

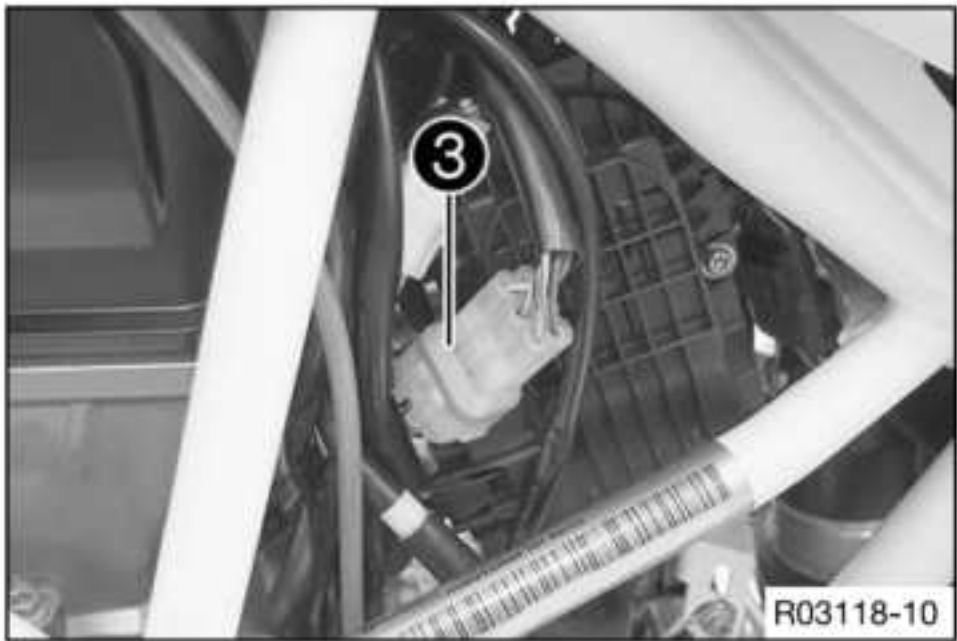
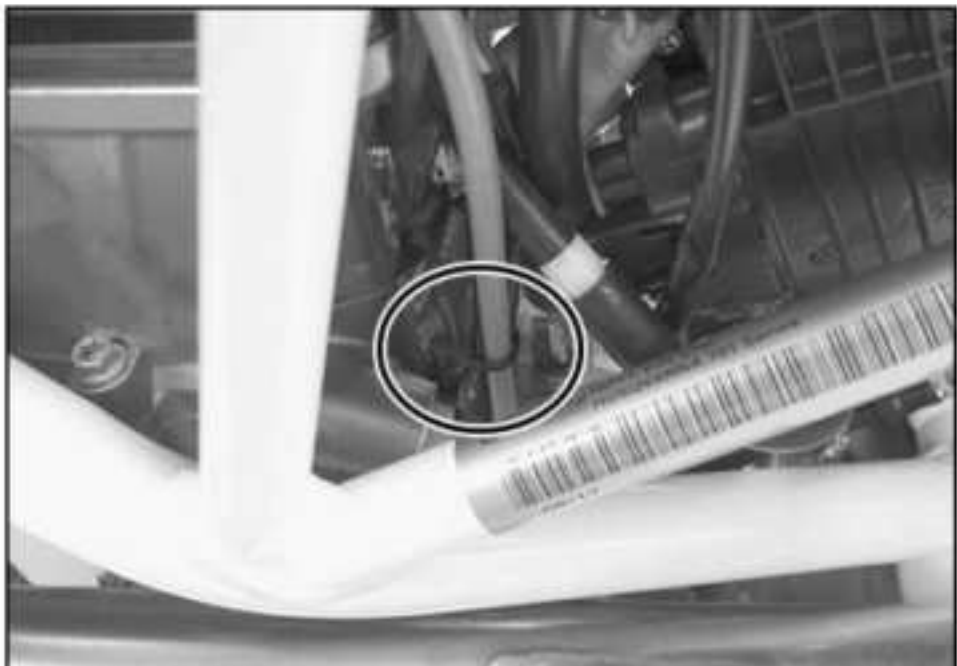
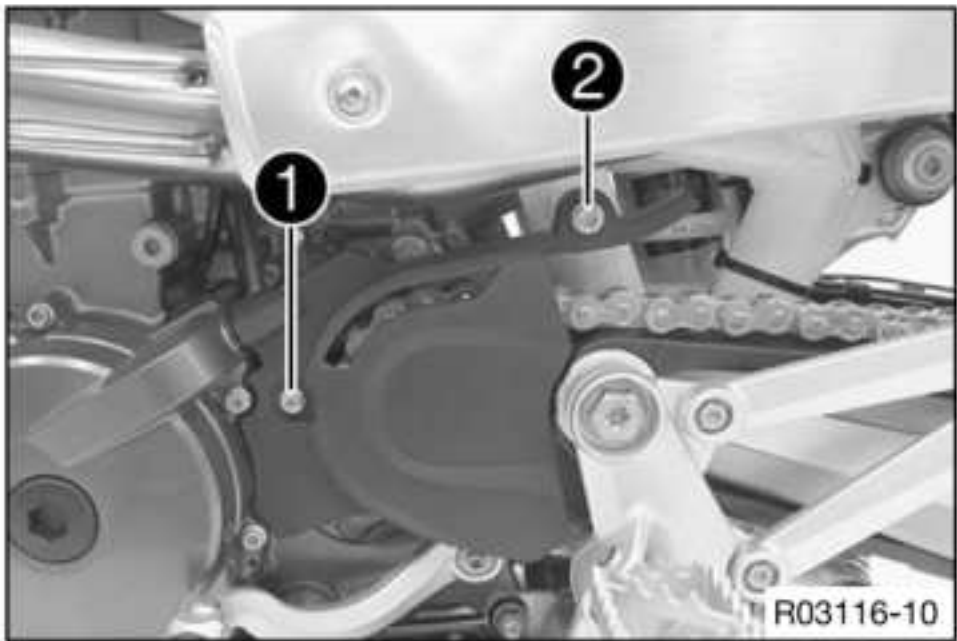
20.1 Changing the gear position sensor

Preparatory work

- Raise the motorcycle with the work stand. (📖 p. 14)

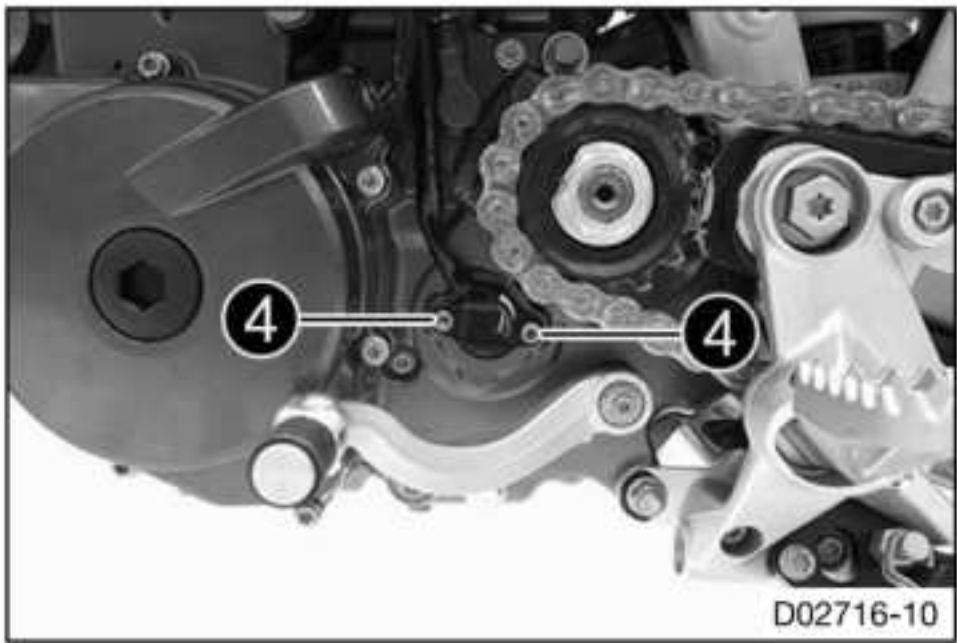
Main work

- Remove screws ❶ and ❷.
- Take off the engine sprocket cover.



- Remove the cable ties.

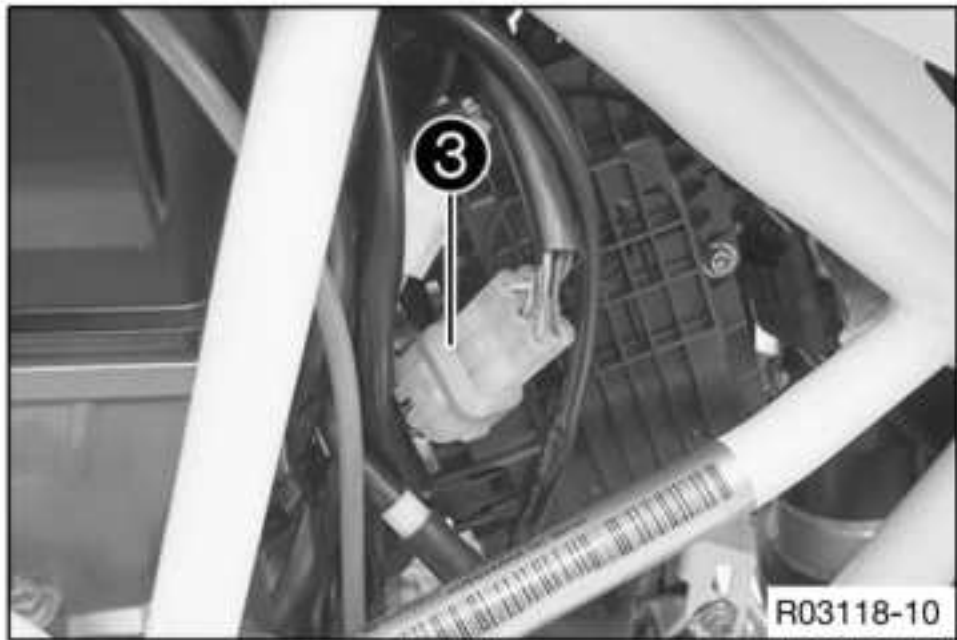
- Disconnect plug-in connector ❸.
- Expose the cable.



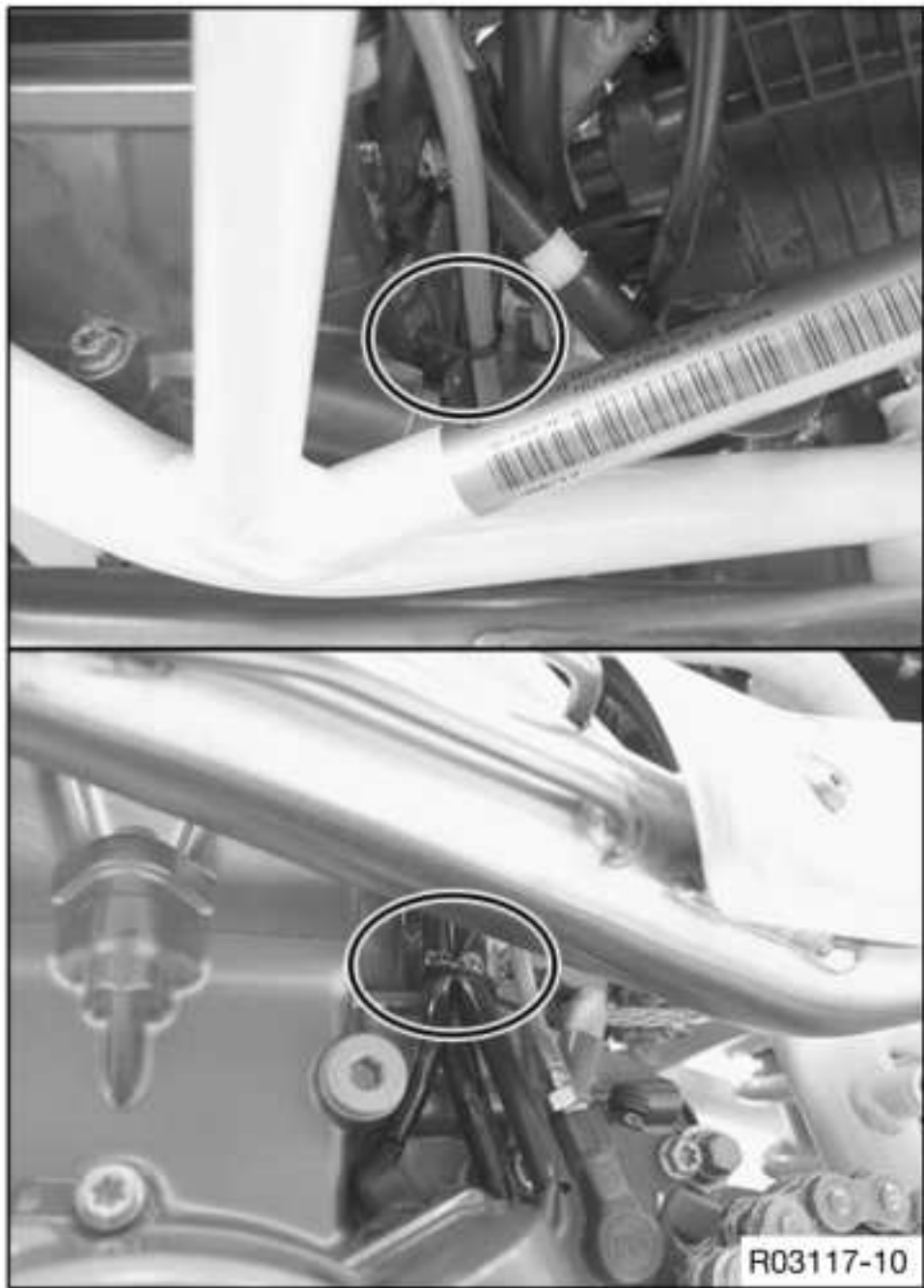
- Remove screws ❹.
- Take off the gear position sensor.
- Position the new gear position sensor.
- Mount and tighten screws ❹.

Guideline

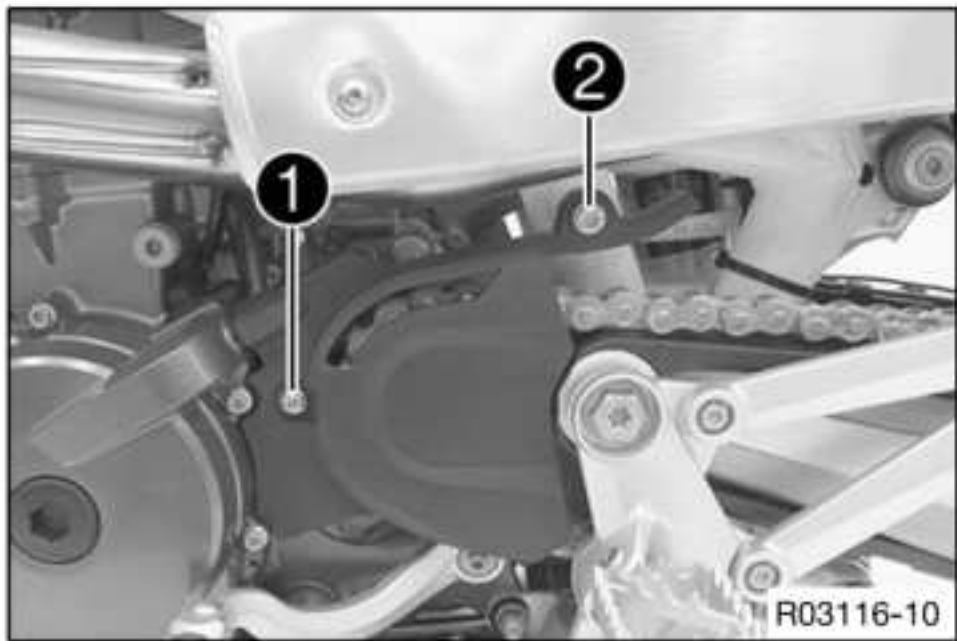
Screw, gear sensor	M5	5 Nm (3.7 lbf ft) Loctite®243™
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- Route the cables without tension.
- Join plug-in connector ③.



- Secure the cable with the cable ties.



- Position the engine sprocket cover.
- Mount and tighten screw ①.

Guideline

Screw, clutch slave cylinder	M6x40	10 Nm (7.4 lbf ft) <b>Loctite® 243™</b>
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- Mount and tighten screw ②.

Guideline

Remaining screws, chassis	M8	25 Nm (18.4 lbf ft)
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**Finishing work**

- Program the gear position sensor. (📖 p. 281)
- Remove the motorcycle from the work stand. (📖 p. 15)

## 20.2 Programming the gear position sensor

### Condition

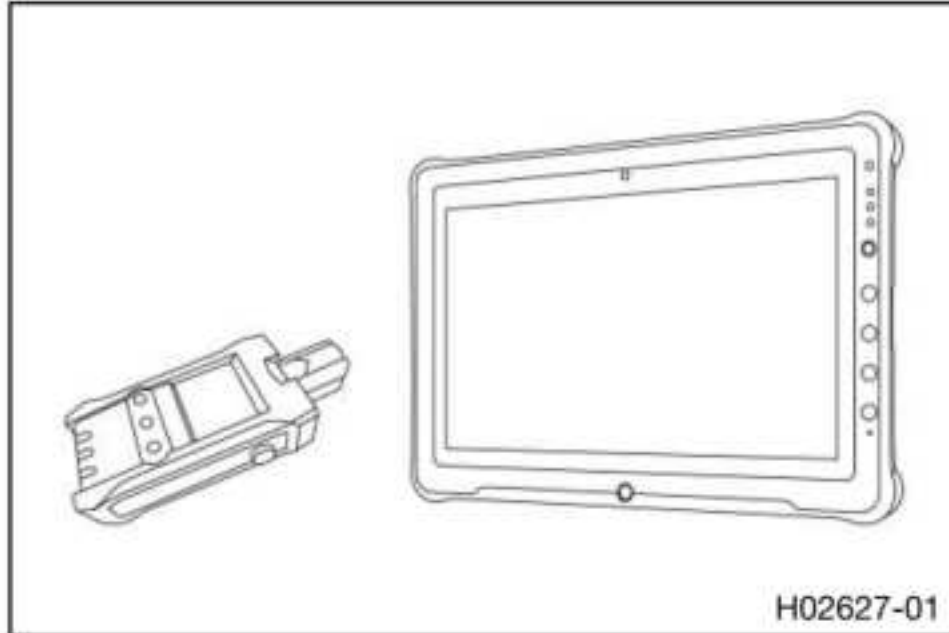
The diagnostics tool is connected and running.

### Preliminary work

- Reset the engine electronics control unit. (📖 p. 311)

### Main work

- Execute "**Engine electronics**" > "**Functions**" > "**Program the gear position sensor**".
- Switch to the main menu.
- Switch the ignition off and on again.
  - ✓ The green idle indicator lamp **N** lights up.





21.1 Draining the coolant



Warning

**Danger of scalding** During motorcycle operation, the coolant gets very hot and is under pressure.

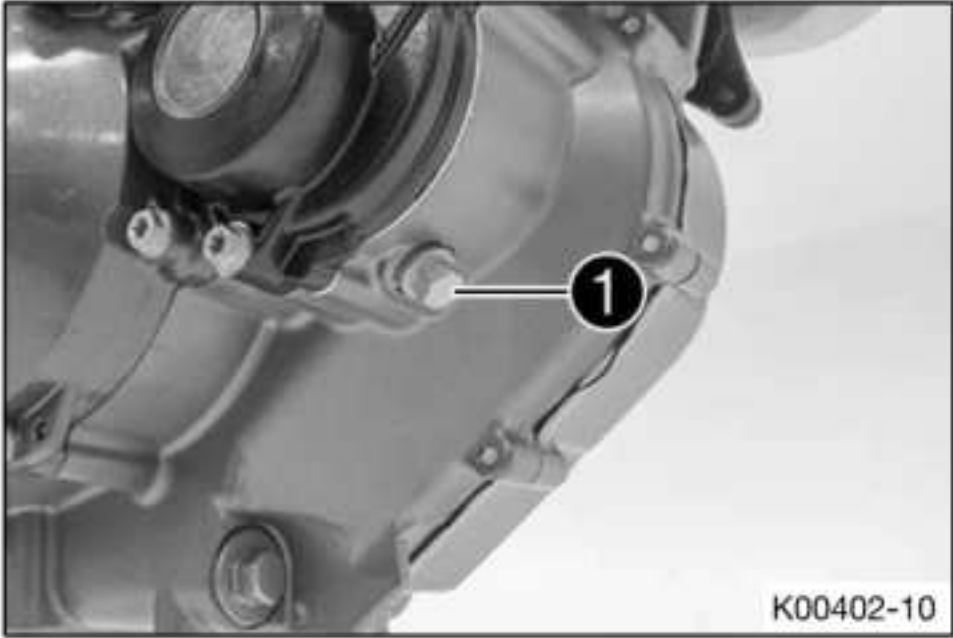
- Do not open the radiator, the radiator hoses or other cooling system components if the engine or the cooling system are at operating temperature.
- Allow the cooling system and the engine to cool down before you open the radiator, the radiator hoses or other components of the cooling system.
- In the event of scalding, rinse the area affected immediately with lukewarm water.



Warning

**Danger of poisoning** Coolant is toxic and a health hazard.

- Keep coolant out of the reach of children.
- Do not allow coolant to come into contact with the skin, the eyes and clothing.
- Consult a doctor immediately if coolant is swallowed.
- Rinse the affected area immediately with plenty of water in the event of contact with the skin.
- Rinse eyes thoroughly with water and consult a doctor immediately if coolant gets into the eyes.
- Change clothing if coolant spills onto your clothing.



- Position the motorcycle upright.
- Place an appropriate container under the engine.
- Remove screw 1 with the seal ring.
- Remove the radiator cap.
- Completely drain the coolant.
- Mount and tighten screw 1 with a new seal ring.

Guideline

Screw plug, water pump drain hole	M10x1	15 Nm (11.1 lbf ft)
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21.2 Filling/bleeding the cooling system



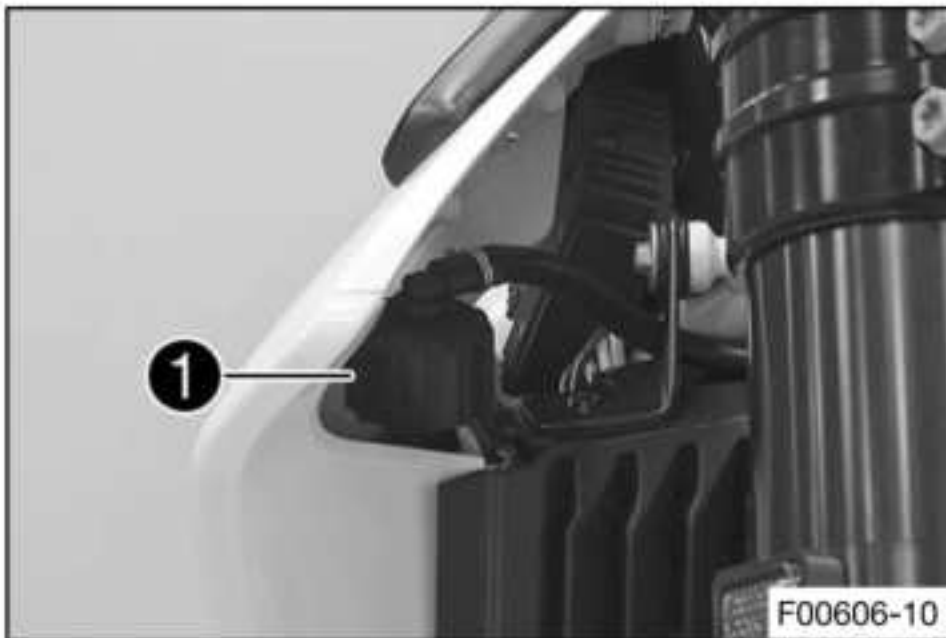
Warning

**Danger of poisoning** Coolant is toxic and a health hazard.

- Keep coolant out of the reach of children.
- Do not allow coolant to come into contact with the skin, the eyes and clothing.
- Consult a doctor immediately if coolant is swallowed.
- Rinse the affected area immediately with plenty of water in the event of contact with the skin.
- Rinse eyes thoroughly with water and consult a doctor immediately if coolant gets into the eyes.
- Change clothing if coolant spills onto your clothing.



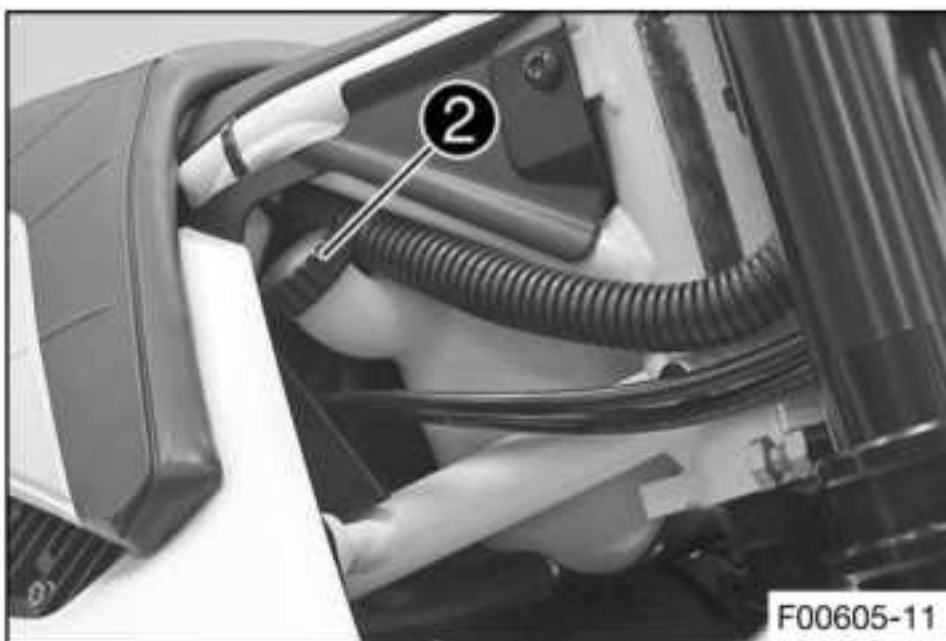
- Stand the motorcycle on its side stand on a horizontal surface.
- Remove radiator cap ①.



- Refill with coolant.

Coolant	1.20 l (1.27 qt.)	Coolant (📖 p. 376)
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- Completely fill the radiator with coolant.
- Mount radiator cap ①.



- Remove cover ② of the compensating tank.
- Add coolant up to a level between the two marks.
- Mount the cover of the compensating tank.



## Danger

**Danger of poisoning** Exhaust gases are toxic and inhaling them may result in unconsciousness and death.

- Always make sure there is sufficient ventilation when running the engine.
- Use effective exhaust extraction when starting or running the engine in an enclosed space.

- Start the engine and let it warm up.
- Stop the engine and allow it to cool down.
- Check the coolant level. (📖 p. 284)

## 21.3 Checking the antifreeze and coolant level



## Warning

**Danger of scalding** During motorcycle operation, the coolant gets very hot and is under pressure.

- Do not open the radiator, the radiator hoses or other cooling system components if the engine or the cooling system are at operating temperature.
- Allow the cooling system and the engine to cool down before you open the radiator, the radiator hoses or other components of the cooling system.
- In the event of scalding, rinse the area affected immediately with lukewarm water.

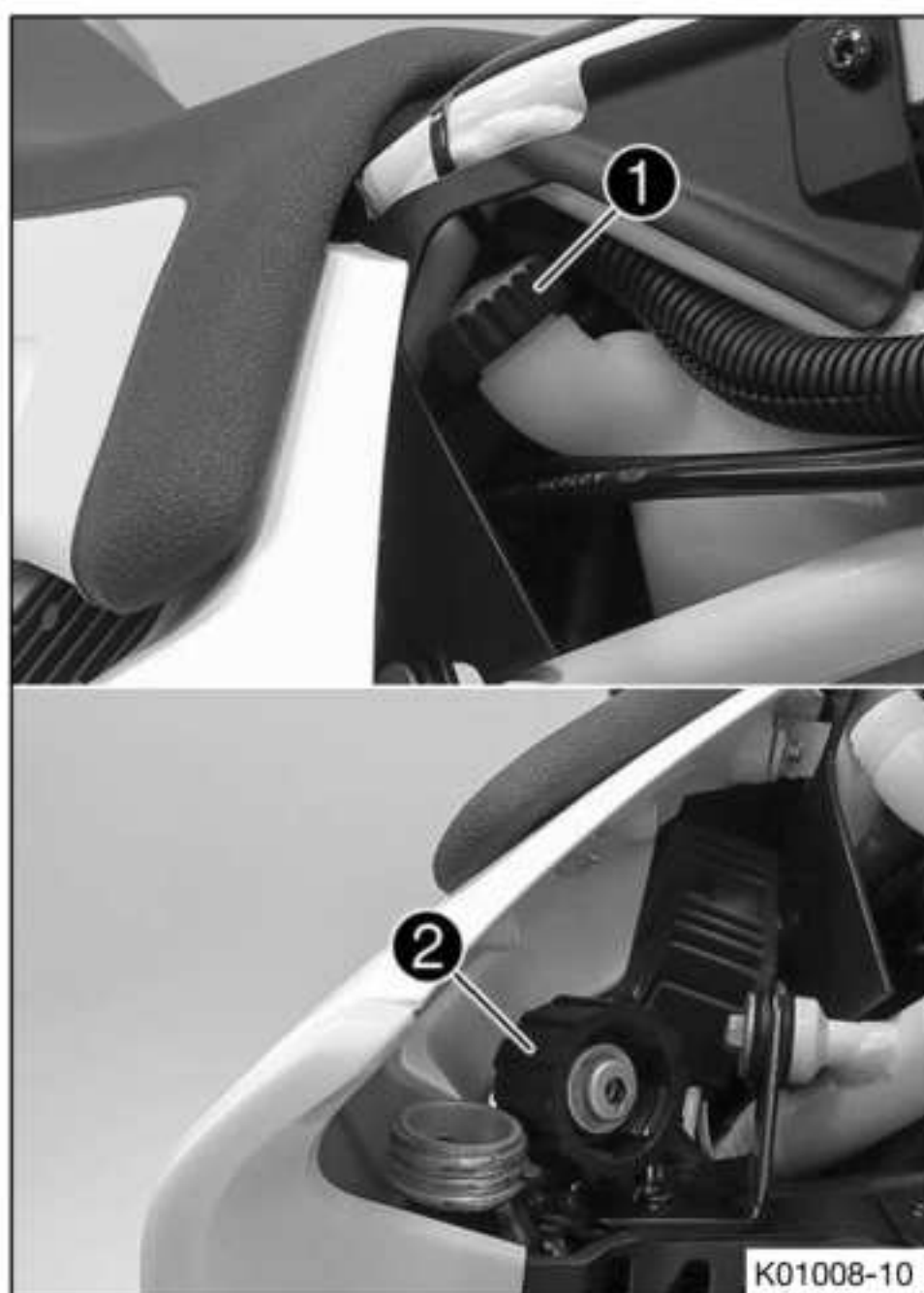




## Warning

**Danger of poisoning** Coolant is toxic and a health hazard.

- Keep coolant out of the reach of children.
- Do not allow coolant to come into contact with the skin, the eyes and clothing.
- Consult a doctor immediately if coolant is swallowed.
- Rinse the affected area immediately with plenty of water in the event of contact with the skin.
- Rinse eyes thoroughly with water and consult a doctor immediately if coolant gets into the eyes.
- Change clothing if coolant spills onto your clothing.



## Condition

The engine is cold.

- Stand the motorcycle on its side stand on a horizontal surface.
- Remove cover **1** of the compensating tank.
- Remove radiator cap **2**.
- Check the antifreeze in the coolant.

–25 ... –45 °C (–13 ... –49 °F)

- » If the antifreeze in the coolant does not match the specified value:
  - Correct the antifreeze in the coolant.

- Check the coolant level in the compensating tank.

The coolant level must be between the two markings.

- » If the coolant level does not match the specified value:
  - Correct the coolant level.

Coolant (📖 p. 376)

- Mount cover **1** of the compensating tank.
- Check the coolant level in the radiator.

The radiator must be filled completely.

- » If the coolant level does not match the specified value:
  - Check the coolant level and the reason for the loss.

- Mount radiator cap **2**.

## 21.4 Checking the coolant level



## Warning

**Danger of scalding** During motorcycle operation, the coolant gets very hot and is under pressure.

- Do not open the radiator, the radiator hoses or other cooling system components if the engine or the cooling system are at operating temperature.
- Allow the cooling system and the engine to cool down before you open the radiator, the radiator hoses or other components of the cooling system.
- In the event of scalding, rinse the area affected immediately with lukewarm water.



## Warning

**Danger of poisoning** Coolant is toxic and a health hazard.

- Keep coolant out of the reach of children.
- Do not allow coolant to come into contact with the skin, the eyes and clothing.
- Consult a doctor immediately if coolant is swallowed.
- Rinse the affected area immediately with plenty of water in the event of contact with the skin.
- Rinse eyes thoroughly with water and consult a doctor immediately if coolant gets into the eyes.
- Change clothing if coolant spills onto your clothing.



## Condition

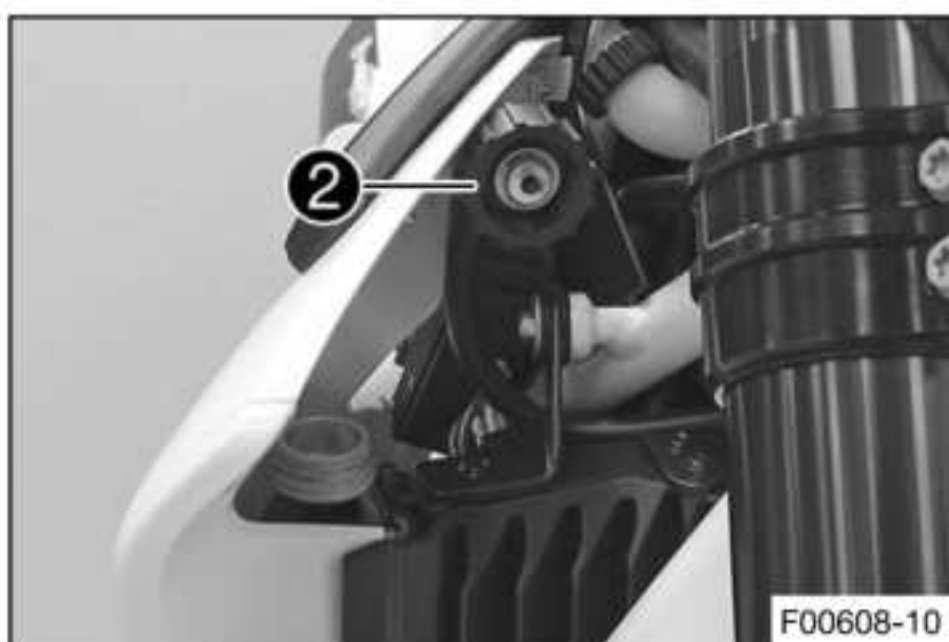
The engine is cold.

- Stand the motorcycle on its side stand on a horizontal surface.
- Check the coolant level in compensating tank ①.

The coolant level must be between the two markings.

- » If the coolant level does not match the specified value:
  - Correct the coolant level.

Coolant (📖 p. 376)



- Remove radiator cap ② and check the coolant level in the radiator.

The radiator must be filled completely.

- » If the coolant level does not match the specified value:
  - Check the coolant level and the reason for the loss.

Coolant (📖 p. 376)

- Mount the radiator cap.

## 21.5 Changing the coolant



## Warning

**Danger of scalding** During motorcycle operation, the coolant gets very hot and is under pressure.

- Do not open the radiator, the radiator hoses or other cooling system components if the engine or the cooling system are at operating temperature.
- Allow the cooling system and the engine to cool down before you open the radiator, the radiator hoses or other components of the cooling system.
- In the event of scalding, rinse the area affected immediately with lukewarm water.

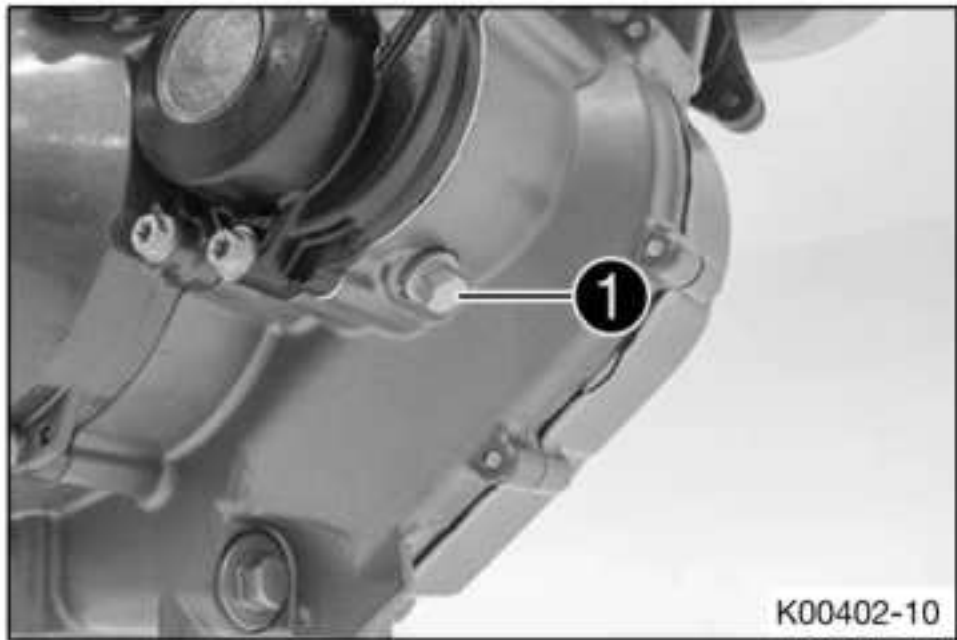


## Warning

**Danger of poisoning** Coolant is toxic and a health hazard.

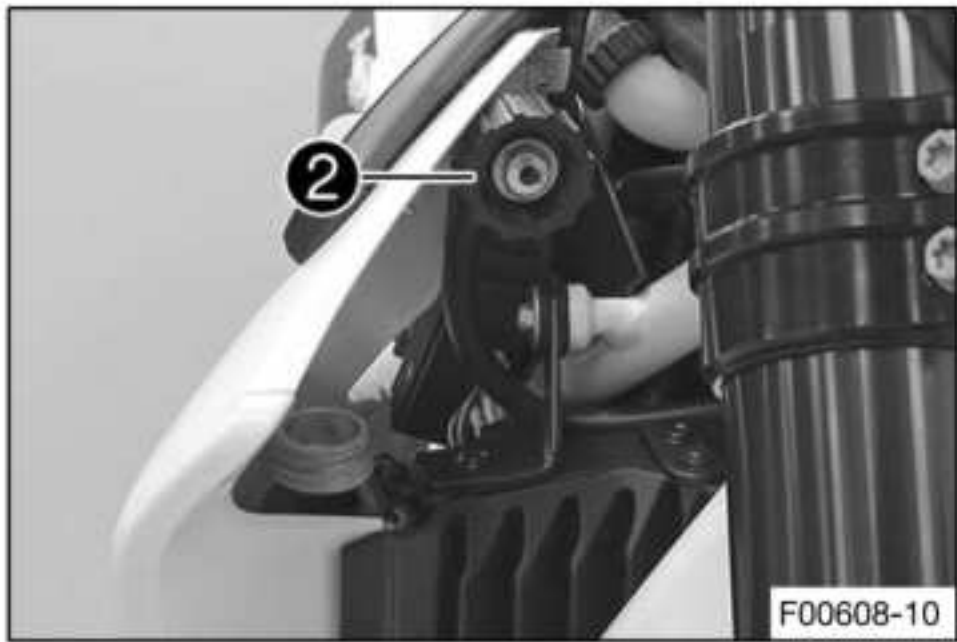
- Keep coolant out of the reach of children.
- Do not allow coolant to come into contact with the skin, the eyes and clothing.
- Consult a doctor immediately if coolant is swallowed.
- Rinse the affected area immediately with plenty of water in the event of contact with the skin.
- Rinse eyes thoroughly with water and consult a doctor immediately if coolant gets into the eyes.
- Change clothing if coolant spills onto your clothing.



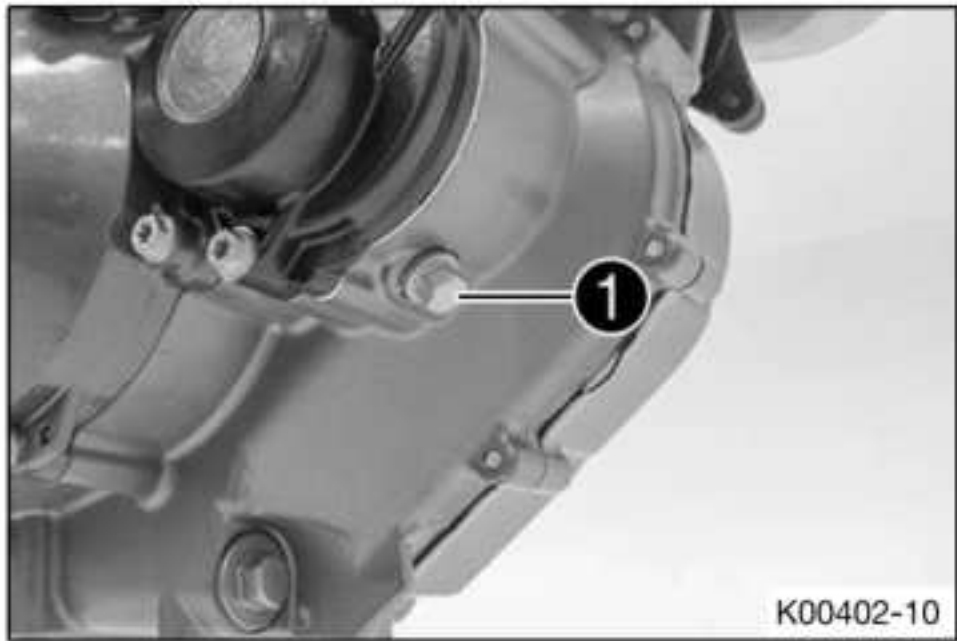


Main work

- Position the motorcycle upright.
- Place an appropriate container under the engine.
- Remove screw 1 with the seal ring.



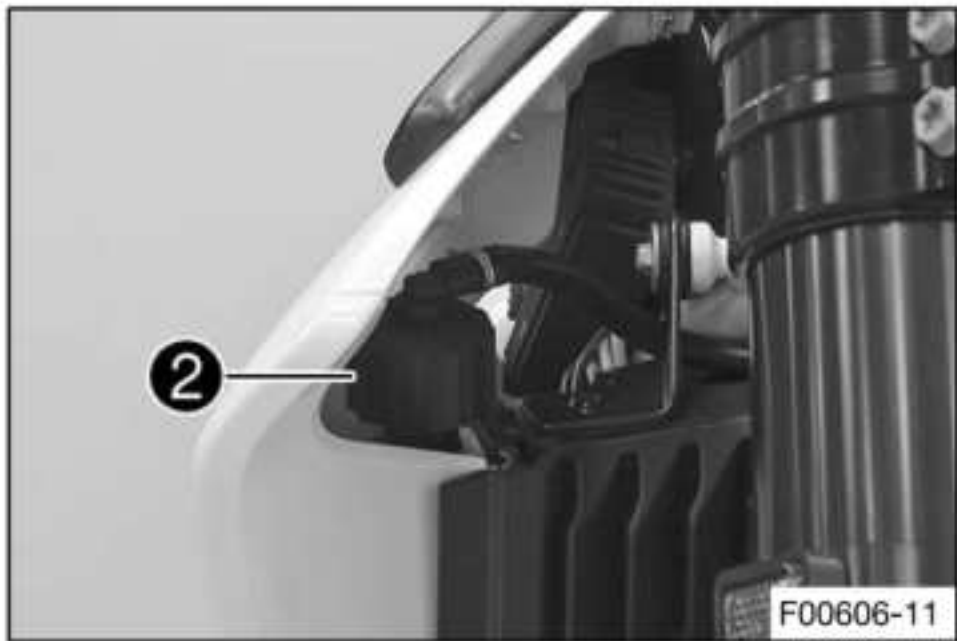
- Remove radiator cap 2.
- Completely drain the coolant.



- Mount and tighten screw 1 with a new seal ring.

Guideline

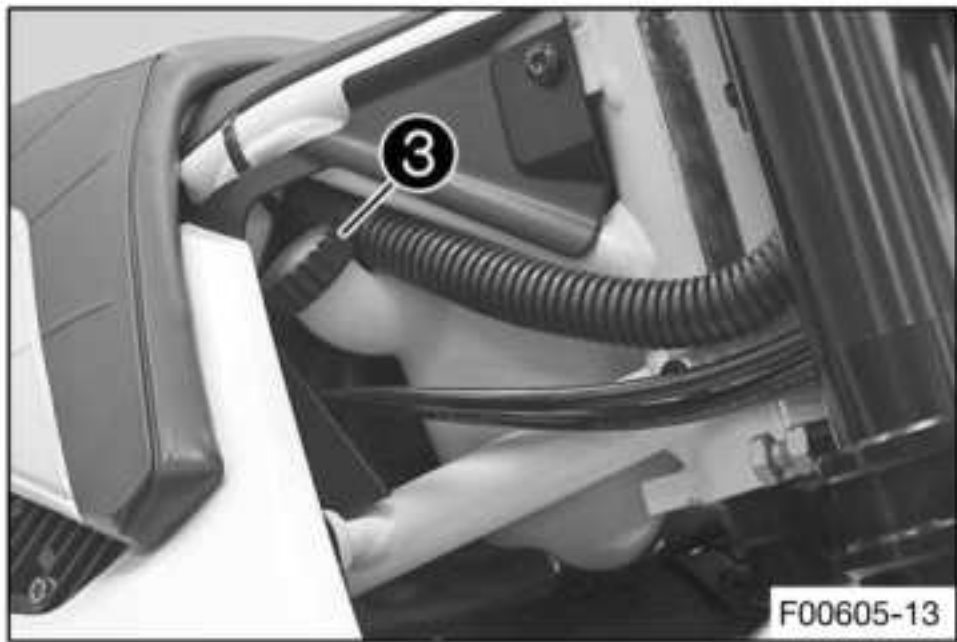
Screw plug, water pump drain hole	M10x1	15 Nm (11.1 lbf ft)
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- Stand the motorcycle on its side stand on a horizontal surface.
- Refill with coolant.

Coolant	1.20 l (1.27 qt.)	Coolant (📖 p. 376)
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- Completely fill the radiator with coolant.
- Mount radiator cap 2.



- Remove cover 3 of the compensating tank.
- Add coolant up to a level between the two marks.
- Mount cover 3 of the compensating tank.



**Danger**

**Danger of poisoning** Exhaust gases are toxic and inhaling them may result in unconsciousness and death.

- Always make sure there is sufficient ventilation when running the engine.
- Use effective exhaust extraction when starting or running the engine in an enclosed space.



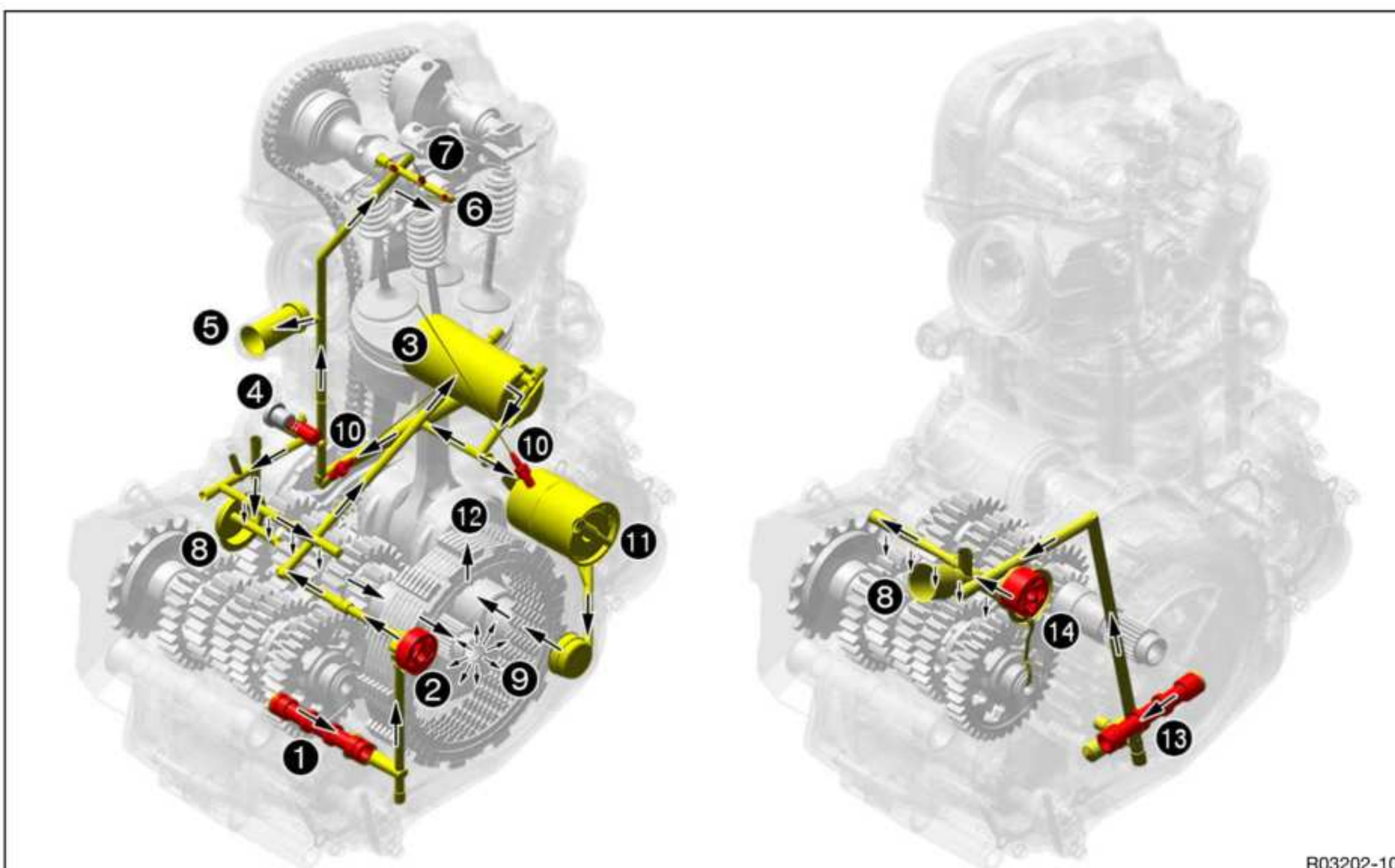
- Start the engine and let it warm up.
- Stop the engine and allow it to cool down.

**Finishing work**

- Check the coolant level. (📖 p. 284)



## 22.1 Oil circuit



R03202-10

### Oil circuit of force pump

- ① Oil screen
- ② Force pump
- ③ Oil filter
- ④ Oil pressure control valve
- ⑤ Timing chain tensioner
- ⑥ Rocker arm shaft
- ⑦ Oil nozzle for rocker arm and cam follower lubrication
- ⑧ Transmission
- ⑨ Clutch
- ⑩ Oil nozzles for piston cooling
- ⑪ Oil filter
- ⑫ Oil nozzle for conrod bearing lubrication

### Oil circuit of suction pump

- ⑬ Oil screen
- ⑭ Suction pump
- ⑧ Transmission