

12 12 011 Removing and installing/renewing all spark plugs

PRELIMINARY WORK

1 – Removing the acoustic cover



WARNING

Hot surfaces.

Risk of burning!

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



RISK OF DAMAGE

Damage to the acoustic cover.

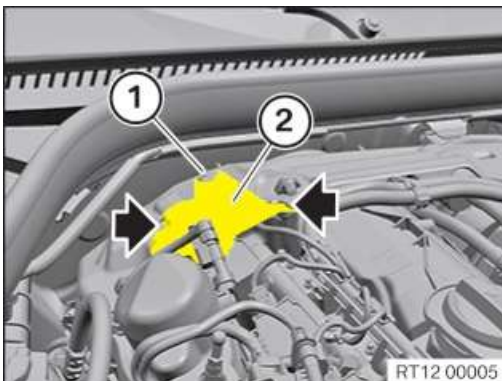
Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover.

- Disassemble or mount the acoustic cover carefully.
- Disassemble or mount snap-lock couplings of the ball pivots one after the other.
- Disassemble or mount acoustic cover only at temperatures $>20^{\circ}\text{C}$.
- Use only distilled water as an auxiliary material during installation, no lubricants.



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

2 – Release the service opening of the sound insulation at the top of the engine



- Detach the service opening (2) in the marked areas (arrows) and twist it to the side at the pivot point (1).

3 – Remove all ignition coils.



NOTICE

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

► Removing the ignition coil



WARNING

Hot surfaces.

Risk of burning!

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



RISK OF DAMAGE

Damage to the ignition coil.

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

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



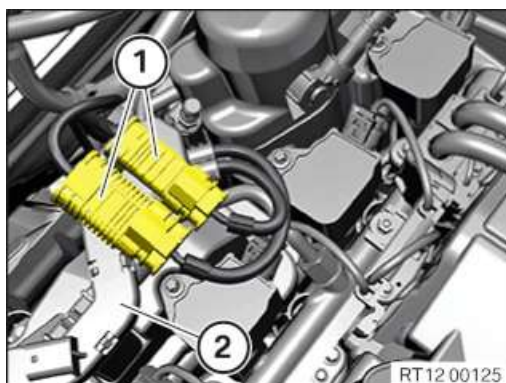
RISK OF DAMAGE



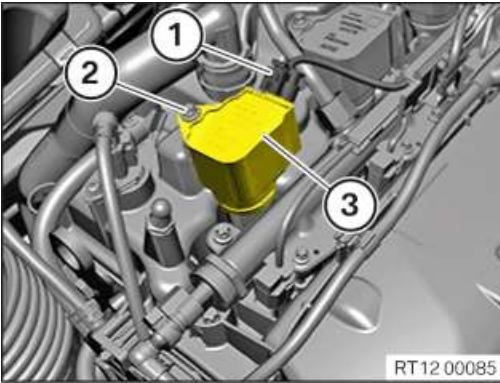
Electrostatic discharge.

Damage to or destruction of electrical components.

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



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



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

MAIN WORK

4 – Removing all spark plugs



WARNING

Hot surfaces.

Risk of burning!

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



CAUTION

Swirling dirt particles caused by compressed air.

Danger of injury!

- Collect dirt particles, e.g. when blowing out, use cloth to do so.



- Wear safety goggles.



TECHNICAL INFORMATION

Clean spark plug slot with compressed air.

The spark plug shaft must be cleaned using compressed air after having removed the ignition coils and before removing the spark plugs. After having removed the spark plugs, once again check the sealing surface for contamination and (if necessary) clean using a moist cloth or clean using compressed air.

Deposits that are not removed according to instructions may enter the combustion chamber and lead to uncontrolled combustion. Remaining deposits on the spark plug sealing surfaces may lead to leaks and the spark plugs may come loose during engine operation.

Spark plug threads must not be greased or oiled. Insufficiently tightened spark plugs may cause leaks and the spark plugs may come loose during engine operation.



NOTICE

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



TECHNICAL INFORMATION

Exclusively swivelling extensions may be used for the reversible ratchet. Rigid mounting tool and variable plug connections with rigid option may not be used; there is a risk that the insulator breaks.

- Mount the special tool [0 495 560 \(12 1 220\)](#) on a pivoting extension.
- Unscrew spark plugs with the special tool [0 495 560 \(12 1 220\)](#) and a pivoting extension.

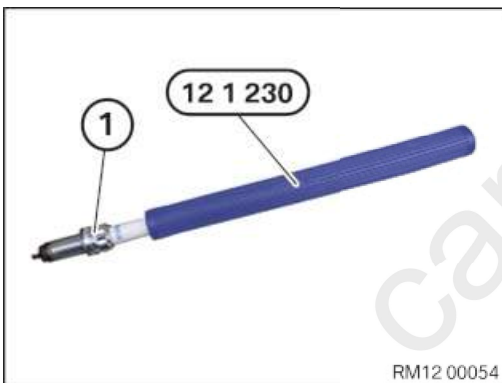


5 – Installing all spark plugs



NOTICE

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



- Insert spark plug (1) into special tool [0 496 065 \(12 1 230\)](#).



TECHNICAL INFORMATION

Do not drop spark plug into spark plug shaft! This can lead to a reduction of the electrode gap and can thus impair smooth running of the engine, especially in idle position.

- Screw in the spark plugs in the engine with the special tool [0 496 065 \(12 1 230\)](#) until hand-tight.



TECHNICAL INFORMATION

Exclusively swivelling extensions may be used for the reversible ratchet. Rigid mounting tool and variable plug connections with rigid option may not be used; there is a risk that the insulator breaks.

- Tighten the spark plugs with the torque wrench, the special tool [0 495 560 \(12 1 220\)](#) and a swivelling extension.

Spark plugs

M12x1.25		Tightening torque	23 Nm
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POSTPROCESSES

6 – Install all ignition coils



NOTICE

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

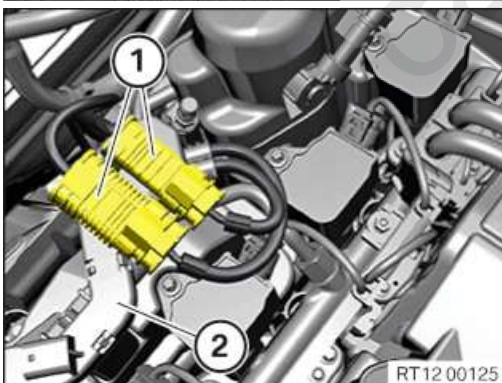
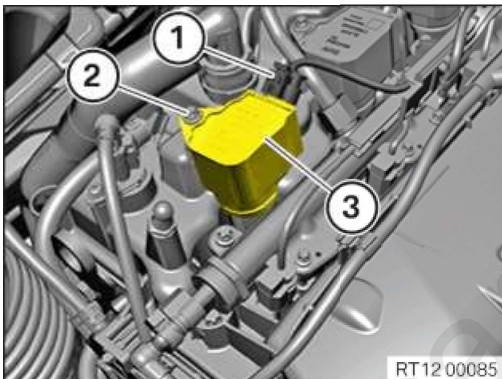
► Install ignition coil.

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

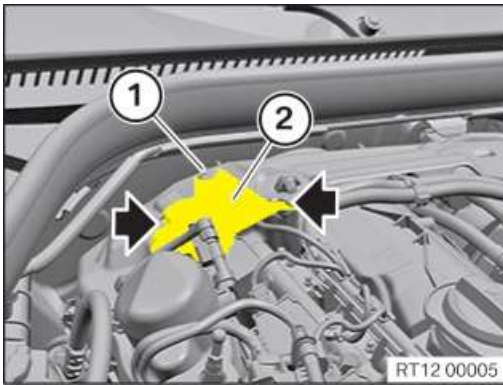
Ignition coil

Screw		Tightening torque	8 Nm
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- Connect connectors (1) and lock.
The connector (1) must engage audibly.
- Connect the connector (1) of the front oxygen sensor and the monitoring oxygen sensor on the cable shaft (2).



7 – Mounting the service opening in sound insulation on top of engine



- Turn the sound insulation (2) at the pivot point (1) to the installation position and guide it in where marked (arrows).

8 – Install acoustic cover

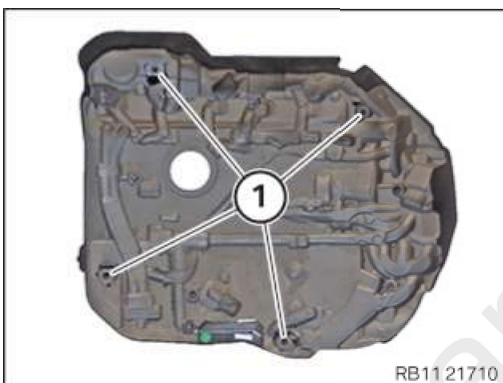


RISK OF DAMAGE

Damage to the acoustic cover.

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

- Disassemble or mount the acoustic cover carefully.
- Disassemble or mount snap-lock couplings of the ball pivots one after the other.
- Disassemble or mount acoustic cover only at temperatures $>20^{\circ}\text{C}$.
- Use only distilled water as an auxiliary material during installation, no lubricants.



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



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

Additional Information

Overview of Tightening Torques

Spark plugs

Used in step 5

M12x1.25	Tightening torque	23 Nm
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Ignition coil		Used in step 6	
Screw		Tightening torque	8 Nm

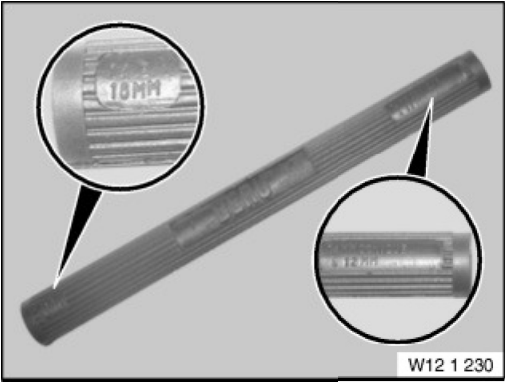
Overview of Special Tools

0 495 560 (12 1 220) Socket



Common		Used in step	45
Usage	For removing and installing the spark plugs (WAF 14 bihexal).		
Included in the tool or work			
Storage location	C18		
Replaced by			
In connection with			
SI-Number	01 20 06 (299)		

0 496 065 (12 1 230) Fitting aid



Common		Used in step	5
Usage	Fitting aid for spark plug installation. Original BERU ZMH 001 rubber hose 0 890 00 001.		
Included in the tool or work			
Storage location	individual		
Replaced by			
In connection with			
SI-Number	01 04 07 (352)		

Links

Repair instructions	Used in step
61 35 ... Notes on ESD protection (Electro Static Discharge)	3