

2 SAFETY ADVICE

2.1 Repair Manual

Read this Repair Manual carefully and thoroughly before beginning work. It contains useful information and tips that will help you repair and maintain your vehicle.
This manual assumes that the necessary special KTM tools and KTM workplace and workshop equipment are available.

2.2 Safety advice

A number of safety instructions need to be followed to operate the product described safely. Therefore read this instruction and all further instructions included carefully. The safety instructions are highlighted in the text and are referred to at the relevant passages.



Info

Various information and warning labels are attached in prominent locations on the product described. Do not remove any information or warning labels. If they are missing, you or others may not recognize dangers and may therefore be injured.

2.3 Degrees of risk and symbols



Danger

Identifies a danger that will immediately and invariably lead to fatal or serious permanent injury if the appropriate measures are not taken.



Warning

Identifies a danger that is likely to lead to fatal or serious injury if the appropriate measures are not taken.



Caution

Identifies a danger that may lead to minor injuries if the appropriate measures are not taken.

Note

Identifies a danger that will lead to considerable machine and material damage if the appropriate measures are not taken.

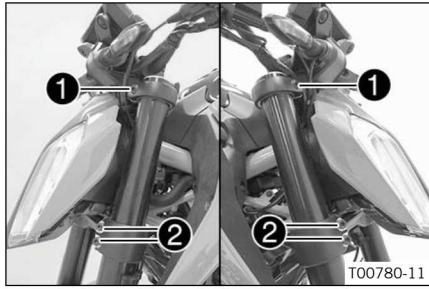


Note

Indicates a danger that will lead to environmental damage if the appropriate measures are not taken.

2.4 Work rules

Special tools are necessary for certain tasks. The tools are not a component of the vehicle, but can be ordered using the number in parentheses. Example: bearing puller (15112017000)
During assembly, use new parts to replace parts which cannot be reused (e.g. self-locking screws and nuts, seals, sealing rings, O-rings, pins, and lock washers).
In the case of certain screws, a thread locker (e.g. **Loctite**®) is required. Apply according to the manufacturer's instructions.
After disassembly, clean the parts that are to be reused and check them for damage and wear. Change damaged or worn parts.
After completing a repair or service work, check the operating safety of the vehicle.



- Tighten screws 1.

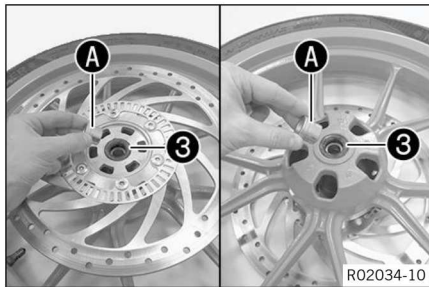
Guideline

Screw, top triple clamp	M8	15 Nm (11.1 lbf ft)
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- Tighten screws 2.

Guideline

Screw, bottom triple clamp	M8	12 Nm (8.9 lbf ft)
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- Check the wheel bearing for damage and wear.

» If the wheel bearing is damaged or worn:

- Change front wheel bearing. (p. 90)

- Clean and grease shaft seal rings 3 and contact surfaces A of the spacers.

Long-life grease (p. 324)

- Insert the spacers.



- Clean the thread of the wheel spindle and screw 4.

- Clean and grease wheel spindle.

Long-life grease (p. 324)

- Position the front wheel and insert the wheel spindle.

- Mount and tighten screw 4.

Guideline

Screw, front wheel spindle	M8	25 Nm (18.4 lbf ft)
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- Position brake caliper with spacers.



Info

Ensure that the brake linings are seated properly.

- Mount screws 5 but do not tighten yet.

Guideline

Screw, front brake caliper	M8	30 Nm (22.1 lbf ft) Loctite® 204™
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- Operate the hand brake lever repeatedly until the brake linings are in contact with the brake disc and there is a pressure point. Fix the hand brake lever in the activated position.

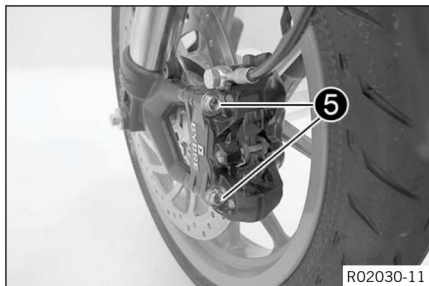
✓ The brake caliper straightens.

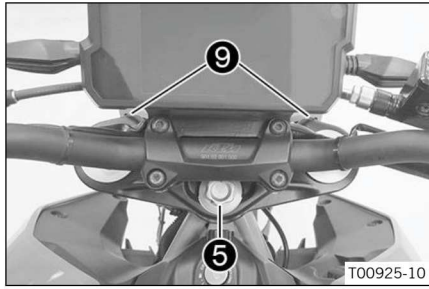
- Tighten screws 5.

Guideline

Screw, front brake caliper	M8	30 Nm (22.1 lbf ft) Loctite® 204™
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- Remove the locking piece of the hand brake lever.





- Loosen screws 9.
- Using a plastic hammer, tap lightly on the upper triple clamp to avoid stresses.
- Tighten screw 5.

Guideline

Screw, steering head, top	M16x1.5	49 Nm (36.1 lbf ft) Loctite®243™
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- Tighten screws 9.

Guideline

Screw, top triple clamp	M8	15 Nm (11.1 lbf ft)
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Finishing work

- Check that the wiring harness, throttle cables, and brake line have the necessary freedom of movement and are correctly routed.
- Check the play of the steering head bearing. (📖 p. 31)
- Remove the motorcycle from the work stand. (📖 p. 14)

6.9 Checking the play of the steering head bearing



Warning

Danger of accidents Incorrect steering head bearing play impairs the handling characteristic and damages components.

- Correct incorrect steering head bearing play immediately.



Info

If the vehicle is operated for a lengthy period with play in the steering head bearing, the bearings and the bearing seats in the frame can become damaged over time.

Preparatory work

- Raise the motorcycle with the work stand. (📖 p. 13)
- Clamp down the rear of the vehicle.

Main work

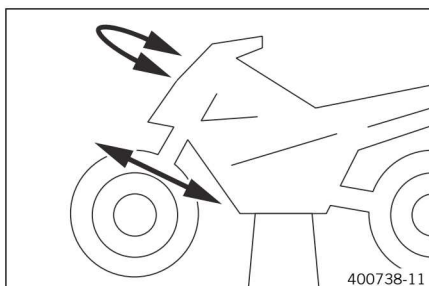
- Move the handlebar to the straight-ahead position. Move the fork legs to and fro in the direction of travel.

Play should not be detectable on the steering head bearing.

- » If there is detectable play:
 - Adjust the steering head bearing play. (📖 p. 32)
- Move the handlebar to and fro over the entire steering range.

It must be possible to move the handlebar easily over the entire steering range. There should be no detectable detent positions.

- » If detent positions are detected:
 - Adjust the steering head bearing play. (📖 p. 32)
 - Check the steering head bearing and adjust if necessary.



9 SHOCK ABSORBER, SWINGARM



- Adjust the spring preload by turning adjusting ring ❶.

Guideline

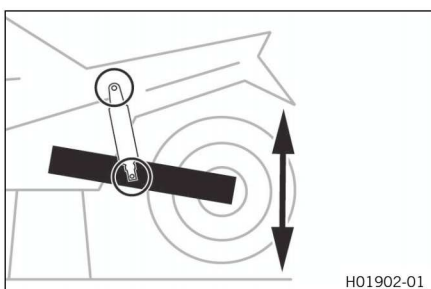
Spring preload	
Standard	5 clicks
Hook wrench, shock absorber (90529077000)	
Extension for hook wrench (90129099025)	



Info

The spring preload can be set to 10 different positions.

9.4 Checking the heim joint for play



Preparatory work

- Raise the motorcycle with the work stand. (📖 p. 13)

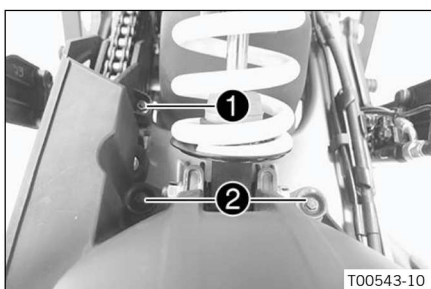
Main work

- Check the top and bottom heim joints.
- Move the swingarm up and down.
 - » If there is detectable play:
 - Change shock absorber.

Finishing work

- Remove the motorcycle from the work stand. (📖 p. 14)

9.5 Removing the shock absorber



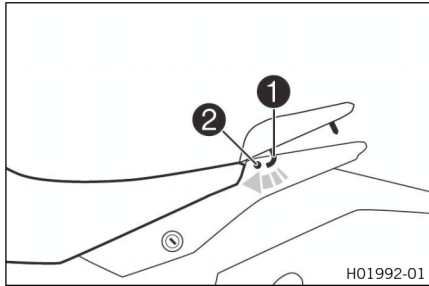
Preparatory work

- Raise the motorcycle with the work stand. (📖 p. 13)

Main work

- Remove nut ❶.
- Remove screws ❷.

12.6 Mounting the passenger seat



- Attach hooks ① on the passenger seat to seat mounting ② on the subframe, and lower it at the rear while pushing forward.
- Press passenger seat downward until it clicks into place.



Warning

Danger of accidents The seat can come loose from the anchoring if it is not mounted correctly.

- After assembly, check whether the seat is correctly locked and cannot be pulled up.

- Finally, check that the passenger seat is correctly mounted.

12.7 Removing the fuel tank cover



Danger

Fire hazard Fuel is highly flammable.

The fuel in the fuel tank expands when warm and can escape if overfilled.

- Do not refuel the vehicle in the vicinity of open flames or lit cigarettes.
- Switch off the engine for refueling.
- Make sure that no fuel is spilled; particularly not on hot parts of the vehicle.
- If any fuel is spilled, wipe it off immediately.
- Observe the specifications for refueling.



Warning

Danger of poisoning Fuel is poisonous and a health hazard.

- Avoid skin, eye and clothing contact with fuel.
- Immediately consult a doctor if you swallow fuel.
- Do not inhale fuel vapors.
- In case of skin contact, rinse the affected area with plenty of water.
- Rinse the eyes thoroughly with water, and consult a doctor in case of fuel contact with the eyes.
- Change your clothing in case of fuel spills on them.
- Keep fuels correctly in a suitable canister, and out of the reach of children.



Note

Environmental hazard Improper handling of fuel is a danger to the environment.

- Do not allow fuel to enter the groundwater, the soil, or the sewage system.

Preparatory work

- Remove the passenger seat. (📖 p. 70)
- Remove the front rider's seat. (📖 p. 70)

14.1 Removing the battery



Warning

Risk of injury Battery acid and battery gases cause serious chemical burns.

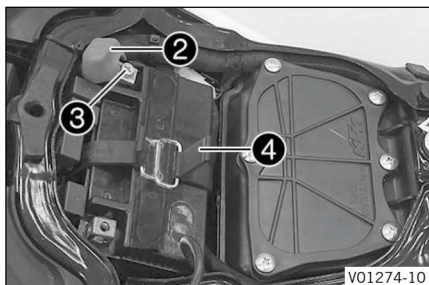
- Keep batteries out of the reach of children.
- Wear suitable protective clothing and safety glasses.
- Avoid contact with battery acid and battery gases.
- Keep sparks or open flames away from the battery.
- Only charge batteries in well-ventilated rooms.
- Rinse the affected area immediately with plenty of water in the event of contact with the skin.
- Rinse eyes with water for at least 15 minutes and consult a doctor immediately if battery acid and battery gases get into the eyes.

Preparatory work

- Switch off the ignition by turning the ignition key to the position \otimes .
- Remove the passenger seat. (📖 p. 70)
- Remove the front rider's seat. (📖 p. 70)

Main work

- Disconnect negative cable ❶ from the battery.



- Pull back positive terminal cover ❷.
- Disconnect positive cable ❸ from the battery.
- Detach rubber band ❹.
- Pull the battery up and out of the battery holder.

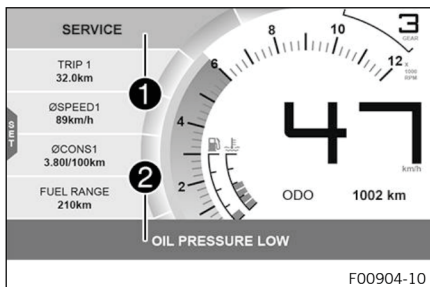


Info

Never operate the motorcycle with a discharged battery or without a battery. In both cases, electrical components and safety devices can be damaged. The vehicle will therefore no longer be roadworthy.

16 COMBINATION INSTRUMENT

16.4 Warning notes



Warning notes appear on the top and/or bottom edge of the display, these are marked yellow or red depending on their relevance. Yellow warning notes ① indicate errors or information which requires prompt intervention or an adjustment to the riding style. Red warning notes ② indicate errors or information which requires immediate intervention.

i Info

Warning notes are cleared by pressing any button. All existing warning notes are displayed in the **Warning** menu until these are no longer active.

16.5 Indicator lamps



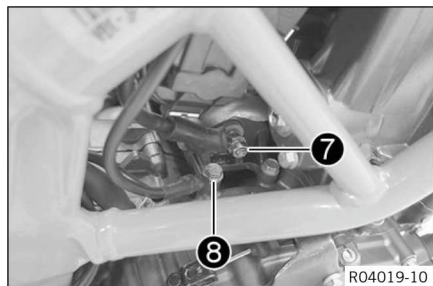
The indicator lamps offer additional information about the operating state of the motorcycle. When the ignition is switched on, all indicator lamps light up briefly.

i Info

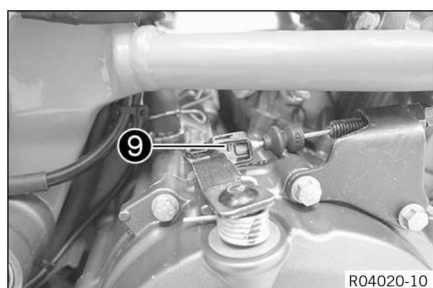
The malfunction indicator lamp always lights up as long as the engine is not running. If the engine is running and the malfunction indicator lamp lights up, stop (taking care not to endanger yourself or other road users in the process) and contact an authorized KTM workshop.

The oil pressure warning lamp always lights up as long as the engine is not running. If the engine is running and the oil pressure warning lamp lights up, stop immediately (taking care not to endanger yourself or other road users in the process) and switch off the engine.

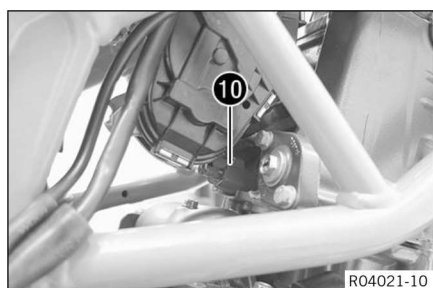
The ABS Indicator lamp lights up for so long, until a speed of approx. 6 km/h (approx. 4 mph) or more has been reached.



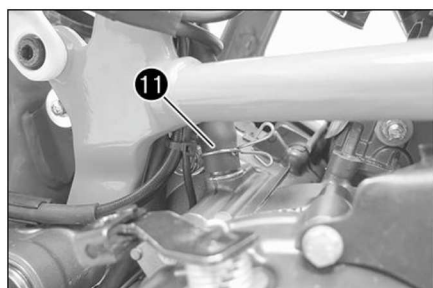
- Push back protection cap.
- Remove nut 7 with washers.
- Hang the cable to the side.
- Remove screw 8.
- Hang the cable to the side.



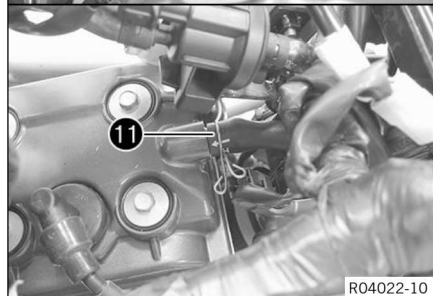
- Bend up lock washer 9.
- Detach the inner clutch cable and expose it.



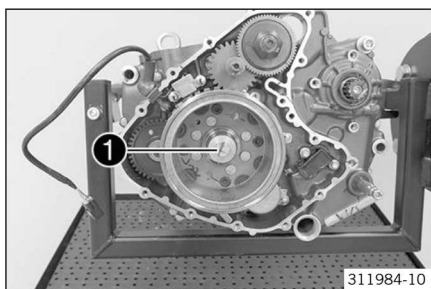
- Unplug connector 10.



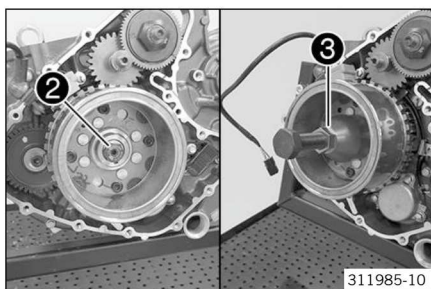
- Push back hose clamps 11.
- Pull off bleeder hoses.



18.3.16 rotor, removing



- Remove screw ① with the washer.



- Position the special tool ② in the crankshaft.

Pressing tool (90129020000) (p. 334)

- Mount special tool ③ on the rotor.

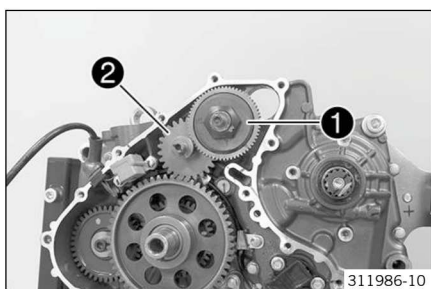
i Info
Left-handed thread!

- Hold it tight using the special tool and pull off the rotor by turning the screw in.

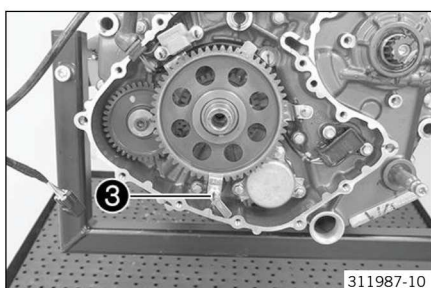
Puller (90229009000) (p. 336)

- Remove the woodruff key.

18.3.17 Removing the starter drive

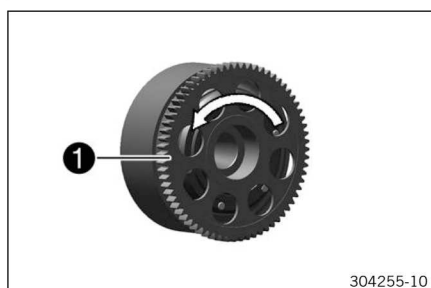


- Take off torque limiter ①.
- Remove starter idler gear ②.



- Remove screw ③.
- Remove the retaining bracket.

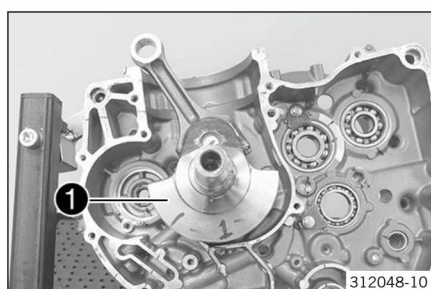
18.4.27 freewheel, checking



- Insert freewheel gear **1** into the freewheel hub, turning the freewheel gear clockwise; do not wedge.
- Check the locking action of the freewheel gear.
 - » The freewheel gear cannot be turned clockwise and does not block counterclockwise:
 - Change the freewheel.

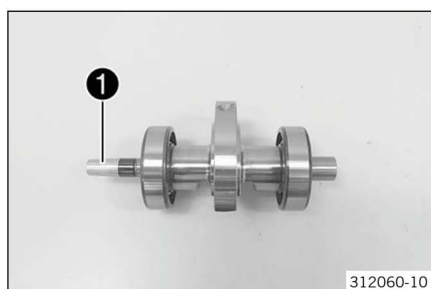
18.5 Engine assembly

18.5.1 Installing the crankshaft



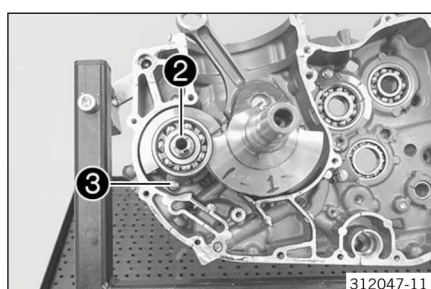
- Oil the bearing.
- Slide crankshaft **1** into the bearing seat.

18.5.2 Installing the balancer shaft



- Mount special tool **1**.

Protection cap (90129005000) (p. 334)



- Mount balancer shaft **2** with the bearing.



Info

If necessary, heat the engine case.

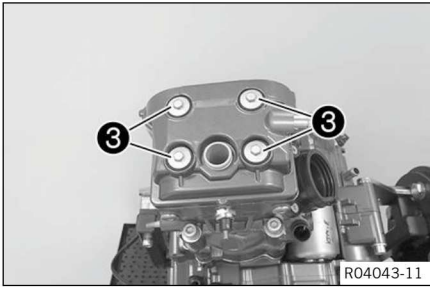
- Position the retaining bracket.
- Mount and tighten screw **3**.

Guideline

Screw, bearing retainer	M6	12 Nm (8.9 lbf ft) Loctite®243™
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- Remove the special tool.

Protection cap (90129005000) (p. 334)

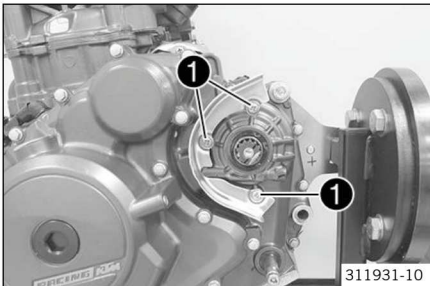


- Position the valve cover with the gasket.
- Mount and tighten screws 3 with the gaskets.

Guideline

Screw, valve cover	M6	12 Nm (8.9 lbf ft)
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18.5.34 Installing the chain securing guide

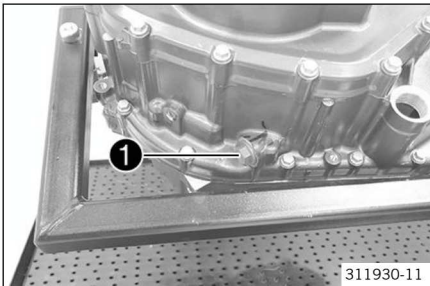


- Position the chain securing guide.
- Mount and tighten screws 1.

Guideline

Screw, chain securing guide	M6	10 Nm (7.4 lbf ft) Loctite®243™
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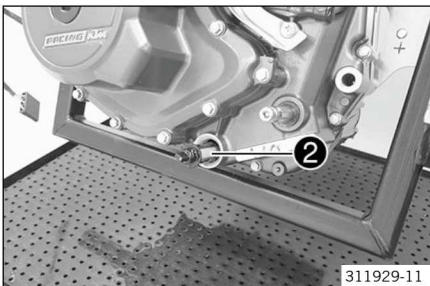
18.5.35 Installing the oil screen



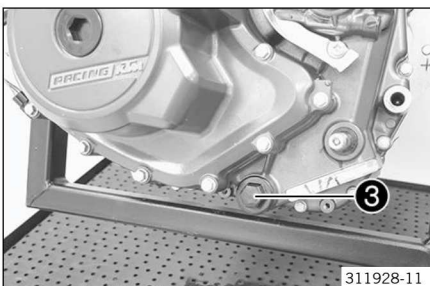
- Mount and tighten screw plug 1 with the O-ring and oil screen.

Guideline

Oil screen screw plug, small	M17x1.5	12 Nm (8.9 lbf ft)
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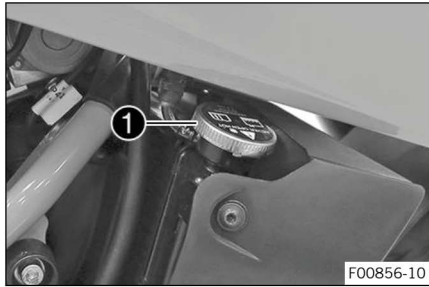
- Mount oil screen 2 with the O-ring.



- Mount and tighten oil drain plug 3 with the O-ring.

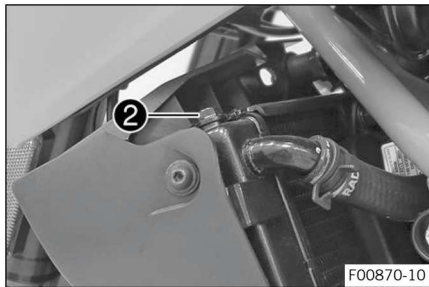
Guideline

Oil drain plug	M24x1.5	15 Nm (11.1 lbf ft)
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Main work

- Remove radiator cap ①.



- Loosen bleeder screw ②.

Guideline

3 turns

- Tilt the vehicle slightly to the right.
- Pour in coolant until it emerges without bubbles at the bleeder screw, and then mount and tighten the bleeder screw immediately.

Coolant (📖 p. 322)

- Completely fill the radiator with coolant. Mount the radiator cap.
- Rest the vehicle on the side stand.



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 an effective exhaust extraction system when starting or running the engine in an enclosed space.

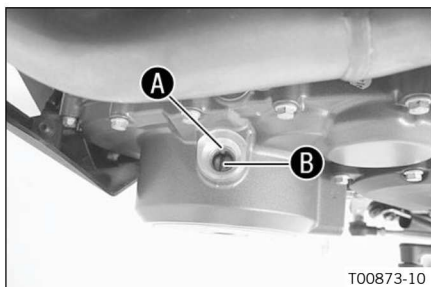


- Start the engine and let it warm up.
- Stop the engine and allow it to cool down.
- When the engine is cool, check the coolant level in the radiator and, if necessary, add coolant.
- Remove cap ③ of the compensating tank and top up the coolant level to the upper marking.
- Mount the cap of the compensating tank.

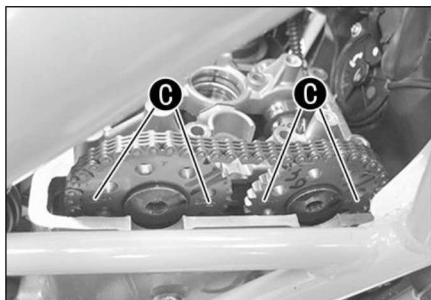
Finishing work

- Fit the front spoiler. (📖 p. 80)

22.5 Installing the camshafts

**Main work**

- Ensure that the marking **A** and **B** are flush.
- ✓ Engine is at ignition top dead center.

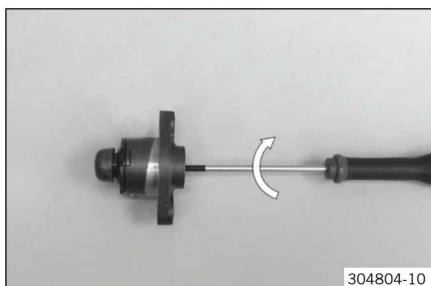
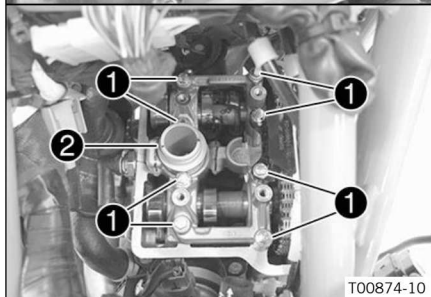


- Pull up the timing chain and insert exhaust camshaft.
- Place the timing chain over the camshaft gear of the intake camshaft.
- ✓ Markings **C** of the camshafts align with the edge of the cylinder head.
- Mount the dowels.
- Clean all oil nozzles thoroughly and blow out with compressed air.
- Position the camshaft bearing bridge.
- Mount screws **1** and tighten them from the inside to the outside.

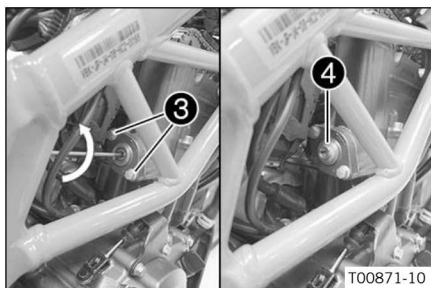
Guideline

Screw, camshaft bearing support	M6	10 Nm (7.4 lbf ft)
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- Grease the O-rings and mount spark plug shaft insert **2**.



- Turn the timing chain tensioner screw clockwise.
- ✓ The timing chain tensioner is locked.



- Holding it with the correct orientation, mount the timing chain tensioner with the gasket.
- Mount and tighten screws **3**.

Guideline

Screw, timing chain tensioner	M6	12 Nm (8.9 lbf ft)
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- Unlock the timing chain tensioner screw counterclockwise.
- Check the timing chain tension.
- Mount screw **4** with the O-ring and tighten.

27 CLEANING/PROTECTIVE TREATMENT

- Push back the sleeves of the handlebar controls to allow any water that has penetrated to evaporate.
- After the motorcycle has cooled off, lubricate all moving parts and pivot points.
- Clean the chain. (📖 p. 103)
- Treat bare metal (except for brake discs and the exhaust system) with a corrosion inhibitor.

Preserving materials for paints, metal and rubber
(📖 p. 324)

- Treat all painted parts with a mild paint care product.

Perfect Finish and high gloss polish for paints (📖 p. 324)



Info

Do not polish parts that were matte when delivered as this would strongly impair the material quality.

- Treat all plastic parts and powder-coated parts with a mild cleaning and care product.

Special cleaner for glossy and matte paint finishes, metal and plastic surfaces (📖 p. 325)

- Oil the ignition/steering lock.

Universal oil spray (📖 p. 325)

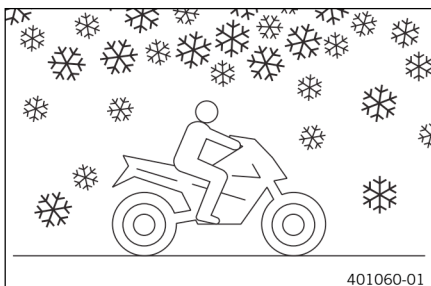


27.2 Checks and maintenance steps for winter operation



Info

If you use the motorcycle in winter, you must expect salt on the roads. You should therefore take precautions against aggressive road salt. Clean the motorcycle with cold water if it has been used on salted roads. Warm water enhances the corrosive effects of salt.



401060-01

- Clean the motorcycle. (📖 p. 279)
- Clean the brakes.



Info

After **EVERY** trip on salted roads, thoroughly clean the motorcycle and, in particular, the brake calipers and brake linings while cooled and installed with cold water and dry carefully.

- Treat the engine, the swingarm, and all other bare or zinc plated parts (except brake discs) with a wax-based corrosion inhibitor.



Info

Corrosion inhibitor is not permitted to come in contact with the brake discs as this would greatly reduce the braking force.

- Clean the chain. (📖 p. 103)



