

# OWNER'S MANUAL 2007

250 SX-F

450 SX-F

ART. NR. 3.211.146 EN



ENGLISH

The KTM logo, consisting of the letters 'KTM' in a bold, italicized, sans-serif font, is positioned in the bottom right corner of the page.

We would like to congratulate you on your purchase of a KTM motorcycle.  
You are now the owner of a state-of-the-art sports motorcycle that guarantees to bring you lots of fun and enjoyment, provided that you clean and maintain it appropriately.

Please insert the serial numbers of your motorcycle in the boxes below

Frame number

Engine number

Stamp of dealer

## CONSUMER INFORMATION FOR AUSTRALIA ONLY

Tampering with noise control system prohibited

Owners are warned that the law may prohibit:

- (a) The removal or rendering inoperative by any person other than for purposes of maintenance, repair or replacement, of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use; and
- (b) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

All information contained is without obligation. KTM-Sportmotorcycle AG particularly reserves the right to modify any equipment, technical specifications, prices, colors, shapes, materials, services, service work, constructions, equipment and the like so as to adapt them to local conditions or to cancel any of the above items, all without previous announcement and without giving reasons. KTM may stop manufacturing certain models without previous notice. KTM shall not be held liable for any deviations of availability and/or ability to deliver, illustrations, descriptions, printing and/or other errors. The illustrated models partly contain extra equipment, which is not applied to standard models.

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In accordance with the international quality management ISO 9001 standard, KTM uses quality assurance processes that lead to the highest possible product quality.

## INTENDED PURPOSE

KTM sports motorcycles are designed and constructed to resist the usual wear and tear of normal use in competitions.

The motorcycles comply with the regulations and categories currently in effect with the leading international motorcycle associations.

## OWNER'S MANUAL

Please read this manual carefully and completely before going on your first ride. It contains a great deal of information and advice which will help you use and handle your bike properly. Only by doing so will you learn how to tune your motorbike to your specific needs and how to protect yourself against injury. Besides, this manual contains important information on motorcycle maintenance.

In your own interest, please pay particular attention to notices that are marked as follows:

### **WARNING**

- Ignoring these instructions can be dangerous to life and limb!

### **CAUTION**

- Ignoring these instructions may damage parts of the motorcycle or impair the motorcycle's traffic safety!

At the time this manual was typeset, it was up-to-date with the latest state of this production series. It cannot be completely ruled out, however, that minor discrepancies may exist resulting from further design upgrades of these motorcycles. This manual is an important part of your motorbike and should be passed on to any subsequent owner in case you decide to sell it.

## SERVICE

Observance of the service, maintenance and tuning instructions for the engine and chassis specified in the Owner's Manual is a prerequisite for faultless operation and the avoidance of premature wear. An improperly tuned chassis can lead to damage and breakage of the chassis components (see chapter on checking the basic chassis setting).

The use of the motorcycle under extreme conditions, e.g. on extremely muddy and wet terrain, can lead to higher than average wear on components such as the drive train or the brakes. In this case it may become necessary to service or replace wear parts before the service limit specified in the maintenance schedule has been reached.

The service work specified in the "Lubrication and Maintenance Schedule" must be performed by a KTM workshop and recorded in the service manual otherwise claims under the warranty shall become void. The fuels and lubricants specified in the Owner's Manual or automotive fluids with equivalent specifications must be used in accordance with the maintenance schedule.

Take special care to follow the recommended run in, inspection, and maintenance intervals. Heeding these guidelines will significantly increase the life of your motorcycle.

## **WARRANTY**

The service work specified in the "Lubrication and Maintenance Schedule" must be performed by a KTM workshop and recorded in the service manual otherwise claims under the warranty shall become void.

No claims can be filed under the warranty for damage or consequential damage caused by manipulations or conversions to the motorcycle.

## **AUTOMOTIVE FLUIDS**

The fuels and lubricants specified in the Owner's Manual or automotive fluids with equivalent specifications must be used in accordance with the maintenance schedule.

## **SPARE PARTS, ACCESSORIES**

For your own safety, use KTM-approved parts and accessories only. KTM is not liable for damage that arises in connection with the use of other products.

## **TRANSPORT**

When transporting your motorcycle, secure it with elastic straps or other mechanical devices in an upright position. Be sure that the fuel tap is closed. If the motorcycle topples over, fuel can flow out of the carburetor or fuel tank

## **ENVIRONMENT**

Offroad-Motorcycle driving is a wonderful sport and we hope that you will be able to enjoy it to the full. It may, however, involve potential problems for the environment or lead to conflicts with others. These problems or conflicts can be avoided if the motorcycle is used responsibly. To safeguard the future of motorcycle sports, make sure that you use the motorcycle in accordance with the law, show that you are environmentally conscious and respect the rights of others.

Enjoy driving your motorcycle !

KTM-SPORTMOTORCYCLE AG  
5230 MATTIGHOFEN, AUSTRIA

Attachments: Spare parts manual chassis & engine

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ENGLISH

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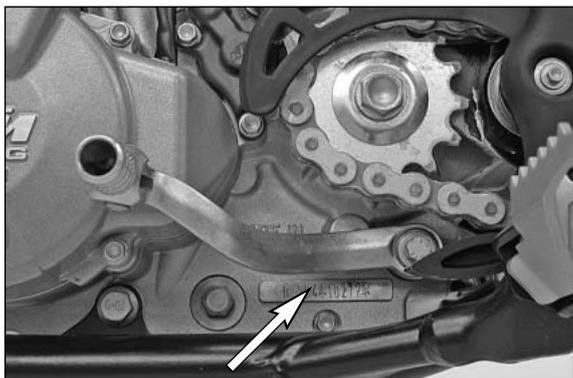
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## SERIAL NUMBER LOCATIONS »



### Chassis number

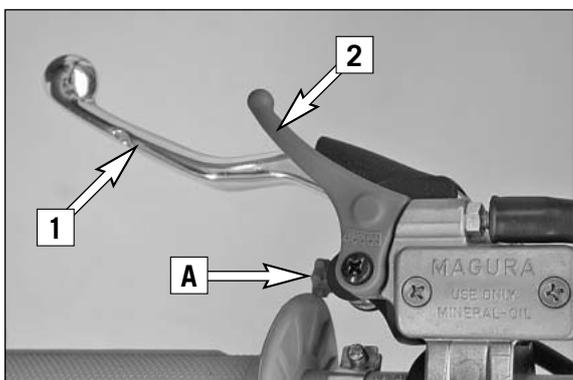
The chassis number is stamped on the right side of the steering head tube. Enter this number in the field on page no 1.



### Engine number, engine type

The engine number and the engine type are stamped into the left side of the engine below the engine sprocket. Enter this number on page 1.

## OPERATION INSTRUMENTS »



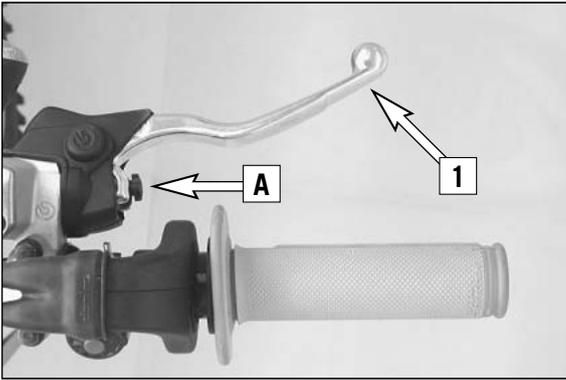
### Clutch lever

The clutch lever [1] is located on the left side of the handlebar. The adjusting screw [A] is used to change the original position of the clutch lever (see maintenance work on chassis and engine).

The clutch is hydraulically actuated and adjusts itself automatically.

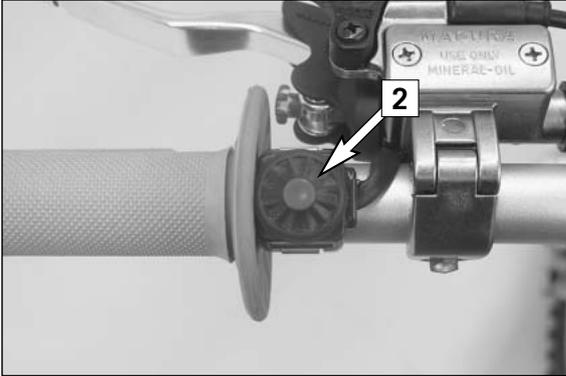
### Hot start lever

If you pull the red hot start lever [2] during the starting procedure backward, a bore in the carburetor will be opened through which the engine may take in additional air. The result is a "lean" fuel-air mixture of the type needed for hot starts.



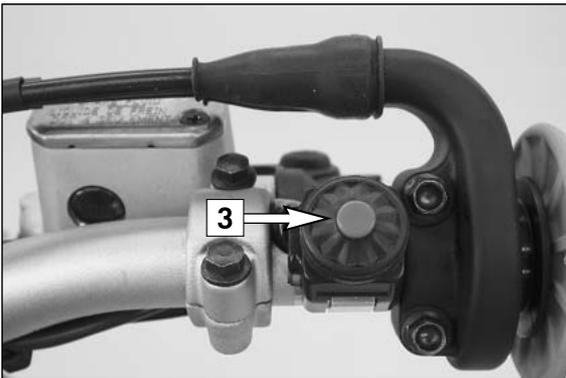
## Hand brake lever

The hand brake lever [1] is mounted on the handlebars on the right and actuates the front wheel brake. The adjusting screw [A] can be used to change the basic position of the hand brake lever (see "Maintenance").



## Short circuit button

The short circuit button [2] turns off the engine. When pressing this button, the ignition circuit is short-circuited.



## Starter button (450 SX-F)

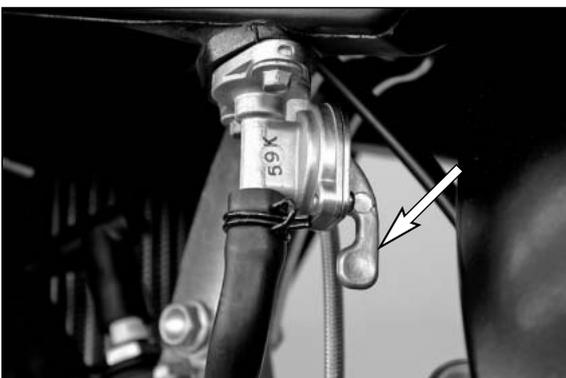
 Pushing the black starter button [3] will actuate the E-starter.



## Filler cap

**To open the filler cap:** Turn the filler cap 45° counter-clockwise.

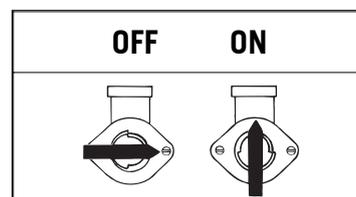
**To close the filler cap:** Put the filler cap on and turn it 45° clockwise.

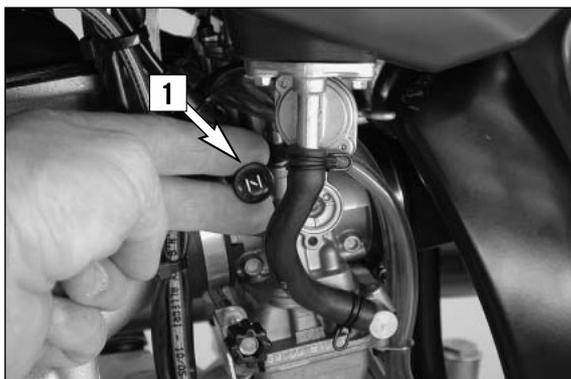


## Fuel tap

**OFF** In this position the fuel tap is closed. No fuel can flow to the carburetor.

**ON** During operation the twist grip must be turned to ON. This means that the fuel can flow to the carburetor.

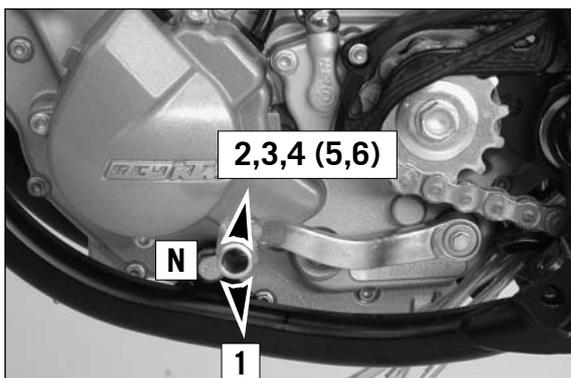




## Choke

If you pull the choke button [1] out as far as possible, a bore in the carburetor will be opened through which the engine may take in additional fuel. The result is a "fat" fuel-air mixture of the type needed for cold starts.

To deactivate the choke, push the choke button back into its basic position.



## Shift lever

The shift lever is mounted on the left side of the engine. The position of the gears is shown in the illustration. Neutral is located between first and second gear.



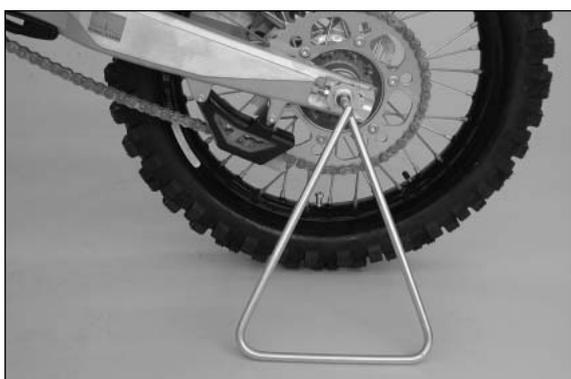
## Kickstarter (250 SX-F)

The kickstarter is mounted on the right side of the engine. Its upper part can be swivelled.



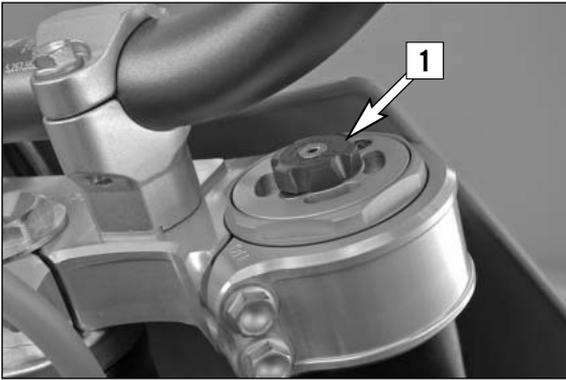
## Foot brake pedal

The foot brake pedal is located in front of the right footrest. Its basic position can be adjusted to your seat position (see maintenance work).



## Plug in stand

The plug-in stand can be attached to the wheel spindle on the left side of the motorcycle.



## Compression damping of fork

Hydraulic compression damping determines the reaction when the fork is compressed. The degree of compression can be adjusted with adjusting screws at the top of the fork legs.

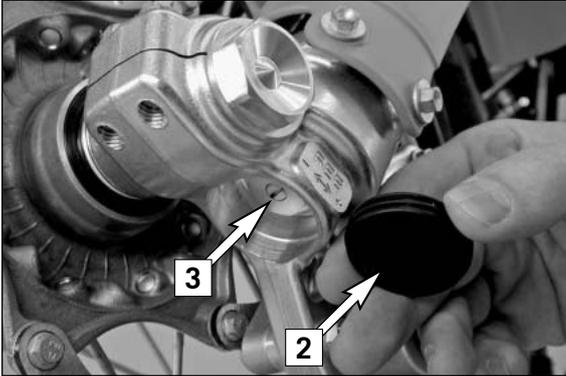
Turn the adjusting screws [1] clockwise to increase damping, turn it counterclockwise to reduce damping during compression.

### STANDARD ADJUSTMENT

- turn adjusting screw clockwise as far as it will go
- turn it back by as many clicks as are specified for the relevant type of fork

WP 14.18.7C.03: 15 clicks

WP 14.18.7C.05: 15 clicks



## Rebound damping of fork

Hydraulic rebound damping determines the reaction when the fork is rebound. Remove the protecting cap [2].

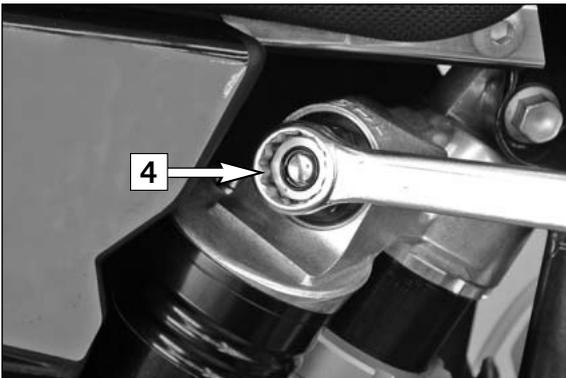
By turning the adjusting screw [3] (REB), the degree of damping of the rebound can be adjusted. Turn the knob clockwise to increase damping, turn it counterclockwise to reduce damping during rebounding.

### STANDARD ADJUSTMENT

- turn adjusting screw clockwise as far as it will go
- turn it back by as many clicks as are specified for the relevant type of fork

WP 14.18.7C.03: 20 clicks

WP 14.18.7C.05: 21 clicks



## Damping action during compression of shock absorber

The shock absorber can synchronize the compression damping in the low and high-speed range separately (Dual Compression Control).

Low and high speed refers to the movement of the shock absorber during compression and not to the speed of the motorcycle.

The low and high-speed technology overlaps.

The low-speed setting is primarily for slow to normal shock absorber compression rates.

The high-speed setting is effective at fast compression rates.

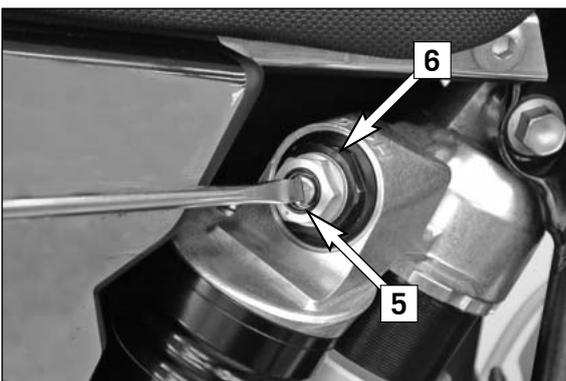
Turning in a clockwise direction will increase the damping, turning counterclockwise will decrease the damping.

### STANDARD HIGH-SPEED SETTING:

- turn the adjusting screw [4] to the limit in a clockwise direction using a box wrench.
- unscrew the respective number of turns for the specific type of shock absorber in a counterclockwise direction.

WP 12.18.7C.03: 1 turn

WP 12.18.7C.05: 1 turn



### STANDARD LOW-SPEED SETTING:

- turn the adjusting screw [5] to the limit in a clockwise direction using a screwdriver.
- unscrew the respective number of clicks for the specific type of shock absorber in a counterclockwise direction.

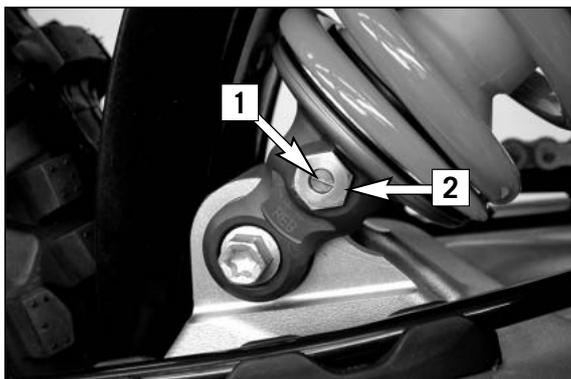
WP 12.18.7C.03: 15 clicks

WP 12.18.7C.05: 15 clicks

## ⚠ WARNING

The damping unit of the shock absorber is filled with high-compression nitrogen. Never try to take the shock absorber apart or to do any maintenance work yourself. Severe injuries could be the result.

Never unscrew the black screw connection [6] (24mm).



### Rebound damping of shock absorber

By using the adjusting screw [1], the degree of damping of the rebound can be adjusted. Turn the knob clockwise to increase damping, turn it counterclockwise to reduce damping during rebounding.

#### STANDARD ADJUSTMENT:

- turn the adjusting screw clockwise to the stop.
- then turn the adjusting screw counterclockwise, counting the number of clicks that corresponds to the respective type of shock absorber.

WP 12.18.7C.03: 25 clicks

WP 12.18.7C.05: 25 clicks

#### **⚠ WARNING**

The damping unit of the shock absorber is filled with high-compression nitrogen. Never try to take the shock absorber apart or to do any maintenance work yourself. Severe injuries could be the result. Never unscrew the screw connection [2] (15mm).

## Instructions for initial operation

- Make sure the work for the “pre-delivery inspection“ was performed by your authorized KTM workshop. The DELIVERY CERTIFICATE and SERVICE MANUAL will be handed over when you pick up your vehicle.
- Read these operating instructions carefully before your first ride.
- Familiarize yourself with the operating elements.
- Set the clutch lever, the handbrake lever, and the footbrake pedal to the positions that are most convenient for you.
- Get used to handling the motorcycle on an empty parking lot or open space, before starting on a longer drive. Also try to drive as slowly as possible and in a standing position, to improve your feeling for the vehicle.
- Do not drive along off-road tracks which go beyond your ability and experience.
- Hold the handlebars with both hands and leave your feet on the foot rests while driving.
- Remove your foot from the foot brake lever when you are not braking. If the foot brake lever is not released the brake pads rub continuously and the braking system is overheated.
- Do not make any alterations to the motorcycle and always use ORIGINAL KTM SPARE PARTS. Spare parts from other manufacturers can impair the safety of the motorcycle.
- Motorcycles are sensitive to alterations in the distribution of weight. If you are taking luggage with you, this should be secured as close as possible to the middle of the vehicle; distribute the weight evenly between the front and rear wheel. Never exceed the maximum permissible laden weight and the axle weights. The maximum permissible laden weight is comprised of the following components:
  - Motorcycle ready for operation and tank full
  - Driver with protective clothing and helmet.
- Pay attention to the running-in procedure.

## WARNING

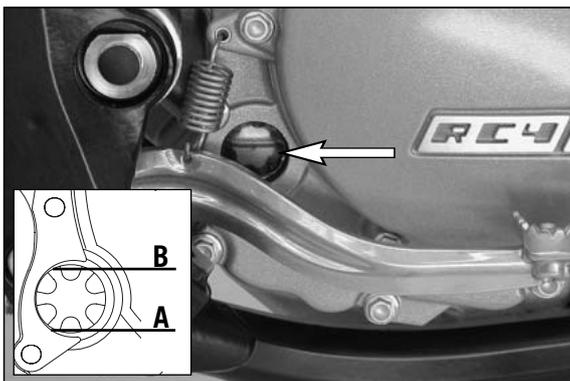
- Dress properly for the ride. Smart KTM drivers always wear a helmet, boots, gloves and the right Enduro/Motocross clothing. Protective clothing should be conspicuous to make sure other road users see you in time.
- Do not drive after drinking alcohol.
- Always switch on the light while driving to make sure other road users see you in time.
- Only use accessories approved by KTM.
- Always use front and rear tires with the same tread pattern.
- The 250/450 SX-F models are designed and built for 1 person only. No passengers are permitted.
- Adjust your speed to the conditions and your driving skill.
- Drive cautiously on unfamiliar roads or in unfamiliar terrain.
- Always have a friend accompany you on his bike when driving off road so you can help each other if you run into trouble.
- Replace the helmet visor or the lenses in your glasses in time. A scratched visor or scratched lenses can make you practically blind in back light.
- Never leave your motorcycle running unattended.
- 250/450 SX-F models are not permitted on public roads and highways.
- When riding your motorcycle, please remember that excessive noise may disturb others.

## Running in

Even very precisely machined sections of engine components have rougher surfaces than components which have been sliding across one another for quite some time. Therefore, every engine needs to be broken in.

For this reason, do not load the engine more than 50% of its capacity during the first 3 operating hours. Besides, the engine speed must not exceed 7000 rpm. Avoid going full-throttle!

In the following 12 operating hours, you may load the engine up to 75% of its capacity.



## Check the following before each start

When you start off, the motorcycle must be in perfect technical condition. For safety reasons, you should make a habit of performing an overall check of your motorcycle before each start.

The following checks should be performed:

### 1 CHECK THE OIL LEVEL

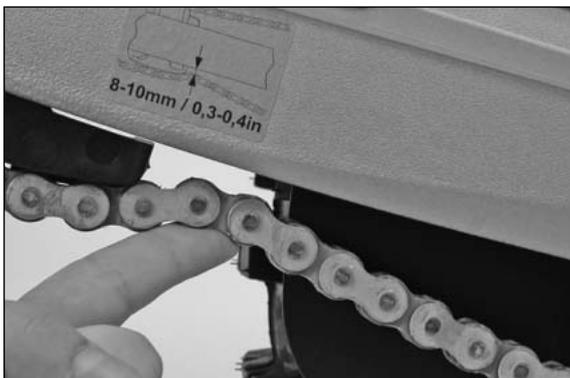
Insufficient oil results in premature wear and consequently to engine damage.

### 2 FUEL

Check that there is sufficient fuel in the tank; when closing the filler cap, check that the tank venting hose is free of kinks.

### 3 CHAIN

A loose chain can fall from the chain wheels; an extremely worn chain can tear, and insufficient lubrication can result in unnecessary wear to the chain and chain wheels. Excessive tensioning of the chain will put additional load on the components of the secondary drivetrain (chain, bearings of transmission and rear wheel). Aside from resulting in premature wear, if worst comes to worst the chain may rupture or the countershaft of the transmission may break.



### 4 TIRES

Check for damaged tires. Tires showing cuts or dents must be replaced. The tread depth must comply with the legal regulations. Also check the air pressure. Insufficient tread and incorrect air pressure deteriorate the driving performance.

### 5 BRAKES

Check correct functioning of the braking system. Check for sufficient brake fluid in the reservoir. The reservoirs have been designed in such a way that brake fluid does not need to be refilled even when the brake pads are worn. If the level of brake fluid falls below the minimum value, this indicates a leak in the braking system or completely worn out brake pads. Arrange for the braking system to be checked by a KTM specialist, as complete failure of the braking system can be avoided.

Also check the state of the brake hose and the thickness of the brake linings.

Check free travel at the hand brake lever and foot brake lever.



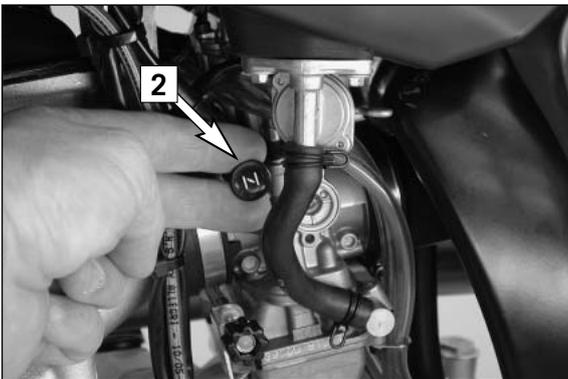
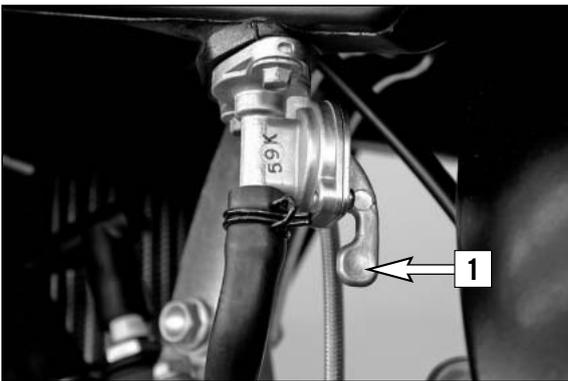
### 6 CABLES

Check correct setting and easy running of all control cables.

### 7 COOLING FLUID

Check the level of the cooling fluid when the engine is cold.





## Starting when the engine is cold

- 1 Open the fuel tap [1].
- 2 Swing up the side stand or center stand.
- 3 Put the gear in neutral.
- 4 Operate the choke [2].
- 5 Leave throttle closed and kick the kickstarter briskly ALL THE WAY or actuate the E-starter.

### ⚠ WARNING

- If you want to start the engine, make sure that you always put on sturdy motorcycle boots in order to avoid injuries. You might slip off the kickstarter, or the engine may kick back.
- Always kick the kickstarter briskly all the way without opening the throttle. If you do not Kick hard enough, with an open throttle grip, the kick-back hazard will be higher.
- Do not start the engine and allow it to idle in a closed area. Exhaust fumes are poisonous and can cause loss of consciousness and death. Always provide adequate ventilation while the engine is running.
- Always verify that the transmission has been set to idle (neutral) before actuating the starter button. If you start the motorcycle with a gear engaged, the motorcycle will move forward.

### ! CAUTION

- Maximal period for continuous starting: 5 seconds. Wait at least 5 seconds before trying again.
- Don't ride your motorcycle with full load and don't rev up the engine when cold because the piston is warming up faster than the water cooled cylinder and can cause engine damage.

NOTE: If you have trouble starting the motorcycle, this could be due to old fuel in the float chamber. The easily inflammable components of the new fuels evaporate during longer periods of standstill. When the motorcycle has been out of operation for more than a week, it is therefore recommended to drain the old fuel from the float chamber. The engine will immediately start off when the float chamber is filled with new fuel.

## Starting when the engine is warm

- 1 Open the fuel tap [1].
- 2 Swing up the side stand.
- 3 Put the gear in neutral.
- 4 Pull the hot start lever
- 5 Leave throttle closed and kick the kickstarter briskly ALL THE WAY or actuate the E-starter.

## What to do when the engine is "flooded"

The fork legs must be partly disassembled to change the spring preload (see WP manual). Pretension spacers in various thicknesses are available (see spare parts catalog).

NOTE:

The carburetor has an accelerator pump. Every time you open the throttle, fuel will be injected into the intake passage. When starting, be sure that you open the throttle completely only once.

## Starting off

Pull the clutch lever. Put the engine into first gear, slowly release the clutch lever and open the throttle at the same time.

## Shifting/Riding

You are now in first gear, referred to as the drive or uphill gear. Depending on the conditions (hill size etc.), you can shift to a higher gear. Close throttle, at the same time pull clutch lever in and shift to the next higher gear. Let clutch lever go again and accelerate. If you turned on the choke, make sure you turn it off again as soon as engine is warm.

When you reach full speed through opening the throttle all the way, turn throttle back to 3/4; the speed hardly decreases although the engine will use less gas. Only give as much gas as the engine can handle. Through quick and high revving of the throttle, the fuel usage increases.

By shifting down, use the brakes if necessary and close the throttle at the same time. Pull the clutch lever and shift down to the next gear. Let clutch lever go slowly and open the throttle or shift down again.

### NOTE:

Dedicated to nothing but offroad racing, 250/450 SX-F-models make no compromises in their design. As such, they do not include any radiator fan, and the size of the radiator is dimensioned for optimum ergonomics.

In normal racing, the cooling system is sufficient.

If you use your motorbike in other conditions, please note that: turn off the engine if you intend to run your motorcycle in idle or at a standstill for longer periods of time (more than 2 minutes). Avoid letting the clutch slip frequently and for extended periods. This would cause the engine oil to heat up, thereby heating up the cooling system. You should drive at low speeds (4-stroke style - letting the engine pull you) and not at high speeds not by letting the clutch slip (2-stroke style).

### ⚠ WARNING

- After falling with the motorcycle, check all functions thoroughly before starting up operations again.
- A twisted handlebar must always be replaced. Do not adjust the handlebar, it will lose stability.

### ! CAUTION

- High rpm rates when the engine is cold have an adverse effect on the life of your engine. We recommend you run the engine in a moderate rpm range for a few miles giving it a chance to warm up. After that no further precautions in this respect need to be taken. The engine has reached its operating temperature as soon as the radiators become warm.
- Never have the throttle wide open when changing down to a lower gear. The engine will over-rev, damaging the valves. In addition, the rear wheel locks so that the motorcycle can easily get out of control.
- If any abnormal vibrations occur while driving, check that the engine fastening bolts are tight.
- In the event that, while riding on your motorcycle, you notice any unusual operation-related noise, stop immediately, turn the engine off, and contact an authorized KTM dealer.

## Braking

Close throttle and apply the hand and foot brakes at the same time. When driving on sandy, wet or slippery ground use mainly the rear wheel brake. Always brake with feeling, blocking wheels can cause you to skid or fall. Always finish braking before you enter a curve. Also change down to lower gears depending on your speed.

When driving down hill, use the braking effect of the engine. Change down one or two gears but do not overspeed the engine. In this way, you will not need to brake so much and the brakes will not overheat.

### ⚠ WARNING

- In case of rain, after washing the motorcycle, after rides through water and in case of rides on wet off-road tracks, humid or dirty brake discs can delay the braking effect. The brakes must be pulled until they are dry or clean.
- Dirty brake discs cause increased wear of brake pads and brake discs.
- When you brake, the brake discs, brake pads, brake caliper and brake fluid heat up. The hotter these parts get, the weaker the braking effect. In extreme cases, the entire braking system can fail.
- If the resistance in the hand brake lever or foot brake pedal feels "spongy" (too much play), this is an indication that something is wrong with the brake system. Don't ride your motorcycle anymore without first having the brake system looked over by a KTM dealer.

## Stopping and parking

Apply the brakes fully and put the engine into neutral. To turn off the engine, push the short-circuit button with the engine at idling speed until the engine stops. Turn the fuel tap to the OFF position, park on an area where the ground is firm.

### ⚠ WARNING

Motorcycle engines produce a great amount of heat while running. The engine, exhaust pipe, muffler, brake rotors, and shock absorbers can become very hot. Do not touch any of these parts after operating the motorcycle, and take care to park it where pedestrians are not likely to touch it and get burned.

### ! CAUTION

- Close the fuel tap when leaving your vehicle. Otherwise the carburettor can flood and fuel will enter the engine.
- Never park your motorcycle in places where there are fire hazards due to dry grass or other easily flammable materials.

## Fuel

The racing engine needs unleaded fuel with at least RON 95 (USA = Premium RON 91).

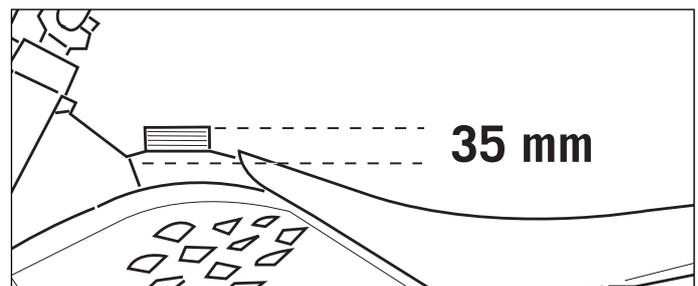
### ! CAUTION

Use leaded or unleaded premium grade gasoline (95 octanes). Never use gasoline having less than 95 octanes because it may damage the engine.

### ⚠ WARNING

Gasoline is highly flammable and poisonous. Extreme caution should be used when handling gasoline. Do not refuel the motorcycle near open flames or burning cigarettes. Always switch off the engine before refuelling. Be careful not to spill gasoline on the engine or exhaust pipe while the engine is hot. Wipe up spills promptly. If gasoline is swallowed or splashed in the eyes, seek a doctor's advice immediately.

Fuel expands when its temperature rises. Therefore do not fill the tank to the top (see fig.).



# PERIODIC MAINTENANCE »

<b>250/450 SX-F 2007</b> <b>A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY WHICH SAVES MONEY!</b>		<b>1st service after 3 hours or 20 l fuel</b>	<b>every 10 hours or 70 l fuel</b>
<b>ENGINE</b>	Change engine oil, oil filter	●	●
	Clean oil screen and drain plug magnet	●	●
	Replace spark plug (after 30 hours)		
	Check and adjust valve clearance	●	●
	Check engine mounting bolts for tightness	●	●
	Clean the spark-plug connector and check for a tight fit	●	●
	Check the screws on the kick starter and shift lever for a tight fit	●	●
<b>CARBURETOR</b>	Check carburetor connection boot for cracks and leaks		●
	Check idle speed setting	●	●
	Check vent hoses for damage or bends	●	●
<b>ADD-ON PARTS</b>	Check cooling system for leaks, check quantity of antifreeze	●	●
	Check exhaust system for leaks and fitment		●
	Check cables for damage, smooth operation and bends, adjust and lubricate	●	●
	Check fluid level of the clutch master cylinder	●	●
	Clean air filter and filter box		●
	Check electric wires for damage and bends		●
<b>BRAKES</b>	Check brake fluid level, lining thickness, brake discs	●	●
	Check brake lines for damage and leaks	●	●
	Check/function smooth operation and adjust free travel of handbrake/foot brake lever	●	●
	Check the screws and guide bolts on the brake system for a tight fit	●	●
<b>CHASSIS</b>	Check shock absorber and fork for leaks and function	●	●
	Clean fork dust bellows		●
	Bleed fork legs		●
	Check swing arm bearings		●
	Check/adjust steering head bearings	●	●
	Check tightness of chassis screws (triple clamps, fork leg axle passage, swingarm, shock absorber)	●	●
<b>WHEELS</b>	Check/adjust steering head bearings	●	●
	Check tires and air pressure	●	●
	Check chain, chain joint, rear sprockets and chain guides for wear, fit and tension	●	●
	Lubricate chain, clean and grease the adjusting screws on the chain tensioner	●	●
	Check clearance of wheel bearings	●	●

<b>250/450 SX-F 2007</b> <b>IMPORTANT RECOMMENDED MAINTENANCE WORK THAT CAN BE CARRIED OUT BY EXTRA ORDER</b>		
	<b>at least once a year</b>	<b>every 2 years</b>
Complete maintenance of fork	●	
Complete maintenance of shock absorber		●
Clean and grease steering head bearings and gasket elements	●	
Clean and adjust carburetor	●	
Treat electric contacts and switches with contact spray	●	
Change hydraulic clutch fluid	●	
Change brake fluid	●	

IF MOTORCYCLE IS USED FOR COMPETITION 10 HOURS SERVICE SHOULD BE CARRIED OUT AFTER EVERY RACE. Service intervals should never be exceeded by more than 2 hours or 15 liters of fuel. Maintenance work done by KTM authorised workshops is not a substitute for care and checks done by the rider.

# PERIODIC MAINTENANCE »

<b>250/450 SX-F 2007</b>				
<b>IMPORTANT CHECKS AND MAINTENANCE TO BE CARRIED OUT BY THE RIDER</b>				
	<b>Before each start</b>	<b>After every cleaning</b>	<b>For cross-country use</b>	<b>at least once a year</b>
Check oil level	●			
Check brake fluid level	●			
Check brake pads for wear	●			
Lubricate and adjust cables and nipples		●		
Bleed fork legs regularly			●	
Remove and clean fork dust bellows regularly			●	
Clean and lubricate chain, check tension and adjust if necessary		●	●	
Clean air filter and filter box			●	
Check tires for pressure and wear	●			
Check cooling fluid level	●			
Check fuel lines for leaks	●			
Drain and clean float chamber		●		●
Check all control elements for smooth operation	●			
Check brake performance	●	●		
Treat blank metal parts (with the exception of brake and exhaust system) with wax-based anti corrosion agent		●		
Check tightness of screws, nuts and hose clamps regularly				●

<b>250/450 SX-F 2007</b>					
<b>RECOMMENDED INSPECTIONS OR MAINTENANCE WORK BY THE AUTHORIZED KTM WORKSHOP FOR COMPETITIVE RACING (ADDITIONAL ORDER FOR THE KTM WORKSHOP)</b>					
	<b>every 10 hours</b>	<b>every 20 hours</b>	<b>every 40 hours</b>	<b>every 60 hours</b>	<b>every 80 hours</b>
	<b>70 liter</b>	<b>140 liter</b>	<b>270 liter</b>	<b>400 liter</b>	<b>540 liter</b>
A 100 liter fuel consumption is equivalent to approx. 15 operating hours					
Check the clutch disks for wear		●	●	●	●
Check the length of the clutch springs		●	●	●	●
Check the clutch drive for indentations		●	●	●	●
Check the outer clutch hub for indentations		●	●	●	●
Check the cylinder and piston for wear (250 SX-F)			●		●
Check the cylinder for wear and replace the piston (450 SX-F)			●		●
Check the groove on the piston pin retainer for wear (visual check)			●		●
Check the camshaft for wear (visual check)			●		●
Check the spring cap for wear			●		●
Check the eccentricity of the valve disk			●		●
Check the valve guides for wear			●		●
Replace the valves (250 SX-F)					●
Replace the valves (450 SX-F)			●		●
Replace the valve springs			●		●
Check the function of the chain tensioner			●		●
Check the eccentricity of the crankshaft journal			●		●
Replace the conrod bearings			●		●
Check piston pin bearing			●		●
Replace the crankshaft main bearings (250 SX-F)					●
Replace the crankshaft main bearings (450 SX-F)			●		●
Check the entire transmission including the roller and bearings for wear			●		●
Check the length of the bypass valve spring			●		●
Replace the glass-fiber yarn filling in the silencer	●	●	●	●	●
Replace the sealing cup for the foot brake cylinder		●	●	●	●
Replace the throttle slide, jet needle and main jet holder (every 200 hours)					

**NOTE:**

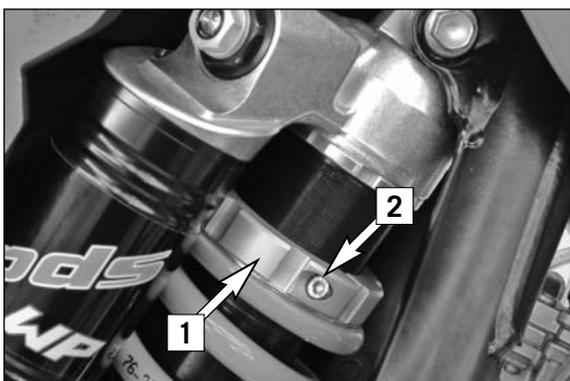
If the inspection establishes that permissible tolerances are exceeded, the respective components must be replaced.

## ⚠ WARNING

Maintenance and adjusting work marked with an asterisk (\*) requires expert skills and technical know-how. For your own safety, always have such work performed by a specialized KTM dealer where your motorcycle will be optimally serviced by appropriately qualified, skilled staff.

## ! CAUTION

- If using a power washer, do not point the water jet at the electric components, plugs, cables, bearings, carburetor, etc. The high pressure will cause water to penetrate into the components and can cause them to malfunction or lead to premature wear.
- When transporting your KTM, ensure that it is held upright with restraining straps or other mechanical fastening devices and that the fuel tap is in the OFF position - if the motorcycle should fall over, no fuel can leak from the carburetor or fuel tank
- Only use special screws with an appropriate thread length supplied by KTM to fix the spoilers on the tank. Using other screws or longer screws can cause leaks in the tank through which fuel can flow out.
- Do not use toothed washers or spring rings with the engine fastening screws, as these work into the frame parts and keep working loose. Instead, use self-locking nuts.
- Let your motorcycle cool down before beginning any maintenance work in order to avoid getting burned.
- Dispose oils, fatty matters, filters, fuels, washing detergents etc. properly.
- Under no circumstances may used oil be disposed of in the sewage system or in the open countryside. 1 liter of used oil contaminates 1,000,000 liters of water.



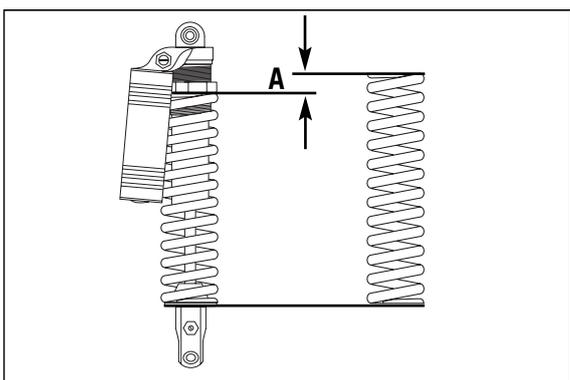
### Changing the spring preloading of the shock absorber

The spring preload can be changed by turning the adjusting ring [1]. For this purpose, you should dismount the shock absorber and clean it thoroughly.

#### NOTE:

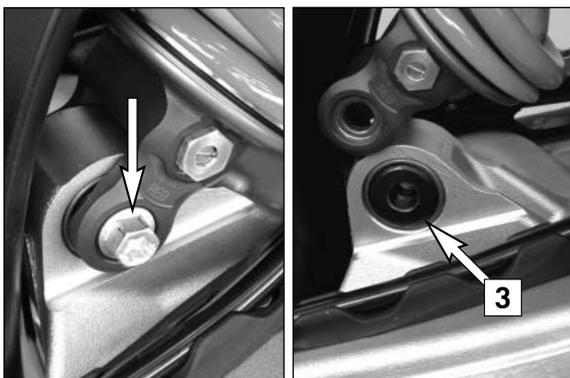
- Before changing the spring preload note down the basic setting, e.g. how many threads are visible above the adjusting ring.
- One rotation of the adjusting ring [1] changes the spring pretension by approximately 1.0 mm.

Loosen the clamping screw [2] and use the hook wrench contained in the vehicle tool set to turn the adjusting ring as desired. Turning it counterclockwise will reduce the preload, turning it clockwise will increase the preload. After readjusting the clamping screw [2], tighten it to 8 Nm.



#### ADJUSTMENT VALUES – SPRING PRELOAD A

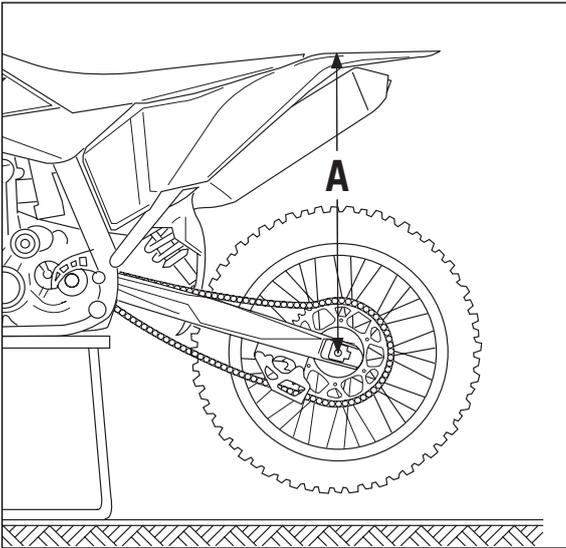
- WP 12.18.7C.03: 5 mm (0,2 in)
- WP 12.18.7C.05: 5 mm (0,2 in)



### Pivot bearing

The pivot bearing [3] for PDS suspension struts at the swinging fork is Teflon-coated and must not be lubricated with either grease or other lubricants. Grease and other lubricants cause the Teflon coat to dissolve, whereby the bearing's lifecycle will be reduced dramatically.

When cleaning your bike with a high-pressure cleaner, do not aim the high-pressure spray directly at the pivot bearing.

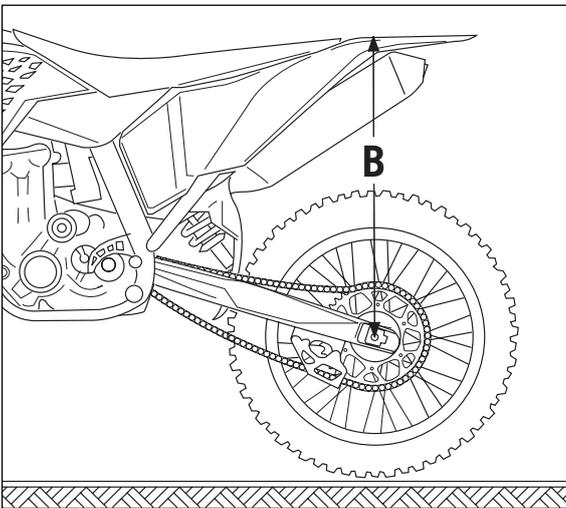


### Basic suspension setup for the weight of the driver

To achieve maximum handling performance and to prevent the fork, shock absorber, swing arm and frame from being damaged, the basic setup of the suspension components must be suitable for your weight. At delivery, KTM's offroad motorcycles are set to accommodate a driver weighing 75 - 85 kg (wearing full protective clothing). If your weight exceeds or falls short of this range, you will need to adjust the basic setup for the suspension components accordingly. Minor deviations in weight can be compensated by adjusting the spring preload. Different springs must be installed for larger deviations.

### Checking the shock absorber and spring

You can establish whether or not the shock absorber spring is suitable for your weight by checking the riding sag. The static sag must be correctly adjusted before the riding sag can be determined.



### Determining the static sag of the shock absorber

The static sag should be as close as possible to 33 mm (250 SX-F) or 35 mm (450 SX-F). Deviations of more than 2 mm can strongly influence the motorcycle's performance.

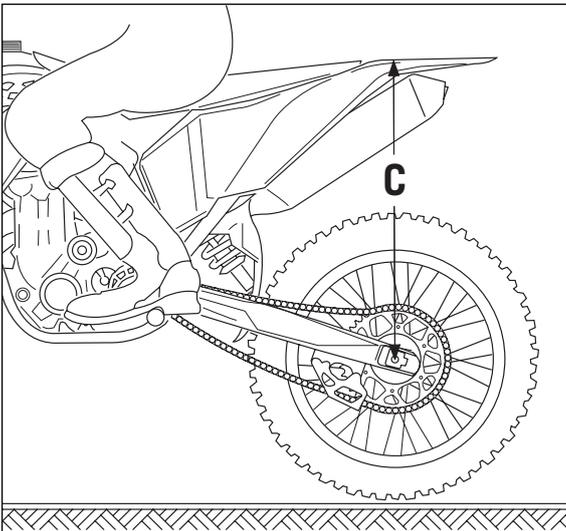
Procedure:

- Jack up the motorcycle until the rear wheel no longer touches the ground.
- Measure the vertical distance between the rear wheel axle and a fixed point (e.g. a mark on the side cover) and write it down as dimension A.
- Place the motorcycle on the ground again.
- Ask a helper to hold the motorcycle in vertical position.
- Measure the distance between the rear axle and the fixed point again to establish dimension B.
- The static sag is the difference between dimensions A and B.

EXAMPLE:

Motorcycle jacked up (dimension A)	.....	.600 mm
Motorcycle on ground, unloaded (dimension B)	.....	- 567 mm
Static sag	.....	.33 mm

If the static sag is lower, the spring preload of the shock absorber must be reduced, if the static sag is higher, the spring preload must be increased. See chapter "Changing the spring preload of the shock absorber."



### Determining the riding sag of the shock absorber

- Have a helper hold the motorcycle while you sit on the bike in a normal seating position (feet on the footrests) wearing full protective clothing and bounce up and down a few times to allow the rear wheel suspension to become level.
- Stay on the bike and have another person measure the distance between the same two points and write it down as dimension C.
- The riding sag is the difference between dimensions A and C.

EXAMPLE:

Motorcycle jacked up (dimension A)	.....	.600 mm
Motorcycle on ground, loaded (dimension C)	.....	- 493 mm
Riding sag	.....	.107 mm

The riding sag should lie between 102 and 112 mm.

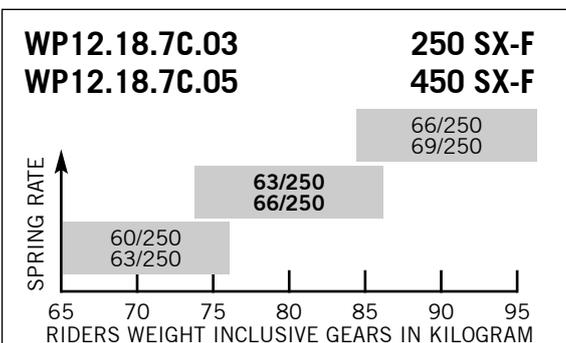
If the riding sag is less than 102 mm, the spring is too hard (the spring rate is too high). If the riding sag is more than 112 mm, the spring is too soft (the spring rate is too low).

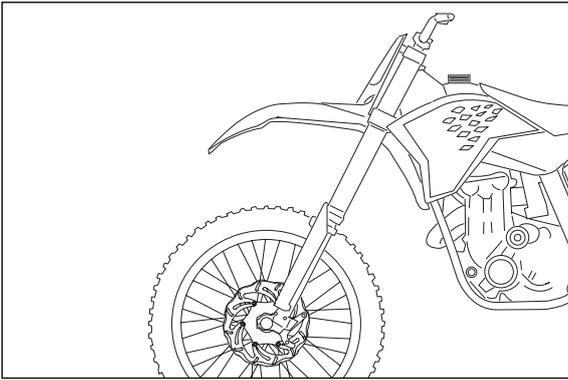
The spring rate is written on the outside of the spring (e.g. 63/250). The type number of the shock absorber is embossed on the bottom of the tank.

The illustrations show which spring should be installed. The standard spring is shown in bold print.

After installing a different spring, readjust the static sag to 33/35 mm (± 2 mm).

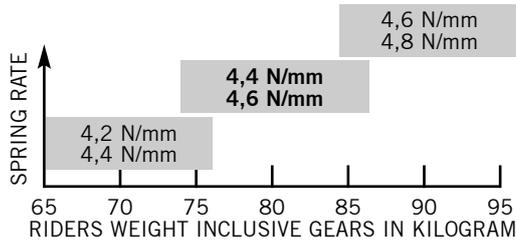
According to our experience, the damping rate of the compression stage can remain unchanged. The damping rate of the rebound stage can be reduced by a few clicks for a softer spring or increased by a few clicks for a harder spring.





**WP14.18.7C.03**  
**WP14.18.7C.05**

**250 SX-F**  
**450 SX-F**



## Checking the basic setup of the telescopic fork

The precise riding sag of the telescopic fork cannot be determined for various reasons. Similar to the shock absorber, smaller deviations in your weight can be compensated by adjusting the spring preload. However, if your telescopic fork bumps frequently (hard end stop during compression), you should install harder fork springs to avoid damaging the telescopic fork and frame.

## Changing the spring preload on the telescopic fork

The fork legs must be partly disassembled to change the spring preload (see WP manual). Pretension spacers in various thicknesses are available (see spare parts catalog).

### NOTE:

WP precisely adjusts the spring pressure by inserting pretension spacers. Fluctuations in production are compensated with pretension spacers in various heights. This can cause the fork springs in the fork legs to have different degrees of pretension. Fork springs and pretension spacers should always stay together.

## Replacing fork springs

If you weigh less than 75 kg or more than 85 kg, you should install the respective fork springs. The correct spring rate is shown in the illustrations. The standard spring is shown in bold print. The type number of the telescopic fork is embossed on the caps on the top of the telescopic fork.

If you are uncertain which spring to use, contact your KTM workshop.

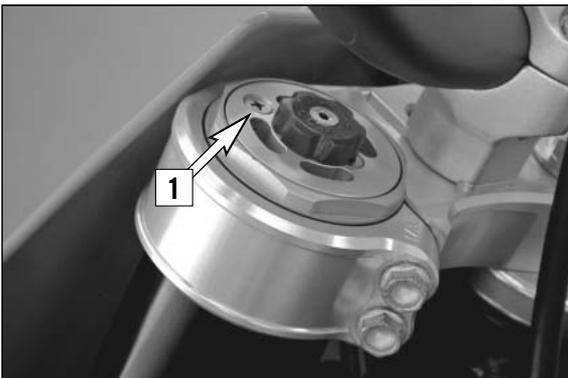
According to our experience, the damping rate of the compression stage can remain unchanged. The damping rate of the rebound stage can be reduced by a few clicks for a softer spring or increased by a few clicks for a harder spring.

## Breather plug front fork

After every 5 hours of use for competitive racing, slacken the breather plugs [1] a few turns in order to relieve excess pressure from the inside of the fork. To do this, place the motorcycle on a stand with the front wheel lifted off the ground.

### ! CAUTION

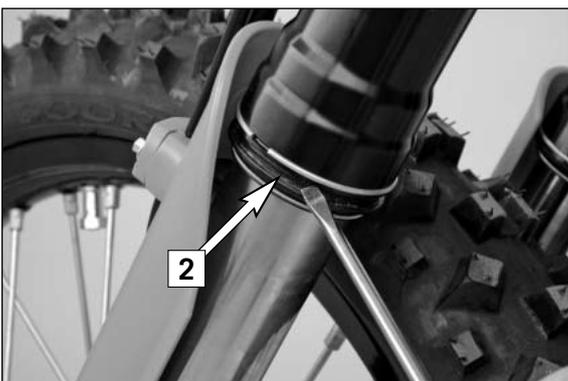
Excessive pressure in the interior of the fork can cause leaks in the fork. If your fork is leaking, it is recommended to open the breather plugs before having the seals replaced.



## Cleaning the dust sleeves of the telescopic fork

The dust-protection bellows [2] are to remove dust and coarse dirt particles from the fork tube. However, after some time, dirt may also get in behind the dust-protection bellows. If this dirt is not removed, the oil sealing rings located behind it may start to leak.

Use a screwdriver to lift the dust-protection bellows out of the outer tubes and slide them downward.



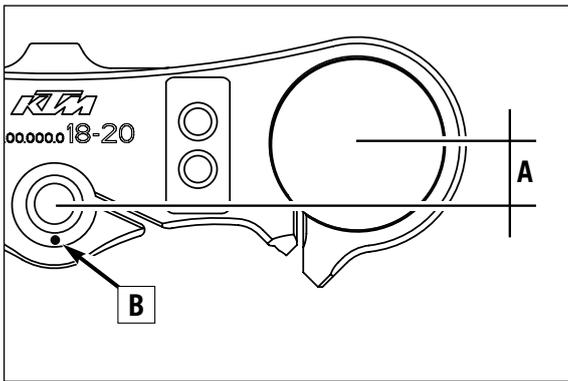
Clean the dust-protection bellows, outer tubes, and fork tubes thoroughly, and oil them thoroughly with Universal oil spray (Motorex Joker 440) or engine oil. Then, push the dust-protection bellows into the outer tubes by hand.

### ⚠ WARNING

No oil may reach the front tire or the brake disks since this would considerably reduce the tire's road grip and the braking effect of the front brake.



# MAINTENANCE WORK ON CHASSIS AND ENGINE »



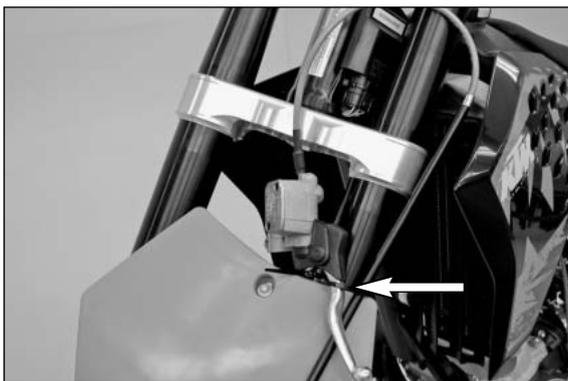
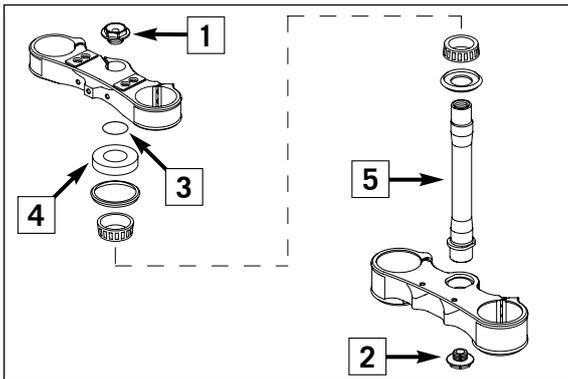
## Changing the fork offset (caster) \*

The fork offset [A] in the 250/450 SX-F models (center fork legs - center steering head angle) can be set to either 18 or 20 mm. This allows you to optimize the handling to match the race course.

Remove the blind screw [1] to see which offset is set. If the mark [B] is in front, the offset is 18 mm. This setting will deliver more directional stability on fast race courses.

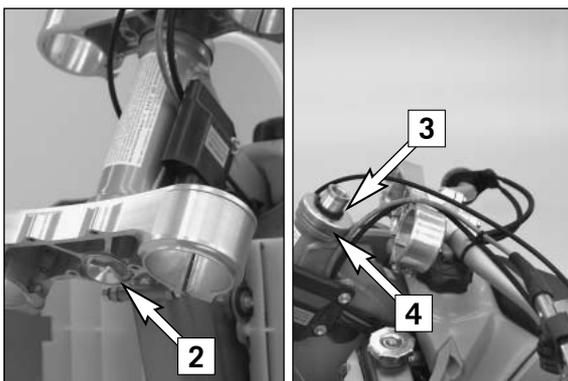
If the mark [B] is in the rear as illustrated, the offset is 20 mm. This setting will deliver better handling in curves.

The offset is set to 20 mm in the condition at delivery.



To adjust the offset, dismantle the front wheel and remove the front wheel fender.

Remove the screw on the starting number plate. Remove the clamp screws on the hand brake cylinder and fasten the hand brake cylinder to the left fork leg with a cable tie to keep the brake line from kinking (see illustration).

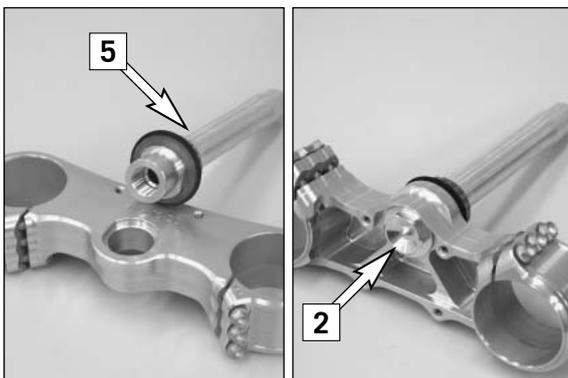


Loosen the clamp screws and take the fork legs out of the triple clamps.

Loosen the collar screw [2] on the lower triple clamp 2 turns.

Remove the blind screw [1] from the upper triple clamp, loosen the clamp screw and upper triple clamp on the seat. Remove the O-ring [3] and the protection ring [4].

Tap gently on the lower triple clamp with a rubber hammer to loosen the steering stem [5] out of the bearing seat. Take the lower triple clamp with the steering stem out of the steering head.

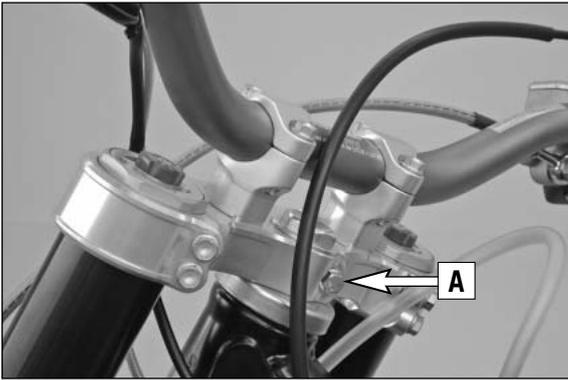


Remove the collar screw from the lower triple clamp and pull out the steering stem. Thoroughly clean all parts. Turn the steering stem 180° and insert it in the triple clamp, tighten the collar screw all the way to the stop. Grease the steering head bearing and sealing elements.

### **⚠ WARNING**

Be sure to lock the thread on the collar screw [2] with Loctite 243. Do not confuse the collar screw [2] with the blind screw [1]. The collar screw is self-locking.

## MAINTENANCE WORK ON CHASSIS AND ENGINE »

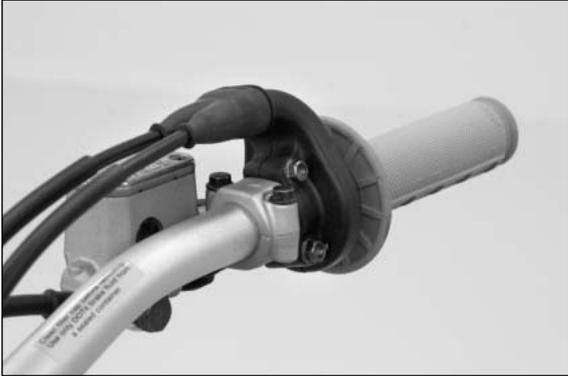


Mount the lower triple clamp, upper steering head bearing, protection ring, O-ring, upper triple clamp and the blind screw.  
Tighten the collar screw on the lower triple clamp to 60 Nm.  
Mount the fork legs and tighten the clamp screws on the lower triple clamp to 12 Nm in 3 stages.

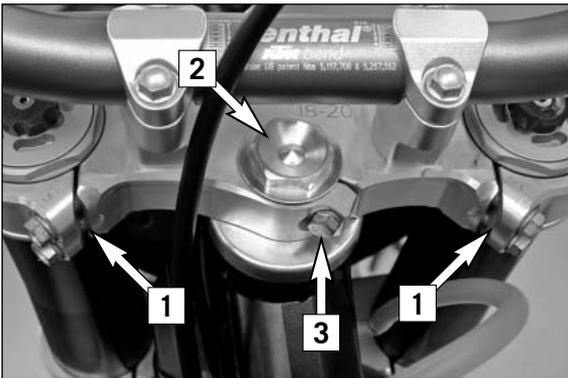
Adjust the steering head bearing without clearance (see: Checking and adjusting the steering head bearing) and tighten the clamp screws on the upper triple clamp to 17 Nm in 3 stages.

### ! CAUTION

Secure the middle clamp screw [A] with Loctite 243.



Mount the front wheel fender and tighten the screws to 10 Nm.  
Mount the hand brake cylinder and tighten the screws to 10 Nm.  
Mount the starting number plate.  
Mount the front wheel (see: Dismounting and mounting the front wheel).



### Checking and adjusting the steering head bearing \*

Check steering head bearing for play periodically. To check, put the motorcycle on a stand so that the front wheel is off the ground. Now try to move the fork forward and backward. To adjust, loosen the 5 clamp screws [1] and [3] on the upper triple clamp and tighten the blind screw [2] to 10 Nm. With a plastic hammer, lightly tap on the triple clamp to release tension. Retighten the five pinch bolts to 17 Nm.

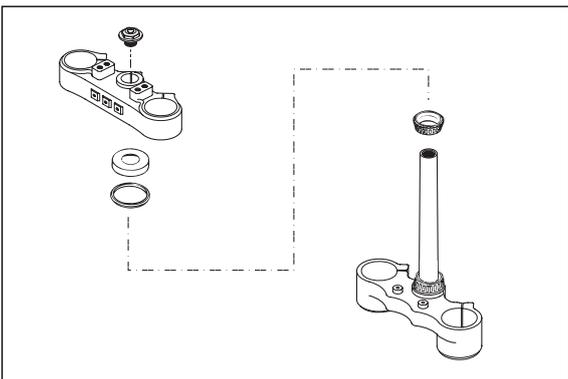
### ! WARNING

- If the steering head bearing is not adjusted to be free of play, the motorcycle will exhibit unsteady driving characteristics and can get out of control.
- Apply Loctite 243 to the clamp screw [3] to lock in place.

### ! CAUTION

If you drive with play in the steering head bearing for longer periods, the bearings and subsequently the bearing seats in the frame will be destroyed.

The steering head bearings should be regreased at least once a year (e.g. Motorex Long Term 2000).

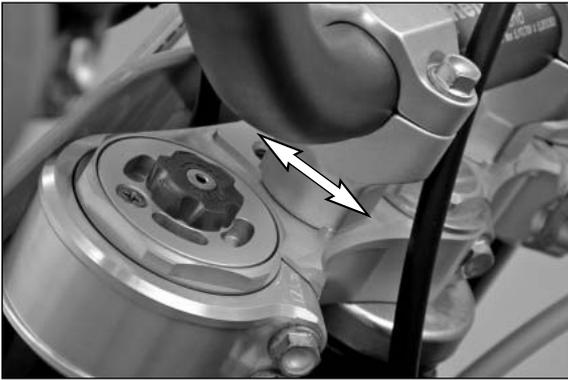


### Checking the throttle cable installation

Both throttle cables must run parallel along the back of the handlebar down to the frame. They must run directly on the right side of the frame above the tank roller to the carburetor.

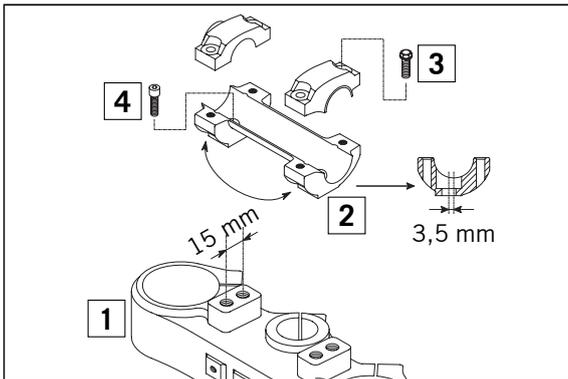
### ! CAUTION

When mounting the tank, make sure the throttle cables stay on the side of the frame and are not pressed down by the tank.



## How to change the handlebar position

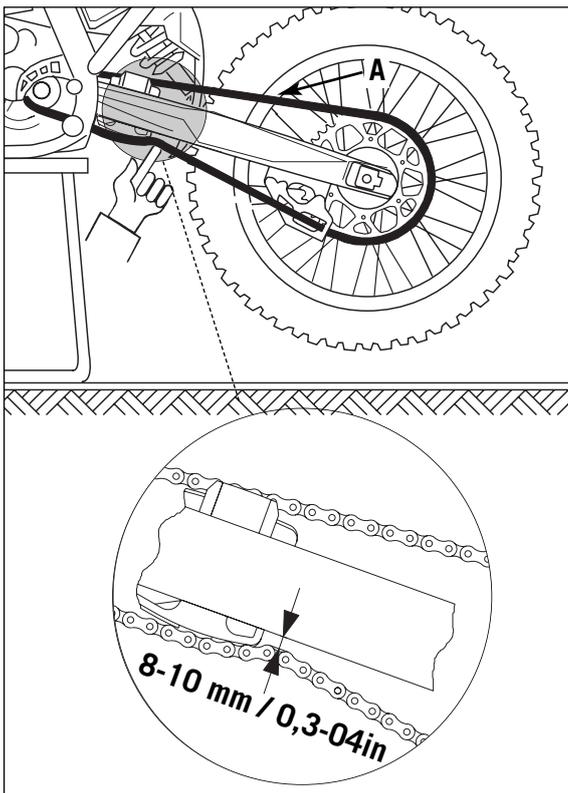
The handlebar position can be readjusted by 22 mm. Thus, you can put the handlebar in the position that is the most convenient for you. The upper triple clamp [1] includes 2 bores arranged at a distance of 15 mm (0.6 in) from one another. The bores at the handlebar support [2] are offset from the center by 3.5 mm (0.13 in). Accordingly, you can mount the handlebar in 4 different positions.



For this purpose, remove screws [3] of the handlebar clamps and screws [4] of the handlebar support. Position the handlebar support, and tighten screws [4] to 40 Nm (30 ft.lbs). Mount the handlebar and handlebar clamps, and tighten screws [3] to 20 Nm (15 ft.lbs). The gap between the handlebar support and the handlebar clamps should be the same size in the front and in the rear.

### ⚠ WARNING

The screws [4] must be secured with loctite 243.



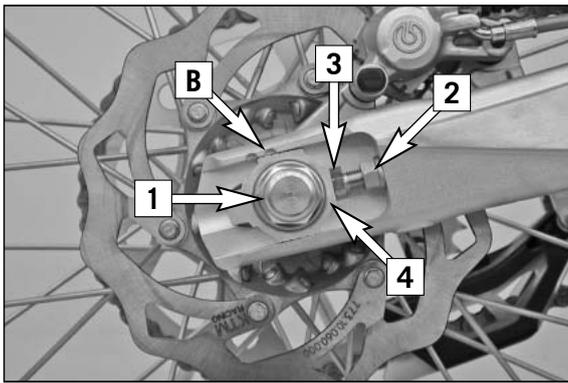
## Check chain tension

Jack the motorcycle up on its frame so that the rear wheel no longer touches the ground.

Press the chain upward at the end of the chain sliding component. The distance between the chain and the swing arm should be approx. 8 - 10 mm (0.31 - 0.39 in). In the course of this procedure, the upper chain portion [A] must be taut (see drawing). If necessary, correct the chain tension.

### ⚠ WARNING

- Excessive tensioning of the chain will put additional load on the components of the secondary drivetrain (chain, bearings of transmission and rear wheel). Aside from resulting premature wear, if worst comes to worst the chain may rupture or the countershaft of the transmission may break.
- Too much slack in the chain, on the other hand, can result in the chain jumping off the chain wheels. If this happens, the chain could also block the rear wheel or damage the engine.
- In either case the operator is likely to lose control of the motorcycle.



## Correct chain tension

Loosen collar nut [1], loosen lock nuts [2], and turn right and left adjusting screws [3] equally far. Tighten lock nuts.

To ensure the correct alignment of the rear wheel, the marks at the left and right chain adjusters must be positioned identically in relation to the reference marks [B]. Tighten the counter nut of the adjusting screws.

Clean and grease the adjusting screws regularly (Motorex Long Term Grease 2000). Before tightening the collar nut, verify that the chain adjusters [4] are sitting close to the adjusting screws and that the rear wheel has been aligned with the front wheel.

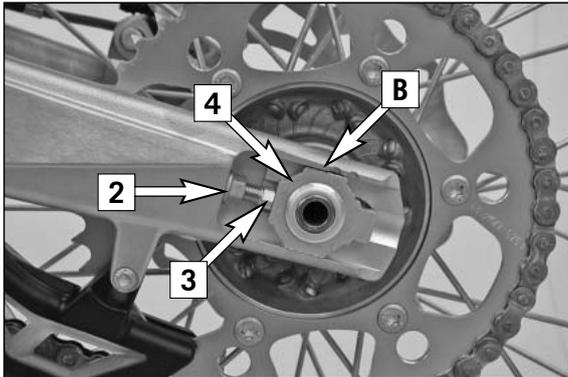
Tighten collar nut [1] to 80 Nm.

### ⚠ WARNING

- If you don't happen to have a torque wrench at hand, make sure you have the tightening torque corrected by a KTM dealer as soon as possible. A loose axle may lead to an unstable driving behavior of your motorcycle.
- Tighten the collar nut with the required torque.

### NOTE:

The large adjusting range of the chain adjusters (32mm) allows you to use different secondary ratios in combination with the same chain length. The chain adjusters [4] can be rotated by 180°.



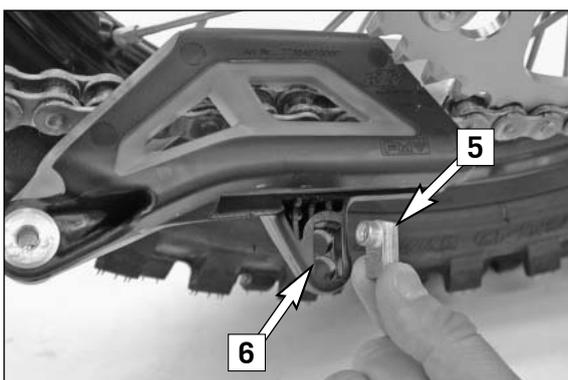
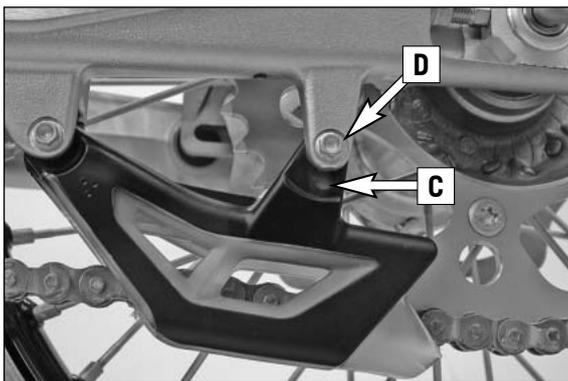
## Adapting the chain guide to the number of rear sprocket teeth

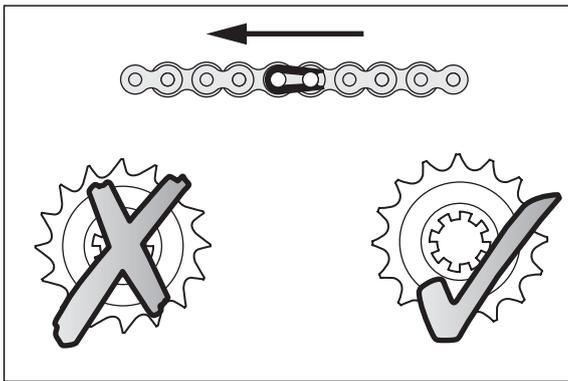
### NOTE:

The position of the chain guide must be adjusted due to the large number of rear sprockets available. Up to 44 teeth, insert the retaining screw on the chain guide in the lower hole [C], from 45 teeth in the upper hole [D].

Loosen both screws on the chain guide and pull the chain guide off the swing arm. Turn the chain guide over, press out the retaining nut [5] and insert it in the other hole [6], turning the retaining nut around.

Remount the chain guide and tighten the screws.





## Chain maintenance

For a long chain life, good maintenance is very important. Chains without X-rings should be cleaned in fireproof solvent regularly and afterwards treated with hot grease or chain spray (e.g. Motorex Chainlube 622).

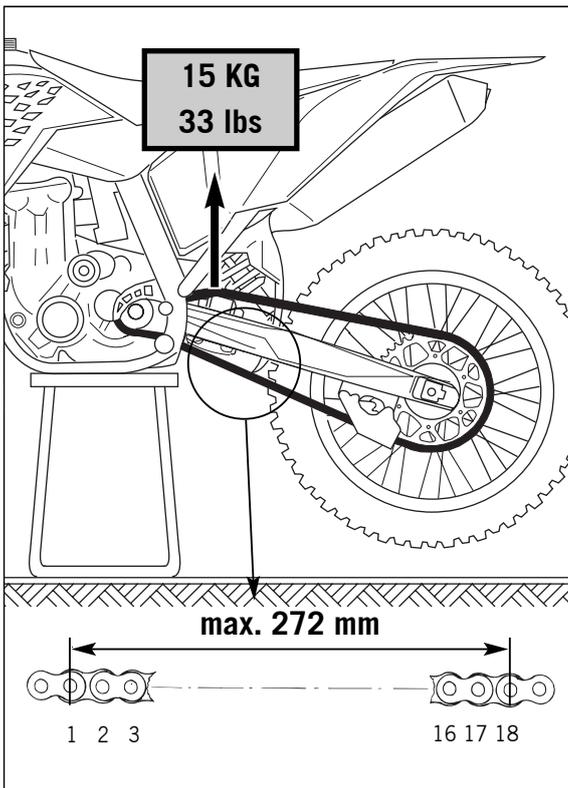
### ⚠ WARNING

No lubrication is allowed to reach the rear tire or the brake disks, otherwise the road adherence and the rear wheel braking effects would be strongly reduced and the motorcycle could easily lose control.

### ! CAUTION

When mounting the chain masterlink clip, the closed side of the masterlink clip must point in running direction.

Also check sprockets and chain guides for wear and replace if necessary.



## Chain wear

To check the chain wear, observe the following indications:

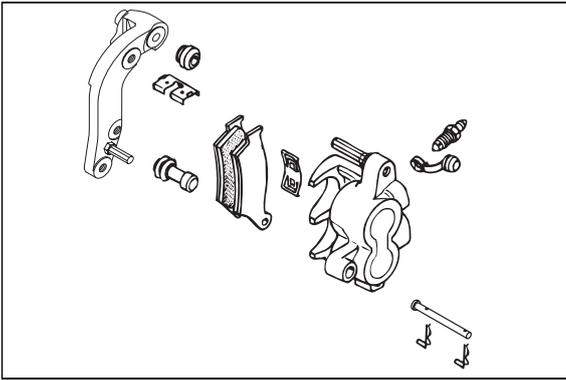
Shift the gear into idling and pull the upper chain strand with approx. 10-15 Kilograms (33 lb) upwards (see figure). Now one can measure a space of 18 chain reels at the lower chain strand. The chain should be replaced at the latest when a space of 272 mm (10.70 in) is measured. Chains do not always wear off evenly, therefore repeat the measurement at different places on the chain.

### NOTE:

If you mount a new chain, the sprockets should also be replaced. New chains wear faster if used on old used sprockets.

### ! CAUTION

Secure the screws of the chain wheel by applying Loctite 243 and fasten them in a crosswise order. Tightening torque for nuts: 35 Nm; tightening torque for screws: 50 Nm.



## General information about KTM disc brakes

### BRAKE CALIPERS:

The brake calipers of this series use a "floating" mount. This means that the brake calipers are not solidly attached to the caliper support, which enables them to "float" for maximum braking contact. Secure the screws of the caliper support with Loctite 243 and tighten to 25 Nm.

### BRAKE PADS:

The brake pads are fitted with TOSHIBA TT 2701 HHB sintered lining at the front and TOYO B 143 FF sintered lining at the back. These linings provide an optimal combination of dosing, brake performance and life cycle. The lining type is stated on the back of the brake pad and also recorded in the homologation papers.

Other brake pads are available for competition sports.

**FRONT:** TOSHIBA H 38 (SINTERED) – harder to dose, good brake performance, long life, for wet slippery terrain.

FERODO ID 450 (ORGANIC) – easy to dose, good brake performance, short life, for dry terrain, low price

**REAR:** FERODO 4424 (organic) – better controllability, shorter service life, for dry terrain.

TOSHIBA H38 (Sinter) – longer service life than FERODO 4424, higher braking performance.

### BRAKE DISCS:

Due to wear, the thickness of the brake disc in the area of the contact face [1] of the brake pads decreases. The brake disk must be at least 2.50 mm (front) / 3.50 mm (rear) thick at the thinnest point [A]. Check the thickness of the brake disk at several points.

### ⚠ WARNING

- A brake disk worn down to less than 2.50 mm (Front) / 3.50 mm (Rear) is a safety risk. Have the brake disk replaced as soon as it reaches the service limit.
- Have any repairs on the brake system be performed by a KTM dealer.

### BRAKE FLUID RESERVOIRS:

The brake fluid reservoirs on the front and rear wheel brakes have been designed in such a way that even if the brake pads are worn it is not necessary to top up the brake fluid. If the brake fluid level drops below the minimum level either the brake system has a leak or the brake pads are completely worn. In this case, consult an authorized KTM dealer immediately.

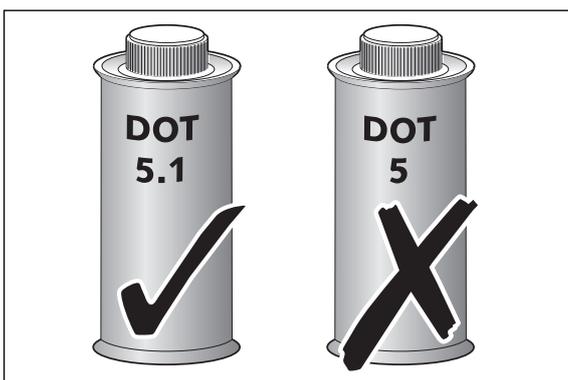
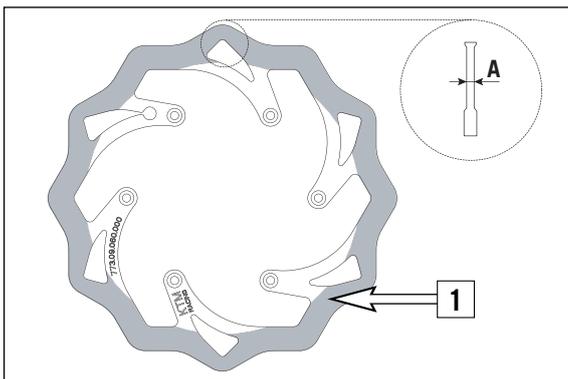
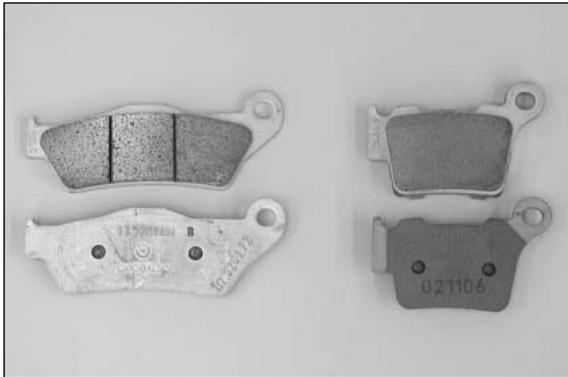
### BRAKE FLUID:

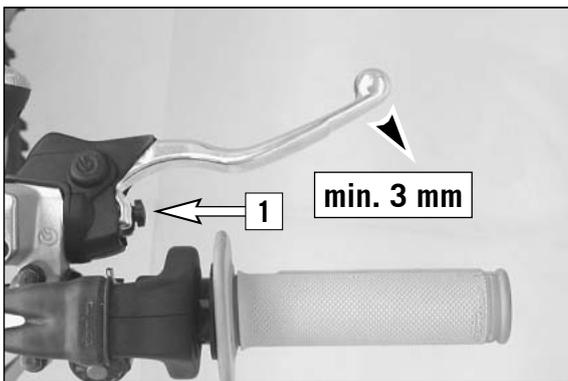
KTM fills the brake systems with Motorex Brake Fluid DOT 5.1 brake fluid, one of the best brake currently available. We recommend that you continue to use it. DOT 5.1 brake fluid is based on glycol ether and of an amber color. If you do not have any DOT 5.1 for refilling, you may use DOT 4 brake fluid. However, you should replace it as soon as possible with DOT 5.1.

Never use brake fluid DOT 5. The color of this silicon oil-based product is purple red. The gaskets and brake hoses of KTM motorcycles are not designed for DOT 5 brake fluid.

### ⚠ WARNING

Have the brake fluid changed at least once annually. If you wash your motorcycle often, the brake fluid should be changed even more frequently. Brake fluid tends to absorb water. Therefore, vapor pockets may form in "old" brake fluids even at low temperatures, causing the brake system to fail.





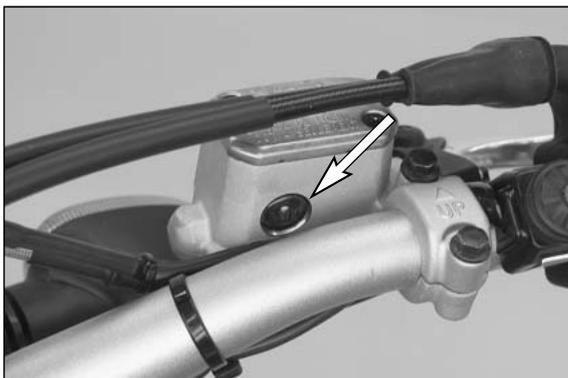
## Adjusting the free travel at the hand brake lever

Free travel at the hand brake lever may be readjusted by using adjustment screw [1]. In this way, the position of the point of pressure (i.e. the resistance you feel on the hand brake lever when the brake pads are pressed against the brake disc) can be adjusted for any hand size.

When you press the hand brake lever forwards, you should have at least 3 mm free travel. Turn the adjusting screw [1] if necessary.

### ! CAUTION

At the hand brake lever, free travel must at least be 3 mm (0.1 in). Only then may the piston in the hand brake cylinder be moved (to be recognized by the greater resistance of the hand brake lever). If this free travel is not provided, pressure will build up in the braking system, and the front-wheel brake may fail due to overheating.

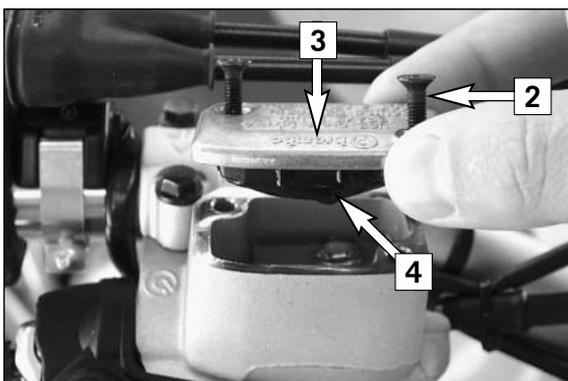


## Checking the brake fluid level - front brake

The brake fluid reservoir is linked with the hand brake cylinder at the handlebar and the reservoir is provided with an inspection glass. With the reservoir in a horizontal position, the brake fluid level should not drop below the middle of the glass.

### ! WARNING

If the brake fluid level drops below the minimum either the brake system has a leak or the brake pads are completely worn. In this case, consult an authorized KTM dealer immediately.



## Refilling the front brake fluid reservoir \*

Loosen screws [2] and remove lid [3] and membrane [4].

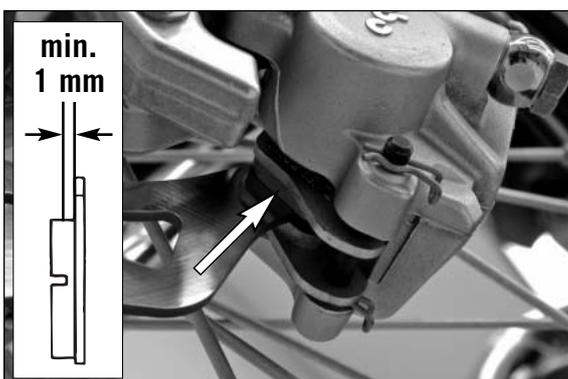
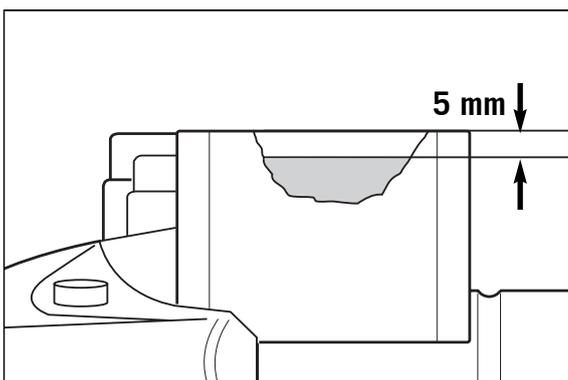
Place hand brake cylinder in a horizontal position and fill the brake fluid reservoir to 5 mm (0.2 in) below the rim with clean brake fluid DOT 5.1 (e.g. Motorex Brake Fluid DOT 5.1). Replace membrane and lid, tighten screws. Rinse off spilled or overflowing brake fluid with water.

### ! WARNING

- Never use DOT 5 brake fluid! It is based on silicone oil and of a purple color. Seals and brake hoses must be especially adapted to it.
- Store brake fluid out of reach of children.
- Brake fluid can cause skin irritation. Avoid contact with skin and eyes. If you get brake fluid in your eyes, rinse with plenty of water and consult a doctor

### ! CAUTION

- Don't let brake fluid get in contact with paint, it is an effective paint remover.
- Use only clean brake fluid taken from a tightly sealed container.



## Checking the front brake pads

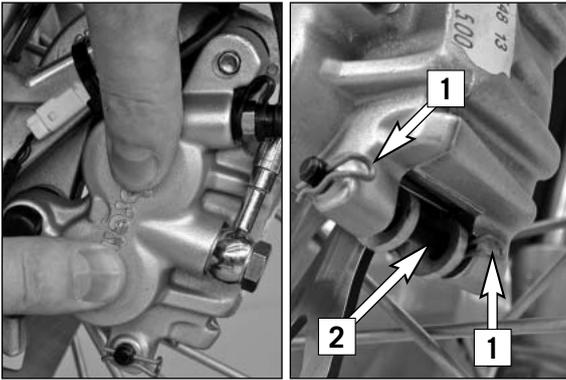
The brake pads can be inspected from below. The linings must be at least 1 mm (0.04 in) thick.

### ! WARNING

At their most worn point brake pad linings should not be thinner than 1 mm, otherwise they could lead to brake failure. For your own safety don't put off having your brake pads changed.

### ! CAUTION

If the brake pads are replaced too late so that the lining is partly or entirely worn, the steel components of the brake pad will rub against the brake disc, thereby impairing the braking effect and destroying the brake disc.



## Replacing the front brake pads \*

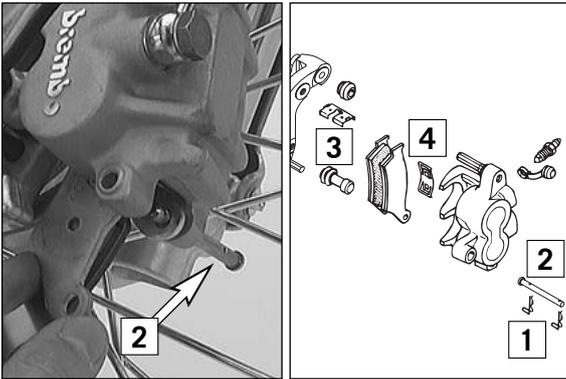
Press the brake caliper toward the brake disk, to put the brake piston in its basic position. Remove clips [1] and pull out bolt [2]. Remove brake pads from the brake caliper. Clean the brake caliper and the brake caliper support with compressed air. Check the sleeves of the guide bolts for damage, and grease guide bolts if necessary.

Mount the right brake pad and fix it with the bolt. Mount the left brake pad and insert the bolt until it stops. Mount the clips.

When mounting the brake pads, be sure to check for correct fit of the sliding metal-sheet [3] in the caliper support and of the leaf spring [4].

### ⚠ WARNING

- It is very important to keep the brake disk free from oil and fatty matters. Otherwise, the braking effect would be strongly reduced.
- After assembly, check if circlips have been fitted correctly.
- After working on the braking system, always actuate the hand brake lever or foot brake lever, respectively to ensure that the brake pads will lie against the brake disk and the pressure point is established.



## Checking the rear brake fluid level

The reservoir for the rear brake disk is located on the right side of the motorcycle on the rear brake cylinder.

No air bubble should be visible in inspection glass [A] when the vehicle is parked in a vertical position.

### ⚠ WARNING

If the brake fluid level drops below the minimum either the brake system has a leak or the brake pads are completely worn. In this case, consult an authorized KTM dealer immediately.

## Refilling the rear brake fluid reservoir \*

Add brake fluid as soon as a bubble is visible in inspection glass [A].

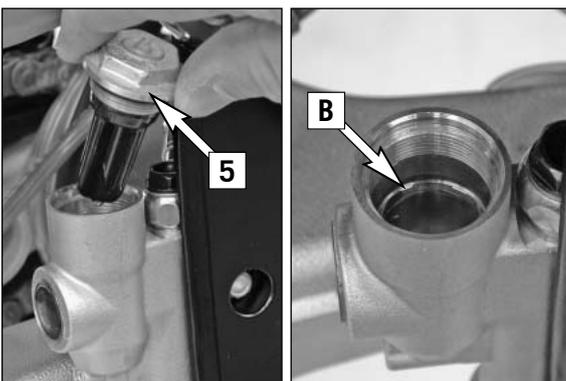
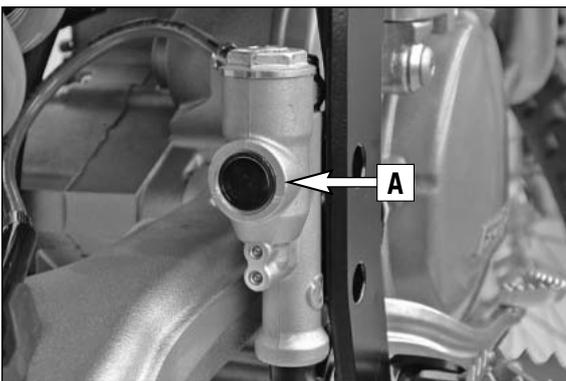
To top up, remove screw [5]. Fill DOT 5.1 brake fluid (e.g. Motorex Brake Fluid DOT 5.1) up to the mark [B] on the inside of the reservoir and remount the screw. Spilled brake fluid must be rinsed off with water.

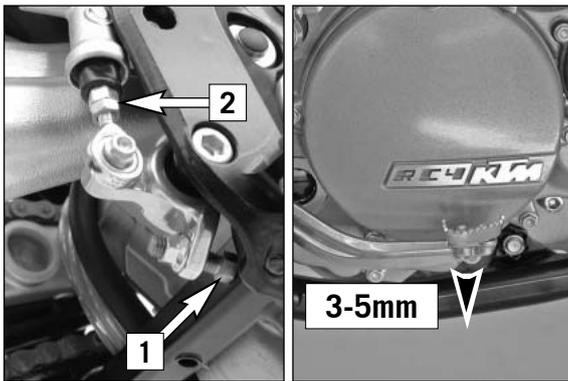
### ⚠ WARNING

- Never use DOT 5 brake fluid! It is based on silicone oil and of a purple color. Seals and brake hoses must be especially adapted to it.
- Store brake fluid out of reach of children.
- Brake fluid can cause skin irritation. Avoid contact with skin and eyes. If you get brake fluid in your eyes, rinse with plenty of water and consult a doctor.

### ! CAUTION

- Don't let brake fluid get in contact with paint, it is an effective paint remover.
- Use only clean brake fluid taken from a tightly sealed container.





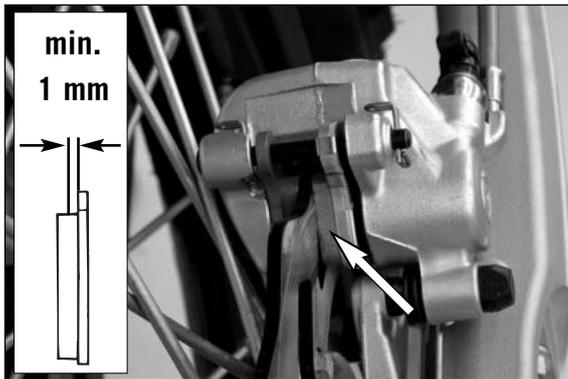
## Changing the basic position of the foot brake pedal \*

The basic position of the foot brake pedal can be altered by turning the stop screw [1]. The free play at the foot brake pedal must then be adjusted by means of the piston rod [2].

Measured on the outside, the foot brake pedal must have 3-5 mm (0.12–0.20 in) of free play before the piston rod can move the piston in the brake cylinder (to be recognised from the resistance on the foot brake pedal).

### ⚠ WARNING

If this free play is not present, then pressure can build up in the brake system when driving, causing the rear wheel to brake. The braking system overheats and may even fail completely in extreme cases.



## Checking the rear brake pads

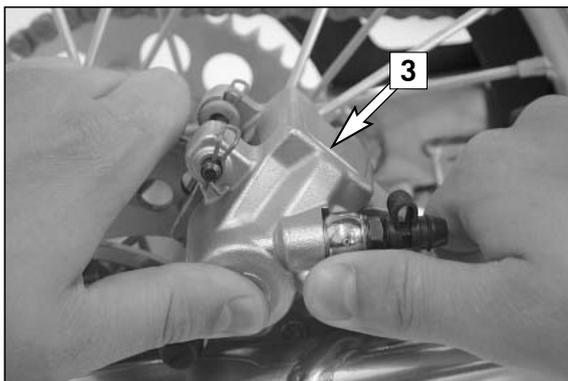
The brake pads can be inspected from the rear. The thickness of the linings may not be less than 1 mm (0.04 in).

### ⚠ WARNING

At their most worn point brake pad linings should not be thinner than 1 mm, otherwise they could lead to brake failure. For your own safety don't put off having your brake pads changed.

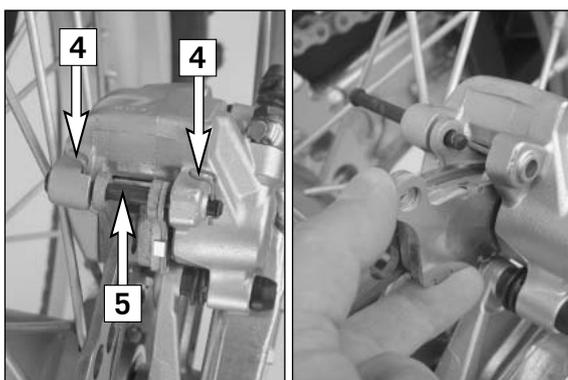
### ! CAUTION

If the brake pads are replaced too late so that the lining is partly or entirely worn, the steel components of the brake pad will rub against the brake disc, thereby impairing the braking effect and destroying the brake disc.



## Replacing the rear brake pads \*

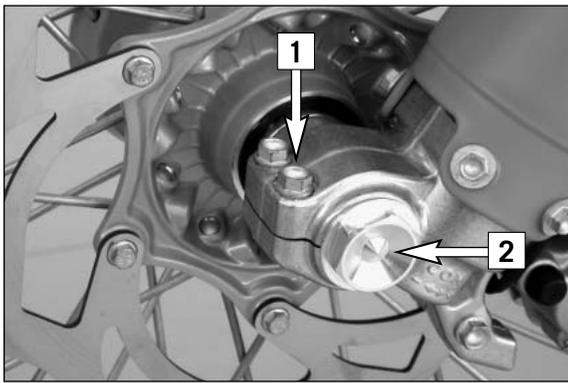
Push the brake caliper [3] toward the chain wheel in order to move the brake piston into its basic position. Remove the clips [4], pull out the bolt [5], and remove the brake pads. Thoroughly clean the brake caliper with compressed air and check the sleeves of the guide bolts for damage.



Insert the left brake pad into the brake caliper and secure it with the bolt. Insert the right brake pad and push the bolt [5] into the brake caliper up to the stop. Reattach clips [4].

### ⚠ WARNING

- It is very important to keep the brake disk free from oil and fatty matters. Otherwise, the braking effect would be strongly reduced.
- After assembly, check if clips have been fitted correctly.
- After working on the braking system, always actuate the hand brake lever or foot brake lever, respectively to ensure that the brake pads will lie against the brake disk and the pressure point is established.



## Dismounting and mounting the front wheel

To remove the front wheel, jack the motorcycle up on its frame so that the front wheel no longer touches the ground.

Loosen the 2 clamping screws [1] on the left side of the fork fists.

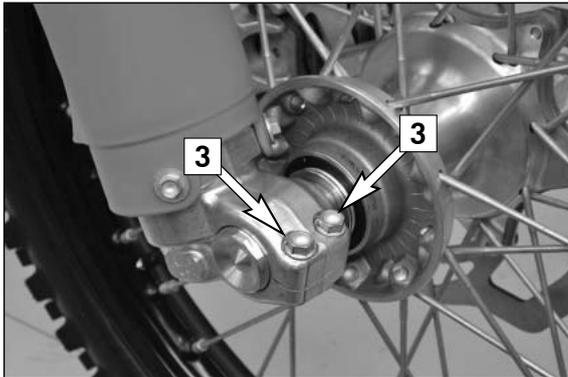
Loosen and remove the collar nut [2], loosen the clamping screws [3] on the right side of the fork fist.

Hold the front wheel, pull out the wheel spindle [4].

Carefully remove the front wheel from the fork.

### ! CAUTION

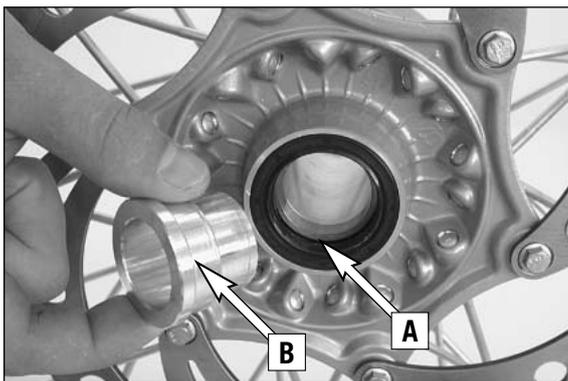
- Do not operate the hand brake when the front wheel has been dismantled.
- Make sure the brake disc is always on top when you lay down the wheel, otherwise the brake disc can be damaged.



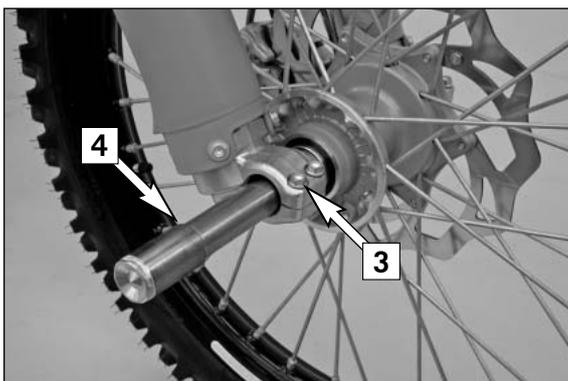
To install the front wheel, lift it into the fork, position and mount the axle shaft. Mount the collar nut [2], tighten the clamping screws [3] on the right fork leg axle passage to prevent the axle shaft from turning and tighten the collar nut to 40 Nm (30ft.lb).

Loosen the clamp screws on the right fork leg. Take the motorcycle down from its stand. Press the front wheel brakes and push down on the fork a few times vigorously so that the fork legs come into alignment.

Only after this has been accomplished, tighten the clamp screws on both fork legs with 15 Nm.

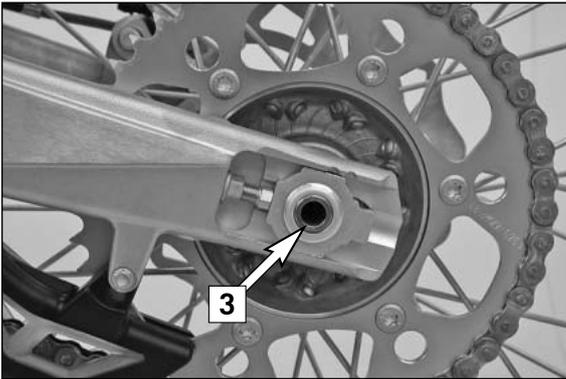
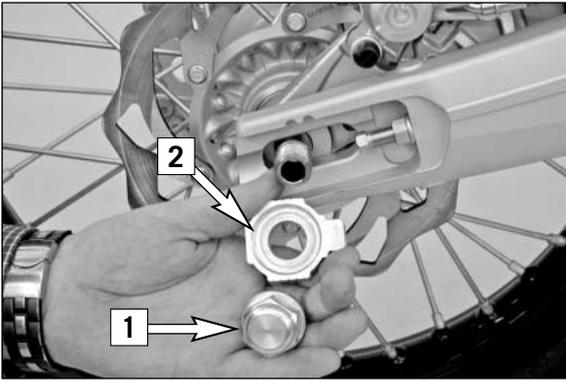


Before remounting the front wheel, clean and grease the shaft seal rings [A] and the bearing surface [B] of the distance bushing and mount the distance bushing



### ⚠ WARNING

- If you don't happen to have a torque wrench at hand, make sure you have the tightening torque corrected by a KTM dealer as soon as possible. A loose axle may lead to an unstable driving behavior of your motorcycle.
- After mounting the front wheel, keep operating the hand brake until the pressure point returns.
- It is very important to keep the brake disc free from oil and fatty matters, otherwise the braking effect would be strongly reduced.



## Dismounting and mounting the rear wheel

Jack the motorcycle up on its frame so that the rear wheel no longer touches the ground.

Remove the collar nut [1], remove the chain tensioner [2] and pull out the wheel spindle [3] until you can push the rear wheel forwards.

Take the chain off the rear sprocket, pull out the wheel spindle and carefully remove the rear wheel from the swing arm.

### ! CAUTION

- Do not operate the rear brake when the rear wheel has been dismantled.
- Make sure the brake disc is always on top when you lay down the wheel, otherwise the brake disc can be damaged.
- If the axle is dismantled, clean the thread of the wheel spindle and collar nut thoroughly and apply a new coat of grease to prevent the thread from jamming.

The rear wheel is remounted in the reverse order. Before tightening the collar nut to 80 Nm, push the rear wheel forwards so that the chain tensioners lie on the tension screws.

### ⚠ WARNING

- If you don't happen to have a torque wrench at hand, make sure you have the tightening torque corrected by a KTM dealer as soon as possible. A loose axle may lead to an unstable driving behavior of your motorcycle.
- After mounting the rear wheel, keep operating the rear brake until the pressure point returns.
- It is very important to keep the brake disk free from oil and fatty matters, otherwise the braking effects would be strongly reduced.
- Tighten the collar nut with the required torque. A loose wheel spindle may lead to an unstable behavior of your motorcycle.

## Checking spoke tension

The correct spoke tension is very important for the stability of the wheels and thus for riding safety. A loose spoke causes the wheel to become unbalanced and before long other spokes will have come loose. Check spoke tension, especially on a new motorcycle, at regular intervals. For checking, tap on each spoke with the blade of a screwdriver (see photo). A clear tone must be the result. Dull tones are indicators of loose spokes. If necessary, have the spokes retightened and the wheel centered by a KTM dealer.

### ⚠ WARNING

- Spokes can tear if you continue to ride with them loose. This may lead to an unstable handling of your motorcycle.
- Excessively tensioned spokes may rupture due to local overloading. The spokes must be tensioned to 4.5-6 Nm.



TIRES-AIR PRESSURE		
	front	rear
Off road	1,0 bar	1,0 bar

## Tires, air pressure

Tire type, tire condition, and air pressure level affect the way your motor-cycle rides and must therefore be checked whenever you are getting ready to go anywhere on your motorcycle.

- Tire size can be found in the technical specifications.
- Tire condition has to be checked every time you want to ride your motorcycle. Before leaving, check tires for punctures and nails or other sharp objects that might have become embedded in them. We recommend you replace the tires at the latest when the tread is down to 2 mm (0.08 in).
- Tire pressure should be checked regularly on a "cold" tire. Proper pressure ensures optimum driving comfort and extends the life of your tires.

### ⚠ WARNING

- Do not mount tires which have not been approved by KTM. Other tires could have adverse effects on the way your motorcycle behaves.
- front and rear wheels may only be fitted with tires having the same tread layout.
- For your own safety replace damaged tires immediately.
- Worn tires can have a negative effect on how your motorcycle performs, especially on wet surfaces.
- If air pressure is too low, abnormal wear and overheating of the tire can result.

## Battery (450 SX-F)

The battery is located under the seat and is maintenance-free.

Maintenance-free means you will not need to check the acid level. Clean the battery terminals regularly and grease with acid-free grease if necessary. The charge condition and type of charge are very important for the battery's service life.

### TO REMOVE THE BATTERY:

First disconnect the negative pole, then the positive pole from the battery. Remove the filter box cover and detach the rubber band.

Remove the battery.

Install the battery as described for the specific type of battery (see illustration). Connect the minus pole to the battery last.

### ⚠ WARNING

- Be extremely careful if any electrolyte (sulfuric acid) runs out of the battery. Electrolyte can cause severe burns.
- Rinse with plenty of water if coming into contact with the skin.
- If electrolyte gets in your eyes, rinse with water for at least 15 minutes and consult a doctor immediately.
- Although the battery is sealed, explosive gases can escape. Keep the battery away from sparks or open flame.
- Keep defective batteries away from children and dispose of properly.

### ! CAUTION

Never remove the closure since it will be damaged

### NOTE:

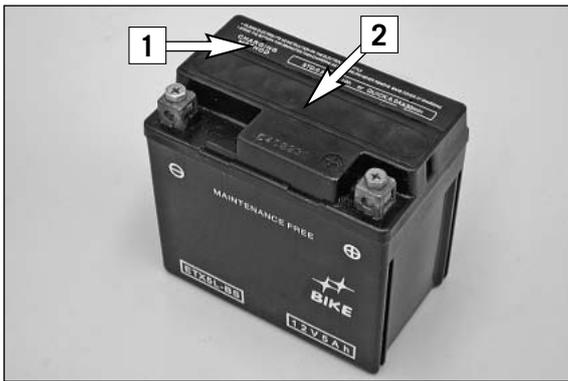
The 450 SX-F model is delivered with 2 batteries; 12 volts 3 A/h and 12 volts 4 A/h. The 4 A/h battery should be used for temperatures below 10°C.

### STORAGE:

If the motorcycle is being immobilized for longer periods of time, remove and charge the battery. Storage temperature 0 - 35°C, avoid direct sunlight.

**Charge the battery every 3 months.**



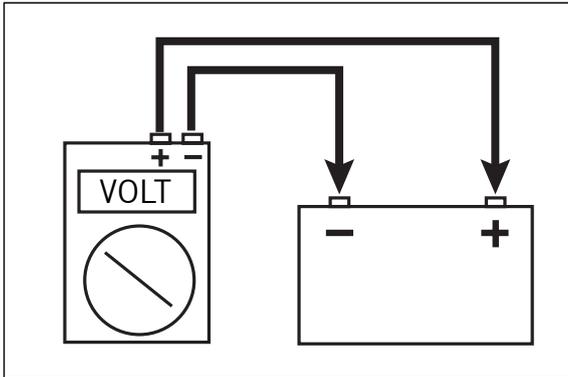


## Charging the battery (450 SX-F)

The battery discharges every day, even if it is not used. Always disconnect the battery when charging. Charge the battery as described in the instructions [1] on the battery housing. Do not exceed the amperage and charging time. Quick charging at a high amperage has an adverse effect on the service life.

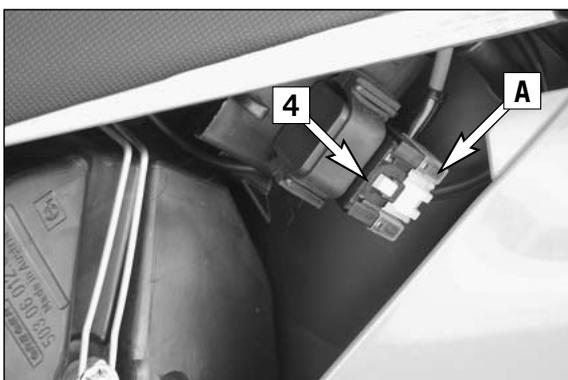
Always use special charging devices to charge maintenance-free batteries, e.g. the KTM charging device (item no. 58429074000). You can also use this charging device to test the off-load voltage and startability of the battery and generator. It is impossible to overcharge the battery with this device.

Charge the battery immediately if it is empty when you start the motorcycle. If left to stand in an uncharged condition for a longer period of time, the battery will run down and sulfatize, destroying the battery. Recharge the battery every 3 months if it is being stored for a longer period of time.



### ! CAUTION

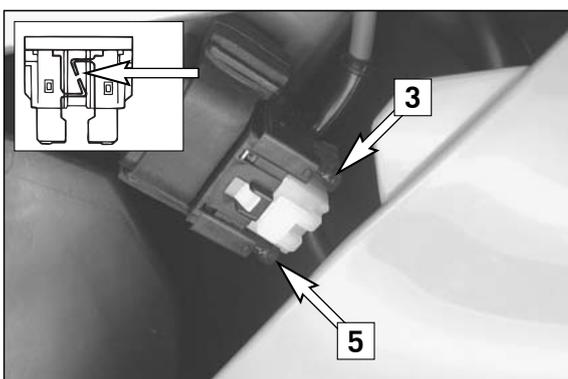
- Never remove the closure [2] since it will be damaged.
- To avoid damage to the on-board electronic system, always disconnect the minus pole before you charge the battery.
- To charge, connect the battery to the battery charger before you switch on the battery charger. When the battery is charged, switch off the battery charger before you disconnect the battery.
- Provide adequate ventilation when charging the battery in a closed room; the battery emits explosive gases when charging.
- Electrolytes will escape through the safety valves if the battery is charged too long or at an excessive voltage or amperage. This will reduce battery capacity.
- Try to avoid quick charges.



## Fuse (450 SX-F)

The fuse [3] is located in the starter relay of the E-starter [4] underneath the left side paneling.

Having removed the left side paneling, the air box cover and the protection cover [A], you will be able to see the fuse.



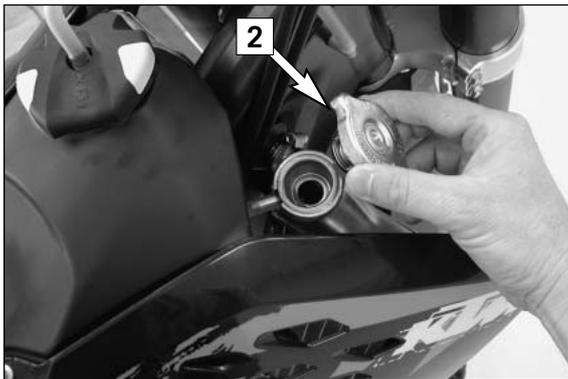
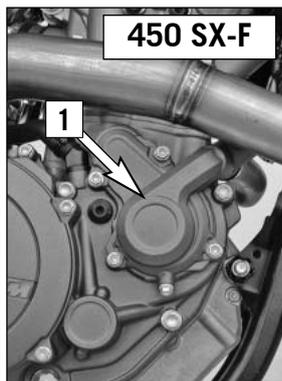
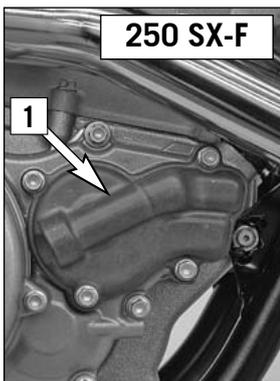
The starter relay also contains a (10 amp) spare fuse [5].

Replace a blown fuse only with an equivalent one. If a new fuse that has just been installed gets blown again, you are strongly advised to have it inspected by a KTM dealer.

The fuse capacity is 10 Ampere.

### ! CAUTION

Under no circumstances is a stronger fuse allowed to be installed or a fuse allowed to be "repaired". An improper treatment could damage the whole electrical installation.



## Cooling system

Coolant is circulated by a water pump [1] located in the engine. Air blowing in through the radiators cools the coolant. The slower the speed of the motorcycle, the less the coolant is cooled down. Dirty radiators also reduce the cooling efficiency. Pressure induced by heating of the coolant in the system is controlled by a valve in the radiator cap [2]; a water temperature rising up to 120° C (248° F) is admissible, without fear of problems.

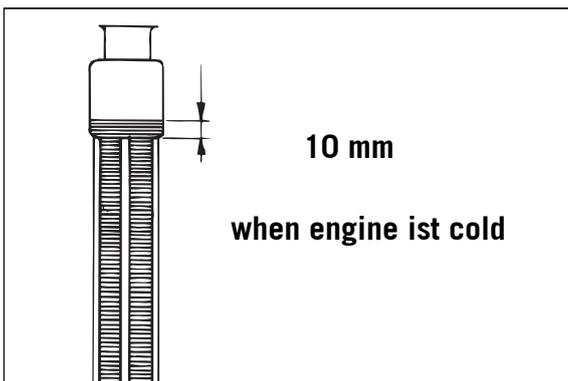
### ⚠ WARNING

- If possible, always check level of cooling liquid when the engine is cold. If you have to open the radiator cap when the engine is hot, use a rag to cover the cap and open slowly to release pressure. Caution - scalding hazard.
- Do not detach any radiator hoses while the engine is hot. The escaping hot coolant and the steam may cause serious burns.
- In case you get burnt, hold the affected part of your body under running cold water right away.
- Coolant is toxic. Keep the coolant out of the reach of children.
- In case coolant is ingested, consult a doctor immediately.
- If coolant gets into your eyes, rinse them out with water immediately and consult doctor.

A mixture of 50% antifreeze liquid and 50% distilled water is used as coolant. However, the antifreeze protection must be at least -25° C (-13° F). This mixture offers antifreeze protection but also good corrosion protection and should therefore not be replaced by pure water.

### ! CAUTION

- The cooling system must be bled after draining the cooling liquid or after adding more than 0.25 l (0.06 US gallons) cooling liquid.(see below).
- For the cooling system, use only high-grade antifreeze (e.g. Motorex Anti Freeze). Using lower-grade antifreeze agents can cause corrosion and coolant foaming.

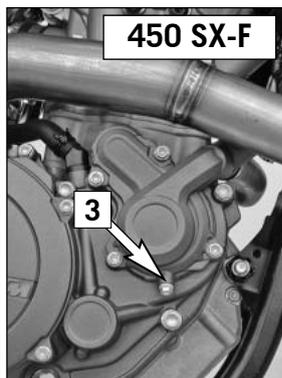
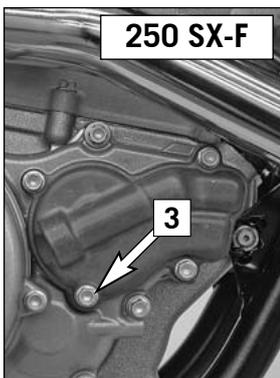


## Checking the coolant level

The coolant should be 10 mm (0.4 in) above the radiator fins when the engine is cold (see diagram). In the event of the coolant being drained, always fill and bleed the system.

### ! CAUTION

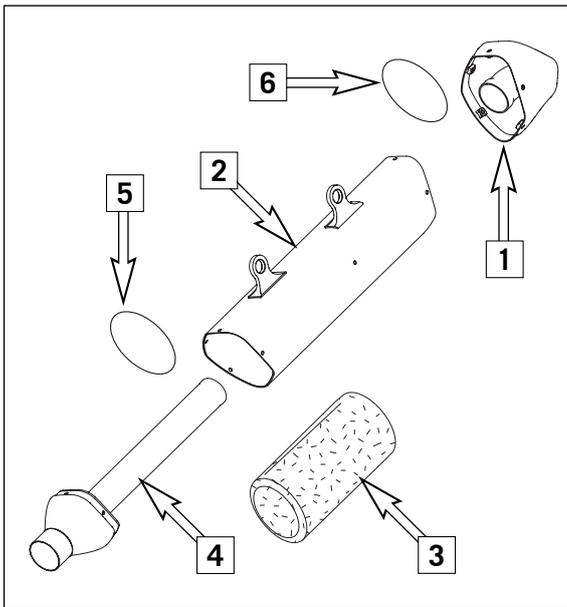
If possible, always check the level of cooling liquid when the engine is cold. If you have to open the radiator cap [2] when the engine is hot, use a rag to cover the cap and open slowly to release pressure.



## Bleeding the cooling system

By removing the screw [3] at the water pump cover you can drain the coolant. To bleed the cooling system, add coolant up to approx. 10 mm above the radiator fins when the engine is cold.

After a short ride, check the coolant level once more.



## Replacing the glassfiber yarn packing of the silencer \*

Aluminum silencers are filled with glassfiber yarn to muffle noise. Have the filling checked regularly by an authorized KTM workshop (see Lubrication and Service Chart). The insulating material fibers escape through the holes in the perforated pipe with time, causing the silencer to "burn out". In addition to causing a higher noise-level, it will also affect the power characteristic. The insulating material suitable for your exhaust is available from your authorized KTM workshop.

To replace, remove all screws, take off the cap [1] and outer pipe [2]. Pull the glass fiber yarn packing [3] out of the inner pipe [4]. Clean all parts thoroughly.

Slide a new glass fiber yarn packing over the inner pipe. Mount a new O-ring [5] and slide the outer pipe over the glass fiber yarn packing. Mount a new O-ring [6] and insert the cap in the outer pipe; mount and tighten all screws.

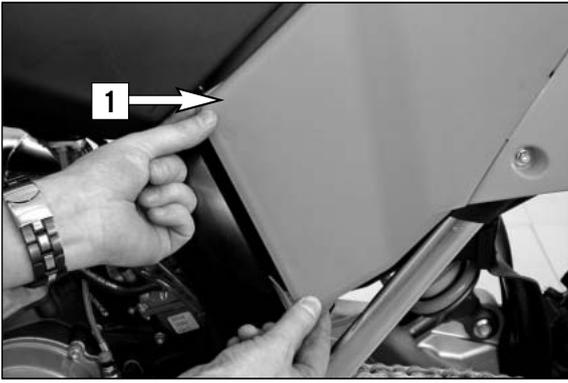
### NOTE:

In every exhaust repair procedure, the O-rings must be replaced by new ones. Glass fiber yarn packings are available from your licensed KTM mechanic.

Make sure the caps are screwed on tightly. Mount the muffler stress-free before tightening the fixing screws.

### **⚠ WARNING**

**The exhaust system becomes very hot while the motorcycle is running. to avoid burns do not start work on the exhaust system until it has properly cooled down.**

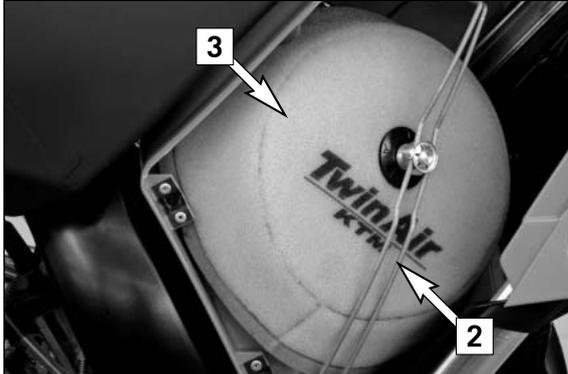


## Cleaning the air filter \*

The air filter must be cleaned prior to each race or whenever dust has accumulated. To clean, lift the filter box cover [1]. Detach the filter retaining clip [2] at the bottom, swing aside and take the air filter [3] and filter support [4] out of the filter box.

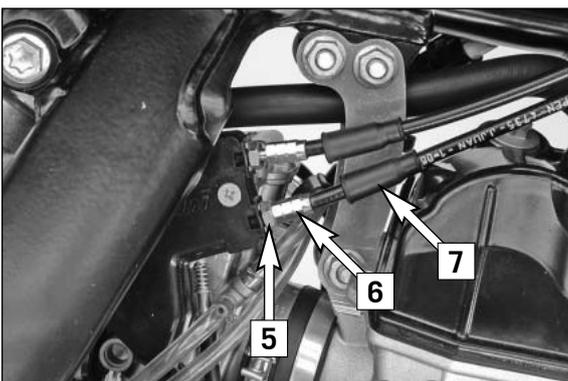
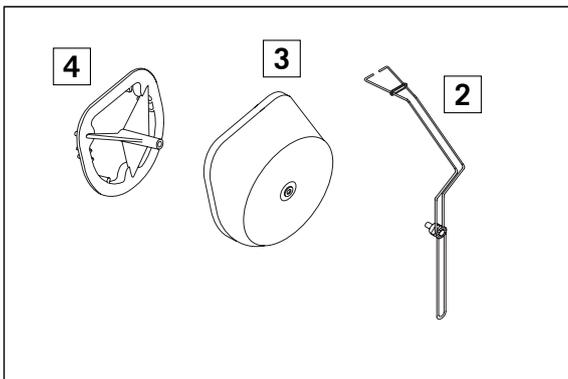
### ! CAUTION

- Do not clean foam filter with fuel or petroleum since these damage the foam. KTM recommends the products of the company Motorex for air filter maintenance (Bio Dirt Remover and Liquid Bio Power).
- Never start your motorcycle without any air filters. Otherwise, dust and dirt may penetrate and cause damage and increased wear.
- Dust and dirt can accumulate and damage the engine if the air filter is not mounted correctly.



Thoroughly wash the air filter in special cleaning fluid and allow it to dry well. Only press out the filter, do not wring it out under any circumstances. Oil the dry air filter with a high-grade filter oil. Also clean the air filter box. Check the carburetor collar for damage and that it is filled correctly.

Place the air filter on the filter support and insert both in the center of the filter box. Hold in place with the filter retaining clip.

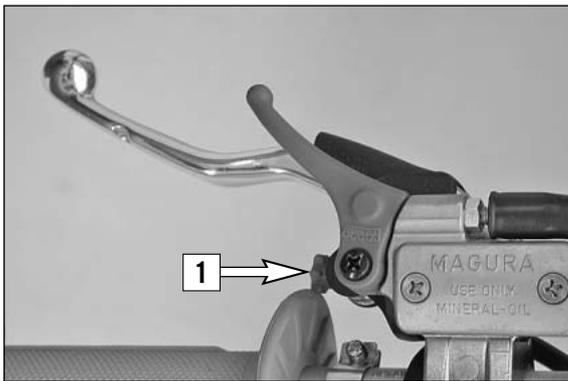


## Adjusting the throttle cables \*

The throttle grip should always provide for a backlash of 3-5mm. Besides, with the engine running, the idling speed must not change if you turn the handlebar all the way to the left or right.

To adjust the throttle cables, dismount the seat and the tank together with spoilers. Slide back the protection cover [5]. Loosen the counternut [6] and turn the adjusting screw [7] accordingly. Turning the adjusting screw counterclockwise will reduce the backlash, turning the adjusting screw clockwise will increase the backlash.

Tighten the counternut and check whether the throttle grip can be actuated smoothly. Mount tank and seat.



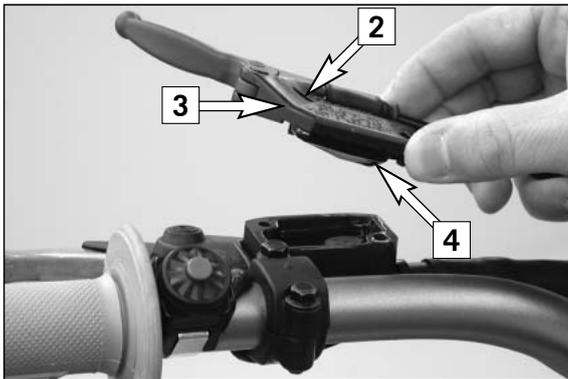
## Changing the original position of the clutch lever

The adjusting screw [1] can be used for individual adjustment of the original position of the clutch lever, thus allowing adjustment to an optimal position for every hand size.

Turning the adjusting screw counterclockwise reduces the distance between the clutch lever and the handlebar. Turning the adjusting screw clockwise increases the distance between the clutch lever and the handlebar.

### ! CAUTION

Adjustment of the clutch lever position is only possible within certain limits. Only turn the adjusting screw manually and never apply excessive force.



## Checking the oil level of the hydraulic clutch

To check the oil level in the master cylinder of the clutch remove the cover. For this purpose, remove screws [2] and cover [3] together with the rubber boot [4]. The oil level in the horizontal-standing master cylinder should be 4 mm below the upper edge.

**250 SX-F:** if necessary, fill up with brake fluid DOT 4 or DOT 5.1 (e.g. Motorex Brake Fluid DOT 5.1)

### ! WARNING

- Never use DOT 5 brake fluid! It is based on silicone oil and of a purple color. Seals and brake hoses must be especially adapted to it.
- Store brake fluid out of reach of children.
- Brake fluid can cause skin irritation. Avoid contact with skin and eyes. If you get brake fluid in your eyes, rinse with plenty of water and consult a doctor.

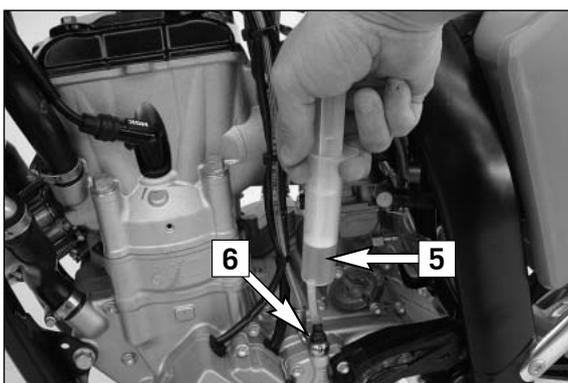
### ! CAUTION

- Don't let brake fluid get in contact with paint, it is an effective paint remover.
- Use only clean brake fluid taken from a tightly sealed container.

**450 SX-F:** if necessary, fill up with biodegradable hydraulic oil SAE 10 (e.g. Motorex Kupplungs-Fluid 75). Biodegradable hydraulic oil is available from your KTM dealer (50ml).

### ! CAUTION

KTM uses biodegradable, hydraulic mineral oil to actuate the hydraulic clutch of the 450 SX-F-model. Do not mix this oil with any other hydraulic oil. Always use original KTM hydraulic oil (available from your authorized KTM workshop) to make sure your clutch operates smoothly. Never refill with brake fluid.



## Bleeding of the hydraulic clutch \*

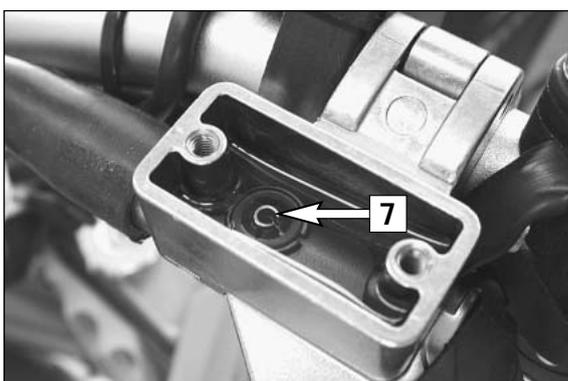
If the clutch lever starts to feel unresponsive, the clutch control system needs to be bled. You will need a bleeder syringe (special tool), available from your KTM dealer.

Turn the handlebar until the master cylinder is in a horizontal position, remove the screws [2], the cover [3] and the rubber boot [4].

Fill the bleeder syringe [5] with brake fluid (250 SX-F) or biodegradable hydraulic oil (450 SX-F).

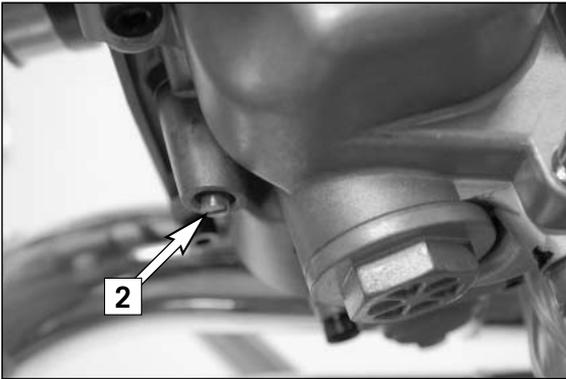
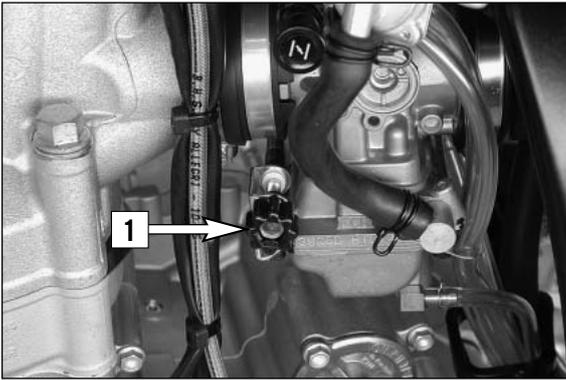
### ! CAUTION

KTM uses brake fluid DOT 5.1 for 250 SX-F and biodegradable, hydraulic mineral oil for 450 SX-F to actuate the hydraulic clutch - see above.



Remove the bleeder screw [6] from the slave cylinder and mount the bleeder syringe. Press oil into the system until the oil runs out of the hole [7] in the master cylinder without bubbles. Occasionally extract the oil from the master cylinder reservoir to keep it from overflowing.

After you finish bleeding, remove the bleeder syringe, mount the bleeder screw, correct the oil level in the reservoir and mount the cover (see above).



## CARBURETOR – Adjust idling (Keihin FCR-MX 39/41) \*

Idling adjustment of the carburetor strongly affects the engine's starting behavior. That is, an engine whose idling speed is adjusted correctly will be easier to start than one whose idling speed has not been adjusted correctly.

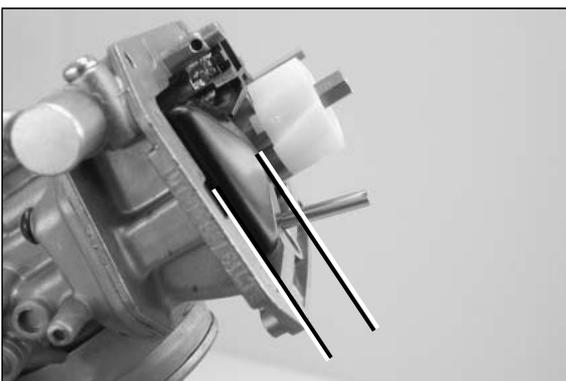
The idle speed is controlled by means of the adjusting wheel [1] and the mixture control screw [2]. The adjusting wheel is used to adjust the basic setting of the slide. The mixture control screw is used to control the idle mixture which arrives at the engine by way of the idle system. Clockwise turning reduces the fuel quantity (lean mixture), counterclockwise turning increases the fuel quantity (rich mixture).

TO ADJUST IDLING CORRECTLY, PROCEED AS FOLLOWS:

- 1 Turn in mixture control screw [2] up to the stop, and turn it back out to the basic position (see technical date-engine)
  - 2 Warm up the engine
  - 3 Use the adjusting wheel [1] to set the normal idle speed (1400 - 1500 rpm).
  - 4 Turn mixture control screw [2] slowly clockwise until idling speed starts to decrease. Memorize this position, and turn mixture control screw slowly counterclockwise until the idling speed decreases again. Adjust the point of the highest idling speed between these two positions. If, in the course of this procedure, the speed undergoes a relatively high increase, reduce the idle speed to a normal level and repeat the procedure specified in 4. Serious competitive racers will choose a setting approx. 1/4 turn (clockwise) leaner than this ideal value because their engine will heat up more when used in competitions.
- NOTE: If you fail to obtain a satisfying result by following the procedure described above, an incorrectly dimensioned idling nozzle may be the cause. If:
- a) the mixture control screw has been screwed in up to the stop without causing any change in rotational speed, a smaller idling jet has to be installed;
  - b) the engine dies when the mixture control screw is still open by 2 turns, a larger idling jet needs to be selected.
- Naturally, in cases of jet changes, you have to start your adjusting work from the beginning.
- 5 Then, use the adjusting wheel to set the desired idle speed.
  - 6 In cases of greater changes in the outside temperature and extremely different altitudes, the idling speed should be readjusted.

## Basic information on carburetor wear

As a result of engine vibrations, the throttle valve, jet needle, and needle jet are subjected to increased wear. This wear may cause the carburetor to malfunction (e.g., overly rich mixture). Therefore, these parts should be replaced after approx. 200 hours.



## Checking the float level (float height) \*

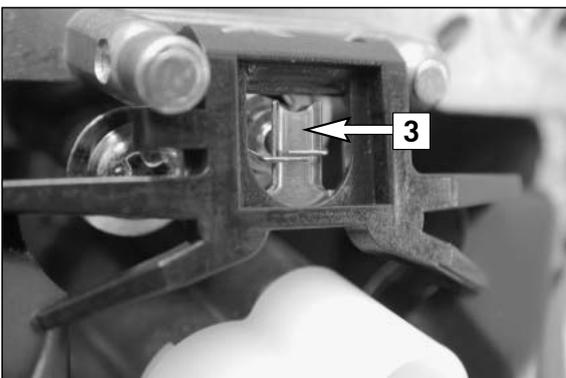
For this purpose, dismount the carburetor and remove the float chamber. Hold the carburetor in a slanted position such that the float will abut the float needle valve but not compress it.

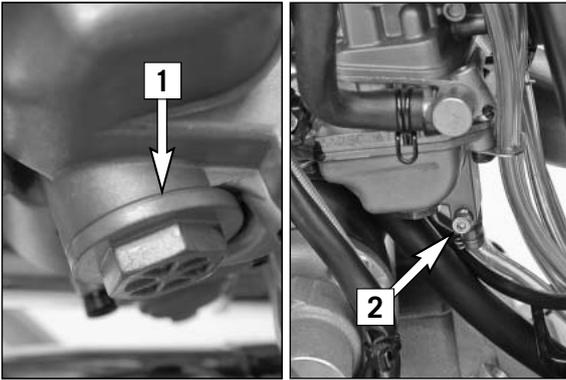
In this position, the edge of the float should be parallel with the float chamber sealing surface (see illustration).

If the float height does not correspond to the desired value, check the float needle valve and, if necessary, replace it.

If the float needle valve is o.k., you can adjust the float height by bending the float lever [3].

Mount the float chamber, install the carburetor, and adjust the idle speed.





## Draining the float chamber of the carburetor

Following every wet-cleaning procedure, the float chamber of the carburetor should be drained in order to remove any water that may have penetrated into it. Water in the float chamber leads to engine malfunction.

Make sure you do this while the engine is cold. Close the fuel tap and place a cloth under the carburetor, which is capable of absorbing the leaking fuel.

**250 SX-F:** Unscrew the plug [1] and clean it with compressed air. Then, mount the plug together with the gasket, open the fuel tap, and check the float chamber for leaks.

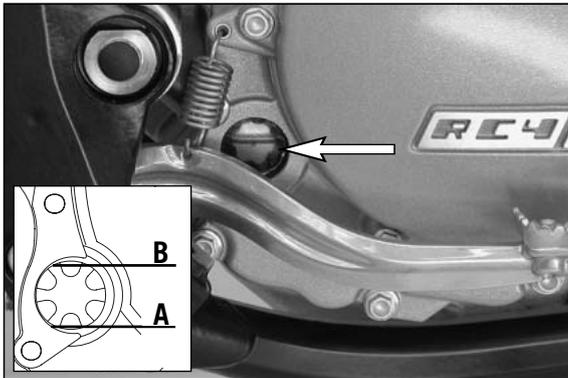
**450 SX-F:** Put the end of the hose that leads downward behind the engine into an appropriate container.

Open the drain plug [2], turning it counterclockwise a few times, and let the fuel drain from the float chamber.

Then tighten the drain plug and open the fuel tap.

### **⚠ WARNING**

- Fuel is easily flammable and toxic. When handling fuel, be sure to exercise the utmost caution. Never perform any work on the fuel system near open flames or burning cigarettes.
- Always allow the engine to cool off first. Immediately clean up any fuel which may have been spilled. Materials saturated with fuel are also easily flammable. In case you ingested fuel or fuel splashed into your eyes, consult a doctor immediately.
- Dispose of the fuel properly.



## Checking the engine oil level

The engine oil level can be checked with the engine either warm or cold. Place the motorcycle in an upright position and on a horizontal surface (not on the side stand).

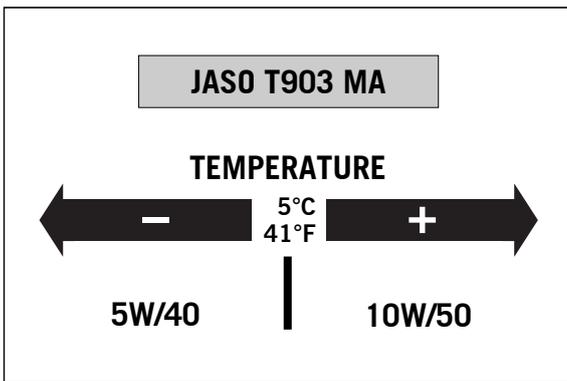
If the engine is cold, the engine oil must be visible at the lower edge of the inspection glass [A].

If the engine is warm, the engine oil must be visible up to the upper edge of the inspection glass [B].

Replenish the engine oil, if necessary.

### **! CAUTION**

Insufficient amounts of or low-grade engine oil lead to premature wear in the engine.



## Engine oil

Automobile engine oil used to be used for four-stroke motorcycles before there were separate motorcycle specifications. Different technical developments made it necessary to have a separate specification for four-stroke motorcycles - the JASO T903 MA standard. Whereas car engines require long changing intervals, motorcycle engines require a higher power output at higher speeds. Most motorcycle engines also use the same oil to lubricate the transmission and the clutch. The JASO MA standard responds to these special requirements. Only use fully synthetic engine oils that meet the JASO MA quality requirements (see information on the can).

KTM recommends Motorex Power Synt 4T in the 10W/50 viscosity (for temperatures over 5°C, 41°F) or 5W/40 (for temperatures under 5°C, 41°F).

### ! CAUTION

Insufficient oil or poor quality oil results in premature wear of the engine.

## Changing the engine oil \*

NOTE: When changing the engine oil, it is necessary to clean the short and long oil screens (450 SX-F only one oil screen) and to replace the oil filter. Engine oil has been changed with the engine at an operating temperature.

### ! CAUTION

An engine at operating temperature and the engine oil it contains are very hot – do not burn or scald yourself.

Place the motorcycle on a horizontal surface, remove the plug [1] and allow the oil to drain into a receptacle.

Clean plug (with magnet) thoroughly.

Once the entire oil has been drained, clean the sealing surface, mount the plug together with the sealing ring and tighten it to 20 Nm.

### CLEANING THE SHORT OIL SCREEN (250 SX-F) AND OIL SCREEN (450 SX-F)

The oil screen is accommodated in the hex-socket plug [3] at the engine bottom. Insert a pin-type key into the plug and tap on the key a few times with a hammer in order to relieve the stress acting on the plug. Dismount the oil screen, clean the components thoroughly and blow compressed air through them. Check the O-rings for damage and, if necessary, replace them. Mount the oil screen together with the plug again and tighten the plug to 10 Nm (250 SX-F) or 30 Nm (450 SX-F).

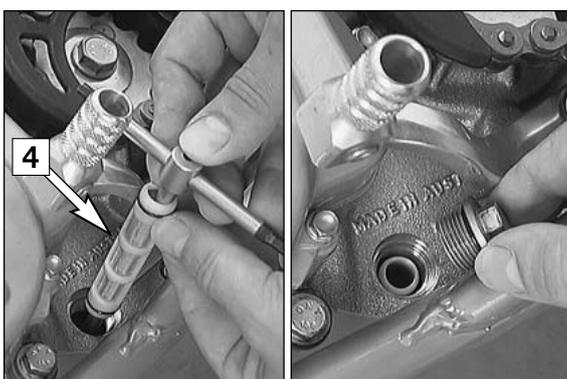
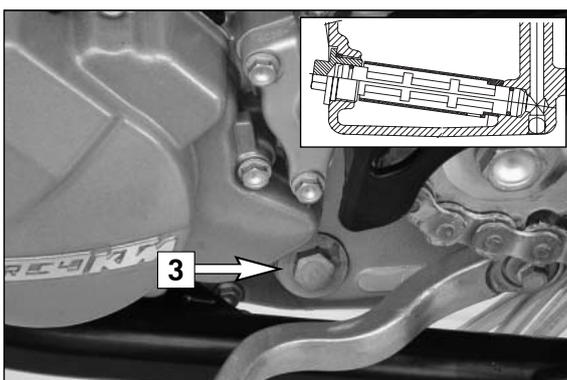
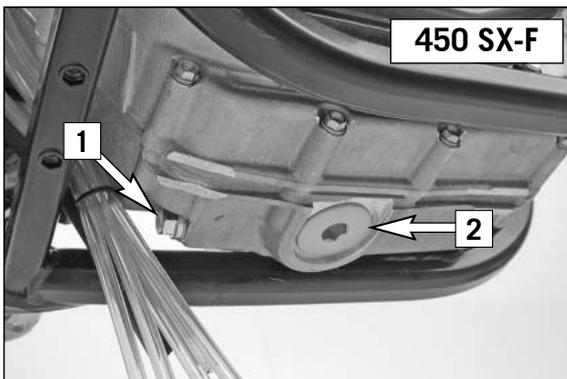
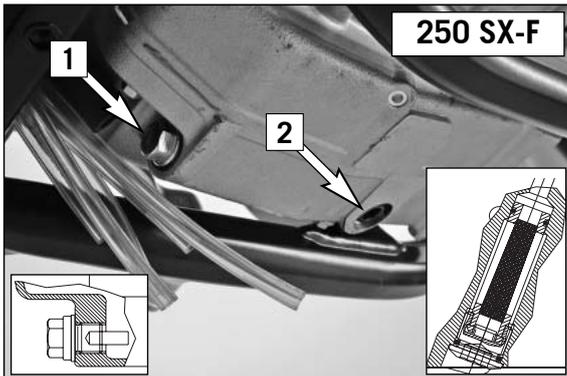
### CLEANING THE LONG OIL SCREEN (250 SX-F)

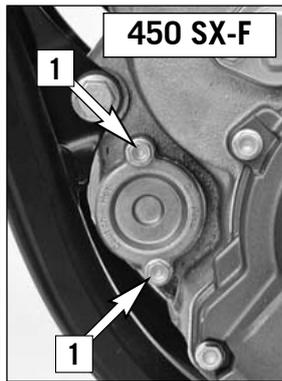
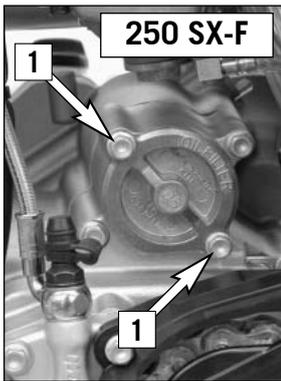
The long oil screen is accommodated in the hexagon plug [3] adjacent to the engine number. Dismount the plug together with the oil screen, clean the components thoroughly and blow compressed air through them. Check the O-rings for damage and, if necessary, replace them.

To mount the long oil screen [4], place it on an approx. 300 mm (12 in) long pin-type key or a similar tool. Insert the pin-type key through the opening into the bore of the opposite engine casing wall. Then, push the oil screen into the engine casing as far as possible. Remove the pin-type key, mount the plug and tighten it to 15 Nm.

### ! CAUTION

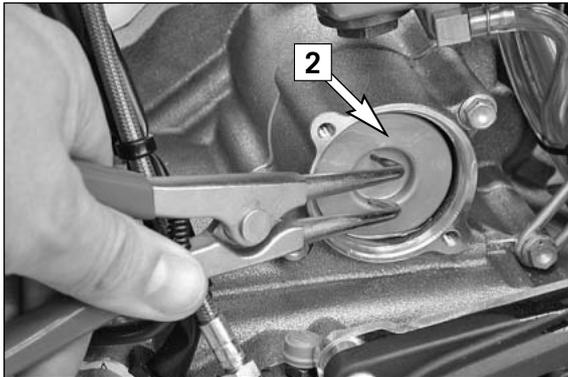
The oil screen is mounted slightly downwards, incorrectly fitted, the screen loses its function and this can cause increased engine wear.



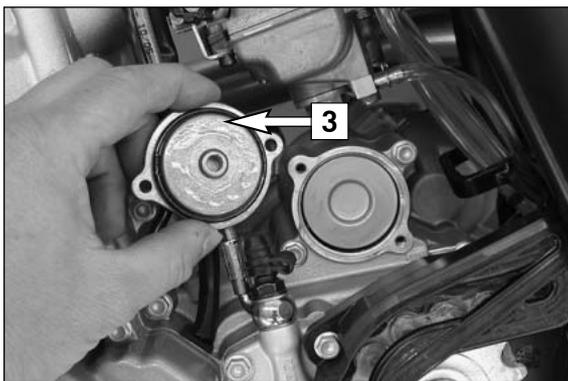


## Changing the oil filters

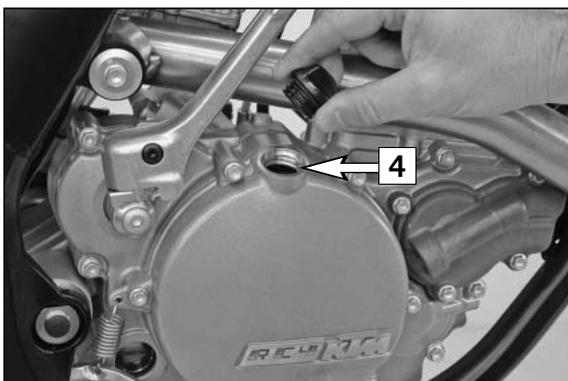
Place a receptacle underneath the engine to collect the drained oil. Remove the 2 screws [1] and dismount the oil filter cover.



Using circlip pliers, pull the oil-filter insert [2] out of the housing. Clean the oil filter cover, the sealing surface of the O-ring and the engine casing. Check the O-ring of the oil filter covers for damage and, if necessary, replace it.



Put the motorcycle on its side and fill the oil filter housing about halfway with engine oil. Fill oil filter with oil, place the oil filter in the filter box. Grease the O-ring [3] of the oil filter cover and mount the cover. Mount the screws and tighten them to 6 Nm.



Return the motorcycle to an upright position.

Remove the oil plug [4] at the clutch cover and fill in 1.1 liters (250 SX-F) or 1.3 liters (450 SX-F) of fully synthetic engine oil (Motorex Power Synt 4T 10W/50).

Start the engine and check all screwed connections and the oil filter cover for leaks.

Finally, check the engine oil level and, if necessary, correct it.

# TROUBLESHOOTING »

If you had the specified maintenance work on your motorcycle carried out, disturbances can hardly be expected. Should an error occur nevertheless, we advise you to use the troubleshooting chart in order to find the cause of error. We would like to point out that many operations cannot be performed by yourself. In case of uncertainty, please contact a KTM-dealer.

TROUBLE	CAUSE	REMEDY
Engine doesn't crank (E-starter).	Blown fuse	Dismount the left paneling and the filter box cover and replace the fuse in the starter relay.
	Discharged battery.	Recharge the battery and investigate the causes for discharging; contact a KTM dealer.
	Low outside temperature	Use the 12 V / 4 A-h battery included in the scope of supply.
Engine cranks but doesn't start (E-starter).	Operating error	Open fuel tap, tank fuel, actuate choke. Pay attention to starting information (see driving instructions).
Engine will not start (Kickstarter).	The motorcycle has been out of operation for a longer period of time. Therefore old fuel has accumulated in the float chamber	The easily inflammable components of the new fuels evaporate during longer periods of standing still. When the motorcycle has been out of operation for more than a week, it is therefore recommended to drain the old fuel from the float chamber. The engine will immediately start when the float chamber is filled with new fuel.
	Fuel supply interrupted	Close fuel tap, loosen fuel hose at carburetor, lead into a basin and open fuel tap <ul style="list-style-type: none"> <li>– if fuel leaks out, the carburetor may need cleaning</li> <li>– if no fuel leaks out, check tank ventilation, i.e. clean fuel tap</li> </ul>
	Flooded engine	Clean and dry the spark plug or exchange it, respectively
	Sooty or wet spark plug	Clean and dry the spark plug or exchange it, respectively
	Electrode gap too large	Adjust spark plug electrode gap to 0.6 mm
	Spark plug connector or spark plug faulty	Dismount spark plug, connect ignition cable, hold to ground (blank place on engine) and actuate starter, a strong spark must be produced at the spark plug <ul style="list-style-type: none"> <li>– If no spark is created replace the spark plug.</li> <li>– If the new spark plug doesn't produce a spark either, disconnect the spark plug connector from the ignition cable, hold it a distance of approx. 5 mm from ground and start.</li> <li>– If a spark now occurs, replace spark plug cap</li> <li>– If no spark is produced, control ignition system</li> </ul>
	Short circuit cable scored in wiring harness, short circuit button faulty	Dismount the fuel tank, disconnect the black/yellow cable from the cable of the short-circuit button, respectively, and check the ignition spark. If a spark is generated, look for the problem in the short-circuit circuit.
	The plug connection of the CDI-unit, the pulse generator or the ignition coil has oxidized	Remove the seat and the fuel tank. Clean the plug connection and treat it with contact spray
	Water in carburetor or jets blocked	Dismount and clean the carburetor
Engine fails to idle	Glogged idling jet	Disassemble the carburetor and clean the jets
	Incorrect adjustment of adjusting screws on carburetor	Have the carburetor adjusted
	Defective spark plug	Replace the spark plug
	Defective ignition system	Have the ignition system checked

# TROUBLESHOOTING »

TROUBLE	CAUSE	REMEDY
Engine does not rev up	Carburetor fuel level too high because float needle valve is dirty or worn out  Loose carburetor jets  Electronic ignition timing faulty	Dismount carburetor and check if worn out  Tighten jets  Have ignition system checked
Engine will not reach full power	Fuel supply partially interrupted or carburetor dirty  Float leaks  Air filter very dirty  Exhaust system is not tight, deformed, or the silencer does not contain enough glassfiber yarn  Valve gap too small  Electronic ignition timing faulty	Clean and check fuel system as well as carburetor  Replace the float  Clean or replace air filter  Check if exhaust is damaged, replace glasfiber yarn in exhaust silencer  Adjust valve gap  Have ignition system checked
Engine stops or splutters in carburetor	Insufficient fuel  Engine takes air out of control	Clean and check fuel system and carburettor  Check rubber sleeve and carburetor for tight fit
Engine gets too hot	Insufficient cooling liquid  Not enough air stream  Cooling system has not been bled  Radiators very dirty  Foam formation in cooling system  Bent cooling hose	Refill cooling liquid (see maintenace work), check cooling system for leaks  Drive on briskly  Bleed cooling system  Clean radiators with water jet  Replace cooling liquid, use antifreeze liquid with brand name  Shorten or replace cooling hose
High oil consumption	Hose of engine ventilation is bent  Engine oil level too high  Motor oil too thin (viscosity)	Dislocate i.e. replace non-buckling vetilation hose  Check engine oil level and, if necessary, correct it  Use thicker engine oil; see chapter "Engine oil"
The battery is discharged	The battery isn't charged by the generator because	Remove seat and fuel tank and check voltage regulator connections; voltage regulator and generator should be checked by a KTM dealer.

## CLEANING »

Clean your motorcycle regularly in order to maintain the beauty of its plastic surfaces. The best manner would be to use warm water that has been mixed with a normal brand-name washing detergent and a sponge. The hard dirt can be removed before washing with the help of a soft water jet.

### ! CAUTION

**If using a power washer, do not point the water jet at the electric components, plugs, cables, bearings, carburetor, etc. The high pressure will cause water to penetrate into the components and can cause them to malfunction or lead to premature wear.**

- You should use normal brand-name detergents to clean the motorcycle. Especially dirty parts should also be cleaned with the help of a paint brush.
- Before cleaning with water, plug the exhaust pipe to prevent water ingress
- After the motorcycle has been rinsed with a soft water jet, it should be dried by air pressure and a cloth. Drain the float chamber of the carburetor. Then take a short drive until the engine has reached the working temperature and also use the brakes. By warming these components, the residual water can evaporate from inaccessible parts of the engine and the brakes.
- Slide back the protective covers on the handlebar-mounted instruments so that any water that may have seeped into this part of the motorcycle is allowed to evaporate.
- Once the motorcycle has cooled down, oil or grease all sliding and bearing points. Treat the chain with a chain spray. Also oil the fuel tap.
- To avoid any failures in of the electric system, you should treat the short-circuit button and socket connectors with a contact spray.

## STORAGE »

Should you wish to make a pause over a longer space of time, please observe the following instructions:

- Clean motorcycle thoroughly (see chapter: CLEANING)
- Change engine oil, oil filter (old engine oil contains aggressive contaminants).
- Check antifreeze and amount of cooling liquid.
- Warm up the engine once again, close the fuel cock and wait until the engine dies. Then open the drain plug of the float chamber to remove the remaining fuel.
- Remove spark plug and fill in approx. 5 ccm of engine oil into the cylinder through the opening. Actuate kick-starter 10 times or E-starter motor 5 sec. in order to distribute the oil onto the cylinder walls and mount the spark plug.
- Set piston to compression so that the valves will be closed (slowly operate the kickstarter until you can hear the automatic decompressor click (release))
- Let fuel flow out of tank into an appropriate container.
- Correct tire pressure.
- Lubricate pivot points of the control levers, foot rests, etc. as well as the chain.
- Service the shock absorber linkage
- Disassemble and charge battery (see chapter: BATTERY).
- The storage place should be dry and not subjected to excessive temperature fluctuations.
- Cover the motorcycle with an air permeated tarpaulin or blanket. Do not use airtight materials as a possible humidity might not be able to escape and could cause corrosion.

### ! CAUTION

**It would be very bad to let the engine run for a short time during the storage period. The engine would not get warmed up enough and the thus developed steam would condense during the combustion process and cause the valves and exhaust to rust.**

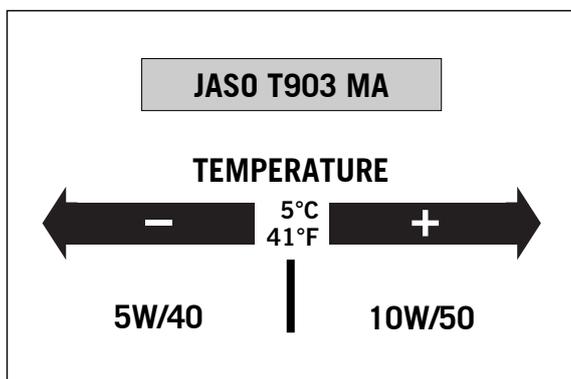
### USE AFTER A PERIOD OF STORAGE

- Mount the charged battery (regard polarity).
- Fill up tank with fresh fuel.
- Check motorcycle as before each start (see driving instructions).
- Take a short, careful test ride first.

NOTE: Before you put your motorcycle away for the winter, you should check all parts for their function and wear. Should any service jobs, repairs, or any refitting be necessary, you should have them carried out during the off-season (lower workload at mechanics' shops). This way, you can avoid the long waiting times at your mechanic at the beginning of the next biking season.

# TECHNICAL DATA – ENGINE »

ENGINE	250 SX-F	450 SX-F
Design	Liquid-cooled single cylinder 4-stroke engine	
Displacement	249.51 ccm	449.3 ccm
Bore/Stroke	76 / 55 mm	97 / 60.8 mm
Ratio	12.8 : 1	12.5 : 1
Fuel	unleaded fuel with at least RON 95	
Valve timing	4 valves controlled by finger levers and 2 camshafts, driven by a pair of spur gears and a tooth-type chain	
Camshaft	05	773.36.009.100 / 773.36.010.100
Valve diameter Intake	30.9 mm	40.4 mm
Valve diameter Exhaust	26.5 mm	31.7 mm
Valve clearance cold Intake	0.10 - 0.20 mm	0.15 mm
Valve clearance cold Exhaust	0.12 - 0.22 mm	0.20 mm
Crank shaft bearing	2 cylinder roller bearings	
Connecting rod bearing	needle bearing	
Top end bearing	bronze bushing	
Piston	aluminium alloy forged	
Piston rings	1 compression ring, 1 oil scraper ring	
Engine lubrication	pressure circulation lubrication with 2 rotor pumps	
Engine oil	full synthetic oil (see below)	
Quantity of engine oil	1.1 liters	1.3 liters
Primary drive	22:68	29:74
Transmission claw shifted	6-speed	4-speed
1st gear	13:32	17:32
2nd gear	15:30	19:30
3rd gear	17:28	21:28
4th gear	19:26	23:26
5th gear	21:25	-
6th gear	22:24	-
Ignition system	contactless DC-CDI ignition with digital advanced system by KOKUSAN	
Generator	no generator	42 Watts at 10.000 rpm
Spark plug	NGK CR 9 EBK	
Cooling system	liquid cooled, permanent rotation of cooling liquid through mechanically driven water pump	
Cooling liquid	1.2 liters, 50% antifreeze, 50% distilled water, at least -25° (-13° F)	
Starting device	kick starter	E-starter



## Engine oil

Only use fully synthetic engine oils that meet the JASO MA quality requirements (see information on the can).

KTM recommends Motorex Power Synt 4T in the 10W/50 viscosity (for temperatures over 5°C, 41°F) or 5W/40 (for temperatures under 5°C, 41°F).

### ! CAUTION

Poor oil quality or minor quantity cause early engine-wear.

# TECHNICAL DATA – ENGINE »

TIGHTENING TORQUES – ENGINE 250/450 SX-F		
Hexagon collar screw, engine case, clutch cover, ignition cover, water pump cover	M6	10 Nm
Hexagon collar screw, engine case, clutch case	M7x1	14 Nm
Oil drain plug	M12x1.5	20 Nm
Allen head plug, oil screen short (250 SX-F)	M16x1.5	10 Nm oiled
Hexagon plug, oil screen long (250 SX-F)	M20x1.5	15 Nm
Plug, oil screen (450 SX-F)	M32x1,5	30 Nm oiled
Collar screw for oil filter cover (250 SX-F)	M5	6 Nm
Collar screw for oil filter cover (450 SX-F)	M4	6 Nm
Plug pressure valve	M12x1,5 / M14x1,5	18 Nm
Hexagon collar screw/collar nut cylinder / cylinder head	M6	10 Nm oiled
Cylinder head screw (250 SX-F)	M10	40/50 Nm oiled
Collar nut cylinder head (450 SX-F)	M10x1,25	10 Nm/30 Nm/50°
Hexagon collar screw, exhaust flange	M6	Loctite 243 + 10 Nm
Valve cover screws	M6	10 Nm
Hexagon nut, primary gear (250 SX-F)	M18x1.5 left	Loctite 243 + 150 Nm
Hexagon nut, primary gear (450 SX-F)	M27x1	60 Nm
Nut for inner clutch hub (250 SX-F)	M18x1.5	Loctite 243 + 120 Nm
Nut for inner clutch hub (450 SX-F)	M18x1.5	Loctite 243 + 80 Nm
Hexagon collar screw, clutch spring	M6	10 Nm
Allan head screw, shift roller locking piece	M6	Loctite 243 + 10 Nm
Hexagon collar screw, locking lever	M5	Loctite 243 + 6 Nm
Plug for chain tensioner	M24x1.5	25 Nm
Hexagon collar screw, stator	M5	Loctite 243 + 6 Nm
Hexagon collar screw, pulser coil	M5	Loctite 243 + 6 Nm
Hexagon collar nut, flywheel (250 SX-F)	M12x1	60 Nm
Flywheelscrew (450 SX-F)	M10x1	80 Nm oiled
Cable retaining bracket (ignition)	M6	Loctite 243 + 6 Nm
Allan head screw, kickstarter	M8	Loctite 243 + 25 Nm
Hexagon collar screw, shift lever	M6	Loctite 243 + 10 Nm
Hexagon screw, engine sprocket	M10	Loctite 243 + 60 Nm
Spark plug	M10	10-12 Nm

BASIC CARBURATOR SETTING		
	250 SX-F	450 SX-F
Type	Keihin FCR-MX 3925E	Keihin FCR-MX 4125F
Main jet	175	185
Jet needle	OBETP	OB DTP
Idling jet	40	40
Main air jet	200	200
Idling air jet	100	100
Needle position	5 <sup>th</sup> from top	4 <sup>th</sup> from top
Starting jet	85	85
Mixture control screw open	1.25	1.5
Slide	15	15
Performance restrictor	–	–
Stop pump membrane	858 / 2.15 mm	858 / 2.15 mm
Hot start device	2.5 mm	2.5 mm

# TECHNICAL DATA – CHASSIS »

CHASSIS	250 SX-F	450 SX-F
Frame	Central tube chrome-moly-steel frame	
Fork	WP 4860 CC MA	
Wheel travel front/rear	300/335 mm	
Rear suspension	WP PDS shock absorber 5018 DCC, aluminium swing arm	
Front brake	Disk brake with carbon-steel brake disc Ø 260 mm (10.2 in), brake caliper floated	
Rear brake	Disk brake with carbon-steel brake disc Ø 220 mm (8.7 in), brake caliper floated	
Brake disc	Wear limit max. 2.5 mm front and 3.5 mm rear	
Front tires	80/100-21"	
Air pressure offroad	1.0 bar	
Rear tires	110/90-19"	
Air pressure offroad	1.0 bar	
Fuel tank capacity	8 liters (2.1 US gall.)	
Final drive ratio	13:48	14:52
Chain	5/8 x 1/4"	
Available final sprockets	38, 40, 42, 45, 48, 49, 50, 51, 52	
Battery	-	maintenance free 12V 3 Ah and 4Ah
Steering head angle	63.5°	
Wheel base	1475 ± 10 mm	
Seat height, unloaded	925 mm	
Ground clearance, unloaded	380 mm	
Weight (without fuel)	approx . 98.2 kg	approx . 104.2 kg

STANDARD ADJUSTMENT – FORK		
	250 SX-F	450 SX-F
	WP 4860 CC MA 14.18.7C.03	WP 4860 CC MA 14.18.7C.05
Compression adjuster	15	15
Rebound adjuster	20	21
Spring	4.4 N/mm	4.6 N/mm
Oil capacity without CC	385 ml	375 ml
Oil capacity CC	195 ml	195 ml
Gas pressure	1.2 bar	1.2 bar
Fork oil	SAE 5	SAE 5

STANDARD ADJUSTMENT – SHOCK ABSORBER		
	250 SX-F	450 SX-F
	WP PDS 5018 DCC 12.18.7C.03	WP PDS 5018 DCC 12.18.7C.05
Compression adjuster	15 LS (low speed)	15 LS (low speed)
	1 HS (high speed)	1 HS (high speed)
Rebound adjuster	25	25
Spring	63-250	66-250
Spring preload	5 mm	5 mm
Static sag	33 mm	33 mm
Riding sag	107 mm	107 mm

# TECHNICAL DATA – CHASSIS »

TIGHTENING TORQUES – CHASSIS 250/450 SX-F		
Collar screw, front wheel spindle	M24x1,5	40 Nm
Brake caliper, front	M8	Loctite 243 + 25 Nm
Brake disks	M6	Loctite 243 + 14 Nm
Clamping screws, top triple clamp	M8	17 Nm
Clamping screws, bottom triple clamp	M8	12 Nm
Clamping screws, fork stubs	M8	15 Nm
Clamping screw steering stem	M8	Loctite 243 + 17 Nm
Steering head screw top	M 20x1,5	10 Nm
Steering head screw bottom	M 20x1,5	Loctite 243 + 60 Nm
Collar nut, swing arm bolt	M16x1,5	100 Nm
Hexagon collar screw, handlebar clamp	M8	20 Nm
Allan head screw, handlebar support	M10	Loctite 243 + 40 Nm
Shock absorber, top	M12	70 Nm
Shock absorber, bottom	M12	70 Nm
Collar nut rear wheel spindle	M20x1,5	80 Nm
Sprocket screws	M8	Loctite 2701 + 35 Nm
Ball joint for push rod	M6	10 Nm
Engine mounting bolt	M10	60 Nm
Engine brace	M8	33 Nm
Spoke nipple		4,5 - 6 Nm
Screw adjusting ring spring preload shock abs.	M6	8Nm
Seat fixing nut	M 12x1	20 Nm
Other screws on chassis	M6	10 Nm
	M8	25 Nm
	M10	45 Nm
Other collar nuts on chassis	M6	15 Nm
	M8	30 Nm
	M10	50 Nm

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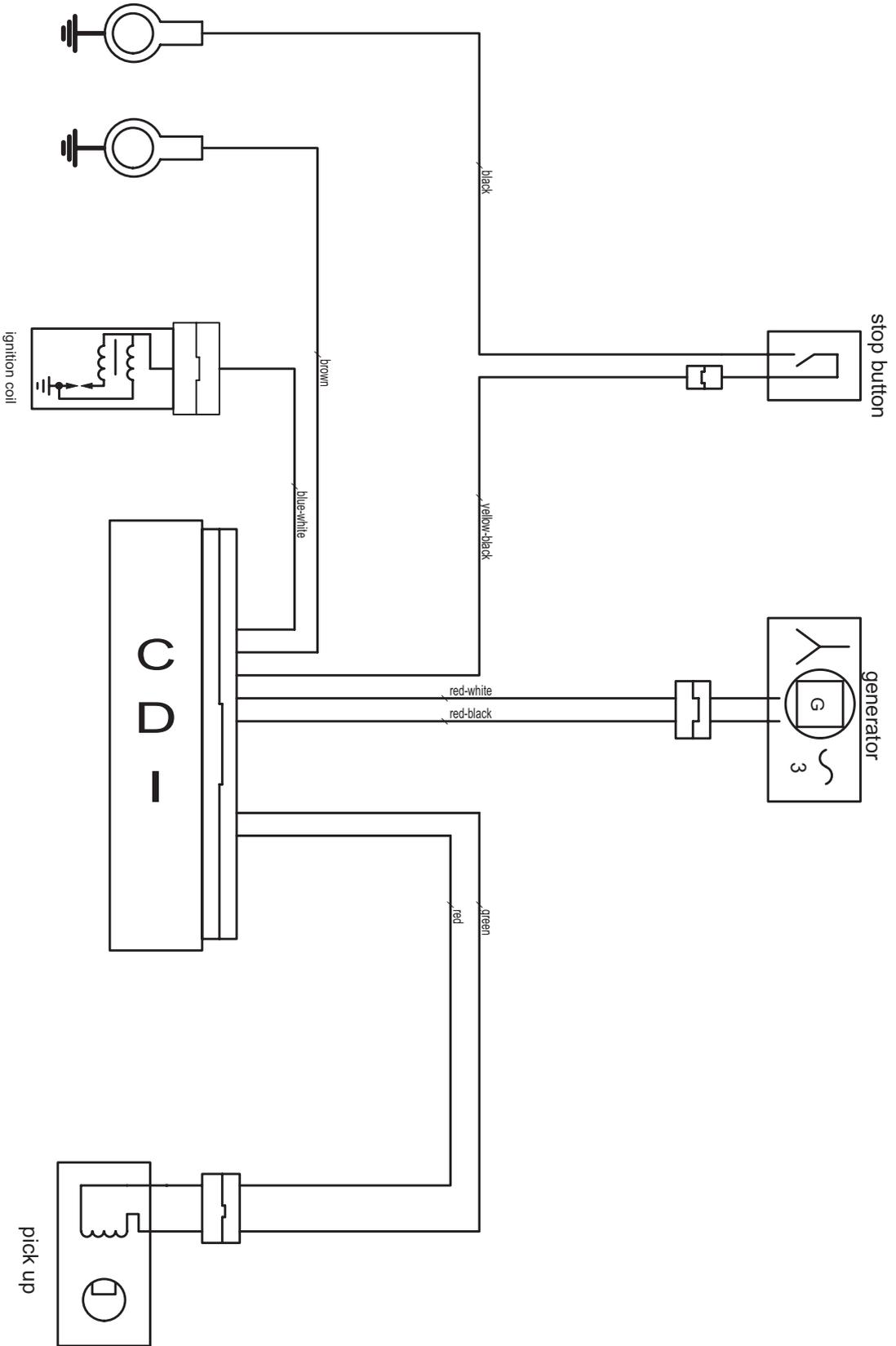
# SCHALTPLAN » WIRING DIAGRAM



250 SX-F 2007

CDI harness - 594.39.032.000

08.04.2006



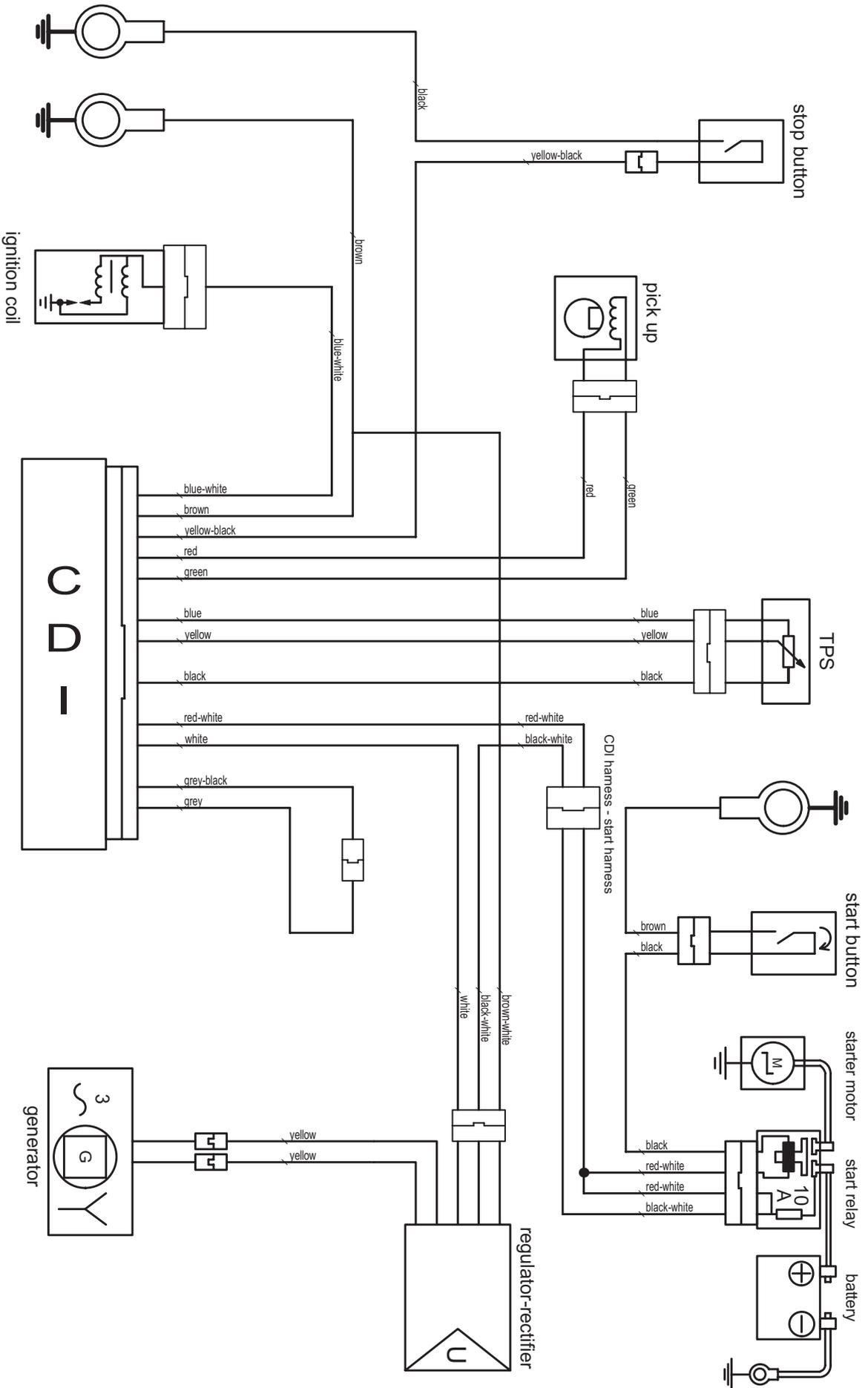
# SCHALTPLAN » WIRING DIAGRAM



SX-F 450 2007

CDI harness - 773.39.032.000  
start harness 773.11.079.000

10.04.2007



# SCHALTPLAN » WIRING DIAGRAM

ENGLISH	DEUTSCH	ITALIANO	FRANCAIS	ESPAÑOL
Battery	Batterie	Batteria	Batterie	Batería
Generator	Generatore	Generatore	Alternateur	Generador
Ignition coil	Zündspule	Bobina d'accensione	Bobine d'allumage	Bobina de encendido
Pick up	Impulsgeber	Pick up	Capteur d'allumage	Generador de impulsos
Regulator-rectifier	Regelgleichrichter	Regolatore-raddrizzatore	Régulateur/redresseur	Regulador rectificador
Start button	Starttaster	Pulsante d'avviamento	Bouton de démarrage	Botón de arranque
Start relay	Startrelais	Relè d'avviamento	Relais de démarreur	Relé del arranque
Starter motor	Startermotor	Motorino d'avviamento	Démarrreur	Motor de arranque eléctrico
Stop button	Not-Aus-Schalter	Interruttore di arresto d'emergenza	Bouton d'arrêt d'urgence	Interrupor de parada de emergencia
Throttle position sensor (TPS)	Vergaserpotentiometer	Potenzionmetro carburatore	Capteur d'ouverture de carburateur	Potenciómetro del carburador

CABLE COLOURS	KABELFARBEN	CAVO COLORATO	COULEUR DE CABLE	COLOR DE CABLE
bl: black	bl: blau	bl: nero	bl: noir	bl: negro
ye: yellow	ye: gelb	ye: giallo	ye: jaune	ye: amarillo
bu: blue	bu: blau	bu: blu	bu: bleu	bu: azul
gn: green	gn: grün	gn: verde	gn: vert	gn: verde
re: red	re: rot	re: rosso	re: rouge	re: rojo
wh: white	wh: weiß	wh: bianco	wh: blanc	wh: blanco
br: brown	br: braun	br: marrone	br: brun	br: marron
or: orange	or: orange	or: arancione	or: orange	or: naranja
pi: pink	pi: rosa	pi: rosa	pi: rose	pi: rosado
gr: grey	gr: grau	gr: grigio	gr: gris	gr: gris
pu: purple	pu: violett	pu: violetto	pu: violet	pu: violeta



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