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 20 ... Battery replacement information

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 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.

If the vehicle electrical system of electric vehicles is not accessible due to a faulty 12 V battery, proceed as follows:

Battery exchange in electrified vehicles

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 exchange

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 the 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:

Register battery exchange

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

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

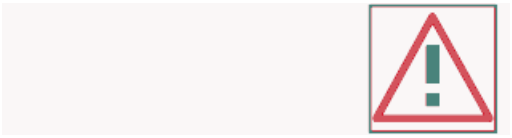
When installing a battery of a different size or a different battery type, this change in vehicle data must be programmed into the vehicle data in accordance with specifications.

Programming system:

- Battery retrofitting

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61 20 908 Carrying out a voltage interruption of the 12-V battery



Important!

Observe safety informations for handling vehicle battery.



There are two ways to carry out a voltage interruption of the 12-V battery:

1. Manually by disconnecting the battery earth lead
2. With the diagnosis system

1. Manually: Carry out the following steps:

- Switch off and disconnect battery charger
- Turn off ignition.
  For vehicles with ignition key: Ignition key in neutral position
  Vehicles with ID transmitter: Remove ID transmitter from slot
  For vehicles with Comfort Access: Secure terminal 30
- Disconnect negative battery lead
- Reconnect battery earth lead (to ensure bus activity)
- Observe a waiting period of 5–10 s
- Disconnect negative battery lead
- Observe a waiting period of approx. 1 minute
- Connect battery earth lead
  Tightening torque: 61 21 1AZ
- Connect and switch on battery charger
- Switch on ignition.

2. With the diagnosis system:

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

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61 00 ... Diagnosis for Condition Based Service

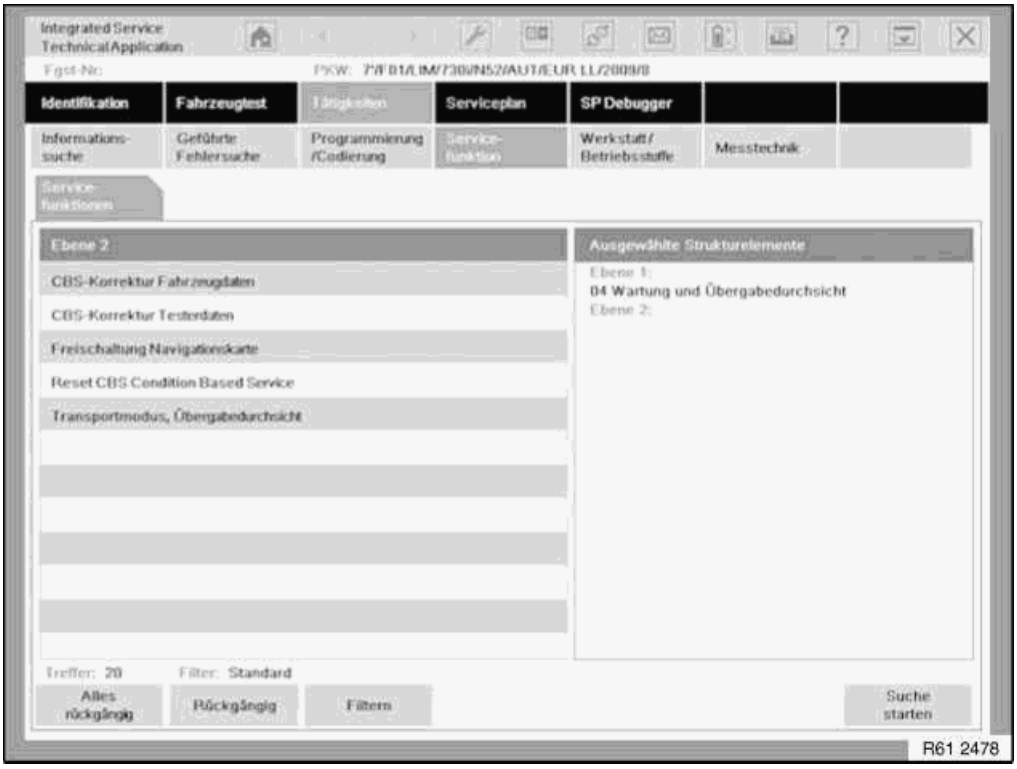


Note: Red symbol for pre-delivery check
The vehicle is coded at the end of line so that the red symbol for the pre-delivery check is shown in the Next Service indicator (same symbol as vehicle check).

The symbol is a reminder to the Service staff that the pre-delivery check has not yet been carried out on this vehicle.

Note: Do not carry out a reset.
Do **not** confuse this function with the "Vehicle check" scope of maintenance work. Do not run a reset with the KOMBI.

When executing the pre-delivery check with the "Transport mode / Pre-delivery check" service function: The symbol will be suppressed automatically after the service function has been executed.



4 service functions are available in the BMW diagnosis system for maintenance:

- Transport mode/pre-delivery check
- CBS correction, tester data
- Reset CBS
- CBS vehicle data correction

Service Function: Transport Mode/Pre-delivery check

In order to ensure that a vehicle can be handed over to the customer in proper condition, the "Transport mode/pre-delivery check" service function must be performed.

The following positions are checked during the pre-delivery check:

- Deactivation of the transport mode.
- To determine the vehicle-specific vehicle performance per week an adaptation process is activated. Transport and immobilisation periods before vehicle delivery to the customer therefore do not have any effect on the customer-specific weekly distance travelled.

  The weekly mileage/kilometrage is used to control escalation from "green" to "yellow" (approx. 4 weeks before "red") for maintenance scopes with remaining distances. It is the vehicle performance determined over the last 6 weeks which is taken into account.

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- Encoding or deletion of the legally-specified intervals for the legally stipulated vehicle inspection and exhaust-gas test.
- Inputting the target dates for the legally stipulated vehicle inspection and exhaust-gas test (automatically or manually).

  Automatically: by date entry of the first registration and the interval

  Manually: by directly entering the target date
- Entry of local, service-related phone numbers, depending on vehicle equipment specification (e.g. BMW Group Mobile Service, BMW Hotline, customer's local dealer).

  The country-specific phone numbers are displayed in the BMW diagnosis system as a note. When asked for input information the phone numbers can simply be read off.
- Information on initialising the TeleServices depending on the vehicle equipment.
- Checking and where necessary adjusting the on-board date for the vehicle.
- Entry of the date of the first registration of the vehicle.
- Clear diagnostic fault entries from fault memory.

Note: Reduction of input effort.
In order to minimise the input effort for the workshop, standardised data is saved on the BMW diagnosis system (for repeat use). The standardised data can be changed with the "CBS correction, tester data" service function.

Service Function: CBS correction, tester data

With the "Pre-delivery check" service function, data will automatically be stored in the vehicle. The standardised data can be changed with the "CBS correction, tester data" service function.

The following standardised data can be modified:

- Phone numbers:
  - BMW Group Mobile Service
  - BMW Hotline
  - Local dealer

  The country-specific phone numbers are contained in the BMW diagnosis system as a note (to be read off when required for input). The phone numbers must be input with the international dialling code.
- Legally stipulated vehicle inspection (country-specific):
  - Encoding or deletion
  - Interval for calculating the target date

  The target date is calculated on the basis of the date of the first registration.
- Legally stipulated exhaust-gas test (country-specific):
  - Encoding or deletion
  - Interval for calculating the target date

  The target date is calculated on the basis of the date of the first registration.

Note: Automation after installation of the BMW diagnosis system.
If the pre-delivery check is being carried out for the first time, the standardised data will be defined automatically. It is therefore not necessary to enter the data separately.

Service Function: Reset CBS Condition Based Service

The scope of maintenance work can be reset with the "Reset CBS Condition Based Service" service function. Even when the availability is above 80 %. The reset via the BMW diagnosis system has the advantage that the on-board date is corrected automatically.

The individual maintenance scopes are displayed in the BMW diagnosis system with service counter and availability.

- The service counter is increased by one count on resetting. In new vehicles all service counters are set to "1".

  The service counters are used in the Service Acceptance Module (SAM) to control the additional work for specific maintenance operations.
- On resetting the availability is set at 100%. The percentage availability is the wear value for the maintenance operation.

  The greater the availability, the further away the next service.

  0% means that the maintenance measure must be carried out.

Service Function: CBS vehicle data correction

Important! The datas have been exceeded.
After carrying out this service function, it will no longer be possible to restore the previous status.

The service function "CBS vehicle data correction" is available if resetting has been carried out **unintentionally**. Thus the availability of a maintenance measure can be corrected to a value which corresponds more closely to the actual situation.

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For this correction a date or kilometre reading is entered. This data is processed internally to give a percentage availability. Here, the BMW diagnosis system will only accept a value which is lower that the current status in the control unit. In addition, the service counter of the scope is automatically reduced by one counter during correction.

The entries in the service booklet are used to determine the actual availability. The most recent maintenance measure (kilometre reading and date) allows the reconstruction availability for the specific scope that corresponds more closely to the actual situation. This does not include the correction of the brake pad availability. The remaining brake pad thickness must be measured and entered (in millimetres).

Note: Reference for distance- and time-dependent maintenance scopes
On correction the availability depends on the distance-dependent and time-dependent calculation.

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61 00 ... Encode/program control unit(s)

Note:
Depending on the vehicle and the equipment, programming/encoding has the following flat rate unit position:

- 61 00 710
- 61 00 720
- 61 00 730

Notes:

- In order to avoid incorrect programming procedures and Check Control message, it is essential to always use the most recent version when working with the ISTA/P programming system.
- Battery voltage must not drop below **13.0 V** during programming. Connect battery charger prior to programming.

  Only use battery chargers* recommended by BMW for low voltage vehicle electrical system.

  *Sourcing reference Workshop Equipment Catalogue



Attention!

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: Observe PuMA measure 55176388!



programming routine via ISTA/P:

- Connect the battery charger to the vehicle.
- Connect the programming system with the vehicle.
- Determine the action plan.
- Accept action plan with the control units to be programmed/encoded and enabled, if necessary or work through.
- Observe the reworking list!
- If applicable, connect the workshop system to the vehicle, depending on the reworking list. Perform brief test and delete fault memory.

  Note:

  With the integration of the service functions and the "quick clearing" function in ISTA/P, it may not be necessary to change to the workshop system. Check the rework list accordingly!
- The information about programming the workshop system and the corresponding notes in the user documentation must be observed.

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

1 â€“ 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 ... Notes for disconnecting and connecting the vehicle battery

Observe safety informations for handling vehicle battery.

Before disconnecting vehicle battery:

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

Note:

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

Attention!

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

General notes on disconnecting the vehicle 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 version with 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 vehicle battery is connected.
- When installing battery terminal: Tightening torque 61 21 1AZ.

Only lead AGM battery:

- 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.

Note the following after having connected the vehicle battery:

Attention!

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.

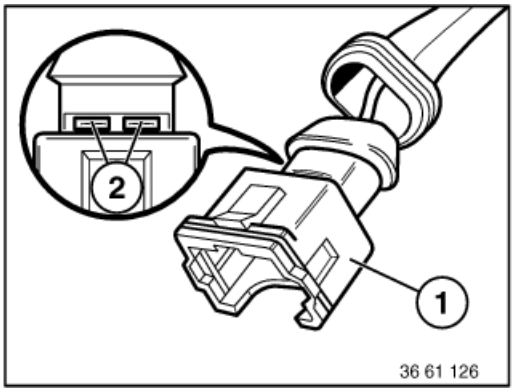
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61 13 ... Notes for opening contacts and locks of different plug contact systems

Special tools required:

- 61 0 300
- 61 0 400
- 61 1 100

Abbreviations of contacts and what they mean:	
ELA	**Strand seal**
D 1.5 / 2.5 / 3.5	**Round contacts with 1.5 mm, 2.5 mm or 3.5 mm diameter**
MDK	**Miniature double flat spring contact**
JPT	Junior Power timer
DFK	Double flat spring contacts
Elo	Electronic contacts
Elo Power	Electronic contacts for heavy load
MQS	Micro Quadlock system
MPQ	Micro Power Quadlock
MLK	Mini laminated contact
SLK	Sensor laminated contact
LSK	Load current contact
MLK	Mini laminated contact
Mcon	Multi contact



Important!

The contacts can be changed on ultrasonically welded connectors (1).

Ultrasonically welded connectors (1) must be replaced completely.

Ultrasonic-welded connectors (1) can be identified by the welds (2) on their longitudinal side.

Note:

Special tools referred to in the repair instructions below are contained in the following special tool sets:

- Unlocking and pressing-off tool 61 1 150

  is replaced as of 09/2005 by 61 0 300 (BMW) and 61 0 400 (MINI)
- Release and pressing-off tool 61 1 100 (engine)

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Repair instructions for opening connector housings and removing contacts of different connector systems:

Connector system D 1.5/D 2.5:

- Circular connectors, 7- or 8-pin, system D 2.5
- Circular connectors, 13-pin, system D 2.5
- Circular connectors, 20-pin, system D 2.5
- Circular connectors, 4-, 7-, 10-, 12- or 25-pin, system D 1.5/D 2.5
- In-line connectors, 15-pin, system D 2.5
- In-line connectors, 8-, 12-pin, system D 2.5
- In-line connectors, 30-pin, system D 2.5
- In-line connectors, 20-pin, system D 2.5

Connector system JPT/MDK/DFK:

- In-line connectors, 2-pin, System JPT ELA
- In-line plugs, 2-pin, System MDK 3 plus 2.8
- In-line plugs, 4-pin, System DFK ELA

Connector system Elo/Elo Power:

- Inline plugs, 4-, 10-pin, System Elo
- In-line connectors, 6- to 50-pin, System Elo
- Inline plugs, 3-, 6-pin, System Elo-Power 2.8

Connector system LSK:

- Connector housing LSK contact

Connector system MQS/MPQ:

- Inline connectors, 6-, 8-pin, System MQS
- Inline plugs, 2-pin, System MPQ 2.8
- Control unit connectors, 25-, 35-, 55-, 83-, 88-pin
- In-line plugs, 24-pin, Hybrid System MQS/MPQ
- Socket housing 42-, 43-pin, Hybrid System MQS / MPQ
- Socket housings 2x21-, 2x27-pin, Hybrid System MQS/MPQ, Elo/Elo Power
- In-line connectors, 30-pin, Hybrid System MQS/MPQ
- Socket housings, 5-, 8-pin, System MQS/MPQ
- Socket housing (radio connector), Hybrid System MQS/MPQ

For connector contact systems not listed, refer to Service Information:

SI 2 05 05 217
SI 2 05 06 294
SI 2 03 08 440
SI 2 08 06 312
SI 2 02 08 439
SI 2 01 08 438

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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 60Â 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 wheel arch, for example):

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- 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.

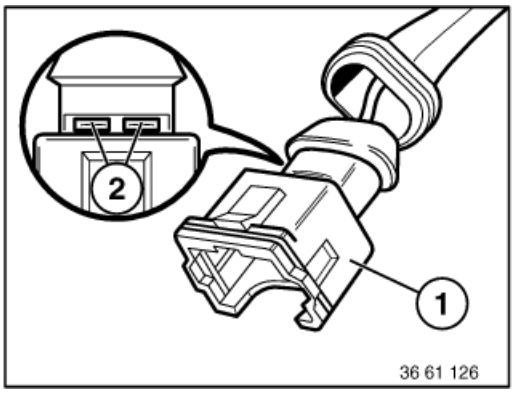
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61 13 ... Opening plug housings and removing contacts of different plug systems

Special tools required:

- 61 0 300
- 61 0 400
- 61 1 100
- 61 1 150

Abbreviations of contacts and what they mean:	
ELA	**Strand seal**
D 1.5 / 2.5 / 3.5	**Round contacts with 1.5 mm, 2.5 mm or 3.5 mm diameter**
MDK	**Miniature double flat spring contact**
JPT	Junior Power timer
DFK	Double flat spring contacts
Elo	Electronic contacts
Elo Power	Electronic contacts for heavy load
MQS	Micro Quadlock system
MPQ	Micro Power Quadlock
MLK	Mini laminated contact
SLK	Sensor laminated contact
MLK	Mini laminated contact
Mcon	Multi contact



Important!

The contacts can be changed on ultrasonically welded plugs (1).

Ultrasonically welded plugs (1) must be replaced completely.

Ultrasonic-welded connectors (1) can be identified by the welds (2) on their longitudinal side.

Note:

Special tools referred to in the repair instructions below are contained in the following special tool kits:

- Release and press-out tool 61 1 150

  is replaced from 09/2005 by 61 0 300 (BMW) and 61 0 400 (MINI)
- Release and press-out tool 61 1 100 (engine)

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Repair instructions for opening plug housings and removing contacts of different plug systems:

Plug system D 1.5/D 2.5:

- Circular plugs, 7-, 8-pin, System D 2.5
- Circular plugs, 13-pin, System D 2.5
- Circular plugs, 20-pin, System D 2.5
- Circular plugs, 4-, 7-, 10-, 12-, 25-pin, System D 1.5/D 2.5
- In-line plugs, 15-pin, System D 2.5
- In-line plugs, 8-, 12-pin, System D 2.5
- In-line plugs, 30-pin, System D 2.5
- In-line plugs, 20-pin, System D 2.5

Plug system JPT/MDK/DFK:

- In-line plugs, 2-pin, System JPT ELA
- In-line plugs, 2-pin, System MDK 3plus 2.8
- In-line plugs, 4-pin, System DFK ELA

Plug system Elo/Elo-Power:

- In-line plugs, 4-, 10-pin, System Elo
- In-line plugs, 6- to 50-pin, System Elo
- In-line plugs, 3-, 6-pin, System Elo-Power 2.8

Plug system MQS/MPQ:

- In-line plugs, 6-, 8-pin, System MQS
- In-line plugs, 2-pin, System MPQ 2.8
- Control unit plugs, 25-, 35-, 55-, 83-, 88-pin
- In-line plugs, 24-pin, Hybrid System MQS/MPQ
- Socket housing 42-, 43-pin, Hybrid System MQS / MPQ
- Socket housings 2x21-, 2x27-pin, Hybrid System MQS/MPQ, Elo/Elo-Power
- In-line plugs, 30-pin, Hybrid System MQS/MPQ
- Socket housings, 5-, 8-pin, System MQS/MPQ
- Socket housing (radio plug), Hybrid System MQS/MPQ

For plug contact systems not listed, refer to Service Information:

SI 2 05 05 217

SI 2 05 06 294

SI 2 03 08 440

SI 2 08 06 312

SI 2 02 08 439

SI 2 01 08 438

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61 00 ... Repairing airbag cables

Important!

> **Only repair those cables which show visible signs of damage. In the event of visible damage, make sure there is only one cable repair in effect after the repair work. If no visible damage can be identified, the entire cable must be replaced. When carrying out repairs to the airbag wiring harness, you must use the spare parts offered in the Electronic Parts Catalogue (EPC).**

Safety regulations for handling components of airbag system.

Instructions for disconnecting and connecting battery.

In event of non-visible damage to wiring harness:

Disconnect plug connection on airbag module or on adapter plug. It is absolutely vital to disconnect the contacts in succession as there is a risk of mixing up (similar parts)! Cut through one cable after the other at an appropriate position, do not under any circumstances cut through both cables at the same time. Insulate cables remaining in wiring harness with insulating tape. Now disconnect plug connection on airbag control unit. Unpin contacts. Cut through one cable after the other at an appropriate position and insulate with insulating tape, do not under any circumstances cut through both cables at the same time. Pin contacts of repair cable for airbag control unit in control unit plug, assignment of repair cables is relevant. Lay repair cable in vehicle parallel to existing airbag lead. Now pin in contacts for airbag control unit or contacts of adapter plug, assignment of repair cables is relevant. Cut off excess length of repair cable in proximity (visible area) of airbag module or of adapter plug. Twist open cables. With the butt connectors and heat-shrink tubings in the Electronic Parts Catalogue (EPC), reconnect the cables with the same cable colours. Twist cables again, open length (twist) must not exceed 40 mm. Secure interface (heat-shrink tubing) with insulating tape to prevent cables from twisting open.

Instructions for cutting off, insulating, crimping cables, installing and removing contacts:

Cutting off and insulating cables.

Repairing a plug connection using butt connectors.

Installing and removing contacts.

In event of visible damage:

Expose cable at damaged areas. Cut through one cable after the other at an appropriate position and insulate cables no longer required in wiring harness with insulating tape, do not under any circumstances cut through both cables at the same time. Now, depending on the scope of work, unpin contacts either on airbag control unit/airbag module or on adapter plug. Cut off unpinned cables. Insulate cables remaining in wiring harness with insulating tape. Now pin in contacts of repair cable, assignment of repair cables is relevant. Lay repair cable in vehicle parallel to existing airbag lead up to separation point. Cut off excess length of repair cable. Twist open cables. Connect cables with butt connectors and heat-shrink tubings in Electronic Parts Catalogue (EPC), assignment of repair cables is relevant. Twist cables again, open length (twist) must not exceed 40 mm. Secure interface (heat-shrink tubing) with insulating tape to prevent cables from twisting open.

Instructions for cutting off, insulating, crimping cables, installing and removing contacts:

Cutting off and insulating cables.

Repairing a plug connection using connectors.

Installing and removing contacts.

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



Warning!

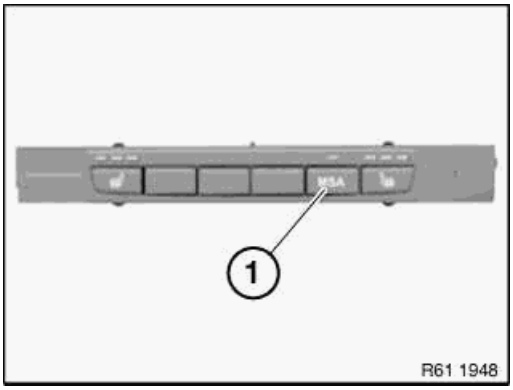
If the engine hood/bonnet contact is pulled upwards (workshop mode), the information "switch closed" is output. The automatic engine start-stop function is active.

An automatic engine start is possible.

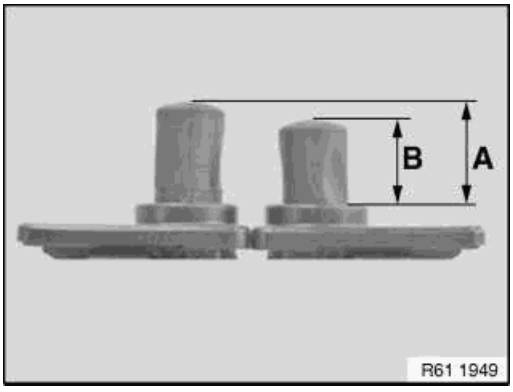
Observe safety precautions when working on MSA vehicles.

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

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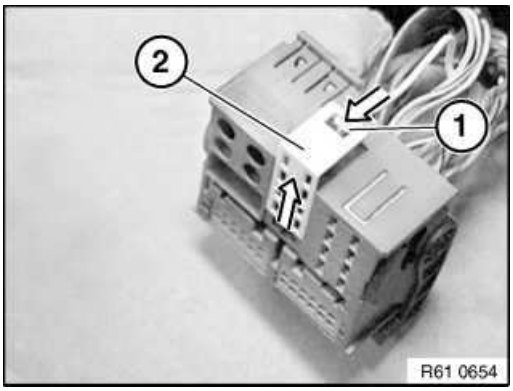
61 13 ... Socket housing (radio connector), Hybrid System MQS/MPQ

Special tools required:

- 61 0 314

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

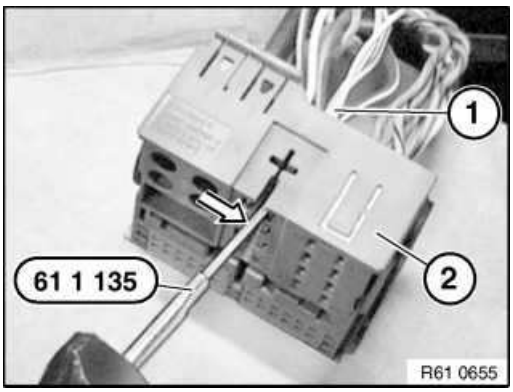
- MQS (Micro Quadlock System)
- MPQ, width 2.8 mm (Micro Power Quadlock)
- MPQ, width 5.2 mm (Micro Power Quadlock)



Removing MPQ contacts from radio connector:

Press lock (1) in direction of arrow.

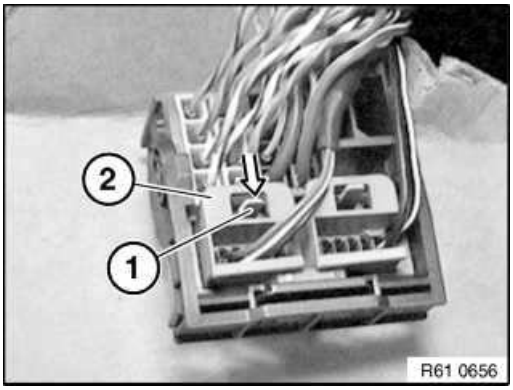
Detach secondary lock (2) from radio plug.



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.

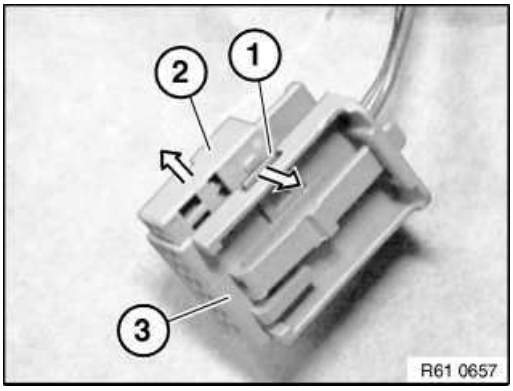
Pull wire (1) with socket contact out of radio connector (2).



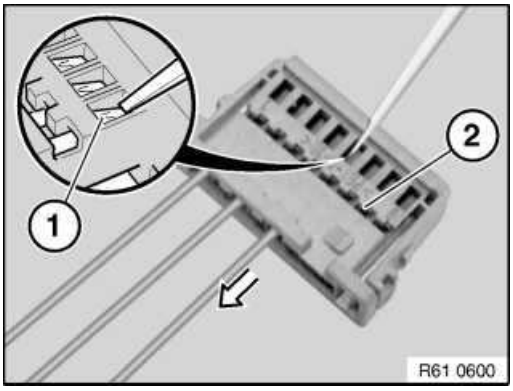
Removing MQS contacts from contact carrier:

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

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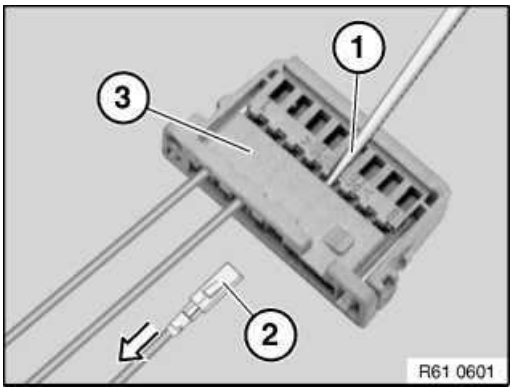
Press lock (1) in direction of arrow. Pull contact carrier (2) out of housing (3).*Note:*
When the contact carrier is pulled out, the secondary locks of the socket contacts are raised.



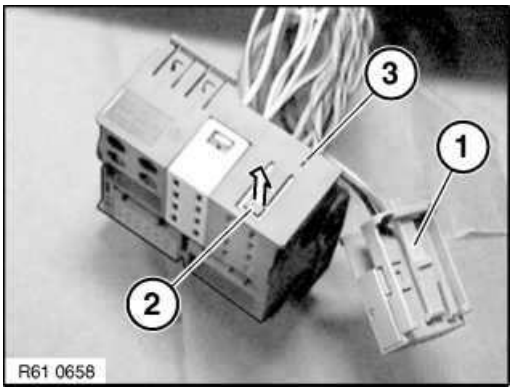
Note:
Schematic diagram shows the 8-pin socket housing by way of example.

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).



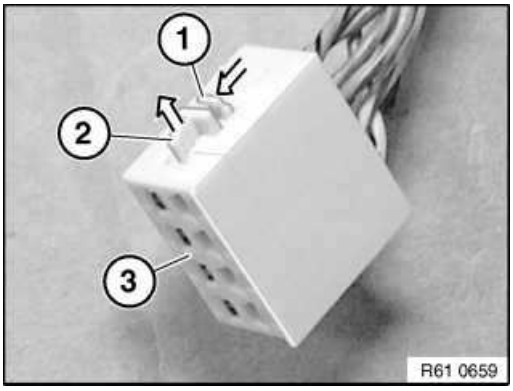
Removing MPQ contacts from contact carrier:

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

Raise lock (2) on radio connector.

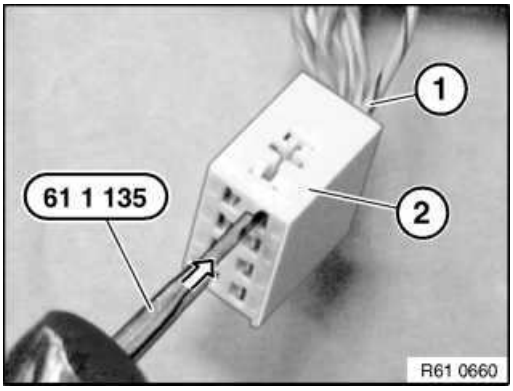
Pull contact carrier (3) out of radio connector.

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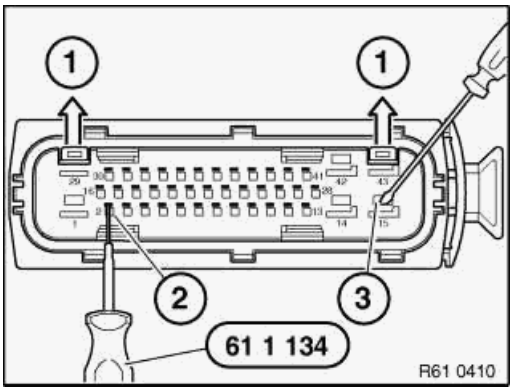
61 13 ... Socket housing 42-, 43-, 46-pin, Hybrid System MQS / MPQ

Special tools required:

- 61 0 312

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

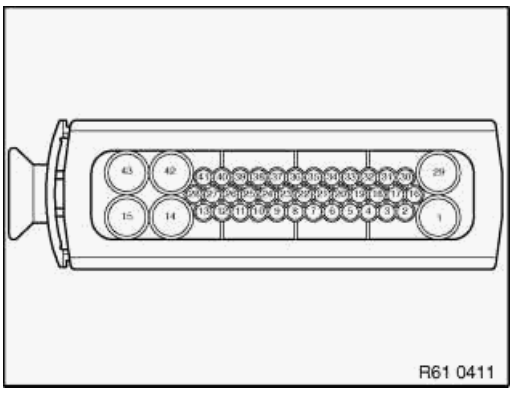
- MQS (Micro Quadlock System)
- MPQ, width 2.8 mm (Micro Power Quadlock)
- MPQ, width 5.2 mm (Micro Power Quadlock)



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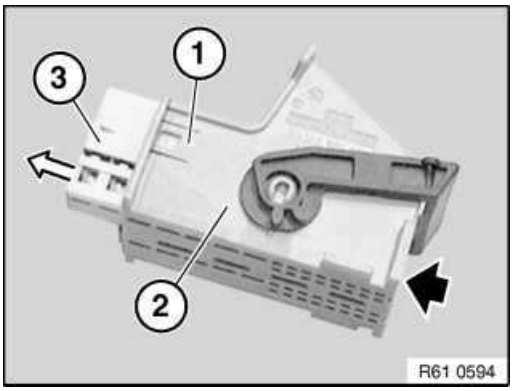
61 13 ... Socket housings, 2x21-, 2x27-pin, Hybrid Systems MQS/MPQ, Elo/Elo Power

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)

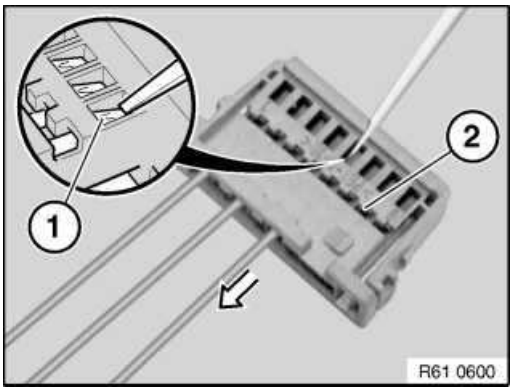


Raise lock (1) on housing (2).

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

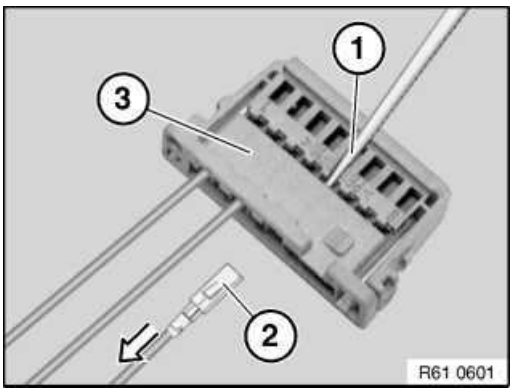
Note:
The second contact carrier is pushed out in the same way.

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).



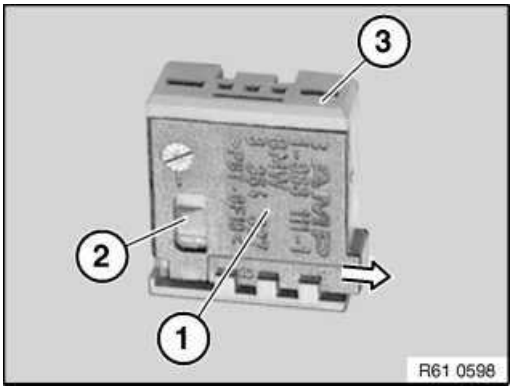
Hold down retaining hook in secondary lock (1) again and pull cable with socket contact (2) completely out of contact carrier (3).

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

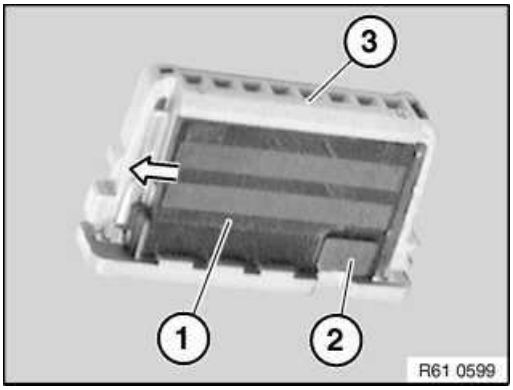
Manufactured by AMP: The following contact types without strand sealing can be fitted in the connector housings:

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



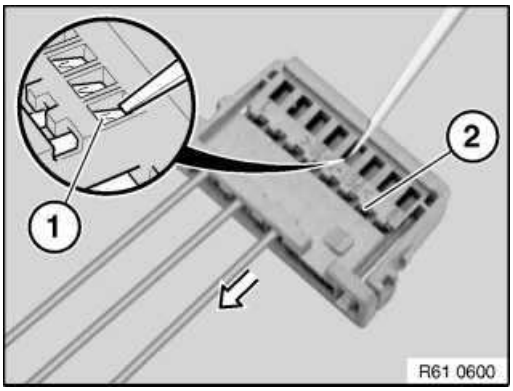
Socket housing, 5-pin (Hybrid System MQS/MPQ)

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



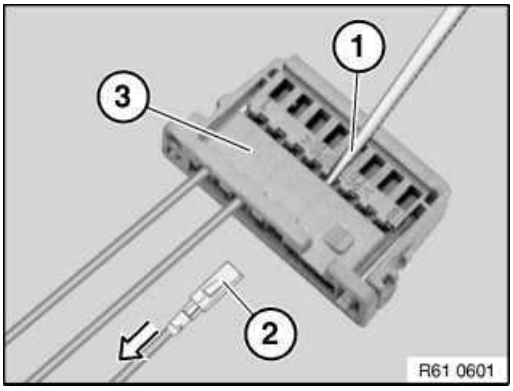
Socket housing, 8-pin (MQS):

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 ... Treating cables and optical fibres



Special tools required:

- 61 4 320
- 61 0 200



Note:
Special tools referred to in the repair instructions below are contained in the following special tool sets:

Repair range for vehicle electrical system	SI 2 04 07 341
Crimping set with pliers for optical fibres, Micro Power Quadlock (MPQ), Micro Quadlock System (MQS) contacts and universal crimping head	61 4 320 61 0 200

Subject of repair instructions

- Special tools for wiring harness repairs
- Cutting cables to length and strip insulation
- Crimping stop parts (contacts)
- Butt connector for repairing a plug connection
- Comb connector for retrofitting/repairs
- Cutting to length and stripping insulation from optical fibres

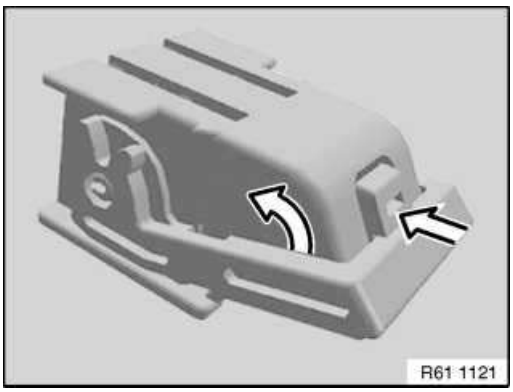
  Crimping optical fibres

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61 13 ... Unlocking and disconnecting different plug connections

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

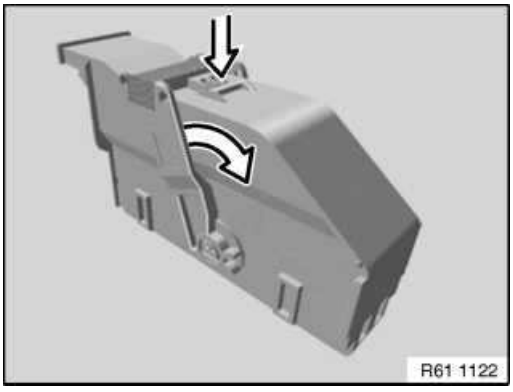
Differences in the details of the size and shape of the plug connections are possible.



1.

Press lock and open release clip in direction of arrow.

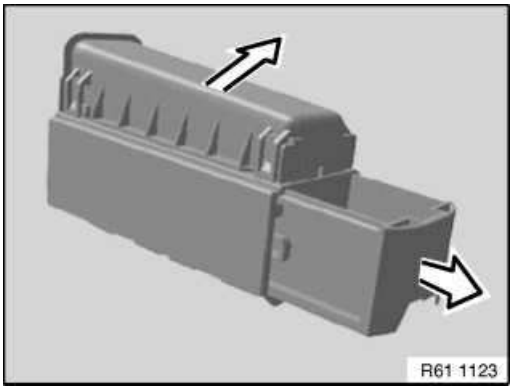
Disconnect plug connection.



2.

Press lock and open release clip in direction of arrow.

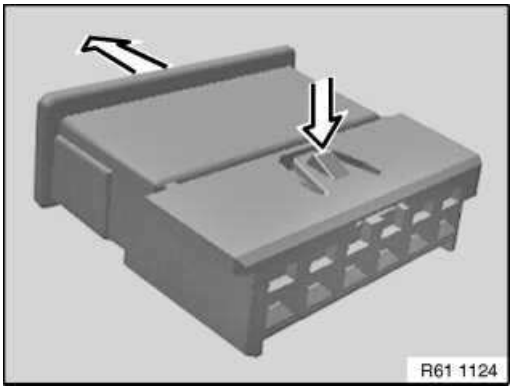
Disconnect plug connection.



3.

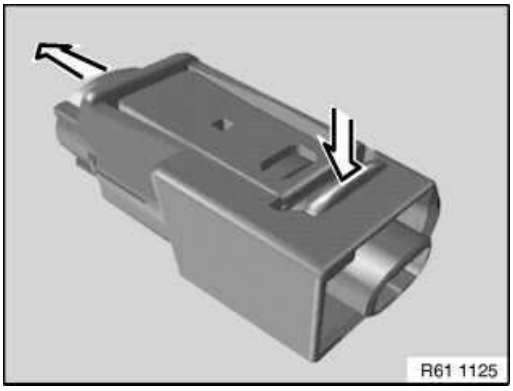
Open release clip in direction of arrow and disconnect plug connection in direction of arrow.

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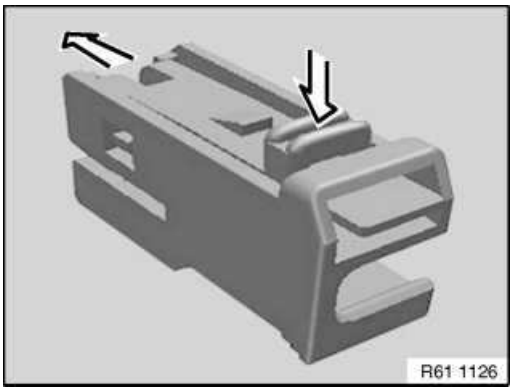
4.

Press lock and disconnect plug connection in direction of arrow.



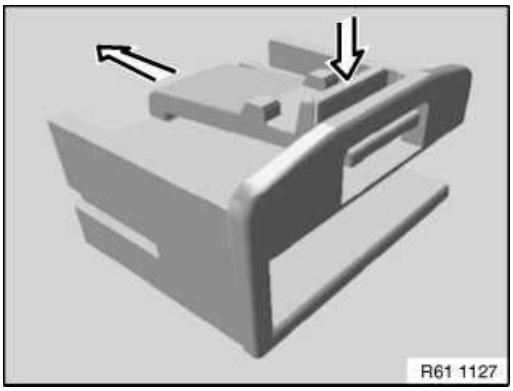
5.

Press lock and disconnect plug connection in direction of arrow.



6.

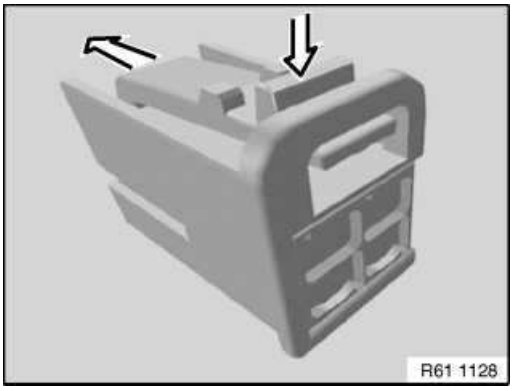
Press lock and disconnect plug connection in direction of arrow.



7.

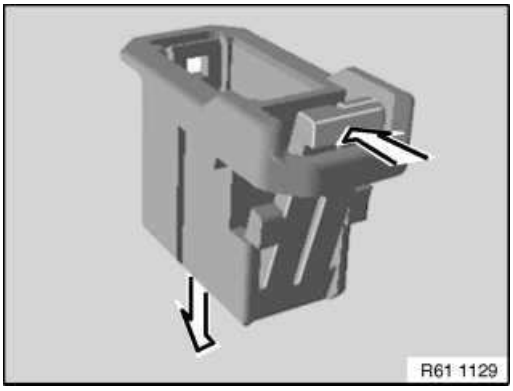
Press lock and disconnect plug connection in direction of arrow.

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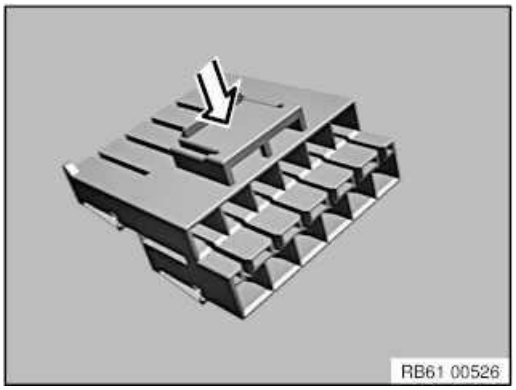
8.

Press lock and disconnect plug connection in direction of arrow.



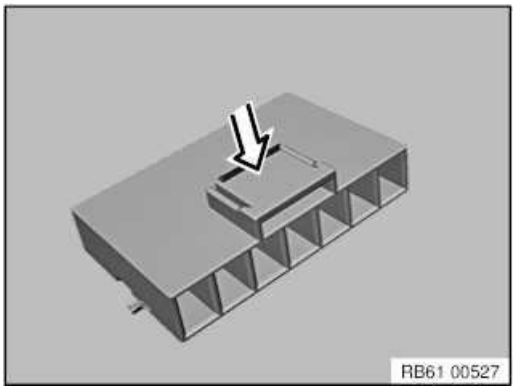
9.

Press lock and disconnect plug connection in direction of arrow.



10.

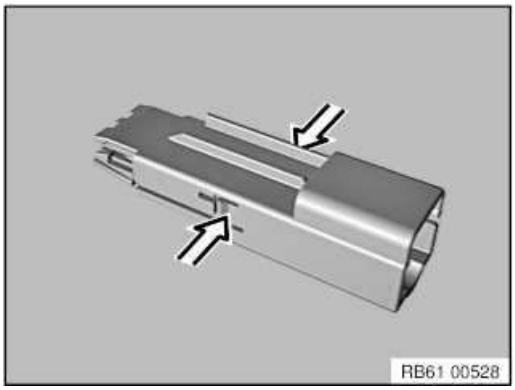
Press the lock and detach plug connection.



11.

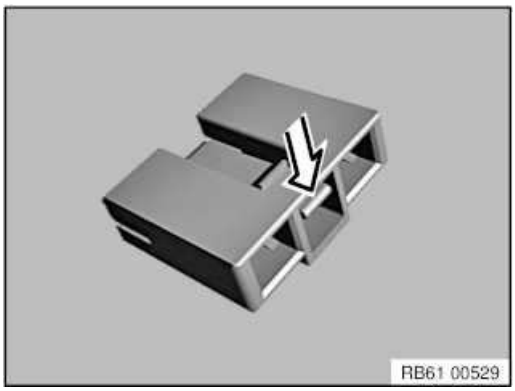
Press the lock and detach plug connection.

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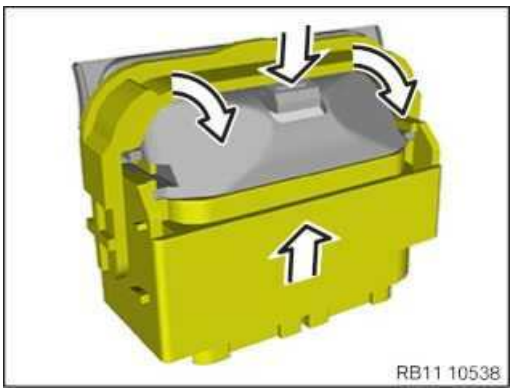
12.

Press the lock on both sides and detach plug connection.



13.

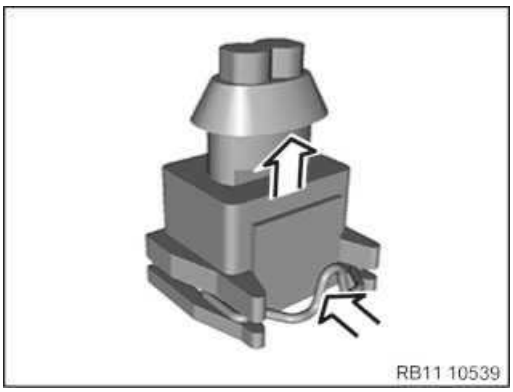
Press the lock and detach plug connection.



14.

Press lock and open release clip in direction of arrow.

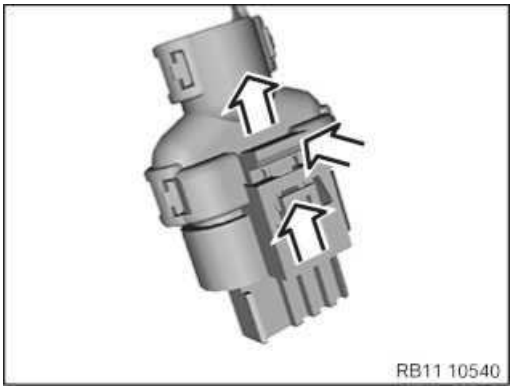
Disconnect plug connection.



15.

Press the lock and detach plug connection.

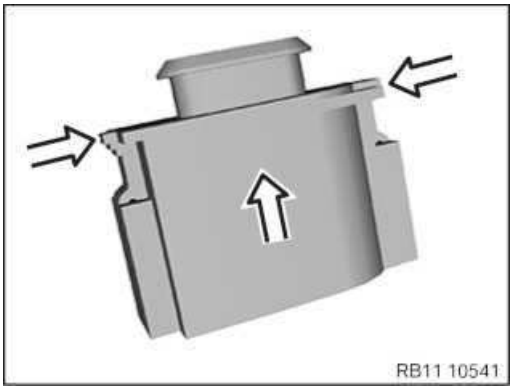
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16.

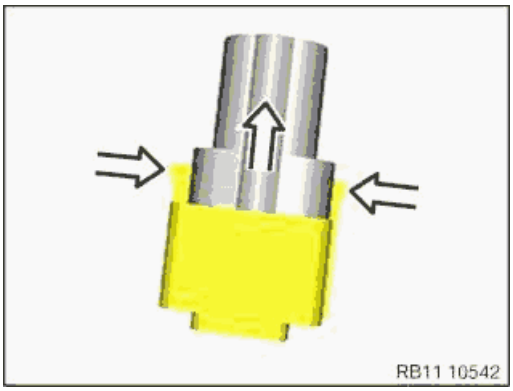
Pull out lock and press.

Disconnect plug connection.



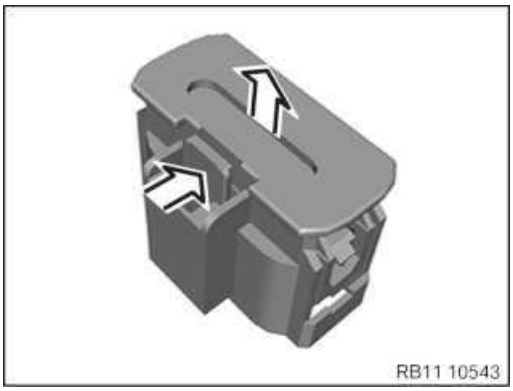
17.

Press the lock and detach plug connection.



18.

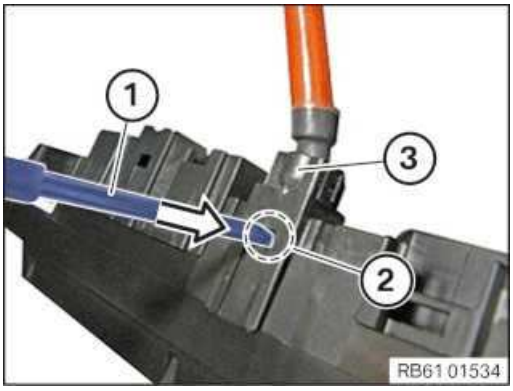
Press the lock and detach plug connection.



19.

Press the lock and detach plug connection.

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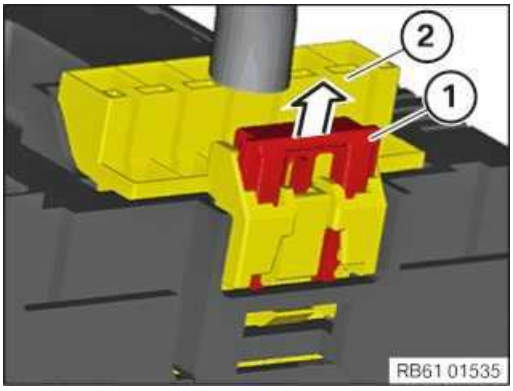


20.

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!

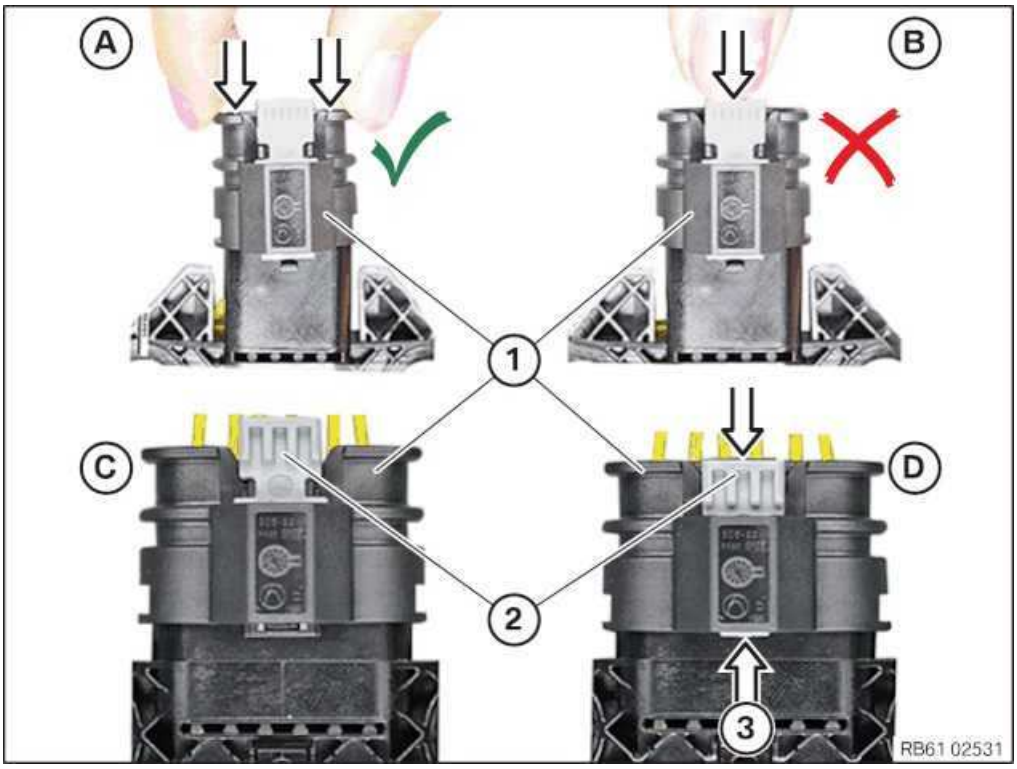
For this connector type, increased forces come into play when disconnecting and closing.

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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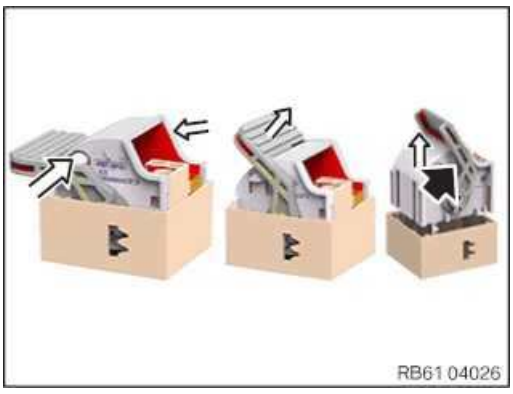


23.

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:

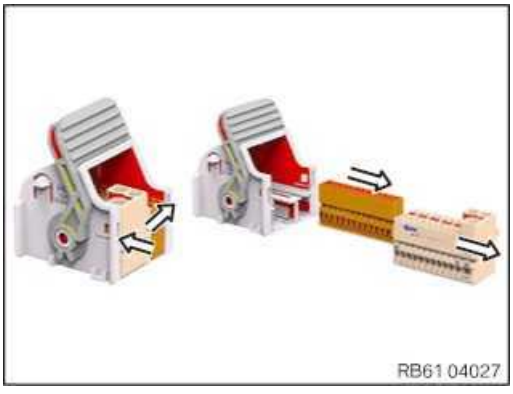


24.

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.

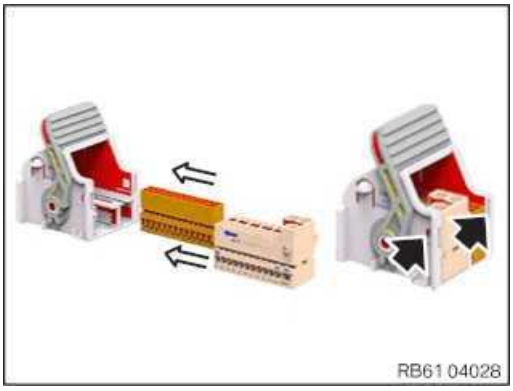
Once the lever is locked in the end position, remove plug connection upwards.



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

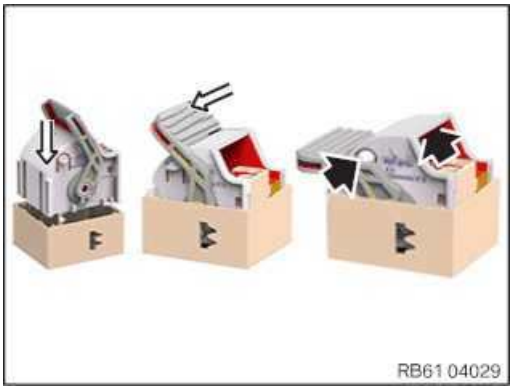
Slide out after unlocking the socket housing.

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Slide in socket housing up to limit position.

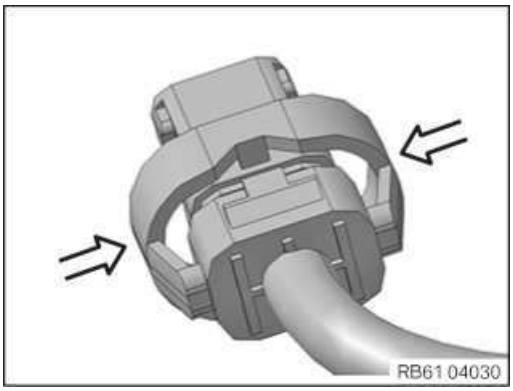
Lock socket housing into place in end position.



Sliding in up to limit position.

Activate plug-inn procedure by moving lever downwards.

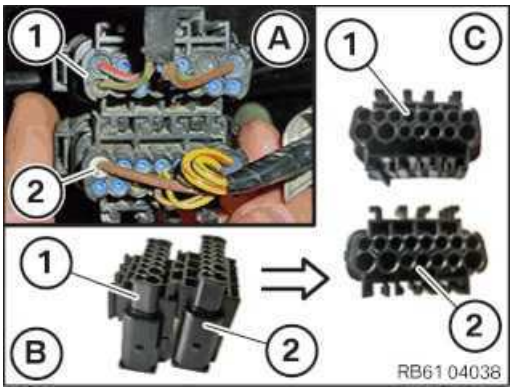
IMPORTANT: the latch mechanism on both sides only works for a completed plug-in procedure.



25.

Rosenberger D4S20G-400A5-Y

Press to unlock on both sides.

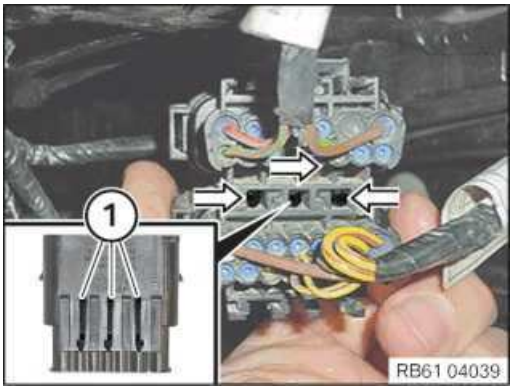


26.

Pin housing, 15-pinMLK1

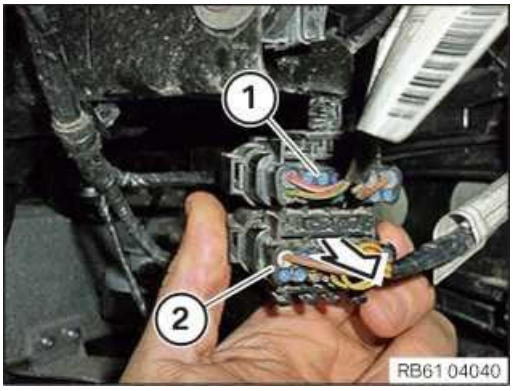
- A & B. To avoid any damage to individual connectors, the given connector assembly consisting of several individual connectors (1) & (2) must be released before disconnecting the plug connection.
- C: released connector assembly

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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).

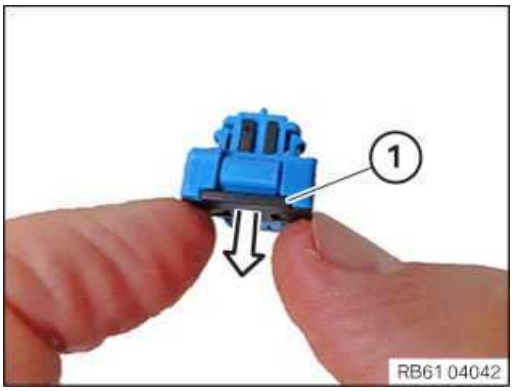


27.

Airbag ignition circuit connector

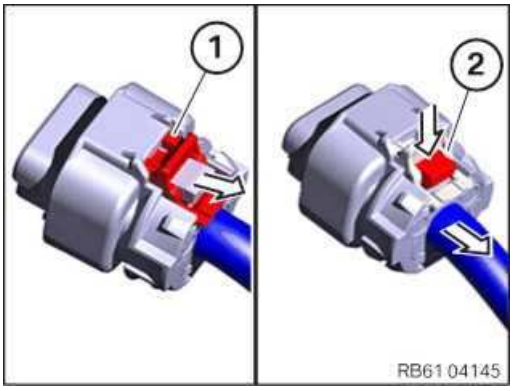
Warning!

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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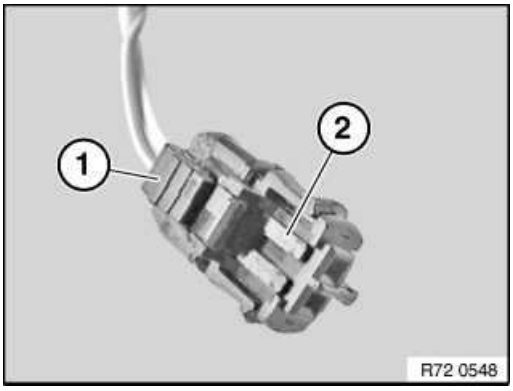


28.

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).

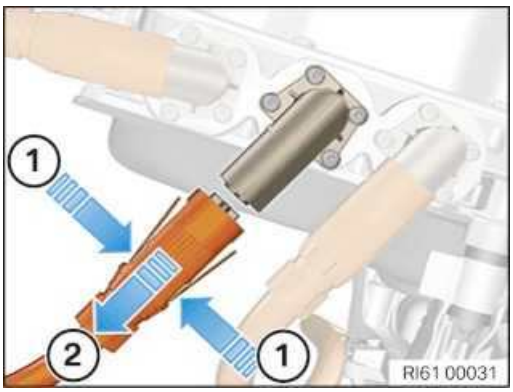
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61 13 ... Unlocking and disconnecting various plug connections in electrical and hybrid vehicles

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:

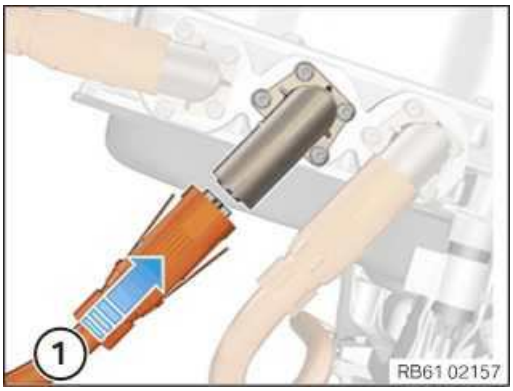
Press the lock (1) on the left and right on the connector in the direction of the arrow.

Pull off connector (2) in direction of arrow.

Attention!

Connector (2) is difficult to pull off.

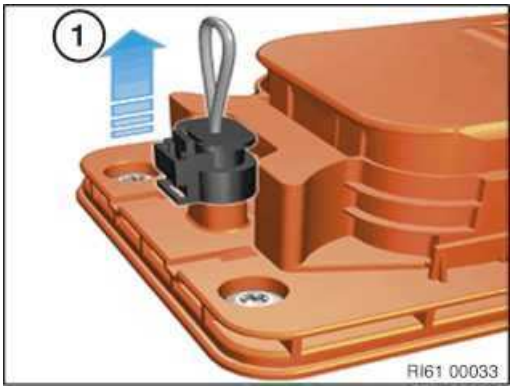
In the event of damage to high-voltage connector (2), the complete high-voltage cable must be replaced!



Connect the Hirschmann high-voltage connectors:

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

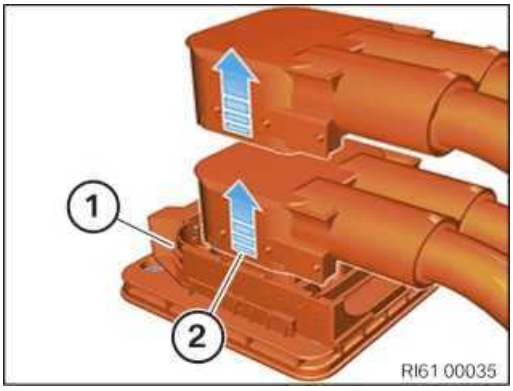
Note:
Connector (2) must lock audibly.



Disconnect the Kostal high-voltage connector:

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

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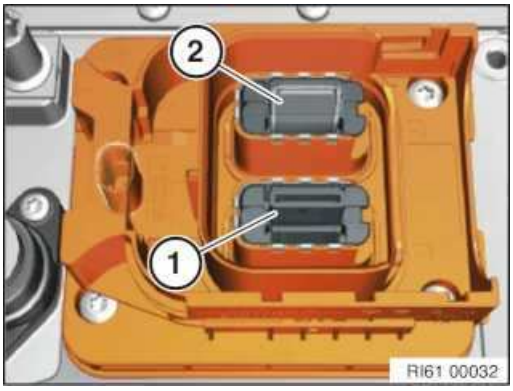
Push the lock (1) fully to the front.

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:

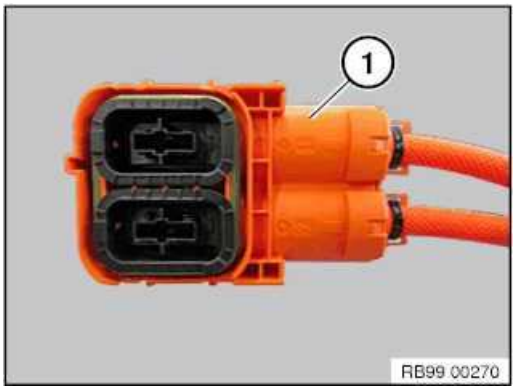
Check the touch protection for damage and correct positioning (1).

Warning!

Do not touch unprotected connector (2)!

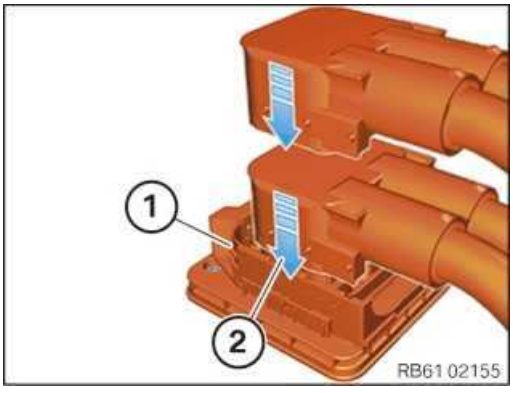
If the contact protection (1) has been pushed to the bottom (2), the high-voltage connector must be refitted.

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:

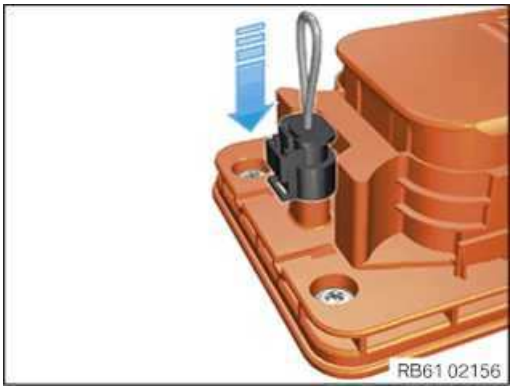
Connect the connector (2) in one single movement to the counter-housing.

Push the lock (1) fully to the rear.

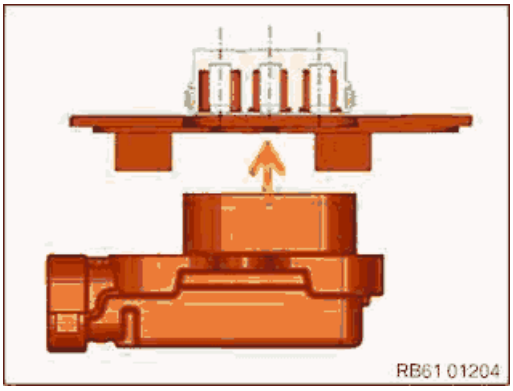
Attention!

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

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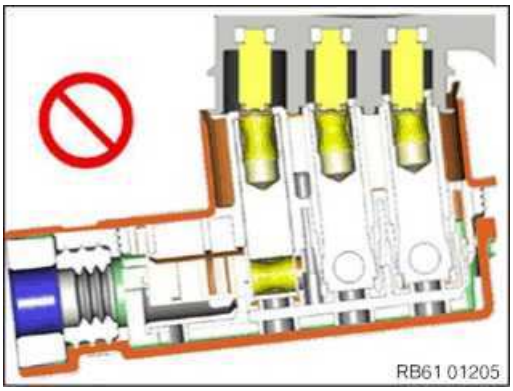


Connect the connector for the high-voltage interlock.



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.



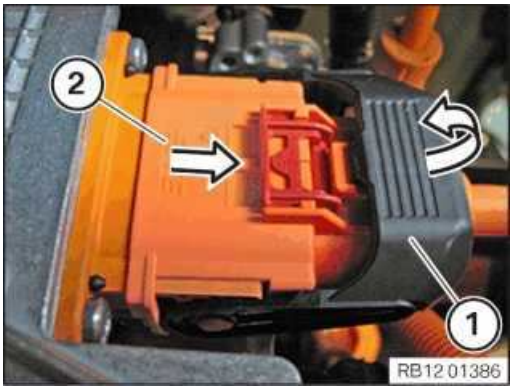
Disconnect the high-voltage connector from the high-voltage connection of the KLE:

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

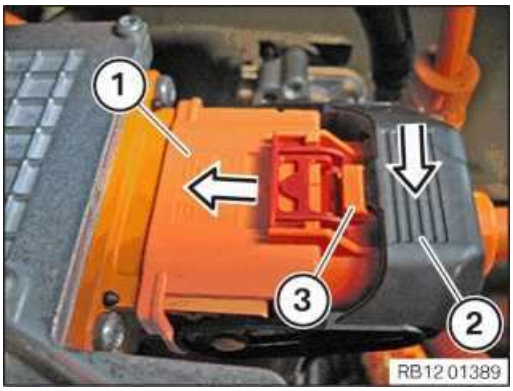
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Press lock (1).



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



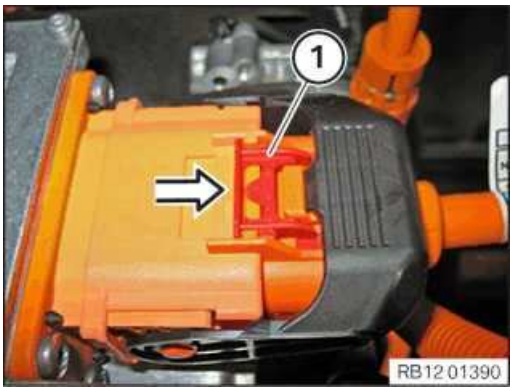
Connect the high-voltage connector to the high-voltage connection of the KLE:

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

Attention!

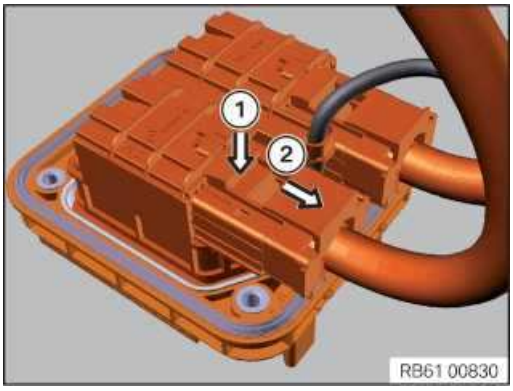
Lock (2) must snap audibly into place.

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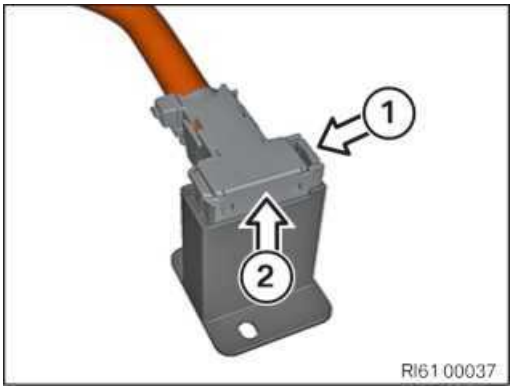
High-voltage connector on the high-voltage connection of the high-voltage battery unit:

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.



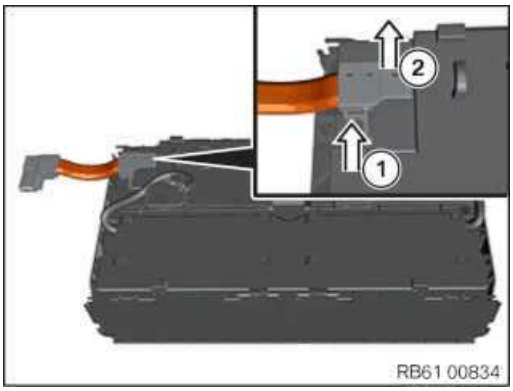
High-voltage connector on the cell module I01:

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 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 wheel arch, for example):

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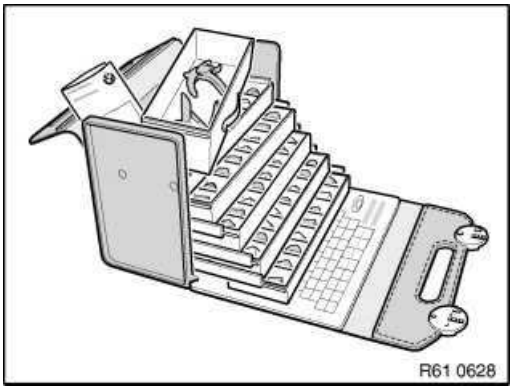
- Cut the additional socket housing and connect the lines to the vehicle-side wiring harness using a butt connector.
- **Using the additional socket housing is not permitted with a separation point outside the vehicle interior.**

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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

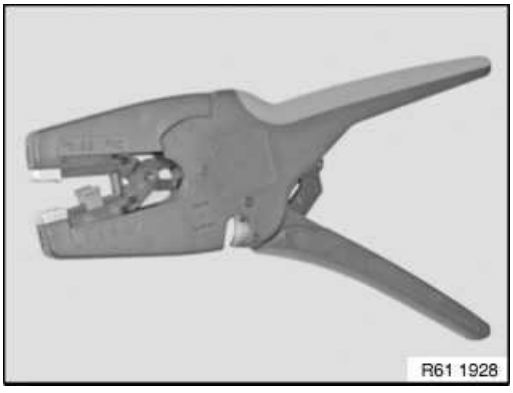


Release and press-out tool:

- 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



Cutting to length and stripping insulation from cables:

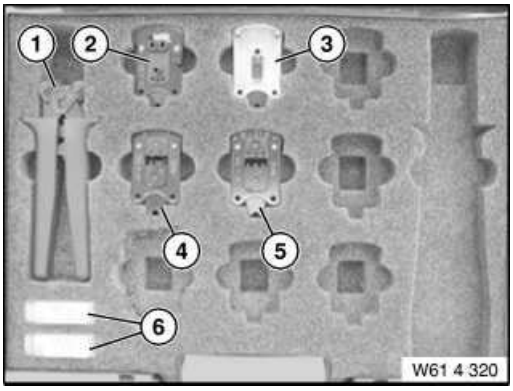
Wire stripper MultiStrip10*

*Sourcing reference BMW Workshop Equipment Catalogue

Handling:

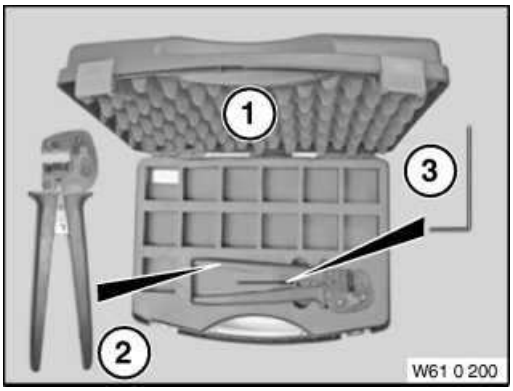
- Cutting cables to length and strip insulation

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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 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!**

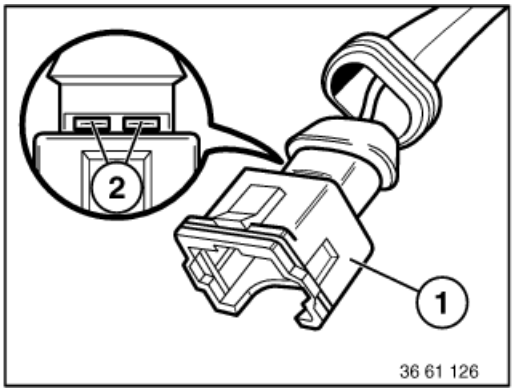
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61 13 ... Notes for opening contacts and locks of different plug contact systems

Special tools required:

- 61 0 300
- 61 0 400
- 61 1 100

Abbreviations of contacts and what they mean:	
ELA	**Strand seal**
D 1.5 / 2.5 / 3.5	**Round contacts with 1.5 mm, 2.5 mm or 3.5 mm diameter**
MDK	**Miniature double flat spring contact**
JPT	Junior Power timer
DFK	Double flat spring contacts
Elo	Electronic contacts
Elo Power	Electronic contacts for heavy load
MQS	Micro Quadlock system
MPQ	Micro Power Quadlock
MLK	Mini laminated contact
SLK	Sensor laminated contact
LSK	Load current contact
MLK	Mini laminated contact
Mcon	Multi contact



Important!

The contacts can be changed on ultrasonically welded connectors (1).

Ultrasonically welded connectors (1) must be replaced completely.

Ultrasonic-welded connectors (1) can be identified by the welds (2) on their longitudinal side.

Note:

Special tools referred to in the repair instructions below are contained in the following special tool sets:

- Unlocking and pressing-off tool 61 1 150

  is replaced as of 09/2005 by 61 0 300 (BMW) and 61 0 400 (MINI)
- Release and pressing-off tool 61 1 100 (engine)

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Repair instructions for opening connector housings and removing contacts of different connector systems:

Connector system D 1.5/D 2.5:

- Circular connectors, 7- or 8-pin, system D 2.5
- Circular connectors, 13-pin, system D 2.5
- Circular connectors, 20-pin, system D 2.5
- Circular connectors, 4-, 7-, 10-, 12- or 25-pin, system D 1.5/D 2.5
- In-line connectors, 15-pin, system D 2.5
- In-line connectors, 8-, 12-pin, system D 2.5
- In-line connectors, 30-pin, system D 2.5
- In-line connectors, 20-pin, system D 2.5

Connector system JPT/MDK/DFK:

- In-line connectors, 2-pin, System JPT ELA
- In-line plugs, 2-pin, System MDK 3 plus 2.8
- In-line plugs, 4-pin, System DFK ELA

Connector system Elo/Elo Power:

- Inline plugs, 4-, 10-pin, System Elo
- In-line connectors, 6- to 50-pin, System Elo
- Inline plugs, 3-, 6-pin, System Elo-Power 2.8

Connector system LSK:

- Connector housing LSK contact

Connector system MQS/MPQ:

- Inline connectors, 6-, 8-pin, System MQS
- Inline plugs, 2-pin, System MPQ 2.8
- Control unit connectors, 25-, 35-, 55-, 83-, 88-pin
- In-line plugs, 24-pin, Hybrid System MQS/MPQ
- Socket housing 42-, 43-pin, Hybrid System MQS / MPQ
- Socket housings 2x21-, 2x27-pin, Hybrid System MQS/MPQ, Elo/Elo Power
- In-line connectors, 30-pin, Hybrid System MQS/MPQ
- Socket housings, 5-, 8-pin, System MQS/MPQ
- Socket housing (radio connector), Hybrid System MQS/MPQ

For connector contact systems not listed, refer to Service Information:

SI 2 05 05 217
SI 2 05 06 294
SI 2 03 08 440
SI 2 08 06 312
SI 2 02 08 439
SI 2 01 08 438

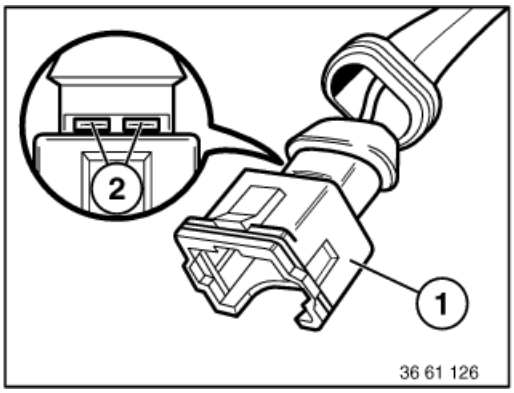
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61 13 ... Opening plug housings and removing contacts of different plug systems

Special tools required:

- 61 0 300
- 61 0 400
- 61 1 100
- 61 1 150

Abbreviations of contacts and what they mean:	
ELA	**Strand seal**
D 1.5 / 2.5 / 3.5	**Round contacts with 1.5 mm, 2.5 mm or 3.5 mm diameter**
MDK	**Miniature double flat spring contact**
JPT	Junior Power timer
DFK	Double flat spring contacts
Elo	Electronic contacts
Elo Power	Electronic contacts for heavy load
MQS	Micro Quadlock system
MPQ	Micro Power Quadlock
MLK	Mini laminated contact
SLK	Sensor laminated contact
MLK	Mini laminated contact
Mcon	Multi contact



Important!

The contacts can be changed on ultrasonically welded plugs (1).

Ultrasonically welded plugs (1) must be replaced completely.

Ultrasonic-welded connectors (1) can be identified by the welds (2) on their longitudinal side.

Note:

Special tools referred to in the repair instructions below are contained in the following special tool kits:

- Release and press-out tool 61 1 150

  is replaced from 09/2005 by 61 0 300 (BMW) and 61 0 400 (MINI)
- Release and press-out tool 61 1 100 (engine)

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Repair instructions for opening plug housings and removing contacts of different plug systems:

Plug system D 1.5/D 2.5:

- Circular plugs, 7-, 8-pin, System D 2.5
- Circular plugs, 13-pin, System D 2.5
- Circular plugs, 20-pin, System D 2.5
- Circular plugs, 4-, 7-, 10-, 12-, 25-pin, System D 1.5/D 2.5
- In-line plugs, 15-pin, System D 2.5
- In-line plugs, 8-, 12-pin, System D 2.5
- In-line plugs, 30-pin, System D 2.5
- In-line plugs, 20-pin, System D 2.5

Plug system JPT/MDK/DFK:

- In-line plugs, 2-pin, System JPT ELA
- In-line plugs, 2-pin, System MDK 3plus 2.8
- In-line plugs, 4-pin, System DFK ELA

Plug system Elo/Elo-Power:

- In-line plugs, 4-, 10-pin, System Elo
- In-line plugs, 6- to 50-pin, System Elo
- In-line plugs, 3-, 6-pin, System Elo-Power 2.8

Plug system MQS/MPQ:

- In-line plugs, 6-, 8-pin, System MQS
- In-line plugs, 2-pin, System MPQ 2.8
- Control unit plugs, 25-, 35-, 55-, 83-, 88-pin
- In-line plugs, 24-pin, Hybrid System MQS/MPQ
- Socket housing 42-, 43-pin, Hybrid System MQS / MPQ
- Socket housings 2x21-, 2x27-pin, Hybrid System MQS/MPQ, Elo/Elo-Power
- In-line plugs, 30-pin, Hybrid System MQS/MPQ
- Socket housings, 5-, 8-pin, System MQS/MPQ
- Socket housing (radio plug), Hybrid System MQS/MPQ

For plug contact systems not listed, refer to Service Information:

SI 2 05 05 217

SI 2 05 06 294

SI 2 03 08 440

SI 2 08 06 312

SI 2 02 08 439

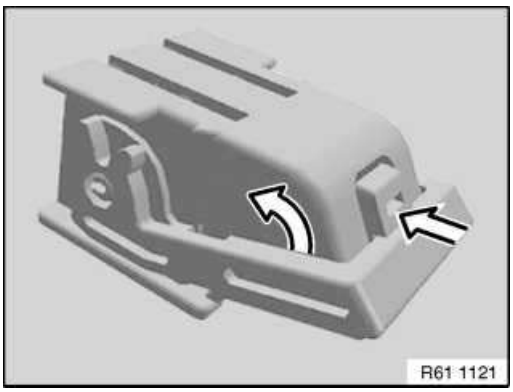
SI 2 01 08 438

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61 13 ... Unlocking and disconnecting different plug connections

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

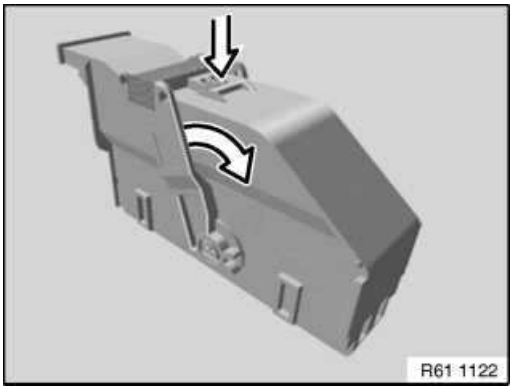
Differences in the details of the size and shape of the plug connections are possible.



1.

Press lock and open release clip in direction of arrow.

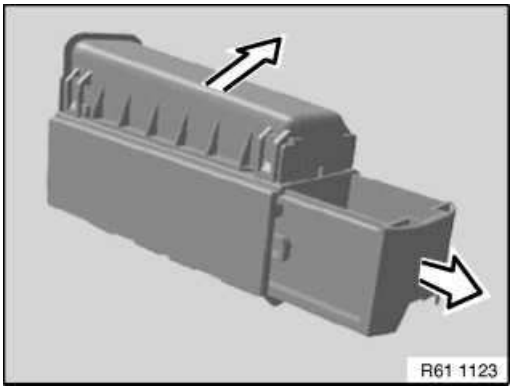
Disconnect plug connection.



2.

Press lock and open release clip in direction of arrow.

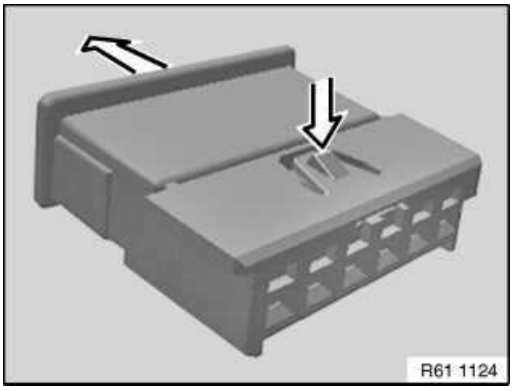
Disconnect plug connection.



3.

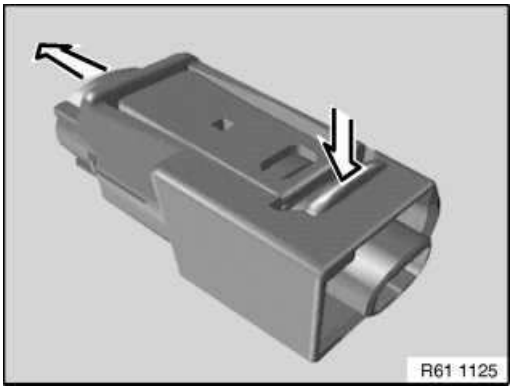
Open release clip in direction of arrow and disconnect plug connection in direction of arrow.

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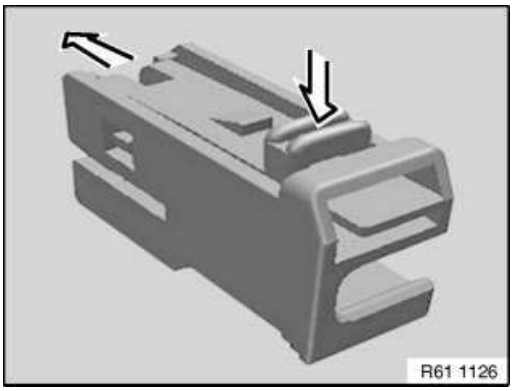
4.

Press lock and disconnect plug connection in direction of arrow.



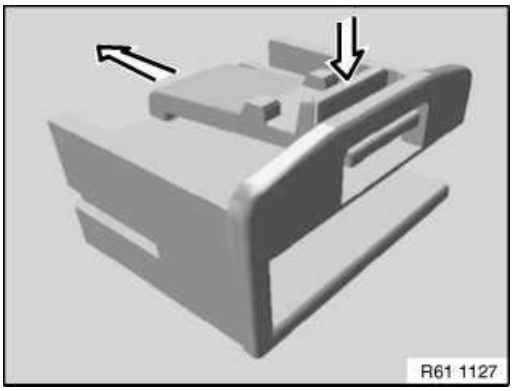
5.

Press lock and disconnect plug connection in direction of arrow.



6.

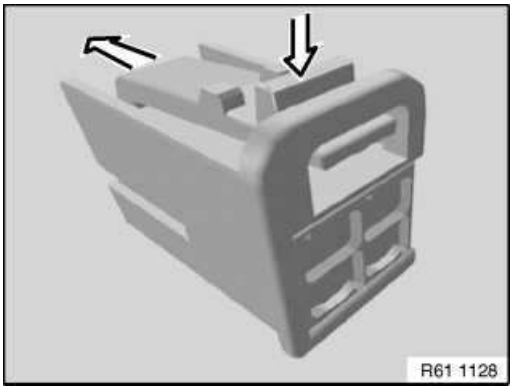
Press lock and disconnect plug connection in direction of arrow.



7.

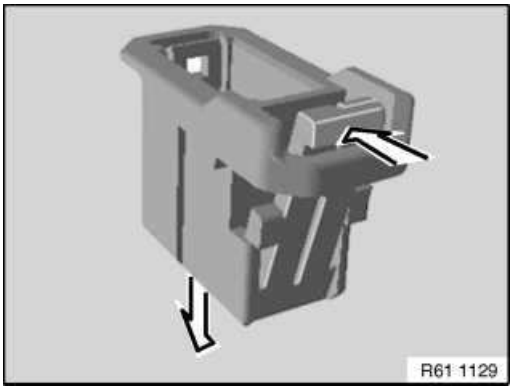
Press lock and disconnect plug connection in direction of arrow.

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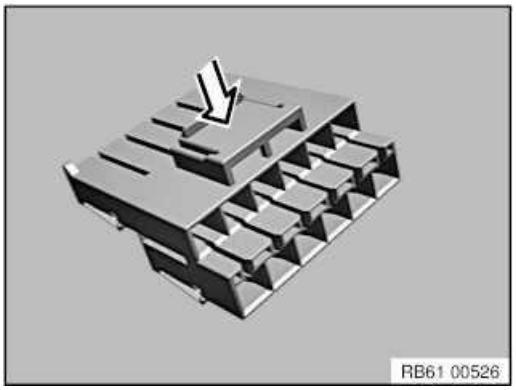
8.

Press lock and disconnect plug connection in direction of arrow.



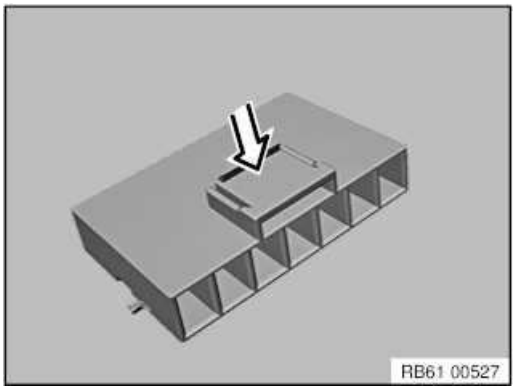
9.

Press lock and disconnect plug connection in direction of arrow.



10.

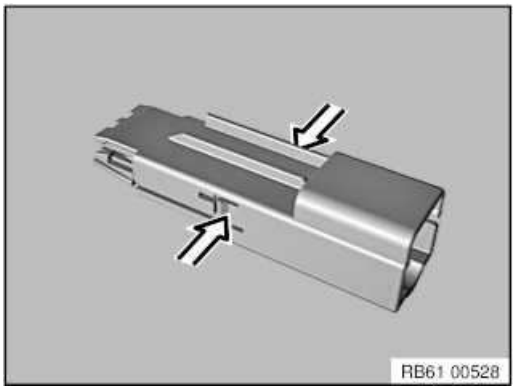
Press the lock and detach plug connection.



11.

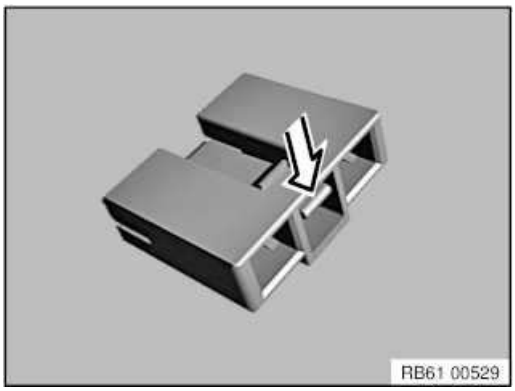
Press the lock and detach plug connection.

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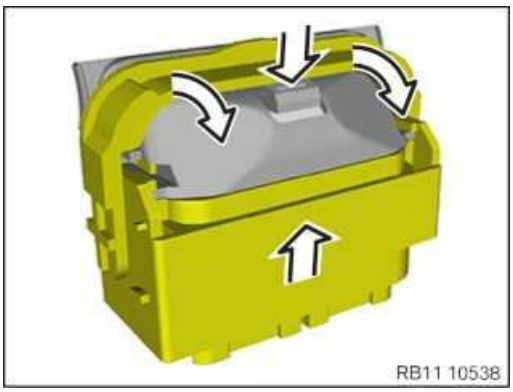
12.

Press the lock on both sides and detach plug connection.



13.

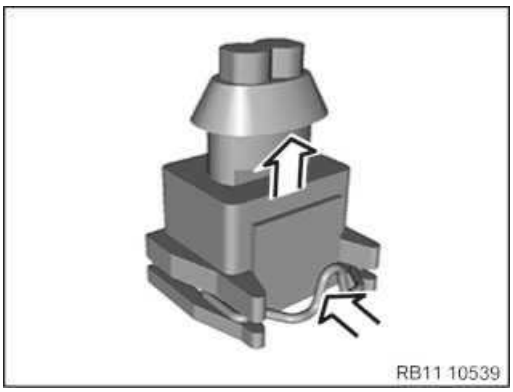
Press the lock and detach plug connection.



14.

Press lock and open release clip in direction of arrow.

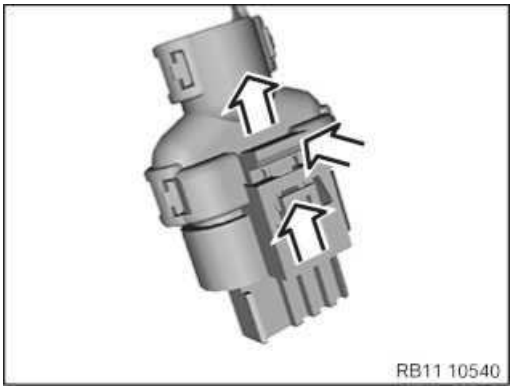
Disconnect plug connection.



15.

Press the lock and detach plug connection.

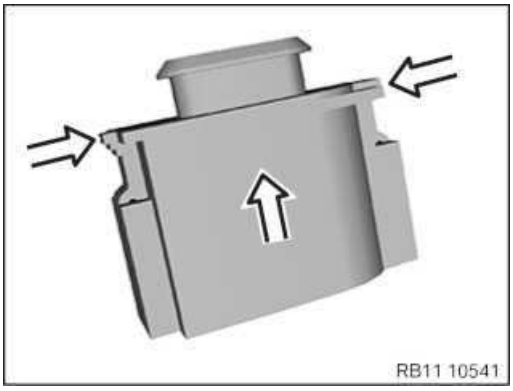
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16.

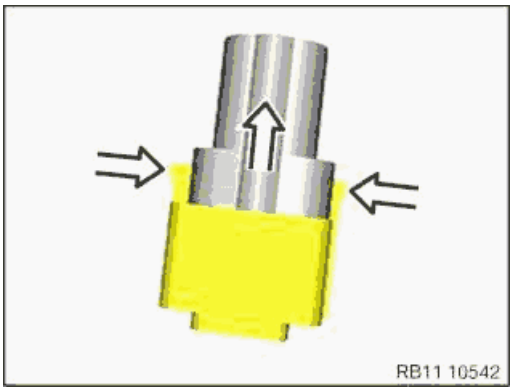
Pull out lock and press.

Disconnect plug connection.



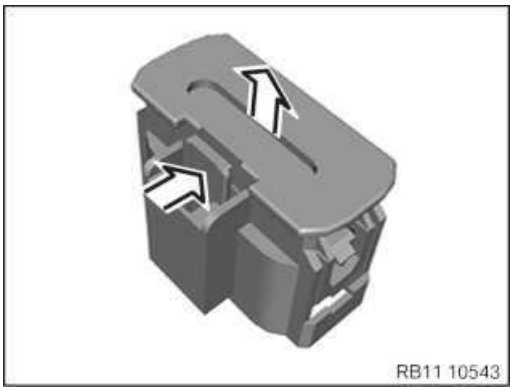
17.

Press the lock and detach plug connection.



18.

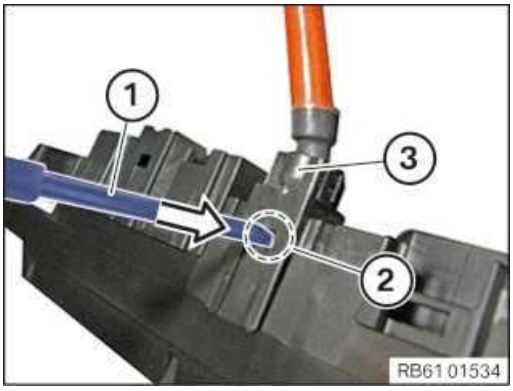
Press the lock and detach plug connection.



19.

Press the lock and detach plug connection.

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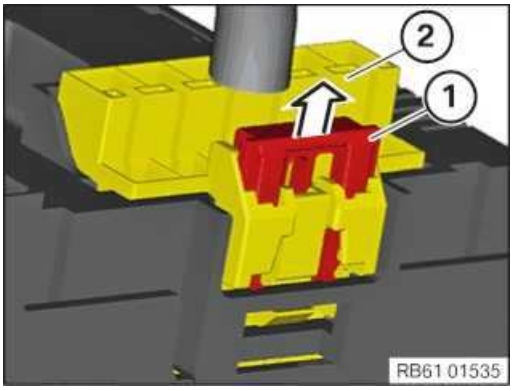


20.

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!

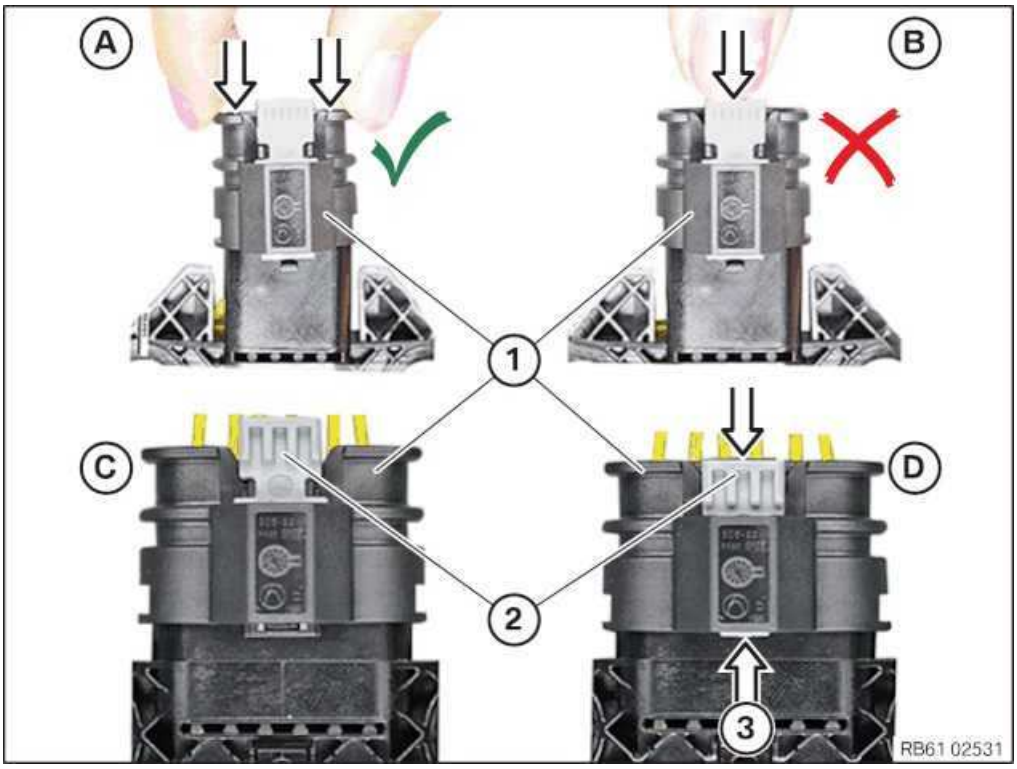
For this connector type, increased forces come into play when disconnecting and closing.

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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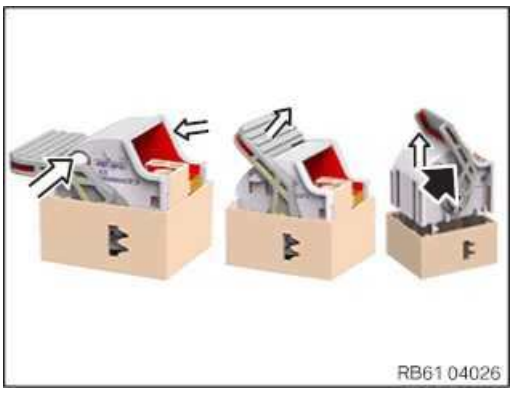


23.

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:

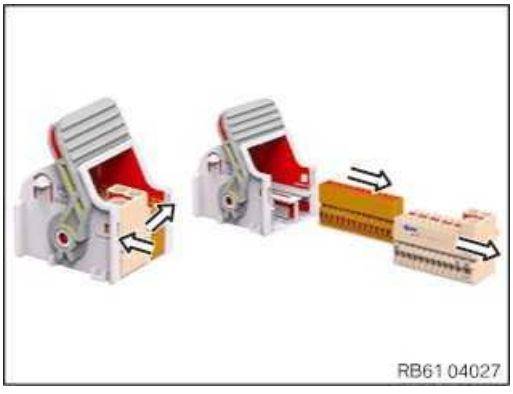


24.

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.

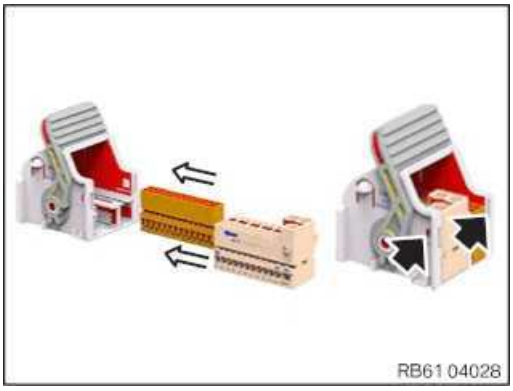
Once the lever is locked in the end position, remove plug connection upwards.



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

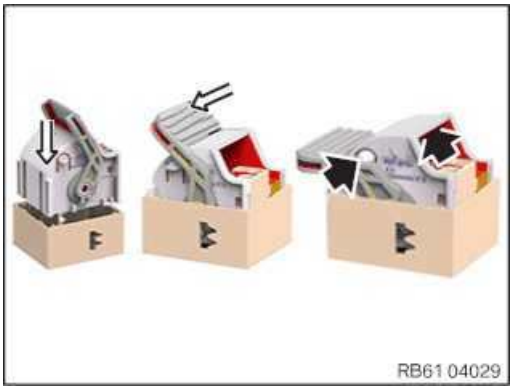
Slide out after unlocking the socket housing.

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Slide in socket housing up to limit position.

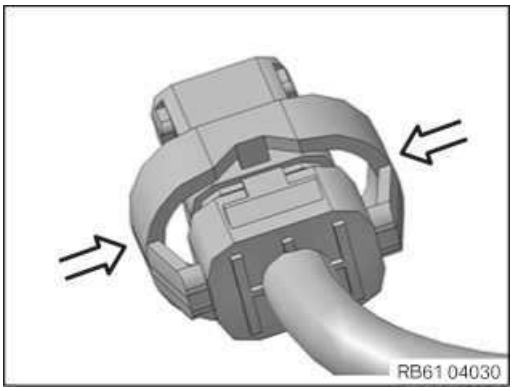
Lock socket housing into place in end position.



Sliding in up to limit position.

Activate plug-inn procedure by moving lever downwards.

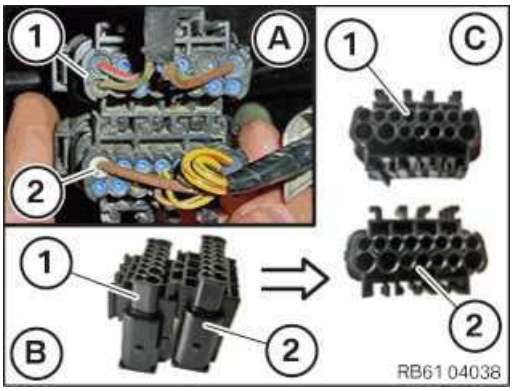
IMPORTANT: the latch mechanism on both sides only works for a completed plug-in procedure.



25.

Rosenberger D4S20G-400A5-Y

Press to unlock on both sides.

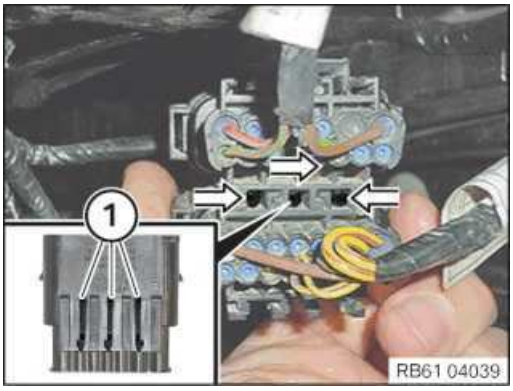


26.

Pin housing, 15-pinMLK1

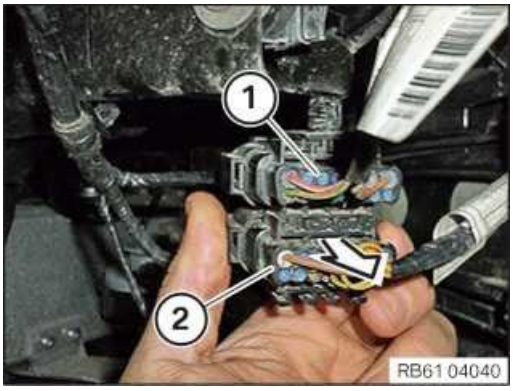
- A & B. To avoid any damage to individual connectors, the given connector assembly consisting of several individual connectors (1) & (2) must be released before disconnecting the plug connection.
- C: released connector assembly

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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).

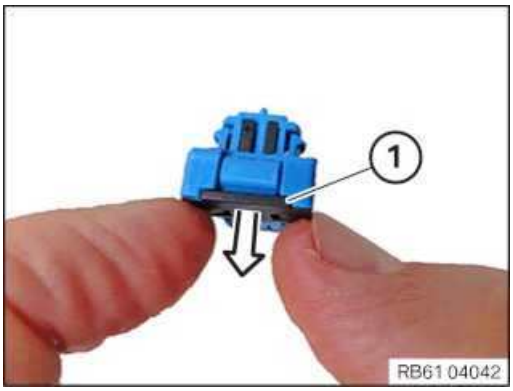


27.

Airbag ignition circuit connector

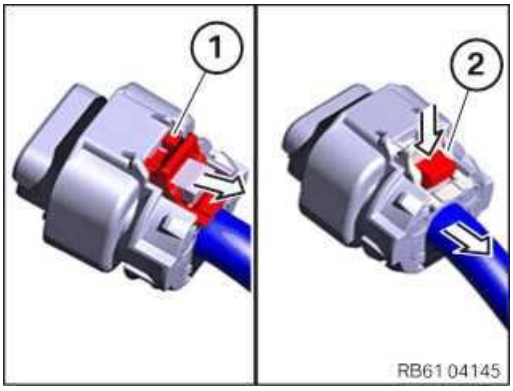
Warning!

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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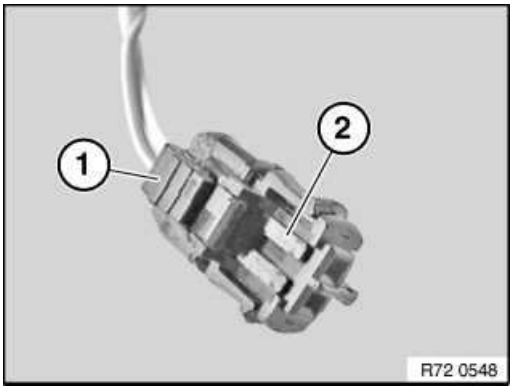


28.

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.

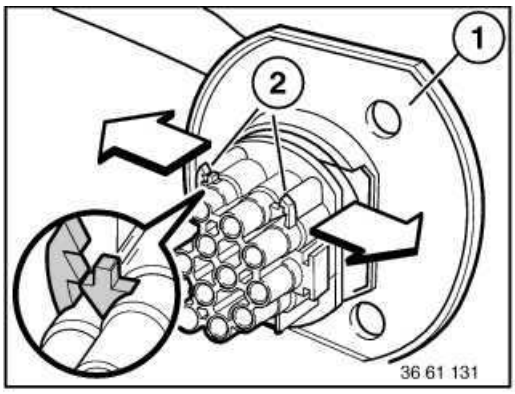
Pull off connector (2).

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

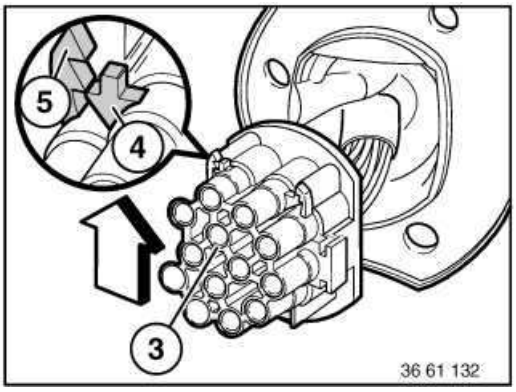
Special tools required:

- 61 0 303

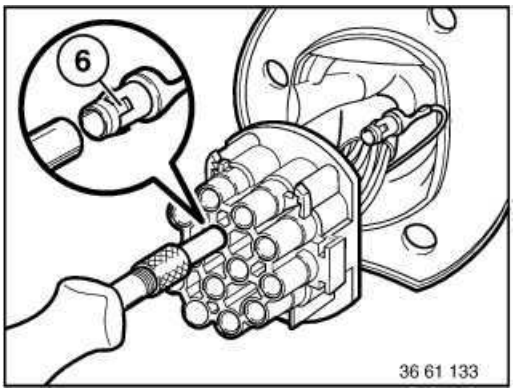


Pull off rubber grommet (1).

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).



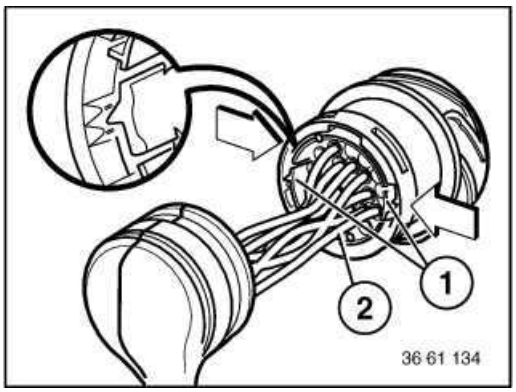
With special tool 61 0 303 , press down retaining lugs (6) of corresponding contact and pull out cable.

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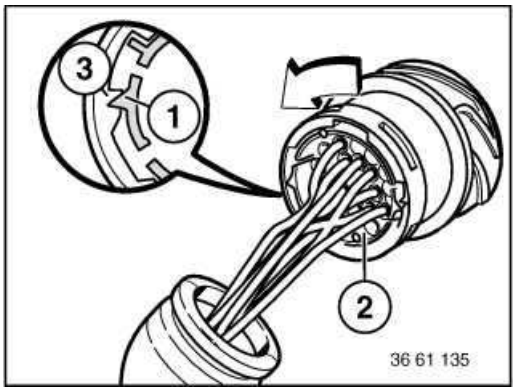
61 13 ... Circular connector, 20-pin, system D2.5

Special tools required:

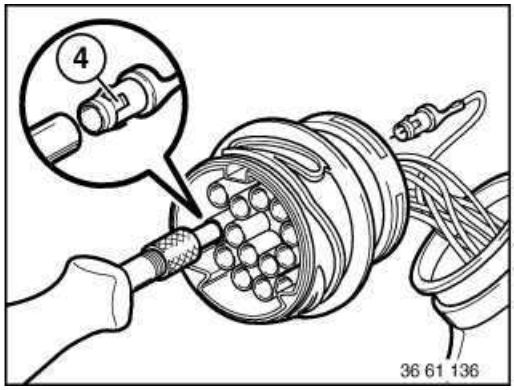
- 61 0 303



Carefully press back retaining tabs (1) of internal connector (2).



Turn internal connector (2) until retaining lugs (1) snap into release groove (3).



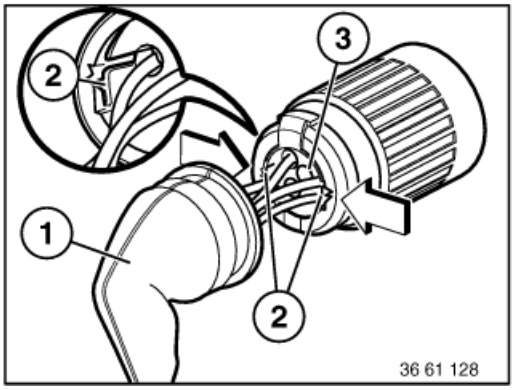
With special tool 61 0 303 press down retaining hook (4) of corresponding contact and pull out cable.

cardiagn.com

61 13 ... Circular connector, 7-pin, 8-pin, system D2.5

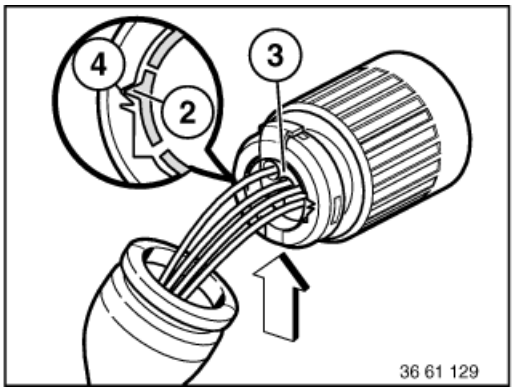
Special tools required:

- 61 0 303

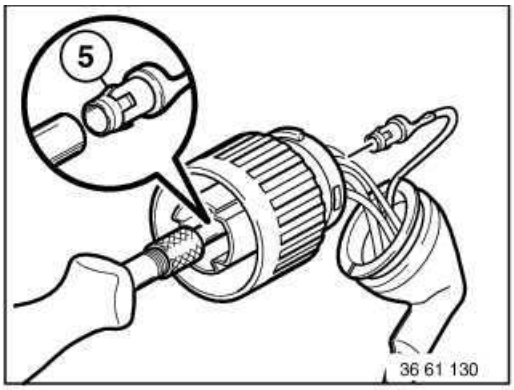


Carefully pull off rubber grommet (1).

Carefully press back retaining tabs (2) of internal connector (3).



Slide internal connector (3) in direction of arrow until retaining tabs (2) lock into locking groove (4).



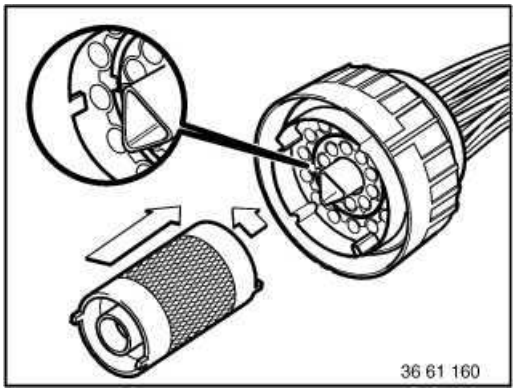
Use special tool 61 0 303 (61 1 132) to press back retaining hook (5) of corresponding contact and pull out cable with contact.

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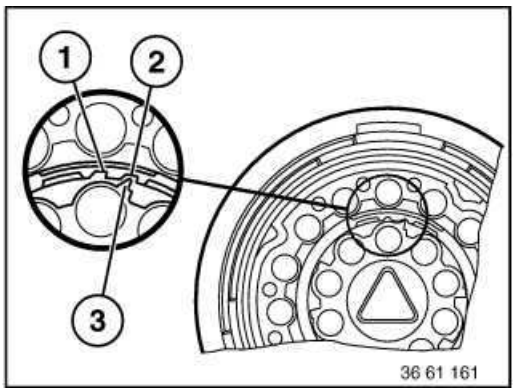
61 13 ... Circular plugs, 4-, 7-, 10- 12-, 25-pin, System D1.5/D2.5

Special tools required:

- 61 0 303

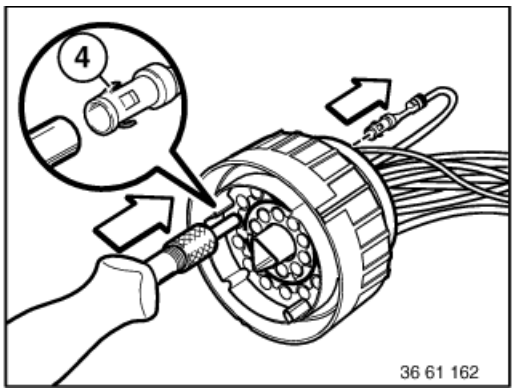


Insert special tool with suitable connection side in connector and twist approx. 3° anticlockwise.



The connector is locked down if retaining lug (3) is located in locking groove (2).

1. Unlocking groove
2. Locking groove
3. Retaining lug



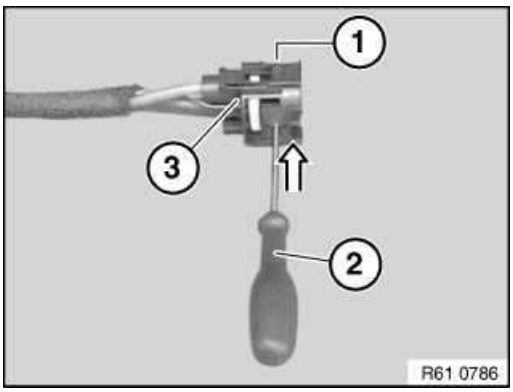
With special tool 61 0 303 press back retaining hook(4) of corresponding contact and pull out cable with contact.

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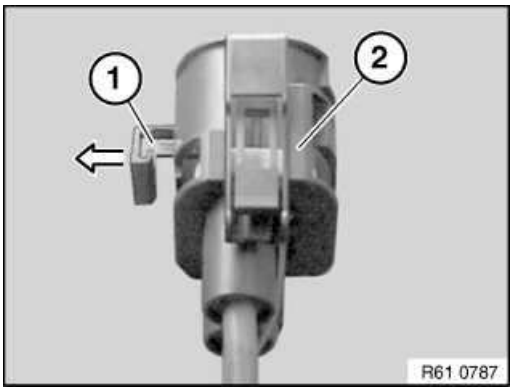
61 13 ... Connector housing, LCC contact (load current contact)

Special tools required:

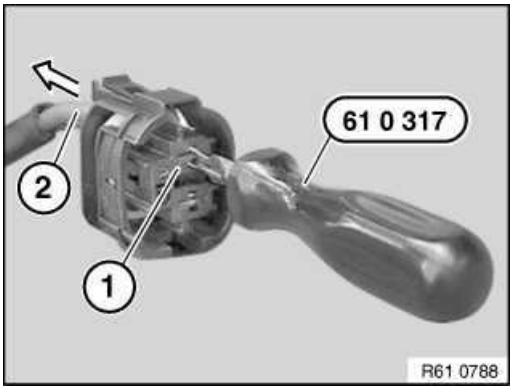
- 61 0 317



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

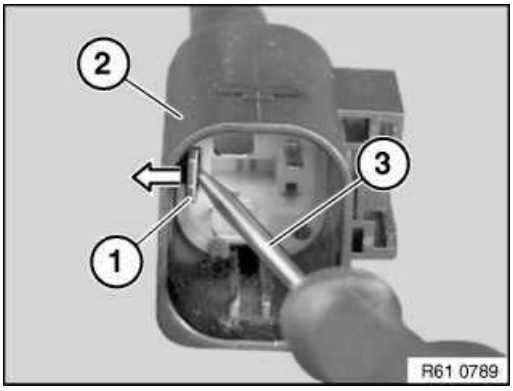


Pull lock (1) out of socket housing (2).

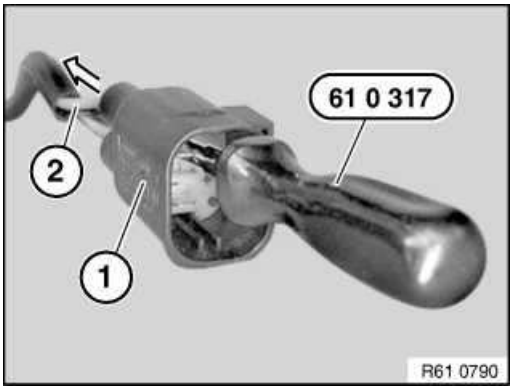


Insert special tool 61 0 317 into socket housing (1) and pull out wiring with LCC contact (2) in direction of arrow.

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



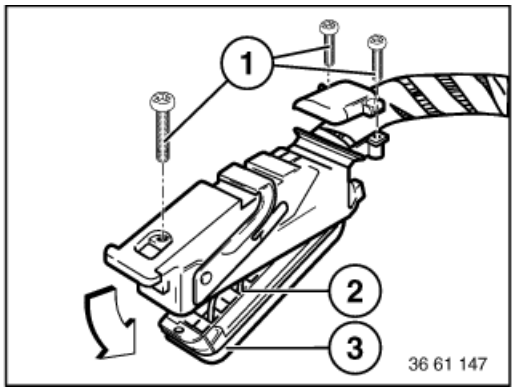
Insert special tool 61 0 317 into pin housing (1) and pull out wiring with LCC contact (2) in direction of arrow.

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61 13 ... Control unit plugs, 25-, 35-, 55-, 83-, 88-pin

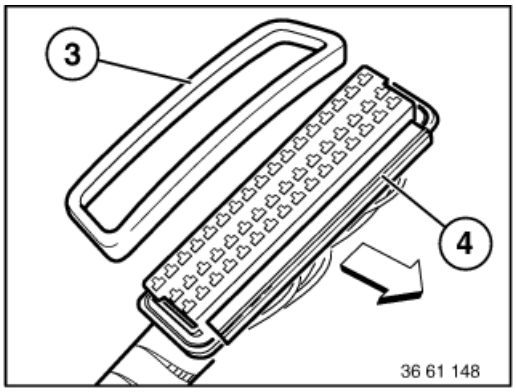
Special tools required:

- 61 0 312
- 61 0 314
- 61 0 315
- 61 0 323



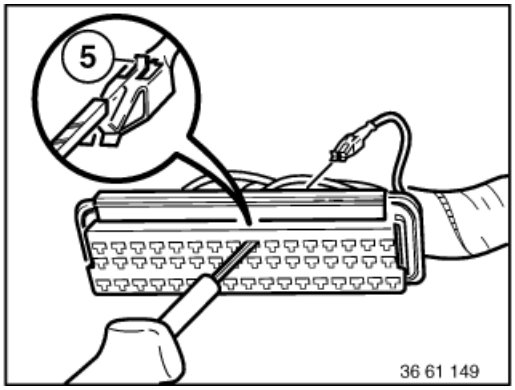
Release screws (1).

Lever out pin sensor (2) with gasket (3) in direction of arrow.



Remove gasket (3).

Pull out housing lock (4) in direction of arrow and unlock.

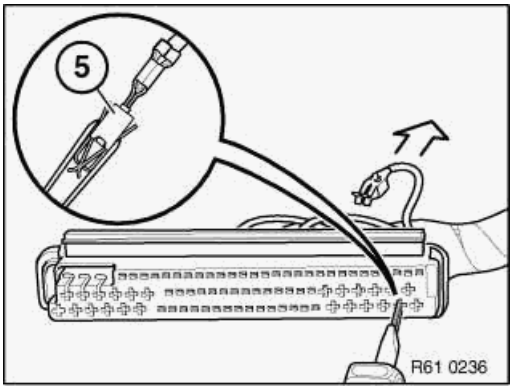


Press down retaining hook (5) of corresponding contact and pull out cable with contact.

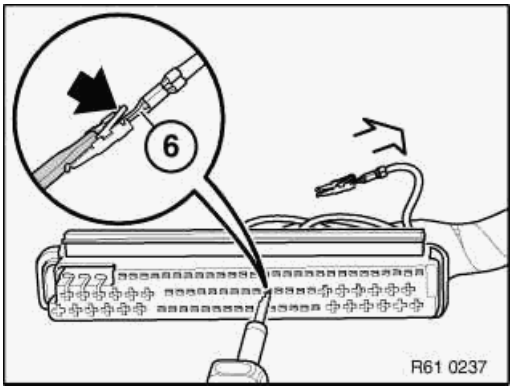
Special tool 61 0 312 (61 1 134) for mini flat spring contacts.

Special tool 61 0 314 (61 1 135) for mini flat spring contacts.

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Special tool 61 0 315 (61 1 151) for double flat spring contacts (dual retaining hooks).



Special tool 61 0 323 (61 1 152) for double flat spring contacts (special retaining hook).

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61 13 ... Crimping annular contacts



Special tools required:

- 61 4 320



Crimping annular contacts:

Special tool61 4 320

Handling:

Refer to Service Information:

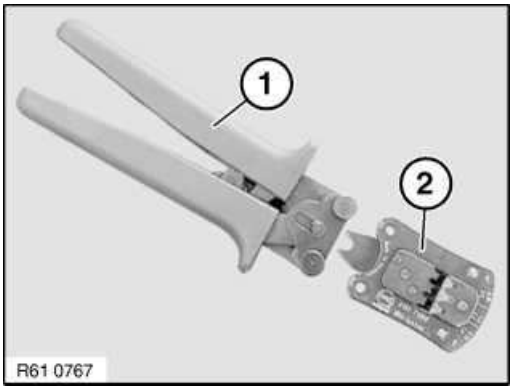
- SI 2 04 06 2939

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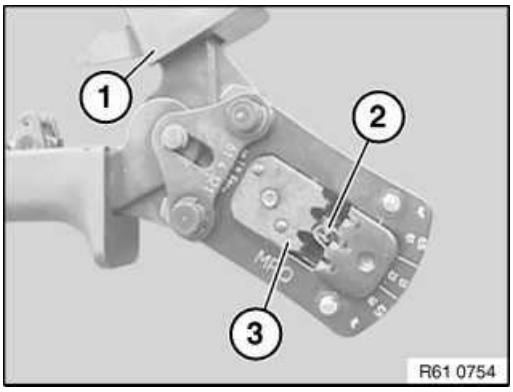
61 13 ... Crimping Micro Power Quadlock contacts (MPQ)

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.

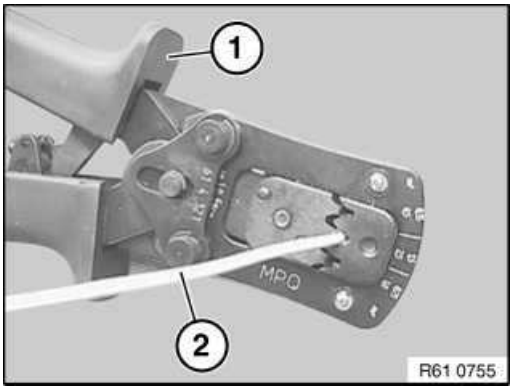


Open hand pliers (1).

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!

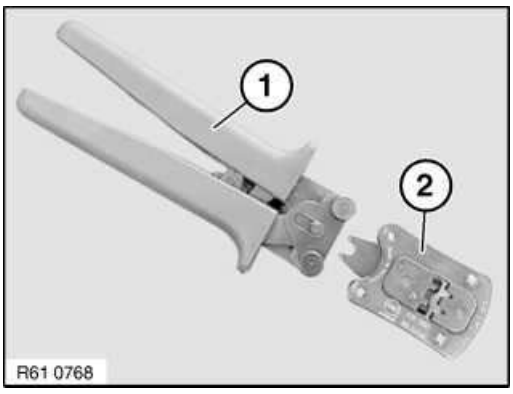
Check contact for correct crimping.

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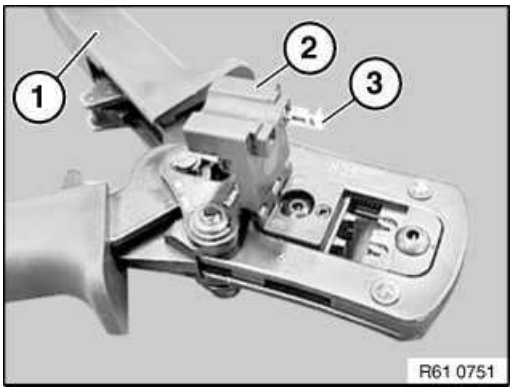
61 13 ... Crimping Micro Quadlock System contacts (MQS)

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.

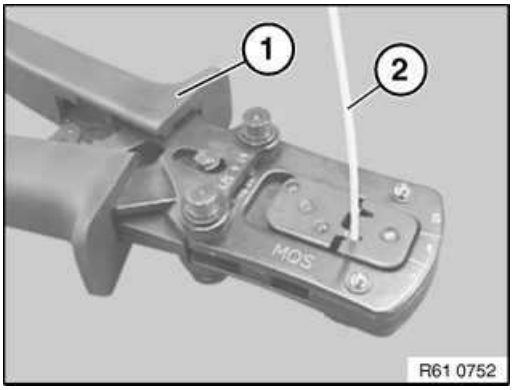


Open hand pliers (1).

Fold up contact carrier (2).

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

Fold back contact carrier (2).



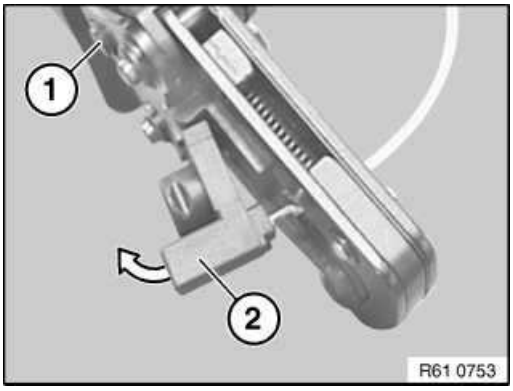
Note:
Follow procedure for cutting and stripping insulation from cables.

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!

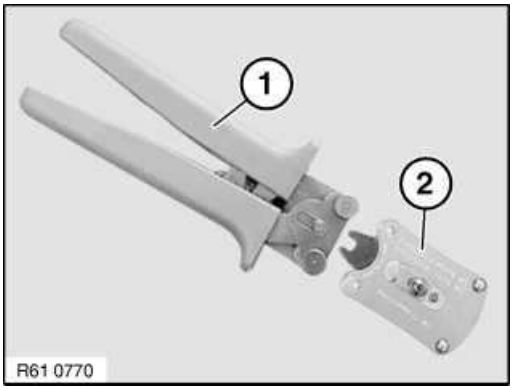
Check contact for correct crimping.

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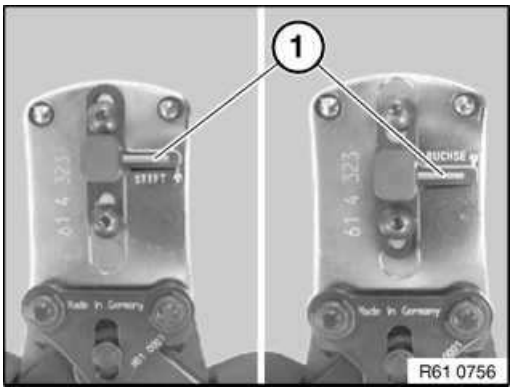
61 13 ... Crimping optical fibres

Special tools required:

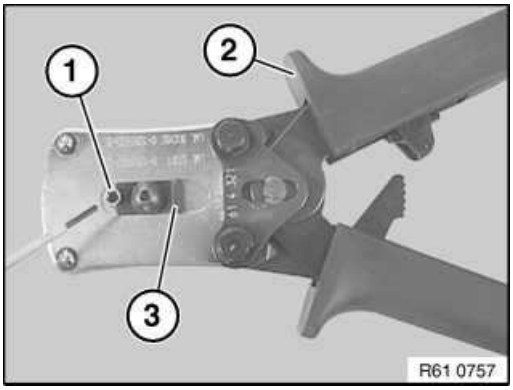
- 61 4 320



To crimp optical fibres, use hand pliers 61 4 321 (1) in conjunction with crimping head 61 4 323 (2) from crimping set 61 4 320 .*Note:*
Hand pliers (1) open automatically until limit position when handles are pressed together.



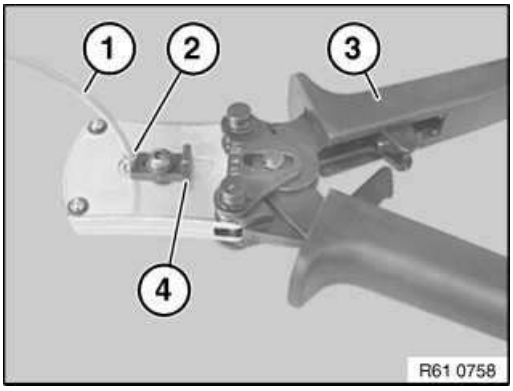
Move contact guide by means of stop lever (1) into corresponding position (pin contact or jack).



Open hand pliers (2).

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

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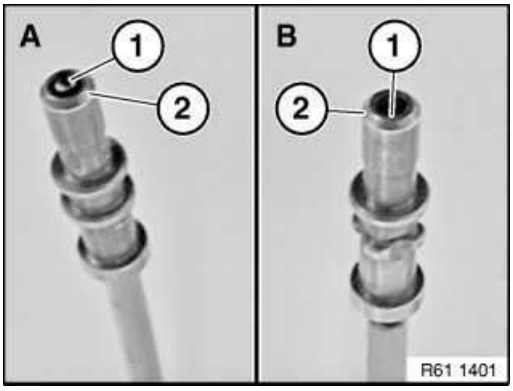
Note:
Follow procedure for cutting and stripping insulation from optical fibres.

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).



Attention!

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 ... 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:

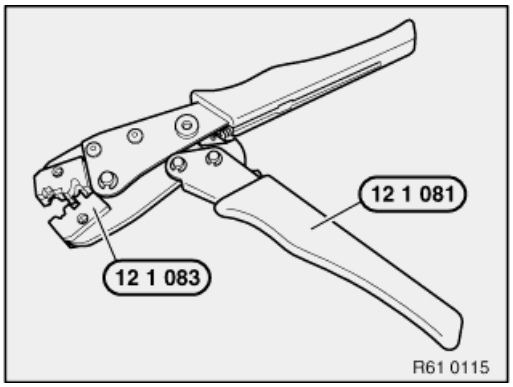
SI 2 04 06 293

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

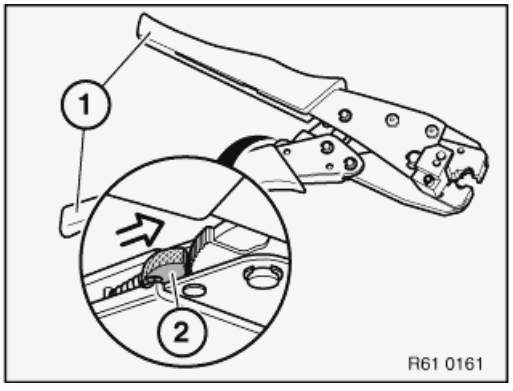


3. Crimping contact sleeves for 4 mm^2 comb connectors and ignition cable contacts

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.



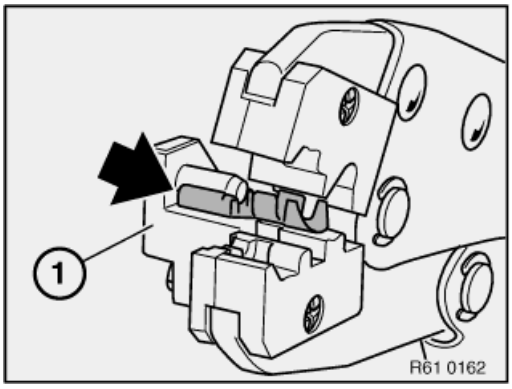
Release special tool 12 1 081 :

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

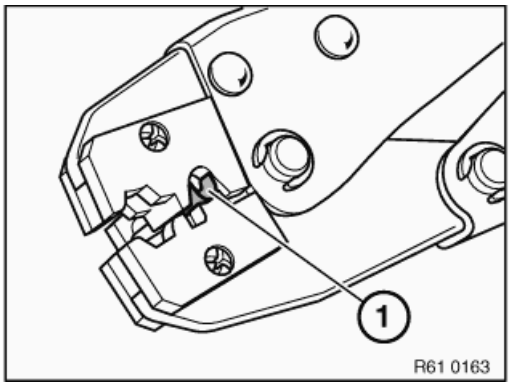
Or:

Compress handles until limit position, hand pliers unlock automatically.

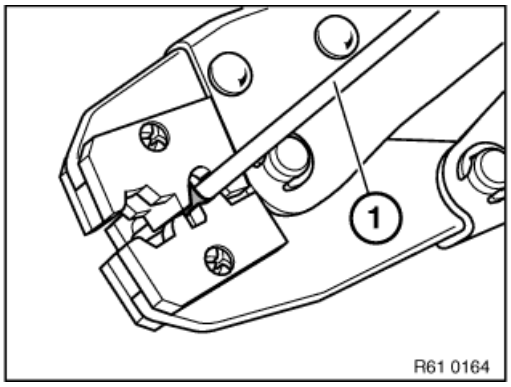
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Place 4 mm² contact sleeve in nest with anti-twist safeguard (1) as far as possible.



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



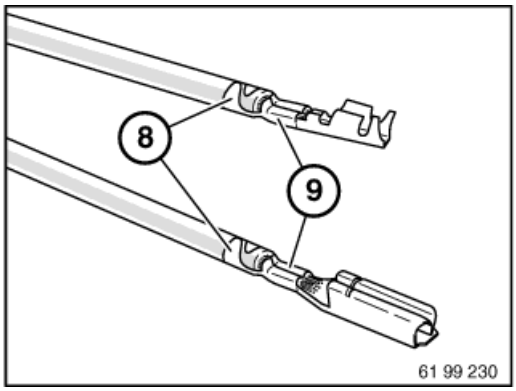
Note:
Follow procedure for cutting and stripping insulation from cables.

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.

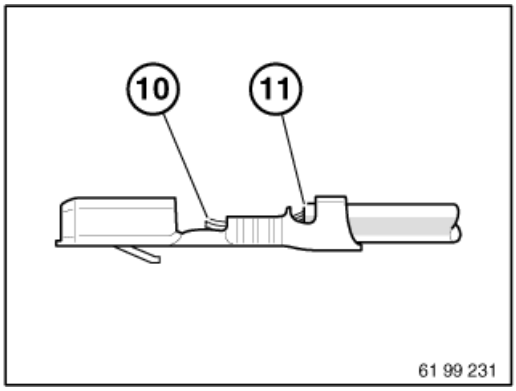


4. Checking crimping

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.

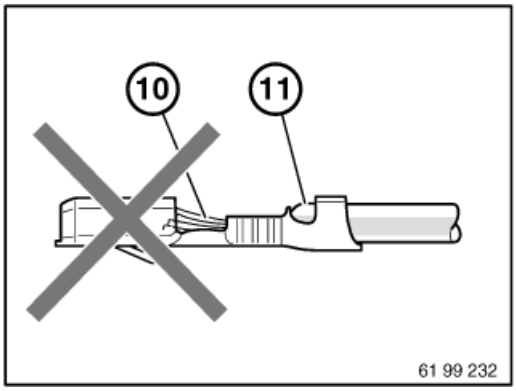
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Correct crimping:

Visible conductor end (10).

Visible insulation end (11).

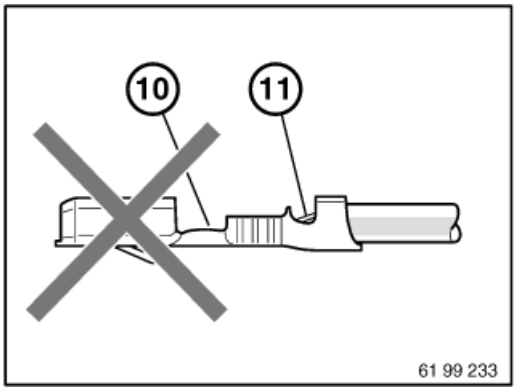


Incorrect crimping:

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 13 ... Crimping stop parts



Special tools required:

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



Necessary preliminary work:

- Notes for opening contacts and locks of different connector systems.
- Cutting cables to length and strip insulation

Special tools for wiring harness repair.

New part for vehicle electrical system (stops and housing):

- Sourcing reference: BMW Group Parts
- Refer to Service Information SI 2 04 07 341



1. Crimping of NanoMQS stops (only G11; G12)

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



2. Crimping of stops up to 2.5 mm ^{2}

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 SWZ 61 4 328)

Refer to Service Information SI 2 04 06 293

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3. Crimping of stops above 2.5 mm ^{2}

Crimping load current contacts (LSK 8).

- Special tool61 0 210

Crimping SLK 2.8.

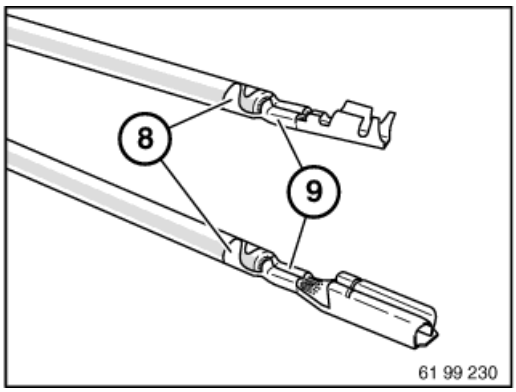
- Special tool61 0 220

Refer to Service Information SI 2 02 05 194

Crimping double spring contact (DFK 40)

Crimping MAK 8

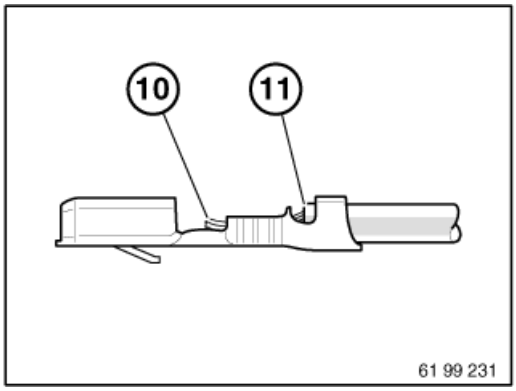
- Special tool61 0 230
- Refer to Service Information SI 2 07 05 233



Checking crimping

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

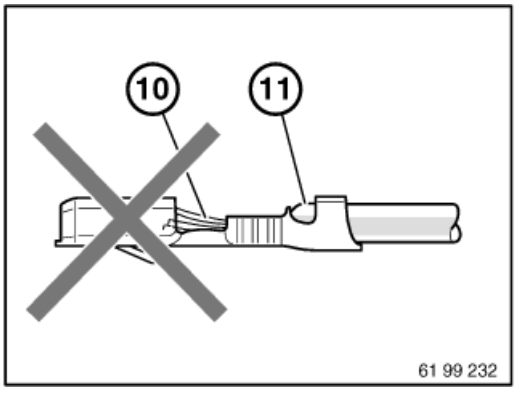
Note:
Illustration shows butt connectors and contact sleeves for comb connectors knocked on one side. The crimping procedure is identical here.



Correct crimping:

Visible conductor end (10).

Visible insulation end (11).



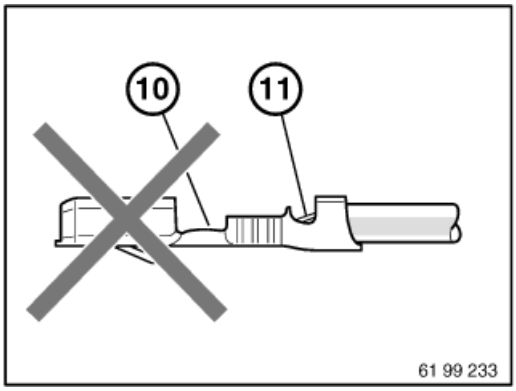
Incorrect crimping:

Conductor end (10) inserted too far.

Insulation end (11) in wire crimp.

If necessary, repeat crimping with a new contact.

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Incorrect crimping:

Conductor end (10) not visible.

Insulation end (11) not visible.

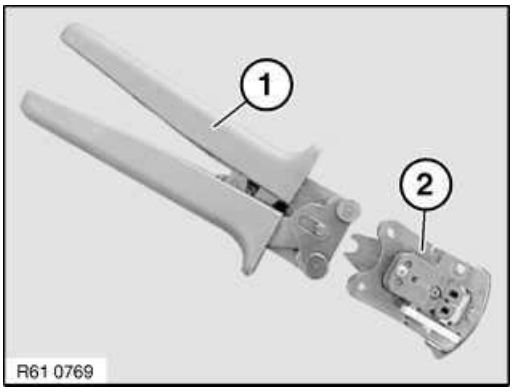
If necessary, repeat crimping with a new contact.

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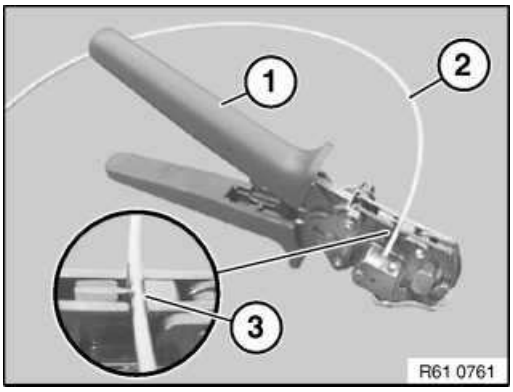
61 13 ... Cutting off, stripping insulation and cutting optical fibres to length

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.

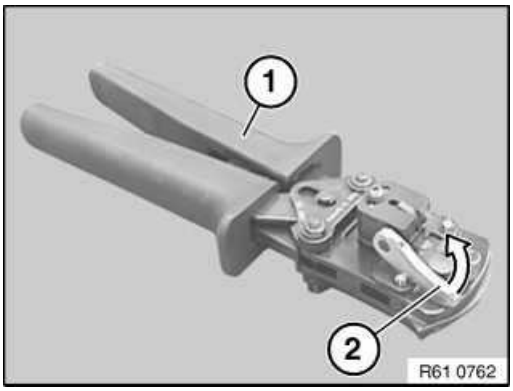


Cutting optical fibre

Open hand pliers (1).

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

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

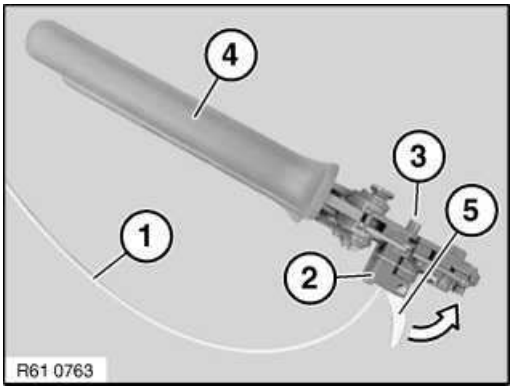


Stripping insulation from optical fibre

Open hand pliers (1).

Open lever (2) in direction of arrow.

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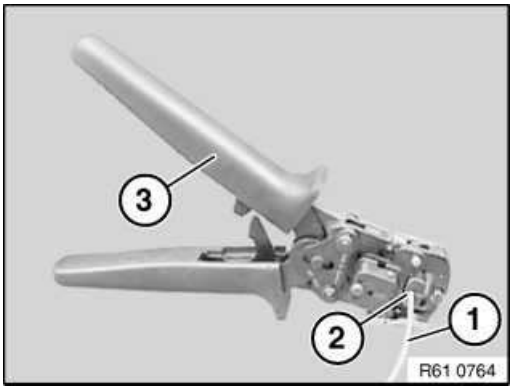
Push the optical fibre (1) into the strip insulation equipment (2) until it is flush in this area (3).

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).



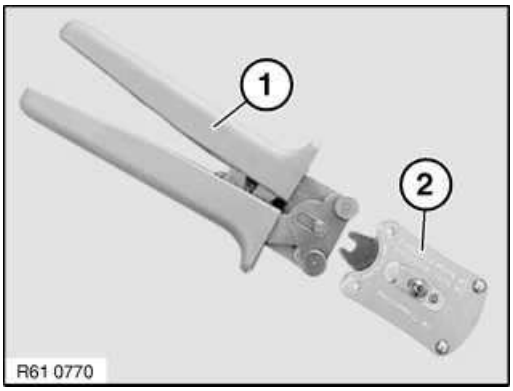
Cutting optical fibre to length

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.

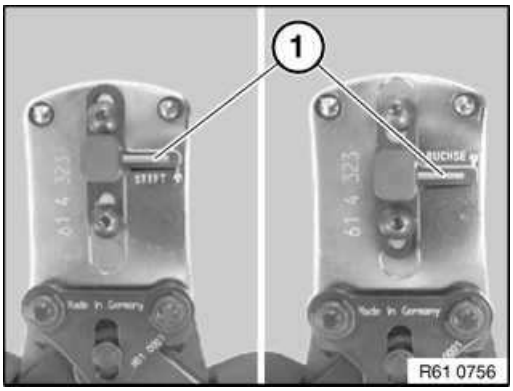
Remove optical fibre (1).



Crimp optical fibre

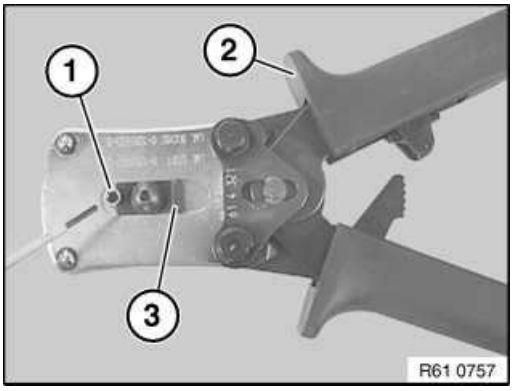
The hand pliers 61 4 321 (1) in connection with the crimping head 61 4 323 (2) from crimping kit 61 4 320 are used for crimping the optical fibres to size.

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



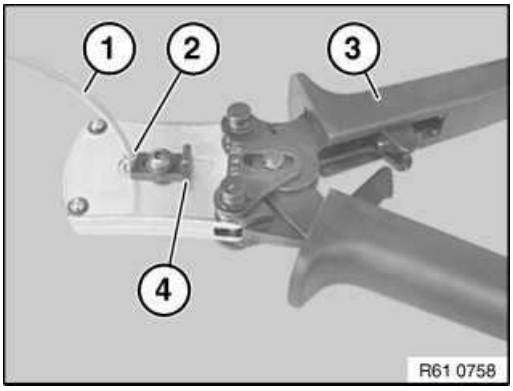
Move contact guide by means of stop lever (1) into corresponding position (pin contact or jack).

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Open hand pliers (2).

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

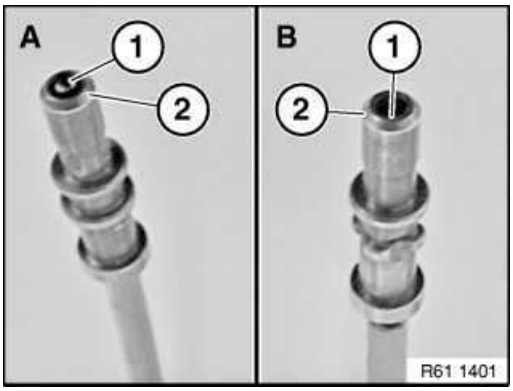


Insert stripped optical fibre(1) until limit position into pin contact or jack (2).

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 ... Cutting to length and stripping insulation from cables



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

SI 2 07 11 721

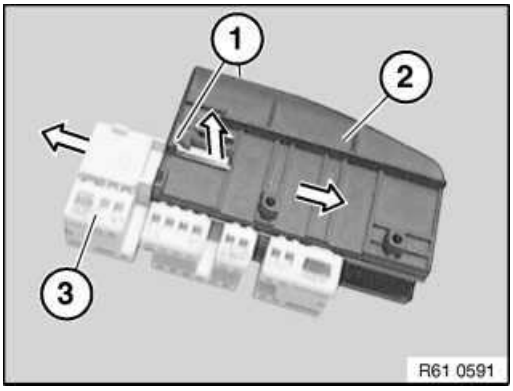
Stripped length:

Wire cross-section (mm2)	Stripped length (mm)
0,35 ... 0,50	4,0
0,75 ... 1,00	4,5
1,00 ... 2,50	5,0

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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)

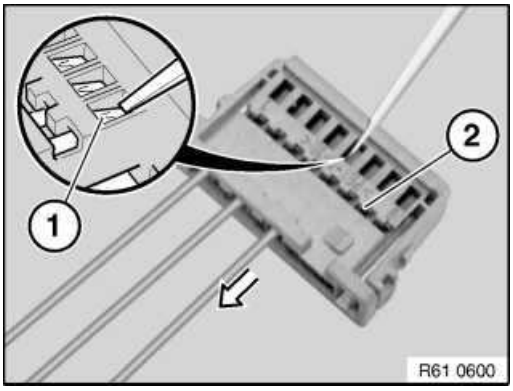


Socket housing:

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

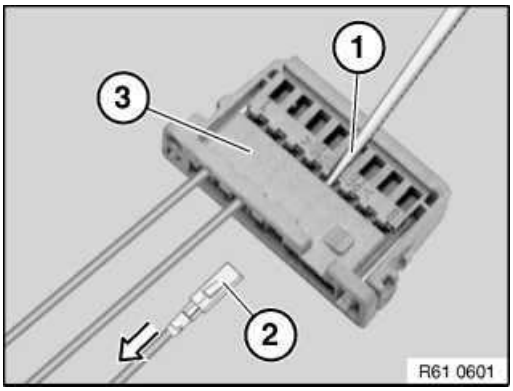
Detach protective cap from contact carrier (3).

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



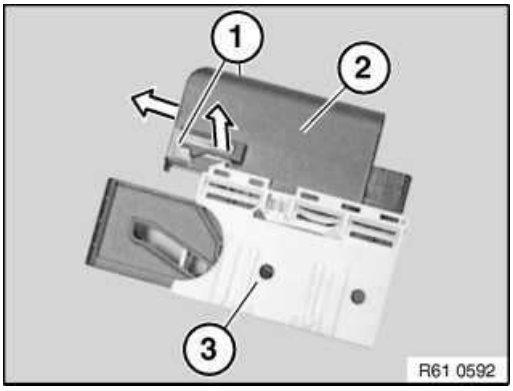
Hold down retaining hook (1) of socket contact in opening of contact carrier with a small screwdriver.

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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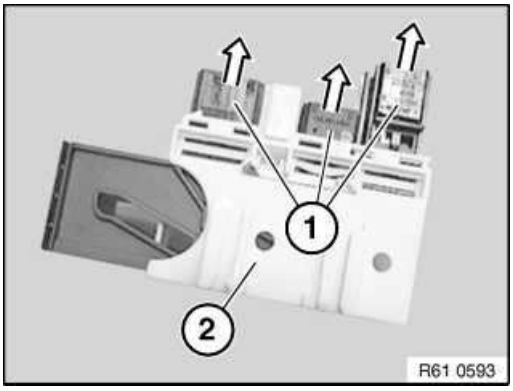


Pin housing:

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.



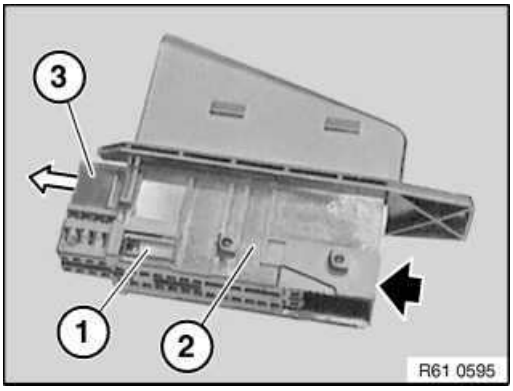
Pull contact carrier (1) out of housing carrier (2).

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

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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)

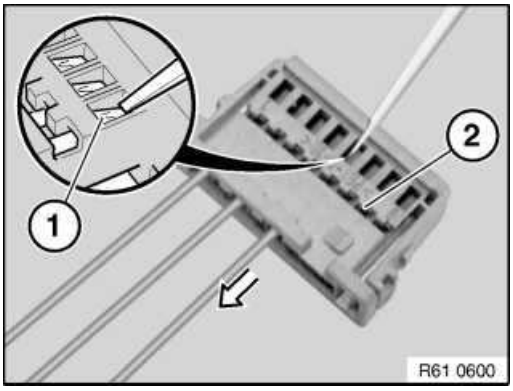


Socket housing:

Raise lock (1) on housing (2).

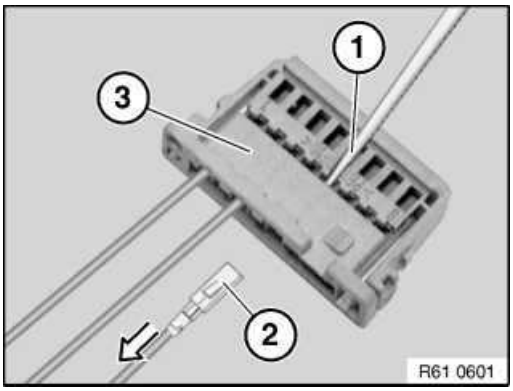
Push contact carrier (3) out of housing (2).

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



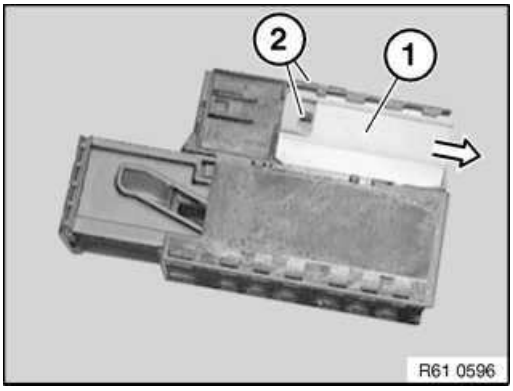
Hold down retaining hook (1) of socket contact in opening of contact carrier with a small screwdriver.

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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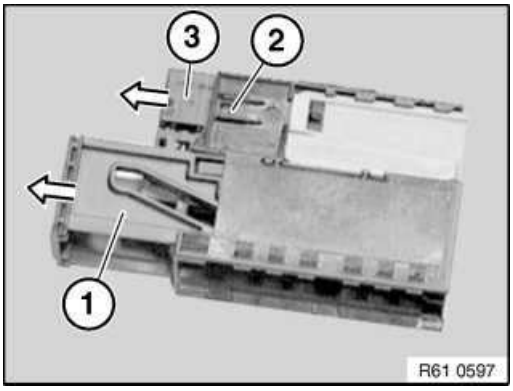


Pin housing:

Contacts 1 ... 13 and 19 ... 27:

Raise locking slide (1) on both sides (2) of housing and detach.

Note:
Detaching the locking slide releases the secondary locks of the pin contacts.



Contacts 14 ... 18 and 28 ... 30:

Pull slide (1) outwards completely.

Raise lock (2) on housing.

Pull contact carrier (3) out of housing.

Note:
Pulling out the contact carrier releases the secondary locks of the pin contacts.

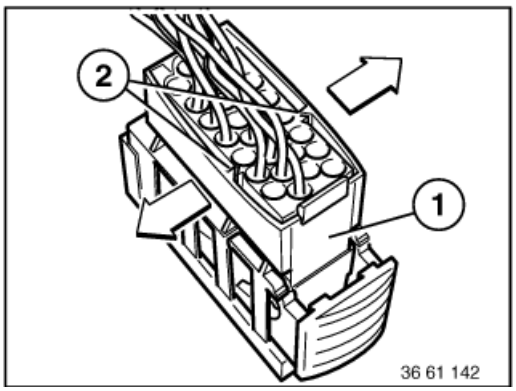
The pin contacts are pulled out of a contact carrier as described under ”Socket housing”.

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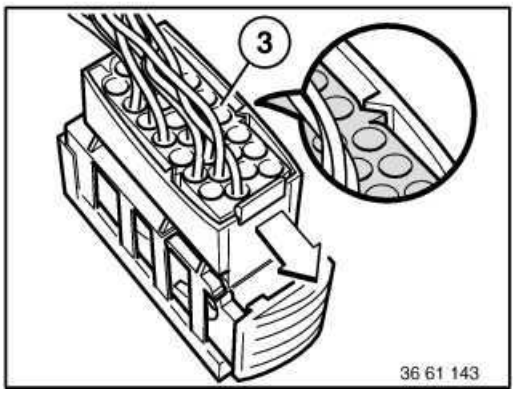
61 13 ... In-line connectors, 30-pin, System D2.5

Special tools required:

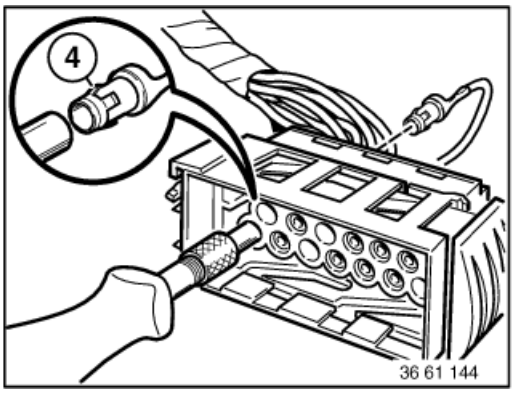
- 61 0 303



Carefully pull external connector (1) in area of retaining lugs (2) apart slightly.



Pull internal connector (3) until limit position in direction of arrow.



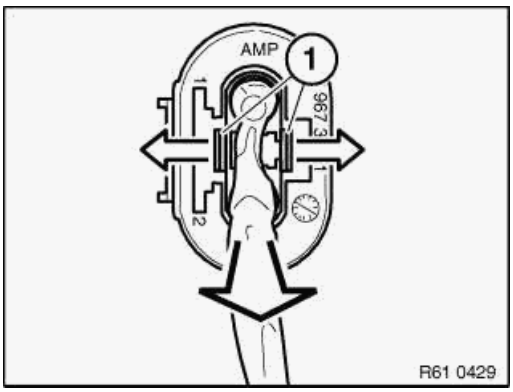
With special tool 61 0 303 press back retaining hook(4) of corresponding contact and pull out cable with contact.

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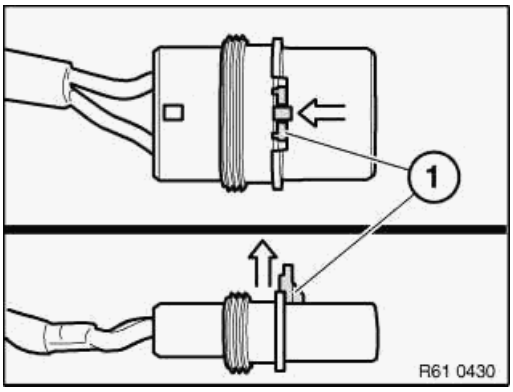
61 13 ... In-line plugs, 2-pin, System JPT ELA

Special tools required:

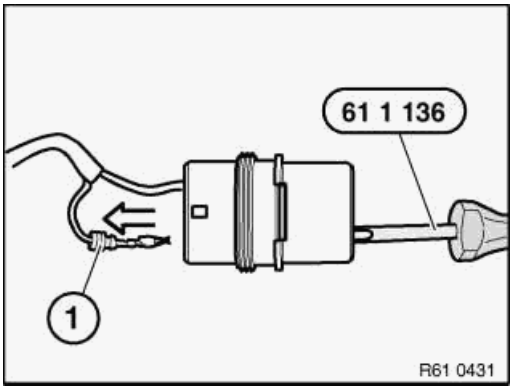
- 61 0 316



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



Press lock (1) downward and slide out to one side.



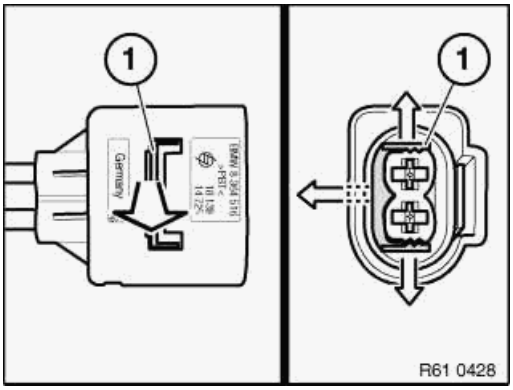
With special tool 61 0 316 (61 1 136), unlock contact and pull out cable with contact (1) towards rear.

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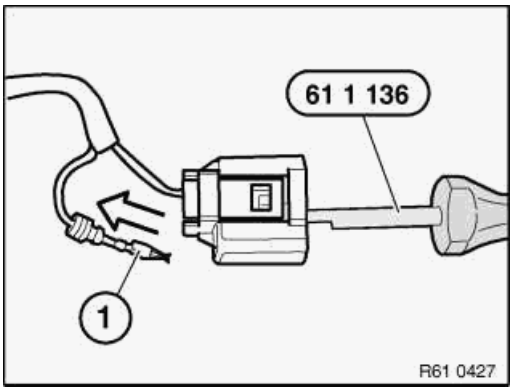
61 13 ... In-line plugs, 2-pin, System MDK 3 plus 2.8

Special tools required:

- 61 0 316



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



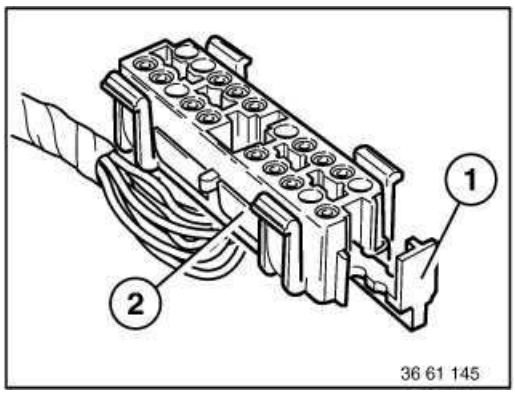
With special tool 61 0 316 (61 1 136), unlock contact and pull out cable with contact (1) towards rear.

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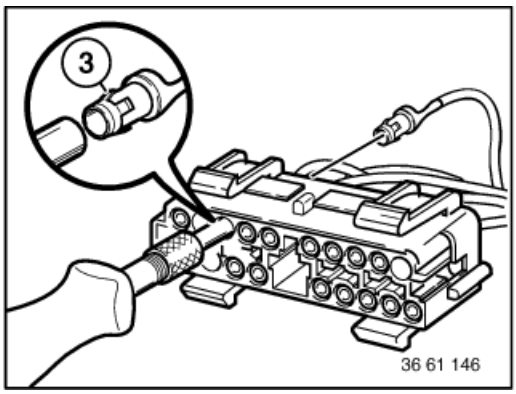
61 13 ... In-line plugs, 20-pin, System D2.5

Special tools required:

- 61 0 303



Pull locking slide (1) out of connector (2).



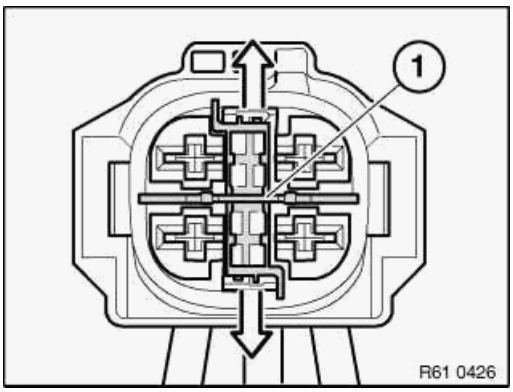
With special tool 61 0 303 , press down retaining hook (3) of corresponding contact and pull out cable with contact.

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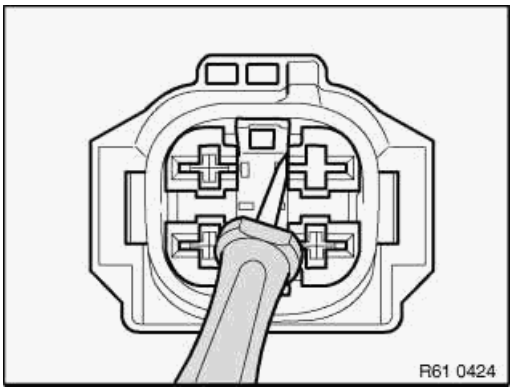
61 13 ... In-line plugs, 4-pin, System DFK ELA

Special tools required:

- 61 0 316

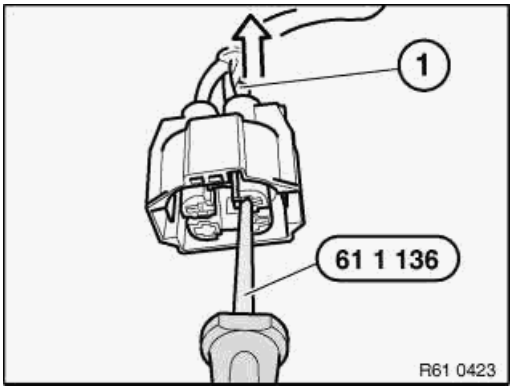


Press retaining hook in direction of arrow and remove lock (1).



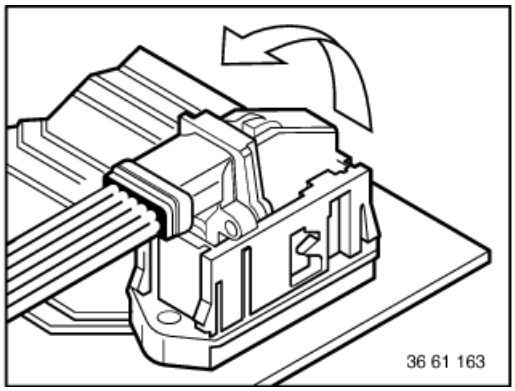
Installation notes:

If necessary, side lock must also be unlocked with screwdriver.

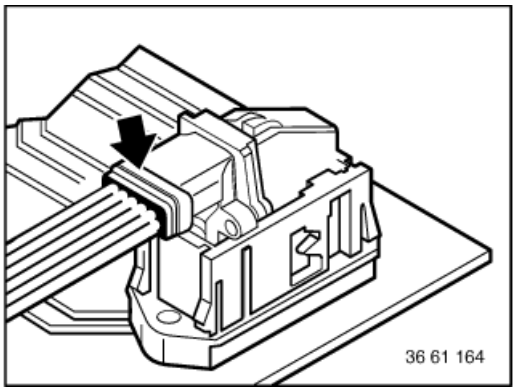


With special tool 61 0 316 (61 1 136), unlock contact and pull out cable with contact (1) towards rear.

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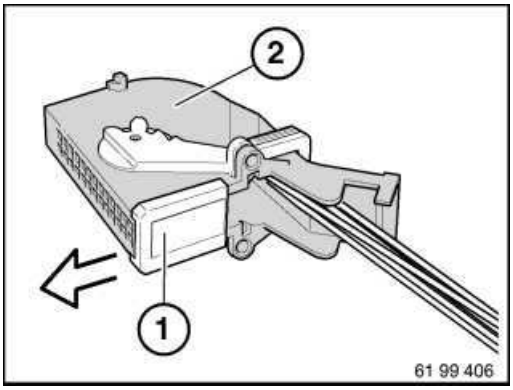


Open lock.

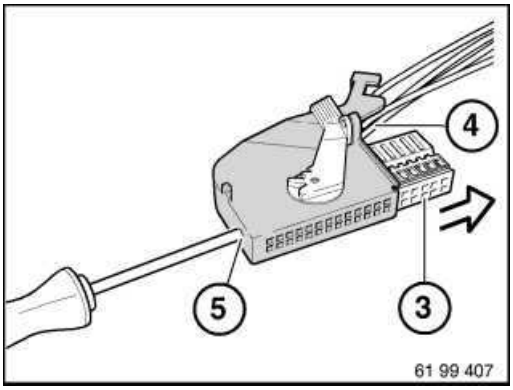


Detach cable strap.

Installation note:
Cable strap must be reinstalled.

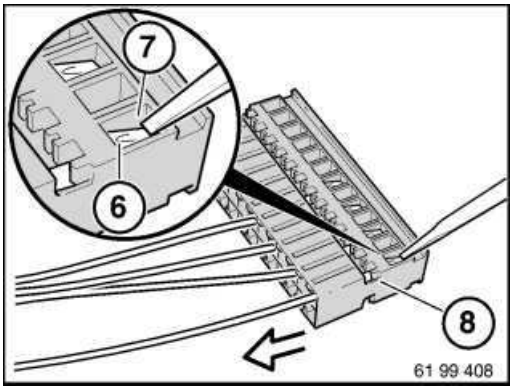


Detach catch (1) from connector housing (2).

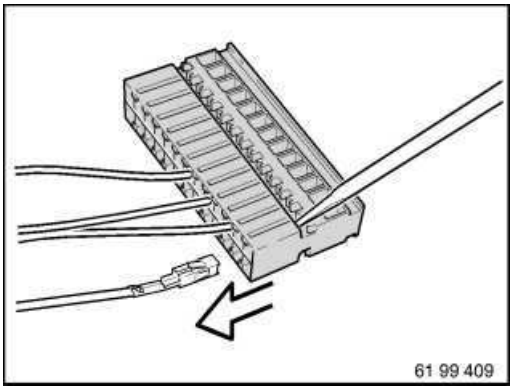


Press out contact carrier (3) with wiring harness (4) through opening (5).

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Hold down retaining hook (6) of defective contact and pull cable and contact up to secondary lock (8).



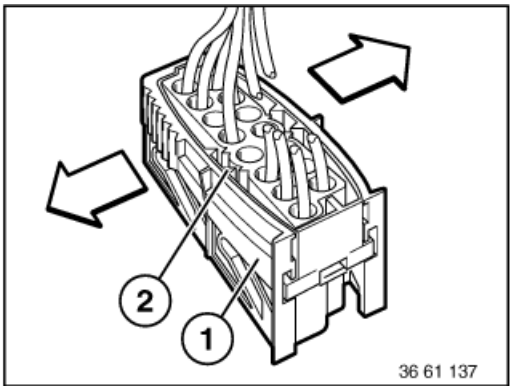
Hold down retaining hook once again in secondary lock (8) and pull cable and contact completely out of contact carrier.

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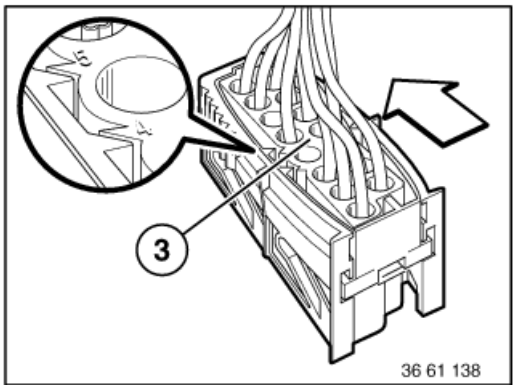
61 13 ... Inline connectors, 15-pin, System D2.5

Special tools required:

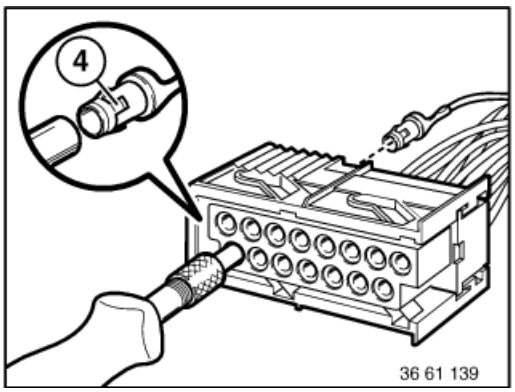
- 61 0 303



Carefully pull external connector (1) in area of retaining lugs (2) apart slightly.

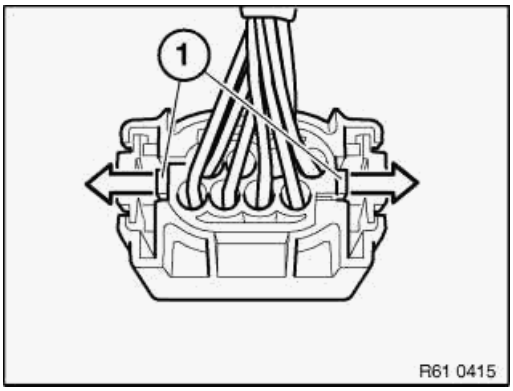


Pull internal connector (3) until limit position in direction of arrow.

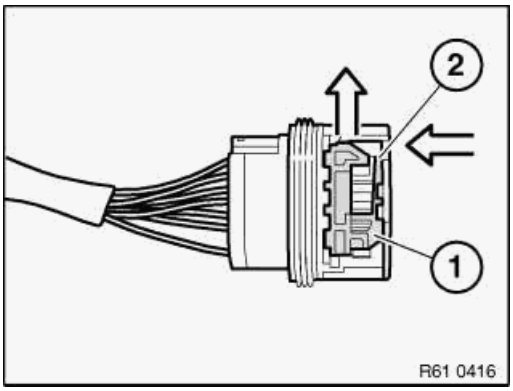


With special tool 61 0 303 press back retaining hook(4) of corresponding contact and pull out cable with contact.

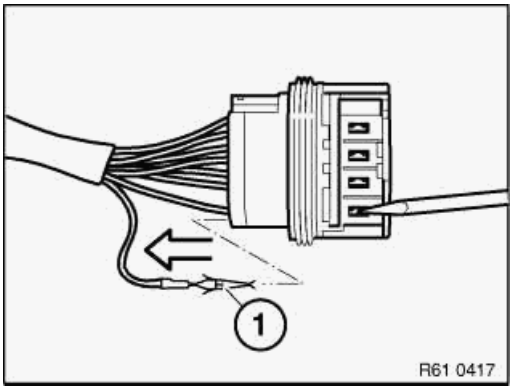
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Press lock (1) in direction of arrow and slide connector forward.



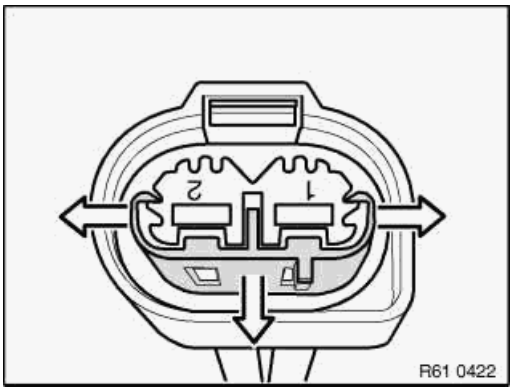
Press locking hook (2) downward and slide lock (1) out.



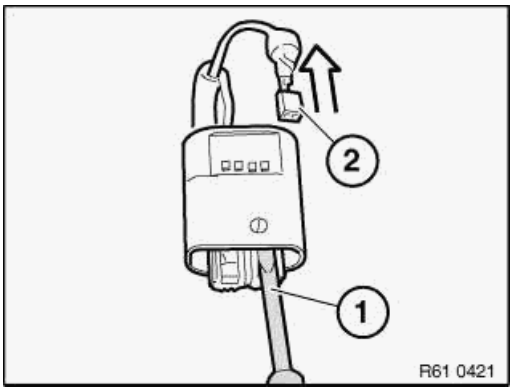
Press down retaining hook (1) with screwdriver and pull out cable with contact towards rear.

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



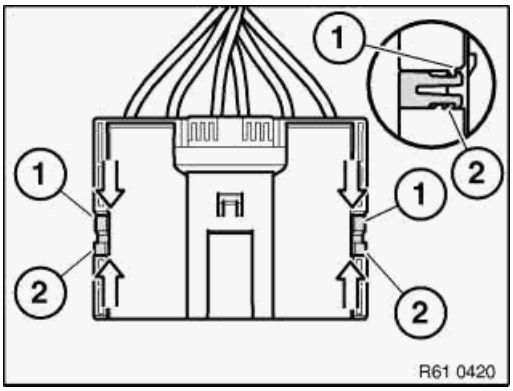
Press catch on outside in direction of arrow and remove towards top.



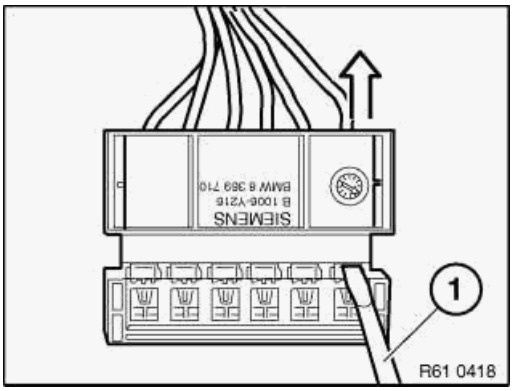
Press down retaining hook (1) with screwdriver and pull out cable and contact (2) towards rear.

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

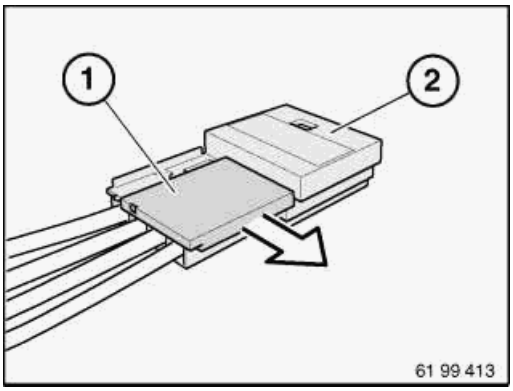


Press locking hook (1) in direction of arrow and disengage. Then unlock locking hook (2) and remove lock.

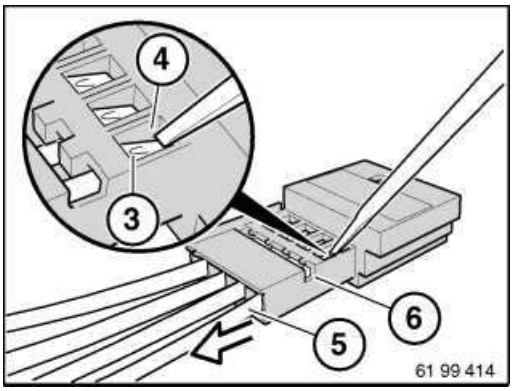


Press down retaining hook with screwdriver (1) and pull out cable with contact towards rear.

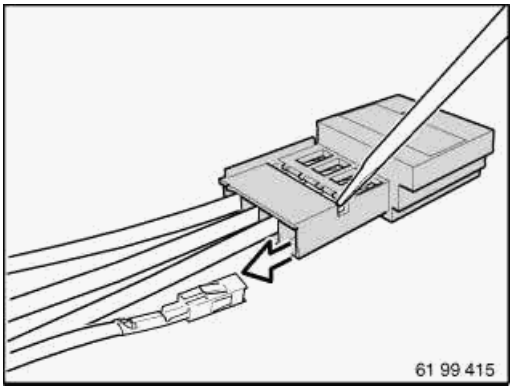
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Detach fastener (1) from contact carrier (2).



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



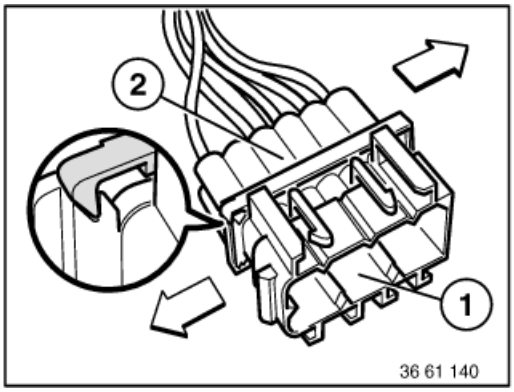
Hold down retaining hook once again in secondary lock and pull cable and contact completely out of contact carrier.

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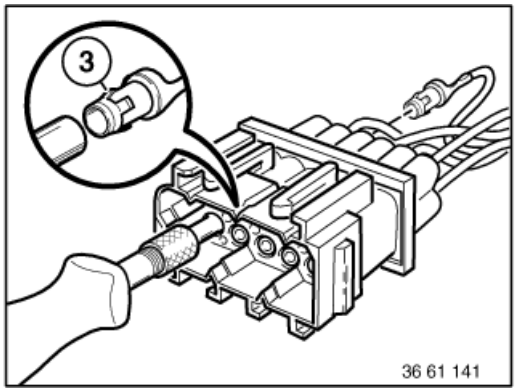
61 13 ... Inline plugs, 8-, 12-pin, System D2.5

Special tools required:

- 61 0 303



Move upper section of connector (1) and lower section of connector (2) against each other in direction of arrow.



With special tool 61 0 303 , press down retaining hook (3) of corresponding contact and pull out cable with contact.

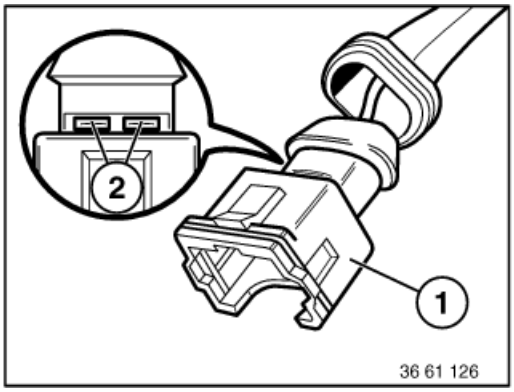
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61 13 ... Notes for opening contacts and locks of different plug contact systems

Special tools required:

- 61 0 300
- 61 0 400
- 61 1 100

Abbreviations of contacts and what they mean:	
ELA	**Strand seal**
D 1.5 / 2.5 / 3.5	**Round contacts with 1.5 mm, 2.5 mm or 3.5 mm diameter**
MDK	**Miniature double flat spring contact**
JPT	Junior Power timer
DFK	Double flat spring contacts
Elo	Electronic contacts
Elo Power	Electronic contacts for heavy load
MQS	Micro Quadlock system
MPQ	Micro Power Quadlock
MLK	Mini laminated contact
SLK	Sensor laminated contact
LSK	Load current contact
MLK	Mini laminated contact
Mcon	Multi contact



Important!

The contacts can be changed on ultrasonically welded connectors (1).

Ultrasonically welded connectors (1) must be replaced completely.

Ultrasonic-welded connectors (1) can be identified by the welds (2) on their longitudinal side.

Note:

Special tools referred to in the repair instructions below are contained in the following special tool sets:

- Unlocking and pressing-off tool 61 1 150

  is replaced as of 09/2005 by 61 0 300 (BMW) and 61 0 400 (MINI)
- Release and pressing-off tool 61 1 100 (engine)

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Repair instructions for opening connector housings and removing contacts of different connector systems:

Connector system D 1.5/D 2.5:

- Circular connectors, 7- or 8-pin, system D 2.5
- Circular connectors, 13-pin, system D 2.5
- Circular connectors, 20-pin, system D 2.5
- Circular connectors, 4-, 7-, 10-, 12- or 25-pin, system D 1.5/D 2.5
- In-line connectors, 15-pin, system D 2.5
- In-line connectors, 8-, 12-pin, system D 2.5
- In-line connectors, 30-pin, system D 2.5
- In-line connectors, 20-pin, system D 2.5

Connector system JPT/MDK/DFK:

- In-line connectors, 2-pin, System JPT ELA
- In-line plugs, 2-pin, System MDK 3 plus 2.8
- In-line plugs, 4-pin, System DFK ELA

Connector system Elo/Elo Power:

- Inline plugs, 4-, 10-pin, System Elo
- In-line connectors, 6- to 50-pin, System Elo
- Inline plugs, 3-, 6-pin, System Elo-Power 2.8

Connector system LSK:

- Connector housing LSK contact

Connector system MQS/MPQ:

- Inline connectors, 6-, 8-pin, System MQS
- Inline plugs, 2-pin, System MPQ 2.8
- Control unit connectors, 25-, 35-, 55-, 83-, 88-pin
- In-line plugs, 24-pin, Hybrid System MQS/MPQ
- Socket housing 42-, 43-pin, Hybrid System MQS / MPQ
- Socket housings 2x21-, 2x27-pin, Hybrid System MQS/MPQ, Elo/Elo Power
- In-line connectors, 30-pin, Hybrid System MQS/MPQ
- Socket housings, 5-, 8-pin, System MQS/MPQ
- Socket housing (radio connector), Hybrid System MQS/MPQ

For connector contact systems not listed, refer to Service Information:

SI 2 05 05 217
SI 2 05 06 294
SI 2 03 08 440
SI 2 08 06 312
SI 2 02 08 439
SI 2 01 08 438

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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 wheel arch, for example):

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- 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.**

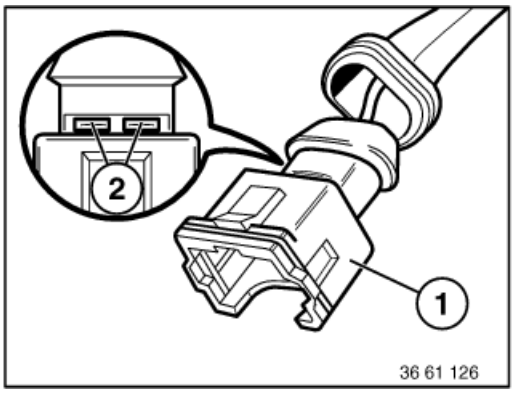
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61 13 ... Opening plug housings and removing contacts of different plug systems

Special tools required:

- 61 0 300
- 61 0 400
- 61 1 100
- 61 1 150

Abbreviations of contacts and what they mean:	
ELA	**Strand seal**
D 1.5 / 2.5 / 3.5	**Round contacts with 1.5 mm, 2.5 mm or 3.5 mm diameter**
MDK	**Miniature double flat spring contact**
JPT	Junior Power timer
DFK	Double flat spring contacts
Elo	Electronic contacts
Elo Power	Electronic contacts for heavy load
MQS	Micro Quadlock system
MPQ	Micro Power Quadlock
MLK	Mini laminated contact
SLK	Sensor laminated contact
MLK	Mini laminated contact
Mcon	Multi contact



Important!

The contacts can be changed on ultrasonically welded plugs (1).

Ultrasonically welded plugs (1) must be replaced completely.

Ultrasonic-welded connectors (1) can be identified by the welds (2) on their longitudinal side.

Note:

Special tools referred to in the repair instructions below are contained in the following special tool kits:

- Release and press-out tool 61 1 150

  is replaced from 09/2005 by 61 0 300 (BMW) and 61 0 400 (MINI)
- Release and press-out tool 61 1 100 (engine)

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Repair instructions for opening plug housings and removing contacts of different plug systems:

Plug system D 1.5/D 2.5:

- Circular plugs, 7-, 8-pin, System D 2.5
- Circular plugs, 13-pin, System D 2.5
- Circular plugs, 20-pin, System D 2.5
- Circular plugs, 4-, 7-, 10-, 12-, 25-pin, System D 1.5/D 2.5
- In-line plugs, 15-pin, System D 2.5
- In-line plugs, 8-, 12-pin, System D 2.5
- In-line plugs, 30-pin, System D 2.5
- In-line plugs, 20-pin, System D 2.5

Plug system JPT/MDK/DFK:

- In-line plugs, 2-pin, System JPT ELA
- In-line plugs, 2-pin, System MDK 3plus 2.8
- In-line plugs, 4-pin, System DFK ELA

Plug system Elo/Elo-Power:

- In-line plugs, 4-, 10-pin, System Elo
- In-line plugs, 6- to 50-pin, System Elo
- In-line plugs, 3-, 6-pin, System Elo-Power 2.8

Plug system MQS/MPQ:

- In-line plugs, 6-, 8-pin, System MQS
- In-line plugs, 2-pin, System MPQ 2.8
- Control unit plugs, 25-, 35-, 55-, 83-, 88-pin
- In-line plugs, 24-pin, Hybrid System MQS/MPQ
- Socket housing 42-, 43-pin, Hybrid System MQS / MPQ
- Socket housings 2x21-, 2x27-pin, Hybrid System MQS/MPQ, Elo/Elo-Power
- In-line plugs, 30-pin, Hybrid System MQS/MPQ
- Socket housings, 5-, 8-pin, System MQS/MPQ
- Socket housing (radio plug), Hybrid System MQS/MPQ

For plug contact systems not listed, refer to Service Information:

SI 2 05 05 217

SI 2 05 06 294

SI 2 03 08 440

SI 2 08 06 312

SI 2 02 08 439

SI 2 01 08 438

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61 00 ... Repairing airbag cables

Important!

> **Only repair those cables which show visible signs of damage. In the event of visible damage, make sure there is only one cable repair in effect after the repair work. If no visible damage can be identified, the entire cable must be replaced. When carrying out repairs to the airbag wiring harness, you must use the spare parts offered in the Electronic Parts Catalogue (EPC).**

Safety regulations for handling components of airbag system.

Instructions for disconnecting and connecting battery.

In event of non-visible damage to wiring harness:

Disconnect plug connection on airbag module or on adapter plug. It is absolutely vital to disconnect the contacts in succession as there is a risk of mixing up (similar parts)! Cut through one cable after the other at an appropriate position, do not under any circumstances cut through both cables at the same time. Insulate cables remaining in wiring harness with insulating tape. Now disconnect plug connection on airbag control unit. Unpin contacts. Cut through one cable after the other at an appropriate position and insulate with insulating tape, do not under any circumstances cut through both cables at the same time. Pin contacts of repair cable for airbag control unit in control unit plug, assignment of repair cables is relevant. Lay repair cable in vehicle parallel to existing airbag lead. Now pin in contacts for airbag control unit or contacts of adapter plug, assignment of repair cables is relevant. Cut off excess length of repair cable in proximity (visible area) of airbag module or of adapter plug. Twist open cables. With the butt connectors and heat-shrink tubings in the Electronic Parts Catalogue (EPC), reconnect the cables with the same cable colours. Twist cables again, open length (twist) must not exceed 40 mm. Secure interface (heat-shrink tubing) with insulating tape to prevent cables from twisting open.

Instructions for cutting off, insulating, crimping cables, installing and removing contacts:

Cutting off and insulating cables.

Repairing a plug connection using butt connectors.

Installing and removing contacts.

In event of visible damage:

Expose cable at damaged areas. Cut through one cable after the other at an appropriate position and insulate cables no longer required in wiring harness with insulating tape, do not under any circumstances cut through both cables at the same time. Now, depending on the scope of work, unpin contacts either on airbag control unit/airbag module or on adapter plug. Cut off unpinned cables. Insulate cables remaining in wiring harness with insulating tape. Now pin in contacts of repair cable, assignment of repair cables is relevant. Lay repair cable in vehicle parallel to existing airbag lead up to separation point. Cut off excess length of repair cable. Twist open cables. Connect cables with butt connectors and heat-shrink tubings in Electronic Parts Catalogue (EPC), assignment of repair cables is relevant. Twist cables again, open length (twist) must not exceed 40 mm. Secure interface (heat-shrink tubing) with insulating tape to prevent cables from twisting open.

Instructions for cutting off, insulating, crimping cables, installing and removing contacts:

Cutting off and insulating cables.

Repairing a plug connection using connectors.

Installing and removing contacts.

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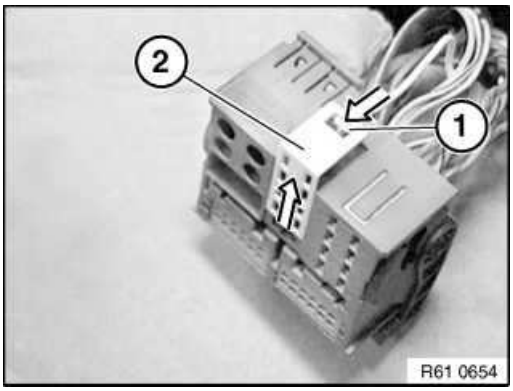
61 13 ... Socket housing (radio connector), Hybrid System MQS/MPQ

Special tools required:

- 61 0 314

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

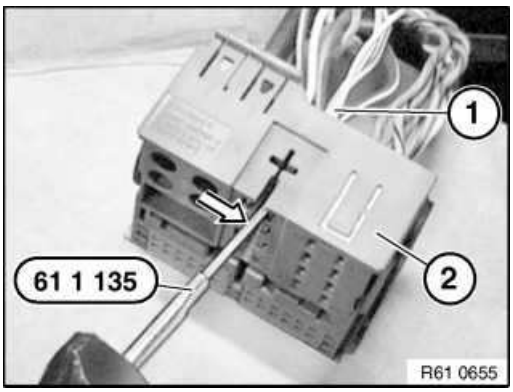
- MQS (Micro Quadlock System)
- MPQ, width 2.8 mm (Micro Power Quadlock)
- MPQ, width 5.2 mm (Micro Power Quadlock)



Removing MPQ contacts from radio connector:

Press lock (1) in direction of arrow.

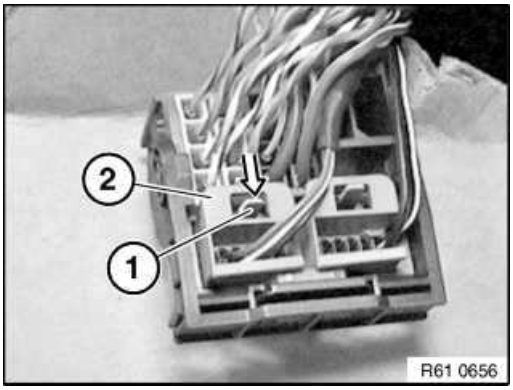
Detach secondary lock (2) from radio plug.



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.

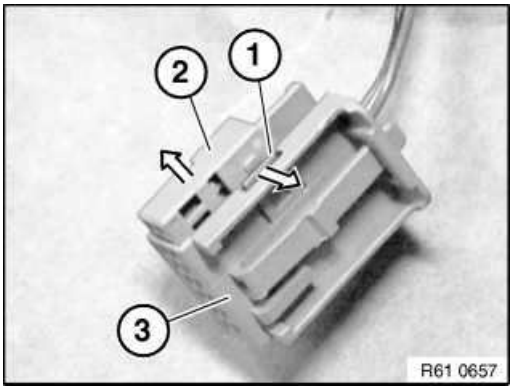
Pull wire (1) with socket contact out of radio connector (2).



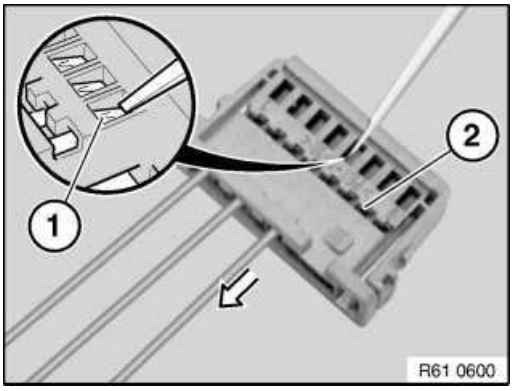
Removing MQS contacts from contact carrier:

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

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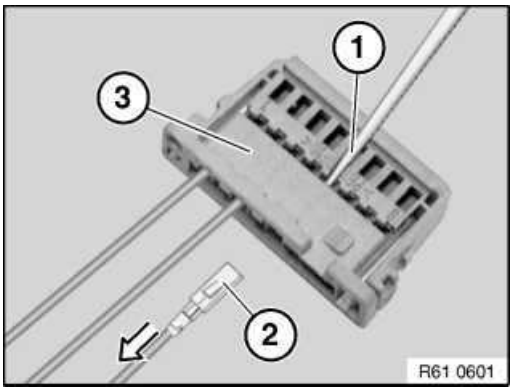
Press lock (1) in direction of arrow. Pull contact carrier (2) out of housing (3).*Note:*
When the contact carrier is pulled out, the secondary locks of the socket contacts are raised.



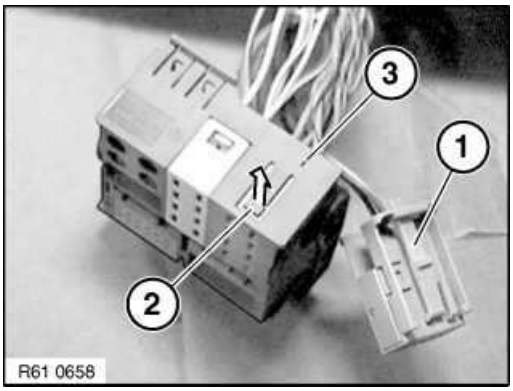
Note:
Schematic diagram shows the 8-pin socket housing by way of example.

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).



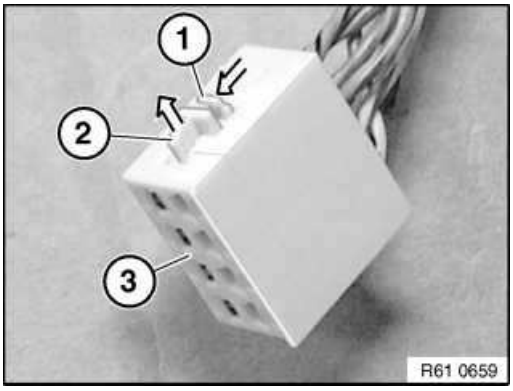
Removing MPQ contacts from contact carrier:

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

Raise lock (2) on radio connector.

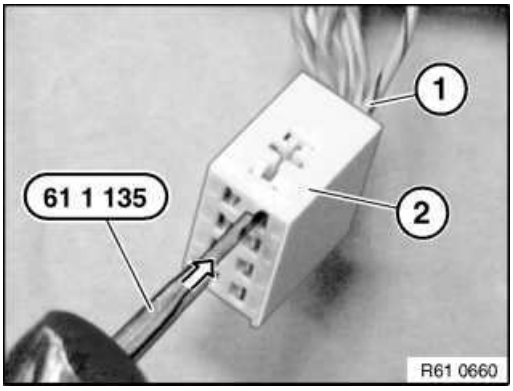
Pull contact carrier (3) out of radio connector.

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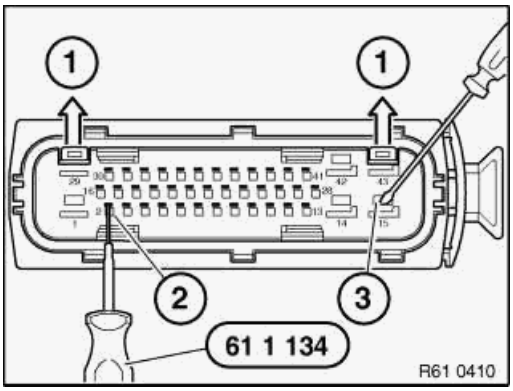
61 13 ... Socket housing 42-, 43-, 46-pin, Hybrid System MQS / MPQ

Special tools required:

- 61 0 312

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

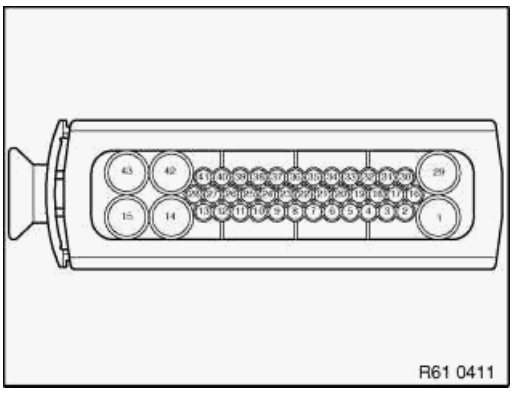
- MQS (Micro Quadlock System)
- MPQ, width 2.8 mm (Micro Power Quadlock)
- MPQ, width 5.2 mm (Micro Power Quadlock)



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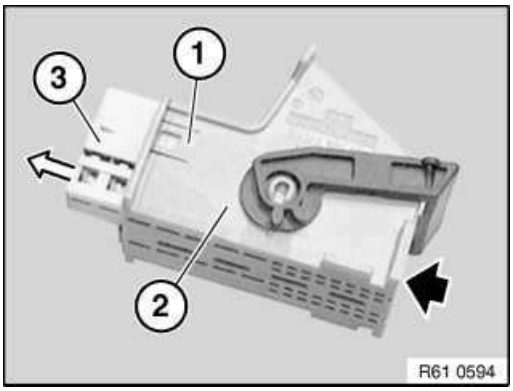
61 13 ... Socket housings, 2x21-, 2x27-pin, Hybrid Systems MQS/MPQ, Elo/Elo Power

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)

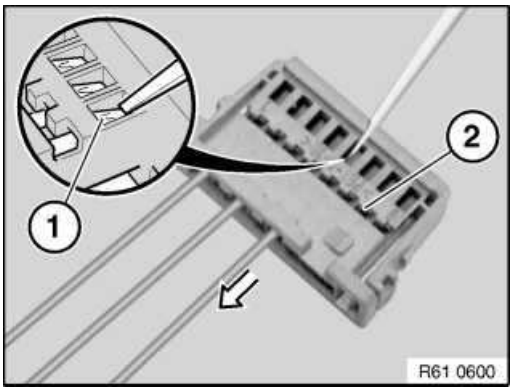


Raise lock (1) on housing (2).

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

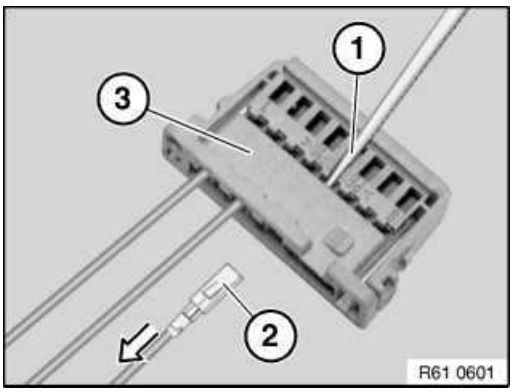
Note:
The second contact carrier is pushed out in the same way.

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).



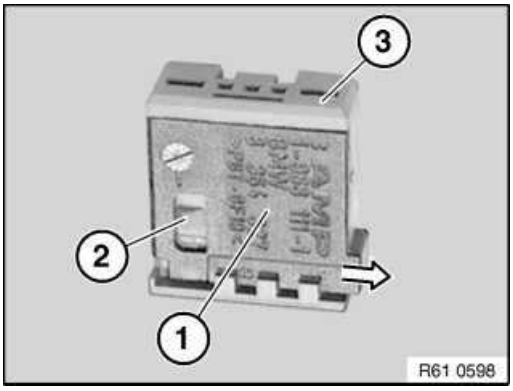
Hold down retaining hook in secondary lock (1) again and pull cable with socket contact (2) completely out of contact carrier (3).

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

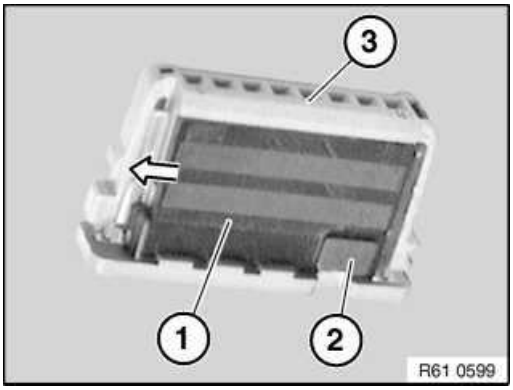
Manufactured by AMP: The following contact types without strand sealing can be fitted in the connector housings:

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



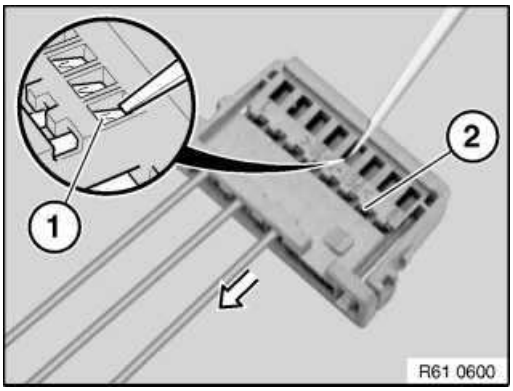
Socket housing, 5-pin (Hybrid System MQS/MPQ)

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



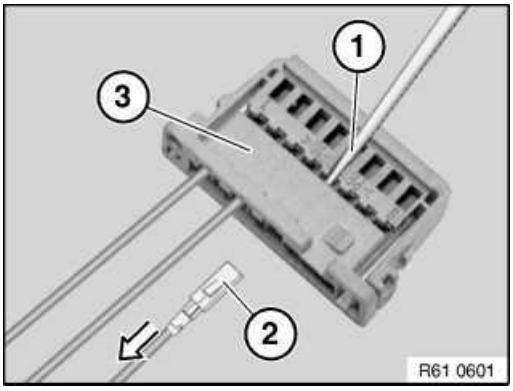
Socket housing, 8-pin (MQS):

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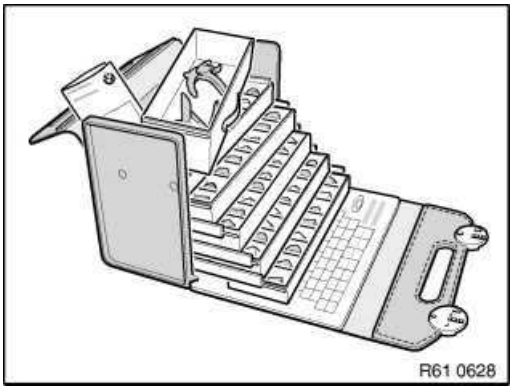
Hold down retaining hook in secondary lock (1) again and pull cable with contact (2) completely out of contact carrier (3).

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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

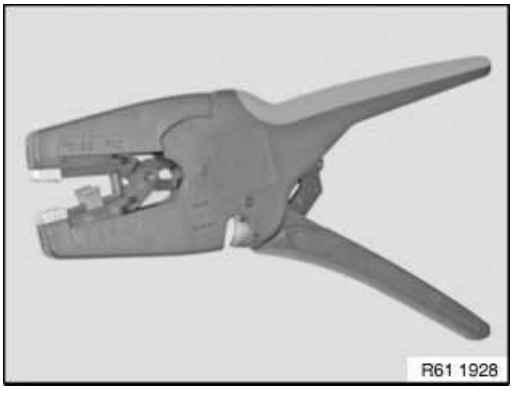


Release and press-out tool:

- 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



Cutting to length and stripping insulation from cables:

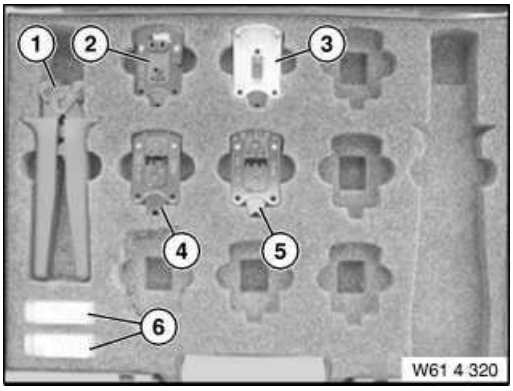
Wire stripper MultiStrip10*

*Sourcing reference BMW Workshop Equipment Catalogue

Handling:

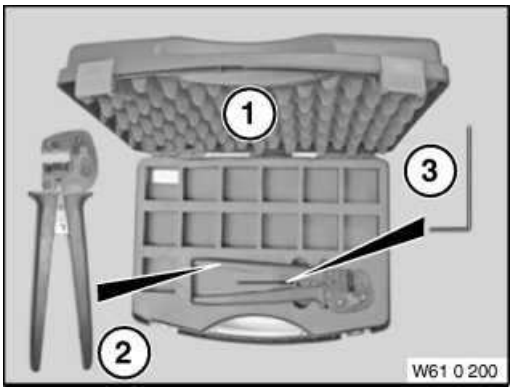
- Cutting cables to length and strip insulation

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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 ... Treating cables and optical fibres



Special tools required:

- 61 4 320
- 61 0 200



Note:
Special tools referred to in the repair instructions below are contained in the following special tool sets:

Repair range for vehicle electrical system	SI 2 04 07 341
Crimping set with pliers for optical fibres, Micro Power Quadlock (MPQ), Micro Quadlock System (MQS) contacts and universal crimping head	61 4 320 61 0 200

Subject of repair instructions

- Special tools for wiring harness repairs
- Cutting cables to length and strip insulation
- Crimping stop parts (contacts)
- Butt connector for repairing a plug connection
- Comb connector for retrofitting/repairs
- Cutting to length and stripping insulation from optical fibres

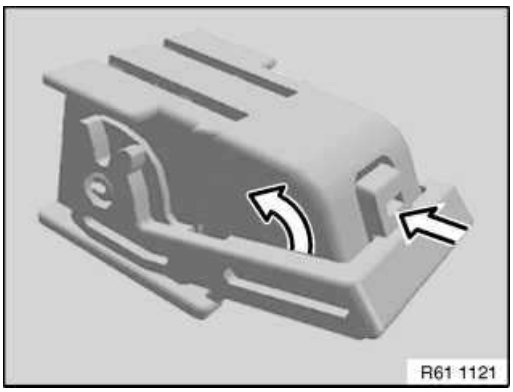
  Crimping optical fibres

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61 13 ... Unlocking and disconnecting different plug connections

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

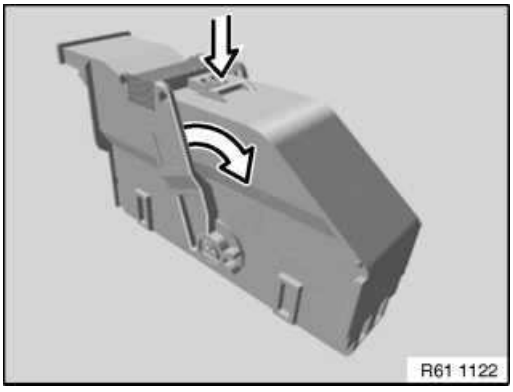
Differences in the details of the size and shape of the plug connections are possible.



1.

Press lock and open release clip in direction of arrow.

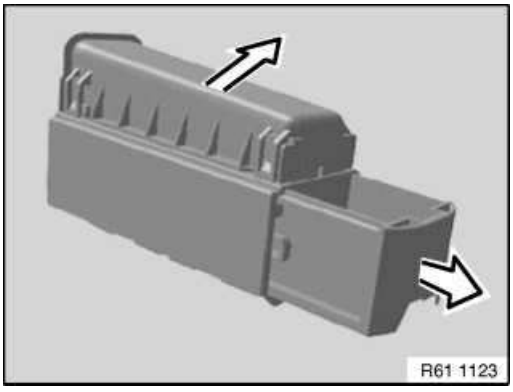
Disconnect plug connection.



2.

Press lock and open release clip in direction of arrow.

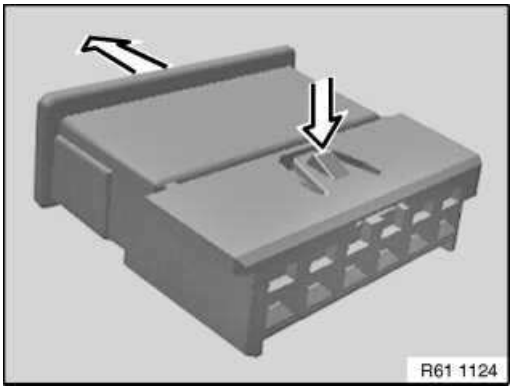
Disconnect plug connection.



3.

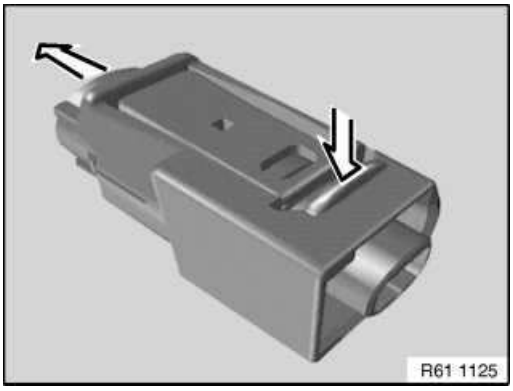
Open release clip in direction of arrow and disconnect plug connection in direction of arrow.

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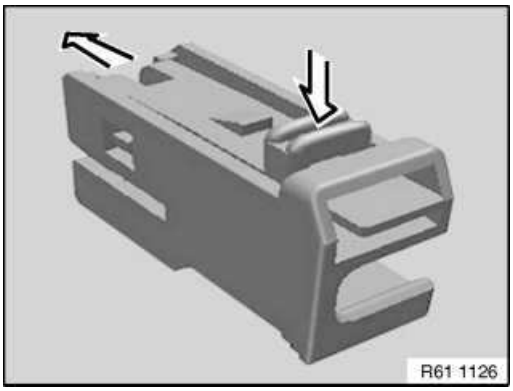
4.

Press lock and disconnect plug connection in direction of arrow.



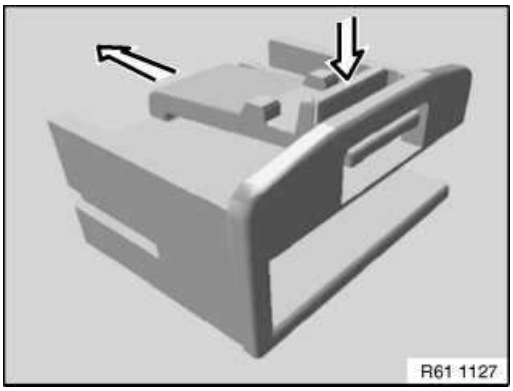
5.

Press lock and disconnect plug connection in direction of arrow.



6.

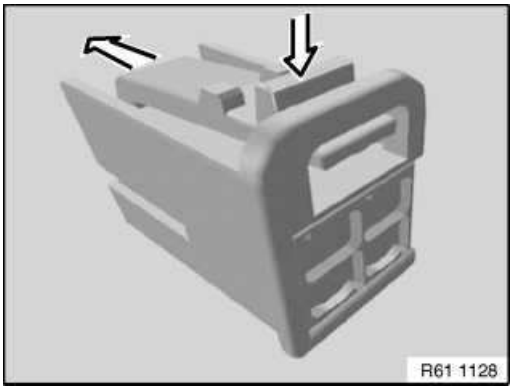
Press lock and disconnect plug connection in direction of arrow.



7.

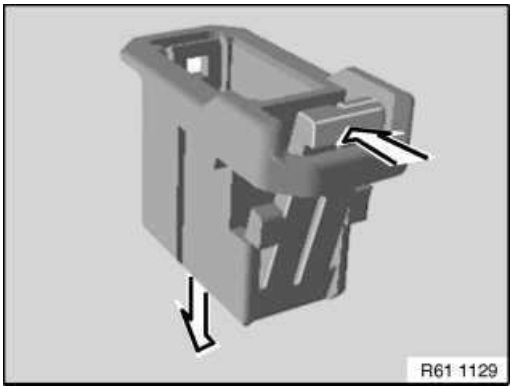
Press lock and disconnect plug connection in direction of arrow.

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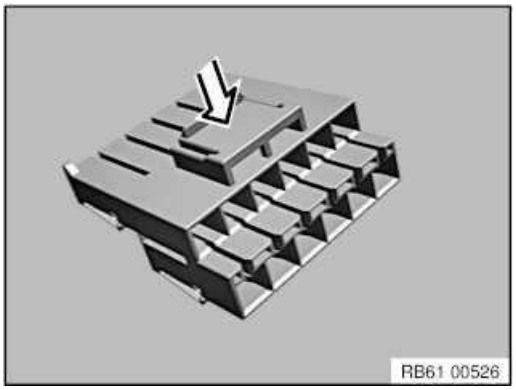
8.

Press lock and disconnect plug connection in direction of arrow.



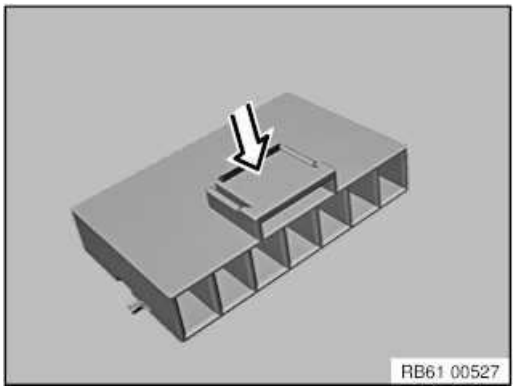
9.

Press lock and disconnect plug connection in direction of arrow.



10.

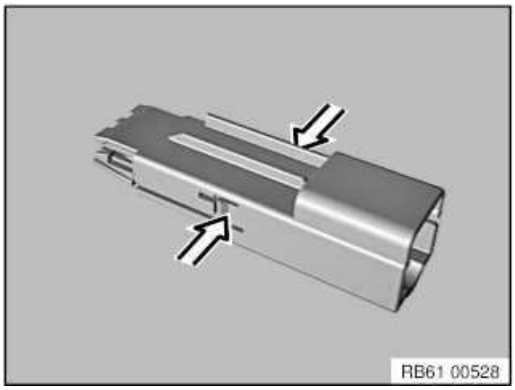
Press the lock and detach plug connection.



11.

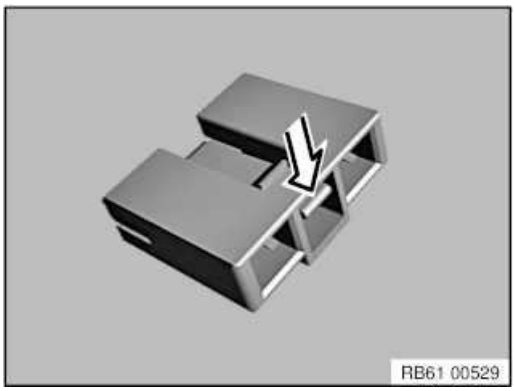
Press the lock and detach plug connection.

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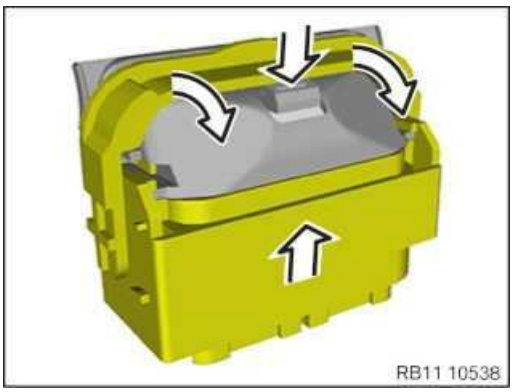
12.

Press the lock on both sides and detach plug connection.



13.

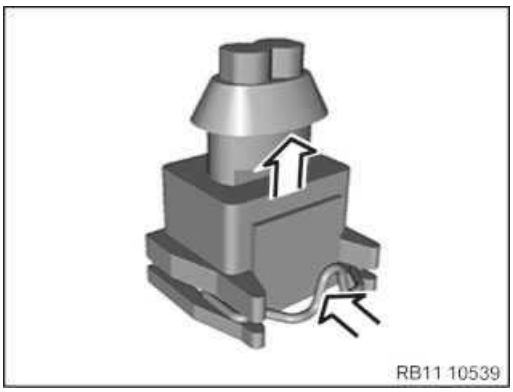
Press the lock and detach plug connection.



14.

Press lock and open release clip in direction of arrow.

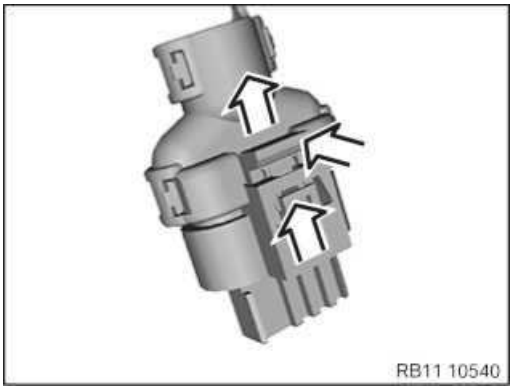
Disconnect plug connection.



15.

Press the lock and detach plug connection.

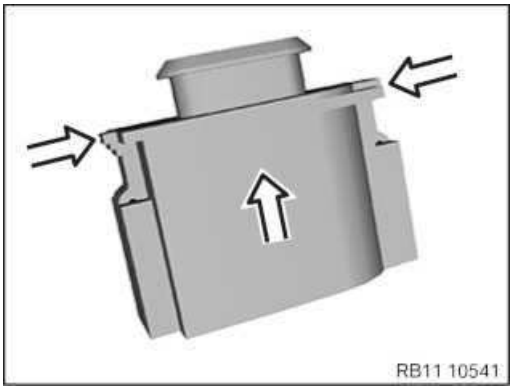
cardiagn.com



16.

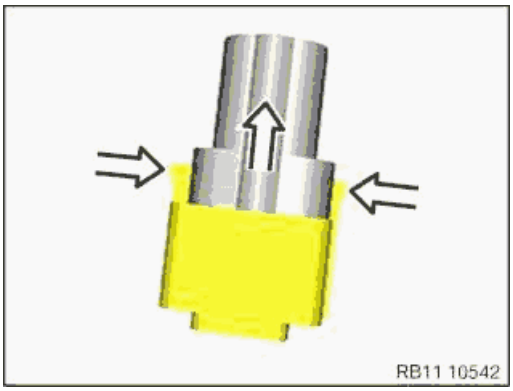
Pull out lock and press.

Disconnect plug connection.



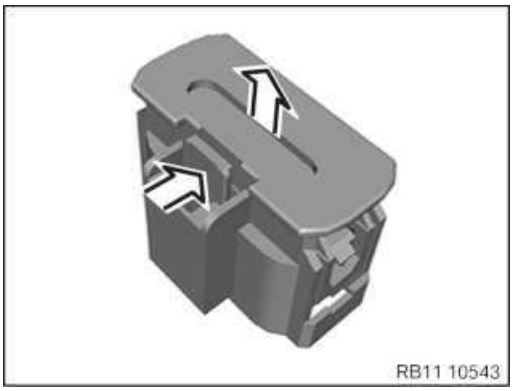
17.

Press the lock and detach plug connection.



18.

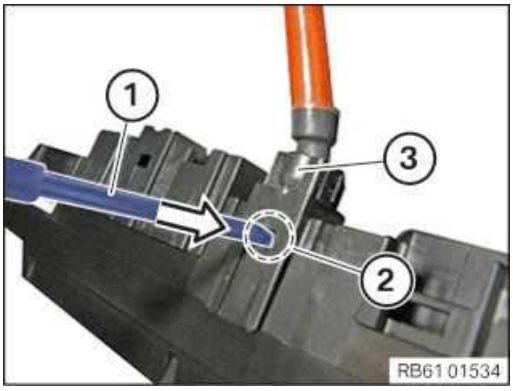
Press the lock and detach plug connection.



19.

Press the lock and detach plug connection.

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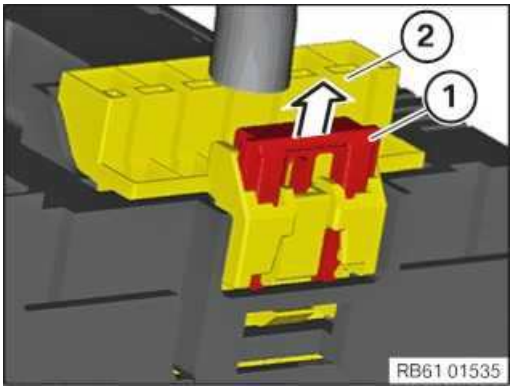


20.

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!

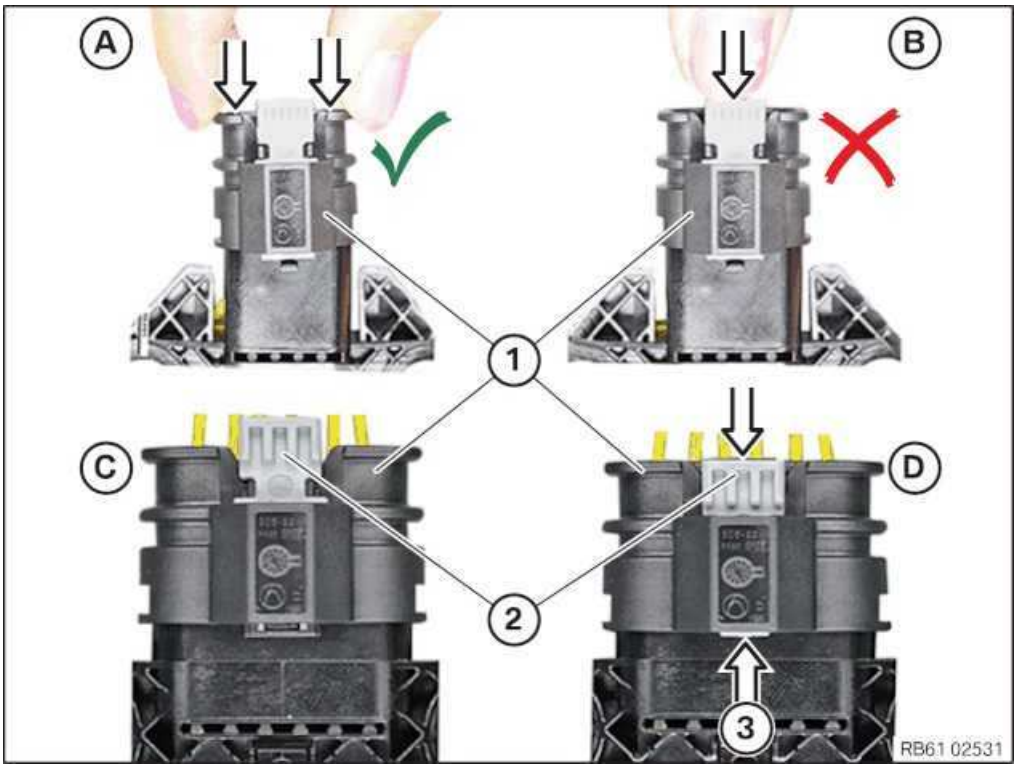
For this connector type, increased forces come into play when disconnecting and closing.

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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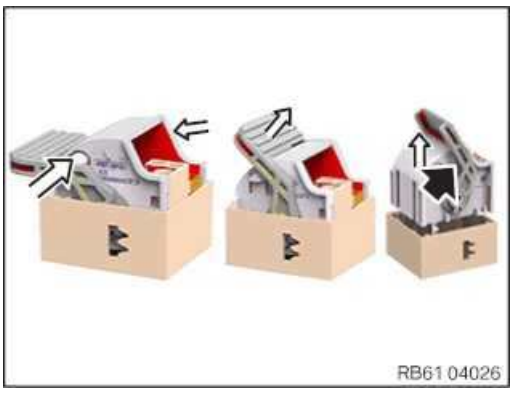


23.

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:

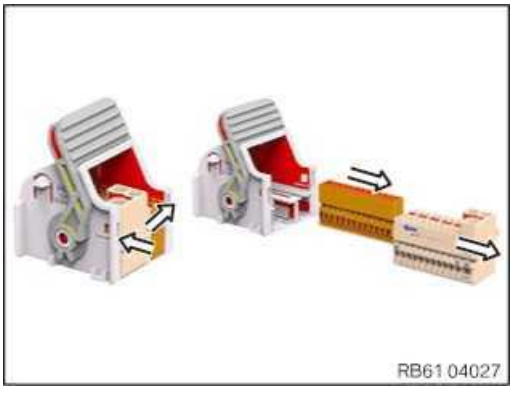


24.

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.

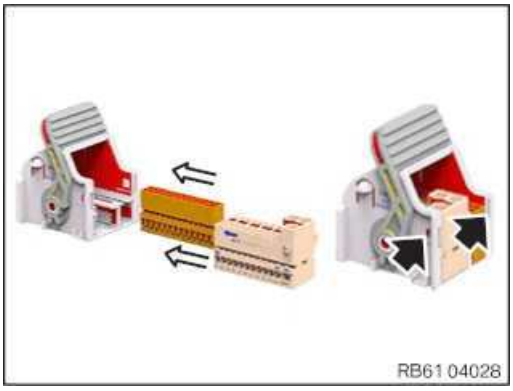
Once the lever is locked in the end position, remove plug connection upwards.



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

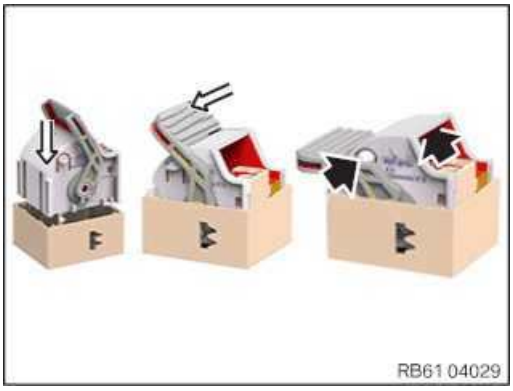
Slide out after unlocking the socket housing.

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Slide in socket housing up to limit position.

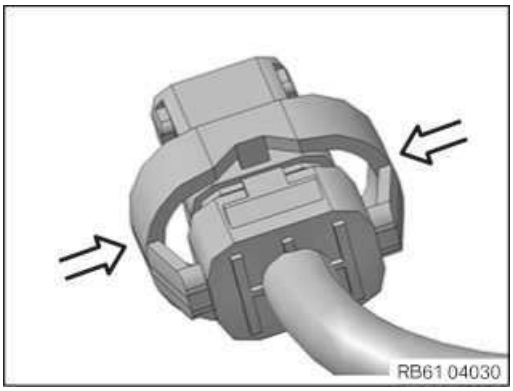
Lock socket housing into place in end position.



Sliding in up to limit position.

Activate plug-inn procedure by moving lever downwards.

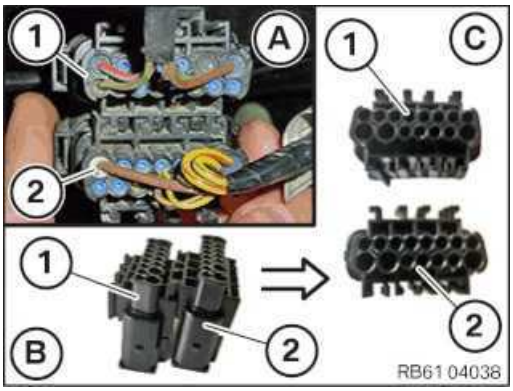
IMPORTANT: the latch mechanism on both sides only works for a completed plug-in procedure.



25.

Rosenberger D4S20G-400A5-Y

Press to unlock on both sides.

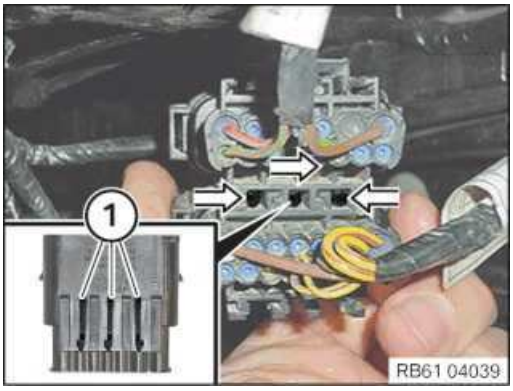


26.

Pin housing, 15-pinMLK1

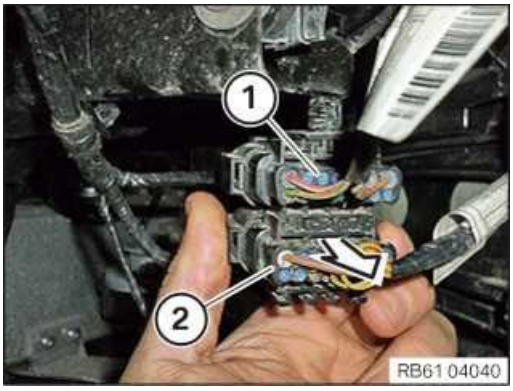
- A & B. To avoid any damage to individual connectors, the given connector assembly consisting of several individual connectors (1) & (2) must be released before disconnecting the plug connection.
- C: released connector assembly

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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).

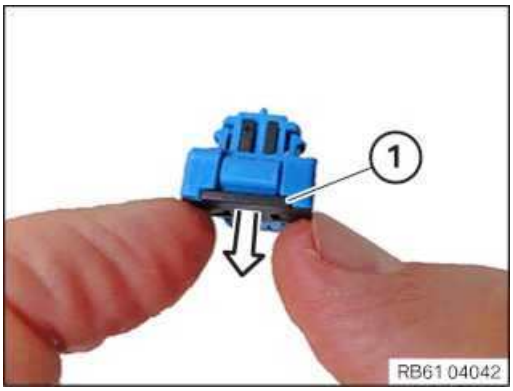


27.

Airbag ignition circuit connector

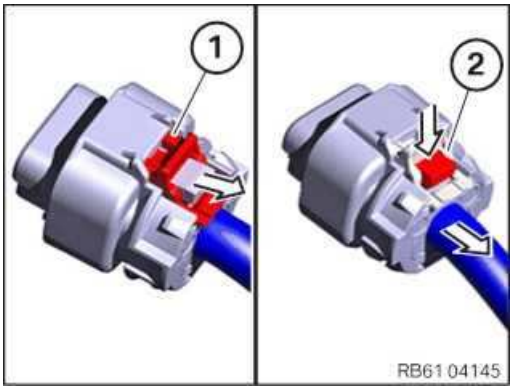
Warning!

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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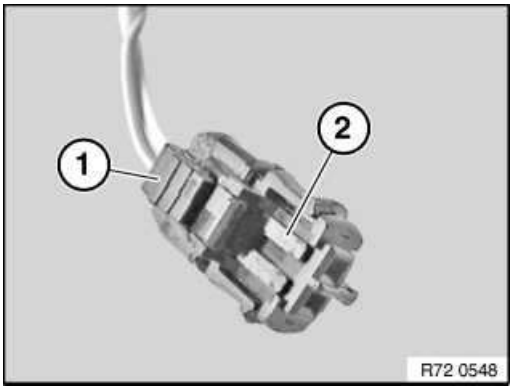


28.

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).

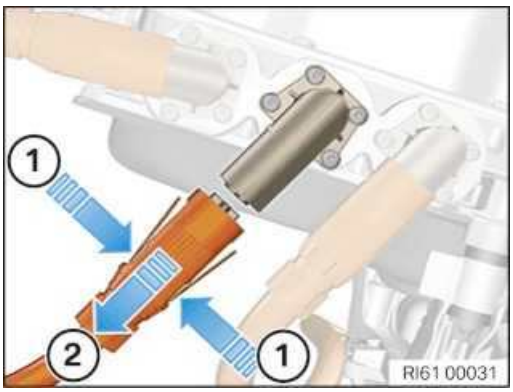
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61 13 ... Unlocking and disconnecting various plug connections in electrical and hybrid vehicles

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:

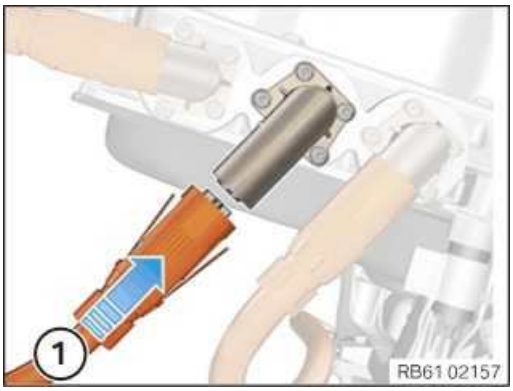
Press the lock (1) on the left and right on the connector in the direction of the arrow.

Pull off connector (2) in direction of arrow.

Attention!

Connector (2) is difficult to pull off.

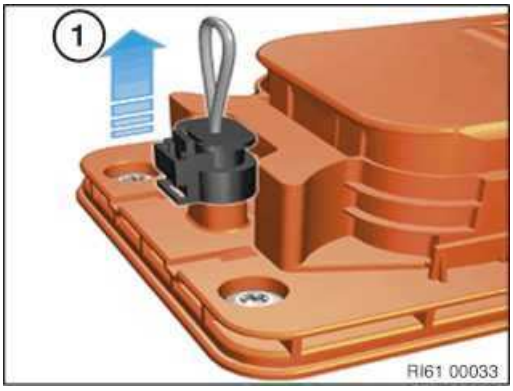
In the event of damage to high-voltage connector (2), the complete high-voltage cable must be replaced!



Connect the Hirschmann high-voltage connectors:

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

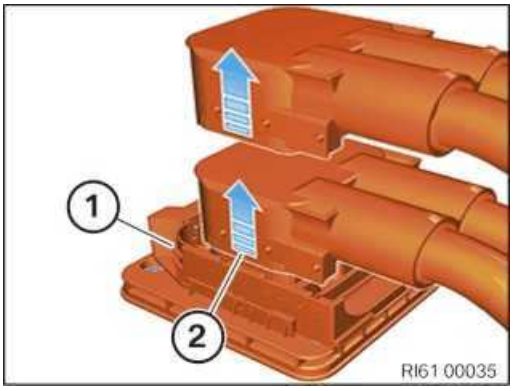
Note:
Connector (2) must lock audibly.



Disconnect the Kostal high-voltage connector:

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

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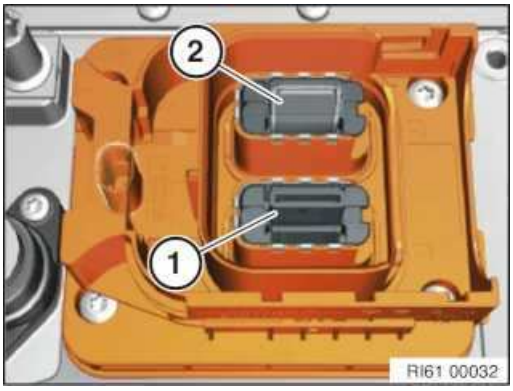
Push the lock (1) fully to the front.

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:

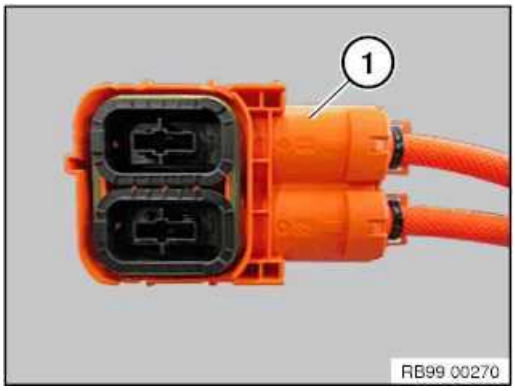
Check the touch protection for damage and correct positioning (1).

Warning!

Do not touch unprotected connector (2)!

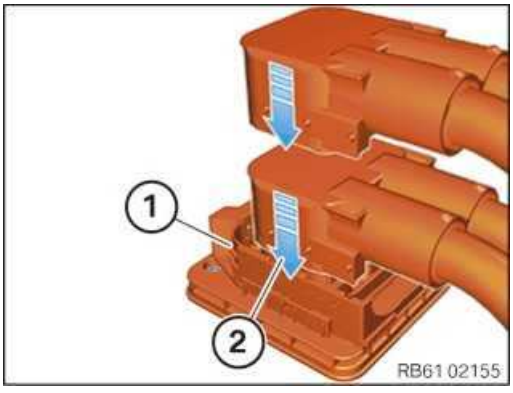
If the contact protection (1) has been pushed to the bottom (2), the high-voltage connector must be refitted.

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:

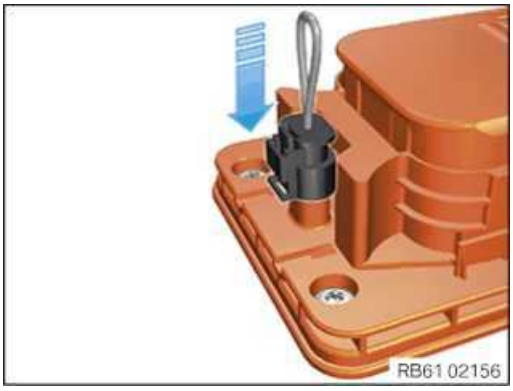
Connect the connector (2) in one single movement to the counter-housing.

Push the lock (1) fully to the rear.

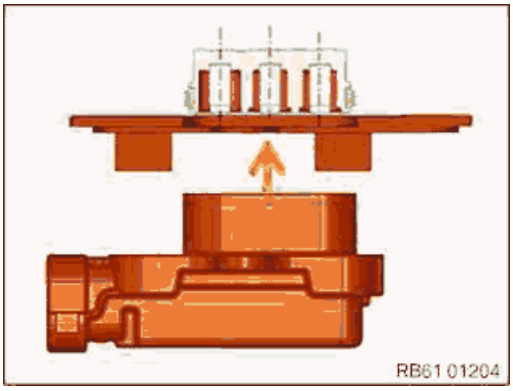
Attention!

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

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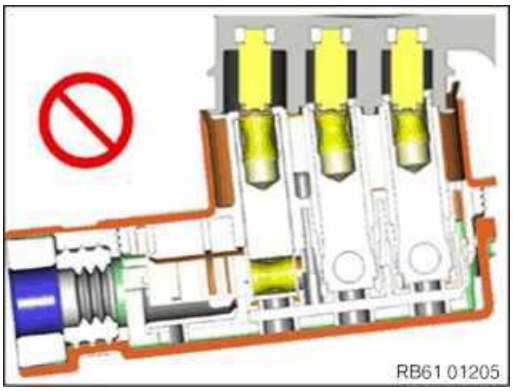


Connect the connector for the high-voltage interlock.



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.



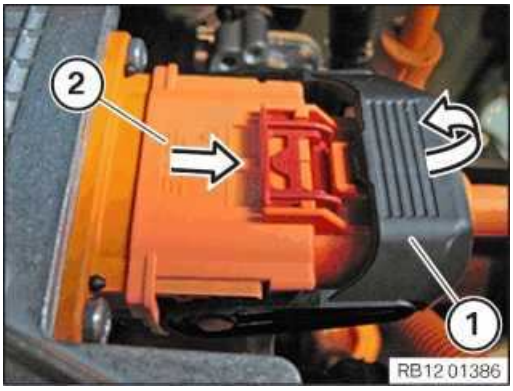
Disconnect the high-voltage connector from the high-voltage connection of the KLE:

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

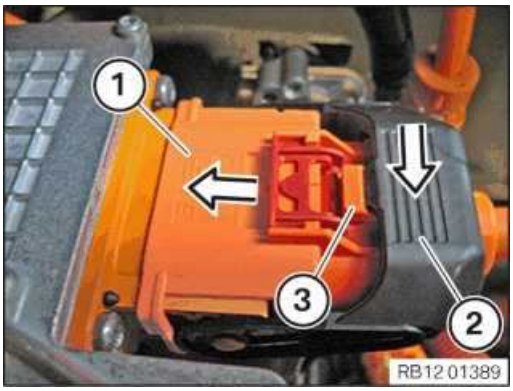
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Press lock (1).



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



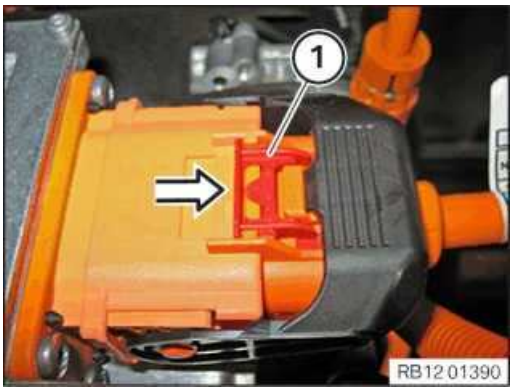
Connect the high-voltage connector to the high-voltage connection of the KLE:

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

Attention!

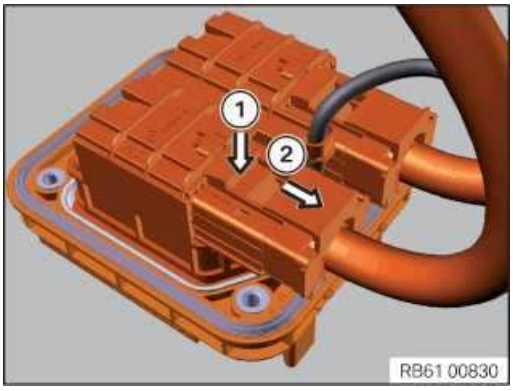
Lock (2) must snap audibly into place.

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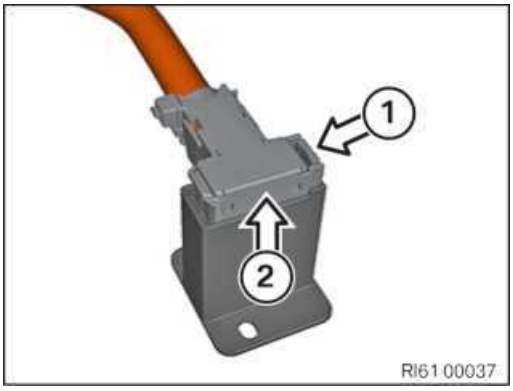
High-voltage connector on the high-voltage connection of the high-voltage battery unit:

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.



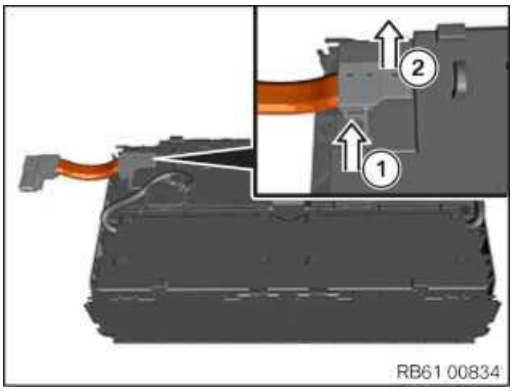
High-voltage connector on the cell module I01:

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 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 20 ... Battery replacement information

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 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.

If the vehicle electrical system of electric vehicles is not accessible due to a faulty 12 V battery, proceed as follows:

Battery exchange in electrified vehicles

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 exchange

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 the 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:

Register battery exchange

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

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

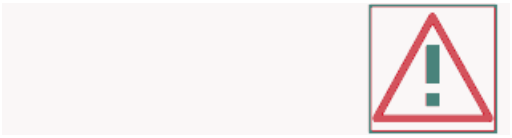
When installing a battery of a different size or a different battery type, this change in vehicle data must be programmed into the vehicle data in accordance with specifications.

Programming system:

- Battery retrofitting

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61 20 908 Carrying out a voltage interruption of the 12-V battery



Important!

Observe safety informations for handling vehicle battery.



There are two ways to carry out a voltage interruption of the 12-V battery:

1. Manually by disconnecting the battery earth lead
2. With the diagnosis system

1. Manually: Carry out the following steps:

- Switch off and disconnect battery charger
- Turn off ignition.
  For vehicles with ignition key: Ignition key in neutral position
  Vehicles with ID transmitter: Remove ID transmitter from slot
  For vehicles with Comfort Access: Secure terminal 30
- Disconnect negative battery lead
- Reconnect battery earth lead (to ensure bus activity)
- Observe a waiting period of 5–10 s
- Disconnect negative battery lead
- Observe a waiting period of approx. 1 minute
- Connect battery earth lead
  Tightening torque: 61 21 1AZ
- Connect and switch on battery charger
- Switch on ignition.

2. With the diagnosis system:

- 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!

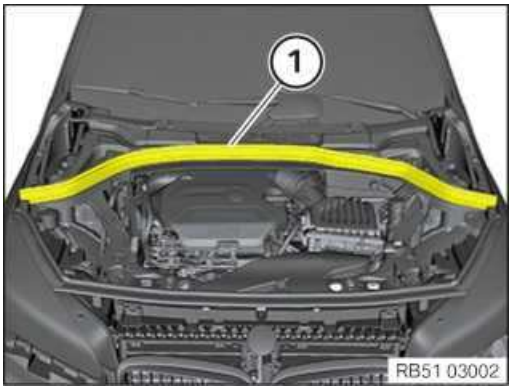
- Detach battery earth lead from battery.
- For additional batteries: Detach all battery earth leads from additional batteries.

1 – Disconnecting the battery earth lead

▶ **Remove the seal for the rear bonnet**

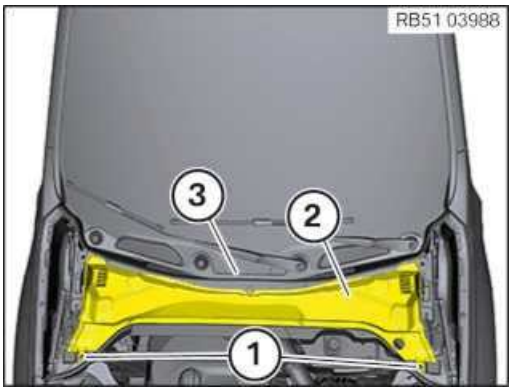
NOTICE

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

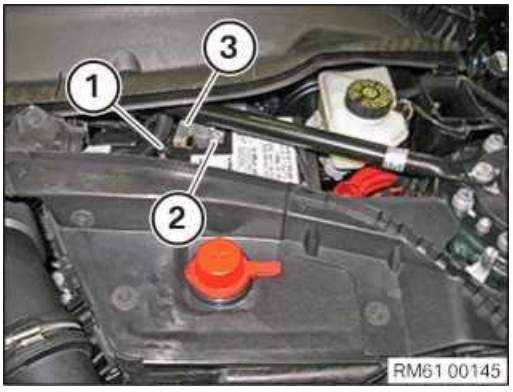


- Pull off rear bonnet seal (1) towards the top and remove.

▶ **Removing front cowl panel cover**



- Loosen the expanding rivet (1).
- Feed out and remove front cowl panel cover (2) from the rear cowl panel cover(3).

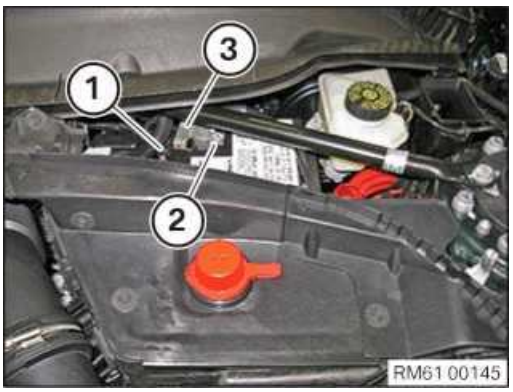


- Unlock and disconnect connector (1).
- Loosen nut (2).
- Remove the battery earth lead (3) and secure to one side.

2 – Connecting the battery earth lead

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2 Connecting the battery earth lead



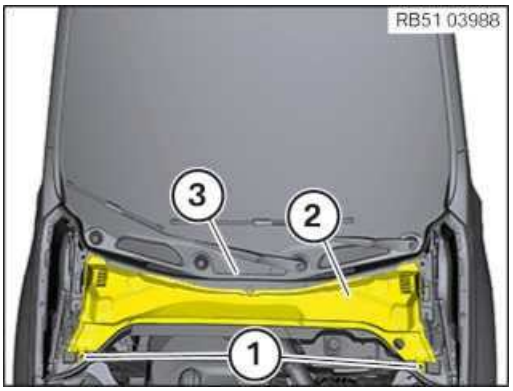
- Mount battery earth lead (3) on the negative battery terminal.
- Tighten nut (2).

Battery terminal with IBS positive battery terminal / negative battery terminal

NutM6		5 Nm

- Connect the connector (1) to the IBS and lock it audibly.

▶ **Installing front cowl panel cover**

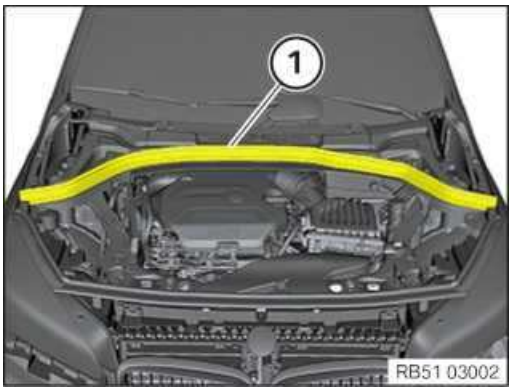


- Insert and install cowl panel cover at front (2) into cowl panel cover at rear (3).
- Check cowl panel cover at front is correctly seated (2).
- Secure expanding rivet (1).

▶ **Install the seal for the bonnet**

NOTICE

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



- Install bonnet seal at rear (1).
- Ensure that the rear bonnet seal (1) is fitted correctly.

Additional Information

Overview of Tightening Torques

Battery terminal with IBS positive battery terminal / negative battery terminal Used in step 2

NutM6		5 Nm

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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 ... Notes for disconnecting and connecting the vehicle battery

Observe safety informations for handling vehicle battery.

Before disconnecting vehicle battery:

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

Note:

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

Attention!

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

General notes on disconnecting the vehicle 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 version with 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 vehicle battery is connected.
- When installing battery terminal: Tightening torque 61 21 1AZ.

Only lead AGM battery:

- 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.

Note the following after having connected the vehicle battery:

Attention!

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.

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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).

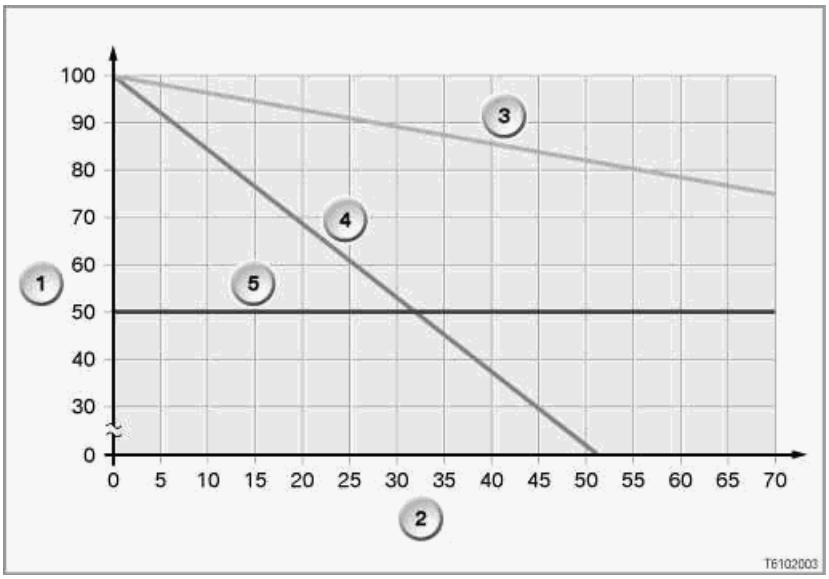
The constantly increasing energy demand of modern vehicle electrical systems calls for ever more powerful battery solutions. A modern luxury-class vehicle has some 100 actuator motors that have to be fed with electrical current. Added to these are safety, environmental and comfort elements which are 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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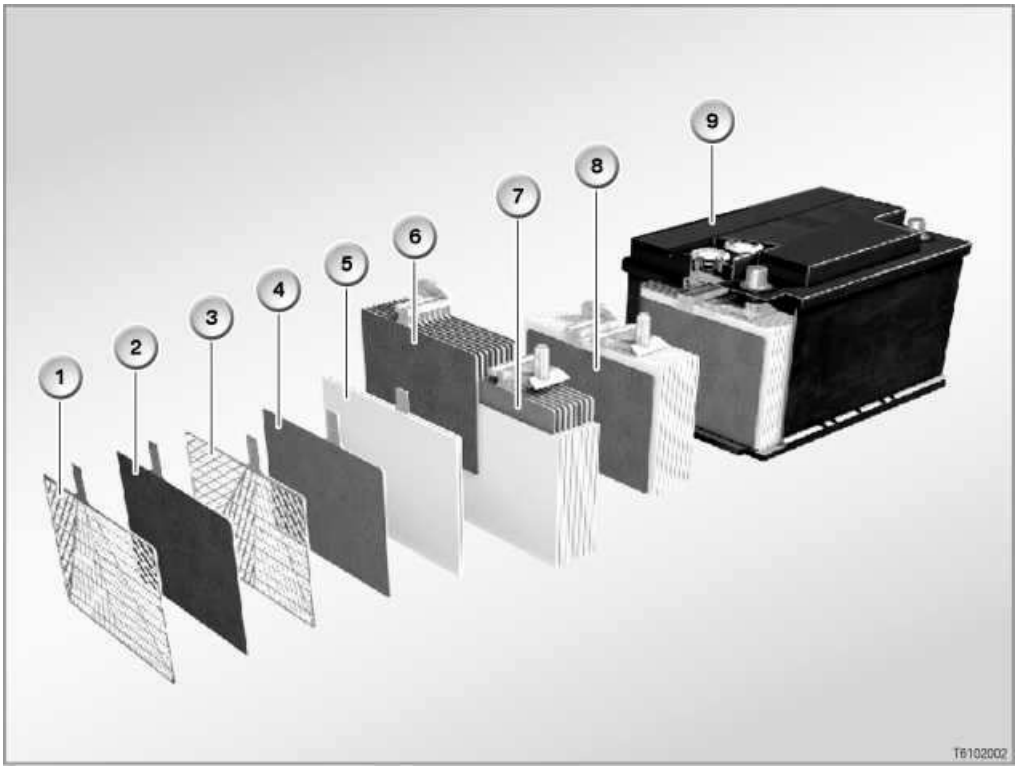


Item	Explanation	Item	Explanation
1	Available capacity [%]	2	Mileage [thousand km]
3	AGM battery	4	Lead-calcium battery
5	50 % capacity limit		

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

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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

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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

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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 00 ... Battery charging calendar

Battery charging calendar 2016 (PDF file)

Battery charging calendar 2017 (PDF file)

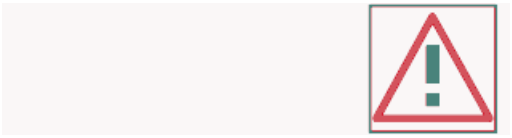
Battery charging calendar 2018 (PDF file)

Battery charging calendar 2019 (PDF file)

Information for the battery charging calendar

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61 20 908 Carrying out a voltage interruption of the 12-V battery



Important!

Observe safety informations for handling vehicle battery.



There are two ways to carry out a voltage interruption of the 12-V battery:

1. Manually by disconnecting the battery earth lead
2. With the diagnosis system

1. Manually: Carry out the following steps:

- Switch off and disconnect battery charger
- Turn off ignition.
  For vehicles with ignition key: Ignition key in neutral position
  Vehicles with ID transmitter: Remove ID transmitter from slot
  For vehicles with Comfort Access: Secure terminal 30
- Disconnect negative battery lead
- Reconnect battery earth lead (to ensure bus activity)
- Observe a waiting period of 5–10 s
- Disconnect negative battery lead
- Observe a waiting period of approx. 1 minute
- Connect battery earth lead
  Tightening torque: 61 21 1AZ
- Connect and switch on battery charger
- Switch on ignition.

2. With the diagnosis system:

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

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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 BMWÂ 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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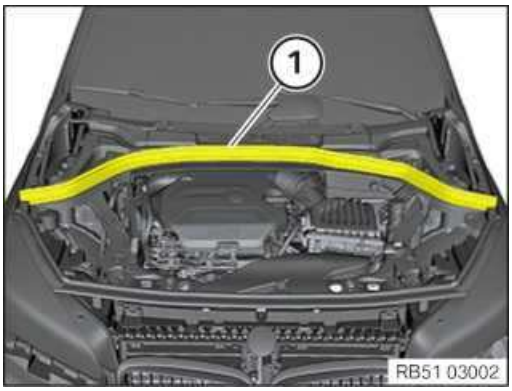
61 21 010 Remove and install the vehicle battery

PRELIMINARY WORK

1 – Remove the seal for the rear bonnet

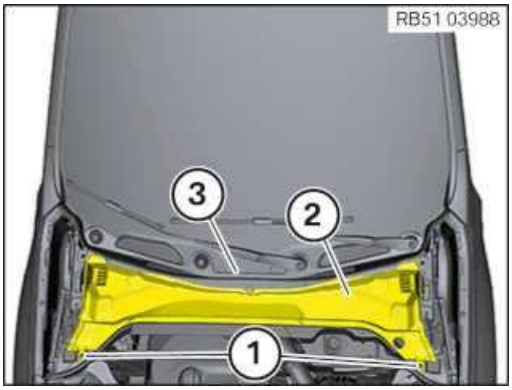
NOTICE

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



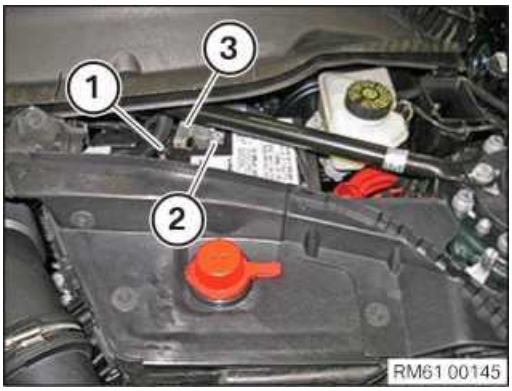
- Pull off rear bonnet seal (1) towards the top and remove.

2 – Removing front cowl panel cover



- Loosen the expanding rivet (1).
- Feed out and remove front cowl panel cover (2) from the rear cowl panel cover(3).

3 – Disconnecting the battery earth lead



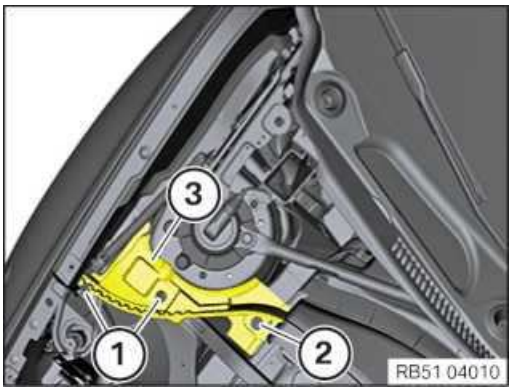
- Unlock plug connection (1) and disconnect.
- Unfasten nut (2).
- Remove the battery earth lead (3) and secure to one side.

4 – Remove suspension cross-brace

TECHNICAL INFORMATION

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

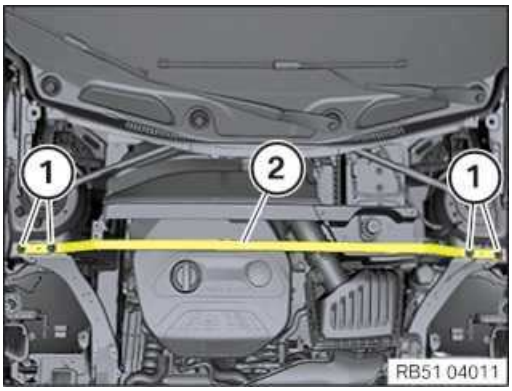
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NOTICE

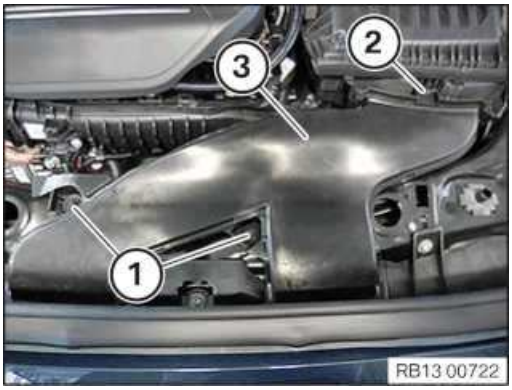
Description is for right component only. The procedure on the left side is identical.

- Loosen expanding rivet (1).
- Loosen screw (2).
- Remove the cover (3).



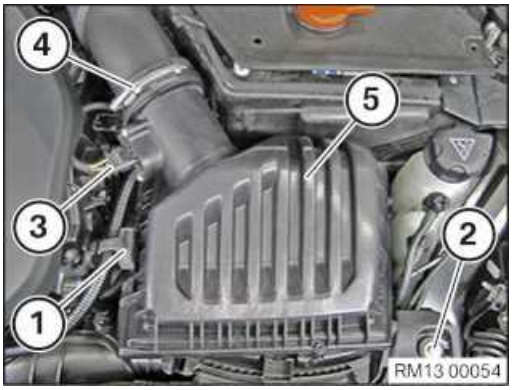
- Loosen screws (1).
- Remove strut brace (2).

5 – Remove the intake neck for intake silencer housing



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

6 – Removing intake silencer housing



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

MAIN WORK

7 – Remove vehicle battery

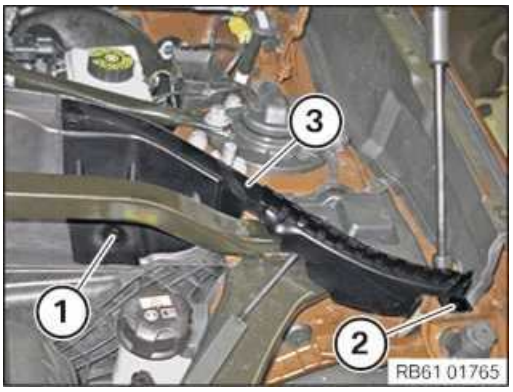
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WARNING

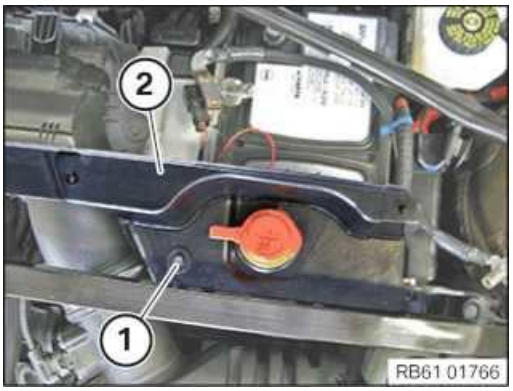
Working on 12 V vehicle electrical system.

Risk of short circuits! Risk of fire!

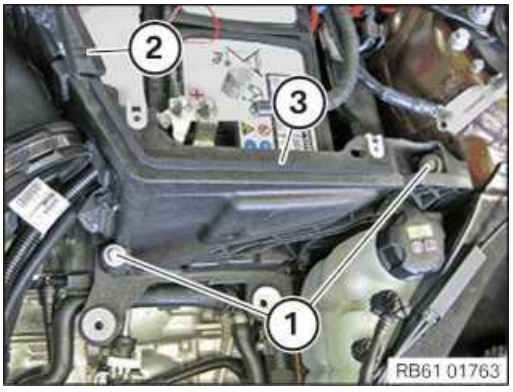
- Detach battery earth lead from battery.
- For additional batteries: Detach all battery earth leads from additional batteries.



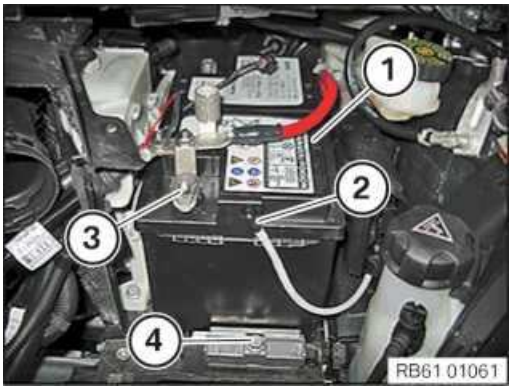
- Release the screw (1) and the expanding rivet (2).
- Remove the fixture for the gasket (3).



- Loosen screw (1).
- Remove the cover (2).



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



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

WARNING

Unprotected battery terminals.

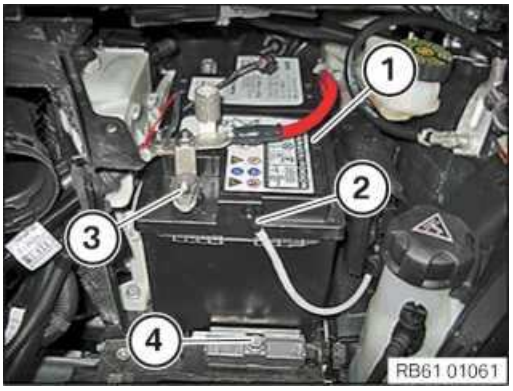
Risk of short circuits! Risk of fire!

- Cover the vehicle battery.

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

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8 – Install vehicle battery



- Install vehicle battery (1).
- Position the bracket and tighten with the screw (4) .

Battery terminal rail to battery tray

M8		19 Nm

- Position the vent hose (2) and clip it in.
- Position the positive battery terminal and tighten with the nut (3) .

Battery terminal with IBS positive battery terminal / negative battery terminal

NutM6		5 Nm

▸ **Check the vent holes of the battery**

WARNING

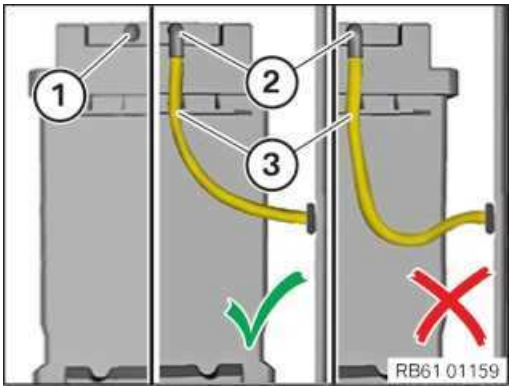
Gas emission.

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).



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.

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Measure

- At the vent hole (2), connect the vent hose (3) correctly.

Check

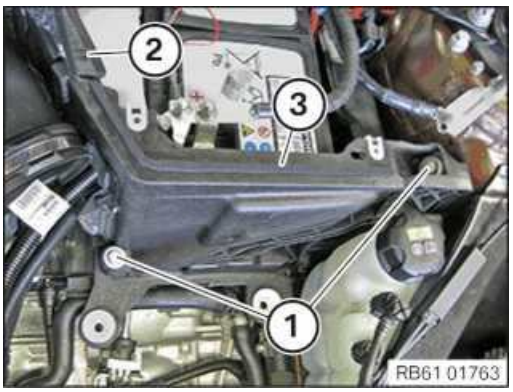
- Check if the vent hose (3) is routed to the outside with a downhill gradient (**no siphon formation!**).

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.



- Insert tension strut (3) and tighten with screws (1).

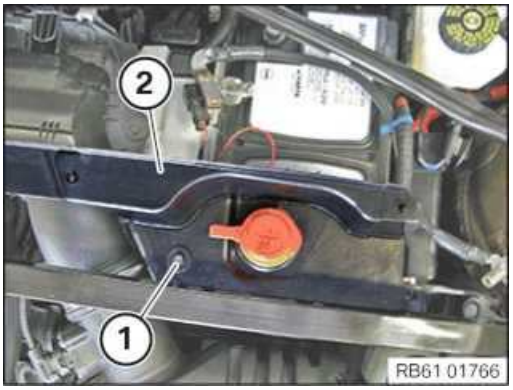
Trailing link

M8		Tightening torque	19 Nm

- Tighten down screw (2).

Battery cover

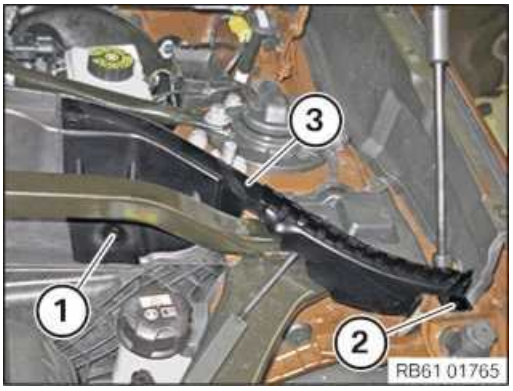
M8		2,8 Nm



- Position the cover (2).
- Tighten down screw (1).

Battery cover

M8		2,8 Nm



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

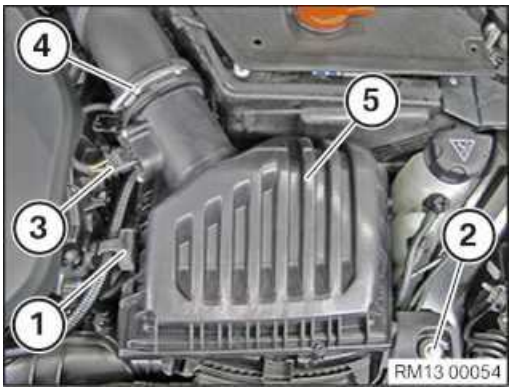
Battery cover

M8		2,8 Nm

POSTPROCESSES

9 – Installing intake silencer housing

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

Intake silencer housing to lock bridge

M6X30		Tightening torque	8 Nm

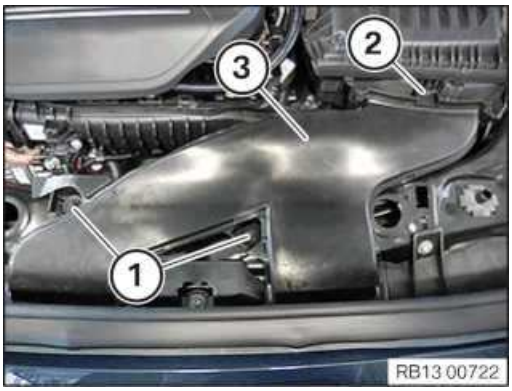
- Tighten clamp (4).

Clean air pipe to intake silencer housing

Clamp		Tightening torque	3 Nm

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

10 – Install the intake neck for the intake filter housing



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

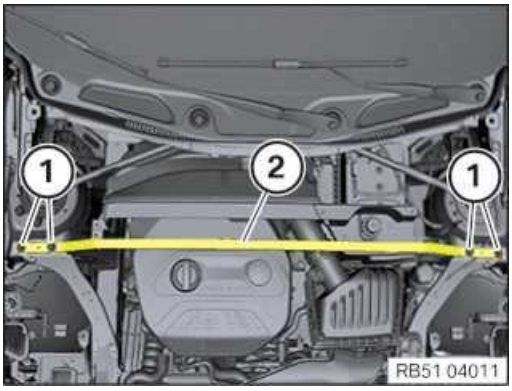
Intake neck to cross connection

M6		Tightening torque	8 Nm

11 – Install strut brace

TECHNICAL INFORMATION

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

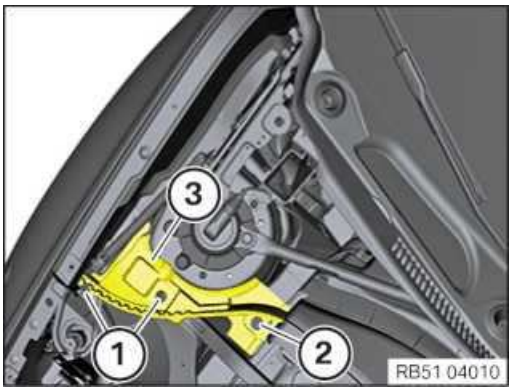


- Install the strut brace (2).
- Renew screws (1).
  Parts: Bolts
- Tighten the screws (1).

Cross-brace to spring strut dome

	Renew screw.	Jointing torque	28 Nm
		Angle of rotation	180 °

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NOTICE

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

- Install the cover (3).
- Tighten down screw (2).

Cover on body

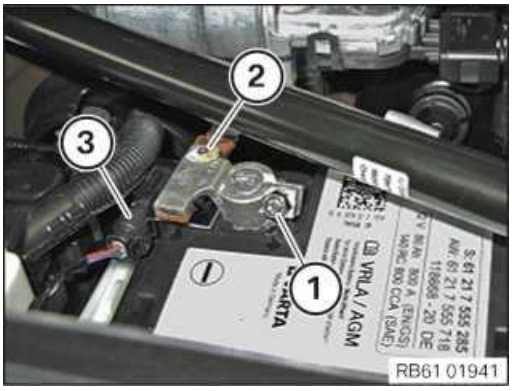
Hexagon screw		Tightening torque	3 Nm

- Install the expanding rivet (1).

12 – Connecting the battery earth lead

TECHNICAL INFORMATION

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



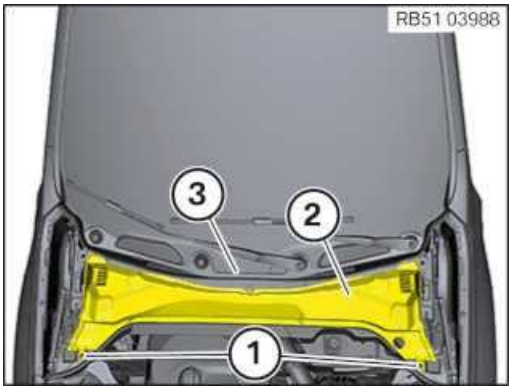
- Remove the protective cover of the positive battery terminal.
- Position the battery earth lead (2).
- Tighten nut (1).

Battery terminal with IBS positive battery terminal / negative battery terminal

NutM6			5 Nm

- If required, connect the connector (3).

13 – Installing front cowl panel cover



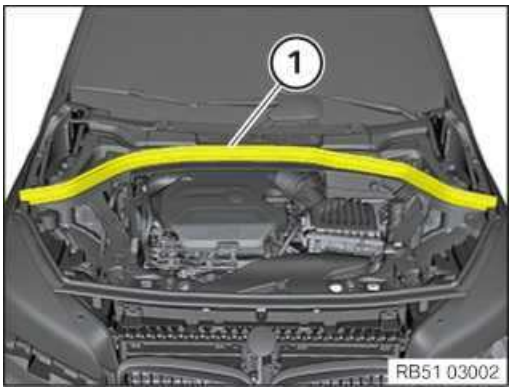
- Insert and install cowl panel cover at front (2) into cowl panel cover at rear (3).
- Check cowl panel cover at front is correctly seated (2).
- Secure expanding rivet (1).

14 – Install the seal for the bonnet

NOTICE

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

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- Install bonnet seal at rear (1).
- Ensure that the rear bonnet seal (1) is fitted correctly.

Additional Information

Overview of Tightening Torques

Battery terminal rail to battery tray			Used in step 8
M8			19 Nm

Battery terminal with IBS positive battery terminal / negative battery terminal			Used in step 8 12
NutM6			5 Nm

Trailing link			Used in step 8
M8		Tightening torque	19 Nm

Battery cover			Used in step 8
M8			2,8 Nm

Intake silencer housing to lock bridge			Used in step 9
M6X30		Tightening torque	8 Nm

Clean air pipe to intake silencer housing			Used in step 9
Clamp		Tightening torque	3 Nm

Intake neck to cross connection			Used in step 10
M6		Tightening torque	8 Nm

Cross-brace to spring strut dome			Used in step 11
	Renew screw.	Jointing torque	28 Nm
		Angle of rotation	180 °

Cover on body			Used in step 11
Hexagon screw		Tightening torque	3 Nm

Links

General repair instructions	Used in step
61 20 ... Notes on AGM battery	12
61 12 ... Notes on intelligent battery sensor (IBS)	12
61 00 ... Notes for disconnecting and connecting battery	12
61 00 ... Safety information for handling vehicle battery	

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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

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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 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 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

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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

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- 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

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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.

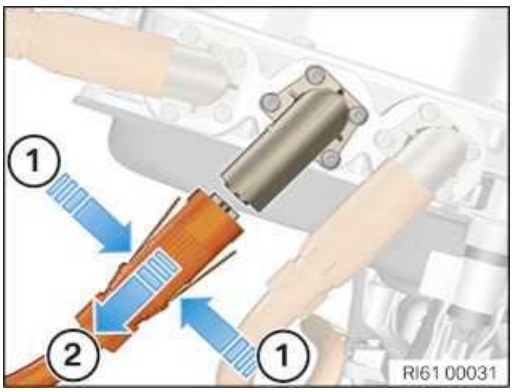
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61 13 ... Unlocking and disconnecting various plug connections in electrical and hybrid vehicles

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:

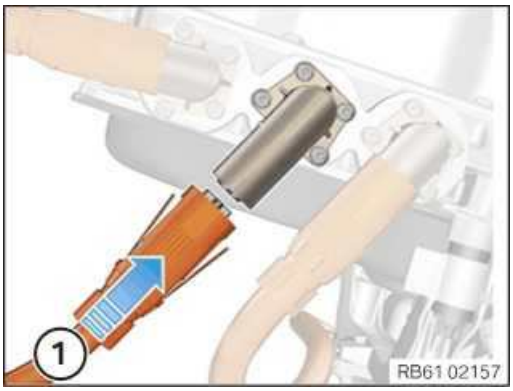
Press the lock (1) on the left and right on the connector in the direction of the arrow.

Pull off connector (2) in direction of arrow.

Attention!

Connector (2) is difficult to pull off.

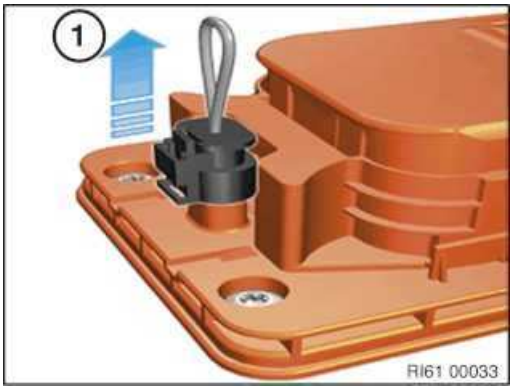
In the event of damage to high-voltage connector (2), the complete high-voltage cable must be replaced!



Connect the Hirschmann high-voltage connectors:

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

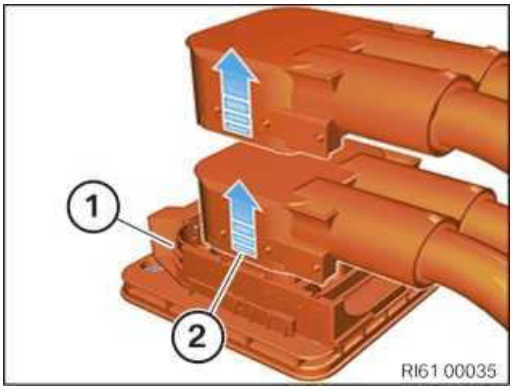
Note:
Connector (2) must lock audibly.



Disconnect the Kostal high-voltage connector:

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

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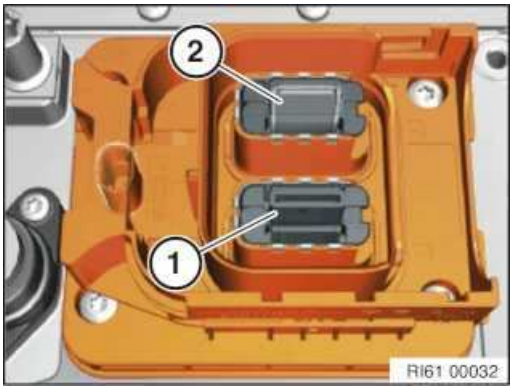
Push the lock (1) fully to the front.

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:

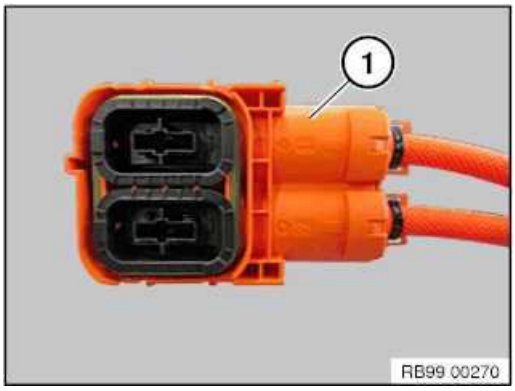
Check the touch protection for damage and correct positioning (1).

Warning!

Do not touch unprotected connector (2)!

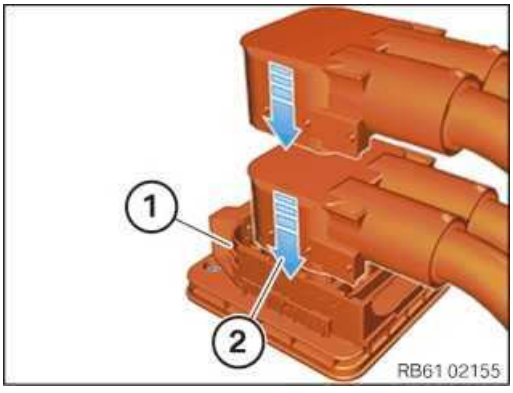
If the contact protection (1) has been pushed to the bottom (2), the high-voltage connector must be refitted.

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:

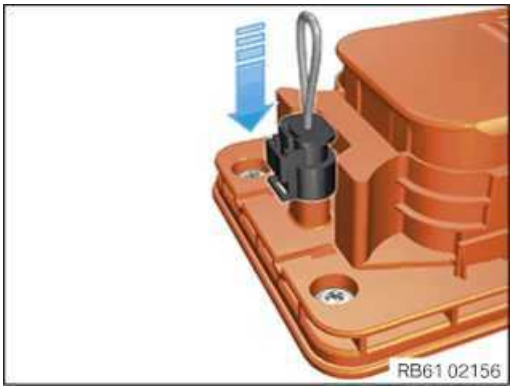
Connect the connector (2) in one single movement to the counter-housing.

Push the lock (1) fully to the rear.

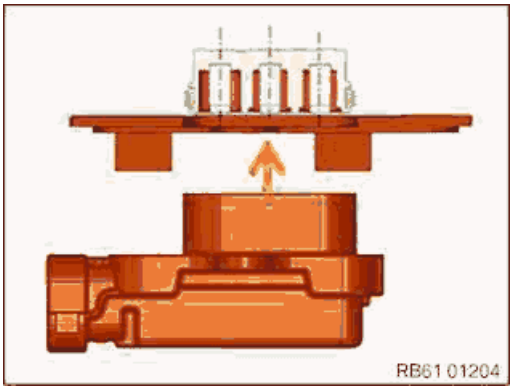
Attention!

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

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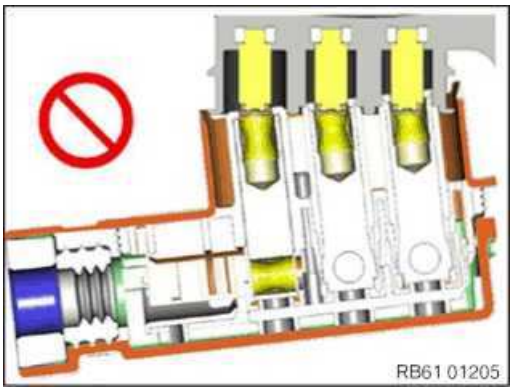


Connect the connector for the high-voltage interlock.



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.



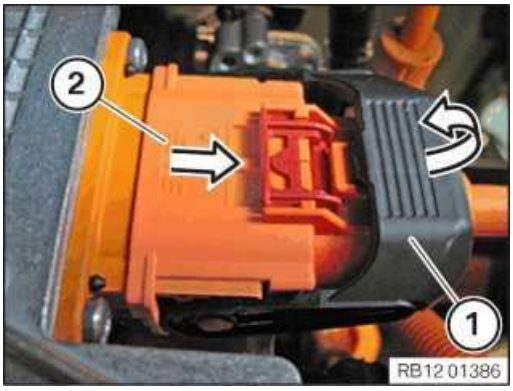
Disconnect the high-voltage connector from the high-voltage connection of the KLE:

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

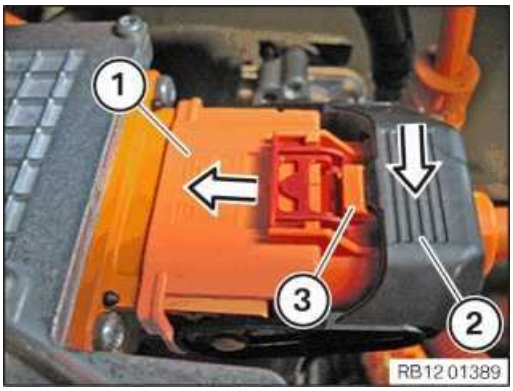
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Press lock (1).



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



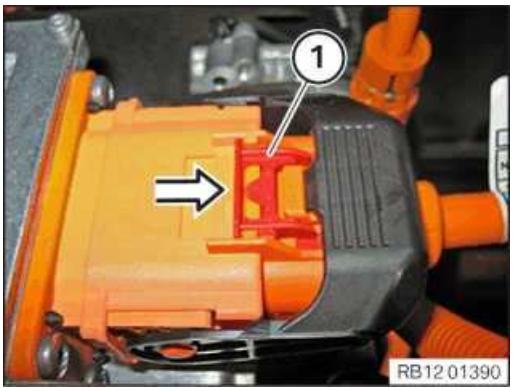
Connect the high-voltage connector to the high-voltage connection of the KLE:

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

Attention!

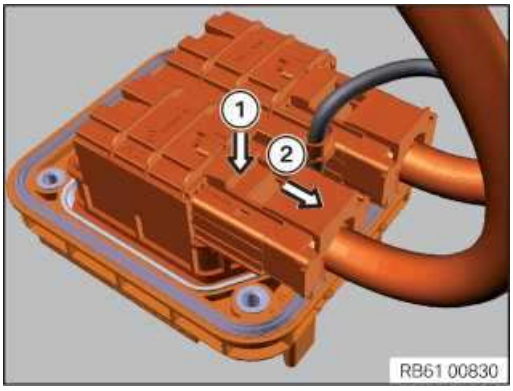
Lock (2) must snap audibly into place.

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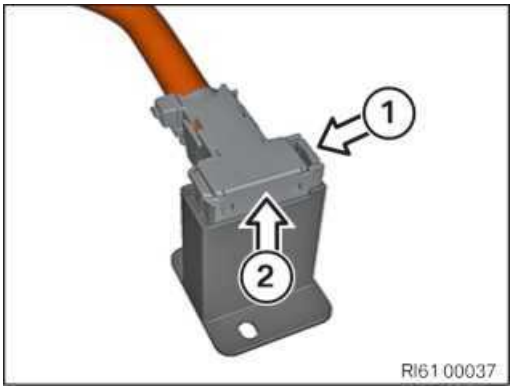
High-voltage connector on the high-voltage connection of the high-voltage battery unit:

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.



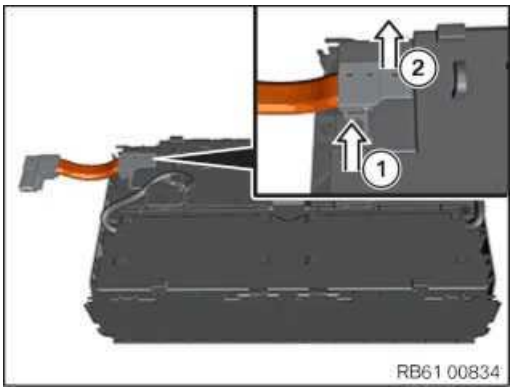
High-voltage connector on the cell module I01:

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.

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61 31 251 Rem. & install audio operating facility

RISK OF DAMAGE



Electrostatic discharge.

Damage to or destruction of electrical components.

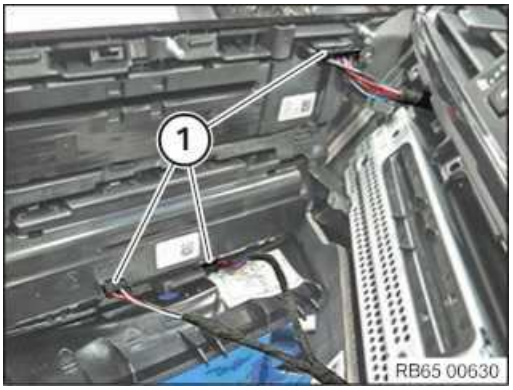
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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

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1 – Removing the audio operating unit and the air conditioning control panel

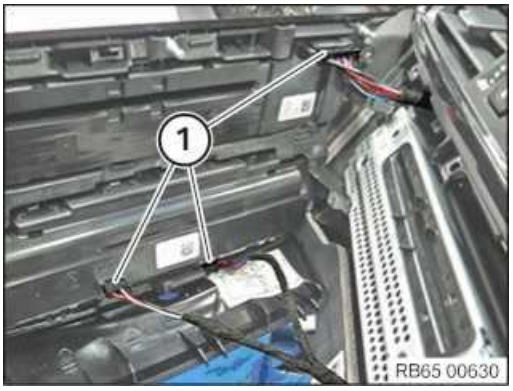


- Unclip the trim (1) using special tool **2 298 505**.



- Unlock plug connection (1) and disconnect.
- Remove the audio operating unit and the air conditioning control panel.

2 – Installing audio operating unit and air conditioning control panel



- Position audio operating unit and air conditioning control panel.
- Connect plug connection (1) and lock.



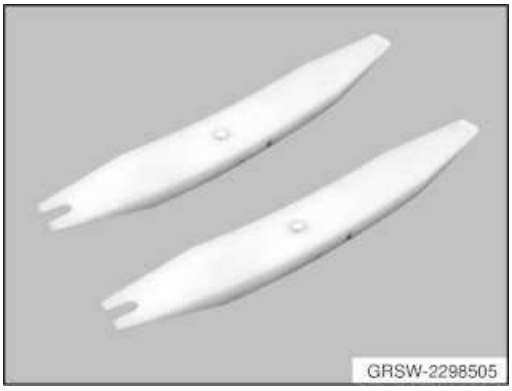
- Correctly position trim (1) and clip it into the instrument panel (2).

Additional Information

Overview of Special Tools

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2 298 505 Wedge



Common	Used in step 1
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 31 172 Remove and install the switch for the electromechanical parking brake

PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

2 – Remove gearshift lever cover



- Use wedges (1) to unclip the gaiter and pull it off upward.



- Remove the gearshift lever knob and the gaiter by means of a powerful jolt vertically upwards.

  In doing so, the tie rod must not be bent or damaged.
- Ensure that the gearshift lever knob is not twisted when removing, otherwise the anti-twist lock in the gearshift lever knob will be sheared off.

3 – Remove the decorative trim from the centre console

RISK OF DAMAGE

Scratches.

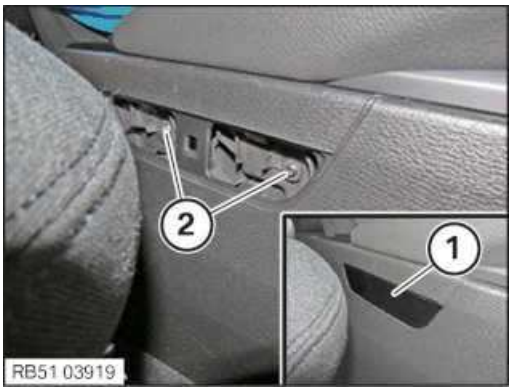
Tools and sharp-edged components can cause scratches.

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

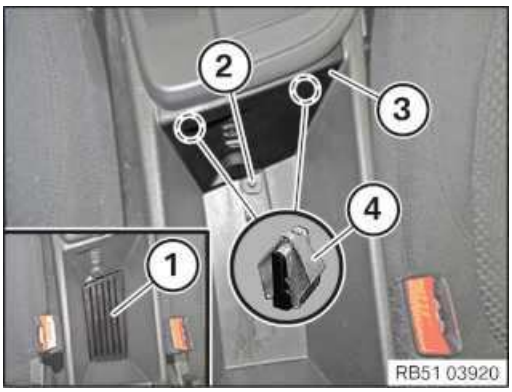
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- Lever out and remove cover (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screws (2).



- Lever out and remove cover (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screws (2).

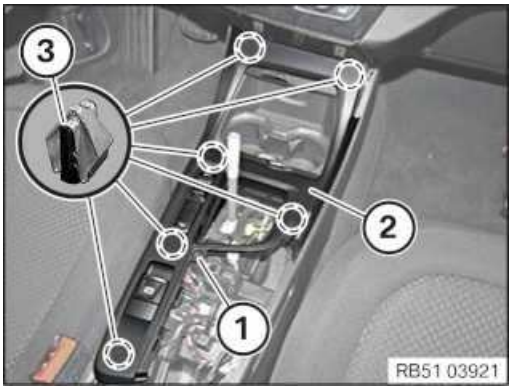


- Remove insert (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screw (2).
- Lever out trim (3) from clamps (4) towards the rear with the special tool **0 496 571 (00 9 327)**.
- Unfasten plug connection.
- Remove the trim (3).



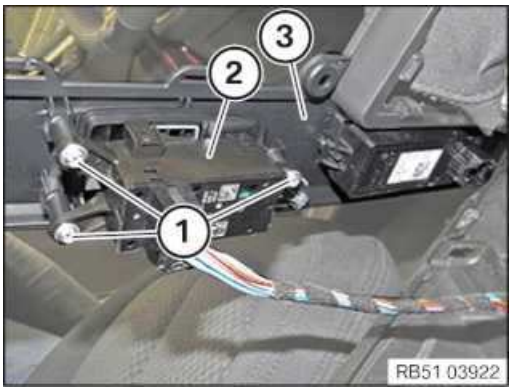
- Loosen screw (1).
- Remove decorative trim (2) and disconnect all the plug connections.
- Remove decorative trim (2).

4 – Remove the centre console trim



- Loosen screw (1).
- Release centre console trim (2) from clamps (3) with the special tool **0 496 569 (00 9 325)**.
- Lift centre console trim (2).

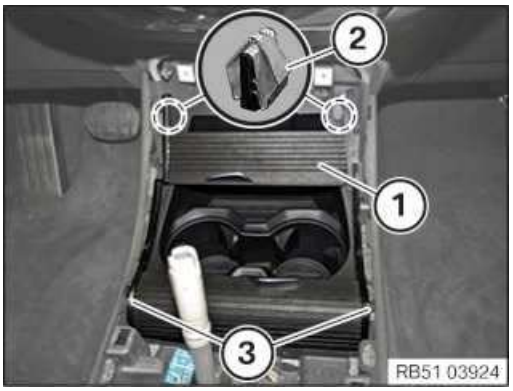
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- Loosen screws (1).
- Remove parking brake button (2) from centre console trim (3) and place it down.

  The plug connection must not be disconnected.
- Disconnect the remaining plug connections and remove centre console trim (3).

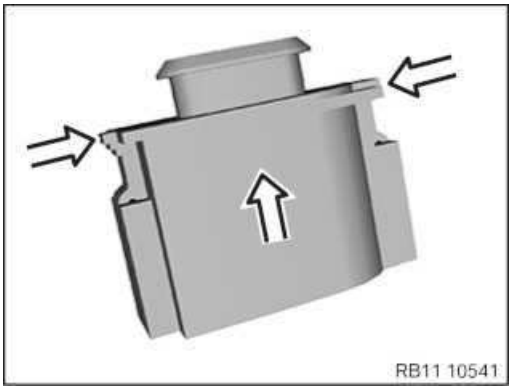
5 – Removing the front storage compartment



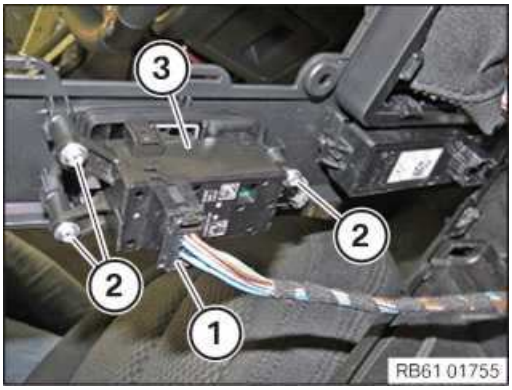
- Lever storage compartment (1) at top from the clamps (2).
- Fold storage compartment (1) so far back that it can be lifted from the guides (3).
- Disconnect plug connections and remove the storage compartment (1).

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6 – Removing parking brake button

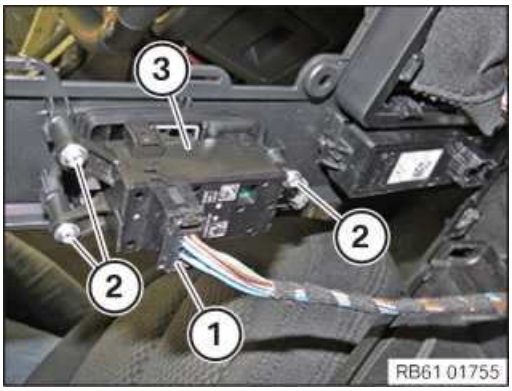


- Press the left and right locks.
- Unlock and disconnect connector .



- Disconnect the connector (1) to the top.
- Loosen screws (2).
- Remove parking brake button (3).

7 – Installing parking brake button



- Position parking brake button (3) correctly.
- Tighten down screws (2).

Parking brake button to centre console trim

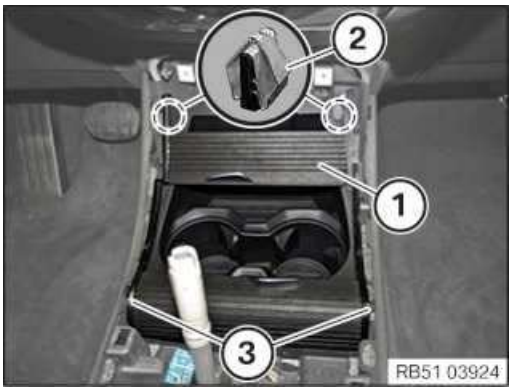
Screw		Tightening torque	1,5 Nm

- Connect connector (1).

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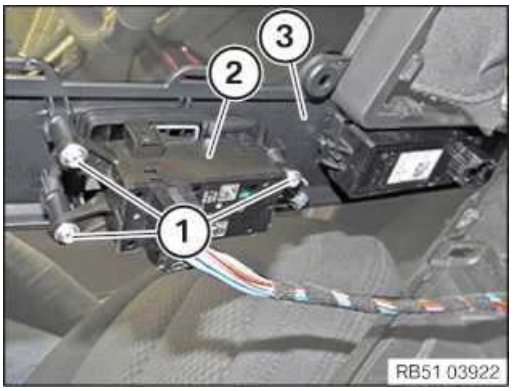
POSTPROCESSES

8 – Installing the front storage compartment



- Install storage compartment (1) and connect the connectors.
- Insert the storage compartment (1) into the guides (3) and fold forward.
- Engage storage compartment (1) in the clamps (2) at top.

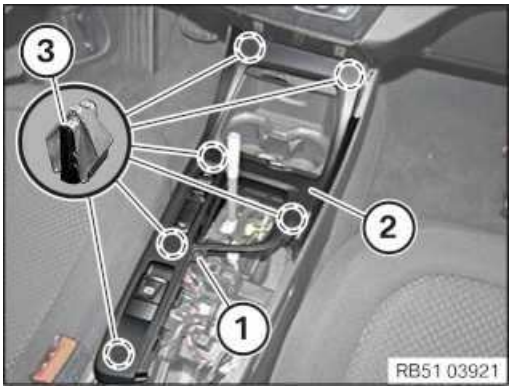
9 – Install the centre console trim



- Install centre console trim (3) and connect and lock the corresponding connectors.
- Install parking brake button (2) on centre console trim (3).
- Tighten the screws (1).

Parking brake button

Oval-head screw		Tightening torque	1,5 Nm



- Install centre console trim (2) and engage it into clamps (3).
- Tighten down screw (1).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

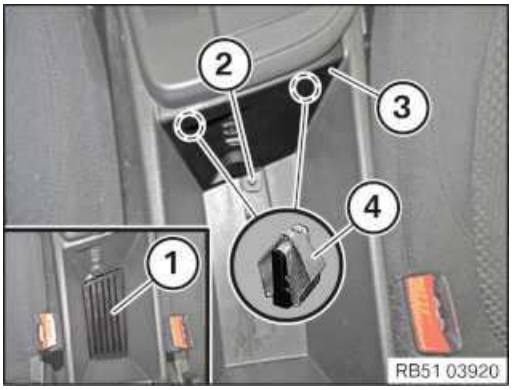
10 – Installing the decorative trim to the centre console



- Connect all connectors.
- Install decorative trim (2).
- Tighten down screw (1).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm



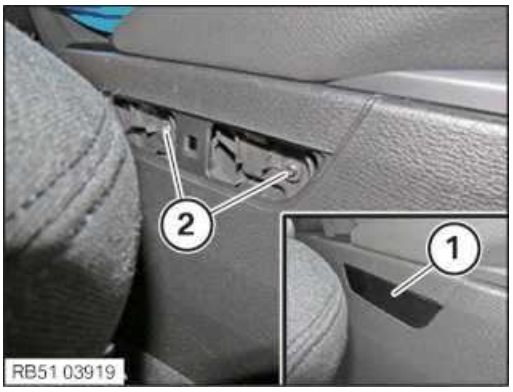
- Position trim (3) and connect all the connectors.
- Install trim (3) and engage it into clamps (4).
- Tighten down screw (2).

Trim to centre console

Oval-head screw		Tightening torque	1,8 Nm

- Insert the insert (1).

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- Tighten down screws (2).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

- Install cover (1) and engage.



- Tighten down screws (2).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

- Install cover (1) and engage.

11 – Installing the gearshift lever cover



- Place the gearshift lever knob on gearshift lever and align by lightly pressing in the direction of travel.

  The anti-twist lock must bite.
- Press the gearshift lever knob with the palm of the hand until it can be felt to engage.

  When installing, the tie rod of the gearshift lever must not be bent.



- Clip in gaiter (arrows).

12 – Disconnecting all battery earth leads



- See additional information.

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Additional Information

Overview of Tightening Torques

Parking brake button to centre console trim

Used in step 7

Screw		Tightening torque	1,5 Nm

Parking brake button

Used in step 9

Oval-head screw		Tightening torque	1,5 Nm

Screw connection for centre console

Used in step 9 10

Oval-head screw		Tightening torque	1,8 Nm

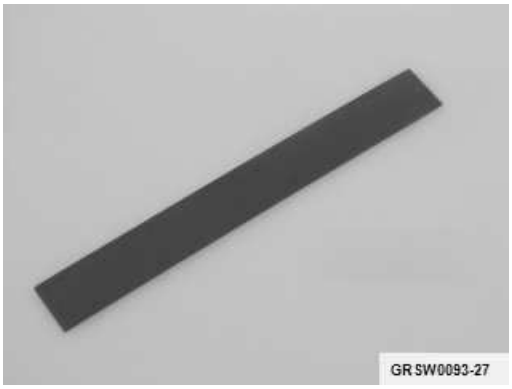
Trim to centre console

Used in step 10

Oval-head screw		Tightening torque	1,8 Nm

Overview of Special Tools

0 496 571 (00 9 327) Wedge



Common — Used in step 3

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

0 496 569 (00 9 325) Wedge



Common — Used in step 4

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)

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12

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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	12
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	12
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12

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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

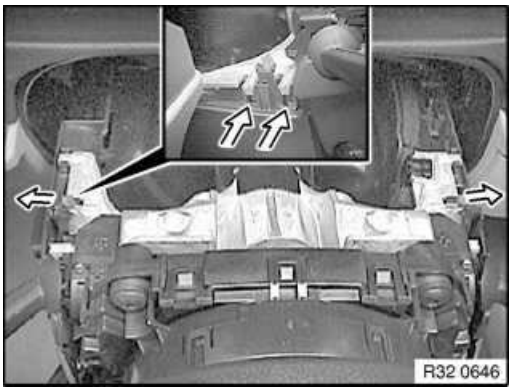
Perform the operations on the left and right side.

- Unclip the steering column shroud upper section (1) with the special tool **2 298 504** in area (2).
- Fold the steering column shroud upper section (1) up.



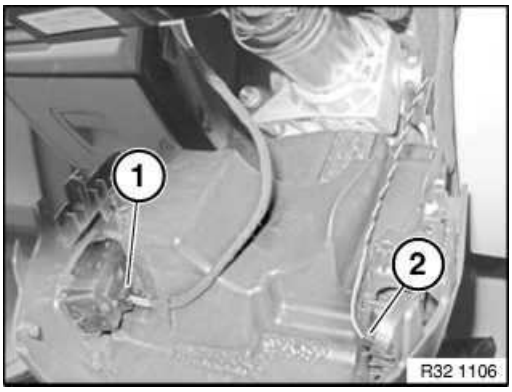
- Release the gap cover of the steering column (1) from the brackets (arrows) of the steering column shroud upper section.
- Remove steering column shroud upper section.

3 – Removing steering column shroud lower section



- Press the retaining lugs (arrows) a little outwards and unclip the steering column shroud lower section in a downward direction.

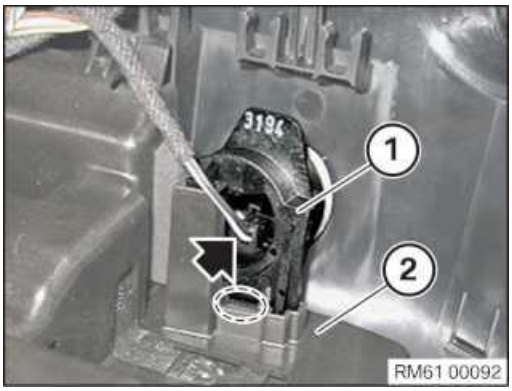
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- Tilt steering column shroud lower section in downward direction.
- Unlock and disconnect the plug connections (1) and (2).
- Remove steering column shroud lower section.

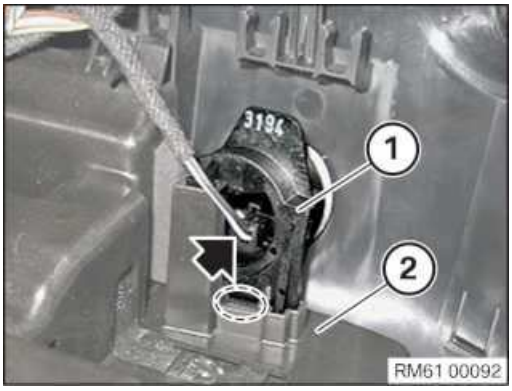
MAIN WORK

4 – Removing the ring aerial



- If applicable, unlock connector (arrow) and disconnect.
- Pull ring aerial (1) out of the lower section of the steering column shroud (2).

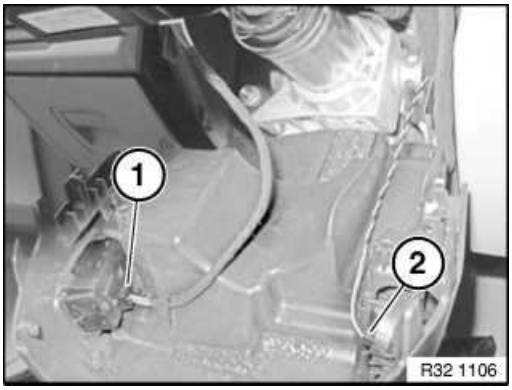
5 – Installing the ring aerial



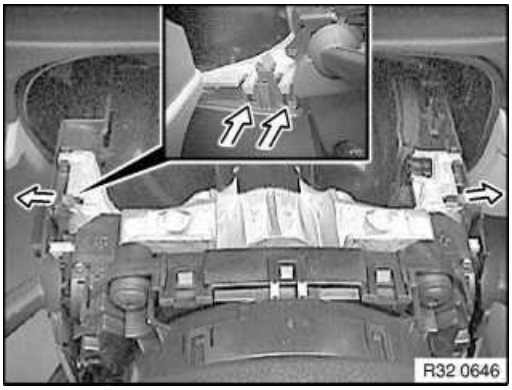
- Join the ring aerial (1) into the steering column shroud lower section (2).
- If applicable, connect the connector (arrow).

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6 – Install steering column shroud lower section



- Position the steering column shroud lower section .
- Connect available connectors (1) and (2) and lock.

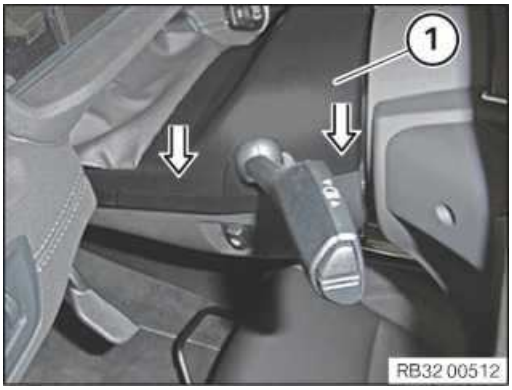


- Position the steering column shroud lower section with the retaining lugs (arrows).
- Press steering column shroud lower section completely towards the top until the retaining lugs (arrows) engage.

7 – Fit steering column shroud upper section



- Position the steering column shroud upper section.
- Attach gap cover of the steering column (1) on the brackets (arrows).



- Position the steering column shroud upper section (1).

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

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Overview of Special Tools

2 298 504 Wedge



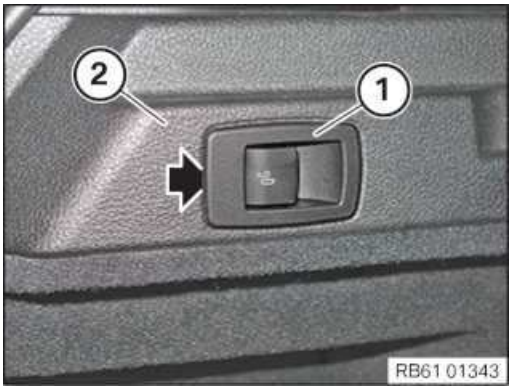
Common Used in step 2

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)

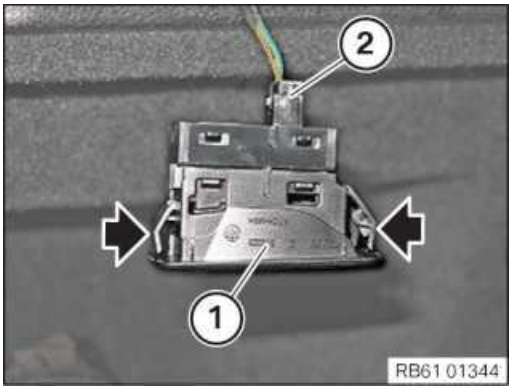
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61 31 139 Remove/install/replace switch of left or right backrest remote unlocking

1 – Removing the backrest release switch

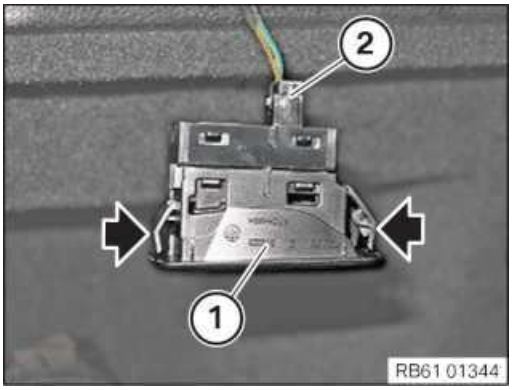


- Unclip the switch (1) in the highlighted area.

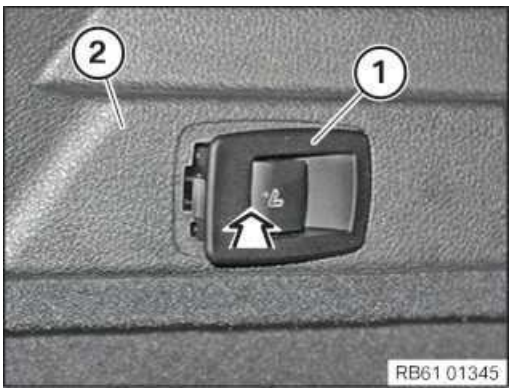


- Disconnect the connector (2) from the switch (1).

2 – Installing the backrest release switch



- Connect the connector (2) with the switch (1).



- Clip the switch (1) into the trim panel (2).

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61 31 195 Removing and installing front controller

PRELIMINARY WORK

1 – Remove the decorative trim from the centre console

RISK OF DAMAGE

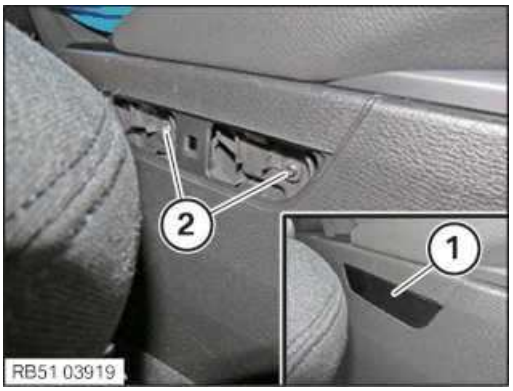
Scratches.

Tools and sharp-edged components can cause scratches.

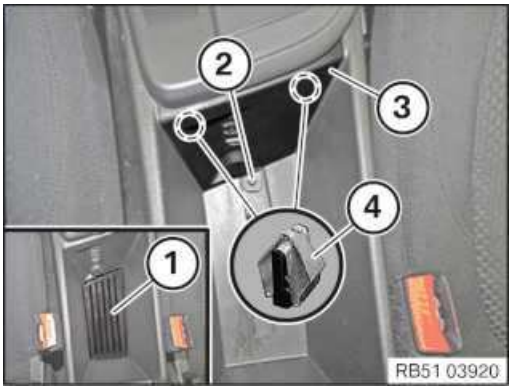
- Protect working area.
- Handle tools and components carefully.



- Lever out and remove cover (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screws (2).



- Lever out and remove cover (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screws (2).



- Remove insert (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screw (2).
- Lever out trim (3) from clamps (4) towards the rear with the special tool **0 496 571 (00 9 327)**.
- Unfasten plug connection.
- Remove the trim (3).

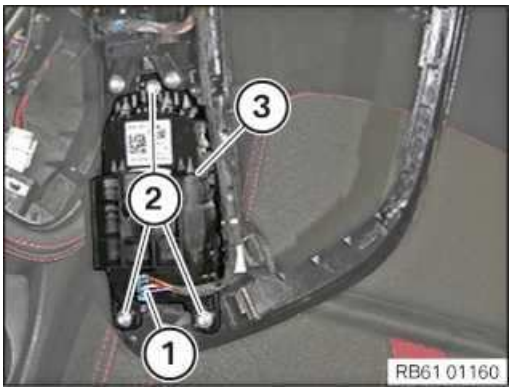
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- Loosen screw (1).
- Remove decorative trim (2) and disconnect all the plug connections.
- Remove decorative trim (2).

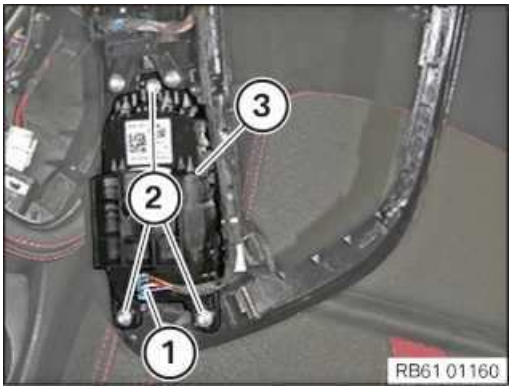
MAIN WORK

2 – Remove controller



- Unlock and disconnect connector (1).
- Release the screws (2) and remove the controller (3).

3 – Install controller



- Position the controller (3) and tighten the screws (2).

Controller to cover

Screw			2,5 Nm

- Connect connector (1).

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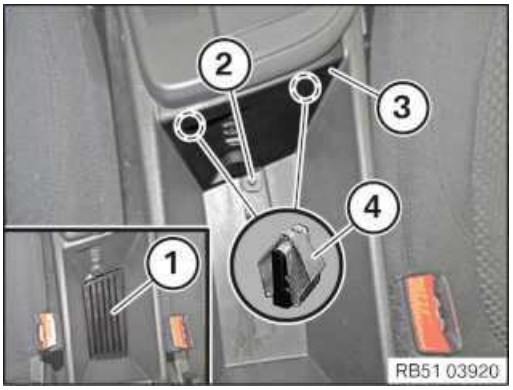
4 – Installing the decorative trim to the centre console



- Connect all connectors.
- Install decorative trim (2).
- Tighten down screw (1).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

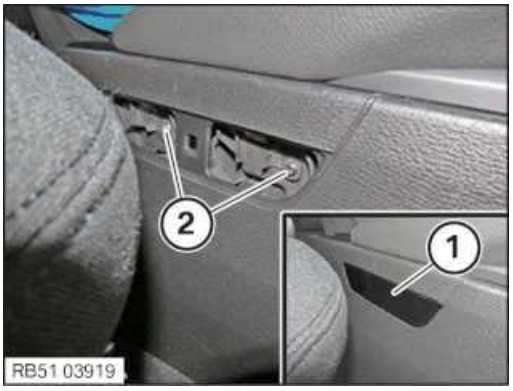


- Position trim (3) and connect all the connectors.
- Install trim (3) and engage it into clamps (4).
- Tighten down screw (2).

Trim to centre console

Oval-head screw		Tightening torque	1,8 Nm

- Insert the insert (1).



- Tighten down screws (2).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

- Install cover (1) and engage.



- Tighten down screws (2).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

- Install cover (1) and engage.

Additional Information

Overview of Tightening Torques

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Controller to cover Used in step 3

Screw			2,5 Nm

Screw connection for centre console Used in step 4

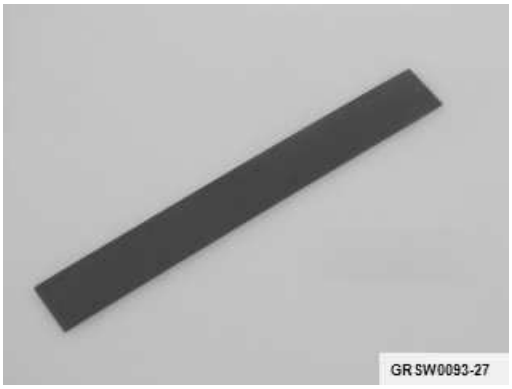
Oval-head screw		Tightening torque	1,8 Nm

Trim to centre console Used in step 4

Oval-head screw		Tightening torque	1,8 Nm

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 31 342 Removing and installing gear selector switch

PRELIMINARY WORK

1 – Disconnecting all battery earth leads



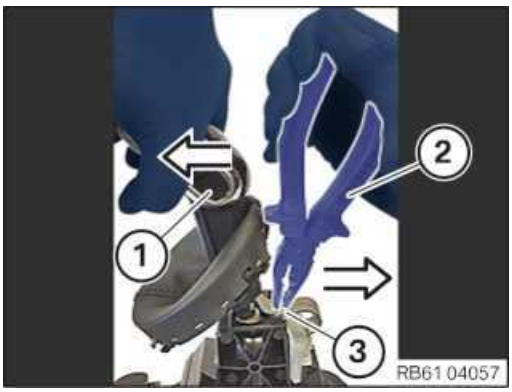
- See additional information.

MAIN WORK

2 – Removing the gear selector switch (GWS)

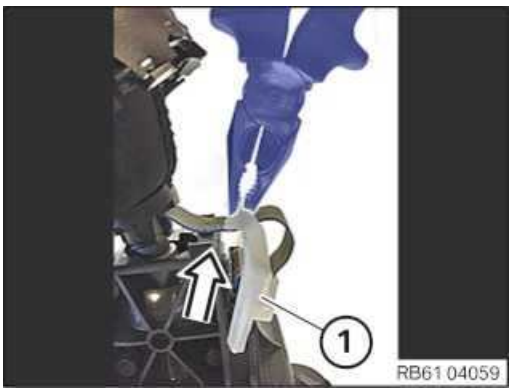


- Lever out the gaiter (1) from all around the trim panel with the special tool **0 496 571 (00 9 327)**.



- Move the gear selector switch (GWS) (1) fully forwards.
- Using pliers (2), grip the plastic guide of the connector (3) at the top.

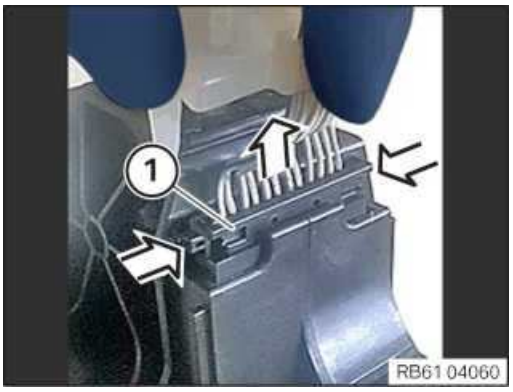
  The wiring harness must not be pinched or damaged in the process.
- Release the plastic guide of the connector (3) from of the latch mechanism towards the rear.



- Carefully pull the plastic guide of the connector (1) upwards out of the latch mechanism using gentle back and forth motions.

  The plastic guide remains on the wiring harness.

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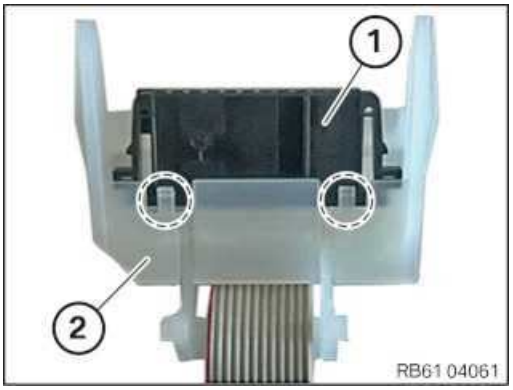


- Unlock plug connection (1) and disconnect.

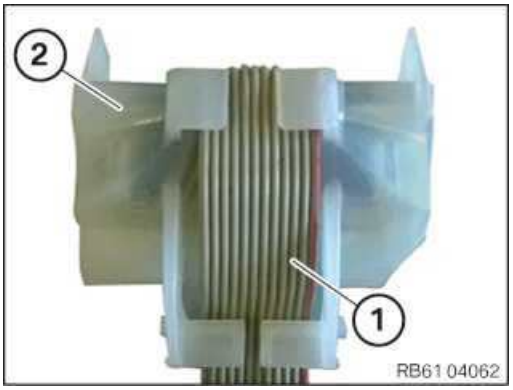


- Pull the gear selector switch (GWS) (1) vertically upwards with a forceful jerk.
- Make sure that the gear selector switch (GWS) (1) does not turn when it is pulled off.

3 – Installing the gear selector switch (GWS)



- Clip the connector (1) into the plastic guide (2).



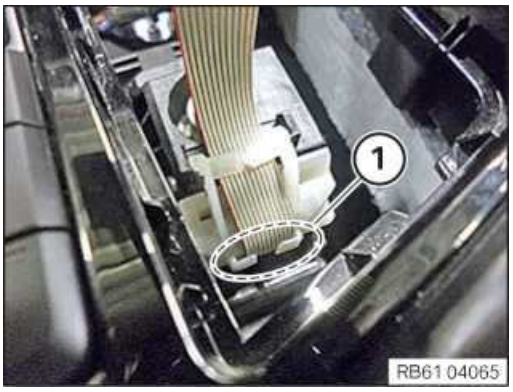
- Make sure that the wiring harness (1) is correctly installed in the plastic guide (2).



- Put the gear selector switch (GWS) on the gearshift rod.
- Position the anti-twist lock (mark) by turning it slightly.

  The gear selector switch (GWS) must still not lock with the gearshift rod.

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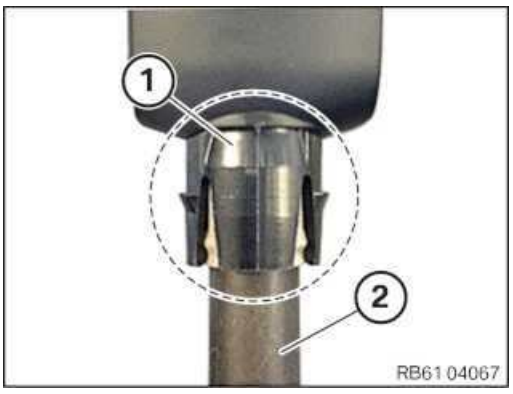


- Connect and lock the connector with the plastic guide (1) with the switching box.



- Push the plastic guide forwards into the upper 2 latch mechanisms.

  It should be possible to hear the latch mechanisms snap into place.



- Carefully push the gear selector switch (GWS) (1) vertically downwards.

  The gear selector switch (GWS) must audibly engage at the gearshift rod (2).



- Position the gaiter (1) and clip it in.

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4 – Disconnecting all battery earth leads

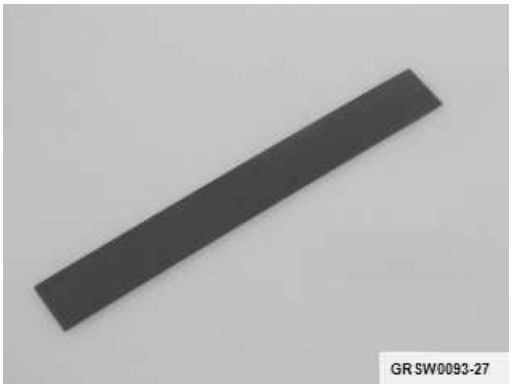


- See additional information.

Additional Information

Overview of Special Tools

0 496 571 (00 9 327) Wedge



Common	Used in step 2
Usage	(Cleaning wedge) From 11/2008 this special tool replaces panel wedge 00 9 323 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 4
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 4

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61 20 900 Disconnecting and connecting battery earth lead	1	4
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	4
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	1	4
61 20 900 Disconnecting and connecting battery earth lead	1	4
61 20 900 Disconnecting and connecting battery earth lead	1	4
61 20 900 Disconnecting and connecting battery earth lead	1	4
61 20 900 Disconnecting and connecting battery earth lead	1	4
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61 20 900 Disconnecting and connecting battery earth lead	1	4
61 20 900 Disconnecting and connecting battery earth lead	1	4
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	4
61 20 900 Disconnecting and connecting battery earth lead	1	4
61 20 900 Disconnecting and connecting battery earth lead	1	4
61 20 900 Disconnecting and connecting battery earth lead	1	4
61 20 900 Disconnecting and connecting battery earth lead	1	4
61 20 900 Disconnecting and connecting battery earth lead	1	4
61 20 900 Disconnecting and connecting battery earth lead	1	4
61 20 900 Disconnecting and connecting battery earth lead	1	4

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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 – Remove gearshift lever cover



- Use wedges (1) to unclip the gaiter and pull it off upward.



- Remove the gearshift lever knob and the gaiter by means of a powerful jolt vertically upwards.

  In doing so, the tie rod must not be bent or damaged.
- Ensure that the gearshift lever knob is not twisted when removing, otherwise the anti-twist lock in the gearshift lever knob will be sheared off.

3 – Remove the decorative trim from the centre console

RISK OF DAMAGE

Scratches.

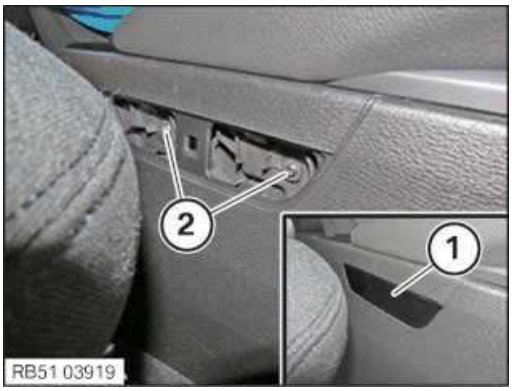
Tools and sharp-edged components can cause scratches.

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

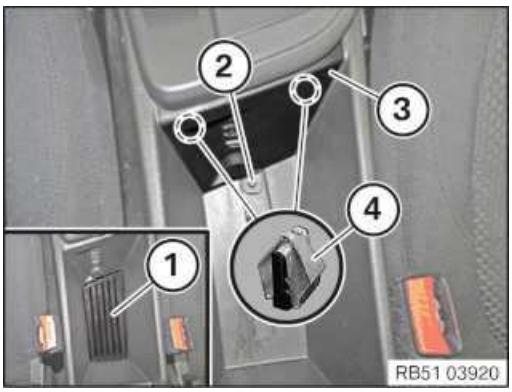
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- Lever out and remove cover (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screws (2).



- Lever out and remove cover (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screws (2).

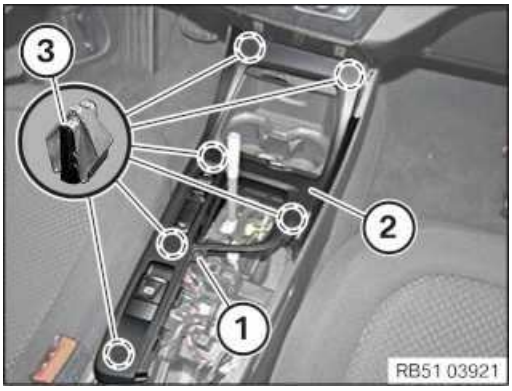


- Remove insert (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screw (2).
- Lever out trim (3) from clamps (4) towards the rear with the special tool **0 496 571 (00 9 327)**.
- Unfasten plug connection.
- Remove the trim (3).



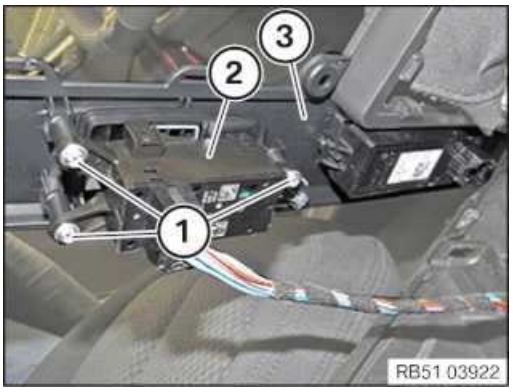
- Loosen screw (1).
- Remove decorative trim (2) and disconnect all the plug connections.
- Remove decorative trim (2).

4 – Remove the centre console trim



- Loosen screw (1).
- Release centre console trim (2) from clamps (3) with the special tool **0 496 569 (00 9 325)**.
- Lift centre console trim (2).

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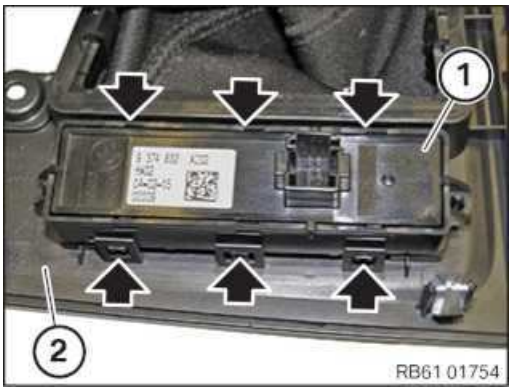


- Loosen screws (1).
- Remove parking brake button (2) from centre console trim (3) and place it down.

  The plug connection must not be disconnected.
- Disconnect the remaining plug connections and remove centre console trim (3).

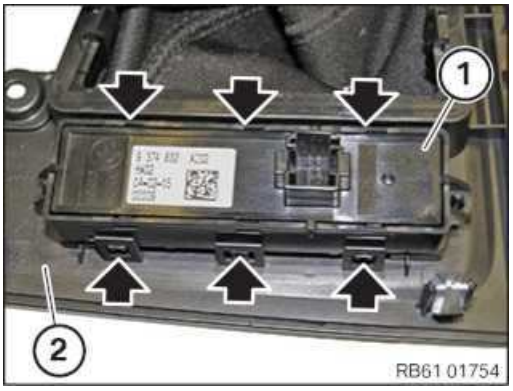
MAIN WORK

5 – Remove the operating facility in the centre console



- Release operating facility in the centre console (1) from the latch mechanisms (arrows) with the special tool **0 493 681 (64 1 020)**.
- Remove the operating facility in the centre console (1) from the centre console trim (2).

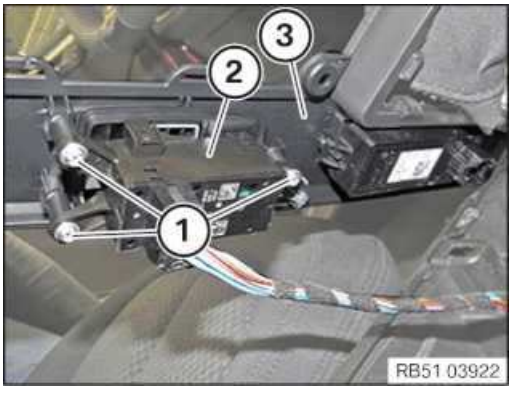
6 – Install the operating facility in the centre console



- Position operating facility in the centre console (1) correctly and engage it in the centre console trim (2).

POSTPROCESSES

7 – Install the centre console trim

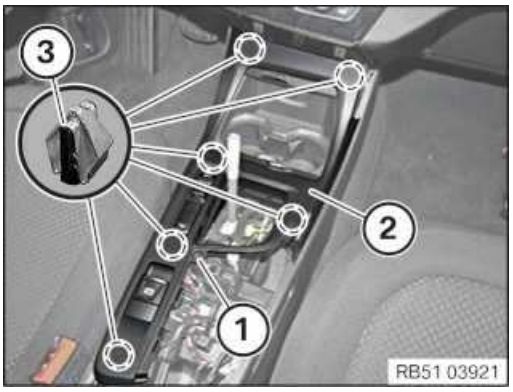


- Install centre console trim (3) and connect and lock the corresponding connectors.
- Install parking brake button (2) on centre console trim (3).
- Tighten the screws (1).

Parking brake button

Oval-head screw		Tightening torque	1,5 Nm

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- Install centre console trim (2) and engage it into clamps (3).
- Tighten down screw (1).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

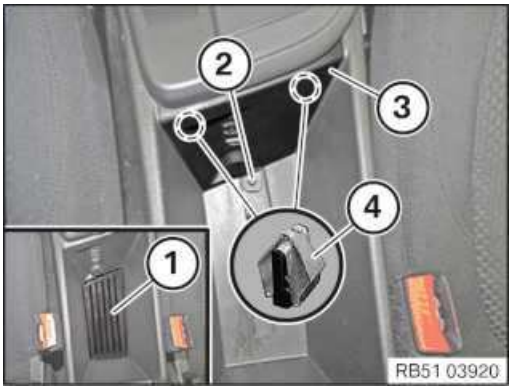
8 – Installing the decorative trim to the centre console



- Connect all connectors.
- Install decorative trim (2).
- Tighten down screw (1).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

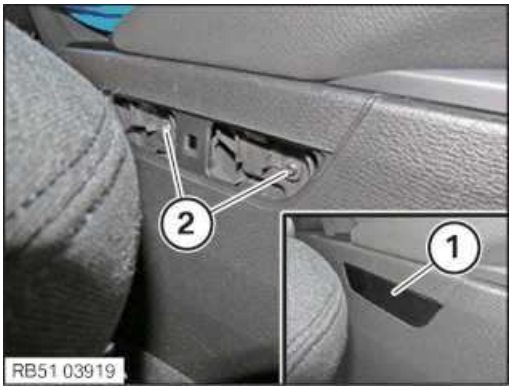


- Position trim (3) and connect all the connectors.
- Install trim (3) and engage it into clamps (4).
- Tighten down screw (2).

Trim to centre console

Oval-head screw		Tightening torque	1,8 Nm

- Insert the insert (1).



- Tighten down screws (2).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

- Install cover (1) and engage.



- Tighten down screws (2).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

- Install cover (1) and engage.

9 – Installing the gearshift lever cover

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- Place the gearshift lever knob on gearshift lever and align by lightly pressing in the direction of travel.

  The anti-twist lock must bite.
- Press the gearshift lever knob with the palm of the hand until it can be felt to engage.

  When installing, the tie rod of the gearshift lever must not be bent.



- Clip in gaiter (arrows).

10 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Overview of Tightening Torques

Parking brake button Used in step 7

Oval-head screw		Tightening torque	1,5 Nm

Screw connection for centre console Used in step 7 8

Oval-head screw		Tightening torque	1,8 Nm

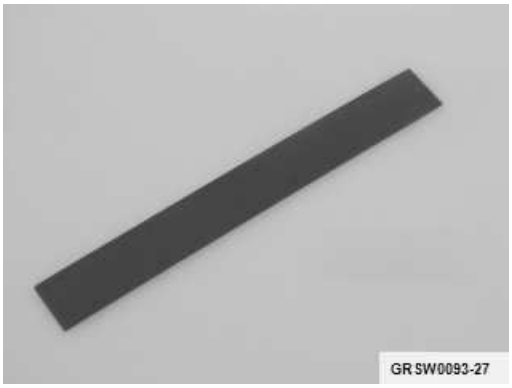
Trim to centre console Used in step 8

Oval-head screw		Tightening torque	1,8 Nm

Overview of Special Tools

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0 496 571 (00 9 327) Wedge



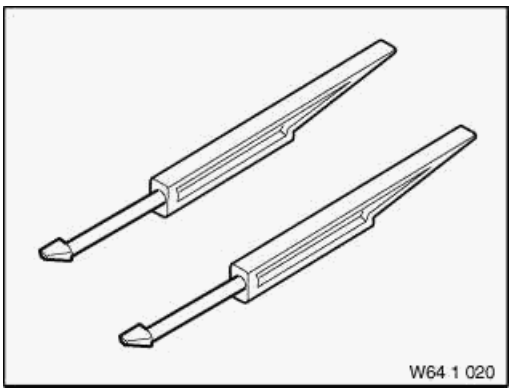
Common	Used in step 3
Usage	(Cleaning wedge) From 11/2008 this special tool replaces panel wedge 00 9 323 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

0 496 569 (00 9 325) Wedge



Common	Used in step 4
Usage	(Panel wedge) From 11/2008 this special tool replaces panel wedge 00 9 317 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	41 01 09 (507)

0 493 681 (64 1 020) Hook



Common	Used in step 5
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	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10

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61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	10
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	10
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
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61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10

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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

A wheel alignment is not necessary after the removal, installation or replacement.

PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

2 – Removing airbag unit of the steering wheel/sports steering wheel

WARNING

Airbag unit.

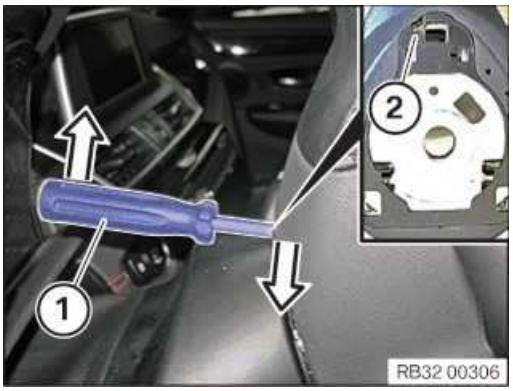
Danger! Life-threatening injuries!

- 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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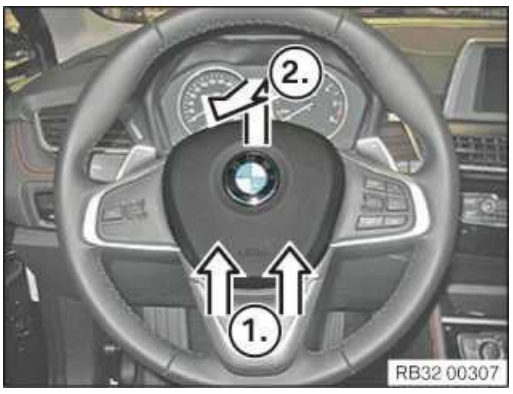


- Turn the steering wheel (1) through 180° from the "straight-ahead driving position".

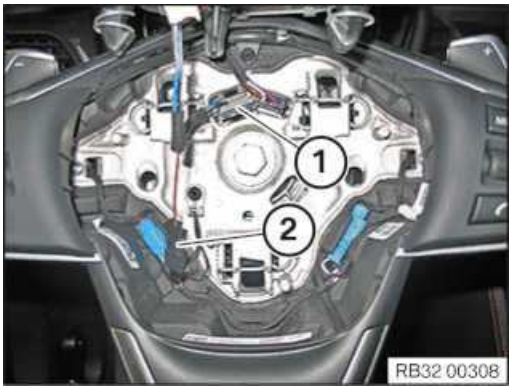


- Insert the slotted screwdriver (1) into the elongated hole on the rear side on the steering wheel.
- Push the slotted screwdriver (1) up and thereby push the retaining spring down (2).

  The airbag unit is unlocked.



- (1) Push unlocked airbag unit up.
- (2) At the same time, pull off the top airbag unit in the opposite direction of travel.



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

3 – Removing steering wheel/sports steering wheel



- Move the steering wheel/sports steering wheels to the straight-ahead position.
- **Unlock plug connection and disconnect.**
- Release the screw (1) and remove the steering wheel/sports steering wheel.

4 – Removing steering column shroud upper section

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NOTICE

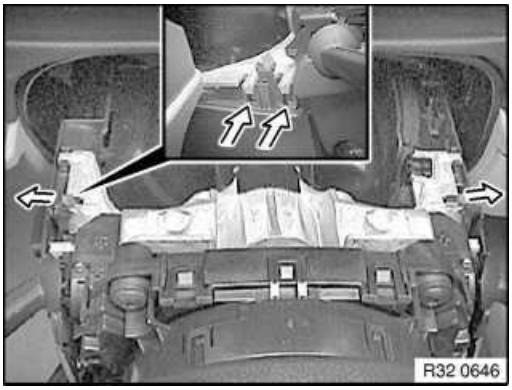
Perform the operations on the left and right side.

- Unclip the steering column shroud upper section (1) with the special tool **2 298 504** in area (2).
- Fold the steering column shroud upper section (1) up.

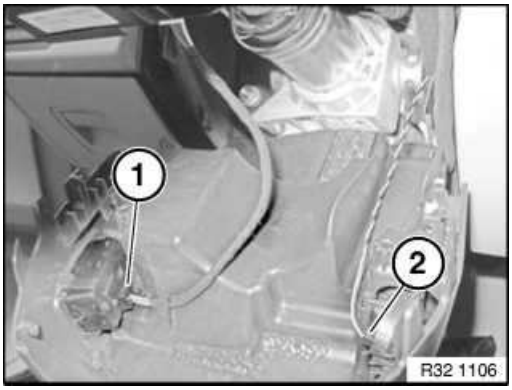


- Release the gap cover of the steering column (1) from the brackets (arrows) of the steering column shroud upper section.
- Remove steering column shroud upper section.

5 – Removing steering column shroud lower section



- Press the retaining lugs (arrows) a little outwards and unclip the steering column shroud lower section in a downward direction.

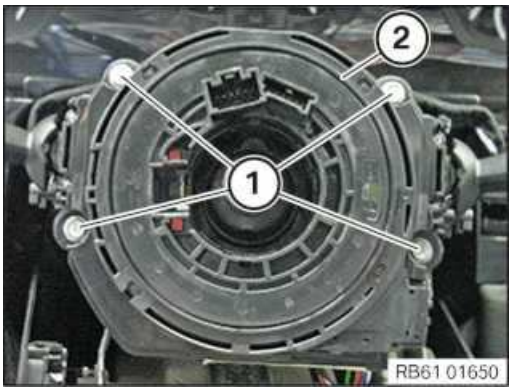


- Tilt steering column shroud lower section in downward direction.
- Unlock and disconnect the plug connections (1) and (2).
- Remove steering column shroud lower section.

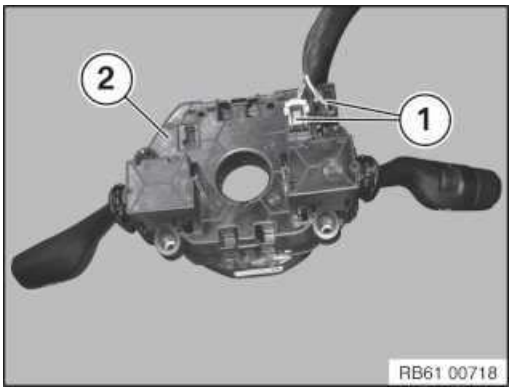
MAIN WORK

6 – Removing the steering column switch cluster (SZL)

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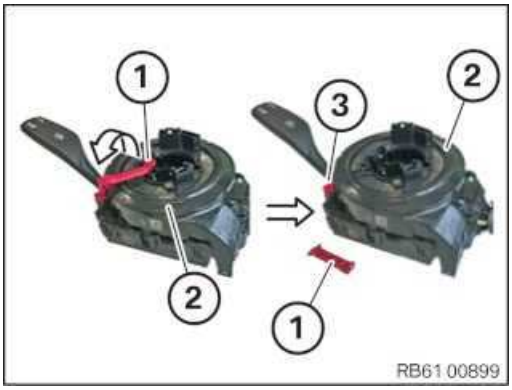


- Loosen screws (1).
- Remove the steering column switch cluster (SZL) (2).



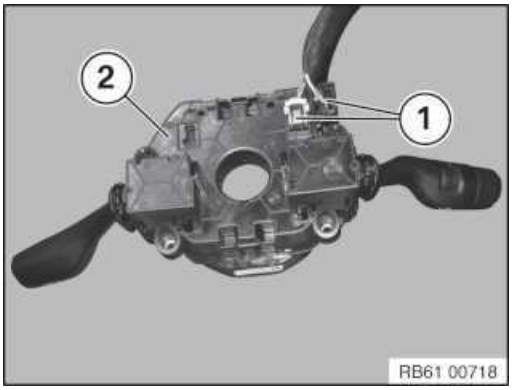
- Unlock and disconnect the connector (1) on the steering column switch cluster (SZL) (2).

7 – 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 of (3) 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).

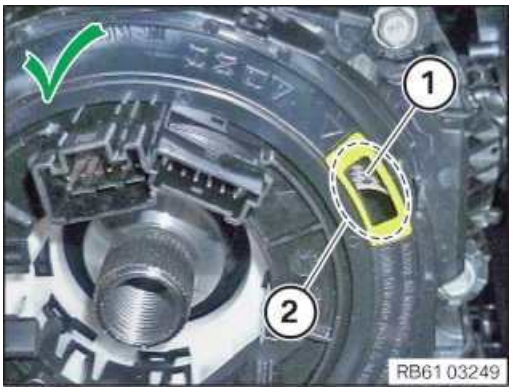
▸ **Check the neutral position of the clock spring**

TECHNICAL INFORMATION

Different variants may be installed depending on the vehicle equipment.

Check

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- **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:**

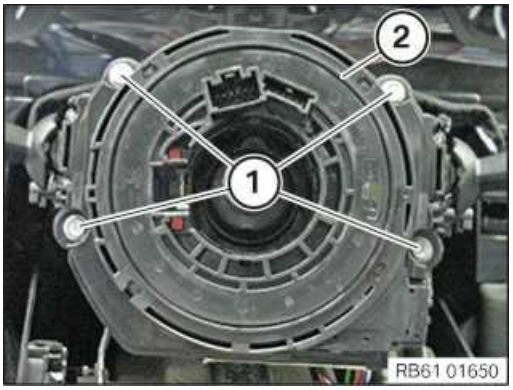
  Check the mark (1) on the coil spring in the inspection glass (2).

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).



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

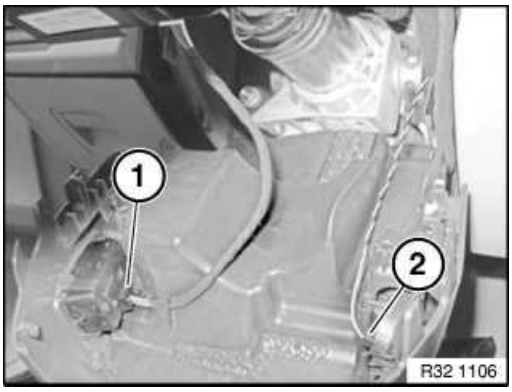
Steering column switch cluster (SZL) on the steering column

Screw TS5x20		Tightening torque	3 Nm

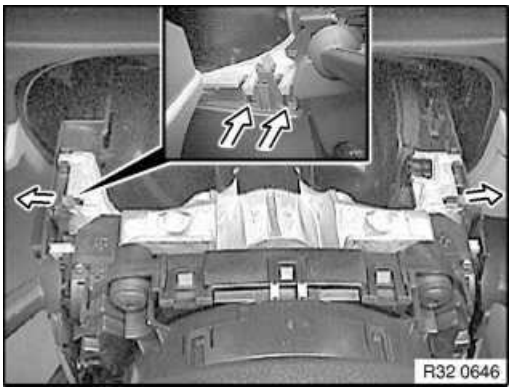
POSTPROCESSES

8 – Install steering column shroud lower section

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- Position the steering column shroud lower section .
- Connect available connectors (1) and (2) and lock.

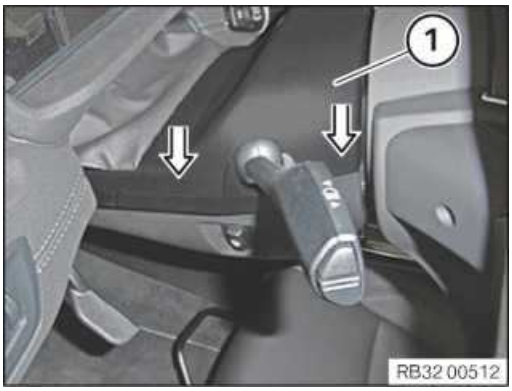


- Position the steering column shroud lower section with the retaining lugs (arrows).
- Press steering column shroud lower section completely towards the top until the retaining lugs (arrows) engage.

9 – Fit steering column shroud upper section



- Position the steering column shroud upper section.
- Attach gap cover of the steering column (1) on the brackets (arrows).



- Position the steering column shroud upper section (1).

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.

10 – Installing the steering wheel/sports steering wheel

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

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- Ensure that the coil spring is not twisted.

  There are clock springs installed without a mechanical anti-twist lock.

  Coil springs without a mechanical anti-twist lock are identifiable on the inspection glass for the neutral position mark.
- Check the neutral position of the clock spring on the steering column switch cluster (SZL).

  The neutral position is correct if the yellow or green mark (1) is clearly visible.

Check



- Check the mark (1) in the inspection glass.

Result

» The mark (1) is not visible.

Measure

- Turn the coil spring until mark (1) is visible in the inspection glass.

Check



- A micro-encapsulated screw (1) may be fitted.
- Checked threaded connection

Result

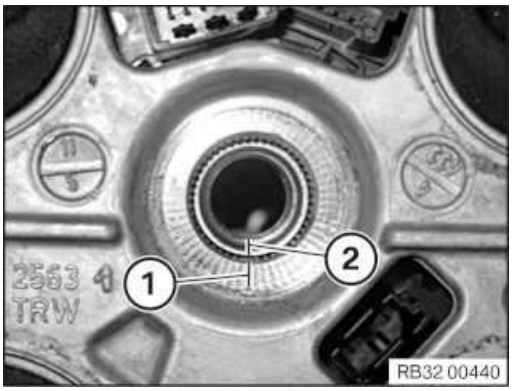
» Screw (1) is micro-encapsulated.

Measure

- Clean thread in the steering column.

  Renew the screw (1).

  Parts: Screw



- Align and connect the steering wheel/sports steering wheel according to the mark (1) with the steering column mark (2).

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- Tighten down screw (1).

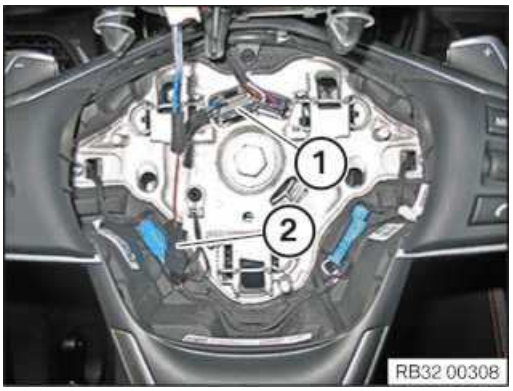
Steering wheel to steering column

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

- **Connect connectors and lock.**

  Make sure connecting lines are correctly routed.

11 – Installing airbag unit of steering wheel/sports steering wheel



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



- Before installing the airbag unit, align the wiring harness (1) to the centre so that the latch mechanisms (arrows) are exposed!



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

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

12 – Disconnecting all battery earth leads



- See additional information.

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Additional Information

Overview of Tightening Torques

Steering column switch cluster (SZL) on the steering column

Used in step 7

Screw TS5x20		Tightening torque	3 Nm

Steering wheel to steering column

Used in step 10

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 4

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	

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 12
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 12
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12

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61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12

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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.

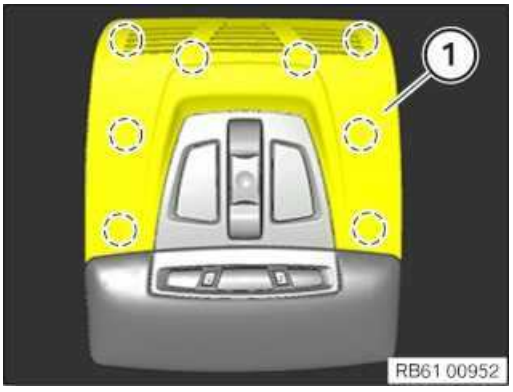
RISK OF DAMAGE

Electrostatic discharge.

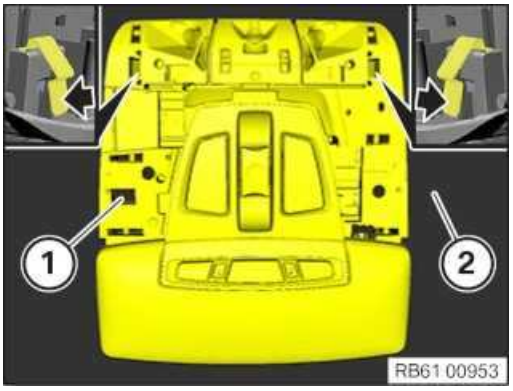
Damage to or destruction of electrical components.

- 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.

1 – Remove the roof function centre



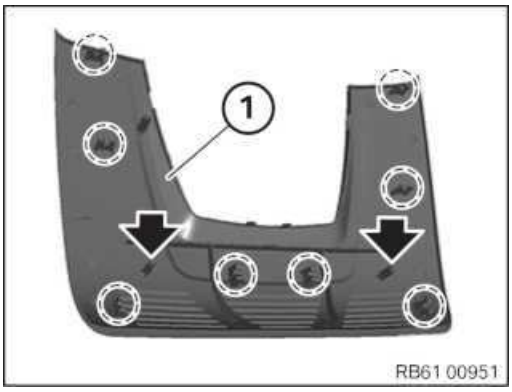
- Carefully unclip and remove the trim (1) with the special tool **0 496 569 (00 9 325)**.



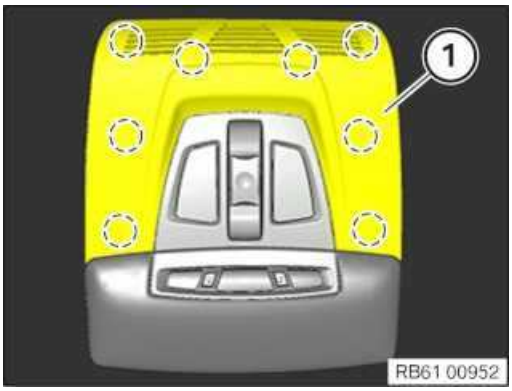
- Unlock the left/right retaining lugs using a screwdriver in direction of the arrow.
- Remove the roof function centre (1) from the headlining (2).
- Unlock and disconnect associated connector.

2 – Install the roof function centre

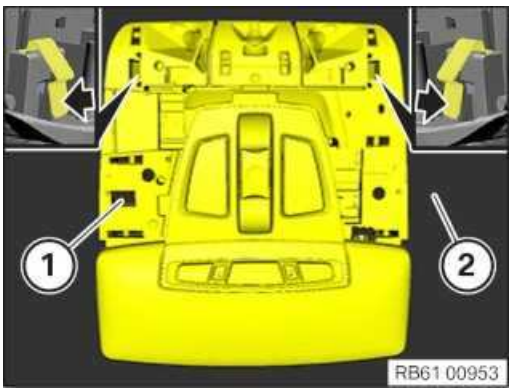
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- The retaining lugs and guides on the trim (1) must not be damaged or missing.



- Carefully engage the trim (1) in the roof function centre.



NOTICE

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

- Connect associated connector.
- Join the roof function centre (1) to the headlining (2).

3 – Initialise panorama glass roof



- Close all doors.
- Operate the START-STOP button three times within 0.8 s.
- Press and hold the switch towards "Lift".
- In the event of a delayed start or sudden stop of the glass sunroof: Continue to press and hold the switch towards "Lift".

TECHNICAL INFORMATION

If the switch is released in the meantime, the initialisation must be restarted.

- Keep pressing the switch during the entire procedure (approx. 50 s):
  - Initialisation starts approx. 15 s after the button is pressed.
  - The glass roof and the roller sunblind are each opened and closed completely.

  Initialisation is complete once the glass roof and the roller sunblind are completely closed. The button can then be released.
- Carry out function check (one-touch function, anti-trapping protection and, if necessary, comfort function).
- Clear fault memory in FZD control unit.

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Additional Information

Overview of Special Tools

0 496 569 (00 9 325) Wedge



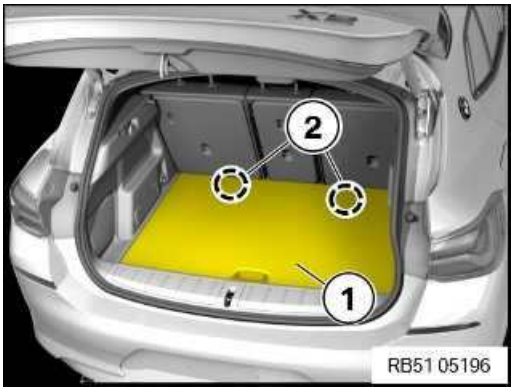
Common	Used in step 1
Usage	(Panel wedge) From 11/2008 this special tool replaces panel wedge 00 9 317 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	41 01 09 (507)

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61 31 362 Removing and installing the radio remote control receiver

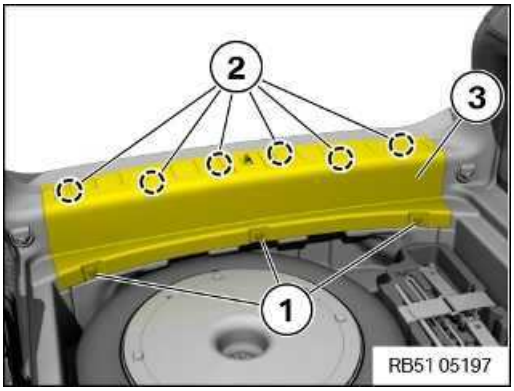
PRELIMINARY WORK

1 – Removing the luggage compartment removable panel



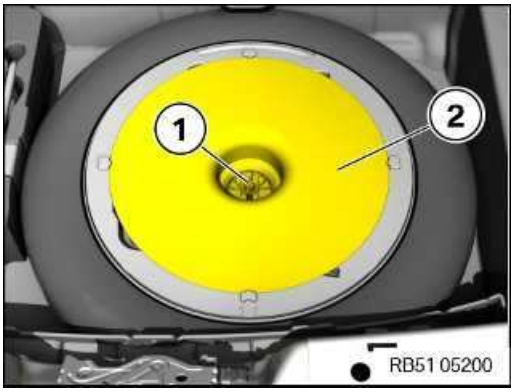
- Raise the luggage compartment removable panel (1) slightly at the handle, detach it from the latch mechanisms (2) and remove it toward the back.

2 – Removing the loading edge trim

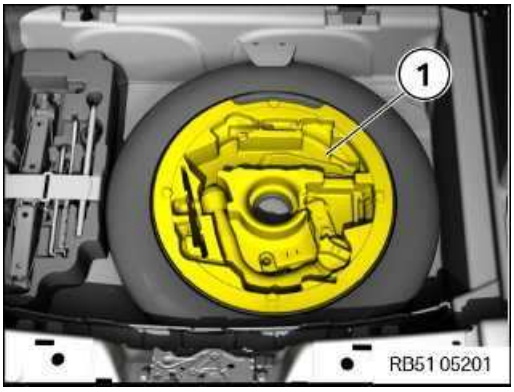


- Loosen the expanding rivet (1).
- Unclip the loading edge trim (3) from the clamps (2) toward the top and remove.

3 – Removing the compact spare wheel



- Loosen screw (1).
- Remove the cover (2).



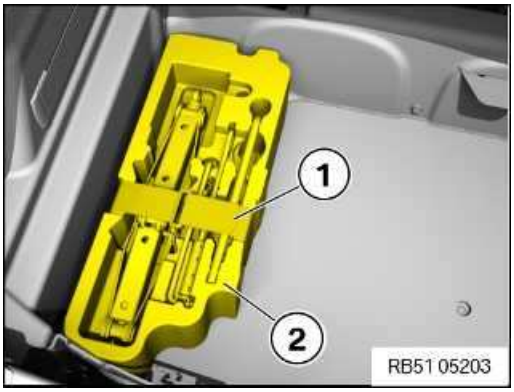
- Remove the oddments tray from the emergency wheel (1).

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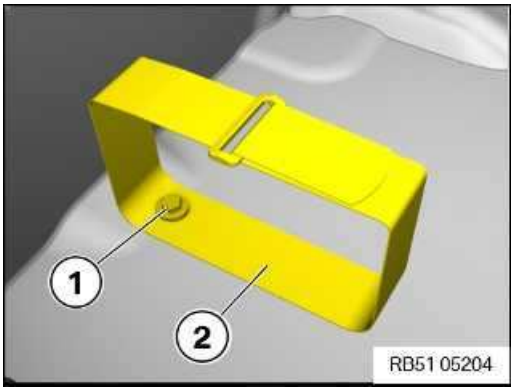
- Remove the emergency wheel (1).

4 – Remove the tool kit



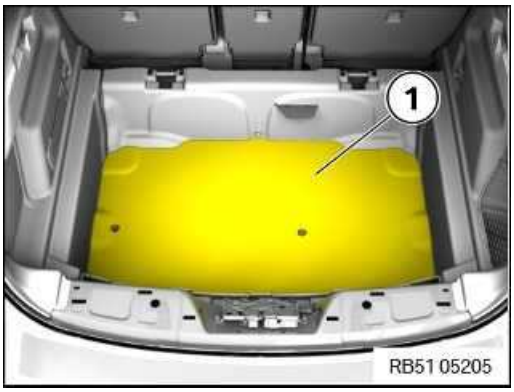
- Open the hook and loop tape (1).
- Remove the tool kit (2).

5 – Remove the hook and loop tape for the tool kit



- Loosen screw (1).
- Remove the hook and loop tape (2).

6 – Removing the luggage compartment floor trim panel



- Remove the luggage compartment floor trim panel (1) upwards.

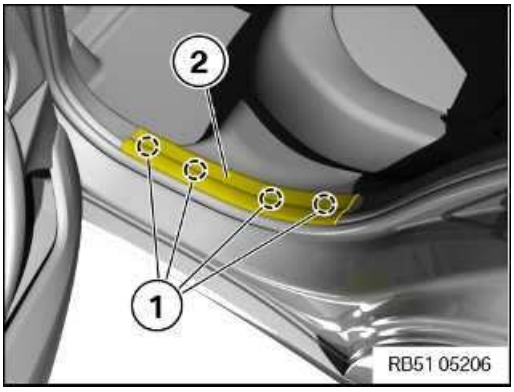
7 – Remove the rear right door sill cover strip

NOTICE

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

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▸ **Remove rear entrance cover strip**



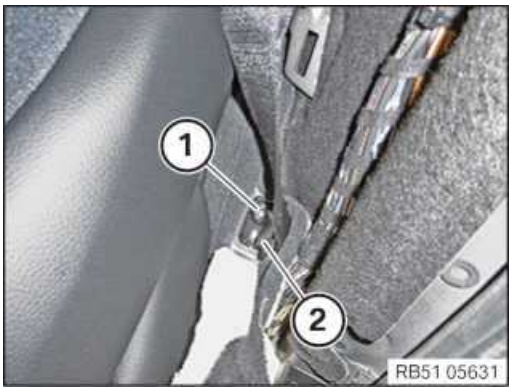
- Unclip the clips (1) of the door sill cover strip (2).
- Remove the door sill cover strip (2).

8 – Removing bottom right C-pillar trim panel

NOTICE

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

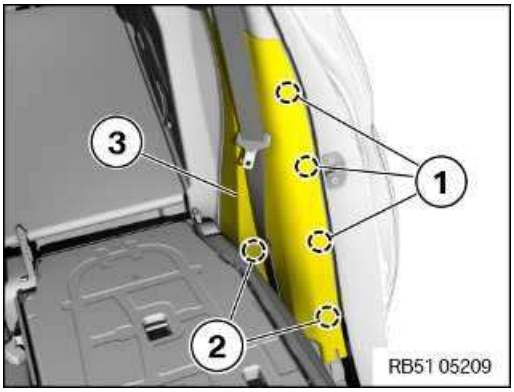
▸ **Remove the bottom C-pillar trim panel**



- Fold up the carpet as shown.
- Loosen screw (1).
- Remove end fitting (2).



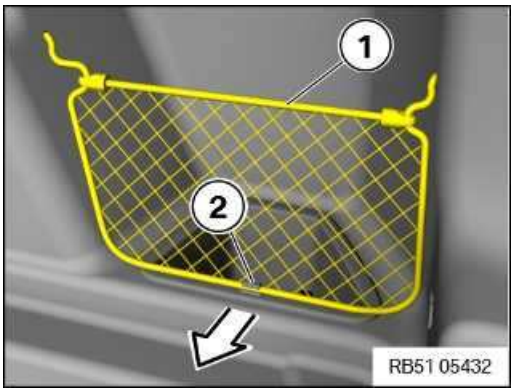
- Release the edge protection (1) in area of the bottom C-pillar trim panel.



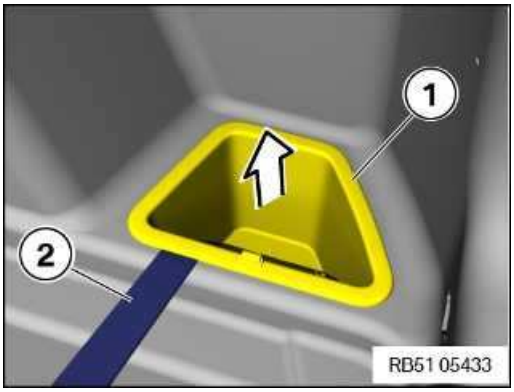
- Clip in the C-pillar trim panel (3) on the bottom with the clamps (1) and the clips (2).
- Detach end fitting and remove the bottom C-pillar trim panel (3).

9 – Removing right luggage compartment wheel arch trim panel

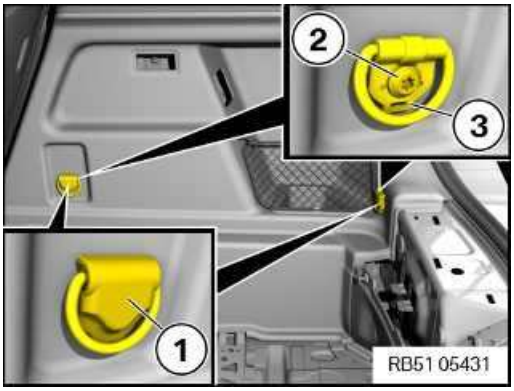
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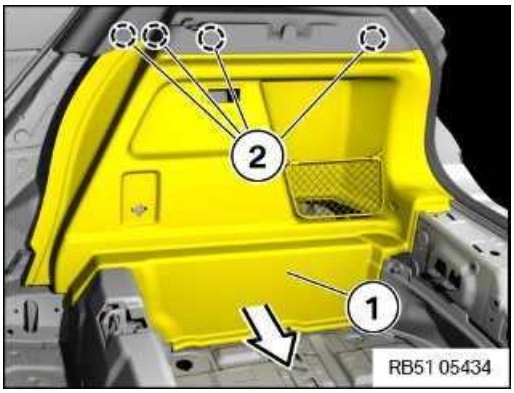
- Release the storage net (1) from the latch mechanism (2) in the direction of arrow and fold up.



- Remove storage compartment (1) out of the luggage compartment wheel arch trim panel in the direction of arrow using a suitable tool (2).



- Unclip covers (1).
- Unscrew the bolts (2) and remove the lashing points (3).



NOTICE

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

- Pull the luggage compartment wheel arch trim panel (1) on the bottom in the direction of the arrow and guide it out of the guides (2) and the C-pillar trim panel and remove.

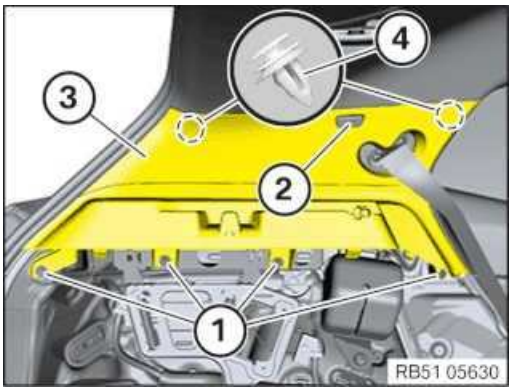
10 – Remove the trim panel of the right luggage compartment capping

NOTICE

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

▸ **Remove the trim panel of the luggage compartment capping**

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- Loosen screws (1).
- Remove the cover (2) with a suitable plastic wedge and unscrew the screw below it.
- Detach the trim panel of the luggage compartment capping (3) from the clips (4).
- Feed out the end fitting and remove the trim panel of the luggage compartment capping (3).

MAIN WORK

11 – Remove receiver for radio remote control



- Disconnect the connector (1) .
- Loosen expanding rivet (2).
- Remove receiver for radio remote control (3).

12 – Install the receiver for the radio remote control



- Position the receiver for the radio remote control (3) correctly.
- Fasten expanding rivet (2).
- Connect connector (1).

POSTPROCESSES

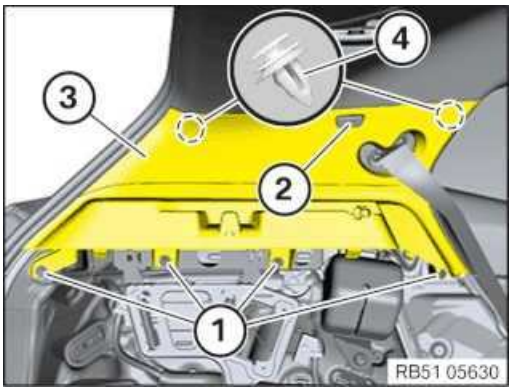
13 – Install the trim panel for the right luggage compartment capping

NOTICE

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

▸ **Install the trim panel for the luggage compartment capping**

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- Install trim panel of the luggage compartment capping (3) and thread in the end fitting.
- Clip in the trim panel of the luggage compartment capping (3) at the clips (4).
- Tighten screw and mount cover (2).

Trim panel of luggage compartment capping

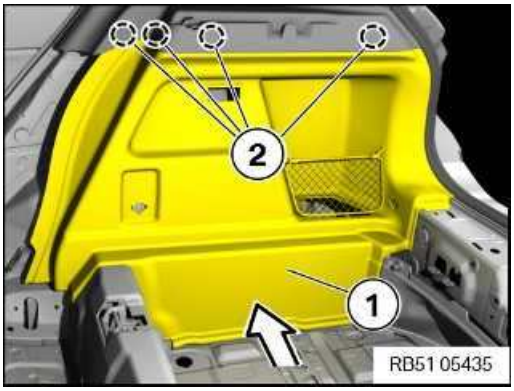
Self-tapping screw		Tightening torque	4 Nm

- Tighten the screws (1).

Trim panel of luggage compartment capping to body

Hexagon screw		Tightening torque	1,8 Nm

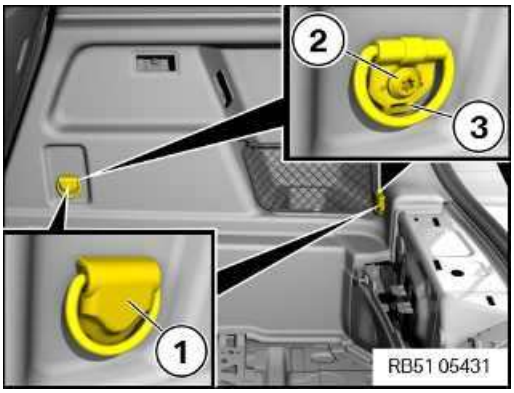
14 – Installing the luggage compartment wheel arch trim panel on the right



NOTICE

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

- Press luggage compartment wheel arch trim panel (1) down in direction of arrow and feed into the guides (2) and under the bottom C-pillar trim panel.

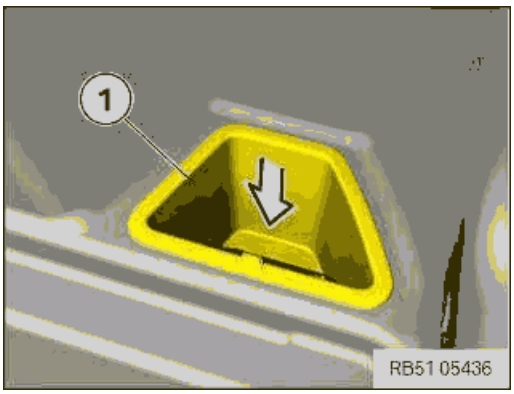


- Position the lashing eyes (3) and tighten the screws (2).

Lashing eye in luggage compartment

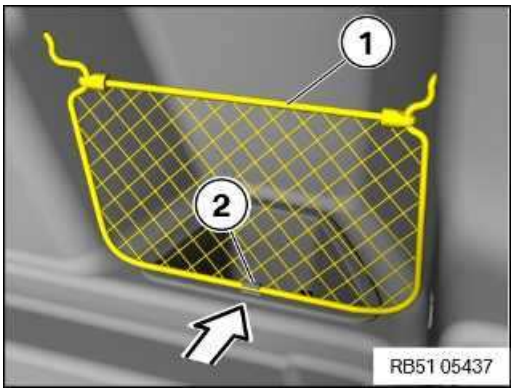
Bolt M8 x 22		Tightening torque	21 Nm

- Clip in the covers (1).



- Install the storage compartment (1) in the luggage compartment wheel arch trim panel in direction of arrow.

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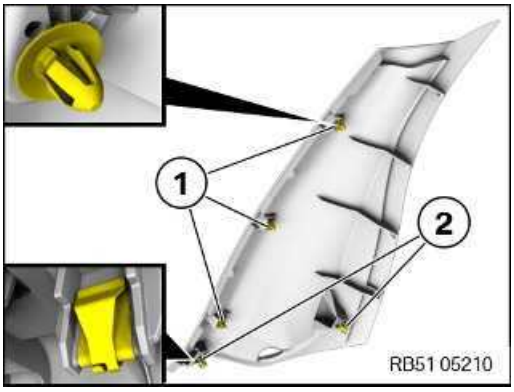
- Clip storage net (1) into latch mechanisms (2) in direction of arrow.

15 – Install the C-pillar trim panel at the bottom right

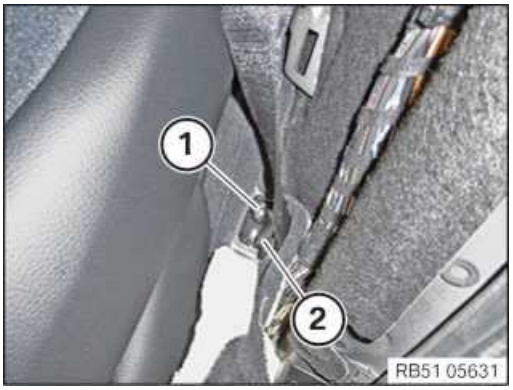
NOTICE

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

▶ **Install the bottom C-pillar trim panel**



- Check clips (1) for damage, and replace if necessary.
- Check the clamps (2) for damage, and replace if necessary.

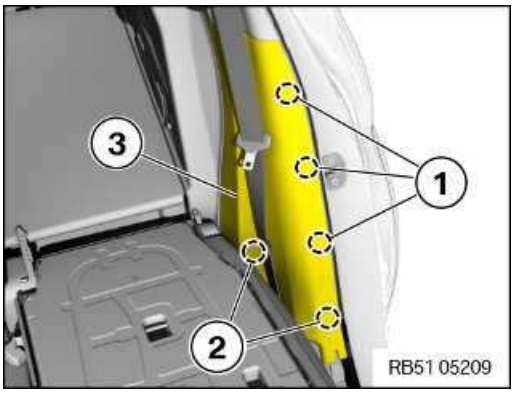


- Insert the end fitting (2) through the C-pillar trim panel.
- Mount the end fitting (2) and tighten the screw (1).

End fitting to body

Screw	Renew screw.	Tightening torque	42 Nm

- Install the carpet correctly.



- Clip in the C-pillar trim panel on the bottom (3) with the clamps (2) and the clips (1).

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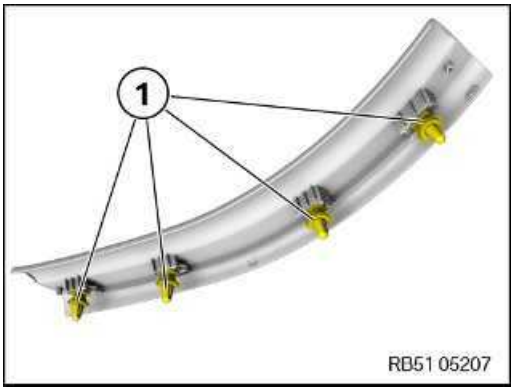
- Position the edge protection (1) correctly in the area of the bottom C-pillar trim.

16 – Installing rear right door sill cover strip

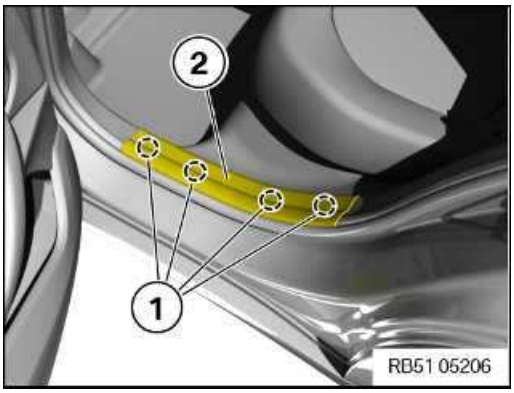
NOTICE

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

▶ **Installing the rear door sill cover strip**

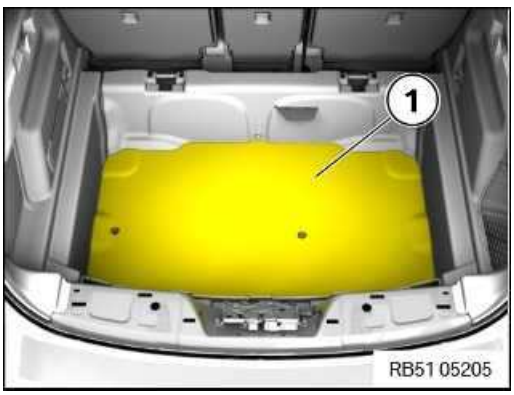


- Check the clips (1) for damage and renew where required.



- Clip in the door sill cover strip (2) with the clips (1).

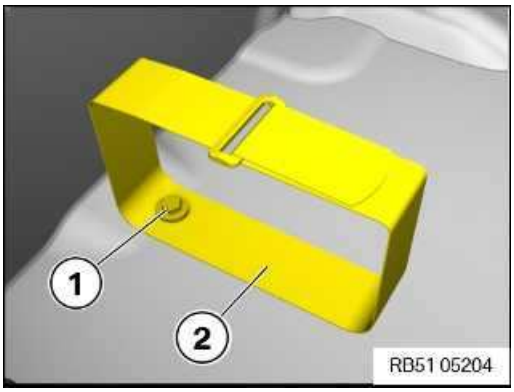
17 – Installing the luggage compartment floor trim panel



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

18 – Inserting the Velcro fastener for the toolkit

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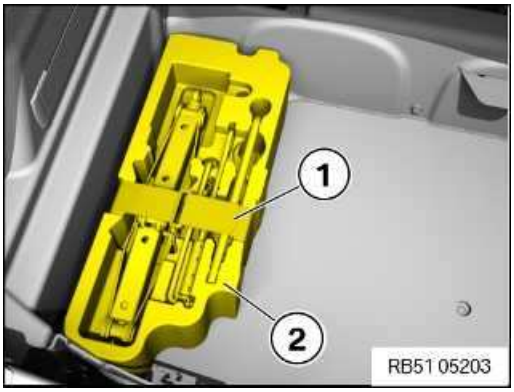


- Insert Velcro fastener (2).
- Tighten down screw (1).

Toolkit hook and loop tape to body

Bolt M6 x 20		Tightening torque	4 Nm

19 – Install the tool kit

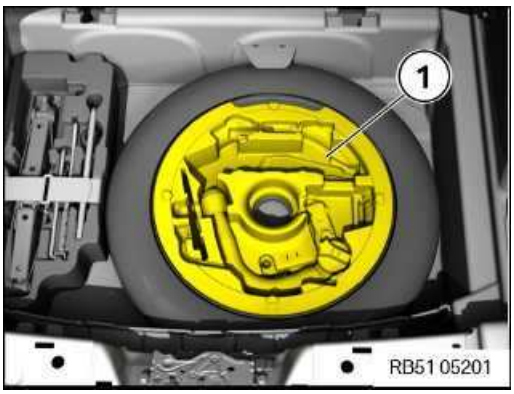


- Install the tool kit (2).
- Close the hook and loop tape (1).

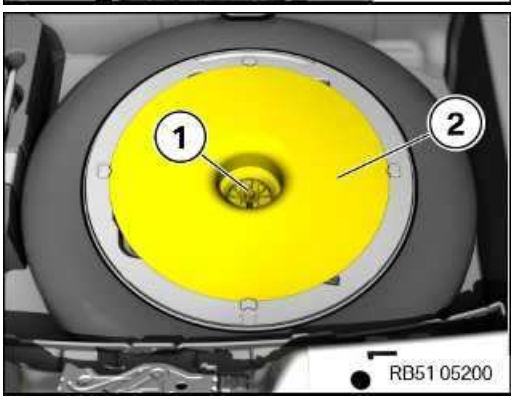
20 – Install the emergency wheel



- Insert compact spare wheel(1).



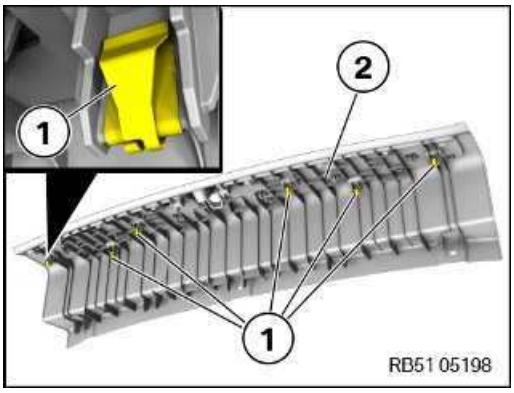
- Insert oddments tray into the compact spare wheel (1).



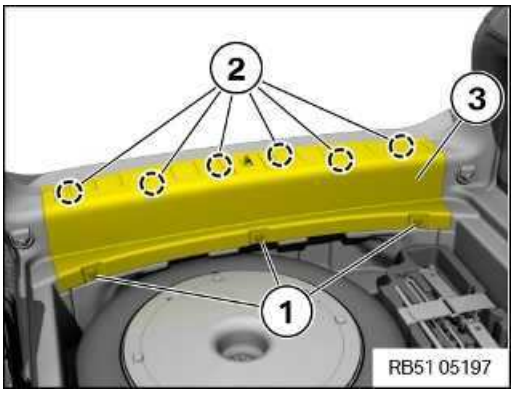
- Insert the lid (2).
- Hand-tighten the bolt (1).

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21 – Installing loading edge trim

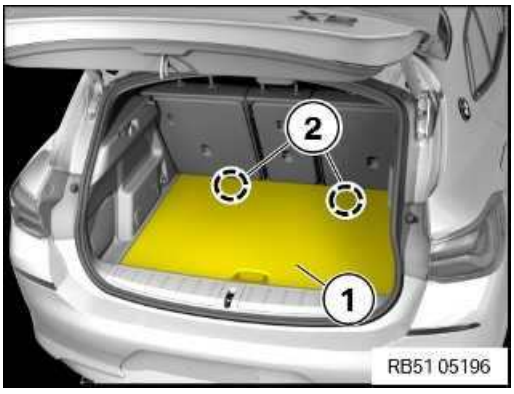


- Check the clamps (1) at the loading edge trim (2) for damage and renew if necessary.



- Insert the loading edge trim (3) in the area of the expanding rivets (1) into the underlying rear luggage compartment trim panel.
- Guide in the loading edge trim (3) under the sealing lip of the seal for the tailgate and clip it in with the clamps (2).
- Secure expanding rivet (1).

22 – Installing the luggage compartment removable panel



- Clip luggage compartment removable panel (1) into latch mechanisms (2) and set down.

Additional Information

Overview of Tightening Torques

Trim panel of luggage compartment capping — Used in step 13

Self-tapping screw		Tightening torque	4 Nm

Trim panel of luggage compartment capping to body — Used in step 13

Hexagon screw		Tightening torque	1,8 Nm

Lashing eye in luggage compartment — Used in step 14

Bolt M8 x 22		Tightening torque	21 Nm

End fitting to body — Used in step 15

Screw	Renew screw.	Tightening torque	42 Nm

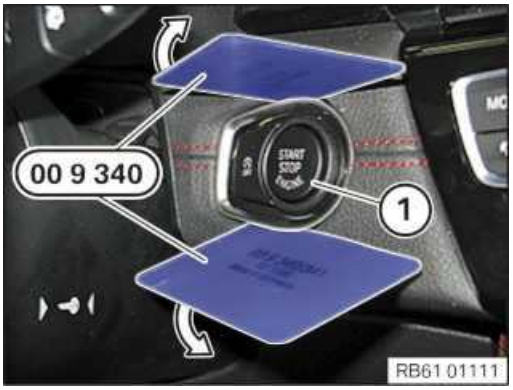
Toolkit hook and loop tape to body — Used in step 18

Bolt M6 x 20		Tightening torque	4 Nm

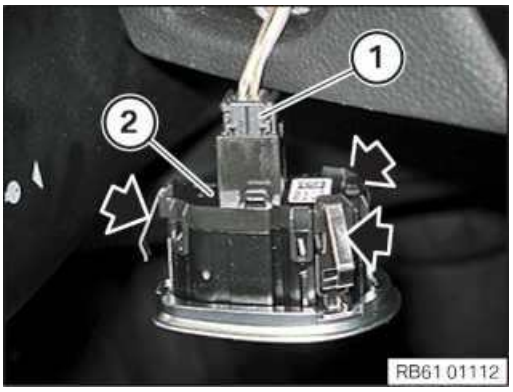
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61 31 014 Removing and installing the START-STOP button

1 – Removing the START-STOP button

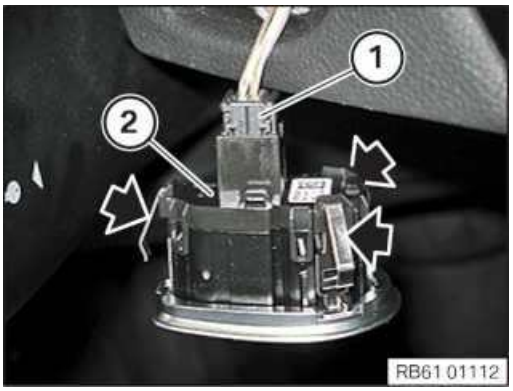


- Remove START-STOP button (1) using the special tool **0 493 687 (00 9 340)** .



- Disconnect the connector (1) and remove the START-STOP button (2).

2 – Installing the START-STOP button



- Connect connector (1) with START-STOP button (2).
  The retaining clips (arrows) must not be damaged or missing.



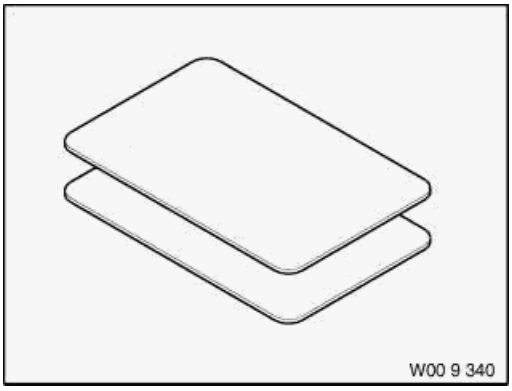
- Install START-STOP button (1) in the instrument panel trim.

Additional Information

Overview of Special Tools

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0 493 687 (00 9 340) Removal aid



Common

Used in step 1

Usage	(Removal aid (2 x)) For levering out switch block on driver's door.
Included in the tool or work	
Storage location	C2
Replaced by	
In connection with	
SI-Number	01 15 99 (483)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 496 289 (00 9 341)		**Removal aid** Only available as a set (2 tools) under 00 9 340 (= 83 30 0 493 687).	

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61 31 038 Removing and installing the switch for the front passenger airbag deactivation

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.

PRELIMINARY WORK

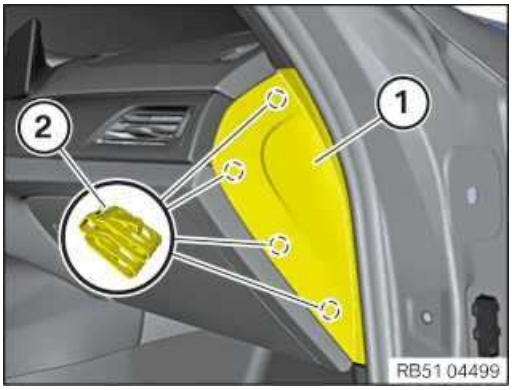
1 – Disconnecting all battery earth leads



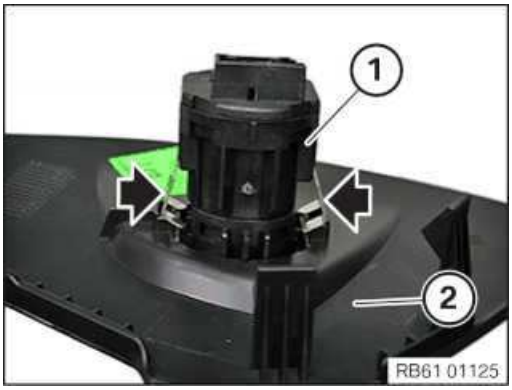
- See additional information.

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2 – Removing the switch for front passenger airbag deactivation

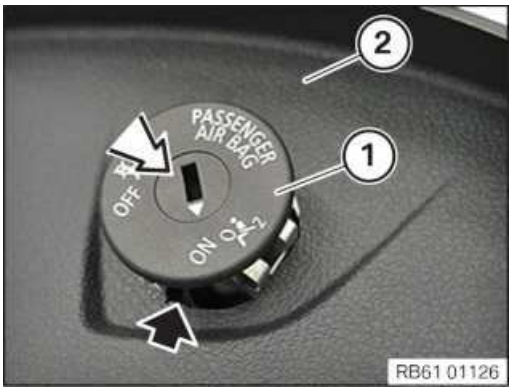


- Unclip and remove the side panel (1) towards the outside from the clamps (2).
- Unlock and disconnect associated connector.

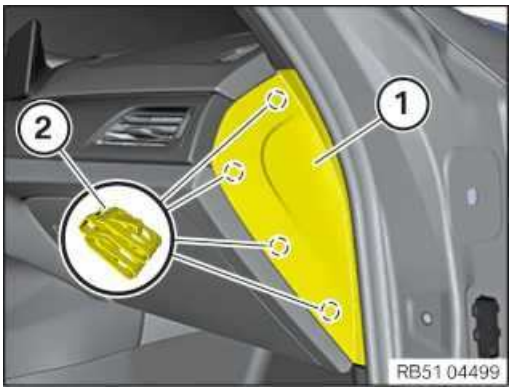


- Unlock both latch mechanisms on the switch for the front passenger airbag deactivation (1).
- Thread out the switch for front passenger airbag deactivation (1) from the side panel (2).

3 – Installing the switch for front passenger airbag deactivation



- Fit switch for front passenger airbag deactivation (1) into the side panel (2).
- Switch for front passenger airbag deactivation (1) must correctly engage in the side panel (2).



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

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POSTPROCESSES

4 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 4
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 4
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
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61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
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61 20 900 Disconnecting and connecting battery earth lead 1 4
61 20 900 Disconnecting and connecting battery earth lead 1 4
61 20 900 Disconnecting and connecting battery earth lead 1 4
61 20 900 Disconnecting and connecting battery earth lead 1 4

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61 31 062 Removing and installing/renewing button for steering wheel heating

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

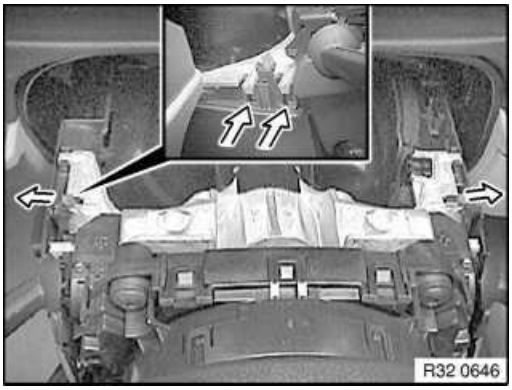
Perform the operations on the left and right side.

- Unclip the steering column shroud upper section (1) with the special tool **2 298 504** in area (2).
- Fold the steering column shroud upper section (1) up.



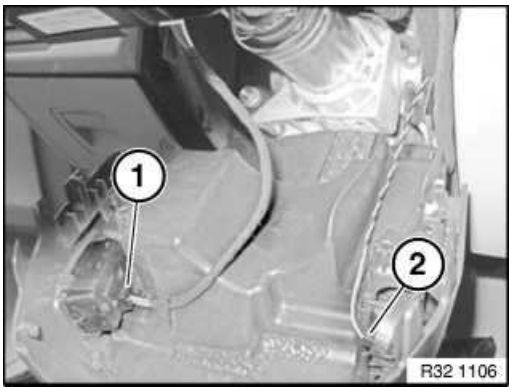
- Release the gap cover of the steering column (1) from the brackets (arrows) of the steering column shroud upper section.
- Remove steering column shroud upper section.

3 – Removing steering column shroud lower section



- Press the retaining lugs (arrows) a little outwards and unclip the steering column shroud lower section in a downward direction.

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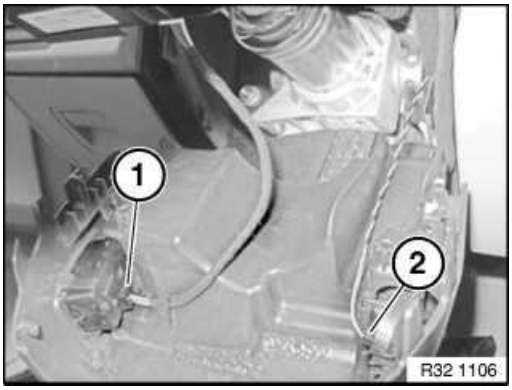


- Tilt steering column shroud lower section in downward direction.
- Unlock and disconnect the plug connections (1) and (2).
- Remove steering column shroud lower section.

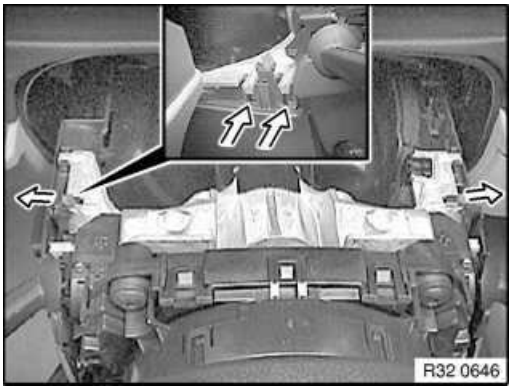
MAIN WORK

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4 – Install steering column shroud lower section



- Position the steering column shroud lower section .
- Connect available connectors (1) and (2) and lock.

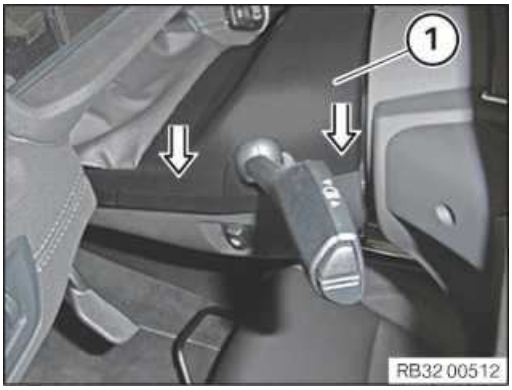


- Position the steering column shroud lower section with the retaining lugs (arrows).
- Press steering column shroud lower section completely towards the top until the retaining lugs (arrows) engage.

5 – Fit steering column shroud upper section



- Position the steering column shroud upper section.
- Attach gap cover of the steering column (1) on the brackets (arrows).



- Position the steering column shroud upper section (1).

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

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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)

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61 31 231 Removing and installing/renewing steering wheel module control unit

WARNING

Pyrotechnic components.

Danger! Life-threatening injuries!

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

WARNING

Airbag unit.

Danger! Life-threatening injuries!

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

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.

PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

2 – Removing airbag unit of the M sports steering wheel

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WARNING

Airbag unit.

Danger! Life-threatening injuries!

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

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.



- Locate the pre-punched bore hole (1) on the rear side of the steering wheel by touch.
- Insert the Torx screwdriver T27 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

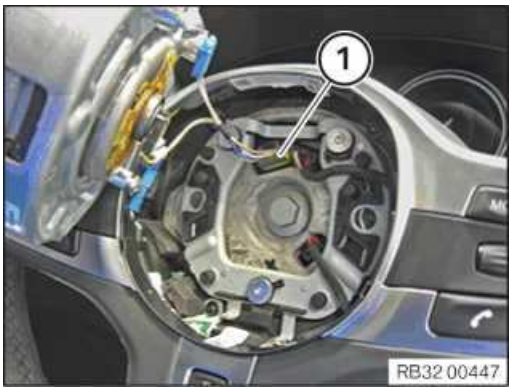
To provide a better overview: Diagram with airbag unit removed.

- 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.



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

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

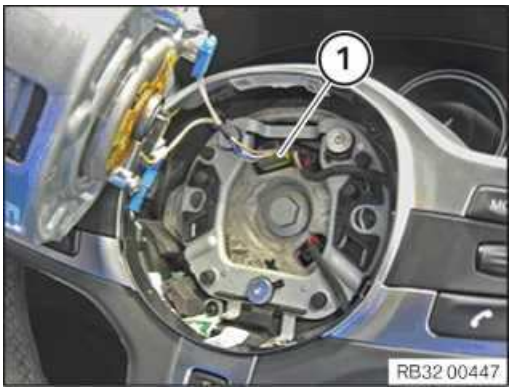
MAIN WORK

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3 – Installing airbag unit of the M sports 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 connectors (1) and 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.

4 – Disconnecting all battery earth leads



- See additional information.

Additional Information

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Overview of Tightening Torques

Overview of Special Tools

Links

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

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 4
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 4
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
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61 20 900 Disconnecting and connecting battery earth lead	1 4
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61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 35 ... Notes on ESD protection (Electro Static Discharge)	

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61 31 080 Removing and installing/replacing hazard warning switch

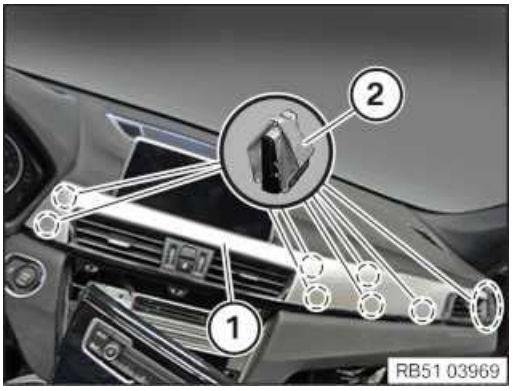
PRELIMINARY WORK

1 – Removing trim of the audio operating unit



- Unclip the trim (1) using special tool **2 298 505**.

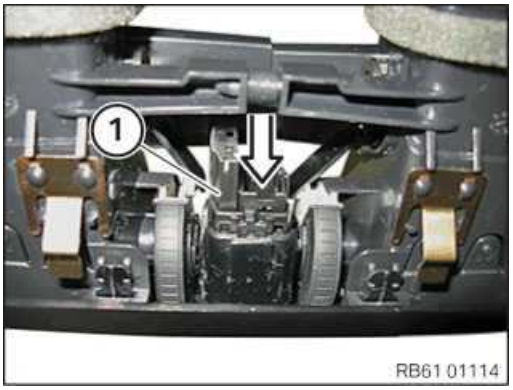
2 – Remove the finisher on the right instrument panel



- Carefully release the decorative strip (1) with the special tool **0 496 569 (00 9 325)** from the clamps (2) starting from the side.
- Lift up the decorative strip (1) and disconnect the plug connections behind it.
- Remove the decorative strip (1).

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3 – Remove the hazard warning switch



- Disconnect the connector (1) .
- Press the hazard warning switch (1) carefully out of the trim centre in the direction of arrow.

4 – Install the hazard warning switch



- Check clamps (arrows) on the hazard warning switch (1) for damage; renew if necessary.

  The clamps (arrows) must not be missing or damaged.



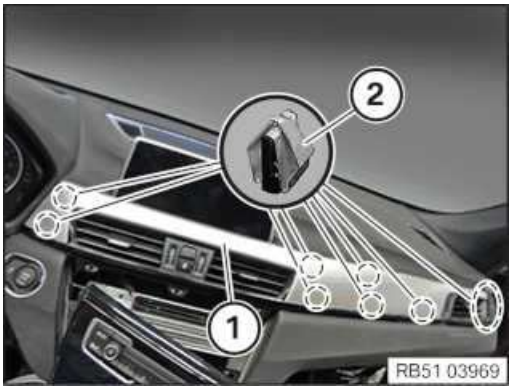
- Connect connector.
- Press the hazard warning switch (1) carefully in the direction of arrow into the trim centre.

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5 – Install the finisher on the right instrument panel

TECHNICAL INFORMATION

Latch mechanisms, guides and mounting elements must not be damaged or missing.



- Install the decorative strip (1).
- Connect connector.
- Engage the decorative strip (1) on the clamps (2).

6 – Installing the audio operating unit trim



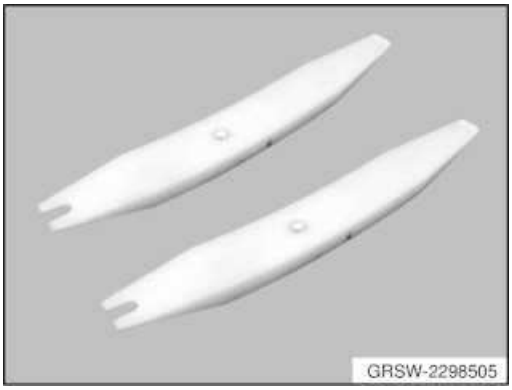
- Correctly position trim (1) and clip it into the instrument panel (2).

Additional Information

Overview of Special Tools

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2 298 505 Wedge



Common	Used in step 1
Usage	Set (delivery of 2 pieces)
Included in the tool or work	
Storage location	C34
Replaced by	
In connection with	
SI-Number	01 03 12 (792)

0 496 569 (00 9 325) Wedge



Common	Used in step 2
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 31 037 Removing and installing/replacing light control unit

1 – Removing the light operating unit



- Unclip the light operating unit (1) in the marked area.
- Unlock and disconnect associated connector.

2 – Installing the light operating unit



- Connect associated connector.
- Position light operating unit (1) correctly and clip in where marked.

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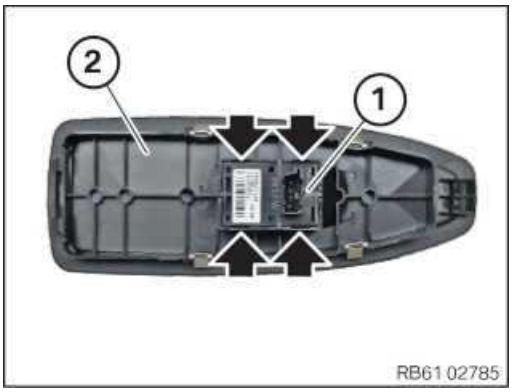
61 31 118 Removing and installing/replacing power window switch on passenger's side

1 – Removing right power window switch



- Lever out the power window switch (1) with the special tool **0 496 569 (00 9 325)** from the armrest.
- Disconnect the associated plug connection and remove the power window switch (1).

2 – Renewing right power window switch



- Release all latch mechanisms (arrows) on the switch trim (2).
- Guide the power window switch (1) out of the switch trim (2).
- Renew power window switch (1).

  Parts: Power window switch
- Position the new power window switch (1) correctly and engage it in the switch trim (2).

3 – Installing right power window switch



- Connect the associated connector with the power window switch (1).
- Fit the power window switch (1) in the armrest (2).

Additional Information

Overview of Special Tools

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0 496 569 (00 9 325) Wedge



Common

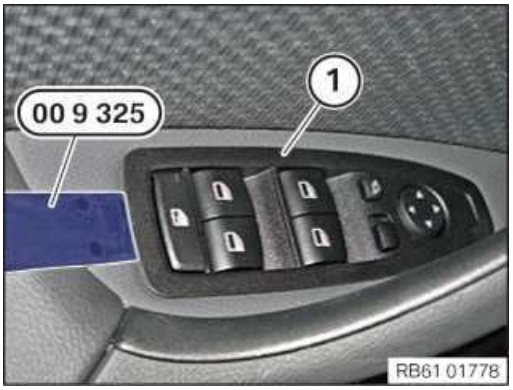
Used in step 1

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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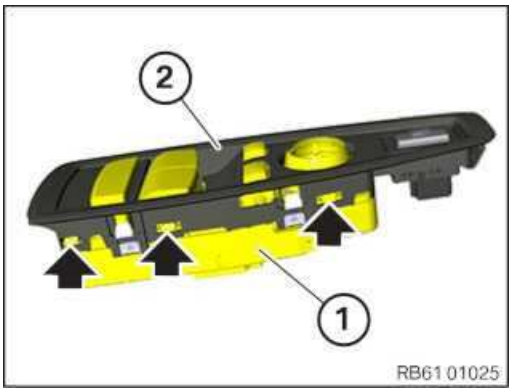
61 31 117 Removing and installing/replacing power window switch, driver's side

1 – Removing the left power window switch



- Lever out the power window switch (1) with the special tool **0 496 569 (00 9 325)** from the armrest.
- Disconnect the associated plug connection and remove the power window switch (1).

2 – Renewing left power window switch



- Release all latch mechanisms (arrows) on the switch trim (2) on both sides.
- Guide the power window switch (1) out of the switch trim (2).
- Renew power window switch (1).

  Parts: Power window switch
- Position the new power window switch (1) correctly and engage it in the switch trim (2).

3 – Installing left power window switch



- Connect the associated connector with the power window switch (1).
- Install the power window switch (1) in direction of arrow into the armrest.

Additional Information

Overview of Special Tools

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0 496 569 (00 9 325) Wedge



Common

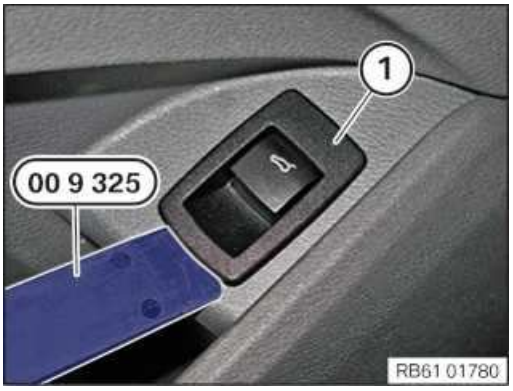
Used in step 1

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 31 083 Removing and installing/replacing switch for unlocking tailgate

1 – Removing the tailgate release switch



- Lift out the switch for the tailgate release (1) with the special tool **0 496 569 (00 9 325)**.
- Disconnect associated connector.

2 – Installing the tailgate release switch



- Connect associated connector.
- Fit the switch for the tailgate release (1) in the door trim panel.

Additional Information

Overview of Special Tools

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 31 068 Removing and installing/replacing the switch for front passenger airbag deactivation

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.

PRELIMINARY WORK

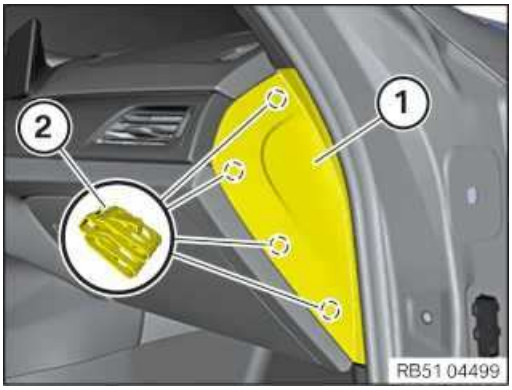
1 – Disconnecting all battery earth leads



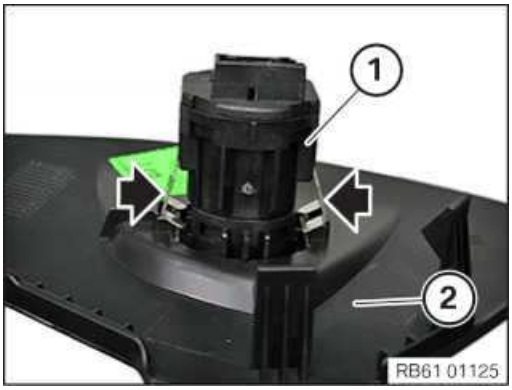
- See additional information.

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2 – Removing the switch for front passenger airbag deactivation

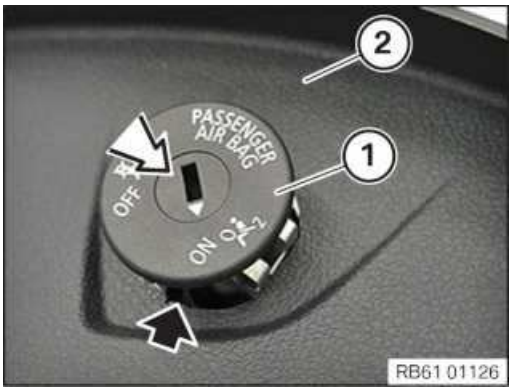


- Unclip and remove the side panel (1) towards the outside from the clamps (2).
- Unlock and disconnect associated connector.

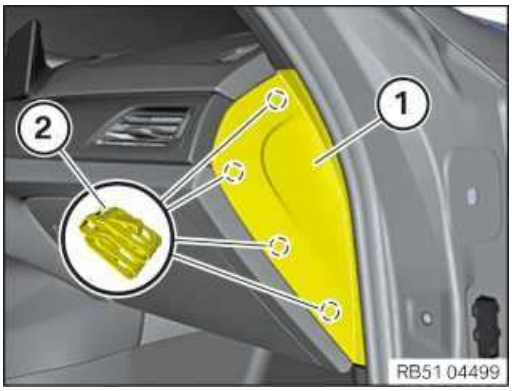


- Unlock both latch mechanisms on the switch for the front passenger airbag deactivation (1).
- Thread out the switch for front passenger airbag deactivation (1) from the side panel (2).

3 – Installing the switch for front passenger airbag deactivation



- Fit switch for front passenger airbag deactivation (1) into the side panel (2).
- Switch for front passenger airbag deactivation (1) must correctly engage in the side panel (2).



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

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POSTPROCESSES

4 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
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61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 4
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
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61 20 900 Disconnecting and connecting battery earth lead	1 4
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 4
61 20 900 Disconnecting and connecting battery earth lead	1 4
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61 20 900 Disconnecting and connecting battery earth lead	1 4

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61 20 900 Disconnecting and connecting battery earth lead 1 4
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61 31 084 Removing and installing/replacing the switch for the automatic operation of tailgate

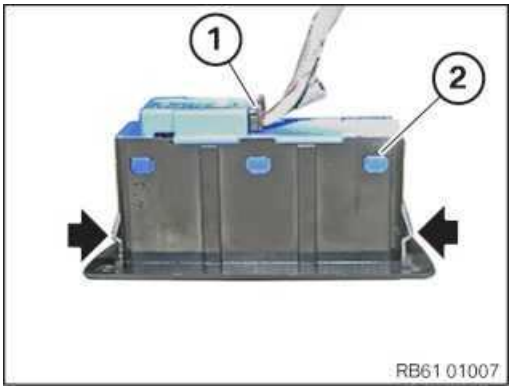
1 – Remove the tailgate lift switch

Prerequisite

Tailgate is open.



- Lever the switch for the tailgate lift (1) out of the tailgate trim panel (2) with the special tool **0 496 571 (00 9 327)**.

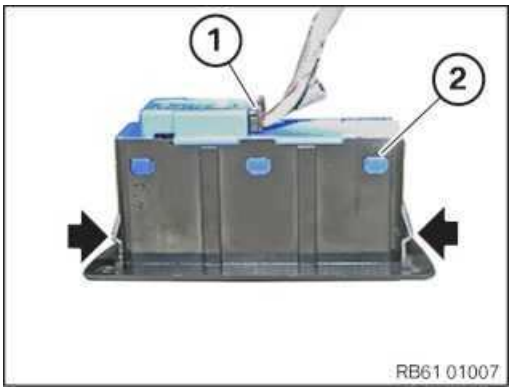


- Connect the connector (1) with the switch (2).

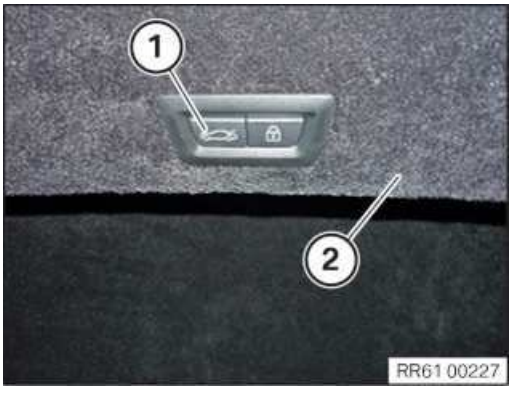
2 – Install the tailgate lift switch

Prerequisite

Tailgate is open.



- Connect the connector (1) with the switch (2).



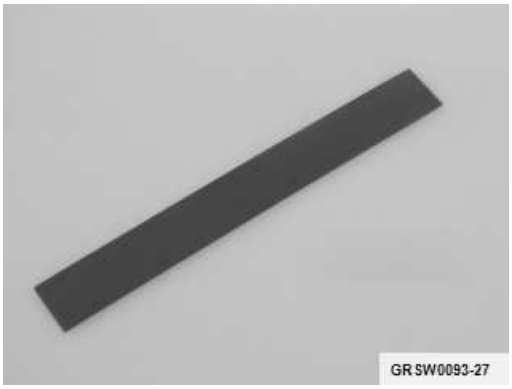
- Install the automatic tailgate operation switch (1) in the tailgate trim panel (2).

Additional Information

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Overview of Special Tools

0 496 571 (00 9 327) Wedge

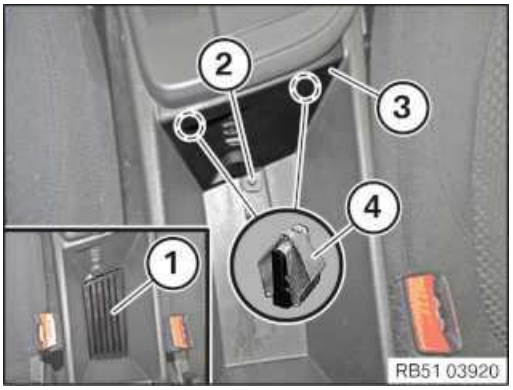


Common	Used in step 1
Usage	(Cleaning wedge) From 11/2008 this special tool replaces panel wedge 00 9 323 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

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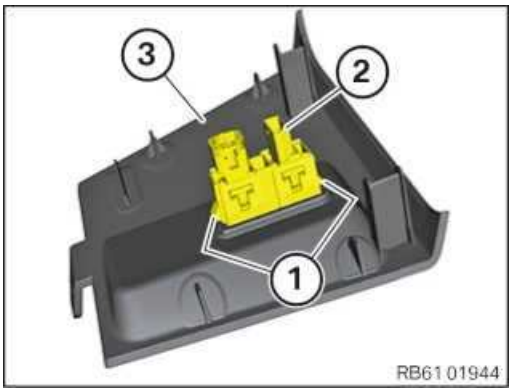
61 31 134 Removing and installing/replacing USB audio interface connecting socket

1 – Remove the connecting socket for the USB audio interface



- Lever out the insert (1) with the special tool **0 496 571 (00 9 327)** and remove.
- Loosen screw (2).
- Lever out the trim (3) with the special tool (4) toward the rear from the clamps.
- Disconnect the connector and remove the trim (3).

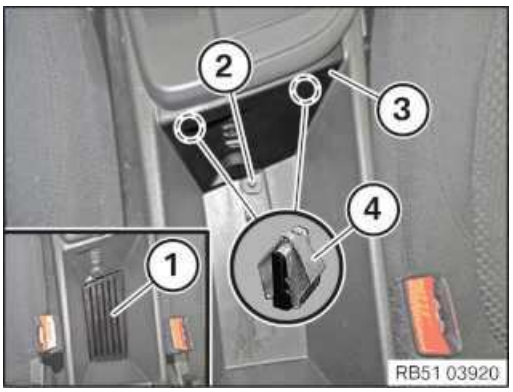
2 – Renewing connecting socket for the USB audio interface



- Unlock both latch mechanisms (1) on the connecting socket (2).
- Remove trim (3) from the connecting socket (2).
- Renew connecting socket (2).

  Parts: Connecting socket
- Position the connecting socket (2) correctly and engage in the trim (3).

3 – Install connecting socket for the USB audio interface



- Position the trim with the connecting socket (3) and connect the connectors.
- Engage the trim (3) in the clamps (4).
- Tighten down screw (2).

Centre console

Oval-head screw			1,8 Nm

- Insert the insert (1).

Additional Information

Overview of Tightening Torques

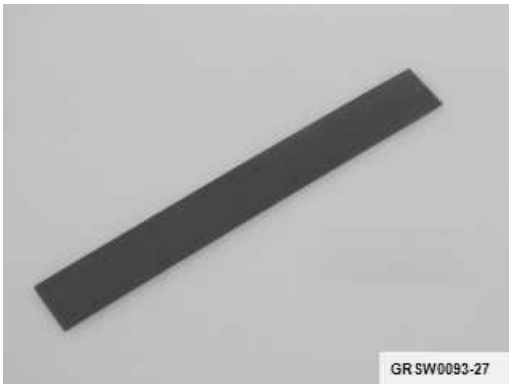
Centre console Used in step 3

Oval-head screw			1,8 Nm

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)

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61 31 673 Replace switch for electromechanical parking brake

PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

2 – Remove gearshift lever cover



- Use wedges (1) to unclip the gaiter and pull it off upward.



- Remove the gearshift lever knob and the gaiter by means of a powerful jolt vertically upwards.

  In doing so, the tie rod must not be bent or damaged.
- Ensure that the gearshift lever knob is not twisted when removing, otherwise the anti-twist lock in the gearshift lever knob will be sheared off.

3 – Remove the decorative trim from the centre console

RISK OF DAMAGE

Scratches.

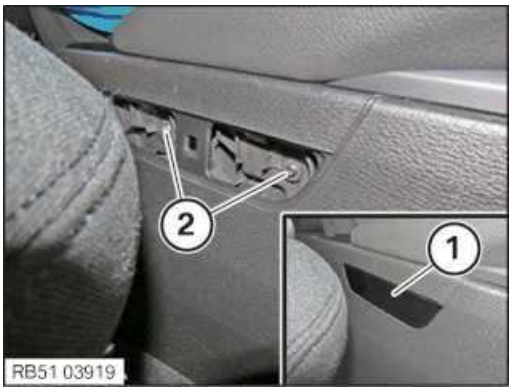
Tools and sharp-edged components can cause scratches.

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

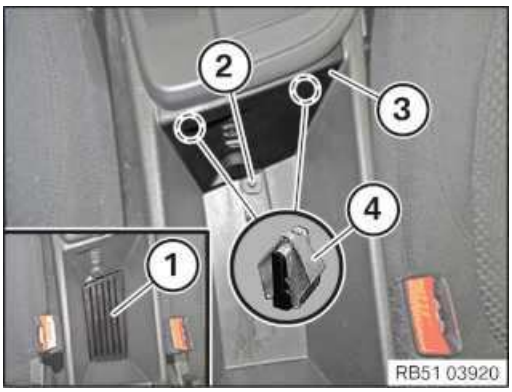
cardiagn.com



- Lever out and remove cover (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screws (2).



- Lever out and remove cover (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screws (2).

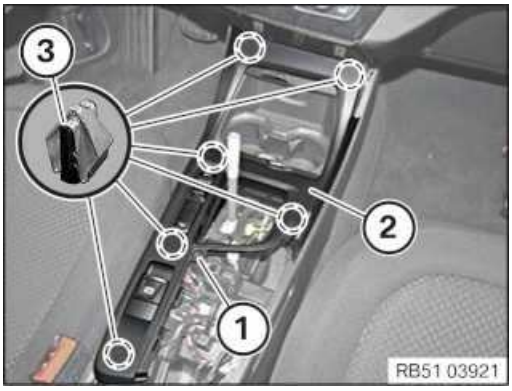


- Remove insert (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screw (2).
- Lever out trim (3) from clamps (4) towards the rear with the special tool **0 496 571 (00 9 327)**.
- Unfasten plug connection.
- Remove the trim (3).



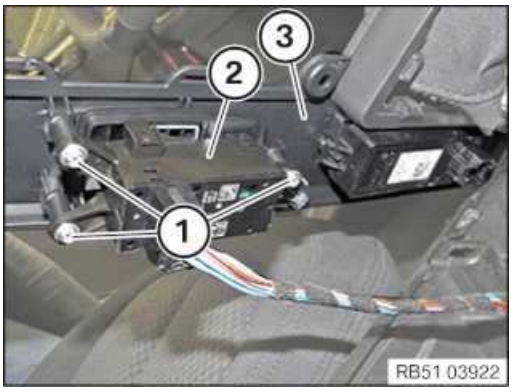
- Loosen screw (1).
- Remove decorative trim (2) and disconnect all the plug connections.
- Remove decorative trim (2).

4 – Remove the centre console trim



- Loosen screw (1).
- Release centre console trim (2) from clamps (3) with the special tool **0 496 569 (00 9 325)**.
- Lift centre console trim (2).

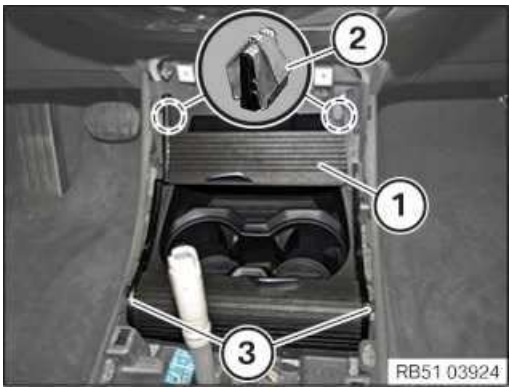
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- Loosen screws (1).
- Remove parking brake button (2) from centre console trim (3) and place it down.

  The plug connection must not be disconnected.
- Disconnect the remaining plug connections and remove centre console trim (3).

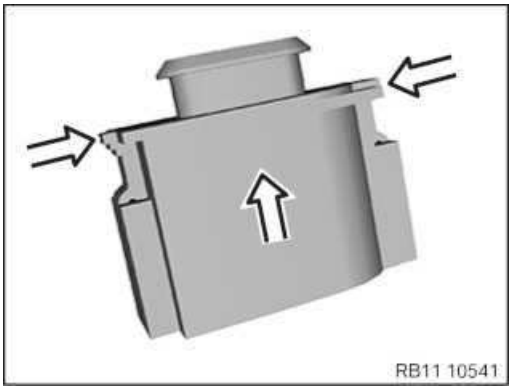
5 – Removing the front storage compartment



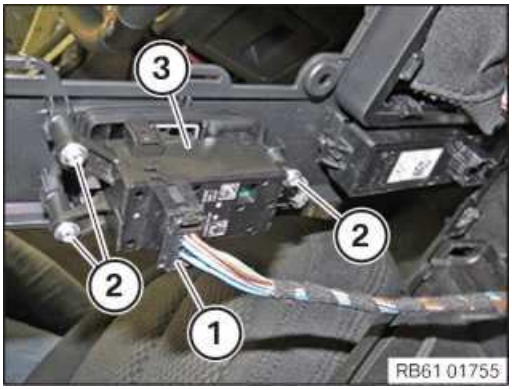
- Lever storage compartment (1) at top from the clamps (2).
- Fold storage compartment (1) so far back that it can be lifted from the guides (3).
- Disconnect plug connections and remove the storage compartment (1).

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6 – Removing parking brake button

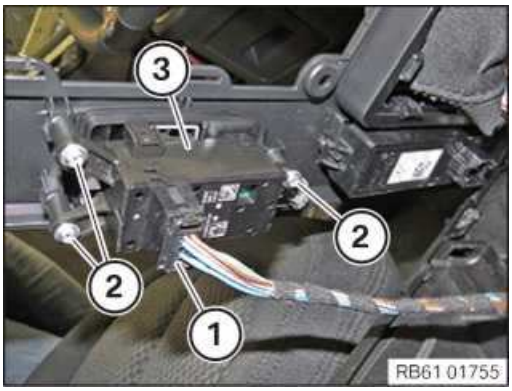


- Press the left and right locks.
- Unlock and disconnect connector .



- Disconnect the connector (1) to the top.
- Loosen screws (2).
- Remove parking brake button (3).

7 – Installing parking brake button



- Position parking brake button (3) correctly.
- Tighten down screws (2).

Parking brake button to centre console trim

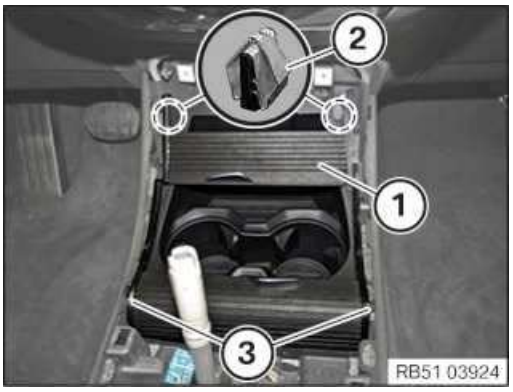
Screw		Tightening torque	1,5 Nm

- Connect connector (1).

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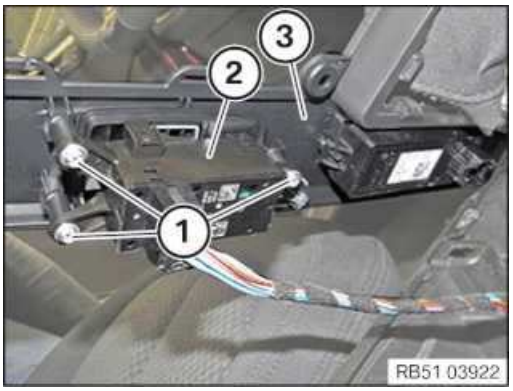
POSTPROCESSES

8 – Installing the front storage compartment



- Install storage compartment (1) and connect the connectors.
- Insert the storage compartment (1) into the guides (3) and fold forward.
- Engage storage compartment (1) in the clamps (2) at top.

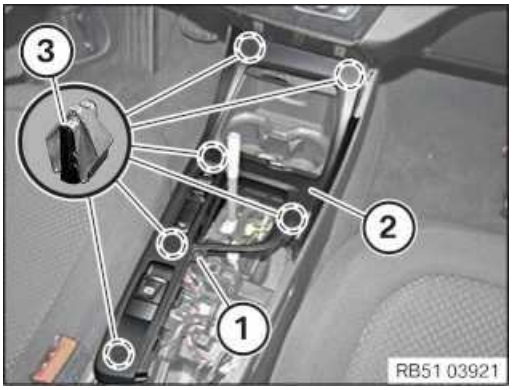
9 – Install the centre console trim



- Install centre console trim (3) and connect and lock the corresponding connectors.
- Install parking brake button (2) on centre console trim (3).
- Tighten the screws (1).

Parking brake button

Oval-head screw		Tightening torque	1,5 Nm



- Install centre console trim (2) and engage it into clamps (3).
- Tighten down screw (1).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

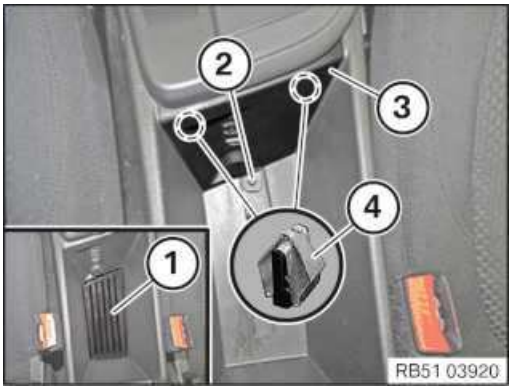
10 – Installing the decorative trim to the centre console



- Connect all connectors.
- Install decorative trim (2).
- Tighten down screw (1).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm



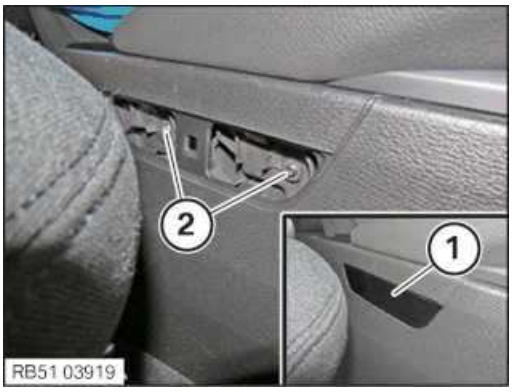
- Position trim (3) and connect all the connectors.
- Install trim (3) and engage it into clamps (4).
- Tighten down screw (2).

Trim to centre console

Oval-head screw		Tightening torque	1,8 Nm

- Insert the insert (1).

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- Tighten down screws (2).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

- Install cover (1) and engage.



- Tighten down screws (2).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

- Install cover (1) and engage.

11 – Installing the gearshift lever cover



- Place the gearshift lever knob on gearshift lever and align by lightly pressing in the direction of travel.

  The anti-twist lock must bite.
- Press the gearshift lever knob with the palm of the hand until it can be felt to engage.

  When installing, the tie rod of the gearshift lever must not be bent.



- Clip in gaiter (arrows).

12 – Disconnecting all battery earth leads



- See additional information.

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Additional Information

Overview of Tightening Torques

Parking brake button to centre console trim

Used in step 7

Screw		Tightening torque	1,5 Nm

Parking brake button

Used in step 9

Oval-head screw		Tightening torque	1,5 Nm

Screw connection for centre console

Used in step 9 10

Oval-head screw		Tightening torque	1,8 Nm

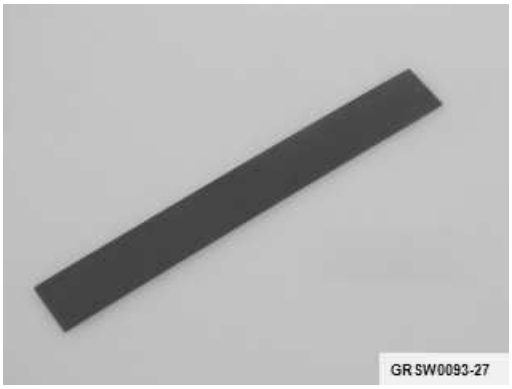
Trim to centre console

Used in step 10

Oval-head screw		Tightening torque	1,8 Nm

Overview of Special Tools

0 496 571 (00 9 327) Wedge



Common — Used in step 3

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

0 496 569 (00 9 325) Wedge



Common — Used in step 4

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)

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12
61 20 900 Disconnecting and connecting battery earth lead	1 12

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61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	12
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	12
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12
61 20 900 Disconnecting and connecting battery earth lead	1	12

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61 31 752 Replace the audio operating unit (after vehicle diagnosis)

RISK OF DAMAGE

Electrostatic discharge.

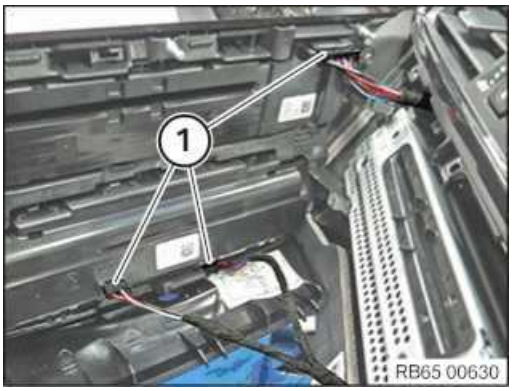
Damage to or destruction of electrical components.

- 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.

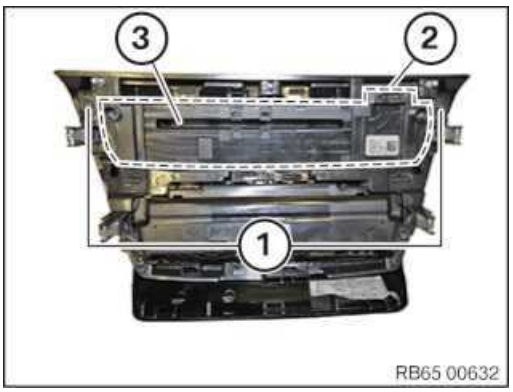
1 – Removing (renewing) the audio operating unit and the air conditioning control panel



- Unclip the trim (1) using special tool **2 298 505**.



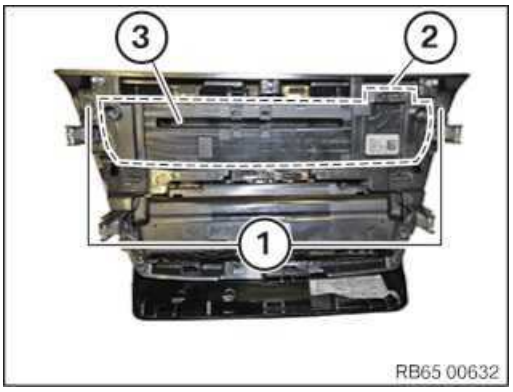
- Unlock plug connection (1) and disconnect.



- Loosen screws (1).
- Unlock the latch mechanisms (2).
- Remove the audio operating unit and the air conditioning control panel (3).

2 – Installing (renewing) audio operating unit and the air conditioning control panel

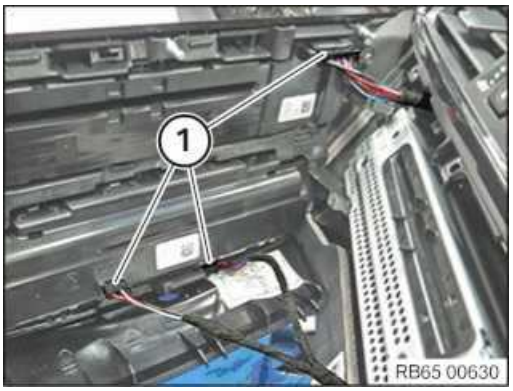
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- Correctly position the audio operating unit (3) and engage it in the latch mechanisms (2).
- Tighten the screws (1).

Audio operating unit on instrument panel

Screw		Tightening torque	2,5 Nm



- Position audio operating unit and air conditioning control panel.
- Connect plug connection (1) and lock.



- Correctly position trim (1) and clip it into the instrument panel (2).

Additional Information

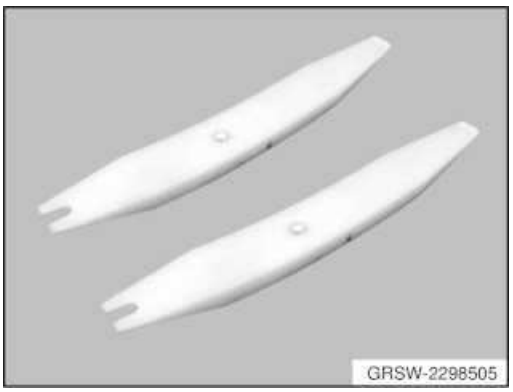
Overview of Tightening Torques

Audio operating unit on instrument panel Used in step 2

Screw		Tightening torque	2,5 Nm

Overview of Special Tools

2 298 505 Wedge



Common Used in step 1

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

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

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61 31 696 Replace the front controller (after vehicle diagnosis) (flat rate specification without programming/encoding, see 61 00 ...)

PRELIMINARY WORK

1 – Remove the decorative trim from the centre console

RISK OF DAMAGE

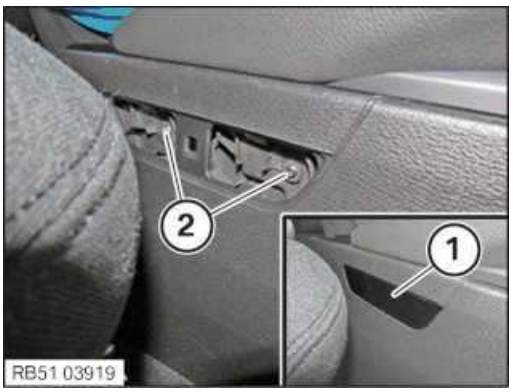
Scratches.

Tools and sharp-edged components can cause scratches.

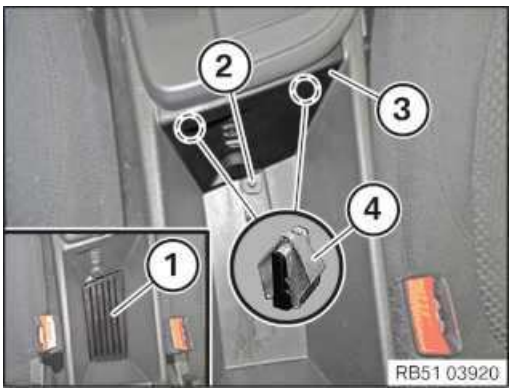
- Protect working area.
- Handle tools and components carefully.



- Lever out and remove cover (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screws (2).



- Lever out and remove cover (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screws (2).



- Remove insert (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screw (2).
- Lever out trim (3) from clamps (4) towards the rear with the special tool **0 496 571 (00 9 327)**.
- Unfasten plug connection.
- Remove the trim (3).

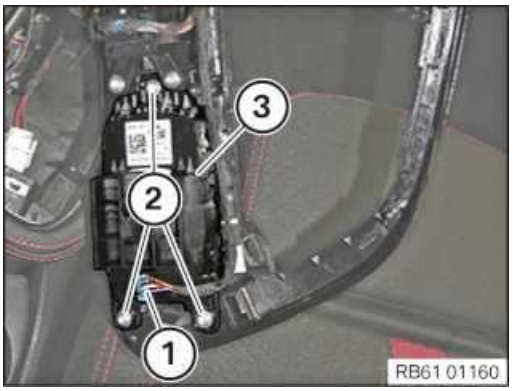
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- Loosen screw (1).
- Remove decorative trim (2) and disconnect all the plug connections.
- Remove decorative trim (2).

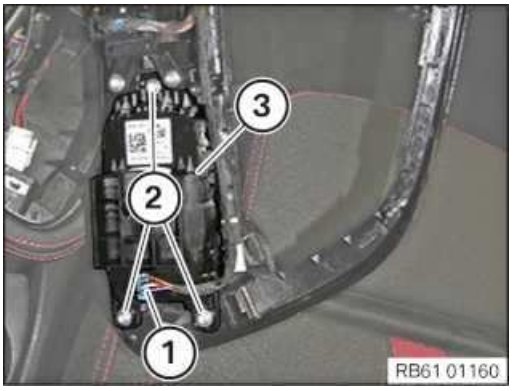
MAIN WORK

2 – Remove controller



- Unlock and disconnect connector (1).
- Release the screws (2) and remove the controller (3).

3 – Install controller



- Position the controller (3) and tighten the screws (2).

Controller to cover

Screw			2,5 Nm

- Connect connector (1).

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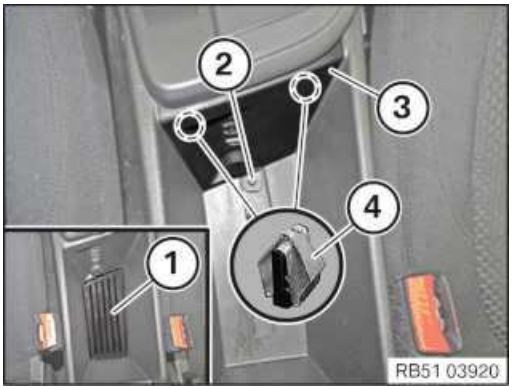
4 – Installing the decorative trim to the centre console



- Connect all connectors.
- Install decorative trim (2).
- Tighten down screw (1).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

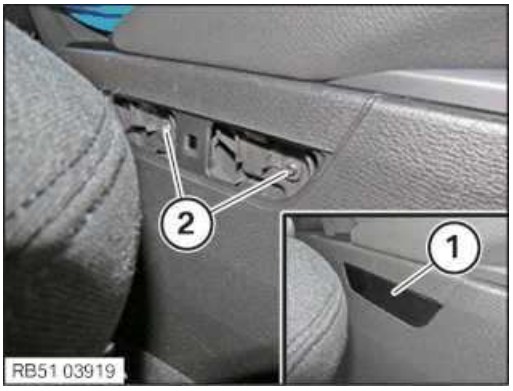


- Position trim (3) and connect all the connectors.
- Install trim (3) and engage it into clamps (4).
- Tighten down screw (2).

Trim to centre console

Oval-head screw		Tightening torque	1,8 Nm

- Insert the insert (1).



- Tighten down screws (2).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

- Install cover (1) and engage.



- Tighten down screws (2).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

- Install cover (1) and engage.

Additional Information

Overview of Tightening Torques

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Controller to cover Used in step 3

Screw			2,5 Nm

Screw connection for centre console Used in step 4

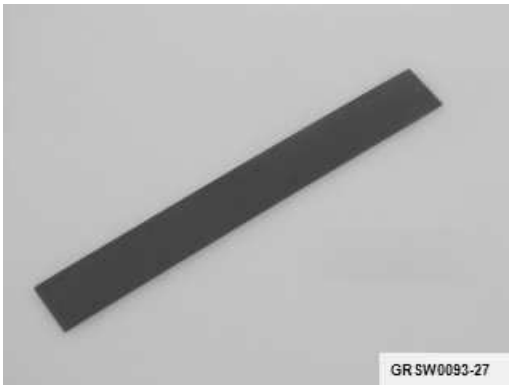
Oval-head screw		Tightening torque	1,8 Nm

Trim to centre console Used in step 4

Oval-head screw		Tightening torque	1,8 Nm

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 31 704 Replace the operating facility in the centre console (after vehicle diagnosis)

PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

2 – Remove gearshift lever cover



- Use wedges (1) to unclip the gaiter and pull it off upward.



- Remove the gearshift lever knob and the gaiter by means of a powerful jolt vertically upwards.

  In doing so, the tie rod must not be bent or damaged.
- Ensure that the gearshift lever knob is not twisted when removing, otherwise the anti-twist lock in the gearshift lever knob will be sheared off.

3 – Remove the decorative trim from the centre console

RISK OF DAMAGE

Scratches.

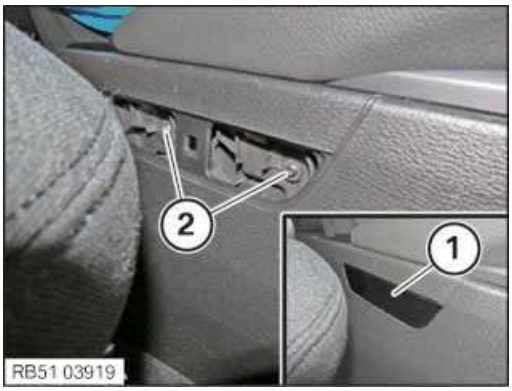
Tools and sharp-edged components can cause scratches.

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

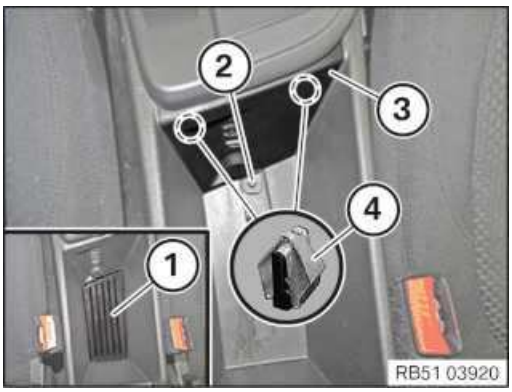
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- Lever out and remove cover (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screws (2).



- Lever out and remove cover (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screws (2).

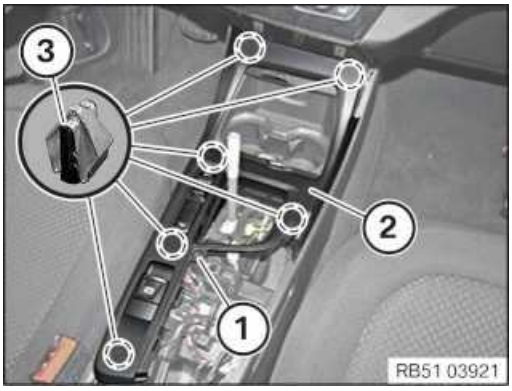


- Remove insert (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screw (2).
- Lever out trim (3) from clamps (4) towards the rear with the special tool **0 496 571 (00 9 327)**.
- Unfasten plug connection.
- Remove the trim (3).



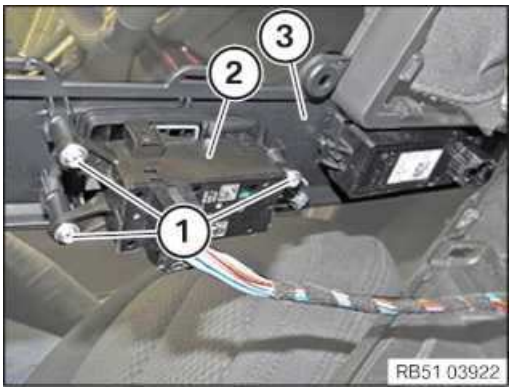
- Loosen screw (1).
- Remove decorative trim (2) and disconnect all the plug connections.
- Remove decorative trim (2).

4 – Remove the centre console trim



- Loosen screw (1).
- Release centre console trim (2) from clamps (3) with the special tool **0 496 569 (00 9 325)**.
- Lift centre console trim (2).

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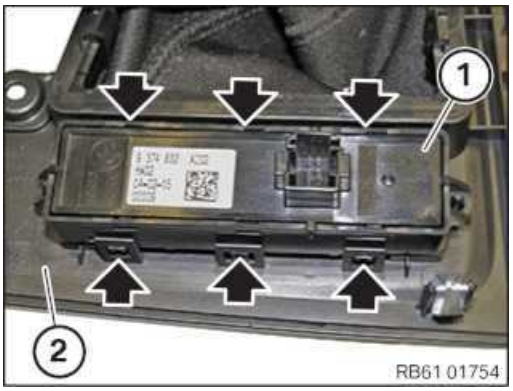


- Loosen screws (1).
- Remove parking brake button (2) from centre console trim (3) and place it down.

  The plug connection must not be disconnected.
- Disconnect the remaining plug connections and remove centre console trim (3).

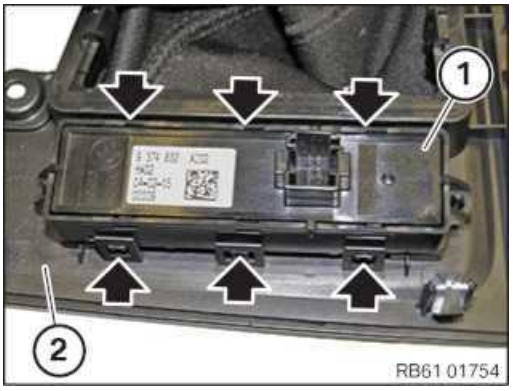
MAIN WORK

5 – Remove the operating facility in the centre console



- Release operating facility in the centre console (1) from the latch mechanisms (arrows) with the special tool **0 493 681 (64 1 020)**.
- Remove the operating facility in the centre console (1) from the centre console trim (2).

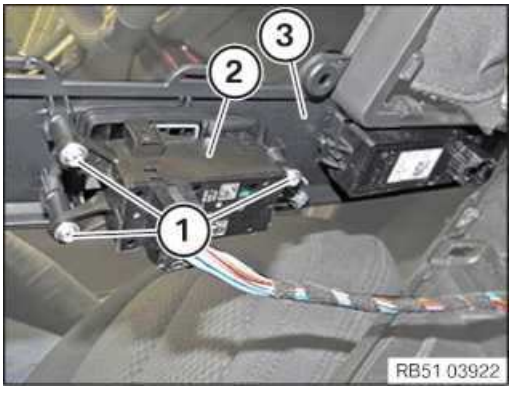
6 – Install the operating facility in the centre console



- Position operating facility in the centre console (1) correctly and engage it in the centre console trim (2).

POSTPROCESSES

7 – Install the centre console trim

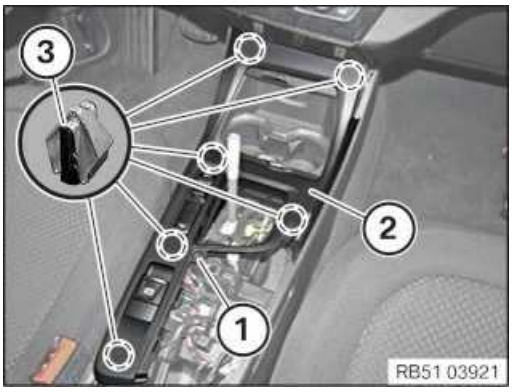


- Install centre console trim (3) and connect and lock the corresponding connectors.
- Install parking brake button (2) on centre console trim (3).
- Tighten the screws (1).

Parking brake button

Oval-head screw		Tightening torque	1,5 Nm

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- Install centre console trim (2) and engage it into clamps (3).
- Tighten down screw (1).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

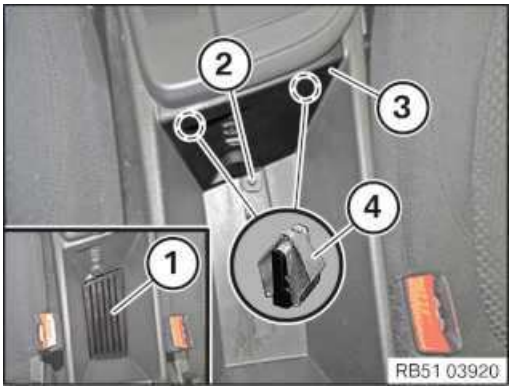
8 – Installing the decorative trim to the centre console



- Connect all connectors.
- Install decorative trim (2).
- Tighten down screw (1).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

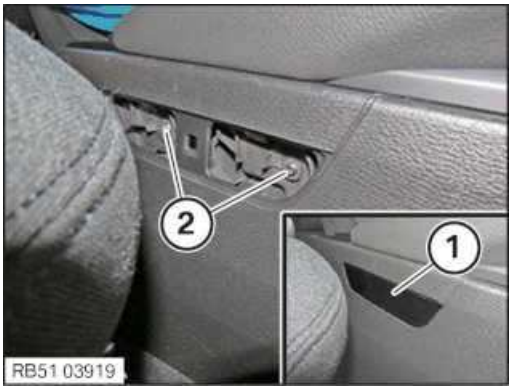


- Position trim (3) and connect all the connectors.
- Install trim (3) and engage it into clamps (4).
- Tighten down screw (2).

Trim to centre console

Oval-head screw		Tightening torque	1,8 Nm

- Insert the insert (1).



- Tighten down screws (2).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

- Install cover (1) and engage.



- Tighten down screws (2).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

- Install cover (1) and engage.

9 – Installing the gearshift lever cover

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- Place the gearshift lever knob on gearshift lever and align by lightly pressing in the direction of travel.

  The anti-twist lock must bite.
- Press the gearshift lever knob with the palm of the hand until it can be felt to engage.

  When installing, the tie rod of the gearshift lever must not be bent.



- Clip in gaiter (arrows).

10 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Overview of Tightening Torques

Parking brake button Used in step 7

Oval-head screw		Tightening torque	1,5 Nm

Screw connection for centre console Used in step 7 8

Oval-head screw		Tightening torque	1,8 Nm

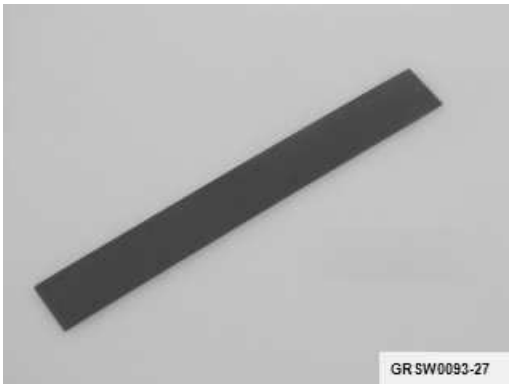
Trim to centre console Used in step 8

Oval-head screw		Tightening torque	1,8 Nm

Overview of Special Tools

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0 496 571 (00 9 327) Wedge



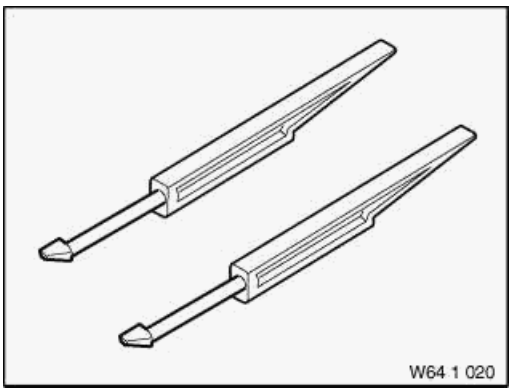
Common	Used in step 3
Usage	(Cleaning wedge) From 11/2008 this special tool replaces panel wedge 00 9 323 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

0 496 569 (00 9 325) Wedge



Common	Used in step 4
Usage	(Panel wedge) From 11/2008 this special tool replaces panel wedge 00 9 317 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	41 01 09 (507)

0 493 681 (64 1 020) Hook



Common	Used in step 5
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	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10

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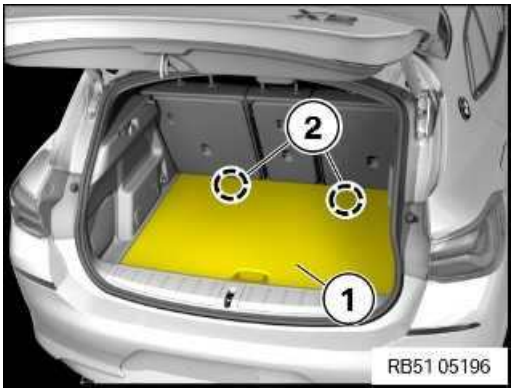
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	10
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	10
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
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61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
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61 20 900 Disconnecting and connecting battery earth lead	1	10
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61 20 900 Disconnecting and connecting battery earth lead	1	10

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61 31 863 Replace the radio remote control receiver (after vehicle diagnosis)

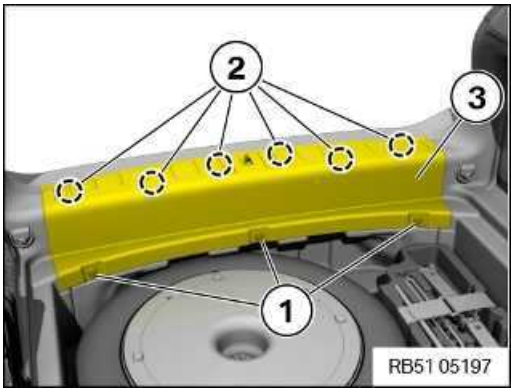
PRELIMINARY WORK

1 – Removing the luggage compartment removable panel



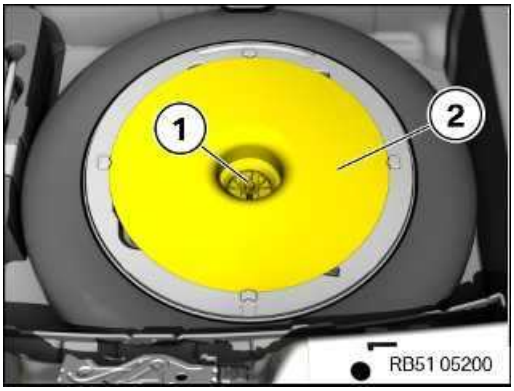
- Raise the luggage compartment removable panel (1) slightly at the handle, detach it from the latch mechanisms (2) and remove it toward the back.

2 – Removing the loading edge trim

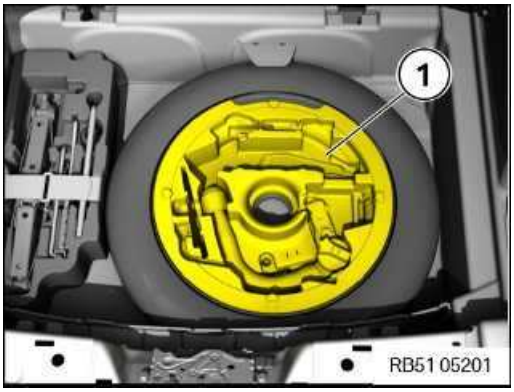


- Loosen the expanding rivet (1).
- Unclip the loading edge trim (3) from the clamps (2) toward the top and remove.

3 – Removing the compact spare wheel



- Loosen screw (1).
- Remove the cover (2).



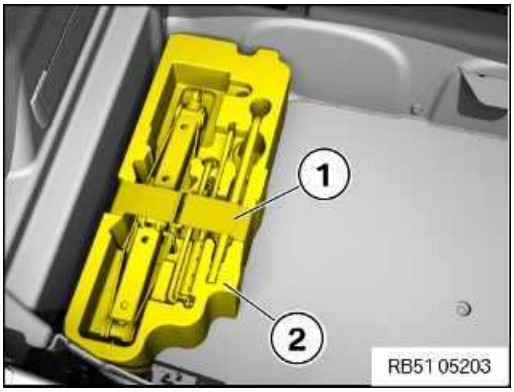
- Remove the oddments tray from the emergency wheel (1).

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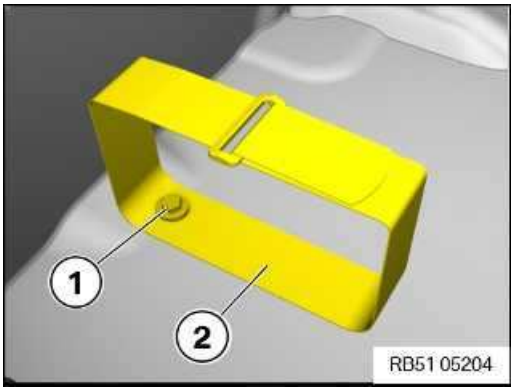
- Remove the emergency wheel (1).

4 – Remove the tool kit



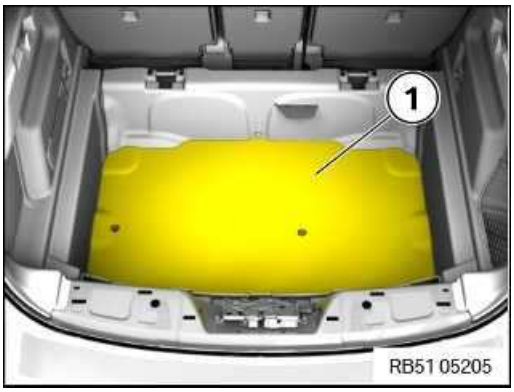
- Open the hook and loop tape (1).
- Remove the tool kit (2).

5 – Remove the hook and loop tape for the tool kit



- Loosen screw (1).
- Remove the hook and loop tape (2).

6 – Removing the luggage compartment floor trim panel



- Remove the luggage compartment floor trim panel (1) upwards.

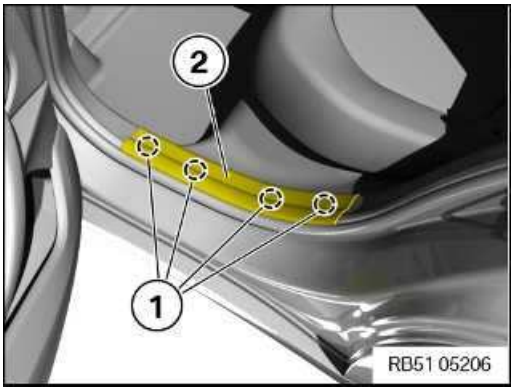
7 – Remove the rear right door sill cover strip

NOTICE

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

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▸ **Remove rear entrance cover strip**



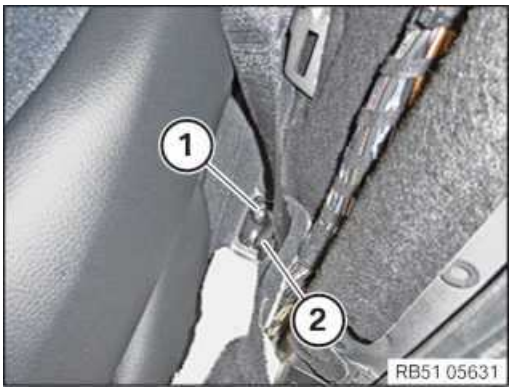
- Unclip the clips (1) of the door sill cover strip (2).
- Remove the door sill cover strip (2).

8 – Removing bottom right C-pillar trim panel

NOTICE

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

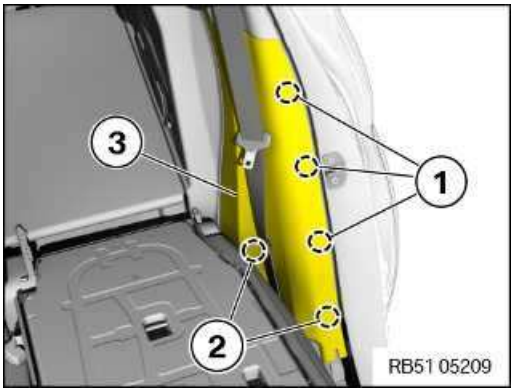
▸ **Remove the bottom C-pillar trim panel**



- Fold up the carpet as shown.
- Loosen screw (1).
- Remove end fitting (2).



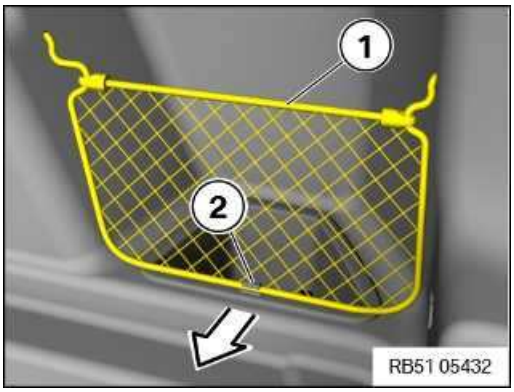
- Release the edge protection (1) in area of the bottom C-pillar trim panel.



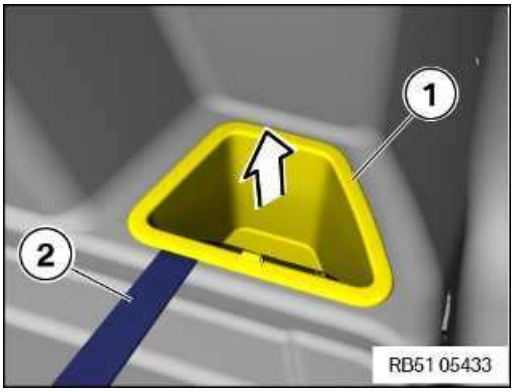
- Clip in the C-pillar trim panel (3) on the bottom with the clamps (1) and the clips (2).
- Detach end fitting and remove the bottom C-pillar trim panel (3).

9 – Removing right luggage compartment wheel arch trim panel

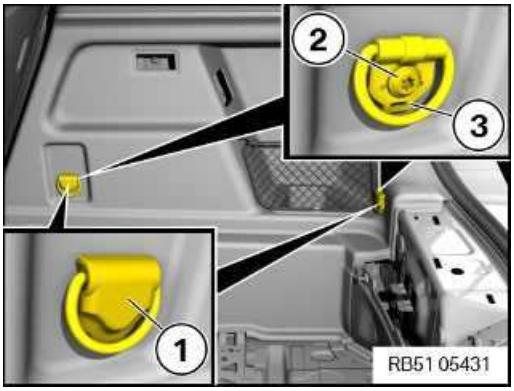
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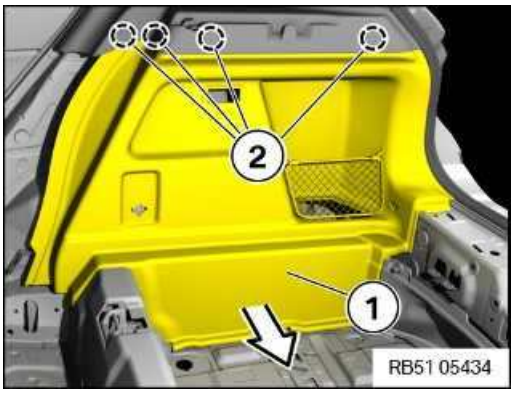
- Release the storage net (1) from the latch mechanism (2) in the direction of arrow and fold up.



- Remove storage compartment (1) out of the luggage compartment wheel arch trim panel in the direction of arrow using a suitable tool (2).



- Unclip covers (1).
- Unscrew the bolts (2) and remove the lashing points (3).



NOTICE

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

- Pull the luggage compartment wheel arch trim panel (1) on the bottom in the direction of the arrow and guide it out of the guides (2) and the C-pillar trim panel and remove.

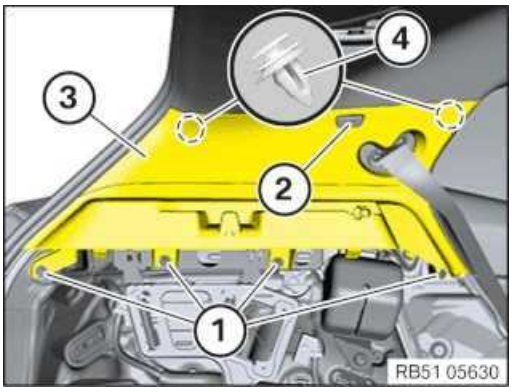
10 – Remove the trim panel of the right luggage compartment capping

NOTICE

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

▸ **Remove the trim panel of the luggage compartment capping**

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- Loosen screws (1).
- Remove the cover (2) with a suitable plastic wedge and unscrew the screw below it.
- Detach the trim panel of the luggage compartment capping (3) from the clips (4).
- Feed out the end fitting and remove the trim panel of the luggage compartment capping (3).

MAIN WORK

11 – Remove receiver for radio remote control



- Disconnect the connector (1) .
- Loosen expanding rivet (2).
- Remove receiver for radio remote control (3).

12 – Install the receiver for the radio remote control



- Position the receiver for the radio remote control (3) correctly.
- Fasten expanding rivet (2).
- Connect connector (1).

POSTPROCESSES

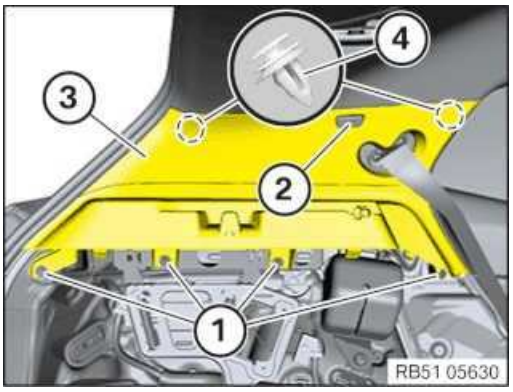
13 – Install the trim panel for the right luggage compartment capping

NOTICE

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

▸ **Install the trim panel for the luggage compartment capping**

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- Install trim panel of the luggage compartment capping (3) and thread in the end fitting.
- Clip in the trim panel of the luggage compartment capping (3) at the clips (4).
- Tighten screw and mount cover (2).

Trim panel of luggage compartment capping

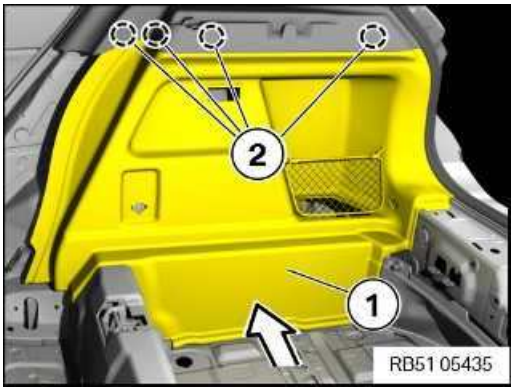
Self-tapping screw		Tightening torque	4 Nm

- Tighten the screws (1).

Trim panel of luggage compartment capping to body

Hexagon screw		Tightening torque	1,8 Nm

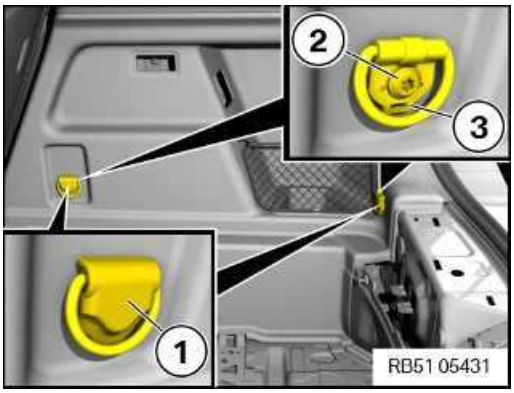
14 – Installing the luggage compartment wheel arch trim panel on the right



NOTICE

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

- Press luggage compartment wheel arch trim panel (1) down in direction of arrow and feed into the guides (2) and under the bottom C-pillar trim panel.

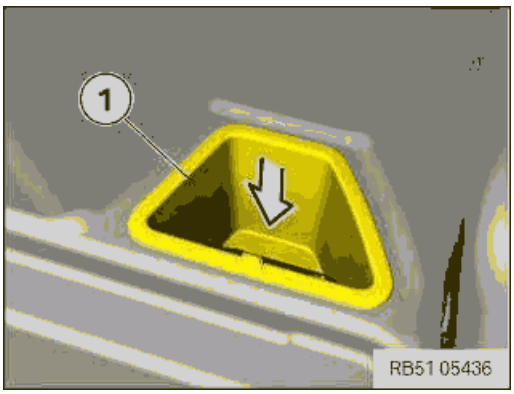


- Position the lashing eyes (3) and tighten the screws (2).

Lashing eye in luggage compartment

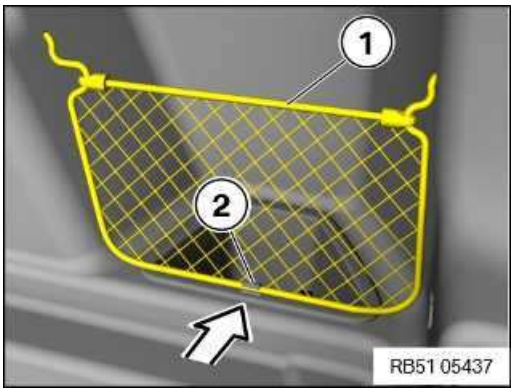
Bolt M8 x 22		Tightening torque	21 Nm

- Clip in the covers (1).



- Install the storage compartment (1) in the luggage compartment wheel arch trim panel in direction of arrow.

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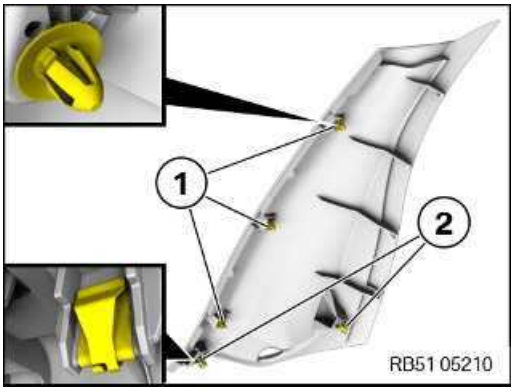
- Clip storage net (1) into latch mechanisms (2) in direction of arrow.

15 – Install the C-pillar trim panel at the bottom right

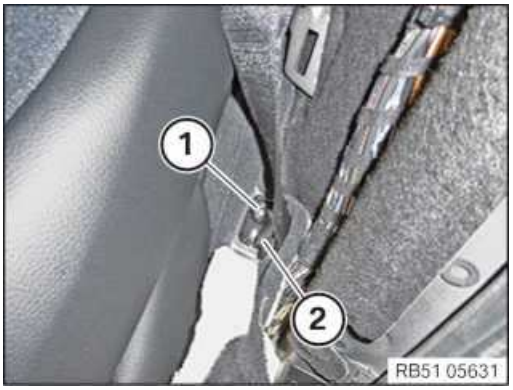
NOTICE

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

▶ **Install the bottom C-pillar trim panel**



- Check clips (1) for damage, and replace if necessary.
- Check the clamps (2) for damage, and replace if necessary.

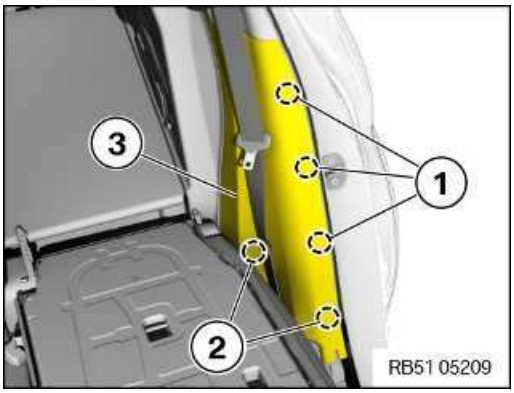


- Insert the end fitting (2) through the C-pillar trim panel.
- Mount the end fitting (2) and tighten the screw (1).

End fitting to body

Screw	Renew screw.	Tightening torque	42 Nm

- Install the carpet correctly.



- Clip in the C-pillar trim panel on the bottom (3) with the clamps (2) and the clips (1).

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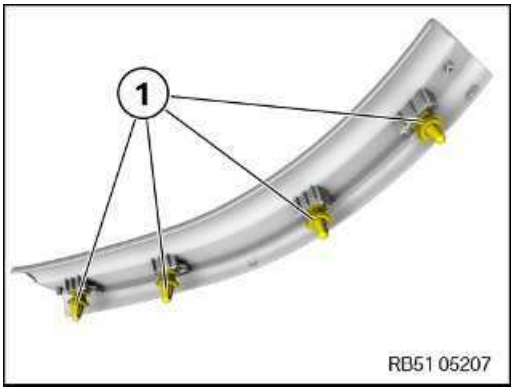
- Position the edge protection (1) correctly in the area of the bottom C-pillar trim.

16 – Installing rear right door sill cover strip

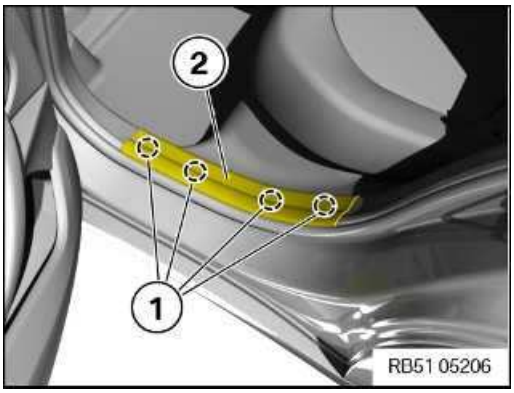
NOTICE

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

▶ **Installing the rear door sill cover strip**

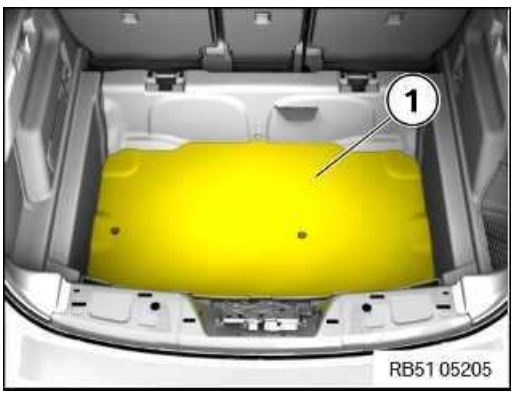


- Check the clips (1) for damage and renew where required.



- Clip in the door sill cover strip (2) with the clips (1).

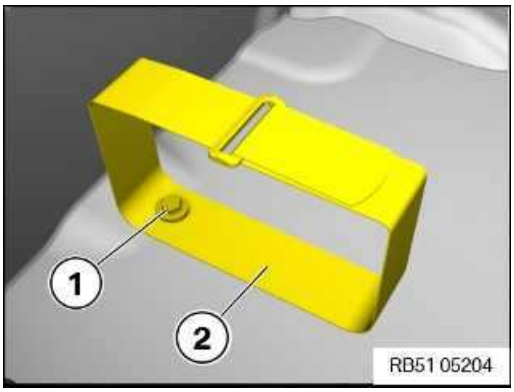
17 – Installing the luggage compartment floor trim panel



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

18 – Inserting the Velcro fastener for the toolkit

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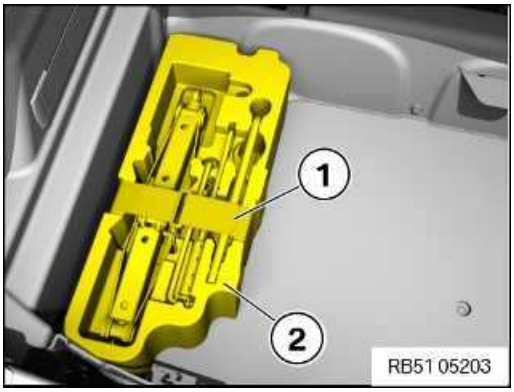


- Insert Velcro fastener (2).
- Tighten down screw (1).

Toolkit hook and loop tape to body

Bolt M6 x 20		Tightening torque	4 Nm

19 – Install the tool kit

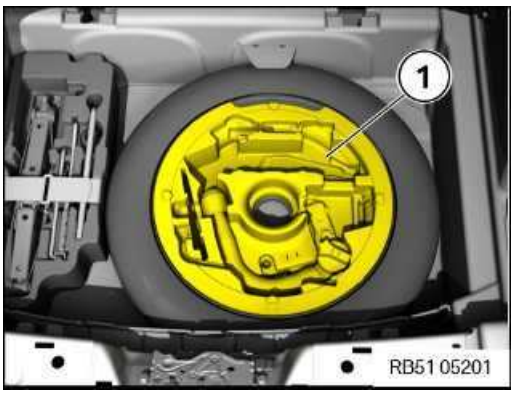


- Install the tool kit (2).
- Close the hook and loop tape (1).

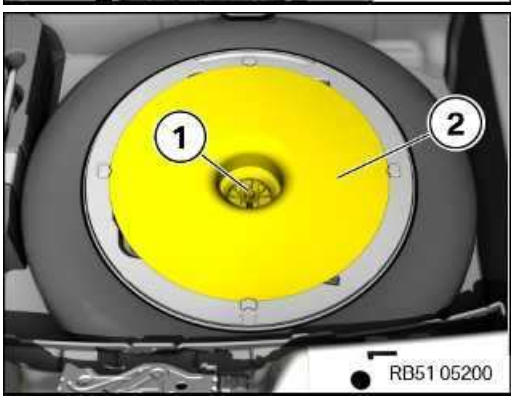
20 – Install the emergency wheel



- Insert compact spare wheel(1).



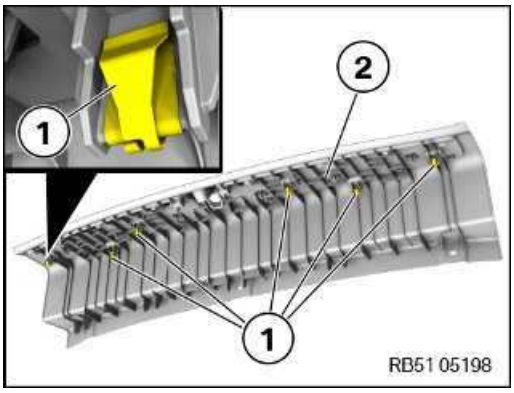
- Insert oddments tray into the compact spare wheel (1).



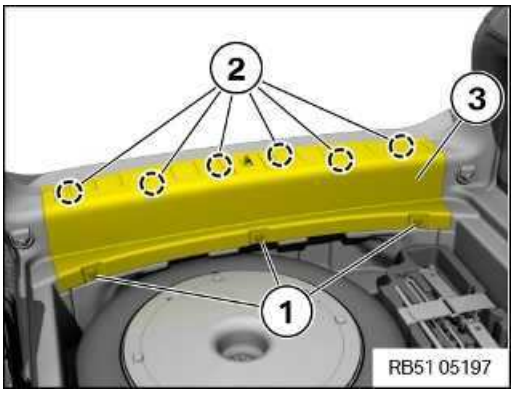
- Insert the lid (2).
- Hand-tighten the bolt (1).

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21 – Installing loading edge trim

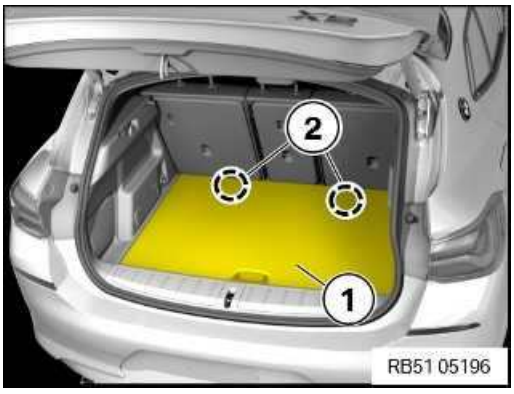


- Check the clamps (1) at the loading edge trim (2) for damage and renew if necessary.



- Insert the loading edge trim (3) in the area of the expanding rivets (1) into the underlying rear luggage compartment trim panel.
- Guide in the loading edge trim (3) under the sealing lip of the seal for the tailgate and clip it in with the clamps (2).
- Secure expanding rivet (1).

22 – Installing the luggage compartment removable panel



- Clip luggage compartment removable panel (1) into latch mechanisms (2) and set down.

Additional Information

Overview of Tightening Torques

Trim panel of luggage compartment capping — Used in step 13

Self-tapping screw		Tightening torque	4 Nm

Trim panel of luggage compartment capping to body — Used in step 13

Hexagon screw		Tightening torque	1,8 Nm

Lashing eye in luggage compartment — Used in step 14

Bolt M8 x 22		Tightening torque	21 Nm

End fitting to body — Used in step 15

Screw	Renew screw.	Tightening torque	42 Nm

Toolkit hook and loop tape to body — Used in step 18

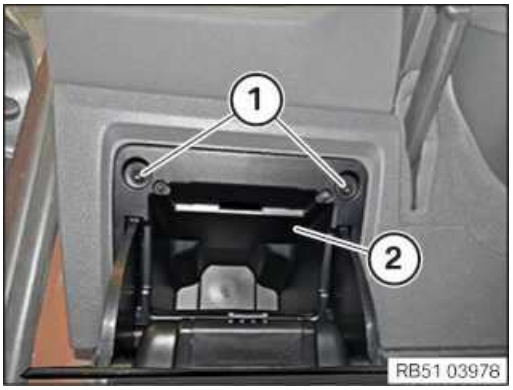
Bolt M6 x 20		Tightening torque	4 Nm

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61 31 310 Replacing brake light switch

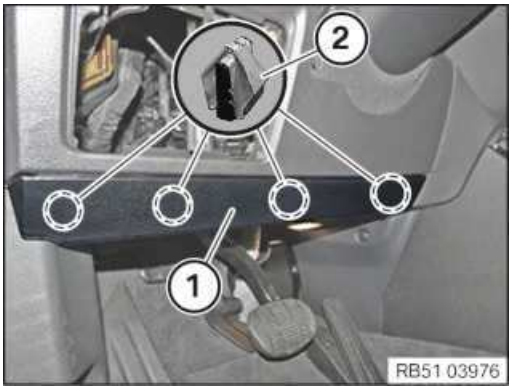
PRELIMINARY WORK

1 – Removing the left fold-down compartment

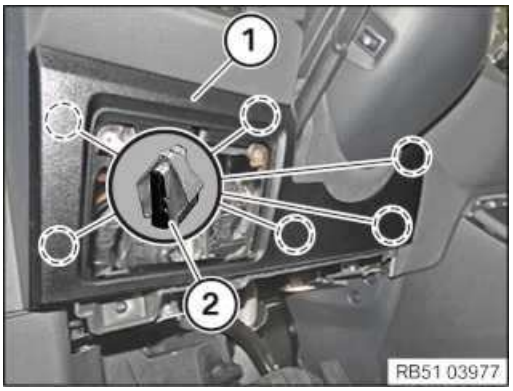


- Loosen screws (1).
- Guide out and remove the fold-down compartment (2) downward from the instrument panel.

2 – Remove the bottom left footwell trim



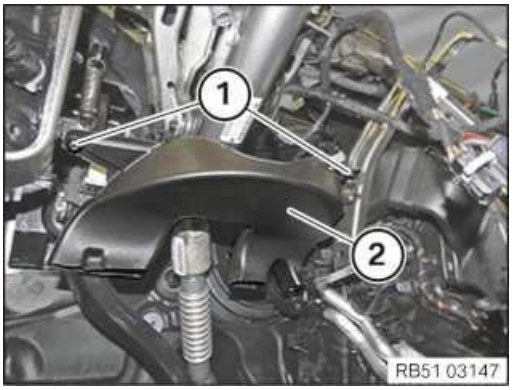
- Release the panel downwards (1) from the clamps (2) and remove it.



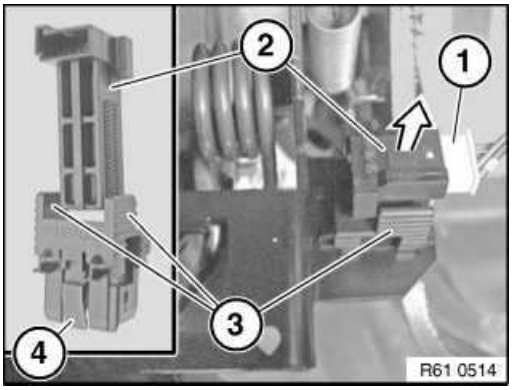
- Release the trim panel (1) from the clamps (2) and remove.

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3 – Remove the brake light switch

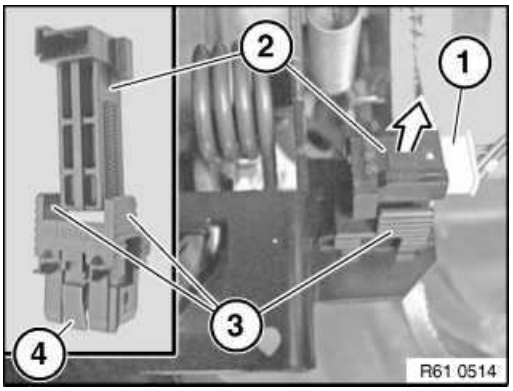


- Release the screws (1) and remove the air duct (2).

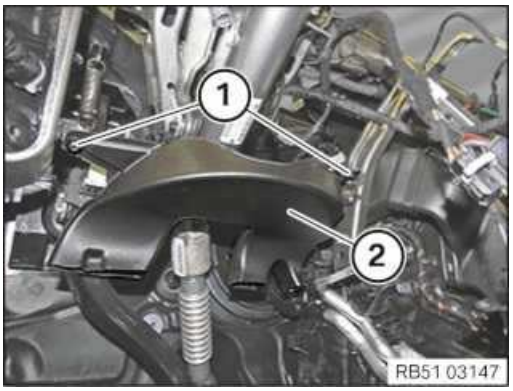


- Disconnect the connector (1) .
- Operate and hold brake pedal.
- Pull the brake light switch (2) from the holder for the brake light switch (3) in the direction of the arrow.
- Press together the latch mechanisms (4) and unclip the holder for the brake light switch (3) from the brake pedal.

4 – Install brake light switch



- Clip the holder for the brake light switch (3) 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 (3) up to the limit position.
- Counter support the holder for the brake light switch (3) 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 (1).



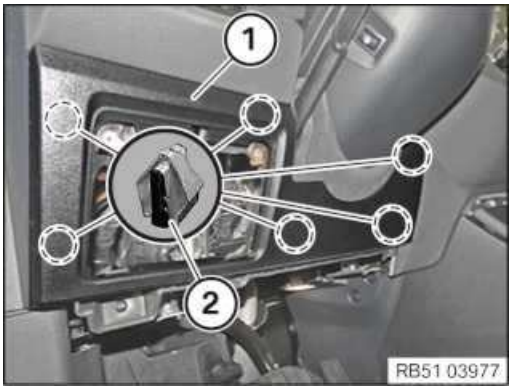
- Position the air duct (2) and tighten the screws (1).
-

Footwell ventilation duct

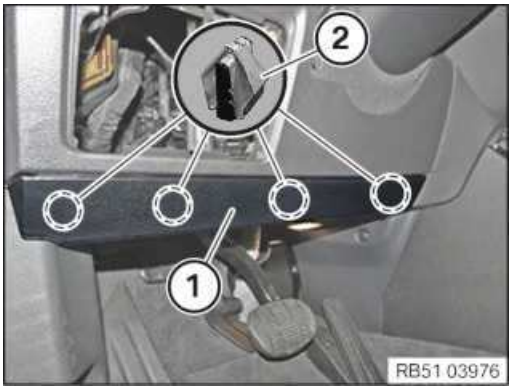
Screw			2,4 Nm

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5 – Install the footwell trim on the bottom left



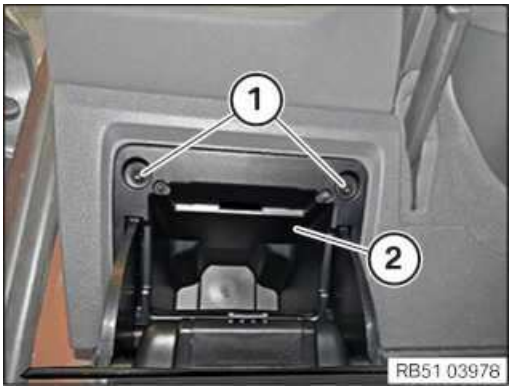
- Install the trim panel (1) and lock it at the clamps (2).



- Install the trim (1) and lock it at the clamps (2).

6 – Installing the left fold-down compartment

- Guide in the fold-down compartment (2) on the instrument panel.



- Tighten the screws (1).

Fold-down compartment to instrument panel

Screw		Tightening torque	1,8 Nm

Additional Information

Overview of Tightening Torques

Footwell ventilation duct Used in step 4

Screw			2,4 Nm

Fold-down compartment to instrument panel Used in step 6

Screw		Tightening torque	1,8 Nm

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61 31 204 Replacing operating unit for seat adjustment

RISK OF DAMAGE



Electrostatic discharge.

Damage to or destruction of electrical components.

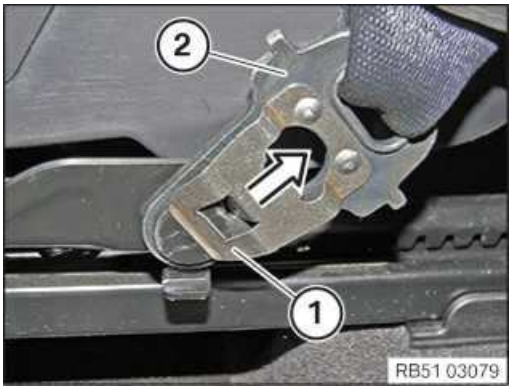
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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

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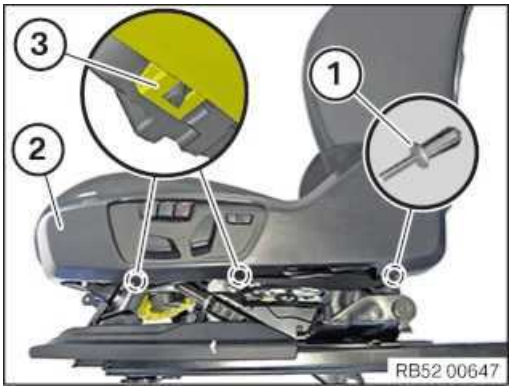
1 – Removing the outer cover on the electrical front seat



- Slide the cover (1) on the seat belt (2) in an upward direction.



- Turn the end fitting (2) to the rear.
- Carefully pull the lock plate (1) outward and feed out the end fitting (2) to the front.
- Remove the end fitting (2) outward.



- Loosen expanding rivet (1).
- Release cover (2) outward from the latch mechanisms (3).

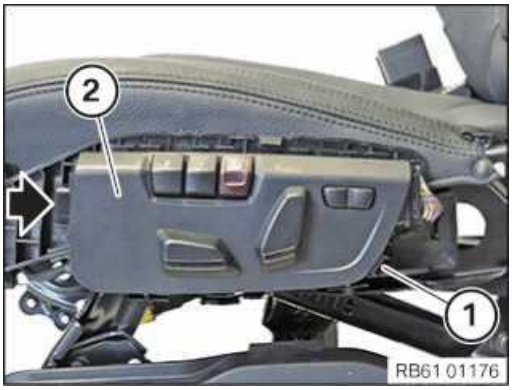


- Pull cover (1) in the lower area out slightly and disengage it upward from the latch mechanisms (2).

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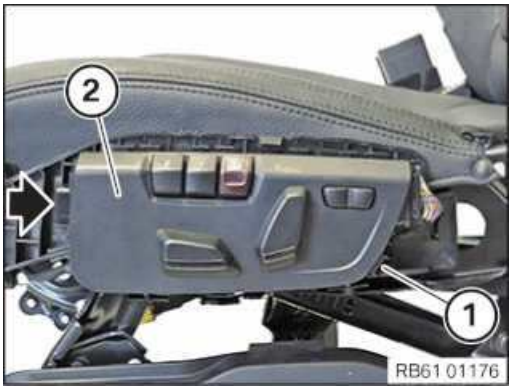
MAIN WORK

2 – Remove operating unit for seat adjustment



- Loosen the lock (1).
- Feed out the operating unit (2) from the guide pin (arrow).
- Disconnect associated connector.

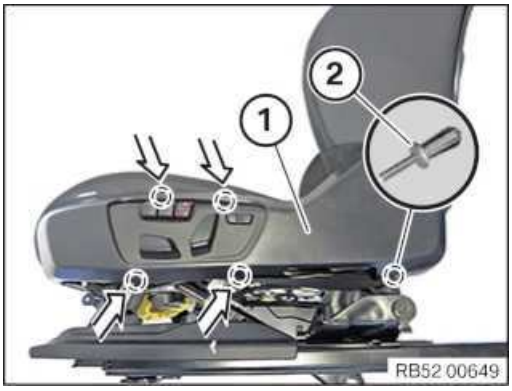
3 – Install operating unit for seat adjustment



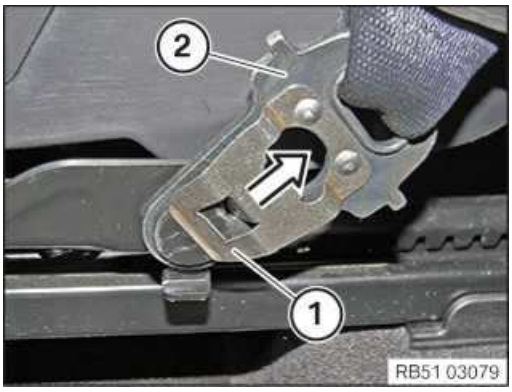
- Insert operating unit (2) into the guide (arrow) and snap into the catch mechanism (1).
- Connect associated connector.

POSTPROCESSES

4 – Installing the outer cover on the electrical front seat



- Position cover (1) on the front seat and fasten with the top and bottom latch mechanisms.
- Insert the expanding rivet (2).

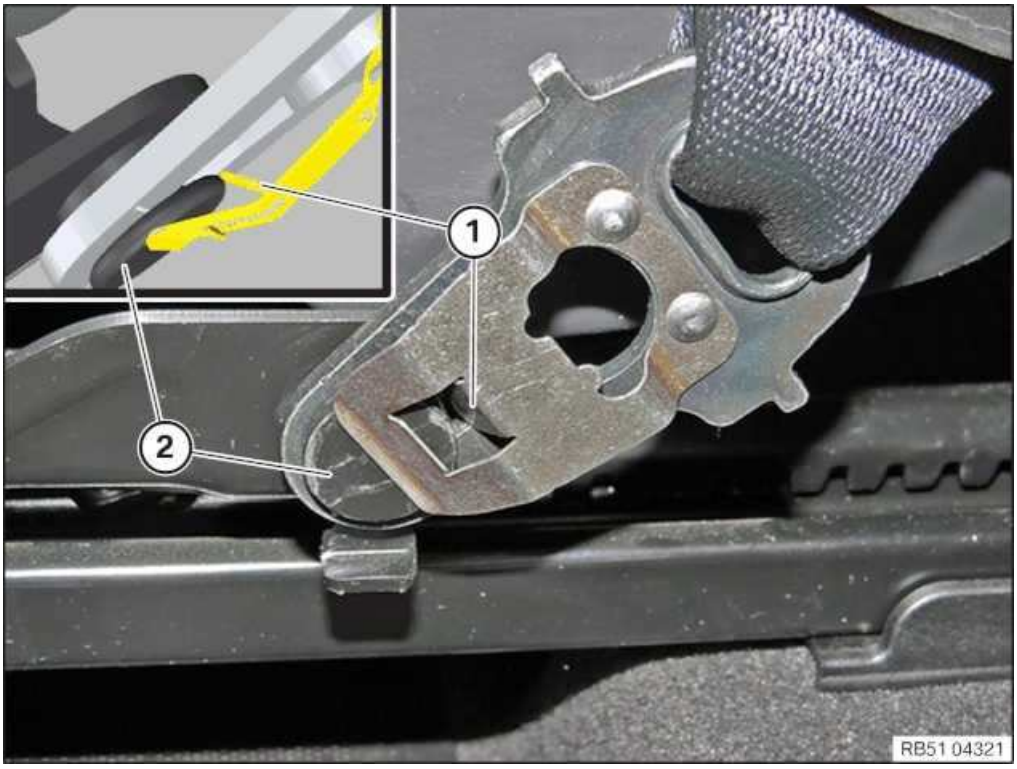


- Feed in end fitting (2) and engage.
- Pull the end fitting (2) in direction of arrow until the lock plate (1) engages audibly.

▸ **Correctly mount the front end fitting**

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End fitting



- Make sure that the retaining tab (1) correctly engages behind the bolt (2).

WARNING

Malfunction with incorrectly secured components.

Danger of injury!

- Ask a second person to check the torque or latch mechanism (four-eyes principle).
- Both persons must document that the work has been carried out correctly in the vehicle records.

- Observe the following animation:

Your browser doesn't support HTML5 video.



- Slide the cover (1) on the seat belt (2) in a downward direction.
- Perform the concluding check: Pull end fitting forward, upward and backward.

  The end fitting can be turned on the bolt if the lock plate is engaged correctly.

Additional Information

Links

Repair instructions	Used in step

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61 35 ... Notes on ESD protection (Electro Static Discharge)

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61 31 544 Replacing roof function center (after vehicle diagnosis)

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

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

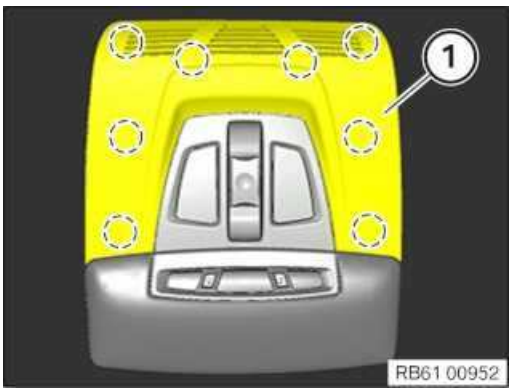
RISK OF DAMAGE

Electrostatic discharge.

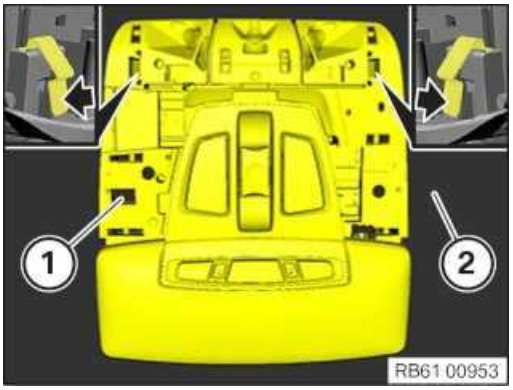
Damage to or destruction of electrical components.

- 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.

1 – Remove the roof function centre



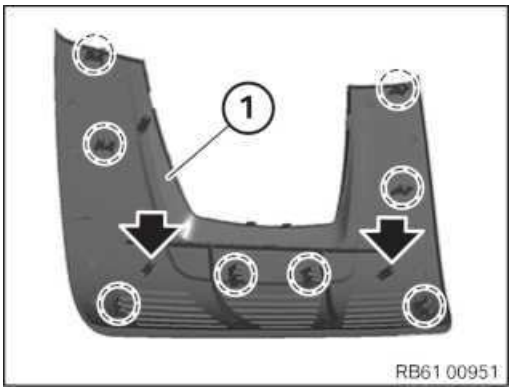
- Carefully unclip and remove the trim (1) with the special tool **0 496 569 (00 9 325)**.



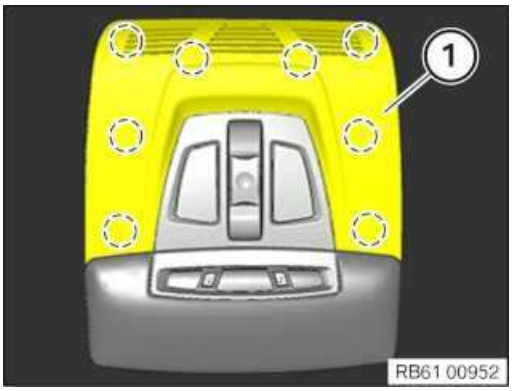
- Unlock the left/right retaining lugs using a screwdriver in direction of the arrow.
- Remove the roof function centre (1) from the headlining (2).
- Unlock and disconnect associated connector.

2 – Install the roof function centre

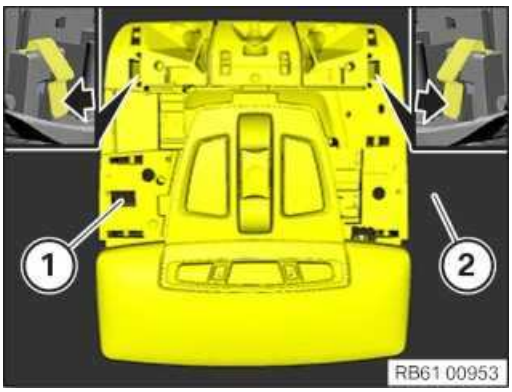
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- The retaining lugs and guides on the trim (1) must not be damaged or missing.



- Carefully engage the trim (1) in the roof function centre.



NOTICE

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

- Connect associated connector.
- Join the roof function centre (1) to the headlining (2).

3 – Initialise panorama glass roof



- Close all doors.
- Operate the START-STOP button three times within 0.8 s.
- Press and hold the switch towards "Lift".
- In the event of a delayed start or sudden stop of the glass sunroof: Continue to press and hold the switch towards "Lift".

TECHNICAL INFORMATION

If the switch is released in the meantime, the initialisation must be restarted.

- Keep pressing the switch during the entire procedure (approx. 50 s):
  - Initialisation starts approx. 15 s after the button is pressed.
  - The glass roof and the roller sunblind are each opened and closed completely.

  Initialisation is complete once the glass roof and the roller sunblind are completely closed. The button can then be released.
- Carry out function check (one-touch function, anti-trapping protection and, if necessary, comfort function).
- Clear fault memory in FZD control unit.

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Additional Information

Overview of Special Tools

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 33 060 Removing and installing/replacing both fanfare horns

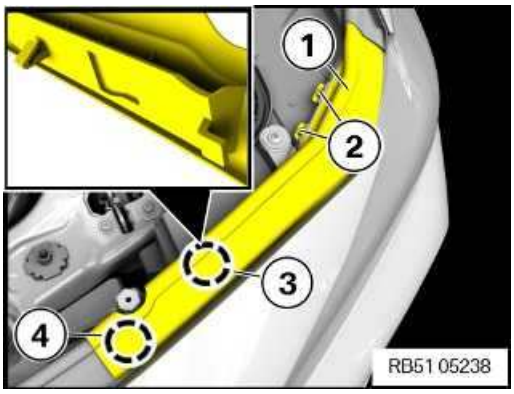
PRELIMINARY WORK

1 – Remove both bonnet seals on the side

NOTICE

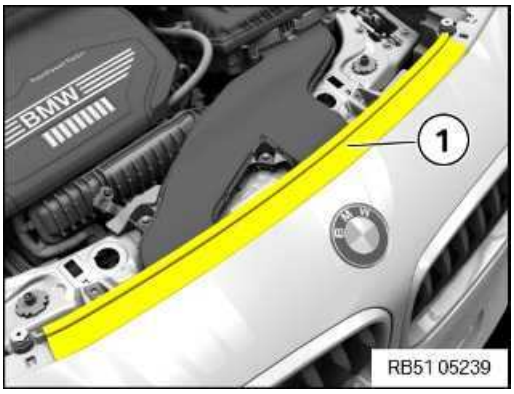
Description is for left component only. Procedure on the right side is identical.

▸ **Remove the bonnet seal on the side**



- Unclip the side bonnet seal (1) from the outer latch mechanisms (2) and the inner latch mechanism (3).
- Feed out the side bonnet seal (1) from the guide (4) and remove.

2 – Removing the seal for the front centre bonnet



- Remove the seal for the front centre bonnet (1) towards the top.

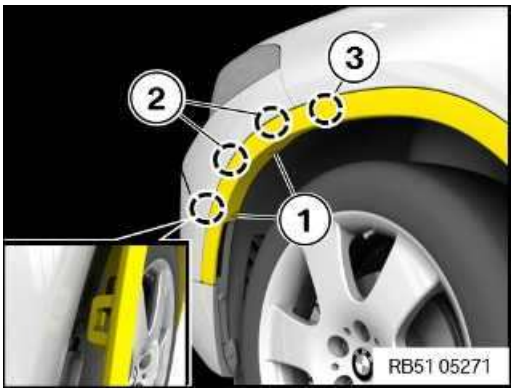
3 – Partially remove both front wheel arch trims

NOTICE

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

▸ **Partially removing the front wheel arch trim**

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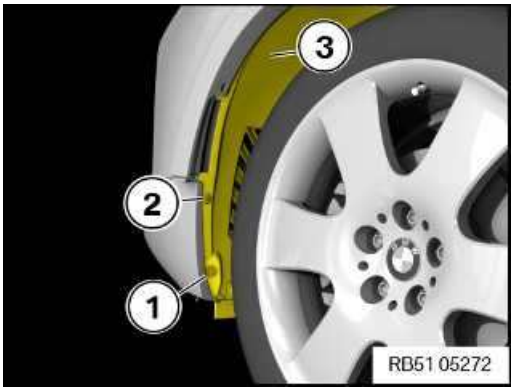
- Loosen blind rivet(1).
- Release front wheel arch trim in the area of the bumper panel from the latch mechanisms (2) and from the clip (3).

4 – Partially remove both front wheel arch covers

NOTICE

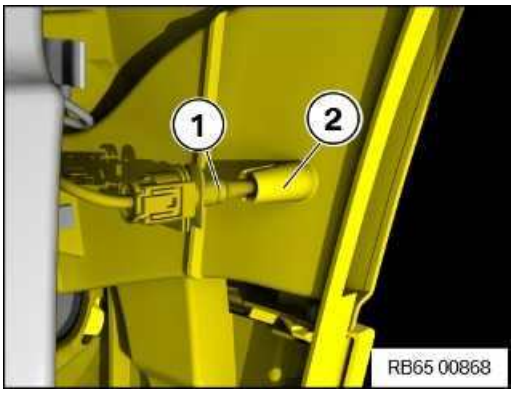
Description is for left component only. Procedure on the right side is identical.

▶ **Partially remove the front wheel arch cover**



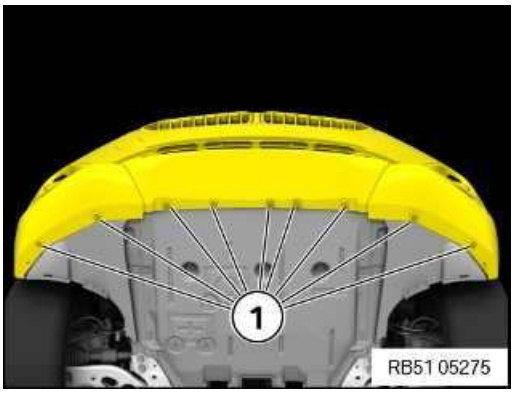
- Loosen screw (1).
- Release the blind rivet (2).
- Fold back the front wheel arch cover (3).

5 – Remove temperature sensor



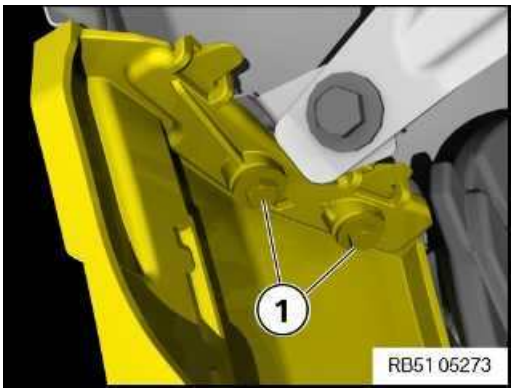
- Unclip temperature sensor (1) from front bumper panel (2).

6 – Remove front bumper panel



- Loosen screws (1).

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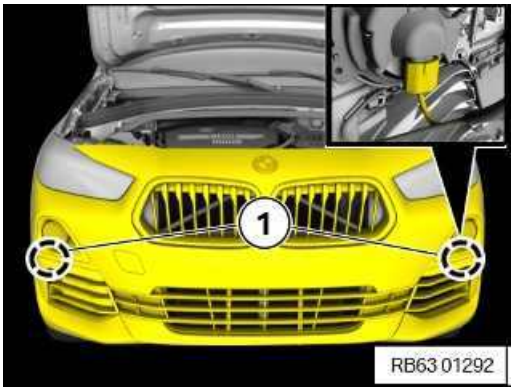
NOTICE

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

- Loosen screws (1).



- Loosen screws (1).
- Loosen screws (2).



- Pull the front bumper panel slightly forward with the help of another person.
- Unlock and disconnect the plug connections (1) on the fog lights.
- Remove the front bumper panel.

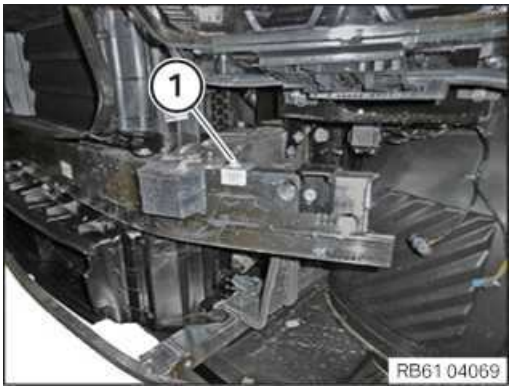
MAIN WORK

7 – Removing the left and right fanfare

NOTICE

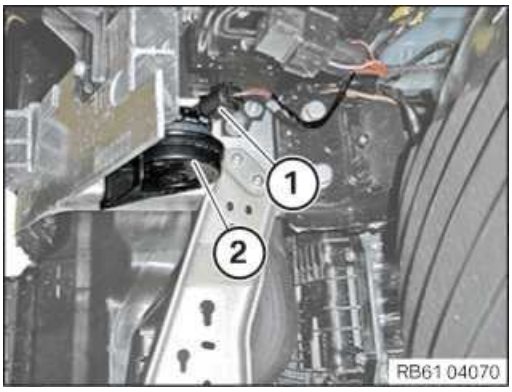
Description is for left component only. Procedure on the right side is identical.

▶ **Removing the fanfare**



- Loosen screw (1).

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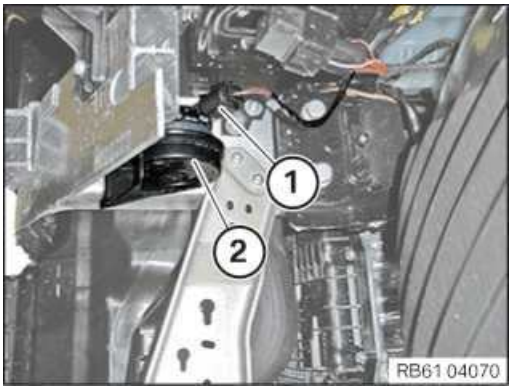
- Unlock and disconnect connector (1).
- Remove fanfare (2) with the holder.

8 – Installing the left and right fanfare

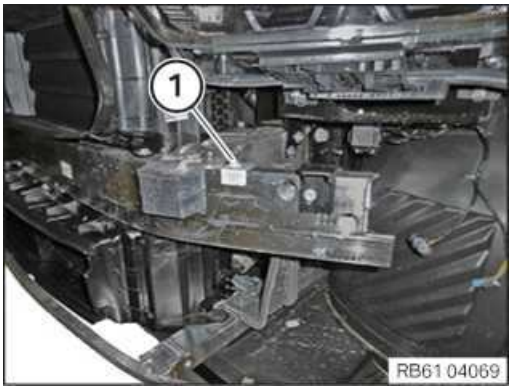
NOTICE

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

▶ **Installing the fanfare**



- Position fanfare (2).
- Connect connectors (1) and lock.



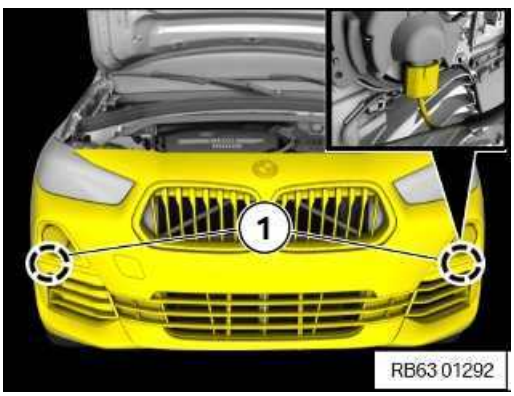
- Tighten down screw (1).

Fanfare

M6x20 screw		Tightening torque	11,8 Nm

POSTPROCESSES

9 – Install bumper panel, front



- Connect the connectors (1) on the fog lights and lock.
- Join the front bumper panel and position.

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- Tighten the screws (1).

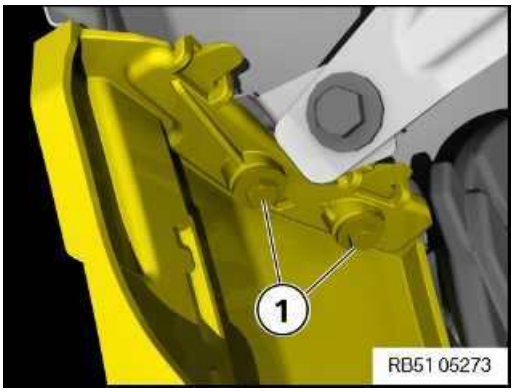
Bumper panel to headlight

Thermoplastic multi-purpose bolt		Tightening torque	2,5 Nm

- Tighten down screws (2).

Bumper panel to air duct

Screw M6		Tightening torque	4,6 Nm



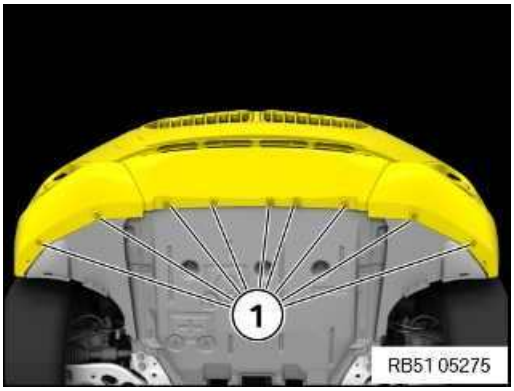
NOTICE

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

- Tighten the screws (1).

Front bumper panel to front side panel

Screw TS5X35		Tightening torque	3 Nm

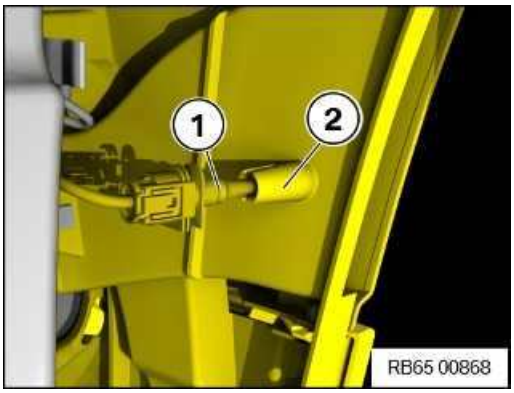


- Tighten the screws (1).

Front bumper panel to underbody panelling

Thermoplastic hexagon screw		Tightening torque	2,5 Nm

10 – Install temperature sensor



- Clip temperature sensor (1) into the front bumper panel (2).

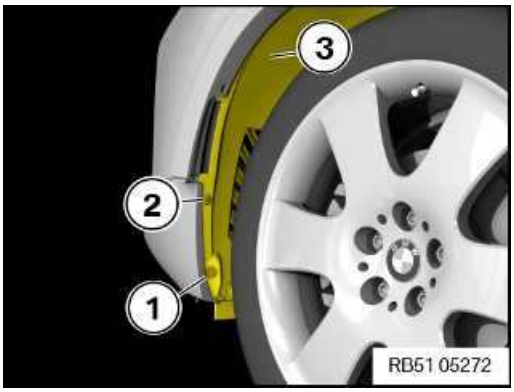
11 – Partially install both front wheel arch covers

NOTICE

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

▸ **Partially install the front wheel arch cover**

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- Fold the front wheel arch cover (3) forward.
- Mount the blind rivet (2) with the special tool **0 496 521 (00 2 230)**.
- Tighten down screw (1).

Front wheel arch cover to front bumper panel

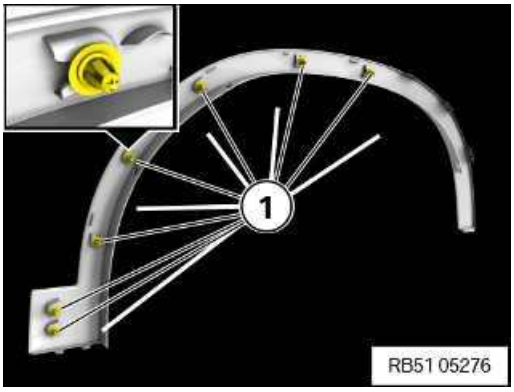
Hexagon screw for thermoplastic plastic		Tightening torque	2,6 Nm

12 – Partially install both front wheel arch trims

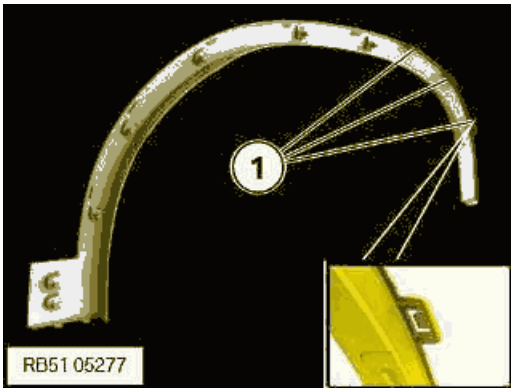
NOTICE

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

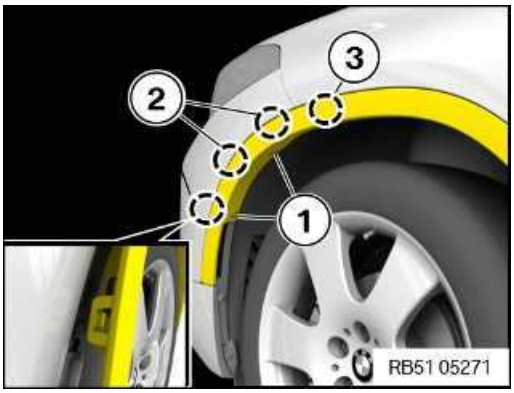
▶ **Partly install the front wheel arch trim**



- Check clips (1) for damage, and replace if necessary.



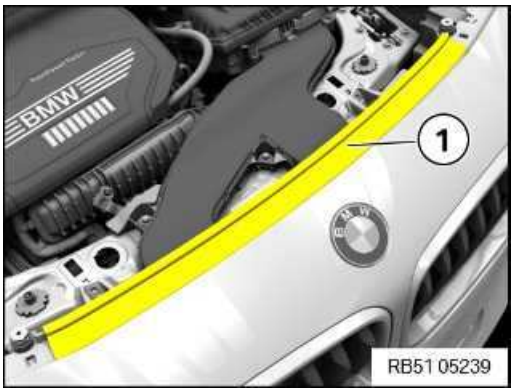
- Check the retaining lugs (1) for damage and replace the front wheel arch trim where required.



- Clip the front wheel arch trim into the clip (3) in the area of the bumper panel and into the latch mechanisms (2).
- Mount blind rivet (1) using the special tool **0 496 521 (00 2 230)**.

13 – Install the center front bonnet seal

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- Press the centre front bonnet seal (1) down into the guide.
- Make sure the centre front bonnet seal (1) is fitted correctly.

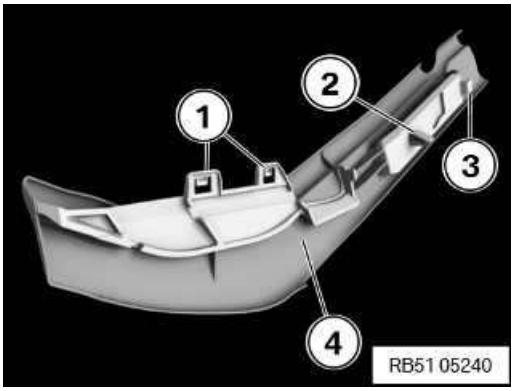
14 – Install both bonnet seals on the side

NOTICE

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

▸ **Installing seal for side bonnet**

Check



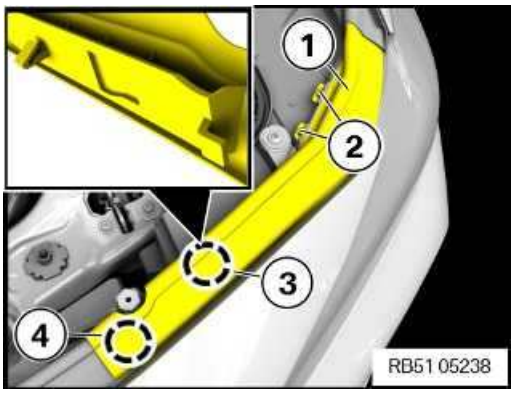
- Check latch mechanisms (1) and (2) and also the guide (3) on the bonnet seal on the side (4) for damage.

Result

» Latch mechanisms (1), (2) or the guide (3) are damaged.

Measure

- Renew the bonnet seal on the side (4).



- Insert the bonnet seal on the side (1) in the guide (4).
- Clip in the bonnet seal on the side (1) in the inner latch mechanism (3) and the outer latch mechanisms (2).

Additional Information

Overview of Tightening Torques

Fanfare Used in step 8

M6x20 screw		Tightening torque	11,8 Nm

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Bumper panel to headlight

Used in step 9

Thermoplastic multi-purpose bolt		Tightening torque	2,5 Nm

Bumper panel to air duct

Used in step 9

Screw M6		Tightening torque	4,6 Nm

Front bumper panel to front side panel

Used in step 9

Screw TS5X35		Tightening torque	3 Nm

Front bumper panel to underbody panelling

Used in step 9

Thermoplastic hexagon screw		Tightening torque	2,5 Nm

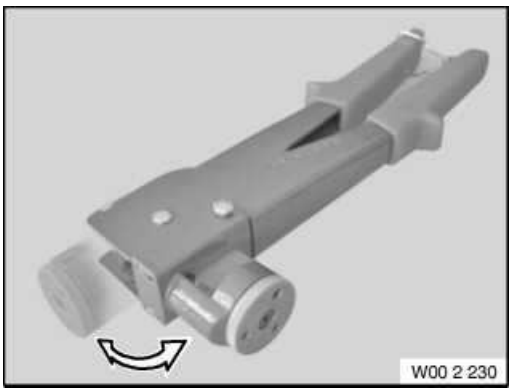
Front wheel arch cover to front bumper panel

Used in step 11

Hexagon screw for thermoplastic plastic		Tightening torque	2,6 Nm

Overview of Special Tools

0 496 521 (00 2 230) Pliers



Common Used in step 11 12

Usage	(Blind rivet pliers for plastic rivets) For shaft diameters of 3.5 mm, 3.9 mm and 4.5 mm
Included in the tool or work	
Storage location	C25
Replaced by	
In connection with	
SI-Number	01 17 08 (478)

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61 33 050 Removing and installing/replacing left fanfare horn

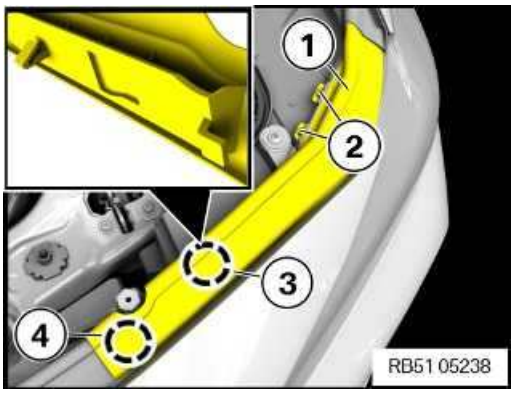
PRELIMINARY WORK

1 – Remove both bonnet seals on the side

NOTICE

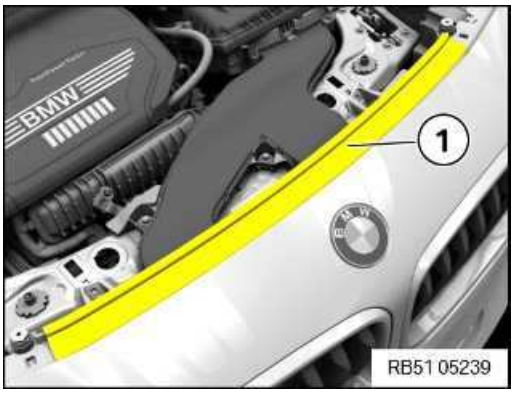
Description is for left component only. Procedure on the right side is identical.

▸ **Remove the bonnet seal on the side**



- Unclip the side bonnet seal (1) from the outer latch mechanisms (2) and the inner latch mechanism (3).
- Feed out the side bonnet seal (1) from the guide (4) and remove.

2 – Removing the seal for the front centre bonnet



- Remove the seal for the front centre bonnet (1) towards the top.

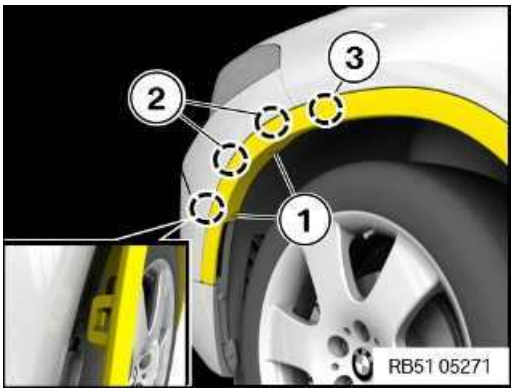
3 – Partially remove both front wheel arch trims

NOTICE

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

▸ **Partially removing the front wheel arch trim**

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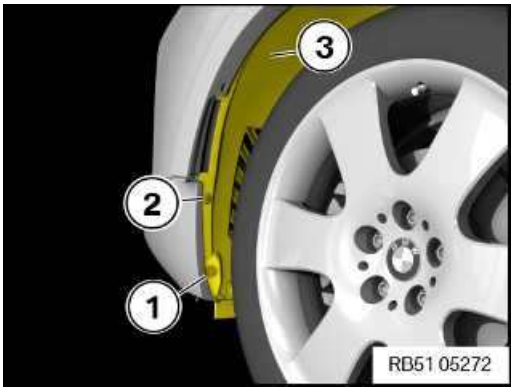
- Loosen blind rivet(1).
- Release front wheel arch trim in the area of the bumper panel from the latch mechanisms (2) and from the clip (3).

4 – Partially remove both front wheel arch covers

NOTICE

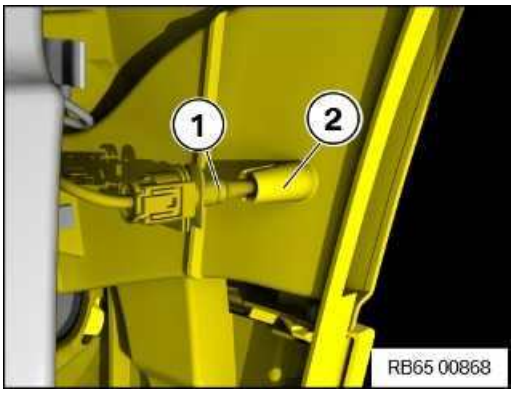
Description is for left component only. Procedure on the right side is identical.

▶ **Partially remove the front wheel arch cover**



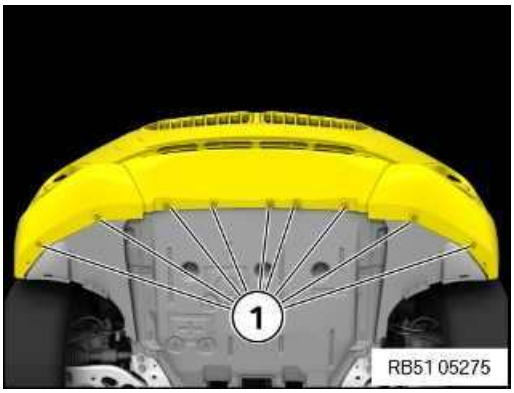
- Loosen screw (1).
- Release the blind rivet (2).
- Fold back the front wheel arch cover (3).

5 – Remove temperature sensor



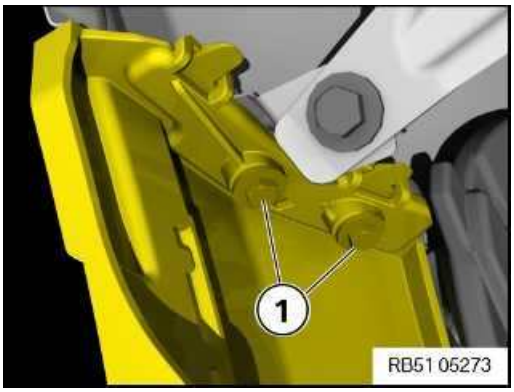
- Unclip temperature sensor (1) from front bumper panel (2).

6 – Remove front bumper panel



- Loosen screws (1).

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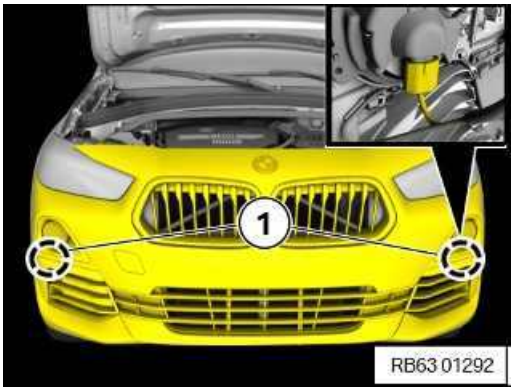
NOTICE

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

- Loosen screws (1).



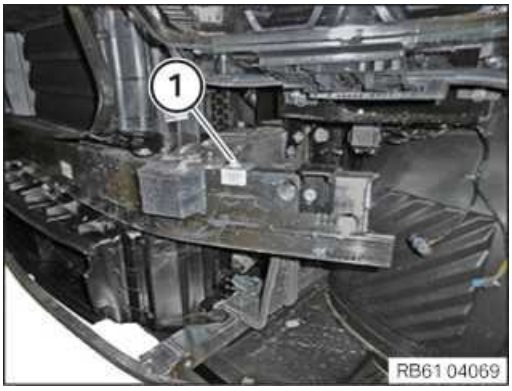
- Loosen screws (1).
- Loosen screws (2).



- Pull the front bumper panel slightly forward with the help of another person.
- Unlock and disconnect the plug connections (1) on the fog lights.
- Remove the front bumper panel.

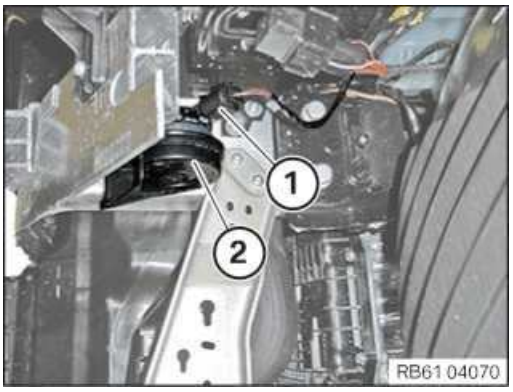
MAIN WORK

7 – Removing the fanfare



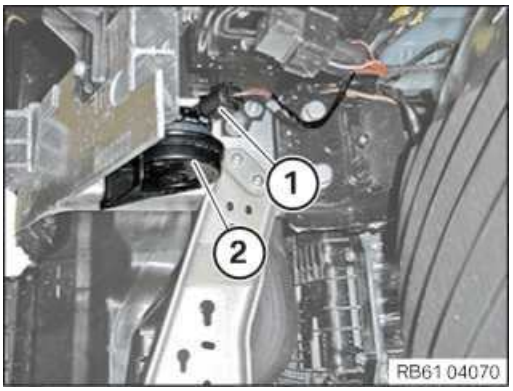
- Loosen screw (1).

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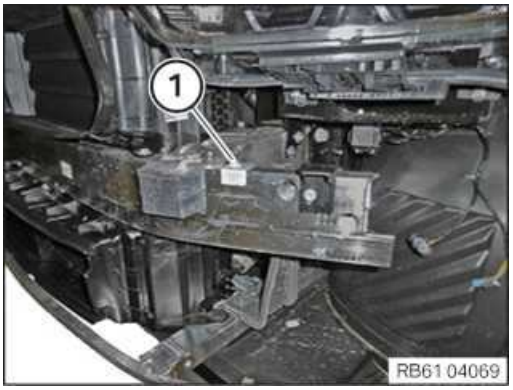


- Unlock and disconnect connector (1).
- Remove fanfare (2) with the holder.

8 – Installing the fanfare



- Position fanfare (2).
- Connect connectors (1) and lock.



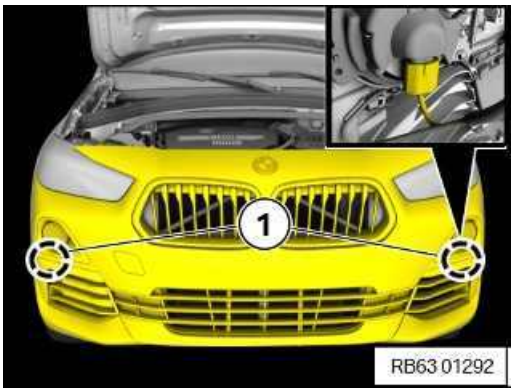
- Tighten down screw (1).

Fanfare

M6x20 screw		Tightening torque	11,8 Nm

POSTPROCESSES

9 – Install bumper panel, front



- Connect the connectors (1) on the fog lights and lock.
- Join the front bumper panel and position.

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- Tighten the screws (1).

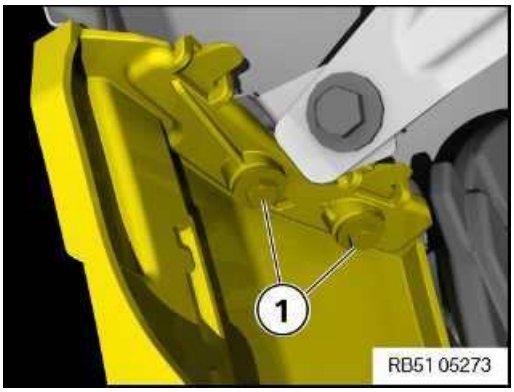
Bumper panel to headlight

Thermoplastic multi-purpose bolt		Tightening torque	2,5 Nm

- Tighten down screws (2).

Bumper panel to air duct

Screw M6		Tightening torque	4,6 Nm



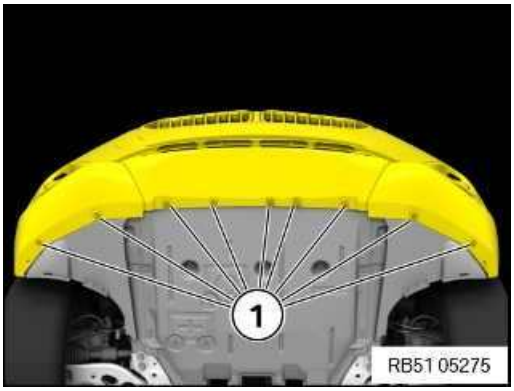
NOTICE

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

- Tighten the screws (1).

Front bumper panel to front side panel

Screw TS5X35		Tightening torque	3 Nm

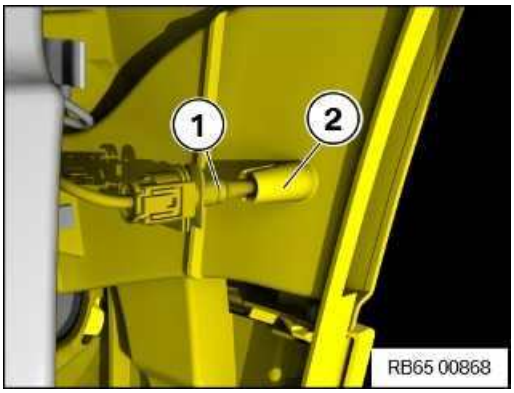


- Tighten the screws (1).

Front bumper panel to underbody panelling

Thermoplastic hexagon screw		Tightening torque	2,5 Nm

10 – Install temperature sensor



- Clip temperature sensor (1) into the front bumper panel (2).

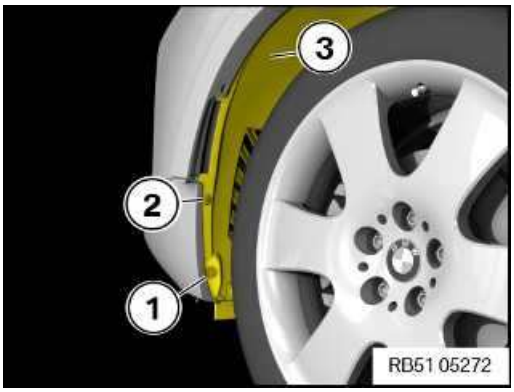
11 – Partially install both front wheel arch covers

NOTICE

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

▸ **Partially install the front wheel arch cover**

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- Fold the front wheel arch cover (3) forward.
- Mount the blind rivet (2) with the special tool **0 496 521 (00 2 230)**.
- Tighten down screw (1).

Front wheel arch cover to front bumper panel

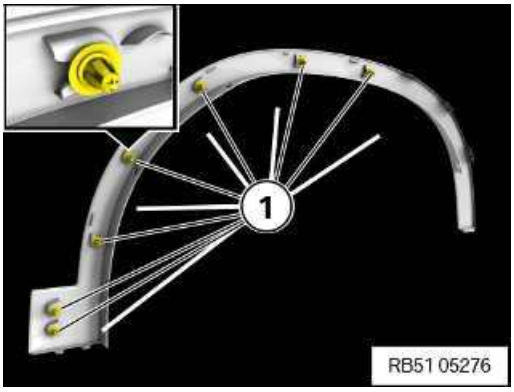
Hexagon screw for thermoplastic plastic		Tightening torque	2,6 Nm

12 – Partially install both front wheel arch trims

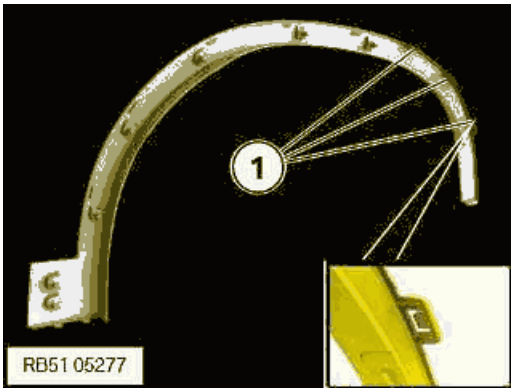
NOTICE

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

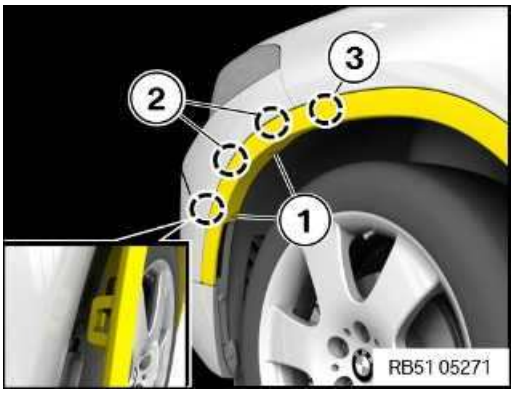
▶ **Partly install the front wheel arch trim**



- Check clips (1) for damage, and replace if necessary.



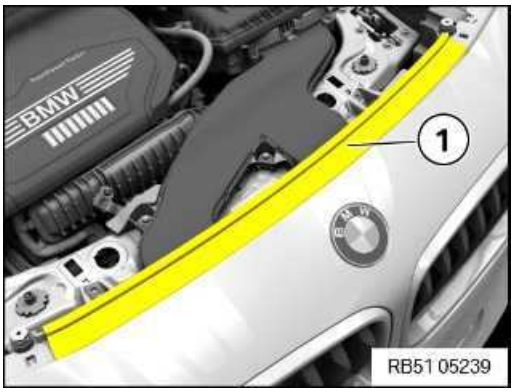
- Check the retaining lugs (1) for damage and replace the front wheel arch trim where required.



- Clip the front wheel arch trim into the clip (3) in the area of the bumper panel and into the latch mechanisms (2).
- Mount blind rivet (1) using the special tool **0 496 521 (00 2 230)**.

13 – Install the center front bonnet seal

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- Press the centre front bonnet seal (1) down into the guide.
- Make sure the centre front bonnet seal (1) is fitted correctly.

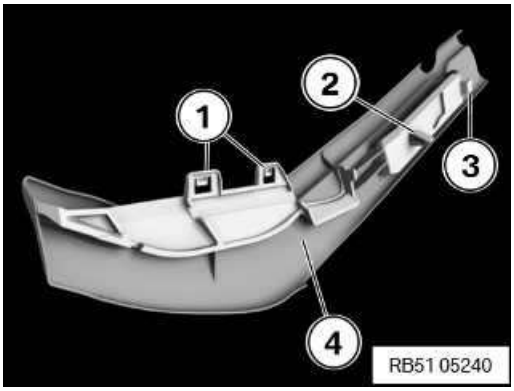
14 – Install both bonnet seals on the side

NOTICE

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

▸ **Installing seal for side bonnet**

Check



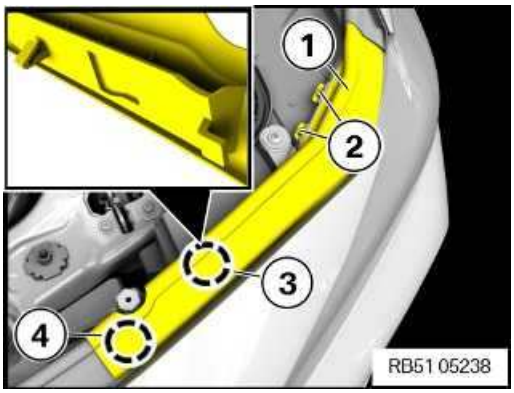
- Check latch mechanisms (1) and (2) and also the guide (3) on the bonnet seal on the side (4) for damage.

Result

» Latch mechanisms (1), (2) or the guide (3) are damaged.

Measure

- Renew the bonnet seal on the side (4).



- Insert the bonnet seal on the side (1) in the guide (4).
- Clip in the bonnet seal on the side (1) in the inner latch mechanism (3) and the outer latch mechanisms (2).

Additional Information

Overview of Tightening Torques

Fanfare Used in step 8

M6x20 screw		Tightening torque	11,8 Nm

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Bumper panel to headlight

Used in step 9

Thermoplastic multi-purpose bolt		Tightening torque	2,5 Nm

Bumper panel to air duct

Used in step 9

Screw M6		Tightening torque	4,6 Nm

Front bumper panel to front side panel

Used in step 9

Screw TS5X35		Tightening torque	3 Nm

Front bumper panel to underbody panelling

Used in step 9

Thermoplastic hexagon screw		Tightening torque	2,5 Nm

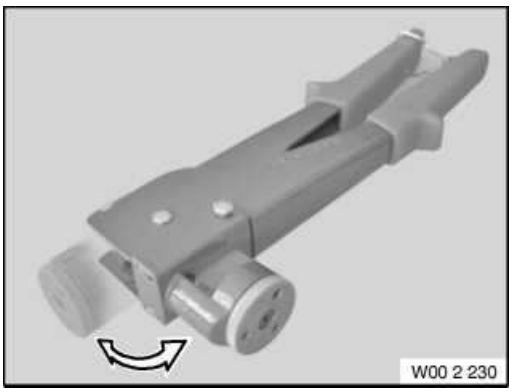
Front wheel arch cover to front bumper panel

Used in step 11

Hexagon screw for thermoplastic plastic		Tightening torque	2,6 Nm

Overview of Special Tools

0 496 521 (00 2 230) Pliers



Common Used in step 11 12

Usage	(Blind rivet pliers for plastic rivets) For shaft diameters of 3.5 mm, 3.9 mm and 4.5 mm
Included in the tool or work	
Storage location	C25
Replaced by	
In connection with	
SI-Number	01 17 08 (478)

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61 33 055 Removing and installing/replacing right fanfare horn

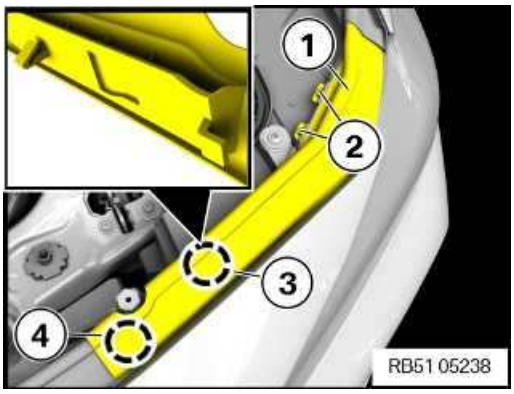
PRELIMINARY WORK

1 – Remove both bonnet seals on the side

NOTICE

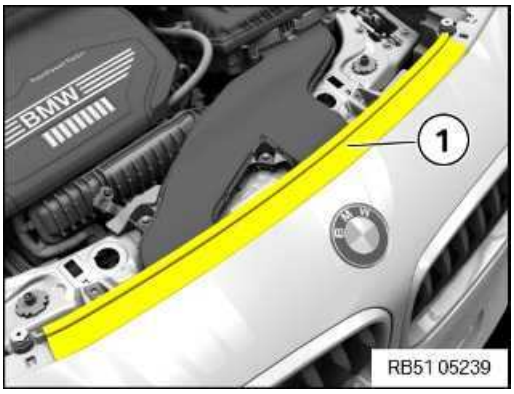
Description is for left component only. Procedure on the right side is identical.

▸ **Remove the bonnet seal on the side**



- Unclip the side bonnet seal (1) from the outer latch mechanisms (2) and the inner latch mechanism (3).
- Feed out the side bonnet seal (1) from the guide (4) and remove.

2 – Removing the seal for the front centre bonnet



- Remove the seal for the front centre bonnet (1) towards the top.

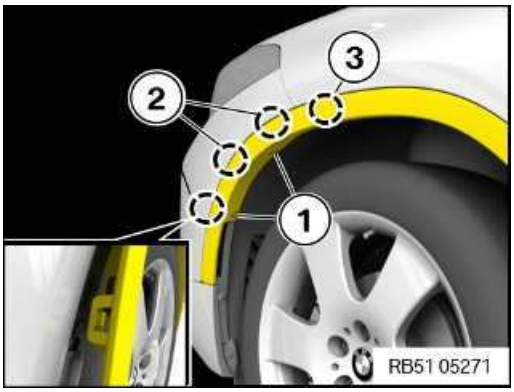
3 – Partially remove both front wheel arch trims

NOTICE

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

▸ **Partially removing the front wheel arch trim**

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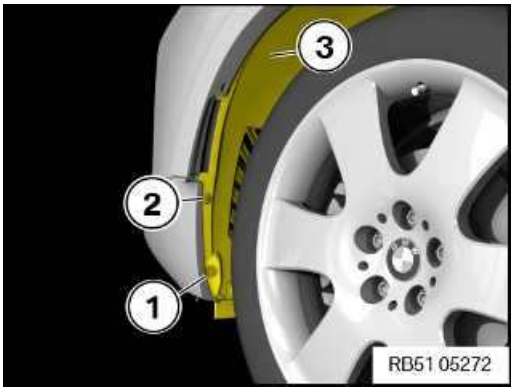
- Loosen blind rivet(1).
- Release front wheel arch trim in the area of the bumper panel from the latch mechanisms (2) and from the clip (3).

4 – Partially remove both front wheel arch covers

NOTICE

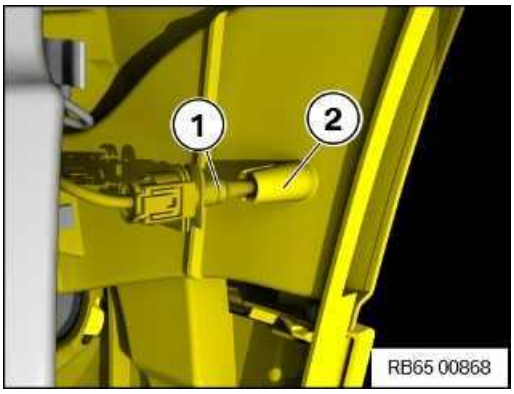
Description is for left component only. Procedure on the right side is identical.

▶ **Partially remove the front wheel arch cover**



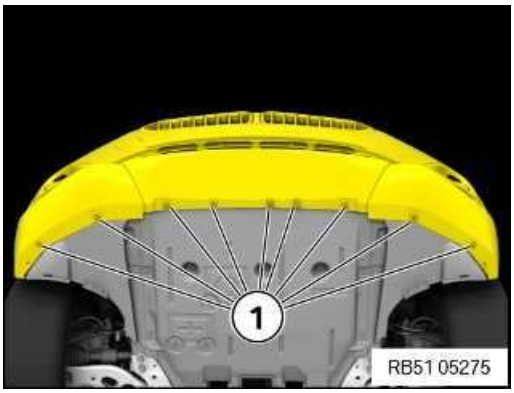
- Loosen screw (1).
- Release the blind rivet (2).
- Fold back the front wheel arch cover (3).

5 – Remove temperature sensor



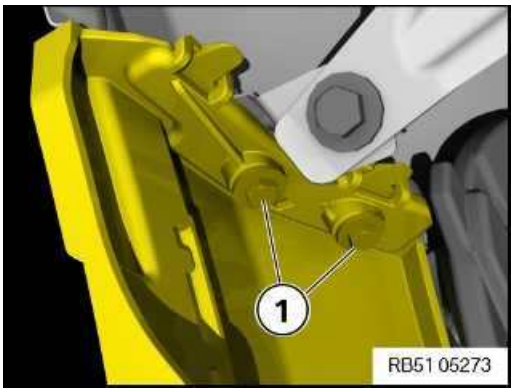
- Unclip temperature sensor (1) from front bumper panel (2).

6 – Remove front bumper panel



- Loosen screws (1).

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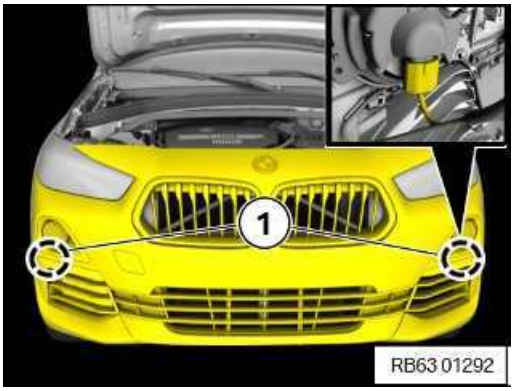
NOTICE

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

- Loosen screws (1).



- Loosen screws (1).
- Loosen screws (2).



- Pull the front bumper panel slightly forward with the help of another person.
- Unlock and disconnect the plug connections (1) on the fog lights.
- Remove the front bumper panel.

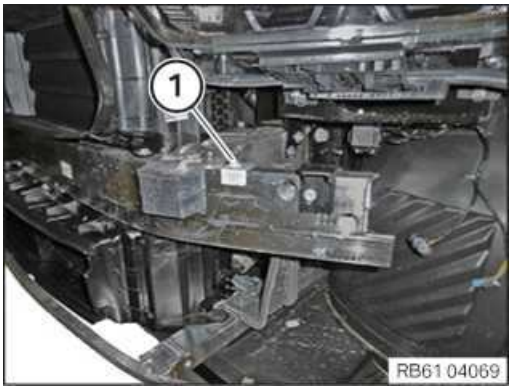
MAIN WORK

7 – Remove fanfare, right

NOTICE

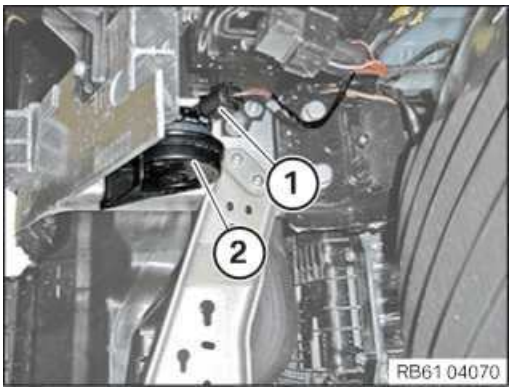
Description is for left component only. Procedure on the right side is identical.

▶ **Removing the fanfare**



- Loosen screw (1).

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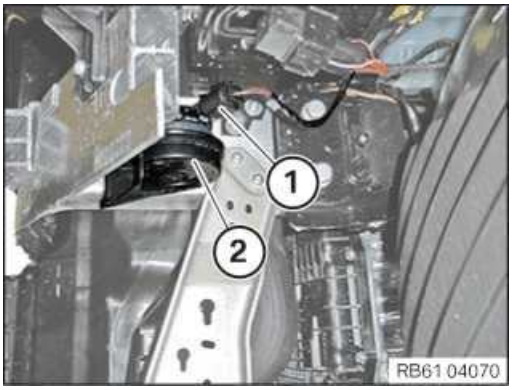
- Unlock and disconnect connector (1).
- Remove fanfare (2) with the holder.

8 – Install fanfare, right

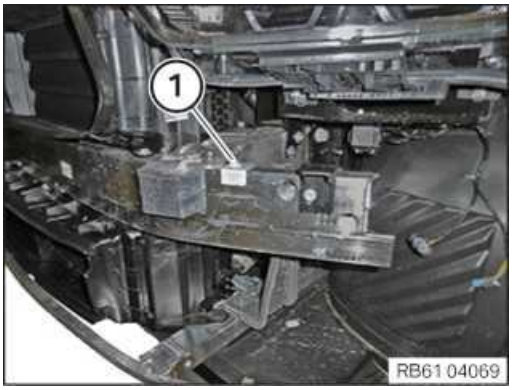
NOTICE

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

▶ **Installing the fanfare**



- Position fanfare (2).
- Connect connectors (1) and lock.



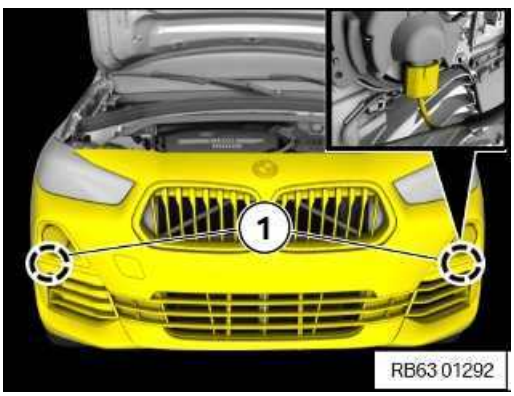
- Tighten down screw (1).

Fanfare

M6x20 screw		Tightening torque	11,8 Nm

POSTPROCESSES

9 – Install bumper panel, front



- Connect the connectors (1) on the fog lights and lock.
- Join the front bumper panel and position.

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- Tighten the screws (1).

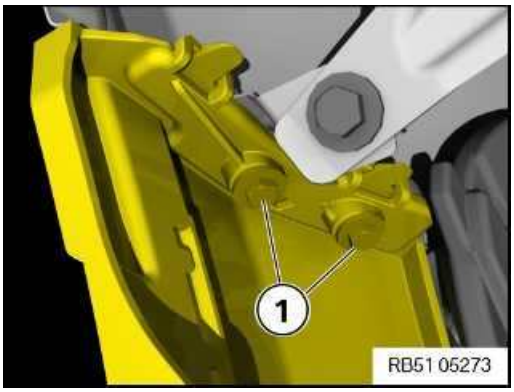
Bumper panel to headlight

Thermoplastic multi-purpose bolt		Tightening torque	2,5 Nm

- Tighten down screws (2).

Bumper panel to air duct

Screw M6		Tightening torque	4,6 Nm



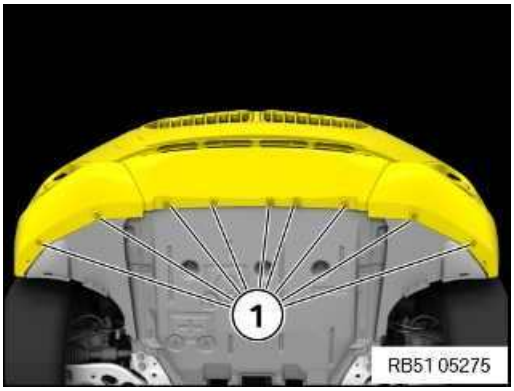
NOTICE

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

- Tighten the screws (1).

Front bumper panel to front side panel

Screw TS5X35		Tightening torque	3 Nm

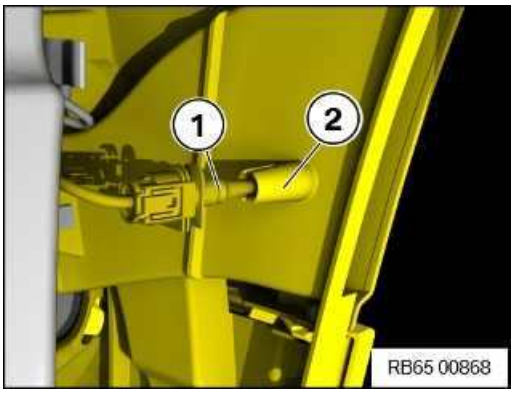


- Tighten the screws (1).

Front bumper panel to underbody panelling

Thermoplastic hexagon screw		Tightening torque	2,5 Nm

10 – Install temperature sensor



- Clip temperature sensor (1) into the front bumper panel (2).

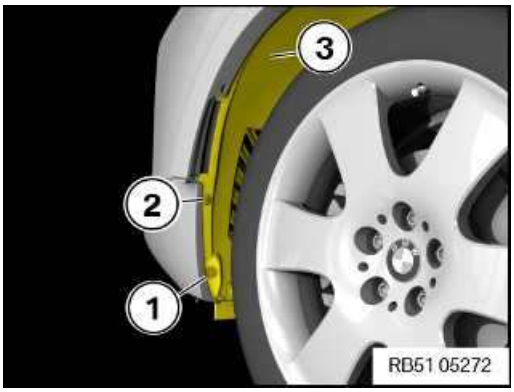
11 – Partially install both front wheel arch covers

NOTICE

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

▸ **Partially install the front wheel arch cover**

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- Fold the front wheel arch cover (3) forward.
- Mount the blind rivet (2) with the special tool **0 496 521 (00 2 230)**.
- Tighten down screw (1).

Front wheel arch cover to front bumper panel

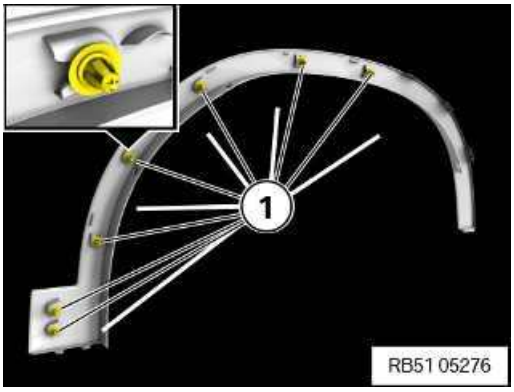
Hexagon screw for thermoplastic plastic		Tightening torque	2,6 Nm

12 – Partially install both front wheel arch trims

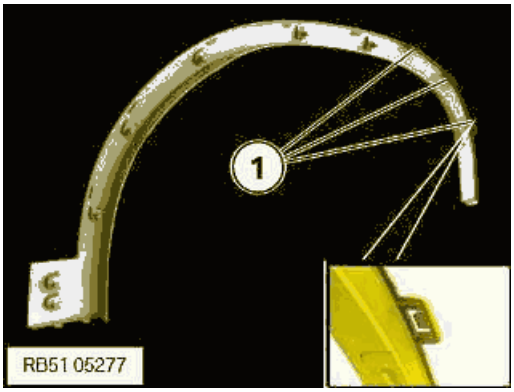
NOTICE

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

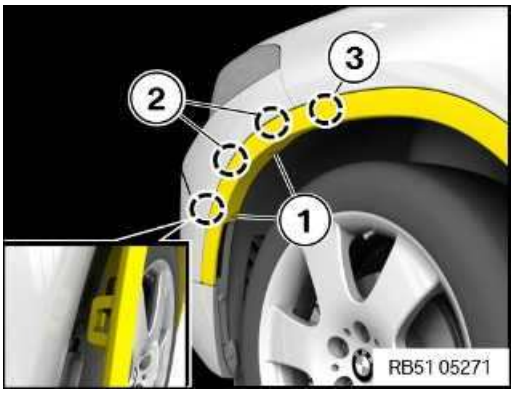
▶ **Partly install the front wheel arch trim**



- Check clips (1) for damage, and replace if necessary.



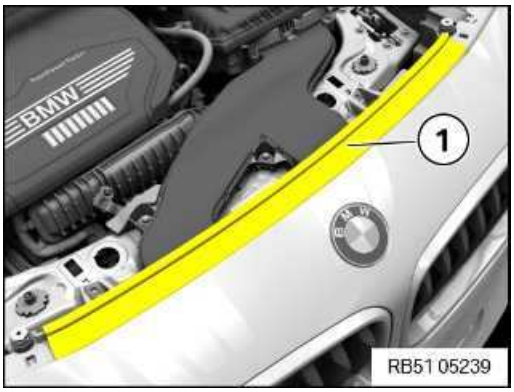
- Check the retaining lugs (1) for damage and replace the front wheel arch trim where required.



- Clip the front wheel arch trim into the clip (3) in the area of the bumper panel and into the latch mechanisms (2).
- Mount blind rivet (1) using the special tool **0 496 521 (00 2 230)**.

13 – Install the center front bonnet seal

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- Press the centre front bonnet seal (1) down into the guide.
- Make sure the centre front bonnet seal (1) is fitted correctly.

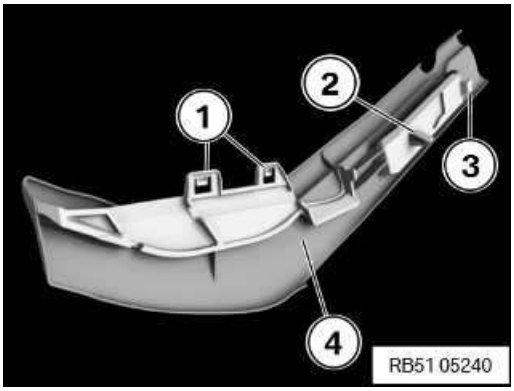
14 – Install both bonnet seals on the side

NOTICE

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

▸ **Installing seal for side bonnet**

Check



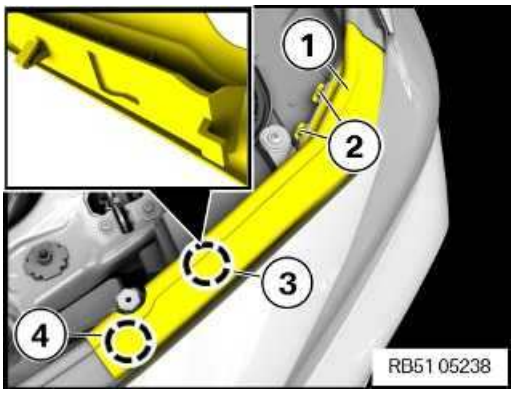
- Check latch mechanisms (1) and (2) and also the guide (3) on the bonnet seal on the side (4) for damage.

Result

» Latch mechanisms (1), (2) or the guide (3) are damaged.

Measure

- Renew the bonnet seal on the side (4).



- Insert the bonnet seal on the side (1) in the guide (4).
- Clip in the bonnet seal on the side (1) in the inner latch mechanism (3) and the outer latch mechanisms (2).

Additional Information

Overview of Tightening Torques

Fanfare Used in step 8

M6x20 screw		Tightening torque	11,8 Nm

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Bumper panel to headlight

Used in step 9

Thermoplastic multi-purpose bolt		Tightening torque	2,5 Nm

Bumper panel to air duct

Used in step 9

Screw M6		Tightening torque	4,6 Nm

Front bumper panel to front side panel

Used in step 9

Screw TS5X35		Tightening torque	3 Nm

Front bumper panel to underbody panelling

Used in step 9

Thermoplastic hexagon screw		Tightening torque	2,5 Nm

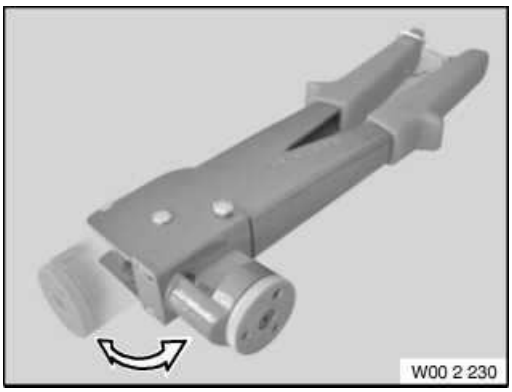
Front wheel arch cover to front bumper panel

Used in step 11

Hexagon screw for thermoplastic plastic		Tightening torque	2,6 Nm

Overview of Special Tools

0 496 521 (00 2 230) Pliers



Common Used in step 11 12

Usage	(Blind rivet pliers for plastic rivets) For shaft diameters of 3.5 mm, 3.9 mm and 4.5 mm
Included in the tool or work	
Storage location	C25
Replaced by	
In connection with	
SI-Number	01 17 08 (478)

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61 00 ... Encode/program control unit(s)

Note:
Depending on the vehicle and the equipment, programming/encoding has the following flat rate unit position:

- 61 00 710
- 61 00 720
- 61 00 730

Notes:

- In order to avoid incorrect programming procedures and Check Control message, it is essential to always use the most recent version when working with the ISTA/P programming system.
- Battery voltage must not drop below **13.0 V** during programming. Connect battery charger prior to programming.

  Only use battery chargers* recommended by BMW for low voltage vehicle electrical system.

  *Sourcing reference Workshop Equipment Catalogue



Attention!

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: Observe PuMA measure 55176388!



programming routine via ISTA/P:

- Connect the battery charger to the vehicle.
- Connect the programming system with the vehicle.
- Determine the action plan.
- Accept action plan with the control units to be programmed/encoded and enabled, if necessary or work through.
- Observe the reworking list!
- If applicable, connect the workshop system to the vehicle, depending on the reworking list. Perform brief test and delete fault memory.

  Note:

  With the integration of the service functions and the "quick clearing" function in ISTA/P, it may not be necessary to change to the workshop system. Check the rework list accordingly!
- The information about programming the workshop system and the corresponding notes in the user documentation must be observed.

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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.

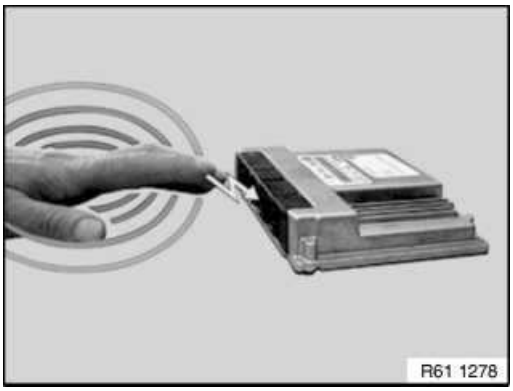
E-Electro

S-Static

D-Discharge

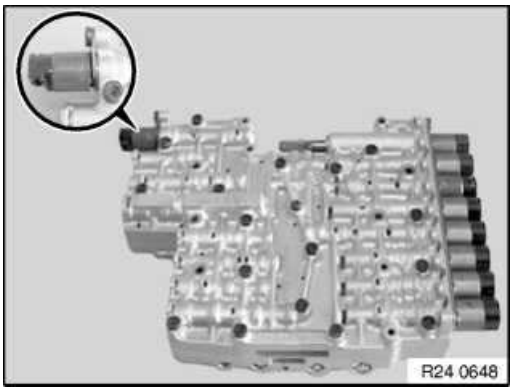
Important!

Read and comply without fail with the notes on this subject from Service Information **2 06 04 128**.



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:

Mechatronic control unit.

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Important!
Do not touch pins and multi-pin connectors directly!

Touch electrical components by their housings only.

Important!

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



Personal protective equipment:

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, rain sensor (additional work when replacing the windscreen / sensor replacement)

- **1-Series:** E8x
- **3-Series:** E9x
- **5-Series:** E6x
- **6-Series:** E6x
- **X1:** E84
- **Z4:** E89

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
Condensation sensor square 30 x 20 mm	Yes	No	No	No

- **5-Series:** E6x
- **6-Series:** E6x
- **7-Series:** E6x

Sensor type/ Sensor shape	With windscreen replacement replacement **sensor** required	When replacing **the sensor** Programming/encoding necessary	When replacing **substitute visuals** Programming/encoding necessary	When replacing **the sensor/ substitute visuals** Initialisation required	Connecting the diagnosis system required
all types square 60 x 40 mm	No	Yes	-	Yes	Yes
RLS approximately ø 50 mm	No (new **substitute visuals** required, refer to Electronic Parts Catalogue)	-	No	Yes	Yes

- **X5:** E70
- **X6**: E7x

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Sensor type/ Sensor shape	With windscreen replacement replacement **sensor** required	When replacing **the sensor** Programming/encoding necessary	When replacing **substitute visuals** Programming/encoding necessary	When replacing **the sensor/** **substitute visuals** Initialisation required	Connecting the diagnosis system required
RLPSS (Rain, light and precipitation solar sensor) (Designation is located on the back of the sensor) approximately ø 50 mm	Yes	Yes	-	Yes	Yes
RLS (vehicle **with no HUD**) (Designation is located on the back of the sensor) approximately ø 50 mm	No (new **substitute visuals** required, refer to Electronic Parts Catalogue)	-	No	Yes	Yes
RLSS (vehicle **with HUD**) (Designation is located on the back of the sensor) approximately ø 50 mm	Yes	Yes	-	Yes	Yes

- **1-Series:** E8x
- **3-Series:** E9x
- **X1:** E84
- **X3:** E83
- **Z4:** E89

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 square 60 x 40 mm	No	Yes	Yes	Yes

- **5-Series:** F1x
- **5 Series GT:** F07

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- **6-Series:** F06, F1x
- **7-Series:** F0x
- **X3:** F25
- **X4:** F26

Sensor type/ Sensor shape	With windscreen replacement replacement **sensor** required	When replacing **the sensor** Programming/encoding necessary	When replacing **substitute visuals** Programming/encoding necessary	When replacing **the sensor/ substitute visuals** Initialisation required	Connecting the diagnosis system required
all types approximately ø 35 mm	No	No	-	Yes	Yes
all types approximately ø 50 mm	Yes	Yes	-	Yes	Yes
Only for F25 : RLS approximately ø 50 mm	No (new **substitute visuals** required, refer to Electronic Parts Catalogue)	-	No	Yes	Yes

- **X5:** F15, F85
- **X6:** F16, F86

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

- **1-Series:** F2x
- **2-Series:** F2x
- **3-Series:** F3x, F8x
- **3 Series GT:** F34
- **4-Series:** F3x, F8x

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

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all **up to 03/2014** except SBS (01) (Designation is located on the back of the sensor) approximately ø 35 mm	No	No	Yes	Yes
SBS (01) (Designation is located on the back of the sensor) approximately ø 35 mm	No	No	No	No
All **as from 03/2014** approximately ø 35 mm	No	No	No	No

- **2-Series:** F4x

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	No	No	No	No

BMW i:

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

BMW from **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	No	No	No	No

MINI (all):

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 square 60 x 40 mm	No	Yes	Yes	Yes

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all types approximately ø 35 mm	No	No	No	No

Rolls-Royce:

- RR1
- RR2
- RR3
- RR4
- RR5
- RR6

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 square 60 x 40 mm	No	Yes	Yes	Yes
all types approximately ø 35 mm	No	No	Yes	Yes
all types approximately ø 50 mm	Yes	Yes	Yes	Yes

Rolls-Royce:

- RR11
- RR12

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 / install Body Domain Controller (BDC)

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.

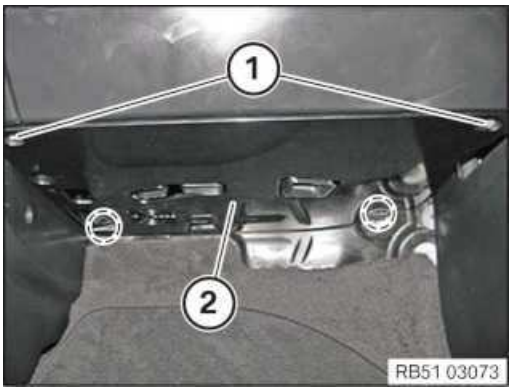
PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

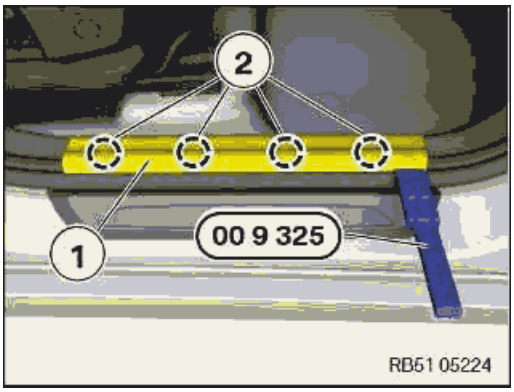
2 – Removing the instrument panel trim at bottom right



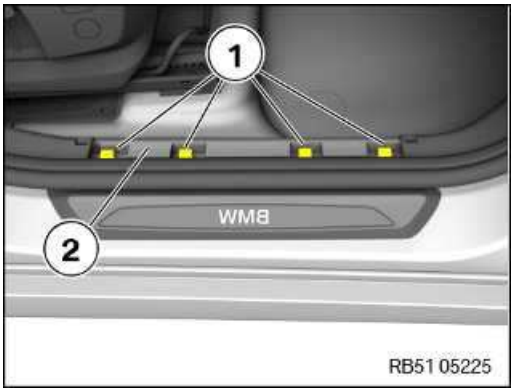
- Loosen nuts (1).
- Lower the instrument panel trim slightly at the bottom right (2) and disconnect the plug connection behind it.
- Guide the instrument panel trim at the bottom right (2) from the front guides and remove it.

3 – Remove front entrance cover strip

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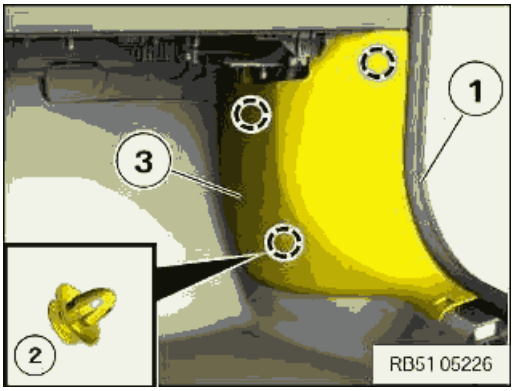


- Unclip the door sill cover strip (1) at the clips **0 496 569 (00 9 325)** using special tool (2) starting from the rear.



- If applicable, loosen clips (1) from floor panel (2) and mount on the door sill cover strip.

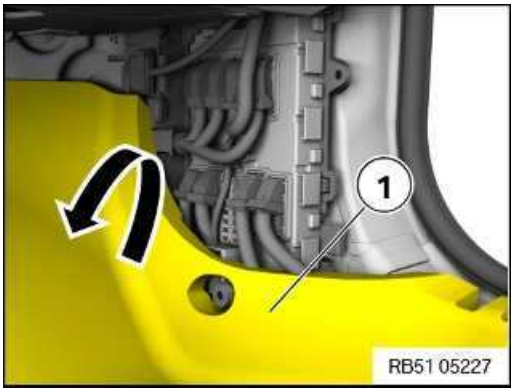
4 – Removing the side trim panel in the footwell at the right-hand A-pillar



- Guide side trim panel (3) under the sealing lip out of the edge protection (1).
- Unclip and remove the side trim panel (3) at the clips (2).

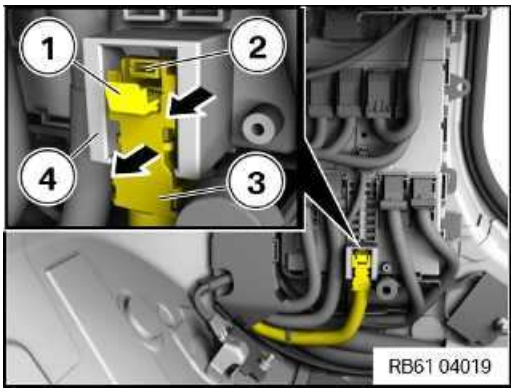
MAIN WORK

5 – Remove the control unit for the Body Domain Controller (BDC)

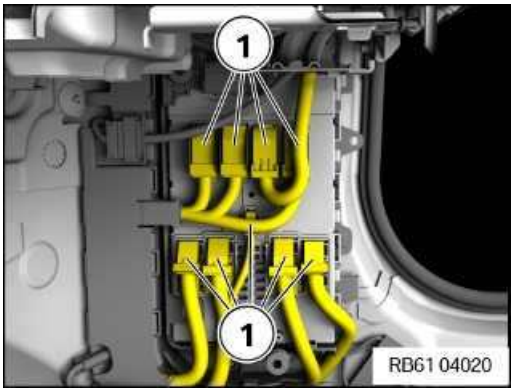


- Fold the carpet (1) in the area Body Domain Controller (BDC) control unit to the side.

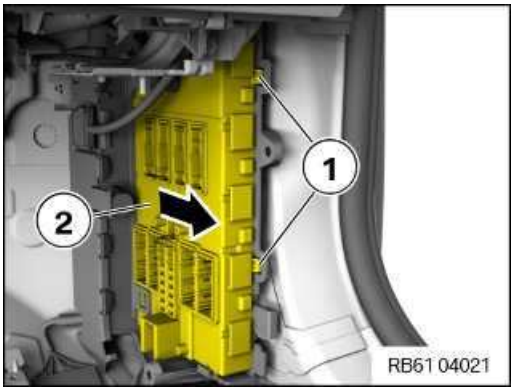
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- Loosen the lock (1) in the direction of the arrow.
- Disengage the latch mechanism (2) on positive battery cable connector (3).
- Remove the connector of the positive battery cable (3) from the housing (4) in the direction of the arrow.

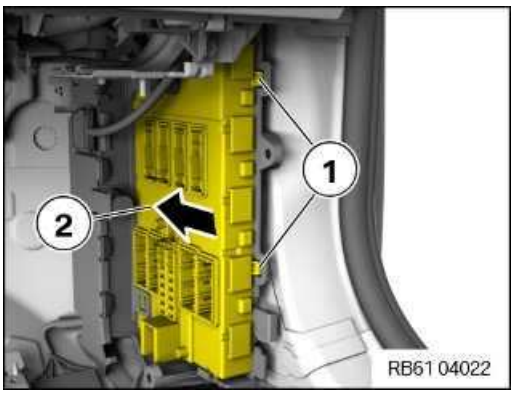


- Unlock and disconnect all plug connections (1).

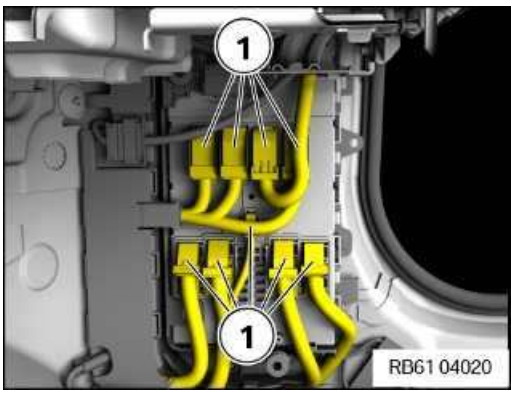


- Loosen the latch mechanisms (1).
- Feed the Body Domain Controller (BDC) control unit (2) sideways out of the holder and remove it to the rear.

6 – Installing Body Domain Controller (BDC) control unit

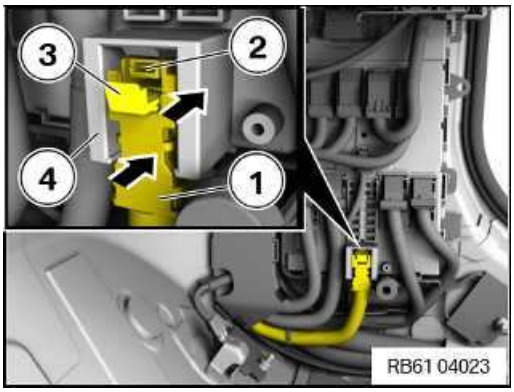


- Feed Body Domain Controller (BDC) control unit (2) into the holder from the side.
- Engage Body Domain Controller (BDC) control unit (2) to the latch mechanisms (1) of the holder.

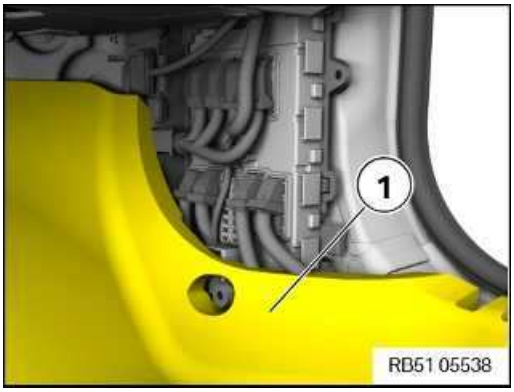


- Connect all connectors (1) and lock.

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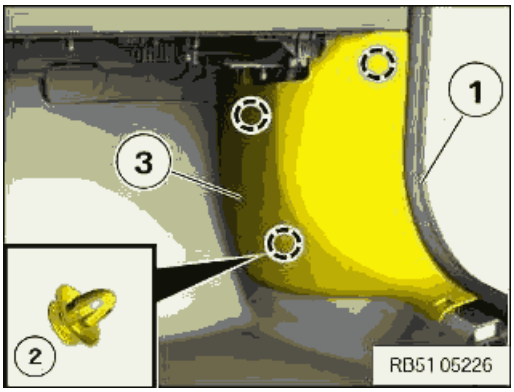
- Attach the connector of the positive battery cable (1) to the Body Domain Controller (BDC) control unit(4) in direction of arrow.
- Engage latch mechanism (2) to the connector of the positive battery cable (1).
- Close lock (3) in direction of arrow.



- Fold down carpet (1) and make sure it is positioned correctly.

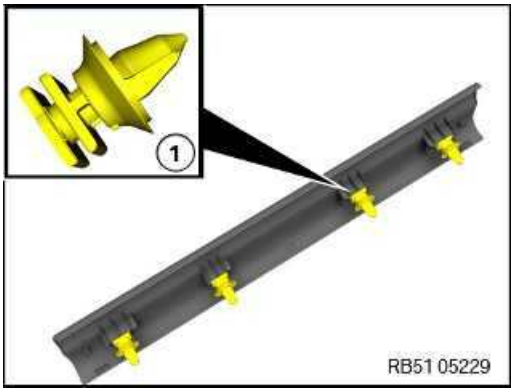
POSTPROCESSES

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



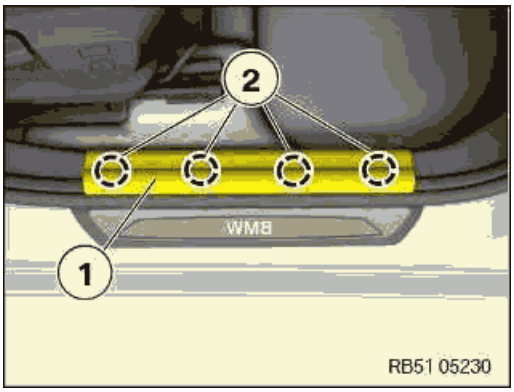
- Check clips (2) for damage, and replace if necessary.
- Feed the side trim panel (3) under the sealing lip of the edge protection (1).
- Clip in the side trim panel (3) with the clips (2).

8 – Install the front door sill cover strip



- Check the clips (1) for damage and renew where required.

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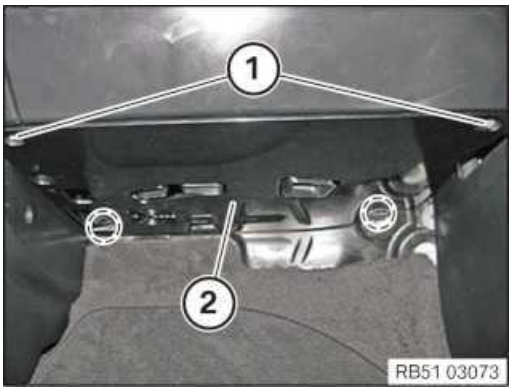


- Clip the door sill cover strip (1) into the floor panel with the clips (2).

9 – Installing the botto right instrument panel trim

TECHNICAL INFORMATION

Latch mechanisms, guides and mounting elements must not be damaged or missing.



- Install the lower right instrument panel trim (2) and connect and lock the plug connection.
- Insert the lower right instrument panel trim (2) into the front guides.
- Tighten nuts (1).

Bottom left footwell trim to instrument panel

M5 hexagon nut		Tightening torque	2 Nm

10 – Disconnecting all battery earth leads



- See additional information.

Additional Information

Overview of Tightening Torques

Bottom left footwell trim to instrument panel Used in step 9

M5 hexagon nut		Tightening torque	2 Nm

Overview of Special Tools

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0 496 569 (00 9 325) Wedge



Common	Used in step 3
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)

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 10
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 10
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10
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61 20 900 Disconnecting and connecting battery earth lead	1 10
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10

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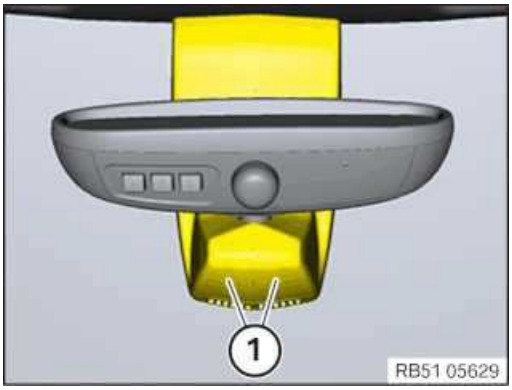
61 20 900 Disconnecting and connecting battery earth lead 1 10
61 20 900 Disconnecting and connecting battery earth lead 1 10
61 20 900 Disconnecting and connecting battery earth lead 1 10
61 20 900 Disconnecting and connecting battery earth lead 1 10

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61 35 177 Remove and install rain-light sensor

PRELIMINARY WORK

1 – Remove the cover on the inside mirror

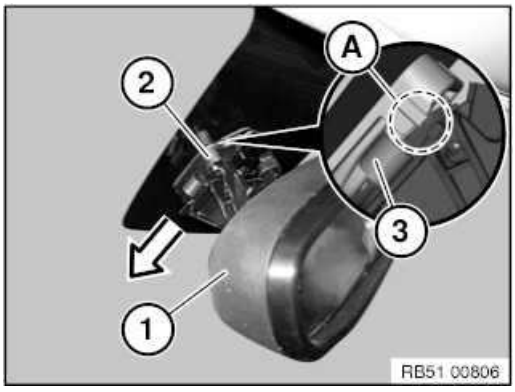


- Unclip the covers on the interior mirror (1) outward with a suitable plastic wedge in the center and remove.

2 – Removing the interior mirror

TECHNICAL INFORMATION

Carry out the work at temperatures between 18 °C and 23 °C only.

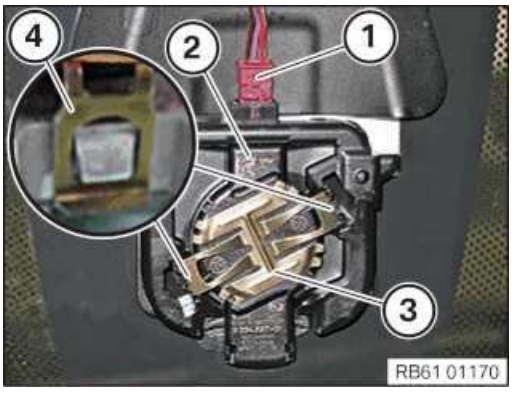


- Make sure that the interior mirror (1) does not bend or twist during removal.

  The interior mirror (1) is held by the clamp (3) and the latch mechanism in this area (A) on the base (2).
- If necessary unlock and disconnect the plug connection on the interior mirror (1).
- Pull off the interior mirror (1) from the mirror socket (2) with a downwards jerk in parallel to the windscreen.

MAIN WORK

3 – Remove driving light sensor



RISK OF DAMAGE

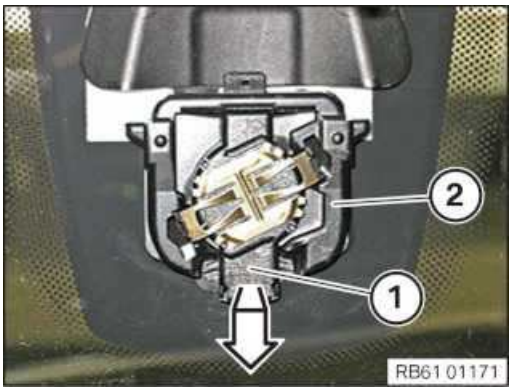
Damage to silicone surface.

A damaged silicone surface can lead to malfunctioning of the rain-light-solar-condensation sensor.

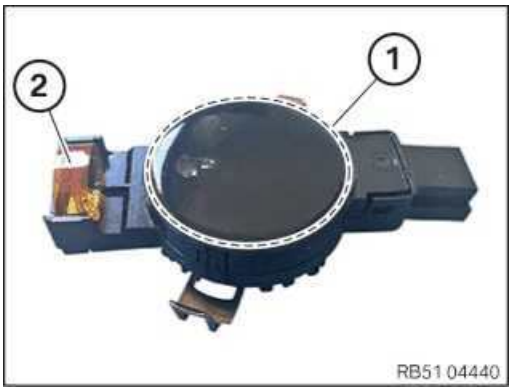
- Do not touch or damage the silicone-coated surface on the rain-light-solar-condensation sensor.
- After releasing lock, wait approx. 30 min. at 20°C for silicone surface to relax.

- 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.

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- Slowly pull the driving light sensor (1) in direction of arrow from the holder (2).



RISK OF DAMAGE

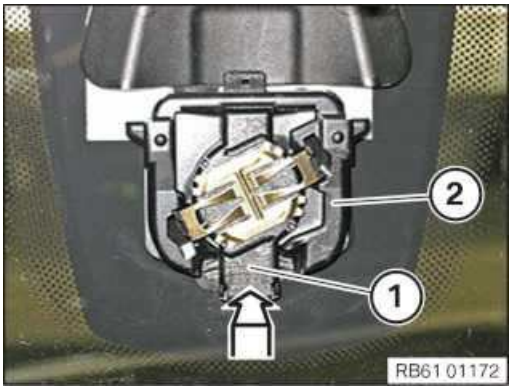
Damage to silicone surface.

A damaged silicone surface can lead to malfunctioning of the rain-light-solar-condensation sensor.

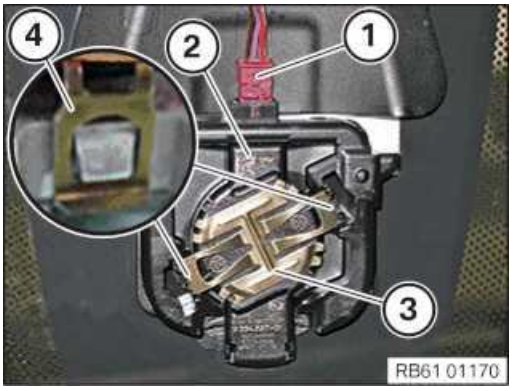
- Do not touch or damage the silicone-coated surface on the rain-light-solar-condensation sensor.
- After releasing lock, wait approx. 30 min. at 20°C for silicone surface to relax.

- Check the silicone-coated surface (1) and the printed circuit board (2) for damage.
- When replacing windscreen: Immediately install the driving light sensor on the new windscreen.

4 – Install driving light sensor

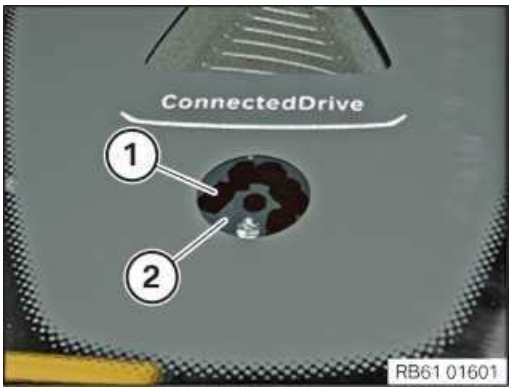


- Thread in the driving light sensor (1) in direction of arrow into the holder (2).



- 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).

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- Check if air pockets are visible.

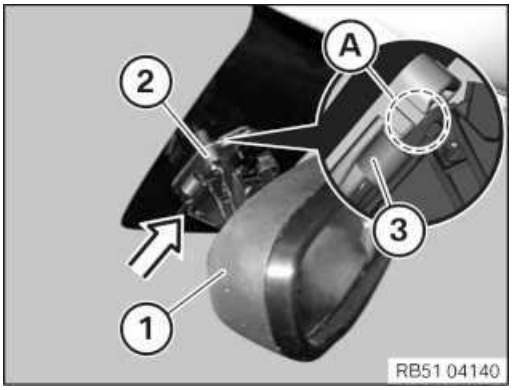
  Visible shades (1) and (2) are not air pockets but rather the optical element of the sensor. The shades do not represent any functional limitation.

POSTPROCESSES

5 – Installing the interior mirror

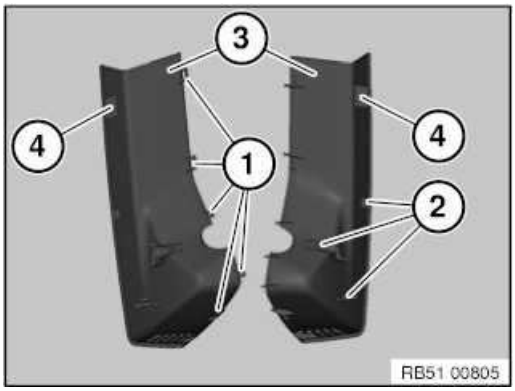
TECHNICAL INFORMATION

Carry out the work at temperatures between 18 °C and 23 °C only.



- Check the clamp (3) on both sides of the interior mirror (1) for damage and renew as needed.
- If necessary, connect the connector on the interior mirror (1).
- Slide the interior mirror (1) parallel to the windscreen in direction of arrow into the base (2) and lock correctly in area (A).

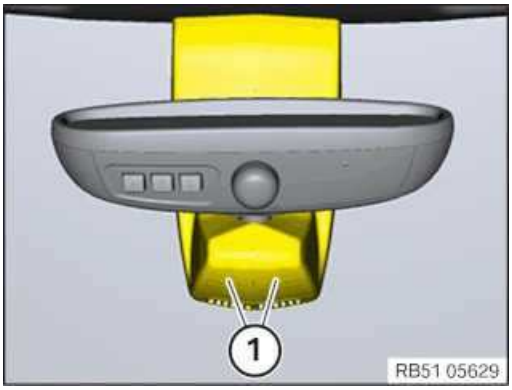
6 – Install the cover on the inside mirror



- Check the latch mechanisms (1) and guides (2) on the two covers (3) for damage, renew if necessary.

  The latch mechanisms (1) and guides (2) must not be damaged.
- Check the spacers (4).

  The spacers (4) must not be damaged or missing.



- Install covers on the interior mirror (1) clip together.

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61 35 245 Remove and install sensor line for bottom CA

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.

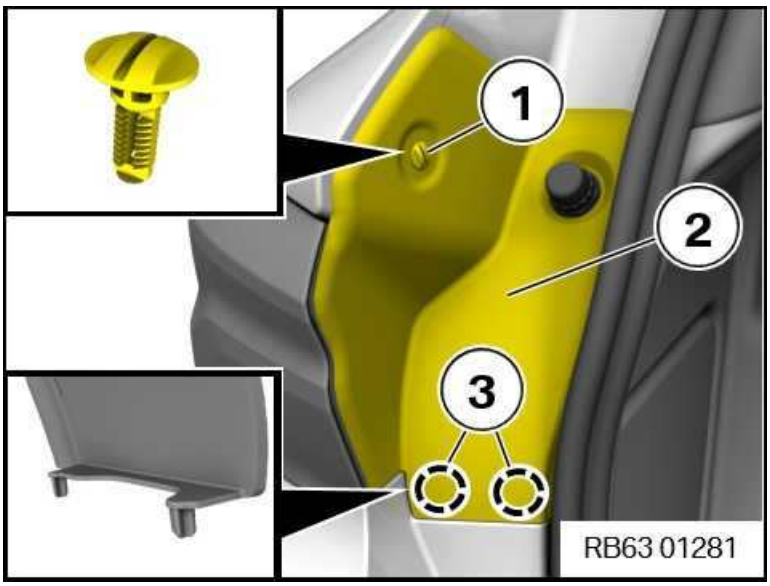
PRELIMINARY WORK

1 – Removing both trims for water channel

NOTICE

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

▸ Removing trim for water channel



- Detach rotary clip (1).
- Feed out and remove trim for water channel (2) from guides (3).

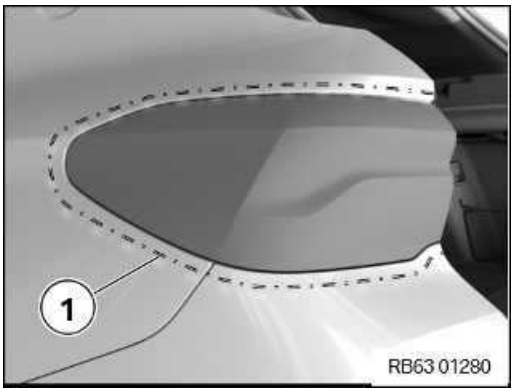
2 – Remove both rear lights from the side panel

NOTICE

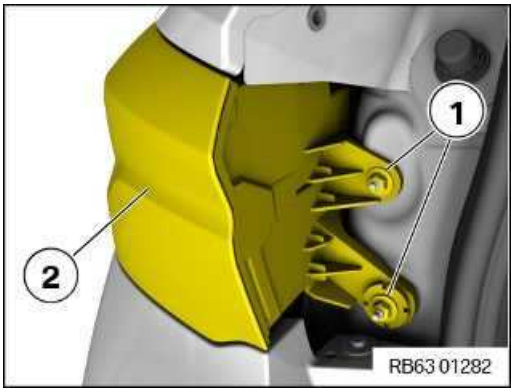
Description is for left component only. Procedure on the right side is identical.

▸ Remove the rear light on the side panel

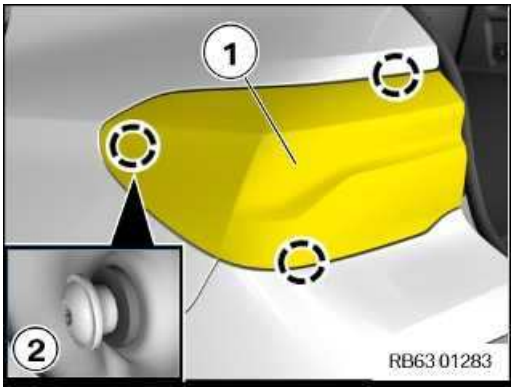
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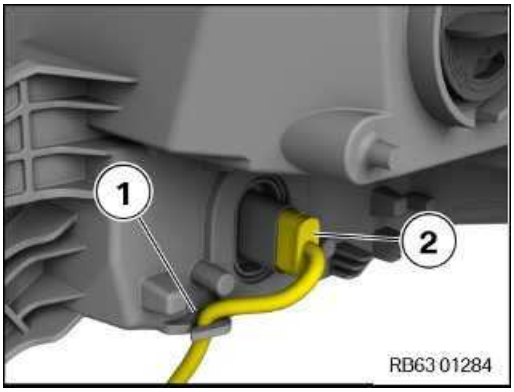
- Mask the body in area (1) with plastic adhesive tape.



- Loosen the nuts (1) on the rear light (2).

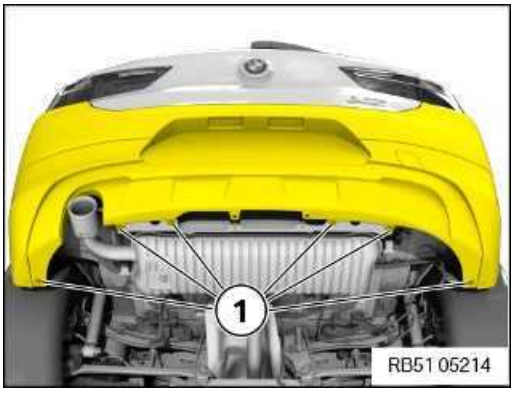


- Remove the rear light (1) from the guides (2) towards the rear.



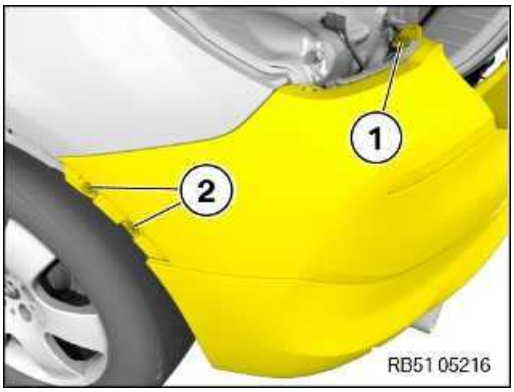
- Detach cable from guide (1).
- Unlock and disconnect the plug connection (2) and remove the rear light .

3 – Remove rear bumper panel



- Loosen screws (1).

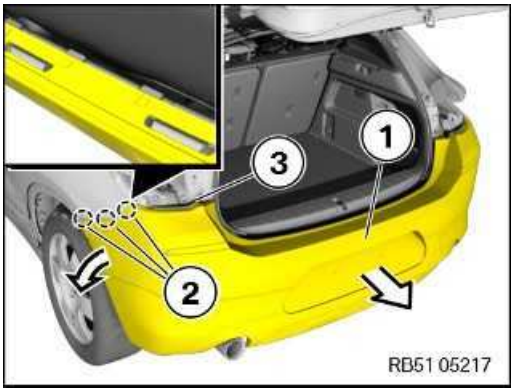
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NOTICE

Perform the operations on the left and right side.

- Loosen screws (1) and (2).



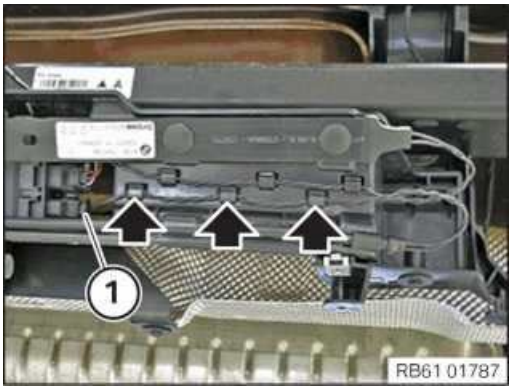
NOTICE

Perform the operations on the left and right side.

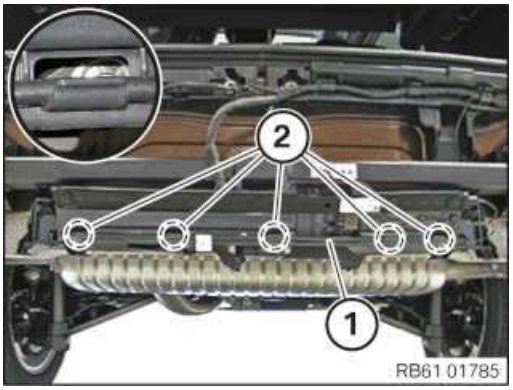
- Carefully detach side latch mechanisms(2) in direction of arrow.
- Carefully detach latch mechanisms in area (3) to the rear.
- Pull the bumper panel (1) straight toward the rear in direction of arrow with an auxiliary person.
- Unlock all plug connections and disconnect.
- Remove the bumper panel (1).

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4 – Remove the bottom sensor line for the contactless tailgate opening

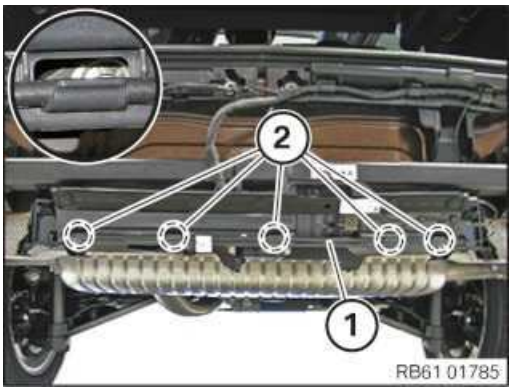


- Unlock and disconnect the associated connector (1) on the control unit.
- Feed out associated access line.

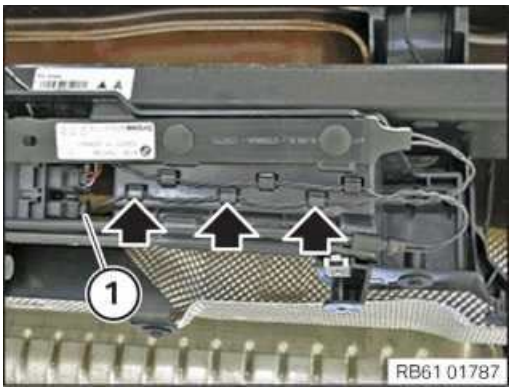


- Unclip the bottom sensor line (1) from the brackets (2).

5 – Install the bottom sensor line for the contactless tailgate opening



- Clip in the bottom sensor line (1) at the brackets (2).



- Connect the associated connector (1) to the control unit.
- Thread associated access line.

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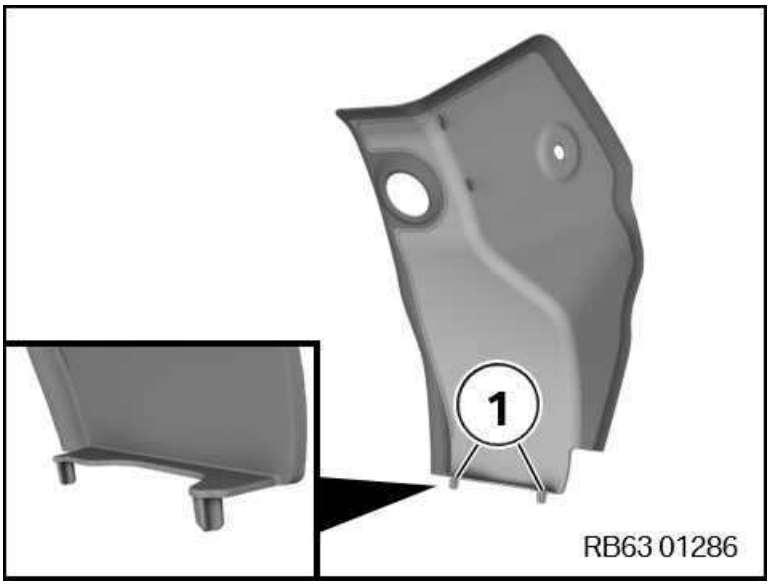
6 – Install both trim pieces for the water channel

NOTICE

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

▸ **Install the trim for the water channel**

Check



- Check the guides (1) for damage.

Result

» The guides (1) are damaged.

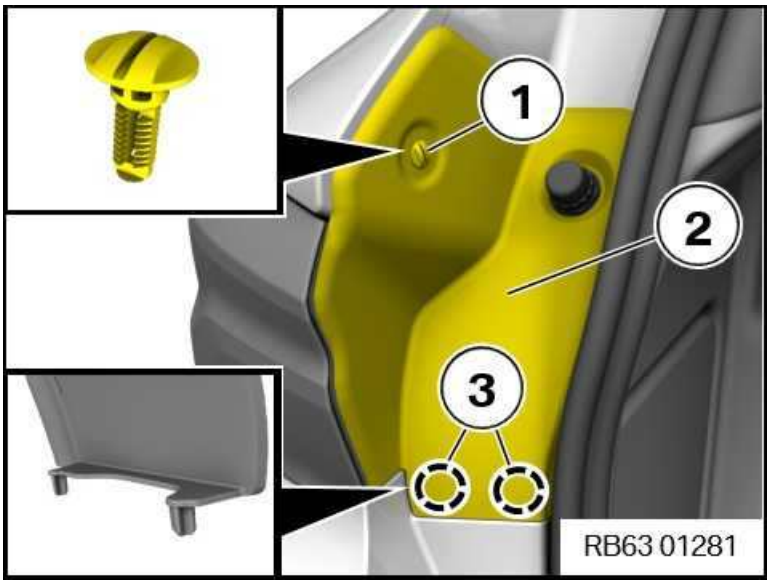
Measure

- Renew the trim for the water channel.



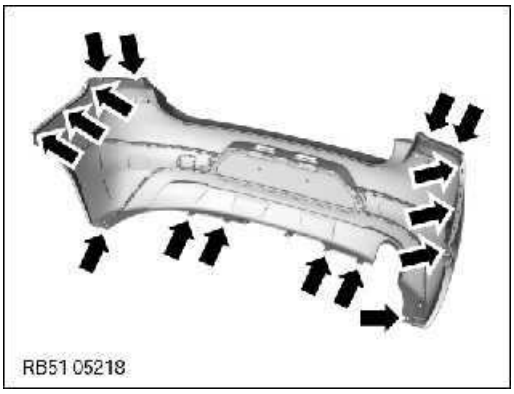
- Check rotary clip (1) for damage and, if necessary, replace it.

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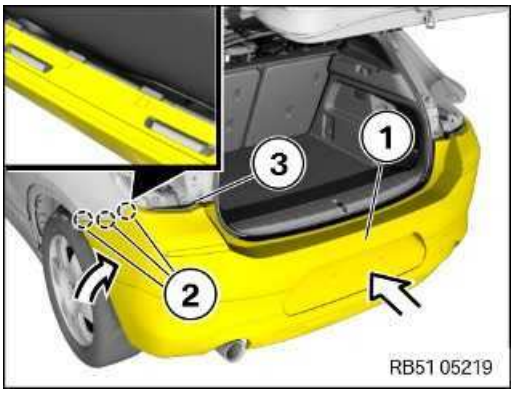


- Insert the trim for water channel (2) with guides (3).
- Fasten the rotary clip (1).

7 – Install rear bumper panel



- Check if the latch mechanisms and the guide (arrows) are damaged or missing and replace the bumper panel where required.

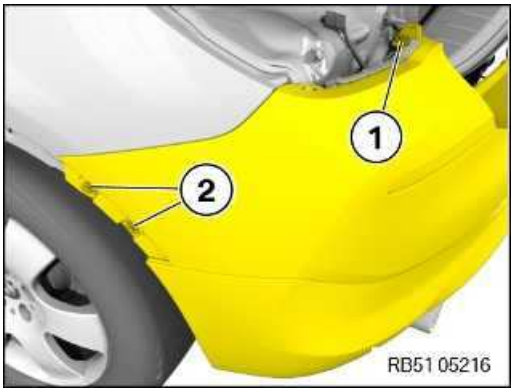


- Position the bumper panel (1) straight with the help of another person.
- Connect all connectors and lock.

NOTICE

Perform the operations on the left and right side.

- Engage the latch mechanisms in the area (3).
- Engage the side latch mechanisms (2) in the direction of the arrow.



NOTICE

Perform the operations on the left and right side.

- Tighten the screws (1).

Rear bumper panel to guides

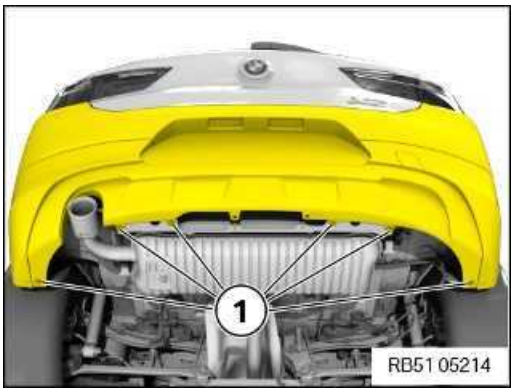
Screw for thermoplastic plastic		Tightening torque	2,5 Nm

- Tighten down screws (2).

Rear bumper panel to side wall

Screw for thermoplastic plastic		Tightening torque	4,6 Nm

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- Tighten the screws (1).

Rear bumper panel to guides

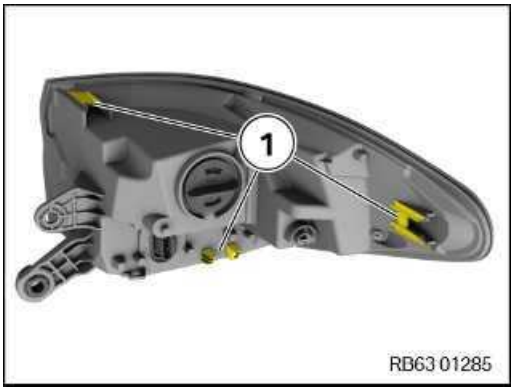
Screw for thermoplastic plastic		Tightening torque	2,5 Nm

8 – Install both rear lights on the side panel

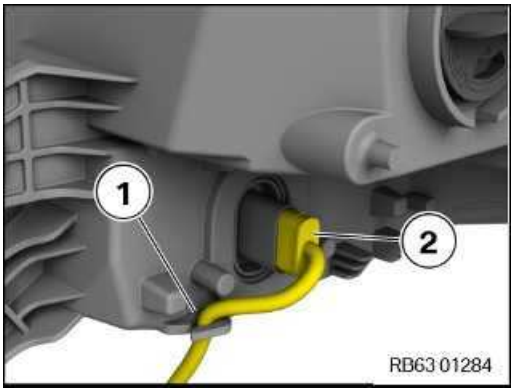
NOTICE

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

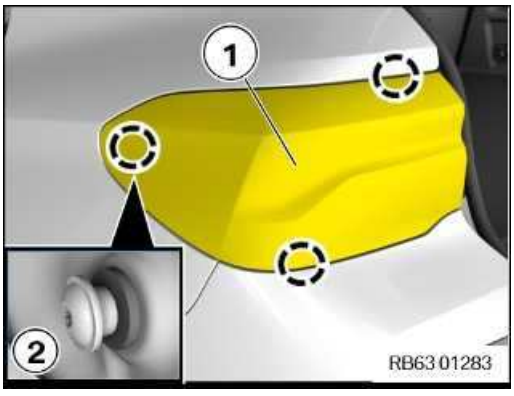
▶ **Install the rear light on the side panel**



- Make sure that the guides (1) on the rear light are not damaged or missing.

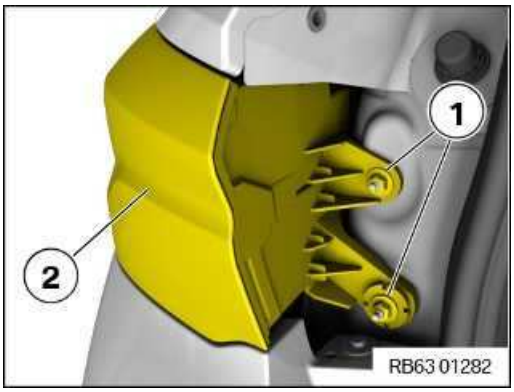


- Connect connectors (2) and lock.
- Attach the cable in the guide (1).



- Position the rear light (1) in the side panel.
- Make sure the rear light (1) is fitted correctly in the guides (2).

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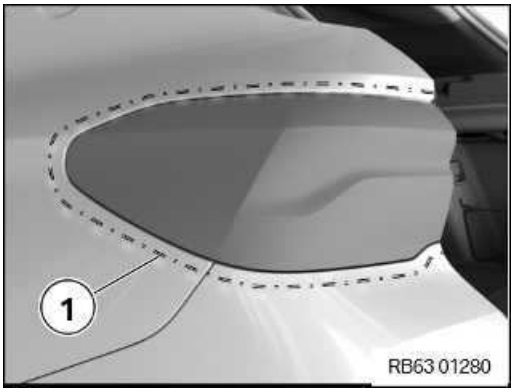


- Replace the nuts (1) on the rear light (2).

  Parts: Nuts
- Tighten nuts (1).

Side panel rear light to body

Combination hexagon nut	Replace nuts.	Tightening torque	2.8 Nm



- Pull off the plastic adhesive tape from the body in the area (1).

Additional Information

Overview of Tightening Torques

Rear bumper panel to guides Used in step 7

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

Rear bumper panel to side wall Used in step 7

Screw for thermoplastic plastic		Tightening torque	4,6 Nm

Side panel rear light to body Used in step 8

Combination hexagon nut	Replace nuts.	Tightening torque	2.8 Nm

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61 35 953 Removing and installing / replacing interior aerial for comfort access (front) (after vehicle diagnosis)

PRELIMINARY WORK

1 – Remove gearshift lever cover



- Use wedges (1) to unclip the gaiter and pull it off upward.



- Remove the gearshift lever knob and the gaiter by means of a powerful jolt vertically upwards.

  In doing so, the tie rod must not be bent or damaged.
- Ensure that the gearshift lever knob is not twisted when removing, otherwise the anti-twist lock in the gearshift lever knob will be sheared off.

2 – Remove the decorative trim from the centre console

RISK OF DAMAGE

Scratches.

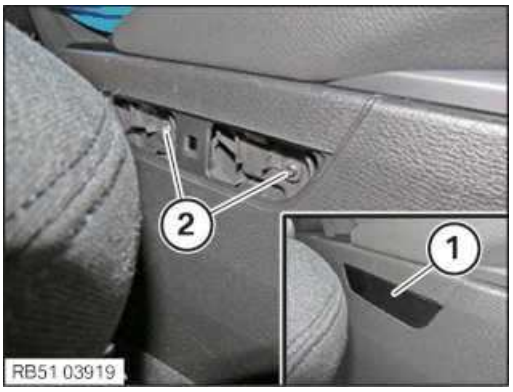
Tools and sharp-edged components can cause scratches.

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

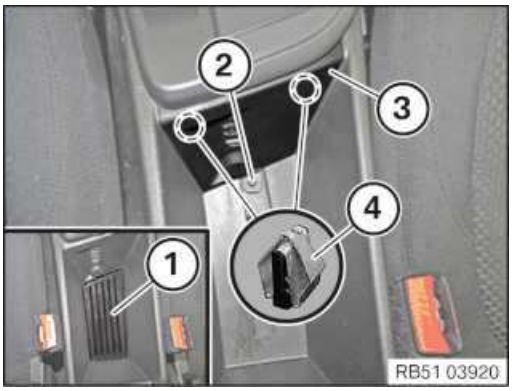


- Lever out and remove cover (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screws (2).

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- Lever out and remove cover (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screws (2).

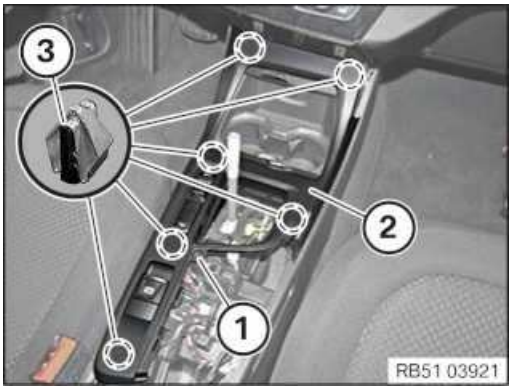


- Remove insert (1) with the special tool **0 496 571 (00 9 327)**.
- Loosen screw (2).
- Lever out trim (3) from clamps (4) towards the rear with the special tool **0 496 571 (00 9 327)**.
- Unfasten plug connection.
- Remove the trim (3).

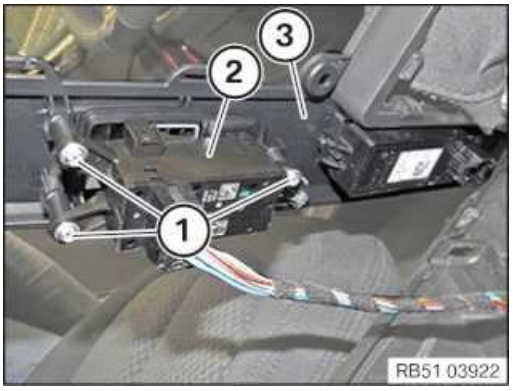


- Loosen screw (1).
- Remove decorative trim (2) and disconnect all the plug connections.
- Remove decorative trim (2).

3 – Remove the centre console trim



- Loosen screw (1).
- Release centre console trim (2) from clamps (3) with the special tool **0 496 569 (00 9 325)**.
- Lift centre console trim (2).

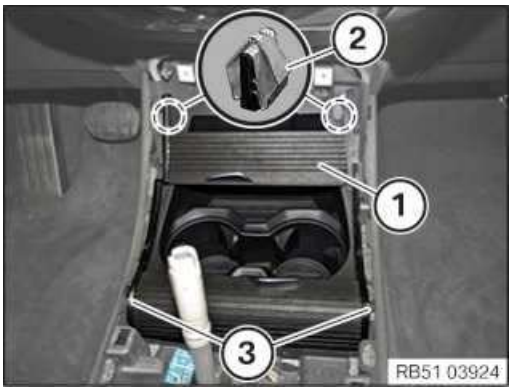


- Loosen screws (1).
- Remove parking brake button (2) from centre console trim (3) and place it down.

  The plug connection must not be disconnected.
- Disconnect the remaining plug connections and remove centre console trim (3).

4 – Removing the front storage compartment

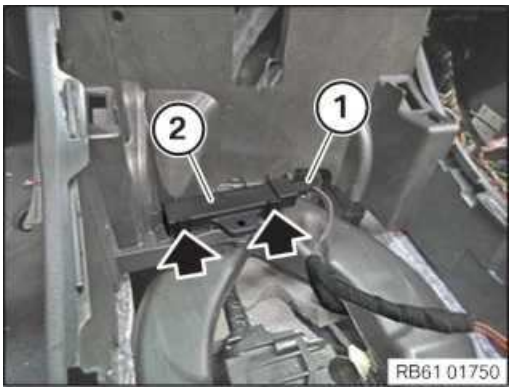
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- Lever storage compartment (1) at top from the clamps (2).
- Fold storage compartment (1) so far back that it can be lifted from the guides (3).
- Disconnect plug connections and remove the storage compartment (1).

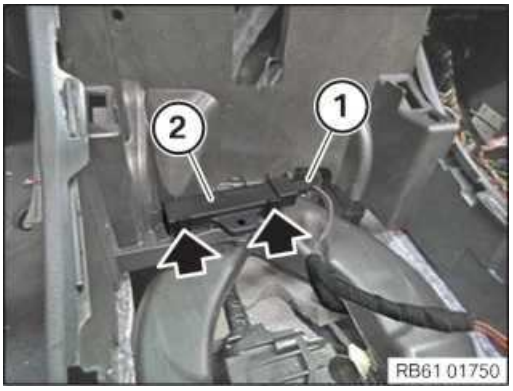
MAIN WORK

5 – Removing front interior aerial for front Comfort Access



- Disconnect plug connection (1).
- Release the latch mechanisms (arrows).
- Remove the interior aerial for Comfort Access (2).

6 – Installing interior aerial for the front Comfort Access

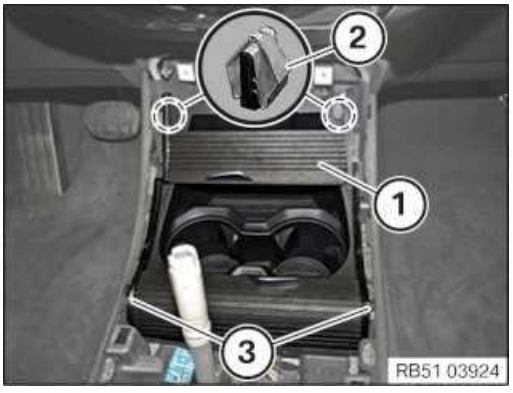


- Clip in the interior aerial for the Comfort Access (2).

  The latch mechanisms (arrows) must engage audibly.
- Connect connector (1).

POSTPROCESSES

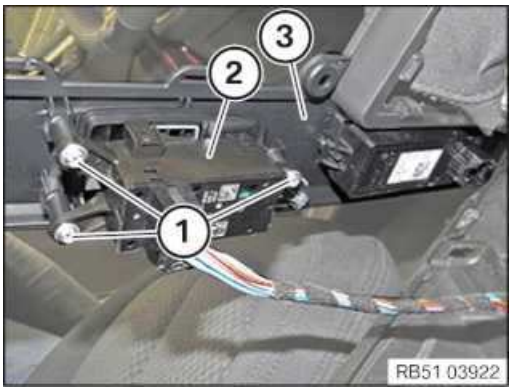
7 – Installing the front storage compartment



- Install storage compartment (1) and connect the connectors.
- Insert the storage compartment (1) into the guides (3) and fold forward.
- Engage storage compartment (1) in the clamps (2) at top.

8 – Install the centre console trim

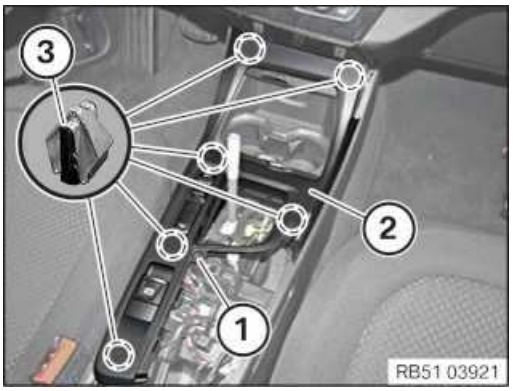
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- Install centre console trim (3) and connect and lock the corresponding connectors.
- Install parking brake button (2) on centre console trim (3).
- Tighten the screws (1).

Parking brake button

Oval-head screw		Tightening torque	1,5 Nm



- Install centre console trim (2) and engage it into clamps (3).
- Tighten down screw (1).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

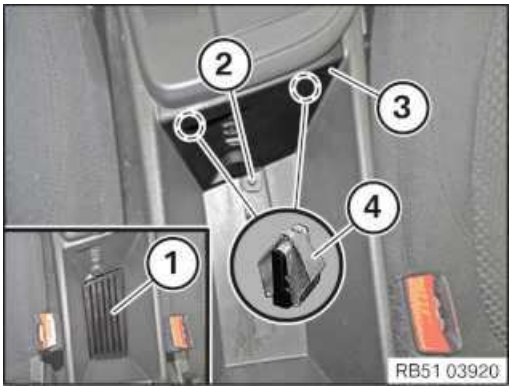
9 – Installing the decorative trim to the centre console



- Connect all connectors.
- Install decorative trim (2).
- Tighten down screw (1).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

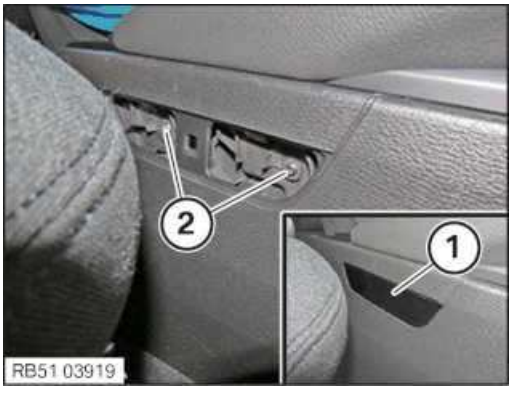


- Position trim (3) and connect all the connectors.
- Install trim (3) and engage it into clamps (4).
- Tighten down screw (2).

Trim to centre console

Oval-head screw		Tightening torque	1,8 Nm

- Insert the insert (1).



- Tighten down screws (2).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

- Install cover (1) and engage.

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- Tighten down screws (2).

Screw connection for centre console

Oval-head screw		Tightening torque	1,8 Nm

- Install cover (1) and engage.

10 – Installing the gearshift lever cover



- Place the gearshift lever knob on gearshift lever and align by lightly pressing in the direction of travel.

  The anti-twist lock must bite.
- Press the gearshift lever knob with the palm of the hand until it can be felt to engage.

  When installing, the tie rod of the gearshift lever must not be bent.



- Clip in gaiter (arrows).

Additional Information

Overview of Tightening Torques

Parking brake button Used in step 8

Oval-head screw		Tightening torque	1,5 Nm

Screw connection for centre console Used in step 8 9

Oval-head screw		Tightening torque	1,8 Nm

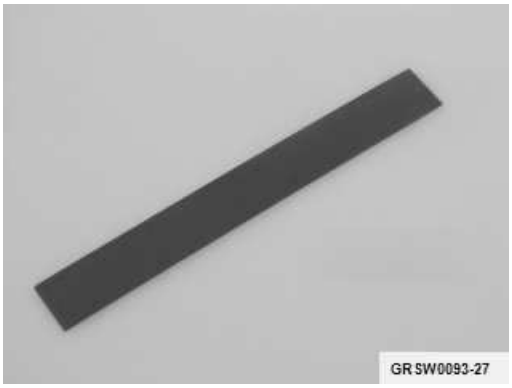
Trim to centre console Used in step 9

Oval-head screw		Tightening torque	1,8 Nm

Overview of Special Tools

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0 496 571 (00 9 327) Wedge



Common	Used in step 2
Usage	(Cleaning wedge) From 11/2008 this special tool replaces panel wedge 00 9 323 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

0 496 569 (00 9 325) Wedge



Common	Used in step 3
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 35 954 Removing and installing / replacing interior aerial for comfort access (rear) (after vehicle diagnosis)

RISK OF DAMAGE

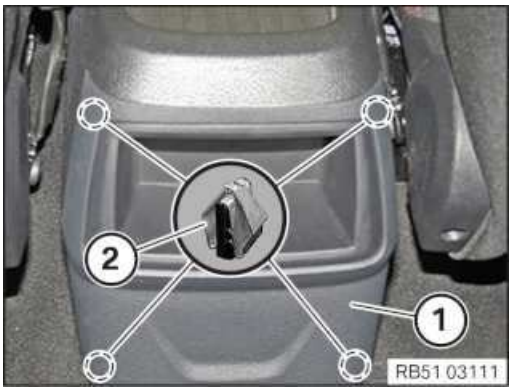
Scratches.

Tools and sharp-edged components can cause scratches.

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

PRELIMINARY WORK

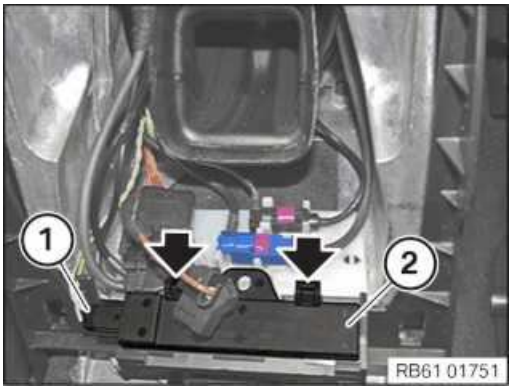
1 – Removing the rear centre console trim



- Lever out and remove centre console trim (1) with the special tool **0 496 569 (00 9 325)** from the clamps (2).

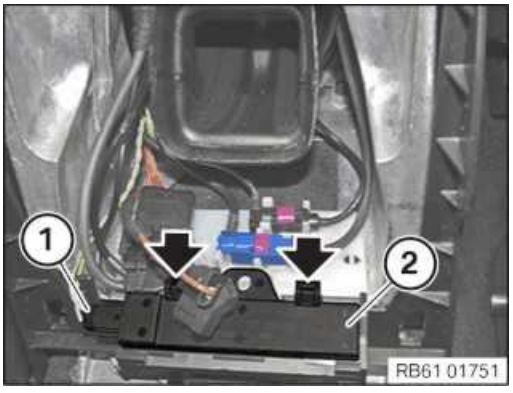
MAIN WORK

2 – Removing front interior aerial for Comfort Access



- Disconnect plug connection (1).
- Release the latch mechanisms (arrows).
- Removing front interior aerial for Comfort Access (2).

3 – Install the interior aerial for the Comfort Access

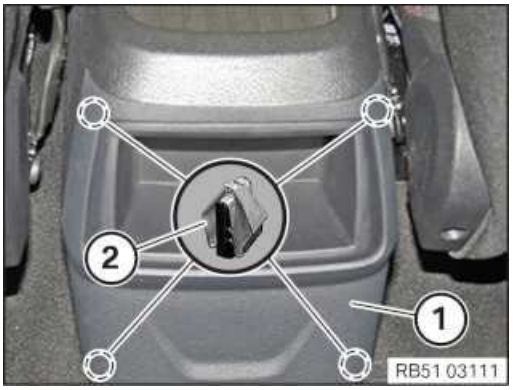


- Clip in the interior aerial for the Comfort Access (2).

  The latch mechanisms (arrows) must engage audibly.
- Connect connector (1).

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4 – Installing the rear centre console trim



- Install centre console trim (1) and engage it into clamps (2).

Additional Information

Overview of Special Tools

0 496 569 (00 9 325) Wedge



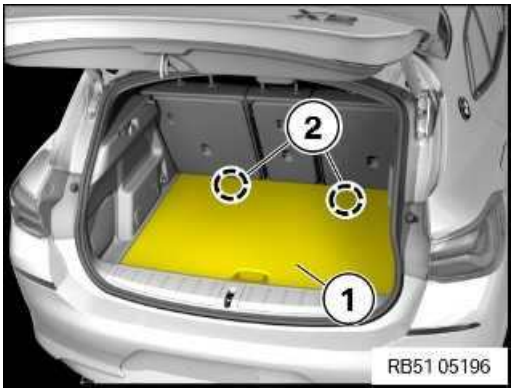
Common	Used in step 1
Usage	(Panel wedge) From 11/2008 this special tool replaces panel wedge 00 9 317 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	41 01 09 (507)

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61 35 196 Removing and installing control unit for automatic tailgate operation

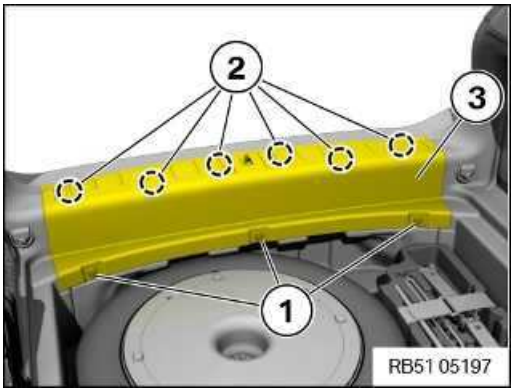
PRELIMINARY WORK

1 – Removing the luggage compartment removable panel



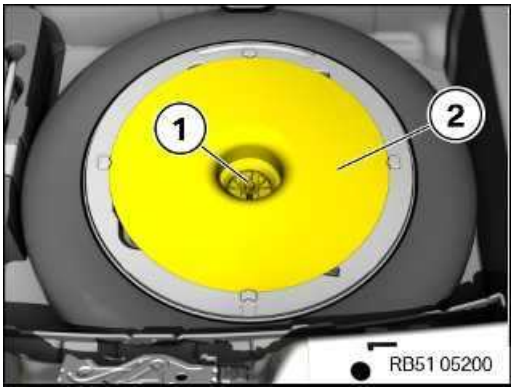
- Raise the luggage compartment removable panel (1) slightly at the handle, detach it from the latch mechanisms (2) and remove it toward the back.

2 – Removing the loading edge trim

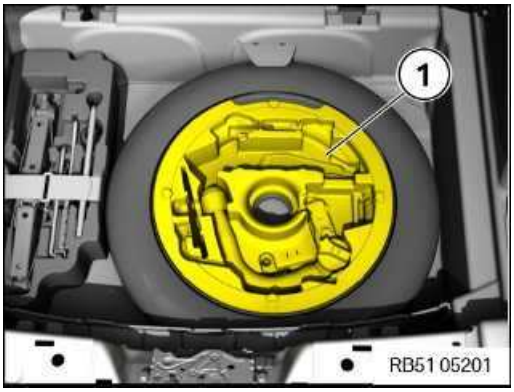


- Loosen the expanding rivet (1).
- Unclip the loading edge trim (3) from the clamps (2) toward the top and remove.

3 – Removing the compact spare wheel



- Loosen screw (1).
- Remove the cover (2).



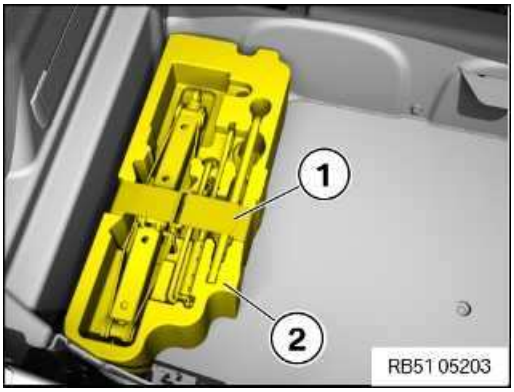
- Remove the oddments tray from the emergency wheel (1).

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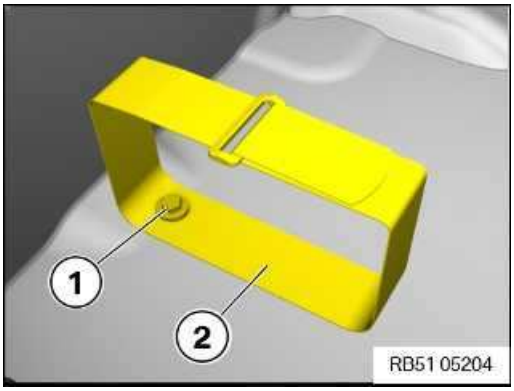
- Remove the emergency wheel (1).

4 – Remove the tool kit



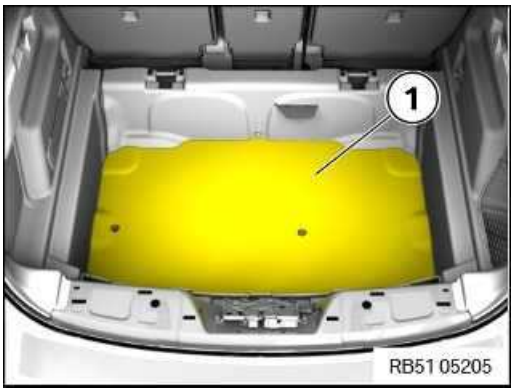
- Open the hook and loop tape (1).
- Remove the tool kit (2).

5 – Remove the hook and loop tape for the tool kit



- Loosen screw (1).
- Remove the hook and loop tape (2).

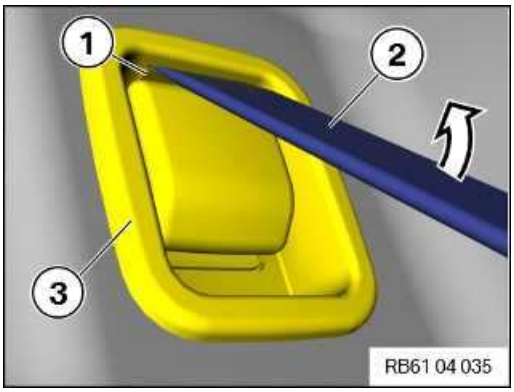
6 – Removing the luggage compartment floor trim panel



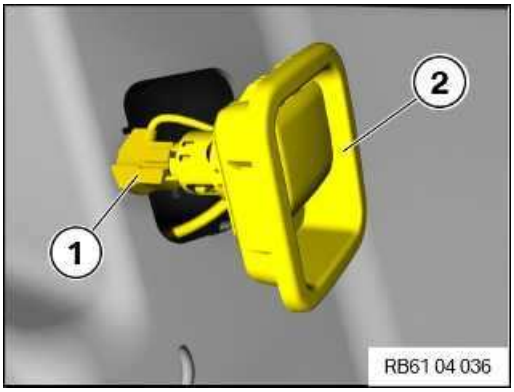
- Remove the luggage compartment floor trim panel (1) upwards.

7 – Remove the fixture of the 12 V power socket

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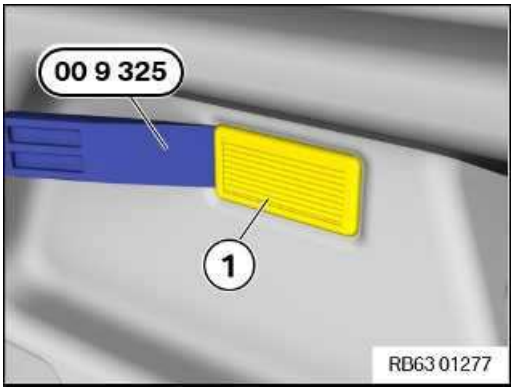


- Push the lock on top (1) with a suitable tool (2) in the direction of the arrow and unlock.
- Remove the fixture (3) of the 12 V power socket in the rear from the luggage compartment wheel arch trim panel.

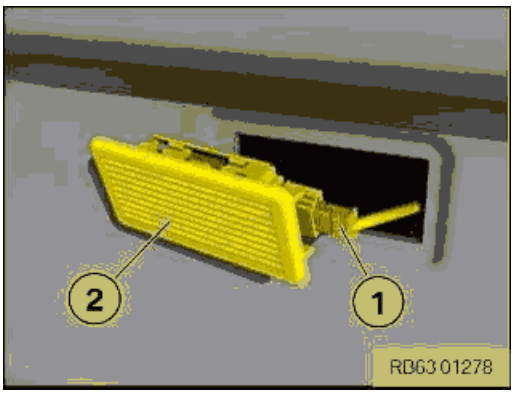


- Unlock the plug connection (1), disconnect it and remove the fixture (2) of the 12 V power socket.

8 – Removing the luggage compartment light

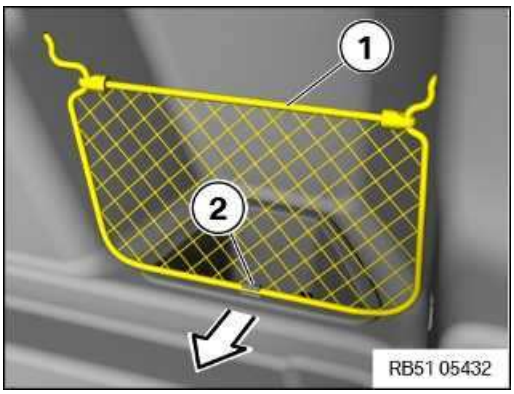


- Lever out the luggage compartment light (1) with the special tool **0 496 569 (00 9 325)**.



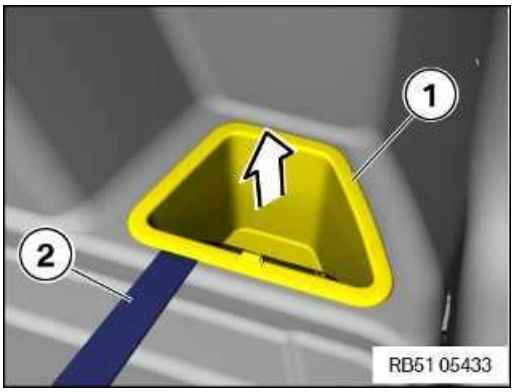
- Disconnect plug connection (1) and remove luggage compartment light (2).

9 – Removing right luggage compartment wheel arch trim panel

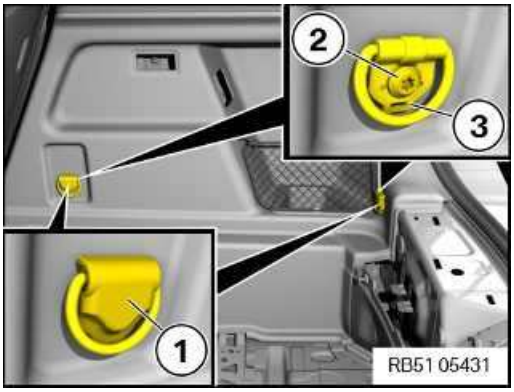


- Release the storage net (1) from the latch mechanism (2) in the direction of arrow and fold up.

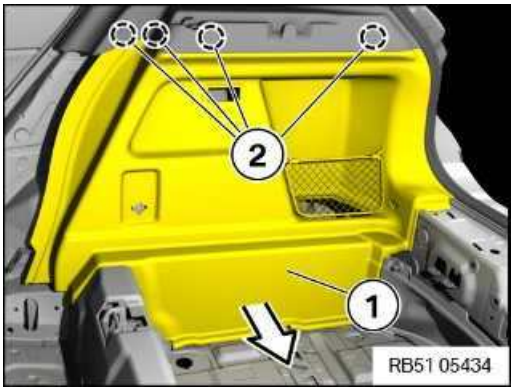
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- Remove storage compartment (1) out of the luggage compartment wheel arch trim panel in the direction of arrow using a suitable tool (2).



- Unclip covers (1).
- Unscrew the bolts (2) and remove the lashing points (3).



NOTICE

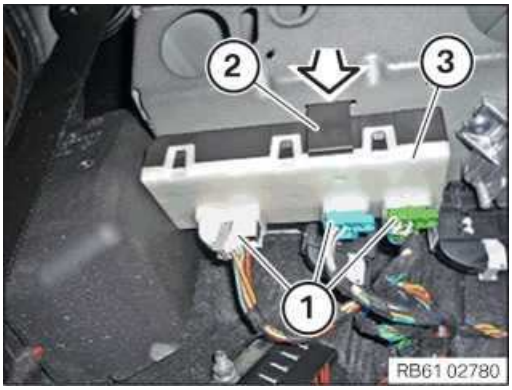
Schematic diagram is for example purposes. Some parts may differ in certain details.

- Pull the luggage compartment wheel arch trim panel (1) on the bottom in the direction of the arrow and guide it out of the guides (2) and the C-pillar trim panel and remove.

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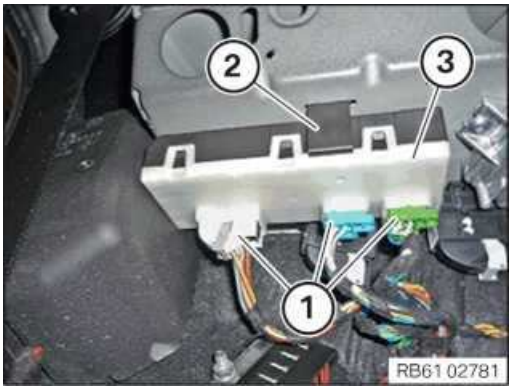
MAIN WORK

10 – Remove the control unit for the automatic tailgate operation (HKL)



- Unlock and disconnect connector (1).
- Unlock latch mechanism (2) in direction of arrow and remove the control unit (3).

11 – Install the control unit for the automatic tailgate operation (HKL)

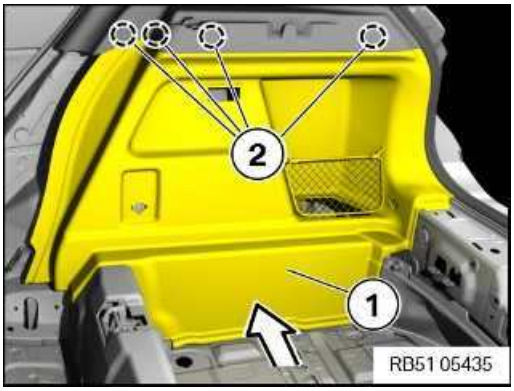


- Position the control unit (3) correctly and engage it in the latch mechanism (2).

  The latch mechanism (2) must be locked correctly.
- Connect the connector (1) to the control unit (3) and lock it.

POSTPROCESSES

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

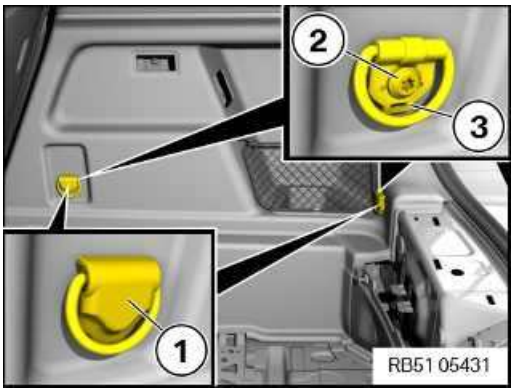


NOTICE

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

- Press luggage compartment wheel arch trim panel (1) down in direction of arrow and feed into the guides (2) and under the bottom C-pillar trim panel.

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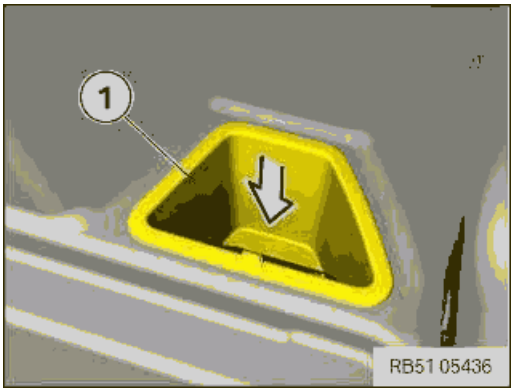


- Position the lashing eyes (3) and tighten the screws (2).

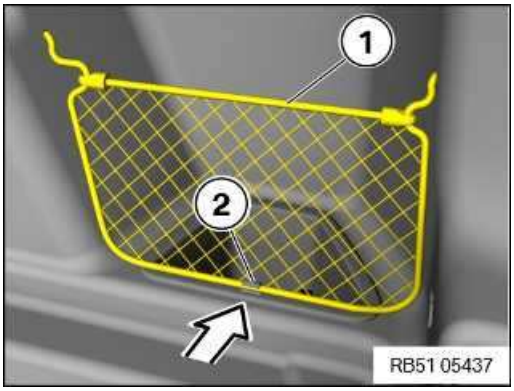
Lashing eye in luggage compartment

Bolt M8 x 22		Tightening torque	21 Nm

- Clip in the covers (1).

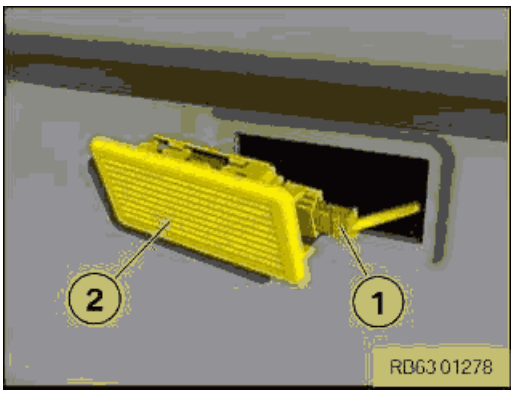


- Install the storage compartment (1) in the luggage compartment wheel arch trim panel in direction of arrow.

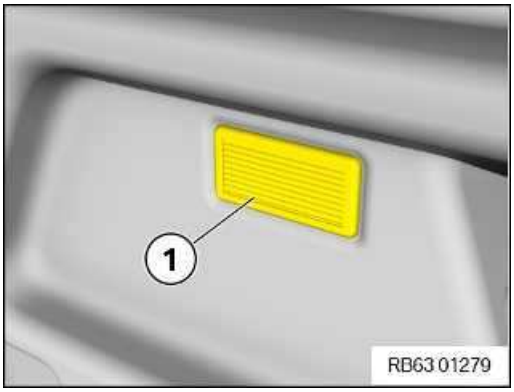


- Clip storage net (1) into latch mechanisms (2) in direction of arrow.

13 – Installing the luggage compartment light



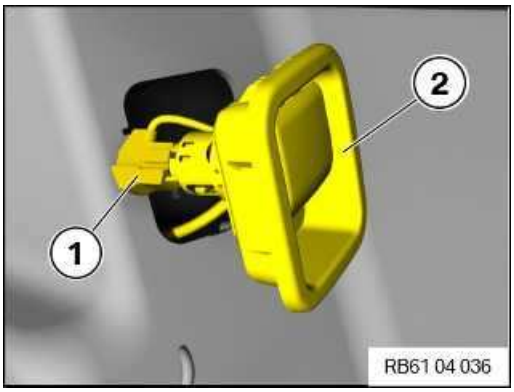
- Connect the connector (1) to the luggage compartment light (2).



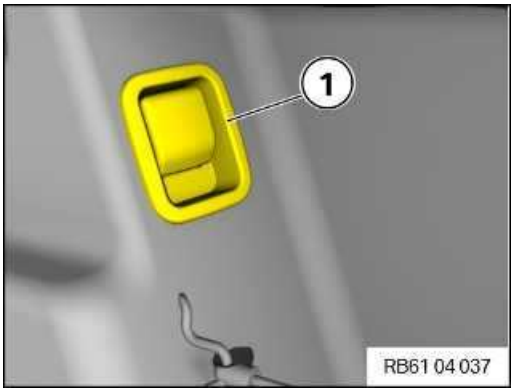
- Install the luggage compartment light (1).

14 – Install the fixture of the 12 V power socket

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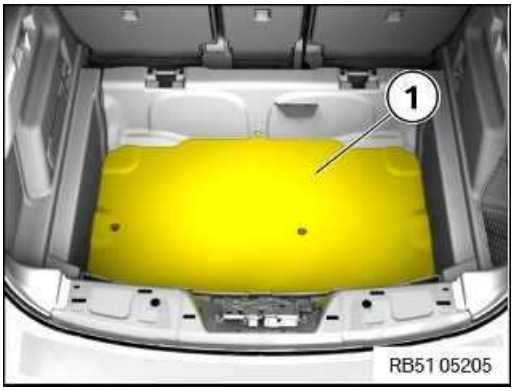


- Connect the connector (1) to the fixture (2) of the 12 V power socket and lock.



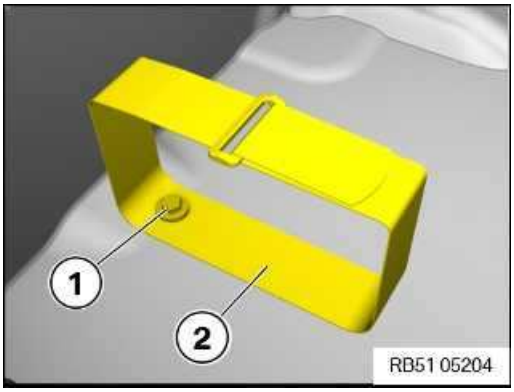
- Insert the fixture (1) of the 12 V power socket in the luggage compartment wheel arch trim panel and engage.

15 – Installing the luggage compartment floor trim panel



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

16 – Inserting the Velcro fastener for the toolkit



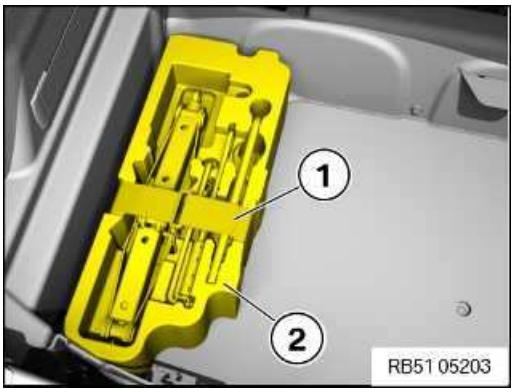
- Insert Velcro fastener (2).
- Tighten down screw (1).

Toolkit hook and loop tape to body

Bolt M6 x 20		Tightening torque	4 Nm

17 – Install the tool kit

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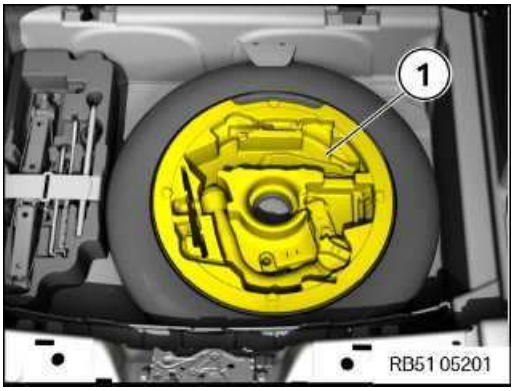


- Install the tool kit (2).
- Close the hook and loop tape (1).

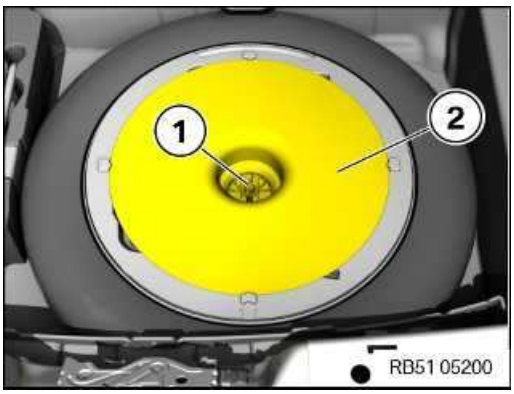
18 – Install the emergency wheel



- Insert compact spare wheel(1).

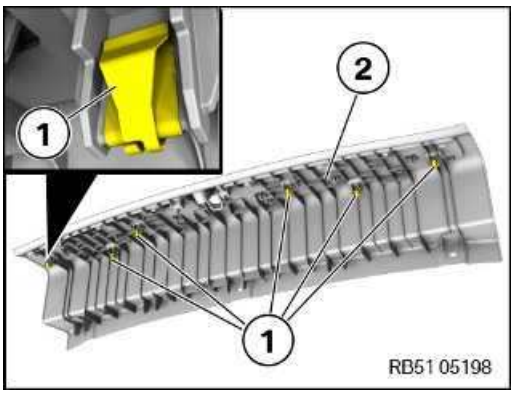


- Insert oddments tray into the compact spare wheel (1).



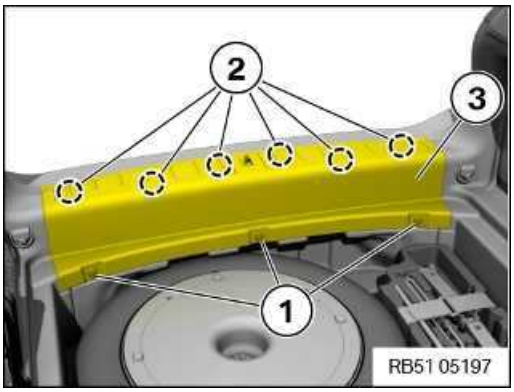
- Insert the lid (2).
- Hand-tighten the bolt (1).

19 – Installing loading edge trim



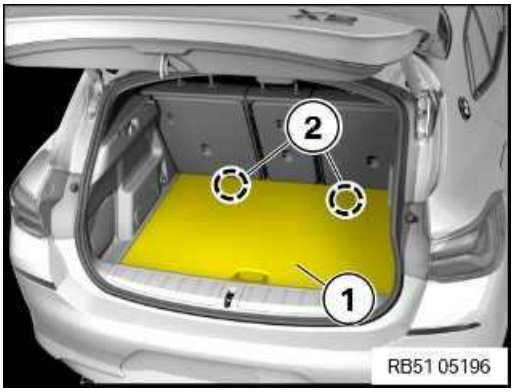
- Check the clamps (1) at the loading edge trim (2) for damage and renew if necessary.

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- Insert the loading edge trim (3) in the area of the expanding rivets (1) into the underlying rear luggage compartment trim panel.
- Guide in the loading edge trim (3) under the sealing lip of the seal for the tailgate and clip it in with the clamps (2).
- Secure expanding rivet (1).

20 – Installing the luggage compartment removable panel



- Clip luggage compartment removable panel (1) into latch mechanisms (2) and set down.

Additional Information

Overview of Tightening Torques

Lashing eye in luggage compartment — Used in step 12

Bolt M8 x 22		Tightening torque	21 Nm

Toolkit hook and loop tape to body — Used in step 16

Bolt M6 x 20		Tightening torque	4 Nm

Overview of Special Tools

0 496 569 (00 9 325) Wedge



Common — Used in step 8

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 35 095 Removing and installing control unit/module for seat heating

RISK OF DAMAGE



Electrostatic discharge.

Damage to or destruction of electrical components.

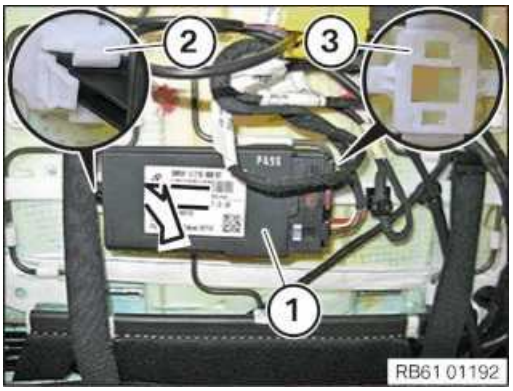
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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

NOTICE

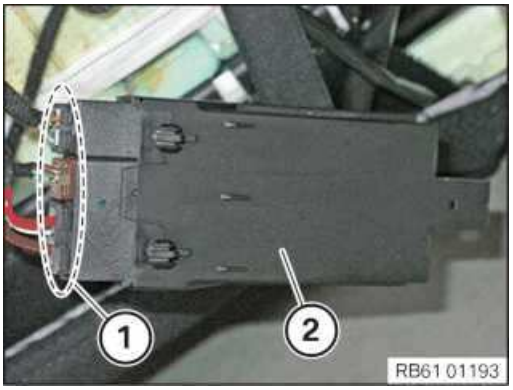
Description is for left component only. Procedure on the right side is identical.

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1 – Remove the seat-heating electronics

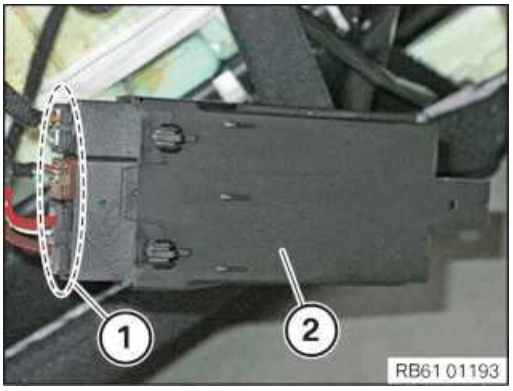


- Release the seat-heating electronics (1) in the direction of the arrow from the holder (3) and the guide (2) and remove.

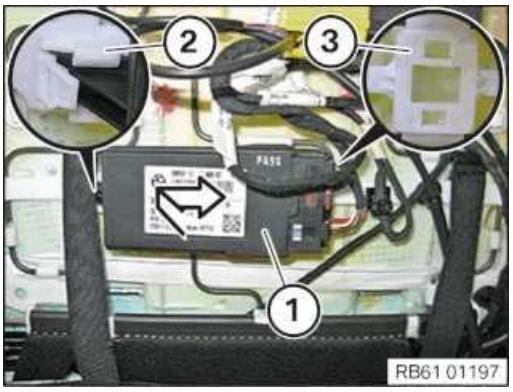


- Unlock all connectors (1) at seat-heating electronics (2) and disconnect.

2 – Install the seat-heating electronics



- Connect all connectors (1) on the seat-heating electronics (2).



- Insert the seat-heating electronics (1) in direction of arrow in the guide (2) and holder (3).

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Additional Information

Links

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

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61 35 080 Removing and installing the control unit/module for the left or right seat adjustment

RISK OF DAMAGE



Electrostatic discharge.

Damage to or destruction of electrical components.

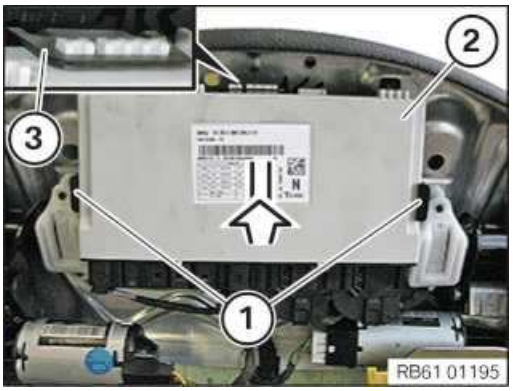
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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

NOTICE

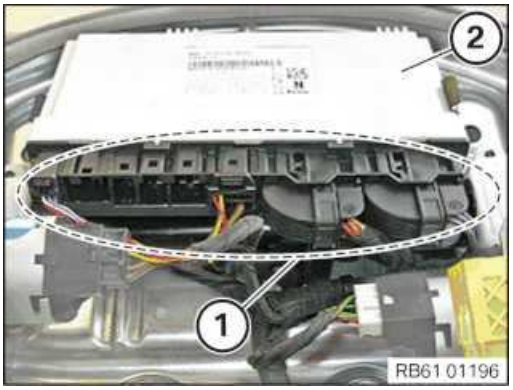
Description is for left component only. Procedure on the right side is identical.

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1 – Remove the front seat module (SMFA)

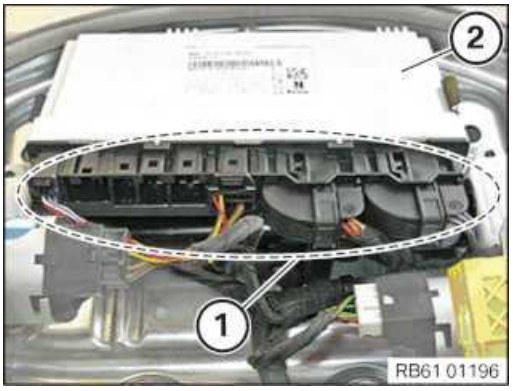


- Unlock the sheet metal tabs (1) at the side and remove the control unit for the seat adjustment (2) from the guide (3) in direction of arrow.

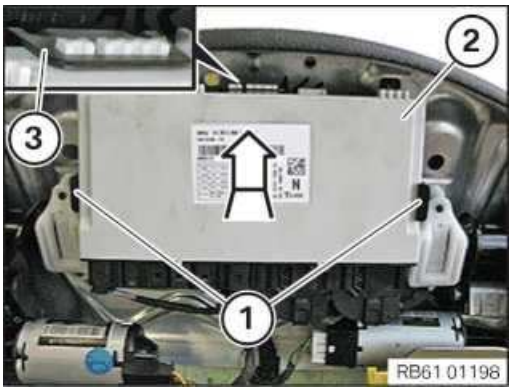


- Unlock and disconnect all connectors (1) from the seat adjustment control unit (2).

2 – Install the front seat module (SMFA)



- Connect all connectors (1) on the control unit for the seat adjustment (2).



- Fit the control unit for the seat adjustment (2) in direction of arrow into guide (3).
- The sheet metal tabs (1) must engage on the side.

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61 35 240 Removing and installing the non-contact tailgate opening control unit

RISK OF DAMAGE

Electrostatic discharge.

Damage to or destruction of electrical components.

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

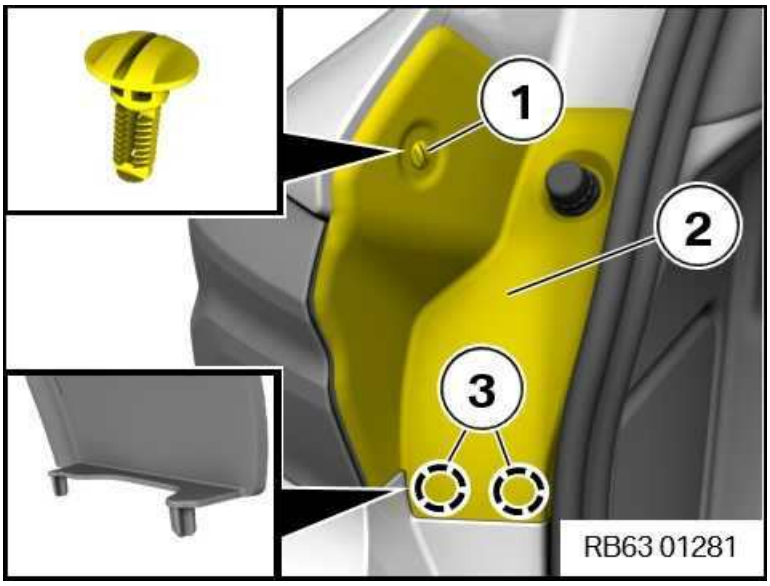
PRELIMINARY WORK

1 – Removing both trims for water channel

NOTICE

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

▸ **Removing trim for water channel**



- Detach rotary clip (1).
- Feed out and remove trim for water channel (2) from guides (3).

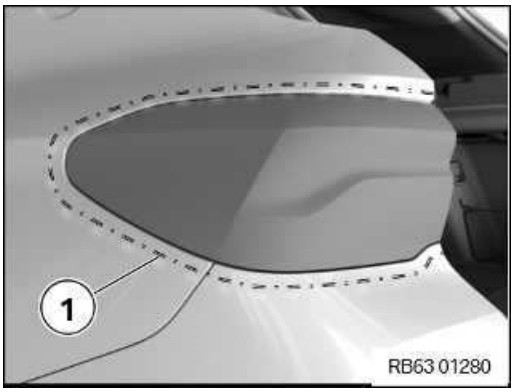
2 – Remove both rear lights from the side panel

NOTICE

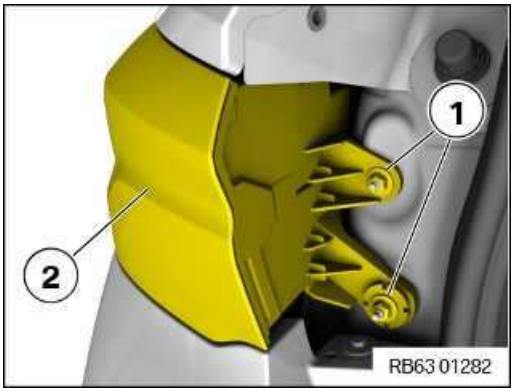
Description is for left component only. Procedure on the right side is identical.

▸ **Remove the rear light on the side panel**

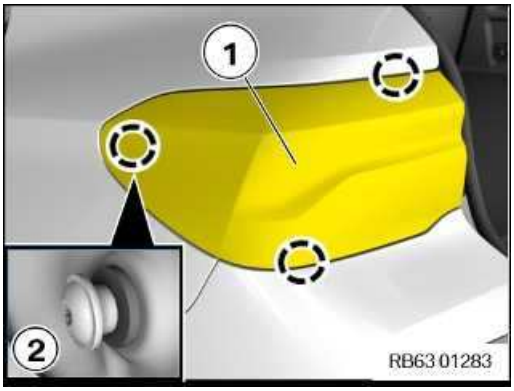
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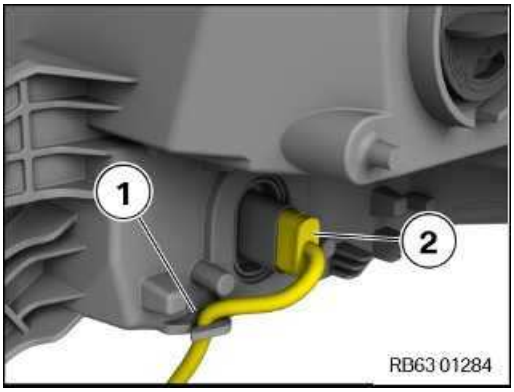
- Mask the body in area (1) with plastic adhesive tape.



- Loosen the nuts (1) on the rear light (2).

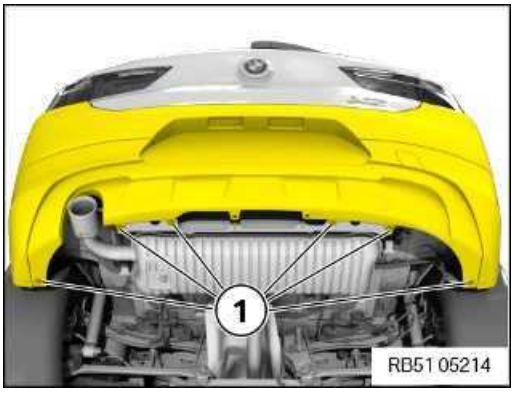


- Remove the rear light (1) from the guides (2) towards the rear.



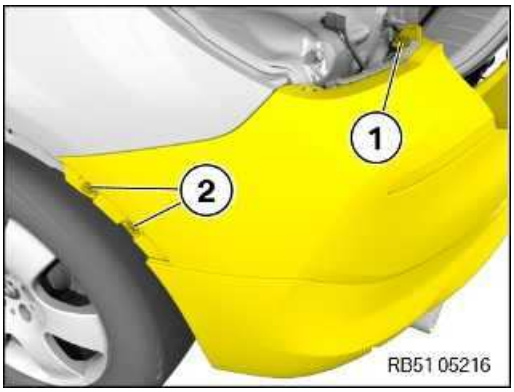
- Detach cable from guide (1).
- Unlock and disconnect the plug connection (2) and remove the rear light .

3 – Remove rear bumper panel



- Loosen screws (1).

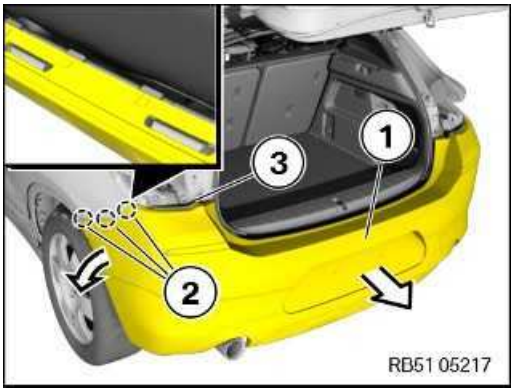
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NOTICE

Perform the operations on the left and right side.

- Loosen screws (1) and (2).



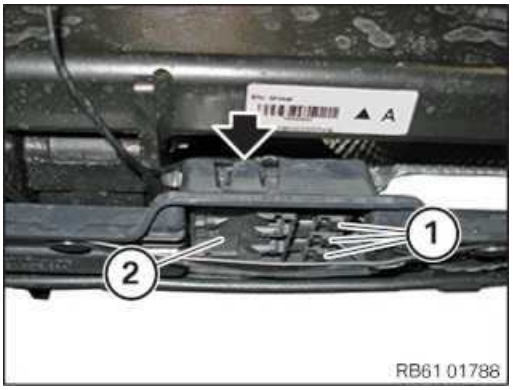
NOTICE

Perform the operations on the left and right side.

- Carefully detach side latch mechanisms(2) in direction of arrow.
- Carefully detach latch mechanisms in area (3) to the rear.
- Pull the bumper panel (1) straight toward the rear in direction of arrow with an auxiliary person.
- Unlock all plug connections and disconnect.
- Remove the bumper panel (1).

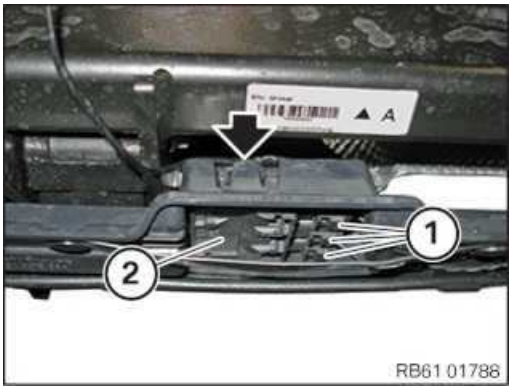
MAIN WORK

4 – Remove the control unit for the contactless tailgate opening



- Release the latch mechanism (arrow).
- Feed control unit (2) out of holder.
- Unlock and disconnect connector (1).

5 – Install the control unit for the contactless tailgate opening



- Connect connector (1).
- Clip in control unit (2) in the holder.
- Lay the access line correctly.

POSTPROCESSES

6 – Install both trim pieces for the water channel

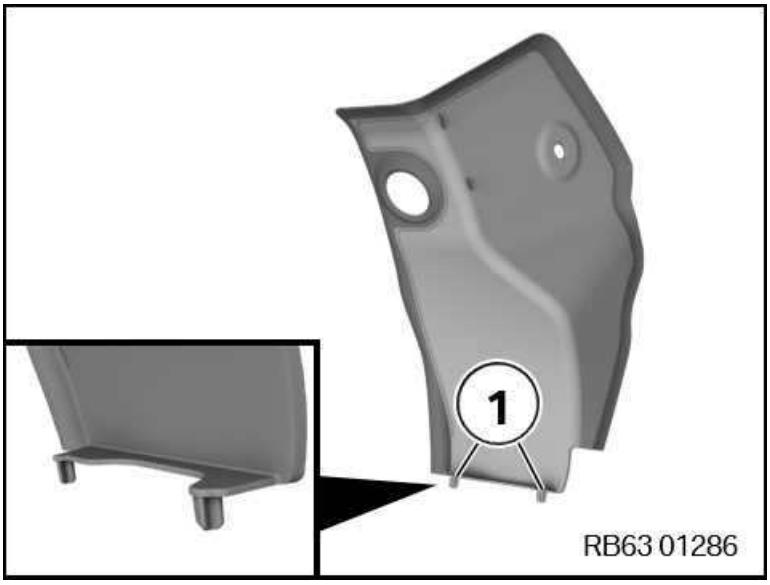
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NOTICE

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

▸ **Install the trim for the water channel**

Check



- Check the guides (1) for damage.

Result

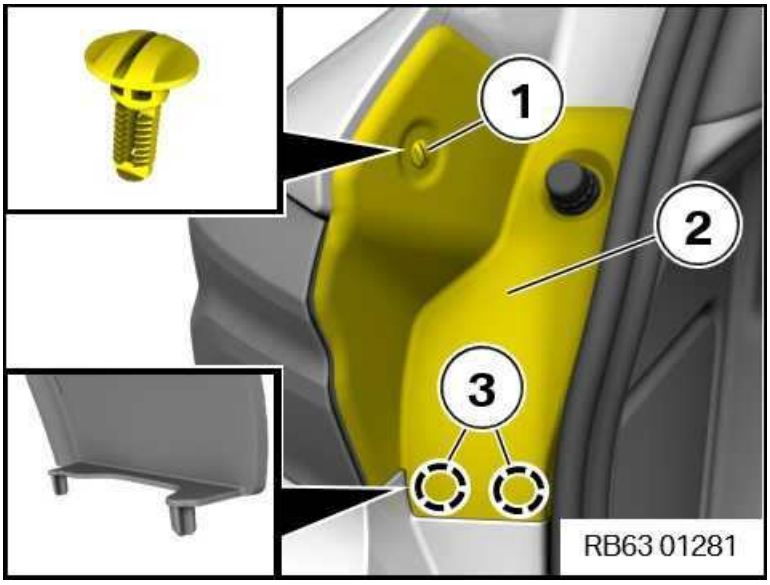
» The guides (1) are damaged.

Measure

- Renew the trim for the water channel.



- Check rotary clip (1) for damage and, if necessary, replace it.

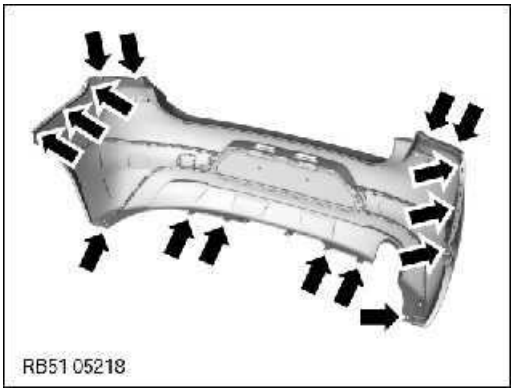


- Insert the trim for water channel (2) with guides (3).
- Fasten the rotary clip (1).

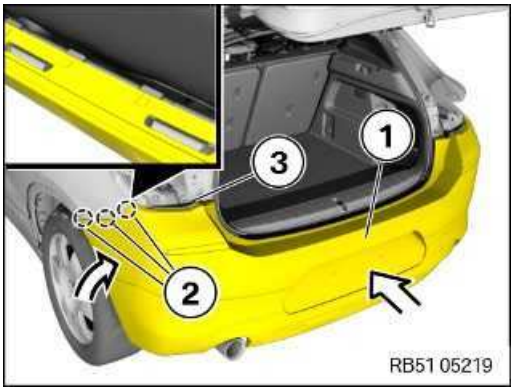
7 Install rear bumper panel

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7 – Install rear bumper panel



- Check if the latch mechanisms and the guide (arrows) are damaged or missing and replace the bumper panel where required.

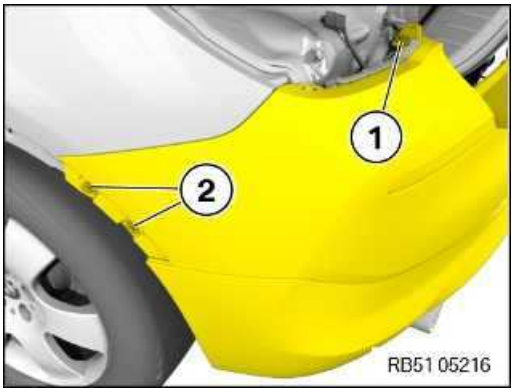


- Position the bumper panel (1) straight with the help of another person.
- Connect all connectors and lock.

NOTICE

Perform the operations on the left and right side.

- Engage the latch mechanisms in the area (3).
- Engage the side latch mechanisms (2) in the direction of the arrow.



NOTICE

Perform the operations on the left and right side.

- Tighten the screws (1).

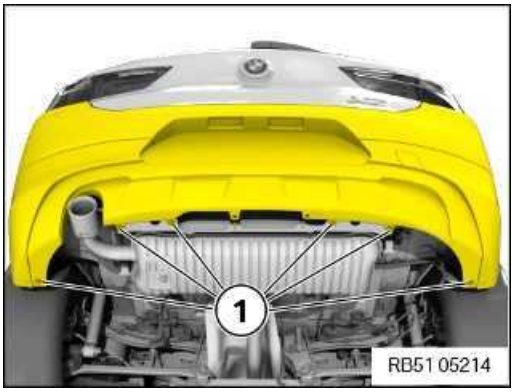
Rear bumper panel to guides

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

- Tighten down screws (2).

Rear bumper panel to side wall

Screw for thermoplastic plastic		Tightening torque	4,6 Nm



- Tighten the screws (1).

Rear bumper panel to guides

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

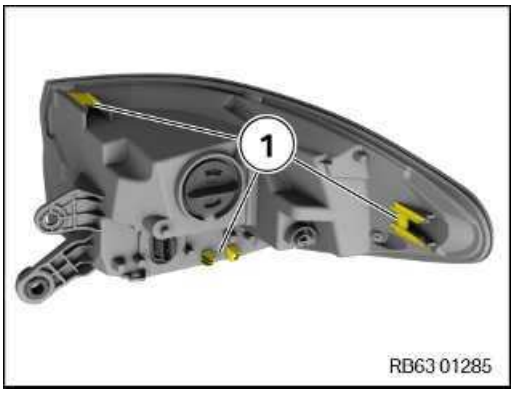
8 – Install both rear lights on the side panel

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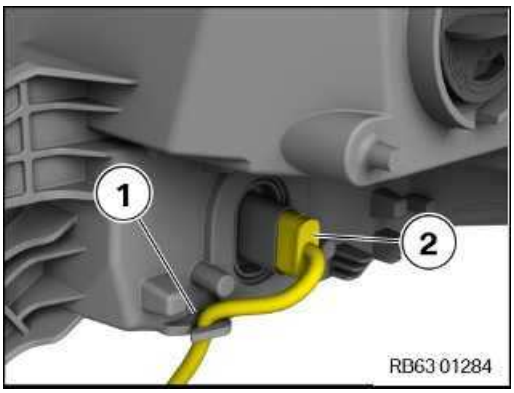
NOTICE

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

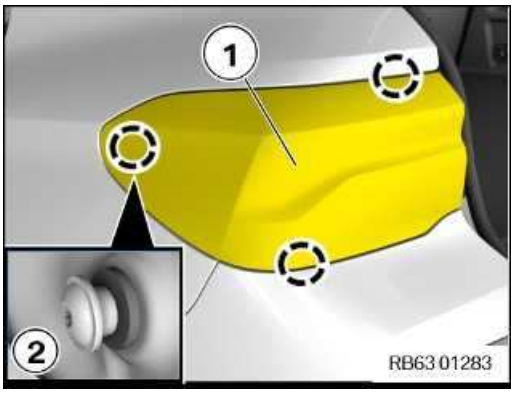
▶ **Install the rear light on the side panel**



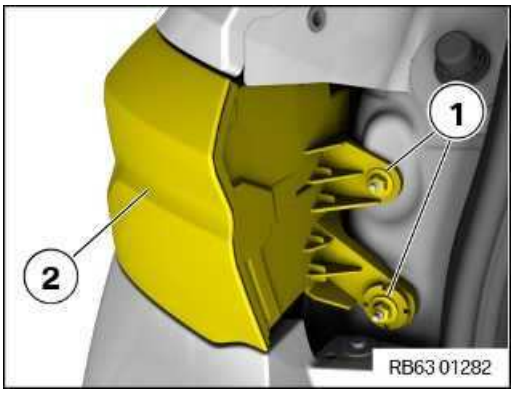
- Make sure that the guides (1) on the rear light are not damaged or missing.



- Connect connectors (2) and lock.
- Attach the cable in the guide (1).



- Position the rear light (1) in the side panel.
- Make sure the rear light (1) is fitted correctly in the guides (2).



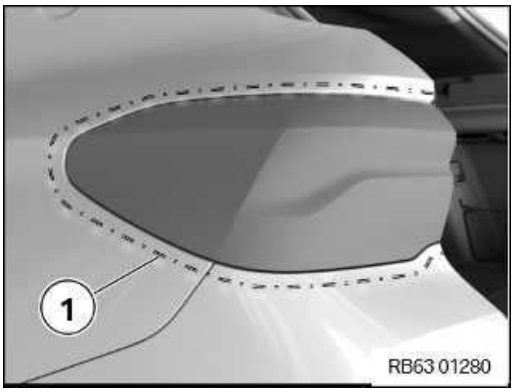
- Replace the nuts (1) on the rear light (2).

  Parts: Nuts
- Tighten nuts (1).

Side panel rear light to body

Combination hexagon nut	Replace nuts.	Tightening torque	2.8 Nm

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- Pull off the plastic adhesive tape from the body in the area (1).

Additional Information

Overview of Tightening Torques

Rear bumper panel to guides — Used in step 7

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

Rear bumper panel to side wall — Used in step 7

Screw for thermoplastic plastic		Tightening torque	4,6 Nm

Side panel rear light to body — Used in step 8

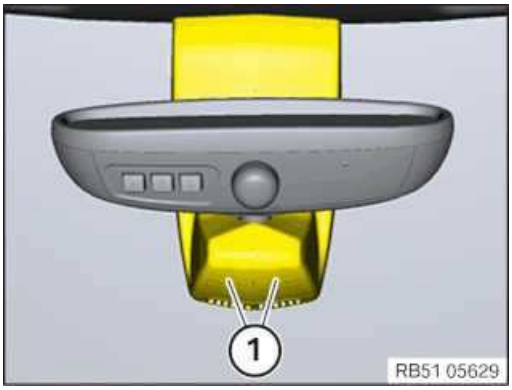
Combination hexagon nut	Replace nuts.	Tightening torque	2.8 Nm

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61 35 179 Removing and installing the rain-light-solar-condensation sensor

PRELIMINARY WORK

1 – Remove the cover on the inside mirror

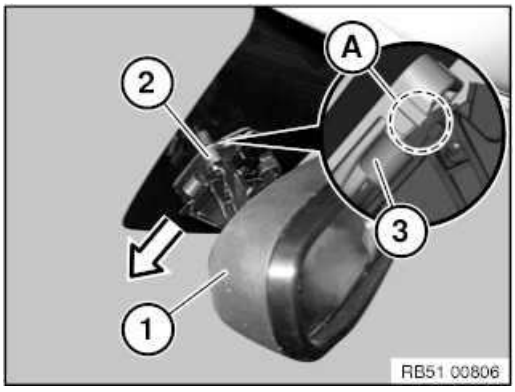


- Unclip the covers on the interior mirror (1) outward with a suitable plastic wedge in the center and remove.

2 – Removing the interior mirror

TECHNICAL INFORMATION

Carry out the work at temperatures between 18 °C and 23 °C only.

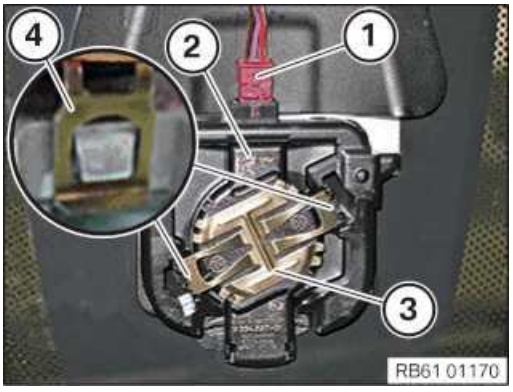


- Make sure that the interior mirror (1) does not bend or twist during removal.

  The interior mirror (1) is held by the clamp (3) and the latch mechanism in this area (A) on the base (2).
- If necessary unlock and disconnect the plug connection on the interior mirror (1).
- Pull off the interior mirror (1) from the mirror socket (2) with a downwards jerk in parallel to the windscreen.

MAIN WORK

3 – Remove rain-light-solar-condensation sensor



RISK OF DAMAGE

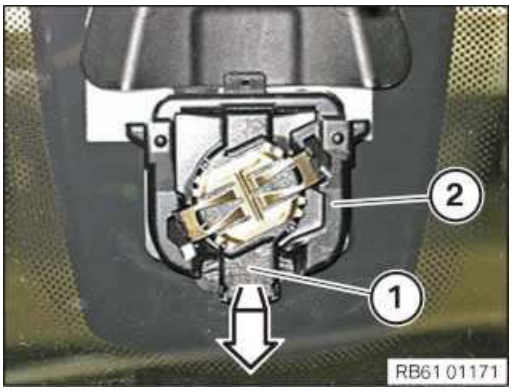
Damage to silicone surface.

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 the rain-light-solar-condensation sensor.

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- Slowly pull the rain-light-solar-condensation sensor (1) in direction of arrow from the holder (2).



RISK OF DAMAGE

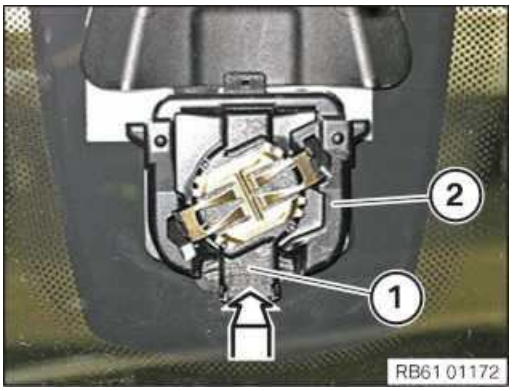
Damage to silicone surface.

A damaged silicone surface can lead to malfunctioning of the rain-light-solar-condensation sensor.

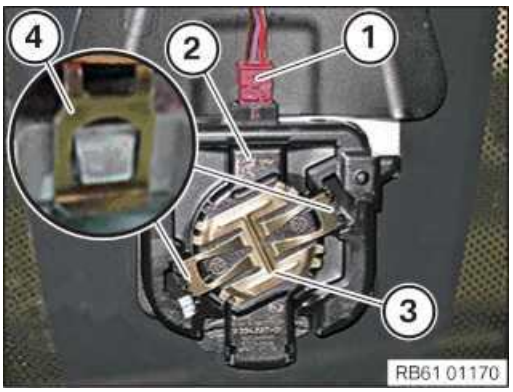
- Do not touch or damage the silicone-coated surface on the rain-light-solar-condensation sensor.
- After releasing lock, wait approx. 30 min. at 20°C for silicone surface to relax.

- Check silicone-coated surface (1) for damage.
- When replacing windscreen: Immediately install the rain-light-solar-condensation sensor on the new windscreen.

4 – Installing the rain-light-solar-condensation sensor

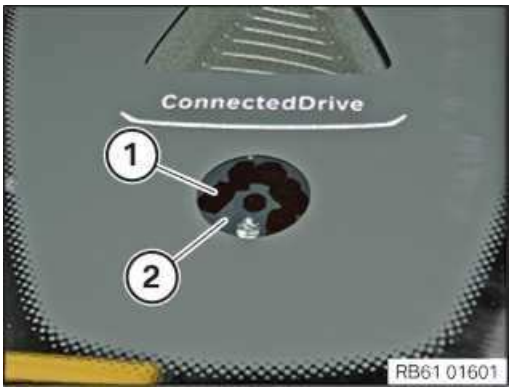


- Feed in the rain-light-solar-condensation sensor (1) in direction of arrow into the holder (2).



- Centrally press on the rain-light-solar-condensation sensor (2) onto the retaining spring (3).
- Successively press down the retaining springs (4) on each side to lock it.
- Connect connector (1).

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- Check if air pockets are visible.

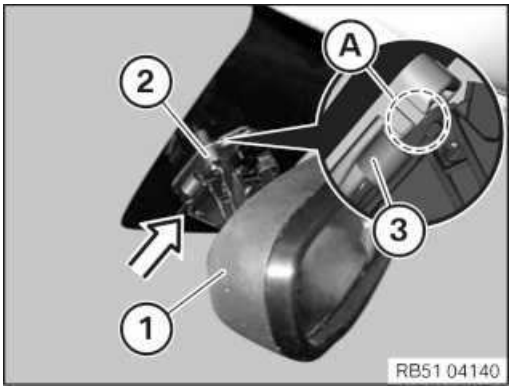
  Visible shades (1) and (2) are not air pockets but rather the optical element of the sensor. The shades do not represent any functional limitation.

POSTPROCESSES

5 – Installing the interior mirror

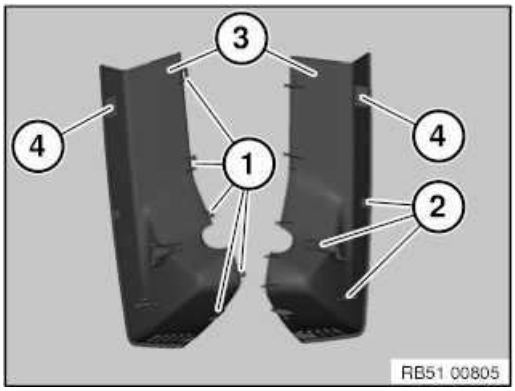
TECHNICAL INFORMATION

Carry out the work at temperatures between 18 °C and 23 °C only.



- Check the clamp (3) on both sides of the interior mirror (1) for damage and renew as needed.
- If necessary, connect the connector on the interior mirror (1).
- Slide the interior mirror (1) parallel to the windscreen in direction of arrow into the base (2) and lock correctly in area (A).

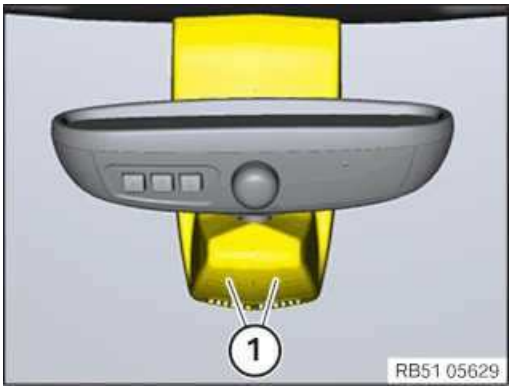
6 – Install the cover on the inside mirror



- Check the latch mechanisms (1) and guides (2) on the two covers (3) for damage, renew if necessary.

  The latch mechanisms (1) and guides (2) must not be damaged.
- Check the spacers (4).

  The spacers (4) must not be damaged or missing.



- Install covers on the interior mirror (1) clip together.

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61 35 243 Removing and installing top non-contact tailgate opening sensor line

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.

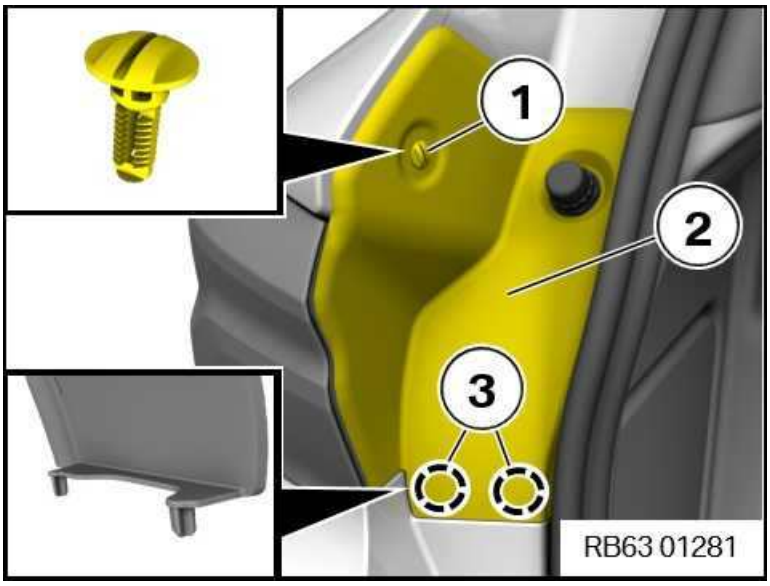
PRELIMINARY WORK

1 – Removing both trims for water channel

NOTICE

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

▸ **Removing trim for water channel**



- Detach rotary clip (1).
- Feed out and remove trim for water channel (2) from guides (3).

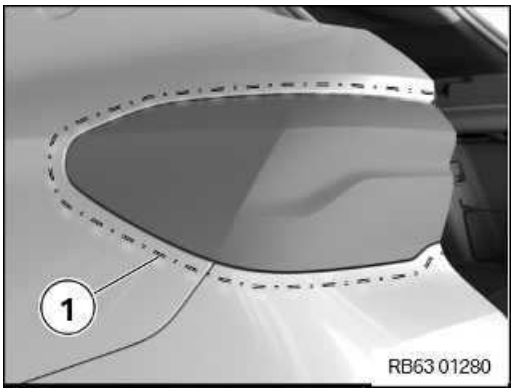
2 – Remove both rear lights from the side panel

NOTICE

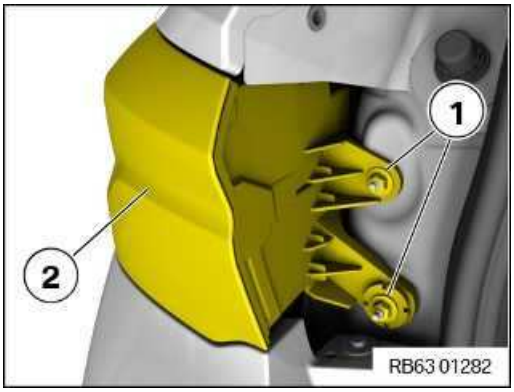
Description is for left component only. Procedure on the right side is identical.

▸ **Remove the rear light on the side panel**

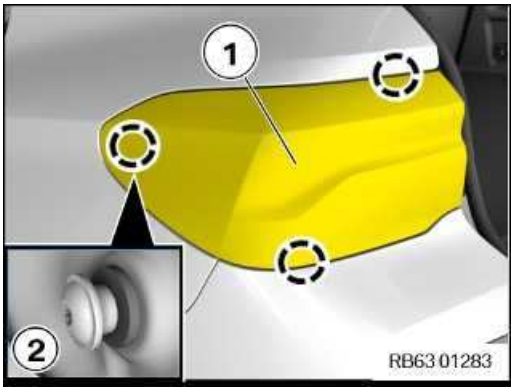
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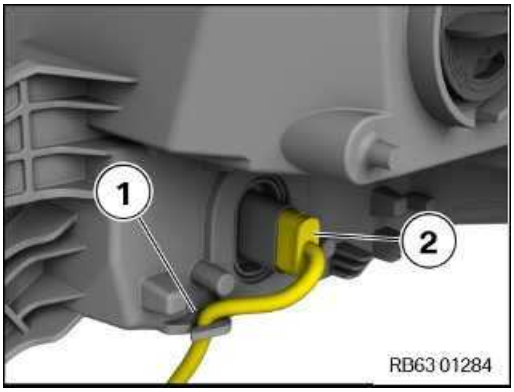
- Mask the body in area (1) with plastic adhesive tape.



- Loosen the nuts (1) on the rear light (2).

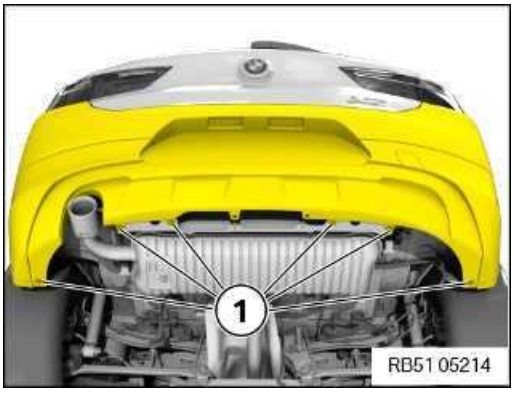


- Remove the rear light (1) from the guides (2) towards the rear.



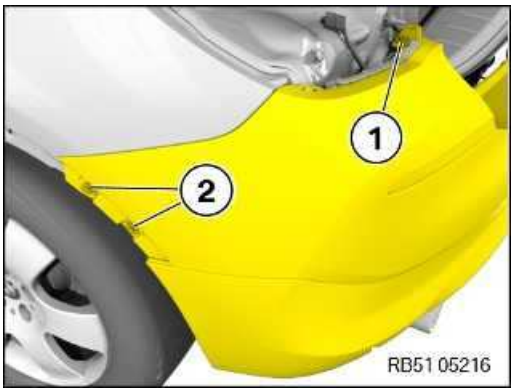
- Detach cable from guide (1).
- Unlock and disconnect the plug connection (2) and remove the rear light .

3 – Remove rear bumper panel



- Loosen screws (1).

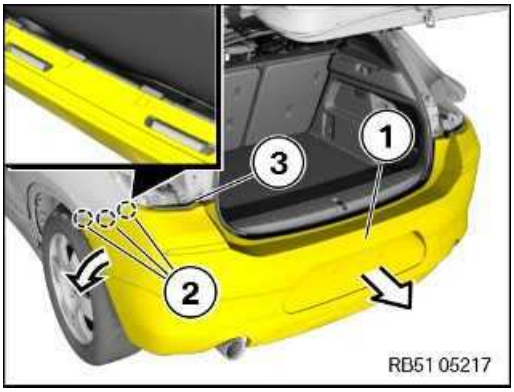
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NOTICE

Perform the operations on the left and right side.

- Loosen screws (1) and (2).



NOTICE

Perform the operations on the left and right side.

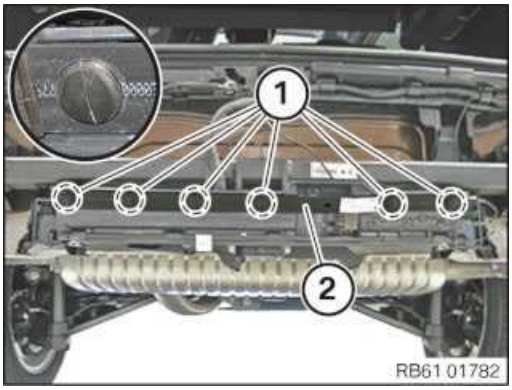
- Carefully detach side latch mechanisms(2) in direction of arrow.
- Carefully detach latch mechanisms in area (3) to the rear.
- Pull the bumper panel (1) straight toward the rear in direction of arrow with an auxiliary person.
- Unlock all plug connections and disconnect.
- Remove the bumper panel (1).

MAIN WORK

4 – Remove the top sensor line for the contactless tailgate opening



- Guide out access line (1).



- Release top sensor line (2) on the clips (1) and remove.

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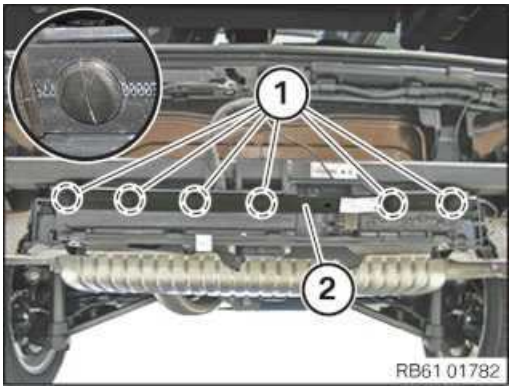


- Unlock and disconnect the associated connector (1) on the control unit.

5 – Install the top sensor line for the contactless tailgate opening



- Connect the associated connector (1) to the control unit.



- Secure the top sensor line (2) with the clips (1).



- Guide in access line (1).

POSTPROCESSES

6 – Install both trim pieces for the water channel

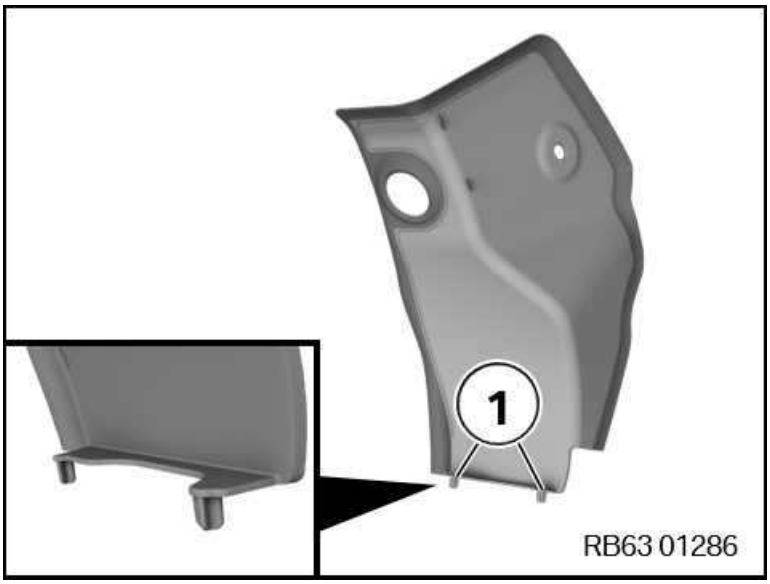
NOTICE

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

▸ **Install the trim for the water channel**

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Check



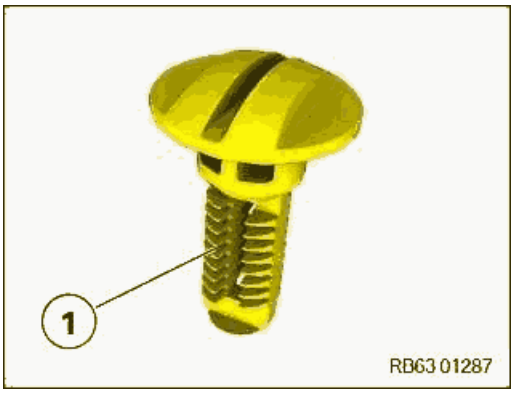
- Check the guides (1) for damage.

Result

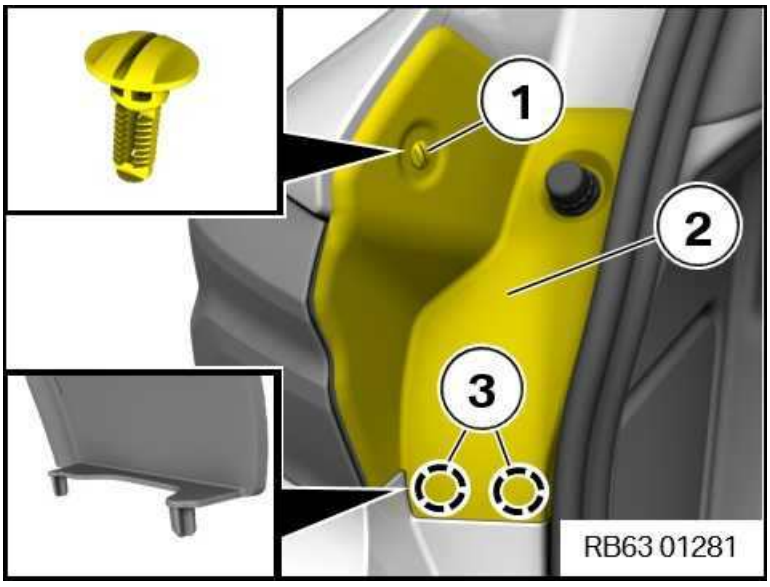
» The guides (1) are damaged.

Measure

- Renew the trim for the water channel.



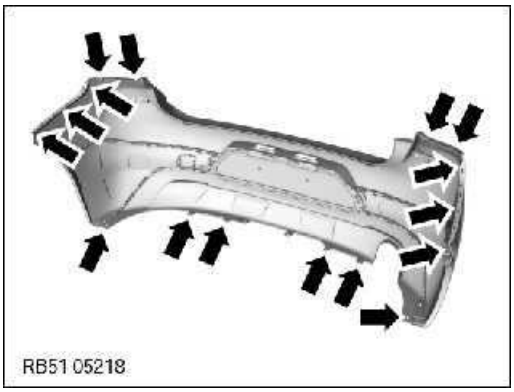
- Check rotary clip (1) for damage and, if necessary, replace it.



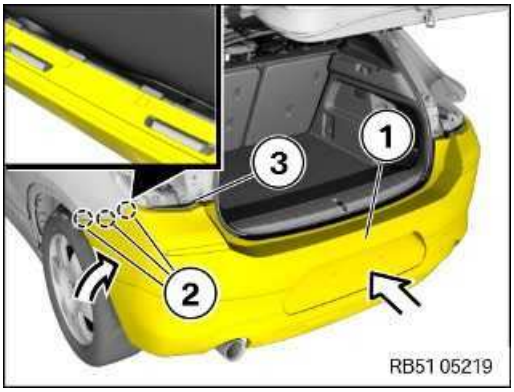
- Insert the trim for water channel (2) with guides (3).
- Fasten the rotary clip (1).

7 – Install rear bumper panel

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- Check if the latch mechanisms and the guide (arrows) are damaged or missing and replace the bumper panel where required.

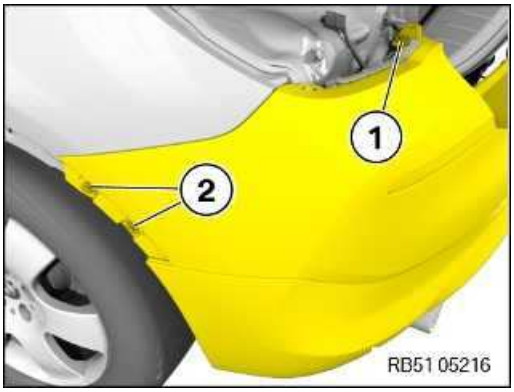


- Position the bumper panel (1) straight with the help of another person.
- Connect all connectors and lock.

NOTICE

Perform the operations on the left and right side.

- Engage the latch mechanisms in the area (3).
- Engage the side latch mechanisms (2) in the direction of the arrow.



NOTICE

Perform the operations on the left and right side.

- Tighten the screws (1).

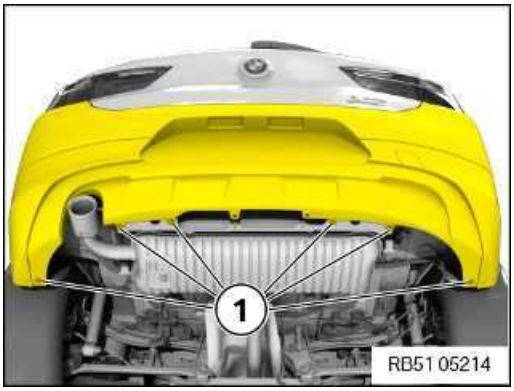
Rear bumper panel to guides

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

- Tighten down screws (2).

Rear bumper panel to side wall

Screw for thermoplastic plastic		Tightening torque	4,6 Nm



- Tighten the screws (1).

Rear bumper panel to guides

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

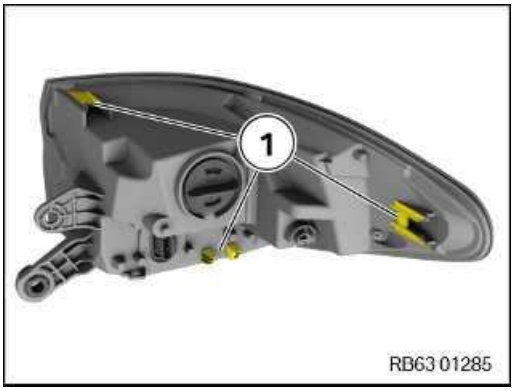
8 – Install both rear lights on the side panel

NOTICE

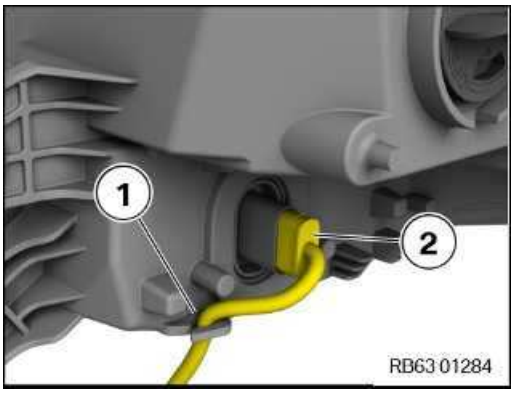
Description is for left component only. Procedure on the right side is identical.

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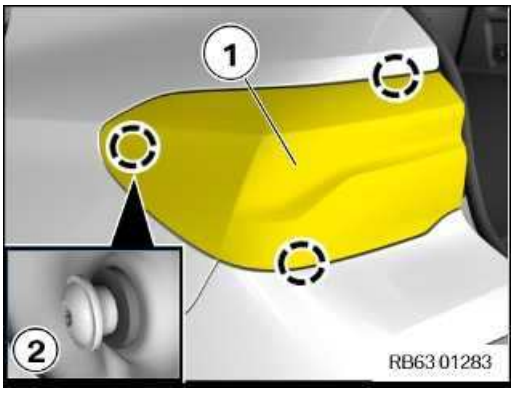
▸ **Install the rear light on the side panel**



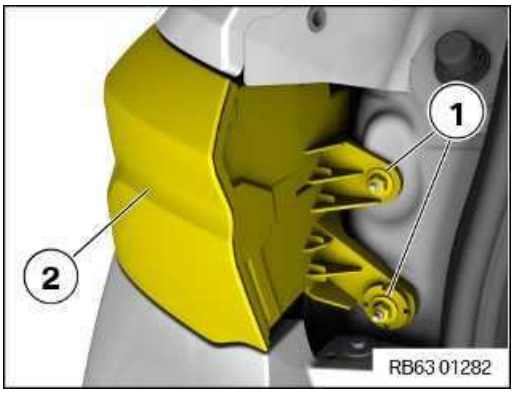
- Make sure that the guides (1) on the rear light are not damaged or missing.



- Connect connectors (2) and lock.
- Attach the cable in the guide (1).



- Position the rear light (1) in the side panel.
- Make sure the rear light (1) is fitted correctly in the guides (2).

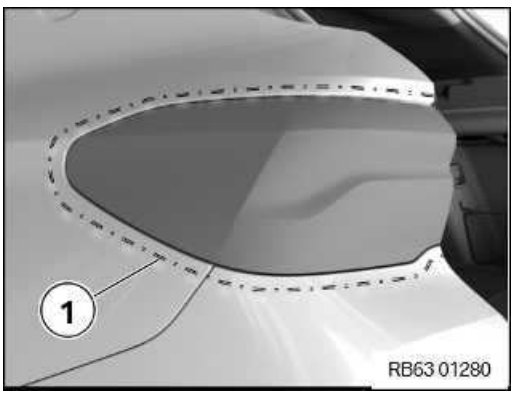


- Replace the nuts (1) on the rear light (2).

  Parts: Nuts
- Tighten nuts (1).

Side panel rear light to body

Combination hexagon nut	Replace nuts.	Tightening torque	2.8 Nm



- Pull off the plastic adhesive tape from the body in the area (1).

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Additional Information

Overview of Tightening Torques

Rear bumper panel to guides

Used in step 7

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

Rear bumper panel to side wall

Used in step 7

Screw for thermoplastic plastic		Tightening torque	4,6 Nm

Side panel rear light to body

Used in step 8

Combination hexagon nut	Replace nuts.	Tightening torque	2.8 Nm

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61 35 975 Removing and installing/replacing bumper aerial for Comfort Access

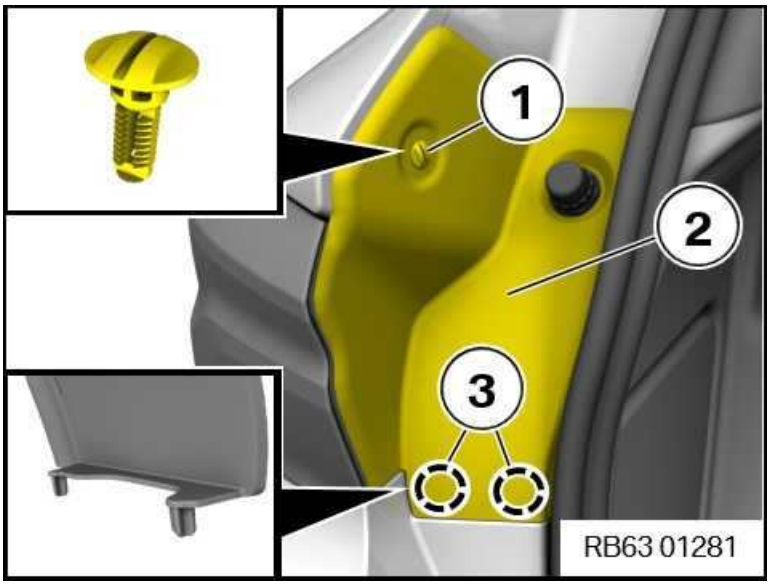
PRELIMINARY WORK

1 – Removing both trims for water channel

NOTICE

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

▸ **Removing trim for water channel**



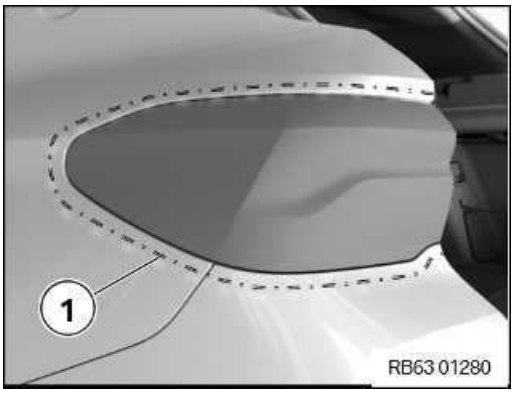
- Detach rotary clip (1).
- Feed out and remove trim for water channel (2) from guides (3).

2 – Remove both rear lights from the side panel

NOTICE

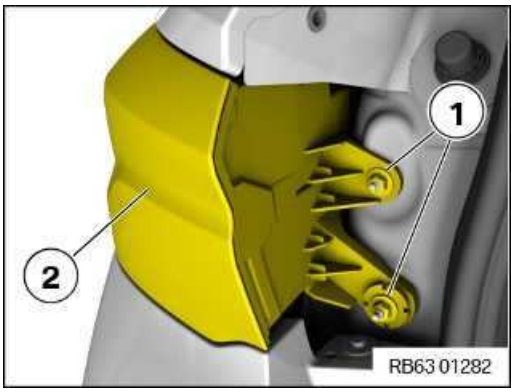
Description is for left component only. Procedure on the right side is identical.

▸ **Remove the rear light on the side panel**

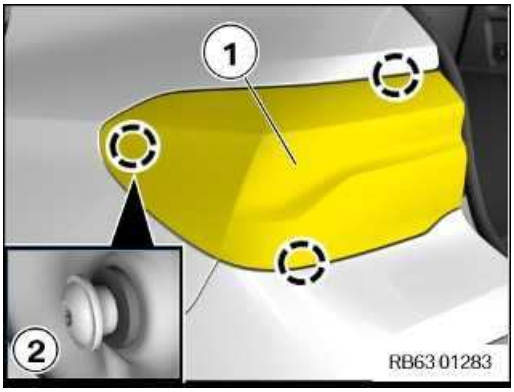


- Mask the body in area (1) with plastic adhesive tape.

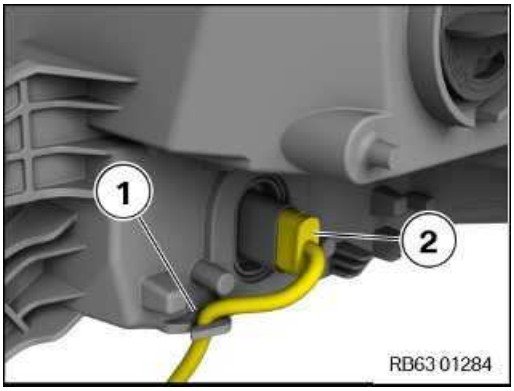
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- Loosen the nuts (1) on the rear light (2).

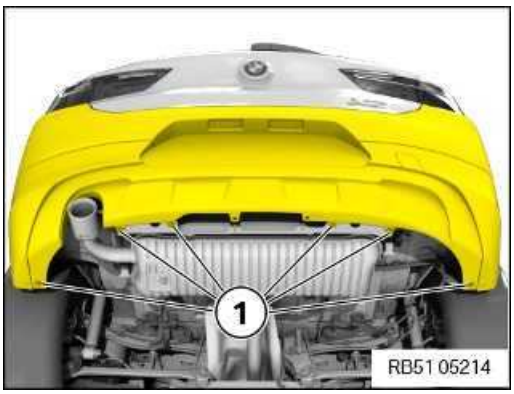


- Remove the rear light (1) from the guides (2) towards the rear.

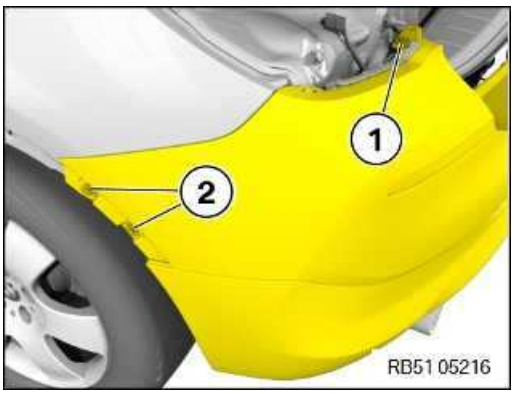


- Detach cable from guide (1).
- Unlock and disconnect the plug connection (2) and remove the rear light .

3 – Remove rear bumper panel



- Loosen screws (1).

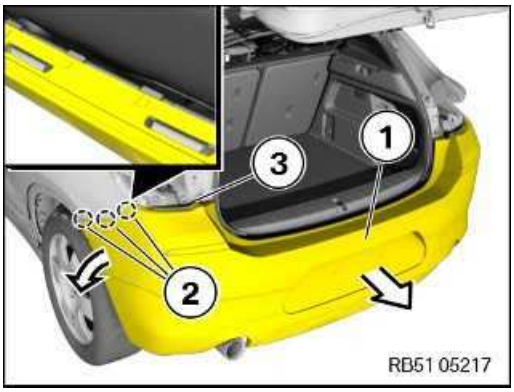


NOTICE

Perform the operations on the left and right side.

- Loosen screws (1) and (2).

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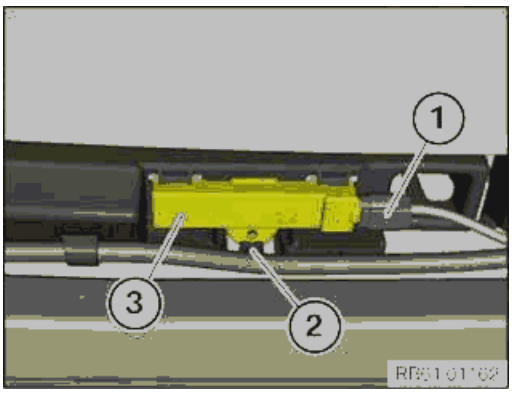
NOTICE

Perform the operations on the left and right side.

- Carefully detach side latch mechanisms(2) in direction of arrow.
- Carefully detach latch mechanisms in area (3) to the rear.
- Pull the bumper panel (1) straight toward the rear in direction of arrow with an auxiliary person.
- Unlock all plug connections and disconnect.
- Remove the bumper panel (1).

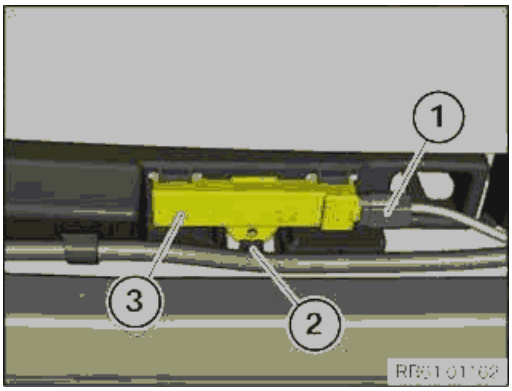
MAIN WORK

4 – Removing bumper aerial for the Comfort Access



- Disconnect the connector (1) .
- Loosen the latch mechanism (2).
- Remove bumper aerial (3) from bracket.

5 – Installing the bumper aerial for Comfort Access



- Position the bumper aerial (3) in the bracket and engage it with the latch mechanism (2).
- Connect connector (1).

POSTPROCESSES

6 – Install both trim pieces for the water channel

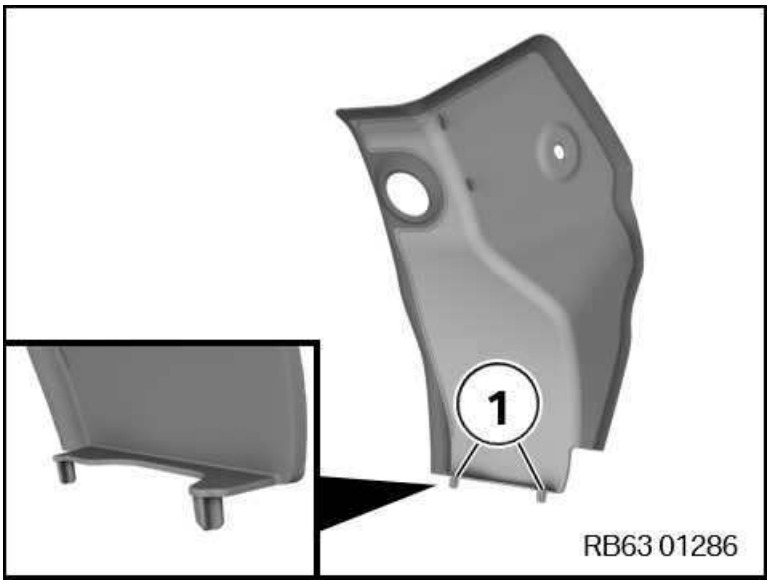
NOTICE

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

▸ **Install the trim for the water channel**

Check

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- Check the guides (1) for damage.

Result

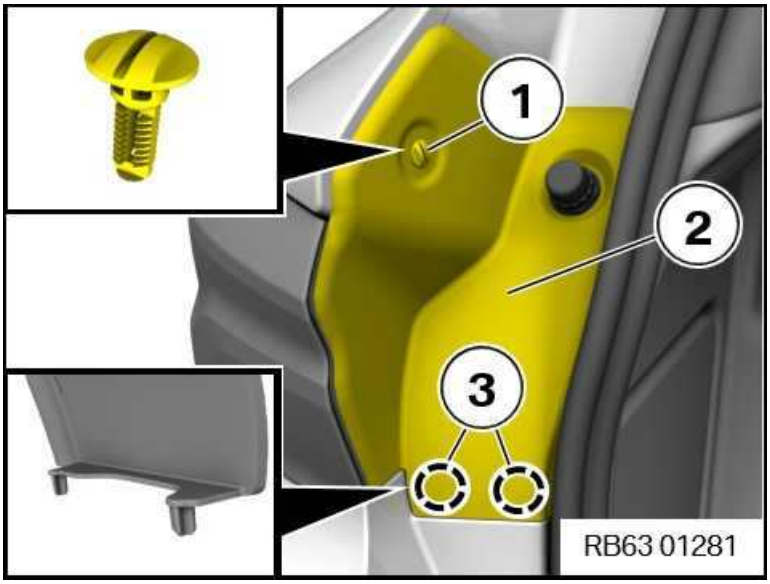
» The guides (1) are damaged.

Measure

- Renew the trim for the water channel.



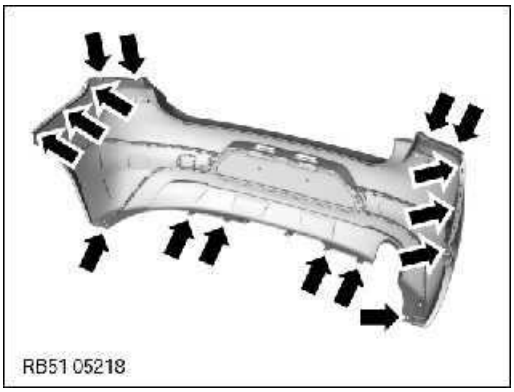
- Check rotary clip (1) for damage and, if necessary, replace it.



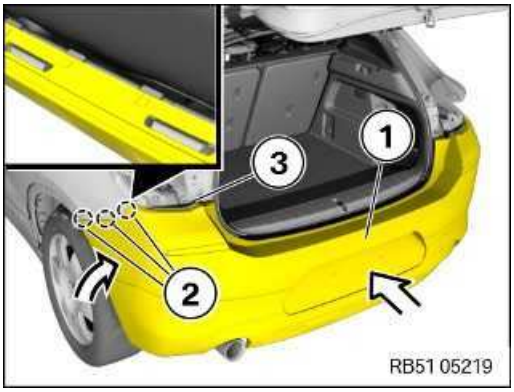
- Insert the trim for water channel (2) with guides (3).
- Fasten the rotary clip (1).

7 – Install rear bumper panel

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- Check if the latch mechanisms and the guide (arrows) are damaged or missing and replace the bumper panel where required.

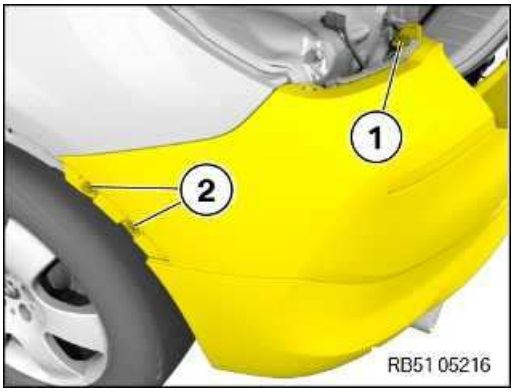


- Position the bumper panel (1) straight with the help of another person.
- Connect all connectors and lock.

NOTICE

Perform the operations on the left and right side.

- Engage the latch mechanisms in the area (3).
- Engage the side latch mechanisms (2) in the direction of the arrow.



NOTICE

Perform the operations on the left and right side.

- Tighten the screws (1).

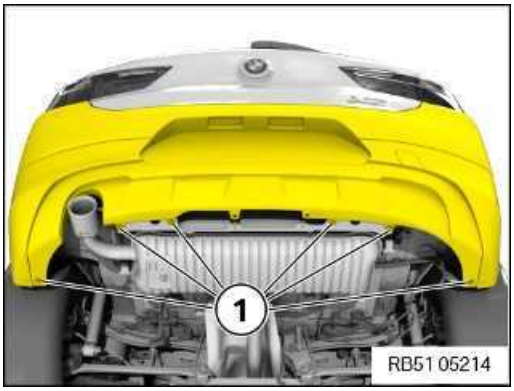
Rear bumper panel to guides

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

- Tighten down screws (2).

Rear bumper panel to side wall

Screw for thermoplastic plastic		Tightening torque	4,6 Nm



- Tighten the screws (1).

Rear bumper panel to guides

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

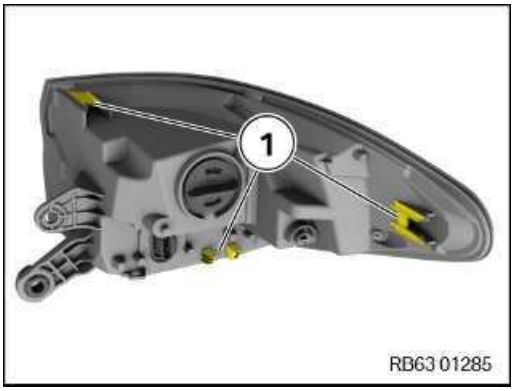
8 – Install both rear lights on the side panel

NOTICE

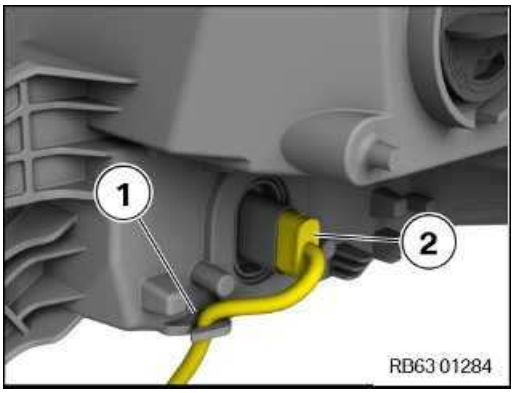
Description is for left component only. Procedure on the right side is identical.

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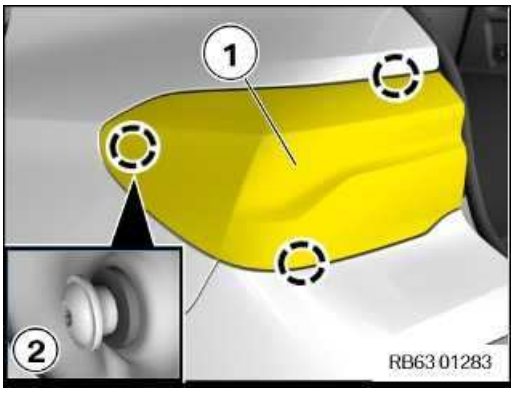
▸ **Install the rear light on the side panel**



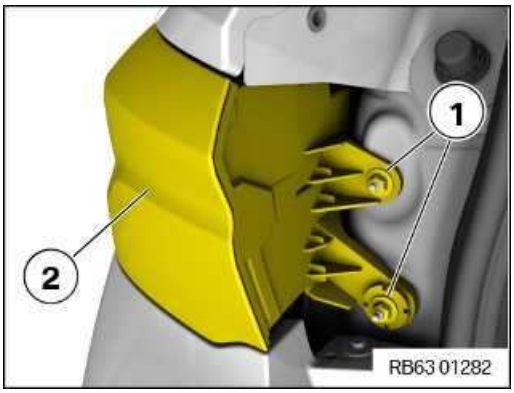
- Make sure that the guides (1) on the rear light are not damaged or missing.



- Connect connectors (2) and lock.
- Attach the cable in the guide (1).



- Position the rear light (1) in the side panel.
- Make sure the rear light (1) is fitted correctly in the guides (2).

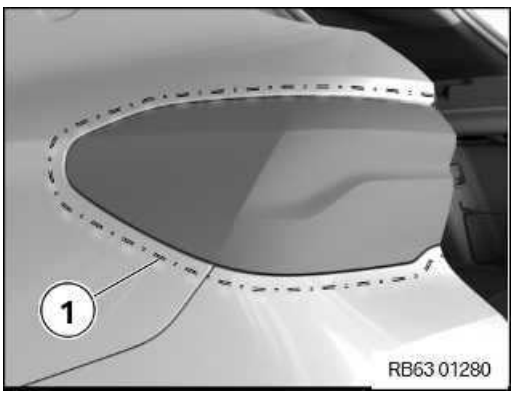


- Replace the nuts (1) on the rear light (2).

  Parts: Nuts
- Tighten nuts (1).

Side panel rear light to body

Combination hexagon nut	Replace nuts.	Tightening torque	2.8 Nm



- Pull off the plastic adhesive tape from the body in the area (1).

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Additional Information

Overview of Tightening Torques

Rear bumper panel to guides

Used in step 7

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

Rear bumper panel to side wall

Used in step 7

Screw for thermoplastic plastic		Tightening torque	4,6 Nm

Side panel rear light to body

Used in step 8

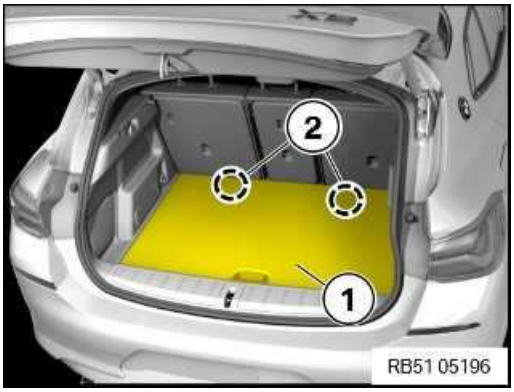
Combination hexagon nut	Replace nuts.	Tightening torque	2.8 Nm

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61 35 970 Removing and installing/replacing luggage compartment aerial for Comfort Access

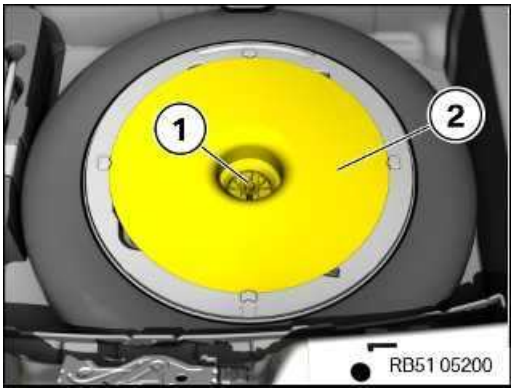
PRELIMINARY WORK

1 – Removing the luggage compartment removable panel

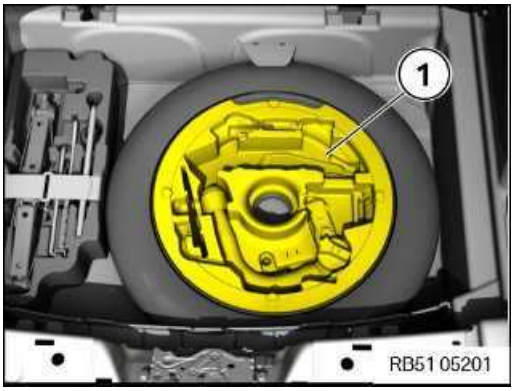


- Raise the luggage compartment removable panel (1) slightly at the handle, detach it from the latch mechanisms (2) and remove it toward the back.

2 – Removing the compact spare wheel



- Loosen screw (1).
- Remove the cover (2).



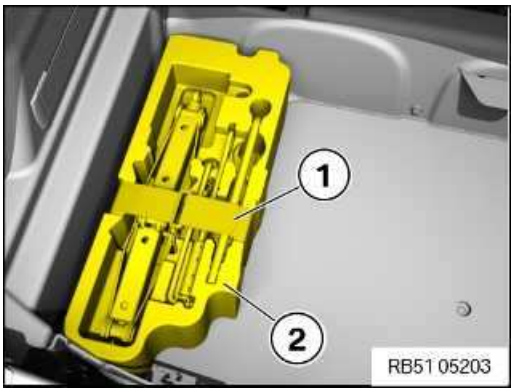
- Remove the oddments tray from the emergency wheel (1).



- Remove the emergency wheel (1).

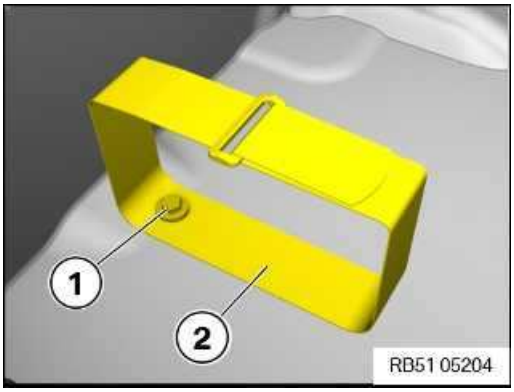
3 – Remove the tool kit

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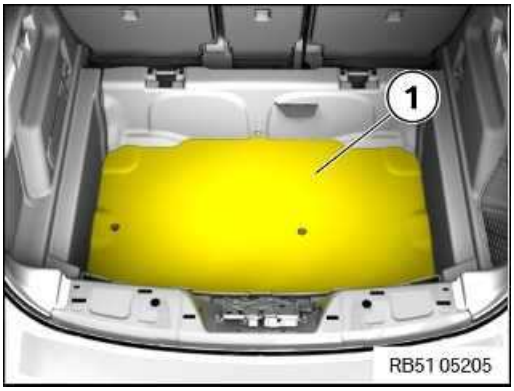
- Open the hook and loop tape (1).
- Remove the tool kit (2).

4 – Remove the hook and loop tape for the tool kit



- Loosen screw (1).
- Remove the hook and loop tape (2).

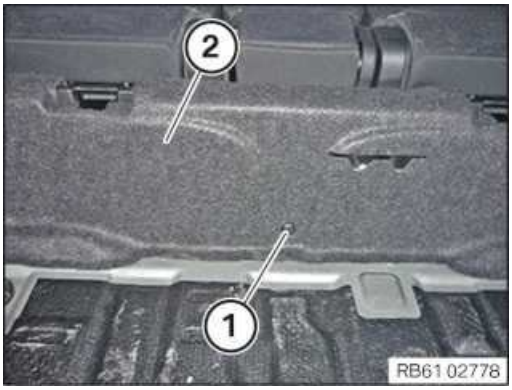
5 – Removing the luggage compartment floor trim panel



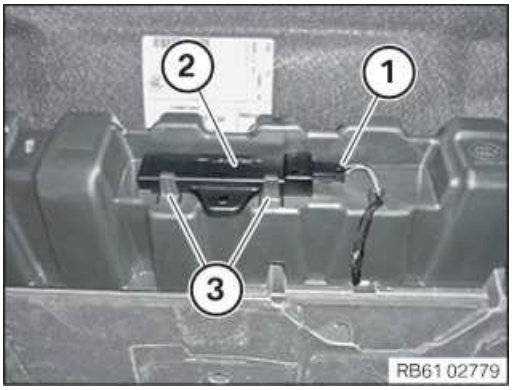
- Remove the luggage compartment floor trim panel (1) upwards.

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6 – Removing the luggage compartment aerial

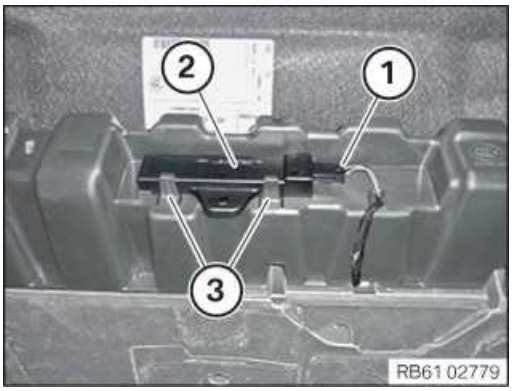


- Loosen expanding rivet (1).
- Fold trim panel (2) upwards somewhat.

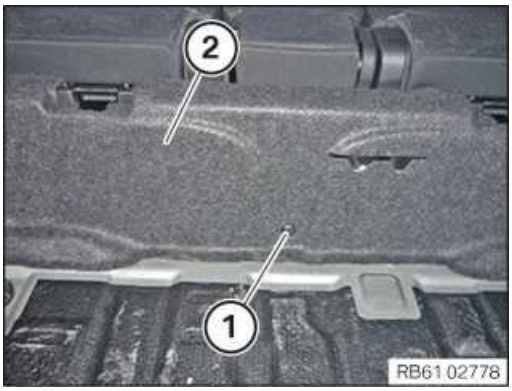


- Disconnect the connector (1) .
- Unlock and remove luggage compartment aerial (2) from the bracket (3).

7 – Installing the luggage compartment aerial



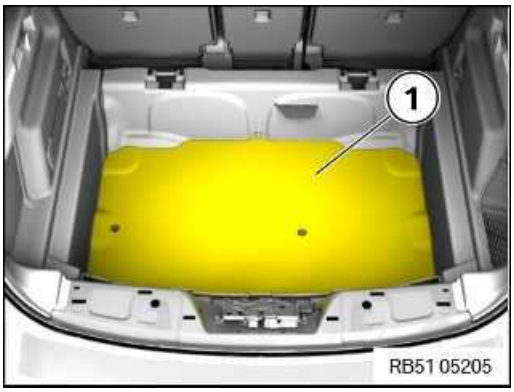
- Engage the luggage compartment aerial (2) in the bracket (3).
- Connect connector (1).



- Position the trim panel (2) correctly.
- Fasten expanding rivet (1).

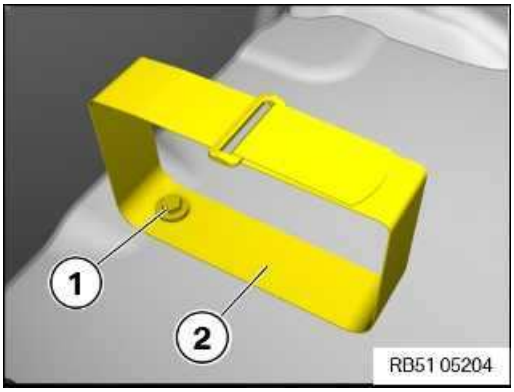
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8 – Installing the luggage compartment floor trim panel



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

9 – Inserting the Velcro fastener for the toolkit

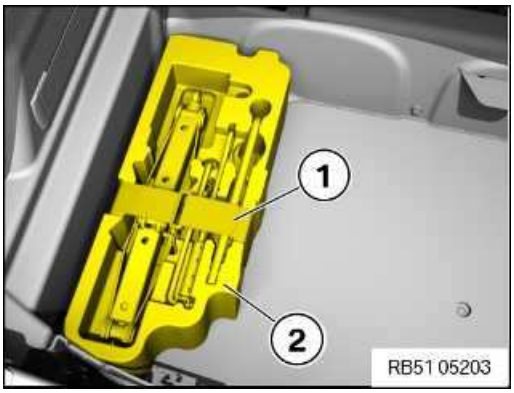


- Insert Velcro fastener (2).
- Tighten down screw (1).

Toolkit hook and loop tape to body

Bolt M6 x 20		Tightening torque	4 Nm

10 – Install the tool kit



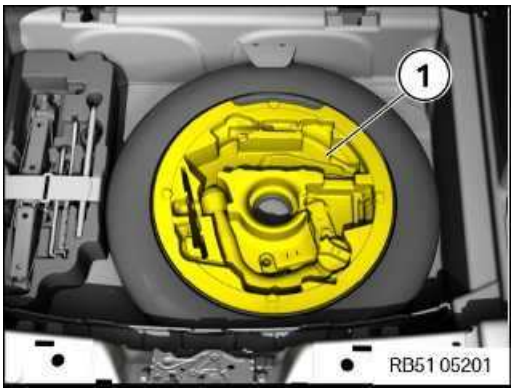
- Install the tool kit (2).
- Close the hook and loop tape (1).

11 – Install the emergency wheel

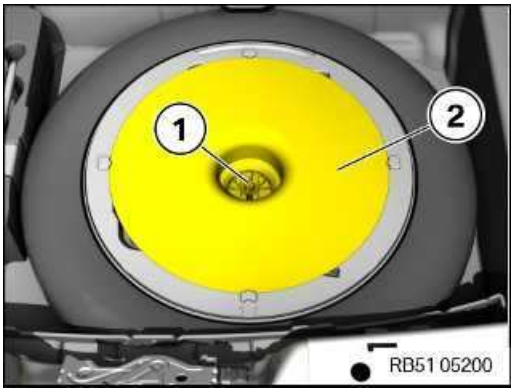


- Insert compact spare wheel(1).

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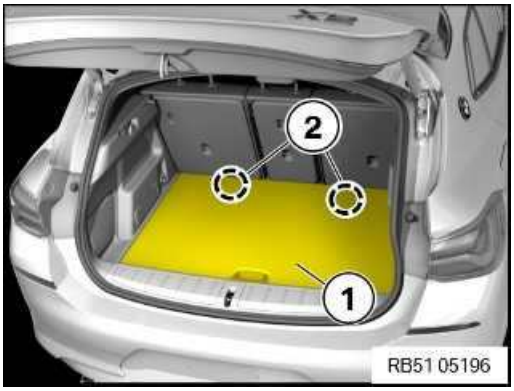


- Insert oddments tray into the compact spare wheel (1).



- Insert the lid (2).
- Hand-tighten the bolt (1).

12 – Installing the luggage compartment removable panel



- Clip luggage compartment removable panel (1) into latch mechanisms (2) and set down.

Additional Information

Overview of Tightening Torques

Toolkit hook and loop tape to body Used in step 9

Bolt M6 x 20		Tightening torque	4 Nm

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61 35 779 Replacing Body Domain Controller (BDC) control unit (after vehicle diagnosis) (AW specification without programming/encoding, see 61 00 ...)

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.

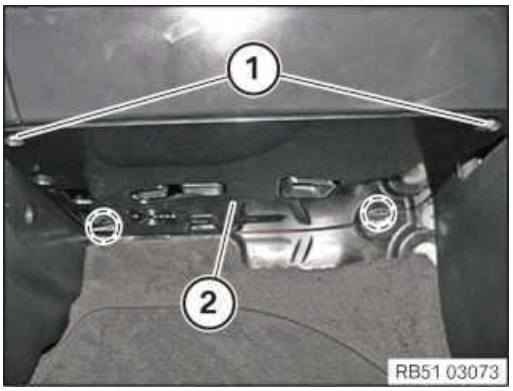
PRELIMINARY WORK

1 – Disconnecting all battery earth leads



- See additional information.

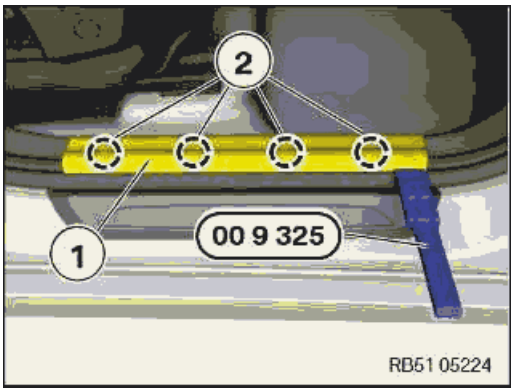
2 – Removing the instrument panel trim at bottom right



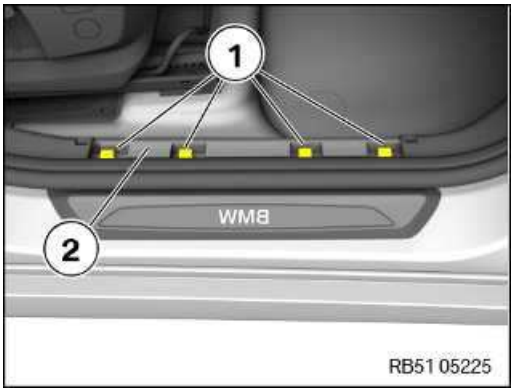
- Loosen nuts (1).
- Lower the instrument panel trim slightly at the bottom right (2) and disconnect the plug connection behind it.
- Guide the instrument panel trim at the bottom right (2) from the front guides and remove it.

3 – Remove front entrance cover strip

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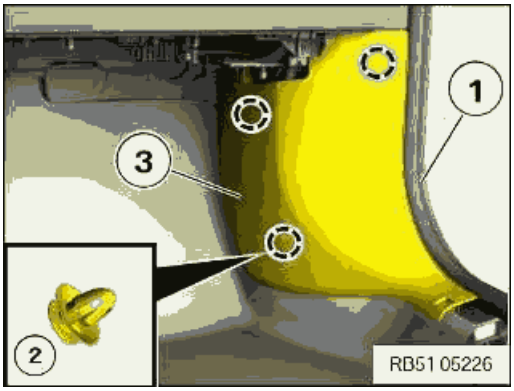


- Unclip the door sill cover strip (1) at the clips **0 496 569 (00 9 325)** using special tool (2) starting from the rear.



- If applicable, loosen clips (1) from floor panel (2) and mount on the door sill cover strip.

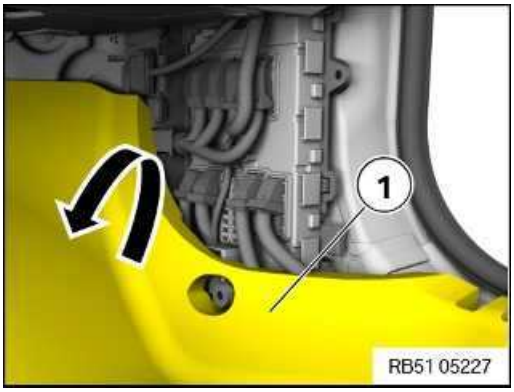
4 – Removing the side trim panel in the footwell at the right-hand A-pillar



- Guide side trim panel (3) under the sealing lip out of the edge protection (1).
- Unclip and remove the side trim panel (3) at the clips (2).

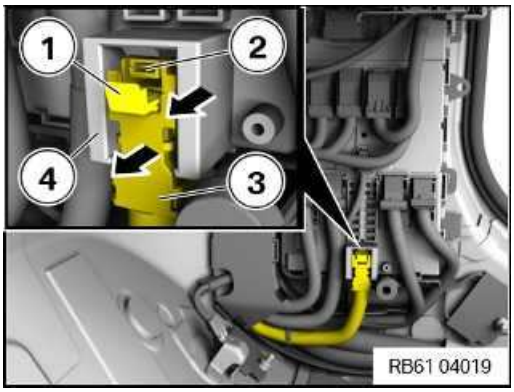
MAIN WORK

5 – Remove the control unit for the Body Domain Controller (BDC)

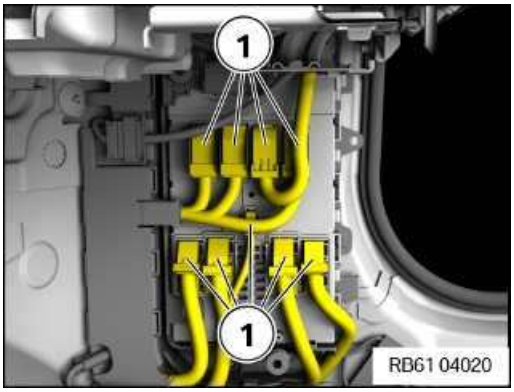


- Fold the carpet (1) in the area Body Domain Controller (BDC) control unit to the side.

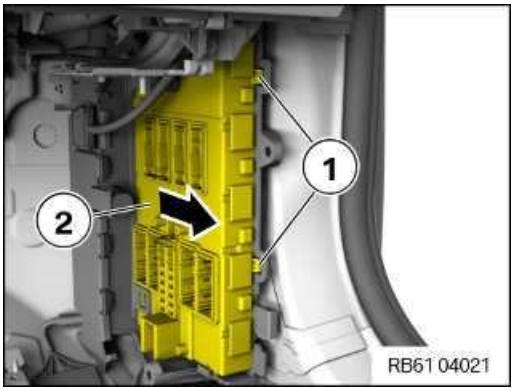
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- Loosen the lock (1) in the direction of the arrow.
- Disengage the latch mechanism (2) on positive battery cable connector (3).
- Remove the connector of the positive battery cable (3) from the housing (4) in the direction of the arrow.

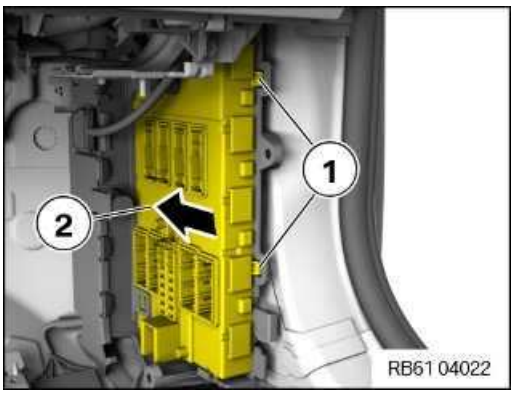


- Unlock and disconnect all plug connections (1).

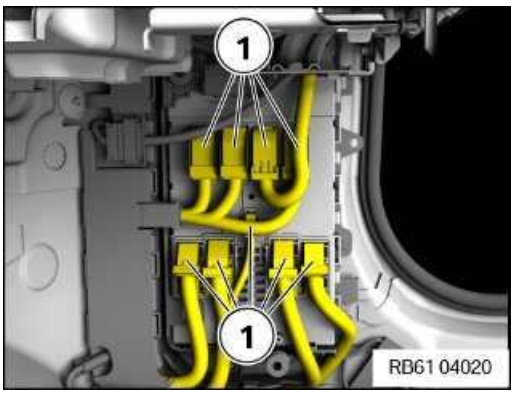


- Loosen the latch mechanisms (1).
- Feed the Body Domain Controller (BDC) control unit (2) sideways out of the holder and remove it to the rear.

6 – Installing Body Domain Controller (BDC) control unit

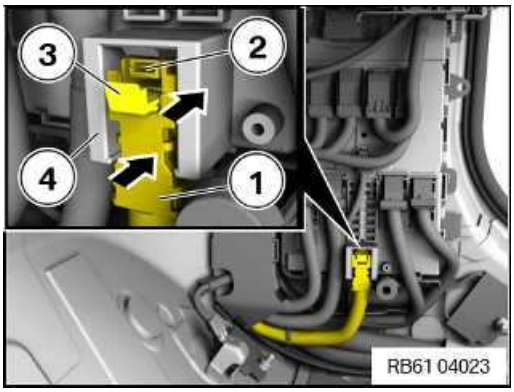


- Feed Body Domain Controller (BDC) control unit (2) into the holder from the side.
- Engage Body Domain Controller (BDC) control unit (2) to the latch mechanisms (1) of the holder.

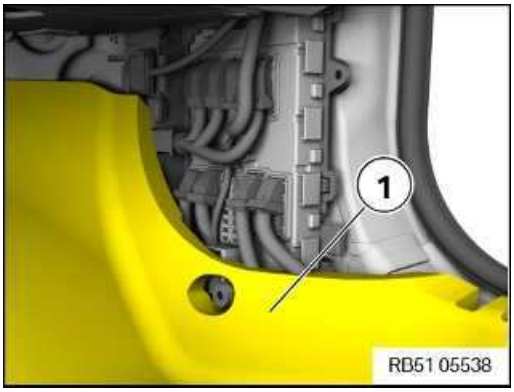


- Connect all connectors (1) and lock.

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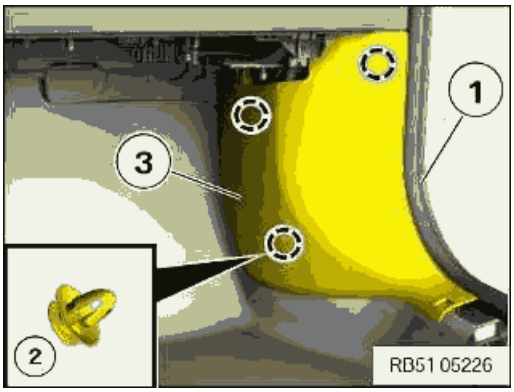
- Attach the connector of the positive battery cable (1) to the Body Domain Controller (BDC) control unit(4) in direction of arrow.
- Engage latch mechanism (2) to the connector of the positive battery cable (1).
- Close lock (3) in direction of arrow.



- Fold down carpet (1) and make sure it is positioned correctly.

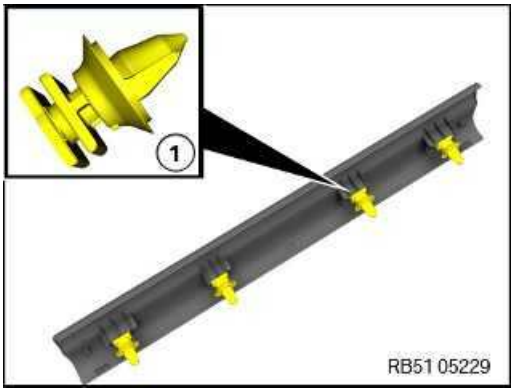
POSTPROCESSES

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



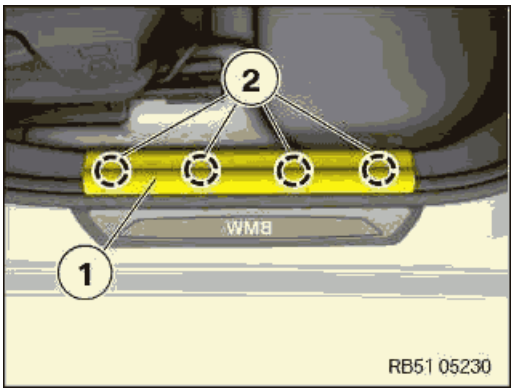
- Check clips (2) for damage, and replace if necessary.
- Feed the side trim panel (3) under the sealing lip of the edge protection (1).
- Clip in the side trim panel (3) with the clips (2).

8 – Install the front door sill cover strip



- Check the clips (1) for damage and renew where required.

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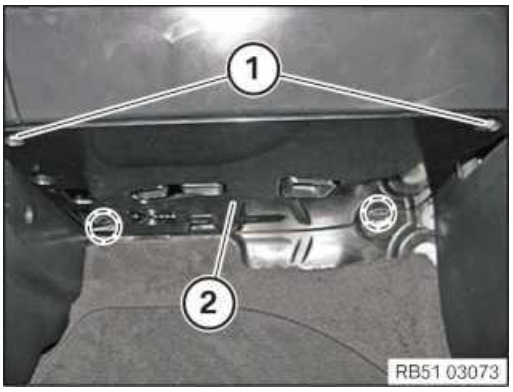


- Clip the door sill cover strip (1) into the floor panel with the clips (2).

9 – Installing the botto right instrument panel trim

TECHNICAL INFORMATION

Latch mechanisms, guides and mounting elements must not be damaged or missing.



- Install the lower right instrument panel trim (2) and connect and lock the plug connection.
- Insert the lower right instrument panel trim (2) into the front guides.
- Tighten nuts (1).

Bottom left footwell trim to instrument panel

M5 hexagon nut		Tightening torque	2 Nm

10 – Disconnecting all battery earth leads



- See additional information.

11 – 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.

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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.

Additional Information

Overview of Tightening Torques

Bottom left footwell trim to instrument panel — Used in step 9

M5 hexagon nut		Tightening torque	2 Nm

Overview of Special Tools

0 496 569 (00 9 325) Wedge



Common — Used in step 3

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)

Links

Repair instructions	Used in step
61 20 900 Disconnecting and connecting battery earth lead	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10
61 20 900 Disconnecting and connecting battery earth lead	1 10

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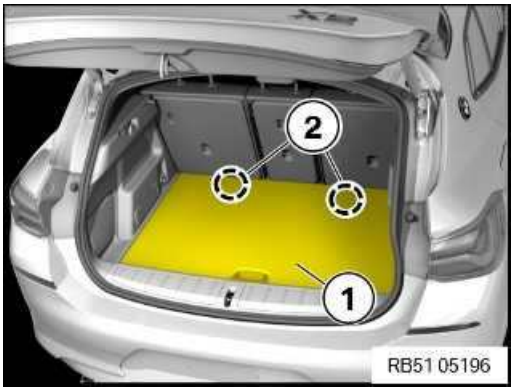
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	10
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	10
61 20 900 Disconnect and connect battery earth lead (Plug-in Hybrid Electric Vehicle)	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
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61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting the battery earth lead (all battery earth leads)	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10
61 20 900 Disconnecting and connecting battery earth lead	1	10

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61 35 697 Replacing control unit for automatic tailgate operation (after vehicle diagnosis) (FRU specification without programming/encoding, see 61 00 ...)

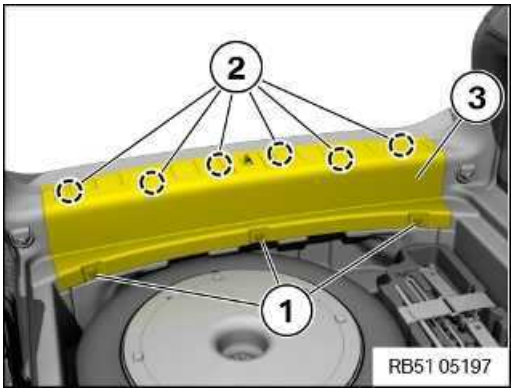
PRELIMINARY WORK

1 – Removing the luggage compartment removable panel



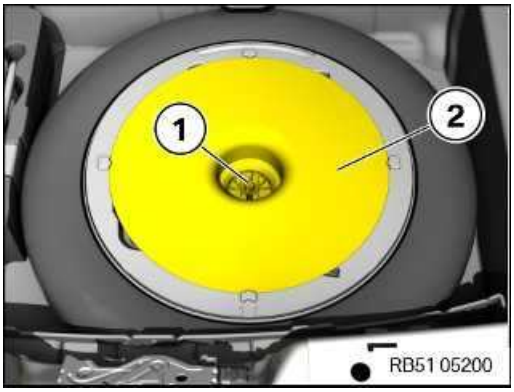
- Raise the luggage compartment removable panel (1) slightly at the handle, detach it from the latch mechanisms (2) and remove it toward the back.

2 – Removing the loading edge trim

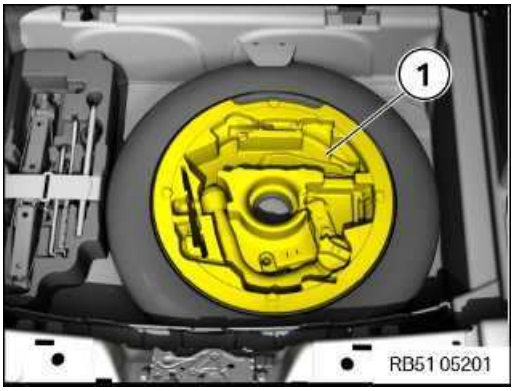


- Loosen the expanding rivet (1).
- Unclip the loading edge trim (3) from the clamps (2) toward the top and remove.

3 – Removing the compact spare wheel



- Loosen screw (1).
- Remove the cover (2).



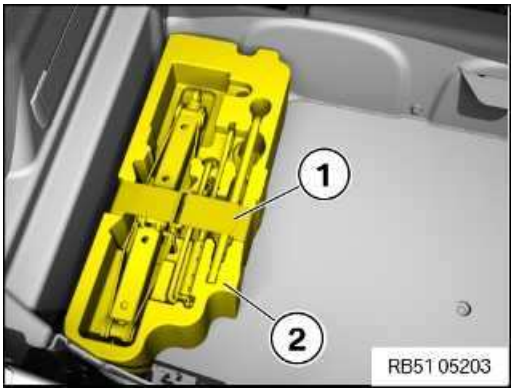
- Remove the oddments tray from the emergency wheel (1).

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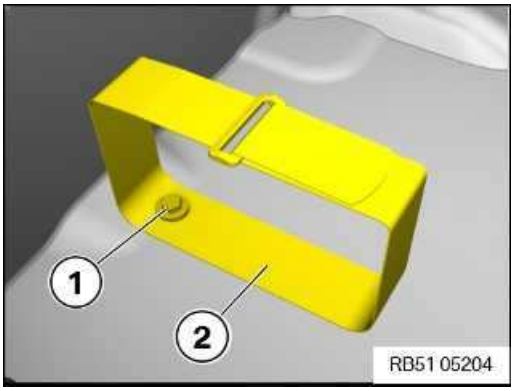
- Remove the emergency wheel (1).

4 – Remove the tool kit



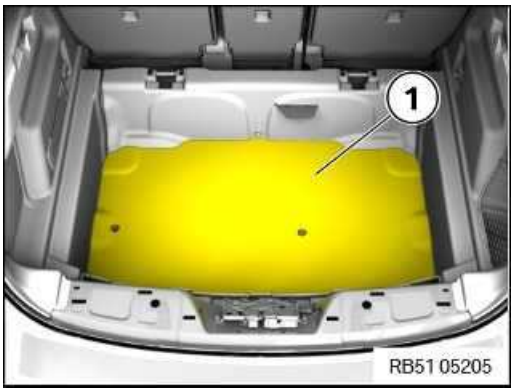
- Open the hook and loop tape (1).
- Remove the tool kit (2).

5 – Remove the hook and loop tape for the tool kit



- Loosen screw (1).
- Remove the hook and loop tape (2).

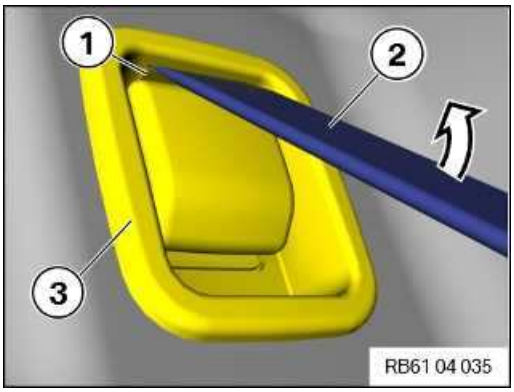
6 – Removing the luggage compartment floor trim panel



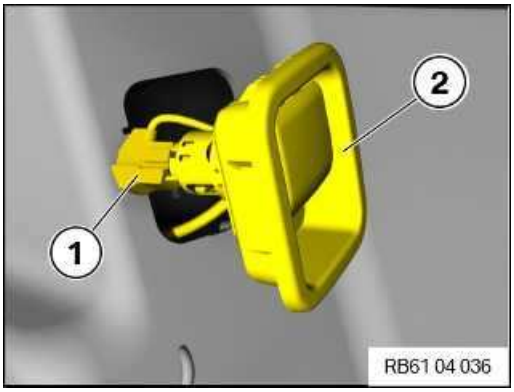
- Remove the luggage compartment floor trim panel (1) upwards.

7 – Remove the fixture of the 12 V power socket

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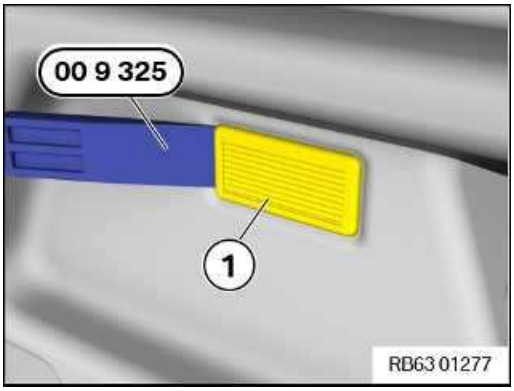


- Push the lock on top (1) with a suitable tool (2) in the direction of the arrow and unlock.
- Remove the fixture (3) of the 12 V power socket in the rear from the luggage compartment wheel arch trim panel.

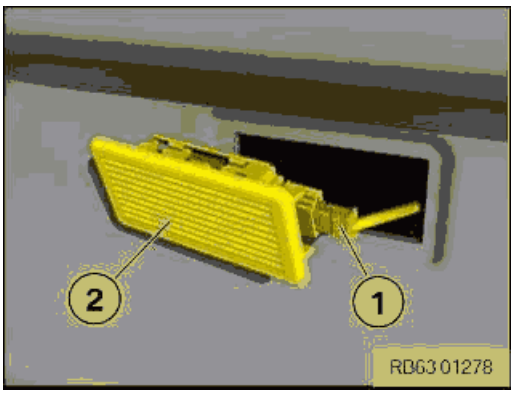


- Unlock the plug connection (1), disconnect it and remove the fixture (2) of the 12 V power socket.

8 – Removing the luggage compartment light

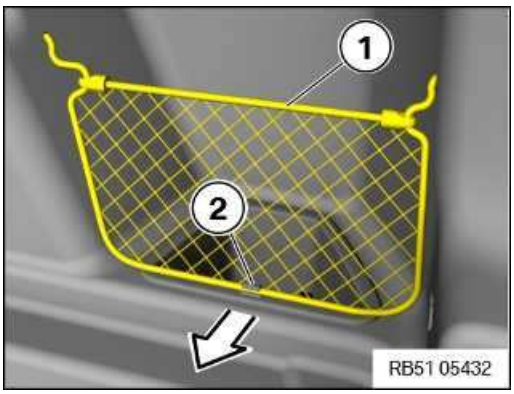


- Lever out the luggage compartment light (1) with the special tool **0 496 569 (00 9 325)**.



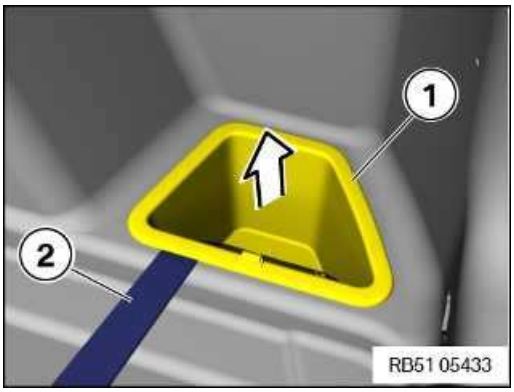
- Disconnect plug connection (1) and remove luggage compartment light (2).

9 – Removing right luggage compartment wheel arch trim panel

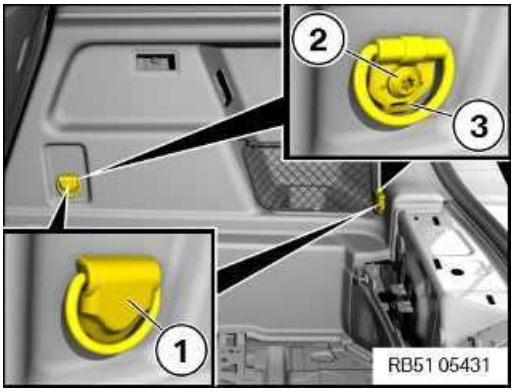


- Release the storage net (1) from the latch mechanism (2) in the direction of arrow and fold up.

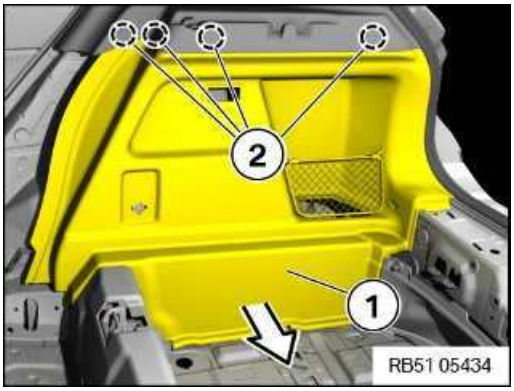
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- Remove storage compartment (1) out of the luggage compartment wheel arch trim panel in the direction of arrow using a suitable tool (2).



- Unclip covers (1).
- Unscrew the bolts (2) and remove the lashing points (3).



NOTICE

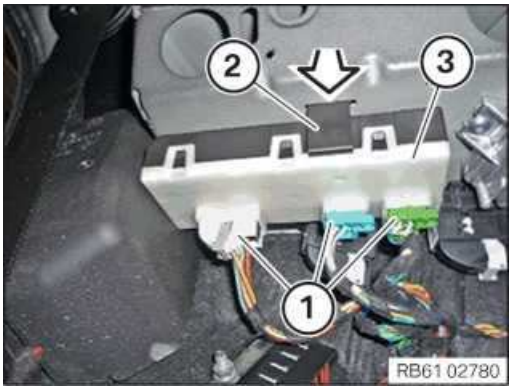
Schematic diagram is for example purposes. Some parts may differ in certain details.

- Pull the luggage compartment wheel arch trim panel (1) on the bottom in the direction of the arrow and guide it out of the guides (2) and the C-pillar trim panel and remove.

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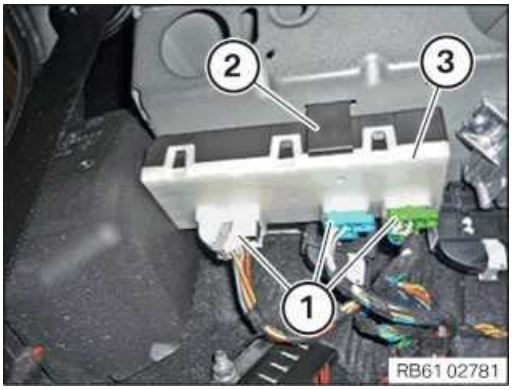
MAIN WORK

10 – Remove the control unit for the automatic tailgate operation (HKL)



- Unlock and disconnect connector (1).
- Unlock latch mechanism (2) in direction of arrow and remove the control unit (3).

11 – Install the control unit for the automatic tailgate operation (HKL)

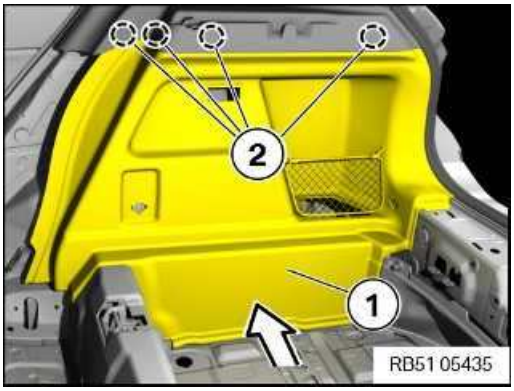


- Position the control unit (3) correctly and engage it in the latch mechanism (2).

  The latch mechanism (2) must be locked correctly.
- Connect the connector (1) to the control unit (3) and lock it.

POSTPROCESSES

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

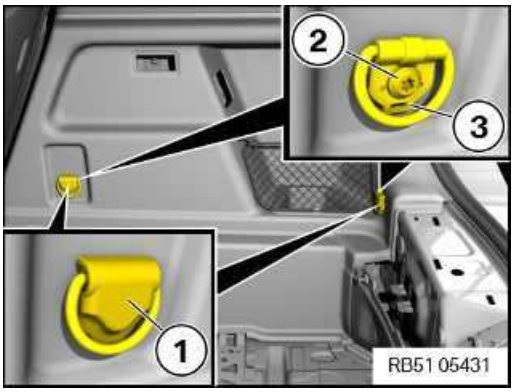


NOTICE

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

- Press luggage compartment wheel arch trim panel (1) down in direction of arrow and feed into the guides (2) and under the bottom C-pillar trim panel.

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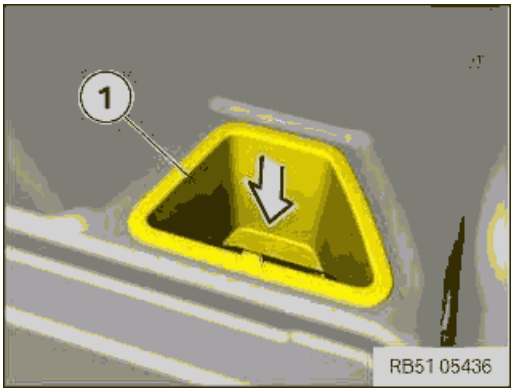


- Position the lashing eyes (3) and tighten the screws (2).

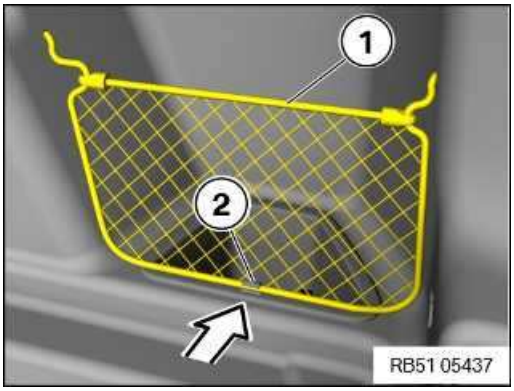
Lashing eye in luggage compartment

Bolt M8 x 22		Tightening torque	21 Nm

- Clip in the covers (1).

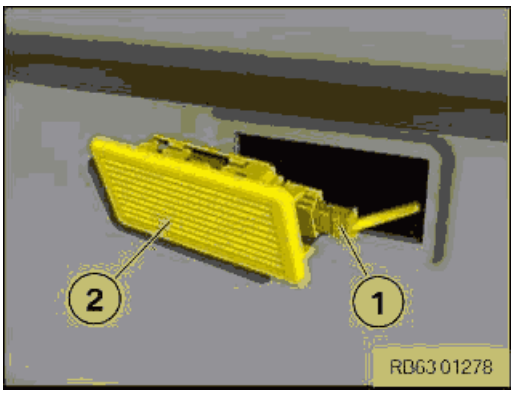


- Install the storage compartment (1) in the luggage compartment wheel arch trim panel in direction of arrow.

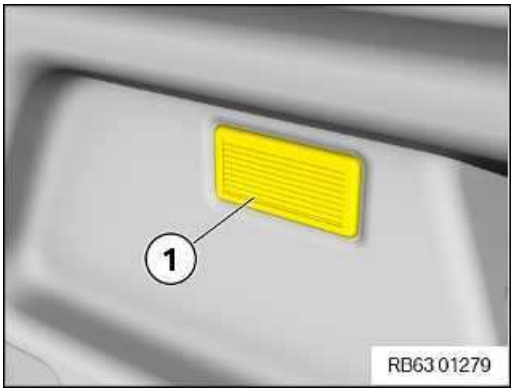


- Clip storage net (1) into latch mechanisms (2) in direction of arrow.

13 – Installing the luggage compartment light



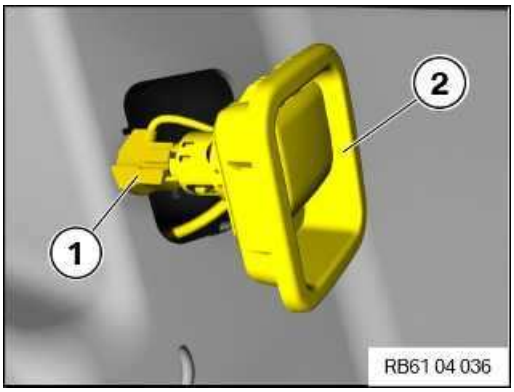
- Connect the connector (1) to the luggage compartment light (2).



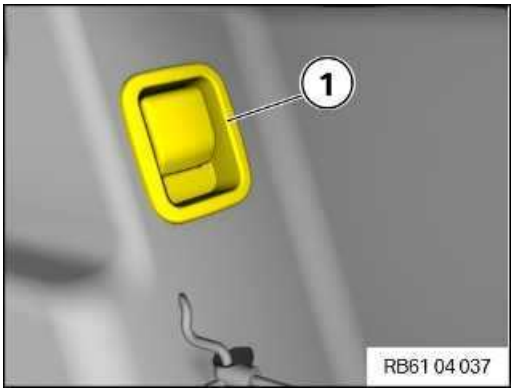
- Install the luggage compartment light (1).

14 – Install the fixture of the 12 V power socket

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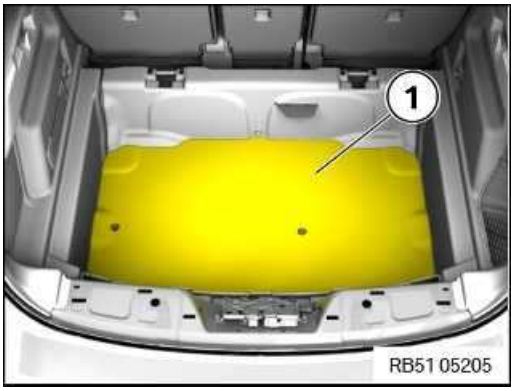


- Connect the connector (1) to the fixture (2) of the 12 V power socket and lock.



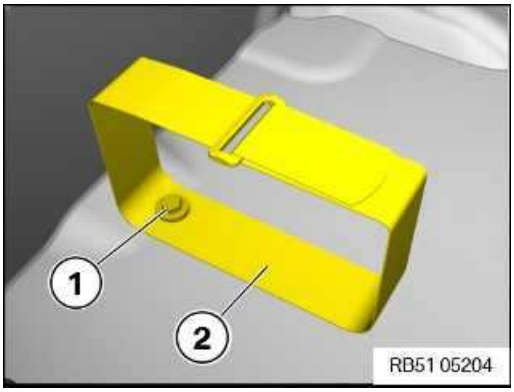
- Insert the fixture (1) of the 12 V power socket in the luggage compartment wheel arch trim panel and engage.

15 – Installing the luggage compartment floor trim panel



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

16 – Inserting the Velcro fastener for the toolkit



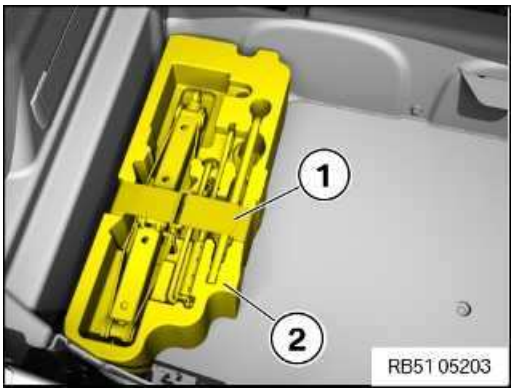
- Insert Velcro fastener (2).
- Tighten down screw (1).

Toolkit hook and loop tape to body

Bolt M6 x 20		Tightening torque	4 Nm

17 – Install the tool kit

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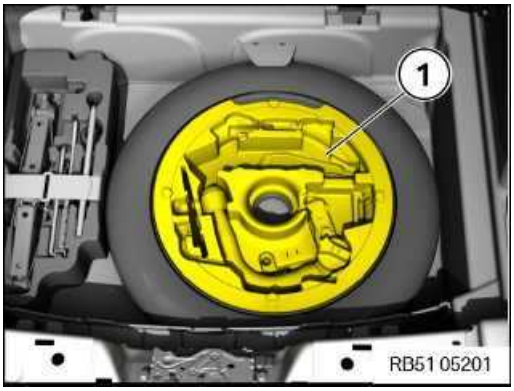


- Install the tool kit (2).
- Close the hook and loop tape (1).

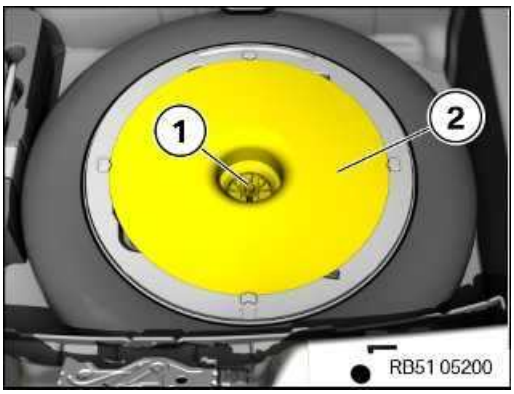
18 – Install the emergency wheel



- Insert compact spare wheel(1).

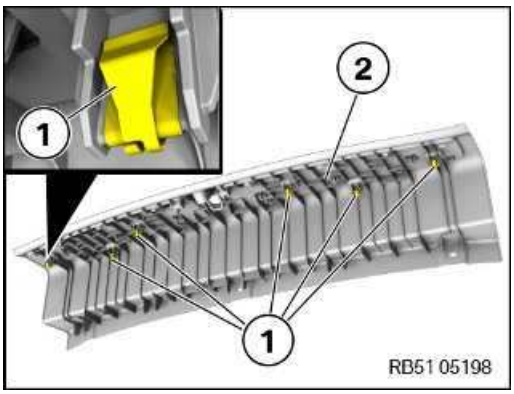


- Insert oddments tray into the compact spare wheel (1).



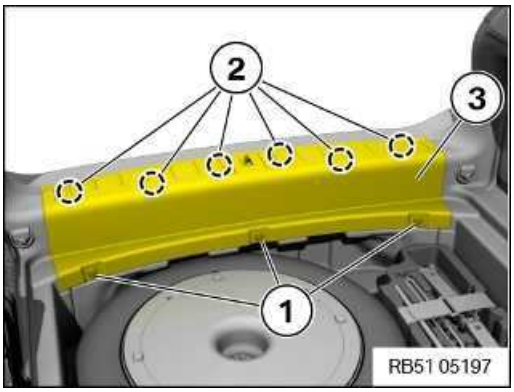
- Insert the lid (2).
- Hand-tighten the bolt (1).

19 – Installing loading edge trim



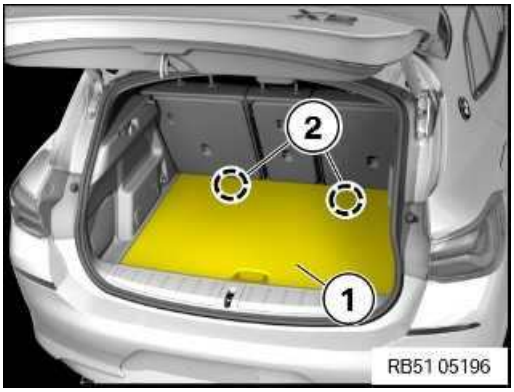
- Check the clamps (1) at the loading edge trim (2) for damage and renew if necessary.

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- Insert the loading edge trim (3) in the area of the expanding rivets (1) into the underlying rear luggage compartment trim panel.
- Guide in the loading edge trim (3) under the sealing lip of the seal for the tailgate and clip it in with the clamps (2).
- Secure expanding rivet (1).

20 – Installing the luggage compartment removable panel



- Clip luggage compartment removable panel (1) into latch mechanisms (2) and set down.

21 – 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.

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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 in luggage compartment — Used in step 12

Bolt M8 x 22		Tightening torque	21 Nm

Toolkit hook and loop tape to body — Used in step 16

Bolt M6 x 20		Tightening torque	4 Nm

Overview of Special Tools

0 496 569 (00 9 325) Wedge



Common — Used in step 8

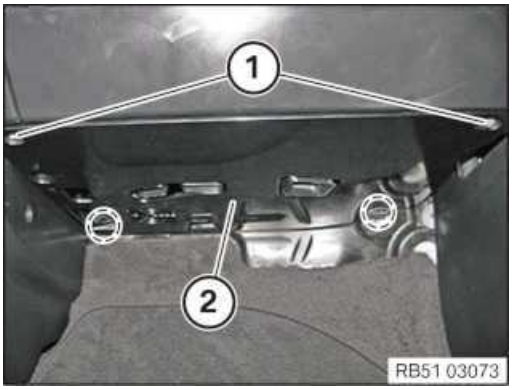
Usage	(Panel wedge) From 11/2008 this special tool replaces panel wedge 00 9 317 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	41 01 09 (507)

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61 35 861 Replacing control unit for camera-based driver support systems (KAFAS)

PRELIMINARY WORK

1 – Removing the instrument panel trim at bottom right

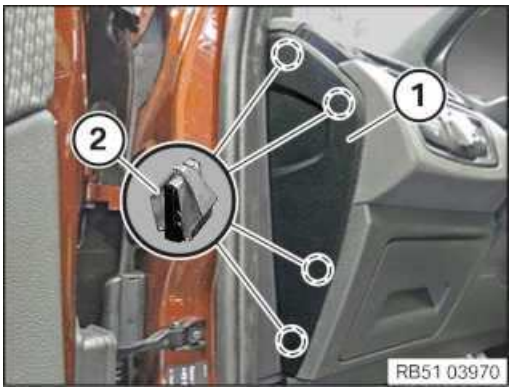


- Loosen nuts (1).
- Lower the instrument panel trim slightly at the bottom right (2) and disconnect the plug connection behind it.
- Guide the instrument panel trim at the bottom right (2) from the front guides and remove it.

2 – Remove the side panel on the right instrument panel

NOTICE

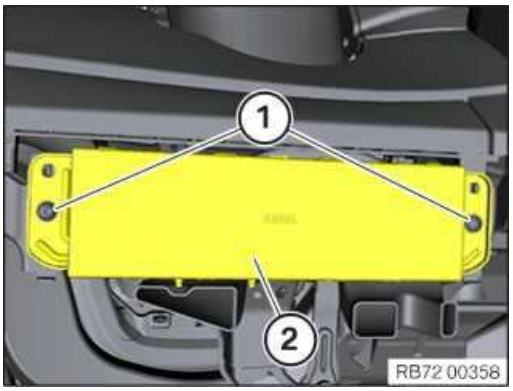
Description is for left component only. Procedure on the right side is identical.



- Lift the side panel (1) out of the clamps (2) with the special tool **0 496 569 (00 9 325)** and feed out toward the rear at an angle.

  If necessary, unlock and disconnect the plug connection on the switch for the front passenger airbag deactivation.

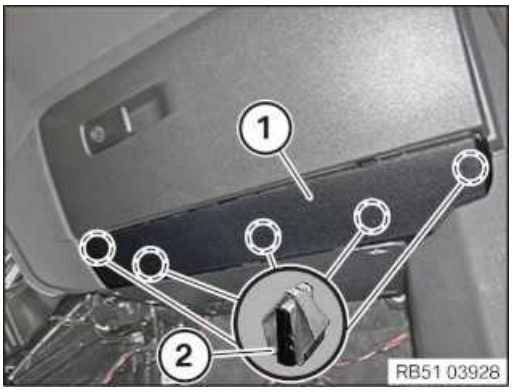
3 – Removing knee airbag



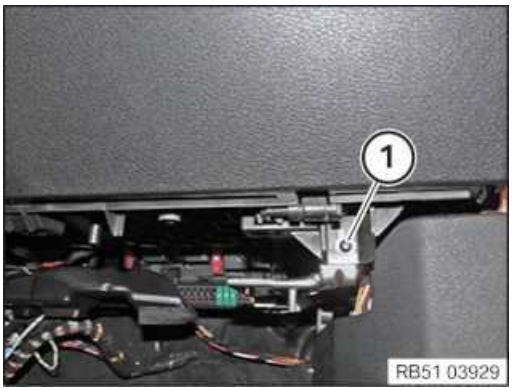
- Unlock plug connection on knee airbag (2) and disconnect.
- Loosen screws (1).
- Remove knee airbag (2).

4 – Remove right glove box

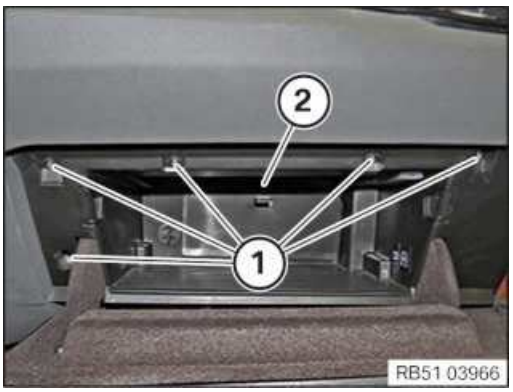
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- Release the trim (1) with the special tool **0 496 569 (00 9 325)** toward the bottom from the clamps (2) and remove.



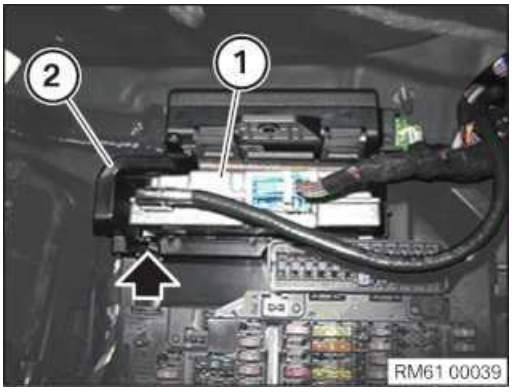
- Loosen screw (1).



- Loosen screws (1).
- Remove glove box (2) to the inside and disconnect associated plug connections.

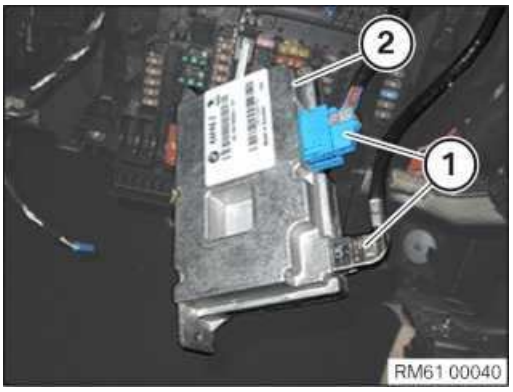
MAIN WORK

5 – Removing control unit for the camera-based driver assistance systems (KAFAS)



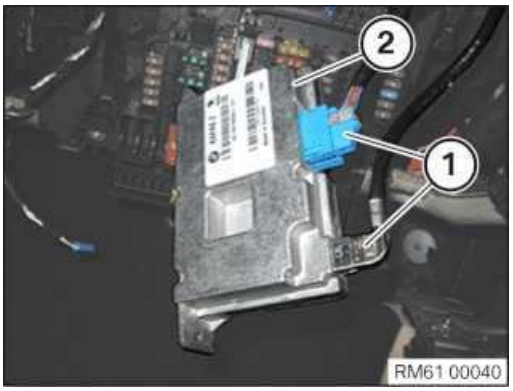
- Release latch mechanism on equipment holder.
- Feed out KAFAS control unit (1) from the equipment holder (2).

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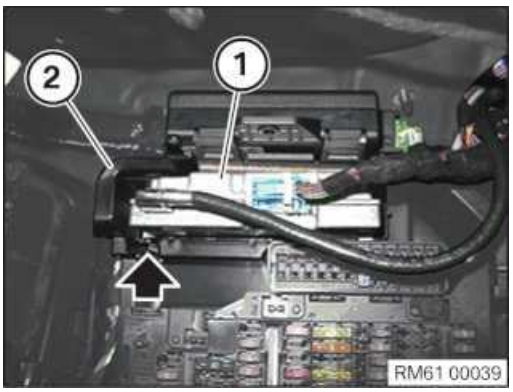


- Unlock and disconnect connector (1) on the KAFAS control unit (2).

6 – Installing the control unit for the camera-based driver assistance systems (KAFAS)



- Connect the connector (1) at the KAFAS control unit (2).

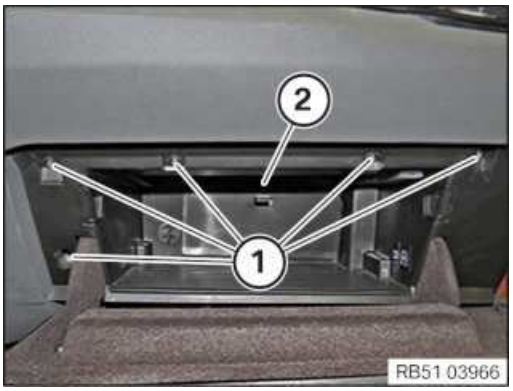


- Position the KAFAS control unit (1) in the equipment holder (2).

  The KAFAS control unit (1) must correctly engage with the equipment holder (2).

POSTPROCESSES

7 – Install right glove box

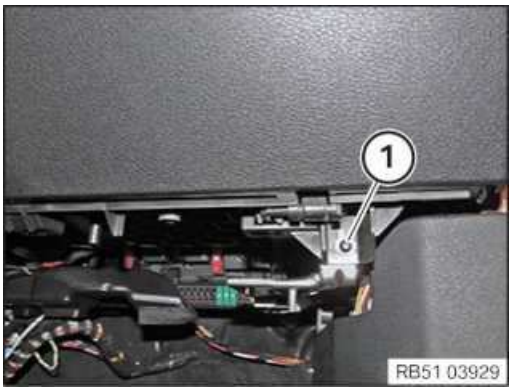


- Install the glove box (2) and connect and lock associated plug connections.
- Tighten the screws (1).

Glove box to instrument panel

Screw		Tightening torque	1,8 Nm

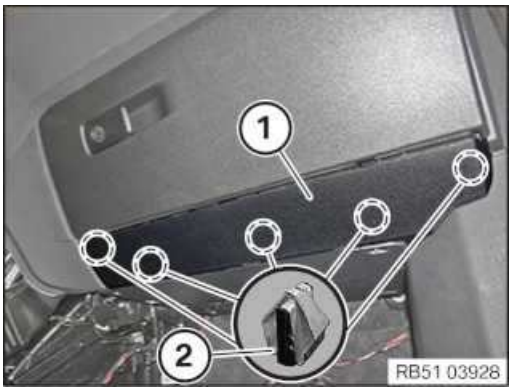
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- Tighten down screw (1).

Glove box to instrument panel

Screw		Tightening torque	1,8 Nm

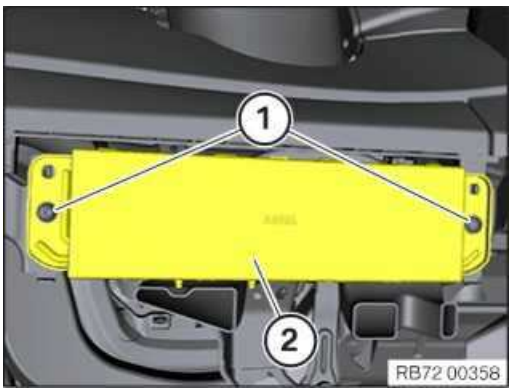


TECHNICAL INFORMATION

Latch mechanisms, guides and mounting elements must not be damaged or missing.

- Install the trim (1) and lock it at the clamps (2).

8 – Installing knee airbag



- Connect the plug connection to the knee airbag (2) and lock.
- Install knee airbag (2).
- Renew screws (1).

  Parts: Screw
- Tighten the screws (1).

Knee airbag to body

M8	Renew screws.	Tightening torque	8 Nm

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

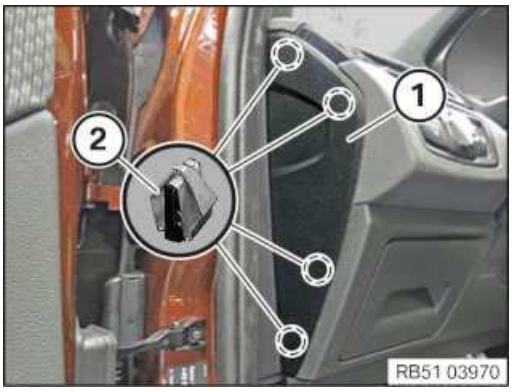
TECHNICAL INFORMATION

Latch mechanisms, guides and mounting elements must not be damaged or missing.

NOTICE

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

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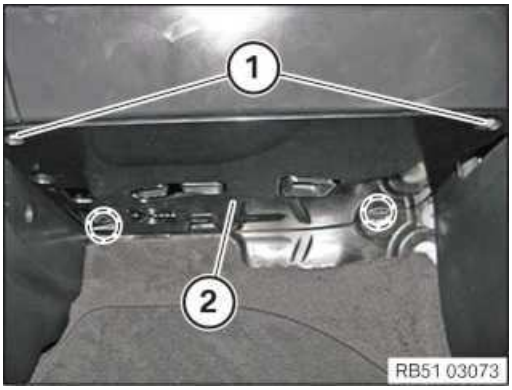


- If necessary, connect the plug connection on the switch for front passenger airbag deactivation and lock.
- Feed in the side panel (1) at an angle toward the front and lock at the clamps (2).

10 – Installing the botto right instrument panel trim

TECHNICAL INFORMATION

Latch mechanisms, guides and mounting elements must not be damaged or missing.



- Install the lower right instrument panel trim (2) and connect and lock the plug connection.
- Insert the lower right instrument panel trim (2) into the front guides.
- Tighten nuts (1).

Bottom left footwell trim to instrument panel

M5 hexagon nut		Tightening torque	2 Nm

11 – 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.

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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

Glove box to instrument panel — Used in step 7

Screw		Tightening torque	1,8 Nm

Knee airbag to body — Used in step 8

M8	Renew screws.	Tightening torque	8 Nm

Bottom left footwell trim to instrument panel — Used in step 10

M5 hexagon nut		Tightening torque	2 Nm

Overview of Special Tools

0 496 569 (00 9 325) Wedge



Common — Used in step 2 4

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 35 741 Replacing control unit for Smart Opener (after vehicle diagnosis)

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.

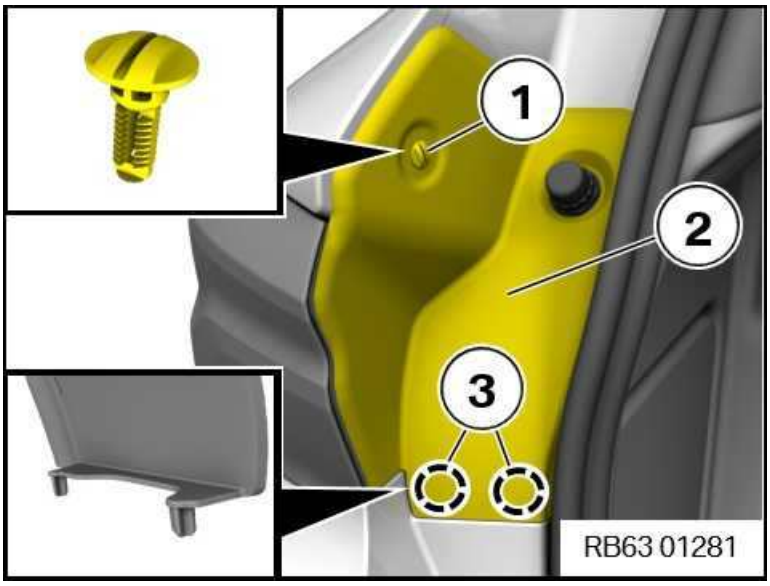
PRELIMINARY WORK

1 – Removing both trims for water channel

NOTICE

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

▸ **Removing trim for water channel**



- Detach rotary clip (1).
- Feed out and remove trim for water channel (2) from guides (3).

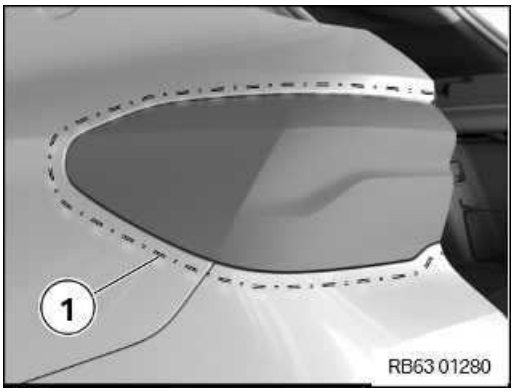
2 – Remove both rear lights from the side panel

NOTICE

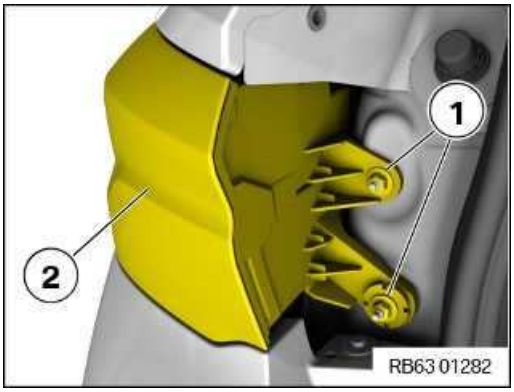
Description is for left component only. Procedure on the right side is identical.

▸ **Remove the rear light on the side panel**

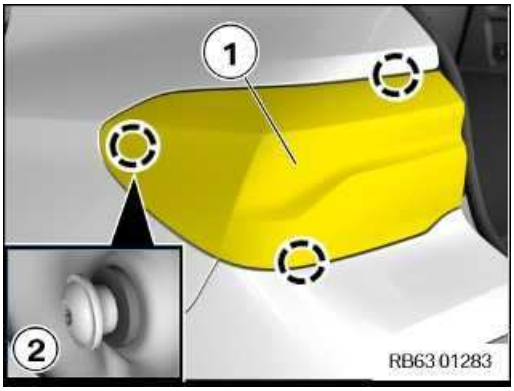
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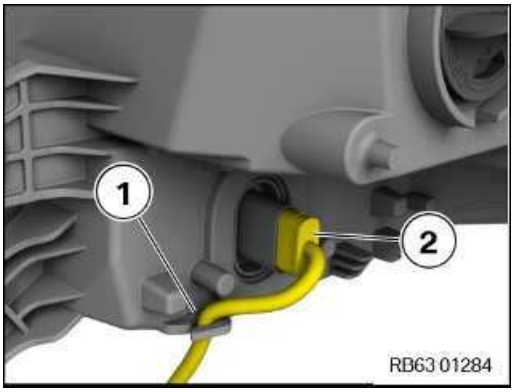
- Mask the body in area (1) with plastic adhesive tape.



- Loosen the nuts (1) on the rear light (2).

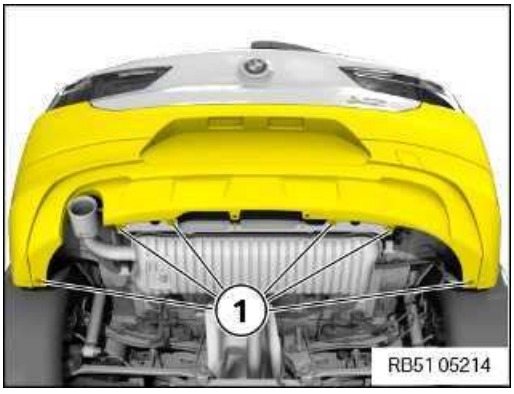


- Remove the rear light (1) from the guides (2) towards the rear.



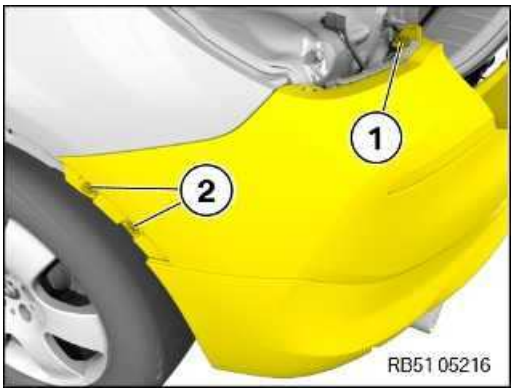
- Detach cable from guide (1).
- Unlock and disconnect the plug connection (2) and remove the rear light .

3 – Remove rear bumper panel



- Loosen screws (1).

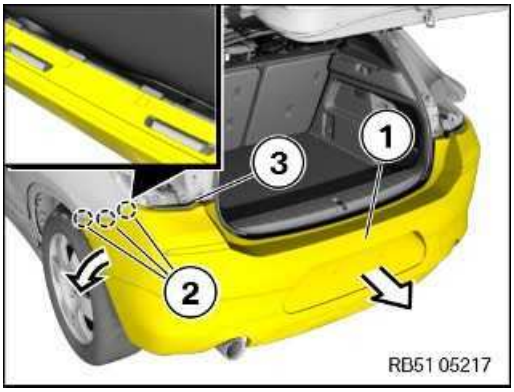
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NOTICE

Perform the operations on the left and right side.

- Loosen screws (1) and (2).



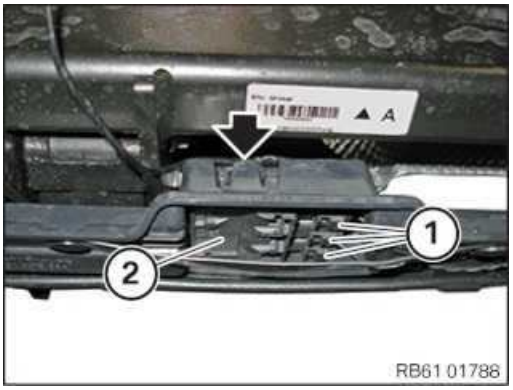
NOTICE

Perform the operations on the left and right side.

- Carefully detach side latch mechanisms(2) in direction of arrow.
- Carefully detach latch mechanisms in area (3) to the rear.
- Pull the bumper panel (1) straight toward the rear in direction of arrow with an auxiliary person.
- Unlock all plug connections and disconnect.
- Remove the bumper panel (1).

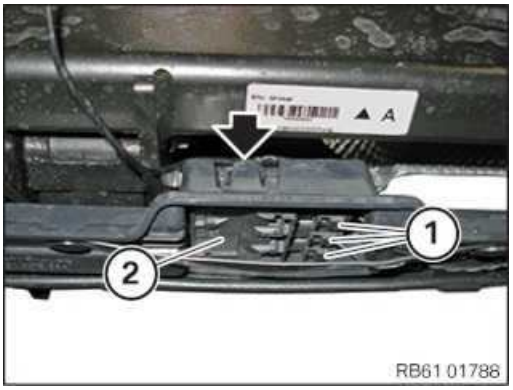
MAIN WORK

4 – Remove the control unit for the contactless tailgate opening



- Release the latch mechanism (arrow).
- Feed control unit (2) out of holder.
- Unlock and disconnect connector (1).

5 – Install the control unit for the contactless tailgate opening



- Connect connector (1).
- Clip in control unit (2) in the holder.
- Lay the access line correctly.

POSTPROCESSES

6 – Install both trim pieces for the water channel

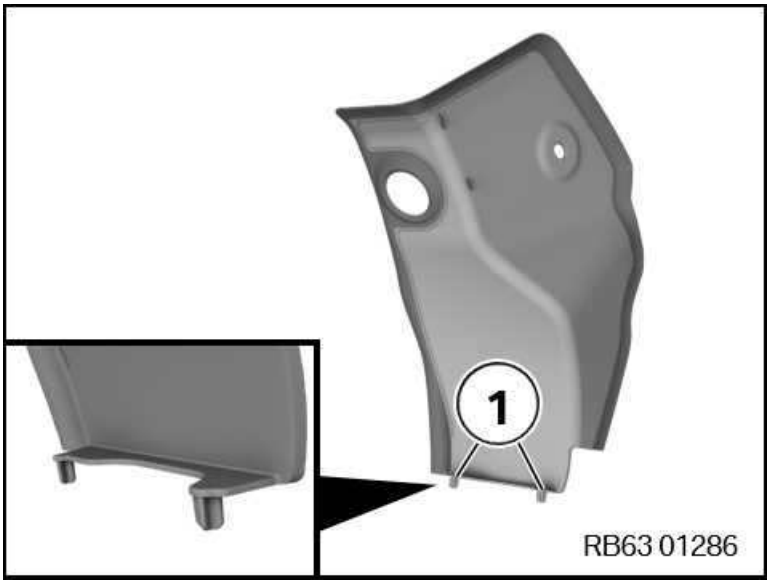
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NOTICE

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

▸ **Install the trim for the water channel**

Check



- Check the guides (1) for damage.

Result

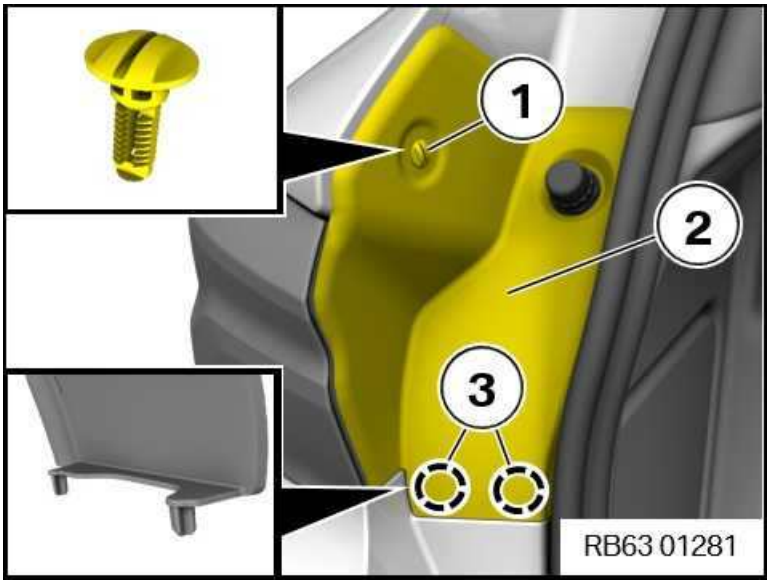
» The guides (1) are damaged.

Measure

- Renew the trim for the water channel.



- Check rotary clip (1) for damage and, if necessary, replace it.

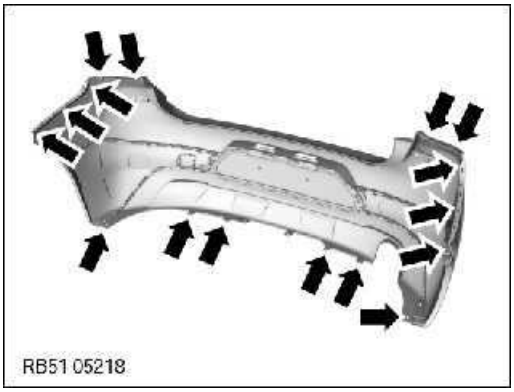


- Insert the trim for water channel (2) with guides (3).
- Fasten the rotary clip (1).

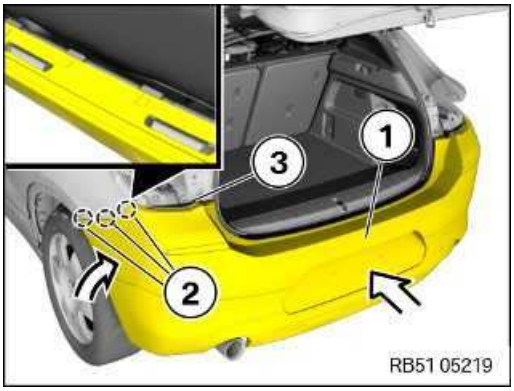
7 Install rear bumper panel

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7 – Install rear bumper panel



- Check if the latch mechanisms and the guide (arrows) are damaged or missing and replace the bumper panel where required.

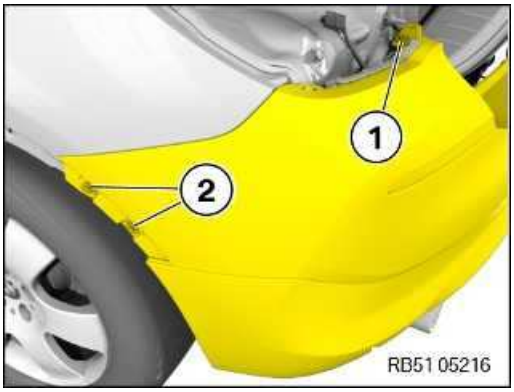


- Position the bumper panel (1) straight with the help of another person.
- Connect all connectors and lock.

NOTICE

Perform the operations on the left and right side.

- Engage the latch mechanisms in the area (3).
- Engage the side latch mechanisms (2) in the direction of the arrow.



NOTICE

Perform the operations on the left and right side.

- Tighten the screws (1).

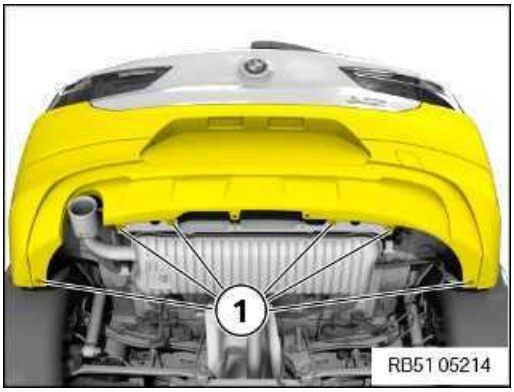
Rear bumper panel to guides

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

- Tighten down screws (2).

Rear bumper panel to side wall

Screw for thermoplastic plastic		Tightening torque	4,6 Nm



- Tighten the screws (1).

Rear bumper panel to guides

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

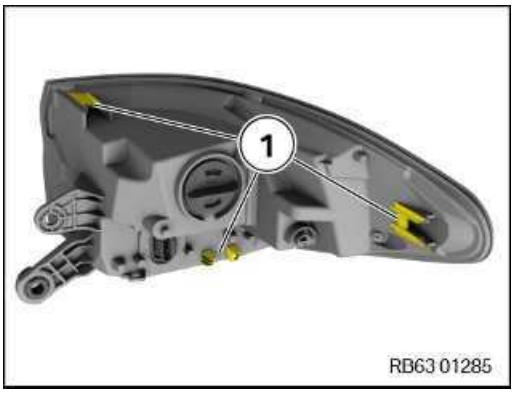
8 – Install both rear lights on the side panel

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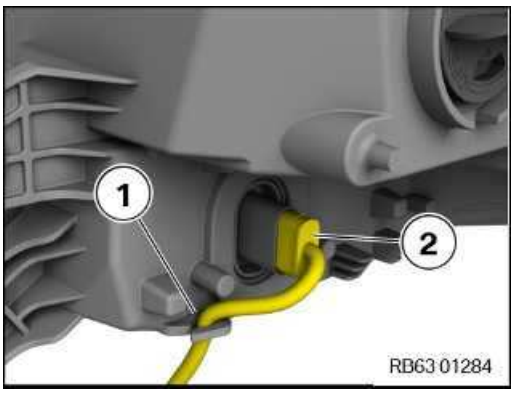
NOTICE

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

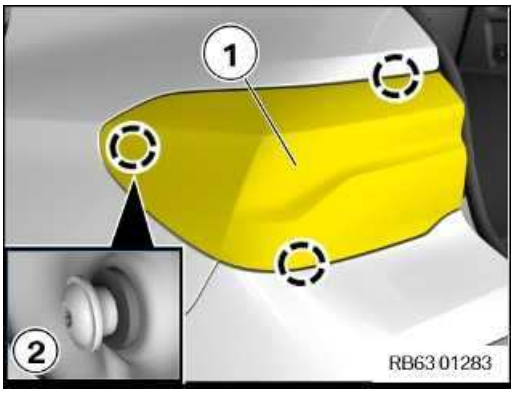
▶ **Install the rear light on the side panel**



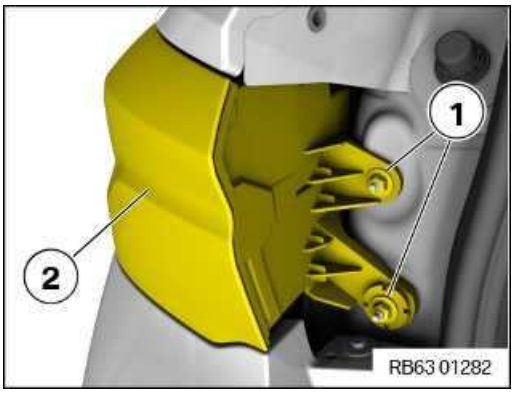
- Make sure that the guides (1) on the rear light are not damaged or missing.



- Connect connectors (2) and lock.
- Attach the cable in the guide (1).



- Position the rear light (1) in the side panel.
- Make sure the rear light (1) is fitted correctly in the guides (2).



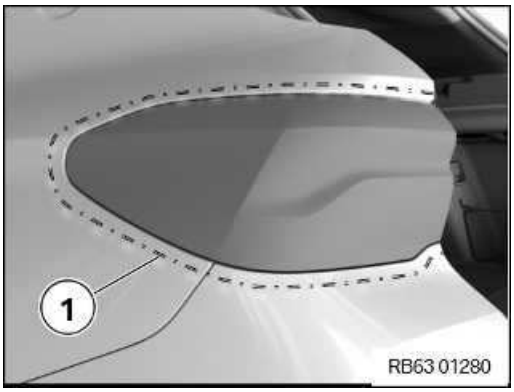
- Replace the nuts (1) on the rear light (2).

  Parts: Nuts
- Tighten nuts (1).

Side panel rear light to body

Combination hexagon nut	Replace nuts.	Tightening torque	2.8 Nm

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- Pull off the plastic adhesive tape from the body in the area (1).

Additional Information

Overview of Tightening Torques

Rear bumper panel to guides — Used in step 7

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

Rear bumper panel to side wall — Used in step 7

Screw for thermoplastic plastic		Tightening torque	4,6 Nm

Side panel rear light to body — Used in step 8

Combination hexagon nut	Replace nuts.	Tightening torque	2.8 Nm

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61 35 596 Replacing control unit/module for seat heating (left or right) (after vehicle diagnosis)

RISK OF DAMAGE



Electrostatic discharge.

Damage to or destruction of electrical components.

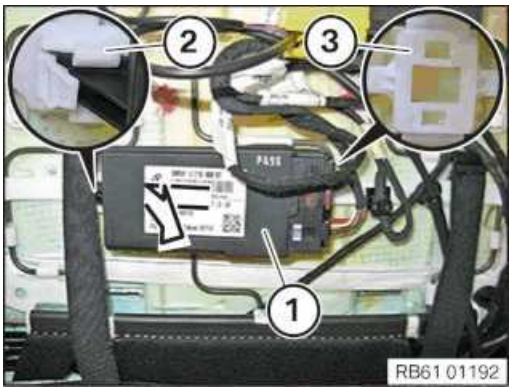
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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

NOTICE

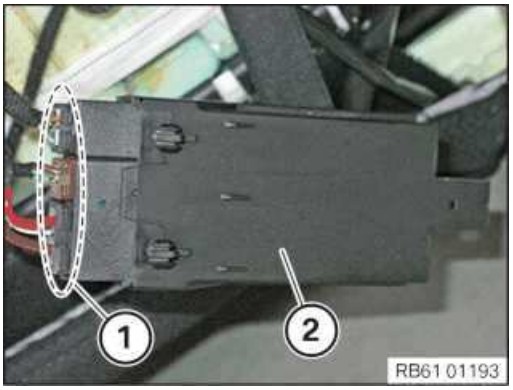
Description is for left component only. Procedure on the right side is identical.

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1 – Remove the seat-heating electronics

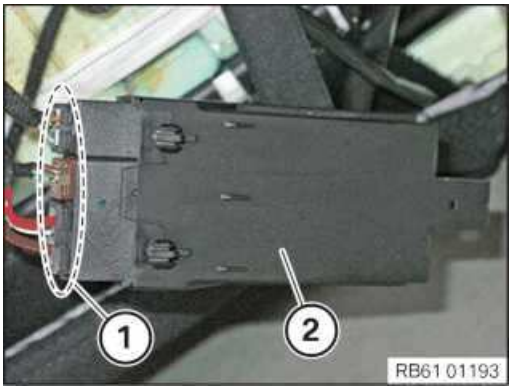


- Release the seat-heating electronics (1) in the direction of the arrow from the holder (3) and the guide (2) and remove.

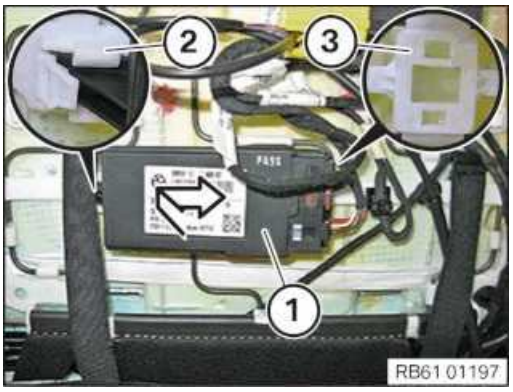


- Unlock all connectors (1) at seat-heating electronics (2) and disconnect.

2 – Install the seat-heating electronics



- Connect all connectors (1) on the seat-heating electronics (2).



- Insert the seat-heating electronics (1) in direction of arrow in the guide (2) and holder (3).

Additional Information

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Links

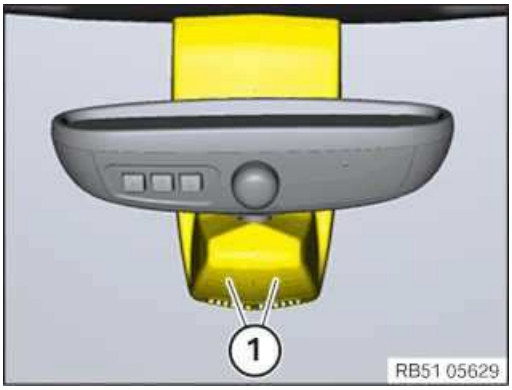
Repair instructions	Used in step
61 35 ... Notes on ESD protection (Electro Static Discharge)	

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61 35 678 Replacing rain/light sensor (after vehicle diagnosis)

PRELIMINARY WORK

1 – Remove the cover on the inside mirror

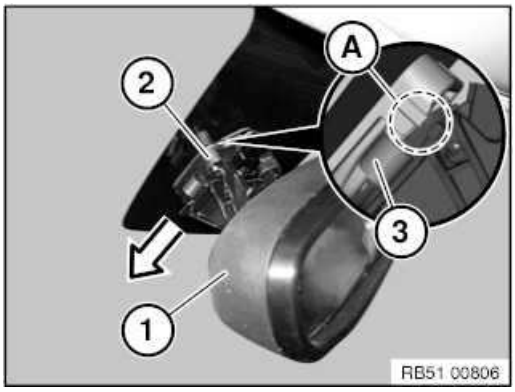


- Unclip the covers on the interior mirror (1) outward with a suitable plastic wedge in the center and remove.

2 – Removing the interior mirror

TECHNICAL INFORMATION

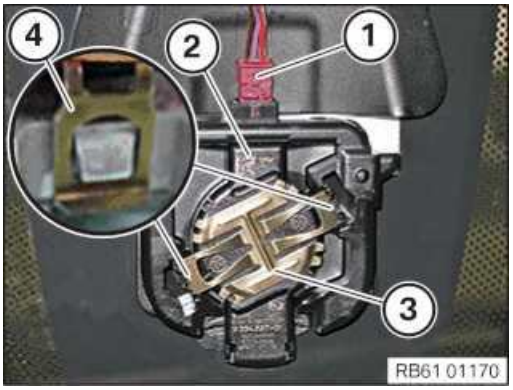
Carry out the work at temperatures between 18 °C and 23 °C only.



- Make sure that the interior mirror (1) does not bend or twist during removal.

  The interior mirror (1) is held by the clamp (3) and the latch mechanism in this area (A) on the base (2).
- If necessary unlock and disconnect the plug connection on the interior mirror (1).
- Pull off the interior mirror (1) from the mirror socket (2) with a downwards jerk in parallel to the windscreen.

3 – Remove driving light sensor



RISK OF DAMAGE

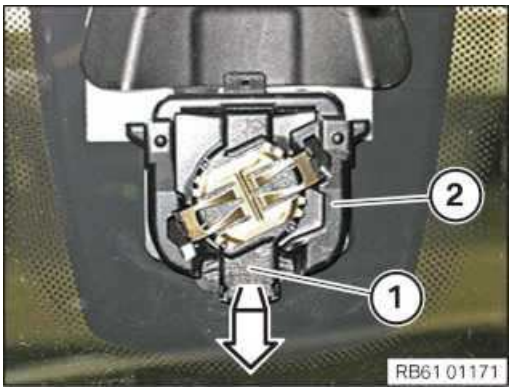
Damage to silicone surface.

A damaged silicone surface can lead to malfunctioning of the rain-light-solar-condensation sensor.

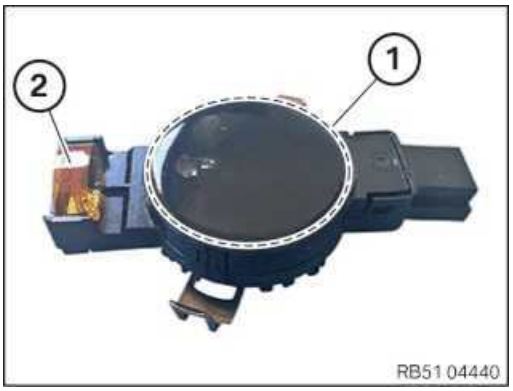
- Do not touch or damage the silicone-coated surface on the rain-light-solar-condensation sensor.
- After releasing lock, wait approx. 30 min. at 20°C for silicone surface to relax.

- 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.

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- Slowly pull the driving light sensor (1) in direction of arrow from the holder (2).



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) for damage.
- When replacing windscreen: Immediately install the driving light sensor on the new windscreen.

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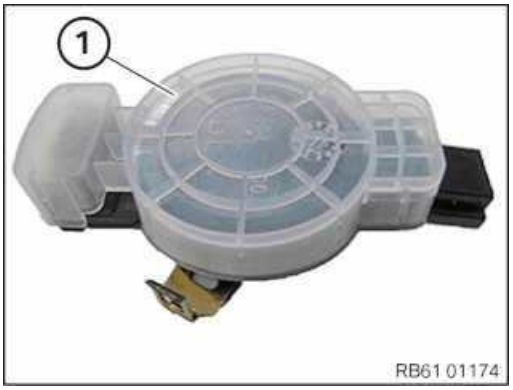
MAIN WORK

4 – Renewing driving light sensor



- Carefully clean windscreen in contact area (1) of driving light sensor.

  All silicone residues must be removed.



- Remove protective cover (1) from the new 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.

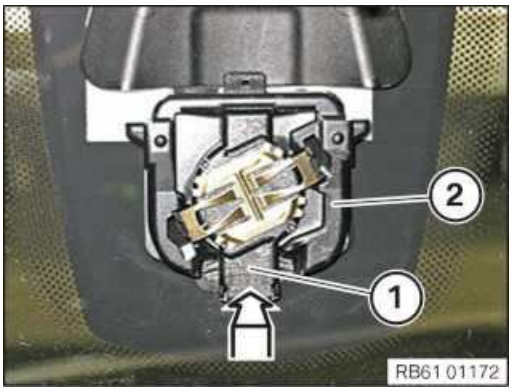
- Do not touch or damage the silicone-coated surface on the rain-light-solar-condensation sensor.
- After releasing lock, wait approx. 30 min. at 20°C for silicone surface to relax.

- Check silicone-coated surface (1) for damage.

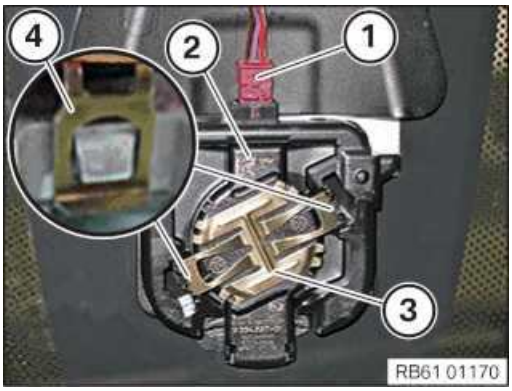
POSTPROCESSES

5 – Install driving light sensor

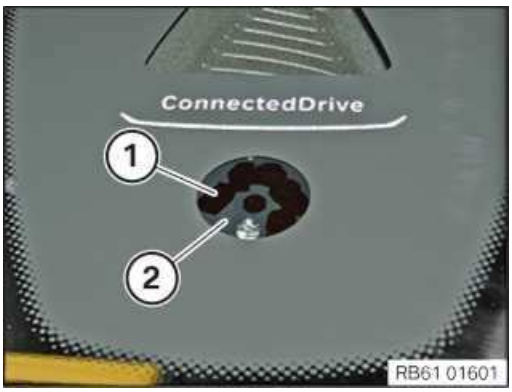
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- Thread in the driving light sensor (1) in direction of arrow into the holder (2).



- 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).



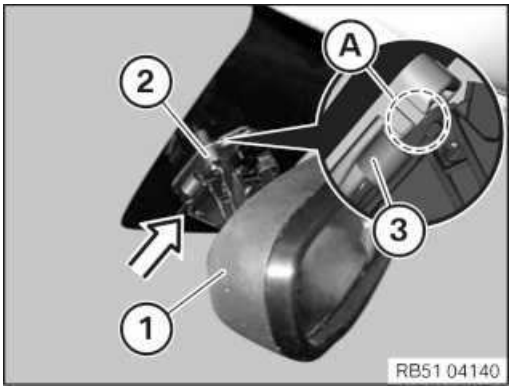
- Check if air pockets are visible.

  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.

6 – Installing the interior mirror

TECHNICAL INFORMATION

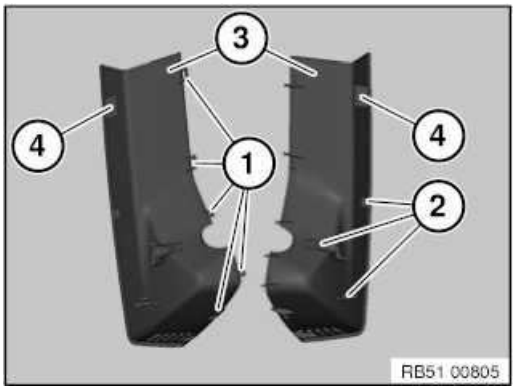
Carry out the work at temperatures between 18 °C and 23 °C only.



- Check the clamp (3) on both sides of the interior mirror (1) for damage and renew as needed.
- If necessary, connect the connector on the interior mirror (1).
- Slide the interior mirror (1) parallel to the windscreen in direction of arrow into the base (2) and lock correctly in area (A).

7 – Install the cover on the inside mirror

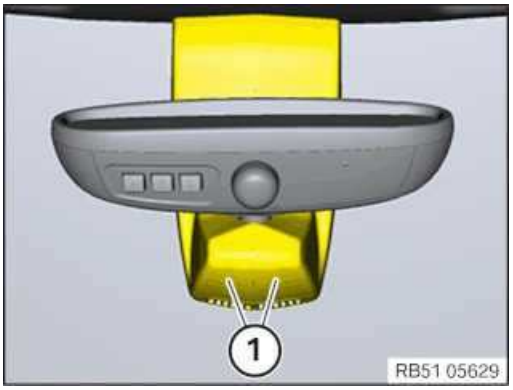
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- Check the latch mechanisms (1) and guides (2) on the two covers (3) for damage, renew if necessary.

  The latch mechanisms (1) and guides (2) must not be damaged.
- Check the spacers (4).

  The spacers (4) must not be damaged or missing.



- Install covers on the interior mirror (1) clip together.

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61 35 746 Replacing sensor line for Smart Opener at bottom (after vehicle diagnosis)

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.

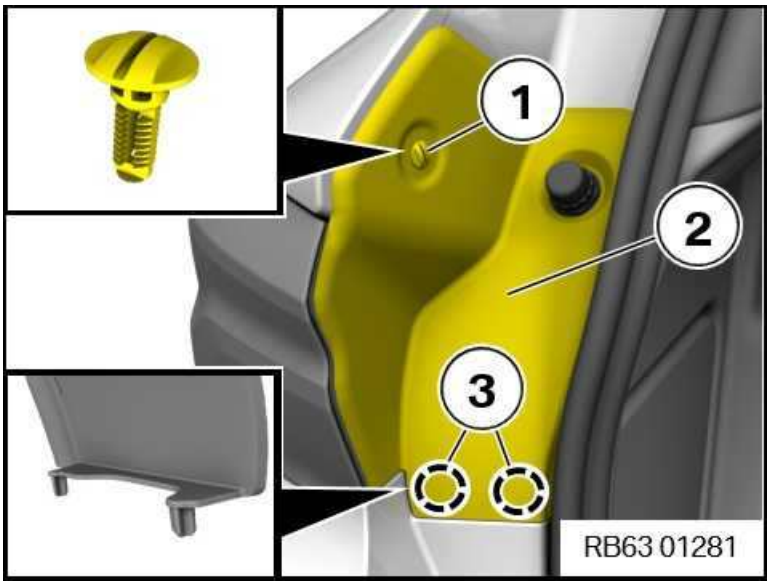
PRELIMINARY WORK

1 – Removing both trims for water channel

NOTICE

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

▸ **Removing trim for water channel**



- Detach rotary clip (1).
- Feed out and remove trim for water channel (2) from guides (3).

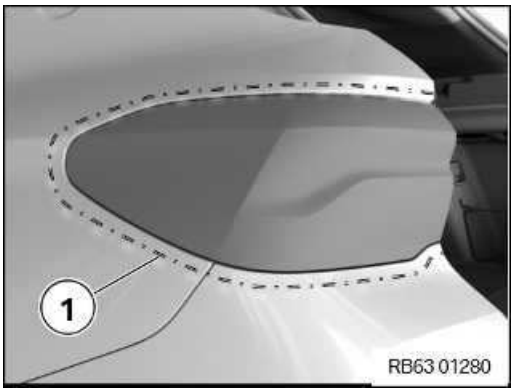
2 – Remove both rear lights from the side panel

NOTICE

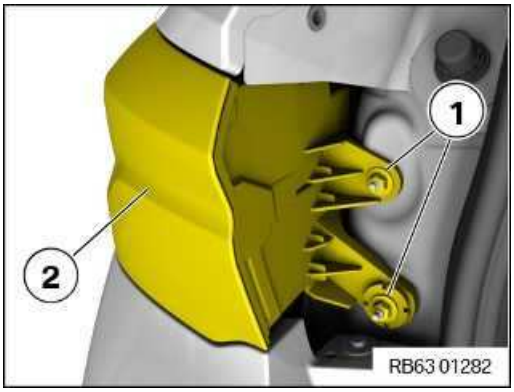
Description is for left component only. Procedure on the right side is identical.

▸ **Remove the rear light on the side panel**

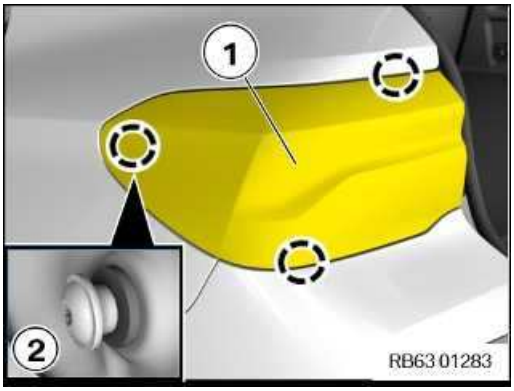
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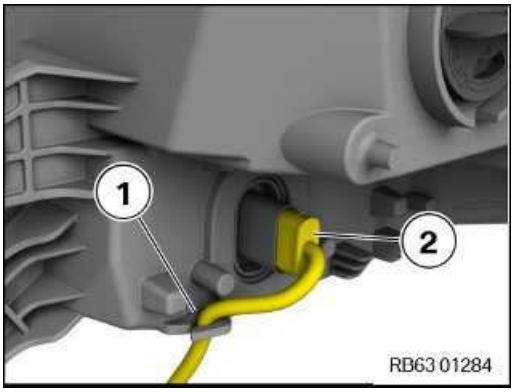
- Mask the body in area (1) with plastic adhesive tape.



- Loosen the nuts (1) on the rear light (2).

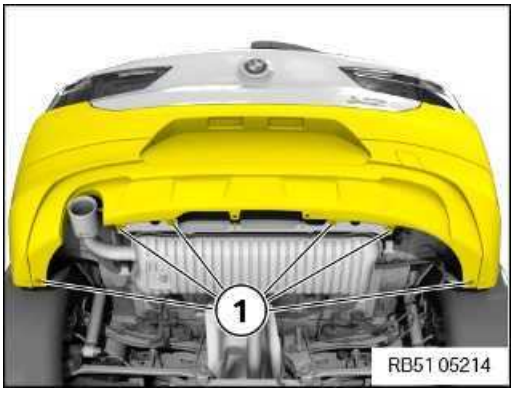


- Remove the rear light (1) from the guides (2) towards the rear.



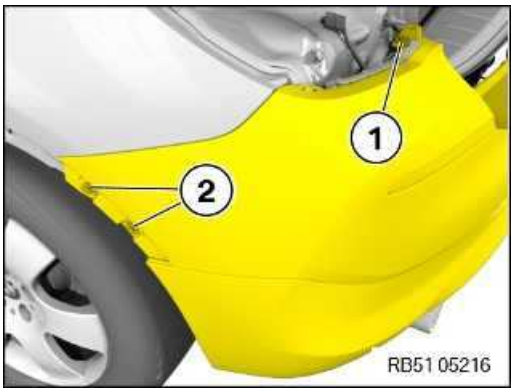
- Detach cable from guide (1).
- Unlock and disconnect the plug connection (2) and remove the rear light .

3 – Remove rear bumper panel



- Loosen screws (1).

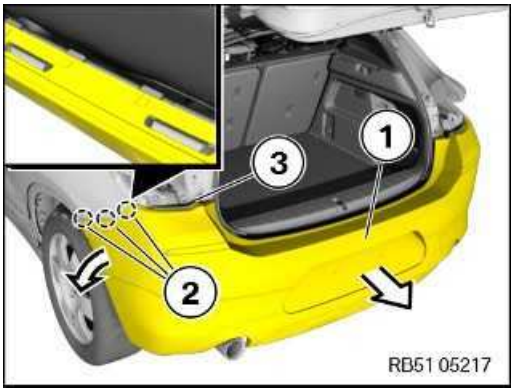
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NOTICE

Perform the operations on the left and right side.

- Loosen screws (1) and (2).



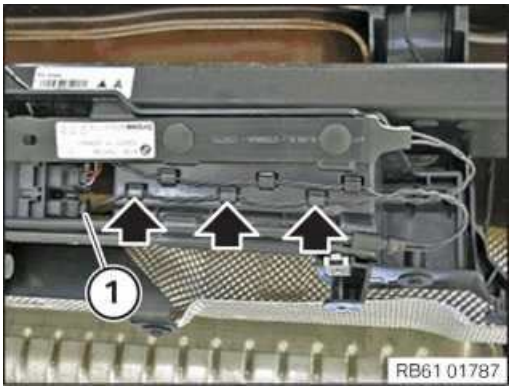
NOTICE

Perform the operations on the left and right side.

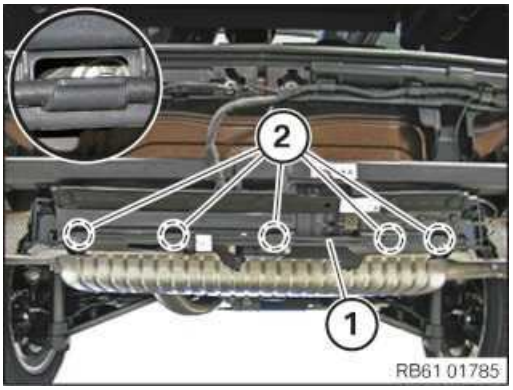
- Carefully detach side latch mechanisms(2) in direction of arrow.
- Carefully detach latch mechanisms in area (3) to the rear.
- Pull the bumper panel (1) straight toward the rear in direction of arrow with an auxiliary person.
- Unlock all plug connections and disconnect.
- Remove the bumper panel (1).

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4 – Remove the bottom sensor line for the contactless tailgate opening

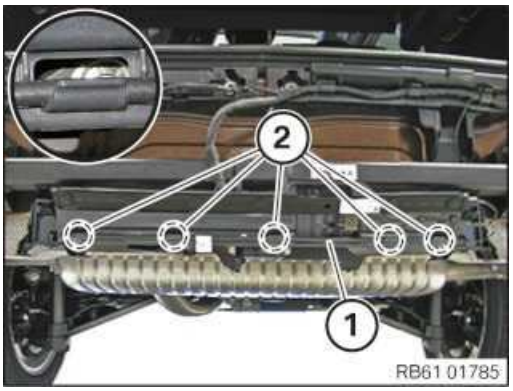


- Unlock and disconnect the associated connector (1) on the control unit.
- Feed out associated access line.

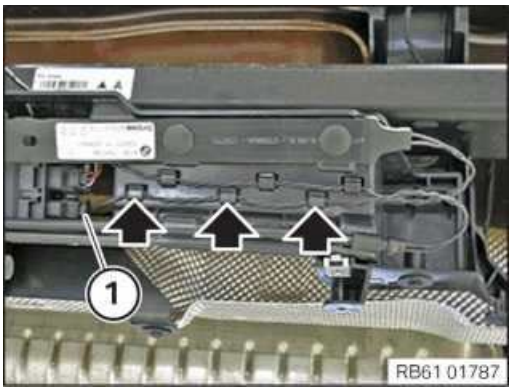


- Unclip the bottom sensor line (1) from the brackets (2).

5 – Install the bottom sensor line for the contactless tailgate opening



- Clip in the bottom sensor line (1) at the brackets (2).



- Connect the associated connector (1) to the control unit.
- Thread associated access line.

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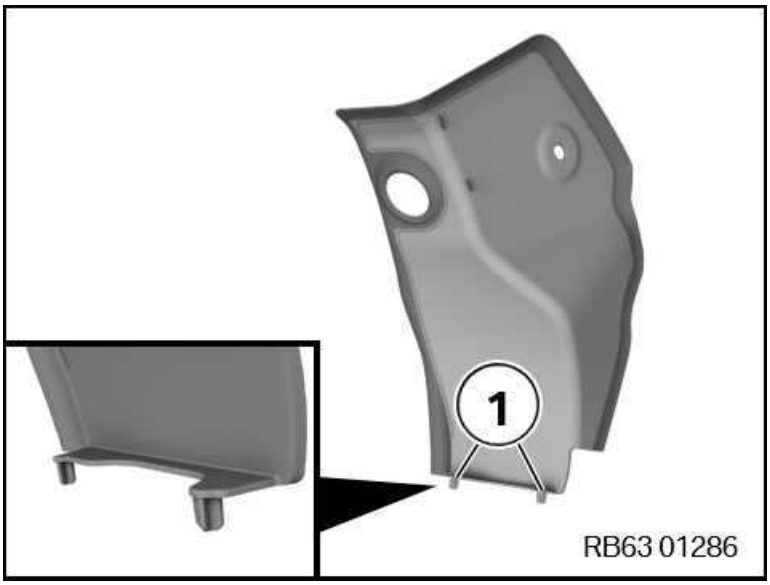
6 – Install both trim pieces for the water channel

NOTICE

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

▸ **Install the trim for the water channel**

Check



- Check the guides (1) for damage.

Result

» The guides (1) are damaged.

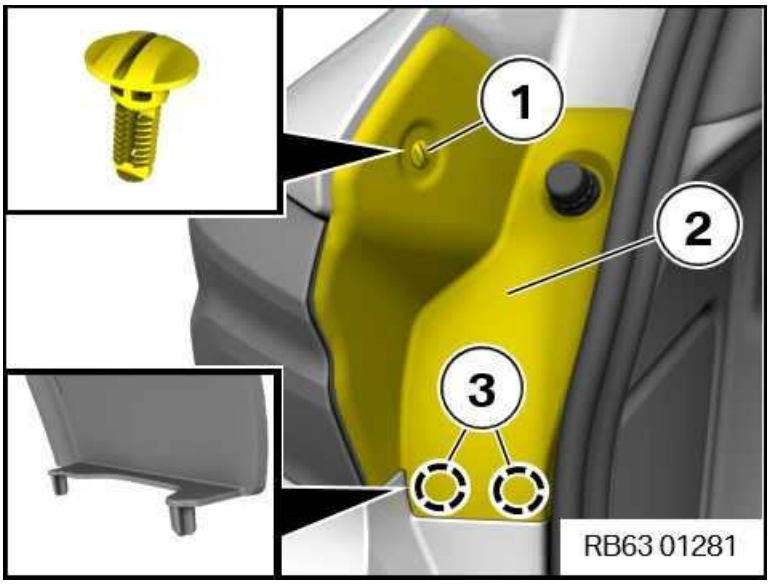
Measure

- Renew the trim for the water channel.



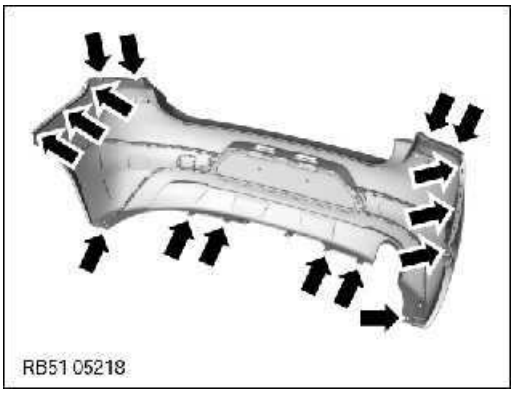
- Check rotary clip (1) for damage and, if necessary, replace it.

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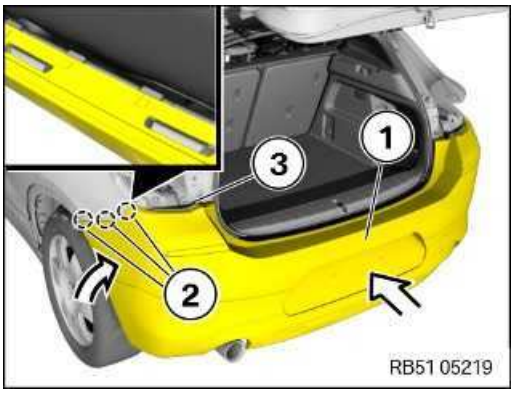


- Insert the trim for water channel (2) with guides (3).
- Fasten the rotary clip (1).

7 – Install rear bumper panel



- Check if the latch mechanisms and the guide (arrows) are damaged or missing and replace the bumper panel where required.

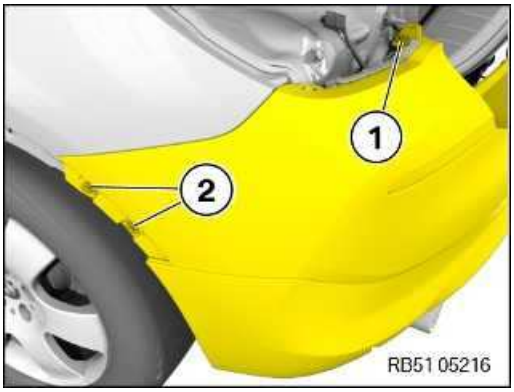


- Position the bumper panel (1) straight with the help of another person.
- Connect all connectors and lock.

NOTICE

Perform the operations on the left and right side.

- Engage the latch mechanisms in the area (3).
- Engage the side latch mechanisms (2) in the direction of the arrow.



NOTICE

Perform the operations on the left and right side.

- Tighten the screws (1).

Rear bumper panel to guides

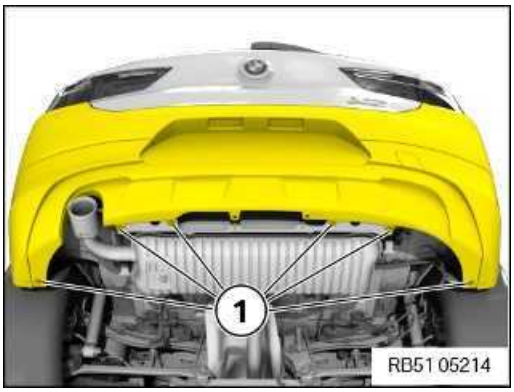
Screw for thermoplastic plastic		Tightening torque	2,5 Nm

- Tighten down screws (2).

Rear bumper panel to side wall

Screw for thermoplastic plastic		Tightening torque	4,6 Nm

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- Tighten the screws (1).

Rear bumper panel to guides

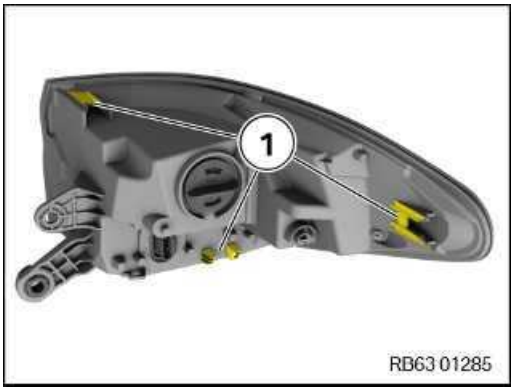
Screw for thermoplastic plastic		Tightening torque	2,5 Nm

8 – Install both rear lights on the side panel

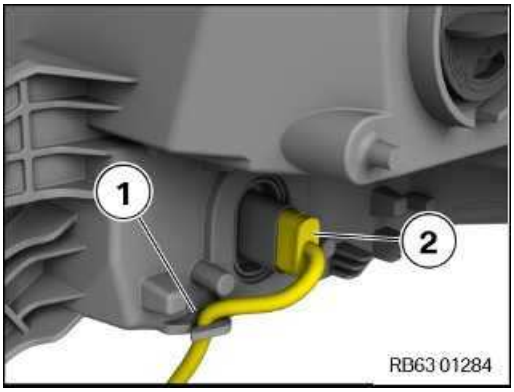
NOTICE

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

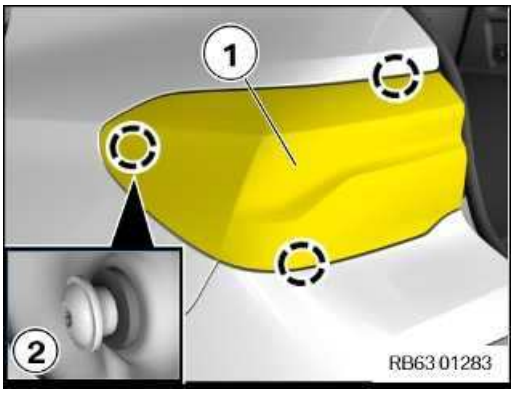
▶ **Install the rear light on the side panel**



- Make sure that the guides (1) on the rear light are not damaged or missing.

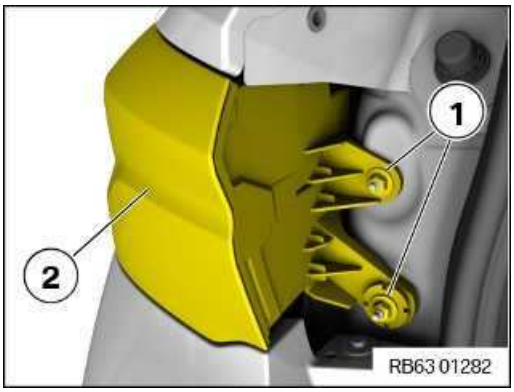


- Connect connectors (2) and lock.
- Attach the cable in the guide (1).



- Position the rear light (1) in the side panel.
- Make sure the rear light (1) is fitted correctly in the guides (2).

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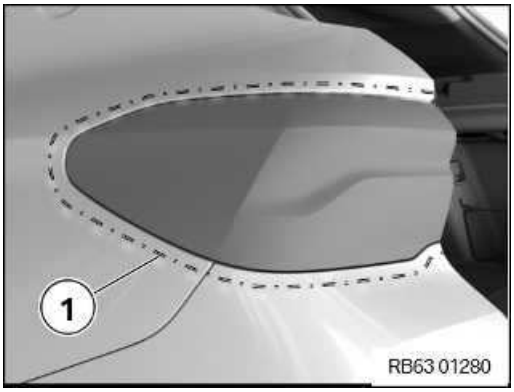


- Replace the nuts (1) on the rear light (2).

  Parts: Nuts
- Tighten nuts (1).

Side panel rear light to body

Combination hexagon nut	Replace nuts.	Tightening torque	2.8 Nm



- Pull off the plastic adhesive tape from the body in the area (1).

Additional Information

Overview of Tightening Torques

Rear bumper panel to guides Used in step 7

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

Rear bumper panel to side wall Used in step 7

Screw for thermoplastic plastic		Tightening torque	4,6 Nm

Side panel rear light to body Used in step 8

Combination hexagon nut	Replace nuts.	Tightening torque	2.8 Nm

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61 35 744 Replacing sensor line for Smart Opener at top (after vehicle diagnosis)

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.

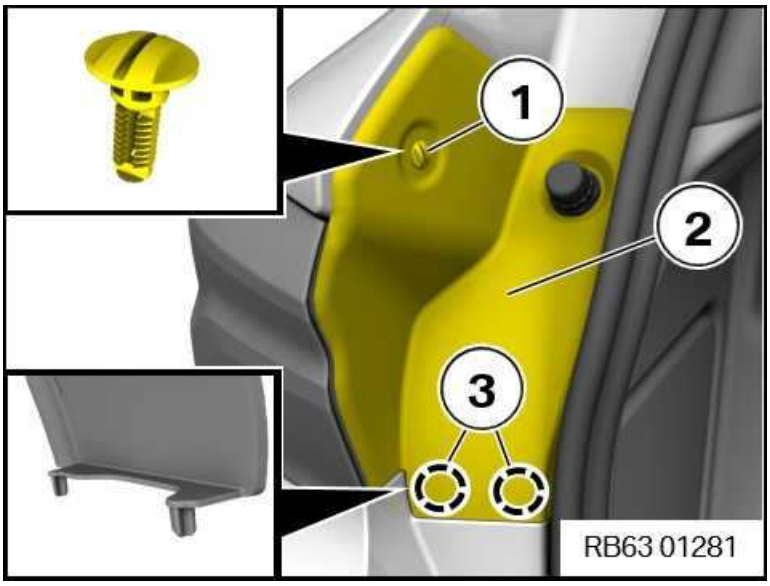
PRELIMINARY WORK

1 – Removing both trims for water channel

NOTICE

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

▸ **Removing trim for water channel**



- Detach rotary clip (1).
- Feed out and remove trim for water channel (2) from guides (3).

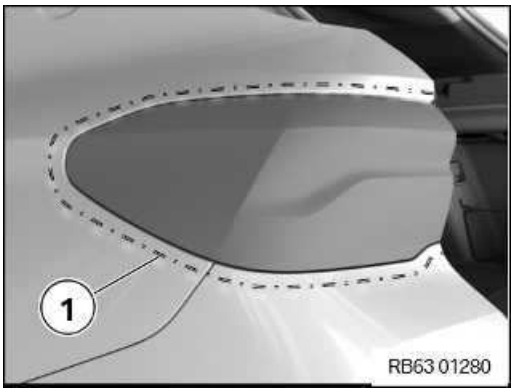
2 – Remove both rear lights from the side panel

NOTICE

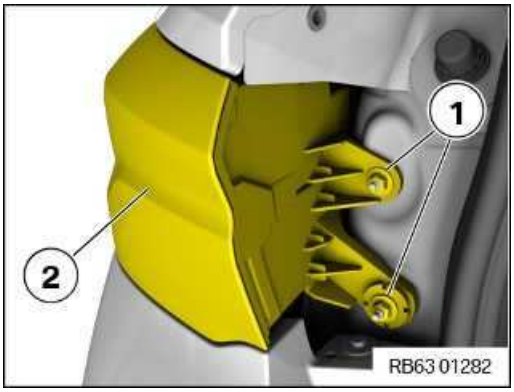
Description is for left component only. Procedure on the right side is identical.

▸ **Remove the rear light on the side panel**

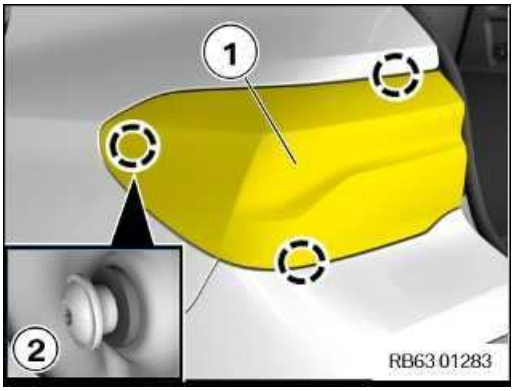
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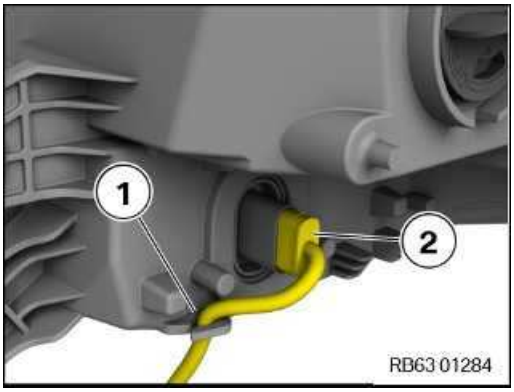
- Mask the body in area (1) with plastic adhesive tape.



- Loosen the nuts (1) on the rear light (2).

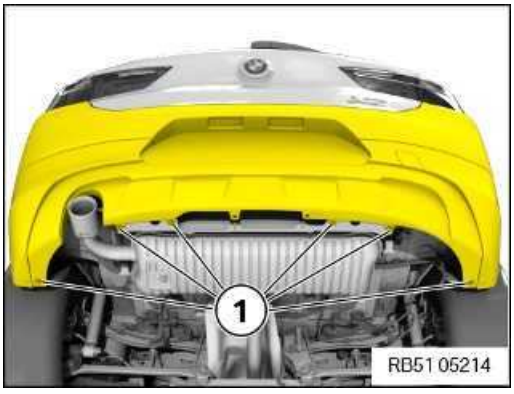


- Remove the rear light (1) from the guides (2) towards the rear.



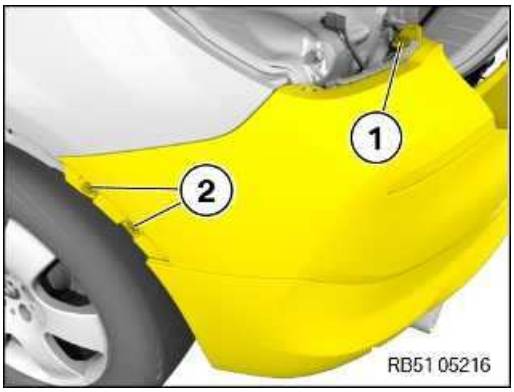
- Detach cable from guide (1).
- Unlock and disconnect the plug connection (2) and remove the rear light .

3 – Remove rear bumper panel



- Loosen screws (1).

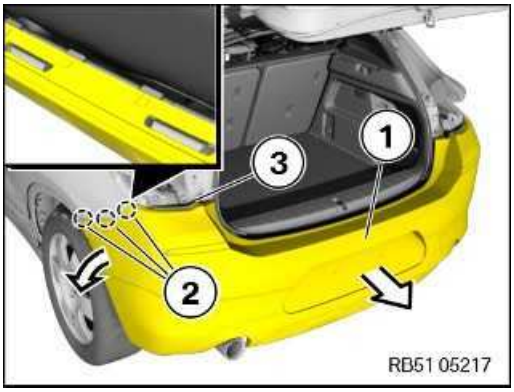
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NOTICE

Perform the operations on the left and right side.

- Loosen screws (1) and (2).



NOTICE

Perform the operations on the left and right side.

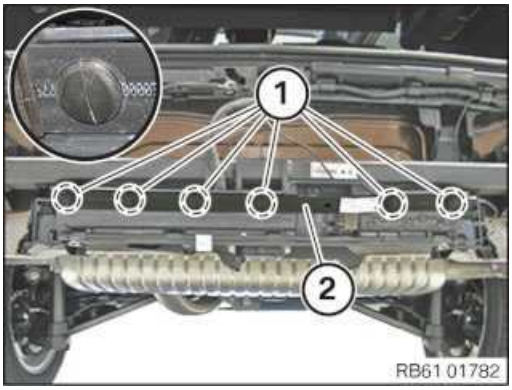
- Carefully detach side latch mechanisms(2) in direction of arrow.
- Carefully detach latch mechanisms in area (3) to the rear.
- Pull the bumper panel (1) straight toward the rear in direction of arrow with an auxiliary person.
- Unlock all plug connections and disconnect.
- Remove the bumper panel (1).

MAIN WORK

4 – Remove the top sensor line for the contactless tailgate opening



- Guide out access line (1).



- Release top sensor line (2) on the clips (1) and remove.

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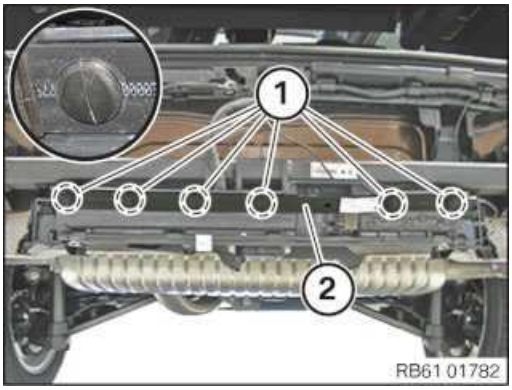


- Unlock and disconnect the associated connector (1) on the control unit.

5 – Install the top sensor line for the contactless tailgate opening



- Connect the associated connector (1) to the control unit.



- Secure the top sensor line (2) with the clips (1).



- Guide in access line (1).

POSTPROCESSES

6 – Install both trim pieces for the water channel

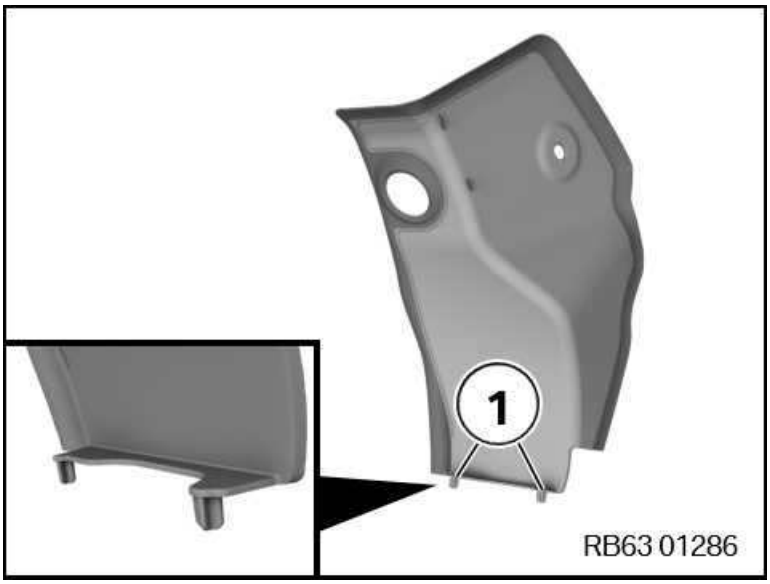
NOTICE

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

▸ **Install the trim for the water channel**

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Check



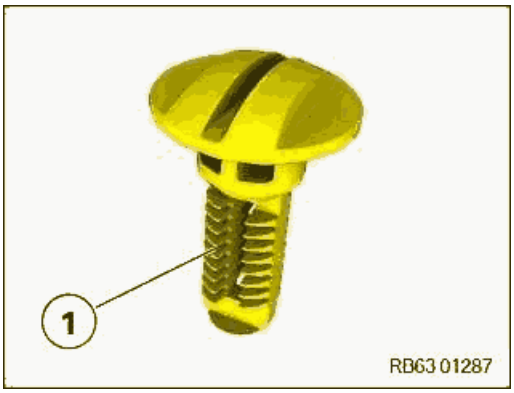
- Check the guides (1) for damage.

Result

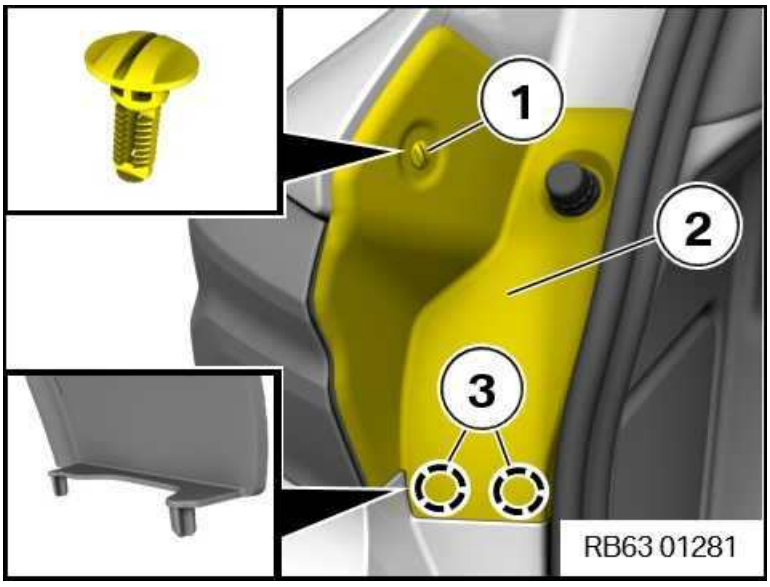
» The guides (1) are damaged.

Measure

- Renew the trim for the water channel.



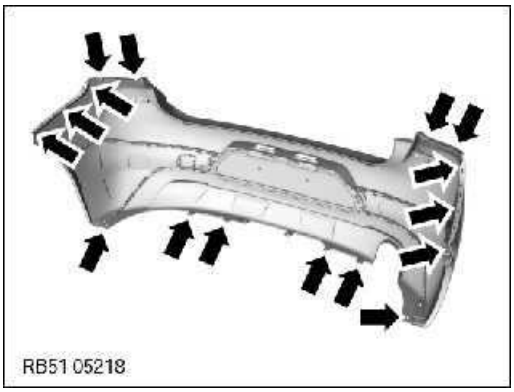
- Check rotary clip (1) for damage and, if necessary, replace it.



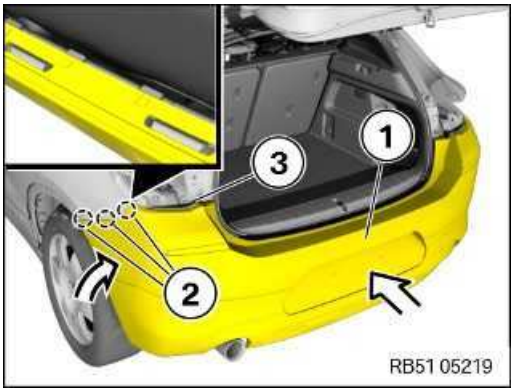
- Insert the trim for water channel (2) with guides (3).
- Fasten the rotary clip (1).

7 – Install rear bumper panel

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- Check if the latch mechanisms and the guide (arrows) are damaged or missing and replace the bumper panel where required.

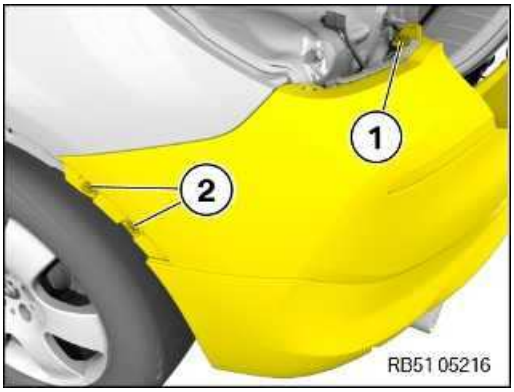


- Position the bumper panel (1) straight with the help of another person.
- Connect all connectors and lock.

NOTICE

Perform the operations on the left and right side.

- Engage the latch mechanisms in the area (3).
- Engage the side latch mechanisms (2) in the direction of the arrow.



NOTICE

Perform the operations on the left and right side.

- Tighten the screws (1).

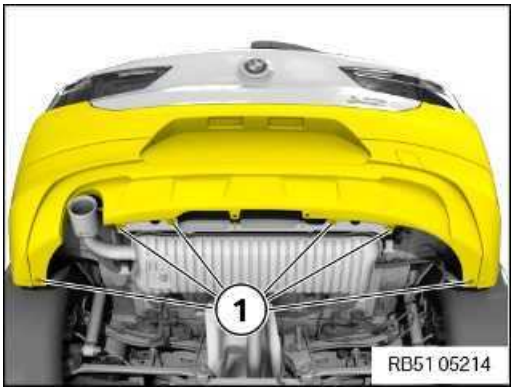
Rear bumper panel to guides

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

- Tighten down screws (2).

Rear bumper panel to side wall

Screw for thermoplastic plastic		Tightening torque	4,6 Nm



- Tighten the screws (1).

Rear bumper panel to guides

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

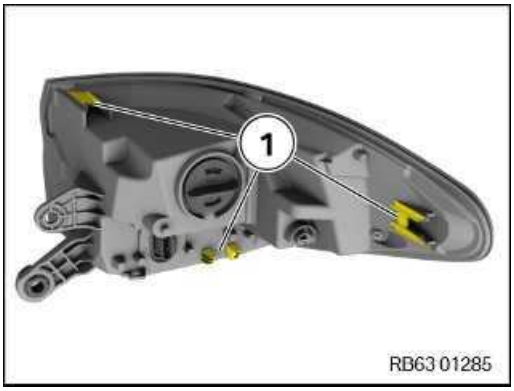
8 – Install both rear lights on the side panel

NOTICE

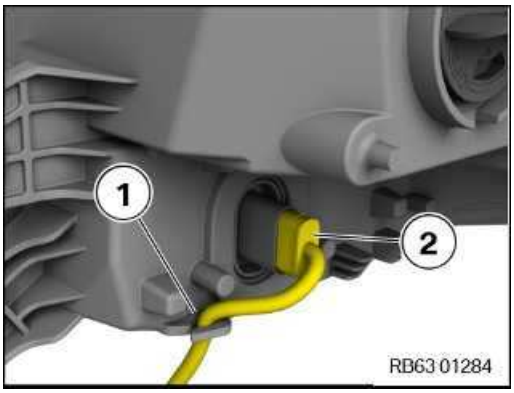
Description is for left component only. Procedure on the right side is identical.

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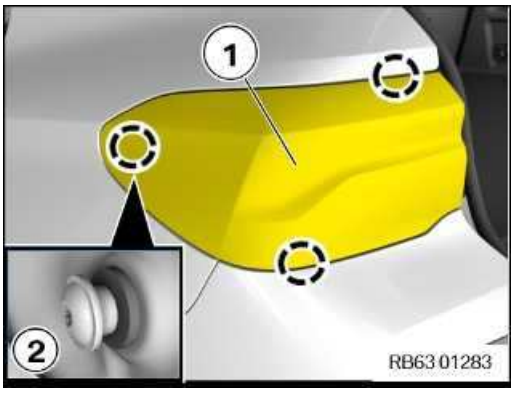
▸ **Install the rear light on the side panel**



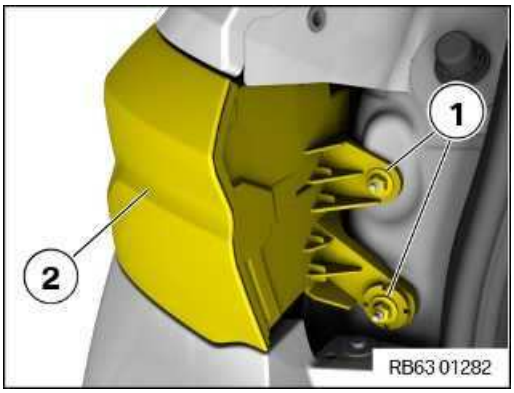
- Make sure that the guides (1) on the rear light are not damaged or missing.



- Connect connectors (2) and lock.
- Attach the cable in the guide (1).



- Position the rear light (1) in the side panel.
- Make sure the rear light (1) is fitted correctly in the guides (2).

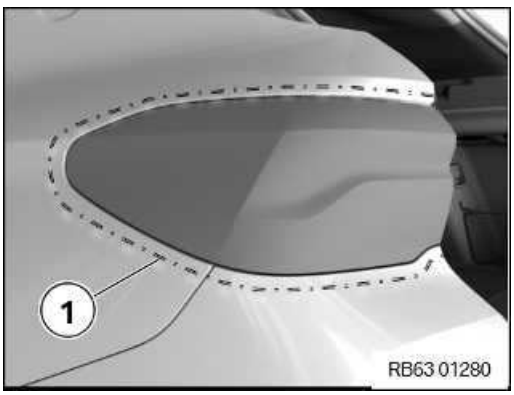


- Replace the nuts (1) on the rear light (2).

  Parts: Nuts
- Tighten nuts (1).

Side panel rear light to body

Combination hexagon nut	Replace nuts.	Tightening torque	2.8 Nm



- Pull off the plastic adhesive tape from the body in the area (1).

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Additional Information

Overview of Tightening Torques

Rear bumper panel to guides

Used in step 7

Screw for thermoplastic plastic		Tightening torque	2,5 Nm

Rear bumper panel to side wall

Used in step 7

Screw for thermoplastic plastic		Tightening torque	4,6 Nm

Side panel rear light to body

Used in step 8

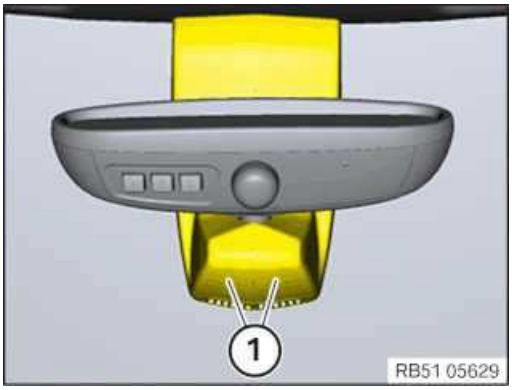
Combination hexagon nut	Replace nuts.	Tightening torque	2.8 Nm

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61 35 688 Replacing the rain-light-solar-condensation sensor (after vehicle diagnosis)

PRELIMINARY WORK

1 – Remove the cover on the inside mirror

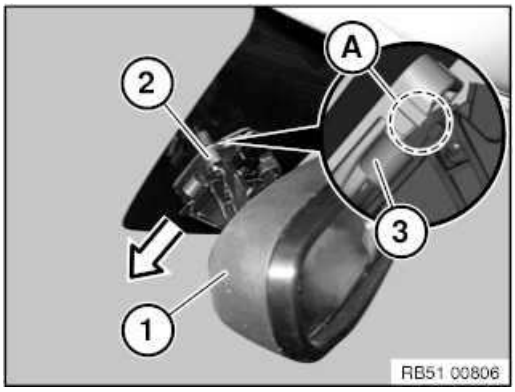


- Unclip the covers on the interior mirror (1) outward with a suitable plastic wedge in the center and remove.

2 – Removing the interior mirror

TECHNICAL INFORMATION

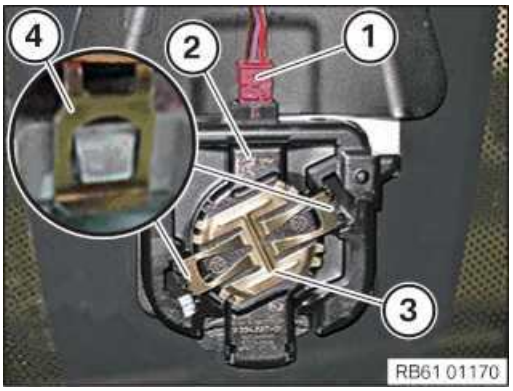
Carry out the work at temperatures between 18 °C and 23 °C only.



- Make sure that the interior mirror (1) does not bend or twist during removal.

  The interior mirror (1) is held by the clamp (3) and the latch mechanism in this area (A) on the base (2).
- If necessary unlock and disconnect the plug connection on the interior mirror (1).
- Pull off the interior mirror (1) from the mirror socket (2) with a downwards jerk in parallel to the windscreen.

3 – Remove rain-light-solar-condensation sensor



RISK OF DAMAGE

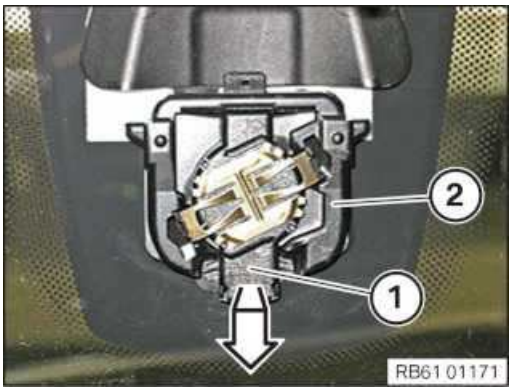
Damage to silicone surface.

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 the rain-light-solar-condensation sensor.

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- Slowly pull the rain-light-solar-condensation sensor (1) in direction of arrow from the holder (2).



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 silicone-coated surface (1) for damage.
- When replacing windscreen: Immediately install the rain-light-solar-condensation sensor on the new windscreen.

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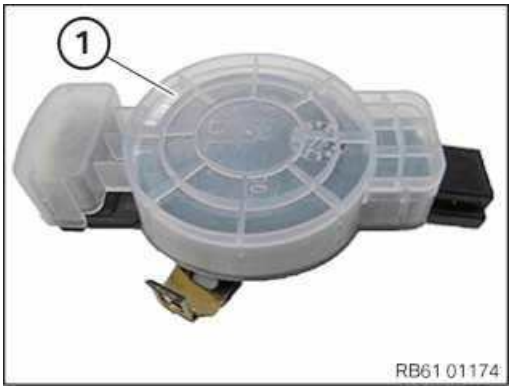
MAIN WORK

4 – Replacing rain-light-solar-condensation sensor



- Carefully clean windscreen in the contact area (1) of rain-light-solar-condensation sensor.

  All silicone residues must be removed.



- Remove protective cover (1) from new rain-light-solar-condensation sensor.



RISK OF DAMAGE

Damage to silicone surface.

A damaged silicone surface can lead to malfunctioning of the rain-light-solar-condensation sensor.

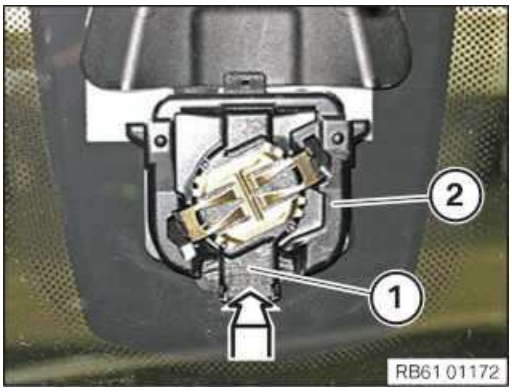
- Do not touch or damage the silicone-coated surface on the rain-light-solar-condensation sensor.
- After releasing lock, wait approx. 30 min. at 20°C for silicone surface to relax.

- Check silicone-coated surface (1) for damage.

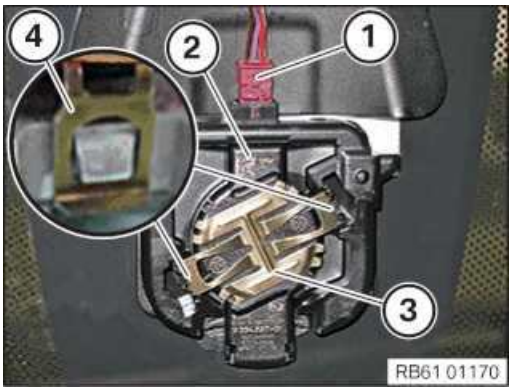
POSTPROCESSES

5 – Installing the rain-light-solar-condensation sensor

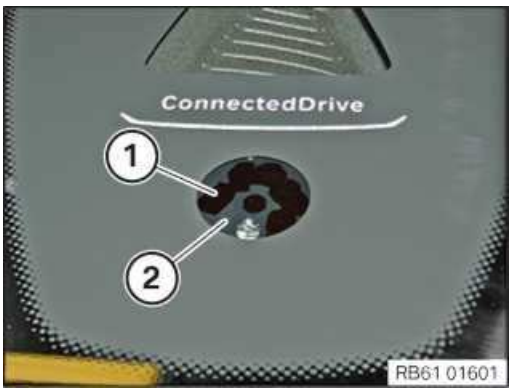
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- Feed in the rain-light-solar-condensation sensor (1) in direction of arrow into the holder (2).



- Centrally press on the rain-light-solar-condensation sensor (2) onto the retaining spring (3).
- Successively press down the retaining springs (4) on each side to lock it.
- Connect connector (1).



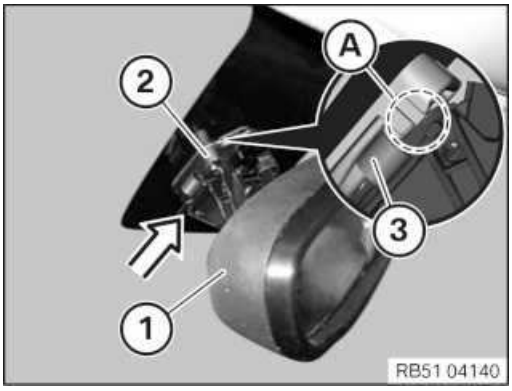
- Check if air pockets are visible.

  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.

6 – Installing the interior mirror

TECHNICAL INFORMATION

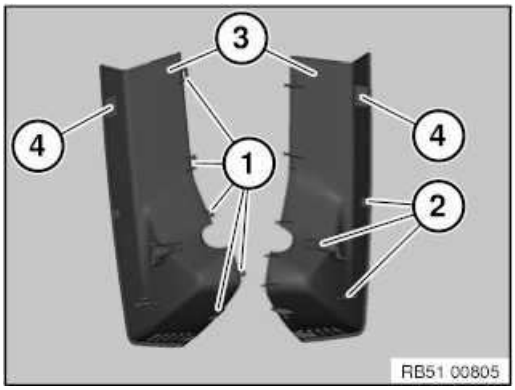
Carry out the work at temperatures between 18 °C and 23 °C only.



- Check the clamp (3) on both sides of the interior mirror (1) for damage and renew as needed.
- If necessary, connect the connector on the interior mirror (1).
- Slide the interior mirror (1) parallel to the windscreen in direction of arrow into the base (2) and lock correctly in area (A).

7 – Install the cover on the inside mirror

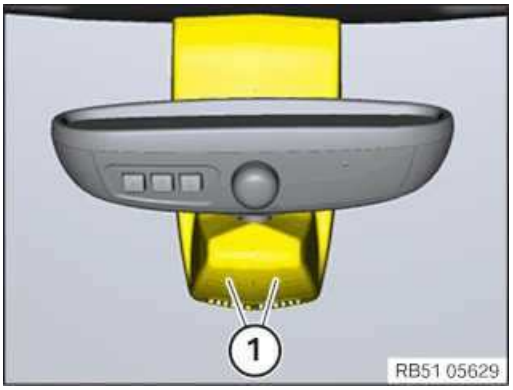
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- Check the latch mechanisms (1) and guides (2) on the two covers (3) for damage, renew if necessary.

  The latch mechanisms (1) and guides (2) must not be damaged.
- Check the spacers (4).

  The spacers (4) must not be damaged or missing.



- Install covers on the interior mirror (1) clip together.

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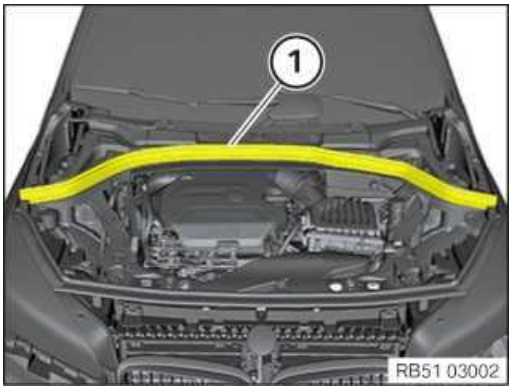
61 61 270 Completely removing and installing the console for the windscreen wiper system including engine

PRELIMINARY WORK

1 – Remove the seal for the rear bonnet

NOTICE

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



- Pull off rear bonnet seal (1) towards the top and remove.

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

NOTICE

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

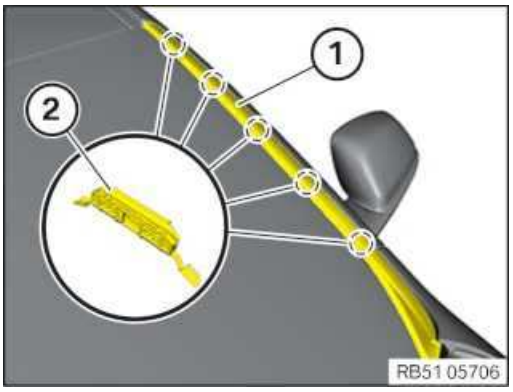
▸ **Remove the gutter strip on the windscreen**

RISK OF DAMAGE

Scratches.

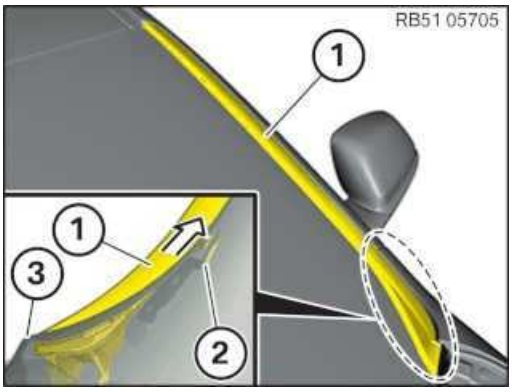
Tools and sharp-edged components can cause scratches.

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



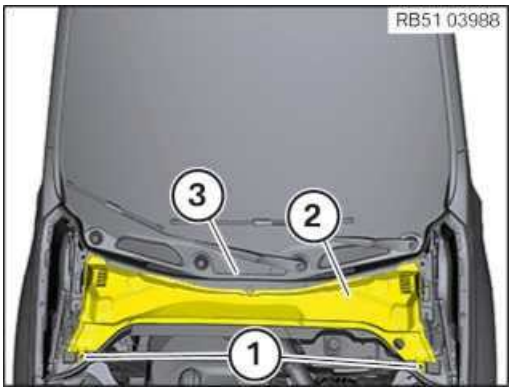
- Unclip the gutter strip (1) from the clamps (2) beginning at the roof to the top.

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- Pull out the gutter strip (1) from the guide (2) in direction of arrow and carefully feed out at the side panel (3).

3 – Removing front cowl panel cover



- Loosen the expanding rivet (1).
- Feed out and remove front cowl panel cover (2) from the rear cowl panel cover(3).

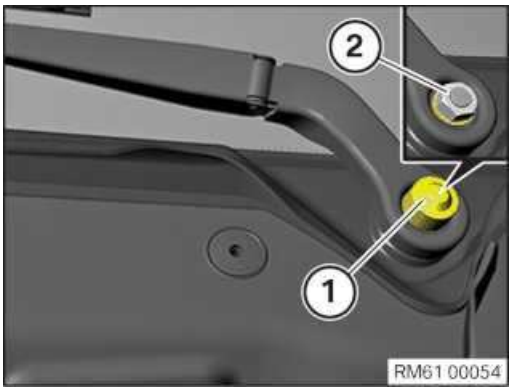
4 – Remove left and right wiper arm

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.



- Pull off the protective cap (1) and release the nut (2) below it.



- Pull off windscreen wiper arm (1)with special tool .

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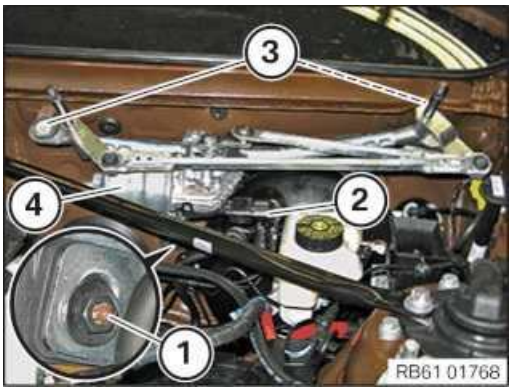
5 – Remove the rear cowl panel



- Pull off the cowl panel cover (1) towards the top, starting from the side and feed out.

MAIN WORK

6 – Removing the console for the windscreen wiper system complete with motor

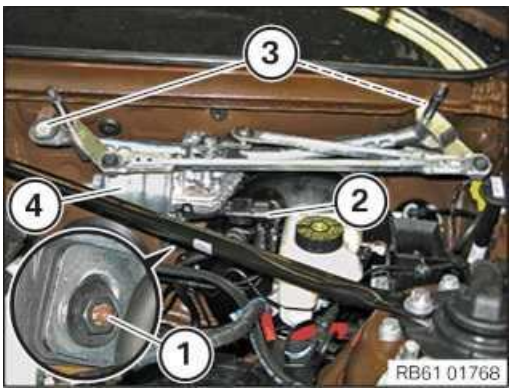


- Unfasten nut (1).
- Loosen screws (3).
- Unlock connector (2) and disconnect (see next figure).
- Remove the console for the windscreen wiper system (4).



- Press lock on the connector underside and pull out the connector.

7 – Installing console for windscreen wiper system complete with engine



- Feed in console for windscreen wiper system (4).
- Tighten down screws (3).

Wiper console to body

M6x30		Tightening torque	10 Nm

- Tighten nut (1).

Wiper console to retaining bracket

M6		Tightening torque	10 Nm

- Connect connector (2).

POSTPROCESSES

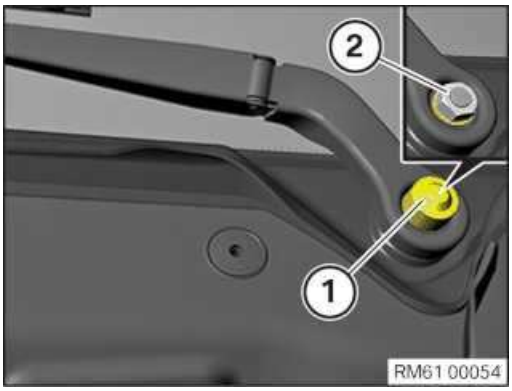
8 – Install the rear cowl panel

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- Insert the cowl panel cover (1) and press it into the latch mechanism on the windscreen starting at the side.

9 – Install left and right wiper arm



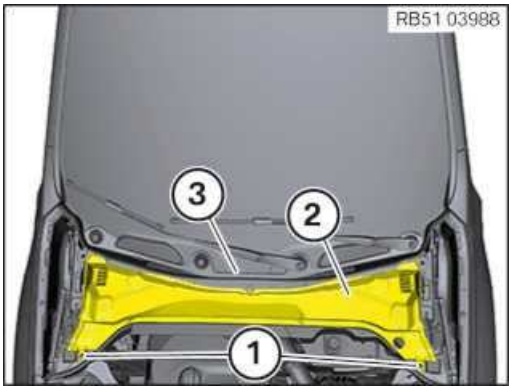
- Join wiper arm and tighten with nut (2).

Windscreen wiper arm

Combination hexagon nut		Tightening torque	35 Nm

- Join the protective cap (1).

10 – Installing front cowl panel cover



- Insert and install cowl panel cover at front (2) into cowl panel cover at rear (3).
- Check cowl panel cover at front is correctly seated (2).
- Secure expanding rivet (1).

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

NOTICE

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

▸ **Install the gutter strip on the windscreen**

RISK OF DAMAGE

Scratches.

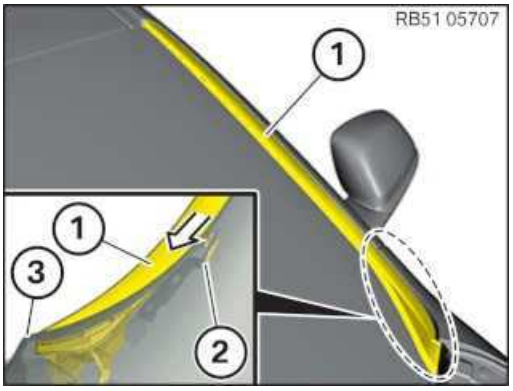
Tools and sharp-edged components can cause scratches.

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

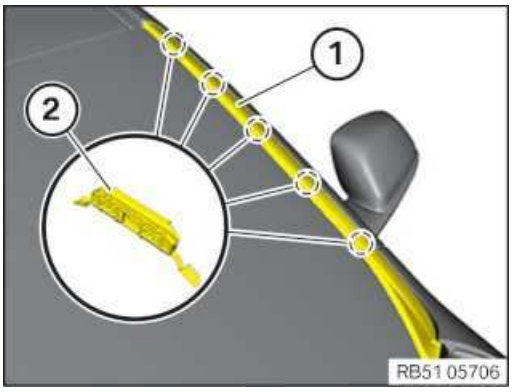
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TECHNICAL INFORMATION

Latch mechanisms, guides and mounting elements must not be damaged or missing.



- Carefully feed in the gutter strip (1) at the side panel (3) and simultaneously feed into the guide (2) in direction of arrow.

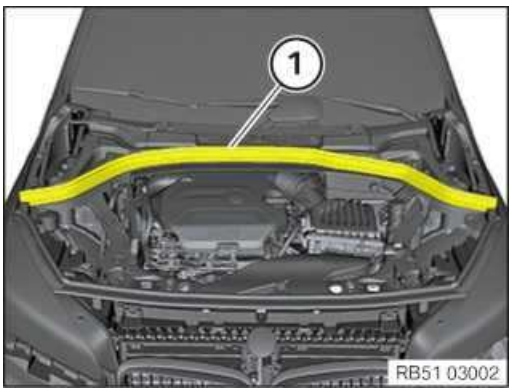


- Clip in the gutter strip (1) at the bottom starting at the clamps (2).

12 – Install the seal for the bonnet

NOTICE

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



- Install bonnet seal at rear (1).
- Ensure that the rear bonnet seal (1) is fitted correctly.

Additional Information

Overview of Tightening Torques

Wiper console to body — Used in step 7

M6x30		Tightening torque	10 Nm

Wiper console to retaining bracket — Used in step 7

M6		Tightening torque	10 Nm

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Windscreen wiper arm Used in step 9

Combination hexagon nut		Tightening torque	35 Nm

Overview of Special Tools

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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.

PRELIMINARY WORK

MAIN WORK

POSTPROCESSES

Additional Information

Overview of Tightening Torques

Overview of Special Tools

Overview Technical Data

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61 61 041 Replacing both wiper blades

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.

TECHNICAL INFORMATION

In the event of a customer complaint about the cleaning or wiper performance and/or noise (windscreen wiper judder, squeaking noise) of the wiper blades, proceed as follows:

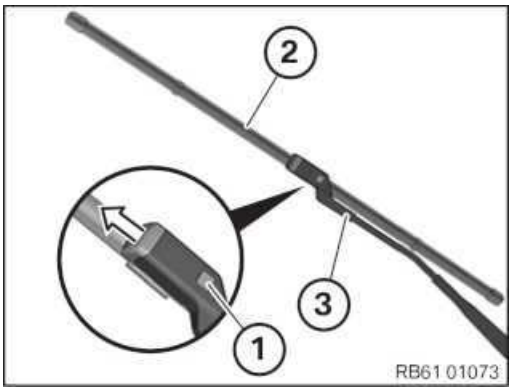
First, **check** if the customer complaint is caused by contamination (preservation wax with new vehicles, tree resins or other environmental influences) on the windscreen. If necessary, **clean the windscreen thoroughly.**

Replace the wiper blades only if cleaning the windscreen fails to remedy the situation.

1 – Remove the wiper blade

NOTICE

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

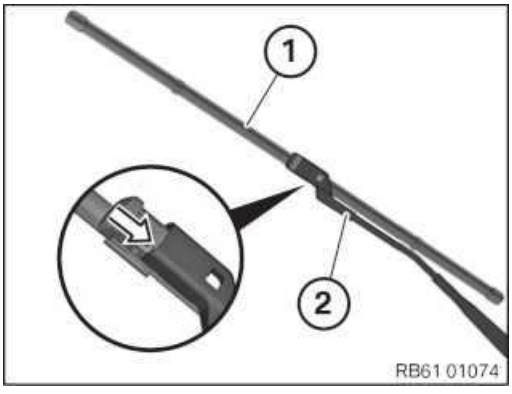


- Prepare for operating readiness.
- Hold the wash/wipe switch up until the windscreen wiper stands still in a roughly vertical position.
- Fold out the wiper arm (3) and open the lock (1).
- Remove the wiper blade (2) from the wiper arm (3) in the direction of the arrow.

2 – Install the wiper blade

NOTICE

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



- Clip in the wiper blade (1) in the direction of the arrow on the wiper arm (2).
- Fold in the wiper arm (2) and check the lock .
- Switch on driving readiness or hold the wash/wipe switch pressed upwards again.

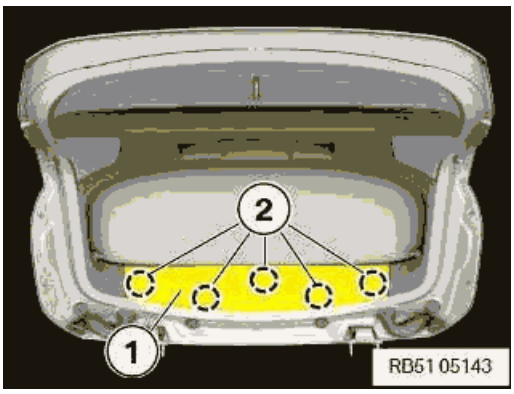
  Wipers move back to wiper park position and are again operational.

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61 62 060 Removing and installing/replacing rear wiper motor

PRELIMINARY WORK

1 – Remove the trim for the top rear window frame



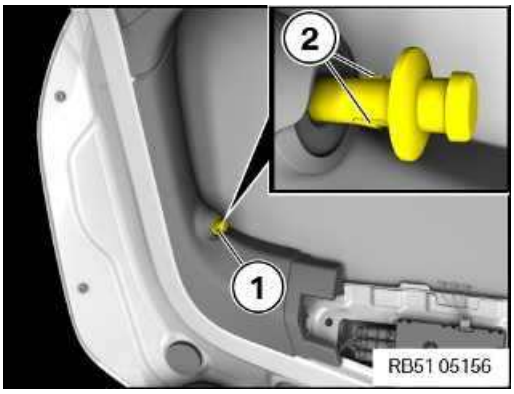
- Unclip the trim for the top rear window frame (1) at the latch mechanisms (2) and remove.

2 – Remove both trims for the rear window frame on the side

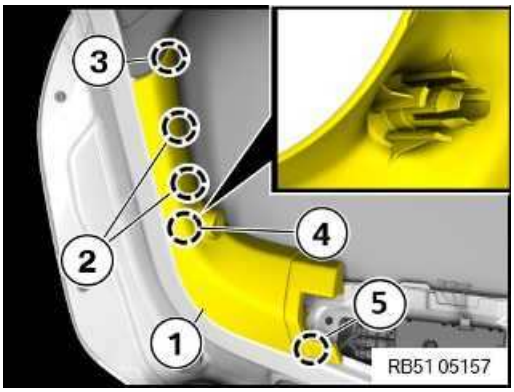
NOTICE

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

▸ **Remove the trim for the rear window frame on the side**



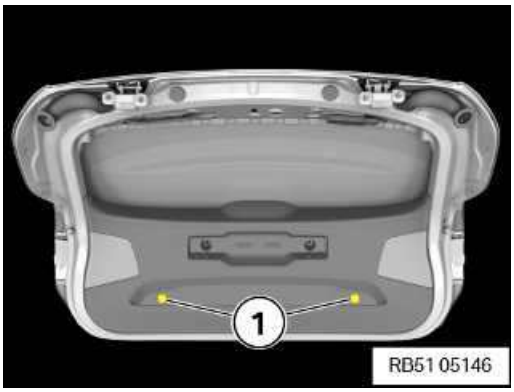
- Detach the mounting button (1) on the latch mechanisms (2) and remove it.



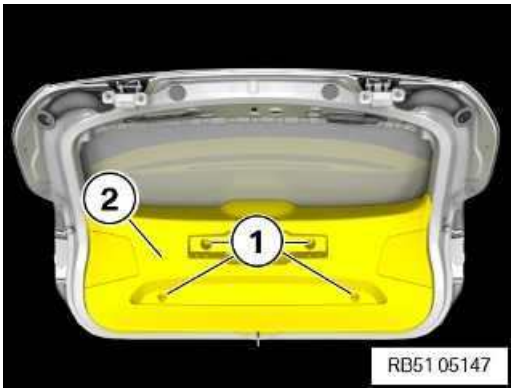
- Unclip the trim for the rear window frame on the side (1) with the clips (2) from the latch mechanisms (3), (4) and (5).

3 – Remove tailgate trim panel

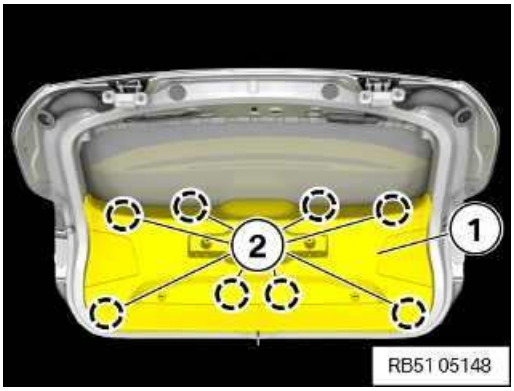
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- Lever out the covers of the screw points (1) with a suitable tool.



- If applicable, remove the warning triangle from the tailgate trim panel (2).
- Unscrew the bolts (1) at the tailgate trim panel (2).

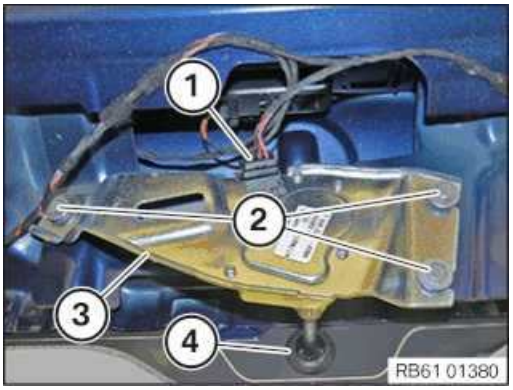


- Unclip the tailgate trim panel (1) at the latch mechanisms (2) and remove.

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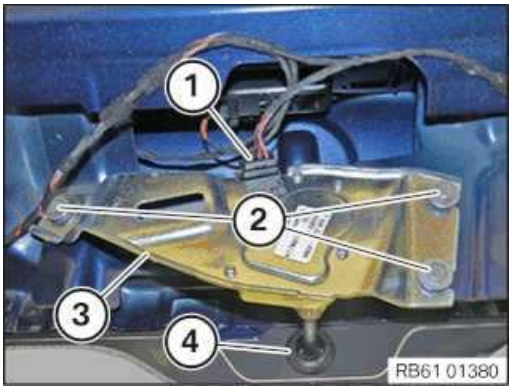
MAIN WORK

4 – Remove rear window wiper motor



- Unlock and disconnect connector (1).
- Unscrew all bolts (2).
- Remove rear wiper motor (3).

5 – Install rear window wiper motor



- Check the rubber grommet (4) for damage.
- Join the rear wiper motor (3) in the grommet (4).
- Tighten down screws (2).

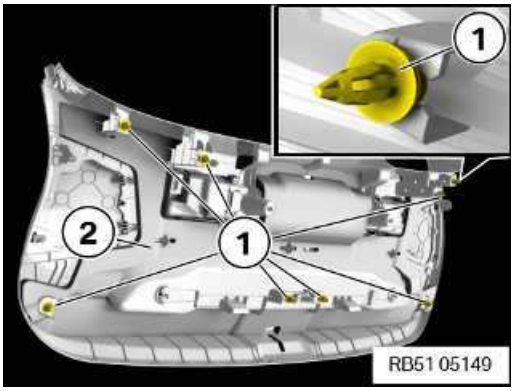
Wiper motor to tailgate

Screw		Tightening torque	7,6 Nm

- Connect connector (1).

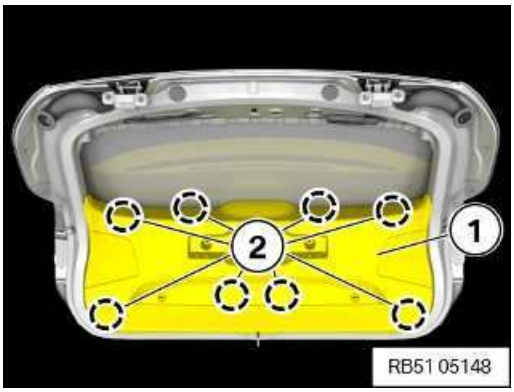
POSTPROCESSES

6 – Installing the tailgate trim panel

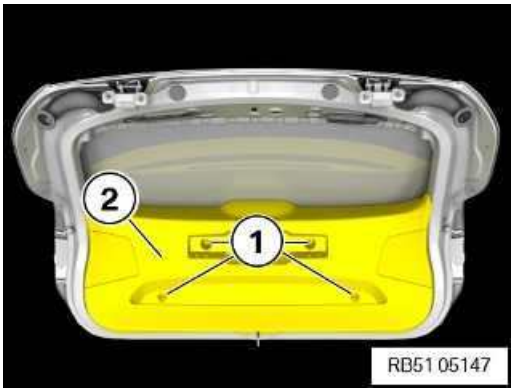


- Check the clips (1) on the tailgate trim panel (2) for damage and replace where required.

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- Clip in the tailgate trim panel (1) with the clips (2).

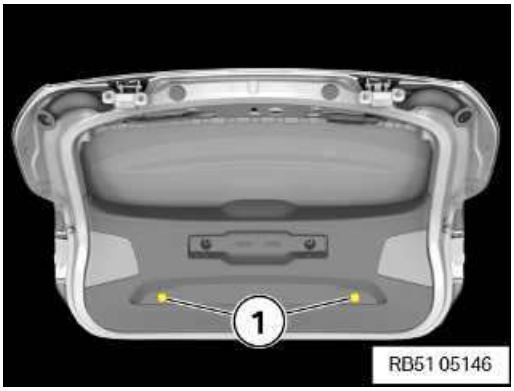


- Tighten the bolts (1) at the tailgate trim panel (2).

Tailgate trim panel

Screw		Tightening torque	1,8 Nm

- If necessary, insert and fasten the warning triangle in the tailgate trim panel (2).



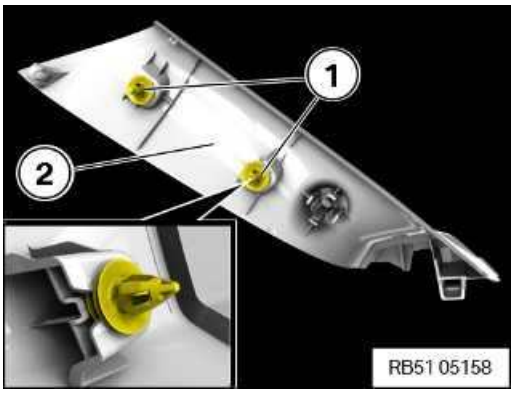
- Insert the covers of the screw points (1).

7 – Mount both trim pieces for the rear window frame on the side

NOTICE

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

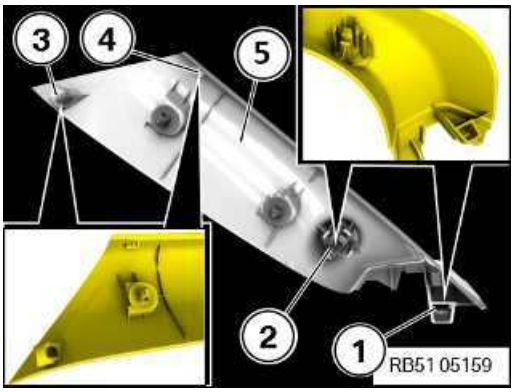
▸ **Install the trim for the rear window frame on the side**



- Check the clips (1) on the trim for the side rear window frame (2) for damage and replace where required.

Check

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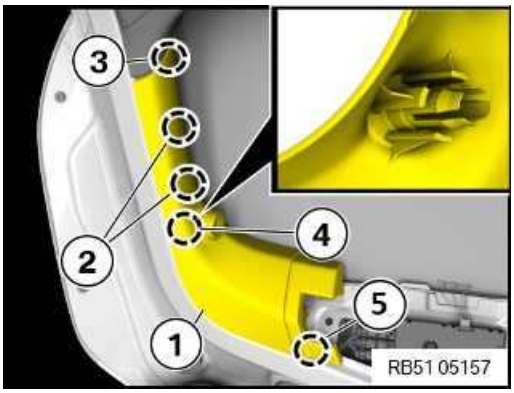
- Check the latch mechanisms (1), (2), (3) and (4) at the trim for the side rear window frame (5) for damage.

Result

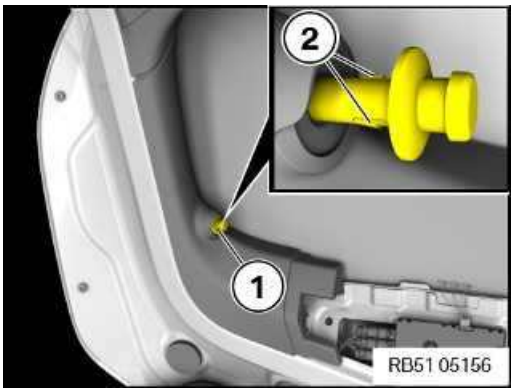
» The latch mechanisms (1), (2), (3) or (4) are damaged.

Measure

- Renew the trim for the side rear window frame (5).

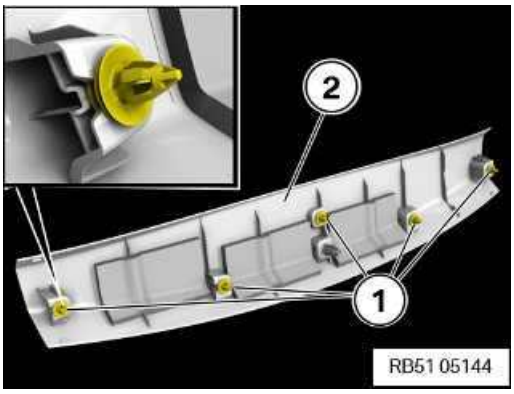


- Clip in the trim for the side rear window frame (1) with the clips (2) and in the latch mechanisms (3), (4) and (5).



- Clip in the mounting button (1) with the latch mechanisms (2).

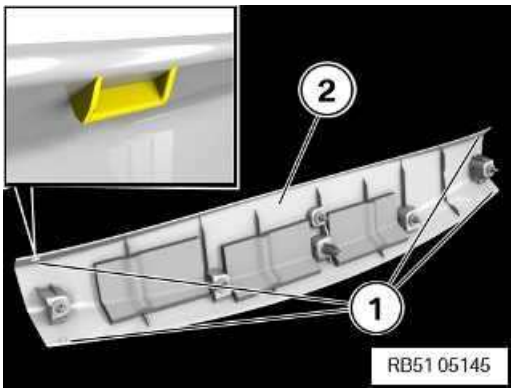
8 – Install the trim for the top rear window frame



- Check the clips (1) on the trim for the top rear window frame (2) for damage and replace where required.

Check

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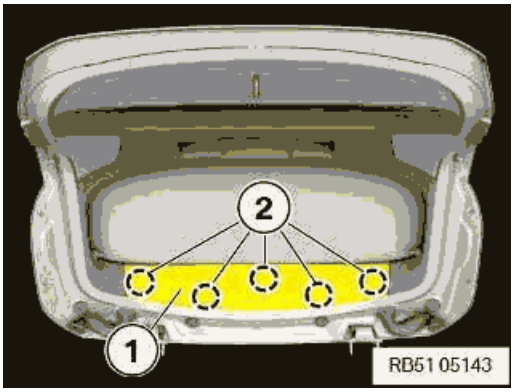
- Check the latch mechanisms (1) on the trim for the top rear window frame (2) for damage.

Result

» The latch mechanisms (1) on the trim for the top rear window frame (2) are damaged.

Measure

- Renew the trim for the top rear window frame (2).



- Clip in the trim for the top rear window frame (1) with the clips (2).

Additional Information

Overview of Tightening Torques

Wiper motor to tailgate Used in step 5

Screw		Tightening torque	7,6 Nm

Tailgate trim panel Used in step 6

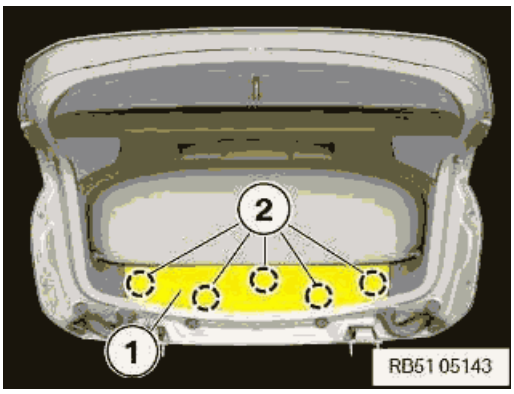
Screw		Tightening torque	1,8 Nm

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61 62 115 Replacing washer jet for rear windscreen washer system

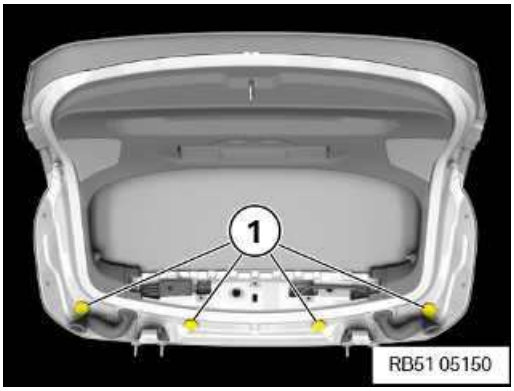
PRELIMINARY WORK

1 – Remove the trim for the top rear window frame

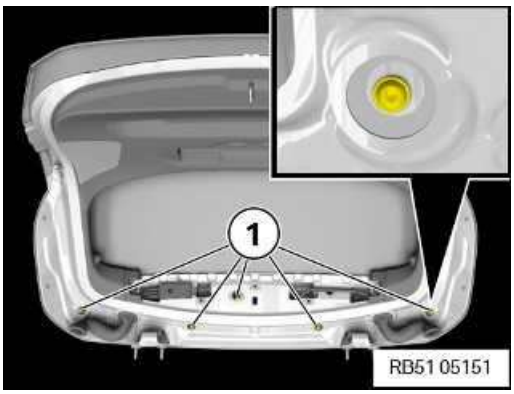


- Unclip the trim for the top rear window frame (1) at the latch mechanisms (2) and remove.

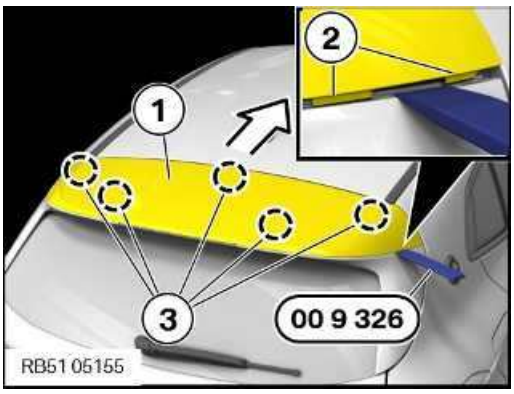
2 – Remove rear spoiler



- Unclip the covers (1) with a suitable tool and remove.



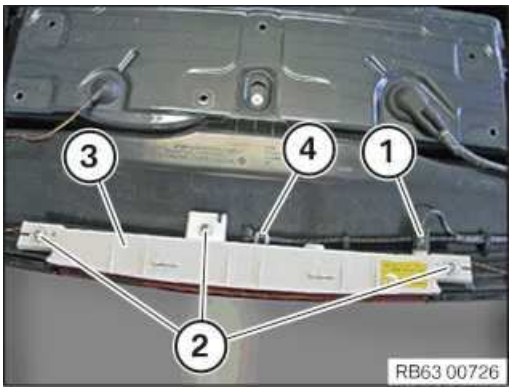
- Loosen screws (1).



- Release rear spoilers (1) on both outer sides with the special tool **0 496 570 (00 9 326)** out of the latch mechanisms (2).
- Unclip rear spoiler (1) from the clips (3).
- Slightly lift rear spoiler (1) in the front area and remove in direction of arrow.

3 – 3. Removing the brake light

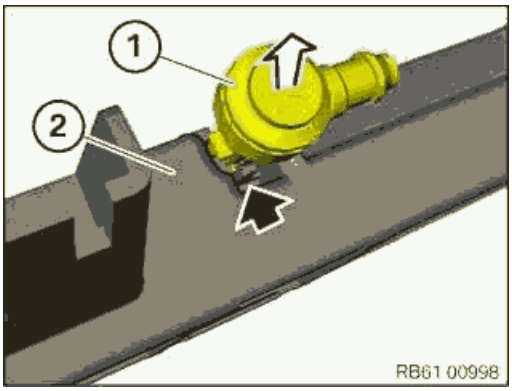
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- Unlock and disconnect the connector (1) at the 3rd brake light (3).
- Loosen screws (2).
- 3. Remove the brake light (3) and disconnect the hose line (4).

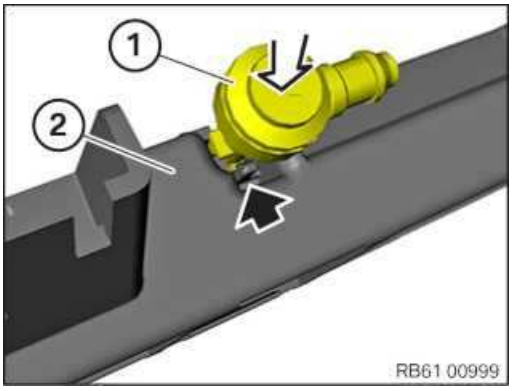
MAIN WORK

4 – Remove the washer jet for the windscreen washer system



- Unlock washer jet (1) on the additional brake light (2) and remove in direction of arrow.

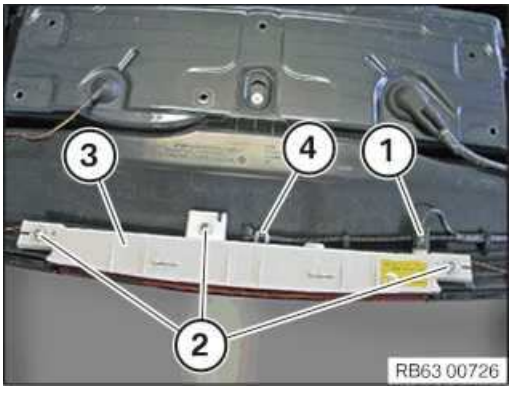
5 – Installing the washer jet for the rear window washer system



- Correctly position the washer jet (1) in direction of arrow in the additional brake light (2) and engage.

POSTPROCESSES

6 – 3. Installing the brake light



- Connect the hose line (4) with the 3rd brake light (3).
- 3. Correctly position the brake light (3) and tighten the screws (2).

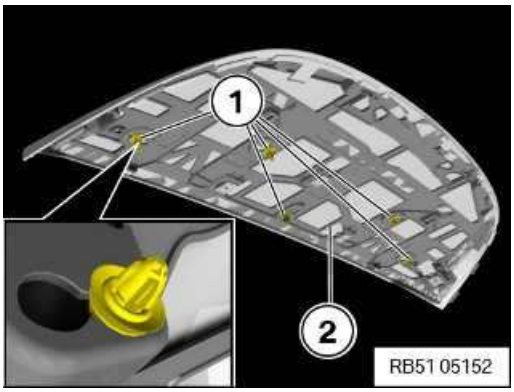
3. Brake light to roof spoiler

Sheet metal screw		Tightening torque	2,0 Nm

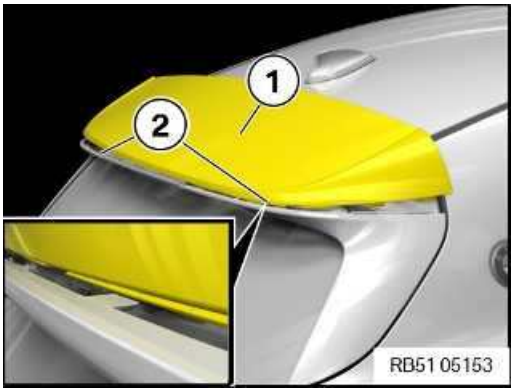
- Connect the connector (1) with the 3rd brake light (3).

7 – Attach rear spoiler

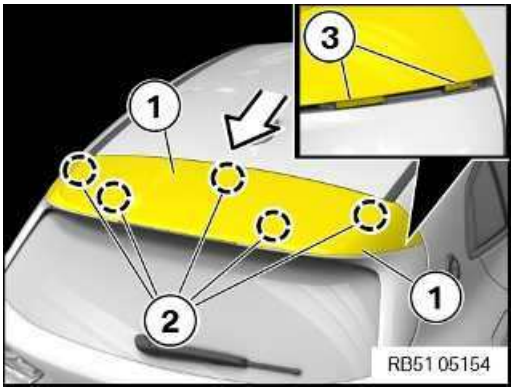
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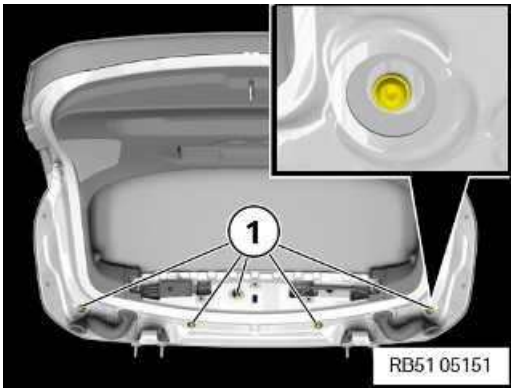
- Check clips (1) on the rear spoiler (2) for damage, renew if required.



- Position the rear spoiler (1) on the guides (2) .



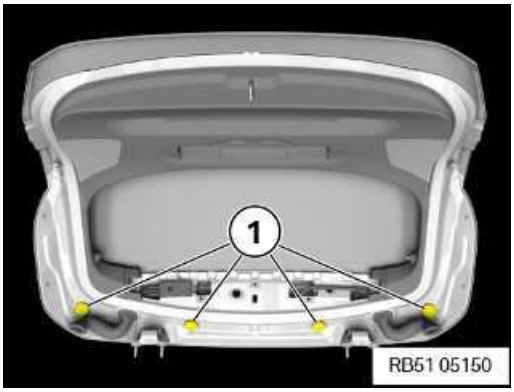
- Slide the rear spoiler (1) onto the lower section of the rear spoiler in the direction of the arrow.
- Clip in the rear spoiler (1) with the clips (2) and clip on the latch mechanisms (3) on both sides.



- Tighten the screws (1).

Rear spoiler to tailgate

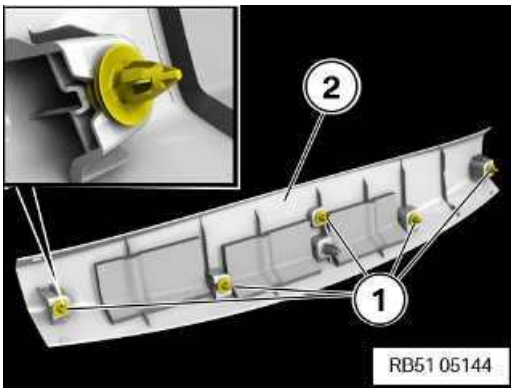
Oval-head screw		Tightening torque	3,1 Nm



- Insert the covers (1).

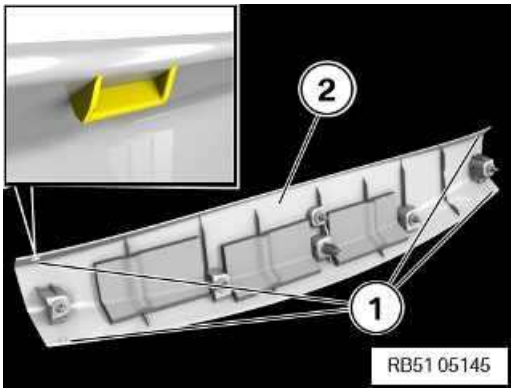
8 – Install the trim for the top rear window frame

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- Check the clips (1) on the trim for the top rear window frame (2) for damage and replace where required.

Check



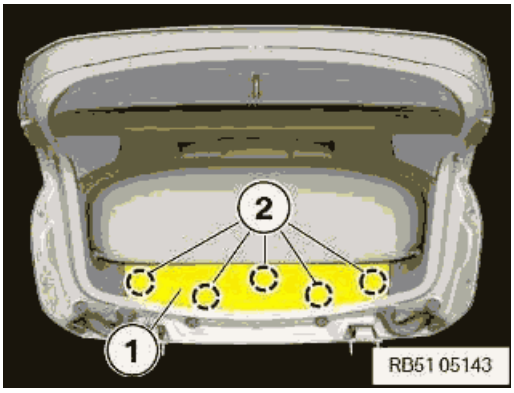
- Check the latch mechanisms (1) on the trim for the top rear window frame (2) for damage.

Result

» The latch mechanisms (1) on the trim for the top rear window frame (2) are damaged.

Measure

- Renew the trim for the top rear window frame (2).



- Clip in the trim for the top rear window frame (1) with the clips (2).

Additional Information

Overview of Tightening Torques

3. Brake light to roof spoiler — Used in step 6

Sheet metal screw		Tightening torque	2,0 Nm

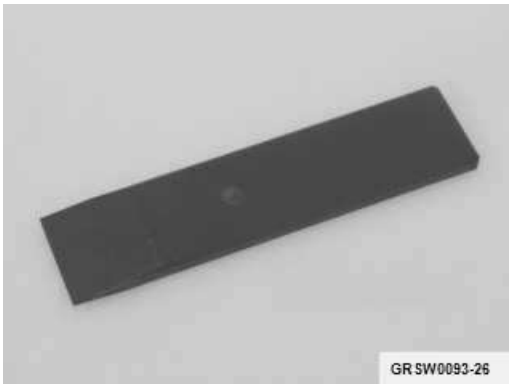
Rear spoiler to tailgate — Used in step 7

Oval-head screw		Tightening torque	3,1 Nm

Overview of Special Tools

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0 496 570 (00 9 326) Wedge



Common

Used in step 2

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 71 004 Adjusting washer jets for windscreen washer system

Prerequisite

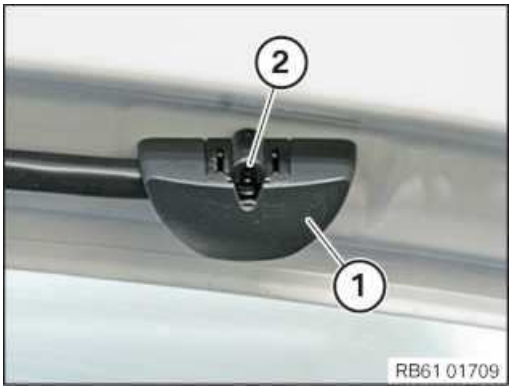
- Engine compartment lid is open.

1 â€“ Adjusting the washer jets

TECHNICAL INFORMATION

The washer jets of the window washer system are preset.

If owing to a customer complaint the setting is to be changed, the typical driving situation (high/low speed; with/without additives) must be taken into consideration. Consider any changes carefully.

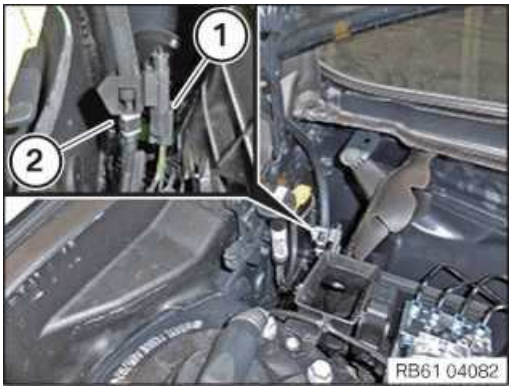


- If applicable adjust the washer jet (1) by twisting the screw (2).

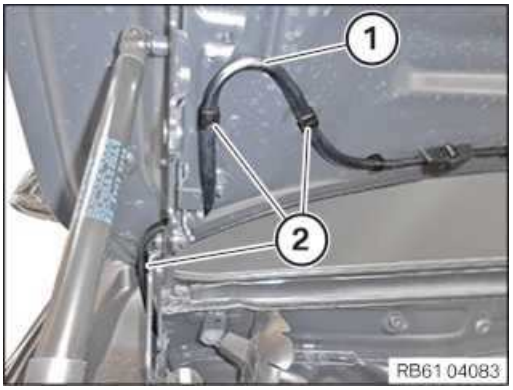
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61 71 030 Removing and installing/renewing all washer jets of windscreen washer system

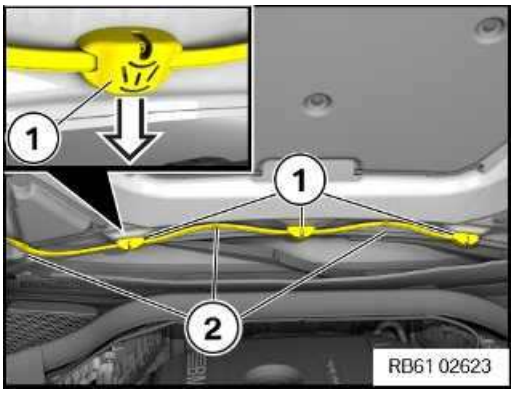
1 – Removing the nozzle chain



- Unlock and disconnect connector (1).
- Unlock and disconnect nozzle chain (2).

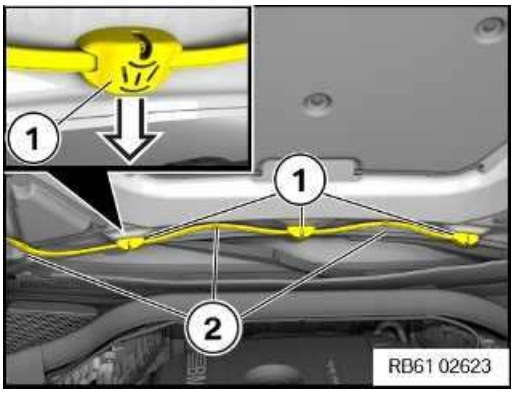


- Unclip the jet chain (1) from the brackets (2).



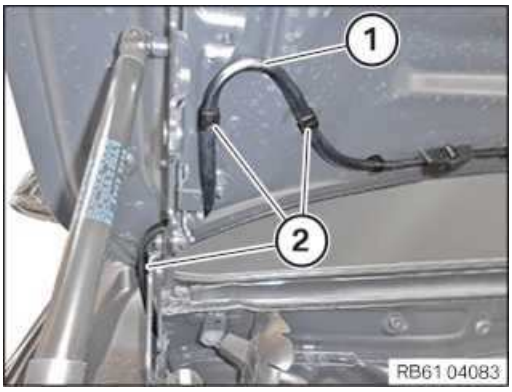
- Unclip the washer jets (1) in the direction of the arrow.
- Unclip and remove jet chain from all retaining rings (2) on the bonnet release.

2 – Installing the nozzle chain

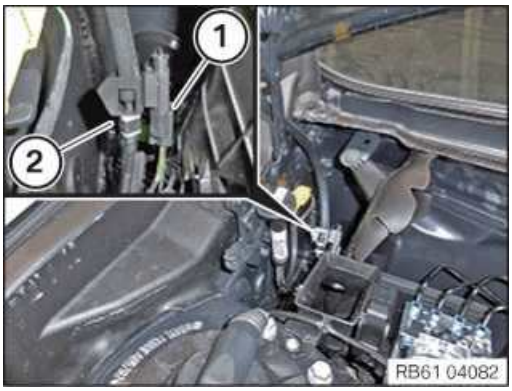


- Position the washer jets (1) and clip them in; in contrary to the direction of the arrow.
- Clip in the jet chain into all brackets (2) on the bonnet.

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- Insert the jet chain (1) and clip in at the brackets (2) on the bonnet.



- Connect jet chain (2) and lock.
- Connect connectors (1) and lock.

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61 71 100 Removing and installing/replacing window washer pump

NOTICE

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

PRELIMINARY WORK

1 – Removing the wheel



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

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

2 – Partially remove the front wheel arch cover

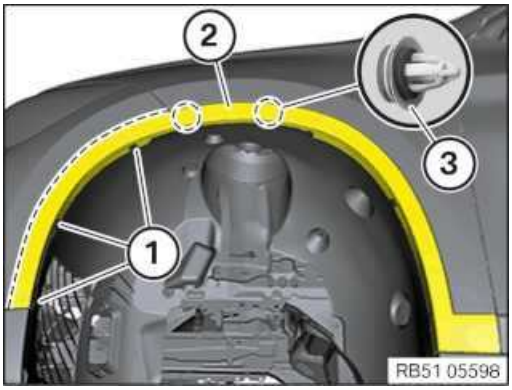
▶ **Partially removing the front wheel arch trim**

NOTICE

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

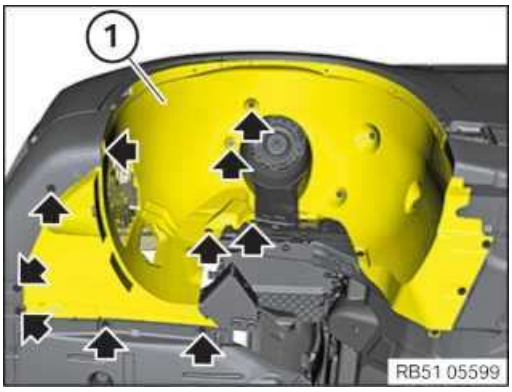
NOTICE

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



- Remove the blind rivets (1).
- Release the wheel arch trim (2) in the area of the side panel from the clips (3).
- Release the wheel arch trim (2) from the latch mechanisms on the bumper and remove.

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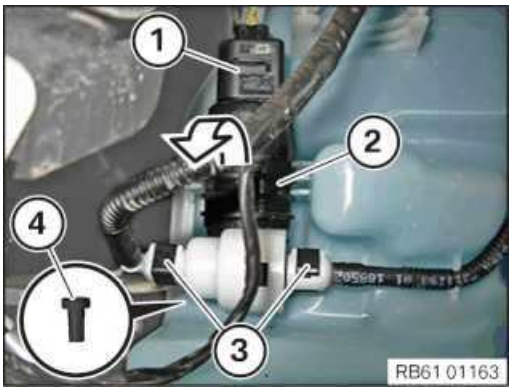
NOTICE

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

- Unscrew all bolts and nuts (arrows).
- Guide the wheel arch cover (2) out.

MAIN WORK

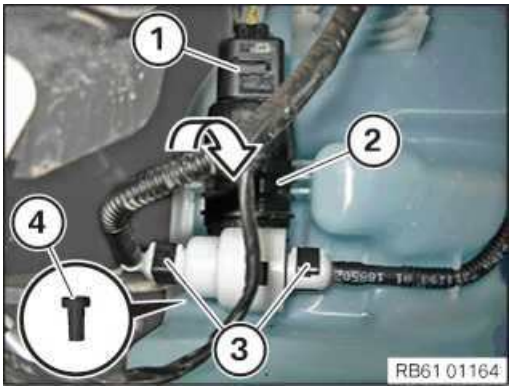
3 – Remove windscreen washer pump



- Unlock and disconnect connector (1).
- Pull windscreen washer pump (2) out of washer fluid reservoir in direction of arrow.

  Catch any escaping washer fluid.
- Remove the sealing ring with the strainer (4) from the washer fluid reservoir or from the window washer pump (2).

4 – Installing the window washer pump



- Renew the sealing ring with the strainer (4).

  Parts: Sealing ring with strainer
- Coat the sealing ring (4) with anti-friction agent.
- Feed in window washer pump (2) into washer fluid reservoir for the window washer system.
- Connect the hose pipes (3) with the window washer pump (2).
- Connect connector (1).

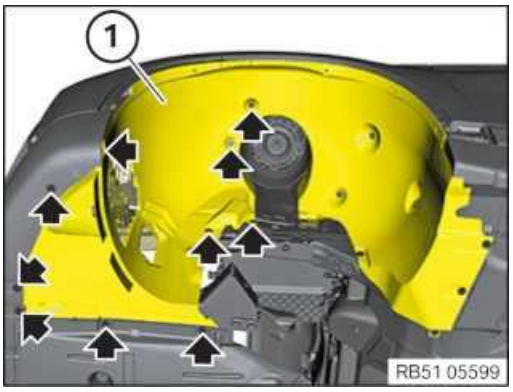
POSTPROCESSES

5 – Partially install the front wheel arch cover

NOTICE

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

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- Guide the wheel arch cover (1) in.
- Tighten all bolts and nuts (arrows).

Wheel arch cover to body

Screw		Tightening torque	2,5 Nm

Wheel arch cover to body

Plastic nut		Tightening torque	3 Nm

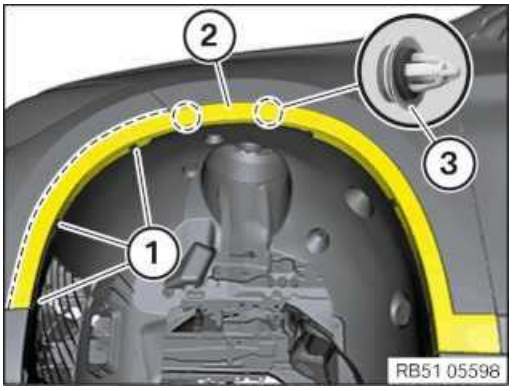
▸ **Partly install the front wheel arch trim**

NOTICE

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

NOTICE

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



- Check the clips (3) for damage and renew where required.

  The clips (3) must not be damaged or missing.
- Feed in wheel arch trim (2) and engage on the clips (3).
- Engage wheel arch trim (2) into the latch mechanisms on the bumper panel.
- Mount blind rivet (1) using the special tool **0 496 521 (00 2 230)**.

6 – 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**.

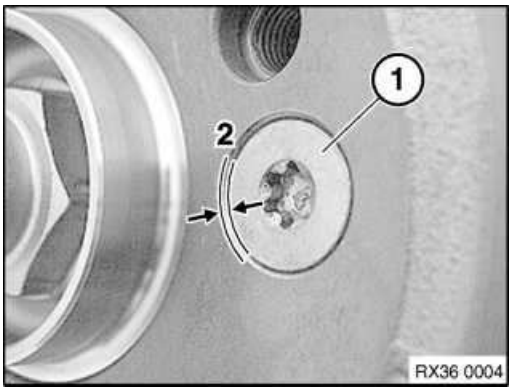
  Do not operate special tool **2 344 011** with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.

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

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



- Renew mounting bolt (1).

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

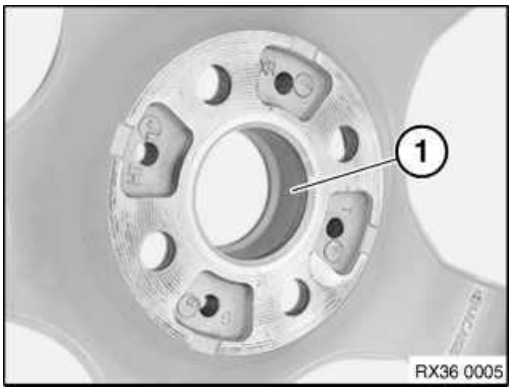
  The mounting bolt (1) for the brake disc may not protrude under any circumstances on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm



- Lightly grease the wheel centring (1) in the wheel rim; refer to additional information for grease for the wheel centring (1).

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TECHNICAL INFORMATION

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

The wheel rim must rest uniformly against the brake disc.

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

Do not apply oil to new wheel bolts.

- Renew corroded wheel bolts.

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

Wheel bolts

M 14/AF 17	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

Additional Information

Overview of Tightening Torques

Wheel arch cover to body — Used in step 5

Screw		Tightening torque	2,5 Nm

Wheel arch cover to body — Used in step 5

Plastic nut		Tightening torque	3 Nm

Brake disc to rear wheel hub — Used in step 6

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to front wheel hub — Used in step 6

M8	Renew screw.	Tightening torque	16 Nm

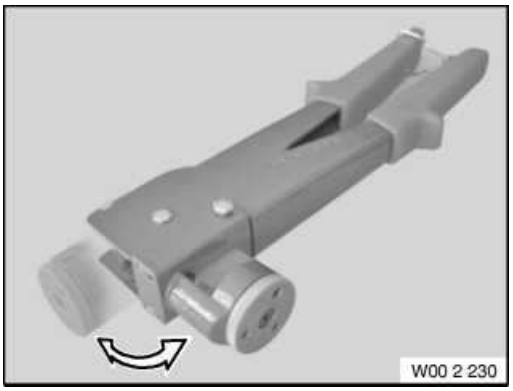
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Wheel bolts Used in step 6

M 14/AF 17	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

0 496 521 (00 2 230) Pliers



Common Used in step 5

Usage	(Blind rivet pliers for plastic rivets) For shaft diameters of 3.5 mm, 3.9 mm and 4.5 mm
Included in the tool or work	
Storage location	C25
Replaced by	
In connection with	
SI-Number	01 17 08 (478)

2 344 011 Tool



Common Used in step 6

Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

Replacement tools:

0 495 221 (36 1 323) Wheel stud

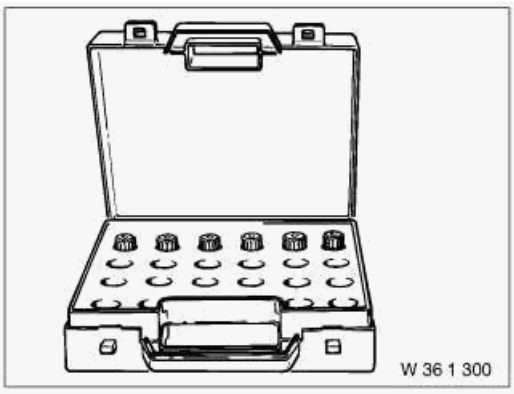


Common Used in step 1

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

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0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

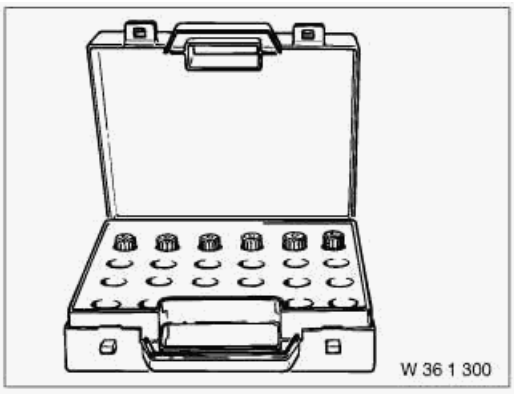
0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

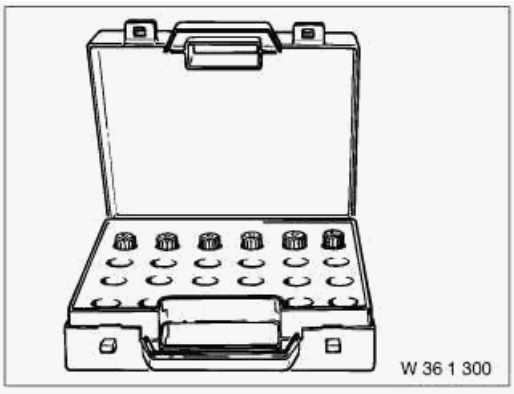
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0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Links

Operating materials	Used in step
2.0 Grease for wheel centring	6

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61 71 061 Replace the washer fluid reservoir for the window washer system

NOTICE

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

PRELIMINARY WORK

1 – Removing all wheels



▸ **Removing the wheel**

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

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

2 – Partially remove the front wheel arch cover

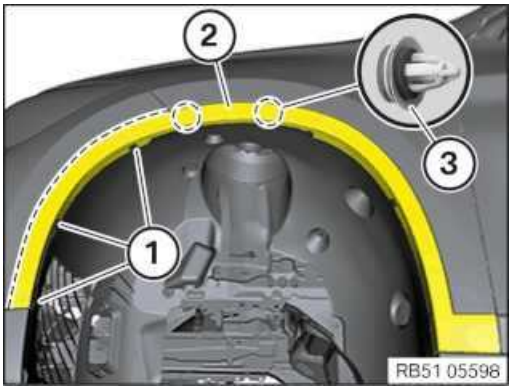
▸ **Partially removing the front wheel arch trim**

NOTICE

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

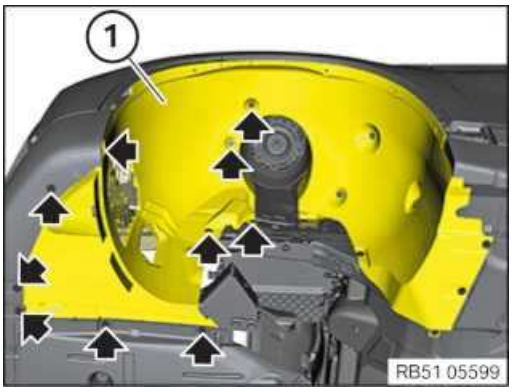
NOTICE

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



- Remove the blind rivets (1).
- Release the wheel arch trim (2) in the area of the side panel from the clips (3).
- Release the wheel arch trim (2) from the latch mechanisms on the bumper and remove.

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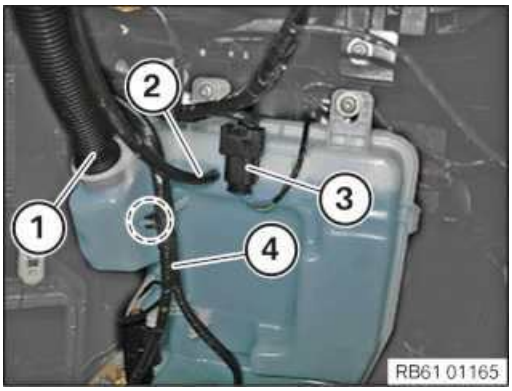
NOTICE

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

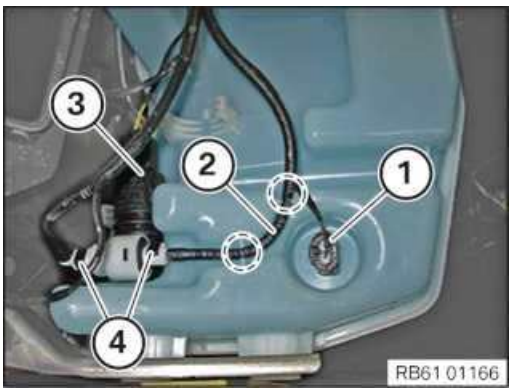
- Unscrew all bolts and nuts (arrows).
- Guide the wheel arch cover (2) out.

MAIN WORK

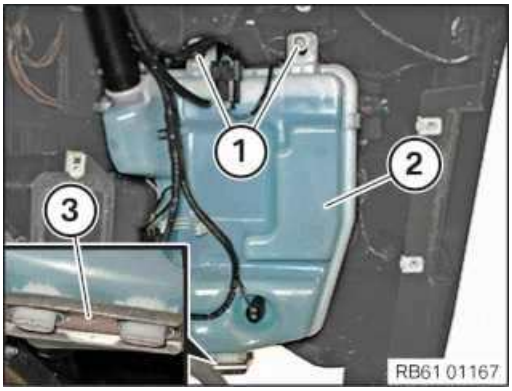
3 – Remove washer fluid reservoir



- Pull off the filler hose (1).
- Pull off the vent hose (2).
- Unclip the connector (3) from the washer fluid reservoir for the window washer system.
- Unclip the hose pipe (4) from the washer fluid reservoir for the window washer system.



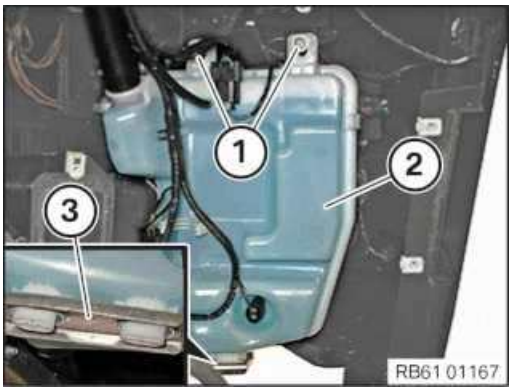
- Catch the escaping washer fluid.
- Unlock and disconnect the connector (1) on the washer fluid level switch.
- Unclip the hose pipe (2) from the washer fluid reservoir for the window washer system.
- Unlock and disconnect the connector (3) on the window washer pump.
- Unlock and disconnect the hose pipes (4) from the windscreen washer pump.



- Loosen screws (1).
- Feed out washer fluid reservoir (2) from the fixture for the washer fluid reservoir (3) and remove.

4 – Installing washer fluid reservoir

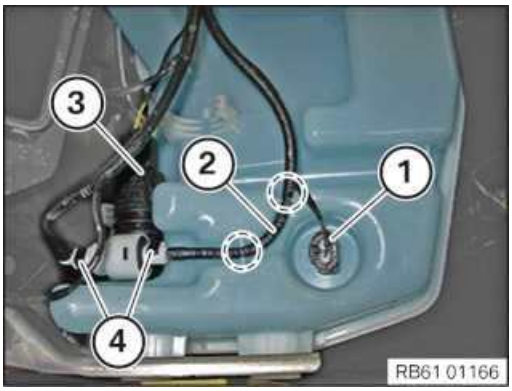
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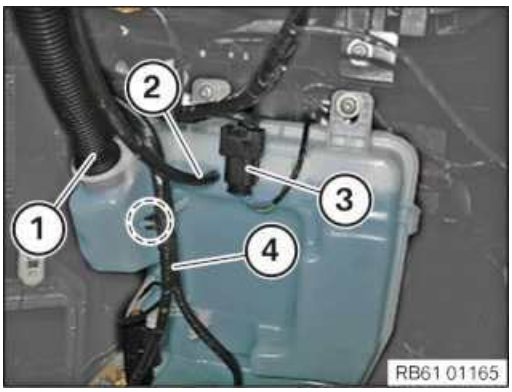
- Feed washer fluid reservoir (2) into the fixture for the washer fluid reservoir (3).
- Tighten the screws (1).

Washer fluid reservoir to body

M6x20 screw		Tightening torque	11,8 Nm



- Connect and lock the hose pipes (4) on the windscreen washer pump.
- Connect the connector (3) to the window washer pump.
- Clip in the hose pipe (2) at the washer fluid reservoir for the window washer system.
- Connect the connector (1) to the washer fluid level switch.



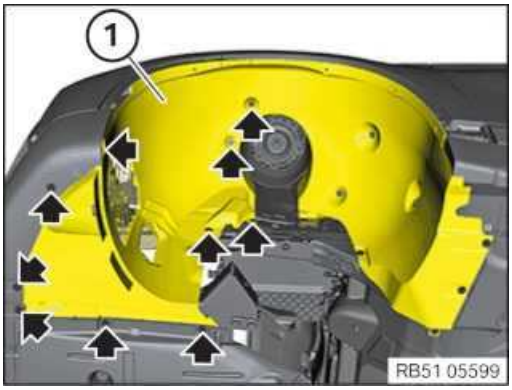
- Clip in the hose pipe (4) at the washer fluid reservoir for the window washer system.
- Clip in the connector (3) at the washer fluid reservoir for the window washer system.
- Join the vent hose (2).
- Join the filler hose (1).

POSTPROCESSES

5 – Partially install the front wheel arch cover

NOTICE

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



- Guide the wheel arch cover (1) in.
- Tighten all bolts and nuts (arrows).

Wheel arch cover to body

Screw		Tightening torque	2,5 Nm

Wheel arch cover to body

Plastic nut		Tightening torque	3 Nm

▸ **Partly install the front wheel arch trim**

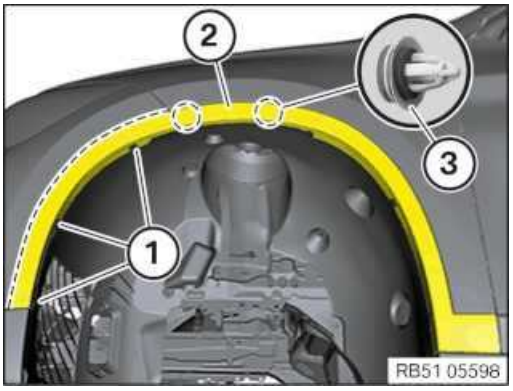
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NOTICE

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

NOTICE

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



- Check the clips (3) for damage and renew where required.

  The clips (3) must not be damaged or missing.
- Feed in wheel arch trim (2) and engage on the clips (3).
- Engage wheel arch trim (2) into the latch mechanisms on the bumper panel.
- Mount blind rivet (1) using the special tool **0 496 521 (00 2 230)**.

6 – Installing all wheels

▶ **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**.

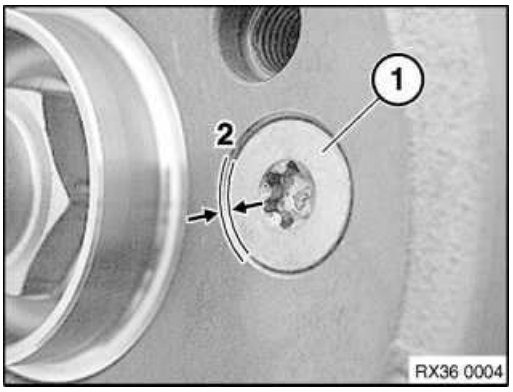
  Do not operate special tool **2 344 011** with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



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

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

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- Renew mounting bolt (1).

  Parts: Mounting bolt

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

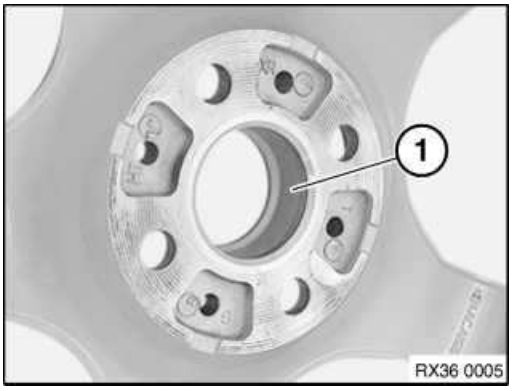
  The mounting bolt (1) for the brake disc may not protrude under any circumstances on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to rear wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm



- Lightly grease the wheel centring (1) in the wheel rim; refer to additional information for grease for the wheel centring (1).

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TECHNICAL INFORMATION

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

The wheel rim must rest uniformly against the brake disc.

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

Do not apply oil to new wheel bolts.

- Renew corroded wheel bolts.

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

Wheel bolts

M 14/AF 17	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

Additional Information

Overview of Tightening Torques

Washer fluid reservoir to body — Used in step 4

M6x20 screw		Tightening torque	11,8 Nm

Wheel arch cover to body — Used in step 5

Screw		Tightening torque	2,5 Nm

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Wheel arch cover to body — Used in step 5

Plastic nut		Tightening torque	3 Nm

Brake disc to rear wheel hub — Used in step 6

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to front wheel hub — Used in step 6

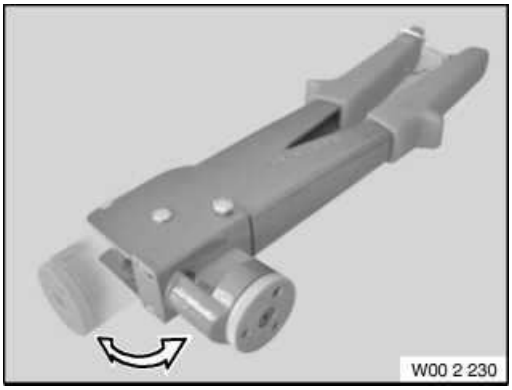
M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts — Used in step 6

M 14/AF 17	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

0 496 521 (00 2 230) Pliers



Common — Used in step 5

Usage	(Blind rivet pliers for plastic rivets) For shaft diameters of 3.5 mm, 3.9 mm and 4.5 mm
Included in the tool or work	
Storage location	C25
Replaced by	
In connection with	
SI-Number	01 17 08 (478)

2 344 011 Tool



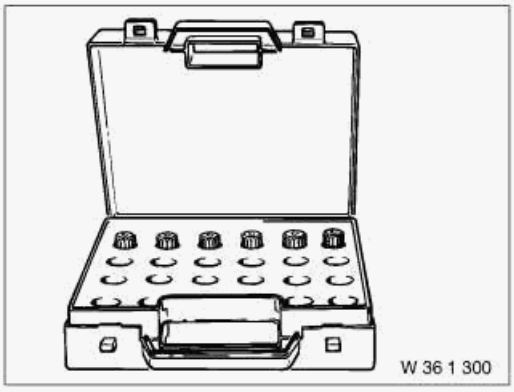
Common — Used in step 6

Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

Replacement tools:

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0 495 221 (36 1 323) Wheel stud



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

0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

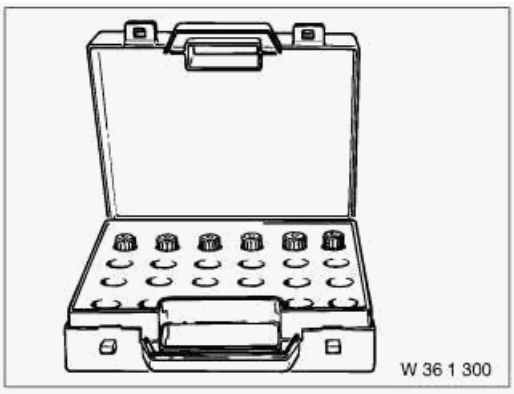
0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

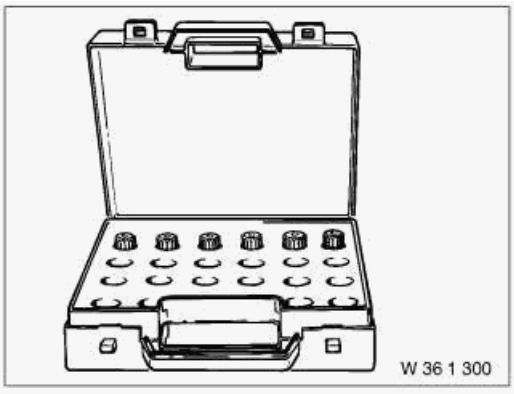
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0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

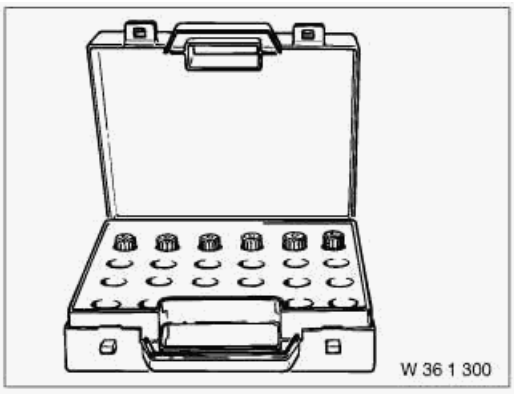
0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

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0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Links

Operating materials	Used in step
2.0 Grease for wheel centring	6

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