REPAIR MANUAL 2009

65 SX
65 XC

Article no. 3206061en

Read this repair manual carefully and thoroughly before beginning work.

Only use **ORGINAL KTM SPARE PARTS**.

The vehicle will only be able to meet the demands placed on it if the specified service work is performed regularly and properly.

This repair manual was written to correspond to the latest state of this series. We reserve the right to make changes in the interest of technical advancement without at the same time updating this manual.
We shall not provide a description of general workshop methods. Likewise, safety rules that apply in a workshop will not be specified here. It is assumed that the repair work will be performed by a fully trained mechanic.

All specifications are non-binding. KTM Sportmotorcycle AG specifically reserves the right to modify or delete technical specifications, prices, colors, forms, materials, services, designs, equipment, etc., without prior notice and without specifying reasons, to adapt these to local conditions, as well as to stop production of a particular model without prior notice. KTM accepts no liability for delivery options, deviations from illustrations and descriptions, as well as printing and other errors. The models portrayed partly contain special equipment that does not belong to the regular scope of delivery.

ISO 9001(12 100 6061)
According to the international quality management standard ISO 9001, KTM uses quality assurance processes that lead to the maximum possible quality of the products.
Issued by: TÜV Management Service

KTM-Sportmotorcycle AG
5230 Mattighofen, Austria

CONTENTS

Symbols used

The symbols used are explained below.

✓	Indicates an expected reaction (e.g. of a work step or a function).
✗	Indicates an unexpected reaction (e.g. of a work step or a function).
☛	Identifies a page reference (more information is provided on the specified page).

Formats used

The typographical and other formats used are explained below.

Proper name	Identifies a proper name.
Name®	Identifies a protected name.
Brand™	Identifies a brand in merchandise traffic.

Warranty

The work prescribed in the service schedule must be carried out in an authorized KTM workshop only and confirmed in the customer's service record, since otherwise no warranty claims will be honored. No warranty claims can be honored for damage resulting from manipulations and/or alterations to the vehicle.

Fuel, oils, etc.

You should use the fuels, oils and greases according to specifications as listed in the owner's manual.

Spare parts, accessories

For your own safety, only use spare parts and accessory products that have been approved and/or recommended by KTM and have them installed in an authorized KTM workshop. KTM accepts no liability for other products and any resulting damage or loss.

The current **KTM PowerParts** for your vehicle can be found on the KTM website.
International KTM Website: http://www.ktm.com

Work rules

During assembly, non-reusable parts (e.g. self-locking screws and nuts, seals, seal rings, O-rings, pins, lock washers) must be replaced by new parts.
If a thread locker is used for the screw connections (e.g. **Loctite®**), follow the specific manufacturer instructions regarding its use.
Parts that are to be reused after disassembly must be cleaned and checked for damage and wear. Change damaged or worn parts.
After repair and maintenance, ensure that the vehicle is roadworthy.

Notes/warnings

Pay close attention to the notes/warning.

Info
Various information and warning labels are affixed to the vehicle. Do not remove information/warning labels. If they are missing, you or others may not recognize dangers and may therefore be injured.

Grades of risks

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.

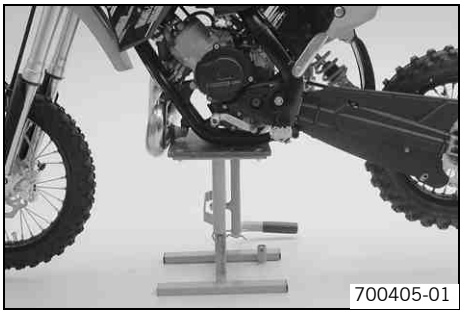
Note
Identifies a danger that will lead to considerable machine and material damage if the appropriate measures are not taken.

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

Repair manual

- It is important that you read this repair manual carefully and thoroughly before beginning work. It contains useful information and tips that will help you repair and service your motorcycle.
- This manual assumes that the necessary special KTM tools and workplace and workshop equipment are available.

Jacking up the motorcycle



Note

Danger of damage The parked vehicle can roll away or fall over.

– Always place the vehicle on a firm and even surface.

– Jack up the motorcycle underneath the engine.

Work stand (54829055000) (☛ p. 127)

– Secure the motorcycle against falling over.

Removing the motorcycle from the work stand

Note

Danger of damage The parked vehicle can roll away or fall over.

– Always place the vehicle on a firm and even surface.

– Remove the motorcycle from the work stand.
– Remove the work stand.

Starting

Danger

Danger of poisoning Exhaust gases are poisonous and can result in unconsciousness and/or death.

– When running the engine, always make sure there is sufficient ventilation, and do not start or run the engine in a closed space without an effective exhaust extraction system.

Note

Engine failure High engine speeds in cold engines have a negative effect on the service life of the engine.

– Always warm up the engine at low engine speeds.

Info

If the motorcycle is unwilling to start, the cause can be old fuel in the float chamber. The flammable elements of the fuel evaporate after a long time of standing.
If the float chamber is filled with fresh fuel, the engine starts immediately.

Engine has been out of use for more than 1 week

– Empty the carburetor float chamber. (☛ p. 93)

– Turn the knurled screw on the fuel tap all the way counterclockwise.

✓ Fuel can flow from the fuel tank to the carburetor.

– Remove the motorcycle from the stand.
– Shift gear to neutral.

The engine is cold

– Push the choke lever down all the way.

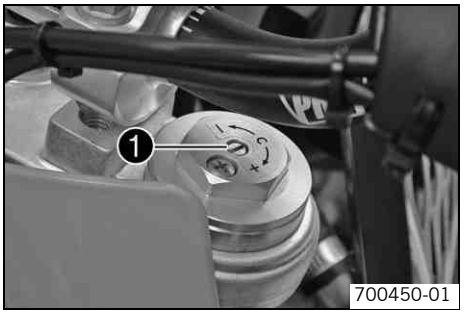
– Forcefully step on the kickstarter, pushing it all the way down.

Info

Do not open the throttle.

Adjusting the compression damping of the fork

Info
The hydraulic compression damping determines the fork suspension behavior.



– Turn adjusting screw ❶ clockwise all the way.

Info
Adjusting screw ❶ is located at the top end of the left fork leg and is labeled with a **C**.

– Turn back counterclockwise by the number of clicks corresponding to the fork type.

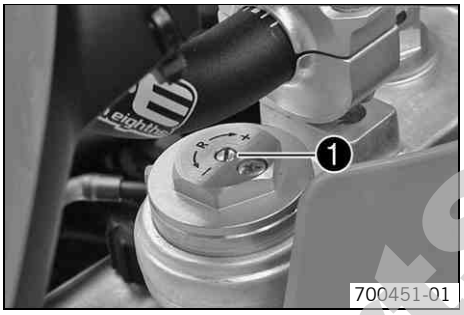
Guideline

Compression damping	
Standard	10 clicks

Info
Turn clockwise to increase damping, turn counterclockwise to reduce suspension damping.

Adjusting the rebound damping of the fork

Info
The hydraulic rebound damping determines the fork suspension behavior.



– Turn adjusting screw ❶ clockwise all the way.

Info
Adjusting screw ❶ is located at the top end of the right fork leg and is labeled with an **R**.

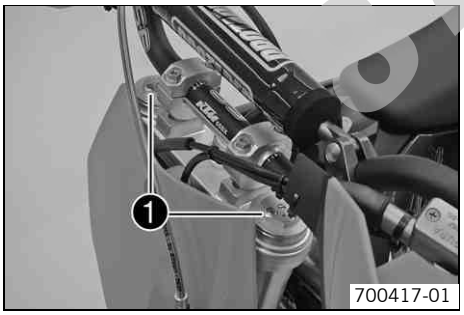
– Turn back counterclockwise by the number of clicks corresponding to the fork type.

Guideline

Rebound damping	
Standard	10 clicks

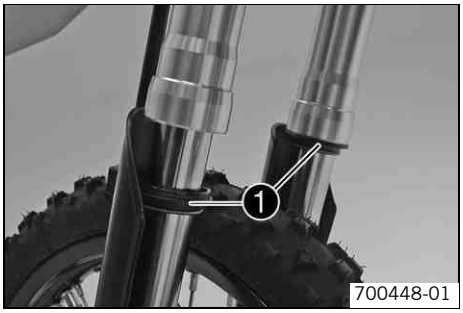
Info
Turn clockwise to increase damping, turn counterclockwise to reduce suspension damping.

Bleeding fork legs



– Jack up the motorcycle. (☛ p. 7)
– Remove bleeder screws ❶ briefly.
✓ Any excess pressure escapes from the interior of the fork.
– Mount and tighten bleeder screws.
– Remove the motorcycle from the work stand. (☛ p. 7)

Cleaning the dust boots of the fork legs



– Jack up the motorcycle. (☛ p. 7)
– Push dust boots ❶ of both fork legs downwards.

Info
The dust boots should remove dust and coarse dirt particles from the fork tubes. Over time, dirt can penetrate behind the dust boots. If this dirt is not removed, the oil seals behind can start to leak.

Warning
Danger of accidents Reduced braking due to oil or grease on the brake discs.

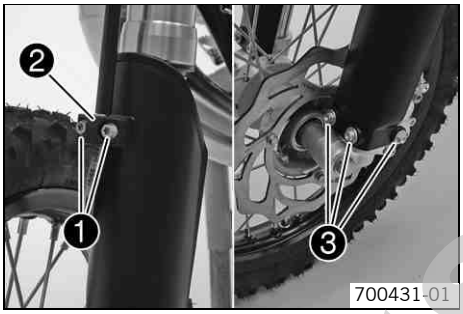
– Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.

– Clean and oil the dust boots and inner fork tube of both fork legs.

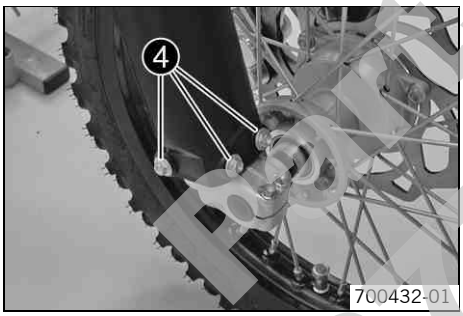
Universal oil spray (☛ p. 123)

– Press the dust boots back into their normal position.
– Remove excess oil.
– Remove the motorcycle from the work stand. (☛ p. 7)

Removing the fork protector

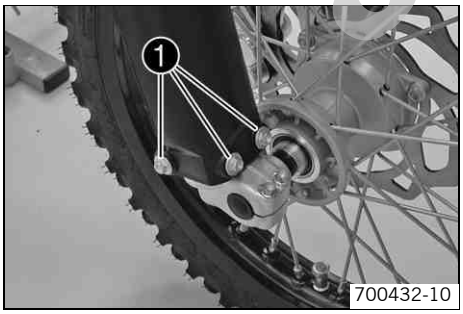


– Remove screws ❶. Take off clamp ❷.
– Remove screw ❸ on the left fork leg. Take off the fork protector.



– Remove screw ❹ on the right fork leg. Take off the fork protector.

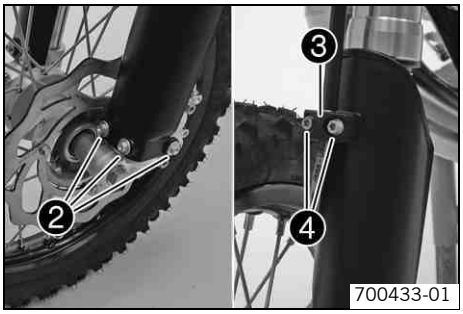
Installing the fork protector



– Position the fork protection on the right fork leg. Mount and tighten screws ❶.

Guideline

Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)



– Position the fork protection on the left fork leg. Mount and tighten screws ❷.

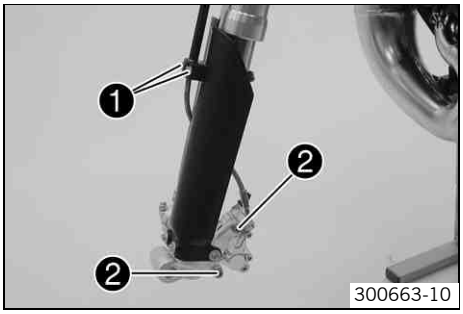
Guideline

Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

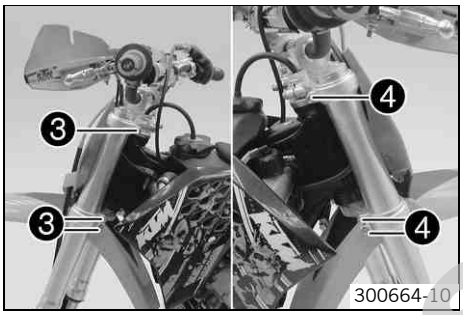
– Position the brake line. Mount clamp ❸.
– Mount the screws ❹.

Removing the fork legs

– Remove the front wheel. (☛ p. 30)



– Remove screws ❶ and take off clamp.
– Remove screws ❷ and take off brake caliper.
– Hang the brake caliper and the brake line loosely to the side.



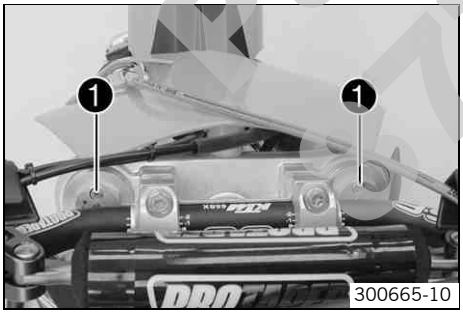
– Loosen screw ❸. Remove the left fork leg.
– Loosen screw ❹. Remove the right fork leg.

Installing the fork legs

Warning

Danger of accidents Modifications to the chassis can seriously alter the vehicle's handling characteristics.

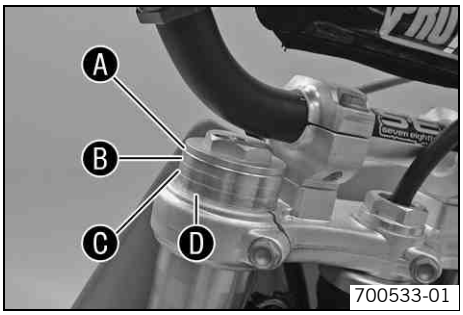
– Following modifications, ride slowly at first to get the feel of the new handling characteristics.



– Position the fork legs.

Info

Position the bleeder screw ❶ to the front.



– Adjust the fork overhang.

Guideline

Upper triple clamp flush with end of outer tube	Ⓐ
Upper triple clamp flush with 1st ring	Ⓑ Standard
Upper triple clamp flush with 2nd ring	Ⓒ
Upper triple clamp flush with 3rd ring	Ⓓ

Info

The setting of the vehicle level via the fork legs must be identical on both fork legs.

– Tighten screws ❷.

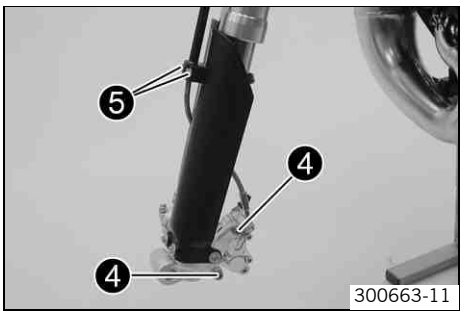
Guideline

Screw, top triple clamp	M8	25 Nm (18.4 lbf ft)

– Tighten screws ❸.

Guideline

Screw, bottom triple clamp	M8	25 Nm (18.4 lbf ft)



– Position brake caliper, mount and tighten screws ❹.

Guideline

Screw, brake caliper	M8	20 Nm (14.8 lbf ft)	**Loctite® 243™**

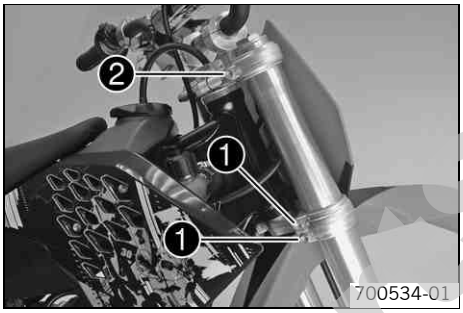
– Position the brake line. Mount the clamp and screws ❺.
– Install the front wheel. (☛ p. 30)

Adjusting the fork overhang

Warning

Danger of accidents Modifications to the chassis can seriously alter the vehicle's handling characteristics.

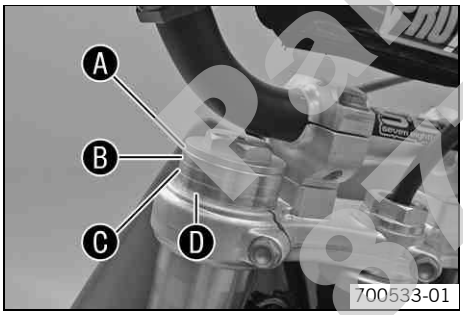
– Following modifications, ride slowly at first to get the feel of the new handling characteristics.



– Loosen screws ❶ on the lower triple clamp.
– Loosen screw ❷ on the upper triple clamp.

Info

Loosen the screws to the point where the fork leg can be moved without damaging it.
Make the adjustments first on one fork leg and then on the other.



– Adjust the fork overhang.

Guideline

Upper triple clamp flush with end of outer tube	Ⓐ
Upper triple clamp flush with 1st ring	Ⓑ Standard
Upper triple clamp flush with 2nd ring	Ⓒ
Upper triple clamp flush with 3rd ring	Ⓓ

– Tighten screw ❷.

Guideline

Screw, top triple clamp	M8	25 Nm (18.4 lbf ft)

– Tighten screws ❶.

Guideline

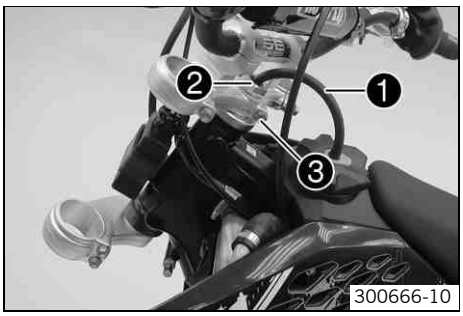
Screw, bottom triple clamp	M8	25 Nm (18.4 lbf ft)

– Repeat the adjustment on the other fork leg.

Info

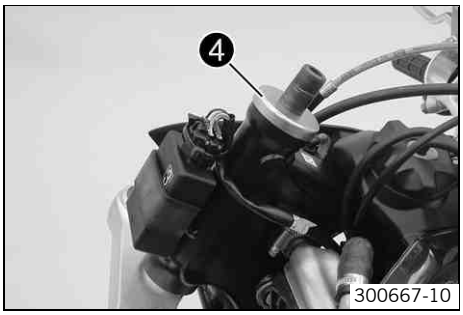
The setting of the vehicle level via the fork legs must be identical on both fork legs.

Removing the lower triple clamp



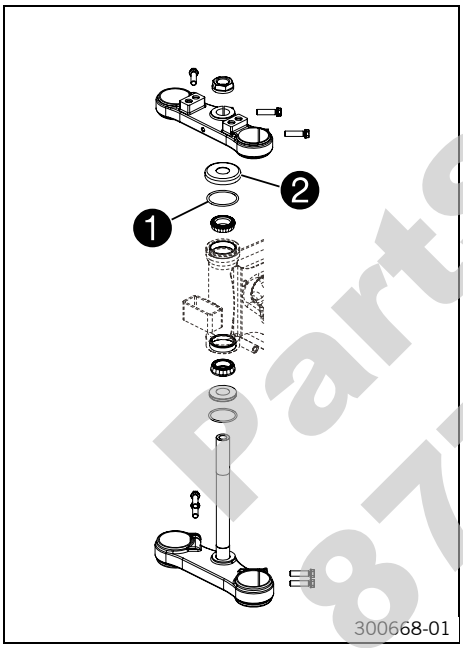
- Remove the fork legs. (☛ p. 10)
- Dismount the start number plate. (☛ p. 28)
- Dismount the front fender. (☛ p. 28)
- Remove fuel tank breather ❶.
- Remove screw ❷. Remove screw ❸, take off top triple clamp with the handlebar and place it on one side.

Info
Protect the motorcycle and its attachments from damage by covering them. Do not bend the cables and lines.



- Remove protector ring ❹.
- Remove the lower triple clamp with the steering stem.
- Remove the upper steering head bearing.

Installing the lower triple clamp



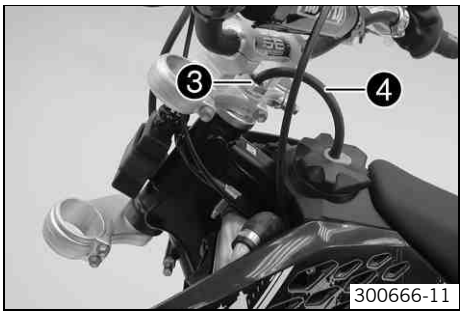
- Clean the bearing and sealing elements, check for damage, and grease.

Long-life grease (☛ p. 122)

- Insert the lower triple clamp with the steering stem. Mount the upper steering head bearing.

Info
Check whether the top steering head seal ❶ is correctly positioned.

- Push on protective ring ❷.

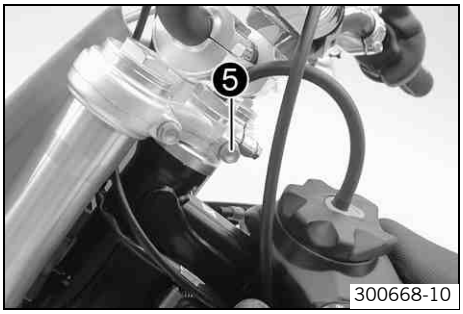


- Position the upper triple clamp with the steering.
- Mount and tighten screw ❸.

Guideline

Nut, steering stem	M20x1.5	10 Nm (7.4 lbf ft)

- Position fuel tank breather ❹.
- Install the front fender. (☛ p. 28)
- Install the start number plate. (☛ p. 28)
- Install the fork legs. (☛ p. 10)



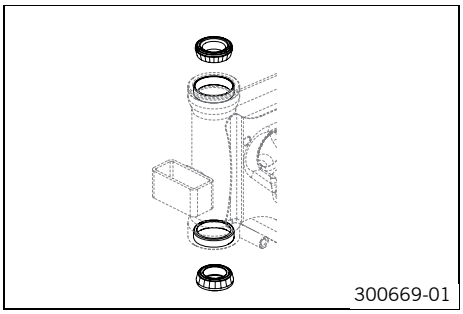
– Mount and tighten screw ❺.

Guideline

Screw, top triple clamp	M8	25 Nm (18.4 lbf ft)

– Check that the cable harness, Bowden cables, brake and clutch line can move freely and are routed correctly.
– Check play of steering head bearing. (☛ p. 13)

Greasing the steering head bearing



– Remove the lower triple clamp. (☛ p. 12)
– Install the lower triple clamp. (☛ p. 12)

Checking play of steering head bearing

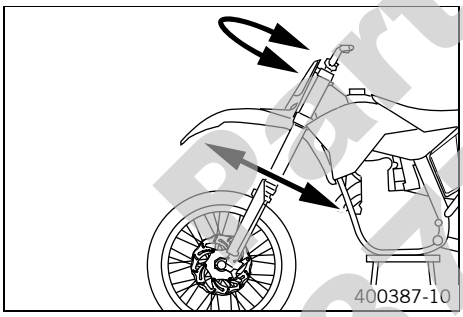
Warning

Danger of accidents Unsafe riding behavior due to incorrect steering head bearing play.

– The steering head bearing play should be adjusted immediately in an authorized KTM workshop.

Info

If the bike is driven for a longer time with play in the steering head bearing, the bearing and the bearing seats in the frame can be damaged after time.



– Jack up the motorcycle. (☛ p. 7)
– Move the handlebar to the straight-ahead position. Move the fork legs to and fro in the direction of travel.

No play should be noticeable in the steering head bearing.

» If there is noticeable play present:
– Adjust play of the steering head bearing. (☛ p. 13)

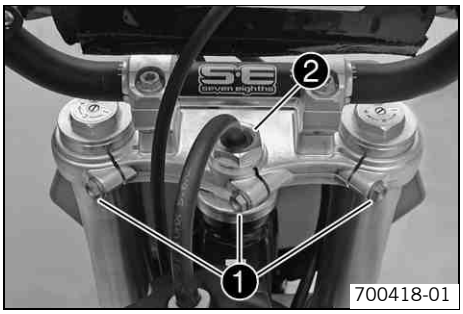
– Move the handlebar to and fro over the entire steering range.

The handlebar must be able to move easily over the entire steering range. No resting locations should be noticeable.

» If click positions are noticeable:
– Adjust play of the steering head bearing. (☛ p. 13)
– Check the steering head bearing and replace if required.

– Remove the motorcycle from the work stand. (☛ p. 7)

Adjusting play of steering head bearing



– Jack up the motorcycle. (☛ p. 7)
– Loosen screw ❶.
– Loosen and retighten screw ❷.

Guideline

Nut, steering stem	M20x1.5	10 Nm (7.4 lbf ft)

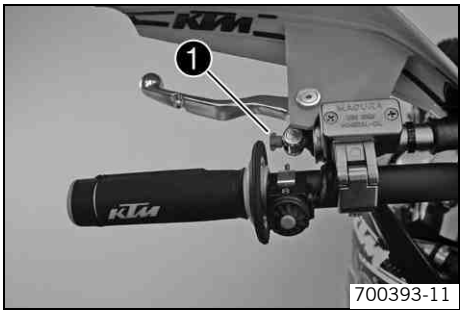
– Using a plastic hammer, tap lightly on the upper triple clamp to avoid strains.

– Fully tighten screw ❶.
  Guideline

Screw, top triple clamp	M8	25 Nm (18.4 lbf ft)

– Check play of steering head bearing. (☛ p. 13)

Adjusting basic position of clutch lever

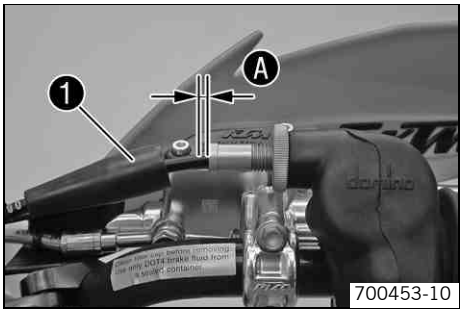


– Adjust the basic setting of the clutch lever to the size of your child's hand by turning the adjusting screw ❶.

Info

Turn the adjusting screw clockwise to increase the distance between the clutch lever and the handlebar.
Turn the adjusting screw counterclockwise to decrease the distance between the clutch lever and the handlebar.
The range of adjustment is limited.
Turn the adjusting screw by hand only, and do not apply any force.
Do not make any adjustments while riding!

Checking play in gas Bowden cable



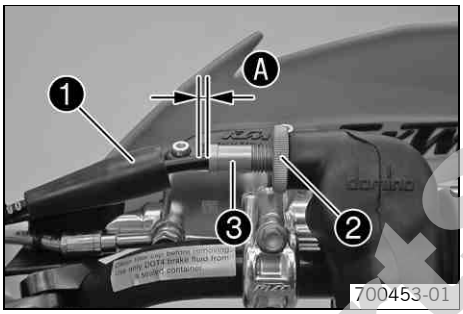
– Move the handlebar to the straight-ahead position.
– Push back bellows ❶.
– It must be possible to raise the outer casing of the gas Bowden cable away from the adjusting screw by distance Ⓐ without encountering a resistance.

Play in gas Bowden cable	3... 5 mm (0.12... 0.2 in)

» If the gas Bowden cable play does not meet specifications:
– Adjust the play in the gas Bowden cable. (☛ p. 15)

– Push bellows ❶ on. Check the throttle grip for smooth operation.

Adjusting play in gas Bowden cable



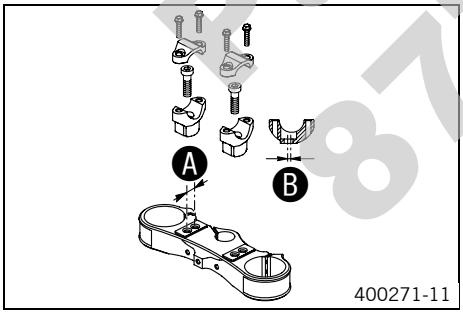
– Move the handlebar to the straight-ahead position.
– Push back bellows ❶.
– Loosen nut ❷. Turn adjusting screw ❸ in as far as possible.
– Turn the adjusting screw so that there is play in the gas Bowden cable at the gas Bowden cable casing.

Guideline

Play in gas Bowden cable	3... 5 mm (0.12... 0.2 in)

– Tighten nut.
– Push bellows ❶ on. Check the throttle grip for smooth operation.
– Check play in the gas Bowden cable. (☛ p. 15)

Handlebar position



On the upper triple clamp, there are 2 holes at a distance of Ⓐ to each other.

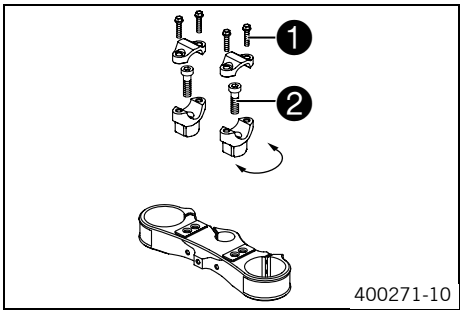
Distance Ⓐ between holes	15 mm (0.59 in)

The holes on the handlebar support are placed at a distance of Ⓑ from the center.

Distance Ⓑ between holes	3.5 mm (0.138 in)

The handlebar supports can be mounted in 4 different positions.

Adjusting handlebar position



– Remove the four screws ❶. Remove the handlebar clamp. Remove the handlebar and lay it to one side.

Info
Protect the motorcycle and its attachments from damage by covering them. Do not bend the cables and lines.

– Remove the two screws ❷. Remove the handlebar support.
– Place the handlebar support in the required position. Mount and tighten the two screws ❷.

Guideline

Screw, handlebar support	M10	40 Nm (29.5 lbf ft)	**Loctite® 243™**

Info
Position the left and right handlebar supports evenly.

– Position the handlebar.

Info
Make sure cables and wiring are positioned correctly.

– Position the handlebar clamp. Mount and evenly tighten the four screws ❶.

Guideline

Screw, handlebar clamp	M8	20 Nm (14.8 lbf ft)

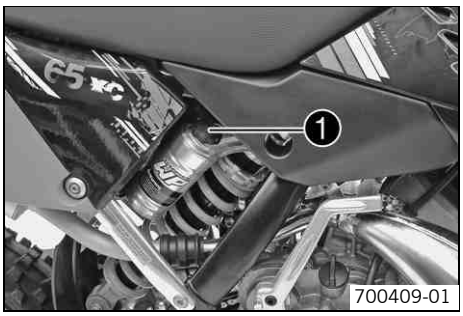
Info
Make sure the gap width is even.

Adjusting the compression damping of the shock absorber

Danger

Danger of accidents The shock absorber is under high pressure.

– The shock absorber is filled with highly compressed nitrogen, so never dismantle the shock absorber or carry out any maintenance on it yourself.



– Turn adjusting knob ❶ clockwise all the way.
– Turn back counterclockwise by the number of turns corresponding to the shock absorber type.

Guideline

Compression damping	
Comfort	10 clicks
Standard	9 clicks
Sport	3 clicks

Info

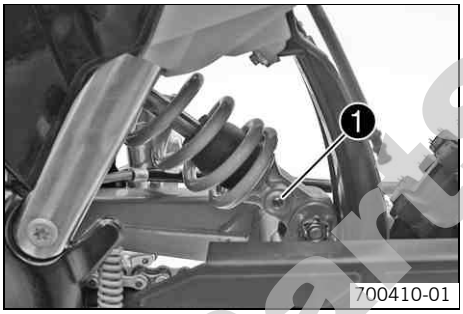
Turn clockwise to increase damping, turn counterclockwise to reduce suspension damping.

Adjusting the rebound damping of the shock absorber

Danger

Danger of accidents The shock absorber is under high pressure.

– The shock absorber is filled with highly compressed nitrogen, so never dismantle the shock absorber or carry out any maintenance on it yourself.



– Turn adjusting screw ❶ clockwise to the last perceptible click.
– Turn back counterclockwise by the number of clicks corresponding to the shock absorber type.

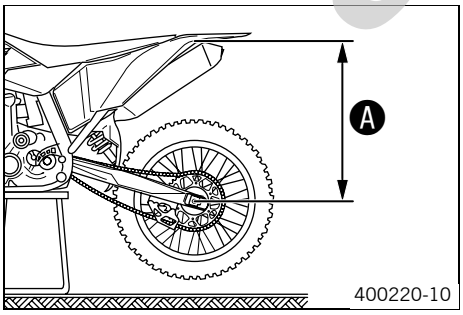
Guideline

Rebound damping	
Comfort	10 clicks
Standard	9 clicks
Sport	6 clicks

Info

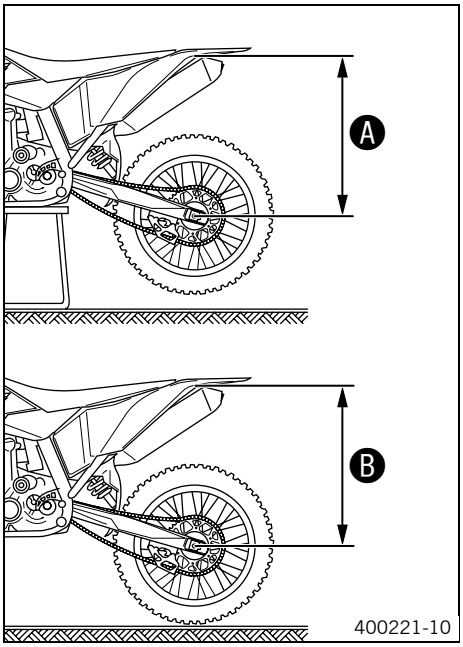
Turn clockwise to increase damping, turn counterclockwise to reduce suspension damping.

Measuring rear wheel sag unloaded



– Jack up the motorcycle. (☛ p. 7)
– Measure the distance – as vertical as possible – between the rear axle and a fixed point, for example, a mark on the side cover.
– Make a note of the value as measurement ❹.
– Remove the motorcycle from the work stand. (☛ p. 7)

Checking the static sag of the shock absorber



– Measure distance Ⓐ of rear wheel unloaded. (☛ p. 17)
– Ask someone to help you by holding the motorcycle upright.
– Measure the distance between the rear axle and the fixed point again.
– Make a note of the value as measurement Ⓑ.

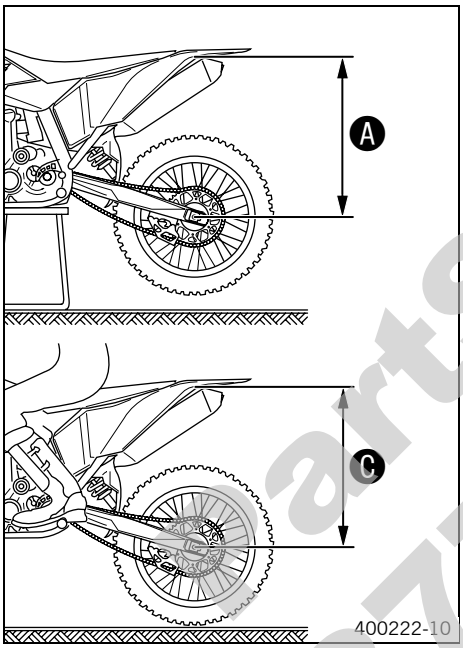
Info
The static sag is the difference between measurements Ⓐ and Ⓑ.

– Check the static sag.

Static sag	12 mm (0.47 in)

» If the static sag is less or more than the specified value:
– Adjust the spring preload of the shock absorber. (☛ p. 18)

Checking the riding sag of the shock absorber



– Measure distance Ⓐ of rear wheel unloaded. (☛ p. 17)
– Hold the motorcycle in a vertical position and seat your child, wearing a full set of protective clothing, on the motorcycle in the normal sitting position (feet on the footrests). Your child should bounce up and down several times so that the rear wheel suspension can level out.
– Now measure the distance between the rear axle and the fixed point again.
– Make a note of the value as measurement Ⓒ.

Info
The riding sag is the difference between measurements Ⓐ and Ⓒ.

– Check the riding sag.

Riding sag	90 mm (3.54 in)

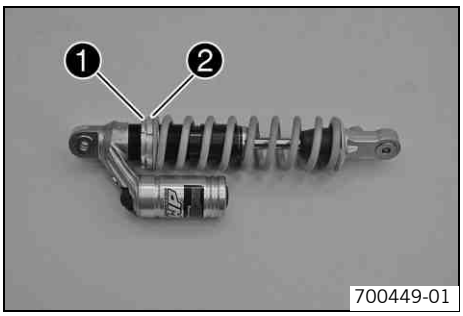
» If the riding sag differs from the specified measurement:
– Adjust the riding sag. (☛ p. 19)

Adjusting the spring preload of the shock absorber

Danger
Danger of accidents The shock absorber is under high pressure.

– The shock absorber is filled with highly compressed nitrogen, so never dismantle the shock absorber or carry out any maintenance on it yourself.

– Remove shock absorber. (☛ p. 19)
– After removing the shock absorber, clean it thoroughly.



– Measure the full spring length while it is under tension and note down the value.
– Loosen lock ring ❶.
– Turn adjusting ring ❷ until the spring is no longer under tension.

Combination wrench (50329080000)
Hook wrench (T106S) (☛ p. 128)

– Measure the overall spring length when not under tension.
– Tighten the spring by turning adjusting ring ❷ to measurement.

Guideline

Spring preload	
Comfort	7 mm (0.28 in)
Standard	7 mm (0.28 in)
Sport	7 mm (0.28 in)

Info
The spring preload is the difference between the relaxed spring length and the tensioned spring length.
Depending on the static sag and/or the riding sag, it may be necessary to increase or decrease the spring preload.

– Tighten lock ring ❶.
– Installing shock absorber. (☛ p. 20)

Adjusting the riding sag

– Remove shock absorber. (☛ p. 19)
– After removing the shock absorber, clean it thoroughly.
– Choose and mount a suitable spring.

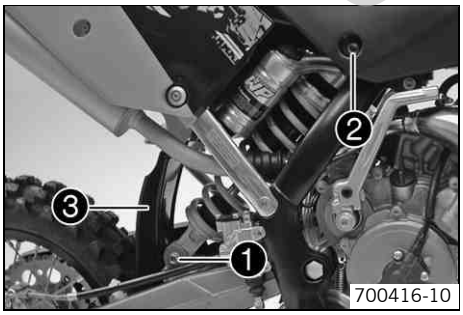
Guideline

Spring rate	
Weight of rider: < 35 kg (< 77 lb.)	35 N/mm (200 lb/in)
Weight of rider: 35... 45 kg (77... 99 lb.)	40 N/mm (228 lb/in)
Weight of rider: > 45 kg (> 99 lb.)	45 N/mm (257 lb/in)

Info
The spring rate is shown on the outside of the spring.
Smaller weight differences can be compensated by changing the spring preload.

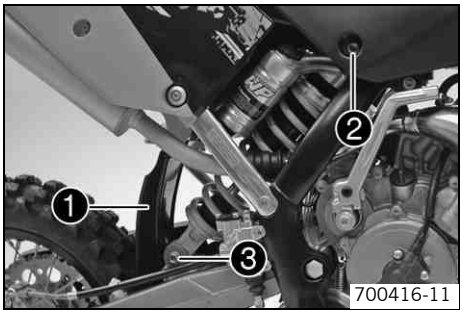
– Installing shock absorber. (☛ p. 20)
– Check the static sag of the shock absorber. (☛ p. 18)
– Check the riding sag of the shock absorber. (☛ p. 18)
– Adjust the rebound damping of the shock absorber. (☛ p. 17)

Removing the shock absorber



– Jack up the motorcycle. (☛ p. 7)
– Remove screw ❶ and lower the rear wheel with the swing arm as far as possible without blocking the rear wheel. Fix the rear wheel in this position.
– Remove screw ❷, push splash protector ❸ to the side, and remove the shock absorber.

Installing shock absorber



– Push splash protector ❶ to the side and position the shock absorber. Mount and tighten screw ❷.

Guideline

Screw, top shock absorber	M10	45 Nm (33.2 lbf ft)

– Mount and tighten screw ❸.

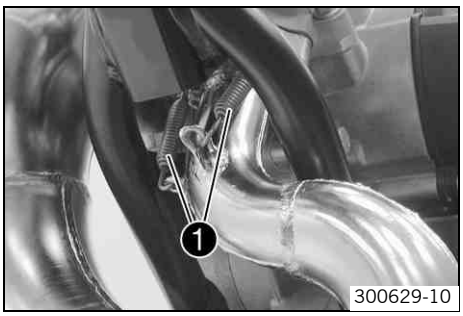
Guideline

Screw, bottom shock absorber	M10	45 Nm (33.2 lbf ft)

– Remove the motorcycle from the work stand. (☛ p. 7)

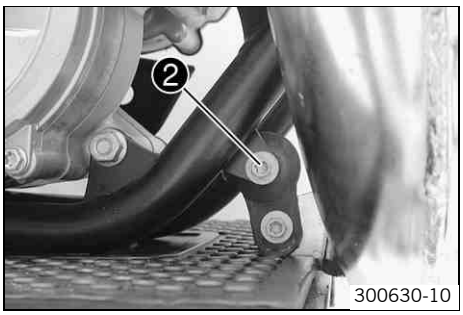
Removing the exhaust manifold

Warning
Danger of burns The exhaust system gets very hot when the vehicle is driven.
– Allow the exhaust system to cool down. Do not touch hot components.

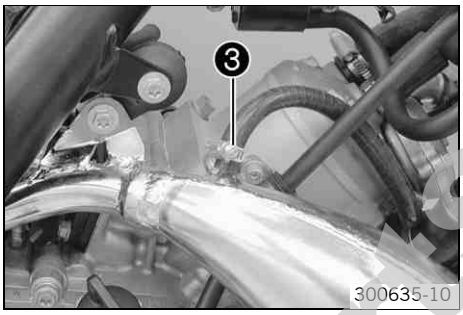


– Remove springs ❶.

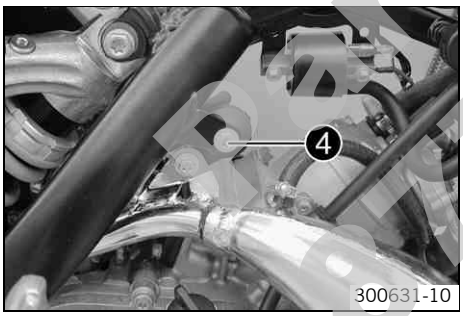
Spring hooks (50305017000) (☛ p. 126)



– Remove screw ❷.

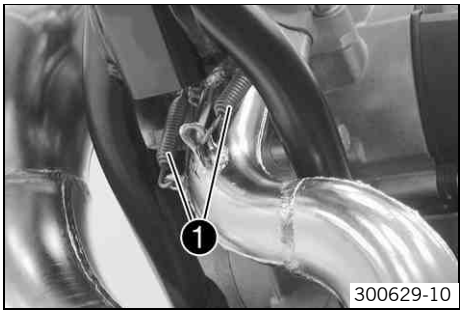


– Unscrew hose clip ❸ and pull off the hose.



– Remove screw ❹.
– Remove the exhaust manifold.

Installing the exhaust manifold

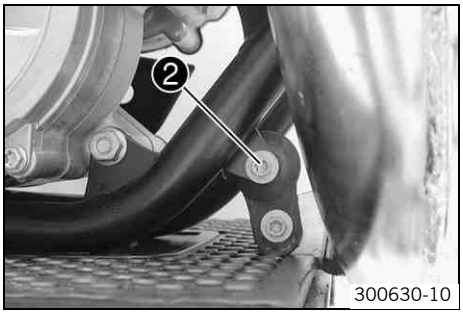


– Lubricate the O-rings of the exhaust manifold.

Long-life grease (☛ p. 122)

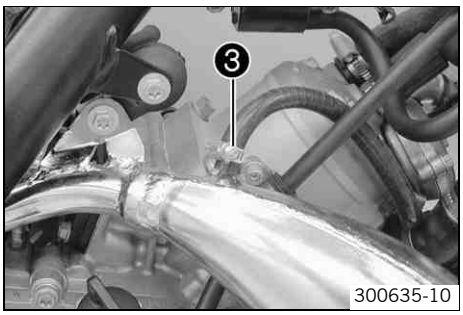
– Position the exhaust manifold.
– Mount springs ❶.

Spring hooks (50305017000) (☛ p. 126)

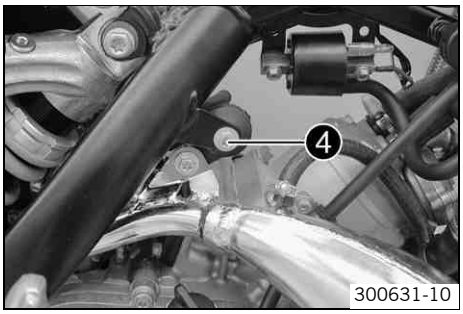


– Mount and tighten screw ❷.
Guideline

Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)



– Position the exhaust control hose.
– Position and tighten hose clamp ❸.

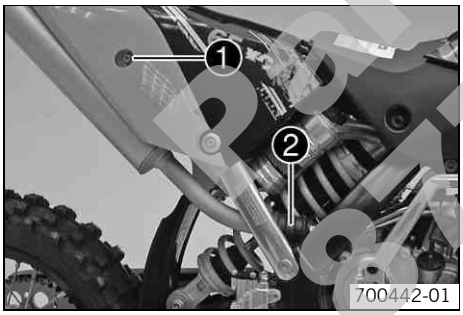


– Mount and tighten screws ❹.
Guideline

Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

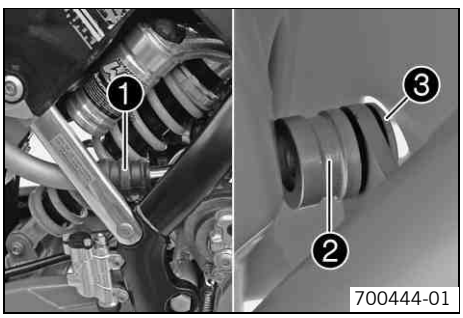
Removing main silencer

Warning
Danger of burns The exhaust system gets very hot when the vehicle is driven.
– Allow the exhaust system to cool down. Do not touch hot components.

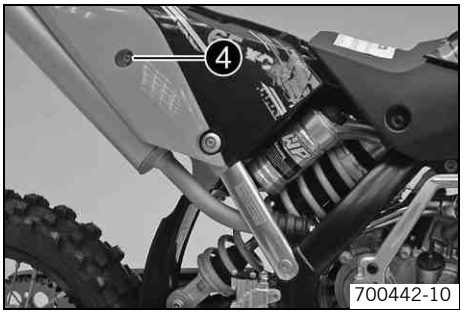


– Remove screw ❶.
– Pull the main silencer off of the manifold at the rubber sleeve ❷.

Installing the main silencer



– Mount the main silencer with the rubber sleeve ❶.
– Position the wide collar bushing ❷ and the narrow collar bushing ❸.



– Mount and tighten screw ❹.

Guideline

Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

Changing the glass fiber yarn filling of the main silencer

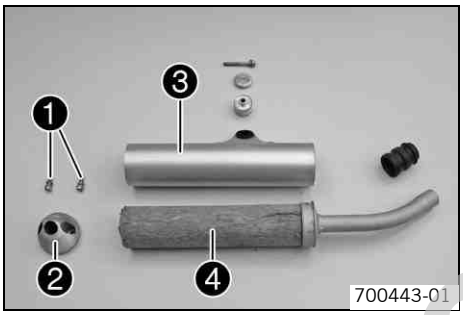
– Remove the glass fiber yarn filling of the main silencer. (☛ p. 23)
– Install the glass fiber yarn filling of the main silencer. (☛ p. 23)

Removing the glass fiber yarn filling of the main silencer

Warning

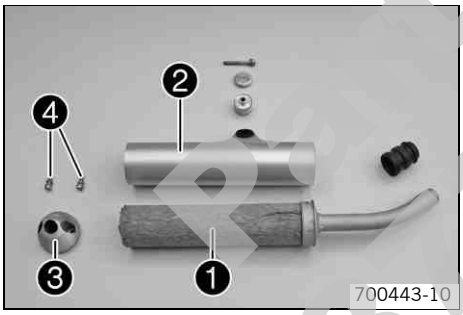
Danger of burns The exhaust system gets very hot when the vehicle is driven.

– Allow the exhaust system to cool down. Do not touch hot components.



– Remove the main silencer. (☛ p. 22)
– Remove screws ❶ of locking cap ❷. Remove locking cap and outer tube ❸.
– Pull the glass fiber yarn filling ❹ from the inner tube.
– Clean the parts that are to be reinstalled.

Installing the glass fiber yarn filling of the main silencer



– Slide the glass fiber yarn filling ❶ over the inner tube.
– Slide the outer tube ❷ over the glass fiber yarn filling.
– Insert the locking cap ❸ into the outer tube. Mount the screws ❹ with toothed wheels and tighten.

Guideline

Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

– Install the main silencer. (☛ p. 22)

Removing the air filter

Note

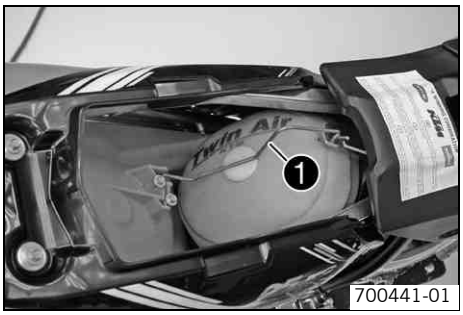
Engine failure Unfiltered intake air has a negative effect on the service life of the engine.

– Never ride the vehicle without an air filter since dust and dirt can get into the engine and result in increased wear.

Warning

Environmental hazard Problem materials cause environmental damage.

– Dispose of oil, grease, filters, fuel, cleaning substances, brake fluid, batteries, etc., according to regulations.



– Remove the seat. (☛ p. 25)
– Unhook the air filter holder ❶ and swing it to the side. Remove the air filter with the air filter support.
– Remove the air filter from the air filter support.

Installing the air filter

– Mount the clean air filter onto the air filter support.
– Put in both parts together, position them and fix them with the air filter support ❶.

Info

If the air filter is not correctly mounted, dust and dirt can penetrate into the engine and can cause damage.

– Mount the seat. (☛ p. 25)

Cleaning air filter

Warning

Environmental hazard Problem materials cause environmental damage.

– Dispose of oil, grease, filters, fuel, cleaning substances, brake fluid, batteries, etc., according to regulations.

Info

Do not clean the air filter with fuel or petroleum since these substances attack the foam.

– Remove the air filter. (☛ p. 24)
– Wash the air filter thoroughly in special cleaning liquid and allow it to dry properly.

Air filter cleaner (☛ p. 122)

Info

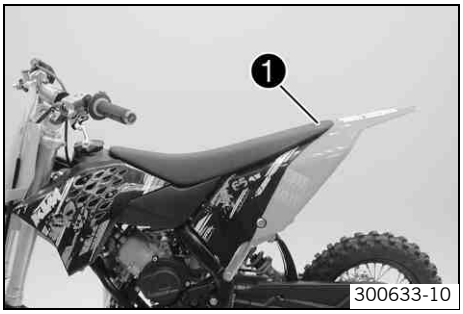
Only press the air filter to dry it, never wring it out.

– Oil the dry air filter with a high/quality filter oil.

Oil for foam air filter (☛ p. 123)

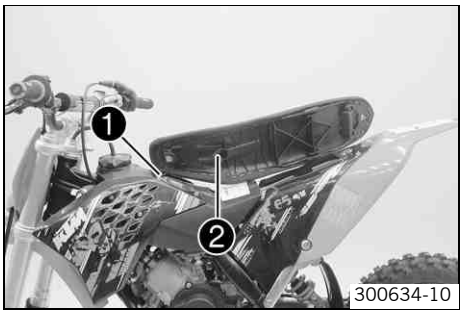
– Clean the air filter box.
– Check carburetor connection boot for damage and tightness.
– Install the air filter. (☛ p. 24)

Removing the seat

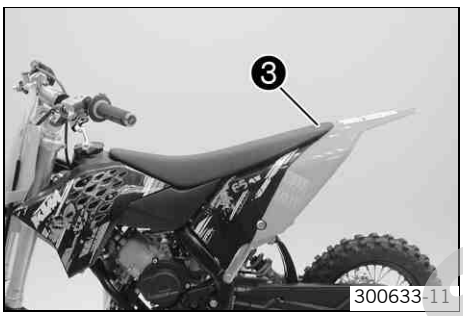


– Open quick release ❶ and raise the rear of the seat.
– Pull back the seat and remove it.

Mounting the seat



– Hook the seat onto screw ❶ and lower the seat at the rear while pushing it forward.
  ✓ Projection ❷ hooks into the fuel tank.



– Close quick release ❸.

Dismounting the fuel tank

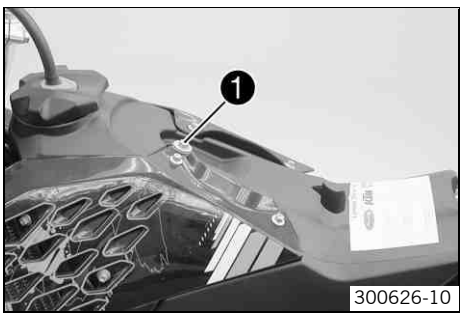
Danger
Fire hazard Fuel can easily catch fire.

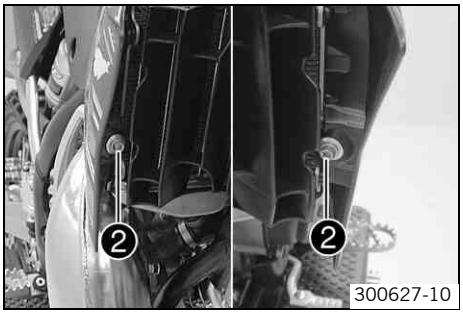
– Never fill up the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
– Fuel in the fuel tank expands when warm and can escape if the tank is overfilled. See specifications on filling up with fuel.

Warning
Danger of poisoning Fuel is poisonous and a health hazard.

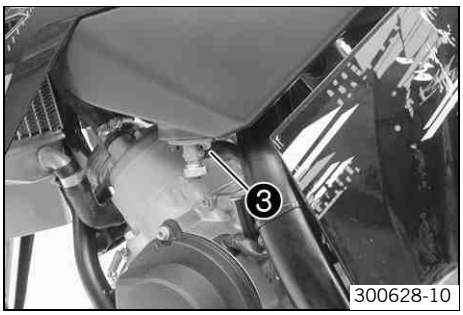
– Avoid contact between fuel and skin, eyes and clothing. Do not inhale fuel vapors. If fuel gets into your eyes, rinse immediately with water and contact a doctor. Wash affected skin areas immediately with soap and water. If fuel is swallowed, contact a doctor immediately. Change clothing that has come into contact with fuel. Store fuel in a suitable canister according to regulations and keep it out of the reach of children.

– Remove the seat. (☛ p. 25)
– Turn the knurled screw on the fuel tap all the way clockwise.
– Remove screw ❶.





– Remove screws ❷.



– Pull off fuel hose ❸.

Info
Remaining fuel may run out of the fuel hose.

– Pull both spoilers off of the side of the radiator bracket and lift off the fuel tank.

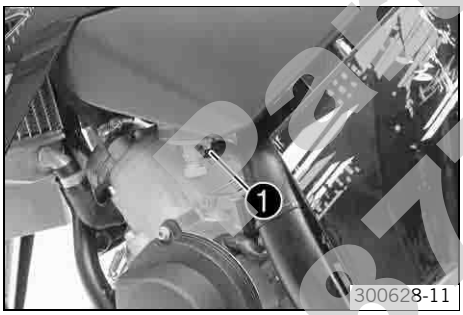
Installing the fuel tank

Danger
Fire hazard Fuel can easily catch fire.

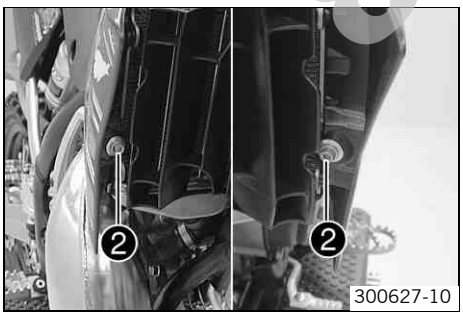
– Never fill up the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
– Fuel in the fuel tank expands when warm and can escape if the tank is overfilled. See specifications on filling up with fuel.

Warning
Danger of poisoning Fuel is poisonous and a health hazard.

– Avoid contact between fuel and skin, eyes and clothing. Do not inhale fuel vapors. If fuel gets into your eyes, rinse immediately with water and contact a doctor. Wash affected skin areas immediately with soap and water. If fuel is swallowed, contact a doctor immediately. Change clothing that has come into contact with fuel. Store fuel in a suitable canister according to regulations and keep it out of the reach of children.



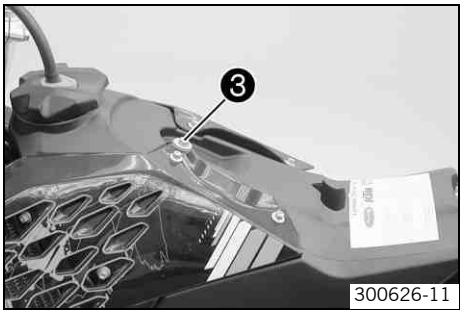
– Position the fuel tank and attach both spoilers onto the sides of the radiator bracket.
– Ensure that cables or Bowden cables are not pinched or damaged.
– Connect fuel hose ❶.



– Mount and tighten screws ❷.

Guideline

Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

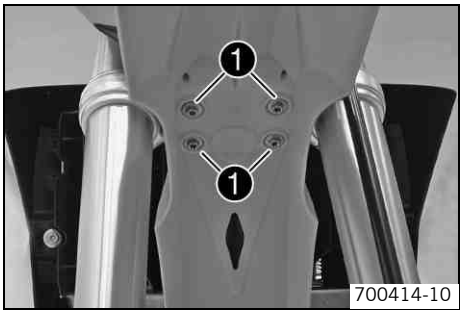


– Mount and tighten screw ❸.
  Guideline

Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

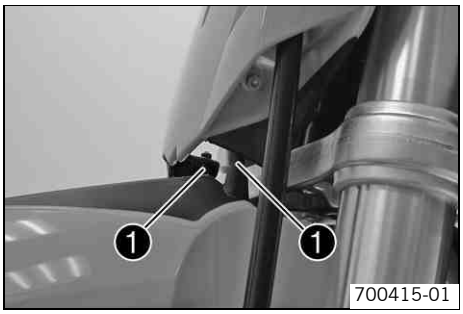
– Position the fuel tank breather.
– Mount the seat. (☛ p. 25)

Dismounting the front fender

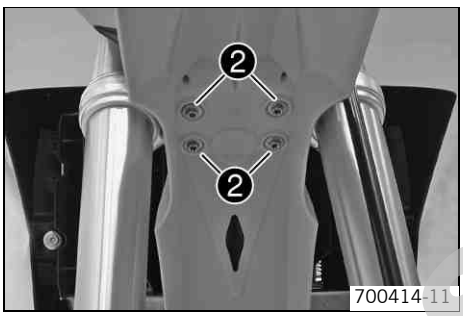


– Remove screws ❶. Remove the front fender.

Installing the front fender



– Position the fender with holding lugs ❶ into the drill holes on the start number plate.

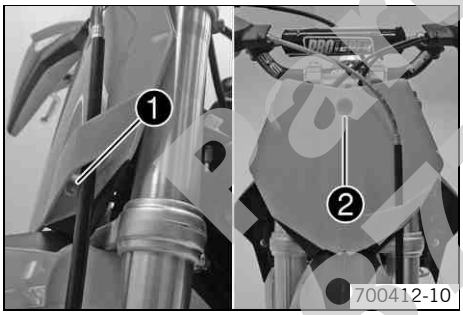


– Position the front fender. Mount and tighten screws ❷.

Guideline

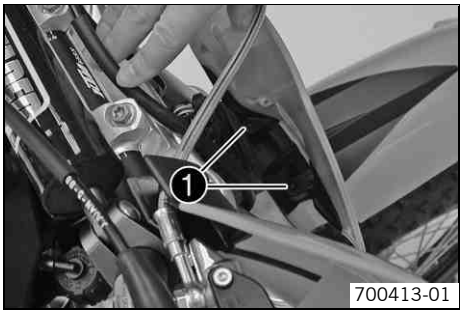
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

Dismounting the start number plate

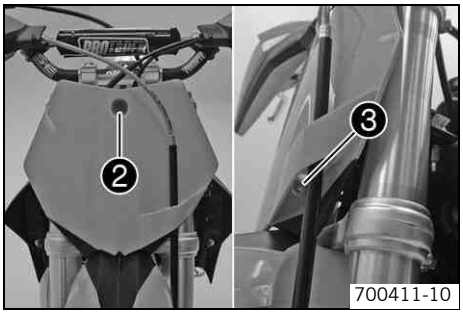


– Remove screw ❶ and take off clamp.
– Remove screw ❷. Remove the start number plate.

Installing the start number plate



– Position the start number plate with the drill holes onto the holding lugs ❶ of the fender.

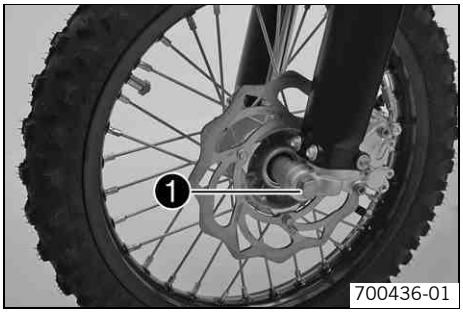


– Mount and tighten screw ❷.
  Guideline

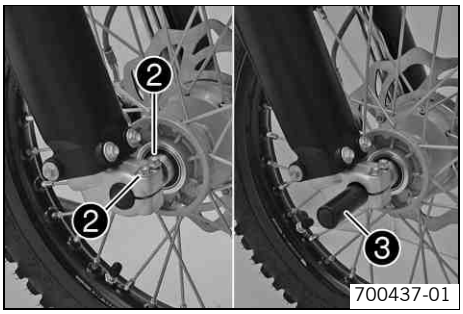
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

– Position the brake line. Put the clamp on, mount and tighten screw ❸.

Removing the front wheel



– Jack up the motorcycle. (☛ p. 7)
– Remove screw ❶.

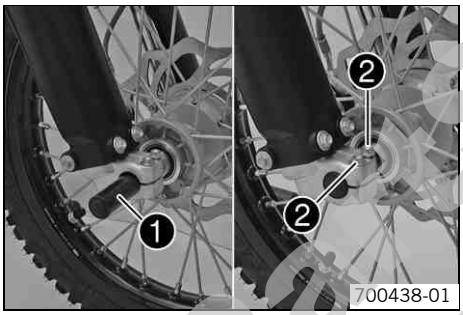


– Loosen screw ❷.
– Hold the front wheel and pull out wheel spindle ❸. Take the front wheel out of the fork.

Info
Do not pull the hand brake lever when the front wheel is removed.
Always lay the wheel down in such a way that the brake disc is not damaged.

Installing the front wheel

Warning
Danger of accidents Reduced braking due to oil or grease on the brake discs.
– Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.

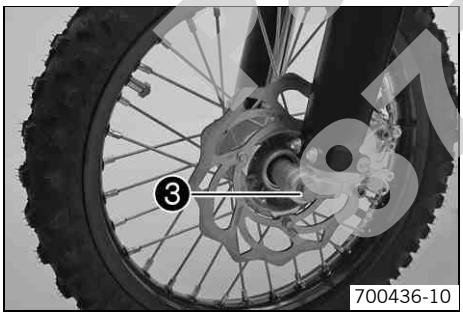


– Clean and grease wheel spindle ❶.

Long-life grease (☛ p. 122)

– Lift the front wheel into the fork, position it, and insert wheel spindle ❶.
– Tighten screws ❷.
Guideline

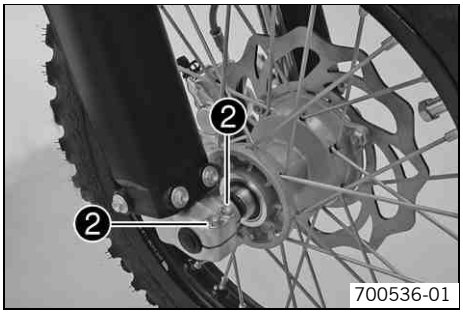
Screw, fork stub	M6	10 Nm (7.4 lbf ft)



– Mount and tighten screw ❸.
Guideline

Screw, front wheel spindle	M10	40 Nm (29.5 lbf ft)

– Remove the motorcycle from the work stand. (☛ p. 7)



– Operate the hand brake lever several times until the brake pads are lying correctly on the brake disc.
– Loosen screw ❷.
– Pull the front wheel brake and push down hard on the fork several times to align the fork legs.
– Tighten screws ❷.
Guideline

Screw, fork stub	M6	10 Nm (7.4 lbf ft)

Checking the tire condition

Info
Only mount tires that have been approved and/or recommended by KTM.
Other tires could have a negative effect on riding behavior.
The type, condition and air pressure of the tires all have an important impact on the riding behavior of the motorcycle.
The front and rear wheels must be mounted with tires with similar profiles.
Worn tires have a negative effect on riding behavior, especially on wet surfaces.

– Check the front and rear tires for cuts, run-in objects and other damage.
  » If the tires exhibit cuts, run-in objects or other damage:
    – Change the tires.
– Check the depth of the tread.

Info
Note local national regulations concerning the minimum tread depth.

Minimum tread depth	≥ 2 mm (≥ 0.08 in)

  » If the tread depth is less than the minimum permissible depth:
    – Change the tires.

Checking tire air pressure

Info
Low tire air pressure leads to abnormal wear and overheating of the tire.
Correct tire air pressure ensures optimal riding comfort and maximum tire service life.


700434-01

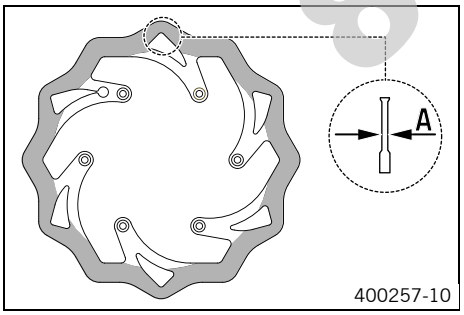
– Remove the dust cap.
– Check the tire air pressure when the tires are cold.

Tire air pressure off road	
Front	1.0 bar (15 psi)
Rear	1.0 bar (15 psi)

  » If the tire pressure does not meet specifications:
    – Correct the tire pressure.
– Mount the dust cap

Checking brake discs

Warning
Danger of accidents Reduced braking due to worn brake discs.
  – Worn brake discs should be replaced immediately in an authorized KTM workshop.



400257-10

– Check the thickness of the front and rear brake discs at several places on the disc to see if it conforms to measurement Ⓐ.

Info
Wear reduces the thickness of the brake disc around the area used by the brake linings.

Brake discs - wear limits	
Front	2.5 mm (0.098 in)
Rear	2.5 mm (0.098 in)

  » If the brake disc thickness is less than the specified value:
    – Change the brake disc.
– Check the front and rear brake discs for damage, cracking and deformation.
  » If the brake disk exhibits damage, cracking or deformation:
    – Change the brake disc.

Checking spoke tension

Warning

Danger of accidents Unstable riding behavior due to loose spokes.

– If you ride with loose spokes, the spokes can break. Have the spoke tension corrected in an authorized KTM workshop.

Info

A loose spoke can cause wheel imbalance, which leads to more loose spokes in a short time.
If the spokes are too tight, they can break due to local overload.
Check the spoke tension regularly, especially on a new motorcycle.

– To check spoke tension, tap each spoke with a screwdriver.

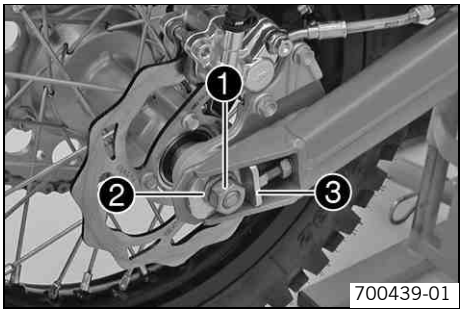
Guideline

You should hear a high note.		
Spoke nipple	M3.5	3 Nm (2.2 lbf ft)

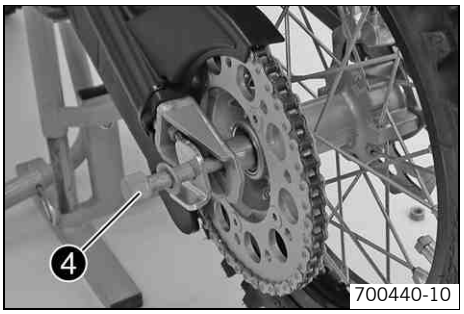
Info

If you hear different tone frequencies from different spokes, this is an indication of different spoke tensions.

Removing the rear wheel



– Jack up the motorcycle. (☛ p. 7)
– Remove nut ❶.
– Remove washer ❷ and chain adjuster ❸.



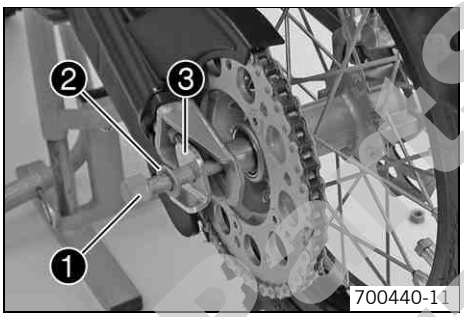
– Withdraw the wheel spindle ❹ only enough to allow the rear wheel to be pushed forward.
– Push the rear wheel forward as far as possible. Remove the chain from the rear sprocket.
– Holding the rear wheel, withdraw the wheel spindle. Take the rear wheel out of the swing arm.

Info
Do not operate the foot brake when the rear wheel is removed.
Always lay the wheel down in such a way that the brake disc is not damaged.

Installing the rear wheel

Warning
Danger of accidents Reduced braking due to oil or grease on the brake discs.

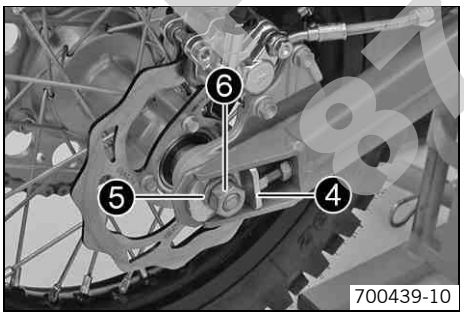
– Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.



– Clean and grease wheel spindle ❶.

Long-life grease (☛ p. 122)

– Lift the rear wheel into the swingarm, positioning it as far forward as possible, and place the chain on the rear sprocket.
– Insert the wheel spindle ❶ with washer ❷ and chain adjuster ❸.



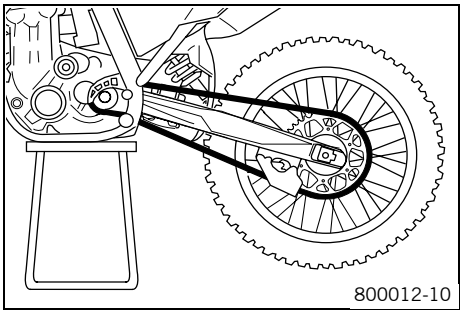
– Position chain adjuster ❹ and washer ❺. Mount nut ❻, but do not tighten it yet.
– Check chain tension when installing the rear wheel. (☛ p. 35)
– Make sure that the chain adjusters are fitted correctly on the adjusting screws.
– Tighten nut ❻.

Guideline

Nut, rear wheel spindle	M12x1	40 Nm (29.5 lbf ft)

– Operate the foot brake lever repeatedly until the brake linings lie on the brake disc and there is a pressure point.
– Remove the motorcycle from the work stand. (☛ p. 7)

Checking chain dirt



– Check the chain for coarse dirt accumulation.
  » If the chain is very dirty:
    – Clean the chain. (☛ p. 34)

Cleaning the chain

Warning
Danger of accidents Oil or grease on the tires reduces their grip.
– Remove oil and grease with a suitable cleaning material.

Warning
Danger of accidents Reduced braking due to oil or grease on the brake discs.
– Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.

Warning
Environmental hazard Problem materials cause environmental damage.
– Dispose of oil, grease, filters, fuel, cleaning substances, brake fluid, batteries, etc., according to regulations.

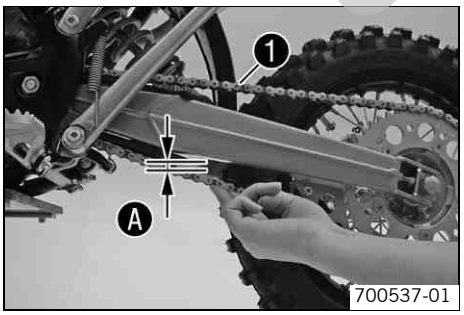
Info
The service life of the chain depends largely on its maintenance.

– Clean the chain regularly and then treat with chain spray.

Chain cleaner (☛ p. 122)
Offroad chain spray (☛ p. 123)

Checking the chain tension

Warning
Danger of accidents Danger caused by incorrect chain tension.
– If the chain tension is too high, the components of the secondary power train (chain, engine sprocket, rear sprocket, bearings in transmission and rear wheel) are under additional load. Apart from premature wear, in extreme cases the chain can rupture or the countershaft of the transmission can break. On the other hand, if the chain is loose, it can fall off the engine sprocket or the rear sprocket and block the rear wheel or damage the engine. Check for correct chain tension and adjust if necessary.



– Jack up the motorcycle. (☛ p. 7)
– Push the chain at the end of the chain sliding component upward to measure the chain tension Ⓐ.

Info
The upper chain section ❶ must be taut.
Because chain wear is not always even, repeat this measurement at different chain positions.

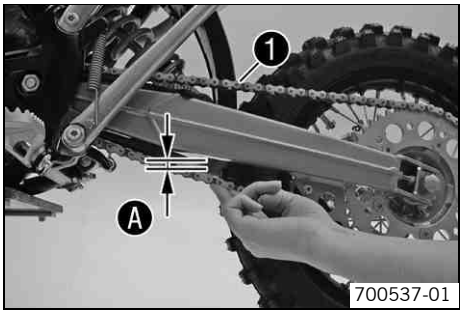
Chain tension	5... 8 mm (0.2... 0.31 in)

  » If the chain tension does not meet specifications:
    – Adjusting chain tension - after checking. (☛ p. 36)
– Remove the motorcycle from the work stand. (☛ p. 7)

Checking the chain tension - installing rear wheel

Warning
Danger of accidents Danger caused by incorrect chain tension.

– If the chain tension is too high, the components of the secondary power train (chain, engine sprocket, rear sprocket, bearings in transmission and rear wheel) are under additional load. Apart from premature wear, in extreme cases the chain can rupture or the countershaft of the transmission can break. On the other hand, if the chain is loose, it can fall off the engine sprocket or the rear sprocket and block the rear wheel or damage the engine. Check for correct chain tension and adjust if necessary.



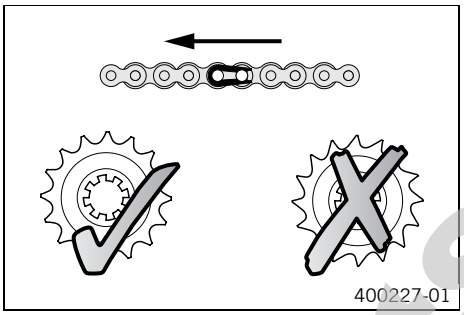
– Make sure that the chain adjusters are fitted correctly on the adjusting screws.
– Push the chain at the end of the chain sliding component upward to measure the chain tension Ⓐ.

Info
The upper chain section ❶ must be taut.
Because chain wear is not always even, repeat this measurement at different chain positions.

Chain tension	5... 8 mm (0.2... 0.31 in)

» If the chain tension does not meet specifications:
– Adjust the chain tension when installing the rear wheel. (☛ p. 36)

Checking rear sprocket / engine sprocket for wear



– Check rear sprocket / engine sprocket for wear.
» If the rear sprocket / engine sprocket are worn:
– Replace rear sprocket / engine sprocket.

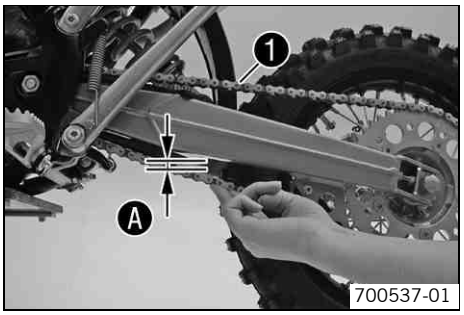
Info
When fitting the chain joint, always make sure that the closed side of the joint faces forward (riding direction).
The engine sprocket, rear sprocket and chain should always be replaced together.

– Check the chain guide for tightness and wear.

Adjusting the chain tension

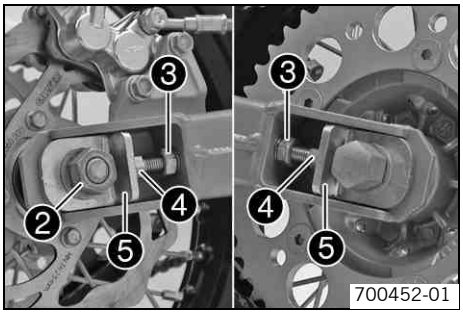
Warning
Danger of accidents Danger caused by incorrect chain tension.

– If the chain tension is too high, the components of the secondary power train (chain, engine sprocket, rear sprocket, bearings in transmission and rear wheel) are under additional load. Apart from premature wear, in extreme cases the chain can rupture or the countershaft of the transmission can break. On the other hand, if the chain is loose, it can fall off the engine sprocket or the rear sprocket and block the rear wheel or damage the engine. Check for correct chain tension and adjust if necessary.



– Jack up the motorcycle. (☛ p. 7)
– Push the chain at the end of the chain sliding component upward to measure the chain tension Ⓐ.

Info
The upper chain section ❶ must be taut.
Because chain wear is not always even, repeat this measurement at different chain positions.



– Loosen nut ❷.
– Loosen nuts ❸.
– Adjust the chain tension by turning the adjusting screws ❹ to the left and right.
Guideline

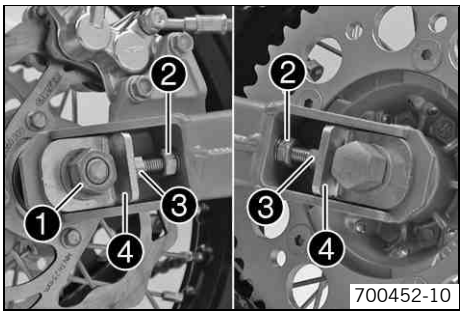
Chain tension	5... 8 mm (0.2... 0.31 in)
Turn adjusting screws ❹ equally on the left and right. Check that the rear wheel is aligned with the front wheel.	

– Tighten nuts ❸.
– Make sure that chain adjusters ❺ are fitted correctly on adjusting screws ❹.
– Tighten nut ❷.
Guideline

Nut, rear wheel spindle	M12x1	40 Nm (29.5 lbf ft)

– Remove the motorcycle from the work stand. (☛ p. 7)

Adjusting chain tension - after checking



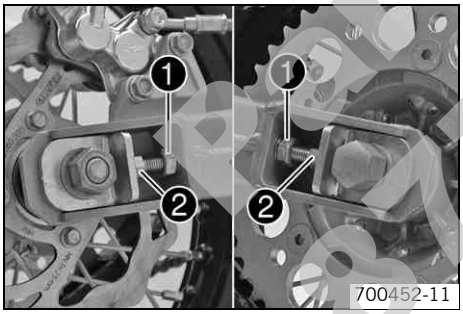
– Loosen nut ❶.
– Loosen nuts ❷.
– Adjust the chain tension by turning the adjusting screws ❸ left and right.
Guideline

Chain tension	5... 8 mm (0.2... 0.31 in)
Turn adjusting screws ❸ equally on the left and right. Check that the rear wheel is aligned with the front wheel.	

– Tighten nuts ❷.
– Make sure that the chain adjusters ❹ are fitted correctly on the adjusting screws ❸.
– Tighten nut ❶.
Guideline

Nut, rear wheel spindle	M12x1	40 Nm (29.5 lbf ft)

Adjusting chain tension - installing rear wheel



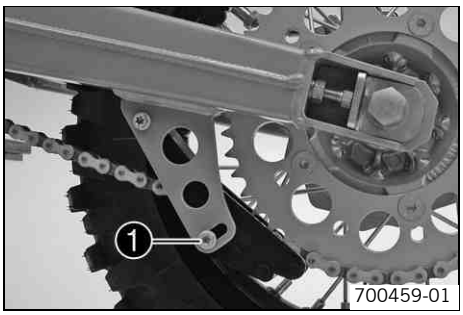
– Loosen nuts ❶.
– Adjust the chain tension by turning the adjusting screws ❷ left and right.
Guideline

Chain tension	5... 8 mm (0.2... 0.31 in)
Turn adjusting screws ❷ equally on the left and right. Check that the rear wheel is aligned with the front wheel.	

– Tighten nuts ❶.

Adjusting the chain guide

Info
The size of the chain wheel varies with the number of teeth. The chain guide can be adjusted on small sprockets.



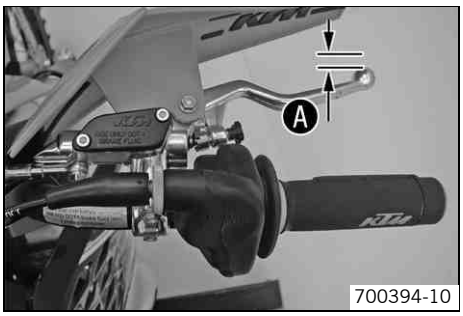
– Loosen screw ❶.
– Position the chain guide.
– Tighten screw.
Guideline

Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

Checking free play of hand brake lever

Warning
Danger of accidents Brake system failure.

– If there is no free travel on the hand brake lever, pressure builds up on the front brake in the brake system. The front brake can fail due to overheating. Adjust free travel on hand brake lever according to specifications.

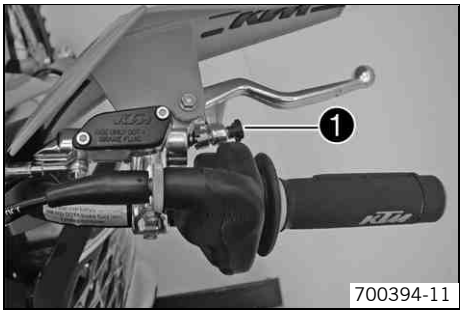


– Push the hand brake lever forwards and check free play. Ⓐ.

Free play of hand brake lever	≥ 3 mm (≥ 0.12 in)

» If the free travel does not meet specifications:
– Adjust the basic position of the handbrake lever. (☛ p. 37)

Adjusting basic position of handbrake lever



– Adjust the basic setting of the hand brake lever to the size of your child's hand by turning adjusting screw ❶.

Info
Turn the adjusting screw clockwise to increase the distance between the handbrake lever and the handlebar.
Turn the adjusting screw counterclockwise to decrease the distance between the handbrake lever and the handlebar.
The range of adjustment is limited.
Turn the adjusting screw by hand only, and do not apply any force.
Do not make any adjustments while riding!

– Check the free play of the hand brake lever. (☛ p. 37)

Checking the front brake fluid level

Warning
Danger of accidents Brake system failure.

– If the brake fluid level falls below the **MIN** mark, this indicates a leakage in the brake system or worn-out brake linings. Have the brake system checked in an authorized KTM workshop, and do not ride any further.

Warning
Skin irritations Brake fluid can cause skin irritation on contact.

– Avoid contact with skin and eyes, and keep out of the reach of children.
– If brake fluid gets into your eyes, rinse thoroughly with water and contact a doctor immediately.

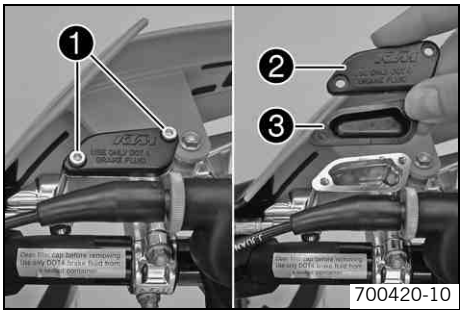
Warning
Danger of accidents Reduced braking due to old brake fluid.

– Have the front and rear brake fluid replaced according to the service plan in an authorized KTM workshop.

Warning
Environmental hazard Problem materials cause environmental damage.

– Dispose of oil, grease, filters, fuel, cleaning substances, brake fluid, batteries, etc., according to regulations.

Info
Never user DOT 5 brake fluid! This is based on silicone oil and is colored purple. Oil seals and brake lines are not designed for DOT 5 brake fluid.
Avoid contact between brake fluid and painted parts. Brake fluid attacks paint!
Use only clean brake fluid from a sealed container!



– Move the brake fluid reservoir mounted on the handlebar to a horizontal position.
– Remove screws ❶.
– Remove cover ❷ with diaphragm ❸.
– Check the brake fluid level.

Fluid level under top level of container	5 mm (0.2 in)

» If the brake fluid level does not meet specifications:
– Add front brake fluid. (☛ p. 38)
– Position the cover with the diaphragm. Mount and tighten the screws.

Info
Clean up overflowed or spilt brake fluid immediately with water.

Adding front brake fluid

Warning
Danger of accidents Brake system failure.

– If the brake fluid level falls below the **MIN** mark, this indicates a leakage in the brake system or worn-out brake linings. Have the brake system checked in an authorized KTM workshop, and do not ride any further.

Warning
Skin irritations Brake fluid can cause skin irritation on contact.

– Avoid contact with skin and eyes, and keep out of the reach of children.
– If brake fluid gets into your eyes, rinse thoroughly with water and contact a doctor immediately.

Warning
Danger of accidents Reduced braking due to old brake fluid.

– Have the front and rear brake fluid replaced according to the service plan in an authorized KTM workshop.

Warning
Environmental hazard Problem materials cause environmental damage.

– Dispose of oil, grease, filters, fuel, cleaning substances, brake fluid, batteries, etc., according to regulations.

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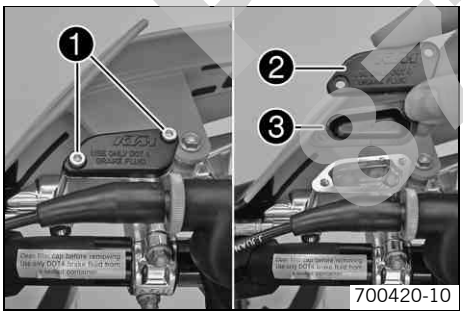
Use only clean brake fluid from a sealed container!



– Move the brake fluid reservoir mounted on the handlebar to a horizontal position.
– Remove screws ❶.
– Remove cover ❷ with diaphragm ❸.
– Correct the brake fluid level.
Guideline

Brake fluid level under top level of container	5 mm (0.2 in)

Brake fluid DOT 4 / DOT 5.1 (☛ p. 120)

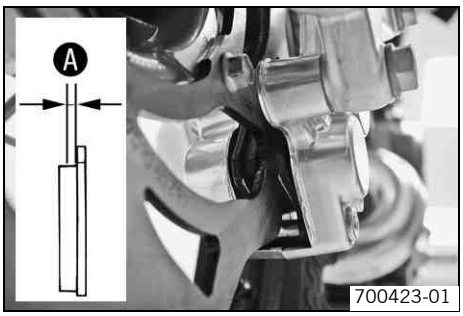
– Position the cover with the diaphragm. Mount and tighten the screws.

Info
Clean up overflowed or spilt brake fluid immediately with water.

Checking the front brake linings

Warning
Danger of accidents Reduced braking due to worn brake linings.

– Worn brake linings should be replaced immediately in an authorized KTM workshop.



– Check the brake linings for minimum thickness Ⓐ.

Minimum thickness Ⓐ	≥ 1 mm (≥ 0.04 in)

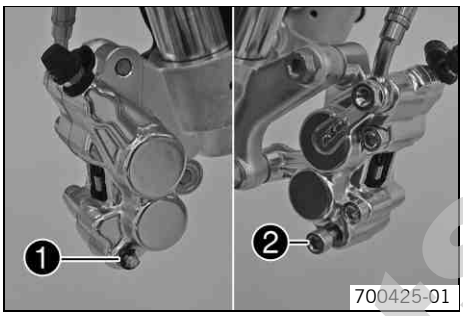
» If the minimum thickness is less than specified:
– Change the front brake linings. (☛ p. 40)

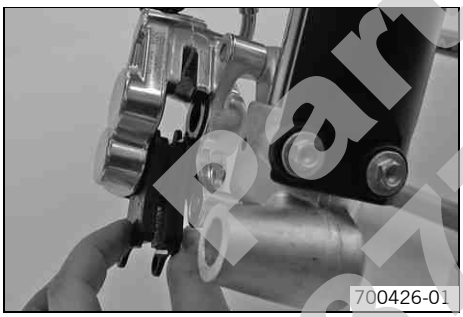
Removing front brake linings

Warning
Danger of accidents Improper brake maintenance and repair.

– Always have your brake system maintained and repaired in an authorized KTM workshop.

– Remove the front wheel. (☛ p. 30)
– Remove the lock washer ❶.
– Remove screw ❷.





– Remove the brake linings.
– Clean brake caliper and brake caliper support.

Installing the front brake linings

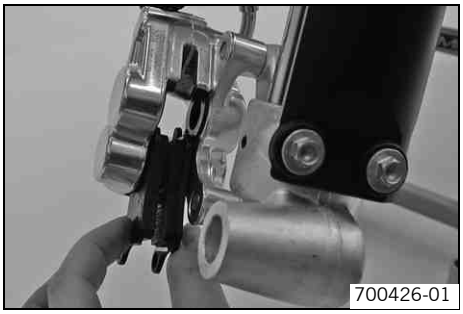
Warning
Danger of accidents Reduced braking due to oil or grease on the brake discs.

– Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.

Warning
Danger of accidents Reduced braking due to use of non-approved brake linings.

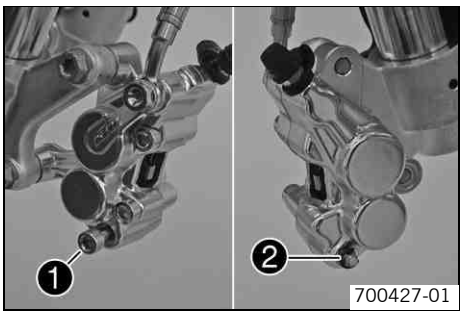
– Brake linings available from accessory suppliers are often not tested and approved for use on KTM vehicles. The construction and friction factor of the brake linings and therefore the brake power can differ considerably from the original KTM brake linings. If brake linings are used that differ from the originals, there is no guarantee that they comply with the original license. The vehicle no longer corresponds to the condition at delivery, and the warranty is no longer valid.

– Check the brake discs. (☛ p. 31)


700426-01

– Insert the brake linings.

Info
Ensure that the brake linings are correctly positioned in the holding spring.



700427-01

– Mount and tighten screw ❶.
– Mount lock washer ❷.
– Operate the hand brake lever repeatedly until the brake linings lie on the brake disc and there is a tight spot.

Changing the front brake linings

Warning
Skin irritations Brake fluid can cause skin irritation on contact.

– Avoid contact with skin and eyes, and keep out of the reach of children.
– If brake fluid gets into your eyes, rinse thoroughly with water and contact a doctor immediately.

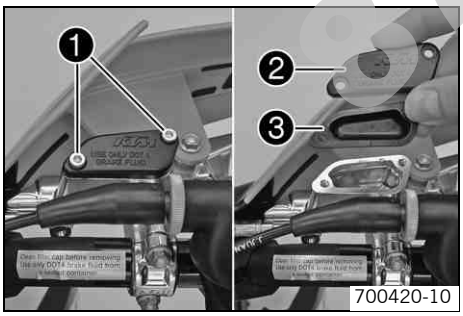
Warning
Danger of accidents Reduced braking due to old brake fluid.

– Have the front and rear brake fluid replaced according to the service plan in an authorized KTM workshop.

Warning
Environmental hazard Problem materials cause environmental damage.

– Dispose of oil, grease, filters, fuel, cleaning substances, brake fluid, batteries, etc., according to regulations.

Info
Never user DOT 5 brake fluid! This is based on silicone oil and is colored purple. Oil seals and brake lines are not designed for DOT 5 brake fluid.
Avoid contact between brake fluid and painted parts. Brake fluid attacks paint!
Use only clean brake fluid from a sealed container!



700420-10

– Remove the front brake linings. (☛ p. 39)
– Move the brake fluid reservoir mounted on the handlebar to a horizontal position.
– Remove screws ❶.
– Remove cover ❷ with diaphragm ❸.
– Press the brake piston back to its basic position and make sure that no brake fluid overflows from the brake fluid reservoir.
– Install the front brake linings. (☛ p. 39)
– Correct the brake fluid level.

Guideline

Brake fluid level under top level of container	5 mm (0.2 in)

Brake fluid DOT 4 / DOT 5.1 (☛ p. 120)

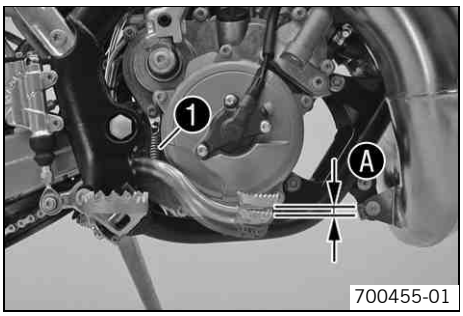
– Position the cover with the diaphragm. Mount and tighten the screws.

Info
Clean up overflowed or spilt brake fluid immediately with water.

Checking the free travel of the foot brake lever

Warning
Danger of accidents Brake system failure.

– If there is no free travel on the foot brake pedal, pressure builds up on the rear brake in the brake system. The rear brake can fail due to overheating. Adjust free travel on foot brake pedal according to specifications.



– Disconnect spring ❶.
– Move the foot brake lever backwards and forwards between the end stop and the foot brake cylinder piston bracket and check free travel Ⓐ.

Guideline

Free play at foot brake lever	3... 5 mm (0.12... 0.2 in)

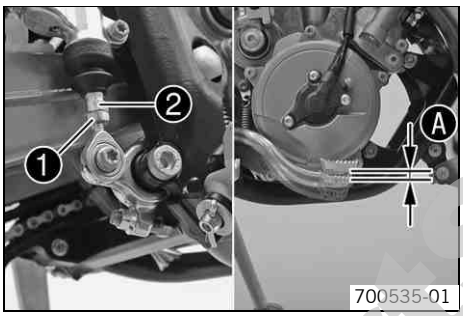
» If the free travel does not meet specifications:
– Adjust the free travel of the foot brake pedal. (☛ p. 41)

– Attach spring ❶.

Adjusting the free travel of the foot brake pedal

Warning
Danger of accidents Brake system failure.

– If there is no free travel on the foot brake pedal, pressure builds up on the rear brake in the brake system. The rear brake can fail due to overheating. Adjust free travel on foot brake pedal according to specifications.



– Detach the spring.
– Loosen nut ❶.
– Turn back push rod ❷ until free travel is at a maximum.

Guideline

Free play at foot brake lever	3... 5 mm (0.12... 0.2 in)

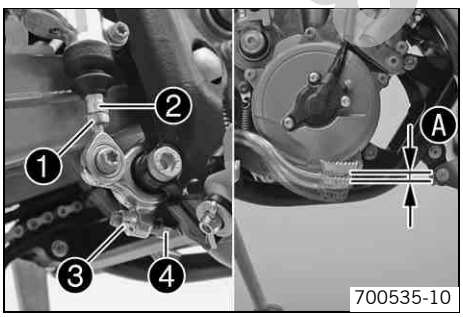
– Hold push rod ❷ and tighten nut ❶.
– Attach the spring.
– Check whether the basic position of the foot brake lever is suitable for your child.

» If the basic position of the foot brake pedal needs to be adjusted:
– Adjust the basic position of the foot brake pedal. (☛ p. 41)

Adjusting the basic position of the foot brake pedal

Warning
Danger of accidents Brake system failure.

– If there is no free travel on the foot brake pedal, pressure builds up on the rear brake in the brake system. The rear brake can fail due to overheating. Adjust free travel on foot brake pedal according to specifications.



– Detach the spring.
– Loosen nut ❶.
– Turn back push rod ❷.
– Loosen nut ❸.
– To adjust the basic position of the foot brake lever, turn screw ❹ accordingly.

Info
The range of adjustment is limited.

– Hold screw ❹ and tighten nut ❸.

Guideline

Remaining nuts, chassis	M8	30 Nm (22.1 lbf ft)

– Check the free travel of the foot brake lever. (☛ p. 41)
Guideline

Free play at foot brake lever	3... 5 mm (0.12... 0.2 in)

» If the free travel at the foot brake pedal does not meet specifications:
– Adjust the free travel of the foot brake pedal. (☛ p. 41)

– Attach spring ❶.

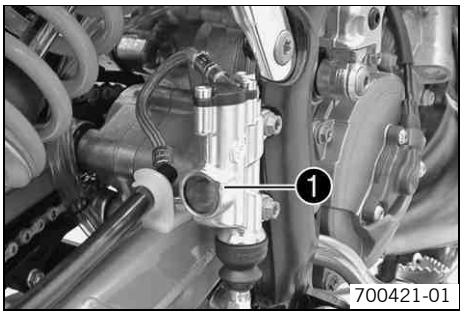
Checking rear brake fluid level

Warning
Danger of accidents Brake system failure.

– If the brake fluid level falls below the **MIN** mark, this indicates a leakage in the brake system or worn-out brake linings. Have the brake system checked in an authorized KTM workshop, and do not ride any further.

Warning
Danger of accidents Reduced braking due to old brake fluid.

– Have the front and rear brake fluid replaced according to the service plan in an authorized KTM workshop.



– Stand the vehicle upright.
– Check the brake fluid level in the viewer ❶.
» When in the viewer ❶ an air bubble is visible:
– Add rear brake fluid. (☛ p. 42)

Adding rear brake fluid

Warning
Danger of accidents Brake system failure.

– If the brake fluid level falls below the **MIN** mark, this indicates a leakage in the brake system or worn-out brake linings. Have the brake system checked in an authorized KTM workshop, and do not ride any further.

Warning
Skin irritations Brake fluid can cause skin irritation on contact.

– Avoid contact with skin and eyes, and keep out of the reach of children.
– If brake fluid gets into your eyes, rinse thoroughly with water and contact a doctor immediately.

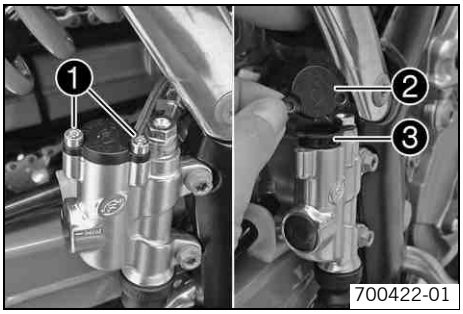
Warning
Danger of accidents Reduced braking due to old brake fluid.

– Have the front and rear brake fluid replaced according to the service plan in an authorized KTM workshop.

Warning
Environmental hazard Problem materials cause environmental damage.

– Dispose of oil, grease, filters, fuel, cleaning substances, brake fluid, batteries, etc., according to regulations.

Info
Never user DOT 5 brake fluid! This is based on silicone oil and is colored purple. Oil seals and brake lines are not designed for DOT 5 brake fluid.
Avoid contact between brake fluid and painted parts. Brake fluid attacks paint!
Use only clean brake fluid from a sealed container!



– Jack up the motorcycle. (☛ p. 7)
– Remove screws ❶.
– Remove the cover with O-ring ❷ and membrane ❸.
– Add brake fluid to the top edge of the level viewer.

Brake fluid DOT 4 / DOT 5.1 (☛ p. 120)

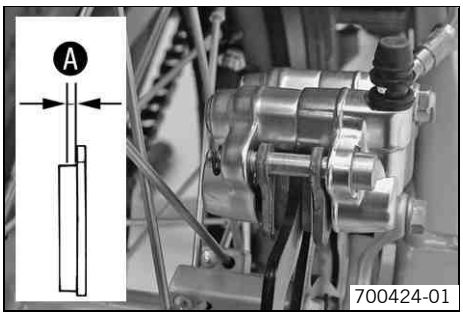
– Position the cover with the O-ring and membrane.

Info
Clean up overflowed or spilt brake fluid immediately with water.

– Mount and tighten the screws.

Checking rear brake linings

Warning
Danger of accidents Reduced braking due to worn brake linings.
– Worn brake linings should be replaced immediately in an authorized KTM workshop.



– Check the brake linings for minimum thickness ❹.

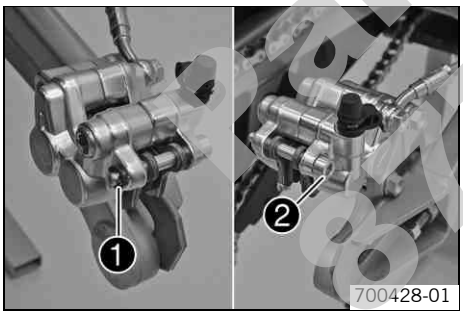
Minimum thickness ❹	≥ 1 mm (≥ 0.04 in)

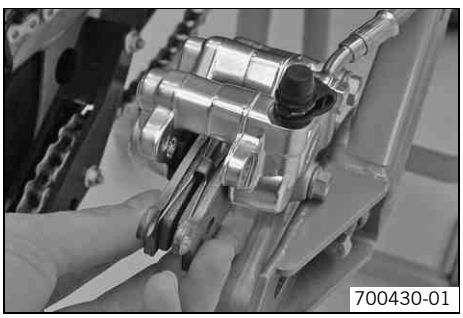
» If the minimum thickness is less than specified:
– Change the rear brake linings. (☛ p. 44)

Removing rear brake linings

Warning
Danger of accidents Improper brake maintenance and repair.
– Always have your brake system maintained and repaired in an authorized KTM workshop.

– Remove the rear wheel. (☛ p. 33)
– Remove lock washer ❶.
– Remove screw ❷.





– Remove the brake linings.
– Clean brake caliper and brake caliper support.

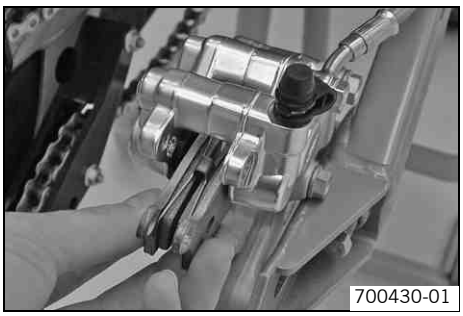
Installing the rear brake linings

Warning
Danger of accidents Reduced braking due to oil or grease on the brake discs.

– Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.

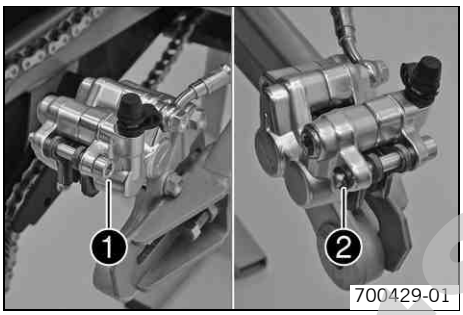
Warning
Danger of accidents Reduced braking due to use of non-approved brake linings.

– Brake linings available from accessory suppliers are often not tested and approved for use on KTM vehicles. The construction and friction factor of the brake linings and therefore the brake power can differ considerably from the original KTM brake linings. If brake linings are used that differ from the originals, there is no guarantee that they comply with the original license. The vehicle no longer corresponds to the condition at delivery, and the warranty is no longer valid.


700430-01

– Check the brake discs. (☛ p. 31)
– Insert the brake linings.

Info
Ensure that the brake linings are correctly positioned in the holding spring.



700429-01

– Mount screw ❶.
– Mount lock washer ❷.
– Install the rear wheel. (☛ p. 33)
– Operate the foot brake lever repeatedly until the brake linings lie on the brake disc and there is a pressure point.

Changing the rear brake linings

Warning
Skin irritations Brake fluid can cause skin irritation on contact.

– Avoid contact with skin and eyes, and keep out of the reach of children.
– If brake fluid gets into your eyes, rinse thoroughly with water and contact a doctor immediately.

Warning
Danger of accidents Reduced braking due to old brake fluid.

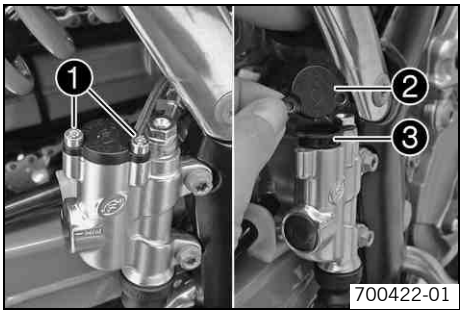
– Have the front and rear brake fluid replaced according to the service plan in an authorized KTM workshop.

Warning
Environmental hazard Problem materials cause environmental damage.

– Dispose of oil, grease, filters, fuel, cleaning substances, brake fluid, batteries, etc., according to regulations.

Info
Never user DOT 5 brake fluid! This is based on silicone oil and is colored purple. Oil seals and brake lines are not designed for DOT 5 brake fluid.
Avoid contact between brake fluid and painted parts. Brake fluid attacks paint!
Use only clean brake fluid from a sealed container!

– Remove the rear brake linings. (☛ p. 43)



– Stand the vehicle upright.
– Remove screws ❶.
– Remove cover ❷ with the O-ring and diaphragm ❸.
– Press the brake piston back to its basic position and make sure that no brake fluid overflows from the brake fluid reservoir.
– Install the rear brake linings. (☛ p. 44)
– Add brake fluid to the top edge of the level viewer.

Brake fluid DOT 4 / DOT 5.1 (☛ p. 120)

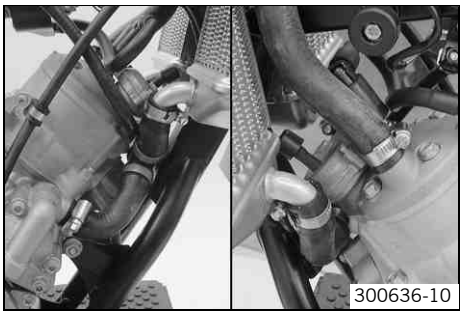
– Position the cover with the O-ring and diaphragm.

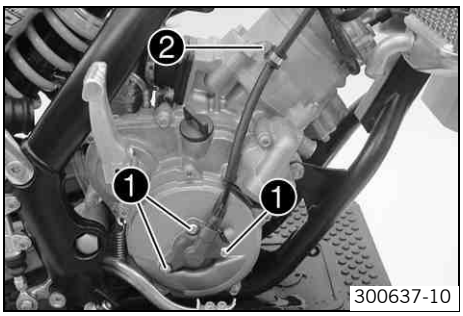
Info
Clean up overflowed or spilt brake fluid immediately with water.

– Mount and tighten the screws.

Removing the engine

– Jack up the motorcycle. (☛ p. 7)
– Dismount the fuel tank. (☛ p. 25)
– Drain the coolant. (☛ p. 96)
– Remove the exhaust manifold. (☛ p. 21)
– Loosen the hose clamps. Detach the radiator hoses.

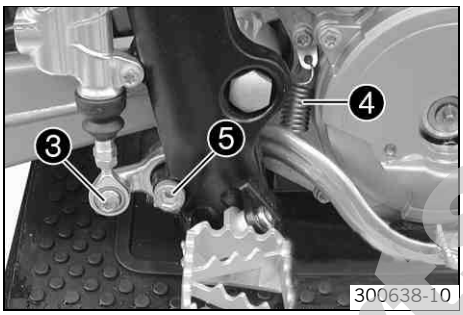

300636-10



300637-10

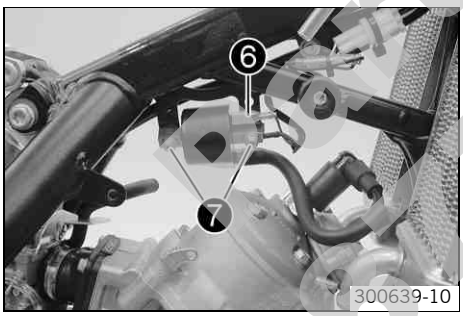
– Remove screws ❶.
– Remove screw ❷.
– Remove the clutch slave cylinder and hang it to one side.

Info
Do not kink the clutch line.
Do not activate the clutch lever while the clutch slave cylinder is not installed.



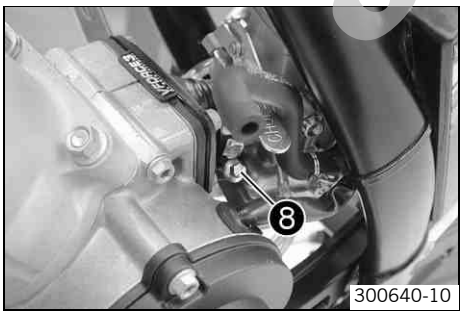
300638-10

– Remove screw ❸.
– Disconnect spring ❹.
– Remove screw ❺.
– Maneuver the foot brake pedal out toward the rear.



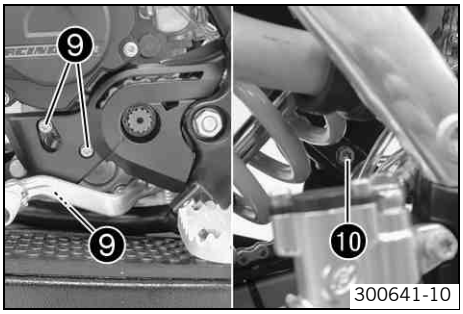
300639-10

– Pull off the spark plug connector.
– Disconnect plug-in connector ❻.
– Remove screws ❼.
– Take off the ignition coil.

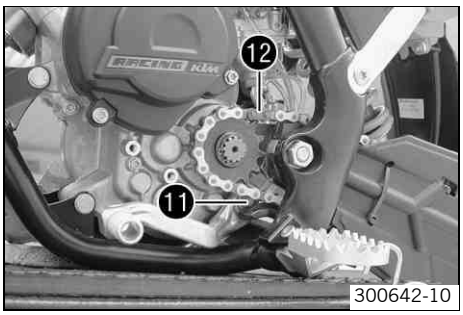


300640-10

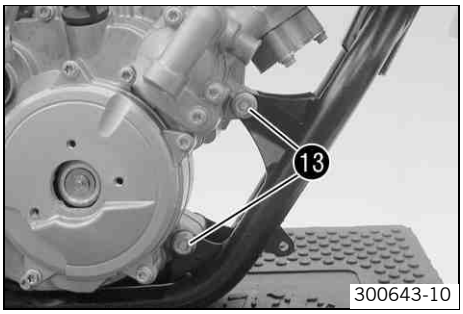
– Unscrew hose clip ❽.
– Pull the carburetor out of the intake flange toward the rear.



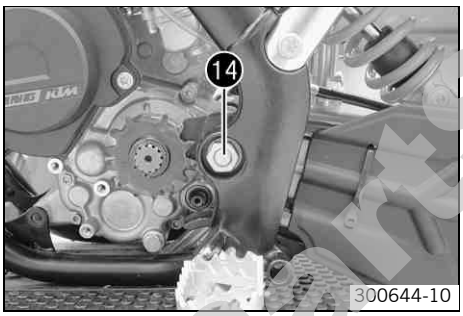
– Remove screws ❾.
– Remove screw ❿.
– Take off the engine sprocket cover.



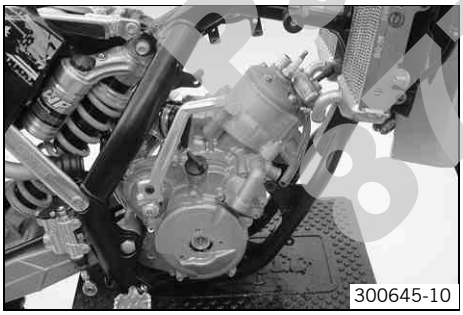
– Remove screw ⓫.
– Take off the shift lever.
– Remove connecting link ⓬ of the chain.
– Remove the chain.



– Remove nuts ⓭.
– Remove both screws.



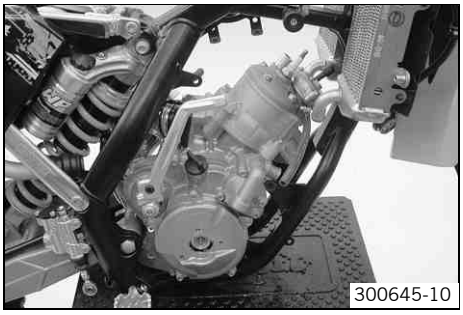
– Remove nut ⓮.
– Remove the swingarm pivot.



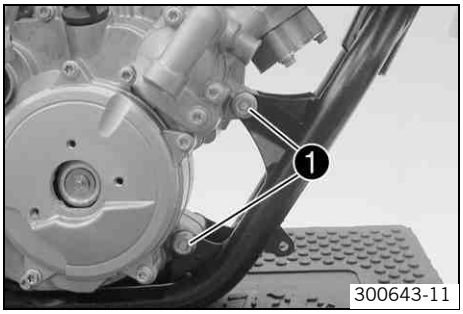
– Lift out the engine from the side.

Info
Pull the link fork back slightly.
It is useful to have an assistant help you with this step.
Ensure that the motorcycle is well-secured against falling over.
Protect the frame and attachments against damage.

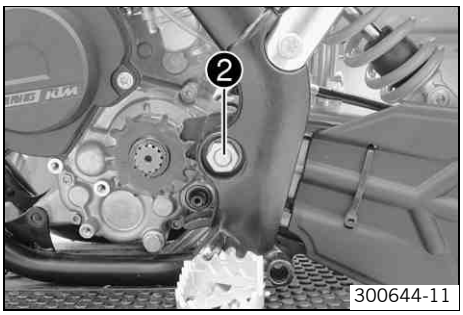
Installing the engine



– Position the engine in the frame.
– Mount the swingarm pivot.



– Mount the screws with nuts ❶, but do not tighten them yet.



– Mount and tighten nut ❷.

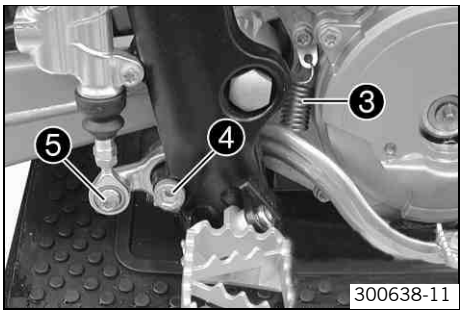
Guideline

Nut, swingarm pivot	M12x1	40 Nm (29.5 lbf ft)

– Tighten nuts ❶.

Guideline

Screw, engine bracket	M8	30 Nm (22.1 lbf ft)



– Position the foot brake pedal.
– Attach spring ❸.
– Mount and tighten screw ❹.

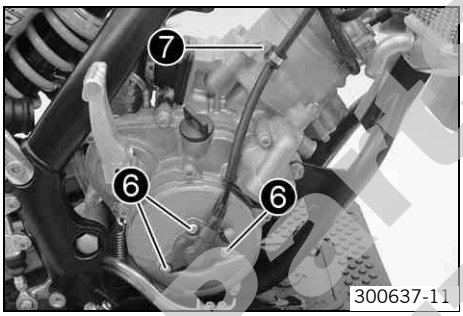
Guideline

Screw, foot brake pedal	M8	25 Nm (18.4 lbf ft)

– Mount and tighten screw ❺.

Guideline

Screw, ball joint, push rod on footbrake cylinder	M6	10 Nm (7.4 lbf ft)



– Position the clutch slave cylinder with the seal.
– Mount and tighten screws ❻.

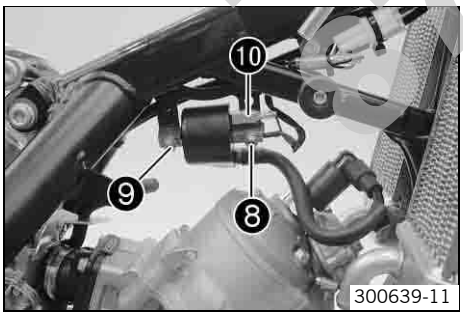
Guideline

Screw, clutch slave cylinder	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**

– Position the clutch line with the holder.
– Mount and tighten screw ❼.

Guideline

Screw, clutch line holder	M5	5 Nm (3.7 lbf ft)	**Loctite® 243™**



– Position the ignition coil.
– Mount and tighten screw ❽ with the ground wire.

Guideline

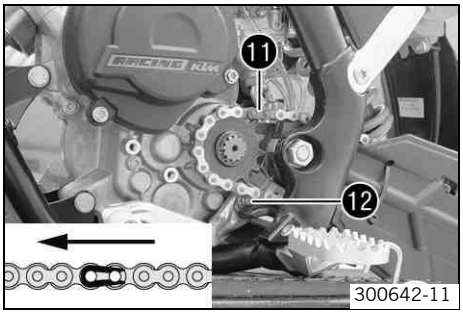
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

– Mount and tighten screws ❾.

Guideline

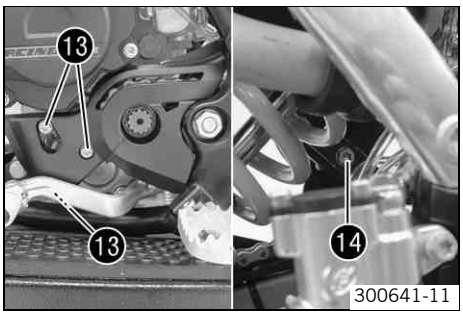
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

– Connect the plug-in connectors ❿.
– Mount the spark plug connector.



– Mount the chain.
– Connect the chain with connecting link ⓫.
– Position the shift lever.
– Mount and tighten screw ⓬ with the washers.
Guideline

Screw, shift lever	M6	14 Nm (10.3 lbf ft)	**Loctite® 243™**

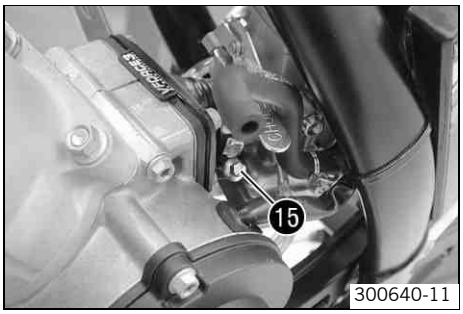


– Position the engine sprocket cover.
– Mount and tighten screw ⓭.
Guideline

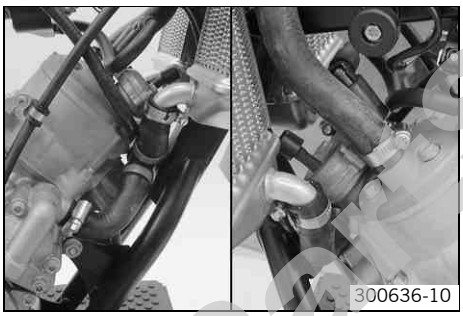
Screw, engine sprocket cover	M6	10 Nm (7.4 lbf ft)

– Mount and tighten screw ⓮.
Guideline

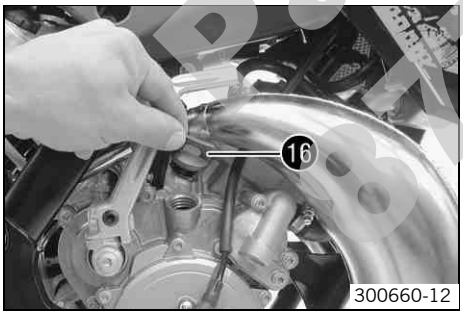
Remaining screws, chassis	M8	25 Nm (18.4 lbf ft)



– Slide the carburetor into the intake flange.
– Position and tighten hose clamp ⓯.



– Mount the radiator hoses. Position and tighten the hose clamps.
– Install the exhaust manifold. (☛ p. 21)

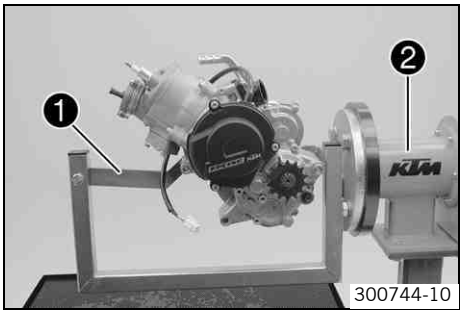


– Remove screw cap ⓰ and fill up with gear oil.

Gear oil	0.50 l (0.53 qt.)	Engine oil (15W/50) (☛ p. 120)

– Mount and tighten screw cap ⓰.
– Refill the coolant. (☛ p. 96)
– Install the fuel tank. (☛ p. 26)
– Remove the motorcycle from the work stand. (☛ p. 7)
– Make a short test ride.
– Check the engine for leakage.
– Check the gear oil level. (☛ p. 99)
– Check the coolant level. (☛ p. 97)

Clamping the engine into the engine work stand



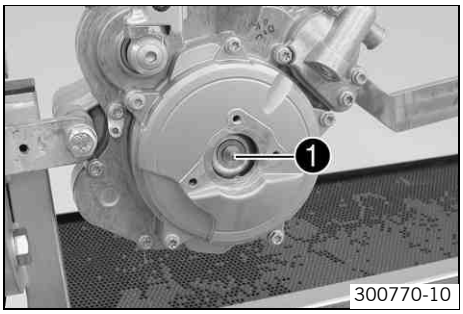
– Mount special tool ❶ on engine work stand ❷.

Engine work stand (61229001000) (☛ p. 128)
Holder of engine work stand (46229001070) (☛ p. 124)

– Mount the engine.

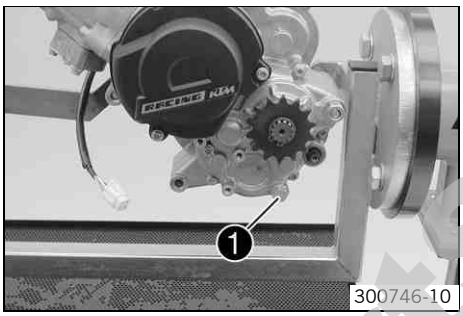
Screw connection for engine work stand (46229001060) (☛ p. 124)

Removing the clutch pressure piece



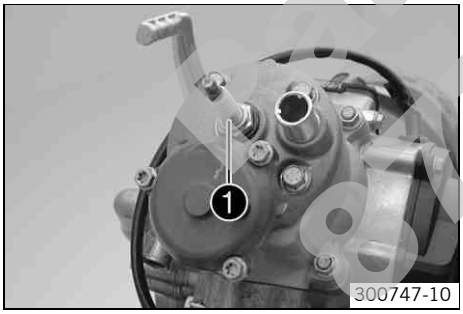
– Remove the clutch pressure piece ❶.

Removing the oil drain plug



– Remove the oil drain plug with magnet ❶ and the seal ring.
– Completely drain the gear oil.

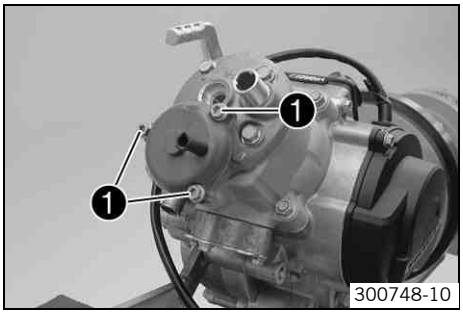
Removing the spark plug



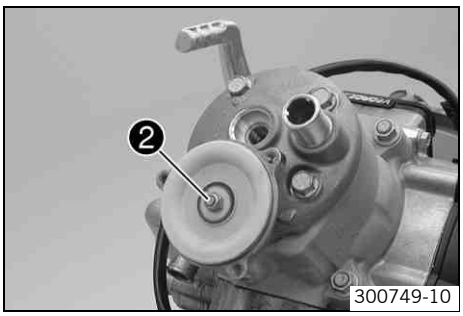
– Remove spark plug ❶.

Spark plug wrench (60029073000) (☛ p. 128)

Removing the exhaust control



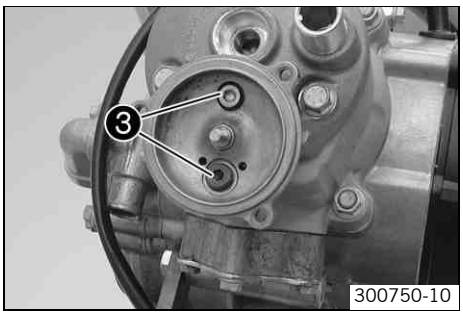
– Remove screws ❶.
– Take off the diaphragm cover of the exhaust control.



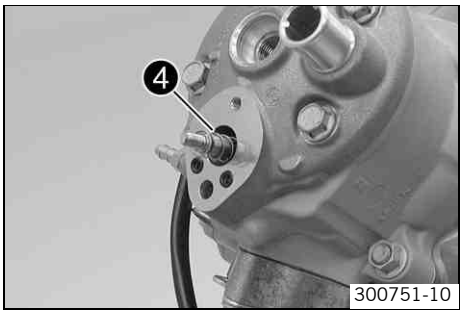
– Remove nut ❷.

Info
If the shaft of the exhaust control turns, raise the diaphragm and hold the shaft in place.

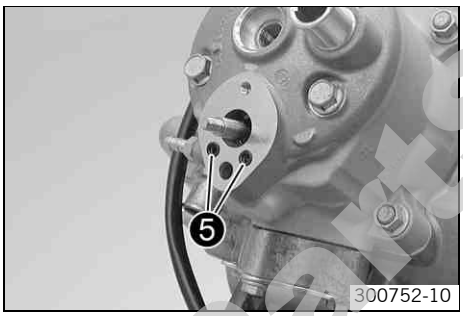
– Remove the diaphragm.



– Remove screws ❸.
– Remove the reed valve housing of the exhaust control.

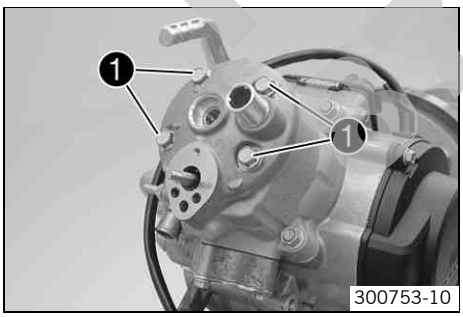


– Remove spring ❹.

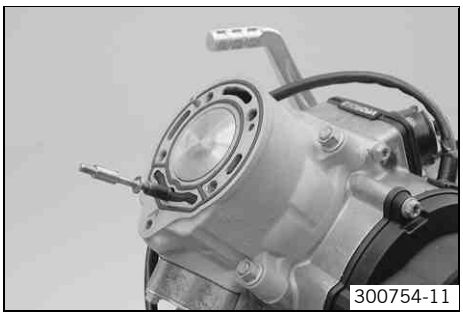


– Remove O-rings ❺.

Removing the cylinder head

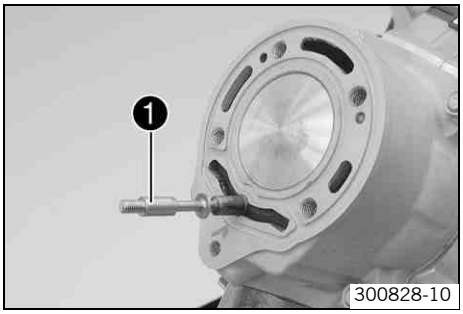


– Alternately loosen screws ❶ and remove them.
– Take off the cylinder head.



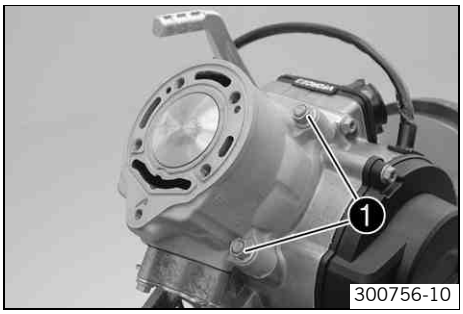
– Remove the cylinder head gasket.
– Remove the dowel pins.

Removing the exhaust control valve



– Remove exhaust control valve ❶.

Removing the cylinder

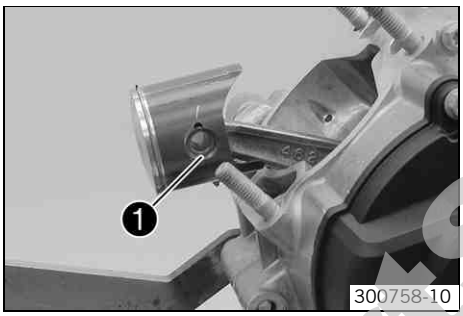


– Remove nuts ❶ on both sides.

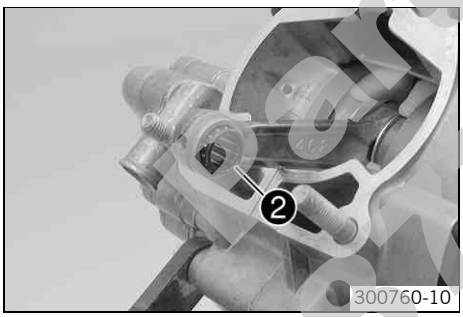
Info
Be careful not to misplace the clutch line holder.

– Carefully slide the cylinder up and take it off.
– Take off the cylinder base gasket.
– Remove the dowels.

Removing the piston

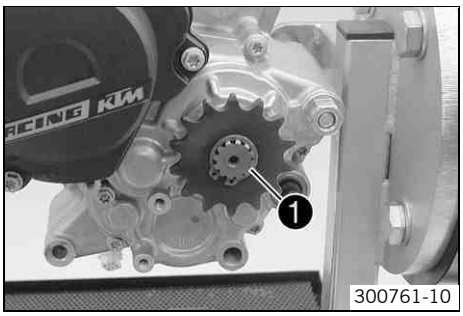


– Remove piston pin retainer ❶.
– Remove the piston pin.
– Take off the piston.



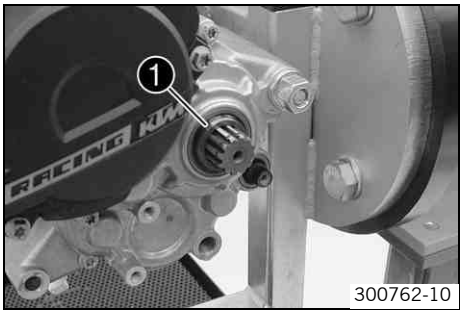
– Remove the upper conrod bearing ❷.

Removing the engine sprocket

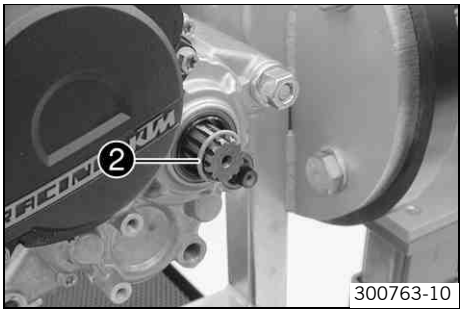


– Remove lock ring ❶. Take off the engine sprocket.

Removing the distance bushing

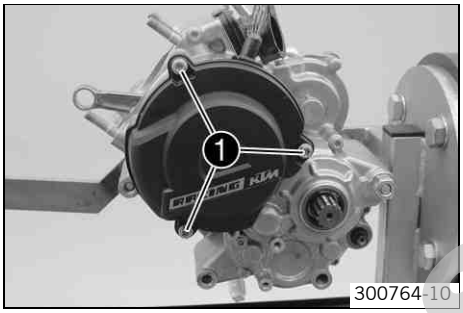


– Remove distance bushing ❶ of the countershaft.



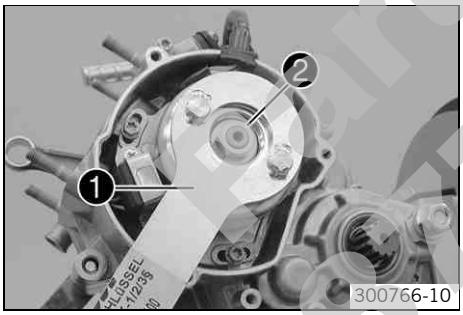
– Remove O-ring ❷.

Removing the generator cover



– Remove screws ❶. Remove the generator cover.
– Remove the gasket.

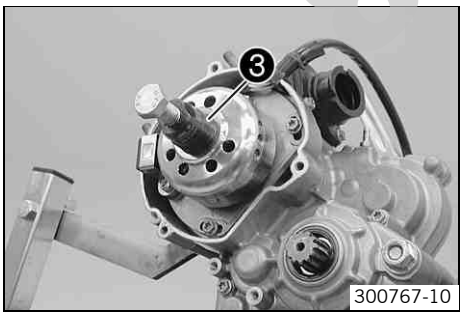
Removing the rotor



– Hold the rotor in place with special tool ❶.

Holding spanner (54629012100) (☛ p. 127)

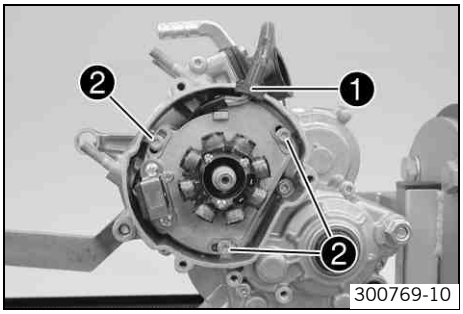
– Remove nut ❷ with the washer.



– Mount special tool ❸, apply counterpressure, and pull off the rotor by screwing in the screw.

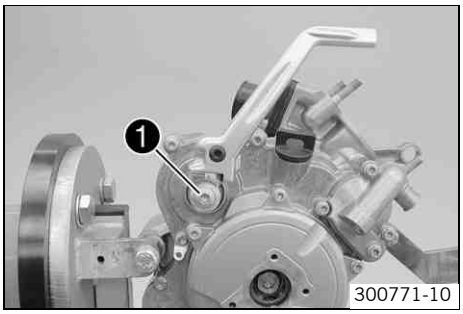
Extractor (54629009044) (☛ p. 127)

Removing the stator



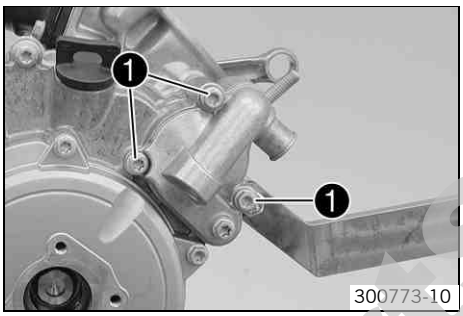
– Remove cable support sleeve ❶ out of the engine case.
– Remove screw ❷.
– Take out the stator.

Removing the kickstarter



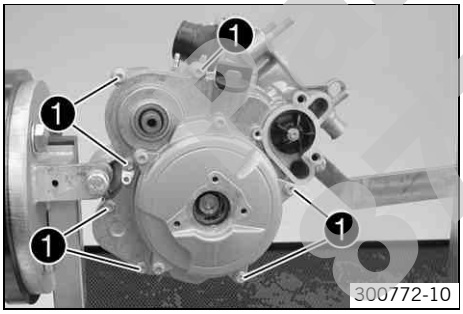
– Remove screw ❶ with the washer.
– Take off the kickstarter.

Removing the water pump cover



– Remove screws ❶.
– Take off the water pump cover.
– Remove the gasket and dowels.

Removing the clutch cover

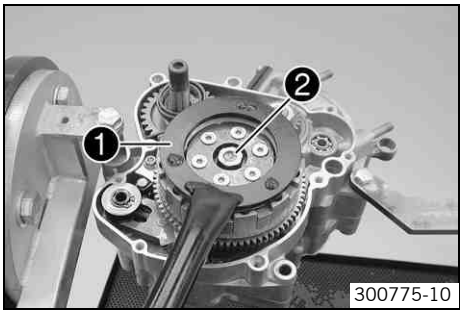


– Remove screws ❶. Take off the clutch cover.

Info
Ensure that the kickstarter shaft remains in the engine case.

– Remove the dowels and clutch cover gasket.

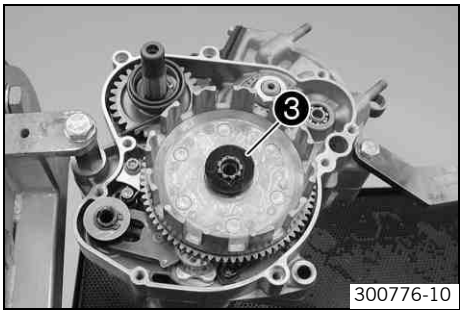
Removing the outer clutch hub



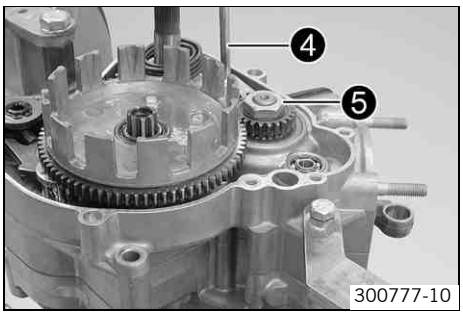
– Hold the clutch in place with special tool ❶.

Clutch holder (49012003000) (☛ p. 126)

– Remove screw ❷.
– Remove the clutch pack.



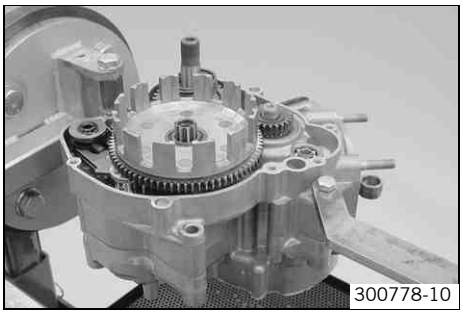
– Remove washer ❸.



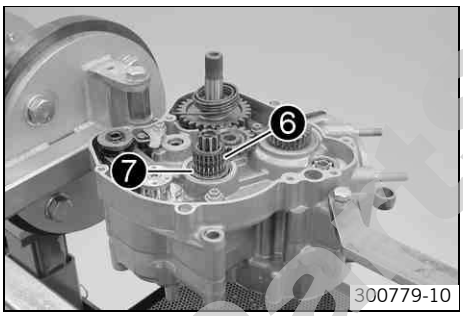
– Hold the outer clutch hub in place with special tool ❹.

Gear segment (46229081000) (☛ p. 125)

– Loosen nut ❺ of the primary gear and remove it with the washer.

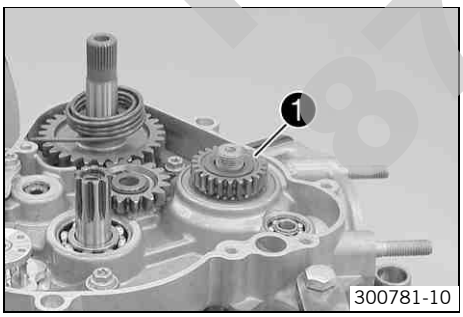


– Take off the outer clutch hub.



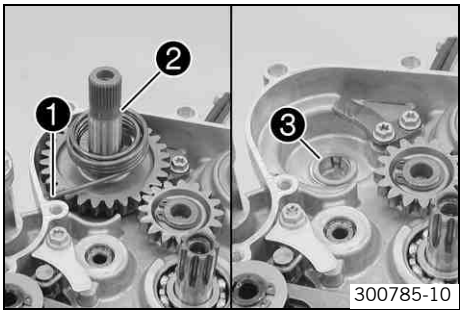
– Remove needle bearing ❻ and collar bushing ❼.

Removing the primary gear



– Take off primary gear ❶.
– Remove the spring washer.
– Remove the washer.

Removing the kickstarter shaft

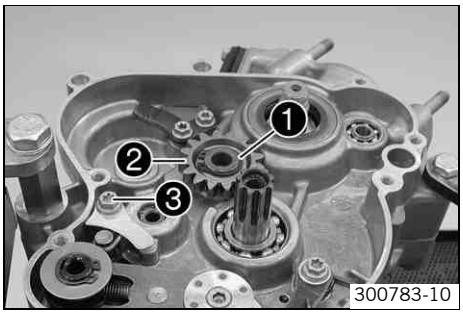


– Detach kickstarter spring ❶.
– Remove kickstarter shaft ❷.

Info
Turn the kickstarter shaft slightly to the left.

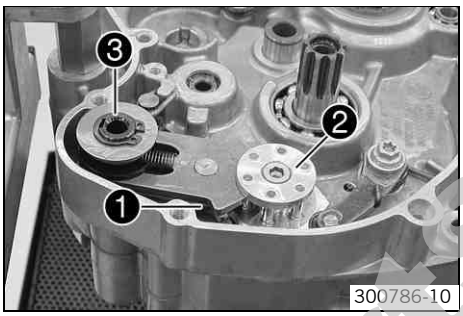
– Remove washer ❸.

Removing the intermediate kickstarter gear



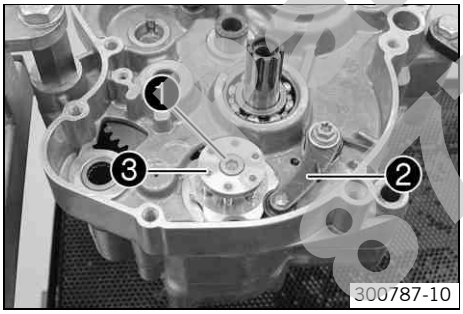
– Remove lock ring ❶.
– Take off intermediate kickstart gear ❷ with the washer.
– Remove screw ❸.
– Remove the retaining bracket.

Removing the shift shaft



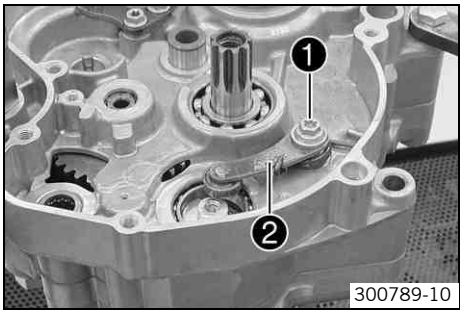
– Push sliding plate ❶ away from the shift drum locating ❷. Remove shift shaft ❸ with the washer.

Removing the shift drum locating



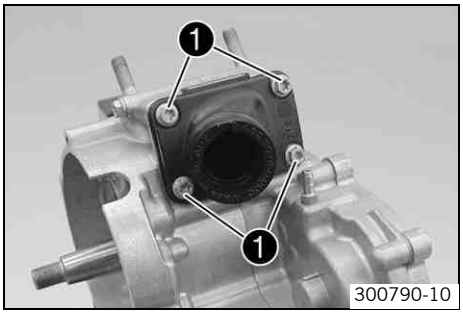
– Remove screw ❶.
– Press locking lever ❷ away from shift drum locating ❸ and take off the shift drum locating.
– Release the locking lever.

Removing the locking lever

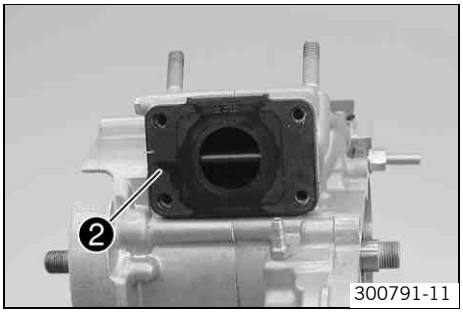


– Remove screw ❶.
– Take off locking lever ❷ with the sleeve and spring.

Removing the reed valve housing

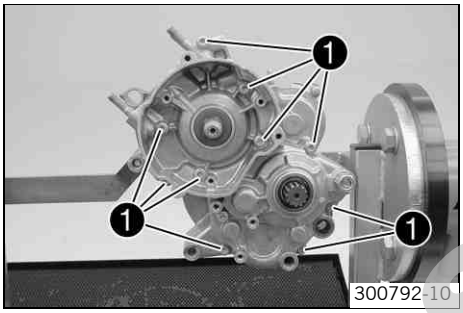


– Remove screws ❶.
– Take off the intake flange.

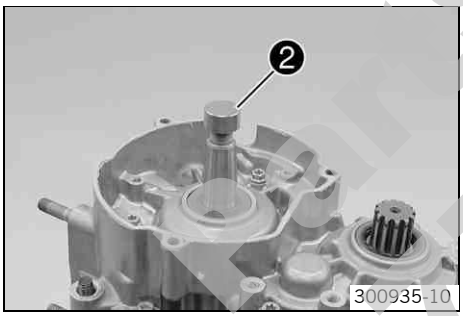


– Remove reed valve housing ❷.
– Remove the gasket.

Removing the left engine case section

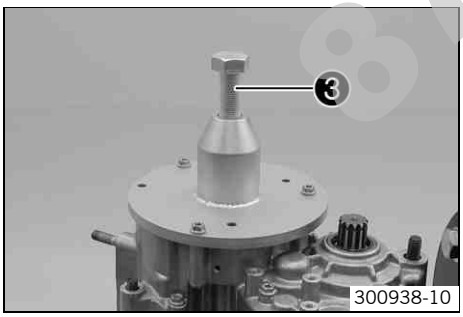


– Remove screws ❶.
– Swing the left section of the engine case up and remove the screw connection of the engine holder.



– Mount special tool ❷.

Protective cap (46229090000) (☛ p. 126)



– Mount the special tool.

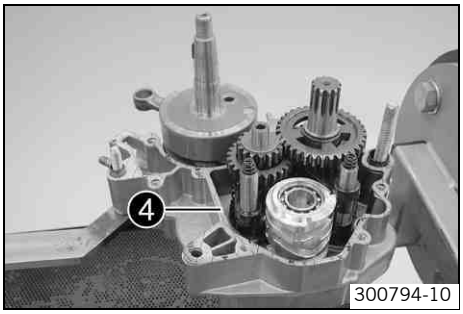
Extractor (45229048000) (☛ p. 124)

Info
Use the hole labeled **462**.

– Separate the engine case sections by screwing in screw ❸.

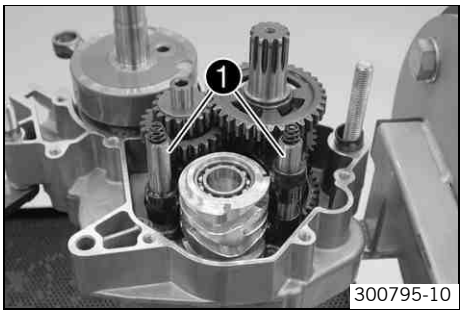
Info
Ensure that the engine case section is raised evenly.

– Take off the left section of the engine case.
– Remove the special tools.



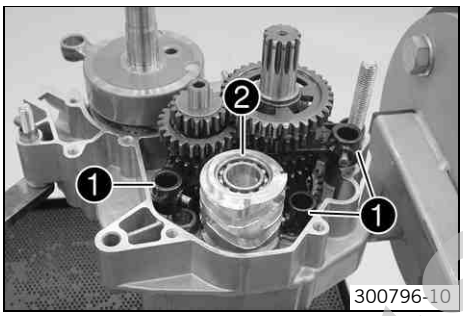
– Remove engine case gasket ❹.

Removing the shift rails



– Remove shift rails ❶ with the springs.

Removing the shift drum

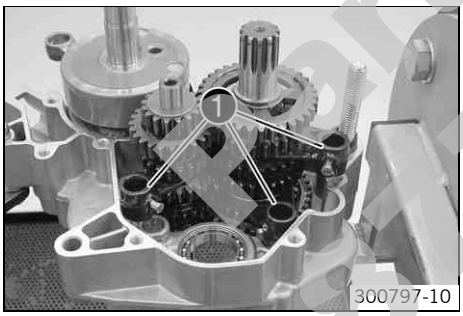


– Swing shift forks ❶ to one side.

Info
Make sure not to misplace the shift rollers.

– Remove shift drum ❷.

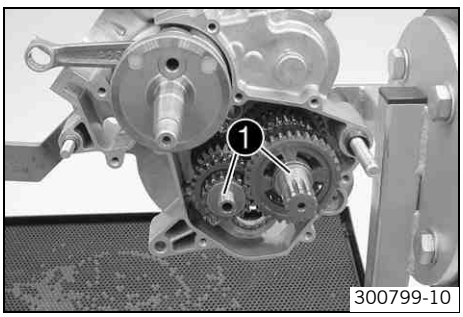
Removing the shift forks



– Take shift forks ❶ out of the shift grooves.

Info
Make sure not to misplace the shift rollers.

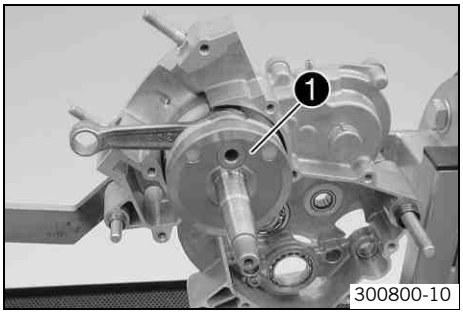
Removing the transmission shaft



– Pull both transmission shafts ❶ out of the bearing seat together.

Info
The stop disks of the transmission shafts usually stick to the bearings.

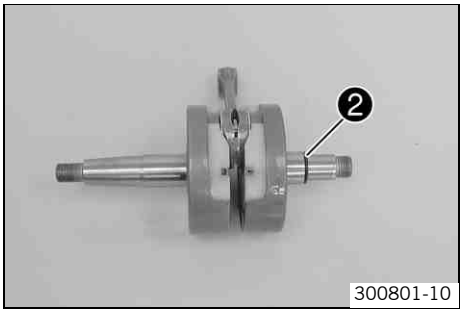
Removing the crankshaft



– Warm up the crankshaft bearing.
  Guideline

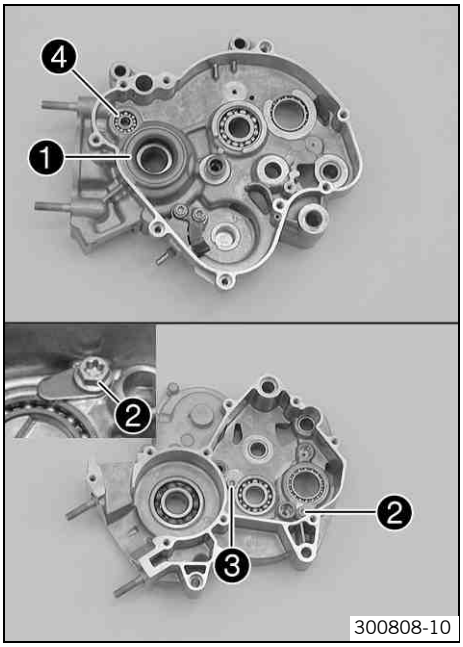
60 °C (140 °F)

– Remove crankshaft ❶.



– Remove O-ring ❷.

Work on the right section of the engine case



– Pull the dowels out of the engine case.
– Remove crankshaft seal ring ❶.
– Remove bearing retainer ❷.
– Remove bearing retainer ❸.
– Warm the engine case section in an oven.

Guideline

150 °C (302 °F)

– Knock the engine case section against a level wooden plate. This will cause the bearings to drop out of the bearing seats.

Info
Any bearings that remain in the engine case section must be removed using a suitable tool.

– Insert the new cold bearings into the bearing seats of the hot engine case section and, if necessary, use a suitable press drift to push the bearing from the inside to the outside, all the way to the stop or so it is flush.

Info
Bearing ❹ of the water pump must be pressed from the outside to the inside so it is flush.
When pressing the bearing in, ensure that the engine case section is level to prevent damage.
Only press the bearings in via the outer ring; otherwise, the bearings will be damaged when they are pressed in.

– Press crankshaft seal ring ❶ from the outside to the inside with the open side facing inward.

Info
The shaft seal ring must be flush on the outside.

– Mount bearing retainer ❷.

Guideline

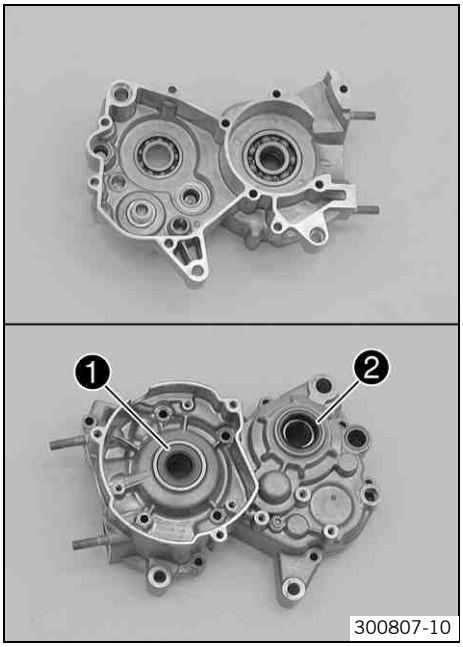
Bearing retainer, shift drum	M6	8 Nm (5.9 lbf ft)	**Loctite® 243™**

– Mount bearing retainer ❸.

Guideline

Bearing retainer, main shafts	M5	**Loctite® 648™**

Work on the left section of the engine case



– Pull the dowels out of the engine case.
– Remove crankshaft seal ring ❶.
– Remove shaft seal ring ❷ of the countershaft.
– Warm the engine case section in an oven.

Guideline

150 °C (302 °F)

– Knock the engine case section against a level wooden plate. This will cause the bearings to drop out of the bearing seats.

Info
Any bearings that remain in the engine case section must be removed using a suitable tool.

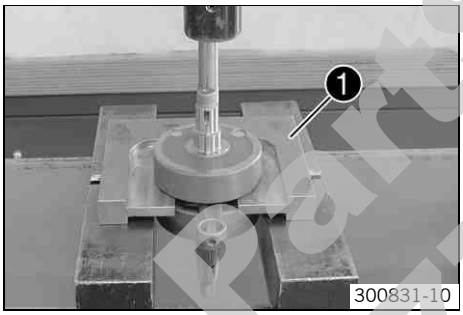
– Insert the new cold bearings into the bearing seats of the hot engine case section and, if necessary, use a suitable press drift to push the bearing from the inside to the outside, all the way to the stop or so it is flush.

Info
When pressing the bearing in, ensure that the engine case section is level to prevent damage.
Only press the bearings in via the outer ring; otherwise, the bearings will be damaged when they are pressed in.

– Press crankshaft seal ring ❶ from the outside to the inside.
– Press shaft seal ring ❷ of the countershaft from the outside to the inside with the open side facing inward.

Info
The shaft seal rings must be flush on the outside.

Changing the conrod bearing



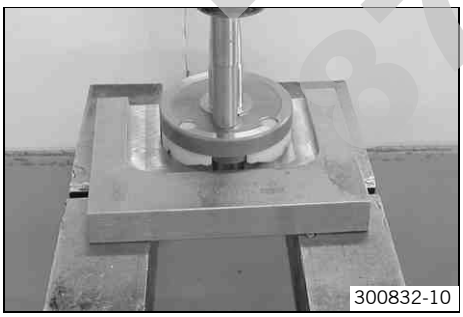
– Position special tool ❶ between the crank webs.

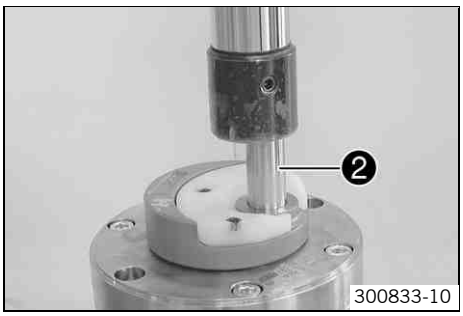
Press plate (46229047050) (☛ p. 125)

– Position the crankshaft in the press with the special tool.
– Press the crank pin out of the upper crank web with a suitable push-out drift.

Info
Hold the lower crank web.

– Take off the connecting rod, bearing and stop disks.
– Press the crank pin out of the crank web.

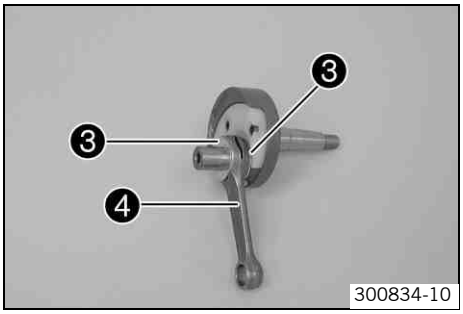




– Position the crank web with the special tool.

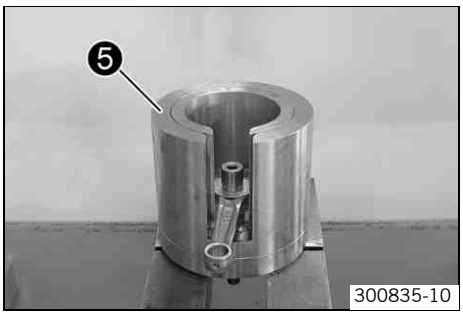
Anchor plate (46229047002) (☛ p. 125)

– Press the new crank pin ❷ all the way in.



– Mount stop disks ❸, bearing and connecting rod ❹.

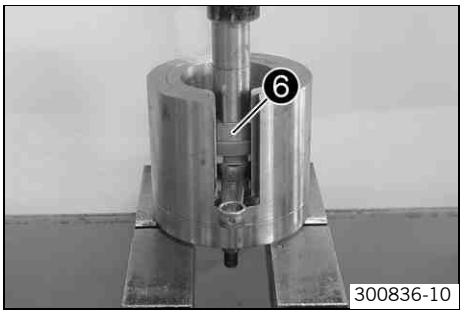
Info
Oil the bearing thoroughly.



– Position special tool ❺ on the press.

Pressing device, crankshaft, complete (50329047000) (☛ p. 126)
Anchor plate (46229047002) (☛ p. 125)
Bushing, crankshaft pressing device (46229008001) (☛ p. 125)

– Insert the crank web with the connecting rod and bearing.



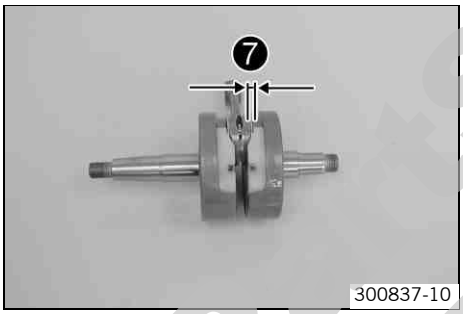
– Position the second crank web.
– Position special tool ❻ with the offset facing down.

Cover, crankshaft pressing device (46229008002) (☛ p. 125)

– Press the upper crank web all the way in.

Info
The press mandrel must be applied above the crank pin.

– Take the crank web out of the special tool and check that the connecting rod can move freely.



– Measure axial clearance ❼ between the stop disk and the crank webs with the special tool.

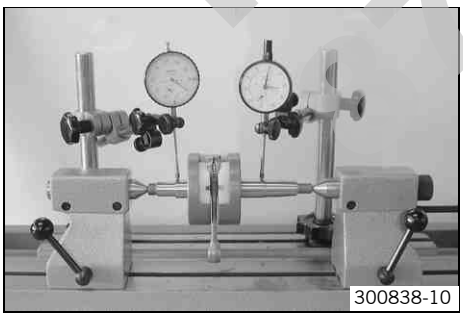
Feeler gauge (59029041100) (☛ p. 127)

Connecting rod - axial clearance of lower conrod bearing	0.40... 0.75 mm (0.0157... 0.0295 in)

» If the specifications are not met:
– Correct the axial clearance to the specified value.

– Check the crankshaft run-out on the bearing pin. (☛ p. 62)

Checking the crankshaft run-out on the bearing pin

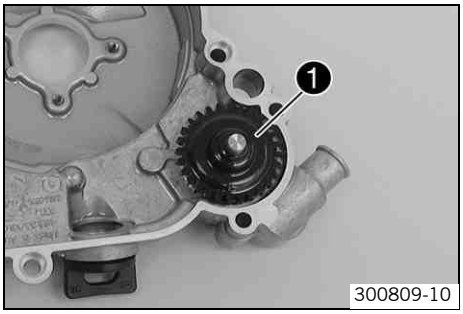


– Position the crankshaft on a roller block.
– Turn the crankshaft slowly.
– Check the crankshaft run-out on both bearing pins.

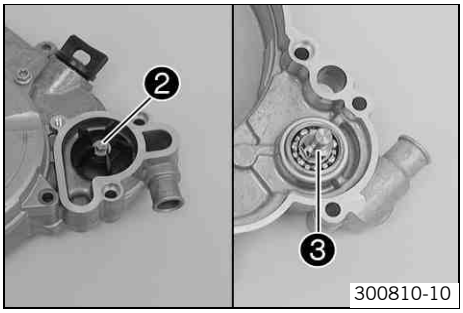
Crankshaft - run-out on bearing pin	≤ 0.03 mm (≤ 0.0012 in)

» If the crankshaft run-out on the bearing pin is larger than the specification:
– Align the crankshaft.

Removing the water pump



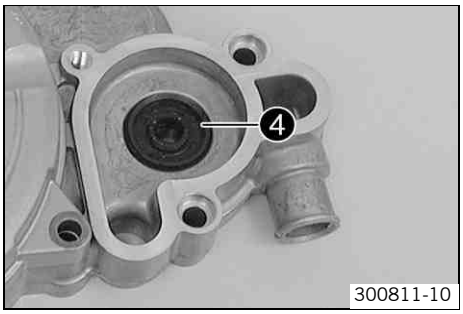
– Remove water pump drive gear ❶.



– Hold shaft ❸ in place and remove screw ❷.
– Take off the water pump impeller.

Info
If the water pump impeller cannot be removed, the water pump shaft can be pressed out toward the inside.

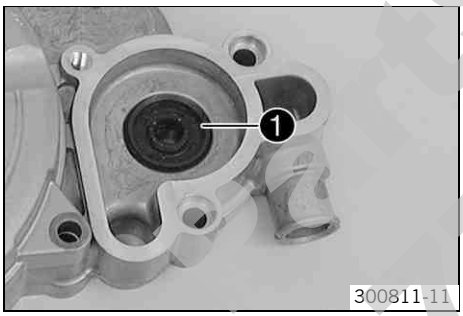
– Remove water pump shaft ❸.



– Remove shaft seal ring ❹.
– Press out the bearing of the water pump shaft with a suitable tool.

Info
Support the clutch cover when pressing out.

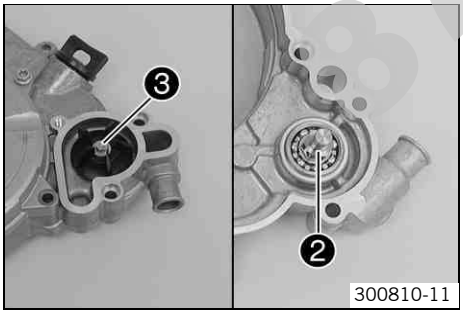
Installing the water pump



– Press in the bearing of the water pump shaft with a suitable tool so it is flush.

Info
Support the clutch cover when pressing in.

– Press shaft seal ring ❶ all the way in.



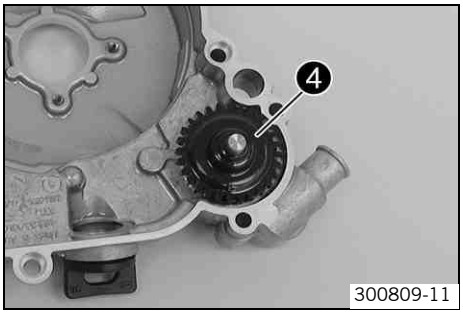
– Mount water pump shaft ❷.

Info
Do not damage the shaft seal ring.

– Mount the water pump impeller.
– Mount and tighten screw ❸.

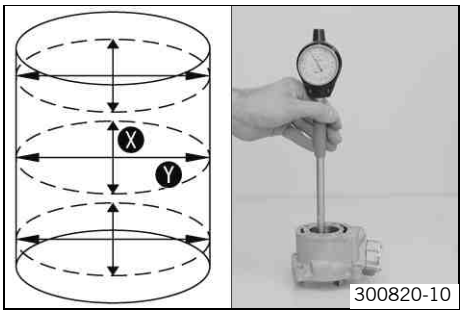
Guideline

Screw, water pump wheel	M5	5 Nm (3.7 lbf ft)	**Loctite® 243™**



– Mount drive gear ❹.

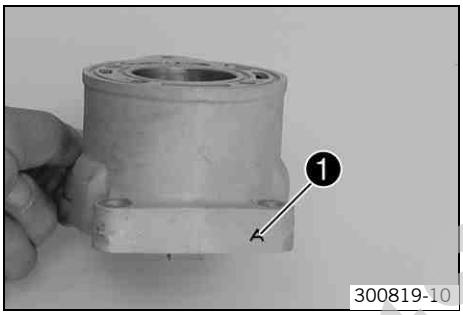
Checking/measuring the cylinder



– Check the cylinder bearing surface for damage.
  » If the cylinder bearing surface is damaged:
    – Change the cylinder and piston.
– Measure the cylinder diameter at several locations on the ❌ and ❎ axes using a micrometer to check for oval wear.

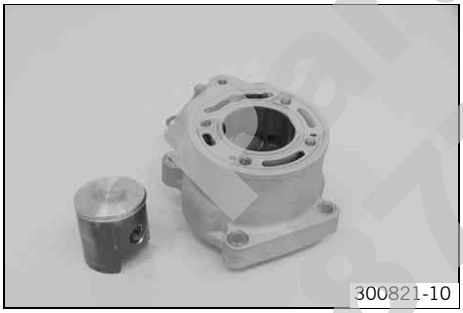
Guideline

Cylinder - bore diameter	
Size A	45.025... 45.037 mm (1.77263... 1.77311 in)
Size B	45.037... 45.050 mm (1.77311... 1.77362 in)



– The cylinder size ❶ is labeled on the side of the cylinder.

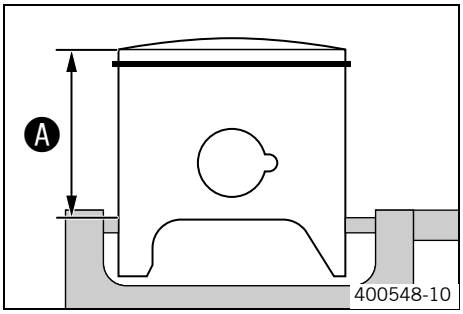
Checking/measuring the piston



– Check the piston bearing surface for damage.
  » If the piston bearing surface is damaged:
    – Change the piston and, if necessary, the cylinder.
– Check that the piston ring moves smoothly in the piston ring groove.
  » If the piston ring is stiff:
    – Clean the piston ring groove.

> **Tip**
> Use an old piston ring to clean the piston ring groove.

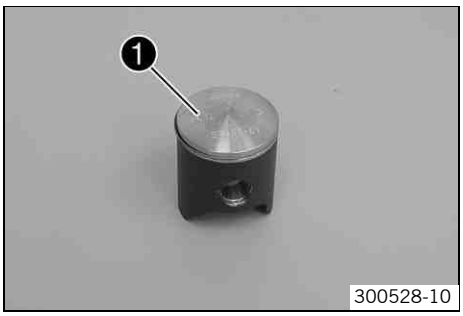
– Check the piston ring for damage.
  » If the piston ring is damaged:
    – Change the piston ring.
– Check the piston ring anti-rotation lock for damage and to ensure that it is firmly seated.
  » If the piston ring anti-rotation lock is damaged or loose:
    – Change the piston.
– Check the piston pin for discoloration or signs of wear.
  » If the piston pin has strong discoloration/signs of wear:
    – Change the piston pin with the piston pin bearing.
– Check the piston pin bearing for damage and wear.
  » If there is damage or wear:
    – Change the piston pin bearing and connecting rod, if necessary.



– Measure the piston at a distance ❹ from the piston head, at right angles to the piston pin.

Guideline

Distance ❹	32.0 mm (1.26 in)
Piston - diameter	
Size 1	44.955... 44.965 mm (1.76988... 1.77027 in)
Size 2	44.965... 44.975 mm (1.77027... 1.77067 in)



– Piston size ❶ is marked on the piston head.

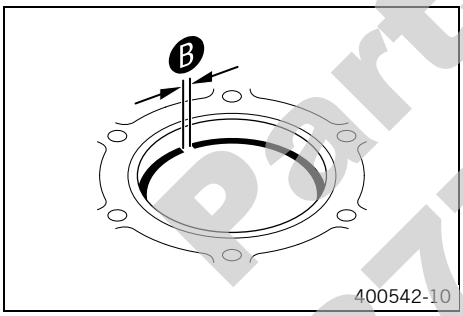
Determining the piston/cylinder mounting clearance

– Check/measure the cylinder. (☛ p. 64)
– Determine the piston/cylinder mounting clearance. (☛ p. 65)
– The smallest piston/cylinder mounting clearance is the result of the smallest cylinder bore diameter minus the largest piston diameter. The largest piston/cylinder mounting clearance is the result of the largest cylinder bore diameter minus the smallest piston diameter.

Guideline

Piston/cylinder - mounting clearance	
New condition	0.060... 0.085 mm (0.00236... 0.00335 in)
Wear limit	0.10 mm (0.0039 in)

Checking the piston ring end gap



– Remove the piston ring from the piston.
– Place the piston ring in the cylinder and align it with the piston.

Guideline

Under the upper edge of the cylinder	10 mm (0.39 in)

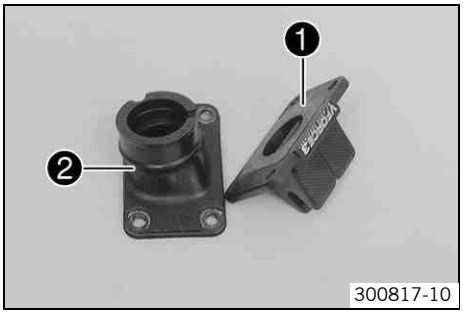
– Measure the end gap ❸ using a feeler gauge.

Guideline

Piston ring end gap	≤ 0.60 mm (≤ 0.0236 in)

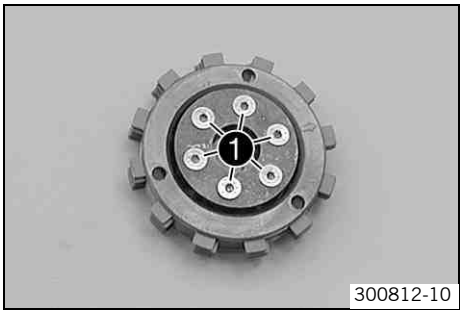
» If the end gap is more than the specified value:
  – Check/measure the cylinder. (☛ p. 64)
» If the cylinder wear is within the tolerance range:
  – Change the piston ring.

Checking the reed valve housing, diaphragm and intake flange

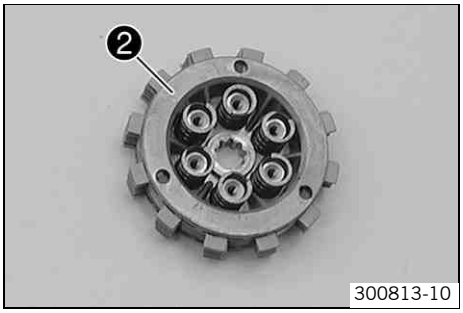


– Check reed valve housing ❶ for damage and wear.
» If there is damage or wear:
  – Change the reed valve housing.
– Check the diaphragm for damage and wear.
» If there is damage or wear:
  – Change the diaphragm.
– Check intake flange ❷ for damage and wear.
» If there is damage or wear:
  – Change the intake flange.

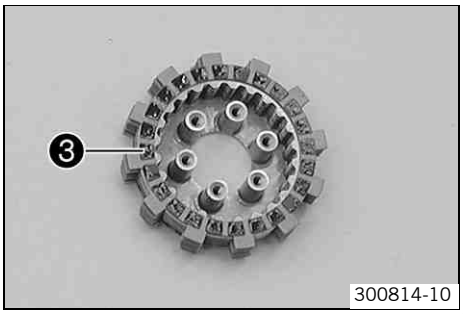
Disassembling the clutch



– Remove screws ❶.
– Take off the spring retainer.

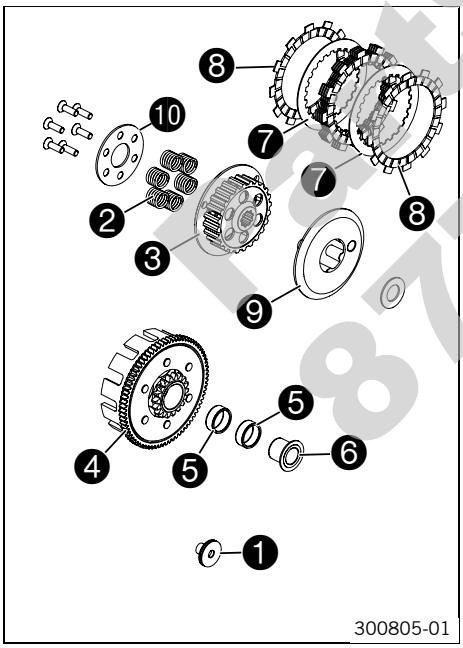


– Remove the springs.
– Take off inner clutch hub ❷.



– Take off clutch discs ❸ from the clutch pressure cap.

Checking the clutch



– Check pressure piece ❶ for damage and wear.
  » If there is damage or wear:
    – Change the pressure piece.
– Check the length of clutch springs ❷.

Clutch spring - length	21.5... 21.9 mm (0.846... 0.862 in)

  » If the clutch spring length is less than the specified value:
    – Change all clutch springs.
– Check the contact surface of inner clutch hub ❸ for damage and wear.
  » If there is damage or wear:
    – Change the inner clutch hub.
– Check the contact surfaces of the clutch facing discs in outer clutch hub ❹ for wear.

Contact surface, clutch facing discs in outer clutch hub	≤ 0.5 mm (≤ 0.02 in)

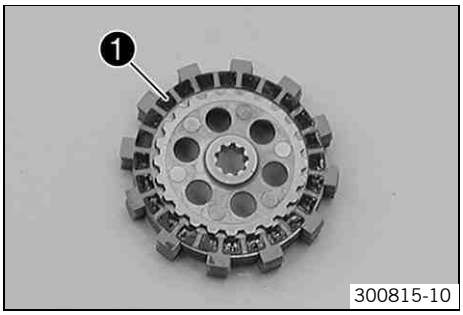
  » If the contact surface is very worn:
    – Change the clutch facing discs and the outer clutch hub.
– Check needle bearing ❺ and collar bushing ❻ for damage and wear.
  » If there is damage or wear:
    – Change the needle bearing and collar bushing.
– Check intermediate discs ❼ for damage and wear.
  » If the intermediate discs are not level and have pittings:
    – Change all clutch discs.
– Check clutch facing discs ❽ for discoloration and scoring.
  » If there is discoloration or scoring:
    – Change all clutch facing discs.

– Check the thickness of clutch facing discs ❽.

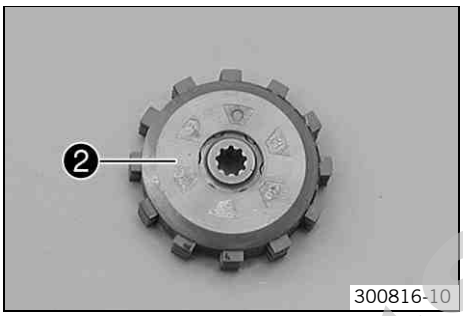
Clutch facing disc - thickness	2.6... 2.7 mm (0.102... 0.106 in)

» If the clutch facing disc does not meet specifications:
  – Change all clutch facing discs.
– Check clutch pressure cap ❾ for damage and wear.
» If there is damage or wear:
  – Change the clutch pressure cap.
– Check spring retainer ❿ for damage and wear.
» If there is damage or wear:
  – Change the spring retainer.

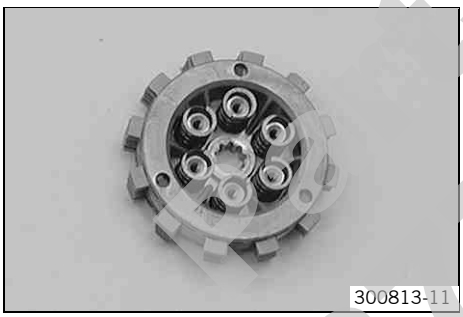
Premounting the clutch



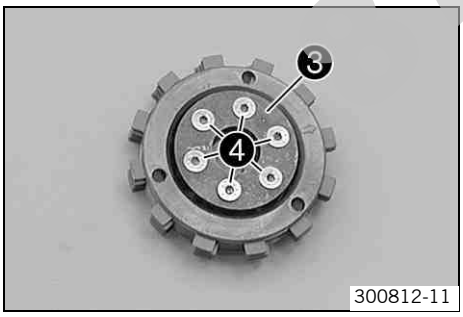
– Oil the clutch discs well.
– Beginning with a clutch facing disc, position all further clutch facing discs and intermediate discs on inner clutch hub ❶.



– Mount clutch pressure cap ❷.

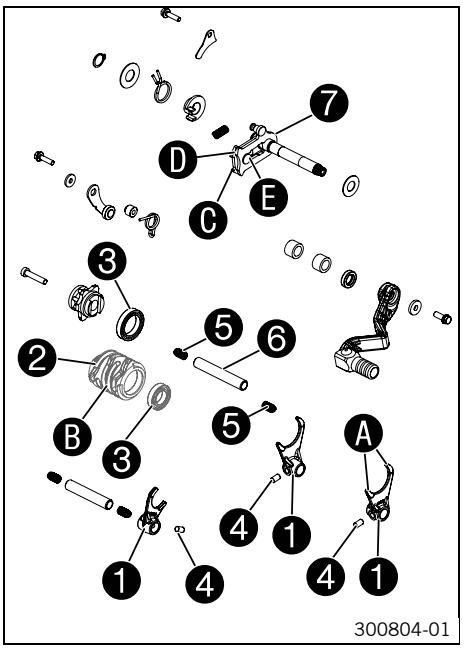


– Position the springs.



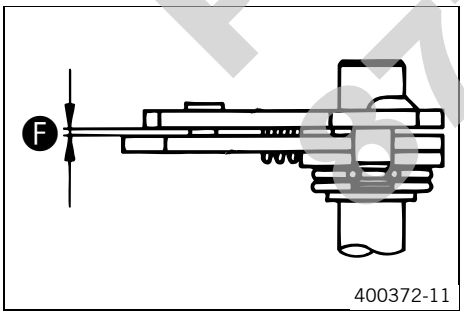
– Position spring retainer ❸.
– Mount screws ❹, but do not tighten them yet.

Checking the shift mechanism



300804-01

– Check shift forks ❶ on leaf Ⓐ for damage and wear (visual inspection).
  » If there is damage or wear:
    – Change the shift fork and the idler/fixed gear pair.
– Check shift grooves Ⓑ of shift drum ❷ for wear.
  » If the shift groove is worn:
    – Change the shift roller.
– Check the seat of the shift drum in bearings ❸.
  » If the shift roller is not seated correctly:
    – Change the shift drum and/or the bearing.
– Check bearing ❸ for smooth operation and wear.
  » If the bearings do not move freely or are worn:
    – Change the bearings.
– Check shift rollers ❹ for smooth operation in the shift groove and for wear.
  » If the shift roller does not move freely or is worn:
    – Change the shift roller.
– Check springs ❺ of the shift rails for damage and wear.
  » If the spring is broken or worn:
    – Change the spring of the shift rail.
– Check the shift rail ❻ on a flat surface for run-out.
  » If there is run-out:
    – Change the shift rail.
– Check shift rail for scoring, signs of corrosion and stiffness in the shift forks.
  » If there is scoring or corrosion, or if the shift fork is stiff:
    – Change the shift rail.
– Check sliding plate ❼ in contact area Ⓒ for wear.
  » If the sliding plate is worn:
    – Change the sliding plate.
– Check return surface Ⓓ on the sliding plate for wear.
  » If deep notches are present:
    – Change the sliding plate.
– Check guide pin Ⓔ for looseness and wear.
  » If the guide pin is loose and/or worn:
    – Change the sliding plate.
– Preassemble the shift shaft. (☛ p. 69)
– Check clearance Ⓕ between the sliding plate and shift quadrant.

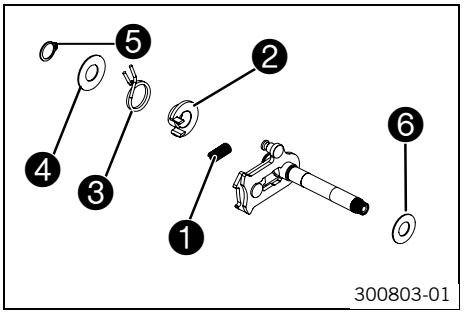


400372-11

Shift shaft - play in sliding plate/shift quadrant	0.40... 0.80 mm (0.0157... 0.0315 in)

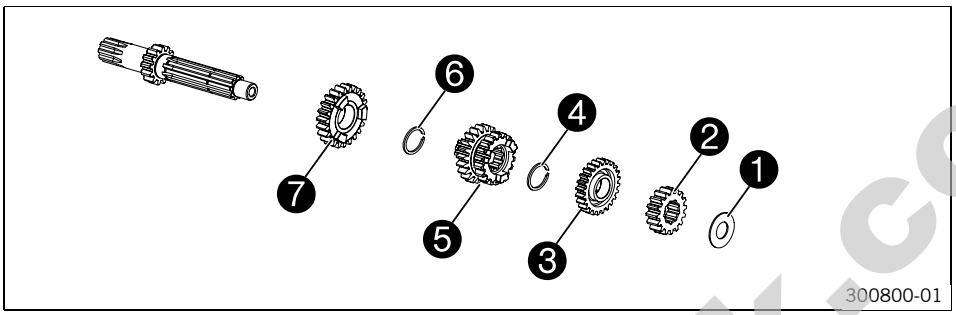
  » If the measured value does not equal the specified value:
    – Change the sliding plate.

Preassembling the shift shaft



– Fix the short end of the shift shaft in a vise.
  Guideline
  | Use soft jaws. |
– Mount preload spring ❶.
– Push on spring guide ❷, push return spring ❸ over the spring guide with the offset end facing upward and lift the offset end over abutment bolt ❺.
– Mount washer ❹.
– Mount lock ring ❺.
– Mount stop disk ❻.

Disassembling the main shaft

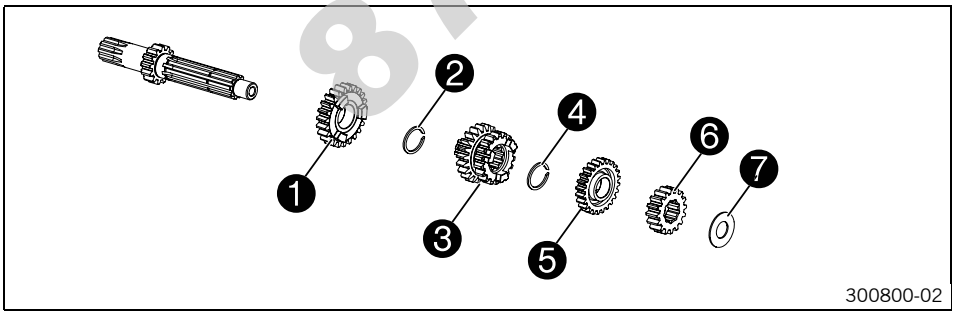


– Fix the main shaft in the vise with the geared end facing downward.
  Guideline
  | Use soft jaws. |
– Remove stop disk ❶ and second-gear fixed gear ❷.
– Remove the sixth-gear idler gear ❸.
– Remove lock ring ❹.
– Remove the third/fourth-gear sliding gear ❺.
– Remove lock ring ❻.
– Remove the fifth-gear idler gear ❼.

Assembling the main shaft

Info
Use new lock rings in every repair job.

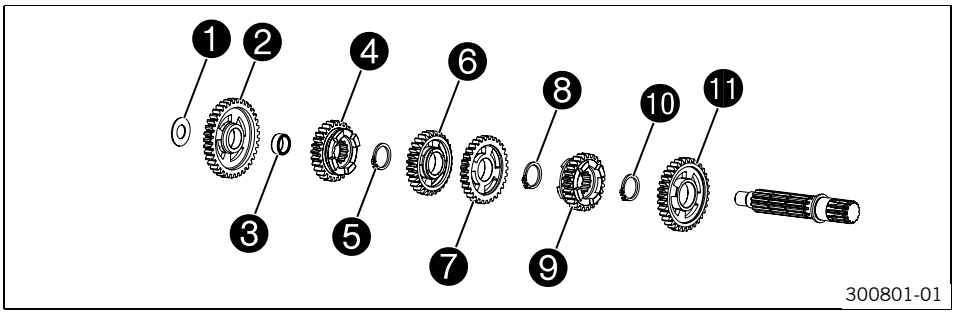
– Oil all parts carefully before assembling.
– Check the transmission. (☛ p. 71)



– Fix the main shaft in the vise with the geared end facing downward.
  Guideline
  | Use soft jaws |
– Put on the fifth-gear idler gear ❶ with the shifting claws facing upward.
– Mount lock ring ❷.
– Mount the third/fourth-gear sliding gear ❸ with the small gear wheel facing upward and mount lock ring ❹.
– Mount the sixth-gear idler gear ❺ with the shifting claws facing downward.
– Mount the second-gear fixed gear ❻ and stop disk ❼.

– Finally, check all gear wheels for smooth operation.

Dismantling the countershaft



– Fix the countershaft in the vise with the geared end facing downward.

Guideline

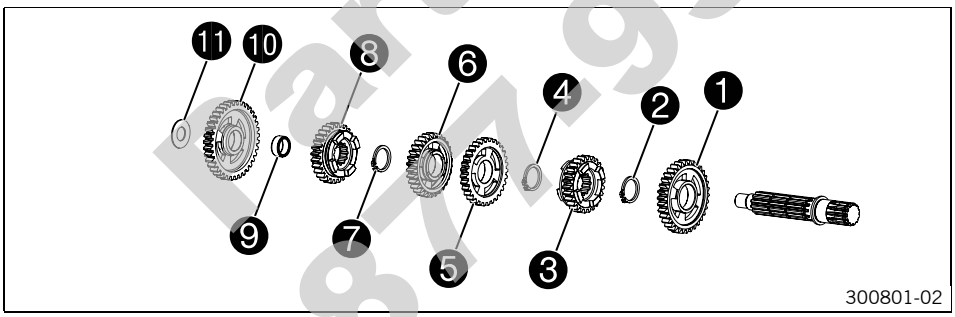
Use soft jaws

– Remove stop disk ❶ and the first-gear idler gear ❷.
– Remove needle bearing ❸.
– Remove the fifth-gear sliding gear ❹ and lock ring ❺.
– Remove the fourth-gear idler gear ❻.
– Remove the third-gear idler gear ❼.
– Remove lock ring ❽.
– Remove the sixth-gear sliding gear ❾.
– Remove lock ring ❿.
– Remove the second-gear idler gear ⓫.

Assembling the countershaft

Info
Use new lock rings in every repair job.

– Oil all parts carefully before assembling.
– Check the transmission. (☛ p. 71)



– Fix the countershaft in the vise with the geared end facing downward.

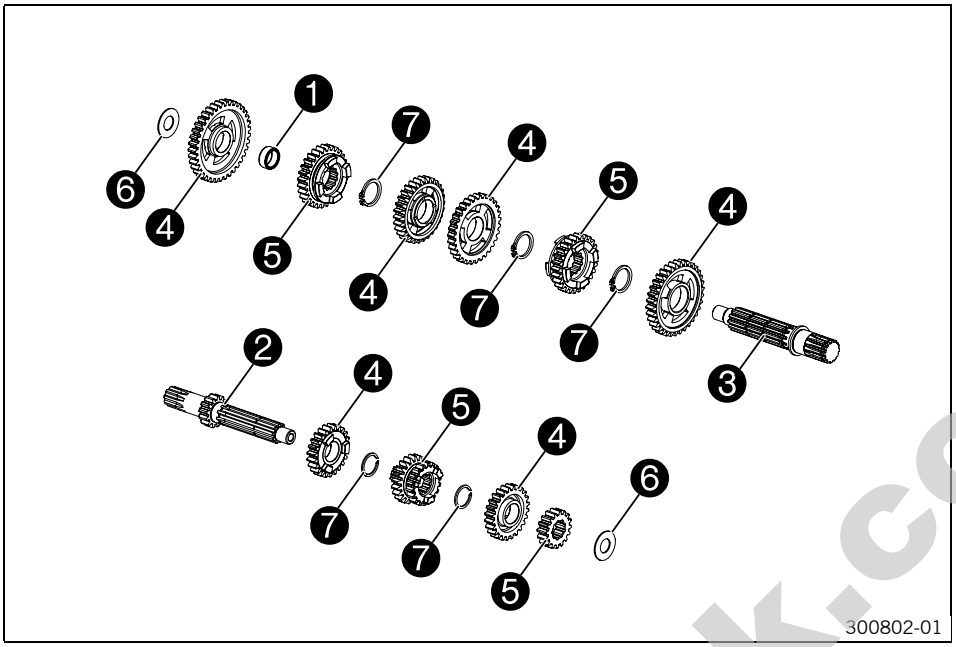
Guideline

Use soft jaws

– Mount the second-gear idler gear ❶ on the countershaft with the protruding collar facing downward.
– Mount lock ring ❷.
– Mount the sixth-gear sliding gear ❸ with the shift groove facing upward.
– Mount lock ring ❹.
– Mount the third-gear idler gear ❺ with the collar facing upward.
– Mount the fourth-gear idler gear ❻ with the collar facing downward.
– Mount lock ring ❼.
– Mount the fifth-gear sliding gear ❽ with the shift groove facing downward.
– Mount needle bearing ❾, first-gear idler gear ❿ with the groove facing downward and stop disk ⓫.
– Finally, check all gear wheels for smooth operation.

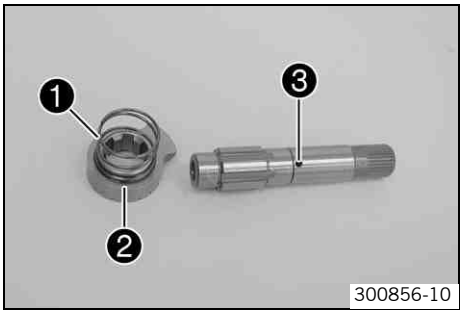
Checking the transmission

– Disassemble the main shaft. (☛ p. 69)
– Dismantle the countershaft. (☛ p. 70)



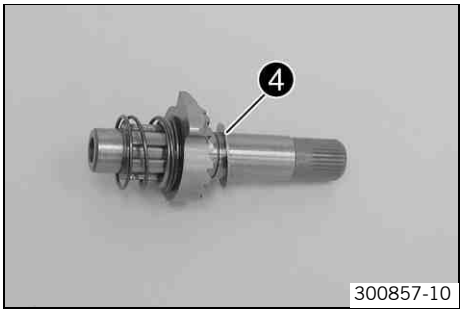
– Check needle bearing ❶ for damage and wear.
  » If there is damage or wear:
    – Change the needle bearing.
– Check the pivot points of main shaft ❷ and countershaft ❸ for damage and wear.
  » If there is damage or wear:
    – Change the main shaft and/or countershaft.
– Check the tooth profiles of main shaft ❷ and countershaft ❸ for damage and wear.
  » If there is damage or wear:
    – Change the main shaft and/or countershaft.
– Check the pivot points of idler gears ❹ for damage and wear.
  » If there is damage or wear:
    – Change the idler/fixed gear pair.
– Check the shift dogs of idler gears ❹ and fixed gears ❺ for damage and wear.
  » If there is damage or wear:
    – Change the idler/fixed gear pair.
– Check the tooth faces of idler gears ❹ and fixed gears ❺ for damage and wear.
  » If there is damage or wear:
    – Change the idler/fixed gear pair.
– Check the tooth profiles of fixed gears ❺ for damage and wear.
  » If there is damage or wear:
    – Change the idler/fixed gear pair.
– Check fixed gears ❺ for smooth operation in the profile of main shaft ❷.
  » If the fixed gear does not move easily:
    – Change the fixed gear or the main shaft.
– Check fixed gears ❺ for smooth operation in the profile of countershaft ❸.
  » If the fixed gear does not move easily:
    – Change the fixed gear or the countershaft.
– Check stop disks ❻ for damage and wear.
  » If there is damage or wear:
    – Change the stop disk.
– Use new lock rings ❼ in every repair job.
– Assemble the countershaft. (☛ p. 70)
– Assemble the main shaft. (☛ p. 69)

Premounting the kickstarter shaft

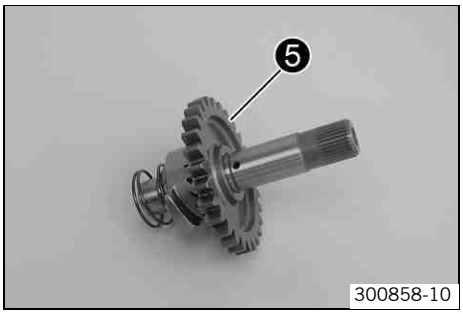


– Mount kickstarter ratchet wheel ❶.

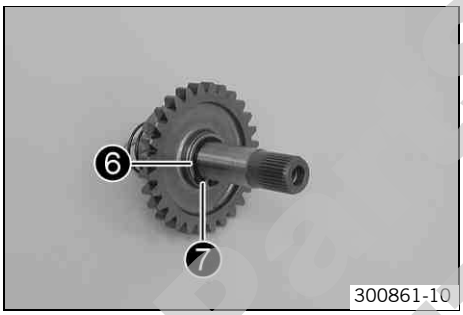
✓ Marking ❷ is offset from hole ❸ by 180°.



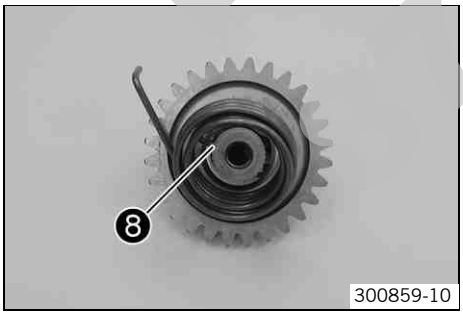
– Mount washer ❹.



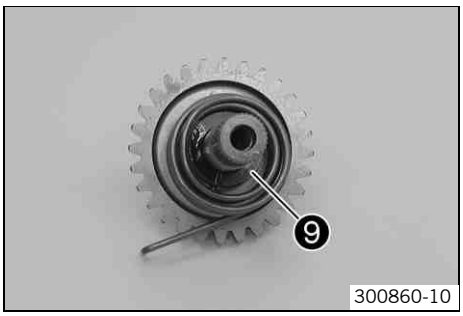
– Mount starter wheel ❺.



– Mount washer ❻ and lock ring ❼.

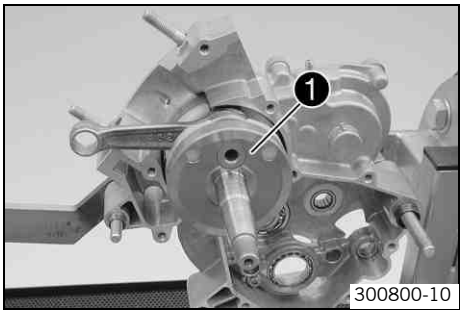


– Position the spring and hook it into hole ❽.



– Mount driving hub ❾.

Installing the crankshaft



– Position the right section of the engine case in the engine work stand.

Engine work stand (61229001000) (☛ p. 128)
Holder of engine work stand (46229001070) (☛ p. 124)

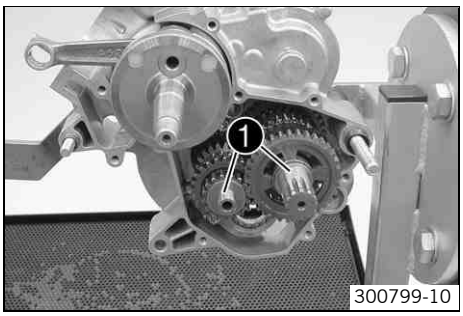
– Warm up the crankshaft bearing.

Guideline

60 °C (140 °F)

– Slide crankshaft ❶ all the way into the bearing seat of the right section of the engine case.
– Mount the dowels.

Installing the transmission shafts

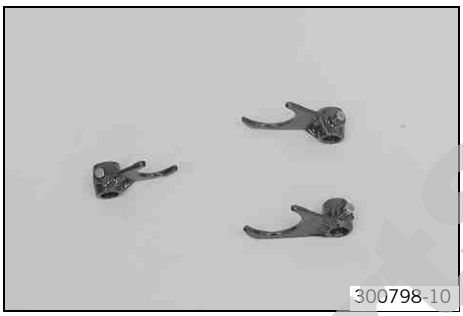


– Oil all bearing.

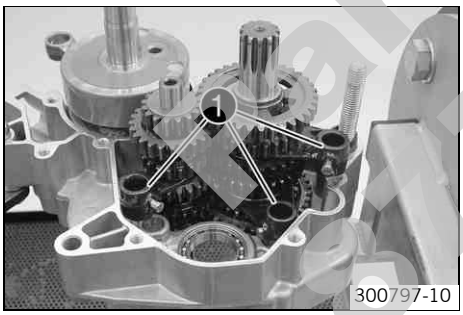
Engine oil (15W/50) (☛ p. 120)

– Assemble the two transmission shafts ❶ and slide them into the bearing seats together.

Installing the shift forks

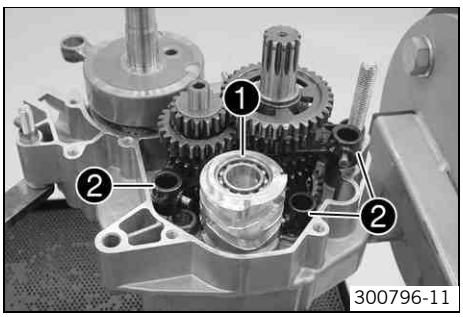


– Arrange the shift forks as shown.



– Position shift forks ❶ in the shift grooves.

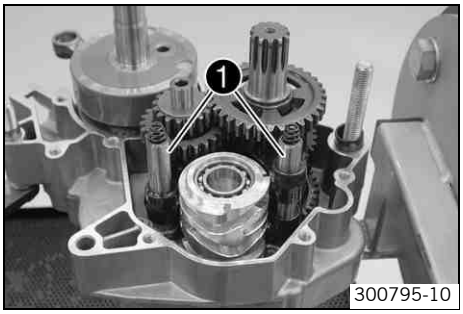
Installing the shift drum



– Slide shift drum ❶ into the bearing seat.
– Attach shift forks ❷ to the shift drum.

Info
Make sure not to misplace the shift rollers.

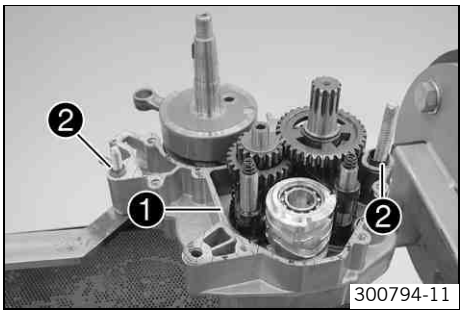
Installing the shift rails



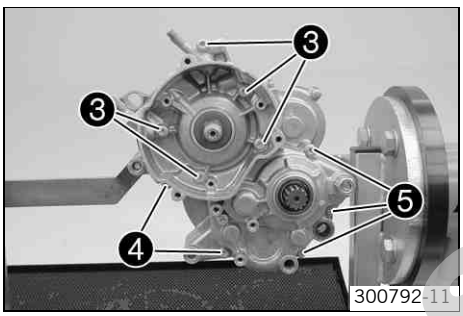
– Install shift rails ❶ together with the upper and lower springs.

Tip
Fix the springs in the shift rails with grease.

Installing the left engine case section



– Mount engine case gasket ❶.
– Check that dowels ❷ are seated correctly.



– Warm up the crankshaft bearing of the left section of the engine case.
Guideline

60 °C (140 °F)

– Mount the left section of the engine case. Strike lightly with a rubber mallet if necessary.

Info
Do not tighten the engine case sections using the screws.

– Mount screws ❸ and tighten them after all screws of the left engine case section are mounted.
Guideline

Screw, engine housing	M6x55	10 Nm (7.4 lbf ft)

– Mount screws ❹ and tighten them after all screws of the left engine case section are mounted.
Guideline

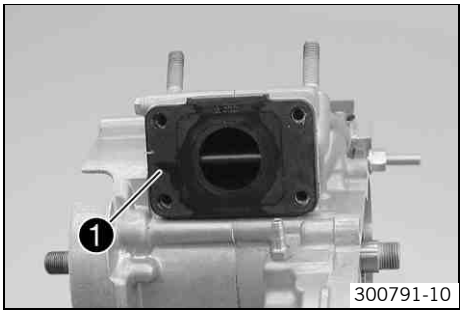
Screw, engine housing	M6x40	10 Nm (7.4 lbf ft)

– Mount screws ❺ and tighten all screws in a crisscross pattern.
Guideline

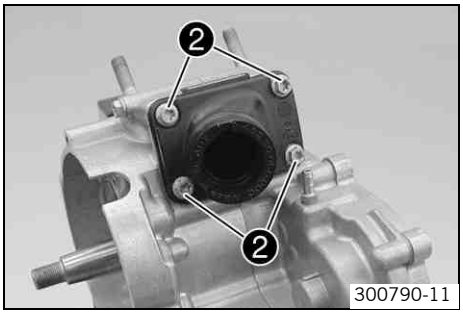
Screw, engine housing	M6x30	10 Nm (7.4 lbf ft)

– Fix the engine in the engine work stand.

Installing the reed valve housing



– Position the gasket.
– Position reed valve housing ❶ in the engine housing opening.

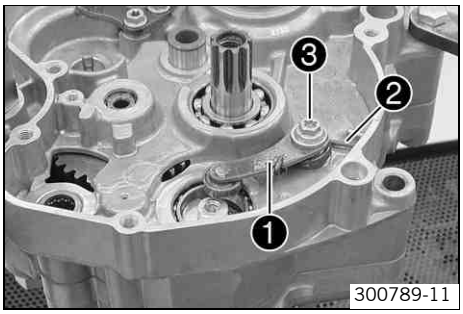


– Position the intake flange.
– Mount and tighten screws ❷.

Guideline

Screw, intake flange/reed valve housing	M6	10 Nm (7.4 lbf ft)

Installing the locking lever

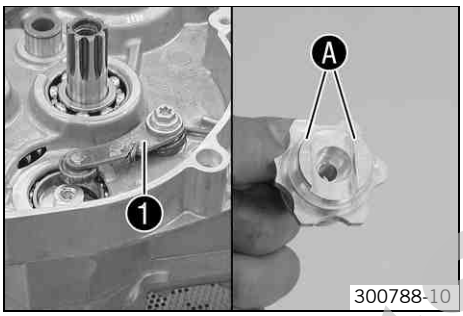


– Position locking lever ❶ with sleeve and spring ❷.
– Mount and tighten screw ❸.

Guideline

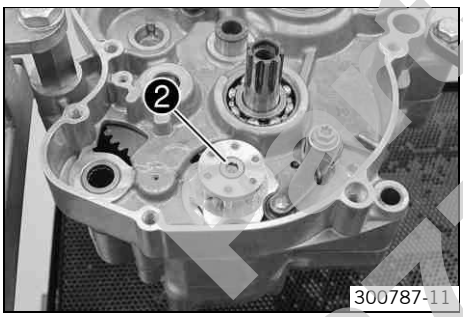
Screw, shift drum locating	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**

Installing the shift drum locating



– Press locking lever ❶ down and position shift drum locating.

Info
The flat surfaces Ⓐ of the shift drum locating are not symmetric.

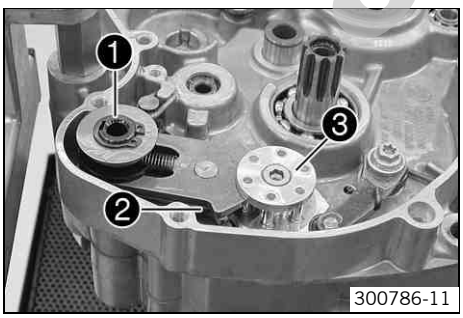


– Release the locking lever.
– Mount and tighten screw ❷.

Guideline

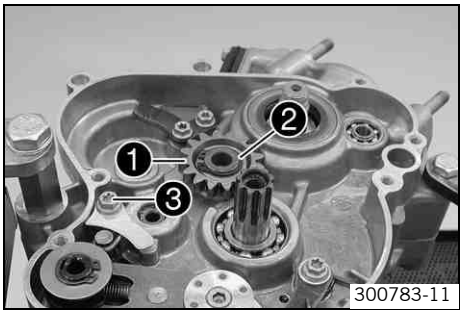
Screw, shift drum locating	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**

Installing the shift shaft



– Slide shift shaft ❶ with the washer into the bearing seat.
– Push sliding plate ❷ away from the shift drum locating ❸. Insert the shift shaft all the way.
– Let the sliding plate engage in the shift drum locating.
– Shift through the transmission.

Installing the intermediate kickstarter gear

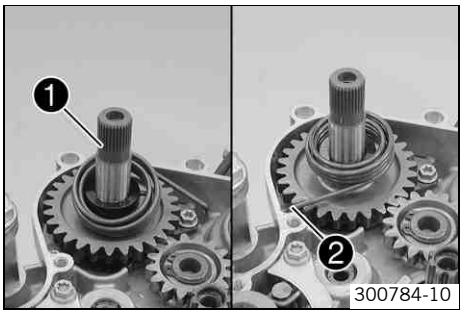


- Position intermediate kickstart gear ❶ with the washer.
- Mount lock ring ❷.
- Position the retaining bracket.
- Mount and tighten screw ❸.

  Guideline

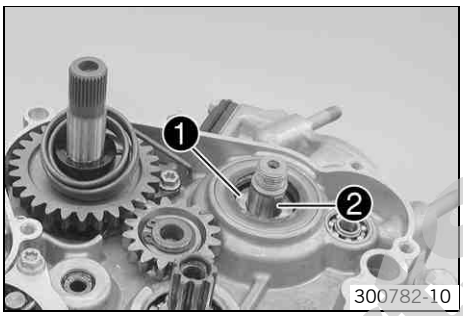
Screw, retaining bracket for return spring of shift shaft	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**

Installing the kickstarter shaft

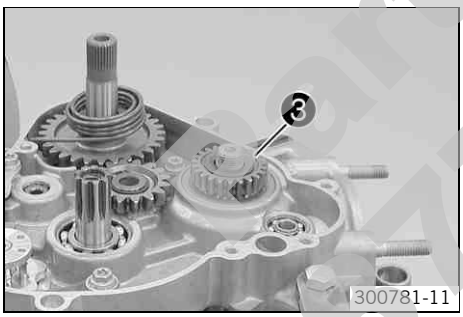


- Premount the kickstarter shaft. (☛ p. 72)
- Mount the premounted kickstarter shaft ❶ with the washer.
- Hook in kickstarter spring ❷.

Installing the primary gear

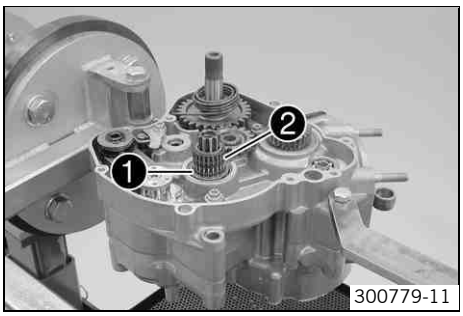


- Position the O-ring.
- Mount washer ❶.
- Mount spring washer ❷.

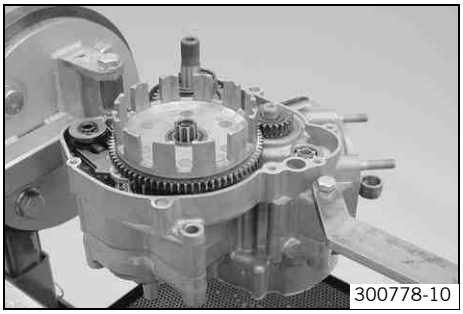


- Position primary gear ❸.

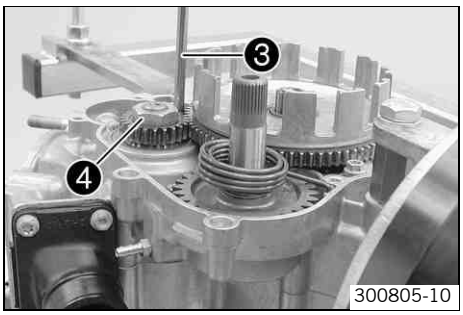
Installing the outer clutch hub



- Mount collar bushing ❶ and needle bearing ❷.



– Mount the outer clutch hub.



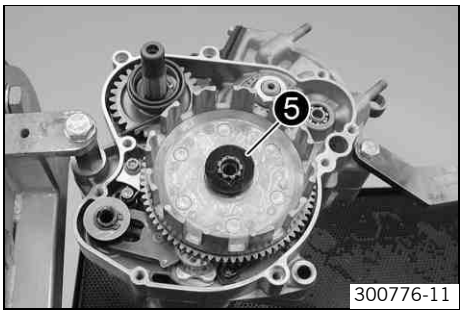
– Hold the outer clutch hub in place with special tool ❸.

Gear segment (46229081000) (☛ p. 125)

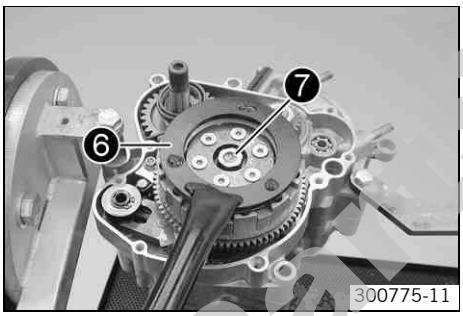
– Mount and tighten the washer and nut ❹ of the primary gear.

Guideline

Nut, primary gear	M14x1.25	40 Nm (29.5 lbf ft)	**Loctite® 243™**



– Mount washer ❺.



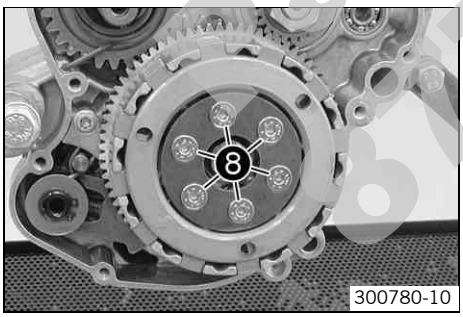
– Premount the clutch. (☛ p. 67)
– Position the clutch pack.
– Hold the clutch in place with special tool ❻.

Clutch holder (49012003000) (☛ p. 126)

– Mount and tighten screw ❼.

Guideline

Screw, inner clutch hub	M10	60 Nm (44.3 lbf ft)	**Loctite® 243™**

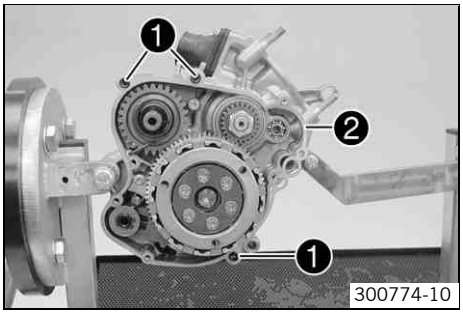


– Tighten screws ❽.

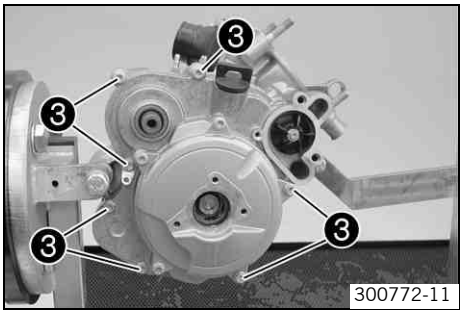
Guideline

Screw, clutch springs	M6	10 Nm (7.4 lbf ft)

Installing the clutch cover



– Mount dowels ❶.
– Mount clutch cover gasket ❷.



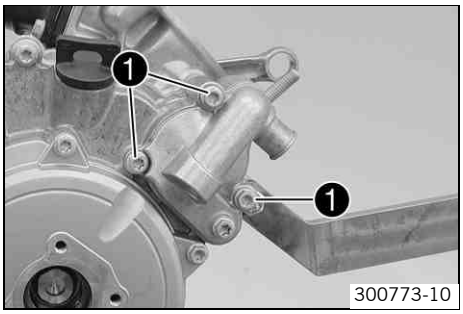
– Position the clutch cover. Mount and tighten screws ❸.

Guideline

Screw, clutch intermediate cover	M6	10 Nm (7.4 lbf ft)

Info
Do not forget the spring hanger.

Mounting the water pump cover

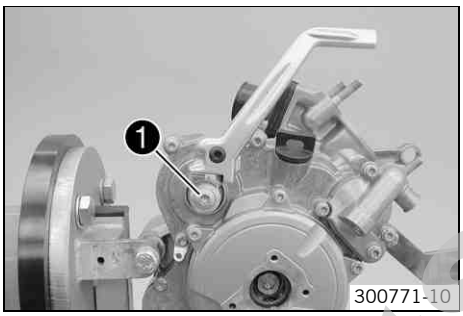


– Mount the gasket and dowels.
– Position the water pump cover.
– Mount and tighten screws ❶.

Guideline

Screw, water pump cover	M6	8 Nm (5.9 lbf ft)

Installing the kickstarter

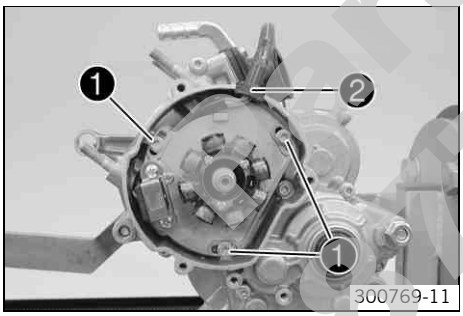


– Position the kickstarter. Mount and tighten screw ❶ with the washer.

Guideline

Screw, kickstarter	M8	25 Nm (18.4 lbf ft)	**Loctite® 243™**

Installing the stator



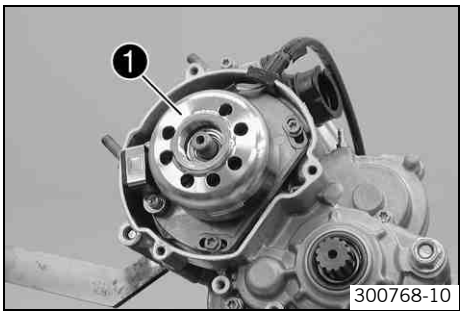
– Position the stator.
– Mount screws ❶, but do not tighten them yet.

Guideline

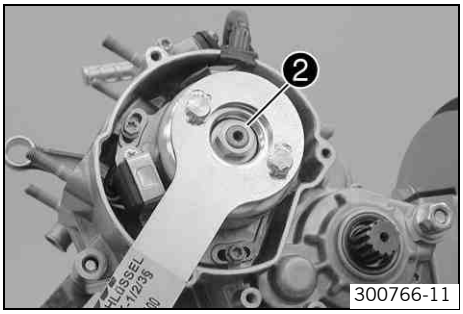
Screw, ignition system/stator	M5	5 Nm (3.7 lbf ft)	**Loctite® 222**

– Position cable support sleeve ❷.

Installing the rotor



– Ensure that the spring washer is seated properly.
– Grease the cone.
– Mount rotor ❶.



– Hold the rotor in place with the special tool.

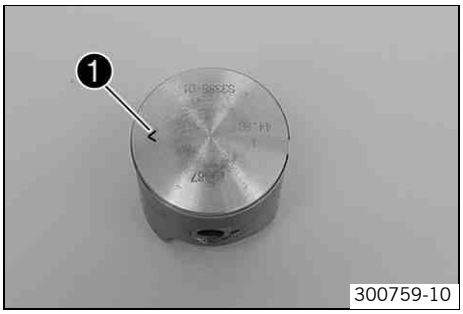
Holding spanner (54629012100) (☛ p. 127)

– Mount the washer and nut ❷. Tighten nut.

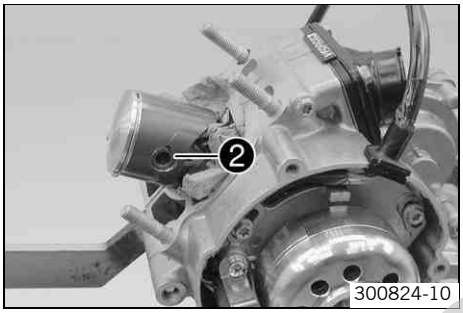
Guideline

Nut, rotor	M10x1.25	50 Nm (36.9 lbf ft)

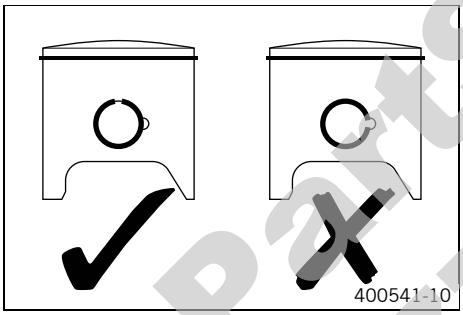
Installing the piston



– Oil the upper conrod bearing and position it in the connecting rod.
– Position the piston.
✓ Piston marking ❶ must face the exhaust side.

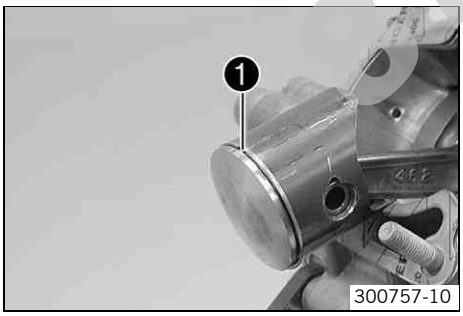


– Slide piston pin ❷ into the connecting rod by hand.



– Cover the engine case opening with a cloth.
– Position the piston pin retainer in the 6 o'clock or 12 o'clock position.
– Ensure that the piston pin retainer is correctly seated on both sides.
– Remove the cloth.

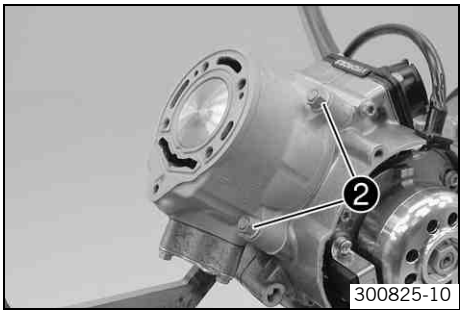
Installing the cylinder



– Mount the dowels.
– Position the new cylinder base gasket.

Info
If neither the piston, cylinder, crankshaft or engine case need to be changed, the same gasket thickness can be used as before.

– Oil the cylinder and piston.
– Position the piston ring.
✓ The anti-rotation lock engages in piston end ❶.
– Slide the cylinder over the piston.
– Push the cylinder down carefully and let the dowels engage.



– Mount nuts ❷ on both sides and tighten in a crisscross pattern.

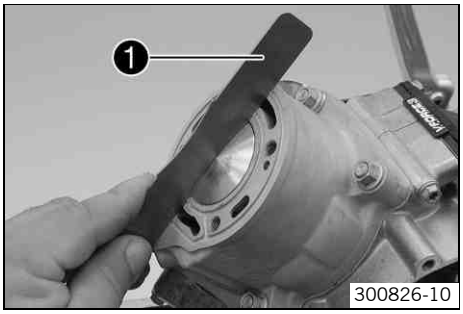
Guideline

Nuts, cylinder base	M8	20 Nm (14.8 lbf ft)

Info
Be careful not to forget the clutch line holder.

Checking the X-distance

Info
The X-distance is the distance defined for the piston protrusion, when the cylinder is clamped down and the piston is at top dead center.
The X-distance must be checked very carefully. If the X-distance is too large, the compression decreases and the engine loses power. If the X-distance is too small, the engine knocks and overheats.



– Apply special tool ❶ to the cylinder.

Adjustment gauge (46129006100) (☛ p. 124)

Info
Apply the special tool with label **cylinder height** onto the cylinder.

– Position the piston at top dead center.
– Check the X-distance.

Info
The piston should not raise the gauge off of the cylinder.

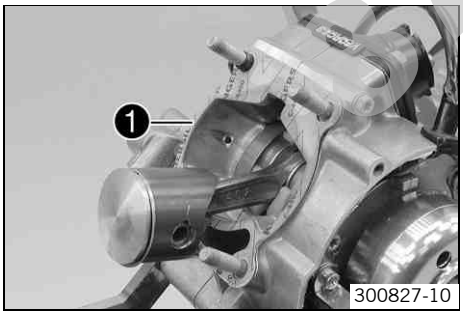
X-distance (distance from adjusting gauge to piston)	0... 0.10 mm (0... 0.0039 in)

» If the specified value is not reached:
– Set the X-distance. (☛ p. 80)

Setting the X-distance

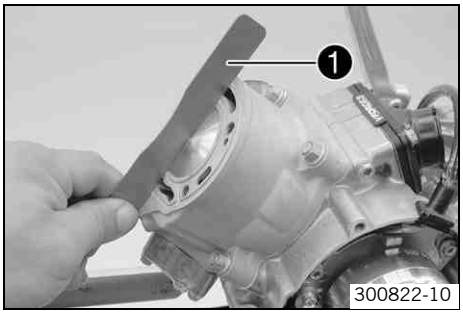
Info
The X-distance is adjusted by inserting cylinder base gaskets of various thicknesses.

– Check the X-distance. (☛ p. 80)
– Remove the cylinder. (☛ p. 52)



– Replace cylinder base gasket ❶ with a cylinder base gasket of the required size.
– Install the cylinder. (☛ p. 79)

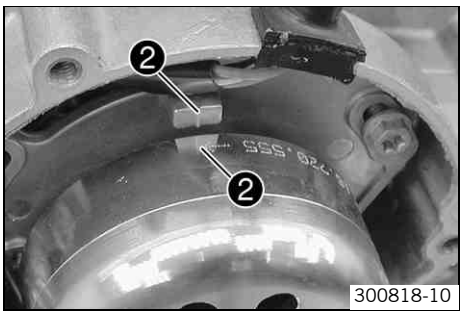
Adjusting the ignition



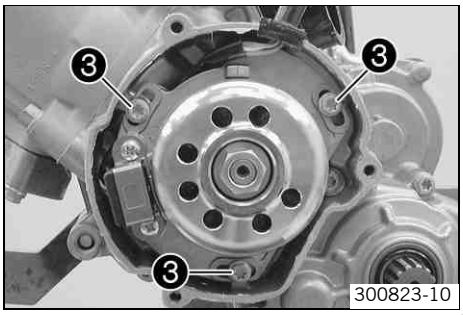
– Position the piston at bottom dead center.
– Apply special tool ❶ to the cylinder.

Adjustment gauge (46129006100) (☛ p. 124)

Info
Apply the special tool with label **ignition** onto the cylinder.



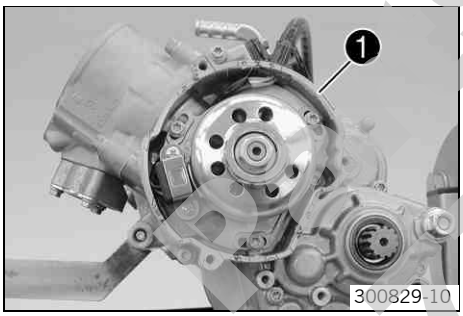
– Turn the crankshaft clockwise until the upper edge of the piston rests against the special tool.
– Turn the stator until markings ❷ are aligned.



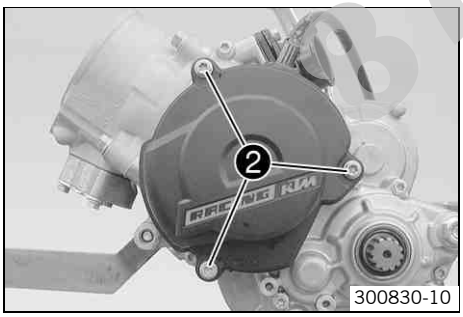
– Tighten screws ❸.
Guideline

Screw, ignition system/stator	M5	5 Nm (3.7 lbf ft)	**Loctite® 222**

Installing the generator cover



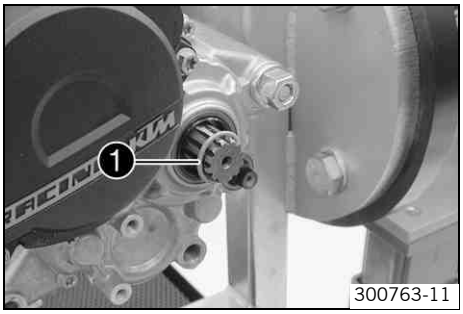
– Position generator cover gasket ❶.



– Position the generator cover.
– Mount and tighten screws ❷.
Guideline

Screw, generator cover	M6	8 Nm (5.9 lbf ft)

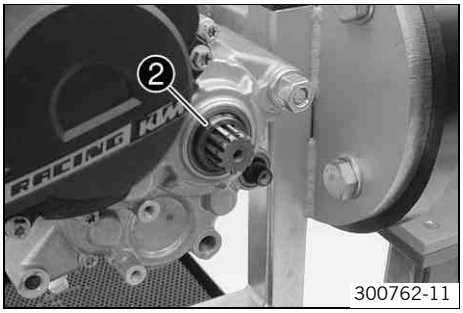
Installing the distance bushing



– Lubricate the shaft seal ring prior to installation.

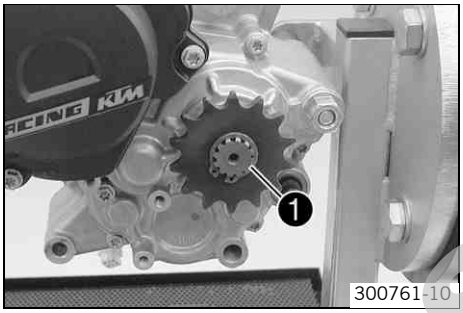
Long-life grease (☛ p. 122)

– Mount O-ring ❶.



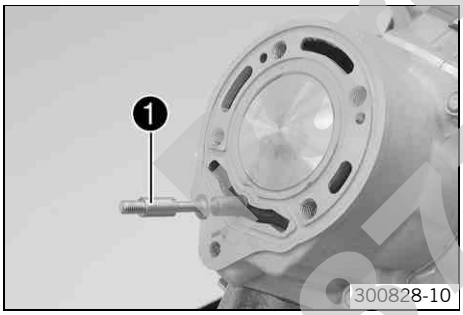
– Mount distance bushing ❷ with the chamfer facing inward.

Installing the engine sprocket



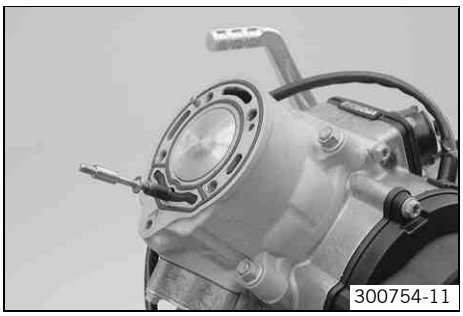
– Slide on the engine sprocket with the collar facing the engine. Mount lock ring ❶.

Installing the exhaust control valve



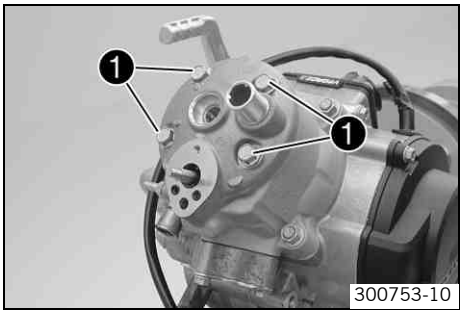
– Mount exhaust control valve ❶.

Installing the cylinder head



– Mount the cylinder head gasket.

Info
Ensure that dowel pin is seated correctly.



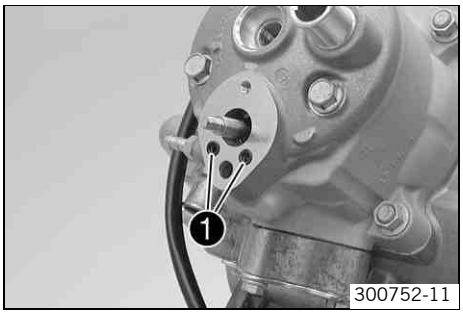
– Mount the cylinder head. Mount screws ❶ with the washers and tighten in a criss-cross pattern.

Guideline

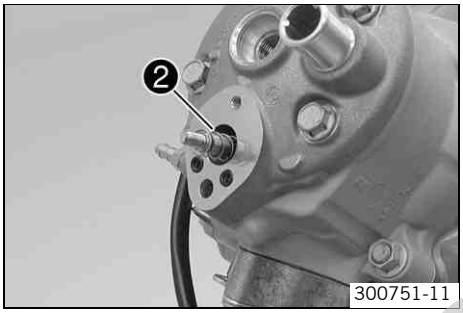
Screw, cylinder head	M7	18 Nm (13.3 lbf ft)

Info
Always use new screws and washers.

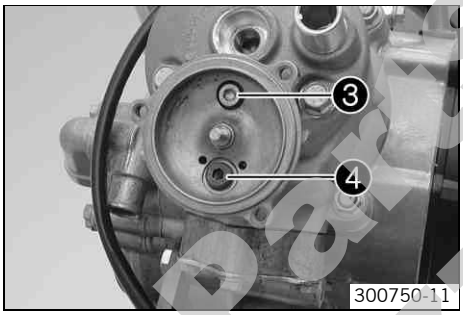
Installing the exhaust control



– Mount both O-rings ❶.



– Position spring ❷.



– Position the reed valve housing of the exhaust control.
– Mount and tighten screws ❸.

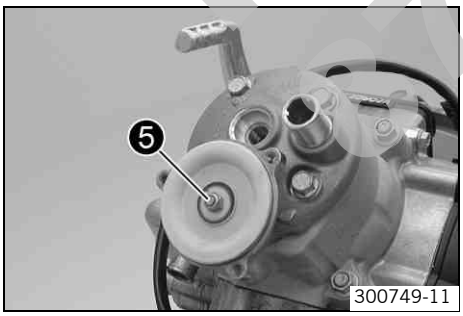
Guideline

Screw, reed valve housing of exhaust control	M5	5 Nm (3.7 lbf ft)

– Mount and tighten screws ❹.

Guideline

Screw, reed valve housing of exhaust control	M6	10 Nm (7.4 lbf ft)

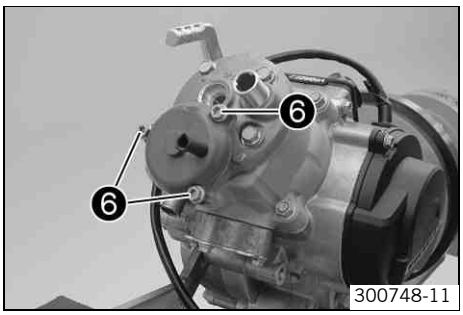


– Position the diaphragm.
– Mount and tighten nut ❺.

Guideline

Nut, exhaust control diaphragm	M5	3 Nm (2.2 lbf ft)

Info
If the shaft of the exhaust control turns, raise the diaphragm and hold the shaft in place.

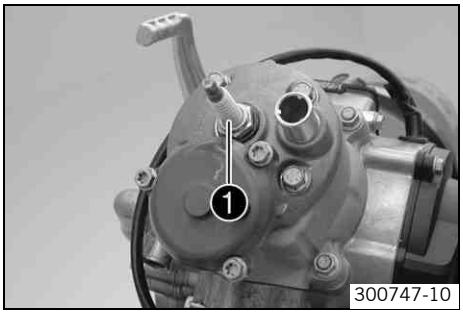


– Position the diaphragm cover of the exhaust control.
– Mount and tighten screws ❻.

Guideline

Screw, diaphragm cover of exhaust control	M5	4 Nm (3 lbf ft)

Installing the spark plug



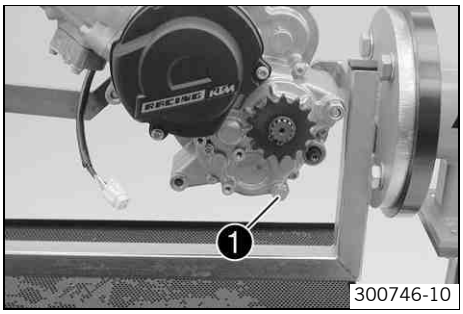
– Mount and tighten spark plug ❶.

Guideline

Spark plug	M10x1	10... 12 Nm (7.4... 8.9 lbf ft)

Spark plug wrench (60029073000) (☛ p. 128)

Installing the oil drain plug

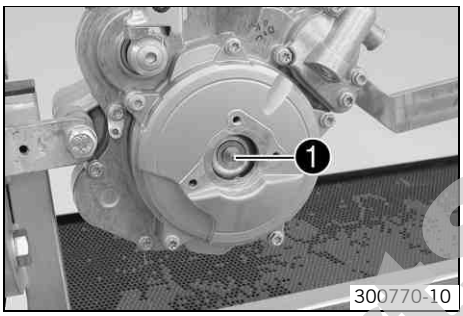


– Mount and tighten the oil drain plug with magnet ❶ and the new seal ring.

Guideline

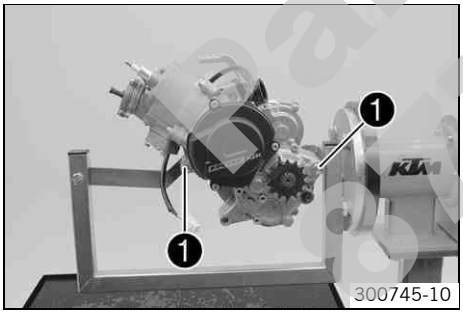
Oil drain plug with magnet	M12x1.5	20 Nm (14.8 lbf ft)

Installing the clutch pressure piece



– Mount clutch pressure piece ❶.

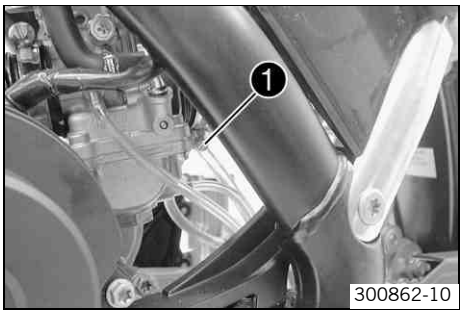
Removing the engine from the universal mounting rack



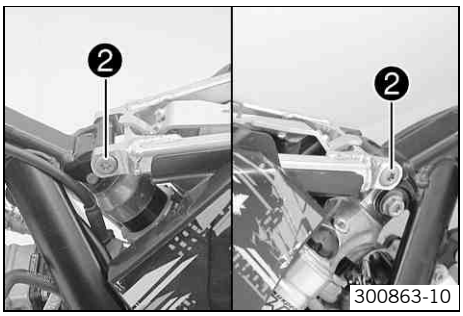
– Remove screw cap ❶.
– Remove the engine from the universal mounting rack.

Removing the carburetor

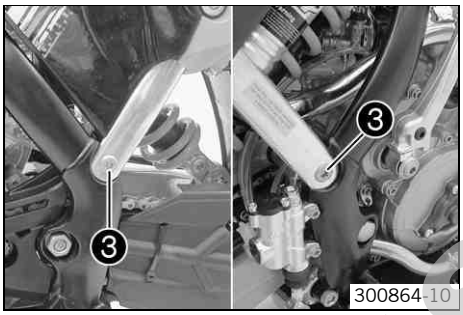
– Dismount the fuel tank. (☛ p. 25)
– Remove the main silencer. (☛ p. 22)



– Unscrew hose clip ❶.

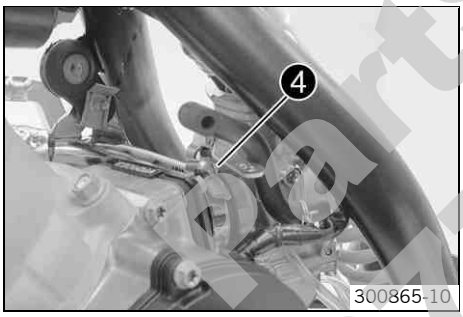


– Loosen screw ❷.

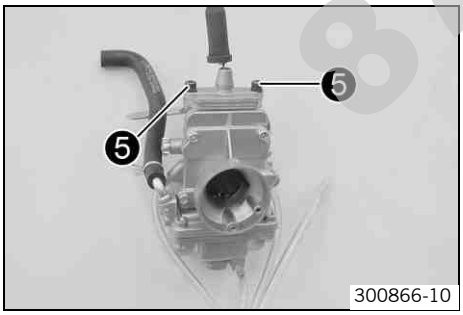


– Remove screw ❸.
– Swing up the tail piece.

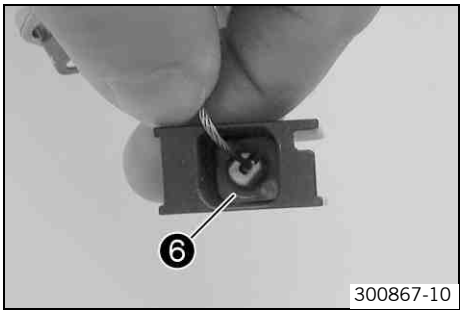
Info
Pay attention to the carburetor connection boot.



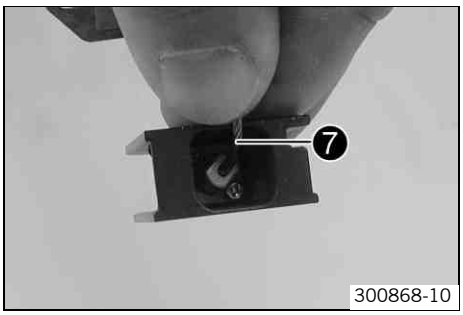
– Unscrew hose clip ❹.
– Pull the carburetor out of the intake flange.



– Remove screws ❺.
– Remove the throttle slide cover and pull the throttle slide out of the carburetor.
– Drain the remaining fuel.

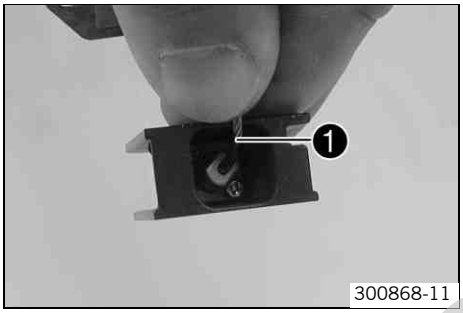


– Pull back the throttle slide spring and plastic lock ❻.

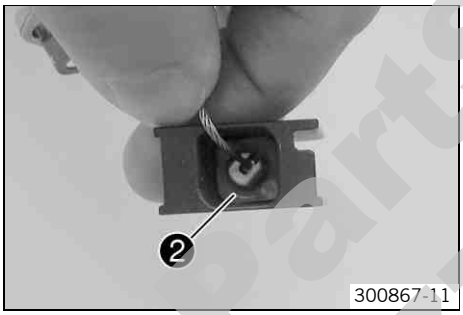


– Detach throttle cable ❼.
– Remove the throttle slide.

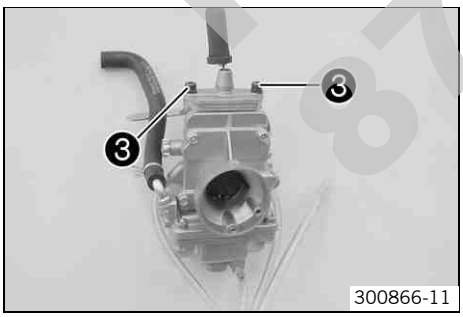
Installing the carburetor



– Attach throttle cable ❶.

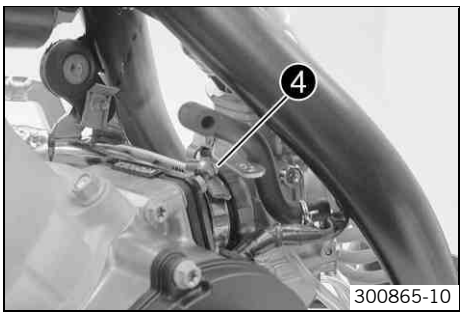


– Position plastic lock ❷.
– Position the throttle slide spring.

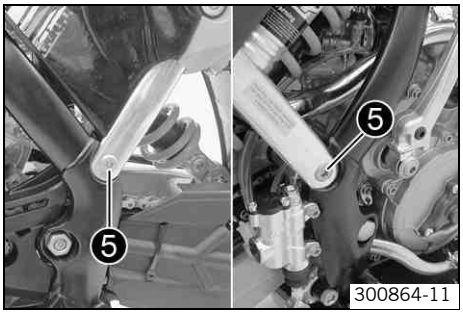


– Position the throttle slide and throttle slide cover.
– Mount and tighten screws ❸.
Guideline

Screw, carburetor cover	M4	3 Nm (2.2 lbf ft)



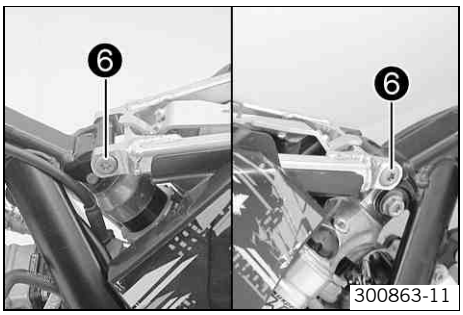
– Mount the carburetor.
– Position and tighten hose clamp ❹.



– Position the tail piece.
– Position the carburetor connection boot.
– Mount and tighten screws ❺.

Guideline

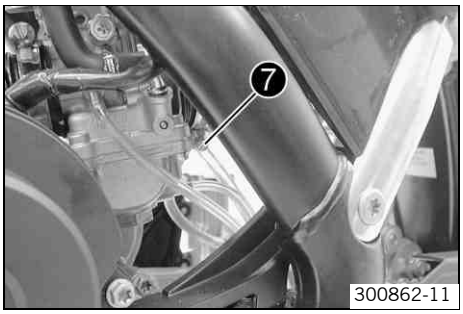
Screw, tail piece	M8	35 Nm (25.8 lbf ft)	**Loctite® 243™**



– Tighten screws ❻.

Guideline

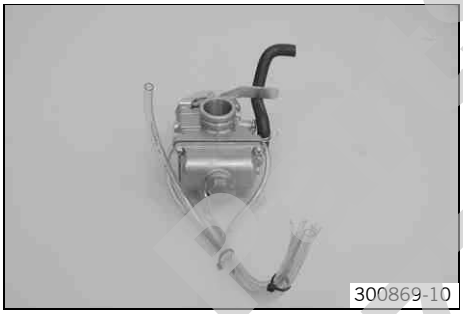
Screw, tail piece	M8	35 Nm (25.8 lbf ft)	**Loctite® 243™**

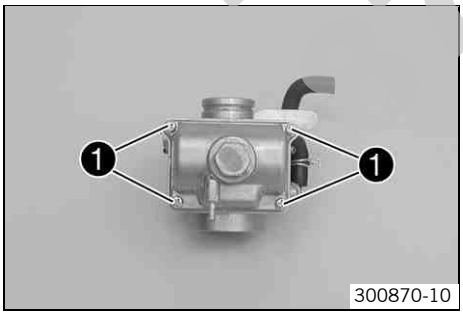


– Tighten hose clip ❼.
– Install the main silencer. (☛ p. 22)
– Install the fuel tank. (☛ p. 26)
– Check play in the gas Bowden cable. (☛ p. 15)
– Carburetor - adjust the idle speed. (☛ p. 93)

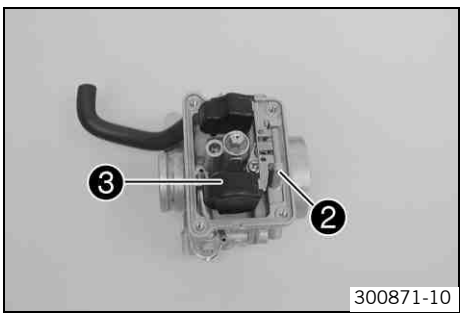
Disassembling the carburetor

– Remove the carburetor. (☛ p. 85)
– Pull the hoses off of the carburetor.

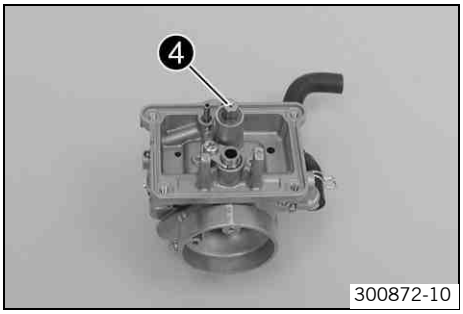




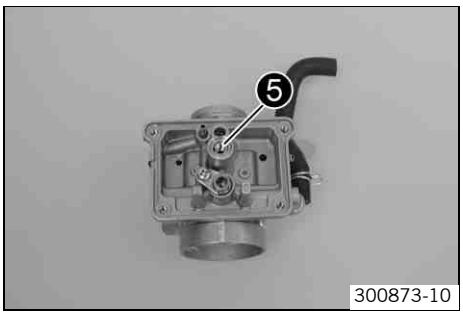
– Remove screws ❶.
– Remove the float chamber.
– Remove seal.



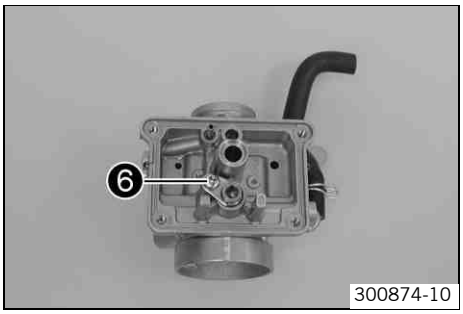
– Remove fulcrum pin ❷.
– Remove float ❸ and the float needle valve.



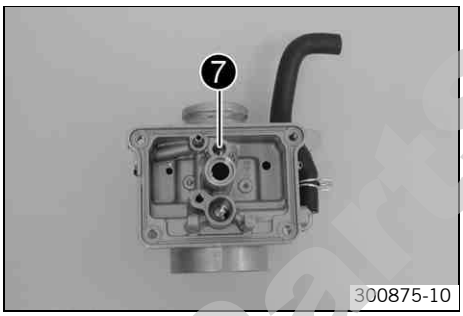
– Remove main jet ❹ with the washer.



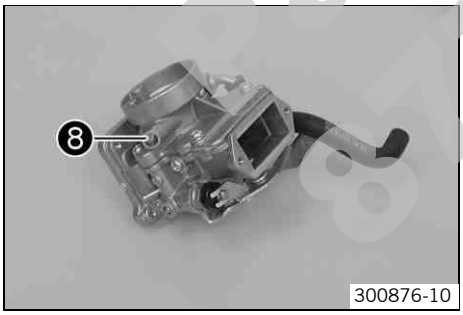
– Press needle jet ❺ out of the carburetor in the direction of the venturi tube.



– Remove screw ❻.
– Remove the valve seat of the float needle valve with the lock washer.

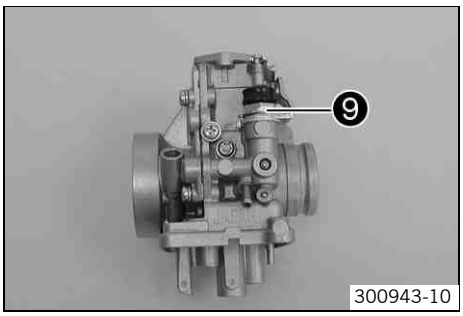


– Remove idling jet ❼.

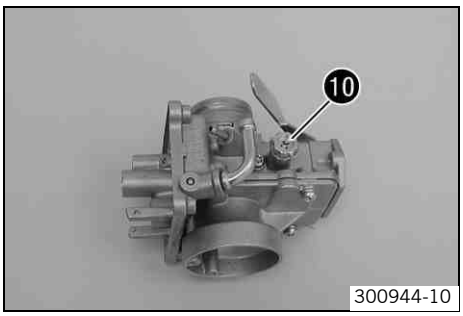


– Note the setting of the idle air adjusting screw ❽.
– Remove the idle air adjusting screw.

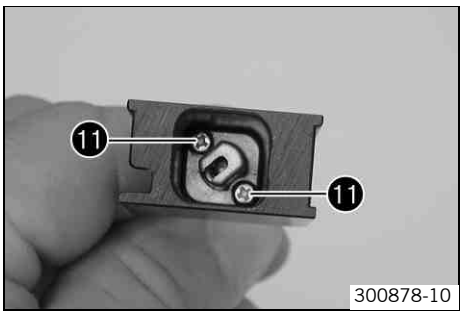
Info
Make sure not to misplace the spring.



– Bend open lock washer ❾.
– Unscrew the choke slide.

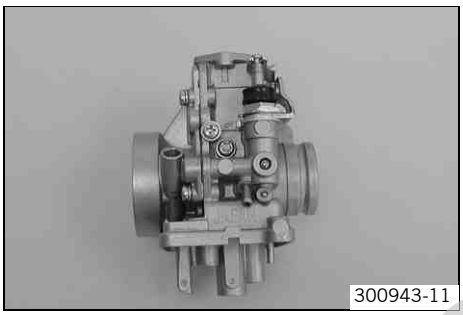


– Remove idle speed adjusting screw ❿ with the spring and O-ring.



– Remove screws ⓫.
– Remove the jet needle with the spring retainer.

Assembling the carburetor

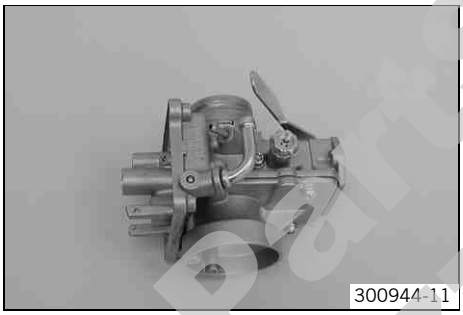


– Position the choke slide with the choke lever.
– Tighten the choke slide.

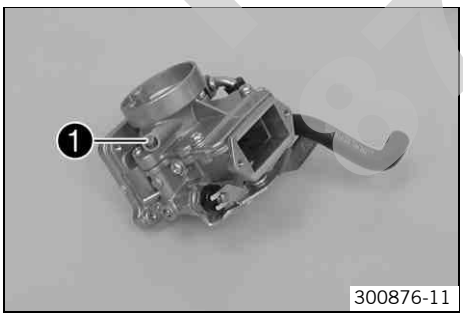
Guideline

Choke slide	M10	5 Nm (3.7 lbf ft)

– Secure the choke slide with the lock washer.



– Mount the speed adjusting screw with the spring and O-ring.



Alternative 1

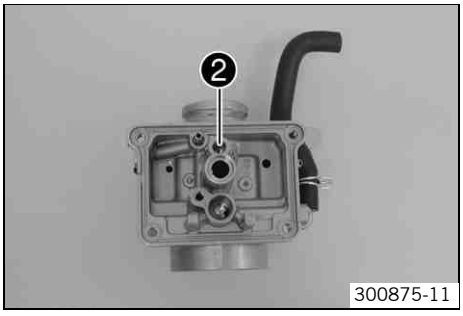
– Mount idle air adjusting screw ❶ with the spring.
– Set the idle air adjusting screw to the specified value.

Guideline

Idle air adjusting screw	
Open	3.5 turns

Alternative 2

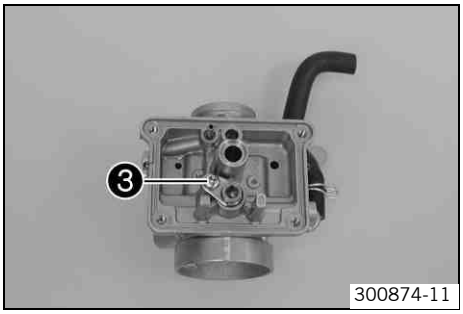
– Set the idle air adjusting screw to the value determined when it was disassembled.



– Mount and tighten idling jet ❷.

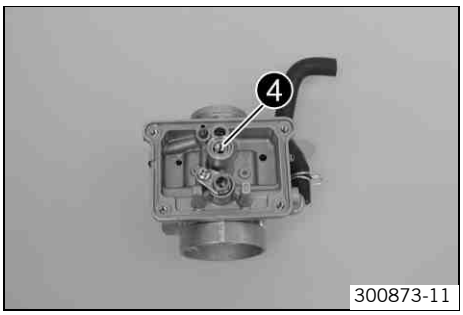
Guideline

Idling jet	M4x0.7	2 Nm (1.5 lbf ft)

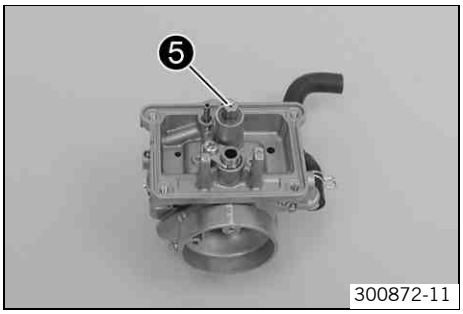


– Position the seat of the float needle valve with the lock washer.
– Mount and tighten screw ❸.
Guideline

Other screws, carburetor	M4	2 Nm (1.5 lbf ft)

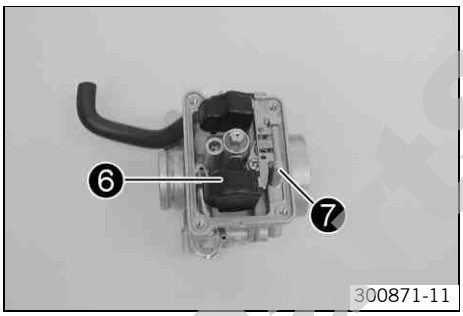


– Position needle jet ❹ in the carburetor.
✔ The pin engages in the recess.

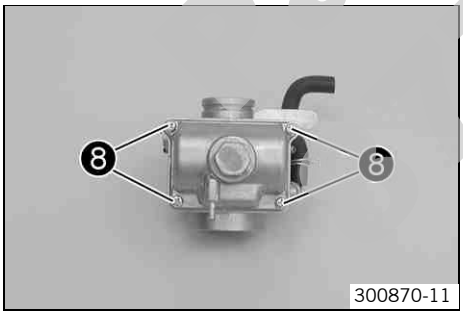


– Mount and tighten main jet ❺ with the washer.
Guideline

Main jet	M5x0.75	2 Nm (1.5 lbf ft)

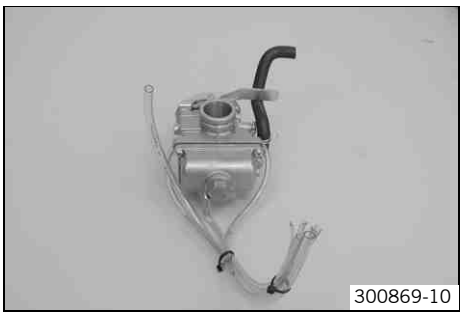


– Position the float needle valve and float ❻.
– Mount fulcrum pin ❼.
– Check/set the float level. (☛ p. 92)

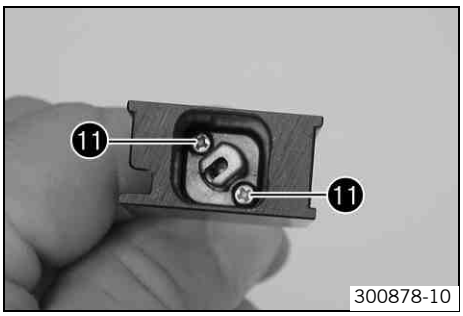


– Mount the gasket.
– Position the float chamber.
– Mount and tighten screws ❽.
Guideline

Other screws, carburetor	M4	2 Nm (1.5 lbf ft)

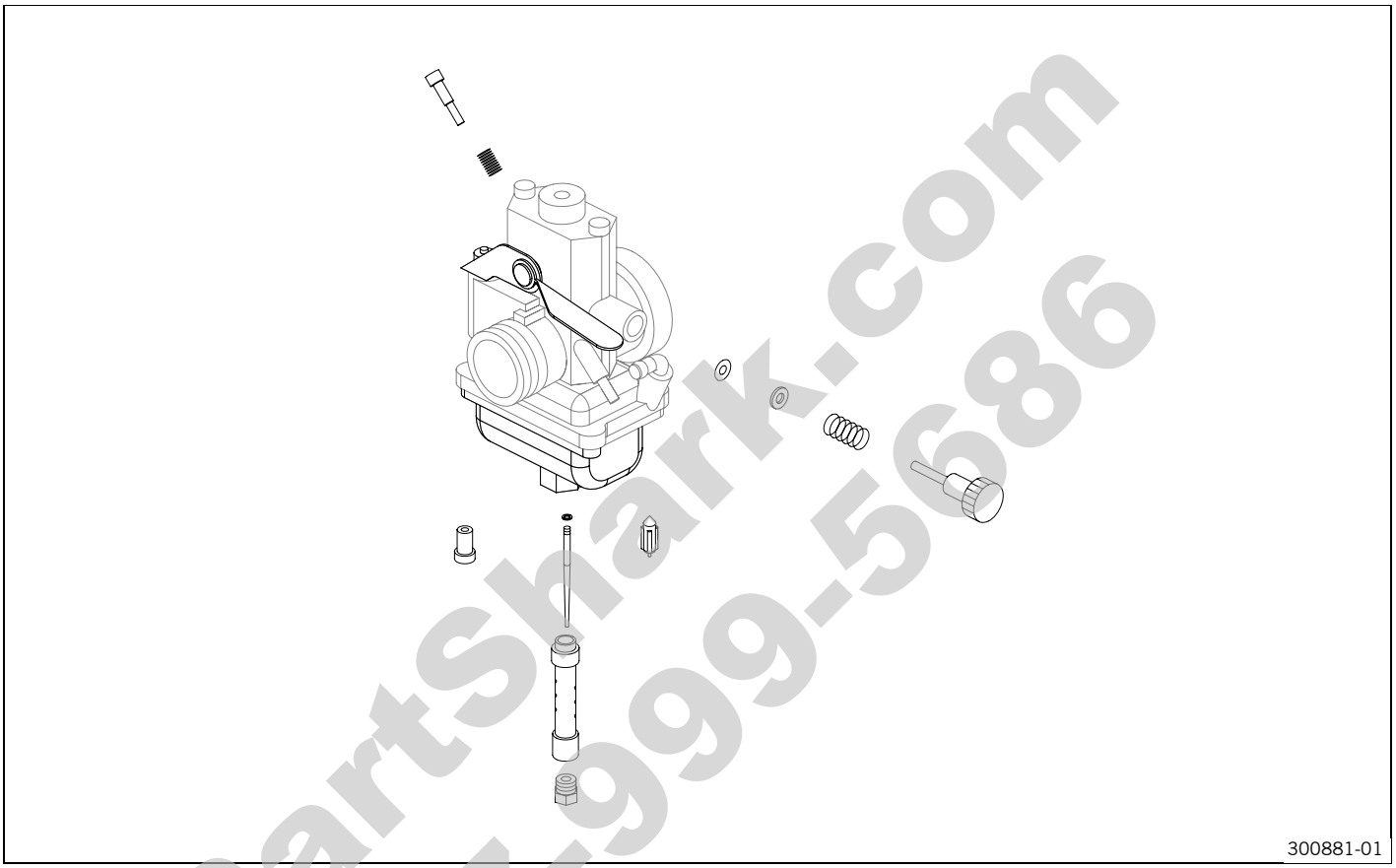


– Mount the hoses on the carburetor.



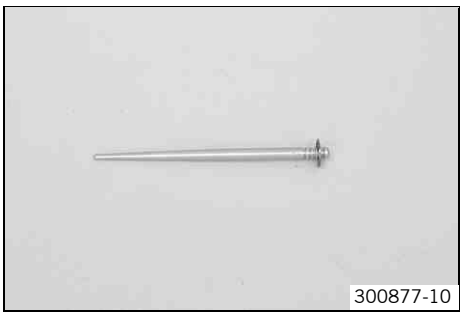
– Position the jet needle with the spring retainer in the throttle slide.
– Mount and tighten screws ❾.
– Install the carburetor. (☛ p. 86)

Checking/setting the carburetor components



– Disassemble the carburetor. (☛ p. 87)
– Check the jet needle. (☛ p. 91)
– Check the throttle slide. (☛ p. 92)
– Check the float needle valve. (☛ p. 92)
– Check the choke slide. (☛ p. 92)
– Assemble the carburetor. (☛ p. 89)

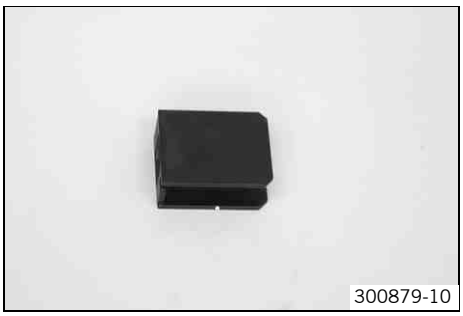
Checking the jet needle



Condition
The jet needle has been removed.

– Check the jet needle for bending and wear of the coating.
  » If the jet needle is bent, or the coating is damaged or worn:
    – Change the jet needle.
– Check the needle clip for tightness.
  » If the needle clip is loose:
    – Change the needle clip or jet needle.

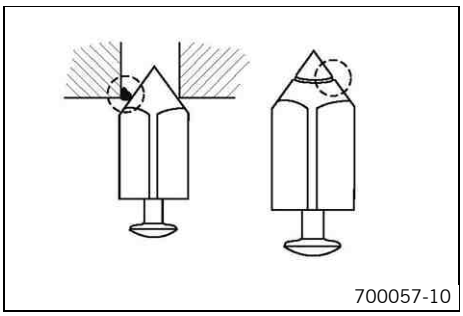
Checking the throttle slide



Condition
The throttle slide has been removed.

– Check the throttle slide for damage and wear.
  » If the throttle slide is damaged or worn:
    – Change the throttle slide.

Checking the float needle valve



Condition
The float needle valve is removed.

– Check the float needle valve including the valve seat for deposits.
  » If there are deposits:
    – Clean or change the valve seat and float needle valve.

    Carburetor cleaner (☛ p. 122)

– Check the float needle valve for wear and the sealing area for notches.
  » If the sealing area is damaged or worn:
    – Change the float needle valve.

Checking the choke slide

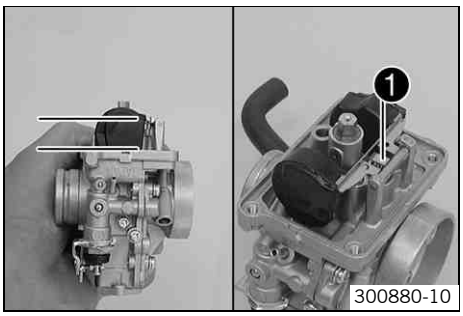
Condition
The choke slide has been removed.

– Check the choke slide for smooth operation.
  » If the choke slide is difficult to move or is dirty:
    – Clean the choke slide and check its activation.

    Carburetor cleaner (☛ p. 122)

– Check the piston of the choke slide for damage and wear.
  » If the piston of the choke slide is damaged or worn:
    – Change the choke slide.
– Check the rubber sleeve and lock.
  » If the rubber sleeve is damaged or brittle, or if the lock is not functioning:
    – Change the choke slide.

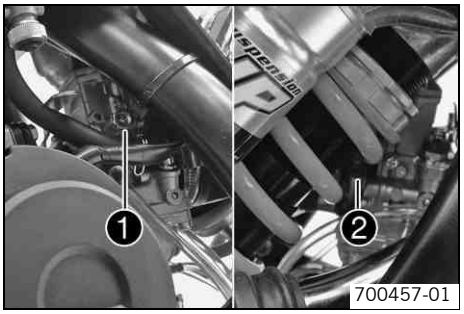
Checking/setting the float level



Condition
The carburetor and float chamber are removed.

– Tilt the carburetor sideways, preventing the fulcrum pin from falling out.
– Tilt the carburetor until the float is resting against the float needle valve, but the float needle valve is not being pressed together.
  » If the edge of the float is not parallel (max. 1° deviation upwards) to the sealing area of the float housing in this position:
    – Adjust the float level by bending float lever ❶.

Carburetor - adjusting the idle speed



– Screw in idle air adjusting screw ❷ all the way and turn it to the specified basic position.

Guideline

Idle air adjusting screw	
Open	3.5 turns

– Run the engine until warm.

Guideline

Warm-up time	≥ 5 min

Danger

Danger of poisoning Exhaust gases are poisonous and can result in unconsciousness and/or death.

– When running the engine, always make sure there is sufficient ventilation, and do not start or run the engine in a closed space without an effective exhaust extraction system.

– Adjust the idle speed with the adjusting screw ❶.

Guideline

Choke function deactivated – The choke lever is pushed up all the way.	
Idle speed	1,400... 1,500 rpm

– Turn idle air adjusting screw ❷ slowly in a clockwise direction until the idle speed begins to fall.
– Note the position and turn the idle air adjusting screw slowly counterclockwise until the idle speed falls again.
– Adjust to the point between these two positions with the highest idle speed.

Info

If the engine speed rises considerably, reduce the idle speed to a normal level and repeat the above steps.
If the procedure described here does not lead to satisfactory results, the cause may be a wrongly dimensioned idling jet.
If you can turn the idle air adjusting screw to the end without any change of engine speed, you need to install a smaller idling jet.
After changing the idling jet, start from the beginning with the adjusting steps.
Following extreme air temperature or altitude changes, adjust the idle speed again.

Emptying the carburetor float chamber

Danger

Fire hazard Fuel can easily catch fire.

– Never fill up the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
– Fuel in the fuel tank expands when warm and can escape if the tank is overfilled. See specifications on filling up with fuel.

Warning

Danger of poisoning Fuel is poisonous and a health hazard.

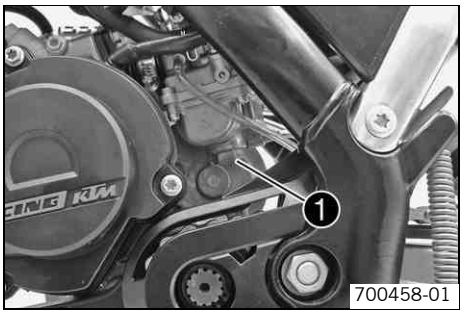
– Avoid contact between fuel and skin, eyes and clothing. Do not inhale fuel vapors. If fuel gets into your eyes, rinse immediately with water and contact a doctor. Wash affected skin areas immediately with soap and water. If fuel is swallowed, contact a doctor immediately. Change clothing that has come into contact with fuel. Store fuel in a suitable canister according to regulations and keep it out of the reach of children.

Warning

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

– Do not allow fuel to get into the ground water, the ground, or the sewage system.

Info
Carry out this work with a cold engine.



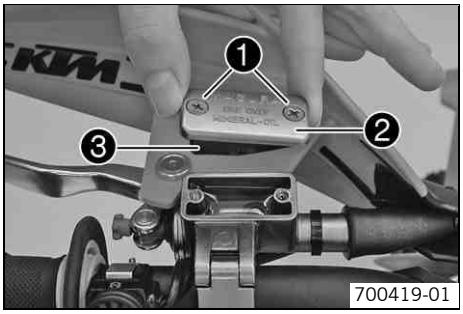
– Turn the knurled screw on the fuel tap all the way clockwise.
  ✓ No more fuel flows from the tank to the carburetor.
– Place a cloth beneath the opening to soak up emerging fuel.

Info
Water in the float chamber results in malfunctioning.

– Remove plug ❶.
– Tighten plug ❶.

Checking the fluid level of hydraulic clutch

Info
The fluid level rises with increasing wear of the clutch lining disc.
Do not use brake fluid.



– Move the clutch fluid reservoir mounted on the handlebar to a horizontal position.
– Remove screws ❶.
– Remove cover ❷ with membrane ❸.
– Check the fluid level.

Fluid level under top level of container	4 mm (0.16 in)

» If the level of the fluid does not meet specifications:
– Correct the fluid level of the hydraulic clutch.

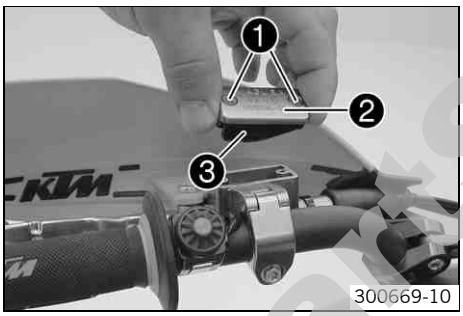
Hydraulic fluid (15) (☛ p. 120)

– Position the cover with the membrane. Mount and tighten the screws.

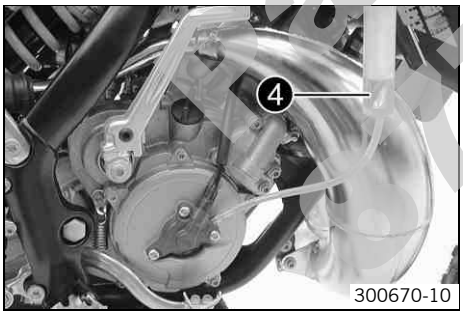
Changing the hydraulic clutch fluid

Warning
Environmental hazard Problem materials cause environmental damage.
– Dispose of oil, grease, filters, fuel, cleaning substances, brake fluid, batteries, etc., according to regulations.

Info
The fluid level rises with increasing wear of the clutch lining disc.



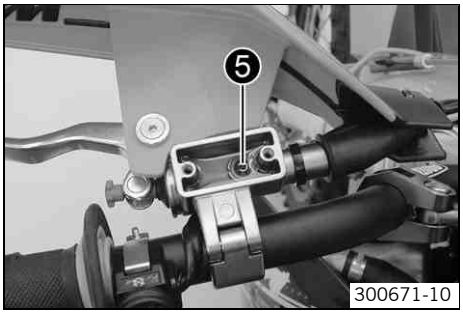
– Move the clutch fluid reservoir mounted on the handlebar to a horizontal position.
– Remove screws ❶.
– Remove cover ❷ with membrane ❸.



– Fill bleeding syringe ❹ with the appropriate hydraulic fluid.

Bleed syringe (50329050000) (☛ p. 126)
Hydraulic fluid (15) (☛ p. 120)

– On the slave cylinder, remove the bleeder screw and mount bleeding syringe ❹.



– Inject the liquid into the system until it escapes from drill hole ❺ of the master cylinder without bubbles.
– To prevent overflow, drain fluid occasionally from the master cylinder reservoir.
– Remove the bleeding syringe. Mount and tighten screws bleeder screw.
– Correct the fluid level of the hydraulic clutch.
Guideline

Fluid level under top level of container.	4 mm (0.16 in)

– Position the cover with the membrane. Mount and tighten the screws.

Draining the coolant

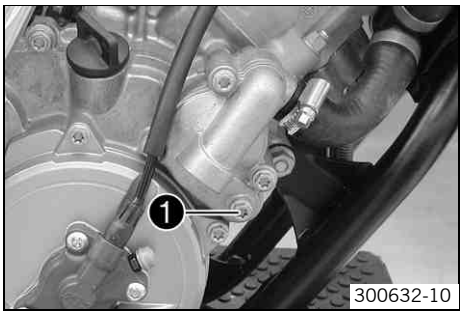
Warning
Scalding hazard During motorcycle operation, the coolant gets very hot and is under pressure.

– Do not open the radiator, the radiator hoses or other components of the cooling system when the engine is hot. Allow the engine and radiator to cool down. If you are scalded, hold the affected part under cold water immediately.

Warning
Danger of poisoning Coolants are poisonous and a health hazard.

– Avoid contact between coolants and skin, eyes and clothing. If fuel gets into your eyes, rinse immediately with water and contact a doctor. Wash affected skin areas immediately with soap and water. If coolant is swallowed, contact a doctor immediately. Change clothes that have come into contact with coolants. Keep coolants out of the reach of children.

Info
Carry out this work with a cold engine.



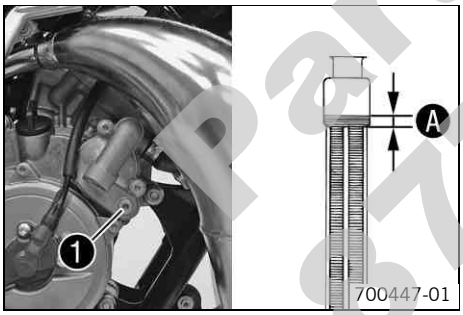
– Stand the vehicle upright.
– Place a suitable container beneath the water pump cover.
– Remove screw ❶. Remove the radiator cap.
– Completely drain the coolant.
– Mount and tighten screw ❶ with a new seal ring.
Guideline

Drain plug, water pump cover	M6	6 Nm (4.4 lbf ft)

Refilling coolant

Warning
Danger of poisoning Coolants are poisonous and a health hazard.

– Avoid contact between coolants and skin, eyes and clothing. If fuel gets into your eyes, rinse immediately with water and contact a doctor. Wash affected skin areas immediately with soap and water. If coolant is swallowed, contact a doctor immediately. Change clothes that have come into contact with coolants. Keep coolants out of the reach of children.



– Make sure that the screw ❶ is tightened.
– Stand the vehicle upright.
– Add coolant to level Ⓐ.
Guideline

Level Ⓐ above the radiator fins	10 mm (0.39 in)

Coolant	0.55 l (0.58 qt.)	Coolant (☛ p. 120)
		Coolant (mixed ready to use) (☛ p. 120)

– Mount the radiator cap.
– Make a short test ride.
– Check the coolant level. (☛ p. 97)

Checking the antifreeze and coolant level

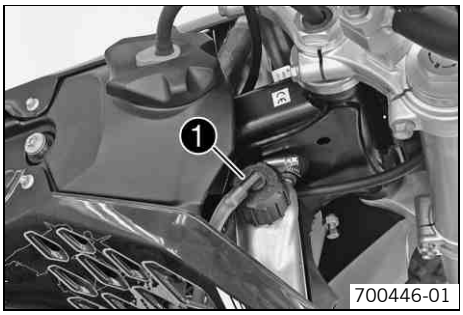
Warning
Scalding hazard During motorcycle operation, the coolant gets very hot and is under pressure.

– Do not open the radiator, the radiator hoses or other components of the cooling system when the engine is hot. Allow the engine and radiator to cool down. If you are scalded, hold the affected part under cold water immediately.

Warning
Danger of poisoning Coolants are poisonous and a health hazard.

– Avoid contact between coolants and skin, eyes and clothing. If fuel gets into your eyes, rinse immediately with water and contact a doctor. Wash affected skin areas immediately with soap and water. If coolant is swallowed, contact a doctor immediately. Change clothes that have come into contact with coolants. Keep coolants out of the reach of children.

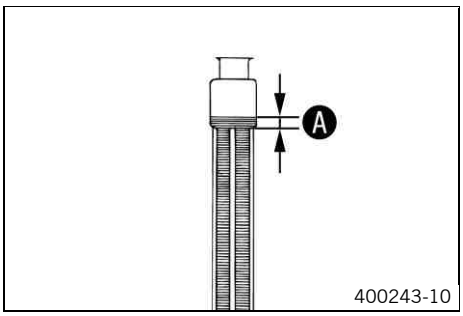
Info
Carry out this work with a cold engine.



– Stand the motorcycle upright on a horizontal surface.
– Remove radiator cap ❶.
– Check the antifreeze of the coolant.

−25... −45 °C (−13... −49 °F)

» If the antifreeze of the coolant does not meet specifications:
– Correct the antifreeze of the coolant.



– Check the coolant level in the radiator.

Coolant level ❹ above the radiator fins	10 mm (0.39 in)

» If the coolant level does not meet specifications:
– Correct the coolant level.

Alternative 1

Coolant (☛ p. 120)

Alternative 2

Coolant (mixed ready to use) (☛ p. 120)

– Mount the radiator cap.

Checking the coolant level

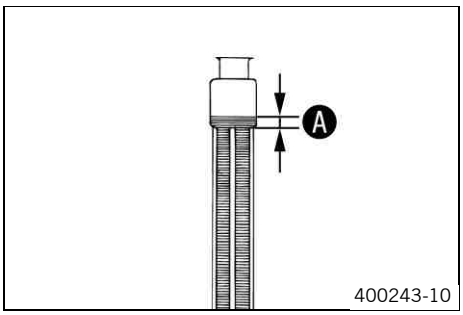
Warning
Scalding hazard During motorcycle operation, the coolant gets very hot and is under pressure.

– Do not open the radiator, the radiator hoses or other components of the cooling system when the engine is hot. Allow the engine and radiator to cool down. If you are scalded, hold the affected part under cold water immediately.

Warning
Danger of poisoning Coolants are poisonous and a health hazard.

– Avoid contact between coolants and skin, eyes and clothing. If fuel gets into your eyes, rinse immediately with water and contact a doctor. Wash affected skin areas immediately with soap and water. If coolant is swallowed, contact a doctor immediately. Change clothes that have come into contact with coolants. Keep coolants out of the reach of children.

Info
Carry out this work with a cold engine.



– Stand the motorcycle upright on a horizontal surface.
– Remove the radiator cap.
– Check the coolant level in the radiator.

Coolant level ❹ above the radiator fins	10 mm (0.39 in)

» If the coolant level does not meet specifications:
– Correct the coolant level.

Alternative 1

Coolant (☛ p. 120)

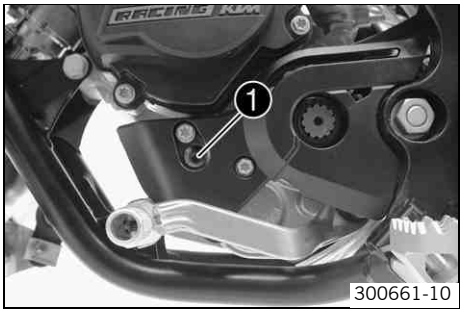
Alternative 2

Coolant (mixed ready to use) (☛ p. 120)

– Mount the radiator cap.

Checking gear oil level

Info
The gear oil level must be checked when the engine is cold.



– Stand the motorcycle upright on a horizontal surface.
– Remove gear oil level check screw ❶. Stand the vehicle upright.
– Check the gear oil level.

A small amount of gear oil should flow out of the hole.

» If no gear oil flows out:
– Add gear oil. (☛ p. 100)
– Mount and tighten the gear oil level check screw.
Guideline

Screw, gear oil level check	M6	6 Nm (4.4 lbf ft)

Changing the gear oil

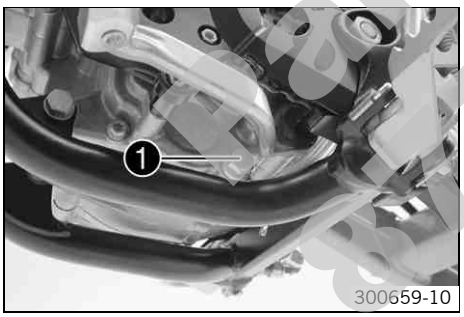
– Drain the gear oil. (☛ p. 99)
– Fill up with gear oil. (☛ p. 99)

Draining the gear oil

Warning
Danger of scalding Engine oil and gear oil get very hot when the motocycle is driven.
– Wear suitable protective clothing and gloves. If you scald yourself, hold the affected area under cold water immediately.

Warning
Environmental hazard Problem materials cause environmental damage.
– Dispose of oil, grease, filters, fuel, cleaning substances, brake fluid, batteries, etc., according to regulations.

Info
Drain the gear oil only when the engine is warm.

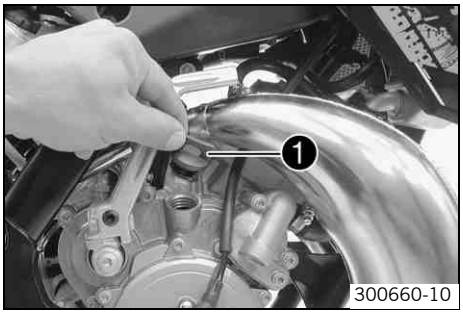


– Stand the motorcycle on its side stand on a horizontal surface.
– Place a suitable container under the engine.
– Remove the gear oil drain plug with magnet ❶.
– Completely drain the gear oil.
– Thoroughly clean gear oil drain plug with magnet.
– Clean the sealing area on the engine.
– Mount the gear oil drain plug with magnet and the seal ring and tighten it.
Guideline

Oil drain plug with magnet	M12x1.5	20 Nm (14.8 lbf ft)

Filling up with gear oil

Info
Too little gear oil or poor-quality oil results in premature wear of the transmission.



– Remove the screw cap ❶ and fill up with gear oil.

Gear oil	0.50 l (0.53 qt.)	Engine oil (15W/50) (☛ p. 120)

– Mount and tighten screw cap ❶.

Danger

Danger of poisoning Exhaust gases are poisonous and can result in unconsciousness and/or death.

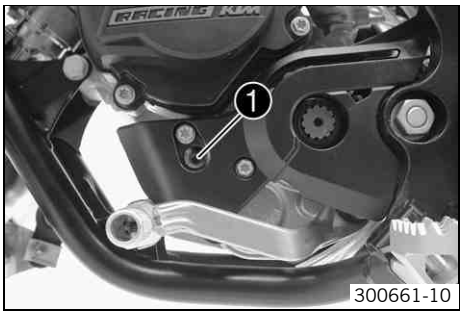
– When running the engine, always make sure there is sufficient ventilation, and do not start or run the engine in a closed space without an effective exhaust extraction system.

– Start the engine and check that it is oil-tight.
– Check the gear oil level. (☛ p. 99)

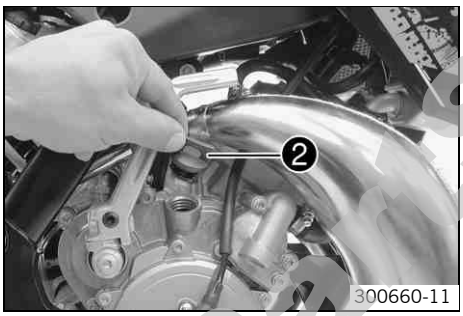
Adding gear oil

Info

Too little gear oil or poor-quality oil results in premature wear of the transmission.



– Remove gear oil level check screw ❶.



– Remove screw cap ❷. Stand the vehicle upright.
– Add gear oil until it flows out of the bore of the gear oil level screw.

Engine oil (15W/50) (☛ p. 120)

– Mount and tighten the gear oil level check screw.

Guideline

Screw, gear oil level check	M6	6 Nm (4.4 lbf ft)

– Mount and tighten screw cap ❷.

Danger

Danger of poisoning Exhaust gases are poisonous and can result in unconsciousness and/or death.

– When running the engine, always make sure there is sufficient ventilation, and do not start or run the engine in a closed space without an effective exhaust extraction system.

– Start the engine and check that it is oil-tight.

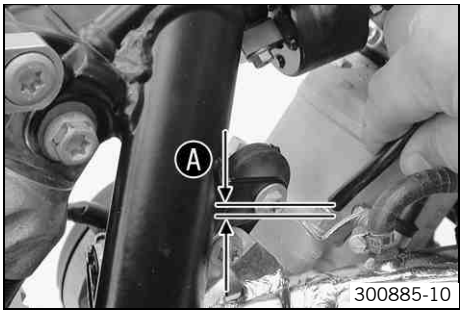
Checking the ignition system

Warning
Risk of injury The ignition system is under high voltage.

– To avoid the danger of an electric shock, do not touch metal parts and the ends of the connection cable during and immediately after measuring.

Condition
The fuel tank has been removed.

– Shift gear to neutral.



– Pull out the spark plug connector and remove the spark plug connector from the ignition wire. Keep the free end of the ignition wire at a distance of Ⓐ from the ground.

Guideline

Distance Ⓐ	5 mm (0.2 in)

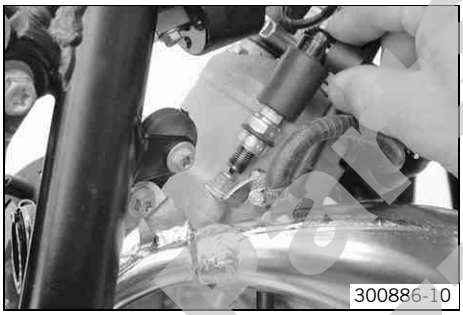
– Forcefully step on the kickstarter, pushing it all the way down.

Info
Do not open the throttle.

– Check the ignition spark.
  » If there is no visible ignition spark:
    – Check the short circuit button. (☛ p. 101)
    – Check the ground connection of the CDI controller and the ignition coil.
    – Check the ignition coil. (☛ p. 103)

Info
The CDI controller cannot be tested using simple tools but requires an ignition test bench.

    – Check the ignition pulse generator. (☛ p. 102)



– Mount the spark plug connector back on the ignition wire. Turn out the spark plug and insert it into the spark plug connector. Keep the spark plug connected to ground.

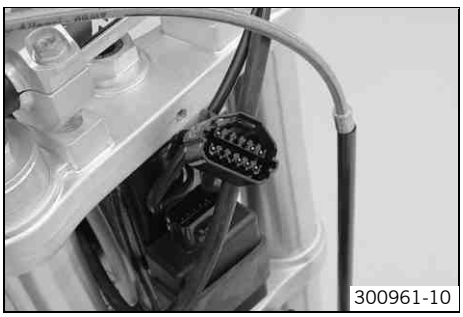
– Forcefully step on the kickstarter, pushing it all the way down.

Info
Do not open the throttle.

– Check the ignition spark.
  » If there is no visible ignition spark:
    – Check the spark plug connector. (☛ p. 103)
    – Change the spark plug.

Checking the short circuit button

Condition
The start number plate has been removed.



– Disconnect plug **FD** from the CDI controller.

– On the cable harness side of plug **FD**, measure pin **8** against ground.

Resistance - short circuit button not confirmed	∞

  » If the displayed value does not equal the specification:
    – Check the wiring harness.
    – Change the short circuit button.

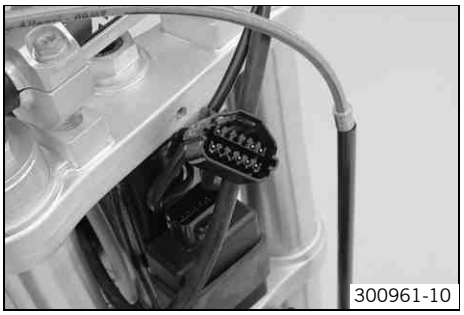
– Activate the short circuit button. On the cable harness side of plug **FD**, measure pin **8** against ground.

Resistance - short circuit button confirmed	0 Ω

» If the displayed value does not equal the specification:
– Check the wiring harness.
– Change the short circuit button.

Checking the ignition pulse generator

Condition
The start number plate has been removed.


300961-10

– Disconnect plug **FD** from the CDI controller.
– On the cable harness side of plug **FD**, measure pin **1** against pin **2**.

Ignition pulse generator	
Resistance at: 20 °C (68 °F)	90... 110 Ω

» If the measured value does not equal the specified value:
– Check the wiring harness.
– Change the ignition pulse generator.

– On the cable harness side of plug **FD**, measure pin **1** against ground.

Resistance	∞

» If the measured value does not equal the specified value:
– Check the wiring harness.
– Change the ignition pulse generator.

– On the cable harness side of plug **FD**, measure pin **2** against ground.

Resistance	∞

» If the measured value does not equal the specified value:
– Check the wiring harness.
– Change the ignition pulse generator.

– Connect the special tool to the multimeter.

Peak voltage adapter (58429042000) (☛ p. 127)

Info
When using the peak voltage adapter, the measurement range of the multimeter must be set to DCV.

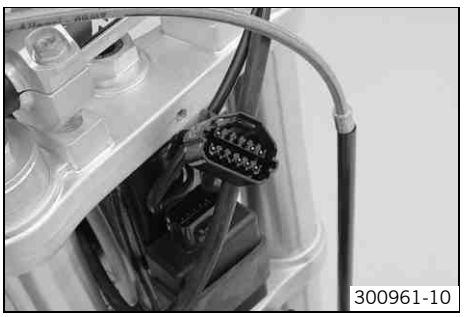
– On the cable harness side of plug **FD**, measure pin **1** against pin **2**. Activate the kickstarter.

Voltage - kickstarter confirmed	≥ 5 V

» If the measured value does not equal the specified value:
– Change the ignition pulse generator.

Checking the generator

Condition
The start number plate has been removed.


300961-10

– Disconnect plug **FD** from the CDI controller.
– On the cable harness side of plug **FD**, measure pin **7** against pin **9**.

Generator	
Resistance at: 20 °C (68 °F)	15.3... 20.7 Ω

» If the measured value does not equal the specified value:
– Check the wiring harness.
– Change the generator.

– On the cable harness side of plug **FD**, measure pin **7** against ground.

Resistance	∞

» If the measured value does not equal the specified value:
– Check the wiring harness.
– Change the generator.

– On the cable harness side of plug **FD**, measure pin **9** against ground.

Resistance	∞

» If the measured value does not equal the specified value:
– Check the wiring harness.
– Change the generator.

– Connect the special tool to the multimeter.

Peak voltage adapter (58429042000) (☛ p. 127)

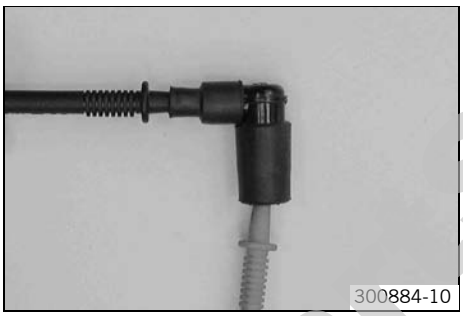
Info
When using the peak voltage adapter, the measurement range of the multimeter must be set to DCV.

– On the cable harness side of plug **FD**, measure pin **7** against pin **9**. Activate the kickstarter.

Voltage - kickstarter confirmed	≥ 40 V

» If the measured value does not equal the specified value:
– Change the generator.

Checking the spark plug connector


300884-10

– Measure the removed spark plug connector with a multimeter.

Spark plug connector	
Resistance at: 20 °C (68 °F)	4.3... 5.7 kΩ

» If the displayed value does not equal the specification:
– Change the spark plug connector.

Checking the CDI controller

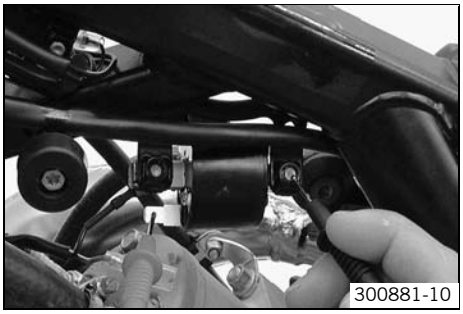
Info
Never check the CDI controller with a conventional measuring instrument. This can destroy highly sensitive electronic components.

– Check the cable and plug-in connection of the CDI controller. A functional check of the CDI controller is only possible on an ignition test bench.

Checking the ignition coil

Condition
The fuel tank is removed.

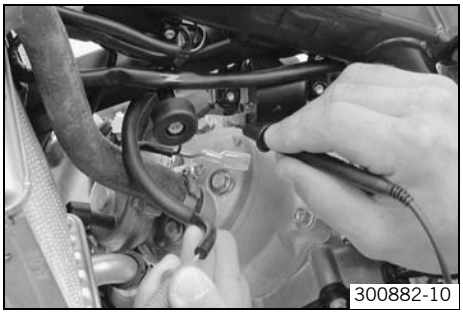
– Remove the spark plug connector.
– Disconnect the ignition coil.


300881-10

– On the component side, measure the connection of the ignition coil against ground.

Ignition coil	
Resistance of primary winding at: 20 °C (68 °F)	0.25... 0.35 Ω

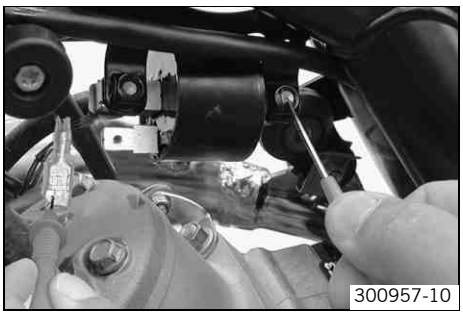
» If the measured value does not equal the specified value:
– Change the ignition coil.


300882-10

– On the component side, measure the connection of the ignition coil against the high voltage output.

Ignition coil	
Resistance of secondary winding at: 20 °C (68 °F)	5... 7.5 kΩ

» If the measured value does not equal the specified value:
– Change the ignition coil.


300957-10

– Connect the special tool to the multimeter.

Peak voltage adapter (58429042000) (☛ p. 127)

Info
When using the peak voltage adapter, the measurement range of the multimeter must be set to DCV.

– Place the red measuring lead of the special tool against ground. Place the black measuring lead against the ignition coil input (blue/white cable).
– Activate the kickstarter.

Ignition coil	
Output voltage, primary winding	≥ 150 V

» If the displayed value does not equal the specification:
– Change the ignition coil.

Faults	Possible cause	Action
Engine turns but does not start	Operating error	– Go through the steps of starting the engine. (☛ p. 7)
	Motorcycle was out of use for a long time and there is old fuel in the float chamber	– Empty the carburetor float chamber. (☛ p. 93)
	Fuel feed interrupted	– Check the fuel tank breather. – Clean the fuel tap. – Check/set the carburetor components. (☛ p. 91)
	Engine flooded	– Clean and dry the spark plug, or change it if necessary.
	Spark plug oily or wet	– Clean and dry the spark plug, or change it if necessary.
	Electrode distance (plug gap) of spark plug too wide	– Adjust the plug gap. Guideline Spark plug electrode gap 0.60 mm (0.0236 in)
	Fault in ignition system	– Check the ignition system. (☛ p. 101) – Adjust the ignition.
	Short-circuit cable in cable harness frayed, short-circuit button defective	– Check the short circuit button. (☛ p. 101)
	Socket connector or ignition coil is loose or oxidized	– Clean the socket connector and treat it with contact spray.
	Water in carburetor or jets blocked	– Check/set the carburetor components. (☛ p. 91)
Engine has no idle	Idling jet blocked	– Check/set the carburetor components. (☛ p. 91)
	Adjusting screws on carburetor distorted	– Carburetor - adjust the idle speed. (☛ p. 93)
	Fault in ignition system	– Check the ignition system. (☛ p. 101) – Adjust the ignition.
	Ignition system defective	– Check the ignition coil. (☛ p. 103) – Check the spark plug connector. (☛ p. 103)
Engine does not speed up	Carburetor running over because float needle dirty or worn	– Check/set the carburetor components. (☛ p. 91)
	Loose carburetor jets	– Check/set the carburetor components. (☛ p. 91)
	Fault in ignition system	– Check the ignition system. (☛ p. 101) – Adjust the ignition.
Engine has too little power	Fuel feed interrupted	– Check the fuel tank breather. – Clean the fuel tap. – Check/set the carburetor components. (☛ p. 91)
	Air filter very dirty	– Clean the air filter. (☛ p. 24)
	Exhaust system leaky, deformed or too little glass fiber yarn filling in main silencer	– Check exhaust system for damage. – Change the glass fiber yarn filling of the main silencer. (☛ p. 23)
	Fault in ignition system	– Check the ignition system. (☛ p. 101) – Adjust the ignition.
	Diaphragm or reed valve housing damaged	– Check the diaphragm and reed valve housing.
	Noticeable wear	– Overhaul the engine.
Engine stalls or is popping into the carburetor	Lack of fuel	– Turn the knurled screw on the fuel tap all the way counterclockwise. – Fill up with fuel.

Faults	Possible cause	Action
Engine stalls or is popping into the carburetor	Engine takes in bad air	– Check the intake flange and carburetor for tightness.
	Socket connector or ignition coil is loose or oxidized	– Clean the socket connector and treat it with contact spray.
Engine overheats	Too little coolant in cooling system	– Check the cooling system for leakage. – Check the coolant level. (☛ p. 97)
	Too little air stream	– Switch off engine when standing.
	Radiator fins very dirty	– Clean radiator fins.
	Foam formation in cooling system	– Drain the coolant. (☛ p. 96) – Refill the coolant. (☛ p. 96)
	Damaged cylinder head or cylinder head gasket	– Check the cylinder head or cylinder head gasket.
	Bent radiator hose	– Change the radiator hose.
	Incorrect ignition point due to loose stator	– Adjust the ignition.
White smoke emission (steam in exhaust gas)	Damaged cylinder head or cylinder head gasket	– Check the cylinder head or cylinder head gasket.
Gear oil exits at the vent hose	Too much gear oil added	– Check the gear oil level. (☛ p. 99)
Water in the gear oil	Damaged shaft seal ring or water pump	– Check the shaft seal ring and water pump.

Design	1-cylinder 2-stroke engine, water-cooled, with reed intake and exhaust control
Displacement	64.85 cm³ (3.9574 cu in)
Stroke	40.8 mm (1.606 in)
Bore	45 mm (1.77 in)
Control	Exhaust control PCEV
Crankshaft bearing	2 grooved ball bearings
Conrod bearing	Needle bearing
Piston pin bearing	Needle bearing
Pistons	Aluminum cast
Piston rings	1 rectangular ring
Engine lubrication	Mixture oil lubrication
Primary transmission	23:75 straight cut spur gear
Clutch	Multidisc clutch in oil bath/hydraulically activated
Gearbox	6-gear, claw shifted
Transmission ratio	
1st gear	13:37
2nd gear	16:34
3rd gear	18:31
4th gear	21:30
5th gear	23:28
6th gear	24:26
Ignition	AET digital
Spark plug	NGK CR 8 HSA
Spark plug electrode gap	0.60 mm (0.0236 in)
Cooling	Water-cooled
Starting aid	Kickstarter

Capacity - gear oil

Gear oil	0.50 l (0.53 qt.)	Engine oil (15W/50) (☛ p. 120)

Capacity - coolant

Coolant	0.55 l (0.58 qt.)	Coolant (☛ p. 120)
		Coolant (mixed ready to use) (☛ p. 120)

X-distance (distance from adjusting gauge to piston)	0... 0.10 mm (0... 0.0039 in)
Piston - diameter	
Size 1	44.955... 44.965 mm (1.76988... 1.77027 in)
Size 2	44.965... 44.975 mm (1.77027... 1.77067 in)
Cylinder - bore diameter	
Size A	45.025... 45.037 mm (1.77263... 1.77311 in)
Size B	45.037... 45.050 mm (1.77311... 1.77362 in)
Piston/cylinder - mounting clearance	
New condition	0.060... 0.085 mm (0.00236... 0.00335 in)
Wear limit	0.10 mm (0.0039 in)
Piston ring end gap	≤ 0.60 mm (≤ 0.0236 in)
Clutch facing disc - thickness	2.6... 2.7 mm (0.102... 0.106 in)
Clutch spring - length	21.5... 21.9 mm (0.846... 0.862 in)
Contact surface, clutch facing discs in outer clutch hub	≤ 0.5 mm (≤ 0.02 in)
Connecting rod - axial clearance of lower conrod bearing	0.40... 0.75 mm (0.0157... 0.0295 in)
Crankshaft - run-out on bearing pin	≤ 0.03 mm (≤ 0.0012 in)
Shift shaft - play in sliding plate/shift quadrant	0.40... 0.80 mm (0.0157... 0.0315 in)

Bearing retainer, main shafts	M5		**Loctite® 648™**
Nut, exhaust control diaphragm	M5	3 Nm (2.2 lbf ft)	–
Screw, clutch line holder	M5	5 Nm (3.7 lbf ft)	**Loctite® 243™**
Screw, diaphragm cover of exhaust control	M5	4 Nm (3 lbf ft)	–
Screw, ignition system/stator	M5	5 Nm (3.7 lbf ft)	**Loctite® 222**
Screw, reed valve housing of exhaust control	M5	5 Nm (3.7 lbf ft)	–
Screw, retaining bracket for return spring of shift shaft	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**
Screw, shift drum locating	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**
Screw, water pump wheel	M5	5 Nm (3.7 lbf ft)	**Loctite® 243™**
Bearing retainer, shift drum	M6	8 Nm (5.9 lbf ft)	**Loctite® 243™**
Drain plug, water pump cover	M6	6 Nm (4.4 lbf ft)	–
Exhaust control, lower part of control valve	M6		**Loctite® 243™**
Screw, clutch intermediate cover	M6	10 Nm (7.4 lbf ft)	–
Screw, clutch slave cylinder	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**
Screw, clutch springs	M6	10 Nm (7.4 lbf ft)	–
Screw, engine housing	M6	10 Nm (7.4 lbf ft)	–
Screw, engine sprocket cover	M6	10 Nm (7.4 lbf ft)	–
Screw, exhaust flange	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**
Screw, gear oil level check	M6	6 Nm (4.4 lbf ft)	–
Screw, generator cover	M6	8 Nm (5.9 lbf ft)	–
Screw, intake flange/reed valve housing	M6	10 Nm (7.4 lbf ft)	–
Screw, kickstarter stop piece	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**
Screw, outer clutch cover	M6	10 Nm (7.4 lbf ft)	–
Screw, reed valve housing of exhaust control	M6	10 Nm (7.4 lbf ft)	–
Screw, shift drum locating	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**
Screw, shift lever	M6	14 Nm (10.3 lbf ft)	**Loctite® 243™**
Screw, water pump cover	M6	8 Nm (5.9 lbf ft)	–
Vacuum connection/vent connection	M6	5 Nm (3.7 lbf ft)	**Loctite® 243™**
Screw, cylinder head	M7	18 Nm (13.3 lbf ft)	–
Nuts, cylinder base	M8	20 Nm (14.8 lbf ft)	–
Screw, kickstarter	M8	25 Nm (18.4 lbf ft)	**Loctite® 243™**
Stud, cylinder base (left section of the engine case)	M8	Tightening sequence: screw in until it projects by 27 mm (1.063 in)	**Loctite® 243™**
Stud, cylinder base (left section of the engine case)	M8	Tightening sequence: screw in until it projects by 29 mm (1.142 in)	**Loctite® 243™**
Screw, inner clutch hub	M10	60 Nm (44.3 lbf ft)	**Loctite® 243™**
Spark plug	M10x1	10... 12 Nm (7.4... 8.9 lbf ft)	–
Nut, rotor	M10x1.25	50 Nm (36.9 lbf ft)	–
Oil drain plug with magnet	M12x1.5	20 Nm (14.8 lbf ft)	–
Nut, primary gear	M14x1.25	40 Nm (29.5 lbf ft)	**Loctite® 243™**

Carburetor type	MIKUNI TM 24
Needle position	2nd position from top
Idle air adjusting screw	
Open	3.5 turns
Main jet	210
Jet needle	51 PL 43-2
Idling jet	20
Needle jet	Q-0 (454)
Throttle slide	2,5

Frame	Central tube frame of chrome molybdenum steel tubing, powder-coated
Fork	**Marzocchi** Upside down
Shock absorber	**WP Suspension** 3614 BAVP
Suspension travel	
Front	220 mm (8.66 in)
Rear	270 mm (10.63 in)
Fork offset	18 mm (0.71 in)
Brake system	
Front	Disc brake, brake caliper, fixed
Rear	Disc brake, brake caliper, fixed
Brake disc diameters	
Front	198 mm (7.8 in)
Rear	160 mm (6.3 in)
Brake discs - wear limits	
Front	2.5 mm (0.098 in)
Rear	2.5 mm (0.098 in)
Tire air pressure off road	
Front	1.0 bar (15 psi)
Rear	1.0 bar (15 psi)
Secondary drive ratio	14:50
Chain	1/2 x 1/4" O-ring
Rear sprockets available	46, 48, 50
Steering head angle	64.5°
Wheelbase	1,137 mm (44.76 in)
Seat height unloaded	750 mm (29.53 in)
Ground clearance unloaded	280 mm (11.02 in)
Weight without fuel, approx.	55.4 kg (122.1 lb.)
Maximum rider weight	< 50 kg (< 110 lb.)

Tires

Front tire	**Rear tire**
60/100 - 14 29M TT Pirelli SCORPION MX Mid Soft 32 NHS	**80/100 - 12 50M TT** Pirelli SCORPION MX Mid Soft 32 NHS
Additional information is available in the Service section under: http://www.ktm.com	

Capacity - fuel

Fuel tank capacity, approx.	3.5 l (3.7 qt.)	Super unleaded gasoline, mixed with 2-stroke engine oil (☛ p. 121)

SX

Fork part number	46201000033
Fork	**Marzocchi** Upside down
Compression damping	
Standard	10 clicks
Rebound damping	
Standard	10 clicks
Spring rate	
Weight of rider: 35... 45 kg (77... 99 lb.)	3.4 N/mm (19.4 lb/in)
Air chamber length	100±2.5 mm (3.94±0.098 in)
Fork length	735 mm (28.94 in)

Fork oil	Fork oil (SAE 5) (☛ p. 120)

XC

Fork part number	46201000133
Fork	**Marzocchi** Upside down
Compression damping	
Standard	10 clicks
Rebound damping	
Standard	10 clicks
Spring rate	
Weight of rider: 35... 45 kg (77... 99 lb.)	3.4 N/mm (19.4 lb/in)
Air chamber length	100±2.5 mm (3.94±0.098 in)
Fork length	735 mm (28.94 in)

Fork oil	Fork oil (SAE 5) (☛ p. 120)

SX

Shock absorber part number	03.18.7E.03
Shock absorber	**WP Suspension** 3614 BAVP
Compression damping	
Comfort	10 clicks
Standard	9 clicks
Sport	3 clicks
Rebound damping	
Comfort	10 clicks
Standard	9 clicks
Sport	6 clicks
Spring preload	
Comfort	7 mm (0.28 in)
Standard	7 mm (0.28 in)
Sport	7 mm (0.28 in)
Spring rate	
Weight of rider: < 35 kg (< 77 lb.)	35 N/mm (200 lb/in)
Weight of rider: 35... 45 kg (77... 99 lb.)	40 N/mm (228 lb/in)
Weight of rider: > 45 kg (> 99 lb.)	45 N/mm (257 lb/in)
Spring length	220 mm (8.66 in)
Gas pressure	10 bar (145 psi)
Static sag	12 mm (0.47 in)
Riding sag	90 mm (3.54 in)
Fitted length	347 mm (13.66 in)

Shock absorber oil	Shock absorber oil (SAE 2.5) (50180342S1) (☛ p. 121)

XC

Shock absorber part number	03.18.7E.05
Shock absorber	**WP Suspension** 3614 BAVP
Compression damping	
Comfort	10 clicks
Standard	9 clicks
Sport	3 clicks
Rebound damping	
Comfort	10 clicks
Standard	9 clicks
Sport	6 clicks
Spring preload	
Comfort	7 mm (0.28 in)
Standard	7 mm (0.28 in)
Sport	7 mm (0.28 in)
Spring rate	
Weight of rider: < 35 kg (< 77 lb.)	35 N/mm (200 lb/in)
Weight of rider: 35... 45 kg (77... 99 lb.)	40 N/mm (228 lb/in)
Weight of rider: > 45 kg (> 99 lb.)	45 N/mm (257 lb/in)
Spring length	220 mm (8.66 in)
Gas pressure	10 bar (145 psi)
Static sag	12 mm (0.47 in)
Riding sag	90 mm (3.54 in)
Fitted length	347 mm (13.66 in)

Shock absorber oil	Shock absorber oil (SAE 2.5) (50180342S1) (☛ p. 121)

Spoke nipple	M3.5	3 Nm (2.2 lbf ft)	–
Remaining nuts, chassis	M6	15 Nm (11.1 lbf ft)	–
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)	–
Screw, ball joint, push rod on foot-brake cylinder	M6	10 Nm (7.4 lbf ft)	–
Screw, footbrake cylinder	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**
Screw, fork stub	M6	10 Nm (7.4 lbf ft)	–
Screw, front brake disc	M6	14 Nm (10.3 lbf ft)	–
Screw, rear brake disc	M6	14 Nm (10.3 lbf ft)	**Loctite® 243™**
Screw, throttle grip	M6	4.5 Nm (3.32 lbf ft)	–
Nut, rim lock	M8	10 Nm (7.4 lbf ft)	–
Remaining nuts, chassis	M8	30 Nm (22.1 lbf ft)	–
Remaining screws, chassis	M8	25 Nm (18.4 lbf ft)	–
Screw, bottom triple clamp	M8	25 Nm (18.4 lbf ft)	–
Screw, brake caliper	M8	20 Nm (14.8 lbf ft)	**Loctite® 243™**
Screw, engine bracket	M8	30 Nm (22.1 lbf ft)	–
Screw, foot brake pedal	M8	25 Nm (18.4 lbf ft)	–
Screw, handlebar clamp	M8	20 Nm (14.8 lbf ft)	–
Screw, rear sprocket	M8	25 Nm (18.4 lbf ft)	**Loctite® 243™**
Screw, side stand fixing	M8	40 Nm (29.5 lbf ft)	**Loctite® 243™**
Screw, tail piece	M8	35 Nm (25.8 lbf ft)	**Loctite® 243™**
Screw, top triple clamp	M8	25 Nm (18.4 lbf ft)	–
Remaining nuts, chassis	M10	50 Nm (36.9 lbf ft)	–
Remaining screws, chassis	M10	45 Nm (33.2 lbf ft)	–
Screw, bottom shock absorber	M10	45 Nm (33.2 lbf ft)	–
Screw, front wheel spindle	M10	40 Nm (29.5 lbf ft)	–
Screw, handlebar support	M10	40 Nm (29.5 lbf ft)	**Loctite® 243™**
Screw, top shock absorber	M10	45 Nm (33.2 lbf ft)	–
Nut, rear wheel spindle	M12x1	40 Nm (29.5 lbf ft)	–
Nut, swingarm pivot	M12x1	40 Nm (29.5 lbf ft)	–
Nut, steering stem	M20x1.5	10 Nm (7.4 lbf ft)	–

Cleaning motorcycle

Note

Material damage Damage and destruction of components by high-pressure cleaning equipment.

– Never clean the vehicle with high-pressure cleaning equipment or a strong water-jet. The excessive pressure can penetrate electrical components, plug connectors, Bowden cables and bearings, etc., and can damage or destroy these parts.

Warning

Environmental hazard Problem materials cause environmental damage.

– Dispose of oil, grease, filters, fuel, cleaning substances, brake fluid, batteries, etc., according to regulations.

Info

If you clean the motorcycle regularly, its value and appearance are maintained over a long period.
Avoid direct sunshine on the motorcycle during cleaning.

– Before you clean the motorcycle, seal the exhaust system to prevent penetration by water.
– First remove coarse dirt particles with a gentle water spray.
– Spray very dirty areas with a normal motorcycle cleaner and then clean with a paintbrush.

Motorcycle cleaner (☛ p. 122)

Info

Use warm water containing normal motorcycle cleaner and a soft sponge.

– After rinsing the motorcycle with a gentle water spray, allow it to dry thoroughly.
– Empty the carburetor float chamber. (☛ p. 93)

Warning

Danger of accidents Reduced braking due to wet or dirty brakes.

– Clean or dry dirty or wet brakes by riding and braking gently.

– After cleaning, let your child ride the vehicle a short distance until the engine warms up and the brakes are dried.

Info

The heat produced causes water at inaccessible positions in the engine and the brakes to evaporate.

– Push back the protection covers on the handlebar instruments to allow water to evaporate.
– After the motorcycle has cooled off, oil or grease all moving parts and bearings.
– Clean the chain. (☛ p. 34)
– Treat bare metal parts (except for brake discs and exhaust system) with anti-corrosion materials.

Cleaning and polishing materials for metal, rubber and plastic (☛ p. 122)

– Treat all painted parts with a mild paint polish.

High-luster polish for paint (☛ p. 122)

– To prevent electrical problems, treat electric contacts and switches with contact spray.

Contact spray (☛ p. 122)

Important maintenance work to be carried out by an authorized KTM workshop.

		S20A	S40A
Engine	Change the gear oil. (☛ p. 99)		•
	Check spark plug and replace if required.	•	•
	Clean spark plug connectors and check for tightness.	•	•
	Check engine mounting screws for tightness.	•	•
Carburetor	Check intake flange and carburetor connection boots for cracks and leakage.		•
	Check idle.	•	•
	Check vent hoses for damage and routing without sharp bends.		•
Attachments	Check the cooling system for leakage.		•
	Check the antifreeze and coolant level. (☛ p. 96)		•
	Check exhaust system for leakage and looseness.	•	•
	Check Bowden cables for damage, smooth operation and routing without sharp bends.		•
	Check the fluid level of the hydraulic clutch. (☛ p. 95)	•	•
	Clean the air filter. (☛ p. 24)	•	•
Brakes	Check the front brake linings. (☛ p. 39)		•
	Check the rear brake linings. (☛ p. 43)		•
	Check the brake discs. (☛ p. 31)		•
	Check the front brake fluid level. (☛ p. 37)	•	•
	Check the rear brake fluid level. (☛ p. 42)	•	•
	Check brake lines for damage and leakage.		•
	Check the free play of the hand brake lever. (☛ p. 37)	•	•
	Check the free travel of the foot brake lever. (☛ p. 41)	•	•
	Check the function of the brake system.	•	•
	Check screws and guide bolts of brake system for tightness.	•	•
Chassis	Check shock absorber and fork for leakage and functioning.	•	•
	Clean the dust boots of the fork legs. (☛ p. 9)	•	•
	Bleed fork legs. (☛ p. 8)	•	•
	Check swingarm bearing.		•
	Check play of steering head bearing. (☛ p. 13)		•
	Check all screws to see if they are tight.	•	•
Wheels	Check the spoke tension. (☛ p. 32)	•	•
	Check rim run-out.	•	•
	Check the tire condition. (☛ p. 31)	•	•
	Check the tire air pressure. (☛ p. 31)	•	•
	Check the chain wear.	•	•
	Check the chain tension. (☛ p. 34)	•	•
	Clean the chain. (☛ p. 34)	•	•
	Check wheel bearing for play.	•	•
	Clean and grease adjusting screws of chain adjuster.	•	•

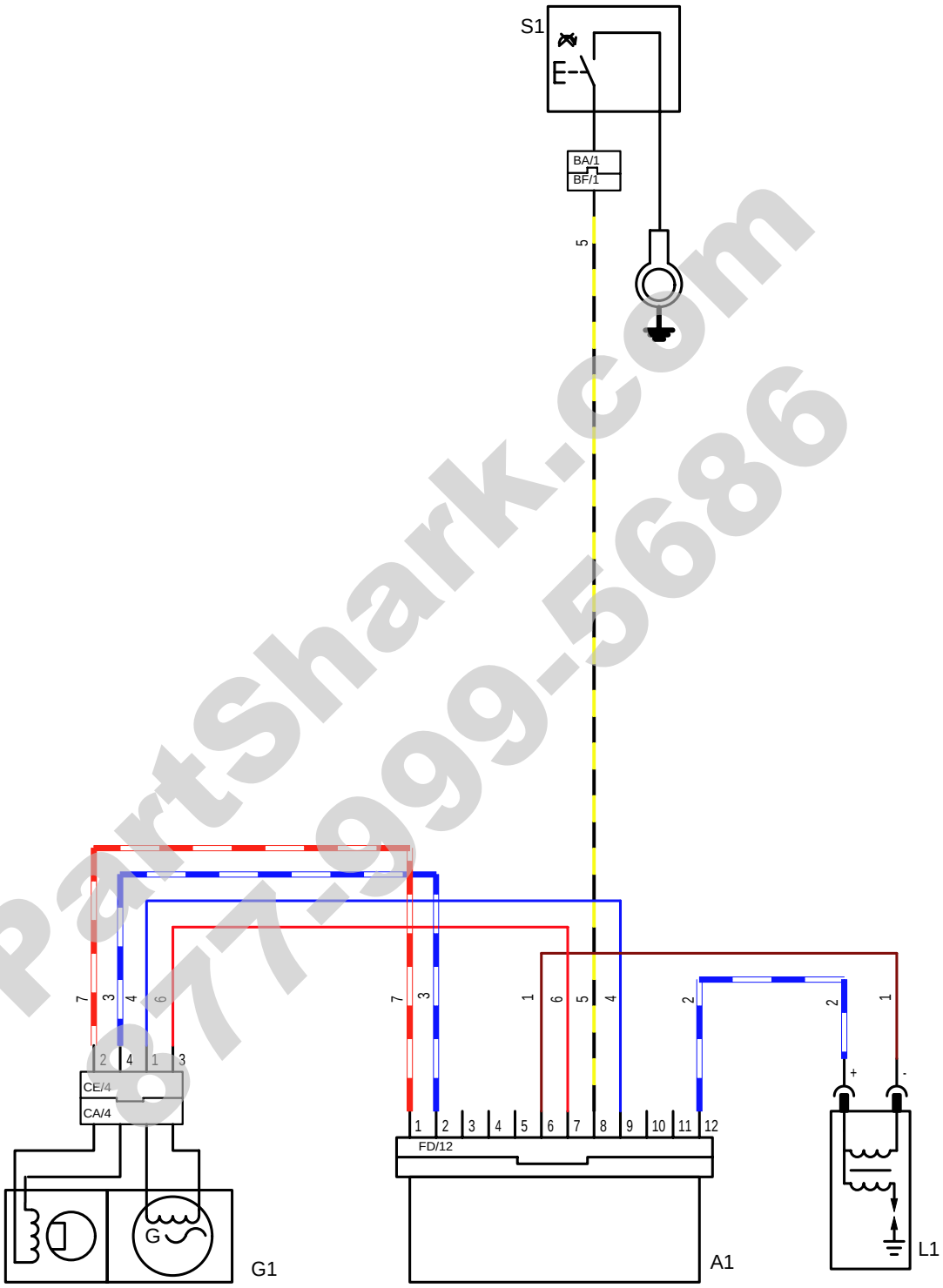
S20A: Every 20 service hours
S40A: Every 40 service hours

Important maintenance work to be carried out by an authorized KTM workshop. (as additional order)

	S20A	S40A	J1A
Check/set the carburetor components. (☛ p. 91)			•
Check intake membrane for wear.	•	•	
Check wear of the clutch lining disc.	•	•	
Check clutch spring length.	•	•	
Check cylinder and piston for wear.	•	•	
Check exhaust control for functioning and smooth operation, clean.	•	•	
Check the seating of the piston pin.	•	•	
Check main bearing of the crankshaft.	•	•	
Check radial clearance of conrod bearing.	•	•	
Change crankshafts and conrod bearings.		•	
Fully check the transmission.		•	
Carry out a complete fork service.			•
Carry out a complete shock absorber service.			•
Clean and lubricate swingarm bearing.			•
Grease the steering head bearing. (☛ p. 13)			•
Change the glass fiber yarn filling of the main silencer. (☛ p. 23)	•	•	
Change the hydraulic clutch fluid. (☛ p. 95)			•
Change the front brake fluid.			•
Change the rear brake fluid.			•

S20A: Every 20 service hours
S40A: Every 40 service hours
J1A: annually

Wiring diagram



300807-01

Components	
A1	CDI controller
G1	Generator
L1	Ignition coil
S1	Short circuit button

Cable colors	
1	Brown
2	White-blue
3	White-blue
4	Blue
5	Blue-yellow
6	Red
7	White-red

Brake fluid DOT 4 / DOT 5.1

According to
– DOT

Guideline
– Use only brake fluid that complies with the specified standards (see specifications on the container) and that possesses the corresponding properties. KTM recommends **Castrol** and **Motorex®** products.

Supplier
Castrol
– **RESPONSE BRAKE FLUID SUPER DOT 4**

Motorex®
– **Brake Fluid DOT 5.1**

Coolant

Guideline
– Use only suitable coolant (in countries with high temperatures also). Use of low-quality antifreeze can lead to corrosion and foaming. KTM recommends **Motorex®** products.

Mixture ratio

Antifreeze protection: −25… −45 °C (−13… −49 °F)	50 % Corrosion/antifreeze 50 % Distilled water

Coolant (mixed ready to use)

Antifreeze	−40 °C (−40 °F)

Supplier
Motorex®
– **Anti Freeze**

Engine oil (15W/50)

According to
– JASO T903 MA (☛ p. 129)
– SAE (☛ p. 129) (15W/50)

Guideline
– Use only engine oils that comply with the specified standards (see specifications on the container) and that possess the corresponding properties. KTM recommends **Motorex®** products.

Supplier
Motorex®
– **Top Speed 4T**

Fork oil (SAE 5)

According to
– SAE (☛ p. 129) (SAE 5)

Guideline
– Use only oils that comply with the specified standards (see specifications on the container) and that possesses the corresponding properties. KTM recommends **Motorex®** products.

Supplier
Motorex®
– **Racing Fork Oil**

Hydraulic fluid (15)

According to
– ISO VG (15)

Guideline
– Use only hydraulic fluid that complies with the specified standards (see specifications on the container) and that possesses the corresponding properties. KTM recommends **Motorex®** products.

Supplier
Motorex®
– **Hydraulic Fluid 75**

Shock absorber oil (SAE 2.5) (50180342S1)

According to

– SAE (☛ p. 129) (SAE 2.5)

Guideline

– Use only oils that comply with the specified standards (see specifications on the container) and that possess the corresponding properties.

Super unleaded gasoline, mixed with 2-stroke engine oil

According to

– DIN EN 228

– JASO FC (☛ p. 129)

Mixture ratio

1:60	2-stroke engine oil Super unleaded (ROZ 95 / RON 95 / PON 91)

Air filter cleaner

Specification

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Twin Air Dirt Bio Remover**

Carburetor cleaner

Specification

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Carburetor**

Chain cleaner

Specification

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Chain Clean 611**

Cleaning and polishing materials for metal, rubber and plastic

Specification

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Protect & Shine 645**

Contact spray

Specification

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Accu Contact**

High-luster polish for paint

Specification

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Moto Polish**

Long-life grease

Specification

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Fett 2000**

Motorcycle cleaner

Specification

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Moto Clean 900**

Offroad chain spray

Specification

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Chain Lube 622**

Oil for foam air filter

Specification

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Twin Air Liquid Bio Power**

Universal oil spray

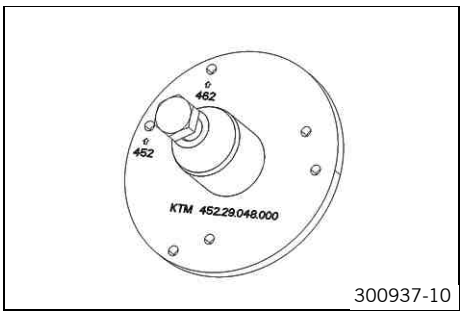
Specification

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Joker 440 Universal**

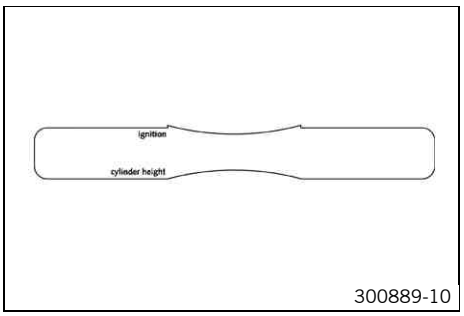
Extractor



300937-10

Art. no.: 45229048000

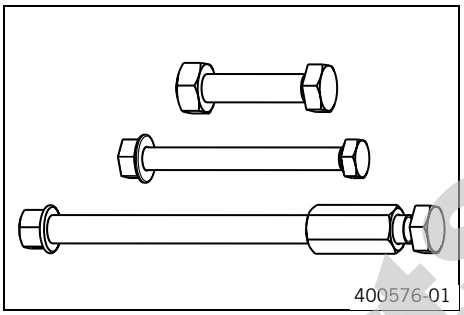
Adjustment gauge



300889-10

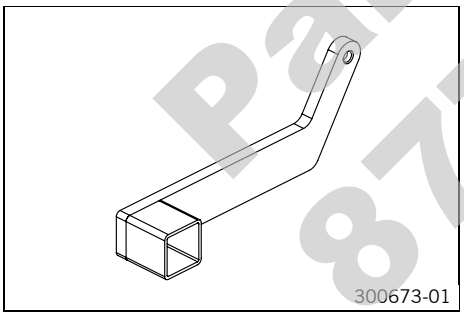
Art. no.: 46129006100

Screw connection for engine work stand


400576-01

Art. no.: 46229001060

Holder of engine work stand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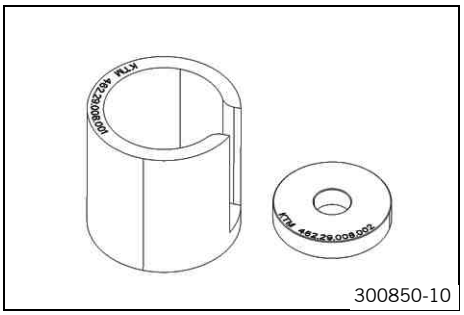
Art. no.: 46229001070

Crankshaft pressing device



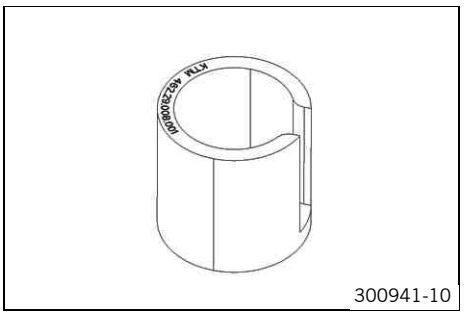
300850-10

Art. no.: 46229008000

Feature

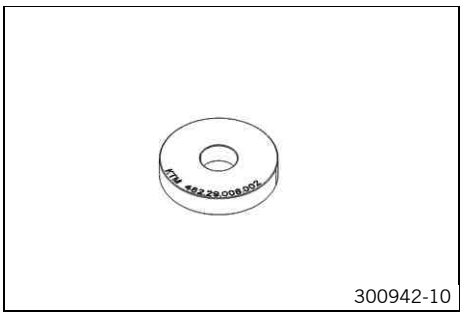
Special tool consists of 46229008001 and 46229008002.

Bushing, crankshaft pressing device



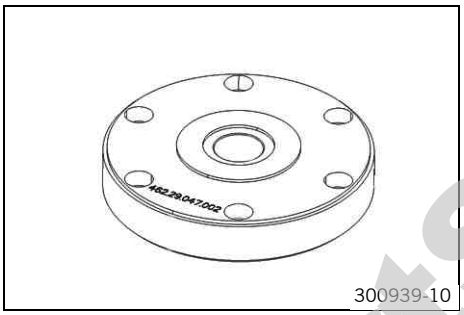
Art. no.: 46229008001

Cover, crankshaft pressing device



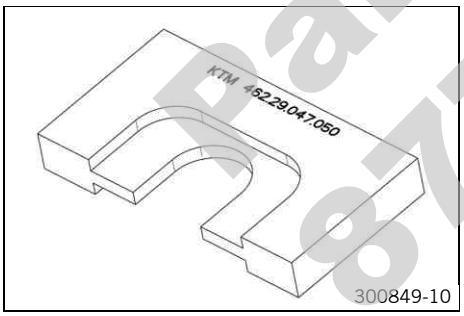
Art. no.: 46229008002

Anchor plate



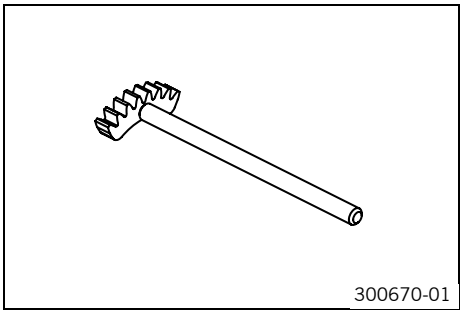
Art. no.: 46229047002

Press plate



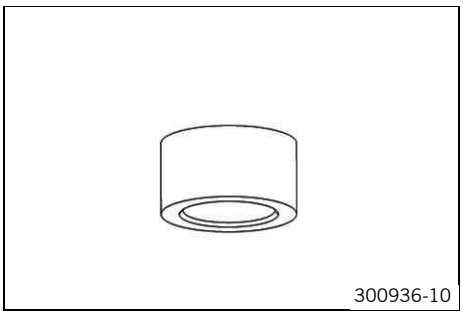
Art. no.: 46229047050

Gear segment



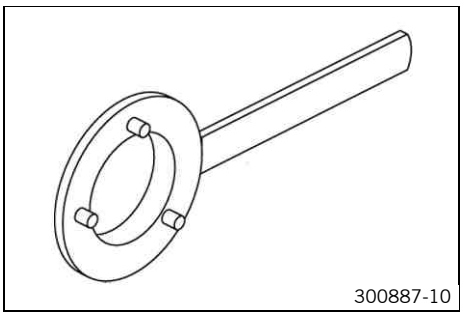
Art. no.: 46229081000

Protective cap



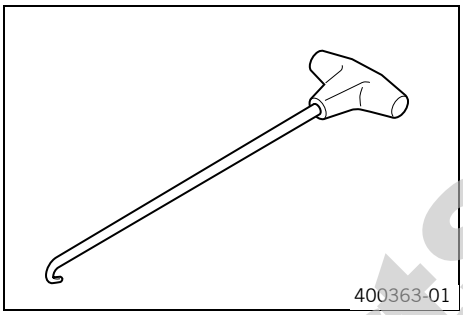
Art. no.: 46229090000

Clutch holder



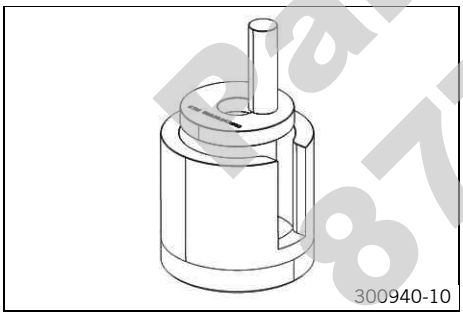
Art. no.: 49012003000

Spring hooks



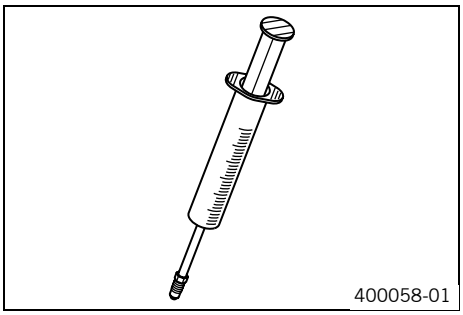
Art. no.: 50305017000

Pressing device, crankshaft, complete



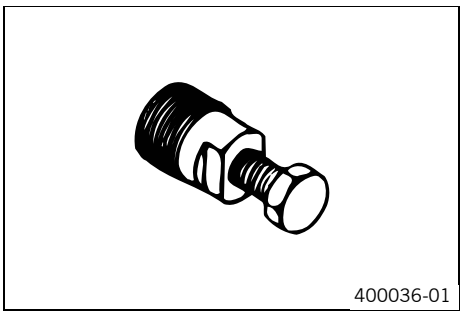
Art. no.: 50329047000

Bleed syringe



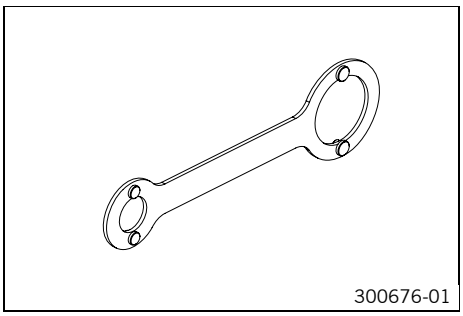
Art. no.: 50329050000

Extractor



Art. no.: 54629009044

Holding spanner

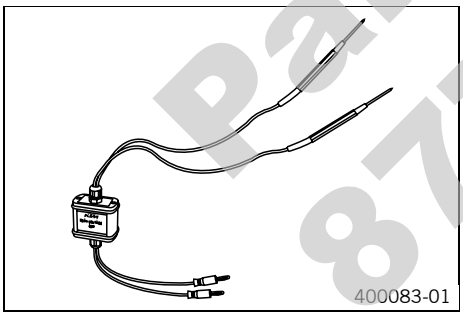


Art. no.: 54629012100

Work stand

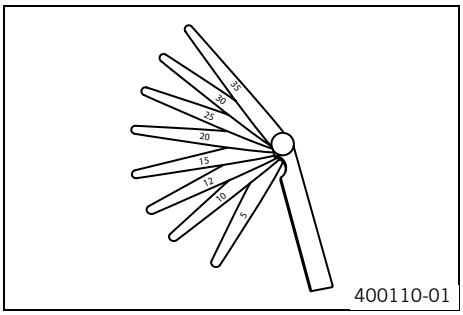
Art. no.: 54829055000

Peak voltage adapter



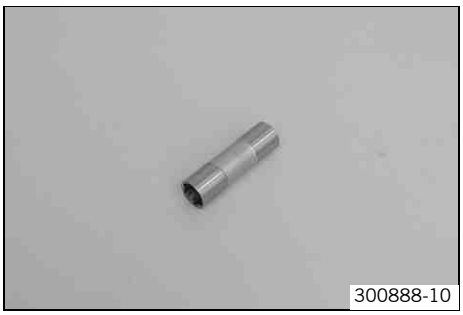
Art. no.: 58429042000

Feeler gauge



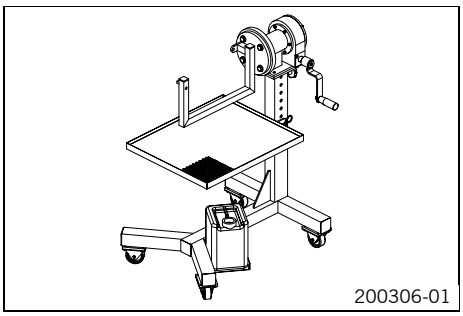
Art. no.: 59029041100

Spark plug wrench



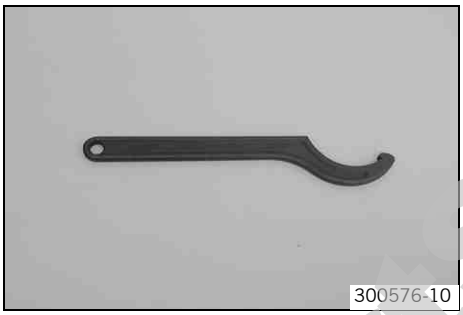
Art. no.: 60029073000

Engine work stand



Art. no.: 61229001000

Hook wrench



Art. no.: T106S

JASO T903 MA

Different technical development directions required a new specification for 4-stroke motorcycles – the JASO T903 MA Standard. Earlier, engine oils from the automobile industry were used for 4-stroke motorcycles because there was no separate motorcycle specification. Whereas long service intervals are demanded for automobile engines, high performance at high engine speeds are in the foreground for motorcycle engines. With most motorcycles, the gearbox and the clutch are lubricated with the same oil as the engine. The JASO MA Standard meets these special requirements.

SAE

The SAE viscosity classes were defined by the Society of Automotive Engineers and are used for classifying oils according to their viscosity. The viscosity describes only one property of oil and says nothing about quality.

JASO FC

JASO FC is a classification for a 2-stroke engine oil that was specifically developed for the extreme demands of racing. Thanks to first rate synthetic esters and specially designed additives, superb combustion is achieved even under extreme operating conditions.

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08/2008 Photo: Mitterbauer

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