# 11 71 100 Remove and install/replace the exhaust-gas recirculation cooler

## PRELIMINARY WORK

### 1 – Before replacing the exhaust-gas recirculation cooler: Work through the exhaust-gas recirculation cooler check



- Connect the battery charger to the vehicle.
- Connect the diagnostic system to the vehicle.
- **Read fault memory of DDE control unit.**
  - Vehicle handling
  - Troubleshooting
  - Function structure
  - Power train
  - Digital Diesel Electronics
  - exhaust re-treatment
  - Exhaust-gas recirculation
  - Exhaust-gas recirculation cooler

### 2 – Removing the acoustic cover

**RISK OF DAMAGE**

**Damage to the acoustic cover/design cover.**

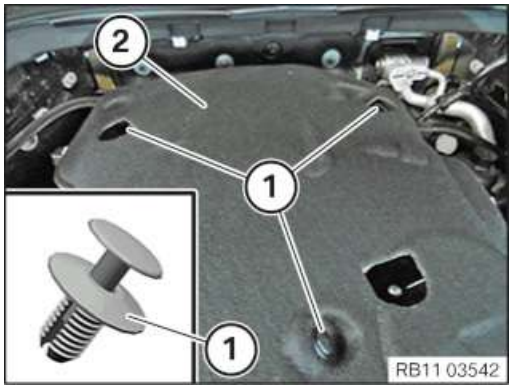
**Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover/design cover.**

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




- Unclip the acoustic cover (1) from the holders in the indicated area towards the top.

### 3 – Remove the acoustic cover for the injectors




- **If installed:** Release the expanding rivet (1).
- Guide the acoustic cover (2) out and remove.

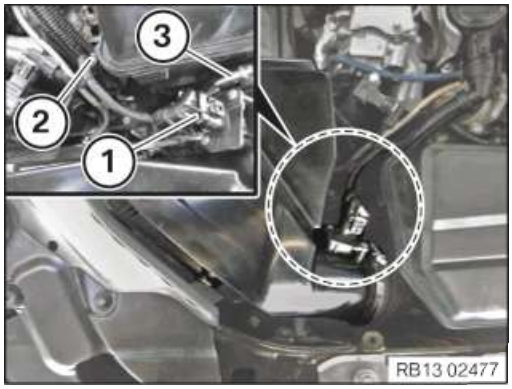
### 4 – Removing the clean air pipe with the resonator

**WARNING**

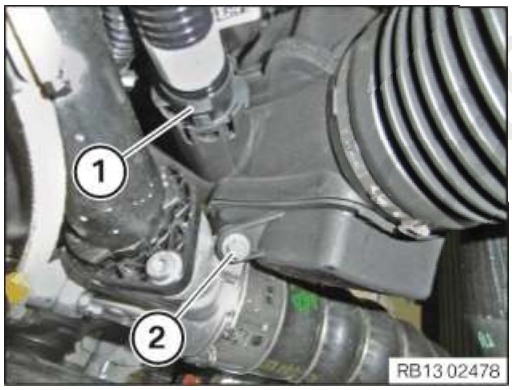
**Hot surfaces.**

**Risk of burning!**

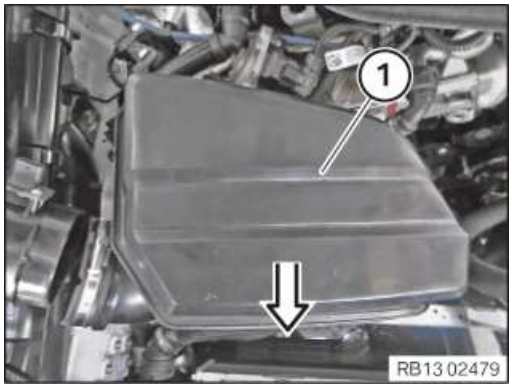
- Perform all work only on components that have cooled down.




- Unlock plug connection (1) and disconnect.
- Loosen clamp (2).
- Unfasten clamp (3).
- Separate the clean air pipe with resonator from the intake filter housing.




- Unlock engine ventilation line (1), disconnect it and place it aside.
- Loosen screw (2).




- Press and hold clean air pipe with resonator (1) in the direction of the arrow.




- Unlock and loosen clamp (1).




- Feed out and remove clean air pipe with resonator (1) in the direction of the arrow.

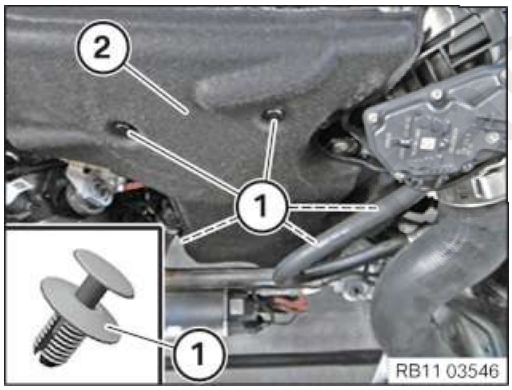
### 5 – Remove acoustic cover of the front engine

**WARNING**

**Hot surfaces.**

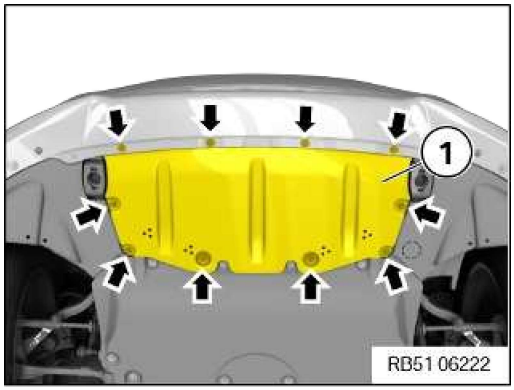
**Risk of burning!**

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




- Release and remove expanding rivet (1).
- Guide the acoustic cover (2) out and remove.

### 6 – Removing the front underbody protection

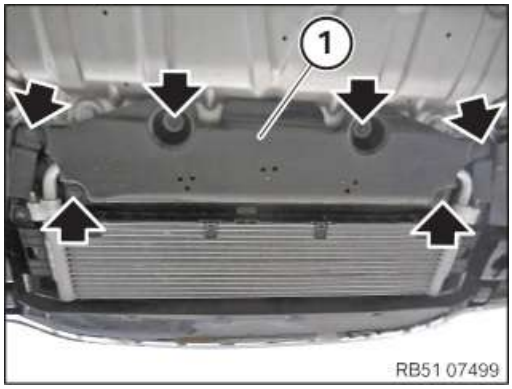



- **Version A:**

  Remove screws (arrows).

  Feed front underbody protection (1) backwards out of the bumper panel.

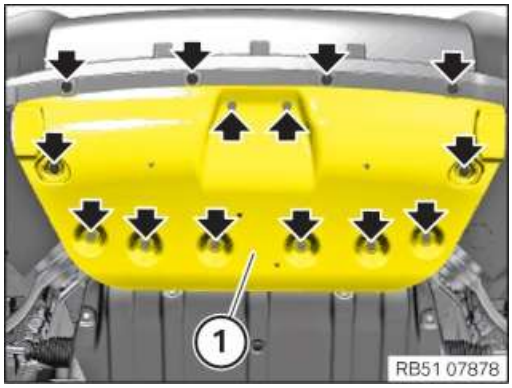
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- **Version B:**

  Remove screws (arrows).

  Guide out front underbody protection (1) and remove it.

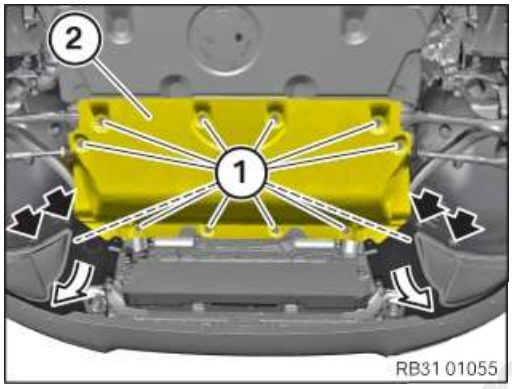



- **Version C:**

  Remove screws (arrows).

  Guide out front underbody protection (1) and remove it.

**7 – Remove the underbody protection of the steering gear**



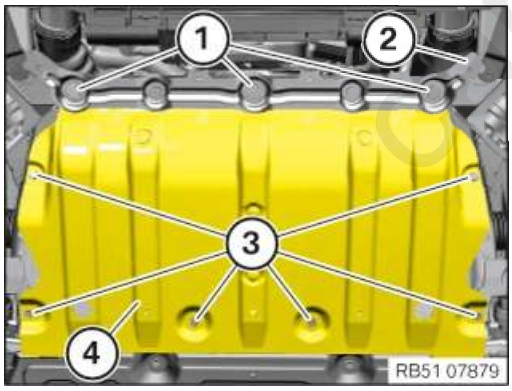

- **Version A:**

  Unscrew the screws (arrows) of the wheel arch cover on the wheel arch cover.

  Fold the bottom wheel arch cover to the side.

  Loosen screws (1).

  Remove the underbody protection (2) of the steering gear.




- **Version B:**

  Loosen screws (1).

  Remove the holder (2) for the underride protection.

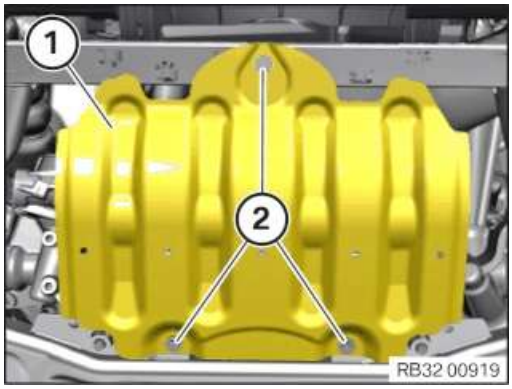
  Loosen screws (3).

  Feed out and remove the underbody protection (4) of the steering gear.

**8 – If installed: Removing the steering underbody protection**

**Prerequisite**

Front underbody protection has been removed.




- Loosen screws (2).
- Remove underbody protection (1).

**9 – Draining the coolant from the high-temperature cooling system**

**WARNING**

**Hot fluids.**

**Risk of scalding!**

- Conduct all work in the vehicle wearing appropriate personal protective equipment only.

**CAUTION**

**Materials harmful to health.**

**Contact with fluids harmful to health!**

- Note and follow safety information on containers.
- Conduct all work in appropriate personal protective equipment only.

**TECHNICAL INFORMATION**

**Life-long fill of coolant!**

Do not reuse used coolant.

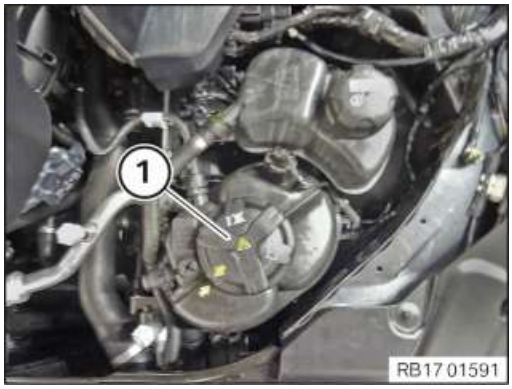
When replacing and removing components which rely on the corrosion protection effect of the coolant, it is essential to change the coolant. The cooling system must therefore be emptied and refilled.

In the case of other removal work involving the draining of part quantities of coolant, the coolant level must be topped up with new coolant.

**TECHNICAL INFORMATION**

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

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- Loosen sealing cap (1).

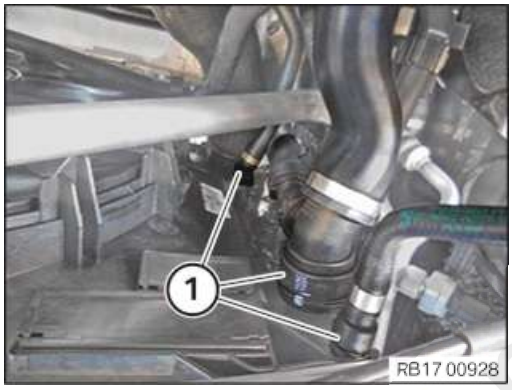
▸ **Avoiding damage to the starter generator due to escaping coolant**

**RISK OF DAMAGE**

**Escaping coolant on the starter generator.**

**Damage and operating failure of the starter generator.**

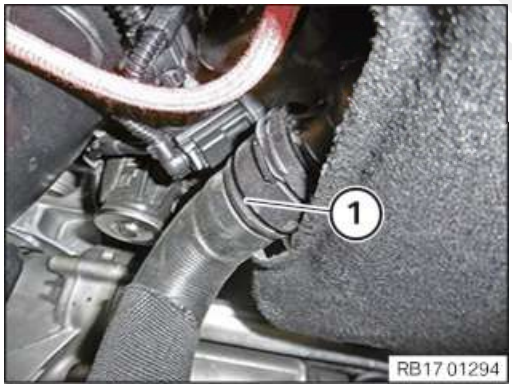
- Cover the starter generator with suitable, watertight auxiliary materials.
- Close off line connections with seal plugs.
- If necessary: Flush the leaked coolant from the starter generator with at least 1 l water.




**NOTICE**

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

- Unlock all coolant lines (1) and detach.
- Catch and dispose of escaping coolant.




- Unlock and loosen coolant line (1).
- Catch and dispose of escaping coolant.

## MAIN WORK

### 10 – Removing the exhaust-gas recirculation cooler

▸ **Avoiding damage to the starter generator due to escaping coolant**

**RISK OF DAMAGE**

**Escaping coolant on the starter generator.**

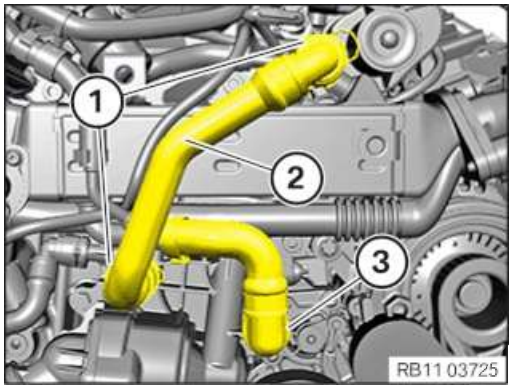
**Damage and operating failure of the starter generator.**

- Cover the starter generator with suitable, watertight auxiliary materials.
- Close off line connections with seal plugs.
- If necessary: Flush the leaked coolant from the starter generator with at least 1 l water.




- **Version A:**

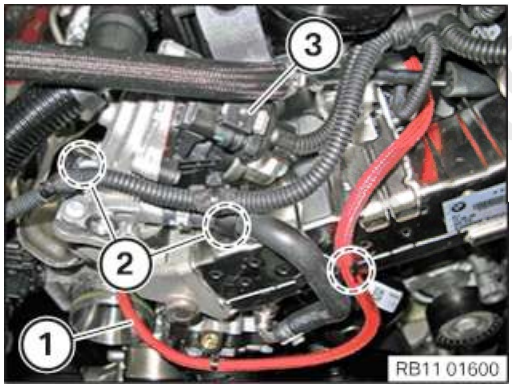
  Unlock and pull off coolant lines (1).



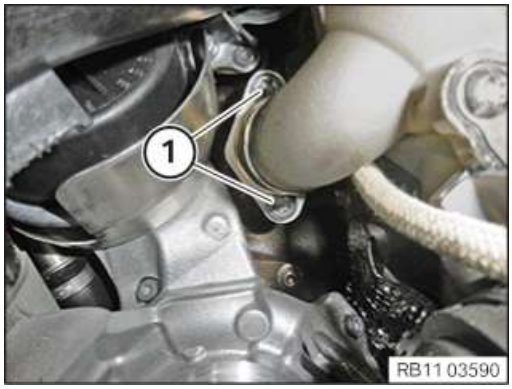

- **Version B:**

  Unlock locks (1) and remove thee coolant line (2).

  Unlock coolant line (3) and pull it off the thermostat.

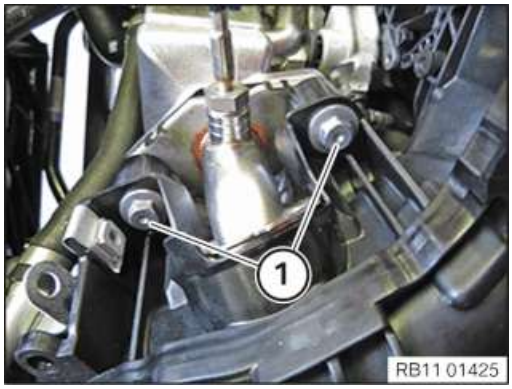



- Loosen the vacuum line (1) from the exhaust-gas recirculation cooler and detach in the highlighted area.
- Loosen the vehicle wiring harness from the exhaust-gas recirculation valve and the coolant line at the clips (2).
- Unlock and disconnect the connector (3) at the exhaust-gas recirculation valve.




- Release the bolts (1) from the exhaust-gas recirculation cooler.

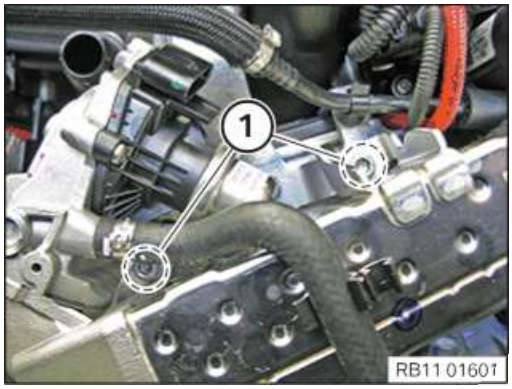
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- Loosen the screws (1) on the intake system.




- Loosen the screw (1) below the exhaust-gas recirculation cooler.




- Loosen screws (1).
- Remove exhaust-gas recirculation cooler.

**11 – Replacement: Check part number of the exhaust-gas recirculation cooler**

**NOTICE**

For vehicles with Real Driving Emissions (RDE) with a production date from 03/2019:

The intake plenum and the exhaust-gas recirculation cooler vary.

When replacing the intake plenum or the exhaust-gas recirculation cooler: Make sure the part number is correct. Note the part number of the removed component and assign the corresponding, suitable part number.

In the electronic Parts Catalogue (EPC), components with the auxiliary "RDE" and components without the auxiliary "RDE" will be provided. Only the following combinations are permitted:

Intake plenum **with** the auxiliary **"RDE"** and exhaust-gas recirculation cooler **with** the auxiliary **"RDE"**.

Intake plenum **without** the auxiliary **"RDE"** and exhaust-gas recirculation cooler **without** the auxiliary **"RDE"**.

Components without the auxiliary "RDE" must not be installed with components with auxiliary "RDE".

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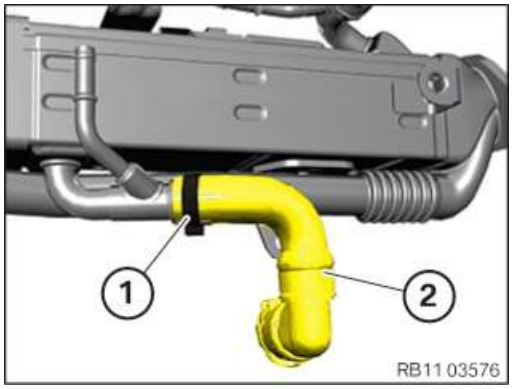



**NOTICE**

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

- Note down part number (1).
- Select new part using the part number from the Electronic Parts Catalogue (EPC).

**12 – When replacing exhaust-gas recirculation cooler: Remount coolant line and delete adaptation**




- Detach the clamp (1) and disconnect the coolant line (2).
- Connect the coolant line (2) to the new exhaust-gas recirculation cooler using the new clamp.

  **Parts:** Exhaust-gas recirculation cooler, clamp
- Fasten clamp (1).

▸ **If a new exhaust-gas recirculation valve is installed: Delete adaptations**

**Check**

- Check if a new exhaust-gas recirculation valve is already installed on the new exhaust-gas recirculation cooler.

**Result**

» A new exhaust-gas recirculation valve is installed.

**Measure**

- Delete adaptations.

▹ **Delete adaptations**

- Connect diagnosis system.
  - Power train
  - Digital diesel electronics (DDE)
  - Reset adaptations
  - Delete adaptations

◃

**13 – Installing the exhaust-gas recirculation cooler**

▸ **Avoiding damage to the starter generator due to escaping coolant**

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**RISK OF DAMAGE**

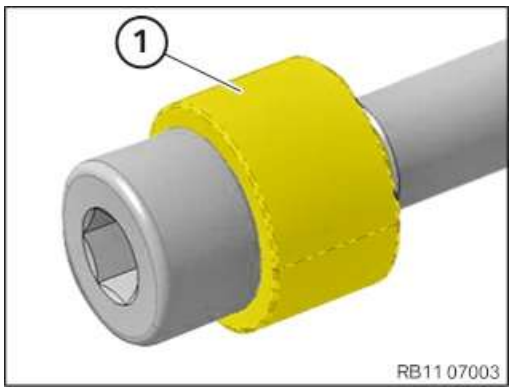
**Escaping coolant on the starter generator.**

**Damage and operating failure of the starter generator.**

- Cover the starter generator with suitable, watertight auxiliary materials.
- Close off line connections with seal plugs.
- If necessary: Flush the leaked coolant from the starter generator with at least 1 l water.

▸ **Installing the exhaust-gas recirculation cooler**

**Check**




- Check whether the screws **with 10mm** sleeves (1) are available.

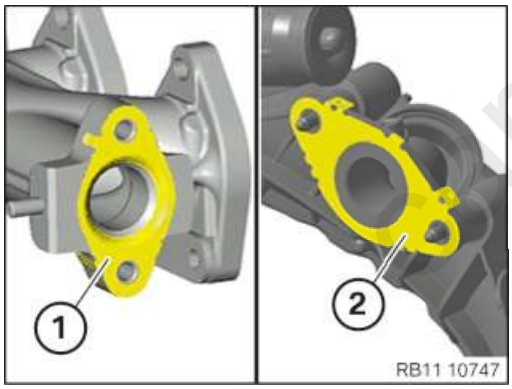
**Result**

» Screws **without** sleeves (1) are available.

**Measure**

- Renew screws.

  **Parts:** Screws (part number 9 886 429)

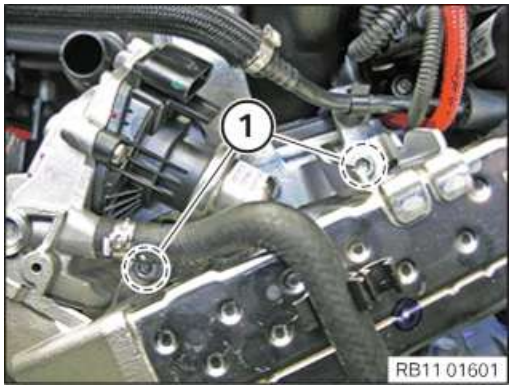



- Renew the seal (1) between the exhaust manifold and the exhaust-gas recirculation cooler.

  **Parts:** Gasket

- Renew the seal (2) between exhaust-gas recirculation cooler and intake air plenum.

  **Parts:** Gasket




**TECHNICAL INFORMATION**

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

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

- Tighten the screws (1) and subsequently release them again.

**Exhaust-gas recirculation cooler to cylinder head**

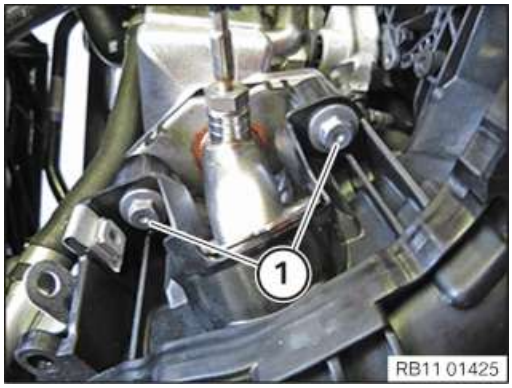
| | | | |
|---|---|---|---|
| M8x20 / M8x28 | | Tightening torque | 5 Nm |
| | | Release angle | 90 ° |




- Tighten the screw (1) under the exhaust-gas recirculation cooler and then release again.

**Exhaust-gas recirculation cooler to cylinder head**

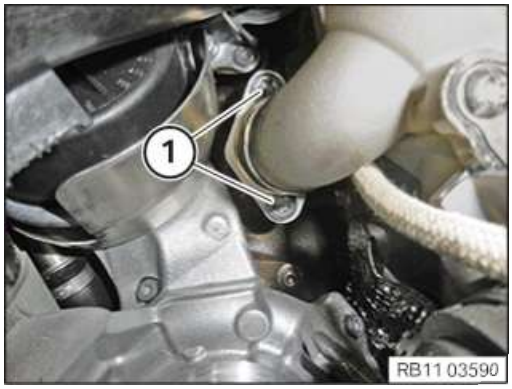
| | | | |
|---|---|---|---|
| M8x20 / M8x28 | | Tightening torque | 5 Nm |
| | | Release angle | 90 ° |




- Tighten the screws (1).

**Exhaust-gas recirculation cooler to intake plenum**

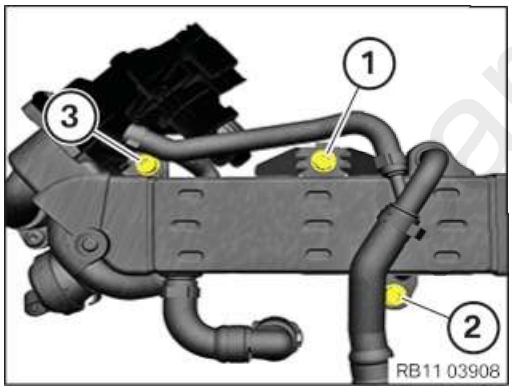
| | | | |
|---|---|---|---|
| | | Tightening torque | 10 Nm |




- Tighten the screws (1).

**Exhaust-gas recirculation cooler to exhaust manifold**

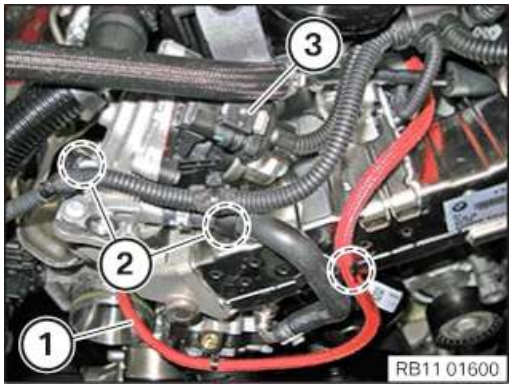
| | | | |
|---|---|---|---|
| M8x28 | Replace screws | Tightening torque | 32 Nm |




- Tighten screws in the order (1) to (3).

**Exhaust-gas recirculation cooler to cylinder head**

| | | | |
|---|---|---|---|
| M8x20 / M8x28 | | Tightening torque | 19 Nm |




- Connect the connector (3) to the exhaust-gas recirculation valve.
- Attach the vehicle wiring harness to the clips (2) at the exhaust-gas recirculation valve and at the coolant line.
- Connect the vacuum line (1) to the exhaust-gas recirculation cooler and attach in the highlighted area.

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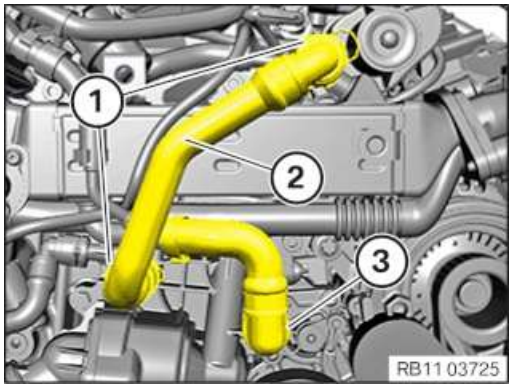



**TECHNICAL INFORMATION**

Make sure that the connections are locked correctly. The locks must engage audibly.

- **Version A:**

  Connect and audibly lock coolant lines (1).



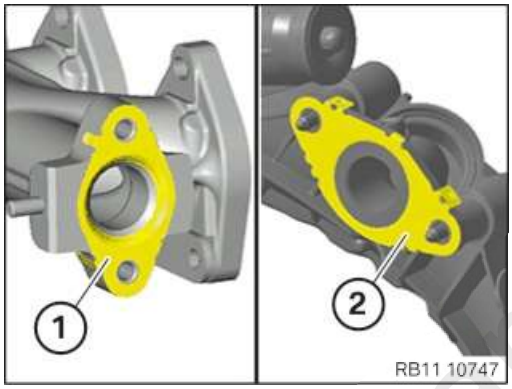

**TECHNICAL INFORMATION**

Make sure that the connections are locked correctly. The locks must engage audibly.

- **Version B:**

  Connect and audibly lock coolant lines (3).
- Install the coolant line (2).
- Audibly lock the locks (1).

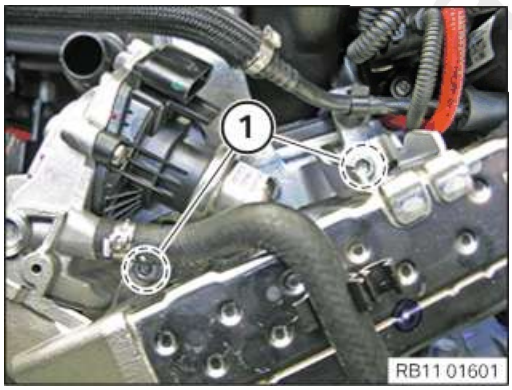
▸ **Installing the exhaust-gas recirculation cooler**




- Renew the seal (1) between the exhaust manifold and the exhaust-gas recirculation cooler.

  **Parts:** Gasket
- Renew the seal (2) between exhaust-gas recirculation cooler and intake air plenum.

  **Parts:** Gasket




**TECHNICAL INFORMATION**

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

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

- Install the exhaust-gas recirculation cooler and fasten with screws (1).
- Tighten the screws (1) and subsequently release them again.

**Exhaust-gas recirculation cooler to cylinder head**

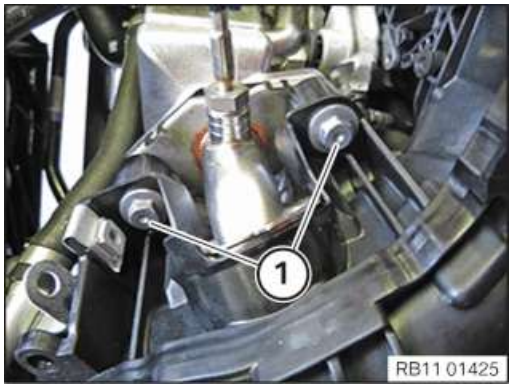
| | | | |
|---|---|---|---|
| M8x20 / M8x28 | | Tightening torque | 5 Nm |
| | | Release angle | 90 ° |




- Tighten the screw (1) under the exhaust-gas recirculation cooler and then release again.

**Exhaust-gas recirculation cooler to cylinder head**

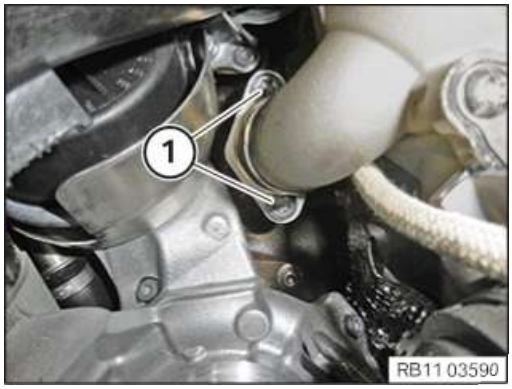
| | | | |
|---|---|---|---|
| M8x20 / M8x28 | | Tightening torque | 5 Nm |
| | | Release angle | 90 ° |




- Tighten the screws (1).

**Exhaust-gas recirculation cooler to intake plenum**

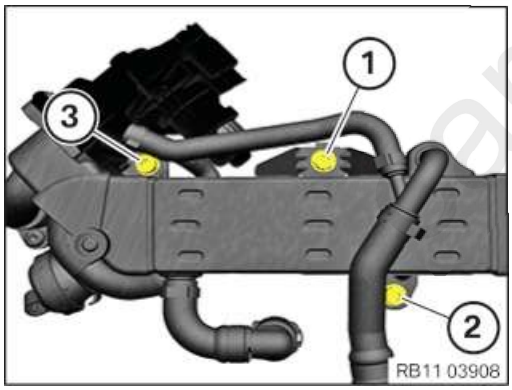
| | | | |
|---|---|---|---|
| | | Tightening torque | 10 Nm |




- Tighten the screws (1).

**Exhaust-gas recirculation cooler to exhaust manifold**

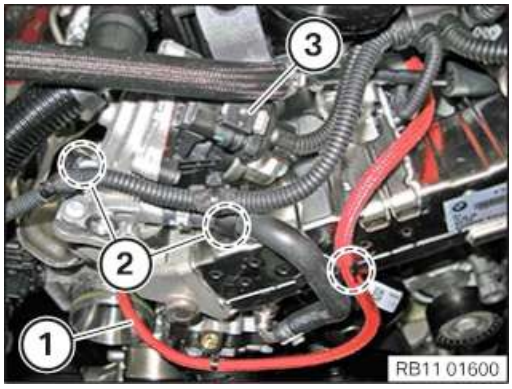
| | | | |
|---|---|---|---|
| M8x28 | Replace screws | Tightening torque | 32 Nm |




- Tighten screws in the order (1) to (3).

**Exhaust-gas recirculation cooler to cylinder head**

| | | | |
|---|---|---|---|
| M8x20 / M8x28 | | Tightening torque | 19 Nm |




- Connect the connector (3) to the exhaust-gas recirculation valve.
- Attach the vehicle wiring harness to the clips (2) at the exhaust-gas recirculation valve and at the coolant line.
- Connect the vacuum line (1) to the exhaust-gas recirculation cooler and attach in the highlighted area.

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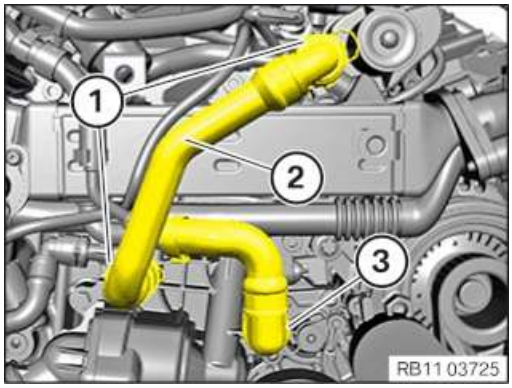



**TECHNICAL INFORMATION**

Make sure that the connections are locked correctly. The locks must engage audibly.

- **Version A:**

  Connect and audibly lock coolant lines (1).




**TECHNICAL INFORMATION**

Make sure that the connections are locked correctly. The locks must engage audibly.

- **Version B:**

  Connect and audibly lock coolant lines (3).

  Install the coolant line (2).

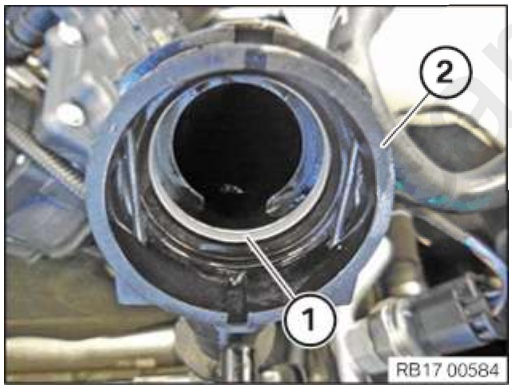
  Audibly lock the locks (1).

## POSTPROCESSES

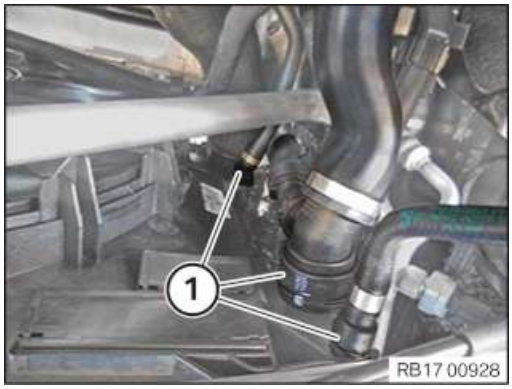
### 14 – Connecting the coolant lines

**TECHNICAL INFORMATION**

Make sure that the connections are locked correctly. The locks must engage audibly.




- Check the sealing ring (1) of the coolant line (2) for damage and renew where required.




**NOTICE**

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

- Connect and lock the coolant lines (1).

  The coolant lines (1) must engage audibly.

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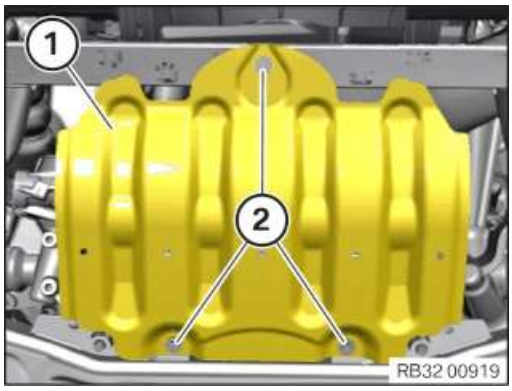

- Connect and lock coolant line (1).

  The coolant line (1) must audibly engage.

**15 – If installed: Install underbody protection of the steering**

**Prerequisite**

Front underbody protection has been removed.




- Position underbody protection (1).
- Tighten the screws (2).

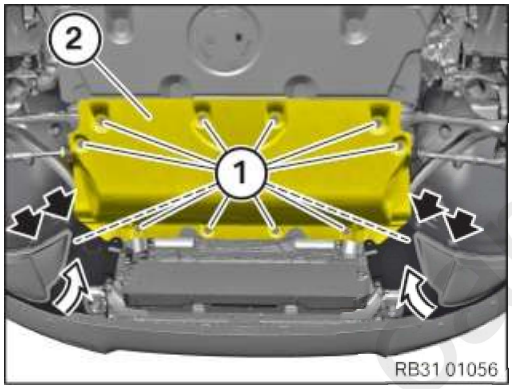
**Underbody protection, steering, to front axle support**

| | | | |
|---|---|---|---|
| Multi-purpose boltM10 | | Tightening torque | 56 Nm |

**Underbody protection, steering, to front axle support**

| | | | |
|---|---|---|---|
| Hexagon bolt M6 | | Tightening torque | 8 Nm |

**16 – Install the underbody protection of the steering gear**




- **Version A:**

  Position the underbody protection (2) of the steering gear.

  Tighten the screws (1).

**Underbody protection of the steering gear**

| | | | |
|---|---|---|---|
| Hexagon screw for thermoplastic | | Tightening torque | 2.6 Nm |
| Hexagon bolt M6x20 | | Tightening torque | 8 Nm |

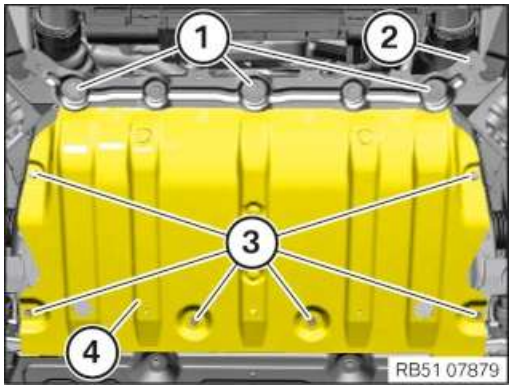
- Position the bottom wheel arch cover.

  Tighten the screws (arrows) of the lower wheel arch cover on the wheel arch cover.

**Wheel arch trim panel, front**

| | | | |
|---|---|---|---|
| Thermoplastic hexagon screw | | Tightening torque | 2,6 Nm |

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- **Version B:**

  Feed in the underbody protection (4) of steering gear and install it.

  Tighten the screws (3).

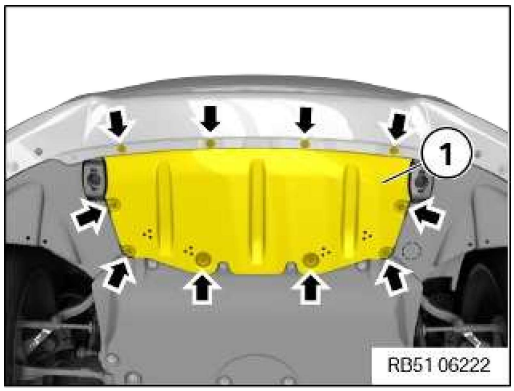
**Underbody protection of the steering gear**

| | | | |
|---|---|---|---|
| Hexagon screw for thermoplastic | | Tightening torque | 2.6 Nm |
| Hexagon bolt M6x20 | | Tightening torque | 8 Nm |

- Position the holder (2) for the underride protection.

  Tighten the screws (1).

### 17 – Installing the front underbody protection



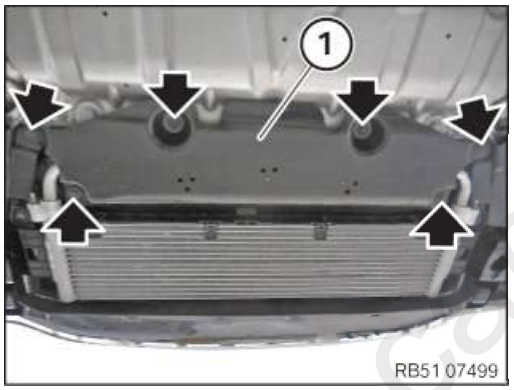

- **Version A:**

  Feed in the front underbody protection (1) towards the front under the bumper panel and position.

  Tighten screws (arrows).

**Underbody protection front**

| | | | |
|---|---|---|---|
| Hexagon screw for thermoplastic | | Tightening torque | 2,6 Nm |
| Hexagon screw M6x20 | | Tightening torque | 8 Nm |



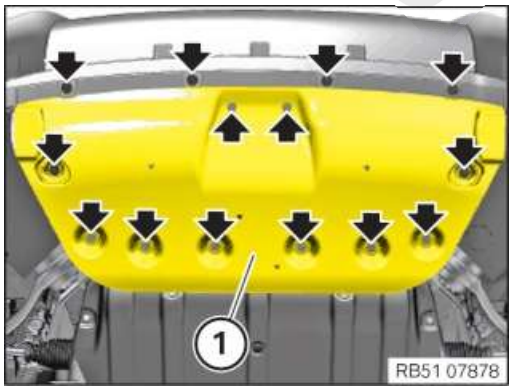

- **Version B:**

  Feed in and position the front underbody protection (1).

  Tighten screws (arrows).

**Underbody protection front**

| | | | |
|---|---|---|---|
| Hexagon screw for thermoplastic | | Tightening torque | 2,6 Nm |
| Hexagon screw M6x20 | | Tightening torque | 8 Nm |




- **Version C:**

  Feed in and install front underbody protection (1).

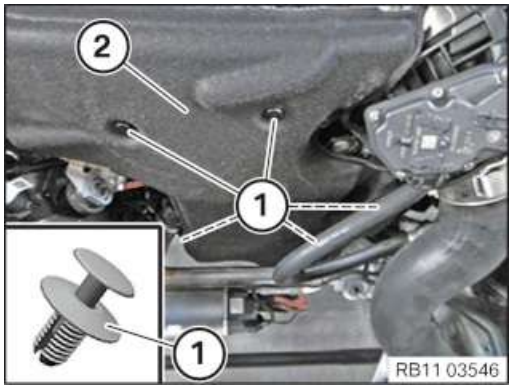
  Tighten screws (arrows).

**Underbody protection front**

| | | | |
|---|---|---|---|
| Hexagon screw for thermoplastic | | Tightening torque | 2,6 Nm |
| Hexagon screw M6x20 | | Tightening torque | 8 Nm |

### 18 – Install acoustic cover for the engine, front

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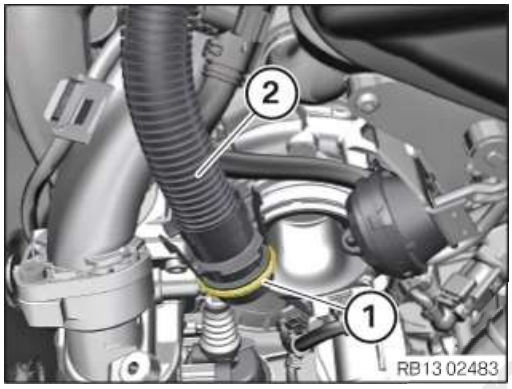



- Feed the acoustic cover (2) in and install.
- Secure the acoustic cover (2) with the expanding rivets (1).

**19 – Installing the clean air pipe with resonator**



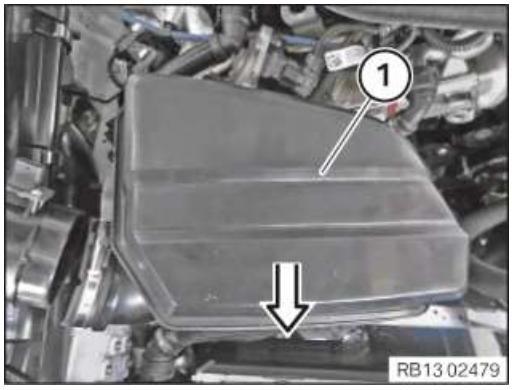

- Check the sealing ring (1) on the exhaust turbocharger for damage and renew if necessary.




- Check the sealing ring (1) for the engine ventilation line (2) for damage and renew where required.




- Feed in and install clean air pipe with resonator (1) in the direction of the arrow.

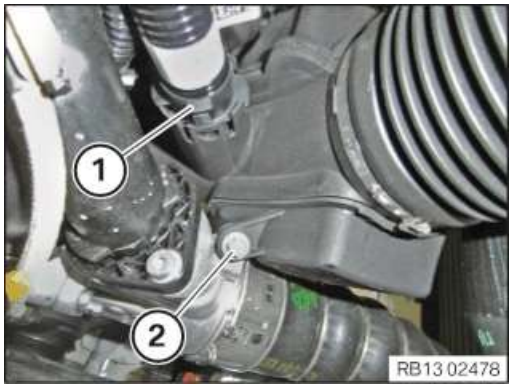



- Press and hold clean air pipe with resonator (1) in the direction of the arrow.




- Attach and lock the clamp (1).

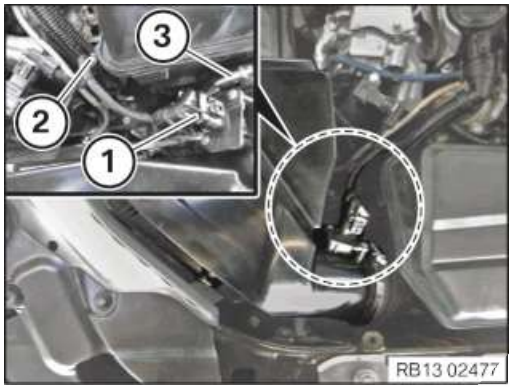
  The clamp (1) must engage audibly.




- Tighten down screw (2).

**Clean air pipe to exhaust turbocharger**

| | | | |
|---|---|---|---|
| M6X20 | | Tightening torque | 8 Nm |




- Connect the clean air pipe with resonator to the intake filter housing.
- Tighten clamp (3).

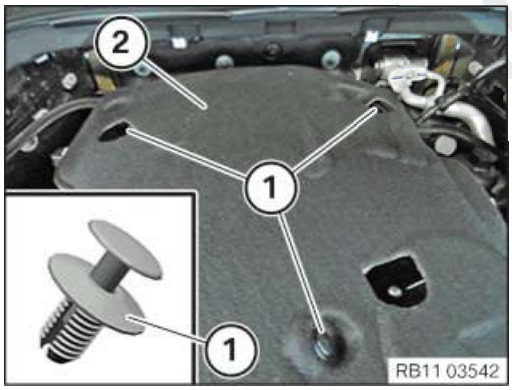
**Clean air pipe to upper section of intake filter housing**

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

- Secure clamps (2).
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

**20 – Install the acoustic cover for the injectors**




- Feed the acoustic cover (2) in and install.
- **If installed:** Secure the acoustic cover (2) with the expanding rivets (1) .

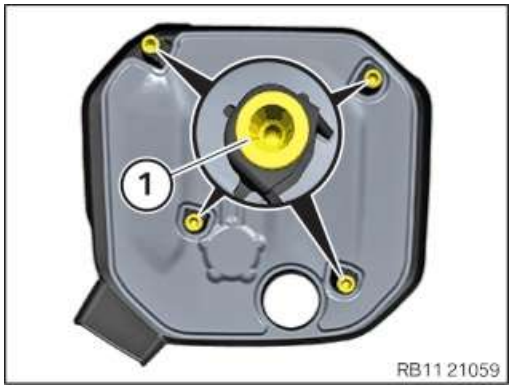
**21 – Install acoustic cover**

**RISK OF DAMAGE**

**Damage to the acoustic cover/design cover.**

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

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




- Check the acoustic cover for correct fit of the rubber mounts (1).




- Clip in the acoustic cover (1) into the holders in the indicated areas.

**22 – Filling and bleed the high-temperature coolant circuit**




**TECHNICAL INFORMATION**

It is **mandatory** to fill the cooling system before bleeding.
Fill **both** the circuits for high and low-temperature coolant circuits.

- See additional information.

**23 – Reset the adaptations of the exhaust-gas recirculation valve**

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**TECHNICAL INFORMATION**

- The **Reset adaptation** service function must be carried out when the exhaust-gas recirculation valve is renewed.

- Connect diagnosis system:
  - Service functions
  - Power train
  - Digital Diesel Electronics
  - Reset adaptations

## Additional Information

### Overview of Tightening Torques

| **Exhaust-gas recirculation cooler to cylinder head** | | | Used in step 13 |
|---|---|---|---|
| M8x20 / M8x28 | | Tightening torque | 5 Nm |
| | | Release angle | 90 ° |

| **Exhaust-gas recirculation cooler to intake plenum** | | | Used in step 13 |
|---|---|---|---|
| | | Tightening torque | 10 Nm |

| **Exhaust-gas recirculation cooler to exhaust manifold** | | | Used in step 13 |
|---|---|---|---|
| M8x28 | Replace screws | Tightening torque | 32 Nm |

| **Exhaust-gas recirculation cooler to cylinder head** | | | Used in step 13 |
|---|---|---|---|
| M8x20 / M8x28 | | Tightening torque | 19 Nm |

| **Underbody protection, steering, to front axle support** | | | Used in step 15 |
|---|---|---|---|
| Multi-purpose boltM10 | | Tightening torque | 56 Nm |

| **Underbody protection, steering, to front axle support** | | | Used in step 15 |
|---|---|---|---|
| Hexagon bolt M6 | | Tightening torque | 8 Nm |

| **Underbody protection of the steering gear** | | | Used in step 16 |
|---|---|---|---|
| Hexagon screw for thermoplastic | | Tightening torque | 2.6 Nm |
| Hexagon bolt M6x20 | | Tightening torque | 8 Nm |

| **Wheel arch trim panel, front** | | | Used in step 16 |
|---|---|---|---|
| Thermoplastic hexagon screw | | Tightening torque | 2,6 Nm |

| **Underbody protection front** | | | Used in step 17 |
|---|---|---|---|
| Hexagon screw for thermoplastic | | Tightening torque | 2,6 Nm |
| Hexagon screw M6x20 | | Tightening torque | 8 Nm |

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**Clean air pipe to exhaust turbocharger** Used in step 19

| | | | |
|---|---|---|---|
| M6X20 | | Tightening torque | 8 Nm |

**Clean air pipe to upper section of intake filter housing** Used in step 19

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

## Links

| Functional descriptions | Used in step |
|---|---|
| Reset adaptations | 1223 |

| Repair instructions | Used in step |
|---|---|
| 17 00 008 Draining and topping up coolant for high-temperature circuit | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 008 Draining and topping up coolant for high-temperature circuit | 22 |
| 17 00 008 Draining and topping up coolant for high-temperature circuit | 22 |
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| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
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| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature) | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |

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| | |
|---|---|
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleeding the cooling system (B36, B38, B46, B48) | 22 |
| 17 00 039 Bleeding cooling system (B37, B47) | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Filling and bleeding the high-temperature cooling system vacuum filler device (B48) | 22 |
| 17 00 008 Draining and topping up the high-temperature coolant circuit | 22 |
| 17 00 008 Draining and topping up the high-temperature coolant circuit | 22 |
| 17 00 016 Draining and topping up coolant circuit for Range Extender \PREMIUM | 22 |
| 17 00 008 Draining and topping up the high-temperature coolant circuit | 22 |
| 17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures) | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures) | 22 |
| 17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures) | 22 |
| 17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures) | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures) | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 040 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature) | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 009 Check the cooling system for watertightness with a special tool (with a tester) | 22 |
| 17 00 009 Check the cooling system for watertightness with a special tool (with a tester) | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 008 Draining and topping up coolant for high-temperature circuit | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 008 Draining and topping up coolant for high-temperature circuit | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |

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# 11 71 100 Remove and install/replace the exhaust-gas recirculation cooler

## PRELIMINARY WORK

### 1 – Before replacing the exhaust-gas recirculation cooler: Work through the exhaust-gas recirculation cooler check



- Connect the battery charger to the vehicle.
- Connect the diagnostic system to the vehicle.
- **Read fault memory of DDE control unit.**
  - Vehicle handling
  - Troubleshooting
  - Function structure
  - Power train
  - Digital Diesel Electronics
  - exhaust re-treatment
  - Exhaust-gas recirculation
  - Exhaust-gas recirculation cooler

### 2 – Removing the acoustic cover

**RISK OF DAMAGE**

**Damage to the acoustic cover/design cover.**

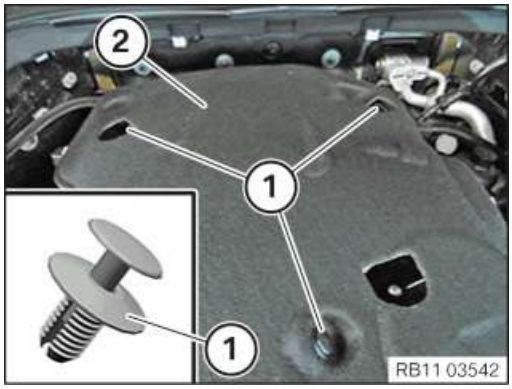
**Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover/design cover.**

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




- Unclip the acoustic cover (1) from the holders in the indicated area towards the top.

### 3 – Remove the acoustic cover for the injectors




- **If installed:** Release the expanding rivet (1).
- Guide the acoustic cover (2) out and remove.

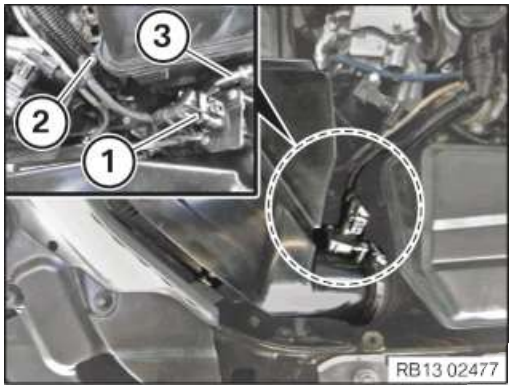
### 4 – Removing the clean air pipe with the resonator

**WARNING**

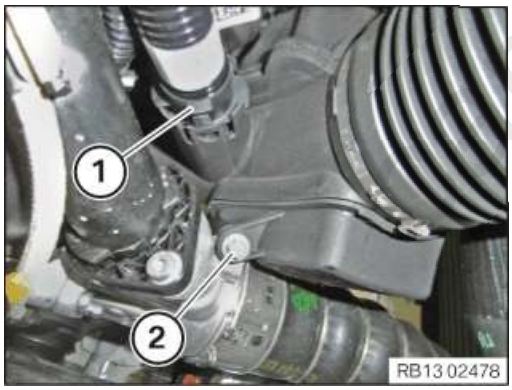
**Hot surfaces.**

**Risk of burning!**

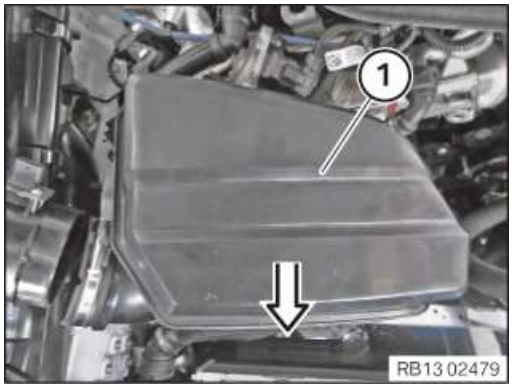
- Perform all work only on components that have cooled down.




- Unlock plug connection (1) and disconnect.
- Loosen clamp (2).
- Unfasten clamp (3).
- Separate the clean air pipe with resonator from the intake filter housing.




- Unlock engine ventilation line (1), disconnect it and place it aside.
- Loosen screw (2).




- Press and hold clean air pipe with resonator (1) in the direction of the arrow.




- Unlock and loosen clamp (1).




- Feed out and remove clean air pipe with resonator (1) in the direction of the arrow.

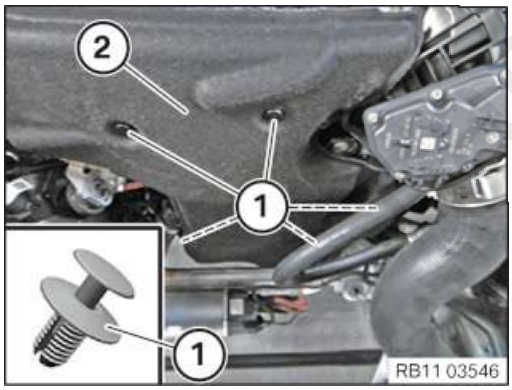
### 5 – Remove acoustic cover of the front engine

**WARNING**

**Hot surfaces.**

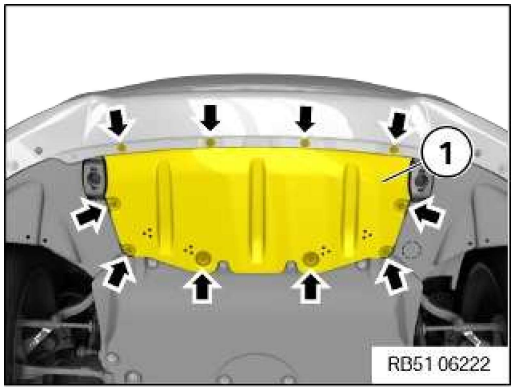
**Risk of burning!**

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




- Release and remove expanding rivet (1).
- Guide the acoustic cover (2) out and remove.

### 6 – Removing the front underbody protection

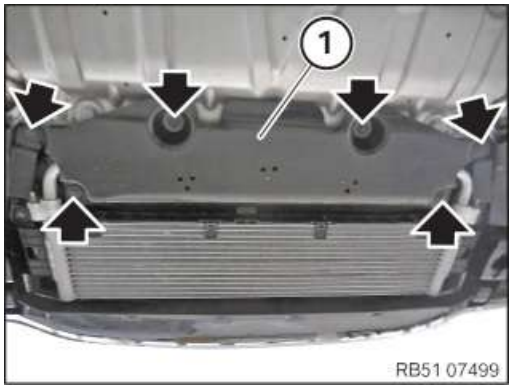



- **Version A:**

  Remove screws (arrows).

  Feed front underbody protection (1) backwards out of the bumper panel.

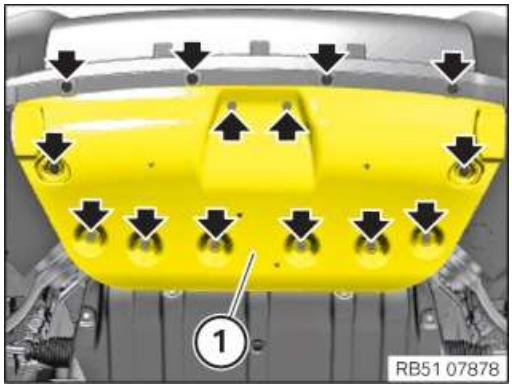
mdiagn.com




- **Version B:**

  Remove screws (arrows).

  Guide out front underbody protection (1) and remove it.

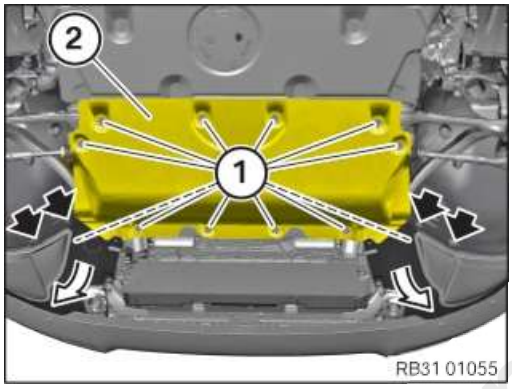



- **Version C:**

  Remove screws (arrows).

  Guide out front underbody protection (1) and remove it.

**7 – Remove the underbody protection of the steering gear**



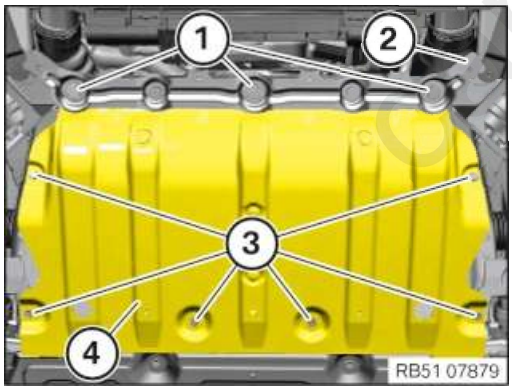

- **Version A:**

  Unscrew the screws (arrows) of the wheel arch cover on the wheel arch cover.

  Fold the bottom wheel arch cover to the side.

  Loosen screws (1).

  Remove the underbody protection (2) of the steering gear.




- **Version B:**

  Loosen screws (1).

  Remove the holder (2) for the underride protection.

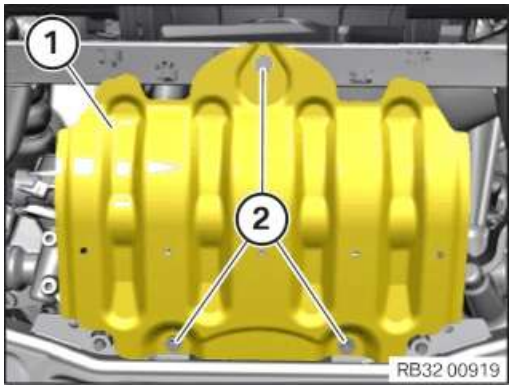
  Loosen screws (3).

  Feed out and remove the underbody protection (4) of the steering gear.

**8 – If installed: Removing the steering underbody protection**

**Prerequisite**

Front underbody protection has been removed.




- Loosen screws (2).
- Remove underbody protection (1).

**9 – Draining coolant**

**WARNING**

**Hot fluids.**

**Risk of scalding!**

- Conduct all work in the vehicle wearing appropriate personal protective equipment only.

**CAUTION**

**Materials harmful to health.**

**Contact with fluids harmful to health!**

- Note and follow safety information on containers.
- Conduct all work in appropriate personal protective equipment only.

**TECHNICAL INFORMATION**

**Life-long fill of coolant!**

Do not reuse used coolant.

When replacing and removing components which rely on the corrosion protection effect of the coolant, it is essential to change the coolant. The cooling system must therefore be emptied and refilled.

In the case of other removal work involving the draining of part quantities of coolant, the coolant level must be topped up with new coolant.

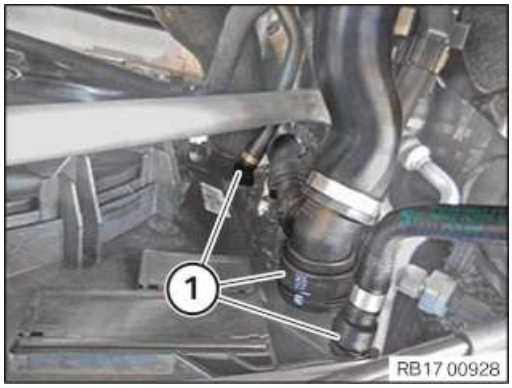
**TECHNICAL INFORMATION**

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

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- Loosen sealing cap (1) from the coolant expansion tank.




**NOTICE**

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

- Unlock all coolant lines (1) and detach.
- Catch and dispose of escaping coolant.




- Unlock and loosen coolant line (1).
- Catch and dispose of escaping coolant.

## MAIN WORK

### 10 – Removing the exhaust-gas recirculation cooler

▸ **Avoiding damage to the starter generator due to escaping coolant**

**RISK OF DAMAGE**

**Escaping coolant on the starter generator.**

**Damage and operating failure of the starter generator.**

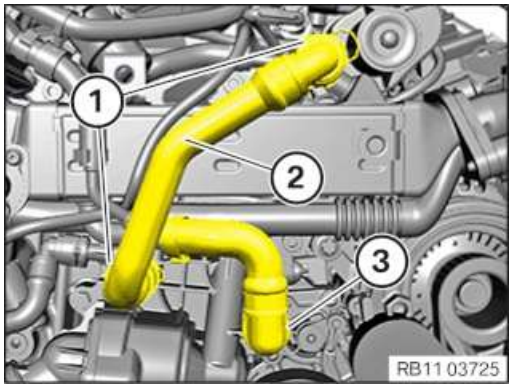
- Cover the starter generator with suitable, watertight auxiliary materials.
- Close off line connections with seal plugs.
- If necessary: Flush the leaked coolant from the starter generator with at least 1 l water.

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- **Version A:**

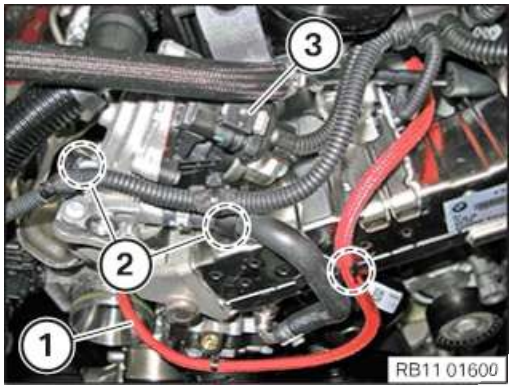
  Unlock and pull off coolant lines (1).



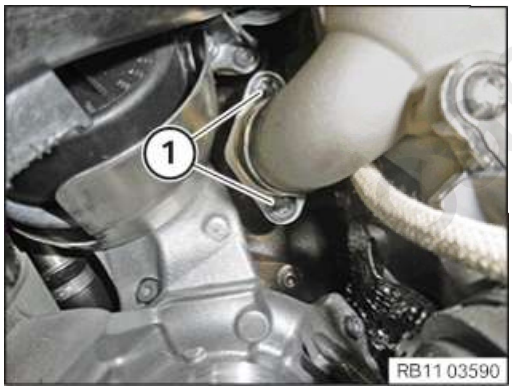

- **Version B:**

  Unlock locks (1) and remove thee coolant line (2).

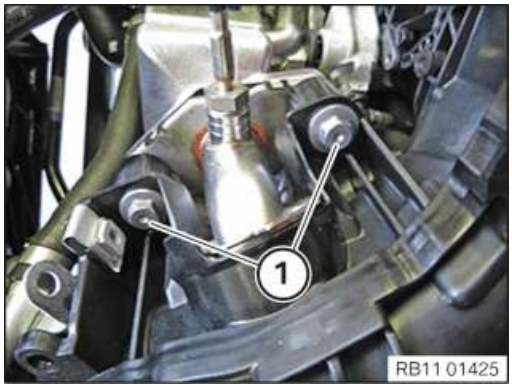
  Unlock coolant line (3) and pull it off the thermostat.




- Loosen the vacuum line (1) from the exhaust-gas recirculation cooler and detach in the highlighted area.
- Loosen the vehicle wiring harness from the exhaust-gas recirculation valve and the coolant line at the clips (2).
- Unlock and disconnect the connector (3) at the exhaust-gas recirculation valve.




- Release the bolts (1) from the exhaust-gas recirculation cooler.

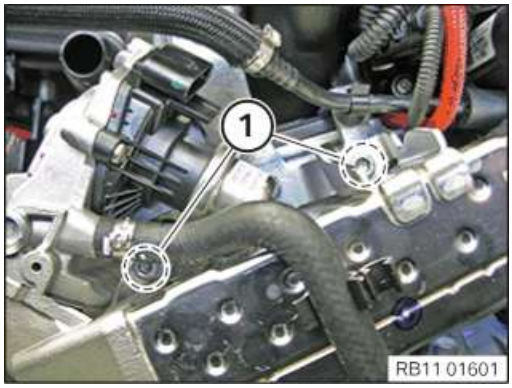



- Loosen the screws (1) on the intake system.

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- Loosen the screw (1) below the exhaust-gas recirculation cooler.




- Loosen screws (1).
- Remove exhaust-gas recirculation cooler.

**11 – Replacement: Check part number of the exhaust-gas recirculation cooler**

**NOTICE**

For vehicles with Real Driving Emissions (RDE) with a production date from 03/2019:

The intake plenum and the exhaust-gas recirculation cooler vary.

When replacing the intake plenum or the exhaust-gas recirculation cooler: Make sure the part number is correct. Note the part number of the removed component and assign the corresponding, suitable part number.

In the electronic Parts Catalogue (EPC), components with the auxiliary "RDE" and components without the auxiliary "RDE" will be provided. Only the following combinations are permitted:

Intake plenum **with** the auxiliary **"RDE"** and exhaust-gas recirculation cooler **with** the auxiliary **"RDE"**.

Intake plenum **without** the auxiliary **"RDE"** and exhaust-gas recirculation cooler **without** the auxiliary **"RDE"**.

Components without the auxiliary "RDE" must not be installed with components with auxiliary "RDE".

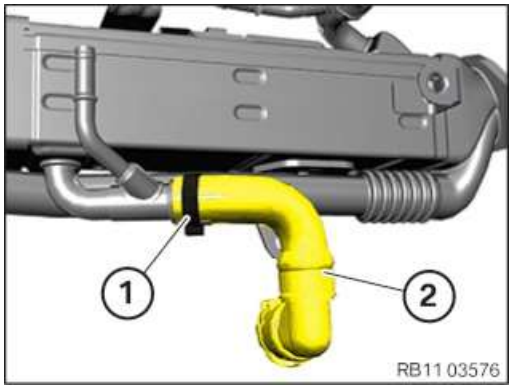



**NOTICE**

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

- Note down part number (1).
- Select new part using the part number from the Electronic Parts Catalogue (EPC).

**12 – When replacing exhaust-gas recirculation cooler: Remount coolant line and delete adaptation**




- Detach the clamp (1) and disconnect the coolant line (2).
- Connect the coolant line (2) to the new exhaust-gas recirculation cooler using the new clamp.

  **Parts:** Exhaust-gas recirculation cooler, clamp
- Fasten clamp (1).

▸ **If a new exhaust-gas recirculation valve is installed: Delete adaptations**

**Check**
- Check if a new exhaust-gas recirculation valve is already installed on the new exhaust-gas recirculation cooler.

**Result**
» A new exhaust-gas recirculation valve is installed.

**Measure**
- Delete adaptations.

▹ **Delete adaptations**



- Connect diagnosis system.
  - Power train
  - Digital diesel electronics (DDE)
  - Reset adaptations
  - Delete adaptations

◃

**13 – Installing the exhaust-gas recirculation cooler**

▸ **Avoiding damage to the starter generator due to escaping coolant**

**RISK OF DAMAGE**

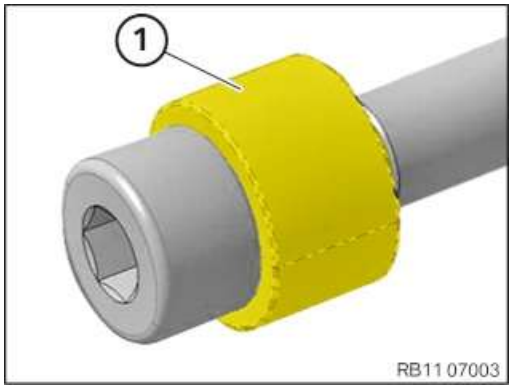
**Escaping coolant on the starter generator.**

**Damage and operating failure of the starter generator.**
- Cover the starter generator with suitable, watertight auxiliary materials.
- Close off line connections with seal plugs.
- If necessary: Flush the leaked coolant from the starter generator with at least 1 l water.

▸ **Installing the exhaust-gas recirculation cooler**

**Check**

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- Check whether the screws **with 10mm** sleeves (1) are available.

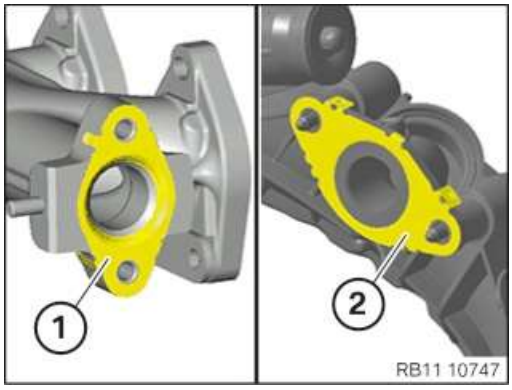
**Result**

» Screws **without** sleeves (1) are available.

**Measure**

- Renew screws.

  **Parts:** Screws (part number 9 886 429)

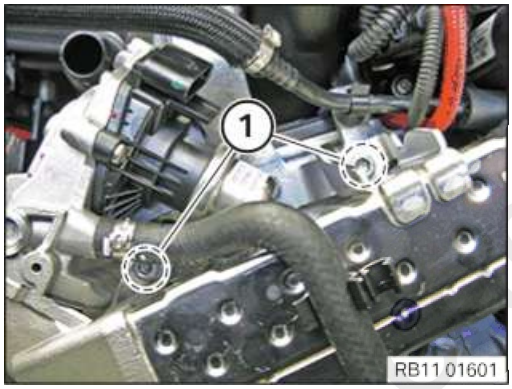



- Renew the seal (1) between the exhaust manifold and the exhaust-gas recirculation cooler.

  **Parts:** Gasket

- Renew the seal (2) between exhaust-gas recirculation cooler and intake air plenum.

  **Parts:** Gasket




**TECHNICAL INFORMATION**

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

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

- Tighten the screws (1) and subsequently release them again.

**Exhaust-gas recirculation cooler to cylinder head**

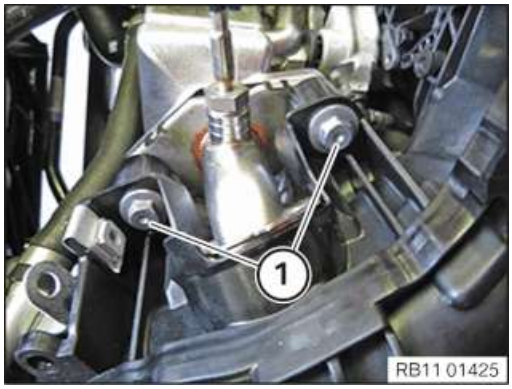
| | | | |
|---|---|---|---|
| M8x20 / M8x28 | | Tightening torque | 5 Nm |
| | | Release angle | 90 ° |




- Tighten the screw (1) under the exhaust-gas recirculation cooler and then release again.

**Exhaust-gas recirculation cooler to cylinder head**

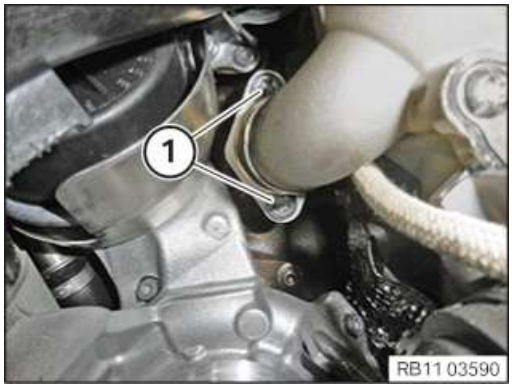
| | | | |
|---|---|---|---|
| M8x20 / M8x28 | | Tightening torque | 5 Nm |
| | | Release angle | 90 ° |




- Tighten the screws (1).

**Exhaust-gas recirculation cooler to intake plenum**

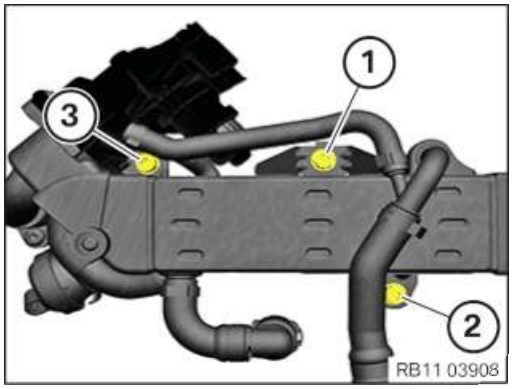
| | | | |
|---|---|---|---|
| | | Tightening torque | 10 Nm |




- Tighten the screws (1).

**Exhaust-gas recirculation cooler to exhaust manifold**

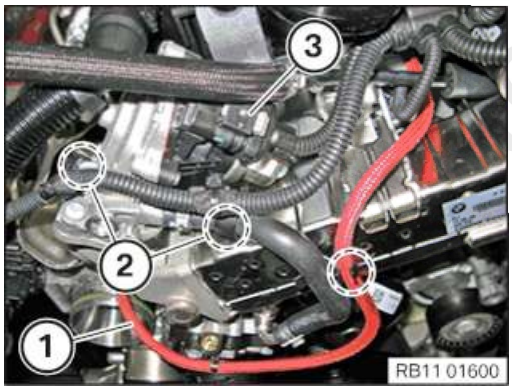
| | | | |
|---|---|---|---|
| M8x28 | Replace screws | Tightening torque | 32 Nm |




- Tighten screws in the order (1) to (3).

**Exhaust-gas recirculation cooler to cylinder head**

| | | | |
|---|---|---|---|
| M8x20 / M8x28 | | Tightening torque | 19 Nm |




- Connect the connector (3) to the exhaust-gas recirculation valve.
- Attach the vehicle wiring harness to the clips (2) at the exhaust-gas recirculation valve and at the coolant line.
- Connect the vacuum line (1) to the exhaust-gas recirculation cooler and attach in the highlighted area.



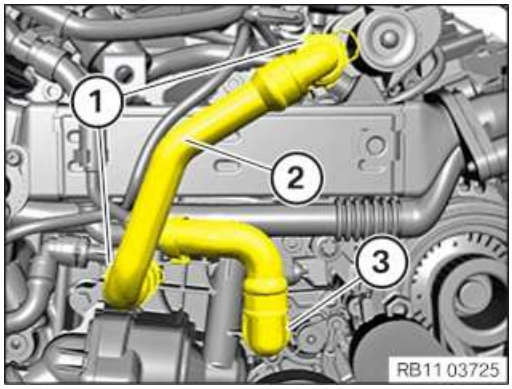

**TECHNICAL INFORMATION**

Make sure that the connections are locked correctly. The locks must engage audibly.

- **Version A:**

  Connect and audibly lock coolant lines (1).

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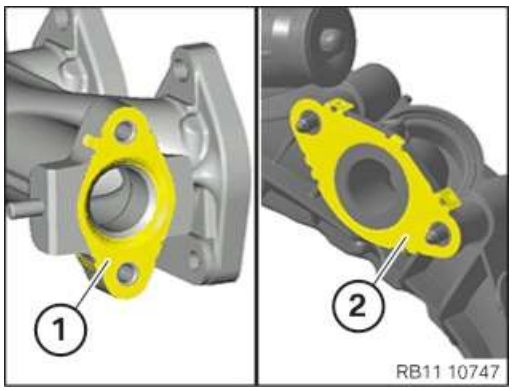

**TECHNICAL INFORMATION**

Make sure that the connections are locked correctly. The locks must engage audibly.

- **Version B:**

  Connect and audibly lock coolant lines (3).
- Install the coolant line (2).
- Audibly lock the locks (1).

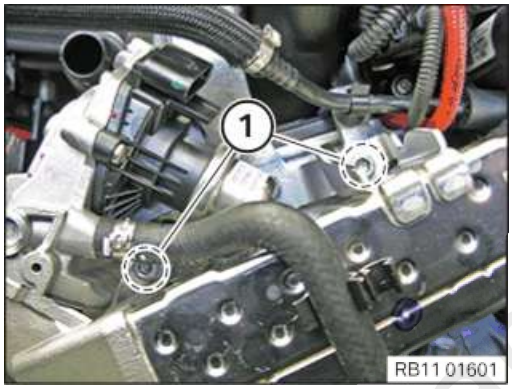
▸ **Installing the exhaust-gas recirculation cooler**




- Renew the seal (1) between the exhaust manifold and the exhaust-gas recirculation cooler.

  **Parts:** Gasket
- Renew the seal (2) between exhaust-gas recirculation cooler and intake air plenum.

  **Parts:** Gasket




**TECHNICAL INFORMATION**

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

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

- Install the exhaust-gas recirculation cooler and fasten with screws (1).
- Tighten the screws (1) and subsequently release them again.

**Exhaust-gas recirculation cooler to cylinder head**

| | | | |
|---|---|---|---|
| M8x20 / M8x28 | | Tightening torque | 5 Nm |
| | | Release angle | 90 ° |

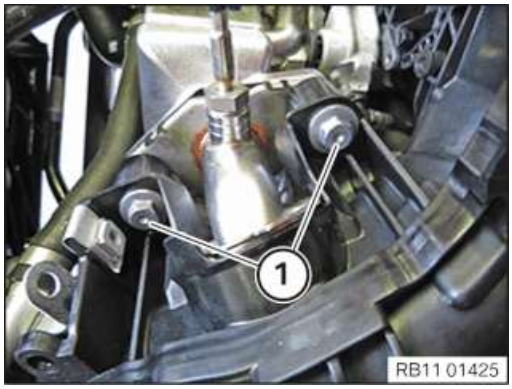



- Tighten the screw (1) under the exhaust-gas recirculation cooler and then release again.

**Exhaust-gas recirculation cooler to cylinder head**

| | | | |
|---|---|---|---|
| M8x20 / M8x28 | | Tightening torque | 5 Nm |
| | | Release angle | 90 ° |

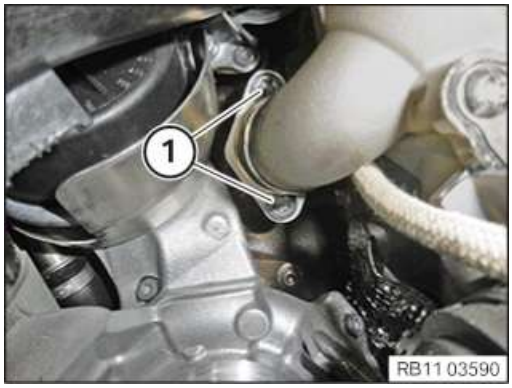
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- Tighten the screws (1).

**Exhaust-gas recirculation cooler to intake plenum**

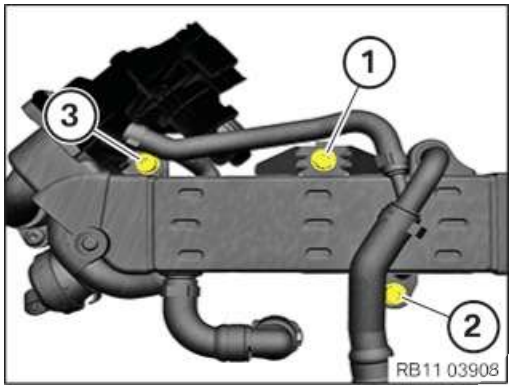
| | | | |
|---|---|---|---|
| | | Tightening torque | 10 Nm |




- Tighten the screws (1).

**Exhaust-gas recirculation cooler to exhaust manifold**

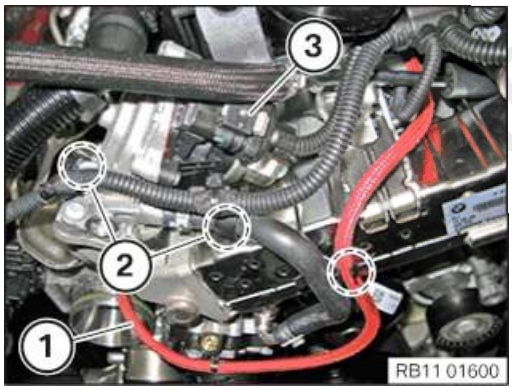
| | | | |
|---|---|---|---|
| M8x28 | Replace screws | Tightening torque | 32 Nm |




- Tighten screws in the order (1) to (3).

**Exhaust-gas recirculation cooler to cylinder head**

| | | | |
|---|---|---|---|
| M8x20 / M8x28 | | Tightening torque | 19 Nm |




- Connect the connector (3) to the exhaust-gas recirculation valve.
- Attach the vehicle wiring harness to the clips (2) at the exhaust-gas recirculation valve and at the coolant line.
- Connect the vacuum line (1) to the exhaust-gas recirculation cooler and attach in the highlighted area.



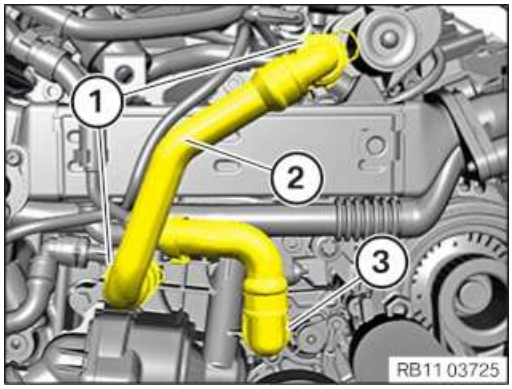

**TECHNICAL INFORMATION**

Make sure that the connections are locked correctly. The locks must engage audibly.

- **Version A:**

  Connect and audibly lock coolant lines (1).

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**TECHNICAL INFORMATION**

Make sure that the connections are locked correctly. The locks must engage audibly.

- **Version B:**

  Connect and audibly lock coolant lines (3).

  Install the coolant line (2).

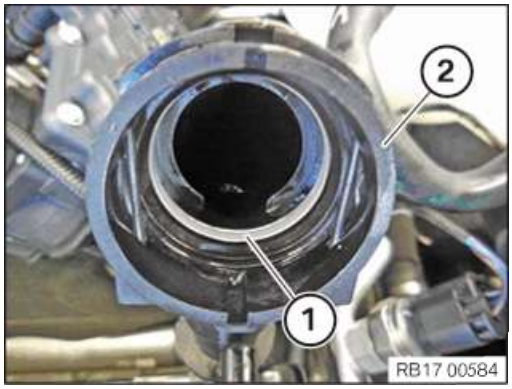
  Audibly lock the locks (1).

## POSTPROCESSES

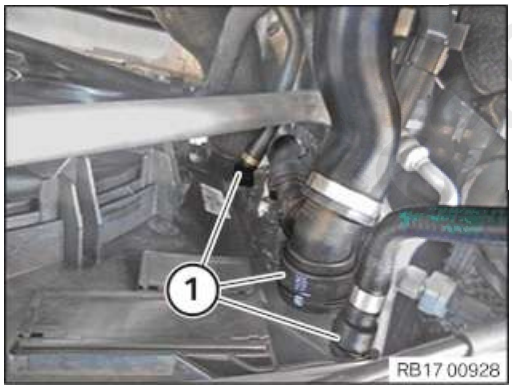
### 14 – Connecting the coolant lines

**TECHNICAL INFORMATION**

Make sure that the connections are locked correctly. The locks must engage audibly.




- Check the sealing ring (1) of the coolant line (2) for damage and renew where required.




**NOTICE**

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

- Connect and lock the coolant lines (1).

  The coolant lines (1) must engage audibly.




- Connect and lock coolant line (1).

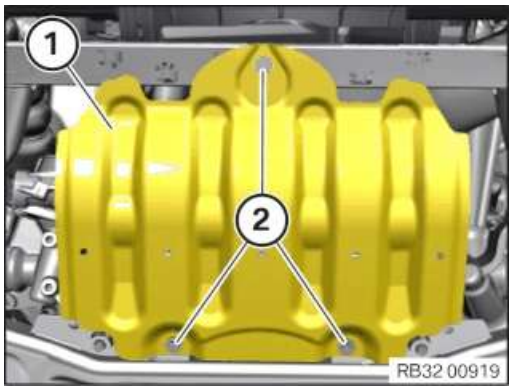
  The coolant line (1) must audibly engage.

### 15 – If installed: Install underbody protection of the steering

**Prerequisite**

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Front underbody protection has been removed.




- Position underbody protection (1).
- Tighten the screws (2).

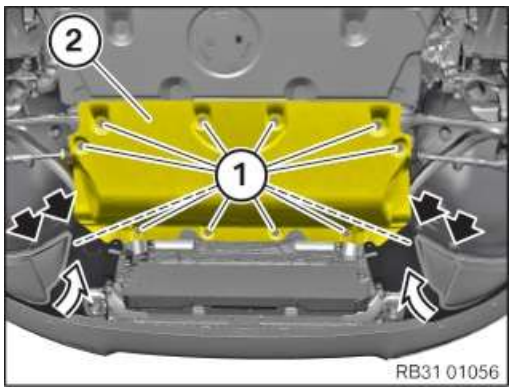
**Underbody protection, steering, to front axle support**

| | | | |
|---|---|---|---|
| Multi-purpose boltM10 | | Tightening torque | 56 Nm |

**Underbody protection, steering, to front axle support**

| | | | |
|---|---|---|---|
| Hexagon bolt M6 | | Tightening torque | 8 Nm |

### 16 – Install the underbody protection of the steering gear




- **Version A:**

  Position the underbody protection (2) of the steering gear.

  Tighten the screws (1).

**Underbody protection of the steering gear**

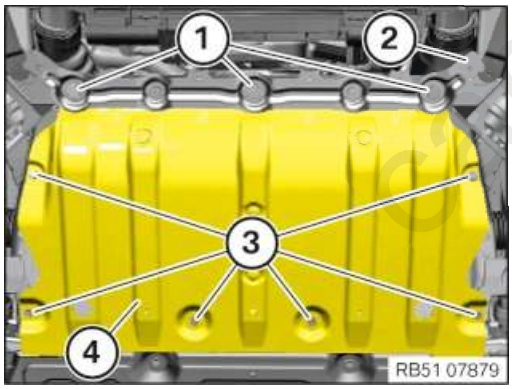
| | | | |
|---|---|---|---|
| Hexagon screw for thermoplastic | | Tightening torque | 2.6 Nm |
| Hexagon bolt M6x20 | | Tightening torque | 8 Nm |

- Position the bottom wheel arch cover.

  Tighten the screws (arrows) of the lower wheel arch cover on the wheel arch cover.

**Wheel arch trim panel, front**

| | | | |
|---|---|---|---|
| Thermoplastic hexagon screw | | Tightening torque | 2,6 Nm |




- **Version B:**

  Feed in the underbody protection (4) of steering gear and install it.

  Tighten the screws (3).

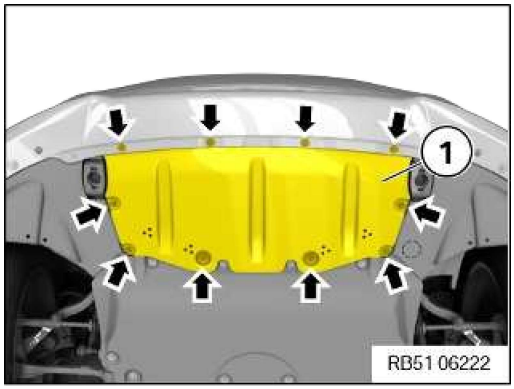
**Underbody protection of the steering gear**

| | | | |
|---|---|---|---|
| Hexagon screw for thermoplastic | | Tightening torque | 2.6 Nm |
| Hexagon bolt M6x20 | | Tightening torque | 8 Nm |

- Position the holder (2) for the underride protection.

  Tighten the screws (1).

### 17 – Installing the front underbody protection



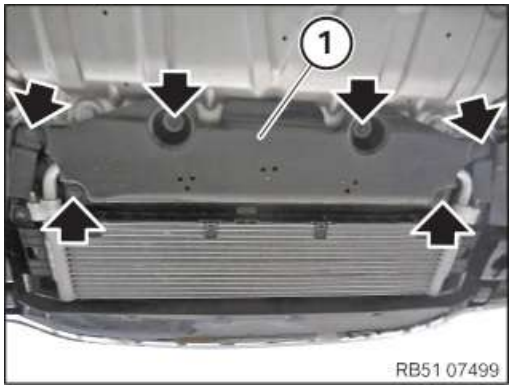

- **Version A:**

  Feed in the front underbody protection (1) towards the front under the bumper panel and position.

  Tighten screws (arrows).

**Underbody protection front**

| | | | |
|---|---|---|---|
| Hexagon screw for thermoplastic | | Tightening torque | 2,6 Nm |
| Hexagon screw M6x20 | | Tightening torque | 8 Nm |



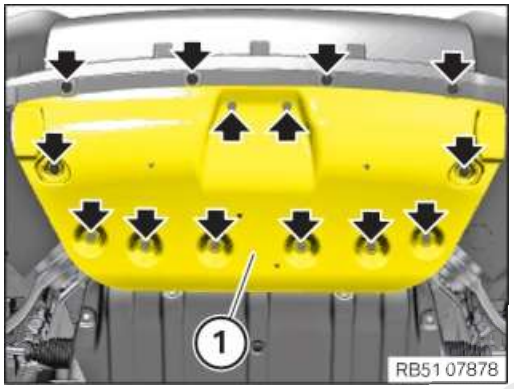

- **Version B:**

  Feed in and position the front underbody protection (1).

  Tighten screws (arrows).

**Underbody protection front**

| | | | |
|---|---|---|---|
| Hexagon screw for thermoplastic | | Tightening torque | 2,6 Nm |
| Hexagon screw M6x20 | | Tightening torque | 8 Nm |




- **Version C:**

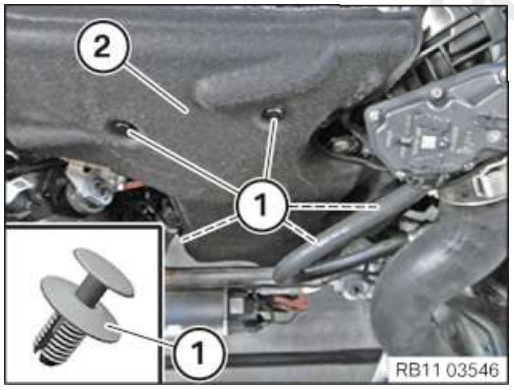
  Feed in and install front underbody protection (1).

  Tighten screws (arrows).

**Underbody protection front**

| | | | |
|---|---|---|---|
| Hexagon screw for thermoplastic | | Tightening torque | 2,6 Nm |
| Hexagon screw M6x20 | | Tightening torque | 8 Nm |

**18 – Install acoustic cover for the engine, front**

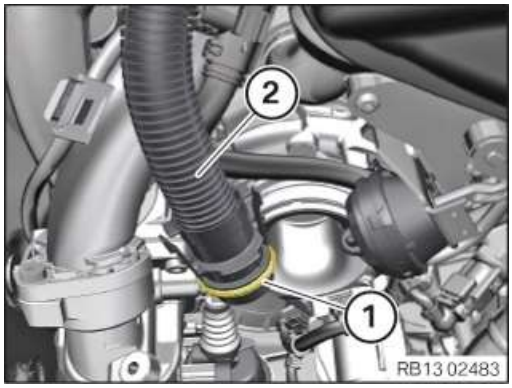



- Feed the acoustic cover (2) in and install.
- Secure the acoustic cover (2) with the expanding rivets (1).

**19 – Installing the clean air pipe with resonator**



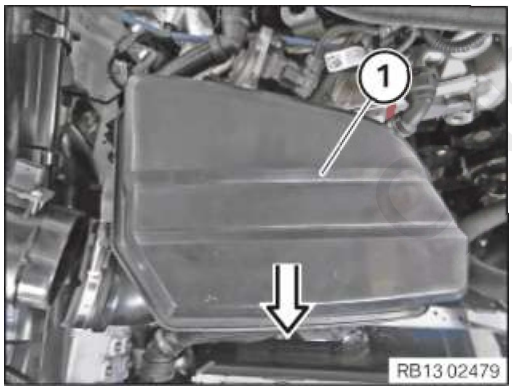

- Check the sealing ring (1) on the exhaust turbocharger for damage and renew if necessary.




- Check the sealing ring (1) for the engine ventilation line (2) for damage and renew where required.




- Feed in and install clean air pipe with resonator (1) in the direction of the arrow.



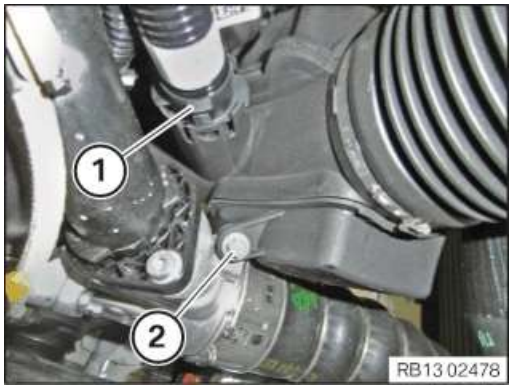

- Press and hold clean air pipe with resonator (1) in the direction of the arrow.




- Attach and lock the clamp (1).

  The clamp (1) must engage audibly.

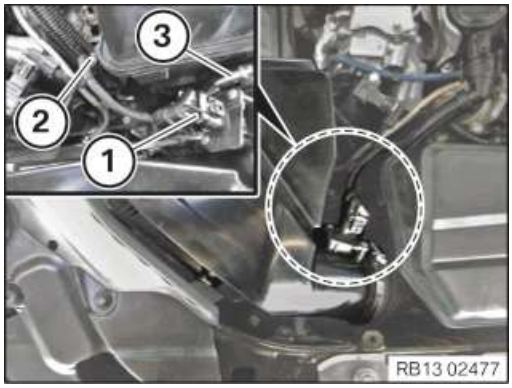
.com




- Tighten down screw (2).

**Clean air pipe to exhaust turbocharger**

| | | | |
|---|---|---|---|
| M6X20 | | Tightening torque | 8 Nm |




- Connect the clean air pipe with resonator to the intake filter housing.
- Tighten clamp (3).

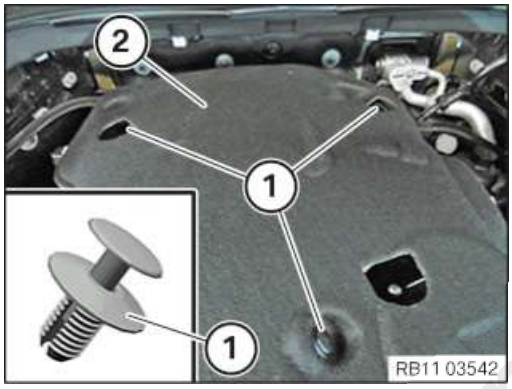
**Clean air pipe to upper section of intake filter housing**

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

- Secure clamps (2).
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

### 20 – Install the acoustic cover for the injectors




- Feed the acoustic cover (2) in and install.
- **If installed:** Secure the acoustic cover (2) with the expanding rivets (1) .

### 21 – Install acoustic cover

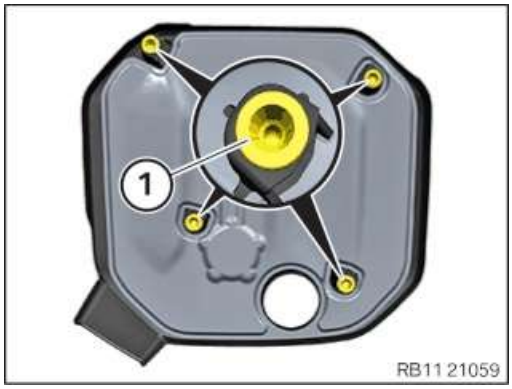
**RISK OF DAMAGE**

**Damage to the acoustic cover/design cover.**

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

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

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- Check the acoustic cover for correct fit of the rubber mounts (1).




- Clip in the acoustic cover (1) into the holders in the indicated areas.

**22 – Filling and bleed the high-temperature coolant circuit**




**TECHNICAL INFORMATION**

It is **mandatory** to fill the cooling system before bleeding.
Fill **both** the circuits for high and low-temperature coolant circuits.

- See additional information.

**23 – Reset the adaptations of the exhaust-gas recirculation valve**



**TECHNICAL INFORMATION**

- The **Reset adaptation** service function must be carried out when the exhaust-gas recirculation valve is renewed.

- Connect diagnosis system:
  - Service functions
  - Power train
  - Digital Diesel Electronics
  - Reset adaptations

## Additional Information

### Overview of Tightening Torques

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| Exhaust-gas recirculation cooler to cylinder head | | | Used in step 13 |
|---|---|---|---|
| M8x20 / M8x28 | | Tightening torque | 5 Nm |
| | | Release angle | 90 ° |

| Exhaust-gas recirculation cooler to intake plenum | | | Used in step 13 |
|---|---|---|---|
| | | Tightening torque | 10 Nm |

| Exhaust-gas recirculation cooler to exhaust manifold | | | Used in step 13 |
|---|---|---|---|
| M8x28 | Replace screws | Tightening torque | 32 Nm |

| Exhaust-gas recirculation cooler to cylinder head | | | Used in step 13 |
|---|---|---|---|
| M8x20 / M8x28 | | Tightening torque | 19 Nm |

| Underbody protection, steering, to front axle support | | | Used in step 15 |
|---|---|---|---|
| Multi-purpose boltM10 | | Tightening torque | 56 Nm |

| Underbody protection, steering, to front axle support | | | Used in step 15 |
|---|---|---|---|
| Hexagon bolt M6 | | Tightening torque | 8 Nm |

| Underbody protection of the steering gear | | | Used in step 16 |
|---|---|---|---|
| Hexagon screw for thermoplastic | | Tightening torque | 2.6 Nm |
| Hexagon bolt M6x20 | | Tightening torque | 8 Nm |

| Wheel arch trim panel, front | | | Used in step 16 |
|---|---|---|---|
| Thermoplastic hexagon screw | | Tightening torque | 2,6 Nm |

| Underbody protection front | | | Used in step 17 |
|---|---|---|---|
| Hexagon screw for thermoplastic | | Tightening torque | 2,6 Nm |
| Hexagon screw M6x20 | | Tightening torque | 8 Nm |

| Clean air pipe to exhaust turbocharger | | | Used in step 19 |
|---|---|---|---|
| M6X20 | | Tightening torque | 8 Nm |

| Clean air pipe to upper section of intake filter housing | | | Used in step 19 |
|---|---|---|---|
| Clamp | | Tightening torque | 3 Nm |

## Links

| Functional descriptions | Used in step |
|---|---|
| Reset adaptations | 1223 |

| Repair instructions | Used in step |
|---|---|
| 17 00 008 Draining and topping up coolant for high-temperature circuit | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 008 Draining and topping up coolant for high-temperature circuit | 22 |

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| 17 00 008 Draining and topping up coolant for high-temperature circuit | 22 |
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| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature) | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleeding the cooling system (B36, B38, B46, B48) | 22 |
| 17 00 039 Bleeding cooling system (B37, B47) | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Filling and bleeding the high-temperature cooling system vacuum filler device (B48) | 22 |
| 17 00 008 Draining and topping up the high-temperature coolant circuit | 22 |
| 17 00 008 Draining and topping up the high-temperature coolant circuit | 22 |
| 17 00 016 Draining and topping up coolant circuit for Range Extender \PREMIUM | 22 |
| 17 00 008 Draining and topping up the high-temperature coolant circuit | 22 |
| 17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures) | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures) | 22 |
| 17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures) | 22 |

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| 17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures) | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleeding the cooling system and checking watertightness using a special tool (coolant circuit for high temperatures) | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
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| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 040 Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature) | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 009 Check the cooling system for watertightness with a special tool (with a tester) | 22 |
| 17 00 009 Check the cooling system for watertightness with a special tool (with a tester) | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 008 Draining and topping up coolant for high-temperature circuit | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 008 Draining and topping up coolant for high-temperature circuit | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |
| 17 00 039 Bleed the cooling system and check it for watertightness with the special tool | 22 |

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# 11 71 501 Replacing the exhaust-gas recirculation valve

## PRELIMINARY WORK

### 1 – Removing the acoustic cover

**RISK OF DAMAGE**

**Damage to the acoustic cover/design cover.**

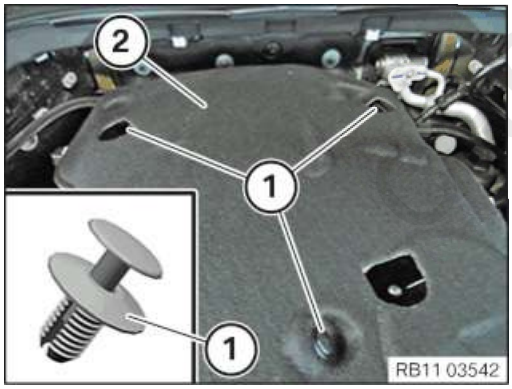
**Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover/design cover.**

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




- Unclip the acoustic cover (1) from the holders in the indicated area towards the top.

### 2 – Remove the acoustic cover for the injectors




- **If installed:** Release the expanding rivet (1).
- Guide the acoustic cover (2) out and remove.

### 3 – Removing the clean air pipe with the resonator

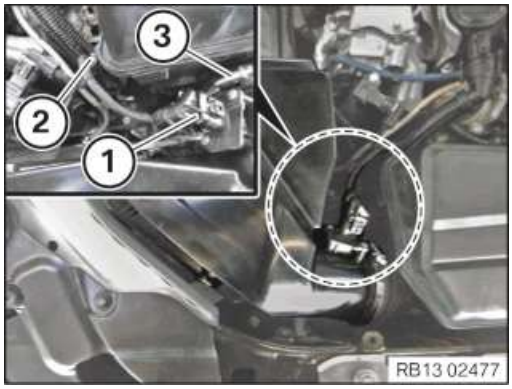
**WARNING**

**Hot surfaces.**

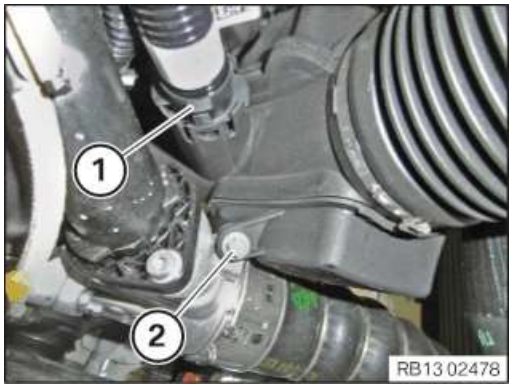
**Risk of burning!**

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

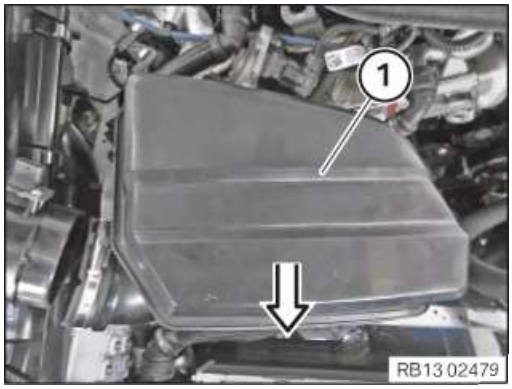
mdiagn.com




- Unlock plug connection (1) and disconnect.
- Loosen clamp (2).
- Unfasten clamp (3).
- Separate the clean air pipe with resonator from the intake filter housing.




- Unlock engine ventilation line (1), disconnect it and place it aside.
- Loosen screw (2).




- Press and hold clean air pipe with resonator (1) in the direction of the arrow.




- Unlock and loosen clamp (1).




- Feed out and remove clean air pipe with resonator (1) in the direction of the arrow.

**4 – Remove acoustic cover of the front engine**

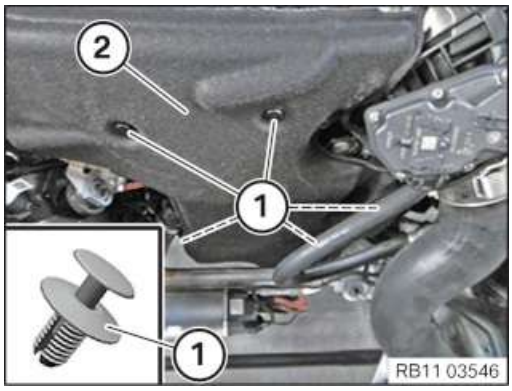
rdiagn.com

**WARNING**

**Hot surfaces.**

**Risk of burning!**

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




- Release and remove expanding rivet (1).
- Guide the acoustic cover (2) out and remove.

## MAIN WORK

### 5 – Removing the exhaust-gas recirculation valve

**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 ... Notes for ESD protection (electrostatic discharge)

**TECHNICAL INFORMATION**

Use commercially available pinch-off tools to pinch off the coolant hoses.

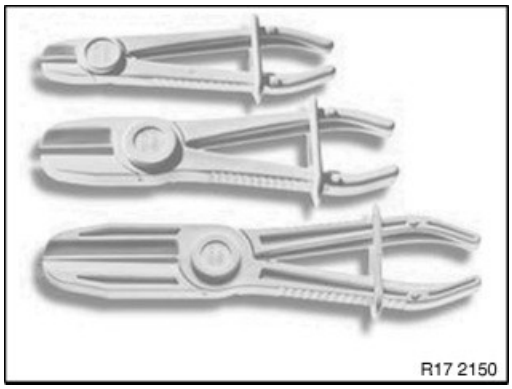
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## TECHNICAL INFORMATION

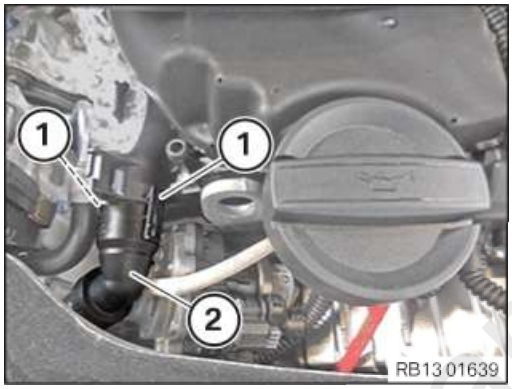
Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.



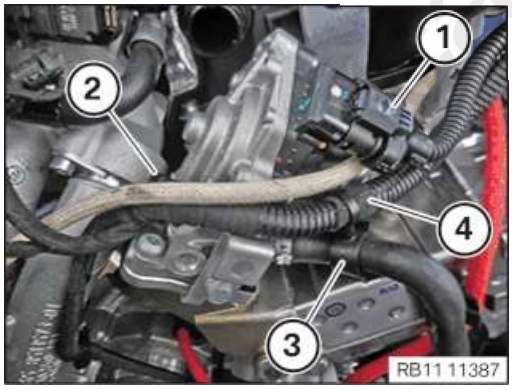
- Connect diagnosis system.
- Carry out the service function "Setting the exhaust-gas recirculation valve installation position":
  - Power train
  - Digital Diesel Electronics
  - Exchange the exhaust-gas recirculation valve
  - Exhaust-gas recirculation valve installation position



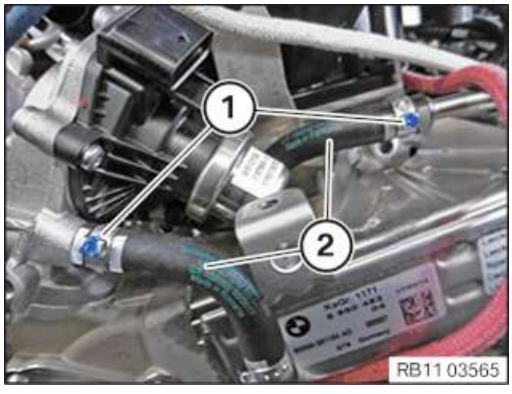

- Use commercially available disconnection tools to pinch off the coolant lines.




- Unlock and loosen the locks (1).
- Feed the engine ventilation line (2) out and set it aside.




- Unlock and disconnect the connector (1) from the exhaust-gas recirculation valve.
- Loosen clamp (2).
- Loosen the holder (3).
- Remove the wiring harness section (4) and put to one side.




- Release the clamps (1) and pull off the coolant line (2).
- Catch and dispose of escaping coolant.

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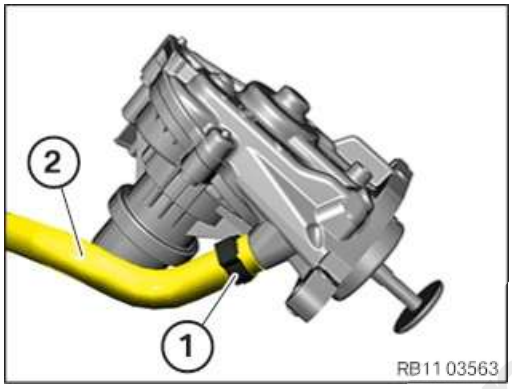

- Unscrew the bolts (1) with conventional tools.
- Detach the exhaust-gas recirculation valve (2).
- Guide out and remove the exhaust-gas recirculation valve (2).

### 6 – Installing the exhaust-gas recirculation valve




- In order to secure the clamps on the exhaust gas recirculation valve and exhaust gas recirculation cooler, use only special tool 0 494 152 (32 1 260).
- Crimp the clamps on the marked, slightly open side (arrows).

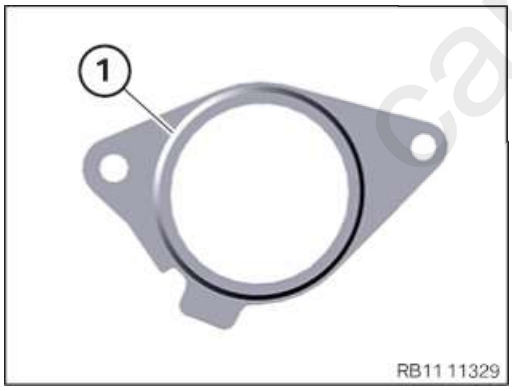
  The clamp is crimped properly if there is a gap **smaller** than 1 mm.




- Release clamp (1) and pull off coolant line (2).
- Position coolant line (2) on the new exhaust-gas recirculation valve.

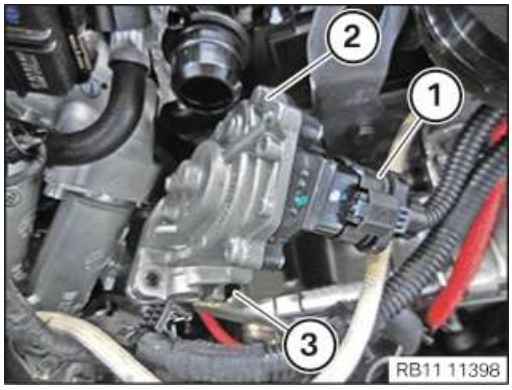
  **Parts:** Exhaust-gas recirculation valve
- If necessary, renew clamp (1).

  **Parts:** Clamp
- Crimp the clamps on the marked, slightly open side (arrows).




- Renew seal between exhaust-gas recirculation cooler and exhaust-gas recirculation valve.

  **Parts:** Gasket




- Connect and lock the connector (1) on the exhaust-gas recirculation valve (2).
- Make sure the connector (1) engages audibly.
- Ensure that seal (3) is fitted correctly on exhaust gas recirculation valve (2).

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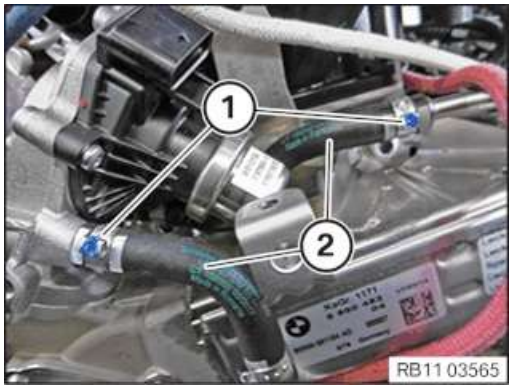
- Connect diagnosis system.
- Carry out the service function "Setting the exhaust-gas recirculation valve installation position":
  - Power train
  - Digital Diesel Electronics
  - Exchange the exhaust-gas recirculation valve
  - Exhaust-gas recirculation valve installation position




- Tighten the bolts (1) with conventional tools.

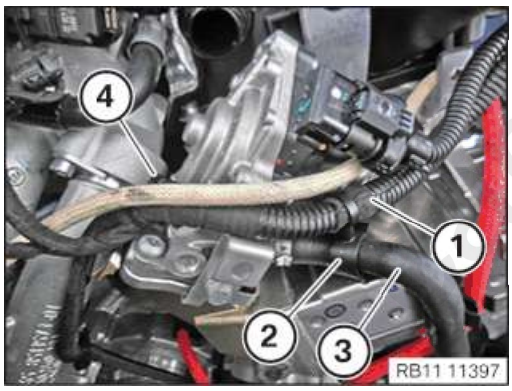
**Exhaust-gas recirculation valve to exhaust-gas recirculation cooler**

| | | | |
|---|---|---|---|
| M6 | | | 13 Nm |

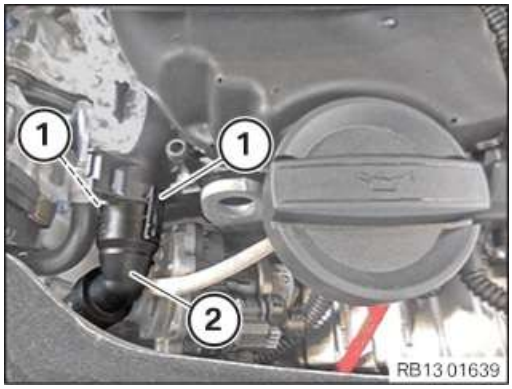



- Renew the clamps (1).

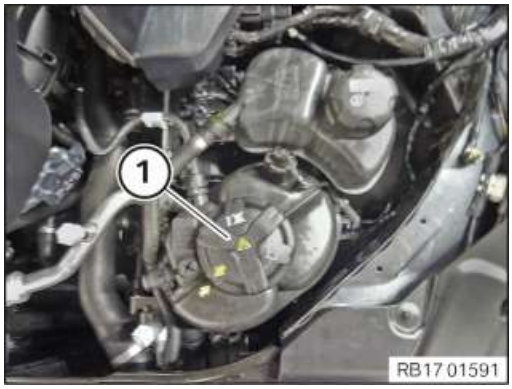
  **Parts:** Clamps
- Connect coolant line (2) to the new clamps (1).
- Position clamps (1) and secure it using special tool 0 494 152 (32 1 260).



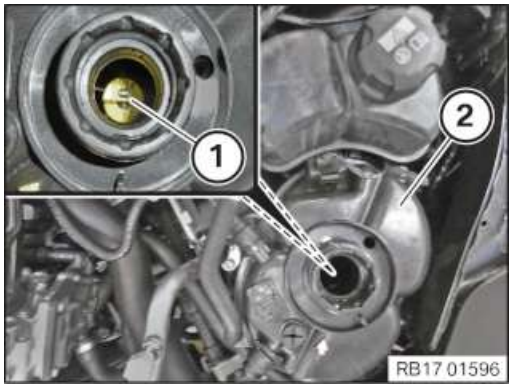

- Guide in the wiring harness section (1) and install.
- Secure the bracket (2) on the coolant line (3).
- Secure clamps (4).




- Unlock and loosen the locks (1).
- Feed the engine ventilation line (2) out and set it aside.




- Loosen sealing cap (1).



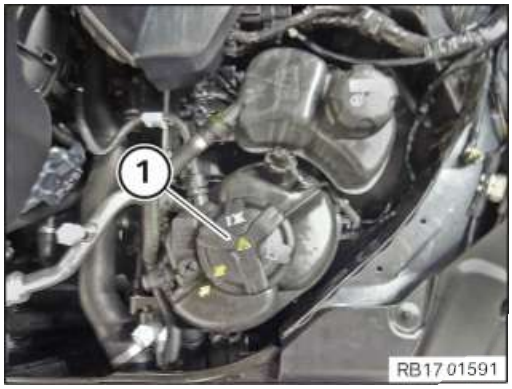

**TECHNICAL INFORMATION**

After the cooling system bleeding routine, the cooling system is topped up above the maximum mark.

Overfilling the cooling system serves to balance the remaining air in the cooling system.

The normal filling level of the coolant is reached while driving.

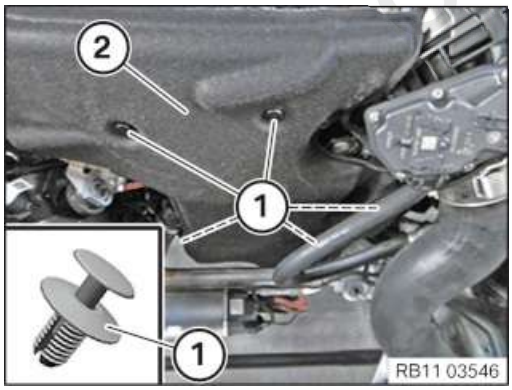
- Adjust the filling level in coolant expansion tank (2) of the high-temperature coolant circuit to **300 ml** above the **max. mark** (1).




- Close sealing cap (1).
- Close the sealing cap (1) until the **arrows** are flush.

## POSTPROCESSES

### 7 – Install acoustic cover for the engine, front



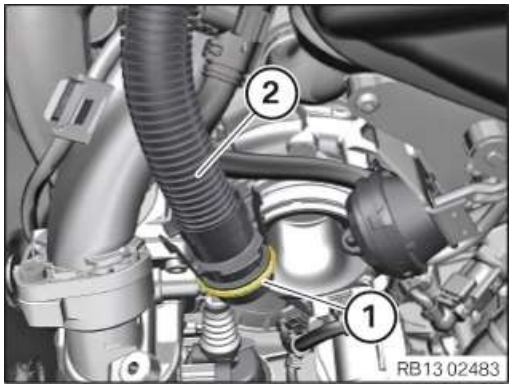

- Feed the acoustic cover (2) in and install.
- Secure the acoustic cover (2) with the expanding rivets (1).

### 8 – Installing the clean air pipe with resonator

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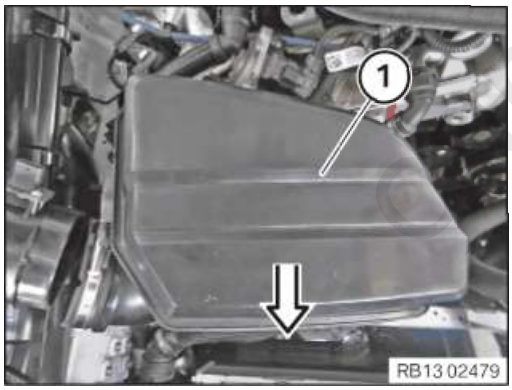

- Check the sealing ring (1) on the exhaust turbocharger for damage and renew if necessary.




- Check the sealing ring (1) for the engine ventilation line (2) for damage and renew where required.




- Feed in and install clean air pipe with resonator (1) in the direction of the arrow.



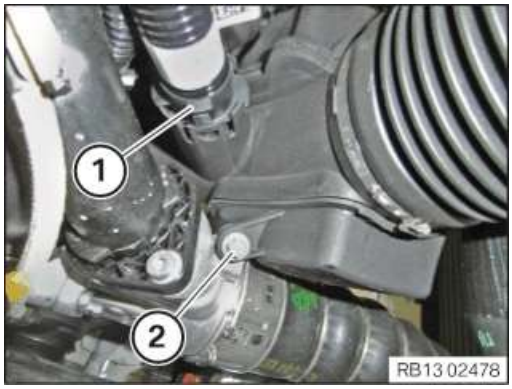

- Press and hold clean air pipe with resonator (1) in the direction of the arrow.




- Attach and lock the clamp (1).

  The clamp (1) must engage audibly.

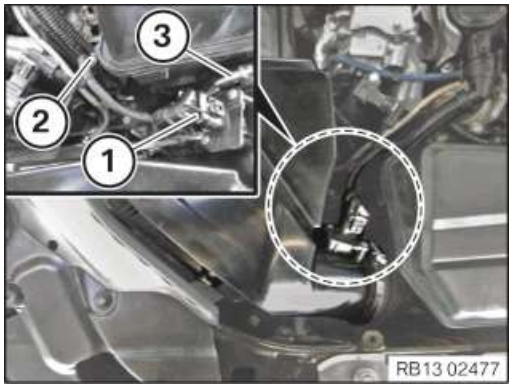
carmanualsdiagn.com




- Tighten down screw (2).

**Clean air pipe to exhaust turbocharger**

| | | | |
|---|---|---|---|
| M6X20 | | Tightening torque | 8 Nm |




- Connect the clean air pipe with resonator to the intake filter housing.
- Tighten clamp (3).

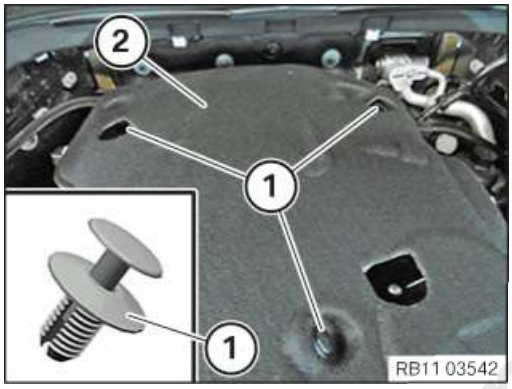
**Clean air pipe to upper section of intake filter housing**

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

- Secure clamps (2).
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

### 9 – Install the acoustic cover for the injectors




- Feed the acoustic cover (2) in and install.
- **If installed:** Secure the acoustic cover (2) with the expanding rivets (1) .

### 10 – Install acoustic cover

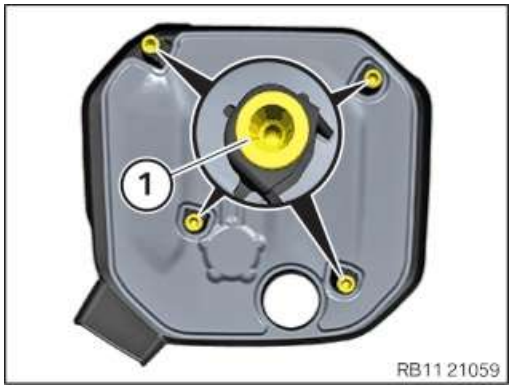
**RISK OF DAMAGE**

**Damage to the acoustic cover/design cover.**

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

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

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- Check the acoustic cover for correct fit of the rubber mounts (1).




- Clip in the acoustic cover (1) into the holders in the indicated areas.

### 11 – Reset the adaptations of the exhaust-gas recirculation valve



**TECHNICAL INFORMATION**

- The **Reset adaptation** service function must be carried out when the exhaust-gas recirculation valve is renewed.

- Connect diagnosis system:
  - Service functions
  - Power train
  - Digital Diesel Electronics
  - Reset adaptations

### 12 – Delete fault memory



- Connect diagnosis system:
  - Reading out the fault memory
  - Delete fault memory

## Additional Information

## Overview of Tightening Torques

| **Exhaust-gas recirculation valve to exhaust-gas recirculation cooler** | | | Used in step 6 |
|---|---|---|---|
| M6 | | | 13 Nm |

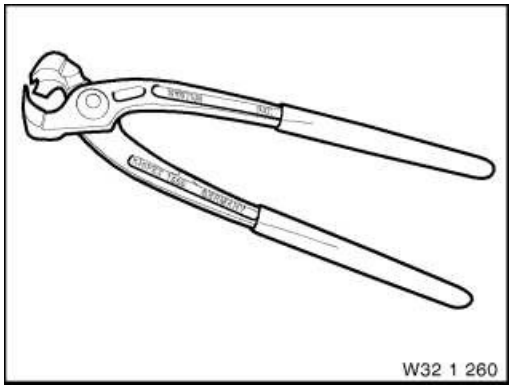
| **Clean air pipe to exhaust turbocharger** | | | Used in step 8 |
|---|---|---|---|
| M6X20 | | Tightening torque | 8 Nm |

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| Clean air pipe to upper section of intake filter housing | | | Used in step 8 |
|---|---|---|---|
| Clamp | | Tightening torque | 3 Nm |

## Overview of Special Tools

### 0 494 152 (32 1 260) Pliers




| Common | | Used in step 6 |
|---|---|---|
| Usage | For opening and fastening hose clamps | |
| Included in the tool or work | | |
| Storage location | Individual | |
| Replaced by | | |
| In connection with | | |
| SI-Number | 01 02 01 (667) | |

## Links

| Functional descriptions | Used in step |
|---|---|
| Reset adaptations | 11 |

| Repair instructions | Used in step |
|---|---|
| 61 35 ... Notes on ESD protection (Electro Static Discharge) | 5 |
| 61 35 ... Notes on ESD protection (Electro Static Discharge) | 5 |

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# 11 71 501 Replacing the exhaust-gas recirculation valve

## PRELIMINARY WORK

### 1 – Removing the acoustic cover

**RISK OF DAMAGE**

**Damage to the acoustic cover/design cover.**

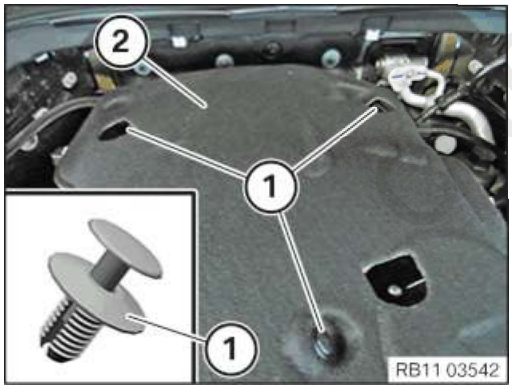
**Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover/design cover.**

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




- Unclip the acoustic cover (1) from the holders in the indicated area towards the top.

### 2 – Remove the acoustic cover for the injectors




- **If installed:** Release the expanding rivet (1).
- Guide the acoustic cover (2) out and remove.

### 3 – Removing the clean air pipe with the resonator

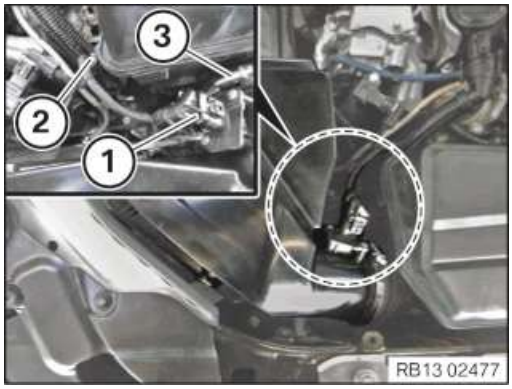
**WARNING**

**Hot surfaces.**

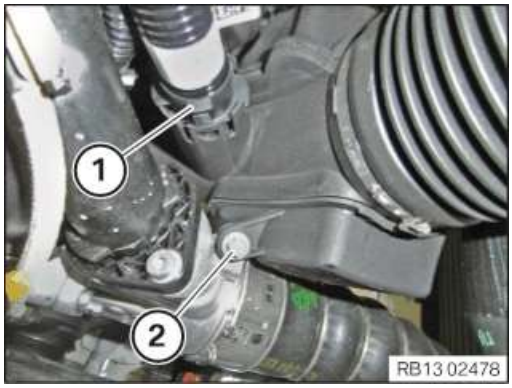
**Risk of burning!**

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

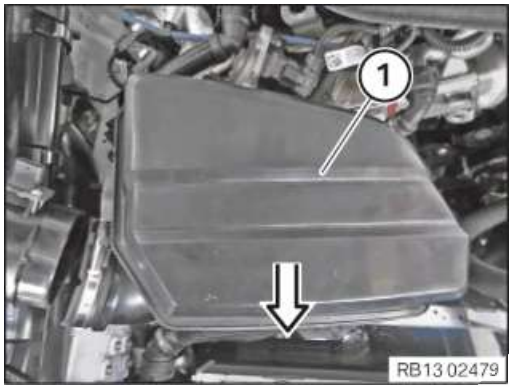
mdiagn.com




- Unlock plug connection (1) and disconnect.
- Loosen clamp (2).
- Unfasten clamp (3).
- Separate the clean air pipe with resonator from the intake filter housing.




- Unlock engine ventilation line (1), disconnect it and place it aside.
- Loosen screw (2).




- Press and hold clean air pipe with resonator (1) in the direction of the arrow.




- Unlock and loosen clamp (1).




- Feed out and remove clean air pipe with resonator (1) in the direction of the arrow.

**4 – Remove acoustic cover of the front engine**

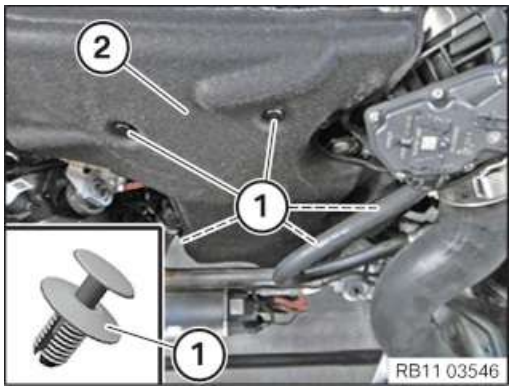
rdiagn.com

**WARNING**

**Hot surfaces.**

**Risk of burning!**

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




- Release and remove expanding rivet (1).
- Guide the acoustic cover (2) out and remove.

## MAIN WORK

### 5 – Removing the exhaust-gas recirculation valve

**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 ... Notes for ESD protection (electrostatic discharge)

**TECHNICAL INFORMATION**

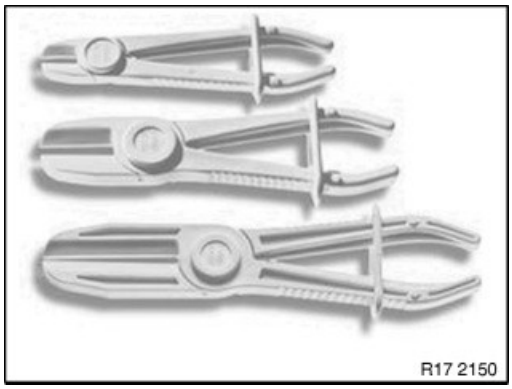
Use commercially available pinch-off tools to pinch off the coolant hoses.

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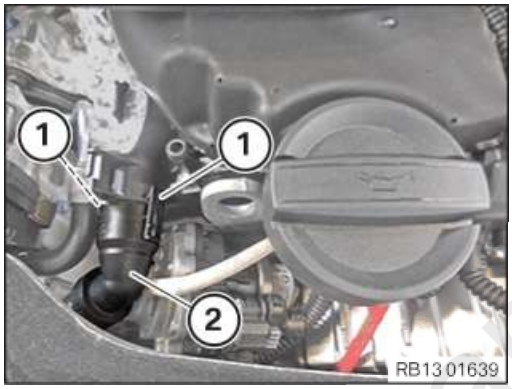
## TECHNICAL INFORMATION

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

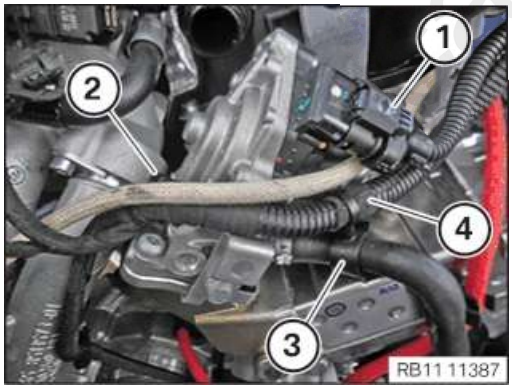
- Connect diagnosis system.
- Carry out the service function "Setting the exhaust-gas recirculation valve installation position":
  - Power train
  - Digital Diesel Electronics
  - Exchange the exhaust-gas recirculation valve
  - Exhaust-gas recirculation valve installation position



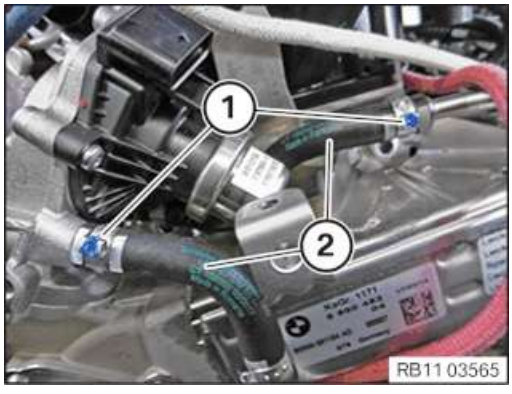

- Use commercially available disconnection tools to pinch off the coolant lines.




- Unlock and loosen the locks (1).
- Feed the engine ventilation line (2) out and set it aside.




- Unlock and disconnect the connector (1) from the exhaust-gas recirculation valve.
- Loosen clamp (2).
- Loosen holder (3).
- Remove the wiring harness section (4) and put to one side.




- Release the clamps (1) and pull off the coolant line (2).
- Catch and dispose of escaping coolant.

tdiagn.com



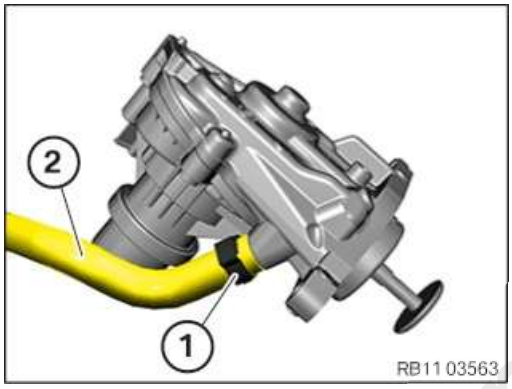

- Unscrew the bolts (1) with conventional tools.
- Detach the exhaust-gas recirculation valve (2).
- Guide out and remove the exhaust-gas recirculation valve (2).

### 6 – Installing the exhaust-gas recirculation valve




- In order to secure the clamps to the exhaust gas recirculation valve and the exhaust gas recirculation cooler, use only special tool 0 494 152 (32 1 260).
- Crimp the clamps on the marked, slightly open side (arrows).

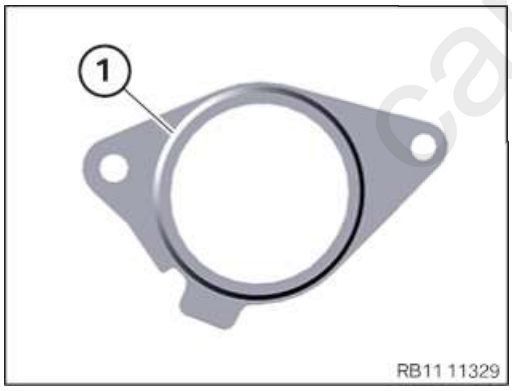
  The clamp is crimped properly if there is a gap **smaller** than 1 mm.




- Release clamp (1) and pull off coolant line (2).
- Position coolant line (2) on the new exhaust-gas recirculation valve.

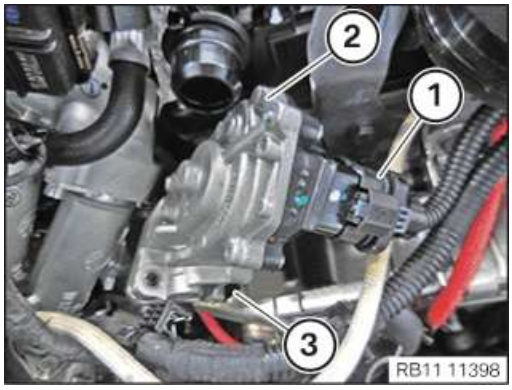
  **Parts:** Exhaust-gas recirculation valve
- Renew clamp (1).

  **Parts:** Clamp
- Crimp the clamps on the marked, slightly open side (arrows).




- Renew seal between exhaust-gas recirculation cooler and exhaust-gas recirculation valve.

  **Parts:** Gasket




- Connect and lock the connector (1) on the exhaust-gas recirculation valve (2).
- Make sure the connector (1) engages audibly.
- Ensure that seal (3) fits correctly on exhaust gas recirculation valve (2).

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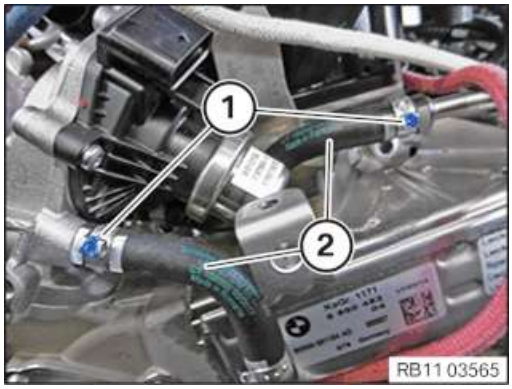
- Connect diagnosis system.
- Carry out the service function "Setting the exhaust-gas recirculation valve installation position":
  - Power train
  - Digital Diesel Electronics
  - Exchange the exhaust-gas recirculation valve
  - Exhaust-gas recirculation valve installation position




- Tighten the bolts (1) with conventional tools.

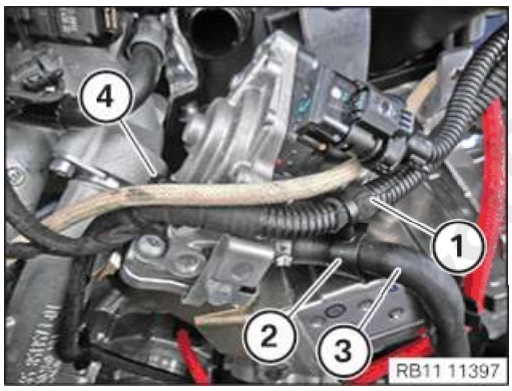
**Exhaust-gas recirculation valve to exhaust-gas recirculation cooler**

| | | | |
|---|---|---|---|
| M6 | | | 13 Nm |

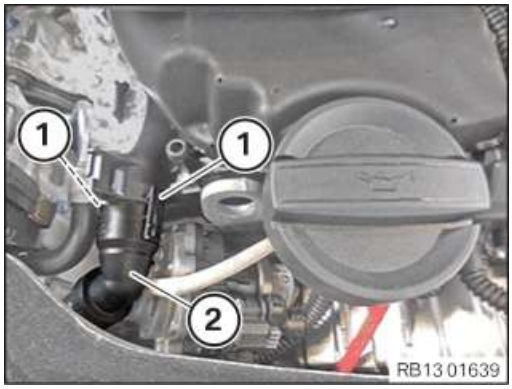



- Renew the clamps (1).

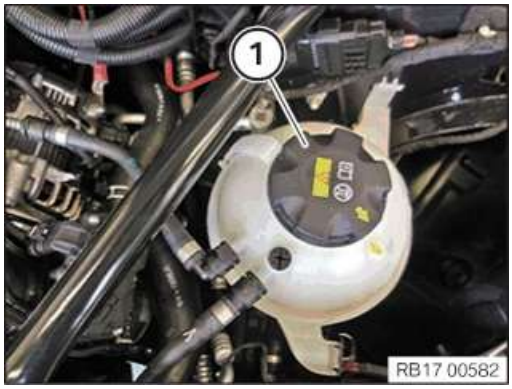
  **Parts:** Clamps
- Connect coolant line (2) to the new clamps (1).
- Position clamps (1) and secure them using special tool 0 494 152 (32 1 260).




- Guide in the wiring harness section (1) and install.
- Secure the bracket (2) on the coolant line (3).
- Secure clamps (4).



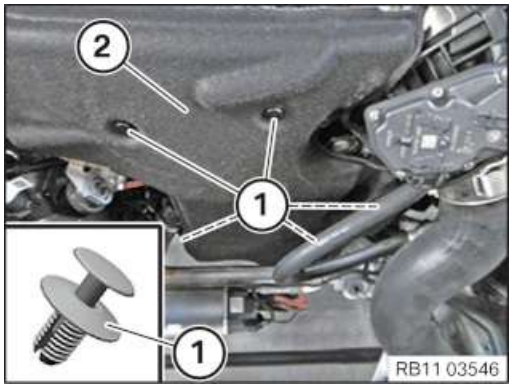

- Unlock and loosen the locks (1).
- Feed the engine ventilation line (2) out and set it aside.




- Adjust the filling level of the coolant expansion tank to the **maximum mark**.
- Close the sealing cap (1) until the arrows are flush.

## POSTPROCESSES

### 7 – Install acoustic cover for the engine, front

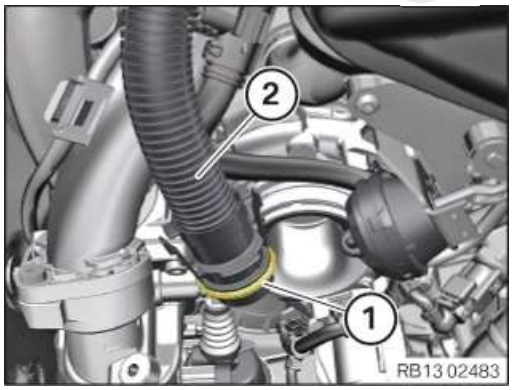



- Feed the acoustic cover (2) in and install.
- Secure the acoustic cover (2) with the expanding rivets (1).

### 8 – Installing the clean air pipe with resonator



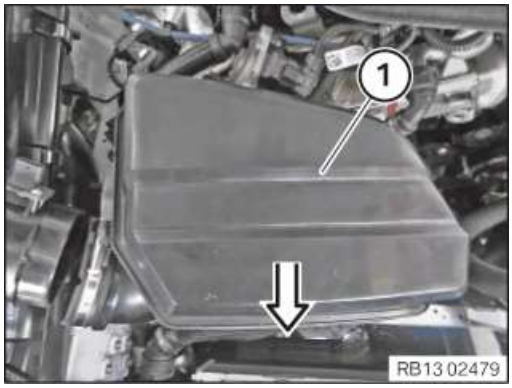

- Check the sealing ring (1) on the exhaust turbocharger for damage and renew if necessary.




- Check the sealing ring (1) for the engine ventilation line (2) for damage and renew where required.




- Feed in and install clean air pipe with resonator (1) in the direction of the arrow.

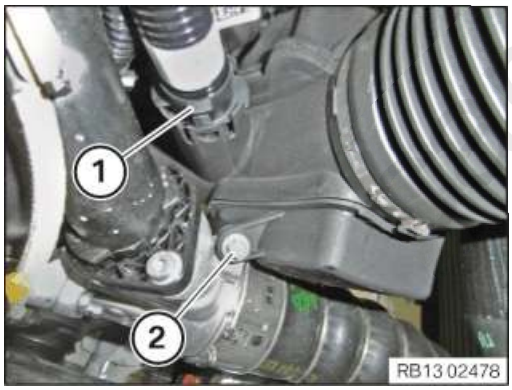



- Press and hold clean air pipe with resonator (1) in the direction of the arrow.




- Attach and lock the clamp (1).

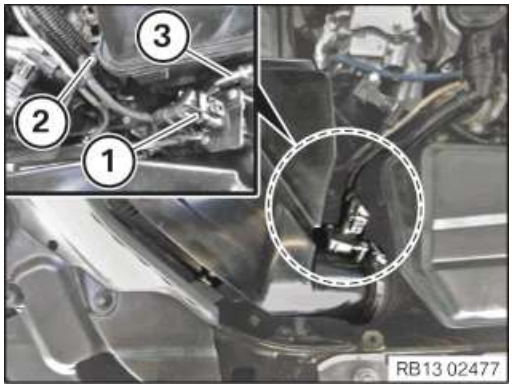
  The clamp (1) must engage audibly.




- Tighten down screw (2).

**Clean air pipe to exhaust turbocharger**

| | | | |
|---|---|---|---|
| M6X20 | | Tightening torque | 8 Nm |




- Connect the clean air pipe with resonator to the intake filter housing.
- Tighten clamp (3).

**Clean air pipe to upper section of intake filter housing**

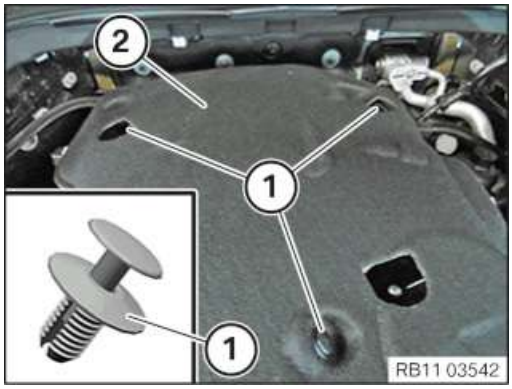
| | | | |
|---|---|---|---|
| Clamp | | Tightening torque | 3 Nm |

- Secure clamps (2).
- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

**9 – Install the acoustic cover for the injectors**

fordiagn.com




- Feed the acoustic cover (2) in and install.
- **If installed:** Secure the acoustic cover (2) with the expanding rivets (1) .

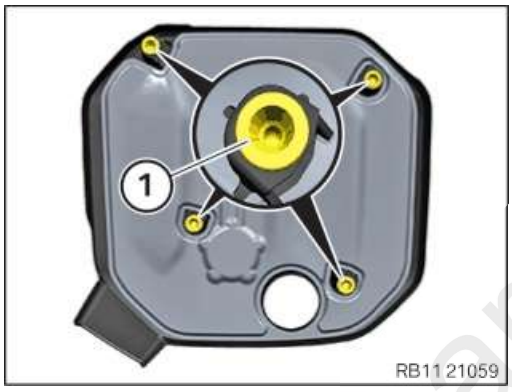
**10 – Install acoustic cover**

**RISK OF DAMAGE**

**Damage to the acoustic cover/design cover.**

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

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




- Check the acoustic cover for correct fit of the rubber mounts (1).




- Clip in the acoustic cover (1) into the holders in the indicated areas.

**11 – Reset the adaptations of the exhaust-gas recirculation valve**

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**TECHNICAL INFORMATION**

- The **Reset adaptation** service function must be carried out when the exhaust-gas recirculation valve is renewed.

- Connect diagnosis system:
  - Service functions
  - Power train
  - Digital Diesel Electronics
  - Reset adaptations

**12 – Delete fault memory**



- Connect diagnosis system:
  - Reading out the fault memory
  - Delete fault memory

## Additional Information

### Overview of Tightening Torques

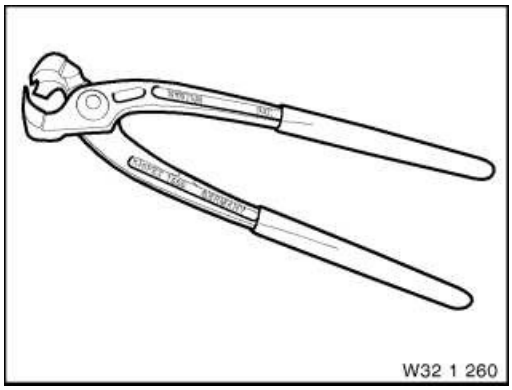
| **Exhaust-gas recirculation valve to exhaust-gas recirculation cooler** | | | Used in step 6 |
|---|---|---|---|
| M6 | | | 13 Nm |

| **Clean air pipe to exhaust turbocharger** | | | Used in step 8 |
|---|---|---|---|
| M6X20 | | Tightening torque | 8 Nm |

| **Clean air pipe to upper section of intake filter housing** | | | Used in step 8 |
|---|---|---|---|
| Clamp | | Tightening torque | 3 Nm |

### Overview of Special Tools

**0 494 152 (32 1 260) Pliers**




| **Common** | Used in step 6 |
|---|---|
| Usage | For opening and fastening hose clamps |
| Included in the tool or work | |
| Storage location | Individual |
| Replaced by | |
| In connection with | |
| SI-Number | 01 02 01 (667) |

### Links

| **Functional descriptions** | **Used in step** |
|---|---|
| Reset adaptations | 11 |

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| Repair instructions | Used in step |
| --- | --- |
| 61 35 ... Notes on ESD protection (Electro Static Discharge) | 5 |
| 61 35 ... Notes on ESD protection (Electro Static Discharge) | 5 |

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# 11 74 564 Removing and installing/replacing electric changeover valve for turbine control flap

## PRELIMINARY WORK

### 1 – Removing the acoustic cover

**RISK OF DAMAGE**

**Damage to the acoustic cover/design cover.**

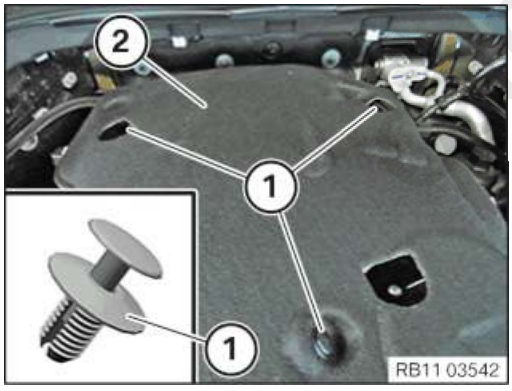
**Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover/design cover.**

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




- Unclip the acoustic cover (1) from the holders in the indicated area towards the top.

### 2 – Remove the acoustic cover for the injectors




- **If installed:** Release the expanding rivet (1).
- Guide the acoustic cover (2) out and remove.

diagn.com

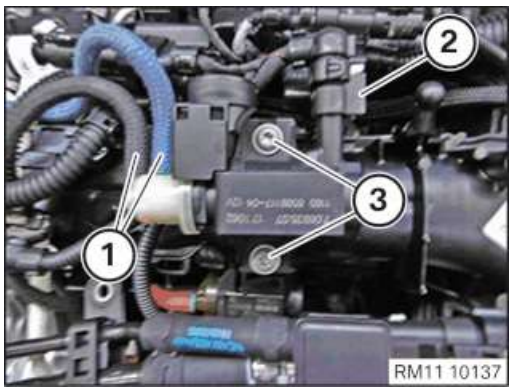
### 3 – Remove the electric changeover valve of the low-pressure stage turbocharger

**RISK OF DAMAGE**

**Electrostatic discharge.**

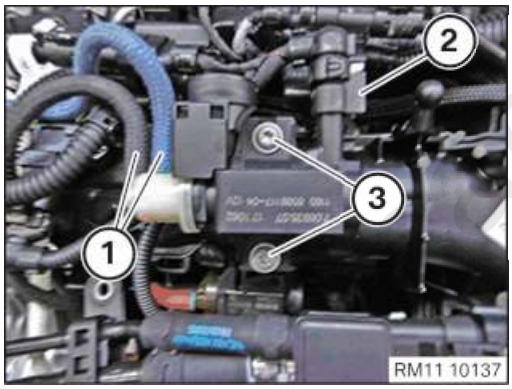
**Damage to or destruction of electrical components.**

- 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 ... Notes for ESD protection (electrostatic discharge)




- Pull off the vacuum hoses (1).
- Make sure that the green O-ring is **not** lost between the blue vacuum hose and the electric changeover valve.
- Unlock connector (2) and pull off.
- Loosen screws (3).
- Remove electric changeover valve.

### 4 – Installing the electric changeover valve of the low-pressure stage turbocharger




- Position the electric changeover valve.
- Tighten down screws (3).

**Electric changeover valve to intake plenum**

| | | | |
|---|---|---|---|
| TS6x20 | | Tightening torque | 5 Nm |

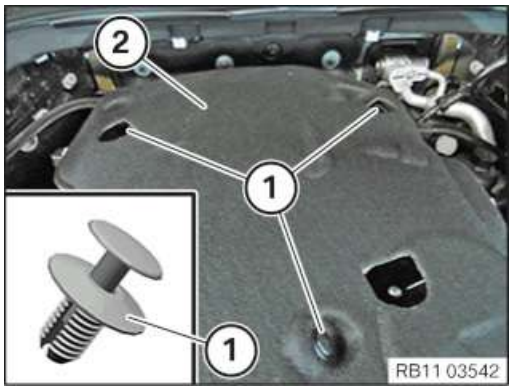
- Connect the blue vacuum hose (1) to the electric changeover valve.

**Note:** The connection for the blue vacuum hose has a green rubber ring.

- Connect black vacuum hose (1) to the electric changeover valve.
- Connect and lock the connector (2).

  Lock must audibly engage.

### 5 – Install the acoustic cover for the injectors




- Feed the acoustic cover (2) in and install.
- **If installed:** Secure the acoustic cover (2) with the expanding rivets (1) .

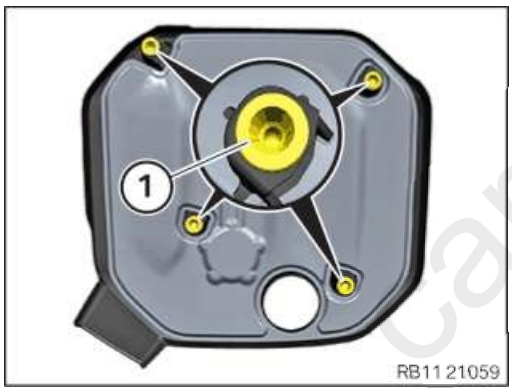
### 6 – Install acoustic cover

**RISK OF DAMAGE**

**Damage to the acoustic cover/design cover.**

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

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




- Check the acoustic cover for correct fit of the rubber mounts (1).




- Clip in the acoustic cover (1) into the holders in the indicated areas.

## Additional Information

## Overview of Tightening Torques

cardiagn.com

| Electric changeover valve to intake plenum | | | Used in step 4 |
|---|---|---|---|
| TS6x20 | | Tightening torque | 5 Nm |

## Links

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

cardiagn.com

# 11 74 559 Replace electric valve for vacuum control of water pump

## PRELIMINARY WORK

### 1 – Removing the acoustic cover

**RISK OF DAMAGE**

**Damage to the acoustic cover/design cover.**

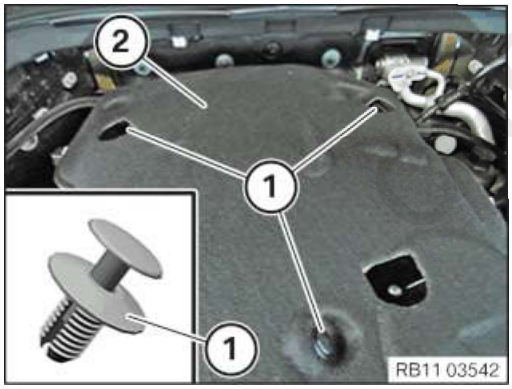
**Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover/design cover.**

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




- Unclip the acoustic cover (1) from the holders in the indicated area towards the top.

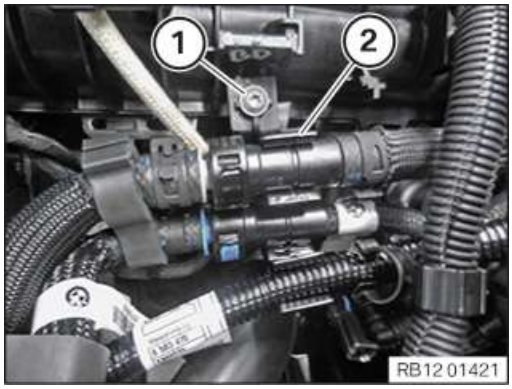
### 2 – Remove the acoustic cover for the injectors



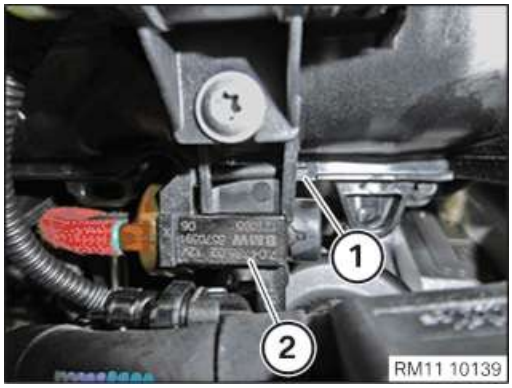

- **If installed:** Release the expanding rivet (1).
- Guide the acoustic cover (2) out and remove.

## MAIN WORK

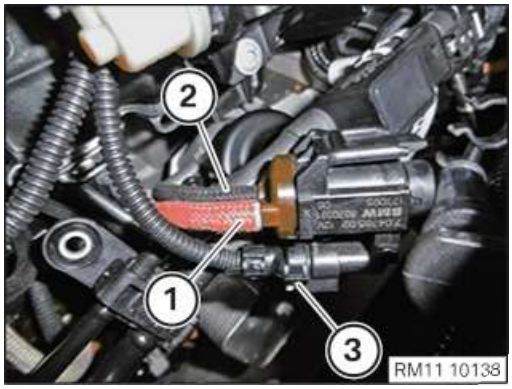
### 3 – Remove the electric changeover valve for the coolant pump vacuum control




- Loosen screw (1).
- Thread out holder (2) and set aside.




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

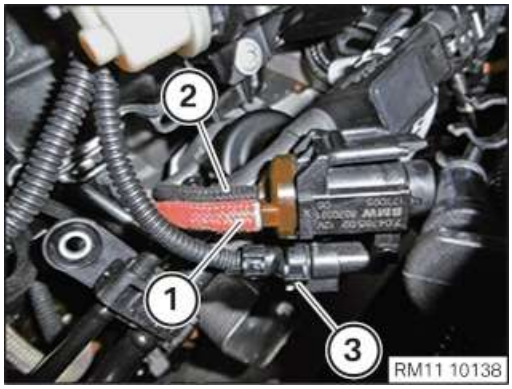



- Pull off vacuum hoses (1) and (2) from electric changeover valve .
- Make sure not to lose the green O-ring between the red vacuum hose (1) and the electric changeover valve.
- Unlock connector (3) and remove.

**4 – Install the electric changeover valve for the vacuum control of the coolant pump**




- Note that the green O-ring (1) marks the connection of the controlled vacuum.



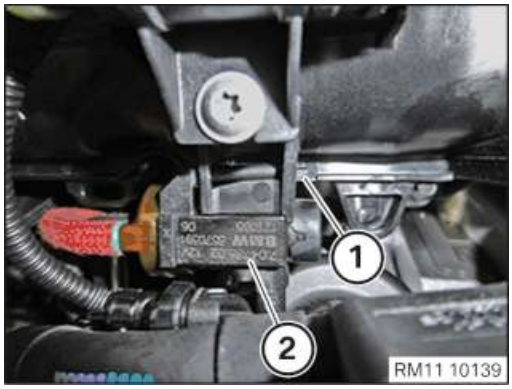

- Connect the black vacuum hose (2) to the electric changeover valve.

  The black vacuum hose (2) must be connected to the unmarked connection.
- Connect red vacuum hose (1) to the electric changeover valve.

  The red vacuum hose (1) must be connected to the connection with the green O-ring.
- Connect and lock the connector (3).

  Lock must audibly engage.

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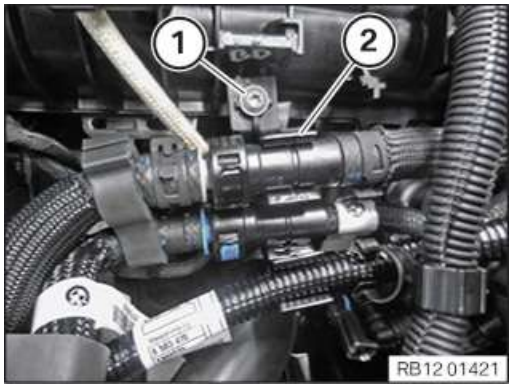



**TECHNICAL INFORMATION**

Latch mechanisms, guides and mounting elements must not be damaged or missing.

- Feed in electric changeover valve (2) and install in the holder from left to right.

  The lock (1) must engage audibly on the holder.



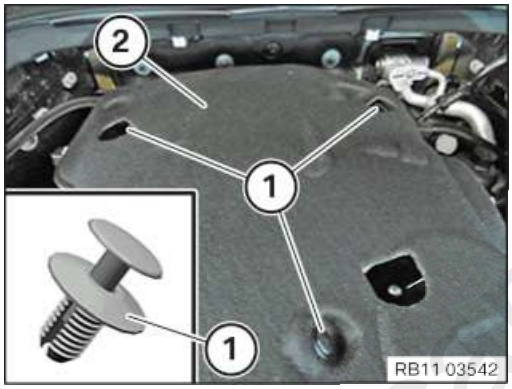

- Insert and install the holder (2).
- Tighten down screw (1).

**Holder on intake plenum**

| | | | |
|---|---|---|---|
| TS6X20 | | Tightening torque | 5 Nm |

## POSTPROCESSES

### 5 – Install the acoustic cover for the injectors




- Feed the acoustic cover (2) in and install.
- **If installed:** Secure the acoustic cover (2) with the expanding rivets (1) .

### 6 – Install acoustic cover

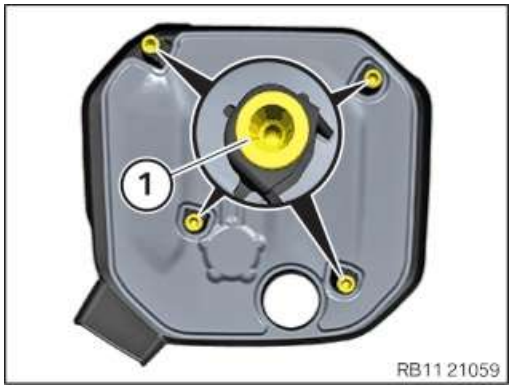
**RISK OF DAMAGE**

**Damage to the acoustic cover/design cover.**

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

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

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- Check the acoustic cover for correct fit of the rubber mounts (1).




- Clip in the acoustic cover (1) into the holders in the indicated areas.

## Additional Information

### Overview of Tightening Torques

**Holder on intake plenum** Used in step 4

| | | | |
|---|---|---|---|
| TS6X20 | | Tightening torque | 5 Nm |

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# 11 74 556 Replace engine mount electrovalve

## PRELIMINARY WORK

### 1 – Removing the acoustic cover

**RISK OF DAMAGE**

**Damage to the acoustic cover/design cover.**

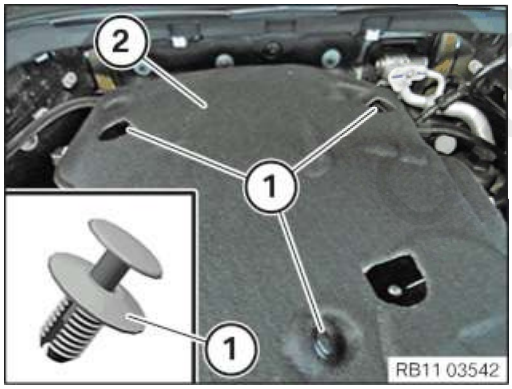
**Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover/design cover.**

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




- Unclip the acoustic cover (1) from the holders in the indicated area towards the top.

### 2 – Remove the acoustic cover for the injectors




- **If installed:** Release the expanding rivet (1).
- Guide the acoustic cover (2) out and remove.

## MAIN WORK

### 3 – Removing the electric changeover valve for the engine mounting

**RISK OF DAMAGE**

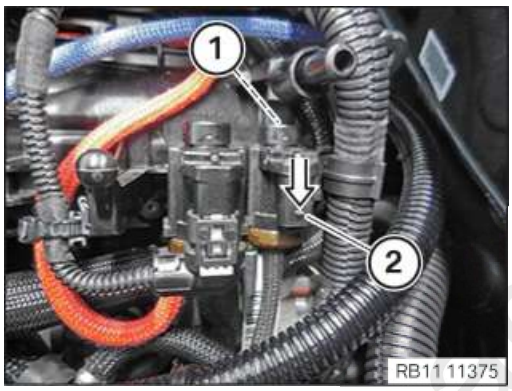
**Electrostatic discharge.**

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

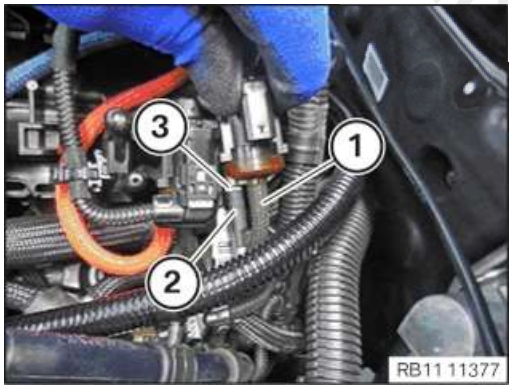
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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




- Unlock and disconnect plug connection (1).

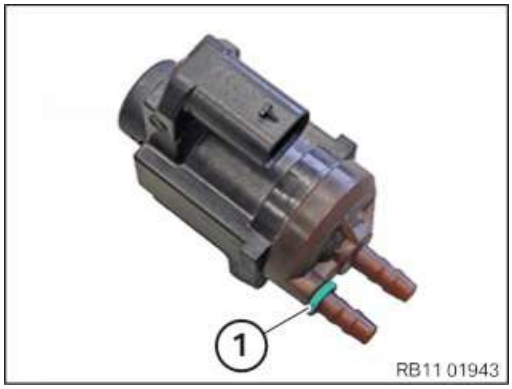



- Unlock lock (1).
- Guide out the electric changeover valve (2) in the direction of the arrow and set aside.

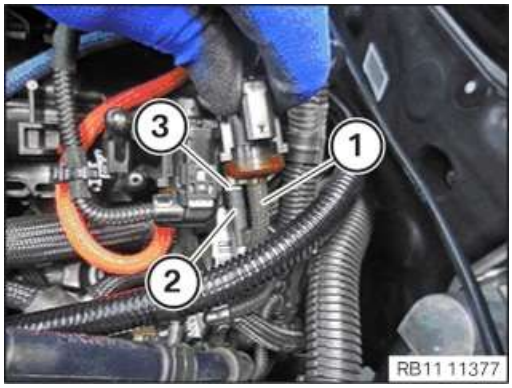



- Ensure that the green O-ring (3) between vacuum hose (2) and the electric changeover valve is **not** lost.
- Pull off vacuum hoses (1) and (2) **carefully** from the electric changeover valve.

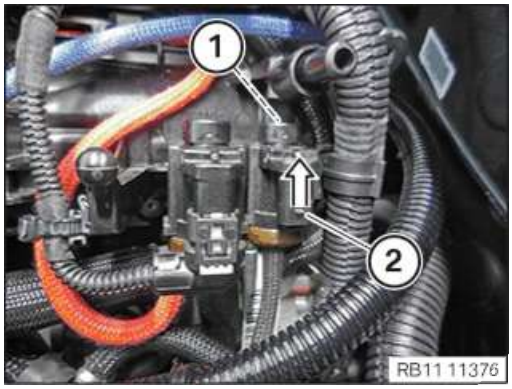
**4 – Installing the electric changeover valve for the engine mounting**




- Note that the green O-ring (1) marks the connection of the controlled vacuum.




- Connect vacuum hose (2) for the engine mount on marked connection (3) of the electric changeover valve.
- Connect vacuum hose (1) of the vacuum reservoir on the electric changeover valve.




- Feed in and install the electric changeover valve (2) in the direction of the arrow.

  The lock (1) must engage audibly.



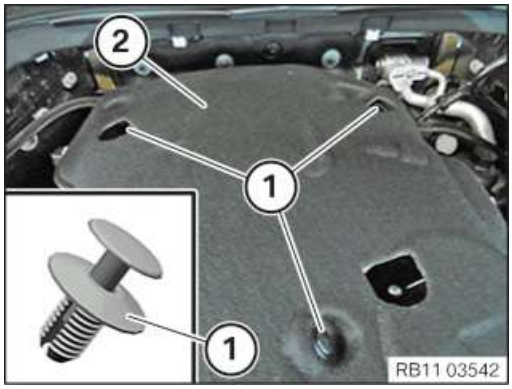

- Connect and lock the connector (1).

  The connector (1) must engage audibly.

## POSTPROCESSES

### 5 – Install the acoustic cover for the injectors

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- Feed the acoustic cover (2) in and install.
- **If installed:** Secure the acoustic cover (2) with the expanding rivets (1) .

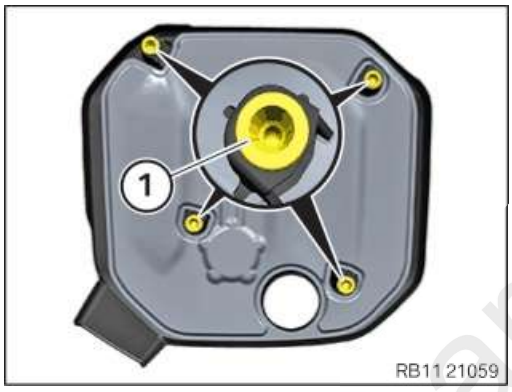
**6 – Install acoustic cover**

**RISK OF DAMAGE**

**Damage to the acoustic cover/design cover.**

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

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




- Check the acoustic cover for correct fit of the rubber mounts (1).




- Clip in the acoustic cover (1) into the holders in the indicated areas.

## Additional Information

### Links

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

ardiagn.com

# 11 74 050 Replacing electric valve for exhaust-gas recirculation

## PRELIMINARY WORK

### 1 – Removing the acoustic cover

**RISK OF DAMAGE**

**Damage to the acoustic cover/design cover.**

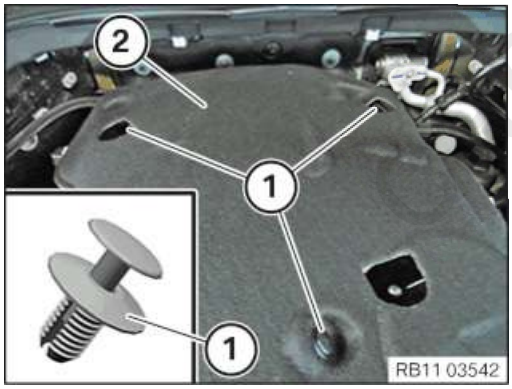
**Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover/design cover.**

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




- Unclip the acoustic cover (1) from the holders in the indicated area towards the top.

### 2 – Remove the acoustic cover for the injectors




- **If installed:** Release the expanding rivet (1).
- Guide the acoustic cover (2) out and remove.

## MAIN WORK

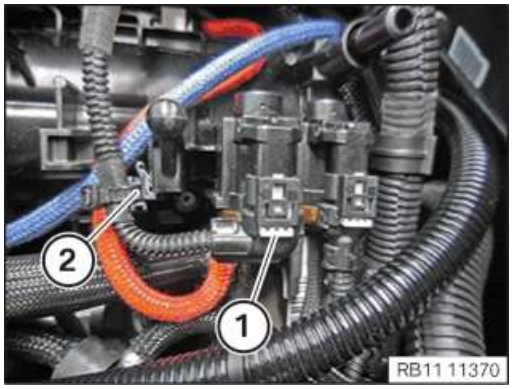
### 3 – Remove the electric changeover valve of the exhaust-gas recirculation

**RISK OF DAMAGE**

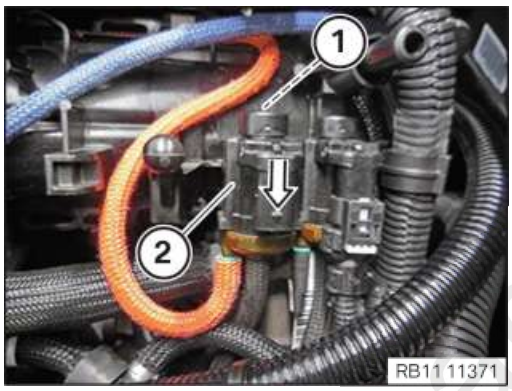
**Electrostatic discharge.**

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

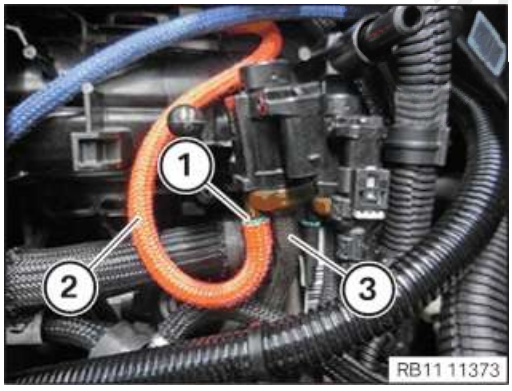
- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the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




- Unlock and loosen connector (1).
- Loosen clamp (2).

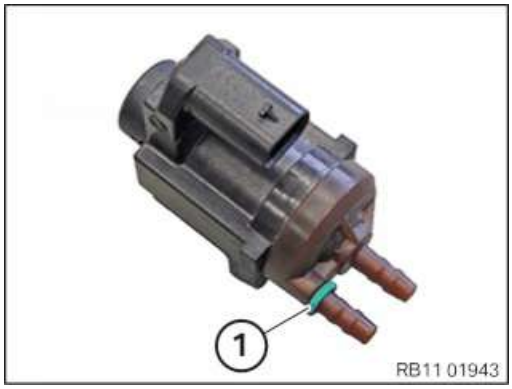



- Unlock lock (1).
- Guide out the electric changeover valve (2) in the direction of the arrow and set aside.

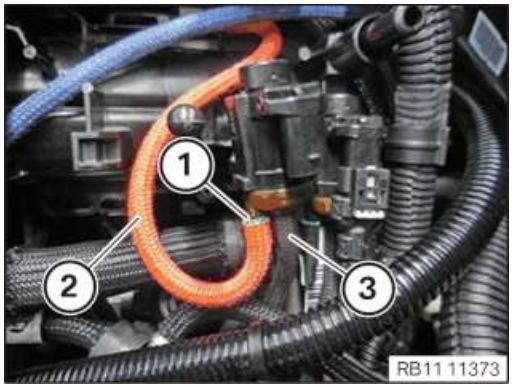



- Make sure the green O-ring (1) between the red vacuum hose and the electric changeover valve is **not** lost.
- Pull vacuum hoses (2) and (3) off the electric changeover valve **carefully**.

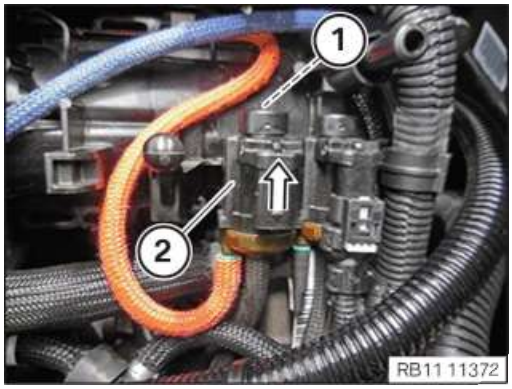
**4 – Install the electric changeover valve for the exhaust-gas recirculation**



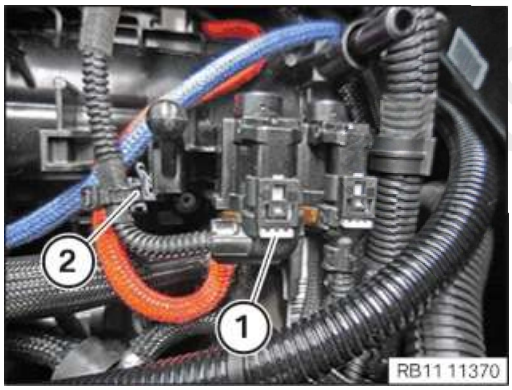

- Note that the green O-ring (1) marks the connection of the controlled vacuum.




- Connect the vacuum hose (2) for the exhaust-gas recirculation on the marked connection (1) of the electric changeover valve.
- Connect the vacuum hose (3) of the vacuum reservoir on the electric changeover valve.




- Feed in and install the electric changeover valve (2) in the direction of the arrow.
- Ensure that the lock (1)engages audibly.

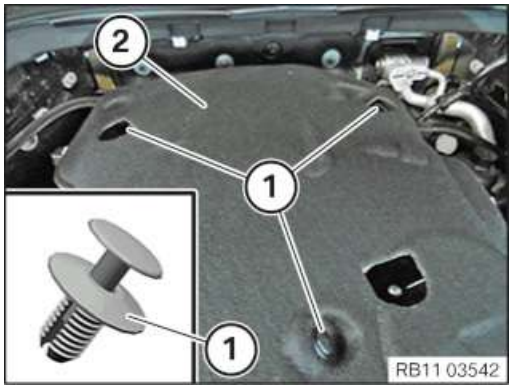



- Connect and lock the connector (1).
- Make sure the connector (1) engages audibly.
- Secure clamps (2).

## POSTPROCESSES

### 5 – Install the acoustic cover for the injectors

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- Feed the acoustic cover (2) in and install.
- **If installed:** Secure the acoustic cover (2) with the expanding rivets (1) .

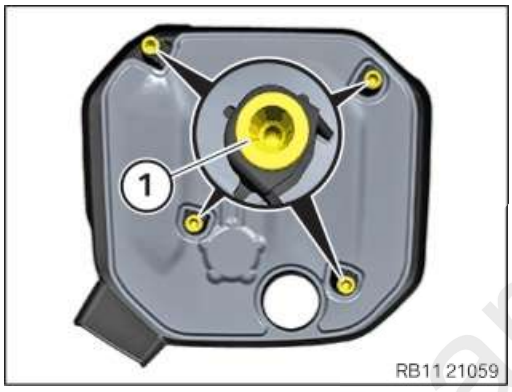
**6 – Install acoustic cover**

**RISK OF DAMAGE**

**Damage to the acoustic cover/design cover.**

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

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




- Check the acoustic cover for correct fit of the rubber mounts (1).




- Clip in the acoustic cover (1) into the holders in the indicated areas.

## Additional Information

### Links

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

ardiagn.com