11 00 039 Check compression of all cylinders

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

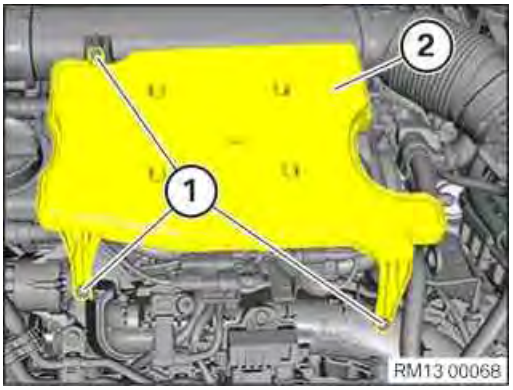
Damage to the acoustic cover.

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 °C.
- Use only distilled water as an auxiliary material during installation, no lubricants.

- Unclip the acoustic cover from the marked areas towards the top.

2 – Remove resonator



- Loosen screws (1).
- Guide out and remove the resonator (2).

3 – Remove the acoustic cover for the injectors

- Release the wiring harness (1) from the brackets.
- Guide the acoustic cover (2) out and remove.

11 00 039 Checking compression of all cylinders (B37C)

Special tools required:

- 11 8 880
- 11 0 235

Necessary preliminary tasks:

- Remove all glow elements.

Warning!

On vehicles with manual gearbox:

There must be no drive position engaged during the starting operation.

Important!

To prevent the injection system from injecting, it is necessary to disconnect the injection system plug connections.

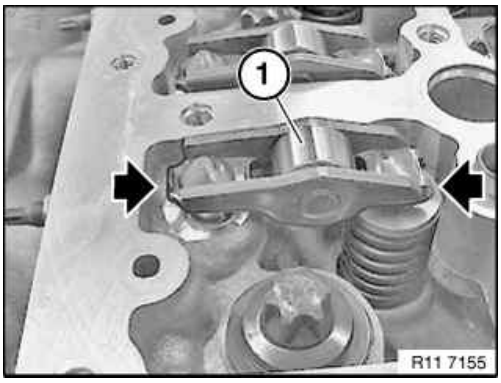
Screw in special tools11 8 880 and 11 0 235 .*Note:*
The compression check on all cylinders must have a constant battery voltage. If necessary, connect an auxiliary battery or charger.

The number of engine revolutions for the compression check must be identical for each cylinder. (The measuring result could be falsified.)

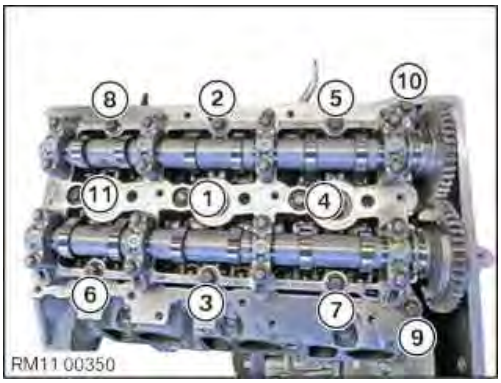
Technical data.

Required follow-up work:

- Install glow elements
- Check function of DDE, erase fault memory if necessary



- Make sure the roller cam followers (1) have the correct mounting orientation.
- Position the camshaft support.



- Tighten the screws of the camshaft support incrementally in the sequence (1) to (11).

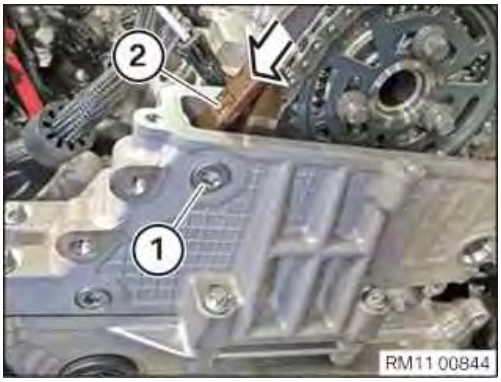
Camshaft carrier to cylinder head

M7x35		Tightening torque	13 Nm

79 – Installing the camshaft sprocket on the intake camshaft

- Position the drive chain on the camshaft sprocket so that the thread of the screw connections are located in the centre of the elongated holes.
- Position the camshaft sprocket on the intake camshaft.
- Merely apply the screws (1) hand-tight so that the camshaft sprocket can still be moved in relation to the intake camshaft.

80 – Install the timing chain guide rail



- Position the guide rail (2) in the direction of the arrow.

  Make sure the guide rail (2) is correctly installed at the bottom bearing journal.
- Renew bearing journal (1).

  Parts: Bearing journal
- Tighten the bearing journals (1).

Bearing journal to cylinder head

M16x1.5	Replace bearing journal.	Tightening torque	20 Nm

- Position the mounting bracket (3).
- Tighten down screws (2).

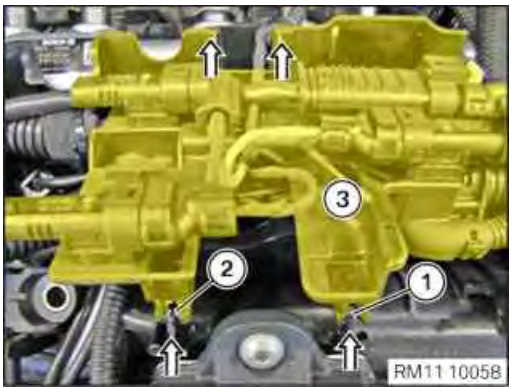
Standard screw connection M8

M8		Tightening torque	19 Nm

- Position the ground cable and tighten the screw (1).

Standard screw connection M6

M6			8 Nm



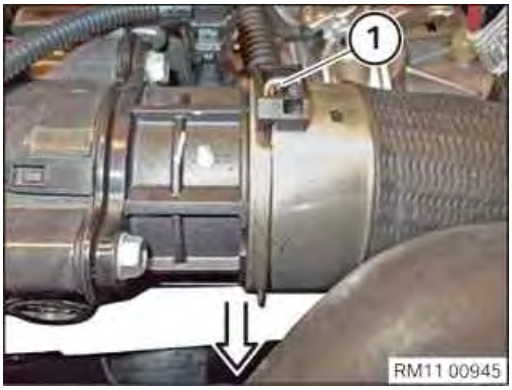
- Release the clips (1) and (2).
- Feed out the cable clip (3) in the direction of the arrow and set it aside.

17 – Removing the intake plenum

TECHNICAL INFORMATION

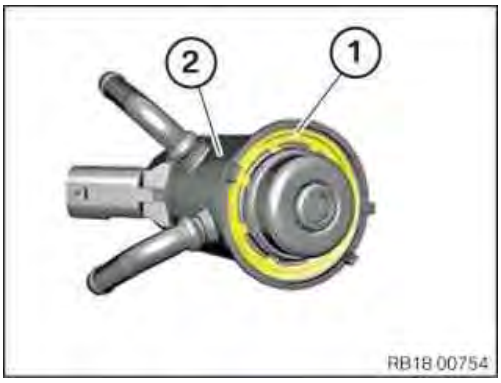
Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

- Unlock the lock (1).



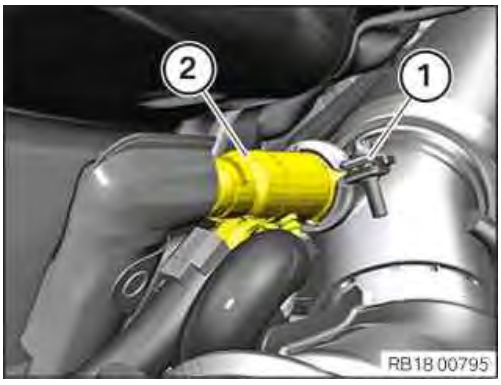
- Ensure that the lock (1) is unlocked.
- Pull the charge air line off the throttle valve.

- Unlock the lock (1) upward.
- Guide out the electric changeover valve (2) to the left and set it aside.



- Renew sealing ring (1) of the SCR metering module (2).

  Parts: Sealing ring

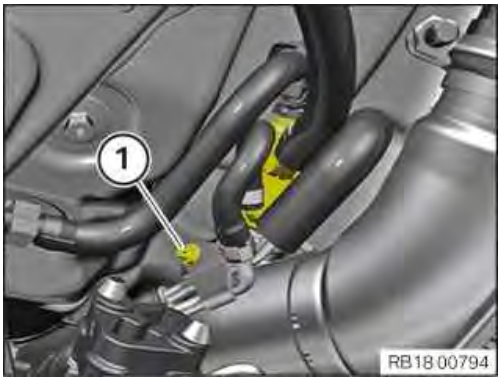


- Insert and install the SCR metering module (2).
- Renew the V-clip (1).

  Parts: V-band clamp
- Tighten V-band clamp (1).

SCR metering module V-clip to exhaust system

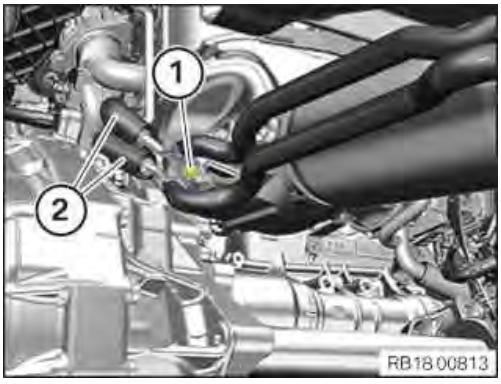
V-band clamp	Renew V-band clamp.	Tightening torque	8 Nm



- Tighten down screw (1).

Holder for coolant lines to diesel particulate filter

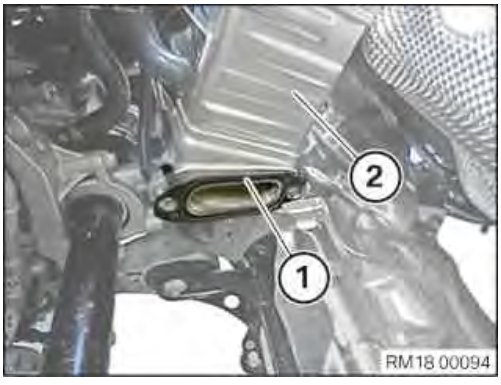
Torx bolt BM6x16		Tightening torque	8 Nm



- Thread in and install coolant line (2) of the SCR metering module.
- Tighten down screw (1).

Holder for coolant lines to diesel particulate filter

Torx bolt BM6x16		Tightening torque	8 Nm

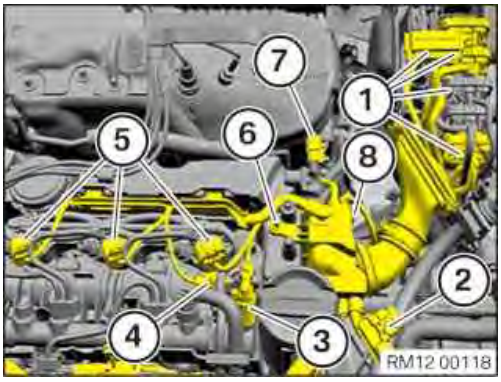


- Replace seal (1) of the low pressure exhaust-gas recirculation cooler (2).

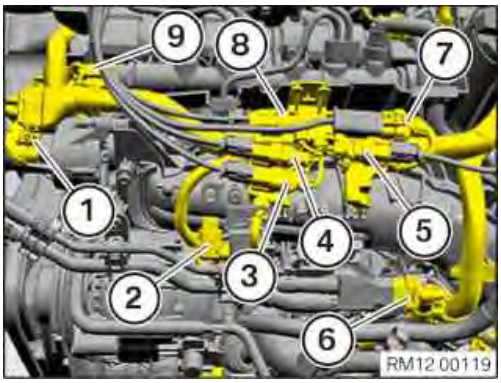
  Parts: Gasket

- Loosen screws (1).

- Release the positive battery cable (1) on the alternator and place to one side.
- Unlock connector (2) and pull off.

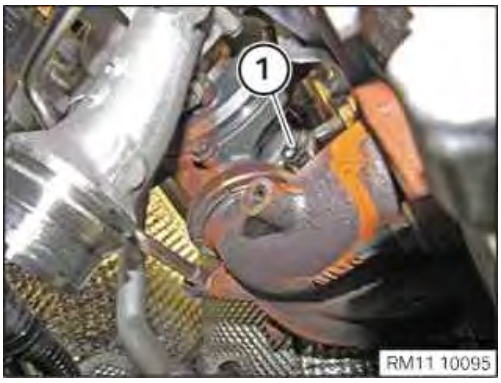


- Disconnect all connectors (1) from the DME control unit and remove the integrated supply module (PDM).
- Unlock connector (2) and pull off from hot film air mass meter.
- Unlock connector (3) and pull off from fuel pressure regulator.
- Unlock connector (4) and disconnect from camshaft sensor.
- Unlock the connector (5) and pull off from the injectors.
- Loosen screw (6).
- Unlock connector (7) and disconnect from differential pressure sensor.



- Unlock connector (1) and pull it off the servomotor for the swirl flap.
- Unlock the connector (2) and pull it off the charging pressure sensor.
- Unlock connector (3) and pull off from exhaust temperature sensor downstream from the diesel particulate filter.
- Unlock connector (4) and pull off from exhaust gas pressure sensor for the low pressure exhaust-gas recirculation cooler.
- Unlock connector (5) and pull off from exhaust gas pressure sensor for the exhaust-gas recirculation cooler.
- Unlock connector (6) and pull off from the fuel pressure and temperature sensor.
- Unlock and disconnect the connector (7) from the front oxygen sensor.
- Unlock connector (8) and pull off from exhaust gas pressure sensor upstream from the diesel particulate filter.

- Unlock connector (1) at all glow elements using special tool **0 490 796 (11 1 480)** and release.
- Guide the wiring harness out of the guide on the cylinder head cover and place to one side.



- Renew gasket.

  Parts: Gasket
- Position seal on exhaust manifold.
- Guide the exhaust turbocharger in from the top and position it.
- **Ensure that gasket is correctly seated.**
- Renew V-band clamp.

  Parts: V-band clamp
- Install V-clip and tighten screw (1).

Exhaust turbocharger to exhaust manifold

V-band clamp		Tightening torque	19 Nm

- Renew sealing rings.

  Parts: Sealing ring
- Position oil feed line with banjo bolt (1) and sealing rings and tighten hand-tight.

  There are 2 sealing rings fitted on the banjo bolt (1).
- Align oil feed line and tighten banjo bolt (1).

  The oil feed line must not sit on the exhaust turbocharger.

Oil feed line to exhaust turbocharger

Hollow bolt	Renew sealing rings.	Jointing torque	10 Nm
		Angle of rotation	45 °

- Renew gasket.

  Parts: Gasket
- Position oil return line (2) with **seal** on exhaust turbocharger.
- Tighten the screws (1).

Oil return line to turbocharger

M6x12		Tightening torque	8 Nm

- Feed in and tighten screw (1).

Holder to exhaust turbocharger and crankcase

M8x16		Tightening torque	22 Nm

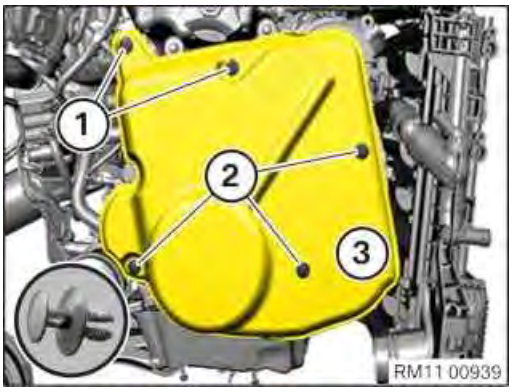
85 – Install right charge air duct

RISK OF DAMAGE

Damage to the exhaust turbocharger.

A leak at the pressure pipe can damage the exhaust turbocharger.

- Replace the gaskets and pressure pipe if necessary.



- Release the expanding rivets (1) from the top.
- Release the expanding rivets (2) from the bottom.
- Feed out and remove acoustic cover (3) downwards.

7 – Removing the drive belt for alternator

CAUTION

Spring preload.

Danger of injury!

- The use of the specified special tool (tool) is mandatory.
- The described operation must be carried out properly.

CAUTION

Component with preload.

Danger of injury!

- Reduce preload as far as possible before disassembly. Relieve component.

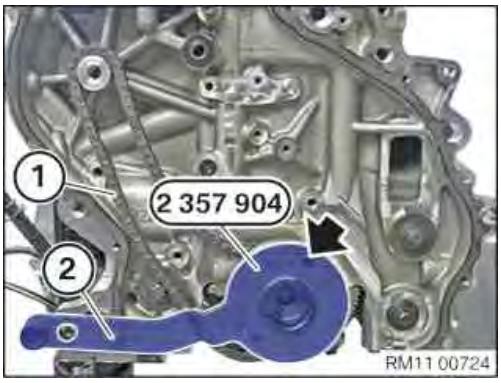
TECHNICAL INFORMATION

If the drive belt is reused: Mark direction of travel and reinstall drive belt in same direction of travel.

TECHNICAL INFORMATION

The drive belt must be replaced if contaminated with coolant- and oil residues.

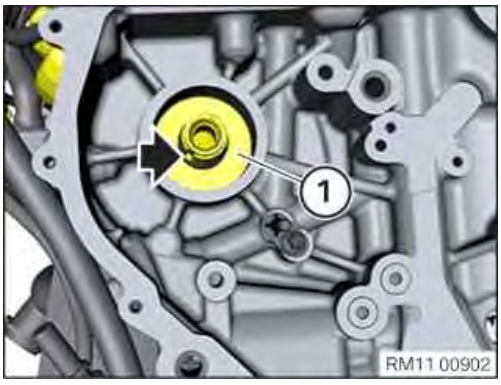
- Increase the preload on the belt tensioner in the direction of arrow.
- Secure the belt tensioner with the special tool .



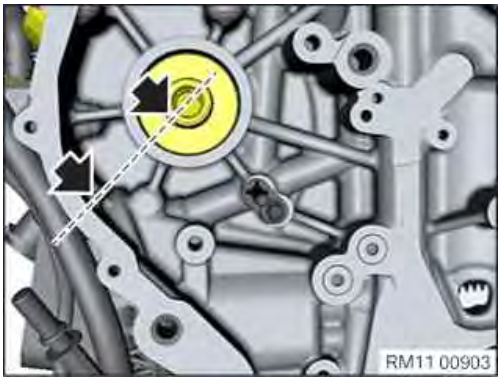
NOTICE

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

- Position the timing chain (1).
- Secure crankshaft with special tool **2 357 904**.
- Secure special tool **2 357 904** with bolt (2) on crankcase.

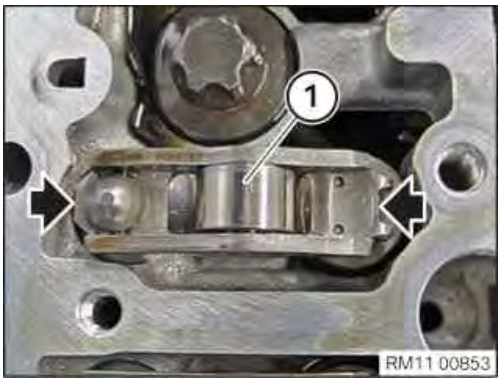


- Note spline groove on high pressure pump (1).



- Mark and groove (arrows) on high pressure pump and crankcase must align.

- Position the impeller with timing chain on the high pressure pump.
- Screw in and fasten central bolt (1) of high pressure pump.
- Mark and cast lug (arrows) must align.



- Guide out and remove all roller cam followers (1) (arrows).
- Place all roller cam followers (1) in order in special tool **0 495 105 (11 4 480)**.

  Roller cam followers that have already been used must be installed in same position again.

23 – Removing the hydraulic valve clearance compensating element

RISK OF DAMAGE

Contaminant or foreign body.

Contamination can result in malfunctions, operating failure or leaks.

- Adhere to the utmost cleanliness.
- Protect components from contamination e.g. by covering.
- Close off line connections with seal plugs.

- Remove the hydraulic valve clearance compensating element (1) in the direction of the arrow and place on the special tool **0 495 105 (11 4 480)**.
- Repeat the process on all hydraulic valve clearance compensating elements.

24 – Removing cylinder head

CAUTION

Heavy component.

Heavy components can lead to injury or damage.

- Remove and install heavy components with the aid of another person/other persons.

- Loosen screws (1).

8 – Removing the acoustic cover

WARNING

Hot surfaces.

Risk of burning!

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

RISK OF DAMAGE

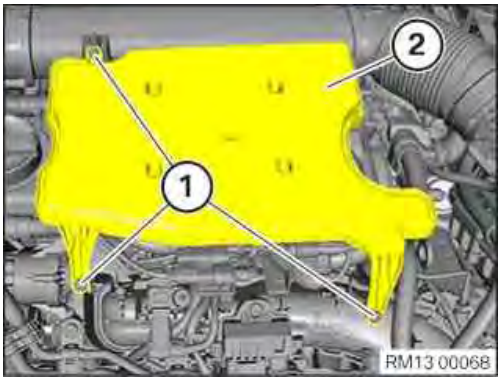
Damage to the acoustic cover.

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

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

- Unclip the acoustic cover from the marked areas towards the top.

9 – Remove resonator



- Loosen screws (1).
- Guide out and remove the resonator (2).

10 – Remove the acoustic cover for the injectors

- Release the wiring harness (1) from the brackets.
- Guide the acoustic cover (2) out and remove.

11 – Remove the intake neck for intake silencer housing

CAUTION

On releasing high pressure line, fuel may emerge at high speed.

Danger of injury!

- Wear suitable personal protective equipment.
- Allow the cooling system to cool down to a temperature below 40°C before starting installation work.
- Note warnings on cylinder head cover.

RISK OF DAMAGE

Contaminant or foreign body.

Contamination can result in malfunctions, operating failure or leaks.

- Adhere to the utmost cleanliness.
- Protect components from contamination e.g. by covering.
- Close off line connections with seal plugs.

RISK OF DAMAGE

Damage to wires when disconnecting connectors and plug connections.

Sheared wires can cause a short circuit.

- Do not pull on the wires when disconnecting connectors and plug connections.

RISK OF DAMAGE

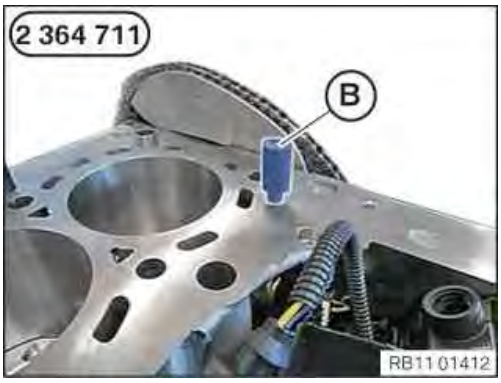
 **Electrostatic discharge.**

Damage to or destruction of electrical components.

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

TECHNICAL INFORMATION

If several injectors are removed, ensure that each injector is reinstalled in its original installation location (cylinder). Mark injectors.



- Lock the front oil duct using special tool (B) from special tool **2 364 711**.

RISK OF DAMAGE

Damage to the surface.

The use of metal-cutting tools (e.g. emery cloth) to clean the surfaces can damage them and lead to leaks or engine damage.

- Do not use any metal-cutting tools.

- Clean the sealing surface using special tool **0 495 103 (11 4 471)**.

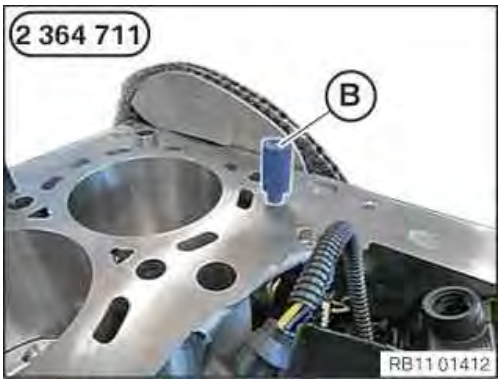
RISK OF DAMAGE

Damage to the surface.

The use of metal-cutting tools (e.g. emery cloth) to clean the surfaces can damage them and lead to leaks or engine damage.

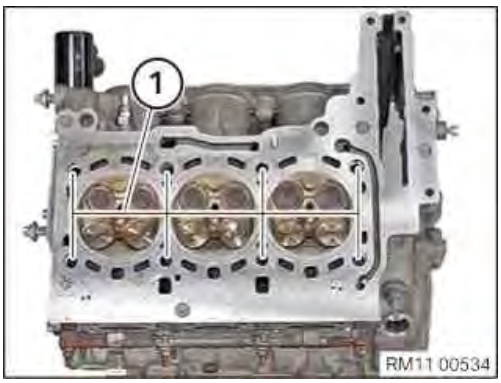
- Do not use any metal-cutting tools.

- Clean the sealing surface using special tool **0 495 104 (11 4 472)**.



- Remove special tool (B).

▶ Renewing the cylinder head gasket



RISK OF DAMAGE

Damage to the surface.

The use of metal-cutting tools (e.g. emery cloth) to clean the surfaces can damage them and lead to leaks or engine damage.

- Do not use any metal-cutting tools.

- Remove oil and dirt residue from the blind holes (1).

NOTICE

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

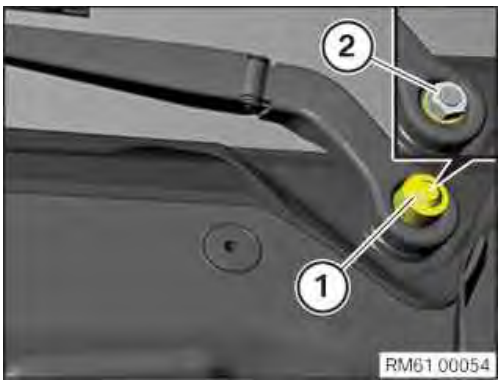
▶ **Remove the wiper arm**

RISK OF DAMAGE

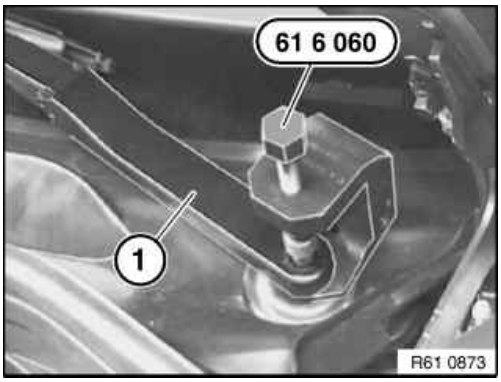
Damage to wiper console

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

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



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



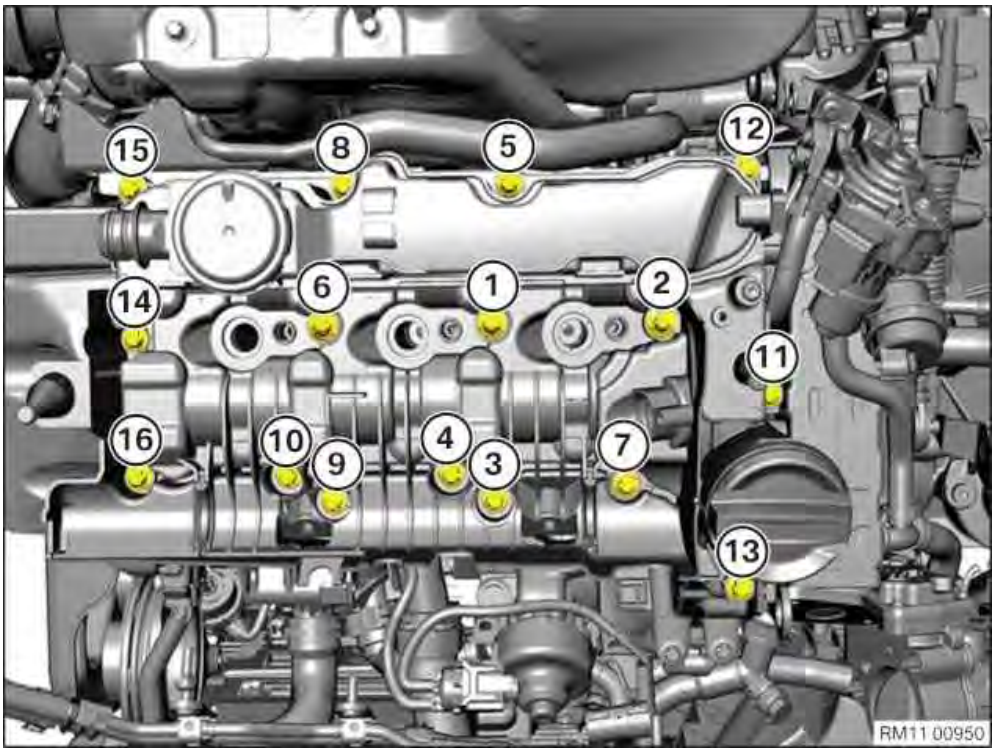
- Pull off the wiper arm (1) using special tool .

3 – 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**



- Loosen screws in the order (16) to (1).
- Remove cylinder head cover by lifting it out.

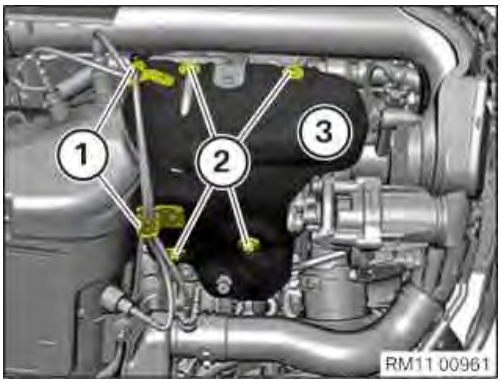
30 – Removing heat shield from top exhaust turbocharger

WARNING

Hot surfaces.

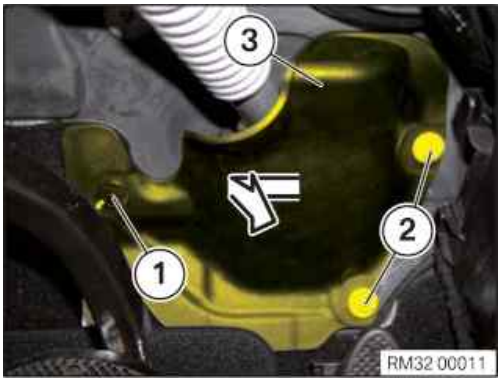
Risk of burning!

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



- Release cable from brackets (1).
- Loosen screws (2).
- Feed out and remove the heat shield (3).

31 – Releasing lower steering shaft from steering gear



- **If installed:**
- Unfasten nut (1).
- Unscrew the nuts (2) by 1 rotation.

  Do not remove the nuts (2) !
- Remove the cover (3) on the steering column in the direction of the arrow.

  The side footwell trim must not be disassembled!