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




**Warning!**

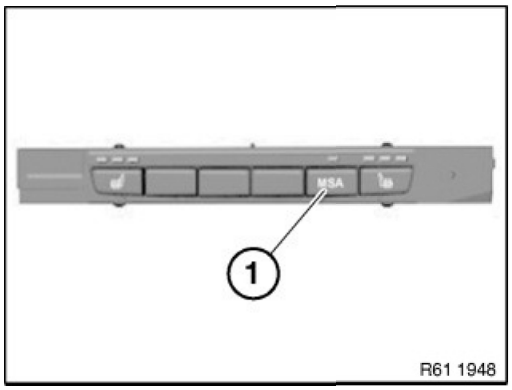
If the engine hood/bonnet contact is pulled upwards (workshop mode), the information "switch closed" is output. The automatic engine start-stop function is active.

An automatic engine start is possible.

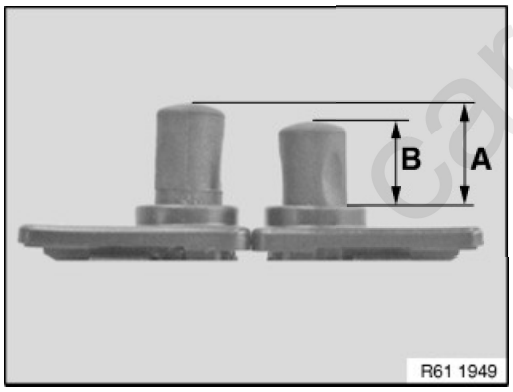
**Observe safety precautions when working on MSA vehicles.**

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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# 13 31 028 Check the fuel delivery pressure (N47 D16 20 K/U/O/T 1, N57 D30 O/T 1)

**Special tools required:**

- 13 6 030
- 11 4 310
- 11 5 364
- 13 3 060

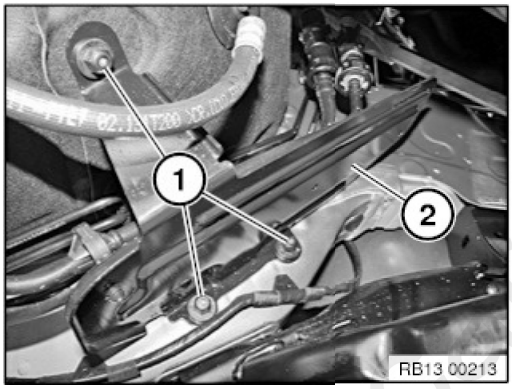
**Necessary preliminary tasks:**

- Remove rear underbody protection.
- Connect BMW diagnosis system.

**Recycling:**

Catch and dispose of escaping fuel in a suitable container.

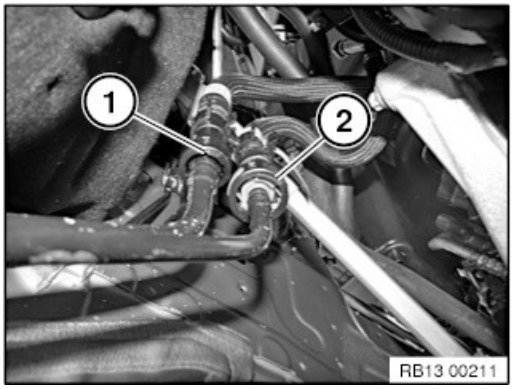
Observe country-specific waste disposal regulations.




Unscrew nuts (1).

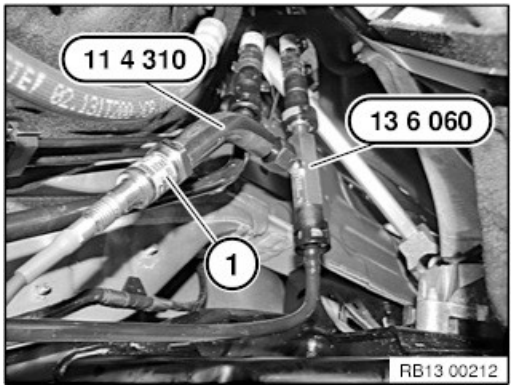
Remove guard plate (2).

Release fuel lines from protective plate.




Unlock and disconnect fuel delivery line (2).

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Insert special tool 13 6 030 into disconnected fuel delivery line.

Screw onto special tool 13 6 030 , the special tool 11 4 310 .

Screw IMIB 100 bar pressure sensor (1) on the special tool 11 4 310 .

*Note:*
As an alternative to the 100 bar IMIB pressure sensor (1), the 25 bar pressure sensor can also be used. For this, screw on special tool 11 5 364 instead of special tool 11 4 310 into special tool 13 6 030 . Or directly screw the pressure manometer from the set of special tools 13 3 060 onto the special tool 13 3 060 .

Establish fuel delivery pressure. Read off fuel delivery pressure on IMIB and compare with values in diagnosis system.

Check fuel system for tightness.

Reassemble the vehicle.

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# 13 31 025 Check the fuel return pressure (N47 D16 20 K/U/O/T 1, N57 D30 O/T 1)

**Special tools required:**

- 13 6 030
- 11 4 310
- 11 5 364
- 13 3 060

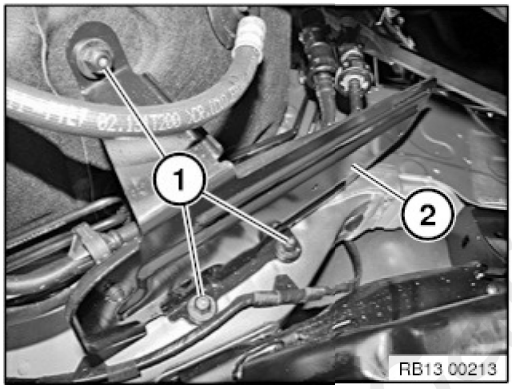
**Necessary preliminary tasks:**

- Remove rear underbody protection.
- Connect BMW diagnosis system.

**Recycling:**

Catch and dispose of escaping fuel with auxiliary materials.

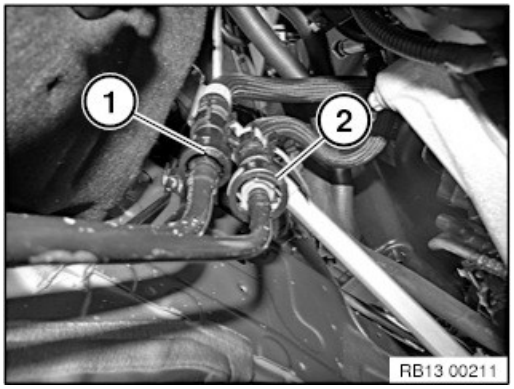
Observe country-specific waste disposal regulations.




Unscrew nuts (1).

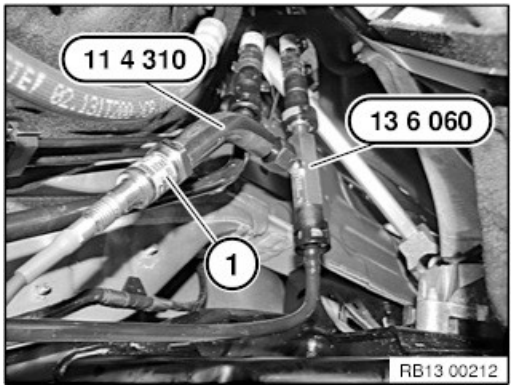
Remove guard plate (2).

Release fuel lines from protective plate.




Unlock and disconnect fuel return line (1).

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Insert special tool 13 6 030 into the disconnected return line.

Screw onto special tool 13 6 030 , special tool 11 4 310 .

Screw IMIB 100 bar pressure sensor (1) on the special tool 11 4 310 .

*Note:*
As an alternative to the 100 bar IMIB pressure sensor (1), the 25 bar pressure sensor can also be used. For this, screw on special tool 11 5 364 instead of special tool 11 4 310 onto special tool 13 6 030 . Or directly screw the pressure manometer from the set of special tools 13 3 060 onto the special tool 13 6 030 .

Build up fuel return pressure. Read off fuel return pressure on IMIB and compare with values in diagnosis system.

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# 13 32 051 Renewing fuel filter (N57 D30 O/T 1)

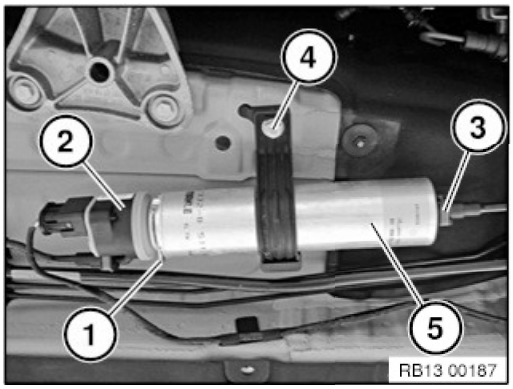
**Necessary preliminary tasks:**

- Remove rear underbody protection.

**Recycling:**

Catch and dispose of escaping fuel.

Observe country-specific waste disposal regulations.




Pull out clamp (1).

Disconnect fuel preheating (2) from fuel filter.

Unlock and detach fuel line (3).

Release screw (4).

Remove fuel filter (5).

Reassemble the vehicle.

Check fuel system for tightness.

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# 13 51 017 Removing and installing/replacing high pressure pump (N57 D30 O/T 1)

**Special tools required:**

- 11 8 740
- 11 8 741
- 11 8 742
- 32 1 270

**Caution!**

Special tool 11 8 741 must - after it has been installed - without fail remain bolted in the sprocket wheel until all repair work has been completed.

When working on the fuel circuit, you must protect the alternator against dirt contamination.

Cover alternator with suitable materials. Failure to comply with this procedure may result in an alternator malfunction.

*Note:*
After disconnecting the fuel injection line, it is absolutely essential to seal the high pressure pump and the high-pressure accumulator with protective caps 32 1 270 .

The position of the high pressure pump in relation to the valve gear does not affect its function. However, it must be taken into account on removal and installation.

For purposes of clarity, all images have been created to show the engine removed.

**Recycling:**

Catch and dispose of escaping fuel.

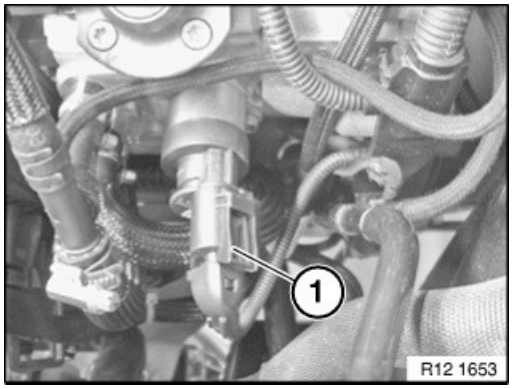
Observe country-specific waste disposal regulations.

**Necessary preliminary work:**

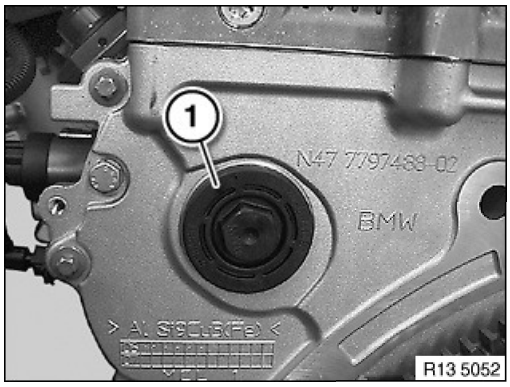
- Switch off ignition.
- Remove pressure lines between high pressure pump and pressure accumulator.
- Remove transmission.
- Secure crankshaft position at firing TDC; for more information, refer to document Checking timing

  **(Do not install cylinder head hood; only fix crankshaft position in firing TDC)**

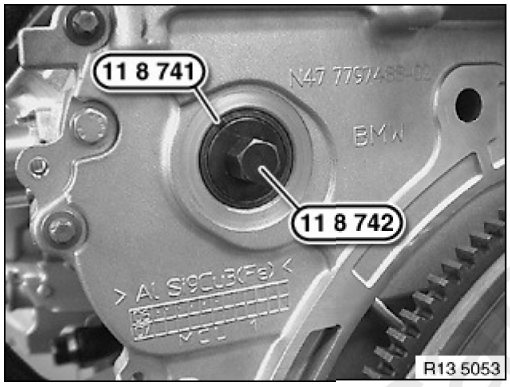
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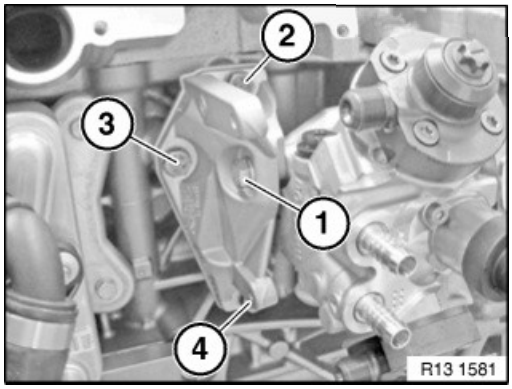

Unlock connector (1) on metering unit and detach. Detach fuel feed and return lines of high pressure pump.*Installation note:*
Replace clamps. Tightening torque 13 51 3AZ.




Release sealing cap in the timing case housing. Picture shows the sealing cap on the removed engine. Replace sealing cap with O-ring.*Installation note:*
Tightening torque 11 14 1AZ.



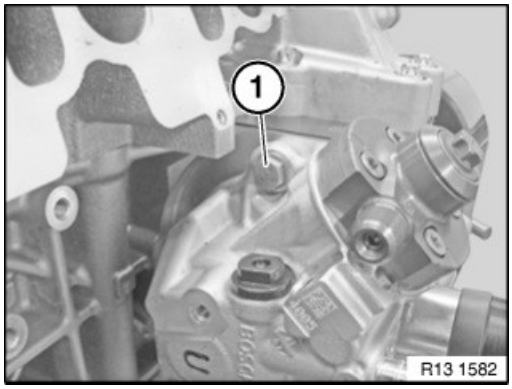

Screw in special tool 11 8 741 for positioning the camshaft sprocket of the high pressure pump. Then remove special tool 11 8 742 . Special tool 11 8 741 remains in the timing case housing until the end of the repair work.




Release screws (1), (2), (3) and (4).

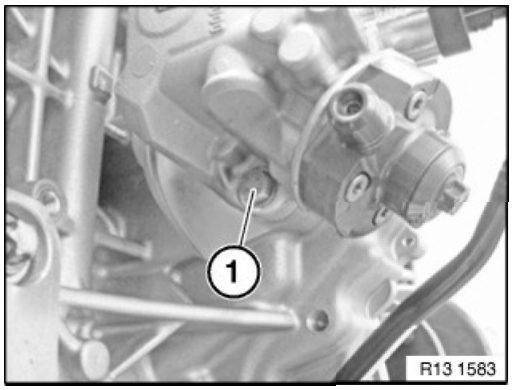
Remove high pressure pump support.

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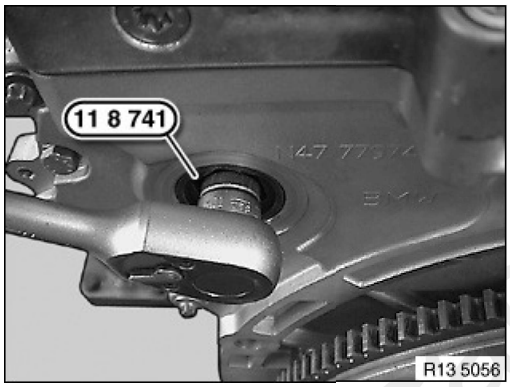

Release bolt (1) at top on high pressure pump.

Tightening torque 13 51 4AZ.




Release bolt (1) at bottom on high pressure pump.

Tightening torque 13 51 4AZ.




**Caution!**

Special tool 11 8 741 remains in timing case housing.

Central screw remains in sprocket wheel.

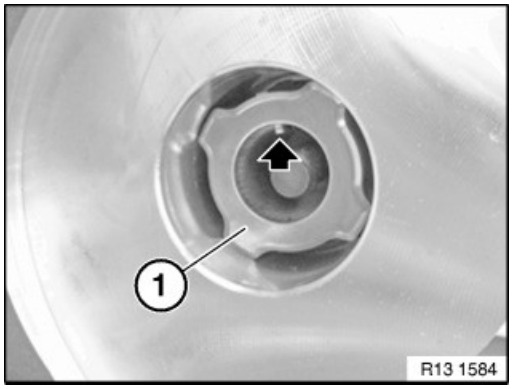
Release screw connection between high pressure pump and sprocket wheel.

*Note:*
Central bolt is supported on special tool 11 8 740 until high pressure pump is pressed out.

Remove high pressure pump.

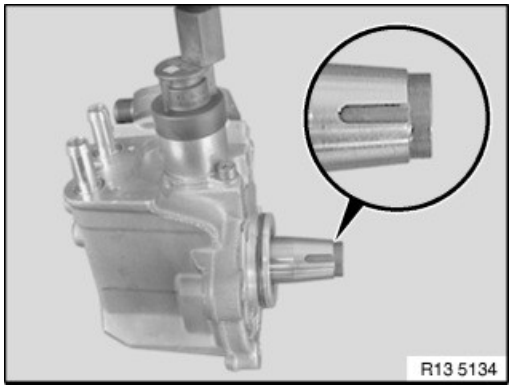
**Installation note:**

Tightening torque 13 52 1AZ.




To insert the high pressure pump shaft in the sprocket wheel (1), it may be necessary to swing the high pressure pump through several degrees (spline groove-lug fit, see arrow). Then rotate high pressure pump back into screwing position.

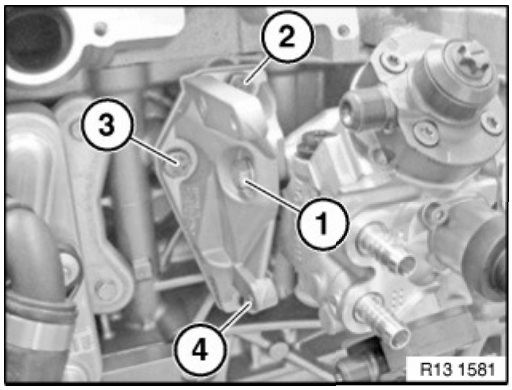
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**Replacing high pressure pump:**

When installing a **new** high pressure pump, adapt the high pressure pump-sprocket wheel assignment. To do so, turn back high pressure pump at **set-back** part of shaft 45° clockwise (top view). Do not damage the shaft, especially the taper.

*Note:*
Graphic N47.




When installing the high pressure pump support, adhere to the screwing sequence.*Installation note:*
1. Tighten down to head (gap-free) hand-tight, sequence 1--2--3--4

2. Tighten to final torque

Tightening sequence 2--3--4--1

Tightening torque 13 51 2AZ.

*Installation note:*
Assemble engine.

Bleed fuel system using BMW diagnosis system.

Check fuel system for tightness.

Reset adaptation of electric fuel pump with BMW diagnosis system.

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# 13 53 315 Removing and installing/replacing all injectors (N57 D30 T 1)

**Special tools required:**

- 13 5 210
- 13 5 214
- 13 5 215
- 13 5 250

**Important!**

When working on the fuel circuit, you must protect the alternator against dirt contamination.

Cover alternator with suitable materials.

- Use only fluff-free cloths.
- Remove all traces of dirt before removing lines or separate components.

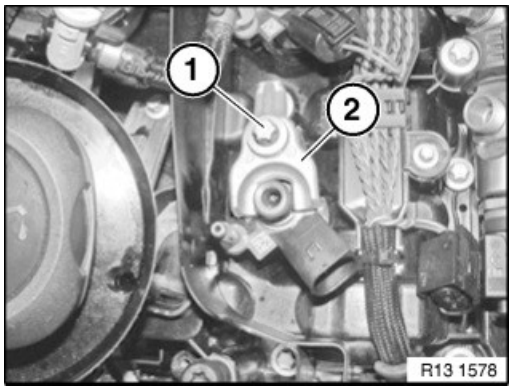
**Recycling:**

Catch and dispose of escaping fuel.

Observe country-specific waste disposal regulations.

**Necessary preliminary tasks:**

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Detach leakage oil lines from the injectors.
- Remove all pressure lines to injectors.
- Unlock all plugs on injectors and disconnect.
- Seal all fuel system openings with protective caps.




Following description applies to all injectors.

Release screw (1) on clamping claw (2).

Remove clamping claw (2) and screw with centering ring.

Pull out injector with light rotational movements.

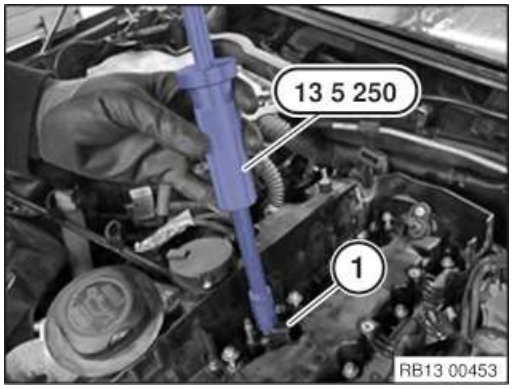
*Installation note:*
Retighten clamping claw rest (cylinder head cover mounting).

Tightening torque 13 53 5AZ.

During assembly, make sure washer is correctly positioned in relation to screw centering in order to align clamping claw. Secure clamping claw in installation position to jointing torque.

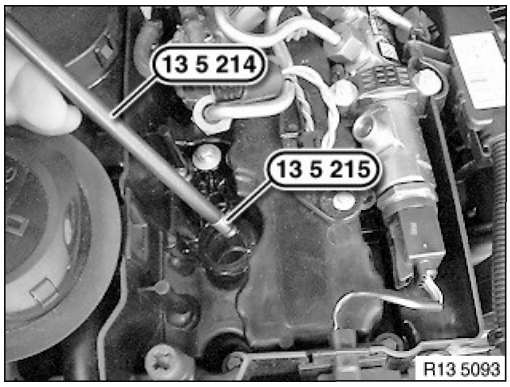
Tightening torque 13 53 1AZ.

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**Only for stuck injectors:**

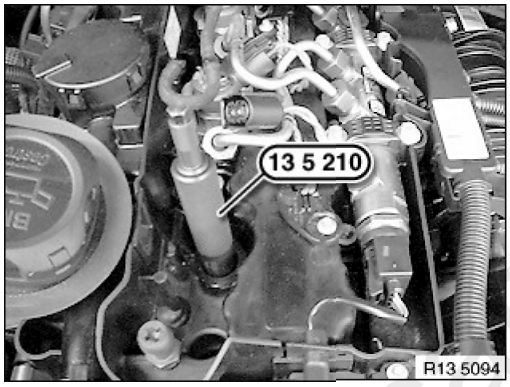
Screw on special tool 13 5 250 onto stuck injector (1). Drive out stuck injector with impact weight of special tool 13 5 250 .



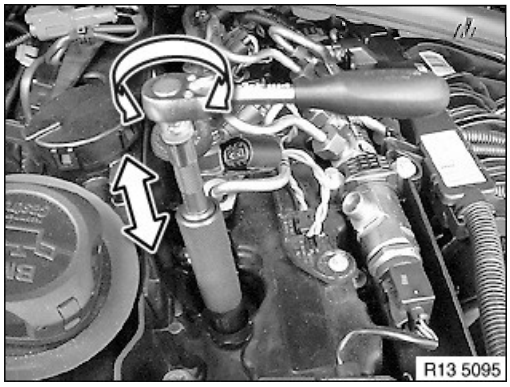

Cleaning injector slots:

Copper sealing ring must not remain in injector slot.

Place the sealing cap 13 5 215 in the injector slot with the mounting rod 13 5 214 . Remove fitting rod.




Place the cleaning tool with brush head 13 5 210 in the injector slot.



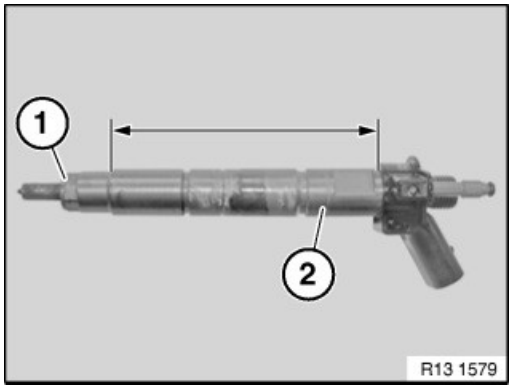

Move the brush head with a suitable tool (AF 8) up and down in the injector slot with a rotational movement. After removing the cleaning tool, blow out the injector slot with compressed air.

**Important!**

Wear safety goggles and cover injector slot with cleaning cloth or similar!

Remove seal plugs 13 5 215 again with mounting rod13 5 214 .

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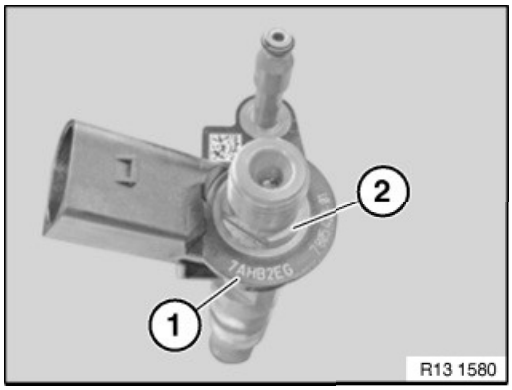



*Installation note:*
Replace copper sealing ring (1) on injector (2) without fail.

Replace sealing ring on leakage oil line connection.

Lightly lubricate injectors with highly heat-resistant grease before installing in injector slot (above copper sealing ring up to injector slot end).

(BMW part number 83 23 0 441 070)




The adjustment values must be read off in each case when new injectors are installed.

The adjustment value (1) (7-position letter code / number code) is engraved on each injector (2).

The digits / letters correspond to the installation location (cylinder) of the new injectors.

- Select ”Digital Diesel Electronics”
- Select ”Adjustment, injection quantity compensation”
- Select ”Test plan”
- The adjustment must be entered for each cylinder on which an injector has been replaced.

  It is necessary to adjust the new injectors to ensure their full operability.

Reset adaptation of injectors with BMW diagnosis system.

*Note:*
Assemble engine.

Check stored fault message.

Delete fault memory

Check fuel system for tightness.

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# 13 53 560 Removing and installing/replacing fuel pressure sensor on pressure accumulator of injection system (N57 D30 O/T 1)

**Attention!**

When working on the fuel circuit, you must protect the alternator against dirt contamination.

Cover alternator with suitable materials.

Failure to comply with this procedure may result in an alternator malfunction.

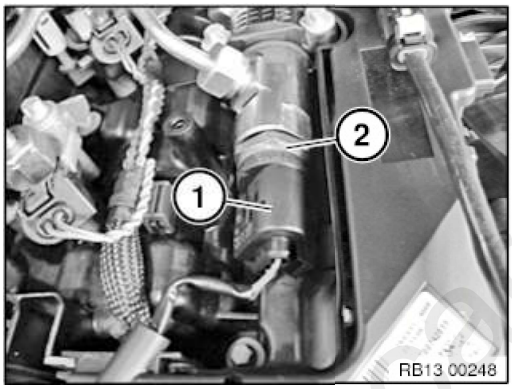
**Recycling:**

Catch and dispose of escaping fuel.

Observe country-specific waste disposal regulations.

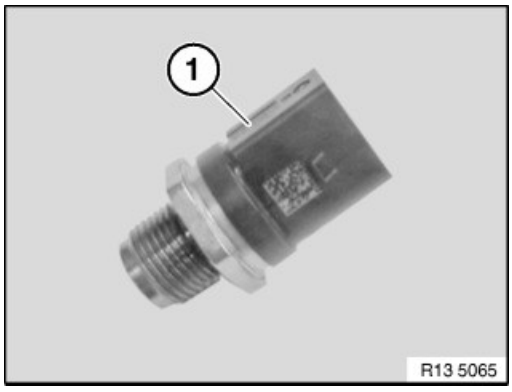
**Necessary preliminary work:**

- Read out the fault memory of the DDE control unit
- Switch off the ignition
- Remove pressure accumulator




Unlock connector (1) and pull off.

Release fuel pressure sensor (2).




Check threads and sealing surfaces for damage prior to installing the fuel pressure sensor. Ensure conditions of cleanliness when installing fuel pressure sensor (1). Lightly grease thread on fuel pressure sensor. Screw in fuel pressure sensor by hand. Then tighten down the fuel pressure sensor with a tool.*Installation note:*
Tightening torque 13 53 3AZ.

Assemble engine.

Check stored fault message.

Check fuel system for leak tightness.

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# 13 53 158 Removing and installing/replacing pressure accumulator of injection system (N57 D30O/T 1)

**Important!**

When working on the fuel circuit, you must protect the alternator against dirt contamination.

Cover alternator with suitable materials.

Failure to comply with this procedure may result in an alternator malfunction.

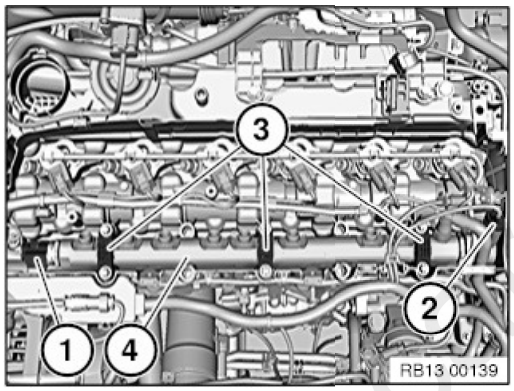
**Recycling:**

Catch and dispose of escaping fuel.

Observe country-specific waste disposal regulations.

**Necessary preliminary work:**

- Remove pressure lines to injectors.
- Remove pressure lines between high pressure pump and pressure accumulator.




Detach connector from pressure sensor (1).

Detach connector (2) from pressure regulator.

Detach return line from pressure accumulator.

Release screws on retaining bracket (3).

Remove pressure accumulator (4).

**Important!**

**Risk of damage to injection system and pressure accumulator!**

Observe tightening torque 13 53 2AZ without fail If the pressure lines are leaking after installation, they must be replaced. Do not retighten pressure lines with a higher tightening torque! Risk of damage to injection system and pressure accumulator!

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Assembly sequence for high-pressure fuel system:

1. Insert pressure accumulator.
2. Provisionally fasten all high pressure lines.
3. Clip pressure accumulator mountings and screw down.
4. Tighten down high pressure lines on injectors.
Tightening torque 13 53 2AZ.
5. Tighten down high pressure lines on pressure accumulator.
Tightening torque 13 53 2AZ.
6. Tighten down high pressure line on high pressure pump.
Tightening torque 13 53 2AZ.

Assemble engine.

Vent fuel system via BMW diagnosis system.

Check fuel system for tightness.

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# 13 53 170 Removing and installing/replacing pressure lines to the injectors (N57 D30O/T 1)

**Special tools required:**

- 32 1 270
- 37 1 152

**Important!**

**Risk of damage to injection system and pressure accumulator!**

Observe tightening torque 13 53 2AZ without fail If the pressure lines are leaking after installation, they must be replaced. Do not retighten pressure lines with a higher tightening torque! Risk of damage to injection system and pressure accumulator!

When working on the fuel circuit, you must protect the alternator against dirt contamination.

Cover alternator with suitable materials.

Failure to comply with this procedure may result in an alternator malfunction.

After disconnecting the pressure lines, it is absolutely essential to seal the injectors and the high-pressure accumulator with protective caps.32 1 270

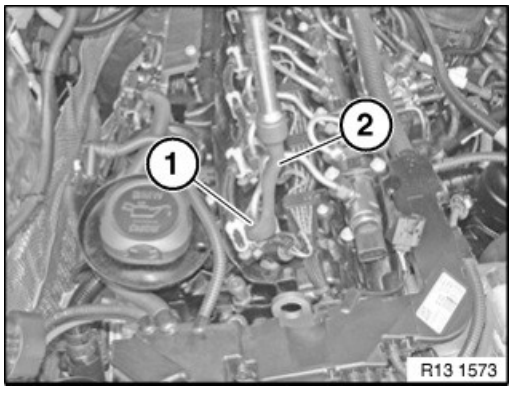
**Necessary preliminary work:**

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Remove intake silencer housing.
- Remove rear acoustic cover and sound insulation on injector.

**Recycling:**

Catch and dispose of escaping fuel.

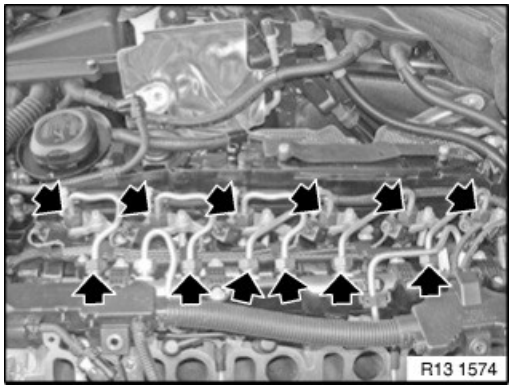
Observe country-specific waste disposal regulations.




Release union nut (1) of pressure line with special tool 37 1 152 .**Note:**

Reset special tool in good time to prevent bending of pressure lines.

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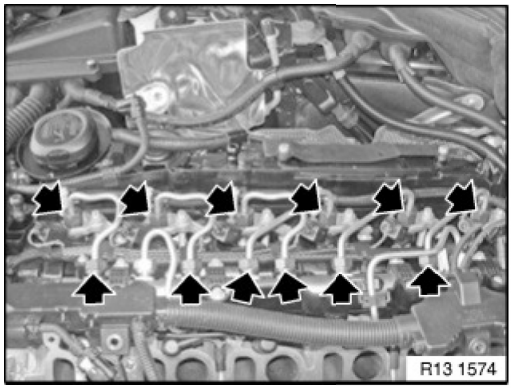



Release all union nuts of the pressure lines with special tool (2) 37 1 152
.**Note:**
Reset special tool in good time to prevent bending of pressure lines.

**Important!**

**Risk of damage to injection system and pressure accumulator!**

Observe tightening torque 13 53 2AZ without fail! If the pressure lines are leaking after installation, they must be replaced. Do not retighten pressure lines with a higher tightening torque! Risk of damage to injection system and pressure accumulator!




**Installing pressure lines.**

1. Insert pressure lines.
2. Hand-tighten all union nuts on pressure lines.
3. Tighten down union nuts on injectors to specified torque.
   Tightening torque 13 53 2AZ.
4. Tighten down union nuts on pressure accumulator to specified torque.
   Tightening torque 13 53 2AZ.

Reassemble the vehicle.

Vent fuel system via BMW diagnosis system.

Check fuel system for tightness.

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# 13 53 330 Replacing leakage oil line (N57 D30 T 1)

**Special tools required:**

- 13 0 170

**Necessary preliminary tasks:**

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Remove intake silencer housing.
- Remove acoustic cover at rear.
- Remove sound insulation on injectors.

**Important!**

It is essential to adhere to conditions of absolute cleanliness when carrying out repair work on the fuel system.

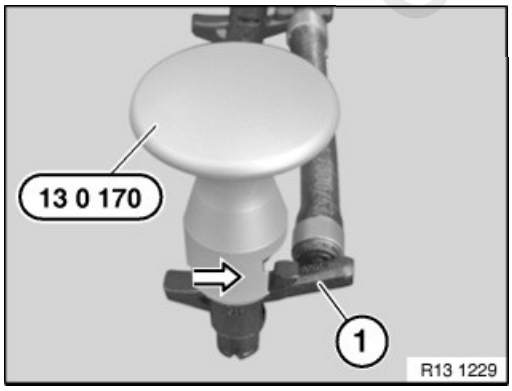
- Do not allow any dirt particles or foreign bodies to get into the system.
- Use only fluff-free cloths.
- Remove all traces of dirt contamination before removing pipes or individual components.

**Important!**

You must protect the alternator against dirt contamination before carrying out any repair work on the fuel circuit.

Cover alternator with suitable materials.

Failure to comply with this procedure may result in an alternator malfunction.

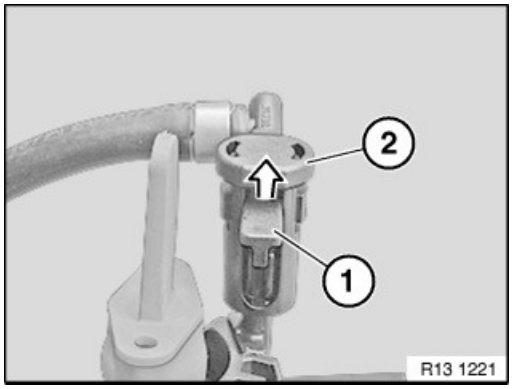



Unlock leakage oil line with special tool 13 0 170 .

Push special tool 13 0 170 on connection (1) in direction of arrow.

Grip line when unlocking.

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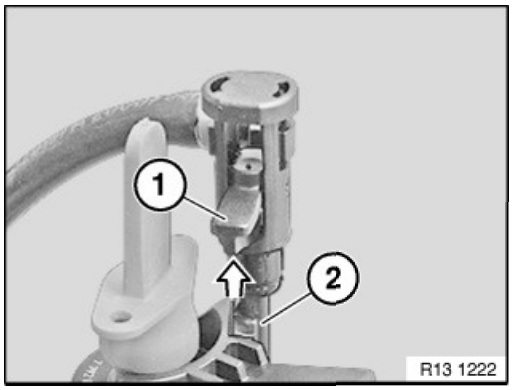



*Note:*
Graphic shows injector removed.

Following procedure applies to all cylinders.

Grip connection for leakage oil line (1).

Release lock (2) with special tool 13 0 170 in direction of arrow.

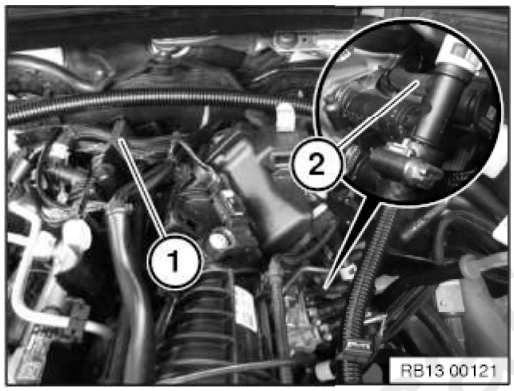



*Note:*
Illustration shows injector removed.

Following procedure applies to all cylinders.

Detach connection (1) for leakage oil line in direction of arrow from injector (2).

Check sealing rings on injectors, replace if damaged.




Detach leakage oil lines from the injectors. Release leakage oil line from rubber grommet (1).

Detach, thread out and remove leakage oil line from T-piece (2) of fuel line (near high pressure pump).

Reassemble the vehicle.

Check fuel system for tightness.

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# 13 53 180 Replacing pressure line between high pressure pump and pressure accumulator (N57 D30 O/T 1)

*Necessary preliminary tasks:*

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Disconnect and connect intake air manifold.

**Attention!**

When working on the fuel circuit, you must protect the alternator against dirt contamination.

Cover alternator with suitable materials.

Failure to comply with this procedure may result in an alternator malfunction.

**Attention!**

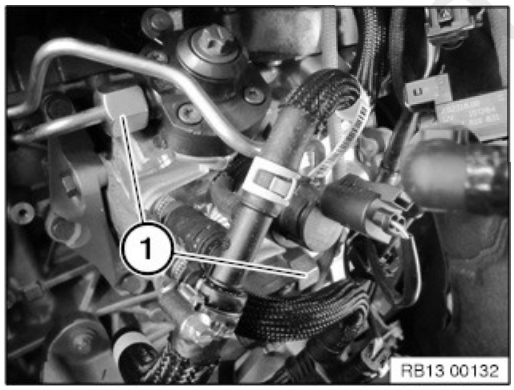
After the engine has stopped, wait at least 1 minute before releasing the high pressure lines.

After disconnecting the pressure line, it is absolutely essential to seal the openings in the high-pressure pump and the high-pressure accumulator with protective caps.

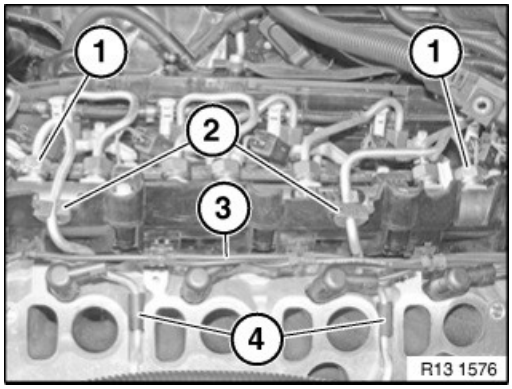
**Recycling:**

Catch and dispose of escaping fuel.

Observe country-specific waste disposal regulations.




Release union nuts (1) on high-pressure pump.




Release union nuts (1) on pressure line.

Remove rubber mount (2).

Partially loosen lines of the glow elements (3).

Feed out pressure lines and remove.

*Installation note:*
Note installation position of rubber mount (4).

Observe tightening sequence.

*Installation note:*

- Install pressure lines and tighten hand-tight on both sides.
- First tighten pressure lines at pressure accumulator.
  Tightening torque 13 53 2AZ.
- Then apply pressure line to high pressure pump.
  Tightening torque 13 53 2AZ.

*Installation note:*
Pay attention to installation position of rubber mount and abrasion protection on pressure line.

Assemble engine.

Check fuel system for leak tightness.

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# 13 53 570 Replacing pressure regulator on pressure accumulator of fuel injection system (N57 D30 O/T 1)

**Necessary preliminary tasks:**

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Remove pressure accumulator.

**Recycling:**

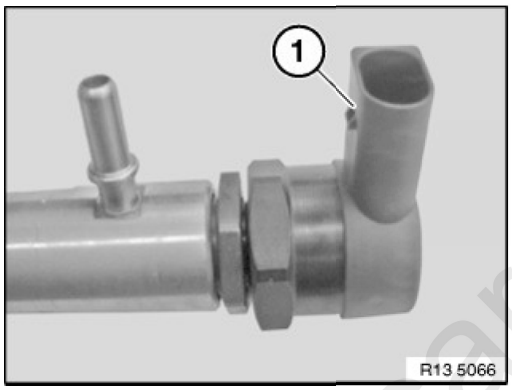
Catch and dispose of escaping fuel.

Observe country-specific waste disposal regulations.

*Installation note:*
Pressure regulator may only be used once!

Pressure regulator must be replaced (cutting seat seal) after screw connection has been released.

Positioning before final tightening!




Grip at hexagon head (1) when removing pressure regulator.

Release hexagon screw connection on pressure accumulator.

*Installation note:*
Secure position of pressure regulator and grip at hexagon head (2).

Tightening torque 13 53 4AZ.

*Note:*
Assemble engine.

Check fuel system for tightness.

Reset adaptation of pressure regulator with BMW diagnosis system.

Check stored fault message.

Clear diagnostic fault entries from fault memory.

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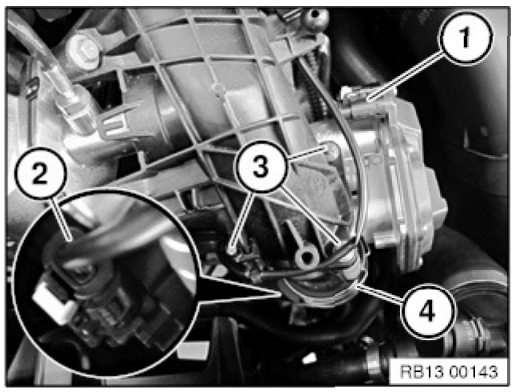
# 13 54 030 Removing and installing/sealing throttle body (N57 D30 O/T 1)

**Important!**

Read and comply with notes on protection against electrostatic discharge (ESD protection).

**Necessary preliminary work:**

- Switch off ignition.
- Remove acoustic cover
- Partially detach the acoustic cover at the front.
- Remove pressure pipe.




Unlock and pull off plug connection (1) from throttle body.

Unlock and pull off plug connection (2) from intake air temperature sensor.

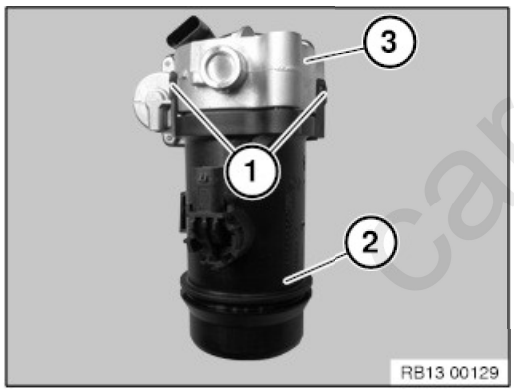
Release screws (3).

Tightening torque 13 54 1AZ.

Unlock and pull off pressure pipe (4) from throttle body.

Feed out and remove side throttle valve together with charge air pipe.

*Installation note:*
Replace gasket at mixing tube for intake air.




*Note:*
On replacement of the throttle body, carry out modifications on the charge air pipe (2). Release clamps (1) and remove charge air pipe (2) from the throttle body (3).

Replace gasket.

*Installation note:*
Check stored fault message.

Clear diagnostic fault entries from fault memory.

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# 13 61 501 Replacing control unit (DDE) (N57 D30 O/T 1)

**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.
- Follow instructions for removing and installing control units.

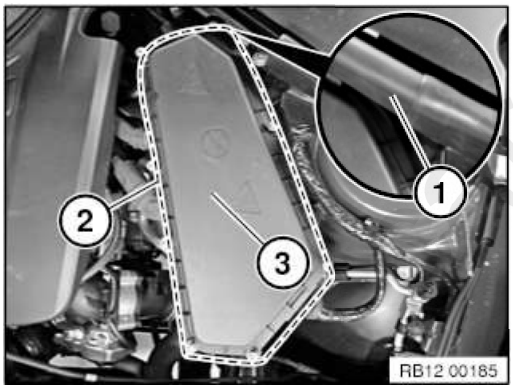
Replacement:

- Carry out programming/encoding.
- If no data can be read out from the previous control unit, carry out injection quantity compensation (description at end of instructions).

**Important!**

It is absolutely essential to read out the fault memory with the diagnosis system and produce a fault memory printout.

Switch off ignition.



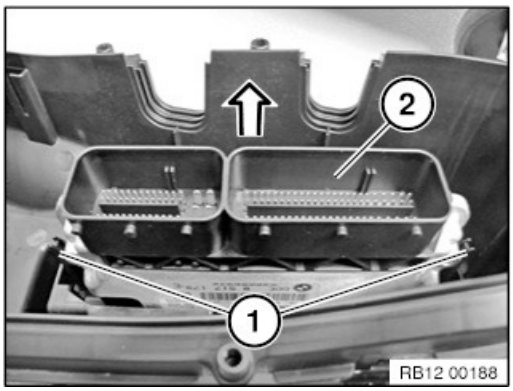

Partially loosen the rear gasket (1) for the engine compartment lid until the screw is accessible from the cover of the electronics box.

Release all screws along line (2).

Remove the electronics box lid (3).

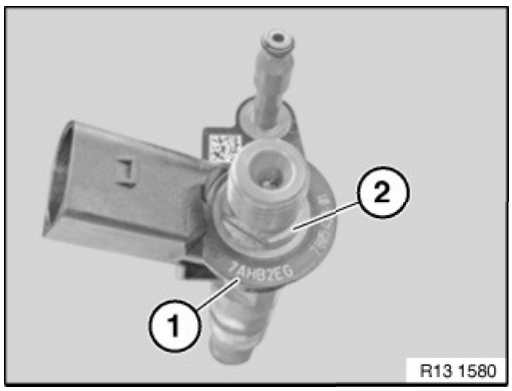



Unlock both connectors (1) in direction of arrow, disconnect connector from the control unit and set aside.




Release retainers (1) on control unit.

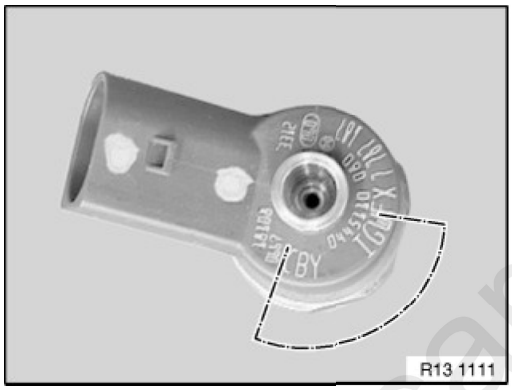
Pull out control unit (2) towards top.




**Injection quantity compensation:**

If the DDE control unit has been replaced, it will also be necessary to carry out adjustment of the injectors!

The adjustment value (1) (7-position letter code / number code) is engraved on each injector (2).




Enter the numbers/letters according to the installation location (cylinder) of the injectors.

- Select "DDE".
- Select "Adjustment, injection quantity compensation"
- Select "Test plan"

The adjustment must be entered for each injector.

It is necessary to adjust the injectors to ensure their full functional capability.

*Note:*
Check stored fault messages.

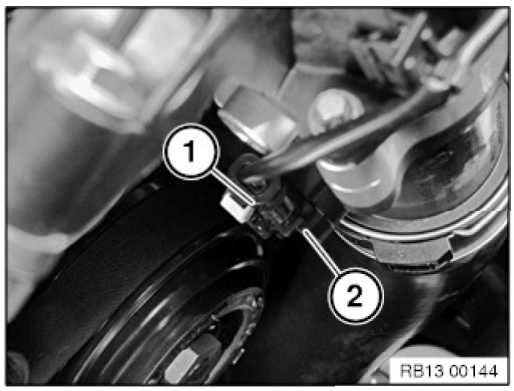
Clear diagnostic fault entries from fault memory.

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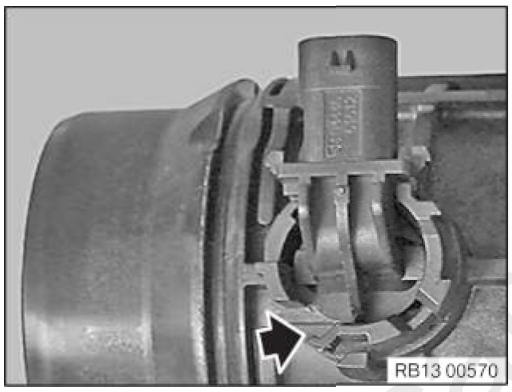
# 13 62 511 Removing and installing/replacing charge-air temperature sensor (N57 D30 O/T 1)

**Necessary preliminary tasks:**

- Read out fault memory of the DME control unit, work through test plans if necessary.
- Switch off ignition.
- Remove acoustic cover




Unlock connector (1) from charge-air temperature sensor (2) and pull off.

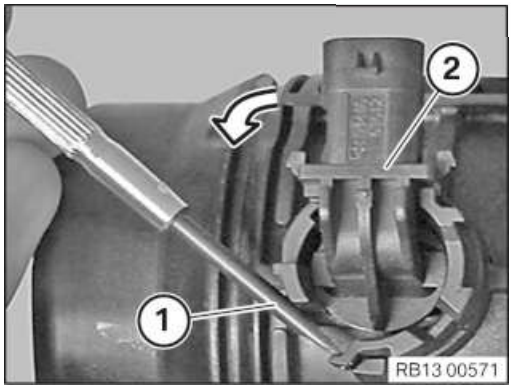



**Important!**

The lock must be unlocked for removal of charge-air temperature sensor!

If the lock is not unlocked, the retaining lug on charge-air temperature sensor wears.

If the retaining lug is damaged, the charge-air temperature sensor can fall out of the pressure pipe.




Open the lock with a suitable tool (1).

Rotate charge-air temperature sensor (2) anticlockwise by 90° and pull out sensor straight.

*Installation note:*
Check sealing ring.

Replace damaged sealing ring.

**Note:**

Clear diagnostic fault entries from fault memory.

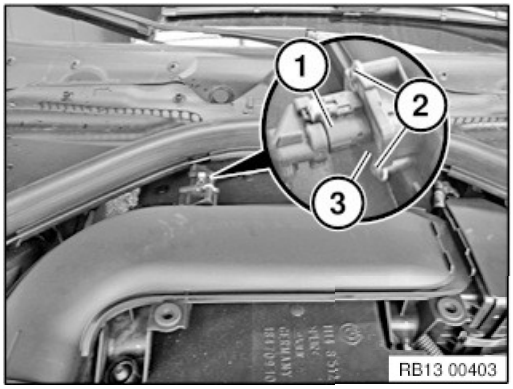
Reassemble the vehicle.

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# 13 62 560 Removing and installing/replacing hot film air mass meter (N57 D30 O/T 1)

*Necessary preliminary tasks:*

- Read out the fault memory of the DDE control unit.
- Switch off ignition.




Unlock connector (1) and remove.

Unfasten screws (2).

Tightening torque 13 71 2AZ.

Remove the hot film air mass meter (3).

**Replacement only:**

Reset the adaptation values for the air mass system via the BMW diagnosis system.

*Note:*
Check stored fault messages.

Delete fault memory.

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# 13 62 651 Removing/replacing oxygen sensor (N57 D30 O/T 1)

**Special tools required:**

- 11 7 020

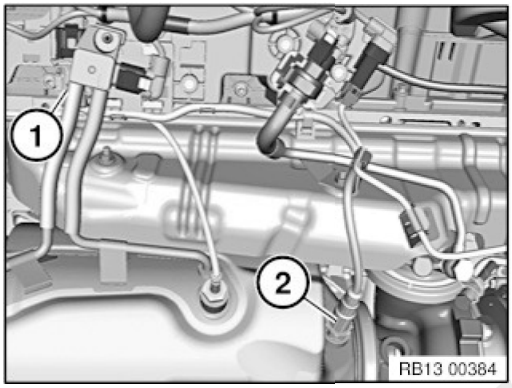
**Necessary preliminary tasks:**

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Remove intake silencer housing.

**Warning!**

Risk of burning!

Only perform this repair work on an engine that has cooled down.




Disconnect connector (1) and release from bracket.

Release oxygen sensor cable from clamp.

Remove oxygen sensor (2) with special tool 11 7 020 .

Tightening torque 13 62 3AZ.

**Installation note:**

Threads of new oxygen sensors are already coated with NEVER-SEEZ compound.

If an oxygen sensor is reused, only apply a thin and uniform coat of Never Seez Compound (refer to BMW Parts Department) to thread.

Oxygen sensor section projecting into exhaust branch must not be cleaned or come into contact with lubricant.

Pay attention to cable routing of oxygen sensors.

11 7 020 Use special tool to tighten down oxygen sensor.

Tightening torque 13 62 3AZ.

Cover oxygen sensors when applying underbody protection.

*Installation note:*

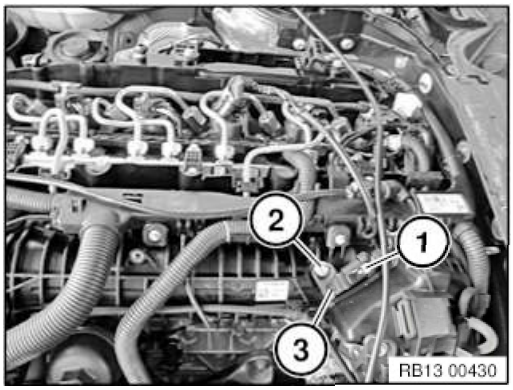
Check stored error/fault messages.

Clear diagnostic fault entries from fault memory.

# 13 62 535 Replacing charging pressure sensor (N57 D30 O/T 1)

**Necessary preliminary tasks:**

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Remove intake silencer housing.
- Remove sound insulation on injectors.




Unlock connector (1) and remove.

Release screw (2).

Tightening torque 13 62 5AZ.

Remove charge-air pressure sensor (3).

*Installation note:*
Check sealing ring of charge-air pressure sensor and replace if damaged.

Prior to installation, apply a thin coat of anti-friction agent to sealing ring of charge-air pressure sensor.

*Note:*
Check stored fault message.

Delete fault memory.

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# 13 62 531 Replacing coolant temperature sensor (N57 D30 O/T 1)

**Special tools required:**

- 11 8 850

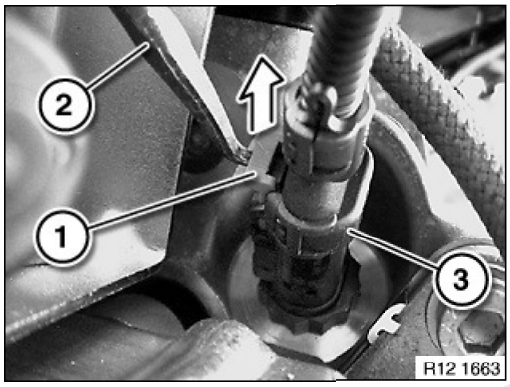
**Necessary preliminary work:**

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Remove acoustic cover

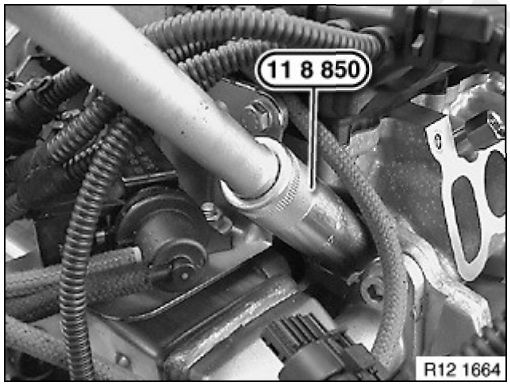
**Recycling:**

Catch and dispose of escaping coolant.

Observe country-specific waste disposal regulations.




Release lock (1) with hook (2) and detach connector (3).




Remove coolant temperature sensor (3) with special tool 11 8 850 .

Tightening torque 13 62 2AZ.

Check O-rings. Replace faulty O-rings.

If necessary, top up coolant.

**Note:**

Check stored fault message.

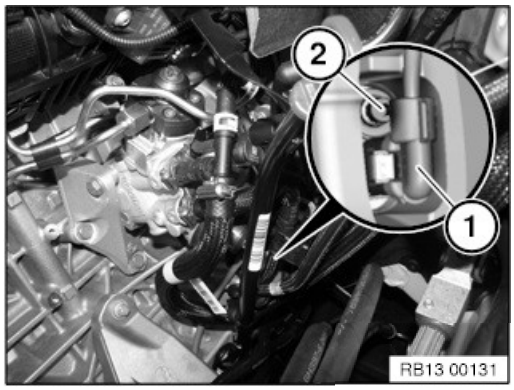
Clear diagnostic fault entries from fault memory.

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# 13 62 610 Replacing crankshaft pulse sensor (N57 D30 O/T 1)

**Necessary preliminary tasks:**

- Remove intake silencer housing.
- Remove electronics box.




Pull connector (1) off pulse sensor.

Release screw (2).

Tightening torque 13 62 6AZ.

Remove pulse sensor.

Reassemble the vehicle.

Read out the fault memory of the DDE control unit.

Clear DDE fault memory.

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# 13 62 589 Replacing differential pressure sensor (N57 D30 T 1)

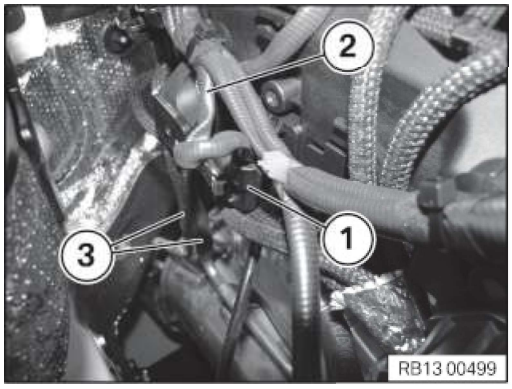
**Necessary preliminary tasks:**

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Remove intake silencer housing.

**Warning!**

Risk of burning!

Only perform this repair work on an engine that has cooled down.




Unlock connector (1) and remove.

Pull off pressure hosesÂ (2). Renew pressure hoses.

Release screw (3).

Remove differential-pressure sensor.

*Installation note:*

Check stored error/fault messages.

Clear diagnostic fault entries from fault memory.

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# 13 62 667 Replacing exhaust backpressure sensor on exhaust turbocharger (N57 D30 T 1)

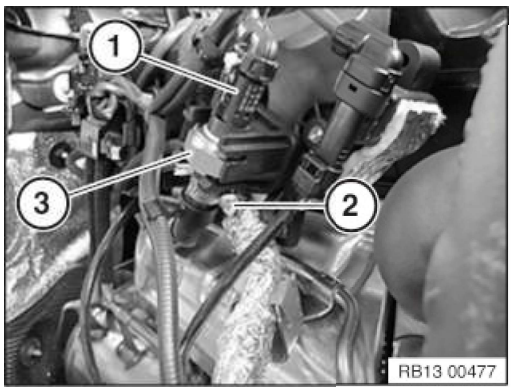
**Warning!**

Risk of burning!

Only perform this repair work on an engine that has cooled down.

**Necessary preliminary tasks:**

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Remove intake silencer housing.




Unlock connector (1) and remove.

Release clamp (3).

Unclip the exhaust-gas temperature sensorÂ (2) and remove from the pressure hose.

*Installation note:*

Check stored error/fault messages.

Clear diagnostic fault entries from fault memory.

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# 13 62 662 Replacing exhaust temperature sensor for exhaust-gas recirculation

## PRELIMINARY WORK

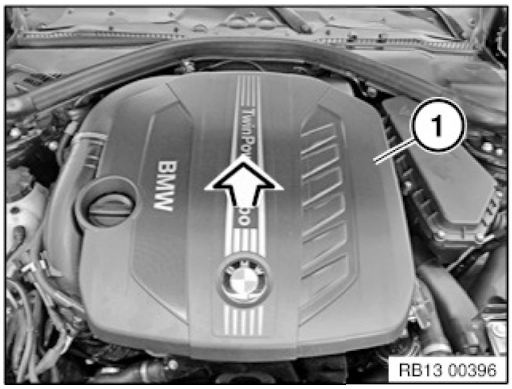
### 1 – Removing the acoustic cover

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

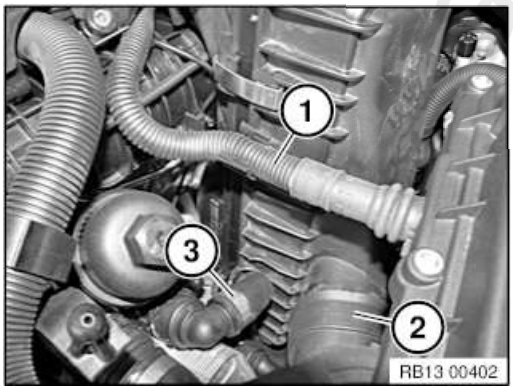



- Detach acoustic cover (1) upwards from rubber mounts and remove in direction of travel.

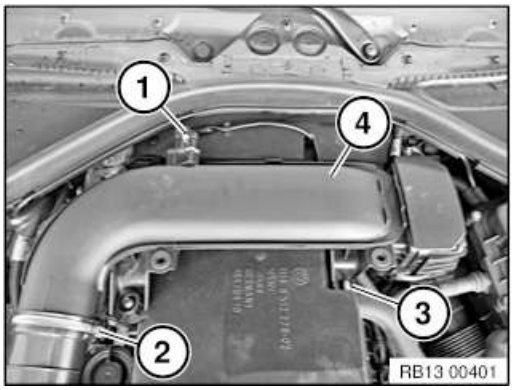
### 2 – Removing intake silencer housing

**Prerequisite**

Ignition is switched off.



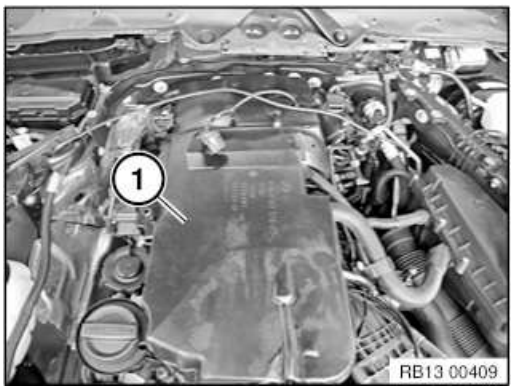

- Unclip wiring harness (1) from intake filter housing.
- Unlock air duct (2) and detach from intake filter housing.
- Release coolant hose (3) from intake filter housing.




- Unlock connector (1) on hot film air mass meter and pull off.
- Unfasten clamp (2).
- Loosen screw (3).
- Pull off intake silencer housing (4) from rubber mounts in upward direction.
- Feed out intake filter housing (4) in upward direction and remove.

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### 3 – Remove sound insulation on injectors




- Feed out sound insulation (1) upwards and remove.

## MAIN WORK

### 4 – Remove the exhaust temperature sensor for the exhaust-gas recirculation

**WARNING**

**Hot surfaces.**

**Risk of burning!**

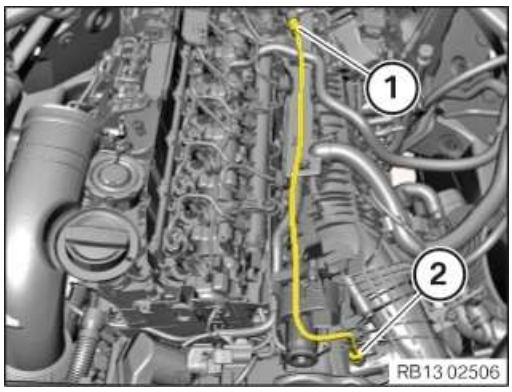
- Perform all work only on components that have cooled down.

**RISK OF DAMAGE**

**Electrostatic discharge.**

**Damage to or destruction of electrical components.**

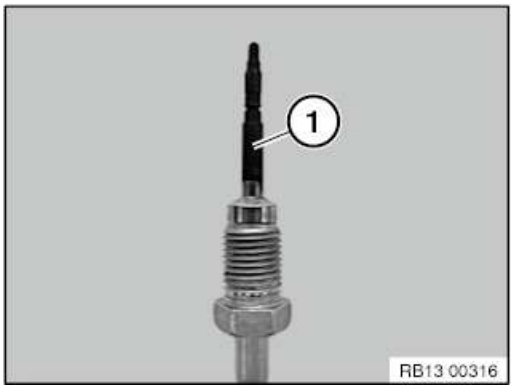
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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




- Unlock and loosen connector (1).
- Loosen and remove the exhaust temperature sensor for the exhaust-gas circulation (2).

### 5 – Install the exhaust temperature sensor for the exhaust-gas recirculation

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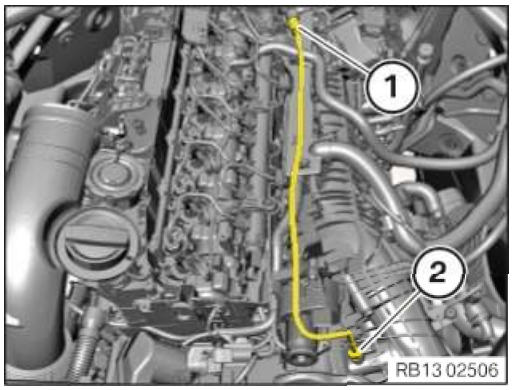

**RISK OF DAMAGE**

**Damage of exhaust temperature sensor.**

**Damage to exhaust temperature sensors leads to malfunctions.**

- Make sure that the gauge tip is not damaged.

- Check the gauge tip (1) for damage and renew the exhaust temperature sensor as needed.




- Install and tighten exhaust temperature sensor for the exhaust-gas recirculation (2).

**Exhaust temperature sensor for EGR**

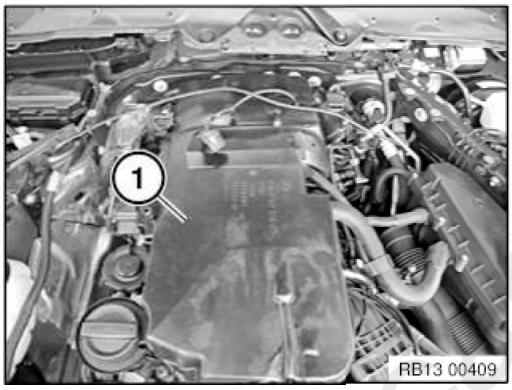
| | | | |
|---|---|---|---|
| Exhaust-gas temperature sensor | | Tightening torque | 21,7 Nm |

- Connect and lock the connector (1).

  The connector (1) must engage audibly.

## POSTPROCESSES

### 6 – Install sound insulation on injectors

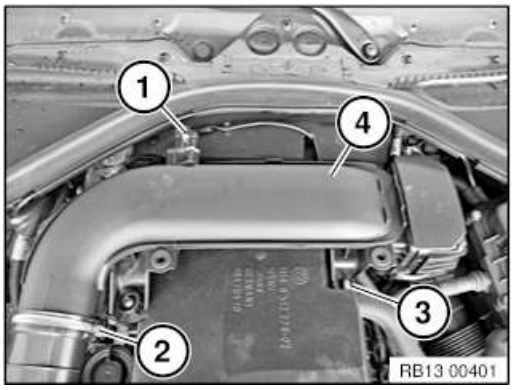



- Insert sound insulation (1)on injectors and install.

### 7 – Installing intake silencer housing

**Prerequisite**

Ignition is switched off.




- Insert and install the intake filter housing (4).
- Connect the intake port (2) to the intake filter housing.
- Tighten clamp (2).

**Intake filter housing to clean-air pipe**

| | | | |
|---|---|---|---|
| Clamp | | Tightening torque | 3 Nm |

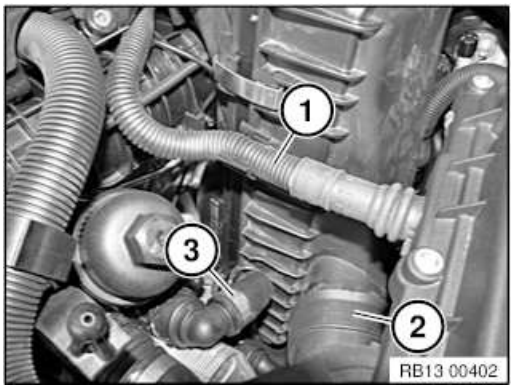
- Tighten down screw (3).

**Intake filter housing to intake manifold**

| | | | |
|---|---|---|---|
| M6x25 | | Tightening torque | 3,5 Nm |

- Connect and audibly lock the connector (1) to the hot film air mass meter.

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- Clip wiring harness (1) onto intake filter housing.
- Connect the intake port (2) to the intake filter housing.
- Attach coolant hose (3) to intake filter housing.

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




- Install acoustic cover (1) and attach to the rubber mounts on the intake silencer housing.

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## Additional Information

### Overview of Tightening Torques

**Exhaust temperature sensor for EGR** — Used in step 5

| | | | |
|---|---|---|---|
| Exhaust-gas temperature sensor | | Tightening torque | 21,7 Nm |

**Intake filter housing to clean-air pipe** — Used in step 7

| | | | |
|---|---|---|---|
| Clamp | | Tightening torque | 3 Nm |

**Intake filter housing to intake manifold** — Used in step 7

| | | | |
|---|---|---|---|
| M6x25 | | Tightening torque | 3,5 Nm |

### Links

| Repair instructions | Used in step |
|---|---|
| 61 35 ... Notes on ESD protection (Electro Static Discharge) | 4 |

# 13 62 534 Replacing exhaust-gas temperature sensor (N57 D30 O/T 1)

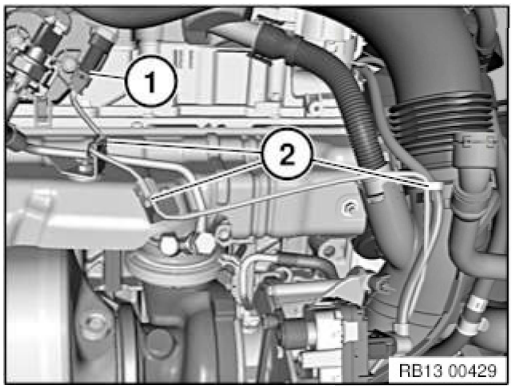
**Necessary preliminary tasks:**

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Remove intake silencer housing.
- Remove front underbody protection.

**Warning!**

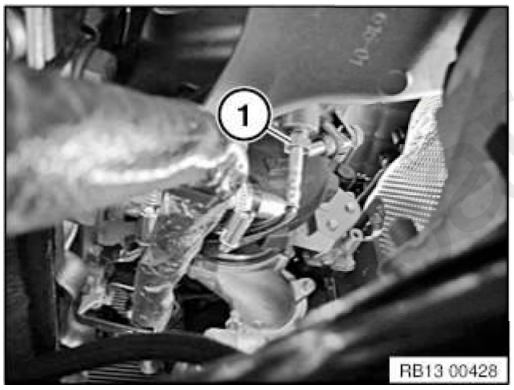
Risk of burning!

Only perform this repair work on an engine that has cooled down.



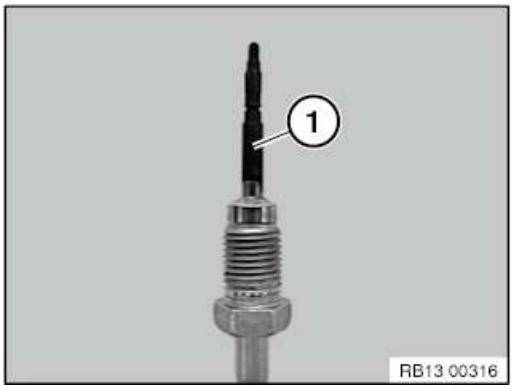

Unlock connector (1) and remove.

Disengage the cable from the clamps (2).




Release exhaust-gas temperature sensor (1) and remove.

Tightening torque 13 62 4AZ.




**Important!**

When installing the exhaust-gas temperature sensor make sure that the gauge tip (1) is not damaged.

bmwdiagn.com



*Installation note:*
Check stored error/fault messages.

Clear diagnostic fault entries from fault memory.

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# 13 62 663 Replacing exhaust-gas temperature sensor (N57 D30 O/T 1)

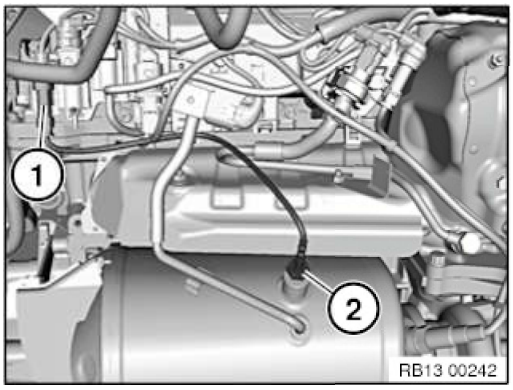
**Necessary preliminary tasks:**

- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Remove intake silencer housing.

**Warning!**

Risk of burning!

Only perform this repair work on an engine that has cooled down.

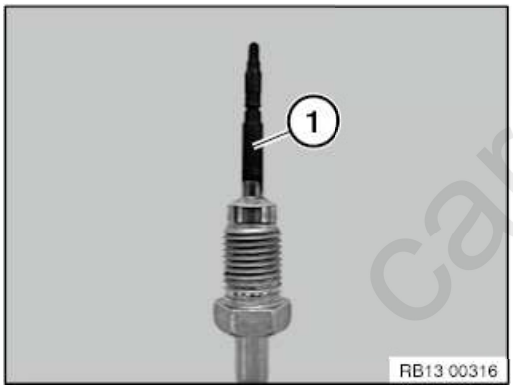



Unlock connector (1) and remove.

Replace cable from clamps.

Release exhaust-gas temperature sensor (2) and remove.

Tightening torque 13 62 4AZ.




**Important!**

When installing the exhaust-gas temperature sensor make sure that the gauge tip (1) is not damaged.

*Installation note:*

Check stored error/fault messages.

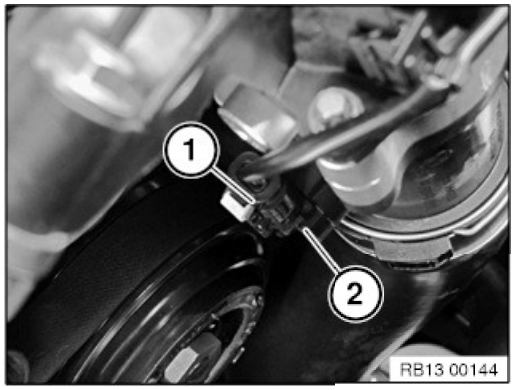
Clear diagnostic fault entries from fault memory.

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# 13 62 538 Replacing intake air temperature sensor (N57 D30 O/T 1)

**Necessary preliminary work:**

- Read out fault memory of the DME control unit, work through test plans if necessary.
- Switch off ignition.
- Remove acoustic cover




Unlock connector (1) and remove.

Release temperature sensor (2) by turning in anticlockwise direction and remove.

*Installation note:*
Check sealing ring.

Replace damaged sealing ring.

**Note:**

Clear diagnostic fault entries from fault memory.

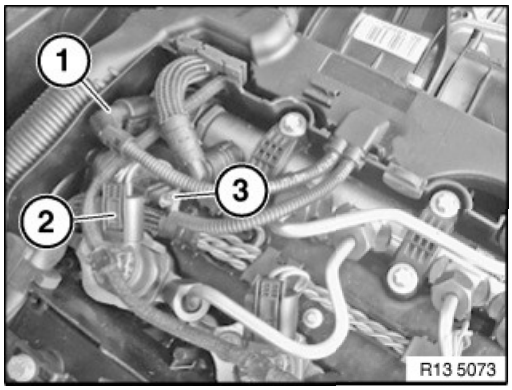
Reassemble the vehicle.

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# 13 62 650 Replacing pulse sensor for camshaft (N57 D30 O/T 1)

**Necessary preliminary work:**

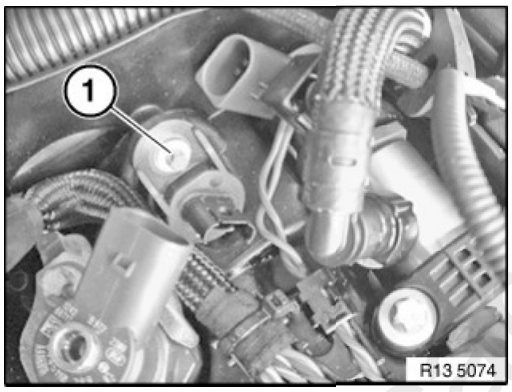
- Read out the fault memory of the DDE control unit.
- Switch off ignition.
- Remove intake silencer housing.
- Remove acoustic cover at rear.
- Remove sound insulation on injectors.




Detach plug from pressure regulator (1).

Detach the connector (2) from injector for cylinder 6.

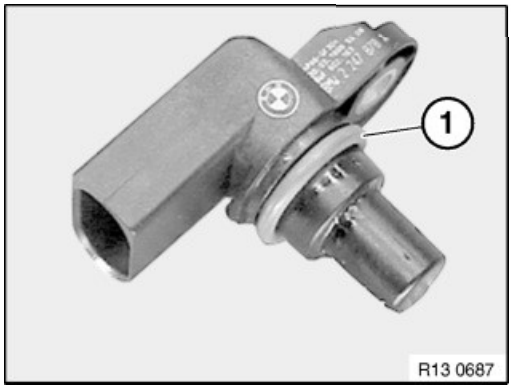
Unlock plug (3) from pulse generator and detach.




Release screw (1).

Tightening torque 13 62 1AZ.

Remove pulse sensor.




*Installation note:*
Replace sealing ring (1). Apply a thin coat of lubricant to sealing ring for installation.

*Installation note:*
Reassemble the vehicle.

Clear diagnostic fault entries from fault memory.

Check function of DDE.

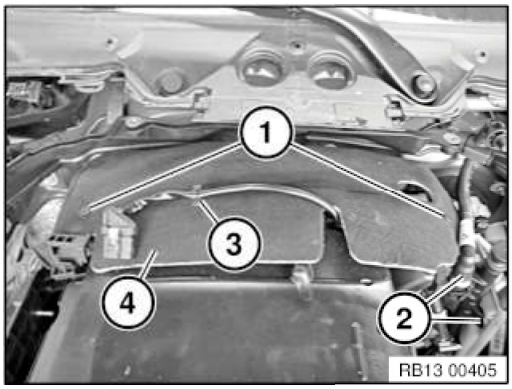
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# 13 71 ... Removing acoustic covers (N57 D30 O/T 1)

**Necessary preliminary tasks:**

- **Only if rear acoustic cover needs to removed:**
  Remove intake silencer housing.
  Remove acoustic insulation for bulkhead, centre.
- **Only if sound insulation on injector needs to be removed:**
  Partially detach rear acoustic cover.
- **Only if front acoustic cover needs to removed:**
  Remove fan cowl.
- **Only if bottom acoustic cover needs to removed:**
  Remove front underbody protection.
  **All-wheel drive vehicles only:**
  Remove reinforcement plate.



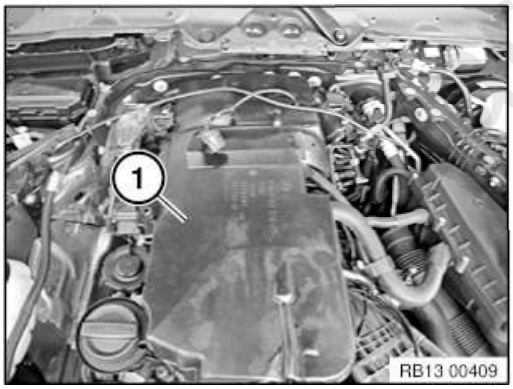

**Remove rear acoustic cover:**

Release expanding rivets (1).

Release vacuum lines (2) from clamps and set to one side.

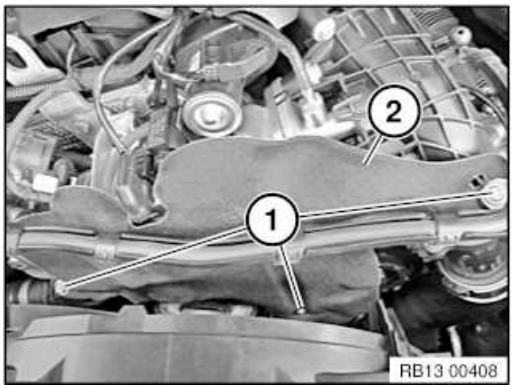
Release cable strap (3) from acoustic cover.

Remove rear acoustic cover (4).




**Remove sound insulation on injectors:**

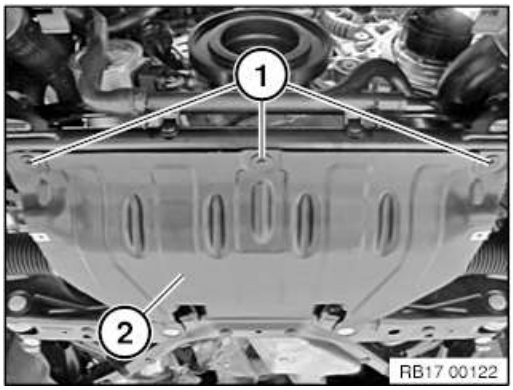
Remove sound insulation (1) upwards.




**Remove front acoustic cover:**

Release screws (1).

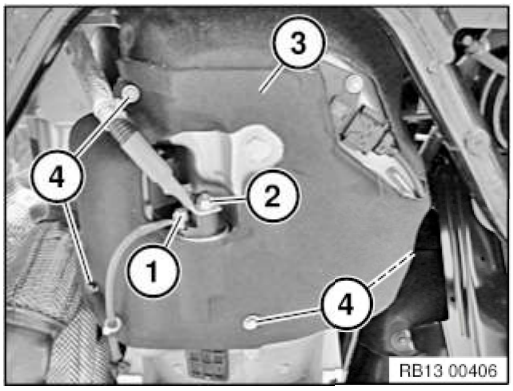
Remove front acoustic cover (2).




**Remove bottom acoustic cover:**

Release screws (1).

Remove cover (2).




**Only rear-wheel drive vehicles:**

Slacken nut (1).

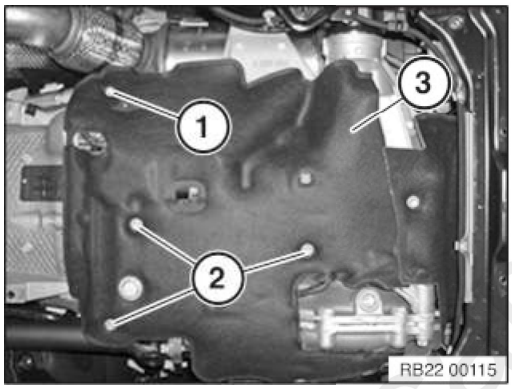
Tightening torque 12 52 1AZ.

Slacken nut (2).

Tightening torque 12 52 3AZ.

Release screws (4).

Remove bottom acoustic cover (3).




**All-wheel drive vehicles only:**

Release screw (1).

Tightening torque 11 13 4AZ.

Unfasten screws (2).

Tightening torque 11 13 5AZ.

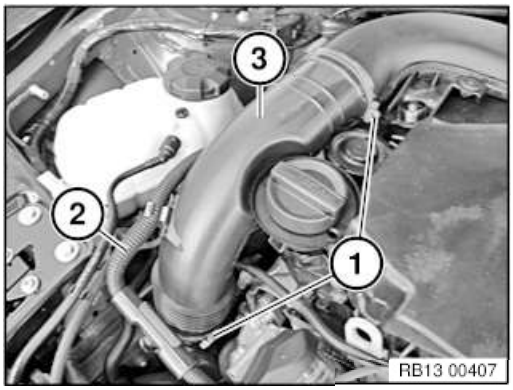
Remove bottom acoustic cover (3).

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# 13 71 150 Removing clean air pipe (N57 D30 T 1)

**Necessary preliminary tasks:**

- Remove acoustic cover

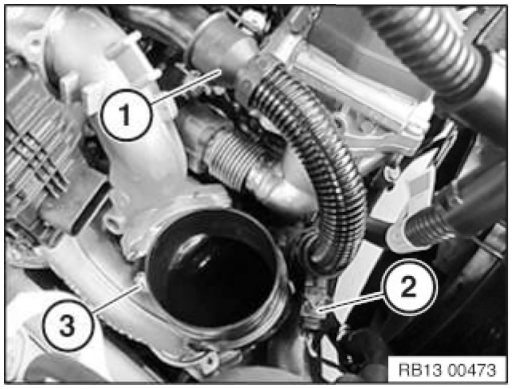



Release clamps (1).

Tightening torque 13 71 3AZ.

Detach positive battery cable (2) from clean air pipe.

Feed out upper part of clean air pipe (3) towards top and remove.



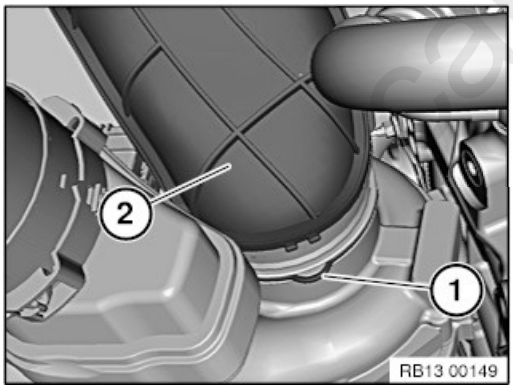

Press down locking hook and pull ventilation line (1) off the cylinder head cover.

With the heating element installed, unlock connector (2) from heating element and pull off.

Unclip cable from clean air pipe lower section.

Release screw (3).

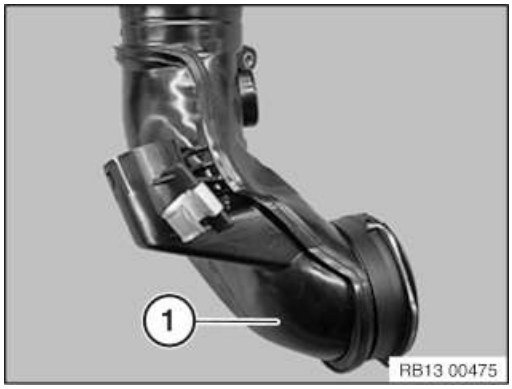
Tightening torque 13 71 4AZ.



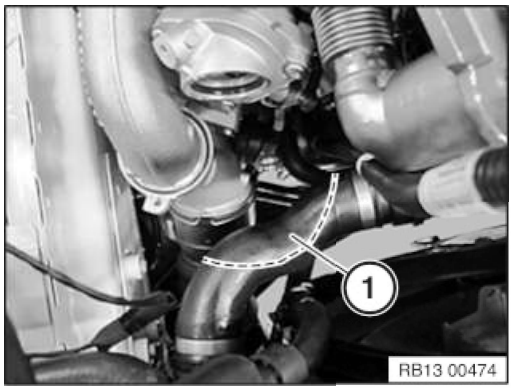

Unlock clamp (1).

Pull clean air pipe lower section off exhaust turbocharger, carefully feed it out and remove in upward direction.

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*Installation note:*
Coat clean air pipe (1) with lubricant before installation.

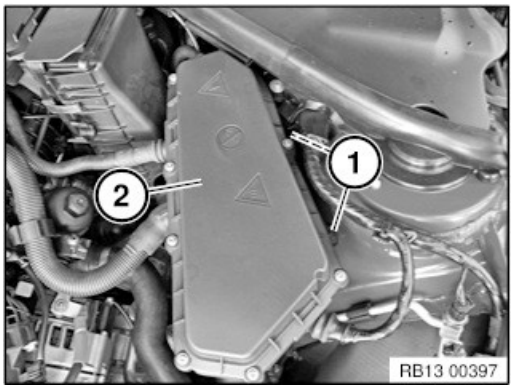



*Installation note:*
Coat coolant hose (1) with lubricant before installation.
**Important!**
Risk of damage! Carefully feed in and install clean air pipe.

Assemble engine.

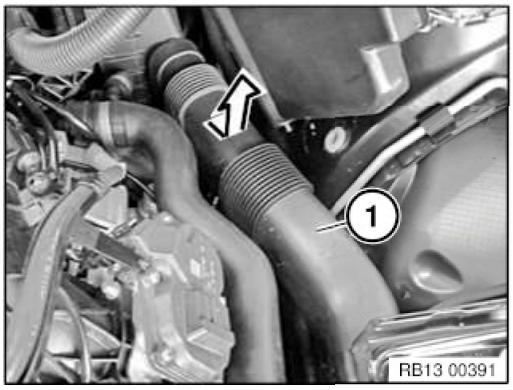
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## 13 71 ... Removing intake port (N57 D30 O/T 1)




Release screws (1).

Detach electronics box (2) from rubber mount and place to one side.




Release catches () in intake silencer housing and air duct.

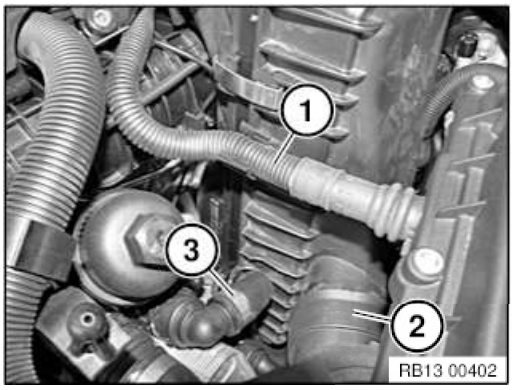
Feed out intake port (1) in direction of arrow and remove.

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# 13 71 000 Removing/replacing intake silencer housing (N57 D30 O/T 1)

*Necessary preliminary work:*

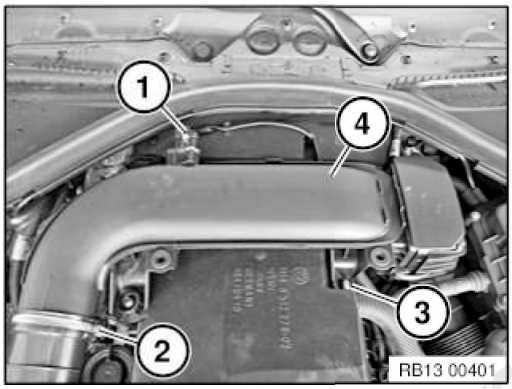
- Switch off ignition.
- Remove acoustic cover




Unclip wiring harness (1) from intake silencer housing.

Unlock air duct (2) and detach from intake silencer housing.

Release coolant hose (3) from intake silencer housing.




Release connector (1) on hot film air mass meter and disconnect. Release cable from intake silencer housing.

Release clamp (2).

Tightening torque 13 71 5AZ.

Release screw (3).

Tightening torque 13 71 6AZ.

Detach intake silencer housing (4) from rubber mounts in upward direction. Feed out intake silencer housing (4) in upward direction and remove.

*Installation note:*
Assemble engine.

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# 13 72 001 Replacing air filter element (N57 D30 O/T 1)

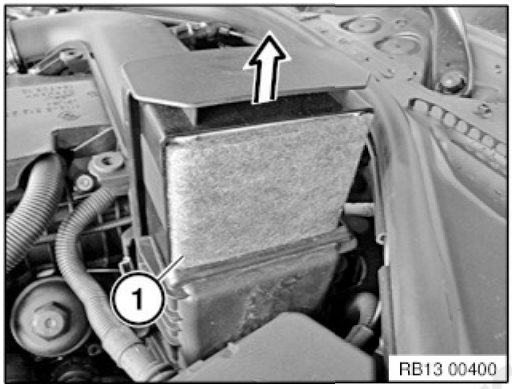
*Necessary preliminary tasks:*

- Switch off ignition.
- Remove acoustic cover




Release front and rear clamps on intake silencer housing.

Partially release coverÂ (1) on intake silencer housing.




Remove air filter element (1) upwards.*Installation note:*
Make sure that the air cleaner is not damaged or bent when being slipped into the intake silencer housing. The lower fleece piece in the area of the raw air supply may not be bent or loosened.

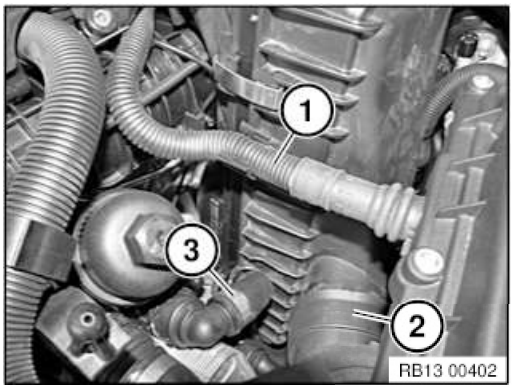
*Installation note:*
Assemble engine.

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# 13 71 000 Removing/replacing intake silencer housing (N57 D30 O/T 1)

*Necessary preliminary work:*

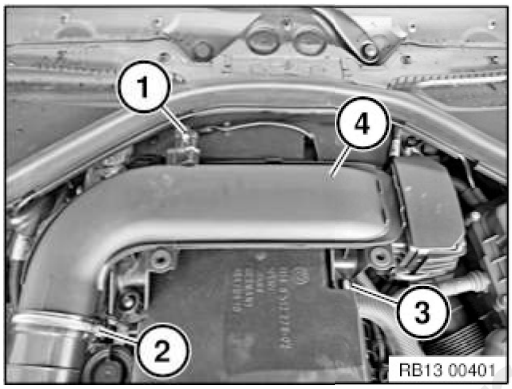
- Switch off ignition.
- Remove acoustic cover




Unclip wiring harness (1) from intake silencer housing.

Unlock air duct (2) and detach from intake silencer housing.

Release coolant hose (3) from intake silencer housing.




Release connector (1) on hot film air mass meter and disconnect. Release cable from intake silencer housing.

Release clamp (2).

Tightening torque 13 71 5AZ.

Release screw (3).

Tightening torque 13 71 6AZ.

Detach intake silencer housing (4) from rubber mounts in upward direction. Feed out intake silencer housing (4) in upward direction and remove.

*Installation note:*
Assemble engine.

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# 13 72 001 Replacing air filter element (N57 D30 O/T 1)

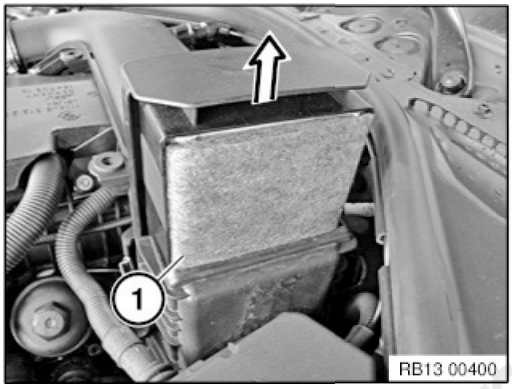
*Necessary preliminary tasks:*

- Switch off ignition.
- Remove acoustic cover




Release front and rear clamps on intake silencer housing.

Partially release coverÂ (1) on intake silencer housing.

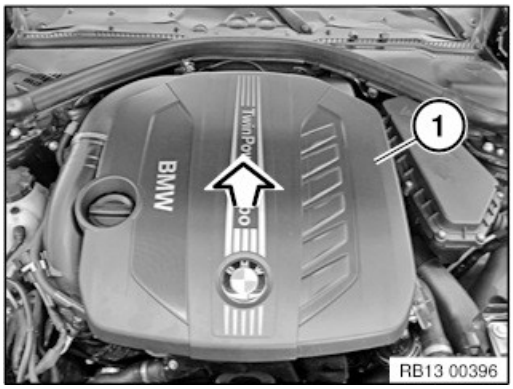



Remove air filter element (1) upwards.*Installation note:*
Make sure that the air cleaner is not damaged or bent when being slipped into the intake silencer housing. The lower fleece piece in the area of the raw air supply may not be bent or loosened.

*Installation note:*
Assemble engine.

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## 13 .. ... Removing acoustic cover (N57 D30 O/T 1)



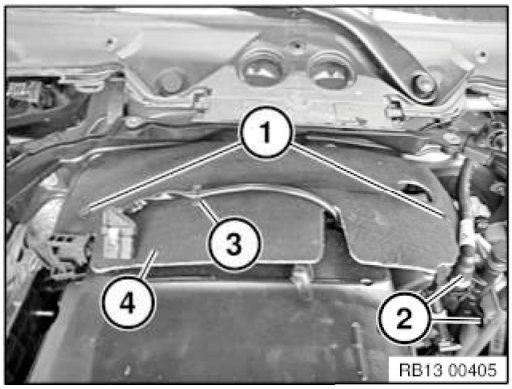

Raise acoustic coverÂ (1) and remove in direction of travel.

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# 13 71 ... Removing acoustic covers (N57 D30 O/T 1)

**Necessary preliminary tasks:**

- **Only if rear acoustic cover needs to removed:**
  Remove intake silencer housing.
  Remove acoustic insulation for bulkhead, centre.
- **Only if sound insulation on injector needs to be removed:**
  Partially detach rear acoustic cover.
- **Only if front acoustic cover needs to removed:**
  Remove fan cowl.
- **Only if bottom acoustic cover needs to removed:**
  Remove front underbody protection.
  **All-wheel drive vehicles only:**
  Remove reinforcement plate.



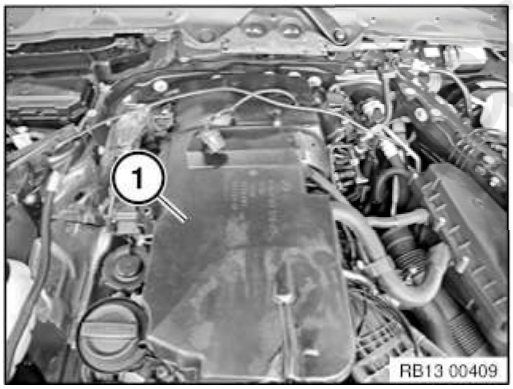

**Remove rear acoustic cover:**

Release expanding rivets (1).

Release vacuum lines (2) from clamps and set to one side.

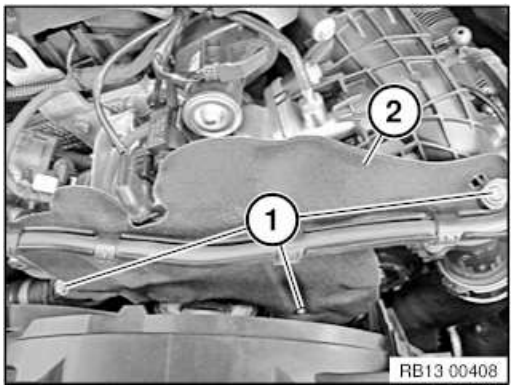
Release cable strap (3) from acoustic cover.

Remove rear acoustic cover (4).




**Remove sound insulation on injectors:**

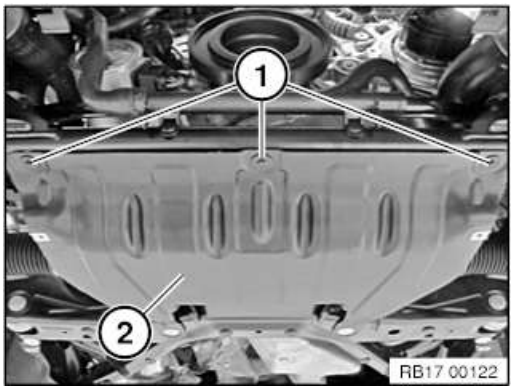
Remove sound insulation (1) upwards.




**Remove front acoustic cover:**

Release screws (1).

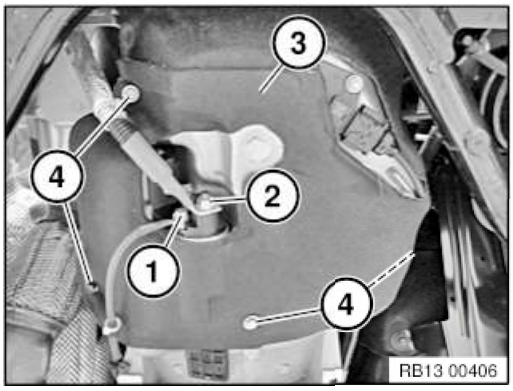
Remove front acoustic cover (2).




**Remove bottom acoustic cover:**

Release screws (1).

Remove cover (2).




**Only rear-wheel drive vehicles:**

Slacken nut (1).

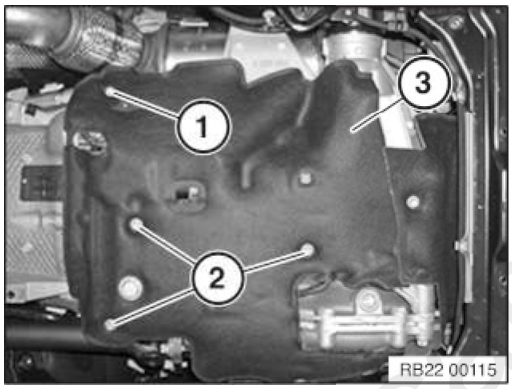
Tightening torque 12 52 1AZ.

Slacken nut (2).

Tightening torque 12 52 3AZ.

Release screws (4).

Remove bottom acoustic cover (3).




**All-wheel drive vehicles only:**

Release screw (1).

Tightening torque 11 13 4AZ.

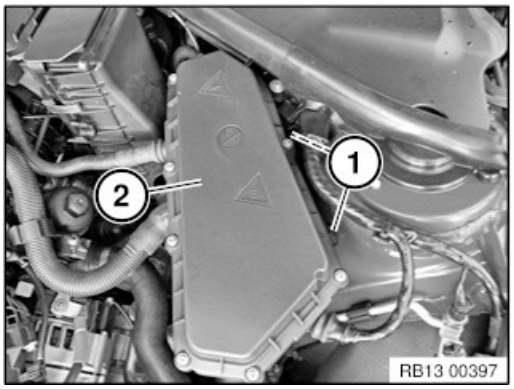
Unfasten screws (2).

Tightening torque 11 13 5AZ.

Remove bottom acoustic cover (3).

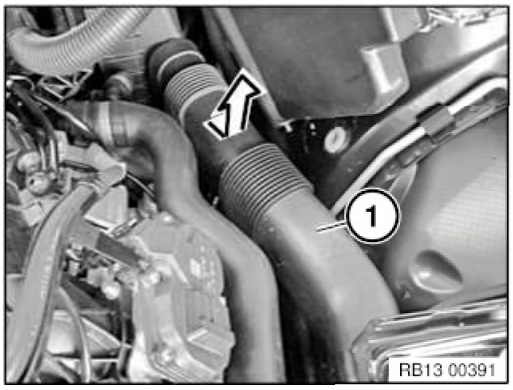
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## 13 71 ... Removing intake port (N57 D30 O/T 1)




Release screws (1).

Detach electronics box (2) from rubber mount and place to one side.




Release catches () in intake silencer housing and air duct.

Feed out intake port (1) in direction of arrow and remove.

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# 16 00 005 Draining and filling fuel tank

**Special tools required:**

- 16 1 080

**Important!**

Observe country-specific safety regulations.

Ensure adequate ventilation in the workbay!

Connect the exhaust extraction unit to the exhaust tailpipe.

The electric fuel pump must not operate without fuel! After completing repairs but before starting the engine for the first time, fill the fuel tank with min. 5 l fuel through the fuel filler pipe.

Do not damage non-return valve when pulling out suction hose.

**Diesel vehicles:**

Before starting the engine for the first time, if the fuel tank has been run dry or emptied, fill with diesel fuel and turn on ignition for approx. 1 minute. The fuel circuit is thus filled and vented, which results in the engine firing more quickly.

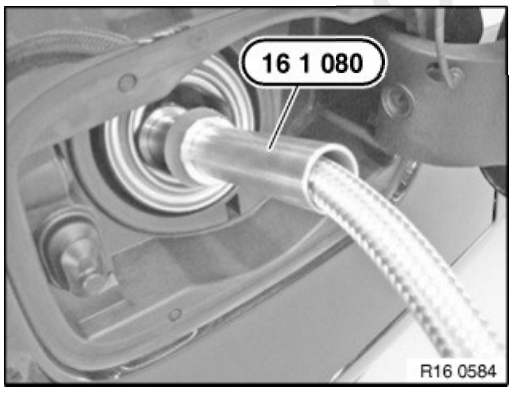
**Drawing off fuel:**

Start engine and allow to run.

The electric fuel pump runs.

In this way, the fuel is re-pumped through the suction jet pump from the left to the right side of the fuel tank.

*Note:*
Fuel can be drawn out of left and right sides of tank through fuel filler neck, leaving only a small residue. The residual amount is drawn off via the sensor opening.




Insert special tool 16 1 080 into fuel filler neck.

Special tool 16 1 080 has two different diameters for petrol/gasoline and diesel-engine cars!

Slide suction hose of extractor unit, refer to BMW Service Workshop Equipment - Planning Documentation, through special tool 16 1 080 into the fuel filler pipe, turning in the process if necessary.

Insertion length approx. 125 cm.

Draw off fuel with extractor unit (refer to BMW Service Workshop Equipment) as far as possible.

Follow drawing off of fuel on fuel gauge in instrument cluster.

**Drawing off residual fuel quantity:**

Drawing off residual fuel amount is not included in the time value of this operation.

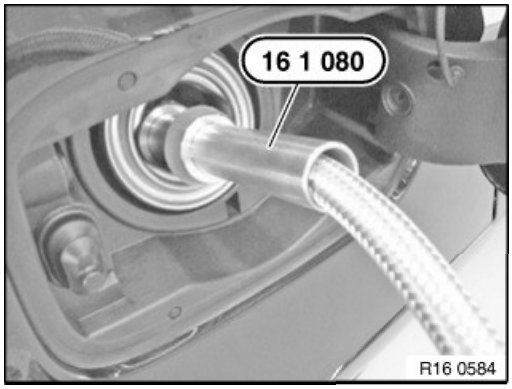
**Important!**

Ensure passenger compartment is adequately ventilated.

Catch dripping fuel in a suitable container.

Remove flange cover.

Draw off residual fuel quantity through sensor openings.




**Fuel filling:**

Insert special tool 16 1 080 into fuel filler neck.

Special tool 16 1 080 has two different diameters for petrol/gasoline and diesel-engine cars!

Slide suction hose of extractor unit, refer to BMW Service Workshop Equipment - Planning Documentation, approx. 40 cm into fuel filler pipe.

Fill fuel from suction extractor unit.

**Extracting fuel after a defect in the suction jet pump or fuel pump:**

Draw off right half of tank completely through fuel filler pipe.

Remove flange cover.

Insert extraction hose through service opening in tank, fuel (also residual quantity) can be drawn off.

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# 16 11 060 Removing and installing or replacing fuel filler pipe

**Recycling**

Fuel escapes when fuel lines are detached. Have a suitable collecting vessel ready.

Catch and dispose of escaping fuel.

Observe country-specific waste disposal regulations.

**Caution!**

Ensure adequate ventilation in the workbay!

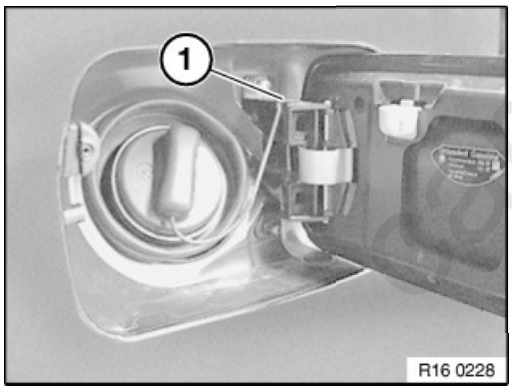
Avoid skin contact (wear gloves)!

After installation of fuel tank/prior to first engine start-up:

- Fill fuel tank with at least 5 litres of fuel.
- Check ground connection at fuel filler neck to body for continuity. If necessary, clean contact surface between body and fuel filler pipe screw connection.

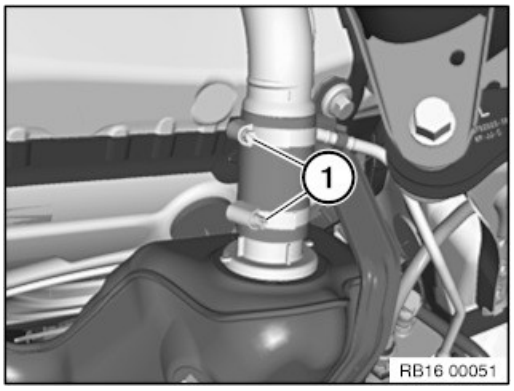
**Necessary preliminary work:**

- Extract fuel from fuel tank.
- Remove rear right wheel arch trim
- Lower rear axle.




Unhook retaining strap (1) from tank flap.

Open cap and set to one side.




**Caution!**

There may still be residual amounts of fuel in the fuel tank.

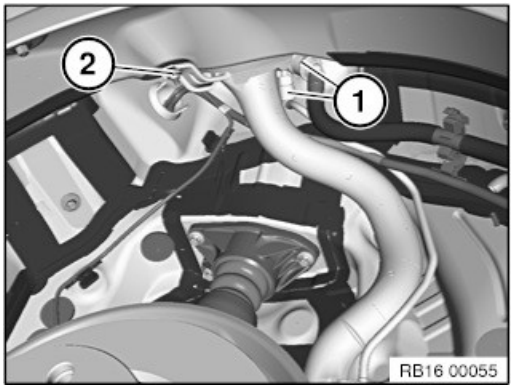
Catch and dispose of escaping fuel.

Loosen hose clamps (1).

Detach fuel filler hose from fuel filler pipe.

*Installation note:*
Replace hose clamps.

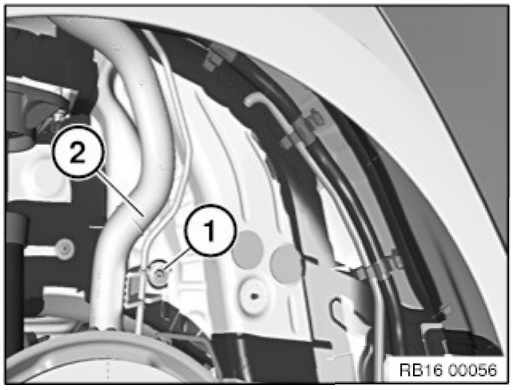
Tightening torque 16 12 1AZ.




Unlock quick-release fasteners (1) and disconnect vent hoses.

Slacken nut (2).

*Installation note:*
Tightening torque: 16 12 2AZ.




Detach the tank ventilation line from the holder.

Slacken nut (1).

*Installation note:*
Renew plastic nut.

Tightening torque 16 12 2AZ.

Withdraw fuel filler pipe (2) completely out of rubber cup at wheel arch and feed out.

*Installation note:*
Make sure rubber cup fits correctly.

*Installation note:*
Clean **contact surface** on body and earth cable on fuel filler pipe.

Ground connection must be guaranteed.

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# 16 14 090 Removing and installing/replacing delivery unit (diesel)

**Special tools required:**

- 16 1 190
- 33 5 070

**Recycling**

Fuel escapes when fuel lines are detached. Have a suitable collecting vessel ready.

Catch and dispose of escaping fuel.

Observe country-specific waste disposal regulations.

**Important!**

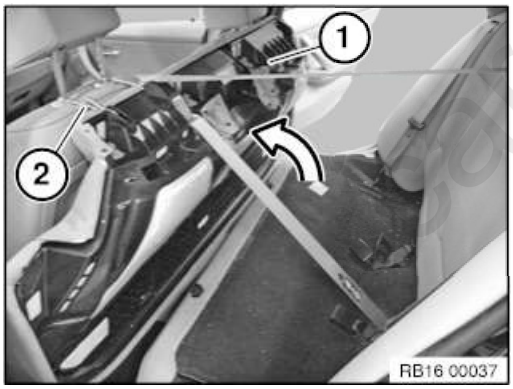
Ensure adequate ventilation in the workbay!

Avoid skin contact (wear gloves)!

Ensure absolute cleanliness when performing repair work on the open fuel system. Dirt contamination in the fuel tank may impair driving or may even result in vehicle breakdown.

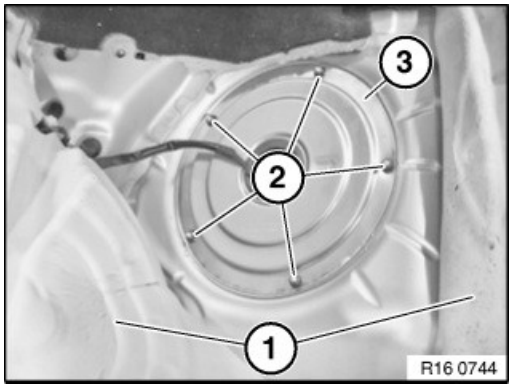
**Necessary preliminary tasks:**

- Draw off fuel.




Only unclip seat bench (1) as shown on the left and right and fold up in direction of arrow.

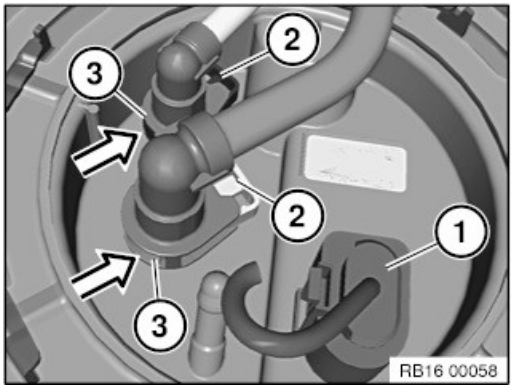
Secure seat bench on front seat (2).




Fold both floor trim panels (1) to the side.

Unscrew nuts (2).

Remove cover for service opening (3).




Disconnect plug connection (1).

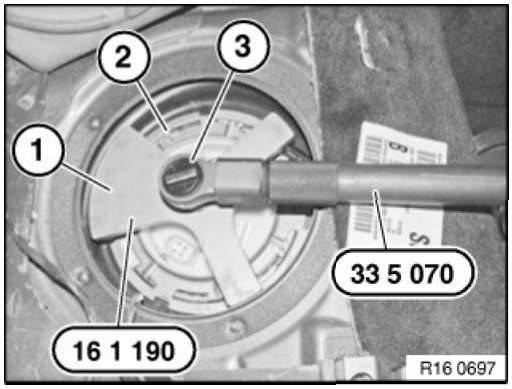
Open the lock (2) in the direction of the arrow (graphic already opened).

Press the release button (3) and pull off the fuel delivery line. If applicable, slightly push the connector out to make pulling the part off easier.

**Important!**

Fuel delivery line must be felt and heard to snap into place.

Damaged lock parts must be replaced without fail!

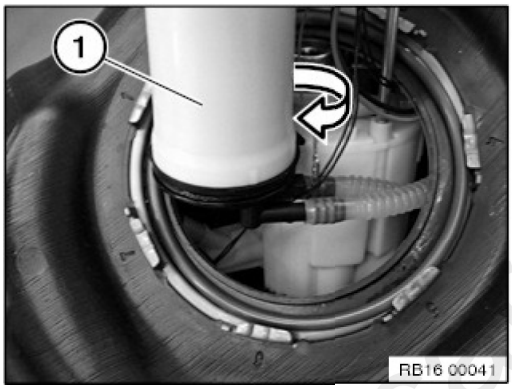



Fit special tool 16 1 190 with wide crank web (1) towards rear onto locking ring (2).

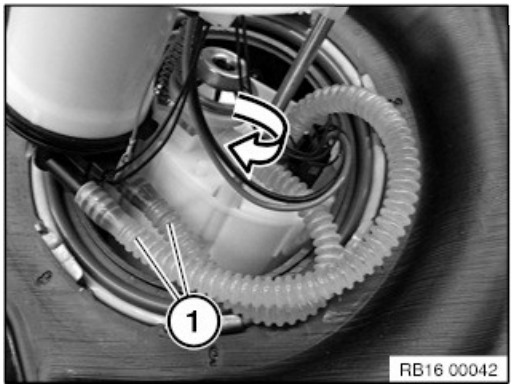
Connect special tool 33 5 070 with reversible ratchet head 1/2 " (3) and position on special tool 16 1 190 .

Release locking ring (2) in counterclockwise direction.

*Installation note:*
Replace the sealing ring between the flange head and fuel tank.




First, unscrew the flange cover with container (1) from the fuel tank.*Note:*
Graphic shows fuel tank removed.

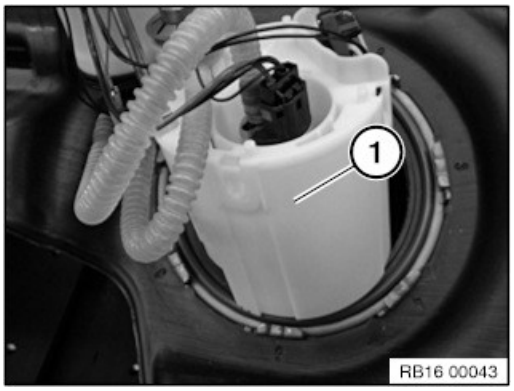



Feed both hoses (1) out of the fuel tank.

Raise the fuel pump by continuing to turn the delivery unit.

*Note:*
Graphic shows fuel tank removed.

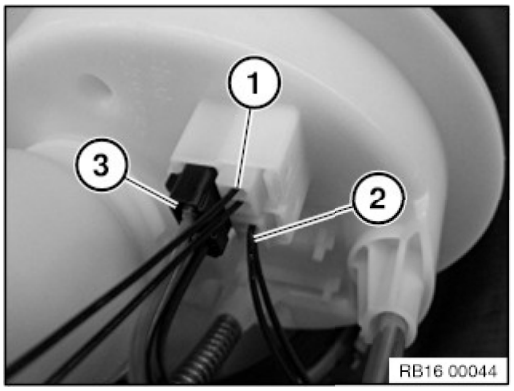
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Carefully remove the delivery unit (1) from the fuel tank.

Make sure that the fuel level sensor is not damaged or bent during the removal.

*Note:*
Graphic shows fuel tank removed.




Disconnect the plug connection (1) from the left fuel level sensor.

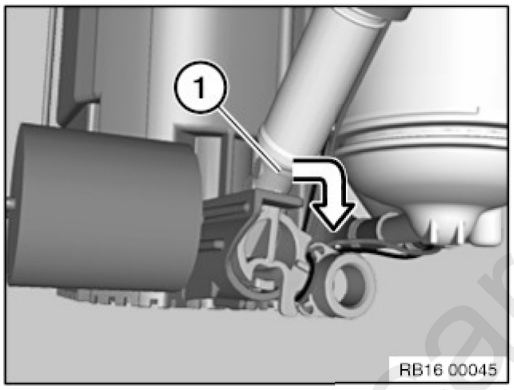
The plug connections (2 and 3) will remain connected.

**Important!**

Connector housings (1 and 2) are not encoded and accidental switching is possible!

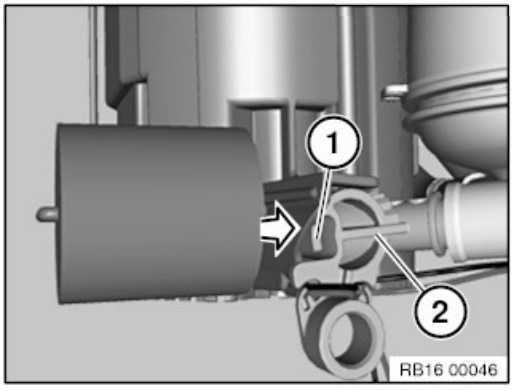
Plug assignment:

- (1) Fuel level sensor, left (cannot be mistakenly switched).
- (2) Fuel level sensor, right
- (3) Fuel pump




Disconnect the hose connection to the left tank half.

Turn the fuel hose (1) by 90° in direction of arrow.

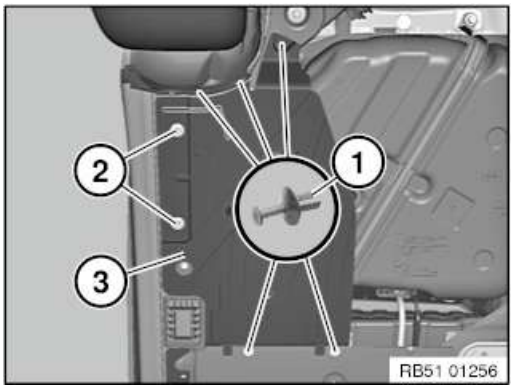



Press the unlocking tab (1) and pull the connector out of the delivery unit in the direction of the arrow.*Installation note:*
Replace sealing ring on the connector (2).

Make sure the connector latches correctly.

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# 51 75 ... Removing and installing/replacing left or right tank cover




Release expanding rivets (1).

Unfasten screws (2).

Tightening torque 51 75 1AZ.

Remove tank (3).

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# 16 11 030 Removing and installing/replacing the fuel tank (diesel fuel)

**Recycling!**

Fuel escapes when fuel lines are detached. Have a suitable collecting vessel ready.

Catch and dispose of escaping fuel.

Observe country-specific waste disposal regulations.

**Attention!**

Ensure adequate ventilation in the workbay!

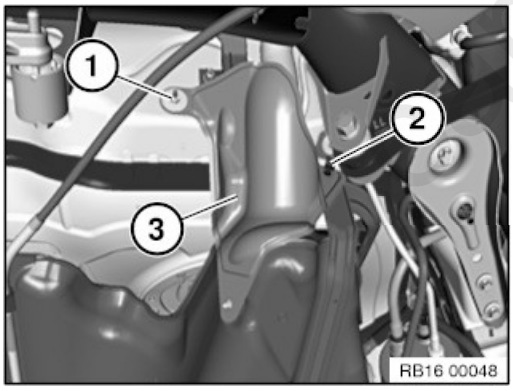
Avoid skin contact (wear gloves)!

After installation of fuel tank/prior to first engine start-up:

- Fill fuel tank with at least 5 litres of fuel.
- Check earth connection at fuel filler neck to body for continuity. If necessary, clean contact surface between body and fuel filler pipe screw connection.

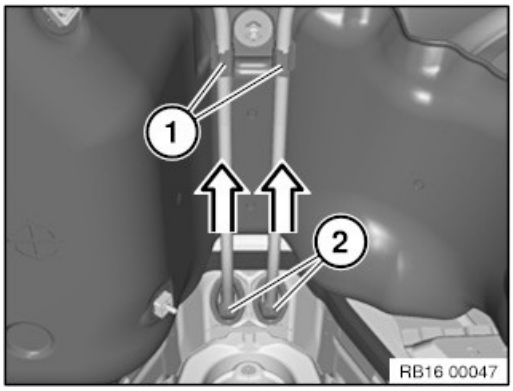
**Necessary preliminary work:**

- Draw off fuel from fuel tank
- Remove the left tank cover.
- Remove the right tank cover.
- Remove propeller shaft.
- Detach parking brake Bowden cables from the brake shoe expander, left and right.




Undo sheet metal nut (1).

Remove the clip (2) from the tensioning strap and remove the heat shield (3).




Detach the guide tubes from the clip (1).

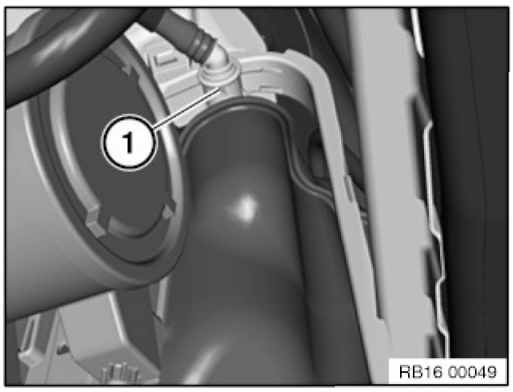
*Installation note:*
It is absolutely necessary to replace damaged clips (1).

Pull both guide tubes back in the direction of the arrow until the guide tubes can be moved freely.

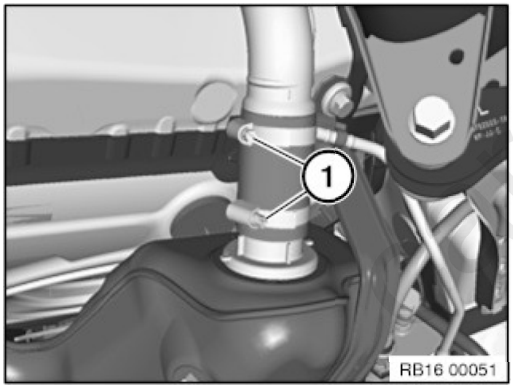
**Attention!**
Parking brake bowden cables remain attached to parking brake lever!

*Installation note:*
The two guide tubes must be inserted into the holder under the centre console by touch!

Both rubber grommets (2) must be correctly pressed into the body after securing the guide tubes in the clips (1).




Unlock the snap fastener (1) and pull off the tank ventilation line.*Installation note:*
Make sure snap fasteners engage correctly.

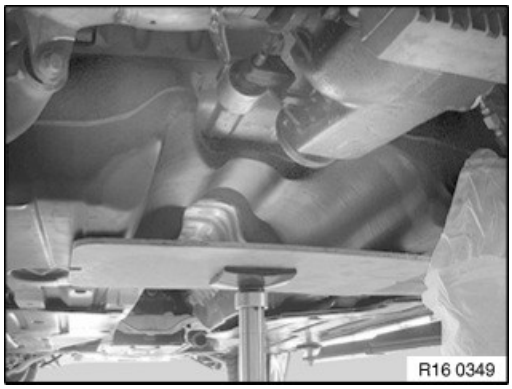



**Attention!**
There may still be residual amounts of fuel in the fuel tank.
Catch and dispose of escaping fuel.

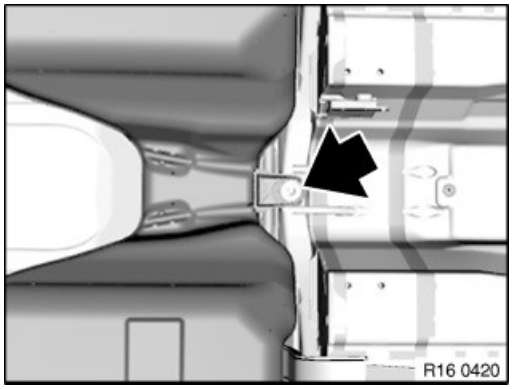
Release hose clamps (1) and loosen the fuel filling hose from fuel filler pipe.

The fuel filling hose cannot be pulled off until the fuel tank has been lowered.

*Installation note:*
Tightening torque 16 12 1AZ.

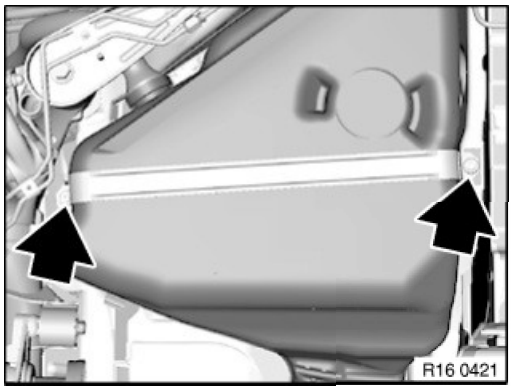



Heavily support the fuel tank.




Unfasten nut.*Installation note:*
Replace self-locking nut.

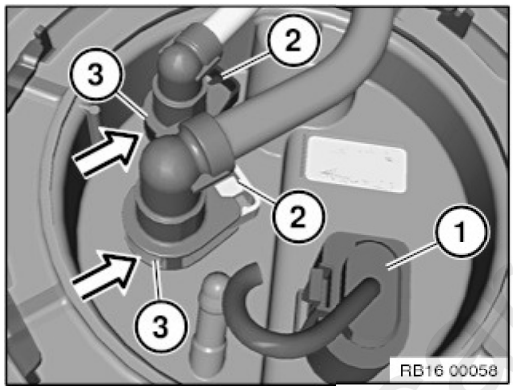
Tightening torque 16 11 1AZ.




Release screws for tightening straps on left and right and remove tightening straps.

Carefully lower the fuel tank until the plug connection and fuel delivery line are accessible at the flange cover.

*Installation note:*
Tightening torque 16 11 2AZ.




Disconnect plug connection (1).

Open both locks (2) in the direction of the arrow (shown already opened).

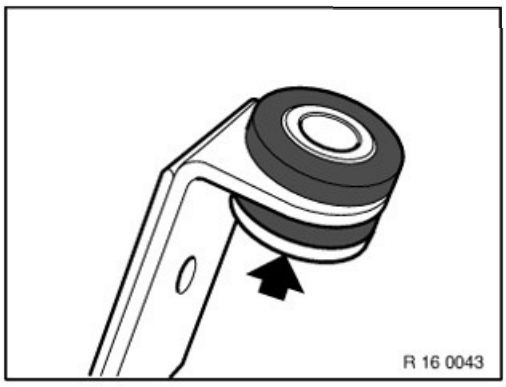
Press both release buttons (3) and pull off fuel delivery line. If applicable, slightly push the connector out to make pulling the part off easier.

**Attention!**

Fuel delivery line must be felt and heard to snap into place.

Damaged lock parts must be replaced without fail!

Completely lower the fuel tank.

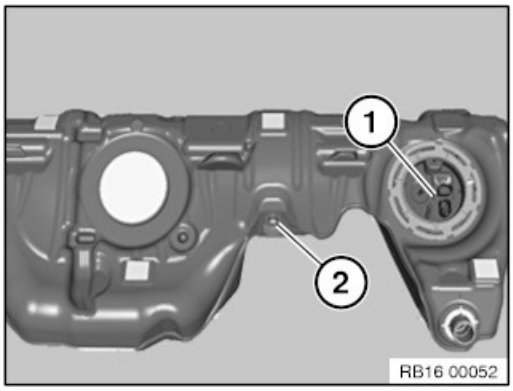



**Installation note:**

Note rubber mount with spacer bush.

Wide collar on spacer bush points to screw head.

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The following components must be remounted when the fuel tank is replaced:

- Delivery unit
- Holder for parking brake Bowden cable guide tubes

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# 16 12 001 Removing and installing/replacing sensor for fuel gauge (left)

*Note:*
Left fuel level sensor cannot be replaced separately.

The entire fuel tank must be replaced.

This operation is described in: Removing and installing the fuel tank.

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# 16 12 000 Removing and installing/replacing sensor for fuel gauge (right).

*Note:*
The fuel level sensor, right, cannot be replaced separately.

The entire delivery unit must be replaced.

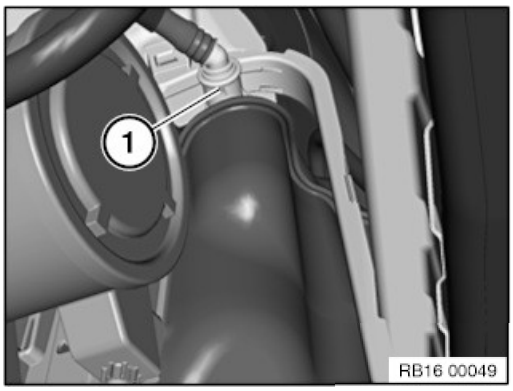
This operation is described in: Remove and install the delivery unit

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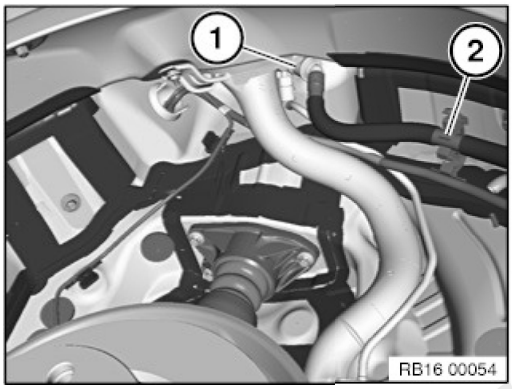
# 16 12 440 Replace fuel filler neck breather pipe (diesel fuel)

**Necessary preliminary tasks:**

- Remove right tank cover.
- Remove right wheel arch panel.



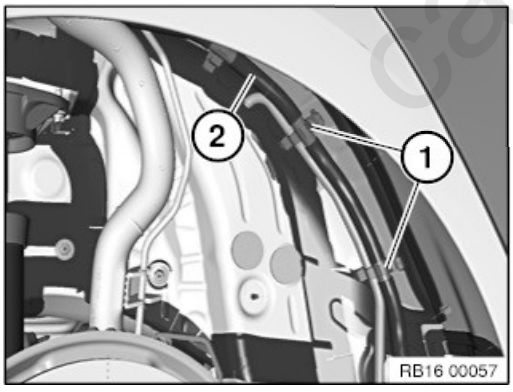

Unlock and disconnect snap fastener (1).*Installation note:*
Make sure the quick-release fastener snaps in correctly.




Unlock and disconnect snap fastener (1).

Disengage fuel filler neck breather pipe from holder (2).

*Installation note:*
Make sure the quick-release fastener snaps in correctly.




Detach the fuel filler neck breather pipe (2) from the holders (1) and feed through body.

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# 16 14 010 Removing and installing/renewing fuel pump (diesel)



*Note:*
The fuel pump can not be replaced separately.

The entire delivery unit must be replaced.

This operation is described in: Remove and install the delivery unit

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# 16 14 500 Removing and installing/replacing control unit for electric fuel pump

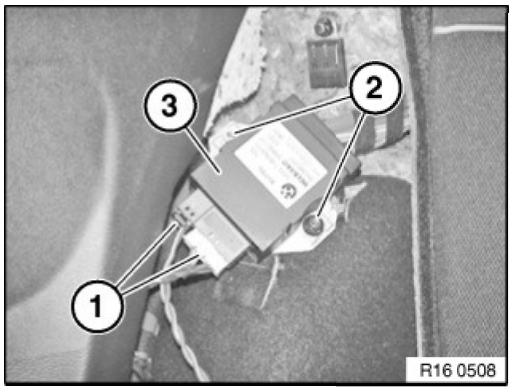
**Attention!**

Read and comply with notes on protection against electrostatic discharge (ESD protection).

**Necessary preliminary work:**

- Remove backrest side section, right rear seat.

*Note:*
On motor vehicles with N13 engine, the control unit for the electric fuel pump is integrated into the DME control unit.




Disconnect plug connection (1).

Release nuts (2) and remove control unit (3).

*Installation note:*
Tightening torque 16 14 1AZ.

**Replacement:**

- Replacement only: Perform initial operation of electric fuel pumps-control electronics.

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# 16 14 090 Removing and installing/replacing delivery unit (diesel)

**Special tools required:**

- 16 1 190
- 33 5 070

**Recycling**

Fuel escapes when fuel lines are detached. Have a suitable collecting vessel ready.

Catch and dispose of escaping fuel.

Observe country-specific waste disposal regulations.

**Important!**

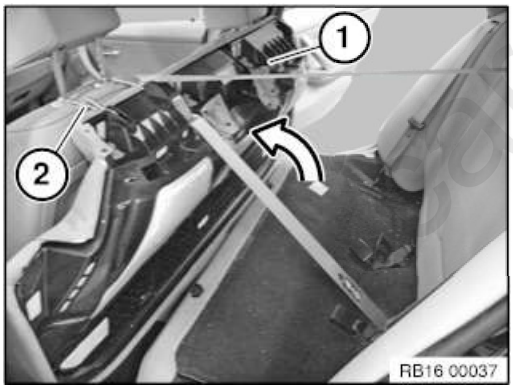
Ensure adequate ventilation in the workbay!

Avoid skin contact (wear gloves)!

Ensure absolute cleanliness when performing repair work on the open fuel system. Dirt contamination in the fuel tank may impair driving or may even result in vehicle breakdown.

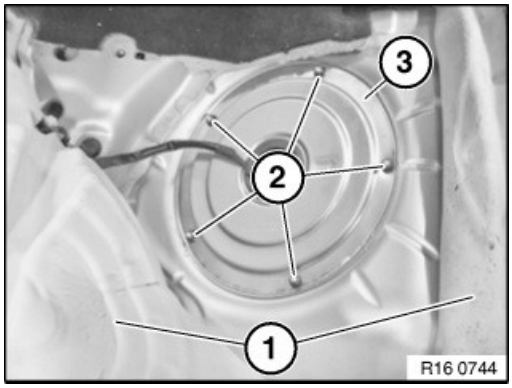
**Necessary preliminary tasks:**

- Draw off fuel.




Only unclip seat bench (1) as shown on the left and right and fold up in direction of arrow.

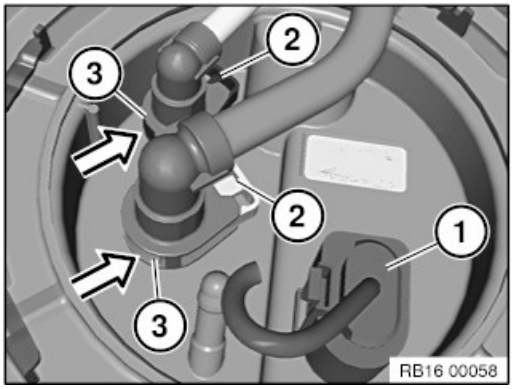
Secure seat bench on front seat (2).




Fold both floor trim panels (1) to the side.

Unscrew nuts (2).

Remove cover for service opening (3).




Disconnect plug connection (1).

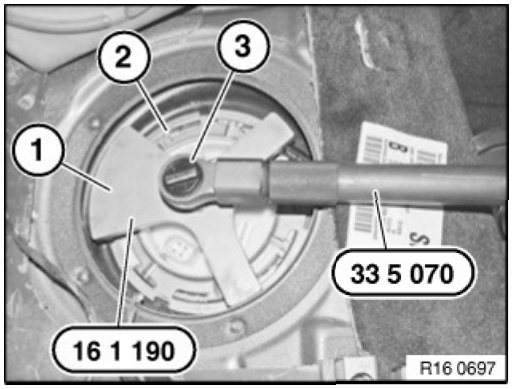
Open the lock (2) in the direction of the arrow (graphic already opened).

Press the release button (3) and pull off the fuel delivery line. If applicable, slightly push the connector out to make pulling the part off easier.

**Important!**

Fuel delivery line must be felt and heard to snap into place.

Damaged lock parts must be replaced without fail!

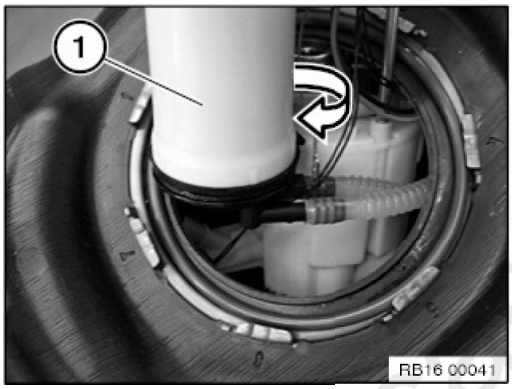



Fit special tool 16 1 190 with wide crank web (1) towards rear onto locking ring (2).

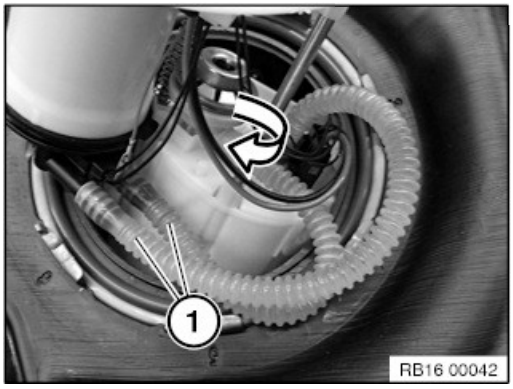
Connect special tool 33 5 070 with reversible ratchet head 1/2 " (3) and position on special tool 16 1 190 .

Release locking ring (2) in counterclockwise direction.

*Installation note:*
Replace the sealing ring between the flange head and fuel tank.




First, unscrew the flange cover with container (1) from the fuel tank.*Note:*
Graphic shows fuel tank removed.

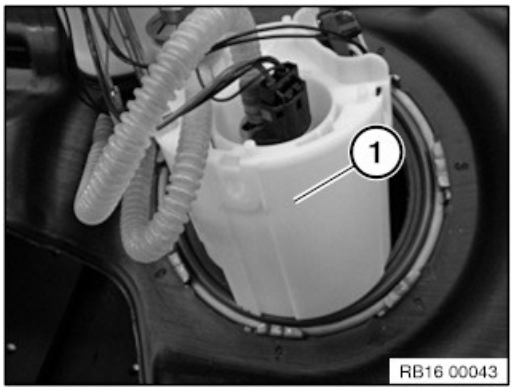



Feed both hoses (1) out of the fuel tank.

Raise the fuel pump by continuing to turn the delivery unit.

*Note:*
Graphic shows fuel tank removed.

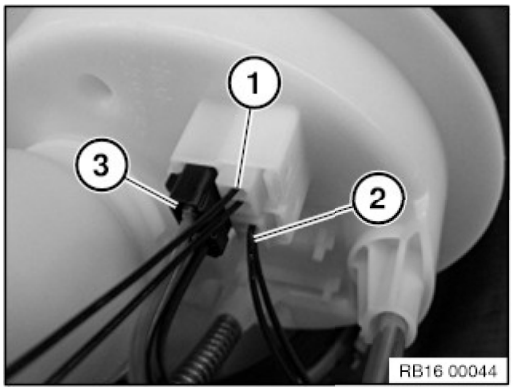
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Carefully remove the delivery unit (1) from the fuel tank.

Make sure that the fuel level sensor is not damaged or bent during the removal.

*Note:*
Graphic shows fuel tank removed.




Disconnect the plug connection (1) from the left fuel level sensor.

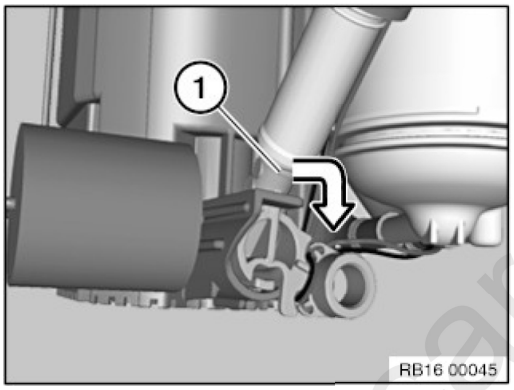
The plug connections (2 and 3) will remain connected.

**Important!**

Connector housings (1 and 2) are not encoded and accidental switching is possible!

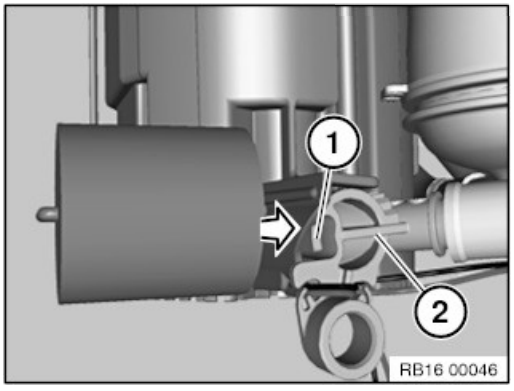
Plug assignment:

- (1) Fuel level sensor, left (cannot be mistakenly switched).
- (2) Fuel level sensor, right
- (3) Fuel pump




Disconnect the hose connection to the left tank half.

Turn the fuel hose (1) by 90° in direction of arrow.




Press the unlocking tab (1) and pull the connector out of the delivery unit in the direction of the arrow.*Installation note:*
Replace sealing ring on the connector (2).

Make sure the connector latches correctly.

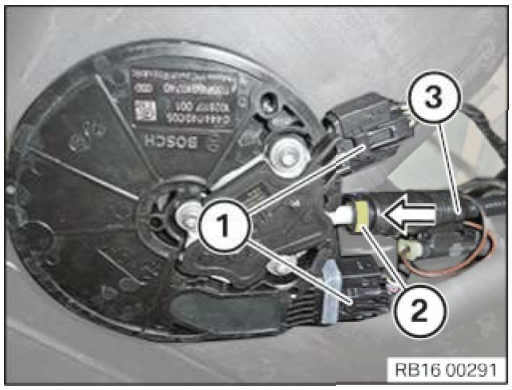
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# 16 19 005 Remove & install/replace the metering line (AdBlue)

**Necessary preliminary work:**

- Remove tank cover
- Remove right underbody panelling

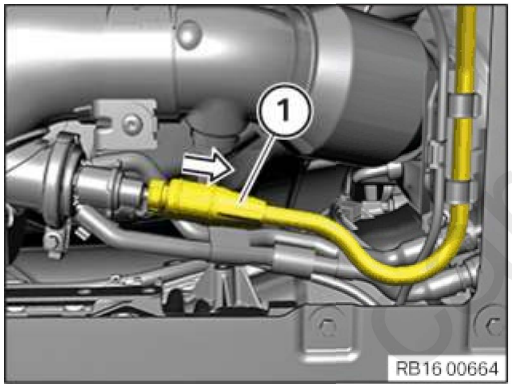
**Removal:**



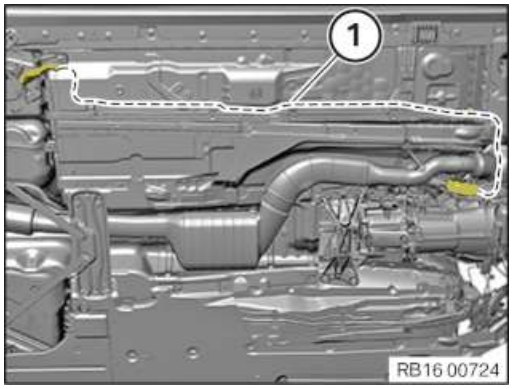

Disconnect plug connection (1).

Press release button (2), and press feed line (3) gently in the delivery unit direction.

Pull off feed line after complete unlocking.




Unlock and disconnect snap fastener (1).

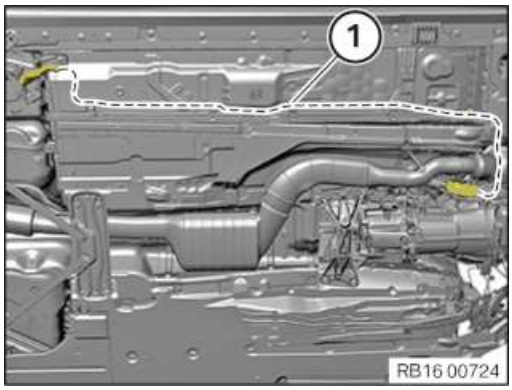



Detach the metering line (1) from all the holders along the route.

Remove the metering line (1).

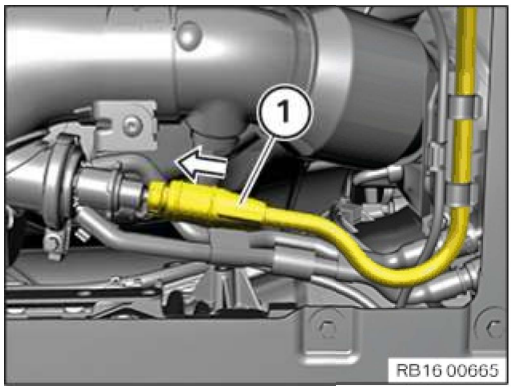
carsdiagn.com

**Installation:**




Install metering line (1):

Attach the metering line (1) in all the holders along the route.




Position snap fastener (1) and lock.

Make sure it is correctly locked via a tensile test!




Position the feed line and lock the snap fastener (1).

Connect plug connections (2).

*Note:*

Check correct engagement of snap fastener (1) by attempting to pull.

**Required reworking:**

- Install tank cover on right
- Install the underbody panelling on right
- Bleed the metering line in accordance with the service function

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# 16 19 020 Removing and installing/replacing active tank



**Attention!**

Ensure adequate ventilation in the workbay!

Avoid skin contact (wear gloves)!

Avoid eye contact (safety goggles)!

When releasing parts resulting from AdBlue, AdBlue may come out. Have a collecting vessel ready.

Observe country-specific waste disposal regulations.



**Attention!**

Maintain conditions of absolute cleanliness.

Clean connections and covers of lines carrying AdBlue thoroughly with water after each disassembly or before each installation.

After completing repair work, thoroughly clean the working area with water!

Use fluff-free cloths for cleaning (see Electronic Parts Catalogue cleaning cloths Wypall X80).

Close connections and lines!

Thoroughly clean special tool with water after each use.



**Necessary preliminary work:**

- Remove rear right wheel arch panel
- Remove right tank cover
- Removing the right compression strut

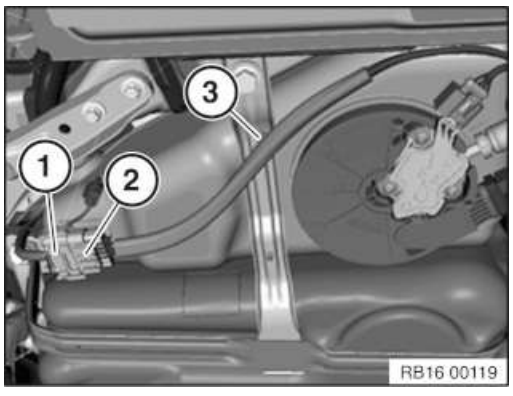


**Attention!**

**With this SCR system, the active tank cannot be drawn off!**



**Removal:**

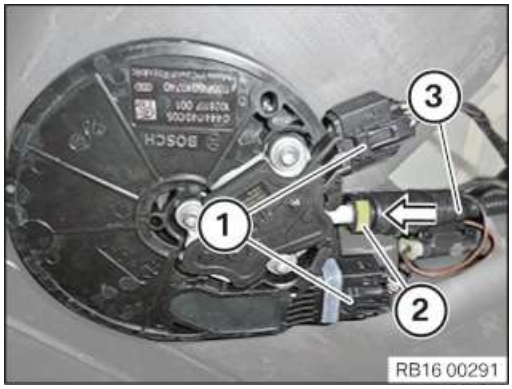



Disconnect plug connection (1).

Unclip connector (2) from bracket.

Unclip wiring harness (3) from bracket.

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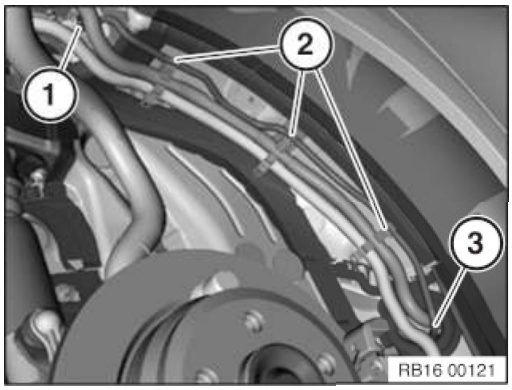



Disconnect plug connection (1).

Press release button (2), and press feed line (3) gently in the delivery unit direction.

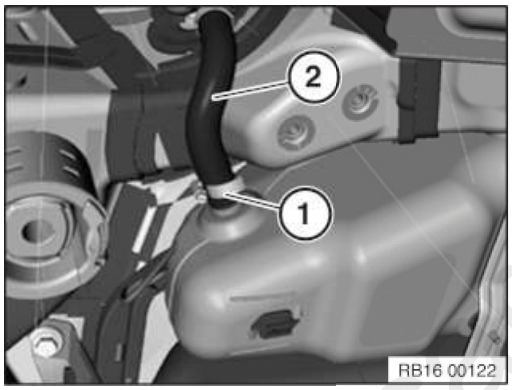
Pull off feed line after complete unlocking.

*Installation note:*
Check for correct latch mechanism of the snap fastener (1) by pulling.

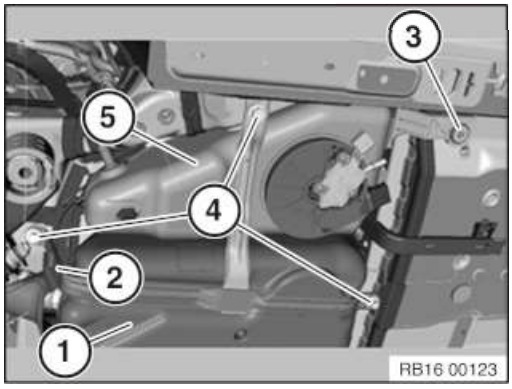



Unlock and disconnect snap fastener (1).

Unclip tank ventilation line from brackets (2) and pass tank ventilation line through opening (3) when removing the active tank.




Release hose clamp (1) and pull off filling hose (2) from active tank.*Installation note:*
Replace hose clamp (1).




**Attention!**

**Support fuel tank (1) using universal jack over a wide area!**

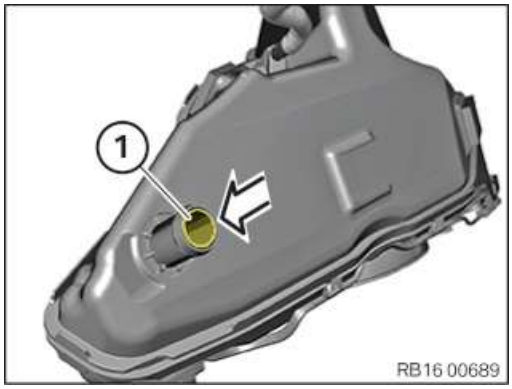
Unclip heat shield (2) from tank retaining strap.

Release nut (3) and screws (4) and remove active tank (5) downward.

**Attention!**

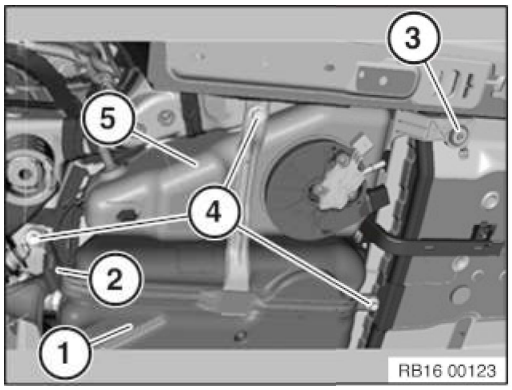
When lowering the active tank, the ventilation line must be passed through the opening in the wheel arch.

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Open the roll-over valve and drain the active tank using filling nozzle 1.

**Installation:**




**Attention!**

**Support fuel tank (1) using universal jack over a wide area!**

Position active tank (5).

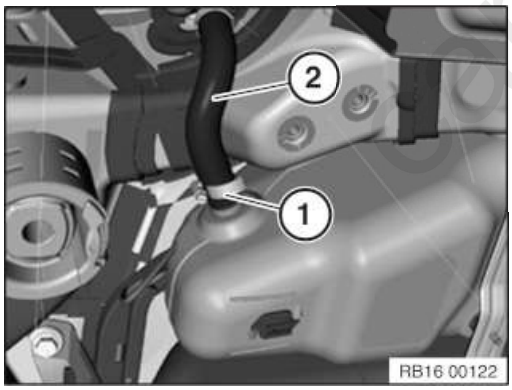
**Attention!**

When lifting the active tank, the ventilation line must be passed through the opening in the wheel arch.

Position and tighten nut (3) and screw (4).

*Installation note:*
Tightening torque: 16 19 2 and 3AZ.

Mount heat shield (2) on the tank retaining strap.

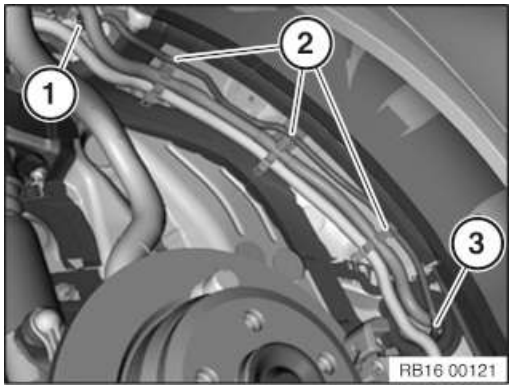



Install the filler hose (2).

Insert hose clamp (1) and tighten.

*Installation note:*
Replace hose clamp (1).

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Pass ventilation line through opening (3).

Clip ventilation line into brackets (2).

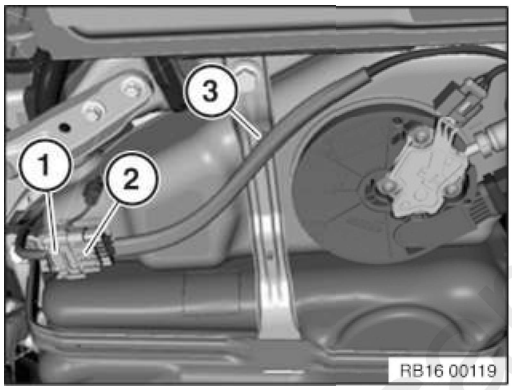
Position snap fastener (1) and lock.




Position the feed line and lock the snap fastener (1).

Connect plug connections (2).

*Note:*
Check correct engagement of snap fastener (1) by attempting to pull.




Clip wiring harness (3) into brackets.

Connect plug connection (1).

Clip in the connector (2) into the bracket.

**Required reworking:**

- Install wheel arch trim panel on rear right
- Install tank cover
- Installing the compression strut on the right.
- Fill SCR reservoir

*Note:*
**After completing work:**

Carry out the "Start-up of the SCR tank system" service function.

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# 16 19 050 Removing and installing/replacing passive tank



**Attention!**

Ensure adequate ventilation in the workbay!

Avoid skin contact (wear gloves)!

Avoid eye contact (safety goggles)!

When releasing parts resulting from AdBlue, AdBlue may come out. Have a collecting vessel ready.

Observe country-specific waste disposal regulations.



**Attention!**

Maintain conditions of absolute cleanliness.

Clean connections and covers of lines carrying AdBlue thoroughly with water after each disassembly or before each installation.

After completing repair work, thoroughly clean the working area with water!

Use fluff-free cloths for cleaning (see ETP Electronic Parts Catalogue WAYPALL cleaning cloths L20)!

Close connections and lines!

Thoroughly clean special tool with water after each use.



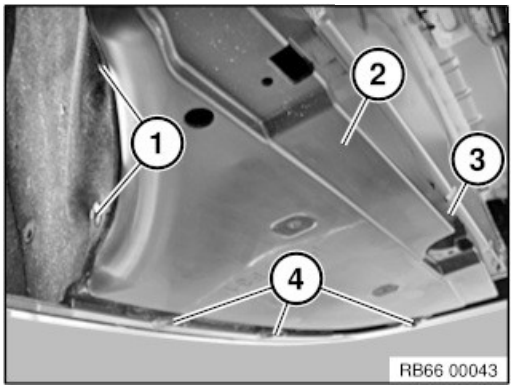
**Necessary preliminary work:**

- Lower exhaust system on rear
- Remove heat shield.



**Attention!**

**With this SCR system, the passive tank cannot be drawn off!**



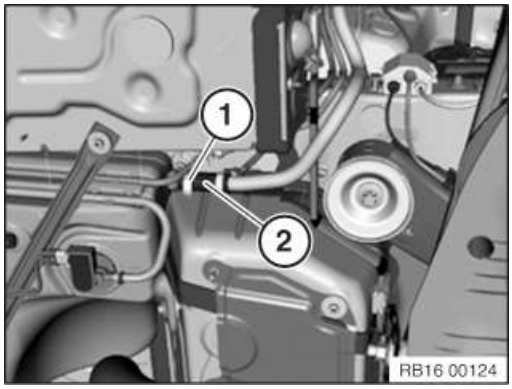

Lever out expanding rivet (1).

Unscrew nut (3).

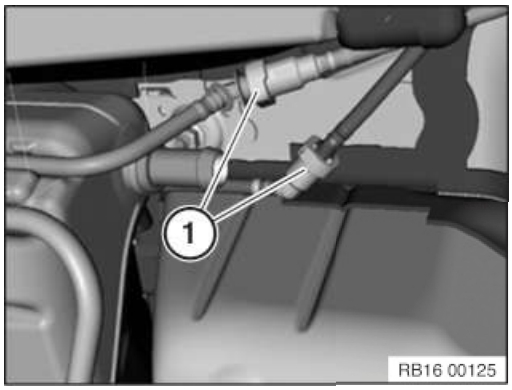
Release screws (4).

Remove cover (2) toward the bottom.

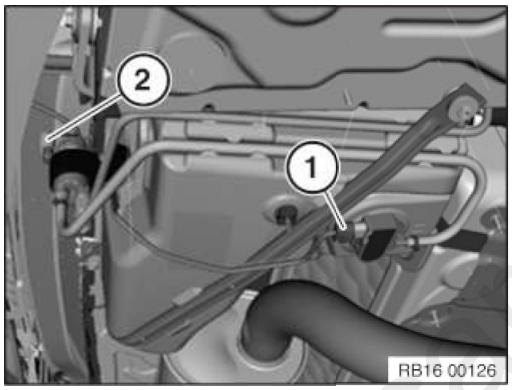
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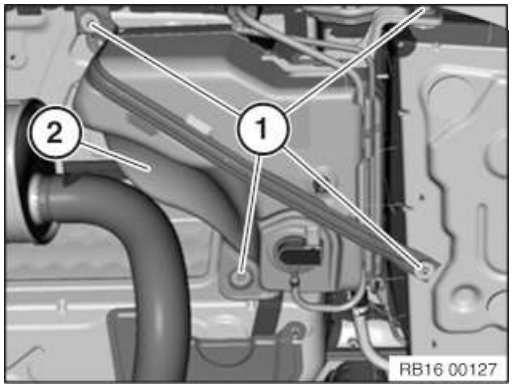

Release hose clamp (1) and pull off fuel filling hose (2).




Unlock and disconnect snap fasteners (1).

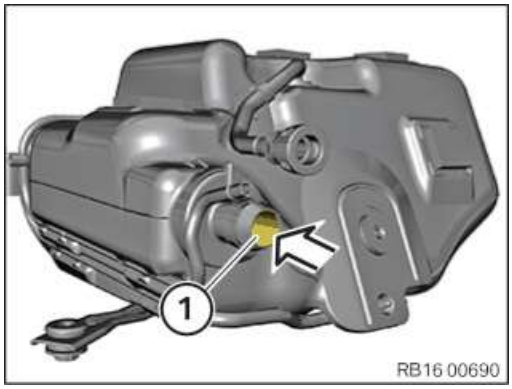



Disconnect plug connections (1) and (2).



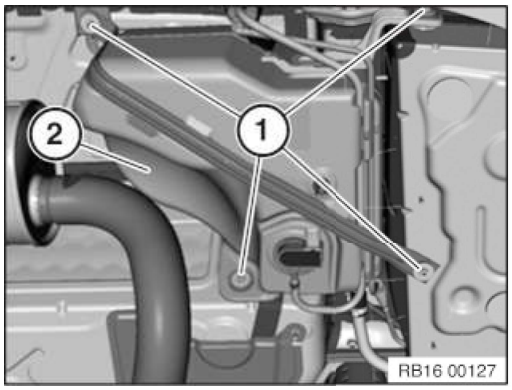

Release nuts (1) and remove passive tank (2).

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Open the roll-over valve and drain the active tank using filling nozzle 1.

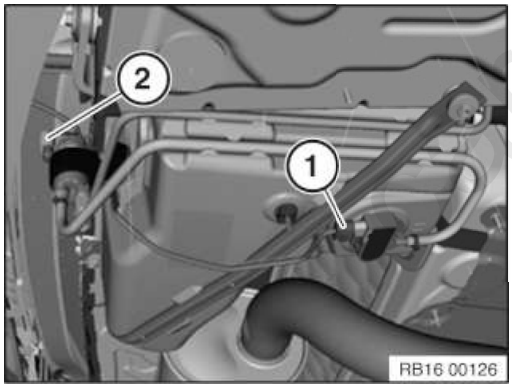
**Installation:**



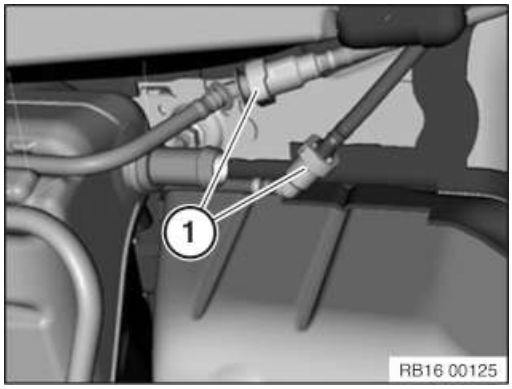

Position passive tank (2).

Insert nuts (1) and tighten.

*Installation note:*
Tightening torque: 16 19 4 and 5AZ.

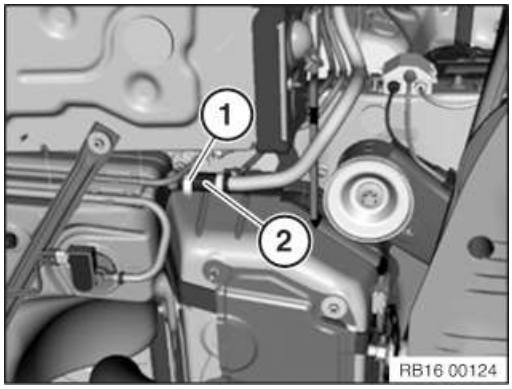



Connect plug connections (1) and (2).




Position snap fasteners (1) and lock.*Installation note:*
Make sure snap fasteners engage correctly.

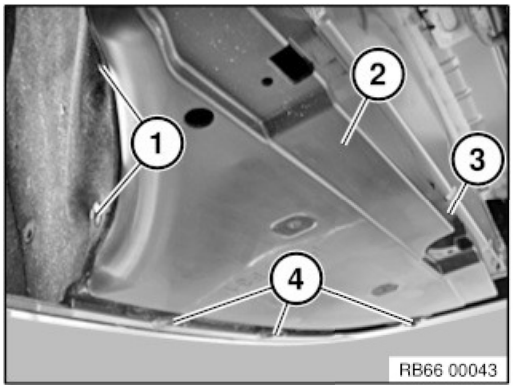
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Install the filler hose (2).

Insert hose clamp (1) and tighten.

*Installation note:*
Replace hose clamp.




Position cover (2).

Install expanding rivet (1).

Fit nut (3) and tighten.

Insert screws (4) and tighten.

*Installation note:*
If necessary, replace faulty expanding rivets (1).

*Note:*
The following components must be remounted when the passive tank is replaced:

- Passive tank pump
- Lines

**Required reworking:**

- Fit the heat shield
- Install exhaust system on rear

*Note:*
**After completing work:**

Carry out the "Start-up of the SCR tank system" service function.

- Fill the SCR reservoir.

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# 16 19 090 Removing and installing/replacing SCR delivery module



**Attention!**

Ensure adequate ventilation in the workbay!

Avoid skin contact (wear gloves)!

Avoid eye contact (safety goggles)!

When releasing parts resulting from AdBlue, AdBlue may come out. Have a collecting vessel ready.

Observe country-specific waste disposal regulations.

**Attention!**

Maintain conditions of absolute cleanliness.

Clean connections and covers of lines carrying AdBlue thoroughly with water after each disassembly or before each installation.

After completing repair work, thoroughly clean the working area with water!

Use fluff-free cloths for cleaning (see ETP Electronic Parts Catalogue WAYPALL cleaning cloths L20)!

Close connections and lines!

Thoroughly clean special tool with water after each use.

**Necessary preliminary work:**

- Remove SCR active tank

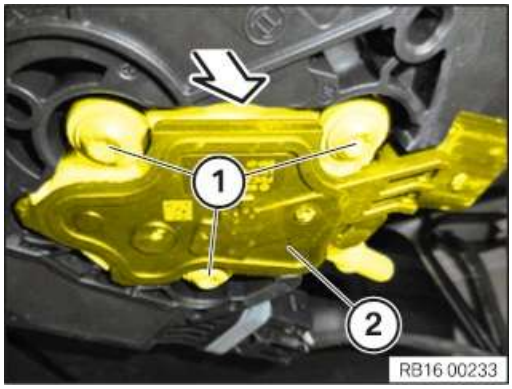
**Removal:**




Unlock snap fastener (1) and pull off feed line.

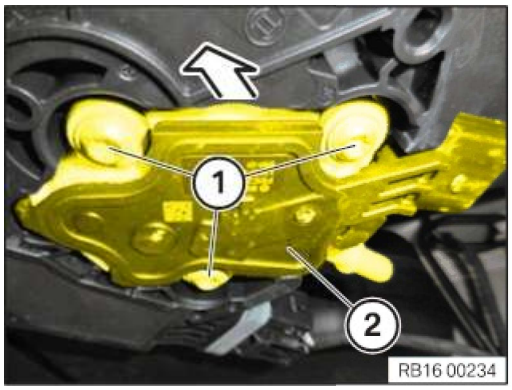
Disconnect plug connection (2).

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Release the screws (1) and remove the SCR delivery module (2) through the bottom.

**Installation:**




Install the SCR delivery module (2).

Insert screws (1) and tighten.




Position the feed line and latch the snap fastener (1).

Connect plug connection (2).

*Note:*
Check correct engagement of snap fastener (1) by attempting to pull.

**Required reworking:**

- Install SCR active tank
- Fill SCR reservoir

*Note:*
**After completing work:**

Carry out the "Start-up of the SCR tank system" service function.

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# 64 00 ... Information on using cleaning agent/paints (personal protection equipment)




**Warning!**

Use of cleaning agents/paints not compliant with instructions can cause serious injuries or burns!

Handling cleaning agents/paints can trigger allergic skin and respiratory reactions!



**Important!**

Observe following instructions:

- Store cleaning agents/paints only in a secure cabinet.
- Keep cleaning agents/paints away from naked flames and other sources of ignition.
- Protect cleaning agents/paints from high temperatures and direct sunlight.
- Always keep an eye douche on hand, change the water regularly (once a month).



**Important!**

Observe following instructions before use:

- Manufacturer's instructions (on container/packaging)
- Hazard warnings (on container/packaging)
- Manufacturer's instructions on package insert
- Material safety data sheet of manufacturer
- Product information in EPC
- National market regulations



**Important!**

Observe following instructions during use:

- Do not eat, drink or smoke while working with these products.
- Avoid direct contact with skin and eyes.
- Wear personal protective clothing/equipment.
- Ensure that all enclosed areas are well ventilated or extract fumes directly.
- Immediately change working clothes soiled with cleaning agent/paint.
- After finishing work, wash your hands and apply protective skin cream.



**Important!**

Follow hazard warnings and wear personal protection equipment!

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First Aid:

- If product comes in contact with eyes, immediately flush with running water for about 10 - 15 minutes. Seek the advice of eye specialist.
- In the event of skin contact and where applicable an allergic skin reaction, clean the affected areas immediately with soap and water and then apply silicone-free skin cream. Seek advice of physician.
- If an adhesive product is swallowed, rinse mouth/parts of mouth thoroughly with running water. Drink 1-2 glasses of water. Do not induce vomiting. Consult a doctor.
- After inhaling vapours ensure ample supply of fresh air. Keep calm, keep respiratory tracks clear and call doctor.



**Recycling:**

Dispose of cleaning agents/paints in a professional manner!

Observe national/country-specific disposal regulations.

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