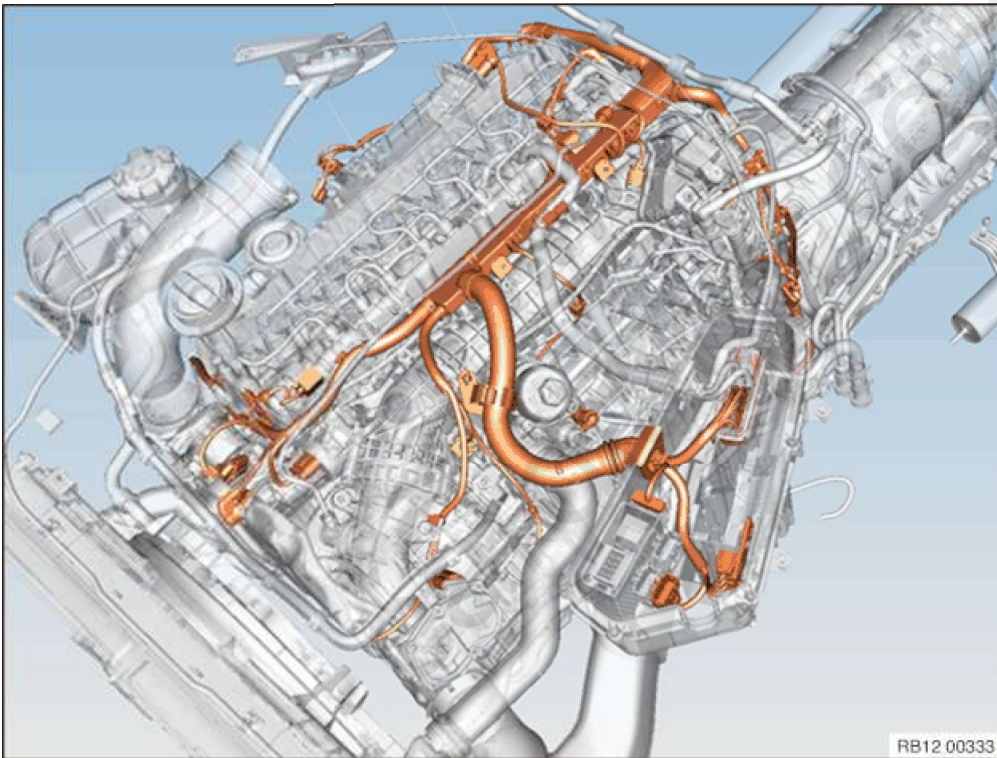


**Attention!**

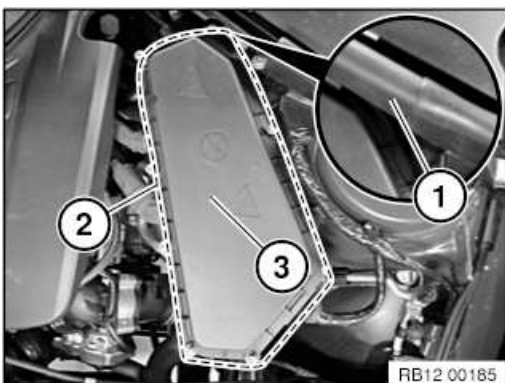
[Read and comply with notes on protection against electrostatic damage \(ESD protection\)!](#)

**Necessary preliminary tasks:**

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Disconnect [battery negative lead](#).
- Remove [intake silencer housing](#).
- Remove rear [acoustic cover](#) and sound insulation on injector.
- Remove front [underbody protection](#).



Overview of the wiring harness section for the engine.

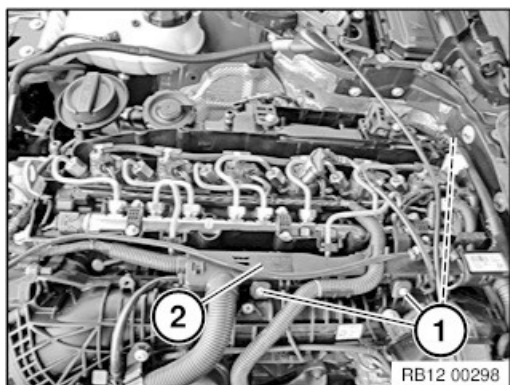


Partially loosen the rear gasket (1) for the engine compartment lid until the screw is accessible from the cover of the electronics box.

Release all screws along line (2).

Remove the electronics box lid (3).

Release wiring harness section for engine from electronics box.



Release screws (1).

Unlock connector from cable channel and pull off. Release cable channel (2).

Unlock and disconnect following connectors and lines	Note
Unlock connector on hot film air mass meter and disconnect	
Unlock connector on exhaust turbocharger and disconnect	
Unlock connector from all electric changeover valves and pull off	
Release and unplug connector from exhaust gas pressure sensor	
Unlock connector on exhaust-gas temperature sensor and disconnect	
Unlock connector on oxygen sensor and disconnect	
Unlock connector on vacuum electric changeover valve (exhaust-gas recirculation) and disconnect	
Unlock connector on exhaust-gas recirculation valve and disconnect	
Unlock connector on coolant temperature sensor and disconnect	
Unlock connector on intake plenum intake adjuster and disconnect	
Pull off and disconnect the connector from the pressure sensor on the intake plenum.	
Unlock connector on rail pressure sensor and disconnect	
Unlock connector on rail pressure regulating valve and disconnect	
Unlock connector on camshaft sensor and disconnect	
Unlock connector on alternator and disconnect	
Unlock connector on air conditioning compressor and disconnect	
Unlock connector on intake air temperature sensor and disconnect	
Unlock connector on oil pressure sensor and disconnect	
Release nut on starter motor, detach cable (terminal 50)	
Unlock connector on transmission and disconnect	Automatic only
Unlock connector on crankshaft sensor and disconnect	
Unlock connector on throttle body and disconnect	
Unlock connector on exhaust-gas recirculation temperature sensor and disconnect	
Unlock connector on high pressure pump and disconnect	
Unlock connector on fuel pressure/temperature sensor and disconnect	
Release and unplug connector from preheating control unit	



Installation note:

Check the wiring harness installation arrangement.

Check that the plug connections are correctly fitted.

Check stored fault messages.

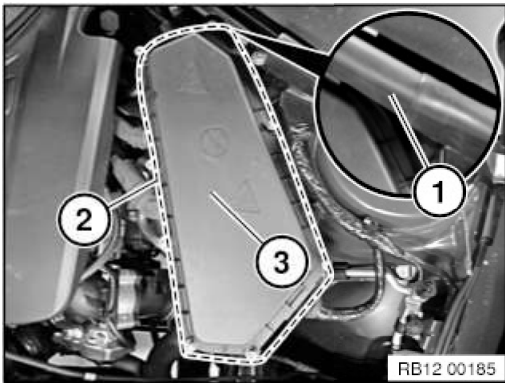
Delete the fault memory.

**Important!**

Read and comply with notes on [protection against electrostatic damage \(ESD protection\)](#).

**Necessary preliminary tasks:**

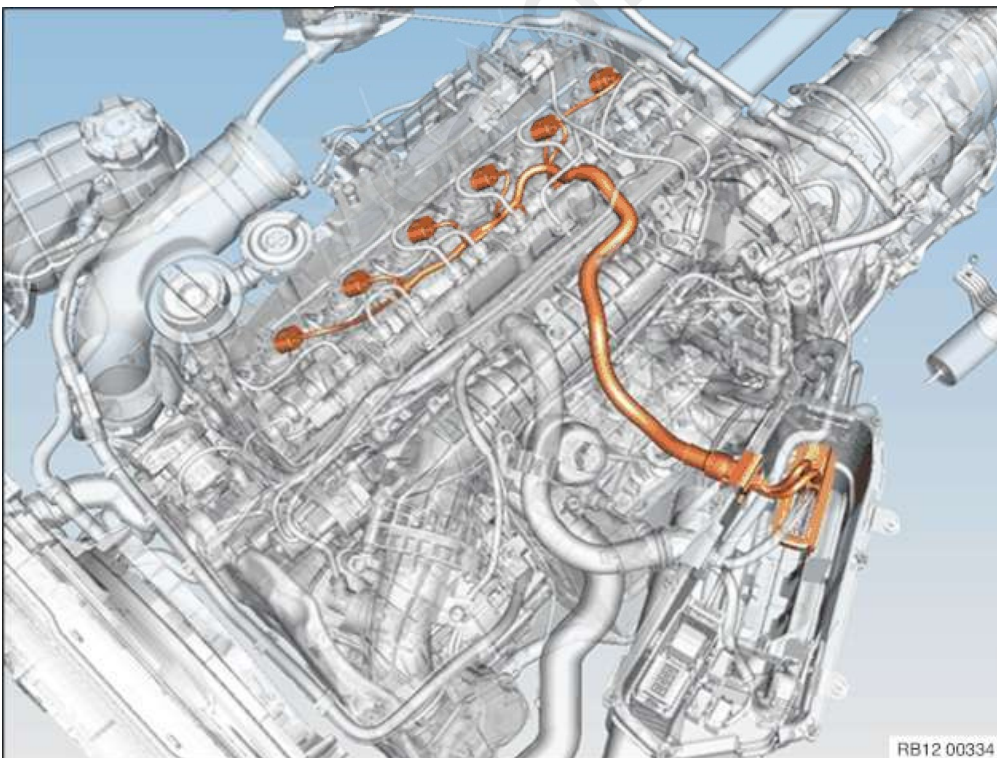
- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Disconnect [negative battery cable](#).
- Remove [intake silencer housing](#).
- Partially release [wiring loom](#) for engine.
- Remove [rear acoustic cover and sound insulation on injector](#).



Partially loosen the rear gasket (1) for the engine compartment lid until the screw is accessible from the cover of the electronics box.

Release all screws along line (2).

Remove the electronics box lid (3).



Unlock all plugs on injectors and disconnect.

Unlock and remove connector from control unit.

Detach wiring harness from clamp.

Feed out wiring harness for injectors under pressure lines and engine wiring harness and remove.

Installation note:

To ensure watertightness, make sure the wiring harness rubber grommet for injectors is correctly inserted.



Note:

Check wiring harness installation arrangement.

Check plug connections for correct fit.

Reassemble the vehicle.

Read out the fault memory of the DDE control unit.

Check and rectify stored fault messages.

Clear diagnostic fault entries from fault memory.

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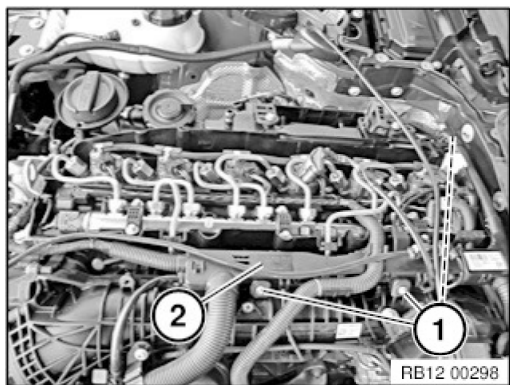
Important!

[Read and comply with notes on protection against electrostatic damage \(ESD protection\)!](#)



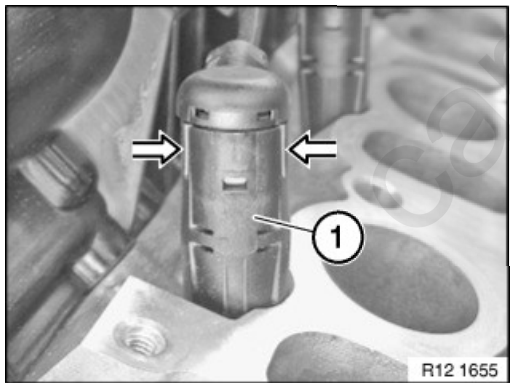
Necessary preliminary tasks:

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Disconnect [battery negative lead](#).
- [Acoustic cover](#), rear.



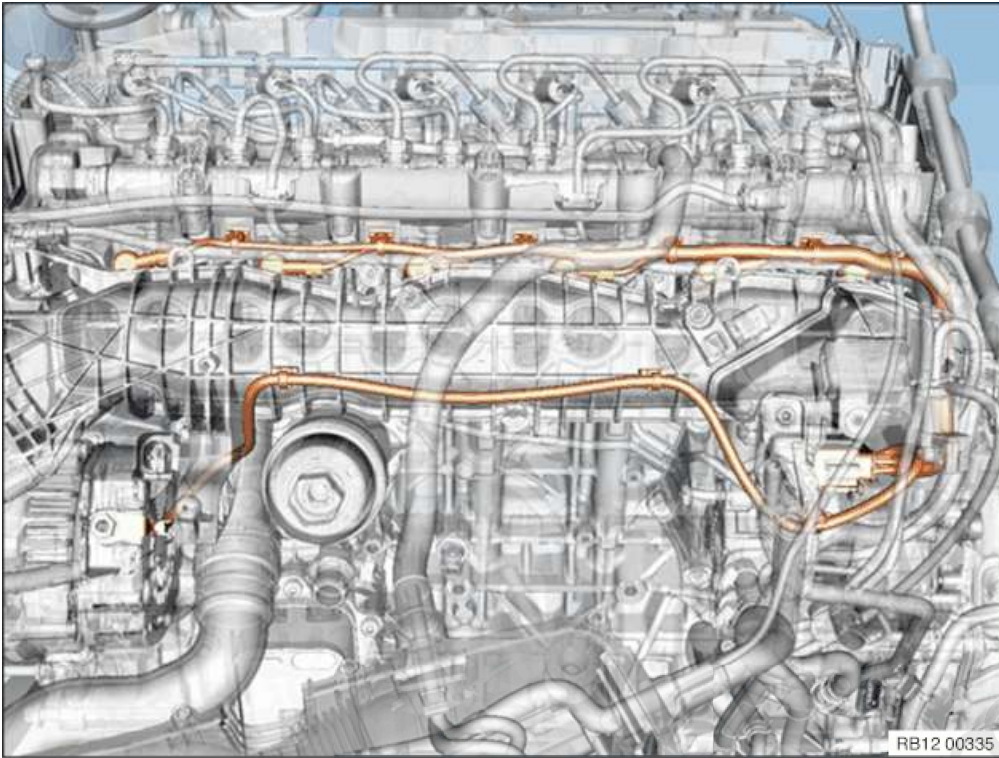
Release screws (1).

Unlock connector from cable channel and pull off. Slide cable channel (2) to one side.



Press together connector fastener (1) and detach plugs from glow elements. *Note:*

For purposes of clarity, the intake plenum is shown removed.



Overview of the wiring harness section for the preheating system.

Release nut on alternator.

Tightening torque [12 52 2AZ](#).

Disconnect positive battery cable from alternator.

Unlock connector on preheating control unit and remove.

Release wiring harness from clips and retainers.

Feed out wiring harness and remove.



Installation note:

Check wiring harness installation arrangement.

Check plug connections for correct fit.

Check stored fault message.

Clear diagnostic fault entries from fault memory.

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 safe vehicles) must be performed by qualified technicians. Each hybrid car requires additional vehicle specific training with training achievement controls. Required training is offered by the BMW Training Academy.

2. Identification:

Observe **warning notices** on high-voltage components. When replacing individual high-voltage components, check if warning stickers are present. Independently attaching warnings is only allowed on the locations provided for them. Use only approved and appropriately identified original new parts.

3. Rules of conduct/protective measures:

- Note operating instructions for handling high-voltage battery units.
- Do not under any circumstances touch open high-voltage cables and high-voltage components on damaged vehicle before shutting down the high-voltage electrical system.
- In the event of damage (mechanical, thermal) transition metal oxides, carbon, electrolyte solvents and their products of decomposition may be released.
Suitable acid-resistant protective clothing/equipment must therefore be used when handling the vehicle!

- Hand protection: Gloves
- Eye protection: Safety goggles

Damaged high-voltage battery units must be stored in an acid-resistant pan in a location in the open that is protected against the weather (sun, rain) and secured against unauthorised access. Do not inhale escaping gasses.

- Prevent escaping substances from entering drains, pits and the sewer system.
- Collect any material that is discharged and have it disposed of according to the work instruction, wear acid-resistant protective clothing when doing so.
- Notify the fire brigade if fire breaks out, clear the area immediately and make accident scene safe. Attempt to extinguish the fire without putting persons in danger (suitable extinguishant: water and water foam).
- A cut 2nd emergency separation point must be repaired with a butt connector.

4. Measures before starting work:

- Each job on the vehicle must be assigned by appropriately trained personnel. Before work is started, this electrician must place the vehicle in the operating condition required to perform the relevant activity. The qualified personnel's instructions and directions absolutely must be followed. **No work may be carried out without this qualified personnel being consulted first.**
- It is **not** permitted to work on the high voltage system or on high voltage components while the engine is running.
- The readiness to drive must be ended before shutting off the voltage of the high-voltage system. The readiness to drive is ended when the driver is absent only under the following conditions:
 1. seat belt buckle unlocked **and**
 2. the driver's door is open **and**
 3. no brake activated **and**
 4. the accelerator pedal is not activated **and**
 5. speed < 3 km/h (2 mph)
- Work on live high-voltage components is expressly prohibited. Before each operation on the high-voltage system, the system must be isolated from the power supply by qualified personnel (high-voltage safety connector Off) and secured against unauthorised recommissioning (padlock).
- After each deactivation of the high-voltage system, it is essential to observe a **waiting period** of at least **10 seconds** prior to further work.
- Before beginning work, it is mandatory to check that the equipment is de-energised and is protected against being energised again.
Work is only permitted to begin if:
 1. Corresponding display in the KOMBI **High-voltage system deactivated** or
When a high-voltage warning is active (indicator light, Check Control, etc.), it is essential to determine and eliminate the cause of this warning via the diagnosis system before continuing with any other work. **If it cannot be definitively established that the equipment is de-energised**, work is not permitted to begin. **Danger to life!** Before work begins, a qualified electrician (1000 V AC) must verify that the system is de-energised using appropriate measuring devices and procedures.
=> In this case, Technical Support must be contacted!
- Do not perform any work on the vehicle while it is charging. Before starting work, disconnect the charging

cable from the vehicle.

Battery charging may result in heating of the high-voltage battery unit. This heating may lead to sporadic launches of the electric fan (switch-on request from the electric fan). Therefore, work in the vicinity of the electric fan during the charging procedure is prohibited. Ensure freedom of movement of the battery charge lines in the vicinity of the electric fan.

5. *Measures during/after activities:*

- Identifiable mechanical damage to or tampering with high-voltage components must be reported immediately to the qualified personnel in charge.
- When carrying out any work on the high-voltage system, it is prohibited to drive externally all the drivetrain components (wheels, gearbox, drive shafts, etc.).
- *E72 only:* When the "Power Electronic Box Cover" is removed, the high-voltage system is not permitted to be activated. The high-voltage service disconnect must only be used when the "Power Electronics Box Cover" is completely installed.
- High-voltage cables (orange coating) and their connectors and stop parts **may not** be repaired. If damaged, a cable must always be replaced completely.
- When working in the vicinity of high-voltage components (identified accordingly with warning stickers and orange-coloured coating), protect these components against damage.
- The specified work steps in the repair instructions must be adhered to exactly.
- High-voltage components and their holders must be screwed/bolted to the defined tightening torque. Tightening torques and tightening specifications must be observed.
- Connecting high-voltage components to body ground is crucial to safety for reasons of equipotential bonding. For this reason, it is prohibited to operate any high-voltage components without them being correctly connected to body ground. The measurements (insulation/potential equalisation measurement) are performed automatically by the vehicle. Manual measurement is not therefore necessary. For a correct earthing connection, the retaining elements of high-voltage components must not be painted. Follow further [painting notes](#).
- Removed high-voltage 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.