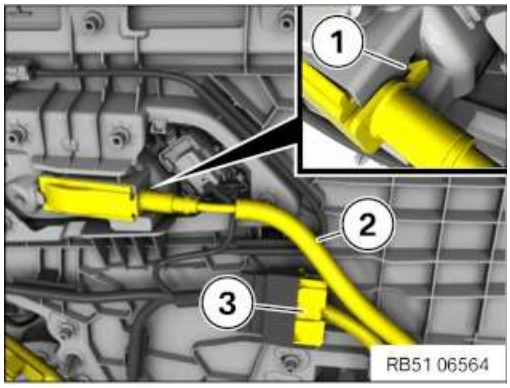


- Loosen screws (1).



- Unclip the door trim panel at the clips (1) using a suitable special tool.
- Guide the door trim panel upwards out of the front inner weather strip and the operating rod (2).

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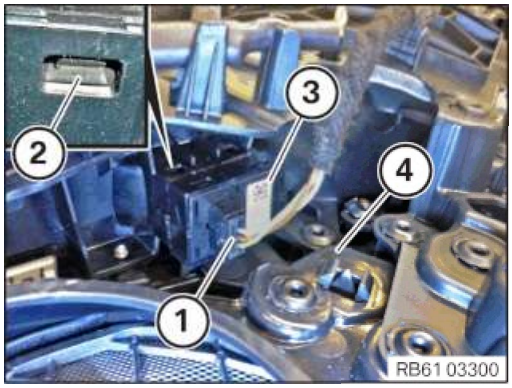


- Release latch mechanism (1) and feed out the Bowden cable for the inner door opener (2).

  In doing so, the Bowden cable for the inner door opener (2) is guided out of the door opener.
- Unlock plug connection (3), disconnect it and remove the door trim panel.

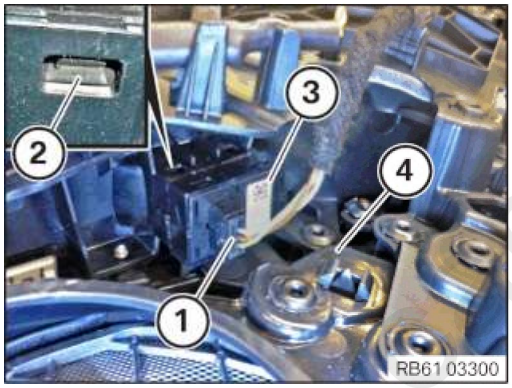
MAIN WORK

2 – Removing the power window switch on the passenger's side



- Disconnect the connector (1) .
- Release latch mechanisms (2) and remove the power window switch (3) from the door trim panel (4).

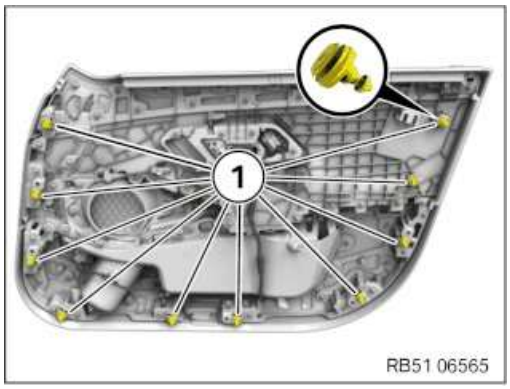
3 – Installing the power window switch on the passenger's side



- Position power window switch (3) on the door trim panel (4) and engage in the latch mechanisms (2).
- Connect connector (1).

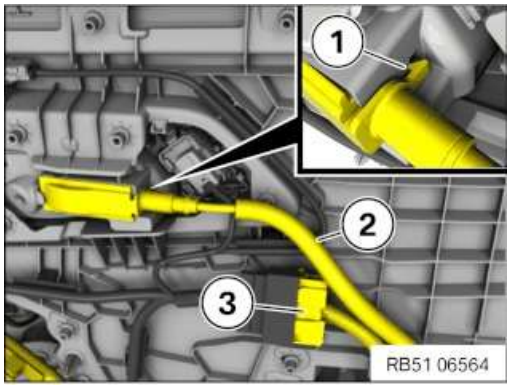
POSTPROCESSES

4 – Install door trim panel

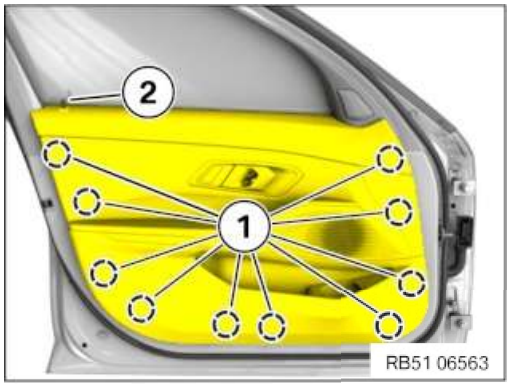


- Renew the clips (1).

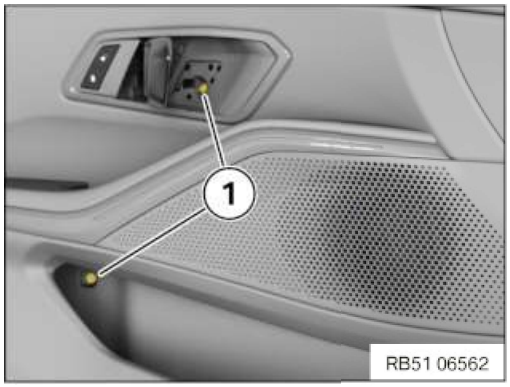
  Parts: Clips



- Push the inner door opener in closed direction.
- Feed in Bowden cable for the inner door opener (2) and clip in the latch mechanism (1).
- Connect connectors (3) and lock.



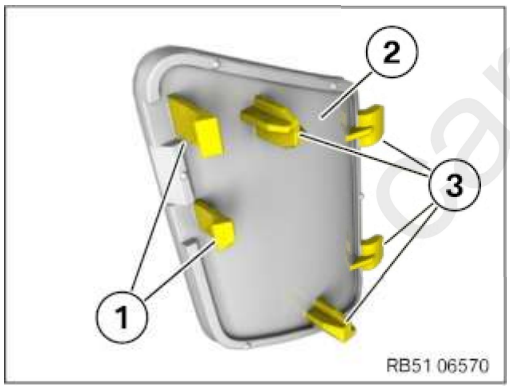
- Feed door trim panel from the top via the operating rod (2) into the inner front weather strip.
- Clip in the door trim panel with the clips (1).



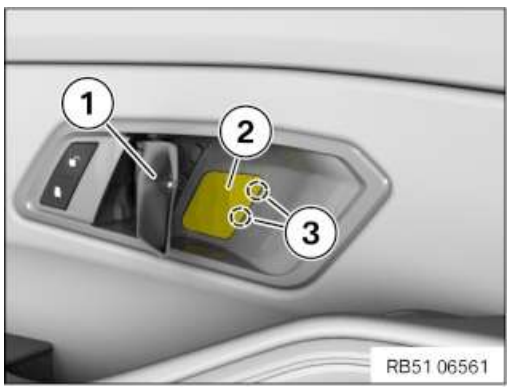
- Tighten the screws (1).

Door trim panel to door

Screw TS5x20		Tightening torque	2,6 Nm



- Check latch mechanisms (1) for damage, if necessary renew the trim (2).
- Check guides (3) for damage, if necessary renew the trim (2).



- Pull door opener (1).
- Position trim (2) and clip in using the latch mechanisms (3).

Additional Information

Overview of Tightening Torques

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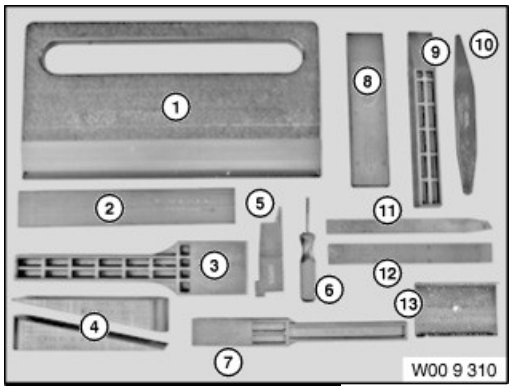
Overview of Tightening Torques

Door trim panel to door — Used in step 4

Screw TS5x20		Tightening torque	2,6 Nm

Overview of Special Tools

0 493 752 (00 9 329) Case



Common — Used in step 1

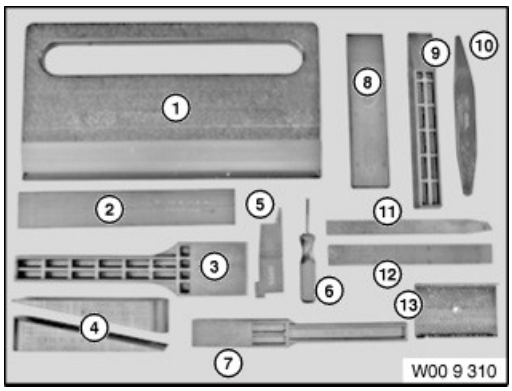
Usage	(Case) with insert not incl. panel wedges
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

cardiagn.com

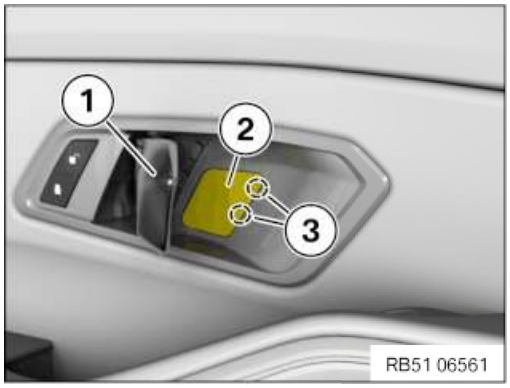
61 31 117 Removing and installing/replacing power window switch, driver's side

PRELIMINARY WORK

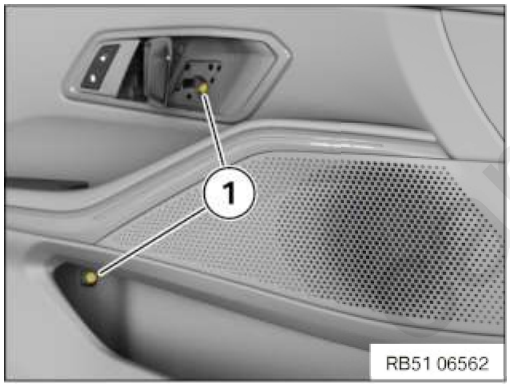
1 – Remove door trim panel



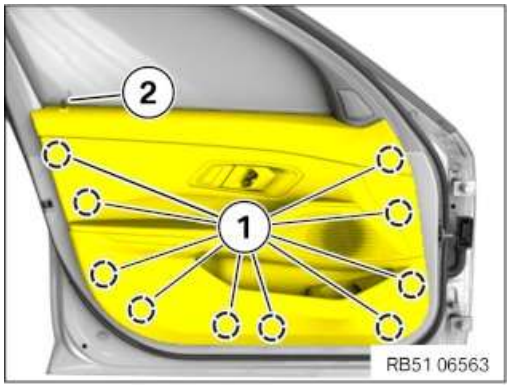
- Have the set of special tools 0 493 752 (00 9 329) ready.



- Pull door opener (1).
- Release latch mechanisms (3) of the trim (2) with suitable special tool.
- Remove trim (2).

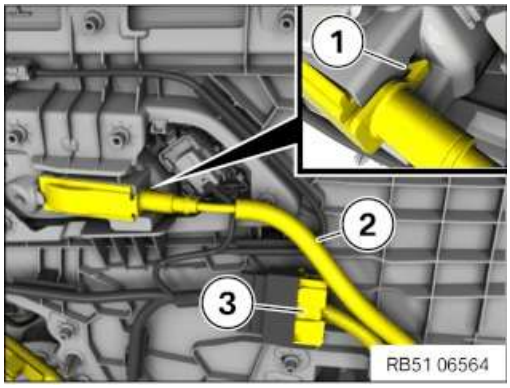


- Loosen screws (1).



- Unclip the door trim panel at the clips (1) using a suitable special tool.
- Guide the door trim panel upwards out of the front inner weather strip and the operating rod (2).

partdiagn.com

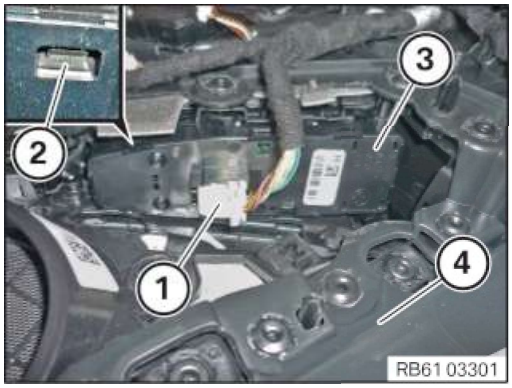


- Release latch mechanism (1) and feed out the Bowden cable for the inner door opener (2).

  In doing so, the Bowden cable for the inner door opener (2) is guided out of the door opener.
- Unlock plug connection (3), disconnect it and remove the door trim panel.

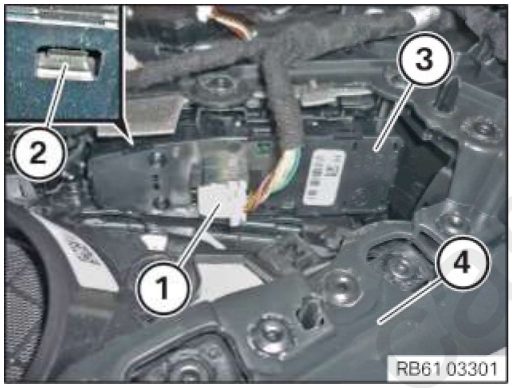
MAIN WORK

2 – Removing power window switch on the driver's side



- Unlock and disconnect connector (1).
- Release latch mechanisms (2) and remove the power window switch (3) from the door trim panel (4).

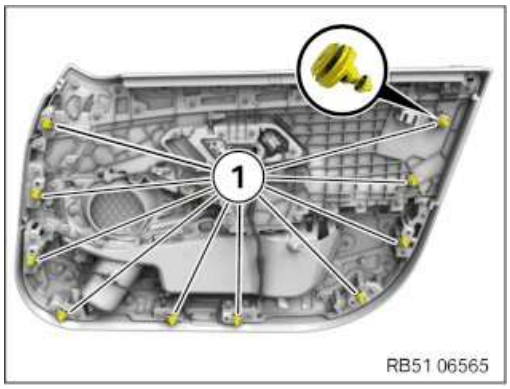
3 – Install the power window switch on the driver's side



- Position power-window switch (3) on the door trim panel (4) and engage in all the latch mechanisms (2).
- Connect connectors (1) and lock.

POSTPROCESSES

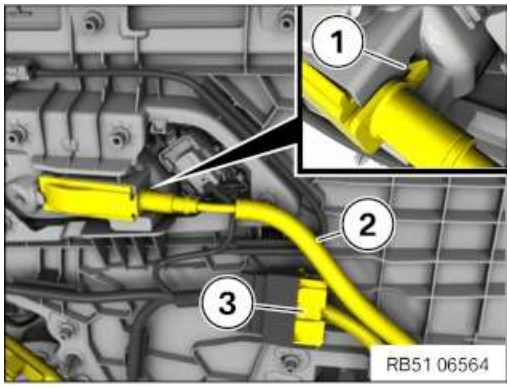
4 – Install door trim panel



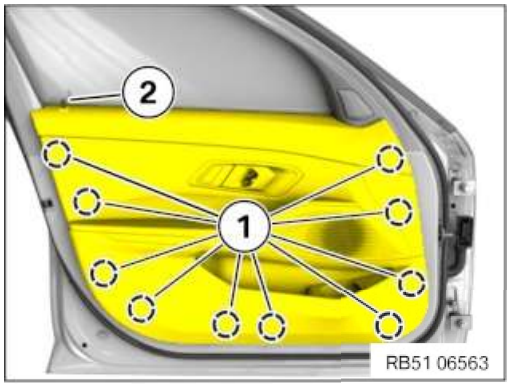
- Renew the clips (1).

  Parts: Clips

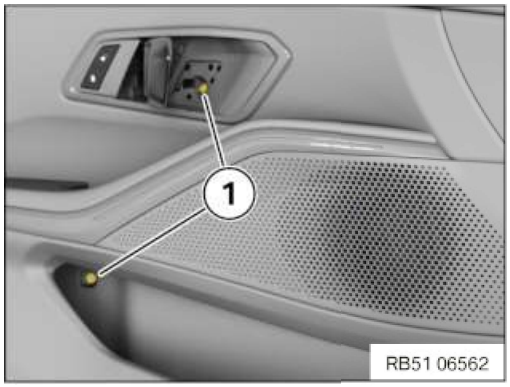
cardiagn.com



- Push the inner door opener in closed direction.
- Feed in Bowden cable for the inner door opener (2) and clip in the latch mechanism (1).
- Connect connectors (3) and lock.



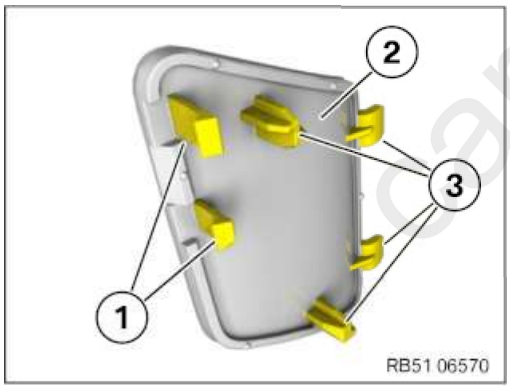
- Feed door trim panel from the top via the operating rod (2) into the inner front weather strip.
- Clip in the door trim panel with the clips (1).



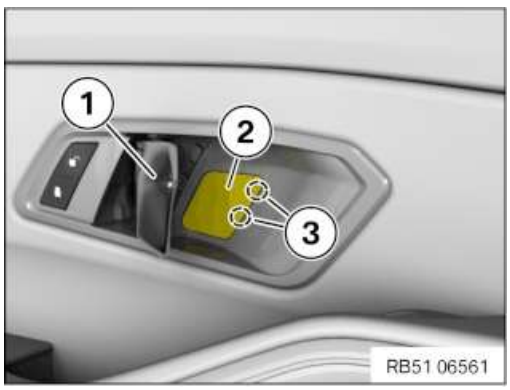
- Tighten the screws (1).

Door trim panel to door

Screw TS5x20		Tightening torque	2,6 Nm



- Check latch mechanisms (1) for damage, if necessary renew the trim (2).
- Check guides (3) for damage, if necessary renew the trim (2).



- Pull door opener (1).
- Position trim (2) and clip in using the latch mechanisms (3).

Additional Information

Overview of Tightening Torques

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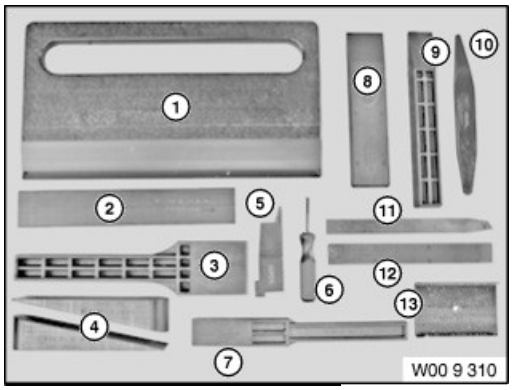
Overview of Tightening Torques

Door trim panel to door — Used in step 4

Screw TS5x20		Tightening torque	2,6 Nm

Overview of Special Tools

0 493 752 (00 9 329) Case



Common — Used in step 1

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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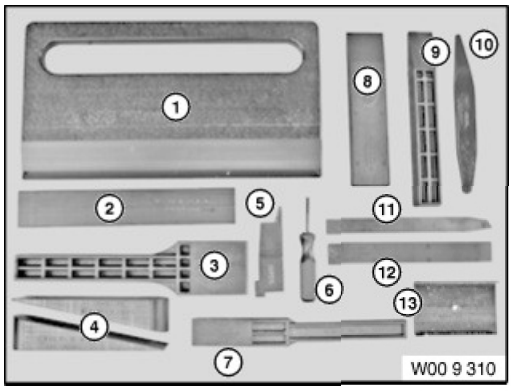
61 31 082 Removing and installing/replacing switch for central locking system

NOTICE

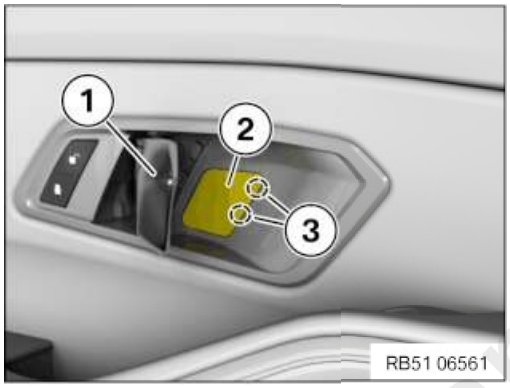
Description is for left component only. Procedure on the right side is identical.

PRELIMINARY WORK

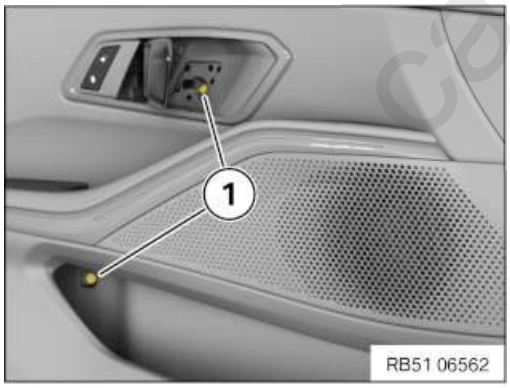
1 – Remove door trim panel



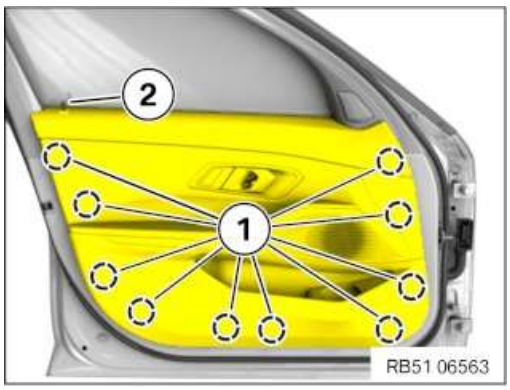
- Have the set of special tools 0 493 752 (00 9 329) ready.



- Pull door opener (1).
- Release latch mechanisms (3) of the trim (2) with suitable special tool.
- Remove trim (2).

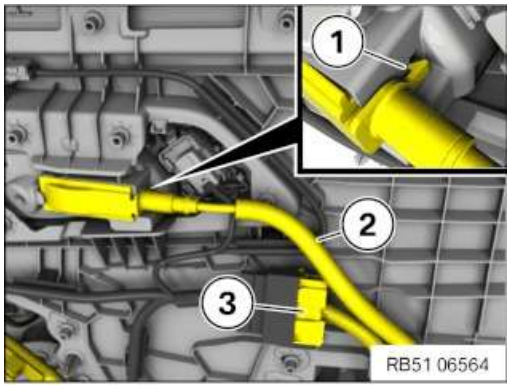


- Loosen screws (1).



- Unclip the door trim panel at the clips (1) using a suitable special tool.
- Guide the door trim panel upwards out of the front inner weather strip and the operating rod (2).

cardiagn.com

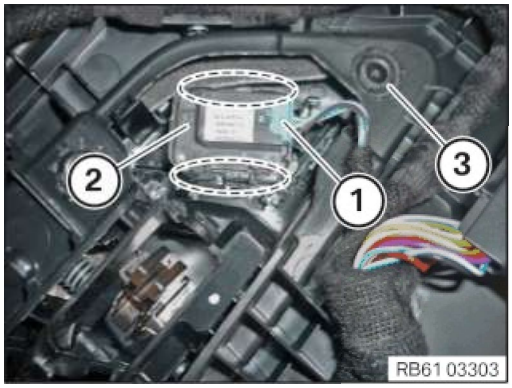


- Release latch mechanism (1) and feed out the Bowden cable for the inner door opener (2).

  In doing so, the Bowden cable for the inner door opener (2) is guided out of the door opener.
- Unlock plug connection (3), disconnect it and remove the door trim panel.

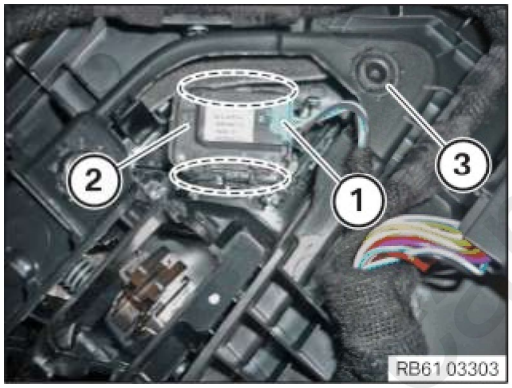
MAIN WORK

2 – Remove the central locking button



- Disconnect the connector (1) .
- Release latch mechanisms in the marked area.
- Remove the central locking button (2)from door trim panel (3).

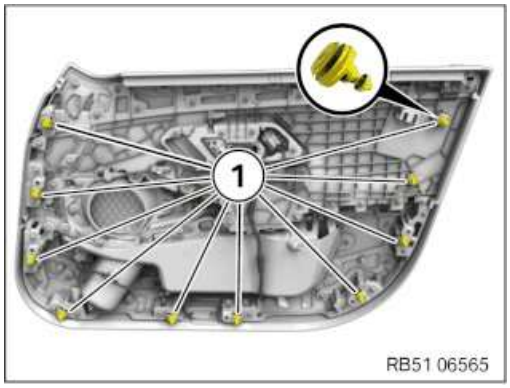
3 – Install the central locking button



- Position central locking button (2) on door trim panel (3) and clip it in the latch mechanisms in the marked area.
- Connect connector (1).

POSTPROCESSES

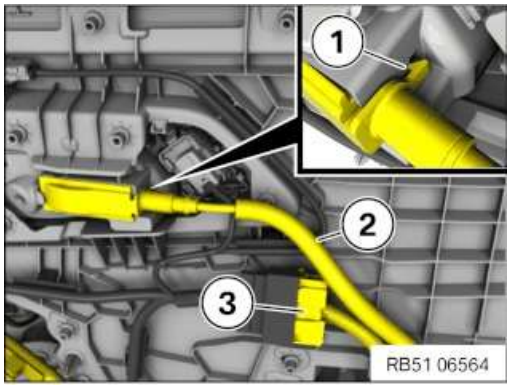
4 – Install door trim panel



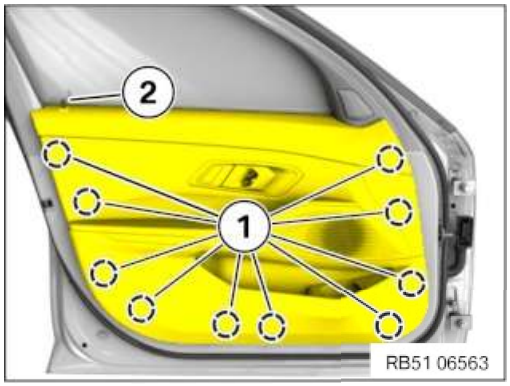
- Renew the clips (1).

  Parts: Clips

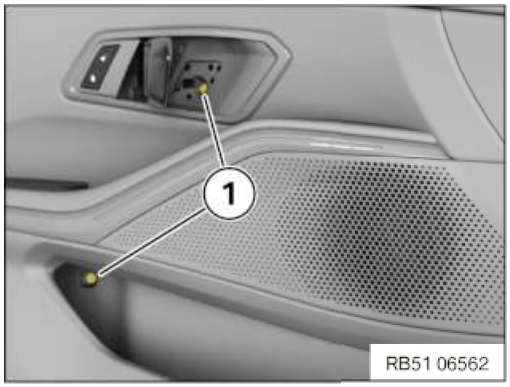
carfdiagn.com



- Push the inner door opener in closed direction.
- Feed in Bowden cable for the inner door opener (2) and clip in the latch mechanism (1).
- Connect connectors (3) and lock.



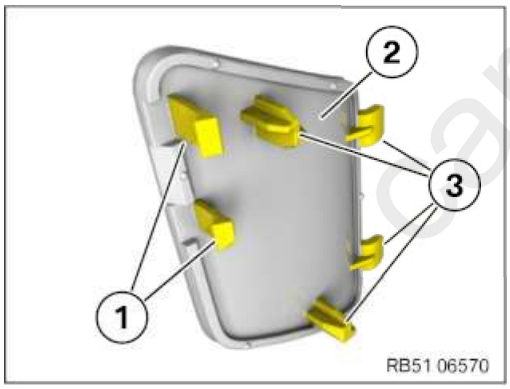
- Feed door trim panel from the top via the operating rod (2) into the inner front weather strip.
- Clip in the door trim panel with the clips (1).



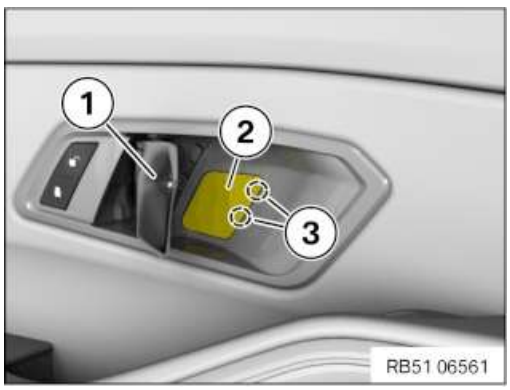
- Tighten the screws (1).

Door trim panel to door

Screw TS5x20		Tightening torque	2,6 Nm



- Check latch mechanisms (1) for damage, if necessary renew the trim (2).
- Check guides (3) for damage, if necessary renew the trim (2).



- Pull door opener (1).
- Position trim (2) and clip in using the latch mechanisms (3).

Additional Information

Overview of Tightening Torques

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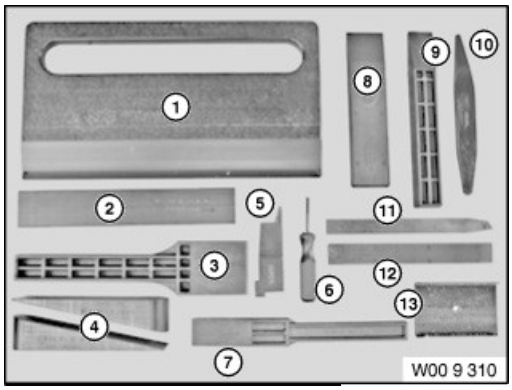
Overview of Tightening Torques

Door trim panel to door — Used in step 4

Screw TS5x20		Tightening torque	2,6 Nm

Overview of Special Tools

0 493 752 (00 9 329) Case



Common — Used in step 1

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)

cardiagn.com

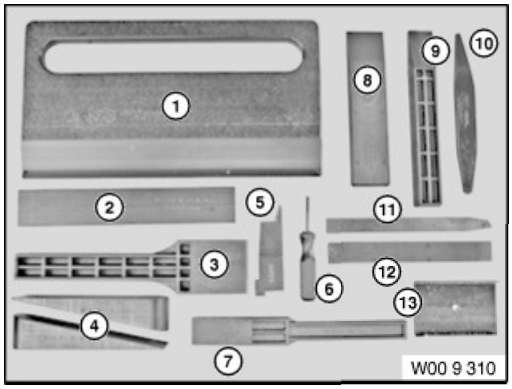
61 31 083 Removing and installing/replacing switch for unlocking tailgate

NOTICE

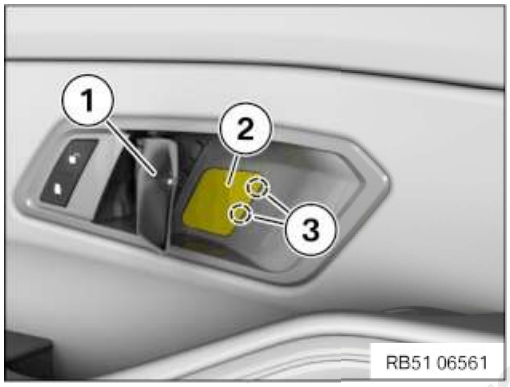
Description is for left component only. Procedure on the right side is identical.

PRELIMINARY WORK

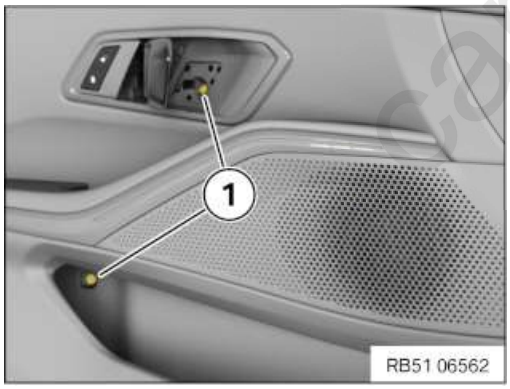
1 – Remove door trim panel



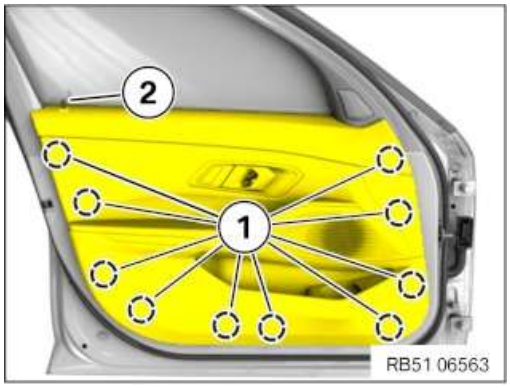
- Have the set of special tools 0 493 752 (00 9 329) ready.



- Pull door opener (1).
- Release latch mechanisms (3) of the trim (2) with suitable special tool.
- Remove trim (2).

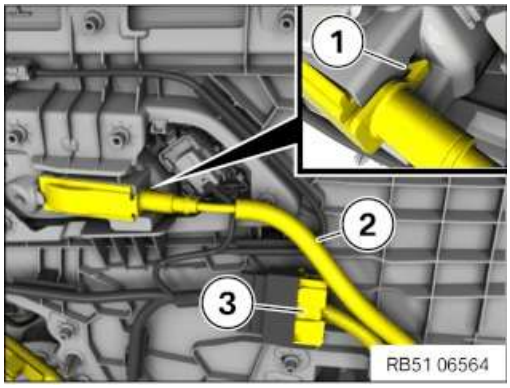


- Loosen screws (1).



- Unclip the door trim panel at the clips (1) using a suitable special tool.
- Guide the door trim panel upwards out of the front inner weather strip and the operating rod (2).

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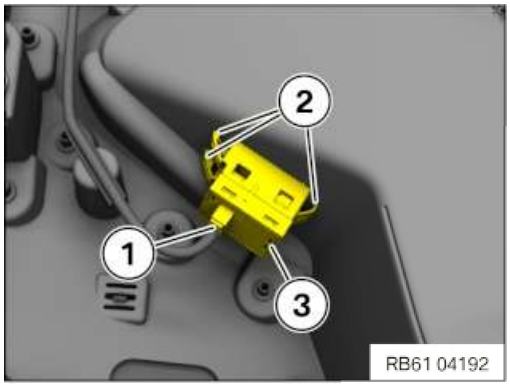


- Release latch mechanism (1) and feed out the Bowden cable for the inner door opener (2).

  In doing so, the Bowden cable for the inner door opener (2) is guided out of the door opener.
- Unlock plug connection (3), disconnect it and remove the door trim panel.

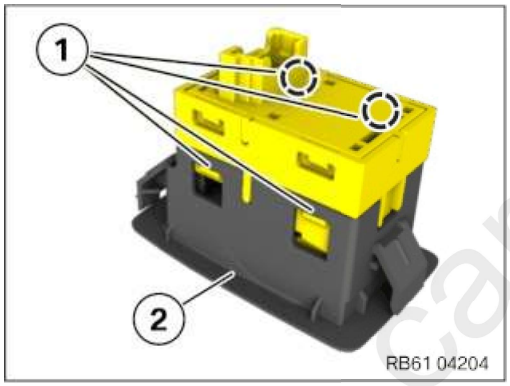
MAIN WORK

2 – Removing the tailgate release switch

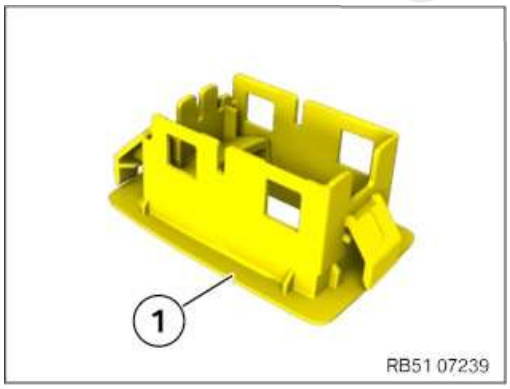


- Unlock plug connection (1) and disconnect.
- Release latch mechanisms (2) and remove the tailgate release switch (3) out of the front door trim panel.

3 – Replacement: Tailgate release switch

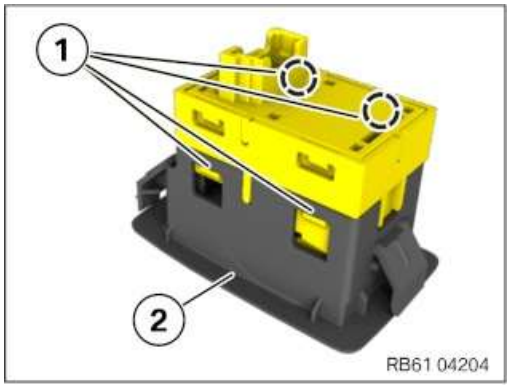


- Unclip clips (1) and remove the rear lid unlocking switches from the tailgate release switch cover (2).



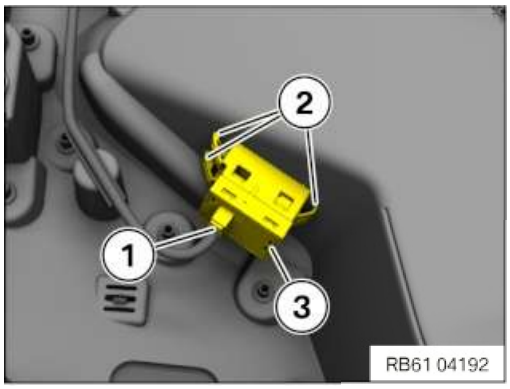
- Check tailgate release switch cover (1) for damage and renew if necessary.

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- Install tailgate release switch in the rear lid unlocking switch cover (2) and clip into the clips (1).

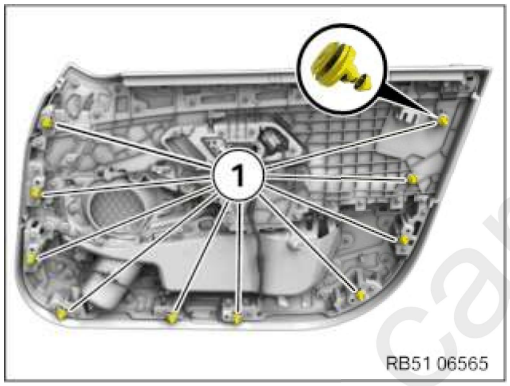
4 – Installing the tailgate release switch



- Install switch for tailgate release (3) in the front door trim panel and clip in using latch mechanisms (2).
- Connect connectors (1) and lock.

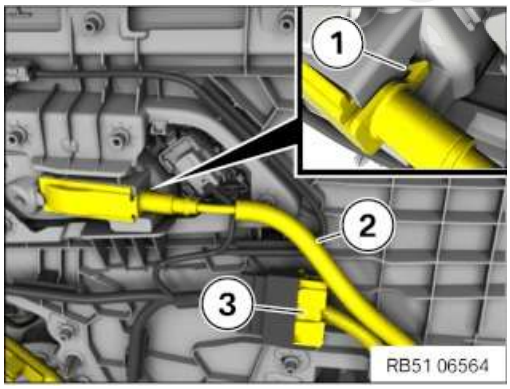
POSTPROCESSES

5 – Install door trim panel



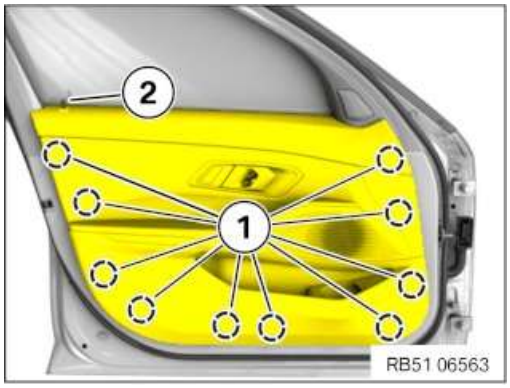
- Renew the clips (1).

  Parts: Clips

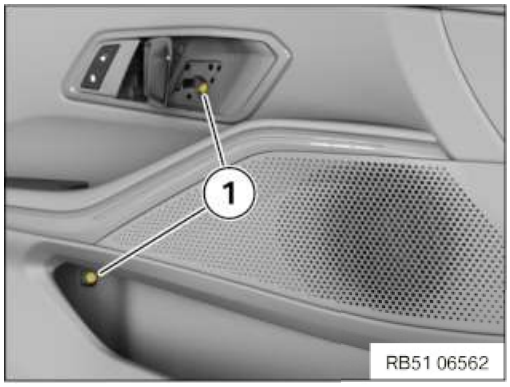


- Push the inner door opener in closed direction.
- Feed in Bowden cable for the inner door opener (2) and clip in the latch mechanism (1).
- Connect connectors (3) and lock.

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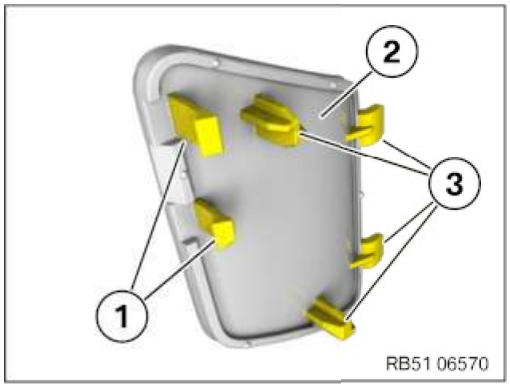
- Feed door trim panel from the top via the operating rod (2) into the inner front weather strip.
- Clip in the door trim panel with the clips (1).



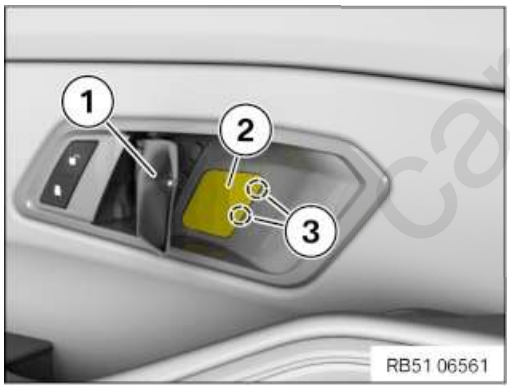
- Tighten the screws (1).

Door trim panel to door

Screw TS5x20		Tightening torque	2,6 Nm



- Check latch mechanisms (1) for damage, if necessary renew the trim (2).
- Check guides (3) for damage, if necessary renew the trim (2).



- Pull door opener (1).
- Position trim (2) and clip in using the latch mechanisms (3).

Additional Information

Overview of Tightening Torques

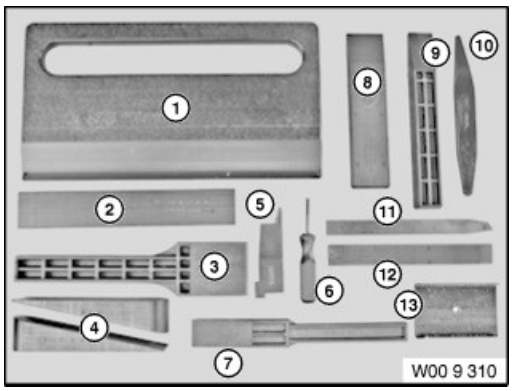
Door trim panel to door Used in step 5

Screw TS5x20		Tightening torque	2,6 Nm

Overview of Special Tools

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0 493 752 (00 9 329) Case



Common	Used in step 1
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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61 31 327 Removing and installing/replacing the shift knob of gear selector switch

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

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

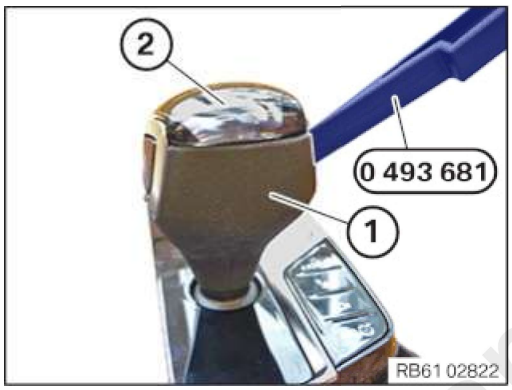
1 – Remove gearshift lever knob

RISK OF DAMAGE

Damage of high-quality surfaces.

Plastic wedges can damage high-quality surfaces.

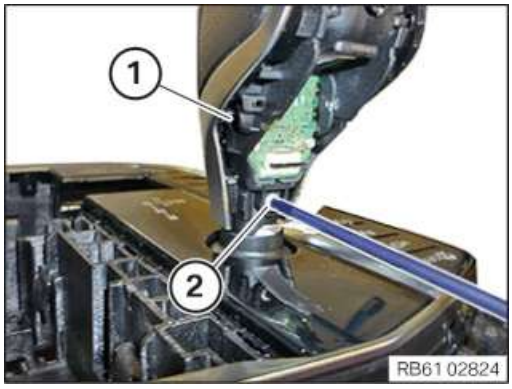
- Protect surfaces from damage.



- Lever the trim (1) with the special tool 0 493 681 (64 1 020) out of the gearshift lever knob (2) on both sides.



- Unlock the connector (1) in the direction of the arrow.
- Thread out the ribbon cable (2).

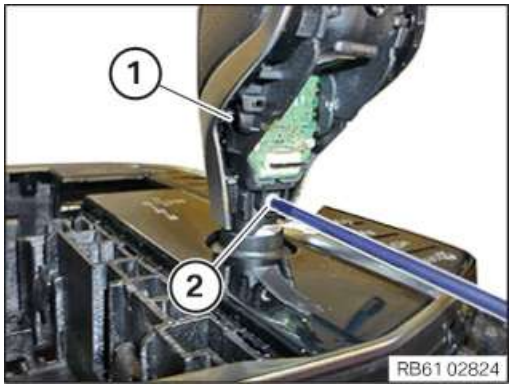


- Loosen screw (2).
- Remove the shift knob (1) upwards.

2 – Installing gearshift lever knob

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2 – Installing gearshift lever knob

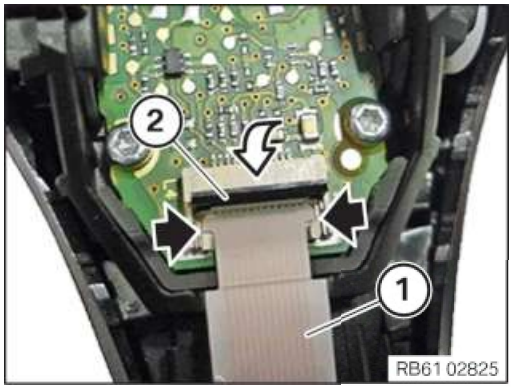


- Position the gearshift lever knob (1).
- Replace the screw of the gearshift lever knob.

  Parts: Screw
- Tighten down screw (2).

Gearshift lever knob

Screw	Renew screw.	Tightening torque	0,8 Nm



- Position ribbon cable (1) correctly on the gearshift lever knob (arrow).
- Lock the connector (2) in the direction of the arrow.



- Position and lock the trim (1) to the gearshift lever knob (2).

  Parts: Gearshift lever knob trim

  Retaining lugs must audibly snap into place.

Additional Information

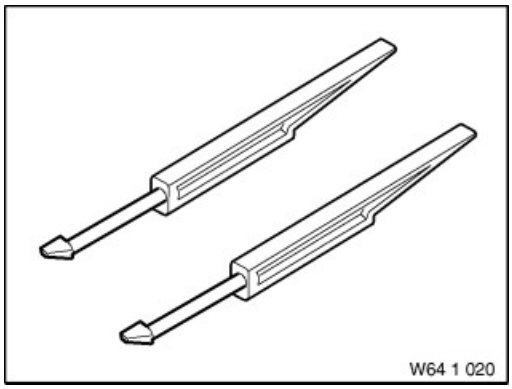
Overview of Tightening Torques

Gearshift lever knob Used in step 2

Screw	Renew screw.	Tightening torque	0,8 Nm

Overview of Special Tools

0 493 681 (64 1 020) Hook



Common Used in step 1

Usage	(release hook) For releasing and removing fresh air grille. For removing various covers.
Included in the tool or work	
Storage location	C2
Replaced by	
In connection with	
SI-Number	01 15 99 (483)

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61 31 068 Removing and installing/replacing the switch for front passenger airbag deactivation

RISK OF DAMAGE

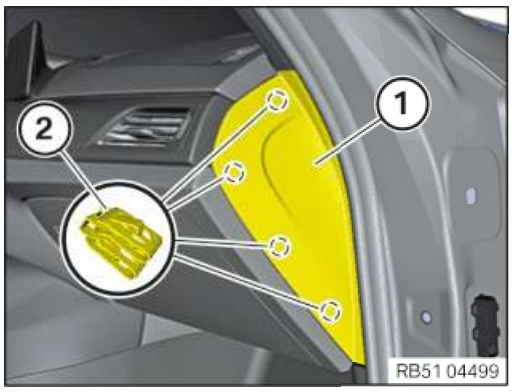
Scratches.

Tools and sharp-edged components can cause scratches.

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

PRELIMINARY WORK

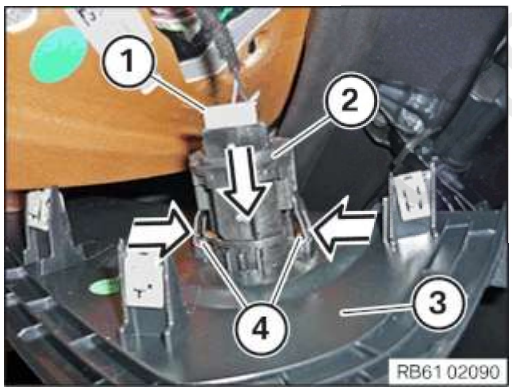
1 – Remove the side panel on the right instrument panel



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

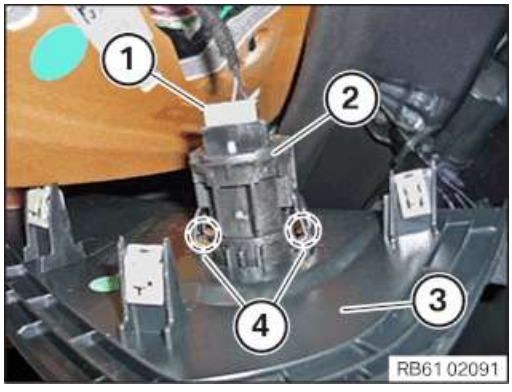
MAIN WORK

2 – Removing the switch for front passenger airbag deactivation



- Disconnect plug connection (1).
- Unlock the latch mechanism (4) in the direction of the arrow.
- Feed the switch for front passenger airbag deactivation (2) out of the cover (3) in the direction of the arrow.

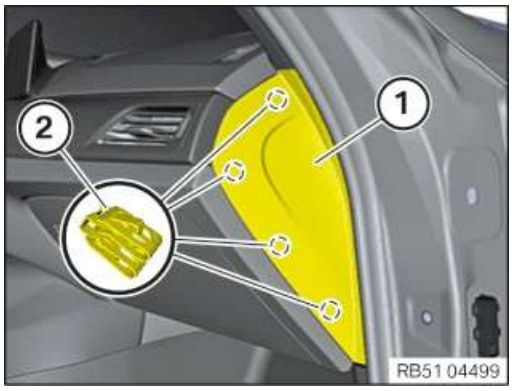
3 – Installing the switch for front passenger airbag deactivation



- Install the switch for front passenger airbag deactivation (2) in the side panel of the instrument panel (3).

  The latch mechanism (4) must engage audibly.
- Connect the connector (1) with the switch for front passenger airbag deactivation.

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

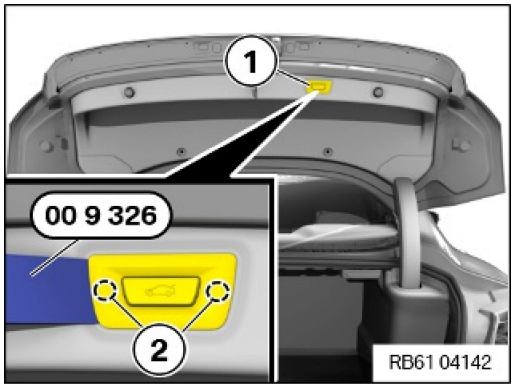


- If required, connect the associated connector.
- Feed in the side panel (1) and clip it in at the clamps (2).

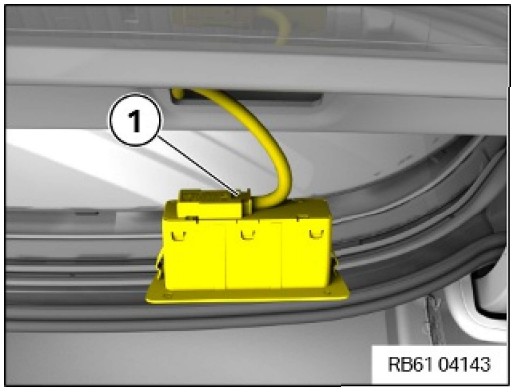
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61 31 084 Removing and installing/replacing the switch for the automatic operation of tailgate

1 – Removing the tailgate lift switch

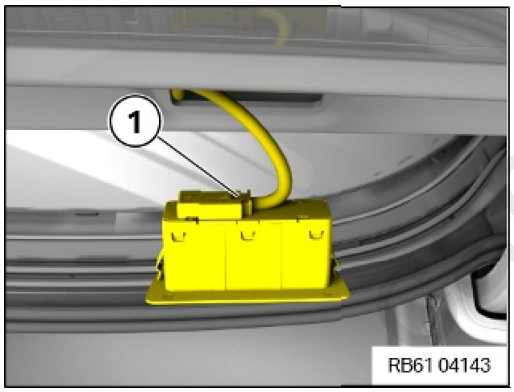


- Unclip the switch for the automatic tailgate operation (1) using special tool 0 496 570 (00 9 326) at the lateral latch mechanisms (2).

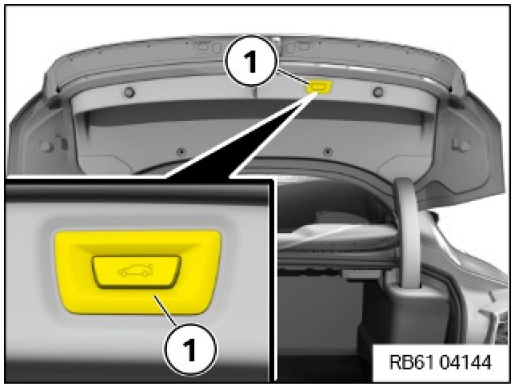


- Unlock plug connection (1) and disconnect.

2 – Install the tailgate lift switch



- Connect connectors (1) and lock.

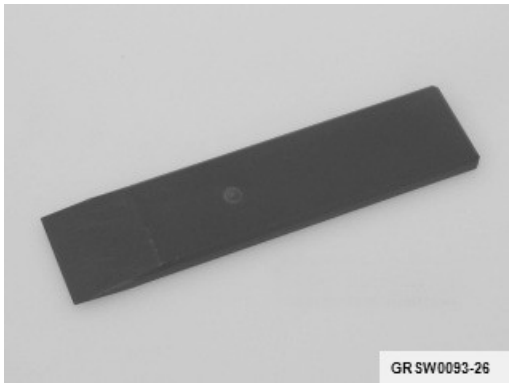


- Clip in the switch for automatic tailgate operation (1).

Additional Information

Overview of Special Tools

0 496 570 (00 9 326) Wedge



Common	Used in step 1
Usage	(Universal wedge) From 11/2008 this special tool replaces panel wedge 00 9 318 (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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61 31 349 Replace the cap for the electromechanical parking brake and cover below the gear selector switch

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

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

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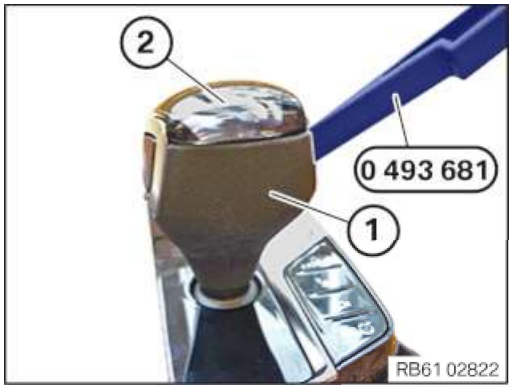
1 – Remove gearshift lever knob

RISK OF DAMAGE

Damage of high-quality surfaces.

Plastic wedges can damage high-quality surfaces.

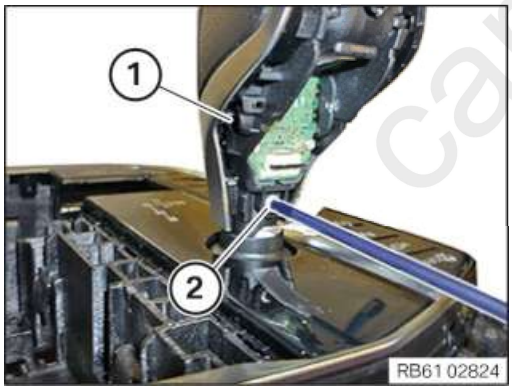
- Protect surfaces from damage.



- Lever the trim (1) with the special tool 0 493 681 (64 1 020) out of the gearshift lever knob (2) on both sides.



- Unlock the connector (1) in the direction of the arrow.
- Thread out the ribbon cable (2).



- Loosen screw (2).
- Remove the shift knob (1) upwards.

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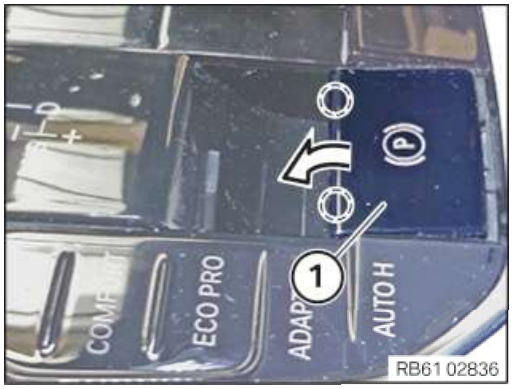
2 – Removing cover on the operating unit in the centre console

RISK OF DAMAGE

Damage of high-quality surfaces.

Plastic wedges can damage high-quality surfaces.

- Protect surfaces from damage.



- Press the parking brake button cover (1) forwards and downwards in the direction of the arrow.

Note: The parking brake button cover can be loosened by pressing strongly out of the catch mechanisms.



- Lever out the cover (1) on the operating facility in the centre console using the special tool 0 493 681 (64 1 020) in the marked area.

3 – Installing trim on the operating facility in the centre console



- Feed out and renew swivel (1).

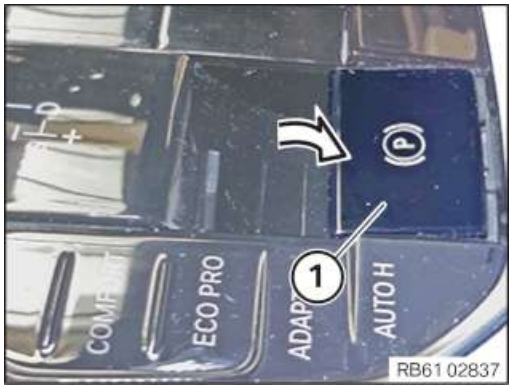
  Parts: Swivel

- Position ribbon cable (2) correctly through swivel (1).



- Feed in trim (1) on the operating facility in the centre console in the marked area.
- Clip in trim (1) on the operating facility in the centre console in direction of arrow.

  Trim (1) on the operating facility in the centre console must engage audibly.

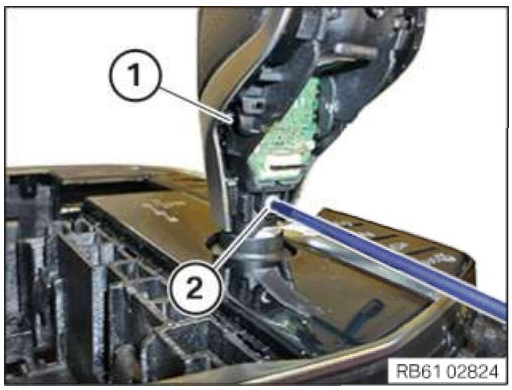


- Position parking brake button cover (1) and snap into place in the direction of the arrow.

  The parking brake button cover (1) must engage audibly.

POSTPROCESSES

4 – Installing gearshift lever knob

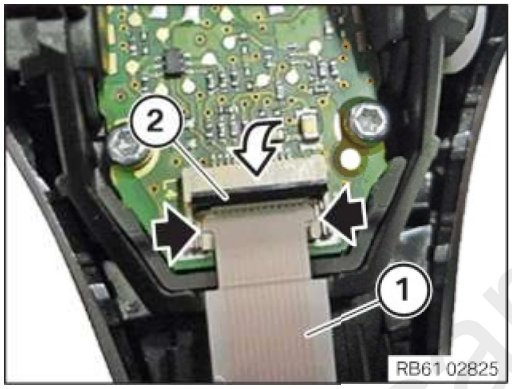


- Position the gearshift lever knob (1).
- Replace the screw of the gearshift lever knob.

  Parts: Screw
- Tighten down screw (2).

Gearshift lever knob

Screw	Renew screw.	Tightening torque	0,8 Nm



- Position ribbon cable (1) correctly on the gearshift lever knob (arrow).
- Lock the connector (2) in the direction of the arrow.



- Position and lock the trim (1) to the gearshift lever knob (2).

  Parts: Gearshift lever knob trim

  Retaining lugs must audibly snap into place.

Additional Information

Overview of Tightening Torques

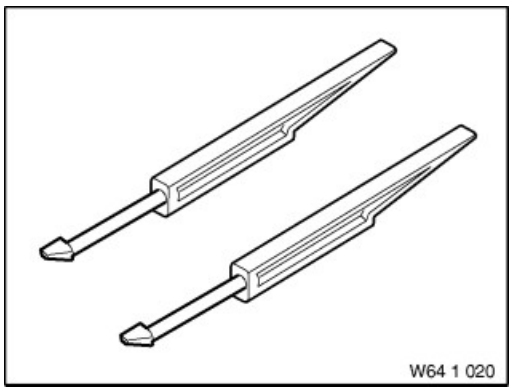
Gearshift lever knob Used in step 4

Screw	Renew screw.	Tightening torque	0,8 Nm

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Overview of Special Tools

0 493 681 (64 1 020) Hook



Common Used in step 12

Usage	(release hook) For releasing and removing fresh air grille. For removing various covers.
Included in the tool or work	
Storage location	C2
Replaced by	
In connection with	
SI-Number	01 15 99 (483)

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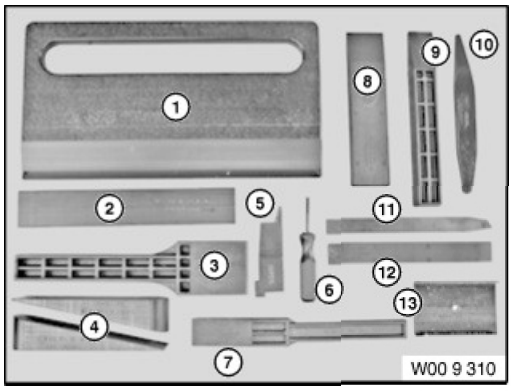
61 31 676 Replace the operating facility for the front left or right additional seat function

NOTICE

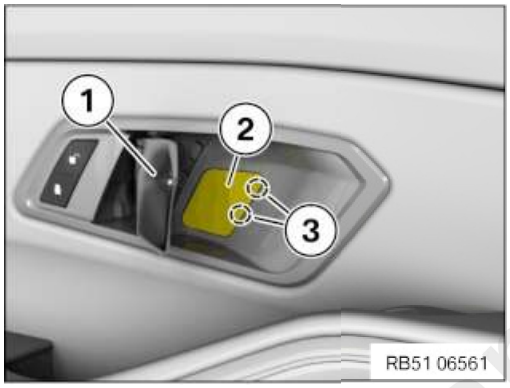
Description is for left component only. Procedure on the right side is identical.

PRELIMINARY WORK

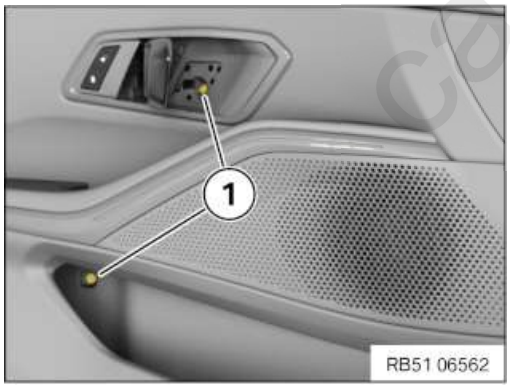
1 – Remove door trim panel



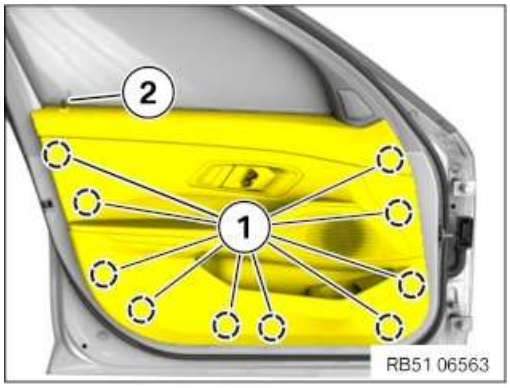
- Have the set of special tools 0 493 752 (00 9 329) ready.



- Pull door opener (1).
- Release latch mechanisms (3) of the trim (2) with suitable special tool.
- Remove trim (2).

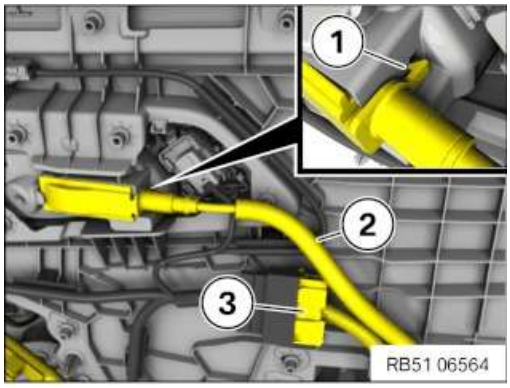


- Loosen screws (1).



- Unclip the door trim panel at the clips (1) using a suitable special tool.
- Guide the door trim panel upwards out of the front inner weather strip and the operating rod (2).

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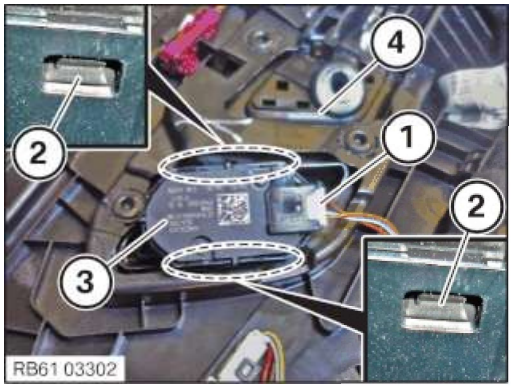


- Release latch mechanism (1) and feed out the Bowden cable for the inner door opener (2).

  In doing so, the Bowden cable for the inner door opener (2) is guided out of the door opener.
- Unlock plug connection (3), disconnect it and remove the door trim panel.

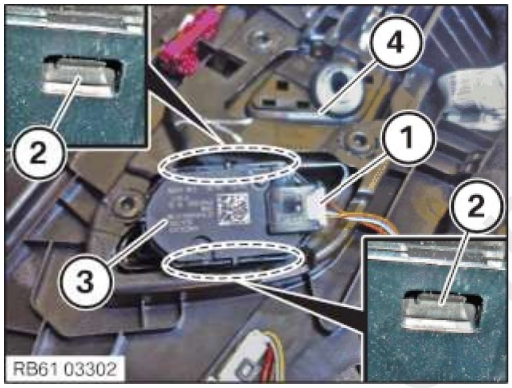
MAIN WORK

2 – Removing operating facility for the additional seat function



- Disconnect the connector (1) .
- Release latch mechanism (2) in the marked area.
- Remove operating unit (3) from the door trim panel (4).

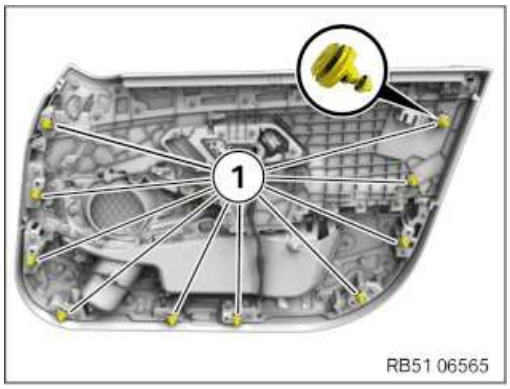
3 – Installing the operating facility for the additional seat function



- Position the operating unit (3) correctly on the door trim panel (4).
- Clip in the operating unit (3) in the latch mechanisms (2) in the marked area.
- Connect connector (1).

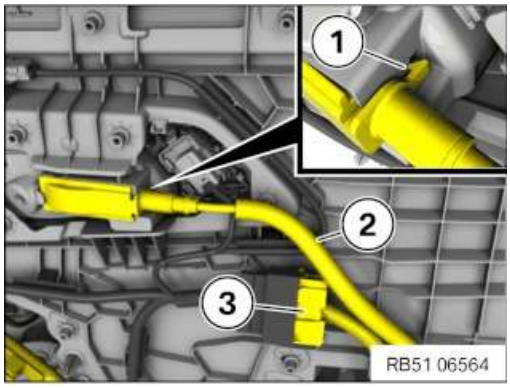
POSTPROCESSES

4 – Install door trim panel

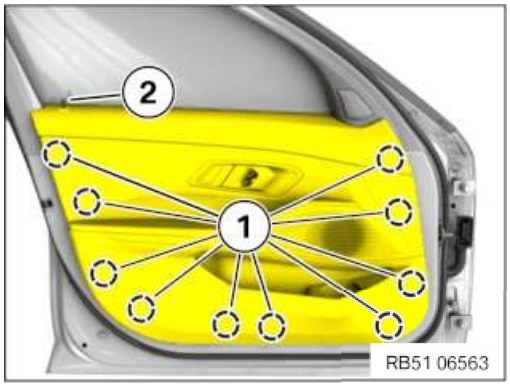


- Renew the clips (1).

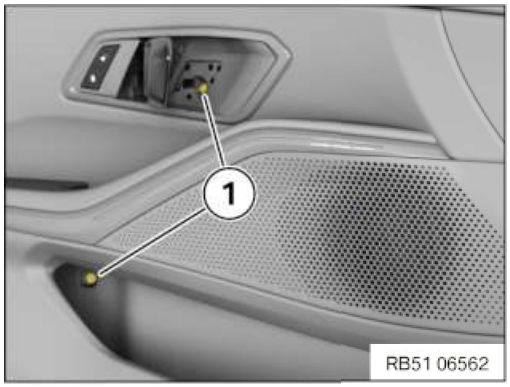
  Parts: Clips



- Push the inner door opener in closed direction.
- Feed in Bowden cable for the inner door opener (2) and clip in the latch mechanism (1).
- Connect connectors (3) and lock.



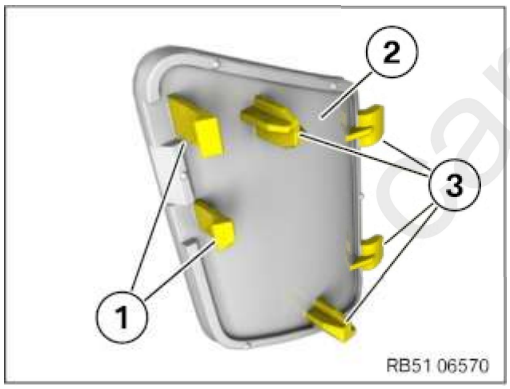
- Feed door trim panel from the top via the operating rod (2) into the inner front weather strip.
- Clip in the door trim panel with the clips (1).



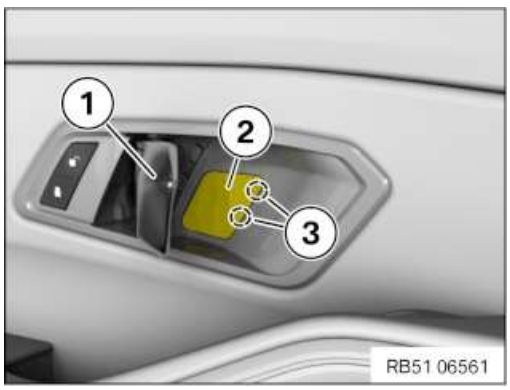
- Tighten the screws (1).

Door trim panel to door

Screw TS5x20		Tightening torque	2,6 Nm



- Check latch mechanisms (1) for damage, if necessary renew the trim (2).
- Check guides (3) for damage, if necessary renew the trim (2).



- Pull door opener (1).
- Position trim (2) and clip in using the latch mechanisms (3).

Additional Information

Overview of Tightening Torques

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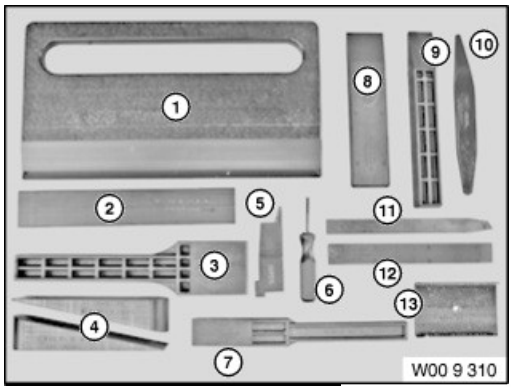
Overview of Tightening Torques

Door trim panel to door — Used in step 4

Screw TS5x20		Tightening torque	2,6 Nm

Overview of Special Tools

0 493 752 (00 9 329) Case



Common — Used in step 1

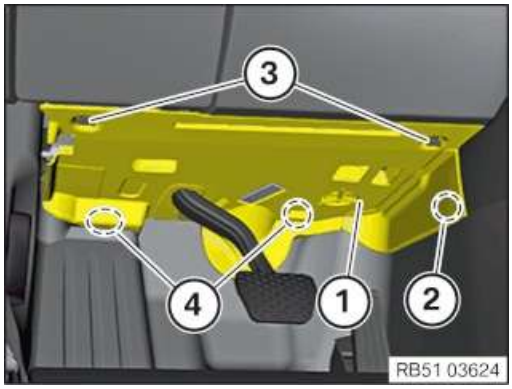
Usage	(Case) with insert not incl. panel wedges
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

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61 31 310 Replacing brake light switch

PRELIMINARY WORK

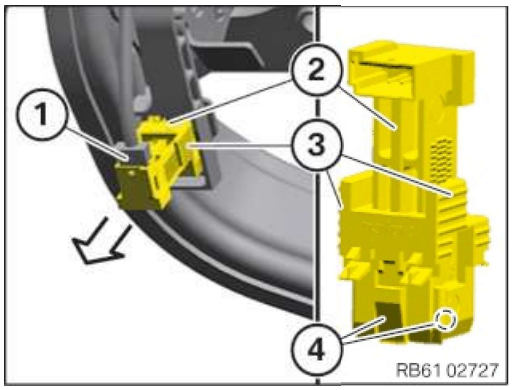
1 – Removing the trim panel for pedal mechanism



- 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.

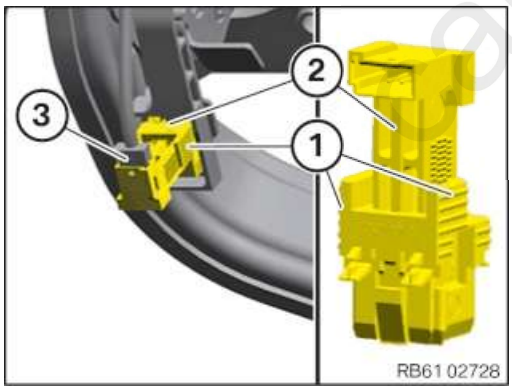
MAIN WORK

2 – Remove the brake light switch



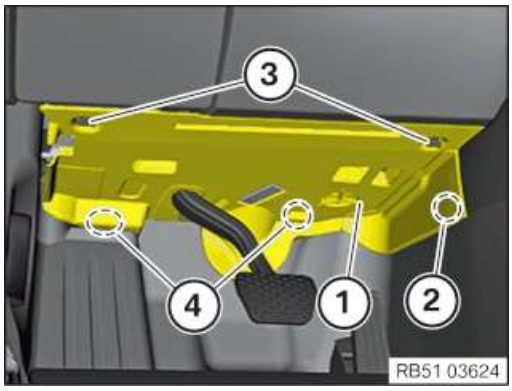
- Unlock and disconnect connector (1).
- Operate and hold brake pedal.
- Pull the brake light switch (2) from the holder for the brake light switch (3) in the direction of the arrow.
- Press together the latch mechanisms (4) and unclip the holder for the brake light switch (3) from the brake pedal.

3 – Install brake light switch



- Clip the holder for the brake light switch (1) into the brake pedal.
- Press brake pedal.
- Push the brake light switch (2) in the opposite direction to the arrow into the holder for the brake light switch (1) up to the limit position.
- Counter support the holder for the brake light switch (1) and move back the brake pedal slowly to the initial position at the same time.
- Slowly pull brake pedal back to limit position.
- Connect connector (3).

4 – Installing the trim panel for the pedal mechanism



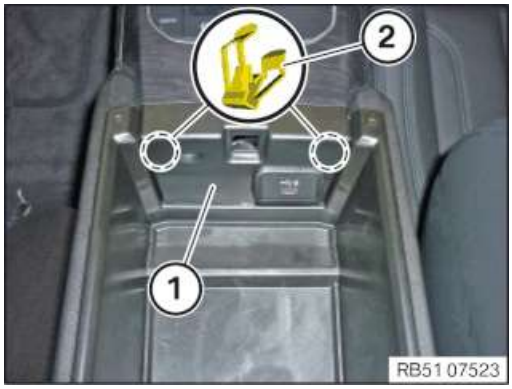
- Connect associated connector.
- Attach the trim panel for the pedal mechanism (1) in the guides (4) and fold it up.
- Clip the trim panel for the pedal mechanism (1) into the centre console in this area (2).
- Insert locks (3) correctly and turn 90°.

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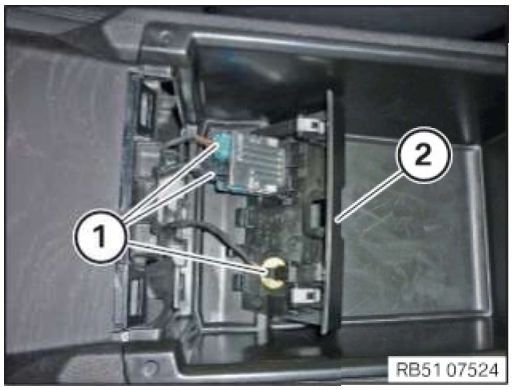
61 31 696 Replacing front controller

PRELIMINARY WORK

1 – 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) .

2 – 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.

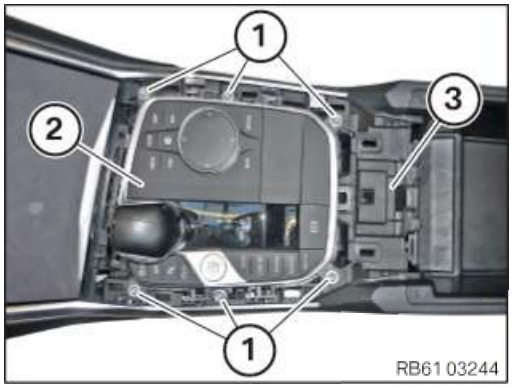
3 – Remove the operating facility in the centre console

▸ **Disconnecting all battery earth leads**

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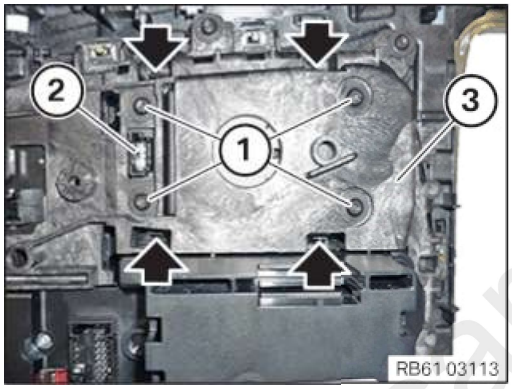
- See additional information.



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

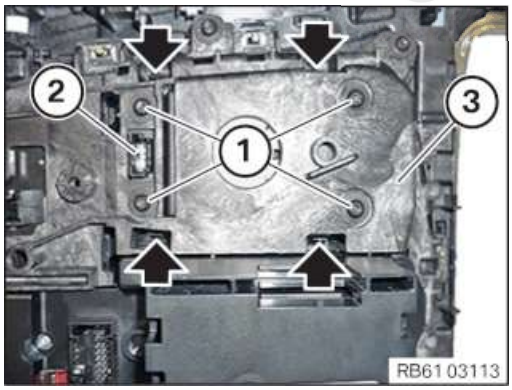
MAIN WORK

4 – Remove controller



- Loosen screws (1).
- Release the latch mechanisms (arrows).
- Remove controller (2) from the gear selector switch(GWS) (3).

5 – Install controller



- Position the controller (2) on gear selector switch (GWS) (3) and engage in the latch mechanisms (arrow).
- Tighten the screws (1).

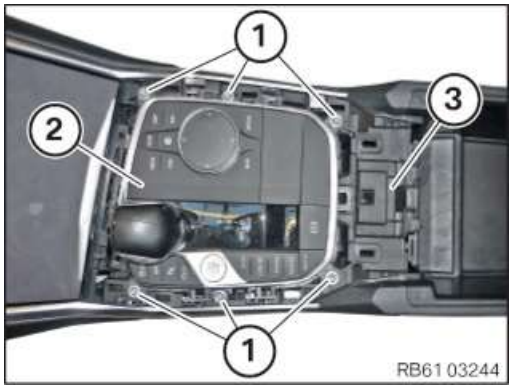
Controller to gear selector switch

Screw		Tightening torque	1,8 Nm

POSTPROCESSES

6 – 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.

7 – 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.



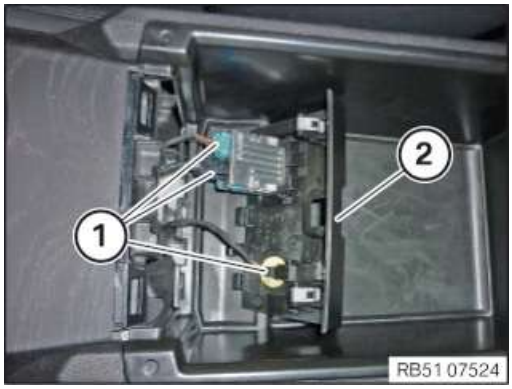
- Check all the latch mechanisms or clamps (arrows).
- In case the latch mechanisms or the clamps (arrows) are faulty, renew the centre console trim .



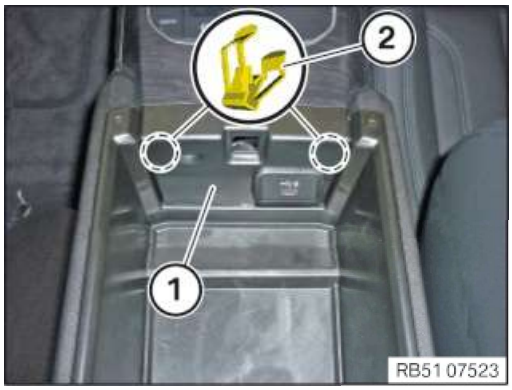
- Correctly position the centre console trim (1) and engage at the latch mechanisms.

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8 – 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).

9 – 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

Controller to gear selector switch — Used in step 5

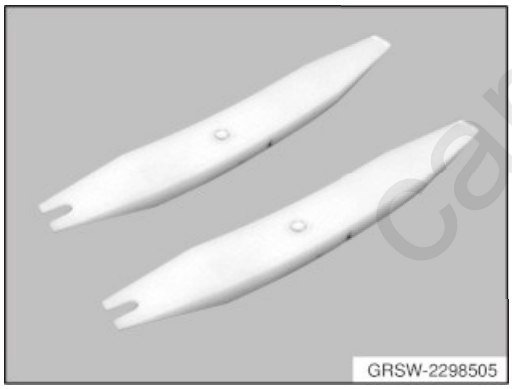
Screw		Tightening torque	1,8 Nm

Gear selector switch to centre console trim — Used in step 6

Screw		Tightening torque	1,8 Nm

Overview of Special Tools

2 298 505 Wedge



Common — Used in step 12

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	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	36
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	36

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61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	36
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
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61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36
61 20 900 Disconnecting and connecting battery earth lead	36

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61 31 204 Replacing operating unit for seat adjustment

Prerequisite

- Move front seat completely towards the front top.

NOTICE

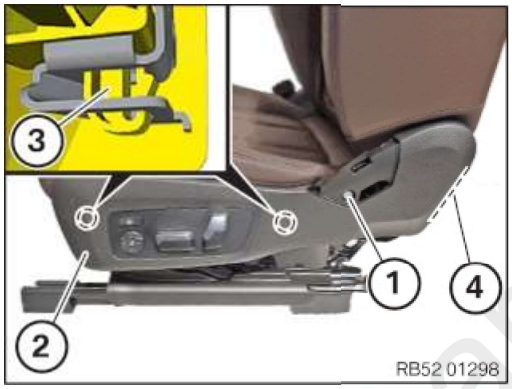
For a better overview the removed condition is shown here.

PRELIMINARY WORK

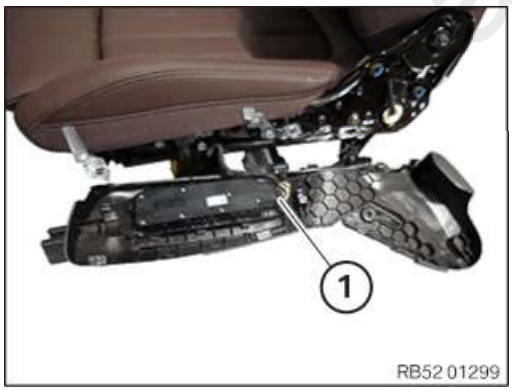
1 – Remove outer cover on front seat



- Unclip the cover (1).



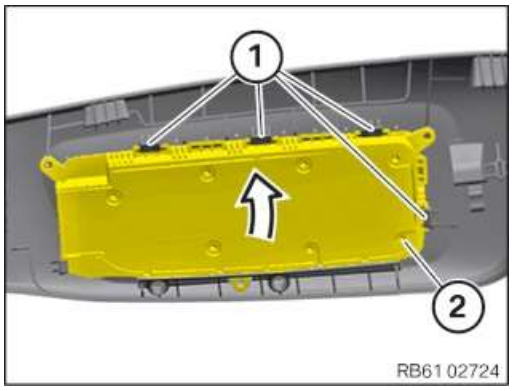
- Loosen screw (1).
- Disengage the cover (2) at the latch mechanisms (3) toward the top.
- Guide out and remove the cover (2) in the area (4).



- Disconnect plug connection (1) and, if necessary, unclip the cable clip.

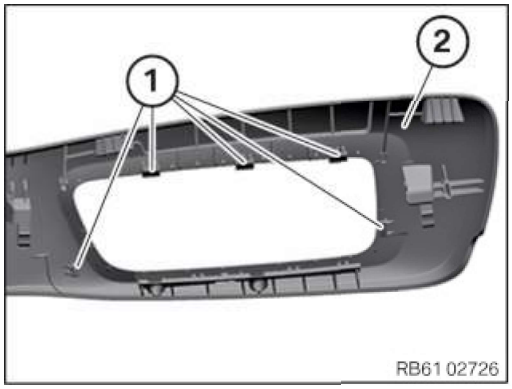
erdiagn.com

2 – Removing operating unit for seat adjustment

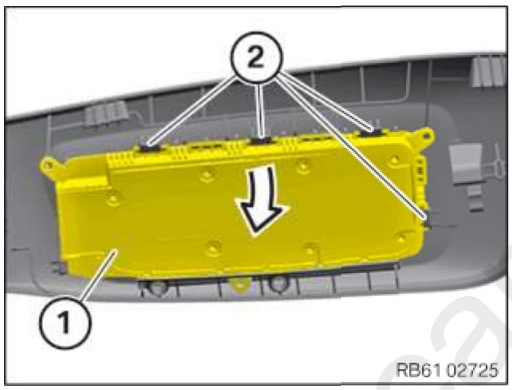


- Loosen latch mechanism (1).
- Remove the operating unit (2) in the direction of the arrow.

3 – Install the operating unit for the seat adjustment



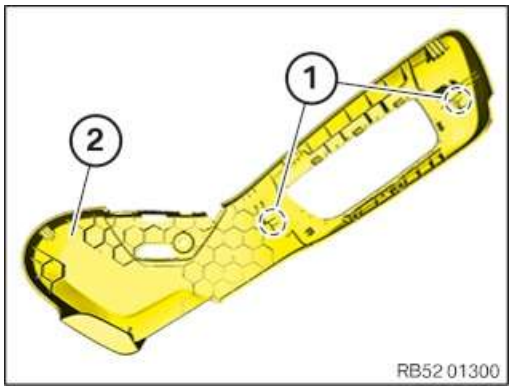
- Check the retaining lugs (1) for damage and renew the seat trim (2) if necessary.



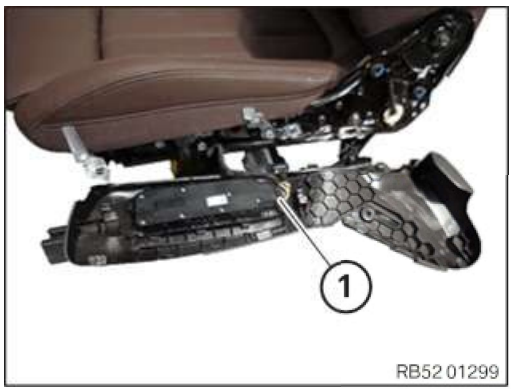
- Install the operating unit (1) in the direction of the arrow.
- Check the latch mechanism (2) is fitted correctly.

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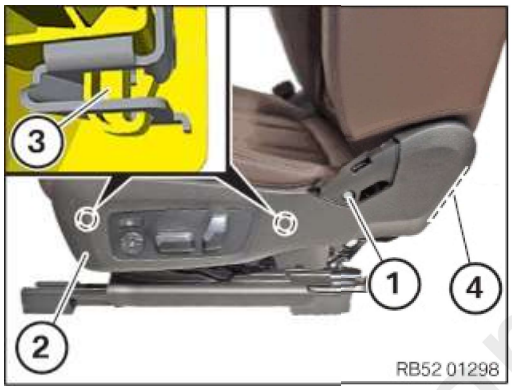
4 – Install outer cover on front seat



- Check the locking units (1) for damages, and replace the cover if necessary (2).



- Connect the connector (1) and if necessary clip the cable holder in.



- Insert the cover (2) in the area (4) and position it.
- Engage the cover (2) at the latch mechanisms (3).
- Tighten down screw (1).

Seat trim to seat frame

Sheet metal screw		Tightening torque	2.5 Nm



- Clip in the cover (1).

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Additional Information

Overview of Tightening Torques

Seat trim to seat frame Used in step 4

Sheet metal screw		Tightening torque	2.5 Nm

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61 31 329 Replacing START-STOP button cover

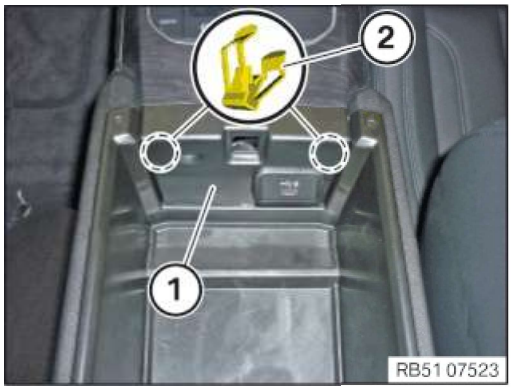
PRELIMINARY WORK

1 – Disconnecting all battery earth leads

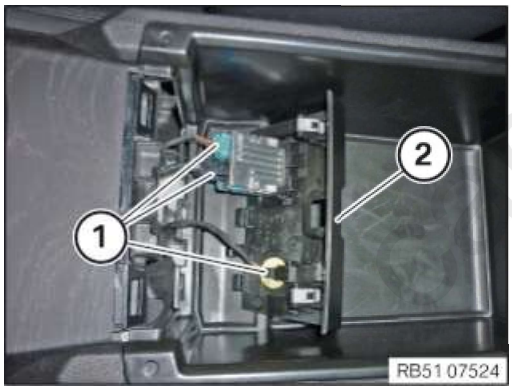


- See additional information.

2 – 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) .

3 – 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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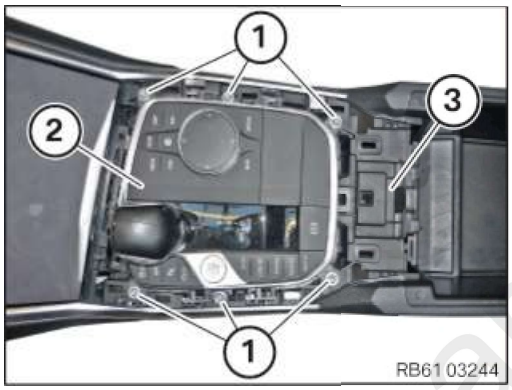
- Release and remove the centre console trim upwards (1) as shown using the special tool 2 298 505 from the latch mechanisms.

4 – Remove the operating facility in the centre console

► **Disconnecting all battery earth leads**

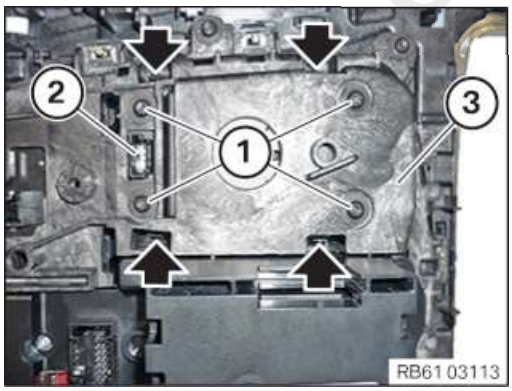


- See additional information.



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

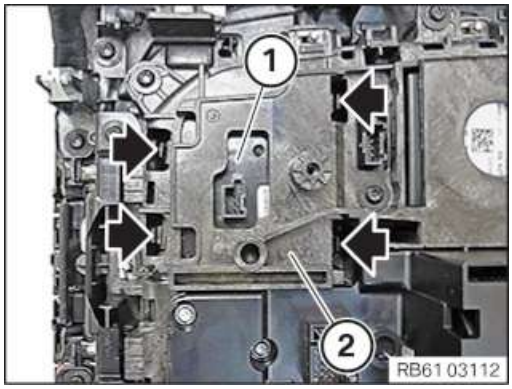
5 – Remove controller



- Loosen screws (1).
- Release the latch mechanisms (arrows).
- Remove controller (2) from the gear selector switch(GWS) (3).

6 – Removing the HDC button

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- Release the latch mechanisms (arrows).
- Remove HDC button (1) from gear selector switch (GWS) (2).

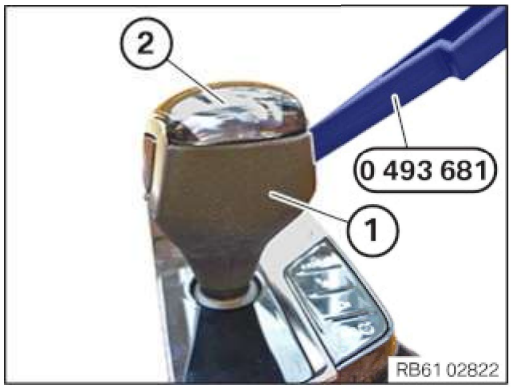
7 – Remove gearshift lever knob

RISK OF DAMAGE

Damage of high-quality surfaces.

Plastic wedges can damage high-quality surfaces.

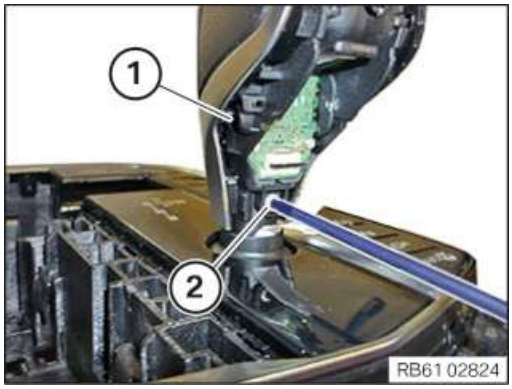
- Protect surfaces from damage.



- Lever the trim (1) with the special tool 0 493 681 (64 1 020) out of the gearshift lever knob (2) on both sides.



- Unlock the connector (1) in the direction of the arrow.
- Thread out the ribbon cable (2).



- Loosen screw (2).
- Remove the shift knob (1) upwards.

8 – Remove covers on the operating unit in the centre console

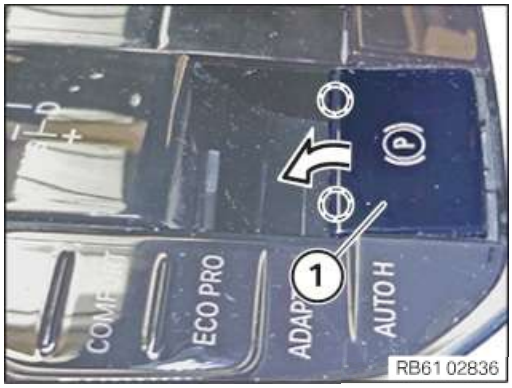
cardiagn.com

RISK OF DAMAGE

Damage of high-quality surfaces.

Plastic wedges can damage high-quality surfaces.

- Protect surfaces from damage.

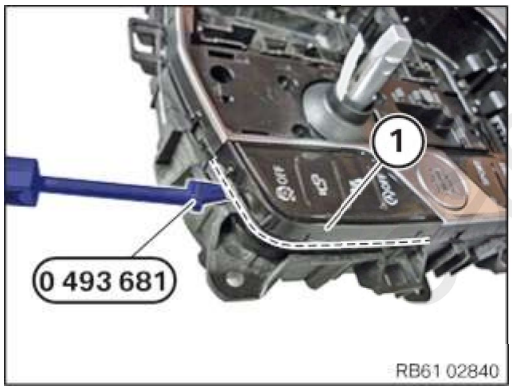


- Press the parking brake button cover (1) forwards and downwards in the direction of the arrow.

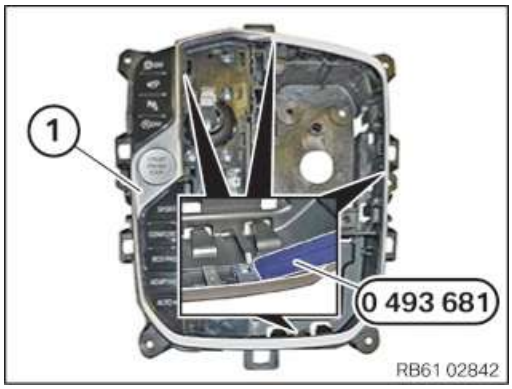
Note: The parking brake button cover can be loosened by pressing strongly out of the catch mechanisms.



- Lever the cover (1) out on the operating unit in the centre console (2) using the special tool 0 493 681 (64 1 020).



- Unclip the trim (1) using special tool 0 493 681 (64 1 020).



- Unclip cover (1) using the special tool 0 493 681 (64 1 020) at the locations marked.

MAIN WORK

9 – Replacing the START-STOP button trim

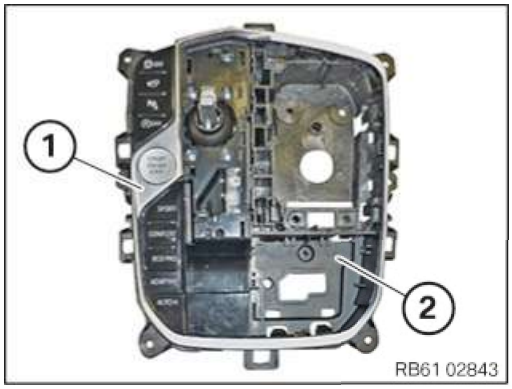
10 – Installing trims on the operating facility in the centre console

RISK OF DAMAGE

Damage of high-quality surfaces.

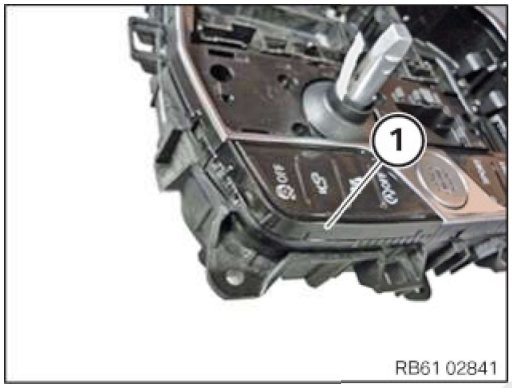
Plastic wedges can damage high-quality surfaces.

- Protect surfaces from damage.



- Position cover (1) on the operating unit in the centre console (2) and clip into place.

  All retaining lugs must engage audibly.

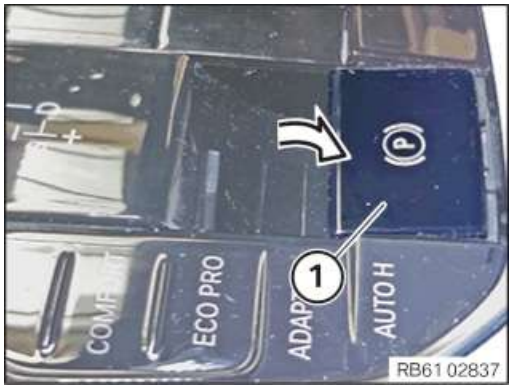


- Position and clip in trim (1).



- Position cover (1) on the operating unit in the centre console (2) and clip into place.

  All retaining lugs must engage audibly.

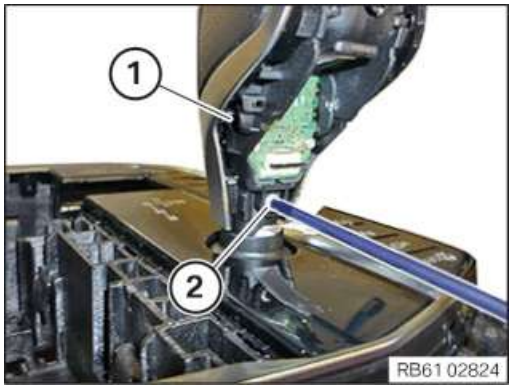


- Position parking brake button cover (1) and snap into place in the direction of the arrow.

  The parking brake button cover (1) must engage audibly.

11 – Installing gearshift lever knob

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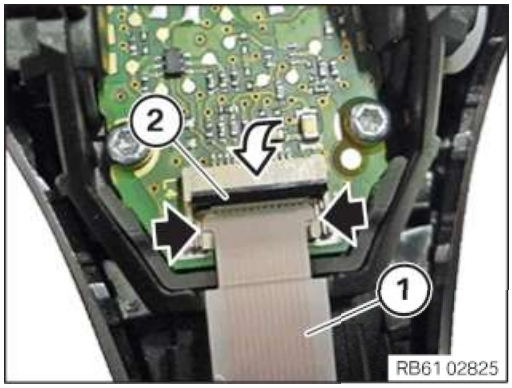


- Position the gearshift lever knob (1).
- Replace the screw of the gearshift lever knob.

  Parts: Screw
- Tighten down screw (2).

Gearshift lever knob

Screw	Renew screw.	Tightening torque	0,8 Nm



- Position ribbon cable (1) correctly on the gearshift lever knob (arrow).
- Lock the connector (2) in the direction of the arrow.

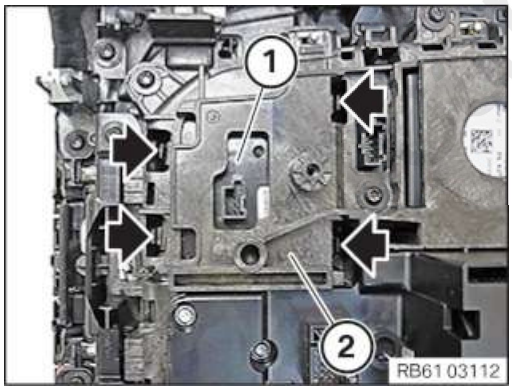


- Position and lock the trim (1) to the gearshift lever knob (2).

  Parts: Gearshift lever knob trim

  Retaining lugs must audibly snap into place.

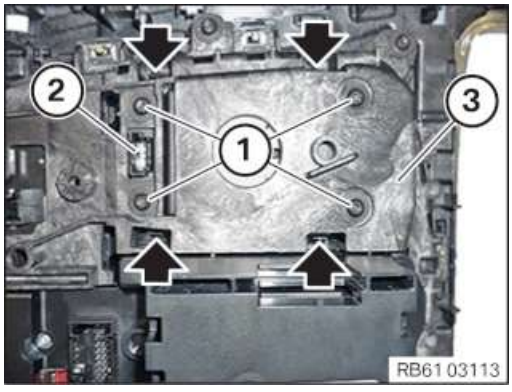
12 – Installing the HDC button



- Position HDC button (1) on gear selector switch (GWS) (2).

  The latch mechanisms (arrows) must engage audibly.

13 – Install controller



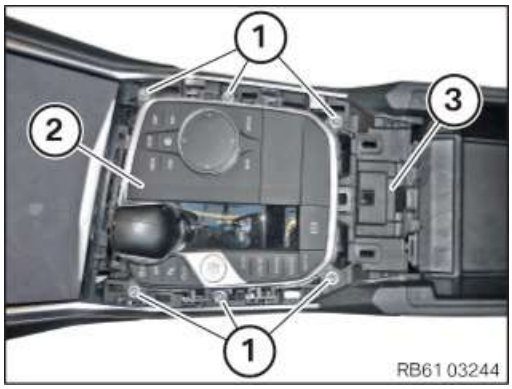
- Position the controller (2) on gear selector switch (GWS) (3) and engage in the latch mechanisms (arrow).
- Tighten the screws (1).

Controller to gear selector switch

Screw		Tightening torque	1,8 Nm

rdiagn.com

14 – 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.

15 – 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.



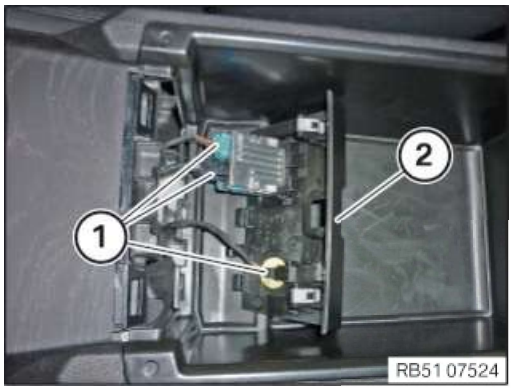
- Check all the latch mechanisms or clamps (arrows).
- In case the latch mechanisms or the clamps (arrows) are faulty, renew the centre console trim .

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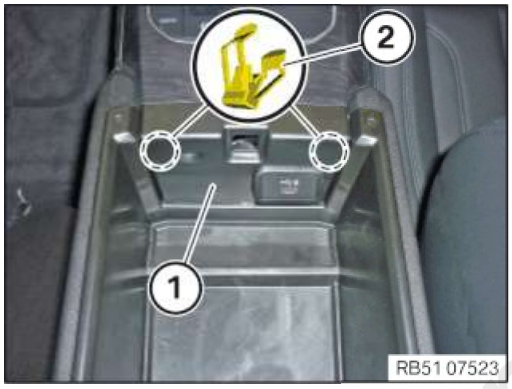


- Correctly position the centre console trim (1) and engage at the latch mechanisms.

16 – 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).

17 – 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.

18 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Overview of Tightening Torques

Gearshift lever knob — Used in step 11

Screw	Renew screw.	Tightening torque	0,8 Nm

Controller to gear selector switch — Used in step 13

Screw		Tightening torque	1,8 Nm

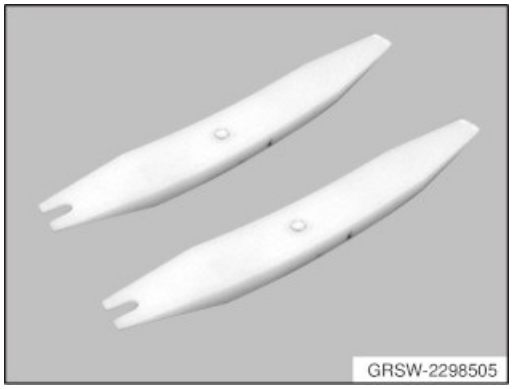
Gear selector switch to centre console trim — Used in step 14

Screw		Tightening torque	1,8 Nm

Overview of Special Tools

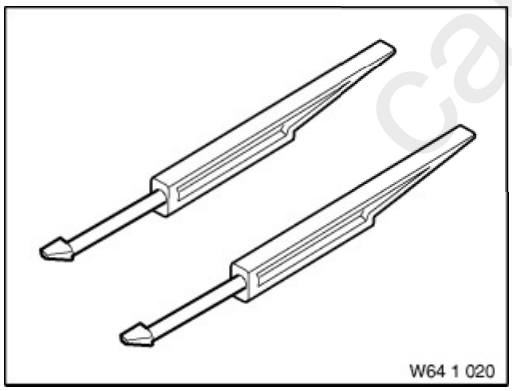
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2 298 505 Wedge



Common	Used in step 23
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)

0 493 681 (64 1 020) Hook



Common	Used in step 78
Usage	(release hook) For releasing and removing fresh air grille. For removing various covers.
Included in the tool or work	
Storage location	C2
Replaced by	
In connection with	
SI-Number	01 15 99 (483)

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	141418
61 20 900 Disconnecting and connecting battery earth lead	141418
61 20 900 Disconnecting and connecting battery earth lead	141418
61 20 900 Disconnecting and connecting battery earth lead	141418
61 20 900 Disconnecting and connecting battery earth lead	141418
61 20 900 Disconnecting and connecting battery earth lead	141418

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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	141418
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	141418
61 20 900 Disconnecting and connecting battery earth lead	141418
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	141418
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	141418
61 20 900 Disconnecting and connecting battery earth lead	141418
61 20 900 Disconnecting and connecting battery earth lead	141418
61 20 900 Disconnecting and connecting battery earth lead	141418
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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	141418
61 20 900 Disconnecting and connecting battery earth lead	141418
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61 20 900 Disconnecting and connecting battery earth lead	141418
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61 20 900 Disconnecting and connecting battery earth lead	141418
61 20 900 Disconnecting and connecting battery earth lead	141418
61 20 900 Disconnecting and connecting battery earth lead	141418

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61 31 704 Replacing the centre console operating facility

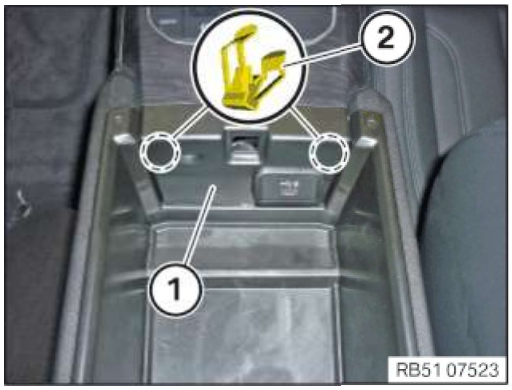
PRELIMINARY WORK

1 – Disconnecting all battery earth leads

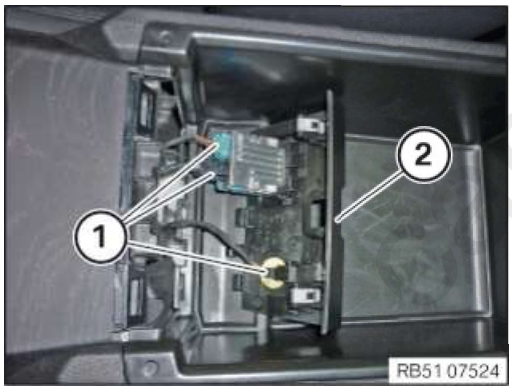


- See additional information.

2 – 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) .

3 – 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.

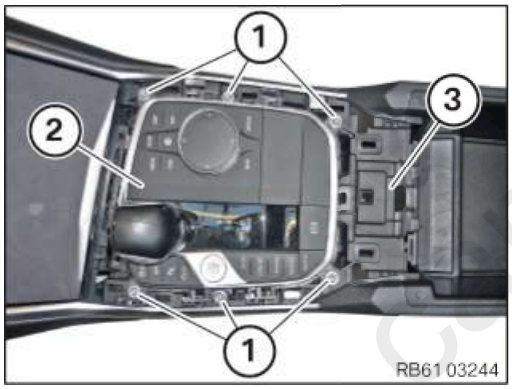
MAIN WORK

4 – Remove the operating facility in the centre console

► **Disconnecting all battery earth leads**

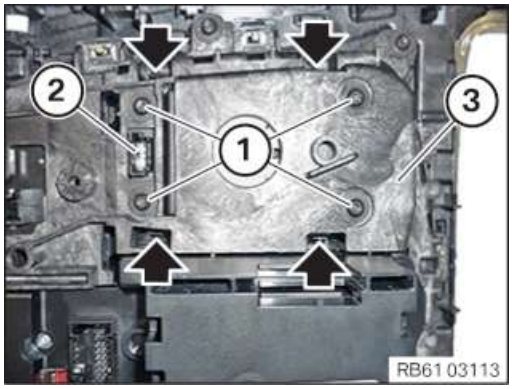


- See additional information.



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

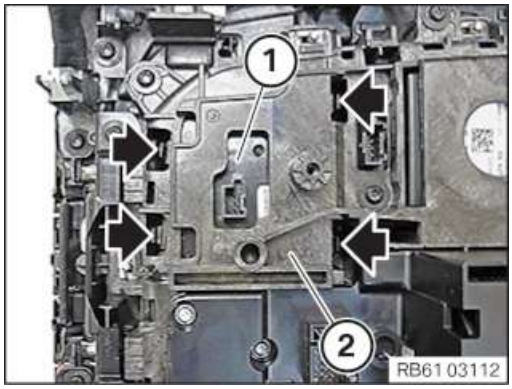
5 – Remove controller



- Loosen screws (1).
- Release the latch mechanisms (arrows).
- Remove controller (2) from the gear selector switch(GWS) (3).

6 – Removing the HDC button

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- Release the latch mechanisms (arrows).
- Remove HDC button (1) from gear selector switch (GWS) (2).

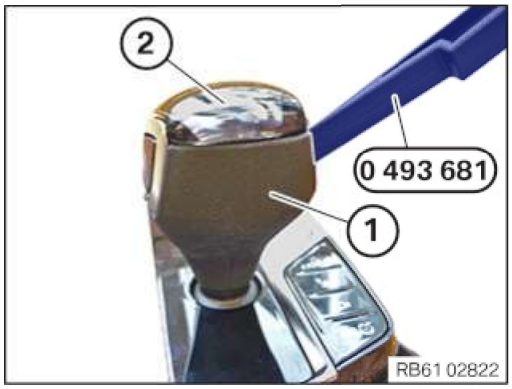
7 – Remove gearshift lever knob

RISK OF DAMAGE

Damage of high-quality surfaces.

Plastic wedges can damage high-quality surfaces.

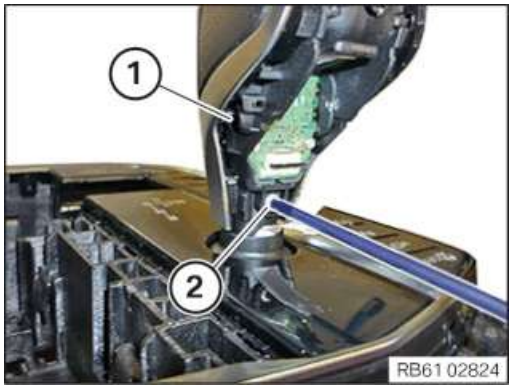
- Protect surfaces from damage.



- Lever the trim (1) with the special tool 0 493 681 (64 1 020) out of the gearshift lever knob (2) on both sides.



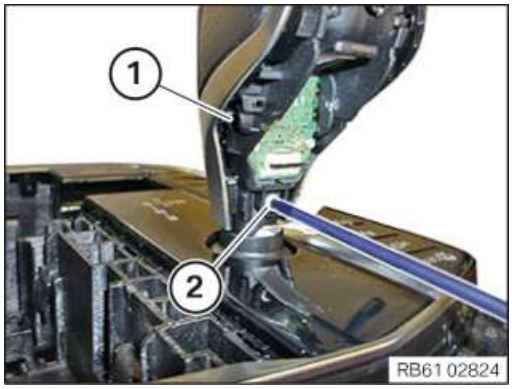
- Unlock the connector (1) in the direction of the arrow.
- Thread out the ribbon cable (2).



- Loosen screw (2).
- Remove the shift knob (1) upwards.

8 – Installing gearshift lever knob

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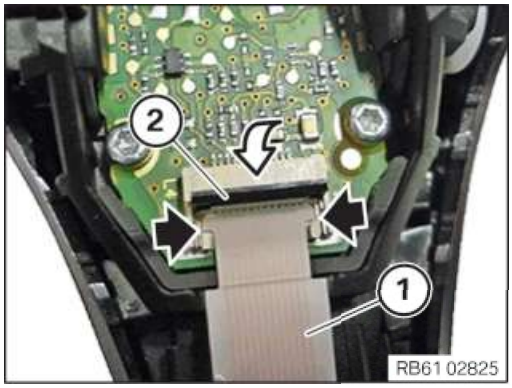


- Position the gearshift lever knob (1).
- Replace the screw of the gearshift lever knob.

  Parts: Screw
- Tighten down screw (2).

Gearshift lever knob

Screw	Renew screw.	Tightening torque	0,8 Nm



- Position ribbon cable (1) correctly on the gearshift lever knob (arrow).
- Lock the connector (2) in the direction of the arrow.

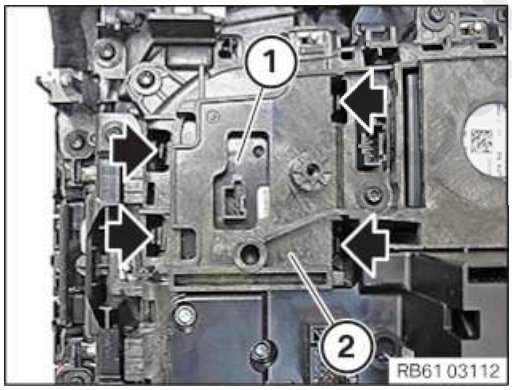


- Position and lock the trim (1) to the gearshift lever knob (2).

  Parts: Gearshift lever knob trim

  Retaining lugs must audibly snap into place.

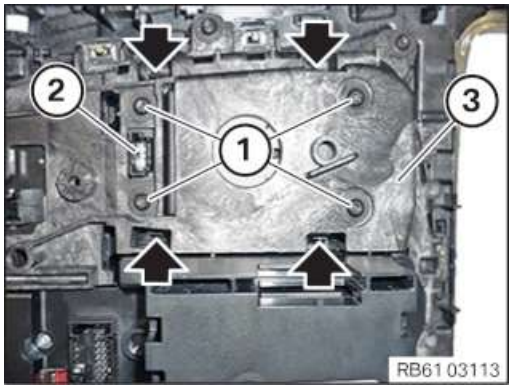
9 – Installing the HDC button



- Position HDC button (1) on gear selector switch (GWS) (2).

  The latch mechanisms (arrows) must engage audibly.

10 – Install controller



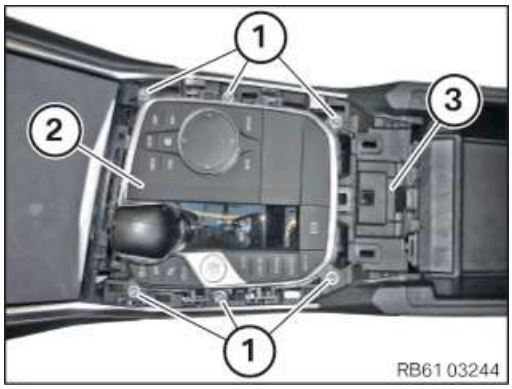
- Position the controller (2) on gear selector switch (GWS) (3) and engage in the latch mechanisms (arrow).
- Tighten the screws (1).

Controller to gear selector switch

Screw		Tightening torque	1,8 Nm

rdiagn.com

11 – 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.

POSTPROCESSES

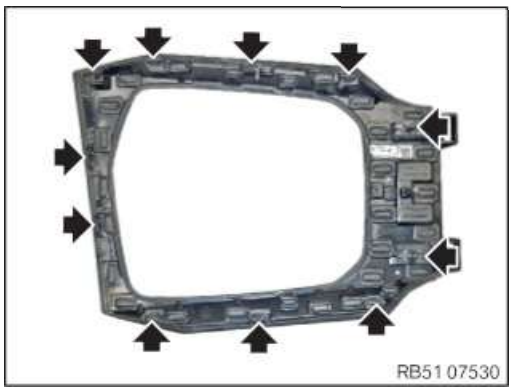
12 – Installing the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

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



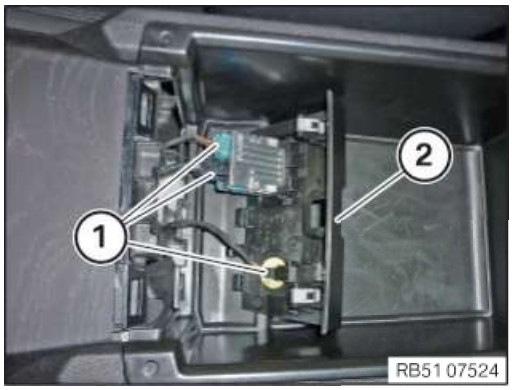
- Check all the latch mechanisms or clamps (arrows).
- In case the latch mechanisms or the clamps (arrows) are faulty, renew the centre console trim .

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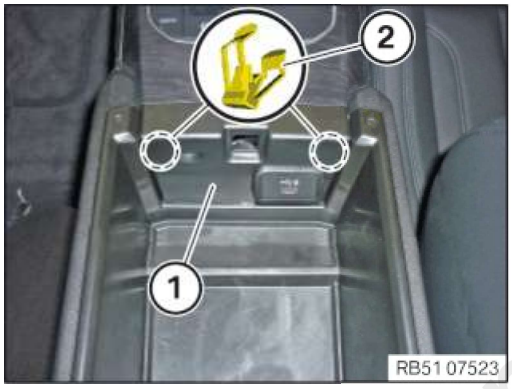


- Correctly position the centre console trim (1) and engage at the latch mechanisms.

13 – 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).

14 – 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.

15 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Overview of Tightening Torques

Gearshift lever knob			Used in step 8
Screw	Renew screw.	Tightening torque	0,8 Nm

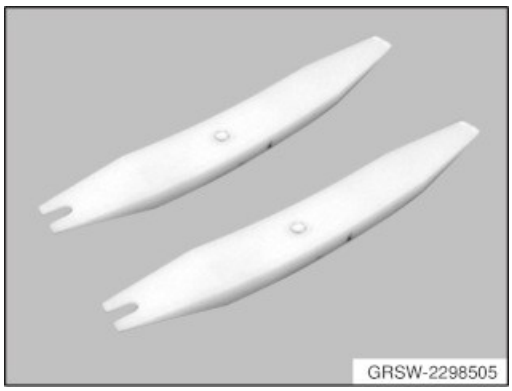
Controller to gear selector switch			Used in step 10
Screw		Tightening torque	1,8 Nm

Gear selector switch to centre console trim			Used in step 11
Screw		Tightening torque	1,8 Nm

Overview of Special Tools

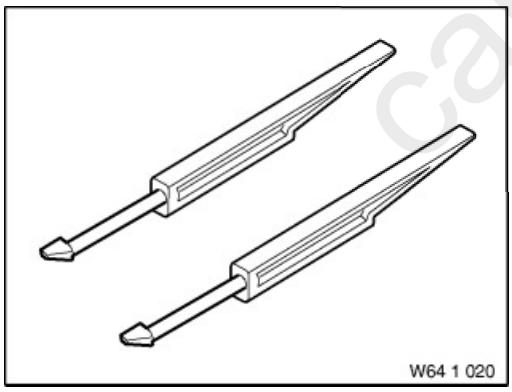
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2 298 505 Wedge



Common	Used in step 23
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)

0 493 681 (64 1 020) Hook



Common	Used in step 7
Usage	(release hook) For releasing and removing fresh air grille. For removing various covers.
Included in the tool or work	
Storage location	C2
Replaced by	
In connection with	
SI-Number	01 15 99 (483)

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	141115
61 20 900 Disconnecting and connecting battery earth lead	141115
61 20 900 Disconnecting and connecting battery earth lead	141115
61 20 900 Disconnecting and connecting battery earth lead	141115
61 20 900 Disconnecting and connecting battery earth lead	141115
61 20 900 Disconnecting and connecting battery earth lead	141115

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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	141115
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	141115
61 20 900 Disconnecting and connecting battery earth lead	141115
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	141115
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	141115
61 20 900 Disconnecting and connecting battery earth lead	141115
61 20 900 Disconnecting and connecting battery earth lead	141115
61 20 900 Disconnecting and connecting battery earth lead	141115
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61 20 900 Disconnecting and connecting battery earth lead	141115
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	141115
61 20 900 Disconnecting and connecting battery earth lead	141115
61 20 900 Disconnecting and connecting battery earth lead	141115
61 20 900 Disconnecting and connecting battery earth lead	141115
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61 20 900 Disconnecting and connecting battery earth lead	141115
61 20 900 Disconnecting and connecting battery earth lead	141115
61 20 900 Disconnecting and connecting battery earth lead	141115

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61 31 116 Replacing the rocker switch for side window operation

RISK OF DAMAGE

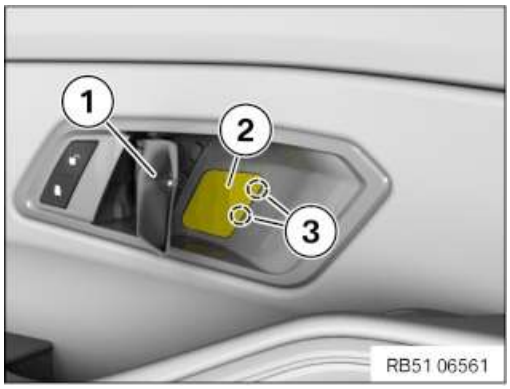
Scratches.

Tools and sharp-edged components can cause scratches.

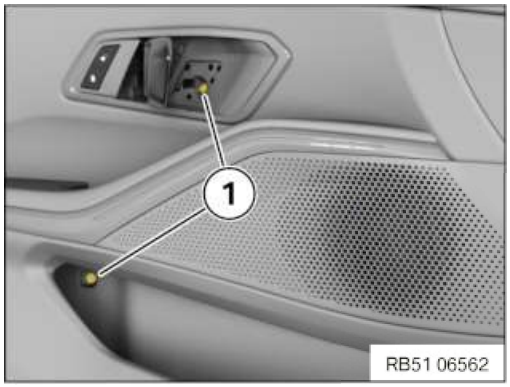
- Protect working area.
- Handle tools and components carefully.

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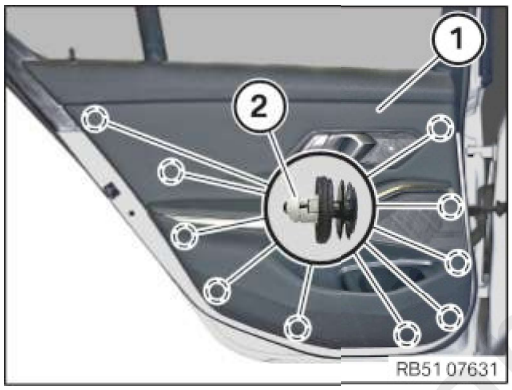
1 – Remove rear door trim



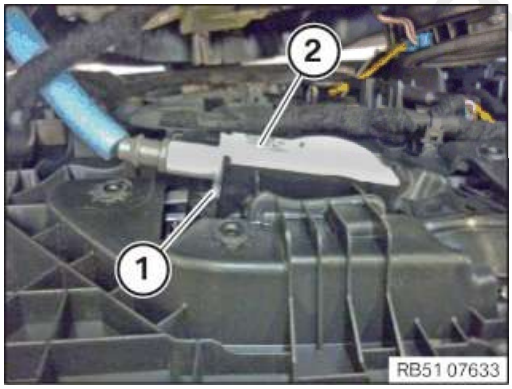
- Pull door opener (1).
- Release latch mechanisms (3) of the trim (2) with suitable tool.
- Remove trim (2).



- Loosen screws (1).



- Unclip the door trim panel (1) with the special tool 0 496 569 (00 9 325) at the clips (2).
- Guide the door trim panel (1) upwards out of the weather strip.

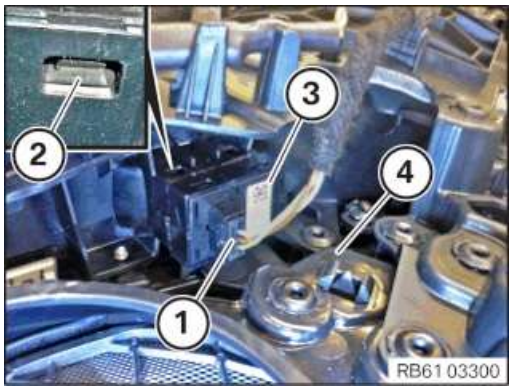


- Release latch mechanism (1) and feed out the Bowden cable for the inner door opener (2).

  In doing so, the Bowden cable for the inner door opener (2) is guided out of the door opener.
- Unlock available plug connections and disconnect.
- Remove door trim panel.

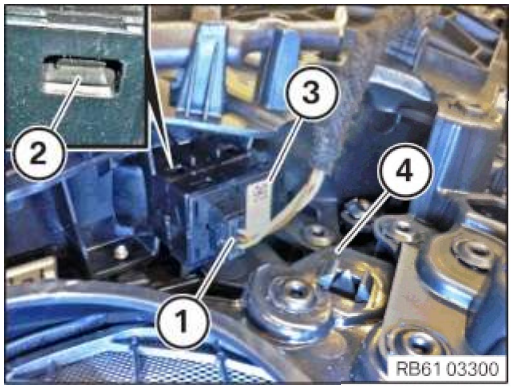
MAIN WORK

2 – Removing the rear power window switch



- Disconnect the connector (1) .
- Release latch mechanisms (2) and remove the power window switch (3) from the door trim panel (4).

3 – Installing the rear power window switch

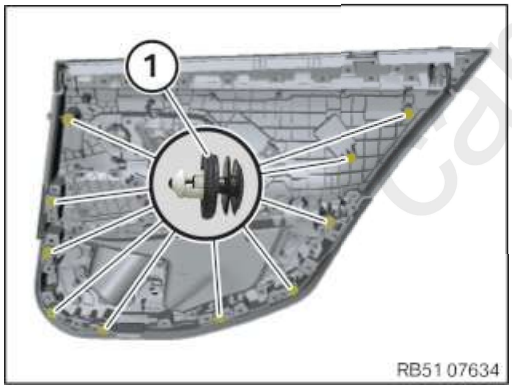


- Position power window switch (3) on the door trim panel (4) and engage in the latch mechanisms (2).
- Connect connector (1).

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POSTPROCESSES

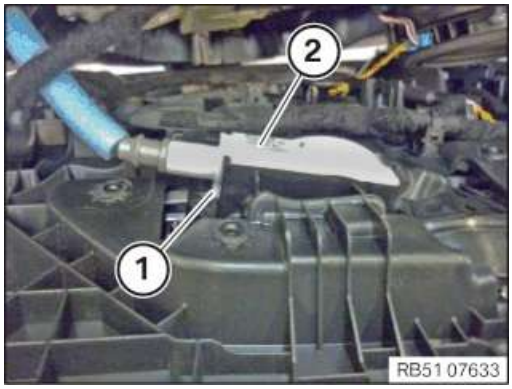
4 – Installing rear door trim panel



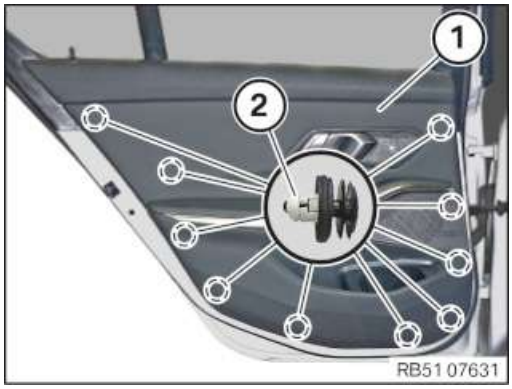
- Renew the clips (1).

  Parts: Clips

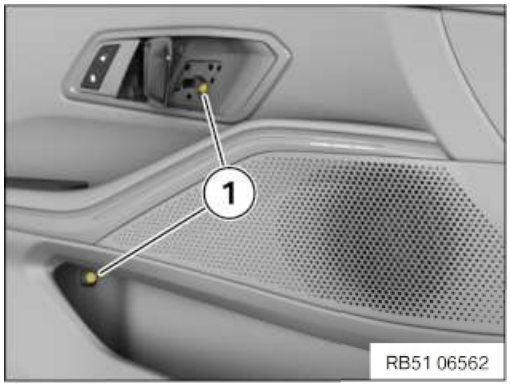
  The clips (1) **must not be engaged. The disengaged state is shown.**



- Push the inner door opener in closed direction.
- Feed in Bowden cable for the inner door handle (2) and clip in to the latch mechanism (1).
- Connect existing connectors and lock.



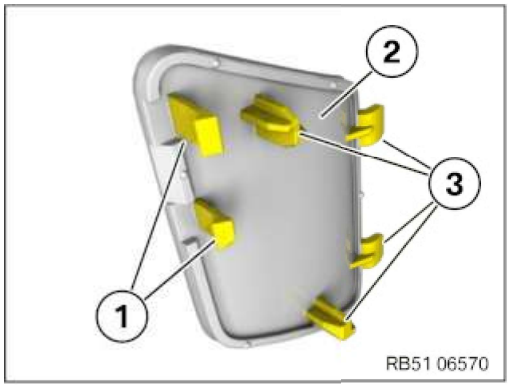
- Feed door trim panel from the top into the inner window recess finisher strip.
- Carefully clip in the door trim panel onto the clips (1).



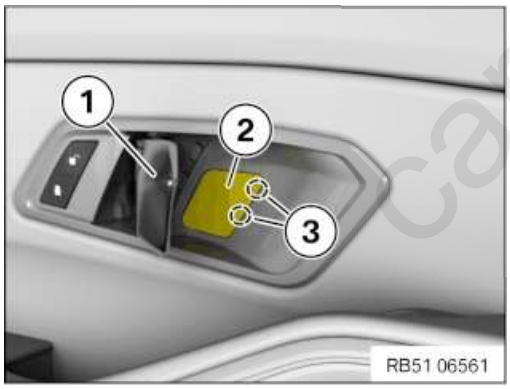
- Tighten the screws (1).

Door trim panel to door

Screw TS5x20		Tightening torque	2,6 Nm



- Check latch mechanisms (1) for damage, if necessary renew the trim (2).
- Check guides (3) for damage, if necessary renew the trim (2).



- Pull door opener (1).
- Position trim (2) and clip in using the latch mechanisms (3).

Additional Information

Overview of Tightening Torques

Door trim panel to door Used in step 4

Screw TS5x20		Tightening torque	2,6 Nm

Overview of Special Tools

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0 496 569 (00 9 325) Wedge



Common	Used in step 1
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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61 31 346 Replacing trim on gear selector switch and all trim of the operating facility in the centre console

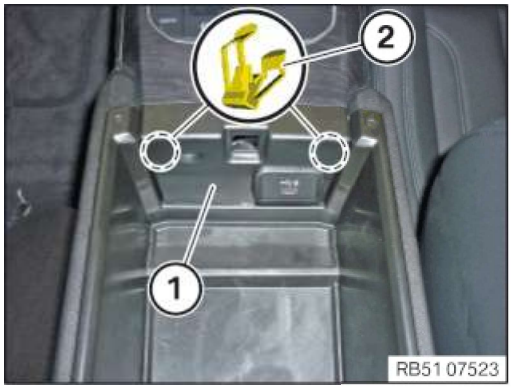
PRELIMINARY WORK

1 – Disconnecting all battery earth leads

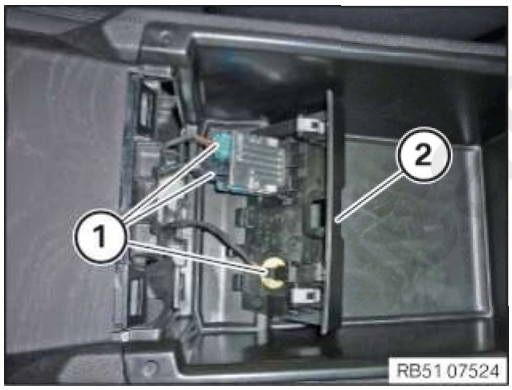


- See additional information.

2 – 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) .

3 – 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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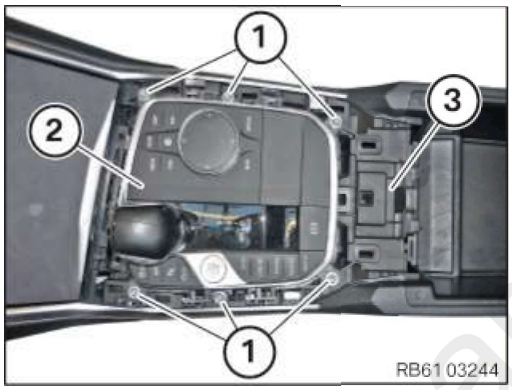
- Release and remove the centre console trim upwards (1) as shown using the special tool 2 298 505 from the latch mechanisms.

4 – Remove the operating facility in the centre console

► **Disconnecting all battery earth leads**

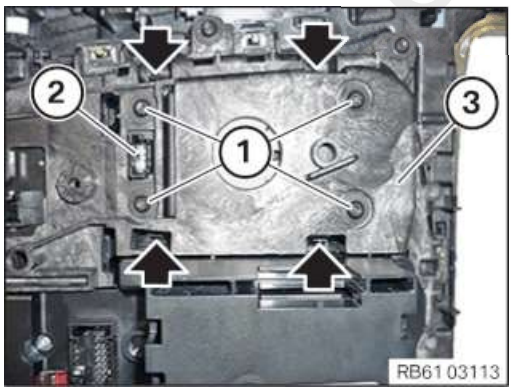


- See additional information.



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

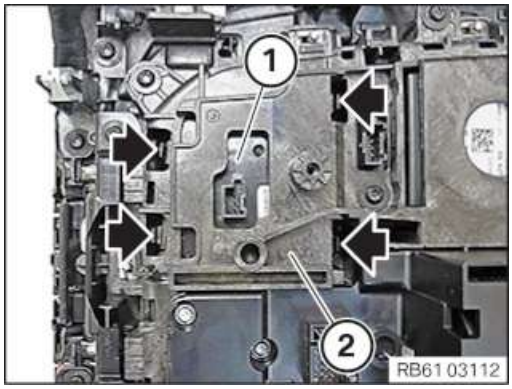
5 – Remove controller



- Loosen screws (1).
- Release the latch mechanisms (arrows).
- Remove controller (2) from the gear selector switch(GWS) (3).

6 – Removing the HDC button

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- Release the latch mechanisms (arrows).
- Remove HDC button (1) from gear selector switch (GWS) (2).

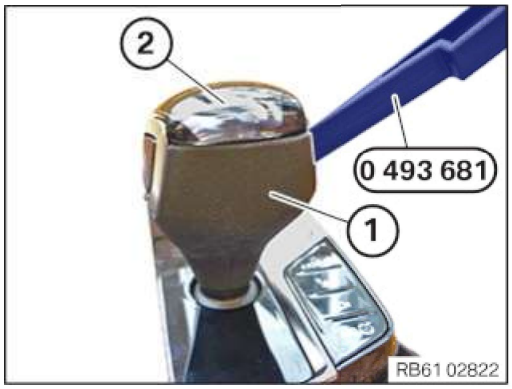
7 – Remove gearshift lever knob

RISK OF DAMAGE

Damage of high-quality surfaces.

Plastic wedges can damage high-quality surfaces.

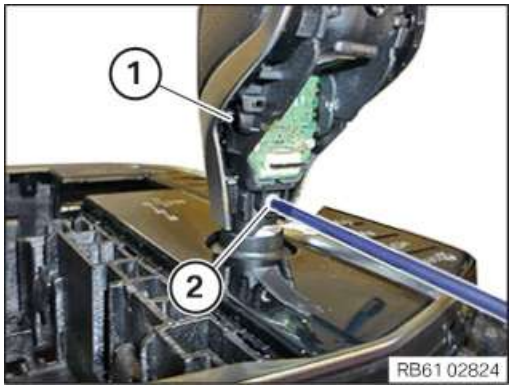
- Protect surfaces from damage.



- Lever the trim (1) with the special tool 0 493 681 (64 1 020) out of the gearshift lever knob (2) on both sides.



- Unlock the connector (1) in the direction of the arrow.
- Thread out the ribbon cable (2).



- Loosen screw (2).
- Remove the shift knob (1) upwards.

MAIN WORK

8 – Replacing the trims on the gearshift lever knob

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8 – Replacing the trims on the gearshift lever knob

▸ **Remove dazzle from gearshift lever knob**

RISK OF DAMAGE

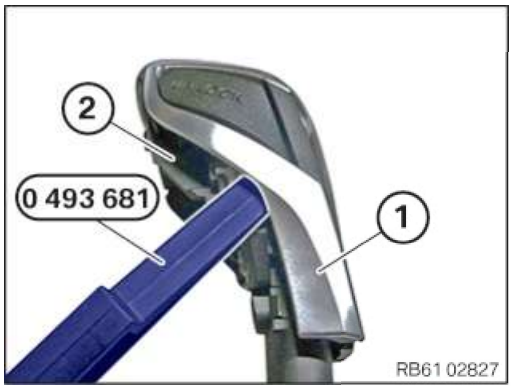
Damage of high-quality surfaces.

Plastic wedges can damage high-quality surfaces.

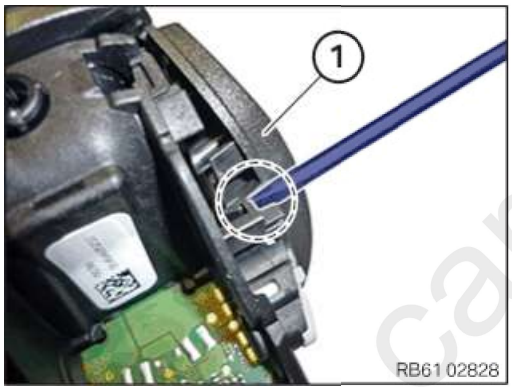
- Protect surfaces from damage.

NOTICE

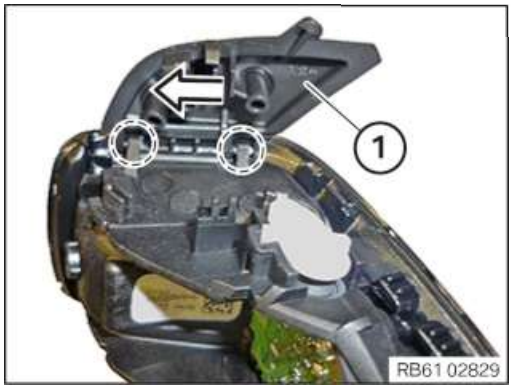
The operations shown only for one side must be carried out on both sides.



- Lever the chrome clasp (1) with the special tool 0 493 681 (64 1 020) out of the gearshift lever knob (2).



- Lever out button (1) with a flat-head screwdriver in the marked area.



- Slightly lift the button (1) and remove it in the direction of the arrow.

▸ **Install the covers on the shift knob**

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RISK OF DAMAGE

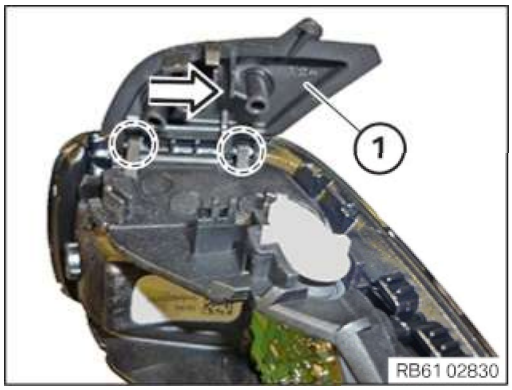
Damage of high-quality surfaces.

Plastic wedges can damage high-quality surfaces.

- Protect surfaces from damage.

NOTICE

The operations shown only for one side must be carried out on both sides.



- Insert unlock button (1) in the area marked in the direction of the arrow.



- Fold down unlock button (1) and clip into place in the area marked.



- Position chrome bar (1) on the shift knob (2) and clip into place.

9 – Replacing trims on the operating facility in the centre console

▸ **Remove covers on the operating unit in the centre console**

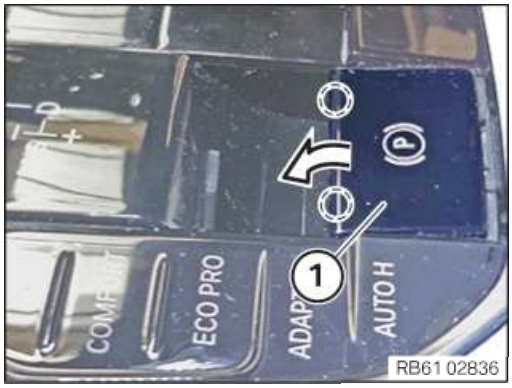
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RISK OF DAMAGE

Damage of high-quality surfaces.

Plastic wedges can damage high-quality surfaces.

- Protect surfaces from damage.

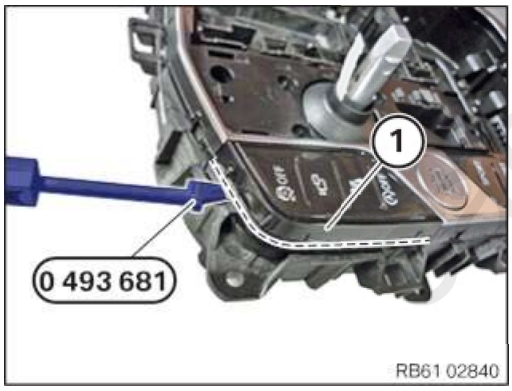


- Press the parking brake button cover (1) forwards and downwards in the direction of the arrow.

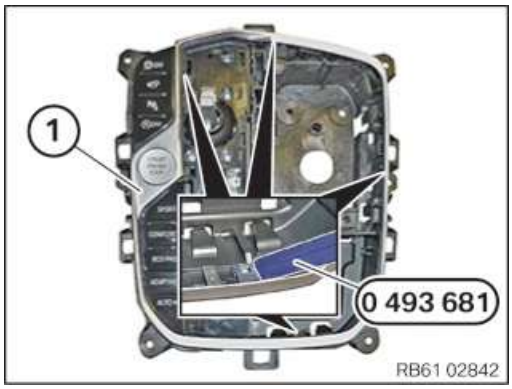
Note: The parking brake button cover can be loosened by pressing strongly out of the catch mechanisms.



- Lever the cover (1) out on the operating unit in the centre console (2) using the special tool 0 493 681 (64 1 020).



- Unclip the trim (1) using special tool 0 493 681 (64 1 020).



- Unclip cover (1) using the special tool 0 493 681 (64 1 020) at the locations marked.

▸ **Installing trims on the operating facility in the centre console**

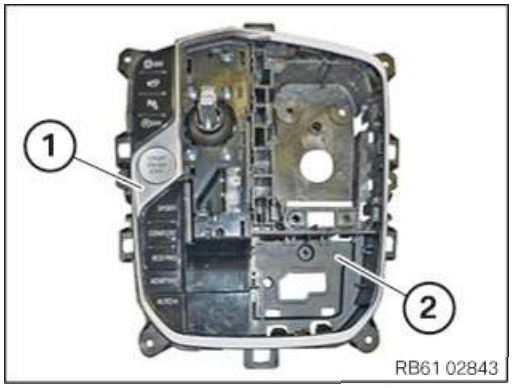
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RISK OF DAMAGE

Damage of high-quality surfaces.

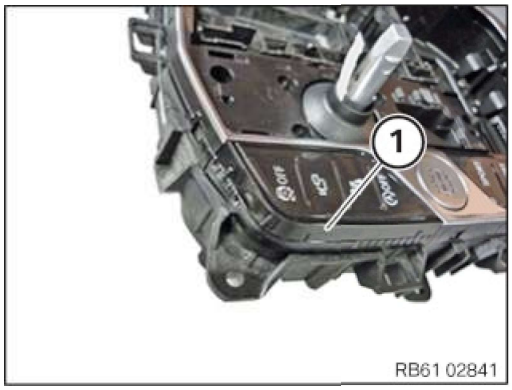
Plastic wedges can damage high-quality surfaces.

- Protect surfaces from damage.



- Position cover (1) on the operating unit in the centre console (2) and clip into place.

  All retaining lugs must engage audibly.

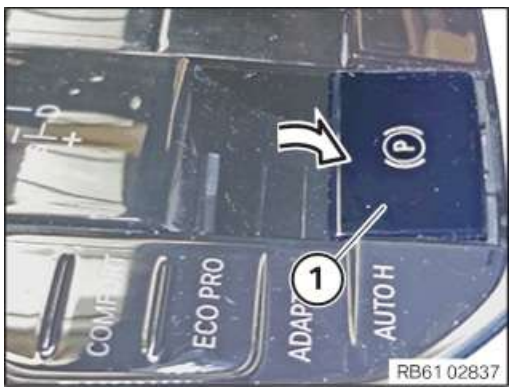


- Position and clip in trim (1).



- Position cover (1) on the operating unit in the centre console (2) and clip into place.

  All retaining lugs must engage audibly.

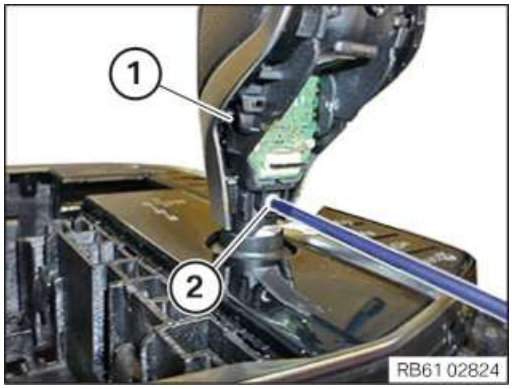


- Position parking brake button cover (1) and snap into place in the direction of the arrow.

  The parking brake button cover (1) must engage audibly.

POSTPROCESSES

10 – Installing gearshift lever knob

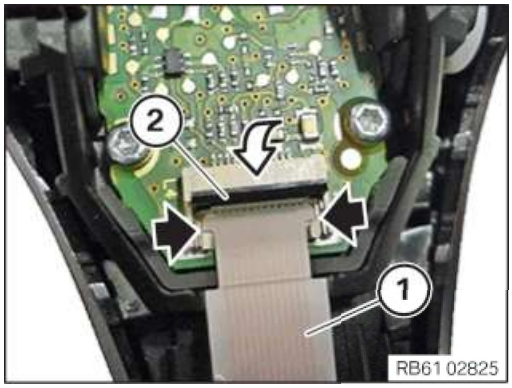


- Position the gearshift lever knob (1).
- Replace the screw of the gearshift lever knob.

  Parts: Screw
- Tighten down screw (2).

Gearshift lever knob

Screw	Renew screw.	Tightening torque	0,8 Nm



- Position ribbon cable (1) correctly on the gearshift lever knob (arrow).
- Lock the connector (2) in the direction of the arrow.

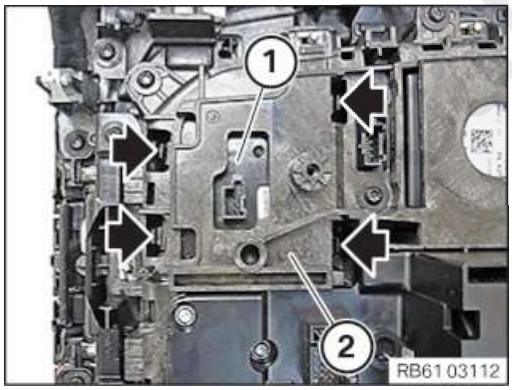


- Position and lock the trim (1) to the gearshift lever knob (2).

  Parts: Gearshift lever knob trim

  Retaining lugs must audibly snap into place.

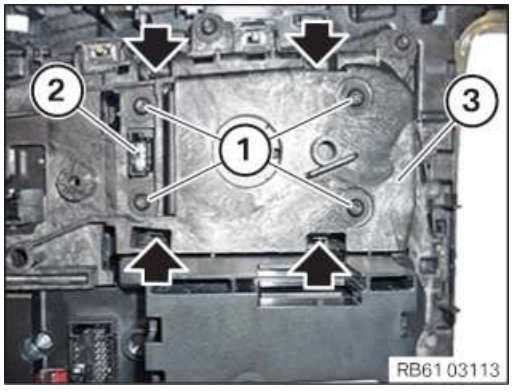
11 – Installing the HDC button



- Position HDC button (1) on gear selector switch (GWS) (2).

  The latch mechanisms (arrows) must engage audibly.

12 – Install controller



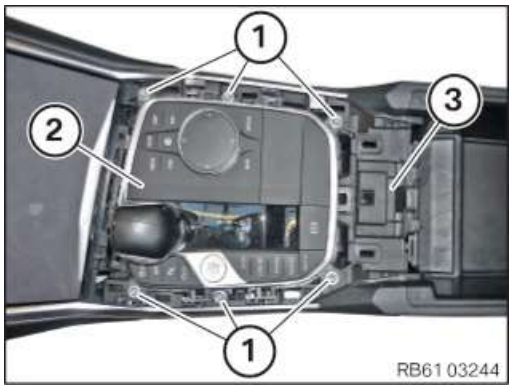
- Position the controller (2) on gear selector switch (GWS) (3) and engage in the latch mechanisms (arrow).
- Tighten the screws (1).

Controller to gear selector switch

Screw		Tightening torque	1,8 Nm

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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 centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

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



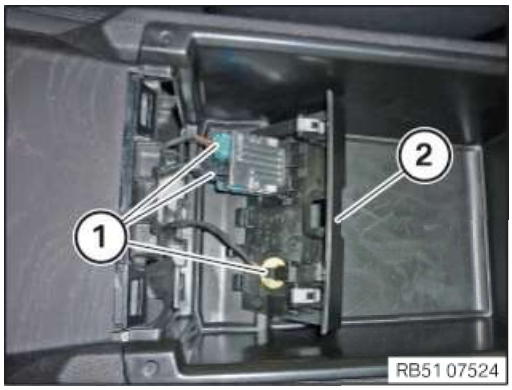
- Check all the latch mechanisms or clamps (arrows).
- In case the latch mechanisms or the clamps (arrows) are faulty, renew the centre console trim .

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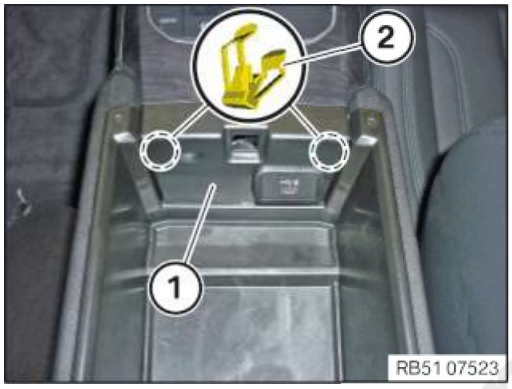


- Correctly position the centre console trim (1) and engage at the latch mechanisms.

15 – 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).

16 – 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.

17 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Overview of Tightening Torques

Gearshift lever knob			Used in step 10
Screw	Renew screw.	Tightening torque	0,8 Nm

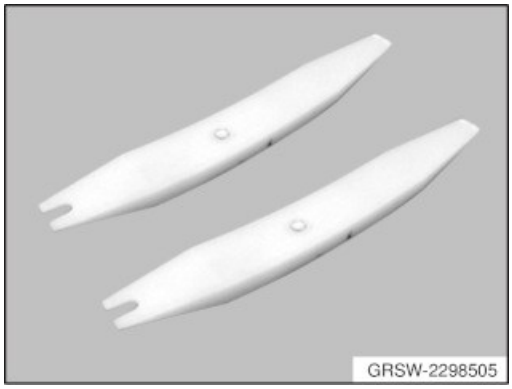
Controller to gear selector switch			Used in step 12
Screw		Tightening torque	1,8 Nm

Gear selector switch to centre console trim			Used in step 13
Screw		Tightening torque	1,8 Nm

Overview of Special Tools

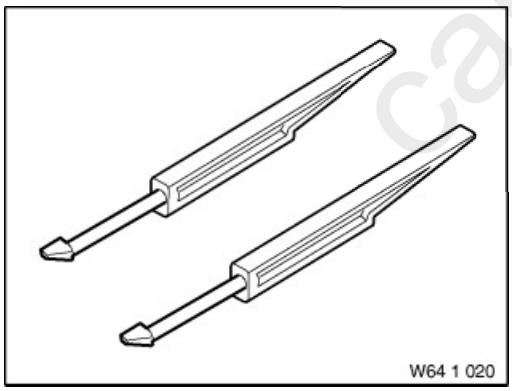
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2 298 505 Wedge



Common	Used in step 23
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)

0 493 681 (64 1 020) Hook



Common	Used in step 789
Usage	(release hook) For releasing and removing fresh air grille. For removing various covers.
Included in the tool or work	
Storage location	C2
Replaced by	
In connection with	
SI-Number	01 15 99 (483)

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	141317
61 20 900 Disconnecting and connecting battery earth lead	141317
61 20 900 Disconnecting and connecting battery earth lead	141317
61 20 900 Disconnecting and connecting battery earth lead	141317
61 20 900 Disconnecting and connecting battery earth lead	141317
61 20 900 Disconnecting and connecting battery earth lead	141317

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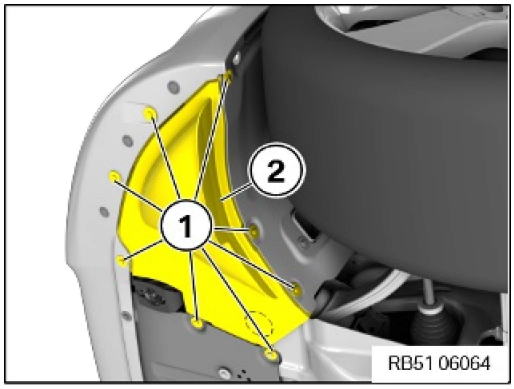
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	141317
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	141317
61 20 900 Disconnecting and connecting battery earth lead	141317
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	141317
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	141317
61 20 900 Disconnecting and connecting battery earth lead	141317
61 20 900 Disconnecting and connecting battery earth lead	141317
61 20 900 Disconnecting and connecting battery earth lead	141317
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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	141317
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61 20 900 Disconnecting and connecting battery earth lead	141317
61 20 900 Disconnecting and connecting battery earth lead	141317

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61 33 050 Removing and installing/replacing left fanfare horn

PRELIMINARY WORK

1 – Removing the lower front cover at the side



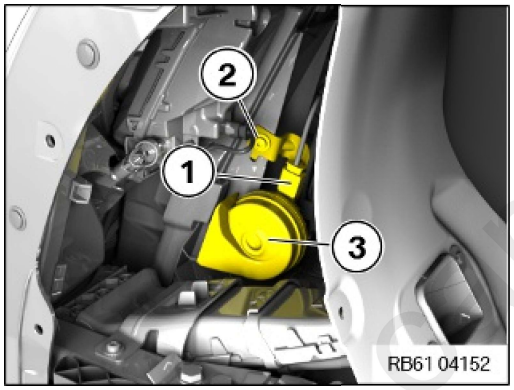
- Loosen screws (1).
- Removing the lower front cover at the side (2).

MAIN WORK

2 – Removing the fanfare on the left

TECHNICAL INFORMATION

Replace the fanfare only complete with the holder.

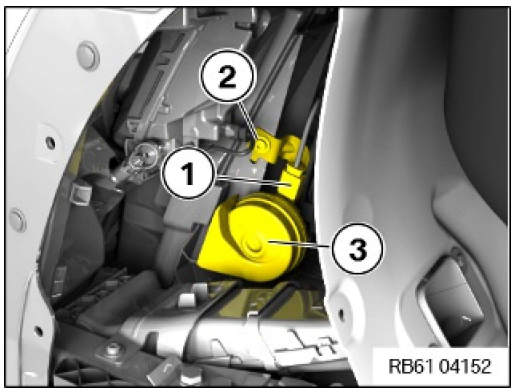


- Unlock plug connection (1) and disconnect.
- Release the screw (2) and remove the left fanfare horn (3) with the bracket.

3 – Installing the fanfare on the left

TECHNICAL INFORMATION

Replace the fanfare only complete with the holder.



- Correctly position the left fanfare horn (3) and tighten screw(2) .

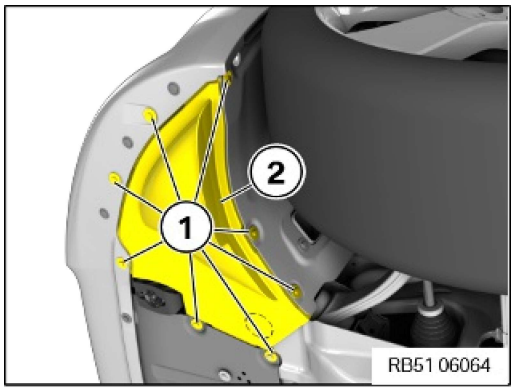
Fanfare to support for bumper panel

M6x20 screw		Tightening torque	8,8 Nm

- Connect connectors (1) and lock.

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4 – Install the lower front cover at the side



- Install front bottom side cover(2).
- Tighten the screws (1).

Cover, front bottom on side

Hexagon screw for thermoplastic		Tightening torque	3 Nm

Additional Information

Overview of Tightening Torques

Fanfare to support for bumper panel — Used in step 3

M6x20 screw		Tightening torque	8,8 Nm

Cover, front bottom on side — Used in step 4

Hexagon screw for thermoplastic		Tightening torque	3 Nm

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61 35 ... Notes on ESD protection (Electro Static Discharge)

Special tools required:

- 12 7 060

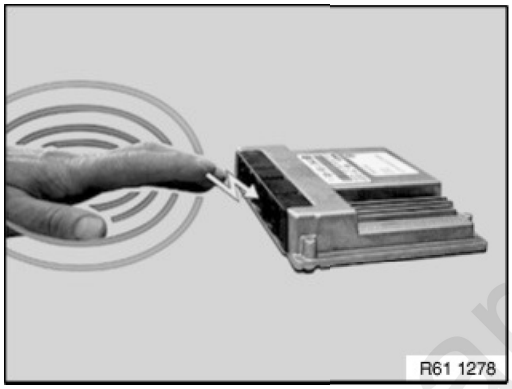
Note:
Electrical components which are particularly sensitive to electrostatic discharge (electronic control units, sensors, etc.) are marked with the ESD warning symbol.

E-Electro

S-Static

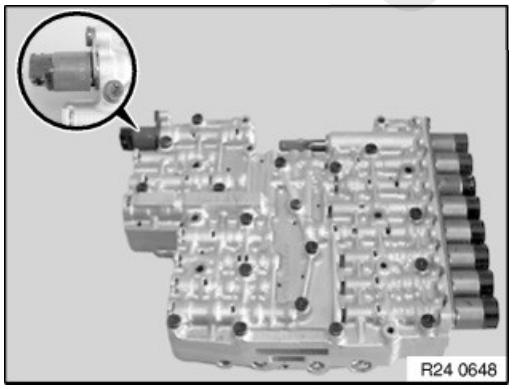
D-Discharge

Attention!
Refer to Service Information.



Statically charged persons can discharge themselves when they touch electrical components.*Note:*
Humans can only detect a discharge starting from a level of approx. 3000 V.

The danger threshold for electrical components already starts from a level of approx. 100 V.



Example:

Mechatronics control unit.

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Attention!
Do not touch pins and multi-pin connectors directly!

Only touch the housings of electrical components.



Attention!

To avoid damaging or destroying electrical components as a result of electrostatic discharge, it is absolutely essential to observe the following instructions:

- When replacing electrical components, leave the replacement components in their original packaging until immediately before they are to be installed
- If necessary, always return a removed component in its original packaging (always pack the component away immediately)
- Read and comply with user information on using the associated special tool 12 7 060



<u>Personal protective equipment:</u>

Electrically conducting clothing (high wool content, antistatic shoes required).

These can primarily be identified by the logo on the side.

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61 35 ... Overview of additional work for the removal and installation or replacement of electronic components in the body area/windscreen

Component	**Removal and installation** Calibration/Initialisation required **(diagnosis system must be connected)**	**Removal and installation** Use of the Special tool necessary	**Replacement** Programming/encoding Calibration/Initialisation required **(diagnosis system must be connected)**	**Replacement** Use of the Special tool necessary	Remarks
Front section: (including bumper panel)					
ACC sensor	Yes	Yes	Yes	Yes	
Night vision camera	No	No	Yes	Yes*	*conventional workshop headlight adjusting device
PDC ultrasonic sensor	No	No	No	No	
PMA ultrasonic sensor	No	No	No	No	
Sensor, lane change warning	no*	No	Yes	No	*Required after a body repair in the surrounding area of the sensor. **Comply with the regulations for repainting!**
Sensor for active pedestrian protection	No	No	No	No	Must be replaced after the active pedestrian protection has been activated! **Impact absorber** must also be replaced!
Actuator for active pedestrian protection	No	No	No	No	Must be replaced after the active pedestrian protection has been activated!
Front camera	No	No	Yes	No	
Side section:					

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Top view camera (in the exterior mirror)	No	No	Yes	No	
Rear area: (including bumper panel):					
reversing camera (with Surround View)	No	No	Yes	No	
reversing camera (without Surround View)	No	No	Yes	No	
PDC ultrasonic sensor	No	No	No	No	
PMA ultrasonic sensor	No	No	No	No	
Sensor, lane change warning	no*	No	Yes	No	*Required after a body repair in the surrounding area of the sensor. **Comply with the regulations for repainting!**
Windscreen:					
Camera-based driver support systems camera	no*	No	Yes	No	*Necessary after **replacement of the windscreen**
Rain sensor (separate document)					

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61 35 ... Overview, rain sensor (additional work when replacing the windscreen / sensor replacement)

BMW G series:

Sensor type/ Sensor shape	With windscreen replacement replacement sensor required	When replacing the sensor Programming/encoding necessary	When replacing the sensor Initialisation required	Connecting the diagnosis system required
all types approximately ø 35 mm	No	No	No	No

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61 35 278 Remove and install Body Domain Controller (BDC) control unit

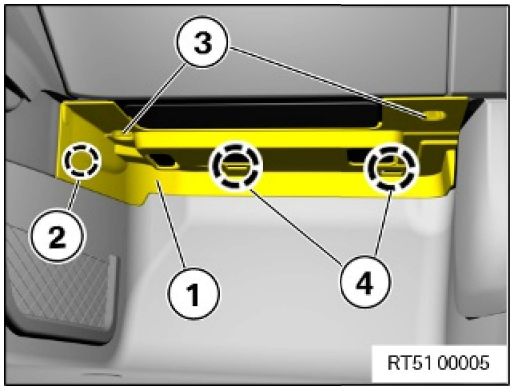
PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

2 – Remove the right footwell trim



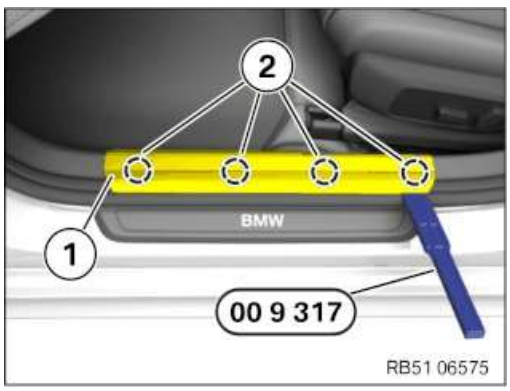
- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

3 – Remove right door sill cover strip

NOTICE

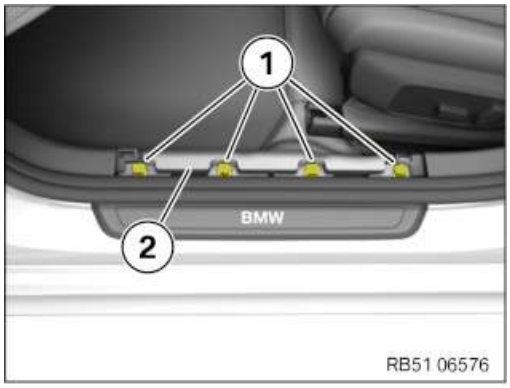
Description is for left component only. Procedure on the right side is identical.

▸ **Remove door sill cover strip**



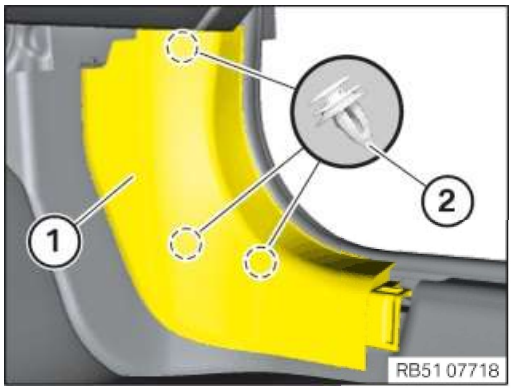
- Detach the door sill cover strip(1) using the special tool 0 490 534 (00 9 317) from the clips (2) in the floor panel.

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

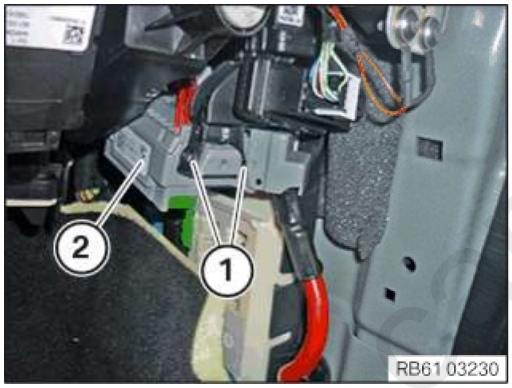
4 – Removing the side trim panel in the footwell at the right-hand A-pillar



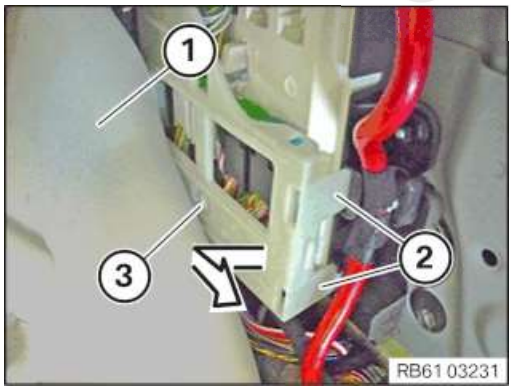
- Loosen the side trim panel (1) at the clips (2) and remove it toward the inside.

MAIN WORK

5 – Remove the BDC control unit

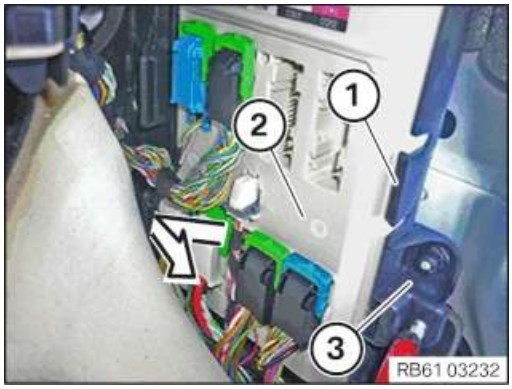


- Unlock the latch mechanisms (1) and remove the power distribution box (2) downwards.



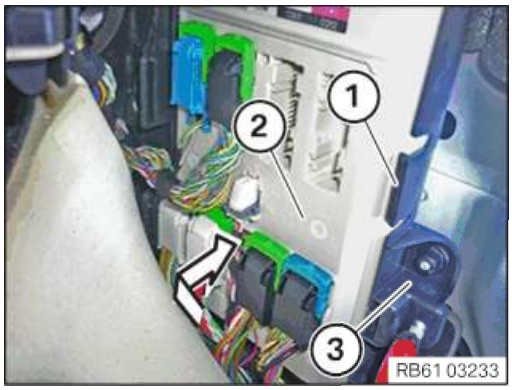
- Fold the carpet (1) to the side.
- Loosen the latch mechanisms (2).
- Guide cover (3) out in direction of arrow.

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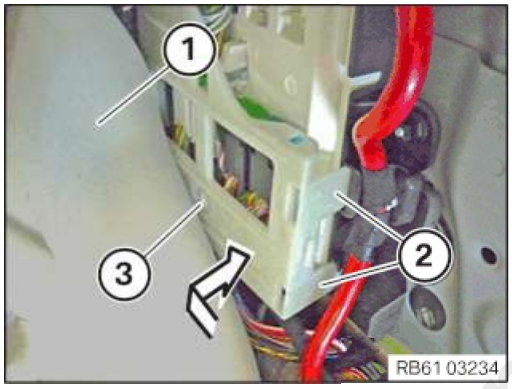


- Unlock and disconnect all connectors.
- Loosen latch mechanism (1).
- Guide out the BDC control unit (2) from the bracket(3) in the direction of the arrow.

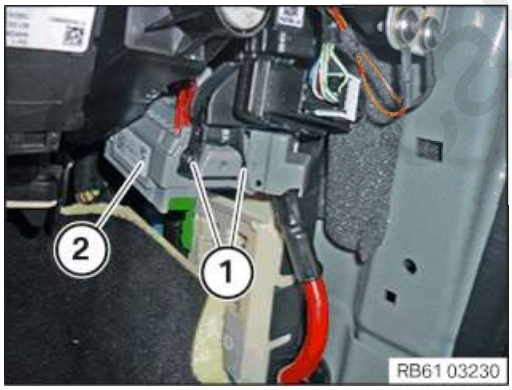
6 – Install the BDC control unit



- Guide in the BDC control unit (2) in the holder (3) in the direction of the arrow.
- Clip BDC control unit (2) into the latch mechanism (1).
- Connect all connectors and lock.



- Guide in the cover (3) in the direction of the arrow and clip into the latch mechanisms (2).
- Position the carpet (1).

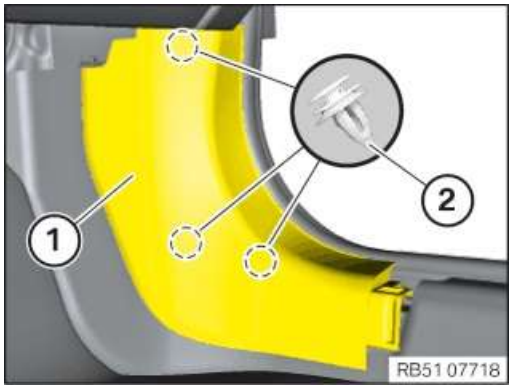


- Guide in the power distribution bow (2) upwards and correctly clip in the latching mechanisms (1).

POSTPROCESSES

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

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- Check the clips (2) for damage.

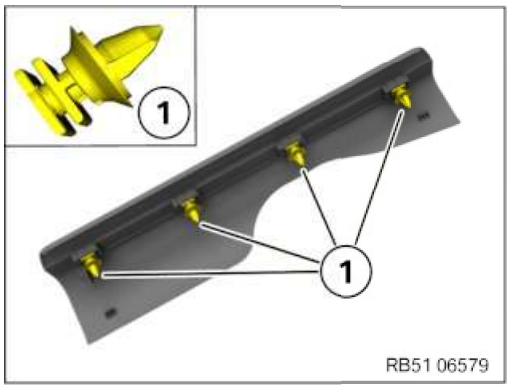
  Renew damaged or missing clips (2).
- Correctly position the side trim panel (1) and clip in to the clips (2).
- Make sure that the side trim panel (1) is correctly fitted against edge protection.

8 – Install right door sill cover strip

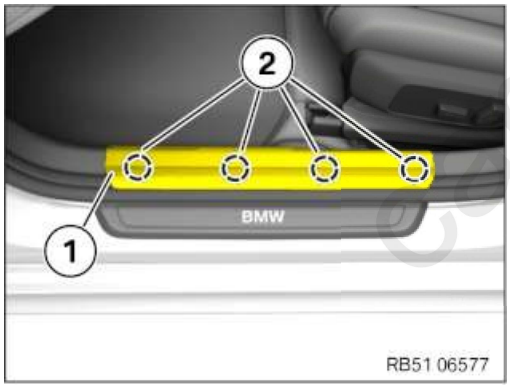
NOTICE

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

▸ **Install the door sill cover strip**

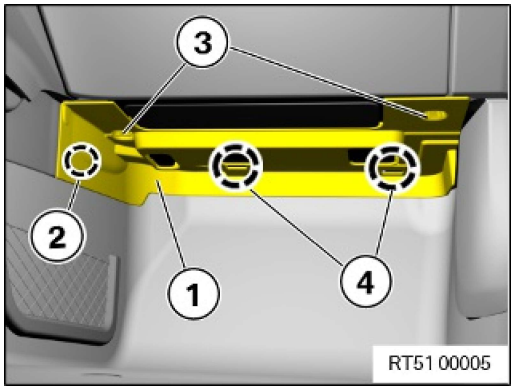


- Check the clips (1) for damage and renew if necessary.



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

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 – Disconnecting all battery earth leads

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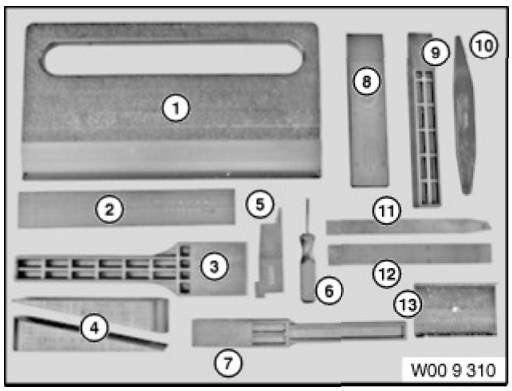


- See additional information.

Additional Information

Overview of Special Tools

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	

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	110
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	110
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
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61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110

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61 35 013 Remove and install LIN power distribution box

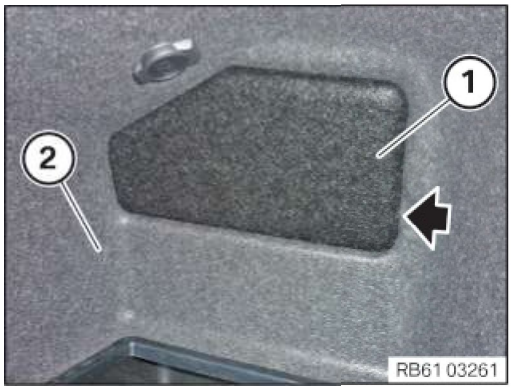
PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

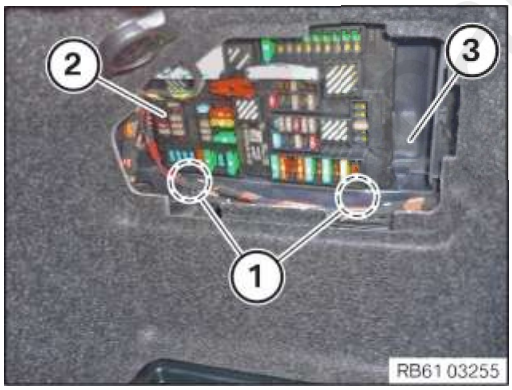
2 – Removing the flap in the luggage compartment wheel arch trim panel on the right



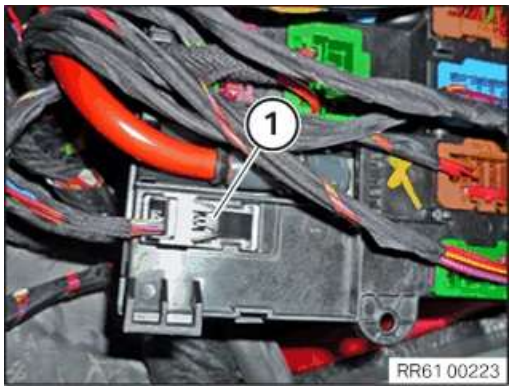
- Remove the flap (1) from the luggage compartment wheel arch trim panel on the right (2)

MAIN WORK

3 – Remove the LIN power distribution box

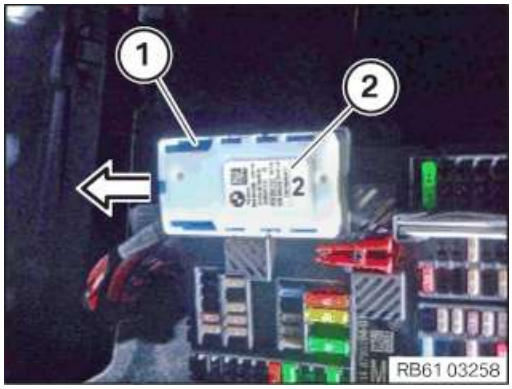


- Unlock latch mechanisms (1) and feed out power distribution box (2) from holder (3).



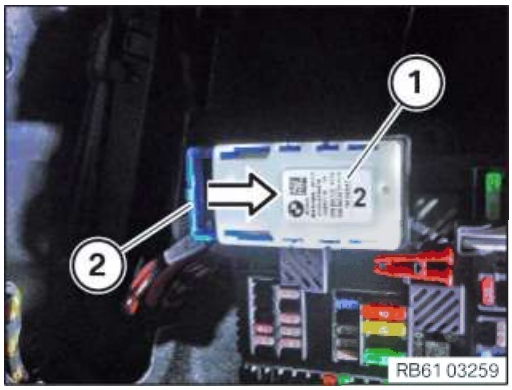
- Unlock and disconnect connector (1).

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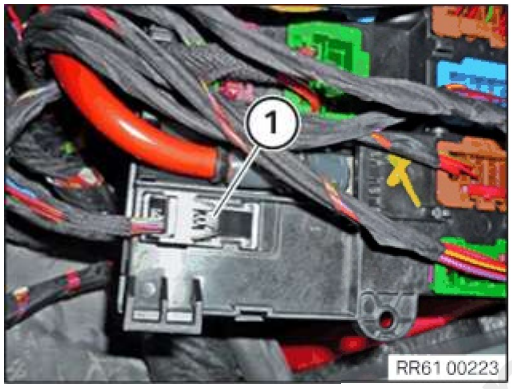


- Loosen the lock (1) in the direction of the arrow.
- Remove the LIN power distribution box (2).

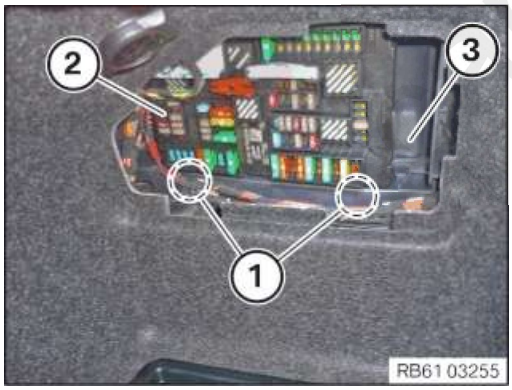
4 – Install the LIN power distribution box



- Correctly position the LIN power distribution box (1) and move the lock (2) in the direction of the arrow.



- Connect connectors (1) and lock.

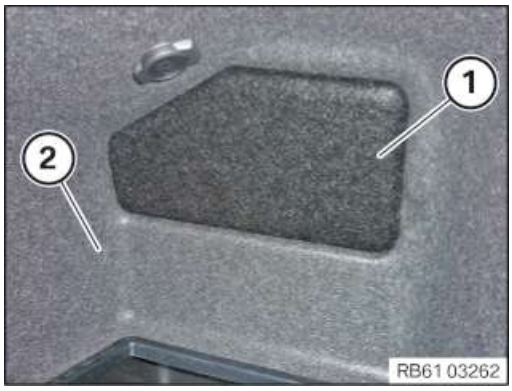


- Position power distribution box (2) correctly and engage it in bracket (3).

  The latch mechanisms (1) must engage correctly.

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5 – Installing the flap in the luggage compartment wheel arch trim panel on the right



- Position the flap (1) correctly in the right luggage compartment wheel arch trim panel (2) and install.

6 – Disconnecting all battery earth leads



- See additional information.

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Additional Information

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	16
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61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	16
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	16

61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
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61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16
61 20 900 Disconnecting and connecting battery earth lead	16

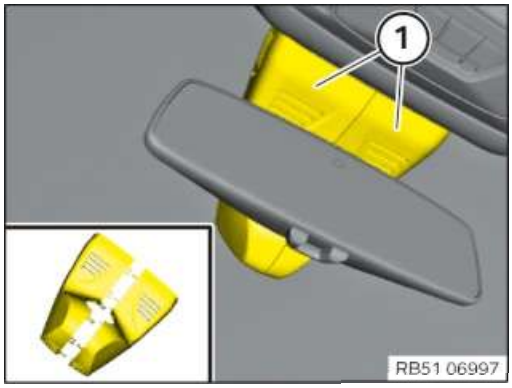
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61 35 177 Remove and install rain-light sensor

PRELIMINARY WORK

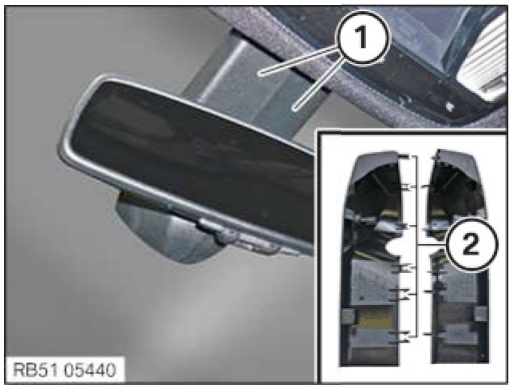
1 – Removing the covers for the interior mirror

- **Version A:**



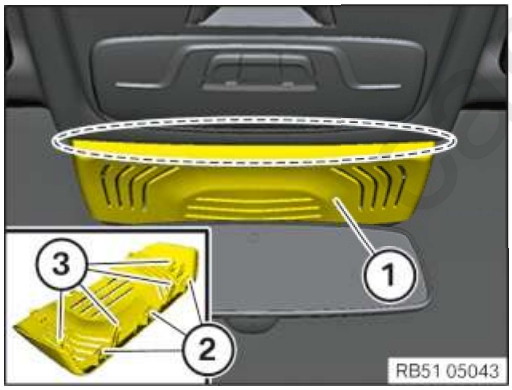
- Release the cover (1) at the centre from the latch mechanisms (2) with a suitable plastic wedge and remove.

- **Version B:**

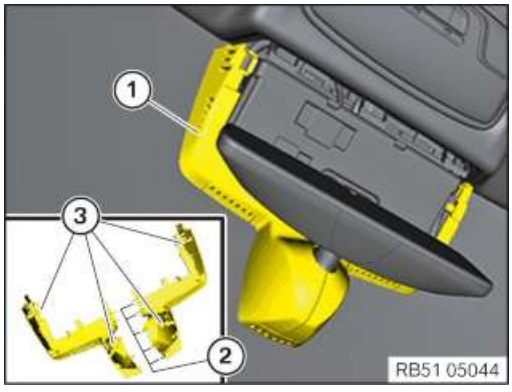


- Release the cover (1) from the latch mechanisms (2) with a suitable plastic wedge and remove sideways.

- **Version C:**



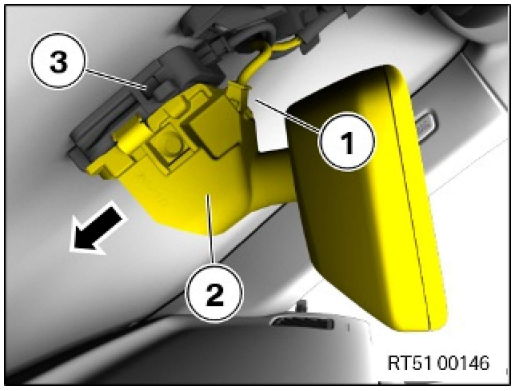
- Detach cover (1) from the clamps (2) in the marked area using a suitable plastic wedge and pull down a certain distance.
- Release cover (1) at the retaining lugs (3) and remove from the guides to the rear.



- Release cover (1) from the latch mechanisms (2) and (3) and remove sideways.
- Remove cover (1) from mirror base (2).

2 – Remove inside mirror

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TECHNICAL INFORMATION

Carry out the work at temperatures between 18 °C and 23 °C only.

- Unlock plug connection (1) and disconnect.

RISK OF DAMAGE

Damage to the component.

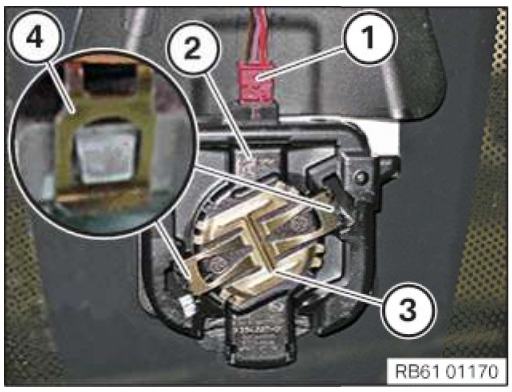
Excessive force may damage the component.

- Handle component carefully.

- Jerk and pull off the interior mirror (2) in the direction of the arrow from the mirror base (3).

MAIN WORK

3 – Remove driving light sensor



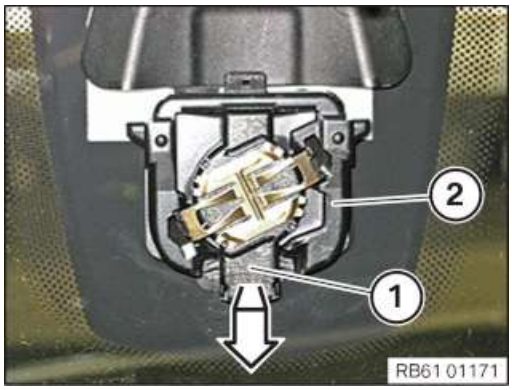
RISK OF DAMAGE

Damage to silicone surface.

A damaged silicone surface can lead to malfunctioning of the rain-light-solar-condensation sensor.

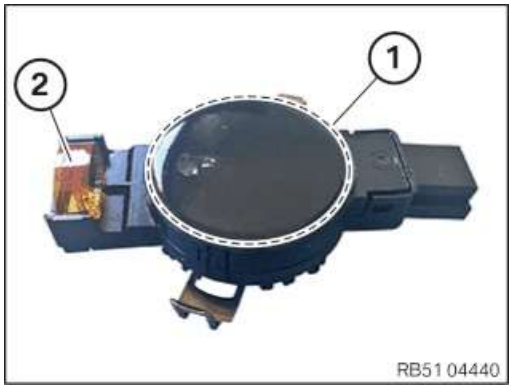
- Do not touch or damage the silicone-coated surface on the rain-light-solar-condensation sensor.
- After releasing lock, wait approx. 30 min. at 20°C for silicone surface to relax.

- Disconnect the connector (1) .
- Push in retaining spring (3) on both sides and unlock the lock (4) by means of a screwdriver.
- Release driving light sensor.



- Slowly pull the driving light sensor (1) in direction of arrow from the holder (2).

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RISK OF DAMAGE

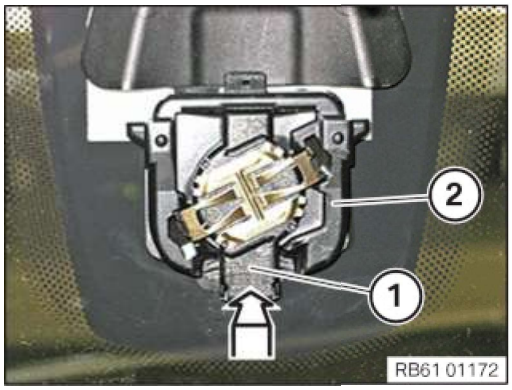
Damage to silicone surface.

A damaged silicone surface can lead to malfunctioning of the rain-light-solar-condensation sensor.

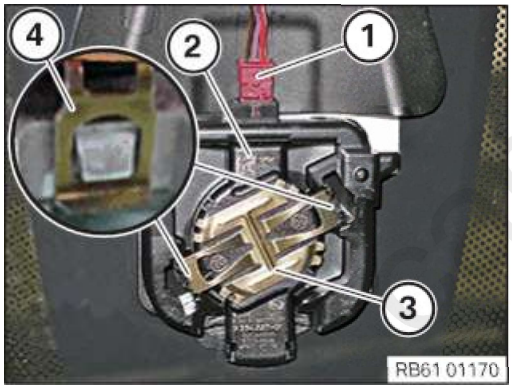
- Do not touch or damage the silicone-coated surface on the rain-light-solar-condensation sensor.
- After releasing lock, wait approx. 30 min. at 20°C for silicone surface to relax.

- Check the silicone-coated surface (1) and the printed circuit board (2) on the driving light sensor for damage.
- When replacing windscreen: Immediately install the driving light sensor on the new windscreen.

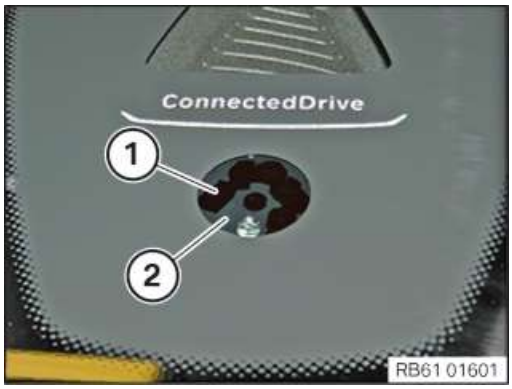
4 – Installing driving light sensor



- Thread in the driving light sensor (1) in direction of arrow into the holder (2).



- Press on the driving light sensor (2) on the retaining spring (3) in the centre.
- Successively press down the retaining springs (4) on each side to lock it.
- Connect connector (1).



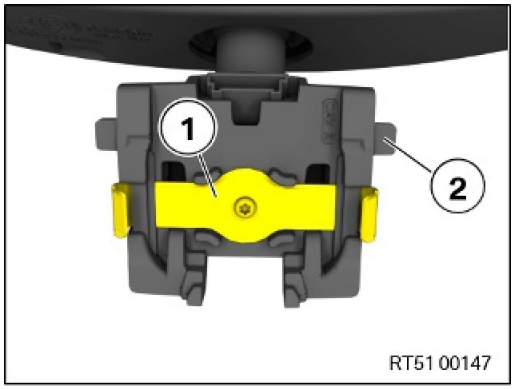
- Check if air pockets are visible.

  Visible shades (1) and (2) are not air pockets but rather the optical element of the sensor. The shades do not represent any functional limitation.

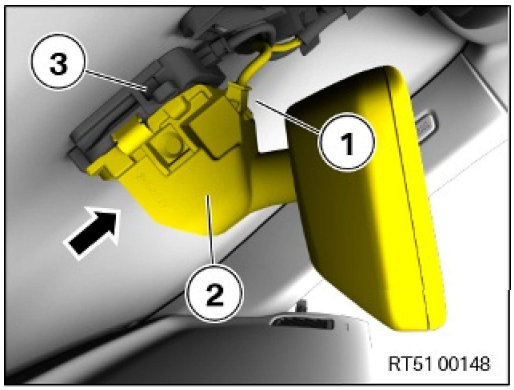
POSTPROCESSES

5 – Install interior mirror

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- Check the clamp (1) on both sides of the mirror base (2) for damage and renew as needed.



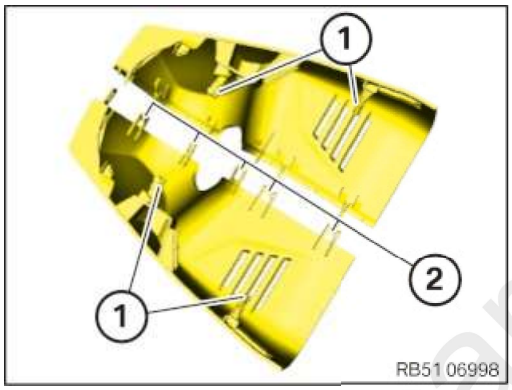
TECHNICAL INFORMATION

Carry out the work at temperatures between 18 °C and 23 °C only.

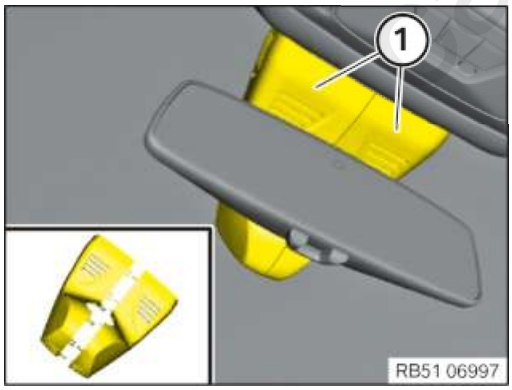
- Position the interior mirror (2) at the mirror base and slide it on in direction of the arrow.
- Check the correct installation position of the interior mirror (2) at the mirror base (3).
- Connect connectors (1) and lock.

6 – Installing the covers for the interior mirror

- **Version A:**

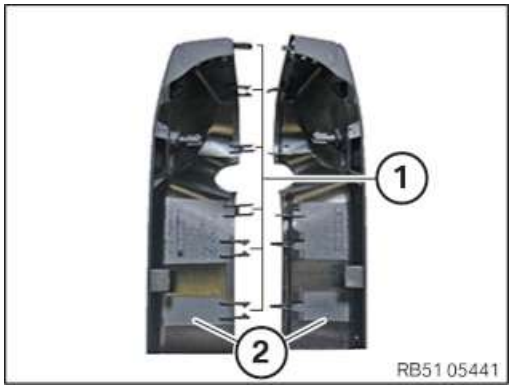


- Check latch mechanisms (1) and (2).
- If the latch mechanisms (1) or (2) are faulty, renew the covers.



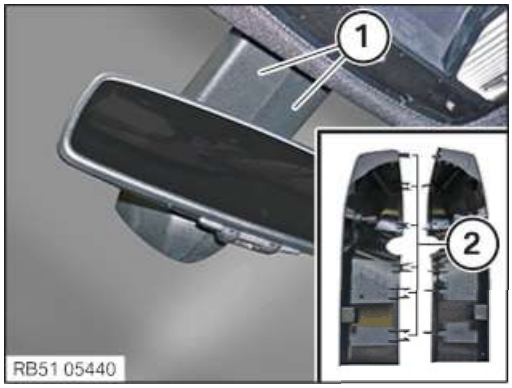
- Feed cover (1) in and lock.
- **Version B:**

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- Check the latch mechanisms (1) on the two covers (2) for damage, renew the covers (2) if necessary.

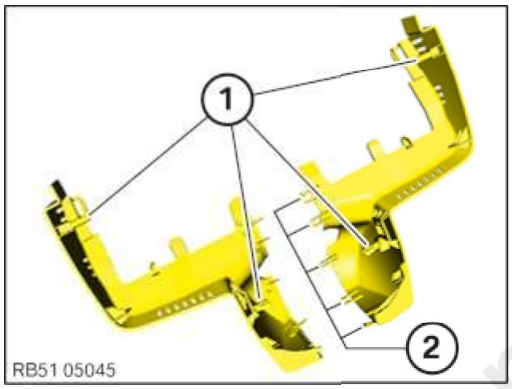
  The covers (2) must not be damaged or missing.



- Position the covers (1) correctly on the mirror and engage with the latch mechanisms (2).

- **Version C:**

Check



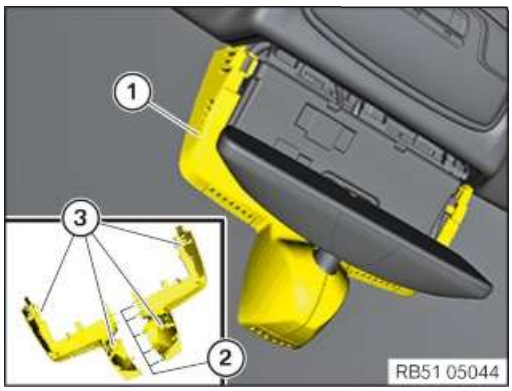
- Check the latch mechanisms (1) and (2) of the covers for damage.

Result

» The latch mechanism is damaged.

Measure

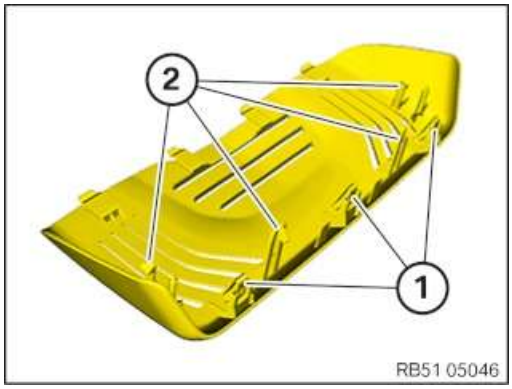
- Renew the cover.



- Guide in cover (1) on left and right and engage using latch mechanisms (2) and (3).

Check

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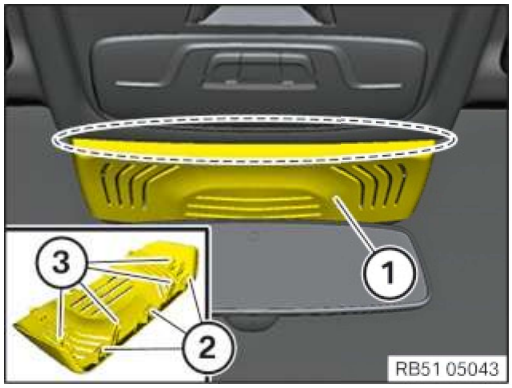
- Check clamps (1) for damage; renew if necessary.
- Check latch mechanisms (2) for damage.

Result

» The latch mechanism is damaged.

Measure

- Renew the cover.



- Guide cover (1) into front guides and engage using retaining lugs (3) and clamps (2).

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61 35 245 Remove and install sensor line for bottom CA

PRELIMINARY WORK

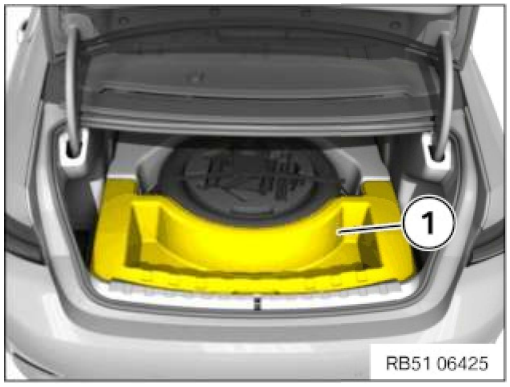
1 – Removing the luggage compartment floor trim panel



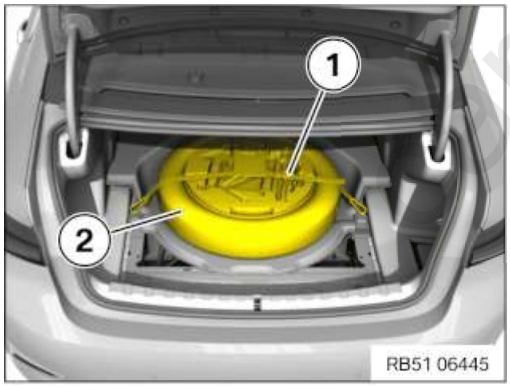
- Remove luggage compartment floor trim panel (1).

2 – If installed: Removing the compact spare wheel

▸ **Removing rear luggage compartment well**

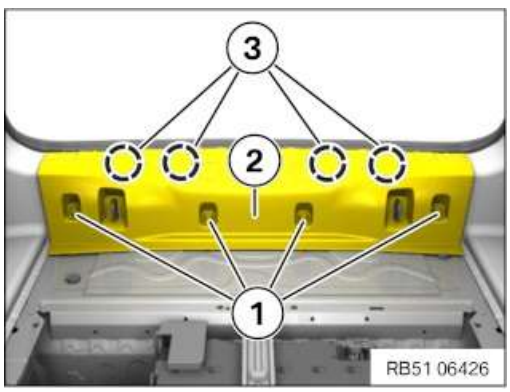


- Remove rear luggage compartment well (1).



- Open buckle on seat belt strap (1) and set it aside.
- Remove emergency wheel (2) with the insert.

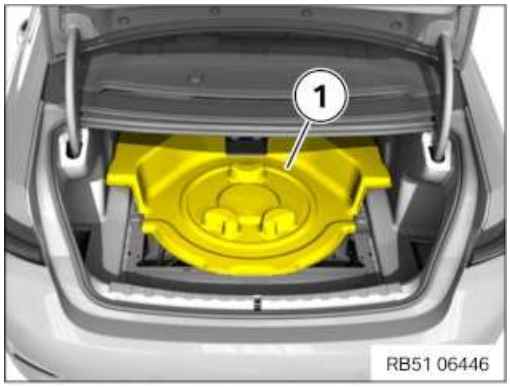
3 – Removing the loading edge trim



- Loosen the expanding rivet (1).
- Unclip loading edge trim(2) upwards from latch mechanisms (3).
- Guide out and remove loading edge trim (2) under the sealing lip of the tailgate seal.

4 – Removing front luggage compartment well

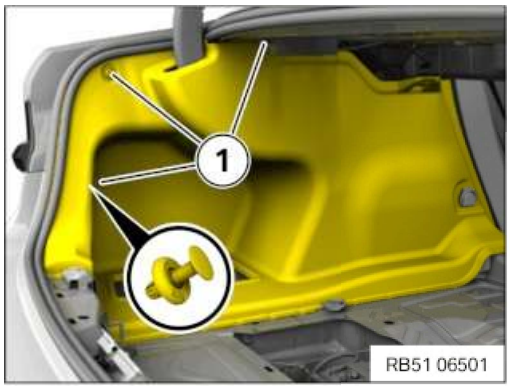
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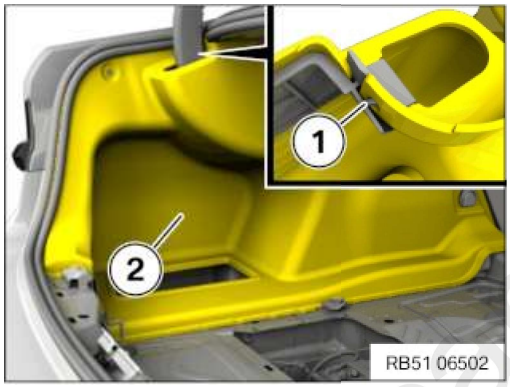
- Guide out and remove front luggage compartment well (1) on the seat belt strap.

5 – Removing both luggage compartment wheel arch trim panels partially

▶ Partially remove luggage compartment wheel arch trim on left



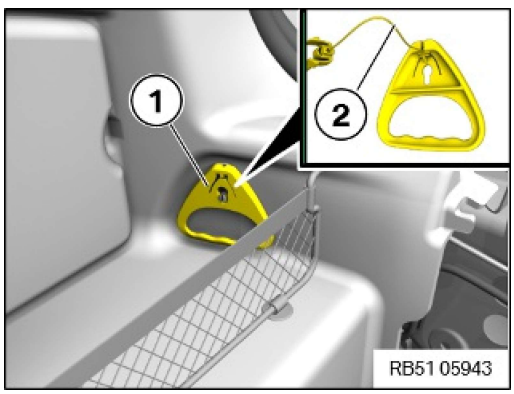
- Loosen the expanding rivet (1).



- Press the tab for luggage compartment wheel arch trim panel (2) on the outer side of the hinge to the front using the stop on trim (1).
- Guide out luggage compartment wheel arch trim panel (2) under the sealing lip of the tailgate seal and release it in the rear area.

▶ Partially remove luggage compartment wheel arch panel on right

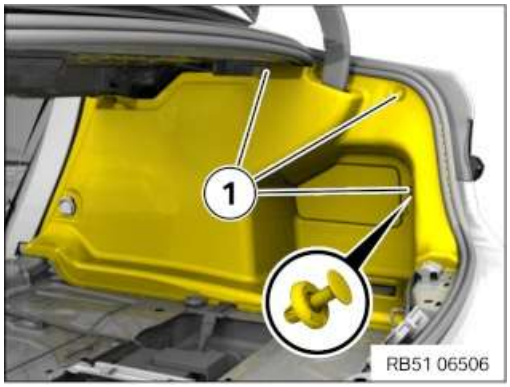
▷ If installed: Remove the emergency release handle for the tailgate (additional work in the US version)



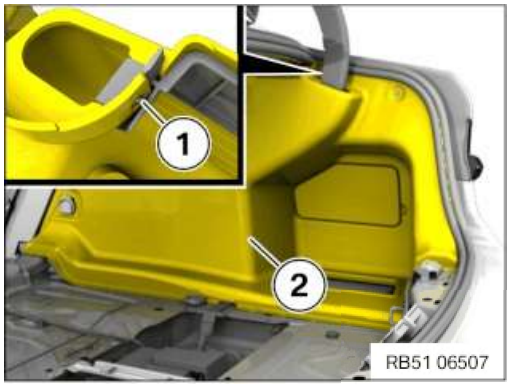
- Release the emergency release handle for tailgate (1) from the holder.
- Detach Bowden cable (2) and remove the emergency release handle for tailgate (1).

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- Loosen the expanding rivet (1).



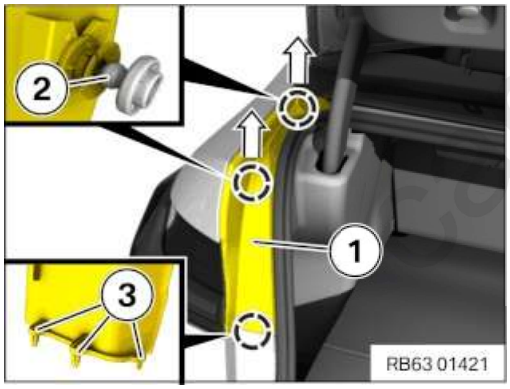
- Press the tab for luggage compartment wheel arch trim panel (2) on the outer side of the hinge to the front using the stop on trim (1).
- Guide out luggage compartment wheel arch trim panel (2) under the sealing lip of the tailgate seal and release it in the rear area.

6 – Removing both trims of water channel

NOTICE

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

▸ **Remove the trim in the water channel**



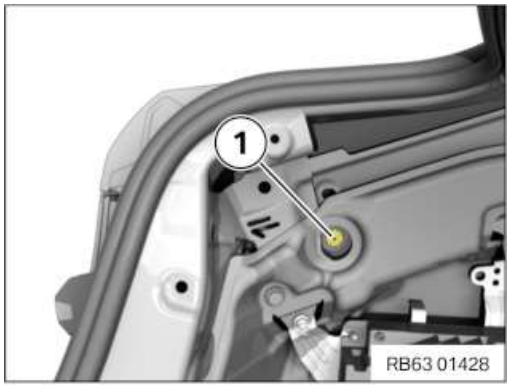
- Unclip the trim in the water channel (1) from the ball pins (2) towards the top.
- Release the trim in the water channel (1) from the guides (3) and remove it.

7 – Remove both rear lights from the side panel

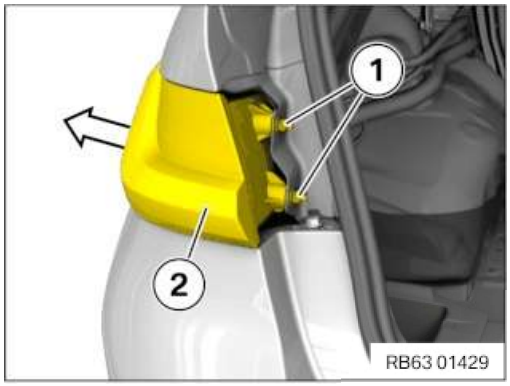
NOTICE

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

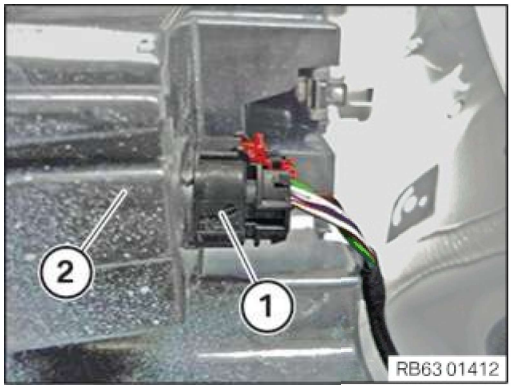
▸ **Remove the rear light on the side panel**



- Loosen nut (1).



- Release the nuts (1) and feed out the rear light on the side panel (2) in the direction of arrow.



TECHNICAL INFORMATION

Observe note on unlocking and disconnecting plug connections.
For additional information see: 6113 ... Unlocking and disconnecting different plug connections

- Unlock and disconnect plug connection (1) as described in position #28 in additional information.
- Remove the rear light on the side panel (2).

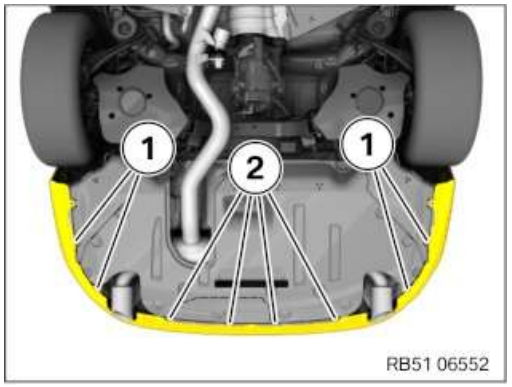
8 – Remove rear bumper panel



NOTICE

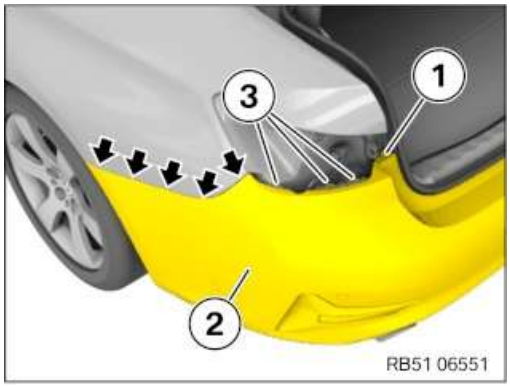
Perform the operations on the left and right side.

- Loosen screws (1).



- Loosen screws (1).
- Release the bumper panel on latch mechanisms (2) with a suitable tool.

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NOTICE

Perform the operations on the left and right side.

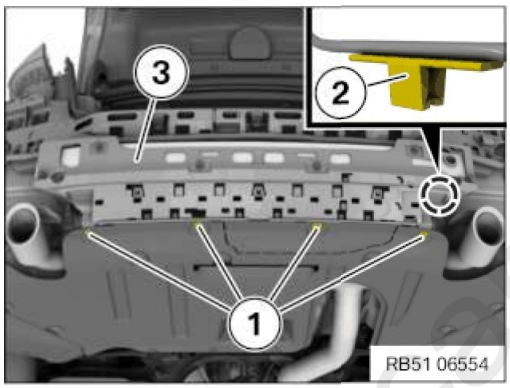
- Loosen screw (1).
- Release bumper panel (2) in the area of the rear light housing from latch mechanisms (3) with a suitable tool.
- Release side bumper panel (2) from the remaining latch mechanisms (arrows).



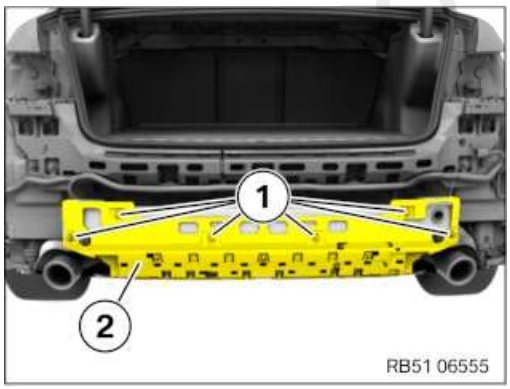
- Remove bumper panel (2) straight to the rear with the help of an auxiliary person.
- Unlock all plug connections and disconnect.
- Remove the bumper panel (1).

MAIN WORK

9 – Remove the sensor line for the contactless tailgate opening (bottom)

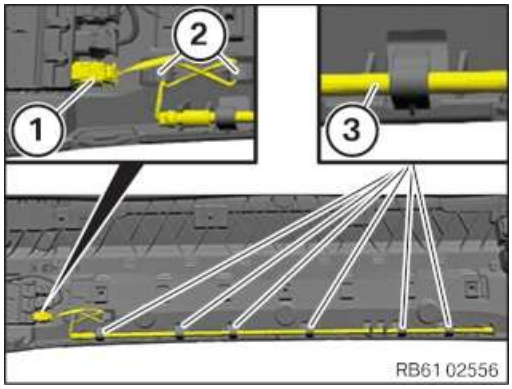


- Loosen screws (1).
- Unclip the cable clip (2) on the inside of the brace for the rear bumper (3).



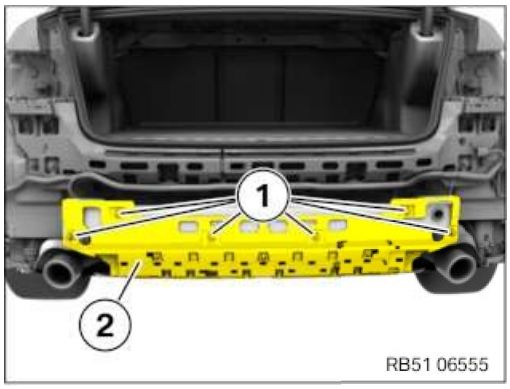
- Open the expanding rivets (1) and remove the brace for the rear bumper (2).

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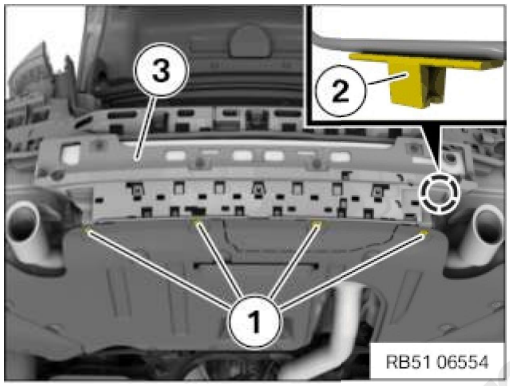


- Unlock and disconnect connector (1).
- Release cable from holder (2).
- Unclip the bottom sensor line (3)towards the top.

10 – Install the sensor line for the contactless tailgate opening (bottom)



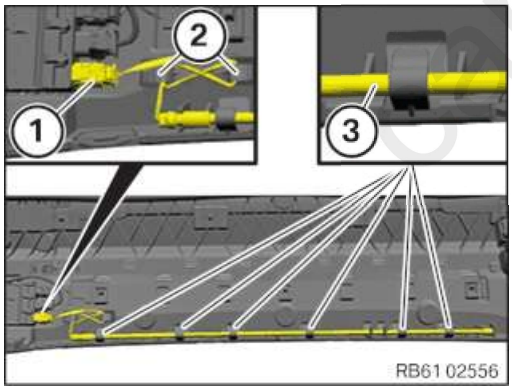
- Position brace for the rear bumper (2) on the support.
- Mount the expanding rivets (1).



- Clip in the cable clip (2) on the inside of the brace for the rear bumper (3).
- Tighten the screws (1).

Mounting for rear bumper panel on support for rear bumper panel

Hexagon screw for thermoplastic	Tightening torque	2,6 Nm



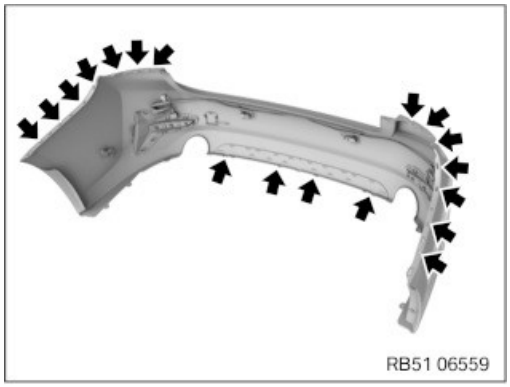
- Clip lower sensor cable (3) from above.
- Secure cable to holder (2).
- Connect connector (1).

POSTPROCESSES

11 – Install rear bumper panel

Check

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- Check the latch mechanisms (arrows) for damage.

Result

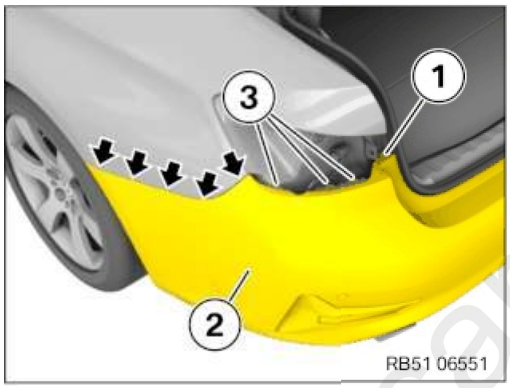
» Latch mechanisms are damaged.

Measure

- Renew the bumper panel.



- Position the bumper panel (1) straight with the help of another person.
- Connect all connectors and lock.



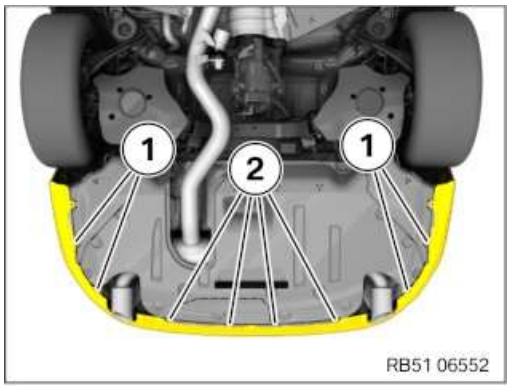
NOTICE

Perform the operations on the left and right side.

- Clip bumper panel (2) on the side in the latch mechanisms (arrows).
- Clip bumper panel (2) in the area of the rear light housing in latch mechanisms (3).
- Tighten down screw (1).

Rear bumper panel guide on rear centre guide

Hexagon screw for thermoplastic		Tightening torque	2,5 Nm



- Clip bumper panel into latch mechanisms (2).
- Tighten the screws (1).

Mounting for rear bumper panel on support for rear bumper panel

Hexagon screw for thermoplastic		Tightening torque	2,6 Nm

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NOTICE

Perform the operations on the left and right side.

- Tighten the screws (1).

Rear bumper panel to rear side panel

Hexagon screw for thermoplastic		Tightening torque	2,5 Nm

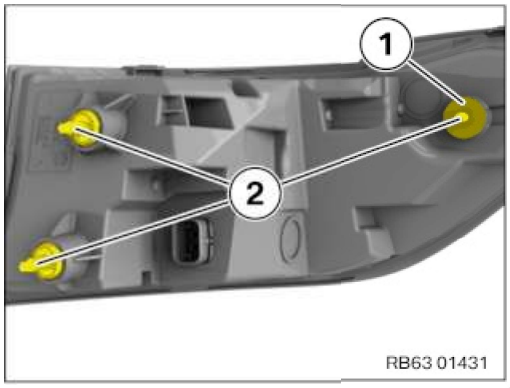
12 – Install both rear lights on the side panel

NOTICE

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

▸ **Install the rear light on the side panel**

Check



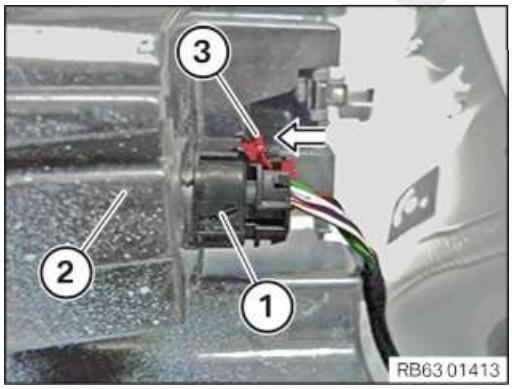
- Check the seal (1) for damage and renew if necessary.
- Check the threaded inserts (2) for damage.

Result

» The threaded inserts are damaged.

Measure

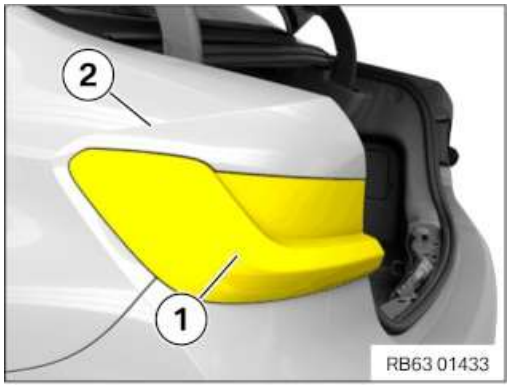
- Replace rear light.



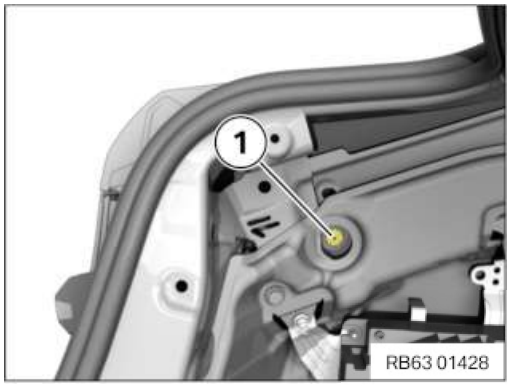
- Connect the connector (1) to the rear light on the side panel (2).

  The connector (1) must engage audibly.
- Lock the lock in direction of arrow (3).

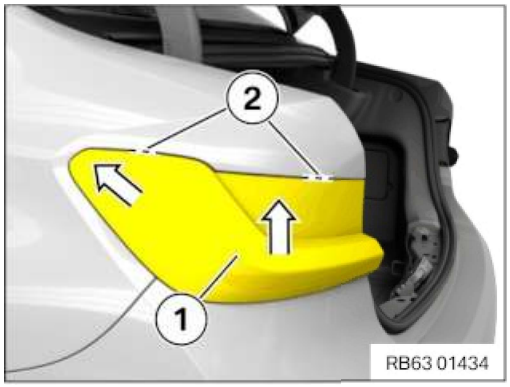
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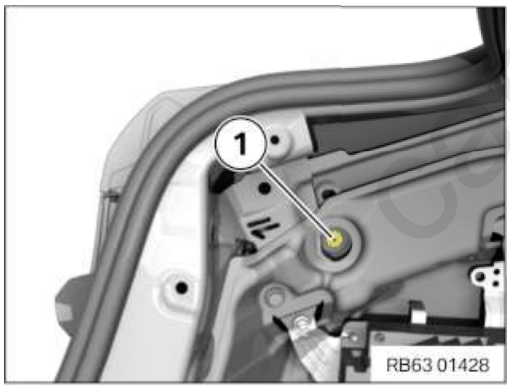
- Position the rear light on the side panel (1) on the side panel (2).



- Position the nut (1).



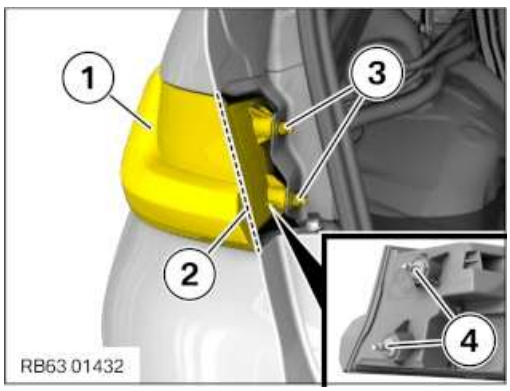
- Position the rear light on the side panel (1) to the front at the top.
- Move the contact surfaces (2) of the rear light on the side panel (1) upwards (arrow) so that they are in place.
- Hold the rear light on the side panel (1) in position.



- Tighten nut (1).

Rear light to side panel

Nut M5, AF 8		Tightening torque	3 Nm



- Position nuts (3).
- Align rear light on the side panel (1) with the connecting line (2).

  The alignment is done through threaded inserts (4) on the rear light on the side panel (2).
- If necessary, correct the position of the rear light on the side panel (1) by twisting threaded inserts (4).
- Tighten nuts (3).

Rear light to side panel

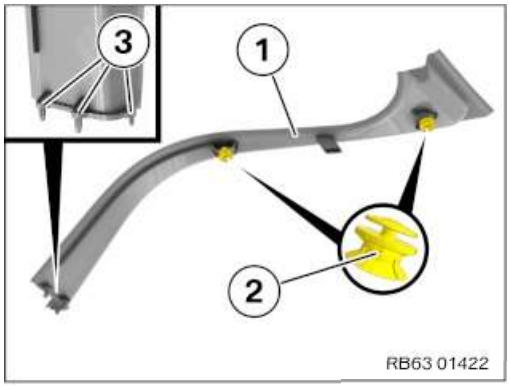
Nut M5, AF 10		Tightening torque	4 Nm

13 – Installing both trims of the water channel

NOTICE

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

▸ **Install the trim in the water channel**



Check

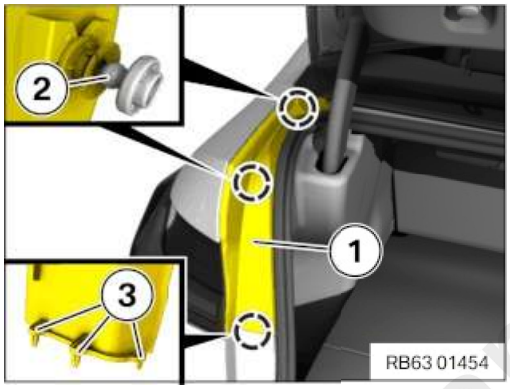
- Check the clips (2) for damage and renew if necessary.
- Check the guides (3) for damage.

Result

» The guides are damaged.

Measure

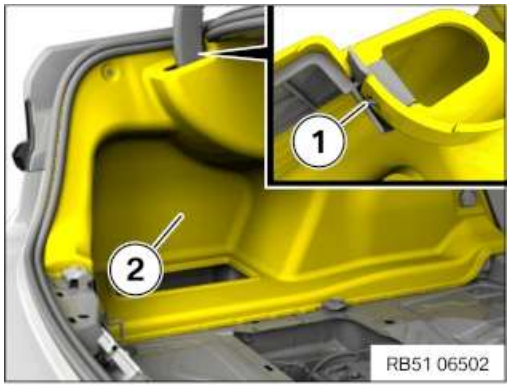
- Renew trim in the water channel .



- Insert the trim in the water channel (1) in the guides (3).
- Clip in the water channel trim (1) from the front into the ball pin (2).

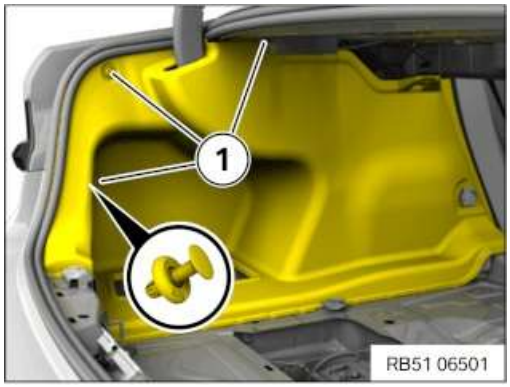
14 – Installing both luggage compartment wheel arch trim panels partially

▸ **Partially installing the left luggage compartment wheel arch trim panel**



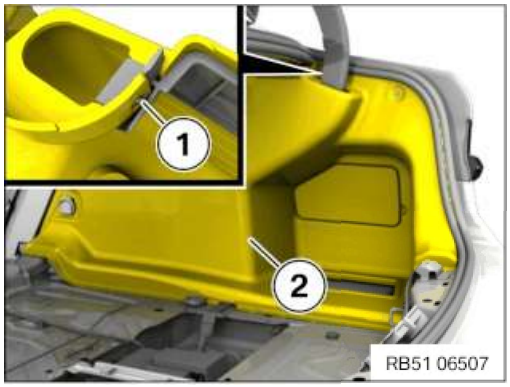
- Feed the luggage compartment wheel arch trim panel (2) in the rear area under the sealing lip of the seal of the tailgate.
- Feed the tab of the luggage compartment wheel arch trim panel (2) on the outer side of the hinge into the stop on the trim (1).

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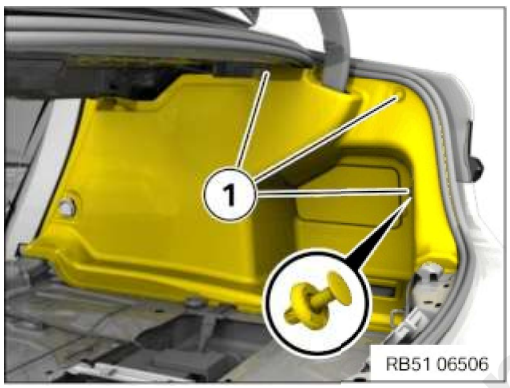


- Secure expanding rivet (1).

▶ **Partially installing right luggage compartment wheel arch trim panel**

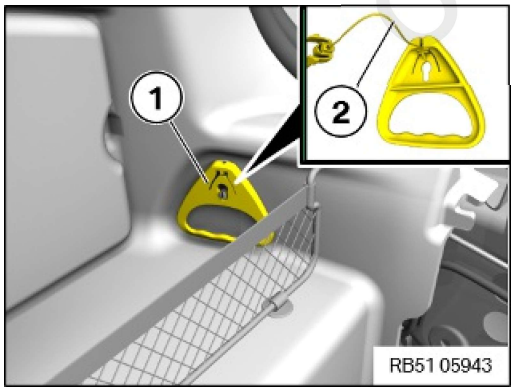


- Guide luggage compartment wheel arch trim panel (2) in the rear area under the sealing lip of the seal for tailgate.
- Feed the tab of the luggage compartment wheel arch trim panel (2) on the outer side of the hinge into the stop on the trim (1).



- Secure expanding rivet (1).

▷ **If installed: Installing the emergency tailgate release handle (additional work for US version)**

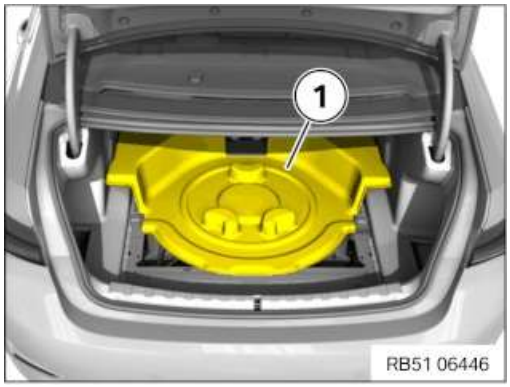


- Attach the Bowden cable (2).
- Fasten emergency tailgate release handle (1) to the bracket.

◁

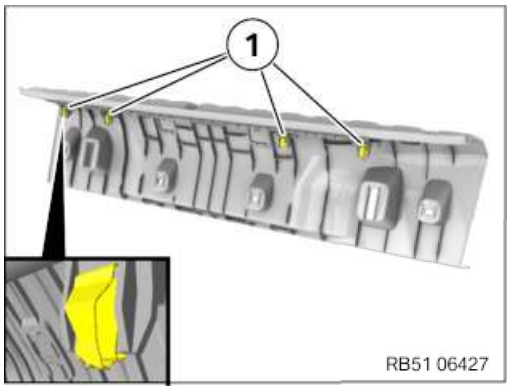
15 – Install the luggage compartment well in front

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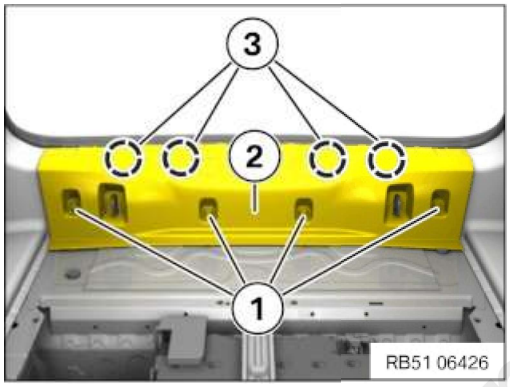


- Feed in and insert front luggage compartment well (1) on the seat belt strap.

16 – Installing loading edge trim

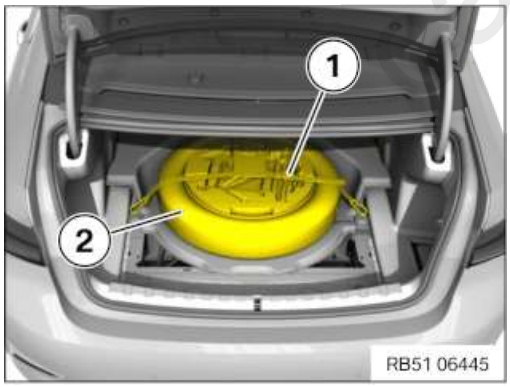


- Check the clamps (1) for damage and renew if necessary.



- Insert the loading edge trim (2) under the sealing lip of the tailgate seal.
- Fit the trim of the loading edge (2) at the latch mechanisms (3) and clip it in to the bottom.
- Secure expanding rivet (1).

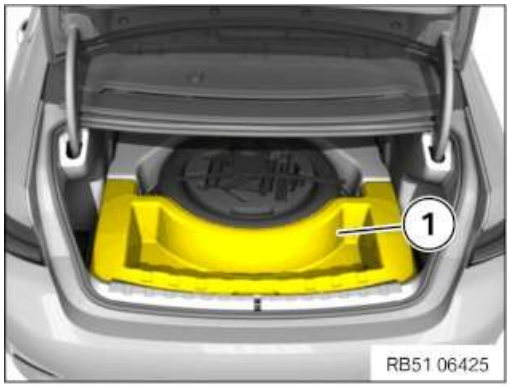
17 – If installed: Install the emergency wheel



- Install the emergency wheel (2) with the insert.
- Position the seat belt strap above the emergency wheel and close the buckle on the seat belt strap (1).

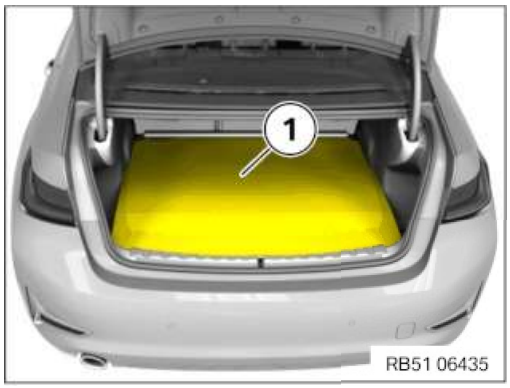
► **Installing rear luggage compartment well**

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- Install rear luggage compartment well (1).

18 – Installing the luggage compartment floor trim panel



- Insert the luggage compartment floor trim panel (1).

Additional Information

Overview of Tightening Torques

Mounting for rear bumper panel on support for rear bumper panel			Used in step 1011
Hexagon screw for thermoplastic		Tightening torque	2,6 Nm

Rear bumper panel guide on rear centre guide			Used in step 11
Hexagon screw for thermoplastic		Tightening torque	2,5 Nm

Rear bumper panel to rear side panel			Used in step 11
Hexagon screw for thermoplastic		Tightening torque	2,5 Nm

Rear light to side panel			Used in step 12
Nut M5, AF 8		Tightening torque	3 Nm

Rear light to side panel			Used in step 12
Nut M5, AF 10		Tightening torque	4 Nm

Links

Repair instructions	**Used in step**
61 13 ... Unlocking and disconnecting different plug connections	7

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61 35 953 Remove and install/replace interior aerial for Comfort Access

PRELIMINARY WORK

1 – Remove cupholder

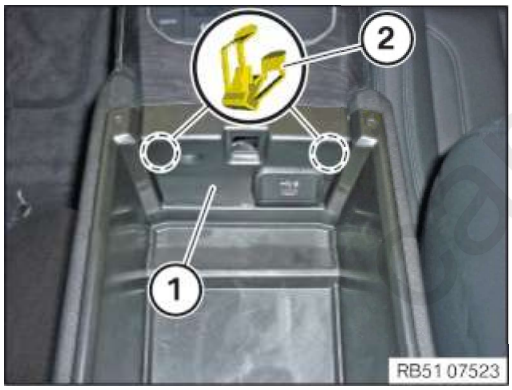


- Remove the insert (1).

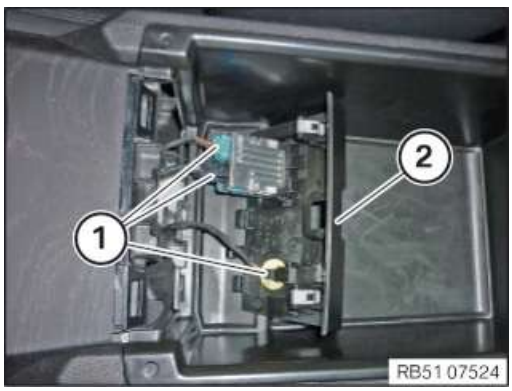


- Loosen screws (1).
- Feed the cup holder (2) out to the top.
- Unlock associated plug connections and disconnect.

2 – 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) .

3 – Remove 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.



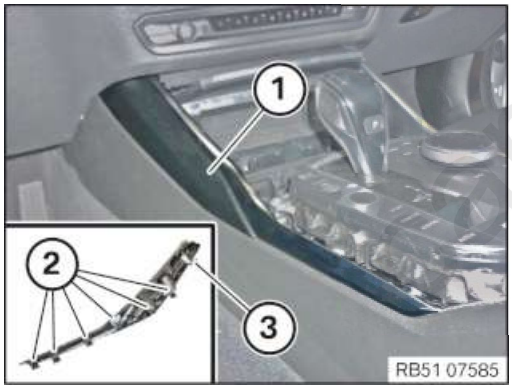
- Release and remove the centre console trim upwards (1) as shown using the special tool 2 298 505 from the latch mechanisms.

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

▶ **Remove decorative trim on centre console**

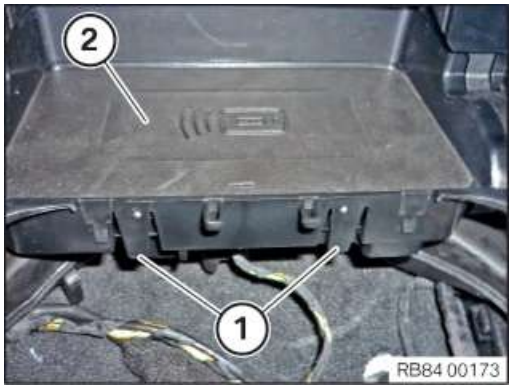
NOTICE

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

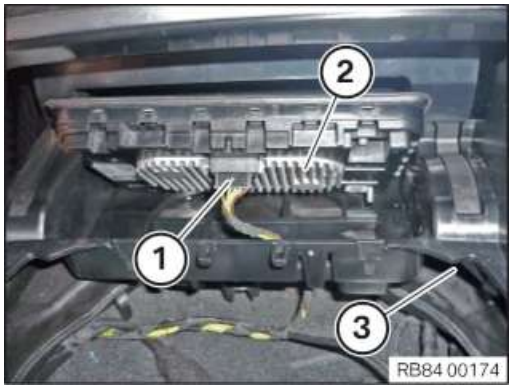


- Lever out the rear decorative trim (1) from the latch mechanisms (2) starting from the top.
- Feed out the decorative trim (1) backwards out of the guide (3) and remove.

5 – Removing the wireless charging station



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



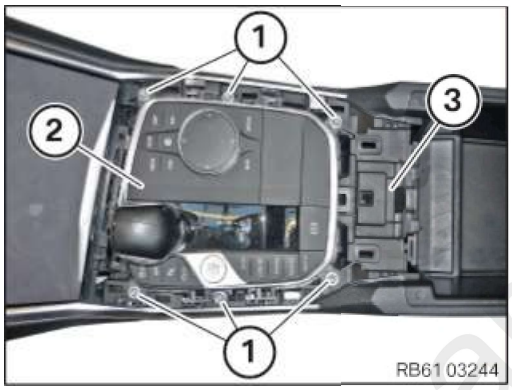
- Disconnect the connector (1) and remove the wireless charging station (2) from the centre console (3).

6 – Remove the operating facility in the centre console

▶ **Disconnecting all battery earth leads**

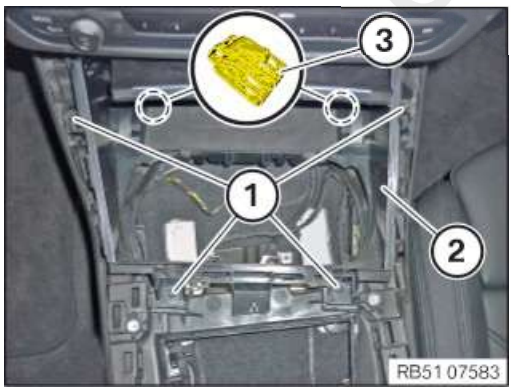


- See additional information.



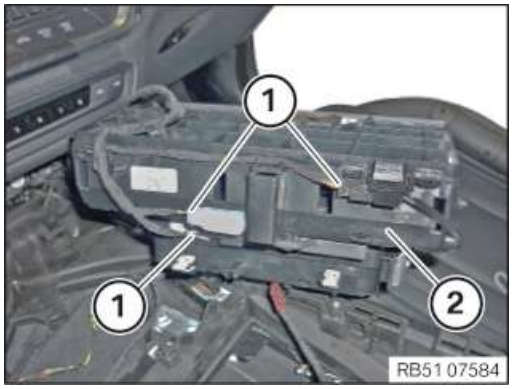
- Loosen screws (1).
- Remove the operating facility in the centre console (2) from the centre console (3).

7 – Removing the storage compartment of the front centre console



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

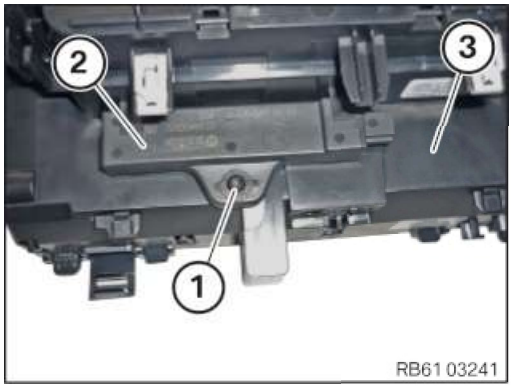
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- Unlock and disconnect all the plug connections (1) and remove the storage compartment (2).

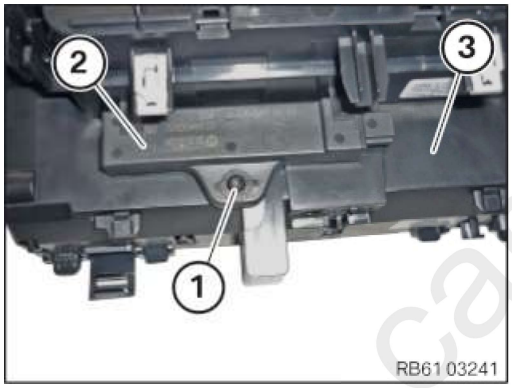
MAIN WORK

8 – Removing interior aerial on the front storage compartment



- Loosen screw (1).
- Detach the interior aerial (2) from the storage compartment (3) and remove.

9 – Install front interior aerial on storage compartment



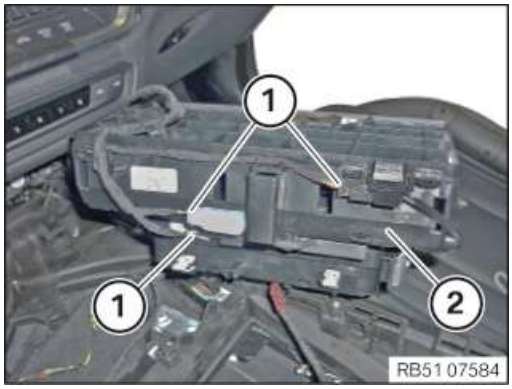
- Position interior aerial (2) on storage compartment (3) and tighten into the screw (1).

Front interior aerial

Screw		Tightening torque	2,3 Nm

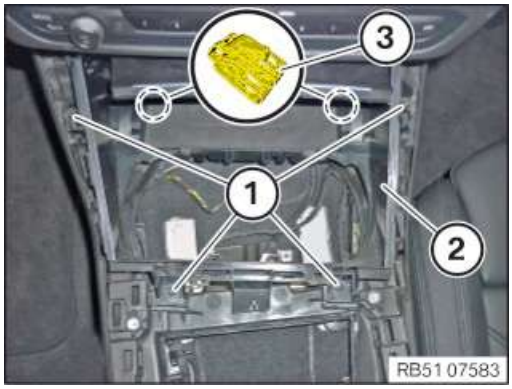
POSTPROCESSES

10 – Installing the storage compartment of the front centre console



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

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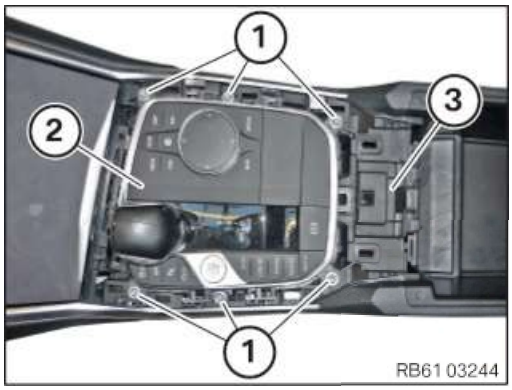


- Engage rear storage compartment trim (2) into clamps (3).
- Tighten the screws (1).

Storage compartment to centre console

Oval-head screw		Tightening torque	1,8 Nm

11 – 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

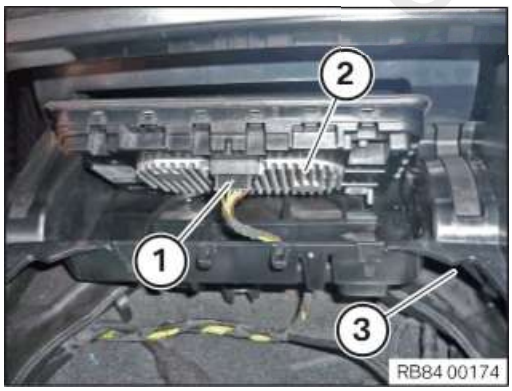
Screw		Tightening torque	1,8 Nm

▶ **Disconnecting all battery earth leads**



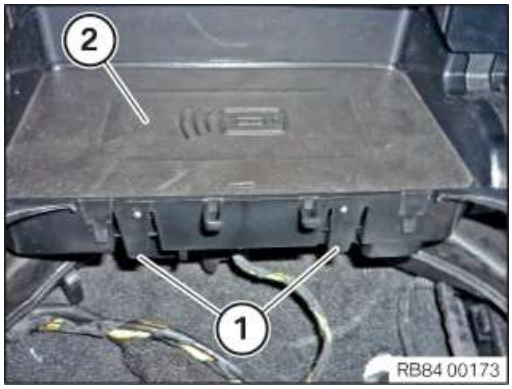
- See additional information.

12 – Installing the wireless charging station



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

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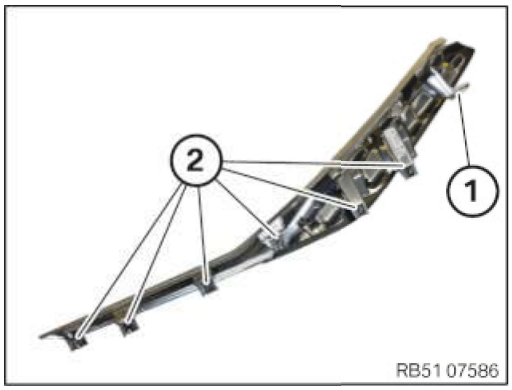
- Press the wireless charging station (2) down till the locking units (1) are engaged correctly.

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

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

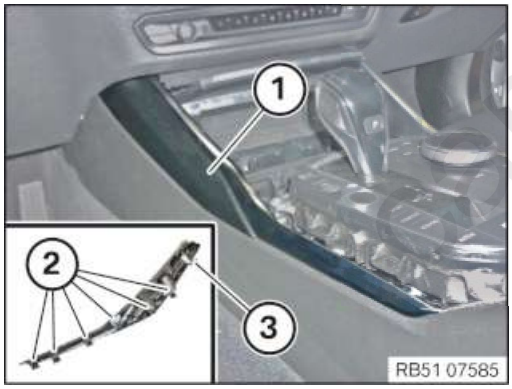
NOTICE

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).

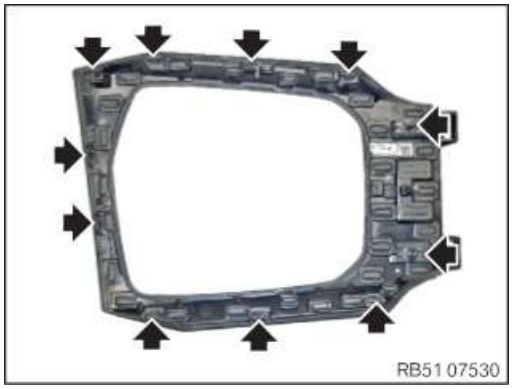
14 – Installing the centre console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

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

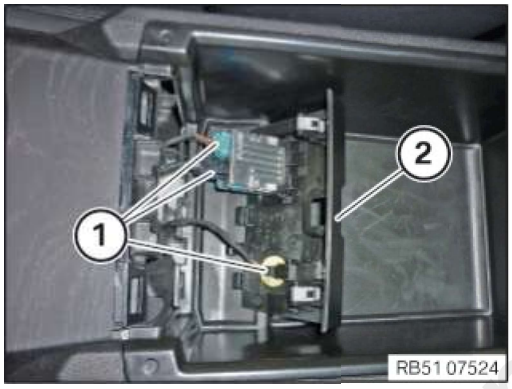


- Check all the latch mechanisms or clamps (arrows).
- In case the latch mechanisms or the clamps (arrows) are faulty, renew the centre console trim .

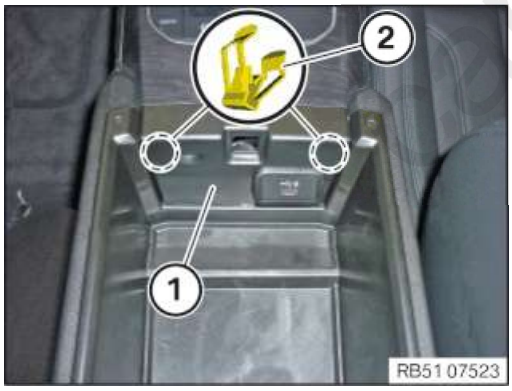


- Correctly position the centre console trim (1) and engage at the latch mechanisms.

15 – 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).

16 – 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).

Additional Information

Overview of Tightening Torques

Front interior aerial			Used in step 9
Screw		Tightening torque	2,3 Nm

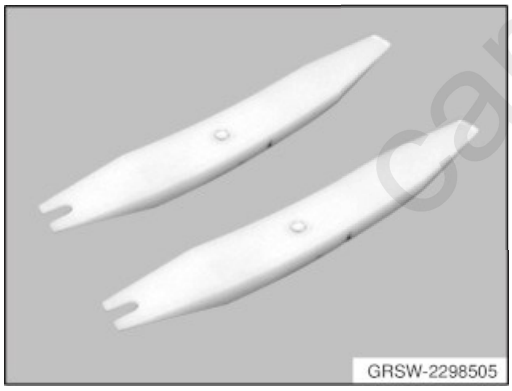
Storage compartment to centre console			Used in step 10
Oval-head screw		Tightening torque	1,8 Nm

Gear selector switch to centre console trim			Used in step 11
Screw		Tightening torque	1,8 Nm

Cup holder to centre console			Used in step 16
Oval-head screw		Tightening torque	1,8 Nm

Overview of Special Tools

2 298 505 Wedge



Common		Used in step 23
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	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	611

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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	611
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting battery earth lead	611
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61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting the battery earth lead (*all* battery earth leads)	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting battery earth lead	611
61 20 900 Disconnecting and connecting battery earth lead	611

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61 35 954 Remove and install/replace interior aerial for Comfort Access

PRELIMINARY WORK

1 – Removing the rear centre console trim

RISK OF DAMAGE

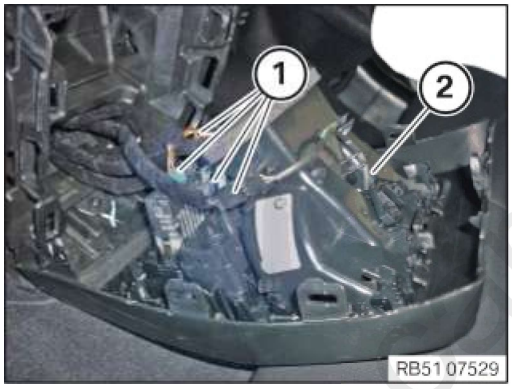
Scratches.

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.

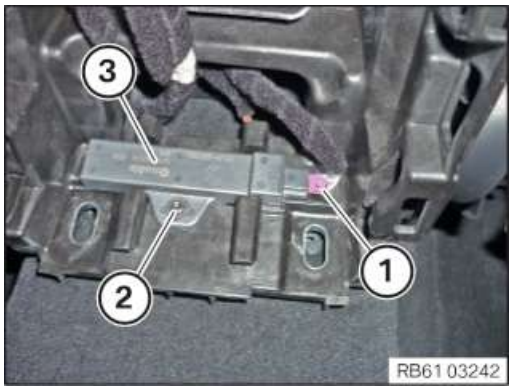


- Unlock and disconnect plug connections (1).
- Remove the centre console trim (2).

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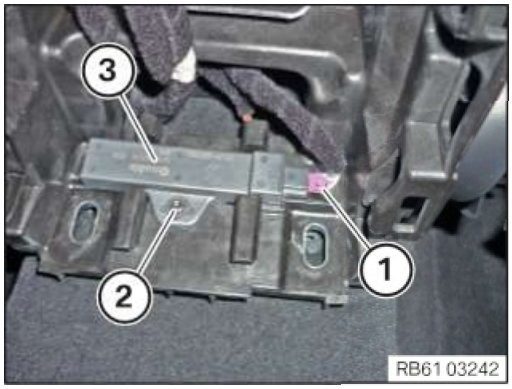
MAIN WORK

2 – Removing the interior aerial from the rear centre console



- Disconnect plug connection (1).
- Loosen screw (2).
- Remove the interior aerial (3).

3 – Install the interior aerial on the rear centre console



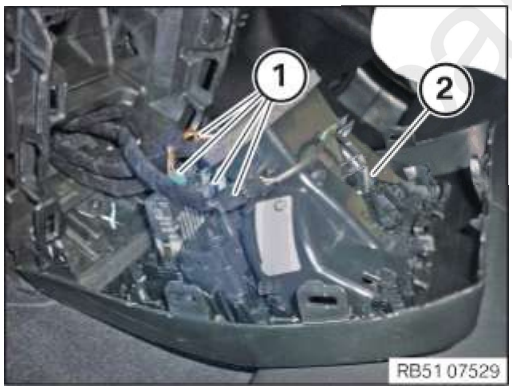
- Connect connector (1).
- Position interior aerial (3) correctly and tighten the screw (2).

Front interior aerial

Screw		Tightening torque	2,3 Nm

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.

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Additional Information

Overview of Tightening Torques

Front interior aerial Used in step 3

Screw		Tightening torque	2,3 Nm

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61 35 196 Removing and installing control unit for automatic tailgate operation

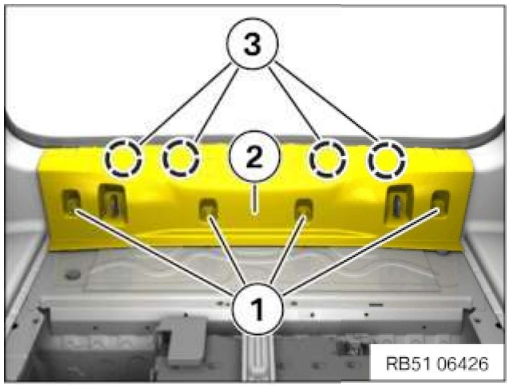
PRELIMINARY WORK

1 – Disconnecting all battery earth leads



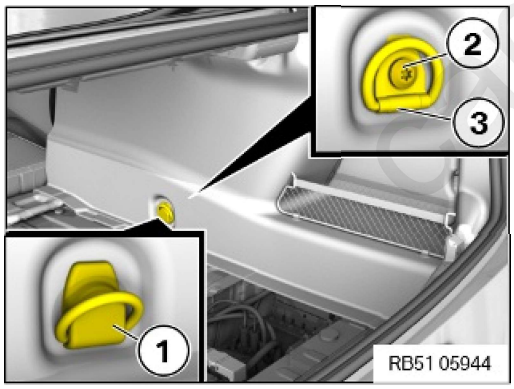
- See additional information.

2 – Removing the loading edge trim



- Loosen the expanding rivet (1).
- Unclip loading edge trim(2) upwards from latch mechanisms (3).
- Guide out and remove loading edge trim (2) under the sealing lip of the tailgate seal.

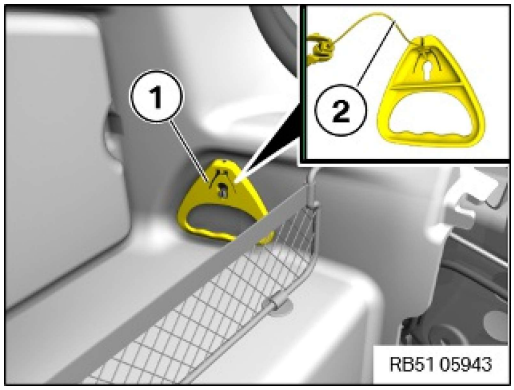
3 – Removing right luggage compartment wheel arch trim panel



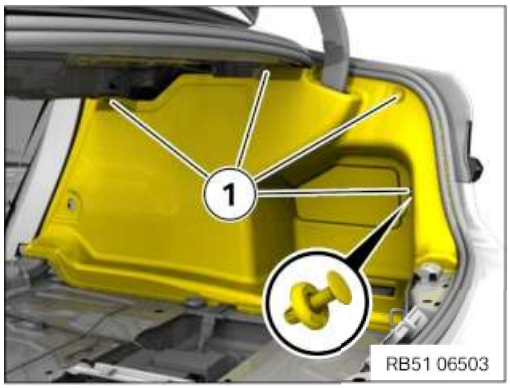
- Remove the cover (1).
- Loosen screw (2).
- Remove the lashing eye (3).

▸ If installed: Remove the emergency release handle for the tailgate (additional work in the US version)

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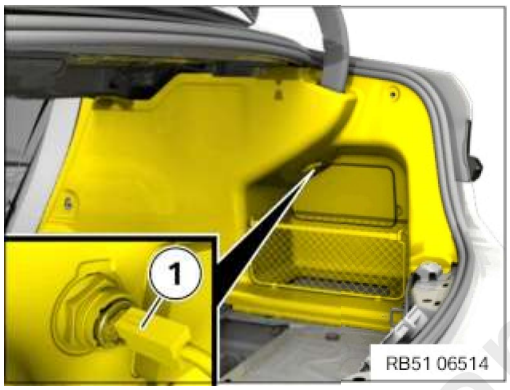


- Release the emergency release handle for tailgate (1) from the holder.
- Detach Bowden cable (2) and remove the emergency release handle for tailgate (1).

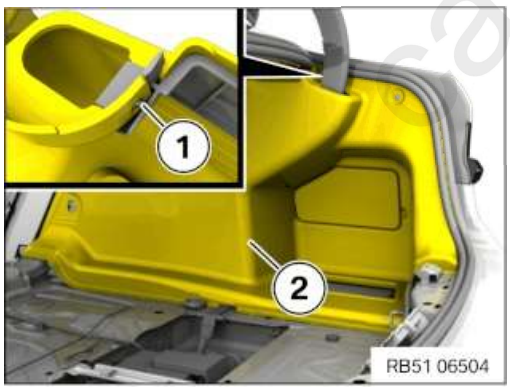


- Reposition the right rear seat backrest.
- Loosen the expanding rivet (1).

▸ If installed: Disconnect plug connection of the 12 V connection (additional work with storage package equipment specification)



- Unlock and disconnect the plug connection (1) of the 12 V power socket.

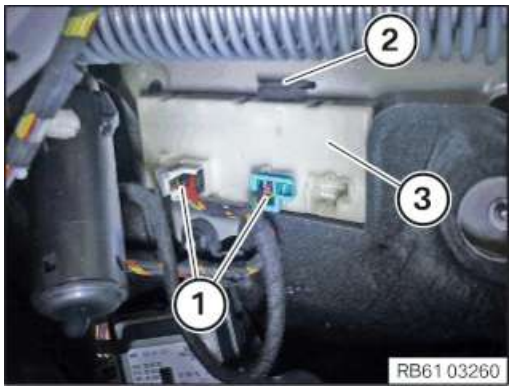


- Press the tab for luggage compartment wheel arch trim panel (2) on the outer side of the hinge to the front using the stop on trim (1).
- Guide out luggage compartment wheel arch trim panel (2) under the sealing lip for the tailgate and the side trim panel in the rear passenger compartment.
- Remove luggage compartment wheel arch trim panel (2).

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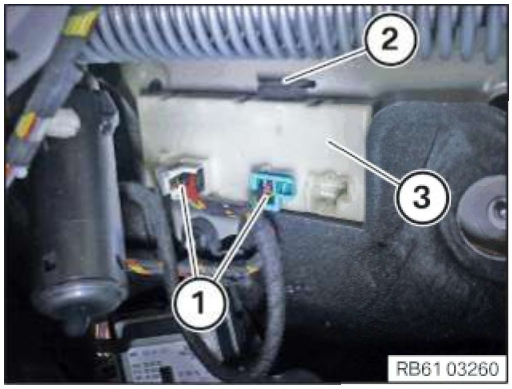
MAIN WORK

4 – Remove the control unit for the automatic tailgate operation



- Unlock and disconnect plug connections (1).
- Unlock the latch mechanism (2) and remove the control unit for the tailgate lift (3).

5 – Install the control unit for the automatic tailgate operation



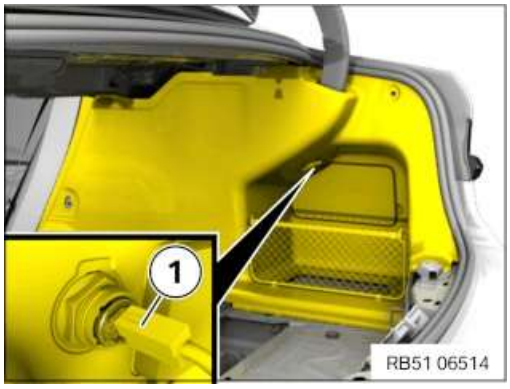
- Correctly position the control unit for the tailgate lift (3) and engage it with the latch mechanism (2).
- Connect connectors (1) and lock.

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POSTPROCESSES

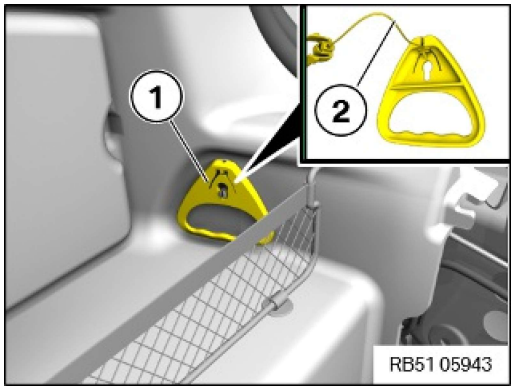
6 – Installing the luggage compartment wheel arch trim panel on the right

▸ If installed: Connecting plug of the 12 V power socket (additional work for equipment specification with storage package)

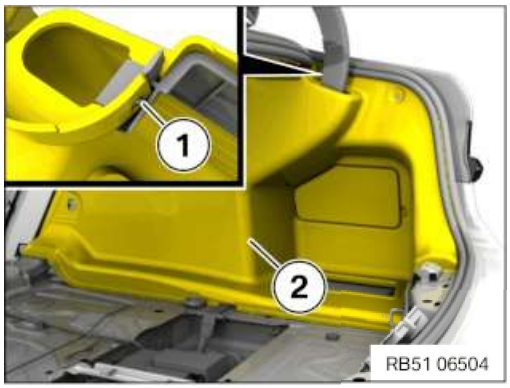


- Connect and lock connector (1) of the 12 V power socket.

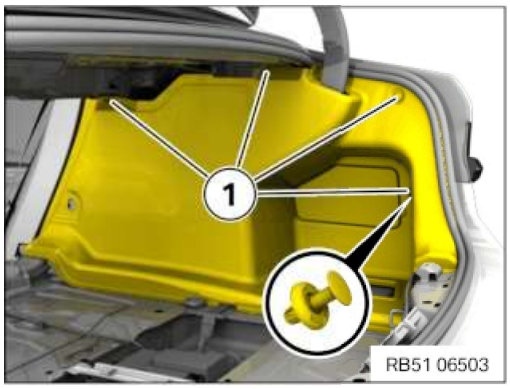
▸ If installed: Installing the emergency tailgate release handle (additional work for US version)



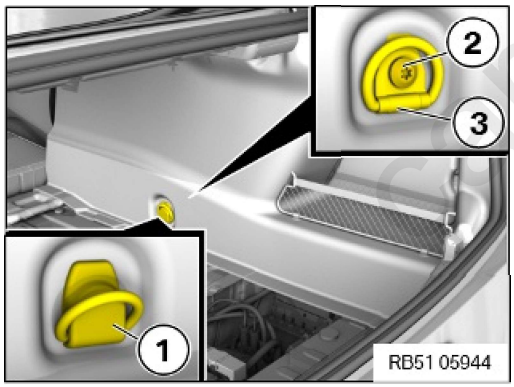
- Attach the Bowden cable (2).
- Fasten emergency tailgate release handle (1) to the bracket.



- Feed luggage compartment wheel arch trim panel (2) under the side trim panel in the rear passenger compartment and the sealing lip for the tailgate.
- Feed the tab of the luggage compartment wheel arch trim panel (2) on the outer side of the hinge into the stop on the trim (1).



- Secure expanding rivet (1).
- Raise the right rear seat backrest.



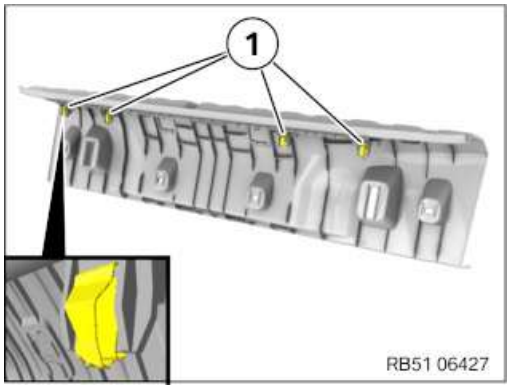
- Position the lashing eye (3).
- Tighten down screw (2).

Lashing eye to body

	Tightening torque	19 Nm

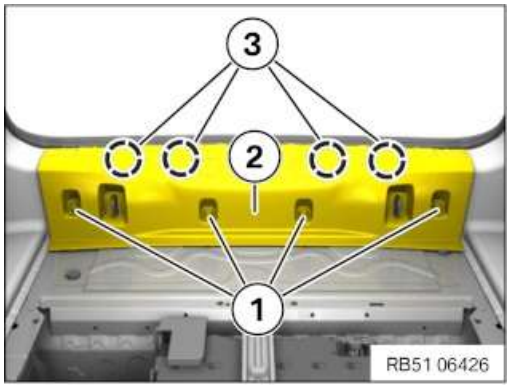
- Install the cover (1).

7 – Installing loading edge trim



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

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- Insert the loading edge trim (2) under the sealing lip of the tailgate seal.
- Fit the trim of the loading edge (2) at the latch mechanisms (3) and clip it in to the bottom.
- Secure expanding rivet (1).

8 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Overview of Tightening Torques

Lashing eye to body		Used in step 6
	Tightening torque	19 Nm

Links

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
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 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
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 35 240 Removing and installing the non-contact tailgate opening control unit

PRELIMINARY WORK

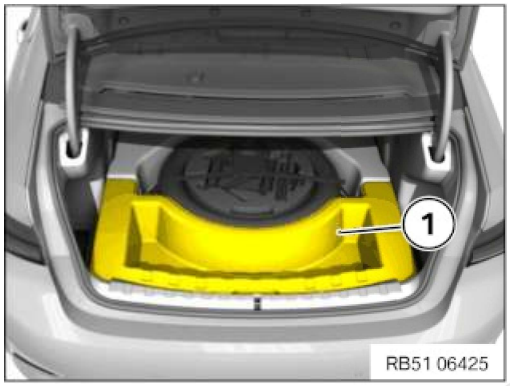
1 – Removing the luggage compartment floor trim panel



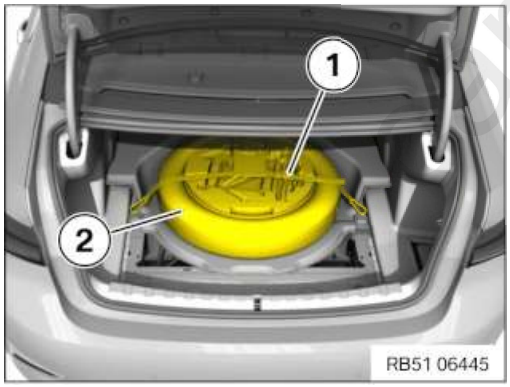
- Remove luggage compartment floor trim panel (1).

2 – If installed: Removing the compact spare wheel

▸ **Removing rear luggage compartment well**

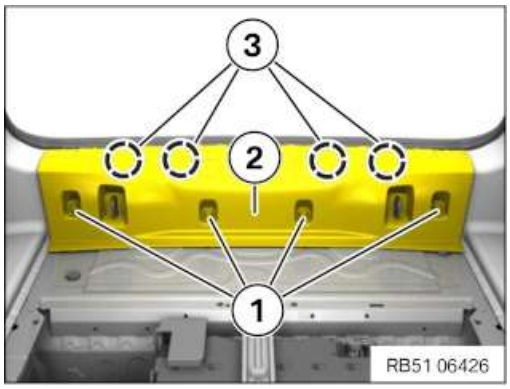


- Remove rear luggage compartment well (1).



- Open buckle on seat belt strap (1) and set it aside.
- Remove emergency wheel (2) with the insert.

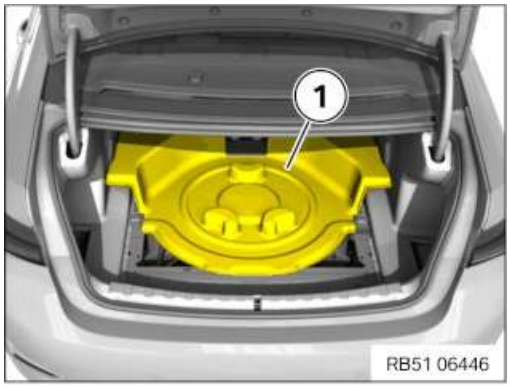
3 – Removing the loading edge trim



- Loosen the expanding rivet (1).
- Unclip loading edge trim(2) upwards from latch mechanisms (3).
- Guide out and remove loading edge trim (2) under the sealing lip of the tailgate seal.

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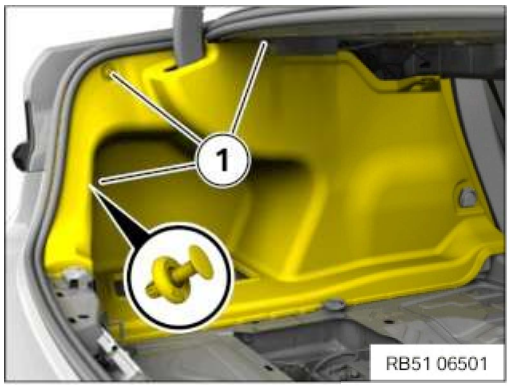
4 – Removing front luggage compartment well



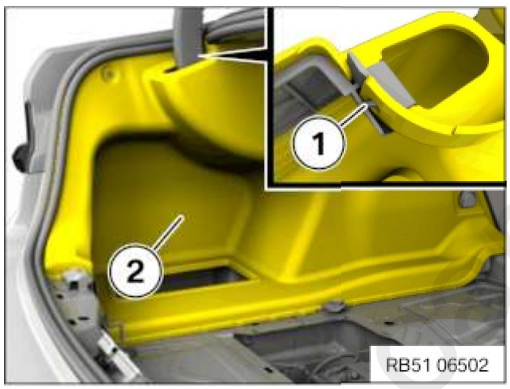
- Guide out and remove front luggage compartment well (1) on the seat belt strap.

5 – Removing both luggage compartment wheel arch trim panels partially

▸ Partially remove luggage compartment wheel arch trim on left



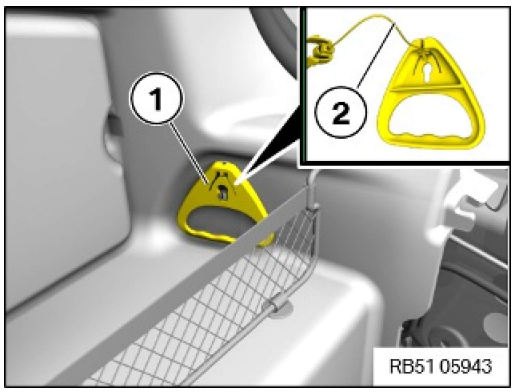
- Loosen the expanding rivet (1).



- Press the tab for luggage compartment wheel arch trim panel (2) on the outer side of the hinge to the front using the stop on trim (1).
- Guide out luggage compartment wheel arch trim panel (2) under the sealing lip of the tailgate seal and release it in the rear area.

▸ Partially remove luggage compartment wheel arch panel on right

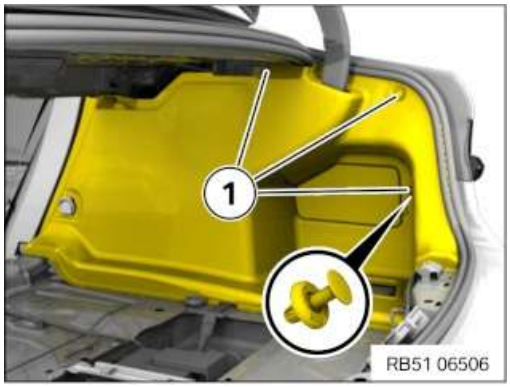
▹ If installed: Remove the emergency release handle for the tailgate (additional work in the US version)



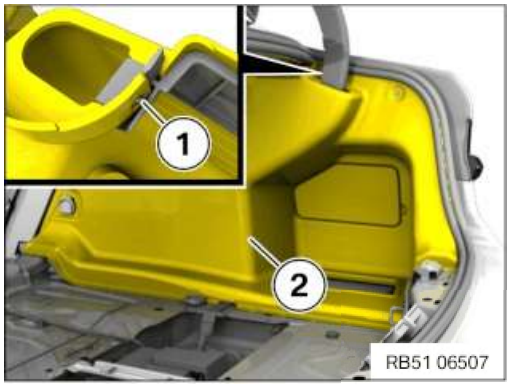
- Release the emergency release handle for tailgate (1) from the holder.
- Detach Bowden cable (2) and remove the emergency release handle for tailgate (1).

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- Loosen the expanding rivet (1).



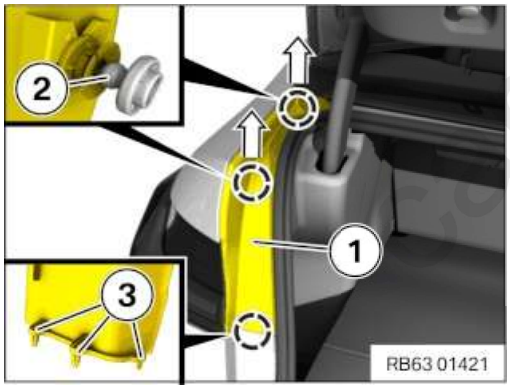
- Press the tab for luggage compartment wheel arch trim panel (2) on the outer side of the hinge to the front using the stop on trim (1).
- Guide out luggage compartment wheel arch trim panel (2) under the sealing lip of the tailgate seal and release it in the rear area.

6 – Removing both trims of water channel

NOTICE

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

▸ **Remove the trim in the water channel**



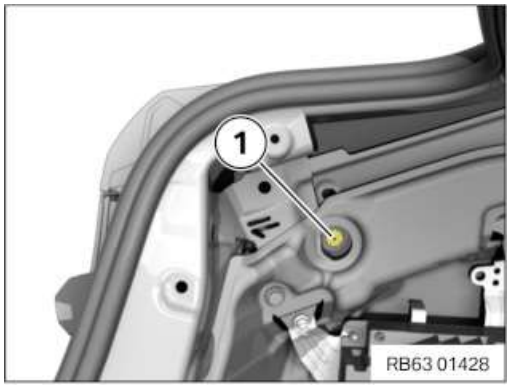
- Unclip the trim in the water channel (1) from the ball pins (2) towards the top.
- Release the trim in the water channel (1) from the guides (3) and remove it.

7 – Remove both rear lights from the side panel

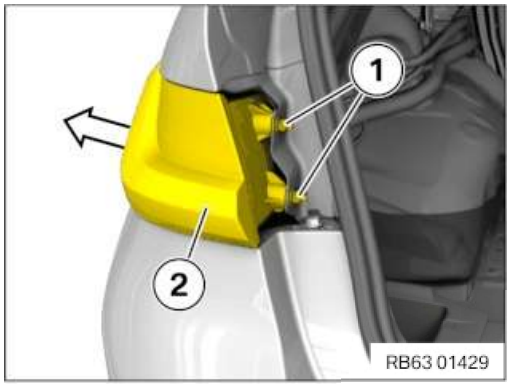
NOTICE

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

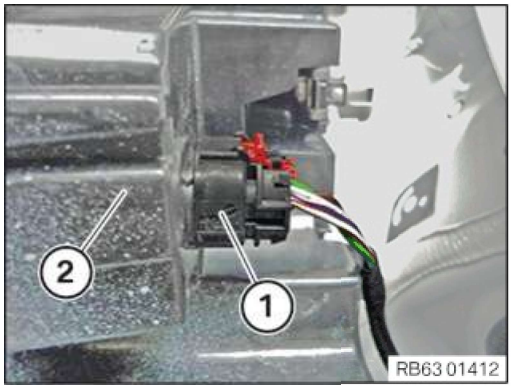
▸ **Remove the rear light on the side panel**



- Loosen nut (1).



- Release the nuts (1) and feed out the rear light on the side panel (2) in the direction of arrow.



TECHNICAL INFORMATION

Observe note on unlocking and disconnecting plug connections.
For additional information see: 6113 ... Unlocking and disconnecting different plug connections

- Unlock and disconnect plug connection (1) as described in position #28 in additional information.
- Remove the rear light on the side panel (2).

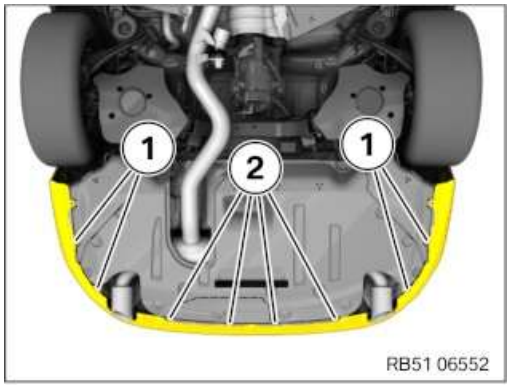
8 – Remove rear bumper panel



NOTICE

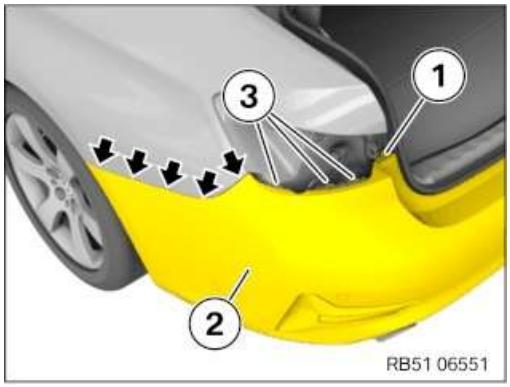
Perform the operations on the left and right side.

- Loosen screws (1).



- Loosen screws (1).
- Release the bumper panel on latch mechanisms (2) with a suitable tool.

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NOTICE

Perform the operations on the left and right side.

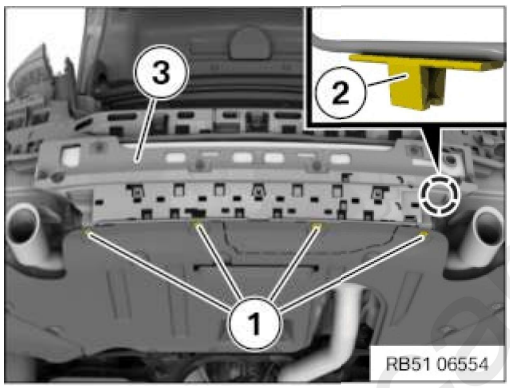
- Loosen screw (1).
- Release bumper panel (2) in the area of the rear light housing from latch mechanisms (3) with a suitable tool.
- Release side bumper panel (2) from the remaining latch mechanisms (arrows).



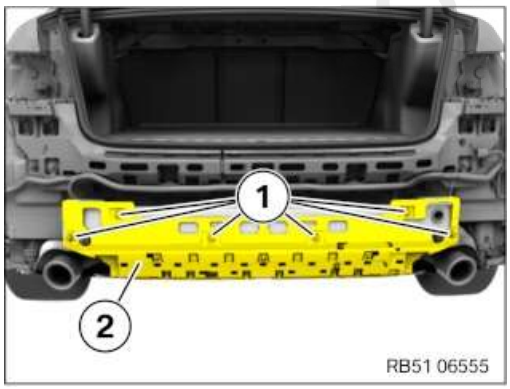
- Remove bumper panel (2) straight to the rear with the help of an auxiliary person.
- Unlock all plug connections and disconnect.
- Remove the bumper panel (1).

MAIN WORK

9 – Remove the control unit for the contactless tailgate opening

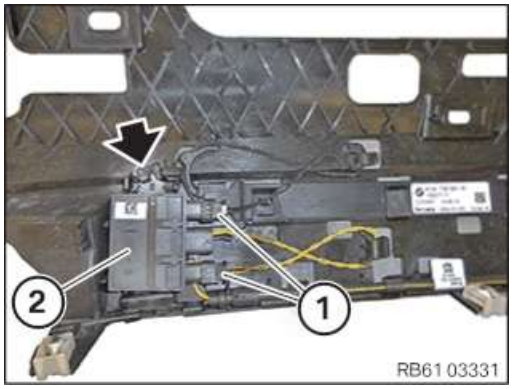


- Loosen screws (1).
- Unclip the cable clip (2) on the inside of the brace for the rear bumper (3).



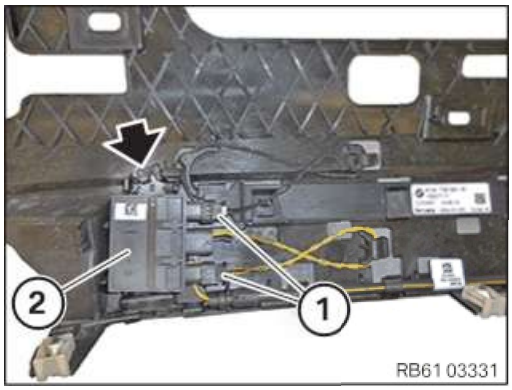
- Release expanding rivets (1) and remove brace for rear bumper (2).

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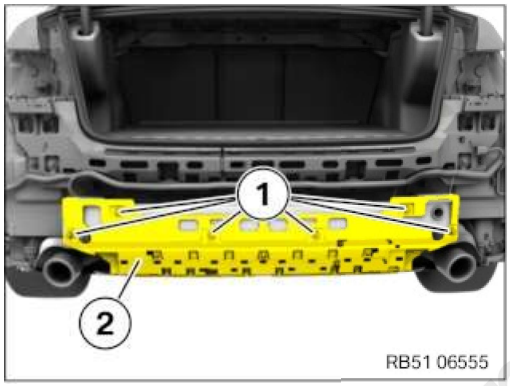


- Unlock and disconnect connector (1).
- Release latch mechanism (arrow) and remove control unit (2).

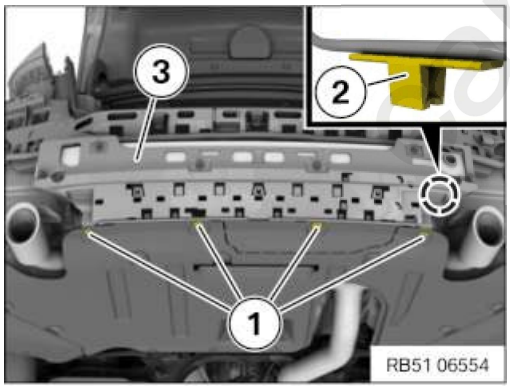
10 – Install the control unit for the contactless tailgate opening



- Position control unit (2) and clip into latch mechanism (arrow).
- Insert and connect the connector (1).



- Position brace for the rear bumper (2) on the support.
- Install the expanding rivet (1).



- Clip in the cable clip (2) on the inside of the brace for the rear bumper (3).
- Tighten the screws (1).

Mounting for rear bumper panel on support for rear bumper panel

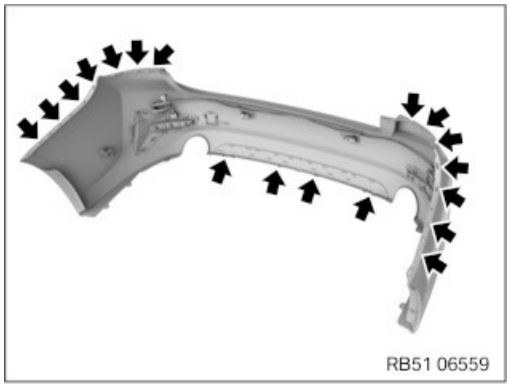
Hexagon screw for thermoplastic		Tightening torque	2,6 Nm

POSTPROCESSES

11 – Install rear bumper panel

Check

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- Check the latch mechanisms (arrows) for damage.

Result

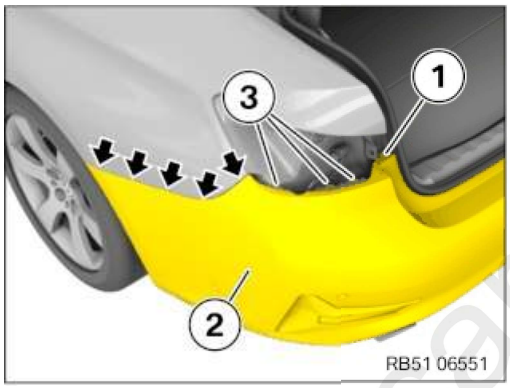
» Latch mechanisms are damaged.

Measure

- Renew the bumper panel.



- Position the bumper panel (1) straight with the help of another person.
- Connect all connectors and lock.



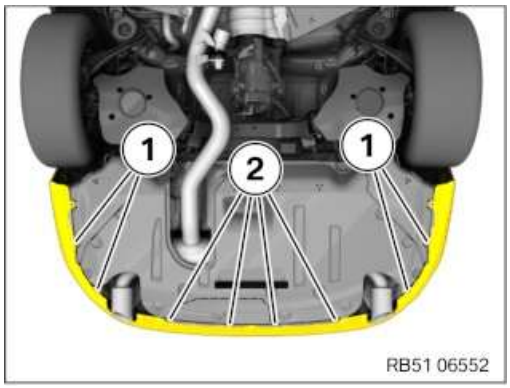
NOTICE

Perform the operations on the left and right side.

- Clip bumper panel (2) on the side in the latch mechanisms (arrows).
- Clip bumper panel (2) in the area of the rear light housing in latch mechanisms (3).
- Tighten down screw (1).

Rear bumper panel guide on rear centre guide

Hexagon screw for thermoplastic		Tightening torque	2,5 Nm



- Clip bumper panel into latch mechanisms (2).
- Tighten the screws (1).

Mounting for rear bumper panel on support for rear bumper panel

Hexagon screw for thermoplastic		Tightening torque	2,6 Nm

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NOTICE

Perform the operations on the left and right side.

- Tighten the screws (1).

Rear bumper panel to rear side panel

Hexagon screw for thermoplastic		Tightening torque	2,5 Nm

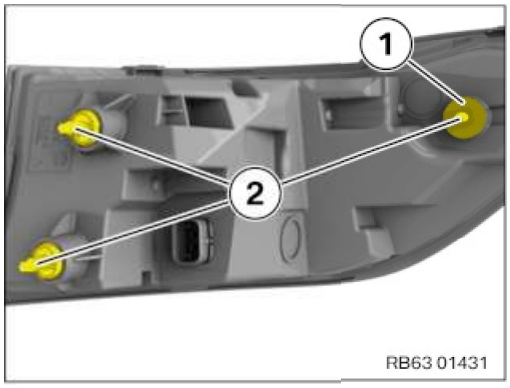
12 – Install both rear lights on the side panel

NOTICE

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

▸ **Install the rear light on the side panel**

Check



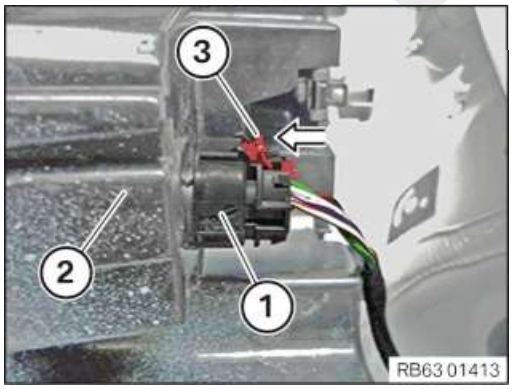
- Check the seal (1) for damage and renew if necessary.
- Check the threaded inserts (2) for damage.

Result

» The threaded inserts are damaged.

Measure

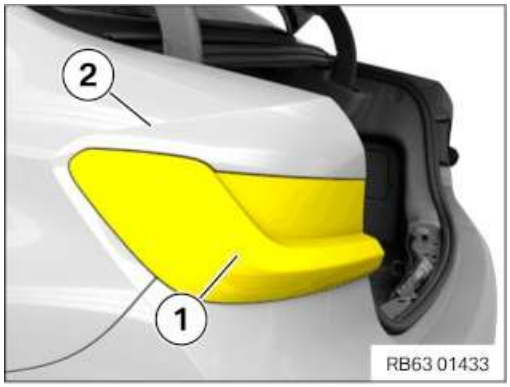
- Replace rear light.



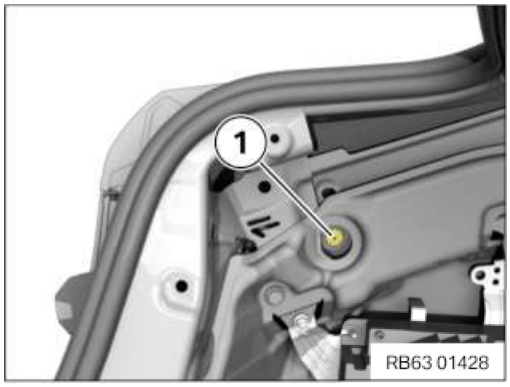
- Connect the connector (1) to the rear light on the side panel (2).

  The connector (1) must engage audibly.
- Lock the lock in direction of arrow (3).

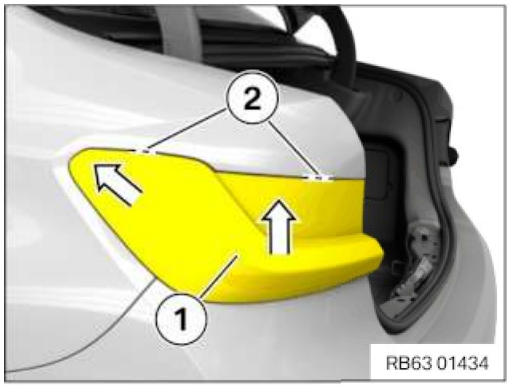
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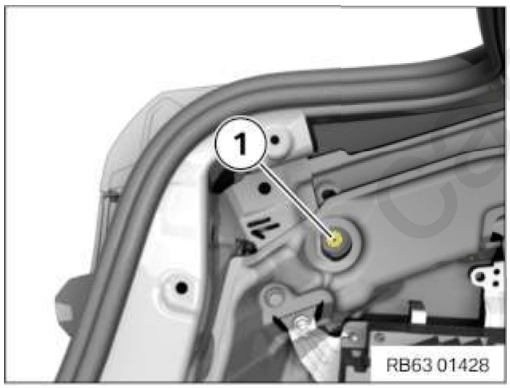
- Position the rear light on the side panel (1) on the side panel (2).



- Position the nut (1).



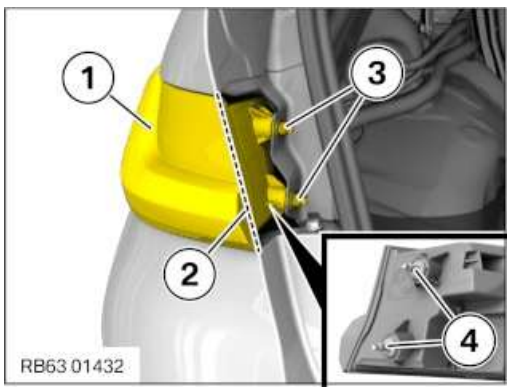
- Position the rear light on the side panel (1) to the front at the top.
- Move the contact surfaces (2) of the rear light on the side panel (1) upwards (arrow) so that they are in place.
- Hold the rear light on the side panel (1) in position.



- Tighten nut (1).

Rear light to side panel

Nut M5, AF 8		Tightening torque	3 Nm



- Position nuts (3).
- Align rear light on the side panel (1) with the connecting line (2).

  The alignment is done through threaded inserts (4) on the rear light on the side panel (2).
- If necessary, correct the position of the rear light on the side panel (1) by twisting threaded inserts (4).
- Tighten nuts (3).

Rear light to side panel

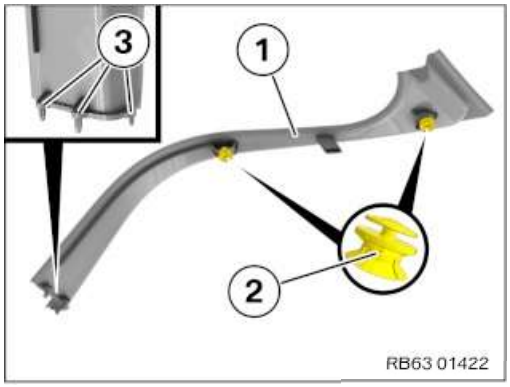
Nut M5, AF 10		Tightening torque	4 Nm

13 – Installing both trims of the water channel

NOTICE

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

▸ **Install the trim in the water channel**



Check

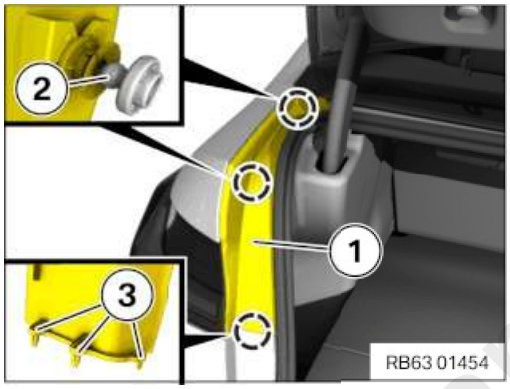
- Check the clips (2) for damage and renew if necessary.
- Check the guides (3) for damage.

Result

» The guides are damaged.

Measure

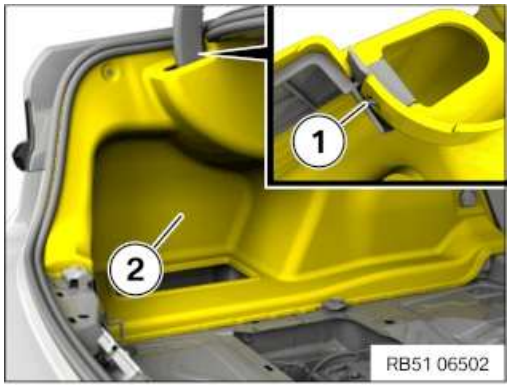
- Renew trim in the water channel .



- Insert the trim in the water channel (1) in the guides (3).
- Clip in the water channel trim (1) from the front into the ball pin (2).

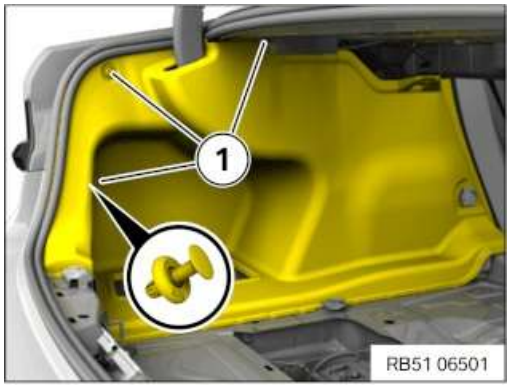
14 – Installing both luggage compartment wheel arch trim panels partially

▸ **Partially installing the left luggage compartment wheel arch trim panel**



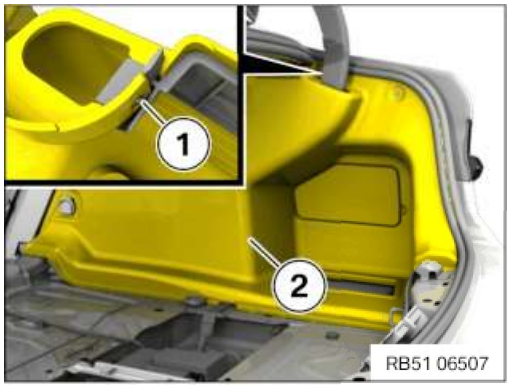
- Feed the luggage compartment wheel arch trim panel (2) in the rear area under the sealing lip of the seal of the tailgate.
- Feed the tab of the luggage compartment wheel arch trim panel (2) on the outer side of the hinge into the stop on the trim (1).

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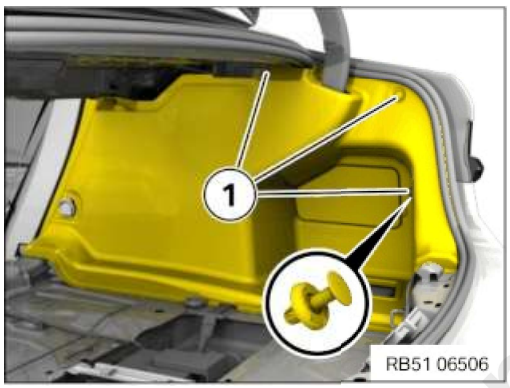


- Secure expanding rivet (1).

▶ **Partially installing right luggage compartment wheel arch trim panel**

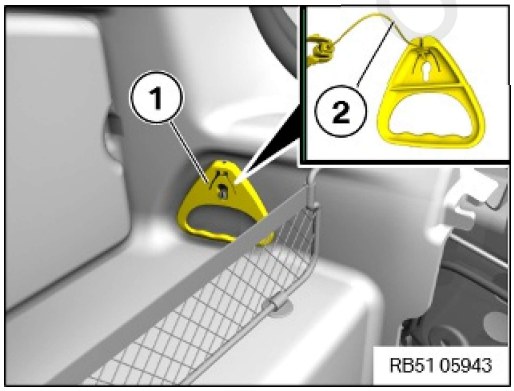


- Guide luggage compartment wheel arch trim panel (2) in the rear area under the sealing lip of the seal for tailgate.
- Feed the tab of the luggage compartment wheel arch trim panel (2) on the outer side of the hinge into the stop on the trim (1).



- Secure expanding rivet (1).

▷ **If installed: Installing the emergency tailgate release handle (additional work for US version)**

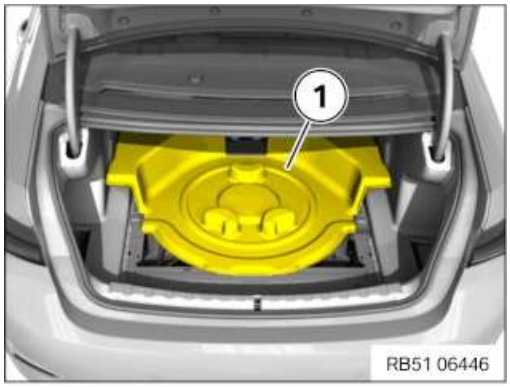


- Attach the Bowden cable (2).
- Fasten emergency tailgate release handle (1) to the bracket.

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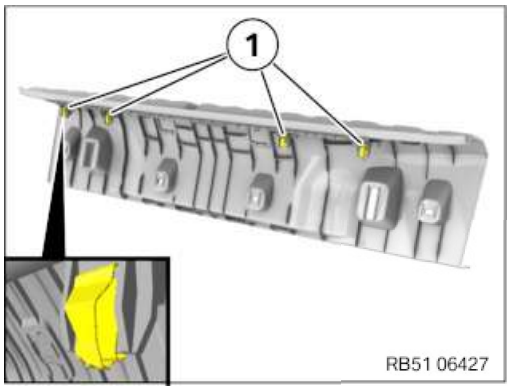
15 – Install the luggage compartment well in front

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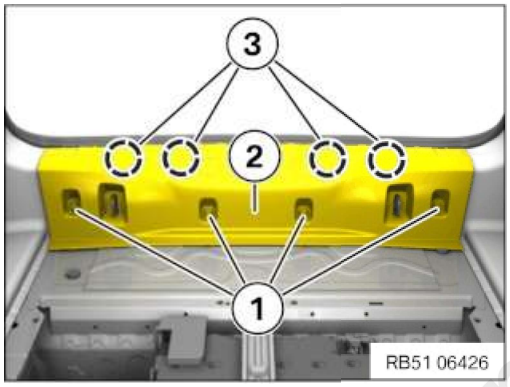


- Feed in and insert front luggage compartment well (1) on the seat belt strap.

16 – Installing loading edge trim

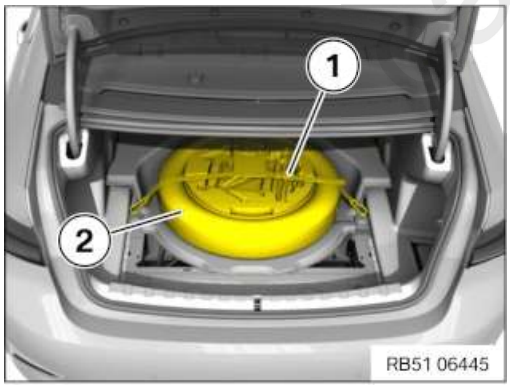


- Check the clamps (1) for damage and renew if necessary.



- Insert the loading edge trim (2) under the sealing lip of the tailgate seal.
- Fit the trim of the loading edge (2) at the latch mechanisms (3) and clip it in to the bottom.
- Secure expanding rivet (1).

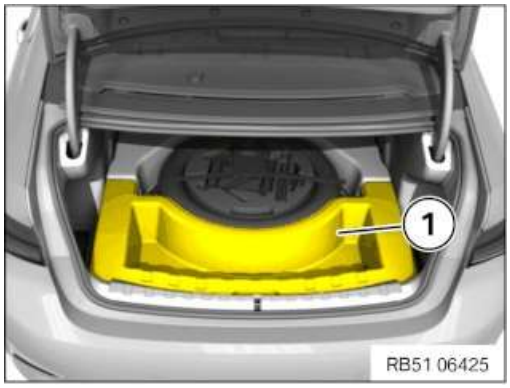
17 – If installed: Install the emergency wheel



- Install the emergency wheel (2) with the insert.
- Position the seat belt strap above the emergency wheel and close the buckle on the seat belt strap (1).

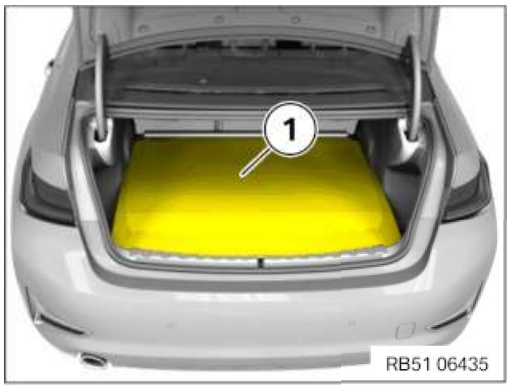
► **Installing rear luggage compartment well**

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- Install rear luggage compartment well (1).

18 – Installing the luggage compartment floor trim panel



- Insert the luggage compartment floor trim panel (1).

Additional Information

Overview of Tightening Torques

Mounting for rear bumper panel on support for rear bumper panel			Used in step 1011
Hexagon screw for thermoplastic		Tightening torque	2,6 Nm

Rear bumper panel guide on rear centre guide			Used in step 11
Hexagon screw for thermoplastic		Tightening torque	2,5 Nm

Rear bumper panel to rear side panel			Used in step 11
Hexagon screw for thermoplastic		Tightening torque	2,5 Nm

Rear light to side panel			Used in step 12
Nut M5, AF 8		Tightening torque	3 Nm

Rear light to side panel			Used in step 12
Nut M5, AF 10		Tightening torque	4 Nm

Links

Repair instructions	**Used in step**
61 13 ... Unlocking and disconnecting different plug connections	7

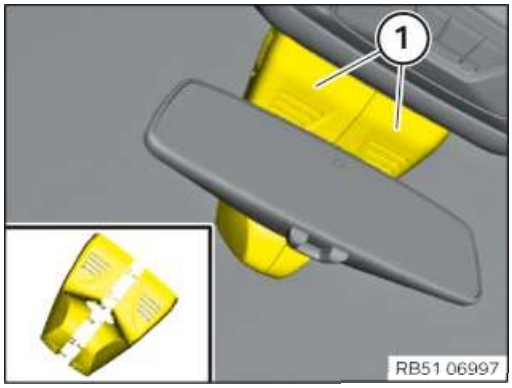
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61 35 179 Removing and installing the rain-light-solar-condensation sensor

PRELIMINARY WORK

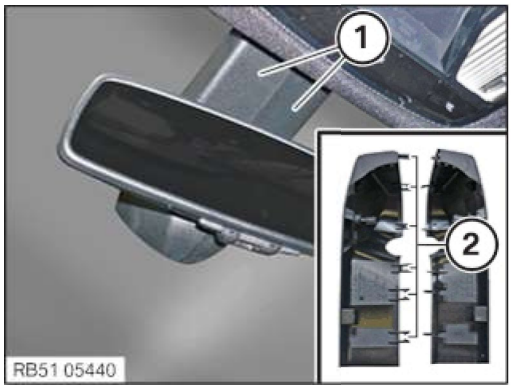
1 – Removing the covers for the interior mirror

- **Version A:**



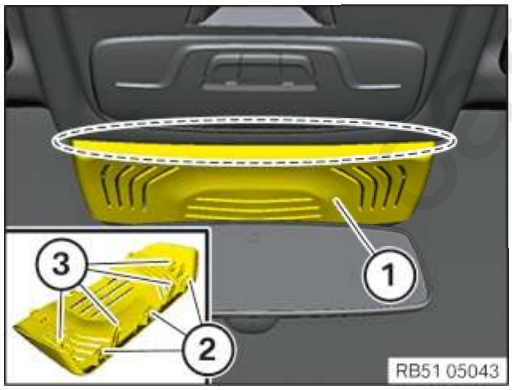
- Release the cover (1) at the centre from the latch mechanisms (2) with a suitable plastic wedge and remove.

- **Version B:**

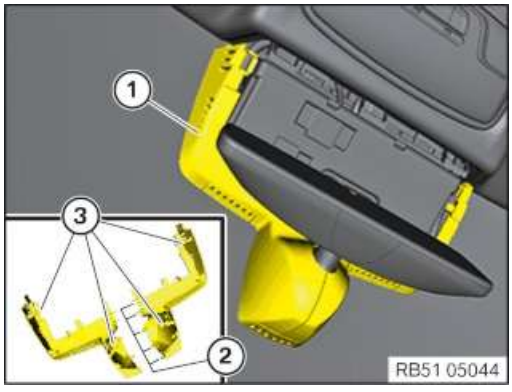


- Release the cover (1) from the latch mechanisms (2) with a suitable plastic wedge and remove sideways.

- **Version C:**



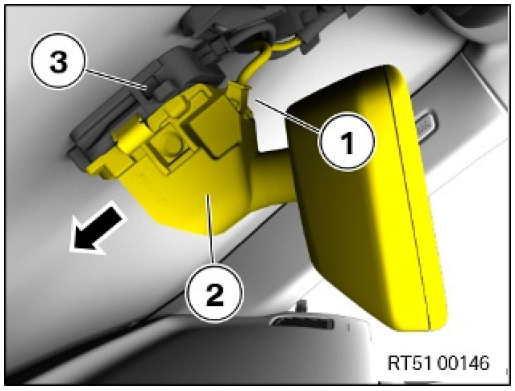
- Detach cover (1) from the clamps (2) in the marked area using a suitable plastic wedge and pull down a certain distance.
- Release cover (1) at the retaining lugs (3) and remove from the guides to the rear.



- Release cover (1) from the latch mechanisms (2) and (3) and remove sideways.
- Remove cover (1) from mirror base (2).

2 – Remove inside mirror

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TECHNICAL INFORMATION

Carry out the work at temperatures between 18 °C and 23 °C only.

- Unlock plug connection (1) and disconnect.

RISK OF DAMAGE

Damage to the component.

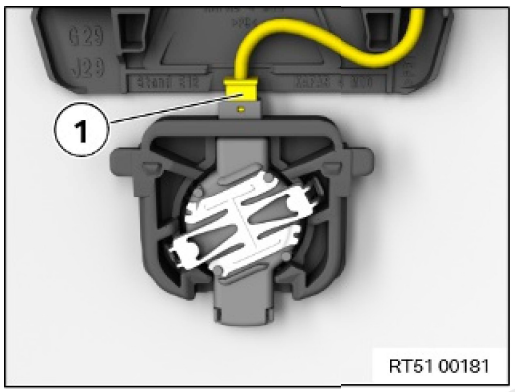
Excessive force may damage the component.

- Handle component carefully.

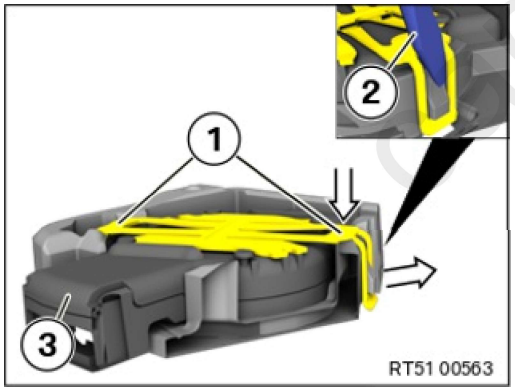
- Jerk and pull off the interior mirror (2) in the direction of the arrow from the mirror base (3).

MAIN WORK

3 – Remove rain-light-solar-condensation sensor



- Unlock plug connection (1) and disconnect.



- Push in retaining springs (1) on both sides and unlock the lock by means of a screwdriver (2) in the direction of the arrow.

RISK OF DAMAGE

Damage to silicone surface.

A damaged silicone surface can lead to malfunctioning of the rain-light-solar-condensation sensor.

- Do not touch or damage the silicone-coated surface on the rain-light-solar-condensation sensor.
- After releasing lock, wait approx. 30 min. at 20°C for silicone surface to relax.

- Pull the rain-light-solar-condensation sensor (3) slowly off the windscreen. At the same time, monitor the release of the silicone area from outside.

  The silicone surface must evenly loosen from the windscreen, if applicable, lower the pull-off force.

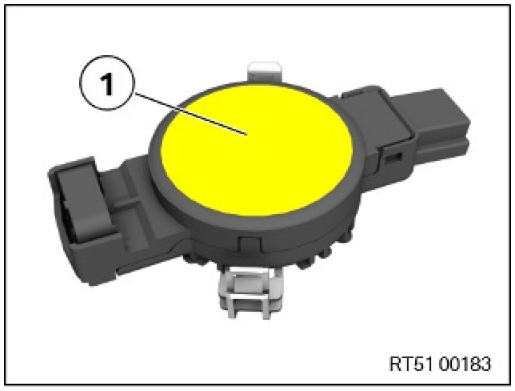
- Feed the rain-light-solar-condensation sensor (3) out of the holder.

Note: When replacing windscreen: Immediately install the rain-light-solar-condensation sensor on the new windscreen.

4 – Installing the rain-light-solar-condensation sensor

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4 – Installing the rain-light-solar-condensation sensor



Check

RISK OF DAMAGE

Damage to silicone surface.

A damaged silicone surface can lead to malfunctioning of the rain-light-solar-condensation sensor.

- Do not touch or damage the silicone-coated surface on the rain-light-solar-condensation sensor.
- After releasing lock, wait approx. 30 min. at 20°C for silicone surface to relax.

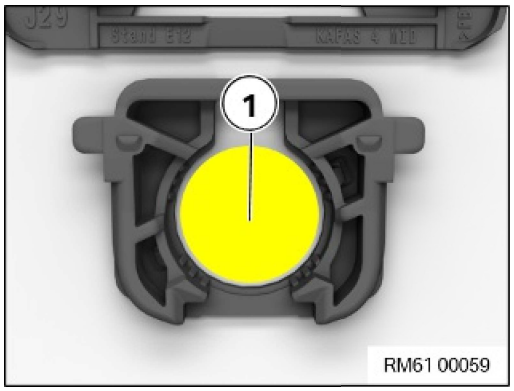
- Check silicon surface (1) for damage.

Result

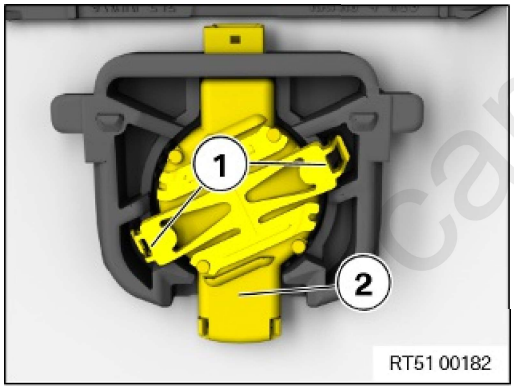
» Silicone surface (1) is damaged.

Measure

- Replace rain-light-solar-condensation sensor.

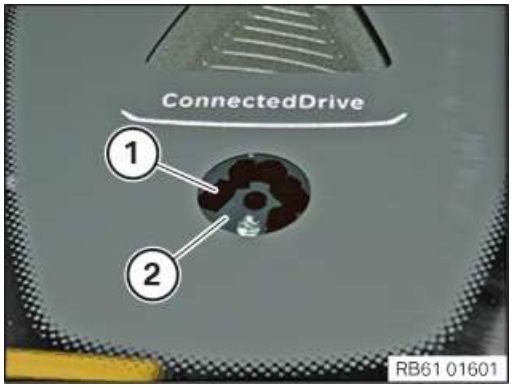


- Carefully clean windscreen in the contact area (1) of rain-light-solar-condensation sensor.



- Insert the rain-light-solar-condensation sensor (2) into the holder and press on centred on the retaining springs (1).
- Successively press down the retaining springs (1) on each side to lock it.

Check



- Check contact surfaces for air pockets from the outside.

  Visible shadows (1) are not air pockets, but the optical element of the rain-light-solar-condensation sensor (2). The shades (1) do not represent any functional limitation.

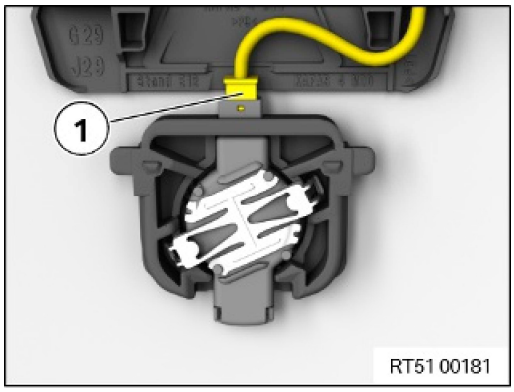
Result

» Contact surface has air pockets.

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Measure

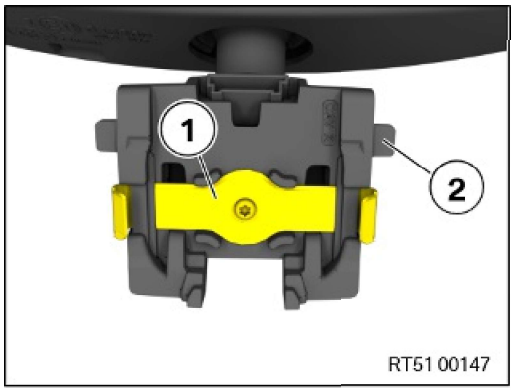
- Remove the rain-light-solar-condensation sensor and install again.



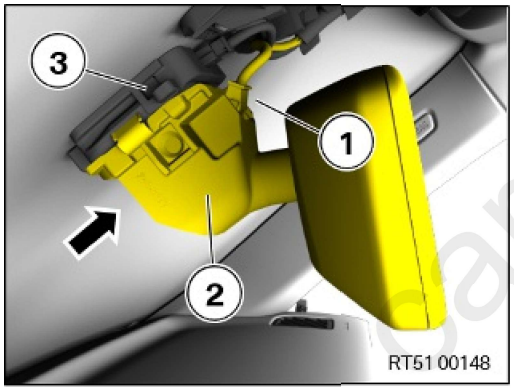
- Connect connectors (1) and lock.

POSTPROCESSES

5 – Install interior mirror



- Check the clamp (1) on both sides of the mirror base (2) for damage and renew as needed.



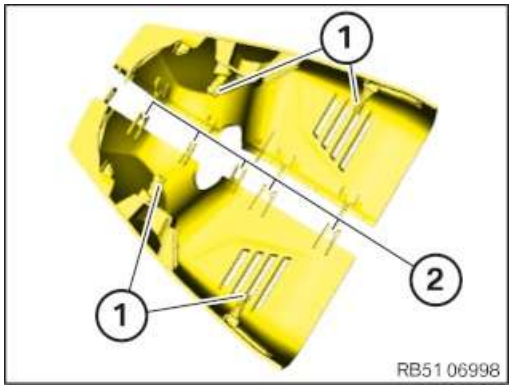
TECHNICAL INFORMATION

Carry out the work at temperatures between 18 °C and 23 °C only.

- Position the interior mirror (2) at the mirror base and slide it on in direction of the arrow.
- Check the correct installation position of the interior mirror (2) at the mirror base (3).
- Connect connectors (1) and lock.

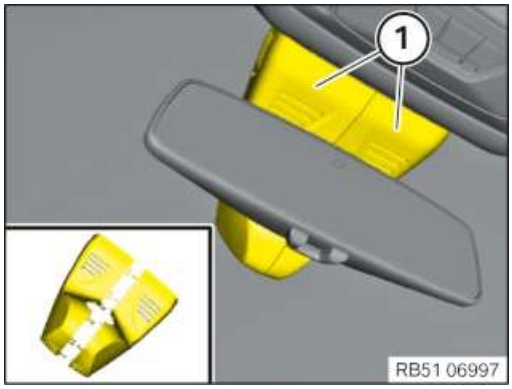
6 – Installing the covers for the interior mirror

- **Version A:**



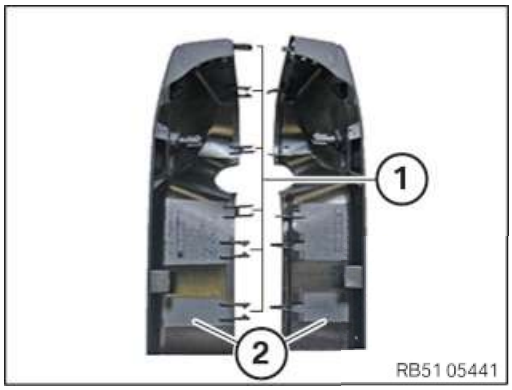
- Check latch mechanisms (1) and (2).
- If the latch mechanisms (1) or (2) are faulty, renew the covers.

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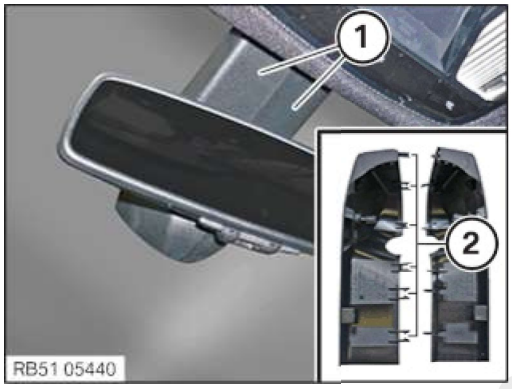
- Feed cover (1) in and lock.

- **Version B:**



- Check the latch mechanisms (1) on the two covers (2) for damage, renew the covers (2) if necessary.

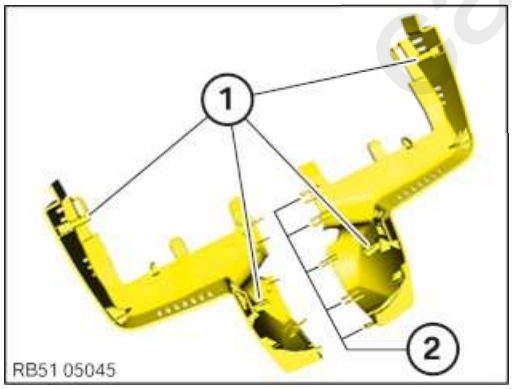
  The covers (2) must not be damaged or missing.



- Position the covers (1) correctly on the mirror and engage with the latch mechanisms (2).

- **Version C:**

Check



- Check the latch mechanisms (1) and (2) of the covers for damage.

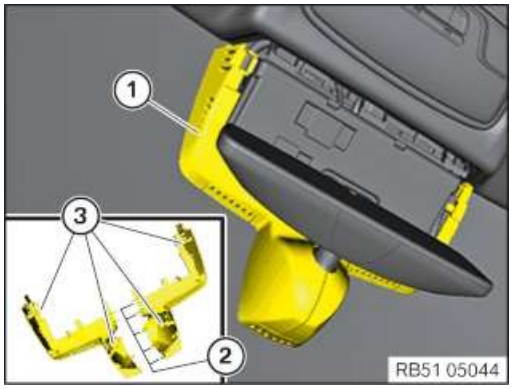
Result

» The latch mechanism is damaged.

Measure

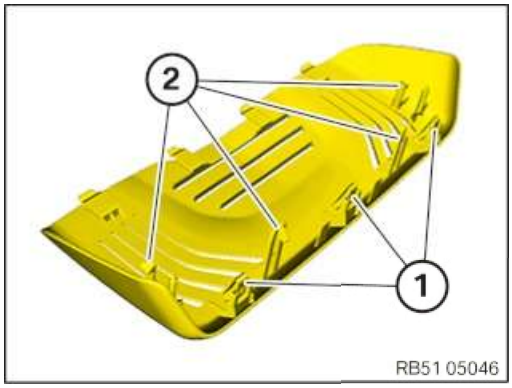
- Renew the cover.

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- Guide in cover (1) on left and right and engage using latch mechanisms (2) and (3).

Check



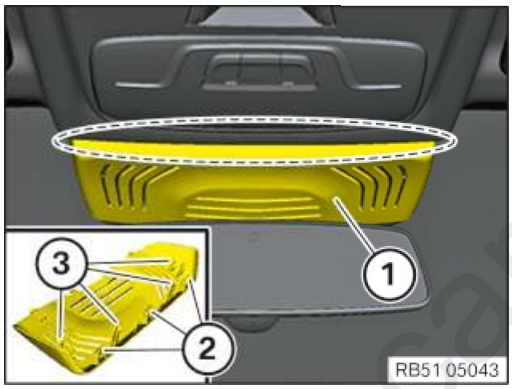
- Check clamps (1) for damage; renew if necessary.
- Check latch mechanisms (2) for damage.

Result

» The latch mechanism is damaged.

Measure

- Renew the cover.



- Guide cover (1) into front guides and engage using retaining lugs (3) and clamps (2).

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61 35 243 Removing and installing top non-contact tailgate opening sensor line

PRELIMINARY WORK

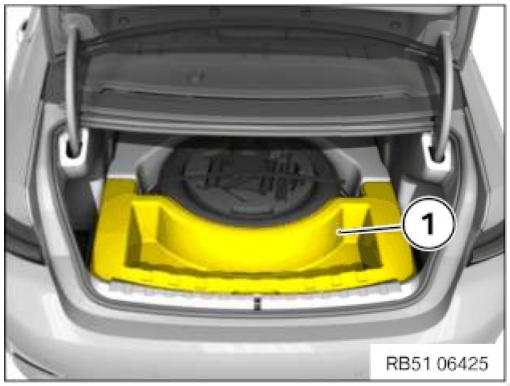
1 – Removing the luggage compartment floor trim panel



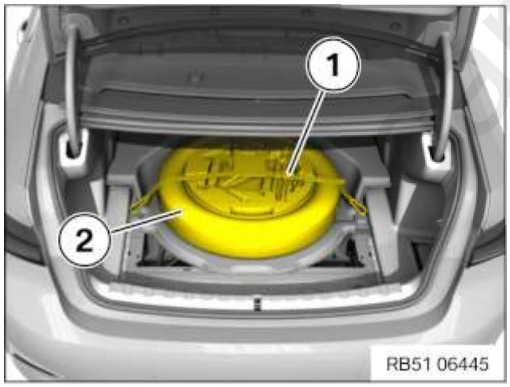
- Remove luggage compartment floor trim panel (1).

2 – If installed: Removing the compact spare wheel

▸ **Removing rear luggage compartment well**

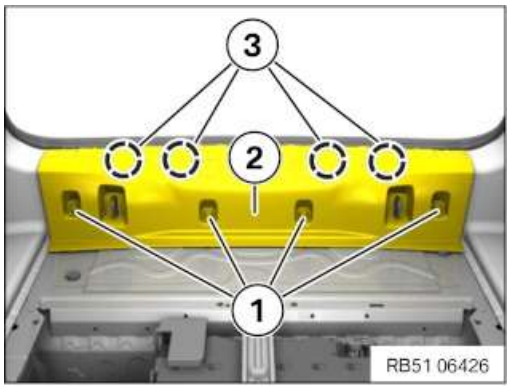


- Remove rear luggage compartment well (1).



- Open buckle on seat belt strap (1) and set it aside.
- Remove emergency wheel (2) with the insert.

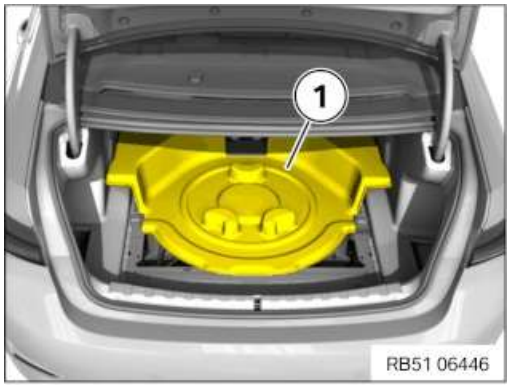
3 – Removing the loading edge trim



- Loosen the expanding rivet (1).
- Unclip loading edge trim(2) upwards from latch mechanisms (3).
- Guide out and remove loading edge trim (2) under the sealing lip of the tailgate seal.

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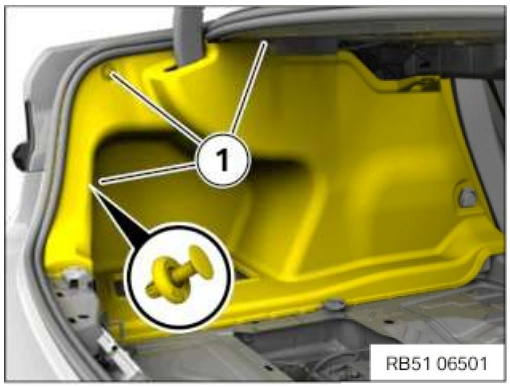
4 – Removing front luggage compartment well



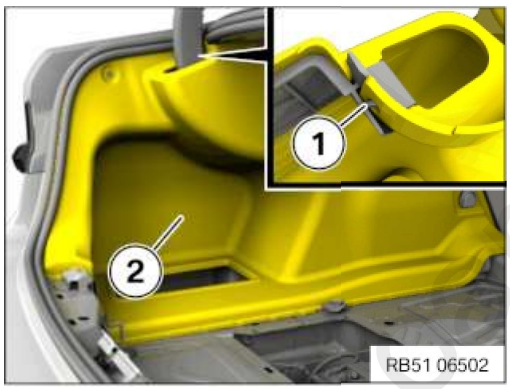
- Guide out and remove front luggage compartment well (1) on the seat belt strap.

5 – Removing both luggage compartment wheel arch trim panels partially

▸ Partially remove luggage compartment wheel arch trim on left



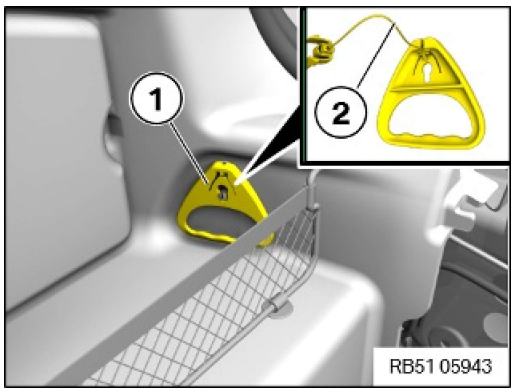
- Loosen the expanding rivet (1).



- Press the tab for luggage compartment wheel arch trim panel (2) on the outer side of the hinge to the front using the stop on trim (1).
- Guide out luggage compartment wheel arch trim panel (2) under the sealing lip of the tailgate seal and release it in the rear area.

▸ Partially remove luggage compartment wheel arch panel on right

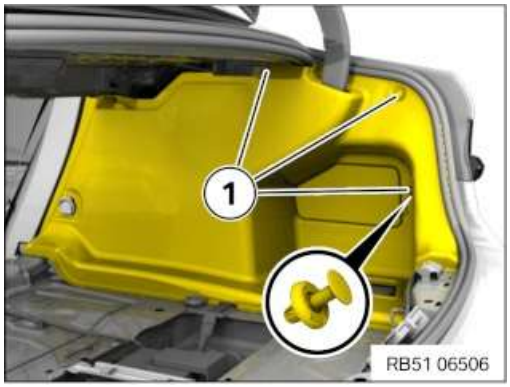
▹ If installed: Remove the emergency release handle for the tailgate (additional work in the US version)



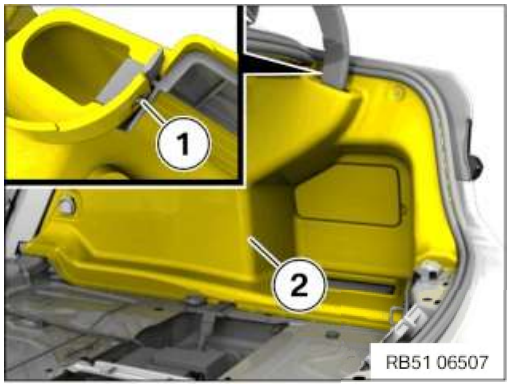
- Release the emergency release handle for tailgate (1) from the holder.
- Detach Bowden cable (2) and remove the emergency release handle for tailgate (1).

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- Loosen the expanding rivet (1).



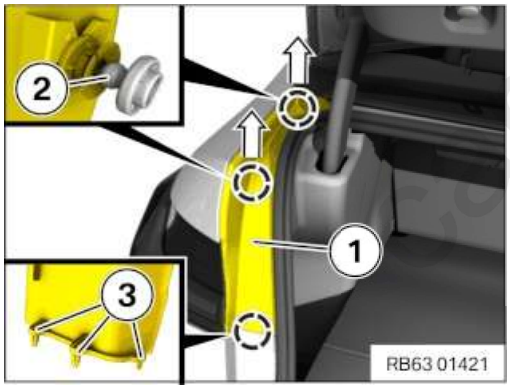
- Press the tab for luggage compartment wheel arch trim panel (2) on the outer side of the hinge to the front using the stop on trim (1).
- Guide out luggage compartment wheel arch trim panel (2) under the sealing lip of the tailgate seal and release it in the rear area.

6 – Removing both trims of water channel

NOTICE

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

▸ **Remove the trim in the water channel**



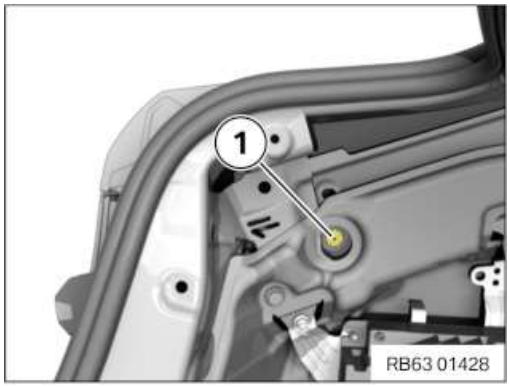
- Unclip the trim in the water channel (1) from the ball pins (2) towards the top.
- Release the trim in the water channel (1) from the guides (3) and remove it.

7 – Remove both rear lights from the side panel

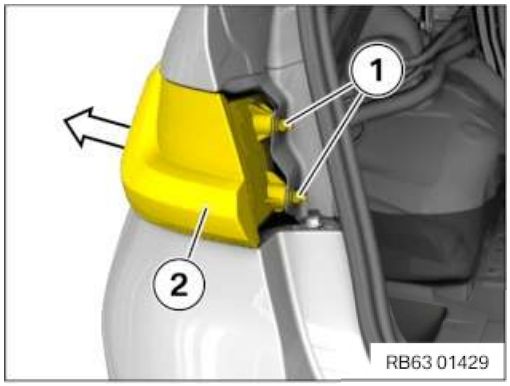
NOTICE

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

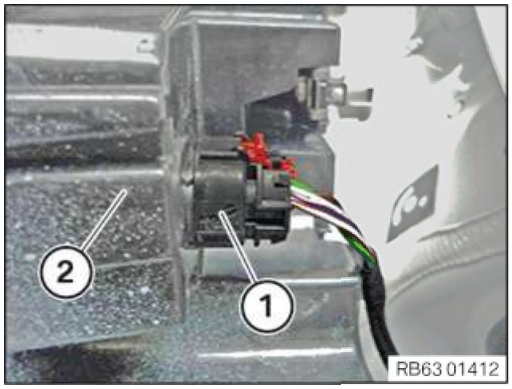
▸ **Remove the rear light on the side panel**



- Loosen nut (1).



- Release the nuts (1) and feed out the rear light on the side panel (2) in the direction of arrow.



TECHNICAL INFORMATION

Observe note on unlocking and disconnecting plug connections.
For additional information see: 6113 ... Unlocking and disconnecting different plug connections

- Unlock and disconnect plug connection (1) as described in position #28 in additional information.
- Remove the rear light on the side panel (2).

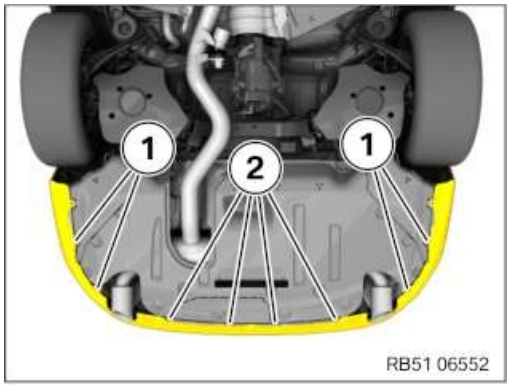
8 – Remove rear bumper panel



NOTICE

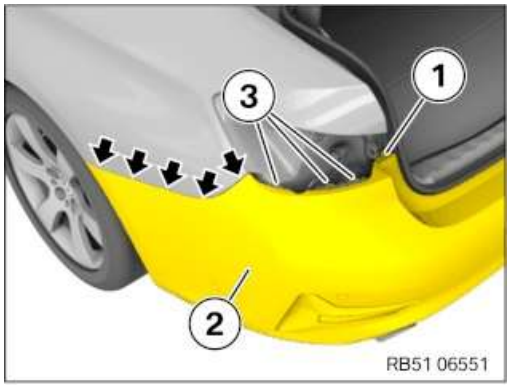
Perform the operations on the left and right side.

- Loosen screws (1).



- Loosen screws (1).
- Release the bumper panel on latch mechanisms (2) with a suitable tool.

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NOTICE

Perform the operations on the left and right side.

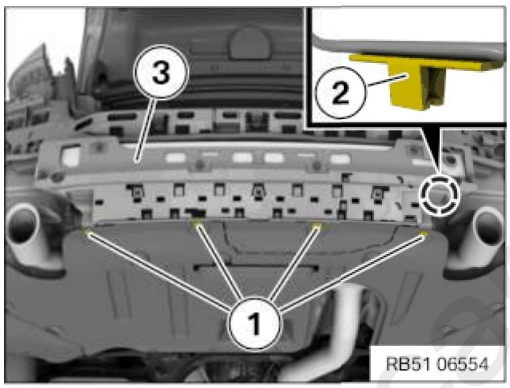
- Loosen screw (1).
- Release bumper panel (2) in the area of the rear light housing from latch mechanisms (3) with a suitable tool.
- Release side bumper panel (2) from the remaining latch mechanisms (arrows).



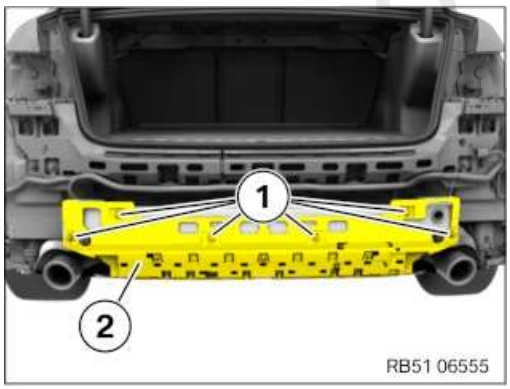
- Remove bumper panel (2) straight to the rear with the help of an auxiliary person.
- Unlock all plug connections and disconnect.
- Remove the bumper panel (1).

MAIN WORK

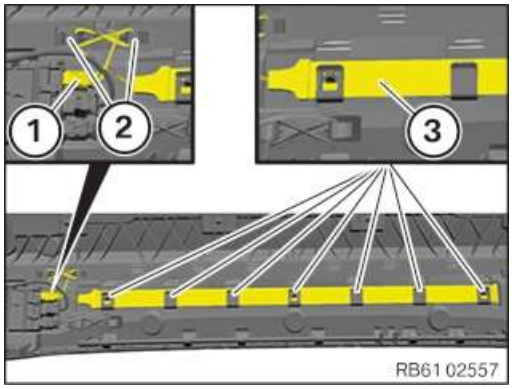
9 – Remove the sensor line for the contactless tailgate opening (top)



- Loosen screws (1).
- Unclip the cable clip (2) on the inside of the brace for the rear bumper (3).

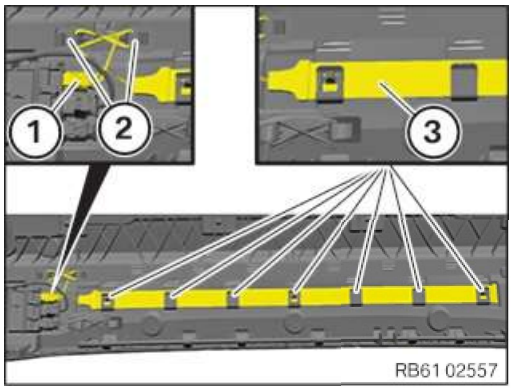


- Open expanding rivets (1) and remove the brace for the rear bumper (2).

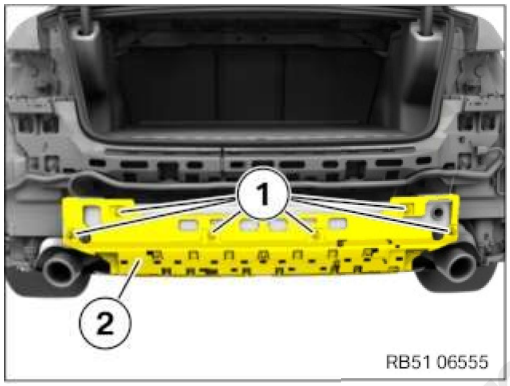


- Unlock and disconnect connector (1).
- Release cable from brackets (2).
- Unclip top sensor line (3) upwards.

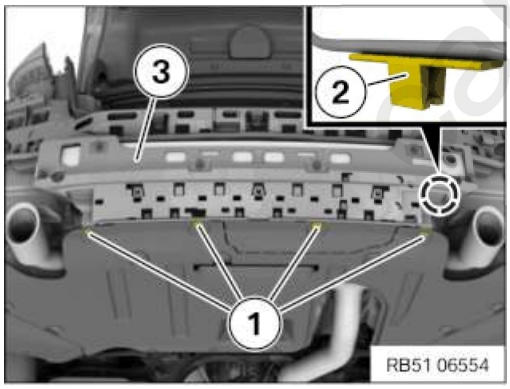
10 – Install the sensor line for the contactless tailgate opening (top)



- Clip in top sensor line (3) from above.
- Fasten the cable at the clips (2).
- Connect connector (1).



- Position brace for the rear bumper (2) on the support.
- Install the expanding rivet (1).



- Clip in the cable clip (2) on the inside of the brace for the rear bumper (3).
- Tighten the screws (1).

Mounting for rear bumper panel on support for rear bumper panel

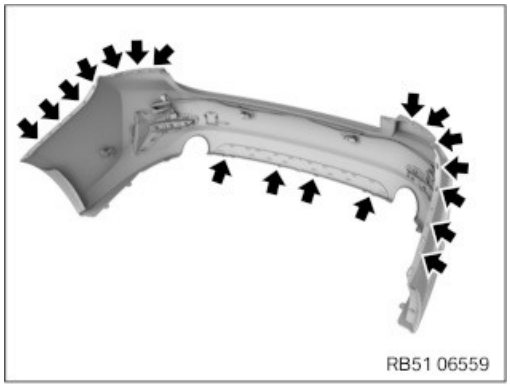
Hexagon screw for thermoplastic		Tightening torque	2,6 Nm

POSTPROCESSES

11 – Install rear bumper panel

Check

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- Check the latch mechanisms (arrows) for damage.

Result

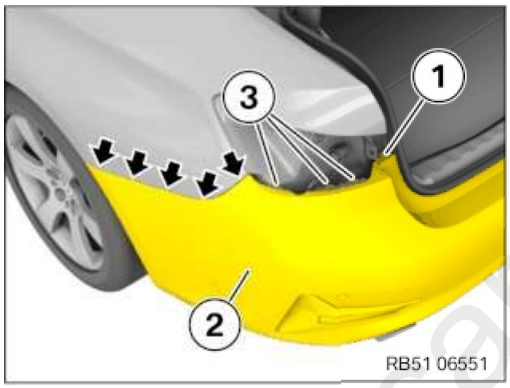
» Latch mechanisms are damaged.

Measure

- Renew the bumper panel.



- Position the bumper panel (1) straight with the help of another person.
- Connect all connectors and lock.



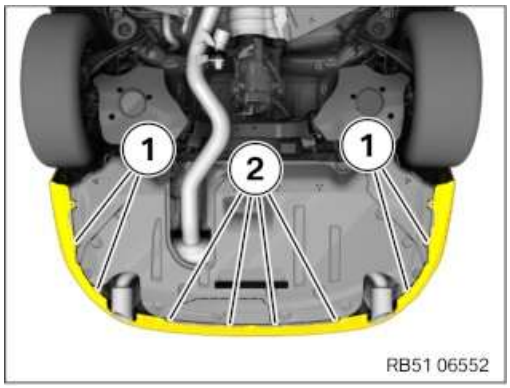
NOTICE

Perform the operations on the left and right side.

- Clip bumper panel (2) on the side in the latch mechanisms (arrows).
- Clip bumper panel (2) in the area of the rear light housing in latch mechanisms (3).
- Tighten down screw (1).

Rear bumper panel guide on rear centre guide

Hexagon screw for thermoplastic		Tightening torque	2,5 Nm



- Clip bumper panel into latch mechanisms (2).
- Tighten the screws (1).

Mounting for rear bumper panel on support for rear bumper panel

Hexagon screw for thermoplastic		Tightening torque	2,6 Nm

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NOTICE

Perform the operations on the left and right side.

- Tighten the screws (1).

Rear bumper panel to rear side panel

Hexagon screw for thermoplastic		Tightening torque	2,5 Nm

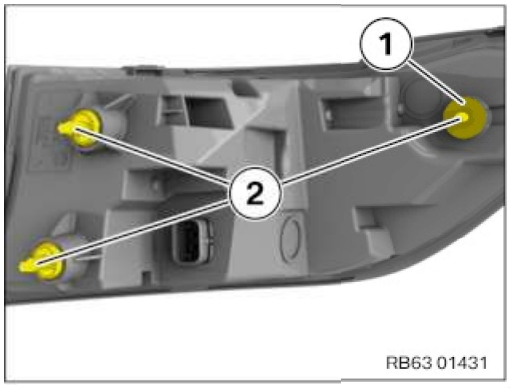
12 – Install both rear lights on the side panel

NOTICE

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

▸ **Install the rear light on the side panel**

Check



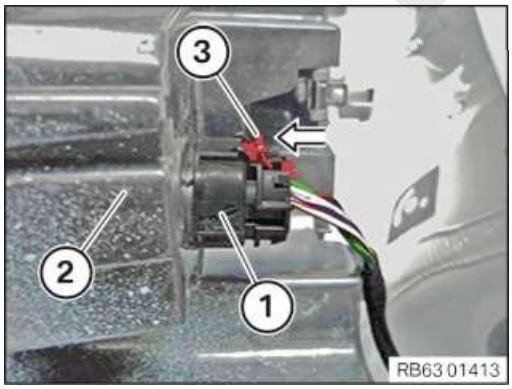
- Check the seal (1) for damage and renew if necessary.
- Check the threaded inserts (2) for damage.

Result

» The threaded inserts are damaged.

Measure

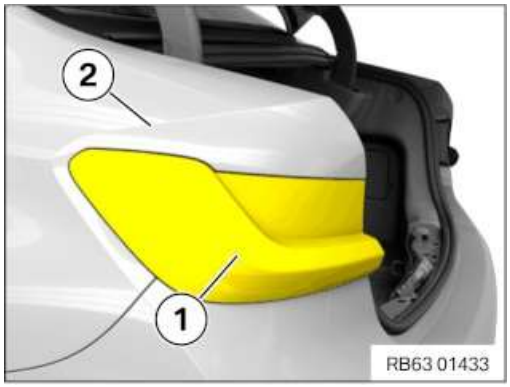
- Replace rear light.



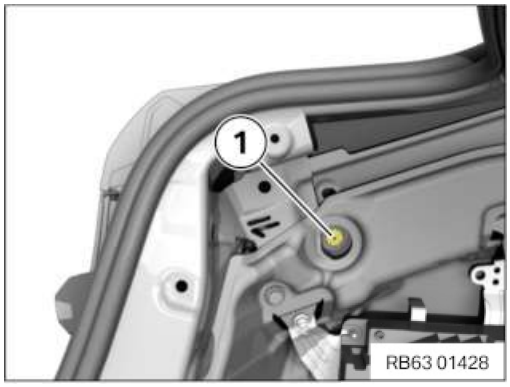
- Connect the connector (1) to the rear light on the side panel (2).

  The connector (1) must engage audibly.
- Lock the lock in direction of arrow (3).

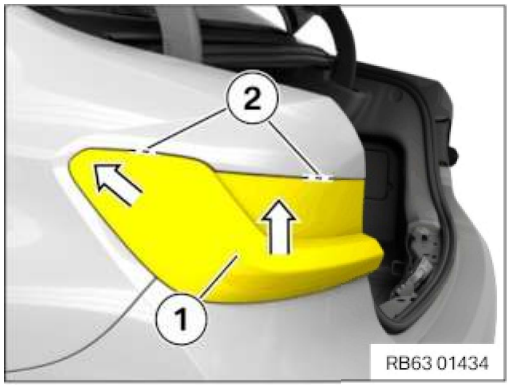
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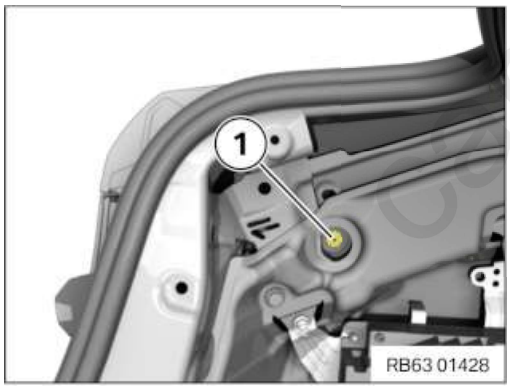
- Position the rear light on the side panel (1) on the side panel (2).



- Position the nut (1).



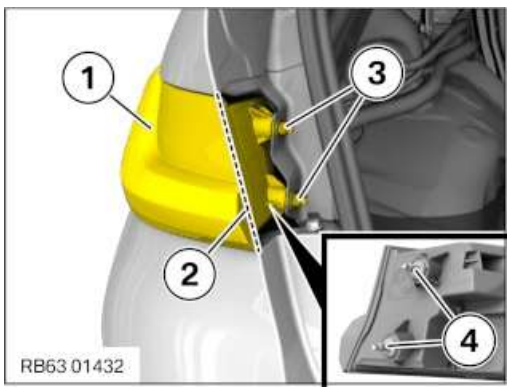
- Position the rear light on the side panel (1) to the front at the top.
- Move the contact surfaces (2) of the rear light on the side panel (1) upwards (arrow) so that they are in place.
- Hold the rear light on the side panel (1) in position.



- Tighten nut (1).

Rear light to side panel

Nut M5, AF 8		Tightening torque	3 Nm



- Position nuts (3).
- Align rear light on the side panel (1) with the connecting line (2).

  The alignment is done through threaded inserts (4) on the rear light on the side panel (2).
- If necessary, correct the position of the rear light on the side panel (1) by twisting threaded inserts (4).
- Tighten nuts (3).

Rear light to side panel

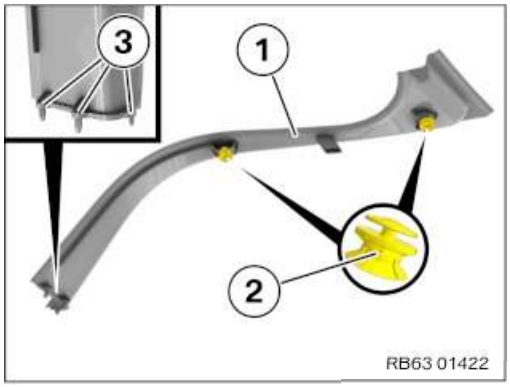
Nut M5, AF 10		Tightening torque	4 Nm

13 – Installing both trims of the water channel

NOTICE

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

▸ **Install the trim in the water channel**



Check

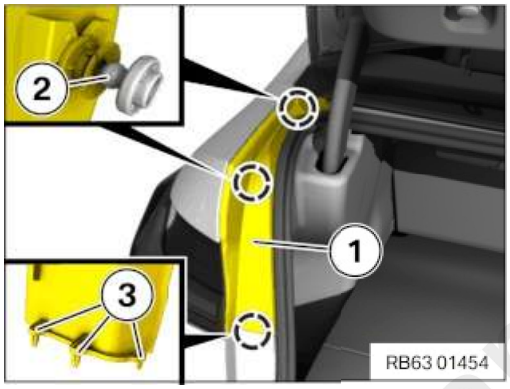
- Check the clips (2) for damage and renew if necessary.
- Check the guides (3) for damage.

Result

» The guides are damaged.

Measure

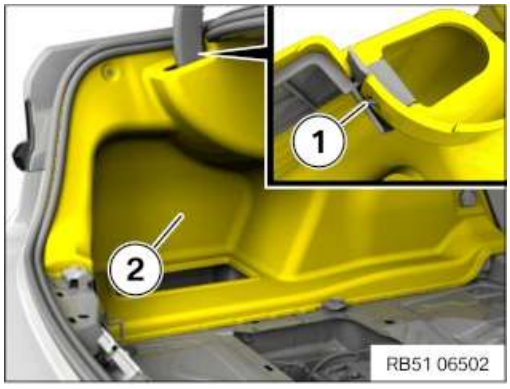
- Renew trim in the water channel .



- Insert the trim in the water channel (1) in the guides (3).
- Clip in the water channel trim (1) from the front into the ball pin (2).

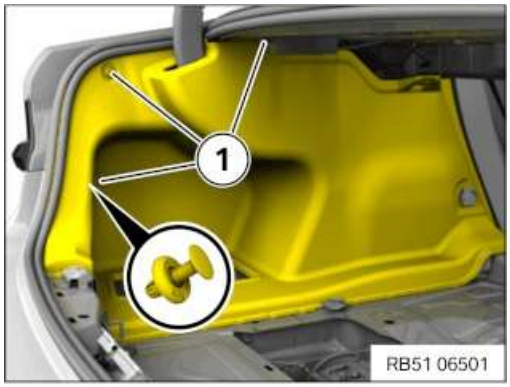
14 – Installing both luggage compartment wheel arch trim panels partially

▸ **Partially installing the left luggage compartment wheel arch trim panel**



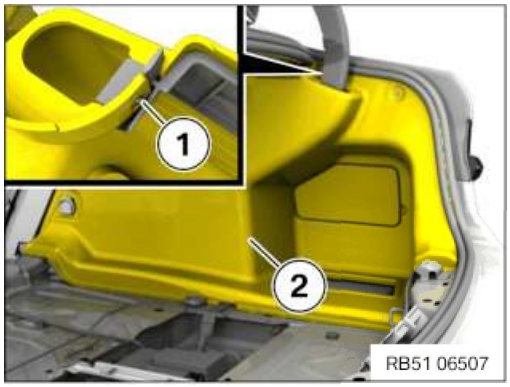
- Feed the luggage compartment wheel arch trim panel (2) in the rear area under the sealing lip of the seal of the tailgate.
- Feed the tab of the luggage compartment wheel arch trim panel (2) on the outer side of the hinge into the stop on the trim (1).

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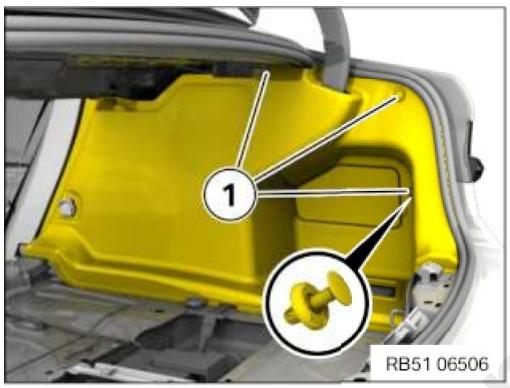


- Secure expanding rivet (1).

▶ **Partially installing right luggage compartment wheel arch trim panel**

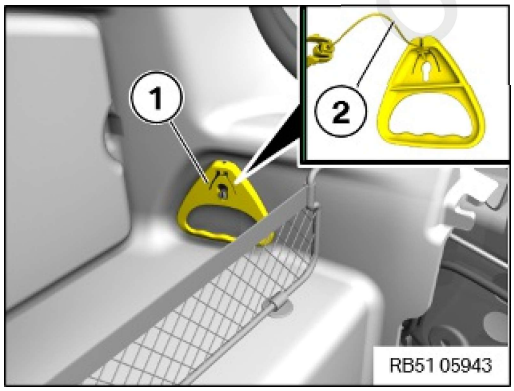


- Guide luggage compartment wheel arch trim panel (2) in the rear area under the sealing lip of the seal for tailgate.
- Feed the tab of the luggage compartment wheel arch trim panel (2) on the outer side of the hinge into the stop on the trim (1).



- Secure expanding rivet (1).

▷ **If installed: Installing the emergency tailgate release handle (additional work for US version)**

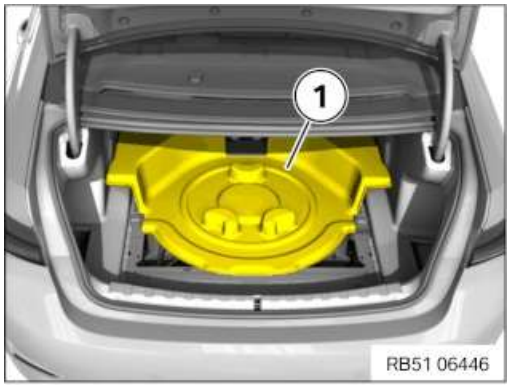


- Attach the Bowden cable (2).
- Fasten emergency tailgate release handle (1) to the bracket.

◁

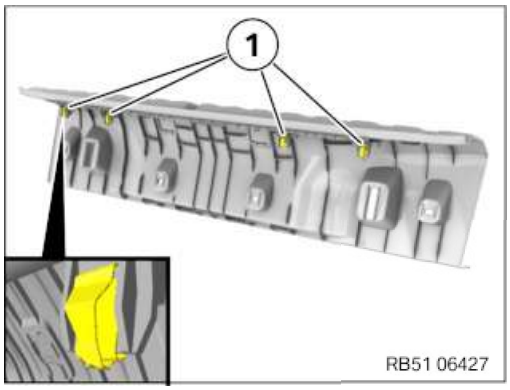
15 – Install the luggage compartment well in front

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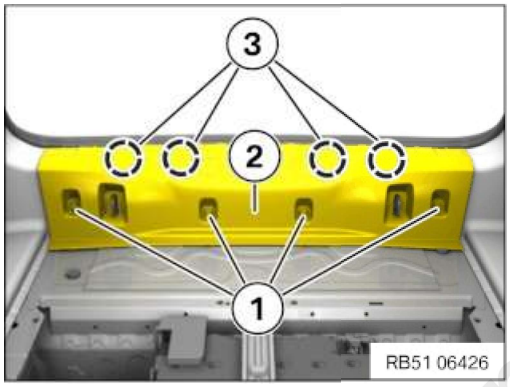


- Feed in and insert front luggage compartment well (1) on the seat belt strap.

16 – Installing loading edge trim

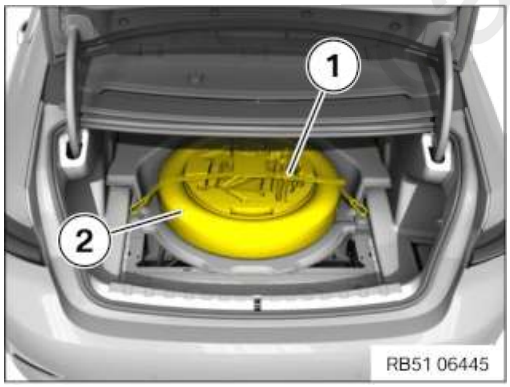


- Check the clamps (1) for damage and renew if necessary.



- Insert the loading edge trim (2) under the sealing lip of the tailgate seal.
- Fit the trim of the loading edge (2) at the latch mechanisms (3) and clip it in to the bottom.
- Secure expanding rivet (1).

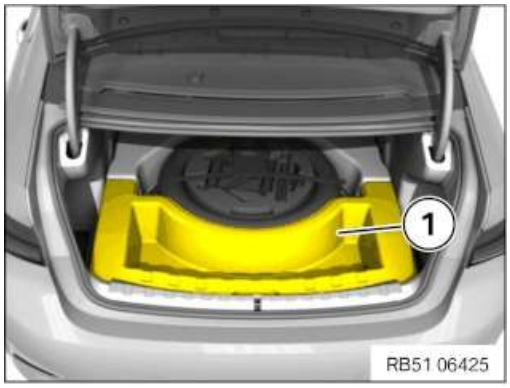
17 – If installed: Install the emergency wheel



- Install the emergency wheel (2) with the insert.
- Position the seat belt strap above the emergency wheel and close the buckle on the seat belt strap (1).

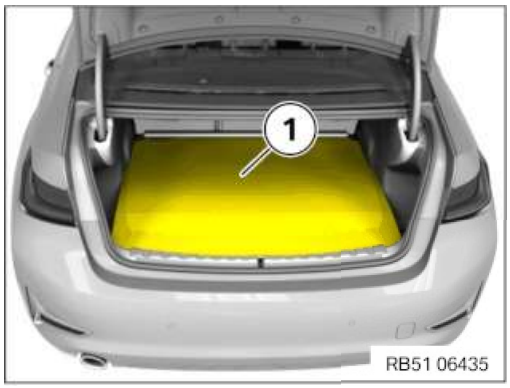
► **Installing rear luggage compartment well**

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- Install rear luggage compartment well (1).

18 – Installing the luggage compartment floor trim panel



- Insert the luggage compartment floor trim panel (1).

Additional Information

Overview of Tightening Torques

Mounting for rear bumper panel on support for rear bumper panel			Used in step 1011
Hexagon screw for thermoplastic		Tightening torque	2,6 Nm

Rear bumper panel guide on rear centre guide			Used in step 11
Hexagon screw for thermoplastic		Tightening torque	2,5 Nm

Rear bumper panel to rear side panel			Used in step 11
Hexagon screw for thermoplastic		Tightening torque	2,5 Nm

Rear light to side panel			Used in step 12
Nut M5, AF 8		Tightening torque	3 Nm

Rear light to side panel			Used in step 12
Nut M5, AF 10		Tightening torque	4 Nm

Links

Repair instructions	**Used in step**
61 13 ... Unlocking and disconnecting different plug connections	7

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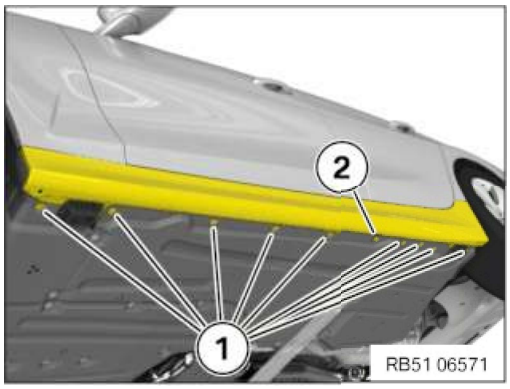
61 35 980 Removing and installing/replacing aerial for Comfort Access on left or right

NOTICE

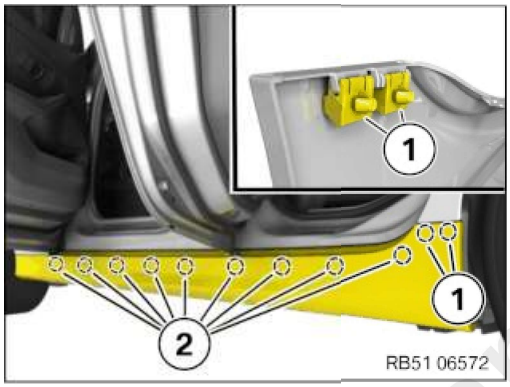
Description is for left component only. Procedure on the right side is identical.

PRELIMINARY WORK

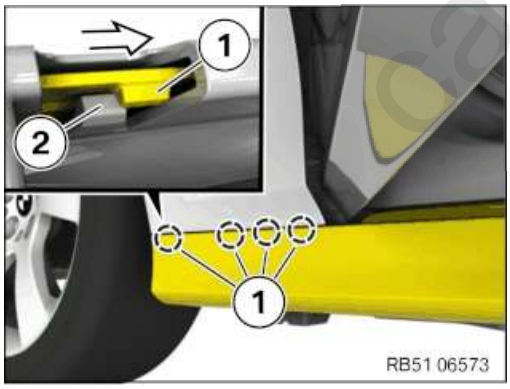
1 – Removing the side sill trim panel



- Loosen screws (1).
- Loosen nut (2).



- Using a suitable tool, unclip the side sill trim panel starting from the rear with holding clips (1) and from holding clips (2).

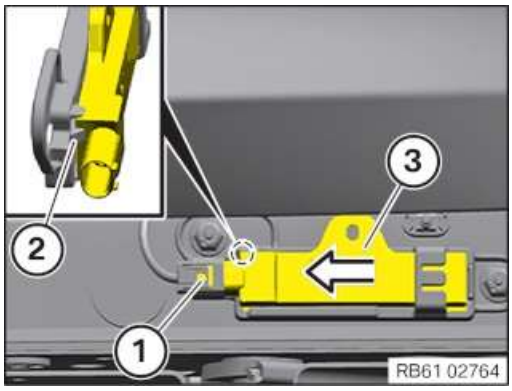


- Slide the side sill trim panel to the front in the direction of the arrow to release latch mechanisms (1) from supporting strip (2).
- Remove the side sill trim panel with the assistance of a second person.

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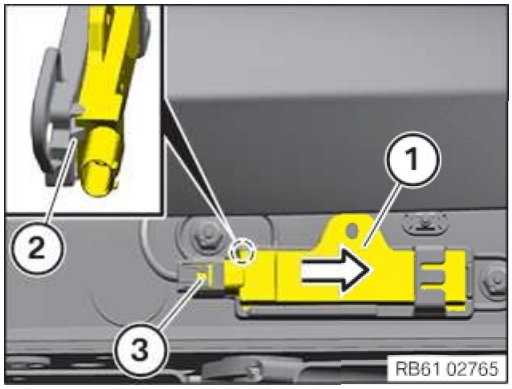
MAIN WORK

2 – Removing aerial for Car Access System (CAS)



- Unlock and disconnect connector (1).
- Release the latch mechanism (2) and remove the aerial (3) in direction of arrow.

3 – Install the aerial for the Car Access System (CAS)

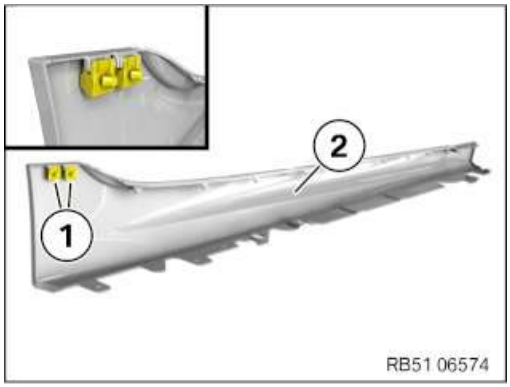


- Install the aerial (2) in the direction of the arrow.
- Check the latch mechanism (2) is fitted correctly.
- Connect connector (3).

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POSTPROCESSES

4 – Installing the side sill trim panel



Check

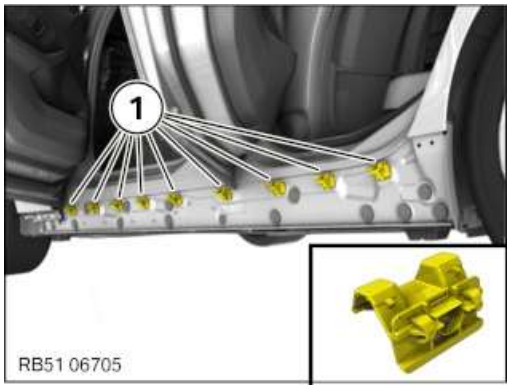
- Check holding clips (1) on the side sill trim panel (2) for damage.

Result

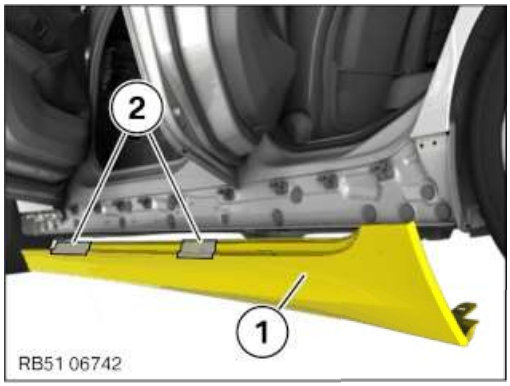
» Holding clip is damaged.

Measure

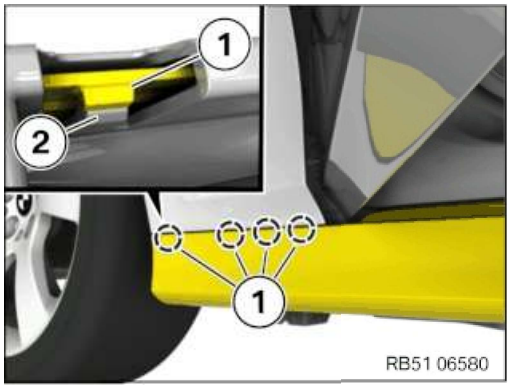
- Replace retaining clip.



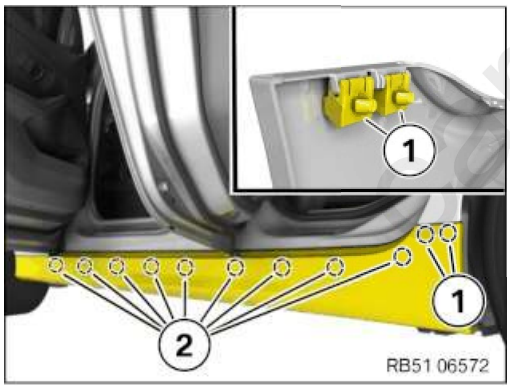
- Check the holding clips (1) for damage and renew if necessary.
- If necessary, clip the holding clips (1) into the body.



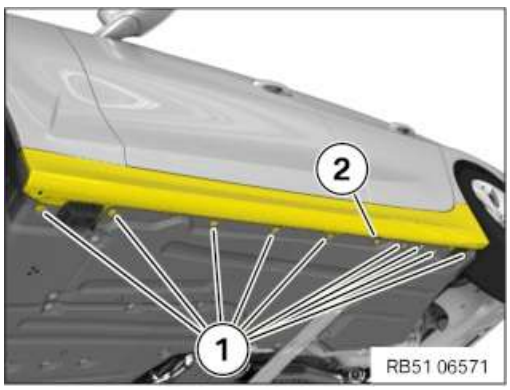
- Mask off side sill trim panel (1) in the areas (2) with adhesive tape.



- Position the side sill trim panel.
- Clip front side sill trim panel with the latch mechanisms (1) into the supporting strip (2).



- Continue to clip side sill trim panel into the holding clips (2) at the rear.
- Clip side sill trim panel with clips (1) into the body.



- Tighten nut (2).

Side sill trim panel to body

Plastic nut with flange for coarse thread		Tightening torque	2,5 Nm

- Tighten the screws (1).

Side sill trim panel to body

Hexagon screw for thermoplastic		Tightening torque	2,5 Nm

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- Remove the adhesive tape (1).

Additional Information

Overview of Tightening Torques

Side sill trim panel to body — Used in step 4

Plastic nut with flange for coarse thread		Tightening torque	2,5 Nm

Side sill trim panel to body — Used in step 4

Hexagon screw for thermoplastic		Tightening torque	2,5 Nm

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61 35 970 Removing and installing/replacing luggage compartment aerial for Comfort Access

PRELIMINARY WORK

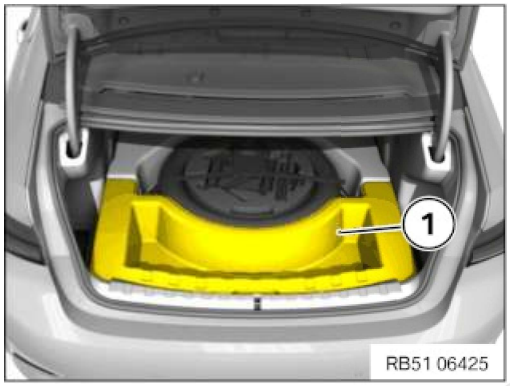
1 – Removing the luggage compartment floor trim panel



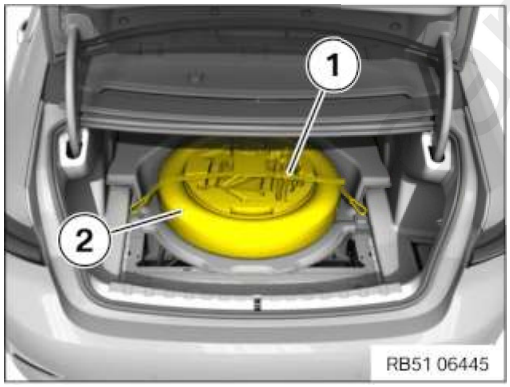
- Remove luggage compartment floor trim panel (1).

2 – If installed: Removing the compact spare wheel

▶ **Removing rear luggage compartment well**

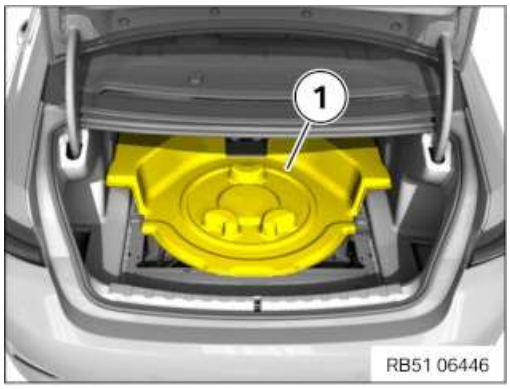


- Remove rear luggage compartment well (1).



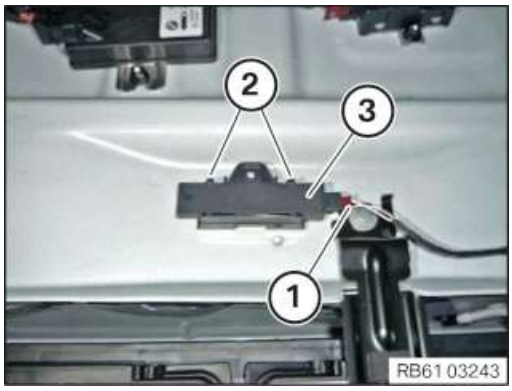
- Open buckle on seat belt strap (1) and set it aside.
- Remove emergency wheel (2) with the insert.

3 – Removing front luggage compartment well



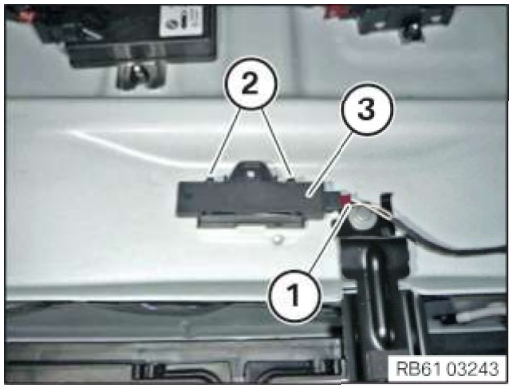
- Guide out and remove front luggage compartment well (1) on the seat belt strap.

4 – Removing the luggage compartment aerial



- Disconnect the connector (1) .
- Unlock the latch mechanisms (2).
- Remove the luggage compartment aerial (3).

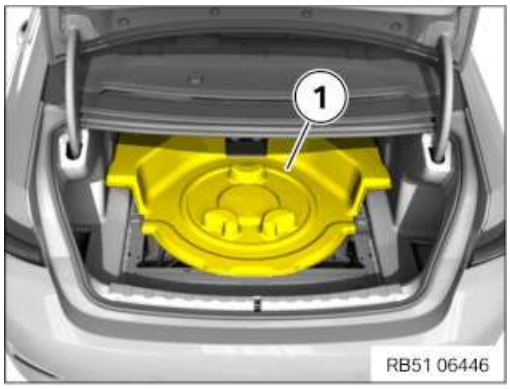
5 – Installing the luggage compartment aerial



- Correctly position the luggage compartment aerial (3) and install it in the latch mechanism (2).
- Connect connector (1).

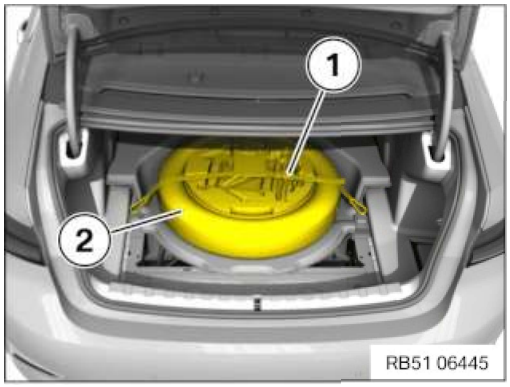
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6 – Install the luggage compartment well in front



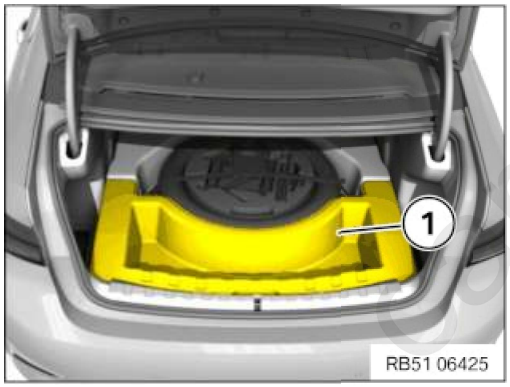
- Feed in and insert front luggage compartment well (1) on the seat belt strap.

7 – If installed: Install the emergency wheel



- Install the emergency wheel (2) with the insert.
- Position the seat belt strap above the emergency wheel and close the buckle on the seat belt strap (1).

▸ **Installing rear luggage compartment well**



- Install rear luggage compartment well (1).

8 – Installing the luggage compartment floor trim panel



- Insert the luggage compartment floor trim panel (1).

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61 35 021 Removing and installing/replacing storage tray near field communication (NFC)

Prerequisite

- The lid of the front storage compartment is open.

PRELIMINARY WORK

1 – Remove cupholder



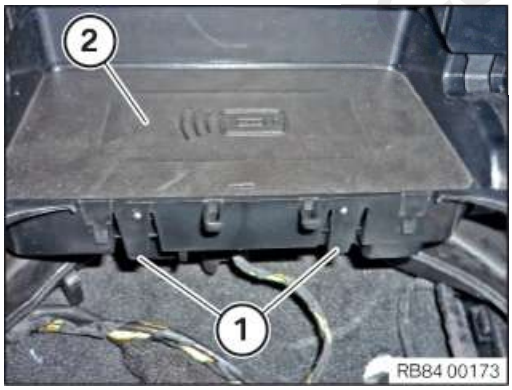
- Remove the insert (1).



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

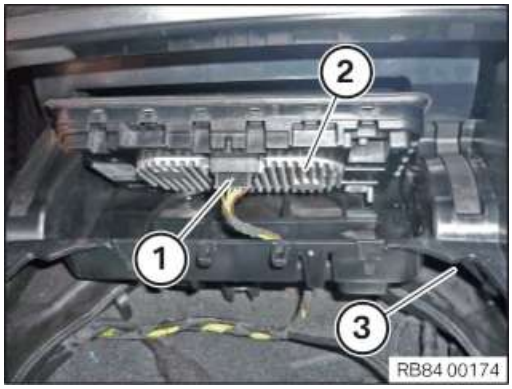
MAIN WORK

2 – Removing the storage tray for near field communication (NFC)



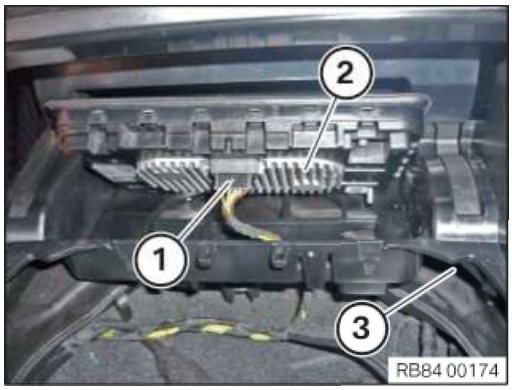
- Loosen the latch mechanisms (1) and push out the near field communication storage tray(2) upwards.

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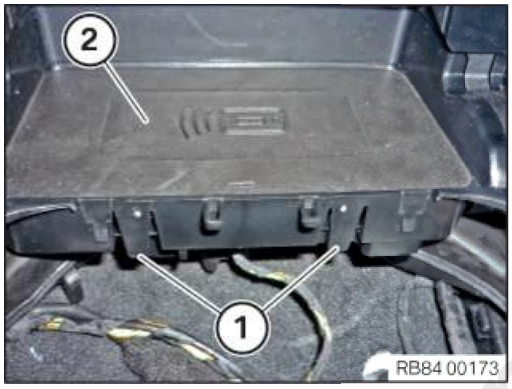


- Disconnect the connector (1) and remove the near field communication storage tray(2) from the centre console (3).

3 – Install storage tray for Near Field Communication (NFC)



- Connect connector (1).
- Position the near-field communication utility box (2) in the centre console (3).



- Push the near-field communication utility box (2) downwards until the catch mechanisms (1) are correctly engaged.

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4 – 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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Additional Information

Overview of Tightening Torques

Cup holder to centre console Used in step 4

Oval-head screw		Tightening torque	1,8 Nm

61 35 779 Replace Body Domain Controller control unit (BDC) (after vehicle diagnosis) (flat rate specification without programming/encoding, see 61 00 ...)

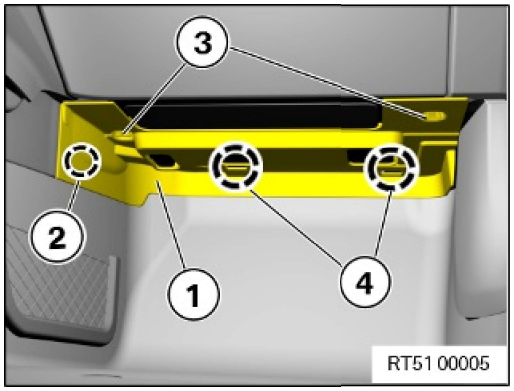
PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

2 – Remove the right footwell trim



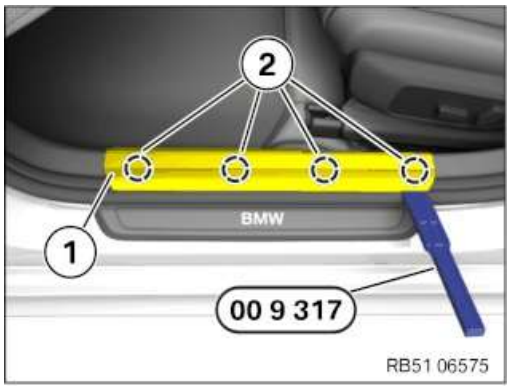
- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

3 – Remove right door sill cover strip

NOTICE

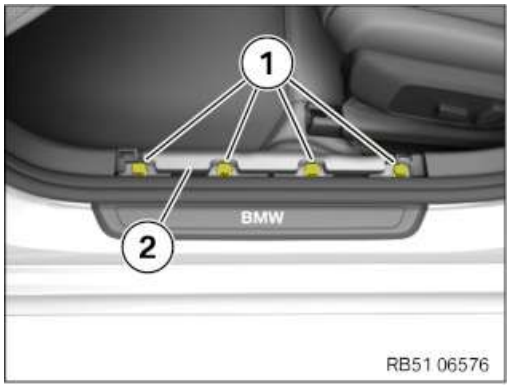
Description is for left component only. Procedure on the right side is identical.

▸ **Remove door sill cover strip**



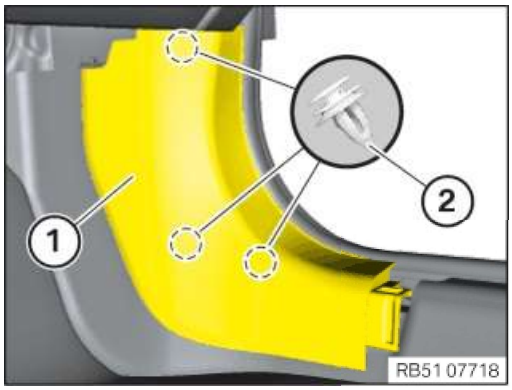
- Detach the door sill cover strip(1) using the special tool 0 490 534 (00 9 317) from the clips (2) in the floor panel.

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

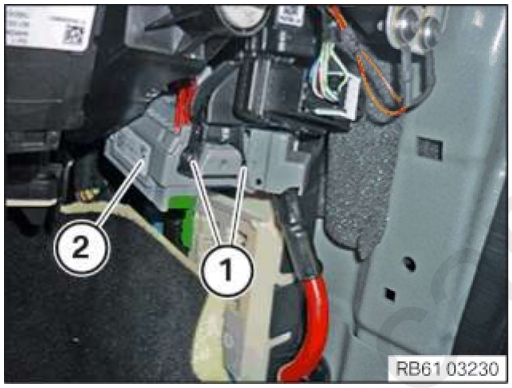
4 – Removing the side trim panel in the footwell at the right-hand A-pillar



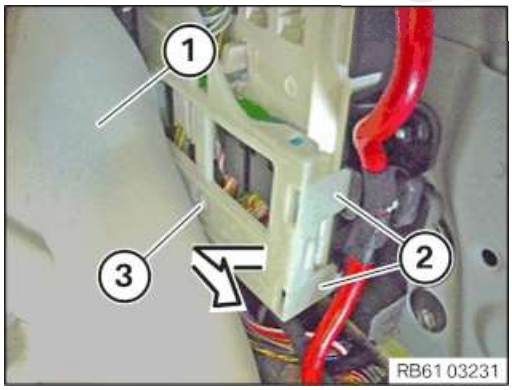
- Loosen the side trim panel (1) at the clips (2) and remove it toward the inside.

MAIN WORK

5 – Remove the BDC control unit

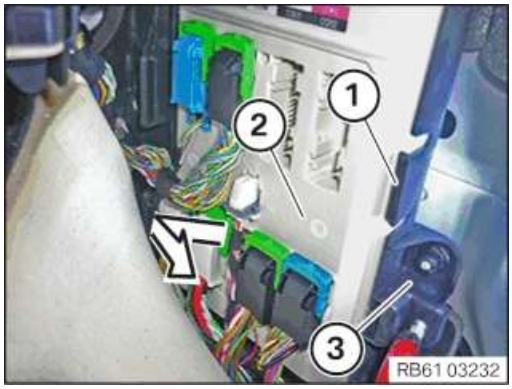


- Unlock the latch mechanisms (1) and remove the power distribution box (2) downwards.



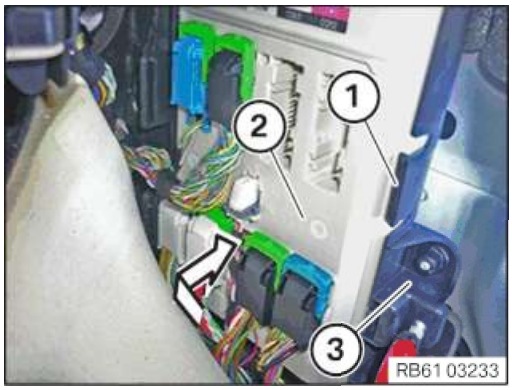
- Fold the carpet (1) to the side.
- Loosen the latch mechanisms (2).
- Guide cover (3) out in direction of arrow.

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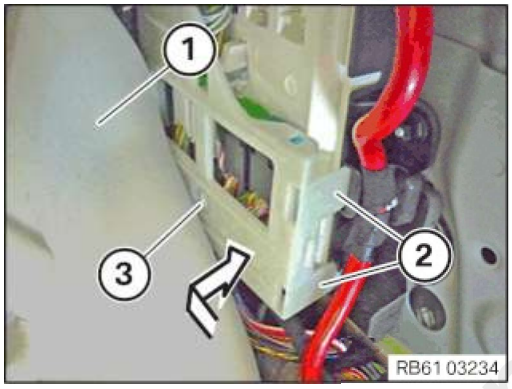


- Unlock and disconnect all connectors.
- Loosen latch mechanism (1).
- Guide out the BDC control unit (2) from the bracket(3) in the direction of the arrow.

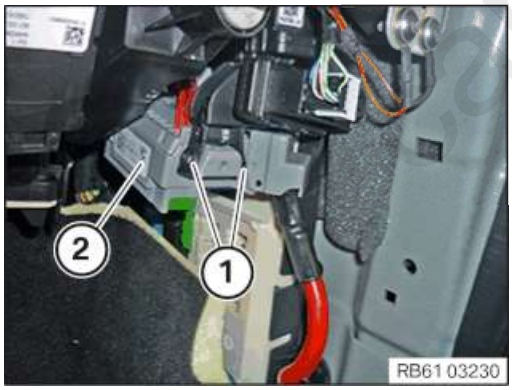
6 – Install the BDC control unit



- Guide in the BDC control unit (2) in the holder (3) in the direction of the arrow.
- Clip BDC control unit (2) into the latch mechanism (1).
- Connect all connectors and lock.



- Guide in the cover (3) in the direction of the arrow and clip into the latch mechanisms (2).
- Position the carpet (1).

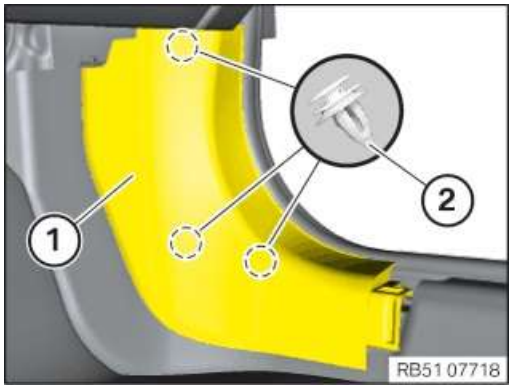


- Guide in the power distribution bow (2) upwards and correctly clip in the latching mechanisms (1).

POSTPROCESSES

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

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- Check the clips (2) for damage.

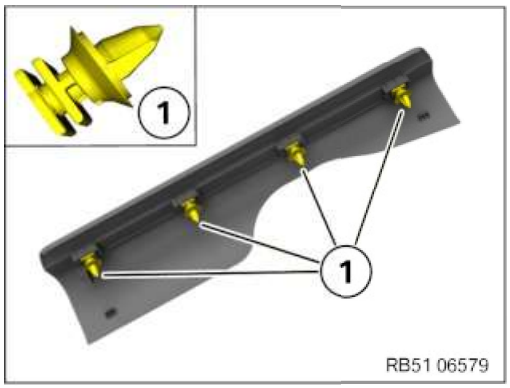
  Renew damaged or missing clips (2).
- Correctly position the side trim panel (1) and clip in to the clips (2).
- Make sure that the side trim panel (1) is correctly fitted against edge protection.

8 – Install right door sill cover strip

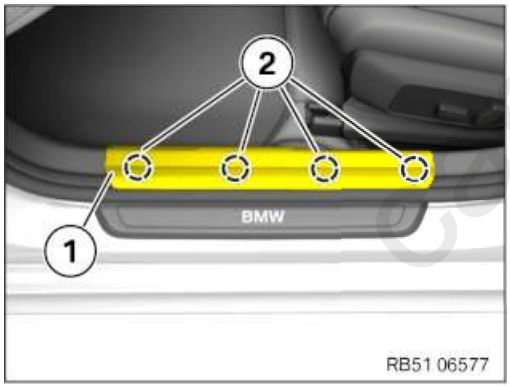
NOTICE

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

▸ **Install the door sill cover strip**

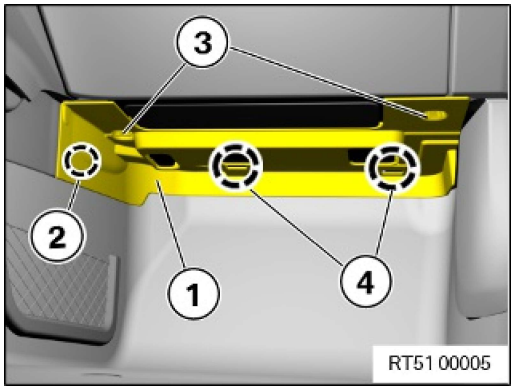


- Check the clips (1) for damage and renew if necessary.



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

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 – Disconnecting all battery earth leads

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- See additional information.

11 – 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.

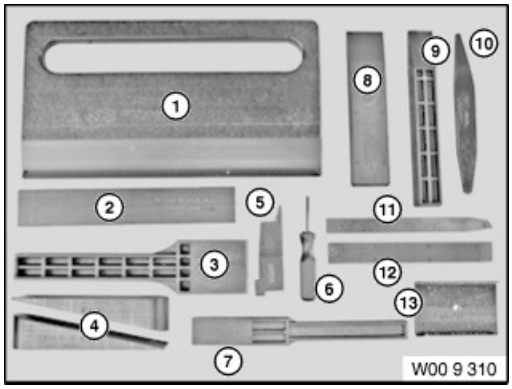
- Connect the battery charger to the vehicle.
- Connect the programming system with the vehicle.
- Determine the action plan.
- Accept and fully process the measures plan.
- If applicable, connect the workshop system to the vehicle, depending on the reworking list.
- Carry out vehicle test.
- Delete 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 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	

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	110
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	110
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
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61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	110

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61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110
61 20 900 Disconnecting and connecting battery earth lead	110

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61 35 697 Replacing control unit for automatic tailgate operation

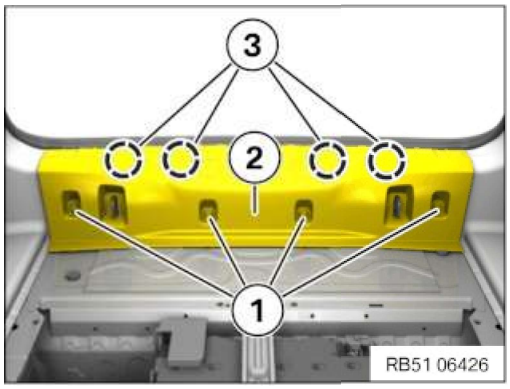
PRELIMINARY WORK

1 – Disconnecting all battery earth leads



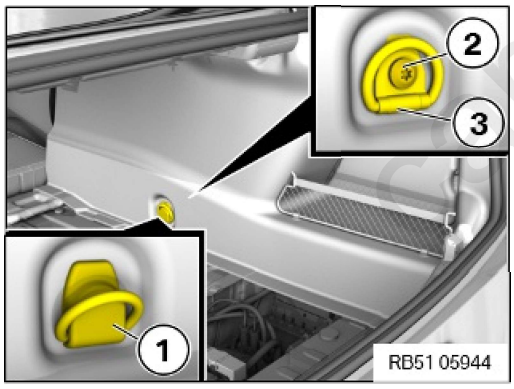
- See additional information.

2 – Removing the loading edge trim



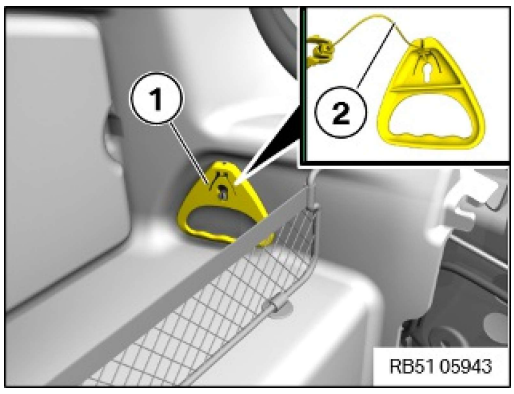
- Loosen the expanding rivet (1).
- Unclip loading edge trim(2) upwards from latch mechanisms (3).
- Guide out and remove loading edge trim (2) under the sealing lip of the tailgate seal.

3 – Removing right luggage compartment wheel arch trim panel

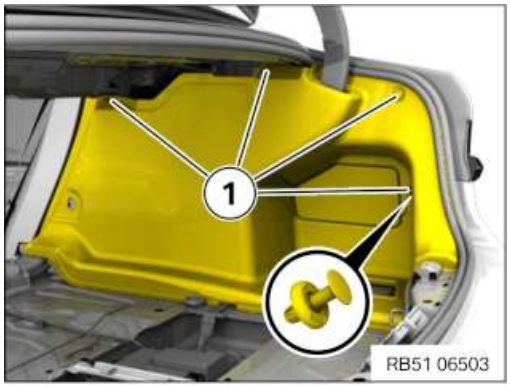


- Remove the cover (1).
- Loosen screw (2).
- Remove the lashing eye (3).

▸ If installed: Remove the emergency release handle for the tailgate (additional work in the US version)

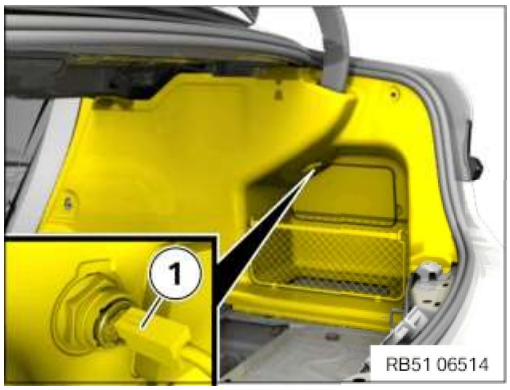


- Release the emergency release handle for tailgate (1) from the holder.
- Detach Bowden cable (2) and remove the emergency release handle for tailgate (1).

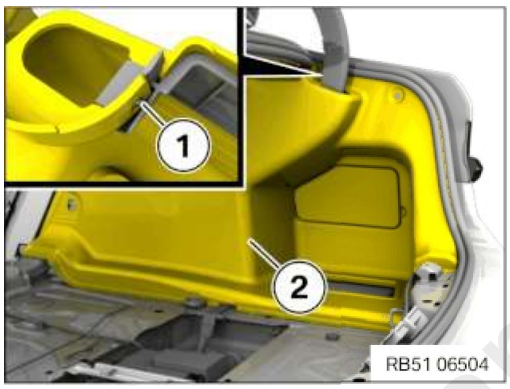


- Reposition the right rear seat backrest.
- Loosen the expanding rivet (1).

▸ If installed: Disconnect plug connection of the 12 V connection (additional work with storage package equipment specification)



- Unlock and disconnect the plug connection (1) of the 12 V power socket.

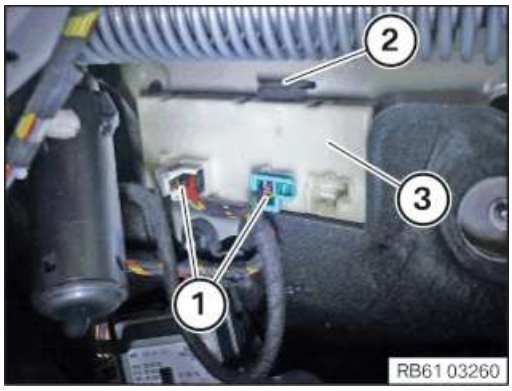


- Press the tab for luggage compartment wheel arch trim panel (2) on the outer side of the hinge to the front using the stop on trim (1).
- Guide out luggage compartment wheel arch trim panel (2) under the sealing lip for the tailgate and the side trim panel in the rear passenger compartment.
- Remove luggage compartment wheel arch trim panel (2).

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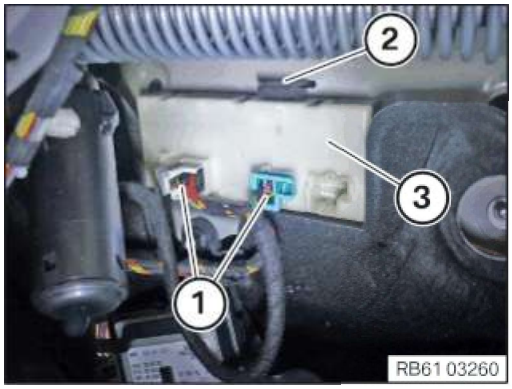
MAIN WORK

4 – Remove the control unit for the automatic tailgate operation



- Unlock and disconnect plug connections (1).
- Unlock the latch mechanism (2) and remove the control unit for the tailgate lift (3).

5 – Install the control unit for the automatic tailgate operation



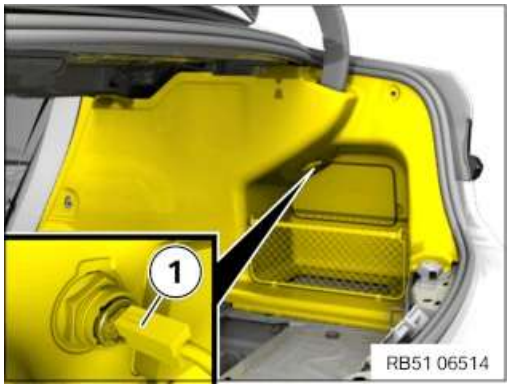
- Correctly position the control unit for the tailgate lift (3) and engage it with the latch mechanism (2).
- Connect connectors (1) and lock.

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POSTPROCESSES

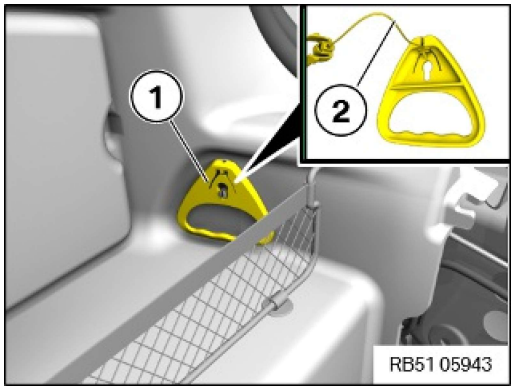
6 – Installing the luggage compartment wheel arch trim panel on the right

▸ If installed: Connecting plug of the 12 V power socket (additional work for equipment specification with storage package)

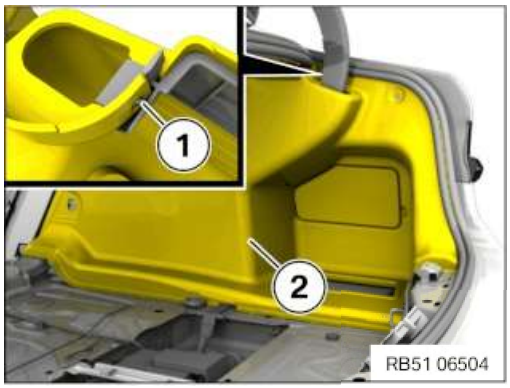


- Connect and lock connector (1) of the 12 V power socket.

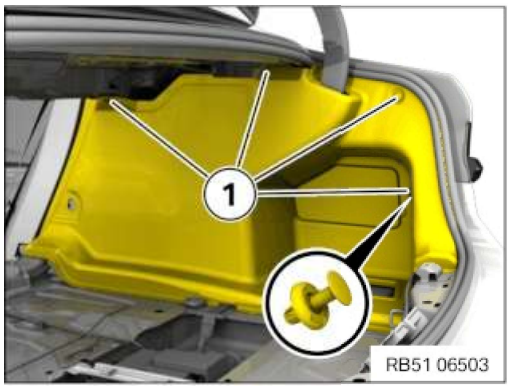
▸ If installed: Installing the emergency tailgate release handle (additional work for US version)



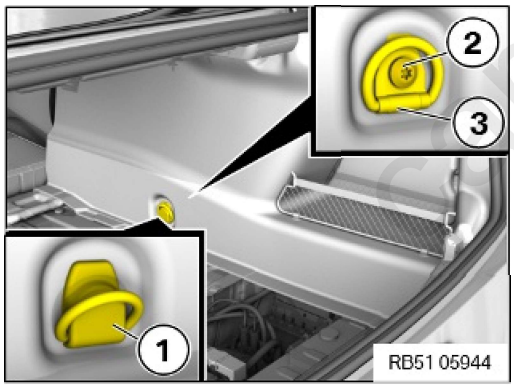
- Attach the Bowden cable (2).
- Fasten emergency tailgate release handle (1) to the bracket.



- Feed luggage compartment wheel arch trim panel (2) under the side trim panel in the rear passenger compartment and the sealing lip for the tailgate.
- Feed the tab of the luggage compartment wheel arch trim panel (2) on the outer side of the hinge into the stop on the trim (1).



- Secure expanding rivet (1).
- Raise the right rear seat backrest.



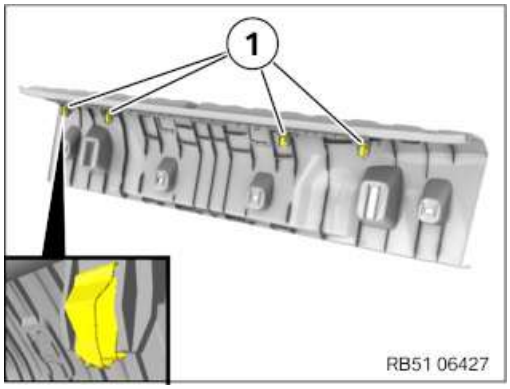
- Position the lashing eye (3).
- Tighten down screw (2).

Lashing eye to body

	Tightening torque	19 Nm

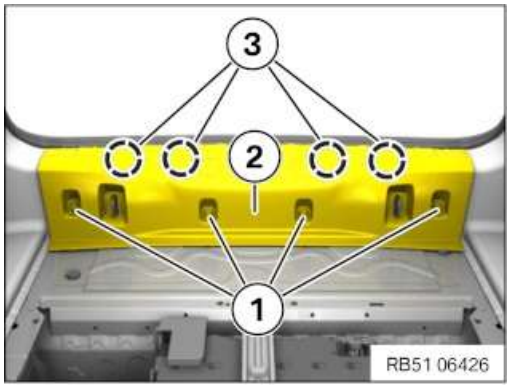
- Install the cover (1).

7 – Installing loading edge trim



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

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- Insert the loading edge trim (2) under the sealing lip of the tailgate seal.
- Fit the trim of the loading edge (2) at the latch mechanisms (3) and clip it in to the bottom.
- Secure expanding rivet (1).

8 – Disconnecting all battery earth leads



- See additional information.

9 – 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

Lashing eye to body Used in step 6

	Tightening torque	19 Nm

Links

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
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

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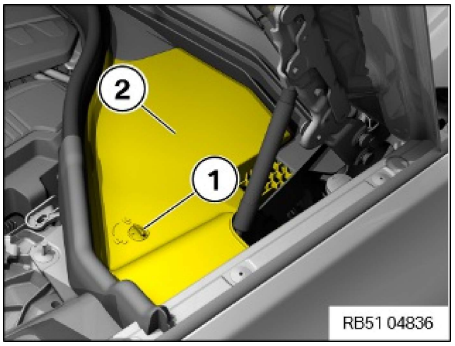
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18
61 20 900 Disconnecting and connecting battery earth lead	18

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61 61 270 Completely removing and installing the console for the windscreen wiper system including engine

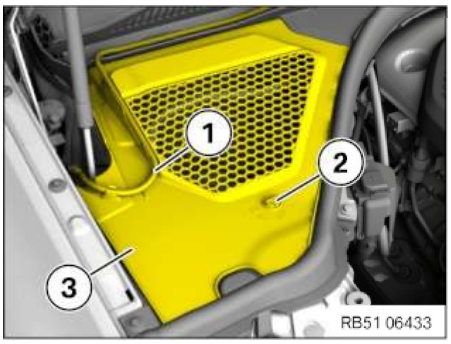
PRELIMINARY WORK

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



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

2 – 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).

3 – Removing both wiper arms

NOTICE

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

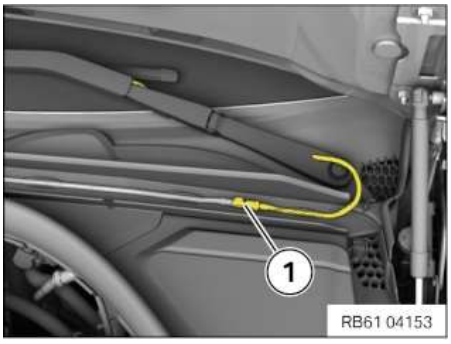
▸ Remove the wiper arm

RISK OF DAMAGE

Damage to wiper console

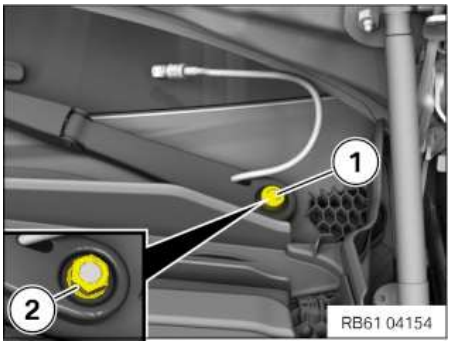
While removing the wiper arms without using special tool, the wiper console can break.

- 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.

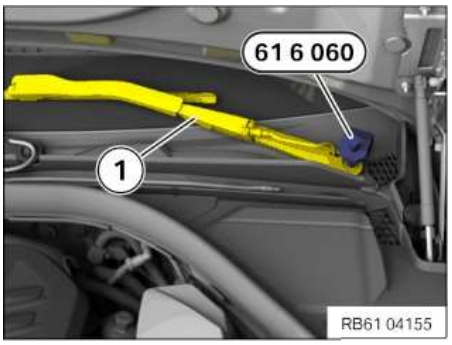


- Disconnect the windscreen wash hose(1) at the separation point and remove from the cowl guide.

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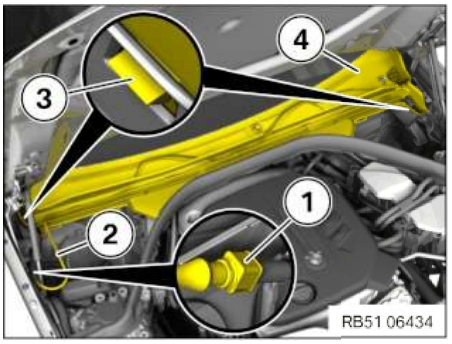


- Remove the protective cap (1).
- Loosen nut (2).

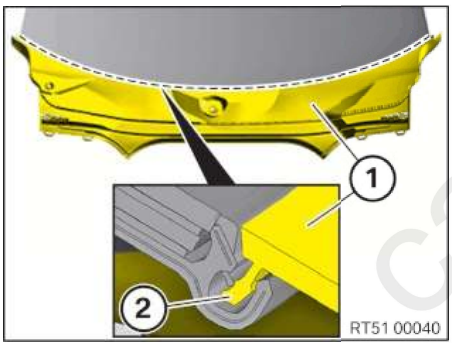


- Pull off the wiper arm (1) using special tool .

4 – Remove cowl panel cover



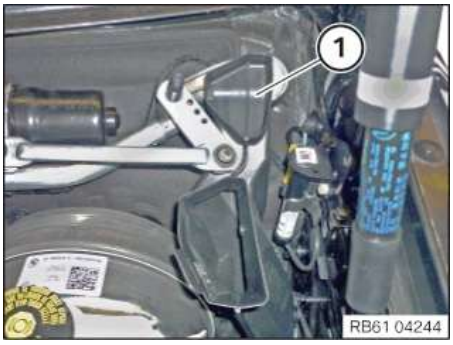
- Release snap fastener of the washer fluid hose (1) and put the washer fluid hose(2) to one side.
- Unclip clips (3) on the cowl panel cover (4).



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

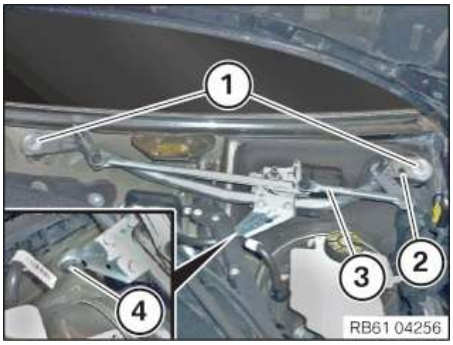
MAIN WORK

5 – Remove wiper console.

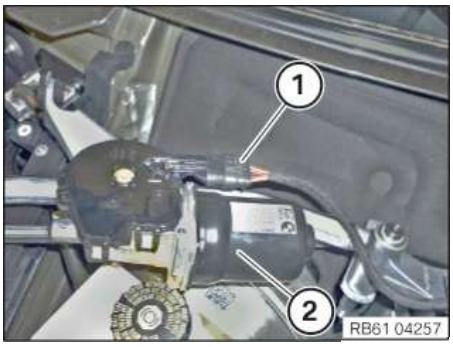


- Remove the water drain channel (1).

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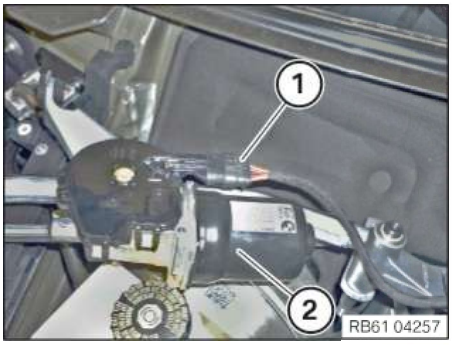


- Loosen nuts (1).
- Unclip the cable clip (2).
- Remove the wiper console (3) from the guide (4) and raise it.

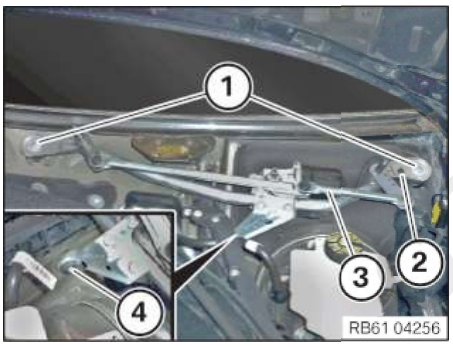


- Unlock plug connection (1) and disconnect.
- Remove the wiper console (2).

6 – Installing the wiper console



- Position the wiper console (2).
- Connect connectors (1) and lock.



- Insert the wiper console (3) into the guide (4) and position it correctly.
- Clip in the cable clip (2).
- Renew nuts (1) and tighten.

Wiper console to body

Nut M8	Renew nut.	Tightening torque	11,8 Nm



- Guide in the water drain channel (1) and clip into place.

POSTPROCESSES

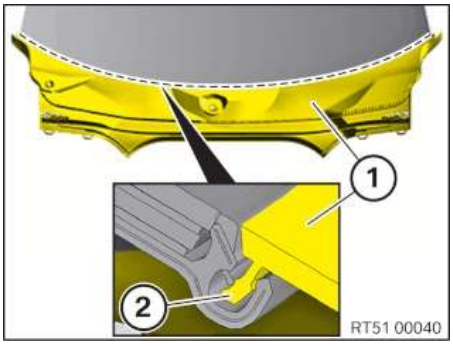
7 – Installing cowl panel cover

RISK OF DAMAGE

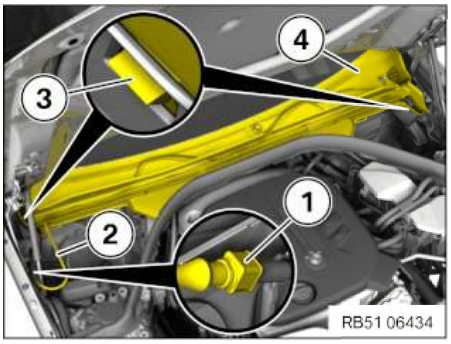
Damage caused by water ingress into the vehicle.

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.

8 – Installing both wiper arms

NOTICE

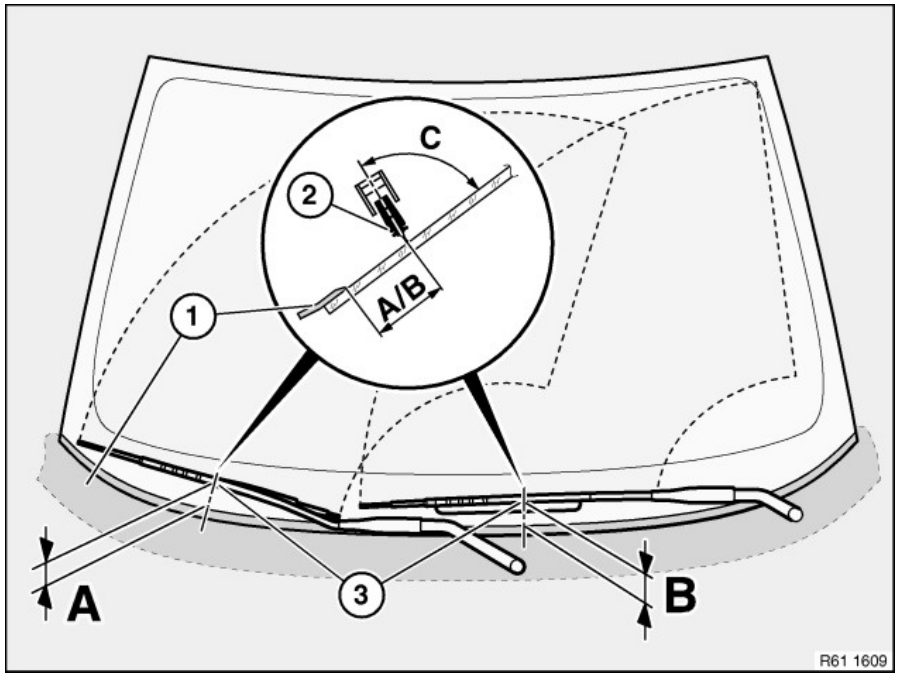
Description is for left component only. Procedure on the right side is identical.

▸ 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.

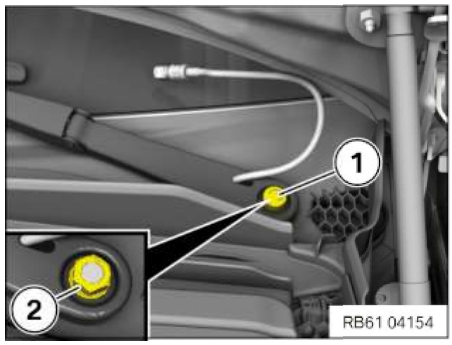
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- Connect the wiper arm (3).
- Correctly position the wiper arm (2) in relation to the window edge (1).

Distance from window pane edge to wiper blade

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

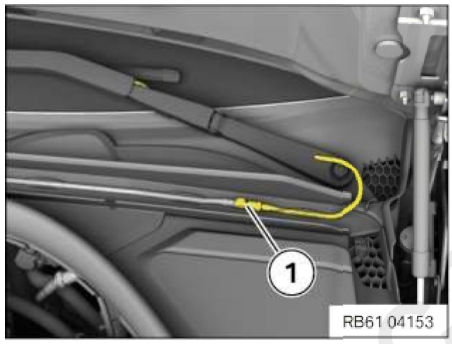


- Tighten nut (2).

Windscreen wiper arm

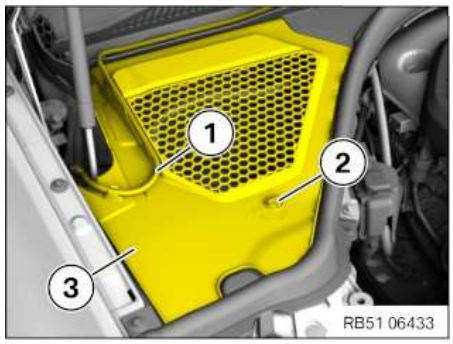
Combination hexagon nut		Tightening torque	35 Nm

- Connect the protective cap (1).



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

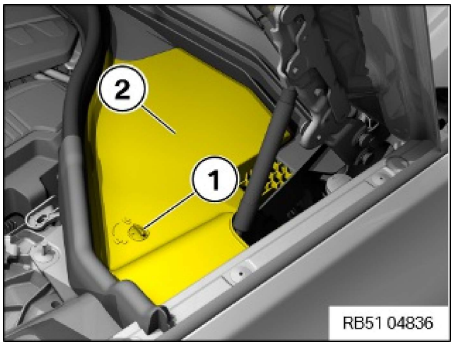
9 – Install the rear right engine compartment cover



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

10 – 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).

Additional Information

Overview of Tightening Torques

Wiper console to body			Used in step 6
Nut M8	Renew nut.	Tightening torque	11,8 Nm

Windscreen wiper arm			Used in step 8
Combination hexagon nut		Tightening torque	35 Nm

Overview of Special Tools

Overview Technical Data

Distance from window pane edge to wiper blade	Used in step 8
Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

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61 61 100 Removing and installing/replacing both windscreen wiper arms

TECHNICAL INFORMATION

The wiper arm must not touch the windscreen or the rear window without a wiper blade. Otherwise the windscreen or the rear window could be damaged.

NOTICE

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

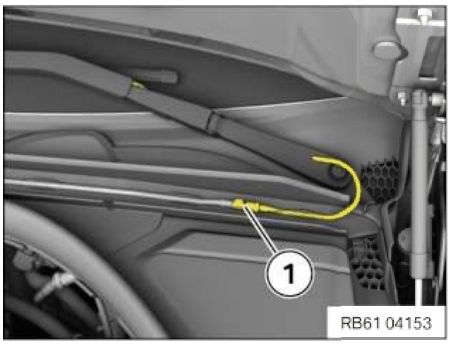
1 – Remove the wiper arm

RISK OF DAMAGE

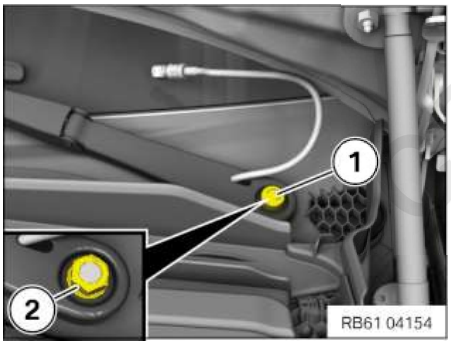
Damage to wiper console

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

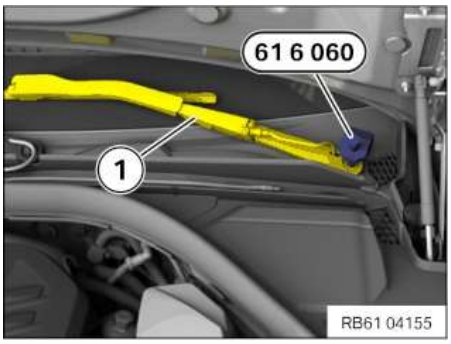
- Removing the wiper arms must be carried out only using the prescribed special tool.
- Do not lift off wiper arm, else the wiper console may break on the predetermined breaking point for the pedestrian protection.



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



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



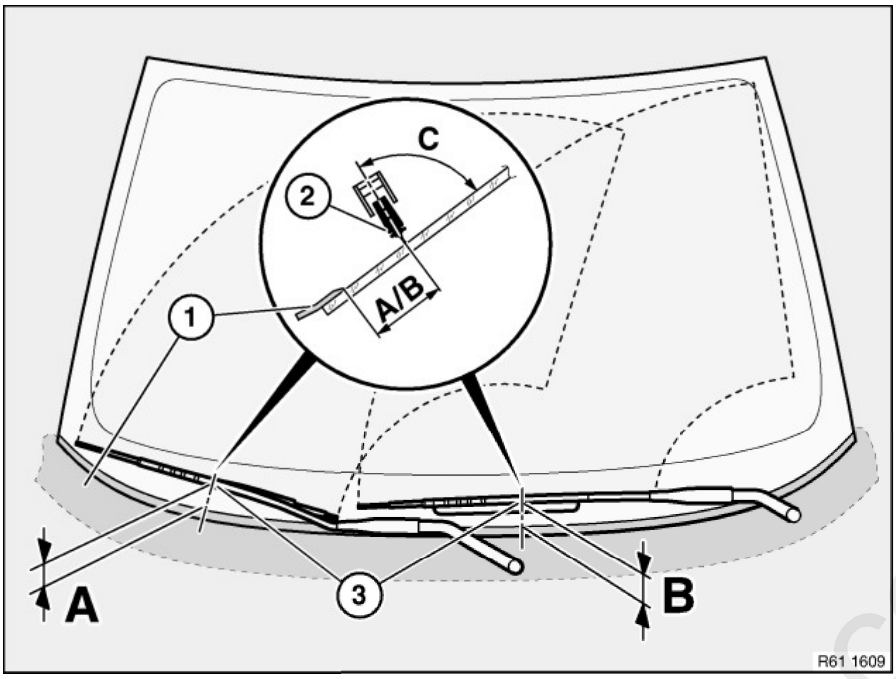
- Pull off the wiper arm (1) using special tool .

2 – Install the wiper arm

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TECHNICAL INFORMATION

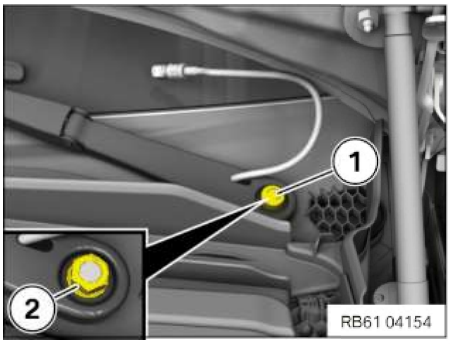
The wiper system must be in zero position.
After installing the cowl panel cover and before fitting the wiper arm:
Activate the wiper system once to ensure that it has the correct installation position.



- 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

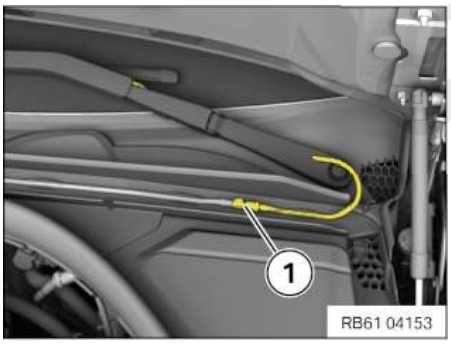


- Tighten nut (2).

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.

Additional Information

Overview of Tightening Torques

Windscreen wiper arm Used in step 2

Combination hexagon nut		Tightening torque	35 Nm

Overview of Special Tools

Overview Technical Data

Distance from window pane edge to wiper blade Used in step 2

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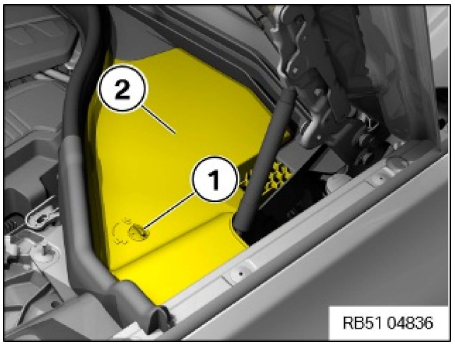
Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

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61 61 271 Replace console for windscreen wiper system

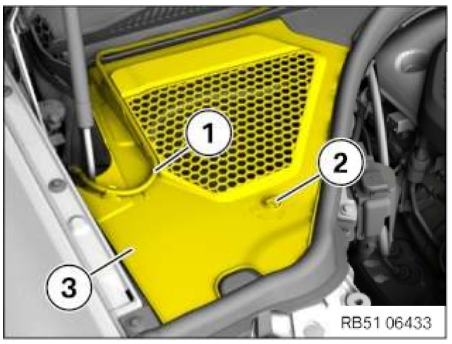
PRELIMINARY WORK

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



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

2 – 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).

3 – Removing both wiper arms

NOTICE

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

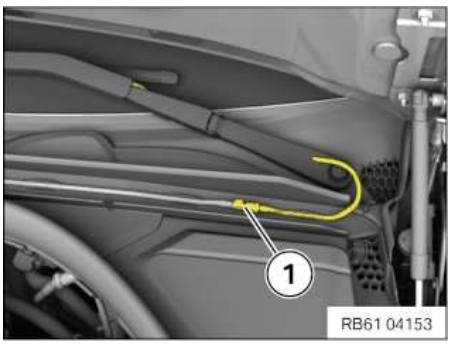
▸ **Remove the wiper arm**

RISK OF DAMAGE

Damage to wiper console

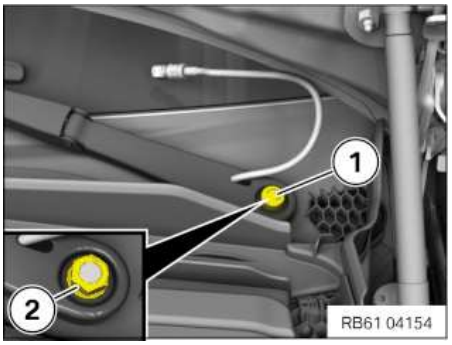
While removing the wiper arms without using special tool, the wiper console can break.

- 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.

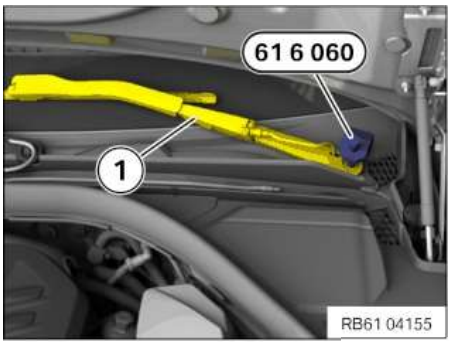


- Disconnect the windscreen wash hose(1) at the separation point and remove from the cowl guide.

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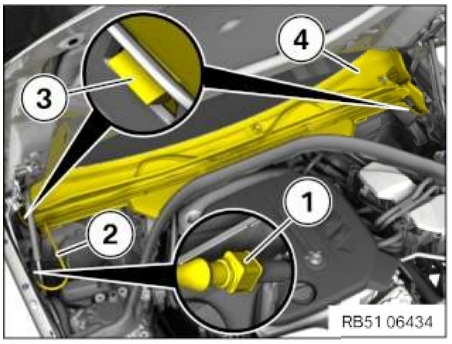


- Remove the protective cap (1).
- Loosen nut (2).

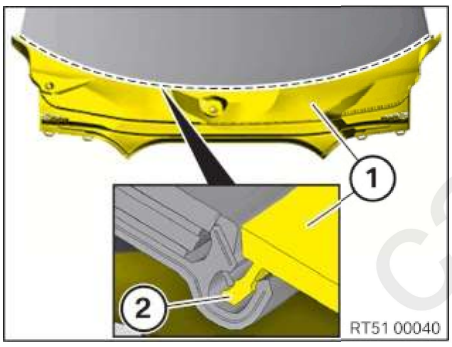


- Pull off the wiper arm (1) using special tool .

4 – Remove cowl panel cover



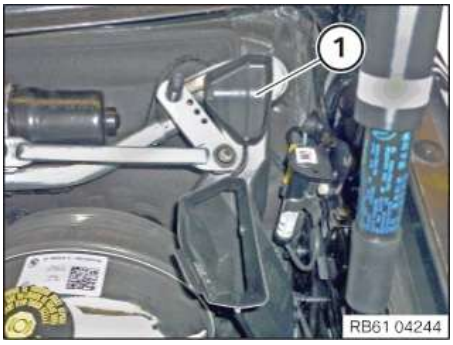
- Release snap fastener of the washer fluid hose (1) and put the washer fluid hose(2) to one side.
- Unclip clips (3) on the cowl panel cover (4).



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

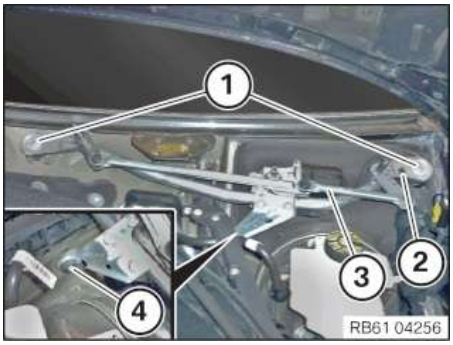
MAIN WORK

5 – Remove wiper console.

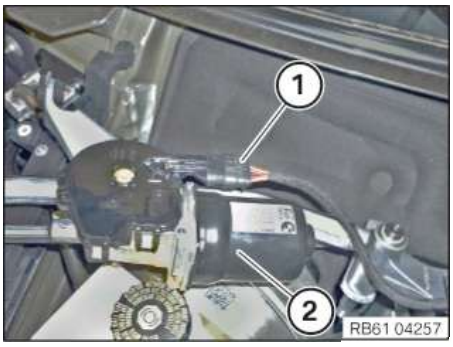


- Remove the water drain channel (1).

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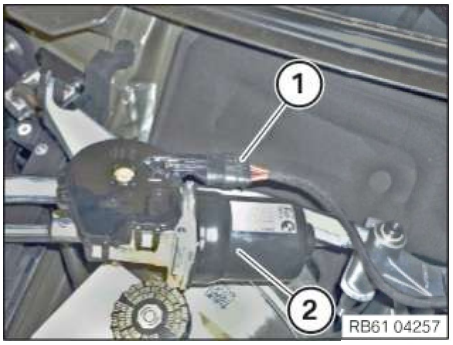


- Loosen nuts (1).
- Unclip the cable clip (2).
- Remove the wiper console (3) from the guide (4) and raise it.

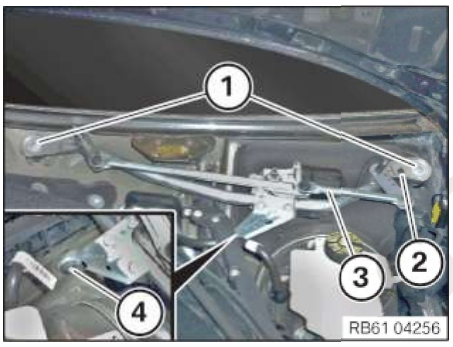


- Unlock plug connection (1) and disconnect.
- Remove the wiper console (2).

6 – Installing the wiper console



- Position the wiper console (2).
- Connect connectors (1) and lock.



- Insert the wiper console (3) into the guide (4) and position it correctly.
- Clip in the cable clip (2).
- Renew nuts (1) and tighten.

Wiper console to body

Nut M8	Renew nut.	Tightening torque	11,8 Nm



- Guide in the water drain channel (1) and clip into place.

POSTPROCESSES

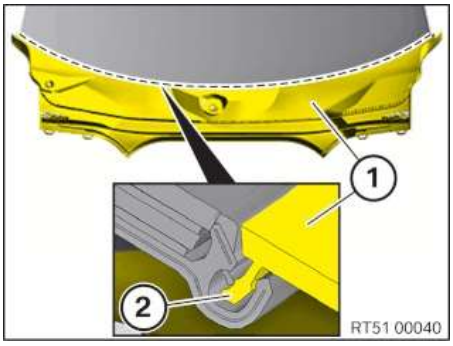
7 – Installing cowl panel cover

RISK OF DAMAGE

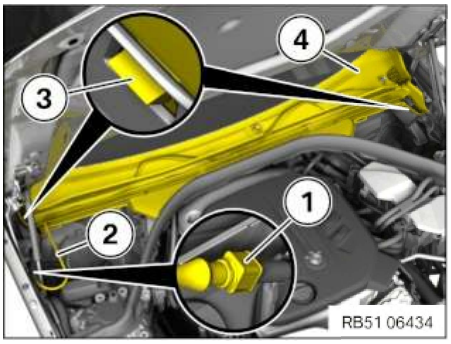
Damage caused by water ingress into the vehicle.

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.

8 – Installing both wiper arms

NOTICE

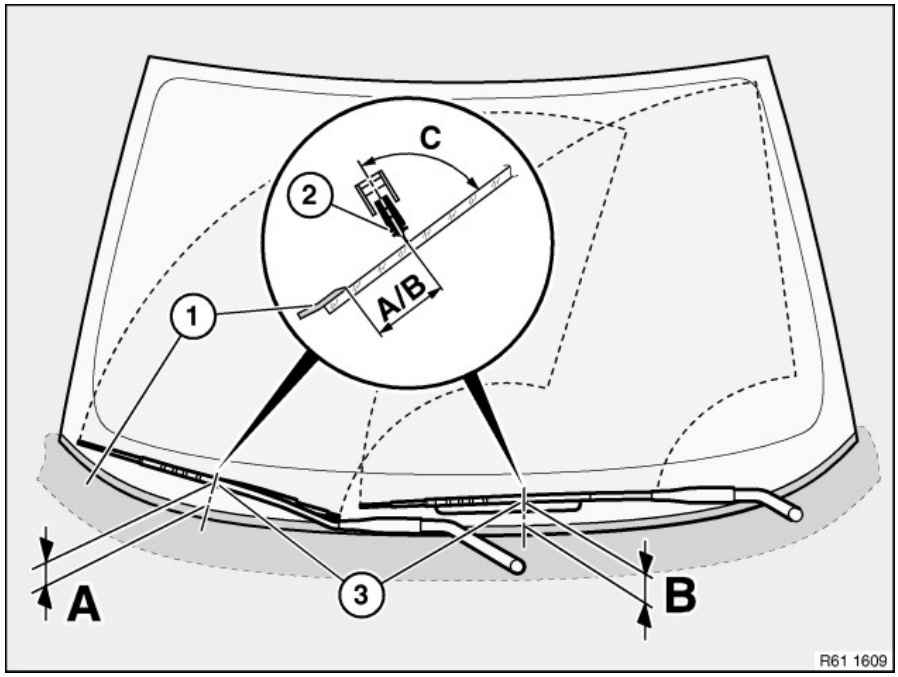
Description is for left component only. Procedure on the right side is identical.

▸ 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.

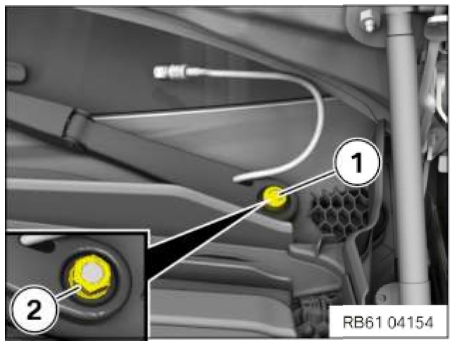
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- Connect the wiper arm (3).
- Correctly position the wiper arm (2) in relation to the window edge (1).

Distance from window pane edge to wiper blade

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

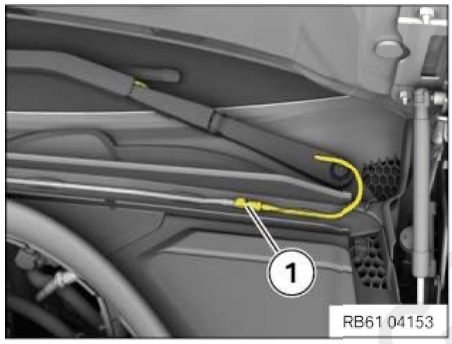


- Tighten nut (2).

Windscreen wiper arm

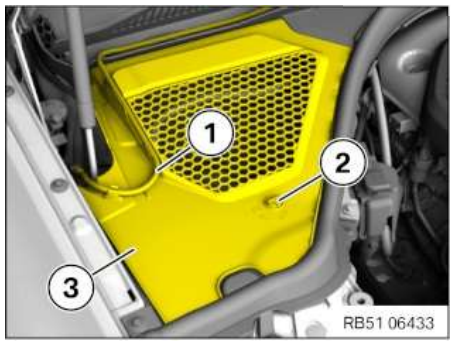
Combination hexagon nut		Tightening torque	35 Nm

- Connect the protective cap (1).



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

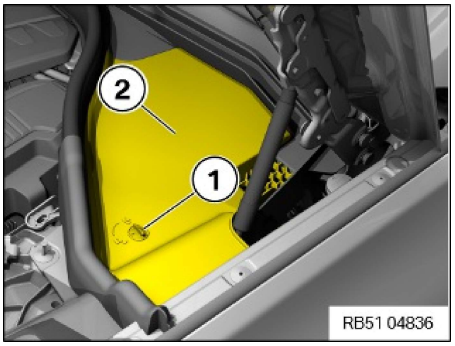
9 – Install the rear right engine compartment cover



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

10 – 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).

Additional Information

Overview of Tightening Torques

Wiper console to body			Used in step 6
Nut M8	Renew nut.	Tightening torque	11,8 Nm

Windscreen wiper arm			Used in step 8
Combination hexagon nut		Tightening torque	35 Nm

Overview of Special Tools

Overview Technical Data

Distance from window pane edge to wiper blade	Used in step 8
Wiper arm right (A)	57,5 ± 5 mm
Wiper arm left (B)	63,3 ± 4 mm

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61 61 041 Replacing both wiper blades

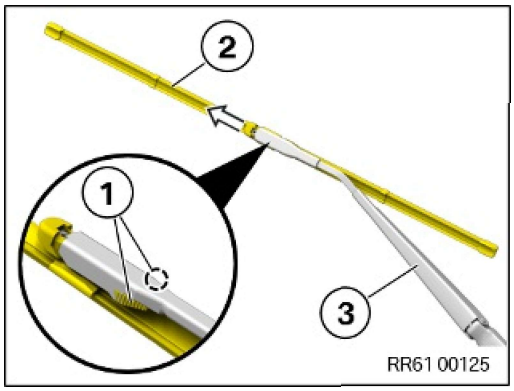
NOTICE

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

1 – Remove the wiper blade

NOTICE

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

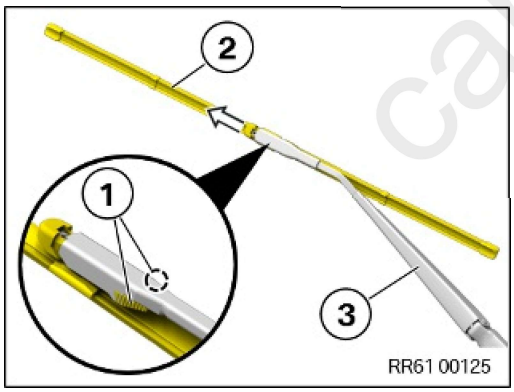


- Prepare for operating readiness.
- Hold the wipe-wash switch down until the windscreen wipers stand still in a roughly vertical position.
- Fold out the windscreen wiper arm (3) and press the locks together (1).
- Remove the wiper blade (2) from the wiper arm (3) in the direction of the arrow.

2 – Install the wiper blade

NOTICE

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



- Clip in the wiper blade (2) in the direction of the arrow on the wiper arm (3).
- Fold in wiper arm (3)and check locks (1).
- Switch on driving readiness or hold the wash/wipe switch down again.

  Windscreen wipers move back to wiper park position and are operational once again.

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61 71 063 Removing and installing the washer fluid reservoir for the window washer system

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.

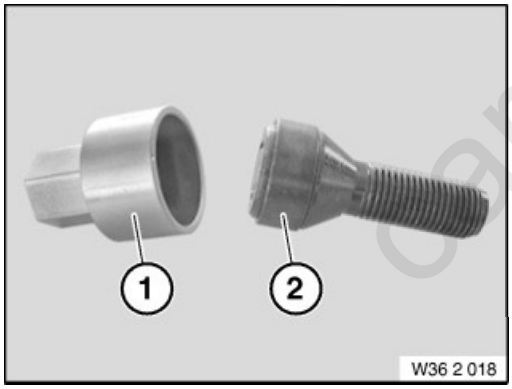
PRELIMINARY WORK

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**



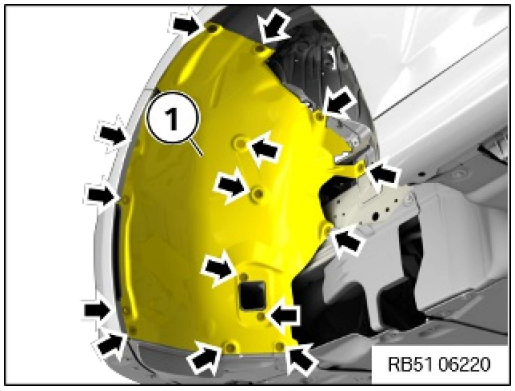
- To unscrew and tighten the wheel bolts with locking wheel bolts (2), use the correct adapter (1) from the set of special tools .

2 – Removing the front section of the front wheel arch cover

NOTICE

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

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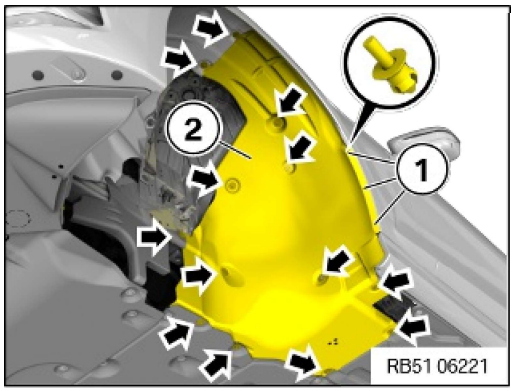


- Remove screws (arrows).
- Remove front section of the front wheel arch cover (1).

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

NOTICE

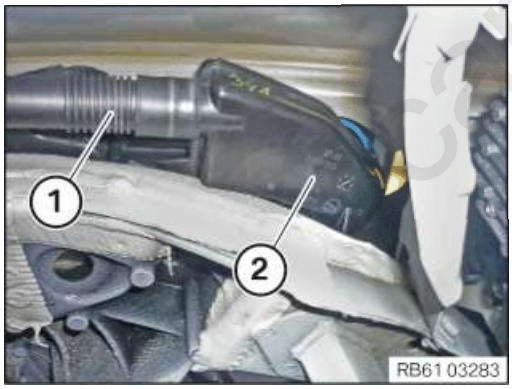
To provide a better overview: Schematic diagram with partially hidden components.



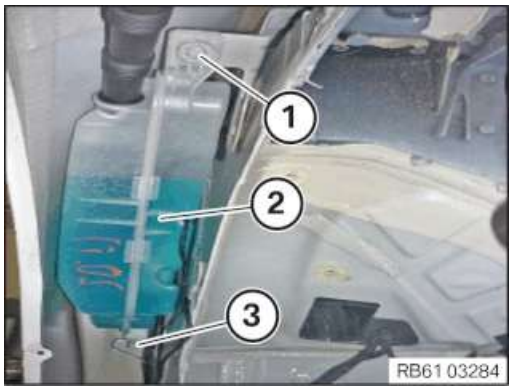
- Loosen the expanding rivet (1).
- Remove screws (arrows).
- Remove the rear section of the front wheel arch cover (2).

MAIN WORK

4 – Remove washer fluid reservoir

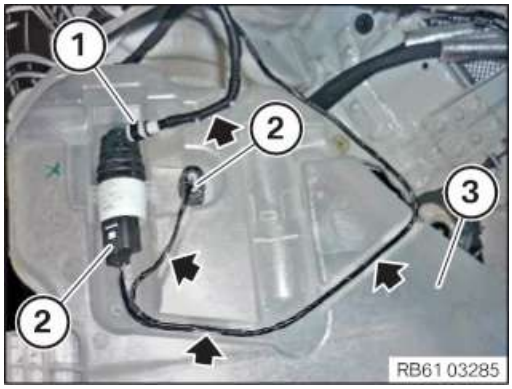


- Pull off filler channel (1) from fuel filler neck (2).



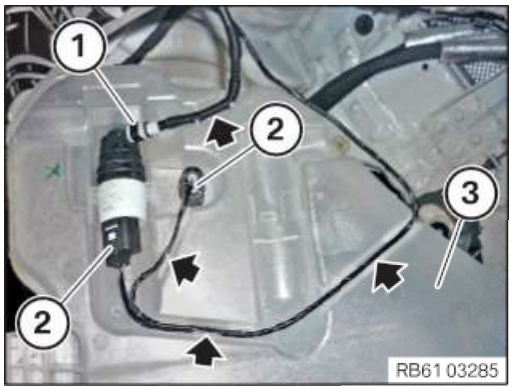
- Loosen screw (1).
- Guide out washer fluid reservoir (2) from holder (3).

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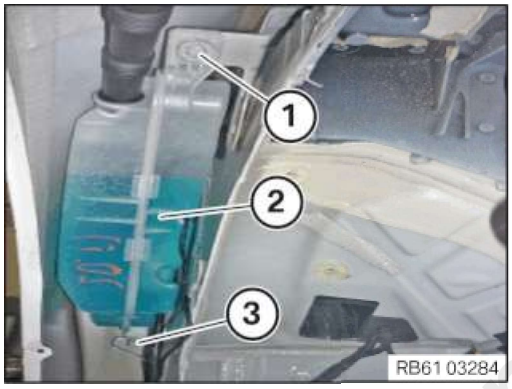


- Unlock hose pipe (1) and disconnect.
- Unclip the hose pipe (1) from the washer fluid hose (3) (arrow).
- Unlock and disconnect connector (2).
- Unclip the cable from the washer fluid reservoir (3) (arrows).

5 – Installing washer fluid reservoir



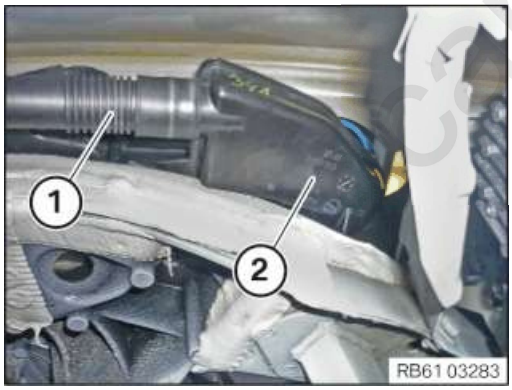
- Connect connector (2).
- Clip the cable into the washer fluid reservoir (3) (arrows).
- Connect and lock hose pipe (2).
- Clip the hose pipe (2) into the washer fluid reservoir (3) (arrow).



- Position the washer fluid reservoir (2) and feed towards the rear into the holder (3).
- Tighten down screw (1).

Washer fluid reservoir

	Tightening torque	8 Nm



- Connect filler channel (1) with the fuel filler neck (2).

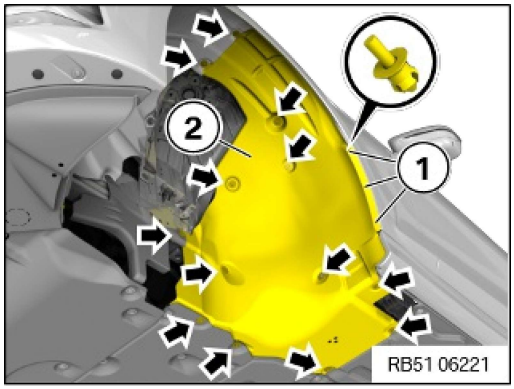
POSTPROCESSES

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

NOTICE

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

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

Wheel arch trim panel, front

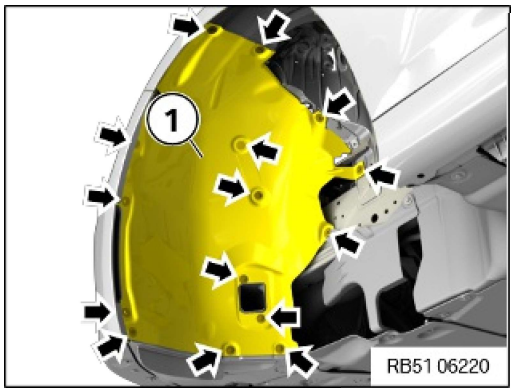
Thermoplastic hexagon screw		Tightening torque	2,6 Nm

- Secure expanding rivet (1).

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 – Mounting the wheel

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



TECHNICAL INFORMATION

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

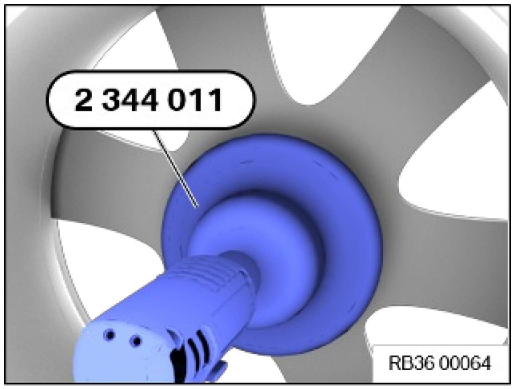
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease 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.

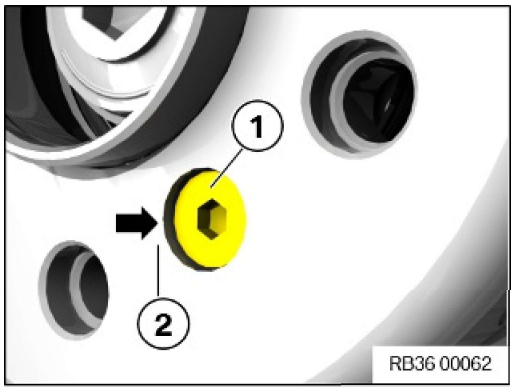


- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease contact surfaces.

Expendable materials

Universal cleaner	20 l, Canister	83192360981

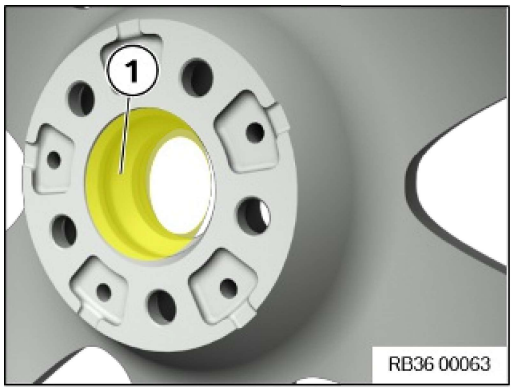


- Check that the mounting bolt (1) for the brake disc is securely seated.

  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 all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Check	140 Nm

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Additional Information

Overview of Tightening Torques

Washer fluid reservoir — Used in step 5

	Tightening torque	8 Nm

Wheel arch trim panel, front — Used in step 67

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

Brake disc to 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

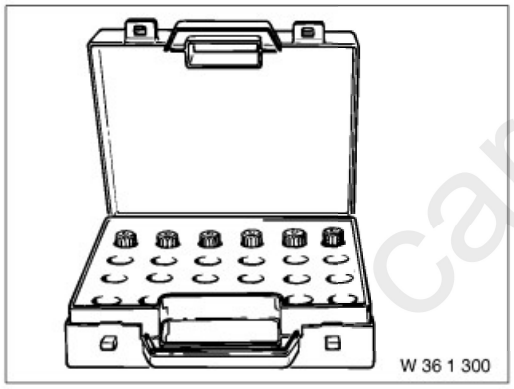


Common Used in step 8

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:

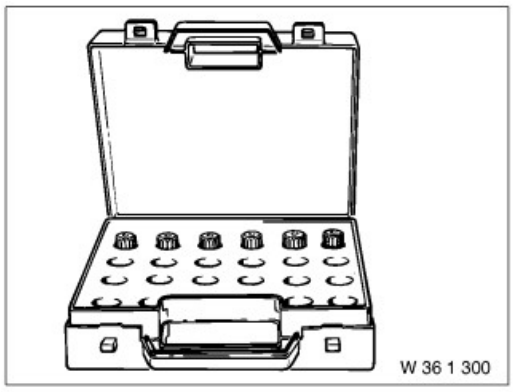
0 495 221 (36 1 323) Wheel stud



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	

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	

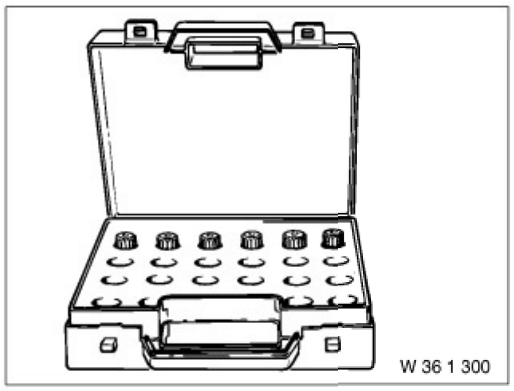
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0 495 225 (36 1 327) Wheel stud



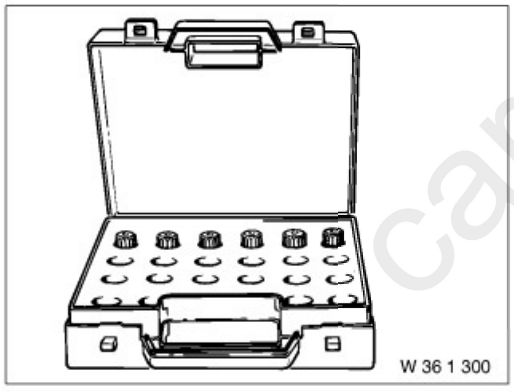
Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



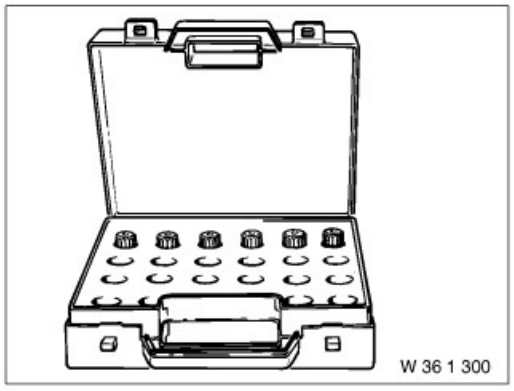
Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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	

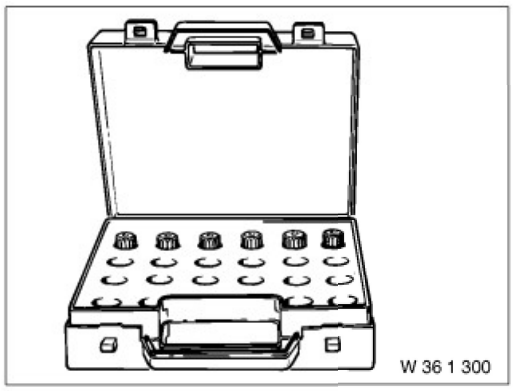
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0 495 229 (36 1 332) Wheel stud



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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61 71 100 Removing and installing/replacing window washer pump

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.

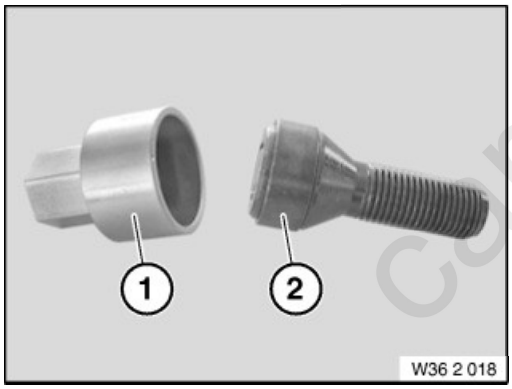
PRELIMINARY WORK

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**



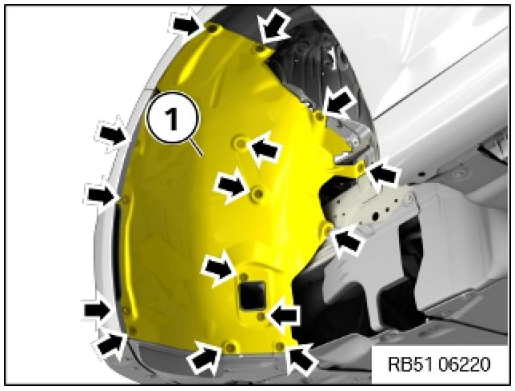
- To unscrew and tighten the wheel bolts with locking wheel bolts (2), use the correct adapter (1) from the set of special tools .

2 – Removing the front section of the front wheel arch cover

NOTICE

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

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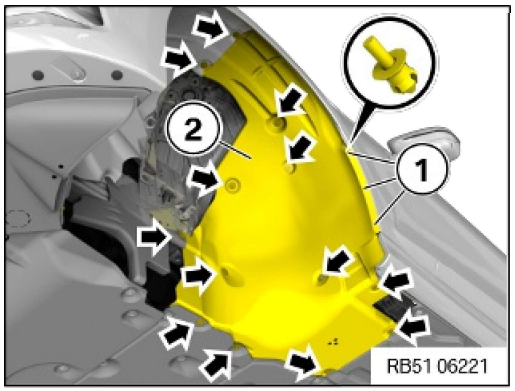


- Remove screws (arrows).
- Remove front section of the front wheel arch cover (1).

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

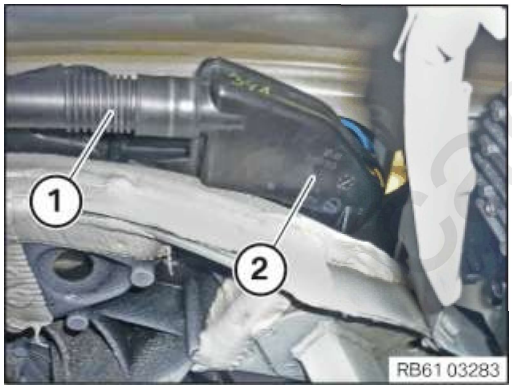
NOTICE

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

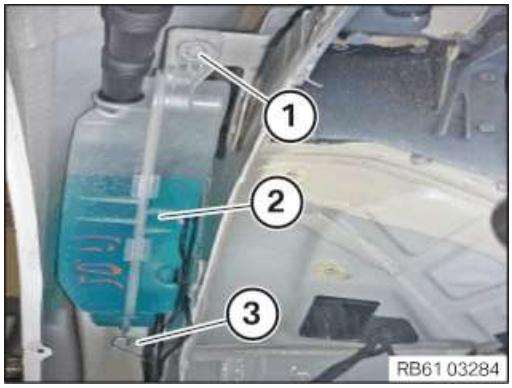


- Loosen the expanding rivet (1).
- Remove screws (arrows).
- Remove the rear section of the front wheel arch cover (2).

4 – Remove washer fluid reservoir

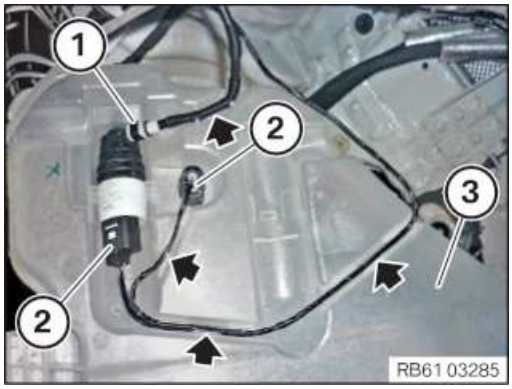


- Pull off filler channel (1) from fuel filler neck (2).



- Loosen screw (1).
- Guide out washer fluid reservoir (2) from holder (3).

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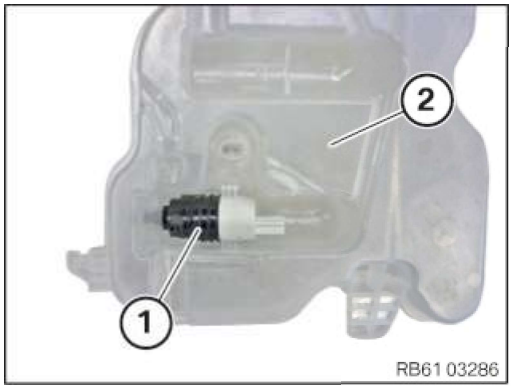


- Unlock hose pipe (1) and disconnect.
- Unclip the hose pipe (1) from the washer fluid hose (3) (arrow).
- Unlock and disconnect connector (2).
- Unclip the cable from the washer fluid reservoir (3) (arrows).

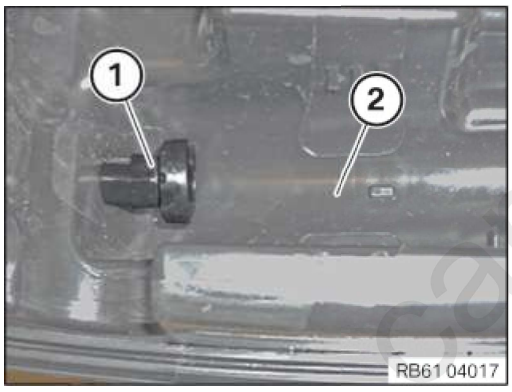
MAIN WORK

5 – Replace windscreen washer pump

▸ **Remove window washer pump**

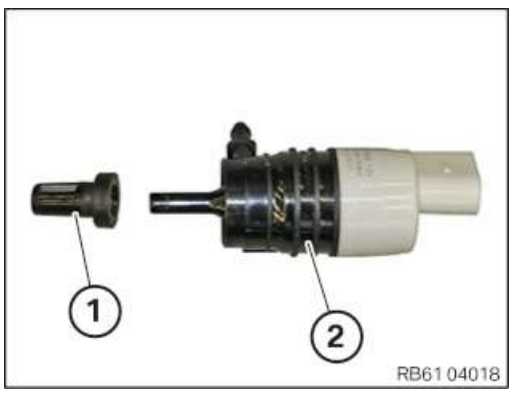


- Pull washer pump relay (1) out of washer fluid hose (2).



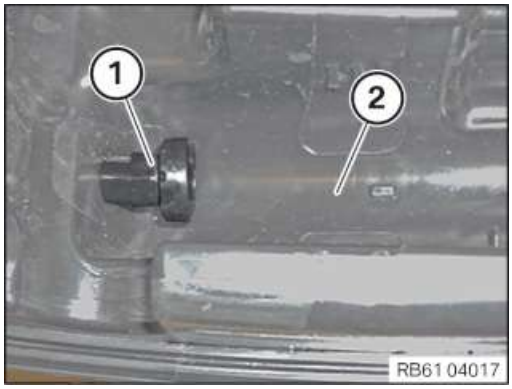
- Pull strainer with gasket (1) out of the washer fluid reservoir (2).

▸ **Installing the window washer pump**

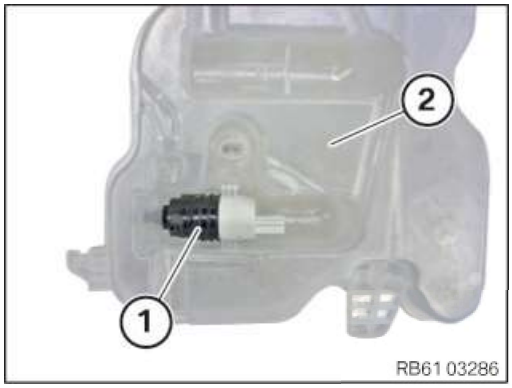


- Check the strainer with seal (1) and pump (2) for damage.

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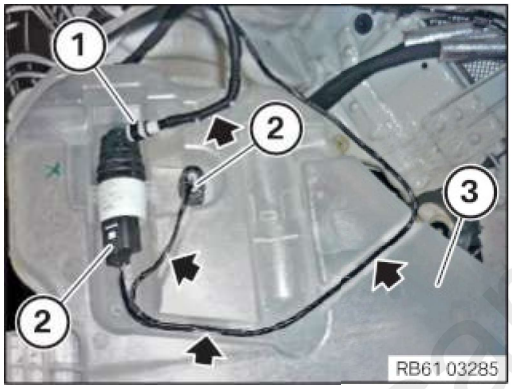
- Join strainer with gasket (1) into the washer fluid reservoir (2).



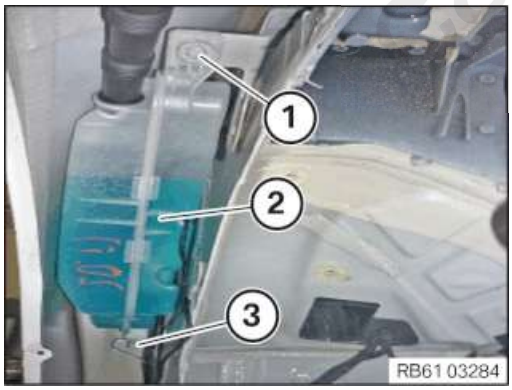
- Join windscreen washer pump (1) into washer fluid reservoir (2).

POSTPROCESSES

6 – Installing washer fluid reservoir



- Connect connector (2).
- Clip the cable into the washer fluid reservoir (3) (arrows).
- Connect and lock hose pipe (2).
- Clip the hose pipe (2) into the washer fluid reservoir (3) (arrow).

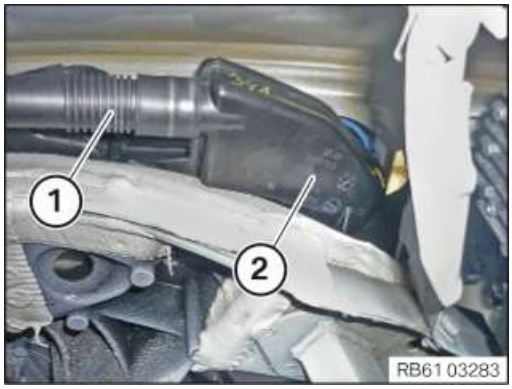


- Position the washer fluid reservoir (2) and feed towards the rear into the holder (3).
- Tighten down screw (1).

Washer fluid reservoir

	Tightening torque	8 Nm

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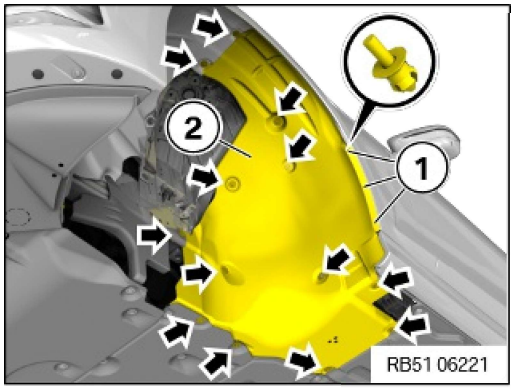


- Connect filler channel (1) with the fuel filler neck (2).

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

NOTICE

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



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

Wheel arch trim panel, front

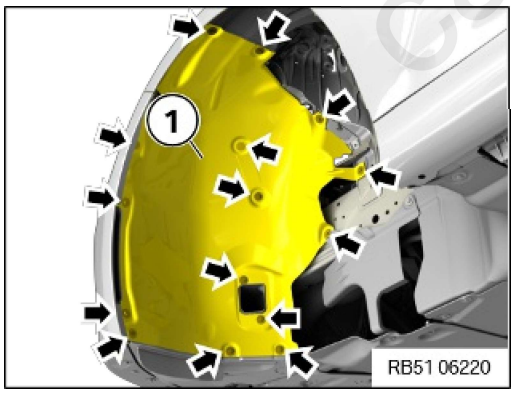
Thermoplastic hexagon screw		Tightening torque	2,6 Nm

- Secure expanding rivet (1).

8 – 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

9 – 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.

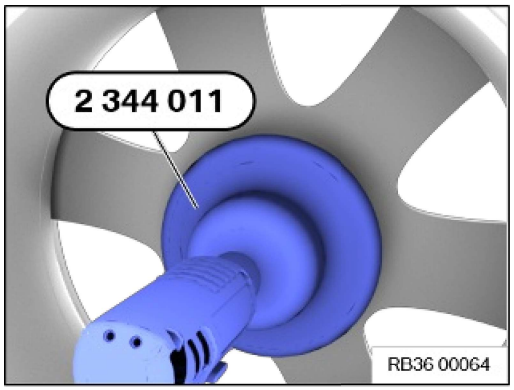
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  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.

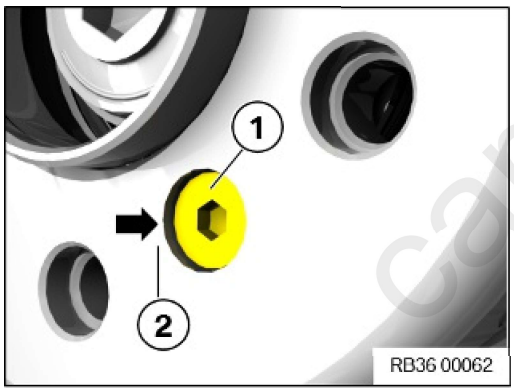


- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease contact surfaces.

Expendable materials

Universal cleaner	20 l, Canister	83192360981

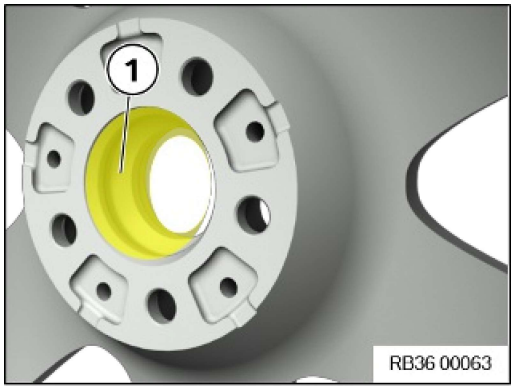


- Check that the mounting bolt (1) for the brake disc is securely seated.

  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 all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Check	140 Nm

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Additional Information

Overview of Tightening Torques

Washer fluid reservoir — Used in step 6

	Tightening torque	8 Nm

Wheel arch trim panel, front — Used in step 78

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

Brake disc to 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

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:

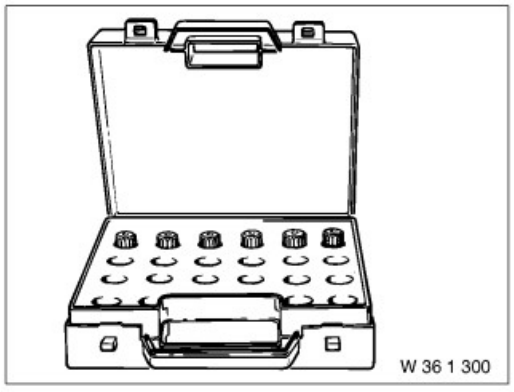
0 495 221 (36 1 323) Wheel stud



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	

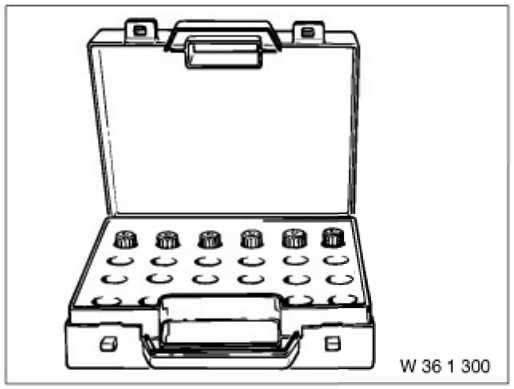
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0 495 225 (36 1 327) Wheel stud



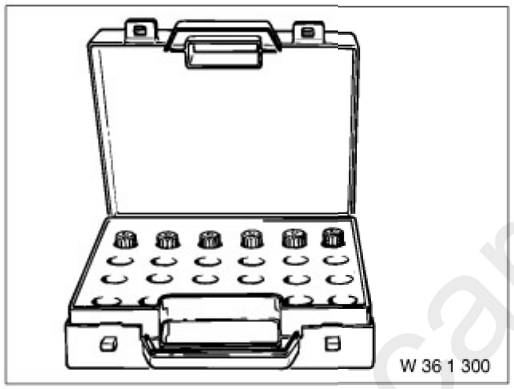
Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



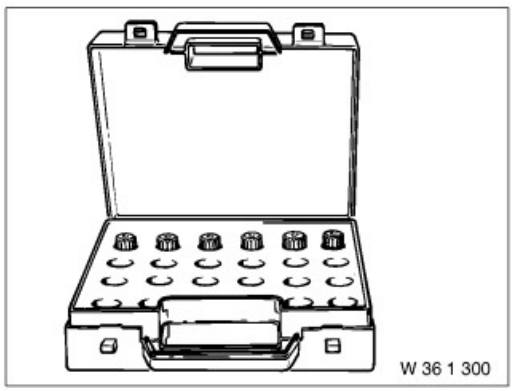
Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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	

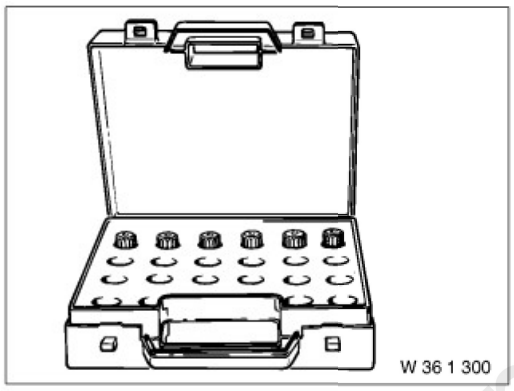
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0 495 229 (36 1 332) Wheel stud



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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61 71 065 Replace the washer fluid reservoir for the window washer system

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.

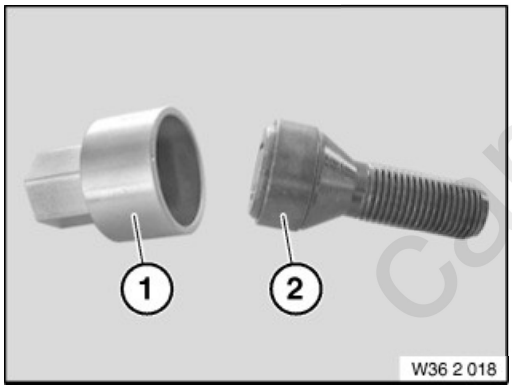
PRELIMINARY WORK

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**



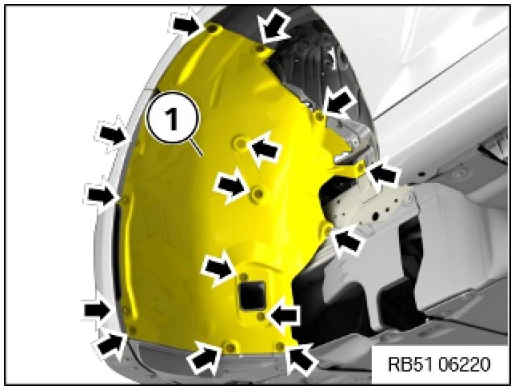
- To unscrew and tighten the wheel bolts with locking wheel bolts (2), use the correct adapter (1) from the set of special tools .

2 – Removing the front section of the front wheel arch cover

NOTICE

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

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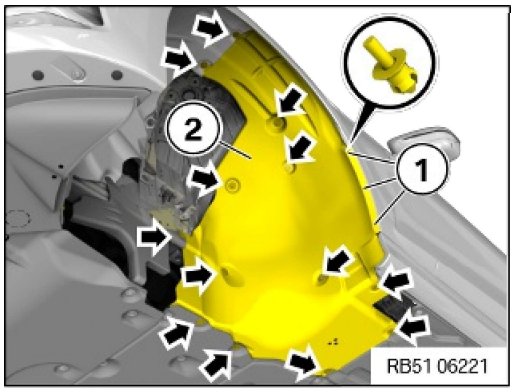


- Remove screws (arrows).
- Remove front section of the front wheel arch cover (1).

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

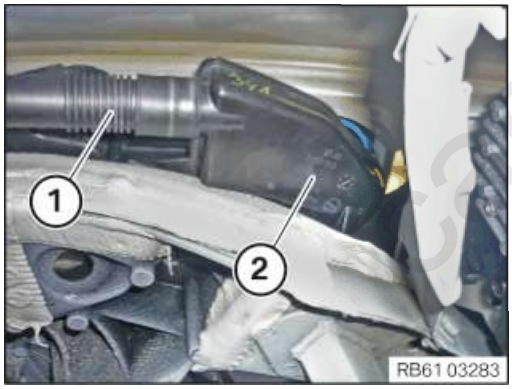
NOTICE

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

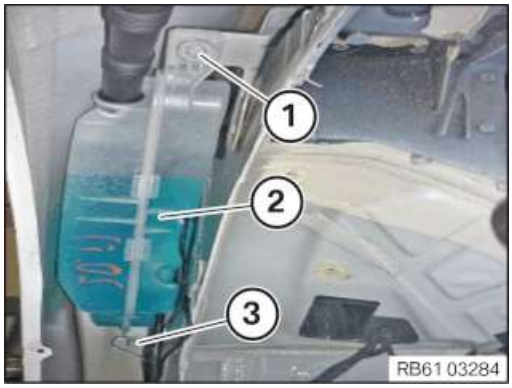


- Loosen the expanding rivet (1).
- Remove screws (arrows).
- Remove the rear section of the front wheel arch cover (2).

4 – Remove washer fluid reservoir

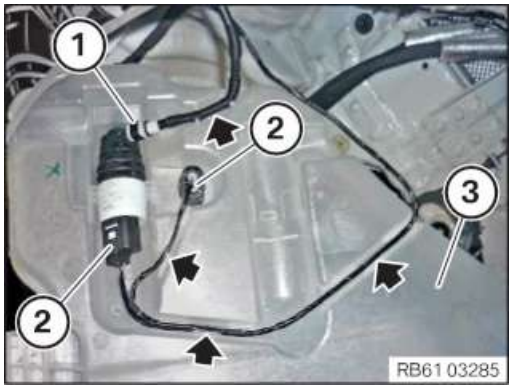


- Pull off filler channel (1) from fuel filler neck (2).



- Loosen screw (1).
- Guide out washer fluid reservoir (2) from holder (3).

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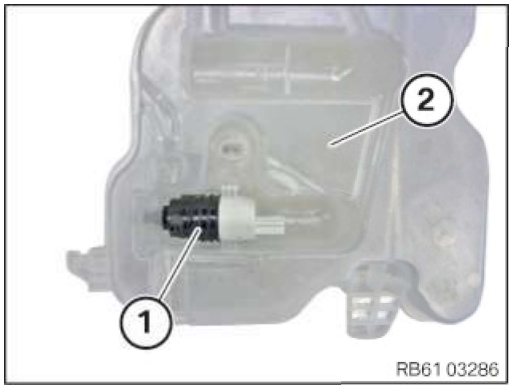


- Unlock hose pipe (1) and disconnect.
- Unclip the hose pipe (1) from the washer fluid hose (3) (arrow).
- Unlock and disconnect connector (2).
- Unclip the cable from the washer fluid reservoir (3) (arrows).

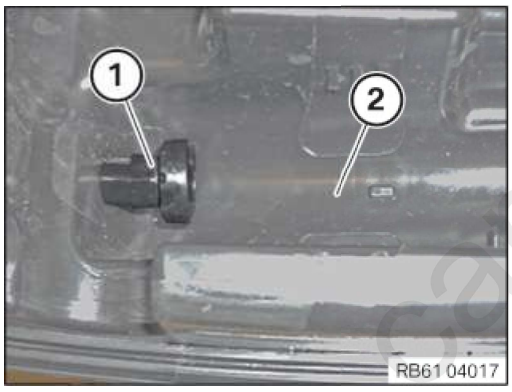
MAIN WORK

5 – Replace washer fluid reservoir

► **Remove window washer pump**

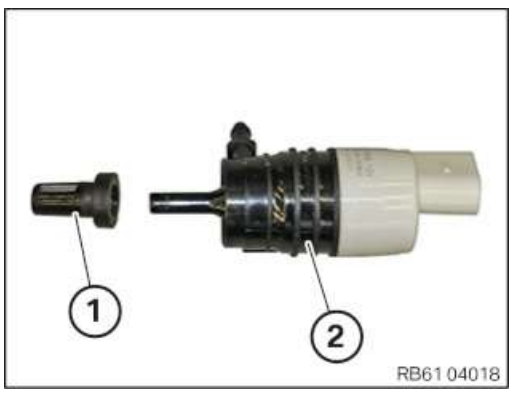


- Pull washer pump relay (1) out of washer fluid hose (2).



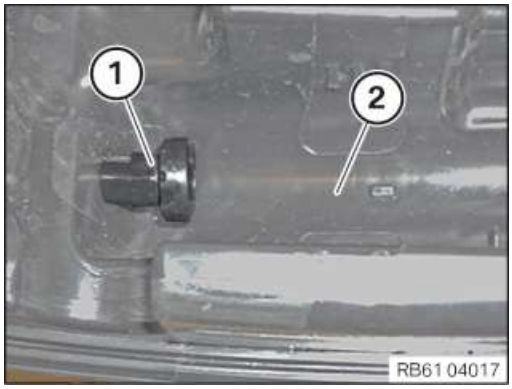
- Pull strainer with gasket (1) out of the washer fluid reservoir (2).

► **Installing the window washer pump**

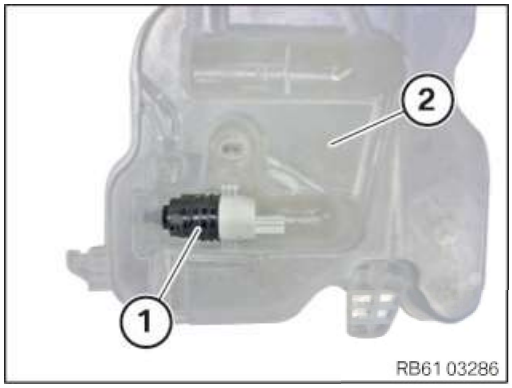


- Check the strainer with seal (1) and pump (2) for damage.

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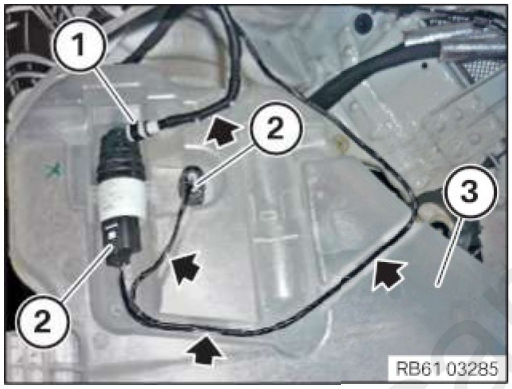
- Join strainer with gasket (1) into the washer fluid reservoir (2).



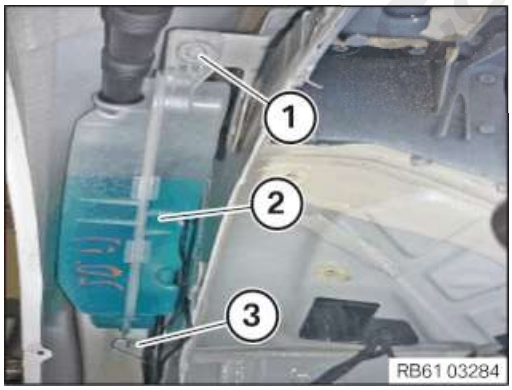
- Join windscreen washer pump (1) into washer fluid reservoir (2).

POSTPROCESSES

6 – Installing washer fluid reservoir



- Connect connector (2).
- Clip the cable into the washer fluid reservoir (3) (arrows).
- Connect and lock hose pipe (2).
- Clip the hose pipe (2) into the washer fluid reservoir (3) (arrow).

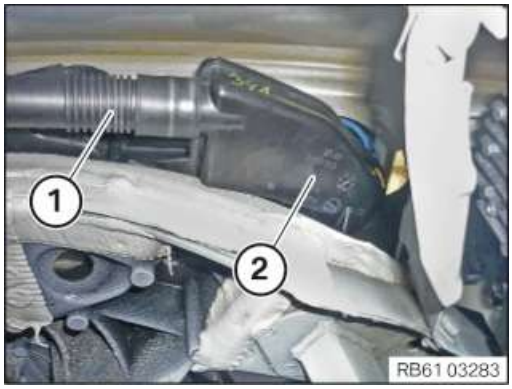


- Position the washer fluid reservoir (2) and feed towards the rear into the holder (3).
- Tighten down screw (1).

Washer fluid reservoir

	Tightening torque	8 Nm

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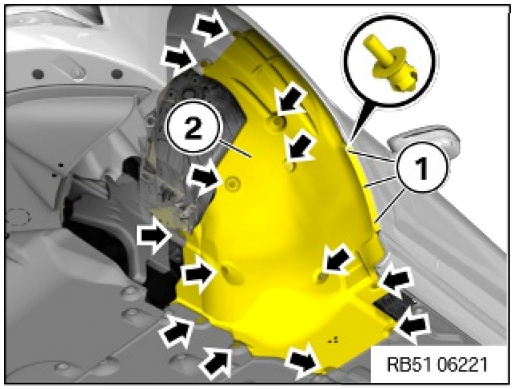


- Connect filler channel (1) with the fuel filler neck (2).

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

NOTICE

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



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

Wheel arch trim panel, front

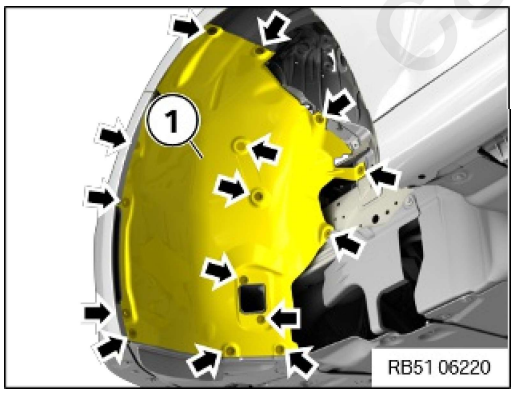
Thermoplastic hexagon screw		Tightening torque	2,6 Nm

- Secure expanding rivet (1).

8 – 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

9 – 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.

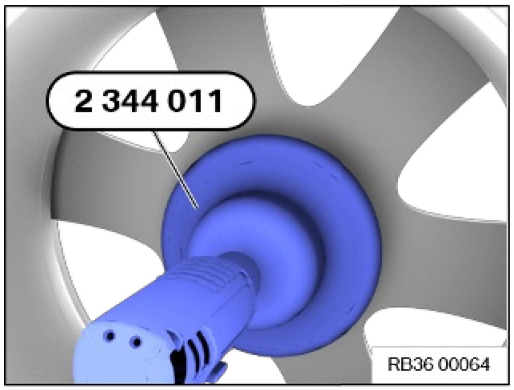
- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  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.

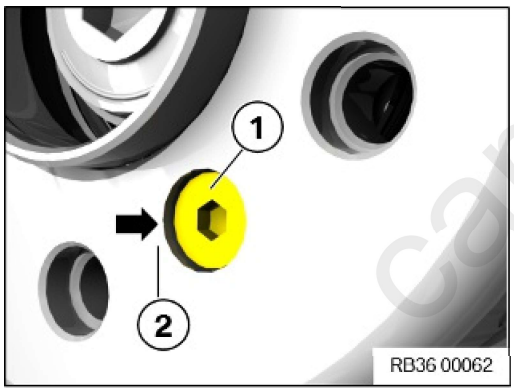


- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease contact surfaces.

Expendable materials

Universal cleaner	20 l, Canister	83192360981

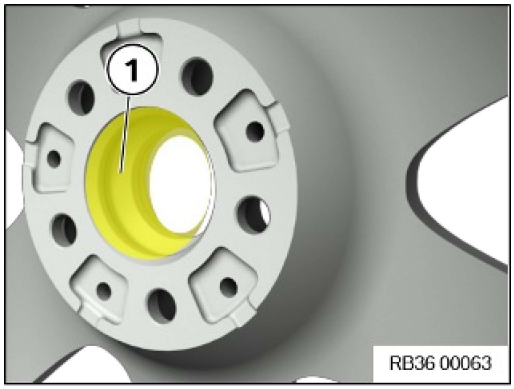


- Check that the mounting bolt (1) for the brake disc is securely seated.

  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 all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Check	140 Nm

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Additional Information

Overview of Tightening Torques

Washer fluid reservoir — Used in step 6

	Tightening torque	8 Nm

Wheel arch trim panel, front — Used in step 78

Thermoplastic hexagon screw		Tightening torque	2,6 Nm

Brake disc to 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

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:

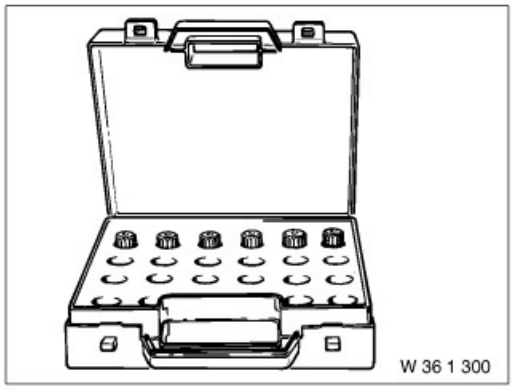
0 495 221 (36 1 323) Wheel stud



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	

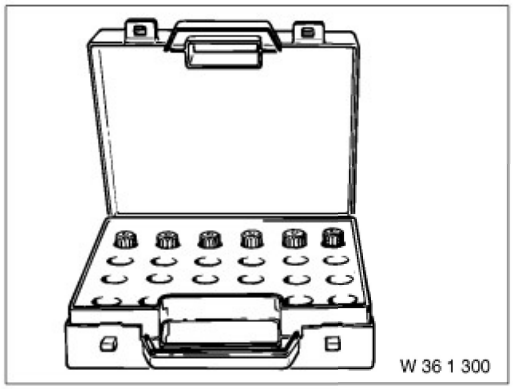
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0 495 225 (36 1 327) Wheel stud



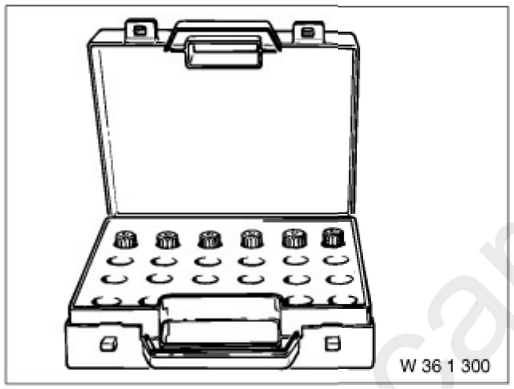
Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



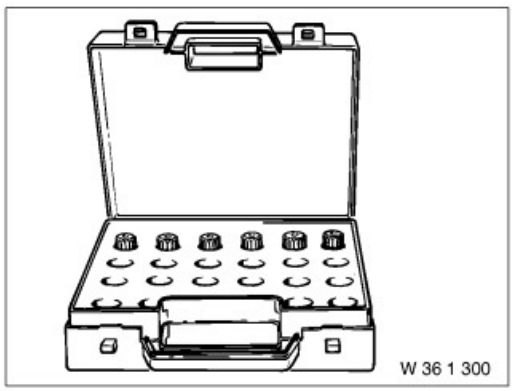
Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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	

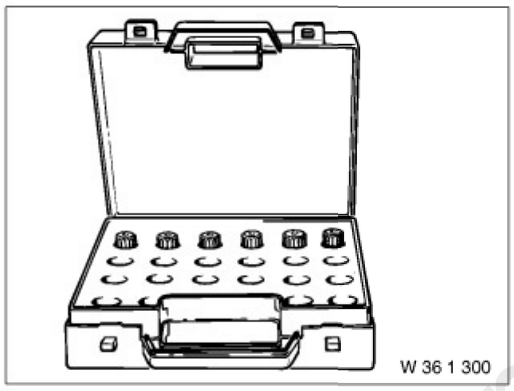
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0 495 229 (36 1 332) Wheel stud



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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