REPAIR MANUAL 2011

250 EXC EU
250 EXC SIX DAYS EU
250 EXC Factory Edition EU
250 EXC AUS
250 XC-W USA
300 EXC EU
300 EXC SIX DAYS EU
300 EXC Factory Edition EU
300 EXC AUS
300 XC-W USA

Art. no. 3206101en

Read this repair manual carefully and thoroughly before beginning work.

Only use **ORIGINAL 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.

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REG.NO. 12 100 6061

ISO 9001(12 100 6061)
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Issued by: TÜV Management Service

KTM-Sportmotorcycle AG
5230 Mattighofen, Austria

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Symbols used

The symbols used are explained below.

✓	Identifies an expected reaction (e.g. to a work step or a function).
✗	Identifies an unexpected reaction (e.g. to a work step or a function).
☛	Identifies a page reference (more information is provided on the specified page).
i	Identifies information with more details or tips.
»	Identifies the result of a testing step.
V	Identifies a voltage measurement.
A	Identifies a current measurement.
Ω	Identifies a resistance measurement.

Formats used

The following typographical formats are used.

Specific name	Identifies a specific name.
Name®	Identifies a protected name.
Brand™	Identifies a brand available on the open market.

Warranty

The work prescribed in the service schedule must be carried out by an authorized KTM workshop only and confirmed in the customer's service record and in the **KTM dealer.net**; otherwise, all warranty claims will be void. No warranty claims can be considered for damage resulting from manipulations and/or alterations to the vehicle.

Substances

You should use the fuels, oils and greases according to specifications as listed in the repair 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.

The current **KTM PowerParts** for your vehicle can be found 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. E.g.: bearing puller (15112017000)
When the vehicle is assembled, non-reusable parts (e.g., self-locking screws and nuts, gaskets, seal rings, O-rings, splints, lock washers) must be replaced with new parts.
Where thread lockers are used on screw connections (e.g., **Loctite®**), follow the instructions for use from the manufacturer.
After disassembly, clean the parts that are to be reused and check them for damage and wear. Replace damaged or worn parts.
After you complete the repair or maintenance work, check the roadworthiness of the vehicle.

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.

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

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

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

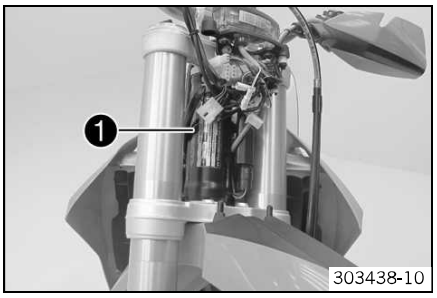
Repair manual

- It is imperative that you read this owner's manual carefully and completely before the start of work. It contains useful information and many tips on how to repair and maintain your vehicle.
- This manual assumes that the necessary special KTM tools and workplace and workshop equipment are available.

Chassis number

(XC-W)

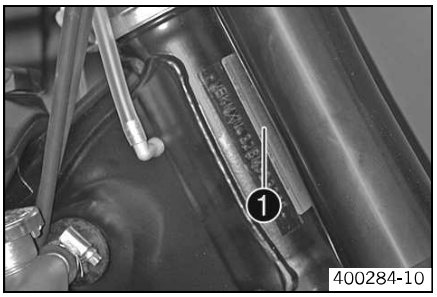
The chassis number ❶ is stamped on the right side of the steering head.



(All 250/300 EXC models)

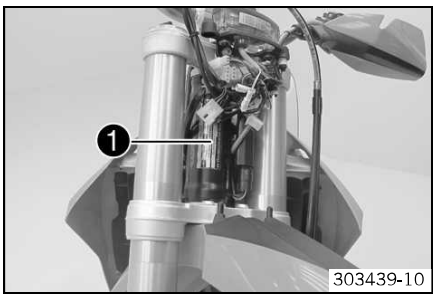
The chassis number ❶ is stamped on the right side of the steering head.

Type label



(XC-W)

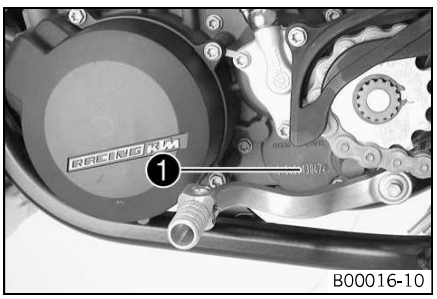
The type label ❶ is fixed to the front of the steering head.



(All 250/300 EXC models)

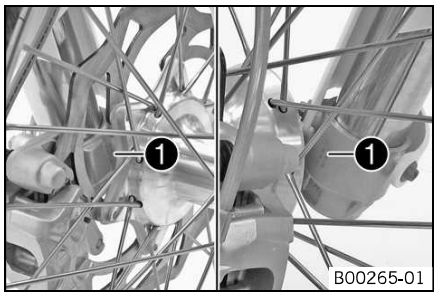
The type label ❶ is fixed to the front of the steering head.

Engine number



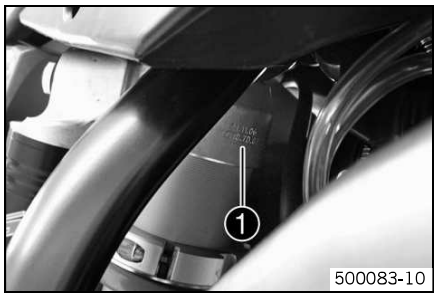
The engine number ❶ is stamped on the left side of the engine under the engine sprocket.

Fork part number



The fork part number ❶ is stamped on the inner side of the fork stub.

Shock absorber part number



The shock absorber part number ❶ is stamped on the top of the shock absorber above the adjusting ring on the engine side.

Raising the motorcycle with the lift stand

Note

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

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

– Raise the motorcycle at the frame underneath the engine.

Lift stand (54829055000) (☛ p. 231)

✓ The wheels must no longer touch the ground.

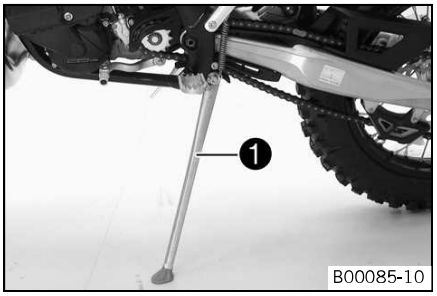
– Secure the motorcycle against falling over.

Removing the motorcycle from the lift 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 lift stand.
– Remove the lift stand.
– To park the motorcycle, press side stand ❶ to the ground with your foot and lean the motorcycle on it.

Info

When you are riding, the side stand must be folded up and secured with the rubber band.

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.

Engine has been out of use for more than 1 week

– Empty the carburetor float chamber. (☛ p. 159)
– Turn handle ❶ of the fuel tap to the **ON** position. (Figure 601157-10☛ p. 65)

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

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

(EXC AUS)

– Turn the emergency OFF switch to the position ❍.

The engine is cold

(EXC EU, EXC SIX DAYS, EXC Factory Edition)

– Pull the choke lever to the stop.

(EXC AUS, XC-W)

– Pull out the choke lever all the way.

– Press the electric starter button or press the kick starter robustly through its full range.

Info
Do not open the throttle.

Starting the motorcycle for checking

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.

– Shift gear to neutral.

(EXC AUS)

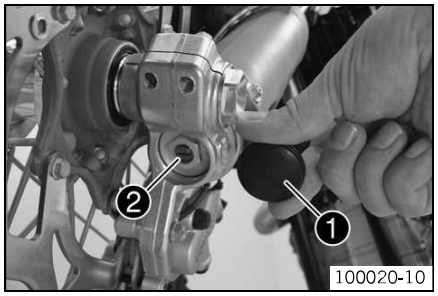
– Turn the emergency OFF switch to the position ○.

– Press the electric starter button or press the kick starter robustly through its full range.

Info
Do not open the throttle.
Press the starter for a maximum of 5 seconds. Wait for a least 5 seconds before trying again.

Adjusting the compression damping of the fork

Info
The hydraulic compression damping determines the fork suspension behavior.



– Remove protection covers ❶.
– Turn adjusting screws ❷ clockwise all the way.

Info
Adjusting screws ❷ are located at the bottom end of the fork legs.
Make the same adjustment on both fork legs.

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

Guideline

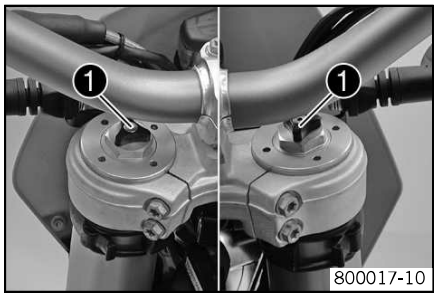
Compression damping	
Comfort	26 clicks
Standard	22 clicks
Sport	18 clicks

Info
Turn clockwise to increase damping; turn counterclockwise to reduce damping.

– Mount protection covers ❶.

Adjusting the rebound damping of the fork

Info
The hydraulic rebound damping determines the fork suspension behavior.



– Turn adjusting screws ❶ clockwise all the way.

Info
Adjusting screws ❶ are located at the top end of the fork legs.
Make the same adjustment on both fork legs.

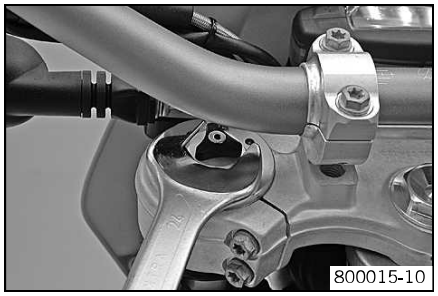
– Turn back counterclockwise by the number of clicks corresponding to the fork type.

Guideline

Rebound damping	
Comfort	24 clicks
Standard	20 clicks
Sport	20 clicks

Info
Turn clockwise to increase damping; turn counterclockwise to reduce damping.

Adjusting the spring preload of the fork



– Turn the adjusting screws counterclockwise all the way.

Info
Make the same adjustment on both fork legs.

– Turn back clockwise by the number of turns corresponding to the fork type.

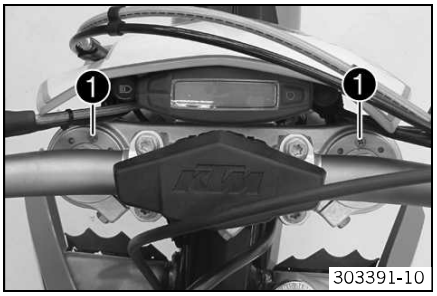
Guideline

Spring preload - **Preload Adjuster**	
Comfort	0 turn
Standard	2 turns
Sport	4 turns

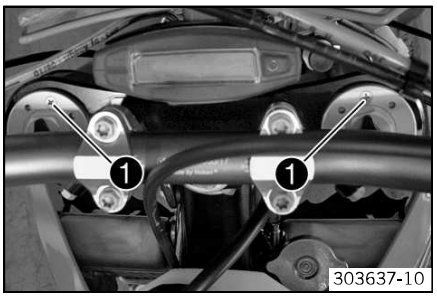
Info
Turn clockwise to increase spring preload; turn counterclockwise to reduce spring preload.
Adjusting the spring preload has no influence on the absorption setting of the rebound damping.
Basically, however, you should set the rebound damping higher with a higher spring preload.

Bleeding the fork legs

– Raise the motorcycle with the lift stand. (☛ p. 9)



(All 250/300 EXC models)
– Remove bleeder screws ❶ briefly.
✓ Any excess pressure escapes from the interior of the fork.
– Mount and tighten bleeder screws.

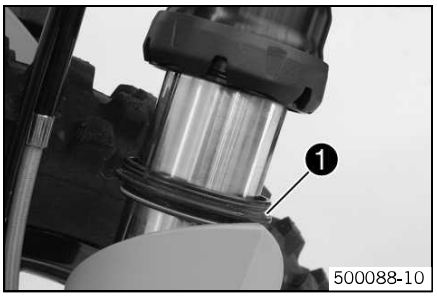


(XC-W)
– Remove bleeder screws ❶ briefly.
✓ Any excess pressure escapes from the interior of the fork.
– Mount and tighten bleeder screws.

– Remove the motorcycle from the lift stand. (☛ p. 9)

Cleaning the dust boots of the fork legs

– Raise the motorcycle with the lift stand. (☛ p. 9)
– Loosen the fork protection. (☛ p. 13)
– Push dust boots ❶ of both fork legs downwards.



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

Warning
Danger of accidents Reduced braking 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.

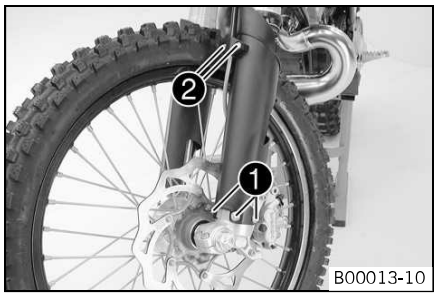
Universal oil spray (☛ p. 229)

– Press the dust boots back into their normal position.
– Remove excess oil.
– Position the fork protection. (☛ p. 13)
– Remove the motorcycle from the lift stand. (☛ p. 9)

Loosening the fork protection

- Remove screws ❶ and take off the clamp.
- Remove screws ❷ on the left fork leg. Push the fork protection downwards.
- Remove the screws on the right fork leg. Push the fork protection downwards.

Positioning the fork protection



- Position the fork protection on the left fork leg. Mount and tighten screws ❶.
  Guideline

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

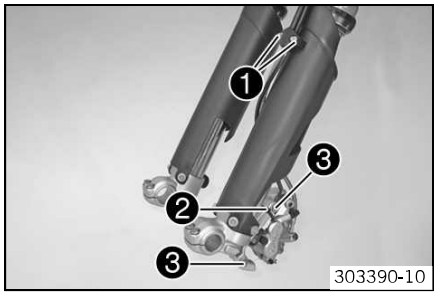
- Position the brake line. Position the clamp and mount and tighten screws ❷.
- Position the fork protection on the right fork leg. Mount and tighten the screws.
  Guideline

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

Removing the fork legs

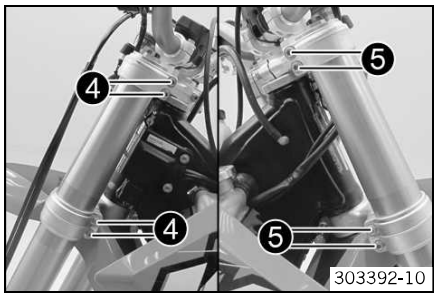
(All 250/300 EXC models)

- Remove the headlight mask with the headlight. (☛ p. 66)
- Remove the front wheel. (☛ p. 68)
- Remove screws ❶ and take off the clamp.
- Remove cable binder ❷.
- Remove screws ❸ and take off the brake caliper.
- Hang the brake caliper and the brake line loosely to the side.



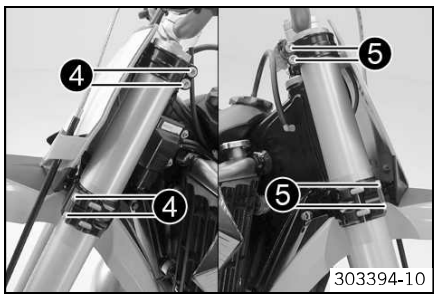
(EXC EU/AUS)

- Loosen screws ❹. Remove the fork leg on the left.
- Loosen screws ❺. Remove the fork leg on the right.

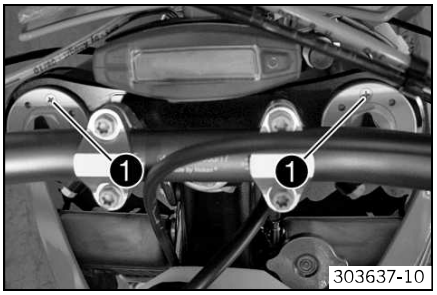


(EXC SIX DAYS, EXC Factory Edition, XC-W)

- Loosen screws ❹. Remove the fork leg on the left.
- Loosen screws ❺. Remove the fork leg on the right.



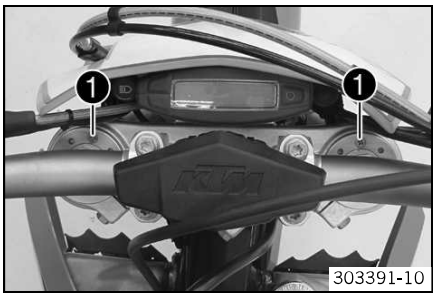
Installing the fork legs



(XC-W)

– Position the fork legs.

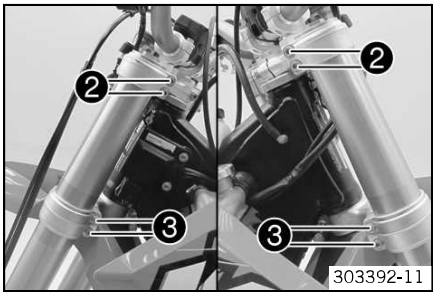
Info
The upper milled groove in the fork leg must be flush with the top edge of the upper triple clamp.
Position bleeder screws ❶ toward the front.



(All 250/300 EXC models)

– Position the fork legs.

Info
The upper milled groove in the fork leg must be flush with the top edge of the upper triple clamp.
Position bleeder screws ❶ toward the front.



(EXC EU/AUS)

– Tighten screws ❷.

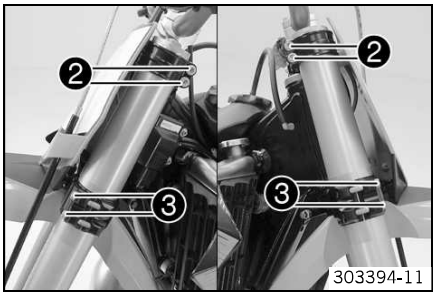
Guideline

Screw, top triple clamp	M8	20 Nm (14.8 lbf ft)

– Tighten screws ❸.

Guideline

Screw, bottom triple clamp	M8	15 Nm (11.1 lbf ft)



(EXC SIX DAYS, EXC Factory Edition, XC-W)

– Tighten screws ❷.

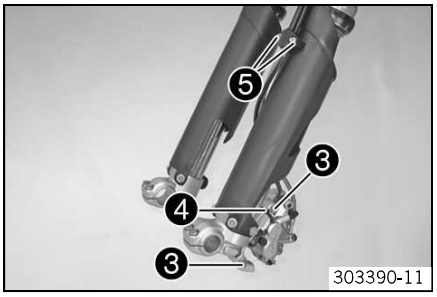
Guideline

Screw, top triple clamp	M8	17 Nm (12.5 lbf ft)

– Tighten screws ❸.

Guideline

Screw, bottom triple clamp	M8	12 Nm (8.9 lbf ft)



– Position the brake caliper and mount and tighten screws ❸.

Guideline

Screw, front brake caliper	M8	25 Nm (18.4 lbf ft)	**Loctite® 243™**

– Mount cable binder ❹.

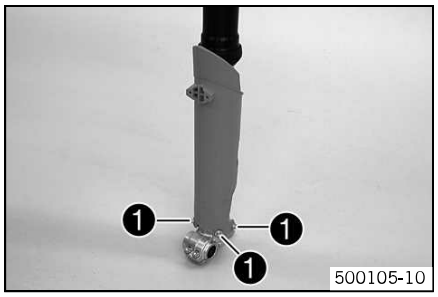
– Position the brake line and wiring harness. Put on the clamp and mount and tighten screws ❺.

– Install the front wheel. (☛ p. 68)

(All 250/300 EXC models)

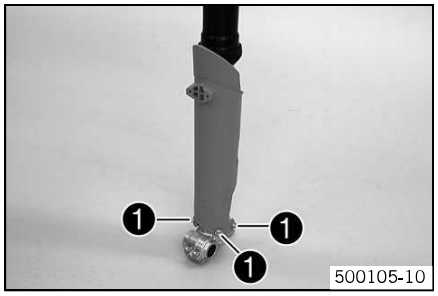
– Refit the headlight mask with the headlight. (☛ p. 67)

Removing the fork protector



- Remove the fork legs. (☛ p. 13)
- Remove screws ❶ on the left fork leg. Lift off the fork protector.
- Remove the screws on the right fork leg. Lift off the fork protector.

Installing the fork protector



- Position the fork protection on the left fork leg. Mount and tighten screws ❶.
  Guideline

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

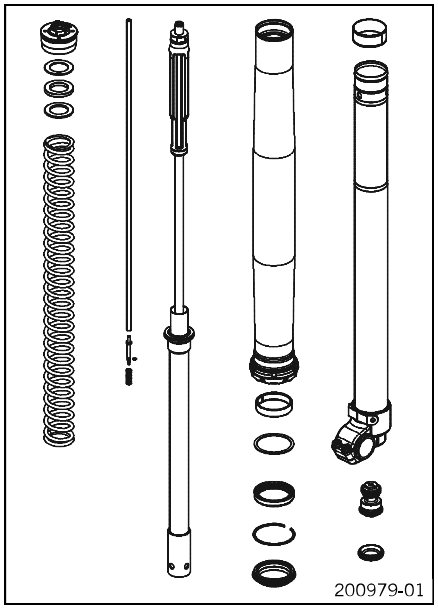
- Position the fork protection on the right fork leg. Mount and tighten the screws.
  Guideline

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

- Install the fork legs. (☛ p. 14)

Performing a fork service

Info
These operations are the same on both fork legs.



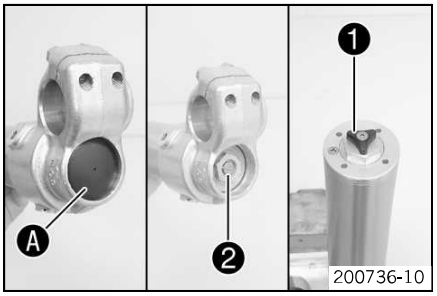
Condition
The fork legs have been removed.

- Disassemble the fork legs. (☛ p. 16)
- Disassemble the cartridge. (☛ p. 18)
- Check the fork legs. (☛ p. 21)
- Assemble the cartridge. (☛ p. 23)
- Assemble the fork legs. (☛ p. 24)

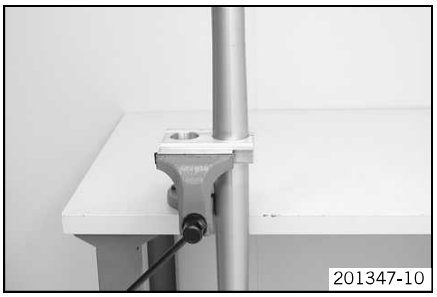
Disassembling the fork legs

Info
The steps are identical for both fork legs.

Condition
The fork legs are disassembled.

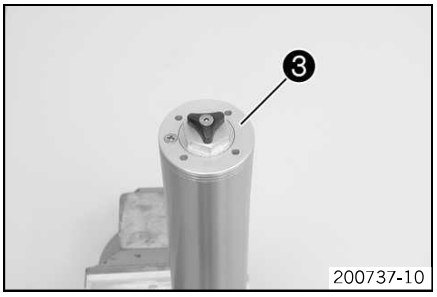


- Remove protective cover Ⓐ.
- Note down the present state of rebound damping ❶ and compression damping ❷.
- Note down of the present state of the spring preload.
- Completely open the adjusters of the rebound damping and compression damping.



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

Clamping stand (T1403S) (☛ p. 237)



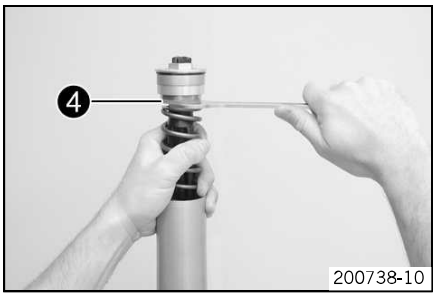
- Loosen **Preload Adjuster** ❸.

Pin wrench (T103) (☛ p. 233)

Info
The **Preload Adjuster** cannot be taken off yet.

- Take out the fork leg and clamp with the axle clamp.

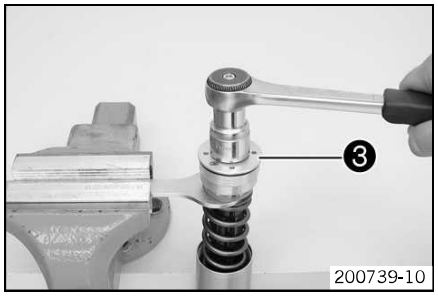
Info
Use soft jaws.



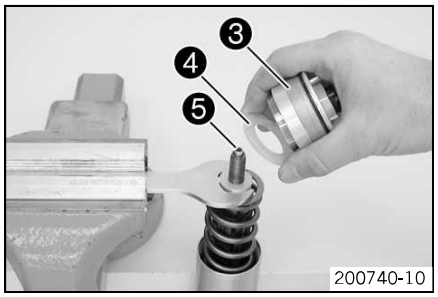
- Push the outer tube downward.
- Pull the spring downward. Place the special tool on the hexagonal part.

Open-end wrench (T14032) (☛ p. 237)

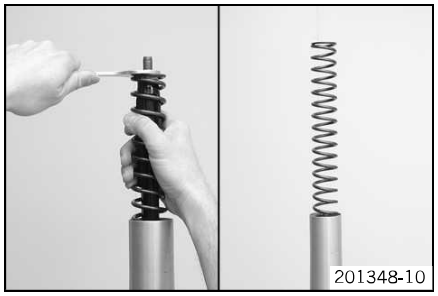
Info
The preload spacers ❹ should be above the special tool.



– Clamp the special tool in the bench vise. Loosen **Preload Adjuster** ❸.



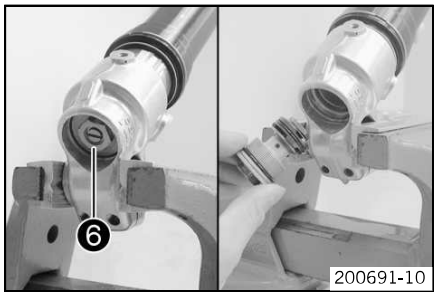
– Remove **Preload Adjuster** ❸ with preload spacers ❹.
– Remove adjustment tube ❺.



– Pull the spring downward. Remove the special tool.
– Remove the spring.

– Drain the fork oil.

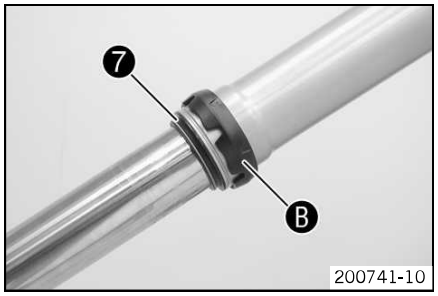
Info
Pull out and push in the piston rod several times in order to pump out the cartridge until it is empty.



– Clamp the fork leg with the axle clamp.
– Unscrew and remove the compression damping fitting ❻.

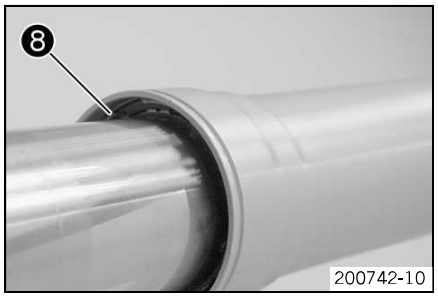
Info
Place a fluid collector beneath it, as usually some oil will drain out.

– Remove the cartridge.



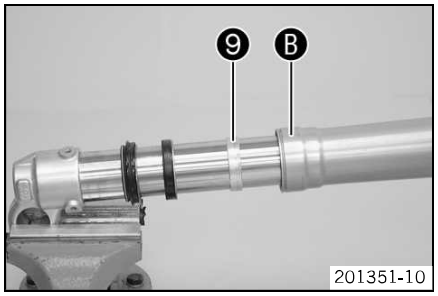
– Remove dust boot ❼.
– Remove fork protector ring ❽.

Info
The fork protector ring does not necessarily need to be disassembled for the further repair.



– Remove lock ring ❽.

Info
The lock ring has a coarsely finished end against which the screwdriver can be placed.



– Warm up the outer tube in area ❽ of the lower sliding bushing.

Guideline

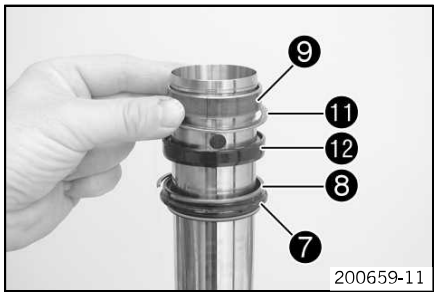
50 °C (122 °F)

– Jerk the outer tube out of the inner tube.

Info
The lower sliding bushing ❾ must be pulled out of its bearing seat when doing this.

– Remove upper sliding bushing ❿.

Info
Gently pull them apart without using any tool.

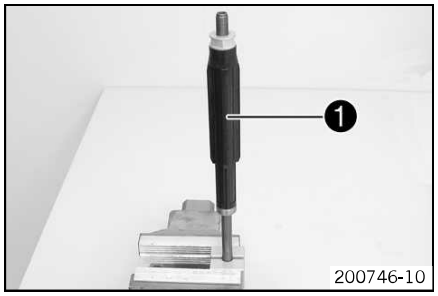


– Take off the lower sliding bushing ❾.
– Take off support ring ⓫.
– Take off seal ring ⓬.
– Take off lock ring ❽.
– Take off dust boot ❼.
– Take out the fork leg.

Cartridge disassembly

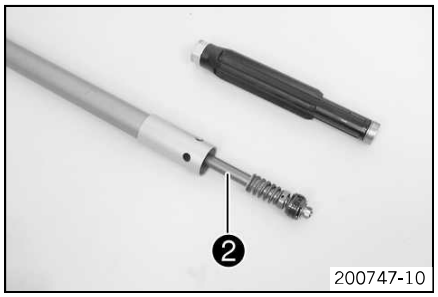
Info
The steps are identical for both fork legs.

– Disassemble the fork legs. (☛ p. 16)

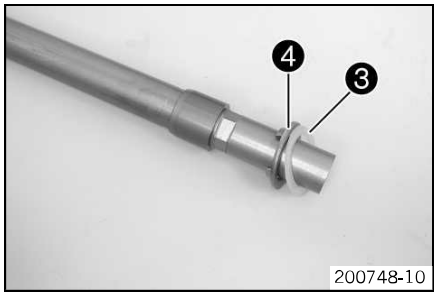


– Remove fluid barrier ❶ from the piston rod.

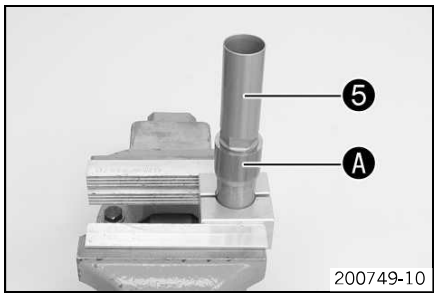
Clamping stand (T14016S) (☛ p. 236)



– Remove piston rod ❷ from the cartridge.



– Remove washer ❸ and spring seat ❹ from the cartridge.



– Degrease the cartridge and clamp using the pecial tool.

Clamping stand (T14015S) (☛ p. 236)

– Warm up the cartridge in the area of Ⓐ.

Guideline

50 °C (122 °F)

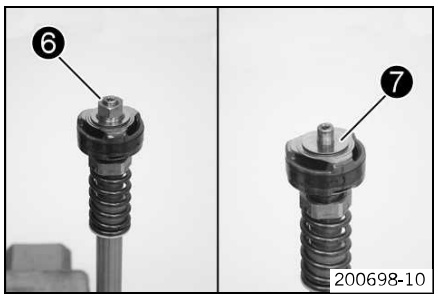
– Unscrew and remove screwsleeve ❺.

Info

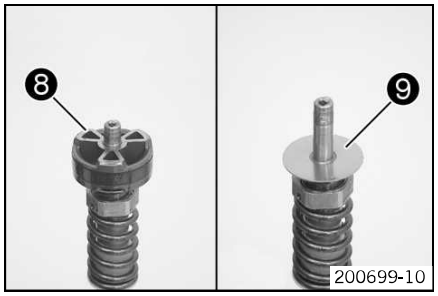
This step is unnecessary for the further disassembly.

– Degrease the piston rod.
– Clamp the piston rod with the special tool.

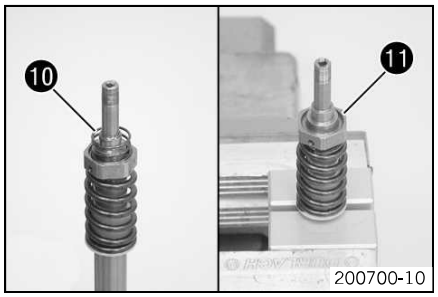
Clamping stand (T14016S) (☛ p. 236)



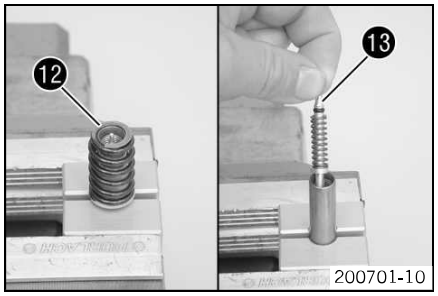
– Remove nut ❻.
– Remove shim stack ❼ completely.



- Remove piston ❽.
- Remove shim stack ❾ completely.



- Remove spring ❿.
- Remove tap rebound ⓫.

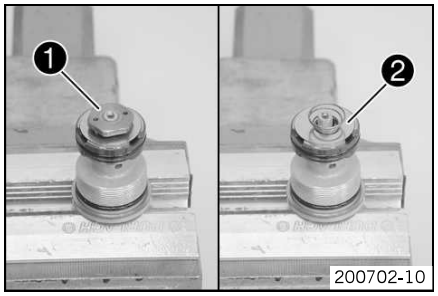


- Remove spring ⓬.
- Remove valve ⓭ of the rebound damping together with the spring.
- Take out the piston rod.

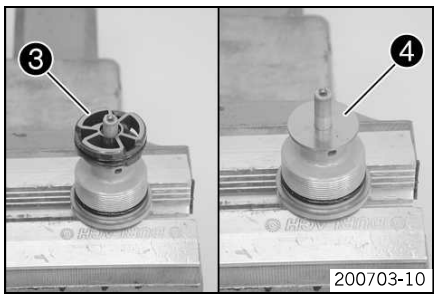
Disassembling the compression damping fitting

Info
The steps are identical for both fork legs.

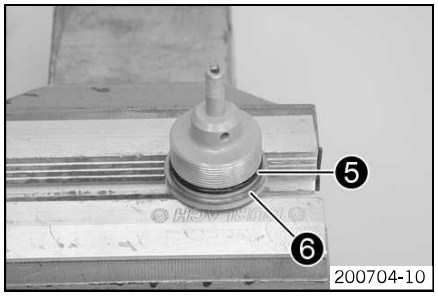
- Disassemble the fork legs. (☛ p. 16)
- Clamp the compression damping fitting in a bench vise using soft jaws.



- Remove nut ❶.
- Remove the spring.
- Remove washer ❷.



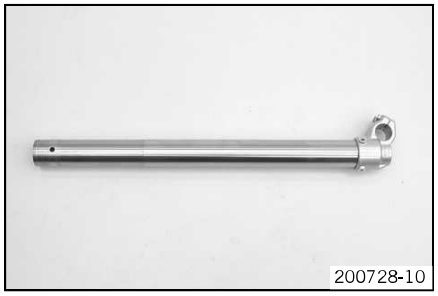
- Remove piston ❸.
- Remove shim stack ❹.



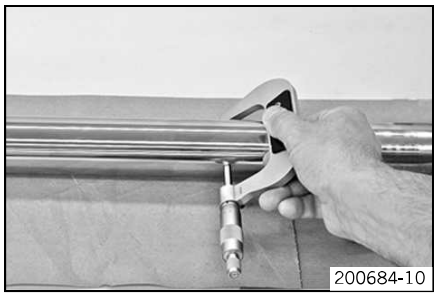
– Remove O-ring ❺ and seal ring ❻ from the compression damping fitting.
– Extract the compression damping fitting.

Checking the fork legs

Condition
The fork legs must be disassembled.



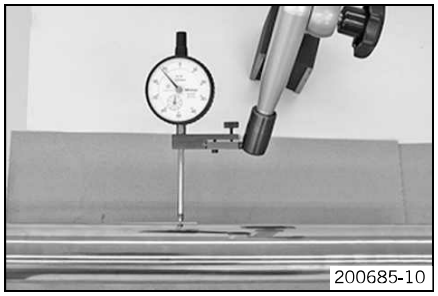
– Check the inner tube and axle clamp for damage.
  » If there is damage:
    – Change the inner tube.



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

Outside diameter of the inner tube	47.975... 48.005 mm (1.88878... 1.88996 in)

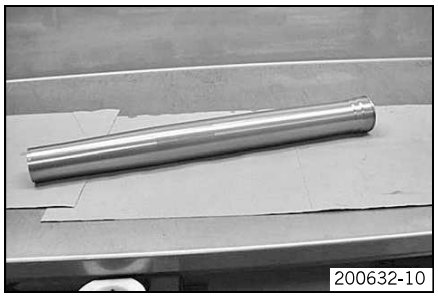
  » If the measured value is below the specified value:
    – Change the inner tube.



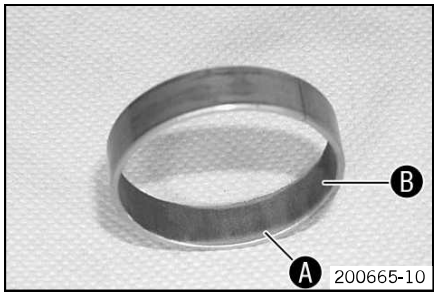
– Measure the run-out of the inner tube.

Inner tub run-out	≤ 0.20 mm (≤ 0.0079 in)

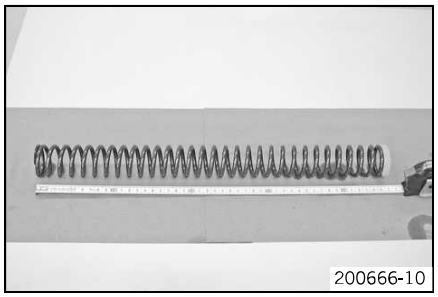
  » If the measured value is greater than the specified value:
    – Change the inner tube.



– Check the outer tube for damage.
  » If there is damage:
    – Change the outer tube.



– Check the surface of the sliding bushing.
  » If the bronze-colored layer Ⓐ under the sliding layer Ⓑ is visible:
    – Replace the sliding bushing.



– Check the spring length.

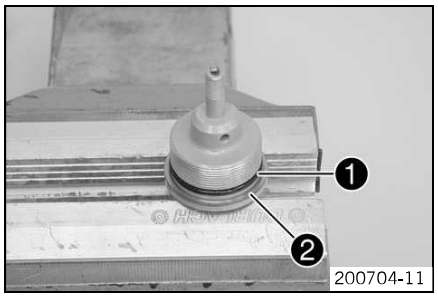
Guideline

Spring length with preload spacer(s)	
Weight of rider: 65... 75 kg (143... 165 lb.)	510 mm (20.08 in)
Weight of rider: 75... 85 kg (165... 187 lb.)	513 mm (20.2 in)
Weight of rider: 85... 95 kg (187... 209 lb.)	510 mm (20.08 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.

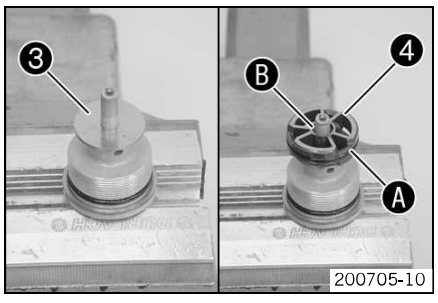
Assembling the compression damping fitting

Info
The steps are identical for both fork legs.



– Clamp the compression damping fitting in a bench vise using soft jaws.
– Mount O-ring ❶ and seal ring ❷.
– Grease the O-ring.

Lubricant (T158) (☛ p. 228)



– Mount shim stack ❸.

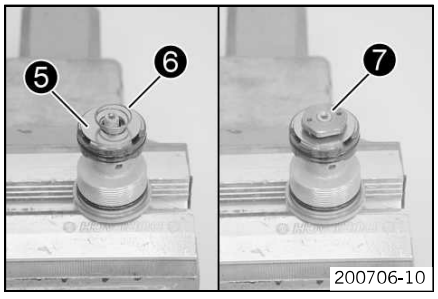
Info
Mount the smaller shims below.

– Mount pistons ❹ with O-ring Ⓐ.

Info
The side with the largest inside diameter Ⓑ faces upward.

– Grease the piston O-ring.

Fork oil (SAE 5) (☛ p. 226)



– Mount washer ❺.
– Mount spring ❻ with the tighter coil facing downward.
– Mount and tighten nut ❼.

Guideline

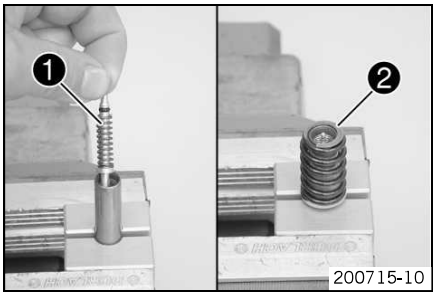
Compression damping fitting nut	M6x0.5	3 Nm (2.2 lbf ft)

Info
The washer ❺ must have freedom of movement relative to the spring force.

– Secure the nut by locking.
– Extract the compression damping fitting.

Assembling the cartridge

Info
The steps are identical for both fork legs.



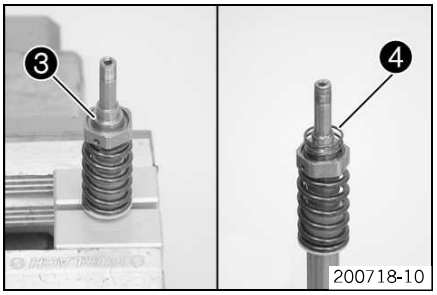
– Clamp in the piston rod.

Clamping stand (T14016S) (☛ p. 236)

– Mount valve ❶ of the rebound damping, with the spring and O-ring.
– Grease the O-ring.

Lubricant (T158) (☛ p. 228)

– Mount spring ❷.



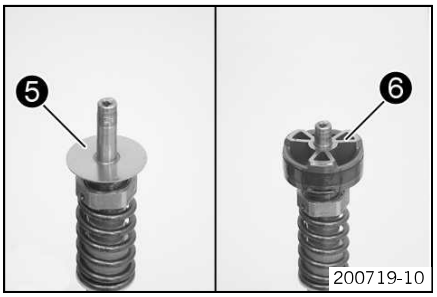
– Grease tap rebound ❸ O-ring.

Lubricant (T158) (☛ p. 228)

– Mount and tighten the tap rebound.
Guideline

Tap rebound	M9x1	18 Nm (13.3 lbf ft)	**Loctite® 2701**

– Position spring ❹.



– Mount shim stack ❺.

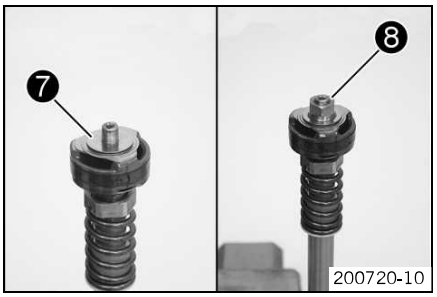
Info
Mount the smaller shims below.

– Press the shim stack downward against the spring force.

Info
The shim stack must be pressed downward over the collar.

– Mount piston ❻ with the piston ring.

Info
The side with the largest inside diameter faces downward.



– Mount shim stack ❼.

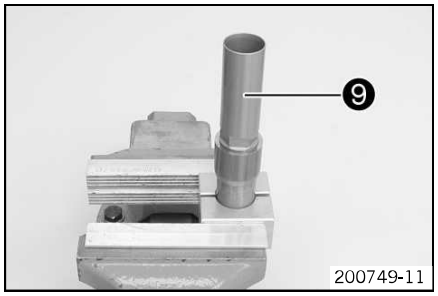
Info
Align the triangular plate exactly with the piston opening.

– Mount and tighten nut ❽.
Guideline

Tap rebound nut	M6x0.5	5 Nm (3.7 lbf ft)

Info
Mount the nut with the collar facing downward.

– Secure the nut by locking.



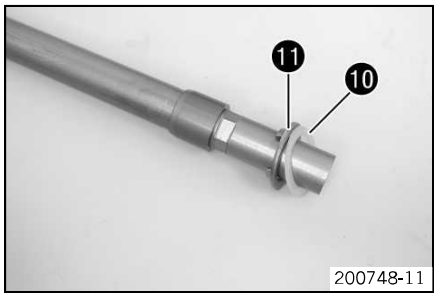
– Degrease the cartridge and clamp using the special tool.

Clamping stand (T14015S) (☛ p. 236)

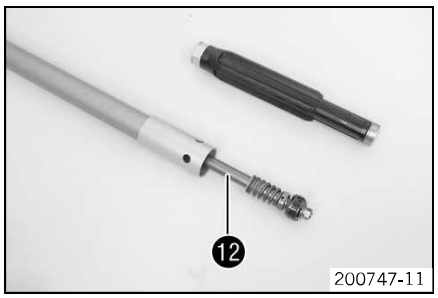
– Mount and tighten screwsleeve ❾.

Guideline

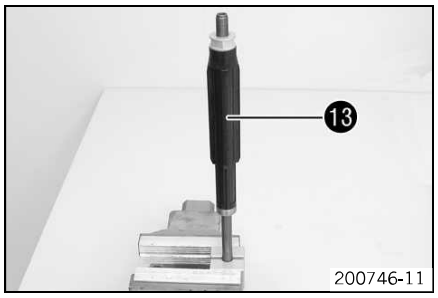
Screwsleeve	M29x1	46 Nm (33.9 lbf ft)	**Loctite® 241**



– Mount washer ❿ and spring seat ⓫.



– Push piston rod ⓬ into the cartridge.



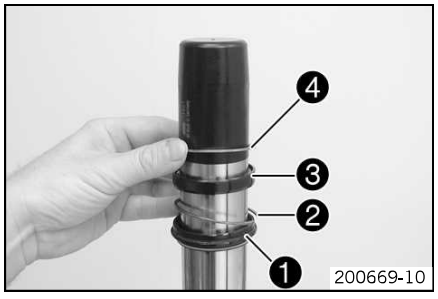
– Screw on fluid barrier ⓭ to the stop.

Info
The fluid barrier must be screwed on tightly against the stop. Do not use a tool.

Assembling the fork legs

Info
The steps are identical for both fork legs.

– Check the fork legs. (☛ p. 21)
– Assemble the cartridge. (☛ p. 23)
– Assemble the compression damping fitting. (☛ p. 22)
– Clamp in the inner tube with the axle clamp.
– Install the special tool.



Protecting sleeve (T1401) (☛ p. 236)

– Grease and slide on dust boot ❶.

Lubricant (T511) (☛ p. 228)

Info
Always change the dust boot, seal ring, lock ring, and support ring. Mount the sealing lip with the spring expander facing downward.

– Slide on lock ring ❷.
– Grease and slide on seal ring ❸.

Lubricant (T511) (☛ p. 228)

Info
The sealing lip should face downward and the open side upward.

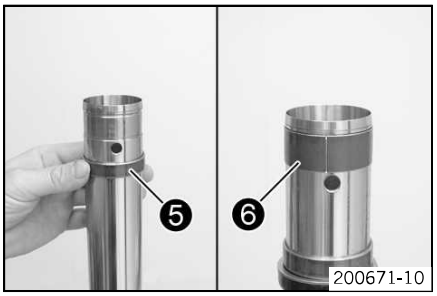
– Slide on support ring ❹.
– Remove the special tool.
– Roughen, clean, and grease the edges of the sliding bushings using 600 grit sandpaper.

Fork oil (SAE 5) (☛ p. 226)


200670-10

– Slide on lower sliding bushing ❺.
– Mount upper sliding bushing ❻.

Info
Gently pull them apart without using any tool.



200671-10

– Slide on the outer tube.
– Warm up the outer tube in the lower sliding bushing area of Ⓐ.

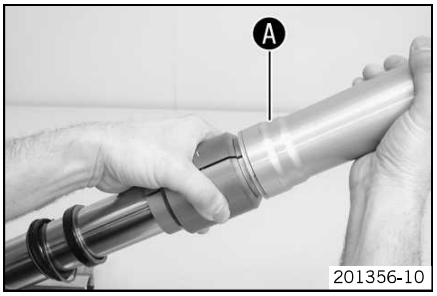
Guideline

50 °C (122 °F)

– Hold the lower sliding bushing with the longer shoulder of the special tool.

Assembly tool (T1402S) (☛ p. 237)

– Press the outer tube all the way in.



201356-10

– Position the support ring.
– Hold the seal ring with the shorter shoulder of the special tool.

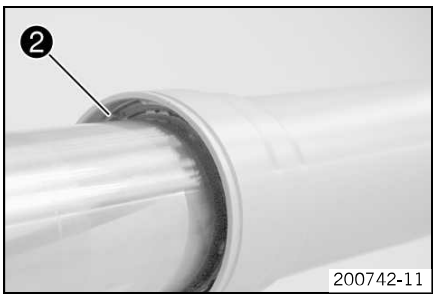
Assembly tool (T1402S) (☛ p. 237)

– Press the outer tube all the way in.

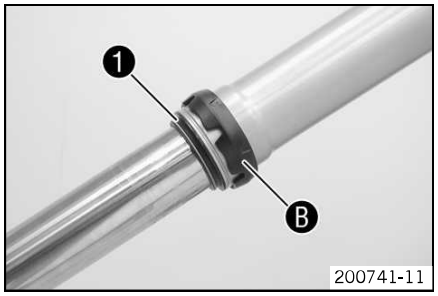

201355-10

– Mount lock ring ❷.

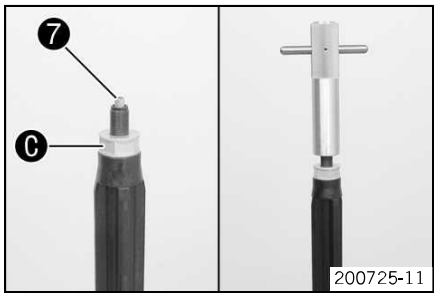
Info
The lock ring must audibly lock into place.



200742-11



– Install dust boot ❶.
– Mount fork protector ring Ⓑ.



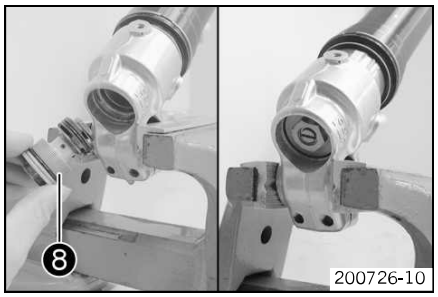
– Mount adjustment tube ❼ of the rebound damping in the cartridge.
  ✓ The adjustment tube extends 5 mm (0.197 in) out from the cartridge and can be pressed inward against the spring force.
  ✗ The adjustment tube extends more than 7 mm (0.276 in) out from the cartridge and cannot be pressed inward against the spring force.
– Screw on water excluder ❻ to the stop.

Info
The water excluder must be screwed on tightly against the stop. Do not use a tool.

– Mount the special tool on the cartridge.

Gripping tool (T14026S1) (☛ p. 236)

Info
The special tool must be used in order that the adjustment tube is not raised. Otherwise, oil will reach the piston rod.



– Push the cartridge into the inner tube.
– Mount and tighten compression damping fitting ❽.

Guideline

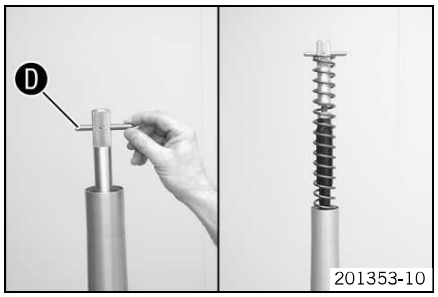
Compression damping fitting	M29x1	35 Nm (25.8 lbf ft)

Info
If the cartridge turns as well, press the piston rod slightly to the side.

– Clamp in the fork vertically.
– Fill with fork oil.

Fork oil per fork leg	626 ml (21.17 fl. oz.)	Fork oil (SAE 5) (☛ p. 226)

Info
Pull out and push in the piston rod several times to bleed air from the cartridge.



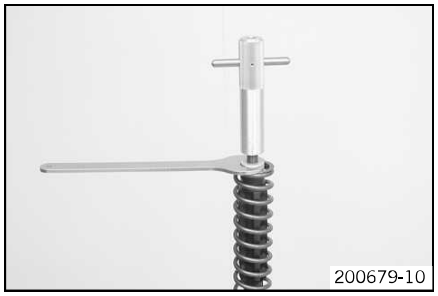
– Remove pin ❹ of the special tool.

Gripping tool (T14026S1) (☛ p. 236)

– Pull out the piston rod. Install the spring. Reinstall the pin.

Guideline

Spring rate	
Weight of rider: 65... 75 kg (143... 165 lb.)	4.0 N/mm (22.8 lb/in)
Weight of rider: 75... 85 kg (165... 187 lb.)	4.2 N/mm (24 lb/in)
Weight of rider: 85... 95 kg (187... 209 lb.)	4.4 N/mm (25.1 lb/in)



– Pull the spring downward. Place the special tool on the hexagonal part.

Open-end wrench (T14032) (☛ p. 237)

– Remove the special tool.

Gripping tool (T14026S1) (☛ p. 236)

– Clamp the special tool in the bench vise.
– Grease the thread of the piston rod.

Lubricant (T159) (☛ p. 229)

– Grease the upper edge ❹ of the piston rod.

Lubricant (T158) (☛ p. 228)

– Screw the **Preload Adjuster** with preload spacer onto the piston rod.

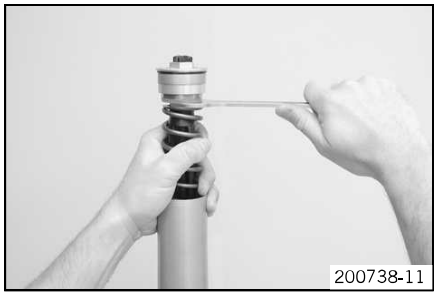
Info

The **Preload Adjuster** must be screwed in all the way before the piston rod also begins to turn. In case of tight piston rod threads, it must be held to keep it from turning. If the **Preload Adjuster** is not screwed in all the way, the rebound adjustment will not function.

– Tighten the **Preload Adjuster**.

Guideline

Preload Adjuster on the piston rod	M12x1	25 Nm (18.4 lbf ft)



– Take pressure off of the special tool. Pull the spring downward and remove the special tool.

– Push the outer tube upward.
– Clamp the outer tube in the area of lower triple clamp.

Clamping stand (T1403S) (☛ p. 237)

– Grease the **Preload Adjuster** O-ring.

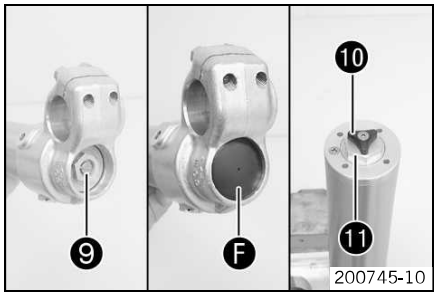
Lubricant (T158) (☛ p. 228)

– Screw on and tighten the **Preload Adjuster**.

Guideline

Preload Adjuster on the outer tube	M51x1.5	50 Nm (36.9 lbf ft)

Pin wrench (T103) (☛ p. 233)



Alternative 1

– Turn adjusting screw of compression damping ❾ and adjusting screw of rebound damping ❿ clockwise all the way.
– Turn back counterclockwise by the number of clicks corresponding to the fork type.

Guideline

Rebound damping	
Comfort	24 clicks
Standard	20 clicks
Sport	20 clicks
Compression damping	
Comfort	26 clicks
Standard	22 clicks
Sport	18 clicks

- Turn the adjusting screw of spring preload ⓫ counterclockwise all the way.
- Turn back clockwise the number of turns corresponding to the fork type.

Guideline

Spring preload - **Preload Adjuster**	
Comfort	0 turn
Standard	2 turns
Sport	4 turns

Alternative 2

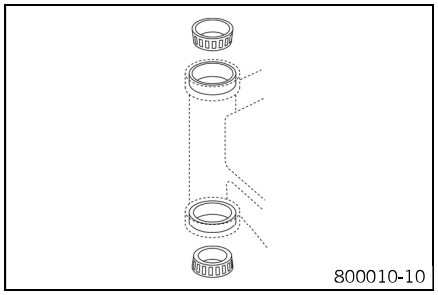
Warning

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.

- Set the adjusting screws to the position determined before removal.
- Mount protection cap ⓕ.

Greasing the steering head bearing



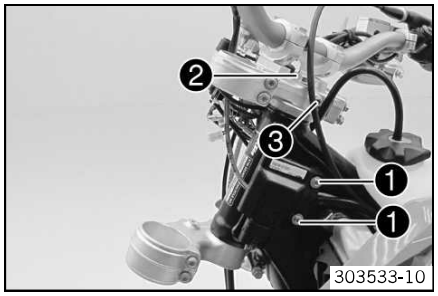
(EXC EU/AUS)

- Remove the lower triple clamp. (☛ p. 28)
- Install the lower triple clamp. (☛ p. 29)

(EXC SIX DAYS, EXC Factory Edition, XC-W)

- Remove the lower triple clamp. (☛ p. 29)
- Install the lower triple clamp. (☛ p. 31)

Removing the lower triple clamp (EXC EU/AUS)



- Remove the fork legs. (☛ p. 13)
- Remove the front fender. (☛ p. 66)
- Remove screws ❶ and hang the CDI control unit to the side.

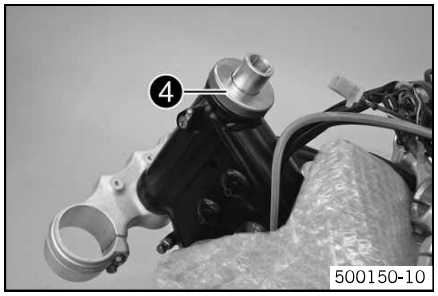
Info

Do not unplug the CDI control unit.

- Remove screw ❷. Loosen screw ❸. Take off the top triple clamp with the handlebar and place it on one side.

Info

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

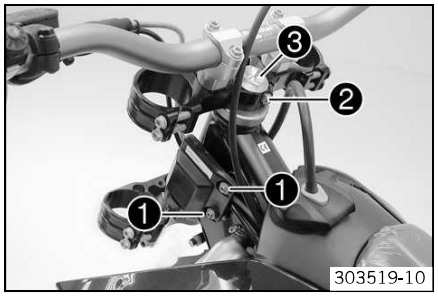


– Remove protective ring ❹.
– Take out the lower triple clamp with the steering stem.
– Take out the upper steering head bearing.

Removing the lower triple clamp (EXC SIX DAYS, EXC Factory Edition, XC-W)

(XC-W)

– Remove the start number plate. (☛ p. 66)
– Remove the fork legs. (☛ p. 13)
– Remove the front fender. (☛ p. 66)

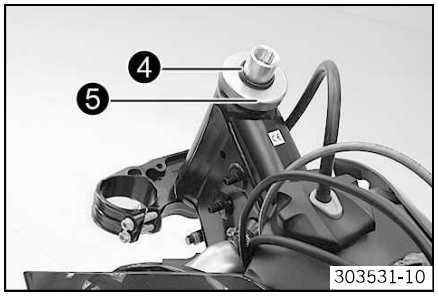


– Remove screws ❶ and hang the CDI control unit to the side.

Info
Do not unplug the CDI control unit.

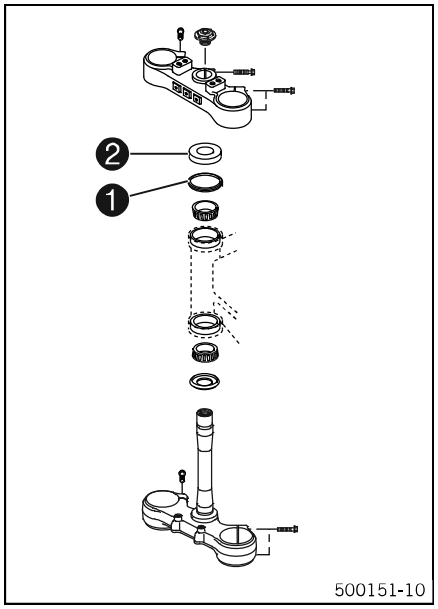
– Remove screw ❷. Remove screw ❸, take off the top triple clamp with the handlebar and place it on one side.

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



– Remove O-ring ❹. Remove protective ring ❺.
– Take out the lower triple clamp with the steering stem.
– Take out the upper steering head bearing.

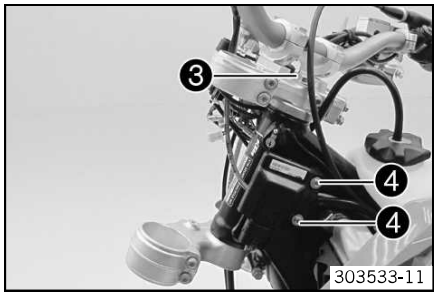
Installing the lower triple clamp (EXC EU/AUS)



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

High viscosity grease (☛ p. 228)

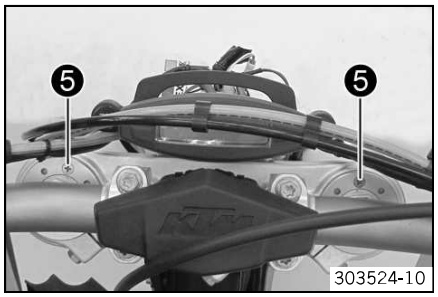
– Insert the lower triple clamp with the steering stem. Mount the upper steering head bearing.
– Check whether the top steering head seal ❶ is correctly positioned.
– Push on protective ring ❷.



– Position the upper triple clamp with the steering.
– Mount screw ❸ but do not tighten yet.
– Position the clutch line, wiring harness and CDI control unit. Mount and tighten screws ❹.

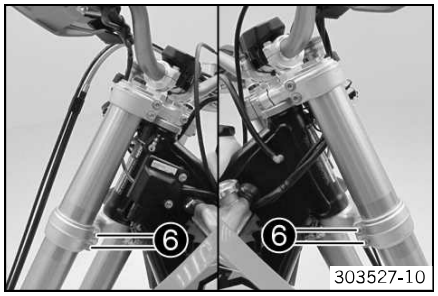
Guideline

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



– Position the fork legs.

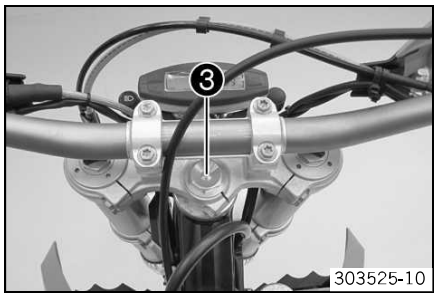
Info
The upper milled groove in the fork leg must be flush with the top edge of the upper triple clamp.
Position bleeder screws ❺ toward the front.



– Tighten screws ❻.

Guideline

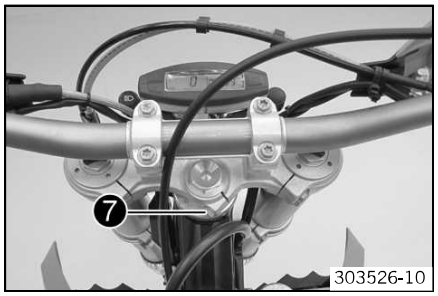
Screw, bottom triple clamp	M8	15 Nm (11.1 lbf ft)



– Tighten screw ❸.

Guideline

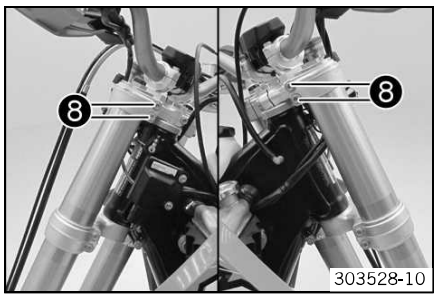
Screw, top steering head	M20x1.5	10 Nm (7.4 lbf ft)



– Tighten screw ❼.

Guideline

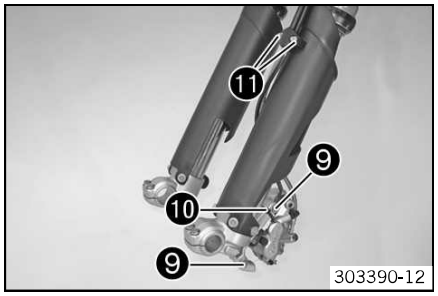
Screw, top steering stem	M8	20 Nm (14.8 lbf ft)



– Fully tighten screws ❽.

Guideline

Screw, top triple clamp	M8	20 Nm (14.8 lbf ft)



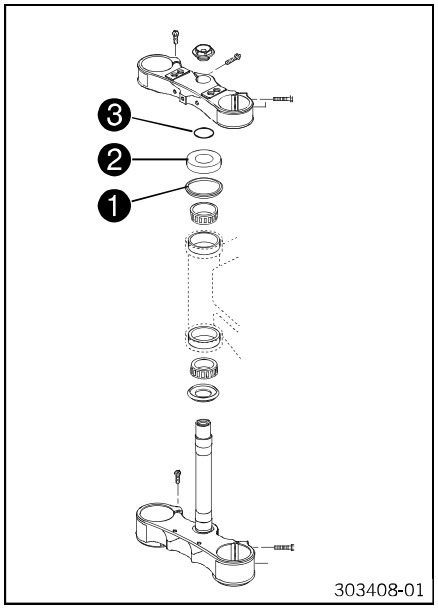
– Position the brake calipers. Mount and tighten screws ❾.

Guideline

Screw, front brake caliper	M8	25 Nm (18.4 lbf ft)	**Loctite® 243™**

– Mount cable binder ❿.
– Position the brake line, wiring harness and clamp. Mount and tighten screws ⓫.
– Install the front fender. (☛ p. 66)
– Refit the headlight mask with the headlight. (☛ p. 67)
– Install the front wheel. (☛ p. 68)
– Check that the wiring harness, throttle cables and brake and clutch lines can move freely and are routed correctly.
– Check the play of the steering head bearing. (☛ p. 33)

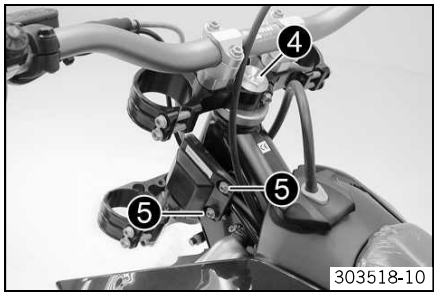
Installing the lower triple clamp (EXC SIX DAYS, EXC Factory Edition, XC-W)



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

High viscosity grease (☛ p. 228)

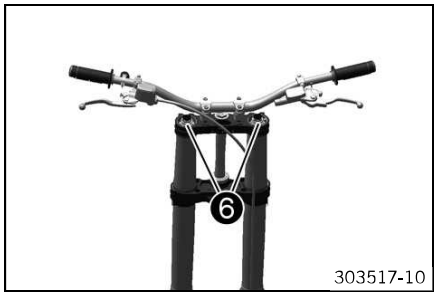
– Insert the lower triple clamp with the steering stem. Mount the upper steering head bearing.
– Check whether the top steering head seal ❶ is correctly positioned.
– Push up protective ring ❷ and O-ring ❸.



– Position the upper triple clamp with the steering.
– Mount screw ❹ but do not tighten yet.
– Position the clutch line, wiring harness and CDI control unit. Mount and tighten screws ❺.

Guideline

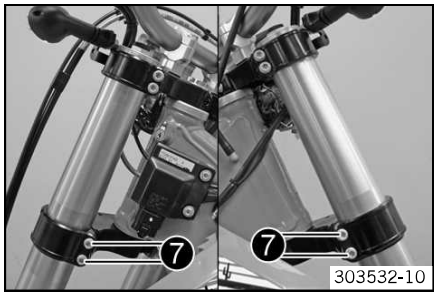
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)



– Position the fork legs.

Info

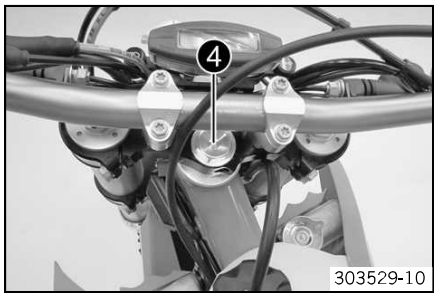
The upper milled groove in the fork leg must be flush with the top edge of the upper triple clamp.
Position bleeder screws ❻ toward the front.



– Tighten screws ❼.

Guideline

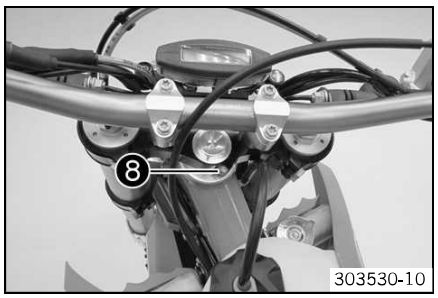
Screw, bottom triple clamp	M8	12 Nm (8.9 lbf ft)



– Tighten screw ❹.

Guideline

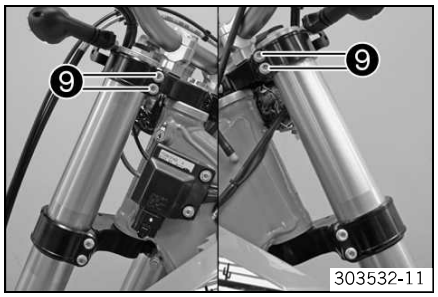
Screw, top steering head	M20x1.5	10 Nm (7.4 lbf ft)



– Mount and tighten screw ❽.

Guideline

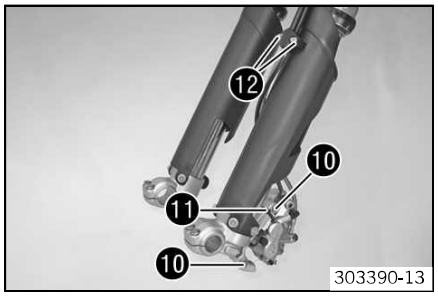
Screw, top steering stem	M8	17 Nm (12.5 lbf ft)	**Loctite® 243™**



– Tighten screws ❾.

Guideline

Screw, top triple clamp	M8	17 Nm (12.5 lbf ft)



– Position the brake calipers. Mount and tighten screws ❿.

Guideline

Screw, front brake caliper	M8	25 Nm (18.4 lbf ft)	**Loctite® 243™**

– Mount cable binder ⓫.
– Position the brake line, wiring harness and clamp. Mount and tighten screws ⓬.
– Install the front fender. (☛ p. 66)

(EXC SIX DAYS, EXC Factory Edition)

– Refit the headlight mask with the headlight. (☛ p. 67)

(XC-W)

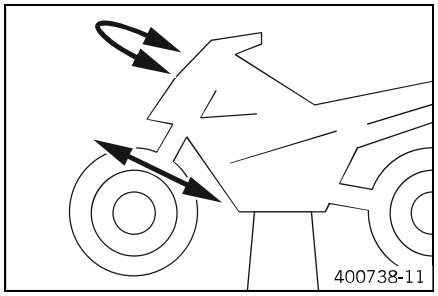
– Install the start number plate. (☛ p. 66)
– Install the front wheel. (☛ p. 68)
– Check that the wiring harness, throttle cables and brake and clutch lines can move freely and are routed correctly.
– Check the play of the steering head bearing. (☛ p. 33)

Checking the play of the 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 with play in the steering head bearing, the bearing and the bearing seats in the frame can become damaged over time.



– Raise the motorcycle with the lift stand. (☛ p. 9)
– Move the handlebar to the straight-ahead position. Move the fork legs to and fro in the direction of travel.

No play should be noticeable in the steering head bearing.

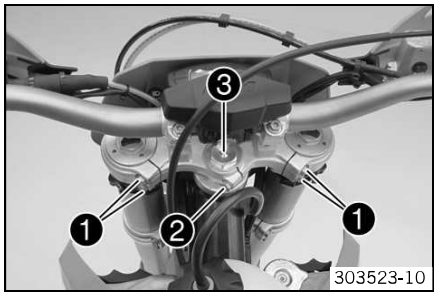
» If there is noticeable play present:
– Adjust the play of the steering head bearing. (☛ p. 33)
– Move the handlebar to and fro over the entire steering range.

The handlebar must be able to move easily 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. 33)
– Check the steering head bearing and replace if required.
– Remove the motorcycle from the lift stand. (☛ p. 9)

Adjusting the play of the steering head bearing

– Raise the motorcycle with the lift stand. (☛ p. 9)



(EXC EU/AUS)
– Loosen screws ❶ and ❷.
– Loosen and retighten screw ❸.
Guideline

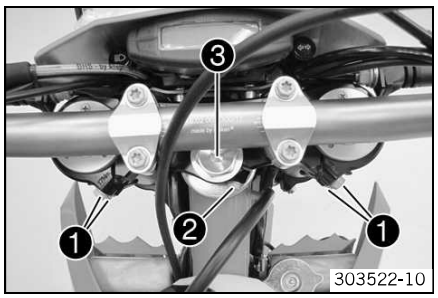
Screw, top steering head	M20x1.5	10 Nm (7.4 lbf ft)

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

Screw, top triple clamp	M8	20 Nm (14.8 lbf ft)

– Tighten screw ❷.
Guideline

Screw, top steering stem	M8	20 Nm (14.8 lbf ft)



(EXC SIX DAYS, EXC Factory Edition, XC-W)
– Loosen screws ❶. Remove screw ❷.
– Loosen and retighten screw ❸.
Guideline

Screw, top steering head	M20x1.5	10 Nm (7.4 lbf ft)

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

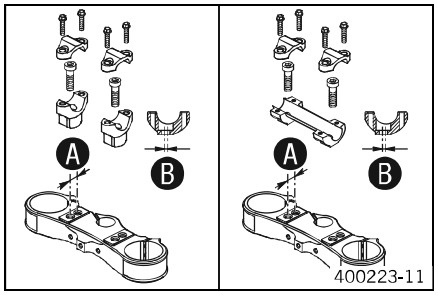
Screw, top triple clamp	M8	17 Nm (12.5 lbf ft)

– Mount and tighten screw ❷.
Guideline

Screw, top steering stem	M8	17 Nm (12.5 lbf ft)	**Loctite® 243™**

– Check the play of the steering head bearing, (☛ p. 33)

Handlebar position



On the upper triple clamp, there are two holes a distance of Ⓐ apart.

Hole distance A	15 mm (0.59 in)

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

Hole distance B	3.5 mm (0.138 in)

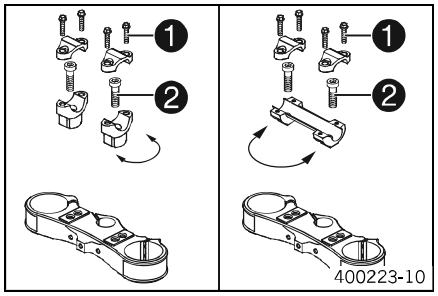
The handlebar can be mounted in four different positions. In this way, the handlebar can be mounted in the position that is most comfortable for the rider.

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

Guideline

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

Info

Position the left and right handlebar supports evenly.

– Position the handlebar.

Info

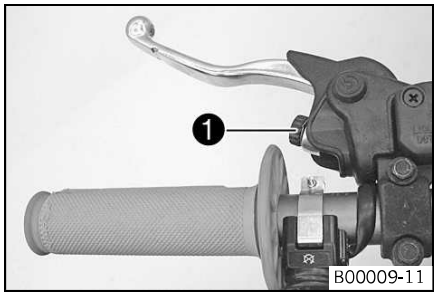
Make sure cables and wiring are positioned correctly.

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

Guideline

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

Adjusting the basic position of the clutch lever



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

Info

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

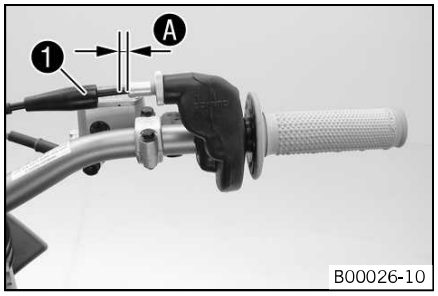
Checking the throttle cable routing

– Remove the fuel tank. (☛ p. 63)
– Check the throttle cable routing.

The throttle cable must be routed to the carburetor on the left side of the upper frame tube behind the handlebars.

» If the throttle cable is not routed as specified:
– Correct the throttle cable routing.
– Install the fuel tank. (☛ p. 64)

Checking the play in the throttle cable

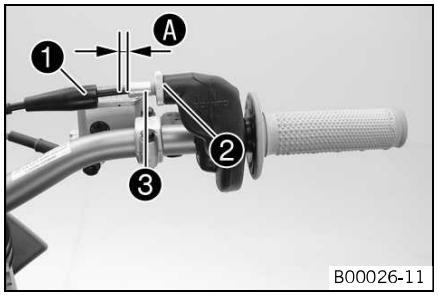


– Move the handlebar to the straight-ahead position.
– Push back sleeve ❶.
– Pull back the throttle cable casing until you sense a resistance.
– Now check throttle cable play Ⓐ.

Play in 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. 36)
– Slide on sleeve 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 sleeve 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 throttle cable	3... 5 mm (0.12... 0.2 in)

– Tighten the nut.
– Slide on sleeve ❶. Check the throttle grip for smooth operation.

Adjusting the high-speed compression damping of the shock absorber

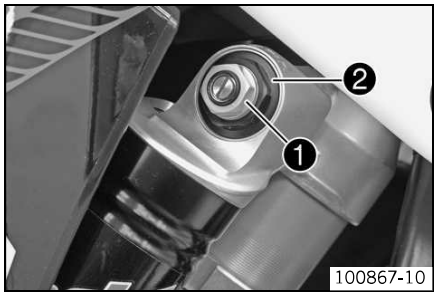
Caution

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.

Info

The high-speed setting can be seen during the fast compression of the shock absorber.



– Turn adjusting screw ❶ all the way clockwise using a socket wrench.

Info

Do not loosen nut ❷!

– Turn back counterclockwise by the number of turns corresponding to the shock absorber type.

Guideline

Compression damping, high-speed	
Comfort	2 turns
Standard	1.5 turns
Sport	1.25 turns

Info

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

Adjusting the low-speed compression damping of the shock absorber

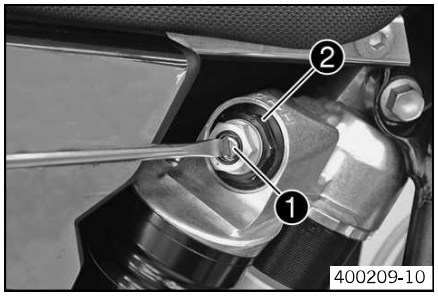
Caution

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.

Info

The low-speed setting can be seen during the slow to normal compression of the shock absorber.



– Turn adjusting screw ❶ clockwise with a screwdriver to the last click.

Info

Do not loosen nut ❷!

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

Guideline

Compression damping, low-speed	
Comfort	22 clicks
Standard	20 clicks
Sport	15 clicks

Info

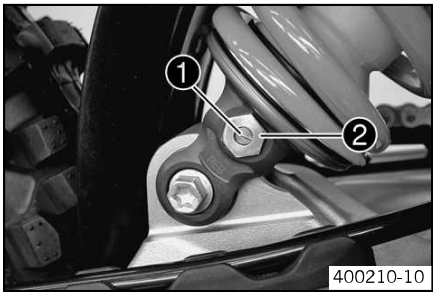
Turn clockwise to increase damping; turn counterclockwise to reduce damping.

Adjusting the rebound damping of the shock absorber

Caution

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 with a screwdriver to the last click.

Info

Do not loosen nut ❷!

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

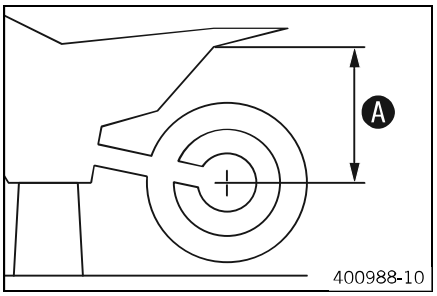
Guideline

Rebound damping	
Comfort	26 clicks
Standard	24 clicks
Sport	22 clicks

Info

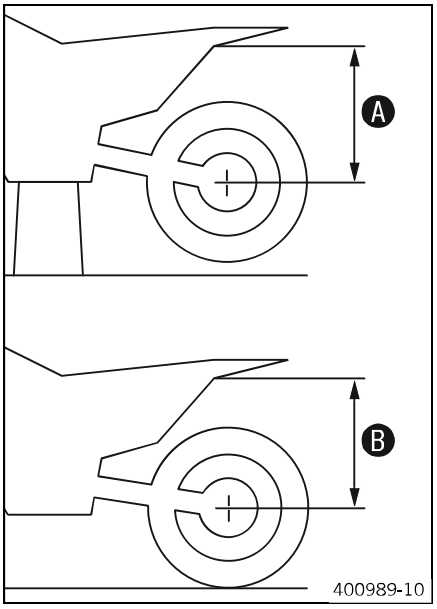
Turn clockwise to increase damping; turn counterclockwise to reduce damping.

Measuring the sag of the unloaded rear wheel



– Raise the motorcycle with the lift stand. (☛ p. 9)
– Measure the distance – as vertical as possible – between the rear axle and a fixed point, for example, a mark on the side cover.
– Note down the value as dimension Ⓐ.
– Remove the motorcycle from the lift stand. (☛ p. 9)

Checking the static sag of the shock absorber



– Measure distance Ⓐ of the unloaded rear wheel. (☛ p. 38)
– Hold the motorcycle upright with the aid of an assistant.
– Measure the distance between the rear axle and the fixed point again.
– Note down the value as dimension Ⓑ.

Info

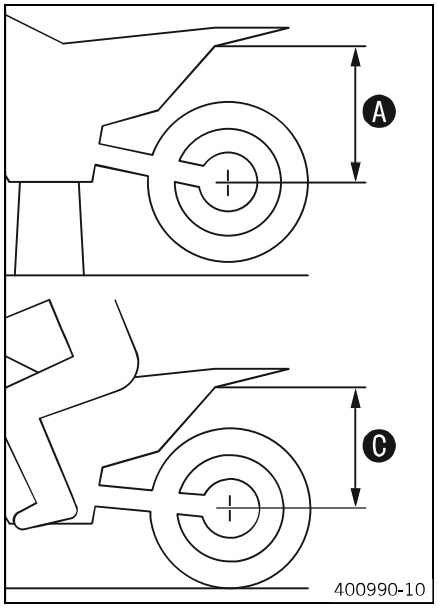
The static sag is the difference between measurements Ⓐ and Ⓑ.

– Check the static sag.

Static sag	35 mm (1.38 in)

» If the static sag is less or more than the specified value:
– Adjust the spring preload of the shock absorber. (☛ p. 39)

Checking the riding sag of the shock absorber



– Measure distance ❹ of the unloaded rear wheel. (☛ p. 38)
– With another person holding the motorcycle, the rider, wearing full protective clothing, sits on the seat in a normal sitting position (feet on footrests) and bounces up and down a few times.
  ✓ The rear wheel suspension levels out.
– Another person now measures the distance between the rear axle and a fixed point.
– Note down the value as dimension ❻.

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

– Check the riding sag.

Guideline

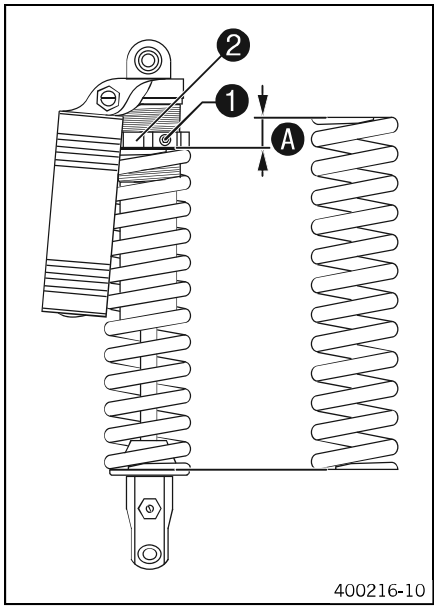
Riding sag	105 mm (4.13 in)

» If the riding sag differs from the specified measurement:
  – Adjust the riding sag. (☛ p. 40)

Adjusting the spring preload of the shock absorber

Caution
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.

Info
Before changing the spring preload, make a note of the present setting, e.g., by measuring the length of the spring.



– Remove the shock absorber. (☛ p. 40)
– After removing the shock absorber, clean it thoroughly.
– Loosen screw ❶.
– Turn adjusting ring ❷ until the spring is no longer under tension.

Combination wrench (50329080000)
Hook wrench (T106S) (☛ p. 234)

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

Guideline

Spring preload	8 mm (0.31 in)

Info
Depending on the static sag and/or the riding sag, it may be necessary to increase or decrease the spring preload.

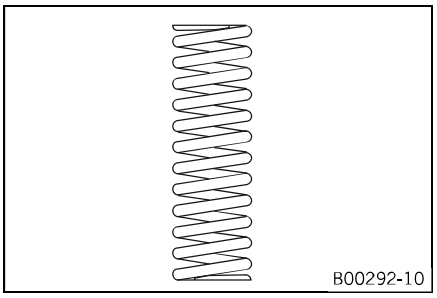
– Tighten screw ❶.

Guideline

Screw, shock absorber adjusting ring	M6	5 Nm (3.7 lbf ft)

– Install the shock absorber. (☛ p. 40)

Adjusting the riding sag



– Remove the shock absorber. (☛ p. 40)
– After removing the shock absorber, clean it thoroughly.
– Choose and mount a suitable spring.

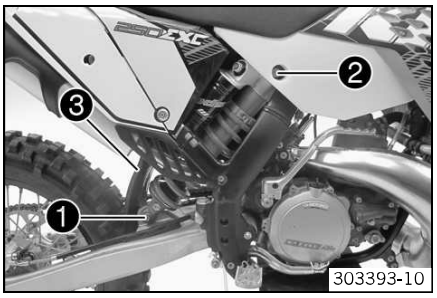
Guideline

Spring rate	
Weight of rider: 65... 75 kg (143... 165 lb.)	66 N/mm (377 lb/in)
Weight of rider: 75... 85 kg (165... 187 lb.)	69 N/mm (394 lb/in)
Weight of rider: 85... 95 kg (187... 209 lb.)	72 N/mm (411 lb/in)

Info
The spring rate is shown on the outside of the spring.

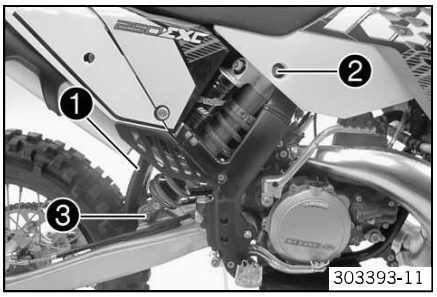
– Install the shock absorber. (☛ p. 40)
– Check the static sag of the shock absorber. (☛ p. 38)
– Check the riding sag of the shock absorber. (☛ p. 39)
– Adjust the rebound damping of the shock absorber. (☛ p. 38)

Removing the shock absorber



– Raise the motorcycle with the lift stand. (☛ p. 9)
– 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 the shock absorber



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

Guideline

Screw, top shock absorber	M12	80 Nm (59 lbf ft)	**Loctite® 2701**

– Mount and tighten screw ❸.

Guideline

Screw, bottom shock absorber	M12	80 Nm (59 lbf ft)	**Loctite® 2701**

Info
The heim joint for the shock absorber at the swing arm is Teflon coated. It must not be lubricated with grease or with other lubricants. Lubricants dissolve the Teflon coating, thereby drastically reducing the service life.

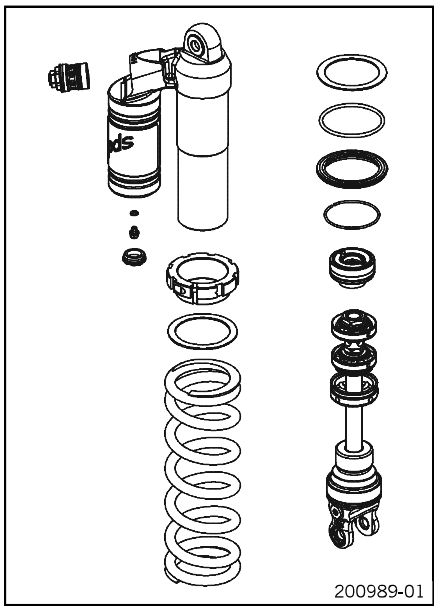
– Remove the motorcycle from the lift stand. (☛ p. 9)

Servicing the shock absorber

Caution

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.



Condition

The shock absorber has been removed.

– Remove the spring. (☛ p. 41)
– Disassemble the damper. (☛ p. 42)
– Disassemble the piston rod. (☛ p. 43)
– Disassemble the seal ring retainer. (☛ p. 44)
– Check the damper. (☛ p. 45)
– Disassemble the rebound adjuster. (☛ p. 46)
– Remove the heim joint. (☛ p. 47)
– Install the heim joint. (☛ p. 47)
– Assemble the rebound adjuster. (☛ p. 48)
– Assemble the seal ring retainer. (☛ p. 49)
– Assemble the piston rod. (☛ p. 49)
– Assemble the damper. (☛ p. 51)
– Install the spring. (☛ p. 56)

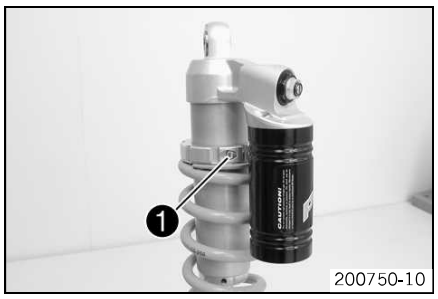
Removing the spring

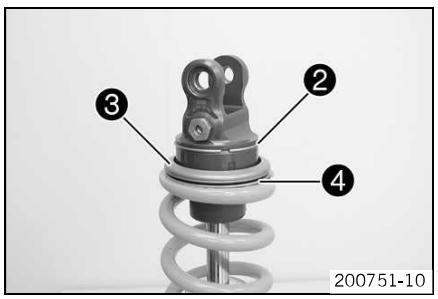
Condition

The shock absorber has been demounted.

– Clamp the shock absorber in a bench vise using soft jaws.
– Measure and note the spring length in its pre-compressed state.
– Loosen screw ❶.
– Turn the adjusting ring until the spring is no longer under tension.

Hook wrench (T106S) (☛ p. 234)





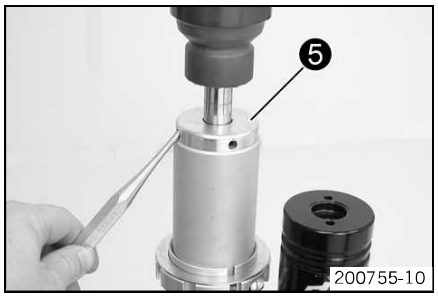
– Remove O-ring ❷.
– Remove spring retainer ❸ and intermediate washer ❹.
– Remove the spring.

Disassembling the damper

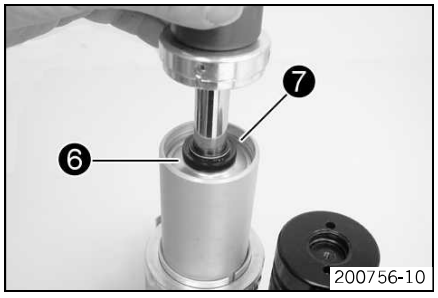
– Remove the spring. (☛ p. 41)

– Note down the present state of rebound damping ❶ and compression damping ❷.
– Completely open the adjustment elements of the rebound damping and compression damping.
– Remove rubber cap ❸ of the reservoir.

– Slowly unscrew screw ❹.
✓ The pressurized nitrogen is bled off.



– Remove locking cap ❺.



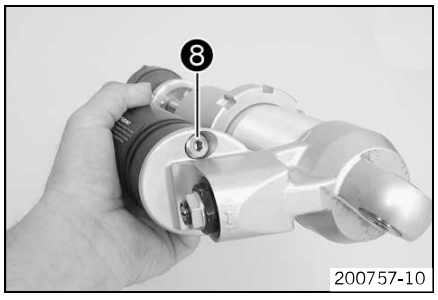
– Press seal ring retainer ❻ all the way in with the special tool.

Disassembly tool (T1216) (☛ p. 235)

– Remove lock ring ❼.

Info
Do not scratch the inner surface.

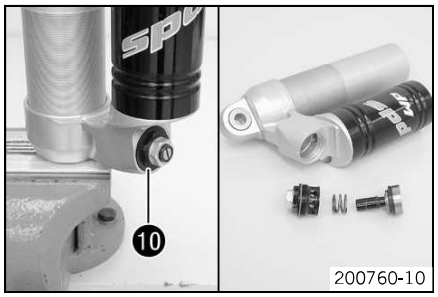
– Take out the damper.



– Remove screw ❽. Drain the oil.

– Remove the piston rod. Drain the remaining oil.

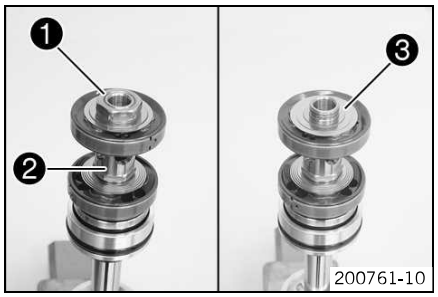
– Remove adjusting ring ❾ with the intermediate washer.



– Remove compression adjuster ❿. Remove the spring and piston.

Disassembling the piston rod

– Disassemble the damper. (☛ p. 42)
– Clamp the piston rod with the fork in a bench vise.

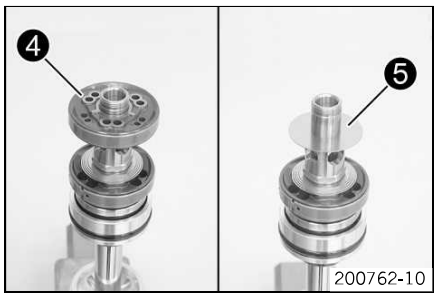


– Remove nut ❶.

Info
If mount ❷ is loosened, apply counteractive force.

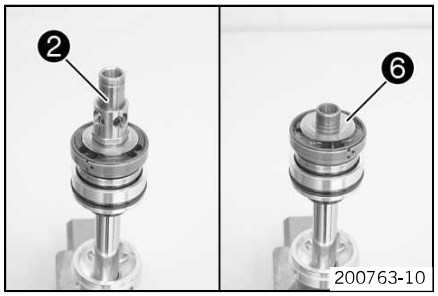
– Remove rebound damping shim stack ❸.

Info
Guide the rebound damping shim stack onto a screwdriver and put them aside together.



– Remove piston ❹.
– Remove compression damping shim stack ❺.

Info
Guide the compression damping shim stack onto a screwdriver and put them aside together.

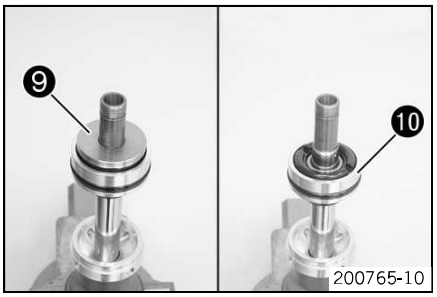


– Unscrew and remove mount ❷.
– Remove rebound damping shim stack ❻.

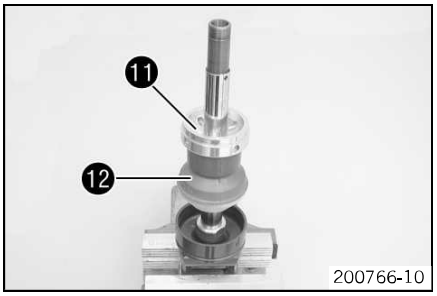
Info
Guide the rebound damping shim stack onto a screwdriver and put them aside together.

– Remove piston ❼.
– Remove compression damping shim stack ❽.

Info
Guide the compression damping shim stack onto a screwdriver and put them aside together.



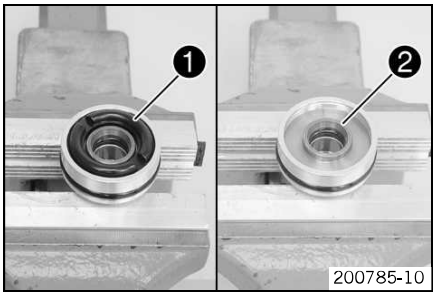
– Remove rebound damping washer ❾.
– Remove seal ring retainer ❿.



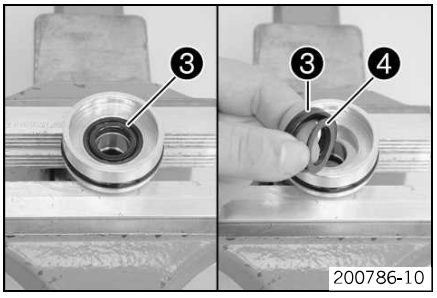
– Remove locking cap ⓫ and bump rubber ⓬.

Disassembling the seal ring retainer

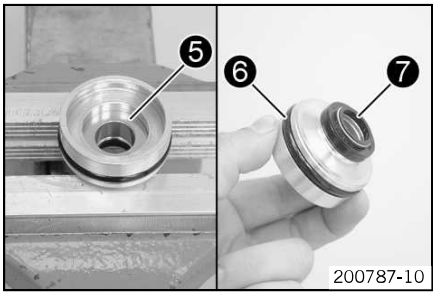
– Disassemble the piston rod. (☛ p. 43)
– Remove rebound rubber ❶.
– Remove centering disk ❷.



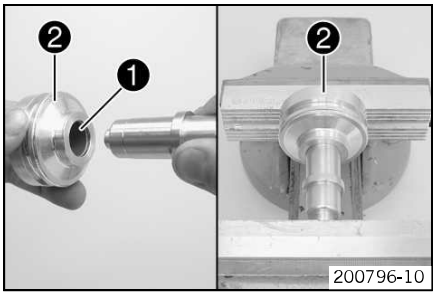
– Remove seal ring ❸.
– Remove washer ❹ from seal ring ❸.



– Remove washer ❺.
– Remove O-ring ❻.
– Remove dust boot ❼.

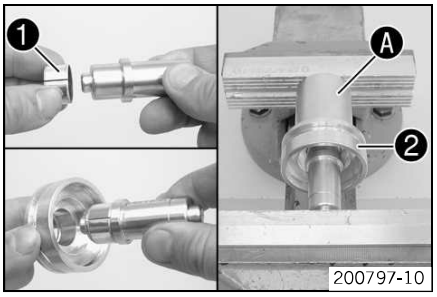


Replacing the pilot bushing



– Disassemble the seal ring retainer. (☛ p. 44)
– Press pilot bushing ❶ out of seal ring retainer ❷ using the special tool.

Press drift (T1504) (☛ p. 237)



– Slide the new pilot bushing ❶ onto the special tool.

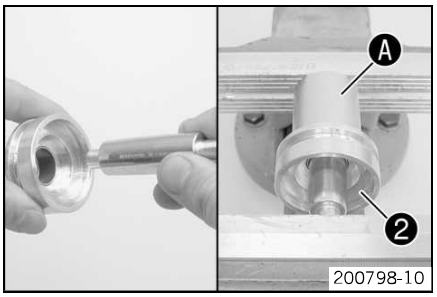
Press drift (T1504) (☛ p. 237)

– Position the pilot bushing in the seal ring retainer using the special tool.

Press drift (T1504) (☛ p. 237)

– Support seal ring retainer ❷ with the sleeve Ⓐ of the special tool. Press the pilot bushing all the way in.

Assembly tool (T150S) (☛ p. 237)



– Lubricate the special tool.

Shock absorber oil (SAE 2,5) (50180342S1) (☛ p. 227)
Calibration pin (T1205) (☛ p. 234)

– Support seal ring retainer ❷ with the sleeve Ⓐ of the special tool.

Assembly tool (T150S) (☛ p. 237)

– Press the special tool through the new pilot bushing.

Calibration pin (T1205) (☛ p. 234)

✓ The pilot bushing is to be calibrated.
– Assemble the seal ring retainer. (☛ p. 49)

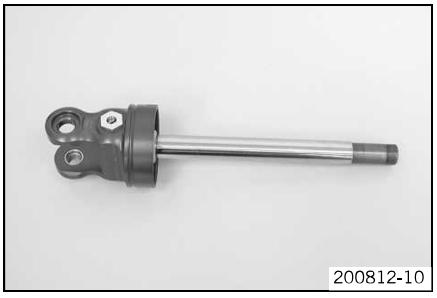
Checking the damper

Condition
The damper has been disassembled.

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

Damper tube	
Diameter	50.08 mm (1.9716 in)

» If the measured value is greater than the specified value:
– Replace the damper cartridge.
– Check the damper cartridge for damage and wear.
» If there is damage or wear:
– Replace the damper cartridge.
– Check the heim joint for damage and wear.
» If there is damage or wear:
– Replace the heim joint.



– Measure the diameter of the piston rod.

Piston rod	
Diameter	17.95 mm (0.7067 in)

» If the measured value is smaller than the specified value:
– Replace the piston rod.
– Measure the run-out of the piston rod.

Piston rod

Run-out	0.02 mm (0.0008 in)

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

– Check the piston rod for damage and wear.
» If there is damage or wear:
  – Replace the piston rod.


200813-10

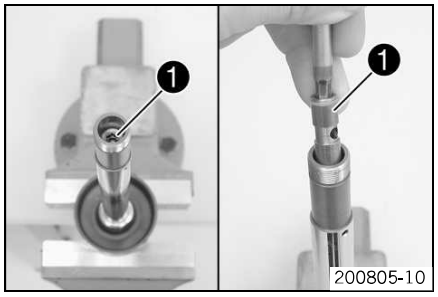
– Check the piston rings for damage and wear.
» If damage or a bronze-colored surface is visible:
  – Replace the piston rings.

Disassembling the rebound adjuster

– Disassemble the piston rod. (☛ p. 43)
– Warm up the piston rod in the area of the rebound damping valve seat.

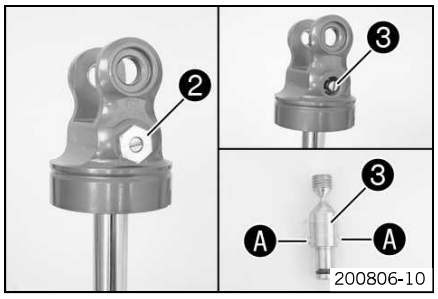
Guideline

80 °C (176 °F)



200805-10

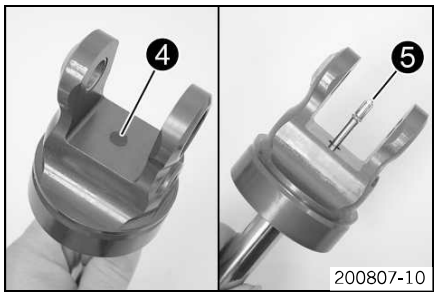
– Remove rebound damping valve seat ❶.



200806-10

– Remove screwsleeve ❷.
– Remove adjusting screw ❸.

Info
Do not lose balls Ⓐ and spring.

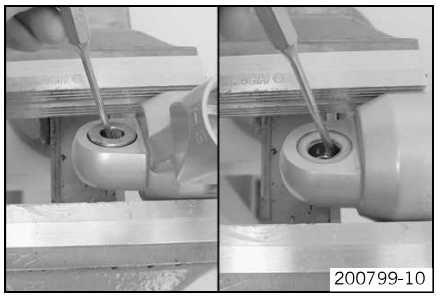


200807-10

– Remove rubber plug ❹.
– From the opposite side, press rebound needle ❺ out of the piston rod.

Removing the heim joint

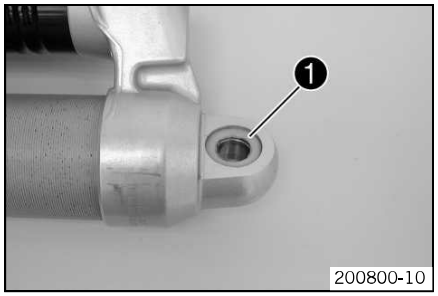
Condition
The shock absorber has been demounted.



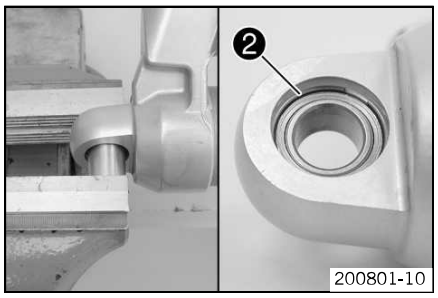
– Clamp the shock absorber in a vise using soft jaws.
– Remove the collar bushing of the heim joint.

Pin (T120) (☛ p. 234)

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



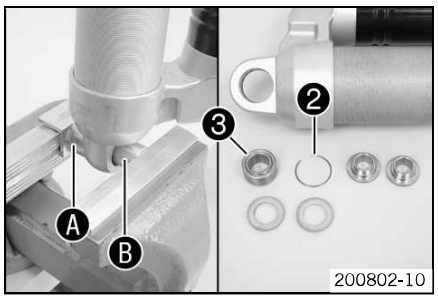
– Remove seal ring ❶ on both sides.



– Press the heim joint against a lock ring using the special tool.

Pressing tool (T1207S) (☛ p. 235)

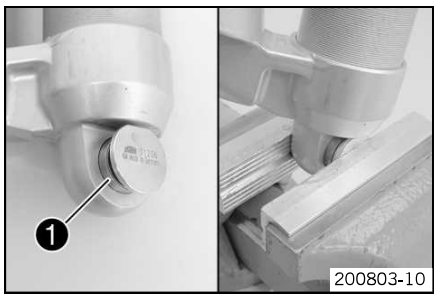
– Remove the second lock ring ❷.



– Place special tool Ⓐ underneath and press out heim joint ❸ using special tool Ⓑ.

Pressing tool (T1207S) (☛ p. 235)

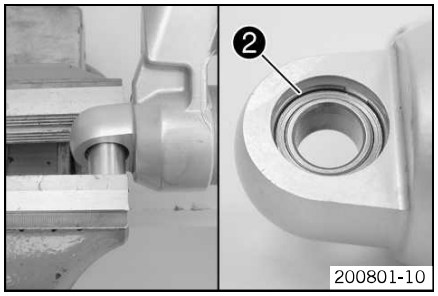
Installing the heim joint



– Position new heim joint ❶ and special tool.

Pressing tool (T1206) (☛ p. 235)

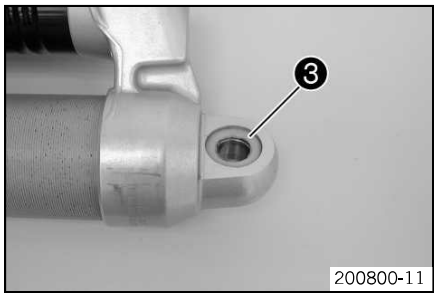
– Press in the heim joint all the way.



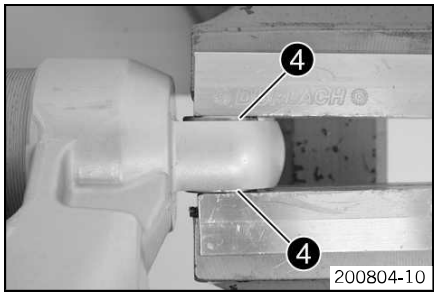
– Press the heim joint against the lock ring using the special tool.

Pressing tool (T1207S) (☛ p. 235)

– Mount the second lock ring ❷.

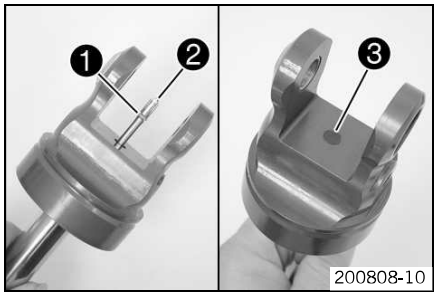


– Mount seal ring ❸ on both sides.



– Position both collar bushings ❹ and press in.

Assembling the rebound adjuster



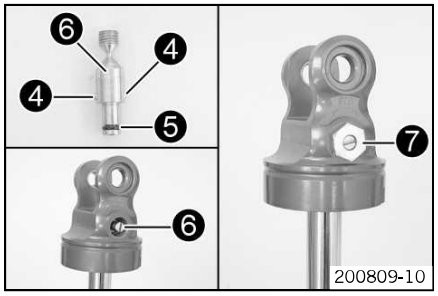
– Grease O-ring ❶ of the rebound needle.

Lubricant (T158) (☛ p. 228)

– Mount rebound needle ❷ in the piston rod.

Info
Push in the rebound needle to the point where it is possible to mount the rebound damping adjusting screw.

– Mount rubber plug ❸.



– Lubricate spring, balls ❹ and O-ring ❺.

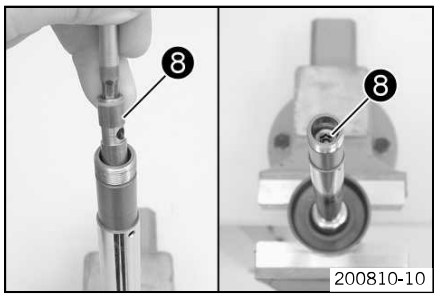
Lubricant (T159) (☛ p. 229)

– Screw in the rebound damping adjusting screw ❻ all the way.
– Mount and tighten screw sleeve ❼.

Guideline

Screw sleeve	M14x1	18 Nm (13.3 lbf ft)

– Screw out the rebound damping adjusting screw ❻ to the stop.



– Grease the O-ring of the rebound damping seat.

Lubricant (T159) (☛ p. 229)

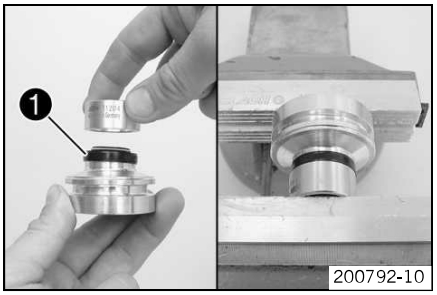
– Mount and tighten rebound damping valve seat ❽.

Guideline

Rebound damping valve seat	M8x1	6 Nm (4.4 lbf ft)	**Loctite® 2701**

Info
The rebound damping valve seat must be pressed inward before tightening.

Assembling the seal ring retainer

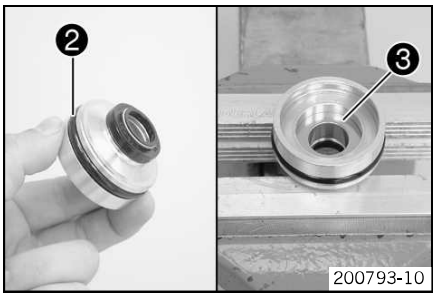


– Mount dust boot ❶ with the special tool.

Mounting sleeve (T1204) (☛ p. 234)

– Grease the sealing lip of the dust boot.

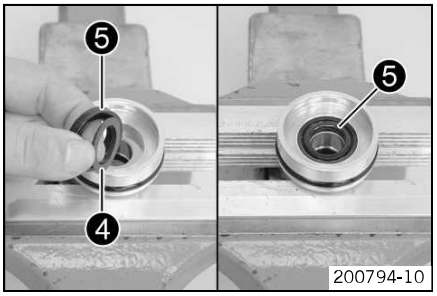
Lubricant (T625) (☛ p. 229)



– Grease the O-ring groove.

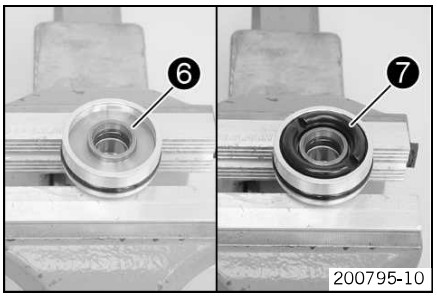
Lubricant (T158) (☛ p. 228)

– Mount O-ring ❷.
– Mount washer ❸.



– Position washer ❹ on seal ring ❺.
– Grease the seal ring and mount with the washer facing downward.

Lubricant (T511) (☛ p. 228)

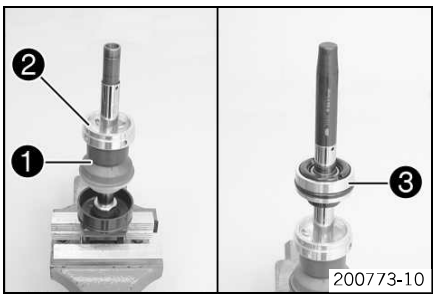


– Mount centering disk ❻.
– Mount rebound rubber ❼.

Assembling the piston rod

– Assemble the seal ring retainer. (☛ p. 49)
– Assemble the rebound adjuster. (☛ p. 48)
– Clamp the piston rod with the fork in a bench vise.
– Mount bump rubber ❶ and locking cap ❷.
– Position the special tool on the piston rod.

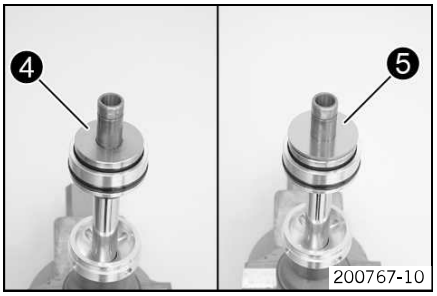
Mounting sleeve (T1215) (☛ p. 235)



– Grease the dust boot and slide seal ring retainer ❸ onto the piston rod.

Lubricant (T625) (☛ p. 229)

– Remove the special tool.

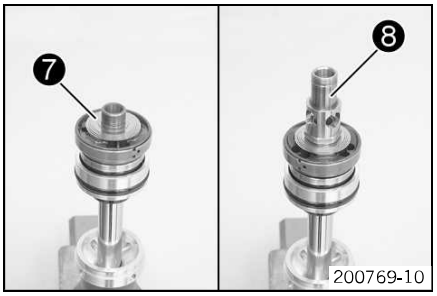


- Mount rebound damping washer ❹.
- Mount the compression shim stack ❺ with the smaller shims facing downward.

- Grind piston ❻ on both sides, using 1200 grit sandpaper on a surfacing plate.
- Clean the piston.
- Mount the piston.

Guideline

View Ⓐ	Top view of piston
View Ⓑ	Bottom view of piston



- Mount rebound damping shim stack ❼ with the smaller shims at the top.
- Apply thread locker to the threads of the piston rod.

Loctite® 2701

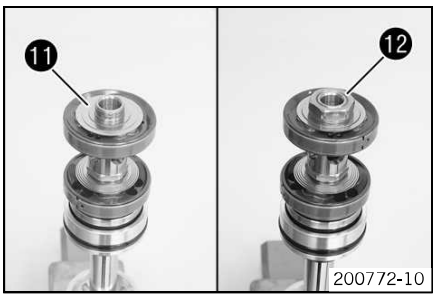
- Screw on mount ❽ to the point where the piston can still be turned.

- Mount the compression shim stack ❾ with the smaller shims facing downward.

- Grind piston ❿ on both sides on a surface plate using 1200 grit sandpaper.
- Clean the piston.
- Mount the piston.

Guideline

View Ⓐ	Top view of piston
View Ⓑ	Bottom view of piston



- Mount rebound damping shim stack ⓫ with the smaller shims facing upward.
- Grease the threads of the mount.

Lubricant (T152) (☛ p. 229)

- Mount nut ⓬, but do not tighten it yet.

– Align both pistons using the special tool.

Centering sleeve (T1214) (☛ p. 235)

– Tighten the nut.

Guideline

Piston rod nut	M16x1	40 Nm (29.5 lbf ft)

– Remove the special tool.

Assembling the damper

– Assemble the piston rod. (☛ p. 49)

– Slide the spring and piston onto compression adjuster ❶.
– Grease the O-ring.

Lubricant (T158) (☛ p. 228)

– Grease the threads.

Lubricant (T159) (☛ p. 229)

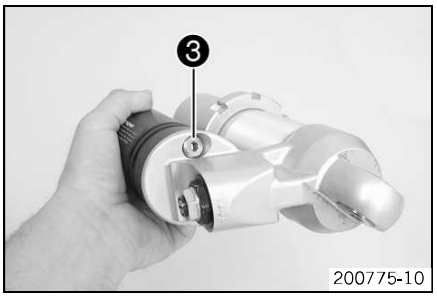
– Mount and tighten the compression adjuster.

Guideline

Compression adjuster	M31x1	50 Nm (36.9 lbf ft)

– Install adjusting ring ❷ with an intermediate washer.

Info
The adjusting ring cannot be mounted after the piston rod has been assembled!



– Mount screw ❸ but do not tighten yet.

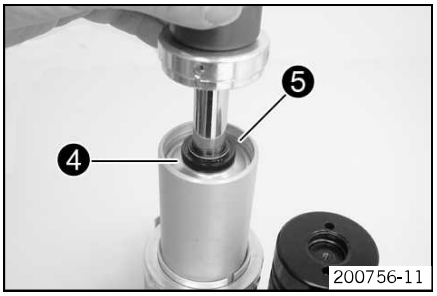
– Grease the O-ring of the seal ring retainer.

Lubricant (T158) (☛ p. 228)

– Fill the damper cartridge approximately half way.

Shock absorber oil (SAE 2,5) (50180342S1) (☛ p. 227)

– Carefully mount the piston rod.

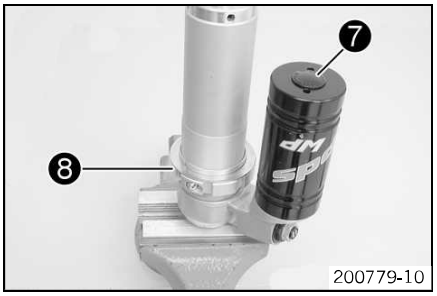


– Mount seal ring retainer ❹ and slide it under the ring groove.
– Mount lock ring ❺.

Info
Do not scratch the inner surface.

– Pull out the piston rod in order that the seal ring retainer fits closely against the lock ring.

– Mount locking cap ❻ of the damper cartridge.
– Bleed and fill the damper. (☛ p. 53)
– Fill the damper with nitrogen. (☛ p. 55)



– Mount rubber cap ❼ of the reservoir.
– Turn adjusting ring ❽ completely down toward the bottom.

Alternative 1

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

Guideline

Compression damping, low-speed	
Comfort	22 clicks
Standard	20 clicks
Sport	15 clicks

– Turn adjusting screw ❿ clockwise with an open end wrench until it stops.
– Turn back counterclockwise by the number of turns corresponding to the shock absorber type.

Guideline

Compression damping, high-speed	
Comfort	2 turns
Standard	1.5 turns
Sport	1.25 turns

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

Guideline

Rebound damping	
Comfort	26 clicks
Standard	24 clicks
Sport	22 clicks

Alternative 2

Warning

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

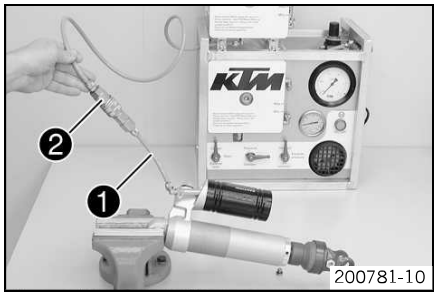
- Extreme modifications to the adjustment of the spring elements can cause a serious deterioration in the handling characteristics and overload some components.
- Only make adjustments within the recommended range.
- After making adjustments, ride slowly at first to get the feel of the new ride behavior.

– Mount adjusting screws ❾, ❿ and ⓫ in the positions determined when disassembling.

Bleeding and filling the damper

Info

Before working with the vacuum pump, carefully read the vacuum pump operating manual.
Completely open the adjusters of the rebound and compression damping.



– Remove the screw from the filling port.
– Mount adapter ❶ on the damper.

Info

Hand-tighten only without using a tool.

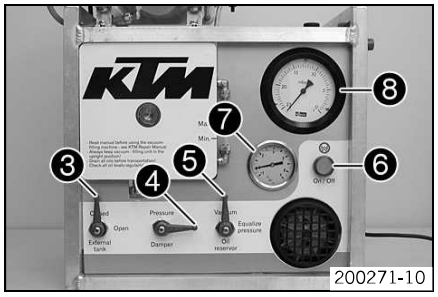
– Connect adapter ❶ to connector ❷ of the vacuum pump.

Vacuum pump (T1240S) (☛ p. 236)

– Clamp the damper with soft jaws or hold it as shown in the photo.

Info

Clamp the damper only lightly.
The filling port must be located at the highest point.
The piston rod moves in and out during filling; do not immobilize it by holding it with your hand.



– Position the control lever as shown in the photo.

✓ Control lever **External tank** ❸ is set to **Closed**; **Damper** ❹ is set to **Vacuum**; and **Oil reservoir** ❺ is set to **Vacuum**.

– Activate **On/Off** switch ❻.

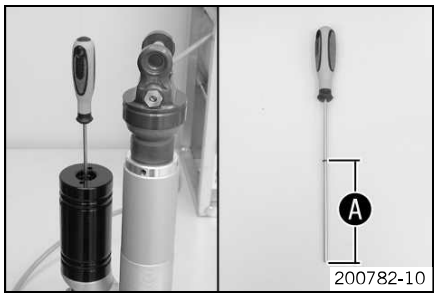
✓ The suction process begins.

✓ Pressure gauge ❼ drops to the required value.

< 0 bar

✓ Vacuum gauge ❽ drops to the required value.

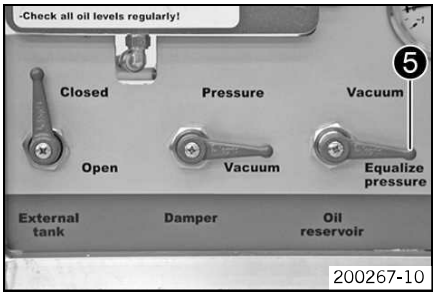
4 mbar



– Determine distance Ⓐ between the floating piston and reservoir hole with the special tool.

Depth micrometer (T107S) (☛ p. 234)

✓ The floating piston is positioned in the lowermost position.



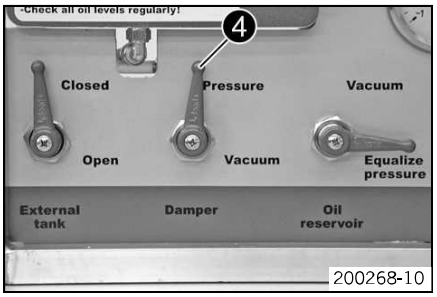
– When the vacuum gauge reaches the required value, turn control lever **Oil reservoir** ❺ to **Equalize pressure.**

Guideline

4 mbar

✓ The pressure gauge increases to the required value.

0 bar



– When the pressure gauge reaches the required value, turn control lever **Damper** ❹ to **Pressure.**

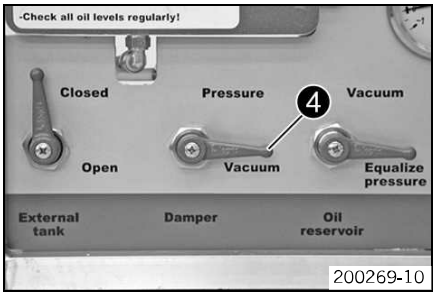
Guideline

0 bar

✓ Oil is pumped into the damper.

✓ The pressure gauge increases to the required value.

3 bar



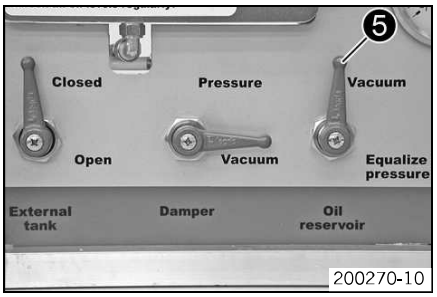
– When the pressure gauge reaches the required value, turn control lever **Damper** ❹ to **Vacuum.**

Guideline

3 bar

✓ The pressure gauge drops to the required value.

0 bar



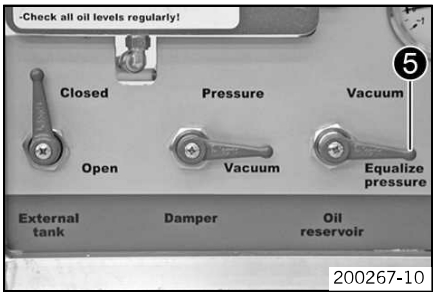
– When the pressure gauge reaches the required value, turn control lever **Oil reservoir** ❺ to **Vacuum.**

Guideline

0 bar

✓ The vacuum gauge drops to the required value.

8 mbar



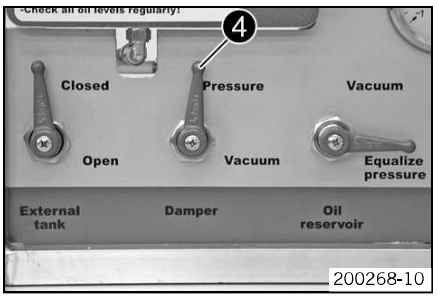
– When the vacuum gauge reaches the required value, turn control lever **Oil reservoir** ❺ to **Equalize Pressure.**

Guideline

8 mbar

✓ The pressure gauge drops to the required value.

0 bar



– When the pressure gauge reaches the required value, turn control lever **Damper** ❹ to **Pressure.**

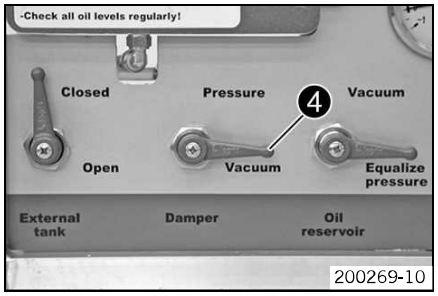
Guideline

0 bar

✓ Oil is pumped into the damper.

✓ The pressure gauge increases to the required value.

3 bar



– When the pressure gauge reaches the required value, turn control lever **Damper** ❹ to **Vacuum**.

Guideline

3 bar

✓ The pressure gauge drops to the required value.

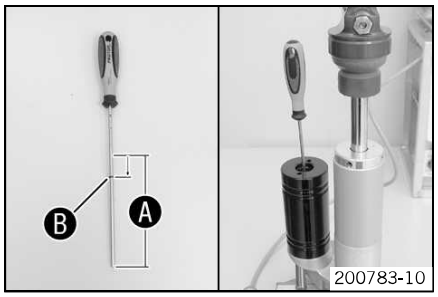
0 bar

– When the pressure gauge reaches the required value, activate the **On/Off** switch.

Guideline

0 bar

✓ The vacuum pump is switched off.



– Slide O-ring ❽ to the end of the special tool by the specified value (distance Ⓐ minus specified value).

Guideline

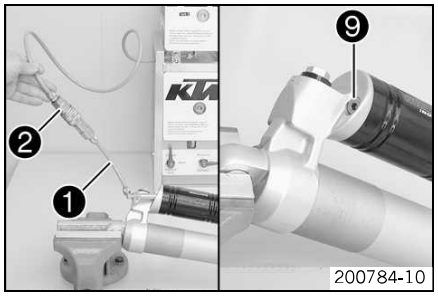
10 mm

Depth micrometer (T107S) (☛ p. 234)

– Push the floating piston into the reservoir to the distance described above using the special tool.

Info
When the piston rod is fully extended, the floating piston must be at precisely this position; otherwise, damage will occur when the shock absorber compresses and rebounds.

– Remove the special tool.



– Remove adapter ❶ from connector ❷ of the vacuum pump.

Info
Hold the damper so that the filling port is at the highest location.

– Remove the adapter.
– Mount and tighten screw ❾.

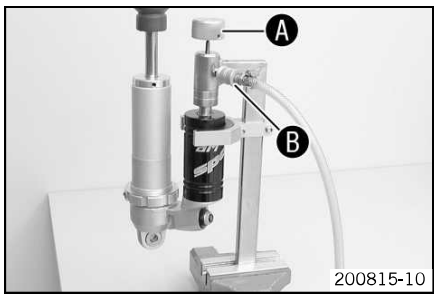
Guideline

Filling port screw	M10x1	14 Nm (10.3 lbf ft)

Filling the damper with nitrogen

– Screw in the screw ❶ approx. two turns, but do not tighten.

Info
The piston rod is completely extended.



– Keep the special tool in place in the bench vise.

Nitrogen filling tool (T170S1) (☛ p. 238)

– Connect the special tool to the pressure regulator of the filling cylinder.

Filling gas - nitrogen

– Adjust the pressure regulator.

Guideline

Gas pressure	10 bar (145 psi)

– Position the shock absorber in the special tool.

✓ The hexagonal part of tap handle Ⓐ engages in the hexagon socket of the screw of the filling port.

– Open spigot ❽.
– Fill the shock absorber for at least 15 seconds.

Guideline

Gas pressure	10 bar (145 psi)

Info
Monitor the pressure control valve indicator.
Ensure that the shock absorber has been filled to the specified pressure.

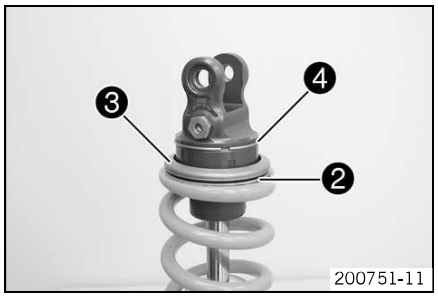
– Screw the filling port shut with tap handle ❹.
– Close spigot ❽ and remove the damper from the special tool.
– Tighten the screw of the filling port.

Guideline

Reservoir filling port screw	M5	3.5 Nm (2.58 lbf ft)

Installing the spring

– Ensure that adjusting ring ❶ is screwed on with the intermediate washer.



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

Guideline

Spring rate	
Weight of rider: 65... 75 kg (143... 165 lb.)	66 N/mm (377 lb/in)
Weight of rider: 75... 85 kg (165... 187 lb.)	69 N/mm (394 lb/in)
Weight of rider: 85... 95 kg (187... 209 lb.)	72 N/mm (411 lb/in)

– Mount intermediate washer ❷ and spring retainer ❸.
– Mount ring ❹.

Alternative 1

– Tighten the spring by turning adjusting ring to measurement.

Guideline

Spring preload	8 mm (0.31 in)

Hook wrench (T106S) (☛ p. 234)

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.

– Tighten the spring by turning the adjusting ring to the measured value determined when it was removed.

Hook wrench (T106S) (☛ p. 234)

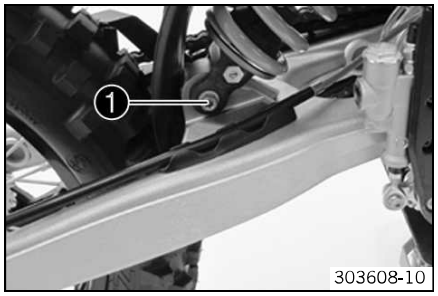
– Tighten screw ❺.

Guideline

Screw, shock absorber adjusting ring	M6	5 Nm (3.7 lbf ft)

Changing the heim joint

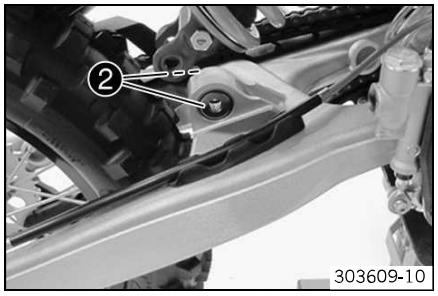
– Raise the motorcycle with the lift stand. (☛ p. 9)



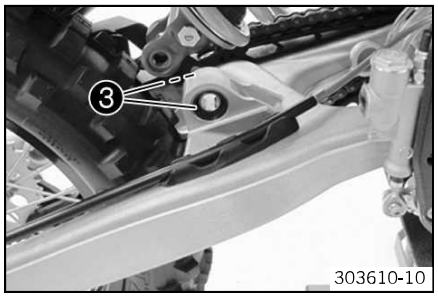
– Remove screw ❶ and lower the rear wheel with the swing arm as far as possible without blocking the rear wheel. Fix the rear wheel in this position.

Info
Raise the wheel slightly to make it easier to remove the screw.

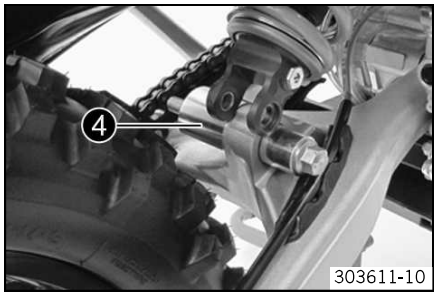
– Move the shock absorber to the rear.



– Remove spacers ❷ on both sides.



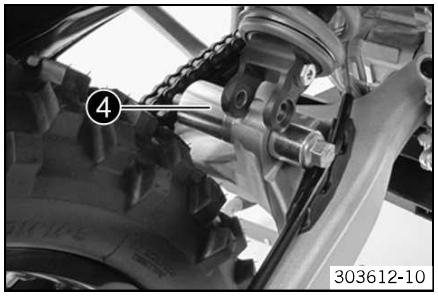
– Remove shaft seal rings ❸ on both sides.



– Mount special tool ❹.

Mounting tool, heim joint (50329000044) (☛ p. 230)

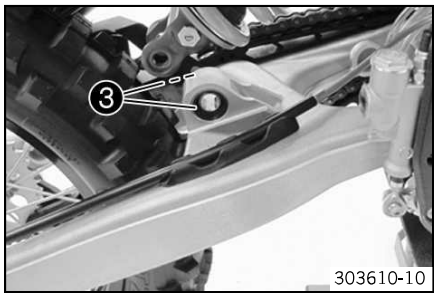
– Press out the heim joint by screwing in the screw.



– Position the new heim joint.
– Mount special tool ❹.

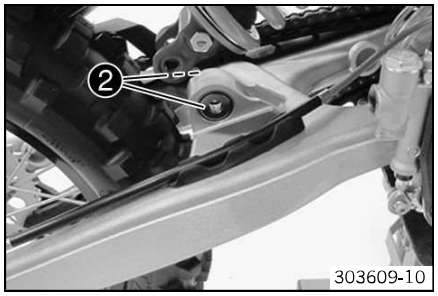
Mounting tool, heim joint (50329000044) (☛ p. 230)

– Press in the heim joint by screwing in the screw.

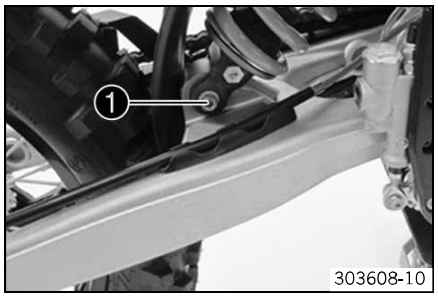


– Press in shaft seal rings ❸ on both sides with the open side facing inward.

Info
The heim joint for the shock absorber at the swing arm is Teflon coated. It must not be greased with grease or with other lubricants. Lubricants dissolve the Teflon coating, thereby drastically reducing the service life.



– Mount spacers ❷ on both sides.



– Position the shock absorber.
– Mount and tighten screw ❶.

Guideline

Screw, bottom shock absorber	M12	80 Nm (59 lbf ft)	**Loctite® 2701**

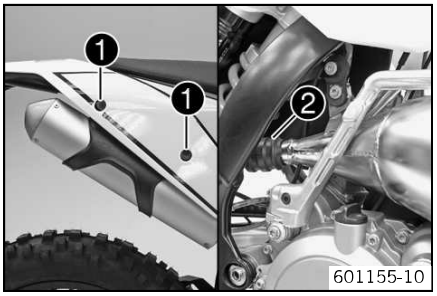
Info
Raise the wheel slightly to make it easier to mount the screw.

– Remove the motorcycle from the lift stand. (☛ p. 9)

Removing the main silencer

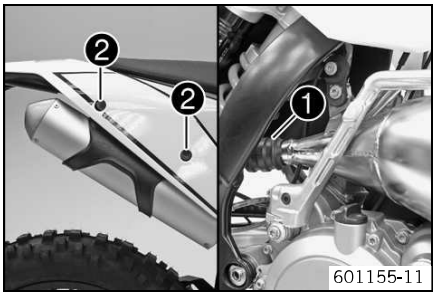
Warning
Danger of burns The exhaust system gets very hot when the vehicle is driven.

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



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

Installing the main silencer



– Mount the main silencer with rubber sleeve ❶.
– Mount and tighten screws ❷.

Guideline

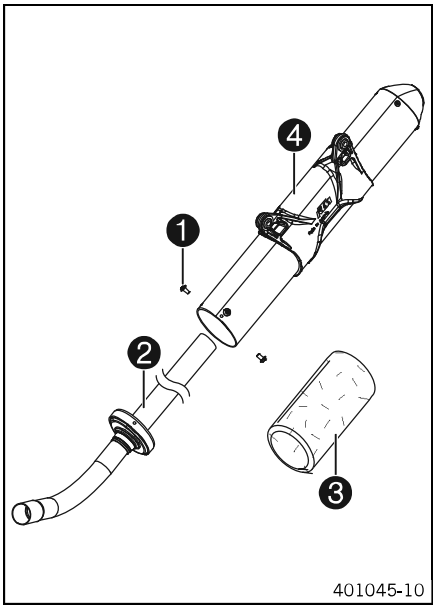
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

Changing 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.

Info
Over a period, the fibers of the insulating material vanish into the air, and the silencer "burns out".
Not only is the noise level higher, the performance characteristic changes.

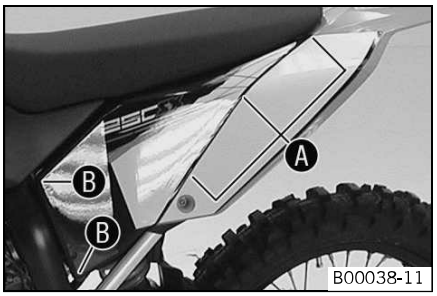


– Remove the main silencer. (☛ p. 59)
– Remove screws ❶. Pull out inner tube ❷.
– Pull the glass fiber yarn filling ❸ from the inner tube.
– Clean the parts that are to be reinstalled.
– Mount the new glass fiber yarn filling ❸ on the inner tube.
– Slide outer tube ❹ over the inner tube with the new glass fiber yarn filling.
– Mount and tighten all screws ❶.
– Install the main silencer. (☛ p. 59)

Removing the air filter box lid

– Pull off the air filter box lid in area ❹ sideways and remove it toward the front.

Installing the air filter box lid



– Insert the air filter box lid into the rear area ❹ and clip it into the front area ❺.

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.

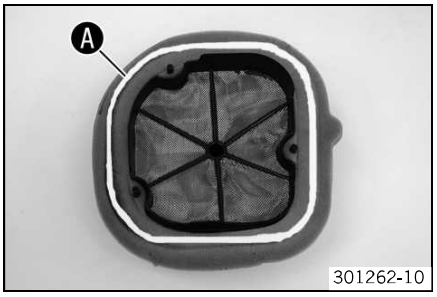
Warning

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 air filter box lid. (☛ p. 60)
– Detach air filter holder ❶ at the bottom and swing it to one side. Remove the air filter with the air filter support.
– Remove the air filter from the air filter support.

Installing the air filter



– Mount the clean air filter onto the air filter support.
– Grease the air filter in area ❹.

Long-life grease (☛ p. 228)

– Put in both parts together, position them, and fix them with air filter holder ❶.

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

– Install the air filter box lid. (☛ p. 60)

Cleaning the air filter and air filter box

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. 60)
– Wash the air filter thoroughly in special cleaning liquid and allow it to dry properly.

Air filter cleaner (☛ p. 228)

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. 229)

– Clean the air filter box.
– Clean the intake flange and check it for damage and tightness.
– Install the air filter. (☛ p. 60)

Opening the filler cap

Danger
Fire hazard Fuel is highly flammable.

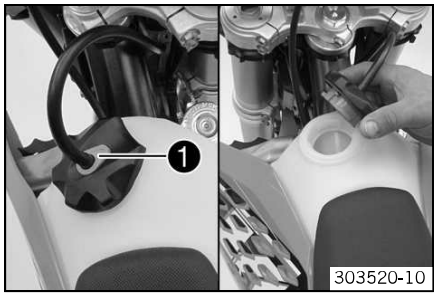
- Never refuel the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
- Fuel in the fuel tank expands when warm and can escape if the tank is overfilled. See the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

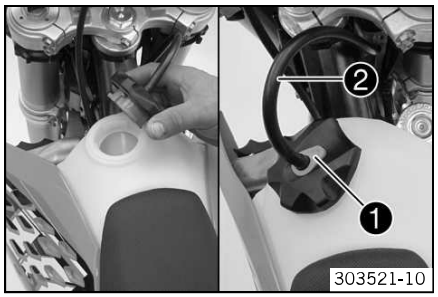
Warning
Environmental hazard Improper handling of fuel is a danger to the environment.

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



- Press release button ❶, turn the filler cap counterclockwise and lift it free.

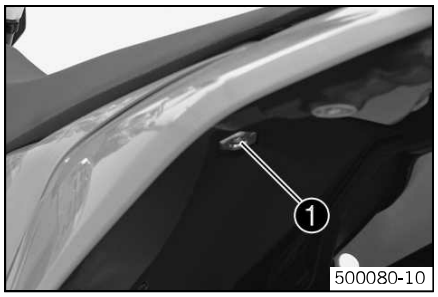
Closing the filler cap



- Replace the filler cap and turn clockwise until the release button ❶ locks in place.

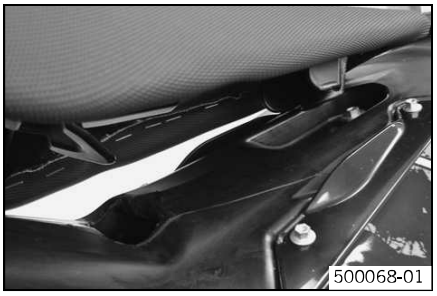
Info
Run the fuel tank breather hose ❷ without kinks.

Removing the seat

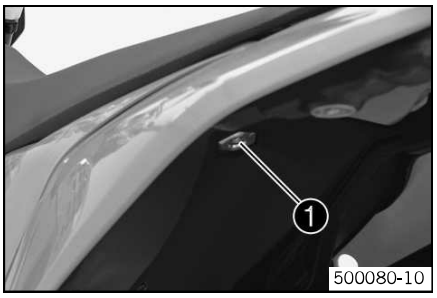


- Remove screw ❶. Lift up the seat at the rear, pull it back and then remove from above.

Mounting the seat



– Hook in the front of the seat at the collar bushing of the fuel tank, lower at the rear and simultaneously push forward.
– Make sure that the seat is correctly locked in.



– Mount and tighten screw ❶ of the seat fixation.

Guideline

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

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

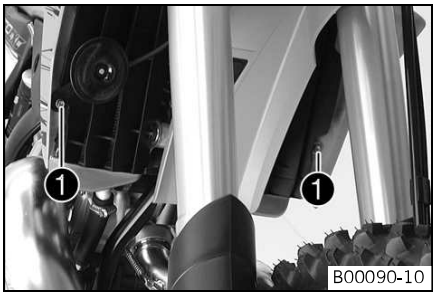
Danger of poisoning Fuel is poisonous and a health hazard.

– 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. 62)
– Turn handle ❶ of the fuel tap to the **OFF** position. (Figure 601157-10☛ p. 65)
– Pull off the fuel hose.

Info

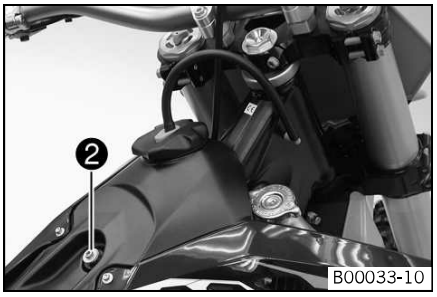
Remaining fuel may run out of the fuel hose.



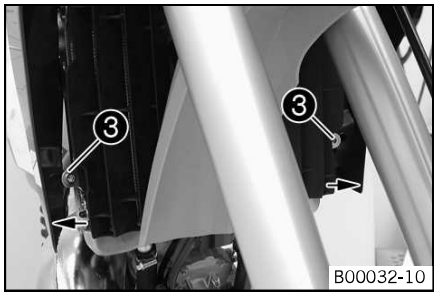
– Remove screws ❶ with the collar sleeve.

(All 250/300 EXC models)

– Hang the horn and horn bracket to one side.



– Remove screw ❷ with the collar sleeve.
– Remove the tube from the fuel tank vent line.



– Pull both spoilers off of the sides of the radiator bracket ❸ and lift 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 of the fuel with 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.

– Check the throttle cable routing. (☛ p. 36)
– Position the fuel tank and fit the two spoilers to the sides of the radiator bracket.
– Make sure that no cables are trapped or damaged.

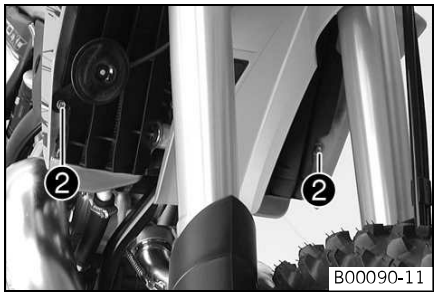
– Mount the fuel tank vent hose.
– Mount and tighten screw ❶ with the collar sleeve.

Guideline

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

(All 250/300 EXC models)

– Position the horn with the horn bracket.



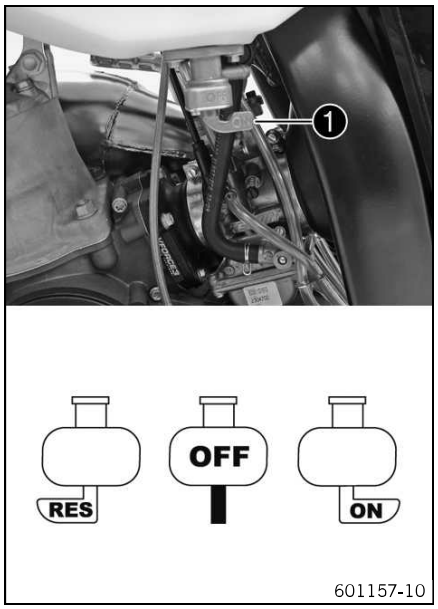
– Mount and tighten screws ❷ with the collar sleeve.

Guideline

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

– Connect the fuel hose.
– Mount the seat. (☛ p. 63)

Fuel tap

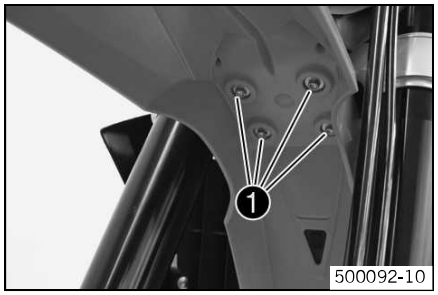


The fuel tap is on the left side of the fuel tank.
Tap handle ❶ on the fuel tap is used to open or close the supply of fuel to the carburetor.

Possible states

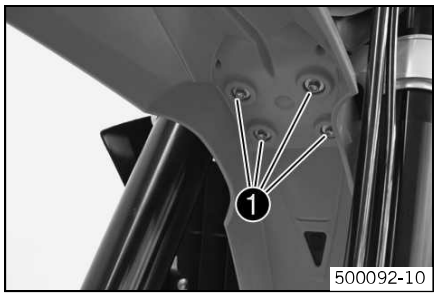
- Fuel supply closed **OFF** – No fuel can flow from the tank to the carburetor.
- Fuel supply open **ON** – Fuel can flow from the tank to the carburetor. The fuel tank empties down to the reserve.
- Reserve fuel supply open **RES** – Fuel can flow from the tank to the carburetor. The fuel tank empties completely.

Removing the front fender



– Remove screws ❶. Remove the front fender.
– Make sure the spacers remain in place.

Installing the front fender



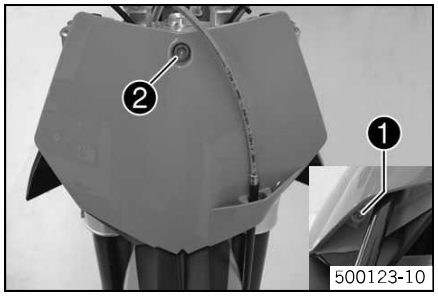
– Ensure that the spacers are mounted in the fender.
– Position the front fender. Mount and tighten screws ❶.

Guideline

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

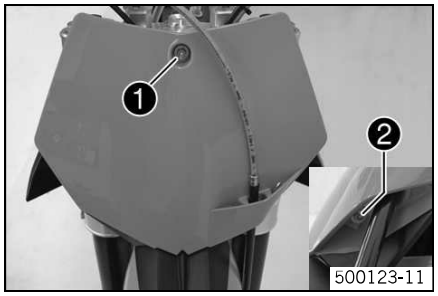
Info
Make sure the holding lugs engage in the start number plate.

Removing the start number plate (XC-W)



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

Installing the start number plate (XC-W)



– Position the start number plate. Mount and tighten screw ❶.

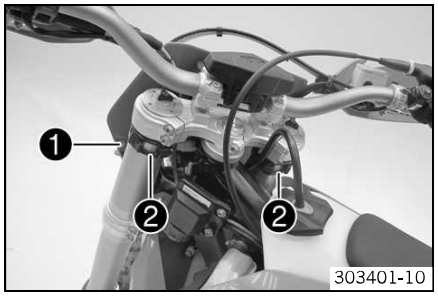
Guideline

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

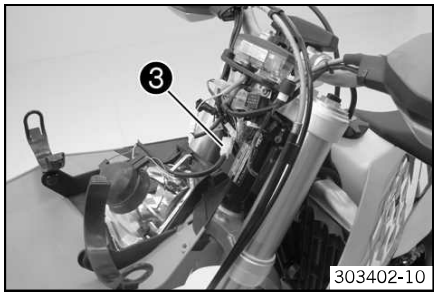
Info
Ensure that the holding lugs engage in the fender.

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

Removing the headlight mask with the headlight (All 250/300 EXC models)

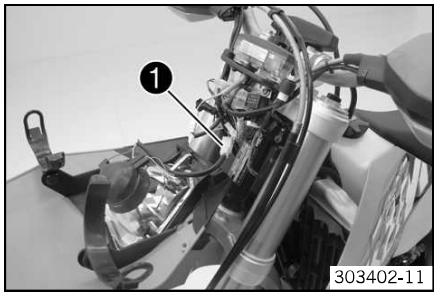


– Switch off all power consumers.
– Remove screw ❶ and take off the clamp.
– Release rubber band ❷. Slide the headlight mask up and swing it forward.

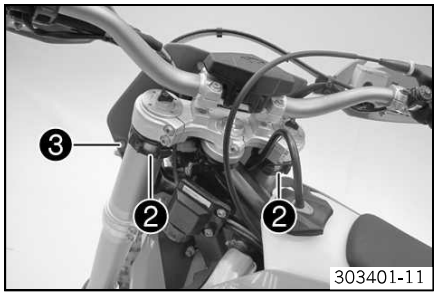


– Disconnect the electrical plug-in connection ❸ and take off the headlight mask with the headlight.

Refitting the headlight mask with the headlight (All 250/300 EXC models)



– Connect the electric plug connector ❶.

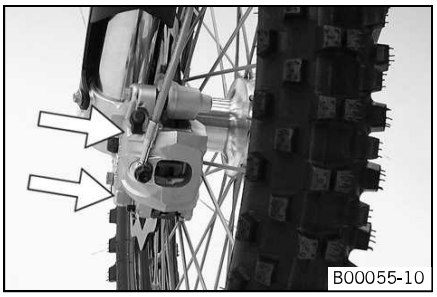


– Position the headlight mask and fix it with the rubber band ❷.

Info
Ensure that the holding lugs engage in the fender.

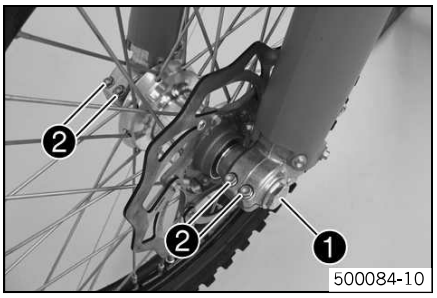
– Position the brake line and wiring harness. Put on the clamp and mount and tighten screw ❸.
– Check the headlight setting. (☛ p. 95)

Removing the front wheel



– Raise the motorcycle with the lift stand. (☛ p. 9)
– Press the brake caliper onto the brake disc by hand in order to push back the brake pistons.

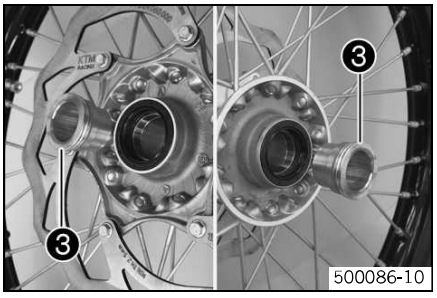
Info
Make sure when pushing back the brake pistons that you do not press the brake caliper against the spokes.



– Remove screw ❶.
– Loosen screws ❷.

– Holding the front wheel, withdraw the wheel spindle. Take the front wheel out of the fork.

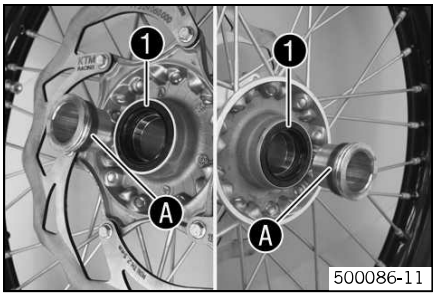
Info
Do not pull the hand brake lever when the front wheel is removed.
Always lay the wheel down in such a way that the brake disc is not damaged.



– Remove spacers ❸.

Installing the front wheel

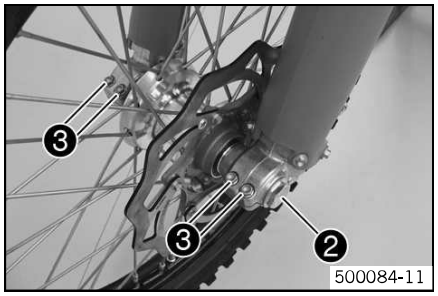
Warning
Danger of accidents Reduced braking efficiency due to oil or grease on the brake discs.
– Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.



– Check the wheel bearing for damage and wear.
  » If the wheel bearing is damaged or worn:
    – Change the wheel bearing.
– Clean and grease shaft seal rings ❶ and bearing surface Ⓐ of the spacers.

Long-life grease (☛ p. 228)

– Insert the spacers.



– Lift the front wheel into the fork, position it, and insert the wheel spindle.
– Mount and tighten screw ❷.

Guideline

Screw, front wheel spindle	M24x1.5	45 Nm (33.2 lbf ft)

– Operate the hand brake lever several times until the brake linings are lying correctly against on the brake disc.
– Remove the motorcycle from the lift stand. (☛ p. 9)
– Pull the front wheel brake and push down hard on the fork several times to align the fork legs.
– Tighten screws ❸.

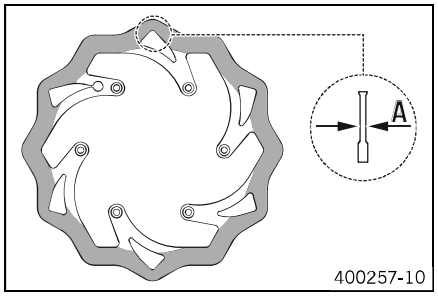
Guideline

Screw, fork stub	M8	15 Nm (11.1 lbf ft)

Checking the 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.

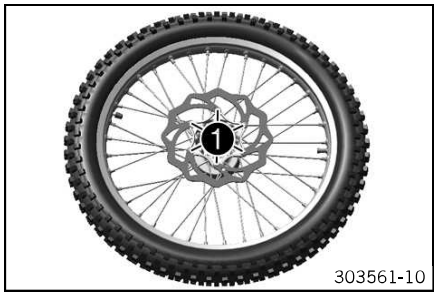
Brake discs - wear limit	
Front	2.5 mm (0.098 in)
Rear	3.5 mm (0.138 in)

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

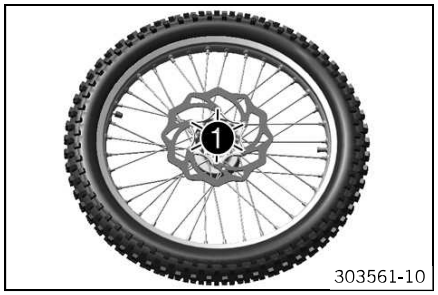
– Check the front and rear brake discs for damage, cracking and deformation.
» If the brake disc exhibits damage, cracking or deformation:
– Change the brake disc.

Removing the brake disc of the front brake

– Remove the front wheel. (☛ p. 68)
– Remove screws ❶. Take off the brake disc.



Installing the brake disc of the front brake



– Clean the contact surface of the brake disc.
– Position the brake disc with the label facing outward. Mount and tighten screws ❶.

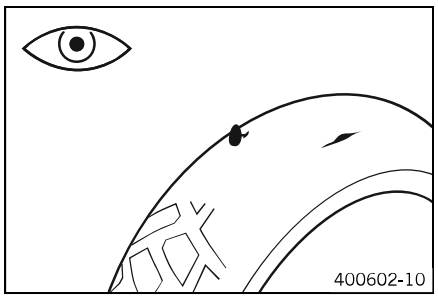
Guideline

Screw, front brake disc	M6	14 Nm (10.3 lbf ft)	**Loctite® 243™**

– Install the front wheel. (☛ p. 68)

Checking the tire condition

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



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

Info
Note local national regulations concerning the minimum tread depth.

Minimum tread depth	≥ 2 mm (≥ 0.08 in)

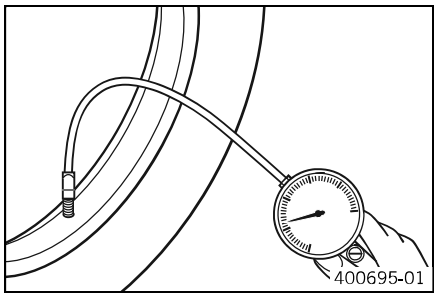
  » If the tread depth is less than the minimum permissible depth:
    – Change the tire.
– Check the tire age.

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 indicate the week of manufacture and the last two digits the year of manufacture.
KTM recommends that the tires are changed at the latest after 5 years, regardless of the actual state of wear.

  » If the tire is older than five years:
    – Change the tire.

Checking the 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)

Tire air pressure, road (All 250/300 EXC models)	
Front	1.5 bar (22 psi)
Rear	2.0 bar (29 psi)

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

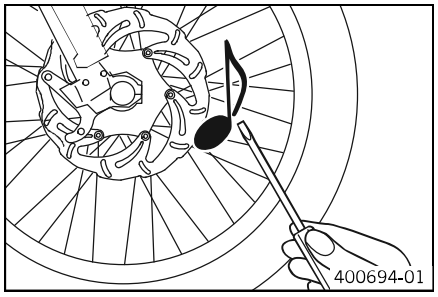
– Mount the dust cap.

Checking the spoke tension

Warning
Danger of accidents Instable handling due to incorrect spoke tension.

– Ensure that the spoke tension is correct.

Info
A loose spoke causes wheel imbalance and rapidly leads to more loose spokes.
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 tip of a screwdriver.

Info
The tone frequency depends on the length of the spoke and the spoke diameter.
If you hear different tone frequencies from different spokes of equal length and diameter, this is an indication of different spoke tensions.

You should hear a high note.

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

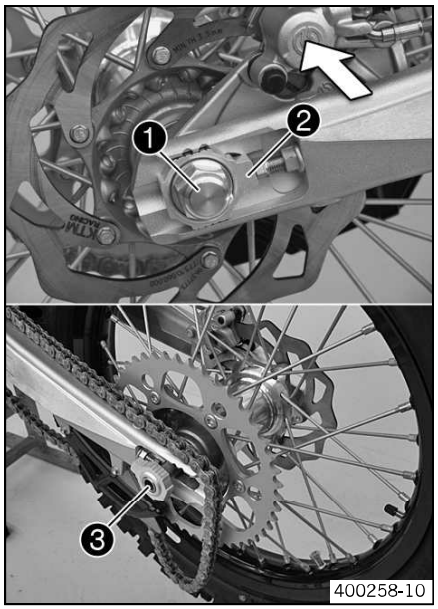
– Check the spoke torque.

Guideline

Spoke nipple, front wheel	M4.5	5… 6 Nm (3.7… 4.4 lbf ft)
Spoke nipple, rear wheel	M5	5… 6 Nm (3.7… 4.4 lbf ft)

Torque wrench with various accessories in set (58429094000) (☛ p. 233)

Removing the rear wheel

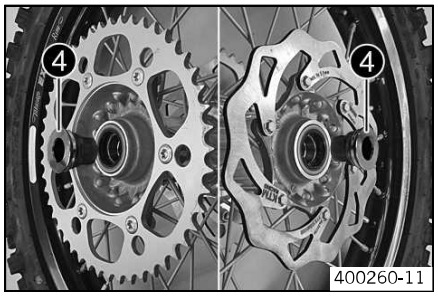


- Raise the motorcycle with the lift stand. (☛ p. 9)
- Press the brake caliper onto the brake disc by hand in order to push back the brake piston.

Info
Make sure when pushing back the brake piston that you do not press the brake caliper against the spokes.

- Remove nut ❶.
- Remove chain adjuster ❷. Withdraw wheel spindle ❸ only enough to allow the rear wheel to be pushed forward.
- Push the rear wheel forward as far as possible. Remove the chain from the rear sprocket.
- Holding the rear wheel, withdraw the wheel spindle. Take the rear wheel out of the swingarm.

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.

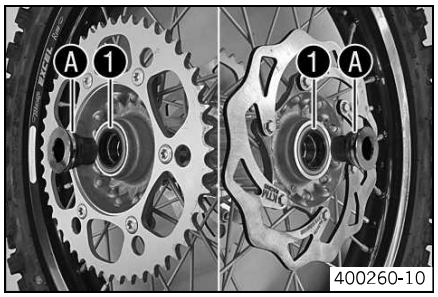


- Remove spacers ❹.

Installing the rear wheel

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

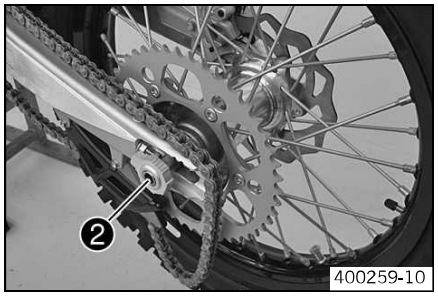
- Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.



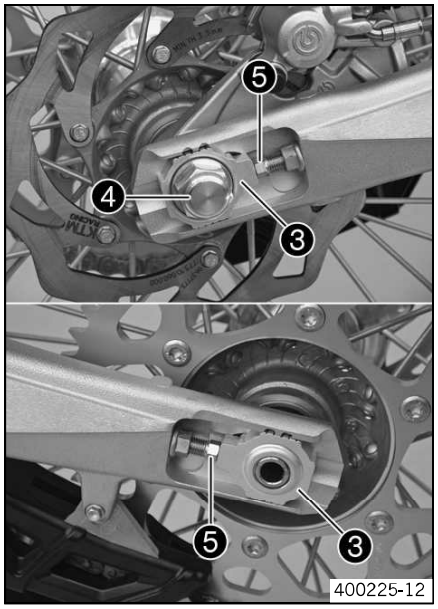
- Check the wheel bearing for damage and wear.
  - » If the wheel bearing is damaged or worn:
    - Change the wheel bearing.
- Clean and grease shaft seal rings ❶ and bearing surface Ⓐ of the spacers.

Long-life grease (☛ p. 228)

- Insert the spacers.



- Lift the rear wheel into the swing arm, position it, and insert wheel spindle ❷.
- Apply the chain.



– Position chain adjuster ❸. Mount nut ❹, but do not tighten it yet.
– Make sure that chain adjusters ❸ are fitted correctly on adjusting screws ❺.
– Check the chain tension. (☛ p. 73)
– Tighten nut ❹.

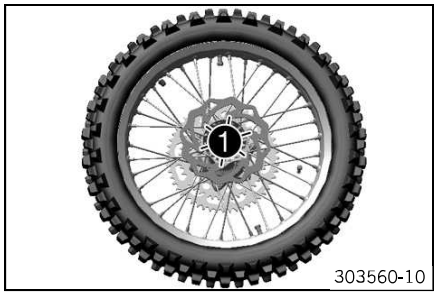
Guideline

Nut, rear wheel spindle	M20x1.5	80 Nm (59 lbf ft)

Info
The wide adjustment range of the chain adjusters (32 mm (1.18 in)) enables different secondary ratios with the same chain length.
Chain adjusters ❸ can be turned by 180°.

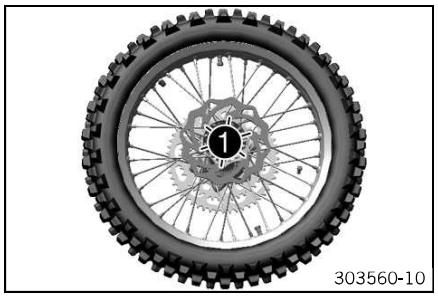
– Operate the foot brake lever several times until the brake linings are lying correctly against the brake disc and there is a pressure point.
– Remove the motorcycle from the lift stand. (☛ p. 9)

Removing the brake disc of the rear brake



– Remove the rear wheel. (☛ p. 72)
– Remove screws ❶. Take off the brake disc.

Installing the brake disc of the rear brake



– Clean the contact surface of the brake disc.
– Position the brake disc with the label facing outward. Mount and tighten screws ❶.

Guideline

Screw, rear brake disc	M6	14 Nm (10.3 lbf ft)	**Loctite® 243™**

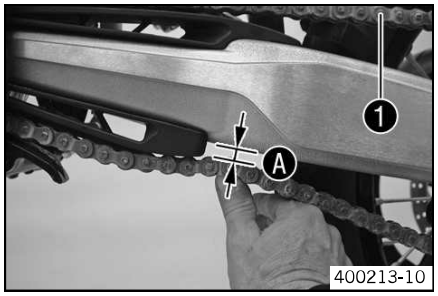
– Install the rear wheel. (☛ p. 72)

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.

– Raise the motorcycle with the lift stand. (☛ p. 9)



– Push the chain at the end of the chain sliding component upwards to measure chain tension ❹.

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

Chain tension	8... 10 mm (0.31... 0.39 in)

» If the chain tension does not meet specifications:
– Adjust the chain tension. (☛ p. 74)

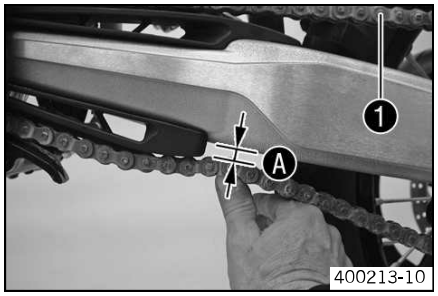
– Remove the motorcycle from the lift stand. (☛ p. 9)

Adjusting the chain tension

Warning
Danger of accidents Danger caused by incorrect chain tension.

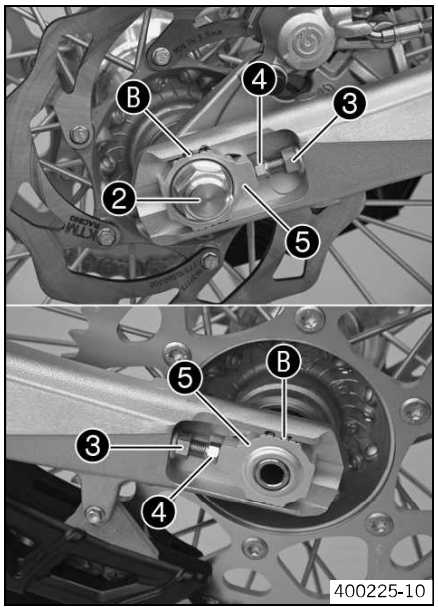
– If the chain tension is too high, the components of the secondary power train (chain, engine sprocket, rear sprocket, bearings in transmission and rear wheel) are under additional load. Apart from premature wear, in extreme cases the chain can rupture or the countershaft of the transmission can break.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

– Raise the motorcycle with the lift stand. (☛ p. 9)



– Push the chain at the end of the chain sliding component upwards to measure the chain tension ❹.

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



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

Guideline

Chain tension	8... 10 mm (0.31... 0.39 in)
Turn adjusting screws ❹ on the left and right so that the markings on the left and right chain adjusters are in the same position relative to the reference marks ❽. The rear wheel is then correctly aligned.	

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

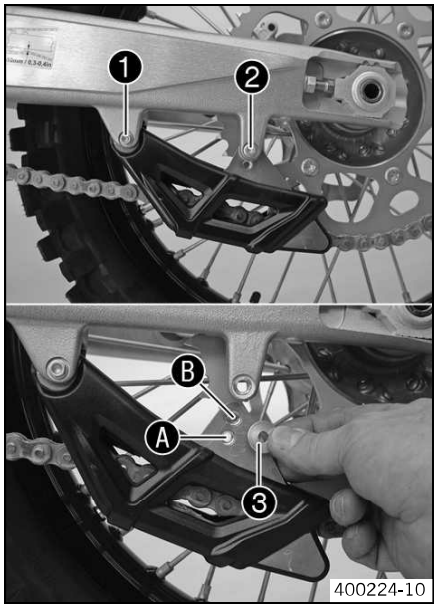
Guideline

Nut, rear wheel spindle	M20x1.5	80 Nm (59 lbf ft)

Info
The wide adjustment range of the chain adjusters (32 mm (1.18 in)) enables different secondary ratios with the same chain length.
Chain adjusters ❺ can be turned by 180°.

– Remove the motorcycle from the lift stand. (☛ p. 9)

Adjusting the chain guide



– Unscrew screw ❶. Remove screw ❷. Swing the chain guide down.

Condition

Number of teeth: ≤ 44 teeth

– Insert collar bushing ❸ in hole Ⓐ. Position the chain guide.
– Mount and tighten screw ❷. Tighten screw ❶.

Guideline

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

Condition

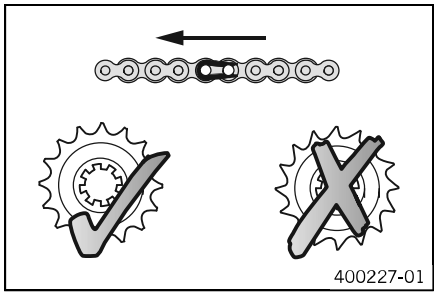
Number of teeth: ≥ 45 teeth

– Insert collar bushing ❸ in hole Ⓑ. Position the chain guide.
– Mount and tighten screw ❷. Tighten screw ❶.

Guideline

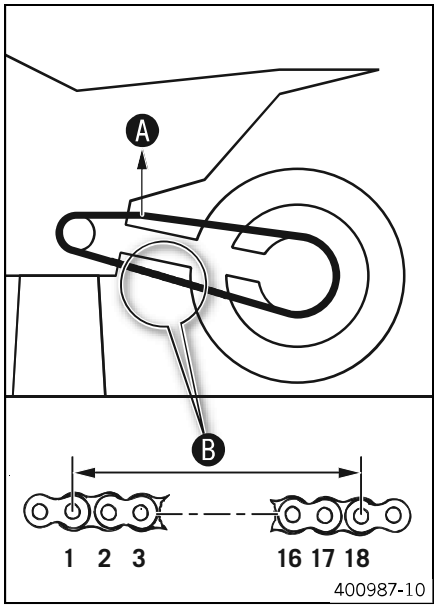
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

Checking the chain, rear sprocket, engine sprocket and chain guide



– Raise the motorcycle with the lift stand. (☛ p. 9)
– Shift gear to neutral.
– Check the rear sprocket and engine sprocket for wear.
» If the rear sprocket and engine sprocket are worn:
– Change the rear sprocket or engine sprocket.

Info
The engine sprocket, rear sprocket, and chain should always be changed together.



– Pull on the upper part of the chain with the specified weight Ⓐ.

Guideline

Weight, chain wear measurement	10... 15 kg (22... 33 lb.)

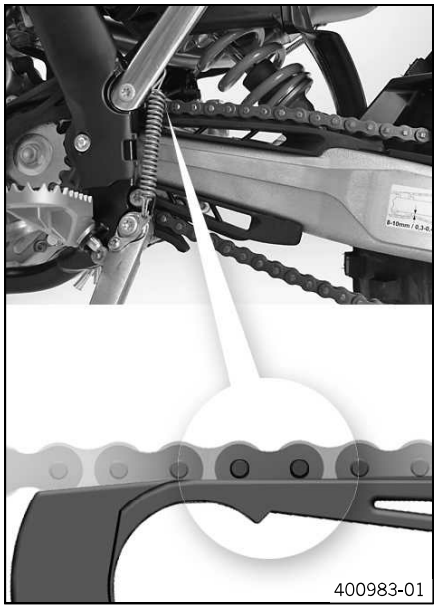
– Measure the distance Ⓑ of 18 chain links in the lower chain section.

Info
Chain wear is not always even; repeat this measurement at different chain positions.

Maximum distance Ⓑ at the longest chain section	272 mm (10.71 in)

» If the distance Ⓑ is greater than the specified measurement:
– Change the chain.

Info
When you replace the chain, you should also change the rear sprocket and engine sprocket.
New chains wear out faster on old, worn sprockets.



– Check the chain sliding guard for wear.
  » If the lower edge of the chain pins is in line with or below the chain sliding guard:
    – Change the chain sliding guard.
– Check the chain sliding guard for tightness.
  » If the chain sliding guard is loose:
    – Tighten the chain sliding guard.

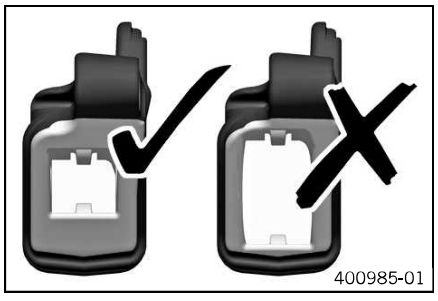
    Guideline

Screw, chain sliding guard	M6	6 Nm (4.4 lbf ft)	**Loctite® 243™**

– Check the chain sliding piece for wear.
  » If the lower edge of the chain pins is in line with or below the chain sliding piece:
    – Change the chain sliding piece.
– Check the chain sliding piece for tightness.
  » If the chain sliding piece is loose:
    – Tighten the chain sliding piece.

    Guideline

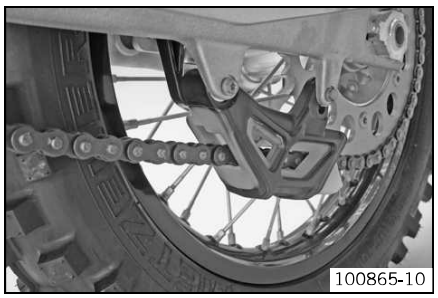
Screw, chain sliding piece	M8	15 Nm (11.1 lbf ft)



– Check the chain guide for wear.

Info
Wear can be seen on the front of the chain guide.

  » If the light part of the chain guide is worn:
    – Change the chain guide.



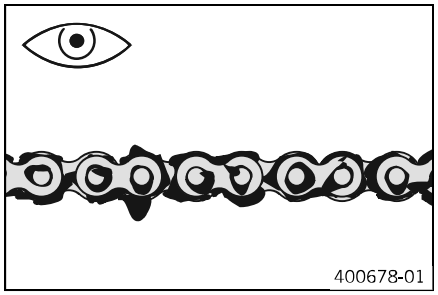
– Check the chain guide for tightness.
  » If the chain guide is loose:
    – Tighten the chain guide.

    Guideline

Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)
Remaining nuts, chassis	M6	15 Nm (11.1 lbf ft)

– Remove the motorcycle from the lift stand. (☛ p. 9)

Checking the chain for dirt



– Check the chain for heavy soiling.
  » If the chain is very dirty:
    – Clean the chain. (☛ p. 77)

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.

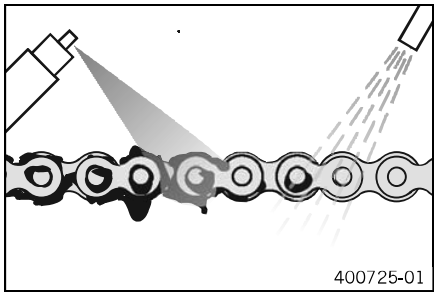
Warning
Danger of accidents Reduced braking efficiency due to oil or grease on the brake discs.

– 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.

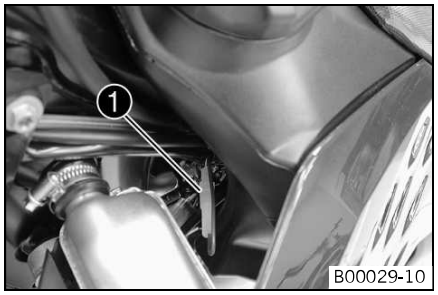
Info
The service life of the chain depends largely on its maintenance.



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

Chain cleaner (☛ p. 228)
Off-road chain spray (☛ p. 229)

Ignition curve plug connection

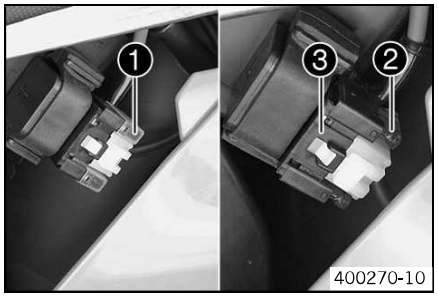


Plug connection ❶ is located in front of the fuel tank on the left side of the frame.

Possible states

- Soft – The plug connection is disconnected to achieve better rideability.
- Performance – The plug connection is connected to achieve better performance.

Removing the main fuse



– Switch off all power consumers and switch off the engine.
– Remove the air filter box lid. (☛ p. 60)
– Remove the protection cover ❶.

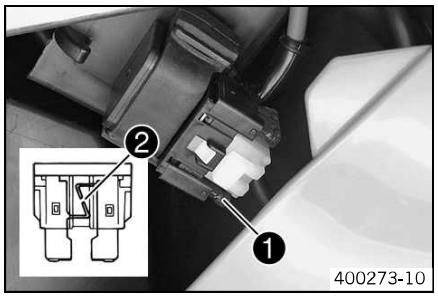
Info
The main fuse ❷ is located in the starter relay ❸ under the filter box cover.

– Remove main fuse ❷.

Installing the main fuse

Warning
Fire hazard The electrical system can be overloaded if the wrong fuses are used.

– Use only fuses with the prescribed amperage. Never by-pass or repair fuses.



– Insert the main fuse.

Fuse (58011109110) (☛ p. 190)

Info
A reserve fuse ❶ is located in the starter relay.
Replace a burned-out fuse ❷ only by an equivalent fuse.

– Replace the protection cover.
– Install the air filter box lid. (☛ p. 60)

Recharging the battery

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

– Keep batteries out of the reach of children.
– Wear suitable protective clothing and goggles.
– Avoid contact with battery acid and battery gases.
– Keep the battery away from sparks or open flames. Charge only in well-ventilated areas.
– In the event of skin contact, rinse with large amounts of water. If battery acid gets in the eyes, rinse with water for at least 15 minutes and contact a physician.

Warning
Environmental hazard Battery parts and acid are harmful to the environment.

– Do not discard batteries with the household trash. Dispose of a defective battery in an environmentally compatible manner. Give the battery to your KTM dealer or to a recycling center that accepts used batteries.

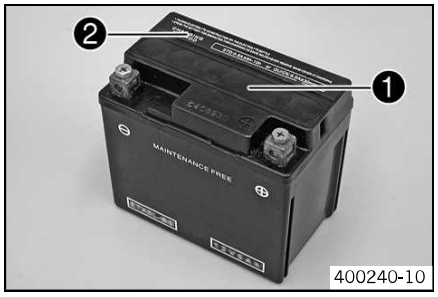
Warning

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

Even when there is no load on the battery, it still loses power steadily.
The charge state and the type of charge are very important for the service life of the battery.
Rapid recharging with a high charging current shortens the battery's service life.
If the charging current, charging voltage and charging time are exceeded, electrolyte escapes through the safety valves. This reduces the battery capacity.
If the battery is depleted from starting the vehicle repeatedly, the battery must be charged immediately.
If the battery is left in a discharged state for an extended period, it will become over-discharged and sulfate, destroying the battery.
The battery is maintenance-free, i.e., the acid level does not have to be checked.



– Switch off all power consumers and switch off the engine.
– Remove the seat. (☛ p. 62)
– Disconnect the minus (negative) cable of the battery to avoid damage to the motorcycle's electronics.
– Connect the battery charger to the battery. Switch on the battery charger.

Battery charger (58429074000)

You can also use the battery charger to test rest potential and start potential of the battery, and to test the alternator. With this device, you cannot overcharge the battery.

Info

Never remove the lid ❶.
Charge the battery with at most 10% of the capacity specified on the battery ❷.

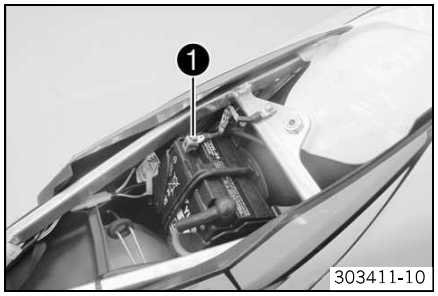
– Switch off the charger after charging. Disconnect the battery.

Guideline

The charge current, charge voltage and charge time must not be exceeded.	
Charge the battery regularly when the motorcycle is not in use	3 months

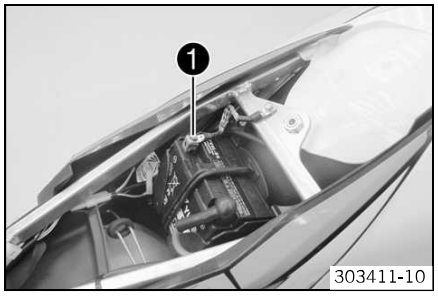
– Mount the seat. (☛ p. 63)

Disconnecting the negative cable of the battery



– Remove the seat. (☛ p. 62)
– Disconnect the negative (minus) cable ❶ of the battery.

Connecting the negative cable of the battery



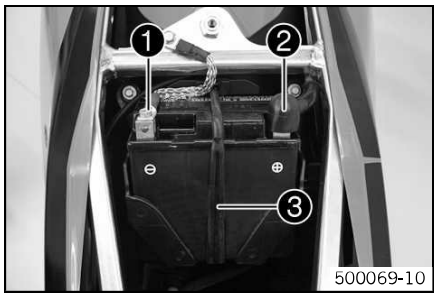
- Attach negative cable ❶.
- Mount the seat. (☛ p. 63)

Removing the battery

Warning

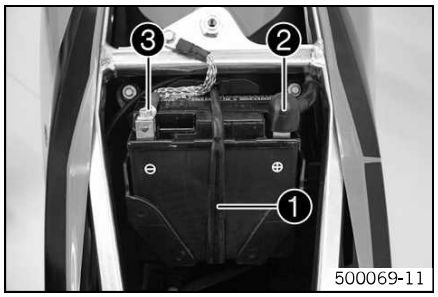
Risk of injury Battery acid and battery gases cause serious chemical burns.

- Keep batteries out of the reach of children.
- Wear suitable protective clothing and goggles.
- Avoid contact with battery acid and battery gases.
- Keep the battery away from sparks or open flames. Charge only in well-ventilated areas.
- In the event of skin contact, rinse with large amounts of water. If battery acid gets in the eyes, rinse with water for at least 15 minutes and contact a physician.



- Switch off all power consumers and switch off the engine.
- Remove the seat. (☛ p. 62)
- Disconnect the negative (minus) cable ❶ of the battery.
- Pull back the plus pole cover ❷ and disconnect the positive (plus) cable of the battery.
- Detach rubber band ❸ at the bottom.
- Lift the battery out.

Installing the battery



- Place the battery in the battery holder.

Battery (YTX4L-BS) (☛ p. 190)

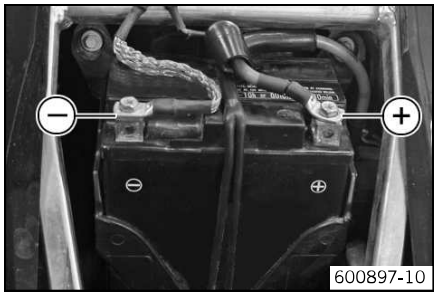
- Reconnect the rubber band ❶.
- Attach the plus cable and replace the plus pole cover ❷.
- Attach the minus cable ❸.
- Mount the seat. (☛ p. 63)

Checking the charging voltage

Condition

The battery must be fully functional and completely charged.

- Go through the steps of starting the engine. (☛ p. 9)
- V Measure the voltage between the specified points.
  Measuring point **Plus (+)** – Measuring point **Ground (–)**



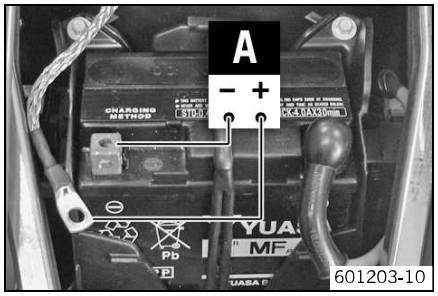
Charging voltage	
5,000 rpm	13.5... 15.0 V

» If the displayed value is less than the specified value:

– Check the plug-in connections from the alternator to the voltage regulator.
– Check the plug-in connections from the voltage regulator to the wiring harness.
– Alternator - check the battery winding. (☛ p. 177)
– Alternator - check the light winding. (☛ p. 178)

» If the displayed value is greater than the specified value:
– Change the voltage regulator.

Checking the closed current



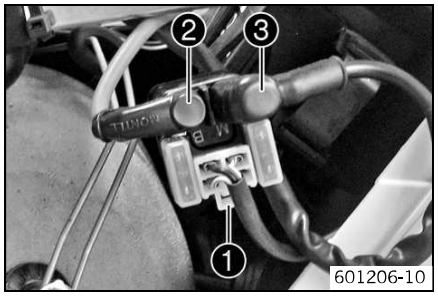
– Switch off all power consumers and switch off the engine.
– Remove the seat. (☛ p. 62)
– Disconnect the negative (minus) cable of the battery.
– Measure the current between battery ground (–) and the negative cable.

Info
The value of the open-circuit current applies only to vehicles in the original state, i.e. without additional power consumers.

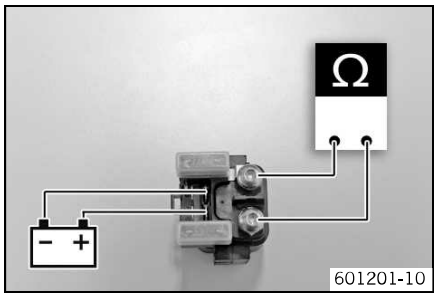
Maximum closed current	< 1.0 mA

» If the measured value is higher than the specified value:
– Disconnect the voltage regulator from the wiring harness and perform the measurement again.

Checking the starter relay



– Switch off all power consumers and switch off the engine.
– Remove the seat. (☛ p. 62)
– Remove the air filter box lid. (☛ p. 60)
– Disconnect the negative (minus) cable of the battery.
– Pull the starter relay off of the bracket.
– Pull off connector ❶.
– Disconnect cables ❷ and ❸ from the starter relay.



– Connect the starter relay to a 12 V power supply as shown in the figure.
– Measure the resistance between the specified points.

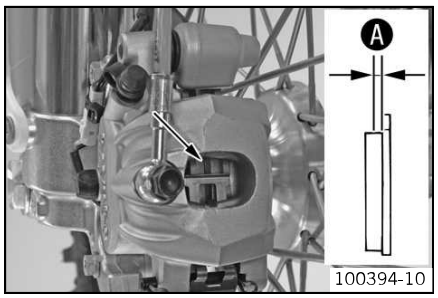
Resistance of open circuit	0 Ω

» If the display does not equal the setpoint value:
– Change the starter relay.

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. 82)

– Check the brake linings for damage and cracking.

» If damage or cracking is visible:
– Change the front brake linings. (☛ p. 82)

Changing the front brake linings

Warning
Danger of accident Brake system failure.

– Maintenance work and repairs must be carried out professionally.

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 comes into contact with the eyes, flush the eyes thoroughly with water and consult a physician immediately.

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

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

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.

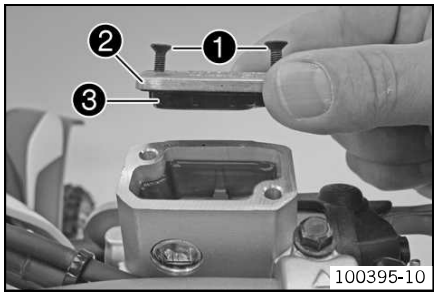
Warning
Danger of accidents Reduced braking efficiency due to use of non-approved brake linings.

– 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.

Warning
Environmental hazard Hazardous substances cause environmental damage.

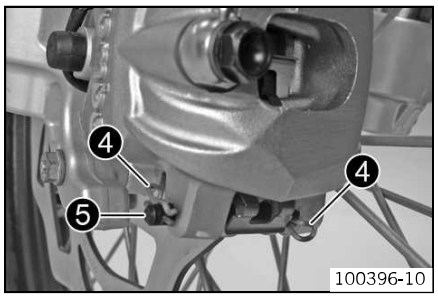
– Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

Info
Never use DOT 5 brake fluid! It is silicone-based and purple in color. 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!

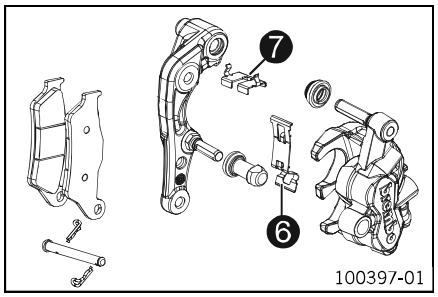


– Move the brake fluid reservoir mounted on the handlebar to a horizontal position.
– Remove screws ❶.
– Remove cover ❷ with membrane ❸.
– Press the brake caliper onto the brake disc by hand in order to push back the brake pistons. Ensure that brake fluid does not overflow from the brake fluid reservoir, using suction to remove it if it does.

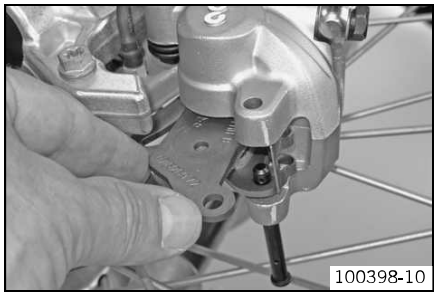
Info
Make sure when pushing back the brake pistons that you do not press the brake caliper against the spokes.



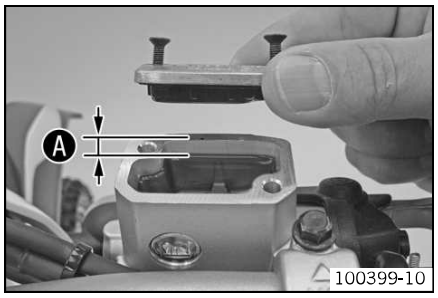
– Remove locking split pins ❹, withdraw bolt ❺, and take out the brake linings.
– Clean the brake caliper and brake caliper support.



– Check that leaf spring ❻ in the brake caliper and sliding plate ❼ in the brake caliper support are seated correctly.



– Fit the brake linings, insert the bolt, and mount the locking split pins.
– Operate the hand brake lever several times until the brake linings are lying correctly against on the brake disc and there is a pressure point.



– Correct the brake fluid quantity 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. 226)

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

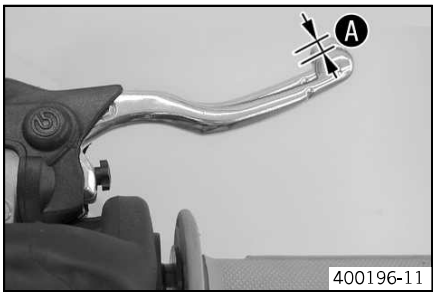
Info
Clean up overflowed or spilt brake fluid immediately with water.

Checking free travel of hand brake lever

Warning

Danger of accidents Brake system failure.

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



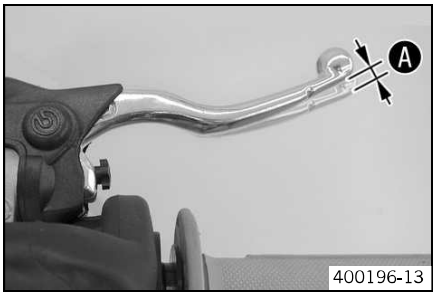
(XC-W)

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

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

» If the free travel does not meet specifications:

– Adjust the basic position of the hand brake lever. (☛ p. 84)



(All 250/300 EXC models)

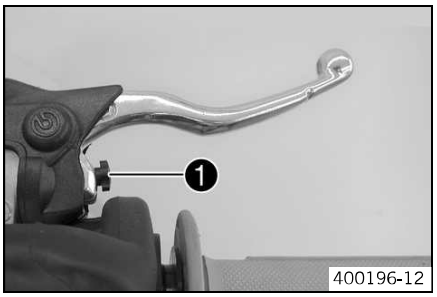
– Push the hand brake to the handlebar and check free travel Ⓐ.

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

» If the free travel does not meet specifications:

– Adjust the free travel of the hand brake lever. (☛ p. 84)

Adjusting the basic position of the hand brake lever (XC-W)



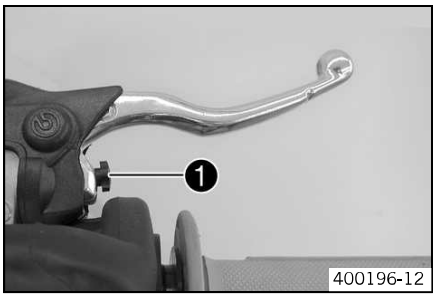
– Check the free travel of the hand brake lever. (☛ p. 84)

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

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.
Turn the adjusting screw by hand only, and do not apply any force.
Do not make any adjustments while riding!

Adjusting free travel of hand brake lever (All 250/300 EXC models)



– Check the free travel of the hand brake lever. (☛ p. 84)

– Adjust the free travel of the hand brake lever with the adjustment screw ❶.

Info

Turn the adjustment screw clockwise to reduce free travel. The pressure point moves away from the handlebar.
Turn the adjustment screw counterclockwise to increase free travel. The pressure point moves towards the handlebar.
The range of adjustment is limited.
Turn the adjusting screw by hand only, and do not apply any force.
Do not make any adjustments while riding!

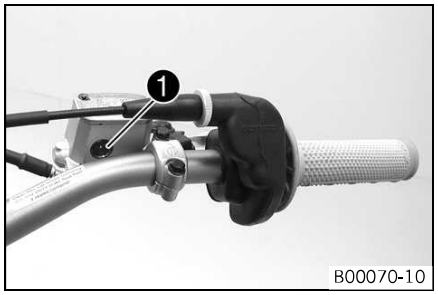
Checking the front brake fluid level

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 brake according to the service schedule.



– Move the brake fluid reservoir mounted on the handlebar to a horizontal position.
– Check the brake fluid level in the viewer ❶.
  » If the brake fluid is below the **MIN** marking:
    – Add front brake fluid. (☛ p. 85)

Adding front 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 comes into contact with the eyes, flush the eyes thoroughly with water and consult a physician immediately.

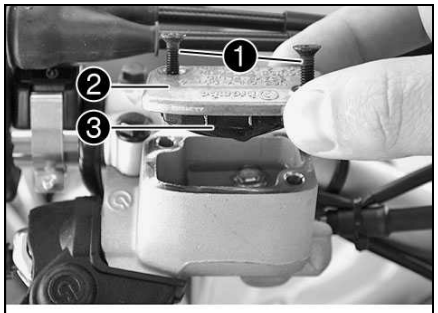
Warning
Danger of accidents Reduced braking effect caused by old brake fluid.

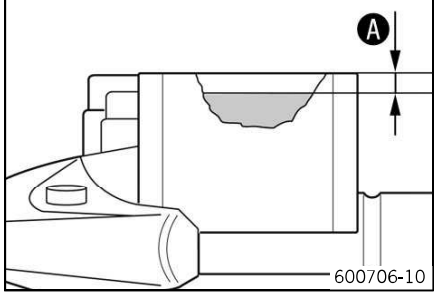
– Change the brake fluid of the front and rear brake according to the service schedule.

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 use DOT 5 brake fluid! It is silicone-based and purple in color. 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.
– 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. 226)

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

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

Changing the front brake fluid

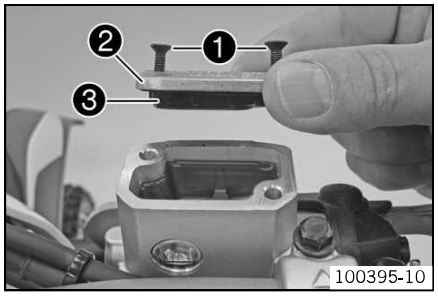
Warning
Skin irritation Brake fluid can cause skin irritation on contact.

– Avoid contact with skin and eyes, and keep out of the reach of children.
– Wear suitable protective clothing and goggles.
– If brake fluid comes into contact with the eyes, flush the eyes thoroughly with water and consult a physician immediately.

Warning
Environmental hazard Hazardous substances cause environmental damage.

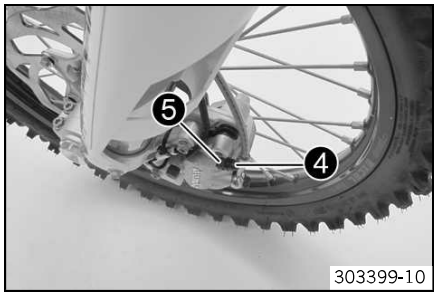
– Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

Info
Never use DOT 5 brake fluid! It is silicone-based and purple in color. 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.

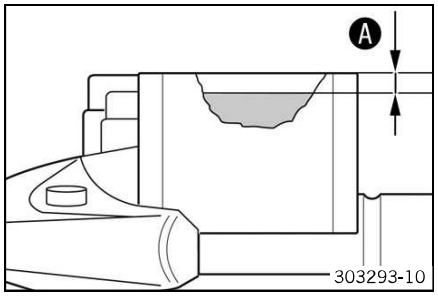


– Move the brake fluid reservoir mounted on the handlebar to a horizontal position.
– Remove screws ❶.
– Remove cover ❷ with membrane ❸.
– Draw the old brake fluid out of the brake fluid reservoir using a syringe and fill with fresh brake fluid.

Bleed syringe (50329050000) (☛ p. 230)
Brake fluid DOT 4 / DOT 5.1 (☛ p. 226)



– Pull off dust cap ❹ and connect a commercially available suction device (standard workshop equipment).
– Release bleeder screw ❺ and draw out the old brake fluid.
– During suction, always ensure that the brake fluid reservoir is filled with a sufficient amount of fresh brake fluid.
– Tighten the bleeder screw. Remove the suction device and mount the dust cap.



– Add brake fluid to level ❹.

Guideline

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

Brake fluid DOT 4 / DOT 5.1 (☛ p. 226)

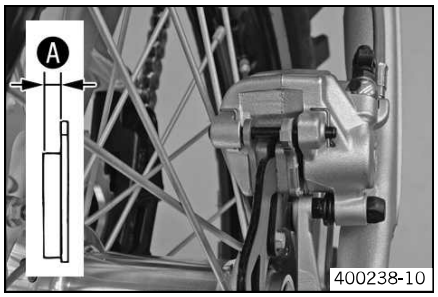
– Position the cover with the membrane. Mount and tighten the screws.
– Activate the hand brake lever until there is a firm pressure point.

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. 88)

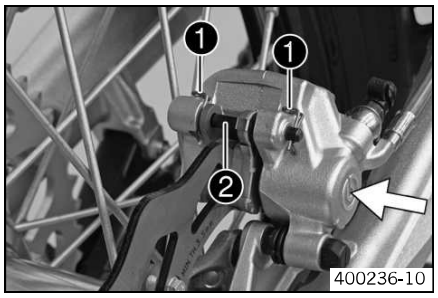
– Check the brake linings for damage and cracking.

» If damage or cracking is visible:
– Change the rear brake linings. (☛ p. 88)

Removing the rear brake linings

Warning
Danger of accident Brake system failure.

– Maintenance work and repairs must be carried out professionally.



– Press the brake caliper onto the brake disc by hand in order to push back the brake piston.

Info
Make sure when pushing back the brake piston that you do not press the brake caliper against the spokes.

– Remove locking split pins ❶, withdraw bolt ❷, and take out the brake linings.
– Clean the brake caliper and brake caliper support.

Installing the rear brake linings

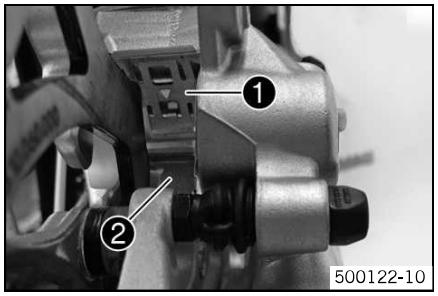
Warning
Danger of accidents Reduced braking efficiency due to oil or grease on the brake discs.

– 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.

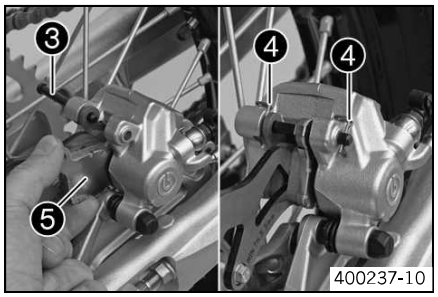
– Brake linings available from accessory suppliers are often not tested and approved for use on KTM vehicles. The construction and friction factor of the brake linings and therefore the brake power can differ considerably from the original KTM brake linings. If brake linings are used that differ from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

– Check the brake discs. (☛ p. 69)



– Check that leaf spring ❶ in the brake caliper and sliding plate ❷ in the brake caliper support are seated correctly.

Info
The arrow on the leaf spring points in the rotation direction of the brake disc.



– Insert the brake linings, insert bolt ❸, and mount locking split pins ❹.

Info
Make sure that the decoupling plate ❺ is mounted on the piston side of the brake lining.

– Operate the foot brake lever several times until the brake linings are lying correctly against the brake disc and there is a pressure point.

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 comes into contact with the eyes, flush the eyes thoroughly with water and consult a physician immediately.

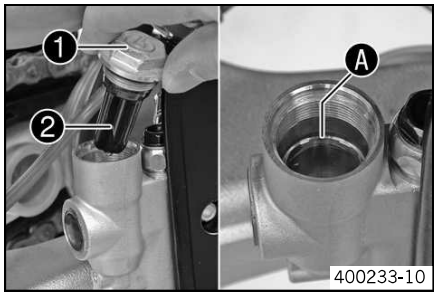
Warning
Danger of accidents Reduced braking effect caused by old brake fluid.

– Change the brake fluid of the front and rear brake 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 use DOT 5 brake fluid! It is silicone-based and purple in color. 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. 87)
– Stand the vehicle upright.
– Remove screw cap ❶ with membrane ❷ and the O-ring.
– 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. 87)
– Add brake fluid to level Ⓐ.

Brake fluid DOT 4 / DOT 5.1 (☛ p. 226)

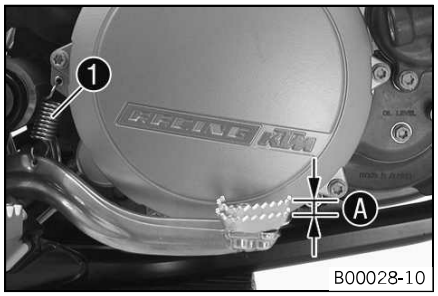
– Mount the screw cap with the membrane and the O-ring.

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

Checking the free travel of 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 contact to the foot brake cylinder piston and check free travel Ⓐ.

Guideline

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

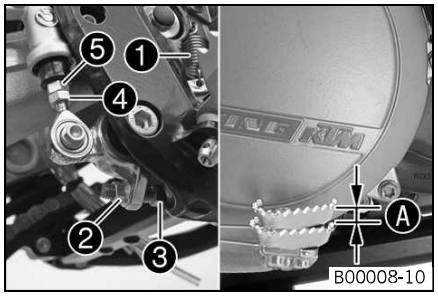
» If the free travel does not meet specifications:
– Adjust the basic position of the foot brake lever. (☛ p. 89)

– Reconnect spring ❶.

Adjusting basic position of 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.
– Loosen nut ❹ and, with push rod ❺, turn it back until you have maximum free travel.
– To adjust the basic position of the foot brake lever individually, lossen nut ❷ and turn screw ❸ accordingly.

Info
The range of adjustment is limited.

– Turn push rod ❺ accordingly until you have free travel Ⓐ. If necessary, adjust the basic position of the foot brake lever.

Guideline

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

– Hold screw ❸ and tighten nut ❷.

Guideline

Nut, foot brake lever stop	M8	20 Nm (14.8 lbf ft)

– Hold push rod ❺ and tighten nut ❹.

Guideline

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

– Reconnect spring ❶.

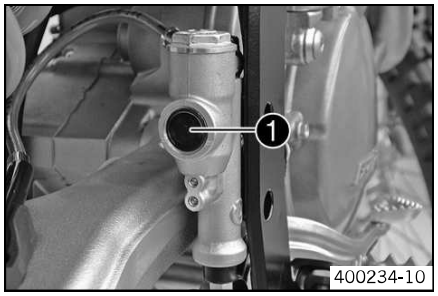
Checking the rear brake fluid level

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 brake according to the service schedule.



– Stand the vehicle upright.
– Check the brake fluid level in the viewer ❶.
  » If an air bubble is visible in viewer ❶:
    – Add brake fluid for the rear brake. (☛ p. 90)

Adding brake fluid for the rear brake

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 comes into contact with the eyes, flush the eyes thoroughly with water and consult a physician immediately.

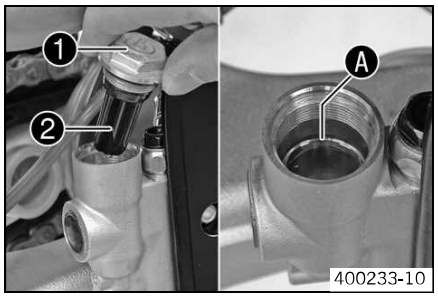
Warning
Danger of accidents Reduced braking effect caused by old brake fluid.

– Change the brake fluid of the front and rear brake 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 use DOT 5 brake fluid! It is silicone-based and purple in color. 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!



– Stand the vehicle upright.
– Remove screw cap ❶ with membrane ❷ and the O-ring.
– Add brake fluid to level Ⓐ.

Brake fluid DOT 4 / DOT 5.1 (☛ p. 226)

– Mount the screw cap with the membrane and the O-ring.

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

Changing the rear brake fluid

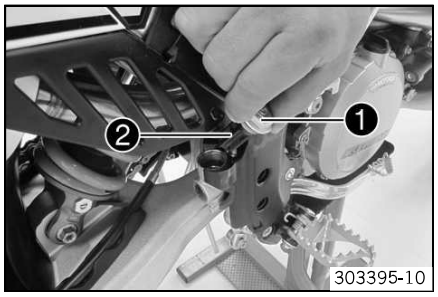
Warning
Skin irritation Brake fluid can cause skin irritation on contact.

– Avoid contact with skin and eyes, and keep out of the reach of children.
– Wear suitable protective clothing and goggles.
– If brake fluid comes into contact with the eyes, flush the eyes thoroughly with water and consult a physician immediately.

Warning
Environmental hazard Hazardous substances cause environmental damage.

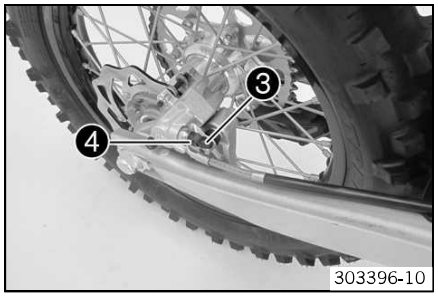
– Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

Info
Never use DOT 5 brake fluid! It is silicone-based and purple in color. 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.



– Stand the vehicle upright.
– Remove screw cap ❶ with membrane ❷ and the O-ring.
– Draw the old brake fluid out of the brake fluid reservoir using a syringe and fill with fresh brake fluid.

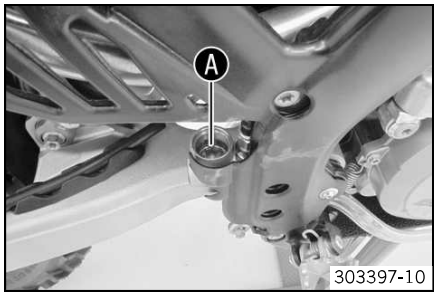
Bleed syringe (50329050000) (☛ p. 230)
Brake fluid DOT 4 / DOT 5.1 (☛ p. 226)



– Pull off dust cap ❸ and connect a conventional suction device (workshop equipment).
– Loosen bleeder screw ❹ and extract the old brake fluid.

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

– Tighten the bleeder screw. Remove the suction device and mount the dust cap.



– Add brake fluid to level Ⓐ.

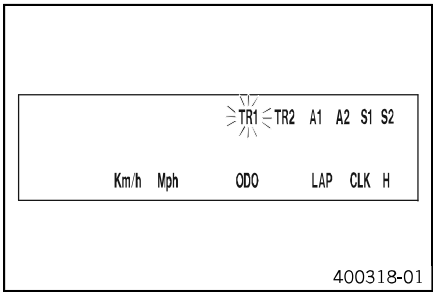
Brake fluid DOT 4 / DOT 5.1 (☛ p. 226)

– Mount the screw cap with the membrane and the O-ring.
– Activate the foot brake lever until a firm pressure point is achieved.

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

Adjusting the speedometer functions

Info
When the vehicle is delivered, only the **SPEED/H** and **SPEED/ODO** display modes are activated.



Condition
The motorcycle is stationary.

– Press the button O briefly and repeatedly until **H** appears at the bottom right of the display.
– Press the button O for 3 - 5 seconds.
  ✓ The Setup menu is displayed and the activated functions are shown.
– Change to the desired function by pressing the button O briefly.
  ✓ The selected function flashes.

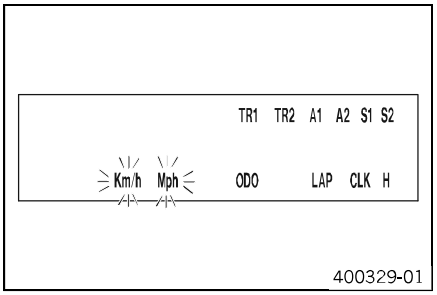
Activating a function
– Press the button +.
  ✓ The symbol remains on the screen and the display changes to the next function.

Deactivating the function
– Press the button −.
  ✓ The symbol on the screen goes out and the display changes to the next function.
– All desired functions are activated or deactivated accordingly.
– Press the button O for 3 - 5 seconds.
  ✓ The settings are stored and the Setup menu is closed.

Info
If no button is pressed for 20 seconds, or if a pulse arrives from the wheel speed sensor, the settings are stored automatically and the Setup menu is closed.

Setting kilometers or miles

Info
If you change the unit of measure, the **ODO** value is retained and converted accordingly.
The values **TR1**, **TR2**, **A1**, **A2** and **S1** are cleared when the unit of measure is changed.



Condition
The motorcycle is stationary.

– Press the button O briefly and repeatedly until **H** appears at the bottom right of the display.
– Press the button O for 3 - 5 seconds.
  ✓ The Setup menu is displayed and the active functions are shown.
– Press the button O repeatedly until the **Km/h/Mph** display flashes.

Adjusting Km/h
– Press the button +.

Adjusting Mph
– Press the button −.
– Press the button O for 3 - 5 seconds.
  ✓ The settings are stored and the Setup menu is closed.

Info
If no button is pressed for 20 seconds, or if no impulse comes from the wheel speed sensor, the settings are automatically saved and the Setup menu is closed.

Activating the additional functions

Danger

Voiding of the government approval for road use and the insurance coverage The vehicle is only authorized for operation on public roads in the homologated version.

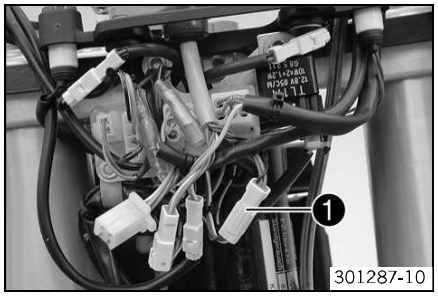
- If the vehicle is modified in any way, it may only be used on designated tracks away from public roads. Advise the vehicle owner and rider of this.
- If you undertake any modifications, please insist on receiving a signed workshop order from your customer in which you inform the customer in writing that these modifications are performed at the customer's own risk and that the vehicle will no longer be approved for use on public roads once modified.

(All 250/300 EXC models)

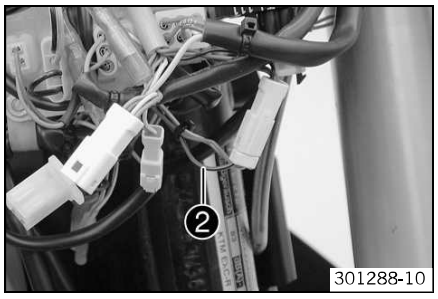
- Remove the headlight mask with the headlight. (☛ p. 66)

(XC-W)

- Remove the start number plate. (☛ p. 66)
- Expose connector **CZ** ❶.



- Sever the black/brown cable ❷.
- Insulate both cable ends.



(All 250/300 EXC models)

- Refit the headlight mask with the headlight. (☛ p. 67)

(XC-W)

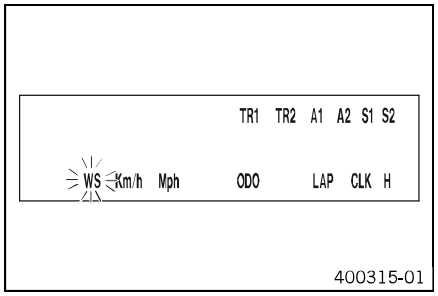
- Install the start number plate. (☛ p. 66)

Setting the wheel circumference

Condition

The motorcycle is stationary.

- Activate the additional functions. (☛ p. 93)
- Press the button ○ briefly and repeatedly until **H** appears at the bottom right of the display.
- Press the button ○ for 3 - 5 seconds.
  - ✓ The setup menu is displayed and the active functions shown.
- Press the button ○ until the **WS** indicator blinks.



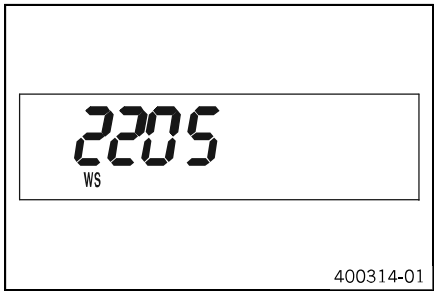
- Press the button +.
  - ✓ The wheel circumference is displayed in millimeters.

Enlarging the wheel circumference

- Press the button +.

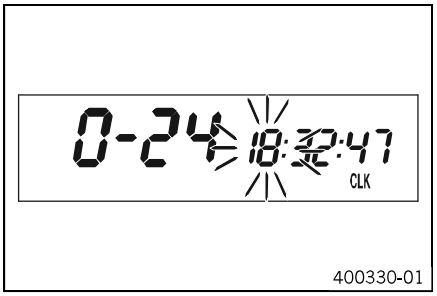
Reducing the wheel circumference

- Press the button −.
- Press the button ○ briefly.
- Press the button ○ for 3 - 5 seconds.
  - ✓ The settings are stored and the setup menu is closed.



Info
If no button is actuated for 20 seconds or there is no signal from the wheel speed sensor, then the settings are automatically stored and the setup menu is closed.

Setting the clock



400330-01

Condition
The motorcycle is stationary.

- Press the button ○ briefly and repeatedly until **CLK** appears at the bottom right of the display.
- Press the button ○ for 3 - 5 seconds.
  ✓ The hour display flashes.
- Set the hour display with the button + and/or button −.
- Press the button ○ briefly.
  ✓ The next segment of the display flashes and can be set.
- You can set the following segments in the same way as the hours by pressing the button + and the button −.

Info
The seconds can only be set to zero.

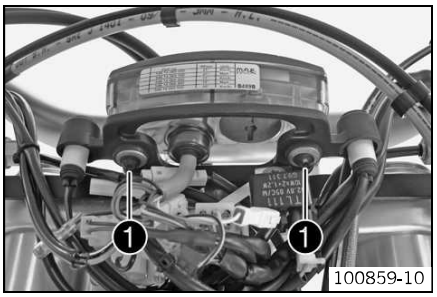
- Press the button ○ for 3 - 5 seconds.
  ✓ The settings are stored and the Setup menu is closed.

Info
If no button is pressed for 20 seconds, or if a pulse arrives from the wheel speed sensor, the settings are stored automatically and the Setup menu is closed.

Changing the speedometer battery

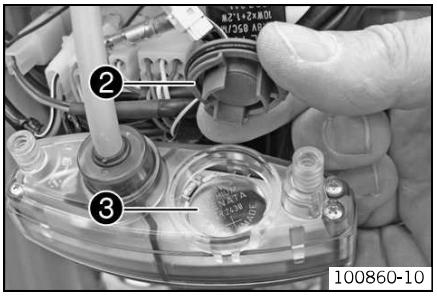
(All 250/300 EXC models)
- Remove the headlight mask with the headlight. (☛ p. 66)

(XC-W)
- Remove the start number plate. (☛ p. 66)



100859-10

- Remove screws ❶.
- Pull the speedometer up and out of the holder.

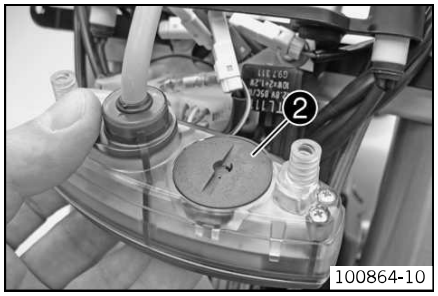


100860-10

- Turn locking cap ❷ counterclockwise all the way using a coin and remove it.
- Remove speedometer battery ❸.
- Insert the new battery with the lettering facing up.

Speedometer battery (CR 2430) (☛ p. 190)

- Check that the O-Ring of the locking cap is seated properly.

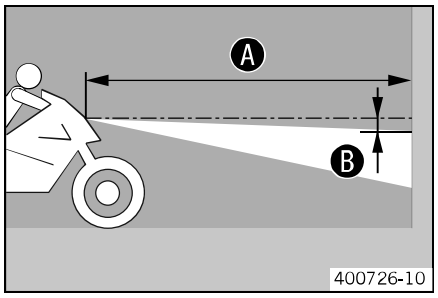


– Position locking cap ❷ and turn it clockwise all the way using a coin.
– Press any button on the speedometer.
  ✓ The speedometer is activated.
– Position the speedometer in the holder.
– Mount and tighten the screws with the washers.

(All 250/300 EXC models)
– Refit the headlight mask with the headlight. (☛ p. 67)

(XC-W)
– Install the start number plate. (☛ p. 66)
– Set kilometers or miles. (☛ p. 92)
– Adjust the speedometer functions. (☛ p. 92)
– Set the clock. (☛ p. 94)

Checking the headlight setting (All 250/300 EXC models)



– Position the vehicle upright on a horizontal surface in front of a light wall and make a mark at the height of the center of the low beam headlight.
– Make another mark a distance ❽ under the first mark.

Guideline

Distance ❽	5 cm (2 in)

– Position the vehicle vertically a distance ❹ away from the wall.

Guideline

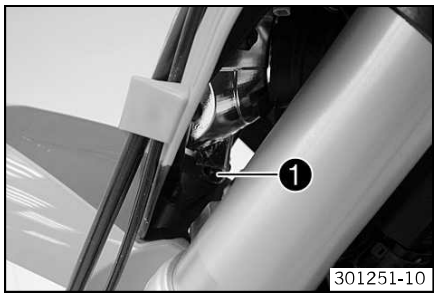
Distance ❹	5 m (16 ft)

– The rider now sits down on the motorcycle.
– Switch on the low beam.
– Check the headlight setting.

The boundary between light and dark must be exactly on the lower mark for an operational motorcycle with a rider.

» If the light-dark border does not meet specifications:
  – Adjust the headlight range. (☛ p. 95)

Adjusting the headlight range (All 250/300 EXC models)



– Check the headlight setting. (☛ p. 95)
– Loosen screw ❶.
– Adjust the headlight range by moving the headlight.

Guideline

The boundary between light and dark must be exactly on the lower mark for an operational motorcycle with a rider (to prepare the mark, see: Checking the headlight setting).

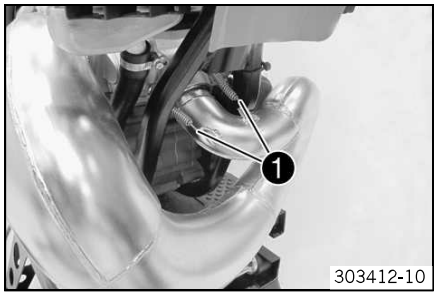
Info
The headlight range may need to be corrected if luggage is carried on the vehicle.

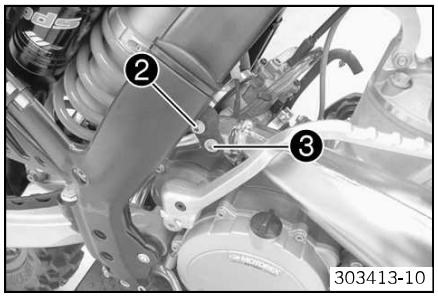
– Tighten screw ❶.

Removing the engine

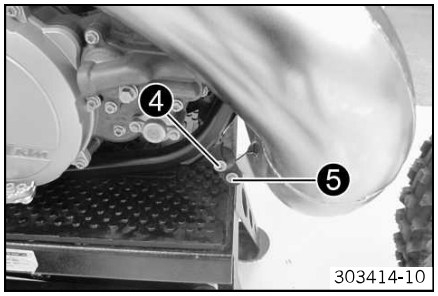
- Raise the motorcycle with the lift stand. (☛ p. 9)
- Remove the fuel tank. (☛ p. 63)
- Disconnect the negative (minus) cable of the battery. (☛ p. 79)
- Drain the coolant. (☛ p. 169)
- Remove the main silencer. (☛ p. 59)
- Remove springs ❶.

Spring hooks (50305017000) (☛ p. 230)

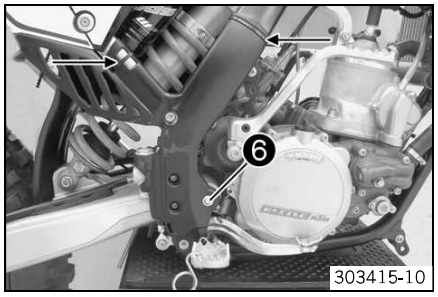




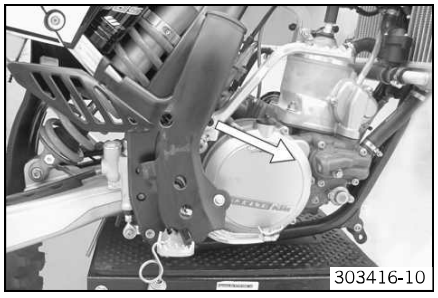
- Loosen screw ❷.
- Remove screw ❸.



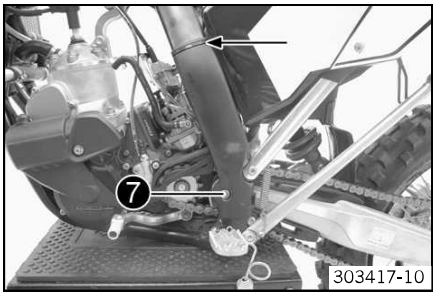
- Loosen screw ❹.
- Remove screw ❺.
- Take off the exhaust manifold.



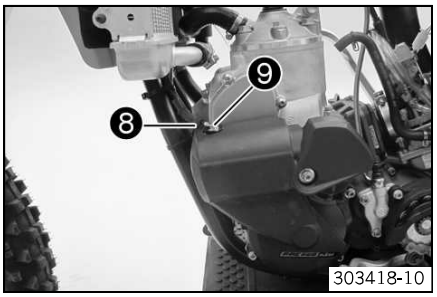
- Loosen screw ❻.
- Remove the cable binders.



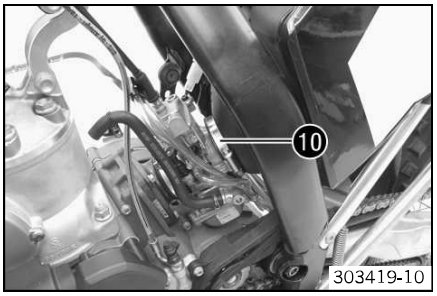
- Pull off the frame protector toward the front.



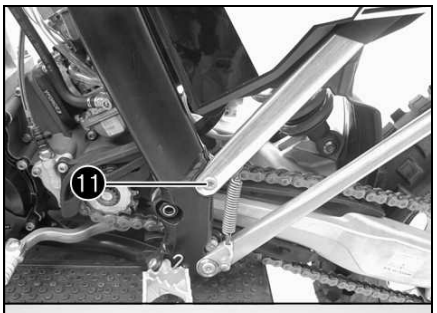
– Loosen screw ❼.
– Remove the cable binders.
– Take off the frame protector.



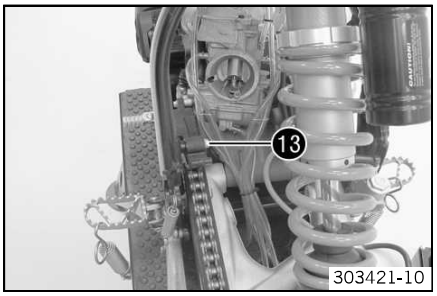
– Slide back cover ❽.
– Remove nut ❾ and hang the positive cable to the side.



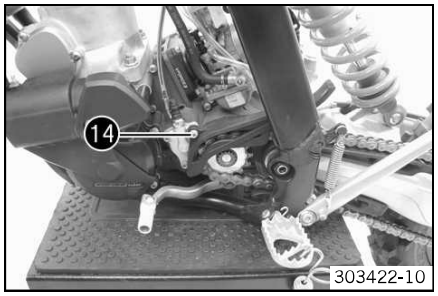
– Loosen hose clip ❿.



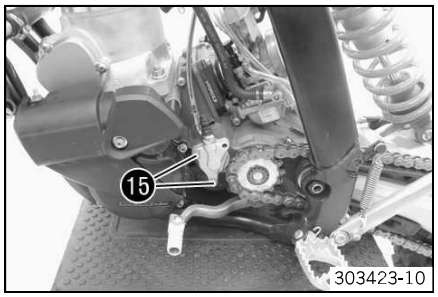
– Remove screw ⓫.
– Loosen screw ⓬.
– Repeat the operation on the opposite side.
– Swing up the subframe and secure it.



– Remove screw ⓭.



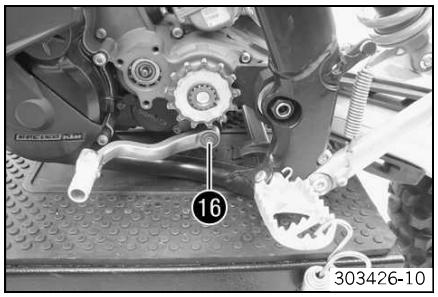
– Remove screw ⓮.
– Take off the engine sprocket cover.



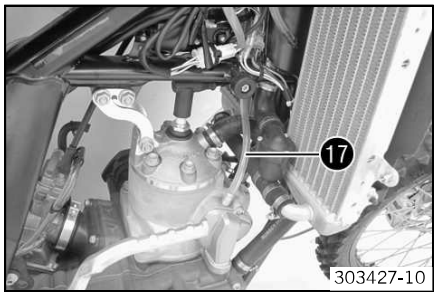
– Remove screws ⓯.
– Take off the clutch slave cylinder and hang it to the side.

Info
Do not kink the clutch line.
Do not operate the clutch lever when the clutch slave cylinder is removed.

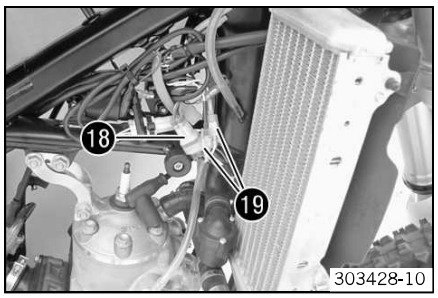
– Remove the connecting link of the chain.
– Take off the chain.



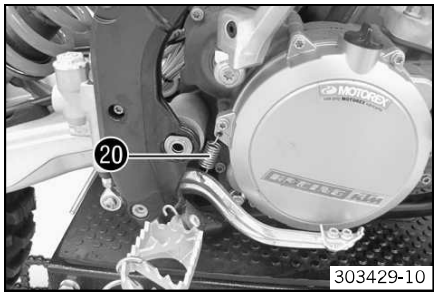
– Remove screw ⓰.
– Take off the shift lever.



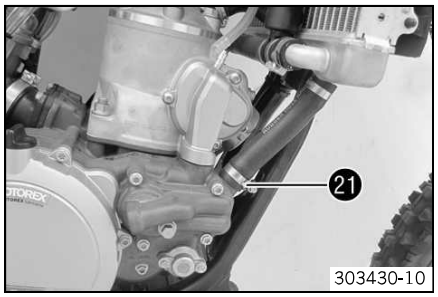
– Pull off the spark plug connector.
– Pull off vent hose ⓱.



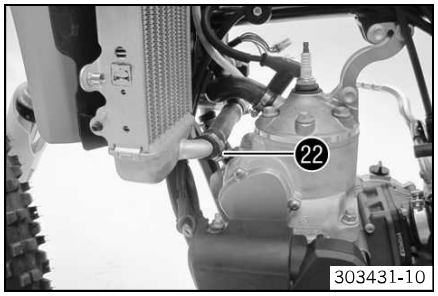
– Disconnect connector ⓲.
– Disconnect connector ⓳.



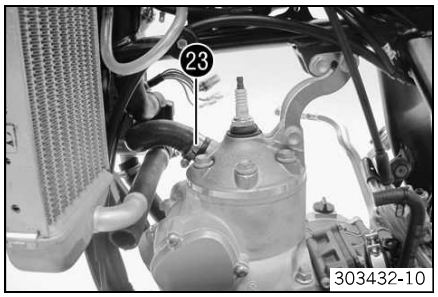
– Remove spring ⓴.



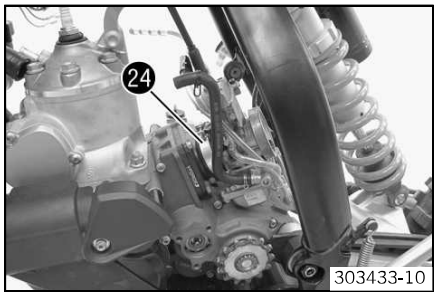
– Loosen hose clip ㉑.
– Take off the radiator hose.



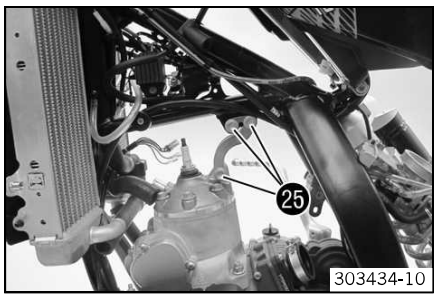
– Loosen hose clip ㉒.
– Take off the radiator hose.



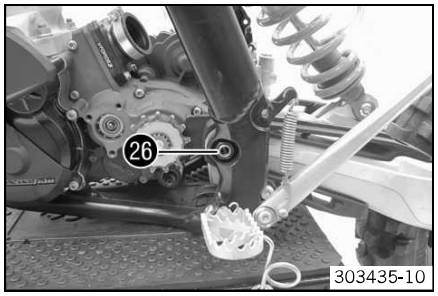
– Loosen hose clip ㉓.
– Take off the radiator hose.



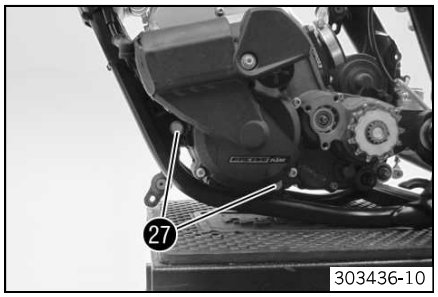
– Loosen hose clip ㉔.
– Pull the carburetor rearward out of the intake flange and hang it to one side.



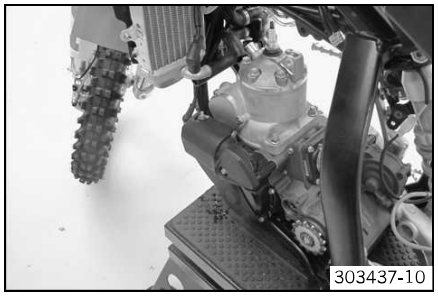
– Remove screw connections ㉕.
– Remove the engine braces.



– Remove nut ❷❻.
– Remove the swingarm pivot.
– Pull the swingarm slightly toward the rear.



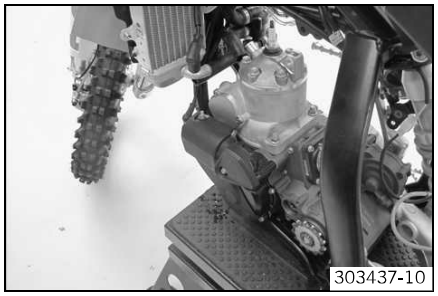
– Remove screws ❷❼.



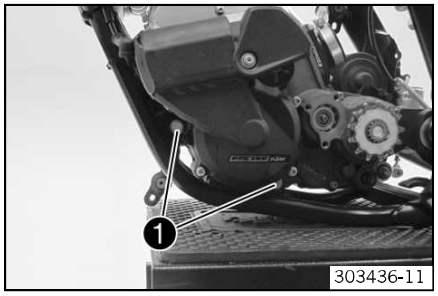
– Lift out the engine from the side.

Info
You should have an assistant for this step.
Make sure that the engine is sufficiently secured against falling over.
Protect the frame and attachments from damage.

Installing the engine

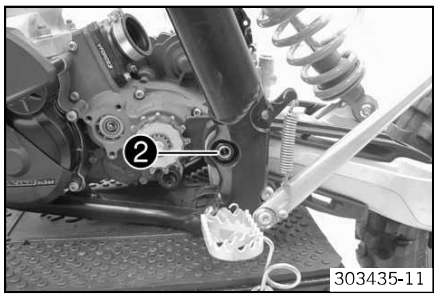


– Position the engine in the frame.



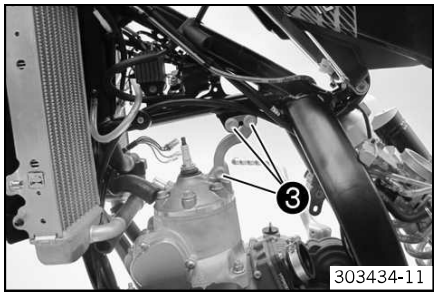
– Mount screws ❶ but do not tighten yet.
Guideline

Engine bracket screw	M10	60 Nm (44.3 lbf ft)



– Position the swingarm.
– Mount the swingarm pivot.
– Mount nut ❷, but do not tighten it yet.
Guideline

Nut, swingarm pivot	M16x1.5	100 Nm (73.8 lbf ft)



– Position the engine braces.
– Mount and tighten screw caps ❸.

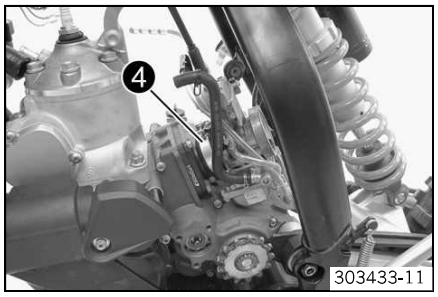
Guideline

Screw, engine brace	M8	33 Nm (24.3 lbf ft)

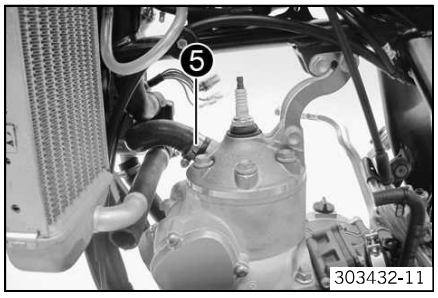
– Tighten screws ❶ and nut ❷.

Guideline

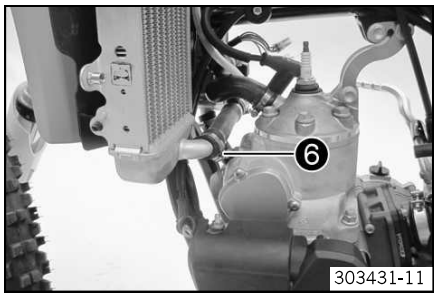
Engine bracket screw	M10	60 Nm (44.3 lbf ft)
Nut, swingarm pivot	M16x1.5	100 Nm (73.8 lbf ft)



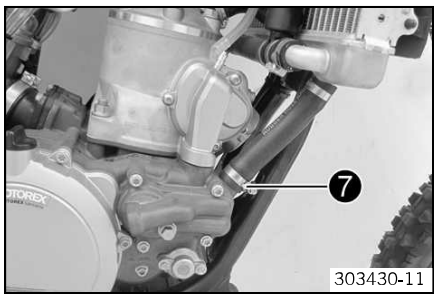
– Slide the carburetor into the intake flange.
– Position and tighten hose clip ❹.



– Mount the radiator hose.
– Position and tighten hose clip ❺.

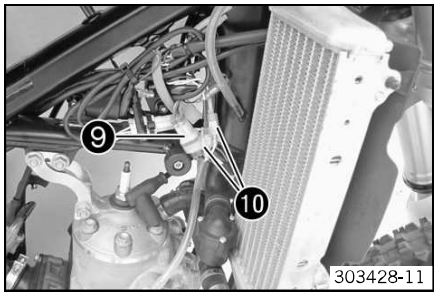


– Mount the radiator hose.
– Position and tighten hose clip ❻.

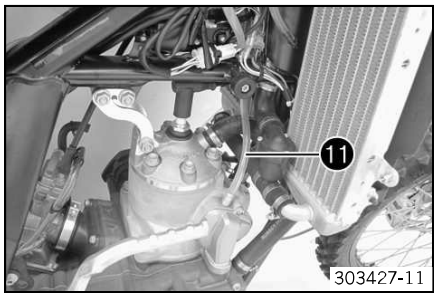


– Mount the radiator hose.
– Position and tighten hose clip ❼.

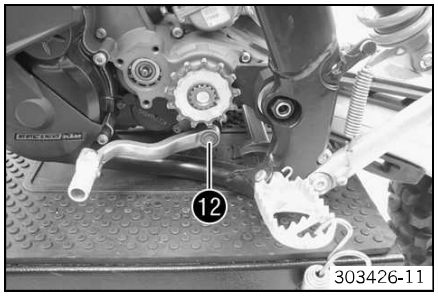
– Mount spring ❽.



– Plug in connector ❾.
– Plug in connector ❿.



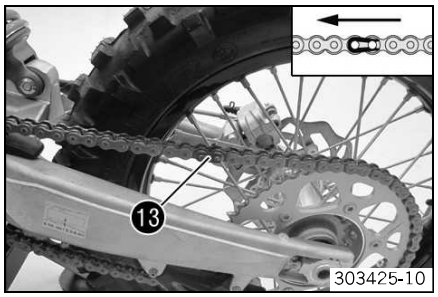
– Mount the spark plug connector.
– Mount vent hose ⓫.



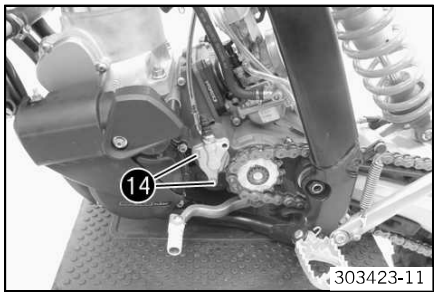
– Position the shift lever.
– Mount and tighten screw ⓬.

Guideline

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



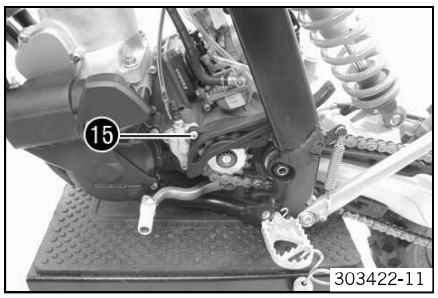
– Mount the chain.
– Connect the chain with connecting link ⓭.



– Position the clutch slave cylinder with the O-ring.
– Mount and tighten screws ⓮.

Guideline

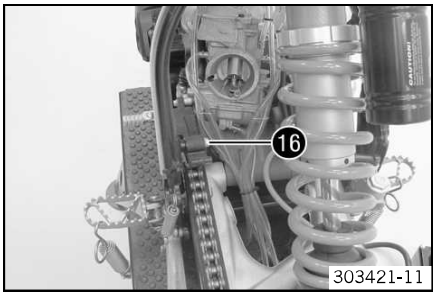
Screw, clutch slave cylinder	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**



– Position the engine sprocket cover.
– Mount and tighten screw ⓯.

Guideline

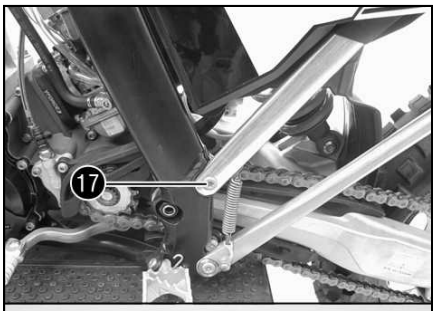
Screw, clutch slave cylinder	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**



– Mount and tighten screw ⓰.

Guideline

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



– Remove the fixation and position the subframe.

Info
Watch out for the intake flange.

– Mount and tighten screw ⓱.

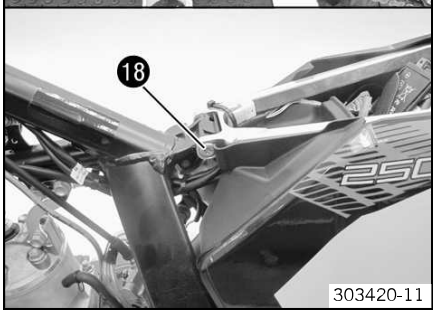
Guideline

Screw, subframe	M8	35 Nm (25.8 lbf ft)	**Loctite® 2701**

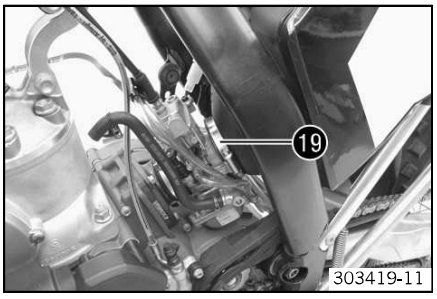
– Remove screw ⓲.
– Mount and tighten screw ⓲.

Guideline

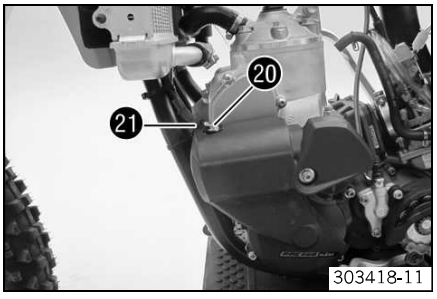
Screw, subframe	M8	35 Nm (25.8 lbf ft)	**Loctite® 2701**



– Repeat the operation on the opposite side.



– Position and tighten hose clip ⓳.

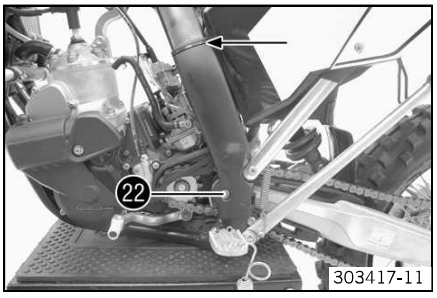


– Position the positive cable on the starter motor.
– Mount and tighten nut ⓴.

Guideline

Nut, starter motor	M6	10 Nm (7.4 lbf ft)

– Position cover ㉑.

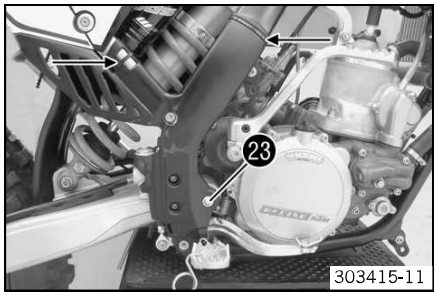


– Mount the frame protector.
– Tighten screw ㉒.

Guideline

Screw, frame protector	M5	3 Nm (2.2 lbf ft)

– Mount the cable clip.

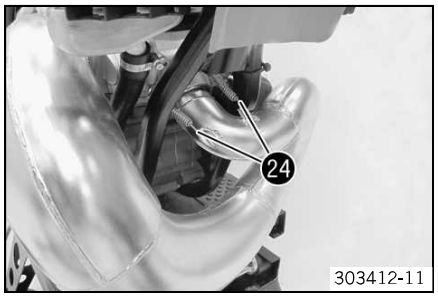


- Mount the frame protector.
- Tighten screw ㉓.

  Guideline

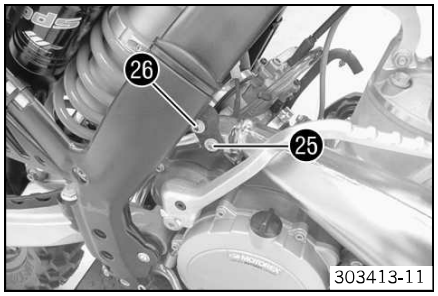
Screw, frame protector	M5	3 Nm (2.2 lbf ft)

- Mount the cable clip.



- Position the exhaust manifold.
- Mount springs ㉔.

Spring hooks (50305017000) (☛ p. 230)



- Mount and tighten screw ㉕.

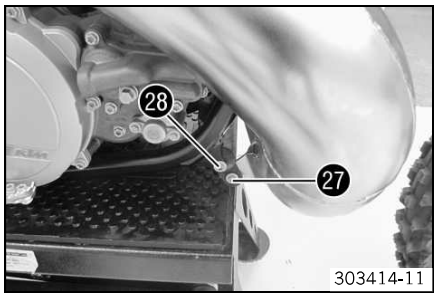
  Guideline

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

- Tighten screw ㉖.

  Guideline

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



- Mount and tighten screw ㉗.

  Guideline

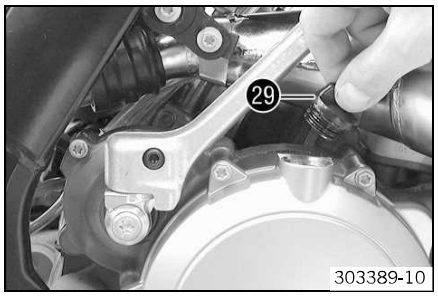
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

- Tighten screw ㉘.

  Guideline

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

- Install the main silencer. (☛ p. 59)
- Connect the negative cable of the battery. (☛ p. 80)

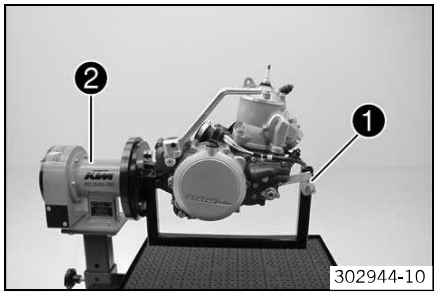


- Remove screw cap ㉙ and fill up gear oil.

Gear oil	0.80 l (0.85 qt.)	Engine oil (15W/50) (☛ p. 226)

- Mount and tighten screw connection ㉙.
- Remove the motorcycle from the lift stand. (☛ p. 9)
- Refill with coolant. (☛ p. 169)
- Install the fuel tank. (☛ p. 64)
- Take a short test ride.
- Check the engine for leakage.
- Check the gear oil level. (☛ p. 173)
- Check the coolant level. (☛ p. 168)

Clamping the engine into the engine work stand

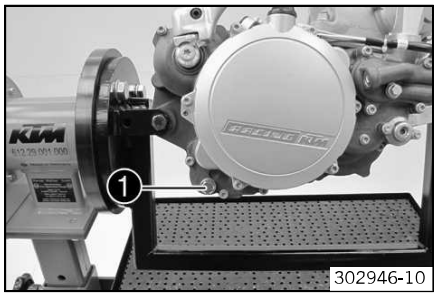


– Mount special tool ❶ on engine work stand ❷.

Engine work stand (61229001000) (☛ p. 233)
Engine fixing arm (56029002030) (☛ p. 232)

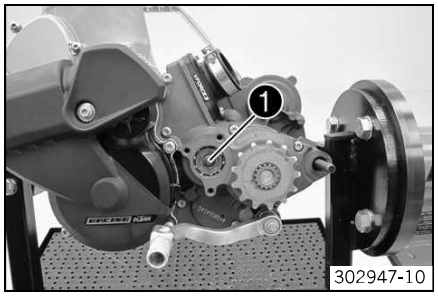
– Mount the engine on special tool ❶.

Draining the gear oil



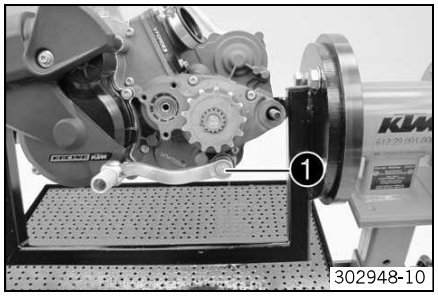
– Remove gear oil drain plug ❶ with the magnet and seal ring.
– Completely drain the gear oil.

Removing the clutch push rod



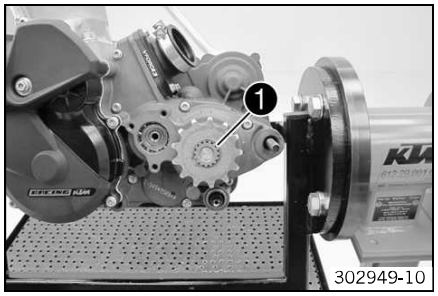
– Remove clutch push rod ❶.

Removing the shift lever



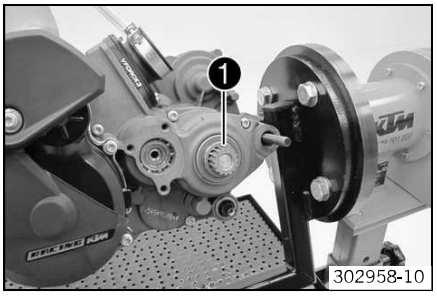
– Remove screw ❶ with the washers. Take off the shift lever.

Removing the engine sprocket

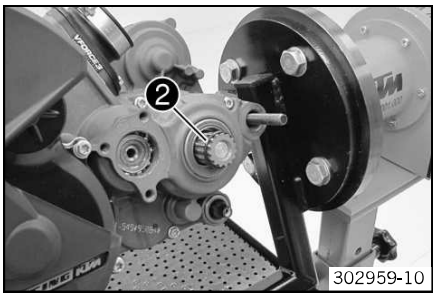


– Remove lock ring ❶. Take off the engine sprocket.

Removing the spacer

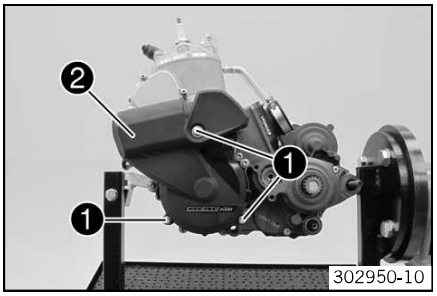


– Remove spacer ❶.

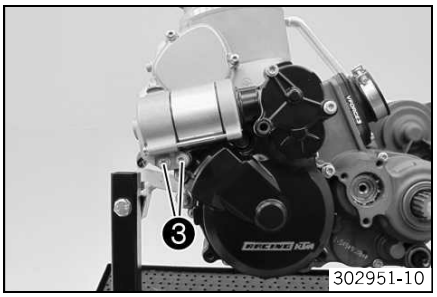


– Remove O-ring ❷.

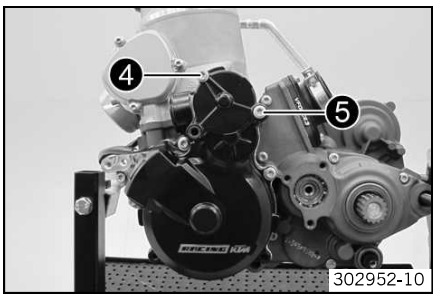
Removing the starter motor



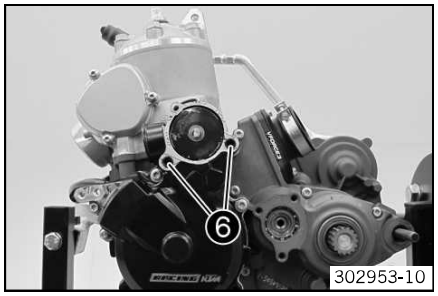
– Remove screws ❶.
– Take off cover ❷.



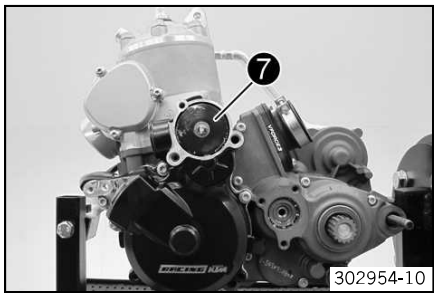
– Remove screws ❸.
– Remove starter motor.



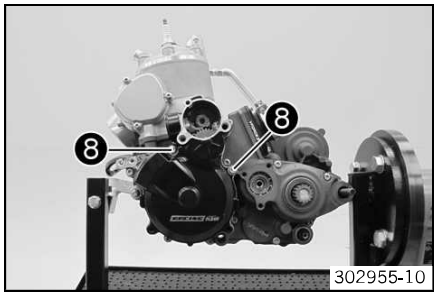
– Remove screws ❹ and ❺.
– Remove the cover.



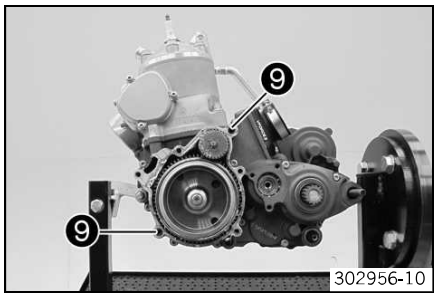
– Remove gasket and dowels ❻.



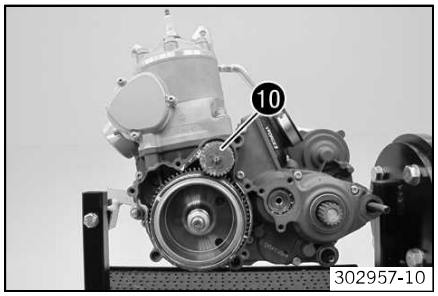
– Remove starter idler gear ❼.



– Remove screws ❽.
– Remove the alternator cover.

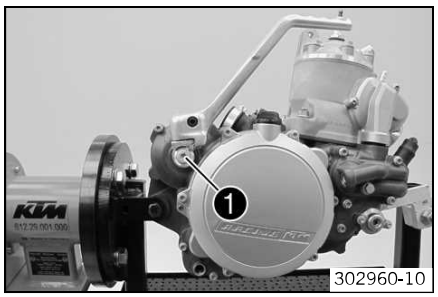


– Remove gasket and dowels ❾.



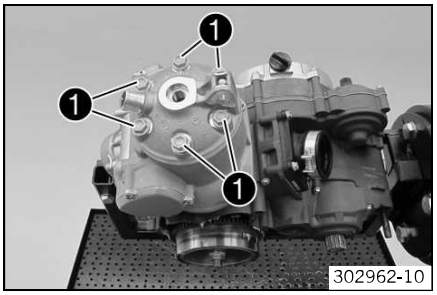
– Take off Bendix ❿.

Removing the kick starter

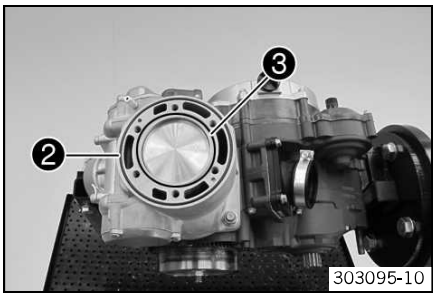


– Remove screw ❶ with the washer.
– Remove the kick starter.

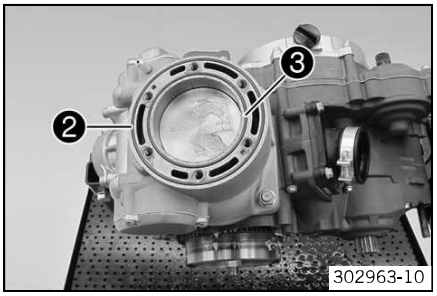
Removing the cylinder head



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

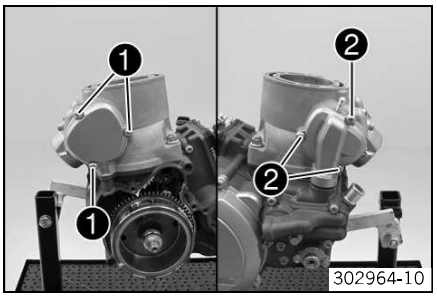


(All 250 models)
– Remove O-rings ❷ and ❸.

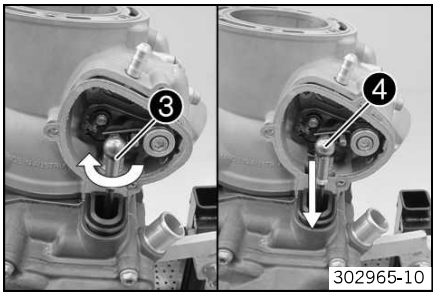


(All 300 models)
– Remove O-rings ❷ and ❸.

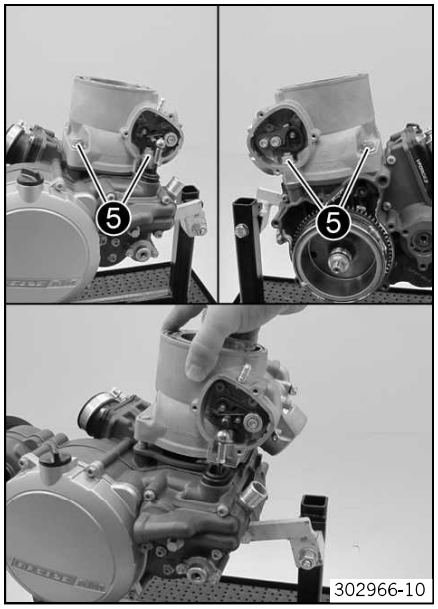
Removing the cylinder



– Remove screws ❶ and ❷.
– Take off both covers.



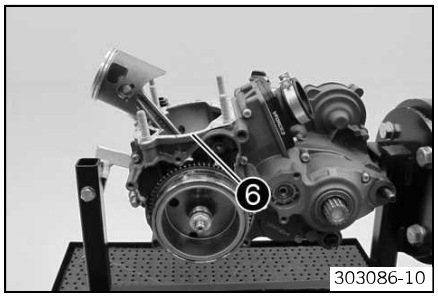
– Remove retainer ❸ of ball socket ❹.
– Pull off the ball socket.
– Remove the gaskets on both sides.



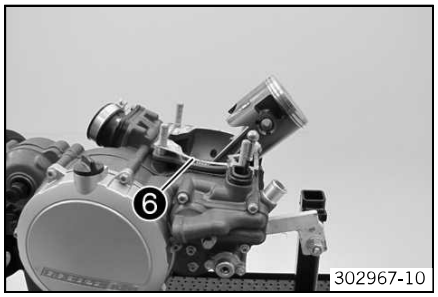
– Remove nuts ❺.

Info
Raise the cylinder slightly to be able to remove the front nuts.

– Carefully slide the cylinder up and take it off.

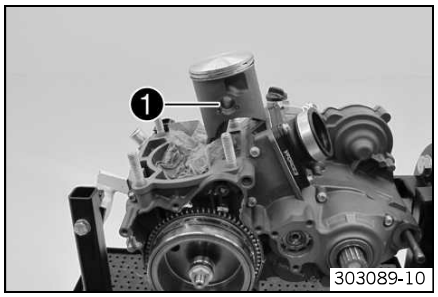


(All 250 models)
– Take off gasket ❻.

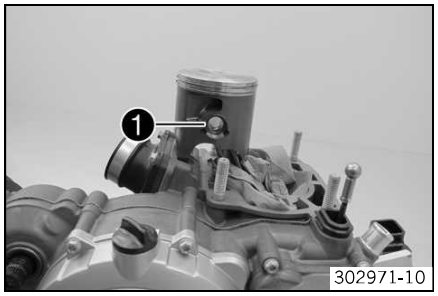


(All 300 models)
– Take off gasket ❻.

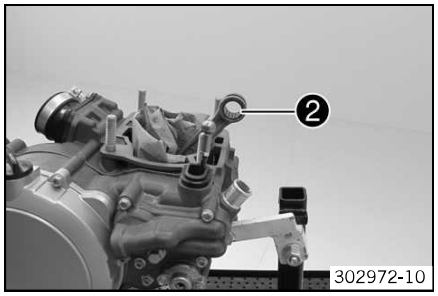
Removing the piston



(All 250 models)
– Uncover the crankcase.
– Remove the piston pin retainer ❶.
– Remove piston pin.
– Take off the piston.

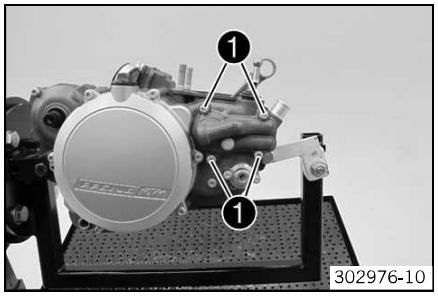


(All 300 models)
– Uncover the crankcase.
– Remove the piston pin retainer ❶.
– Remove piston pin.
– Take off the piston.



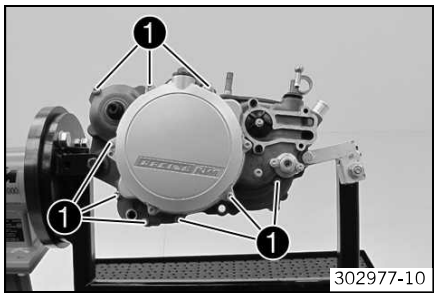
– Remove the upper conrod bearing ❷.

Removing the water pump cover



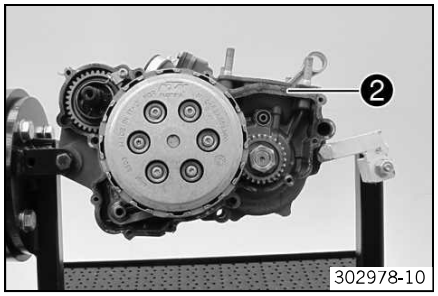
– Remove screws ❶.
– Take off the water pump cover.
– Remove the form ring.

Removing the clutch cover



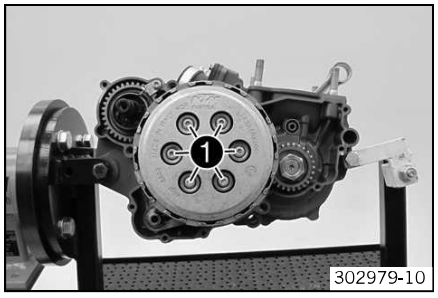
– Remove screws ❶. Take off the clutch cover.

Info
Ensure that the kick starter shaft remains in the engine case.

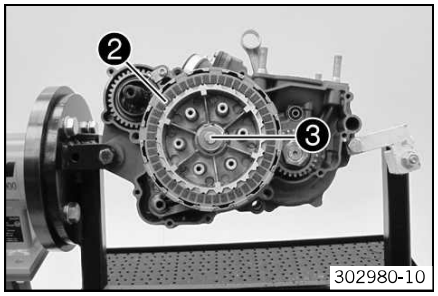


– Remove the dowels and clutch cover gasket ❷.

Removing the clutch discs

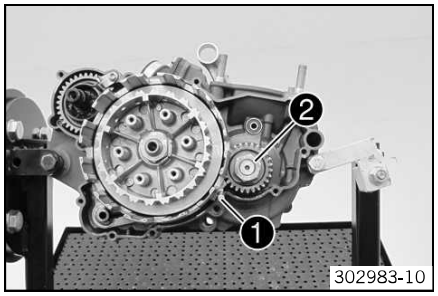


– Loosen screws ❶ and remove together with the washers and springs.
– Take off the pressure cap.



– Completely remove clutch discs ❷.
– Remove pressure piece ❸.

Removing the outer clutch hub

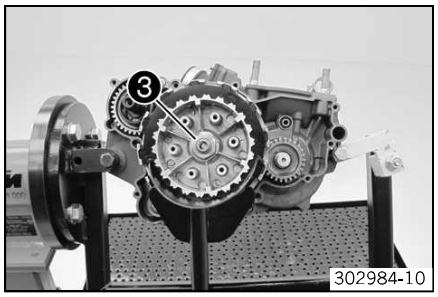


– Hold the primary gear using special tool ❶.

Gear segment (56012004000) (☛ p. 232)

– Remove nut ❷ with the washer.

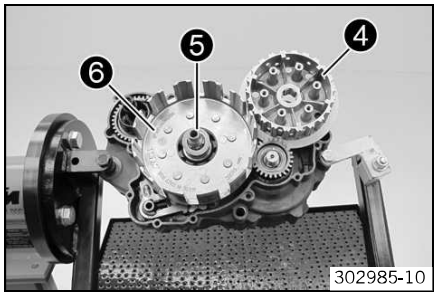
Info
Left-handed thread!



– Bend up the lock washer.
– Hold the inner clutch hub with the special tool. Loosen nut ❸.

Clutch holder (54629003000) (☛ p. 230)

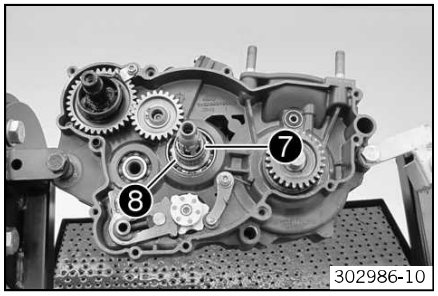
– Remove the nut with the lock washer.



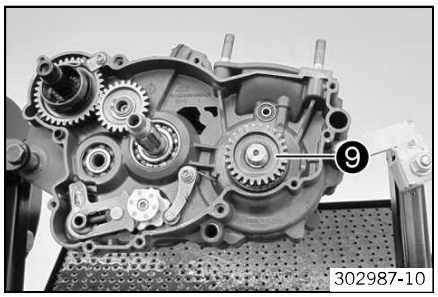
– Take off inner clutch hub ❹ and washer ❺.

Info
The washer usually sticks to the inner clutch hub.

– Take off outer clutch hub ❻.

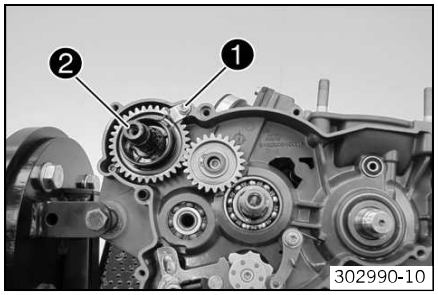


– Take off needle bearing ❼ and collar bushing ❽.



– Take off primary gear ❾.
– Remove the spacer.

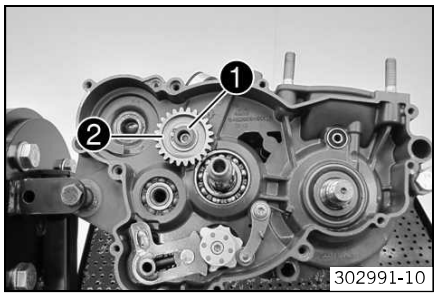
Removing the kick starter shaft



– Remove screw ❶.
– Remove kick starter shaft ❷ with the washer.

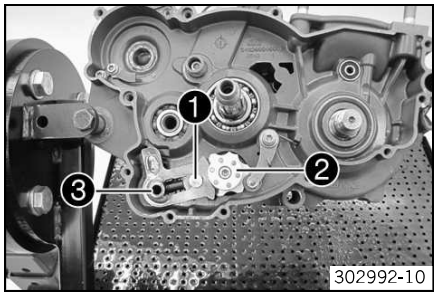
Info
Turn the kick starter shaft slightly to the left.

Removing the intermediate kick starter gear



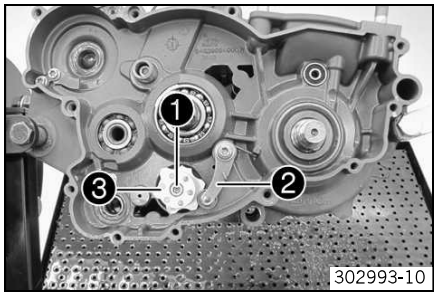
– Remove lock ring ❶.
– Take off intermediate kick starter gear ❷ with the washer.

Removing the shift shaft



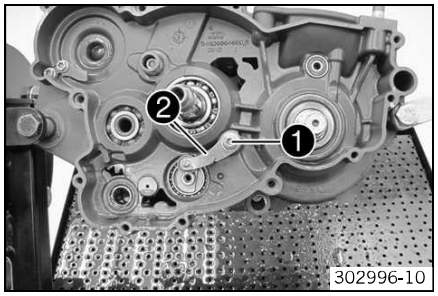
– Push sliding plate ❶ away from the shift drum locating unit ❷. Remove shift shaft ❸ with the washer.

Removing the shift drum locating unit



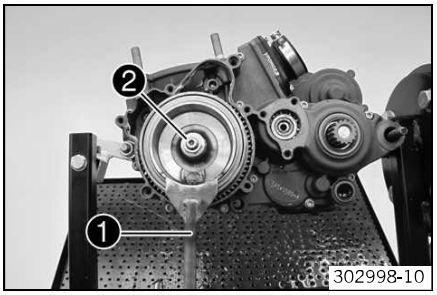
– Remove screw ❶.
– Push away locking lever ❷ from shift drum locating unit ❸ and remove the shift drum locating unit.
– Relieve tension from the locking lever.

Removing the locking lever



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

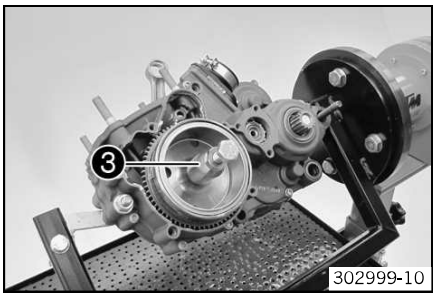
Removing the rotor



– Hold the rotor with special tool ❶.

Holding spanner, rotor (55129001000) (☛ p. 231)

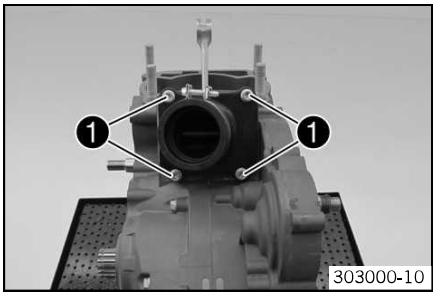
– Remove nut ❷ and the washer.



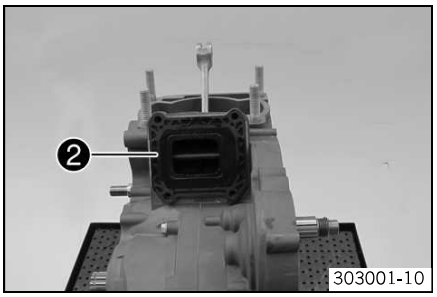
– Mount special tool ❸, apply counterpressure, and pull off the rotor by screwing in the screw.

Extractor (58012009000) (☛ p. 232)

Removing the reed valve housing

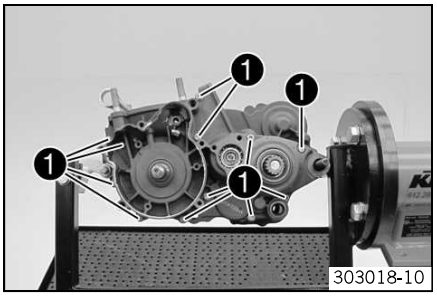


– Remove screws ❶.
– Take off the intake flange.



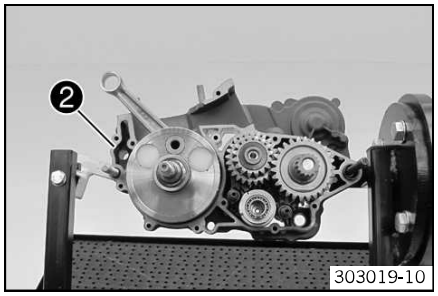
– Remove reed valve housing ❷.
– Take off the gasket.

Removing the left engine case section



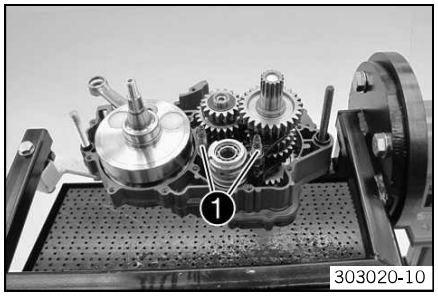
– Remove screws ❶.
– Tilt the left section of the engine case upward and remove the screw connections of the engine fixing arm.
– Loosen the left section of the engine case by striking it lightly with a plastic hammer and remove it.

Info
Do not pry it apart with screwdrivers since the sealing areas are easily damaged.



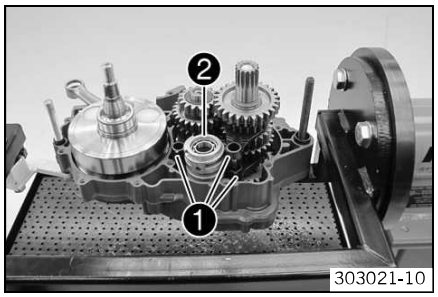
– Remove engine case gasket ❷.

Removing the shift rails



– Remove shift rails ❶ with the springs.

Removing the shift drum

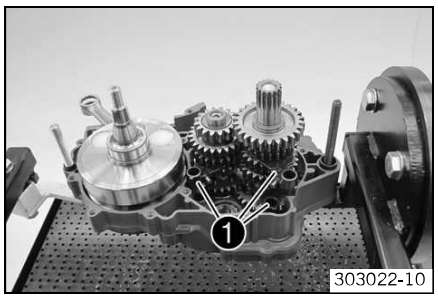


– Tilt shift forks ❶ to the side.

Info
Do not misplace the shift rollers.

– Remove shift drum ❷.

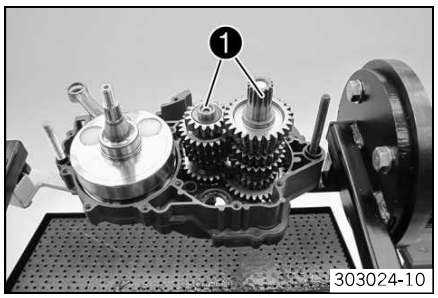
Removing the shift forks



– Remove shift forks ❶.

Info
Do not misplace the shift rollers.

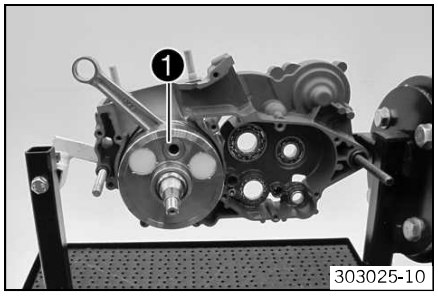
Removing the transmission shafts



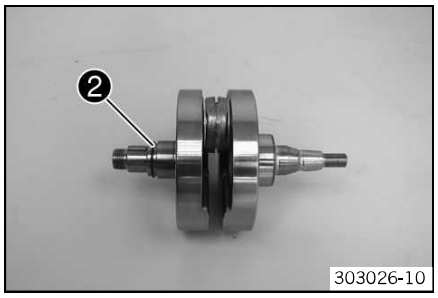
– Pull both transmission shafts ❶ out of the bearing seats together.

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

Removing the crankshaft

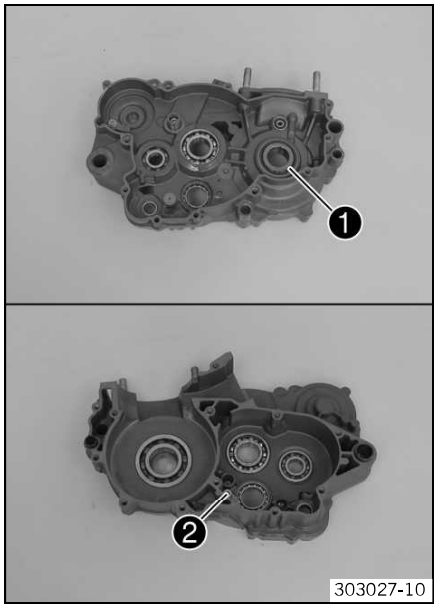


– Take out crankshaft ❶.



– Remove O-ring ❷.

Work on the right section of the engine case



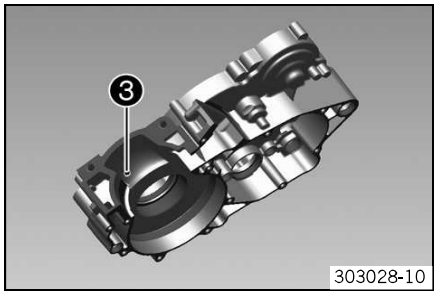
- Remove all dowels.
- Remove shaft seal ring ❶ of the crankshaft.
- Remove screw ❷. Remove the bearing retainer.
- Clean the engine case section thoroughly.
- Warm the engine case section in an oven.

  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.



- Blow out lubrication bore ❸ with compressed air and check that it is clear.
- Insert the new cold bearings in the bearing seats of the heated section of the engine case; if necessary, use a suitable press drift to push them all the way in and make them 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.

- After the engine case section has cooled, check that the bearings are firmly seated.

Info
If the bearings are not firmly seated after cooling, it is likely that they will rotate in the engine case when warm. In this case, the engine case must be renewed.

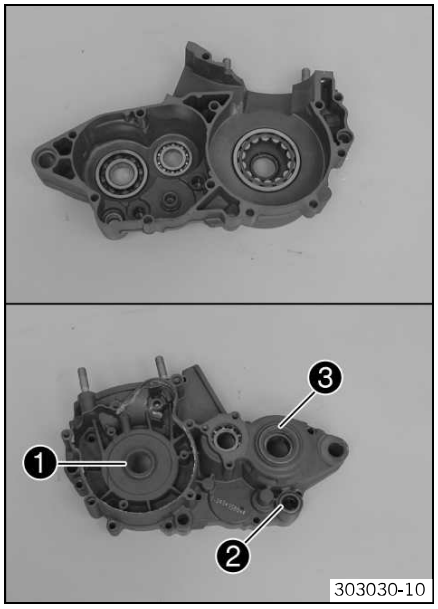
- Press in shaft seal ring ❶ of the crankshaft so it is flush with the open side facing in.
- Mount and tighten screw ❷ with the bearing retainer.

  Guideline

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

- Mount the dowels.

Work on the left section of the engine case



- Remove all dowels.
- Remove shaft seal ring ❶ of the crankshaft, ❷ shift shaft and ❸ countershaft.
- Clean the engine case section thoroughly.
- 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.

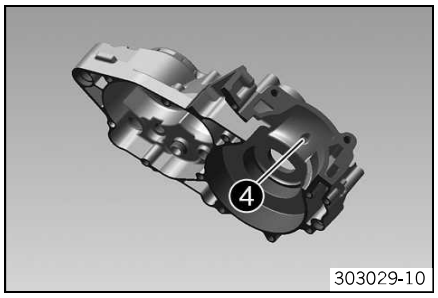
- Insert the new cold bearings in the bearing seats of the heated section of the engine case; if necessary, use a suitable press drift to push them all the way in and make them flush.

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.

- After the engine case section has cooled, check that the bearings are firmly seated.

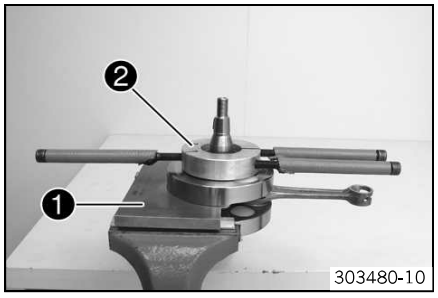
Info
If the bearings are not firmly seated after cooling, it is likely that they will rotate in the engine case when warm. In this case, the engine case must be renewed.

- Press in shaft seal ring ❶ of the crankshaft so it is flush with the open side facing in.
- Press in shaft seal ring ❷ of the shift shaft so it is flush with the open side facing in.
- Press in shaft seal ring ❸ of the countershaft so it is flush with the open side facing in.



- Blow out lubrication bore ❹ with compressed air and check that it is clear.
- Mount the dowels.

Removing the crankshaft bearing inner race



- Fixate the crankshaft in the vice with special tool ❶.

Separator plate (54829009000) (☛ p. 231)

Info
Use soft jaws.

- Warm up special tool ❷.

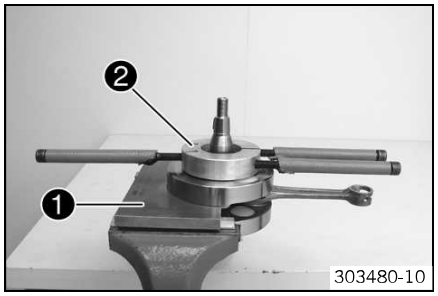
  Guideline

150 °C (302 °F)

Tool for inner bearing race (58429037040) (☛ p. 232)

– Push the warmed up special tool ❷ onto the crankshaft bearing inner race, press firmly together and pull jointly from the crankshaft.

Installing the crankshaft bearing inner race



– Fixate the crankshaft in the vice with special tool ❶.

Separator plate (54829009000) (☛ p. 231)

Info
Use soft jaws.

– Heat the crankshaft bearing inner race in special tool ❷ and mount together.

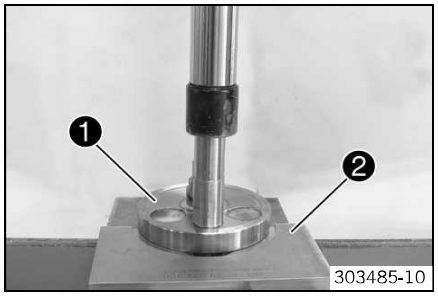
Guideline

120 °C (248 °F)

Tool for inner bearing race (58429037040) (☛ p. 232)

– Ensure that the new crankshaft bearing inner race is flush.

Changing the connecting rod, conrod bearing, and crank pin



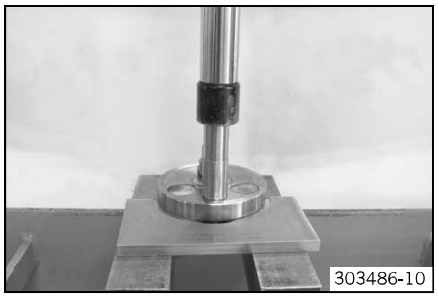
– Position crankshaft ❶ in the press using special tool ❷.

Separator plate (54829009000) (☛ p. 231)

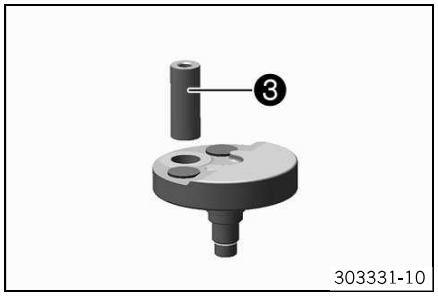
– Press the crank pin out of the upper crank web with a suitable tool.

Info
Hold the lower crank web.

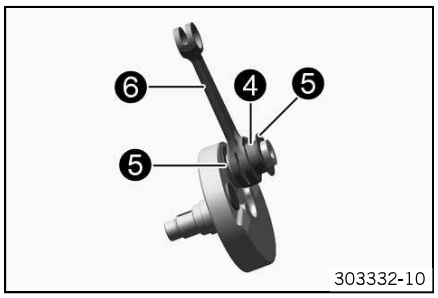
– Remove the connecting rod and bearing.



– Press the crank pin out of the lower crank web.

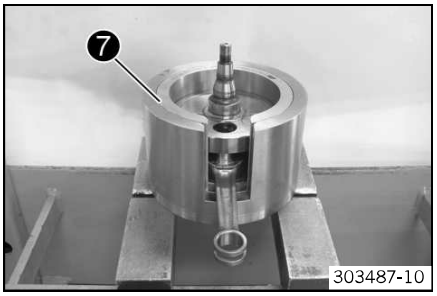


– Press in the new crank pin ❸ as far as possible.



– Mount new bearing ❹ with washers ❺ and connecting rod ❻.

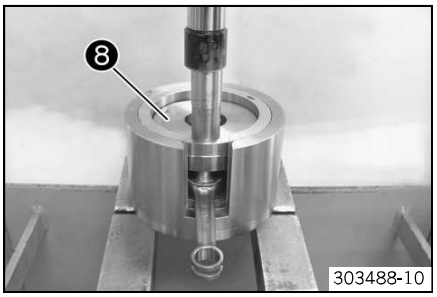
Info
Thoroughly oil the bearing.



– Position special tool ❼ on the press.

Pressing device for crankshaft, complete (75029047000) (☛ p. 233)
Insert for crankshaft pressing tool (54829108000) (☛ p. 231)

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



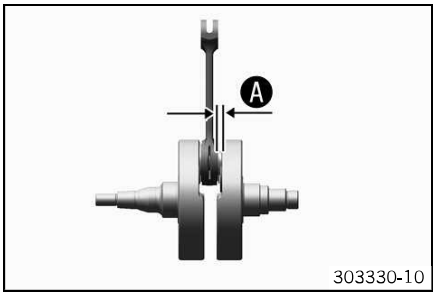
– Position special tool ❽ with the heel pointing down.

Insert for crankshaft pressing tool (54829108000) (☛ p. 231)

– Press in the upper crank web as far as possible.

Info
The press mandrel must be positioned over the crank pin.

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



– Measure axial play Ⓐ between the connecting rod and the crank webs using the special tool.

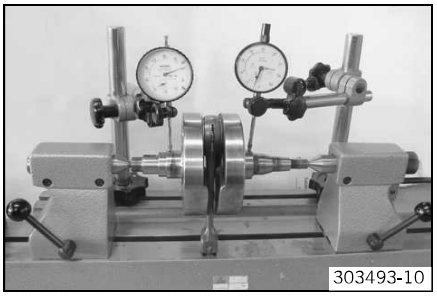
Feeler gauge (59029041100) (☛ p. 233)

Connecting rod - axial play of lower conrod bearing	0.60... 0.70 mm (0.0236... 0.0276 in)

» If the specification is not reached:
– Correct it so the dimension is equal to the specified value.

– Check the crankshaft run-out at the bearing pin. (☛ p. 119)

Checking the crankshaft run-out at the bearing pin

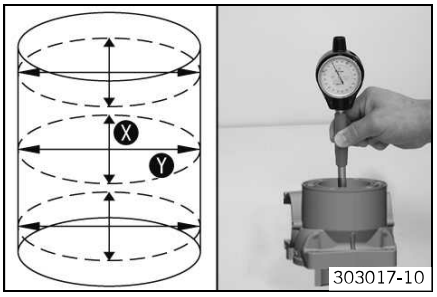


– Position the crankshaft on a roller block.
– Turn the crankshaft slowly.
– Check the crankshaft run-out on both bearing pins.

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

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

Checking/measuring the cylinder



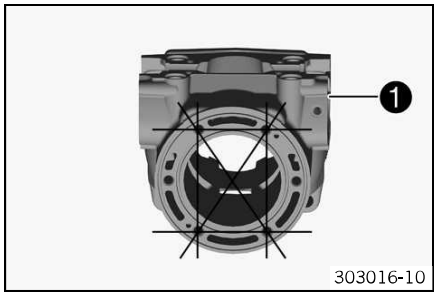
– Check the cylinder bearing surface for damage.
» If the cylinder bearing surface is damaged:
– Change the cylinder and piston.

– Measure the cylinder diameter at several locations on the Ⓧ- and Ⓨ-axes using a micrometer to identify oval wear.

Guideline

Cylinder - drill hole diameter (All 250 models)	
Size I	66.400... 66.412 mm (2.61417... 2.61464 in)
Size II	66.412... 66.425 mm (2.61464... 2.61515 in)
Cylinder - drill hole diameter (All 300 models)	
Size I	72.000... 72.012 mm (2.83464... 2.83511 in)
Size II	72.012... 72.025 mm (2.83511... 2.83562 in)

Info
The cylinder size ❶ is labeled on the right side of the cylinder.

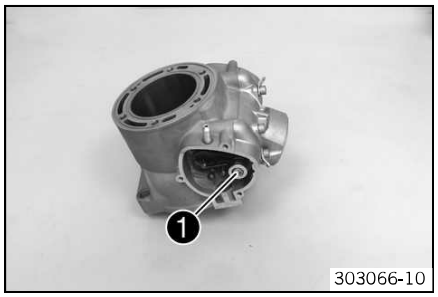


– Using a straightedge and the special tool, check the sealing area of the cylinder head for distortion.

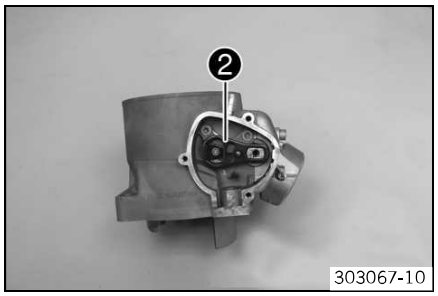
Feeler gauge (59029041100) (☛ p. 233)	
Cylinder/cylinder head - distortion of sealing area	≤ 0.10 mm (≤ 0.0039 in)

» If the measured value does not meet specifications:
– Change the cylinder.

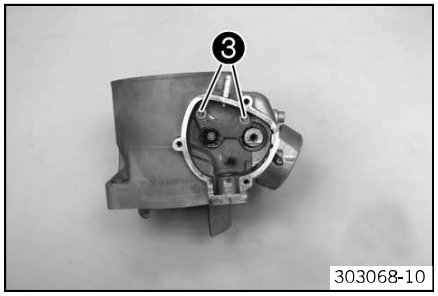
Removing the exhaust control



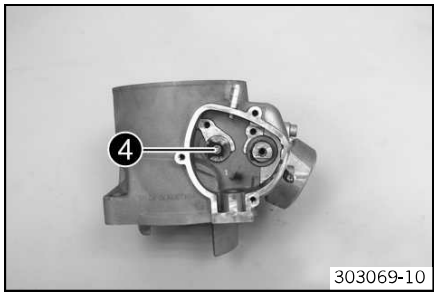
– Remove screw ❶ with the bushing and spring.



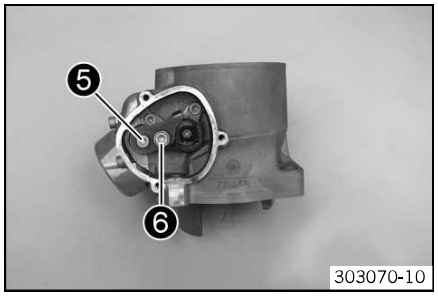
– Take off gear segment ❷.



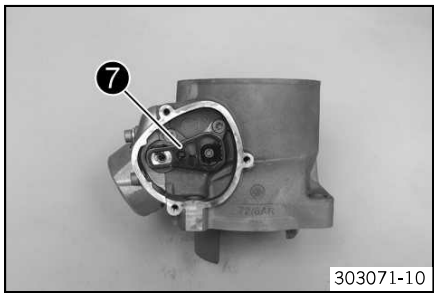
– Remove screws ❸.
– Remove the retaining bracket.



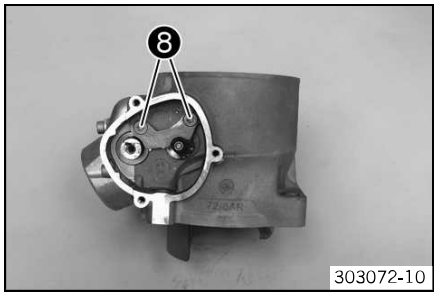
– Remove control shaft ❹.



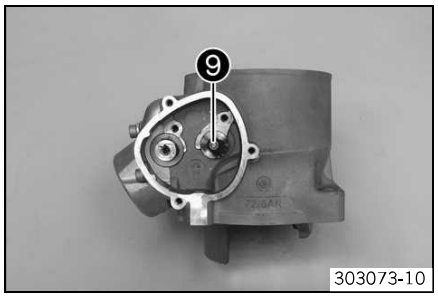
– Remove screw ❺.
– Remove screw ❻ with the washer.
– Take off the stop plate.



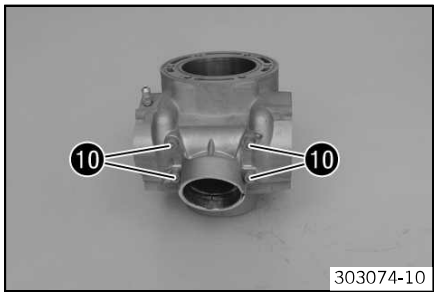
– Take off gear segment ❼.



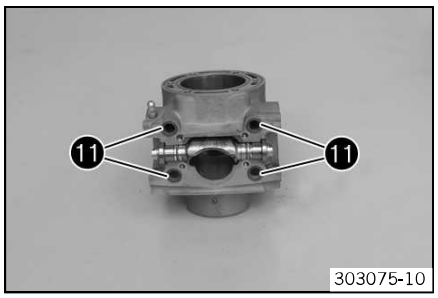
– Remove screws ❽.
– Take off the retaining bracket.



– Remove control shaft ❾.

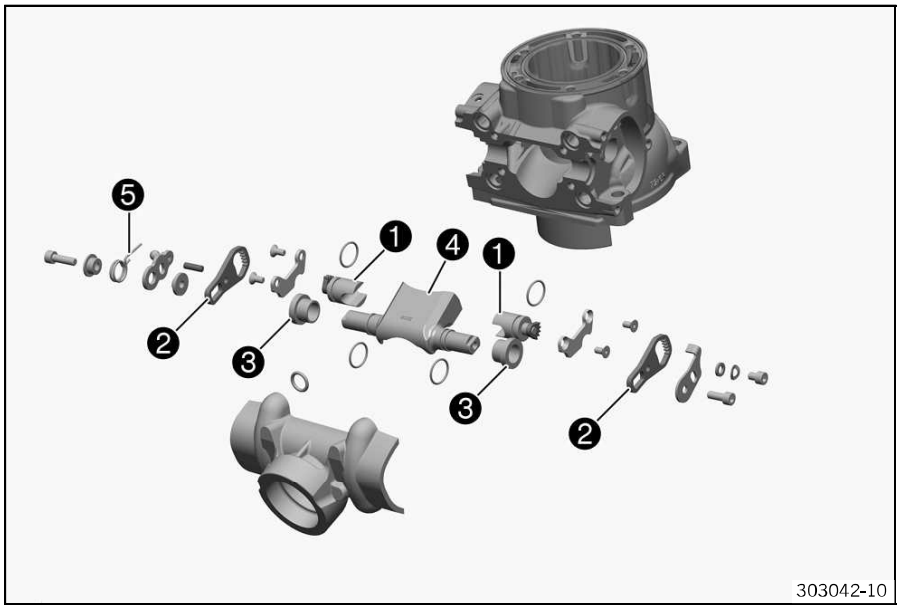


– Remove screws ❿.
– Take off the exhaust flange.



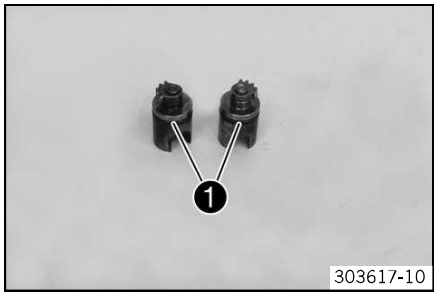
– Remove O-rings ⓫.
– Take off the control flap.

Checking the exhaust control



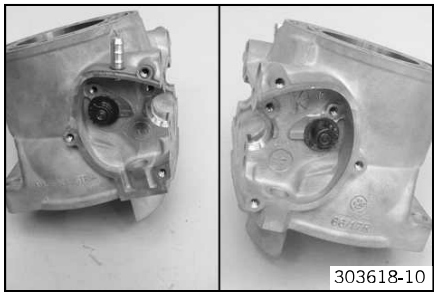
– Check control shafts ❶ for damage and wear.
  » If there is damage or wear:
    – Change the control shaft.
– Check gear segments ❷ for damage and wear.
  » If there is damage or wear:
    – Change the gear segments.
– Check bearing sleeves ❸ for damage and wear.
  » If there is damage or wear:
    – Change the bearing sleeves.
– Check control flap ❹ for damage and wear.
  » If there is damage or wear:
    – Change the control flap.
– Check control springs ❺ for damage and wear.
  » If there is damage or wear:
    – Change the spring.

Installing the exhaust control

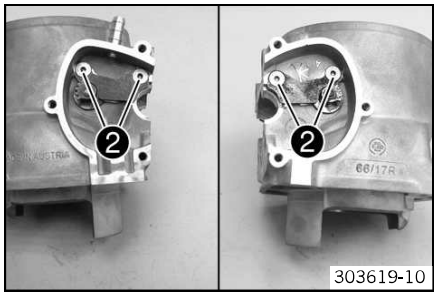


– Mount and grease O-rings ❶.

Long-life grease (☛ p. 228)



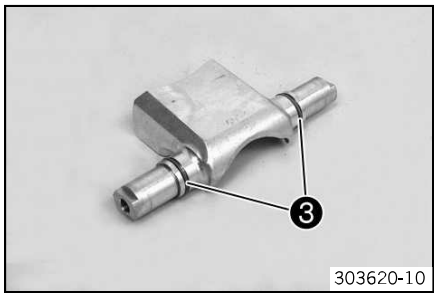
– Mount the control shafts.



– Mount the retaining brackets.
– Mount and tighten screws ❷.

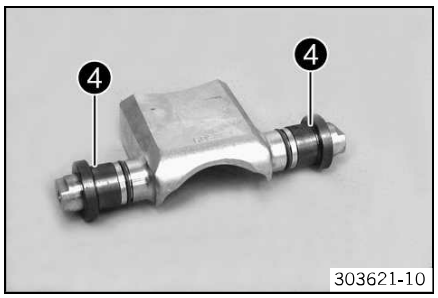
Guideline

Screw, retaining bracket of exhaust control	M5	7 Nm (5.2 lbf ft)	**Loctite® 243™**



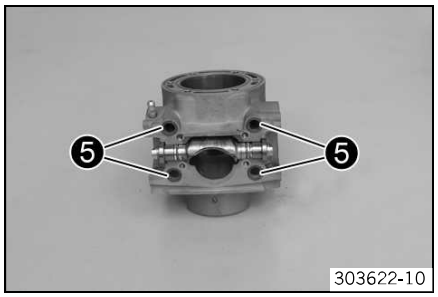
– Mount and grease O-rings ❸.

Long-life grease (☛ p. 228)

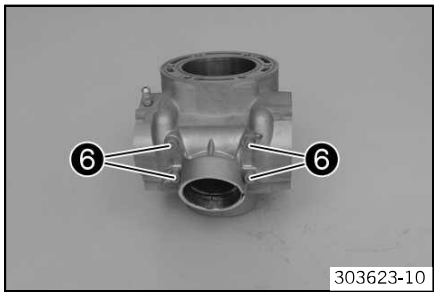


– Mount and grease bearing sleeves ❹.

Long-life grease (☛ p. 228)



– Position the control flap.
– Mount O-rings ❺.



– Degrease the sealing area and coat thinly with sealant.

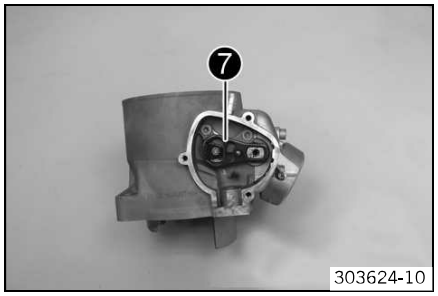
Loctite® 5910

– Position the exhaust flange.
– Mount and tighten screws ❻.

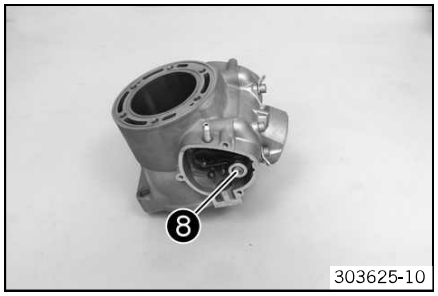
Guideline

Screw, exhaust flange	M6	8 Nm (5.9 lbf ft)

Info
Do not forget the spring hangers.



– Position gear segment ❼.



– Position the spring with the short leg toward the outside.
– Mount screw ❽ with the bushing and spring but do not tighten yet.

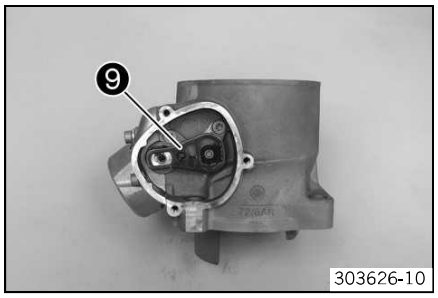
Guideline

Screw, control flap, exhaust control	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**

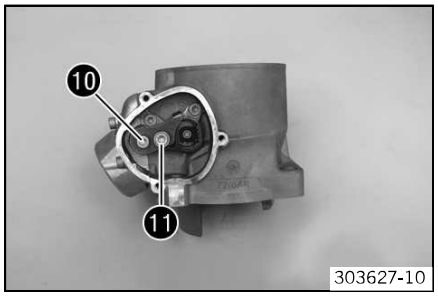
– Attach the spring to the cylinder pin.
– Tighten screw.

Guideline

Screw, control flap, exhaust control	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**



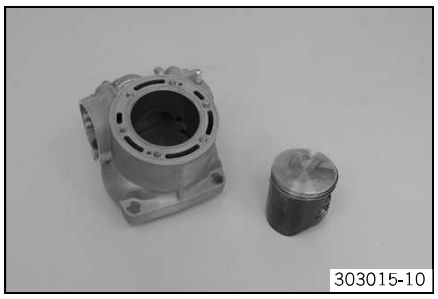
– Position gear segment ❾.



– Position the stop plate.
– Mount screw ❿ but do not tighten yet.
– Mount screw ⓫ with the washer but to not tighten yet.

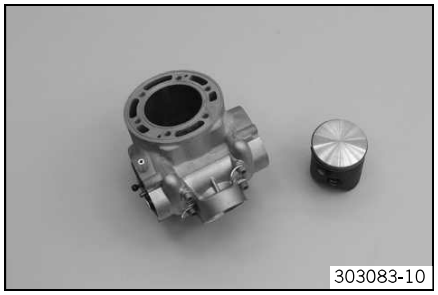
Info
The screws are tightened when the Z-distance is adjusted.

Cylinder - Nikasil® coating



Nikasil® is a surface protection layer for a coating procedure developed by Mahle. The name is derived from the two materials used in this procedure - a layer of nickel into which is embedded the particularly hard silicone carbide.
The most important advantages of the **Nikasil®** coating are very good heat conductivity, resulting in much improved performance, low wear, and a lightweight cylinder.

Checking/measuring the piston



(All 250 models)

– Check the piston sliding surface for damage.
  » If the piston sliding surface is damaged:
    – Replace the piston and, if necessary, the cylinder.
– Check that the piston rings move easily in the piston ring grooves.
  » If the piston ring is stiff:
    – Clean the piston ring groove.

Tip
An old piston ring can be used to clean the piston ring groove.

– Check the piston rings for damage.
  » If the piston ring is damaged:
    – Change the piston ring.

Info
Mount the piston ring with the marking facing upward.

- Check the piston pins for discoloration or signs of wear.
  - » If the piston pin shows severe discoloration/signs of wear:
    - Change the piston pin.
- Place the piston pin in the connecting rod and check the seating for play.
  - » If the piston pin seating has excessive play:
    - Change the connecting rod and piston pin.


303015-10

(All 300 models)

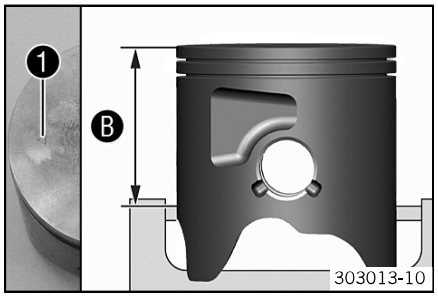
- Check the piston sliding surface for damage.
  - » If the piston sliding surface is damaged:
    - Replace the piston and, if necessary, the cylinder.
- Check that the piston rings move easily in the piston ring grooves.
  - » If the piston ring is stiff:
    - Clean the piston ring groove.

Tip
An old piston ring can be used to clean the piston ring groove.

- Check the piston rings for damage.
  - » If the piston ring is damaged:
    - Change the piston ring.

Info
Mount the piston ring with the marking facing upward.

- Check the piston pins for discoloration or signs of wear.
  - » If the piston pin shows severe discoloration/signs of wear:
    - Change the piston pin.
- Place the piston pin in the connecting rod and check the seating for play.
  - » If the piston pin seating has excessive play:
    - Change the connecting rod and piston pin.



303013-10

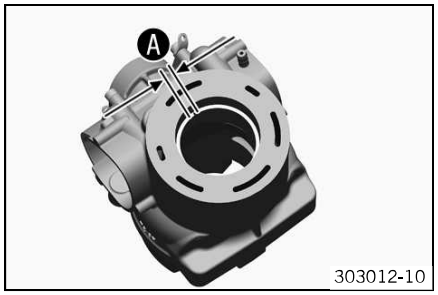
- Measure the piston at the piston skirt, at right angles to the piston pin, at a distance ❷.

Guideline

Distance ❷	50 mm (1.97 in)
Piston - diameter (All 250 models)	
Size I	66.340... 66.350 mm (2.61181... 2.6122 in)
Size II	66.351... 66.360 mm (2.61224... 2.61259 in)
Piston - diameter (All 300 models)	
Size I	71.940... 71.950 mm (2.83228... 2.83267 in)
Size II	71.951... 71.960 mm (2.83271... 2.83307 in)

Info
Piston dimensions ❶ are marked on the piston head.

Checking the piston ring end gap



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

Guideline

Below the upper edge of the cylinder	20 mm (0.79 in)

– Measure end gap Ⓐ with a feeler gauge.

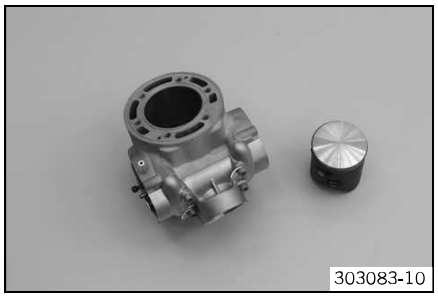
Guideline

Piston ring - end gap	
Ring 1	≤ 0.40 mm (≤ 0.0157 in)
Ring 2	≤ 0.40 mm (≤ 0.0157 in)

» If the end gap is greater than the specified measurement:
– Check/measure the cylinder. (☛ p. 119)
» If cylinder wear lies within the specified tolerance:
– Change the piston ring.

– Mount the piston ring with the marking facing toward the piston head.

Piston/cylinder - measuring the mounting clearance



(All 250 models)

– Check/measure the cylinder. (☛ p. 119)
– Check/measure the piston. (☛ p. 124)
– The smallest piston/cylinder mounting clearance equals the smallest cylinder bore diameter minus the largest piston diameter. The largest piston/cylinder mounting clearance equals the largest cylinder bore diameter minus the smallest piston diameter.

Guideline

Piston/cylinder - mounting clearance	
New condition	0.050... 0.074 mm (0.00197... 0.00291 in)
Piston/cylinder - mounting clearance	
Wear limit	0.10 mm (0.0039 in)

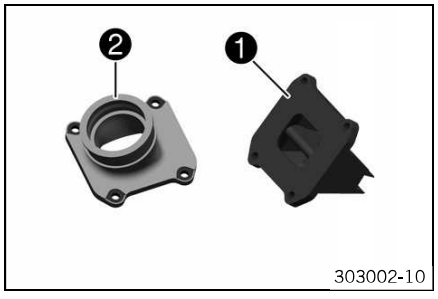
(All 300 models)

– Check/measure the cylinder. (☛ p. 119)
– Check/measure the piston. (☛ p. 124)
– The smallest piston/cylinder mounting clearance equals the smallest cylinder bore diameter minus the largest piston diameter. The largest piston/cylinder mounting clearance equals the largest cylinder bore diameter minus the smallest piston diameter.

Guideline

Piston/cylinder - mounting clearance	
New condition	0.050... 0.085 mm (0.00197... 0.00335 in)
Piston/cylinder - mounting clearance	
Wear limit	0.10 mm (0.0039 in)

Checking the reed valve housing, reed valve and intake flange

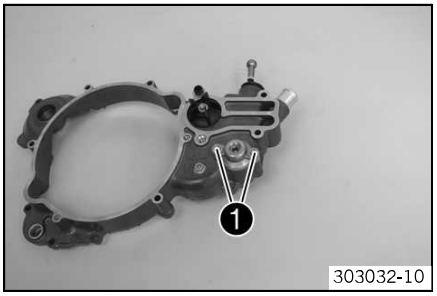


– Check reed valve housing ❶ for damage and wear.
» If there is damage or wear:
– Change the reed valve housing.
– Check the reed valve for damage and wear.
» If there is damage or wear:
– Change the reed valve.
– Check intake flange ❷ for damage and wear.
» If there is damage or wear:

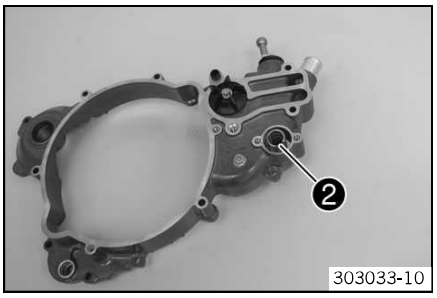
– Change the intake flange.

Work on the clutch cover

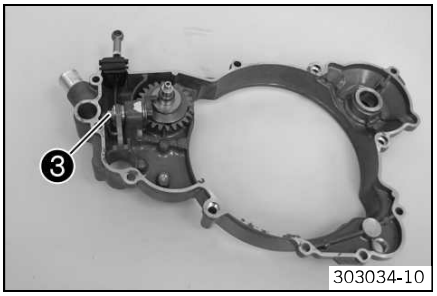
Info
Remove the outer clutch cover to avoid damage.



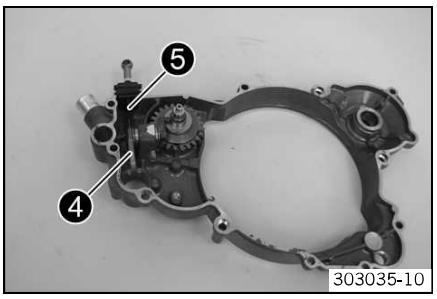
– Remove screws ❶.
– Remove the locking cap.



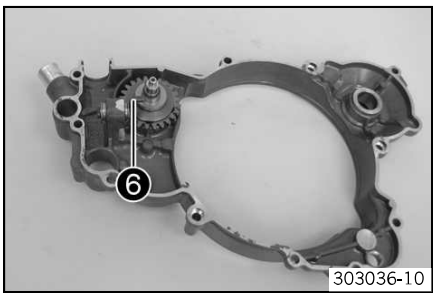
– Remove adjusting spring ❷, the auxiliary spring, and the spring insert.



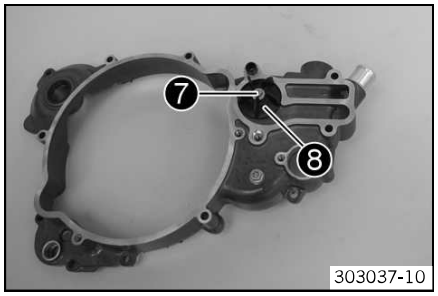
– Remove screw ❸ with the washer.



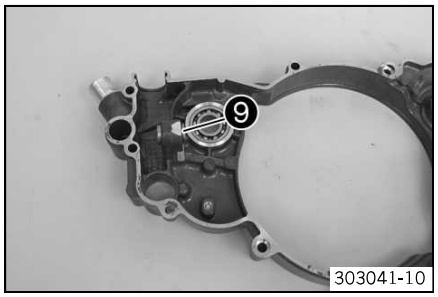
– Take off angle lever ❹.
– Remove linkage ❺.



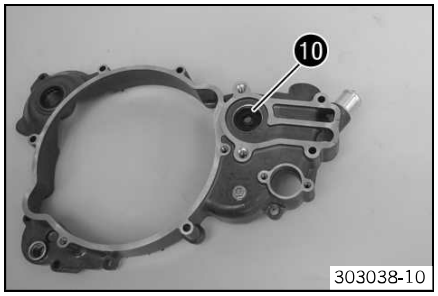
– Remove adjusting lever ❻ with the washers.



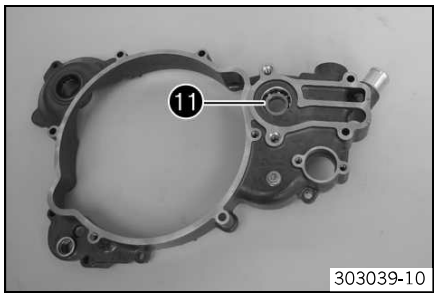
– Remove screw ❼.
– Take off water pump impeller ❽.
– Remove the centrifugal timer.



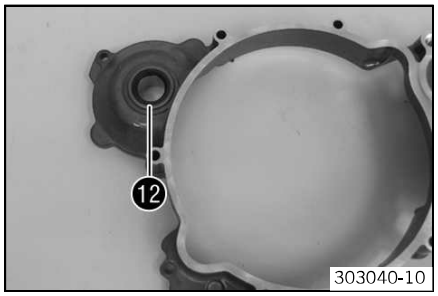
– Press out both needle bearings ❾.



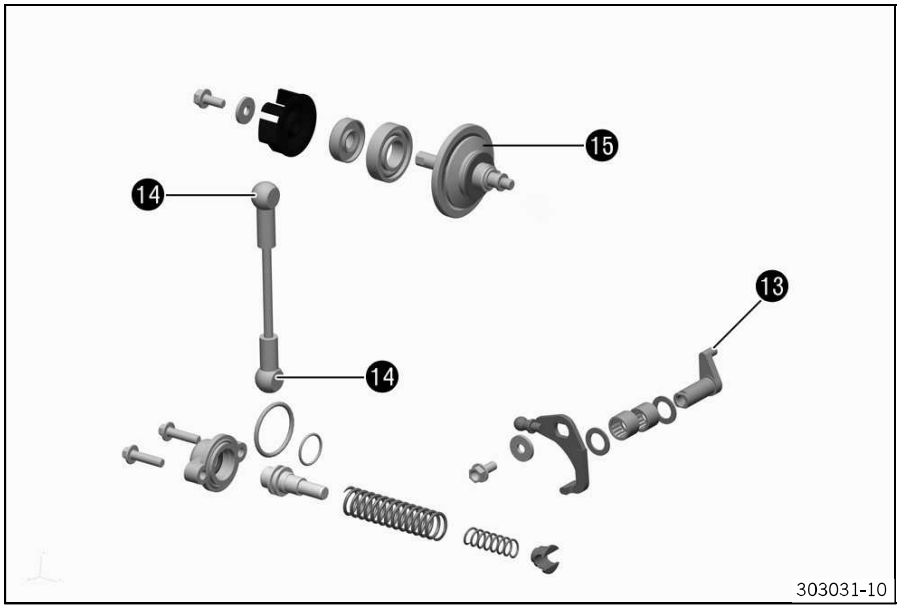
– Remove shaft seal ring ❿.



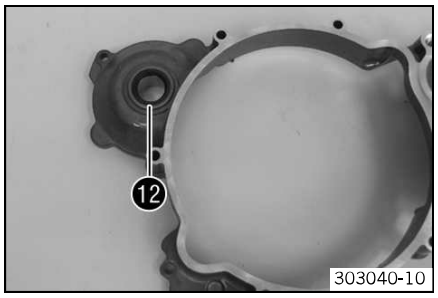
– Press out bearing ⓫ toward the inside.



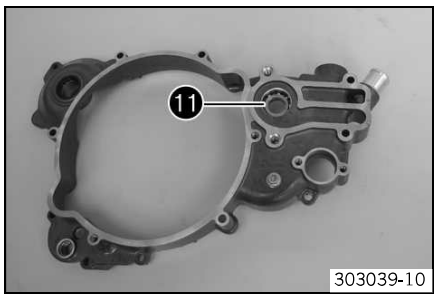
– Remove shaft seal ring ⓬.



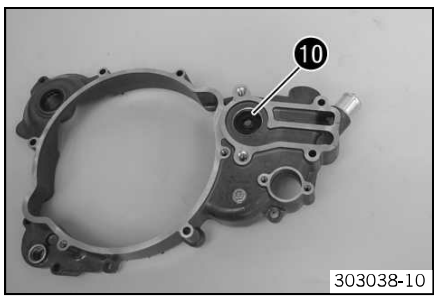
– Check pin ⓭ of the adjusting lever for damage and wear.
  » If there is damage or wear:
    – Change the adjusting lever.
– Check ball heads ⓮ of the linkage for damage and wear.
  » If there is damage or wear:
    – Change the linkage.
– Check centrifugal timer ⓯ for damage and wear.
  » If there is damage or wear:
    – Change the centrifugal timer.



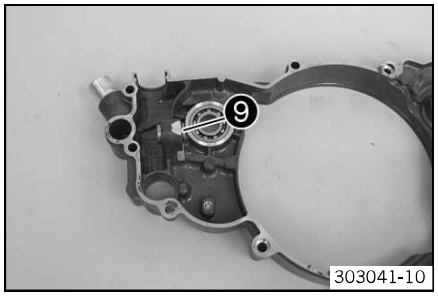
– Press shaft seal ring ⓬ all the way in.



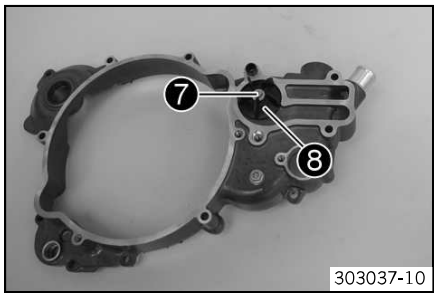
– Press bearing ⓫ all the way in to the stop from the inside.



– Press shaft seal ring ⓾ so it is flush.
– Ensure that the bearing can turn freely and does not touch the shaft seal ring.



– Press in both needle bearings ❾.

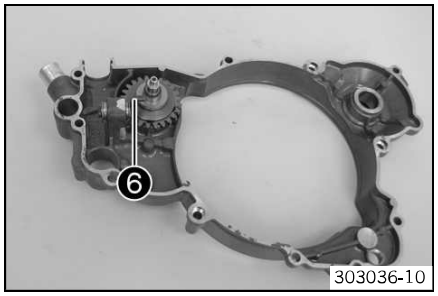


– Mount the centrifugal timer.
– Position water pump impeller ❽.
– Mount and tighten screw ❼.

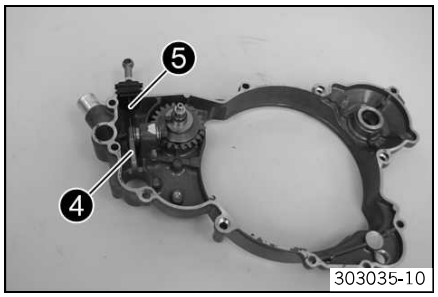
Guideline

Screw, water pump wheel	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**

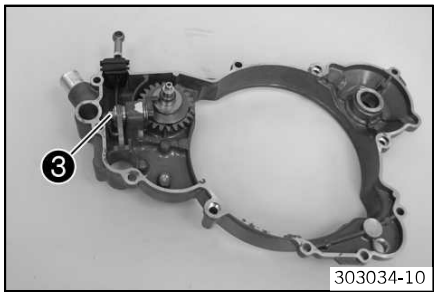
– Turn the water pump impeller all the way around to ensure that it can move easily.



– Mount adjusting lever ❻ with the washers.



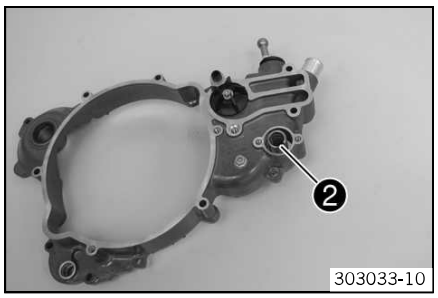
– Position linkage ❺.
– Mount angle lever ❹.



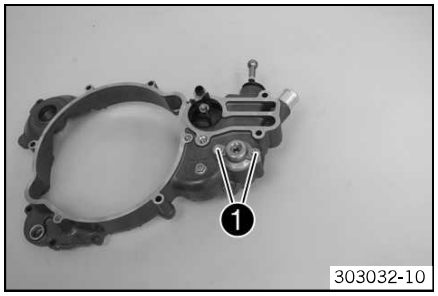
– Mount and tighten screw ❸ with the washer.

Guideline

Screw, angle lever, exhaust control	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**



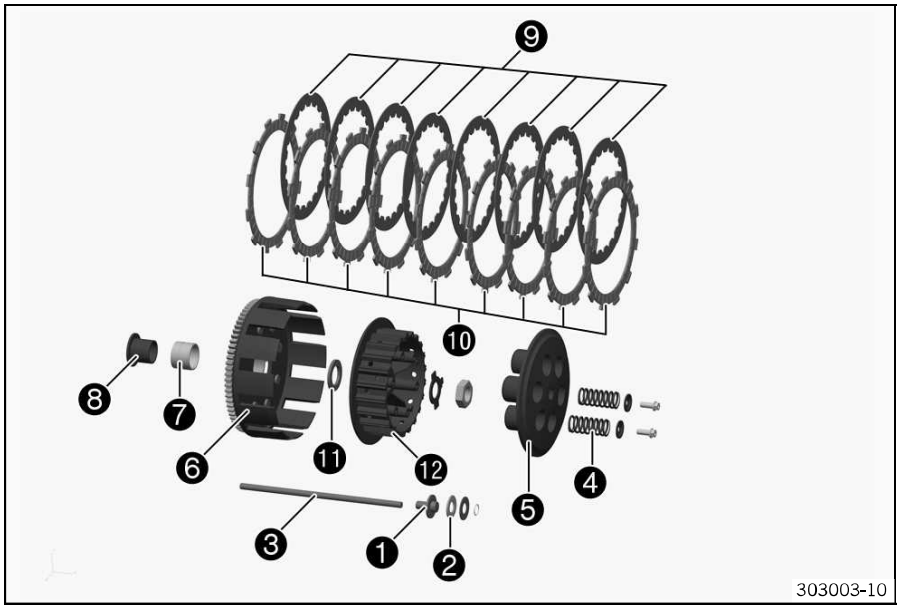
– Mount adjusting spring ❷ with the auxiliary spring and spring insert.



– Position the locking cap.
– Mount and tighten screws ❶.
Guideline

Screw, exhaust control cover	M5	5 Nm (3.7 lbf ft)

Checking the clutch



– Check pressure piece ❶ for damage and wear.
» If there is damage or wear:
– Change the pressure piece.
– Check axial bearing ❷ for damage and wear.
» If there is damage or wear:
– Change the axial bearing.
– Place push rod ❸ on a level surface and check for run-out.
» If there is run-out:
– Change the push rod.
– Check the length of clutch springs ❹.

Clutch spring - length	≥ 42.0 mm (≥ 1.654 in)

» If the clutch spring length is less than the specified value:
– Change all clutch springs.
– Check the thrust face of pressure cap ❺ for damage and wear.
» If there is damage or wear:
– Change the pressure cap.
– Check the thrust surfaces of the clutch facing discs in the outer clutch hub ❻ for wear.

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

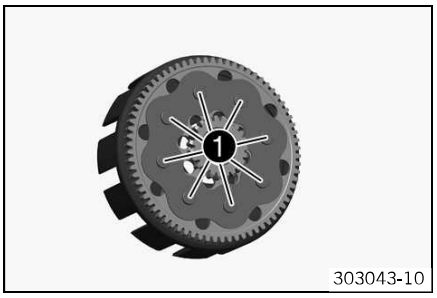
» If the contact surface exhibits significant wear:
– Change the clutch facing discs and the outer clutch hub.
– Check needle bearing ❼ and collar bushing ❽ for damage and wear.
» If there is damage or wear:
– Change the needle bearing and collar bushing.

– Check intermediate disc ❾ for damage and wear.
  » If the intermediate discs are not flat or have punctiform outbreaks:
    – Change all intermediate discs.
– Check clutch facing discs ❿ for discoloration and scoring.
  » If there is discoloration or scoring:
    – Change all clutch facing discs.
– Check the thickness of clutch facing discs ❿.

Clutch facing disc - thickness	≥ 2.6 mm (≥ 0.102 in)

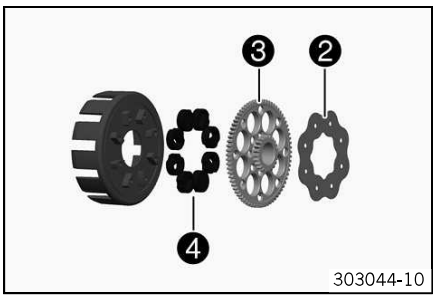
  » If the clutch lining disc does not meet specifications:
    – Change all clutch facing discs.
– Check disc ⓫ for damage and wear.
  » If there is damage or wear:
    – Change the disc.
– Check the inner clutch hub ⓬ for damage and wear.
  » If there is damage or wear:
    – Change the inner clutch hub.

Changing the absorbing element of the clutch



303043-10

– Drill open clutch rivets ❶ and remove them.



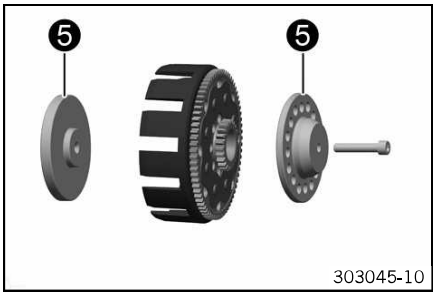
303044-10

– Take off retaining bracket ❷.
– Remove primary ring gear ❸.
– Take off absorbing element ❹.
– Mount the new absorbing element ❹.

Info
Always change the full set of absorbing elements.

– Mount the primary ring gear ❸.
– Position retaining bracket ❷.
– Mount special tool ❺.

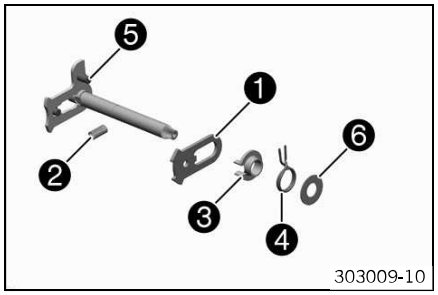
Pressing tool (54629027000) (☛ p. 230)



303045-10

– Close the clutch rivets using pointed and rounded mandrels.

Preassembling the shift shaft



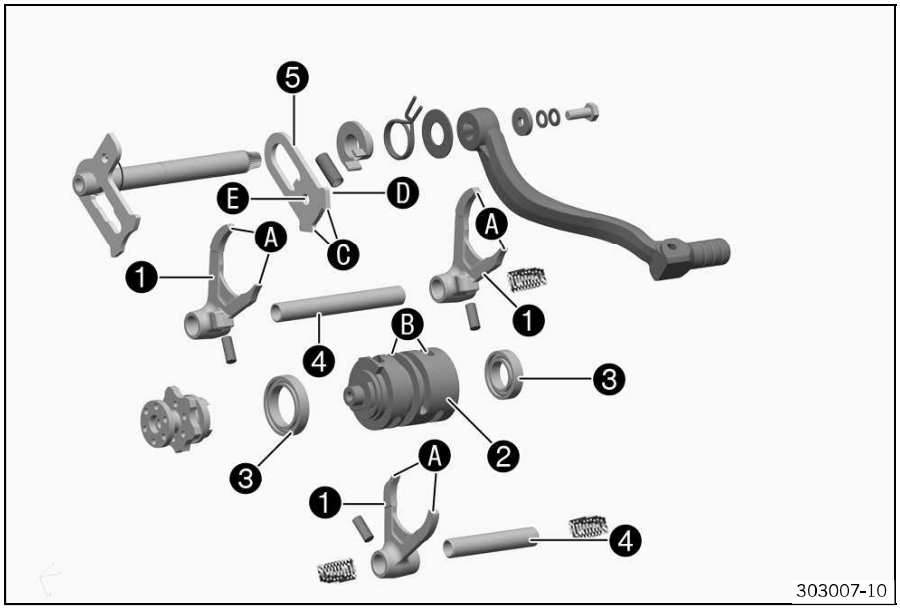
– Secure the short end of the shift shaft in the bench vise.

Guideline

Use soft jaws.

– Mount sliding plate ❶ with the guide pin facing downward and put the guide pin on the shift quadrant.
– Mount pressure spring ❷.
– Slide on spring guide ❸, push return spring ❹, with the offset end facing upward, over the spring guide and lift the offset end over abutment bolt ❺.
– Mount stop disk ❻.

Checking the shift mechanism



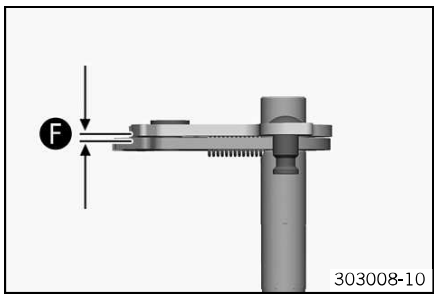
– Check shift forks ❶ on disc Ⓐ for damage and wear (visual check).
  » If there is damage or wear:
    – Change the shift fork and gear wheel pair.
– Check shift grooves Ⓑ of shift drum ❷ for wear.
  » If the shift groove is worn:
    – Change the shift drum.
– Check the seating of the shift drum in bearings ❸.
  » If the shift drum is not correctly seated:
    – Change the shift drum and/or bearings.
– Check bearings ❸ for smooth operation and wear.
  » If the bearings are stiff or worn:
    – Change the bearings.
– Check the shift rollers for damage and wear.
  » If there is damage or wear:
    – Change the shift rollers.
– Check the springs of shift rails ❹ for damage and wear.
  » If the spring is damaged or worn:
    – Change the spring of the shift rail.
– Check the shift rails ❹ for run-out on a flat surface.
  » If there is run-out:
    – Change the shift rail.
– Check the shift rails for scoring, wear and smooth operation in the shift forks.

» If scoring or wear is present or of the shift fork is stiff:
– Change the shift rail.

– Check sliding plate ❺ for wear on contact areas Ⓒ.
» If the sliding plate is worn:
– Change the sliding plate.

– Check return surface Ⓓ on the sliding plate for wear.
» If there is severe grooving:
– Change the sliding plate.

– Check guide bolts Ⓔ for firm seating and wear.
» If the guide bolts are loose or worn:
– Change the sliding plate.

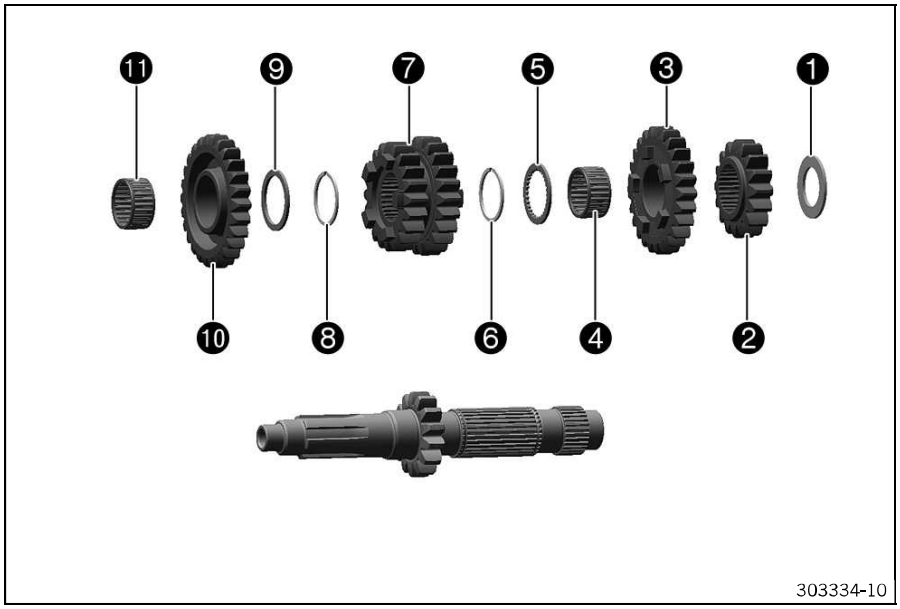


– Preassemble the shift shaft. (☛ p. 133)
– Check clearance Ⓕ between the sliding plate and the shift quadrant.

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

» If the measured value does not meet specifications:
– Change the sliding plate.

Disassembling the main shaft

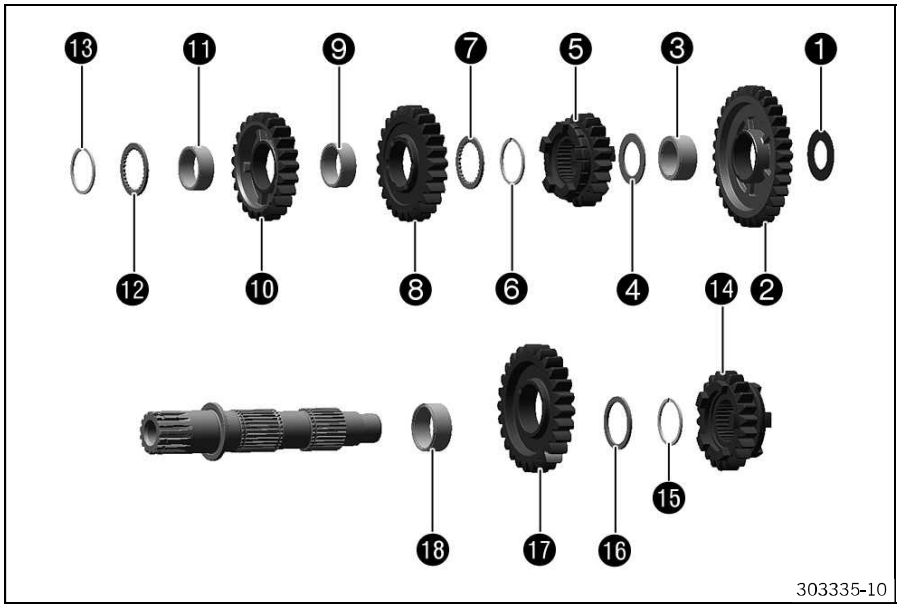


– Secure the main shaft with the toothed end facing downward in the vise.
Guideline

Use soft jaws.

– Remove stop disk ❶ and 2nd-gear fixed gear ❷.
– Remove 5th-gear idler gear ❸ and needle bearing ❹.
– Remove stop disk ❺.
– Remove lock ring ❻.
– Remove 3rd/4th-gear sliding gear ❼.
– Remove lock ring ❽.
– Remove stop disk ❾.
– Remove 6th-gear idler gear ❿.
– Remove needle bearing ⓫.

Disassembling the countershaft



– Fix the countershaft in the vice with the toothed end facing downward.

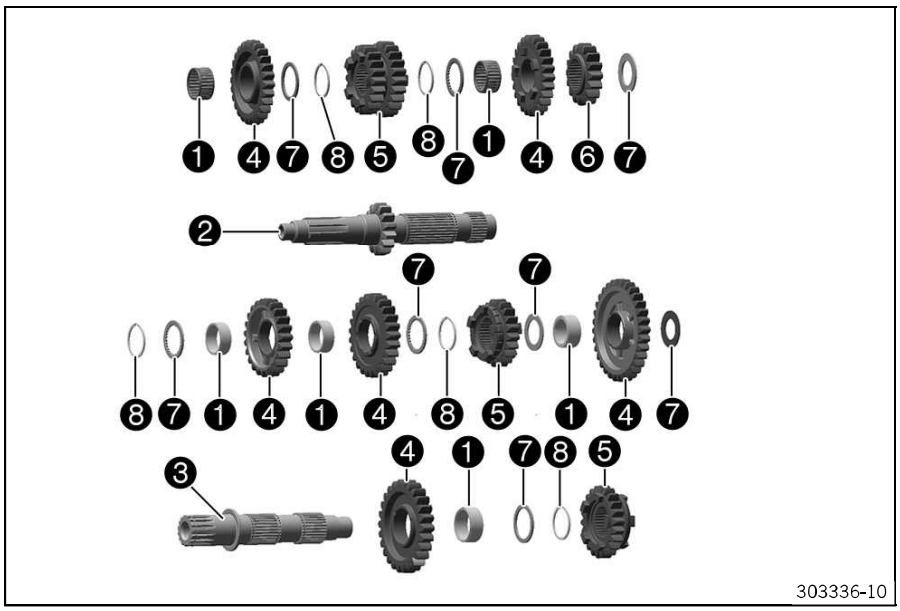
Guideline

Use soft jaws

– Remove stop disk ❶ and 1st-gear idler gear ❷.
– Remove needle bearing ❸ and stop disk ❹.
– Remove 6th-gear sliding gear ❺.
– Remove lock ring ❻.
– Remove stop disk ❼.
– Remove 3rd-gear idler gear ❽ and needle bearing ❾.
– Remove 4th-gear idler gear ❿.
– Remove needle bearing ⓫.
– Remove stop disk ⓬ and lock ring ⓭.
– Remove 5th-gear sliding gear ⓮.
– Remove lock ring ⓯.
– Remove stop disk ⓰.
– Remove 2nd-gear idler gear ⓱ and needle bearing ⓲.

Checking the transmission

– Disassemble the main shaft. (☛ p. 134)
– Disassemble the countershaft. (☛ p. 135)

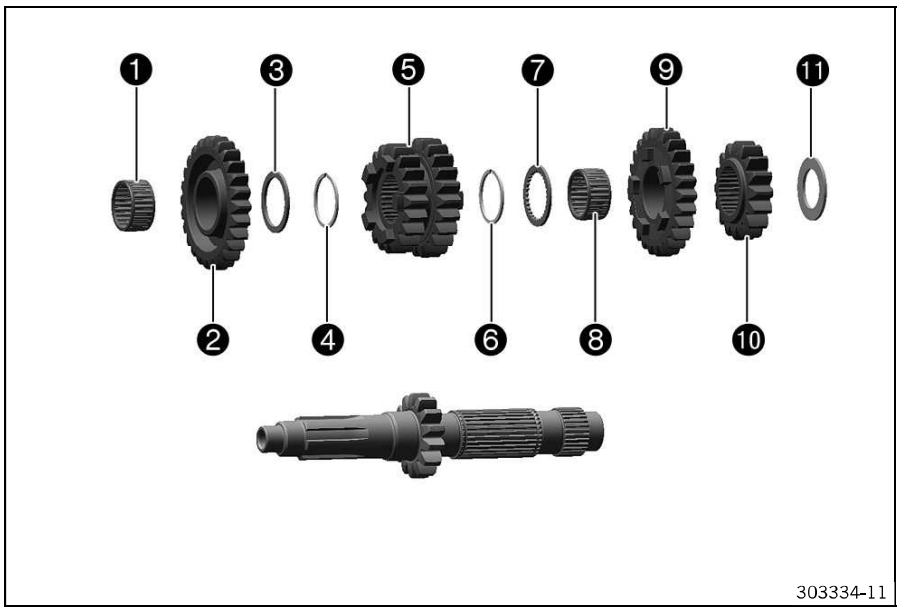


- Check needle bearings ❶ for damage and wear.
  - » If there is damage or wear:
    - Change the needle bearing.
- Check the pivot points of main shaft ❷ and countershaft ❸ for damage and wear.
  - » If there is damage or wear:
    - Change the main shaft and/or countershaft.
- Check the tooth profiles of main shaft ❷ and countershaft ❸ for damage and wear.
  - » If there is damage or wear:
    - Change the main shaft and/or countershaft.
- Check the pivot points of idler gears ❹ for damage and wear.
  - » If there is damage or wear:
    - Change the gear wheel pair.
- Check the shift dogs of the idler gears ❹ and sliding gears ❺ for damage and wear.
  - » If there is damage or wear:
    - Change the gear wheel pair.
- Check the tooth faces of idler gears ❹, sliding gears ❺ and fixed gear ❻ for damage and wear.
  - » If there is damage or wear:
    - Change the gear wheel pair.
- Check the tooth profiles of sliding gears ❺ for damage and wear.
  - » If there is damage or wear:
    - Change the gear wheel pair.
- Check sliding gears ❺ for smooth operation in the profile of main shaft ❷.
  - » If the sliding gear does not move freely:
    - Change the sliding gear or the main shaft.
- Check sliding gears ❺ for smooth operation in the profile of countershaft ❸.
  - » If the sliding gear does not move freely:
    - Change the sliding gear or the countershaft.
- Check stop disks ❼ for damage and wear.
  - » If there is damage or wear:
    - Change the stop disks.
- Use new lock rings ❽ with every repair.

Assembling the main shaft

Info
Use new lock rings with every repair.

- Carefully lubricate all parts before assembling.
- Check the transmission. (☛ p. 135)



- Secure the main shaft with the toothed end facing downward in the vise.

  Guideline

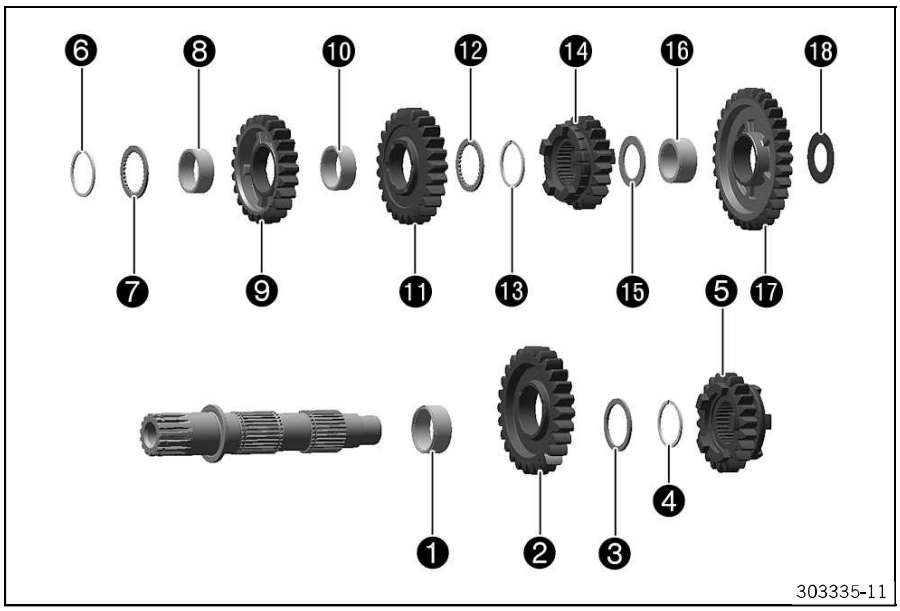
Use soft jaws

- Mount needle bearing ❶.
- Mount 6th-gear idler gear ❷.
- Mount stop disk ❸ and lock ring ❹.
- Mount 3rd/4th-gear sliding gear ❺ with the small gear wheel facing downward.
- Mount lock ring ❻ and stop disk ❼.
- Mount needle bearing ❽.
- Mount 5th-gear idler gear ❾.
- Mount 2nd-gear fixed gear ❿ and stop disk ⓫.
- Finally, check all gear wheels for smooth operation.

Assembling the countershaft

Info
Use new lock rings with every repair.

- Carefully lubricate all parts before assembling.
- Check the transmission. (☛ p. 135)



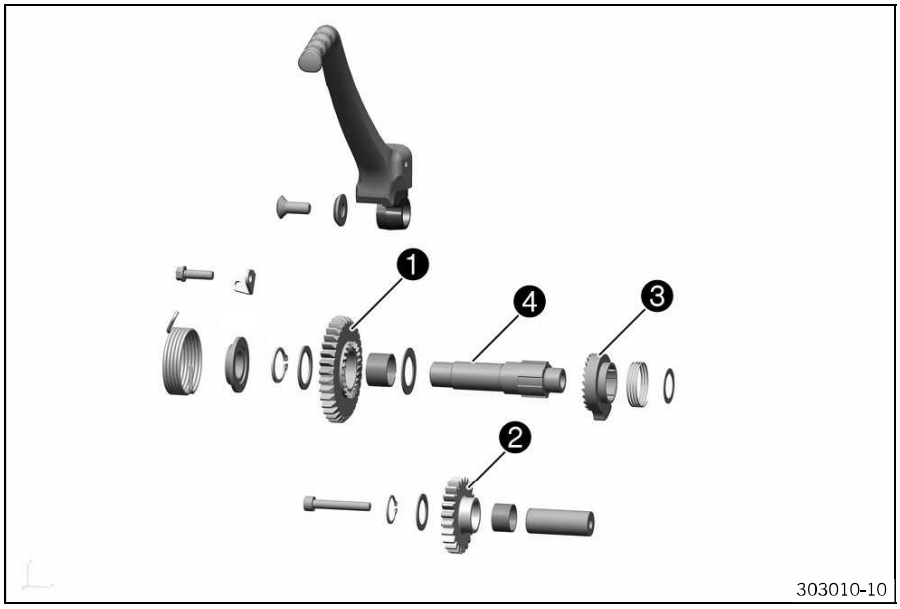
– Fix the countershaft in the vice with the toothed end facing downward.

Guideline

Use soft jaws

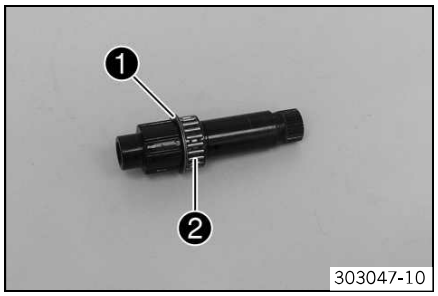
– Mount needle bearing ❶ and 2nd-gear idler gear ❷ onto the countershaft with the protruding collar facing downward.
– Mount stop disk ❸ and lock ring ❹.
– Mount 5th-gear sliding gear ❺ with the shift groove facing up.
– Mount lock ring ❻ and stop disk ❼.
– Mount needle bearing ❽ and 4th-gear idler gear ❾.
– Mount needle bearing ❿.
– Mount 3rd-gear idler gear ⓫.
– Mount stop disk ⓬ and lock ring ⓭.
– Mount 6th-gear sliding gear ⓮ with the shift groove facing downward.
– Mount stop disk ⓯.
– Mount needle bearing ⓰ and 1st-gear idler gear ⓱.
– Mount stop disk ⓲.
– Finally, check all gear wheels for smooth operation.

Checking the kick starter

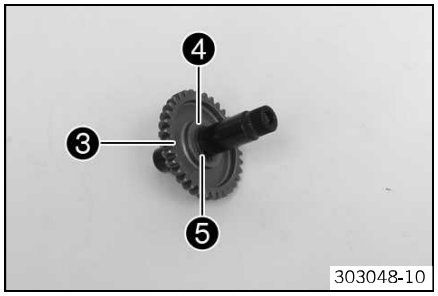


– Check the gear mesh and bearing of kick starter gear ❶ for damage and wear.
  » If there is damage or wear:
    – Change the kick starter gear.
– Check the gear mesh and bearing of intermediate kick starter gear ❷ for damage and wear.
  » If there is damage or wear:
    – Change the intermediate kick starter gear.
– Check the gear mesh and contact surface of kick starter ratchet wheel ❸ for damage and wear.
  » If there is damage or wear:
    – Change the kick starter ratchet wheel.
– Check the gear mesh and bearing of kick starter shaft ❹ for damage and wear.
  » If there is damage or wear:
    – Change the kick starter shaft.

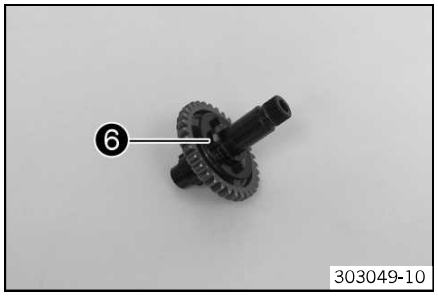
Preassembling the kick starter shaft



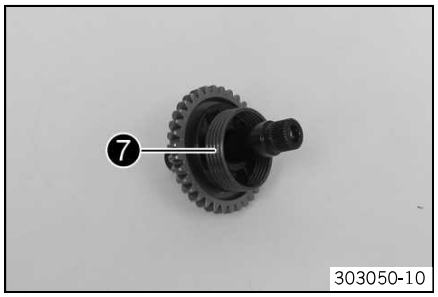
– Mount washer ❶ and bearing ❷.



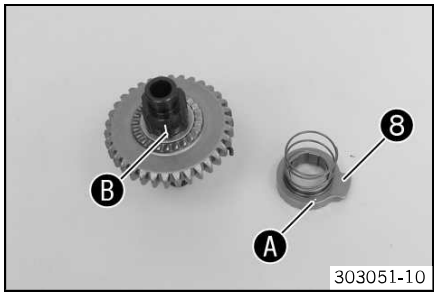
– Mount kick starter gear ❸ with washer ❹.
– Mount lock ring ❺.



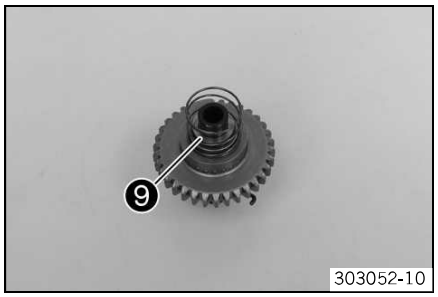
– Mount driving hub ❻.
  ✓ The cut-out must be aligned with the hole in the kick starter shaft.



– Mount kick starter spring ❼.
  ✓ The end of the kick starter spring engages in the hole.

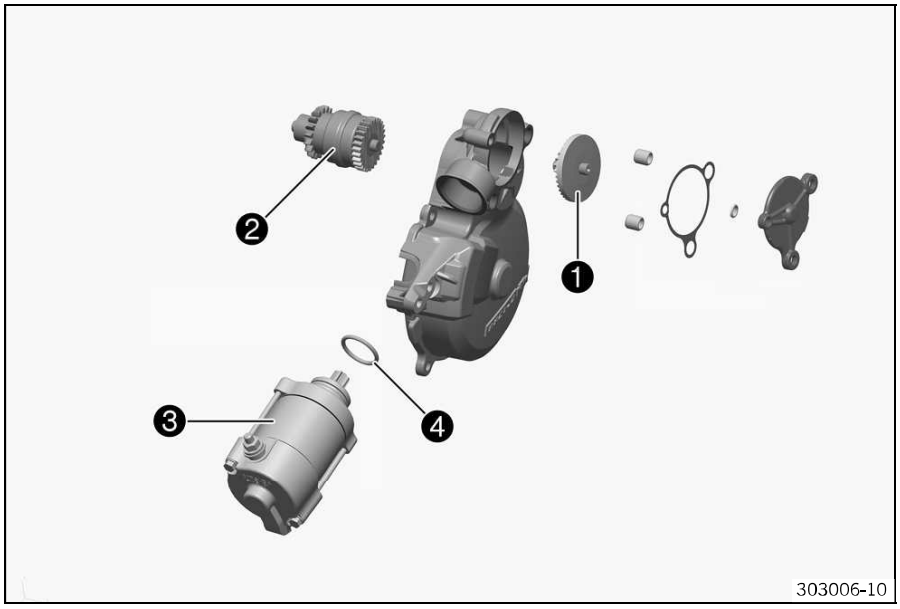


– Mount kick starter ratchet wheel ❽ with the spring.
  ✓ Marking Ⓐ is offset by one tooth behind marking Ⓑ.

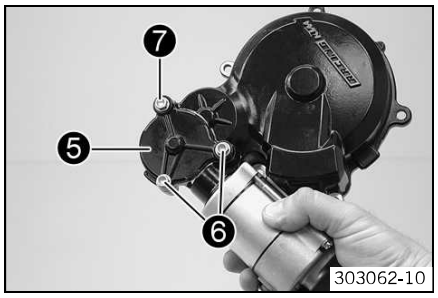


– Mount washer ❾.

Checking the electric starter drive



– Check the gear mesh and bearing of starter idler gear ❶ for damage and wear.
  » If there is damage or wear:
    – Change the starter idler gear.
– Check the gear mesh and bearing of Bendix ❷ for smooth operation, damage and wear.
  » If damaged or worn, or if the Bendix does not move easily:
    – Change the Bendix.
– Check the gear mesh of starter motor ❸ for damage and wear
  » If there is damage or wear:
    – Change the starter motor.
– Change O-ring ❹ of the starter motor.
– Connect the negative cable of a 12 volt power supply to the housing of the starter motor. Connect the positive cable of the power supply briefly with the connector of the starter motor.
  » If the starter motor does not turn when the circuit is closed:
    – Change the starter motor.

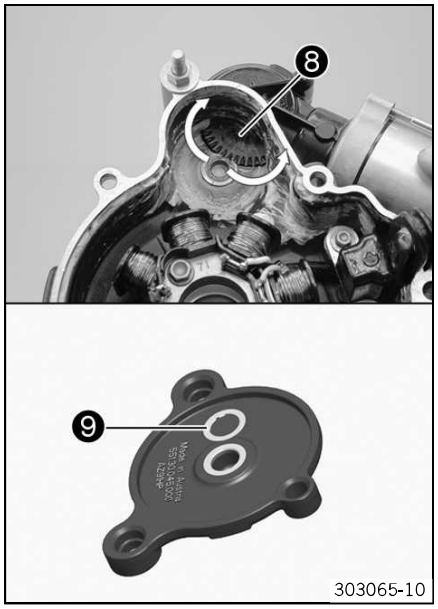


– Mount the starter idler gear in the alternator cover.
– Mount cover ❺ with the gasket.
– Mount and tighten screws ❻.
  Guideline

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

– Mount and tighten a fitting screw ❼ with the washer and nut.
  Guideline

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



– Move starter idler gear ❽ back and forth in the direction of rotation.
– Check for play.

Guideline

Play may not exceed half the tooth width.

» If the play is greater:
– Remove the cover.
– Add enough compensating disks ❾ to eliminate the play.
– Remove one compensating disk again.

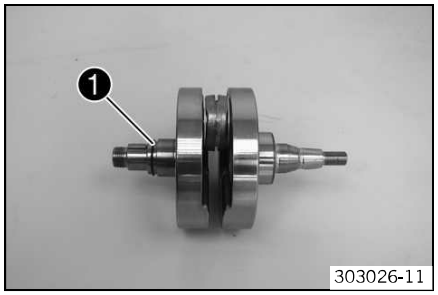
Guideline

Compensating disk	0.10 mm (0.0039 in)

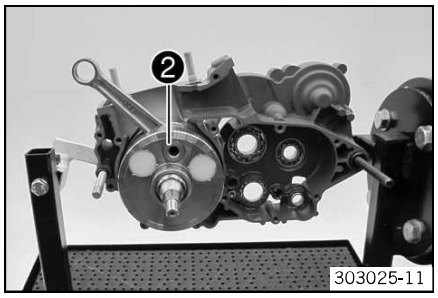
– Check the play again.
– Grease all pivot points.

Lubricant (T625) (☛ p. 229)

Installing the crankshaft



– Mount O-ring ❶.



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

Engine work stand (61229001000) (☛ p. 233)
Engine fixing arm (56029002030) (☛ p. 232)

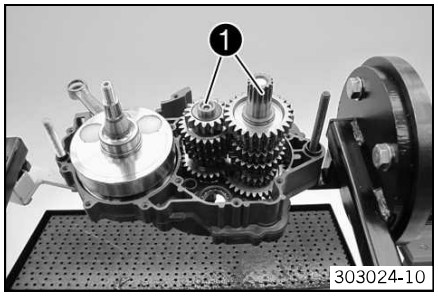
– Warm up the crankshaft bearing.

Guideline

100 °C (212 °F)

– Slide crankshaft ❷ all the way into the bearing seat of the right section of the engine case.

Installing the transmission shafts

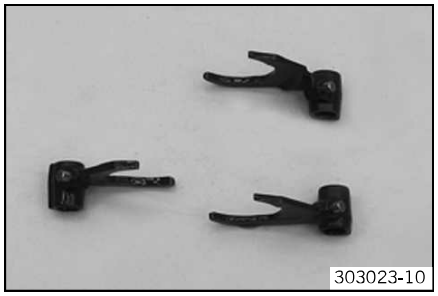


– Oil all bearing.

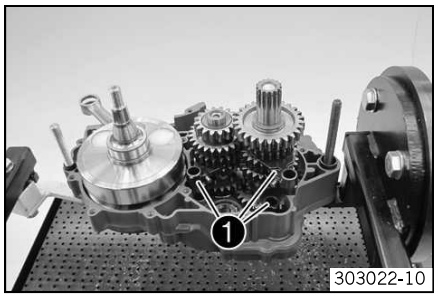
Engine oil (15W/50) (☛ p. 226)

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

Installing the shift forks

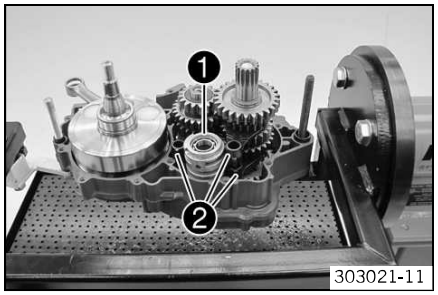


– Arrange the shift forks as shown above.



– Position shift forks ❶ in the shift grooves.

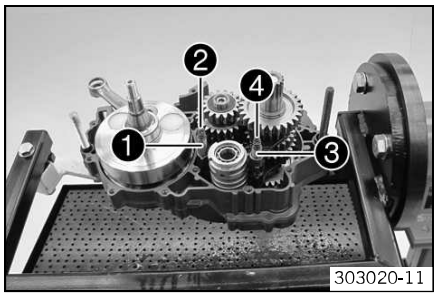
Installing the shift drum



– Push shift drum ❶ into the bearing seat.
– Put shift forks ❷ in the shift drum.

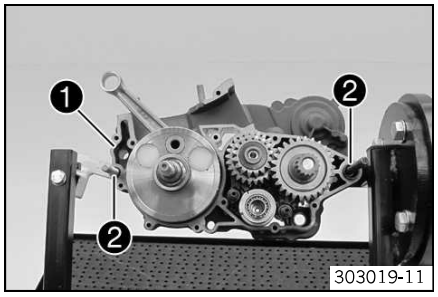
Info
Do not misplace the shift rollers.

Installing the shift rails

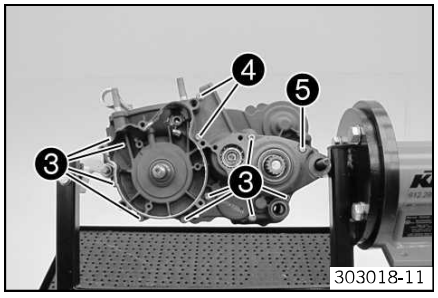


– Install shift rail ❶ together with upper spring ❷ and the lower spring.
– Install shift rail ❸ together with upper spring ❹.

Installing the left engine case section



– Coat the sealing area thinly with grease.
– Mount engine case gasket ❶.
– Check that dowels ❷ are seated correctly.



– Mount the left section of the engine case.

Info
Do not use the screws to pull the two sections of the engine case together.

– Mount screws ❸ and, once all screws of the left section of the engine case have been mounted, tighten them.

Guideline

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

– Mount screws ❹ and, once all screws of the left section of the engine case have been mounted, tighten them.

Guideline

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

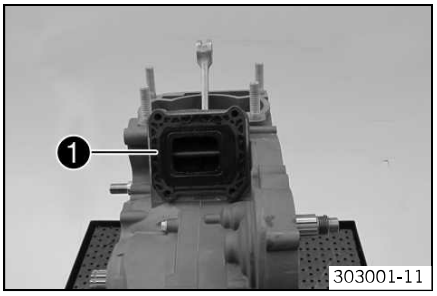
– Mount screws ❺ and tighten all screws in a crisscross pattern.

Guideline

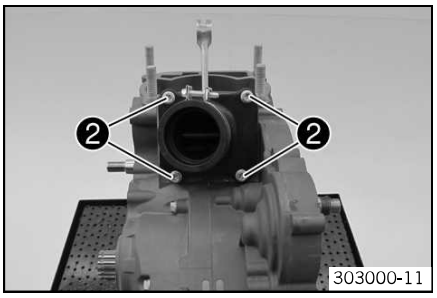
Screw, engine case	M6x60	10 Nm (7.4 lbf ft)

– Fix the engine in the engine work stand.
– Remove the excess lengths of the engine case gasket in the area of the cylinder support and the reed valve housing.

Installing the reed valve housing



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

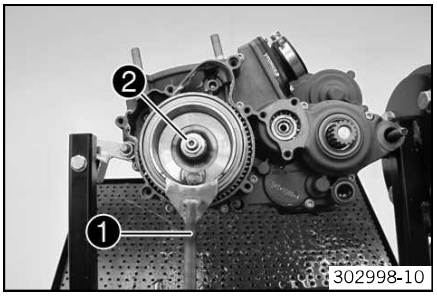


– Position the intake flange.
– Mount and tighten screws ❷.

Guideline

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

Installing the rotor



– Ensure that the spring washers are seated properly.
– Grease the cone.
– Mount the rotor and hold it with special tool ❶.

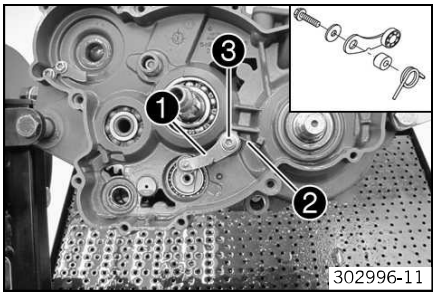
Holding spanner, rotor (55129001000) (☛ p. 231)

– Mount washer and nut ❷. Tighten the nut.

Guideline

Nut, rotor	M12x1	60 Nm (44.3 lbf ft)

Installing the locking lever

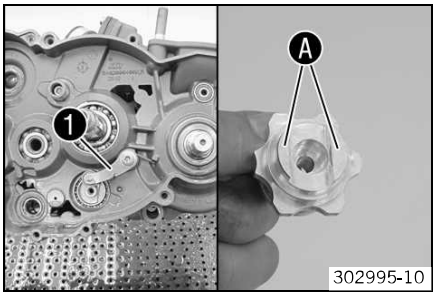


– Position locking lever ❶ with the sleeve and spring ❷.
– Mount and tighten screw ❸.

Guideline

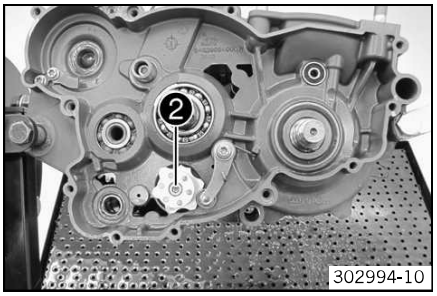
Screw, shift drum locating	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**

Installing the shift drum locating unit



– Press locking lever ❶ to the right and position the shift drum locating unit.

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

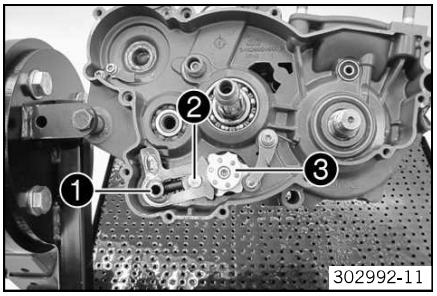


– Relieve tension from the locking lever.
– Mount and tighten screw ❷.

Guideline

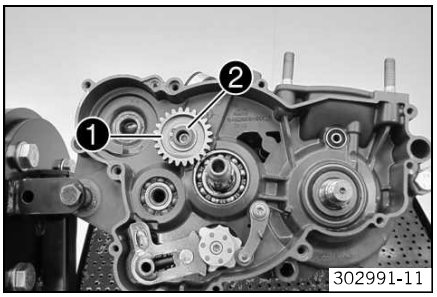
Screw, shift drum locating	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**

Installing the shift shaft



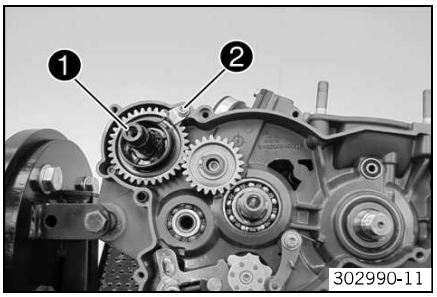
– Slide shift shaft ❶ with the washer into the bearing seat.
– Push sliding plate ❷ away from the shift drum locating unit ❸. Insert the shift shaft all the way.
– Let the sliding plate engage in the shift drum locating unit.
– Shift through the transmission.

Installing the intermediate kick starter gear



– Mount intermediate kick starter gear ❶ with the high collar facing the engine case.
– Position the washer.
– Mount lock ring ❷.

Installing the kick starter shaft



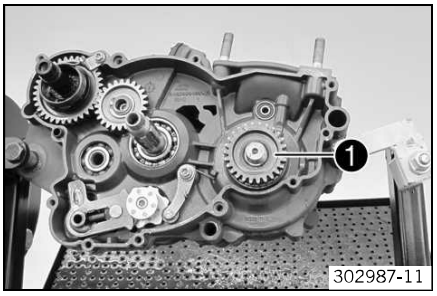
– Preassemble the kick starter shaft. (☛ p. 139)
– Mount the preassembled kick starter shaft ❶ with the washer.
– Tension the kick starter spring and mount and tighten screw ❷.

Guideline

Screw, kick starter spring	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**

Info
Ensure that the distance from the kick starter spring to the kick starter shaft is the same all around.

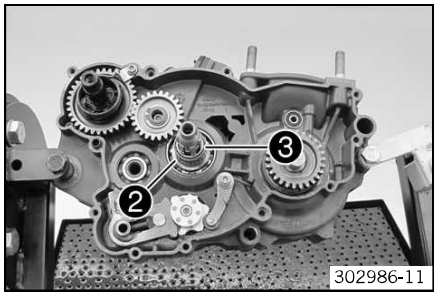
Installing the outer clutch hub



– Mount the spacer.

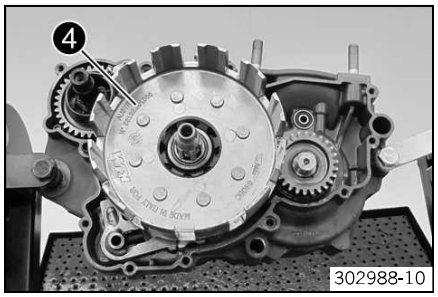
Info
Do not damage the shaft seal ring.

– Position primary gear ❶.

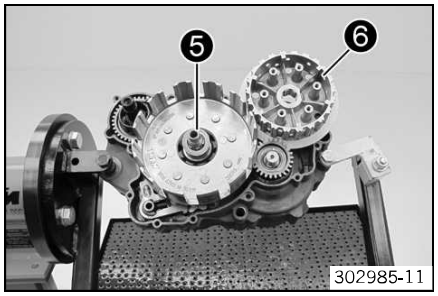


– Mount collar bushing ❷.
– Oil and mount needle bearing ❸.

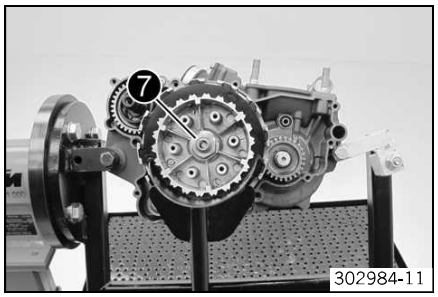
Engine oil (15W/50) (☛ p. 226)



– Slide the outer clutch hub ❹ onto the gearbox main shaft.



– Slide on washer ❺ and inner clutch hub ❻.



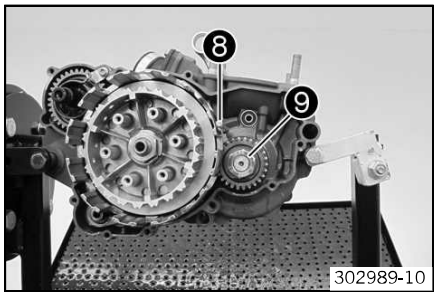
– Position the new lock washer and mount nut ❼. Tighten the nut, holding the inner clutch hub with a special tool.

Guideline

Nut, inner clutch hub	M18x1.5	100 Nm (73.8 lbf ft)	**Loctite® 2701**

Clutch holder (54629003000) (☛ p. 230)

– Secure the nut with the lock washer.



– Hold the primary gear using special tool ❽.

Gear segment (56012004000) (☛ p. 232)

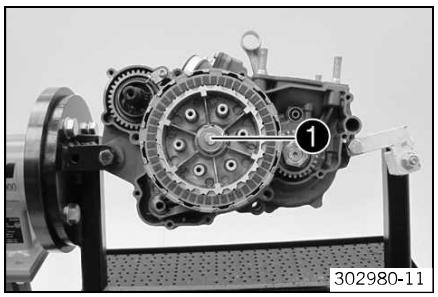
– Mount and tighten nut ❾ with the washer.

Guideline

Nut, primary gear	M18LHx1.5	150 Nm (110.6 lbf ft)	**Loctite® 243™**

– Crank the engine to ensure that it can move easily.

Installing the clutch discs

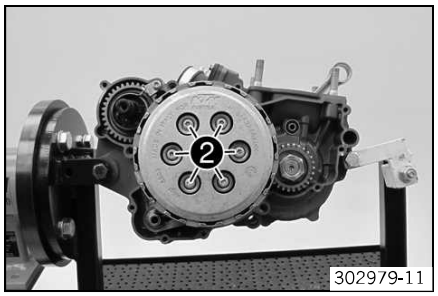


– Thoroughly oil the clutch facing discs.

Engine oil (15W/50) (☛ p. 226)

– Beginning with a clutch facing discs, alternately insert all remaining intermediate discs and clutch facing discs into the outer clutch hub.

Info
The last disc must be a clutch facing disc.

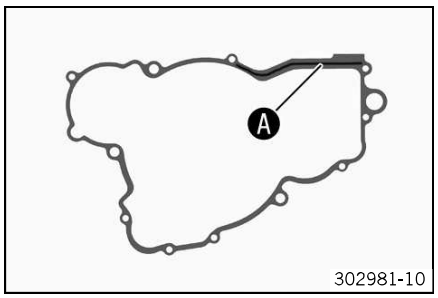


– Mount pressure piece ❶.
– Position the pressure cap. Mount screws ❷ with the washers and springs.
– Tighten the screws in a crisscross pattern.

Guideline

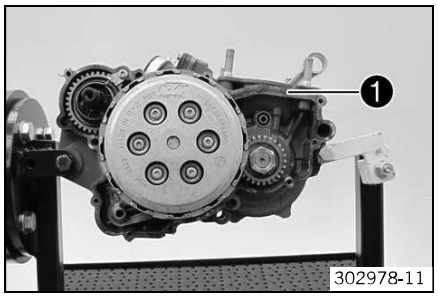
Screw, clutch spring	M6	10 Nm (7.4 lbf ft)

Installing the clutch cover

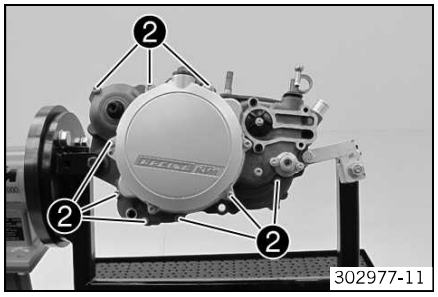


– Apply a thin layer of sealing compound in area Ⓐ on both sides.

Loctite® 5910



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

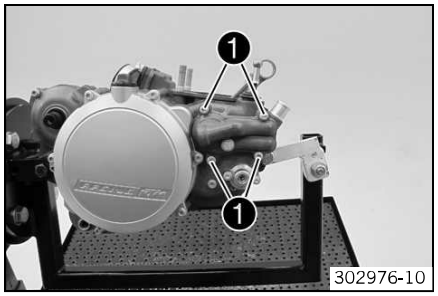


– Position the clutch cover. Mount and tighten screws ❷.

Guideline

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

Installing the water pump cover



– Mount the form ring.

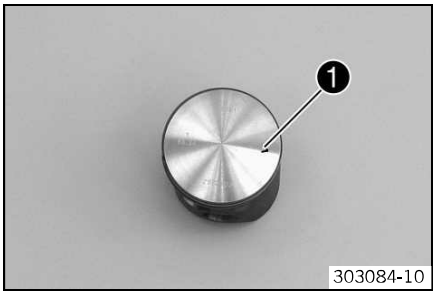
Info
Ensure that the dowels are seated properly.

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

Guideline

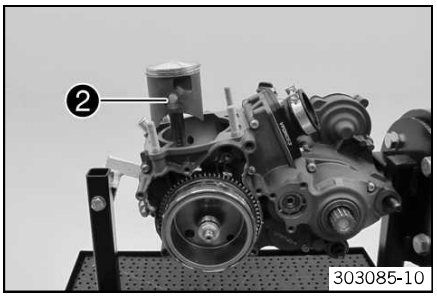
Screw, water pump cover	M6	10 Nm (7.4 lbf ft)

Installing the piston

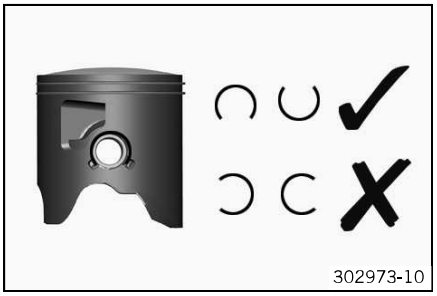


(All 250 models)

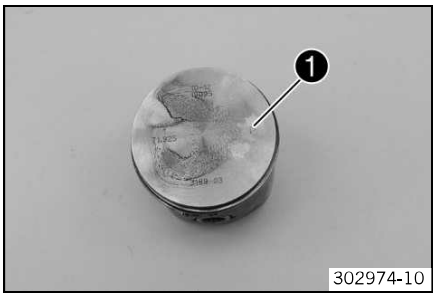
- Oil the upper conrod bearing and position it in the connecting rod.
- Position the piston.
  ✓ Piston marking ❶ must face the exhaust side.



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

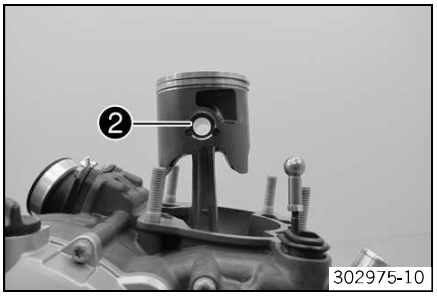


- Cover the engine case opening with a cloth.
- Position the piston pin retainer in the 6 o'clock or 12 o'clock position.
- Ensure that the piston pin retainer is seated properly on both sides.
- Remove the cloth.

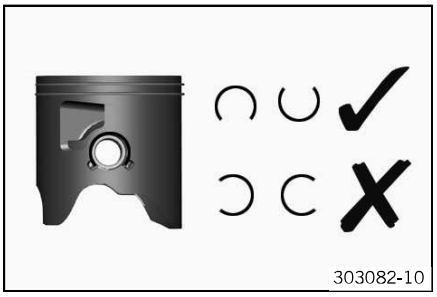


(All 300 models)

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

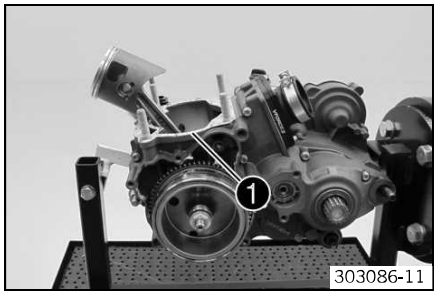


- Slide piston pin ❷ into the connecting rod by hand.



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

Installing the cylinder

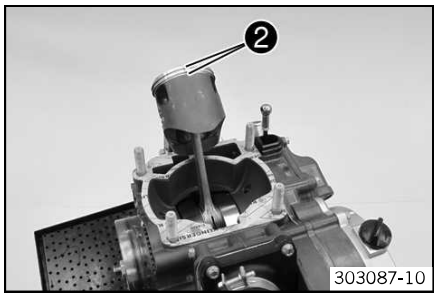


(All 250 models)

– Position the new cylinder base gasket ❶.

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.



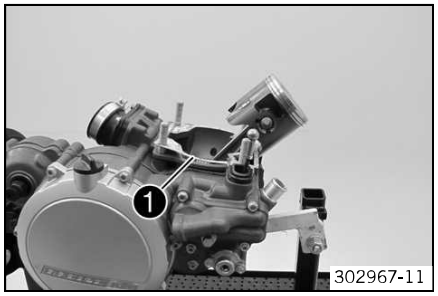
– Position the piston ring.
✓ The anti-rotation lock engages in piston ring end ❷.

(All 300 models)

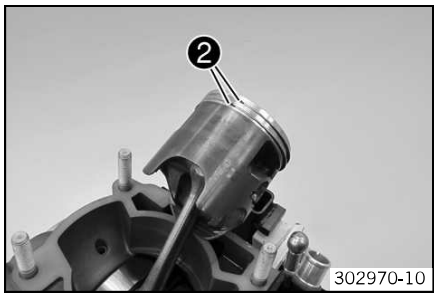
– Position the new cylinder base gasket ❶.

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

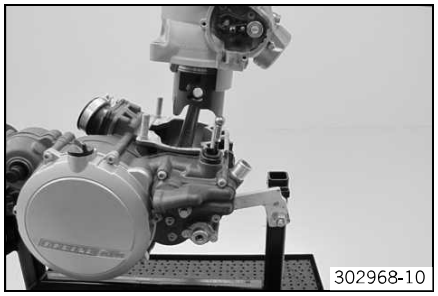
– Oil the cylinder and piston.

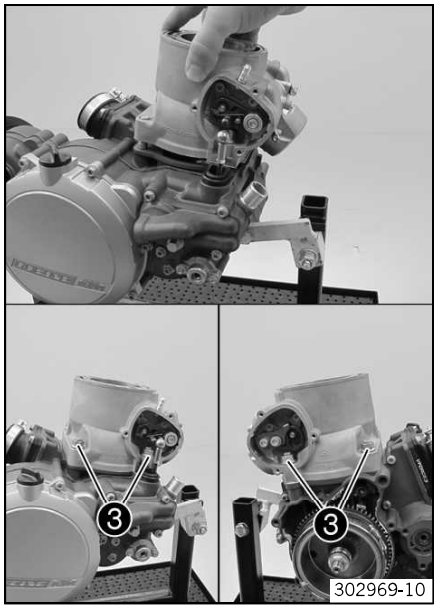


– Position the piston ring.
✓ The anti-rotation lock engages in piston ring end ❷.



– Slide the cylinder over the piston.
– Push the cylinder down carefully.





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

Guideline

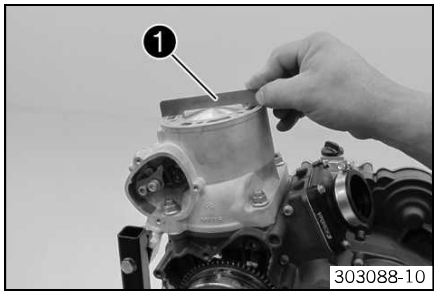
Nut, cylinder base	M10	35 Nm (25.8 lbf ft)

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.



(All 250 models)

– Apply special tool ❶ to the cylinder.

Adjustment gauge (54829001100) (☛ p. 231)

– Position the piston at top dead center.

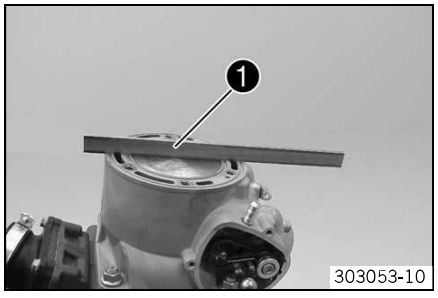
– Check the X-distance using the special tool.

Feeler gauge (59029041100) (☛ p. 233)

X (upper edge of piston to upper edge of cylinder)	0... 0.10 mm (0... 0.0039 in)

» If the specified value is not attained:

– Adjust the X-distance. (☛ p. 152)



(All 300 models)

– Place straightedge ❶ on the cylinder.

– Position the piston at top dead center.

– Check the X-distance using the special tool.

Feeler gauge (59029041100) (☛ p. 233)

X (upper edge of piston to upper edge of cylinder)	0... 0.10 mm (0... 0.0039 in)

» If the specified value is not attained:

– Adjust the X-distance. (☛ p. 152)

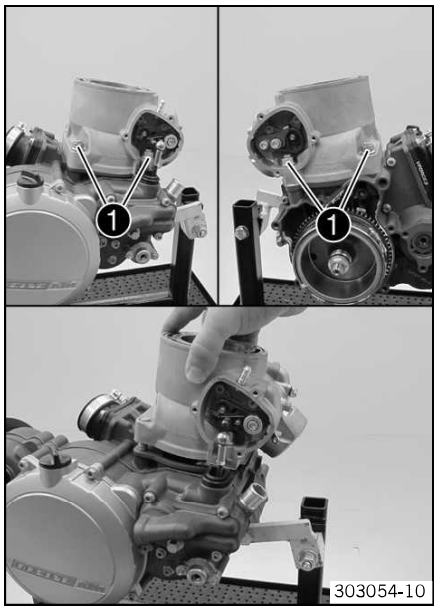
Adjusting the X-distance

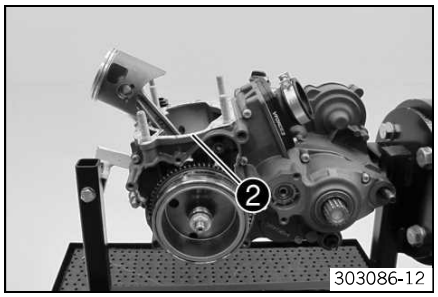
Info
The X-distance is adjusted by inserting cylinder base gaskets of various thicknesses.

– Check the X-distance. (☛ p. 151)
– Remove nuts ❶.

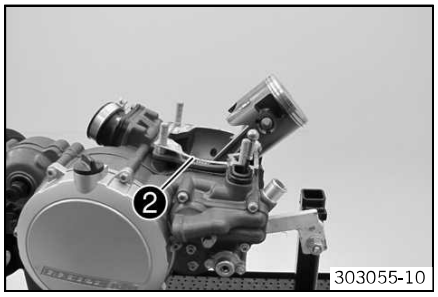
Info
Raise the cylinder slightly to be able to remove the front nuts.

– Carefully slide the cylinder up and take it off.





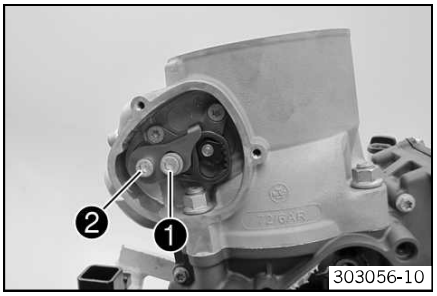
(All 250 models)
– Replace cylinder base gasket ❷ with a cylinder base gasket of the required X-distance.



(All 300 models)
– Replace cylinder base gasket ❷ with a cylinder base gasket of the required X-distance.
– Install the cylinder. (☛ p. 150)

Adjusting the Z-distance

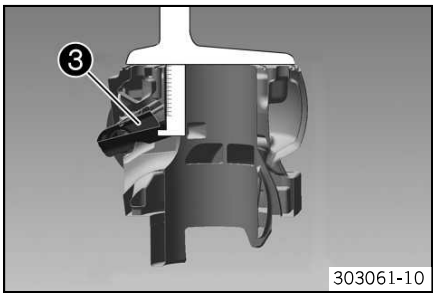
Info
The Z-distance is the distance from the lower edge of the control flap to the upper edge of the cylinder, measured in the middle of the exhaust port.



– Remove screws ❶ and ❷.
– Remove screws ❶ and ❷ but do not tighten yet.

Guideline

Screw, control flap, exhaust control	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**

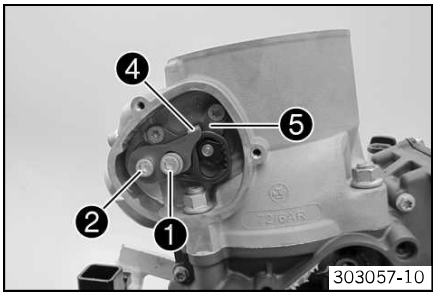


– Adjust the Z-distance using the depth gauge.

Guideline

Z (height of control flap)	48 mm (1.89 in)

– Move control flap ❸ up and position the depth gauge.



– Position stop plate ❹ so it is in contact with retaining bracket ❺.
– Tighten screws ❶ and ❷.

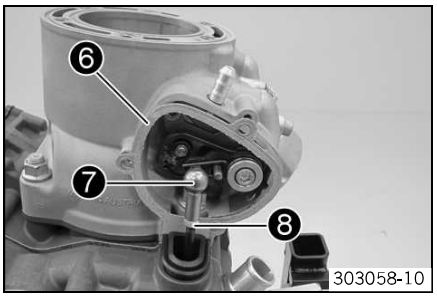
Guideline

Screw, control flap, exhaust control	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**

– Check the Z-distance.

Guideline

Z (height of control flap)	48 mm (1.89 in)



– Mount gasket ❻.
– Press the control flap all the way down.
– Mount ball socket ❼.

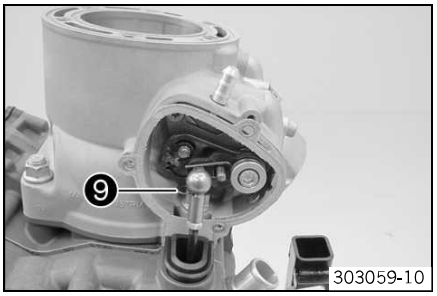
Info
The linkage may only be pulled up slightly.
The control flap may not be moved up.

– Check the movement of the linkage.

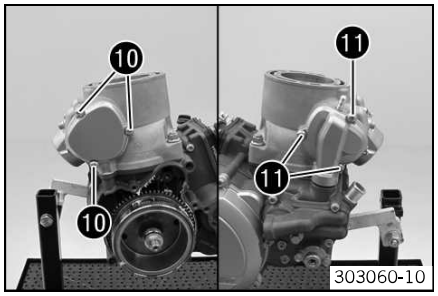
Guideline

≤ 1 mm (≤ 0.04 in)

» If the linkage is pulled up further:
  – Loosen counter nut ❽.
  – Turn the ball socket accordingly until the linkage has the correct length.
  – Tighten the lock nut.



– Mount retainer ❾.

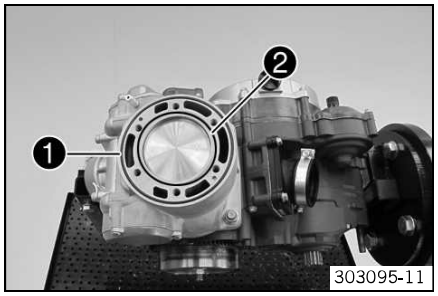


– Position the gasket.
– Position both covers.
– Mount and tighten screws ❿ and ⓫.

Guideline

Screw, exhaust control cover	M5	5 Nm (3.7 lbf ft)

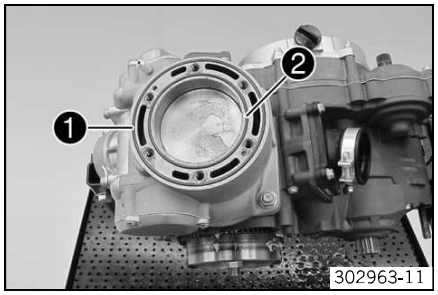
Installing the cylinder head



(All 250 models)

– Mount O-rings ❶ and ❷.

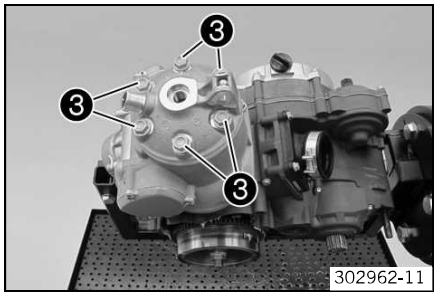
Info
Ensure that the dowels are seated correctly.



(All 300 models)

– Mount O-rings ❶ and ❷.

Info
Ensure that the dowels are seated correctly.



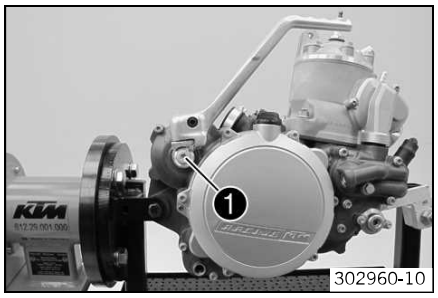
– Put the cylinder head in place. Mount screws ❸ with the washers and tighten them in a crisscross pattern.

Guideline

Screw, cylinder head	M8	27 Nm (19.9 lbf ft)

Info
Use new washers.

Installing the kick starter



– Position the kick starter. Mount and tighten screw ❶.

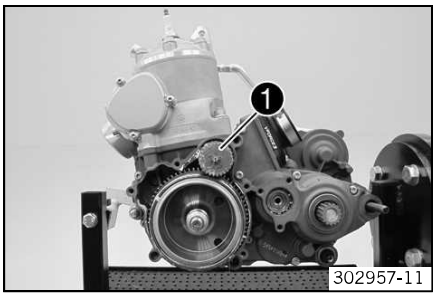
Guideline

Screw, kick starter	M8	25 Nm (18.4 lbf ft)	**Loctite® 2701**

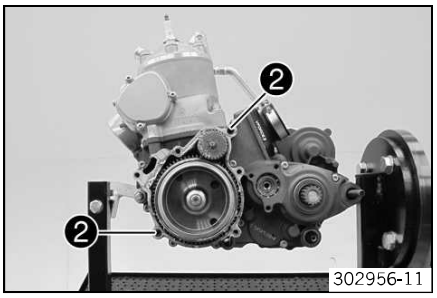
Installing the starter motor

– Check the electric starter drive. (☛ p. 141)
– Grease and mount Bendix ❶.

Lubricant (T625) (☛ p. 229)



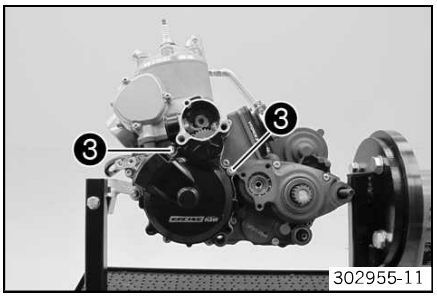
– Mount dowels ❷.
– Position the gasket.



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

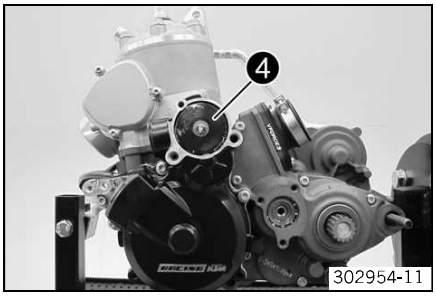
Guideline

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

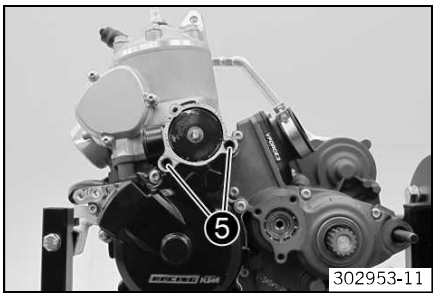


– Grease and mount starter idler gear ❹.

Lubricant (T625) (☛ p. 229)



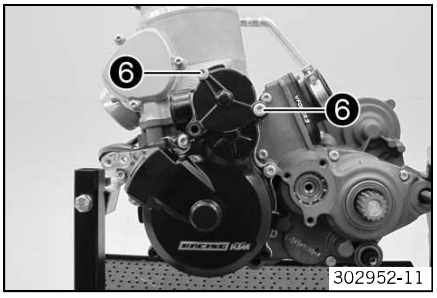
– Mount dowels ❺.
– Position the gasket.

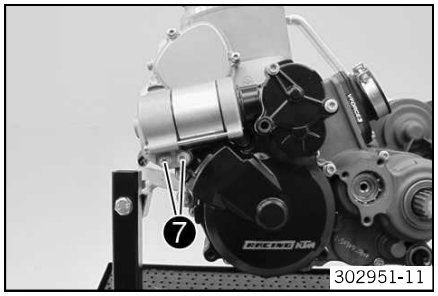


– Position the cover.
– Mount and tighten screws ❻.

Guideline

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





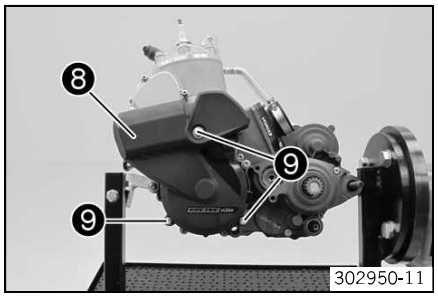
– Grease the O-ring. Position the starter motor.

Long-life grease (☛ p. 228)

– Mount and tighten screws ❼.

Guideline

Screw, starter motor	M6	8 Nm (5.9 lbf ft)

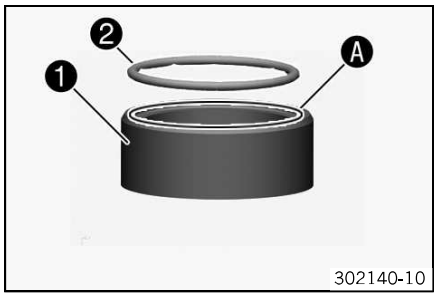


– Position cover ❽.
– Mount and tighten screws ❾.

Guideline

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

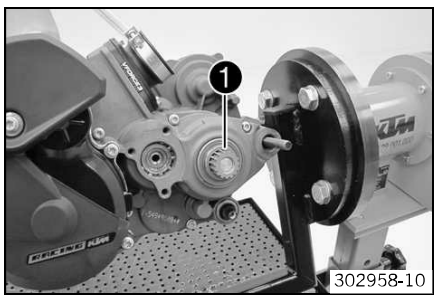
Installing the spacer



– Before mounting, grease spacer ❶ in area Ⓐ and O-Ring ❷.

Long-life grease (☛ p. 228)

– Position the O-ring in the cut-out of the spacer.

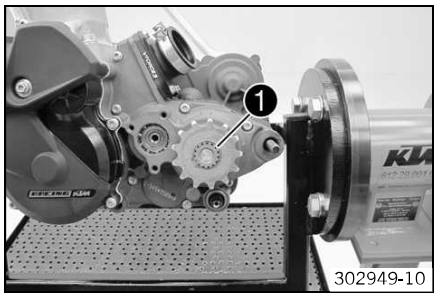


– Grease the shaft seal ring.

Long-life grease (☛ p. 228)

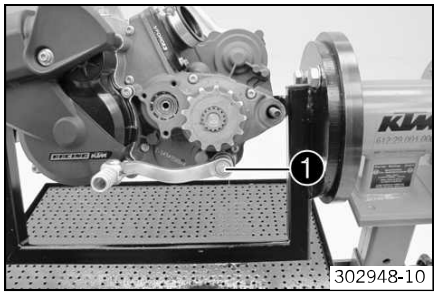
– Push spacer ❶ with the O-ring onto the countershaft with a twisting motion.
  ✓ The cut-out with the O-ring must face inward.
  ✓ The shaft seal ring rests against the spacer along the entire circumference.

Installing the engine sprocket



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

Installing the shift lever

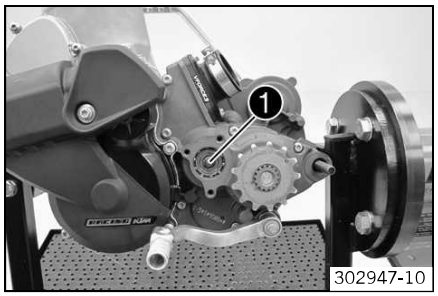


– Position the shift lever. Mount and tighten screw ❶ with the washers.

Guideline

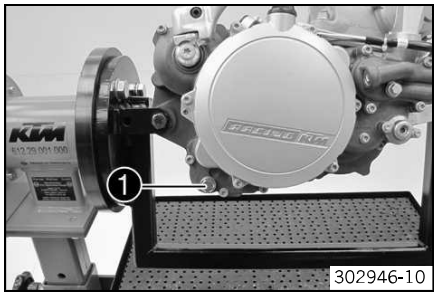
Screw, shift lever	M6	14 Nm (10.3 lbf ft)	**Loctite® 243™**

Installing the clutch push rod



– Mount clutch push rod ❶.

Installing the gear oil drain plug



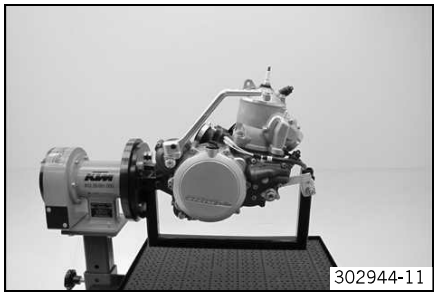
– Mount and tighten the gear oil drain plug ❶ with the magnet and the new seal ring.

Guideline

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

– Activate the kick starter several times to check whether the engine turns over freely.

Removing the engine from the universal mounting rack

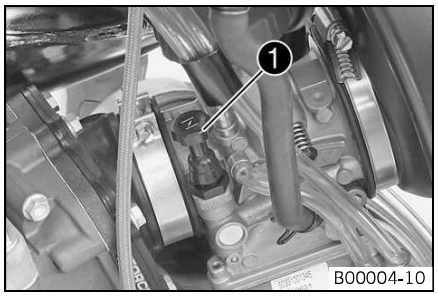


– Remove the screw connection from the special tool.

Engine fixing arm (56029002030) (☛ p. 232)

– Remove the engine from the universal mounting rack.

Choke (EXC AUS, XC-W)

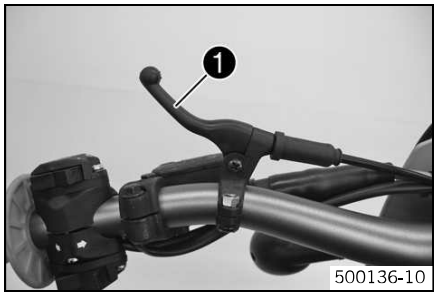


The choke lever ❶ is fitted on the left side of the carburetor.
Activating the choke function frees an opening through which the engine can draw extra fuel. This gives a richer fuel-air mixture, which is needed for a cold start.

Info
If the engine is warm, the choke function must be deactivated.

Possible states
- Choke function activated – The choke lever is pulled out all the way.
- Choke function deactivated – The choke lever is pushed in all the way.

Choke (EXC EU, EXC SIX DAYS, EXC Factory Edition)

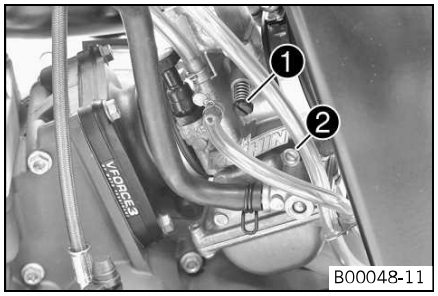


The choke lever ❶ is fitted on the left side of the handlebar.
Activating the choke function frees an opening through which the engine can draw extra fuel. This gives a richer fuel-air mixture, which is needed for a cold start.

Info
If the engine is warm, the choke function must be deactivated.

Possible states
- Choke function activated – The choke lever is pulled to the stop.
- Choke function deactivated – The choke lever is pushed back to the stop.

Carburetor - adjusting the idle speed



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

Guideline

Idle air adjusting screw (XC-W)	
Open	2.0 turns
Idle air adjusting screw (EXC AUS)	
Open	3.5 turns
Idle air adjusting screw (250 EXC EU, 250 EXC SIX DAYS EU, 250 EXC Factory Edition EU)	
Open	1.75 turns
Idle air adjusting screw (300 EXC EU, 300 EXC SIX DAYS EU, 300 EXC Factory Edition EU)	
Open	1.75 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 adjusting screw ❶.

Guideline

Choke function deactivated – The choke lever is pushed in all the way. (EXC AUS, XC-W) (☛ p. 158)	
Choke function deactivated – The choke lever is pushed back to the stop. (EXC EU, EXC SIX DAYS, EXC Factory Edition) (☛ p. 158)	
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 there is a large engine speed rise, reduce the idle speed to a normal level and repeat the above steps.
If the procedure described here does not lead to satisfactory results, the cause may be a wrongly dimensioned idling jet.
If you can turn the idle air adjusting screw to the end without any change of engine speed, you need to install a smaller idling jet.
After changing the idling jet, repeat the adjusting steps from the beginning.
Following extreme air temperature or altitude changes, adjust the idle speed again.

Emptying the carburetor float chamber

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.

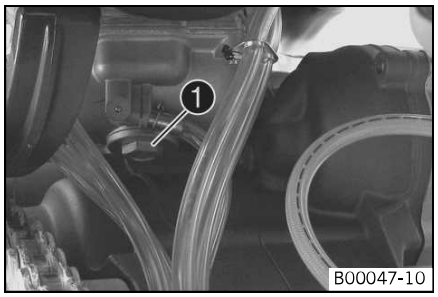
Warning
Danger of poisoning Fuel is poisonous and a health hazard.

– 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.

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

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

Info
Carry out this work with a cold engine.
Water in the float chamber results in malfunctioning.



– Turn handle ❶ of the fuel tap to the **OFF** position.
  ✓ No more fuel flows from the tank to the carburetor.
– Place a cloth beneath the carburetor to soak up emerging fuel.
– Remove plug ❶.
– Completely drain the fuel.
– Mount and tighten the plug.

Removing the carburetor

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.

Warning

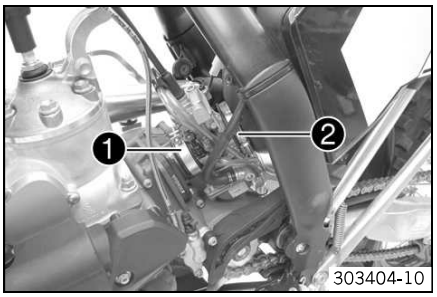
Environmental hazard Improper handling of fuel is a danger to the environment.

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

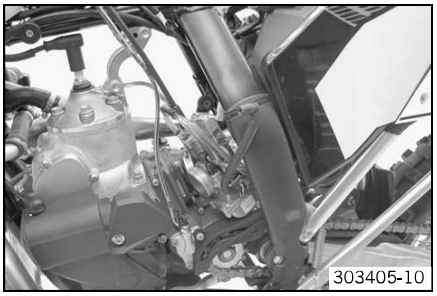
- Remove the fuel tank. (☛ p. 63)

(EXC EU, EXC SIX DAYS, EXC Factory Edition)

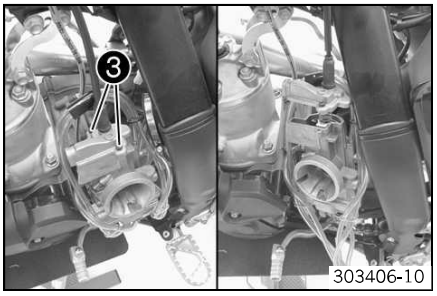
- Remove the choke slide.



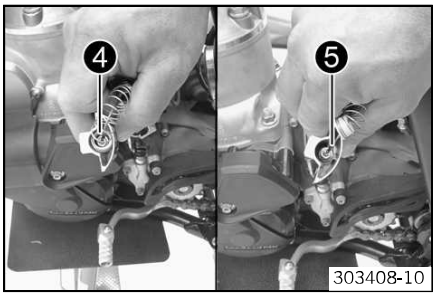
- Loosen hose clip ❶.
- Loosen hose clip ❷.
- Pull the carburetor out of the intake flange toward the rear.



- Pull the carburetor forward out of the intake flange.

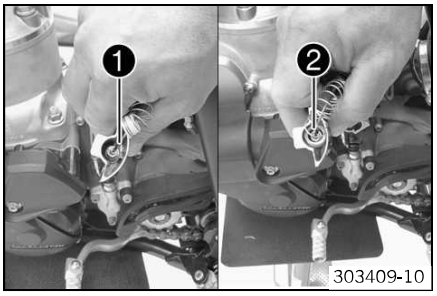


- Remove screws ❸.
- Remove the throttle slide cover and pull the throttle slide out of the carburetor.
- Drain the remaining fuel.

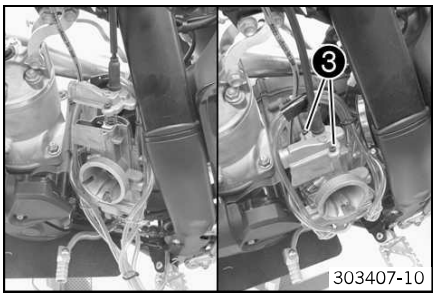


- Pull back the throttle slide spring and plastic lock ❹.
- Detach throttle cable ❺.
- Remove the throttle slide.

Installing the carburetor



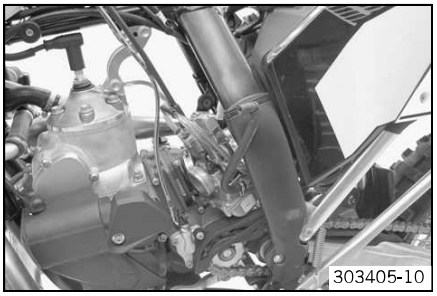
- Attach throttle cable ❶.
- Position plastic retainer ❷.
  - ✓ The catch of the plastic retainer engages in the cut-out of the jet needle screw.



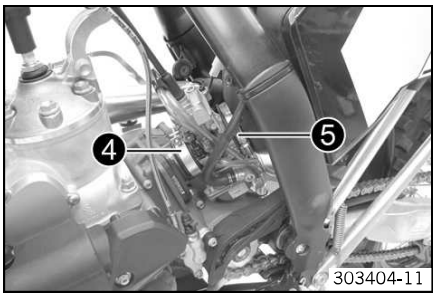
- Position the throttle slide and throttle slide cover.
- Mount and tighten screws ❸.

  Guideline

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



- Position the carburetor on the intake flange.



- Position the carburetor on the intake flange.
- Position and tighten hose clip ❹.
- Position and tighten hose clip ❺.

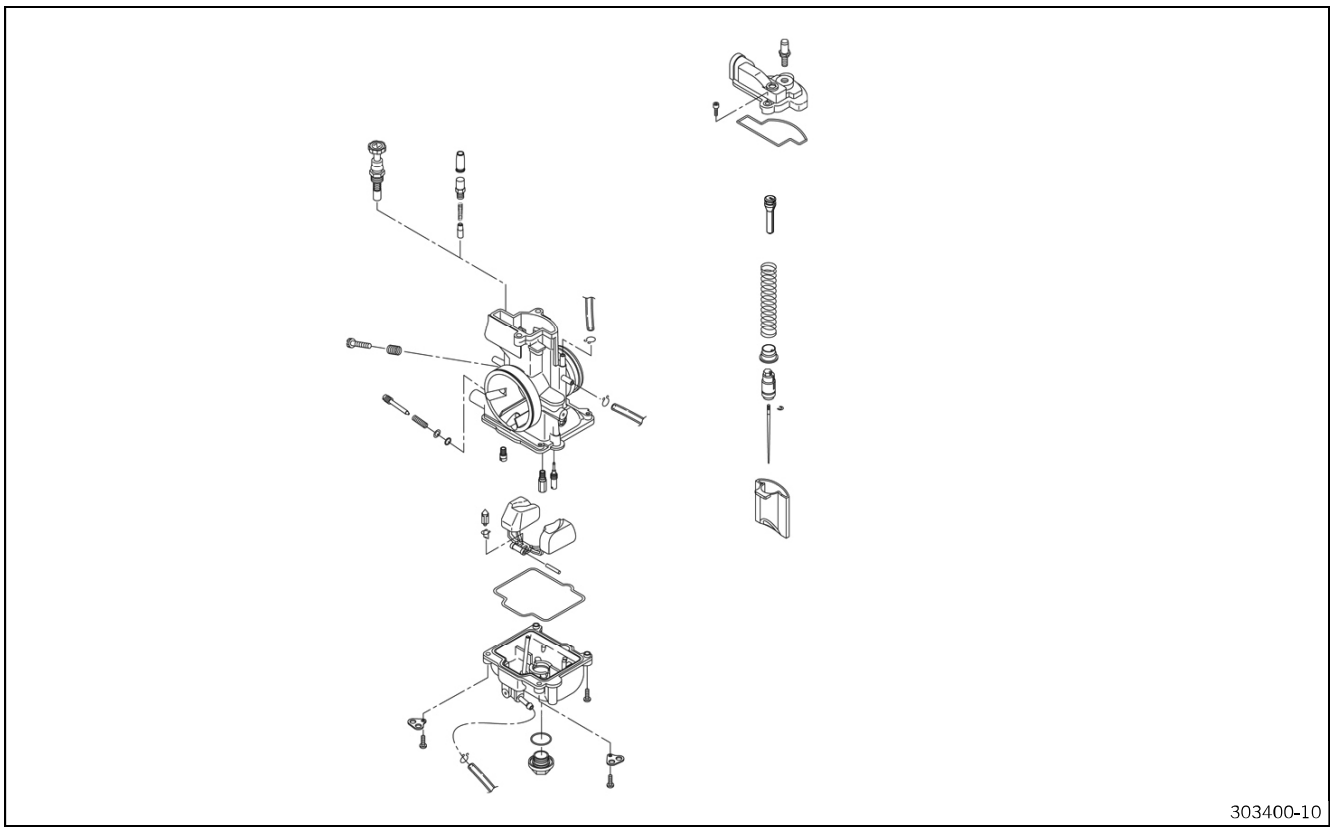
(EXC EU, EXC SIX DAYS, EXC Factory Edition)

- Mount and tighten the choke slide.
- Install the fuel tank. (☛ p. 64)
- Check the play in the throttle cable. (☛ p. 36)
- Carburetor - adjust the idle speed. (☛ p. 158)

Checking/adjusting the carburetor components

Condition

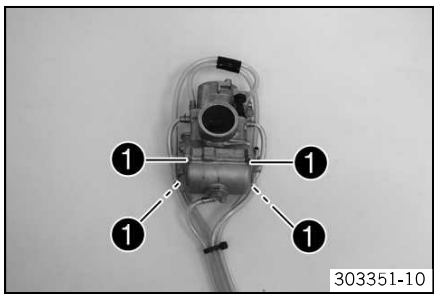
The carburetor has been removed.


303400-10

- Disassemble the carburetor. (☛ p. 162)
- Check the choke slide. (☛ p. 163)
- Check the jet needle. (☛ p. 164)
- Check the throttle slide. (☛ p. 164)
- Check the float needle valve. (☛ p. 164)
- Assemble the carburetor. (☛ p. 164)

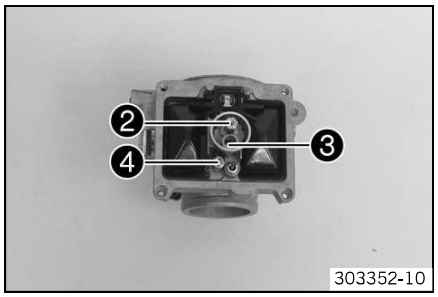
Disassembling the carburetor

Condition
The carburetor has been removed.



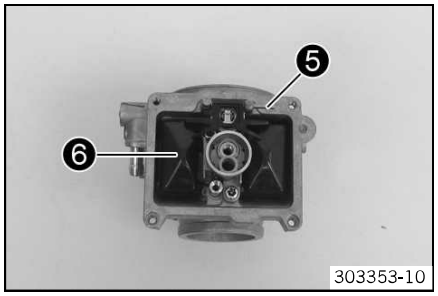
303351-10

- Remove screws ❶.
- Remove the float chamber.
- Pull the hoses off of the carburetor.

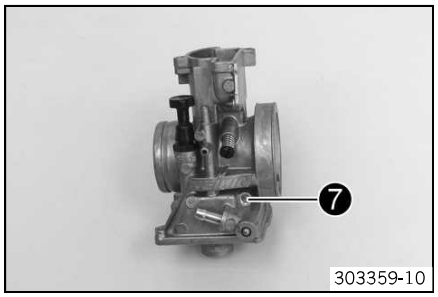


303352-10

- Remove main jet ❷.
- Remove idling jet ❸.
- Remove cold start jet ❹.

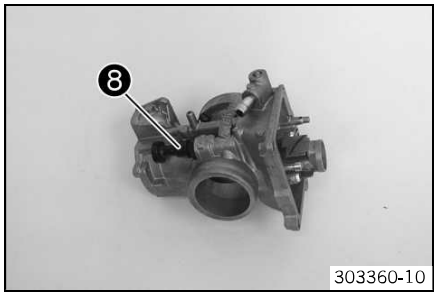


– Remove fulcrum pin ❺.
– Remove float ❻ and the float needle valve.

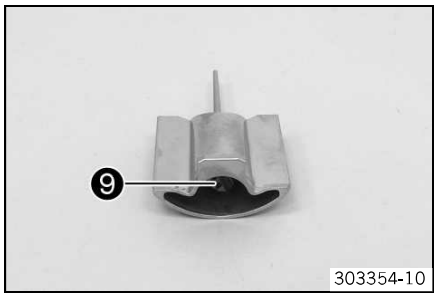


– Note the setting of the idle air adjusting screw ❼.
– Remove the idle air adjusting screw with the O-ring.

Info
Make sure not to misplace the spring.



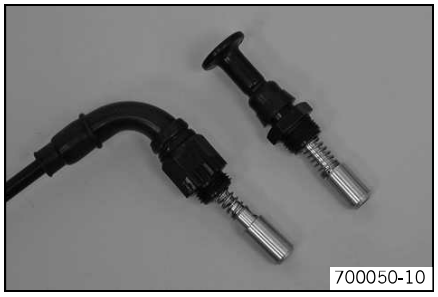
(EXC AUS, XC-W)
– Remove choke slide ❽.



– Remove needle screw cap ❾.
– Pull the jet needle out of the throttle slide.

Checking the choke slide

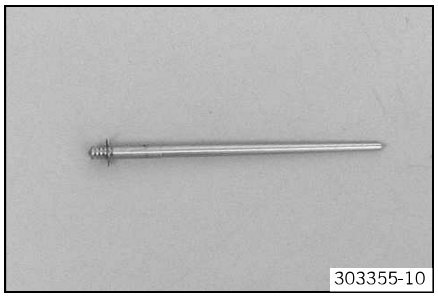
Condition
The choke slide has been removed.



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

    Carburetor cleaner (☛ p. 228)
– 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.

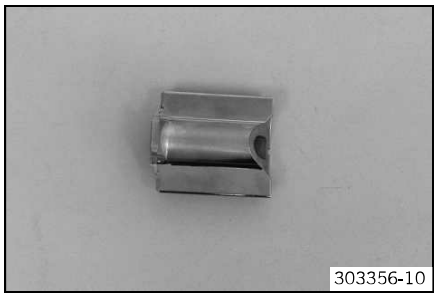
Checking the jet needle


303355-10

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.

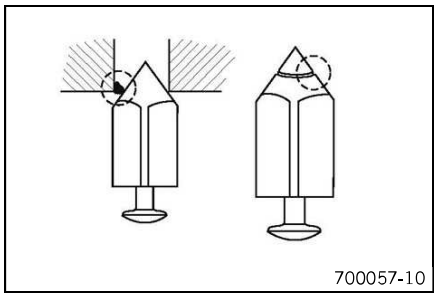
Checking the throttle slide


303356-10

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 float needle valve


700057-10

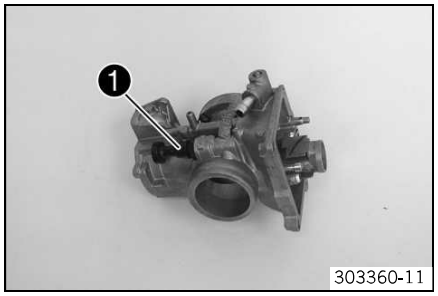
Condition
The float needle valve has been removed.

– 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. 228)

– 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.

Assembling the carburetor



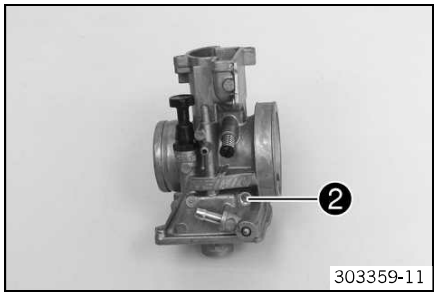
303360-11

(EXC AUS, XC-W)

– Mount and tighten choke slide ❶.

Guideline

Choke slide	M10	5 Nm (3.7 lbf ft)

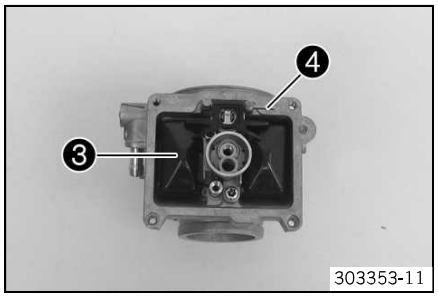


Alternative 1

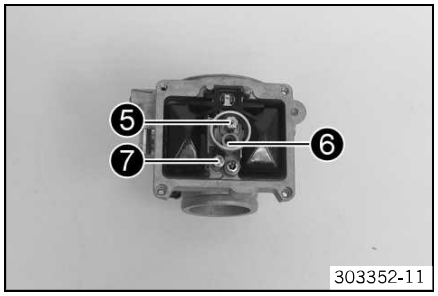
- Mount idle air adjusting screw ❷ with the spring and O-ring.
- Set the idle air adjusting screw to the specified value.

Alternative 2

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



- Position the float needle valve and float ❸.
- Mount fulcrum pin ❹.



- Mount and tighten main jet ❺.

  Guideline

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

- Mount and tighten idling jet ❻.

  Guideline

Idling jet	M5	2 Nm (1.5 lbf ft)

- Mount and tighten cold start jet ❼.

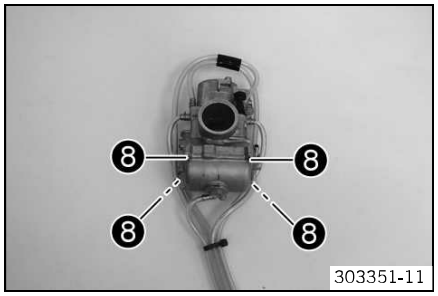
  Guideline

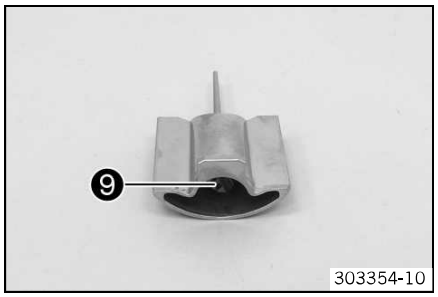
Cold start jet	M5	2 Nm (1.5 lbf ft)

- Check/adjust the float level. (☛ p. 166)
- Mount the hoses on the carburetor.
- Position the float chamber.
- Mount and tighten screws ❽.

  Guideline

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



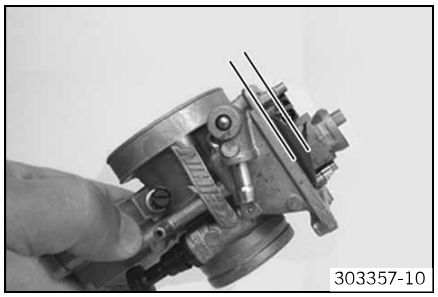


- Position the jet needle in the throttle slide.
- Mount and tighten needle screw cap ❾.

  Guideline

Needle screw cap	M8	3.5 Nm (2.58 lbf ft)

Checking/adjusting the float level



Condition

The carburetor and float chamber have been removed.

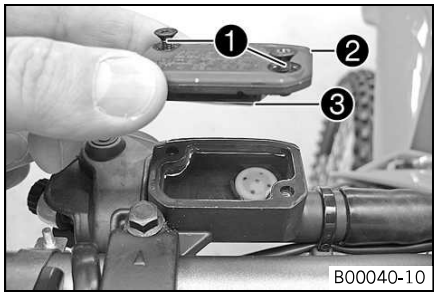
– Tilt the carburetor sideways, preventing the fulcrum pin from falling out.
– Tilt the carburetor until the float is resting against the float needle valve, but the float needle valve is not being pressed together.

60°

» 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 the float lever.

Checking the fluid level of the hydraulic clutch

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



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

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

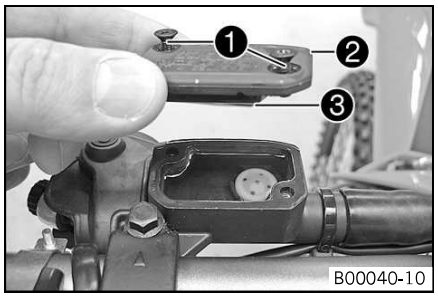
» If the level of the fluid does not meet specifications:
- Correct the fluid level of the hydraulic clutch.

Brake fluid DOT 4 / DOT 5.1 (☛ p. 226)

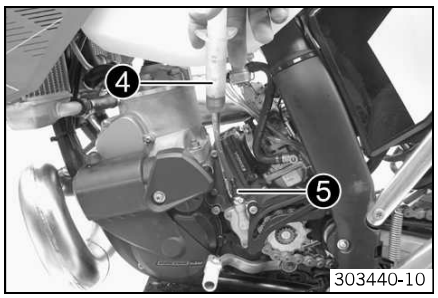
- Position the cover with the membrane. Mount and tighten the screws.

Changing the hydraulic clutch fluid

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.



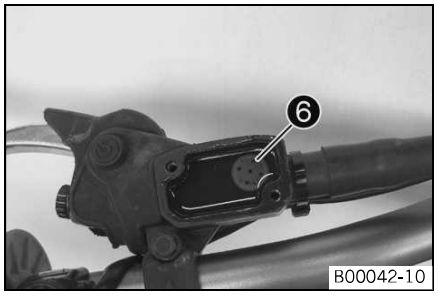
- Move the clutch fluid reservoir mounted on the handlebar to a horizontal position.
- Remove screws ❶.
- Remove cover ❷ with membrane ❸.



- Fill bleeding syringe ❹ with the appropriate hydraulic fluid.

Bleed syringe (50329050000) (☛ p. 230)
Brake fluid DOT 4 / DOT 5.1 (☛ p. 226)

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



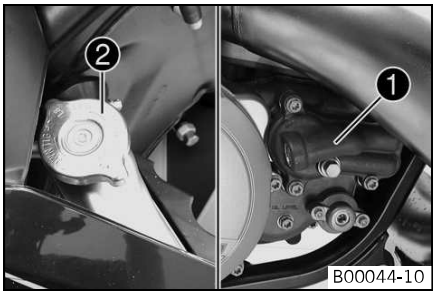
- Inject the liquid into the system until it escapes from hole ❻ of the master cylinder without bubbles.
- To prevent overflow, drain fluid occasionally from the master cylinder reservoir.
- Remove the bleeding syringe. Mount and tighten the bleeder screw.
- Correct the fluid level of the hydraulic clutch.

  Guideline

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

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

Cooling system



Water pump ❶ in the engine circulates the coolant.
The pressure resulting from the warming of the cooling system is regulated by a valve in radiator cap ❷. This ensures that operating the vehicle at the specified coolant temperature will not result in a risk of malfunctions.

120 °C (248 °F)

Cooling is effected by the air stream.
The lower the speed, the less the cooling effect. Dirty cooling fins also reduce the cooling effect.

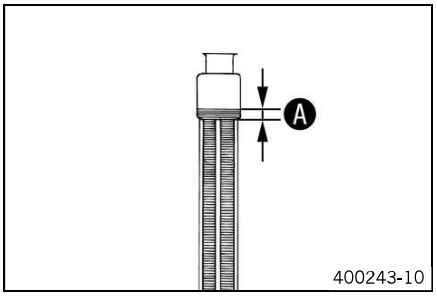
Checking the antifreeze and coolant level

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.



Condition
The engine is cold.

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

−25... −45 °C (−13... −49 °F)

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

– Check the coolant level in the radiator.

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

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

Alternative 1

Coolant (☛ p. 226)

Alternative 2

Coolant (mixed ready to use) (☛ p. 226)

– Mount the radiator cap.

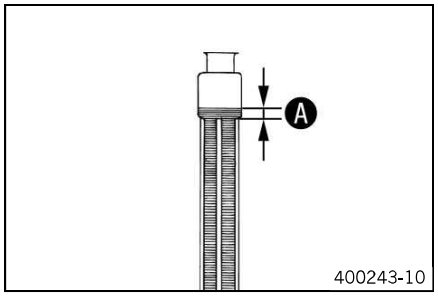
Checking the coolant level

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.



Condition
The engine is cold.

– 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 level of the coolant does not meet specifications:
– Correct the coolant level.

Alternative 1

Coolant (☛ p. 226)

Alternative 2

Coolant (mixed ready to use) (☛ p. 226)

– Mount the radiator cap.

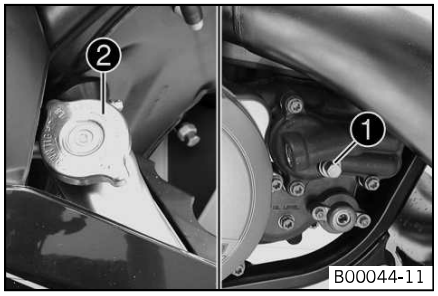
Draining the coolant

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.



Condition
The engine is cold.

– Position the motorcycle upright.
– Place a suitable container under the water pump cover.
– Remove screw ❶. Remove radiator cap ❷.
– Completely drain the coolant.
– Mount screw ❶ with a new seal ring and tighten it.

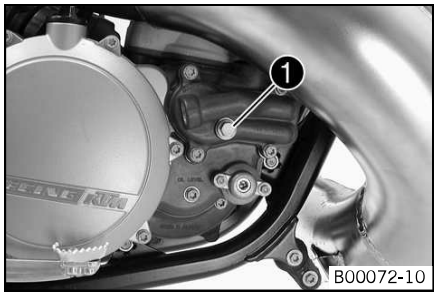
Guideline

Drain plug, water pump cover	M10x1	15 Nm (11.1 lbf ft)

Refilling with coolant

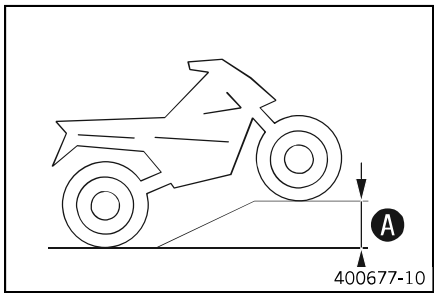
Warning
Danger of poisoning Coolant is poisonous and a health hazard.

– 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 screw ❶ is tightened.
– Position the motorcycle upright.
– Fill the radiator completely with coolant.

Coolant	1.2 l (1.3 qt.)	Coolant (☛ p. 226)
		Coolant (mixed ready to use) (☛ p. 226)



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

Guideline

Height difference Ⓐ	75 cm (29.5 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.
– Fill the radiator completely with coolant.
– Mount radiator cap ❷.
– Run the engine until it is warm.
– Check the coolant level. (☛ p. 168)

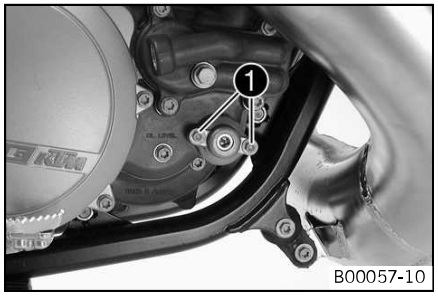
Engine characteristic - adjusting the auxiliary spring

Warning

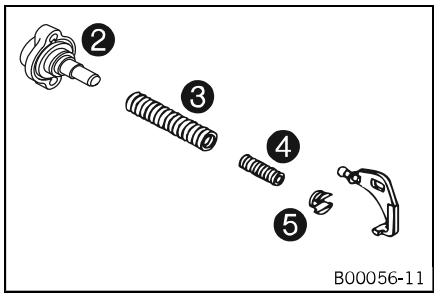
Danger of burns Some vehicle components become very hot when the vehicle is operated.

– Do not touch hot components such as exhaust system, radiator, engine, shock absorber and brakes. Allow these components to cool down before starting work on them.

– Tilt the motorcycle approx. 45° to the left and secure it in this position to prevent it from falling over.

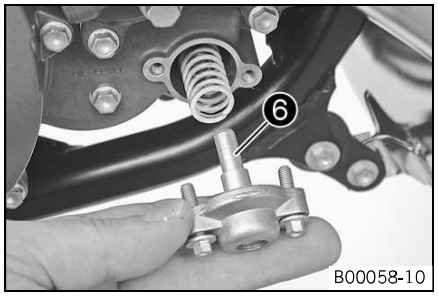


– Remove screws ❶.



– Take locking cap ❷, adjusting spring ❸, auxiliary spring ❹ and spring insert ❺ out of the clutch cover.

– Pull both springs off of the spring insert.



– Mount the desired auxiliary spring ❹ and adjusting spring ❸ and slide them into the clutch cover together.

Auxiliary spring with yellow marking (54637072300)
Auxiliary spring with green marking (54837072100)
Auxiliary spring with red marking (54837072000)

✓ The cut-out of spring insert ❺ engages in the angle lever.

Info

Under no circumstances should screw ❻ be turned as this would have a negative effect on the engine characteristic.

– Check the O-ring in the locking cap.

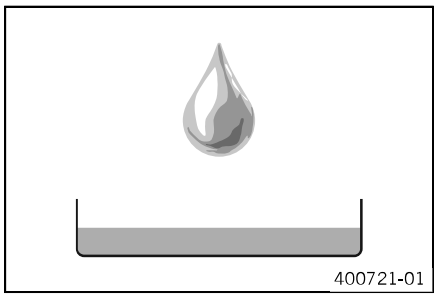
– Position the locking cap.

– Mount and tighten the screws.

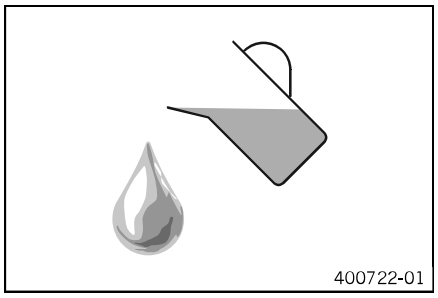
Guideline

Screw, exhaust control cover	M5	5 Nm (3.7 lbf ft)

Changing the gear oil



– Drain the gear oil. (☛ p. 172)



– Refill with gear oil. (☛ p. 172)

Draining the gear oil

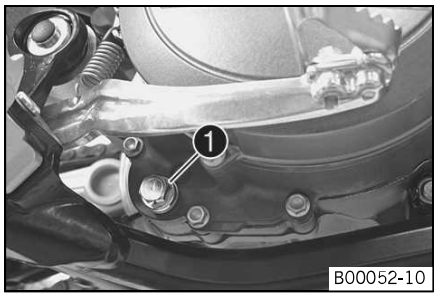
Warning
Danger of scalding Engine oil and gear oil get very hot when the motorcycle is ridden.

– 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.



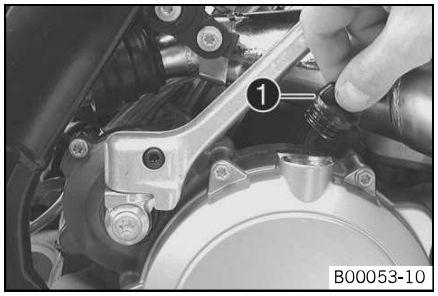
– Place the motorcycle on a level surface.
– Place a suitable container under the engine.
– Remove the gear oil drain plug with magnet ❶.
– Completely drain the gear oil.
– Thoroughly clean the gear oil drain plug with a magnet.
– Clean the sealing area on the engine.
– Mount the gear oil drain plug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

Guideline

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

Refilling 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 gear oil.

Gear oil	0.80 l (0.85 qt.)	Engine oil (15W/50) (☛ p. 226)

– Mount and tighten the screw cap.

Danger

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

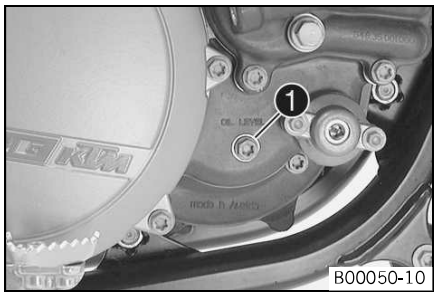
– When running the engine, always make sure there is sufficient ventilation, and do not start or run the engine in an enclosed space without an effective exhaust extraction system.

– Start the engine and check that it is oil-tight.
– Check the gear oil level. (☛ p. 173)

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.
– Remove gear oil level check screw ❶.
– Check the gear oil level.

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

» If no gear oil flows out:
– Add gear oil. (☛ p. 173)

– Mount and tighten the gear oil level check screw.

Guideline

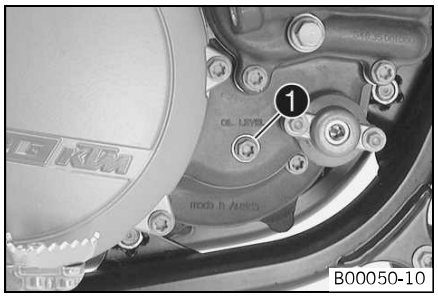
Screw, gear oil level check	M6	10 Nm (7.4 lbf ft)

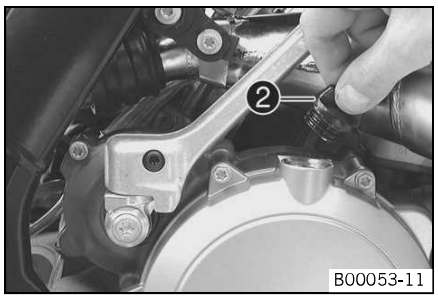
Adding gear oil

Info

Too little gear oil or poor-quality oil results in premature wear of the transmission.
The gear oil must be added when the engine is cold.

– Place the motorcycle on a level surface.
– Remove gear oil level check screw ❶.





– Remove screw cap ❷.
– Add gear oil until it flows out of the hole of the gear oil level check screw.

Engine oil (15W/50) (☛ p. 226)

– 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.

Checking the ignition system

Warning

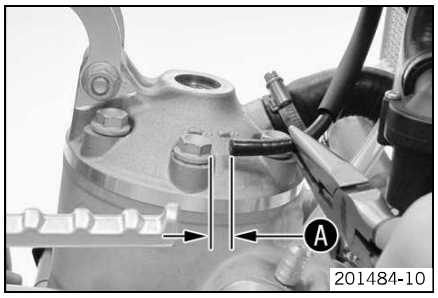
Risk of injury The ignition system is under high voltage.

– 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.

– Shift gear to neutral.

(EXC AUS)

– Turn the emergency OFF switch to the position ○.



– Pull off the spark plug connector and remove the spark plug connector from the ignition wire.

– Remove the spark plug.

– Hold the free end of the ignition wire at a distance Ⓐ from ground.

Guideline

Distance Ⓐ	5 mm (0.2 in)

– Press the kick starter forcefully through its full range.

Info

Do not open the throttle.

– Check the ignition spark.

» If no ignition spark is visible:

– Check the emergency OFF switch.

– Check the wiring harness to the emergency OFF switch.

– Check the kill switch.

– Check the ground connection of the CDI controller and ignition coil.

– Check the cable from the CDI controller to the ignition coil.

Info

The CDI controller cannot be tested using simple methods but only using an ignition test stand.

– Ignition coil - check the primary winding. (☛ p. 176)

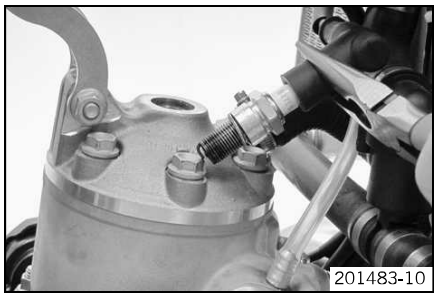
– Ignition coil - check the secondary winding. (☛ p. 176)

– Check the ignition pulse generator. (☛ p. 178)

– Alternator - check the charging coil of the ignition. (☛ p. 177)

– Check the spark plug connector. (☛ p. 177)

– Change the spark plug.



– Fit the spark plug connector on the ignition cable again. Insert the spark plug into the spark plug connector. Hold the spark plug to ground.

– Press the kick starter forcefully through its full range.

Info

Do not open the throttle.

– Check the ignition spark.

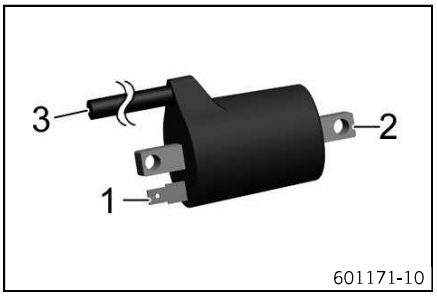
» If no ignition spark is visible:

– Change the spark plug.

Ignition coil - checking the primary winding

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

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



Condition
Ignition coil cylinder 1 is disconnected.

Ignition coil cylinder 1 - check the primary winding resistance
– Measure the resistance between the specified points.
Ignition coil pin **1 (+)** – Ignition coil pin **2 (–)**

Ignition coil	
Primary winding resistance at: 20 °C (68 °F)	0.255... 0.345 Ω

» If the displayed value does not correspond to the nominal value:
– Change the ignition coil.

Condition
Ignition coil cylinder 1 is connected.

– Connect the special tool to the multimeter.

Peak voltage adapter (58429042000) (☛ p. 232)

Info
When using the peak voltage adapter, adjust the measuring range of the multimeter to DCV.

– Start the motorcycle for checking. (☛ p. 10)

Ignition coil cylinder 1 - check the primary winding voltage
– Measure the voltage between the specified points.
Ignition coil pin **1 (+)** – Ignition coil pin **2 (–)**

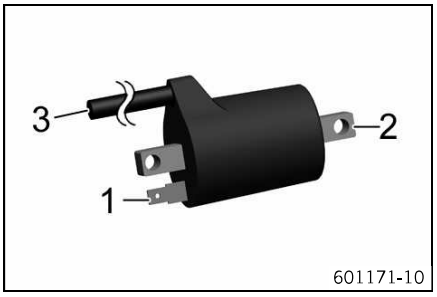
Info
Connect the black measuring lead to pin **1** and the red measuring lead to pin **2** of the ignition coil.

Ignition coil	
Voltage, primary winding	150... 200 V

» If the displayed value does not correspond to the nominal value:
– Change the ignition coil.

Ignition coil - checking the secondary winding

Condition
Ignition coil cylinder 1 is disconnected.
Spark plug connector cylinder 1 has been removed.

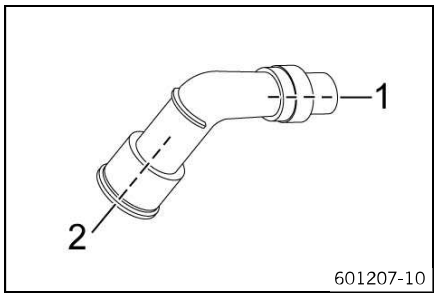


Ignition coil cylinder 1 - check the secondary winding resistance
– Measure the resistance between the specified points.
Ignition coil pin **2 (–)** – Ignition coil pin **3**

Ignition coil	
Secondary winding resistance at: 20 °C (68 °F)	5.04... 7.56 kΩ

» If the displayed value does not correspond to the nominal value:
– Change the ignition coil.

Checking the spark plug connector



Condition

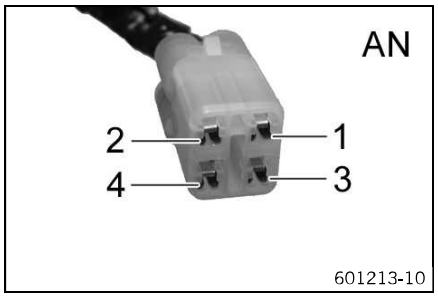
Spark plug connector cylinder 1 has been removed.

– Measure the resistance between the specified points.
Measuring point 1 – Measuring point 2

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

» If the specification is not reached:
– Change the spark plug connector.

Alternator - checking the charging coil of the ignition



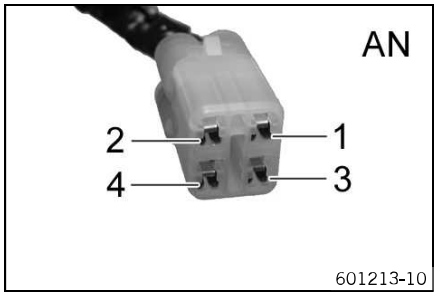
Condition

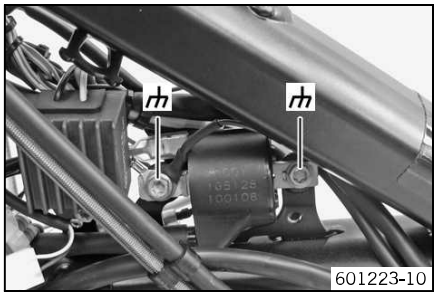
The alternator has been disconnected.

– Measure the resistance between the specified points.
Alternator, charging coil/ignition pulse generator, connector **AN** pin **1** –
Alternator, charging coil/ignition pulse generator, connector **AN** pin **2**

Alternator	
Resistance of ignition charging coil at: 20 °C (68 °F)	12... 16.5 Ω

» The specifications have not been met:
– Replace the stator.





– Measure the resistance between the specified points.
Alternator, charging coil/ignition pulse generator, connector **AN** pin **1** – Measuring point Ground, wiring harness/frame

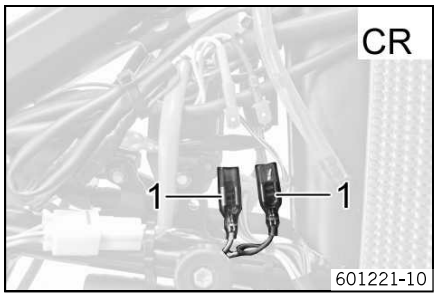
Resistance	∞ Ω

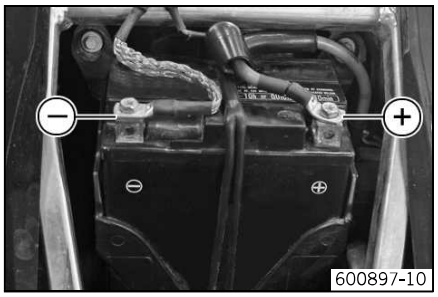
» The specifications have not been met:
– Replace the stator.

Alternator - checking the battery winding

Condition

The alternator has been disconnected.





– Measure the resistance between the specified points.
Alternator, connector **CR** pin **1** (White) – Measuring point **Ground (–)**

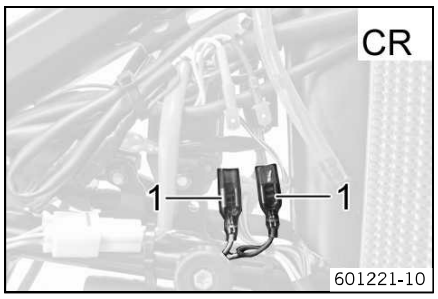
Alternator

Battery winding resistance at: 20 °C (68 °F)	0.5... 0.9 Ω

» The specifications have not been met:
– Replace the stator.

Alternator - checking the light winding

Condition
The alternator has been disconnected.



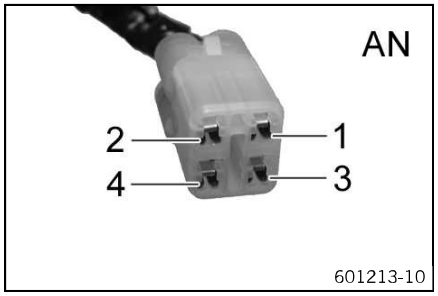
– Measure the resistance between the specified points.
Alternator, connector **CR** pin **1** (White) – Alternator, connector **CR** pin **1** (Yellow)

Alternator	
Light winding resistance at: 20 °C (68 °F)	0.1... 0.2 Ω

» The specifications have not been met:
– Replace the stator.

Checking the ignition pulse generator

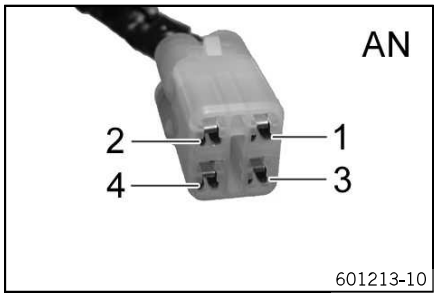
Condition
The crankshaft position sensor is disconnected.

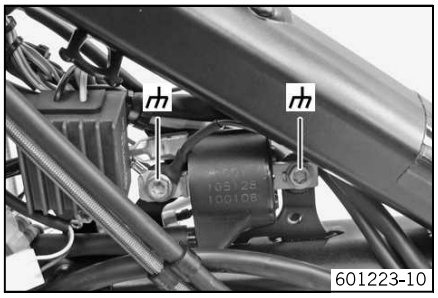


– Measure the resistance between the specified points.
Alternator, charging coil/ignition pulse generator, connector **AN** pin **3** – Alternator, charging coil/ignition pulse generator, connector **AN** pin **4**

Crankshaft position sensor	
Resistance at: 20 °C (68 °F)	80... 120 Ω

» The specifications have not been met:
– Change the ignition pulse generator.





– Measure the resistance between the specified points.
Alternator, charging coil/ignition pulse generator, connector **AN** pin **3** – Measuring point Ground, wiring harness/frame

Resistance	∞ Ω

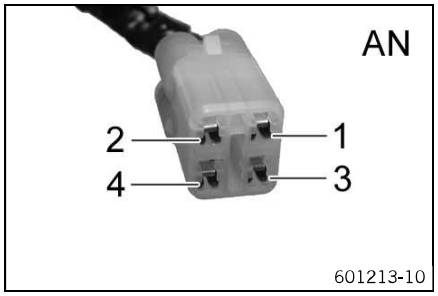
» The specifications have not been met:
– Change the ignition pulse generator.

– Connect the special tool to the multimeter.

Peak voltage adapter (58429042000) (☛ p. 232)

Info
When using the peak voltage adapter, adjust the measuring range of the multimeter to DCV.

– Start the motorcycle for checking. (☛ p. 10)



Check the ignition pulse generator voltage

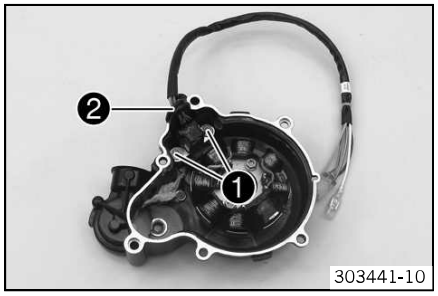
– V Measure the voltage between the specified points.
Alternator, charging coil/ignition pulse generator, connector **AN** pin **3** –
Alternator, charging coil/ignition pulse generator, connector **AN** pin **4**

Crankshaft position sensor	
Voltage	2... 4 V

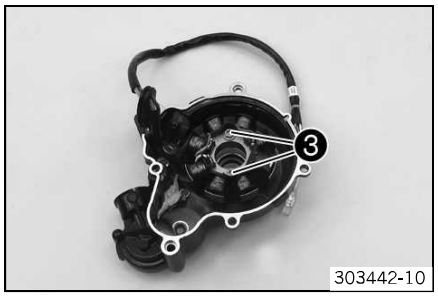
» The specifications have not been met:
– Change the ignition pulse generator.

Removing the stator and ignition pulse generator

Condition
The alternator cover has been removed.

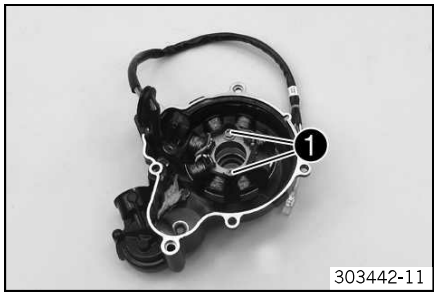


– Remove screw ❶.
– Remove cable support sleeve ❷ from the alternator cover.



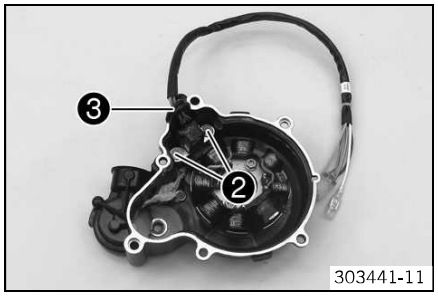
– Remove screw ❸.
– Remove the stator and ignition pulse generator from the alternator cover.

Installing the stator and ignition pulse generator



– Position the stator in the alternator cover.
– Mount and tighten screws ❶.
Guideline

Screw, stator	M6	8 Nm (5.9 lbf ft)	**Loctite® 243™**

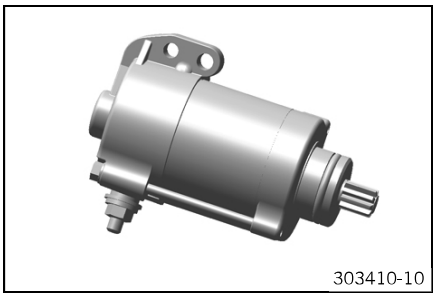


– Position the ignition pulse generator.
– Mount and tighten screws ❷.
Guideline

Screw, ignition pulse generator	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**

– Position cable support sleeve ❸ in the alternator cover.

Checking the starter motor


303410-10

Condition

The starter motor has been removed.

– Clamp the negative cable of a 12 Volt power supply to the housing of the starter motor. Connect the positive cable of the power supply briefly to the connection of the starter motor.

  » If the starter motor does not turn over when the circuit is closed:

    – Change the starter motor.

All 250 models

Design	1-cylinder 2-stroke engine, water-cooled, with reed intake and exhaust control
Displacement	249 cm³ (15.19 cu in)
Stroke	72 mm (2.83 in)
Bore	66.4 mm (2.614 in)
Exhaust valve - Beginning of adjustment	5,600 rpm
Exhaust valve - end of adjustment with red auxiliary spring	7,200 rpm
Exhaust valve - end of adjustment with yellow auxiliary spring	7,900 rpm
Exhaust valve - end of adjustment with green auxiliary spring	8,400 rpm
Crankshaft bearing	1 grooved ball bearing/1 roller bearing
Conrod bearing	Needle bearing
Piston pin bearing	Needle bearing
Pistons	Aluminum cast
Piston rings	2 half keystone rings
X (upper edge of piston to upper edge of cylinder)	0... 0.10 mm (0... 0.0039 in)
Z (height of control flap)	48 mm (1.89 in)
Primary transmission	26:72
Clutch	Multidisc clutch in oil bath/hydraulically activated
Gearbox	6-gear, claw shifted
Transmission ratio	
1st gear	14:32
2nd gear	16:26
3rd gear	20:25
4th gear	22:23
5th gear	25:22
6th gear	26:20
Ignition	Contactless controlled fully electronic ignition with digital ignition adjustment, type Kokusan
Ignition point (BTDC)	1.9 mm (0.075 in)
Spark plug	NGK BR 7 ES
Spark plug electrode gap	0.60 mm (0.0236 in)
Starting aid	Kick starter and electric starter

All 300 models

Design	1-cylinder 2-stroke engine, water-cooled, with reed intake and exhaust control
Displacement	293 cm³ (17.88 cu in)
Stroke	72 mm (2.83 in)
Bore	72 mm (2.83 in)
Exhaust valve - Beginning of adjustment	5,600 rpm
Exhaust valve - end of adjustment with red auxiliary spring	7,200 rpm
Exhaust valve - end of adjustment with yellow auxiliary spring	7,900 rpm
Exhaust valve - end of adjustment with green auxiliary spring	8,400 rpm
Crankshaft bearing	1 grooved ball bearing/1 roller bearing
Conrod bearing	Needle bearing
Piston pin bearing	Needle bearing
Pistons	Aluminum cast
Piston rings	2 rectangular rings
X (upper edge of piston to upper edge of cylinder)	0... 0.10 mm (0... 0.0039 in)
Z (height of control flap)	48 mm (1.89 in)
Primary transmission	26:72

Clutch	Multidisc clutch in oil bath/hydraulically activated
Gearbox	6-gear, claw shifted
Transmission ratio	
1st gear	14:32
2nd gear	16:26
3rd gear	20:25
4th gear	22:23
5th gear	25:22
6th gear	26:20
Ignition	Contactless controlled fully electronic ignition with digital ignition adjustment, type Kokusan
Ignition point (BTDC)	1.9 mm (0.075 in)
Spark plug	NGK BR 7 ES
Spark plug electrode gap	0.60 mm (0.0236 in)
Starting aid	Kick starter and electric starter

Capacity - transmission oil

Gear oil	0.80 l (0.85 qt.)	Engine oil (15W/50) (☛ p. 226)

Capacity - coolant

Coolant	1.2 l (1.3 qt.)	Coolant (☛ p. 226)
		Coolant (mixed ready to use) (☛ p. 226)

Piston - diameter (All 250 models)	
Size I	66.340... 66.350 mm (2.61181... 2.6122 in)
Size II	66.351... 66.360 mm (2.61224... 2.61259 in)
Piston - diameter (All 300 models)	
Size I	71.940... 71.950 mm (2.83228... 2.83267 in)
Size II	71.951... 71.960 mm (2.83271... 2.83307 in)
Cylinder - drill hole diameter (All 250 models)	
Size I	66.400... 66.412 mm (2.61417... 2.61464 in)
Size II	66.412... 66.425 mm (2.61464... 2.61515 in)
Cylinder - drill hole diameter (All 300 models)	
Size I	72.000... 72.012 mm (2.83464... 2.83511 in)
Size II	72.012... 72.025 mm (2.83511... 2.83562 in)
Piston/cylinder - mounting clearance (All 250 models)	
New condition	0.050... 0.074 mm (0.00197... 0.00291 in)
Wear limit	0.10 mm (0.0039 in)
Piston/cylinder - mounting clearance (All 300 models)	
New condition	0.050... 0.085 mm (0.00197... 0.00335 in)
Wear limit	0.10 mm (0.0039 in)
Piston ring - end gap	
Ring 1	≤ 0.40 mm (≤ 0.0157 in)
Ring 2	≤ 0.40 mm (≤ 0.0157 in)
Cylinder/cylinder head - distortion of sealing area	≤ 0.10 mm (≤ 0.0039 in)
Connecting rod - axial play of lower conrod bearing	0.60... 0.70 mm (0.0236... 0.0276 in)
Crankshaft - run-out at bearing pin	≤ 0.03 mm (≤ 0.0012 in)
Clutch facing disc - thickness	≥ 2.6 mm (≥ 0.102 in)
Clutch spring - length	≥ 42.0 mm (≥ 1.654 in)
Contact surface of clutch facing discs in outer clutch hub	≤ 0.5 mm (≤ 0.02 in)
Shift shaft - sliding plate/shift quadrant clearance	0.40... 0.80 mm (0.0157... 0.0315 in)

Screw, angle lever, exhaust control	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**
Screw, exhaust control cover	M5	5 Nm (3.7 lbf ft)	–
Screw, ignition pulse generator	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**
Screw, locking lever	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**
Screw, retaining bracket of exhaust control	M5	7 Nm (5.2 lbf ft)	**Loctite® 243™**
Screw, water pump wheel	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**
Screw, alternator cover	M6	8 Nm (5.9 lbf ft)	–
Screw, clutch cover	M6	10 Nm (7.4 lbf ft)	–
Screw, clutch slave cylinder	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**
Screw, clutch spring	M6	10 Nm (7.4 lbf ft)	–
Screw, control flap, exhaust control	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**
Screw, engine case	M6x40	10 Nm (7.4 lbf ft)	–
Screw, engine case	M6x55	10 Nm (7.4 lbf ft)	–
Screw, engine case	M6x60	10 Nm (7.4 lbf ft)	–
Screw, exhaust flange	M6	8 Nm (5.9 lbf ft)	–
Screw, gear oil level check	M6	10 Nm (7.4 lbf ft)	–
Screw, intake flange/reed valve housing	M6	10 Nm (7.4 lbf ft)	–
Screw, kick starter spring	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**
Screw, kick starter stop plate	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**
Screw, shift drum bearing retainer	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**
Screw, shift drum locating	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**
Screw, shift lever	M6	14 Nm (10.3 lbf ft)	**Loctite® 243™**
Screw, starter motor	M6	8 Nm (5.9 lbf ft)	–
Screw, stator	M6	8 Nm (5.9 lbf ft)	**Loctite® 243™**
Screw, water pump cover	M6	10 Nm (7.4 lbf ft)	–
Screw, cylinder head	M8	27 Nm (19.9 lbf ft)	–
Screw, kick starter	M8	25 Nm (18.4 lbf ft)	**Loctite® 2701**
Nut, cylinder base	M10	35 Nm (25.8 lbf ft)	–
Drain plug, water pump cover	M10x1	15 Nm (11.1 lbf ft)	–
Nut, rotor	M12x1	60 Nm (44.3 lbf ft)	–
Gear oil drain plug with magnet	M12x1.5	20 Nm (14.8 lbf ft)	–
Spark plug	M14x1.25	25 Nm (18.4 lbf ft)	–
Nut, inner clutch hub	M18x1.5	100 Nm (73.8 lbf ft)	**Loctite® 2701**
Nut, primary gear	M18LHx1.5	150 Nm (110.6 lbf ft)	**Loctite® 243™**

250 EXC EU, 250 EXC SIX DAYS EU, 250 EXC Factory Edition EU

Carburetor type	KEIHIN PWK 36S AG
Carburetor identification number	FK0251
Needle position	3rd position from top
Jet needle	N84K (N8RW / N8RJ / N8RK)
Main jet	115 (162 / 165)
Idling jet	38X38 (35)
Starting jet	50 (85)
Idle air adjusting screw	
Open	1.75 turns
Throttle slide	7 with cut-out
Slide stop	Present

250 EXC AUS

Carburetor type	KEIHIN PWK 36S AG
Carburetor identification number	3600C
Needle position	1st position from top
Jet needle	N3CJ (N8RW / N8RJ / N8RK / N2ZK / N2ZJ / N2ZL)
Main jet	160 (162 / 165)
Idling jet	35
Starting jet	85
Idle air adjusting screw	
Open	3.5 turns
Throttle slide	7 with cut-out
Slide stop	Present

250 XC-W USA

Carburetor type	KEIHIN PWK 36S AG
Carburetor identification number	BC4 0
Needle position	4th position from top
Jet needle	N8RJ (N8RW / N8RK)
Main jet	165 (162)
Idling jet	35
Starting jet	85
Idle air adjusting screw	
Open	2.0 turns
Throttle slide	7 with cut-out
Slide stop	-

300 EXC EU, 300 EXC SIX DAYS EU, 300 EXC Factory Edition EU

Carburetor type	KEIHIN PWK 36S AG
Carburetor identification number	FK0261
Needle position	3rd position from top
Jet needle	N84K (N2ZJ / N2ZK / N2ZL)
Main jet	115 (162 / 165)
Idling jet	38X38 (35)
Starting jet	50 (85)
Idle air adjusting screw	
Open	1.75 turns
Throttle slide	7 with cut-out
Slide stop	Present

300 EXC AUS

Carburetor type	KEIHIN PWK 36S AG
Carburetor identification number	3600C
Needle position	1st position from top
Jet needle	N3CJ (N8RW / N8RJ / N8RK / N2ZK / N2ZJ / N2ZL)
Main jet	160 (162 / 165)
Idling jet	35
Starting jet	85
Idle air adjusting screw	
Open	3.5 turns
Throttle slide	7 with cut-out
Slide stop	Present

300 XC-W USA

Carburetor type	KEIHIN PWK 36S AG
Carburetor identification number	BC5 0
Needle position	4th position from top
Jet needle	N2ZK (N2ZJ / N2ZL)
Main jet	165 (162)
Idling jet	35
Starting jet	85
Idle air adjusting screw	
Open	2.0 turns
Throttle slide	7 with cut-out
Slide stop	-

Carburetor configuration (All 250 models)

Danger

Loss of approval for road use and insurance coverage The motorcycle is authorized for public road traffic in the homologous (reduced) version only.

– In the derestricted version, the motorcycle must be used only on closed off property remote from public road traffic.

KEIHIN PWK 36S AG							
M/FT ASL ↓	TEMP →	-20°C ... -7°C *-2°F ... 20°F*	-6°C ... 5°C *19°F ... 41°F*	6°C ... 15°C *42°F ... 60°F*	16°C ... 24°C *61°F ... 78°F*	25°C ... 36°C *79°F ... 98°F*	37°C ... 49°C *99°F ... 120°F*
3.000 m *10,000 ft* ↑ 2.301 m *7,501 ft*	ASO IJ NDL POS MJ	2 35 N8RJ 4 165	2 35 N8RJ 3 165	2,5 35 N8RK 3 162	2,5 35 N8RK 2 160	3 35 N8RL 2 158	
2.300 m *7,500 ft* ↑ 1.501 m *5,001 ft*	ASO IJ NDL POS MJ	1,5 35 N8RW 4 168	2 35 N8RJ 4 165	2 35 N8RJ 3 165	2,5 35 N8RK 3 162	2,5 35 N8RK 2 160	3 35 N8RL 2 158
1.500 m *5,000 ft* ↑ 751 m *2,501 ft*	ASO IJ NDL POS MJ	1,5 38 N8RH 4 170	1,5 35 N8RW 4 168	2 35 N8RJ 4 165	2 35 N8RJ 3 165	2,5 35 N8RK 3 162	2,5 35 N8RK 2 160
750 m *2,500 ft* ↑ 301 m *1,001 ft*	ASO IJ NDL POS MJ	1 40 N8RH 5 172	1,5 38 N8RH 4 170	1,5 35 N8RW 4 168	**2** **35** **N8RJ** **4** **165**	2 35 N8RJ 3 165	2,5 35 N8RK 3 162
300 m *1,000 ft* ↑ 0 m *0 ft*	ASO IJ NDL POS MJ	1 40 N8RG 5 175	1 40 N8RH 5 172	1,5 38 N8RH 4 170	1,5 35 N8RW 4 168	2 35 N8RJ 4 165	2 35 N8RJ 3 165

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M/FT ASL	Sea level
TEMP	Temperature
ASO	Idle air adjusting screw is open
IJ	Idling jet
NDL	Needle
POS	Needle position from above
MJ	Main jet

Does not apply to sand surfaces!

Carburetor configuration (All 300 models)

Danger

Loss of approval for road use and insurance coverage The motorcycle is authorized for public road traffic in the homologous (reduced) version only.

– In the derestricted version, the motorcycle must be used only on closed off property remote from public road traffic.

KEIHIN PWK 36S AG

M/FT ASL ↓	TEMP →	-20°C ... -7°C *-2°F ... 20°F*	-6°C ... 5°C *19°F ... 41°F*	6°C ... 15°C *42°F ... 60°F*	16°C ... 24°C *61°F ... 78°F*	25°C ... 36°C *79°F ... 98°F*	37°C ... 49°C *99°F ... 120°F*
3.000 m *10,000 ft* ↑ 2.301 m *7,501 ft*	ASO IJ NDL POS MJ	2 35 N2ZK 4 165	2 35 N2ZK 3 165	2,5 35 N2ZL 3 162	3 35 N2ZL 2 160	3,5 35 N2ZL 2 158	
2.300 m *7,500 ft* ↑ 1.501 m *5,001 ft*	ASO IJ NDL POS MJ	1,5 35 N2ZJ 4 168	2 35 N2ZK 4 165	2 35 N2ZK 3 165	2,5 35 N2ZL 3 162	3 35 N2ZL 2 160	3,5 35 N2ZL 2 158
1.500 m *5,000 ft* ↑ 751 m *2,501 ft*	ASO IJ NDL POS MJ	1,5 38 N2ZW 4 170	1,5 35 N2ZJ 4 168	2 35 N2ZK 4 165	2 35 N2ZK 3 165	2,5 35 N2ZL 3 162	3 35 N2ZL 2 160
750 m *2,500 ft* ↑ 301 m *1,001 ft*	ASO IJ NDL POS MJ	1 40 N2ZW 5 172	1,5 38 N2ZW 4 170	1,5 35 N2ZJ 4 168	**2** **35** **N2ZK** **4** **165**	2 35 N2ZK 3 165	2,5 35 N2ZL 3 162
300 m *1,000 ft* ↑ 0 m *0 ft*	ASO IJ NDL POS MJ	1 40 N2ZH 5 175	1 40 N2ZW 5 172	1,5 38 N2ZW 4 170	1,5 35 N2ZJ 4 168	2 35 N2ZK 4 165	2 35 N2ZK 3 165

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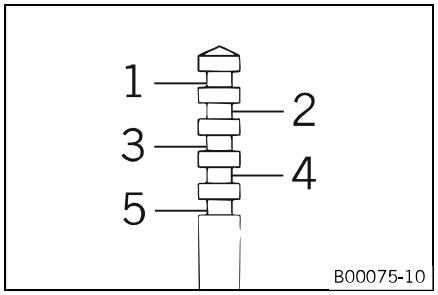
M/FT ASL	Sea level
TEMP	Temperature
ASO	Idle air adjusting screw is open
IJ	Idling jet
NDL	Needle
POS	Needle position from above
MJ	Main jet

Does not apply to sand surfaces!

General carburetor configuration



1... 5	Needle position from above

The five needle positions are shown here.
The carburetor configuration depends on the defined ambient and operating conditions.

Frame	Central tube frame made of chrome molybdenum steel tubing
Fork	**WP Suspension** Up Side Down 4860 MXMA PA
Suspension travel	
Front	300 mm (11.81 in)
Rear	335 mm (13.19 in)
Fork offset (EXC EU/AUS)	20 mm (0.79 in)
Fork offset (EXC SIX DAYS, EXC Factory Edition)	19 mm (0.75 in)
Fork offset (XC-W)	19 mm (0.75 in)
Shock absorber	**WP Suspension** PDS 5018 DCC
Brake system	Disc brakes, brake calipers on floating bearings
Brake discs - diameter	
Front	260 mm (10.24 in)
Rear	220 mm (8.66 in)
Brake discs - wear limit	
Front	2.5 mm (0.098 in)
Rear	3.5 mm (0.138 in)
Tire air pressure, road (All 250/300 EXC models)	
Front	1.5 bar (22 psi)
Rear	2.0 bar (29 psi)
Tire air pressure off road	
Front	1.0 bar (15 psi)
Rear	1.0 bar (15 psi)
Secondary ratio (All 250/300 EXC models)	13:40 (13:50)
Secondary ratio (XC-W)	13:50
Chain	5/8 x 1/4"
Rear sprockets available	38, 40, 42, 45, 48, 49, 50, 51, 52
Steering head angle	63.5°
Wheelbase	1,475±10 mm (58.07±0.39 in)
Seat height unloaded	985 mm (38.78 in)
Ground clearance unloaded	385 mm (15.16 in)
Weight without fuel, approx. (250 EXC EU, 250 EXC SIX DAYS EU, 250 EXC Factory Edition EU, 250 EXC AUS)	103 kg (227 lb.)
Weight without fuel, approx. (300 EXC EU, 300 EXC SIX DAYS EU, 300 EXC Factory Edition EU, 300 EXC AUS)	103.1 kg (227.3 lb.)
Weight without fuel, approx. (XC-W)	100.4 kg (221.3 lb.)
Maximum permissible front axle load	145 kg (320 lb.)
Maximum permissible rear axle load	190 kg (419 lb.)
Maximum permissible overall weight	335 kg (739 lb.)

Battery	YTX4L-BS	Battery voltage: 12 V Nominal capacity: 3 Ah maintenance-free
Speedometer battery	CR 2430	Battery voltage: 3 V
Fuse	58011109110	10 A

Lighting equipment

Headlight (All 250/300 EXC models)	S2 / socket BA20d	12 V 35/35 W
Parking light (All 250/300 EXC models)	W5W / socket W2.1x9.5d	12 V 5 W
Indicator lamps (All 250/300 EXC models)	W2.3W / socket W2x4.6d	12 V 2.3 W
Turn signal (All 250/300 EXC models)	R10W / socket BA15s	12 V 10 W
Brake/tail light (All 250/300 EXC models)	LED	
License plate lamp (All 250/300 EXC models)	W5W / socket W2.1x9.5d	12 V 5 W

Tires

Validity	Front tire	Rear tire
(All 250/300 EXC models)	**90/90 - 21 M/C 54M M+S TT** Metzeler MCE 6 DAYS EXTREME	**140/80 - 18 M/C 70M M+S TT** Metzeler MCE 6 DAYS EXTREME
(XC-W)	**80/100 - 21 51M TT** Bridgestone M59	**110/100 - 18 64M TT** Bridgestone M402
Additional information is available in the Service section under: http://www.ktm.com		

Capacity - fuel

Total fuel tank capacity, approx. (EXC EU, EXC SIX DAYS, EXC Factory Edition)	9.5 l (2.51 US gal)	Super unleaded gasoline, mixed with 2-stroke engine oil (1:60) (☛ p. 227)
Total fuel tank capacity, approx. (EXC AUS, XC-W)	11.5 l (3.04 US gal)	Super unleaded gasoline, mixed with 2-stroke engine oil (1:60) (☛ p. 227)

Fuel reserve, approx.	2 l (2 qt.)

Fork part number	14.18.7J.04
Fork	**WP Suspension** Up Side Down 4860 MXMA PA
Compression damping	
Comfort	26 clicks
Standard	22 clicks
Sport	18 clicks
Rebound damping	
Comfort	24 clicks
Standard	20 clicks
Sport	20 clicks
Spring preload - **Preload Adjuster**	
Comfort	0 turn
Standard	2 turns
Sport	4 turns
Spring length with preload spacer(s)	
Weight of rider: 65... 75 kg (143... 165 lb.)	510 mm (20.08 in)
Weight of rider: 75... 85 kg (165... 187 lb.)	513 mm (20.2 in)
Weight of rider: 85... 95 kg (187... 209 lb.)	510 mm (20.08 in)
Spring rate	
Weight of rider: 65... 75 kg (143... 165 lb.)	4.0 N/mm (22.8 lb/in)
Weight of rider: 75... 85 kg (165... 187 lb.)	4.2 N/mm (24 lb/in)
Weight of rider: 85... 95 kg (187... 209 lb.)	4.4 N/mm (25.1 lb/in)
Fork length	940 mm (37.01 in)
Air chamber length	110^{+20}_{-30} mm ($4.33^{+0.79}_{-1.18}$ in)

Fork oil per fork leg	626 ml (21.17 fl. oz.)	Fork oil (SAE 5) (☛ p. 226)

Shock absorber part number	12.18.7J.04
Shock absorber	**WP Suspension** PDS 5018 DCC
Compression damping, low-speed	
Comfort	22 clicks
Standard	20 clicks
Sport	15 clicks
Compression damping, high-speed	
Comfort	2 turns
Standard	1.5 turns
Sport	1.25 turns
Rebound damping	
Comfort	26 clicks
Standard	24 clicks
Sport	22 clicks
Spring preload	8 mm (0.31 in)
Spring rate	
Weight of rider: 65... 75 kg (143... 165 lb.)	66 N/mm (377 lb/in)
Weight of rider: 75... 85 kg (165... 187 lb.)	69 N/mm (394 lb/in)
Weight of rider: 85... 95 kg (187... 209 lb.)	72 N/mm (411 lb/in)
Spring length	250 mm (9.84 in)
Gas pressure	10 bar (145 psi)
Static sag	35 mm (1.38 in)
Riding sag	105 mm (4.13 in)
Fitted length	411 mm (16.18 in)
Shock absorber oil (☛ p. 227)	SAE 2,5

Spoke nipple, front wheel	M4.5	5... 6 Nm (3.7... 4.4 lbf ft)	–
Screw, frame protector	M5	3 Nm (2.2 lbf ft)	–
Screw, spoiler on fuel tank (XC-W)	M5x12	1.5 Nm (1.11 lbf ft)	–
Spoke nipple, rear wheel	M5	5... 6 Nm (3.7... 4.4 lbf ft)	–
Remaining nuts, chassis	M6	15 Nm (11.1 lbf ft)	–
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)	–
Screw, ball joint of push rod on foot brake cylinder	M6	10 Nm (7.4 lbf ft)	–
Screw, chain sliding guard	M6	6 Nm (4.4 lbf ft)	**Loctite® 243™**
Screw, front brake disc	M6	14 Nm (10.3 lbf ft)	**Loctite® 243™**
Screw, rear brake disc	M6	14 Nm (10.3 lbf ft)	**Loctite® 243™**
Screw, shock absorber adjusting ring	M6	5 Nm (3.7 lbf ft)	–
Nut, foot brake lever stop	M8	20 Nm (14.8 lbf ft)	–
Nut, rear sprocket screw	M8	35 Nm (25.8 lbf ft)	**Loctite® 2701**
Nut, rim lock	M8	10 Nm (7.4 lbf ft)	–
Remaining nuts, chassis	M8	30 Nm (22.1 lbf ft)	–
Remaining screws, chassis	M8	25 Nm (18.4 lbf ft)	–
Screw, bottom triple clamp (EXC EU/AUS)	M8	15 Nm (11.1 lbf ft)	–
Screw, bottom triple clamp (EXC SIX DAYS, EXC Factory Edition, XC-W)	M8	12 Nm (8.9 lbf ft)	–
Screw, chain sliding piece	M8	15 Nm (11.1 lbf ft)	–
Screw, engine brace	M8	33 Nm (24.3 lbf ft)	–
Screw, fork stub	M8	15 Nm (11.1 lbf ft)	–
Screw, front brake caliper	M8	25 Nm (18.4 lbf ft)	**Loctite® 243™**
Screw, handlebar clamp	M8	20 Nm (14.8 lbf ft)	–
Screw, side stand attachment	M8	40 Nm (29.5 lbf ft)	**Loctite® 2701**
Screw, subframe	M8	35 Nm (25.8 lbf ft)	**Loctite® 2701**
Screw, top steering stem (EXC EU/AUS)	M8	20 Nm (14.8 lbf ft)	–
Screw, top steering stem (EXC SIX DAYS, EXC Factory Edition, XC-W)	M8	17 Nm (12.5 lbf ft)	**Loctite® 243™**
Screw, top triple clamp (EXC EU/AUS)	M8	20 Nm (14.8 lbf ft)	–
Screw, top triple clamp (EXC SIX DAYS, EXC Factory Edition, XC-W)	M8	17 Nm (12.5 lbf ft)	–
Engine bracket screw	M10	60 Nm (44.3 lbf ft)	–
Remaining nuts, chassis	M10	50 Nm (36.9 lbf ft)	–
Remaining screws, chassis	M10	45 Nm (33.2 lbf ft)	–
Screw, handlebar support	M10	40 Nm (29.5 lbf ft)	**Loctite® 243™**
Screw, bottom shock absorber	M12	80 Nm (59 lbf ft)	**Loctite® 2701**
Screw, top shock absorber	M12	80 Nm (59 lbf ft)	**Loctite® 2701**
Nut, seat fixing	M12x1	20 Nm (14.8 lbf ft)	–
Nut, swingarm pivot	M16x1.5	100 Nm (73.8 lbf ft)	–
Nut, rear wheel spindle	M20x1.5	80 Nm (59 lbf ft)	–
Screw, top steering head	M20x1.5	10 Nm (7.4 lbf ft)	–
Screw-in nozzles, cooling system	M20x1.5	12 Nm (8.9 lbf ft)	**Loctite® 243™**
Screw, front wheel spindle	M24x1.5	45 Nm (33.2 lbf ft)	–

Cleaning the 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.

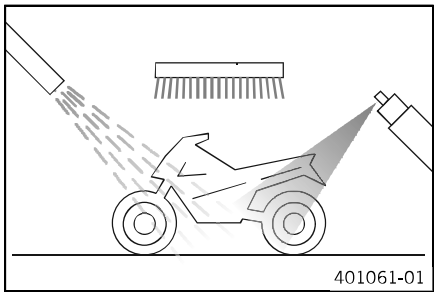
Warning

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 will be maintained over a long period.
Avoid direct sunlight on the motorcycle during cleaning.



– Close off the exhaust system to prevent water from entering.
– Remove coarse dirt particles by spraying gently with water.
– Spray very dirty areas with a normal motorcycle cleaner and then clean with a soft brush.

Motorcycle cleaner (☛ p. 229)

Info

Clean the vehicle with warm water containing normal motorcycle cleaner and a soft sponge.

– After rinsing the motorcycle with a gentle water spray, allow it to dry thoroughly.
– Empty the carburetor float chamber. (☛ p. 159)

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, take a short ride until the engine reaches operating temperature.

Info

The heat produced causes water at inaccessible positions in the engine and the brakes to evaporate.

– Push back the protection caps on the handlebar controls to allow water that may have penetrated there to evaporate.
– After the motorcycle has cooled down, lubricate all moving parts and bearings.
– Clean the chain. (☛ p. 77)
– Treat bare metal parts (except for brake discs and exhaust system) with anti-corrosion materials.

Cleaning and preserving materials for metal, rubber and plastic (☛ p. 228)

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

Cleaning and preserving materials for metal, rubber and plastic (☛ p. 228)

(All 250/300 EXC models)

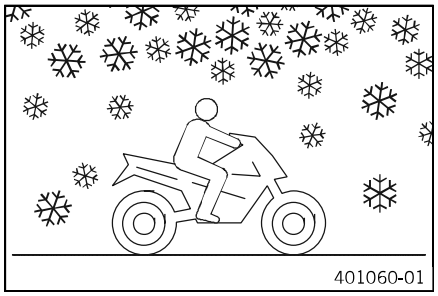
– Lubricate the steering lock.

Universal oil spray (☛ p. 229)

Protection for winter operation

Info

If the motorcycle is used in the winter, salt can be expected on the roads. Precautions need to be taken against the aggressive road salt.
If the vehicle has been used on salted roads, clean it with cold water. Warm water intensifies the effects of salt.


401060-01

– Clean the motorcycle. (☛ p. 195)
– Treat the engine, swingarm and all other bright and zinc-plated parts (except for the brake discs) with a wax-based corrosion inhibitor.

Info

Corrosion inhibitor is not permitted to come in contact with the brake discs as this would greatly reduce the braking force.
After riding on salted roads, thoroughly wash the motorcycle with cold water and dry it well.

– Clean the chain. (☛ p. 77)

Storage

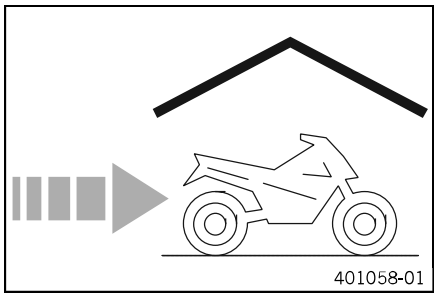
Warning

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.


401058-01

– Clean the motorcycle. (☛ p. 195)
– Change the gear oil. (☛ p. 172)
– Check the antifreeze and coolant level. (☛ p. 168)
– Drain the fuel from the tank into a suitable container.
– Empty the carburetor float chamber. (☛ p. 159)
– Check the tire air pressure. (☛ p. 70)
– Remove the battery. (☛ p. 80)
– Recharge the battery. (☛ p. 78)

Guideline

Storage temperature of battery without direct sunlight	0... 35 °C (32... 95 °F)

– Store the vehicle in a dry location that is not subject to large fluctuations in temperature.

Info

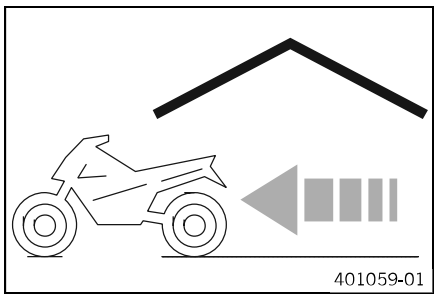
KTM recommends raising the motorcycle.

– Raise the motorcycle with the lift stand. (☛ p. 9)
– Cover the vehicle with a tarp or 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. Because the engine will not warm up sufficiently, the water vapor produced during combustion will condense, causing engine parts and the exhaust system to rust.

Preparing for use after storage


401059-01

– Remove the motorcycle from the lift stand. (☛ p. 9)
– Install the battery. (☛ p. 80)
– Refuel.
– Perform checks and maintenance work when preparing the vehicle for use.
– Take a test ride.

Service schedule

	S20A	S40A
Check that the electrical equipment is functioning properly.	•	•
Check and charge the battery.	•	•
Change the gear oil. (☛ p. 172)	•	•
Check the front brake linings. (☛ p. 82)	•	•
Check the rear brake linings. (☛ p. 87)	•	•
Check the brake discs. (☛ p. 69)	•	•
Check the brake lines for damage and leakage.	•	•
Check the rear brake fluid level. (☛ p. 89)	•	•
Check the free travel of the foot brake lever. (☛ p. 89)	•	•
Check the frame and swingarm.	•	•
Check the swingarm bearing.		•
Check the heim joints at the top and bottom of the shock absorber.	•	•
Check the tire condition. (☛ p. 70)	•	•
Check the tire air pressure. (☛ p. 70)	•	•
Check the wheel bearing for play.	•	•
Check the wheel hubs.	•	•
Check the rim run-out.	•	•
Check the spoke tension. (☛ p. 71)	•	•
Check the chain, rear sprocket, engine sprocket, and chain guide. (☛ p. 75)	•	•
Check the chain tension. (☛ p. 73)	•	•
Grease all moving parts (e.g. side stand, hand lever, chain, ...) and check for smooth operation.	•	•
Check the fluid level of the hydraulic clutch. (☛ p. 167)	•	•
Check the front brake fluid level. (☛ p. 85)	•	•
Check the free travel of the hand brake lever. (☛ p. 84)	•	•
Check the play of the steering head bearing. (☛ p. 33)	•	•
Change the spark plug and spark plug connector.	•	•
Check the intake diaphragm.	•	•
Check the exhaust control for functioning and smooth operation.		•
Check the clutch.		•
Check all hoses (e. g. fuel, cooling, bleeding, drainage) and sleeves for cracking, leaks, and incorrect routing.	•	•
Check the antifreeze and coolant level. (☛ p. 168)	•	•
Check the cables for damage and routing without sharp bends.	•	•
Check that the throttle cables are undamaged, routed without sharp bends and set correctly.	•	•
Clean the air filter and air filter box. (☛ p. 61)	•	•
Change the glass fiber yarn filling of the main silencer. (☛ p. 59)	•	•
Check the screws and nuts for tightness.	•	•
Check the headlight setting. (All 250/300 EXC models) (☛ p. 95)	•	•
Check the idle.	•	•
Final check: Check the vehicle for safe operation and take a test ride.	•	•
Make the service entry in **KTM DEALER.NET** and in the service record.	•	•

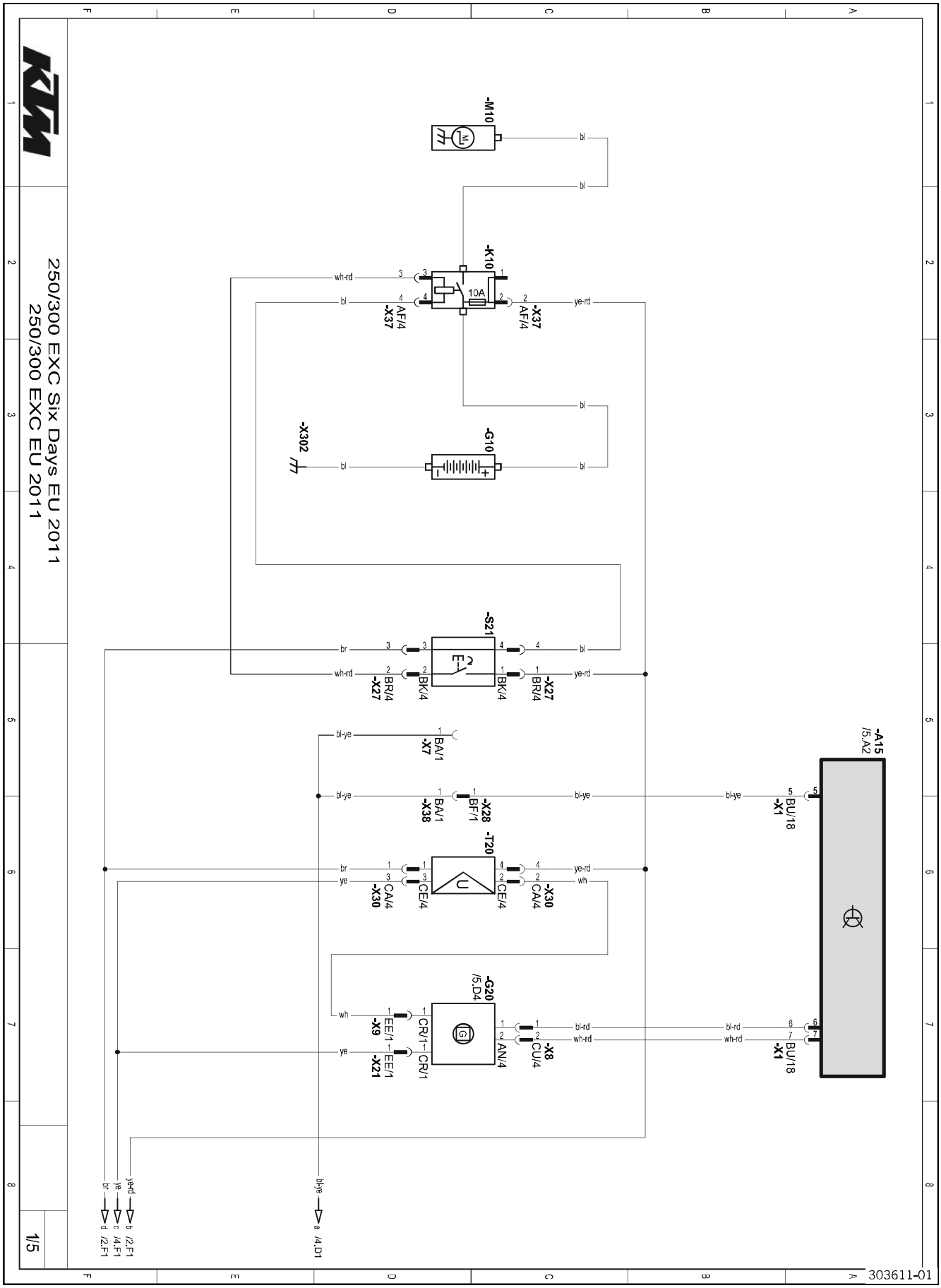
S20A: Every 20 operating hours
S40A: Every 40 operating hours/after every race

Maintenance work (as an additional order)

	S1ON	S40A	S80A	J1A
Change the front brake fluid. (☛ p. 86)				•
Change the rear brake fluid. (☛ p. 90)				•
Change the foot brake cylinder seals.				•
Change the hydraulic clutch fluid. (☛ p. 167)				•
Grease the steering head bearing. (☛ p. 28)				•
Check/set the carburetor components.			•	•
Perform a fork service. (☛ p. 15)	•	•	•	
Service the shock absorber. (☛ p. 41)		•	•	
Check the starter drive.		•	•	
Change the piston and check the cylinder.			•	
Change the connecting rod, conrod bearing and crank pin.			•	
Check the transmission and shift mechanism.			•	
Change all engine bearings.			•	

S1ON: Once after 10 operating hours
S40A: Every 40 operating hours
S80A: Every 80 operating hours/every 40 operating hours after sporting use
J1A: Annually

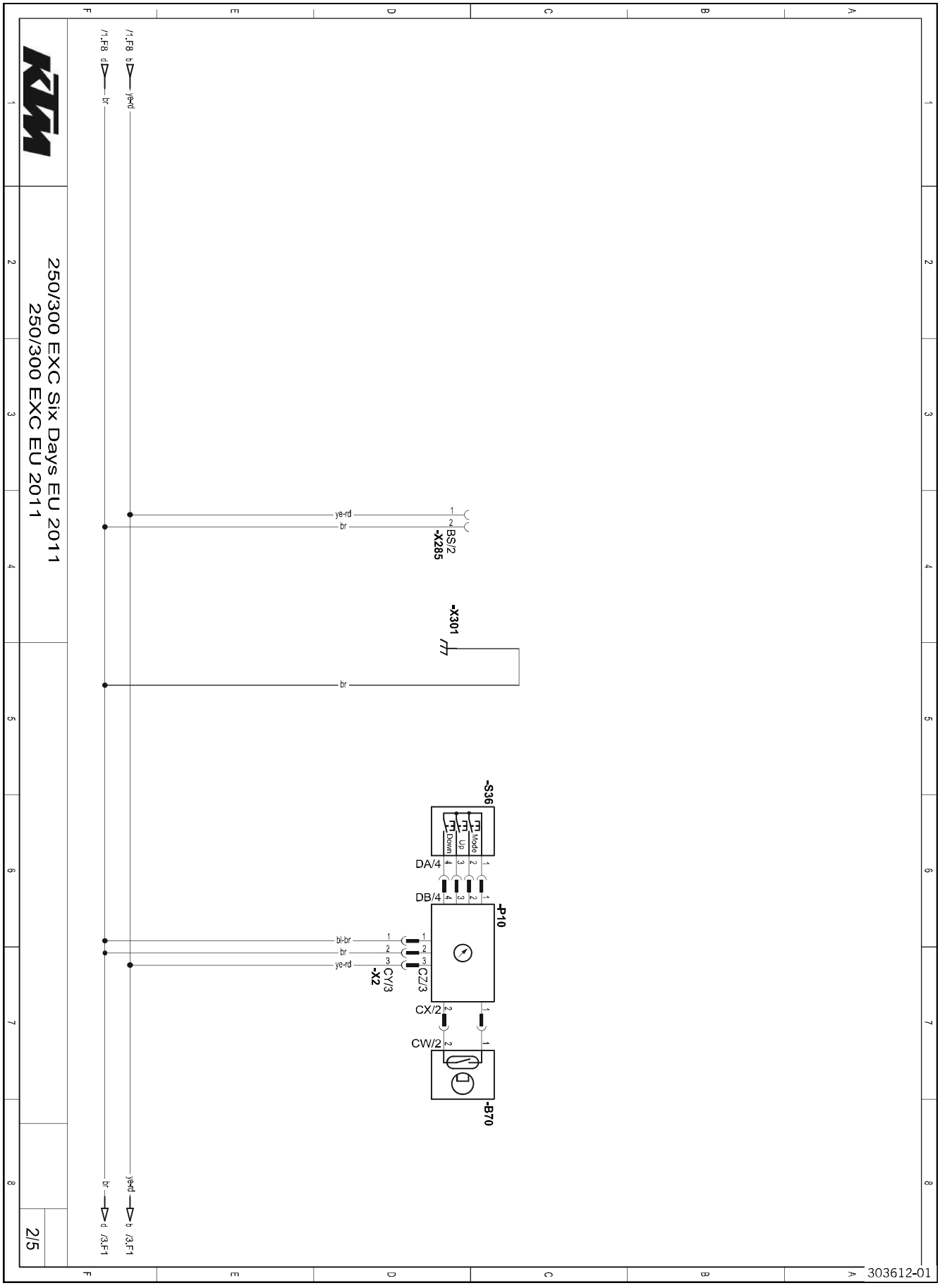
Page 1 of 5 (EXC EU, EXC SIX DAYS, EXC Factory Edition)



Components:

A15	CDI controller
G10	Battery
G20	Alternator
K10	Starter relay with main fuse
M10	Starter motor
S21	Electric starter button
T20	Voltage regulator

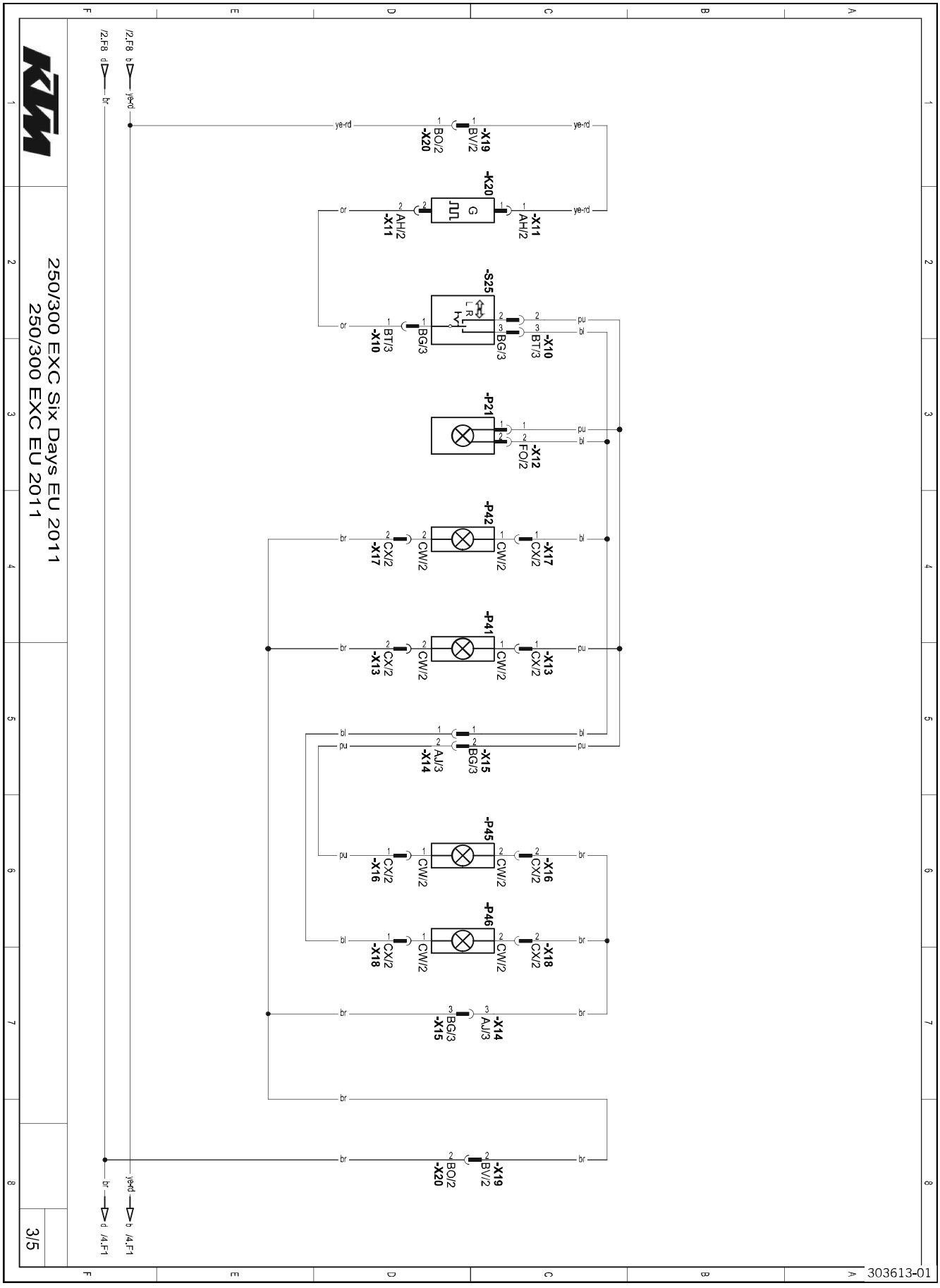
Page 2 of 5 (EXC EU, EXC SIX DAYS, EXC Factory Edition)



Components:

B70	Wheel speed sensor, front
P10	Speedometer
S36	Tripmaster switch (optional)
X285	Connector for radiator fan (optional)

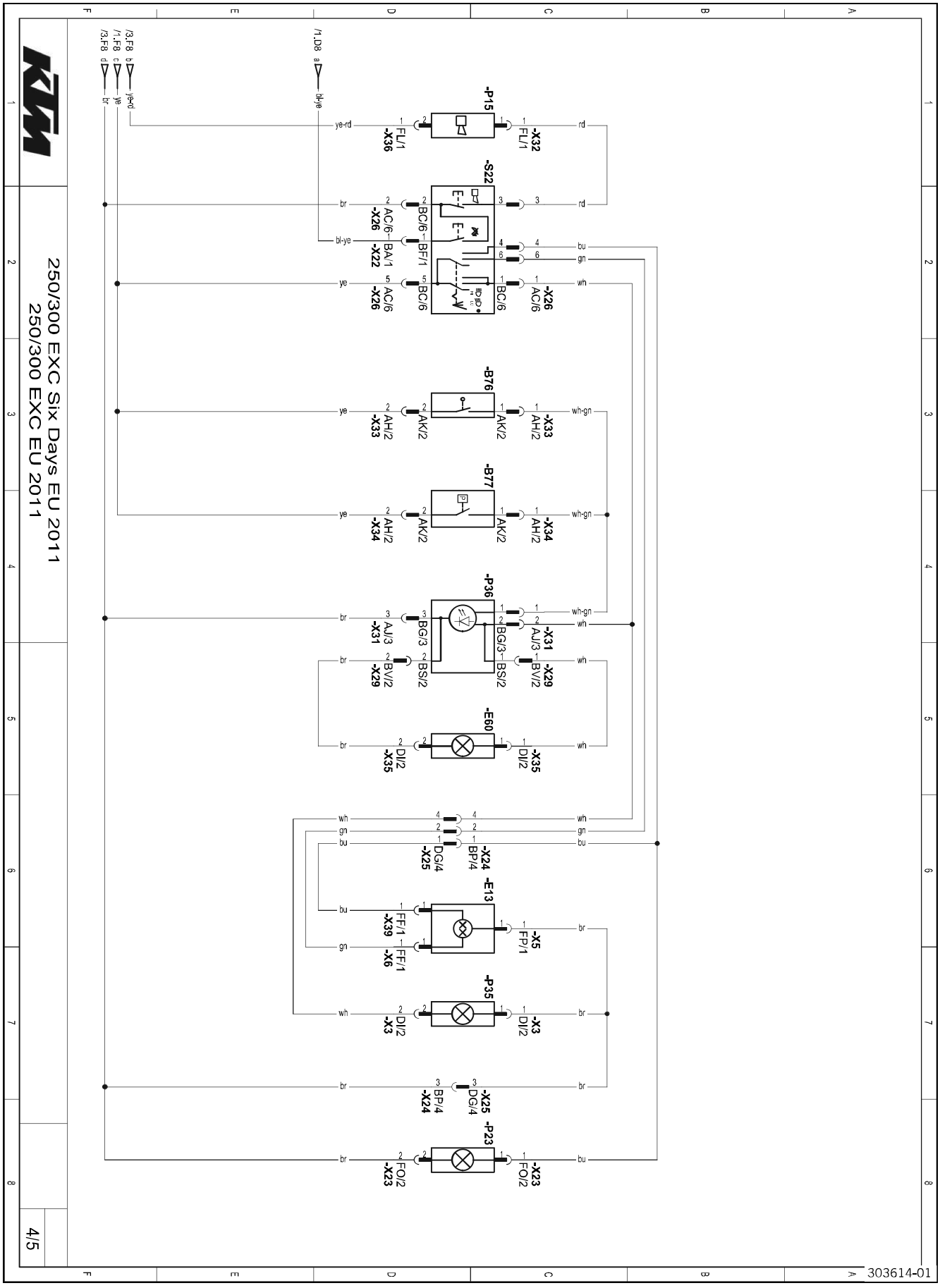
Page 3 of 5 (EXC EU, EXC SIX DAYS, EXC Factory Edition)



Components:

K20	Turn signal relay
P21	Turn signal indicator light
P41	Left front turn signal
P42	Right front turn signal
P45	Left rear turn signal
P46	Right rear turn signal
S25	Turn signal switch

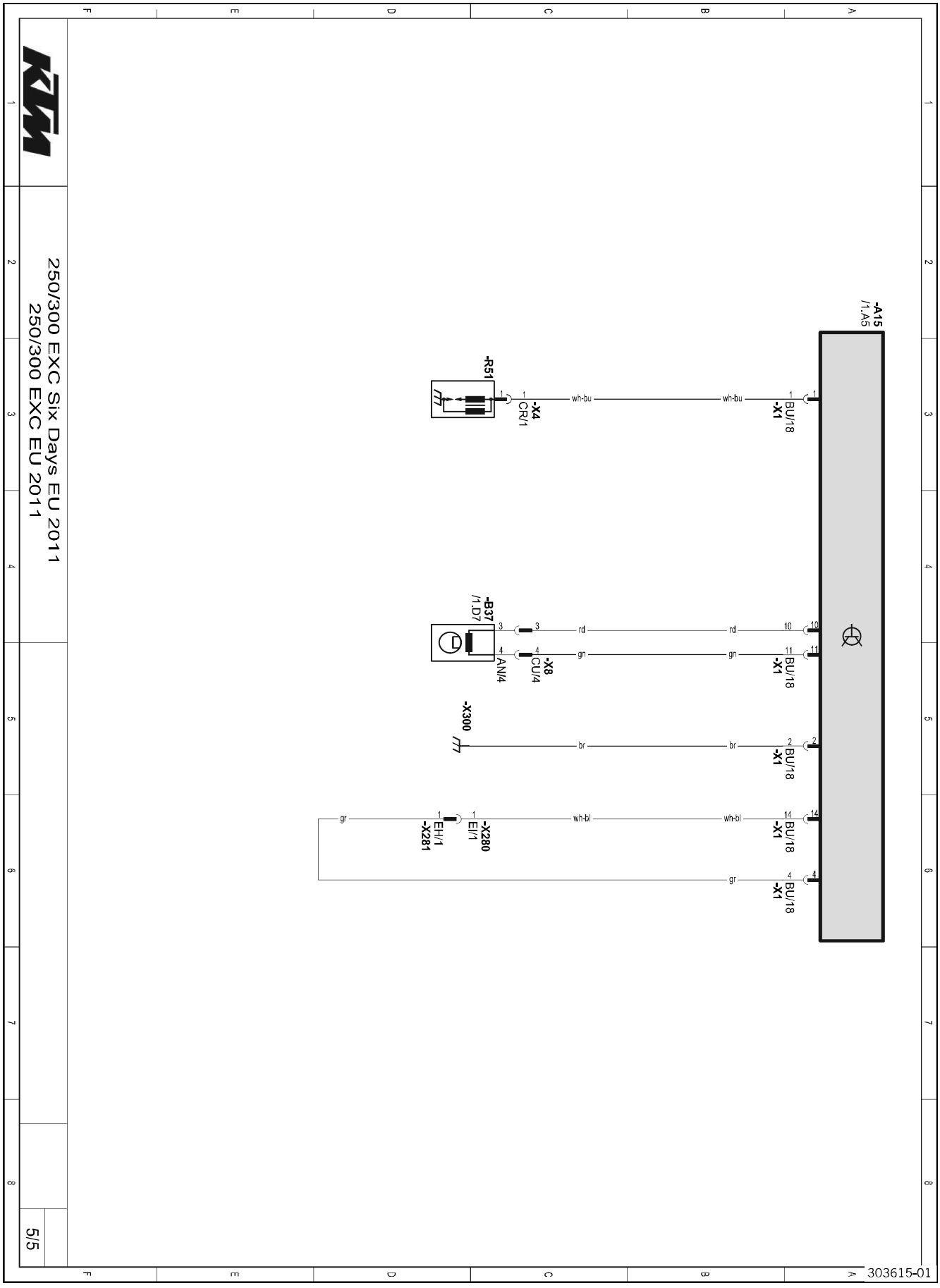
Page 4 of 5 (EXC EU, EXC SIX DAYS, EXC Factory Edition)



Components:

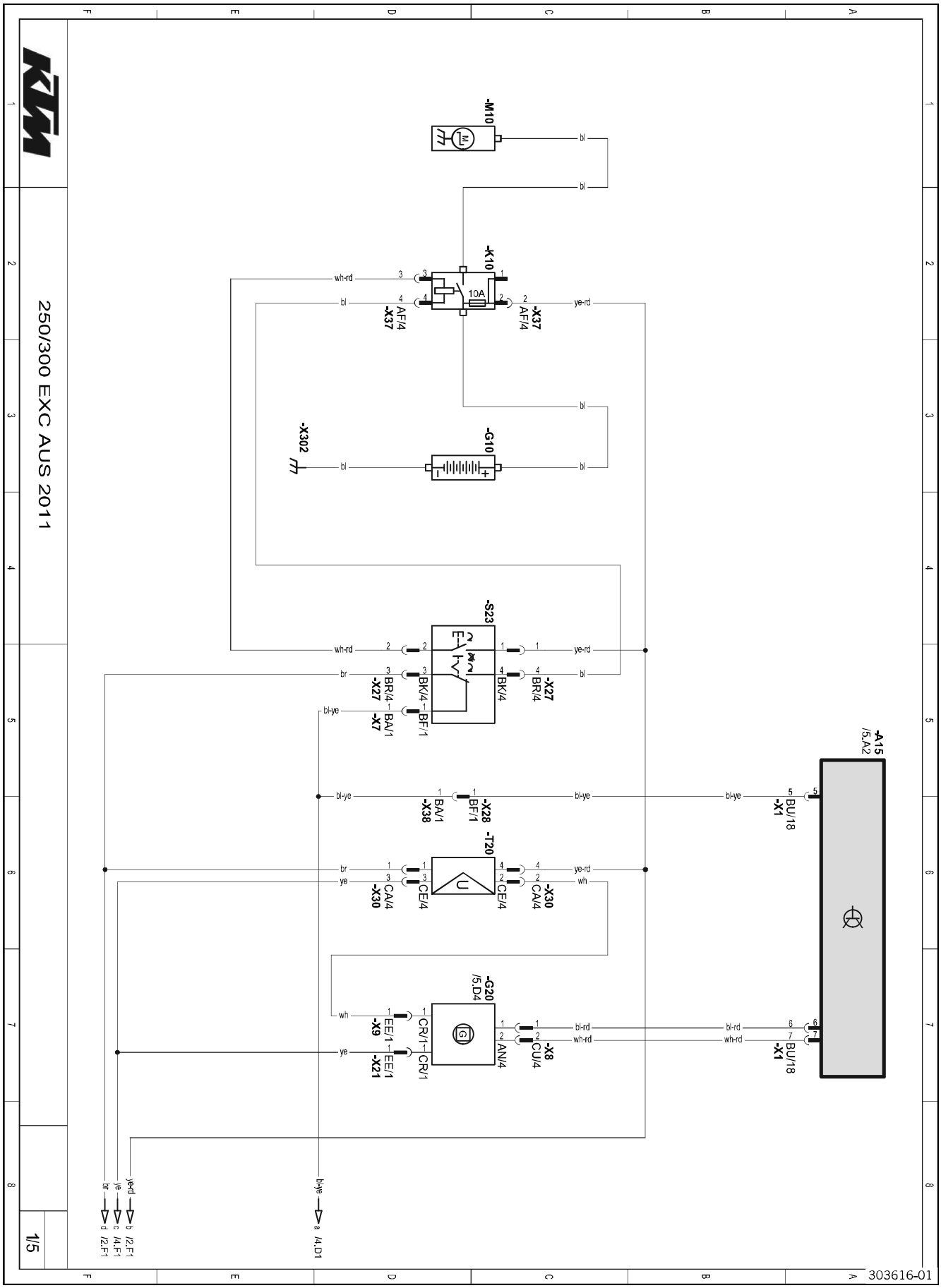
B76	Front brake light switch
B77	Rear brake light switch
E13	Low beam, high beam
E60	License plate lamp
P15	Horn
P23	High beam indicator light
P35	Parking light
P36	Brake/tail light
S22	Light switch, horn button, kill switch

Page 5 of 5 (EXC EU, EXC SIX DAYS, EXC Factory Edition)



Components:	
A15	CDI controller
B37	Crankshaft position sensor
R51	Ignition coil (cylinder 1)
X280	Connector, ignition curve
X281	Connector, ignition curve
Cable colors:	
bl	Black
br	Brown
bu	Blue
gn	Green
gr	Gray
lbu	Light blue
or	Orange
pk	Pink
pu	Violet
rd	Red
wh	White
ye	Yellow

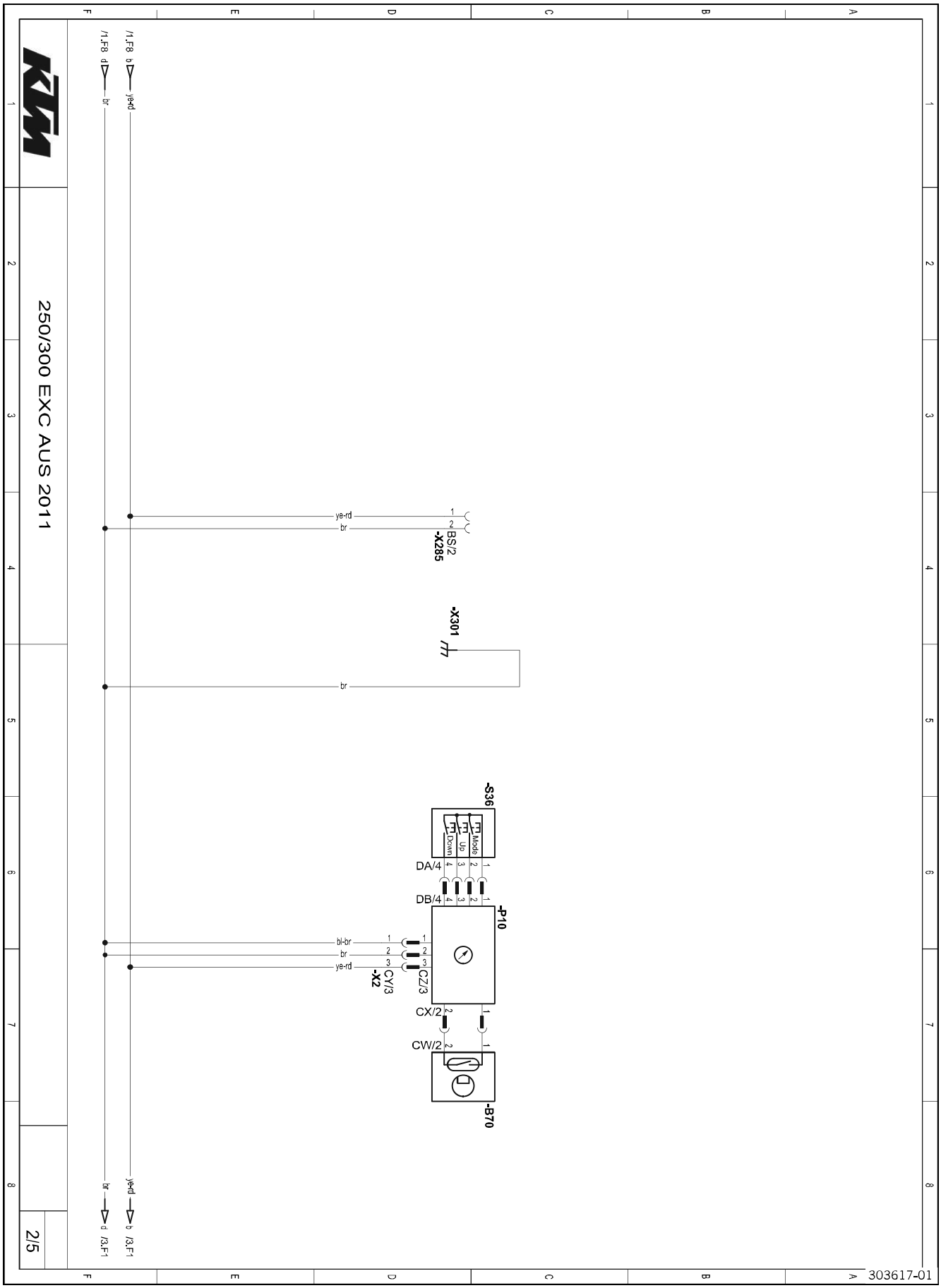
Page 1 of 5 (EXC AUS)



Components:

A15	CDI controller
G10	Battery
G20	Alternator
K10	Starter relay with main fuse
M10	Starter motor
S23	Emergency OFF switch, electric starter button
T20	Voltage regulator

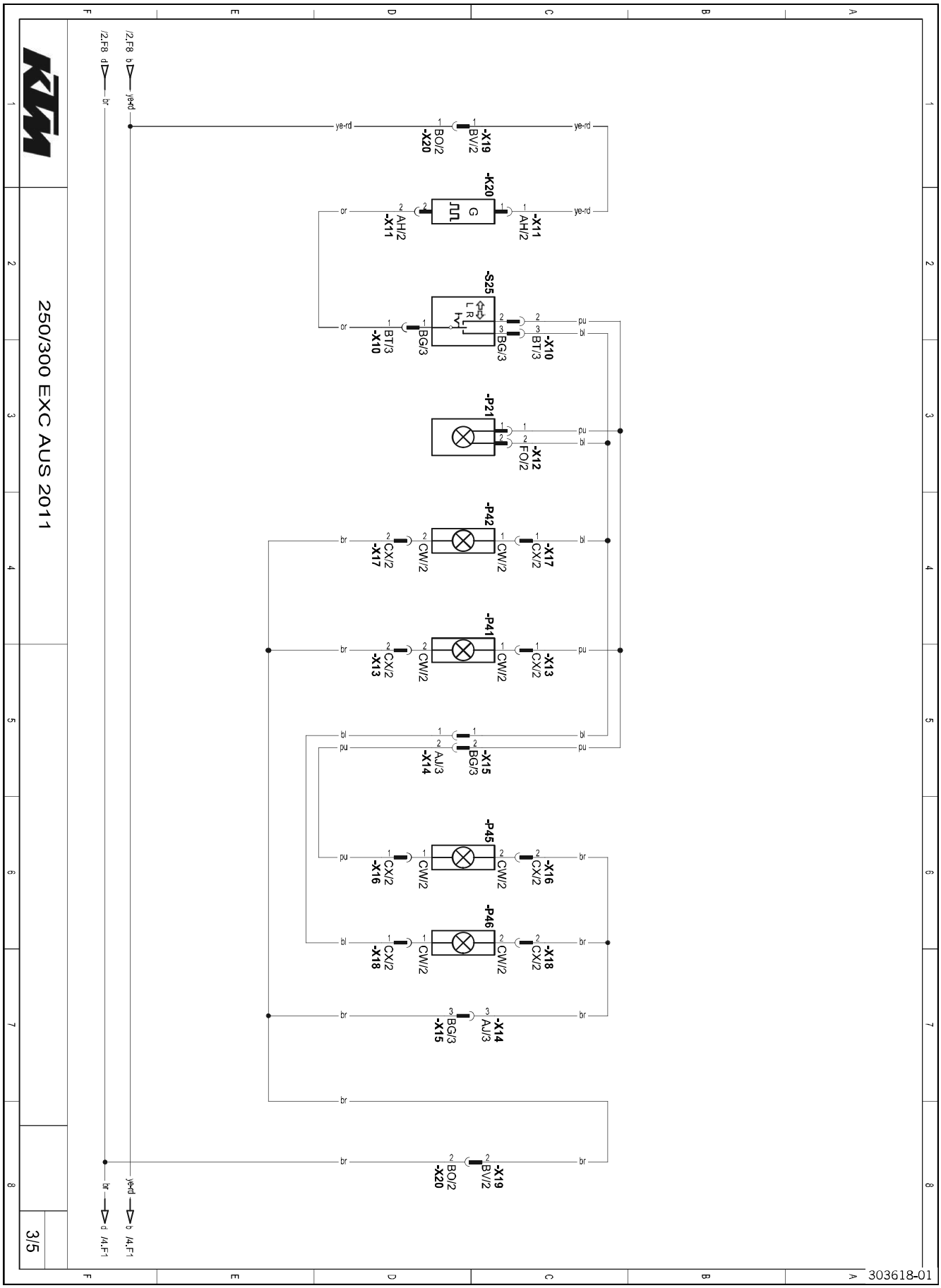
Page 2 of 5 (EXC AUS)



Components:

B70	Wheel speed sensor, front
P10	Speedometer
S36	Tripmaster switch (optional)
X285	Connector for radiator fan (optional)

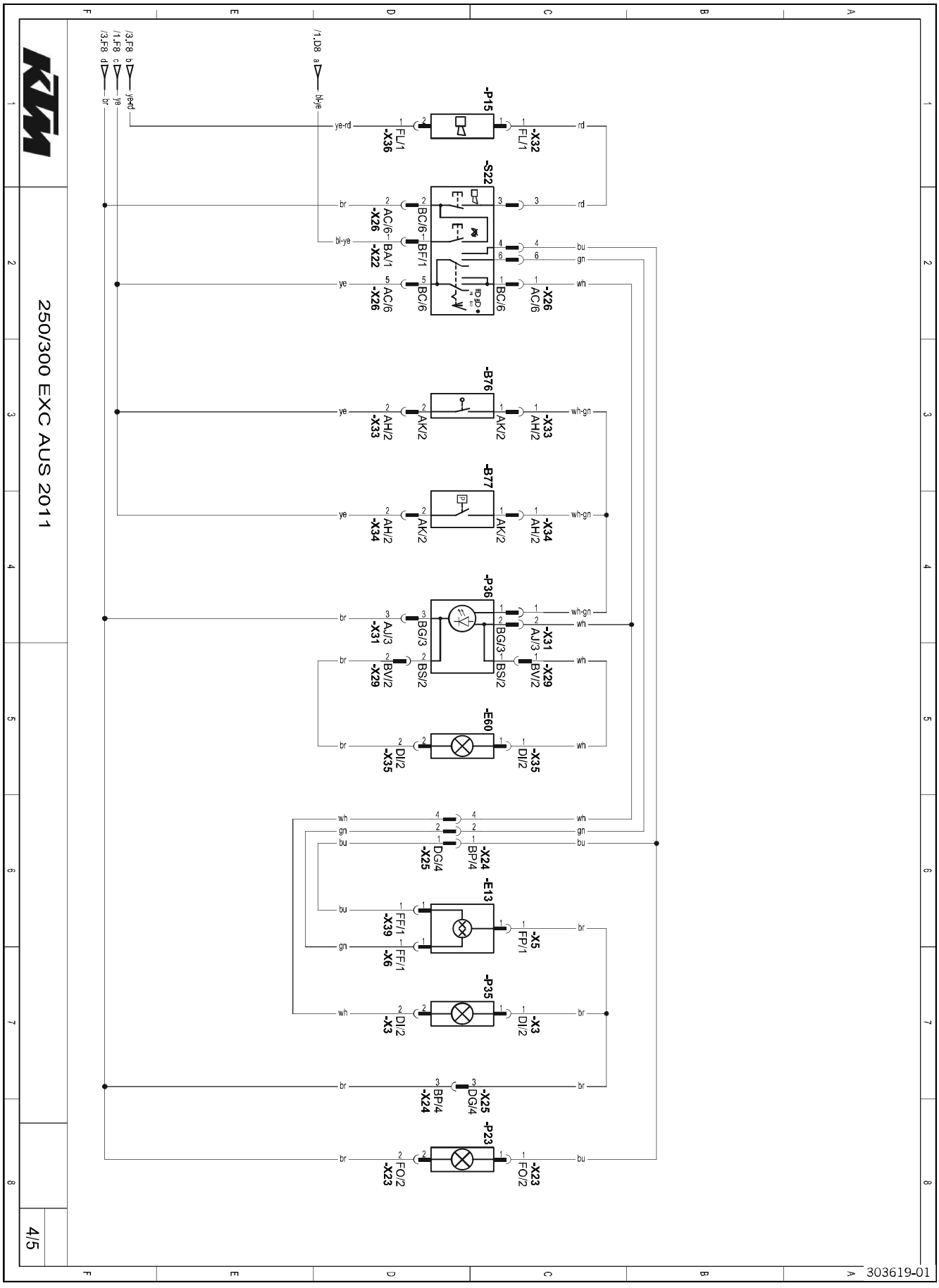
Page 3 of 5 (EXC AUS)



Components:

K20	Turn signal relay
P21	Turn signal indicator light
P41	Left front turn signal
P42	Right front turn signal
P45	Left rear turn signal
P46	Right rear turn signal
S25	Turn signal switch

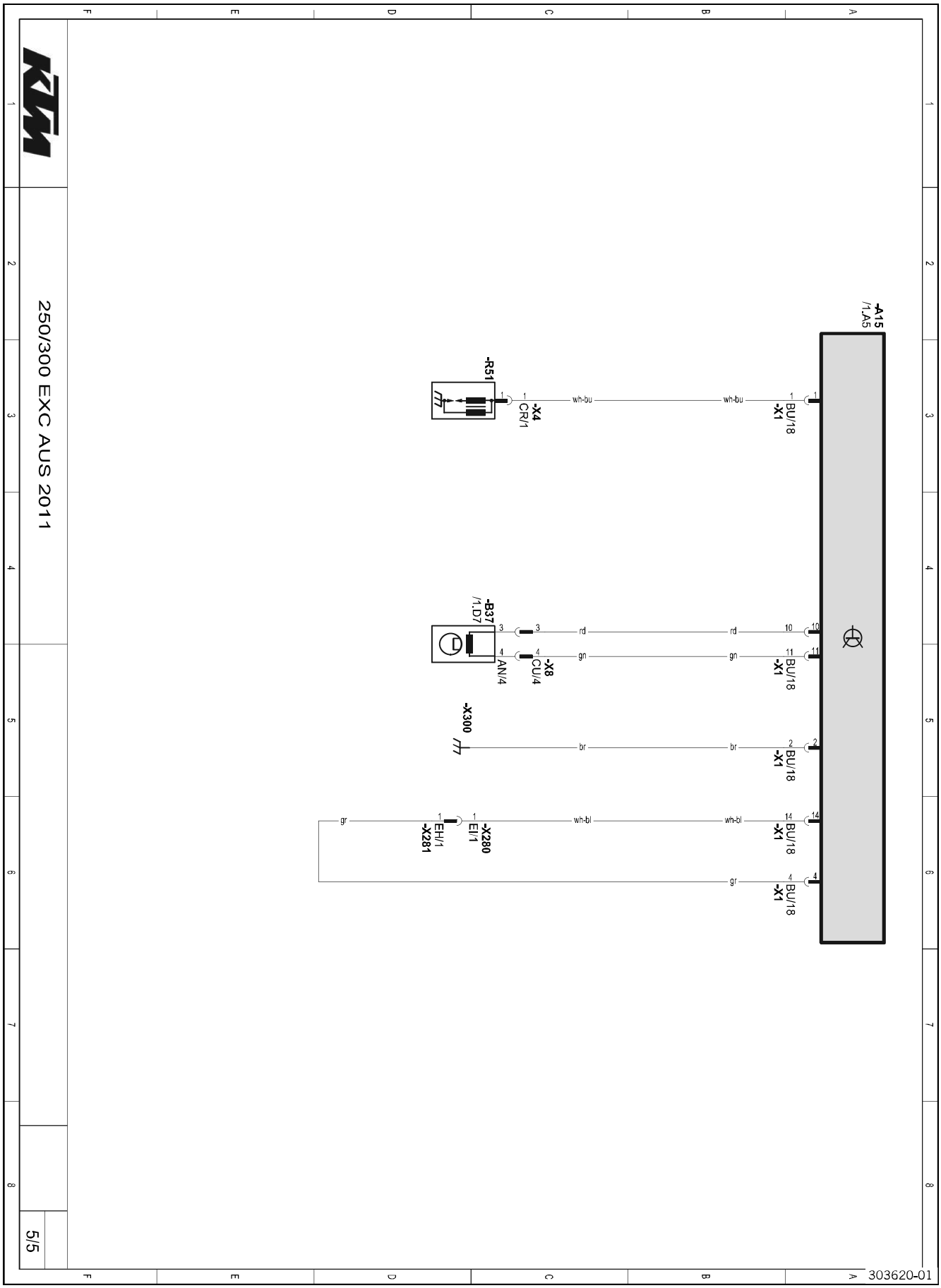
Page 4 of 5 (EXC AUS)



Components:

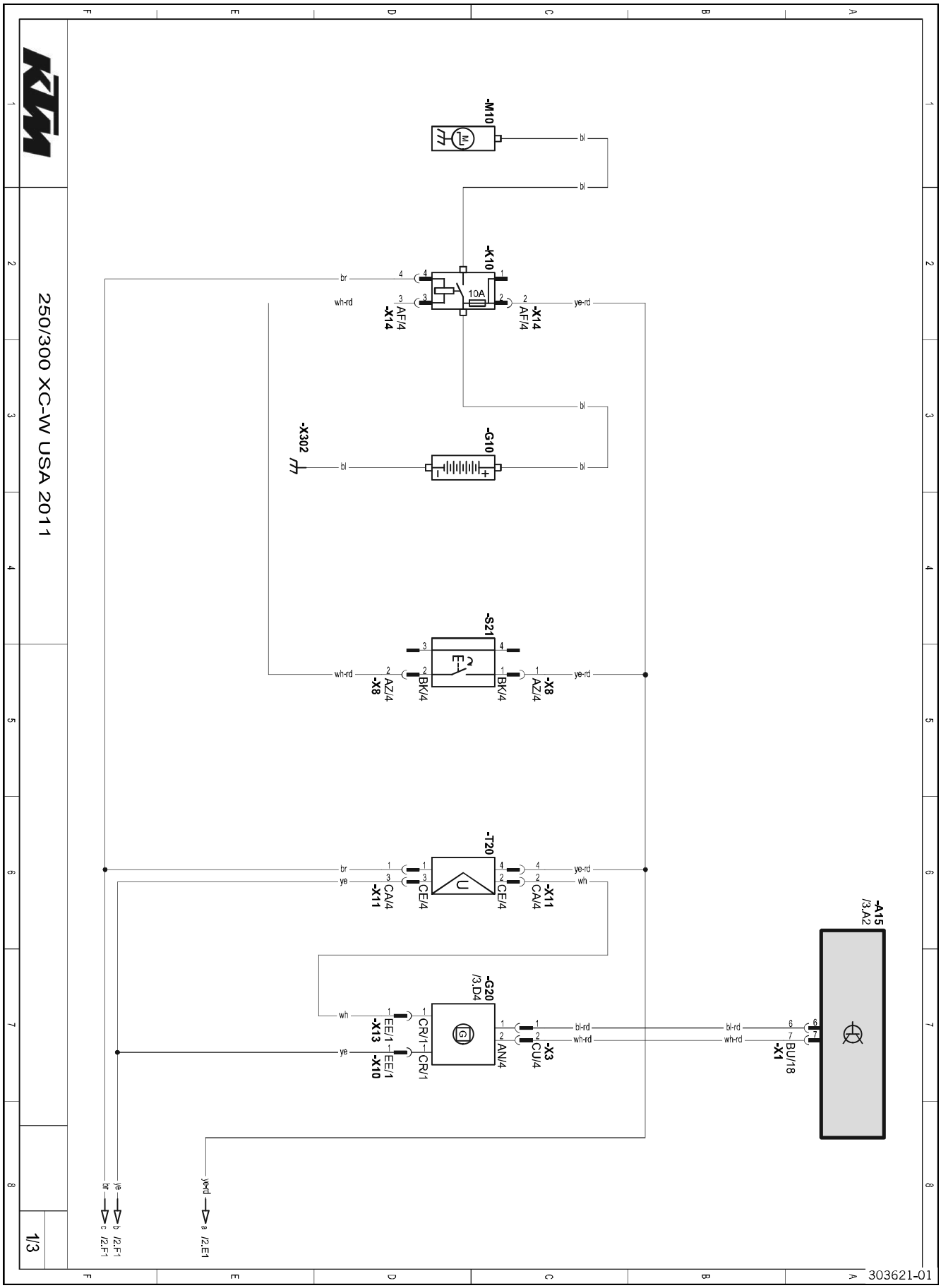
B76	Front brake light switch
B77	Rear brake light switch
E13	Low beam, high beam
E60	License plate lamp
P15	Horn
P23	High beam indicator light
P35	Parking light
P36	Brake/tail light
S22	Light switch, horn button, kill switch

Page 5 of 5 (EXC AUS)



Components:	
A15	CDI controller
B37	Crankshaft position sensor
R51	Ignition coil (cylinder 1)
X280	Connector, ignition curve
X281	Connector, ignition curve
Cable colors:	
bl	Black
br	Brown
bu	Blue
gn	Green
gr	Gray
lbu	Light blue
or	Orange
pk	Pink
pu	Violet
rd	Red
wh	White
ye	Yellow

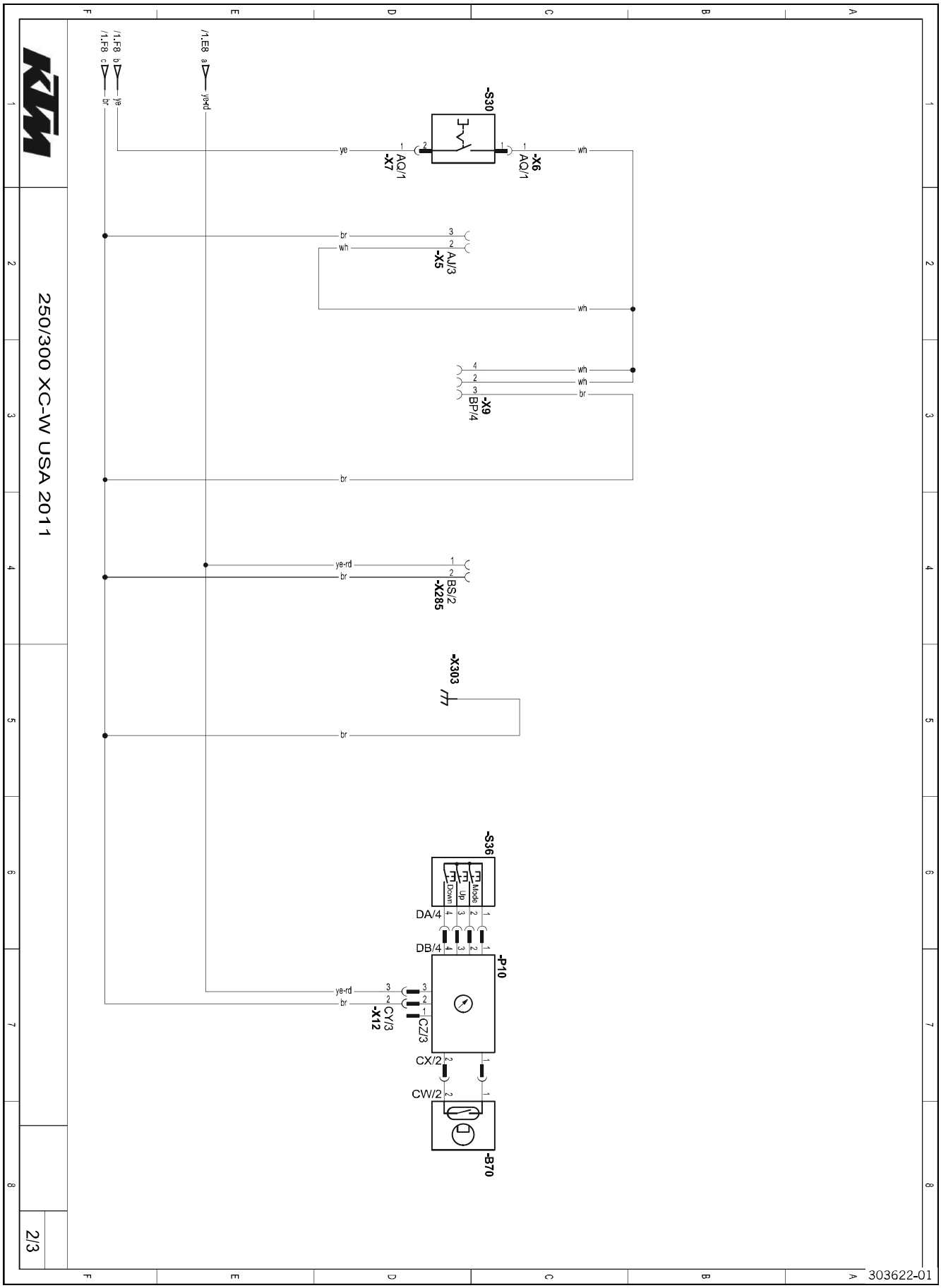
page 1 of 3 (XC-W)



Components:

A15	CDI controller
G10	Battery
G20	Alternator
K10	Starter relay with main fuse
M10	Starter motor
S21	Electric starter button
T20	Voltage regulator

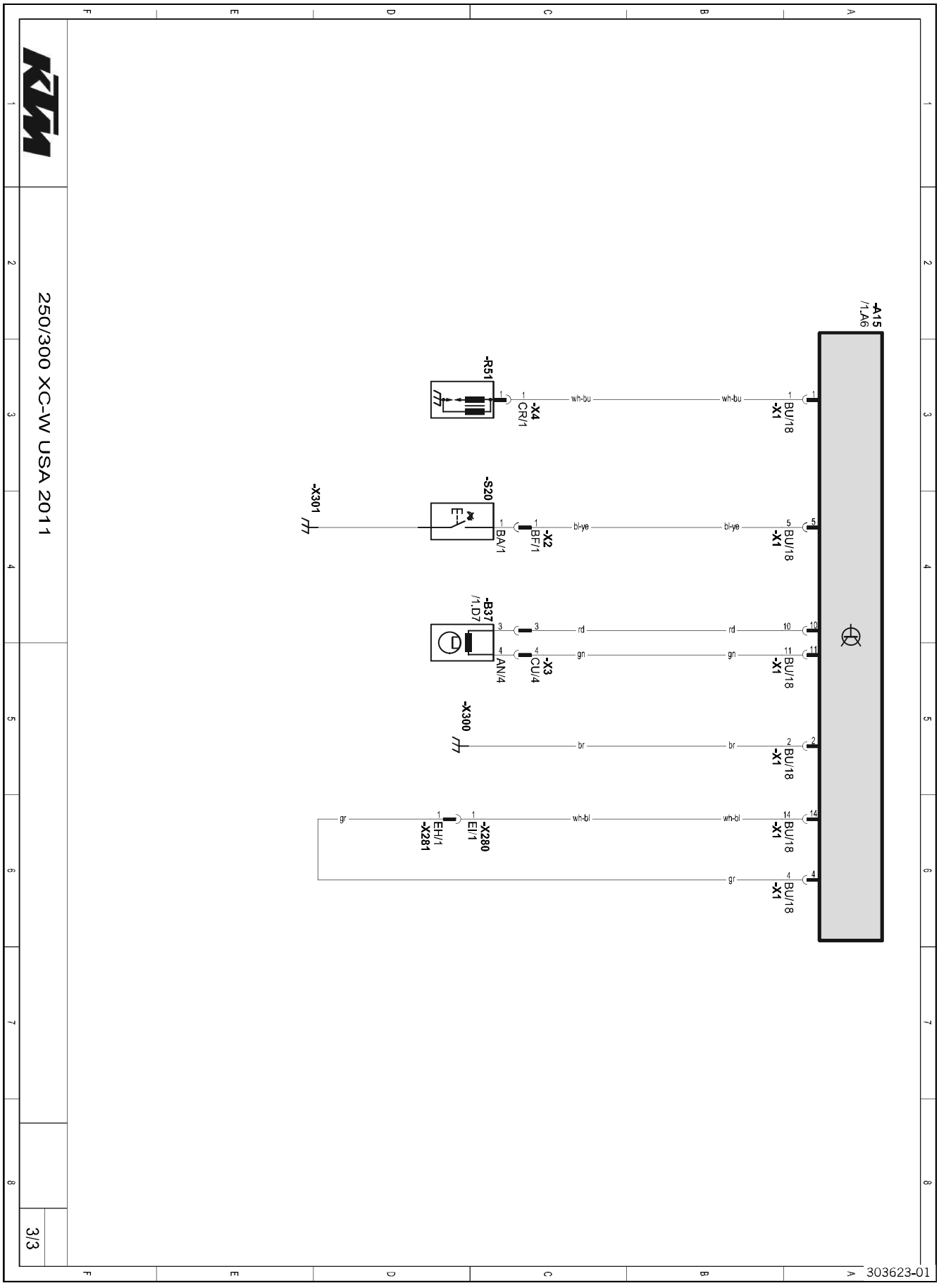
page 2 of 3 (XC-W)



Components:

B70	Wheel speed sensor, front
S30	Light switch
S36	Tripmaster switch (optional)
P10	Speedometer
X285	Connector for radiator fan (optional)

page 3 of 3 (XC-W)



Components:	
A15	CDI controller
B37	Crankshaft position sensor
R51	Ignition coil (cylinder 1)
S20	Kill switch
X280	Connector, ignition curve
X281	Connector, ignition curve

Cable colors:	
bl	Black
br	Brown
bu	Blue
gn	Green
gr	Gray
lbu	Light blue
or	Orange
pk	Pink
pu	Violet
rd	Red
wh	White
ye	Yellow

2-stroke engine oil

According to
– JASO FC (☛ p. 239)

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 standard (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**

Engine oil (15W/50)

According to
– JASO T903 MA (☛ p. 239)
– SAE (☛ p. 239) (15W/50)

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

Supplier
Motorex®
– **Top Speed 4T**

Fork oil (SAE 5)

According to
– SAE (☛ p. 239) (SAE 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**

Shock absorber oil (SAE 2,5) (50180342S1)

According to
- SAE (☛ p. 239) (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. 239) (1:60)

Mixture ratio

1:60	2-stroke engine oil (☛ p. 226) Super unleaded (ROZ 95/RON 95/PON 91) (☛ p. 227)

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

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**

Cleaning and preserving materials for metal, rubber and plastic

Guideline

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Protect & Shine**

High viscosity grease

Guideline

– KTM recommends **SKF®** products.

Supplier
SKF®

– **LGHB 2**

Long-life grease

Guideline

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Bike Grease 2000**

Lubricant (T158)

Guideline

– KTM recommends **Lubcon®** products.

Supplier
Lubcon®

– **Turmogrease® PP 300**

Lubricant (T511)

Guideline

– KTM recommends **Lubcon®** products.

Supplier
Lubcon®

– **Turmsilon® GTI 300 P**

Lubricant (T159)

Guideline

– KTM recommends **Bel-Ray®** products.

Supplier
Bel-Ray®

– **MC-11®**

Lubricant (T625)

Guideline

– KTM recommends **Molykote®** products.

Supplier
Molykote®

– **33 Medium**

Lubricant (T152)

Guideline

– KTM recommends **Bel-Ray®** products.

Supplier
Bel-Ray®

– **Molylube® Anti-Seize**

Motorcycle cleaner

Guideline

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Moto Clean 900**

Off-road chain spray

Guideline

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Chainlube Offroad**

Oil for foam air filter

Guideline

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Twin Air Liquid Bio Power**

Universal oil spray

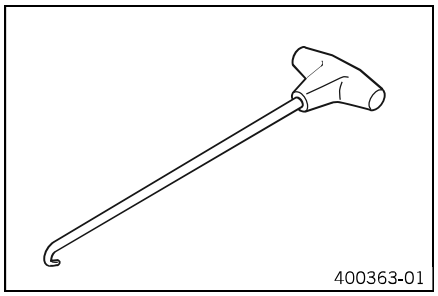
Guideline

– KTM recommends **Motorex®** products.

Supplier
Motorex®

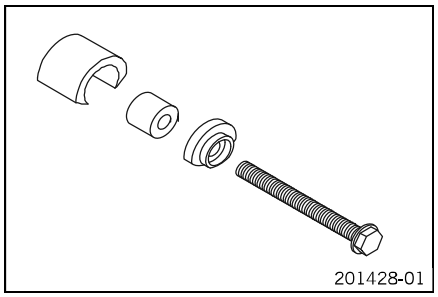
– **Joker 440 Synthetic**

Spring hooks



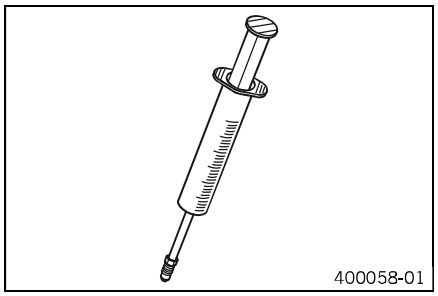
Art. no.: 50305017000

Mounting tool, heim joint



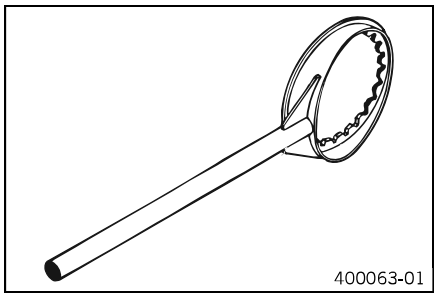
Art. no.: 50329000044

Bleed syringe



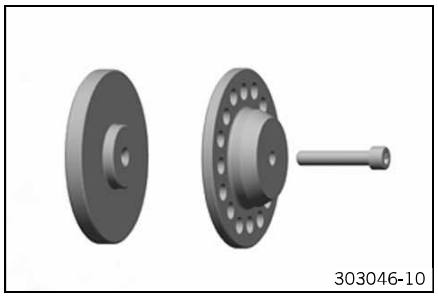
Art. no.: 50329050000

Clutch holder



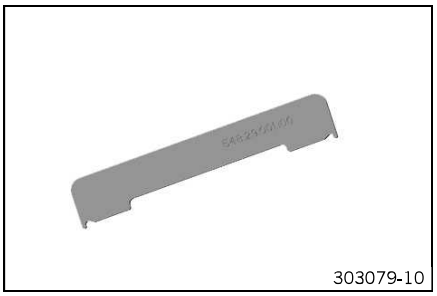
Art. no.: 54629003000

Pressing tool



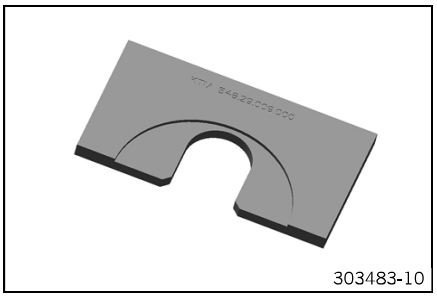
Art. no.: 54629027000

Adjustment gauge



Art. no.: 54829001100

Separator plate



Art. no.: 54829009000

Lift stand

Art. no.: 54829055000

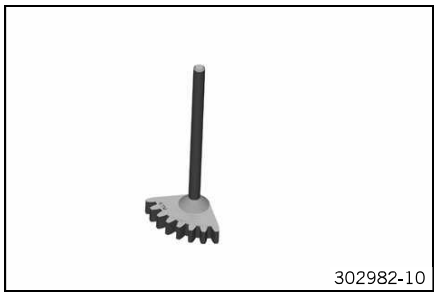
Insert for crankshaft pressing tool

Art. no.: 54829108000

Holding spanner, rotor

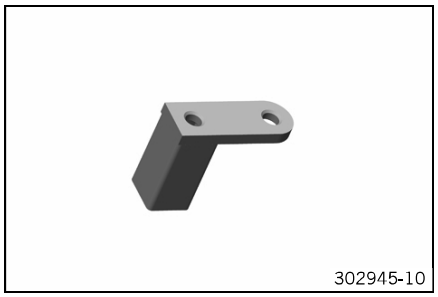
Art. no.: 55129001000

Gear segment



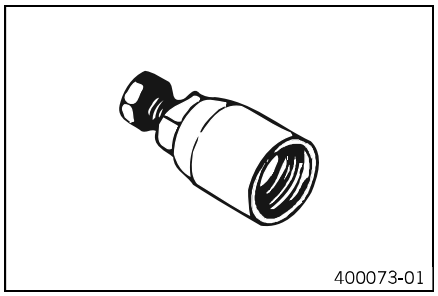
Art. no.: 56012004000

Engine fixing arm



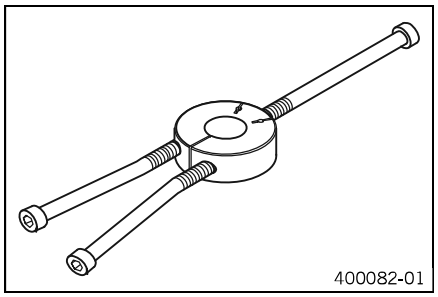
Art. no.: 56029002030

Extractor



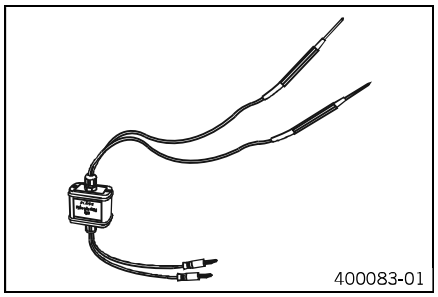
Art. no.: 58012009000

Tool for inner bearing race



Art. no.: 58429037040

Peak voltage adapter

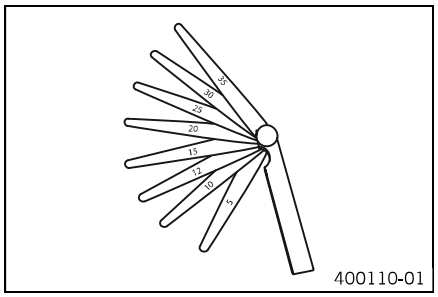


Art. no.: 58429042000

Torque wrench with various accessories in set

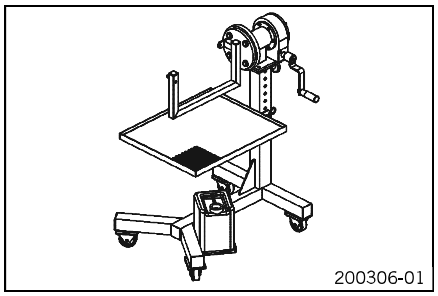
Art. no.: 58429094000

Feeler gauge



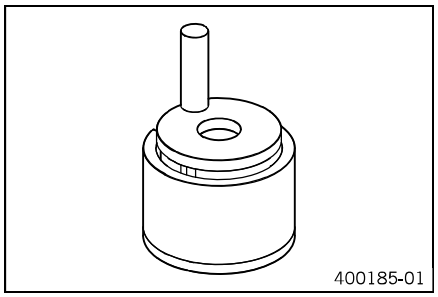
Art. no.: 59029041100

Engine work stand



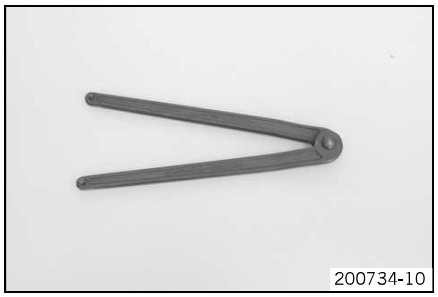
Art. no.: 61229001000

Pressing device for crankshaft, complete



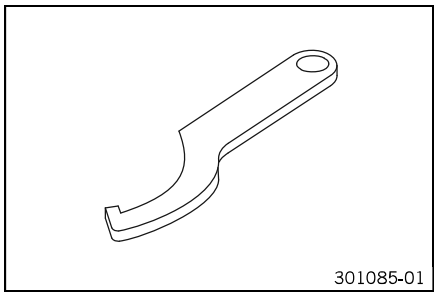
Art. no.: 75029047000

Pin wrench



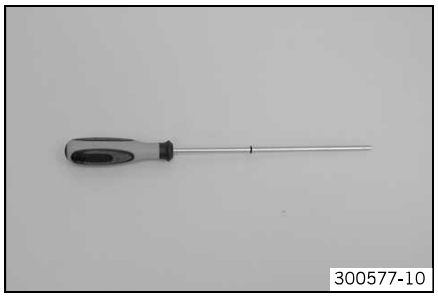
Art. no.: T103

Hook wrench



Art. no.: T106S

Depth micrometer



Art. no.: T107S

Pin

Art. no.: T120

Mounting sleeve

Art. no.: T1204

Calibration pin

Art. no.: T1205

Pressing tool

Art. no.: T1206

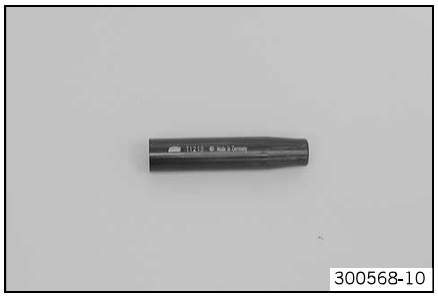
Pressing tool

Art. no.: T1207S

Centering sleeve

Art. no.: T1214

Mounting sleeve



Art. no.: T1215

Disassembly tool

Art. no.: T1216

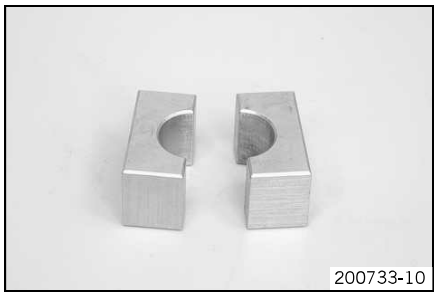
Vacuum pump

Art. no.: T1240S

Protecting sleeve

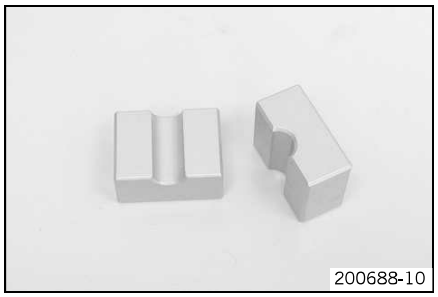
Art. no.: T1401

Clamping stand



Art. no.: T14015S

Clamping stand

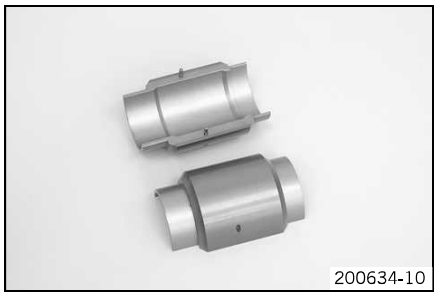


Art. no.: T14016S

Gripping tool

Art. no.: T14026S1

Assembly tool



Art. no.: T1402S

Open-end wrench

Art. no.: T14032

Clamping stand

Art. no.: T1403S

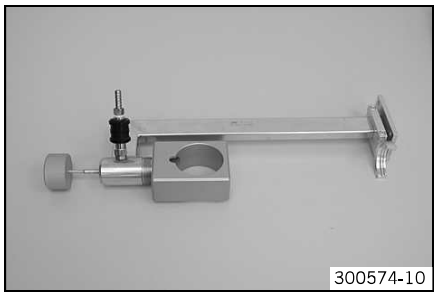
Press drift

Art. no.: T1504

Assembly tool

Art. no.: T150S

Nitrogen filling tool



Art. no.: T170S1

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.

JASO T903 MA

Different technical development directions required a new specification for 4-stroke motorcycles – the JASO T903 MA Standard. Earlier, engine oils from the automobile industry were used for 4-stroke motorcycles because there was no separate motorcycle specification. Whereas long service intervals are demanded for automobile engines, high performance at high engine speeds are in the foreground for motorcycle engines. With most motorcycles, the gearbox and the clutch are lubricated with the same oil as the engine. The JASO MA Standard meets these special requirements.

SAE

The SAE viscosity classes were defined by the Society of Automotive Engineers and are used for classifying oils according to their viscosity. The viscosity describes only one property of oil and says nothing about quality.

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01/2011 Photo: Mitterbauer

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