REPAIR MANUAL 2009

50 SX
50 SX Junior
50 SX Mini

Article no. 3206060en

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 are not 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 misprints 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.

Specific name	Denotes a proper name.
Name®	Denotes a protected name.
Brand™	Denotes a brand available on the open market.

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

Only use spare parts and accessories approved and/or recommended by KTM. KTM accepts no liability for other products and any resulting damage or loss.

You will find the current **KTM PowerParts** for your vehicle on the KTM website.
International KTM Website: http://www.ktm.com

Work rules

Special tools are needed for certain tasks. They are not included with the vehicle but can be ordered under the number in parentheses. Ex.: bearing puller (15112017000)
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/warnings.

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 potential hazards 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.

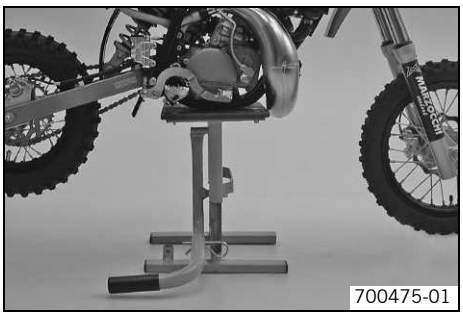
Note
Identifies a danger that will lead to considerable machine and material damage if the appropriate measures are not taken.

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 may 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. 149)

– Secure the motorcycle against falling over.

Removing the motorcycle from the work stand

Note

Danger of damage The parked vehicle may 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 inhaling them may 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 an enclosed 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.

– 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.

The engine is cold

(50 SX)

– Pull the choke knob fully out and turn it by max. ¼ turn.

(50 SX Junior, 50 SX Mini)

– Push the choke lever up all the way.

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

Info

Do not open the throttle.

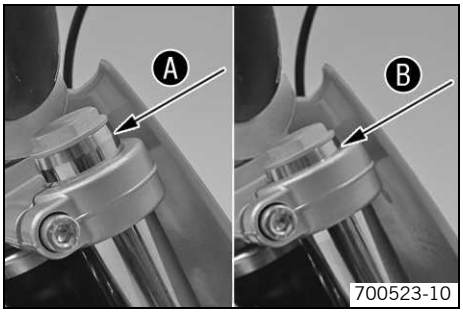
Vehicle level

Warning

Danger of accidents Modifications to the suspension settings can seriously alter the vehicle's ride behavior.

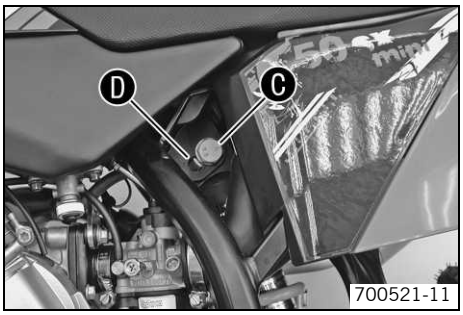
– Following modifications, ride slowly at first to get the feel of the new ride behavior.

The vehicle level can be adjusted at the front by means of the clamping of the fork legs and at the rear by means of the positioning of the shock absorber.



The fork overhang can be individually adjusted to the size of the child. In the lower position Ⓐ (standard), the fork is completely pushed through. In the higher position Ⓑ, the cone is flush with the upper triple clamp.

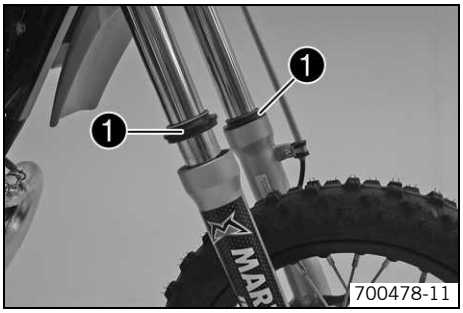
Fork overhang over the upper triple clamp	10... 17 mm (0.39... 0.67 in)



The seat height can be individually adjusted to the size of the child. The shock absorber can be mounted at two different holes in the frame.

Difference between low Ⓒ (standard) and high Ⓓ seat position	25 mm (0.98 in)

Cleaning dust boots of fork legs



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

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 efficiency 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.

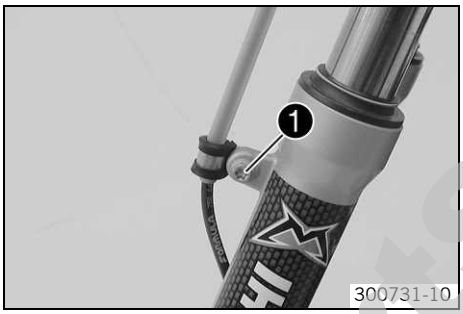
– Clean and oil the dust boots and inner fork tube of both fork legs.

Universal oil spray (☛ p. 145)

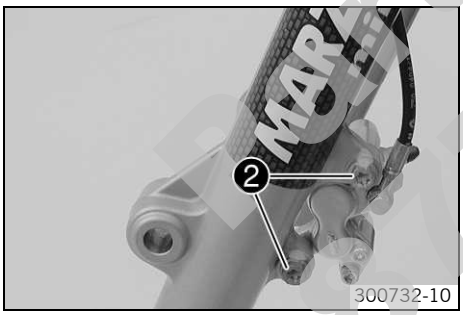
– Press the dust boots back into their normal position.
– Remove excess oil.
– Remove the motorcycle from the work stand. (☛ p. 7)

Removing the fork legs

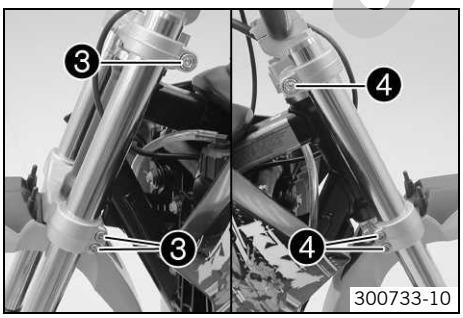
– Remove front wheel. (☛ p. 46)
– Dismount the start number plate. (☛ p. 44)



– Remove screws ❶ and take off clamp.

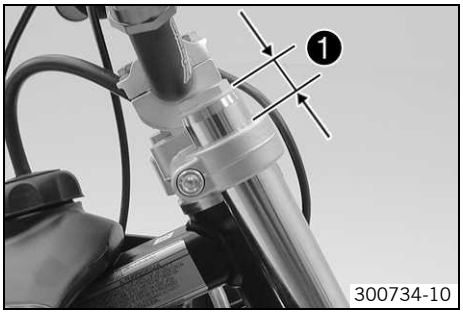


– Remove screws ❷ with washers and brake caliper.
– Hang the brake caliper and the brake line loosely to the side.



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

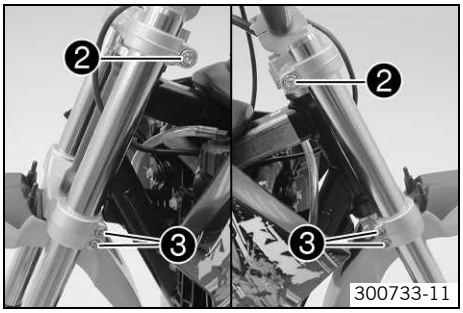
Installing the fork legs



– Position the fork legs.
– Adjust fork overhang ❶.

Guideline

Upper fork projection	10... 17 mm (0.39... 0.67 in)



– Tighten screw ❷.

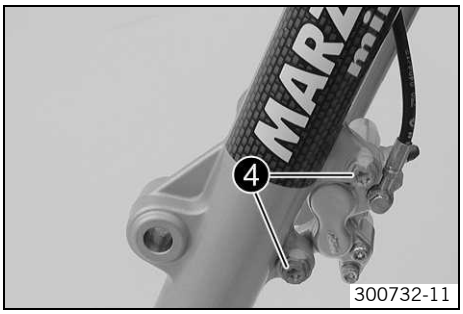
Guideline

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

– Tighten screws ❸.

Guideline

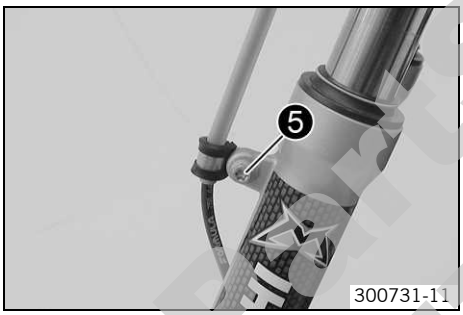
Screw, bottom triple clamp	M6	10 Nm (7.4 lbf ft)



– Position the brake caliper, fit and tighten the screws ❹ with washers.

Guideline

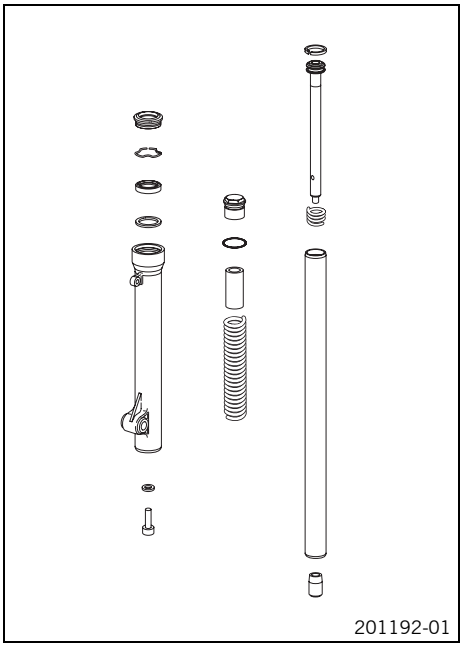
Screw, front brake caliper	M8	20 Nm (14.8 lbf ft)	**Loctite® 243™**



– Position the brake line. Put the clamp on, and mount and tighten screws ❺.
– Install the start number plate. (☛ p. 44)
– Install the front wheel. (☛ p. 46)

Servicing fork

Condition
The fork legs have been removed.

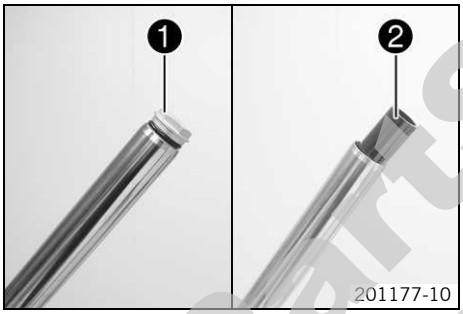

201192-01

– Disassemble the fork legs. (☛ p. 11)
– Check the fork legs. (☛ p. 12)
– Assemble the fork legs. (☛ p. 13)

Disassembling the fork legs

Info
The operations are the same on both fork legs.
The only difference between the two fork legs lies in the piston ring of the piston rod, which is only mounted on the left fork leg.

Condition
The fork legs have been removed.

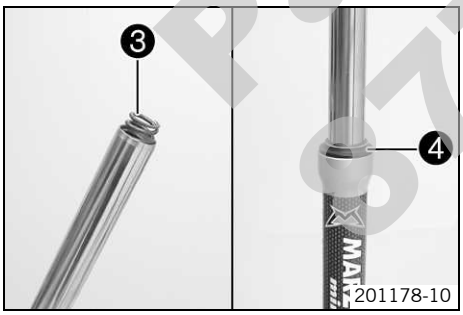


201177-10

– Clamp the fork leg in the area of the lower triple clamp.

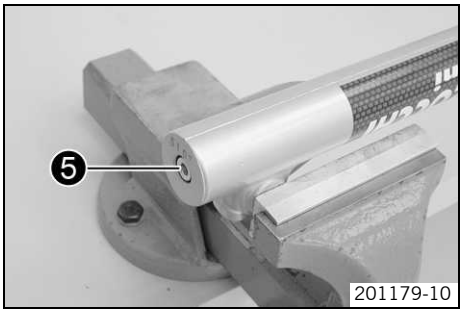
Info
Use soft jaws.

– Remove locking cap ❶.
– Remove preload bush ❷.



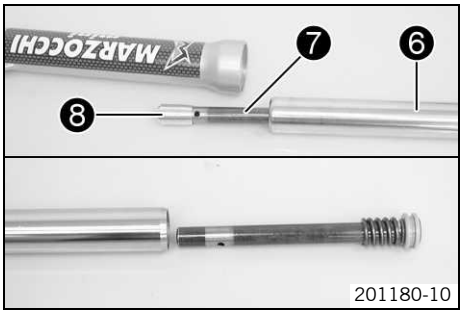
201178-10

– Remove spring ❸.
– Unclamp the fork leg.
– Drain the oil.
– Remove dust boot ❹.



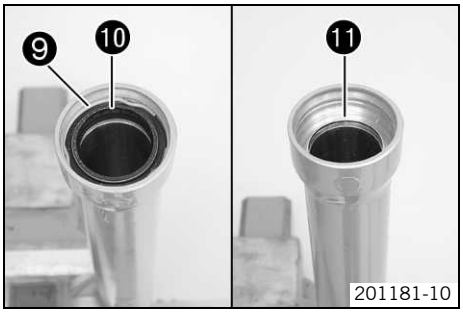
201179-10

– Clamp the fork leg with the axle clamp.
– Remove screw ❺.

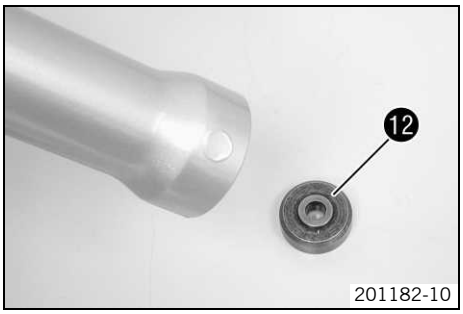


– Pull inner tube ❻ with piston rod ❼ out of the outer tube.

Info
If the damping bush ❽ remains in the outer tube, remove it as well.



– Remove lock ring ❾.
– Remove seal ring ❿.
– Remove washer ⓫.



– Remove washer ⓬ from the outer tube.

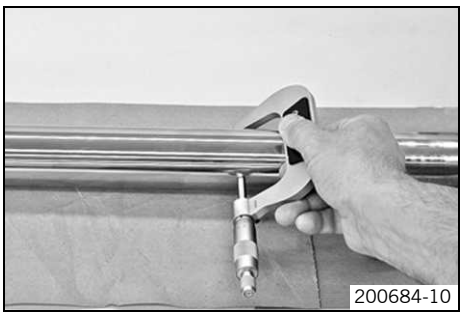
Checking the fork legs

Condition
The fork legs are disassembled.

– Check the inner tube ❶ for damage.
» If there is damage:
– Change the inner tube.
– Check the outer tube ❷ for damage.
» If there is damage:
– Change the outer tube.
– Check the spring length.
Guideline

Spring length with preload bush(es)	347... 353 mm (13.66... 13.9 in)

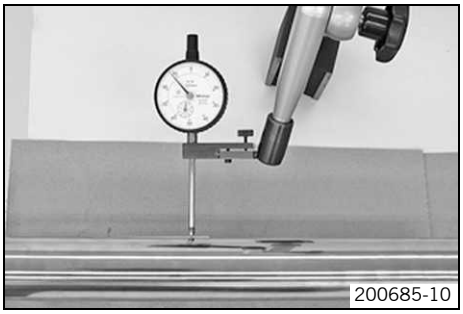
» If the measured value is greater than the specified value:
– Reduce the thickness of the preload spacer.
» If the measured value is less than the specified value:
– Increase the thickness of the preload spacer.



– Measure the outside diameter at several locations on the inner tube.

Outside diameter of the inner tube	31.936... 31.975 mm (1.25732... 1.25886 in)

» If the measured value is less than the specified value:
– Change the inner tube.


200685-10

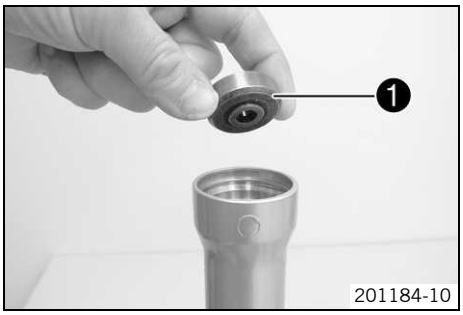
– Measure the run-out of the inner tube.

Inner tube run-out	≤ 0.10 mm (≤ 0.0039 in)

» If the measured value is greater than the specified value:
– Change the inner tube.

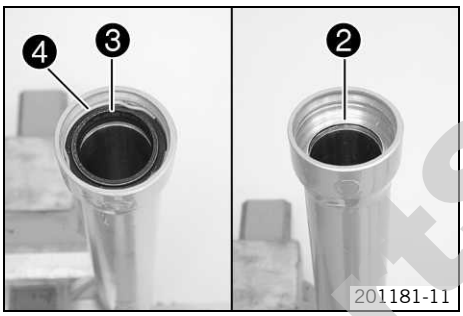
Assembling the fork legs

Info
The operations are the same on both fork legs.
The only difference between the two fork legs lies in the piston ring of the piston rod, which is only mounted on the left fork leg.



201184-10

– Position washer ❶ in the outer tube with the collar facing forward.



201181-11

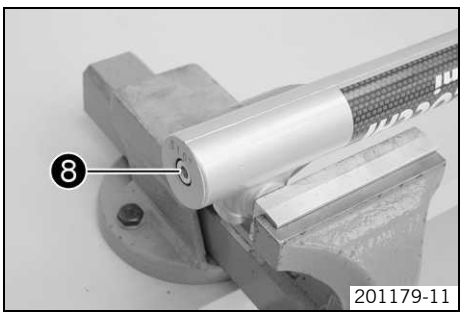
– Mount washer ❷.
– Lubricate seal ring ❸ and press it in all the way.

Lubricant (T511) (☛ p. 144)

– Mount lock ring ❹.

201180-11

– Slide piston rod ❺ into inner tube ❻.
– Position damping bush ❼.
– Slide the inner tube with the piston rod into the outer tube.



201179-11

– Mount and tighten screw ❽ with the seal ring.
Guideline

Screw, piston rod	M8x1.25	30 Nm (22.1 lbf ft)

Info
The washer and damping bush are centered by the screw.
To prevent the piston rod from turning, pull out the inner tube.

– Grease and mount dust boot ❾.

Lubricant (T511) (☛ p. 144)

– Refill with fork oil.

Fork oil	210 ml (7.1 fl. oz.)	Fork oil (SAE 7.5) (☛ p. 142)

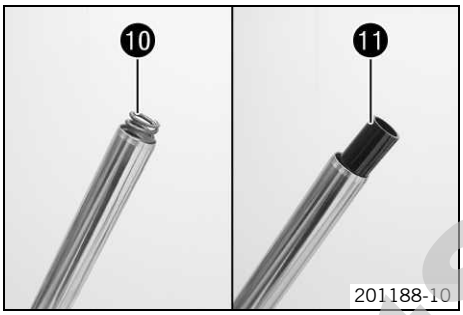
Info
Pull out and push back in the inner tube a number of times to bleed the fork leg.

– Slide the inner tube all the way into the outer tube.
– Adjust the air chamber length to the specified size using extraction.

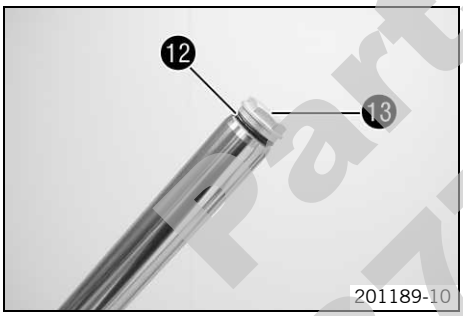
Guideline

Air chamber length	100±2.5 mm (3.94±0.098 in)

Squeeze bottle (T137S) (☛ p. 151)



– Mount spring ❿.
– Mount preload bush ⓫.



– Clamp the fork leg in the area of the lower triple clamp.

Info
Use soft jaws.

– Lubricate O-ring ⓬ of locking cap ⓭.

Lubricant (T158) (☛ p. 144)

– Mount and tighten the locking cap.

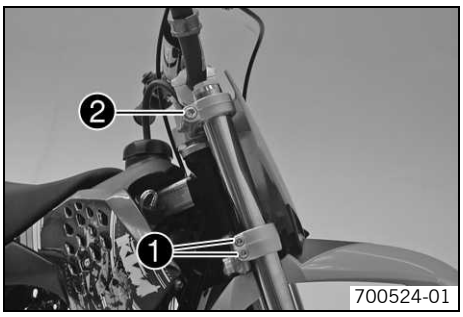
Guideline

Locking cap	M28x1.5	20 Nm (14.8 lbf ft)

Adjusting the fork overhang

Warning
Danger of accidents Modifications to the suspension settings can seriously alter the vehicle's ride behavior.

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



– 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 legs can be moved without damaging it.
Make the adjustments first on one fork leg and then on the other.

– Adjust the fork overhang with the upper triple clamp.
Guideline

10... 17 mm (0.39... 0.67 in)

– Tighten screw ❷.
Guideline

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

– Fully tighten screws ❶.
Guideline

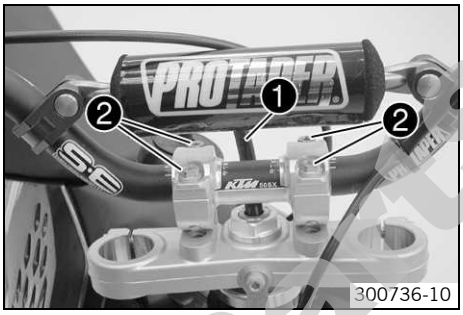
Screw, bottom triple clamp	M6	10 Nm (7.4 lbf ft)

– 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.

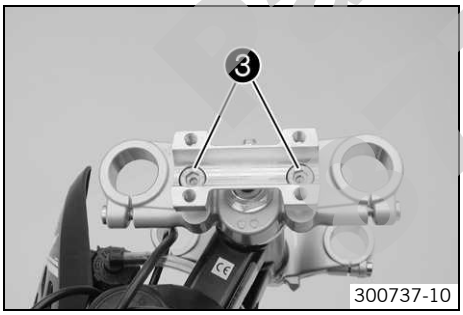
Removing the lower triple clamp

– Remove the fork legs. (☛ p. 9)
– Dismount the front fender. (☛ p. 44)
– Remove the fuel tank breather ❶.
– Remove screws ❷.
– Remove the handlebar clamp.
– Remove the handlebar and lay it to one side.

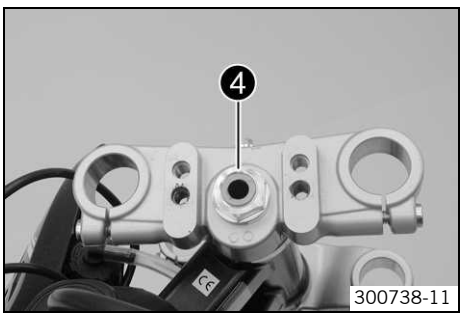


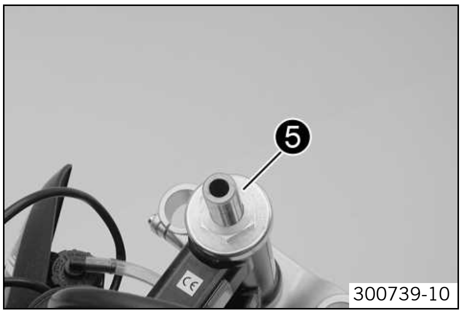
Info
Protect the motorcycle and its attachments from damage by covering them.
Do not bend the cables and lines.

– Remove screws ❸.
– Take off the handlebar support.

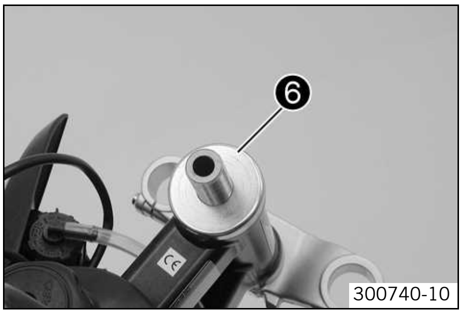


– Remove nut ❹.
– Take off the upper triple clamp.



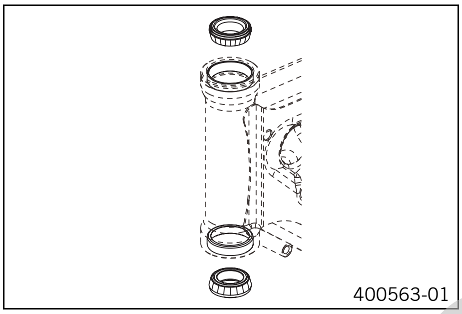


- Remove nut ❺.



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

Installing the lower triple clamp

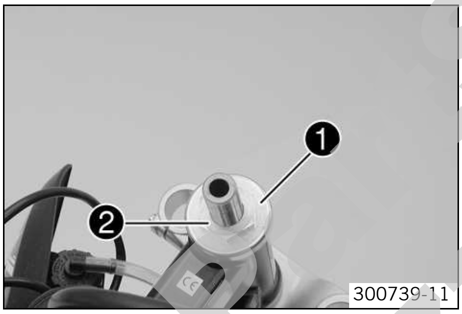


- Clean the bearing and sealing elements, check for damage, and grease.

Long-life grease (☛ p. 144)

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

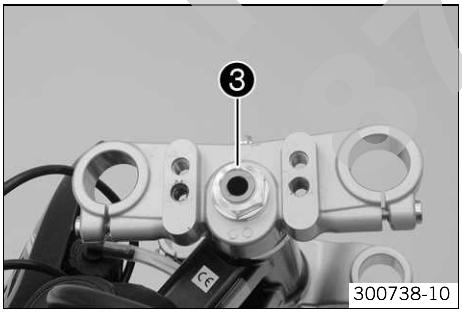
> **Info**
> Check that the O-rings of the steering head seal are correctly positioned.



- Push on protective ring ❶.
- Mount and tighten nut ❷.

Guideline

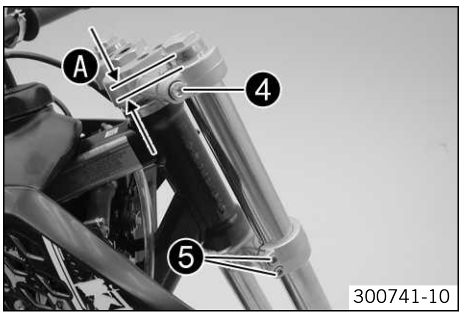
Steering head nut	M20x1.5	10 Nm (7.4 lbf ft)



- Position the upper triple clamp.
- Mount nut ❸, but do not tighten it yet.

Guideline

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



- Position the fork leg.
- Adjust fork overhang 🅐.

Guideline

Upper fork projection	10… 17 mm (0.39… 0.67 in)

- Tighten screw ❹.

Guideline

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

– Tighten screws ❺.

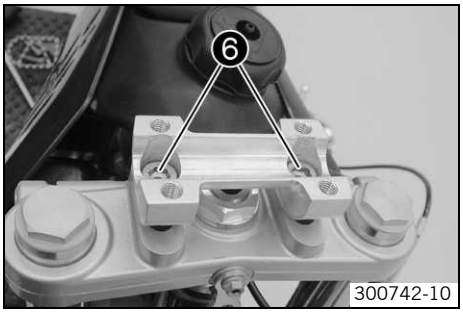
Guideline

Screw, bottom triple clamp	M6	10 Nm (7.4 lbf ft)

– Repeat these steps on the opposite side.
– Tighten nut ❸.

Guideline

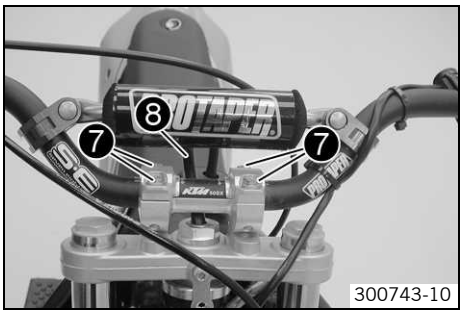
Nut, steering stem	M20x1.5	10 Nm (7.4 lbf ft)



– Position the handlebar support.
– Mount and tighten screws ❻.

Guideline

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

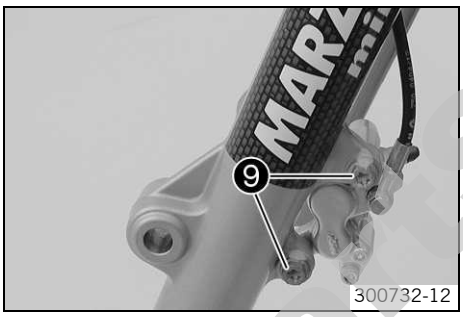


– Position the handlebar with handlebar clamps.
– Mount and tighten screws ❼.

Guideline

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

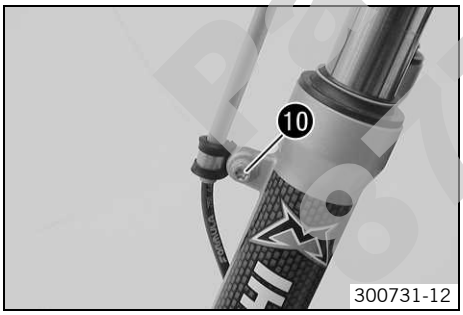
– Position the fuel tank breather ❽.



– Position the brake caliper, fit and tighten the screws ❾ with washers.

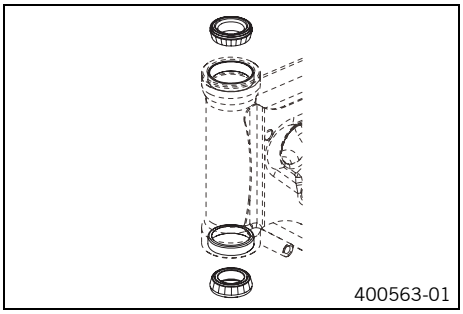
Guideline

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



– Position the brake line. Put the clamp on, and mount and tighten screws ❿.
– Install the front fender. (☛ p. 44)
– Install the start number plate. (☛ p. 44)
– Install the front wheel. (☛ p. 46)
– Check that the wiring harness, throttle cables and brake line have freedom of movement and are routed correctly.
– Check play of steering head bearing. (☛ p. 18)

Greasing the steering head bearing



– Remove the lower triple clamp. (☛ p. 15)
– Install the lower triple clamp. (☛ p. 16)

Checking play of steering head bearing

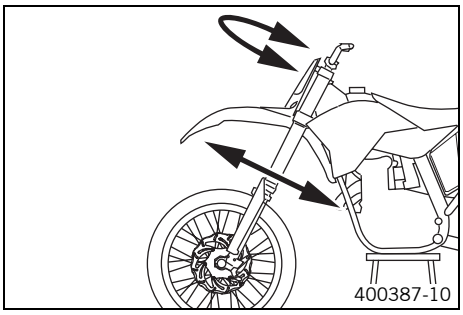
Warning

Danger of accidents Unstable vehicle handling from incorrect steering head bearing play.

– Adjust the steering head bearing play without delay.

Info

If the bike is ridden 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:
– Adjust the play of the steering head bearing. (☛ p. 18)

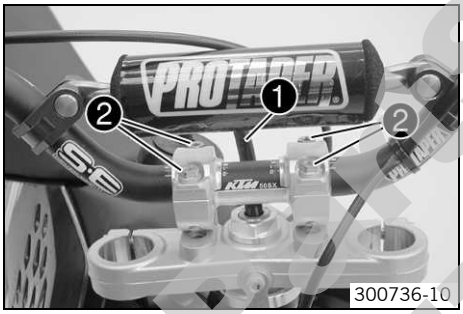
– Move the handlebar to and fro over the entire steering range.

The handlebar must move smoothly over the entire steering range. There should be no perceptible detent positions.

» If detent positions are noticeable:
– Adjust the play of the steering head bearing. (☛ p. 18)
– Check the steering head bearing and replace if required.

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

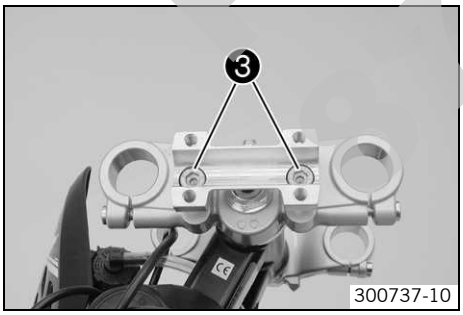
Adjusting the play of the steering head bearing



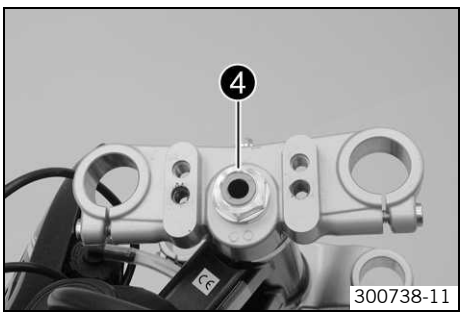
– Jack up the motorcycle. (☛ p. 7)
– Remove the fork legs. (☛ p. 9)
– Remove fuel tank breather ❶.
– Remove screws ❷.
– Remove the handlebar clamp.
– Remove the handlebar and lay it to one side.

Info

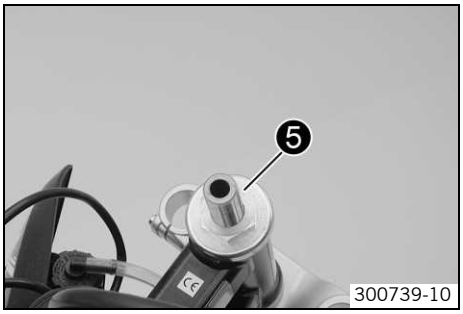
Protect the motorcycle and its attachments against damage by covering them.
Do not bend the cables and lines.



– Remove screws ❸.
– Remove the handlebar support.



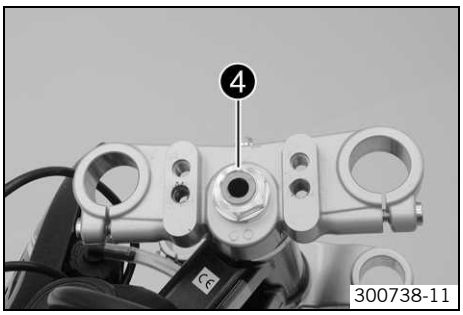
– Remove nut ❹.
– Take off the upper triple clamp.



– Tighten nut ❺.

Guideline

Steering head nut	M20x1.5	10 Nm (7.4 lbf ft)



– Position the upper triple clamp.
– Mount nut ❹, but do not tighten it yet.

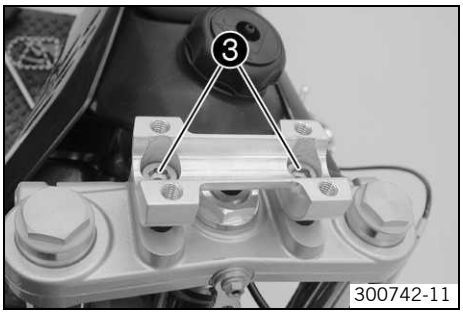
Guideline

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

– Install the fork legs. (☛ p. 10)
– Tighten nut ❹.

Guideline

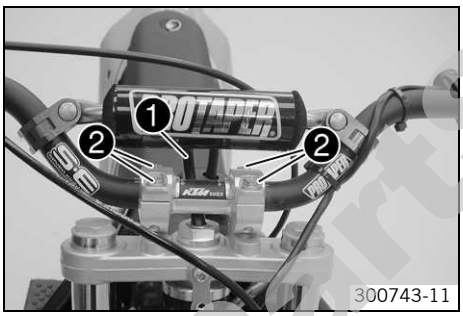
Nut, steering stem	M20x1.5	10 Nm (7.4 lbf ft)



– Position the handlebar support.
– Mount and tighten screws ❸.

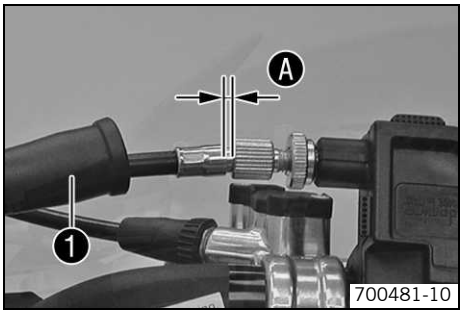
Guideline

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



– Position the handlebar with handlebar clamps.
– Mount and tighten screws ❷.
– Position the fuel tank breather ❶.
– Check play of steering head bearing. (☛ p. 18)
– Check that the wiring harness, throttle cables and brake line have freedom of movement and are routed correctly.
– Remove the motorcycle from the work stand. (☛ p. 7)

Checking the play in the throttle cable



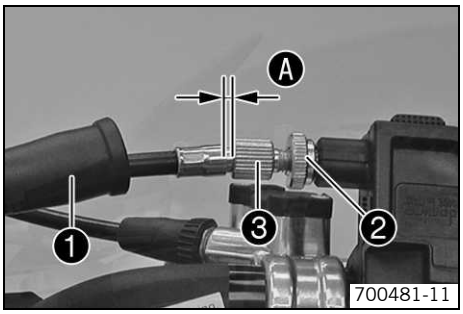
– Move the handlebar to the straight-ahead position.
– Push back bellows ❶.
– Pull back the throttle cable casing until you sense a resistance.
– Now check throttle cable play Ⓐ.

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

» If the throttle cable play does not meet specifications:
– Adjust the play in the throttle cable. (☛ p. 20)

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

Adjusting the play in the throttle cable



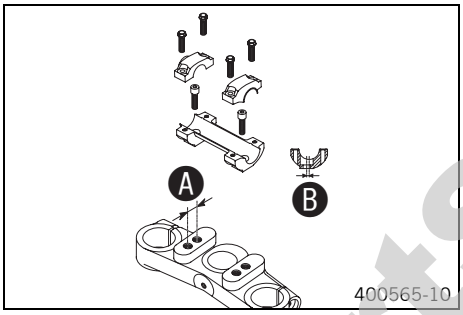
– Move the handlebar to the straight-ahead position.
– Push back bellows ❶.
– Loosen nut ❷. Turn adjusting screw ❸ in as far as possible.
– Turn the adjusting screw so that there is play Ⓐ at the outer casing of the throttle cable.

Guideline

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

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

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.

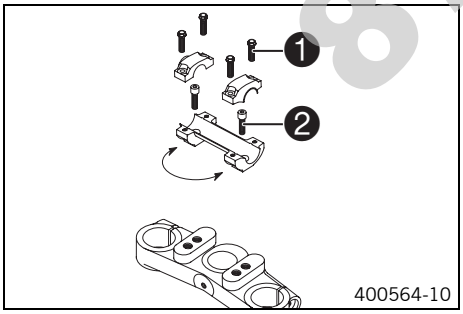
Distance Ⓑ between holes	3.5 mm (0.138 in)

The handlebar supports can be mounted in 4 different positions.

Adjusting handlebar position

Warning
Danger of accidents Handlebar breakage.

– If the handlebar is bent or straightened it will cause material fatigue, and the handlebar can break. Always replace handlebar.



– 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™**

– 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)

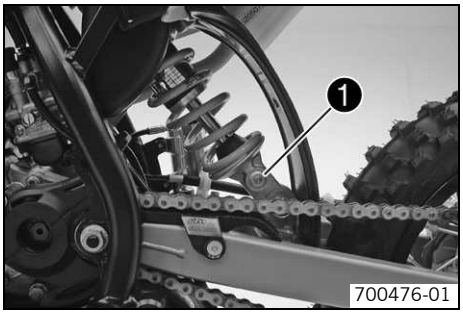
Info
Make sure the gap width is even.

Adjusting the rebound damping of the shock absorber

Danger

Danger of accidents Disassembly of pressurized parts can lead to injury.

– The shock absorber is filled with high density nitrogen. Adhere to the description provided.



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

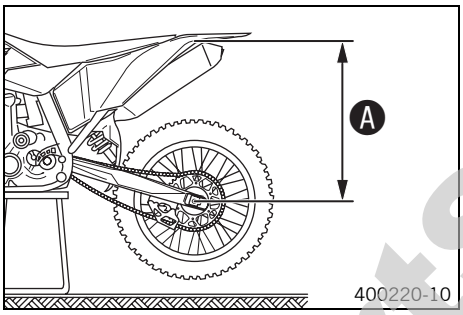
Guideline

Rebound damping (50 SX)	
Standard	10 clicks
Rebound damping (50 SX Junior)	
Standard	12 clicks
Rebound damping (50 SX Mini)	
Standard	12 clicks

Info

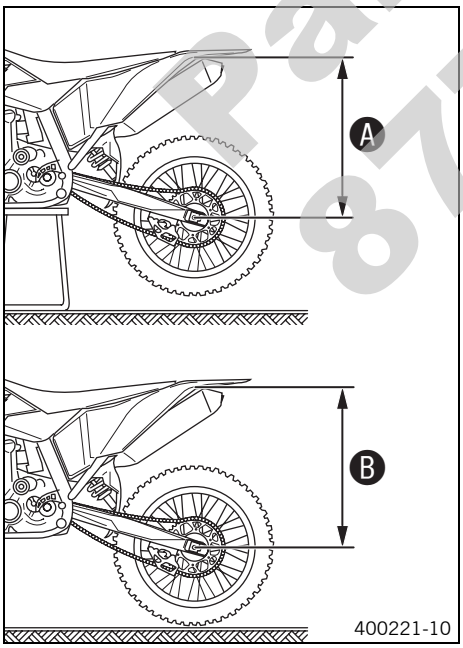
Turn clockwise to increase damping, turn counterclockwise to reduce damping.

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 ❹ of rear wheel unloaded. (☛ p. 22)
– 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 ❺.

Info

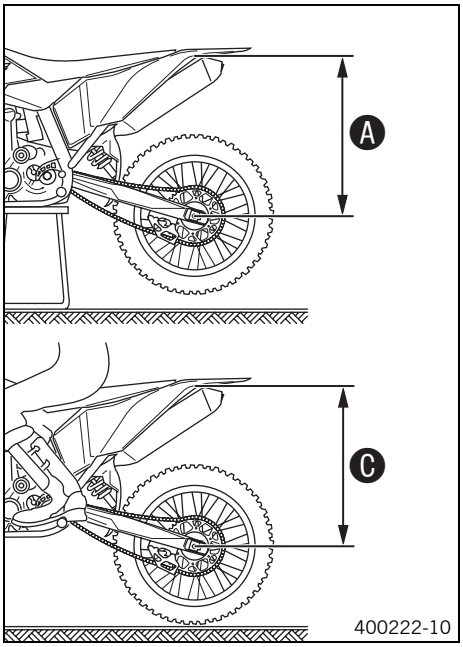
The static sag is the difference between measurements ❹ and ❺.

– Check the static sag.

Static sag (50 SX)	20 mm (0.79 in)
Static sag (50 SX Junior)	15 mm (0.59 in)
Static sag (50 SX Mini)	15 mm (0.59 in)

» If the static sag is less or more than the specified value:
– Adjust the spring preload of the shock absorber. (☛ p. 23)

Checking the riding sag of the shock absorber



– Measure distance ❹ of rear wheel unloaded. (☛ p. 22)
– Hold the motorcycle in a vertical position and seat the rider, wearing a full set of protective clothing, on the motorcycle in the normal sitting position (feet on the footrests). The rider 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 ❸.

Info
The riding sag is the difference between measurements ❹ and ❸.

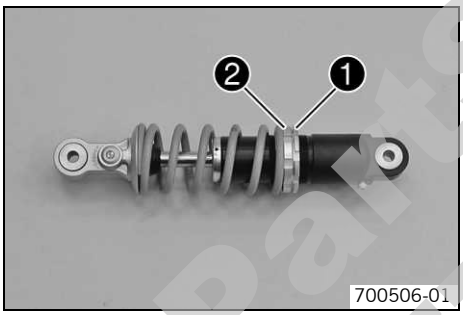
– Check the riding sag.

Riding sag (50 SX)	45... 55 mm (1.77... 2.17 in)
Riding sag (50 SX Junior)	40... 50 mm (1.57... 1.97 in)
Riding sag (50 SX Mini)	40... 50 mm (1.57... 1.97 in)

» If the riding sag differs from the specified measurement:
– Adjust the riding sag. (☛ p. 24)

Adjusting the spring preload of the shock absorber

Danger
Danger of accidents Disassembly of pressurized parts can lead to injury.
– The shock absorber is filled with high density nitrogen. Adhere to the description provided.



– Remove shock absorber. (☛ p. 24)
– 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.

Hook wrench (T106S) (☛ p. 150)

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

Guideline

Spring preload (50 SX)	
Standard	3 mm (0.12 in)
Spring preload (50 SX Junior)	
Standard	5 mm (0.2 in)
Spring preload (50 SX Mini)	
Standard	5 mm (0.2 in)

Info
Measure 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.
– Install shock absorber. (☛ p. 24)

Adjusting the riding sag

– Remove shock absorber. (☛ p. 24)
– After removing the shock absorber, clean it thoroughly.
– Choose and mount a suitable spring.

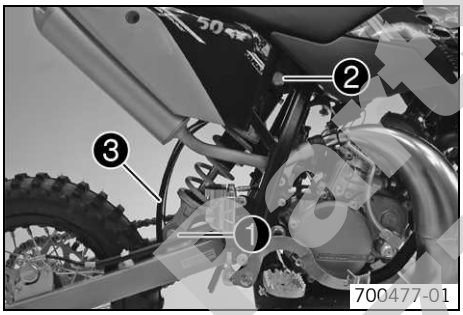
Guideline

Spring rate (50 SX)	
Weight of rider: < 25 kg (< 55 lb.)	30 N/mm (171 lb/in)
Weight of rider: 25... 35 kg (55... 77 lb.)	35 N/mm (200 lb/in)
Weight of rider: > 40 kg (> 88 lb.)	40 N/mm (228 lb/in)
Spring rate (50 SX Junior)	
Weight of rider: < 25 kg (< 55 lb.)	65 N/mm (371 lb/in)
Weight of rider: 25... 35 kg (55... 77 lb.)	75 N/mm (428 lb/in)
Weight of rider: > 35 kg (> 77 lb.)	85 N/mm (485 lb/in)
Spring rate (50 SX Mini)	
Weight of rider: < 25 kg (< 55 lb.)	65 N/mm (371 lb/in)
Weight of rider: 25... 35 kg (55... 77 lb.)	75 N/mm (428 lb/in)
Weight of rider: > 35 kg (> 77 lb.)	85 N/mm (485 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.

– Install shock absorber. (☛ p. 24)
– Check the static sag of the shock absorber. (☛ p. 22)
– Check the riding sag of the shock absorber. (☛ p. 23)
– Adjust the rebound damping of the shock absorber. (☛ p. 22)

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 the splash protector ❶ to the side and position the shock absorber according to the desired seat height. Mount and tighten screw ❷.

Guideline

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

– Mount and tighten screw ❸.

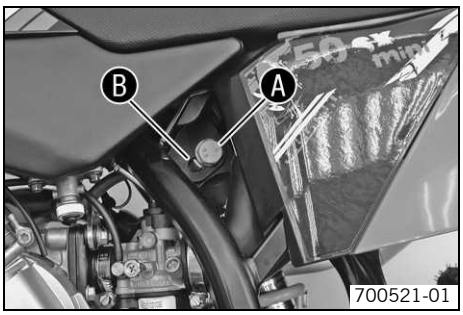
Guideline

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

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

Adjusting seat height

Warning
Danger of accidents Modifications to the suspension settings can seriously alter the vehicle's ride behavior.
– Following modifications, ride slowly at first to get the feel of the new ride behavior.

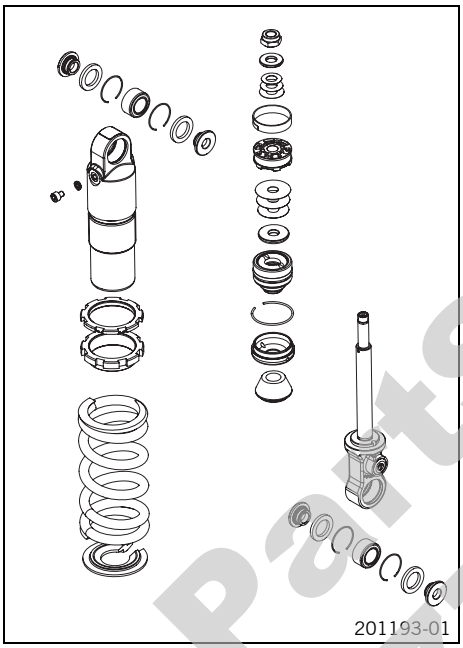


– Remove shock absorber. (☛ p. 24)
– Position the shock absorber according to the required seat height.
Guideline

Low seat position (standard)	Ⓐ
High seat position	Ⓑ

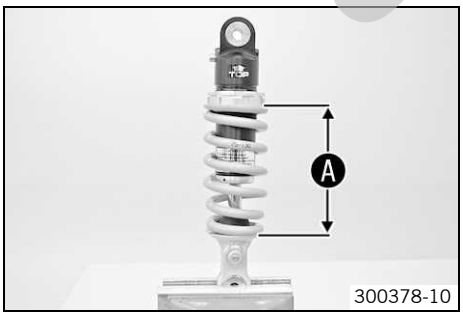
– Install shock absorber. (☛ p. 24)

Servicing shock absorber



Condition
The shock absorber has been removed.
– Remove the spring. (☛ p. 25)
– Disassemble the damper. (☛ p. 26)
– Disassemble the piston rod. (☛ p. 27)
– Remove the heim joint. (☛ p. 28)
– Check the damper. (☛ p. 29)
– Install the heim joint. (☛ p. 30)
– Assemble the piston rod. (☛ p. 31)
– Assemble the damper. (☛ p. 32)
– Install the spring. (☛ p. 35)

Removing the spring

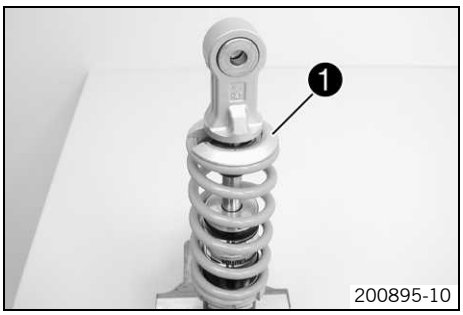


Condition
The shock absorber has been removed.
– Clamp the shock absorber into the vise using soft jaws.
– Measure and note down spring length Ⓐ in the preloaded state.

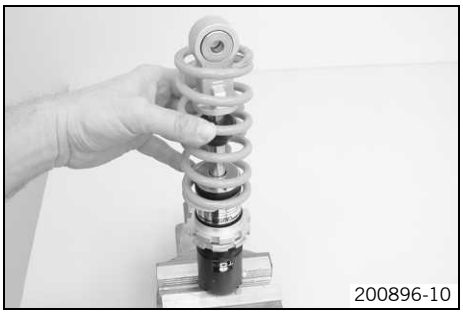
– Release the retaining ring and adjusting ring using the special tools.

Hook wrench (T304) (☛ p. 152)
Hook wrench (T1533) (☛ p. 151)

– Turn the retaining and adjusting rings all the way up.



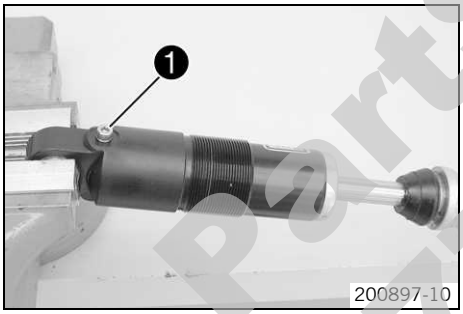
– Remove spring retainer ❶.



– Take off the spring with the retaining and adjusting rings.

Disassembling the damper

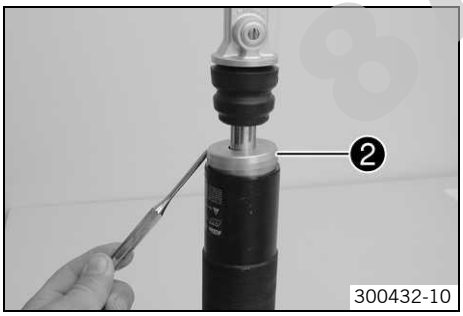
– Remove the spring. (☛ p. 25)



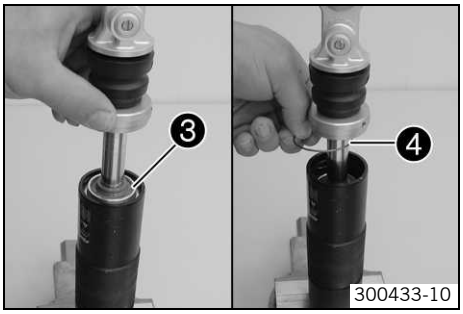
– Clamp the damper into the vise using soft jaws.
– Note down the current state of the rebound damping.
– Fully open the rebound damping.
– Remove screw ❶.
✓ The nitrogen pressure dissipates.

Info
The screw of the filling port must be in the highest position.

– Let the oil drain.



– Remove locking cap ❷.



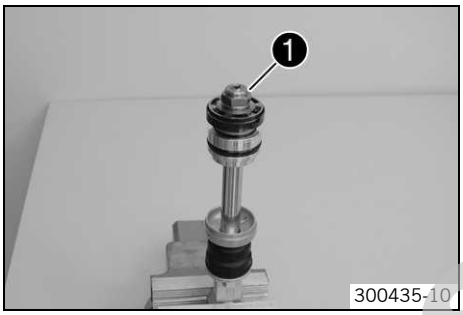
– Push in seal ring retainer ❸. Remove lock ring ❹.

Info
Do not scratch the inside surface.

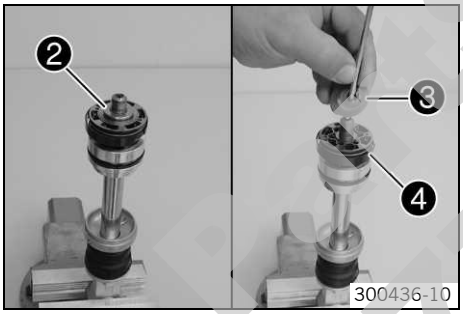
– Remove the piston rod. Drain the remaining oil.

Disassembling the piston rod

– Disassemble the damper. (☛ p. 26)
– Clamp the piston rod with the heim joint into a vise.

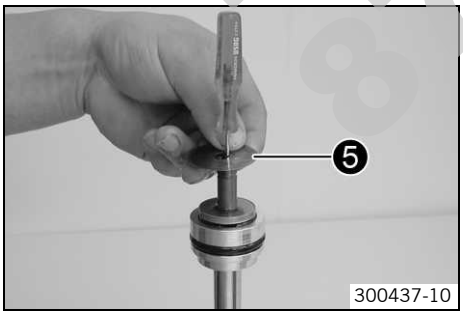


– Remove nut ❶.



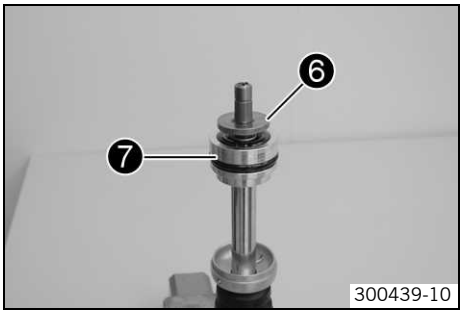
– Remove supporting plate ❷ and rebound shim stack ❸ together with piston ❹.

Info
Thread the rebound shim stack onto a screwdriver and set the shims down together.

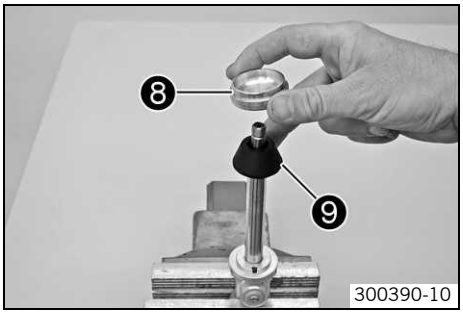


– Remove compression shim stack ❺.

Info
Thread the compression shim stack onto a screwdriver and set the shims down together.



– Remove supporting plate ❻.
– Remove seal ring retainer ❼.

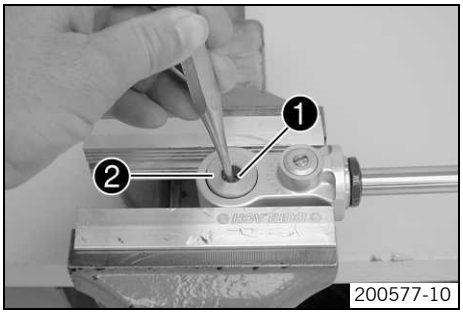


– Remove locking cap ❽ and rubber buffer ❾.

Removing the heim joint

Condition

The shock absorber has been removed.

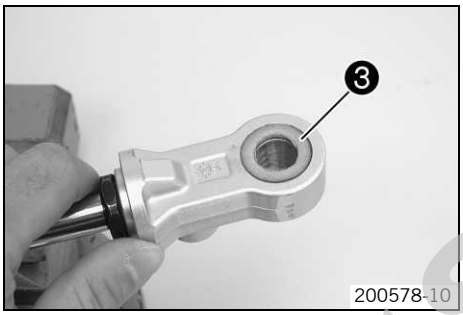


– Clamp the shock absorber into the vise using soft jaws.
– Remove collar bushing ❶ of the heim joint.

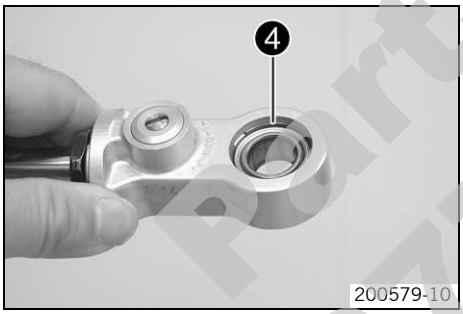
Pin (T120) (☛ p. 150)

– Turn around the shock absorber and remove collar bushing ❷ of the heim joint.

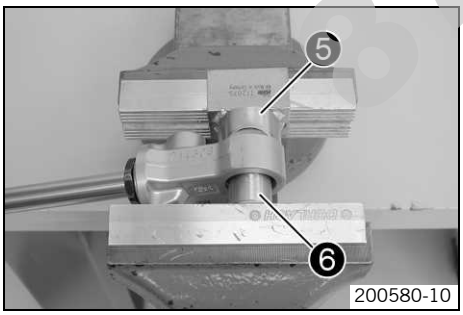
Pin (T120) (☛ p. 150)



– Remove seal rings ❸ on both sides.



– Remove lock rings ❹ on both sides.

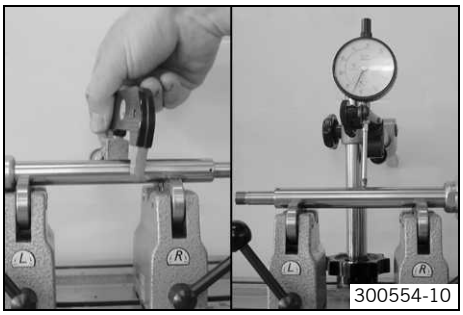


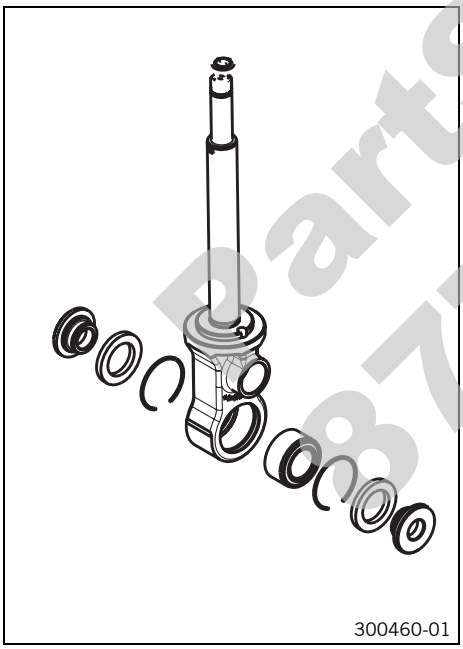
– Place special tool ❺ underneath and press out the heim joint using special tool ❻.

Pressing tool (T1207S) (☛ p. 151)

Checking the damper


300440-10


300554-10


300460-01

Condition

The damper has been disassembled.

– Measure the inside diameter at both ends and in the middle of the damper cartridge.

Damper cartridge	
Minimum diameter	36.10 mm (1.4213 in)

» If the measured value is greater than the specified value:
  – Change the damper cartridge.

– Check the damper cartridge for damage and wear.

» If there is damage or wear:
  – Change the damper cartridge.

– Measure the diameter of the piston rod.

Piston rod	
Diameter	13.93… 13.98 mm (0.5484… 0.5504 in)

» If the specified value is not reached:
  – Change the piston rod.

– Measure the run-out of the piston rod.

Piston rod	
Run-out	≤ 0.08 mm (≤ 0.0031 in)

» If the measured value is greater than the specified value:
  – Change the piston rod.

– Check the piston rod for damage and wear.

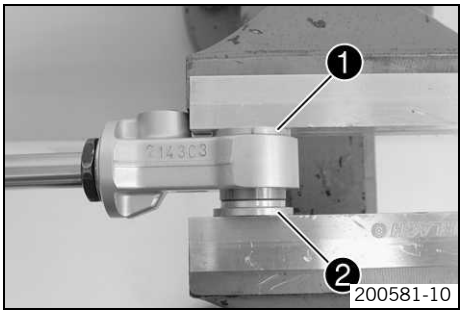
» If there is damage or wear:
  – Change the piston rod.

– Check the heim joint for damage and wear.

» If there is damage or wear:
  – Change the heim joint.

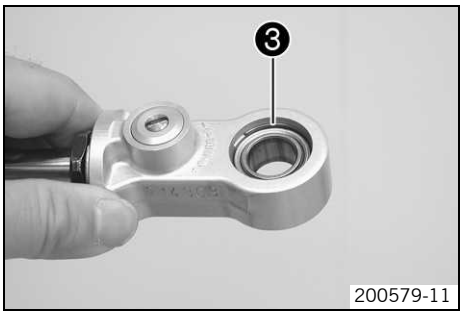
Installing the heim joint

Info
The operations are the same on the upper and lower heim joints.

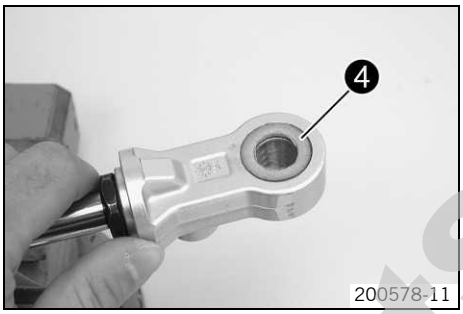


– Place special tool ❶ underneath and press the heim joint to the middle using special tool ❷.

Pressing tool (T1206) (☛ p. 150)
Pressing tool (T129) (☛ p. 151)

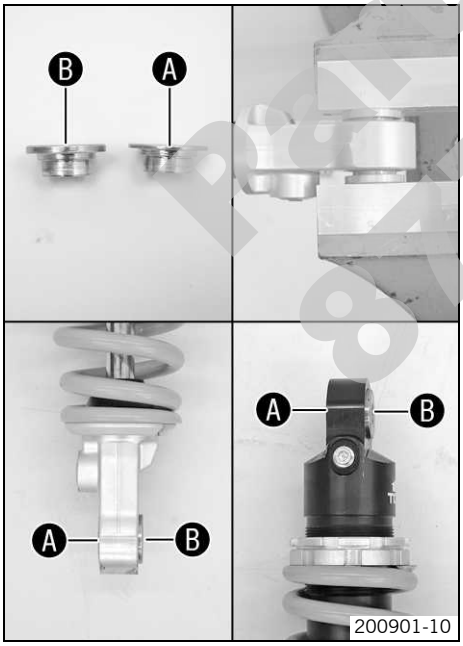


– Mount lock rings ❸ on both sides.



– Mount and grease seal rings ❹ on both sides.

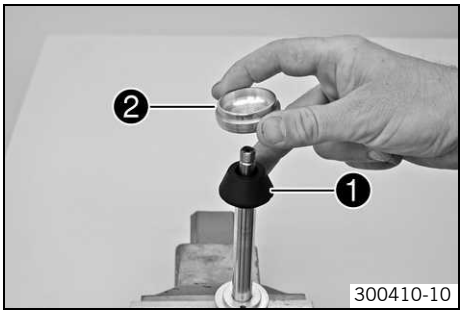
Lubricant (T158) (☛ p. 144)



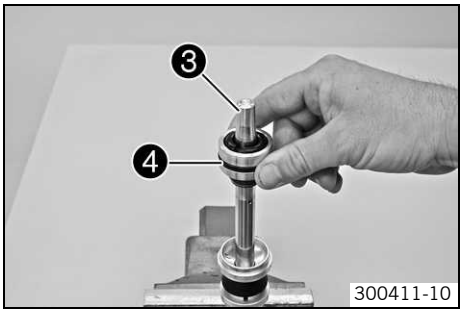
– Press in both collar bushings of the heim joint.

Info
Because the collar bushings are different (Ⓐ thin, Ⓑ thick), ensure that they are installed in the correct positions; see the photos.
If the collar bushings are installed incorrectly, the shock absorber will rub against the swingarm.

Assembling the piston rod



– Clamp the piston rod with the heim joint into a vise.
– Mount rubber buffer ❶ and locking cap ❷.



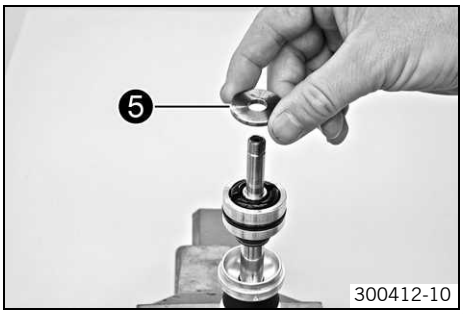
– Position special tool ❸ on the piston rod.

Mounting sleeve (T313) (☛ p. 152)

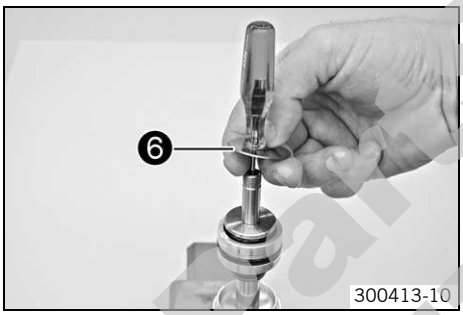
– Grease the seal ring and slide seal ring retainer ❹ on the piston rod.

Lubricant (T625) (☛ p. 145)

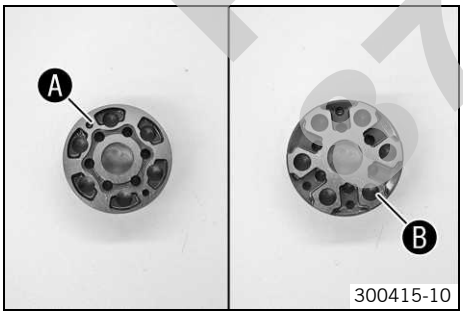
– Remove the special tool.



– Mount supporting plate ❺ with the round side first.



– Mount compression shim stack ❻ with the smaller disks facing down.

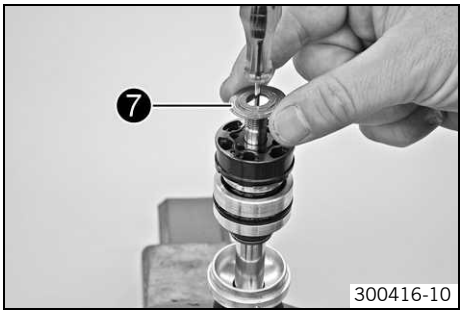


– Grind the piston on both sides on a surface plate with sandpaper grit 1200.
– Mount the piston.
Guideline

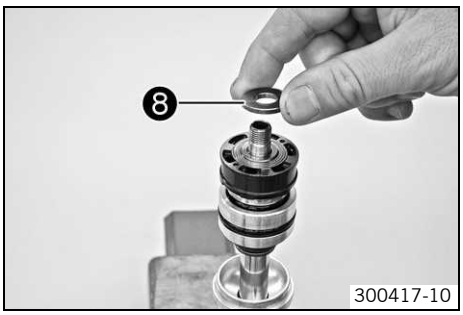
View Ⓐ	Piston from above
View Ⓑ	Piston from below

– Clean the piston.

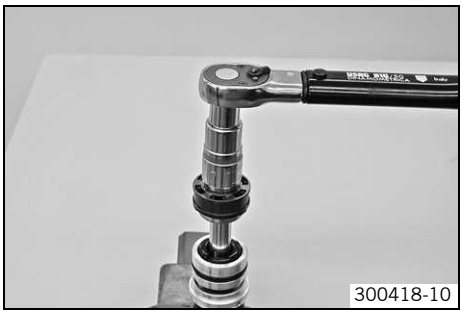
– Mount the piston.



– Mount rebound shim stack ❼ with the smaller disks facing up.



– Mount supporting plate ❽.



– Mount and tighten the nut.

Guideline

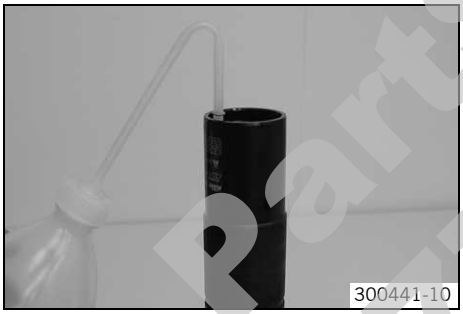
Nut, piston rod	M10x1	30 Nm (22.1 lbf ft)

Assembling the damper (50 SX Junior, 50 SX Mini)

– Assemble the piston rod. (☛ p. 31)
– Mount and tighten the screw of the filling port with a new sealing washer.

Guideline

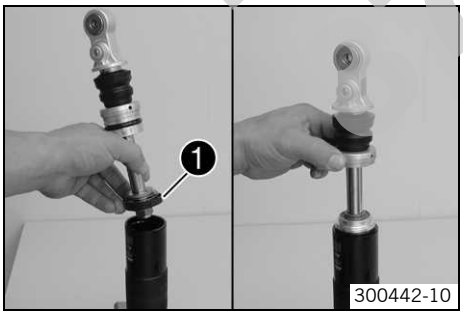
Screw, filling port	M5	3 Nm (2.2 lbf ft)



– Fill the damper cartridge.

Guideline

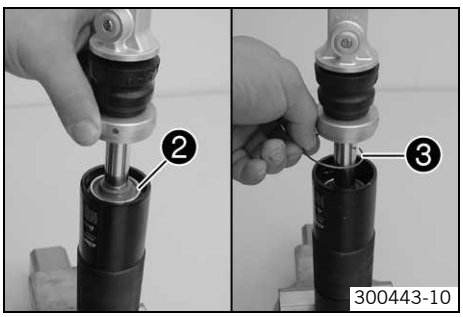
Fluid level below top edge	55 mm (2.17 in)
Shock absorber oil (SAE 2.5) (50180342S1) (☛ p. 143)	



– Mount and oil piston ring ❶ in the groove of the piston.
– Grease the O-ring of the gasket support.

Lubricant (T158) (☛ p. 144)

– Carefully mount the piston rod.

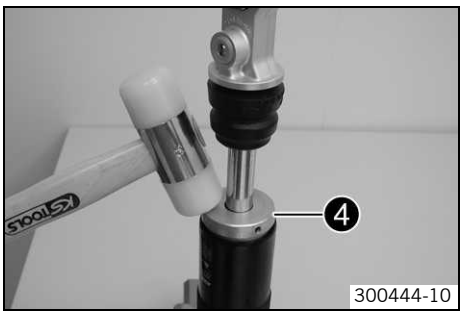


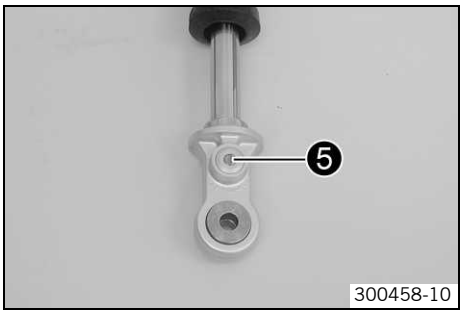
– Push in seal ring retainer ❷.
– Mount lock ring ❸.

Info

First insert the closed part of the lock ring and then the two ends to prevent the surface of the damper cartridge under the groove from becoming scratched and the O-ring from being damaged during installation or operation.

– Pull out the piston rod until the seal ring retainer rests against the lock ring.
– Mount locking cap ❹ with a plastic hammer.
– Fill the damper with nitrogen. (☛ p. 34)





Alternative 1

– Turn adjusting screw ❺ all the way to the right.
– Turn to the left by the number of clicks corresponding to the shock absorber type.

Guideline

Rebound damping	
Standard	12 clicks

Alternative 2

Warning
Danger of accidents Modifications to the suspension settings can seriously alter the vehicle's ride behavior.

– Extreme modifications to the adjustment of the spring elements can cause a serious deterioration in the handling characteristics and overload some components.
– Only make adjustments within the recommended range.
– After making adjustments, ride slowly at first to get the feel of the new ride behavior.

– Turn adjusting screw ❺ to the position measured during disassembly.

Assembling the damper (50 SX)

– Assemble the piston rod. (☛ p. 31)
– Mount and tighten the screw of the filling port with a new sealing washer.

Guideline

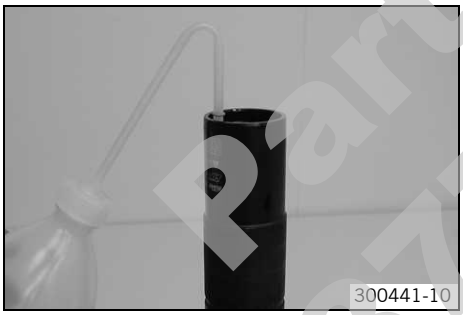
Screw, filling port	M5	3 Nm (2.2 lbf ft)

– Fill the damper cartridge.

Guideline

Fluid level below top edge	55 mm (2.17 in)

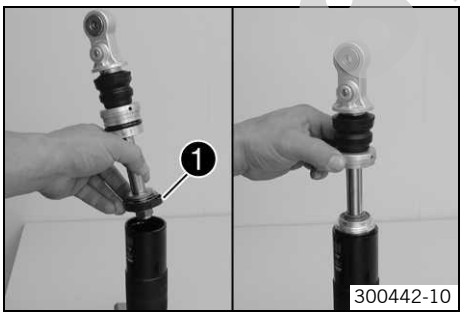
Shock absorber oil (SAE 2.5) (50180342S1) (☛ p. 143)

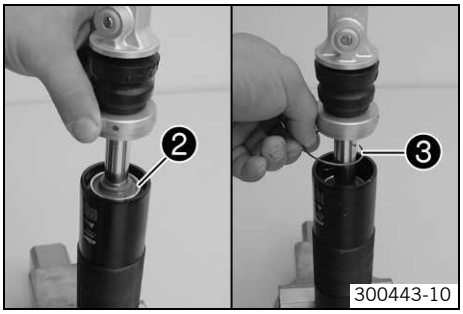


– Mount and oil piston ring ❶ in the groove of the piston.
– Grease the O-ring of the gasket support.

Lubricant (T158) (☛ p. 144)

– Carefully mount the piston rod.

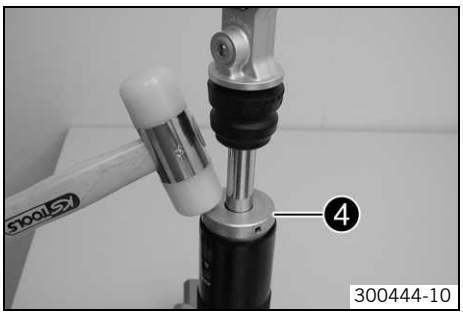




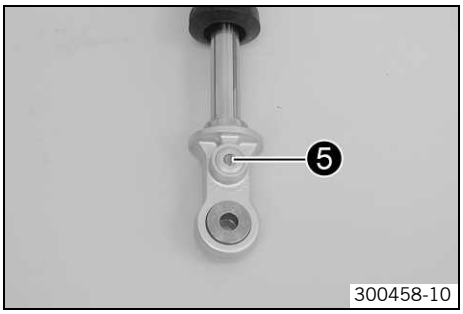
– Push in seal ring retainer ❷.
– Mount lock ring ❸.

Info
First insert the closed part of the lock ring and then the two ends to prevent the surface of the damper cartridge under the groove from becoming scratched and the O-ring from being damaged during installation or operation.

– Pull out the piston rod until the seal ring retainer rests against the lock ring.



– Mount locking cap ❹ with a plastic hammer.
– Fill the damper with nitrogen. (☛ p. 34)



Alternative 1

– Turn adjusting screw ❺ all the way to the right.
– Turn to the left by the number of clicks corresponding to the shock absorber type.

Guideline

Rebound damping	
Standard	10 clicks

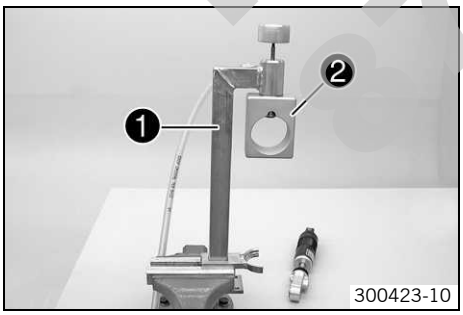
Alternative 2

Warning
Danger of accidents Modifications to the suspension settings can seriously alter the vehicle's ride behavior.

– Extreme modifications to the adjustment of the spring elements can cause a serious deterioration in the handling characteristics and overload some components.
– Only make adjustments within the recommended range.
– After making adjustments, ride slowly at first to get the feel of the new ride behavior.

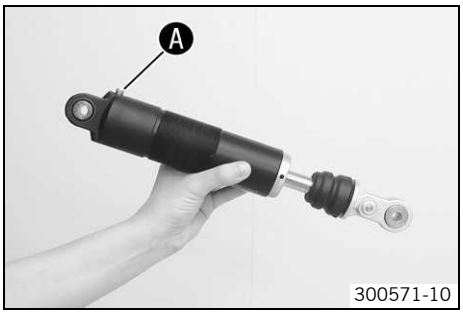
– Turn adjusting screw ❺ to the position measured during disassembly.

Filling the damper with nitrogen

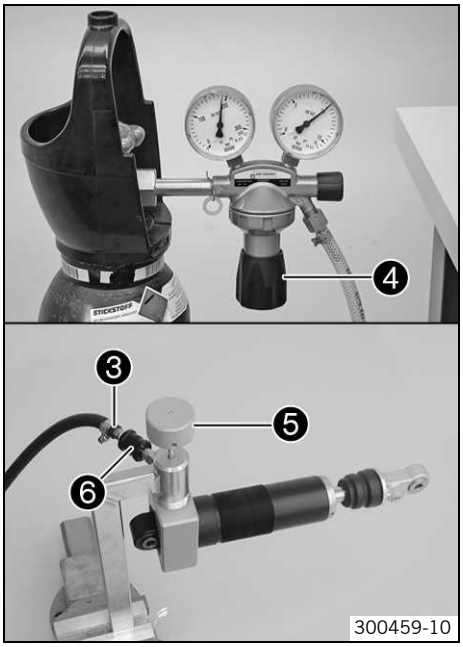


– Fix special tool ❶ in a vise.
– Mount special tool ❷.

Nitrogen filling tool (T170S1) (☛ p. 151)



– Loosen screw Ⓐ of the filling port by approx. 2 rotations.
– Position the screw of the filling port at the top and slide the piston rod into the damper cartridge until oil begins to emerge.



– Connect the filling cylinder to connector ❸.

Filling gas - nitrogen

– Adjust pressure regulator ❹.

Guideline

Gas pressure	10 bar (145 psi)

– Position the damper in the special tool.

✔ The hexagonal part of tap handle ❺ engages in the hexagon socket of the filling port screw.

– Open spigot ❻.

✔ The piston rod moves out as the damper is filled.

Info
The spigot is opened when the sleeve is pushed toward special tool ❶ and closed when it is pulled away from the special tool.
If nitrogen escapes, the damper must be pressed more tightly against the seal of special tool ❶.

– Fill the damper for at least 15 seconds.

Guideline

Gas pressure	10 bar (145 psi)

Info
Observe the pressure regulator dial.
Ensure that the damper is filled to the required pressure.

– Close the screw of the filling port using tap handle ❺.
– Close the spigot and take the damper out of the special tool.
– Tighten the screw of the filling port.

Guideline

Screw, filling port	M5	3 Nm (2.2 lbf ft)

Installing the spring (50 SX Junior, 50 SX Mini)

– Assemble the damper. (☛ p. 32)
– Clamp the damper into the vise using soft jaws.
– Mount the retaining ring and turn it all the way down.

✔ The collar faces the adjusting ring.

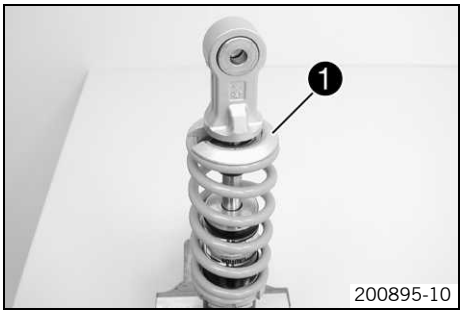
– Mount the adjusting ring and turn it all the way down.

✔ The collar faces the spring.

– Measure the overall spring length when not under tension.
– Mount the spring.

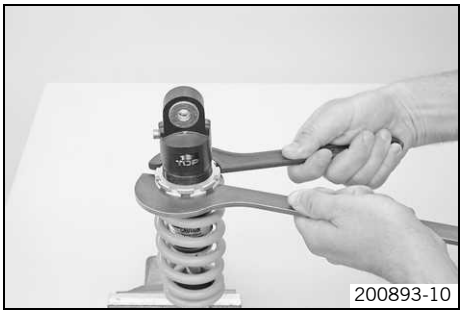
Guideline

Spring rate	
Weight of rider: < 25 kg (< 55 lb.)	65 N/mm (371 lb/in)
Weight of rider: 25… 35 kg (55… 77 lb.)	75 N/mm (428 lb/in)
Weight of rider: > 35 kg (> 77 lb.)	85 N/mm (485 lb/in)



– Mount spring retainer ❶.

✔ The open end is across from the spring end.



Alternative 1

– Tension the spring to the defined length by turning the adjusting ring.

Guideline

Spring preload	
Standard	5 mm (0.2 in)

Hook wrench (T304) (☛ p. 152)
Hook wrench (T1533) (☛ p. 151)

Alternative 2

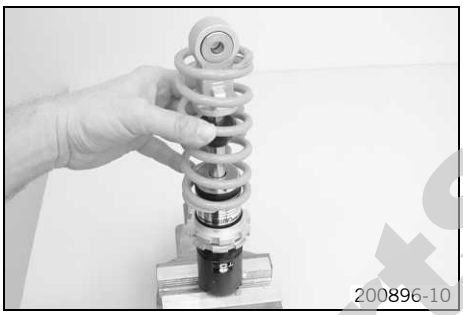
Warning

Danger of accidents Modifications to the suspension settings can seriously alter the vehicle's ride behavior.

– Extreme modifications to the adjustment of the spring elements can cause a serious deterioration in the handling characteristics and overload some components.
– Only make adjustments within the recommended range.
– After making adjustments, ride slowly at first to get the feel of the new ride behavior.

– Tension the spring to the length measured during disassembly by turning the adjusting ring.
– Lock the lock nut and adjusting ring.

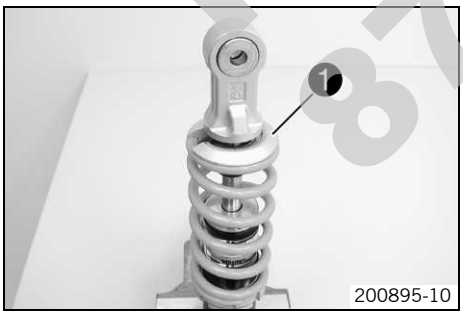
Installing the spring (50 SX)



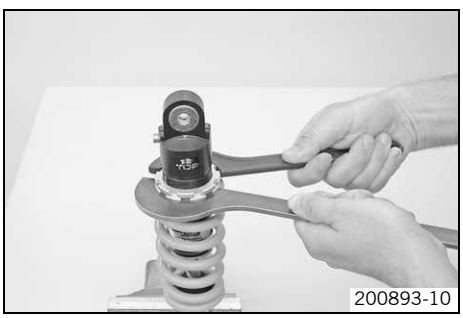
– Assemble the damper. (☛ p. 33)
– Clamp the damper into the vise using soft jaws.
– Mount the retaining ring and turn it all the way down.
✔ The collar faces the adjusting ring.
– Mount the adjusting ring and turn it all the way down.
✔ The collar faces the spring.
– Measure the overall spring length when not under tension.
– Mount the spring.

Guideline

Spring rate	
Weight of rider: < 25 kg (< 55 lb.)	30 N/mm (171 lb/in)
Weight of rider: 25... 35 kg (55... 77 lb.)	35 N/mm (200 lb/in)
Weight of rider: > 40 kg (> 88 lb.)	40 N/mm (228 lb/in)



– Mount spring retainer ❶.
✔ The open end is across from the spring end.



Alternative 1

– Tension the spring to the defined length by turning the adjusting ring.

Guideline

Spring preload	
Standard	3 mm (0.12 in)

Hook wrench (T304) (☛ p. 152)
Hook wrench (T1533) (☛ p. 151)

Alternative 2

Warning

Danger of accidents Modifications to the suspension settings can seriously alter the vehicle's ride behavior.

- Extreme modifications to the adjustment of the spring elements can cause a serious deterioration in the handling characteristics and overload some components.
- Only make adjustments within the recommended range.
- After making adjustments, ride slowly at first to get the feel of the new ride behavior.

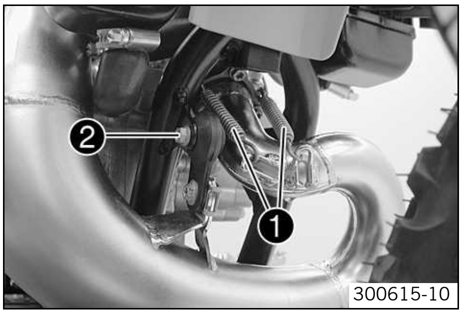
- Tension the spring to the length measured during disassembly by turning the adjusting ring.
- Lock the lock nut and adjusting ring.

Removing the exhaust manifold

Warning

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

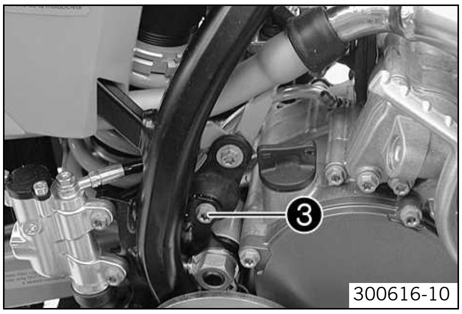
– Allow the exhaust system to cool down. Do not touch hot components.


300615-10

– Remove springs ❶.

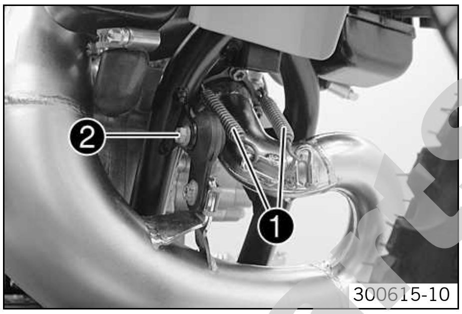
Spring hooks (50305017000) (☛ p. 148)

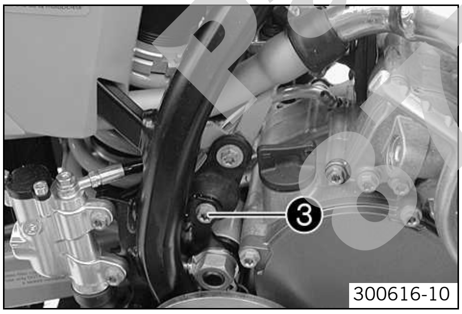
– Remove screw ❷.


300616-10

– Remove screws ❸.
– Remove the exhaust manifold.

Installing the exhaust manifold


300615-10


300616-10

– Grease the O-ring of the exhaust manifold.

Long-life grease (☛ p. 144)

– Position the exhaust manifold.
– Mount springs ❶.

Spring hooks (50305017000) (☛ p. 148)

– Mount and tighten screw ❷.

Guideline

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

– Mount and tighten screws ❸.

Guideline

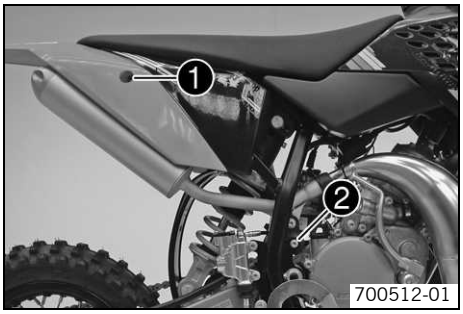
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

Removing main silencer

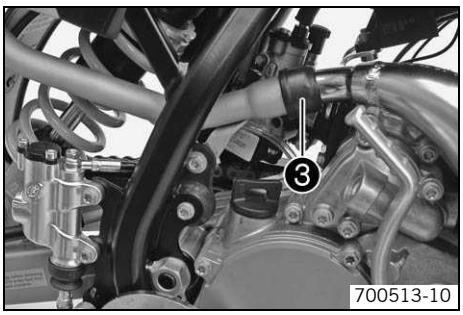
Warning

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.

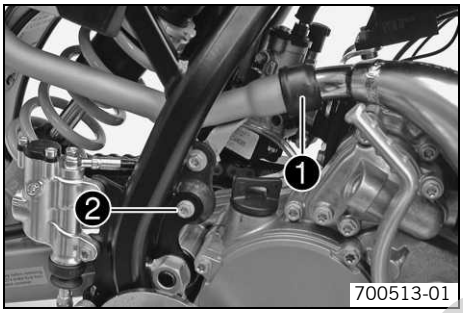


– Remove screw ❶.
– Remove screw ❷.



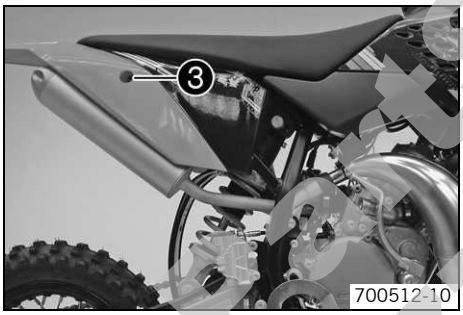
– Pull the main silencer off of the manifold at the rubber sleeve ❸.

Installing the main silencer



– Position the main silencer.
– Mount the main silencer with the rubber sleeve ❶.
– Mount the silentblock with the screw ❷.
Guideline

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

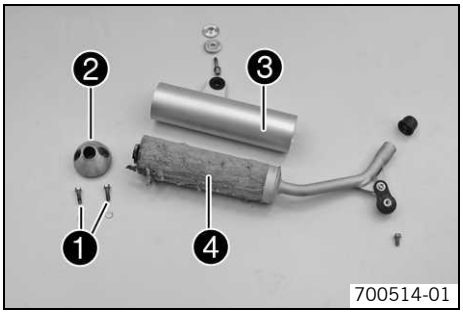


– Position the collar sleeves.
– Mount and tighten screw ❸.
Guideline

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

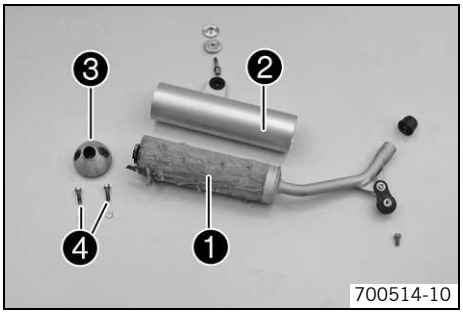
Removing the glass fiber yarn filling of the main silencer

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. 38)
– 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 locking cap ❸ into the outer tube. Fit and tighten screws ❹ with tooth lock washer.

  Guideline

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

– Install the main silencer. (☛ p. 39)

Removing the air filter

Note

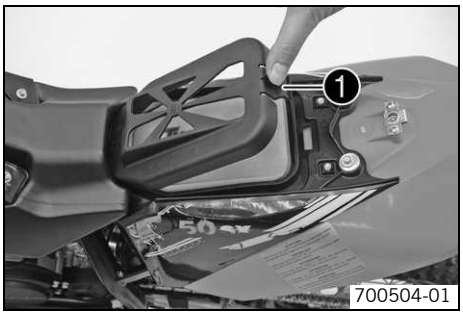
Engine failure Unfiltered intake air has a negative effect on the service life of the engine.

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

Warning

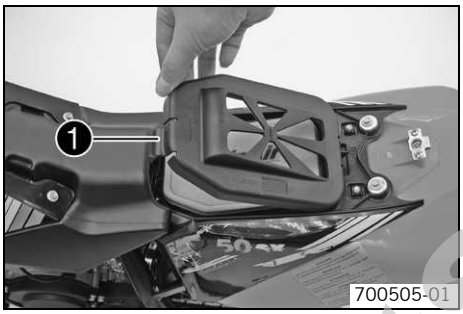
Environmental hazard Hazardous substances cause environmental damage.

– Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.



– Remove the seat. (☛ p. 42)
– Press the rear holding lugs ❶ together slightly and swing the air filer cover upward. Pull out the front holding lug and take off the air filter cover.
– Take off the air filter.

Installing the air filter



– Position the clean air filter.
– Position the rear holding lug. Lower the air filter cover and allow the front holding lug ❶ to snap in.

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. 42)

Cleaning air filter

Warning

Environmental hazard Hazardous substances cause environmental damage.

– Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

Info

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

– Remove the air filter. (☛ p. 41)
– Wash the air filter thoroughly in special cleaning liquid and allow it to dry properly.

Air filter cleaner (☛ p. 144)

Info

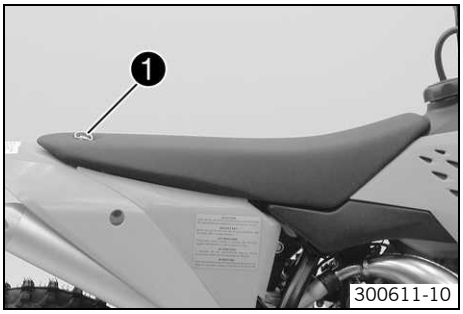
Only press the air filter to dry it, never wring it out.

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

Oil for foam air filter (☛ p. 145)

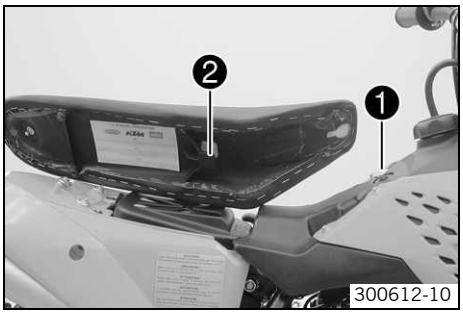
– Clean the air filter box.
– Check carburetor connection boot for damage and tightness.
– Install the air filter. (☛ p. 41)

Removing the seat

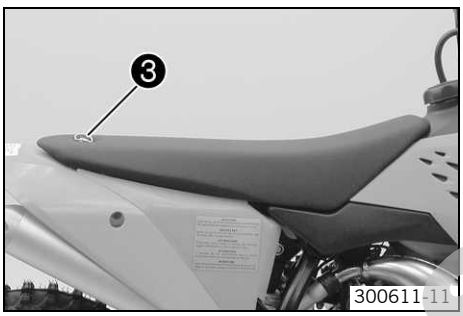


– Open quick release ❶ and raise the rear of the seat.
– Pull back the seat and remove it.

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.

Removing the fuel tank

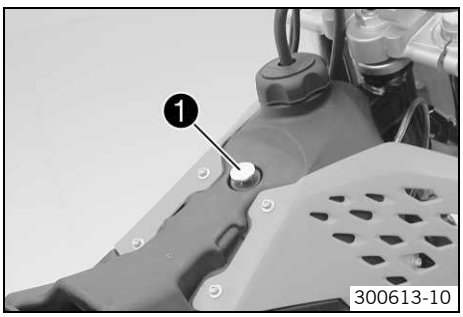
Danger
Fire hazard Fuel is highly flammable.

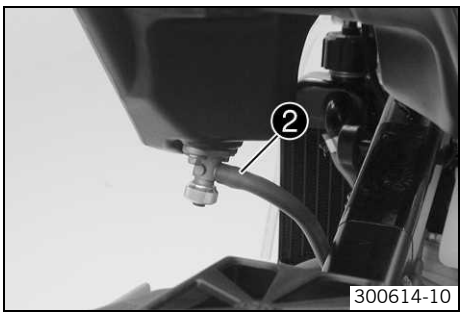
– Never refuel the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
– Fuel in the fuel tank expands when warm and can escape if the tank is overfilled. See the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

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. 42)
– Turn the knurled screw on the fuel tap all the way clockwise.
– Remove screw ❶.





– Raise the fuel tank.
– Pull off fuel hose ❷.

Info
Remaining fuel may run out of the fuel hose.

– Take off the fuel tank.

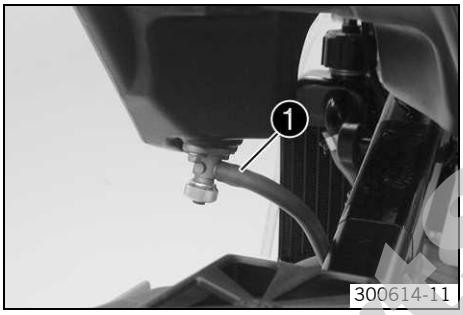
Installing the fuel tank

Danger
Fire hazard Fuel is highly flammable.

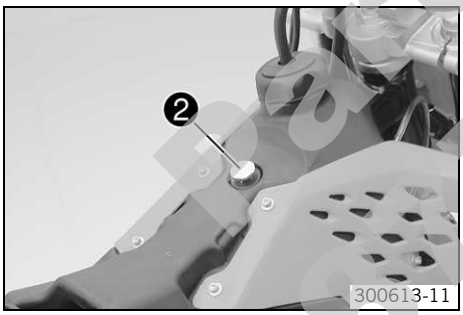
– Never refuel the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
– Fuel in the fuel tank expands when warm and can escape if the tank is overfilled. See the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

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.



– Connect fuel hose ❶.



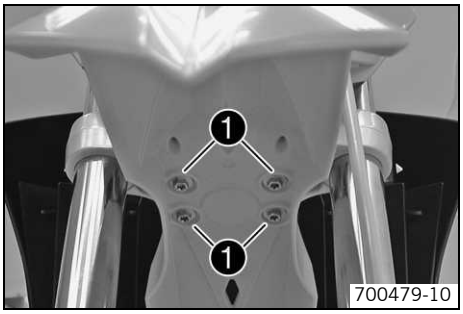
– Position the fuel tank.
– Mount and tighten screw ❷.

Guideline

Remaining nuts, chassis	M6	15 Nm (11.1 lbf ft)

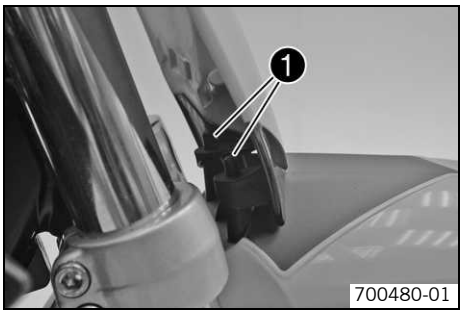
– Position the fuel tank breather.
– Mount the seat. (☛ p. 42)

Dismounting the front fender

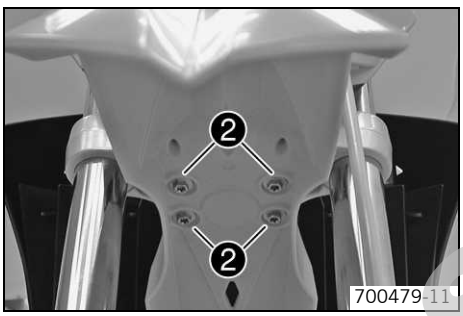


– Remove screws ❶. Remove the front fender.

Installing the front fender



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

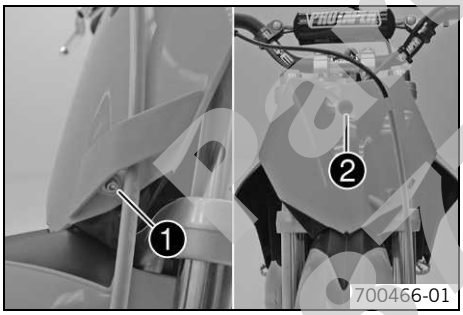


– Position the front fender. Mount and tighten screws ❷.

Guideline

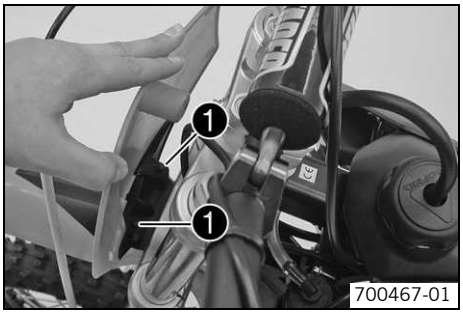
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

Dismounting the start number plate

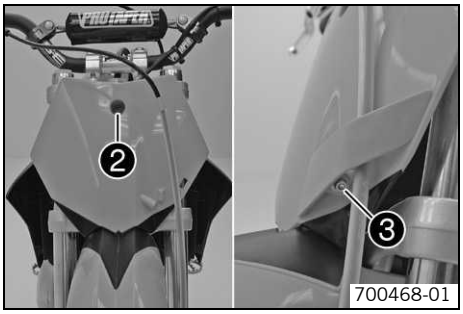


– Remove screw ❶ and take off clamp.
– Remove screw ❷. Remove the start number plate.

Installing the start number plate



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

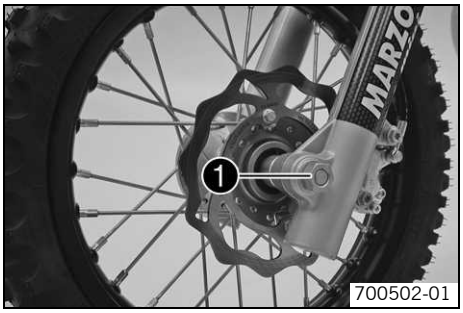


– Mount and tighten screw ❷.
  Guideline

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

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

Removing front wheel



– Jack up the motorcycle. (☛ p. 7)
– Remove nut ❶ with washer.

– Hold the front wheel and pull out the wheel spindle ❷ with the washer ❸. Take the front wheel out of the fork.

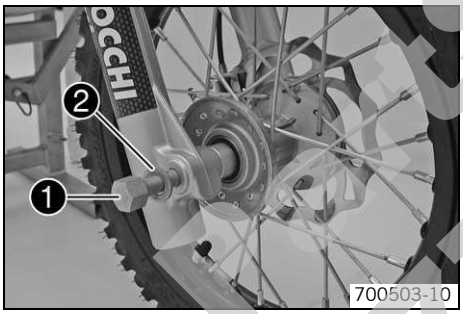
Info
Do not pull the hand brake lever when the front wheel is removed.
Always lay the wheel down in such a way that the brake disc is not damaged.

Installing the front wheel

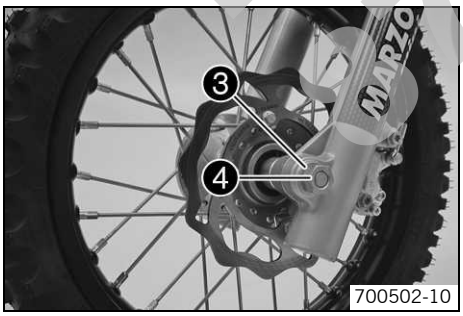
Warning
Danger of accidents Reduced braking efficiency due to oil or grease on the brake discs.
– Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.

– Clean and grease wheel spindle ❶.

Long-life grease (☛ p. 144)



– Lift the front wheel into the fork, position it, and insert wheel spindle ❶ with washer ❷.



– Position washer ❸.
– Mount and tighten nut ❹.

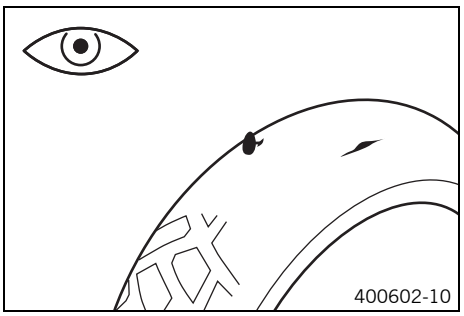
Guideline

Front wheel spindle nut	M12x1	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 linings are lying correctly on the brake disc.

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 vehicle handling.
The type, condition and air pressure of the tires all have an important impact on the handling characteristics of the motorcycle.
The tires mounted on the front and rear wheels must have the same profile.
Worn tires have a negative effect on vehicle handling, 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)

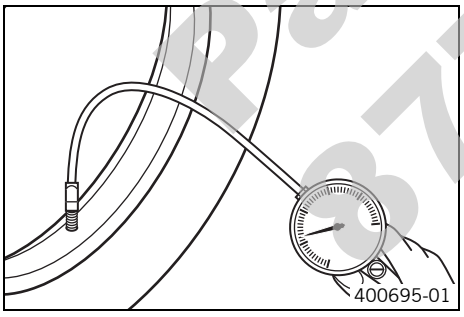
  » If the tread depth is less than the minimum permissible depth:
    – Change the tires.
– Check the tire age.

Info
The tire's date of manufacture is usually part of the tire markings and is indicated by the last four digits of the **DOT** marking. The first two digits refer to the week of manufacture and last two digits refer to the year of manufacture.
KTM recommends that the tires be changed regardless of the actual wear, at the latest after 5 years.

  » If a tire is more than 5 years old:
    – 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.



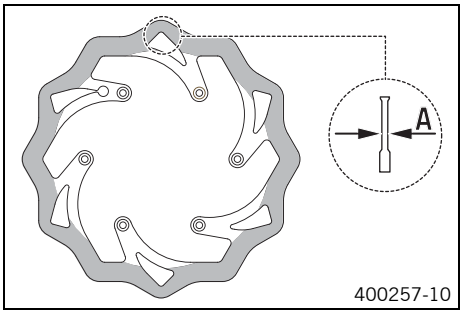
– Remove the dust cap.
– Check the tire air pressure when the tires are cold.

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 efficiency due to worn brake disc(s).
– Change the worn brake disc(s) without delay.



– 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	2.2 mm (0.087 in)
Rear	2.2 mm (0.087 in)

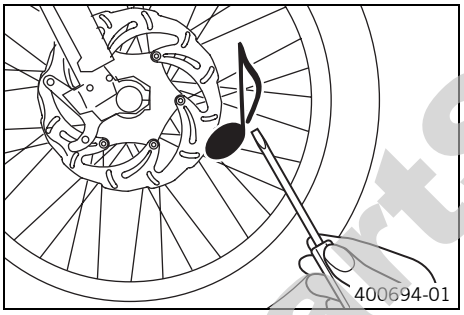
» If the brake disc thickness is less than the specified value:
– Change the brake disc.

– 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 Instable handling due to incorrect spoke tension.
– Ensure that the spoke tension is correct.

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.



– Briefly strike each spoke with the blade of a screwdriver.

Info
The frequency of the tone depends on the spoke length and diameter.
If you hear different tone frequencies from spokes of the same length and thickness, this is an indication that the spoke tension differs.

You should hear a high note.

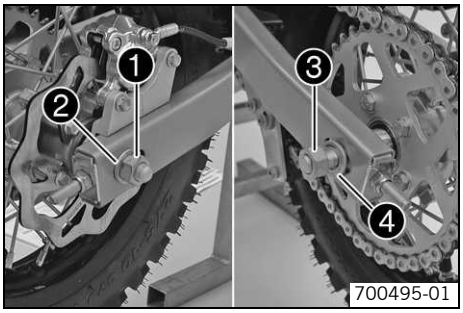
» If the spoke tension differs:
– Correct the spoke tension.

– Check the spoke torque.
Guideline

Spoke nipple	M3.5	3 Nm (2.2 lbf ft)

Torque wrench with various accessories in set (58429094000) (☛ p. 149)

Removing rear wheel

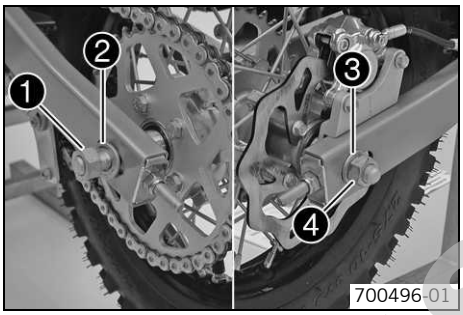


– Jack up the motorcycle. (☛ p. 7)
– Remove nut ❶.
– Remove the washer ❷.
– Pull out the wheel spindle ❸ with the washer ❹.
– Remove the chain from the rear sprocket.
– Take the rear wheel out of the swing arm.

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 efficiency 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. 144)

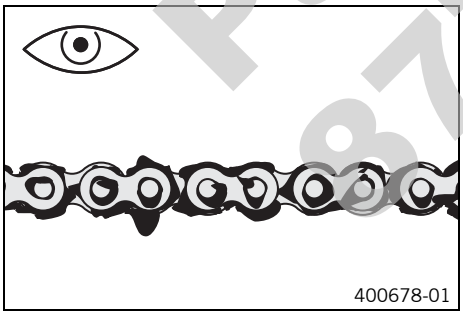
– Lift the rear wheel into the swingarm and place the chain on the rear sprocket.
– Insert the wheel spindle ❶ with the washer ❷.
– Position washer ❸. Mount nut ❹, but do not tighten it yet.
– Check chain tension when installing the rear wheel. (☛ p. 51)
– Make sure that the chain adjuster supports are fitted correctly on the adjusting screws.
– Tighten nut ❹.

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 tight spot.
– 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. 50)

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.

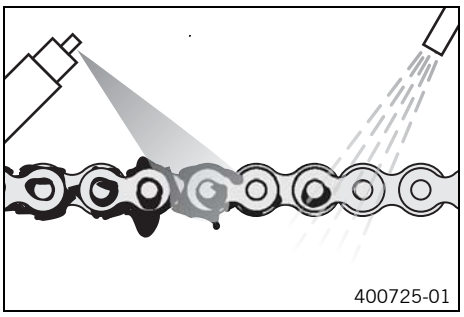
Warning
Danger of accidents Reduced braking efficiency due to oil or grease on the brake discs.

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

Warning
Environmental hazard Hazardous substances cause environmental damage.

– Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

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


400725-01

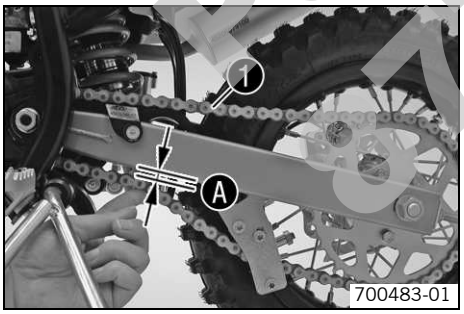
– Clean the chain regularly and then treat with chain spray.

Chain cleaner (☛ p. 144)
Off-road chain spray (☛ p. 145)

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 the chain tension and correct if necessary.



700483-01

– 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)

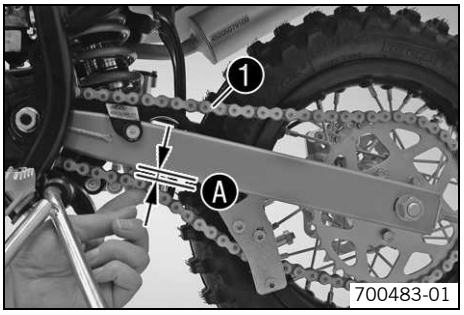
» If the chain tension does not meet specifications:
– Adjusting chain tension - after checking. (☛ p. 52)

– 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 the chain tension and correct if necessary.



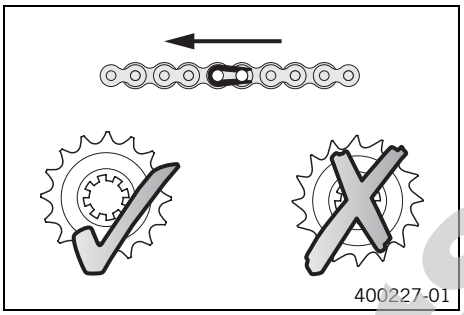
– Make sure that the chain adjuster support plates are lying on the adjusting screws.
– Push the chain at the end of the chain sliding component upward to measure the chain tension Ⓐ.

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. 52)

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.

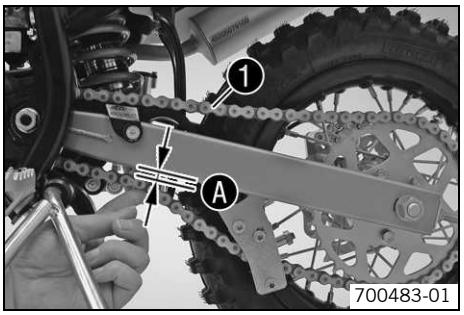
Info
When fitting the chain joint, always make sure that the closed side of the joint faces forward (riding direction).
The engine sprocket, rear sprocket and chain should always be replaced together.

– Check the chain guide for tightness and wear.

Adjusting chain tension

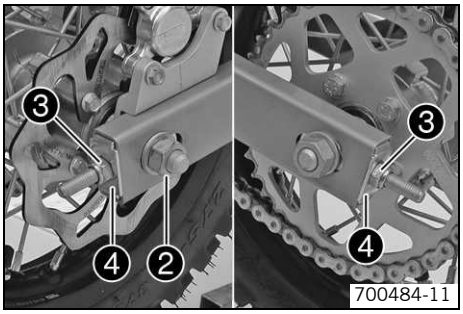
Warning
Danger of accidents Danger caused by incorrect chain tension.

– 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 the chain tension and correct 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.
– 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.	

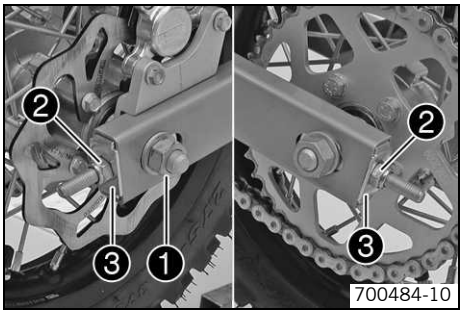
– Make sure that the chain adjuster supports ❹ are fitted correctly on the adjusting screws ❸.
– Tighten nut ❷.

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.
– Adjust the chain tension by turning the adjusting screws ❷ left and right.

Guideline

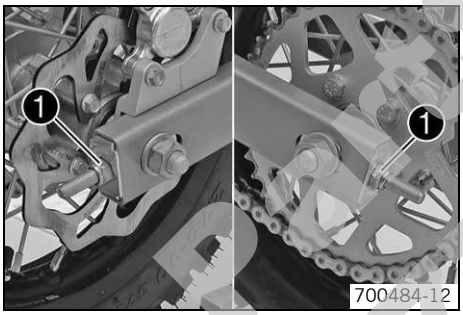
Chain tension	5... 8 mm (0.2... 0.31 in)
Turn adjusting screws ❷ equally on the left and right. Check that the rear wheel is aligned with the front wheel.	

– Make sure that the chain adjuster supports ❸ are fitted correctly on the adjusting screws ❷.
– Tighten nut ❶.

Guideline

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

Adjusting chain tension - installing rear wheel



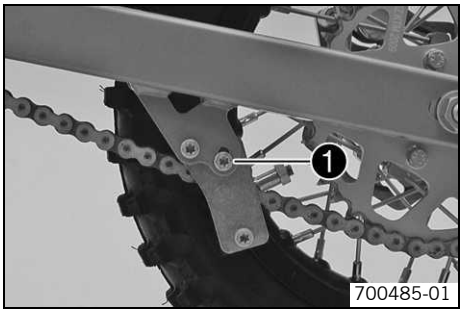
– Adjust the chain tension by turning the adjusting screws ❶ left and right.

Guideline

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

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.

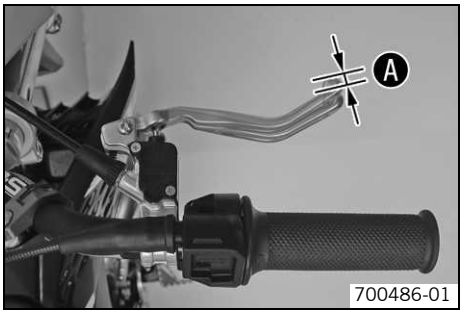


– Loosen screw ❶.
– Position the chain guide.
– Tighten screw.

Guideline

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

Checking the play of the hand brake lever

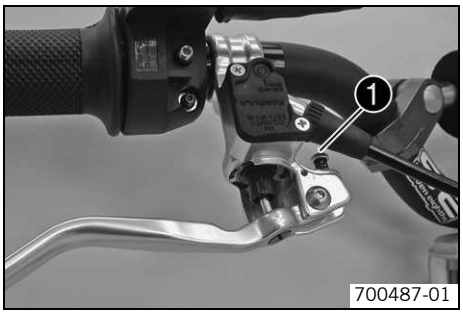


– Push the hand brake lever forwards and check the play Ⓐ.

Play of hand brake lever	3... 5 mm (0.12... 0.2 in)

» If the play does not meet specifications:
– Adjust the play of the hand brake lever. (☛ p. 53)

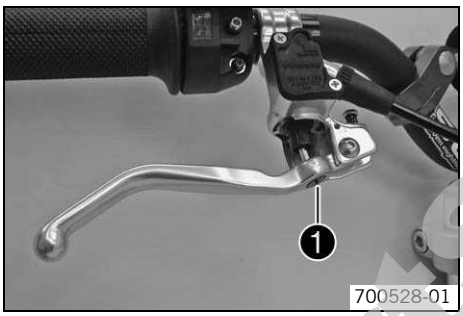
Adjusting the play of the hand brake lever



– Check the play of the hand brake lever. (☛ p. 53)
– Adjust the play of the hand brake lever with the adjusting screw ❶.
Guideline

Play of hand brake lever	3... 5 mm (0.12... 0.2 in)

Adjusting the basic position of the hand brake lever



– Check the play of the hand brake lever. (☛ p. 53)
– Adjust the basic position of the hand brake lever with the adjusting screw ❶ to the rider's hand size.

Info
Turn the adjusting screw clockwise to increase the distance between the hand brake lever and the handlebar.
Turn the adjusting screw counterclockwise to decrease the distance between the hand brake lever and the handlebar.
The range of adjustment is limited.

Checking the front brake fluid level

Warning
Danger of accidents Brake system failure.

– If the brake fluid level drops below the specified marking or the specified value, this is an indication that the brake system is leaking or that the brake linings are completely worn down. Check the brake system and do not continue riding.

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

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

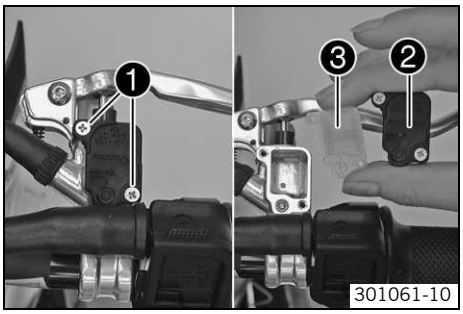
Warning
Danger of accidents Reduced braking effect caused by old brake fluid.

– Change the brake fluid of the front and rear brakes according to the service schedule.

Warning
Environmental hazard Hazardous substances cause environmental damage.

– Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable 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.

Brake 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. 54)
– 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 drops below the specified marking or the specified value, this is an indication that the brake system is leaking or that the brake linings are completely worn down. Check the brake system and do not continue riding.

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

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

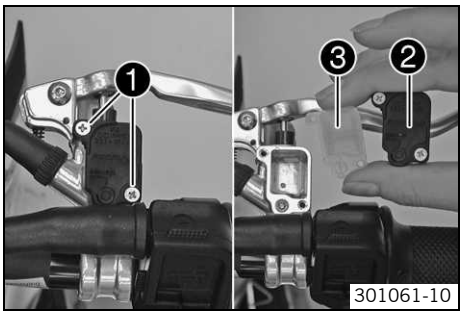
Warning
Danger of accidents Reduced braking effect caused by old brake fluid.

– Change the brake fluid of the front and rear brakes according to the service schedule.

Warning
Environmental hazard Hazardous substances cause environmental damage.

– Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable 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.
– 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. 142)

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

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

Changing the front brake fluid

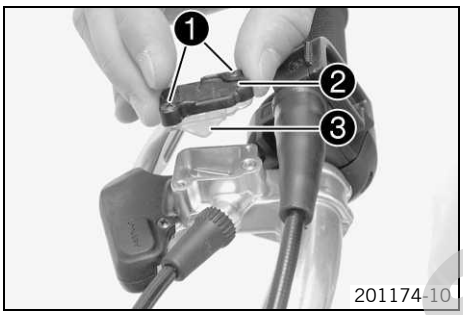
Warning
Skin irritation Brake fluid can cause skin irritation on contact.

- Avoid contact with skin and eyes, and keep out of the reach of children.
- Wear suitable protective clothing and goggles.
- If brake fluid gets into your eyes, rinse thoroughly with water and contact a doctor immediately.

Warning
Environmental hazard Hazardous substances cause environmental damage.

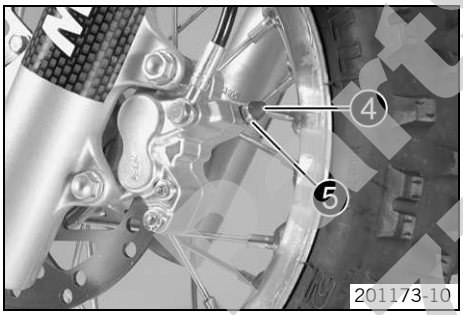
- Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

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 membrane ❸.
- Draw the used brake fluid out of the brake fluid reservoir using a syringe and fill in new brake fluid.

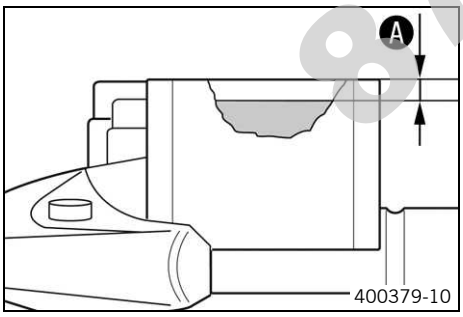
Bleed syringe (50329050000) (☛ p. 149)
Brake fluid DOT 4 / DOT 5.1 (☛ p. 142)



- Pull off dust cap ❹ and connect a conventional suction device (workshop equipment).
- Loosen bleeder screw ❺ and draw out the used brake fluid.

Info
During suction, ensure that the brake fluid reservoir is always filled with a sufficient amount of new brake fluid.

- Tighten the bleeder screw. Remove the suction device and attach the dust cap.



- Add brake fluid to level Ⓐ.

Guideline

Dimension Ⓐ (brake fluid level below top edge of container)	5 mm (0.2 in)

Brake fluid DOT 4 / DOT 5.1 (☛ p. 142)

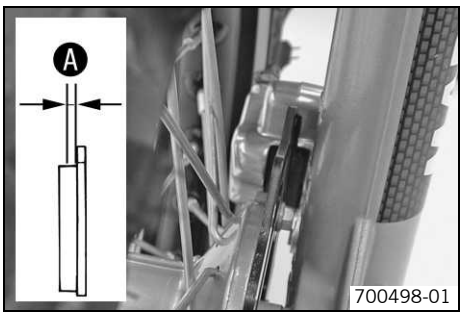
- Position the cover with the membrane. Mount and tighten the screws.
- Activate the hand brake lever until you feel a firm pressure point.

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

Checking the front brake linings

Warning
Danger of accidents Reduced braking efficiency caused by worn brake linings.

– Change worn brake linings immediately.



– 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. 57)

– Check the brake linings for damage and cracking.

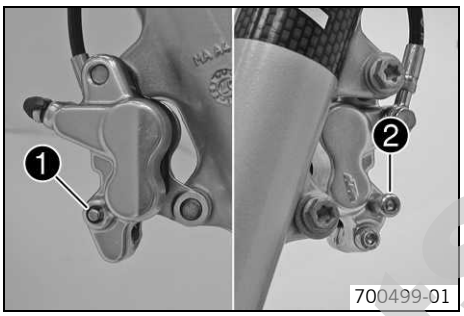
» If damage or wear is encountered:
– Change the front brake linings. (☛ p. 57)

Removing front brake linings

Warning
Danger of accident Brake system failure.

– Maintenance work and repairs must be carried out professionally.

– Remove front wheel. (☛ p. 46)
– Remove the lock washer ❶.
– Remove screw ❷.



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

Installing the front brake linings

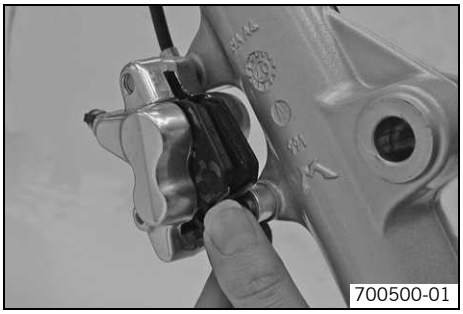
Warning
Danger of accidents Reduced braking efficiency due to oil or grease on the brake discs.

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

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

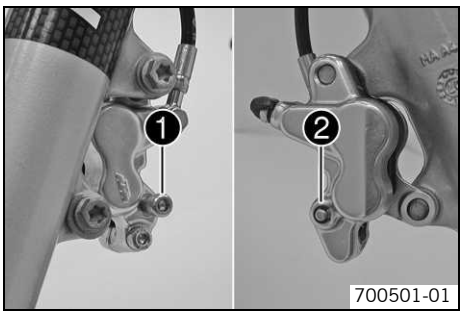
– Brake linings available from accessory suppliers are often not tested and approved for use on KTM vehicles. The construction and friction factor of the brake linings and therefore the brake power can differ considerably from the original KTM brake linings. If brake linings are used that differ from 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. 47)



– Insert the brake linings.

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



– Mount screw ❶.
– Fit the lock washer ❷.
– Install the front wheel. (☛ p. 46)

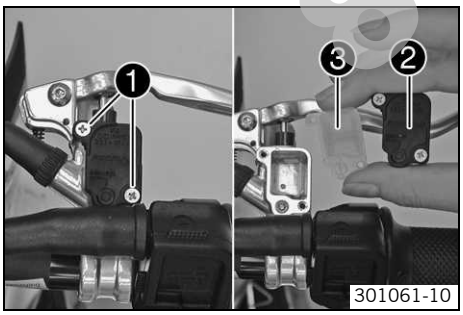
Changing the front brake linings

Warning
Skin irritation Brake fluid can cause skin irritation on contact.
– Avoid contact with skin and eyes, and keep out of the reach of children.
– Wear suitable protective clothing and goggles.
– If brake fluid gets into your eyes, rinse thoroughly with water and contact a doctor immediately.

Warning
Danger of accidents Reduced braking effect caused by old brake fluid.
– Change the brake fluid of the front and rear brakes according to the service schedule.

Warning
Environmental hazard Hazardous substances cause environmental damage.
– Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable 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 front brake linings. (☛ p. 56)
– 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. 56)
– 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. 142)

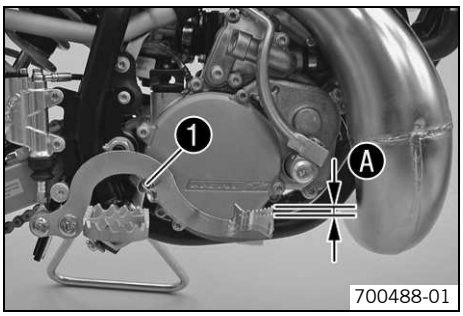
– Position the cover with the diaphragm. Mount and tighten the screws.

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 lever, pressure builds up on the rear brake circuit. The rear brake can fail due to overheating. Adjust free travel on foot brake lever according to specifications.



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

Guideline

Free travel of foot brake lever	3... 5 mm (0.12... 0.2 in)

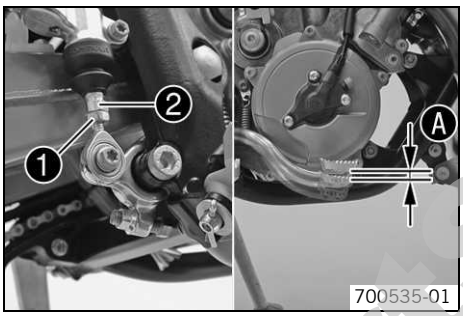
» If the free travel does not meet specifications:
– Adjust the free travel of the foot brake lever. (☛ p. 58)

– Attach spring ❶.

Adjusting 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 lever, pressure builds up on the rear brake circuit. The rear brake can fail due to overheating. Adjust free travel on foot brake lever according to specifications.



– Detach the spring.
– Loosen nut ❶.
– Turn push rod ❷ until clearance Ⓐ is created.

Guideline

Free travel of foot brake lever	3... 5 mm (0.12... 0.2 in)

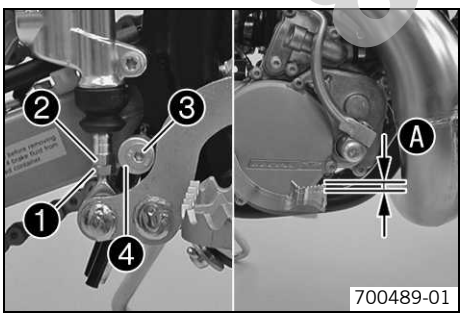
– Hold push rod ❷ and tighten nut ❶.
– Attach the spring.
– Check whether the basic position of the foot brake lever is suitable for the rider.

» If the basic position of the foot brake lever needs to be adjusted:
– Adjust the basic position of the foot brake lever. (☛ p. 58)

Adjusting the basic position of the foot brake lever

Warning
Danger of accidents Brake system failure.

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



– Detach the spring.
– Loosen nut ❶.
– Turn back push rod ❷ until free travel is at a maximum.
– For an individual adjustment of the basic position of the foot brake lever, loose the screw ❸ and turn the eccentric brake lever stop ❹ accordingly.
– Tighten screw ❸.

Guideline

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

– Turn push rod ❷ until clearance Ⓐ is created.

Guideline

Free travel of 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 the rider.

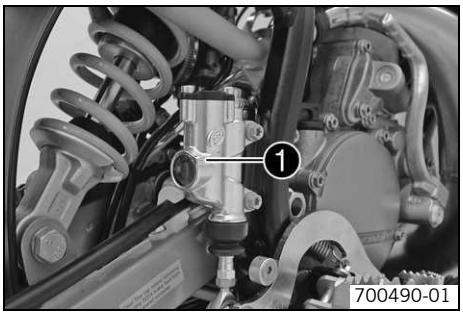
Checking rear brake fluid level

Warning
Danger of accidents Failure of the brake system.

– If the brake fluid level falls below the **MIN** mark, this indicates a leakage in the brake system or worn-out brake linings. Check the brake system and do not continue riding.

Warning
Danger of accidents Reduced braking effect caused by old brake fluid.

– Change the brake fluid of the front and rear brakes according to the service schedule.



– Stand the vehicle upright.
– Check the brake fluid level in the viewer ❶.
  » When an air bubble is visible in the viewer ❶:
    – Add rear brake fluid. (☛ p. 59)

Adding rear brake fluid

Warning
Danger of accidents Failure of the brake system.

– If the brake fluid level falls below the **MIN** mark, this indicates a leakage in the brake system or worn-out brake linings. Check the brake system and do not continue riding.

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

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

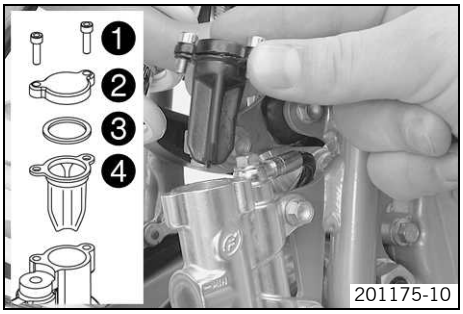
Warning
Danger of accidents Reduced braking effect caused by old brake fluid.

– Change the brake fluid of the front and rear brakes according to the service schedule.

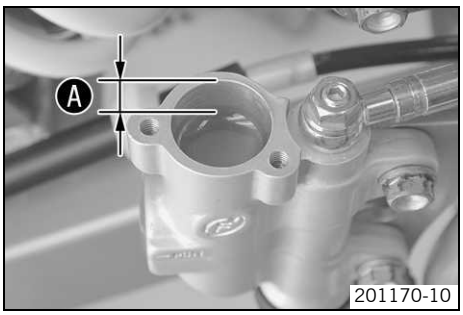
Warning
Environmental hazard Hazardous substances cause environmental damage.

– Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable 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.
– Take off cover ❷ with washer ❸ and membrane ❹.



– Add brake fluid to level Ⓐ.

Guideline

Dimension Ⓐ (brake fluid level below top edge of container)	10 mm (0.39 in)

Brake fluid DOT 4 / DOT 5.1 (☛ p. 142)

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

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

Changing the rear brake fluid

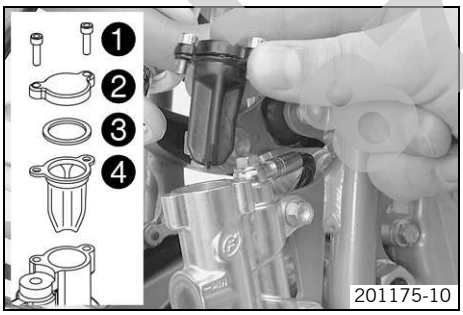
Warning
Skin irritation Brake fluid can cause skin irritation on contact.

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

Warning
Environmental hazard Hazardous substances cause environmental damage.

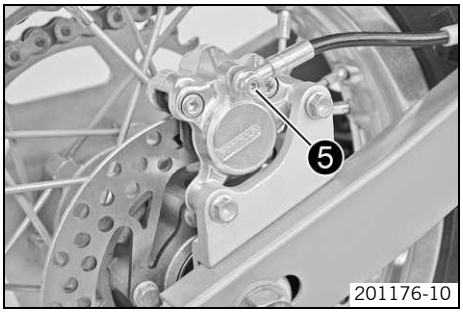
– Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

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.
– Take off cover ❷ with washer ❸ and membrane ❹.
– Draw the used brake fluid out of the brake fluid reservoir using a syringe and fill in new brake fluid.

Bleed syringe (50329050000) (☛ p. 149)
Brake fluid DOT 4 / DOT 5.1 (☛ p. 142)

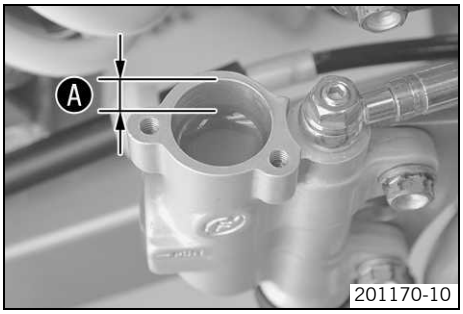


– Remove bleeder screw ❺. Extract old brake fluid with a syringe.

Bleed syringe (50329050000) (☛ p. 149)

Info
During suction, ensure that the brake fluid reservoir is always filled with a sufficient amount of new brake fluid.

– Mount and tighten screws bleeder screw.



– Adjust brake fluid level up to mark ❹.

Guideline

Dimension ❹ (brake fluid level below top edge of container)	10 mm (0.39 in)

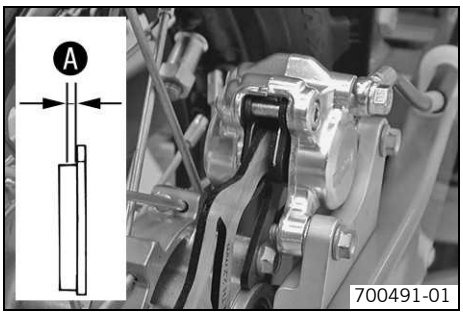
Brake fluid DOT 4 / DOT 5.1 (☛ p. 142)

– Position the cover with the membrane. Mount and tighten screws.
– Activate the foot brake lever until you feel a firm pressure point.

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

Checking the rear brake linings

Warning
Danger of accidents Reduced braking efficiency caused by worn brake linings.
– Change worn brake linings immediately.



– Check the brake linings for minimum thickness ❹.

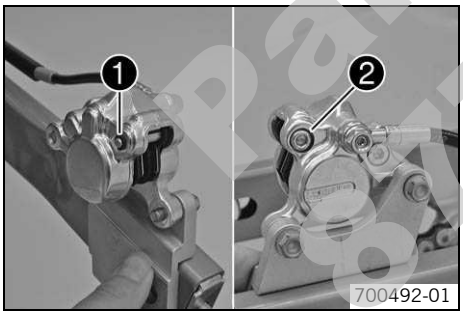
Minimum thickness ❹	≥ 1 mm (≥ 0.04 in)

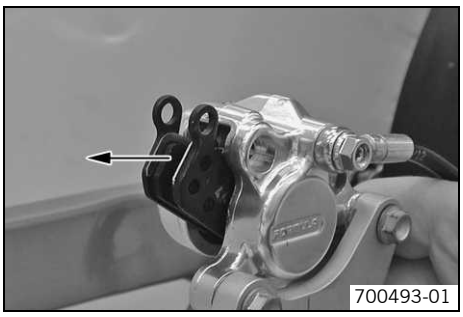
» If the minimum thickness is less than specified:
– Change the rear brake linings. (☛ p. 62)
– Check the brake linings for damage and cracking.
» If damage or wear is encountered:
– Change the rear brake linings. (☛ p. 62)

Removing rear brake linings

Warning
Danger of accident Brake system failure.
– Maintenance work and repairs must be carried out professionally.

– Remove the rear wheel. (☛ p. 49)
– Remove the lock washer ❶.
– Remove screw ❷.





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

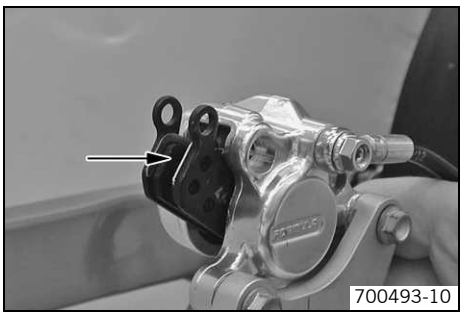
Installing the rear brake linings

Warning
Danger of accidents Reduced braking efficiency 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.

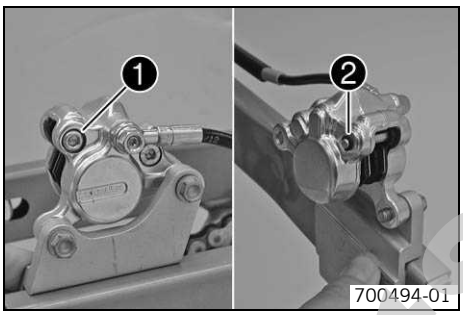
Warning
Danger of accidents Reduced braking efficiency due to use of non-approved brake linings.

– 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.


700493-10

– Check the brake discs. (☛ p. 47)
– Insert the brake linings.

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



700494-01

– Mount screw ❶.
– Fit the lock washer ❷.
– Install the rear wheel. (☛ p. 49)

Changing the rear brake linings

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

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

Warning
Danger of accidents Reduced braking effect caused by old brake fluid.

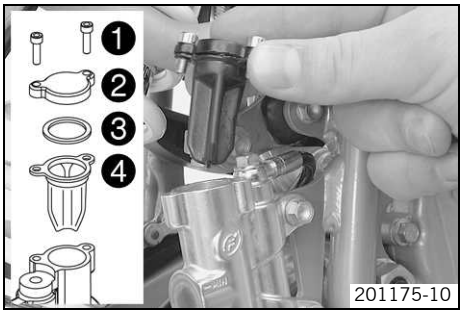
– Change the brake fluid of the front and rear brakes according to the service schedule.

Warning
Environmental hazard Hazardous substances cause environmental damage.

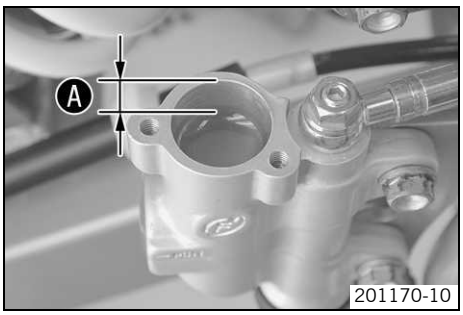
– Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

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. 61)



– Remove screws ❶.
– Take off cover ❷ with washer ❸ and membrane ❹.
– 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. 62)



– Add brake fluid to level Ⓐ.

Guideline

Dimension Ⓐ (brake fluid level below top edge of container)	10 mm (0.39 in)

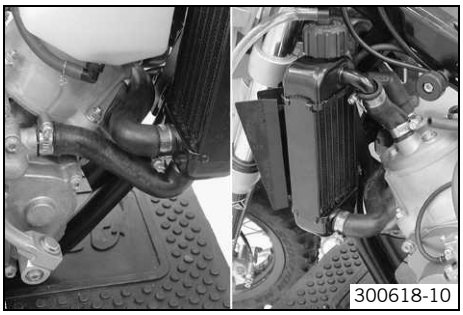
Brake fluid DOT 4 / DOT 5.1 (☛ p. 142)

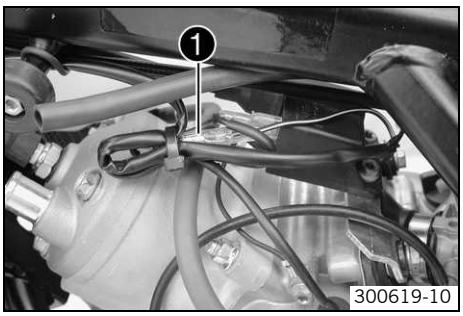
– Position the membrane and the cover with the washer. Mount and tighten the screws.

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

Removing the engine

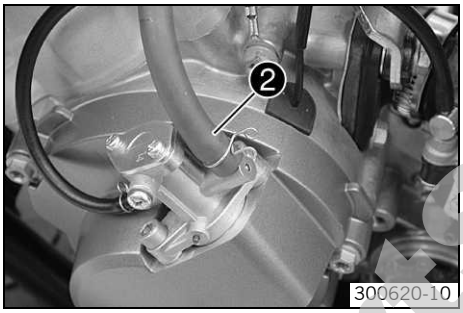
– Remove the fuel tank. (☛ p. 42)
– Drain the coolant. (☛ p. 114)
– Jack up the motorcycle. (☛ p. 7)
– Remove the exhaust manifold. (☛ p. 38)
– Loosen the hose clamps. Detach the radiator hoses.


300618-10



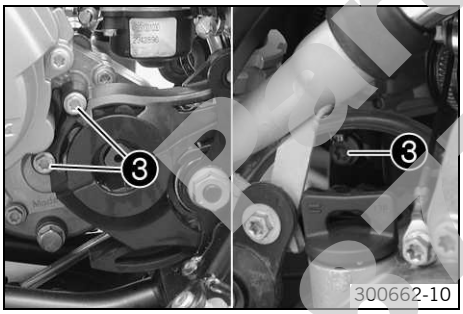
300619-10

– Remove the cable binder.
– Disconnect plug-in connector ❶.



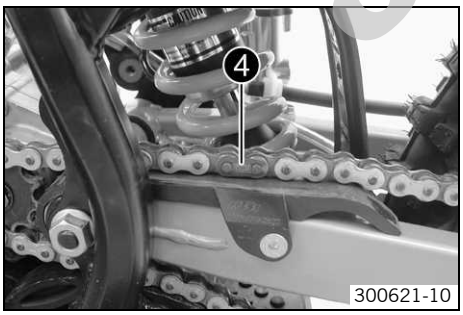
300620-10

(50 SX Mini)
– Detach oil line ❷ of the oil pump.
– Close the oil line using a suitable object.



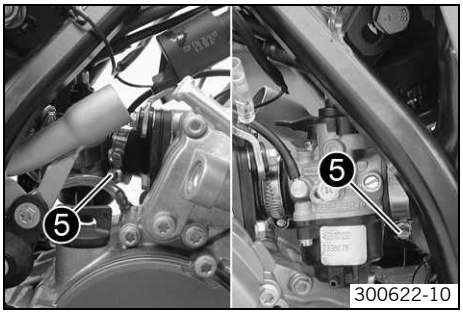
300662-10

– Remove screws ❸.
– Take off the engine sprocket cover.



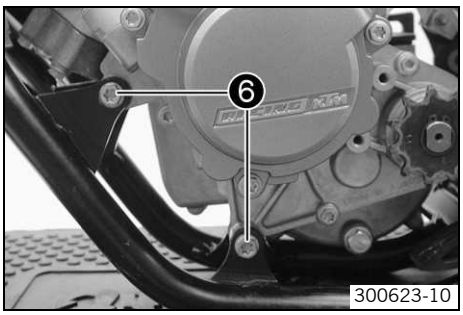
300621-10

– Remove connecting link ❹ of the chain.
– Remove the chain.

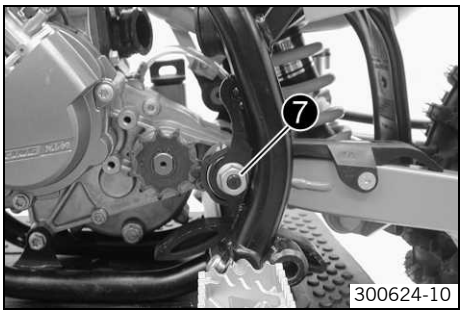


– Loosen both hose clamps ❺.
– Remove the carburetor and hang it to one side.

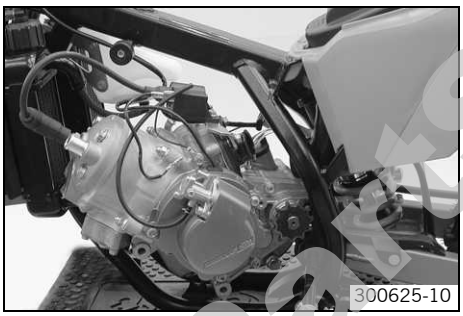
Info
Do not kink the throttle cable.



– Remove screws ❻.

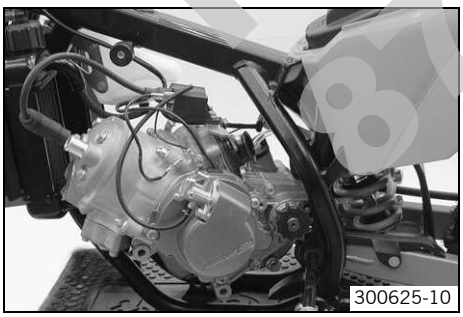


– Remove nut ❼.
– Remove the swingarm pivot.

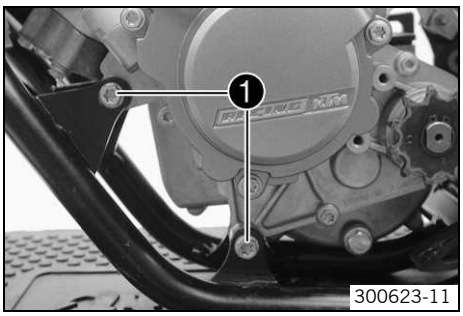


– Lift out the engine from the side.

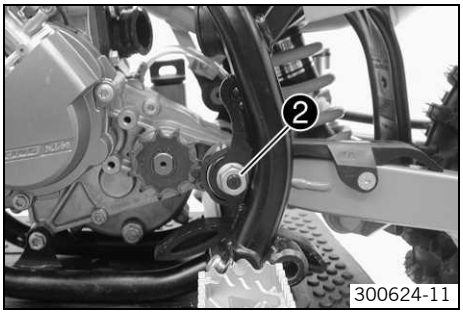
Installing the engine



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



– Mount screws ❶ but do not tighten yet.



– Mount and tighten nuts ❷ of the swingarm pivots.

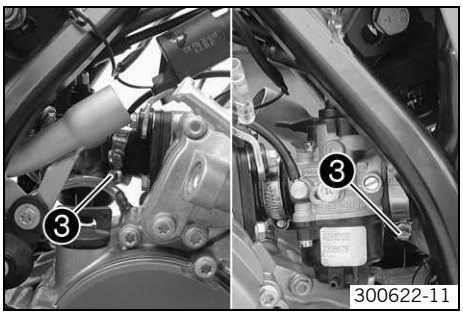
Guideline

Nut, swingarm pivot	M10	45 Nm (33.2 lbf ft)

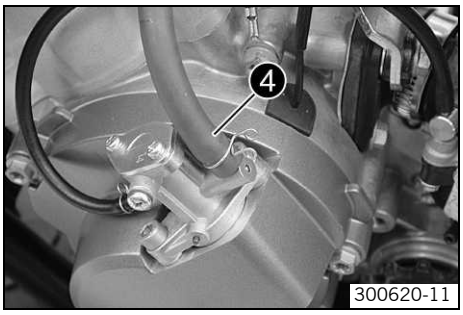
– Fully tighten screw ❶.

Guideline

Engine carrying screw	M8	25 Nm (18.4 lbf ft)

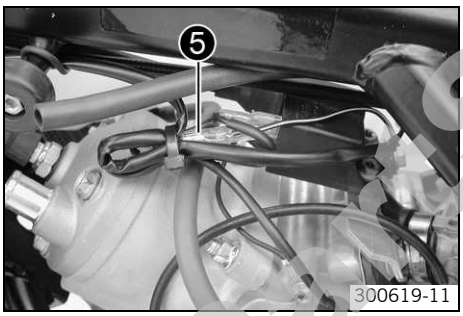


– Mount the carburetor.
– Position and tighten hose clamps ❸.

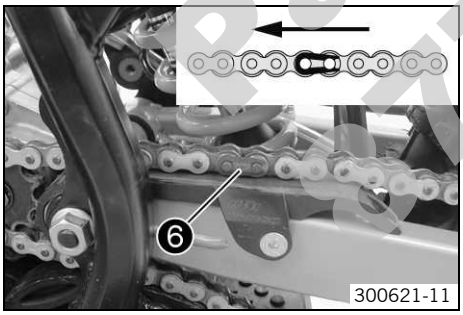


(50 SX Mini)

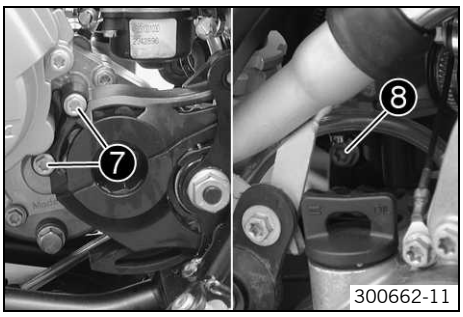
– Remove the plug.
– Attach oil line ❹ to the connection of the oil pump.
– Position the clamp.



– Connect the plug-in connectors ❺.
– Secure the cables with the cable binder.



– Mount the chain.
– Connect the chain with connecting link ❻.



– Position the engine sprocket cover.
– Mount and tighten screws ❼.

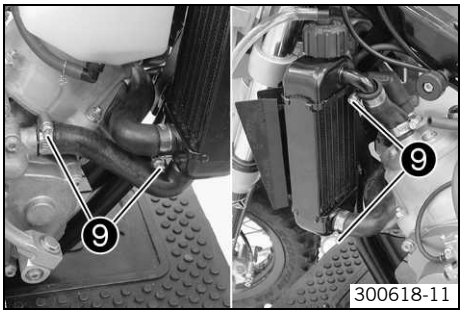
Guideline

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

– Mount and tighten screw ❽.

Guideline

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



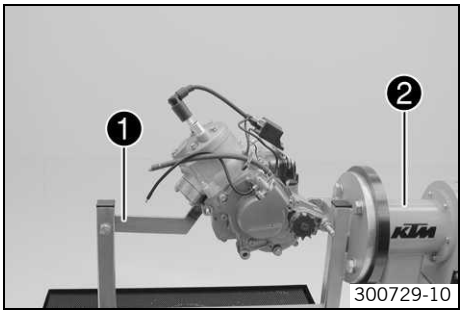
– Mount the radiator hoses. Position and tighten hose clamps ❾.
– Install the exhaust manifold. (☛ p. 38)

(50 SX Mini)

– Bleed the oil pump. (☛ p. 119)

– Install the fuel tank. (☛ p. 43)
– Refill the coolant. (☛ p. 114)
– Make a short test ride.
– Check the engine for leakage.
– Check the gear oil level. (☛ p. 118)
– Check the coolant level. (☛ p. 115)

Clamping the engine into the engine work stand

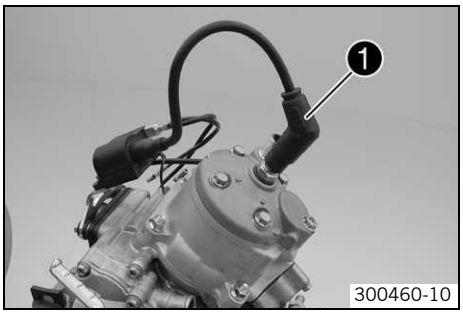


– Mount special tool ❶ on engine work stand ❷.

Engine work stand (61229001000) (☛ p. 150)
Fitting for work stand (45229001060) (☛ p. 146)
Holder of engine work stand (45229001070) (☛ p. 146)

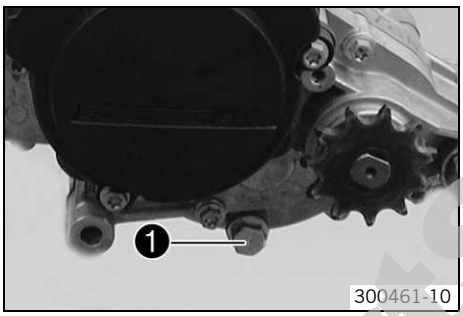
– Mount the engine on special tool ❶.

Pulling off the spark plug connector



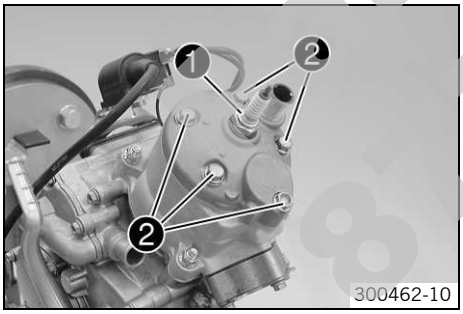
– Pull of spark plug connector ❶.

Draining the gear oil

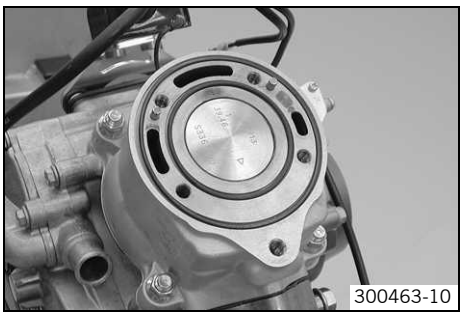


– Remove oil drain plug ❶ with the magnet and seal ring.
– Completely drain the gear oil.

Removing the cylinder head

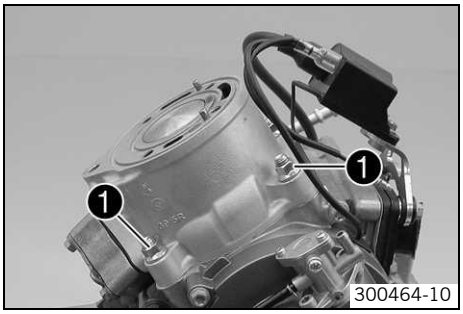


– Remove spark plug ❶.
– Alternately loosen screws ❷ and remove them.
– Take off the cylinder head.



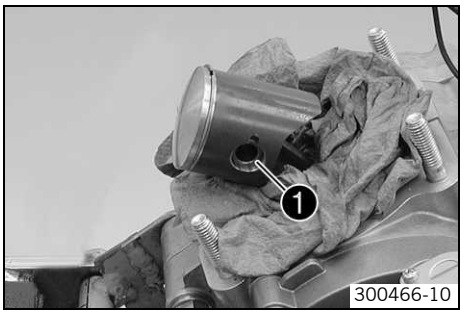
– Remove the O-rings.

Removing the cylinder



– Remove nuts ❶ on both sides.
– Carefully slide the cylinder up and take it off.
– Take off the cylinder base gasket.

Removing the piston

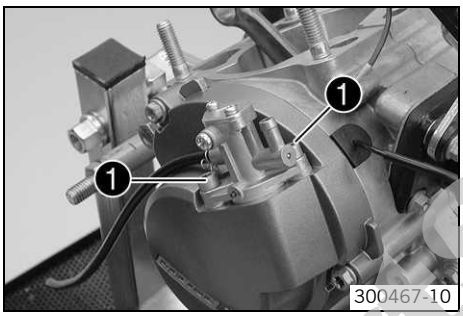


– Remove piston pin retainer ❶.

Info
Cover the engine case opening with a cloth.

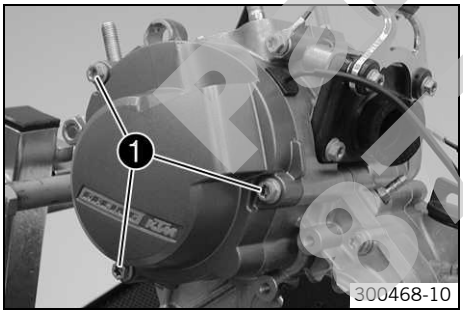
– Remove the piston pin.
– Take off the piston.
– Remove the upper conrod bearing.

Removing the oil pump (50 SX Mini)

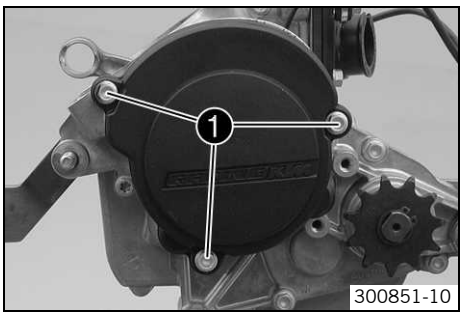


– Remove screws ❶.
– Take off the oil pump.

Removing the alternator cover

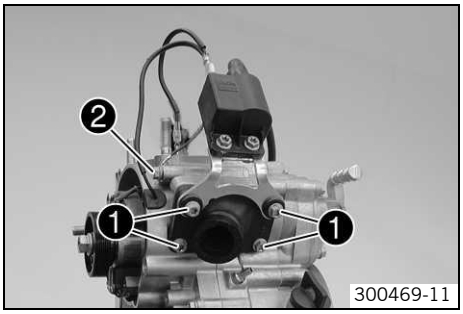


(50 SX Mini)
– Remove screws ❶. Remove the alternator cover.
– Remove the gasket.
– Remove the dowels.

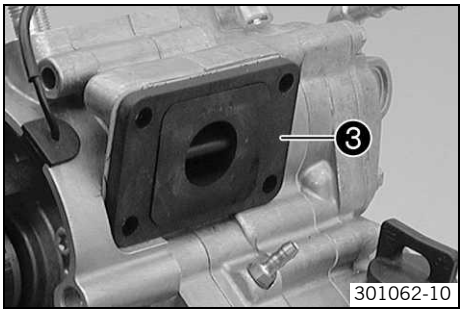


(50 SX, 50 SX Junior)
– Remove screws ❶. Remove the alternator cover.
– Remove the gasket.

Removing the ignition coil, intake flange, and reed valve housing

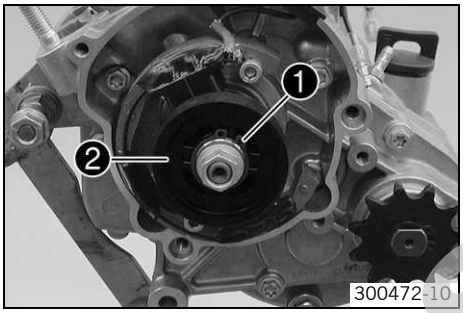


– Remove screws ❶.
– Remove screw ❷.
– Take off the ignition coil and intake flange.



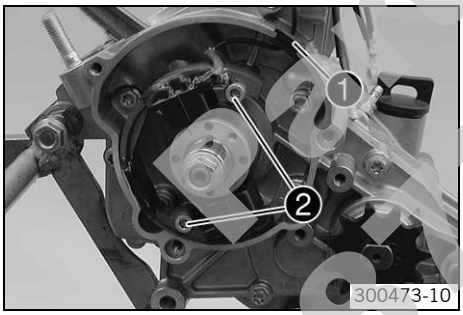
– Remove reed valve housing ❸.
– Remove the gasket.

Removing the oil pump drive gear (50 SX Mini)



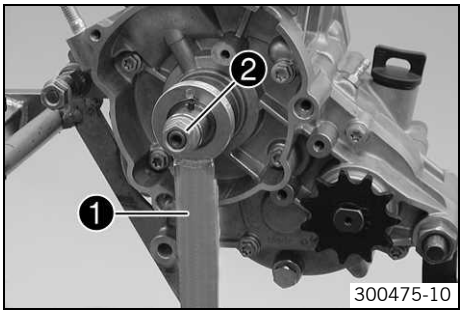
– Remove lock ring ❶.
– Take off oil pump drive gear ❷.

Removing the stator



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

Removing the rotor

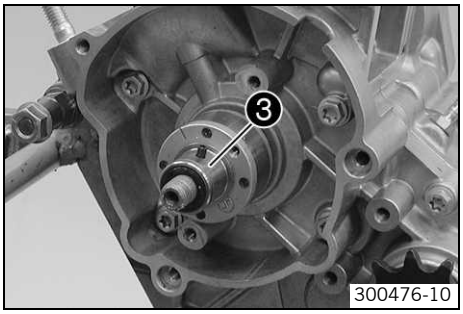


(50 SX Mini)

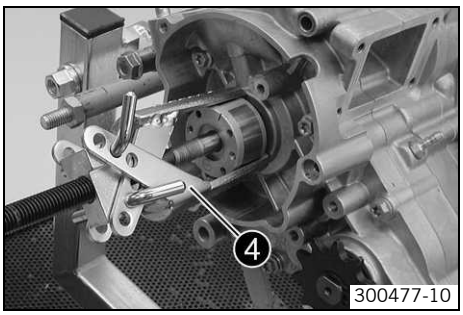
– Hold the rotor in place with special tool ❶.

Holding spanner, rotor (45229012000) (☛ p. 147)

– Remove nut ❷ of the rotor.



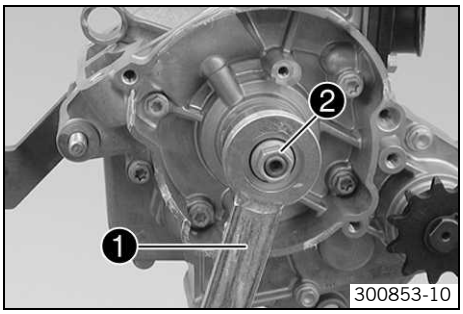
– Remove distance sleeve ❸.



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

Extractor (46129021000) (☛ p. 148)

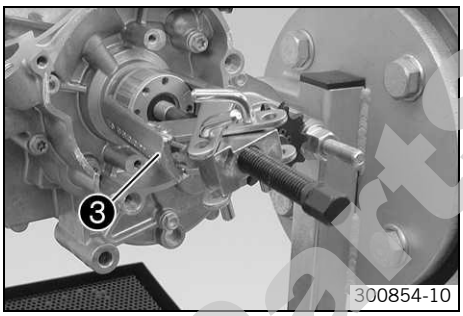
(50 SX, 50 SX Junior)



– Hold the rotor in place with special tool ❶.

Holding spanner, rotor (45229012000) (☛ p. 147)

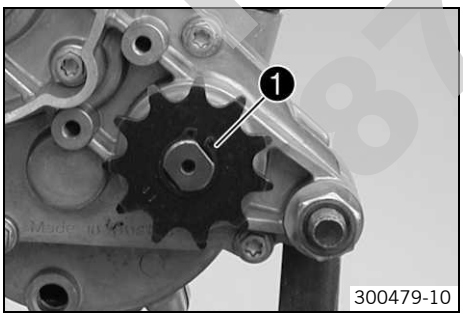
– Remove nut ❷ and the washer of the rotor.



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

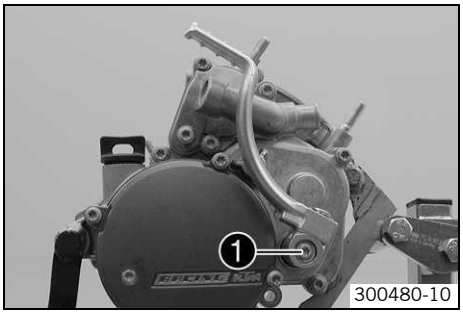
Extractor (46129021000) (☛ p. 148)

Removing the engine sprocket



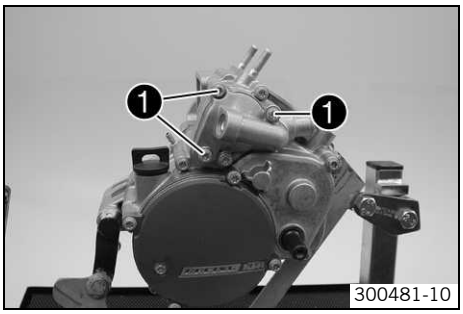
– Remove lock ring ❶. Take off the engine sprocket.

Removing the kickstarter



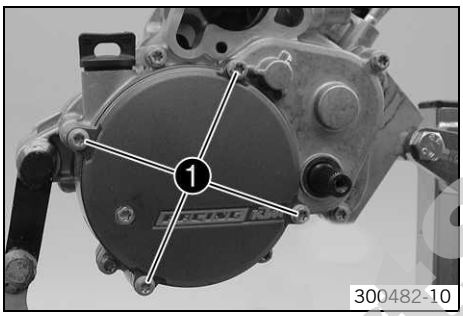
– Remove screw ❶ with the washer.
– Take off the kickstarter.

Removing the water pump cover



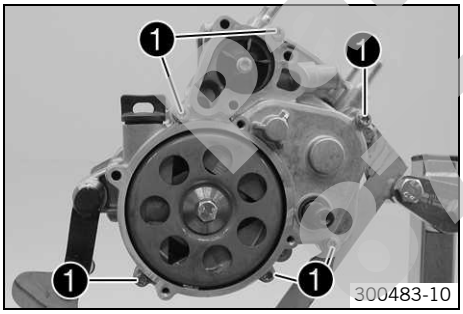
– Remove screws ❶.
– Take off the water pump cover.
– Remove the gasket and dowels.

Removing the outer clutch cover



– Remove screws ❶. Take off the outer clutch cover.
– Remove the clutch cover gasket.

Removing the clutch cover

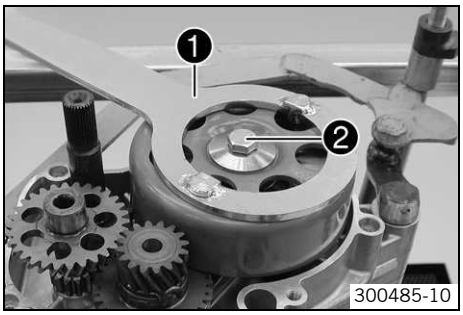


– Remove screws ❶. Take off the clutch cover.

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

– Remove the dowels and clutch cover gasket.

Removing the clutch drum

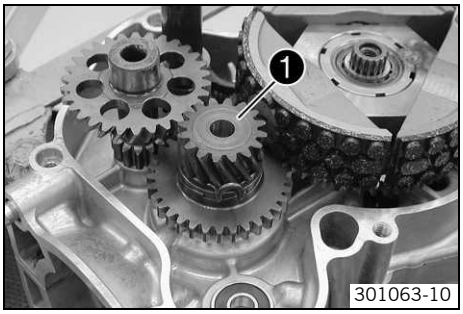


– Hold the clutch drum with special tool ❶.

Holding spanner (54629012100) (☛ p. 149)

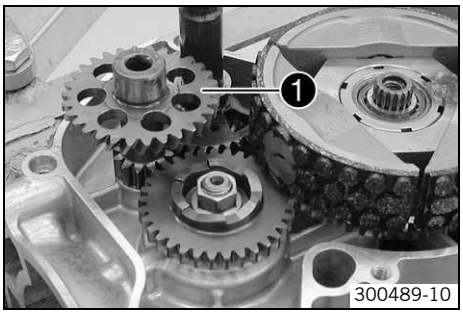
– Remove screw ❷.
– Take off the clutch drum.

Removing the kickstarter gear



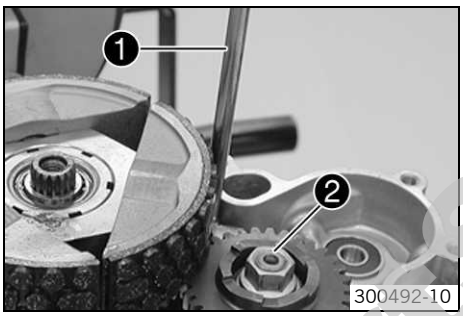
– Remove kickstarter gear ❶.

Removing the kickstarter idler shaft



– Remove kickstarter idler shaft ❶.

Loosening the nut of the primary gear

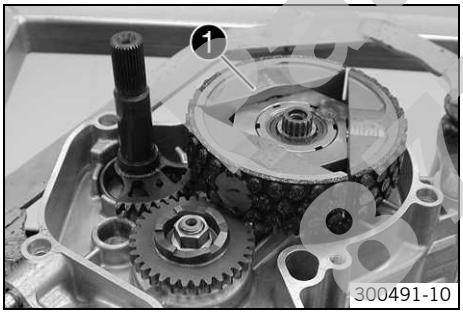


– Hold the clutch in place with special tool ❶.

Gear segment (45229081000) (☛ p. 147)

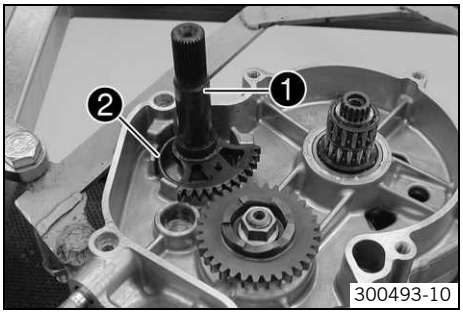
– Loosen nut ❷.

Removing the centrifugal force clutch



– Take off centrifugal force clutch ❶ completely.

Removing the kickstarter shaft

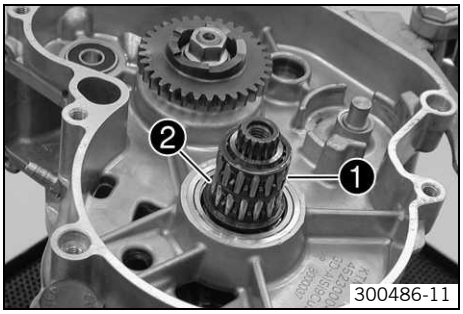


– Remove kickstarter shaft ❶ with the washer.

Info
The washer usually sticks to the bearing.

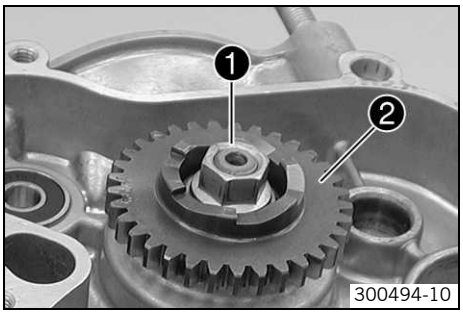
– Remove kickstarter spring ❷.

Removing the clutch bearing



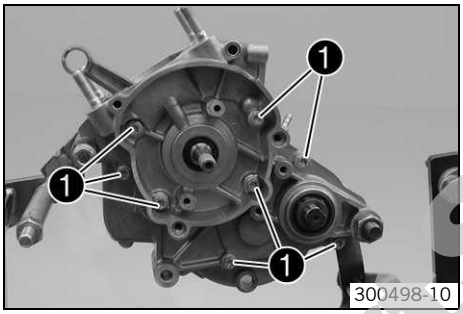
– Remove needle bearings ❶ and collar bushing ❷.

Removing the primary gear

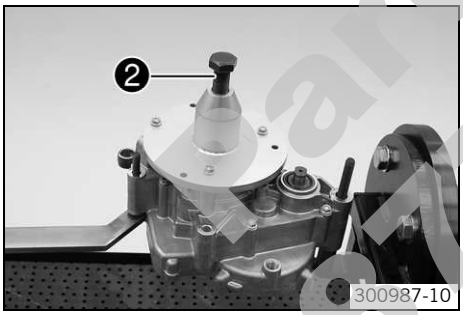


– Remove nut ❶.
– Take off primary gear ❷.
– Remove the spring washer and washer.

Removing the left engine case



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



– Mount the special tool on the crankshaft.

Protecting sleeve (45229090000) (☛ p. 148)

– Mount the special tool.

Extractor (45229048000) (☛ p. 147)

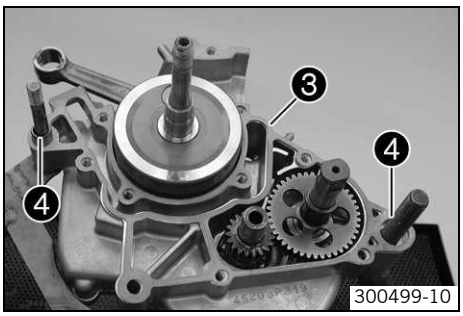
Info
Use the hole labeled **452**.

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

Info
Ensure that the engine case section is raised evenly.

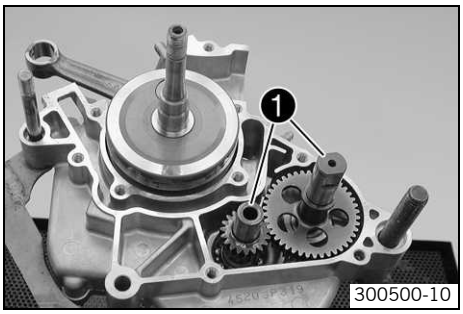
– Take off the left section of the engine case.
– Remove the special tools.
– Remove the spacer of the countershaft with the O-ring.

Info
The spacer of the countershaft usually remains in the engine case.



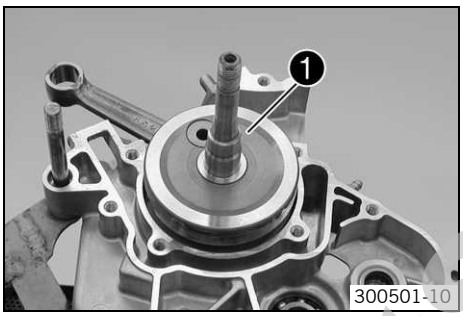
– Remove engine case gasket ❸ and dowels ❹.

Removing the transmission shafts

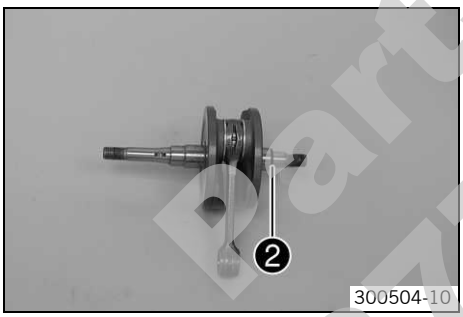


– Pull both transmission shafts ❶ out of the bearing seats together.

Removing the crankshaft

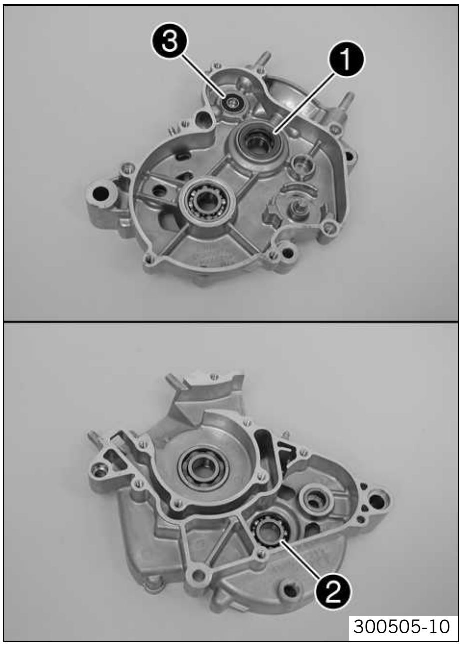


– Remove crankshaft ❶.



– Remove O-ring ❷.

Work on the right section of the engine case



300505-10

- Pull the dowels out of the engine case.
- Remove crankshaft seal ring ❶.
- 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.

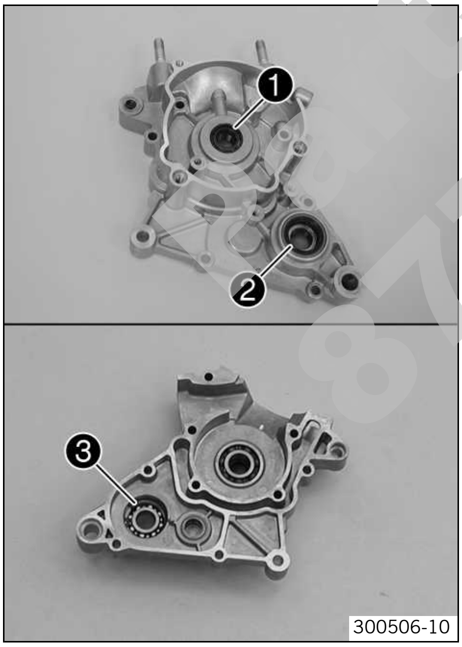
- Insert the new cold bearings into the bearing seats of the hot engine case section and, if necessary, use a suitable press drift to push the bearing from the inside to the outside, all the way to the stop or so it is flush.

> **Info**
> Main shaft bearing ❷ must be pressed in from the outside to the inside so it is flush.
> Bearing ❸ 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.

Work on the left section of the engine case



300506-10

- Pull the dowels out of the engine case.
- Remove crankshaft seal ring ❶.
- Remove shaft seal ring ❷ of the countershaft.
- Remove lock ring 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.

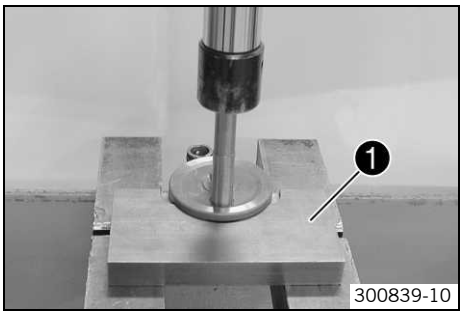
> **Info**
> When pressing the bearing in, ensure that the engine case section is level to prevent damage.
> Only press the bearings in via the outer ring; otherwise, the bearings will be damaged when they are pressed in.

- Mount lock ring ❸.
- Press crankshaft seal ring ❶ from the outside to the inside with the open side facing inward.

– 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



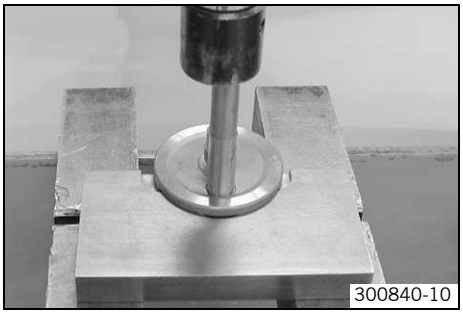
– Position special tool ❶ between the crank webs.

Press plate (45229047050) (☛ p. 147)

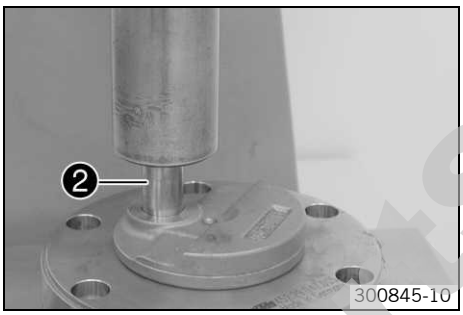
– Position the crankshaft in the press with the special tool.
– Press the crank pin out of the upper crank web with a suitable push-out drift.

Info
Hold the lower crank web.

– Take off the connecting rod, bearing, and stop disks.

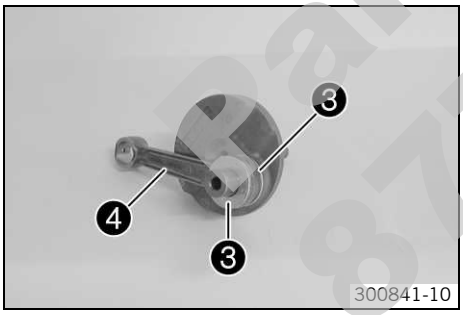


– Press the crank pin out of the crank web.



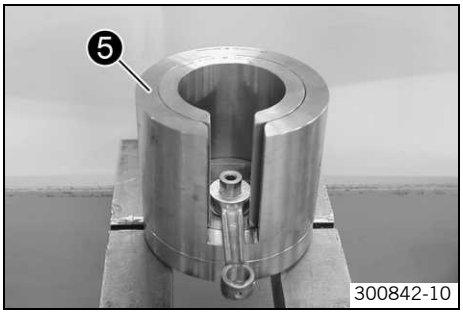
– Press the new crank pin ❷ all the way in.

Anchor plate (46229047002) (☛ p. 148)



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

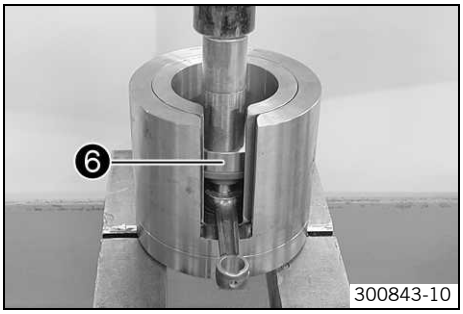
Info
Oil the bearing thoroughly.



– Position special tool ❺ on the press.

Pressing device, crankshaft, complete (50329047000) (☛ p. 148)
Anchor plate (46229047002) (☛ p. 148)
Bushing, crankshaft pressing device (45229008001) (☛ p. 146)

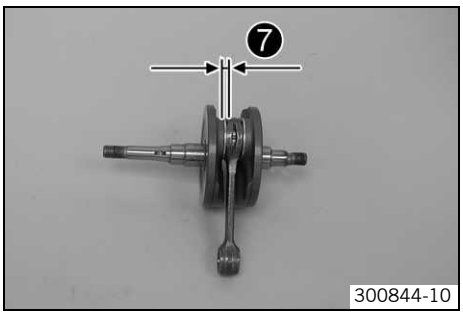
– Insert the crank web with the connecting rod and bearing.



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



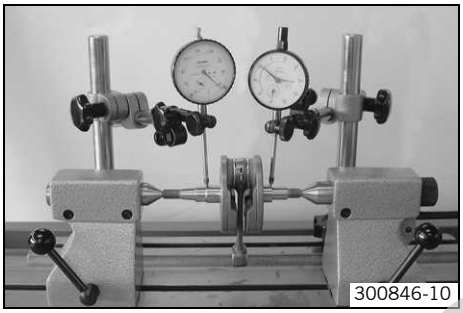
– Measure axial clearance ❼ between the stop disk and the crank webs with the special tool.

Feeler gauge (59029041100) (☛ p. 150)	
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. 78)

Checking the crankshaft run-out on the bearing pin

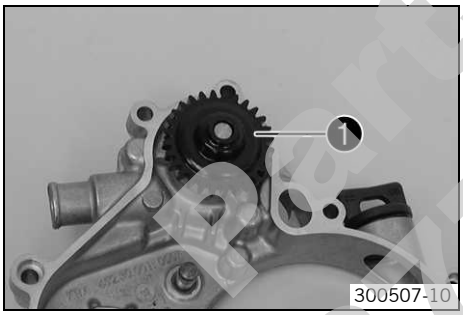


– Position the crankshaft on a roller block.
– Turn the crankshaft slowly.
– Check the crankshaft run-out on both bearing pins.

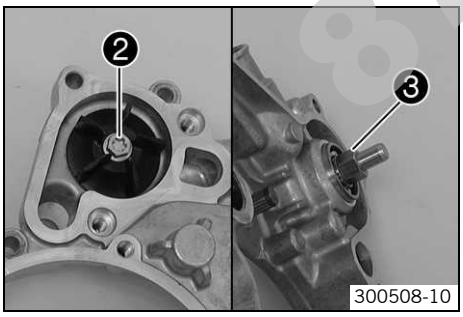
Crankshaft - run-out on bearing pin	≤ 0.10 mm (≤ 0.0039 in)

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

Removing the water pump



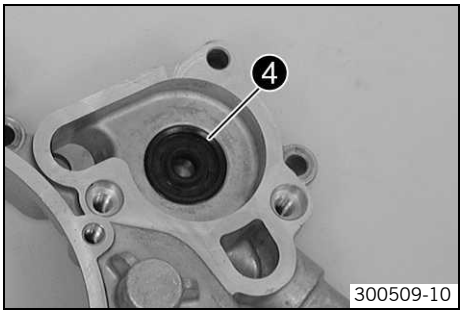
– Remove water pump drive gear ❶.



– Hold water pump 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.

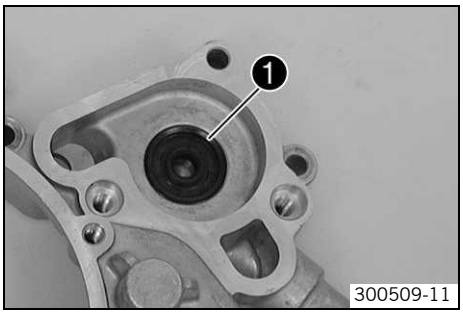
– Remove water pump shaft ❸.



– 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.

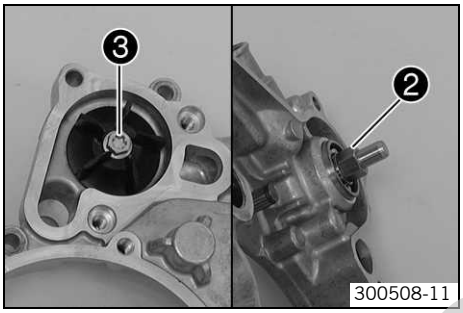
Installing the water pump



– Press the bearing of the water pump shaft all the way in with a suitable tool.

Info
Support the clutch cover when pressing in.

– Press in the shaft seal ring ❶ until it is flush.



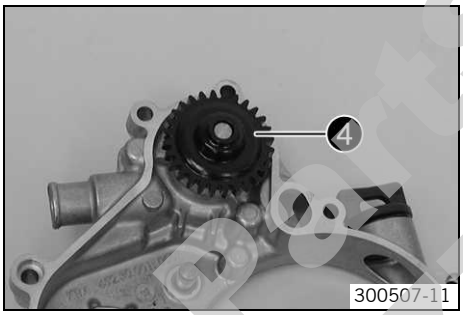
– Mount water pump shaft ❷.

Info
Do not damage the shaft seal ring.

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

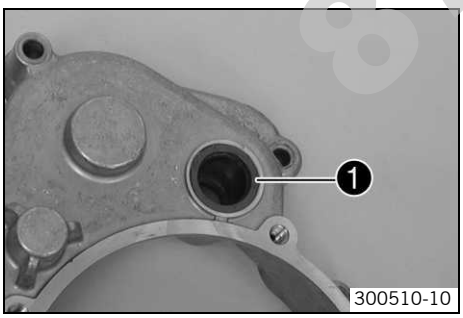
Guideline

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



– Mount drive gear ❹.

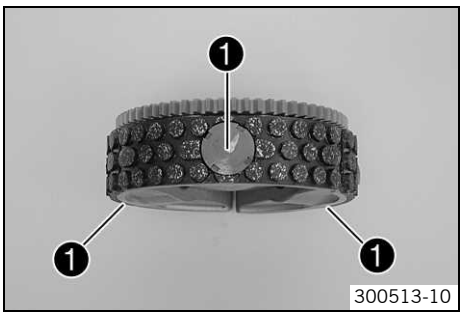
Changing the shaft seal ring of the kick starter



– Remove shaft seal ring ❶ of the kick starter.
– Press the new shaft seal ring all the way in with the open side facing inward.

Info
Support the clutch cover when pressing in.

Dismantling centrifugal clutch



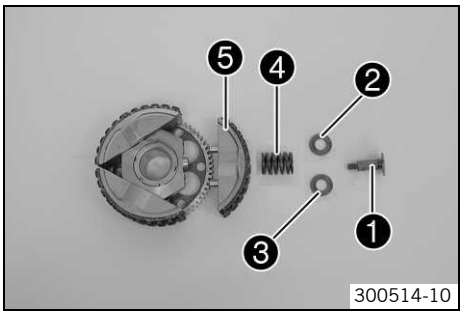
300513-10

Condition

The centrifugal clutch has been removed.

– Loosen screws ❶ with special tool.

Mortise key (45229021000) (☛ p. 147)



300514-10

– Remove screw ❶ with spacing washer ❷ and spring ❹.

Info

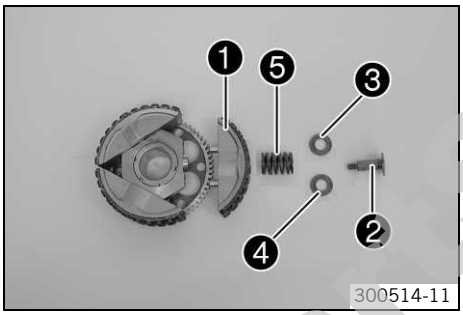
Washer ❸ is used for adjusting the clutch engagement speed and does not have to be fitted.

– Remove clutch shoe ❺.
– Repeat these steps on the other clutch shoes.

Assembling centrifugal clutch

Condition

The centrifugal clutch has been removed.



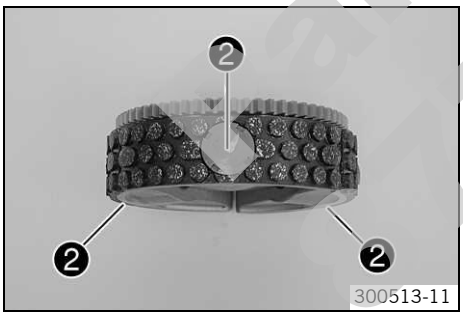
300514-11

– Position the clutch shoe ❶.
– Fit screw ❷ with spacing washer ❸ and spring ❺.

Info

Washer ❹ is used for adjusting the clutch engagement speed and must be fitted consistently on all clutch shoes depending on the clutch engagement speed.

– Repeat these steps on the other clutch shoes.



300513-11

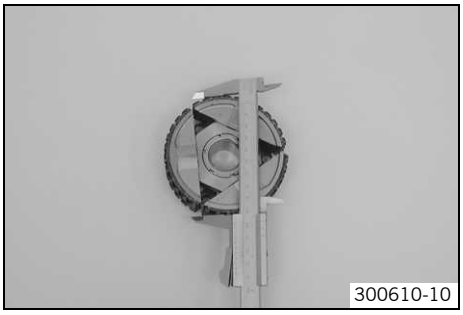
– Tighten screws ❷ with special tool.

Guideline

Screw, clutch spring	M6	7 Nm (5.2 lbf ft)

Mortise key (45229021000) (☛ p. 147)

Checking/measuring clutch


300610-10

Condition

The centrifugal clutch has been removed.

– Measure clutch.

Guideline

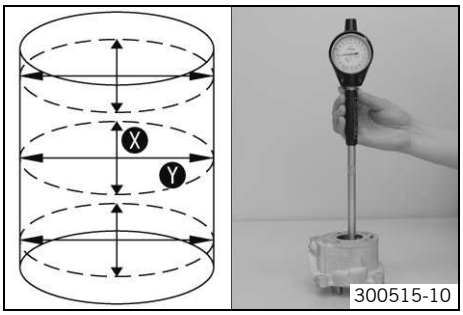
Clutch shoe height	≥ 98.00 mm (≥ 3.8583 in)

» If the specified value is not reached:
  – Replace the clutch linings.
– Dismantle the centrifugal clutch. (☛ p. 80)
– Check clutch linings for damage.

» If the clutch linings are damaged:
– Replace the clutch linings.

– Assemble the centrifugal clutch. (☛ p. 80)

Checking/measuring the cylinder

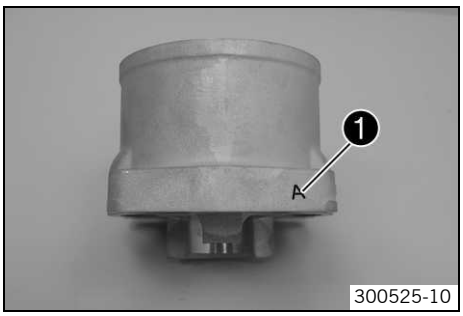


– Check the cylinder bearing surface for damage.
» If the cylinder bearing surface is damaged:
– Change the cylinder and piston.

– Measure the cylinder diameter at several locations on the ❎ and ❎ axes using a micrometer to check for oval wear.

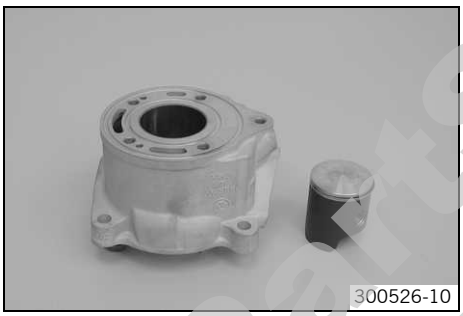
Guideline

Cylinder - bore diameter	
Size A	39.505... 39.517 mm (1.55531... 1.55578 in)
Size B	39.517... 39.530 mm (1.55578... 1.5563 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.

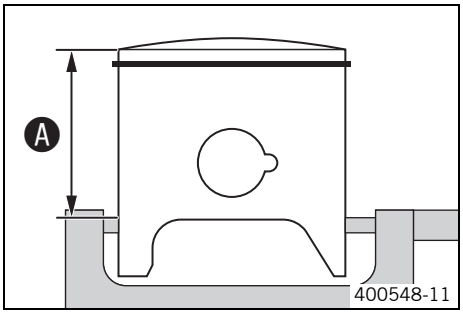
Tip
Use an old piston ring to clean the piston ring groove.

– 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 and, if necessary, the piston pin bearing.

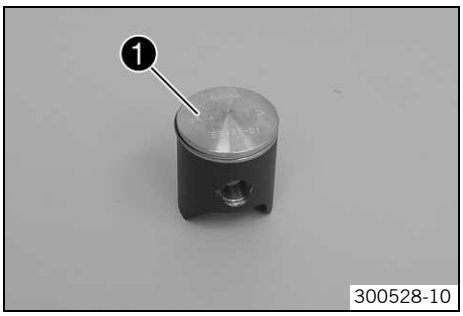
– Check the piston pin bearing for damage and wear.
» If there is damage or wear:
– Change the piston pin bearing and connecting rod, if necessary.



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

Guideline

Distance Ⓐ	31.5 mm (1.24 in)
Piston - diameter	
Size 1	39.455... 39.465 mm (1.55334... 1.55374 in)
Size 2	39.465... 39.475 mm (1.55374... 1.55413 in)



– Piston size ❶ is marked on the piston head.

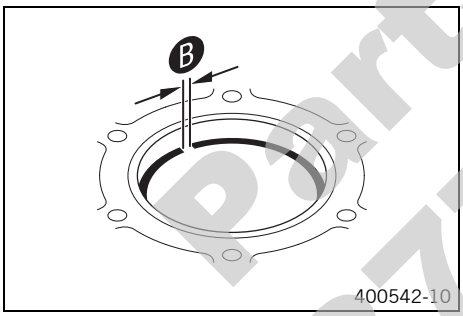
Determining piston/cylinder mounting clearance

– Check/measure the cylinder. (☛ p. 81)
– Determine the piston/cylinder mounting clearance. (☛ p. 82)
– 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	0.042... 0.065 mm (0.00165... 0.00256 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)

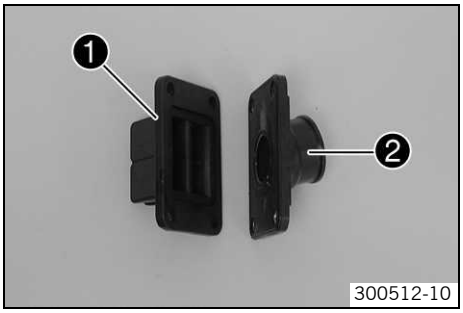
– Measure the end gap Ⓑ using a feeler gauge.

Guideline

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

» If the end gap is more than the specified value:
  – Check/measure the cylinder. (☛ p. 81)
» If the cylinder wear is within the tolerance range:
  – Change the piston ring.

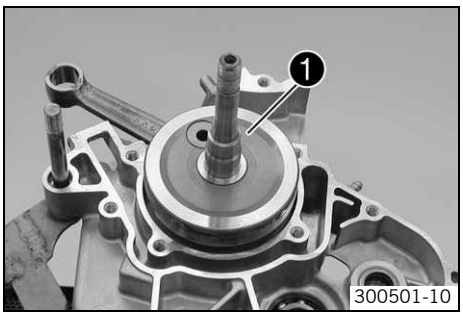
Checking reed valve housing, diaphragm and intake flange



– 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:

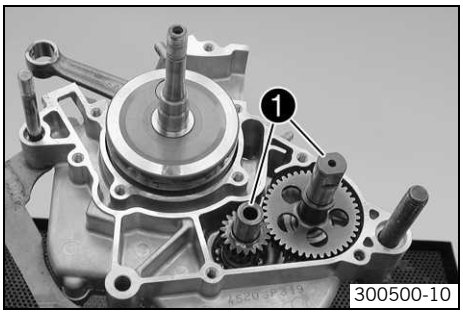
– Change the intake flange.

Installing the crankshaft



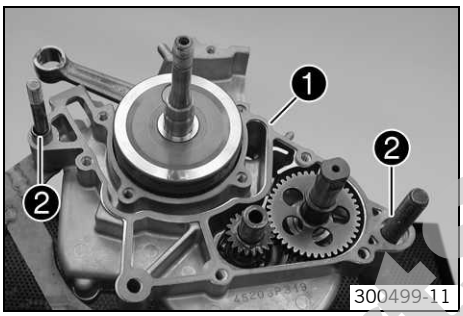
– Clamp the right section of the engine case into the engine work stand.
– Slide crankshaft ❶ all the way into the bearing seat of the right section of the engine case.

Installing the transmission shafts



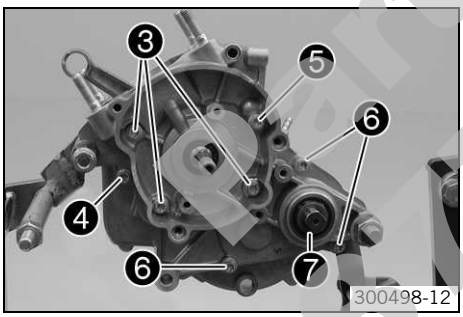
– Push both transmission shafts ❶ into the bearing seats together.

Installing the left engine case



– Mount engine case gasket ❶ and dowels ❷.

Info
The axial play cannot be adjusted.



– Mount the left section of the engine case.
– Mount screws ❸ but do not tighten yet.

Guideline

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

– Mount screw ❹ but do not tighten yet.

Guideline

Screw, engine case	M6x35	10 Nm (7.4 lbf ft)

– Mount screw ❺ but do not tighten yet.

Guideline

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

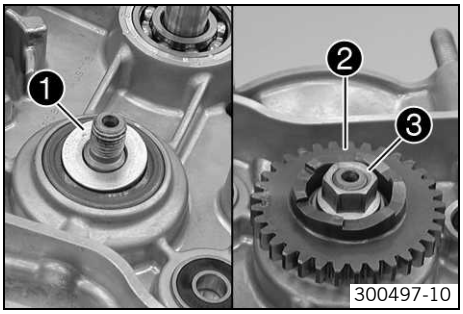
– Mount screws ❻ and tighten all screws in a crisscross pattern.

Guideline

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

– Mount distance bushing ❼ with the chamfer facing inward.

Installing the primary gear

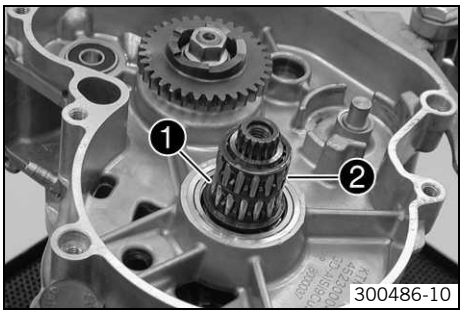


- Position the O-ring.
- Mount washer ❶.
- Mount spring washer.
- Position primary gear ❷.
- Mount nut ❸ but do not tighten yet.

Guideline

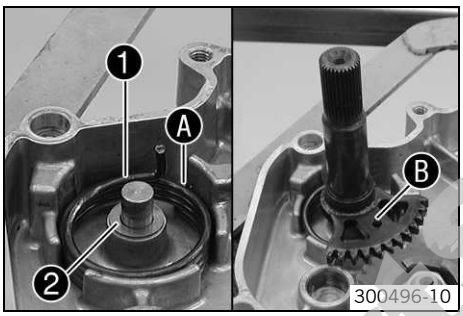
Nut, primary gear	M10x1.25	40 Nm (29.5 lbf ft)	**Loctite® 243™**

Installing the clutch bearing



- Mount collar sleeve ❶ and needle bearing ❷.

Installing the kickstarter shaft

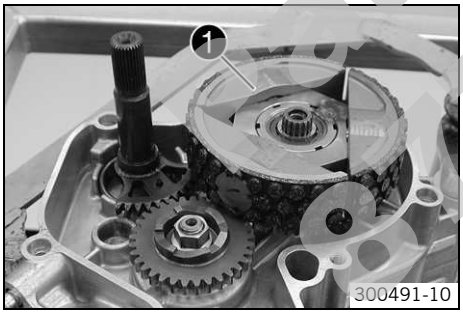


- Position kickstarter spring ❶ and hook it in at area Ⓐ.
- Mount washer ❷.
- Hook the kickstarter spring into kickstarter shaft Ⓑ.

✓ The kickstarter spring is spring-loaded by turning the kickstarter shaft clockwise.

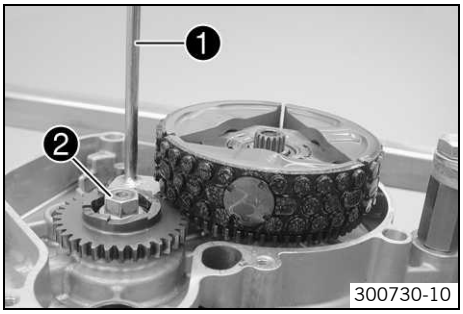
- Insert the kickstarter shaft into the engine case and let it engage.

Installing the centrifugal force clutch



- Position the centrifugal force clutch ❶.

Tightening the nut of the primary gear



- Hold the clutch in place with special tool ❶.

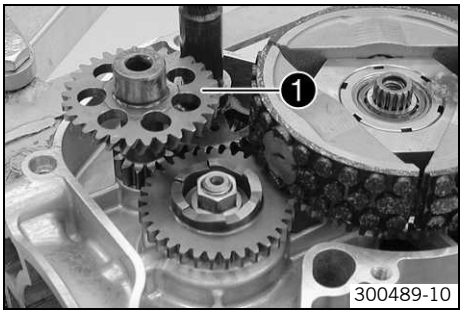
Gear segment (45229081000) (☛ p. 147)

- Tighten nut ❷.

Guideline

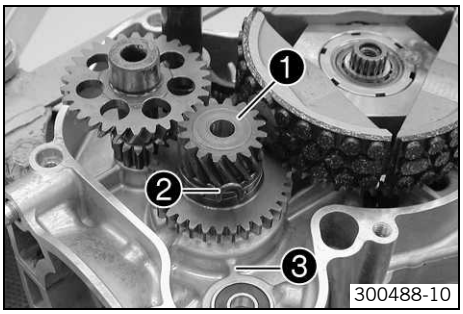
Nut, primary gear	M10x1.25	40 Nm (29.5 lbf ft)	**Loctite® 243™**

Installing the kickstarter idler shaft



– Position the kickstarter idler shaft ❶.

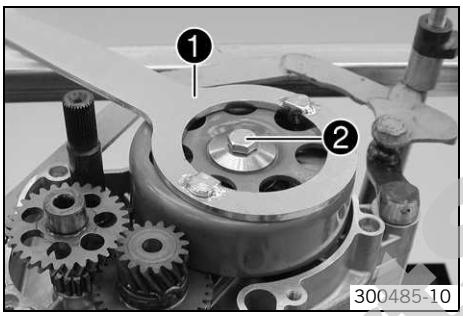
Installing the kickstarter gear



– Position kickstarter gear ❶.

✓ Spring loop ❷ is aligned with engine case rib ❸.

Installing the clutch drum



– Position the clutch drum.
– Hold the clutch drum with special tool ❶.

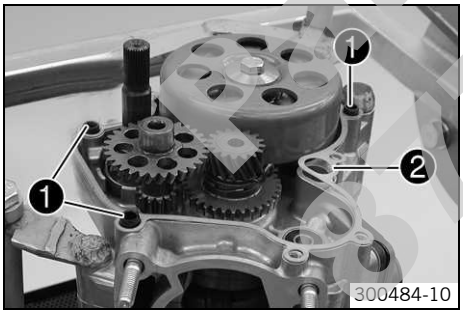
Holding spanner (54629012100) (☛ p. 149)

– Mount and tighten screw ❷.

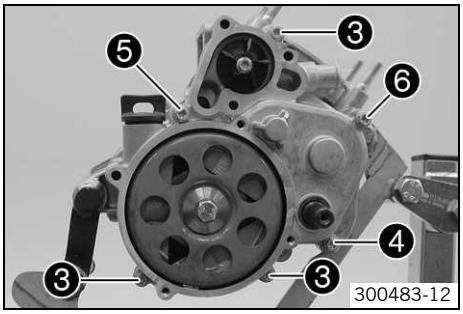
Guideline

Screw, clutch drum	M8	30 Nm (22.1 lbf ft)	**Loctite® 243™**

Installing the clutch cover



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



– Position the clutch cover.
– Mount screws ❸ but do not tighten yet.

Guideline

Screw, clutch cover	M6x25	10 Nm (7.4 lbf ft)

– Mount screw ❹ but do not tighten yet.

Guideline

Screw, clutch cover	M6x30	10 Nm (7.4 lbf ft)

– Mount screw ❺ but do not tighten yet.

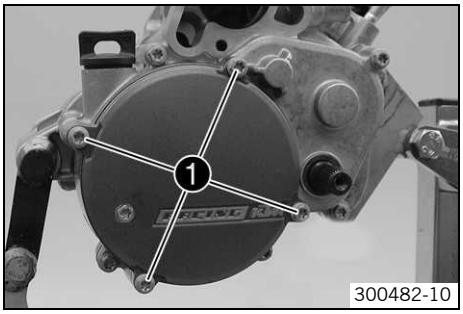
Guideline

Screw, clutch cover	M6x35	10 Nm (7.4 lbf ft)

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

Screw, clutch cover	M6x50	10 Nm (7.4 lbf ft)

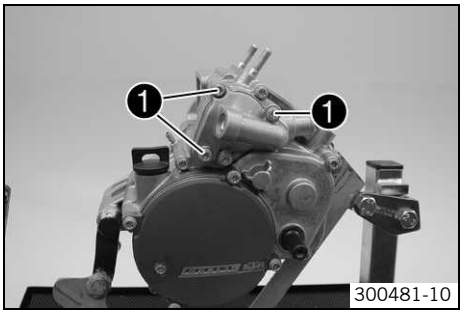
Installing the outer clutch cover



– Mount the clutch cover gasket.
– Position the outer clutch cover. Mount and tighten screws ❶.
Guideline

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

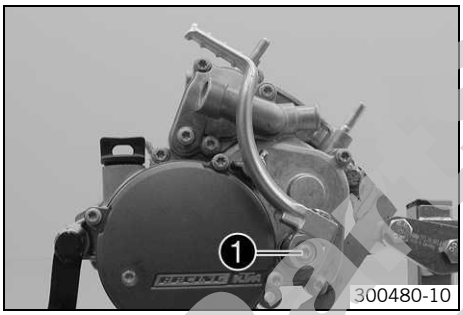
Mounting the water pump cover



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

Screw, water pump cover	M6	10 Nm (7.4 lbf ft)

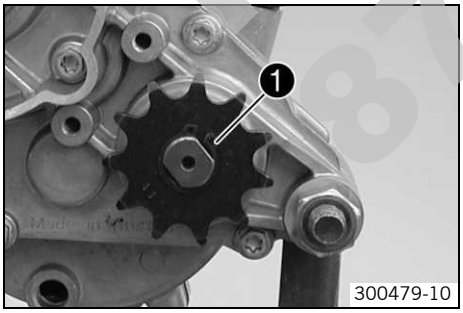
Installing the kickstarter



– Position the kickstarter. Mount and tighten screw ❶.
Guideline

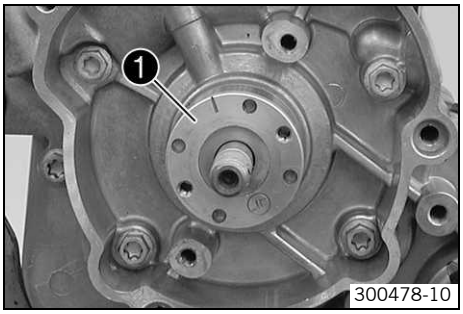
Screw, kickstarter	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**

Installing the engine sprocket



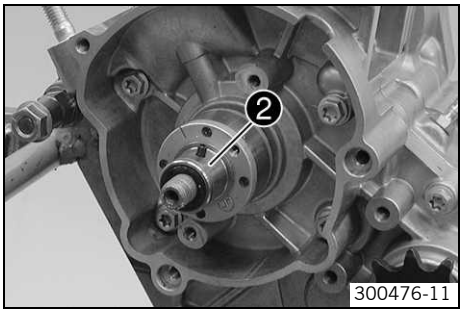
– Slide on the engine sprocket with the collar facing the engine. Mount lock ring ❶.

Installing the rotor

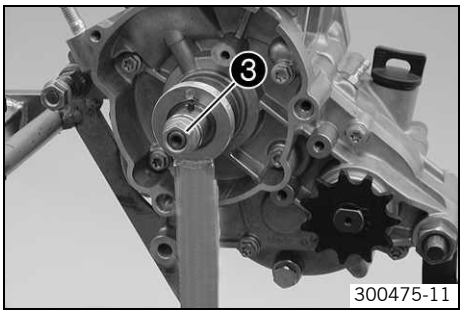


(50 SX Mini)

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



– Mount distance sleeve ❷.



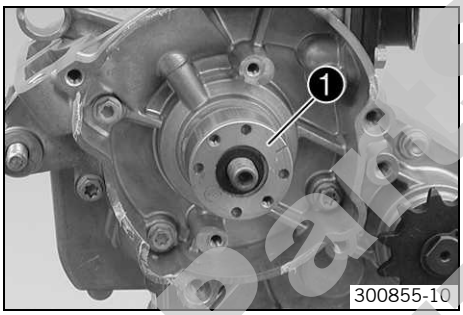
– Hold the rotor in place with the special tool.

Holding spanner, rotor (45229012000) (☛ p. 147)

– Mount and tighten nut ❸.

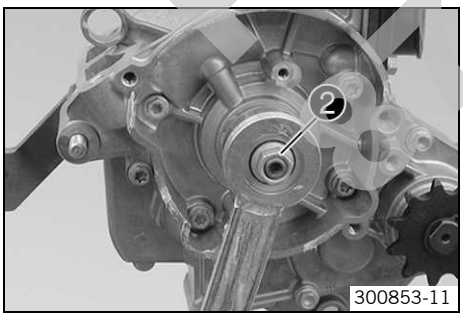
Guideline

Nut, rotor	M10x1.25	15 Nm (11.1 lbf ft)



(50 SX, 50 SX Junior)

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



– Hold the rotor in place with the special tool.

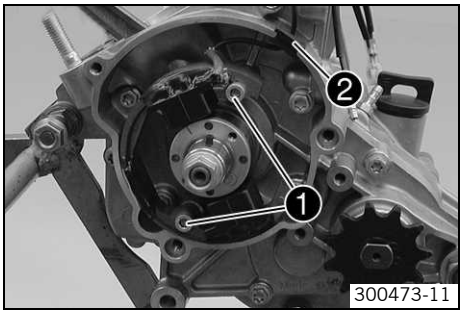
Holding spanner, rotor (45229012000) (☛ p. 147)

– Mount the washer and nut ❷. Tighten the nut.

Guideline

Nut, rotor	M10x1.25	15 Nm (11.1 lbf ft)

Installing the stator



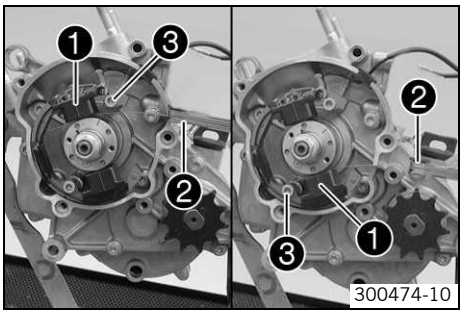
– Position the stator.
– Mount screws ❶ but do not tighten yet.

Guideline

Screw, stator clamp	M5	6 Nm (4.4 lbf ft)

– Position cable support sleeve ❷.

Adjusting the stator/rotor distance



– Adjust the distance between stator ❶ and rotor using special tool ❷.

Guideline

Distance between rotor/stator	0.35 mm (0.0138 in)

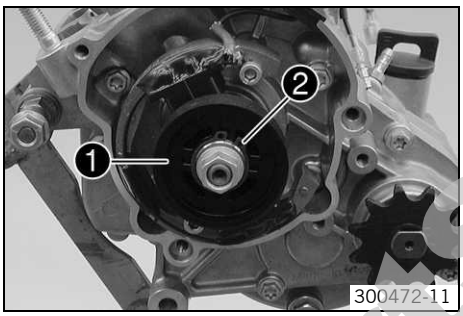
Feeler gauge (59029041100) (☛ p. 150)

– Tighten screws ❸.

Guideline

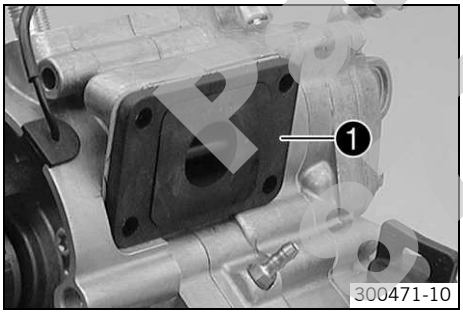
Screw, stator clamp	M5	6 Nm (4.4 lbf ft)

Installing the oil pump drive gear (50 SX Mini)

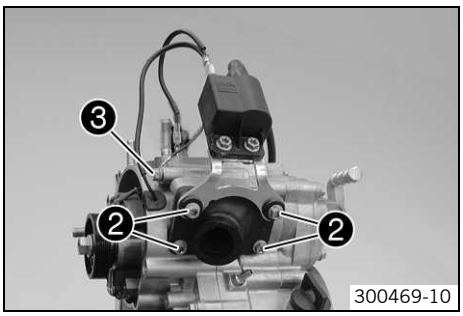


– Position oil pump drive gear ❶.
– Mount lock ring ❷.

Installing the reed valve housing, ignition coil, and intake flange



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



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

Guideline

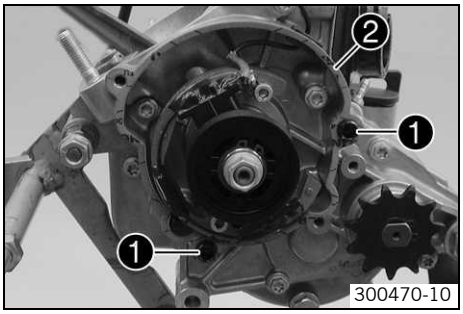
Screw, intake flange	M6	5 Nm (3.7 lbf ft)	**Loctite® 243™**

– Mount and tighten screw ❸ with the cable of the ignition coil.

Guideline

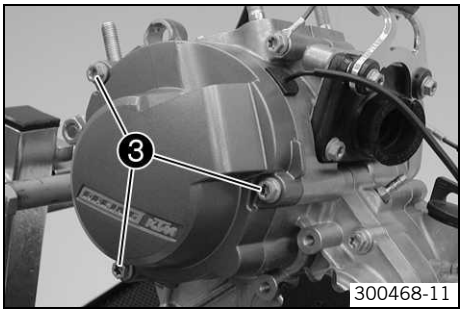
Screw, engine case	M6x55	10 Nm (7.4 lbf ft)

Installing the alternator cover



(50 SX Mini)

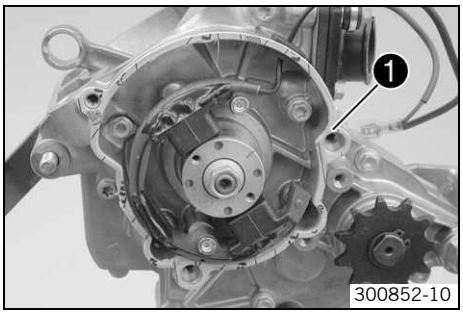
– Mount dowels ❶.
– Position alternator cover gasket ❷.



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

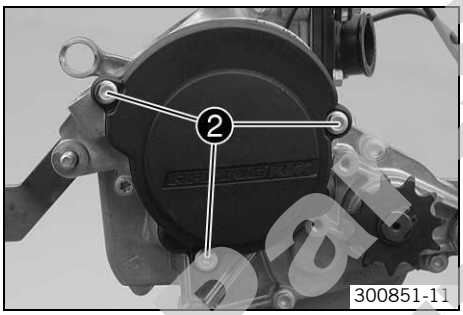
Guideline

Screw, alternator cover	M6	6 Nm (4.4 lbf ft)



(50 SX, 50 SX Junior)

– Position alternator cover gasket ❶.

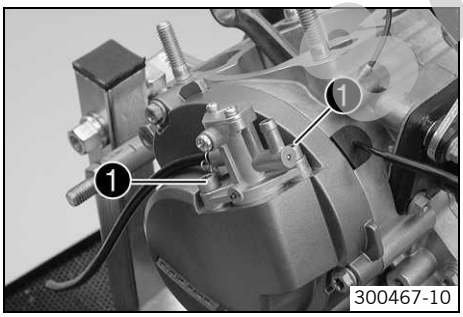


– Position the alternator cover.
– Mount and tighten screws ❷.

Guideline

Screw, alternator cover	M6	6 Nm (4.4 lbf ft)

Installing the oil pumps (50 SX Mini)

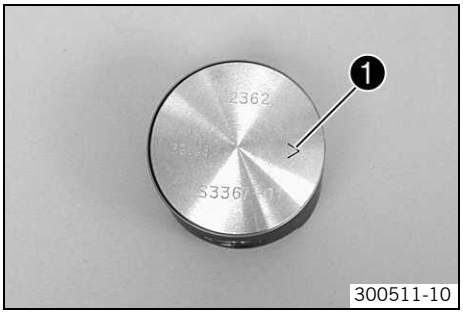


– Position the oil pump.
– Mount and tighten screws ❶.

Guideline

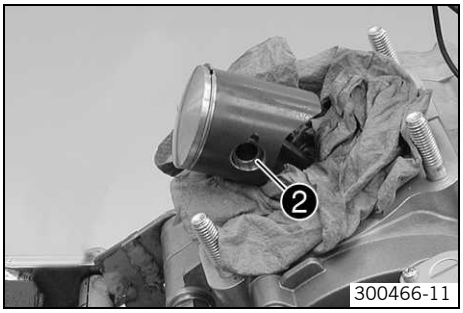
Screw, oil pump	M5	6 Nm (4.4 lbf ft)

Installing the piston

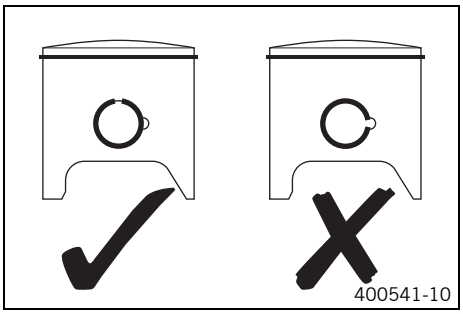


- Cover the engine case opening with a cloth.
- Oil the conrod bearing and position it in the connecting rod.
- Position the piston.

  ✓ Piston marking ❶ must face the exhaust side.

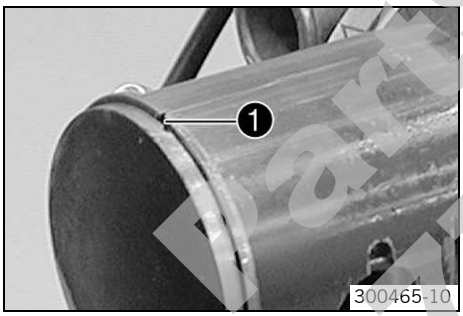


- Slide piston pin ❷ into the connecting rod by hand.



- 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



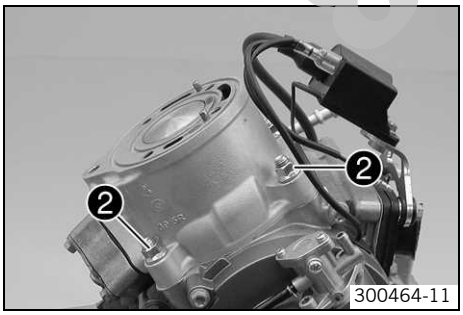
- Position the new cylinder base gasket.

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 ring end ❶.
- Slide the cylinder over the piston.
- Carefully push the cylinder down and ensure that the dowel pins are properly engaged.



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

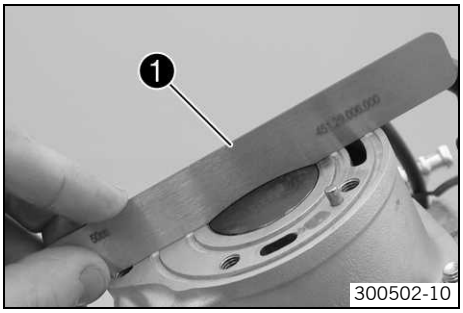
  Guideline

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

- Check the X-distance. (☛ p. 92)

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 (45129006000) (☛ p. 146)

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

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

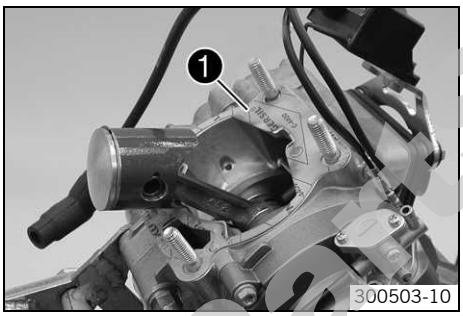
X-distance (distance from adjusting gauge to piston)	0... 0.10 mm (0... 0.0039 in)

» If the specified value is not reached:
– Set the X-distance. (☛ p. 92)

Setting the X-distance

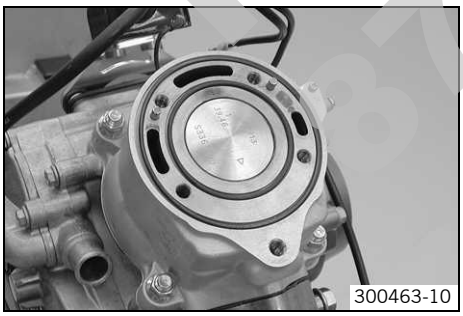
Info
The X-distance is adjusted by inserting cylinder base gaskets of various thicknesses.

– Check the X-distance. (☛ p. 92)
– Remove the cylinder. (☛ p. 69)



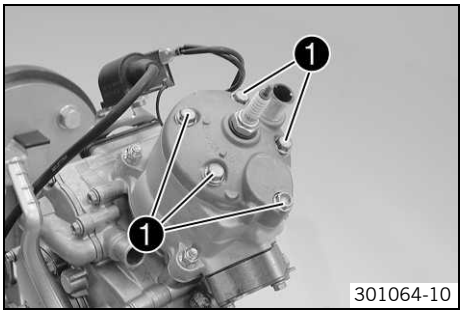
– Replace cylinder base gasket ❶ with a cylinder base gasket of the required size.
– Install the cylinder. (☛ p. 91)

Installing the cylinder head



– Put the O-rings in place.

Info
Ensure that dowels are seated correctly.



– Mount the cylinder head. Mount and tighten screws ❶ with the washers.
Guideline

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

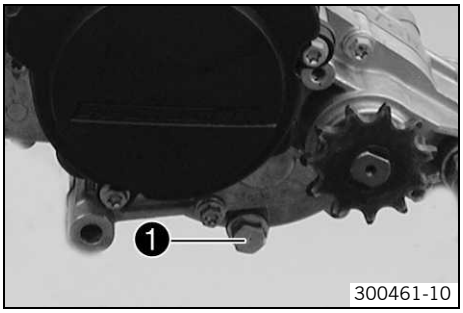
Info
Always use new screws and washers.

– Mount and tighten the spark plug.

Guideline

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

Installing the oil drain plug

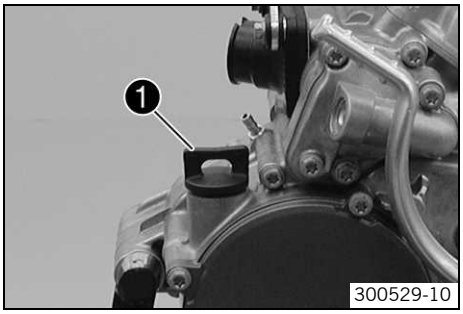


– Mount and tighten the oil drain plug with magnet ❶ and the new seal ring.

Guideline

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

Refilling with gear oil

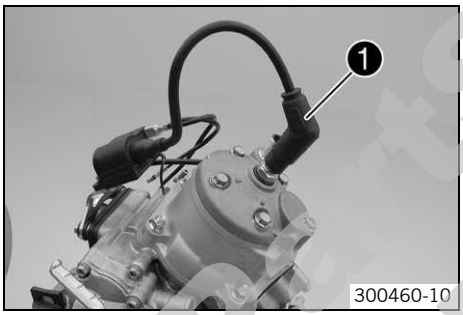


– Remove screw cap ❶ and refill with gear oil.

Gear oil	0.20 l (0.21 qt.)	Gear oil (ATF Dexron 3) (☛ p. 142)

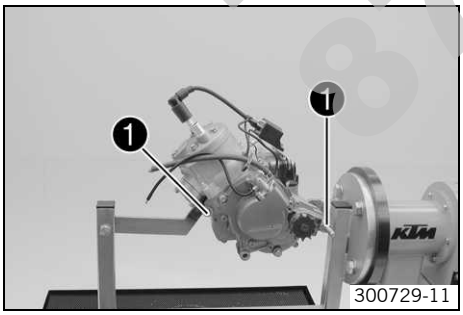
– Mount and tighten the screw cap.

Mounting the spark plug connector



– Mount spark plug connector ❶.

Removing the engine from the universal mounting rack



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

Removing the carburetor (50 SX)

Danger

Fire hazard Fuel is highly flammable.

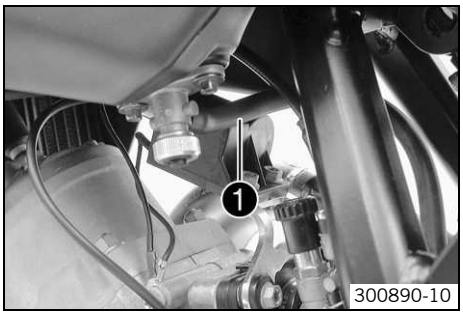
- Never refuel the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
- Fuel in the fuel tank expands when warm and can escape if the tank is overfilled. See the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

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.

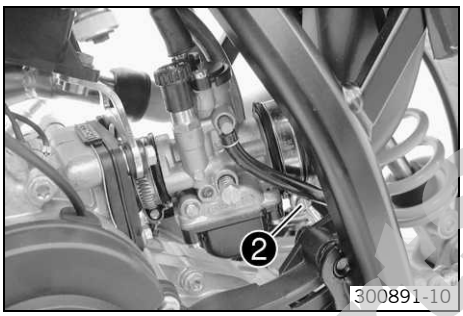
- Turn the knurled screw on the fuel tap all the way clockwise.
- Pull off fuel hose ❶.



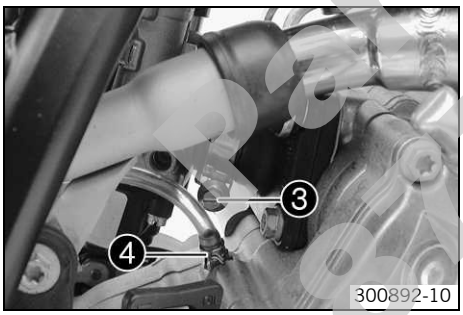
Info

Remaining fuel may run out of the fuel hose.

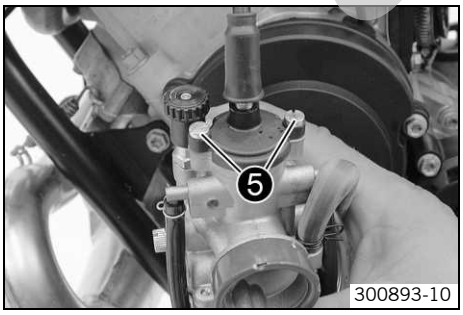
- Unscrew hose clip ❷.

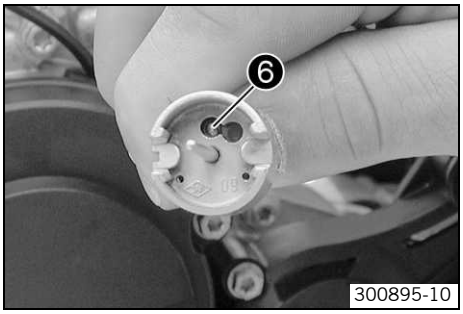


- Unscrew hose clip ❸.
- Take off clamp ❹ and pull off the engine breather hose.
- Pull the carburetor out of the intake flange.
- Pull the carburetor forward out of the carburetor connection boot.



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





– Pull back the spring retainer and throttle slide spring.
– Detach throttle cable ❻.
– Remove the throttle slide.

Removing the carburetor (50 SX Junior, 50 SX Mini)

Danger

Fire hazard Fuel is highly flammable.

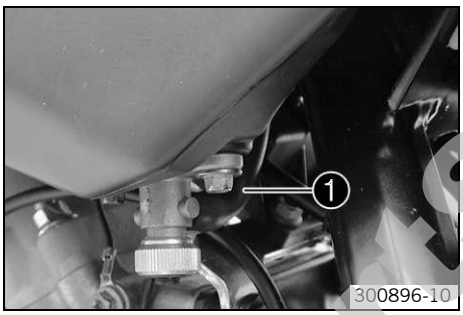
– Never refuel the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
– Fuel in the fuel tank expands when warm and can escape if the tank is overfilled. See the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

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.

– Turn the knurled screw on the fuel tap all the way clockwise.
– Pull off fuel hose ❶.

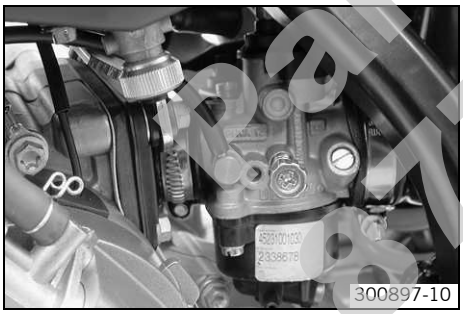


Info

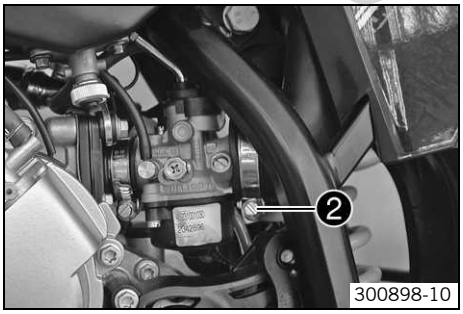
Remaining fuel may run out of the fuel hose.

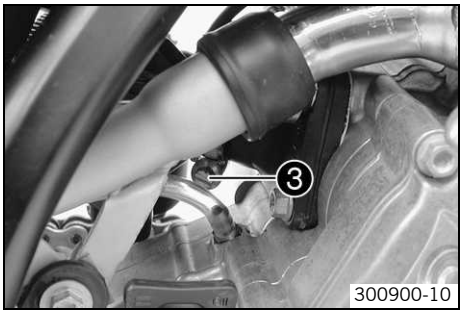
(50 SX Mini)

– Close the oil line.
– Close the oil line using a suitable object.

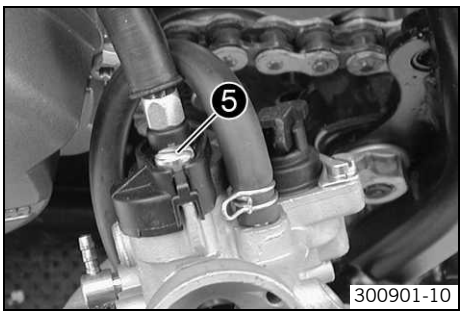


– Unscrew hose clip ❷.

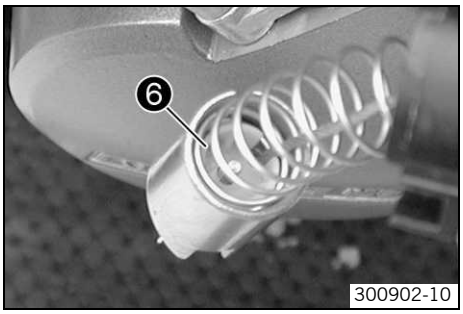




– Unscrew hose clip ❸.
– Pull the carburetor out of the intake flange.
– Pull the carburetor forward out of the carburetor connection boot.

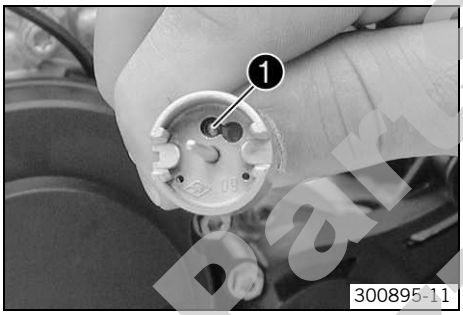


– Remove screw ❺.
– Remove the throttle slide cover and pull the throttle slide out of the carburetor.
– Drain the remaining fuel.

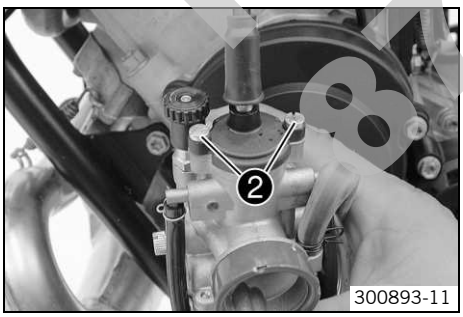


– Pull back spring retainer ❻ and the throttle slide spring.
– Detach the throttle cable.

Installing the carburetor (50 SX)



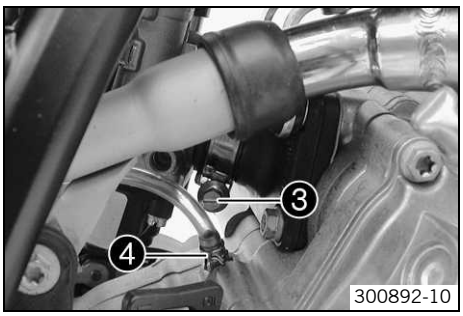
– Attach throttle cable ❶.
– Position the spring retainer and throttle slide spring.



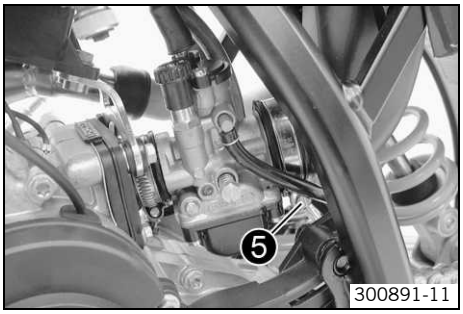
– Position the throttle slide, gasket, and throttle slide cover.
– Mount and tighten screws ❷.

Guideline

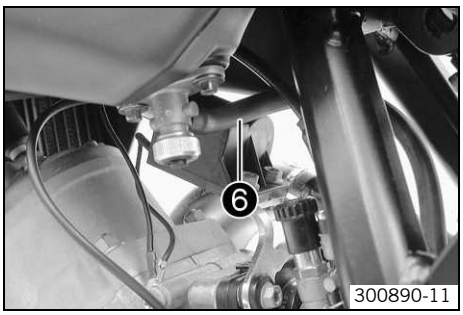
Screw, throttle slide cover	M5	3 Nm (2.2 lbf ft)



– Mount the carburetor.
– Position and tighten hose clamp ❸.
– Mount the engine breather hose and position clamp ❹.

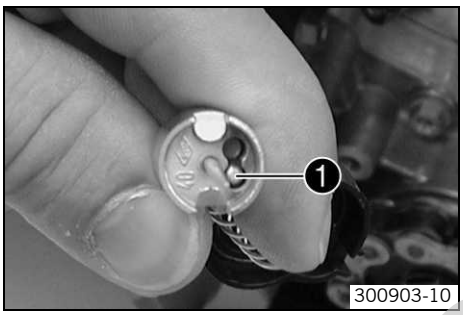


– Mount the carburetor connection boot.
– Position and tighten hose clamp ❺.

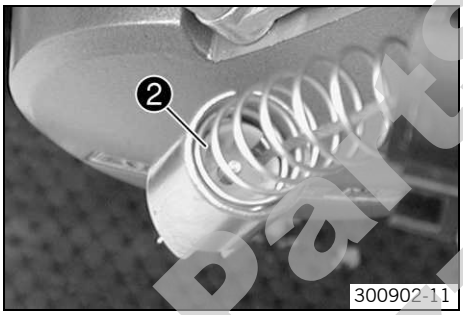


– Mount fuel hose ❻.
– Check the play in the throttle cable. (☛ p. 20)
– Carburetor - adjust the idle speed. (☛ p. 108)

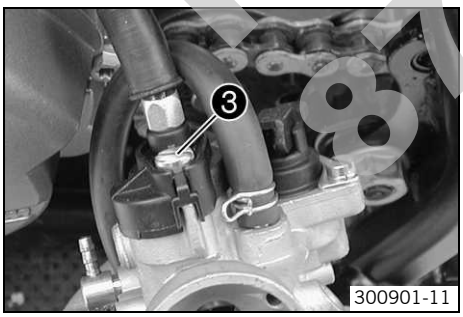
Installing the carburetor (50 SX Junior, 50 SX Mini)



– Attach throttle cable ❶.



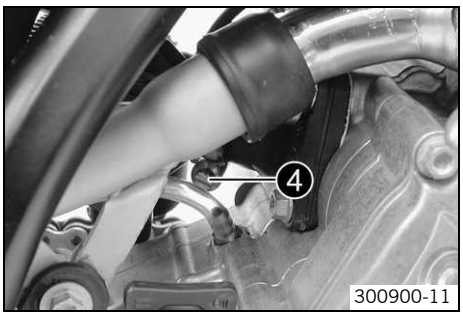
– Position spring retainer ❷.
– Position the throttle slide spring.



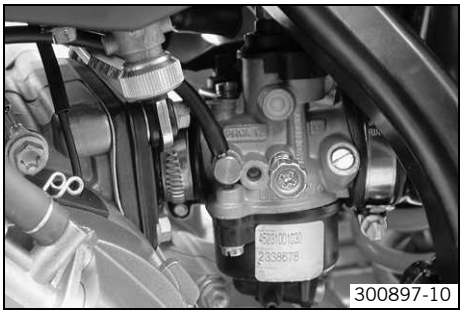
– Position the throttle slide and throttle slide cover.
– Mount and tighten screw ❸.

Guideline

Screw, throttle slide cover (50 SX Junior)	M5	3 Nm (2.2 lbf ft)
Screw, throttle slide cover (50 SX Mini)	M5	3 Nm (2.2 lbf ft)

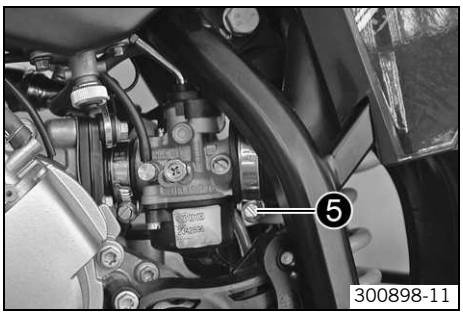


– Mount the carburetor.
– Position and tighten hose clamp ❹.

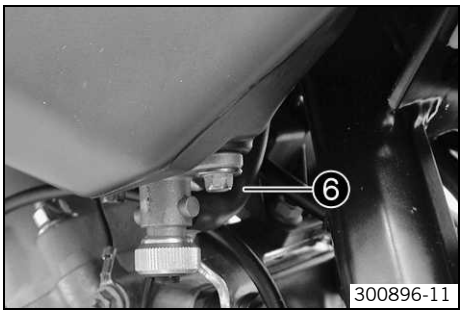


(50 SX Mini)

– Remove the plug.
– Connect the oil line.



– Tighten hose clip ❺.

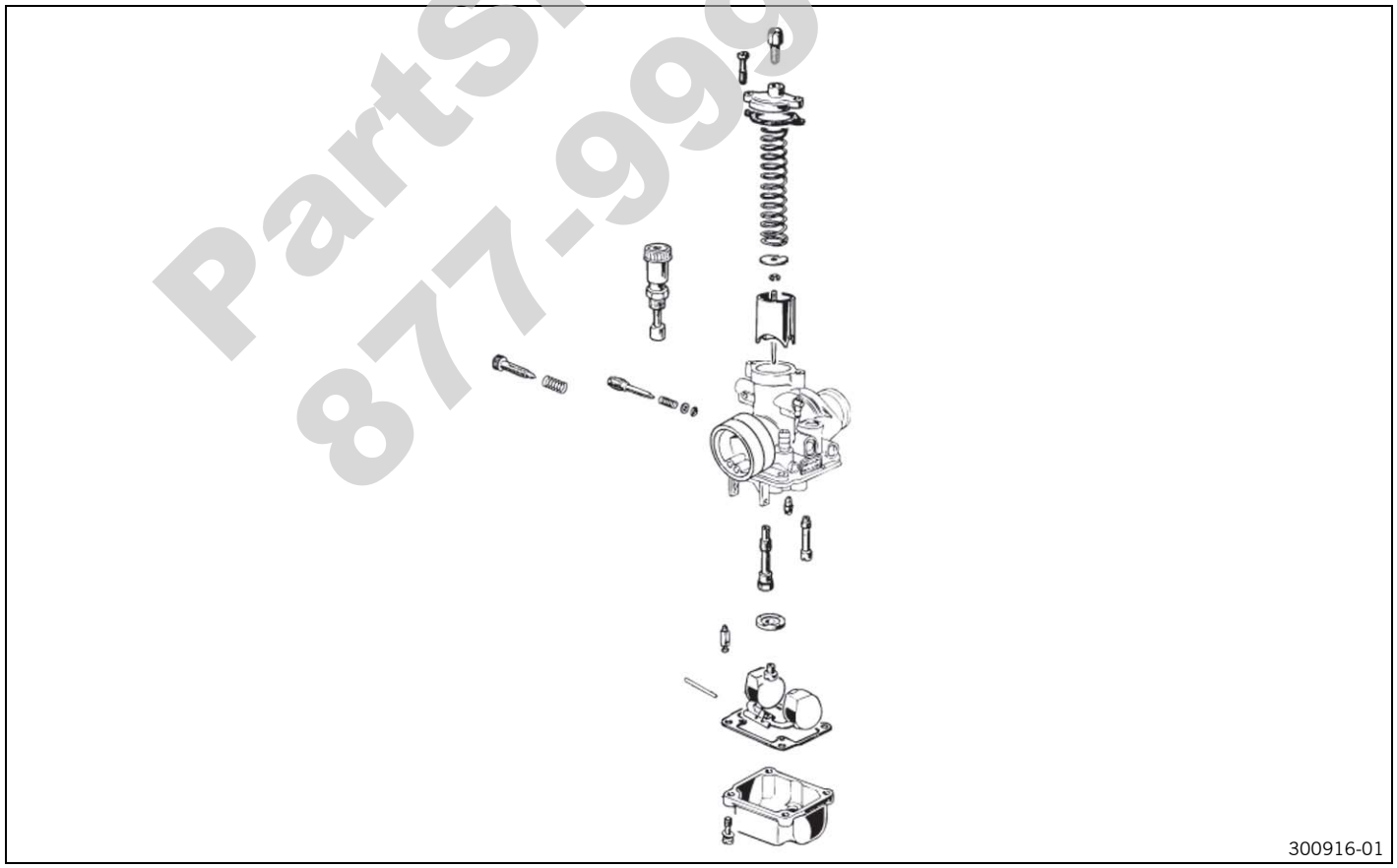


– Connect the fuel hose.

(50 SX Mini)

– Bleed the oil pump. (☛ p. 119)
– Check the play in the throttle cable. (☛ p. 20)
– Carburetor - adjust the idle speed. (☛ p. 109)

Checking/setting the carburetor components (50 SX)



– Disassemble the carburetor. (☛ p. 99)

– Check the jet needle. (☛ p. 108)
– Check the throttle slide. (☛ p. 107)
– Check the float needle valve. (☛ p. 108)
– Check/set the float level. (☛ p. 108)
– Check the choke slide. (☛ p. 107)
– Assemble the carburetor. (☛ p. 102)

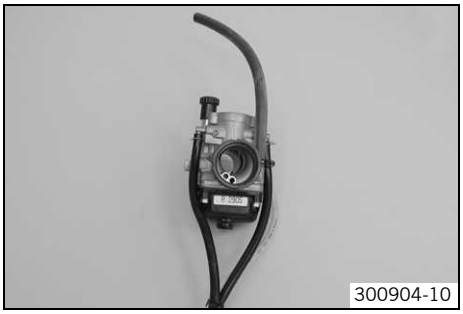
Checking/setting the carburetor components (50 SX Junior, 50 SX Mini)

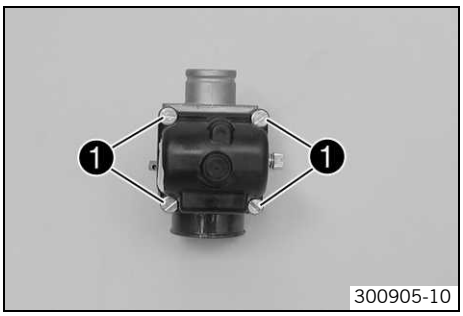
– Disassemble the carburetor. (☛ p. 101)
– Check the jet needle. (☛ p. 108)
– Check the throttle slide. (☛ p. 107)
– Check the float needle valve. (☛ p. 108)
– Check the choke slide. (☛ p. 107)
– Assemble the carburetor. (☛ p. 104)

Disassembling the carburetor (50 SX)

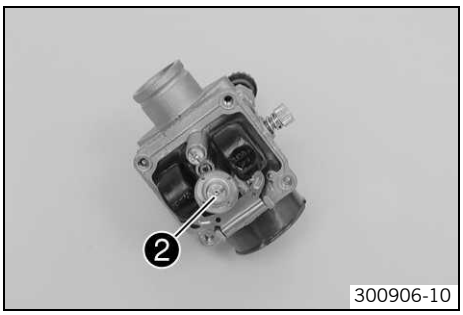
Condition
The carburetor has been removed.

– Pull the hoses off of the carburetor.

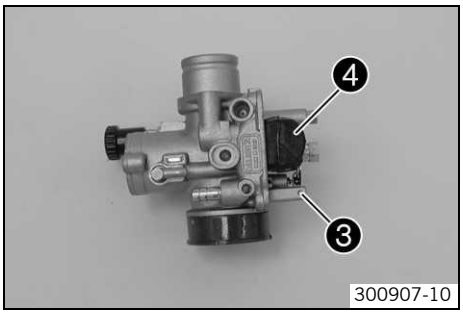




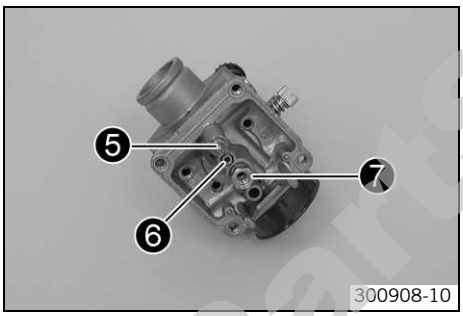
– Remove screws ❶.
– Remove the float chamber.
– Remove seal.



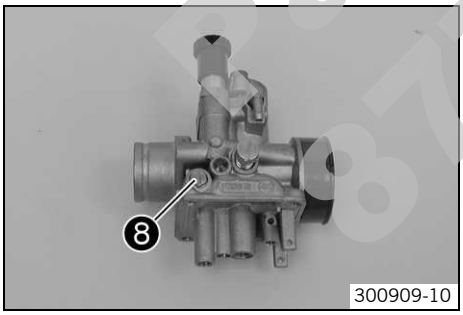
– Remove main jet ❷ with the washer.



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



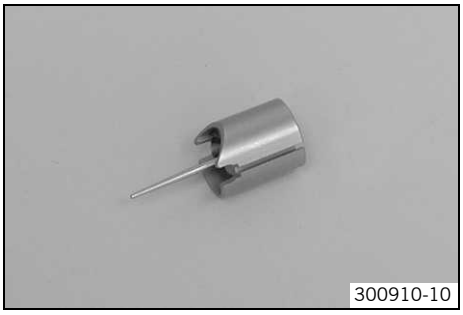
– Remove cold start jet ❺.
– Remove idling jet ❻.
– Remove needle jet ❼.



– Note the setting of the idle mixture control screw ❽.
– Remove the idle mixture control screw with the O-ring.

Info
Make sure not to misplace the spring.

– Remove the choke slide.

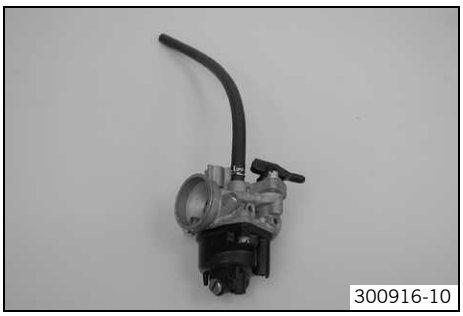


– Pull the jet needle out of the throttle slide.

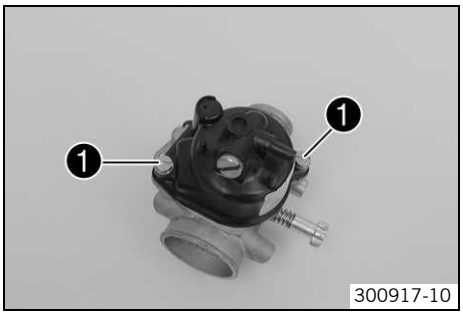
Disassembling the carburetor (50 SX Junior, 50 SX Mini)

Condition

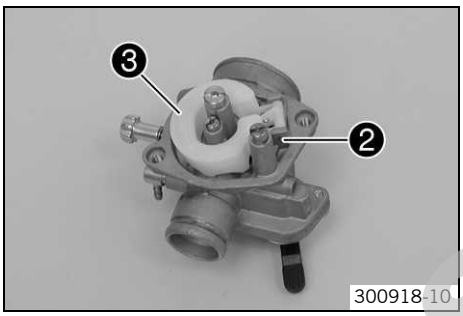
The carburetor has been removed.



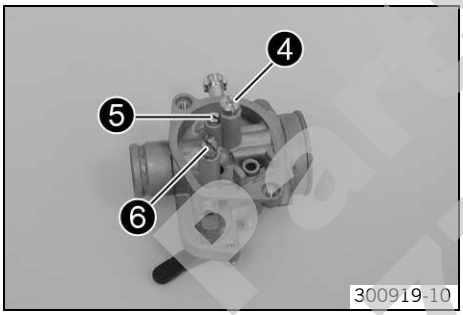
– Pull the fuel hose off the carburetor.



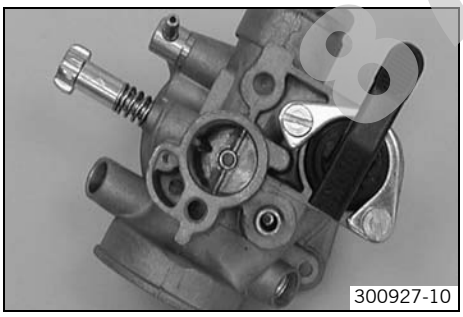
– Remove screws ❶.
– Remove the float chamber.



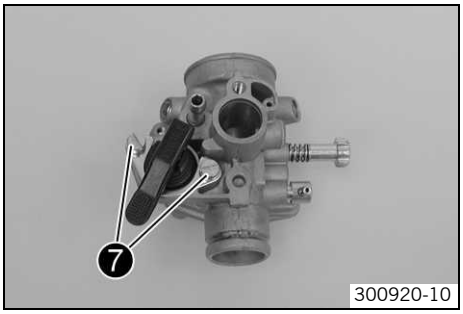
– Remove fulcrum pin ❷.
– Remove float ❸ and the float needle valve.



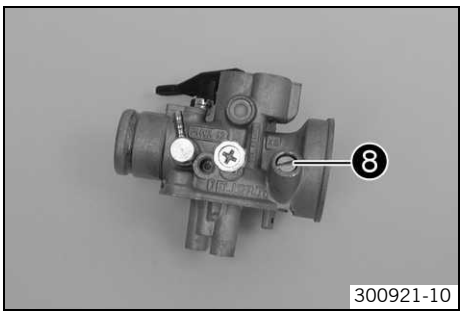
– Remove main jet ❹.
– Remove idling jet ❺.
– Remove cold start jet ❻.



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

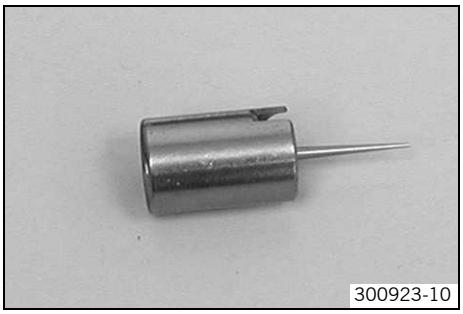


– Remove screws ❼.
– Remove the choke slide.



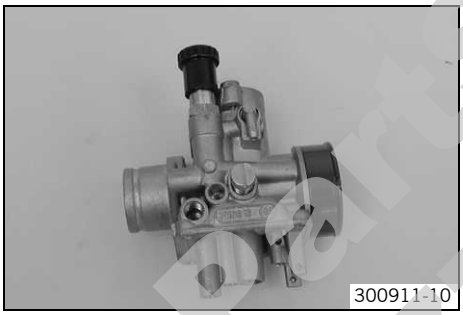
– Note the setting of the idle air adjusting screw ❽.
– Remove the idle air adjusting screw.

Info
Make sure not to misplace the spring.



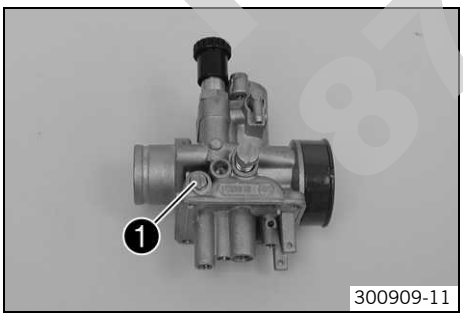
– Pull the jet needle out of the throttle slide.

Assembling the carburetor (50 SX)



– Mount and tighten the choke slide.
Guideline

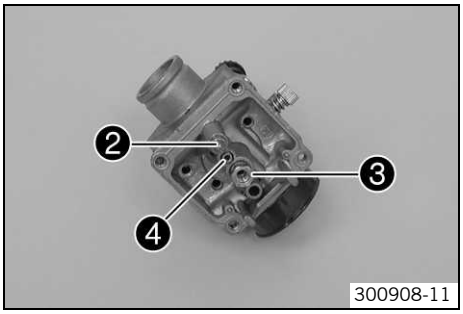
Choke slide	M10	5 Nm (3.7 lbf ft)



Alternative 1
– Mount idle mixture control screw ❶ with the spring and O-ring.
– Set the idle mixture control screw to the specified value.
Guideline

Idle mixture adjusting screw	
Open	3 turns

Alternative 2
– Set the idle mixture control screw to the value determined when it was disassembled.



– Mount and tighten cold start jet ❷.
Guideline

Cold start jet	M5	2 Nm (1.5 lbf ft)

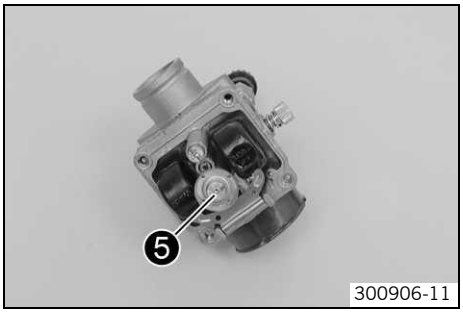
– Mount and tighten needle jet ❸.
Guideline

Needle jet	M6x0.75	3 Nm (2.2 lbf ft)

– Mount and tighten idling jet ❹.

Guideline

Idling jet	M5	2 Nm (1.5 lbf ft)

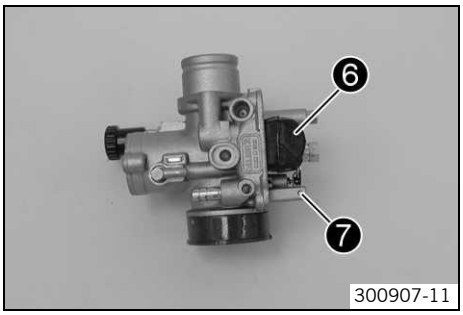


– Mount and tighten main jet ❺ with the washer.

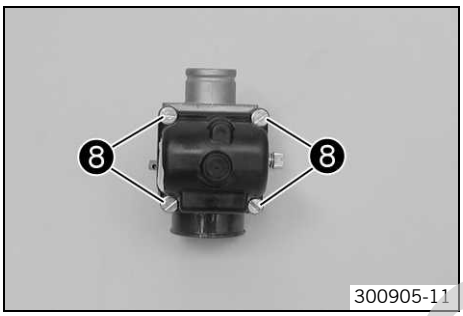
Guideline

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

✔ The edge of the disk faces the float chamber.



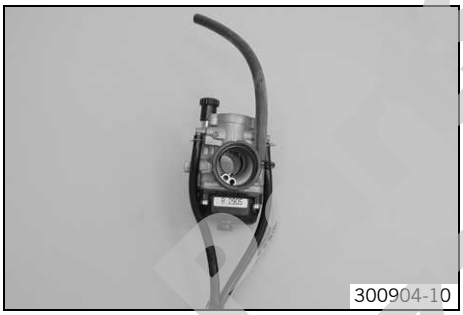
– Position the float needle valve and float ❻.
– Mount fulcrum pin ❼.
– Check/set the float level. (☛ p. 108)



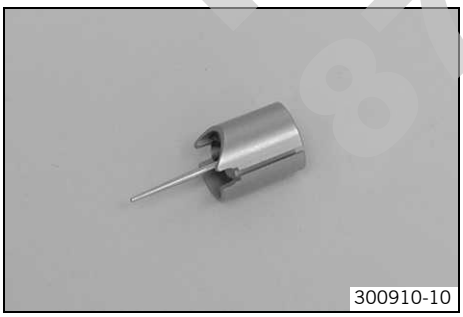
– Mount the gasket.
– Position the float chamber.
– Mount and tighten screws ❽.

Guideline

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

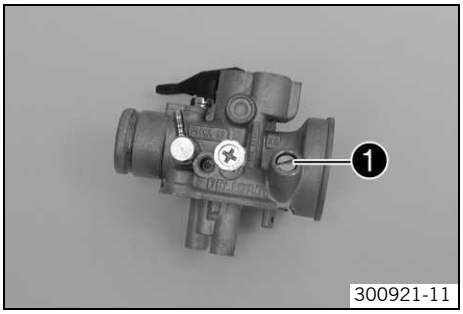


– Mount the hoses on the carburetor.



– Position the jet needle in the throttle slide.

Assembling the carburetor (50 SX Junior)



Alternative 1

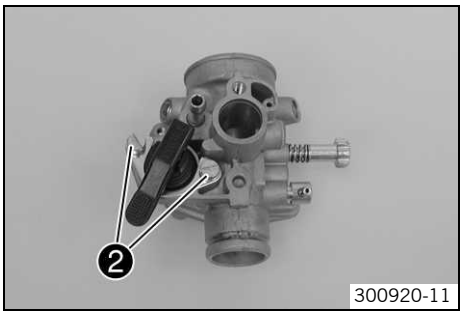
– Mount idle air adjusting screw ❶ with the spring.
– Set the idle air adjusting screw to the specified value.

Guideline

Idle air adjusting screw	
Open	3.5 turns

Alternative 2

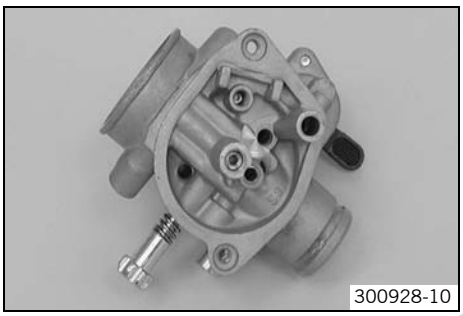
– Set the idle air adjusting screw to the value determined when it was disassembled.



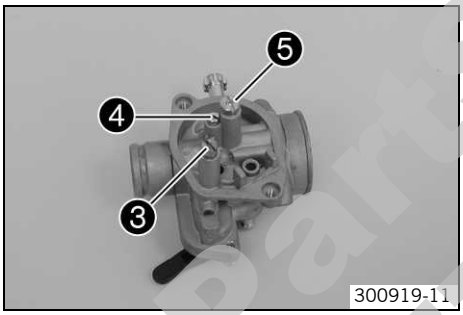
– Mount the choke slide.
– Mount and tighten screws ❷.

Guideline

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



– Position the needle jet in the carburetor.



– Mount and tighten cold start jet ❸.

Guideline

Cold start jet	M5	2 Nm (1.5 lbf ft)

– Mount and tighten idling jet ❹.

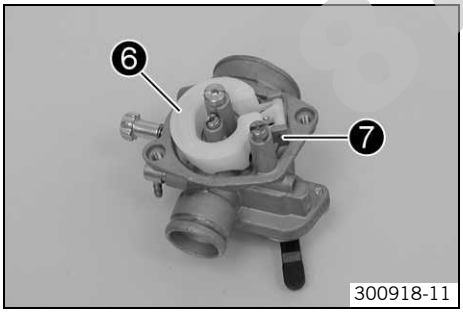
Guideline

Idling jet	M4	1.5 Nm (1.11 lbf ft)

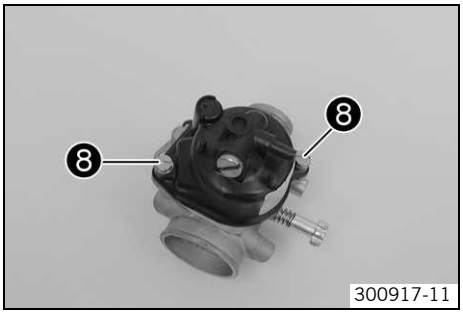
– Mount and tighten main jet ❺.

Guideline

Main jet	M6x0.75	3 Nm (2.2 lbf ft)



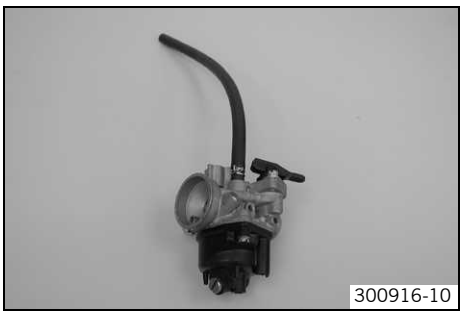
– Position the float needle valve and float ❻.
– Mount fulcrum pin ❼.



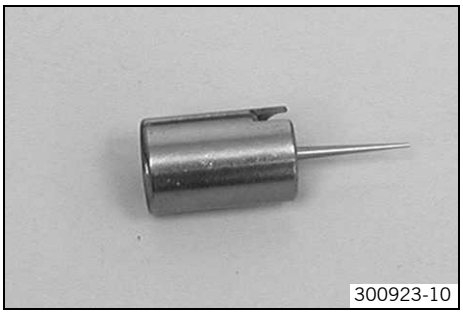
– Position the float chamber.
– Mount and tighten screws ❽.

Guideline

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

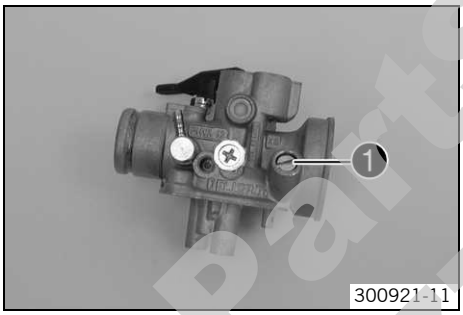


– Mount the fuel hose on the carburetor.



– Position the jet needle in the throttle slide.

Assembling the carburetor (50 SX Mini)



Alternative 1

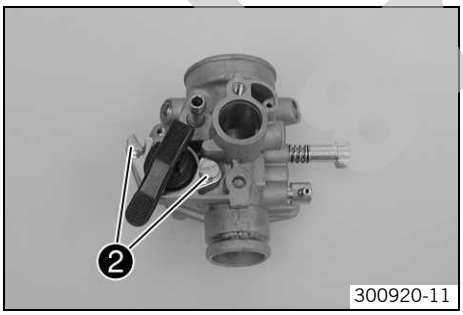
– Mount idle air adjusting screw ❶ with the spring.
– Set the idle air adjusting screw to the specified value.

Guideline

Idle air adjusting screw	
Open	1 turn

Alternative 2

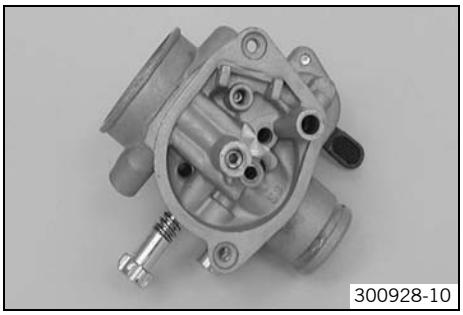
– Set the idle air adjusting screw to the value determined when it was disassembled.



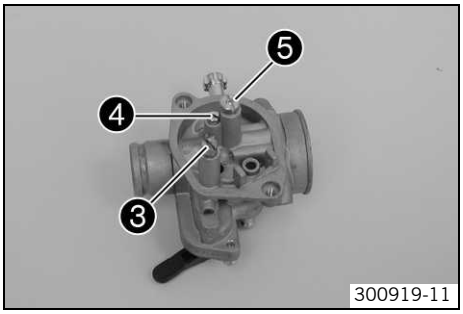
– Mount the choke slide.
– Mount and tighten screws ❷.

Guideline

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



– Position the needle jet in the carburetor.



– Mount and tighten cold start jet ❸.

Guideline

Cold start jet	M5	2 Nm (1.5 lbf ft)

– Mount and tighten idling jet ❹.

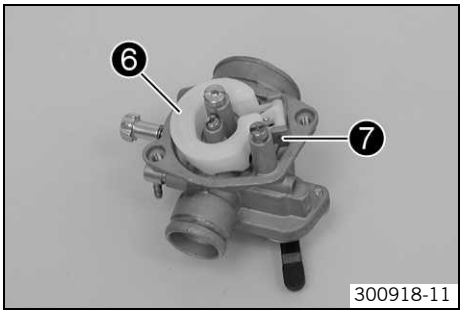
Guideline

Idling jet	M4	1.5 Nm (1.11 lbf ft)

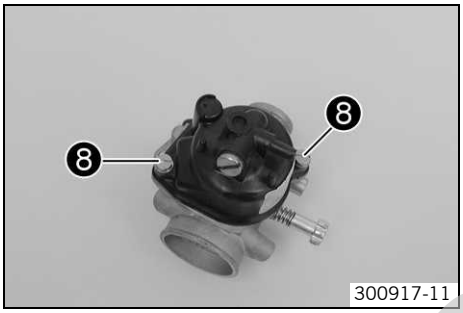
– Mount and tighten main jet ❺.

Guideline

Main jet	M6x0.75	3 Nm (2.2 lbf ft)



– Position the float needle valve and float ❻.
– Mount fulcrum pin ❼.

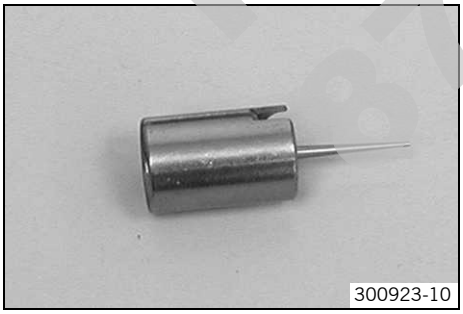


– Position the float chamber.
– Mount and tighten screws ❽.

Guideline

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

– Mount the fuel hose on the carburetor.



– Position the jet needle in the throttle slide.

Checking the choke slide (50 SX)


300912-10

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. 144)

– 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 the choke slide (50 SX Junior, 50 SX Mini)


300922-10

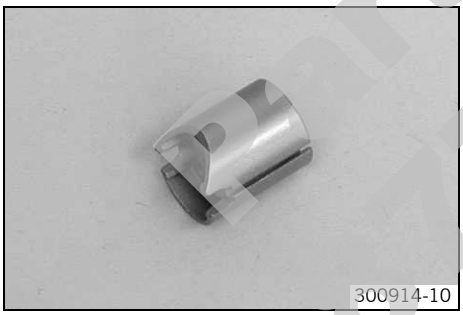
Condition
The choke slide has been removed.

– 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. 144)

– 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.

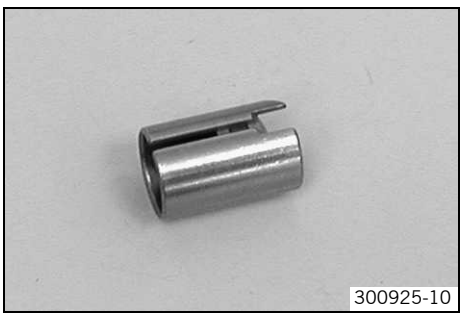
Checking the throttle slide (50 SX)


300914-10

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

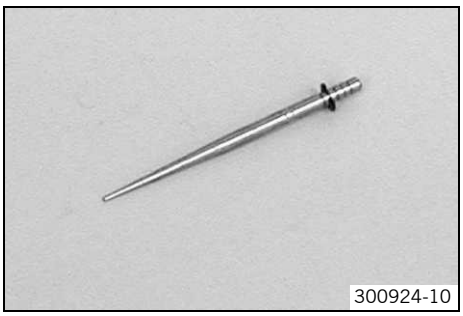
Checking the throttle slide (50 SX Junior, 50 SX Mini)


300925-10

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

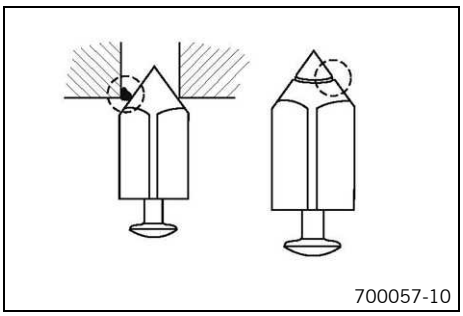
Checking the jet needle


300924-10

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 float needle valve


700057-10

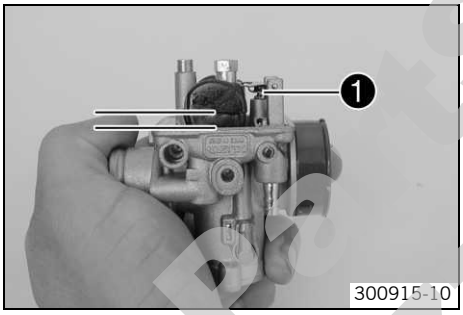
Condition
The float needle valve has been removed.

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

Carburetor cleaner (☛ p. 144)

– 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/setting the float level (50 SX)

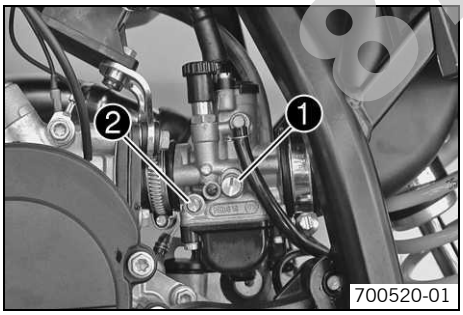


300915-10

Condition
The carburetor and float chamber have been 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 idle speed (50 SX)



700520-01

– Screw in the idle adjusting screw ❷ until it stops and then to the prescribed basic setting.

Guideline

Idle mixture adjusting screw	
Open	3 turns

– Run the engine until warm.

Guideline

Warm-up time	≥ 5 min

Danger
Danger of poisoning Exhaust gases are poisonous and inhaling them may 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 an enclosed space without an effective exhaust extraction system.

– Adjust the idle speed with the adjusting screw ❶.

Guideline

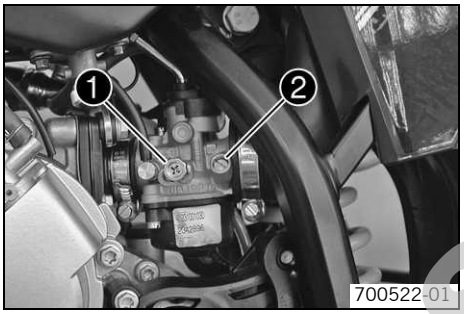
Choke function deactivated – Choke knob is in lower position. No O-ring is visible.	
Idle speed	1,400… 1,500 rpm

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

Info

If the speed rise is too high, reduce the idle speed to a normal level and repeat the preceding 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 adjusting screw to the end without any change of engine speed, you have 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.

Carburetor - adjusting idle speed (50 SX Junior, 50 SX Mini)



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

Guideline

Idle air adjusting screw (50 SX Junior)	
Open	3.5 turns
Idle air adjusting screw (50 SX Mini)	
Open	1 turn

– Run the engine until warm.

Guideline

Warm-up time	≥ 5 min

Danger

Danger of poisoning Exhaust gases are poisonous and inhaling them may 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 an enclosed space without an effective exhaust extraction system.

– Adjust the idle speed with the adjusting screw ❶.

Guideline

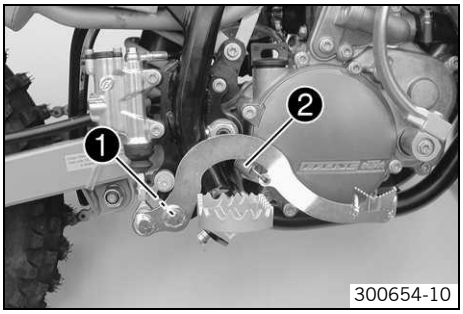
Choke function deactivated – The choke lever is pushed down all the way.	
Idle speed	1,400… 1,500 rpm

– 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.

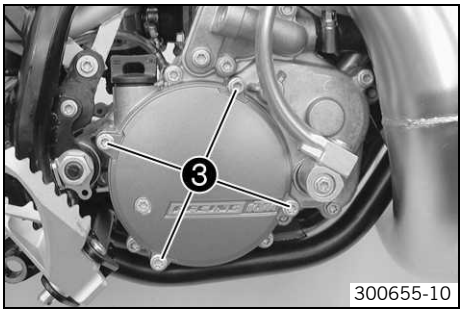
Info

If the speed rise is too high, reduce the idle speed to a normal level and repeat the preceding 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.

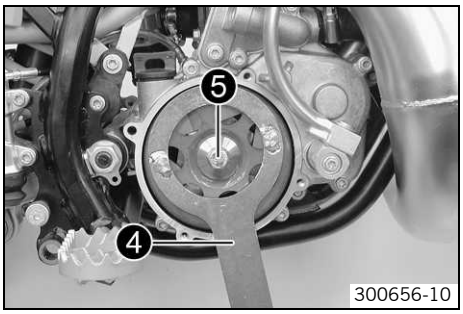
Removing the centrifugal force clutch



– Remove nut ❶.
– Disconnect spring ❷.
– Take off the foot brake lever.



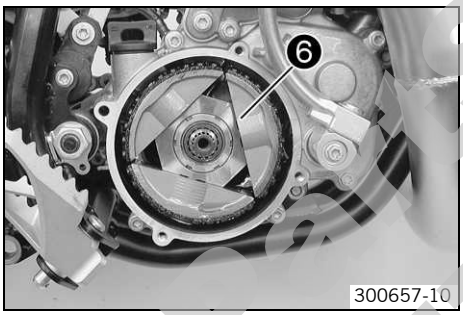
– Lay the motorcycle on its side.
– Remove screws ❸.
– Take off the clutch cover.



– Hold the clutch drum with the special tool ❹.

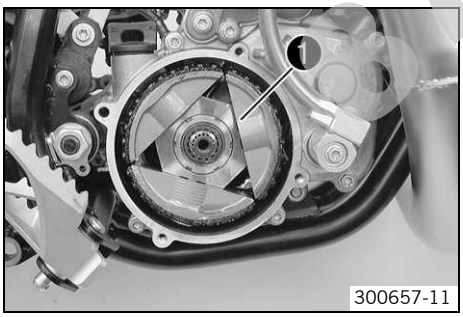
Holding spanner (54629012100) (☛ p. 149)

– Remove screw ❺.
– Take off the clutch cover.

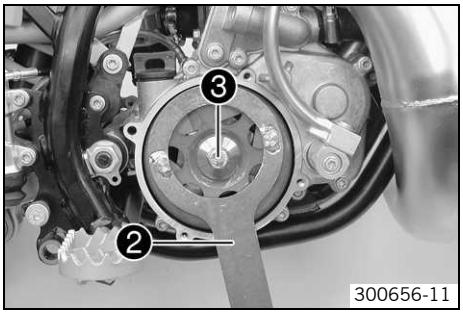


– Take off the centrifugal clutch ❻.

Fitting centrifugal force clutch



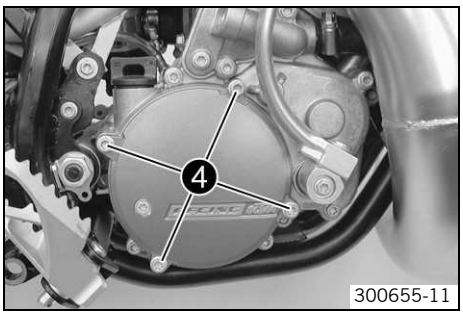
– Position the centrifugal force clutch ❶.



– Position the clutch drum.
– Hold the clutch drum with the special tool ❷.
– Mount and tighten screw ❸.

Guideline

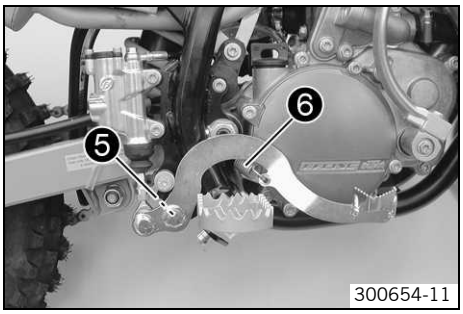
Screw, clutch drum	M8	30 Nm (22.1 lbf ft)	**Loctite® 243™**



– Position the clutch cover with the gasket.
– Mount and tighten screws ❹.

Guideline

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



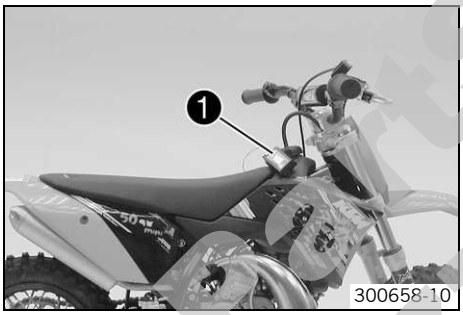
– Position the foot brake lever.
– Mount and tighten nut ❺.

Guideline

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

– Mount the spring ❻.
– Check the gear oil level. (☛ p. 118)
– Check the clutch engagement speed. (☛ p. 112)

Checking clutch engagement speed



– Connect special tool ❶.

Tachometer (45129075000) (☛ p. 146)

Danger

Danger of poisoning Exhaust gases are poisonous and inhaling them may 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 an enclosed space without an effective exhaust extraction system.

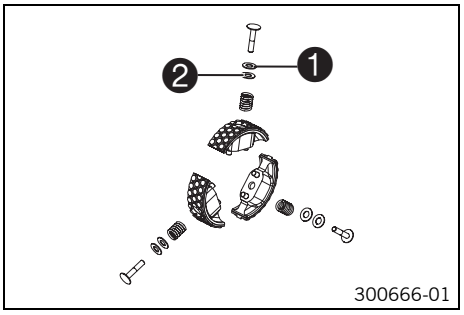
– Start the motorcycle.
– Slowly increase engine speed until the clutch begins to engage.
– Measure the engine speed.

Clutch engagement speed	7,200… 7,500 rpm

» If the specified value is not reached:
– Adjust the clutch engagement speed. (☛ p. 112)

Adjust the clutch engagement speed

– Check the clutch engagement speed. (☛ p. 112)
– Remove the centrifugal force clutch. (☛ p. 111)
– Dismantle the centrifugal clutch. (☛ p. 80)



– Correct the washer ❷ according to the measured value.

Guideline

A washer of 0.2 mm (0.008 in) changes the clutch engagement speed by about:	100 rpm

Info

The spacing washer ❶ of 1.7 mm (0.067 in) must always be fitted.
If you fit the washer ❷, the clutch engagement speed is increased.
If you remove the washer ❷, the clutch engagement speed is reduced.

– Assemble the centrifugal clutch. (☛ p. 80)
– Fit the centrifugal force clutch. (☛ p. 111)
– Check the clutch engagement speed. (☛ p. 112)

Draining the coolant

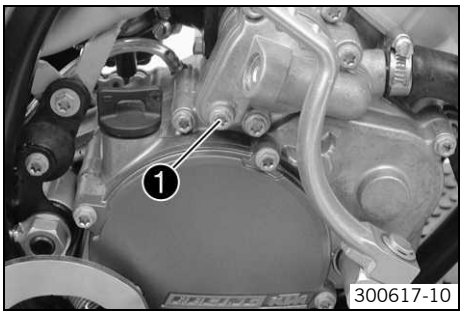
Warning
Danger of scalding During motorcycle operation, the coolant gets very hot and is under pressure.

– Do not remove the radiator cap, radiator hoses or other cooling system components when the engine is hot. Allow the engine and cooling system to cool down. In case of scalding, rinse immediately with lukewarm water.

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

– Avoid contact between coolant and skin, eyes and clothing. If it 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 coolant out of the reach of children.

Info
Carry out this work with a cold engine.



– Stand the motorcycle upright.
– Place a suitable container under the engine.
– Remove screw ❶. Remove the radiator cap.
– Completely drain the coolant.
– Mount screw ❶ with a new seal ring and tighten it.

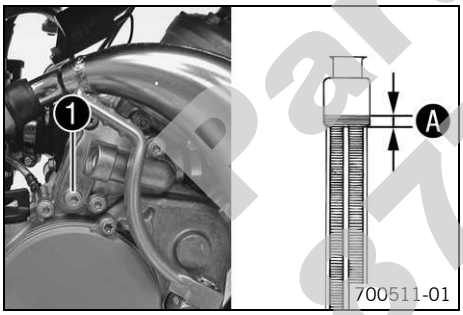
Guideline

Screw, water pump cover	M6	10 Nm (7.4 lbf ft)

Refilling coolant

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

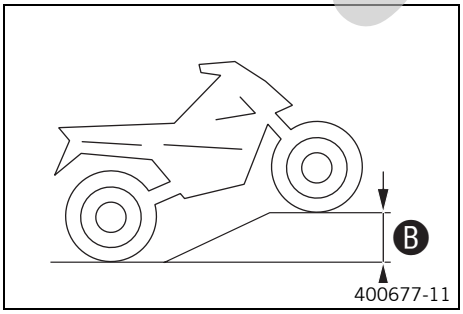
– Avoid contact between coolant and skin, eyes and clothing. If it gets into your eyes, rinse immediately with water and contact a doctor. Wash affected skin areas immediately with soap and water. If coolant is swallowed, contact a doctor immediately. Change clothes that have come into contact with coolants. Keep coolant 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	0.5 l (0.5 qt.)	Coolant (☛ p. 142)
		Coolant (mixed ready to use) (☛ p. 142)



– Position the vehicle as shown and secure it against rolling away. A height difference of Ⓑ must be reached.

Guideline

Height difference Ⓑ	100 cm (39.4 in)

Info
To ensure that all of the air can escape from the cooling system, the front of the vehicle must be jacked up. A poorly bled cooling system is less effective at cooling and may result in overheating of the engine.

– Place the vehicle back on a level surface.
– Add coolant to level Ⓐ.
– Mount the radiator cap.

– Make a short test ride.
– Check the coolant level. (☛ p. 115)

Checking the coolant level

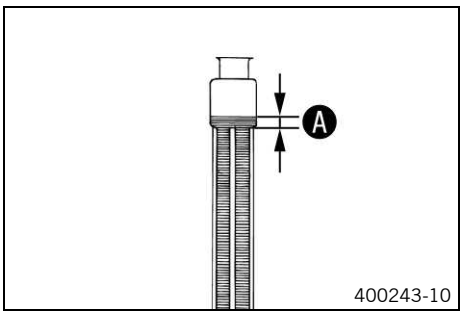
Warning
Danger of scalding During motorcycle operation, the coolant gets very hot and is under pressure.

– Do not remove the radiator cap, radiator hoses or other cooling system components when the engine is hot. Allow the engine and cooling system to cool down. In case of scalding, rinse immediately with lukewarm water.

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

– Avoid contact between coolant and skin, eyes and clothing. If it 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 coolant 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 Ⓐ 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. 142)

Alternative 2

Coolant (mixed ready to use) (☛ p. 142)

– Mount the radiator cap.

Checking the antifreeze and coolant level

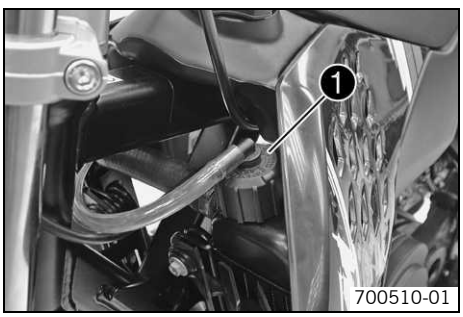
Warning
Danger of scalding During motorcycle operation, the coolant gets very hot and is under pressure.

– Do not remove the radiator cap, radiator hoses or other cooling system components when the engine is hot. Allow the engine and cooling system to cool down. In case of scalding, rinse immediately with lukewarm water.

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

– Avoid contact between coolant and skin, eyes and clothing. If it 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 coolant out of the reach of children.

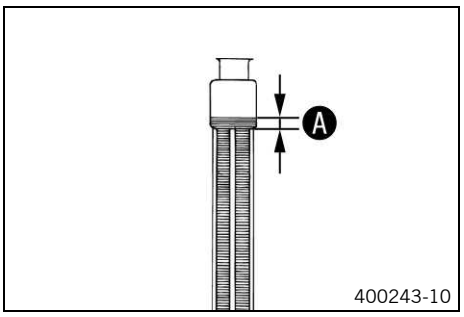
Info
Carry out this work with a cold engine.



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

» If the coolant level does not meet specifications:

– Correct the coolant level.

Alternative 1

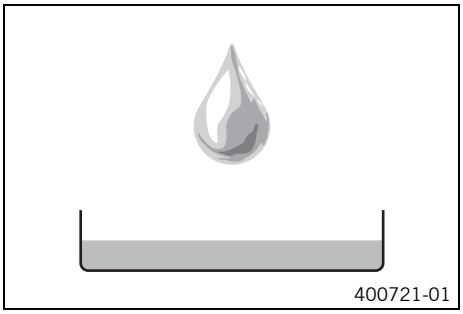
Coolant (☛ p. 142)

Alternative 2

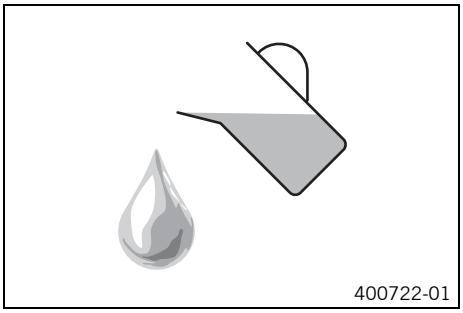
Coolant (mixed ready to use) (☛ p. 142)

– Mount the radiator cap.

Changing the gear oil


400721-01

– Drain the gear oil. (☛ p. 117)


400722-01

– Fill up with gear oil. (☛ p. 117)

Draining the gear oil

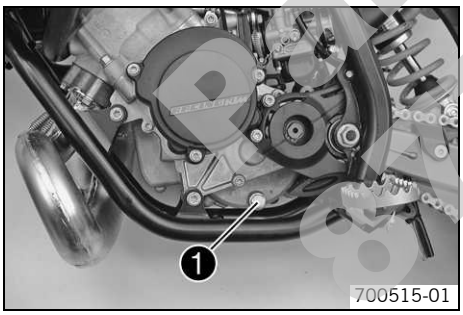
Warning
Danger of scalding Engine oil and gear oil get very hot when the motorcycle is ridden.

– Wear appropriate protective clothing and safety gloves. In case of burns, rinse immediately with lukewarm water.

Warning
Environmental hazard Hazardous substances cause environmental damage.

– Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

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



700515-01

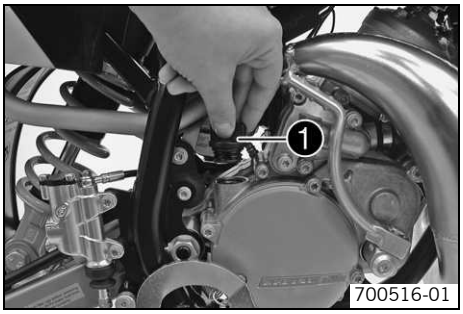
– Stand the motorcycle on its side stand on a horizontal surface.
– Place a suitable container under the engine.
– Remove the oil drain plug with magnet ❶.
– Completely drain the gear oil.
– Thoroughly clean the oil drain plug with magnet.
– Clean the sealing area on the engine.
– Mount and tighten the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

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 screw cap ❶ and fill up with gear oil.

Gear oil	0.20 l (0.21 qt.)	Gear oil (ATF Dexron 3) (☛ p. 142)

– Mount and tighten screw cap.

Danger

Danger of poisoning Exhaust gases are poisonous and inhaling them may result in unconsciousness and/or death.

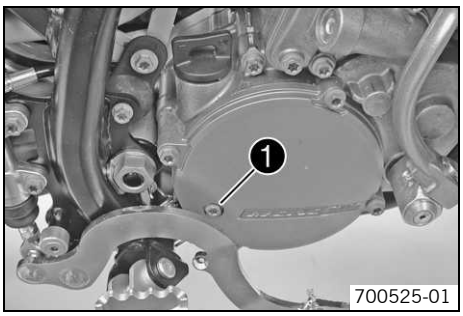
– When running the engine, always make sure there is sufficient ventilation, and do not start or run the engine in an enclosed space without an effective exhaust extraction system.

– Start the engine and check that it is oil-tight.
– Check the gear oil level. (☛ p. 118)

Checking the gear oil level

Info

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



– Stand the motorcycle upright on a horizontal surface.

Condition

The engine is cold.

– Remove gear oil level check screw ❶. Stand the motorcycle upright.
– Check the gear oil level.

A small amount of gear oil should flow out.

» If no gear oil flows out:

– Add gear oil. (☛ p. 118)

– Mount and tighten the gear oil level check screw.

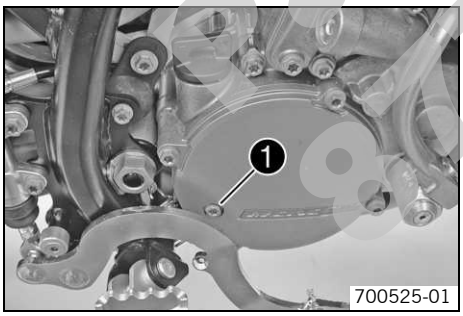
Guideline

Screw, gear oil level check	M6	10 Nm (7.4 lbf ft)

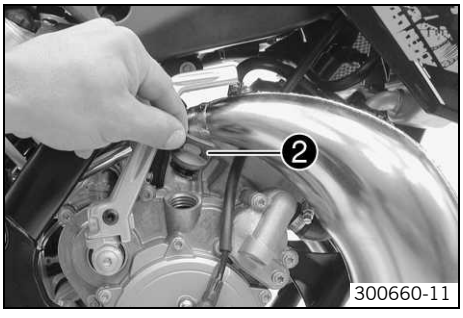
Adding gear oil

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.

Gear oil (ATF Dexron 3) (☛ p. 142)

– Mount and tighten the gear oil level check screw.

Guideline

Screw, gear oil level check	M6	10 Nm (7.4 lbf ft)

– Mount and tighten screw cap ❷.

Danger

Danger of poisoning Exhaust gases are poisonous and inhaling them may 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 an enclosed space without an effective exhaust extraction system.

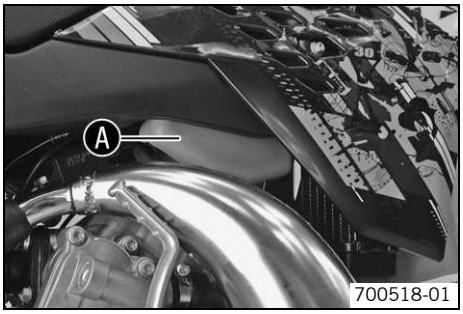
– Start the engine and check that it is oil-tight.

Filling up with oil (50 SX Mini)

Warning

Engine failure If the vehicle is run without 2-stroke oil in the tank, the result is engine failure.

– The oil tank must always be filled up to the **MIN** mark.



– Switch off the engine.
– Open the oil tank cap.
– Fill the oil tank at least up to the **MIN** mark Ⓐ.

Guideline

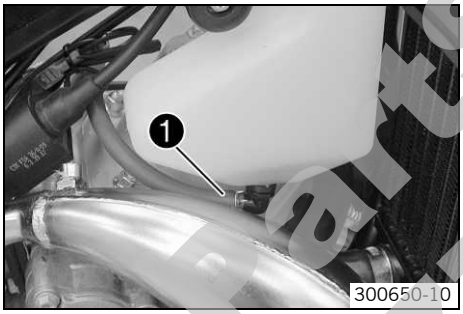
MIN mark		Sufficient for a single tank filling
Oil tank contents ca.	0.2 l (0.2 qt.)	2-stroke engine oil (☛ p. 142)

– Close the oil tank cap.

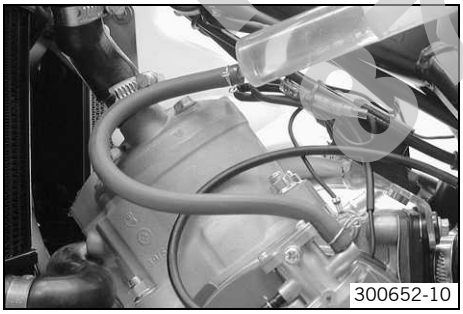
Bleeding the oil pump (50 SX Mini)

Condition

The fuel tank has been removed.

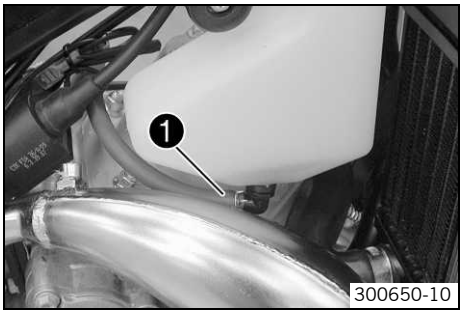


– Pull off oil line ❶.

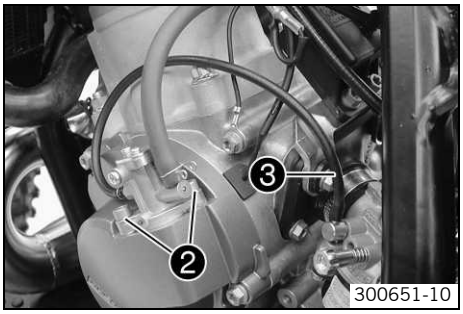


– Fill the oil line with a syringe.

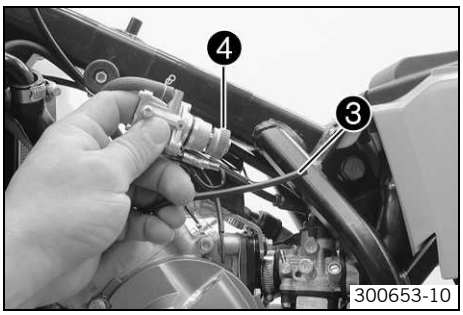
2-stroke engine oil (☛ p. 142)



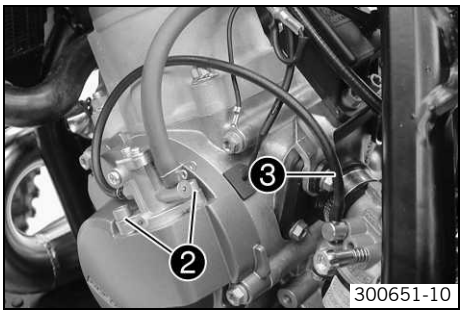
– Connect oil line ❶.



– Remove screws ❷.
– Take off the oil pump.
– Pull off oil line ❸ from the carburetor.



– Turn the oil pump gear ❹ counterclockwise until oil flows out of oil line ❸ without bubbles.



– Connect oil line ❸.
– Position the oil pump.
– Mount and tighten screws ❷.

Guideline

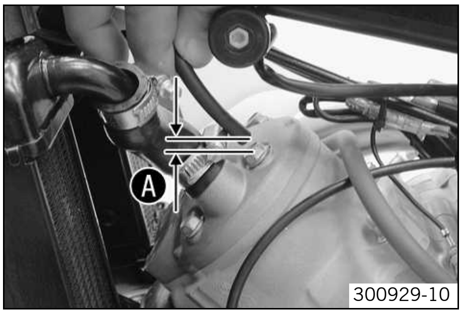
Screw, oil pump	M5	6 Nm (4.4 lbf ft)

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.



300929-10

– Remove the fuel tank. (☛ p. 42)

– 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 **A** from the ground.

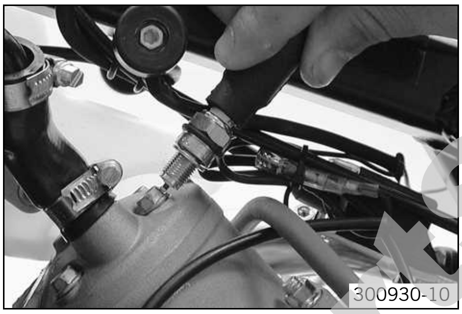
Guideline

Distance **A**	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 kill switch. (☛ p. 122)
    – Check the cable from the alternator to the ignition coil.
    – Check the ignition coil. (☛ p. 121)
    – Check the spark plug connector. (☛ p. 121)
    – Change the spark plug.


300930-10

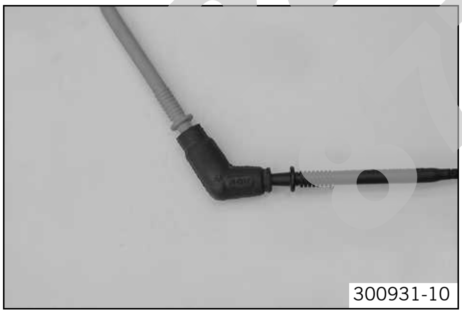
– Mount the spark plug connector back on the ignition wire. Turn out the spark plug and insert it into the spark plug connector. Keep the spark plug connected to ground.

– 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:
    – Change the spark plug.

Checking the spark plug connector


300931-10

– Measure the removed spark plug connector with a multimeter.

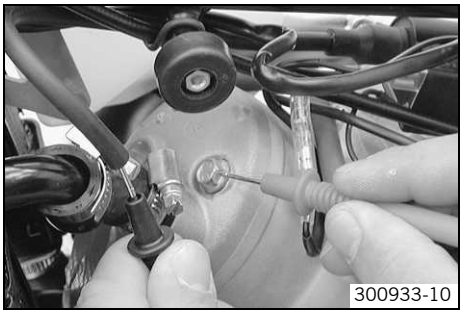
Spark plug connector	
Resistance at: 20 °C (68 °F)	4.3… 5.7 kΩ

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

Checking the ignition coil

Condition
Fuel tank removed.

– Remove the spark plug connector.

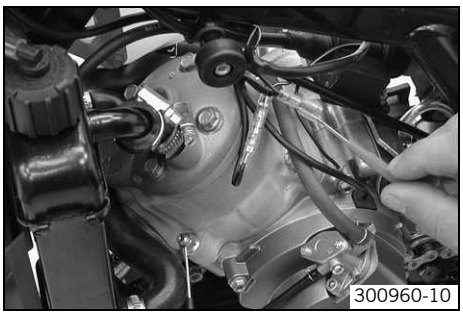

300933-10

– Measure high voltage output of ignition coil against ground.

Ignition coil	
Resistance of secondary winding at: 20 °C (68 °F)	2.025... 2.475 kΩ

» If the measured value differs from the setpoint value:
– Change the ignition coil.

– Fit and connect spark plug connector.


300960-10

– Connect the special tool to the multimeter.

Peak voltage adapter (58429042000) (☛ p. 149)

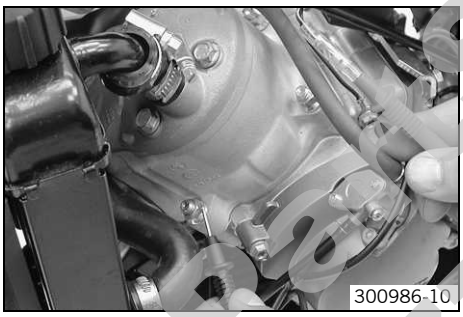
Info
When using the peak voltage adapter, the measurement range of the multimeter must be set to DCV.

– Disconnect the ignition coil.
– Connect the black measuring lead of the special tool to ground. Connect the red measuring lead to the input plug of the ignition coil.
– Activate the kickstarter.

Ignition coil	
Ignition coil input connector - ground	≥ 150 V

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

Checking the kill switch


300986-10

Condition
Fuel tank removed.

– Disconnect ignition coil and kill switch.
– Measure resistance on cable of kill switch to ground.

Resistance - kill switch not activated	∞

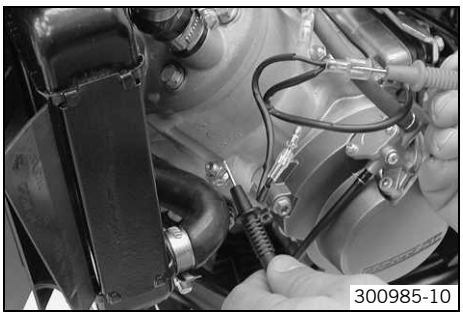
» If the displayed value does not equal the specification:
– Check the wiring harness.
– Change the kill switch.

– Activate the kill switch.

Resistance - kill switch activated	0 Ω

» If the displayed value does not equal the specification:
– Check the wiring harness.
– Change the kill switch.

Checking the alternator


300985-10

Condition
The fuel tank has been removed.

– Disconnect the ignition coil and kill switch.
– Measure the resistance of the alternator against ground.

Alternator	
Resistance at: 20 °C (68 °F)	450... 500 Ω

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

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.
	Fuel feed interrupted	– Check the fuel tank breather. – Clean the fuel tap. **(50 SX Junior, 50 SX Mini)** – Check/set the carburetor components. (☛ p. 99) **(50 SX)** – Check/set the carburetor components. (☛ p. 98)
	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. 121)
	Short circuit cable in cable harness frayed, kill switch defective	– Check the kill switch. (☛ p. 122)
	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	**(50 SX Junior, 50 SX Mini)** – Check/set the carburetor components. (☛ p. 99) **(50 SX)** – Check/set the carburetor components. (☛ p. 98)
Engine has no idle	Idling jet blocked	**(50 SX Junior, 50 SX Mini)** – Check/set the carburetor components. (☛ p. 99) **(50 SX)** – Check/set the carburetor components. (☛ p. 98)
	Adjusting screws on carburetor distorted	**(50 SX Junior, 50 SX Mini)** – Carburetor - adjust the idle speed. (☛ p. 109) **(50 SX)** – Carburetor - adjust the idle speed. (☛ p. 108)
	Spark plug defective	– Change spark plug.
	Ignition system defective	– Check the ignition coil. (☛ p. 121) – Check the spark plug connector. (☛ p. 121)
Engine does not speed up	Carburetor running over because float needle dirty or worn	**(50 SX Junior, 50 SX Mini)** – Check/set the carburetor components. (☛ p. 99) **(50 SX)** – Check/set the carburetor components. (☛ p. 98)
	Loose carburetor jets	**(50 SX Junior, 50 SX Mini)** – Check/set the carburetor components. (☛ p. 99) **(50 SX)** – Check/set the carburetor components. (☛ p. 98)

Faults	Possible cause	Action
Engine does not speed up	Fault in ignition system	– Check the ignition system. (☛ p. 121)
Engine has too little power	Fuel feed interrupted	– Check the fuel tank breather. – Clean the fuel tap. **(50 SX Junior, 50 SX Mini)** – Check/set the carburetor components. (☛ p. 99) **(50 SX)** – Check/set the carburetor components. (☛ p. 98)
	Air filter very dirty	– Clean the air filter. (☛ p. 41)
	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.
	Ignition system defective	– Check the ignition coil. (☛ p. 121) – Check the spark plug connector. (☛ p. 121)
	Diaphragm or reed valve housing damaged	– Check the diaphragm and reed valve housing.
	Noticeable wear	– Overhaul the engine.
	Clutch engagement speed too low or too high	– Check the clutch engagement speed. (☛ p. 112)
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.
	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. 115)
	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. 114) – Refill the coolant. (☛ p. 114)
	Damaged cylinder head or cylinder head gasket	– Check the cylinder head or cylinder head gasket.
	Bent radiator hose	– Change the radiator hose.
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. 118)
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
Displacement	49.0 cm³ (2.99 cu in)
Stroke	40 mm (1.57 in)
Bore	39.5 mm (1.555 in)
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 (50 SX, 50 SX Junior)	Mixture oil lubrication
Engine lubrication (50 SX Mini)	Separate lubrication
Primary transmission	61:33 straight cut spur gear
Clutch	3-lining automatic clutch on the main shaft / centrifugal force
Gearbox	Rigid 1-stage reduction gear
Transmission ratio	19:42
Ignition	SELETTRA 2p D36
Spark plug	NGK LR 8 B
Spark plug electrode gap	0.60 mm (0.0236 in)
Cooling	Water-cooled
Starting aid	Kickstarter

Capacity - gear oil

Gear oil	0.20 l (0.21 qt.)	Gear oil (ATF Dexron 3) (☛ p. 142)

Capacity - coolant

Coolant	0.5 l (0.5 qt.)	Coolant (☛ p. 142)
		Coolant (mixed ready to use) (☛ p. 142)

Clutch shoe height	≥ 98.00 mm (≥ 3.8583 in)
Piston - diameter	
Size 1	39.455... 39.465 mm (1.55334... 1.55374 in)
Size 2	39.465... 39.475 mm (1.55374... 1.55413 in)
Piston/cylinder - mounting clearance	
New condition	0.042... 0.065 mm (0.00165... 0.00256 in)
Wear limit	0.10 mm (0.0039 in)
Piston ring end gap	
Piston ring	≤ 0.60 mm (≤ 0.0236 in)
Cylinder - bore diameter	
Size A	39.505... 39.517 mm (1.55531... 1.55578 in)
Size B	39.517... 39.530 mm (1.55578... 1.5563 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	≤ 0.10 mm (≤ 0.0039 in)
X-distance (distance from adjusting gauge to piston)	0... 0.10 mm (0... 0.0039 in)

Screw, kickstarter	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**
Screw, oil pump (50 SX Mini)	M5	6 Nm (4.4 lbf ft)	–
Screw, stator clamp	M5	6 Nm (4.4 lbf ft)	–
Screw, water pump wheel	M5	5 Nm (3.7 lbf ft)	**Loctite® 243™**
Bleeder flange of engine case	M6	4 Nm (3 lbf ft)	**Loctite® 243™**
Screw, alternator cover	M6	6 Nm (4.4 lbf ft)	–
Screw, clutch cover	M6	10 Nm (7.4 lbf ft)	–
Screw, clutch spring	M6	7 Nm (5.2 lbf ft)	–
Screw, engine case	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)	–
Screw, gear oil level check	M6	10 Nm (7.4 lbf ft)	–
Screw, ignition coil	M6	5 Nm (3.7 lbf ft)	–
Screw, intake flange	M6	5 Nm (3.7 lbf ft)	**Loctite® 243™**
Screw, water pump cover	M6	10 Nm (7.4 lbf ft)	–
Screw, cylinder head	M7	18 Nm (13.3 lbf ft)	–
Nuts, cylinder base	M8	20 Nm (14.8 lbf ft)	–
Screw, clutch drum	M8	30 Nm (22.1 lbf ft)	**Loctite® 243™**
Stud bolt, cylinder base	M8	10 Nm (7.4 lbf ft)	–
Spark plug	M10x1	10... 12 Nm (7.4... 8.9 lbf ft)	–
Nut, primary gear	M10x1.25	40 Nm (29.5 lbf ft)	**Loctite® 243™**
Nut, rotor	M10x1.25	15 Nm (11.1 lbf ft)	–
Oil drain plug with magnet	M12x1.5	20 Nm (14.8 lbf ft)	–

50 SX

Carburetor type	Dell`Orto PHBG 19BS
Needle position	3rd position from top
Idle mixture adjusting screw	
Open	3 turns
Main jet	85
Jet needle	W9
Idling jet	58
Needle jet	260AU
Throttle slide	60
Cold start jet	60

50 SX Junior

Carburetor type	Dell`Orto PHVA 14DS
Needle position	3rd position from top
Idle air adjusting screw	
Open	3.5 turns
Main jet	70
Jet needle	A10
Idling jet	45
Needle jet	211FA
Throttle slide	40
Cold start jet	60

50 SX Mini

Carburetor type	Dell`Orto PHVA 12XS
Needle position	4th position from top
Idle air adjusting screw	
Open	1 turn
Main jet	60
Jet needle	A10
Idling jet	35
Needle jet	211FA
Throttle slide	40
Cold start jet	60

Frame	Central tube frame of chrome molybdenum steel tubing, powder-coated
Fork	**Marzocchi**
Shock absorber	**WP Suspension** 3614 BAEM
Suspension travel (50 SX)	
Front	185 mm (7.28 in)
Rear	185 mm (7.28 in)
Suspension travel (50 SX Junior)	
front	140 mm (5.51 in)
Rear	205 mm (8.07 in)
Suspension travel (50 SX Mini)	
Front	110 mm (4.33 in)
Rear	171 mm (6.73 in)
Fork offset	14 mm (0.55 in)
Brake system	
Front	Disc brake, brake caliper, fixed
Rear	Disc brake, brake caliper, fixed
Brake disc diameters	
Front	160 mm (6.3 in)
Rear	140 mm (5.51 in)
Brake discs - wear limits	
Front	2.2 mm (0.087 in)
Rear	2.2 mm (0.087 in)
Tire air pressure off road	
Front	1.0 bar (15 psi)
Rear	1.0 bar (15 psi)
Secondary drive ratio (50 SX)	11:40
Secondary drive ratio (50 SX Junior)	10:40
Secondary drive ratio (50 SX Mini)	10:42
Chain	1/2 x 3/16”
Rear sprockets available	38, 39, 40, 41, 42
Steering head angle (50 SX)	66°
Steering head angle (50 SX Junior, 50 SX Mini)	67.4°
Wheelbase (50 SX)	1,032 mm (40.63 in)
Wheelbase (50 SX Junior)	910 mm (35.83 in)
Wheelbase (50 SX Mini)	914 mm (35.98 in)
Seat height unloaded (50 SX)	684 mm (26.93 in)
Seat height unloaded (50 SX Junior)	607 mm (23.9 in)
Seat height unloaded (50 SX Mini)	558 mm (21.97 in)
Ground clearance unloaded (50 SX)	252 mm (9.92 in)
Ground clearance unloaded (50 SX Junior)	220 mm (8.66 in)
Ground clearance unloaded (50 SX Mini)	184 mm (7.24 in)
Weight without fuel, approx. (50 SX)	39.8 kg (87.7 lb.)
Weight without fuel, approx. (50 SX Junior, 50 SX Mini)	39.0 kg (86 lb.)

Tires

Validity	Front tire	Rear tire
(50 SX)	**60/100 - 12 36M TT** Pirelli SCORPION MX Mid Soft 32 NHS	**2.75 - 10 37J TT** Pirelli SCORPION MX Mid Soft 32 NHS
(50 SX Junior, 50 SX Mini)	**2.50 - 10 33J TT** Pirelli SCORPION MX Mid Soft 32 NHS	**2.75 - 10 37J 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. (50 SX, 50 SX Junior)	2.3 l (2.4 qt.)	Super unleaded gasoline, mixed with 2-stroke engine oil (1:60) (☛ p. 143)
Fuel tank capacity, approx. (50 SX Mini)	2.0 l (2.1 qt.)	Super unleaded (ROZ 95 / RON 95 / PON 91) (☛ p. 143)

50 SX

Fork part number	45101000644
Fork	**Marzocchi**
Spring rate	
Weight of rider: 25... 35 kg (55... 77 lb.)	2 N/mm (11 lb/in)
Air chamber length	100±2.5 mm (3.94±0.098 in)
Fork length	692 mm (27.24 in)

Fork oil	210 ml (7.1 fl. oz.)	Fork oil (SAE 7.5) (☛ p. 142)

50 SX Junior

Fork part number	45201000133
Fork	**Marzocchi**
Spring rate	
Weight of rider: 25... 35 kg (55... 77 lb.)	2 N/mm (11 lb/in)
Air chamber length	100±2.5 mm (3.94±0.098 in)
Fork length	607 mm (23.9 in)

Fork oil	210 ml (7.1 fl. oz.)	Fork oil (SAE 7.5) (☛ p. 142)

50 SX Mini

Fork part number	45201000233
Fork	**Marzocchi**
Spring rate	
Weight of rider: 25... 35 kg (55... 77 lb.)	2 N/mm (11 lb/in)
Air chamber length	100±2.5 mm (3.94±0.098 in)
Fork length	578 mm (22.76 in)

Fork oil	210 ml (7.1 fl. oz.)	Fork oil (SAE 7.5) (☛ p. 142)

50 SX

Shock absorber part number	03.18.9E.02
Shock absorber	**WP Suspension** 3614 BAEM
Rebound damping	
Standard	10 clicks
Spring preload	
Standard	3 mm (0.12 in)
Spring rate	
Weight of rider: < 25 kg (< 55 lb.)	30 N/mm (171 lb/in)
Weight of rider: 25... 35 kg (55... 77 lb.)	35 N/mm (200 lb/in)
Weight of rider: > 40 kg (> 88 lb.)	40 N/mm (228 lb/in)
Spring length	130 mm (5.12 in)
Gas pressure	10 bar (145 psi)
Static sag	20 mm (0.79 in)
Riding sag	45... 55 mm (1.77... 2.17 in)
Fitted length	275 mm (10.83 in)

Shock absorber oil	Shock absorber oil (SAE 2.5) (50180342S1) (☛ p. 143)

50 SX Junior

Shock absorber part number	03.18.9E.01
Shock absorber	**WP Suspension** 3614 BAEM
Rebound damping	
Standard	12 clicks
Spring preload	
Standard	5 mm (0.2 in)
Spring rate	
Weight of rider: < 25 kg (< 55 lb.)	65 N/mm (371 lb/in)
Weight of rider: 25... 35 kg (55... 77 lb.)	75 N/mm (428 lb/in)
Weight of rider: > 35 kg (> 77 lb.)	85 N/mm (485 lb/in)
Spring length	130 mm (5.12 in)
Gas pressure	10 bar (145 psi)
Static sag	15 mm (0.59 in)
Riding sag	40... 50 mm (1.57... 1.97 in)
Fitted length	255 mm (10.04 in)

Shock absorber oil	Shock absorber oil (SAE 2.5) (50180342S1) (☛ p. 143)

50 SX Mini

Shock absorber part number	03.18.9E.04
Shock absorber	**WP Suspension** 3614 BAEM
Rebound damping	
Standard	12 clicks
Spring preload	
Standard	5 mm (0.2 in)
Spring rate	
Weight of rider: < 25 kg (< 55 lb.)	65 N/mm (371 lb/in)
Weight of rider: 25... 35 kg (55... 77 lb.)	75 N/mm (428 lb/in)
Weight of rider: > 35 kg (> 77 lb.)	85 N/mm (485 lb/in)
Spring length	120 mm (4.72 in)
Gas pressure	10 bar (145 psi)
Static sag	15 mm (0.59 in)

Riding sag	40... 50 mm (1.57... 1.97 in)
Fitted length	245 mm (9.65 in)

Shock absorber oil	Shock absorber oil (SAE 2.5) (50180342S1) (☛ p. 143)

Spoke nipple	M3.5	3 Nm (2.2 lbf ft)	–
Rear brake caliper screw	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**
Remaining nuts, chassis	M6	15 Nm (11.1 lbf ft)	–
Screw, ball joint of push rod on foot brake cylinder	M6	10 Nm (7.4 lbf ft)	–
Screw, bottom triple clamp	M6	10 Nm (7.4 lbf ft)	–
Screw, front brake disc	M6	15 Nm (11.1 lbf ft)	**Loctite® 243™**
Screw, rear brake disc	M6	15 Nm (11.1 lbf ft)	**Loctite® 243™**
Screw, rear sprocket	M7	15 Nm (11.1 lbf ft)	**Loctite® 243™**
Engine carrying screw	M8	25 Nm (18.4 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, front brake caliper	M8	20 Nm (14.8 lbf ft)	**Loctite® 243™**
Screw, handlebar clamp	M8	20 Nm (14.8 lbf ft)	–
Screw, top triple clamp	M8	25 Nm (18.4 lbf ft)	–
Nut, swingarm pivot	M10	45 Nm (33.2 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, handlebar support	M10	40 Nm (29.5 lbf ft)	**Loctite® 243™**
Screw, top shock absorber	M10	45 Nm (33.2 lbf ft)	–
Front wheel spindle nut	M12x1	40 Nm (29.5 lbf ft)	–
Nut, rear wheel spindle	M12x1	40 Nm (29.5 lbf ft)	–
Nut, steering stem	M20x1.5	10 Nm (7.4 lbf ft)	–
Steering head nut	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, socket connects, throttle cables, and bearings, etc., and can damage or destroy these parts.

Warning

Environmental hazard Hazardous substances cause environmental damage.

– Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable 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 brush.

Motorcycle cleaner (☛ p. 145)

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.

Warning

Danger of accidents Reduced braking efficiency 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. 50)
– 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. 144)

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

Cleaning and polishing materials for metal, rubber and plastic (☛ p. 144)

– To prevent electrical problems, treat electric contacts and switches with contact spray.

Contact spray (☛ p. 144)

Storage

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.

Info

If you want to put the motorcycle into storage for a longer period, take the following actions.
Before storing the motorcycle, check all parts for function and wear. If service, repairs or replacements are necessary, you should do this during the storage period (less workshop overload). In this way, you can avoid long workshop waiting times at the start of the new season.

– Clean the motorcycle. (☛ p. 135)
– Change the gear oil. (☛ p. 117)
– Check the antifreeze and coolant level. (☛ p. 115)
– Drain the fuel from the tank into a suitable container.
– Check the tire air pressure. (☛ p. 47)
– Store the vehicle in a dry location that is not subject to large fluctuations in temperature.

Info

KTM recommends jacking up the motorcycle.

– Jack up the motorcycle. (☛ p. 7)
– Cover the vehicle with a tarp or similar cover that is permeable to air.

Info

Do not use non-porous materials since they prevent humidity from escaping, thus causing corrosion.
Avoid running the engine for a short time only. Since the engine cannot warm up properly, the water vapor produced during combustion condenses and causes valves and exhaust system to rust.

Putting into operation after storage

– Remove the motorcycle from the work stand. (☛ p. 7)
– Fill up with fuel.
– Checks before putting into operation.
– Take a test ride.

Important maintenance work that must be done in an authorized KTM workshop

		S20A	S40A
Engine	Change the gear oil. (☛ p. 117)		•
	Check spark plug and replace if required.	•	•
	Clean spark plug connectors and check for tightness.	•	•
	Check engine mounting screws for tightness.	•	•
	Check the clutch engagement speed. (☛ p. 112)	•	•
Carburetor	Check intake flange and carburetor connection boot 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. 115)		•
	Check exhaust system for leakage and looseness.	•	•
	Check throttle cables for damage, smooth operation and routing without sharp bends.		•
	Clean the air filter. (☛ p. 41)	•	•
Brakes	Check the front brake linings. (☛ p. 56)		•
	Check the rear brake linings. (☛ p. 61)		•
	Check the brake discs. (☛ p. 47)		•
	Check the front brake fluid level. (☛ p. 53)	•	•
	Check the rear brake fluid level. (☛ p. 59)	•	•
	Check brake lines for damage and leakage.		•
	Check the play of the hand brake lever. (☛ p. 53)	•	•
	Check the free travel of the foot brake lever. (☛ p. 58)	•	•
	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 dust boots of fork legs. (☛ p. 9)	•	•
	Check swingarm bearing.		•
	Check play of steering head bearing. (☛ p. 18)		•
	Check all screws to see if they are tight.	•	•
Wheels	Check the spoke tension. (☛ p. 48)	•	•
	Check rim run-out.	•	•
	Check the tire condition. (☛ p. 47)	•	•
	Check the tire air pressure. (☛ p. 47)	•	•
	Check the chain wear.	•	•
	Check the chain tension. (☛ p. 50)	•	•
	Clean the chain. (☛ p. 50)	•	•
	Check wheel bearing for play.	•	•
	Clean and grease adjusting screws of chain adjuster.	•	•

S20A: Every 20 operating hours
S40A: Every 40 operating hours

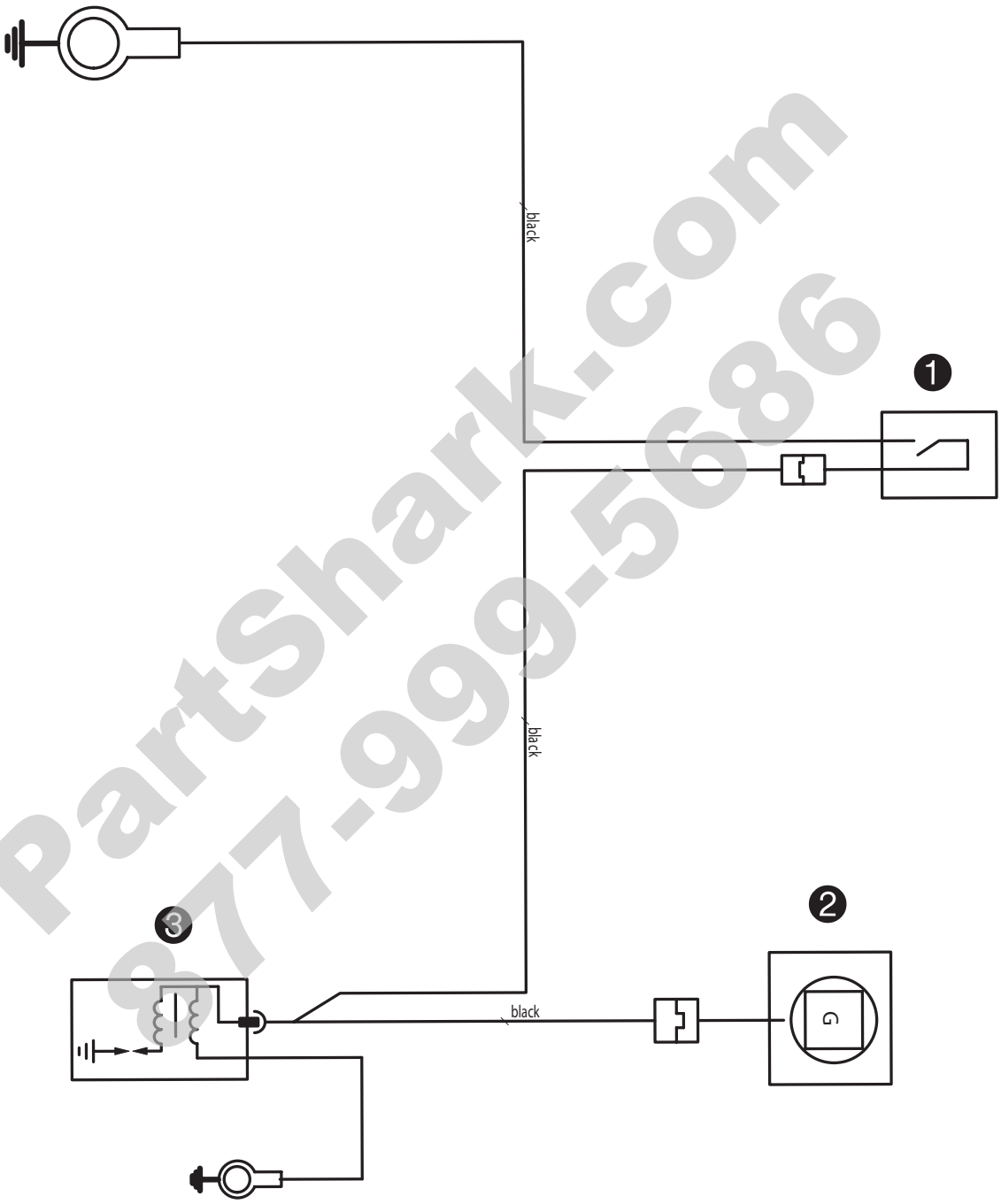
Important maintenance work that must be done in an authorized KTM workshop (as additional order)

	S20A	S40A	S80A	J1A
Check/set the carburetor components. (50 SX Junior, 50 SX Mini) (☛ p. 99)				•
Check/set the carburetor components. (50 SX) (☛ p. 98)				•
Check the reed valve housing, diaphragm and intake flange. (☛ p. 82)	•	•	•	
Check/measure the clutch. (☛ p. 80)	•	•	•	
Checking wear of clutch drum.	•	•	•	
Determine the piston/cylinder mounting clearance. (☛ p. 82)	•	•	•	
Check the seating of the piston pin.	•	•	•	
Check main bearing of the crankshaft.	•	•	•	

	S20A	S40A	S80A	J1A
Check radial clearance of conrod bearing.	•	•	•	
Change crankshafts and conrod bearings.		•	•	
Service the fork. (☛ p. 10)		•	•	
Service the shock absorber. (☛ p. 25)			•	
Clean and lubricate swingarm bearing.				•
Grease the steering head bearing. (☛ p. 17)				•
Change the glass fiber yarn filling of the main silencer.	•	•	•	
Change the front brake fluid. (☛ p. 55)				•
Change the rear brake fluid. (☛ p. 60)				•

S20A: Every 20 operating hours
S40A: Every 40 operating hours
S80A: Every 80 operating hours
J1A: Annually

Wiring diagram



300929-01

Components	
1	Kill switch
2	Alternator
3	Ignition coil

Cable colors	
black	Black

2-stroke engine oil

According to
– JASO FC (☛ p. 153)

Guideline
– Only use high quality 2-stroke engine oil of a well-known brand. KTM recommends **Motorex®** products.

Fully synthetic

Supplier
Motorex®
– **Cross Power 2T**

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 (also in countries with high temperatures). 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 inhibitor/antifreeze 50 % distilled water

Coolant (mixed ready to use)

Antifreeze	−40 °C (−40 °F)

Supplier
Motorex®
– **Anti Freeze**

Fork oil (SAE 7.5)

According to
– SAE (☛ p. 153) (SAE 7.5)

Guideline
– Use only oils that comply with the specified standards (see specifications on the container) and that possess the corresponding properties. KTM recommends **Motorex®** products.

Supplier
Motorex®
– **Racing Fork Oil**

Gear oil (ATF Dexron 3)

According to
– Dexron III (ATF Dexron 3)

Guideline
– Use only ATF gear oils that comply with the specified standards (see specifications on the container) and that possess the corresponding properties. KTM recommends **Motorex®** products.

Supplier
Motorex®
– **ATF Dexron 3**

Shock absorber oil (SAE 2.5) (50180342S1)

According to

– SAE (☛ p. 153) (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 (ROZ 95 / RON 95 / PON 91)

According to

– DIN EN 228 (ROZ 95 / RON 95 / PON 91)

Super unleaded gasoline, mixed with 2-stroke engine oil (1:60)

According to

– DIN EN 228

– JASO FC (☛ p. 153) (1:60)

Mixture ratio

1:60	2-stroke engine oil (☛ p. 142) Super unleaded (ROZ 95 / RON 95 / PON 91) (☛ p. 143)

Air filter cleaner

Guideline

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Twin Air Dirt Bio Remover**

Carburetor cleaner

Guideline

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Carburetor**

Chain cleaner

Guideline

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Chain Clean 611**

Cleaning and polishing materials for metal, rubber and plastic

Guideline

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Protect & Shine 645**

Contact spray

Guideline

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Accu Contact**

Long-life grease

Guideline

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Fett 2000**

Lubricant (T511)

Guideline

– KTM recommends **Lubcon®** products.

Supplier
Lubcon®

– **Turmsilon® GTI 300 P**

Lubricant (T158)

Guideline

– KTM recommends **Lubcon®** products.

Supplier
Lubcon®

– **Turmogrease® PP 300**

Lubricant (T625)

Guideline

– KTM recommends **Molykote®** products.

Supplier

Molykote®

– **33 Medium**

Motorcycle cleaner

Guideline

– KTM recommends **Motorex®** products.

Supplier

Motorex®

– **Moto Clean 900**

Off-road chain spray

Guideline

– KTM recommends **Motorex®** products.

Supplier

Motorex®

– **Chain Lube 622**

Oil for foam air filter

Guideline

– KTM recommends **Motorex®** products.

Supplier

Motorex®

– **Twin Air Liquid Bio Power**

Universal oil spray

Guideline

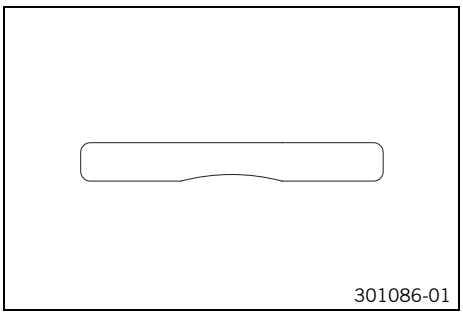
– KTM recommends **Motorex®** products.

Supplier

Motorex®

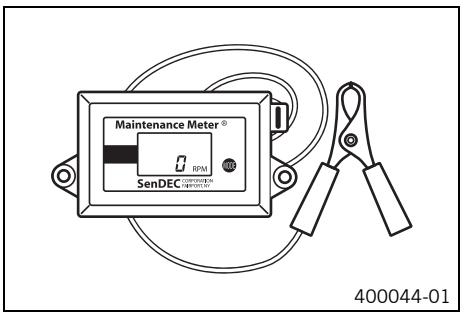
– **Joker 440 Universal**

Adjustment gauge



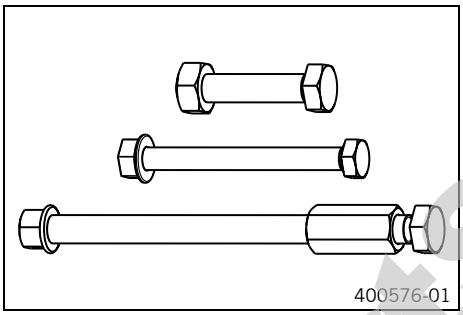
Art. no.: 45129006000

Tachometer



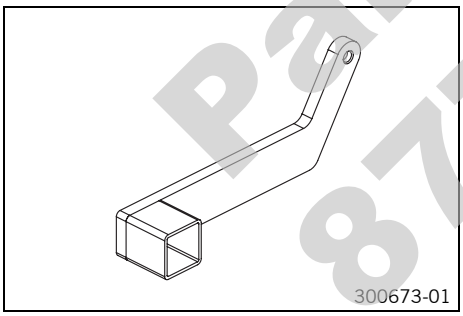
Art. no.: 45129075000

Fitting for work stand



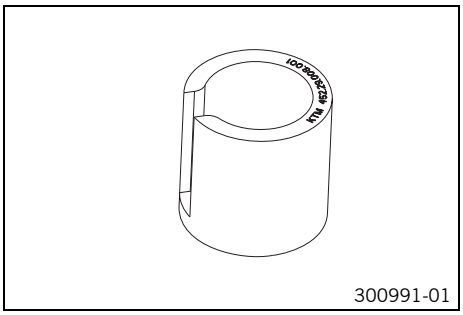
Art. no.: 45229001060

Holder of engine work stand



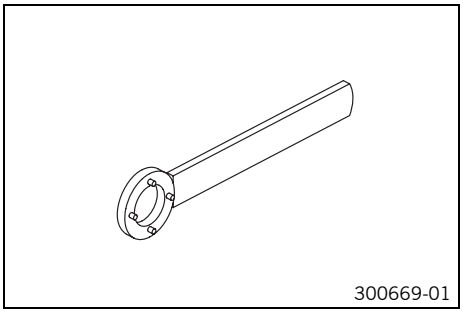
Art. no.: 45229001070

Bushing, crankshaft pressing device



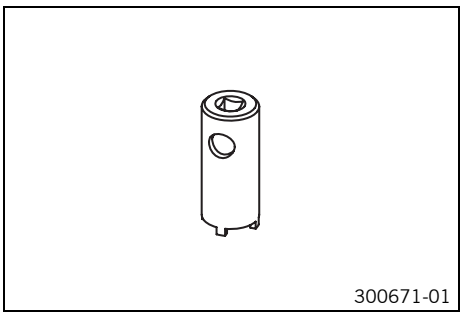
Art. no.: 45229008001

Holding spanner, rotor


300669-01

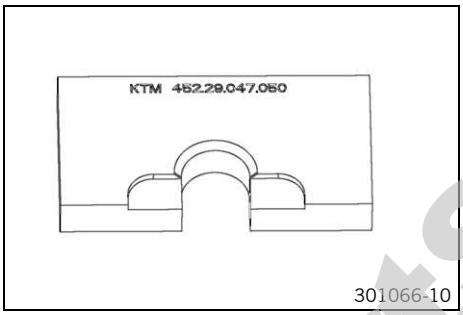
Art. no.: 45229012000

Mortise key


300671-01

Art. no.: 45229021000

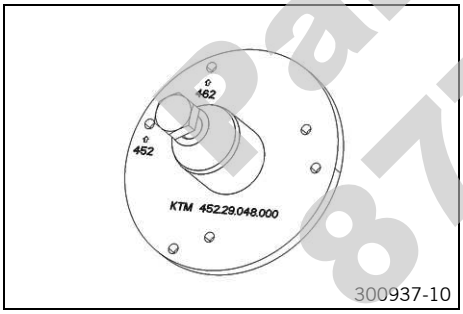
Press plate



301066-10

Art. no.: 45229047050

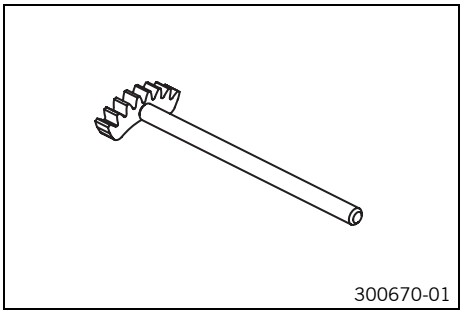
Extractor



300937-10

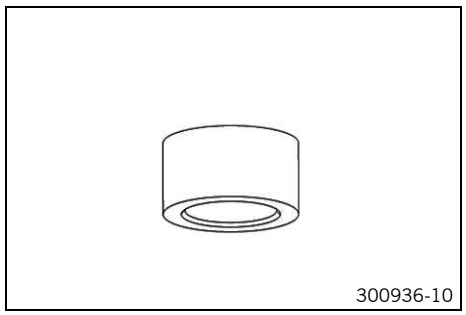
Art. no.: 45229048000

Gear segment


300670-01

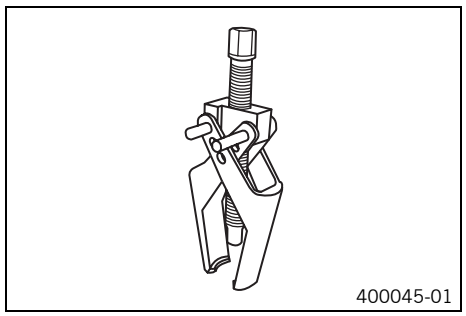
Art. no.: 45229081000

Protecting sleeve



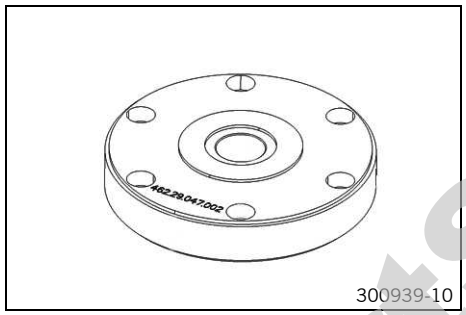
Art. no.: 45229090000

Extractor



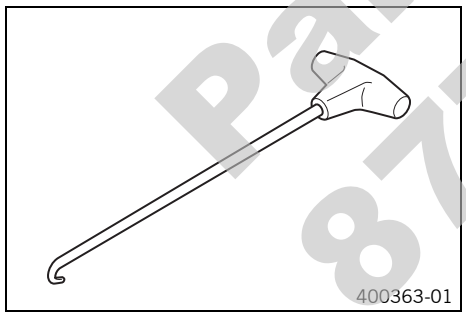
Art. no.: 46129021000

Anchor plate



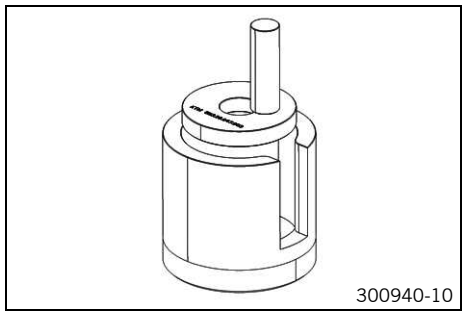
Art. no.: 46229047002

Spring hooks



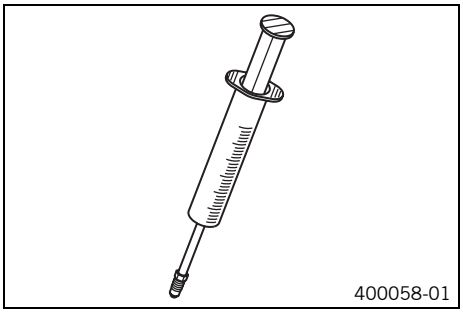
Art. no.: 50305017000

Pressing device, crankshaft, complete



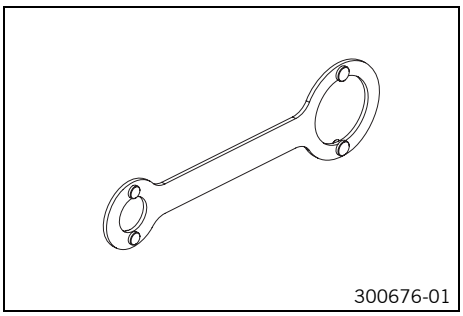
Art. no.: 50329047000

Bleed syringe



Art. no.: 50329050000

Holding spanner

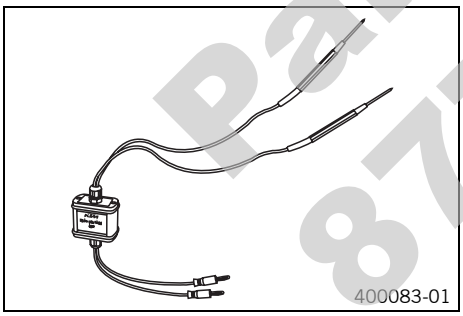


Art. no.: 54629012100

Work stand

Art. no.: 54829055000

Peak voltage adapter

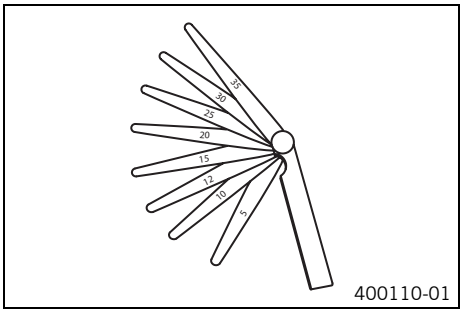


Art. no.: 58429042000

Torque wrench with various accessories in set

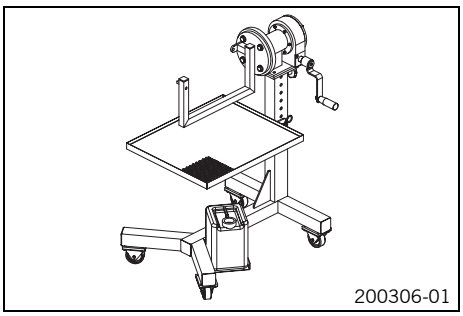
Art. no.: 58429094000

Feeler gauge



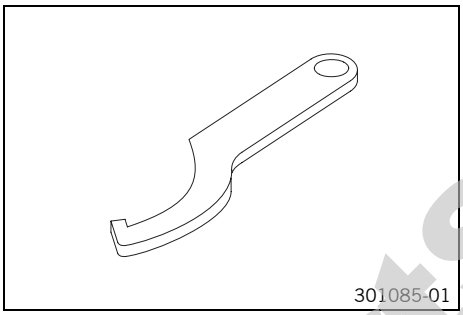
Art. no.: 59029041100

Engine work stand



Art. no.: 61229001000

Hook wrench



Art. no.: T106S

Pin

Art. no.: T120

Pressing tool

Art. no.: T1206

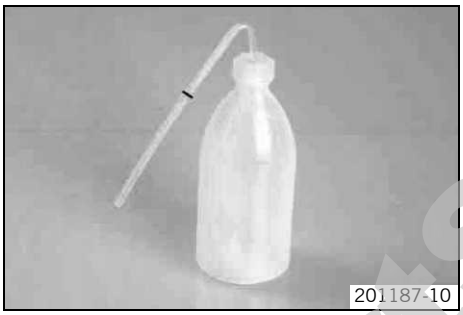
Pressing tool

Art. no.: T1207S

Pressing tool

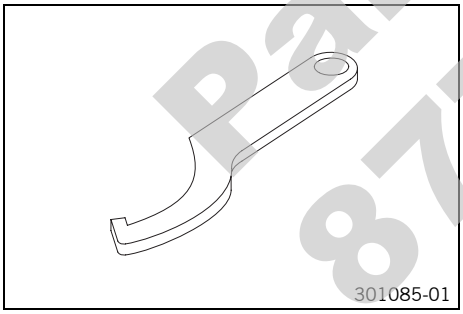
Art. no.: T129

Squeeze bottle



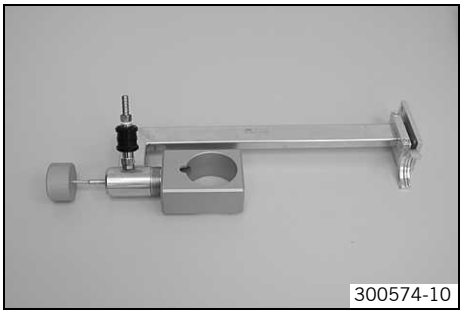
Art. no.: T137S

Hook wrench



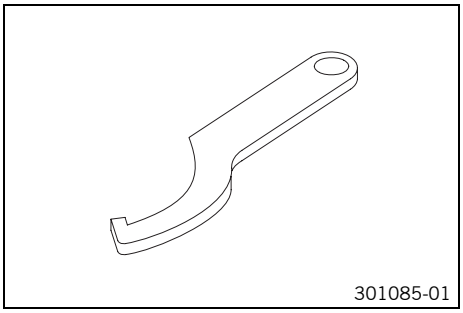
Art. no.: T1533

Nitrogen filling tool



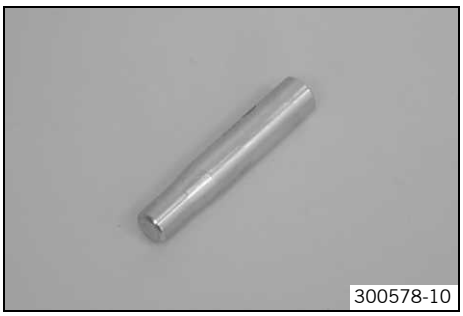
Art. no.: T170S1

Hook wrench



Art. no.: T304

Mounting sleeve



Art. no.: T313

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.

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.

3206060en

07/2009 Photo: Mitterbauer

KTM-Sportmotorcycle AG
5230 Mattighofen/Austria
http://www.ktm.com