13 53 301 Remove, install/replace injector (s) in the injection system at cyl. 1-3

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.

Working on fuel system.

Risk of fire! Danger of explosion!

- When working on the fuel system, make sure that the workbay is sufficiently ventilated, e.g. using extraction unit.
- Tightly seal off open lines and connections; collect any escaping fuel directly at the point of exit.
- No fire, sparks, open flames or smoking.

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.

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.

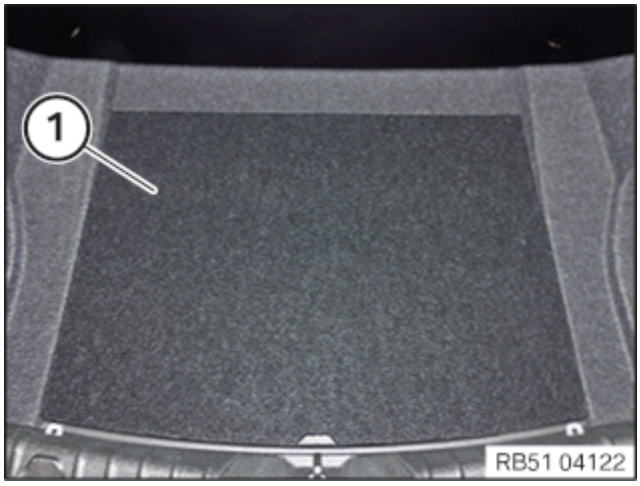
Contaminant or foreign body.
Contamination can result in malfunctions, operating failure or leaks.

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

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

PRELIMINARY WORK

1 – Removing the luggage compartment floor trim panel



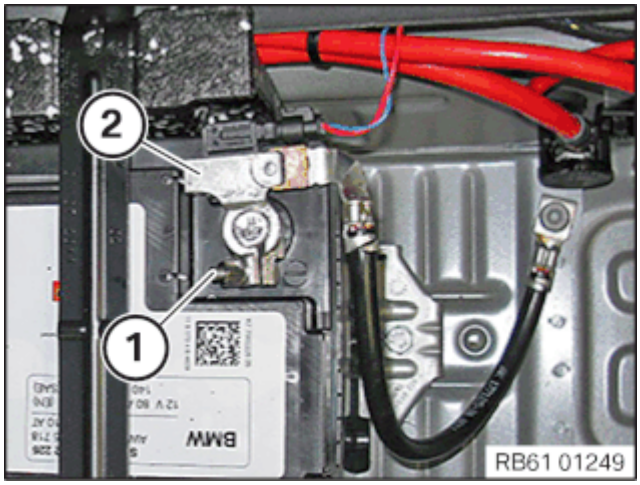
- Remove luggage compartment floor trim panel (1).

2 – Disconnecting the battery earth lead

Prerequisite

Ignition is switched off.

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)



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

Damaged battery terminals can lead to malfunctions or vehicle electrical system faults.

- Pull off battery terminal from battery pole by carefully moving to and fro. Do not pry off using a tool.

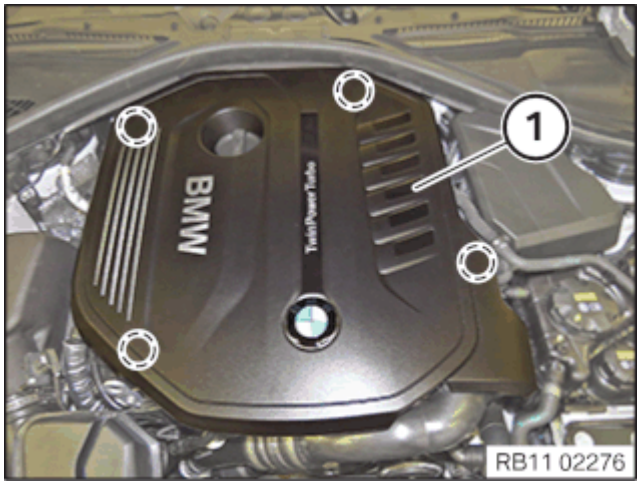
- Slacken nut (1).
- Remove the battery terminal clamp (2) with the battery earth lead and secure it on the side.

3 – Removing the acoustic cover

Damage to the acoustic cover.

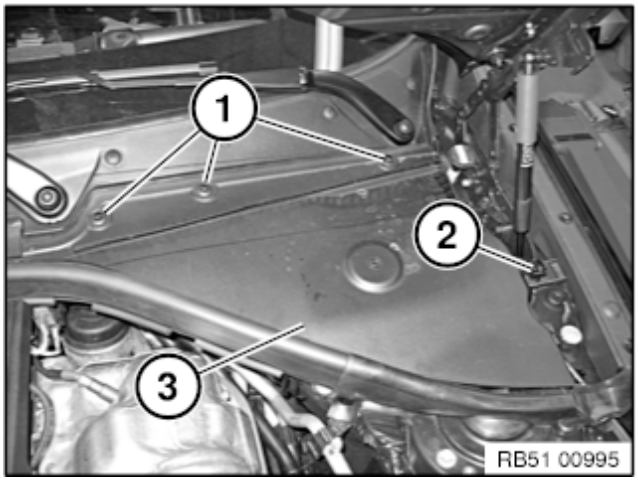
Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover.

- 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.



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

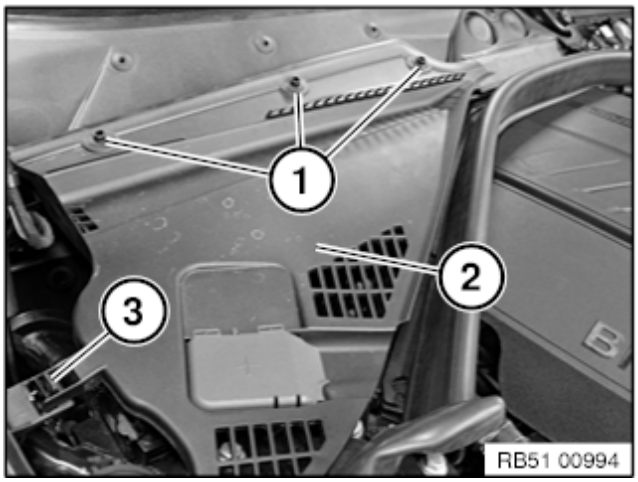
4 – Remove the cover in the left engine compartment



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

- Loosen the mounting elements (1).
- Unlock the latch mechanism (2).
- Remove the cover (3).

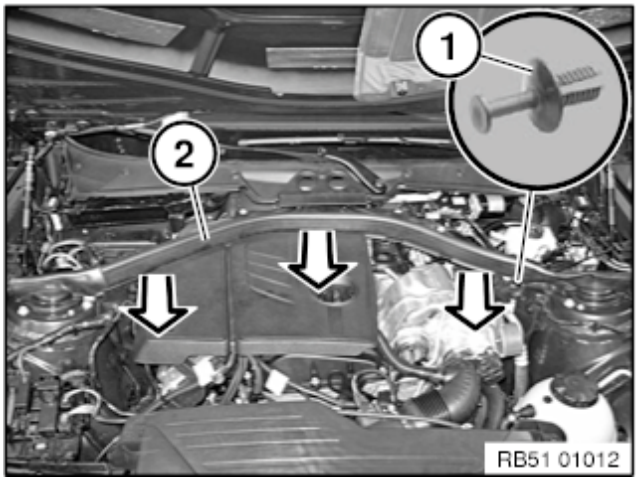
5 – Remove the right cover in the engine compartment



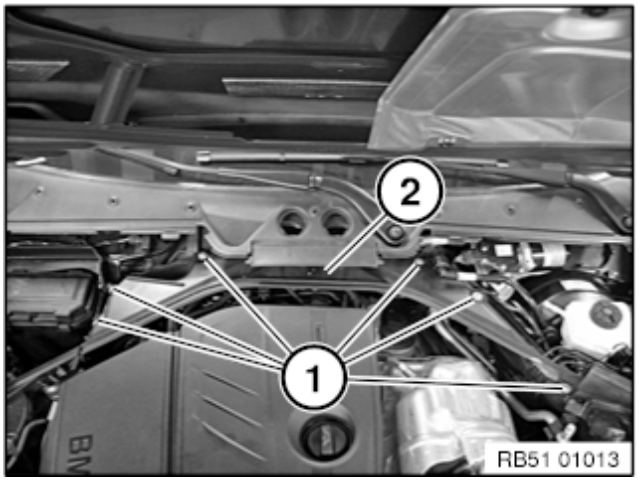
Schematic diagram is for example purposes.
Some parts may differ in certain details.

- Loosen the mounting elements (1).
- Unlock the latch mechanism (3).
- Remove the cover (2).

6 – Removing the sound insulation on the bulkhead upper part centre



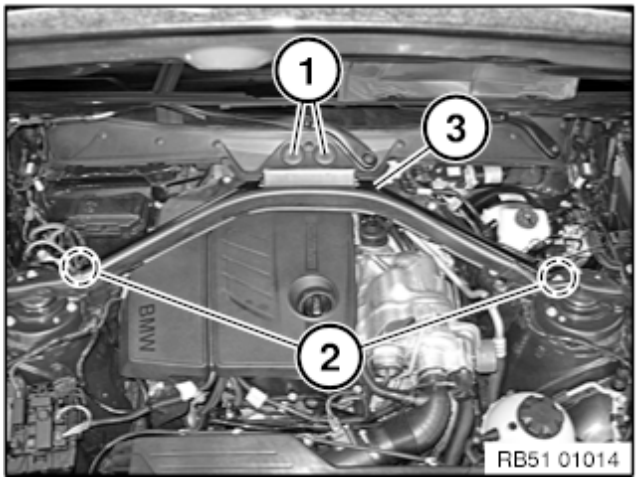
- Detach positive battery cable from the sealing (2).
- Loosen expanding rivet (1).
- Unclip the sealing (2) in the direction of arrow.



- Loosen screws (1).
- Remove the sound insulation (2).

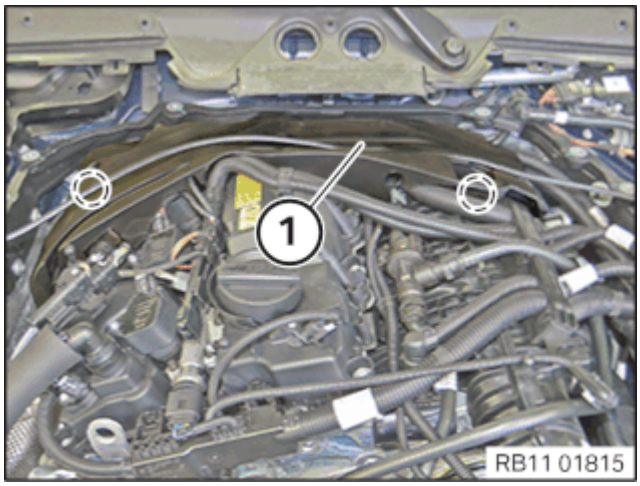
7 – Remove trailing link at spring strut dome

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



- Unclip the covers (1) and unscrew the underlying bolts.
- Loosen the screws (2) and remove the tension strut (3).

8 – Removing acoustic cover at rear



- Thread out the acoustic cover (1) upward from the guides in the marked areas and remove.

9 – Remove ignition coils

Hot surfaces.

Risk of burning!

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

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.

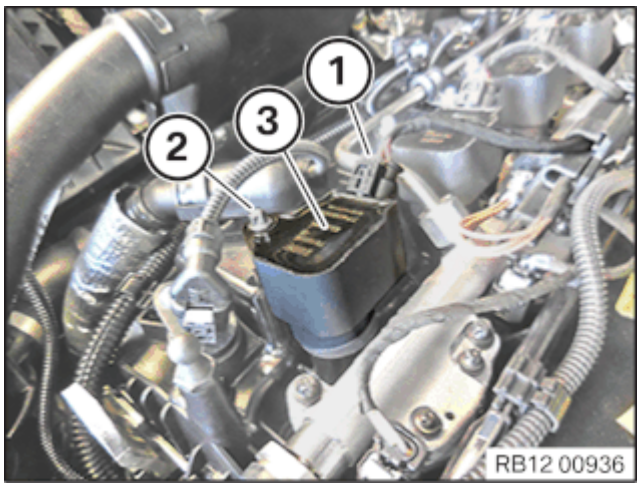
- Cover ignition coils using suitable covers when working on the fuel system, if necessary remove them.
- Do not oil or grease the silicone tube of the spark plug connector. The silicone tube is coated with talc to reduce the pulling forces.

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.

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



- Unlock and loosen connector (1).
- Loosen screw (2).
- Remove the ignition coil (3).

10 – Remove the high pressure line between the rail and the high pressure pump

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.

Working on fuel system.

Risk of fire! Danger of explosion!

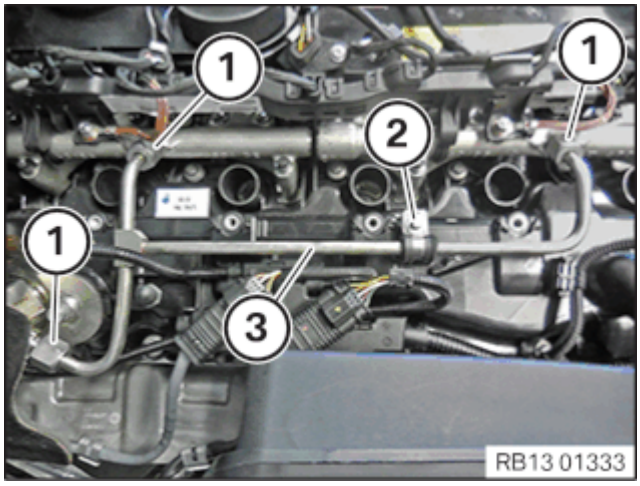
- When working on the fuel system, make sure that the workbay is sufficiently ventilated, e.g. using extraction unit.
- Tightly seal off open lines and connections; collect any escaping fuel directly at the point of exit.
- No fire, sparks, open flames or smoking.

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.

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.



- Release union nuts (1).
- Loosen screw (2).
- Feed the high pressure line (3) out and remove.

MAIN WORK

11 – Remove the injectors for cylinders 1 to 3

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.

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.

Damage to the injector tips and Teflon ring.

Improper handling of the injector tips and Teflon ring can lead to malfunctioning of the injector.

- Avoid mechanical contact with injector tip.
- When exchanging Teflon ring, hands and work surface must be clean and free of oil. Do not use any lubricating agents.
- Do not use fingernails to slide Teflon ring on.

Damage to injectors.

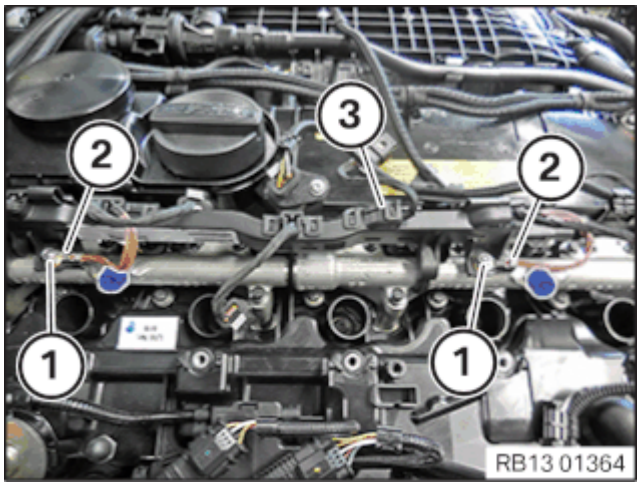
Excessive force may damage the injector and this means having to renew the injector.

- Twist the injectors with a maximum torsional movement of 13 Nm.

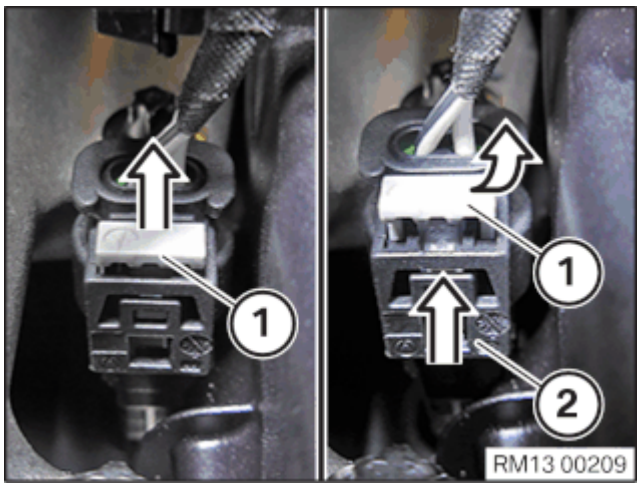
Electrostatic discharge.

Damage to or destruction of electrical components.

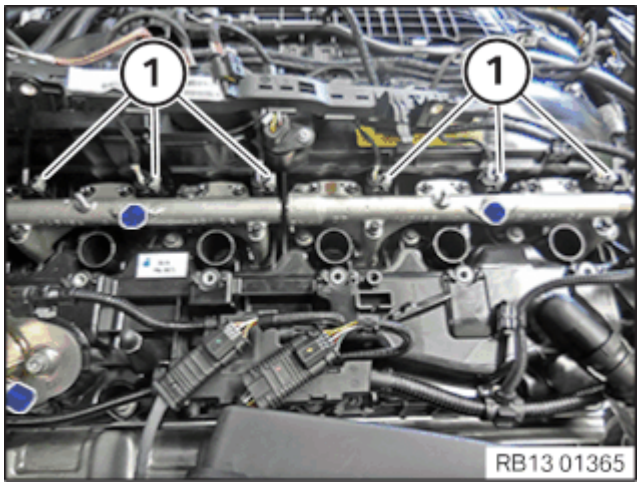
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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



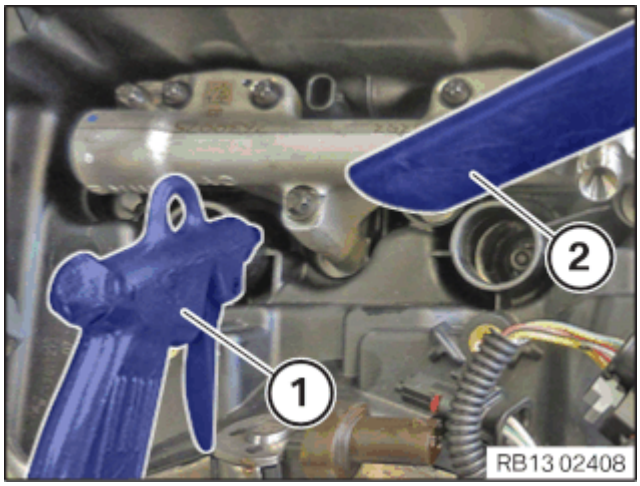
- Loosen nuts (1).
- Feed out ground cable (2) and set it aside.
- Feed out cable channel (3) and set it aside.



- Unlock lock (1) in direction of arrow from the top.
- Press the lock (1) together and release it in the direction of the arrow.
- Pull off connector (2) from the injectors.



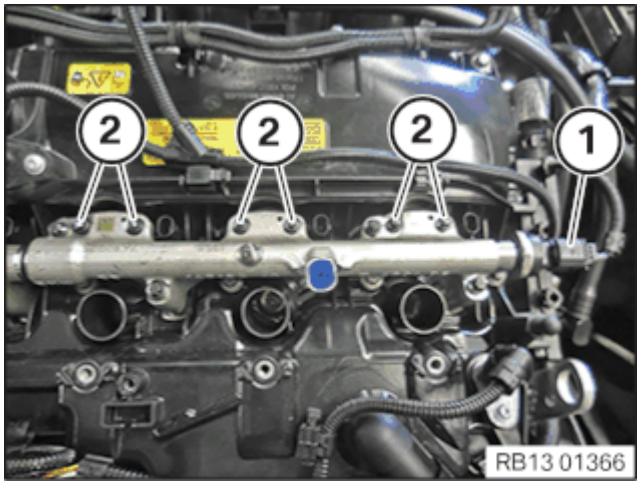
- Unlock and release all connectors (1) of the injectors.



In case of dusty / sandy operating conditions of the vehicle, the injector shafts must be cleaned before removal.

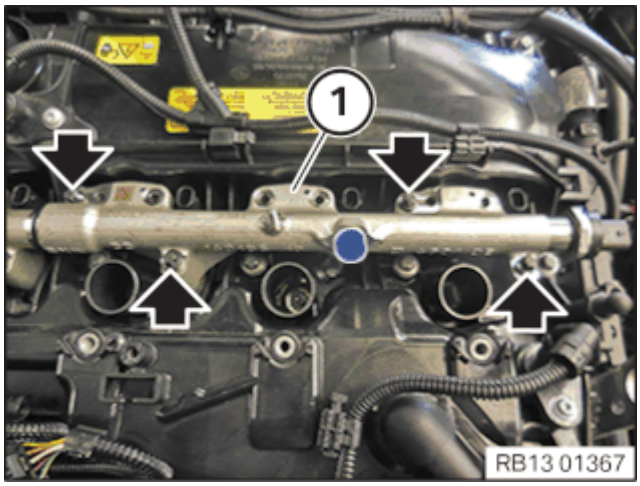
For additional information see: 13 53 ... Cleaning the cylinder head in the area of the injectors in case of sandy / dusty contamination

- Before releasing the high pressure lines: Blow out the injector shafts with an air gun (1) set to low pressure.
- Simultaneously, suction out dirt particles **with a explosion-proof** vacuum cleaner (2).



- Unlock and loosen connector (1).
- Release screws (M5x30) (2).

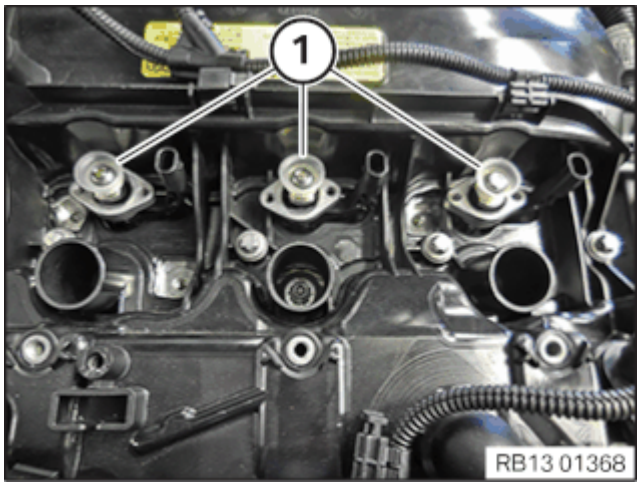
  Do not reuse the bolts (2).
- Catch and dispose of escaping fuel with suitable materials.



- Unscrew the screws (M6x70) (arrows).

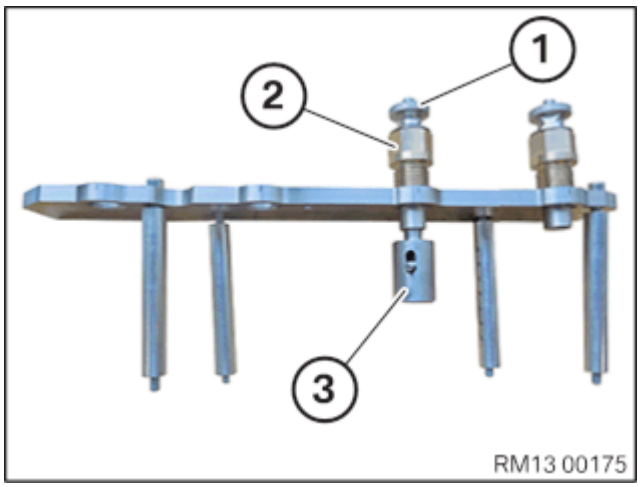
  The screws (arrows) may **not** be reused.
- Remove rail (1) to the top.

  The injectors remain in the cylinder head.



- Remove the gaskets (1).

  The seals (1) are required during first assembly within the plant only and will not be installed again.



Damage to injectors.

Excessive force may damage the injector and this means having to renew the injector.

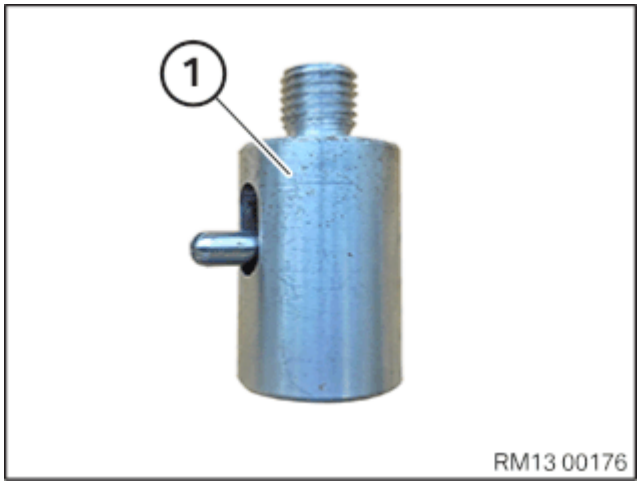
- Twist the injectors with a maximum torsional movement of 13 Nm.

- If the specified value for the tensile force is exceeded: Replace fuel injector
- Use the special tool **2 358 417**to remove the injectors.

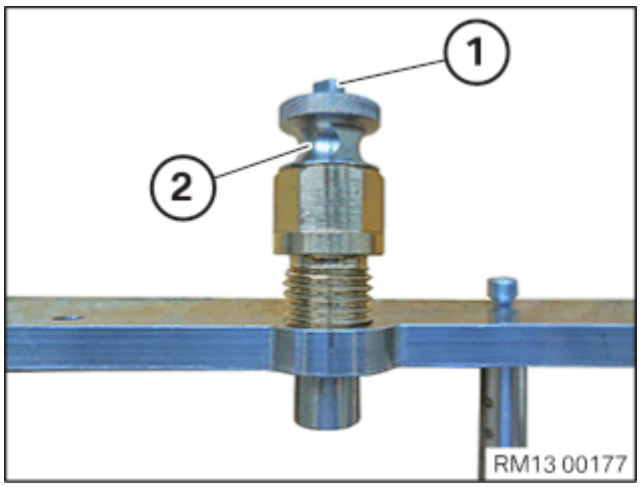
  The special tool **2 358 417** is used to ensure that the tensile force is not exceeded.

  The special tool **2 358 417** consists of:

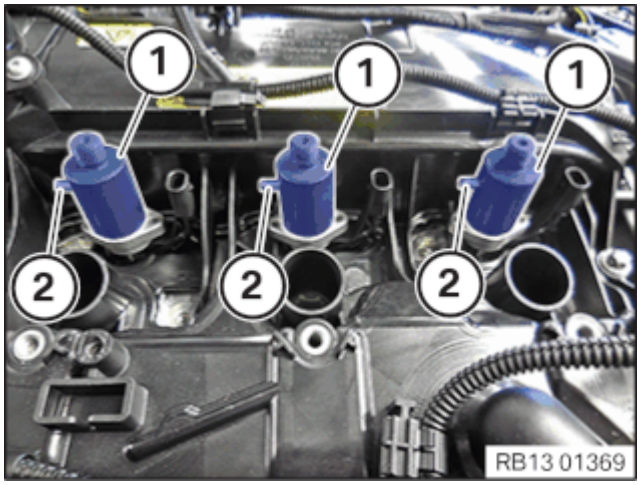
  - **(1)** Threaded sleeves
  - **(2)** Pull-out thread (left-hand thread)
  - **(3)** Mounting for the injectors



- Unscrew the fixture for the injectors (1) from the special tool **2 358 417**.

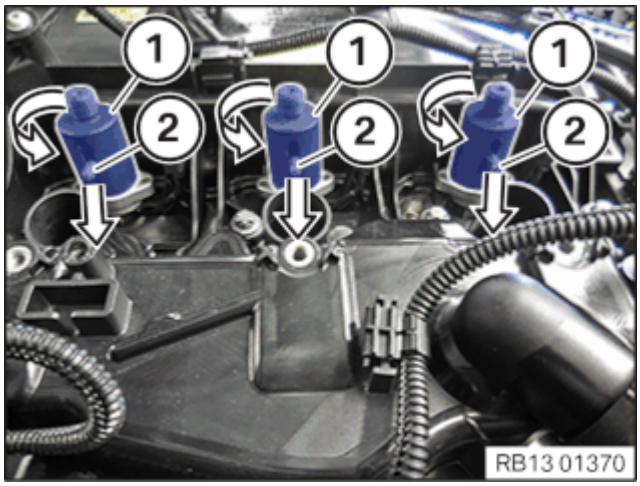


- Press the lock (1) in and remove threaded sleeve (2) from the special tool **2 358 417**.

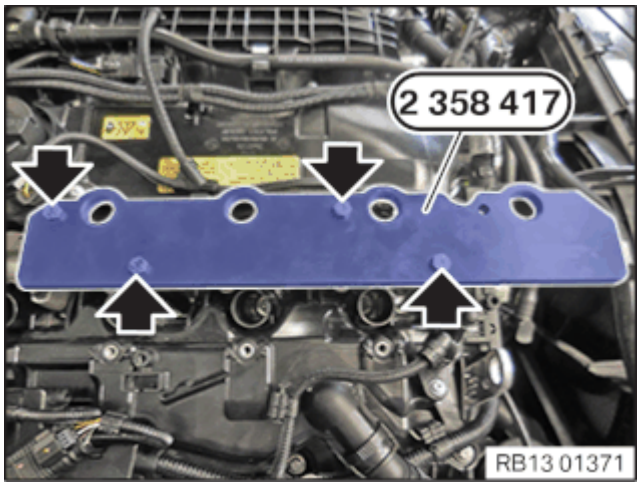


- Install all fixtures (1) for the injectors.

  The fixtures (1) are not locked when the levers (2) are up.



- Turn fixtures (1) by 90° and lock the lever (2) downwards.

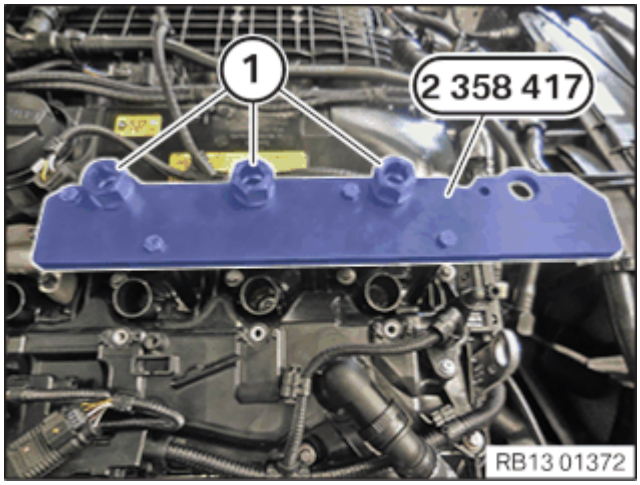


Damage to injectors.

Excessive force may damage the injector and this means having to renew the injector.

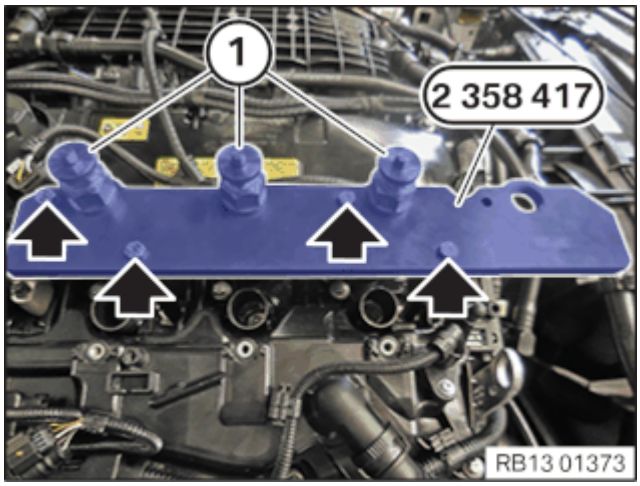
- Do not use the puller plate as a support.

- Attach special tool **2 358 417** to cylinder head.
- Hand-tighten the bolts (arrows).

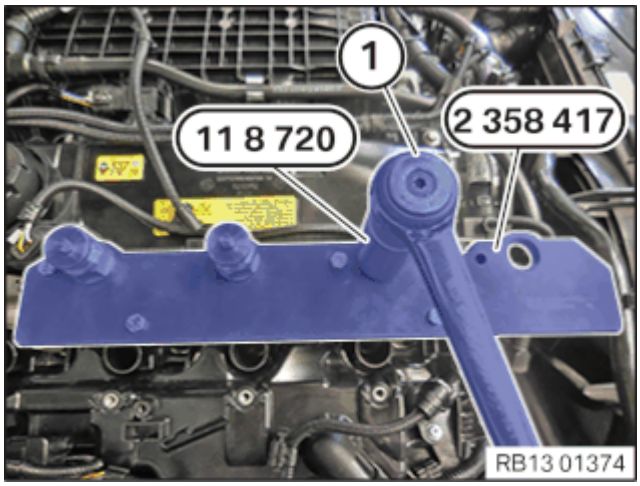


The extraction thread is a left-hand thread.

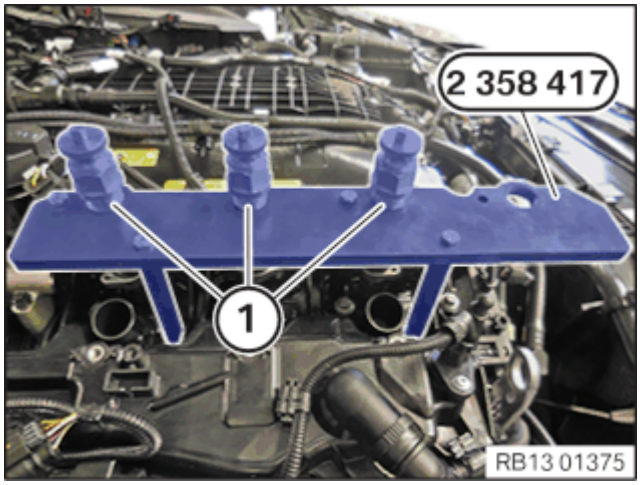
- Screw in pull-out thread (1) on the special tool **2 358 417**fully.



- Insert threaded sleeves (1) and screw the threaded sleeves completely onto the fixtures for the injectors.
- Tighten the screws (arrows) on the special tool **2 358 417** to 5 Nm.

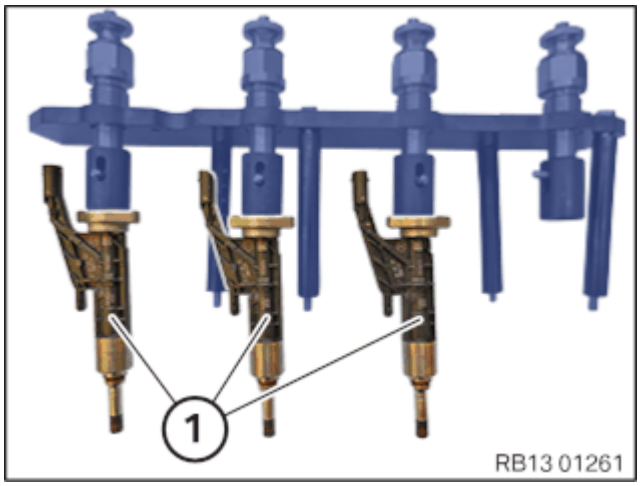


- Adjust torque wrench to 13 Nm **clockwise**.
- Turn torque wrench (1) in **clockwise** direction with special tool **0 496 106 (11 8 720)**until the injector is pulled out.
- Disassemble all injectors individually.

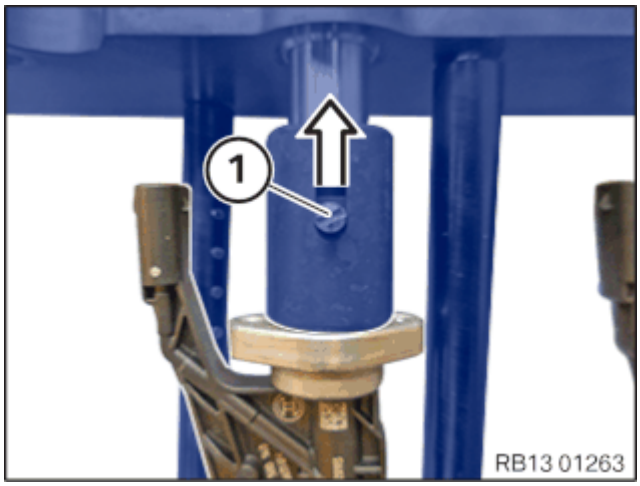


- Before removing the special tool **2 358 417** with the injectors, check if all the injectors were completely pulled out of the cylinder head.

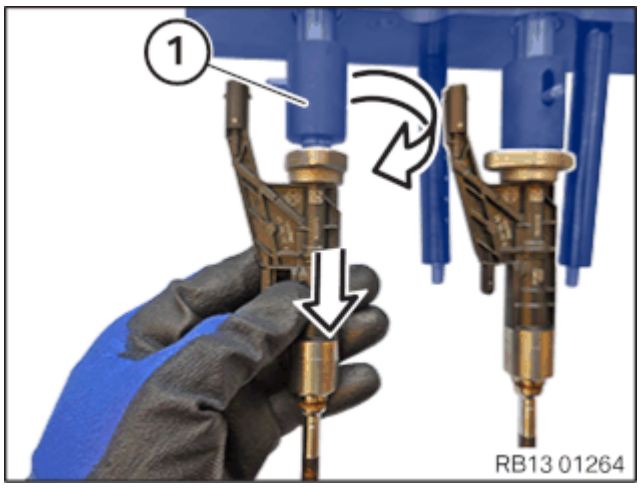
  This can be recognised on the completely visible threads of the threaded sleeves (1).
- Loosen screws on special tool **2 358 417**.



- Carefully remove the special tool **2 358 417** with the injectors (1) vertically straight up from the cylinder head.
- Place the combination of the special tool **2 358 417** and the injectors (1) flat onto a clean table.



- Unlock the fixture lock (1) from the top.



- Turn the unlocked fixture (1) by 90°.
- Release and remove the injector downwards.

12 – Prepare the injectors for installation

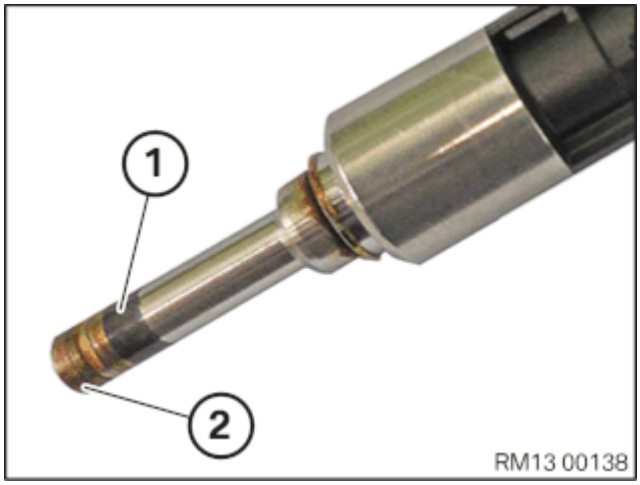
Damage to the injector tips and Teflon ring.

Improper handling of the injector tips and Teflon ring can lead to malfunctioning of the injector.

- Avoid mechanical contact with injector tip.
- When exchanging Teflon ring, hands and work surface must be clean and free of oil. Do not use any lubricating agents.
- Do not use fingernails to slide Teflon ring on.

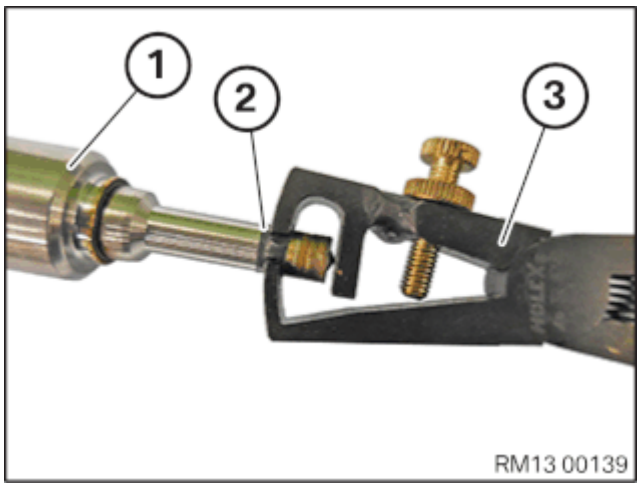
Before re-installing the injector, the Teflon ring must be renewed. Once a Teflon ring has been installed, it may not be re-used. New injectors are supplied with a new Teflon ring.

After the installation of a new Teflon ring on the injectors, the injector must be installed in the cylinder head within 10 minutes or protected with protective caps; otherwise, the Teflon ring will swell.

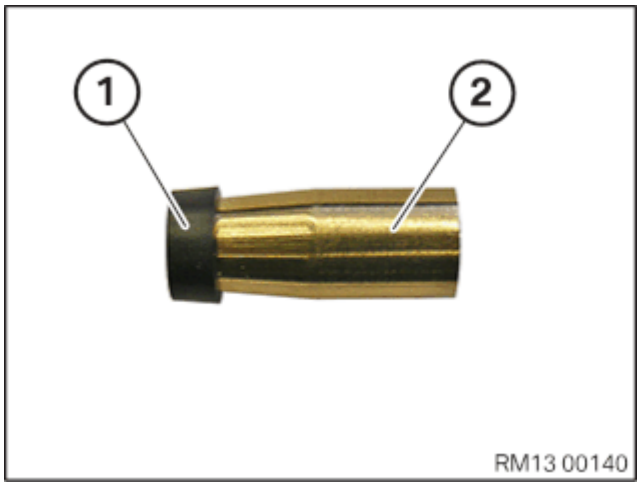


- Before installing the injectors: Renew the Teflon rings (1).

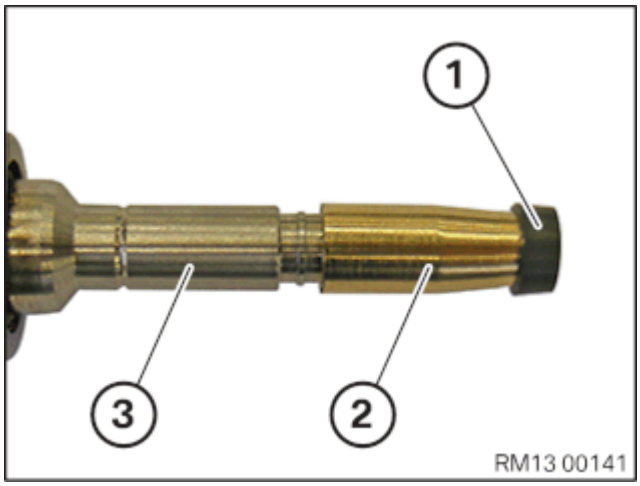
  Parts: Teflon rings
- Avoid mechanical contact with injector tip (2).



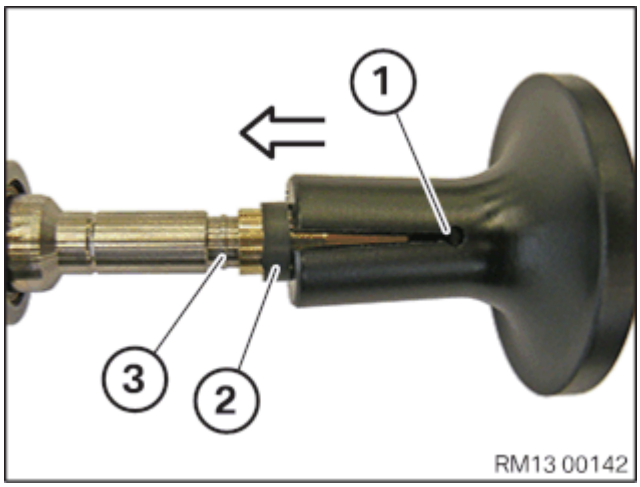
- Dismount the Teflon ring (2) with the special tool **0 495 757 (13 0 191)** (3) from the set of special tools **0 495 756 (13 0 190)** from the injector (1).
- If necessary, use a lint-free cloth to clean the cylindrical part of the injector tip. Do not use ultrasonic sound or other auxiliary materials.
- Do **not** clean injector tip.



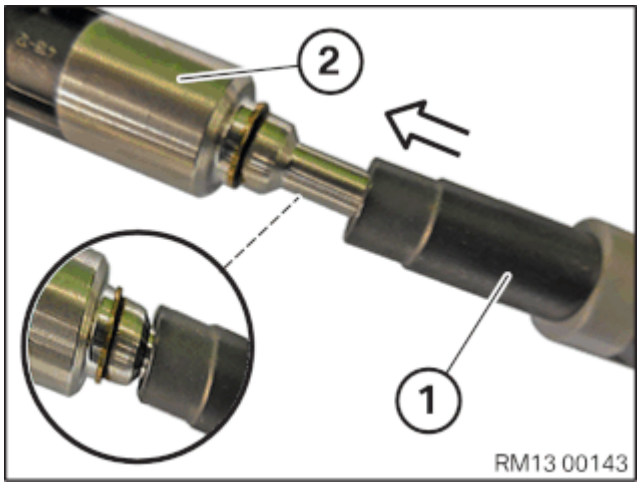
- Slide the new Teflon ring (1) onto the installation cone **0 496 771 (13 0 283)** (2) from the set of special tools **0 496 668 (13 0 280)**.



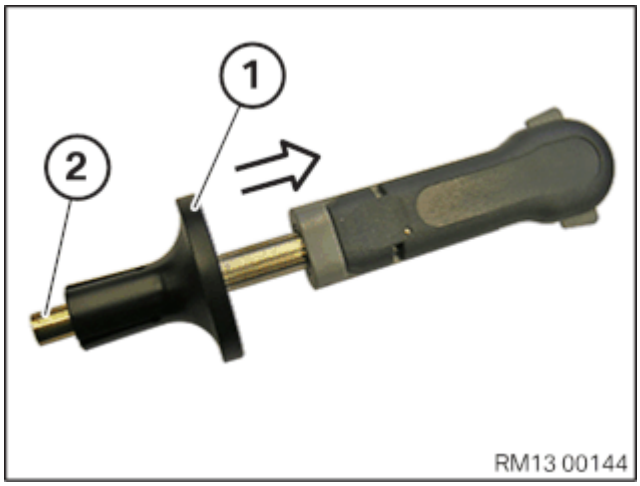
- Mount the Teflon ring (1) with the installation cone **0 496 771 (13 0 283)** (2) from the set of special tools **0 496 668 (13 0 280)** on the injector tip (3).



- Use the sliding sleeve (1) of the special tool **0 496 769 (13 0 281)** from the set of special tools **0 496 668 (13 0 280)** to push the Teflon ring (2) into the groove (3) on the injector.



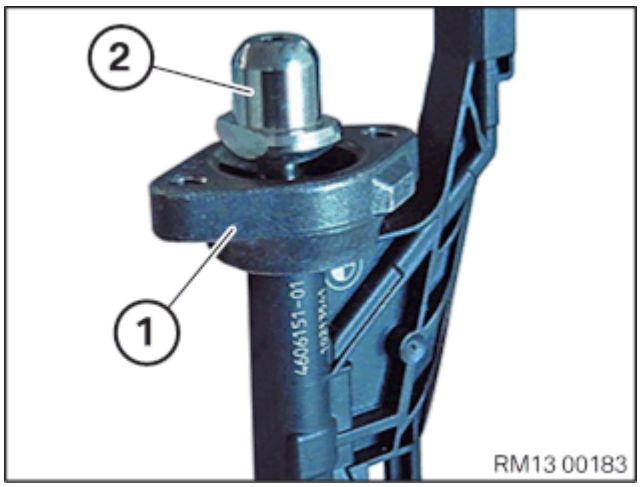
- Adjust the expanded Teflon ring with the special tool **0 496 770 (13 0 282)** (1) from the set of special tools **0 496 668 (13 0 280)** to the installation dimension.
- Slide special tool **0 496 770 (13 0 282)** (1) onto the injector (2) up to the limit position.



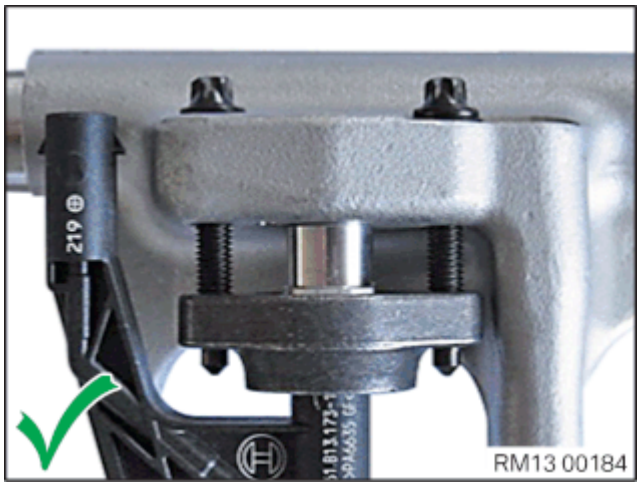
- Push the sliding sleeve (1) of the special tool **0 496 770 (13 0 282)** towards the rear and loosen the installation cone **0 496 771 (13 0 283)** (2).

13 – Installing the injectors for the cylinders 1 to 3

When assembling, it is essential to observe screwing sequences and tightening torques.
Non-observance of these requirements may result in leaks and damage.

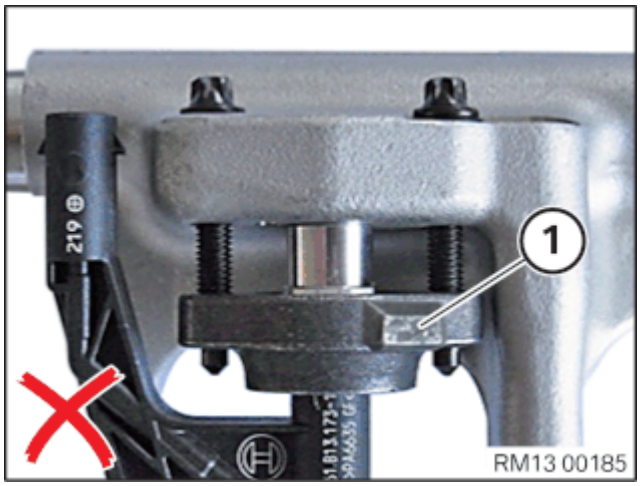


- Mount the holder (1) above the bayonet fitting (2) on the injector.
- **If the holder** (1) **has a cast lug:** Make sure that the holder is installed in the correct position.



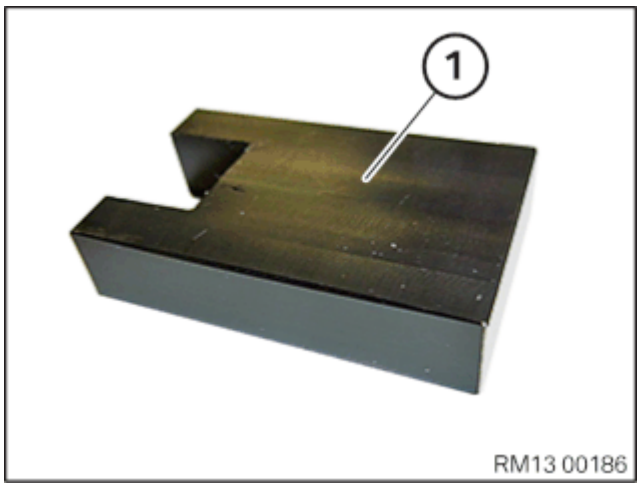
- Note the position of the cast lug:

  The holder is mounted **correctly** when the cast lug is located at the rear.



- Note the position of the cast lug:

  The holder is mounted **incorrectly** when the cast lug (1) is in front.

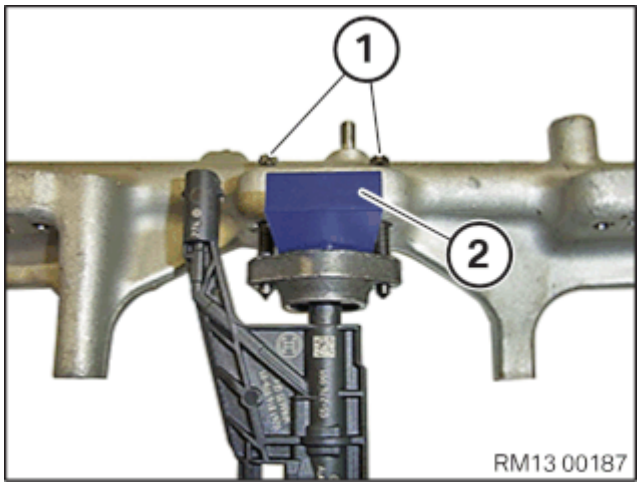


Damage to injectors.

Weld seams on the injector may tear due to incorrect distances between the rail and injector so that the injector must be renewed.

- Insertion of the distance gauge is compulsory.
- Replace distance gauge, if a thickness of 8.5 mm is no longer given in the distance gauge.

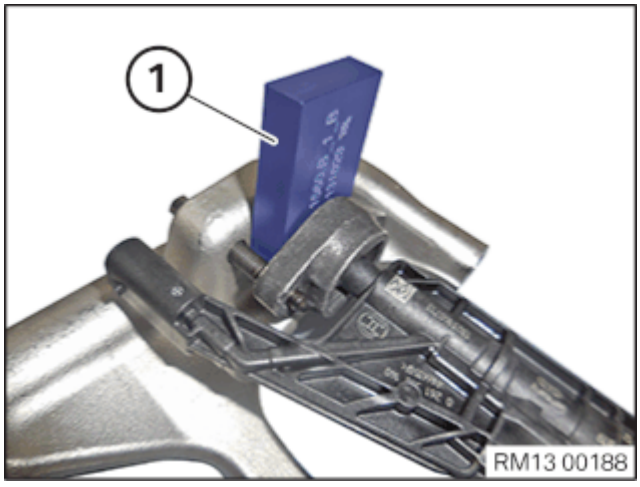
- Use special tool **2 358 022** (1).



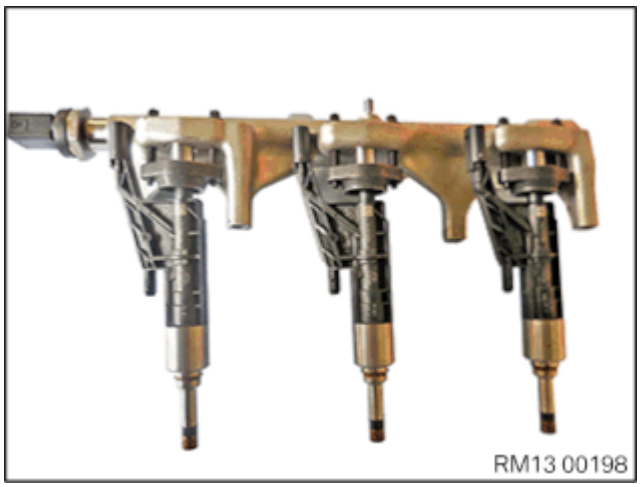
- Replace (M5x30) screws.

  Parts: Screws (M5x30)
- Mount the injectors with the holders and the bolts (M5x30) (1) on the rail.
- Keep the rail on a clean table in such a way that the openings on the rail for the injectors point upwards.

  The electrical injector connections must point to the fuel pressure sensor.
- Slide the special tool **2 358 022** (2) between the holders and the rail onto the injector head.
- Make sure that the special tool **2 358 022** (2) rests flat on the retaining bridge.
- Hand-tighten both screws (M5x30) (1) evenly until the special tool **2 358 022** (2) rests flat against the rail and the holder.

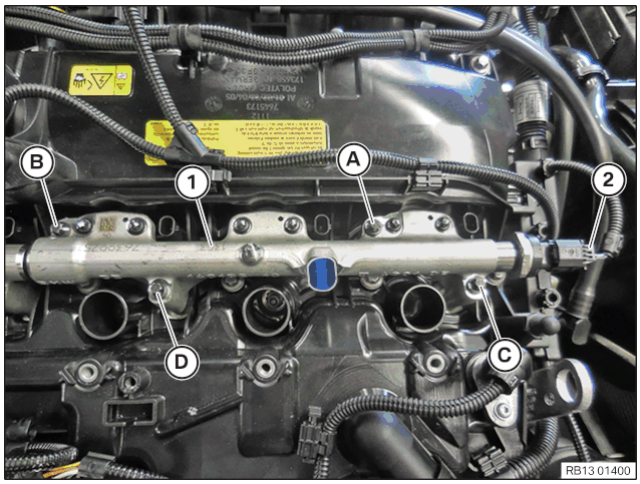


- Remove special tool **2 358 022** (1).
- Repeat this operation for all injectors.



- Check injectors for loose fit at the rail.
- Align the electrical injector connections parallel to the rail.

  The injectors must move freely.



- Renew screws (A) to (D).

  Parts: Bolts
- Attach the rail (1) with the injectors to the cylinder head from the top.
- Make sure the injector tips catch the corresponding holes for the injectors in the cylinder head.
- Make sure the guides on the injector are properly inserted into the guide bores in the cylinder head.
- Press the high pressure rail (1) down until a resistance can be felt; join and hand-tighten the bolts (M6x30) (A) and (B).
- Tighten the bolts (A) and (B) in alternating order by **180°** each with the torque wrench until the rail is positioned flush on the cylinder head.

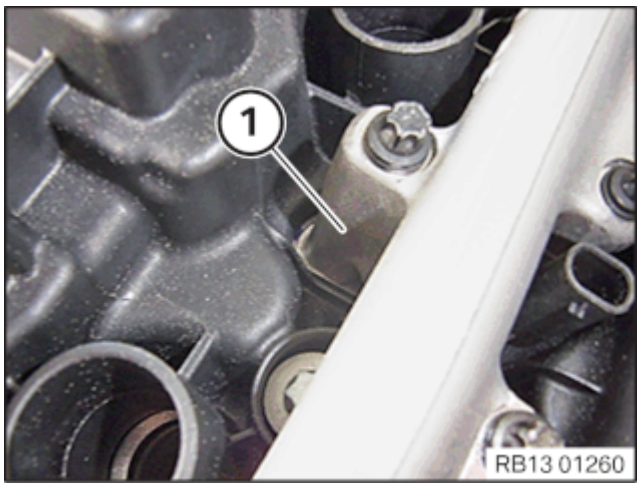
  The figure shows the rail resting flat against the cylinder head.
- Insert screws (C) and (D).

When assembling, it is essential to observe screwing sequences and tightening torques.

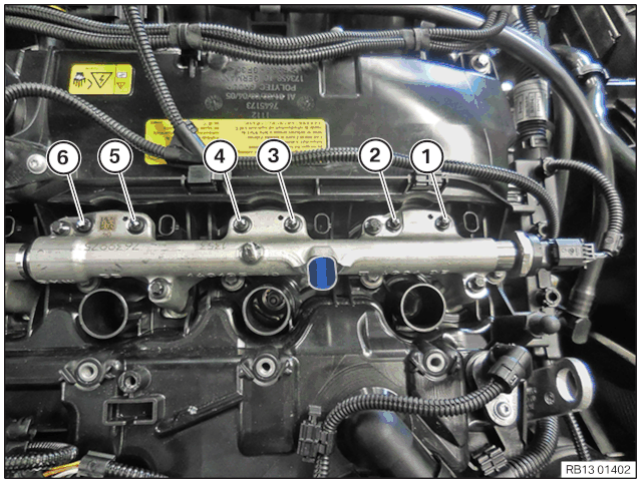
Non-observance of these requirements may result in leaks and damage.

- Tighten screw (A) by 5 Nm.
- Tighten screw (D) by 5 Nm.
- Tighten screw (B) by 5 Nm.
- Tighten screw (C) by 5 Nm.
- Connect and lock the connector (2).

  The connector (2) must engage audibly.



- Make sure that the rail (1) rests flat against the cylinder head.



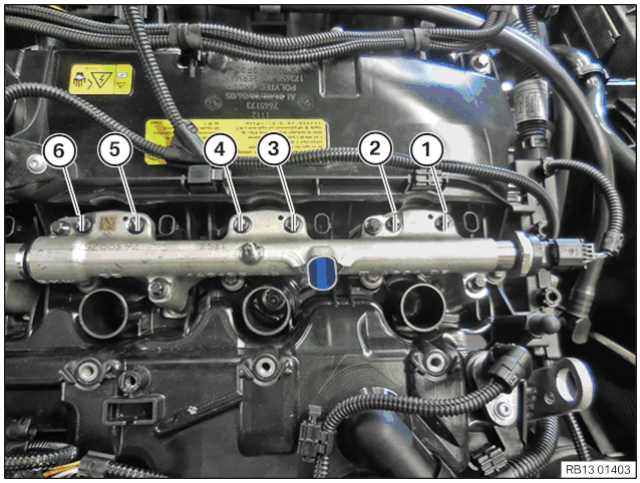
- Attach a socket to an extension.

  Do not use a reversible ratchet or torque wrench.
- Tighten the bolts (M5x30) in pairs ((1) with (2), (3) with (4), (5) with (6)) in alternating order **90° hand-tight**.
- Set torque wrench to 5 Nm.

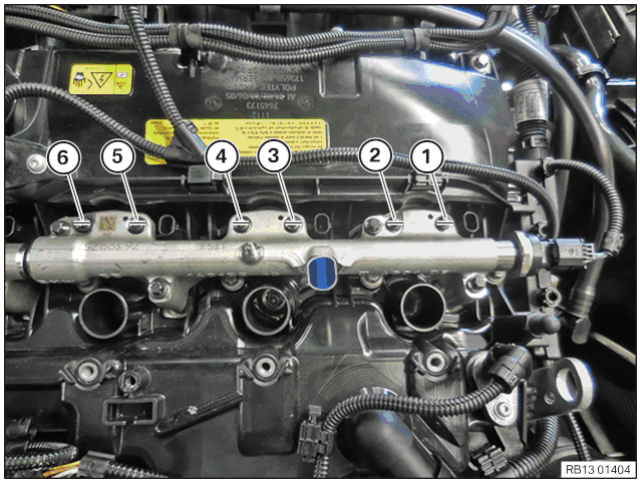
When assembling, it is essential to observe screwing sequences and tightening torques.

Non-observance of these requirements may result in leaks and damage.

- **Screw the (M5x30) bolts according to the following plan:**
  - **Fuel injector 1:**
  - Tighten screw (1) at an angle of rotation of 90° ±15° with the torque wrench.
  - Tighten screw (2) at an angle of rotation of 90° ±15° with the torque wrench.
  - Repeat the operations for bolts (1) and (2) until both bolts reach a torque of 5 Nm.
  - **Fuel injector 2:**
  - Tighten screw (3) at an angle of rotation of 90° ±15° with the torque wrench.
  - Tighten screw (4) at an angle of rotation of 90° ±15° with the torque wrench.
  - Repeat the operations for bolts (3) and (4) until both bolts reach a torque of 5 Nm.
  - **Fuel injector 3**:
  - Tighten screw (5) at an angle of rotation of 90° ±15° with the torque wrench.
  - Tighten screw (6) at an angle of rotation of 90° ±15° with the torque wrench.
  - Repeat the operations for bolts (5) and (6) until both bolts reach a torque of 5 Nm.

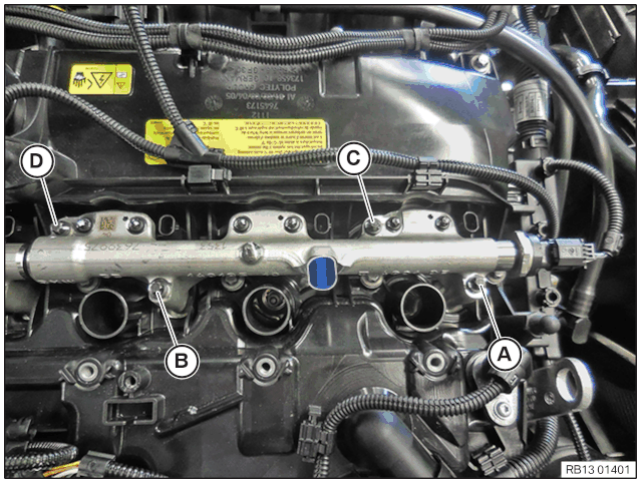


- Mark all bolts (1) to (6) with a line (see figure).
- **Tighten screws using an angle of rotation.**
  - Tighten the screw (1) with an angle of rotation of 90° ±15°.
  - Tighten the screw (2) with an angle of rotation of 90° ±15°.
  - Tighten the screw (3) with an angle of rotation of 90° ±15°.
  - Tighten the screw (4) with an angle of rotation of 90° ±15°.
  - Tighten the screw (5) with an angle of rotation of 90° ±15°.
  - Tighten the screw (6) with an angle of rotation of 90° ±15°.



- Check if all bolts (1) to (6) have been tightened with a 90° ±15° angle of rotation.

  All markings (lines) must be horizontal (see Figure).



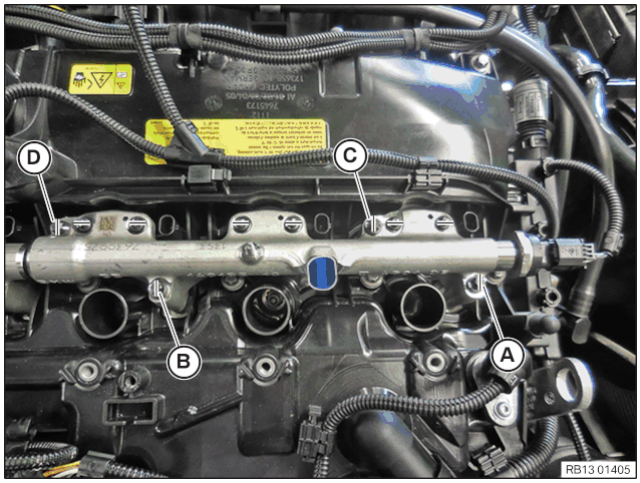
- Release bolts (M6x70) (A) to (D).

  It is imperative that the bolts are unscrewed.

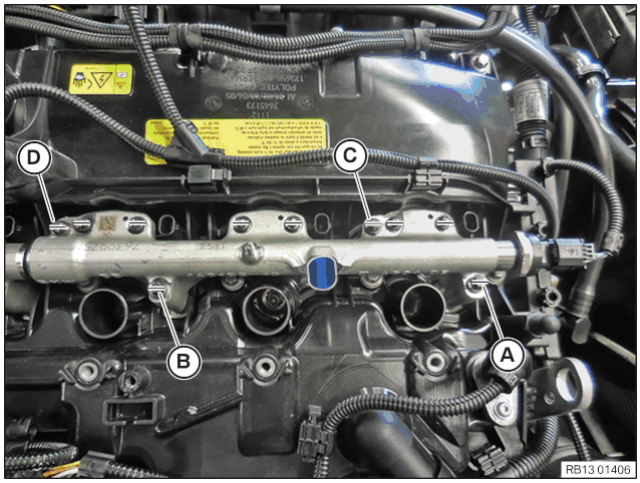
When assembling, it is essential to observe screwing sequences and tightening torques.

Non-observance of these requirements may result in leaks and damage.

- Tighten screw (A) by 5 Nm.
- Tighten screw (D) by 5 Nm.
- Tighten screw (B) by 5 Nm.
- Tighten screw (C) by 5 Nm.

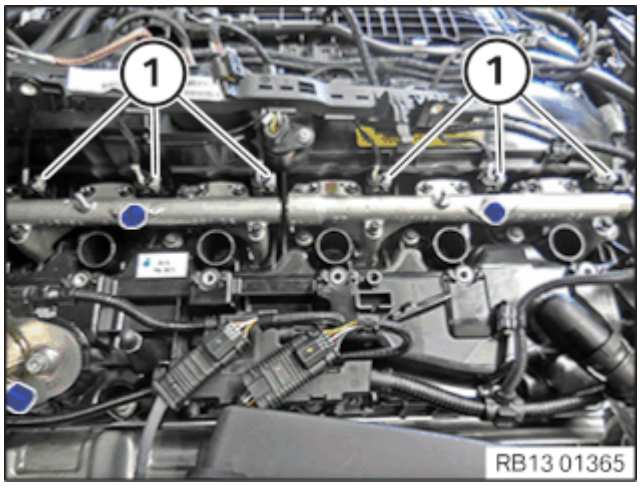


- Mark all the bolts (A) to (D) with a vertical line (see Figure).
- Tighten bolts (M6x70) (A) to (D) with an angle of rotation of 90°.



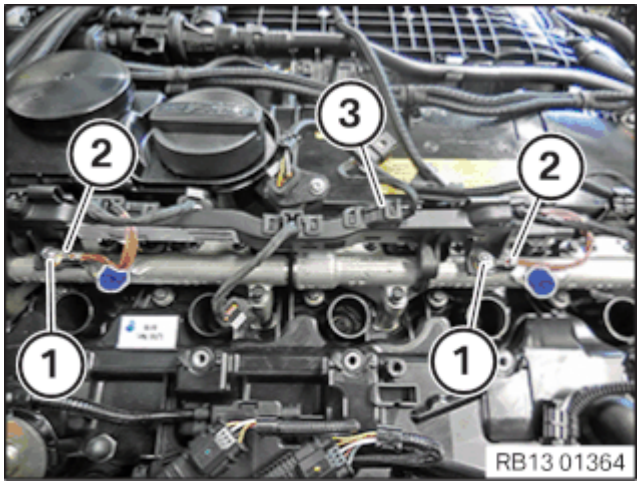
- Check if all screws (A) to (D) were tightened with an angle of rotation of 90°.

  All marks (lines) must be horizontal (see figure).



- Connect and lock all the connectors (1) to the injectors.

  All connectors (1) must engage audibly.



- Thread the cable channel (3) in and install.
- Thread in ground cable (2) and install.
- Tighten nuts (1).

Ground cable to rail

M6	5 Nm

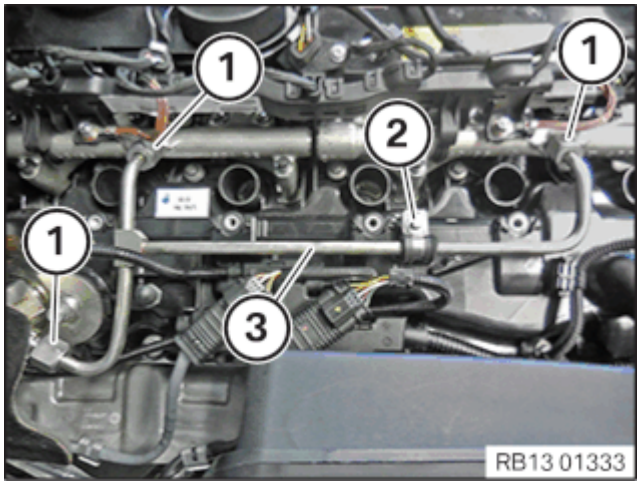
14 – Reset ultra-small quantity adaptation

If the DME control unit or an injector is renewed, minimum quantity adaptation must be reset. If an injector has been replaced on cylinder side, the minimum quantity adaptation must also be reset.

- Connect the diagnosis system and reset the minimum quantity adaptation:
  - Read out vehicle data
  - Identification with vehicle test
  - Start vehicle test
  - Vehicle handling
  - Service functions
  - Power train
  - Engine electronics
  - Reset adaptation values
  - Adaptation values of fuel system
  - Continue service function

POSTPROCESSES

15 – Installing high pressure line between rail and high pressure pump



- Thread in and install the high pressure line (3).
- Tighten union nut (1) hand tight.
- Tighten union nut (1).

High pressure line between rail and high pressure pump

M14x1,5	Tightening torque	33 Nm

- Tighten down screw (2).

Fuel line to cylinder head cover

6x18	Tightening torque	6,5 Nm

- Check fuel system for leak tightness.

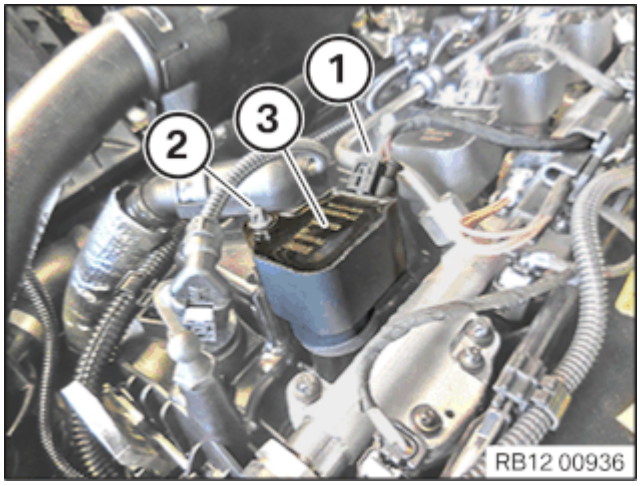
16 – Installing the ignition coils

Damage to the catalytic converter due to misfiring.

An incorrectly mounted ignition coil can loosen during engine operation, thereby causing misfiring.

- Ensure that the sealing lip fits correctly on the ignition coil so that it can seal correclty. Do not crush the sealing lip.

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



- Insert and install the ignition coil (3).
- Tighten down screw (2).

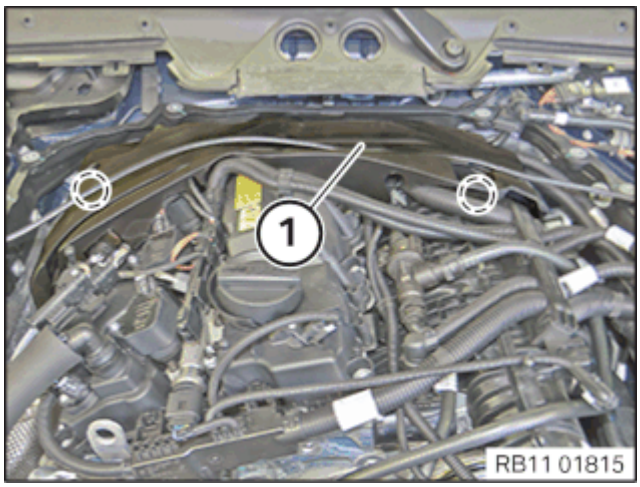
Ignition coil

M6x31.8	Tightening torque	8 Nm

- Connect and lock the connector (1).

  The connector (1) must engage audibly.

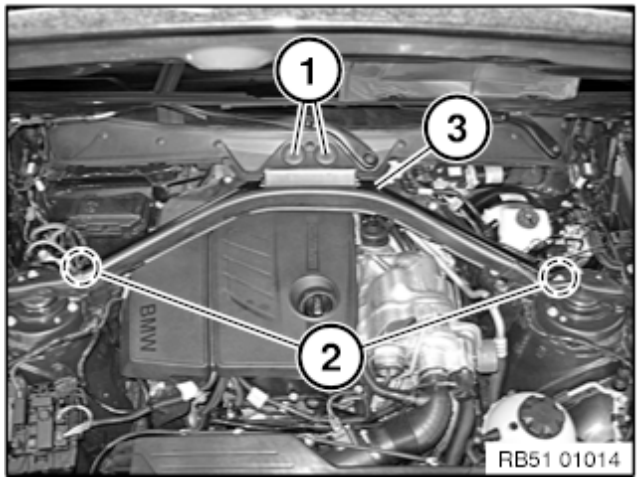
17 – Installing acoustic cover at rear



- Position and install the acoustic cover (1) correctly in the guides at the marked areas.

18 – Install tension strut on spring strut dome.

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



- Position tension strut (3).
- Renew screws (1) and (2).

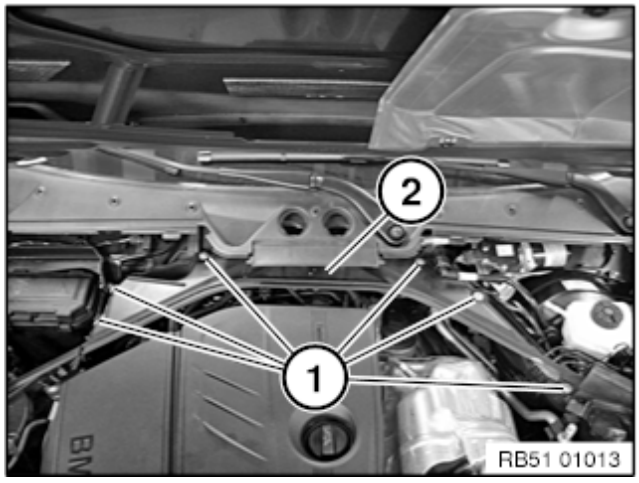
  Parts: Bolts
- Tighten down screws (1) and (2).

Tension strut to body

M10	Renew screws.	Jointing torque	56 Nm
		Angle of rotation	90 °

- Clip in the covers of the screws (1).

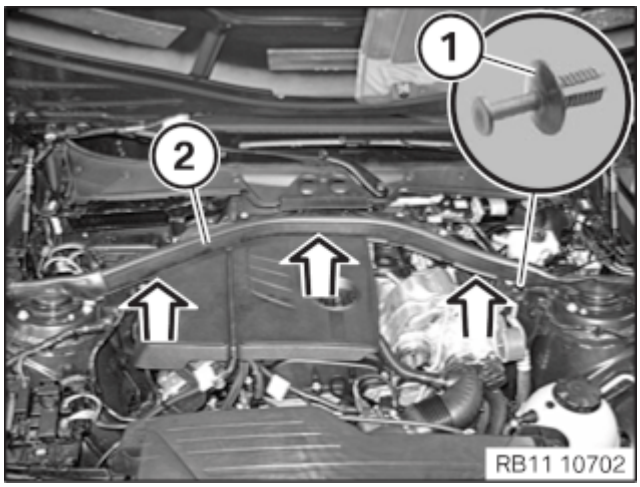
19 – Installing the sound insulation on the bulkhead upper part centre



- Check the seal on the bottom of the sound insulation (2) for damage, renew if necessary.
- Position the sound insulation (2).
- Tighten the screws (1).

Sound insulation to bulkhead upper part

Screw	8,0 Nm



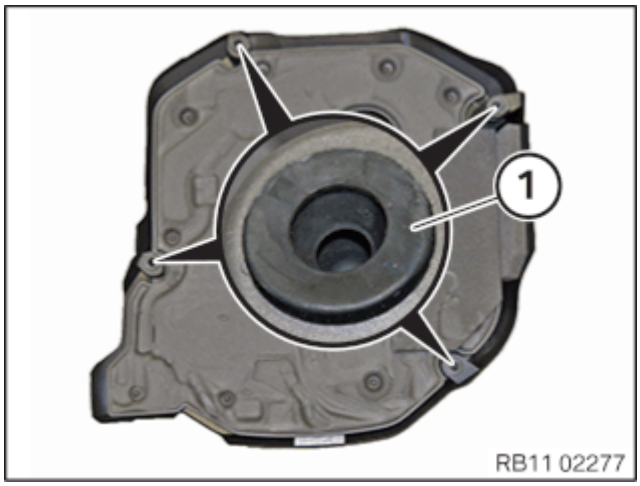
- Clip in the sealing (2) in the direction of arrow.
- Fasten expanding rivet (1).
- Secure positive battery cable at the sealing (2).

20 – Install acoustic cover

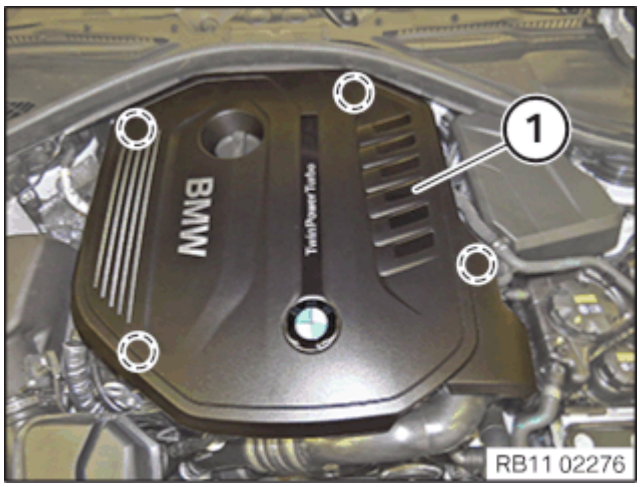
Damage to the acoustic cover.

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.

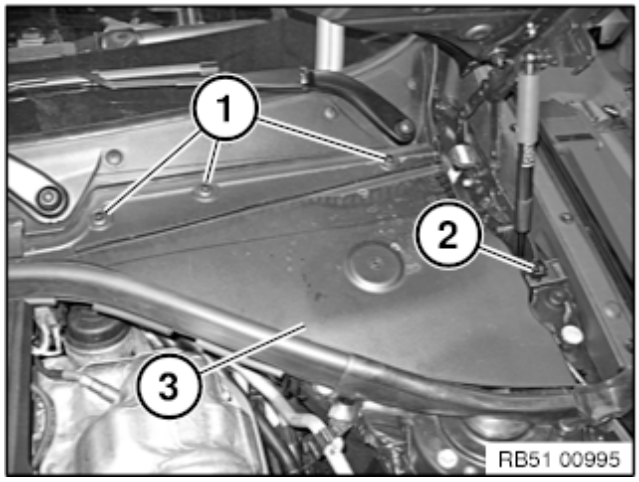


- Check the rubber mount (1) for correct fit in the acoustic cover.



- Install the acoustic cover (1) and fasten it in the rubber mounts (markings).

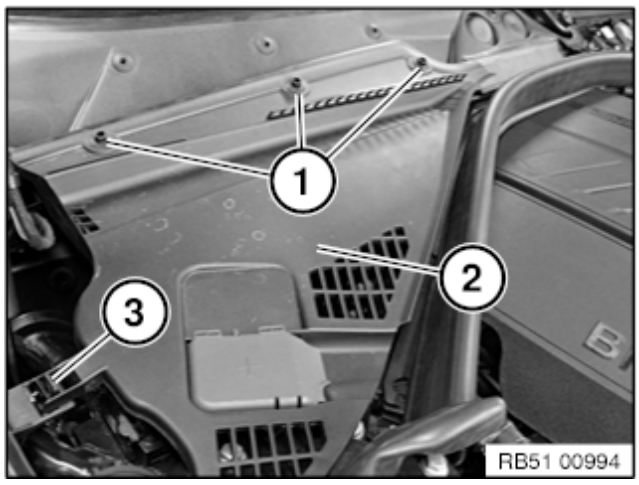
21 – Installing the cover in the engine compartment on the left



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

- Position the cover (3).
- Lock latch mechanism (2).
- Attach the mounting elements (1).

22 – Installing the cover in the engine compartment on the right

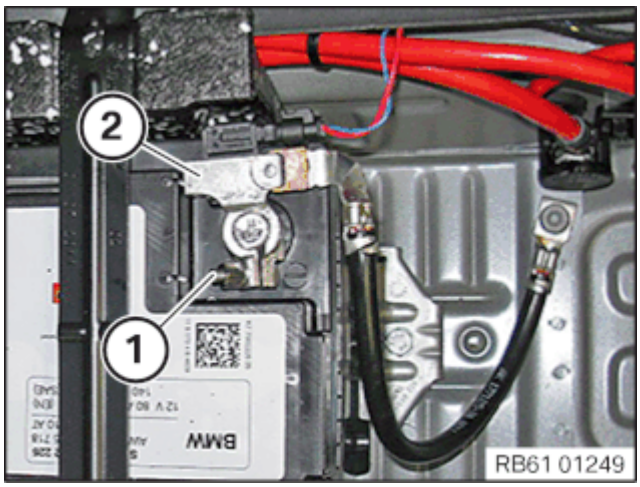


Schematic diagram is for example purposes.
Some parts may differ in certain details.

- Position the cover (2).
- Lock latch mechanism (3).
- Attach the mounting elements (1).

23 – Connecting the battery earth lead

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)

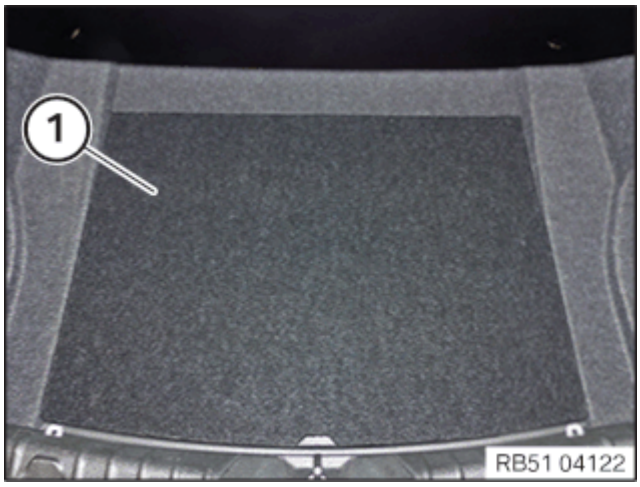


- Position the battery terminal (2) including the battery earth lead on the negative battery terminal.
- Tighten the nut (1) of the battery terminal.

Battery earth lead to battery

M6	5 Nm

24 – Installing the luggage compartment floor trim panel



- Install luggage compartment floor trim panel (1).

Additional Information

Overview of Tightening Torques

Ground cable to rail — Used in step 13

M6	5 Nm

High pressure line between rail and high pressure pump — Used in step 15

M14x1,5	Tightening torque	33 Nm

Fuel line to cylinder head cover			Used in step 15
6x18		Tightening torque	6,5 Nm

Ignition coil			Used in step 16
M6x31.8		Tightening torque	8 Nm

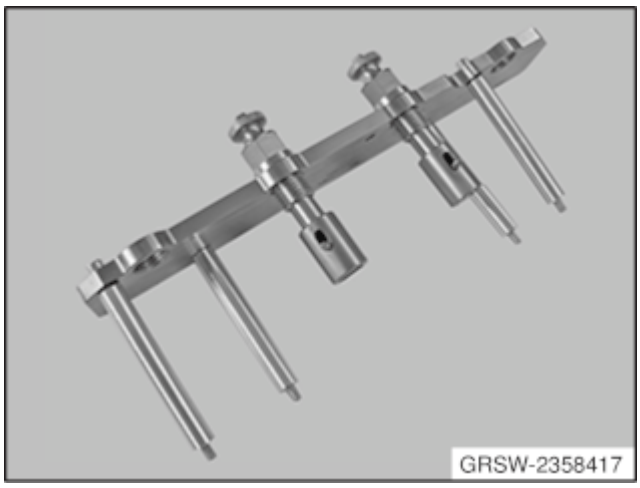
Tension strut to body			Used in step 18
M10	Renew screws.	Jointing torque	56 Nm
		Angle of rotation	90 °

Sound insulation to bulkhead upper part			Used in step 19
Screw			8,0 Nm

Battery earth lead to battery			Used in step 23
M6			5 Nm

Overview of Special Tools

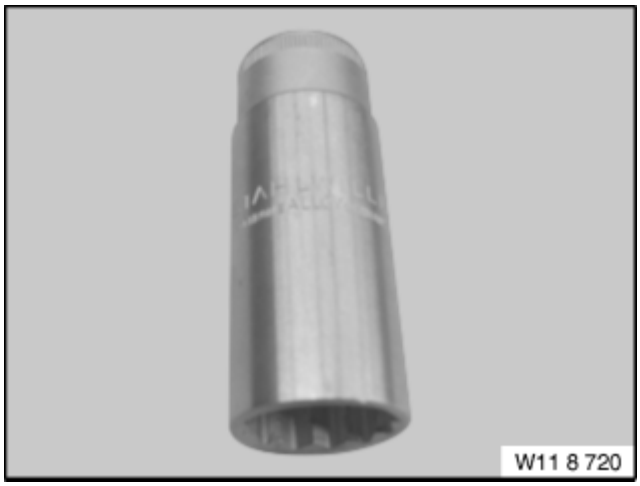
2 358 417 Device



Common	Used in step 11
Usage	For removing and installing injectors. Contour-graphic silhouette foil is included in delivery specification. Further information on the contour-graphic silhouette foil can be found in service information 00 22 13 (969).
Included in the tool or work	
Storage location	A57
Replaced by	
In connection with	
SI-Number	01 13 14 (098)

0 496 106 (11 8 720) Socket WAF 46

Common	Used in step 11
Usage	(Long socket SW24) For removal and installation of oil pressure sensor. (Stahlwille or HAZET)
Included in	



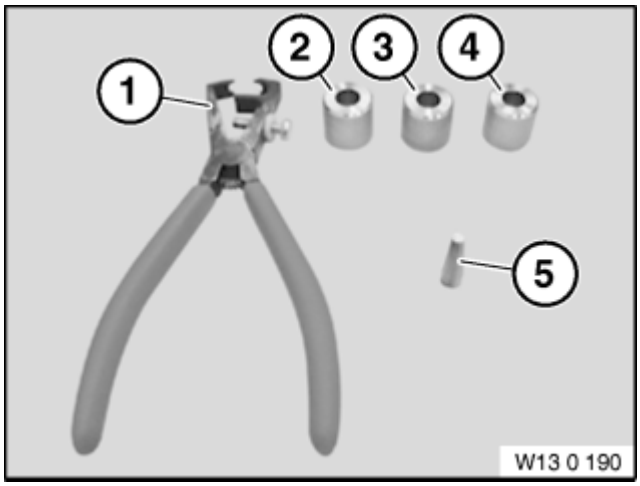
the tool or work	
Storage location	C20
Replaced by	
In connection with	
SI-Number	01 04 07 (352)

0 495 757 (13 0 191) Pliers

Common Used in step 12

Usage	Was replaced by: 2452959.
Included in the tool or work	0 495 756
Storage location	
Replaced by	
In connection with	
SI-Number	01 20 06 (299)

0 495 756 (13 0 190) Fitting aid



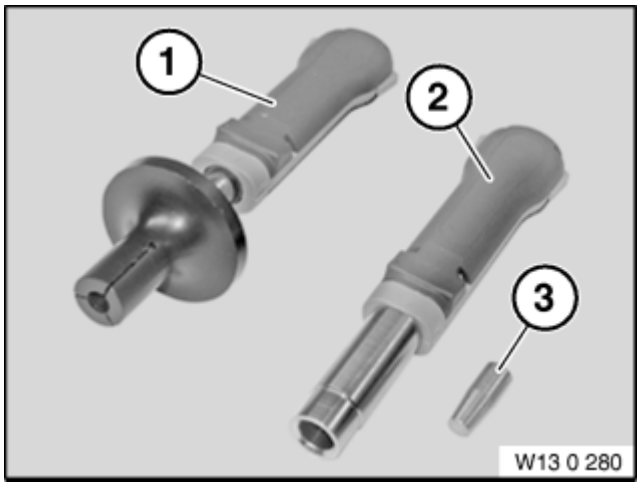
Common Used in step 12

Usage	Tool set discontinued - can now only be ordered via separate components. (Installation set) For removing and installing the Teflon rings on the injector.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 20 06 (299)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 495 757 (13 0 191)	**2 452 959**	**Pliers** Was replaced by: 2452959.	
2	0 495 758 (13 0 192)		**Holding sleeve** (Assembly sleeve 1)	
3	0 495 759 (13 0 193)		**Holding sleeve** (Assembly sleeve 2)	
4	0 495 760 (13 0 194)		**Holding sleeve** (Assembly sleeve 3)	
5	0 495 761 (13 0 195)		**Fitting aid** (Mounting cone)	

0 496 771 (13 0 283) Holding sleeve



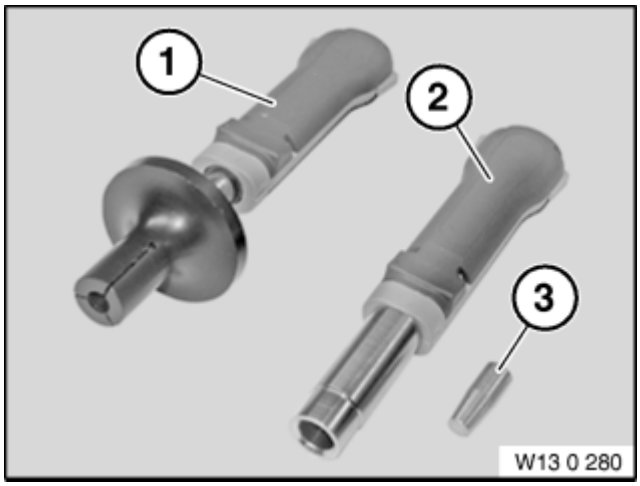
Common Used in step 12

Usage	Available separately as of 04/2017.
Included in the tool or work	0 496 668
Storage location	
Replaced by	
In connection with	
SI-Number	

0 496 668 (13 0 280) Fitting aid

Common Used in step 12

Usage	For installation of PTFE rings on injector.
Included in the tool or work	
Storage	A27



location

Replaced by

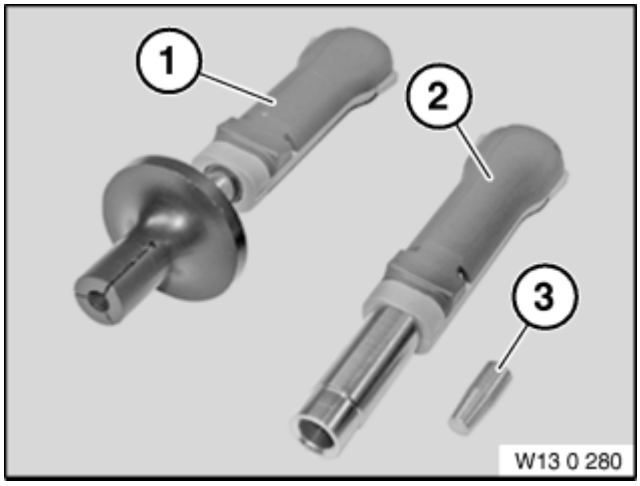
In connection with

SI-Number 01 18 09 (578)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 496 769 (13 0 281)		**Fitting aid** Not available individually, but as part of set 0496668 (130280) only.	
2	0 496 770 (13 0 282)		**Guide** Not available individually, but as part of set 0496668 (130280) only.	
3	0 496 771 (13 0 283)		**Holding sleeve** Available separately as of 04/2017.	

0 496 769 (13 0 281) Fitting aid



Common Used in step 12

Usage Not available individually, but as part of set 0496668 (130280) only.

Included in the tool or work 0 496 668

Storage location

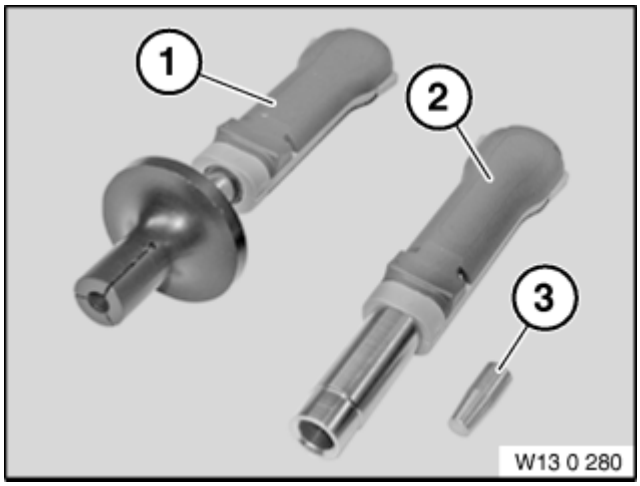
Replaced by

In connection with

SI-Number

0 496 770 (13 0 282) Guide

Common Used in step 12



Usage	Not available individually, but as part of set 0496668 (130280) only.
Included in the tool or work	0 496 668
Storage location	
Replaced by	
In connection with	
SI-Number	

2 358 022 Gauge

Common Used in step 13

Usage	To position the injector during installation. Contour-graphic silhouette foil is included in delivery specification. Further information on the contour-graphic silhouette foil can be found in service information 00 22 13 (969).
Included in the tool or work	
Storage location	A56
Replaced by	
In connection with	
SI-Number	01 13 14 (098)

Replacement tools:

2 452 959 Pliers

Common Used in step 12

Usage	For disassembly of the PTFE sealing rings on the injector HDEV5 & HDEV6. Replaces 0495757 (SWZ number 13 0 191). Contour-graphic silhouette foil is included in delivery specification. Further information on the contour-graphic silhouette foil can be found in service information 00 22 13 (969).
Included in the tool or	

work	
Storage location	A5
Replaced by	
In connection with	
SI-Number	01 07 17 (487)

Links

General repair instructions	Used in step
61 20 ... Notes on AGM battery	23
61 12 ... Notes on intelligent battery sensor (IBS)	2 23
61 00 ... Notes for disconnecting and connecting battery	2 23
61 00 ... Safety information for handling vehicle battery	2

Repair instructions	Used in step
61 35 ... Notes on ESD protection (Electro Static Discharge)	9 11
13 53 ... Cleaning the cylinder head in the area of the injectors for sandy / dusty contamination	11