REPAIRMANUAL2004-2009

BEDIENUNGSANLEITUNGEN
OWNER'S MANUAL
MANUALE O'USO
MANUEL D'UTILISATION
MANUAL DE INSTRUCCIONES

REPARATURANLEITUNG
REPAIR MANUAL
MANUALE DI REPARAZIONE
MANUEL DE REPARATION
MANUAL DE REPARACION

FEDERBEIN
SHOCK ABSORBER
AMMORTIZZATORE
AMMORTISSEUR
AMORTIGUADOR

GABEL
FORK
FORCELLA
FOURCHE
HORQUILLA

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OWNER'S MANUAL 2007

85/105 SX

ART. NR. 3.211.143 EN

ENGLISH

KTM

INTENDED PURPOSE

KTM mini-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 thoroughly before letting your youngster ride the motorcycle for the first time. This manual contains important information and recommendations that will help you and your youngster to operate and handle the motorcycle properly. In the interest of everybody involved, we urge you to pay particular attention to instructions and information 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!**

This manual contains important information on the operation and maintenance of your new KTM motorcycle. It went to press describing your model's latest state of development. Nevertheless, the descriptions may deviate slightly from the current design as our motorcycles are permanently improved.The Owner's Manual is an integral part of the motorcycle and must be handed over to the new owner when the motorcycle is sold.

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.

We expressly point out that work marked with an asterisk (*) in the chapter "Maintenance work on the chassis and engine" must be performed by a KTM workshop. If maintenance work should become necessary during a competition, it must be performed by a trained mechanic.

Please strictly observe the prescribed running-in periods and inspection and maintenance intervals. Compliance with these instructions will significantly prolong 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 the safety of your child, only use spare parts and accessories approved by KTM. KTM shall not assume any liability for other products or consequential damage resulting from the use of such products.
When special needs arise, please contact a KTM dealer, who will seek the assistance of the KTM importer if necessary.

SAFETY
Parents should keep in mind that the safety of their youngsters always depends on the efforts made by the parents to ensure that the motorcycle is kept in good working order and only used on safe terrains. Nevertheless, driving the motorcycle, like driving any other vehicle, involves a potential risk. Therefore, please make sure that all fundamental precautions are taken. Please also read the „INFORMATION ON SAFE DRIVING FOR PARENTS“ on page 4.

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
Riding an off-highway motorcycle is a wonderful form of outdoor recreation and we certainly hope that you and your youngsters will enjoy it to the full. However, this enjoyable outdoor activity can cause environmental problems or lead to conflicts with other people. Responsible use of the motorcycle will prevent such problems and conflicts. You can contribute to securing the future of motorcycling by making sure that you and your youngsters only use the motorcycle within the limits established by the applicable laws, making environmental protection one of your top priorities and never violating other people's rights.

In this spirit, we hope that you and your youngsters will always safely enjoy your motorcycle!

KTM-SPORTMOTORCYCLE AG
5230 MATTIGHOFEN, AUSTRIA

Attachments: 1 spare parts manual chassis & engine

The 85/105 SX mini motorcycles are off-road motorcycles designed for one person only. They are not allowed on public roads.

The vehicle dimensions and components are designed for children from 10 to 15 years of age with a maximum weight of 75 kg (33,98 lb).

- Have your youngster wear proper protective gear whenever he or she rides the motorcycle: helmet, eye protection, chest, back, arm and leg protectors, gloves and boots. To set a good example, be sure to wear protective gear yourself whenever riding a motorcycle!
- Before your youngster takes his or her first ride, explain how each of the controls works and check if your youngster has understood what you explained. We recommend to review the entire owner's manual with your youngster item by item, paying particular attention to the specially marked warnings and pointing out the danger of injury.
- Instruct your youngster about riding and falling techniques, explain how the motorcycle will respond to shifting of the rider's weight, etc.
- Before starting the motorcycle for the first time check whether the basic fork and shock absorber settings are suitable for your child's weight (see chapter on checking the basic chassis setting)
- Before using the motorcycle you should always check all components for proper operation (see mainenance schedule). Have your youngster perform these technical checks himself / herself as well.
- Whenever you go for a ride with your youngster, keep in mind that the speed should be adjusted to your youngster and not the other way around.
- Your youngster must understand that all instructions he or she receives from you or any other supervising adult must be followed.
- Your child must be physically ready to ride a motorcycle. This means that he or she must at least be able to ride a bicycle. Being good at sports that require fast reactions is an additional advantage. Your youngster should be strong enough to pick up the motorcycle after a fall.
- Never demand too much of your youngster. Give him or her time to get used to the motorcycle and to improve his / her riding skills. Do not even consider letting your youngster participate in a race before his / her physical condition, riding skills and motivation have sufficiently developed.
- Explain to your youngster that he / she should always adjust his / her riding speed to the local conditions as well as to his / her own riding skills and that excessive speed can cause falls and severe injuries. Always keep in mind that youngsters tend to underestimate dangers or fail to recognize them altogether. The riding speed must be reduced, in particular, on unknown terrain.
- Never let your youngster ride the motorcycle without supervision. An adult should always be present.
- The motorcycle is designed for one rider only. Your youngster is not allowed to transport a passenger.
- When you go for a ride, somebody at home should always know where you are going and when you will be back. This makes it easier to send you help, should problems occur.

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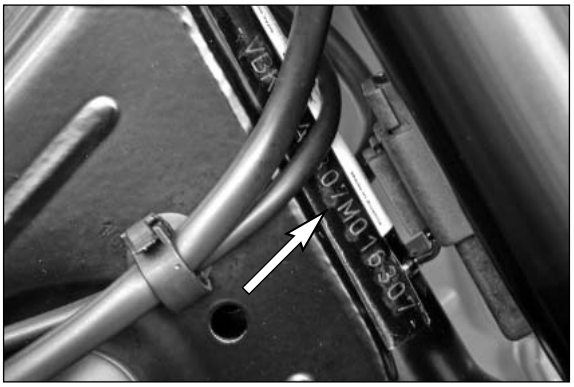
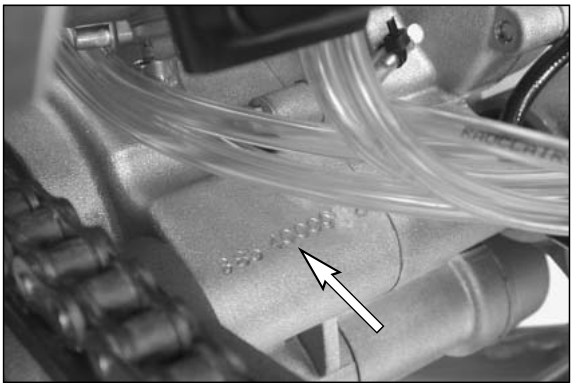
SERIAL NUMBER LOCATIONS »



Chassis number

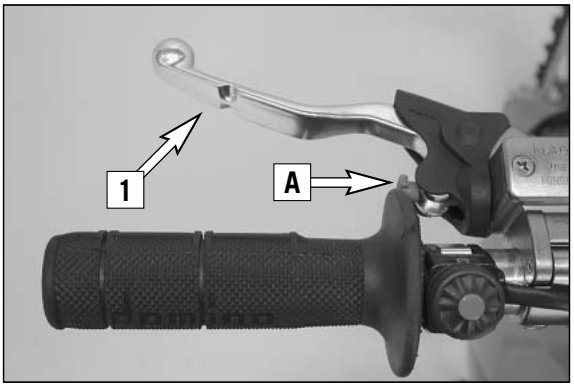
The chassis number is stamped on the right side of the steering head tube. Enter this number in the field on page no 1.



Engine number

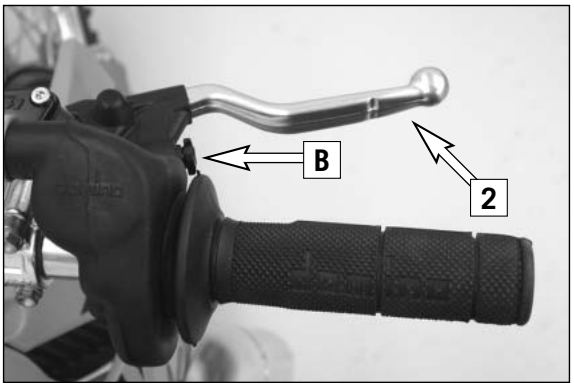
The engine number is stamped into the engine housing underneath the carburetor. Enter this number in the field on page no 1.

OPERATION INSTRUMENTS »



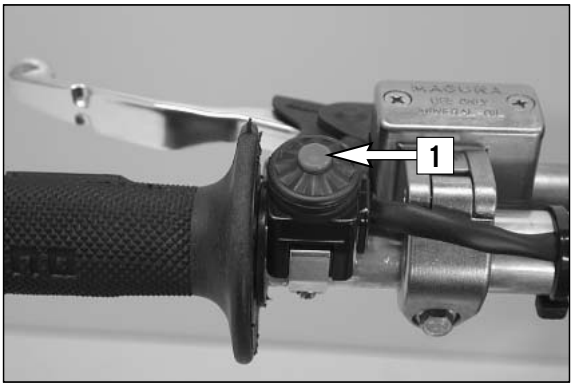
Clutch lever

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.



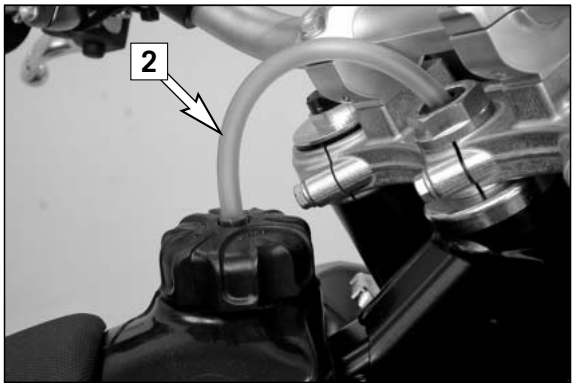
Hand brake lever

The hand brake lever **[2]** is mounted on the handle bars on the right and actuates the front wheel brake.The adjusting screw **[B]** is used to change the original position of the hand brake lever (see maintenance work on chassis and engine).



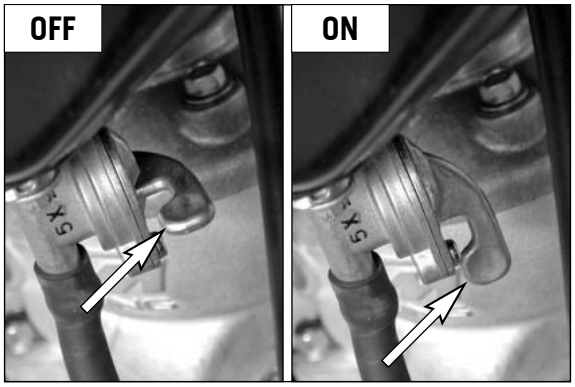
Short circuit button

The short circuit button **[1]** turns off the engine. When pressing this button, the ignition circuit is short-circuited.



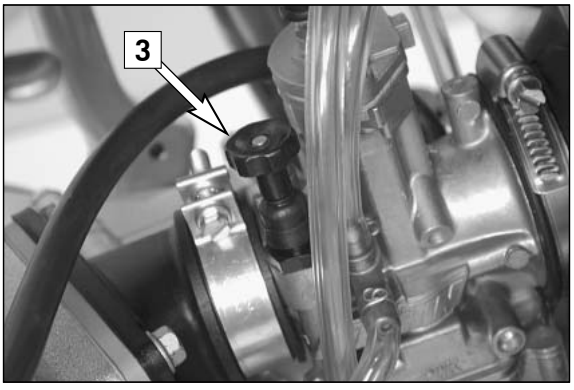
Filler cap

To open it: turn filler cap counter-clockwise.
To close it: put filler cap back on and tighten it by turning it clockwise. Install tank breather hose **[2]** without kinks.



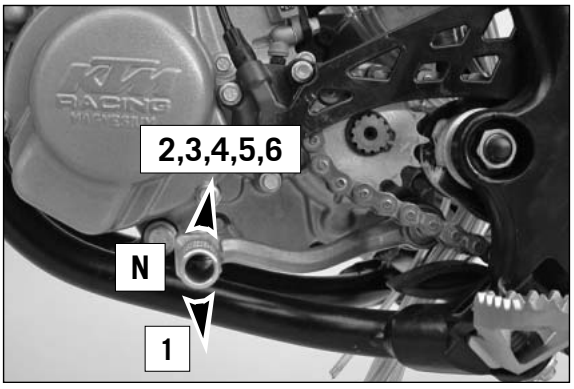
Fuel tap

OFF In this position the fuel tap is closed. No fuel can flow to the carburetor.
ON When the motorcycle is running the grip is must be in the ON position to enable fuel to flow to the carburetor. The tank will drain completely in this position.



Choke

The choke button **[3]** is located on the left side of the carburetor. Pulling the choke button **[3]** all the way out opens a bore in the carburetor through which the engine can take in additional fuel, thus achieving the "rich" fuel air mixture needed for cold starting.
Pushing the choke button back in closes the bore in the carburetor.

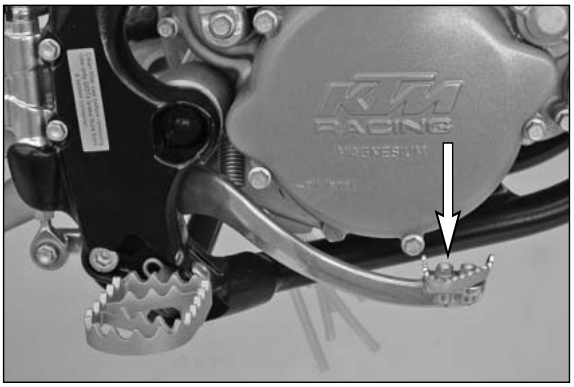


Shift lever

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

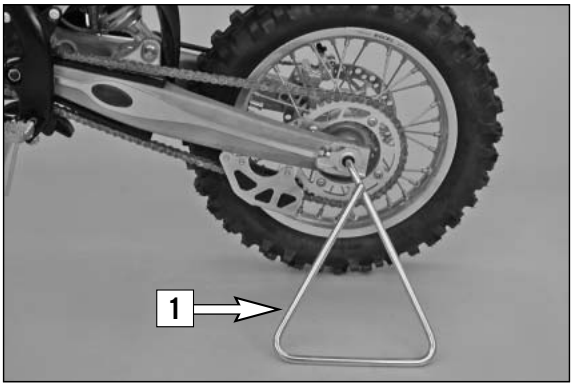
Kickstarter

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



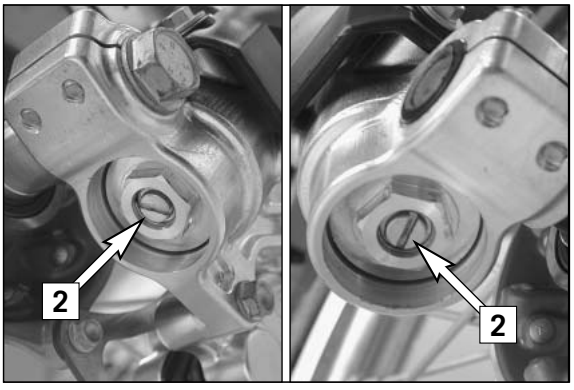
Foot brake pedal

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



Plugin- Stand

The plug-in stand **[1]** included in the scope of supply can be plugged into the left side of the bike at the end of the swinging fork.

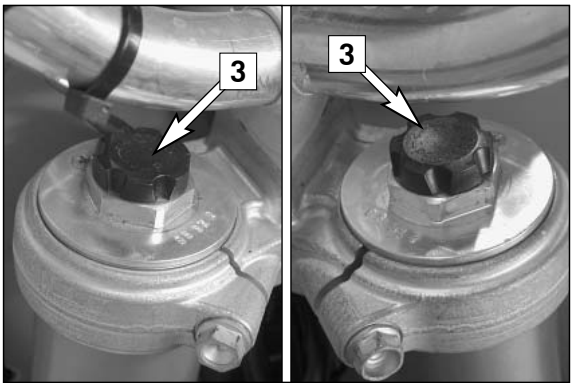


Compression damping of fork

Hydraulic compression damping determines the reaction when the fork is compressed. The degree of compression can be adjusted with adjusting screws at the bottom of the fork legs.Remove the protecting cap.
Turn the knob **[2]** 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

Typ WP Suspension 05187C05 20 clicks



Rebound damping of fork

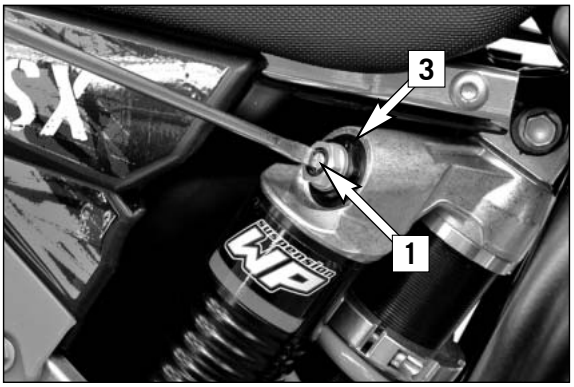
Hydraulic rebound damping determines the reaction when the fork is rebound. By turning the adjusting screw **[3]** (REB), the degree of damping of the rebound can be adjusted. Turn the knob clockwise to increase damping, turn it counterclockwise to reduce damping during rebounding.

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

Typ WP Suspension 05187C05 20 clicks

Damping action during compression of shock absorber

The shock absorber on the models 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 low-speed setting:

– Turn the adjusting screw **[1]** 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.

Typ WP Suspension 15187C02 15 clicks

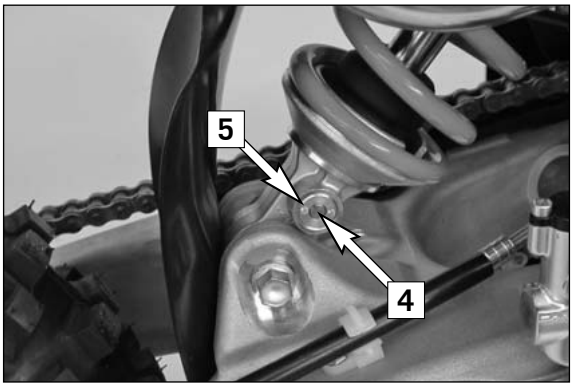
Standard high-speed setting:

– Turn the adjusting screw **[2]** 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.

Typ WP Suspension 15187C02 2 turns

⚠ 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 3 connection (24mm).



Rebound damping function of the shock absorber

By using the adjusting screw **[4]**, 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.

Type WP Suspension 15187C02 22 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 5 (15mm).

Instructions for the first ride

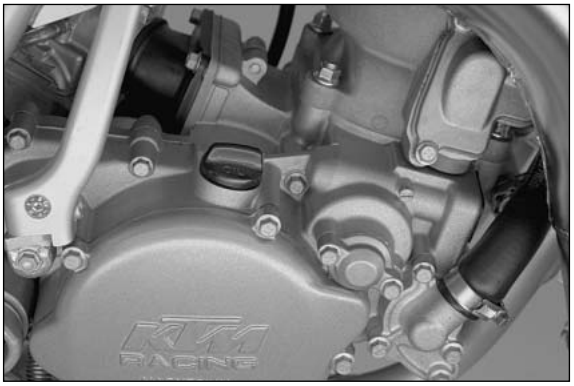
- Make sure the work for the "pre-delivery inspection" was performed by your authorized KTM workshop. The DELIVERY CERTIFICATE and SERVICE MANUAL will be handed over when you pick up your vehicle.
- Before your youngster takes his or her first ride, explain how each of the controls works and check if your youngster has understood what you explained. We recommend to review the entire owner's manual with your youngster item by item, pay ing particular attention to the specially marked warnings and pointing out the danger of injury.
- Adjust the clutch lever, hand lever and foot brake pedal so your child can operate them easily!
- To prevent injury, teach your youngster the basic riding skills on soft ground, e.g. on a meadow or in the garden. Be sure that there is room enough to maneuver, and that no other rid ers are close.
- To ensure that your youngster gets the feel of the hand brake, have your youngster operate the hand brake while you push the motorcycle. Do not start the engine before your young ster has learned to apply hand brake with appropriate pressure.
- To familiarize your youngster with the operation of the hand brake let him or her practice to operate the hand brake while you are pushing the motorcycle. Do not start the engine before he or she is thoroughly familiar with the use of the hand brake.
- Initially, your youngster should ride back and forth between two persons who help the young rider to stop the motorcycle. However, you should also teach your youngster how to stop the motorcycle himself/herself.
- To improve his/her riding skills, your youngster should prac tise riding the motorcycle standing on the footpegs or to rid ing at the slowest possible speed. Additionally, you can arrange a series of obstacles and have your youngster drive around them, etc.
- Pay attention to the running-in procedure.

Running in

- Even very precisely machined sections of engine components have rougher surfaces than components which have been sli ing across one another for quite some time. Therefore, every engine needs to be broken in. For this reason, during its first 30 minutes the engine must not be revved up to its perform ance limits.
- Apply low but changing loads for running-in.
- DO NOT DRIVE AT FULL LOAD FOR THE FIRST 30 MINUTES!

⚠ WARNING

- **Have your youngster wear proper protective gear whenever he or she rides the motorcycle: helmet, eye protection, chest, back, arm and leg protectors, gloves and boots. To set a good example, be sure to wear protective gear yourself whenever riding a motorcycle!**
- **Only use accessory parts recommended by KTM.**
- **The front and rear wheel are only allowed to be tired with tires that have the same profile type.**
- **Your youngster's driving speed should always be adjusted to his/her driving skills as well as to the terrain.**
- **Your youngster should never be allowed to ride the motorcycle without supervision.**
- **Replace the helmet visor or goggle glasses early enough. When light shines directly on a scratched visor or goggles, you will be practically blind.**
- **Never leave your motorcycle without supervision as long as the engine is running.**
- **SX models are designed for one person only. Passengers are not allowed.**
- **These models do not comply with the regulations and safety standards established by the law. Therefore, they are not permitted on public roads.**
- **Always keep in mind that other people feel molested by excessive noise.**



What you should check before each start

When you start off, the motorcycle must be in a perfect technical condition. For safety reasons, you should make it a habit to perform an overall check of your motorcycle before each start.
The following checks should be performed:

1 CHECKING THE ENGINE
Check the engine for any oil leakage. Too little gear oil will lead to premature wear and consequently destroy the transmission.

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 was fall off the chain wheels; an extremely worn chain may tear, and insufficient lubrication may result in unnecessary wear of the chain and chain wheels.

4 TIRES
Check for damaged tires. Tires showing cuts or dents must be replaced. Also check the air pressure. Insufficient tread and incorrect air pressure deteriorate the driving performance.

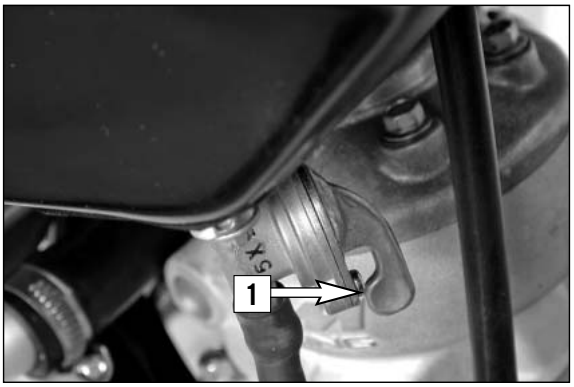
5 BRAKES
Check the correct functioning of the braking system. Verify that there is sufficient brake fluid in the reservoir. The reservoirs have been designed in such a way that brake fluid does not need to be refilled even when the brake pads are worn. If the level of brake fluid falls below the minimum value, this indicates a leak in the braking system or completely worn out brake pads. Always have the brake system checked by a KTM workshop to avoid brake failure.
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.

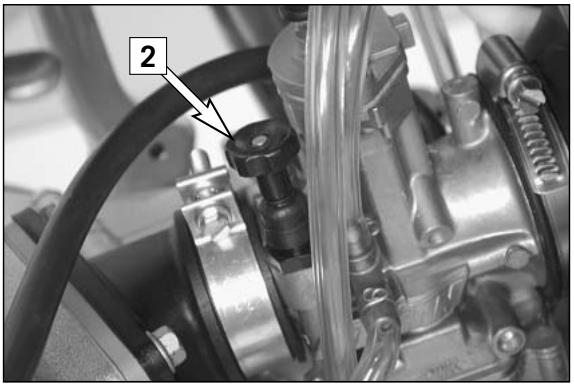
⚠ WARNING

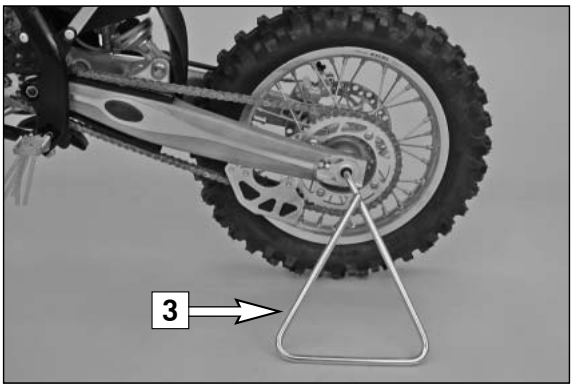
If the resistance in the hand brake lever feels “spongy” (too much play), this is an indication that something is wrong with the brake system. Don’t let your child ride the motorcycle anymore without first having the brake system looked over by a KTM dealer.

6 CABLES
Check correct setting and easy running of all control cables.

7 COOLING FLUID
Check the level of cooling fluid when the engine is cold.







Starting when the engine is cold

1 Open fuel tap **[1]** .
2 Put the gear in neutral
3 Activate the cold-starting aid (choke) **[2]**.
4 Leave throttle closed and kick down the kickstarter vigorously all the way.

⚠ WARNING

- **To avoid injury when starting the engine, always wear strong bikers boots!You may slip off the kickstarter, or the engine may kick back if you do not kick hart enough.**
- **Check for power transmission at temperatures below 0°C (32°F) before you actuate the kickstarter. If you depress the kickstarter without feeling any resistance, power ist not being transmitted. This could cause injuries.**
- **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.**

! CAUTION

Do not ride your motorcycle at full load and do not rev up the engine when cold. since the piston warms up and expands faster than the water cooled cylinder, this might cause engine damage. always let engine idle until warm or drive it warm at low r.p.m. speeds.

NOTE:
The highly inflammable components in modern fuels volatilize if left standing for longer periods of time. If the motorcycle has not been used for over 1 week, the fuel should be drained from the float chamber. The engine will start up immediately if the float chamber is filled with fresh, ignitable fuel

Starting when the engine is warm

1 Open fuel tap
2 Put the gear in neutral
3 Leave throttle closed and kick down kickstarter vigorously all the way.

What to do when the engine is “flooded“

1 Close fuel tap
2 Start engine with full throttle. If necessary, unscrew spark plug and dry it.
3 Once the engine is running, open fuel tap again.

Starting off

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

⚠ WARNING

Always remove the plug-in [3] stand before your child rides the motorcycle.

Shifting/Riding

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

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

⚠ WARNING

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

! CAUTION

- **Driving a cold engine at high speed will reduce the life of the engine. We recommend to warm the engine up at a medium engine speed for several minutes before switching to full load.**
- **Never have the throttle wide open when changing down to a lower gear. The engine will overrev, damaging the valves. In addition, the rear wheel blocks so that the motorcycle can easily get out of control.**
- **If the engine runs without throttle during longer downhill travel, the engine should be accelerated occasionally to ensure that it is supplied with sufficient lubricant which is mixed in the fuel.**
- **In the event that, while your child is riding on the motorcycle, you notice any unusual operation-related noise, your child should stop immediately, turn the engine off, and contact an authorized KTM dealer.**

Braking

Turn off the gas 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. Also change down to lower gears depending on your speed.

⚠ 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 tear 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 breaking effect. In extreme cases, the entire braking system can fail.**

Stopping

Brake motorcycle and shift gears to idling. To switch off the engine, depress short circuit switch until the engine stops. Close fuel tap.

⚠ 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 starting 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 carburetor may get flooded and fuel will enter the engine.**
- **The plug-in stand is designed to hold the weight of the motorcycle only. By sitting on the motorcycle, your child will put additional weight on the plug-in stand, possibly causing the plug-in stand or swinging fork to be damaged or the motorcycle to fall down.**

Refueling, fuel

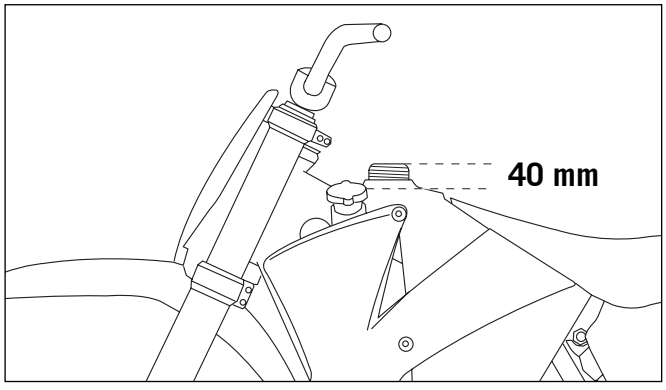
Oil (high-grade two-stroke engine oil; i.e. Motorex Cross Power 2T) must be mixed with the fuel (ROZ 95) at a mixing ratio of 1:40.

⚠ WARNING

Gasoline is highly flammable and poisonous. Extreme caution should be used when handling gasoline. Never refuel the motorcycle near open flames or burning cigarettes. Always switch off the engine before refueling. 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.

! CAUTION

- **Only use premium-grade gasoline ROZ 95 mixed with high-grade two-stroke engine oil. Other types of gasoline can cause engine failure.**
- **Only use known brands of high-grade 2-stroke engine oil (Motorex Cross Power 2T).**
- **Not enough oil or low-grade oil can cause erosion of the piston. when Using too much oil, the engine may start smoking and foul the spark plug.**
- **Fuel expands when its temperature rises. Therefore do not fill the tank to the top. (see fig.)**
- **Do not use premixed two-stroke oils, oils for outboard engines or normal engine oil to prepare the mixture.**
- **Do not use gasoline and oil mixtures that are older than one week. The lubrication properties of some two-stroke oils can deteriorate very rapidly.**



PERIODIC MAINTENANCE SCHEDULE »

85 SX 2007 A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY WHICH SAVES MONEY		before each race	1st service after 10 hours	every 20 hours	every 40 hours	at least once a year
ENGINE	Check gear box oil level			●		
	Change gear box oil	●	●		●	●
	Check spark plugs, adjust distance between electrodes		●	●		
	Renew spark plugs	●			●	
	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	●		●	●	
CARBURETOR	Check the carburetor connection boot and intake flange for cracks or leaks	●			●	●
	Check idle speed setting	●	●		●	●
	Check that vent hoses are not damaged or bent	●	●		●	●
ADD-ON-PARTS	Check cooling system for leaks, check quantity of antifreeze	●	●		●	●
	Check exhaust system for leaks and fitment	●		●	●	
	Check cables for damage, smooth operation, bends; adjust and lubricate	●	●		●	
	Check the fluid level in the master cylinder of the hydraulic clutch	●	●	●	●	
	Clean air filter and filter box	●	●	●	●	●
	Check electric wires for damage and bends	●			●	
	Check function of electric systems (emergency OFF switch)	●	●		●	
BRAKES	Check brake fluid level, lining thickness, brake lining	●	●		●	
	Check brake lines for damage and leaks	●	●		●	
	Check/adjust smooth operation and free travel of handbrake/foot brake lever	●	●		●	
	Check the screws and guide bolts on the brake system for a tight fit	●	●		●	
CHASSIS	Check shock absorber and fork for leaks and function	●	●	●	●	
	Clean dust bellows	●		●	●	
	Bleed fork legs	●		●	●	
	Check swing arm bearings	●			●	
	Check/adjust steering head bearings	●	●		●	
	Check tightness of all chassis screws (triple clamps, fork leg axle passage axle nuts and screws, swing arm bearings, shock absorber)	●	●		●	
WHEELS	Check spoke tension and rim joint	●	●	●	●	
	Check tires and air pressure	●	●	●	●	
	Check chain, rear sprockets and chain guides for wear, fitment and tension	●	●	●	●	
	Lubricate chain, Clean and grease the adjusting screws on the chain tensioner	●	●	●	●	
	Check clearance of wheel bearings	●	●		●	

The kilometer reading for inspection intervals should not exceed 3 hours.
Maintenance work performed by your authorized KTM workshop is not a substitute for care and maintenance by the driver!

85/105 SX 2007 IMPORTANT SERVICE WORK THAT MUST BE PERFORMED BY AN AUTHORIZED KTM WORKSHOP UNDER A SEPARATE ORDER	Every 20 hours	Every 40 hours	At least once a year	Every 2 years
Clean and adjust carburetor			●	
Check the reed-type intake valve for wear	●	●		
Check the wear on the clutch disks and length of the clutch springs	●	●		
Check the cylinder and piston for wear	●	●		
Check function of exhaust control	●	●		
Check piston pin bearing	●			
Replace the crankshaft main bearings	●			
Replace the conrod bearings		●		
Check the entire transmission, the shift mechanism and bearings		●		
Complete maintenance of fork	●		●	
Complete maintenance of shock absorber				●
Clean and grease steering head bearings and gasket elements			●	
Replace the sealing cup for the foot brake cylinder	●	●		
Replace the glass-fiber yarn filling in the silencer	●	●		
Treat electric contacts and switches with contact grease			●	
Change break fluid	●	●	●	
Change hydraulic clutch fluid			●	
Change the hydraulic clutch oil				

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

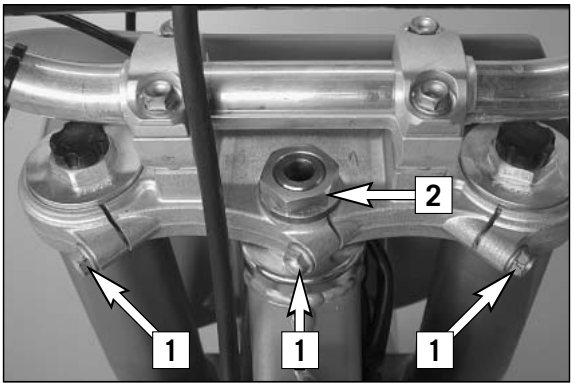
85/105 SX 2007 IMPORTANT CHECKS AND MAINTENANCE TO BE CARRIED OUT BY THE RIDER OR THE MECHANIC	before each start	after every cleaning	for cross country use	once a year
Check gear box oil level	●			
Check brake fluid level	●			
Check brake pads for wear	●			
Lubricate and adjust cables and nipples		●		
Bleed fork legs regulary			●	
Remove and clean 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 liquid level	●			
Check fuel lines for leaks	●			
Empty and clean float chamber		●		●
Remove, clean and oil the throttle slide		●		
Check all control elements for smooth operation	●			
Check brake performance	●	●		
Treat blank metal parts (with the exception of brake and exhaust systems) with wax-based anti corrosion agent		●		
Check tightness of screws, nuts and hose clamps regularly				●

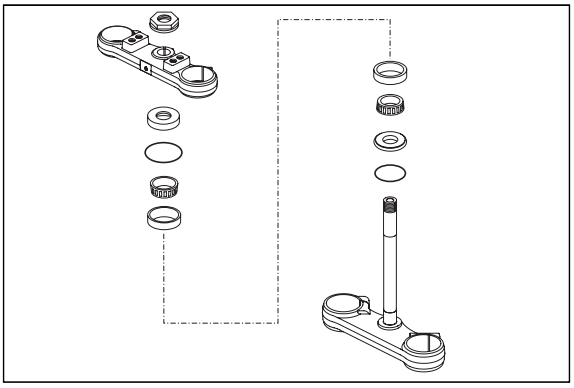
⚠ WARNING

All maintenance and adjustment operations that are marked with an asterisk * require specialist knowledge. For your own security, let these tasks be carried out by a ktm-dealer where your motorcycle will be optimally serviced by appropriately qualified, skilled staff.

! CAUTION

- **When cleaning the motorcycle, do not use a high pressure cleaning unit if possible, otherwise water will penetrate the bearings, carburetor, electric connectors, etc.**
- **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 of 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.**





Checking and adjusting the steering head bearing *

Check steering head bearing for play periodically. To check, put motorcycle on the stand so that the front wheel is off the ground. Now try to move the fork forward and backward. For readjusting, loosen the three clamp screws **[1]** of the top triple clamp and turn steering stem bolt **[2]** clockwise until there is no more play. Don't tighten the steering stem bolt all the way, otherwise the bearings will be damaged. With a plastic hammer, lightly rap on the triple clamp to release tension. Retighten the three clamp screws to 20 Nm.

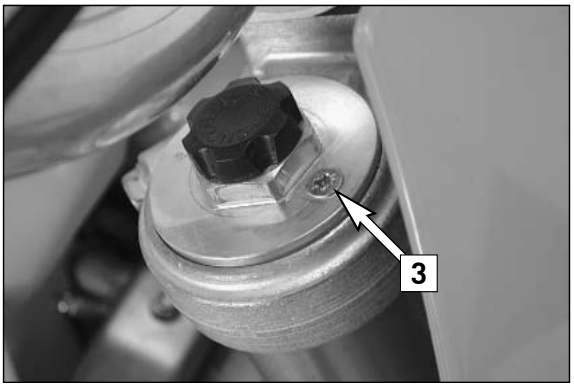
⚠ WARNING

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.

! 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 (i.e. Motorex Long Term 2000).

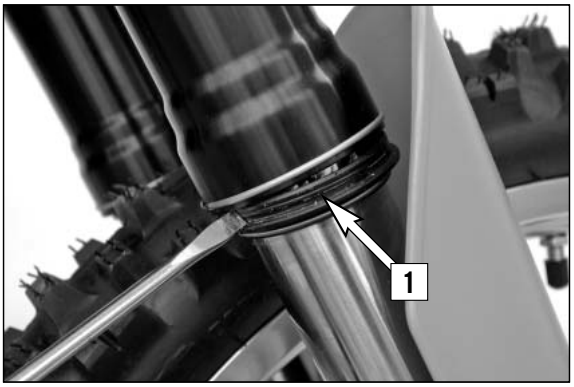


Breather plug front fork

After every 5 hours of use for competitive racing, slacken the breather plugs **[3]** 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.

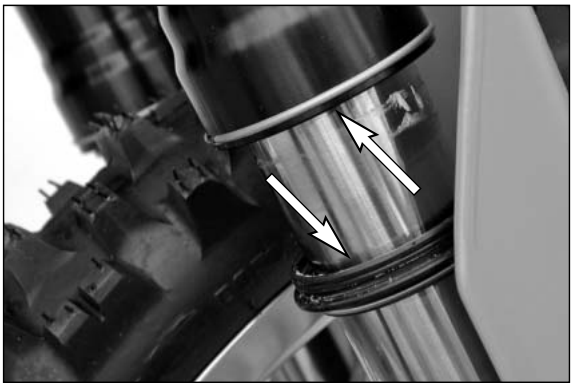
! CAUTION

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

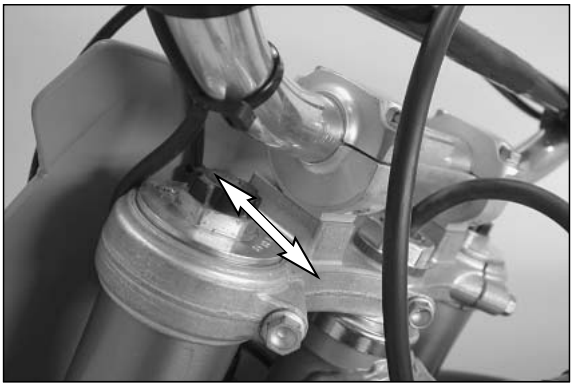
The dust-protection bellows **[1]** are to remove dust and coarse dirt particles from the fork tube. However, after some time, dirt may also get in behind the dust-protection bellows. If this dirt is not removed, the oil sealing rings located behind it may start to leak.
Use a screwdriver to lift the dust-protection bellows out of the outer tubes and slide them downward.



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

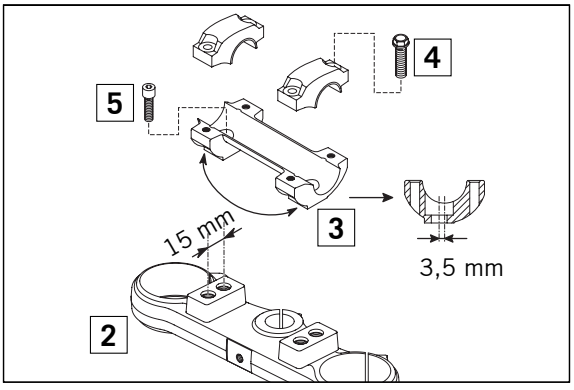
⚠ WARNING

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.



How to change the handlebar position

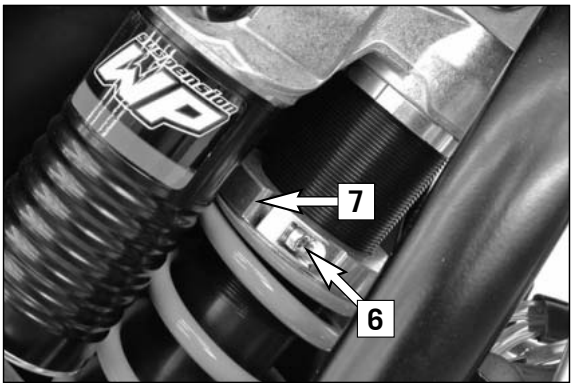
The handlebar position can be readjusted by 22 mm. Thus, you can put the handlebar in the position that is the most convenient for you. The upper triple clamp **[2]** includes 2 bores arranged at a distance of 15 mm (0.6 in) from one another. The bores at the handlebar support **[3]** are offset from the center by 3.5 mm (0.13 in). Accordingly, you can mount the handlebar in 4 different positions.



For this purpose, remove screws **[4]** of the handlebar clamps and screws **[5]** of the handlebar support. Position handlebar support, and tighten screws **[5]** to 40 Nm. Mount handlebar and handlebar clamps, and tighten screws **[4]** to 20 Nm. The gap between the handlebar support and handlebar clamps should be the same size in the front and in the rear.

⚠ WARNING

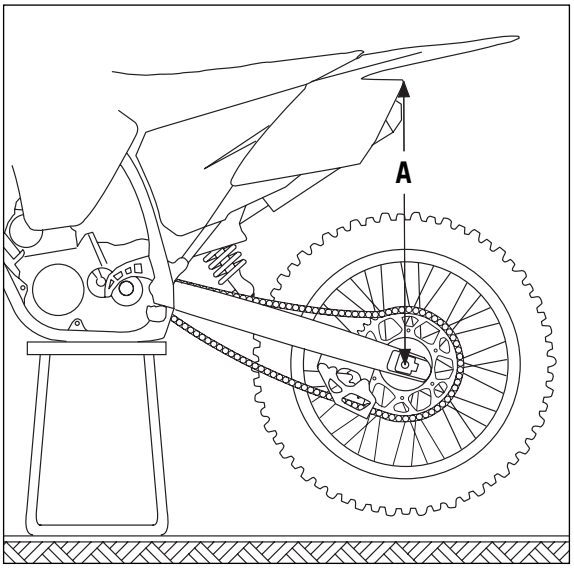
The screws [5] must be secured with loctite 243.



Changing the spring preloading of the shock absorber

The spring preload can be changed by turning the adjusting ring **[7]**. 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 **[6]** changes the spring pretension by approximately 1.75 mm (0.07 in).

Loosen the clamping screw **[7]** 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 **[6]**, tighten it to 5 Nm (6 ft.lb).

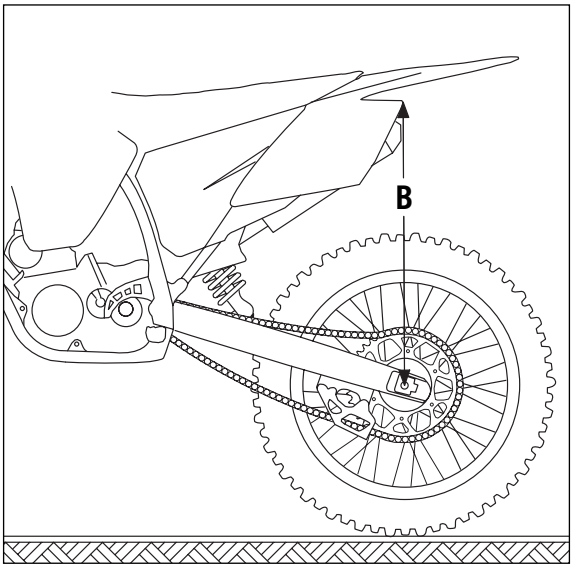


Basic suspension setup for the weight of the driver

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 child's weight. At delivery, the fork and shock absorber are set to accommodate a driver weighing between 45 and 55 kg (wearing full protective clothing). If your child's weight exceeds or falls short of this range, you will need to adjust the spring components accordingly.
Minor deviations in weight can be compensated by adjusting the spring preload on the shock absorber. Other springs must be mounted on the fork and shock absorber for larger deviations.

Checking the shock absorber and spring

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



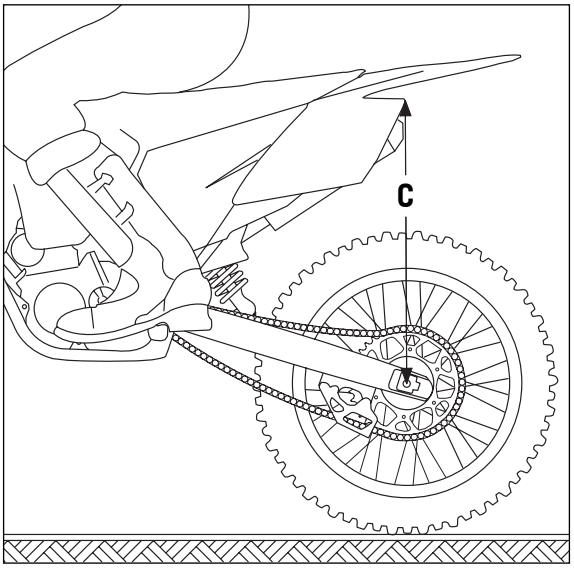
Determining the static sag of the shock absorber

The static sag should be between 30 and 35 mm. Larger deviations 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) . . . . . .– 565 mm
Static sag . . . . . .35 mm

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

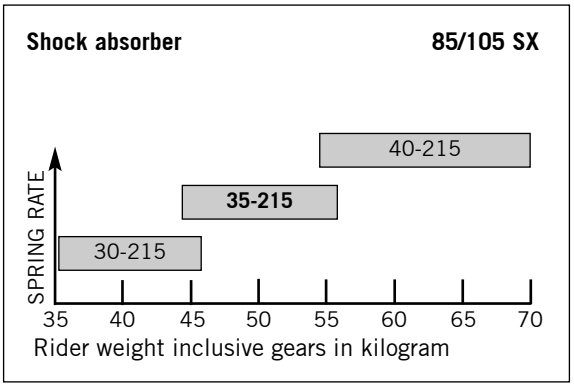


Determining the riding sag of the shock absorber

- Have a helper hold the motorcycle. Your child should sit on the bike in a normal seating position (feet on the footrests) and bounce up and down a few times to allow the rear wheel suspension to become level.
- With your child on the bike, 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) . . . . . .– 500 mm
Riding sag . . . . . .100 mm

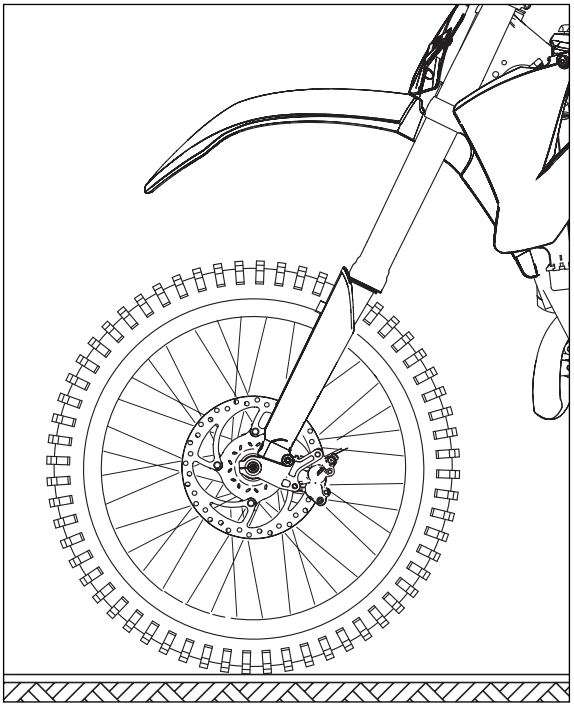
The riding sag should lie between 95 and 105 mm.
If the riding sag is less than 95 mm, the spring is too hard (the spring rate is too high). If the riding sag is more than 105 mm, the spring is too soft (the spring rate is too low).



Overview of the shock absorber springs

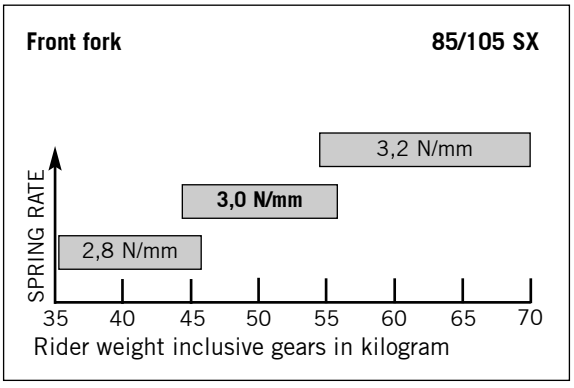
The spring rate is written on the outside of the spring (e.g. 35-215). The type number of the shock absorber is embossed on the top.
The illustration on the left shows which spring should be installed. The standard spring is shown in bold print.
After installing a different spring, readjust the static sag to 30-35 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.



Checking the basic setup of the telescopic fork

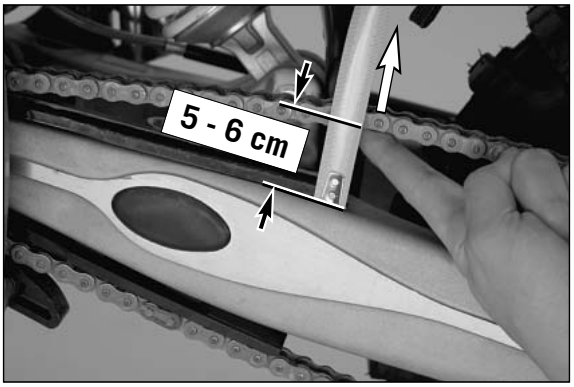
The precise riding sag of the telescopic fork cannot be determined for various reasons. If your telescopic fork bumps frequently (hard end stop during compression), you should install harder fork springs to avoid damaging the telescopic fork and frame.



Overview of the telescopic fork springs

If your child weights less than 45 kg or more than 55 kg, have your KTM workshop mount suitable fork springs. The illustration on the left shows the correct spring rate. The standard spring is shown in bold print.
The type number of the telescopic fork is embossed on the inside of the fork leg.

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.

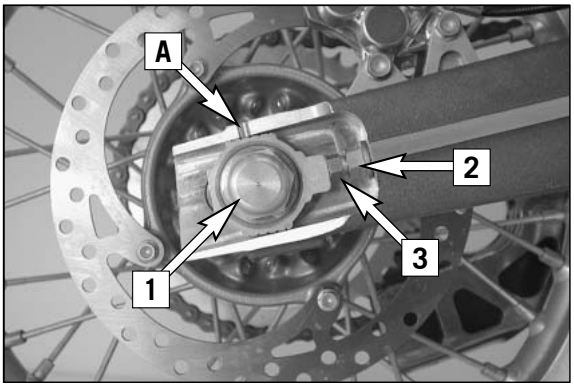


Checking chain tension

Support the motorcycle on the center stand or side stand, respectively. Switch transmission to neutral. Push the chain upwards from the end of the chain sliding component until the upper part of the chain is tensioned. The distance between the chain and the swing arm should be 5 - 6 cm. The lower part of the chain should be tightened. Correct chain tension, if necessary!

⚠ WARNING

- **If the chain is too tight the secondary transmission components (chain, sprockets, bearings of the transmission and of the rear wheel) will be put under additional strain that can, in addition to premature wear, also cause chain breakage.**
- **If the chain is not tight enough it can slip off the sprockets and block the rear wheel or damage the engine.**
- **In both cases the rider is very likely to lose control of the motorcycle.**

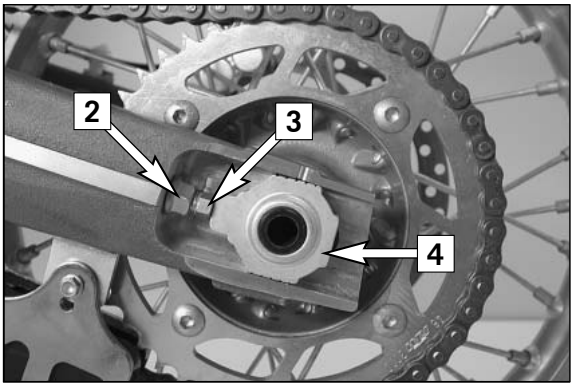


Correct chain tension

Loosen collar nut **[1]**, loosen lock nuts **[2]**, and turn right and left adjusting screws **[3]** equally far. Tighten lock nuts.
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 (60 ft.lb).

⚠ WARNING

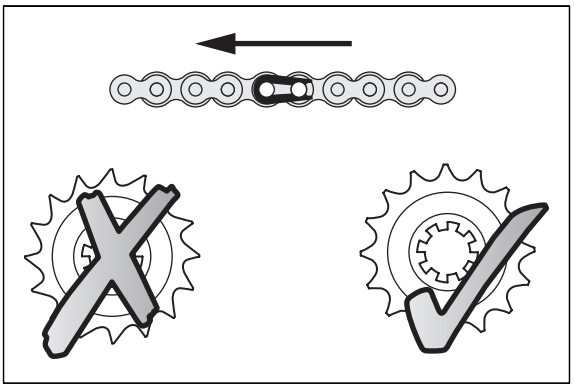
- **If you don't happen to have a torque wrench at hand, make sure you have the tightening torque corrected by a KTM dealer as soon as possible. A loose axle may lead to an unstable driving behavior of your motorcycle.**
- **Tighten the collar nut with the required torque.**



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°.

! CAUTION

Always mount the chain tensioner equally aligned.



Chain maintenance

For long chain life, good maintenance is very important. The chain should be cleaned in fireproof solvent regularly and afterwards treated with hot grease or chain spray (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.

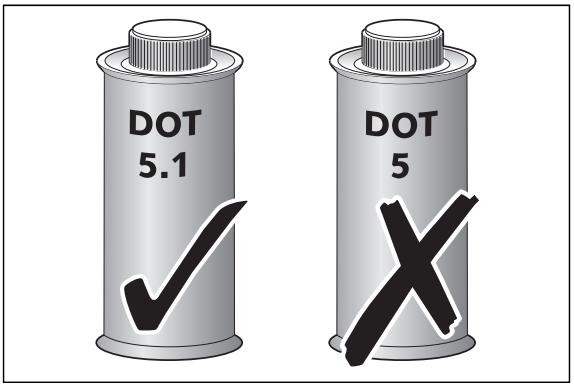
Also check sprockets and chain guides for wear, and replace if necessary.

General information about KTM disc brakes

BRAKE CALIPERS:
If the front brake caliper is removed, the screws must be secured with Loctite 243 when mounted and tightened to 25 Nm.

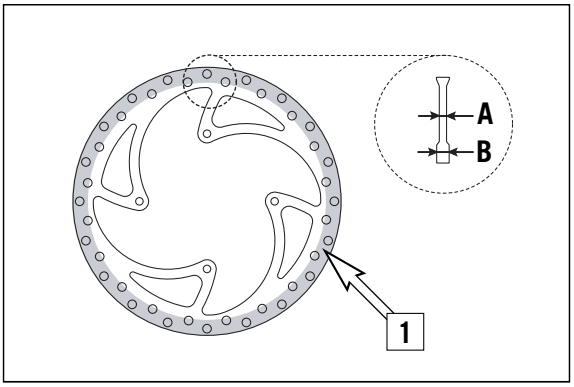
BRAKE FLUID RESERVOIRS:
The brake fluid reservoirs on front and rear wheel brakes have been designed in such a way that even if the brake pads are worn it is not necessary to top up the brake fluid. If the brake fluid level drops below the minimum level either the brake system has a leak or the brake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

BRAKE FLUID:
KTM fills the brake system with "Motorex Brake Fluid DOT 5.1", one of the best brake fluids 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. DOT 4 shown on the lid means minimum standard. However, you should replace it as soon as possible by DOT 5.1.



⚠ WARNING

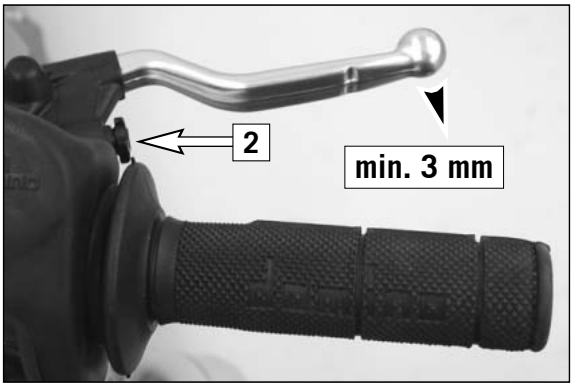
Have the brake fluid changed at least once annually. If you wash your motorcycle often, the brake fluid should be changed even more frequently. Brake fluid tends to absorb water. Therefore, vapor pockets may form in "old" brake fluids even at low temperatures, causing the brake system to fail.



BRAKE DISCS:
Due to wear, the thickness of the brake disc in the area of the contact face **[1]** of the brake pads decreases. At their thinnest point A, the brake discs must not be more than 0.40 mm (0.016 in) thinner than the pad's nominal thickness. Measure the nominal thickness in a location B outside the contact face. Check wear in several locations.

⚠ WARNING

- **Brake discs suffering from wear greater than 0.40 mm (0.016 in) constitute a safety risk. Have the brake discs replaced immediately as soon as they reach the wear limit.**
- **Have any repairs on the brake system be performed by a KTM dealer.**

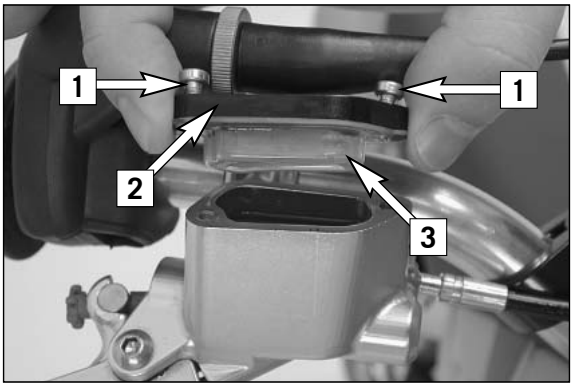


Adjusting free travel of the hand brake lever

Free travel of the hand brake lever may be readjusted by using the adjustment screw **[2]**. 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.

! 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.

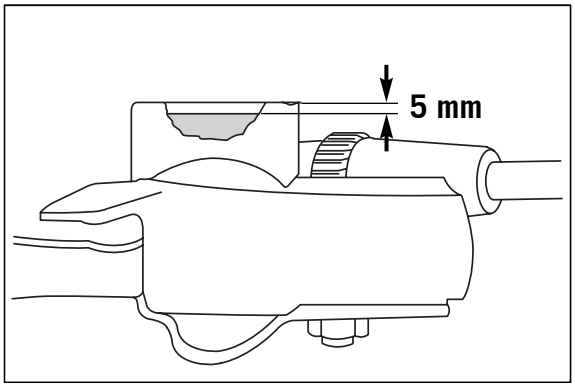


Checking the brake fluid level/ refilling *

The brake fluid reservoir is combined with the hand brake cylinder on the handlebar. To check the brake fluid level, press the brake pistons back into the basic position. Move the hand brake cylinder in a horizontal position, remove the screws **[1]** and the cover **[2]** with the diaphragm **[3]**. The brake fluid level should be 5 mm below the upper edge of the reservoir (see drawing), otherwise add DOT 5.1 brake fluid (e.g. Motorex Brake Fluid DOT 5.1) up to 5 mm below the upper edge of the reservoir.
Mount the diaphragm, the cover and the screws and actuate the hand brake lever until you feel the point of pressure again. Wipe off any overflowing or spilled brake fluid with water.

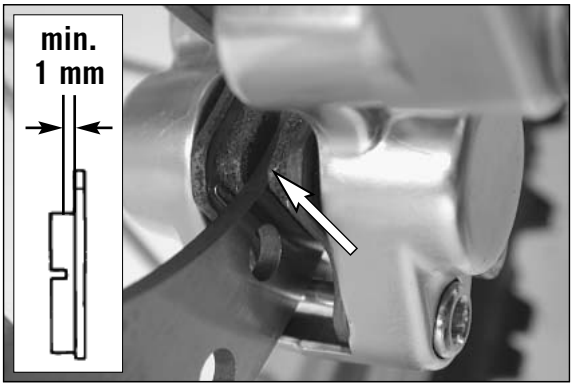
⚠ WARNING

- **Actuate the hand brake lever until you feel the point of pressure again.**
- **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 front brake pads

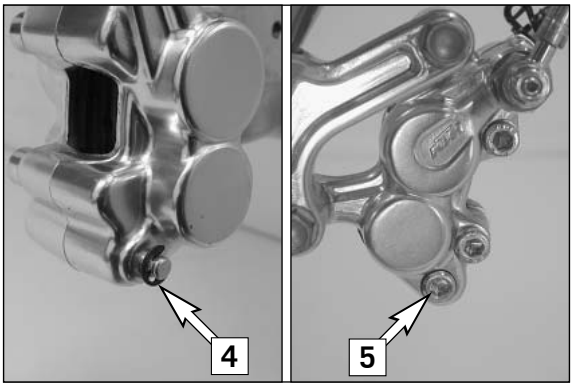
Inspect the brake pads from in front of the vehicle. The linings must be at least 1 mm (0.04 in) thick.

⚠ WARNING

At their most worn point brake pad linings should not be thinner than 1 mm (0.04 in), 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 imparing the braking effect and destroying the brake disc.



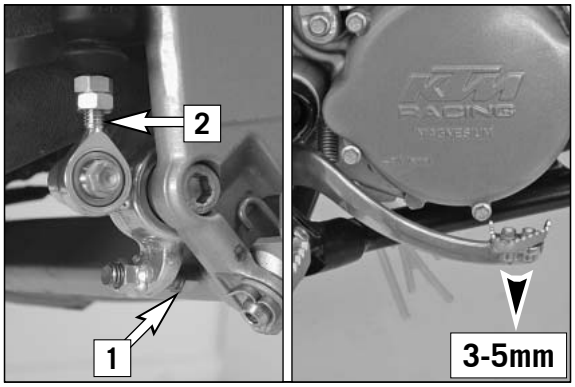
Replacing the front brake pads *

Remove the front wheel (see front wheel chapter).
Press brake shoes apart with a suitable screwdriver to put the brake pistons in their basic position.
Remove the lock washer **[4]** from the screw as well as fixing screw **[5]** and take the brake shoes out of the brake caliper. Clean brake caliper thoroughly with compressed air.

Mount the right brake shoe and fix with screw. Mount the left brake shoe and tighten the screw to 4 Nm. Mount the lock washer. Align brake shoes, mount front wheel (see chapter: Mounting the front wheel).

⚠ 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.**
- **Do not unscrew any other screws on the brake caliper or you will have to bleed the brake system.**
- **After working on the brake system always operate the hand brake lever to apply the brake pads to the brake disk and create a point of pressure.**

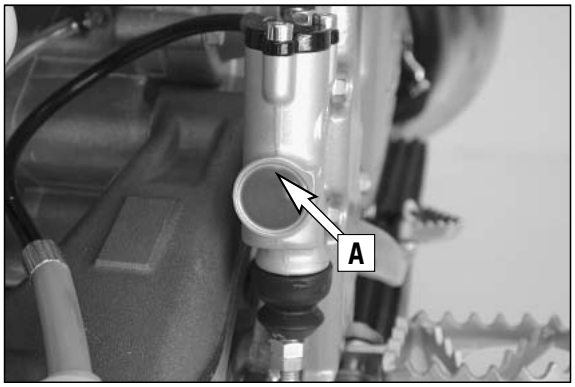


Changing basic position of the brake pedal *

The basic setting of the foot brake pedal can be changed by turning the end stop roller **[1]**. Using the push rod **[2]**, the free play on the foot brake pedal must be set.
Measured on the outside, the foot brake pedal must have 3-5 mm of free play before the push rod can move the piston in the brake cylinder (to be recognised from the resistance on the foot brake pedal).

⚠ WARNING

If this clearance is missing, pressure accumulates in the braking system and the brake pads begin to rub. The braking system overheats and can fail completely in extreme cases.

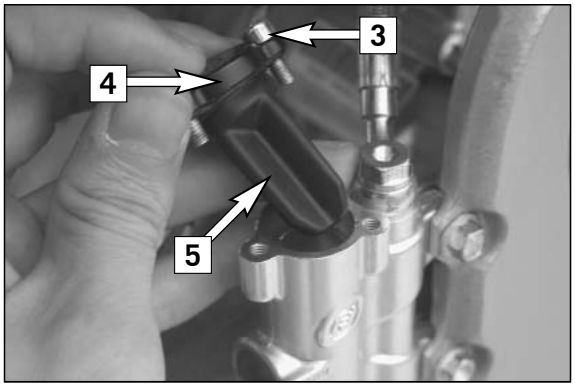


Checking the rear brake fluid level

The reservoir for the rear disk brake is on the right side of the motorcycle on the rear brake cylinder.
The brake fluid level may not drop below the upper edge A of the inspection glass when the bike is in a horizontal position.

⚠ WARNING

If the brake fluid level drops below the upper edge of the inspection glass, this indicates that the brake system is either leaking or the brake shoes completely worn.



Refilling the rear brake fluid reservoir *

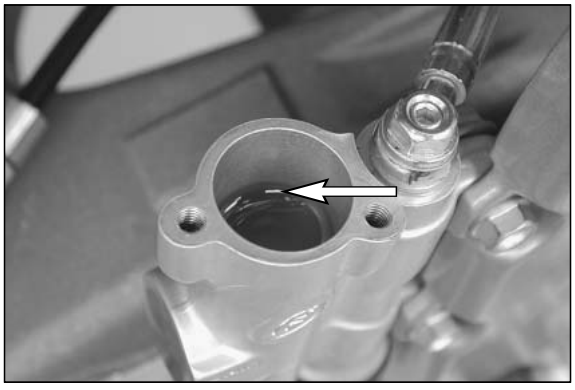
Remove the screws **[3]** and take off the cover **[4]** and diaphragm **[5]**.The brake pistons must be pushed back to their basic position. Fill DOT 5.1 brake fluid (e.g. Motorex Brake Fluid DOT 5.1) up to 10 mm (0.4 in) under the upper edge of the reservoir.
Remount the diaphragm, cover and screws and actuate the foot brake lever until you feel the point of pressure again. Wipe any overflowing or spilled brake fluid off with water.

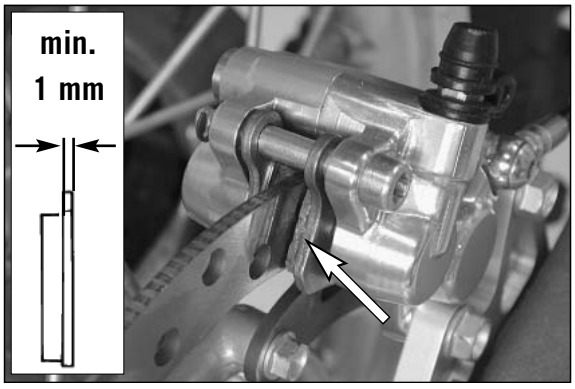
⚠ WARNING

- **Actuate the foot brake lever until you feel the point of pressure again.**
- **Never use DOT5 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 rear brake pads

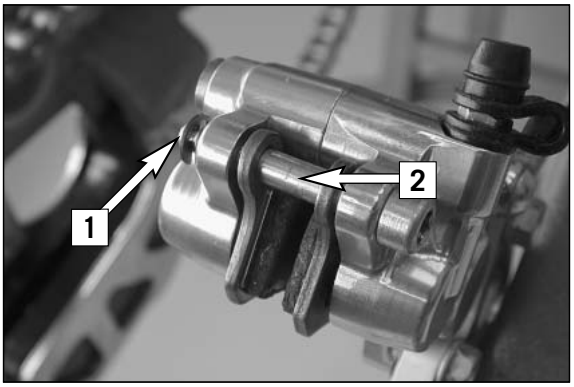
The brake pads can be inspected from the rear. The thickness of the linings may not be less than 1 mm (0.04 in).

⚠ WARNING

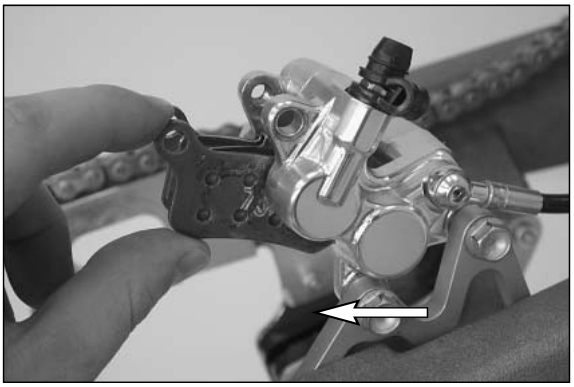
At their most worn point brake pad linings should not be thinner than 1 mm, otherwise they could lead to brake failure. For your own safety don't put off having your brake pads changed.

! 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 imparing the braking effect and destroying the brake disc.



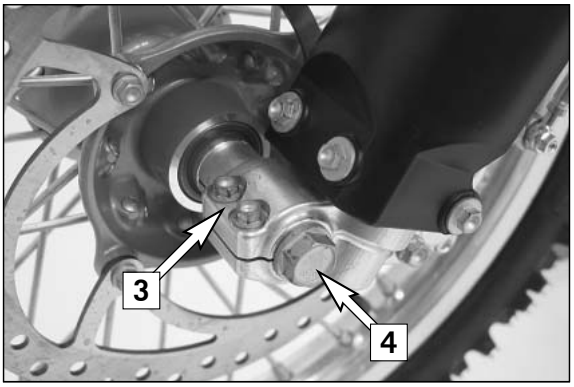
Remove the safety device **[1]**, knock out the guide pin **[2]** from the brake caliper with a drift towards the chain wheel and remove the brake pads. Carefully clean the brake caliper with compressed air and check the sleeves of the guide pins for damage.



Press both brake shoes into the brake caliper and fix with bolt **[2]**. Mount the locks **[1]**. Tighten bolt **[2]** to 5 Nm (3,7 ft.lb).

⚠ 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, one must always actuate the hand brake lever or foot brake lever, respectively so as to ensure that the brake pads will lie against the brake disk and the pressure point is established.**

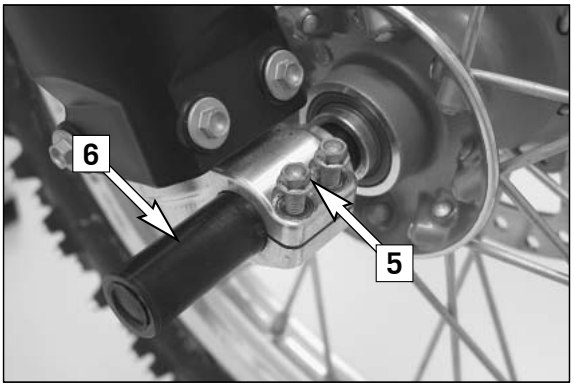


Dismounting and mounting the front wheel

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 **[3]** on the left side of the fork fists.
Loosen and remove the collar nut **[4]**, loosen the clamping screews **[5]** on the right side of the fork fist.
Hold the front wheel, pull out the wheel spindle **[6]**.
Carefully remove the front wheel from the fork.

! CAUTION

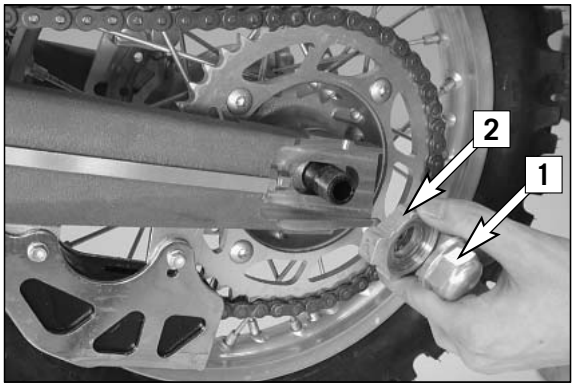
- **Do not operate the hand brake when the front wheel has been dismounted.**
- **Make sure the brake disc is always on top when you lay down the wheel, otherwise the brake disc can be damaged.**

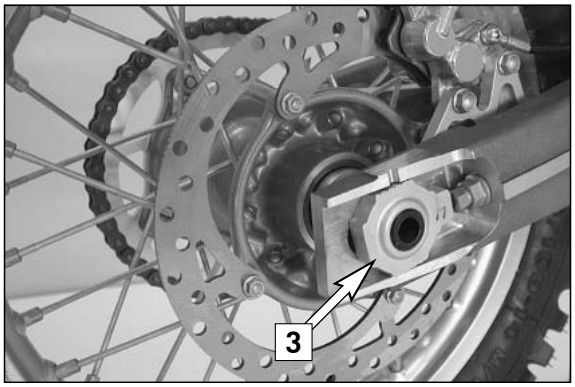


To install the front wheel, lift it into the fork, position and mount the axle shaft. Mount the collar nut **[4]**, tighten the clamping screws **[5]** on the right fork leg axle passage to prevent the axle shaft from turning and tighten the collar nut to 30 Nm (22,14ft.lb).
Loosen the clamp screws on 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 10Nm (7ft.lbs)

⚠ 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 hexagon nut with the required torque. A loose wheel spindle may lead to an unstable 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 disk free from oil and fatty matters, otherwise the braking effects 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.
Loosen the collar nut **[1]**, remove chain tensioner **[2]**, hold the rear wheel and pull out the wheel spindle **[3]** until the rear wheel is free but the brake caliper support is still held.
Push the rear wheel as far forward as possible, take the chain from the chain wheel and carefully take the rear wheel out of the swingarm.

! CAUTION

- **Do not operate the rear brake when the rear wheel has been dismounted.**
- **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 dismounted, 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 (60 ft.lb), 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.**

Tires, air pressure

Tire type, tire condition, and air pressure level affect the way your motorcycle rides, and they 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.
Tire pressure should be checked regularly on a "cold" tire. Proper pressure (1.0 bar) ensures optimum driving comfort and extends the life of your tires.

⚠ WARNING

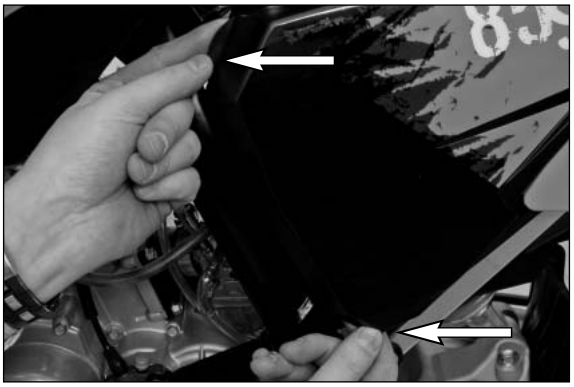
- **Damaged tires must be replaced immediately to protect your youngster.**
- **Worn tires can have a negative effect on how the motorcycle performs, especially on wet surfaces**
- **Tire pressure below the normal level will lead to premature tire wear.**

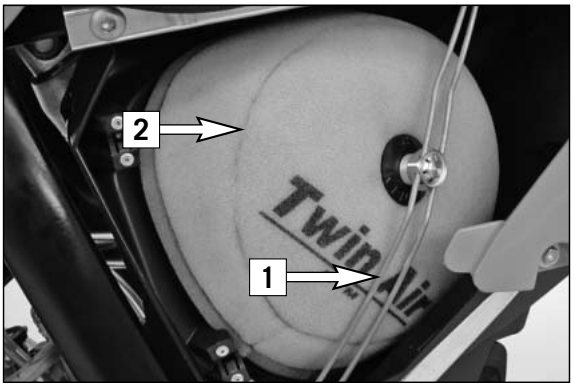
Checking spoke tension

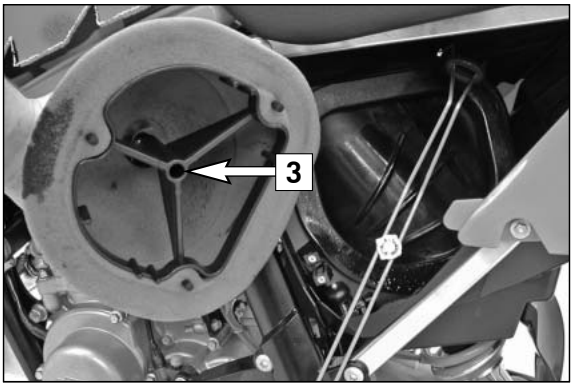
The correct spoke tension is very important for the stability of the wheels and thus for riding safety. A loose spoke causes the wheel to become unbalanced and before long other spokes will have come loose. Check spoke tension, especially on a new motorcycle, at regular intervals. For checking, tap on 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 5 Nm.**







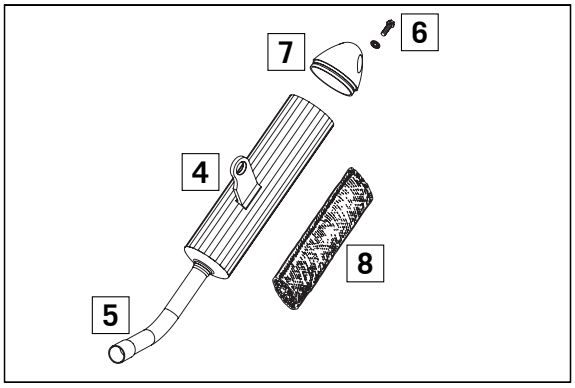
Cleaning the air filter *

The air filter must be cleaned prior to each race or whenever dust has accumulated. To clean, lift the filter box cover (see illustration) and pull off towards the front. Detach the filter retainer **[1]** at the bottom, tilt to the side and remove the air filter **[2]** and the filter support **[3]** from the filter box.

⚠ WARNING

Do not clean the air filter with fuel or petroleum since these will damage the foam. KTM recommends the products made by Motorex (Bio Dirt Remover and Liquid Bio Power) for air filter maintenance. for cleaning purposes and to oil the air filter.

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.
Mount the air filter on the filter support. Mount the filter together with the filter support in the filter box, making sure to center them, and fix them properly with the filter holding bracket.



Exhaust system

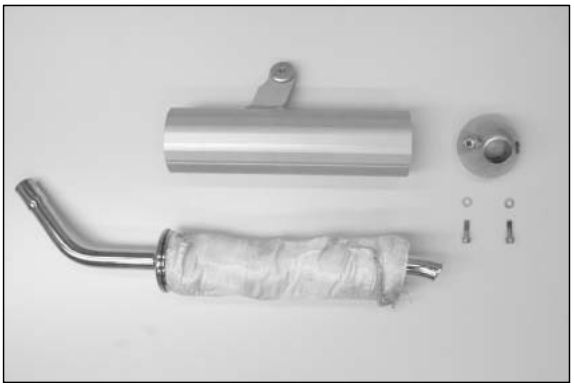
The silencer is filled with glass-fiber yarn for damping. When in use, the glass-fiber yarn becomes loose or coked with oil carbon. This can lead to a power loss and a reduction of the silencer damping. The glass-fiber yarn packing can be replaced in a few easy steps.
To replace, remove the silencer from the vehicle and mark the position of the outer tube **[4]** to the inner tube **[5]**. Remove screws **[6]** and the end cap **[7]**. Pull of the outer tube and remove the old glass-fiber yarn packing **[8]** from the inner tube. Thoroughly clean all parts.

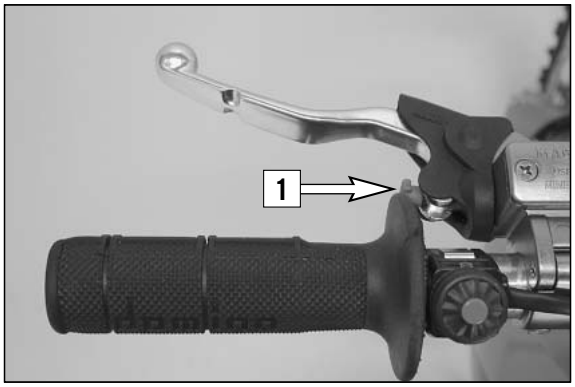
To assemble, mount a new glass-fiber yarn packing onto the inner tube (see illustration) and slide into the outer tube. Mount end cap and fix with screws **[6]**. Before tightening the screws, turn the outer tube until they match the positions you marked. Mount the silencer and check the exhaust system for tightness.

Note: Glass fiber yarn packages are offered by your licensed KTM dealer.

⚠ 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.



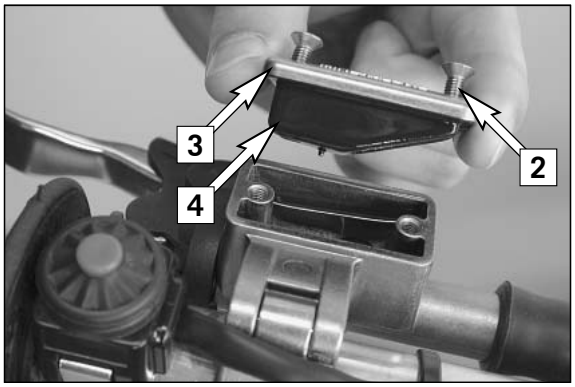


Changing the original position of the clutch lever

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.

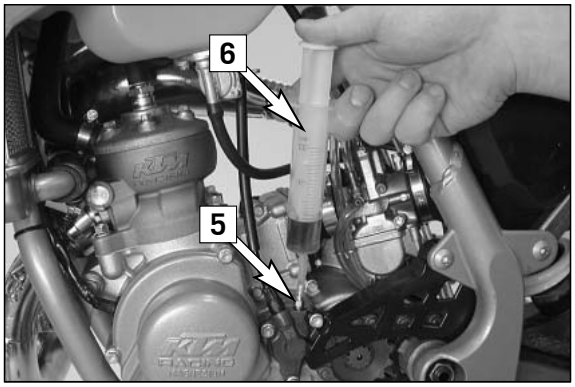


Checking the oil level of the hydraulic clutch

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.
If necessary, add SAE 10 biodegradable hydraulic oil (Motorex clutch fluid 75), available from your authorized KTM workshop.

! CAUTION

KTM uses biodegradable hydraulic oil for the hydraulic clutch control. Never mix biodegradable hydraulic oils with mineral oils. Never refill with mineral hydraulic oil or brake fluid.

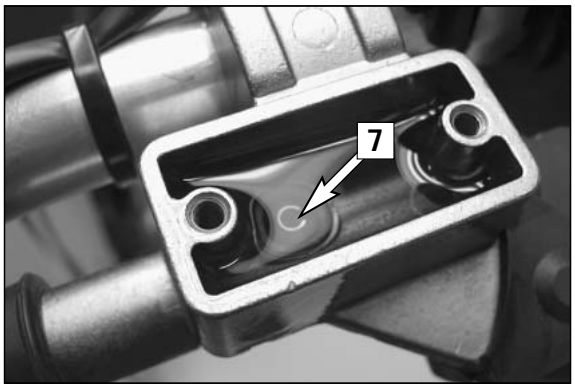


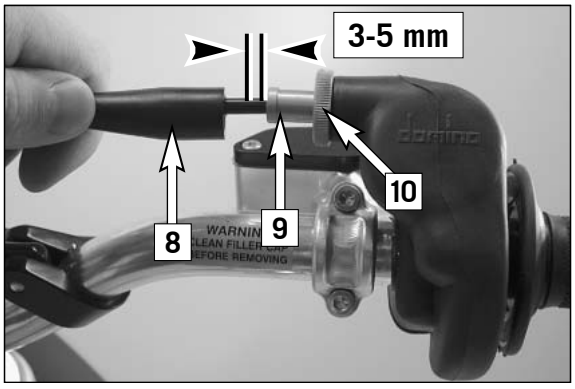
Bleeding of the hydraulic clutch

To bleed, the cover of the master cylinder of the clutch needs to be removed. For this purpose, remove screws **[2]** and take off the cover **[3]** together with the rubber bellows **[4]**. At the slave cylinder of the clutch, remove the bleeder nipple **[5]**. In its place, mount the bleeder syringe **[6]** which is filled with SAE 10 hydraulic oil. Refill oil, until oil is discharged from the bore **[7]** of the master cylinder in a bubble-free state. Make sure that the oil does not overflow. The bleeder syringe can be purchased from your KTM dealer.Having completed the bleeding procedure, you have to verify that the oil level in the master cylinder is correct.If necessary, fill up with biodegradable hydraulic oil SAE 10 (e.g. Motorex Clutchfluid 75).
Biodegradable hydraulic oil is available from your KTM dealer (50ml).

! CAUTION

KTM uses biodegradable hydraulic oil for the hydraulic clutch control. Never mix biodegradable hydraulic oils with mineral oils.
Always use biodegradable hydraulic oil SAE 10 (e.g. Motorex Clutchfluid 75) to fill up the master cylinder. Never refill with mineral hydraulic oil or brake fluid.

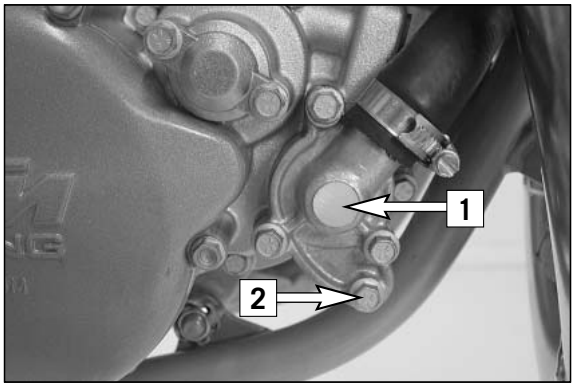


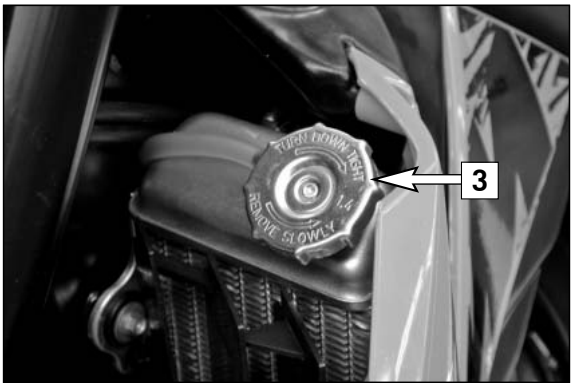


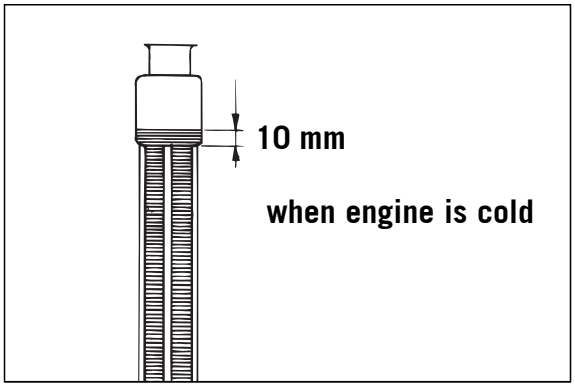
Adjusting the throttle cable*

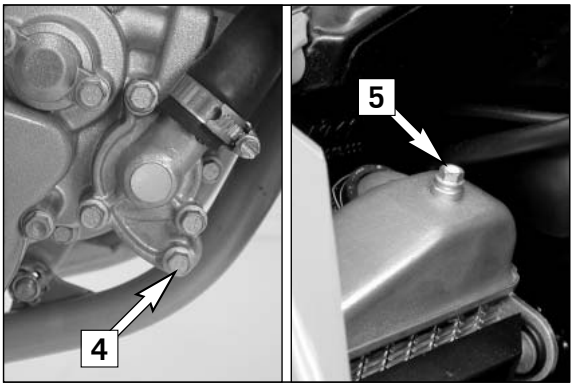
There must always be a 3-5 mm (0.1-0.2 in) play in the throttle cable. To check this, move back the protective cover **[8]** on the throttle grip. You must be able to lift the outer covering of the cable 3-5 mm from the adjusting screw **[9]** until resistance is felt.
To adjust, loosen the counternut **[10]** and turn the adjusting screw accordingly. Finally tighten the counternut and slide the protective cover back on.

To check the correctness of this setting, start the engine, turn the handlebar left and right, in both cases as far as it will go. This must not cause any changes in idling speed. Otherwise, you will have to increase the backlash of the throttle cable.









Cooling system

The water pump **[1]** in the engine keeps the cooling liquid in circulation. The cooling liquid is cooled by the air stream. Therefore, the cooling effect is reduced when the traveling speed is reduced. Dirty radiators additionally reduce the cooling effect.

The cooling liquid can be drained by removing the screw **[2]** on the water-pump cover.

⚠ WARNING

- **If possible, always check level of cooling liquid when the engine is cold. If you have to open the radiator cap [3] 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% 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

For the cooling system, use only with high-grade antifreeze (Motorex Anti-Freeze). Using lower-grade antifreeze agents can cause corrosion and coolant foaming.

Pressure induced by heating of the coolant in the system is controlled by a valve in the radiator cap **[3]**; a water temperature rising up to 120° C (248° F) is admissible, without fear of problems.

Checking coolant level

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

⚠ WARNING

If possible, always check the 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

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.

Refilling/Bleeding the cooling system

The cooling system must be bled as described below after draining the cooling liquid or after adding more than 0.25 l (0.06 US gallons) cooling liquid.
Make sure that the drain screw **[4]** is fastened.
Pour approx. 0.5 litres (0.13 US gallons) coolant into the system.

Remove the screw **[5]** on the right radiator.
Now add cooling liquid until it emerges free of bubbles at the right radiator. Then immediately mount the screw so that no more air can enter the right radiator.
Top up the left radiator until the coolant can be seen approx. 10 mm (0.4 in) above the radiator fins.
Check the coolant level again after a short ride.

Carburetor adjustment *

Basic information on the original carburetor setting
The original carburetor setting was adapted for an altitude of approx. 500 meters (1600 ft.) above sea level, and the ambient temperature of approx. 20° C (68° F), mainly for off-road use and central European premium-grade fuel (ROZ 95).
Mixing ratio 2-stroke motor oil : super fuel 1:40 .
Basic information of changing the carburetor setting
Always start out from the original carburetor setting. Essential requirements are a clean air filter system, air-tight exhaust system and an intact carburetor. Experience has shown that adjusting the main jet, the idling jet and the jet needle is sufficient and that changes to other parts of the carburetor will not greatly affect engine performance.

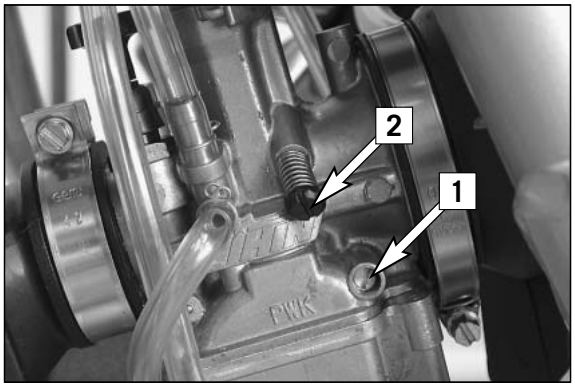
RULE OF THUMB: high altitude or high temperatures → choose leaner carburetor adjustment
low altitude or low temperatures → choose richer carburetor adjustment

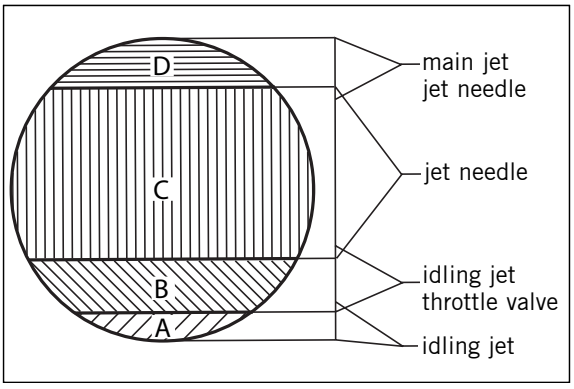
⚠ WARNING

- **Only use unleaded fuel with at least RON 95 (USA = Premium RON 91), mixed with high grade two-stroke oil. Other types of gasoline can cause engine failure, and their use will void your warranty.**
- **Only use high-grade 2-stroke engine oil of known brands (e. g. Motorex Cross Power 2T).**
- **Do not use premixed two-stroke oils, oils for outboard engines or normal engine oil to prepare the mixture.**
- **Not enough oil or low-grade oil can cause erosion of the piston. If you use too much oil, the engine can start smoking and foul the spark plug.**
- **In the case of a leaner adjustment of the carburetor proceed cautiously. Always reduce the jet size in steps of one number to avoid overheating and piston seizure.**

NOTE: If the engine does not run properly, despite a changed adjustment look for mechanical faults and check the ignition system.

Basic information on carburetor wear:
Engine vibrations subject the throttle slide, jet needle, float needle valve and the needle jet to extreme wear. Wear leads to malfunctioning of the carburetor (e.g. over-enrichment). These parts should be replaced after 100 operating hours. The carburetor body, main jet holder and the float support should be replaced after 200 operating hours.





Idling range A

Operation with closed throttle valve. This range is influenced by the position of the air control screw **[1]** and the air control screw **[2]**. Only make adjustments when the engine is hot.
To this end, slightly increase the idling speed of the engine by means of the air control screw. Turning it clockwise produces a higher idling speed and turning the screw counterclockwise produces a lower idling speed. Create a round and stable engine speed using the air control screw (basic position of the air control screw = open by 1.5 turns). Then adjust to the normal idling speed by means of the air control screw.

Opening up – B

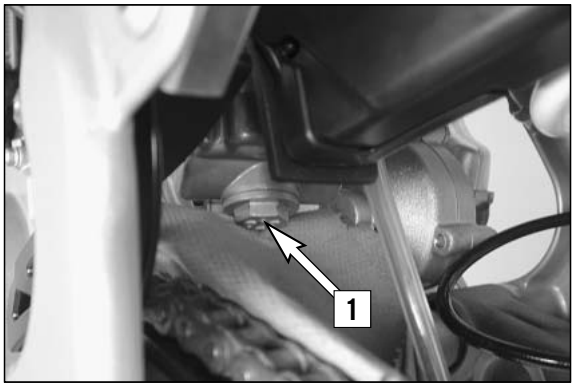
Engine behavior when the throttle opens. The idle jet and the shape of the throttle valve influences this range. If, despite good idling-speed and part-throttle setting, the engine sputters and smokes when the throttle is fully opened and develops its full power not smoothly but suddenly at high engine speeds, the mixture to the carburetor will be too rich, the fuel level too high or the float needle is leaking.

Part-throttle range – C

Operation with partly open throttle valve. This range is only influenced by the jet needle (shape and position). The optimum part-throttle setting is controlled by the idling setting in the lower range and by the main jet in the upper range. If the engine runs on a four-stroke cycle or with reduced power when it is accelerated with the throttle partly open, the jet needle must be lowered by one notch. If the engine pings, especially when accelerating under full power at maximum engine revs, the jet needle should be raised.
If these faults should occur at the lower end of the part throttle range at a four-stroke running, make the idling range leaner; if the engine pings, adjust the idling range richer.

Full throttle range – D

Operation with the throttle fully open (flat out). This range is influenced by the main jet and the jet needle. If the porcelain of the new spark plug is found to have a very bright or white coating or if the engine rings, after a short distance of riding flat out, a larger main jet is required. If the porcelain is dark brown or black with soot the main jet must be replaced by a smaller one.

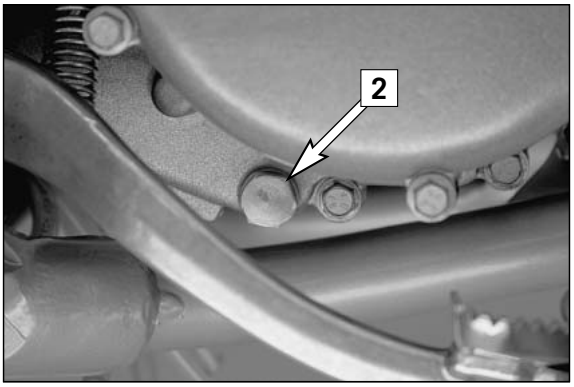


Draining the float chamber of the carburetor

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. Unscrew the plug **[1]** and clean it with compressed air. Then, mount the plug together with the gasket and tighten to 4 Nm, open fuel tap, and check the float chamber for leaks.

⚠ 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 of 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 gear oil level

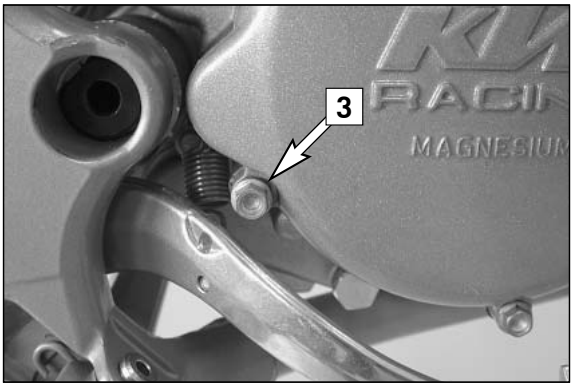
To check the gear oil, warm up the engine to operating temperature with a low load and place the motorcycle on an even surface. Remove the oil drain plug **[2]** and allow the gear oil to drain into a vessel. Clean the sealing area, mount the oil drain plug and gasket and tighten to 15 Nm.
Remove the oil filler screw **[4]** and add 0.5 liters of gear oil (e.g. Motorex Topspeed 4T 15W50). Mount the oil filler screw and check the engine for leaks.
If the gear oil is still clean you can continue to use it up to your next service.

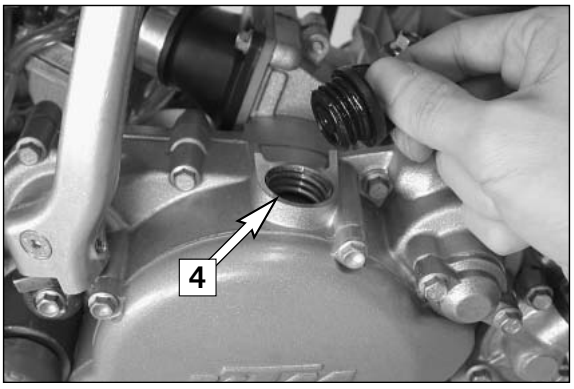
! CAUTION

- **too little oil or a poor oil quality will cause the transmission to wear prematurely. Only use brand-name oils.**
- **due to a change in the fluid capacities the inspection screw [3] can no longer be used.**

⚠ WARNING

Engines and engine oil are extremely hot at operating temperatures - be careful not to burn yourself.





Changing gear oil *

Before changing the gear oil warm up the engine and park the motorcycle on a horizontal surface. Remove the oil drain plug **[2]** and drain the used oil into an appropriate container. Clean the sealing surface. Mount the oil drain plug together with its gasket and tighten to 15 Nm.

Remove the filler plug **[4]** and add 0.5 l gear oil (e.g. Motorex Topspeed 4T 15W50). Mount the filler plug and check the engine for leaks.

! CAUTION

- **too little oil or a poor oil quality will cause the transmission to wear prematurely. Only use brand-name oils.**
- **due to a change in the fluid capacities the inspection screw [3] can no longer be used.**

⚠ WARNING

Engines and engine oil are extremely hot at operating temperatures - be careful not to burn yourself.

TROUBLE SHOOTING »

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

TROUBLE	CAUSE	REMEDY
Engine fails to start	Operating error	Open fuel tap, replenish fuel, do not use choke
	The motorcycle was not driven for a longer period of time, leaving old fuel in the float chamber	The highly inflammable components in modern fuels volatilize if left standing for longer periods of time. If the motorcycle has not been used for over 1 week, the fuel should be drained from the float chamber. The engine will start up immediately if the float chamber is filled with fresh, ignitable fuel
	Fuel supply interrupted	Close fuel tap, loosen fuel hose at carburettor, lead into a basin and open fuel tap, – if fuel leaks out, clean carburettor – if no fuel leaks out, check tank ventilation, i.e. clean fuel tap
	Electrode distance too great	Reduce electrode distance (0.60 mm)
	Plug fouled by oil, wet or bridged	Clean spark plug or renew
	Ignition wire or spark plug connector damaged	Dismount spark plug, connect ignition cable, hold to ground (blank place on engine) and actuate kickstarter, a strong spark must be produced at the spark plug – If no spark is produced, loosen spark plug cap from ignition cable, hold about 5 mm from ground and actuate kickstarter – If a spark now occurs, replace spark plug cap – If no spark is produced, control ignition system
	Kill button wire or short-circuit switch faulty	Disconnect black coloured cable from short circuit button at ignition coil and check ignition spark. If the spark is O.K. repair defective part of cable or ignition switch
	Loose ignition cable connectors	Inspect cable connectors
	Spark too weak	Examine ignition system
	Water in the carburetor and jets blocked	Dismantle and clean carburetor
Engine without idle running	Idle adjusting screw out of adjustment	Readjust idle running or replace idle adjusting screw
	Ignition system damaged	Examine ignition system
	Wear	Overhaul engine
Engine has not enough power	Charred glass fiber yarn in silencer	Renew filling
	Air filter obstructed	Clean or renew airfilter
	Fuel supply partly interrupted or blocked	Blow through fuel pipe and clean carburetor
	Loss of compression through loose spark plug	Tighten spark plug
	Exhaust system damaged	Check exhaust system for damage
	Engine has not enough preignition	Check and adjust ignition

TROUBLE	CAUSE	REMEDY
Engine has not enough power	Reed paddles tensionless or damaged, surface of reed valve housing damaged	Replace reed paddles or reed valve housing
	Wear	Overhaul engine
Engine revs not up and running in four stroke cycle	Carburetor overflows if level adjust too high, float needle seating is dirty or enlarged	Clean carburetor, if necessary replace float needle and adjust level
	Loose carburetor jets	Tighten jets
High rpm misfiring	Incorrect heat range spark plug or low quality spark plug	Refer to technical data section
	Loose, corroded or non conductive ignition socket connector	Check and seal with silicon
Engine spluters into the carburetor	Lack of fuel	Clean fuel pipes, examine tank aeration and clean
	Spark plug with incorrect heat value (Ignition by incandescence)	Fit correct spark plug
	Engine takes air out of control	Check intake flange and carburettor if firmly setted
Engine overheating	Insufficient liquid in cooling system	Top up coolant and bleed cooling system check cooling system for leaks
	Radiator fins clogged	Clean radiatar fins with water jet
	Frothing in cooling system	Renew coolant using branded anti-freeze/anti-corrosive (Motorex Anti-Freeze)
	Pinched or kinked water hoses	Replace with correct routed hoses
	Incorrect ignition timing because of loose stator screws	Readjust to correct ignition timing specifications, secure screws with Loctite 243
	Incorrect compression ratio	Measure and adjust compression ratio
Emission of white smoke (steam)	Cylinder head or O-ring of cylinder head gasket leaks	Check cylinder head, replace O-ring
Excessive oil escapes from transmission breather tube	Excessive oil quantity in transmission	Correct transmission oil level
Water in transmission oil	Shaft seal ring of the water pump defect	Replace shaft seal ring of the water pump.

CLEANING »

Clean your motorcycle regularly in order to keep its painted finish looking shiny and new.
The best manner would be to use warm water that has been mixed with a commercially available washing detergent and a sponge. The hard dirt can be removed before with the help of a soft water jet.

! CAUTION

Never clean your motorcycle with a high-pressured cleaner or a high-pressured water jet. otherwise the water might run into the electrical components, connectors, sheathed cables, bearings, carburetor etc. and cause mailfunctions, i.e., lead to the premature destruction of these parts.

- You should use commercially available detergents to clean the motorcycle. Heavily soiled 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. Then take a short drive until the engine has reached its operating temperature, and also operate the brakes. The heat also causes the water at the inac cessible parts of the engine and the brakes to evaporate.
- 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.
- After the motorcycle has cooled down, oil and grease all the gliding bearing parts. Also treat the chain with a chain spray.
- To prevent failures in the electric system, you should treat the short circuit button with a contact spray.

STORAGE »

If you want to put your motorcycle away for longer periods of time, please observe the following instructions:

- Clean motorcycle thoroughly (see chapter: CLEANING)
- Change engine oil (old engine oil contains aggressive contaminations).
- Check antifreeze and amount of cooling liquid.
- Let the engine warm up again, close fuel tap and wait until the engine dies off by itself. In this way, the carburetor jets are prevented from becoming resin-clogged by the old fuel.
- Remove spark plug and fill in approx. 5 ccm of engine oil into the cylinder through the opening. Actuate kickstarter 10 times in order to distribute the oil onto the cylinder walls and mount the spark plug.
- Let fuel flow out of tank into an appropriate basin.
- Correct tire pressure.
- Lubricate bearing points of the control levers, footrests, etc. as well as the chain.
- The storage place should be dry and not be subjected to overly great temperature fluctuations.
- Cover the motorcycle with an air permeable tarpaulin or blanket. Do not use airtight materials, as possible humidity might not be able to escape and thereby cause corrosion.

⚠ WARNING

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 exhaust to rust.

Use after period of storage

- 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 shop at the beginning of the next biking season.

CHASSIS	85 SX (17"/14")	85/105 SX (19"/16")
Frame	Central chrome-moly-steel frame	
Fork	telescopic fork WP Suspension 4357 MXMA	
Wheel travel front/rear	275 mm / 300 mm (10.82/11.81 in)	
Rear suspension	WP PDS 4618 (Progressive Damping System) shock absorber	
Front brake	Disc brake Ø 220 mm (8.66 in), 4 piston	
Rear brake	Disc brake Ø 200 mm (7.87 in), 4 piston	
Tires front	70/100-17" Pirelli NHS 40 M	70/100-19" Pirelli NHS 42M
Tires rear	90/100-14" Pirelli NHS 49	90/100-16" Pirelli NHS 51
Air pressure	1.0 bar	
Fuel tank capacity	5.1 liter	
Final drive ratio	14 : 46 t	14 : 49 t
Chain	1/2 x 5/16" 122 rolls	
Steering angle	66 °	
Wheel base	1290 mm	
Seat height, unloaded	865 mm	900 mm
Ground clearance	385 mm	415 mm
Dead weight without fuel	66 kg	68 kg
Rider's body weight	max. 75 kg	
Recommended age of rider	10 to 15 years	
Engine	CR-85	

STANDARD ADJUSTMENT – FORK	
	WP 4357 MXMA 05187C05
Compression adjuster	20
Rebound adjuster	20
Spring	3 N/mm
Spring preload	3 mm
Air chamber length	110 mm
Fork oil	SAE 5

STANDARD ADJUSTMENT - SHOCK ABSORBER	
	WP 4618 PDS-DCC WP 15187C02
Compression adjuster	15 LS (LOW SPEED) 2 HS (HIGH SPEED)
Rebound adjuster	22
Spring	35-215
Spring preload	7 MM

TIGHTENING TORQUES - CHASSIS		
Hexagon bolt - brake caliper front	M 8	Loctite 243 + 25 Nm
Allan head screw - brake pads rear	M6	5 Nm
Flat head bolt - brake discs	M6	Loctite 243 + 14 Nm
Hexagon nut - front wheel spindle	M 10x 1.5	40 Nm
Hexagon nut - rear wheel spindle	M 20x1.5	80 Nm
Hexagon nut - swingarm bolt	M 14/M 16x1.5	75 Nm
Clamping bolts - top triple clamp	M 8	20 Nm
Clamping bolts - bottom triple clamp	M 8	15 Nm
Bolt - handlebar clamp	M 8	20 Nm
Spoke nipple	M 4,5	5.0 Nm
Other chassis bolts	M6 M8 M10	10 Nm 25 Nm 45 Nm

TECHNICAL SPECIFICATIONS - ENGINE 85/105 SX 2007»

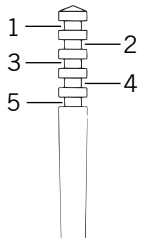
ENGINE	85 SX	105 SX
Design	Liquid cooled single cylinder two-stroke engine with reed valve intake	
Displacement	84.93 ccm	103.96 ccm
Bore/stroke	47 / 48.95 mm	52 / 48.95 mm
Fuel	unleaded fuel with at least RON 95 (USA = Premium RON 91), mixed with high grade two-stroke oil	
Oil/gasoline ratio	1 : 40 - 1 : 60 when using high grade two-stroke oil (e.g. Motorex 2T Crosspower), when in doubt, please contact your importer	
Lubrication	mixture lubrication	
Crankshaft bearing	deep-groove ball bearing, cylinder roller bearing	
Connecting rod bearing	needle bearing	
Piston pin bearing	needle bearing	
Piston rings	1 compression ring	
Primary drive	straight cut spur gears, 19 : 66 t	
Clutch	multiple disc clutch in oil bath, hydraulic operated (Motorex Kupplungs-Fluid 75)	
Transmission	6 speed, claw actuated	
Gear ratio	1st gear 11 : 29 2nd gear 14 : 28 3rd gear 16 : 26 4th gear 19 : 26 5th gear 21 : 25 6th gear 20 : 21	
Transmission oil	0.5 liter engine oil Motorex Topspeed 4T 15W50	
Ignition system	Moric Digital 2M1	
Spark plug	NGK BR 9 EVX	
Electrode gap	0.60 mm	
Carburetor	flat-slide carburetor, carburetor see table	
Coolant	1 liter, mixture 50% antifreeze, 50% distilled water, at least –25° C (-13° F)	
Air filter	wet foam type air filter insert	

BASIC CARBURETOR SETTING	
Carburetor	Keihin PWK 28
Main jet	118
Needle jet	2.6
Idling jet	45
Jet needle	N5HG
Needle position from top	III
Throttle valve	3.5
Starting jet	62
Air adjustment screw open	1,5

TIGHTENING TORQUES - ENGINE		
Flange bolts - cylinder-head	M 6	10 Nm
Nuts-cylinder base	M 8	30 Nm
Flywheel collar nut	M 12X1	60 Nm
Primary gear bolt	M 10X1,25	Loctite 243 + 80 Nm
Nut for inner clutch hub	M 14X1,25	Loctite 243 + 60 Nm
Crankcase and cover bolts	M 6	8 Nm
Spark plug	M 14X1,25	20 Nm
Reed valve housing	M 14X1,5	75 Nm
Kickstarter	M 6	6 Nm
Shift lever	M 6	Loctite 243 + 12 Nm
Swingarm pivot	M 6	Loctite 243 + 12 Nm
Other bolts	M 5 M 6	6 Nm 10 Nm

VERGASERREGULIERUNG *CARBURETOR SETTING* KEIHIN PWK 28		85/105 SX 2007				KTM
MEERESHÖHE ***ALTITUDE*** ↓	**TEMPERATUR** ***TEMPERATURE*** →	- 20°C bis -7°C *-2°F to 20°F*	- 6°C bis 5°C *19°F to 41°F*	6°C bis 15°C *42°F to 60°F*	16°C bis 24°C *61°F to 78°F*	25°C bis 38°C *79°F to 98°F*
3000 m *10000 ft* ↑ 2301 m *7501 ft*	LSO *ASO*	1,5	1,75	2	2,25	2,5
	LD *IJ*	45	42	40	38	38
	NADEL *NEEDLE*	N5HG	N5HH	N5HH	N5HH	N5HH
	POS *POS*	2	3	2	1	1
	HD *MJ*	118	115	115	115	115
2300 m *7500 ft* ↑ 1501 m *5001 ft*	LSO *ASO*	1,25	1,5	1,75	2	2,25
	LD *IJ*	48	45	42	40	38
	NADEL *NEEDLE*	N5HG	N5HG	N5HH	N5HH	N5HH
	POS *POS*	3	2	3	2	1
	HD *MJ*	120	118	115	115	115
1500 m *5000 ft* ↑ 751 m *2501 ft*	LSO *ASO*	1	1,25	1,5	1,75	2
	LD *IJ*	50	48	45	42	40
	NADEL *NEEDLE*	N5HF	N5HG	N5HG	N5HH	N5HH
	POS *POS*	3	3	2	2	2
	HD *MJ*	122	120	118	115	115
750 m *2500 ft* ↑ 301 m *1001 ft*	LSO *ASO*	0,75	1	1,25	**1,5**	1,75
	LD *IJ*	50	50	48	**45**	42
	NADEL *NEEDLE*	N5HF	N5HF	N5HG	**N5HG**	N5HH
	POS *POS*	4	3	3	**3**	2
	HD *MJ*	125	122	120	**118**	115
300 m *1000 ft* ↑ Meeresniveau *Sea level*	LSO *ASO*	0,5	0,75	1	1,25	1,5
	LD *IJ*	50	50	50	48	45
	NADEL *NEEDLE*	N5HF	N5HF	N5HG	N5HG	N5HG
	POS *POS*	5	4	3	3	2
	HD *MJ*	125	125	122	120	118

LSO = Luftregulierschraube offen
LD = Leerlaufdüse
POS = Nadel Clip Position von oben
HD = Hauptdüse



ASO = Air screw open from fully-seated
IJ = Idling jet
POS = Needle clip position from top
MJ = Main jet

NICHT FÜR STRASSENBETRIEB
Kraftstoff: Super Bleifrei ROZ 95

NOT FOR HIGHWAY USE
Fuel: unleaded fuel with at least RON 95
USA = Premium PON 91

HEAD WORD INDEX »

REPAIRMANUAL2004-2009

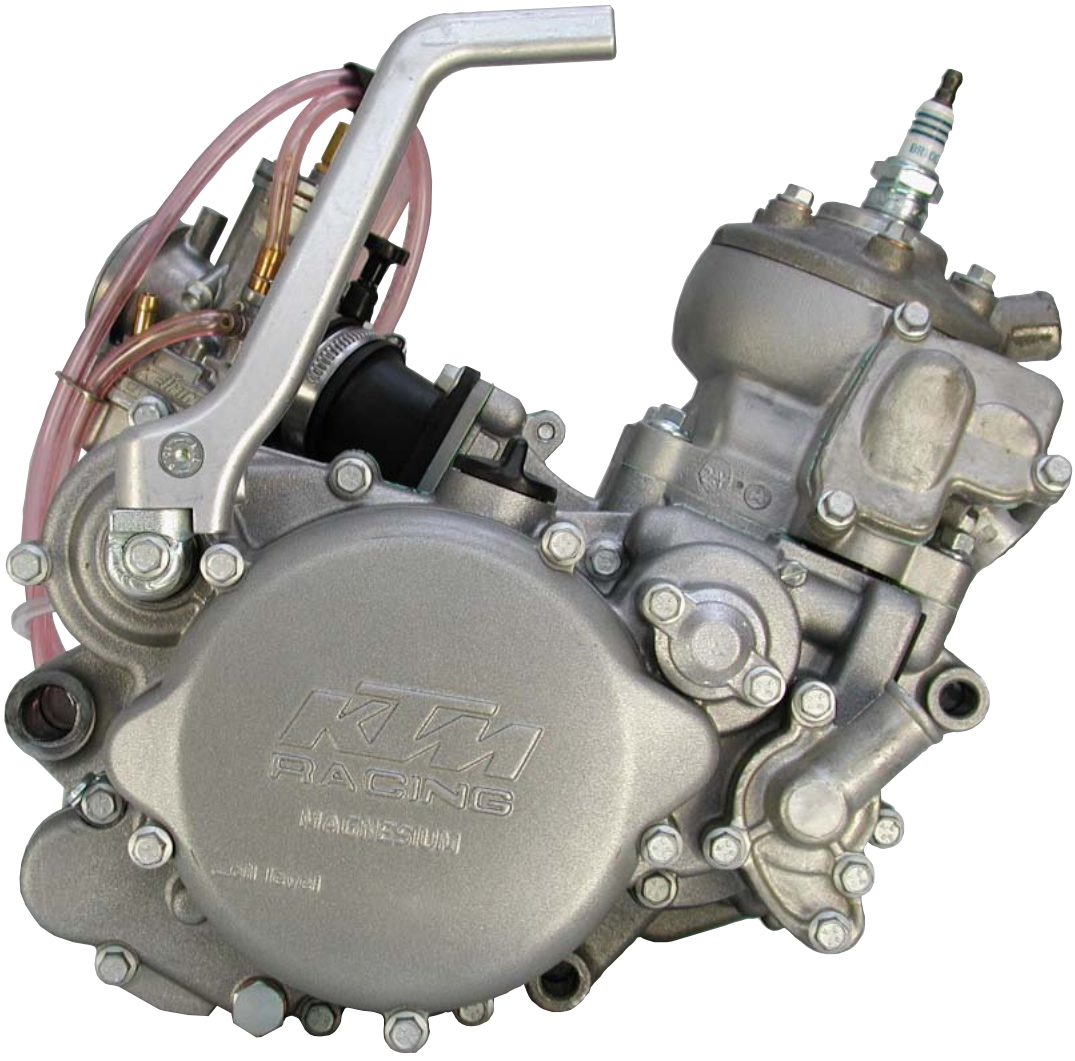
85/105 SX/XC

REPARATURANLEITUNG

MANUALE DI RIPARAZIONE

MANUEL DE RÉPARATION

MANUAL DE REPARACIÓN



ART.NR.: 3.206.049-E

GENERAL INFORMATION 2

INDEX

Art.- Nr. 3.206.049-E

Carburetor adjustment

Basic information on the original carburetor setting

The original carburetor setting was adapted for an altitude of approx. 500 meters (1600 ft.) above sea level, and the ambient temperature of approx. 20° C (68° F), mainly for off-road use and central European premium-grade fuel (ROZ 95).
Mixing ratio 2-stroke motor oil : super fuel 1:40 - 1:60.

Basic information of changing the carburetor setting (For the carburetor setting, see "Technical Specifications")

Always start out from the original carburetor setting. Essential requirements are a clean air filter system, air-tight exhaust system and an intact carburetor. Experience has shown that adjusting the main jet, the idling jet and the jet needle is sufficient and that changes to other parts of the carburetor will not greatly affect engine performance.

RULE OF THUMB: high altitude or high temperatures ⇨ choose leaner carburetor adjustment
low altitude or low temperatures ⇨ choose richer carburetor adjustment

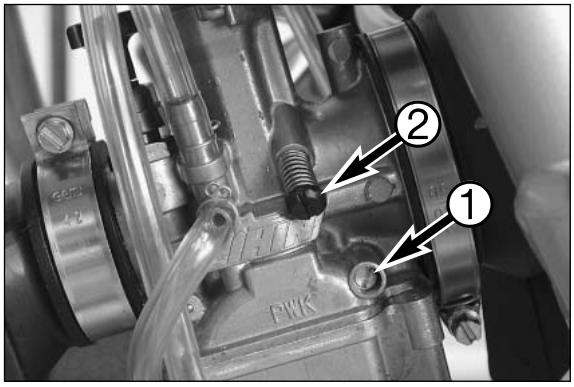
⚠ WARNING ⚠

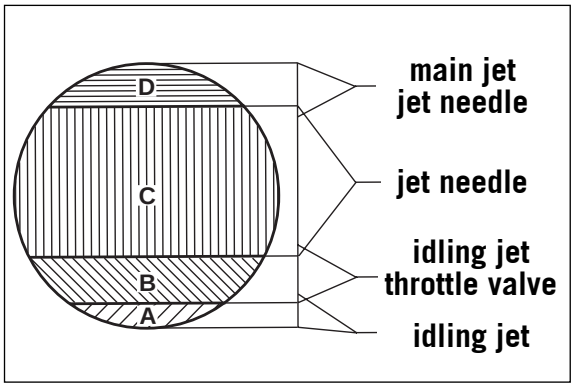
- Only use premium-grade gasoline ROZ 95 mixed with high-grade two-stroke engine oil. Other types of gasoline can cause engine failure, and their use will void your warranty.
- Only use high-grade 2-stroke engine oil of known brands (e. g. Motorex Cross Power 2T).
- Not enough oil or low-grade oil can cause erosion of the piston. If you use too much oil, the engine can start smoking and foul the spark plug.
- In the case of a leaner adjustment of the carburetor proceed cautiously. Always reduce the jet size in steps of one number to avoid overheating and piston seizure.

NOTE: If the engine does not run properly, despite a changed adjustment look for mechanical faults and check the ignition system.

Basic information on carburetor wear

Engine vibrations subject the throttle slide, jet needle, float needle valve and the main nozzle holder to extreme wear. Wear leads to malfunctioning of the carburetor (e.g. over-enrichment). These parts should be inspected and/or replaced after 100 operating hours.





Idling range – A, Adjusting the idle speed

Operation with closed throttle valve. This range is influenced by the position of the air control screw ❶ and the idle adjusting screw ❷. Only make adjustments when the engine is hot.
To this end, slightly increase the idling speed of the engine by means of the idle adjusting screw. Turning it clockwise produces a higher idling speed and turning the screw counterclockwise produces a lower idling speed. Create a round and stable engine speed using the air control screw (basic position of the air control screw = open by 1.5 turns). Then adjust to the normal idling speed by means of the idle adjusting screw.

Opening up – B

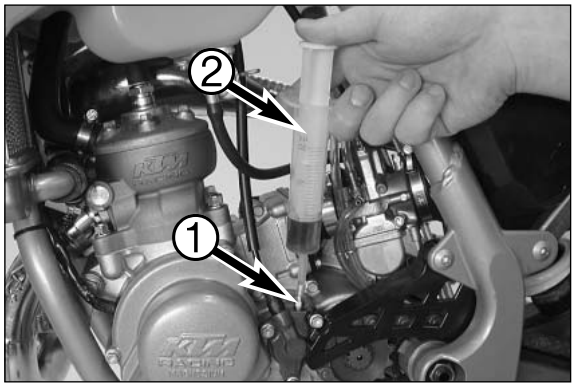
Engine behavior when the throttle opens. The idle jet and the shape of the throttle valve influences this range. If, despite good idling-speed and part-throttle setting, the engine sputters and smokes when the throttle is fully opened and develops its full power not smoothly but suddenly at high engine speeds, the mixture to the carburetor will be too rich, the fuel level too high or the float needle is leaking.

Part-throttle range – C

Operation with partly open throttle valve. This range is only influenced by the jet needle (shape and position). The optimum part-throttle setting is controlled by the idling setting in the lower range and by the main jet in the upper range. If the engine runs on a four-stroke cycle or with reduced power when it is accelerated with the throttle partly open, the jet needle must be lowered by one notch. If the engine pings, especially when accelerating under full power at maximum engine revs, the jet needle should be raised.
If these faults should occur at the lower end of the part throttle range at a four-stroke running, make the idling range leaner; if the engine pings, adjust the idling range richer.

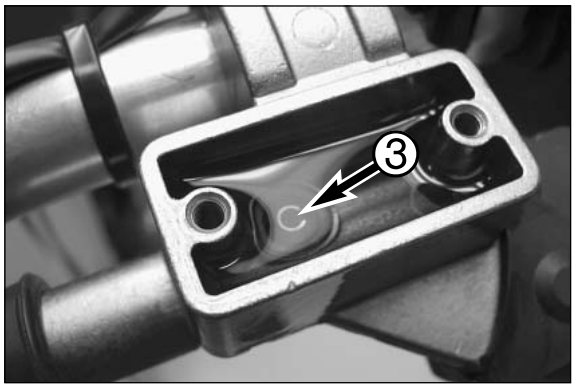
Full throttle range – D

Operation with the throttle fully open (flat out). This range is influenced by the main jet and the jet needle. If the porcelain of the new spark plug is found to have a very bright or white coating or if the engine rings, after a short distance of riding flat out, a larger main jet is required. If the porcelain is dark brown or black with soot the main jet must be replaced by a smaller one.



Bleeding the hydraulic clutch

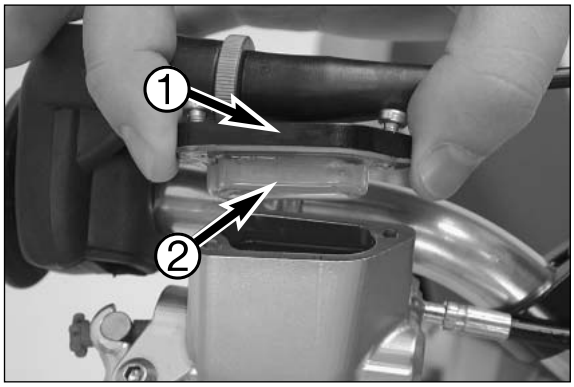
– Take off cover together with rubber bellows.
– At the slave cylinder of the clutch, remove the bleeder nipple ❶. It its place, mount the bleeder syringe ❷ which is filled with SAE 10 (**e.g. Motorex Kupplungsfluid 75**) hydraulic oil.



– Refill oil, until oil is discharged from the bore ❸ of the master cylinder in a bubble-free state. Make sure that the oil does not overflow.

! CAUTION !

– HAVING COMPLETED THE BLEEDING PROCEDURE, YOU HAVE TO VERIFY THAT THE OIL LEVEL IN THE MASTER CYLINDER IS CORRECT.
– KTM USES BIODEGRADABLE HYDRAULIC OIL FOR THE HYDRAULIC CLUTCH CONTROL. NEVER MIX BIODEGRADABLE HYDRAULIC OILS WITH MINERAL OILS.
– ALWAYS USE BIODEGRADABLE HYDRAULIC OIL SAE 10 (E.G. MOTOREX KUPPLUNGSFLUID 75) TO FILL UP THE MASTER CYLINDER. NEVER REFILL WITH MINERAL HYDRAULIC OIL OR BRAKE FLUID.



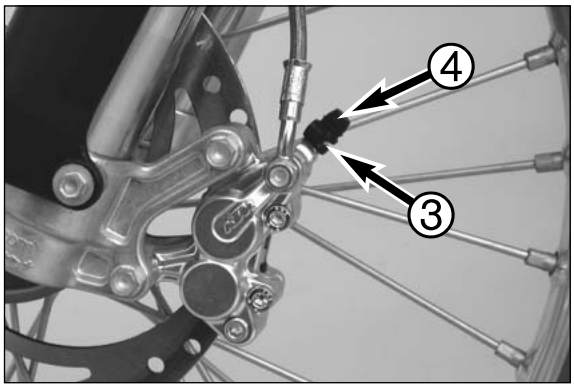
Changing the front brake fluid

– Move the hand brake cylinder into horizontal position.

– Disassemble the cover ❶ together with the rubber boot ❷ from the brake fluid reservoir.

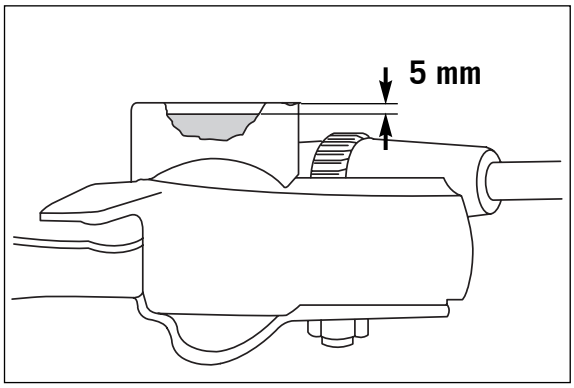
– Press the brake caliper pistons all the way back.

– Use a syringe to extract the used brake fluid and add fresh DOT 5.1 brake fluid (Motorex Brake Fluid DOT 5.1).



– Use a commercial extractor (shop equipment) to extract the used brake fluid out of the system through the bleeder screw ❸ on the brake caliper. Make sure the brake fluid reservoir is always filled with enough fresh brake fluid.

– Tighten the bleeder screw ❸ and attach the dust cap ❹ again.



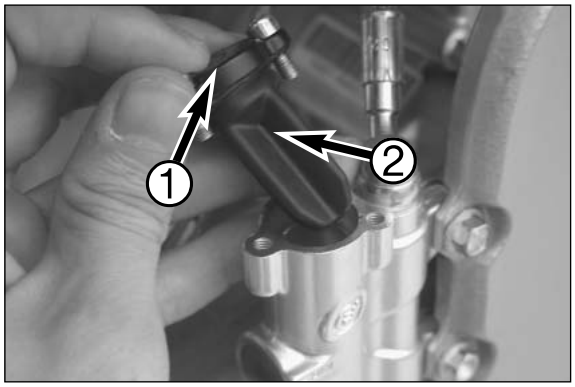
– Add DOT 5.1 brake fluid (Motorex Brake Fluid DOT 5.1) up to 5 mm under the top edge of the reservoir. Remount the rubber boot, cover and screws.

– Wash off any overflowing or spilled brake fluid with water.

– Actuate the hand brake lever until you feel the point of pressure.

! CAUTION !

– NEVER USE DOT 5 BRAKE FLUID. IT IS BASED ON SILICONE OIL AND DYED PURPLE. GASKETS AND BRAKE HOSES WILL BE DAMAGED IF DOT 5 BRAKE FLUID IS USED.
– BRAKE FLUID CAN CAUSE SKIN IRRITATIONS. AVOID COMING INTO CONTACT WITH THE SKIN OR EYES. IF BRAKE FLUID SPLASHES INTO YOUR EYES, RINSE THOROUGHLY WITH WATER AND CONSULT A DOCTOR.
– MAKE SURE NO BRAKE FLUID COMES INTO CONTACT WITH PAINTED PARTS SINCE BRAKE FLUID WILL CORRODE THE PAINTWORK!
– ONLY USE CLEAN, NEW BRAKE FLUID FROM TIGHTLY SEALED CONTAINERS.



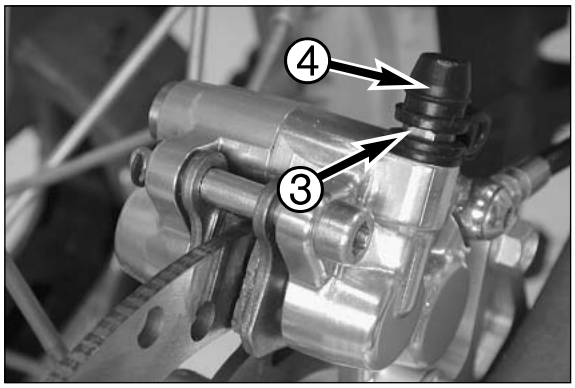
Changing the rear brake fluid

– Move the vehicle in a vertical position.

– Disassemble the cover ❶ together with the rubber boot ❷ from the brake fluid reservoir.

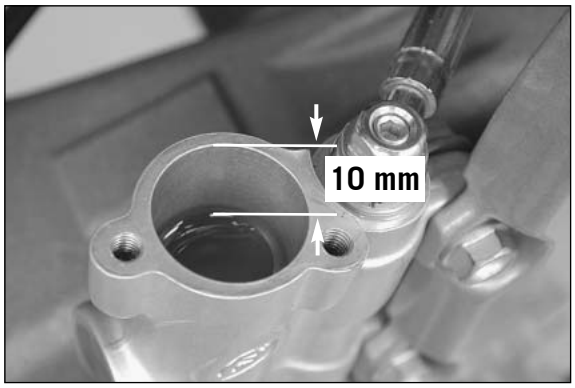
– Press the brake caliper pistons all the way back.

– Use a syringe to extract the used brake fluid and add fresh DOT 5.1 brake fluid (Motorex Brake Fluid DOT 5.1).



– Use a commercial extractor (shop equipment) to extract the used brake fluid out of the system through the bleeder screw ❸ on the brake caliper. Make sure the brake fluid reservoir is always filled with enough fresh brake fluid.

– Tighten the bleeder screw ❸ and attach the dust cap ❹ again.



– Add DOT 5.1 brake fluid (Motorex Brake Fluid DOT 5.1) up to 10 mm under the top edge of the reservoir. Remount the rubber boot, cover and screws.

– Wash off any overflowing or spilled brake fluid with water.

– Actuate the foot brake lever until you feel the point of pressure.

! CAUTION !

– NEVER USE DOT 5 BRAKE FLUID. IT IS BASED ON SILICONE OIL AND DYED PURPLE. GASKETS AND BRAKE HOSES WILL BE DAMAGED IF DOT 5 BRAKE FLUID IS USED.
– BRAKE FLUID CAN CAUSE SKIN IRRITATIONS. AVOID COMING INTO CONTACT WITH THE SKIN OR EYES. IF BRAKE FLUID SPLASHES INTO YOUR EYES, RINSE THOROUGHLY WITH WATER AND CONSULT A DOCTOR.
– MAKE SURE NO BRAKE FLUID COMES INTO CONTACT WITH PAINTED PARTS SINCE BRAKE FLUID WILL CORRODE THE PAINTWORK!
– ONLY USE CLEAN, NEW BRAKE FLUID FROM TIGHTLY SEALED CONTAINERS.

Checking the brake pads and brake discs

– See Owner's Manual

NOTE: As of model year 2006 a reinforced brake disk and a modified brake caliper is used.

SPECIAL TOOLS – ENGINE 85 SX / 105 SX

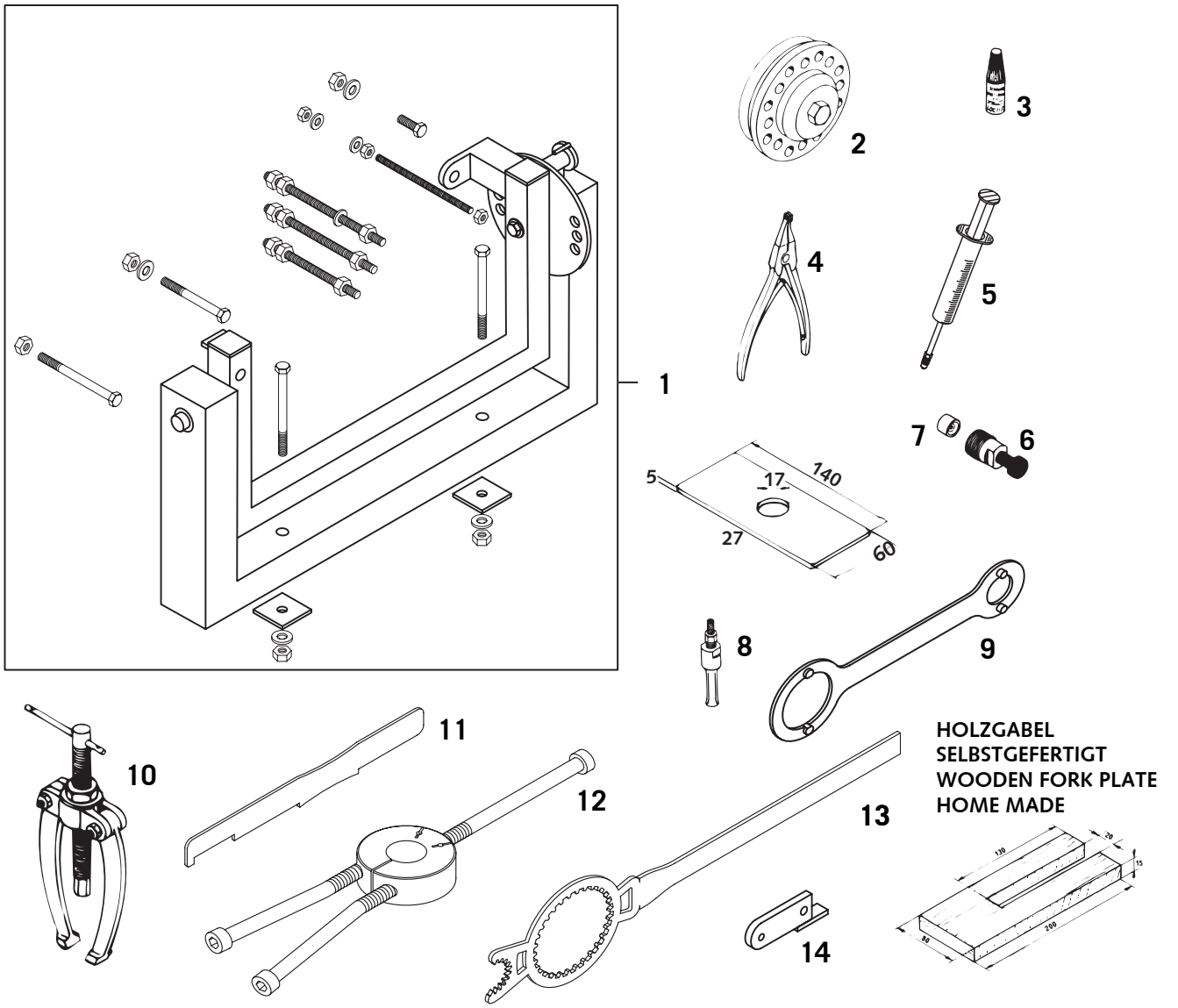


FIG.	DESCRIPTION	PART NUMBER
1	560.12.001.044	Universal engine work stand
2	470.29.027.000	Clutch rivetting tool
3	6 899 785	Loctite 243 blu 6 cm^3
4	510.12.011.000	Circlip plier
5	503.29.050.000	Vent syringe for hydraulic clutch
6	546.29.009.044	Magneto extractor M 27x1
7	510.12.016.000	Protection cap
8	151.12.018.200	Internal bearing puller 5-7 mm
9	546.29.012.100	Holding spanner for flywheel
10	151.12.017.000	Bearing puller
11	470.29.006.000 475.29.006.000	Adjusting plate 85 SX Adjusting plate 105 SX
12	584.29.037.031	Mounting tool inner ring NJ207
13	470.29.003.000	Clutch/Primary gear holder
14	470.29.002.000	Engine holder

CLEANING

Clean your motorcycle regularly in order to keep its painted finish looking shiny and new.
The best manner would be to use warm water that has been mixed with a commercially available washing detergent and a sponge. The hard dirt can be removed before with the help of a soft water jet.

! CAUTION !

NEVER CLEAN YOUR MOTORCYCLE WITH A HIGH-PRESSURED CLEANER OR A HIGH-PRESSURED WATER JET. OTHERWISE THE WATER MIGHT RUN INTO THE ELECTRICAL COMPONENTS, CONNECTORS, SHEATHED CABLES, BEARINGS, CARBURETOR ETC. AND CAUSE MAILFUNCTIONS, I.E., LEAD TO THE PREMATURE DESTRUCTION OF THESE PARTS.

– You should use commercially available detergents to clean the motorcycle. Heavily soiled 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. Then take a short drive until the engine has reached its operating temperature, and also operate the brakes. The heat also causes the water at the inaccessible parts of the engine and the brakes to evaporate.
– 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.
– After the motorcycle has cooled down, oil and grease all the gliding bearing parts. Also treat the chain with a chain spray.
– To prevent failures in the electric system, you should treat the short circuit button with a contact spray.

STORAGE

If you want to put your motorcycle away for longer periods of time, please observe the following instructions:

– Clean motorcycle thoroughly (see chapter: CLEANING)
– Change engine oil (old engine oil contains aggressive contaminations).
– Check antifreeze and amount of cooling liquid.
– Let the engine warm up again, close fuel tap and wait until the engine dies off by itself. In this way, the carburetor jets are prevented from becoming resin-clogged by the old fuel.
– Remove spark plug and fill in approx. 5 ccm of engine oil into the cylinder through the opening. Actuate kickstarter 10 times in order to distribute the oil onto the cylinder walls and mount the spark plug.
– Let fuel flow out of tank into an appropriate basin.
– Correct tire pressure.
– Lubricate bearing points of the control levers, footrests, etc. as well as the chain.
– The storage place should be dry and not be subjected to overly great temperature fluctuations.
– Cover the motorcycle with an air permeable tarpaulin or blanket. Do not use airtight materials, as possible humidity might not be able to escape and thereby 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 EXHAUST TO RUST.

USE AFTER PERIOD OF STORAGE

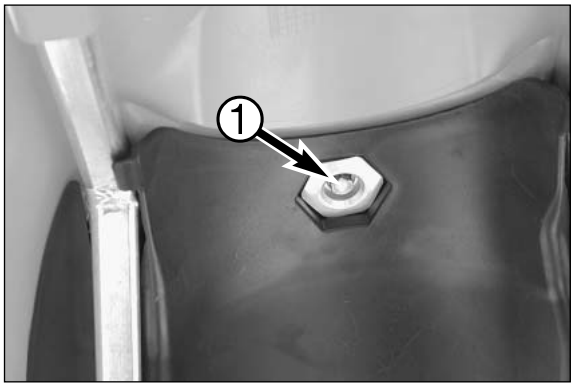
– Fill up tank with fresh fuel.
– Check motorcycle as before each start (see driving instructions).
– Take a short, careful test ride first.

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 shop at the beginning of the next biking season.

REMOVING AND REFITTING THE ENGINE 3

INDEX

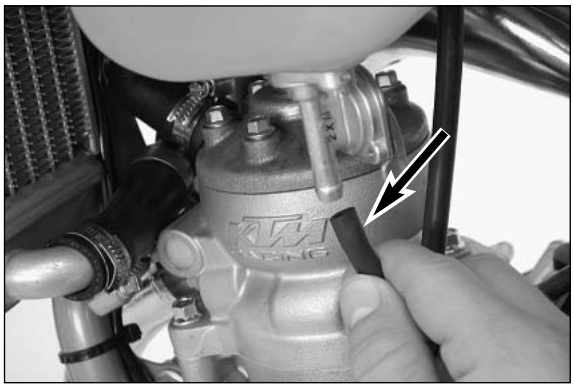
Art.- Nr. 3.206.049-E



Removing the engine

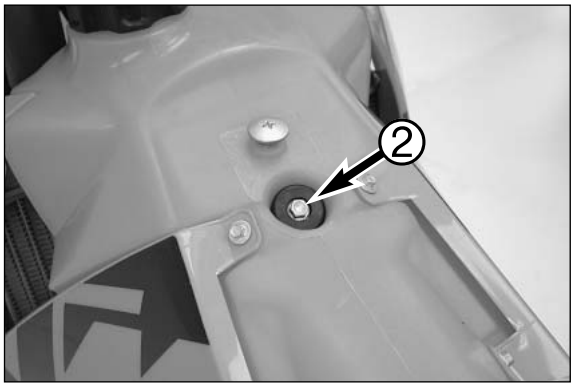
Before removing the engine thoroughly clean the entire motorcycle.
Let the motorcycle cool down before commencing to remove the engine. Danger of burns!

– Jack the motorcycle up on a stable supporting device.
– Remove the bolt ❶ on the seat, slightly lift the back of the seat and pull off towards the rear.

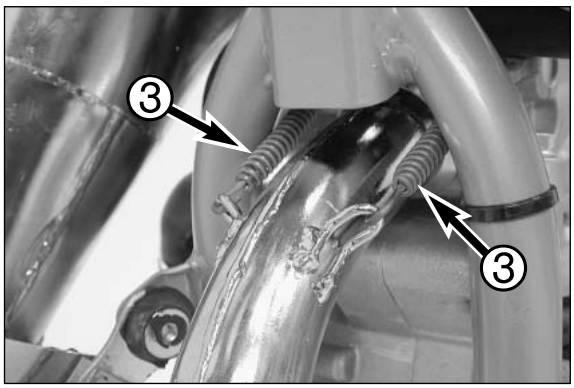


– Close the fuel tap and disconnect the hose.

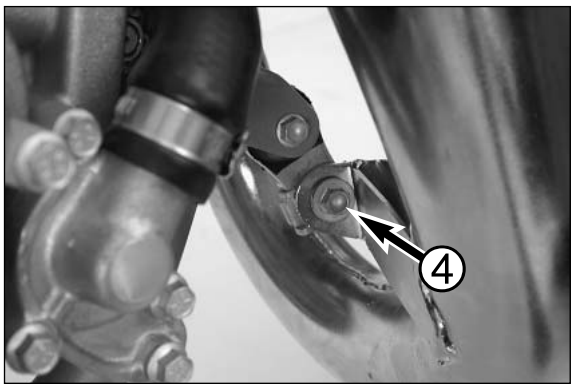
– Remove the chain joint and take off the chain.



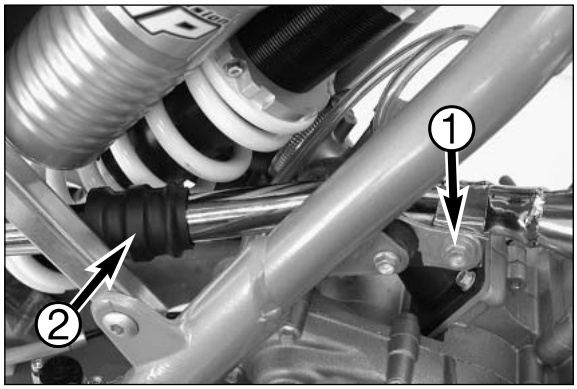
– Undo the bolt ❷ and remove.
– Lift of tank together with spoilers.



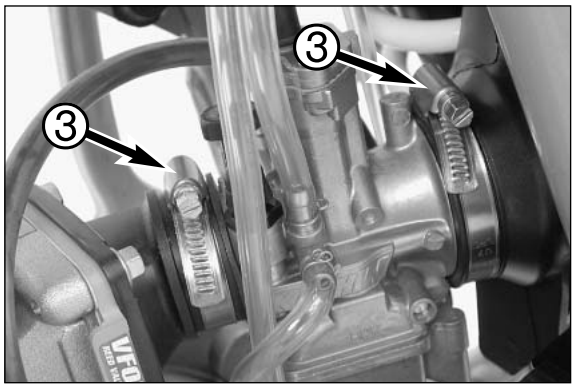
– Unhook the two springs ❸ of the exhaust pipe.



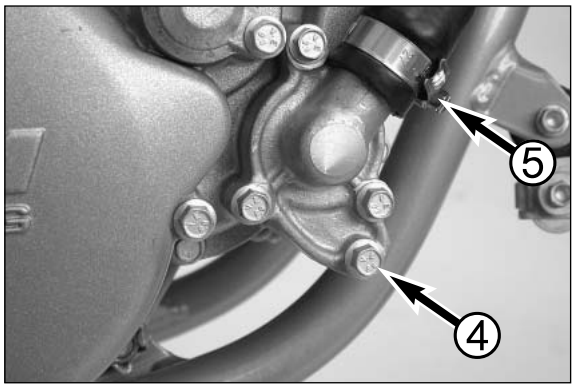
– Remove the bolt of the front exhaust bracket ❹.



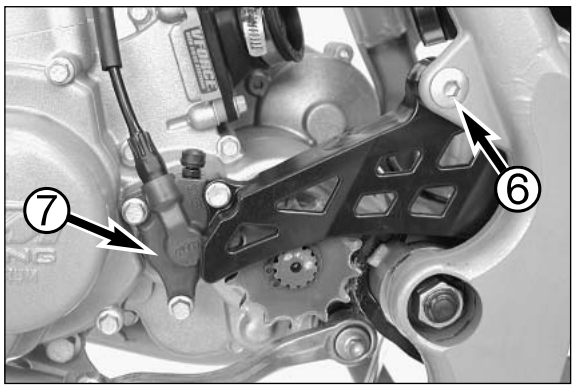
– Remove the bolt of the rear exhaust bracket ❶.
– Pull exhaust pipe out of the rubber sleeve ❷, take of the exhaust pipe.



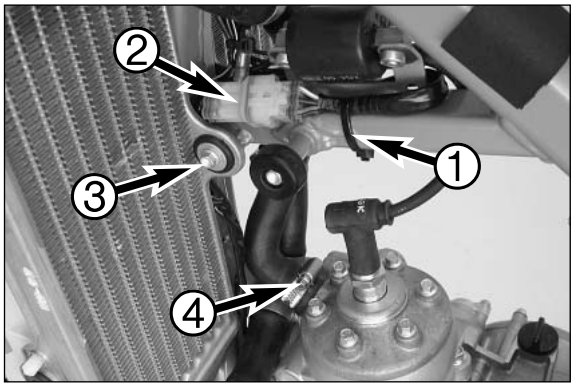
– Loosen the two hose clamps ❸ and remove the carburetor.
– Let the fuel of the float chamber run out into an appropriate basin.
– Put the carburetor into a clean cloth and lay it on the air filter box.



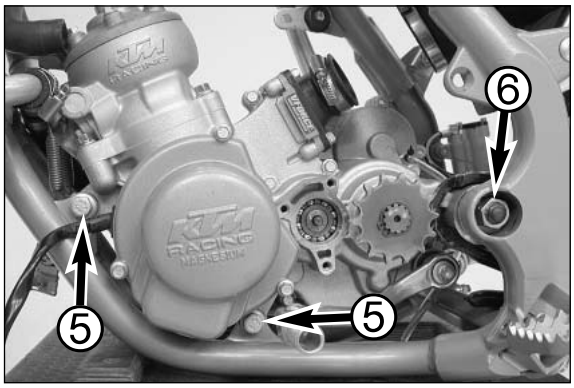
– Remove the radiator cap.
– Remove drain bolt ❹ at the water pump cover and drain cooling liquid.
– Loosen hose clamp ❺ and disconnect the radiator hose.



– Unscrew the three bolts on the clutch slave cylinders and the bolt ❻ on the chainguard.
– Remove the chainguard and tilt the clutch slave cylinder ❼ to the side.

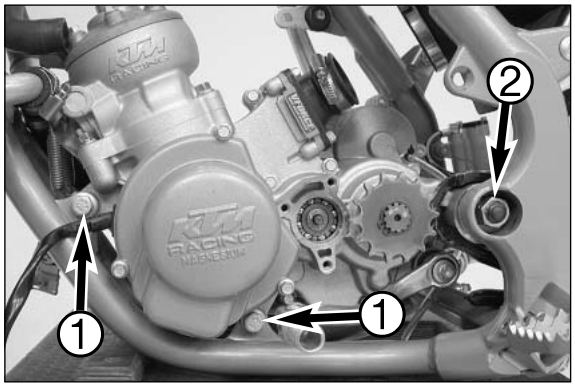


– Disconnect spark plug connector, remove cable tie ❶ and disconnect the connector ❷.
– Loosen the bolt ❸ on the radiator mounting and pull the wiring harness through.
– Loosen hose clamp ❹ and disconnect radiator hose at the cylinder head.



– Remove the two engine fixing bolts ❺ and the hexagon nut ❻.

– Dismount the swing arm pivot and pull the swing arm towards the rear.
– Lift the engine out of the frame.

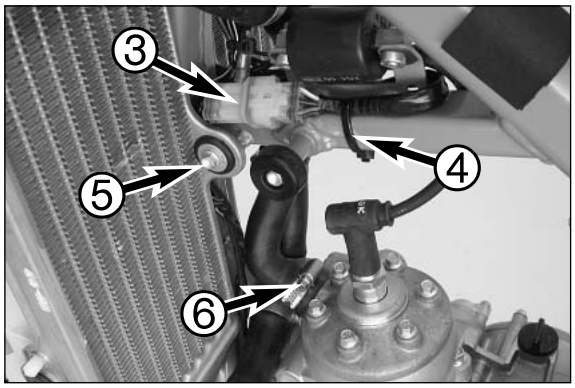


Refitting the engine

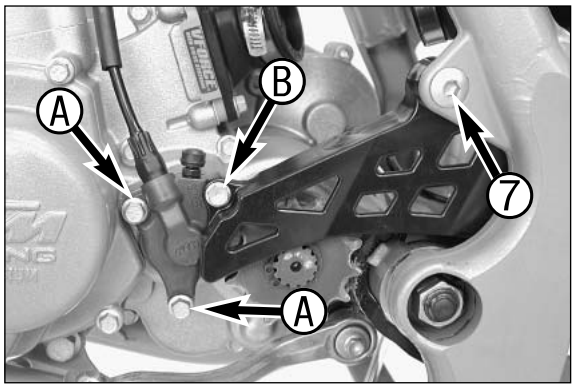
– Lift the engine into the frame and correctly position it.
– Slightly grease the two engine fixing bolts ❶ and mount but do not tighten yet.
– Slightly grease the swing arm pivot, mount the hexagon nut ❷ and tighten to 75 Nm.

! CAUTION !

TIGHTEN THE HEXAGON NUT ❷ FIRST SO THE ENGINE WILL NOT BE DEFORMED WHEN MOUNTED. THEN TIGHTEN THE ENGINE FIXING BOLTS ❶.

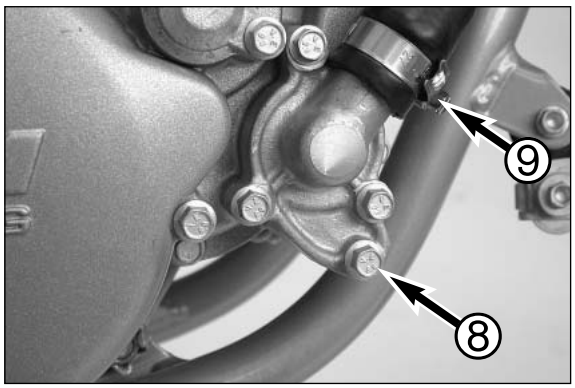


– Connect connector ❸ and attach the cable to the frame with a cable tie ❹.
– Mount the radiator with the bolt ❺.
– Mount the spark plug connector on the spark plug.
– Put the radiator hose onto the connection device on the cylinder head and fix it with the hose clamp ❻.

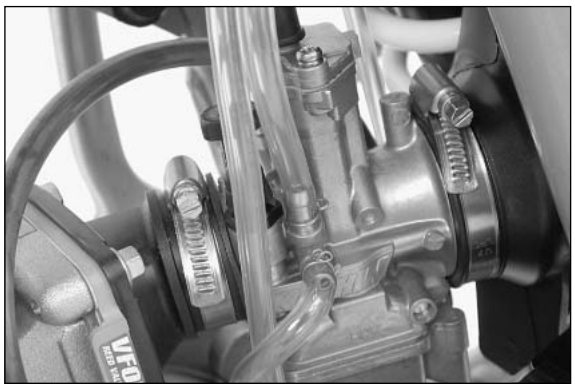


– Mount the clutch slave cylinder and the chainguard and tighten the three bolts to 10 Nm.
– Tighten the bolt ❼.

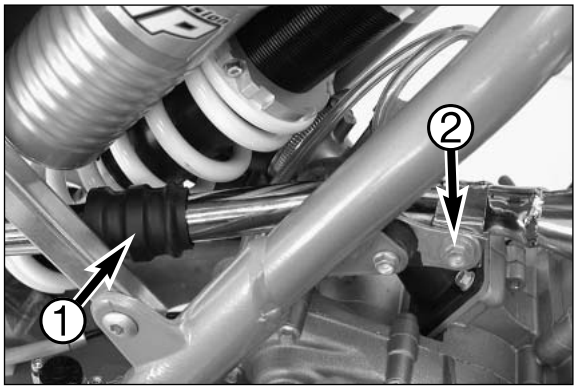
NOTE: Two bolts M6x16 are used in position Ⓐ, one bolt M6x20 in position Ⓑ.



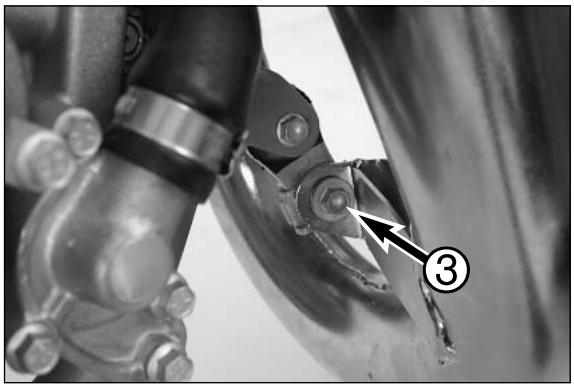
– Mount the bolt ❽ of the water pump cover with a new seal ring.
– Connect the radiator hose to the water pump and fix it with the hose clamp ❾.



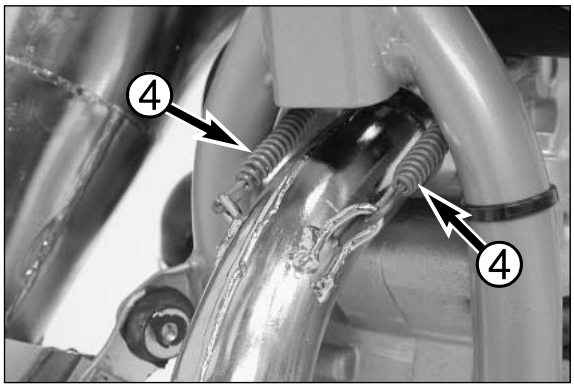
– Insert the rear end of the carburetor into the carburetor connection boot and the front end into the intake flange.
– Mount and tighten both hose clamps.



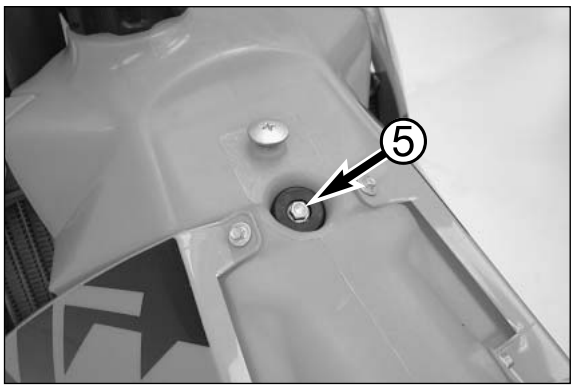
– Push exhaust pipe into the rubber sleeve ❶ and tighten the bolt of the rear exhaust pipe bracket ❷.



– Tighten the bolt of the front exhaust pipe bracket ❸.



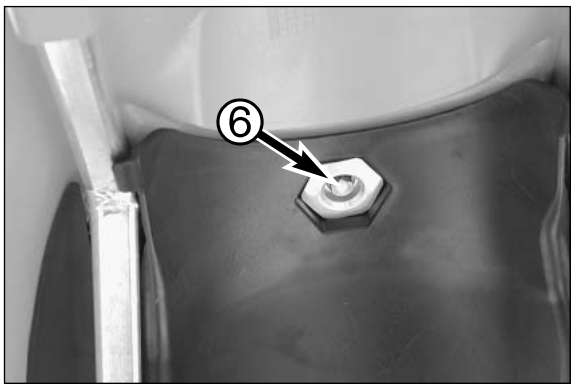
– Hook the spring ❹.



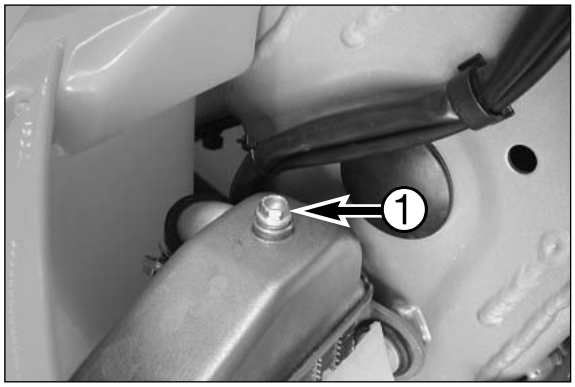
– Correctly position the tank and mount the bolt ❺ with the tank roller, tighten the bolt to 10 Nm.

– Connect the fuel hose to the carburetor.

– Mount the chain and the chain joint. When mounting the chain joint make sure that the closed side of the safety device is facing the moving direction.



– Mount the seat. When mounting, make sure the locating tab engages in the seat. Tighten bolt ❻.



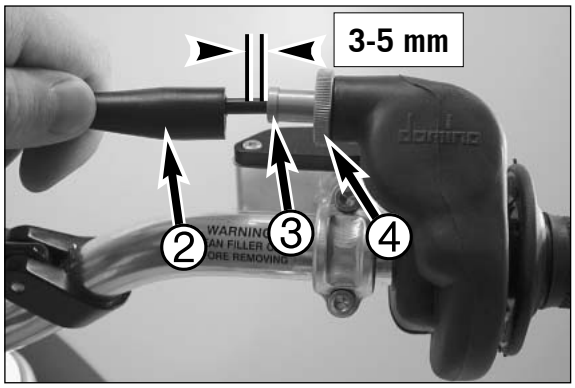
Refilling/bleeding the cooling system

– Pour approx. 0.5 litres coolant into the system.

– Remove the bolt ❶ on the right radiator.
– Now add cooling liquid until it emerges free of bubbles at the right radiator. Then immediately mount the bolt so that no more air can enter the right radiator.
– Top up the left radiator until the coolant can be seen approx. 10 mm above the radiator fins.

Total capacity: 1 l

– After installing briefly warm up the engine and top up the cooling liquid. If the engine is working properly a short, careful test ride can be taken.
– After the test ride check the engine and the exhaust system for leaks.



Adjusting the throttle cable

There must always be a 3-5 mm) play in the throttle cable.

– To check this, move back the protective cover ❷ on the throttle grip. You must be able to lift the outer covering of the cable 3-5 mm from the adjusting screw ❸ until resistance is felt.
– To adjust, loosen the counternut ❹ and turn the adjusting screw accordingly. Finally tighten the counternut and slide the protective cover back on.
– To check the correctness of this setting, start the engine, turn the handlebar left and right, in both cases as far as it will go. This must not cause any changes in idling speed. Otherwise, you will have to increase the backlash of the throttle cable.

DISASSEMBLING THE ENGINE 4

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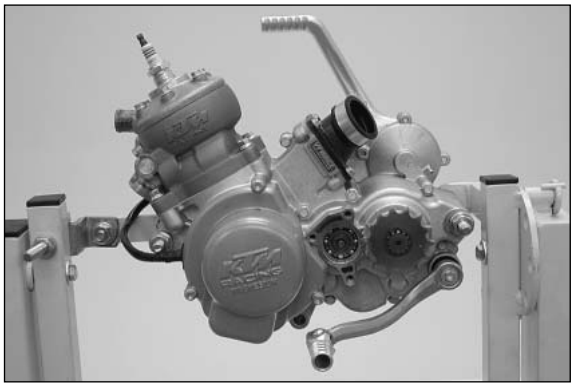
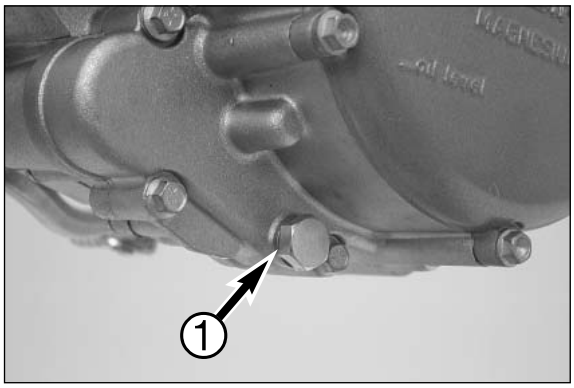


Preparation

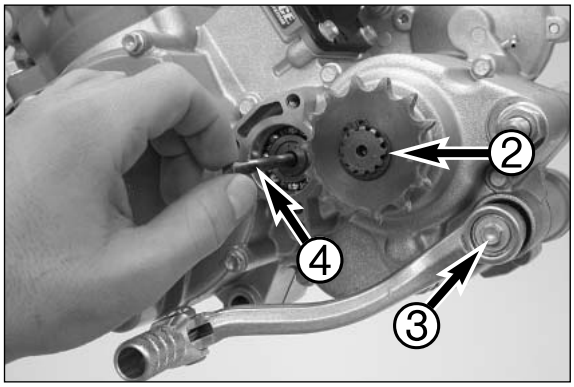
– Clean the engine thoroughly.
– Clamp the engine into the workstand.
– Remove the kickstarter.



Draining gear oil

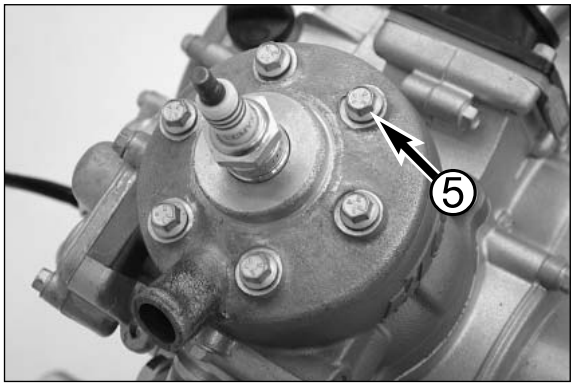
NOTE: Drain the gear oil in a warm condition before the engine is dismounted, otherwise the gear oil may run out through the main shaft when the clutch slave cylinder is removed.

– Unscrew plug ❶, allowing oil to drain.



Dismounting of sprocket and shift lever

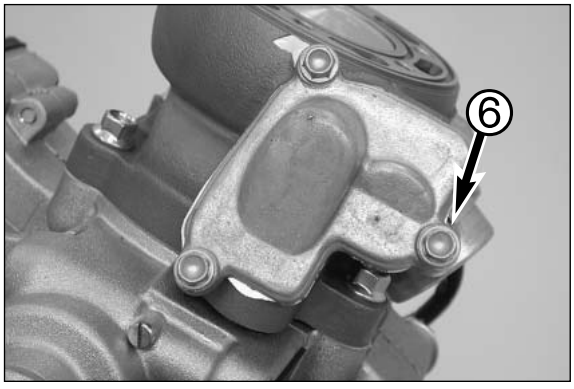
– Remove the circlip ❷ and pull the engine sprocket off of the countershaft together with the distance bushing and O-ring located behind the engine sprocket.
– Undo the bolt ❸ and remove the shift lever.
– Remove the push rod ❹ and the ball positioned behind the push rod from the main shaft.



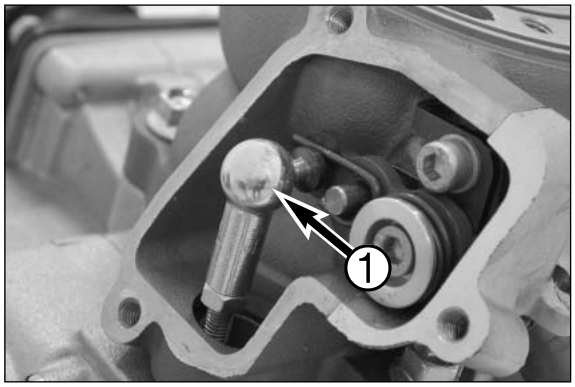
Dismounting of cylinder head, cylinder and piston

– Unscrew the 6 collar bolts ❺ and remove cylinder head and the two O-rings.

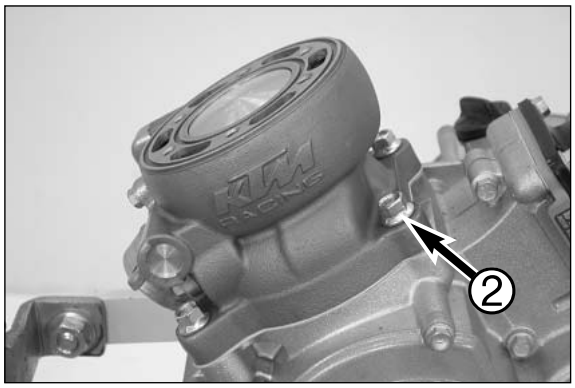
NOTE: If you are replacing the spark plug, loosen it before you dismount the cylinder head.



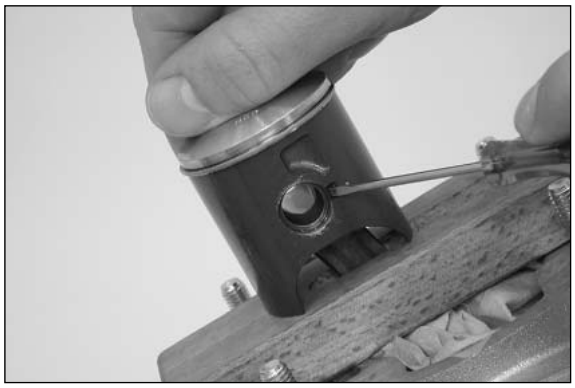
– Undo the bolts ❻ and remove the control cover together with the gasket.



– Detach the ball socket ❶ from the control lever.



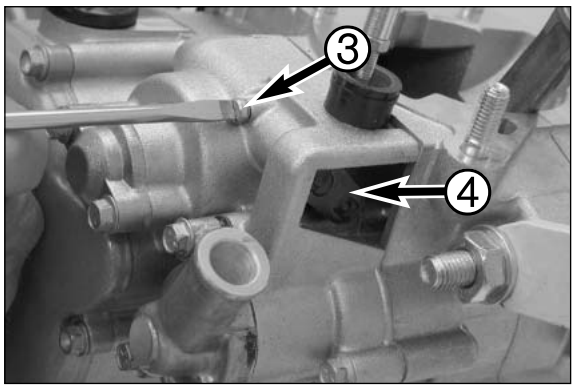
– Remove the 4 collar nuts ❷ on cylinder base and remove cylinder.
– Remove the cylinder base gasket.



– Cover the crankcase.
– Place piston on wooden jig and remove both piston pin locking pins.
– Expel piston pin from piston without exerting undue force. Use a suitable mandrel if necessary.
– Remove piston and piston pin needle-bearing from conrod eye.

! CAUTION !

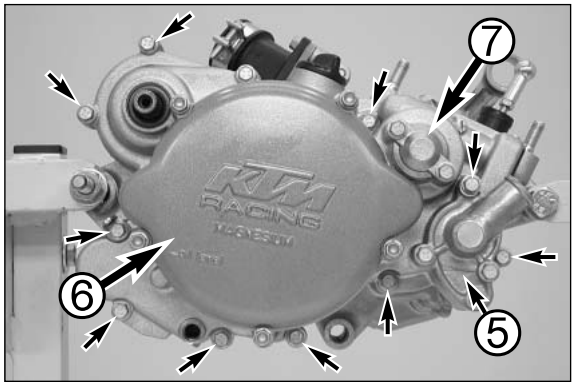
THE PISTON PIN MUST NEVER BE FORCED OUT WITH A PUNCH. THIS WOULD DAMAGE THE CONROD BEARING.



Dismounting of clutch cover

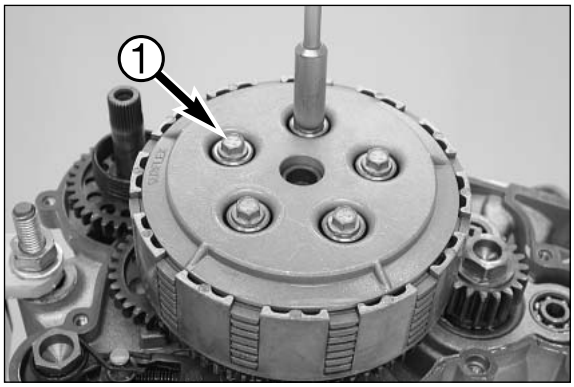
– Remove the sealing element.
– Remove the locking screw on the adjusting shaft ❸, detach the ball socket from the adjusting shaft and pull the adjusting shaft ❹ out of the housing.

NOTE: As of model year 2006 a new adjusting shaft ❹ with a shaft sealing ring is used.



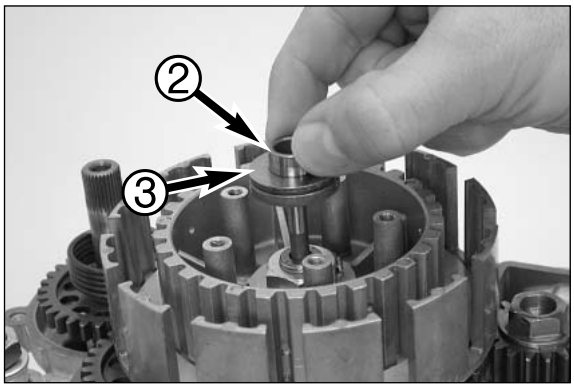
– Remove collar bolts and clutch cover including gasket.

NOTE:
– The water pump cover ❺, the outer cover ❻ and the cover lid ❼ do not need to be removed. The water pump and the centrifugal timer remain in the clutch cover.
– Only the outer cover ❻ needs to be removed to work on the clutch.



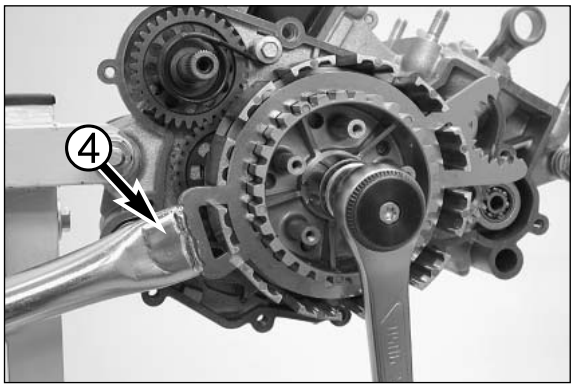
Dismounting the clutch

– Loosen collar bolts ❶ in diagonally opposite sequence to prevent wedging of discs as springs expand.
– Remove collar bolts, springs and spring retainers.

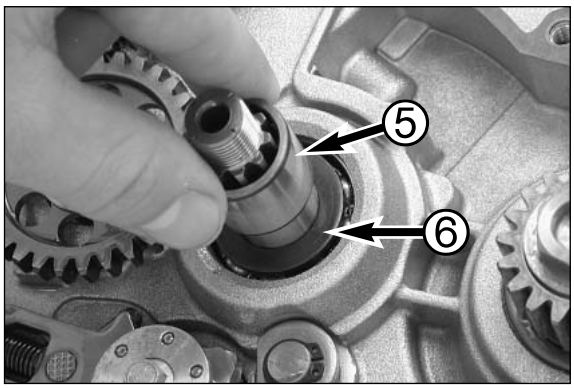


– Take pressure cap and disc package out of outer clutch hub.
– Remove the pressure piece ❷ and the axial needle bearing from the main shaft.

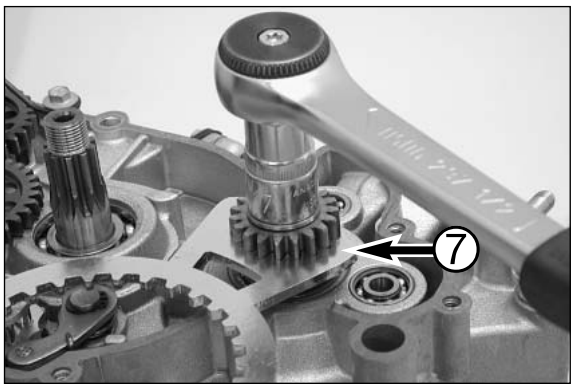
NOTE: The washer ❸ on the axial needle bearing may adhere to the pressure cap.



– Release the lock washer of the inner clutch hub.
– Connect clutch holder 470.29.003.000 ❹ to inner clutch hub and loosen hexagon nut (see illustration).
– Remove clutch holder.



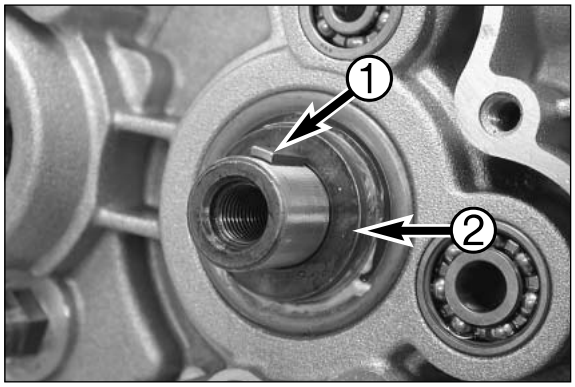
– Remove the driver and the outer clutch hub including the bushing ❺ and the stop disk ❻ from the main shaft.



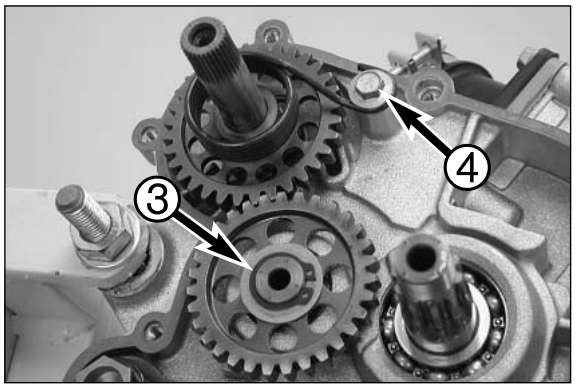
Dismounting of the primary drive

– Hold the primary pinion with the gear segment 470.29.003.000 ❼ (see illustration).
– Loosen the HH bolt and remove the primary gear.

NOTE: The primary gear and the outer clutch hub belong together. Always replace both together!



– Pull the woodruff key ❶ and the distance sleeve ❷ including the O-ring behind the distance sleeve off of the crankshaft.

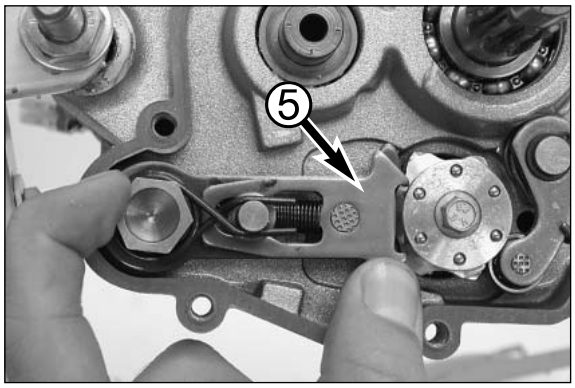


Dismounting the kickstarter unit

– Remove the circlip ❸ and the stop disk, take off the kickstarter idler gear and the stop disk behind the idler gear.
– Carefully unscrew the collar bolt ❹, relieve the kickstarter spring and remove the kickstarter shaft from the engine case.
– Take care of the stop disc, which could stay in the housing.

⚠ WARNING ⚠

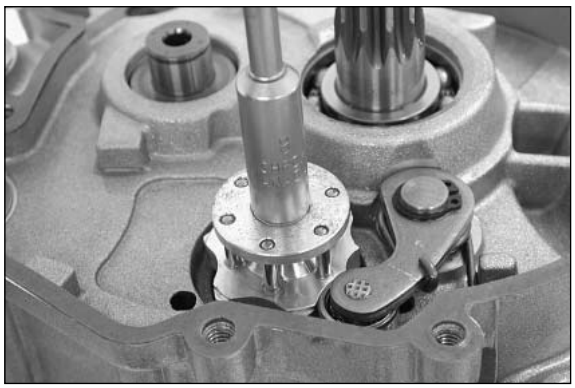
CAREFULLY RELEASE THE KICKSTARTER SPRING! DANGER OF INJURY!



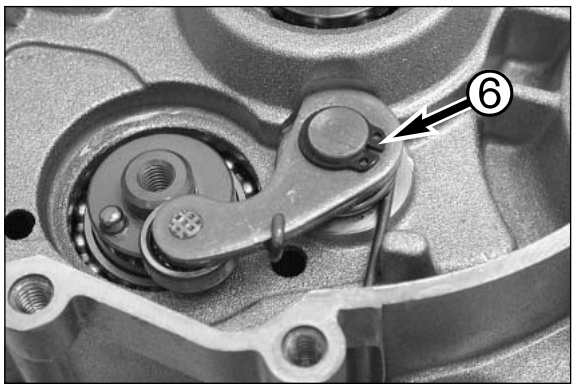
Dismounting the shift mechanism

– Press back the shift rail ❺ until it no longer engages in the driver for the shaft roller while you pull the shift shaft out of the housing.

NOTE: Watch the stop disc which remains in the housing.

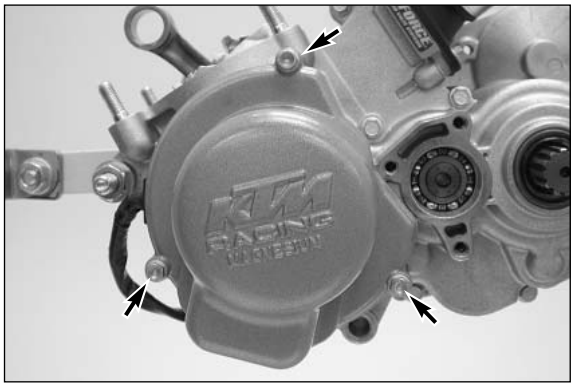


– Loosen the collar bolt and remove the shift lock. To remove, slightly press the locking lever towards the rear.



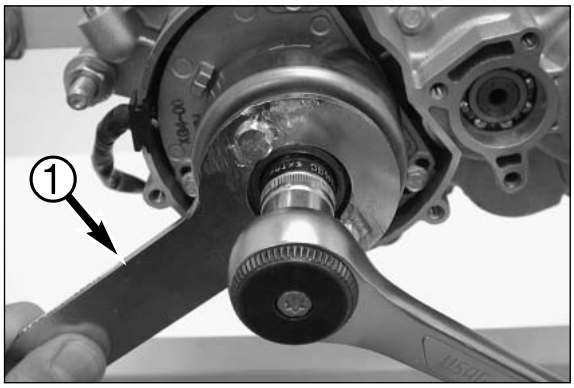
NOTE: Disassemble locating lever only if the engine case must be replaced.

– To disassemble, remove the circlip ❻ and take off the locking lever and the spring.

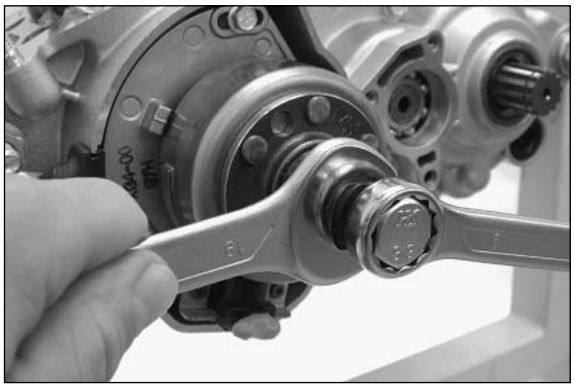


Dismounting the ignition

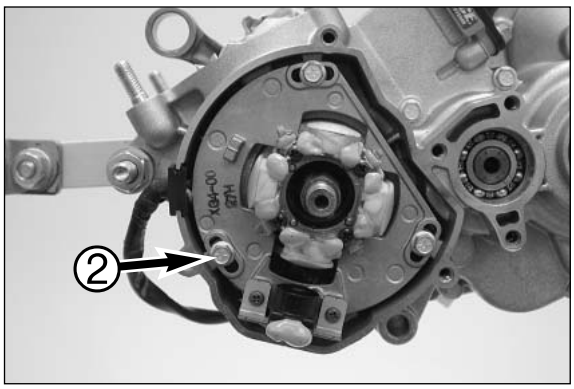
– Undo the 3 bolts and remove the ignition cover together with the gasket.



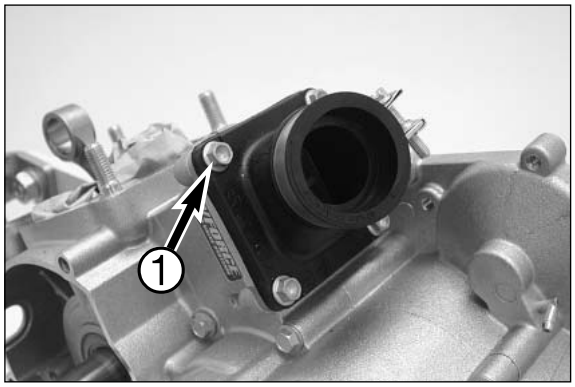
– Apply the holding spanner 546.29.012.000 ❶ and undo the collar nut.
– Remove the collar nut and the locking cant ring.



– Put the protection cover 510.12.016.000 on the crankshaft thread, twist in the flywheel extractor 546.29.009.044 and remove the flywheel.

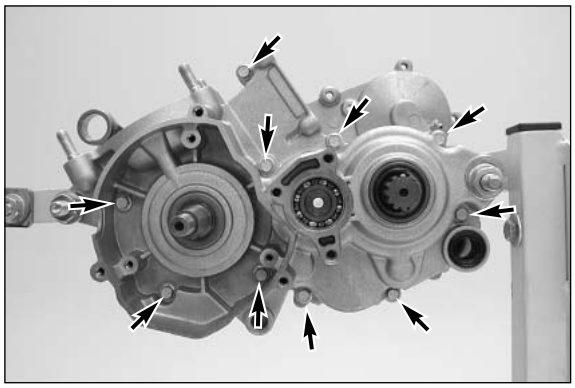


– Undo the 3 bolts ❷ and remove the stator together with the base plate.



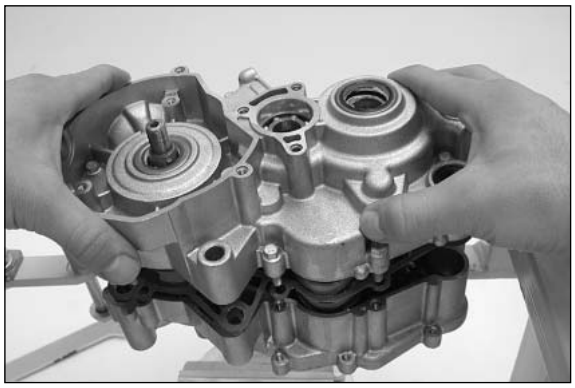
Dismounting of intake flange and reed valve housing

– Remove the 4 collar bolts ❶.
– Remove the intake flange and the reed valve housing together with the gasket.



Parting of engine housing halves

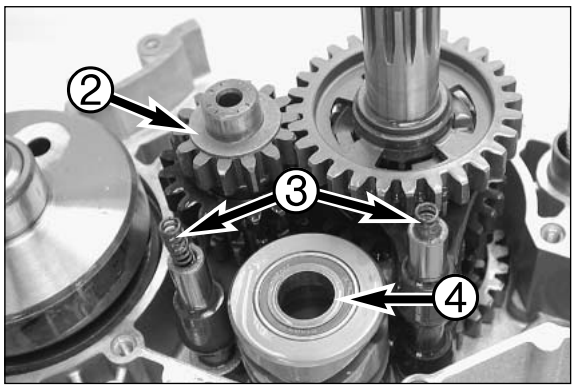
– Top ignition-gear upwards and remove all 10 housing bolts.
– Loosen the 2 engine fixtures on the engine work stand.



– Lift left-hand housing half with suitable tools by on the bosses provided, or part with a few light plastic mallet blows against the countershaft from the right-hand housing half.

! CAUTION !

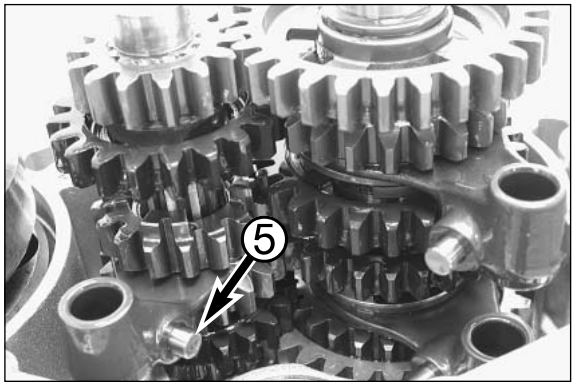
LEVERING APART WITH A SCREW DRIVER OR SIMILAR TOOL MUST BE AVOIDED, SINCE THE SEAL FACES ARE EASILY DAMAGED.



Dismounting of gearshift mechanism and transmission

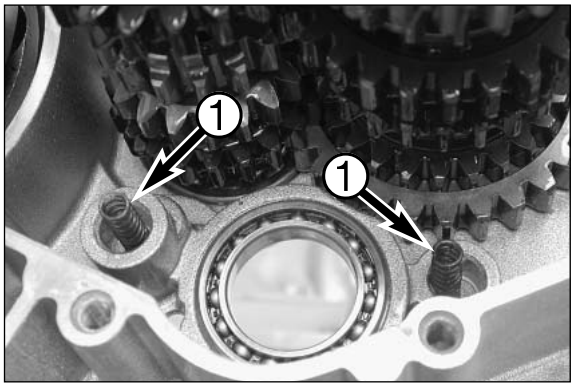
– Remove the stop disk ❷ from the main shaft.
– Pull the 2 pressure springs ❸ out of the shift rails.
– Remove the stop disk ❹ from the shift drum.

NOTE: Pay attention to the stop disks ❷ and ❹ when you separate the engine case (they may adhere to the inside of the case).



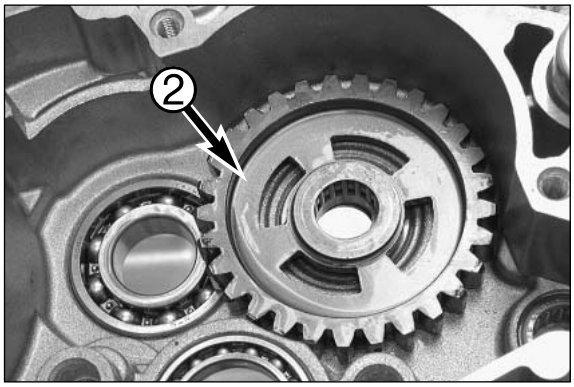
– Pull out the shift rails and swing the shift forks aside.
– Pull the shift drum and stop disk out of the bearing seat.
– Remove the shift forks.

NOTE:
– When dismounting, pay attention to the needle rollers ❺, which could stay behind in the shift drum.
– Since the shift forks differ from each other, be sure to mark them accordingly when you remove them.

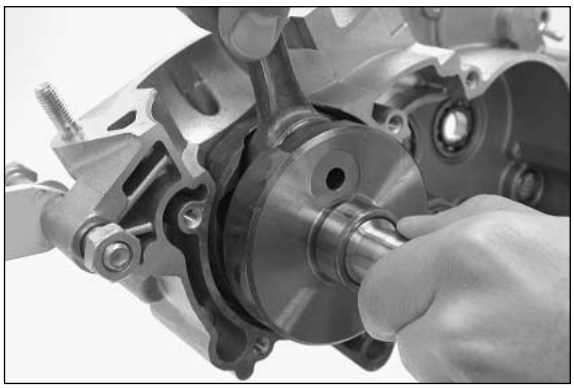


– Take the pressure springs ❶ out of the engine case.

– Pull the drive shaft together with the countershaft out of the bearing seats.



– Remove 1st-gear idler gear ❷ with needle cage and the two stop discs from the engine case.



Dismounting the crankshaft

– Pull crankshaft from the bearing seat (if necessary, use a plastic hammer and tap carefully on the crankshaft journal).

– Clean all parts and check for wear, replace if necessary.

NOTE: When an engine is completely overhauled it is recommended that all gaskets, shaft seal rings and O-rings are renewed.

SERVICING INDIVIDUAL COMPONENTS 5

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Art.- Nr. 3.206.049-E

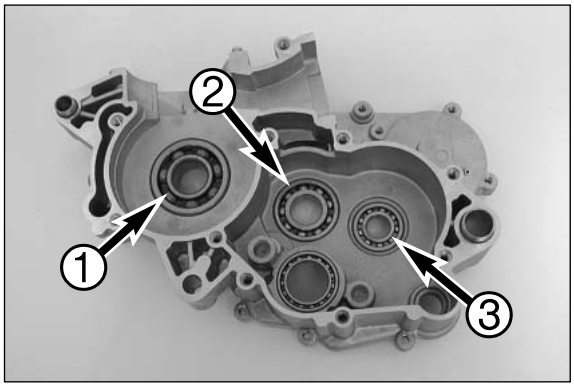
IMPORTANT NOTE REGARDS WORKING ON ENGINE HOUSING

Read through the following section before commencing work. Then determine the assembly sequence so that the engine housing halves only need to be heated up once before replacing the bearings.

Having first removed the dowels, in order to expel the bearings or remove them with light mallet blows, the housing halves must be placed on a suitably large plane surface, supporting the whole of the sealing surface without damaging it. A wooden panel is best used as a base.

Bearings or shaft seal rings should not be hammered into their seats. If no suitable press is available, use a suitable mandrel and hammer them in with great care. Cold bearings will practically drop into their seats at an engine housing temperature of approx. 150° C.

After cooling, should the bearings fail to lock in the bore, they are bound to rotate after warming. In that event the housing must be replaced.

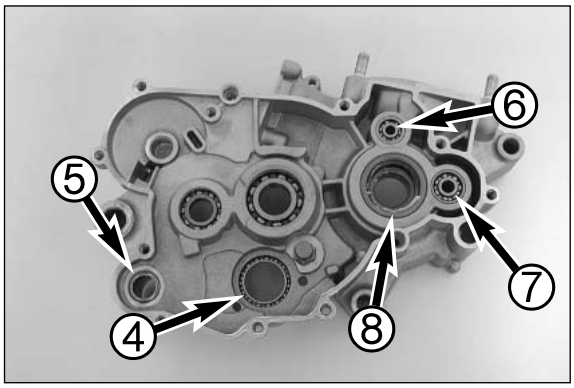


Working on the right-hand housing half

– Remove all shaft seal rings and use an oven to heat the casing half to approx. 150°C.

The bearings usually fall out of their seat of their own accord by knocking the housinq half on a plane piece of wood when the housing has a temperature of 150° C.

Grooved ball bearing of crankshaft ❶.
Press old grooved ball-bearing inwards. Press in new grooved ball bearing from inside up to the stop.

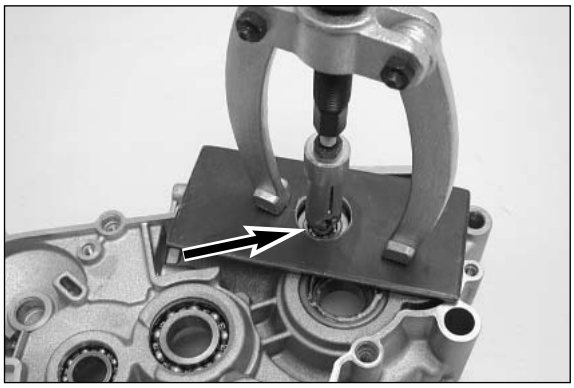


Grooved ball bearing of main shaft ❷
Press in new ball bearing from inside up to the stop.

Grooved ball bearing of countershaft ❸
Press in new grooved ball bearing from downward to the stop.

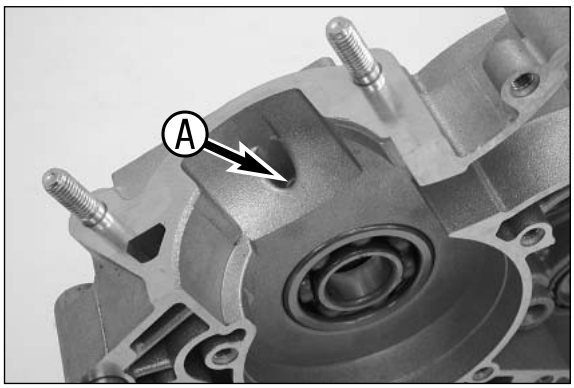
Grooved ball bearing of the shift roller ❹
Press the old bearing towards the inside. Press in a new grooved ball bearing from the inside to the stop.

Needle bushing of the shift shaft ❺
Press old needle bushing inwards, press in new needle bushing flush from the outside.



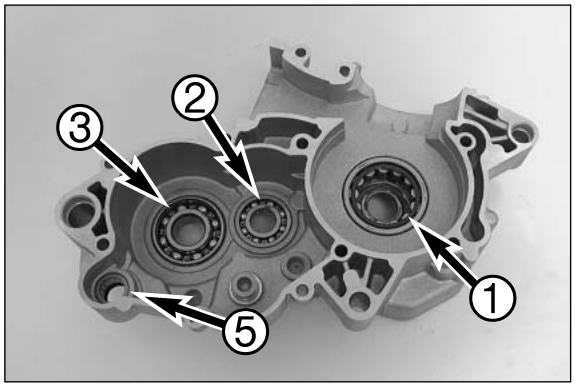
Grooved ball bearing of centrifugal timer ❻
Use a self-made "supporting plate" to support the puller to avoid damage to the housing (see illustration).
Pull out the bearing using a Ø 5-8 mm inside puller (151.12.018.200, 151.12.017.000).
Press in new grooved ball bearing to the stop.

Grooved ball bearing for the water pump ❼
Use a self-made "supporting plate" to support the puller to avoid damage to the housing (see illustration).
Pull out the bearing using a Ø 5-8 mm inside puller (151.12.018.200, 151.12.017.000).
Press in new grooved ball bearing to the stop.



Crankshaft seal ring ❽
Press in new shaft seal ring from the outside, with sealing lip facing inward, until flush.

– Finally check clear passage of the crankshaft ball bearing lubrication bore Ⓐ.

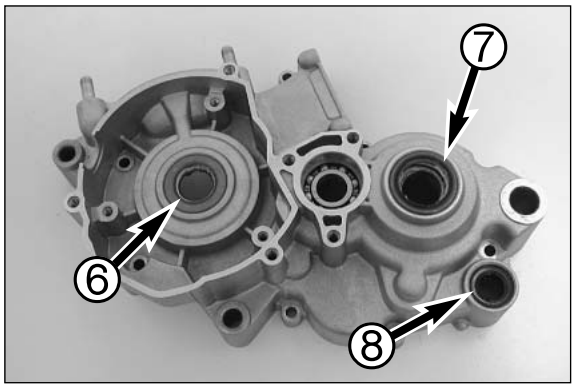


Working on the left-hand housing half

– Remove all shaft seal rings and use an oven to heat the casing half to approx. 150°C.

The bearings usually fall out of their seat of their own accord by knocking the housinq half on a plane piece of wood when the housing has a temperature of 150° C.

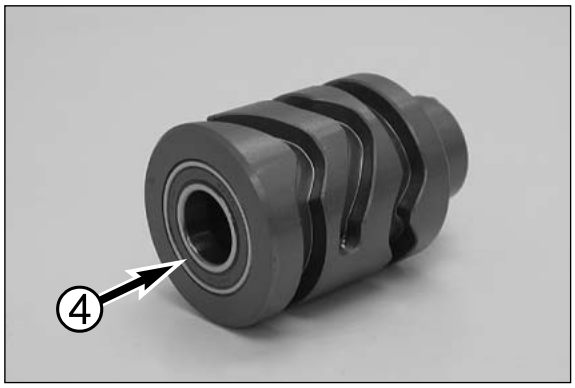
Crankshaft roller bearing ❶
Press old roller bearing inwards, press in new ball bearing to the stop with the open side of ball cage downwards (outside). The inner ring on the crankshaft must also be renewed (see paragraph about crankshaft).



Needle bearing of drive shaft ❷
Press old grooved ball bearing inward, press new grooved ball bearing from the inside up to the stop.

Grooved ball bearing of countershaft ❸
Press old ball bearing inwards, press in new ball bearing to the stop from inside.

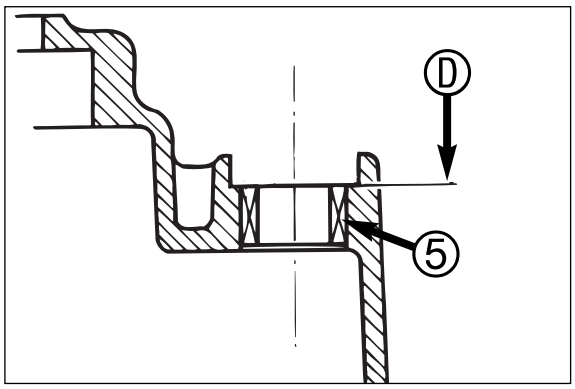
Grooved ball bearing of shift roller ❹
Heat the shift drum to approx.150° C.
At this temperature the grooved ball bearing will automatically fall out of the bearing seat.
If necessary, tap the shift drum on a flat wooden surface.
Insert a new grooved ball bearing and press in gently up to the stop.



Needle bushing of shift shaft ❺
Remove shaft seal ring and press old needle bushing inwards. Press in new needle bushing from the outside to the collar ❶.

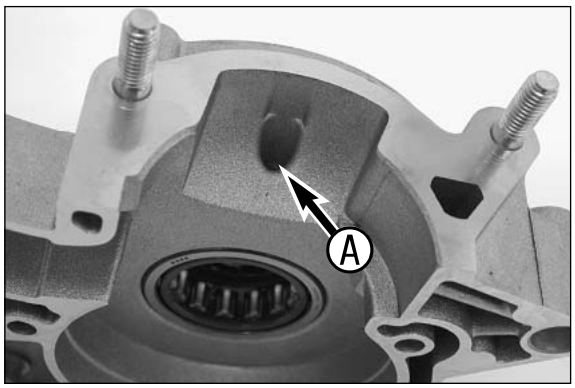
Crankshaft seal ring ❻
Press in a new shaft seal ring from the outside until the sealing lip is flush with the inner surface.

Counter shaft seal ring ❼
Press in a new shaft seal ring until the sealing lip is flush with the inner surface.



Shift shaft seal ring ❽
Press in a new shaft seal ring up to the stop with the sealing lip on the inside.

When housing half has cooled off, check to see that the bearings are tight.



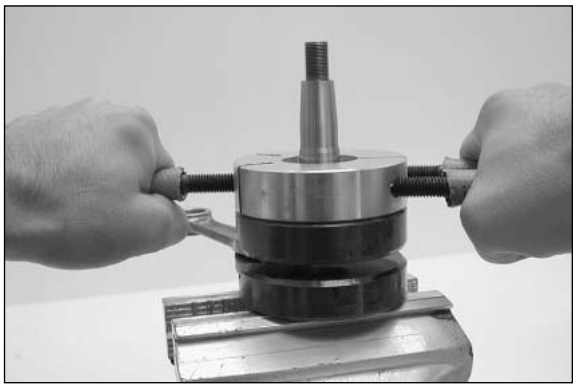
– Finally check clear passage of the crankshaft roller bearing lubrication bore Ⓐ.

Crankshaft

– When replacing the roller bearing, the inner crankshaft ring must also be renewed.
– Heat special tool 584.29.037.031 on a heating pad up to approx. 150°C and slip it on the inner ring immediately. Press the special tool together tightly so as to obtain a good heat transfer and pull the inner ring off the crankshaft.
– To mount the new inner ring, heat the special tool again to approx. 150°C, engage the inner ring and slip it on the crankshaft journal immediately. Make sure the inner ring is pushed back to the stop.

! CAUTION !

NEVER CLAMP THE CRANKSHAFT WITH A STUD OR WEB IN THE VICE, AND NEVER TRY TO KNOCK THE BEARING INNER RING FREE. THE CRANKSHAFT WEBS MAY BE COMPRESSED AND THE CON-ROD PLUG AND BEARING MAY BE DAMAGES, THEREBY MAKING THE CRANKSHAFT UNUSABLE.

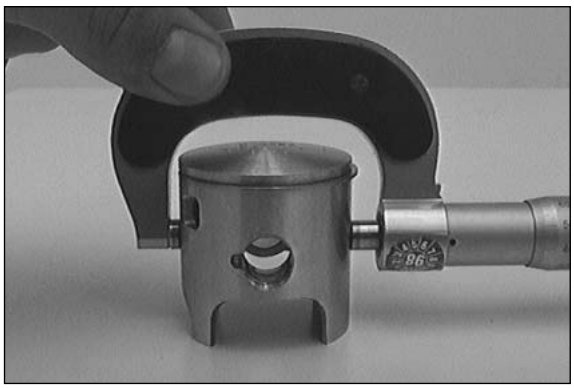


NOTE:
– Distance adjustment of the main bearings is not requested.
– See Technical Informations!

Piston

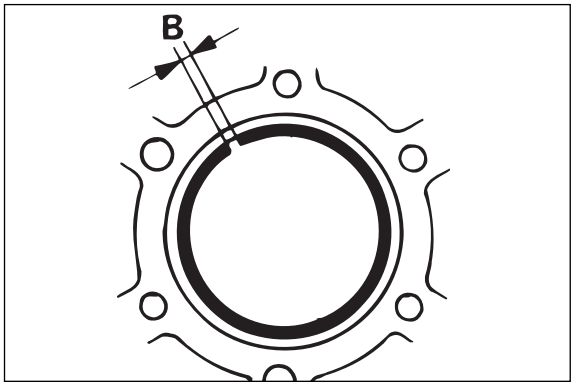
If a used piston is to remain in service then the following should be checked:

1. Piston running surface: Check for pressure marks (seizing marks) minor friction marks can be removed with a fine abrasive stick.
2. Piston ring groove: The piston ring may not jam in the groove. Use an old piston ring or sandpaper (400 grit) to clean the groove.
3. The piston ring anti-rotation device must fit tightly in the piston and may not be worn.
4. Check piston rings for wear and check end gap.



– The piston is measured at the piston skirt, transverse to the piston pin 32 mm below the top, as shown in the illustration.
– The smallest cylinder diameter minus the largest piston diameter determines the piston fitting clearance.

Piston fitting clearance: 0.045 - 0.07 mm
Wear limit: 0.10 mm

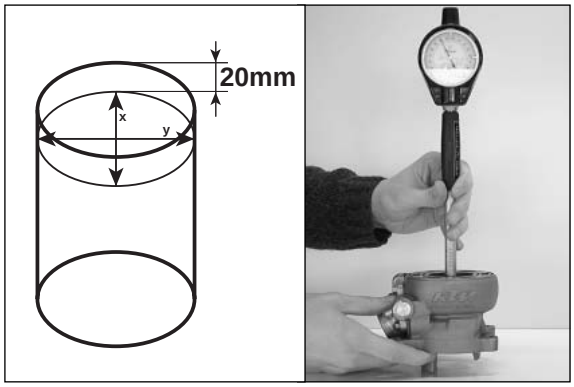


Piston ring end gap

– Insert piston ring into the cylinder and adjust. Piston ring must be approx. 10 mm from top of cylinder.
– The end gap ❸ can now be checked with a feeler gauge.

Piston ring end gap: max. 0.40 mm

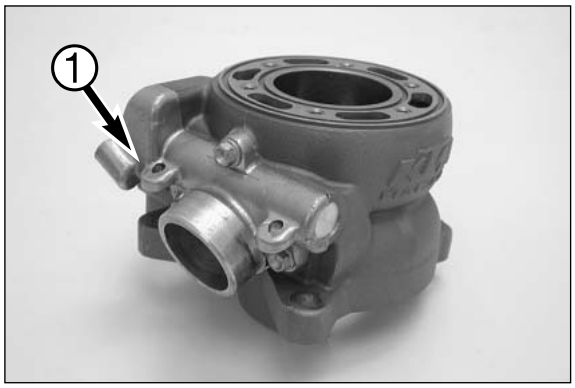
NOTE: If the end gap is greater check piston and cylinder for wear. If piston and cylinder wear are within the permitted tolerance limits, replace the piston ring.



Checking cylinder for wear

– To check the wear on the cylinder, measure the cylinder 20 mm below the upper edge of the running surface using a micrometer.
– Measure the cylinder diameter in the X and the Y axis to detect any ovality.

Engine	Cylinder Ø	Piston size
85	47.000 - 47.012	1
	47.013 - 47.025	2
105	52.000 - 52.012	1
	52.013 - 52.025	2



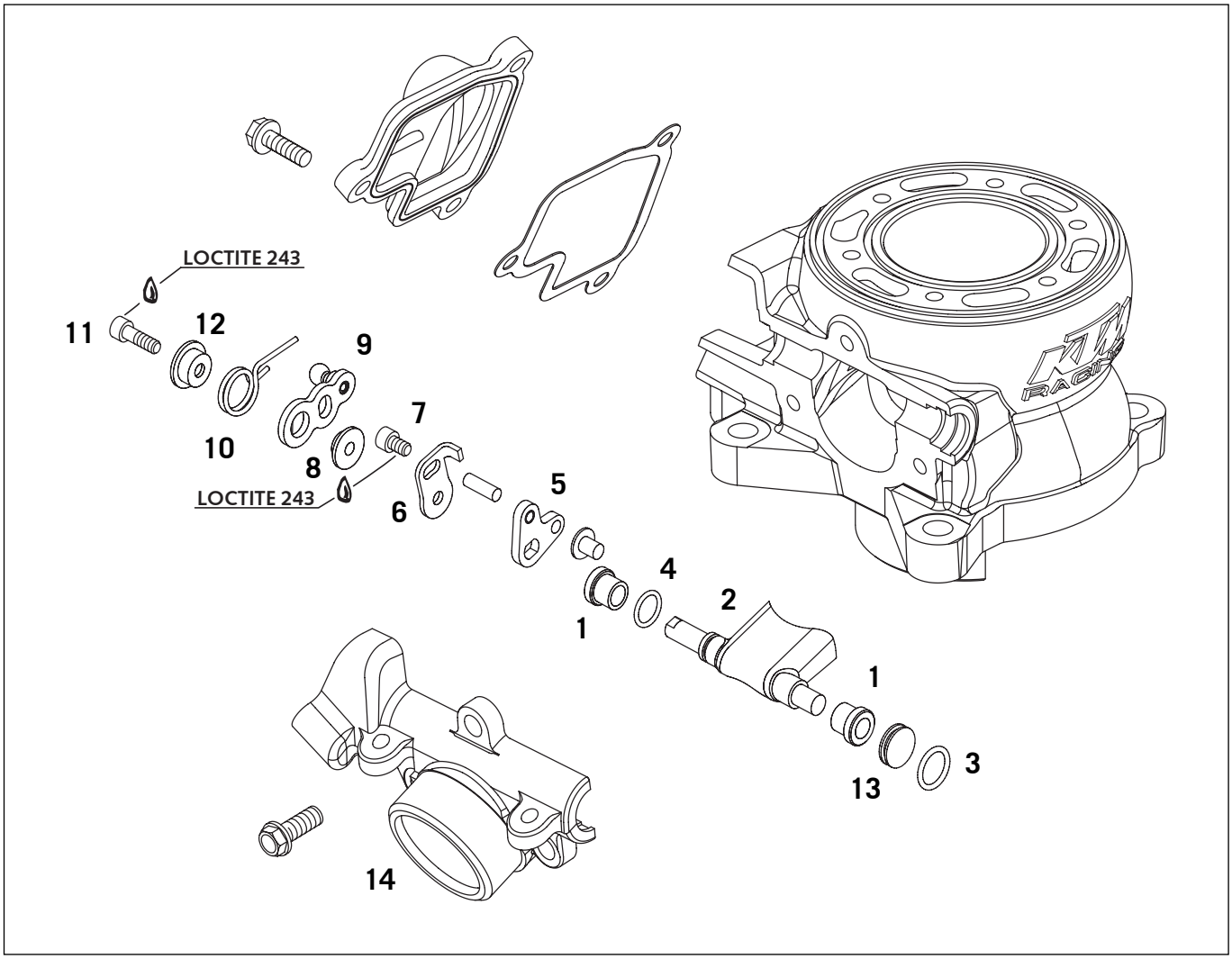
Recoated cylinder

NOTE: If the cylinder diameter is greater than 47.025 mm (85 SX) or 52.025 (105 SX), the Nikasil cylinder must be reconditioned or replaced.
For reconditioning of the old cylinder all exhaust control components must be removed. The intermediate flange ❶ remains with the cylinder. The piston size is stamped into the bottom of the piston.

Nikasil coating of cylinder

Nikasil is the brand name for a cylinder coating process, developed by the piston manufacturer Mahle. The name is derived from the two materials used in this process - a nickel layer into which the particularly hard silicon carbide is inbedded.

The main advantages of the Nikasil coating are:
– excellent heat dissipation and thus better power output
– low wear
– low weight of the cylinder.



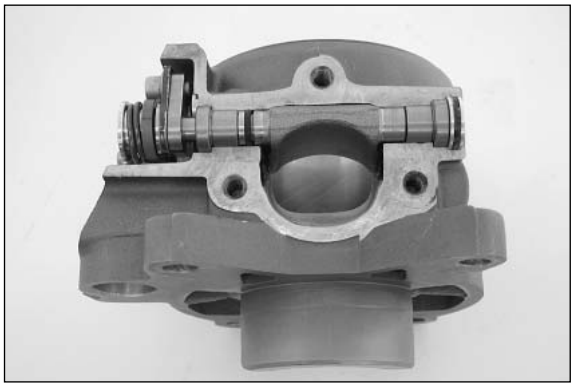
Cylinder exhaust control system

Dismantle and clean all exhaust control components, check for signs of wear and damage.

Bearing sleeves ❶ – Check bearing sleeves of the control flap for play and easy operation.

Control flap ❷ – Clean the control flap. The control flap must not graze inside the exhaust port.

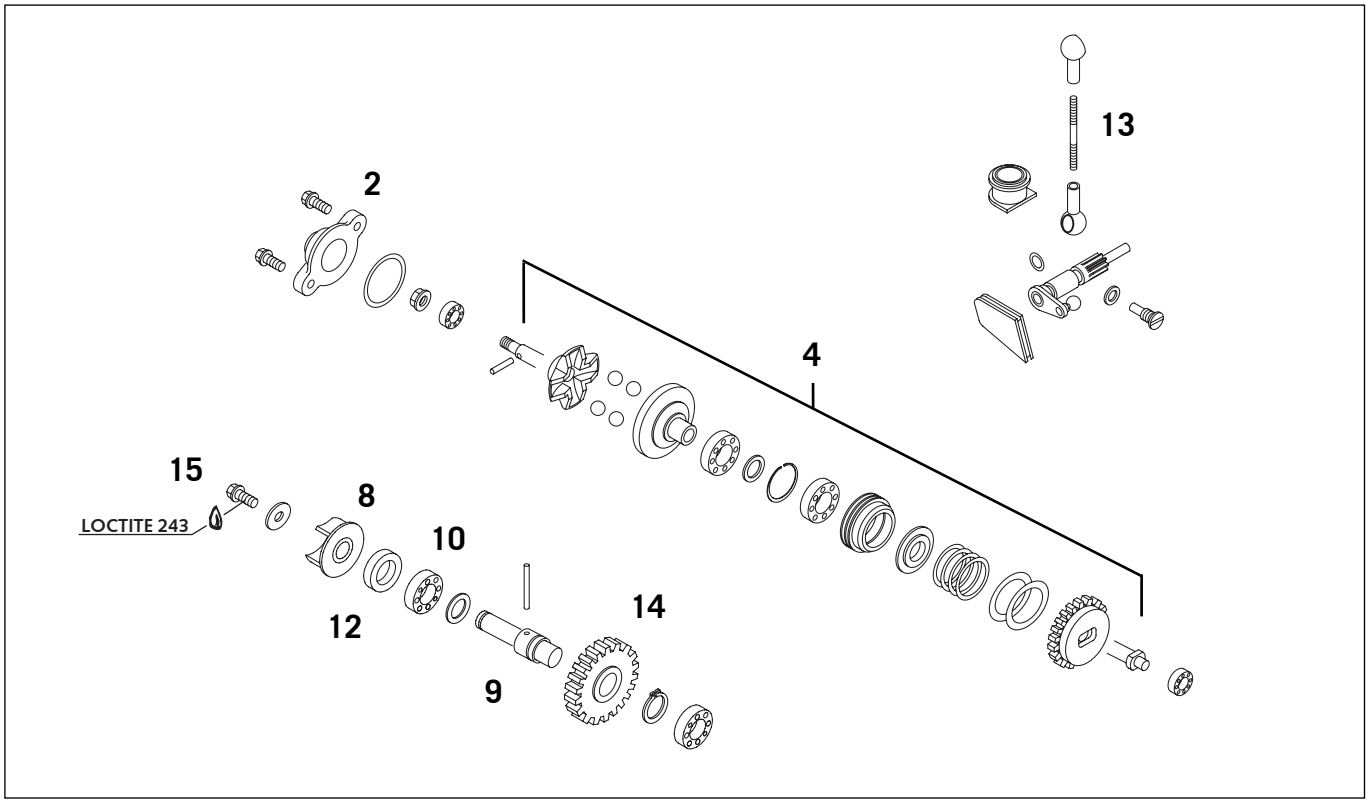
Check the silicone O-ring in the closing cover ❸ and the control flap ❹ for wear and replace if necessary.

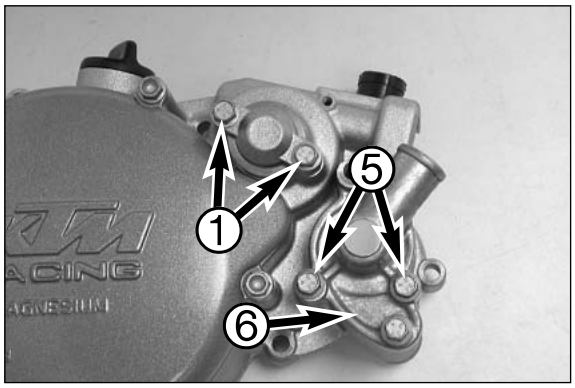


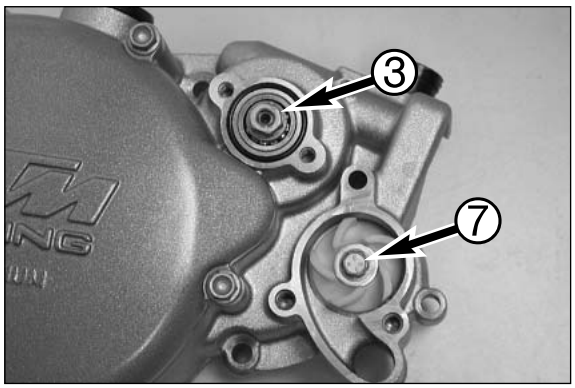
Preassembling the control flap and the cylinder

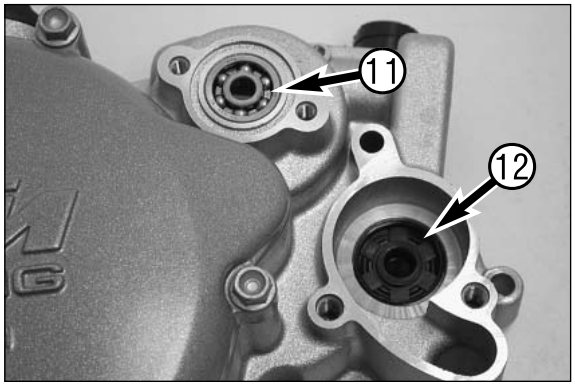
- Mount the silicone O-ring ❹ on the control flap and grease.
- Push the bearing sleeve ❶ onto the right side with the collar facing outwards.
- Fasten the driving disk ❺ with the bolt facing outwards and the stop plate ❻ with the stop facing inwards with the bolt ❼. Do not tighten yet since this bolt will also be used to adjust the exhaust control (measurement Z).
- Position the bearing sleeve ❽ with the collar facing outwards and mount the control lever ❾ with the ball head facing outwards.
- Mount the overload spring ❿ with the long shank facing upwards. Apply Loctite 243 to the thread of the AH bolt ⓫ and screw in the bolt and the spring sleeve ⓬ several turns. Attach the short shank of the overload spring to the cylindrical pin and tighten the AH bolt.
- Push the bearing sleeve ❶ onto the left side with the collar facing outwards.
- Insert the preassembled control flap and closing cover ⓭ including the O-ring (12x2) ❸ in the cylinder.
- Apply a thin layer of silicone to the sealing areas and mount the flange ⓮.
- Finally, check the exhaust control system for smooth operation.

NOTE: It should be possible to press the control lever ❾ further up against the spring force.









Dismounting the centrifugal timer and the water pump

- Remove both of the bolts ❶ and take off the closing cover ❷ together with the O-ring.
- Loosen the nut ❸ on the centrifugal timer.
- Pull the centrifugal timer ❹ out of the housing.
- Remove both of the bolts ❺ and take off the water pump cover ❻ together with the gasket.
- Loosen the bolt ❼ on the water pump wheel.
- Pull off the water pump wheel ❽ and take out the water pump shaft ❾.

- Cleanse all parts and check for wear.
- Check the ball heads on the linkage ⓭ for play.
- Check the water pump drive wheel ⓮ for damage or wear.
- Check the grooved ball bearings ❿ and ⓫ for wear.

NOTE: The centrifugal timer does not require any maintenance work or adjustments.

Replacing the grooved ball bearings ❿ for the water pump and the centrifugal timer ⓫:

- Remove the shaft seal ring ⓬ from the water pump and heat the housing half in an oven to approx. 150° C.
- When it has reached a temperature of 150° C, the bearings will fall out of the bearing seats by themselves when the housing half is tapped on a flat wooden surface.

- Press in new bearings until flush.
- Press in a new shaft seal ring for the water pump from the outside with the sealing lip facing inwards until flush.

Preassembling the clutch cover

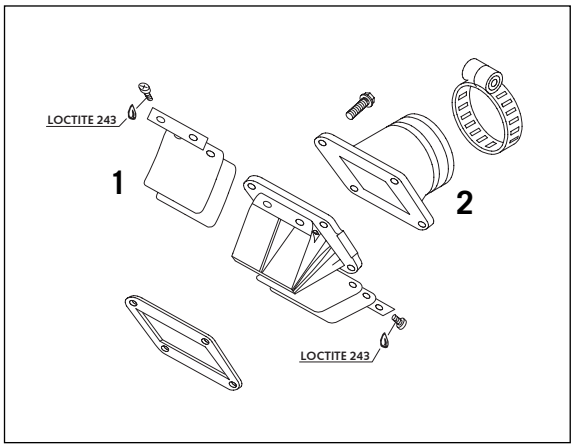
- Grease the shaft seal ring ⓬ for the water pump and mount the water pump shaft ❾ together with the washer (10x14x0.5 mm).
- Mount the water pump wheel, apply Loctite 243 to the bolt ⓯ and tighten together with the washer to 4 Nm.
- Mount the water pump cover and gasket.
- Insert the centrifugal timer in the housing and tighten the self-locking nut to 6 Nm.
- Mount a new O-ring and mount the closing cover.

Reed valve housing, intake flange

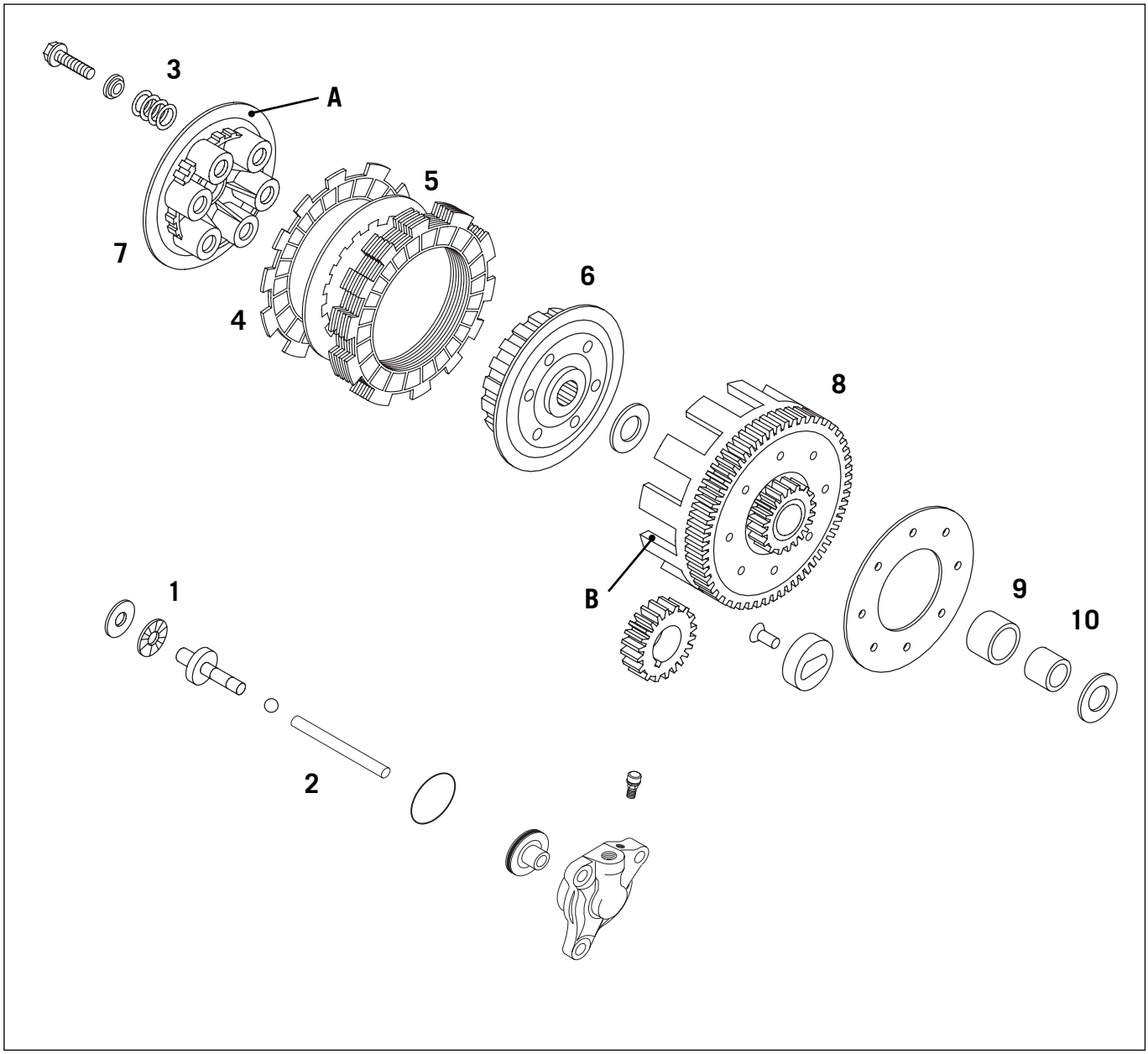
NOTE: Reed paddles ❶ gradually lose tension through operation, resulting in power loss. Damaged or worn reed paddles must be replaced.

! CAUTION !

SECURE ALL BOLTS OF THE REED VALVE HOUSING WITH LOCTITE 243.



Intake flange ❷
Check for firm mounting and for signs of damage.



Clutch

Thrust bearing ❶ check for wear

Push rod ❷ check for wear (length 113 mm).

Clutch springs ❸
All 5 clutch springs should have the same length. Minimum length 33 mm (new 34 mm). Replace all 5 springs if necessary.

7 Lining discs ❹
Minimum thickness 2.8 mm (new 3 mm). All disks should be plane. Check disks for score marks or mechanical damage.

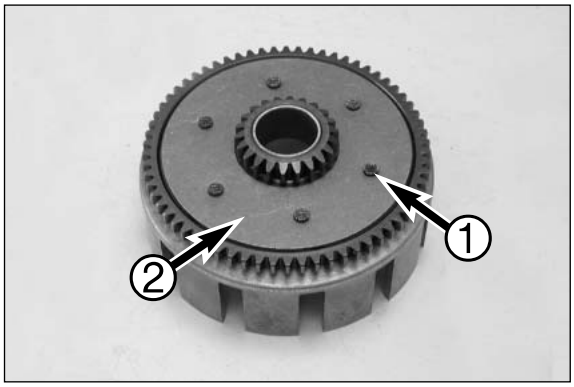
6 Steel discs ❺
Must be plane, check for mechanical damage.

Inner clutch hub ❻
Check the contact surfaces of the steel disks against the driver. Check the driver for mechanical damage or score marks.

Pressure cap ❼
Check contact surfaces Ⓐ between lining disc and pressure cap for signs of mechanical damage and score marks.

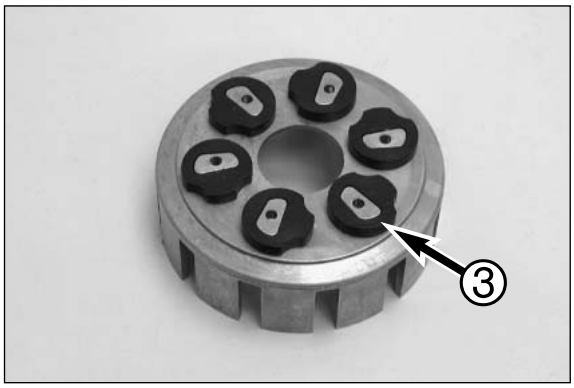
Outer clutch hub ❽
Check start surfaces Ⓑ of clutch discs on for wear. If indentations exceed 0.50 mm, replace outer clutch hub.

Check the friction bearing (inner ring) ❾ and the bushing ❿ for wear or score marks.

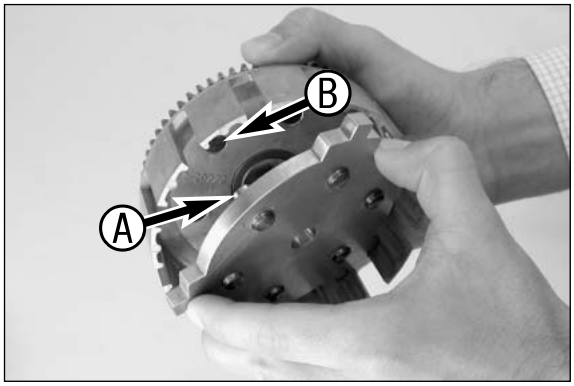


Replace outer clutch hub

– Drill open the clutch rivets ❶ in area of retaining bracket ❷ and remove parts.

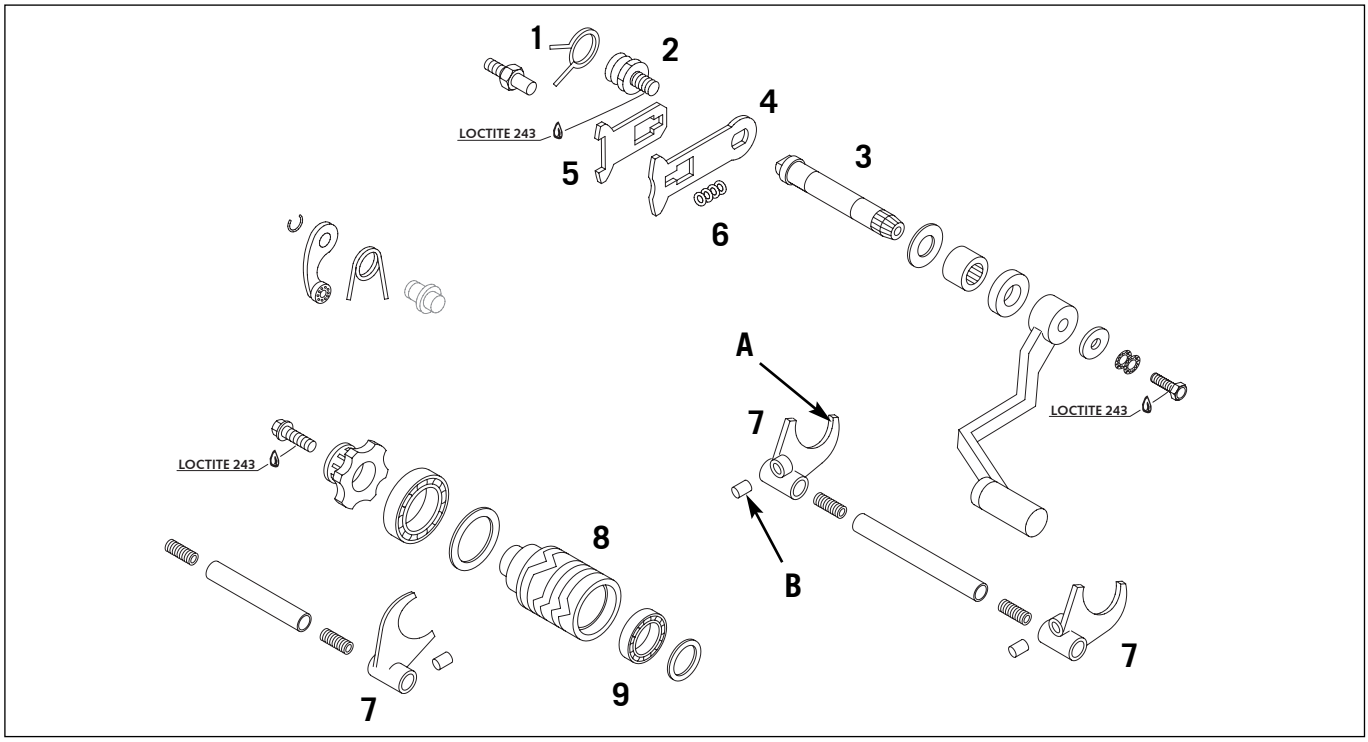


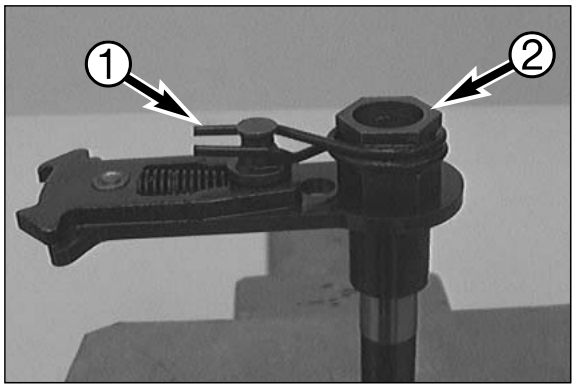
– Check 6 absorbing elements ❸ for signs of mechanical damage, replace all 6 where applicable.



– When using the special tool 470.29.027.000, make sure the longer side of the bolts Ⓐ rest on the rivets Ⓑ.

– Apply the special tool 470.29.027.000 as shown, screw together and clinch the rivets with the press.





Disassembling the shifting shaft

- Clamp the shifting shaft into the vise (use protective jaws).
- Remove the return spring ❶ and twist the spring holder ❷ off the shifting shaft ❸.
- Take the shift quadrant ❹ off the shifting shaft ❸ together with the slide plate ❺ and the pressure spring ❻.
- Remove the pressure spring ❻, shift the slide plate ❺ and take it out of the shift quadrant ❹.

Shifting mechanism - Checking parts for wear

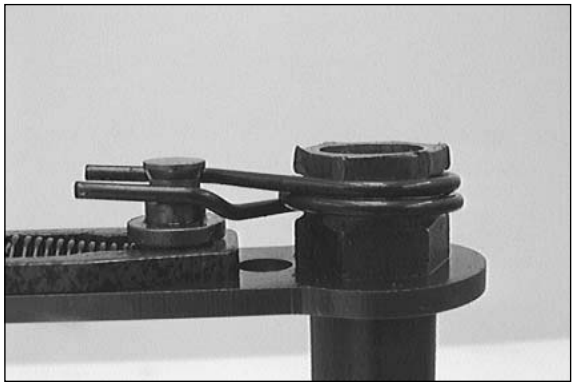
Shift forks ❼
Check shift fork blades Ⓐ and shift roller driving pin Ⓑ for signs of wear.

Shift roller ❽
Check shift grooves for wear.
Check position of shift roller in grooved ball bearings ❾.

Slide plate ❺
Check the contact surfaces for the locking piece for wear. Check the return surface at the slide plate for wear (replace it if deep grooves are detected).

Pressure spring ❻
Check the preload of the pressure spring for the slide plate.

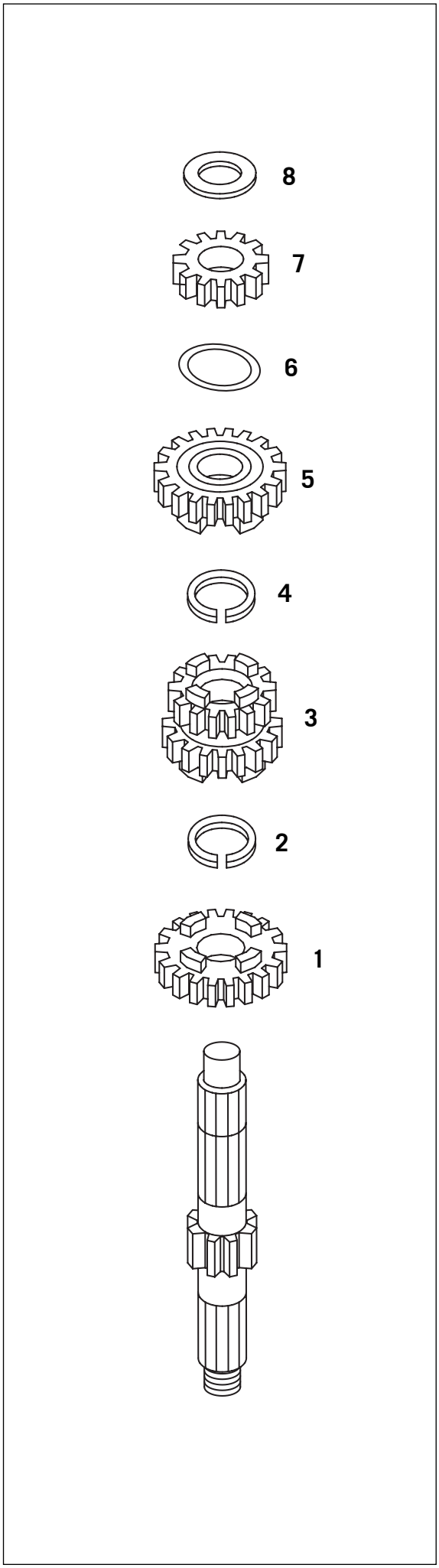
Grooved ball bearings ❾
Check grooved ball bearings for easy movement.



Preassembling the shifting shaft

- Insert the slide plate into the shift quadrant and slide it.
- Then insert the pressure spring.
- Degrease the thread of the spring holder and apply a small quantity of Loctite 243. Position the slide plate together with the shift quadrant on the shifting shaft and secure both with the spring holder.
- Mount the return spring (15x25x05 mm).

NOTE: When mounting the return spring keep in mind that the offset must be on top.



Transmission

Secure mainshaft or countershaft in the vice (using soft jaw-covers).
Remove gears and check the following for wear:
- Needle bearing
- Mainshaft and countershaft pivot points including idler gears
- Shift dogs and gear wheels
- Tooth faces of all gears
- Tooth profile of mainshaft and countershaft and correspondending gears
- Easy operation of gear-change
- Check the friction bearings in the idler gears for score marks and a flawless condition

Carefully clean components and replace damaged components.

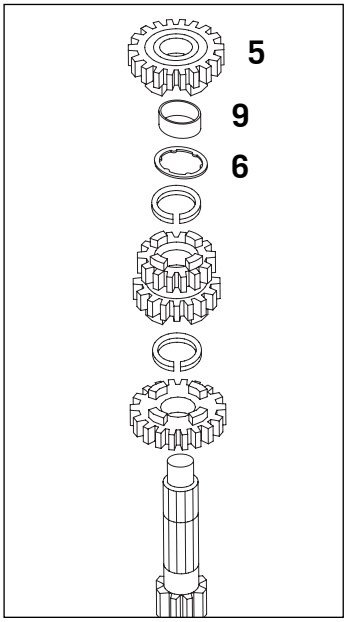
NOTE:
- Always place circlips with sharp edge facing the components secured, ensuring that they are not overexpanded (use special pliers).
- Check that after any repair of the transmission, circlips should axially not move more than 0.20 mm and must not seize between stop discs.
- Apply molycote to the idler gears before you mount them.

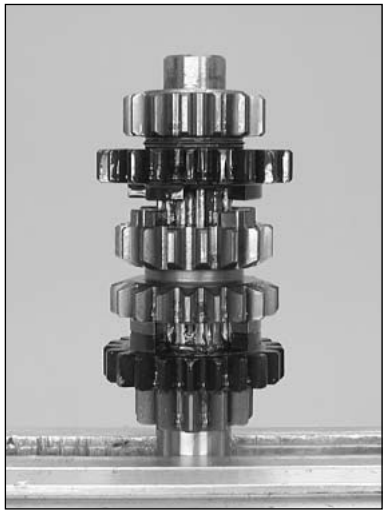
Assembling the mainshaft

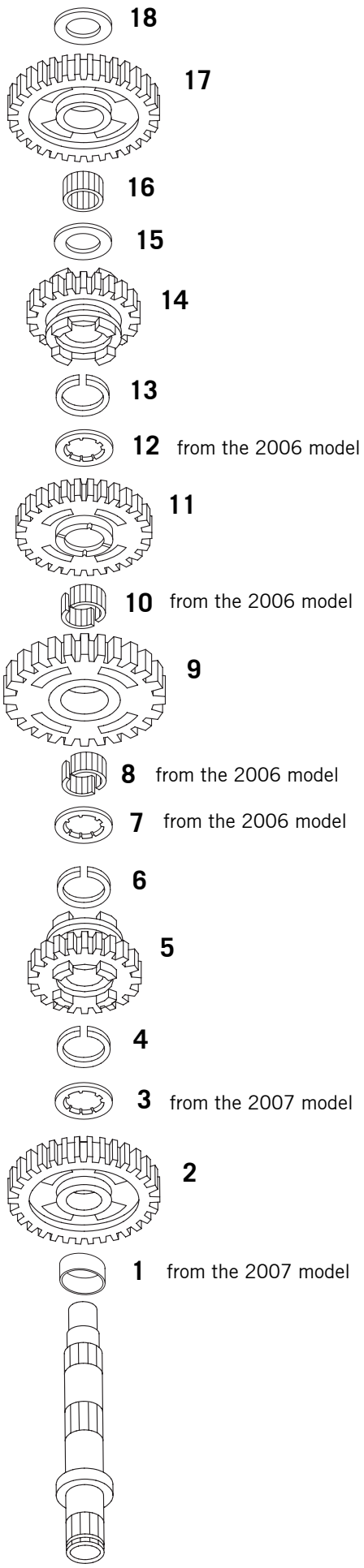
- Fix mainshaft in vice with toothed end upwards (use covered clamps).
- Oil all parts before assembly.
- Slide on the 5th idler gear ❶ with the shifting dogs facing up.
- Mount the circlip ❷ (19 SW) with the sharp edge facing up.
- Slide on the 3rd and 4th gear sliding gear ❸ with the larger gear facing down.
- Mount the circlip ❹ (19 SW) with the sharp edge facing up and slide on the 6th gear idler ❺ with the dogs facing down.
- Slide on the stop disk (20.3x26x0.4) ❻ and the mount the fixed 2nd gear ❼ together with the stop disk ❽ (16x26x1).

NOTE:
- the stop disk ❻ is no longer included starting with engine number B85 400300 since the idler gear for 6th gear ❺ was widened.
- starting with the 2005 model (engine number B85 500000) the idler gear for 6th gear ❺ has a larger inner diameter and runs on a bushing ❾. A stop disk ❻ is also used. In case of repair, all transmissions starting with the 2003 model can be equipped with this set (also see Technical Informations).

- Finally, check all of the gears for smooth operation.







Assembling the countershaft

– Clamp the countershaft in the vise with the toothed end pointing down (use protective jaws).
– Thoroughly oil all parts.

Up to the 2005 model

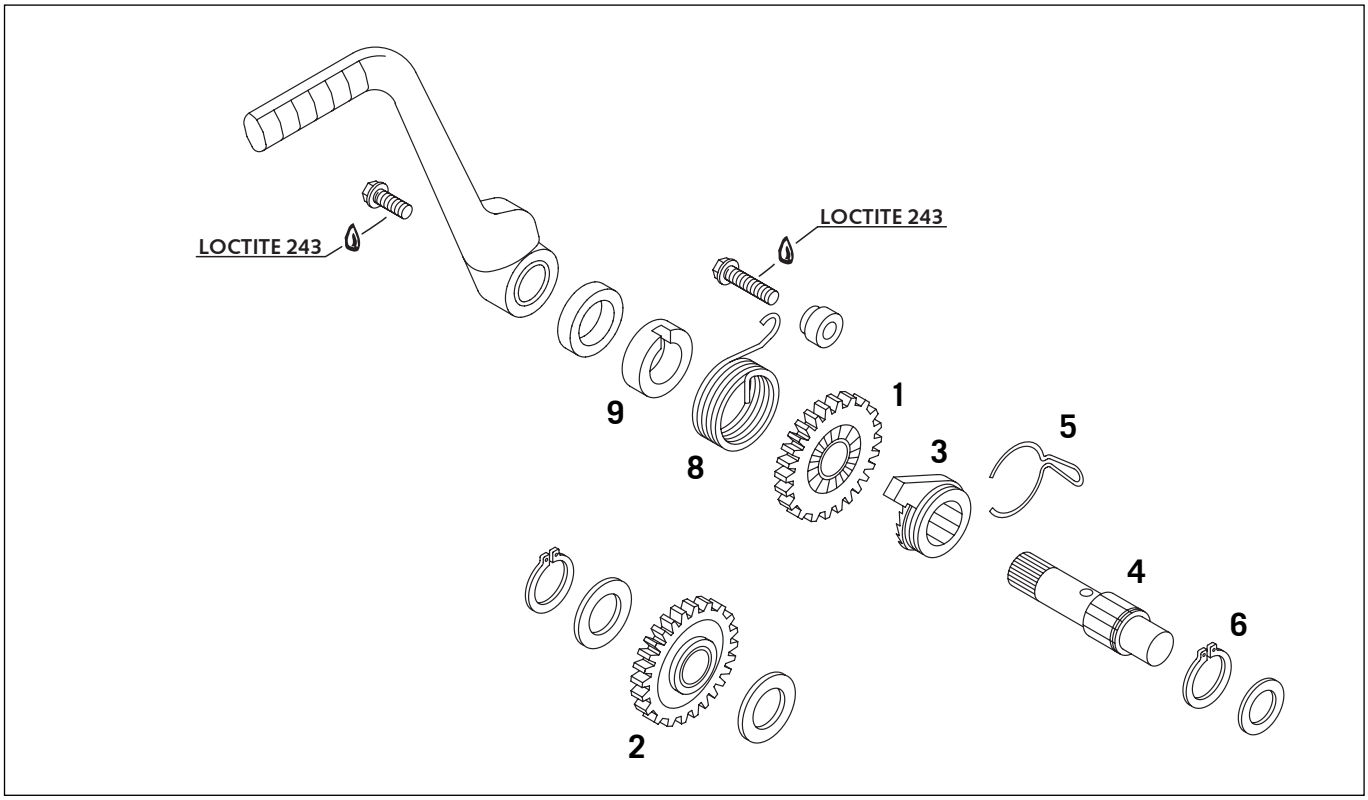
– Slip on the idler gear 2nd gear ❷ with the collar facing down.
– Mount the circlip ❹ (A/F 21) with the sharp edge facing up.
– Slip on the 6th gear sliding gear ❺ with the shift groove facing up and mount the circlip ❻ (A/F 21).
– Slip on the idler gear 3rd gear ❾ the collar facing up and slip on the idler gear 4th gear ⓫ with the collar facing down.
– Mount the circlip ⓭ (A/F 21) with the sharp edge facing up.
– Slip on the sliding gear 5th gear ⓮ with the shift groove facing down.
– Slip on the stop disk ⓯ (15x25x0.5) and the needle bearing ⓰.
– Slip on the idler gear 1st gear ⓱ with the notches on the contact face facing down and the stop disk ⓲ (15x25x1).
– Finally, check all gears for smooth operation.

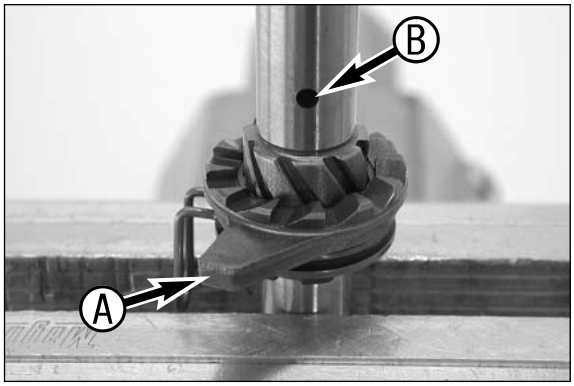
2006 model

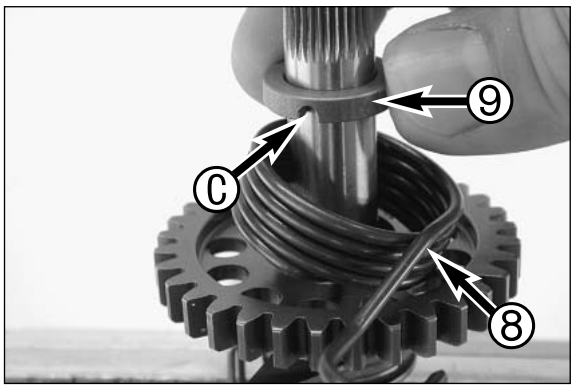
– Slip on the idler gear 2nd gear ❷ with the collar facing down.
– Mount the circlip ❹ (A/F 21) with the sharp edge facing up.
– Slip on the 6th gear sliding gear ❺ with the shift groove facing up and mount the circlip ❻ (A/F 21).
– Slip on the stop disk ❼ and the needle bearing ❽.
– Slip on the idler gear 3rd gear ❾ with the collar facing up.
– Slip on the needle bearing ❿ and idler gear 4th gear ⓫ with the collar facing down.
– Mount the stop disk ⓬ and circlip ⓭ (A/F 21) with the sharp edge facing up.
– Slip on the sliding gear 5th gear ⓮ with the shift groove facing down.
– Slip on the stop disk ⓯ (15x25x0.5) and the needle bearing ⓰.
– Slip on the idler gear 1st gear ⓱ with the notches on the contact face facing down and the stop disk ⓲ (15x25x1).
– Finally, check all gears for smooth operation.

from the 2007 model

– Slip on the idler gear bushing ❶ and the idler gear 2nd gear ❷ with the collar facing down.
– Mount the stop disk ❸ and circlip ❹ (A/F 21) with the sharp edge facing up.
– Slip on the 6th gear sliding gear ❺ with the shift groove facing up and mount the circlip ❻ (A/F 21).
– Slip on the stop disk ❼ and the needle bearing ❽.
– Slip on the idler gear 3rd gear ❾ with the collar facing up.
– Slip on the needle bearing ❿ and idler gear 4th gear ⓫ with the collar facing down.
– Mount the stop disk ⓬ and circlip ⓭ (A/F 21) with the sharp edge facing up.
– Slip on the sliding gear 5th gear ⓮ with the shift groove facing down.
– Slip on the stop disk ⓯ (15x25x0.5) and the needle bearing ⓰.
– Slip on the idler gear 1st gear ⓱ with the notches on the contact face facing down and the stop disk ⓲ (15x25x1).
– Finally, check all gears for smooth operation.







Checking the kickstarter for wear

Take all components off the kickstarter shaft and clean them.

Kickstarter gear ❶
Check the toothing for wear and the bearing for clearance.

Kickstarter idler gear ❷
Check the bearing for clearance and seizing marks. Check the toothing for wear. It is constantly engaged with the outer clutch hub.

Kickstarter ratchet gear ❸
Check the inclined surface and the toothings for wear.

Kickstarter shaft ❹
Check bearing positions and toothings for wear and damage. Check the oil bore for the kickstarter gear for unobstructed passage.

Ratchet gear spring ❺
Check the ratchet gear spring for wear.

NOTE: The ratchet gear spring must be clamped by the ratchet gear and may not move freely.

Preassembling the kickstarter shaft

- Fix the kickstarter shaft ❹ with the toothed end facing up in the vise (use protective jaws).
- Mount the circlip ❻.
- Slide the kickstarter ratchet gear ❸ and the ratchet gear spring on the kickstarter shaft so that the nose Ⓐ is located on the left side of the hole Ⓑ (see illustration).
- Slip on the kickstarter pinion ❶ with the toothing facing down.
- Fix the kickstarter spring ❽ in the hole in the kickstarter shaft and slide the driving hub ❾ with the recess Ⓒ over the end of the kickstarter spring.

ASSEMBLING THE ENGINE 6

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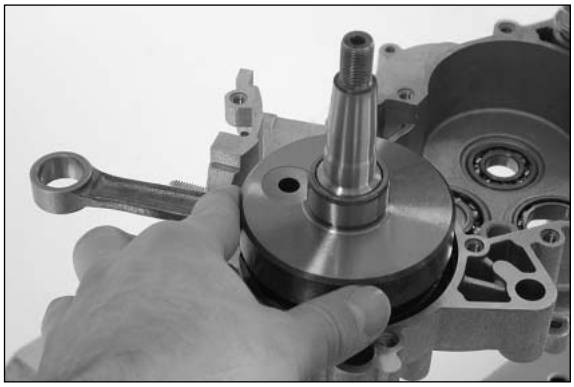


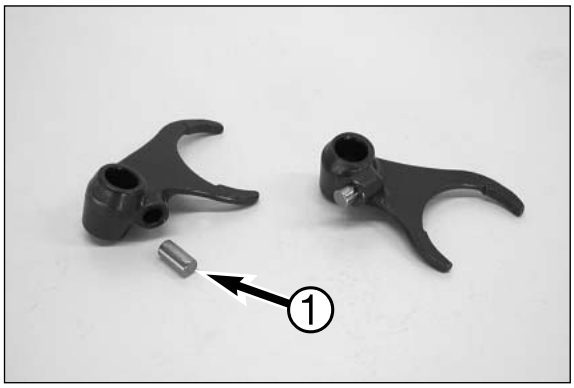
– Secure the right-hand housing half in the engine work stand.

Crankshaft

– Insert crankshaft from above through grooved ball bearing and push carefully as far as stop.

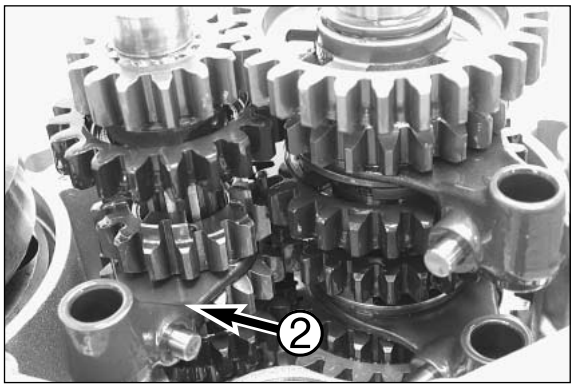
! CAUTION !

WHEN PUSHING IN CRANKSHAFT, MAKE SURE CONROD IS FACING CYLINDER.



Transmission

– Oil driving pin ❶ for the shift forks and mount.
– Fix the lower stop disc on the countershaft with a small amount of grease.
– Mount drive shaft together with countershaft, and insert them into the bearings as far as they will go.
– Oil shift forks prior to mounting.

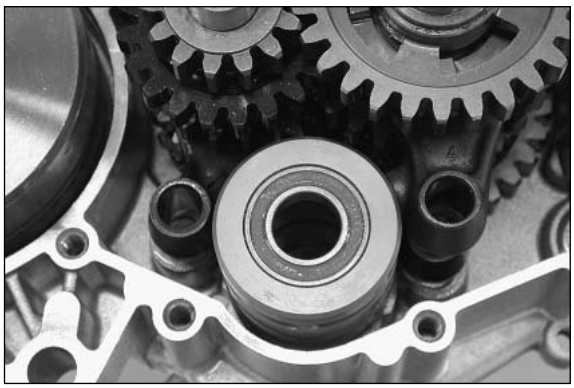


– Shift fork ❷ with the shorter shift dog belongs to the main shaft.
– Mount the two other shift forks at the countershaft, using the marks applied before disassembly for better orientation.

! CAUTION !

ALL OF THE SHIFT FORKS ARE DIFFERENT SO GO BY THE MARKS MADE DURING DEMOUNTING WHEN YOU MOUNT THEM AGAIN.

NOTE: If you forgot to make a mark before disassembling, mount the shift forks at the countershaft so that the greatest distance is between the driving pins.

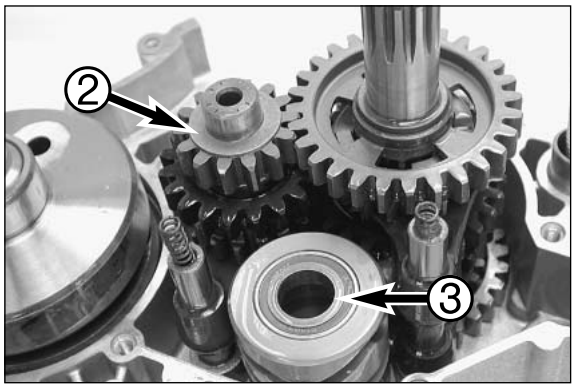


– Fit the shift forks in the sliding gears and insert the shift drum and the spacing washer (25x32x0.5 mm) in the grooved ball bearing.
– Attach the shift forks to the shift roller.

! CAUTION !

WHEN INSERTING THE SHIFT FORKS, MAKE SURE THE DRIVING PINS DO NOT FALL OUT OF THE SHIFT FORKS.

– Fix the 4 pressure springs ❶ with ample amounts of grease in the gearshift rails.



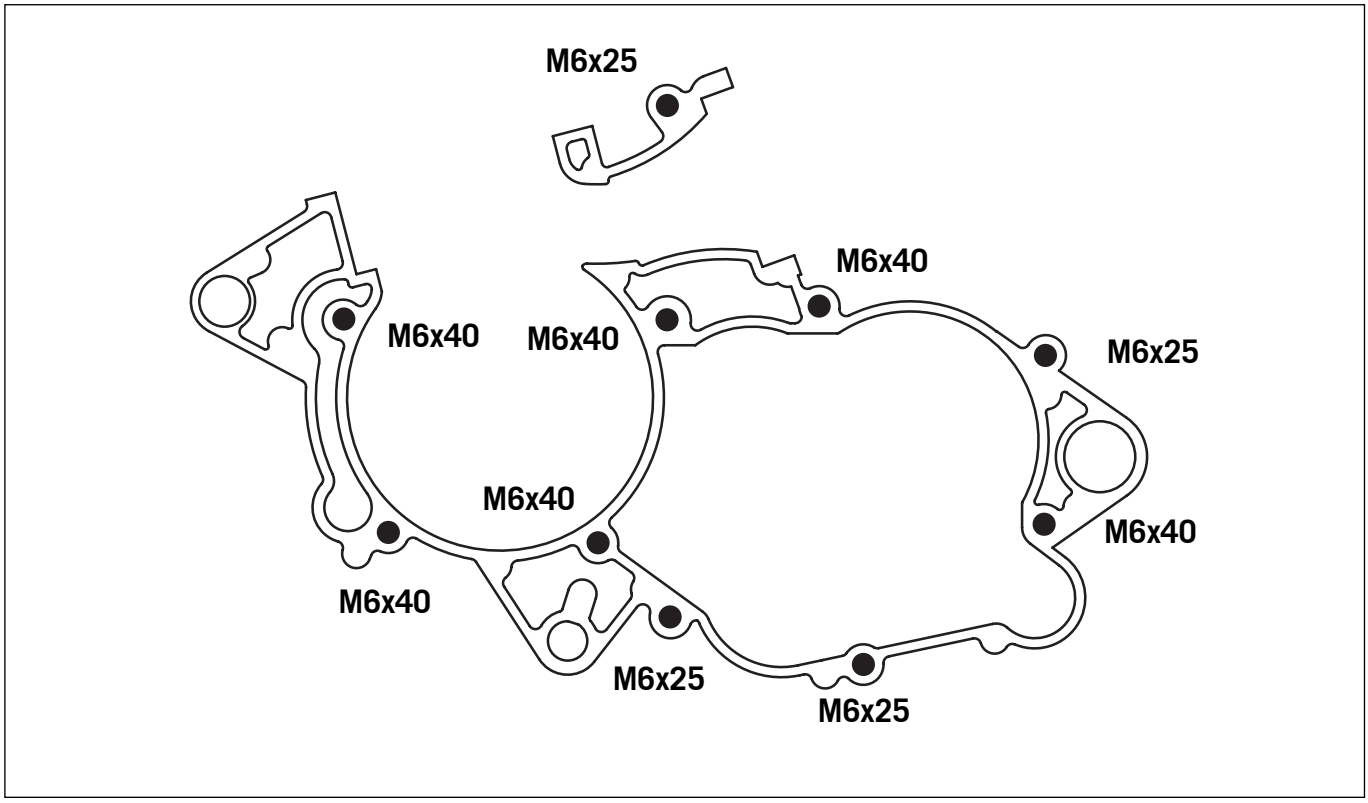
– Oil gearshift rails and insert them into the gearshift forks (short gearshift rail toward drive shaft). Insert gearshift rails into the casing bores as far as they will go.

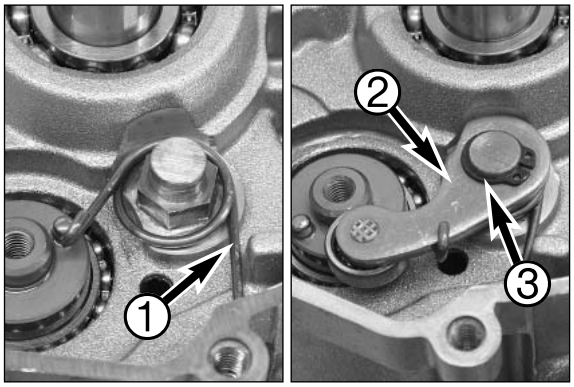
NOTE: It must now be possible to gently turn gear shafts.

– Mount stop disk ❷ (16x26x1 mm) on the main shaft.
– Fix the spacing washer ❸ (15x20x0.5 mm) to the shift drum with a little grease.

Assembling the engine housing

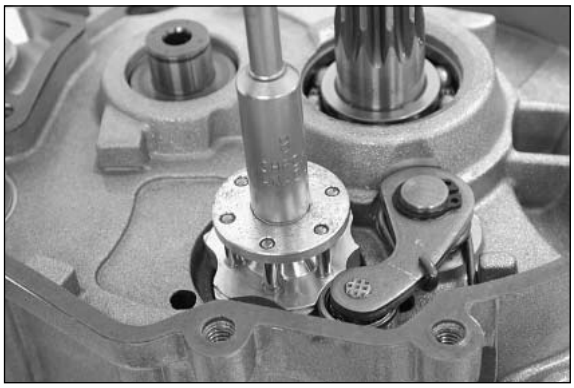
– Remove engine fastener from engine work stand.
– Make sure that both fitting collars are in place in the right housing half and that the stop disk on the main shaft and the spacing washer are mounted on the shift drum.
– Apply light coat of grease to sealing surfaces of the housing and position new gasket.
– Grease shaft seal rings in left-hand half and place left-hand half in position.
– Position bolts and tighten with 8 Nm.
– Fix engine in work stand.



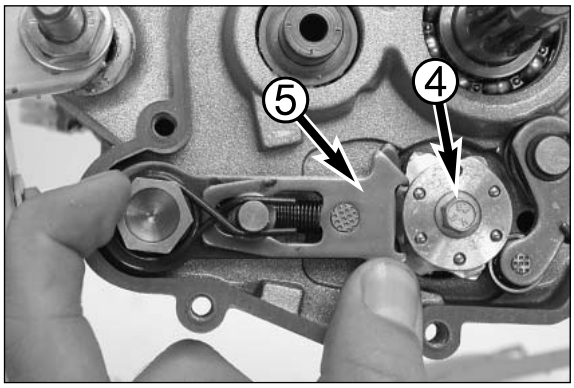


Mounting the shift mechanism

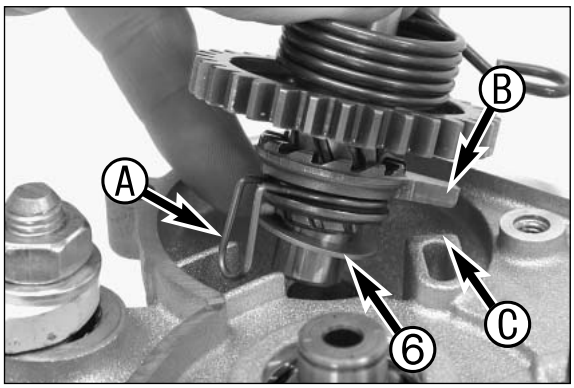
– Insert the locking spring ❶ into the housing as indicated in the illustration.
– Mount the locking lever ❷ with the roll facing the engine case, preload and mount the circlip ❸ with the sharp edge facing up.



– Push the locking lever backwards with a screwdriver and mount the shift drum locating device on the shift roller.
– Degrease and apply Loctite 243 to the thread of bolt ❹ and use the bolt to fasten the shift drum locating device to 10 Nm.

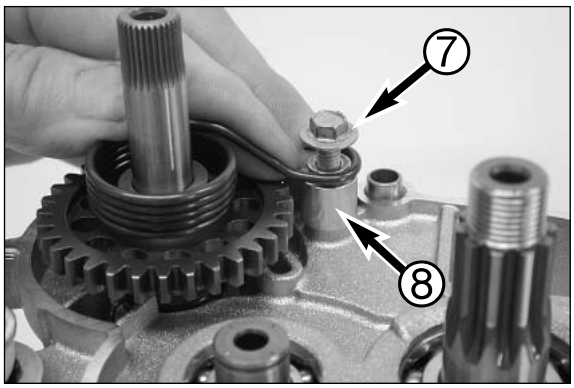


– Grease the shaft seal ring of the shift shaft.
– Carefully grease the preassembled shift shaft and carefully insert it together with the stop disk (15x25x0.5 mm) in the engine case. Push back the shift rail ❺ and insert the shift shaft in the engine case all the way up to the stop.
– Mount the foot shift lever and shift through all gears. When shifting through the gears, turn the countershaft. Then remove the foot shift lever.

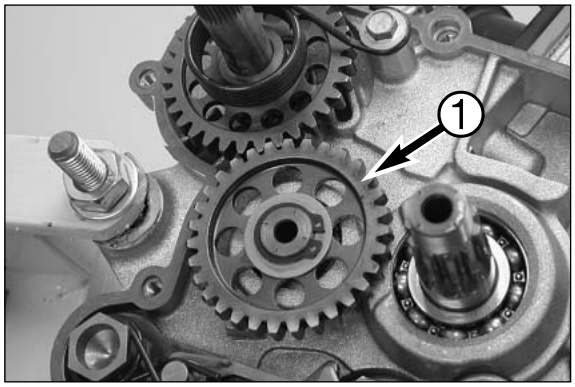


Mounting kickstarter

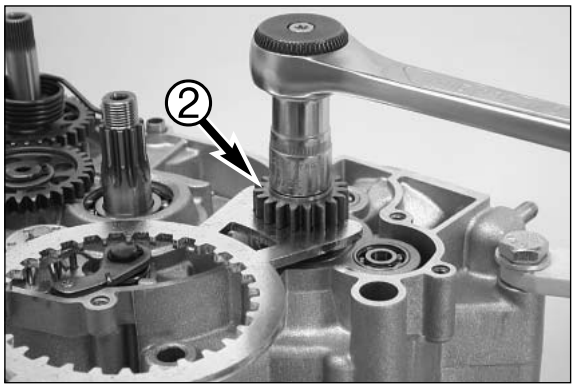
– Oil the bearing bore for the kickstarter shaft.
– Insert the preassembled kickstarter shaft and the stop disk ❻ (15x25x1 mm) in the bearing bore so that the nose Ⓐ on the ratchet gear spring is located between the two bars and the nose Ⓑ on the ratchet gear is behind the stop Ⓒ.



– Apply Loctite 243 to the thread of the bolt ❼ (M5x25 mm).
– Mount the spring bushing ❽, preload the starter spring and put into place (see illustration) and tighten the bolt to 6 Nm.

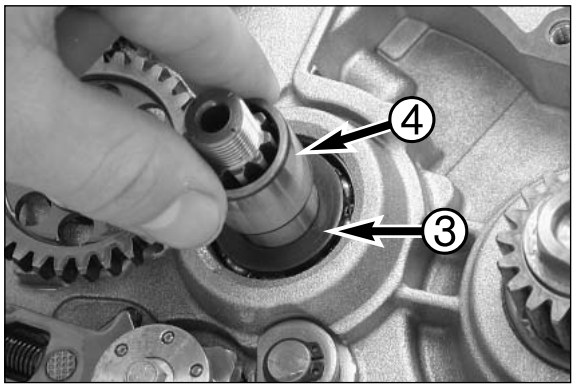


– Oil the bearing position of the starter idler and slide on the stop disk (15x25x0.5 mm).
– Mount the starter idler ❶ on the bearing pin with the high collar facing the engine case .
– Slip on the stop disk (15x25x0.5 mm) and mount the circlip with the sharp edge facing outwards.

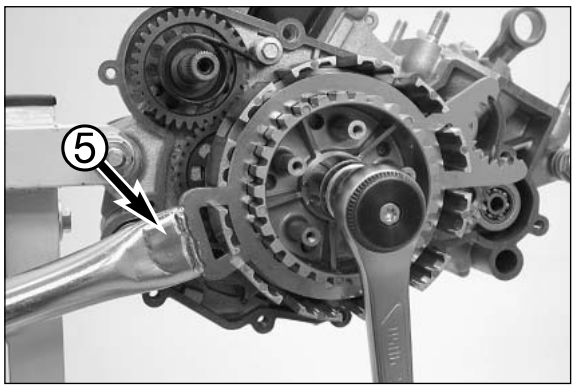


Mount primary drive and clutch

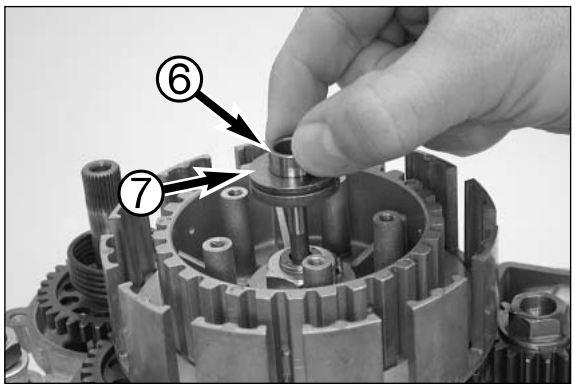
– Grease crankshaft seal ring.
– Slide the oiled O-ring (18.77 x 1.78 mm) on the crankshaft and slip on the distance sleeve.
– Mount the woodruff key and slide the primary pinion ❷ on the crankshaft.
– Apply the special tool 470.29.003.000 as shown.
– Decrease the HH bolt (M10x1.25x20), apply Loctite 243 and tighten to 80 Nm.



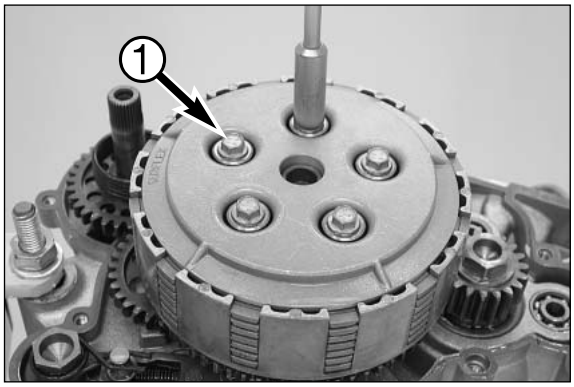
– Mount the stop disk ❸ (20x32x2 mm) and the bushing ❹ on the main shaft.
– Mount the outer clutch hub, supporting plate (18.5x35x1.5 mm), the driver and a new lock washer.



– Degrease the hexagon nut and apply Loctite 243.
– Position clutch holder 470.29.003.000 ❺ and tighten hexagon nut with 60 Nm.
– Remove the clutch holder and secure the hexagon nut by bending both brackets of the lock washer upwards.



– Insert the pressure piece ❻ and the axial needle bearing together with the washer ❼ in the main shaft.

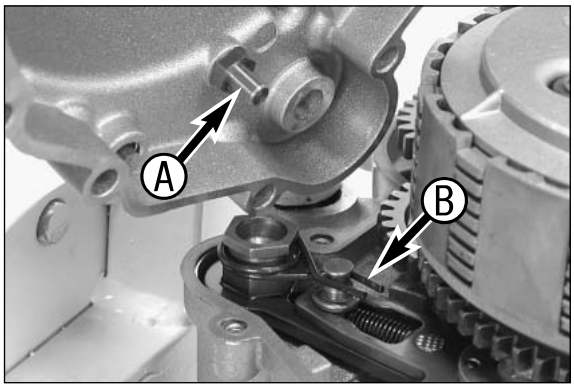


Mounting clutch discs and pressure cap

– Oil lining discs before mounting.
– Starting with a lining disk, alternately insert 7 lining disks and 6 clutch disks. A lining disk must be the last disk on top.

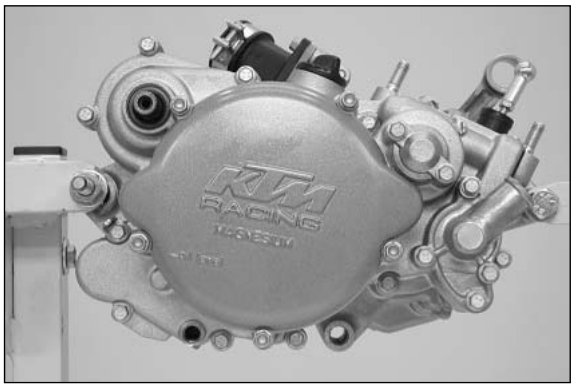
NOTE: Mount the clutch disks with the sharp edge facing up.

– Place pressure cap into position; fit clutch springs, spring retainer and collar bolts ❶.
– Tighten the collar bolts crosswise. Do not apply more than 6 Nm to prevent damaging of the threads in the inner clutch hub.



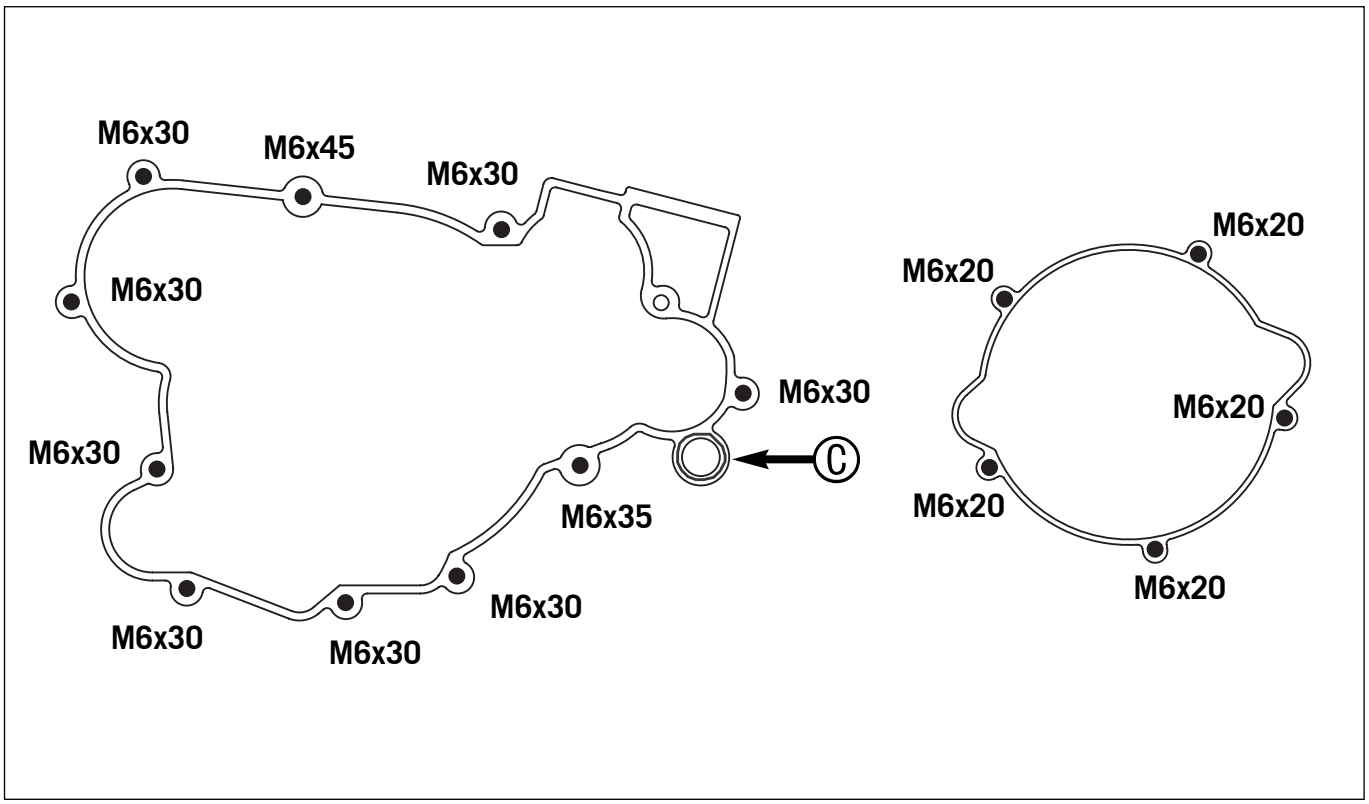
Mounting clutch cover

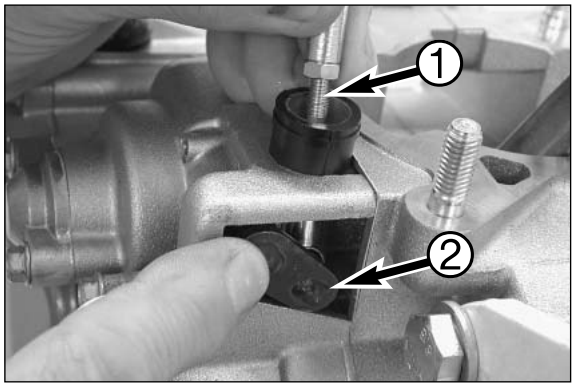
– Make sure the 2 dowels are mounted in the engine housing.
– Grease the shaft seal ring on the kickstarter shaft and fix a new clutch cover seal with a small amount of grease.
– Center the shift shaft to allow the bolt Ⓐ to engage between the two shanks Ⓑ of the return spring.
– Apply silicone to area Ⓒ and carefully mount the preassembled clutch cover. Turn the crankshaft slightly to allow the centrifugal timer to engage in the primary pinion.



– Fit collar bolts (see sketch for bolt lengths) and tighten with 8 Nm.
– Then check easy running of all shafts.

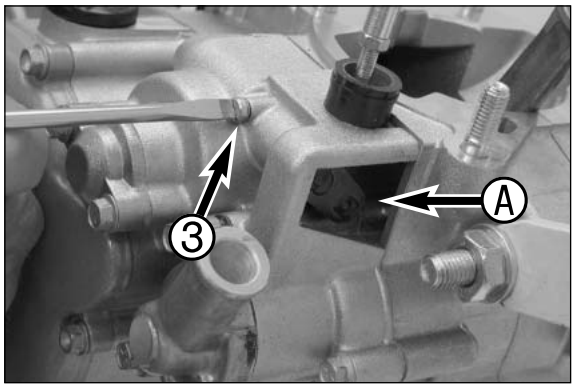
NOTE: If you cannot mount the clutch cover, check whether the kickstarter spring and the shift shaft are in the right position.



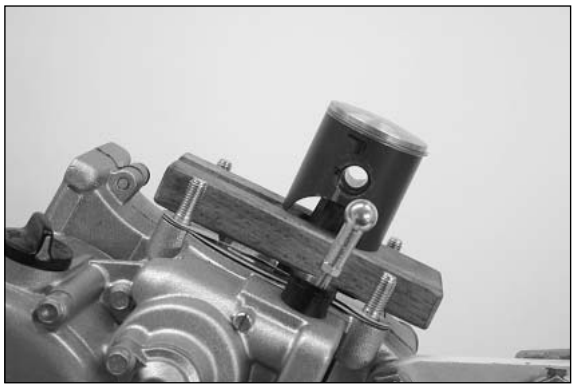


– Position the linkage ❶ with the counternut facing up, insert the adjusting shaft ❷ with the lever facing down and press the ball socket on the ball of the lever (see illustration).

NOTE: As of model year 2006 a new adjusting shaft ❷ with a shaft sealing ring is used.

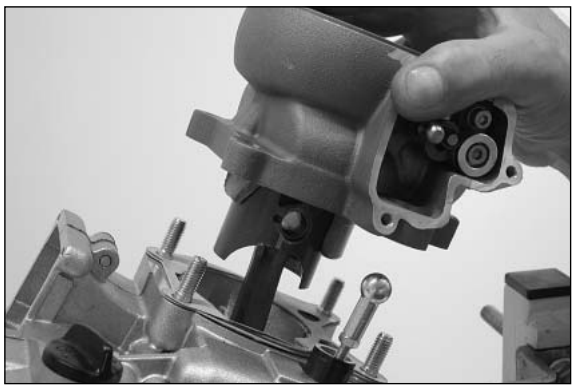


– Mount the locking screw ❸ and the gasket.
– Slide the sealing element into area Ⓐ.
– Finally, check the lever for smooth operation by hand.

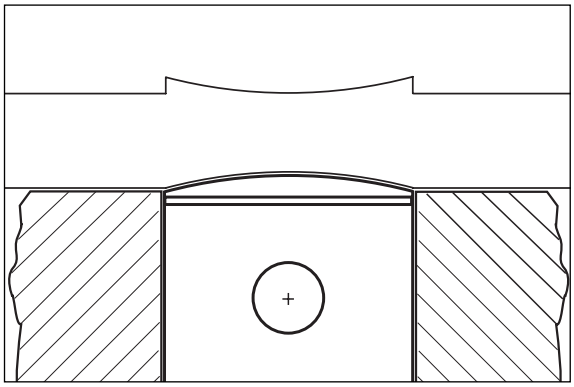


Mounting piston and cylinder

– Before assembly, oil all parts thoroughly at the sliding points.
– Insert needle bearing in conrod eye, mount piston (arrow on piston head shows direction for exhaust duct).
– Mount piston pin and wire circlips with open side showing downwards (see sketch).
– Mount cylinder base gaskets.
– Place the piston on a self-made wooden stand and adjust the piston ring.



– Place on preassembled cylinder, remove wooden stand and tighten cylinder down crosswise, using two nuts.

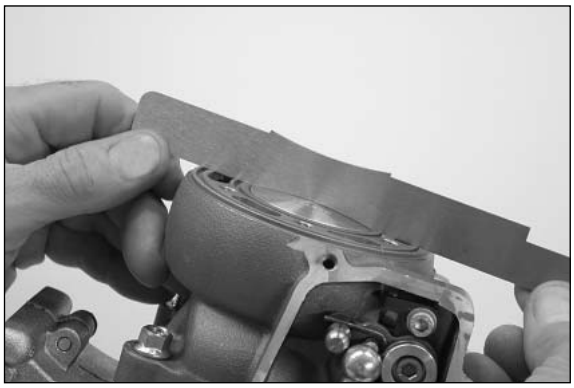


Adjusting dimension „X“

Dimension „X“ is the dimension from upper edge of piston to upper edge of cylinder with cylinder under low tension and piston in TDC position.
The dimension „X“ should be adjusted extremely carefully by inserting cylinder base gaskets of suitable thicknesses.

! CAUTION !

IF THE DIMENSION „X“ IS TOO LARGE, THE COMPRESSION RATIO WILL BE REDUCED AND THE ENGINE LOOSES POWER. ON THE OTHER HAND, IF THE DIMENSION „X“ IS TOO SMALL, THE ENGINE WILL PING AND OVERHEAT.

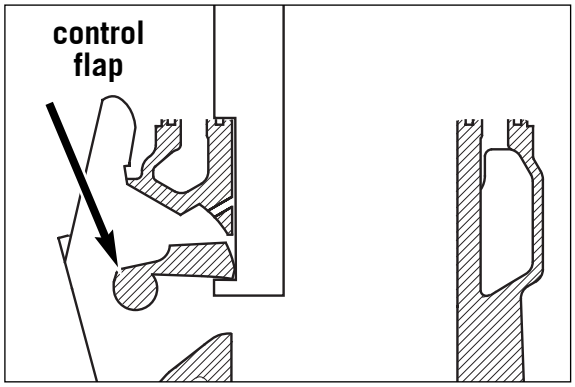


– Move the piston to TDC and apply the adjusting plate 470.29.006.000 (85 SX) or 475.29.006.000 (105 SX) (see illustration). Use a feeler gauge to measure the gap between the upper edge of the piston or cylinder and the master gauge. If correctly adjusted, the master gauge will fit flush against the upper edge of the piston and cylinder.
  Correct by adding or removing cylinder base gaskets.

! CAUTION !

THE PISTON MUST NOT PROTRUDE BEYOND THE CYLINDER'S UPPER EDGE.

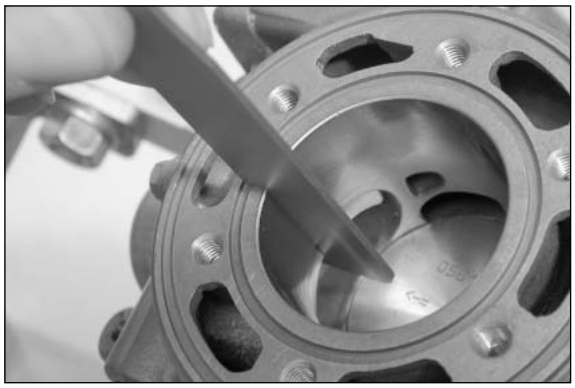
– Mount the 2 remaining collar nuts at the cylinder base, and tighten each of the 4 collar nuts to 30 Nm.



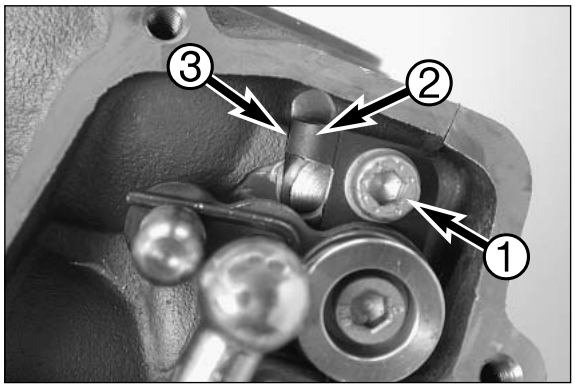
Adjusting control flap (dimension “Z“)

NOTE: Dimension “Z“ is the distance from the lower edge of the control flap to the upper edge of the cylinder, as measured in the centre of the exhaust port with the adjusting plate 470.29.006.000 (85 SX) or 475.29.006.000 (105 SX).

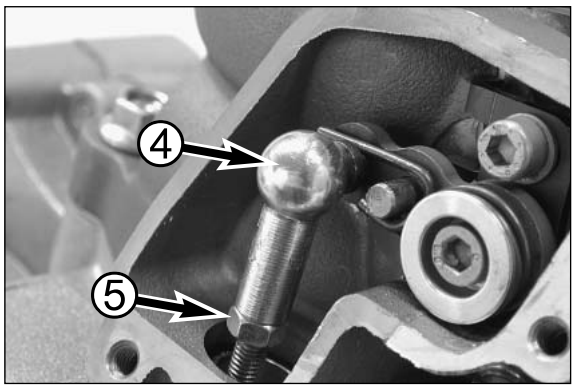
85 SX: dimension „Z“ = 32 mm
105 SX: dimension „Z“ = 31 mm



– Loosen the screw ❶ on the stop plate and apply Loctite 243 to the thread. Mount the screw again but do not tighten yet.
– Fold the control flap up and hold the adjusting plate 470.29.006.000 (85 SX) or 475.29.006.000 (105 SX) in the cylinder as shown in the drawing.
– Fold the control flap back down and up against the setting gauge.



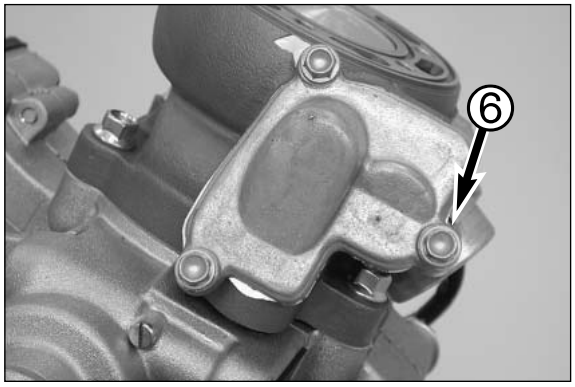
– Turn the stop plate ❷ until it rests against the edge of the stop ❸.
– Fix the stop plate by tightening the screw ❶.
– After the screw ❶ is tightened, check dimension "Z" again and correct if necessary.



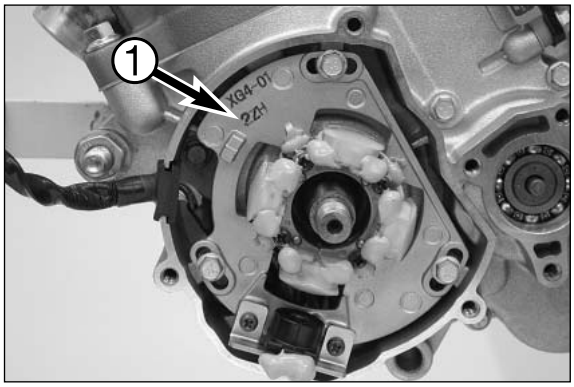
– Press the control flap all the way down and press the ball socket ❹ onto the ball of the control lever.

NOTE: When you press on the ball socket, make sure there is no stress towards the top or bottom.

– Adjust linkage length if necessary.
– To do so, loosen counter nut ❺ and turn ball socket accordingly.
– Retighten counter nut.

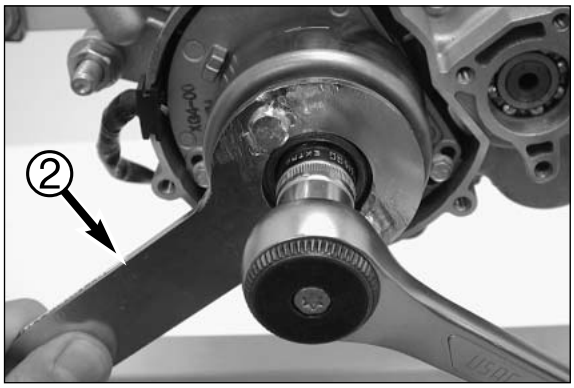


– Mount the control cover ❻ together with the gasket and fix with 3 bolts.

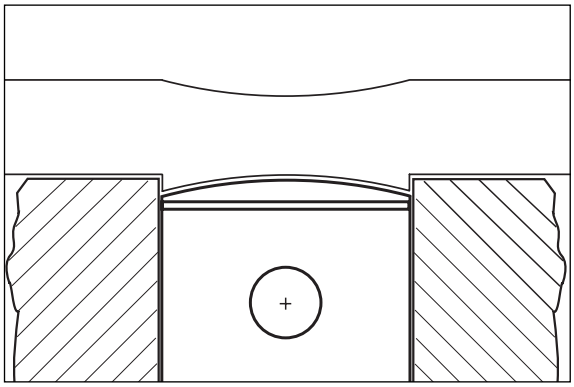


Mounting the ignition

– Degrease the crankshaft and insert the woodruff key in the crankshaft.
– Fix the stator ❶ with 3 collar bolts M5x16 but do not tighten yet.
– Mount the cable guide in the housing opening.



– Mount the rotor on the crankshaft. Then mount the spring ring with the hexagon nut.
– Insert the holding tool 546.29.012.000 ❷ into the two bores and tighten the hexagon nut with 60 Nm.



Adjusting the ignition

– Set the piston to TDC and hold the adjusting plate 470.29.006.000 (85 SX) or 475.29.006.000 (105 SX) against the upper edge of the cylinder.
– Turn the rotor in a counterclockwise direction until the upper edge of the piston rests against the setting gauge (see drawing).

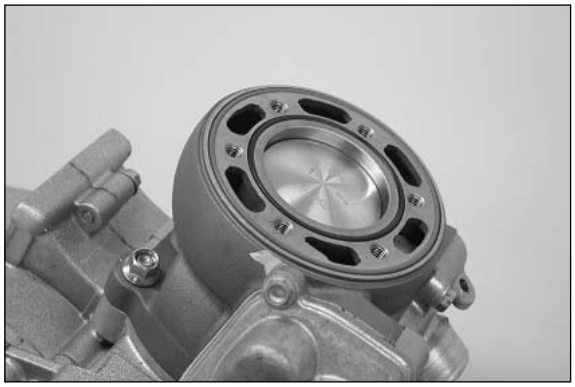
– Now turn the stator until the two marks ❸ coincide.

! CAUTION !

BEFORE CHECKING THE IGNITION THE DIMENSION „X“ MUST BE ADJUSTED CORRECTLY.

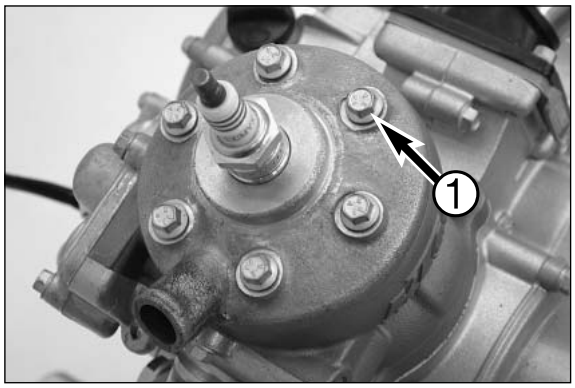
– Tighten the 3 collar bolts on the stator to 6 Nm.
– Once again check the distance between the edge of the piston and the upper edge of the cylinder using the adjusting plate. If necessary readjust the distance by rotating the stator.

– Put on a new gasket, and fix the ignition cover by means of the 3 bolts.

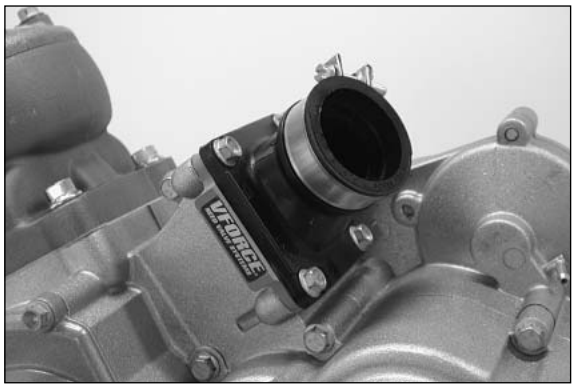


Mounting cylinder head

– Clean cylinder and cylinder head sealing surface, place O-rings in grooves.
– Mount cylinder head with water nozzle on the exhaust side.

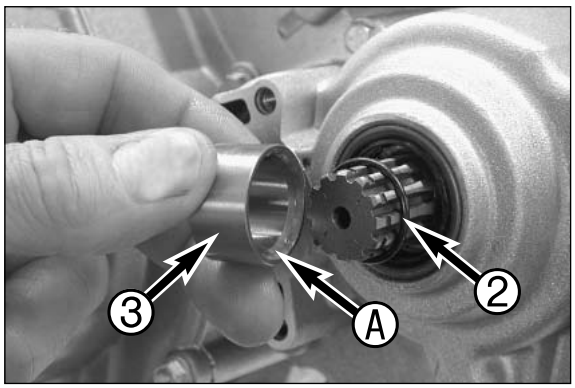


– Oil the collar nuts ❶ at threads and contact faces.
– Mount the collar bolts with new copper gaskets and tighten them crosswise, taking three turns to achieve the total tightening torque of 10 Nm.
– In first stage, only tighten until slight resistance is felt.



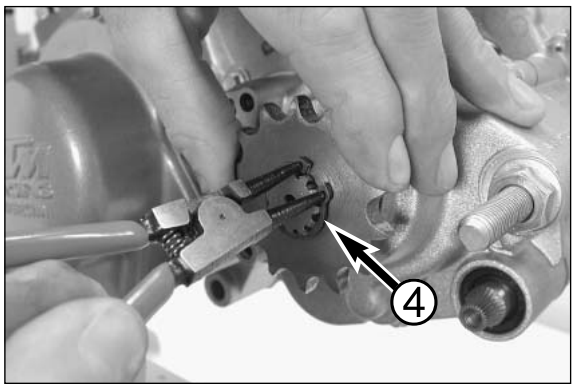
Mounting the intake flange and reed valve housing

– Mount a gasket and insert the reed valve housing in the intake port.
– Tighten the intake flange to 6 Nm.

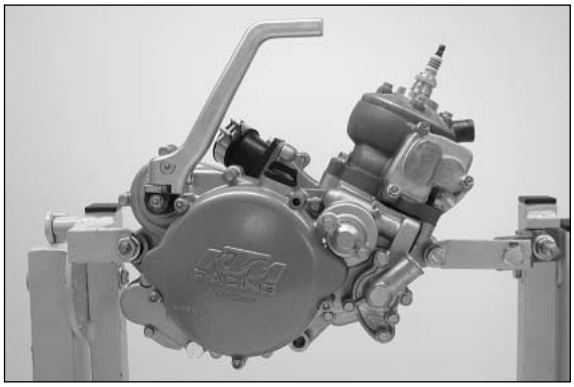


Mounting engine sprocket

– Lubricate O-ring ❷ with oil and slide over counter shaft.
– Slide distance bushing ❸ in position so that O-ring is in correct position Ⓐ.

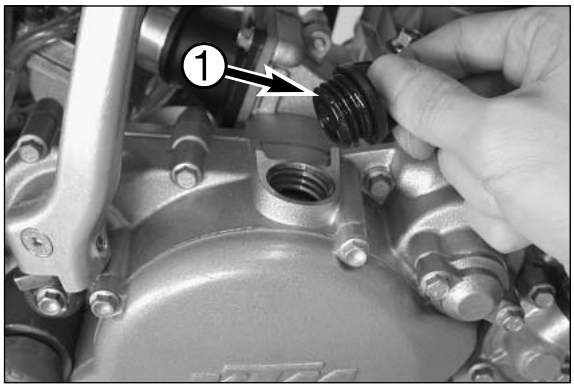


– Mount the engine sprocket with the collar facing inwards on the countershaft and fix with circlip ❹.



Mounting the kickstarter and shift lever

– Mount the kickstarter. Apply Loctite 243 to the kickstarter bolt and tighten to 12 Nm.
– Mount the shift lever. Apply Loctite 243 to the shift lever bolt and tighten to 12 Nm.
– Operate the kickstarter a few times and check if the engine turns freely.
– Oil the push rod and insert in the main shaft together with the ball (Ø 6 mm).
– Mount oil drain plug.



Fill in transmission oil

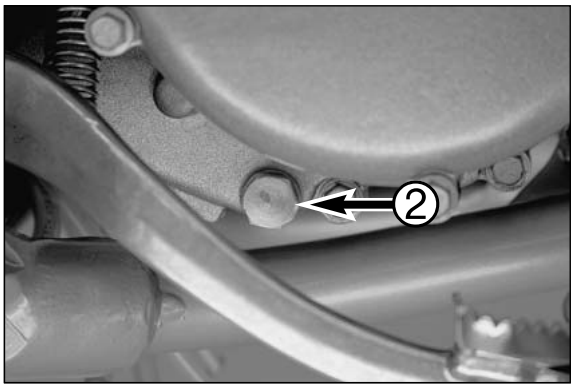
NOTE: The transmission oil should be filled in only after the engine has been mounted. Otherwise, a part of the transmission oil would leak out through the drive shaft.

– Remove the filler plug ❶ and add 0.50 l gear oil (e.g. Motorex Topspeed 4T 15W50). Mount the filler plug and check the engine for leaks.

! CAUTION !

NOT ENOUGH OIL OR A POOR OIL QUALITY LEAD TO PREMATURE WEAR OF THE TRANSMISSION. THEREFORE, USE ONLY HIGH-QUALITY OILS (E.G. MOTOREX TOPSPEED 4T 15W50).

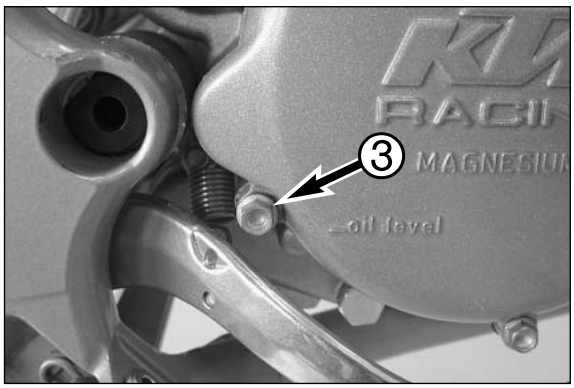
Quantity of oil: 0.50 liter



Checking gear oil level

– To check the gear oil, warm up the engine to operating temperature with a low load and place the motorcycle on an even surface.
– Remove the oil drain plug ❷ and allow the gear oil to drain into a vessel.
– Clean the sealing area, mount the oil drain plug and gasket and tighten to 15 Nm.
– Remove the oil filler screw ❶ and add 0.5 liters of gear oil (e.g. Motorex Topspeed 4T 15W50). Mount the oil filler screw and check the engine for leaks.

NOTE:
– Due to a change in the fluid capacities the inspection screw ❸ can no longer be used.
– If the gear oil is still clean you can continue to use it up to your next service.



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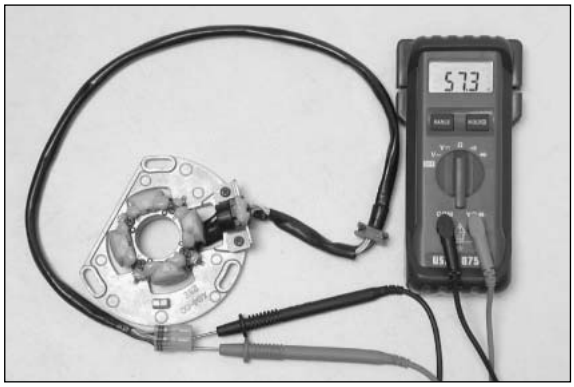


Resistor values of the ignition system - Stator

– Unplug the connector on the ignition stator and measure the resistance of the stator coils at 20° C using a digital multimeter.

Pulse generator: between the white/red and white/blue cable
Multimeter display: 310 Ω +/- 60 Ω

CDI voltage supply: between the green/blue and black cable
Multimeter display: 55 Ω +/- 10 Ω

Capacitor charging coil: between the black/red and green/white cable
Multimeter display: 900 Ω +/- 180 Ω

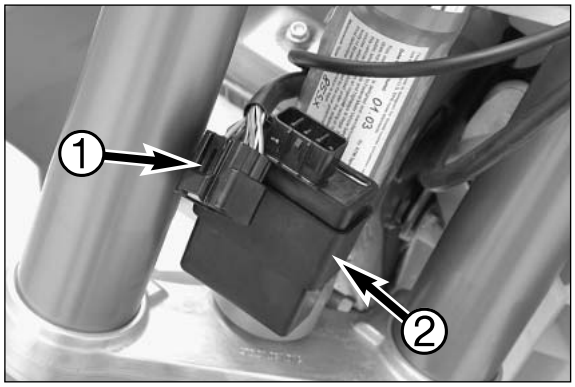
NOTE: the stator does not need to be removed to measure.

Ignition coil

– Unscrew the spark plug connector and disconnect the cable for the primary drive.
– Measure the resistance on the primary side of the ignition coil between the primary drive plug and the ignition coil ground.
Multimeter display: under 10 Ω at 20° C

– Measure the resistance on the secondary side of the ignition coil between the high voltage cable and the ignition coil ground.
Multimeter display: 7900 Ω +/- 1500 Ω at 20° C

NOTE: The ignition coils do not need to be removed to measure.



Measuring static ignition values with peak voltage adapter

Measuring conditions:
- cold engine
- remove starting number plate
- unscrew sparkplug, plug on and hold against ground
- all plug and socket connectors and ground connections in a non-corroding condition
- depress the kickstarter forcefully at least 5 times for each measurement

Check the **pulse generator** for output signal – white/red and white/blue cables:
- Apply the red measuring tip of the peak voltage adapter to the white/red cable and the black measuring tip to the white/blue cable, disconnect plug ❶ to disconnect the CDI unit ❷
  Multimeter display: 10 volts +/-1 volt

- Same measurement with CDI unit connected
  Multimeter display: 6 volts +/-1 volt

Check the **CDI voltage supply** for output voltage – green/red and black cables:
- Apply the red measuring tip of the peak voltage adapter to the green/red cable and the black measuring tip to the black cable, disconnect plug ❶
  Multimeter display: 40 volts +/-5 volts

- Same measurement with CDI unit connected
  Multimeter display: 35 volts +/-5 volts

Check **capacitor charging coil** for output voltage – black/red and green/white cables:
- Apply the red measuring tip of the peak voltage adapters to the black/red cable and the black measuring tip to the green/white cable, disconnect plug ❶
  Multimeter display: 270 volts +/-20 volts

- Same measurement with CDI unit connected
  Multimeter display: 230 volts +/-20 volts

Check the **primary voltage output** for ignition coil control (orange cable):

- Apply the red measuring tip of the peak voltage adapter to the (ground) and the black measuring tip to the orange cable, CDI unit and ignition coil connected
  Multimeter display: 230 volts +/-20 volts

NOTE: If no voltage can be measured during the test, check the respective cable for continuity before replacing any parts.

Spark plug
- Set the electrode distance.

Electrode distance: 0.60 mm

Insulator
Check for cracks and fissures.

! CAUTION !

ALWAYS USE A SPARK PLUG WITH RESISTOR. OTHERWISE PROBLEMS CAN OCCUR IN THE CDI UNIT.

TROUBLE SHOOTING 8

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TROUBLE SHOOTING

If you let the specified maintenance work on your motorcycle be carried out, disturbances can hardly be expected. Should an error occur nevertheless, we advise you to use the trouble shooting chart in order to find the cause of error.

TROUBLE	CAUSE	REMEDY
Engine fails to start	Operating error	Open fuel tap, replenish fuel, do not use choke
	The motorcycle was not driven for a longer period of time, leaving old fuel in the float chamber	The highly inflammable components in modern fuels volatilize if left standing for longer periods of time. If the motorcycle has not been used for over 1 week, the fuel should be drained from the float chamber. The engine will start up immediately if the float chamber is filled with fresh, ignitable fuel
	Fuel supply interrupted	Close fuel tap, loosen fuel hose at carburettor, lead into a basin and open fuel tap, – if fuel leaks out, clean carburettor – if no fuel leaks out, check tank ventilation, i.e. clean fuel tap
	Electrode distance too great	Reduce electrode distance (0.60 mm)
	Plug fouled by oil, wet or bridged	Clean spark plug or renew
	Ignition wire or spark plug connector damaged	Dismount spark plug, connect ignition cable, hold to ground (blank place on engine) and actuate kickstarter, a strong spark must be produced at the spark plug – If no spark is produced, loosen spark plug cap from ignition cable, hold about 5 mm from ground and actuate kickstarter – If a spark now occurs, replace spark plug cap – If no spark is produced, control ignition system
	Kill button wire or short-circuit switch faulty	Disconnect black coloured cable from short circuit button at ignition coil and check ignition spark. If the spark is O.K. repair defective part of cable or ignition switch
	Loose ignition cable connectors	Inspect cable connectors
	Spark too weak	Examine ignition system
	Water in the carburetor and jets blocked	Dismantle and clean carburetor
Engine without idle running	Idle adjusting screw out of adjustment	Readjust idle running or replace idle adjusting screw
	Ignition system damaged	Examine ignition system
	Wear	Overhaul engine
Engine has not enough power	Charred glass fiber yarn in silencer	Renew filling
	Air filter obstructed	Clean or renew airfilter
	Fuel supply partly interrupted or blocked	Blow through fuel pipe and clean carburetor
	Loss of compression through loose spark plug	Tighten spark plug
	Exhaust system damaged	Check exhaust system for damage
	Engine has not enough preignition	Check and adjust ignition

TROUBLE	CAUSE	REMEDY
Engine has not enough power	Reed paddles tensionless or damaged, surface of reed valve housing damaged	Replace reed paddles or reed valve housing
	Wear	Overhaul engine
Engine revs not up and running in four stroke cycle	Carburetor overflows if level adjust too high, float needle seating is dirty or enlarged	Clean carburetor, if necessary replace float needle and adjust level
	Loose carburetor jets	Tighten jets
High rpm misfiring	Incorrect heat range spark plug or low quality spark plug	Refer to technical data section
	Loose, corroded or non conductive ignition socket connector	Check and seal with silicon
Engine spluters into the carburetor	Lack of fuel	Clean fuel pipes, examine tank aeration and clean
	Spark plug with incorrect heat value (Ignition by incandescence)	Fit correct spark plug
	Engine takes air out of control	Check intake flange and carburettor if firmly setted
Engine overheating	Insufficient liquid in cooling system	Top up coolant and bleed cooling system check cooling system for leaks
	Radiator fins clogged	Clean radiatar fins with water jet
	Frothing in cooling system	Renew coolant using branded anti-freeze/anti-corrosive (Motorex Anti-Freeze)
	Pinched or kinked water hoses	Replace with correct routed hoses
	Incorrect ignition timing because of loose stator screws	Readjust to correct ignition timing specifications, secure screws with Loctite 243
	Incorrect compression ratio	Measure and adjust compression ratio
Emission of white smoke (steam)	Cylinder head or O-ring of cylinder head gasket leaks	Check cylinder head, replace O-ring
Excessive oil escapes from transmission breather tube	Excessive oil quantity in transmission	Correct transmission oil level
Water in transmission oil	Shaft seal ring of the water pump defect	Replace shaft seal ring of the water pump.

TECHNICAL SPECIFICATIONS 9

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TECHNICAL SPECIFICATIONS 9

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TECHNICAL SPECIFICATIONS - ENGINE 85 SX 2004

Engine	CR-85
Design	Liquid cooled single cylinder two-stroke engine with reed valve intake
Displacement	84.93 ccm
Bore/stroke	47 / 48.95 mm
Fuel	unleaded fuel with at least RON 95 (USA = Premium RON 91), mixed with high grade two-stroke oil
Oil/gasoline ratio	1:40 - 1:60 when using high grade two-stroke oil (e.g. Motorex 2T Crosspower), when in doubt, please contact our importer
Lubrication	mixture lubrication
Crankshaft bearing	deep-groove ball bearing, cylinder roller bearing
Connecting rod bearing	needle bearing
Piston pin bearing	needle bearing
Piston rings	1 compression ring
Primary drive	straight cut spur gears, 19 : 66 t
Clutch	multiple disc clutch in oil bath, hydraulic operated (Motorex Kupplungs-Fluid 75)
Transmission	6 speed, claw actuated
Gear ratio	1st gear 11 : 29 2nd gear 14 : 28 3rd gear 16 : 26 4th gear 19 : 26 5th gear 21 : 25 6th gear 20 : 21
Transmission oil	0.50 liter engine oil Motorex Topspeed 4T 15W50
Ignition system	Moric Digital 2M1
Spark plug	NGK BR 10 ECMVX
Electrode gap	0.60 mm
Carburetor	flat-slide carburetor, carburetor see table
Coolant	1 liter, mixture coolant : water = 2 : 1, at least -25° C (-13° F)
Air filter	wet foam type air filter insert

BASIC CARBURETOR SETTING	
Carburetor	Keihin PWK 28
Main jet	118
Needle jet	2.6
Idling jet	45
Jet needle	N5HG
Needle position from top	III
Throttle valve	3.5
Starting jet	62
Air adjustment screw open	1.5

TECHNICAL SPECIFICATIONS – CHASSIS 85 SX 2004

Frame	Central chrome-moly-steel frame	
Fork	telescopic fork White Power 43 MXMA	
Wheel travel front/rear	275 mm / 300 mm	
Rear suspension	WP PDS 4618 (Progressive Damping System) shock absorber	
Front brake	Disc brake Ø 220 mm, 4 piston	
Rear brake	Disc brake Ø 200 mm, 4 piston	
Tires front	70/100-17“ Pirelli MT 32A	70/100-19“ Pirelli MT 32A
Tires rear	90/100-14“ Pirelli MT 320	90/100-16“ Pirelli MT 320
Air pressure	1.0 bar	
Fuel tank capacity	5.1 liter	
Final drive ratio	14 : 46 t	14 : 49 t
Chain	1/2 x 5/16" 122 rolls	
Steering angle	66 °	
Wheel base	1278 mm	
Seat height, unloaded	865 mm	900 mm
Ground clearance	385 mm	415 mm
Dead weight without fuel	66 kg	68 kg
Rider’s body weight	max. 70 kg	
Recommended age of rider	10 to 15 years	
Engine	CR-85	

STANDARD ADJUSTMENT – FORK	
	WP 4357 MXMA 0518Y740
Compression adjuster	34
Rebound adjuster	30
Spring	3 N/mm
Spring preload	6 mm
Air chamber length	100 mm
Fork oil	SAE 5

STANDARD ADJUSTMENT – SHOCK ABSORBER	
	WP 4618 PDS-DCC WP 1518Y706
Compression adjuster	28 LS (low speed)
	2 HS (high speed)
Rebound adjuster	30
Spring	40-215
Spring preload	4 mm

TECHNICAL SPECIFICATIONS - ENGINE 105 SX 2004

Engine	105 SX
Design	Liquid cooled single cylinder two-stroke engine with reed valve intake
Displacement	103.96 ccm
Bore/stroke	52 / 48.95 mm (2.047 / 1.927 in)
Fuel	unleaded fuel with at least RON 95 (USA = Premium RON 91), mixed with high grade two-stroke oil
Oil/gasoline ratio	1 : 40 - 1 : 60 when using high grade two-stroke oil (e.g. Motorex 2T Crosspower), when in doubt, please contact your importer
Lubrication	mixture lubrication
Crankshaft bearing	deep-groove ball bearing, cylinder roller bearing
Connecting rod bearing	needle bearing
Piston pin bearing	needle bearing
Piston rings	1 compression ring
Primary drive	straight cut spur gears, 19 : 66 t
Clutch	multiple disc clutch in oil bath, hydraulic operated (Motorex Kupplungs-Fluid 75)
Transmission	6 speed, claw actuated
Gear ratio	1st gear 11 : 29 2nd gear 14 : 28 3rd gear 16 : 26 4th gear 19 : 26 5th gear 21 : 25 6th gear 20 : 21
Transmission oil	0.50 liter engine oil Motorex Topspeed 4T 15W50
Ignition system	Moric Digital 2M1
Spark plug	NGK BR 10 ECMVX
Electrode gap	0.60 mm (0.0236 in)
Carburetor	flat-slide carburetor, carburetor see table
Coolant	1 liter (0.264 USgal), 40% antifreeze, 60% water, at least -25° C (-13° F)
Air filter	wet foam type air filter insert

BASIC CARBURETOR SETTING	
Carburetor	Keihin PWK 28
Main jet	118
Needle jet	2.6
Idling jet	45
Jet needle	N5HG
Needle position from top	III
Throttle valve	3.5
Starting jet	62
Air adjustment screw open	1.5

TECHNICAL SPECIFICATIONS - CHASSIS 105 SX 2004

Frame	Central chrome-moly-steel frame
Fork	telescopic fork White Power 43 MXMA
Wheel travel front/rear	275 mm (10.83 in)/ 300 mm (11.81 in)
Rear suspension	WP PDS 4618 (Progressive Damping System) shock absorber
Front brake	Disc brake Ø 220 mm (8.66 in), 4 piston
Rear brake	Disc brake Ø 200 mm (7.87 in), 4 piston
Tires front	70/100-19“ Pirelli MT 32A
Tires rear	90/100-16“ Pirelli MT 320
Air pressure	1.0 bar (14.403psi)
Fuel tank capacity	5.1 liter (1.346 USgal)
Final drive ratio	14 : 49 t
Chain	1/2 x 5/16" 122 rolls
Steering angle	66°
Wheel base	1278 mm (50.3 in)
Seat height, unloaded	900 mm (35.43 in)
Ground clearance	415 mm (16.34 in)
Dead weight without fuel	68 kg (150.1 lbs)
Rider’s body weight	max. 70 kg (154.5 lbs)
Recommended age of rider	10 to 15 years
Engine	105 SX

STANDARD ADJUSTMENT - SHOCK ABSORBER	
	WP 4618 PDS-DCC **WP 1518Y706**
Compression adjuster	17 LS (low speed) 2 HS (high speed)
Rebound adjuster	24
Spring	40-215
Spring preload	4 mm (0.158 in)

STANDARD ADJUSTMENT – FORK	
	WP 4357 MXMA **0518Y740**
Compression adjuster	20
Rebound adjuster	20
Spring	3 N/mm
Spring preload	6 mm (0.236 in)
Air chamber length	100 mm (3.937 in)
Fork oil	SAE 5

TECHNICAL SPECIFICATIONS – ENGINE 85 SX 2005 / 2006 + 105 SX 2006

Engine	85 SX 2005 / 2006	105 SX 2006
Design	Liquid cooled single cylinder two-stroke engine with reed valve intake	
Displacement	84.93 ccm	103.96 ccm
Bore/stroke	47 / 48.95 mm	52 / 48.95 mm
Fuel	unleaded fuel with at least RON 95 (USA = Premium PON 91), mixed with high grade two-stroke oil	
Oil/gasoline ratio	1 : 40 - 1 : 60 when using high grade two-stroke oil (e.g. Motorex 2T Crosspower), when in doubt, please contact your importer	
Lubrication	mixture lubrication	
Crankshaft bearing	deep-groove ball bearing, cylinder roller bearing	
Connecting rod bearing	needle bearing	
Piston pin bearing	needle bearing	
Piston rings	1 compression ring	
Primary drive	straight cut spur gears, 19 : 66 t	
Clutch	multiple disc clutch in oil bath, hydraulic operated (Motorex Kupplungs-Fluid 75)	
Transmission	6 speed, claw actuated	
Gear ratio	1st gear 11 : 29 2nd gear 14 : 28 3rd gear 16 : 26 4th gear 19 : 26 5th gear 21 : 25 6th gear 20 : 21	
Transmission oil	0.5 liter engine oil Motorex Topspeed 4T 15W50	
Ignition system	Moric Digital 2M1	
Spark plug	NGK BR 10 ECMVX	
Electrode gap	0.60 mm	
Carburetor	flat-slide carburetor, carburetor see table	
Coolant	1 liter, mixture 50% antifreeze, 50% pure water, at least –25° C (-13° F)	
Air filter	wet foam type air filter insert	

BASIC CARBURETOR SETTING	
Carburetor	Keihin PWK 28
Main jet	118
Needle jet	2.6
Idling jet	45
Jet needle	N5HG
Needle position from top	III
Throttle valve	3.5
Starting jet	62
Air adjustment screw open	1,5

TECHNICAL SPECIFICATIONS - CHASSIS 85 SX 2005

Frame	Central chrome-moly-steel frame	
Fork	telescopic fork White Power 43 MXMA	
Wheel travel front/rear	275 mm / 300 mm	
Rear suspension	WP PDS 4618 (Progressive Damping System) shock absorber	
Front brake	Disc brake Ø 220 mm, 4 piston	
Rear brake	Disc brake Ø 200 mm, 4 piston	
Tires front	70/100-17“ Pirelli MT 32A	70/100-19“ Pirelli MT 32A
Tires rear	90/100-14“ Pirelli MT 320	90/100-16“ Pirelli MT 320
Air pressure	1.0 bar	
Fuel tank capacity	5.1 liter	
Final drive ratio	14 : 46 t	14 : 49 t
Chain	1/2 x 5/16" 122 rolls	
Steering angle	66 °	
Wheel base	1278 mm	
Seat height, unloaded	865 mm	900 mm
Ground clearance	385 mm	415 mm
Dead weight without fuel	66 kg	68 kg
Rider’s body weight	max. 70 kg	
Recommended age of rider	10 to 15 years	
Engine	CR-85	

STANDARD ADJUSTMENT – FORK	
	WP 4357 MXMA **05187A05**
Compression adjuster	20
Rebound adjuster	20
Spring	3 N/mm
Spring preload	6 mm
Air chamber length	100 mm
Fork oil	SAE 5

STANDARD ADJUSTMENT - SHOCK ABSORBER	
	WP 4618 PDS-DCC **WP 15187A02**
Compression adjuster	17 LS (LOW SPEED) 2 HS (HIGH SPEED)
Rebound adjuster	24
Spring	40-215
Spring preload	4 MM

TECHNICAL SPECIFICATIONS - CHASSIS 85 / 105 SX 2006

	85 SX (17"/14")	85 / 105 SX (19"/16")
Frame	Central chrome-moly-steel frame	
Fork	telescopic fork WP Suspension 43 MXMA	
Wheel travel front/rear	275 mm / 300 mm	
Rear suspension	WP PDS 4618 (Progressive Damping System) shock absorber	
Front brake	Disc brake Ø 220 mm, 4 piston	
Rear brake	Disc brake Ø 200 mm, 4 piston	
Tires front	70/100-17" Pirelli MT 32A	70/100-19" Pirelli MT 32A
Tires rear	90/100-14" Pirelli MT 320	90/100-16" Pirelli MT 320
Air pressure	1.0 bar	
Fuel tank capacity	5.1 liter	
Final drive ratio	14 : 46 t	14 : 49 t
Chain	1/2 x 5/16" 122 rolls	
Steering angle	66 °	
Wheel base	1290 mm	
Seat height, unloaded	865 mm	900 mm
Ground clearance	385 mm	415 mm
Dead weight without fuel	66 kg	68 kg
Rider's body weight	max. 75 kg	
Recommended age of rider	10 to 15 years	

STANDARD ADJUSTMENT – FORK	
	WP 4357 MXMA **05.18.7B.05**
Compression adjuster	20
Rebound adjuster	20
Spring	3 N/mm
Spring preload	3 mm
Air chamber length	110 mm
Fork oil	SAE 5

STANDARD ADJUSTMENT - SHOCK ABSORBER	
	WP 4618 PDS-DCC **WP 15.18.7B.02**
Compression adjuster	15 LS (LOW SPEED) 2 HS (HIGH SPEED)
Rebound adjuster	22
Spring	35-215
Spring preload	4 mm

TECHNICAL SPECIFICATIONS – ENGINE 85 / 105 SX 2007

Engine	85 SX	105 SX
Design	Liquid cooled single cylinder two-stroke engine with reed valve intake	
Displacement	84.93 ccm	103.96 ccm
Bore/stroke	47 / 48.95 mm	52 / 48.95 mm
Fuel	unleaded fuel with at least RON 95 (USA = Premium PON 91), mixed with high grade two-stroke oil	
Oil/gasoline ratio	1 : 40 - 1 : 60 when using high grade two-stroke oil (e.g. Motorex 2T Crosspower), when in doubt, please contact your importer	
Lubrication	mixture lubrication	
Crankshaft bearing	deep-groove ball bearing, cylinder roller bearing	
Connecting rod bearing	needle bearing	
Piston pin bearing	needle bearing	
Piston rings	1 compression ring	
Primary drive	straight cut spur gears, 19 : 66 t	
Clutch	multiple disc clutch in oil bath, hydraulic operated (Motorex Kupplungs-Fluid 75)	
Transmission	6 speed, claw actuated	
Gear ratio	1st gear 11 : 29 2nd gear 14 : 28 3rd gear 16 : 26 4th gear 19 : 26 5th gear 21 : 25 6th gear 20 : 21	
Transmission oil	0.5 liter engine oil Motorex Topspeed 4T 15W50	
Ignition system	Moric Digital 2M1	
Spark plug	NGK BR 9 EVX	
Electrode gap	0.60 mm	
Carburetor	flat-slide carburetor, carburetor see table	
Coolant	1 liter, mixture 50% antifreeze, 50% pure water, at least –25° C (-13° F)	
Air filter	wet foam type air filter insert	

BASIC CARBURETOR SETTING	
Carburetor	Keihin PWK 28
Main jet	118
Needle jet	2.6
Idling jet	45
Jet needle	N5HG
Needle position from top	III
Throttle valve	3.5
Starting jet	62
Air adjustment screw open	1,5

TECHNICAL SPECIFICATIONS - CHASSIS 85 / 105 SX 2007

	85 SX (17"/14")	85 / 105 SX (19"/16")
Frame	Central chrome-moly-steel frame	
Fork	telescopic fork WP Suspension 4357 MXMA	
Wheel travel front/rear	275 mm / 300 mm	
Rear suspension	WP PDS 4618 (Progressive Damping System) shock absorber	
Front brake	Disc brake Ø 220 mm, 4 piston	
Rear brake	Disc brake Ø 200 mm, 4 piston	
Tires front	70/100-17" Pirelli NHS 40M	70/100-19" Pirelli NHS 42M
Tires rear	90/100-14" Pirelli NHS 49	90/100-16" Pirelli NHS 51
Air pressure	1.0 bar	
Fuel tank capacity	5.1 liter	
Final drive ratio	14 : 46 t	14 : 49 t
Chain	1/2 x 5/16"	
Steering angle	66 °	
Wheel base	1290 mm	
Seat height, unloaded	865 mm	900 mm
Ground clearance	385 mm	415 mm
Dead weight without fuel	66 kg	68 kg
Rider's body weight	max. 75 kg	
Recommended age of rider	10 to 15 years	

STANDARD ADJUSTMENT – FORK	
	WP 4357 MXMA **05.18.7C.05**
Compression adjuster	20
Rebound adjuster	20
Spring	3 N/mm
Spring preload	3 mm
Air chamber length	110 mm
Fork oil	SAE 5

STANDARD ADJUSTMENT - SHOCK ABSORBER	
	WP 4618 PDS-DCC **WP 15.18.7C.02**
Compression adjuster	15 LS (LOW SPEED) 2 HS (HIGH SPEED)
Rebound adjuster	22
Spring	35-215
Spring preload	7 mm

TECHNICAL SPECIFICATIONS – ENGINE 85/105 SX/XC 2008

ENGINE	85 SX/XC	105 SX/XC
Design	Liquid cooled single cylinder two-stroke engine with reed valve intake	
Displacement	84.93 ccm	103.96 ccm
Bore/stroke	47 / 48.95 mm	52 / 48.95 mm
Fuel	unleaded fuel with at least RON 95 (USA = Premium RON 91), mixed with high grade two-stroke oil	
Oil/gasoline ratio	1 : 40 - 1 : 60 when using high grade two-stroke oil (e.g. Motorex 2T Crosspower), when in doubt, please contact your importer	
Lubrication	mixture lubrication	
Crankshaft bearing	deep-groove ball bearing, cylinder roller bearing	
Connecting rod bearing	needle bearing	
Piston pin bearing	needle bearing	
Piston rings	1 compression ring	
Primary drive	straight cut spur gears, 19 : 66 t	
Clutch	multiple disc clutch in oil bath, hydraulic operated (Motorex Kupplungs-Fluid 75)	
Transmission	6 speed, claw actuated	
Gear ratio	1st gear 11 : 29 2nd gear 14 : 28 3rd gear 16 : 26 4th gear 19 : 26 5th gear 21 : 25 6th gear 20 : 21	
Transmission oil	0.5 liter engine oil Motorex Topspeed 4T 15W50	
Ignition system	Moric Digital 2M1	
Spark plug	NGK BR 9 ECMVX	
Electrode gap	0.60 mm	
Carburetor	flat-slide carburetor, carburetor see table	
Coolant	1 liter, mixture 50% antifreeze, 50% distilled water, at least –25° C (-13° F)	
Air filter	wet foam type air filter insert	

BASIC CARBURETOR SETTING	
Carburetor	Keihin PWK 28
Main jet	118
Needle jet	2.6
Idling jet	45
Jet needle	N5HG
Needle position from top	III
Throttle valve	3.5
Starting jet	62
Air adjustment screw open	1,5

TECHNICAL SPECIFICATIONS - CHASSIS 85/105 SX/XC 2008

CHASSIS	85 SX/XC (17"/14")	85 SX 105 SX/XC (19"/16")
Frame	Central chrome-moly-steel frame	
Fork	telescopic fork WP Suspension 4357 MXMA	
Wheel travel front/rear	275 mm / 300 mm (10.82/11.81 in)	
Rear suspension	WP PDS 4618 (Progressive Damping System) shock absorber	
Front brake	Disc brake Ø 220 mm (8.66 in), 4 piston	
Rear brake	Disc brake Ø 200 mm (7.87 in), 4 piston	
Tires front	70/100-17" Pirelli NHS 40 M	70/100-19" Pirelli NHS 42M
Tires rear	90/100-14" Pirelli NHS 49	90/100-16" Pirelli NHS 51
Air pressure	1.0 bar	
Fuel tank capacity	5.1 liter	
Final drive ratio	14 : 46 t	14 : 49 t
Chain	1/2 x 5/16" 122 rolls (SX)	1/2 x 5/16" O-Ring 122 rolls (XC)
Steering angle	66 °	
Wheel base	1290 mm	
Seat height, unloaded	865 mm	900 mm
Ground clearance	385 mm	415 mm
Dead weight without fuel	66 kg	68 kg
Rider's body weight	max. 75 kg	
Recommended age of rider	10 to 15 years	
Engine	CR-85/CR-105	

STANDARD ADJUSTMENT – FORK (SX)	
	WP 4357 MXMA 05187D05
Compression adjuster	15
Rebound adjuster	20
Spring	3,4 N/mm
Air chamber length	110 mm
Fork oil	SAE 5

STANDARD ADJUSTMENT – FORK (XC)	
	WP 4357 MXMA 05187D06
Compression adjuster	20
Rebound adjuster	20
Spring	3,4 N/mm
Air chamber length	110 mm
Fork oil	SAE 5

STANDARD ADJUSTMENT – SHOCK ABSORBER (SX)	
	WP 4618 PDS-DCC WP 15187D02
Compression adjuster	15 LS (LOW SPEED) 2 HS (HIGH SPEED)
Rebound adjuster	22
Spring	35-215
Spring preload	7 MM

STANDARD ADJUSTMENT – SHOCK ABSORBER (XC)	
	WP 4618 PDS-DCC WP 15187D04
Compression adjuster	15 LS (LOW SPEED) 2 HS (HIGH SPEED)
Rebound adjuster	22
Spring	35-215
Spring preload	7 MM

TECHNICAL SPECIFICATIONS – ENGINE 85/105 SX/XC 2009

ENGINE	85 SX/XC	105 SX/XC
Design	Liquid cooled single cylinder two-stroke engine with reed valve intake	
Displacement	84.93 ccm	103.96 ccm
Bore/stroke	47 / 48.95 mm	52 / 48.95 mm
Fuel	unleaded fuel with at least RON 95 (USA = Premium RON 91), mixed with high grade two-stroke oil	
Oil/gasoline ratio	1 : 40 - 1 : 60 when using high grade two-stroke oil (e.g. Motorex 2T Crosspower), when in doubt, please contact your importer	
Lubrication	mixture lubrication	
Crankshaft bearing	deep-groove ball bearing, cylinder roller bearing	
Connecting rod bearing	needle bearing	
Piston pin bearing	needle bearing	
Piston rings	1 compression ring	
Primary drive	straight cut spur gears, 19 : 66 t	
Clutch	multiple disc clutch in oil bath, hydraulic operated (Motorex Kupplungs-Fluid 75)	
Transmission	6 speed, claw actuated	
Gear ratio	1st gear 11 : 29 2nd gear 14 : 28 3rd gear 16 : 26 4th gear 19 : 26 5th gear 21 : 25 6th gear 20 : 21	
Transmission oil	0.5 liter engine oil Motorex Topspeed 4T 15W50	
Ignition system	Moric Digital 2M1	
Spark plug	NGK BR 9 ECMVX	
Electrode gap	0.60 mm	
Carburetor	flat-slide carburetor, carburetor see table	
Coolant	1 liter, mixture 50% antifreeze, 50% distilled water, at least –25° C (-13° F)	
Air filter	wet foam type air filter insert	

BASIC CARBURETOR SETTING	
Carburetor	Keihin PWK 28
Main jet	118
Needle jet	2.6
Idling jet	45
Jet needle	N5HG
Needle position from top	III
Throttle valve	3.5
Starting jet	62
Air adjustment screw open	1,5

TECHNICAL SPECIFICATIONS - CHASSIS 85/105 SX/XC 2009

CHASSIS	85 SX/XC (17"/14")	85 SX 105 SX/XC (19"/16")
Frame	Central chrome-moly-steel frame	
Fork	telescopic fork WP Suspension 4357 MXMA	
Wheel travel front/rear	275 mm / 300 mm (10.82/11.81 in)	
Rear suspension	WP PDS 4618 (Progressive Damping System) shock absorber	
Front brake	Disc brake Ø 220 mm (8.66 in), 4 piston	
Rear brake	Disc brake Ø 200 mm (7.87 in), 4 piston	
Tires front	70/100-17" Pirelli NHS 40 M	70/100-19" Pirelli NHS 42M
Tires rear	90/100-14" Pirelli NHS 49	90/100-16" Pirelli NHS 51
Air pressure	1.0 bar	
Fuel tank capacity	5.1 liter	
Final drive ratio	14 : 46 t	14 : 49 t
Chain	1/2 x 5/16" 122 rolls (SX)	1/2 x 5/16" O-Ring 122 rolls (XC)
Steering angle	66 °	
Wheel base	1290 mm	
Seat height, unloaded	865 mm	900 mm
Ground clearance	385 mm	415 mm
Dead weight without fuel	66 kg	68 kg
Rider's body weight	max. 75 kg	
Recommended age of rider	10 to 15 years	
Engine	CR-85/CR-105	

STANDARD ADJUSTMENT – FORK (SX)	
	WP 4357 MXMA 05187E05
Compression adjuster	15
Rebound adjuster	20
Spring	3,4 N/mm
Air chamber length	110 mm
Fork oil	SAE 5

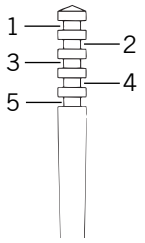
STANDARD ADJUSTMENT – FORK (XC)	
	WP 4357 MXMA 05187E06
Compression adjuster	20
Rebound adjuster	20
Spring	3,4 N/mm
Air chamber length	110 mm
Fork oil	SAE 5

STANDARD ADJUSTMENT – SHOCK ABSORBER (SX)	
	WP 4618 PDS-DCC WP 15187E02
Compression adjuster	15 LS (LOW SPEED) 2 HS (HIGH SPEED)
Rebound adjuster	22
Spring	35-215
Spring preload	7 MM

STANDARD ADJUSTMENT – SHOCK ABSORBER (XC)	
	WP 4618 PDS-DCC WP 15187E04
Compression adjuster	15 LS (LOW SPEED) 2 HS (HIGH SPEED)
Rebound adjuster	22
Spring	35-215
Spring preload	7 MM

VERGASERREGULIERUNG *CARBURETOR SETTING* KEIHIN PWK 28	85 SX 2005 - 2007 105 SX 2006 / 2007					
MEERESHÖHE ***ALTITUDE*** ↓	**TEMPERATUR** ***TEMPERATURE*** →	- 20°C bis -7°C *-2°F to 20°F*	- 6°C bis 5°C *19°F to 41°F*	6°C bis 15°C *42°F to 60°F*	16°C bis 24°C 61*°F to 78°F*	25°C bis 38°C *79°F to 98°F*
3000 m *10000 ft* ↑ 2301 m *7501 ft*	LSO *ASO*	1,5	1,75	2	2,25	2,5
	LD *IJ*	45	42	40	38	38
	NADEL *NEEDLE*	N5HG	N5HH	N5HH	N5HH	N5HH
	POS *POS*	2	3	2	1	1
	HD *MJ*	118	115	115	115	115
2300 m *7500 ft* ↑ 1501 m *5001 ft*	LSO *ASO*	1,25	1,5	1,75	2	2,25
	LD *IJ*	48	45	42	40	38
	NADEL *NEEDLE*	N5HG	N5HG	N5HH	N5HH	N5HH
	POS *POS*	3	2	3	2	1
	HD *MJ*	120	118	115	115	115
1500 m *5000 ft* ↑ 751 m *2501 ft*	LSO *ASO*	1	1,25	1,5	1,75	2
	LD *IJ*	50	48	45	42	40
	NADEL *NEEDLE*	N5HF	N5HG	N5HG	N5HH	N5HH
	POS *POS*	3	3	2	2	2
	HD *MJ*	122	120	118	115	115
750 m *2500 ft* ↑ 301 m *1001 ft*	LSO *ASO*	0,75	1	1,25	**1,5**	1,75
	LD *IJ*	50	50	48	**45**	42
	NADEL *NEEDLE*	N5HF	N5HF	N5HG	**N5HG**	N5HH
	POS *POS*	4	3	3	**3**	2
	HD *MJ*	125	122	120	**118**	115
300 m *1000 ft* ↑ Meeresniveau *Sea level*	LSO *ASO*	0,5	0,75	1	1,25	1,5
	LD *IJ*	50	50	50	48	45
	NADEL *NEEDLE*	N5HF	N5HF	N5HG	N5HG	N5HG
	POS *POS*	5	4	3	3	2
	HD *MJ*	125	125	122	120	118

LSO = Luftregulierschraube offen
LD = Leerlaufdüse
POS = Nadel Clip Position von oben
HD = Hauptdüse



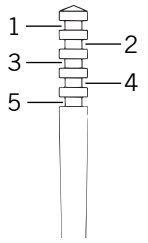
ASO = Air screw open from fully-seated
IJ = Idling jet
POS = Needle clip position from top
MJ = Main jet

NICHT FÜR STRASSENBETRIEB
Kraftstoff: Super Bleifrei ROZ 95

NOT FOR HIGHWAY USE
Fuel: unleaded fuel with at least RON 95
USA = Premium PON 91

VERGASERREGULIERUNG *CARBURETOR SETTING* KEIHIN PWK 28		85/105 SX/XC 2008				
MEERESHÖHE ***ALTITUDE*** ↓	**TEMPERATUR** ***TEMPERATURE*** →	- 20°C bis -7°C *-2°F to 20°F*	- 6°C bis 5°C *19°F to 41°F*	6°C bis 15°C *42°F to 60°F*	16°C bis 24°C *61°F to 78°F*	25°C bis 38°C *79°F to 98°F*
3000 m *10000 ft* ↑ 2301 m *7501 ft*	LSO *ASO*	1,5	1,75	2	2,25	2,5
	LD *IJ*	45	42	40	38	38
	NADEL *NEEDLE*	N5HG	N5HH	N5HH	N5HH	N5HH
	POS *POS*	2	3	2	1	1
	HD *MJ*	118	115	115	115	115
2300 m *7500 ft* ↑ 1501 m *5001 ft*	LSO *ASO*	1,25	1,5	1,75	2	2,25
	LD *IJ*	48	45	42	40	38
	NADEL *NEEDLE*	N5HG	N5HG	N5HH	N5HH	N5HH
	POS *POS*	3	2	3	2	1
	HD *MJ*	120	118	115	115	115
1500 m *5000 ft* ↑ 751 m *2501 ft*	LSO *ASO*	1	1,25	1,5	1,75	2
	LD *IJ*	50	48	45	42	40
	NADEL *NEEDLE*	N5HF	N5HG	N5HG	N5HH	N5HH
	POS *POS*	3	3	2	2	2
	HD *MJ*	122	120	118	115	115
750 m *2500 ft* ↑ 301 m *1001 ft*	LSO *ASO*	0,75	1	1,25	**1,5**	1,75
	LD *IJ*	50	50	48	**45**	42
	NADEL *NEEDLE*	N5HF	N5HF	N5HG	**N5HG**	N5HH
	POS *POS*	4	3	3	**3**	2
	HD *MJ*	125	122	120	**118**	115
300 m *1000 ft* ↑ Meeresniveau *Sea level*	LSO *ASO*	0,5	0,75	1	1,25	1,5
	LD *IJ*	50	50	50	48	45
	NADEL *NEEDLE*	N5HF	N5HF	N5HG	N5HG	N5HG
	POS *POS*	5	4	3	3	2
	HD *MJ*	125	125	122	120	118

LSO = Luftregulierschraube offen
LD = Leerlaufdüse
POS = Nadel Clip Position von oben
HD = Hauptdüse



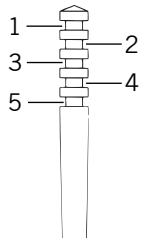
ASO = Air screw open from fully-seated
IJ = Idling jet
POS = Needle clip position from top
MJ = Main jet

NICHT FÜR STRASSENBETRIEB
Kraftstoff: Super Bleifrei ROZ 95

NOT FOR HIGHWAY USE
Fuel: unleaded fuel with at least RON 95
USA = Premium PON 91

VERGASERREGULIERUNG *CARBURETOR SETTING* KEIHIN PWK 28		85/105 SX/XC 2009				
MEERESHÖHE ***ALTITUDE*** ↓	**TEMPERATUR** ***TEMPERATURE*** →	- 20°C bis -7°C *-2°F to 20°F*	- 6°C bis 5°C *19°F to 41°F*	6°C bis 15°C *42°F to 60°F*	16°C bis 24°C *61°F to 78°F*	25°C bis 38°C *79°F to 98°F*
3000 m *10000 ft* ↑ 2301 m *7501 ft*	LSO *ASO* LD *IJ* NADEL *NEEDLE* POS *POS* HD *MJ*	1,5 45 N5HG 2 118	1,75 42 N5HH 3 115	2 40 N5HH 2 115	2,25 38 N5HH 1 115	2,5 38 N5HH 1 115
2300 m *7500 ft* ↑ 1501 m *5001 ft*	LSO *ASO* LD *IJ* NADEL *NEEDLE* POS *POS* HD *MJ*	1,25 48 N5HG 3 120	1,5 45 N5HG 2 118	1,75 42 N5HH 3 115	2 40 N5HH 2 115	2,25 38 N5HH 1 115
1500 m *5000 ft* ↑ 751 m *2501 ft*	LSO *ASO* LD *IJ* NADEL *NEEDLE* POS *POS* HD *MJ*	1 50 N5HF 3 122	1,25 48 N5HG 3 120	1,5 45 N5HG 2 118	1,75 42 N5HH 2 115	2 40 N5HH 2 115
750 m *2500 ft* ↑ 301 m *1001 ft*	LSO *ASO* LD *IJ* NADEL *NEEDLE* POS *POS* HD *MJ*	0,75 50 N5HF 4 125	1 50 N5HF 3 122	1,25 48 N5HG 3 120	**1,5** **45** **N5HG** **3** **118**	1,75 42 N5HH 2 115
300 m *1000 ft* ↑ Meeresniveau *Sea level*	LSO *ASO* LD *IJ* NADEL *NEEDLE* POS *POS* HD *MJ*	0,5 50 N5HF 5 125	0,75 50 N5HF 4 125	1 50 N5HG 3 122	1,25 48 N5HG 3 120	1,5 45 N5HG 2 118

LSO = Luftregulierschraube offen
LD = Leerlaufdüse
POS = Nadel Clip Position von oben
HD = Hauptdüse



ASO = Air screw open from fully-seated
IJ = Idling jet
POS = Needle clip position from top
MJ = Main jet

NICHT FÜR STRASSENBETRIEB UND SANDSTRECKEN

NOT FOR HIGHWAY USE AND SAND TRACKS

Kraftstoff: Super Bleifrei ROZ 95

Fuel: unleaded fuel with at least RON 95
USA = Premium PON 91

TOLERANCES AND FITTING CLEARANCES	
Piston fitting clearance	0.045 – 0.07 mm
Piston fitting clearance - wear limit	0.10 mm
Piston ring end gap	max. 0.4 mm
Connecting rod bearing - radial clearance	max 0.035 mm
Clutch springs - length	new = 34 mm, minimum length = 33 mm
Crankshaft web	47 mm ± 0,05 mm between bearing thrust faces

GASKET THICKNESSES	
Crankcase	0.5 mm
Clutch cover	0.5 mm
Cylinder bottom gasket	as required
Available cylinder bottom gaskets	0.2/0.3/0.5 mm
Cylinder-head gasket	O-rings (for 105: form rings)
Outer clutch cover	O-ring
Water pump cover	O-ring

TIGHTENING TORQUES - ENGINE		
Flange bolts - cylinder-head	M6	10 Nm
Nuts-cylinder base	M8	30 Nm
Flywheel collar nut	M12x1	60 Nm
Primary pinion bolt	M10x1.5	Loctite 243 + 80 Nm
Nut for inner clutch hub	M14x1.5	Loctite 243 + 60 Nm
Crankcase and cover bolts	M6	8 Nm
Spark plug	M14x1.25	20 Nm
Reed valve housing	M6	6 Nm
Kickstarter	M6	Loctite 243 + 12 Nm
Shift lever	M6	Loctite 243 + 12 Nm
Swingarm pivot	M14x1.5	75 Nm
Other bolts	M5	6 Nm
	M6	10 Nm

TIGHTENING TORQUES - CHASSIS		
Hexagon bolt - brake caliper	M8	Loctite 243 + 25 Nm
AH bolt rear brake pads	M6	5 Nm
Bolt - brake discs up to the 2006 model	M6	Loctite 243 + 10 Nm
Bolt - brake discs from the 2007 model	M6	Loctite 243 + 14 Nm
Hexagon nut - front wheel spindle	M10x1,5	40 Nm
Hexagon nut - rear wheel spindle	M20x1.5	80 Nm
Hexagon nut - swingarm bolt	M14/M16x1.5	75 Nm
Clamping bolts - top triple clamp	M8	20 Nm
Clamping bolts - bottom triple clamp	M8	15 Nm
Bolt - handlebar clamp	M8	20 Nm
AH screw - handlebar mount	M10	Loctite 243 + 40 Nm
Screws for axle clamp	M6	10 Nm
Steering head nut	M20	10 Nm
HH screw - upper/lower shock absorber	M12	60 Nm
Rear sprocket screws	M8	Loctite 243 + 35 Nm
Ball joint for push rod up to the 2006 model	M6	Loctite 243 + 10 Nm
Ball joint for push rod from the 2007 model	M6	10 Nm
Engine carrier screw	M10	45 Nm
rim lock	M8	10 Nm
Spoke nipple up to the 2006 model	M4,5/M5	4,5 - 5,5 Nm
Spoke nipple from the 2007 model	M4,5	5 Nm
Outrigger screw connection	M8	Loctite 243 + 35 Nm
Collar nut for seat attachment	M12x1	20 Nm
Clamp screws for throttle grip	M6	4,5 Nm
Other chassis bolts/nuts	M6	10/15 Nm
	M8	25/30 Nm
	M10	45/50 Nm

PERIODIC MAINTENANCE SCHEDULE 10

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PERIODIC MAINTENANCE SCHEDULE 2004

85 SX / 105 SX

	A clean motorcycle can be checked more quickly which saves money!	1st service after 10 hours or 1000 kilometers	after 20 hours or 2000 kilometers	after 4000 kilometer or once a year
ENGINE	Check gear box oil level		●	
	Change gear box oil	●		●
	Check spark plugs, adjust distance between electrodes	●	●	
	Renew spark plugs			●
CARBURETOR	Check the carburetor connection boot for cracks and leaks			●
	Check idle speed setting	●		●
	Check that vent hoses are not damaged or bent	●		●
ADD-ON-PARTS	Check cooling system for leaks, check quantity of antifreeze	●		●
	Check exhaust system for leaks and fitment			●
	Check cables for damage, smooth operation, bends; adjust and lubricate	●		●
	Check oil level of the clutch master cylinder	●	●	●
	Clean air filter and filter box			●
	Check electric wires for damage and bends			●
	Check function of electric systems (emergency OFF switch or button)	●		●
BRAKES	Check brake fluid level, lining thickness, brake lining	●		●
	Check brake lines for damage and leaks	●		●
	Check/adjust smooth operation and free travel of handbrake/foot brake lever	●		●
	Check tightness of brake system bolts	●		●
CHASSIS	Check shock absorber and fork for leaks and function	●		●
	Clean dust bellows			●
	Bleed fork legs			●
	Check swing arm bearings			●
	Check/adjust steering head bearings	●		●
	Check tightness of all chassis bolts (triple clamps, fork leg axle passage axle nuts and bolts, swing arm bearings, shock absorber)	●		●
WHEELS	Check spoke tension and rim joint	●		●
	Check tires and air pressure	●		●
	Check chain, rear sprockets and chain guides for wear, fitment and tension	●		●
	Lubricate chain	●		●
	Check clearance of wheel bearings	●		●

IMPORTANT RECOMMENDED MAINTENANCE WORK THAT CAN BE CARRIED OUT BY EXTRA ORDER

	at least once a year	every 2 years or 20000 km
Check function of exhaust control	●	
Complete maintenance of shock absorber	●	
Complete maintenance of fork		●
Clean and grease steering head bearings and gasket elements	●	
Clean and adjust carburetor	●	
Replace glass fibre-yarn filling of the exhaust main silencer	●	
Treat electric contacts and switches with contact grease	●	
Change hydraulic clutch fluid	●	
Change brake fluid	●	

IF MOTORCYCLE IS USED FOR COMPETITION 4000 KM SERVICE SHOULD BE CARRIED OUT AFTER EVERY RACE!
SERVICE INTERVALS SHOULD NEVER BE EXCEEDED BY MORE THAN 5 HOURS OR 500 KM!
MAINTENANCE WORK DONE BY KTM AUTHORISED WORKSHOPS IS NOT A SUBSTITUTE FOR CARE AND CHECKS DONE BY THE RIDER!

Important Checks and Maintenance to be Carried out by the Rider

	Before each start	After every cleaning	For cross-country use	Once a year
Check gear box oil level	●			
Check brake fluid level	●			
Check brake pads for wear	●			
Lubricate and adjust cables and nipples		●		
Bleed fork legs regulary			●	
Remove and clean 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 liquid level	●			
Check fuel lines for leaks	●			
Empty 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 systems) with wax-based anti corrosion agent		●		
Check tightness of bolts, nuts and hose clamps regularly				●

Recommended inspection of the 85 SX / 105 SX engine used for enduro competitions by your KTM workshop (additional order for the KTM workshop)

	30 hours	45 hours	60 hours	90 hours	120 hours	135 hours
Check the reed-type intake valve for wear	●	●	●	●	●	●
Check the clutch shoes for wear	●	●	●	●	●	●
Check the length of the clutch springs	●	●	●	●	●	●
Check the cylinder and piston for wear	●	●	●	●	●	●
Check the exhaust control for proper functioning and smooth running	●	●	●	●	●	●
Check the eccentricity of the crankshaft journal	●	●	●	●	●	●
Check the radial clearance of the conrod bearings	●		●		●	
Check the radial clearance of the piston pin main bearing	●		●		●	
Check the crankshaft main bearing for wear	●		●		●	
Replace the crankshaft bearings and conrod bearings		●		●		●
Check the entire transmission including roller and bearings for wear		●		●		●

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PERIODIC MAINTENANCE SCHEDULE 2005

	A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY WHICH SAVES MONEY!	1st service after 10 hours or 1000 kilometers	after 20 hours or 2000 kilometers	after 4000 kilometer or once a year
ENGINE	Check gear box oil level		●	
	Change gear box oil	●		●
	Check spark plugs, adjust distance between electrodes	●	●	
	Renew spark plugs			●
CARBURETOR	Check the carburetor connection boot for cracks and leaks			●
	Check idle speed setting	●		●
	Check that vent hoses are not damaged or bent	●		●
ADD-ON-PARTS	Check cooling system for leaks, check quantity of antifreeze	●		●
	Check exhaust system for leaks and fitment			●
	Check cables for damage, smooth operation, bends; adjust and lubricate	●		●
	Check oil level of the clutch master cylinder	●	●	●
	Clean air filter and filter box			●
	Check electric wires for damage and bends			●
	Check function of electric systems (emergency OFF switch or button)	●		●
BRAKES	Check brake fluid level, lining thickness, brake lining	●		●
	Check brake lines for damage and leaks	●		●
	Check/adjust smooth operation and free travel of handbrake/foot brake lever	●		●
	Check tightness of brake system screws	●		●
CHASSIS	Check shock absorber and fork for leaks and function	●		●
	Clean dust bellows			●
	Bleed fork legs			●
	Check swing arm bearings			●
	Check/adjust steering head bearings	●		●
	Check tightness of all chassis screws (triple clamps, fork leg axle passageaxle nuts and screws, swing arm bearings, shock absorber)	●		●
WHEELS	Check spoke tension and rim joint	●		●
	Check tires and air pressure	●		●
	Check chain, rear sprockets and chain guides for wear, fitment and tension	●		●
	Lubricate chain	●		●
	Check clearance of wheel bearings	●		●

IMPORTANT RECOMMENDED MAINTENANCE WORK THAT CAN BE CARRIED OUT BY EXTRA ORDER	at least once a year	every 2 years or 20000 km
Check function of exhaust control	●	
Complete maintenance of shock absorber	●	
Complete maintenance of fork		●
Clean and grease steering head bearings and gasket elements	●	
Clean and adjust carburetor	●	
Replace glass fibre- yarn filling of the exhaust main silencer	●	
Treat electric contacts and switches with contact grease	●	
Change hydraulic clutch fluid	●	
Change break fluid	●	

IF MOTORCYCLE IS USED FOR COMPETITION 4000KM SERVICE SHOULD BE CARRIED OUT AFTER EVERY RACE!
Service Intervals should never be exceeded by more than 5 hours or 500 km!
Maintenance work done by KTM authorised workshops is not a substitute for care and checks done by the rider!

IMPORTANT CHECKS AND MAINTENANCE TO BE CARRIED OUT BY THE RIDER				
	Before each start	**After every cleaning**	**For cross-country use**	**Once a year**
Check gear box oil level	●			
Check brake fluid level	●			
Check brake pads for wear	●			
Lubricate and adjust cables and nipples		●		
Bleed fork legs regulary			●	
Remove and clean 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 liquid level	●			
Check fuel lines for leaks	●			
Empty 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 systems) with wax-based anti corrosion agent		●		
Check tightness of screws, nuts and hose clamps regularly				●

RECOMMENDED INSPECTION OF THE 85 SX ENGINE USED FOR ENDURO COMPETITIONS BY YOUR KTM WORKSHOP (ADDITIONAL ORDER FOR THE KTM WORKSHOP)						
	30 hours	**45 hours**	**60 hours**	**90 hours**	**120 hours**	**135 hours**
Check the reed-type intake valve for wear	●	●	●			
Check the clutch shoes for wear	●	●	●	●	●	●
Check the length of the clutch springs	●	●	●	●	●	●
Check the cylinder and piston for wear	●	●	●	●	●	●
Check the exhaust control for proper functioning and smooth running	●	●	●	●	●	●
Check the eccentricity of the crankshaft journal	●	●	●	●	●	●
Check the radial clearance of the conrod bearings	●		●		●	
Check the radial clearance of the piston pin main bearing	●		●		●	
Check the crankshaft main bearing for wear	●		●		●	
Replace the crankshaft bearings and conrod bearings		●		●		●
Check the entire transmission including roller and bearings for wear		●		●		●

PERIODIC MAINTENANCE SCHEDULE 2006

	A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY WHICH SAVES MONEY	after every race	1st service after 10 hours	every 20 hours	every 40 hours	at least once a year
ENGINE	Check gear box oil level			●		
	Change gear box oil	●	●		●	●
	Check spark plugs, adjust distance between electrodes		●	●		
	Renew spark plugs	●			●	
	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	●		●	●	
CARBURETOR	Check the carburetor connection boot and intake flange for cracks or leaks	●			●	●
	Check idle speed setting	●	●		●	●
	Check that vent hoses are not damaged or bent	●	●		●	●
ADD-ON-PARTS	Check cooling system for leaks, check quantity of antifreeze	●	●		●	●
	Check exhaust system for leaks and fitment	●		●	●	
	Check cables for damage, smooth operation, bends; adjust and lubricate	●	●		●	
	Check the fluid level in the master cylinder of the hydraulic clutch	●	●	●	●	
	Clean air filter and filter box	●	●	●	●	●
	Check electric wires for damage and bends	●			●	
	Check function of electric systems (emergency OFF switch)	●	●		●	
BRAKES	Check brake fluid level, lining thickness, brake lining	●	●		●	
	Check brake lines for damage and leaks	●	●		●	
	Check/adjust smooth operation and free travel of handbrake/foot brake lever	●	●		●	
	Check the screws and guide bolts on the brake system for a tight fit	●	●		●	
CHASSIS	Check shock absorber and fork for leaks and function	●	●	●	●	
	Clean dust bellows	●		●	●	
	Bleed fork legs	●		●	●	
	Check swing arm bearings	●			●	
	Check/adjust steering head bearings	●	●		●	
	Check tightness of all chassis screws (triple clamps, fork leg axle passage axle nuts and screws, swing arm bearings, shock absorber)	●	●		●	
WHEELS	Check spoke tension and rim joint	●	●	●	●	
	Check tires and air pressure	●	●	●	●	
	Check chain, rear sprockets and chain guides for wear, fitment and tension	●	●	●	●	
	Lubricate chain, Clean and grease the adjusting screws on the chain tensioner	●	●	●	●	
	Check clearance of wheel bearings	●	●		●	

THE KILOMETER READING FOR INSPECTION INTERVALS SHOULD NOT EXCEED 3 HOURS. MAINTENANCE WORK PERFORMED BY YOUR AUTHORIZED KTM WORKSHOP IS NOT A SUBSTITUTE FOR CARE AND MAINTENANCE BY THE DRIVER!

IMPORTANT CHECKS AND MAINTENANCE TO BE CARRIED OUT BY THE RIDER	before each start	after every cleaning	for cross country use	once a year
Check gear box oil level	●			
Check brake fluid level	●			
Check brake pads for wear	●			
Lubricate and adjust cables and nipples		●		
Bleed fork legs regulary			●	
Remove and clean 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 liquid level	●			
Check fuel lines for leaks	●			
Empty and clean float chamber		●		●
Remove, clean and oil the throttle slide		●		
Check all control elements for smooth operation	●			
Check brake performance	●	●		
Treat blank metal parts (with the exception of brake and exhaust systems) with wax-based anti corrosion agent		●		
Check tightness of screws, nuts and hose clamps regularly				●

IMPORTANT RECOMMENDED MAINTENANCE WORK THAT CAN BE CARRIED OUT BY EXTRA ORDER	Every 20 hours	Every 40 hours	At least once a year	Every 2 years
Clean and adjust carburetor			●	
Check the reed-type intake valve for wear	●	●		
Check the wear on the clutch disks and length of the clutch springs	●	●		
Check the cylinder and piston for wear	●	●		
Check function of exhaust control	●	●		
Check piston pin bearing	●			
Replace the crankshaft main bearings	●			
Replace the conrod bearings		●		
Check the entire transmission, the shift mechanism and bearings		●		
Complete maintenance of fork	●		●	
Complete maintenance of shock absorber				●
Clean and grease steering head bearings and gasket elements			●	
Replace the sealing cup for the foot brake cylinder	●	●		
Replace the glass-fiber yarn filling in the silencer	●	●		
Treat electric contacts and switches with contact grease			●	
Change break fluid	●	●	●	
Change hydraulic clutch fluid			●	

NOTE: IF THE INSPECTION ESTABLISHES THAT PERMISSIBLE TOLERANCES ARE EXCEEDED, THE RESPECTIVE COMPONENTS MUST BE REPLACED.

PERIODIC MAINTENANCE SCHEDULE 2007

	A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY WHICH SAVES MONEY	before each race	1st service after 10 hours	every 20 hours	every 40 hours	at least once a year
ENGINE	Check gear box oil level			●		
	Change gear box oil	●	●		●	●
	Check spark plugs, adjust distance between electrodes		●	●		
	Renew spark plugs	●			●	
	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	●		●	●	
CARBURETOR	Check the carburetor connection boot and intake flange for cracks or leaks	●			●	●
	Check idle speed setting	●	●		●	●
	Check that vent hoses are not damaged or bent	●	●		●	●
ADD-ON-PARTS	Check cooling system for leaks, check quantity of antifreeze	●	●		●	●
	Check exhaust system for leaks and fitment	●		●	●	
	Check cables for damage, smooth operation, bends; adjust and lubricate	●	●		●	
	Check the fluid level in the master cylinder of the hydraulic clutch	●	●	●	●	
	Clean air filter and filter box	●	●	●	●	●
	Check electric wires for damage and bends	●			●	
	Check function of electric systems (emergency OFF switch)	●	●		●	
BRAKES	Check brake fluid level, lining thickness, brake lining	●	●		●	
	Check brake lines for damage and leaks	●	●		●	
	Check/adjust smooth operation and free travel of handbrake/foot brake lever	●	●		●	
	Check the screws and guide bolts on the brake system for a tight fit	●	●		●	
CHASSIS	Check shock absorber and fork for leaks and function	●	●	●	●	
	Clean dust bellows	●		●	●	
	Bleed fork legs	●		●	●	
	Check swing arm bearings	●			●	
	Check/adjust steering head bearings	●	●		●	
	Check tightness of all chassis screws (triple clamps, fork leg axle passage axle nuts and screws, swing arm bearings, shock absorber)	●	●		●	
WHEELS	Check spoke tension and rim joint	●	●	●	●	
	Check tires and air pressure	●	●	●	●	
	Check chain, rear sprockets and chain guides for wear, fitment and tension	●	●	●	●	
	Lubricate chain, Clean and grease the adjusting screws on the chain tensioner	●	●	●	●	
	Check clearance of wheel bearings	●	●		●	

THE KILOMETER READING FOR INSPECTION INTERVALS SHOULD NOT EXCEED 3 HOURS. MAINTENANCE WORK PERFORMED BY YOUR AUTHORIZED KTM WORKSHOP IS NOT A SUBSTITUTE FOR CARE AND MAINTENANCE BY THE DRIVER!

IMPORTANT SERVICE WORK THAT MUST BE PERFORMED BY AN AUTHORIZED KTM WORKSHOP UNDER A SEPARATE ORDER	Every 20 hours	Every 40 hours	At least once a year	Every 2 years
Clean and adjust carburetor			●	
Check the reed-type intake valve for wear	●	●		
Check the wear on the clutch disks and length of the clutch springs	●	●		
Check the cylinder and piston for wear	●	●		
Check function of exhaust control	●	●		
Check piston pin bearing	●			
Replace the crankshaft main bearings	●			
Replace the conrod bearings		●		
Check the entire transmission, the shift mechanism and bearings		●		
Complete maintenance of fork	●		●	
Complete maintenance of shock absorber				●
Clean and grease steering head bearings and gasket elements			●	
Replace the sealing cup for the foot brake cylinder	●	●		
Replace the glass-fiber yarn filling in the silencer	●	●		
Treat electric contacts and switches with contact grease			●	
Change break fluid	●	●	●	
Change the hydraulic clutch oil			●	

NOTE: IF THE INSPECTION ESTABLISHES THAT PERMISSIBLE TOLERANCES ARE EXCEEDED, THE RESPECTIVE COMPONENTS MUST BE REPLACED.

IMPORTANT CHECKS AND MAINTENANCE TO BE CARRIED OUT BY THE RIDER OR THE MECHANIC	before each start	after every cleaning	for cross country use	once a year
Check gear box oil level	●			
Check brake fluid level	●			
Check brake pads for wear	●			
Lubricate and adjust cables and nipples		●		
Bleed fork legs regulary			●	
Remove and clean 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 liquid level	●			
Check fuel lines for leaks	●			
Empty and clean float chamber		●		●
Remove, clean and oil the throttle slide		●		
Check all control elements for smooth operation	●			
Check brake performance	●	●		
Treat blank metal parts (with the exception of brake and exhaust systems) with wax-based anti corrosion agent		●		
Check tightness of screws, nuts and hose clamps regularly				●

PERIODIC MAINTENANCE SCHEDULE 2008

A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY WHICH SAVES MONEY		before each race	1st service after 10 hours	every 20 hours	every 40 hours	at least once a year
ENGINE	Check gear box oil level			●		
	Change gear box oil	●	●		●	●
	Check spark plugs, adjust distance between electrodes		●	●		
	Renew spark plugs	●			●	
	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	●		●	●	
CARBURETOR	Check the carburetor connection boot and intake flange for cracks or leaks	●			●	●
	Check idle speed setting	●	●		●	●
	Check that vent hoses are not damaged or bent	●	●		●	●
ADD-ON-PARTS	Check cooling system for leaks, check quantity of antifreeze	●	●		●	●
	Check exhaust system for leaks and fitment	●		●	●	
	Check cables for damage, smooth operation, bends; adjust and lubricate	●	●		●	
	Check the fluid level in the master cylinder of the hydraulic clutch	●	●	●	●	
	Clean air filter and filter box	●	●	●	●	●
	Check electric wires for damage and bends	●			●	
	Check function of electric systems (emergency OFF switch)	●	●		●	
BRAKES	Check brake fluid level, lining thickness, brake lining	●	●		●	
	Check brake lines for damage and leaks	●	●		●	
	Check/adjust smooth operation and free travel of handbrake/foot brake lever	●	●		●	
	Check the screws and guide bolts on the brake system for a tight fit	●	●		●	
CHASSIS	Check shock absorber and fork for leaks and function	●	●	●	●	
	Clean dust bellows	●		●	●	
	Bleed fork legs	●		●	●	
	Check swing arm bearings	●			●	
	Check/adjust steering head bearings	●	●		●	
	Check tightness of all chassis screws (triple clamps, fork leg axle passage axle nuts and screws, swing arm bearings, shock absorber)	●	●		●	
WHEELS	Check spoke tension and rim joint	●	●	●	●	
	Check tires and air pressure	●	●	●	●	
	Check chain, rear sprockets and chain guides for wear, fitment and tension	●	●	●	●	
	Lubricate chain, Clean and grease the adjusting screws on the chain tensioner	●	●	●	●	
	Check clearance of wheel bearings	●	●		●	

The kilometer reading for inspection intervals should not exceed 3 hours.
Maintenance work performed by your authorized KTM workshop is not a substitute for care and maintenance by the driver!

IMPORTANT SERVICE WORK THAT MUST BE PERFORMED BY AN AUTHORIZED KTM WORKSHOP UNDER A SEPARATE ORDER	Every 20 hours	Every 40 hours	At least once a year	Every 2 years
Clean and adjust carburetor			●	
Check the reed-type intake valve for wear	●	●		
Check the wear on the clutch disks and length of the clutch springs	●	●		
Check the cylinder and piston for wear	●	●		
Check function of exhaust control	●	●		
Check piston pin bearing	●			
Replace the crankshaft main bearings	●			
Replace the conrod bearings		●		
Check the entire transmission, the shift mechanism and bearings		●		
Complete maintenance of fork	●		●	
Complete maintenance of shock absorber				●
Clean and grease steering head bearings and gasket elements			●	
Replace the sealing cup for the foot brake cylinder	●	●		
Replace the glass-fiber yarn filling in the silencer	●	●		
Treat electric contacts and switches with contact grease			●	
Change break fluid	●	●	●	
Change hydraulic clutch fluid			●	
Change the hydraulic clutch oil				

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

IMPORTANT CHECKS AND MAINTENANCE TO BE CARRIED OUT BY THE RIDER OR THE MECHANIC	before each start	after every cleaning	for cross country use	once a year
Check gear box oil level	●			
Check brake fluid level	●			
Check brake pads for wear	●			
Lubricate and adjust cables and nipples		●		
Bleed fork legs regulary			●	
Remove and clean 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 liquid level	●			
Check fuel lines for leaks	●			
Empty and clean float chamber		●		●
Remove, clean and oil the throttle slide		●		
Check all control elements for smooth operation	●			
Check brake performance	●	●		
Treat blank metal parts (with the exception of brake and exhaust systems) with wax-based anti corrosion agent		●		
Check tightness of screws, nuts and hose clamps regularly				●

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PERIODIC MAINTENANCE SCHEDULE 2009

A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY WHICH SAVES MONEY		before each race	1st service after 10 hours	every 20 hours	every 40 hours	at least once a year
ENGINE	Check gear box oil level			●		
	Change gear box oil	●	●		●	●
	Check spark plugs, adjust distance between electrodes		●	●		
	Renew spark plugs	●			●	
	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	●		●	●	
CARBURETOR	Check the carburetor connection boot and intake flange for cracks or leaks	●			●	●
	Check idle speed setting	●	●		●	●
	Check that vent hoses are not damaged or bent	●	●		●	●
ADD-ON-PARTS	Check cooling system for leaks, check quantity of antifreeze	●	●		●	●
	Check exhaust system for leaks and fitment	●		●	●	
	Check cables for damage, smooth operation, bends; adjust and lubricate	●	●		●	
	Check the fluid level in the master cylinder of the hydraulic clutch	●	●	●	●	
	Clean air filter and filter box	●	●	●	●	●
	Check electric wires for damage and bends	●			●	
	Check function of electric systems (emergency OFF switch)	●	●		●	
BRAKES	Check brake fluid level, lining thickness, brake lining	●	●		●	
	Check brake lines for damage and leaks	●	●		●	
	Check/adjust smooth operation and free travel of handbrake/foot brake lever	●	●		●	
	Check the screws and guide bolts on the brake system for a tight fit	●	●		●	
CHASSIS	Check shock absorber and fork for leaks and function	●	●	●	●	
	Clean dust bellows	●		●	●	
	Bleed fork legs	●		●	●	
	Check swing arm bearings	●			●	
	Check/adjust steering head bearings	●	●		●	
	Check tightness of all chassis screws (triple clamps, fork leg axle passage axle nuts and screws, swing arm bearings, shock absorber)	●	●		●	
WHEELS	Check spoke tension and rim joint	●	●	●	●	
	Check tires and air pressure	●	●	●	●	
	Check chain, rear sprockets and chain guides for wear, fitment and tension	●	●	●	●	
	Lubricate chain, Clean and grease the adjusting screws on the chain tensioner	●	●	●	●	
	Check clearance of wheel bearings	●	●		●	

The kilometer reading for inspection intervals should not exceed 3 hours.
Maintenance work performed by your authorized KTM workshop is not a substitute for care and maintenance by the driver!

IMPORTANT SERVICE WORK THAT MUST BE PERFORMED BY AN AUTHORIZED KTM WORKSHOP UNDER A SEPARATE ORDER	Every 20 hours	Every 40 hours	At least once a year	Every 2 years
Clean and adjust carburetor			●	
Check the reed-type intake valve for wear	●	●		
Check the wear on the clutch disks and length of the clutch springs	●	●		
Check the cylinder and piston for wear	●	●		
Check function of exhaust control	●	●		
Check piston pin bearing	●			
Replace the crankshaft main bearings	●			
Replace the conrod bearings		●		
Check the entire transmission, the shift mechanism and bearings		●		
Complete maintenance of fork	●		●	
Complete maintenance of shock absorber				●
Clean and grease steering head bearings and gasket elements			●	
Replace the sealing cup for the foot brake cylinder	●	●		
Replace the glass-fiber yarn filling in the silencer	●	●		
Treat electric contacts and switches with contact grease			●	
Change break fluid	●	●	●	
Change hydraulic clutch fluid			●	
Change the hydraulic clutch oil				

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

IMPORTANT CHECKS AND MAINTENANCE TO BE CARRIED OUT BY THE RIDER OR THE MECHANIC	before each start	after every cleaning	for cross country use	once a year
Check gear box oil level	●			
Check brake fluid level	●			
Check brake pads for wear	●			
Lubricate and adjust cables and nipples		●		
Bleed fork legs regulary			●	
Remove and clean 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 liquid level	●			
Check fuel lines for leaks	●			
Empty and clean float chamber		●		●
Remove, clean and oil the throttle slide		●		
Check all control elements for smooth operation	●			
Check brake performance	●	●		
Treat blank metal parts (with the exception of brake and exhaust systems) with wax-based anti corrosion agent		●		
Check tightness of screws, nuts and hose clamps regularly				●

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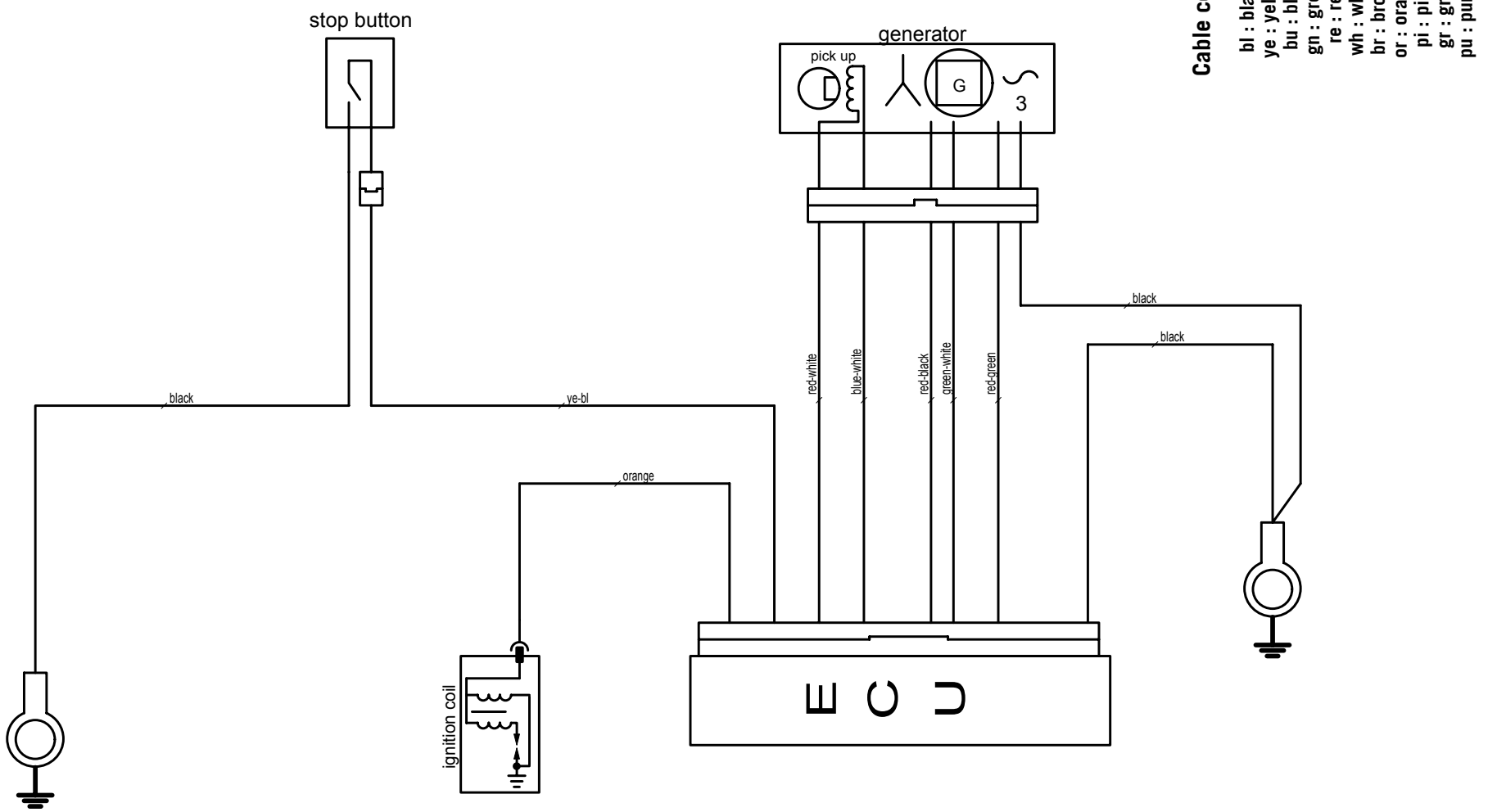
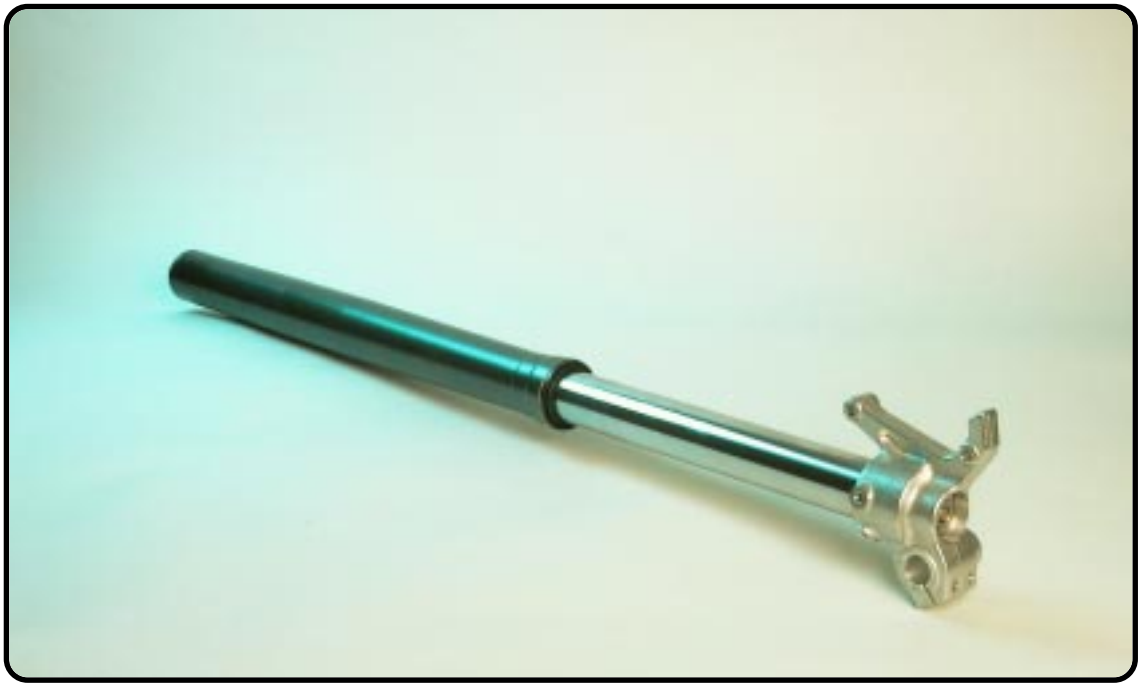


KTM	**85/105 SX/XC**		



Frontfork

4357 / 4860 MX Multi Adjuster

02/2002
Frontfork 4357/4860 MXMA

Introduction

General notice:

Pay attention to the following notes, when you are working with WP Suspension products as described in this workshop manual.

Always use clean and professional tools.
Regular you need next to the general equipment, the special tools of WP Suspension.
These tools with a unique “T” number (available at WP Suspension) protect you from damaging the parts.

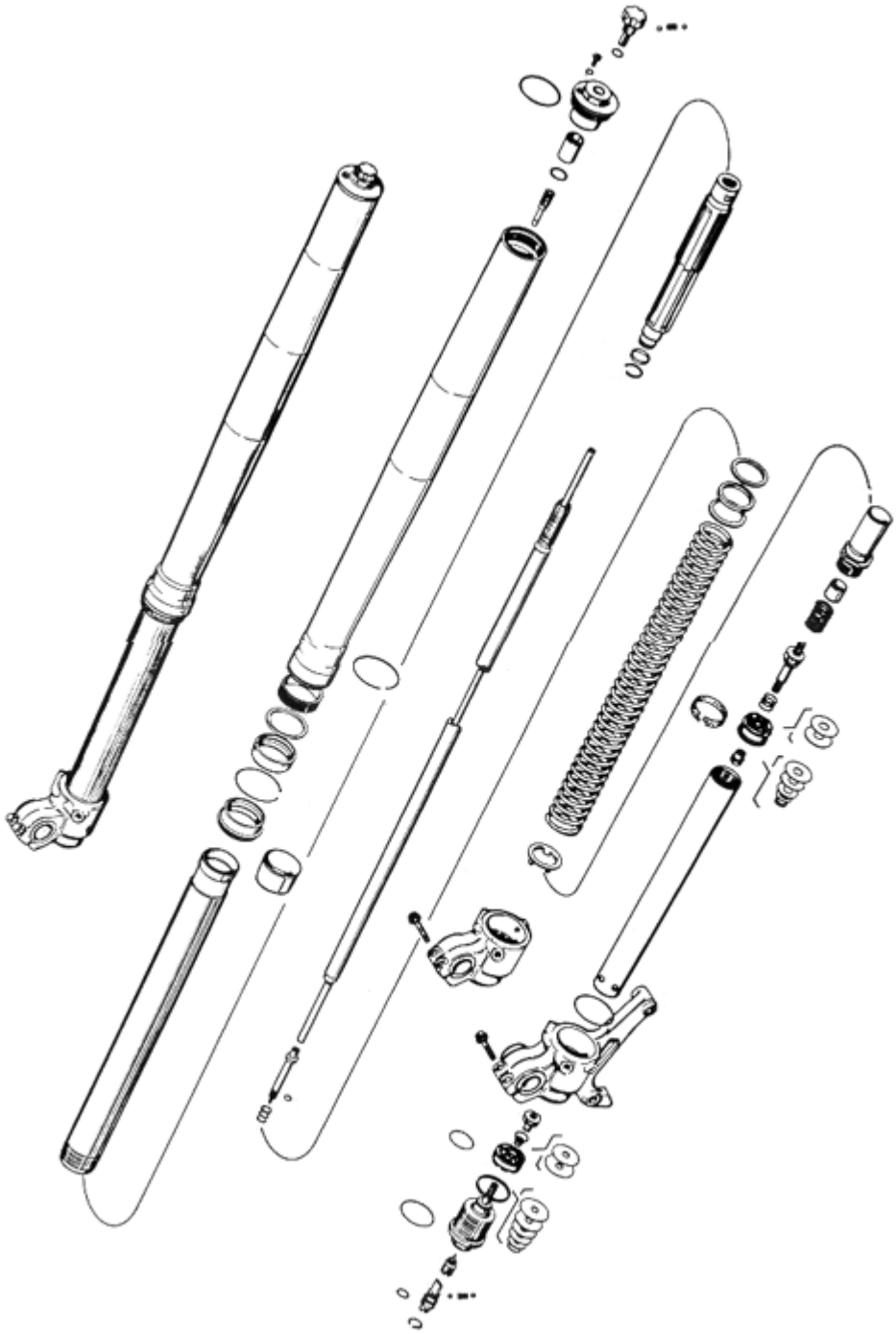
Always use aluminium protector-plates, when clamping our products or parts in the vice.

Always replace damaged or worn parts.

Clean all parts before assembling.

Caution:
Many times it is necesarry to assemble parts with T131, T132 and T163.
These parts must dry for at least four hours!!

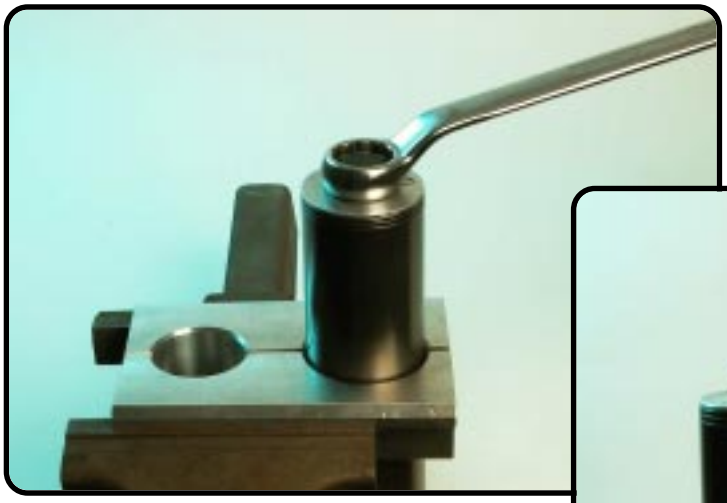
Exploded view



Disassembly forkleg

Note the rebound position by turning the knob to the right.

After removing the rubber cap.
Note the compression position by turning the screw to the right.



Clamp the outer-tube in (4357) T501S / (4860) T1403S and unscrew the screw-cap. (size 24)
Cap PA with T103.

Clamp the forkleg (axle-clamp) in the vice and let the outer-tube down.
Pull the spring downwards...

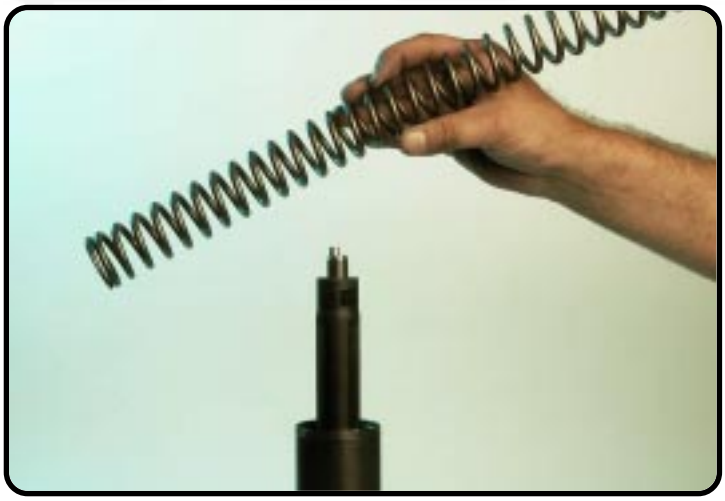
...and place open-end spanner (size 22) on the hydraulic stop.

Unscrew the screw-cap.

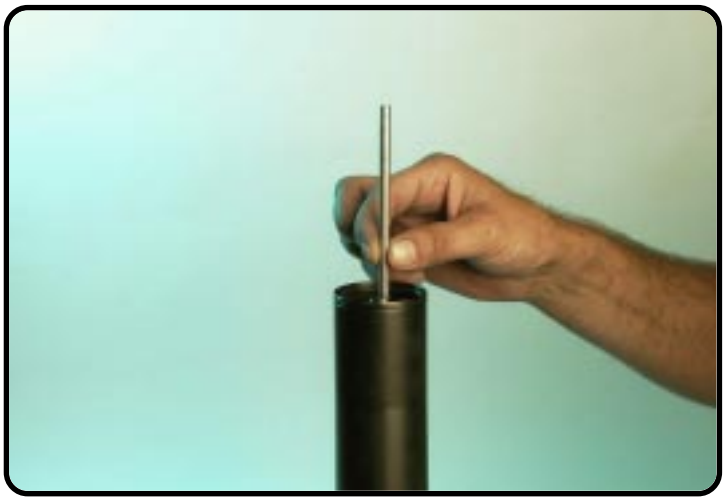
Remove the screw-cap from the piston- rod.

Remove the preload spacers.

Pull the spring downwards and remove the spanner.



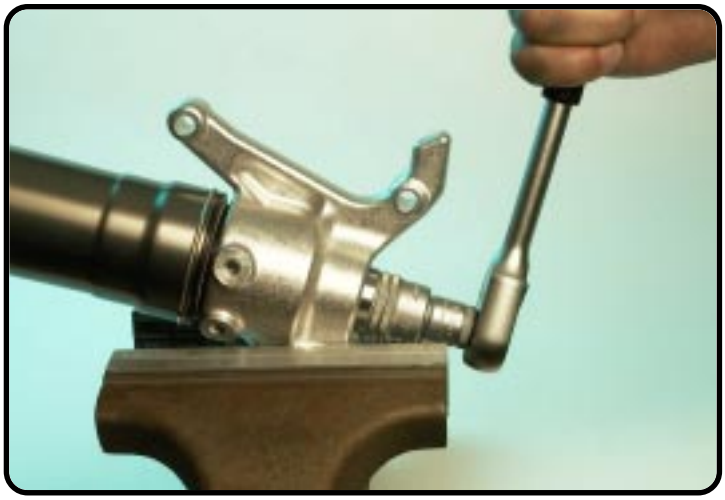
Remove the spring.



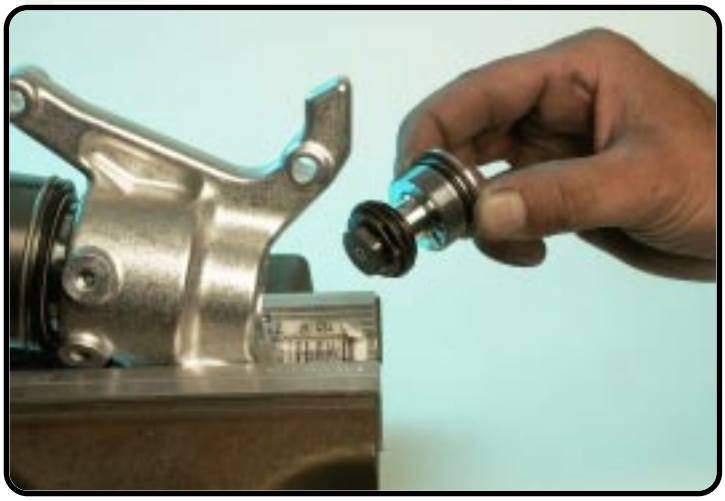
Remove the adjustment tube with the O-ring.

Drain the oil out the forkleg.

Clamp the axle-clamp in the vice so that the forkleg is at an angle of ±45 degrees.

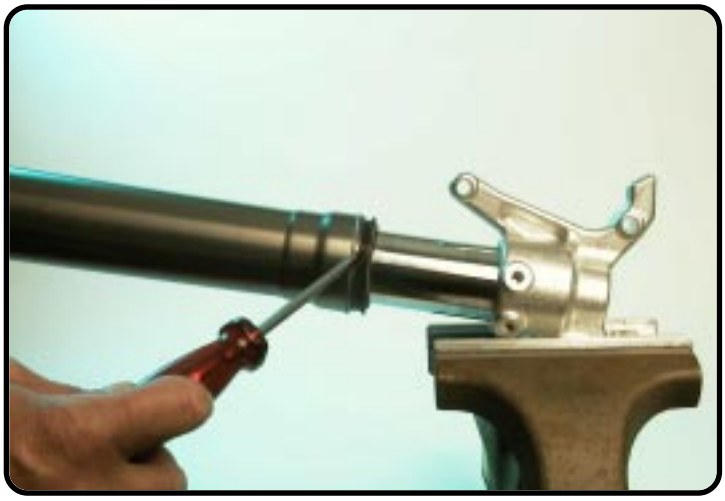


Unscrew the compression holder out of the axle-clamp. (size 19)
(when the cartridge is rotating with the holder, bend the piston- rod a little bit to the side)



Remove holder compression.
Caution: oil iscoming out the cartridge.

Disassemble the cartridge out the forkleg.



Disassemble the dust-wiper.

Disassemble the circlip.

Heat the outer-tube near the oilseal.
(not too hot)

Pull with both hands the outer-tube from the inner-tube.

Remove DU-bush inner-tube.

Remove DU-bush outer-tube.

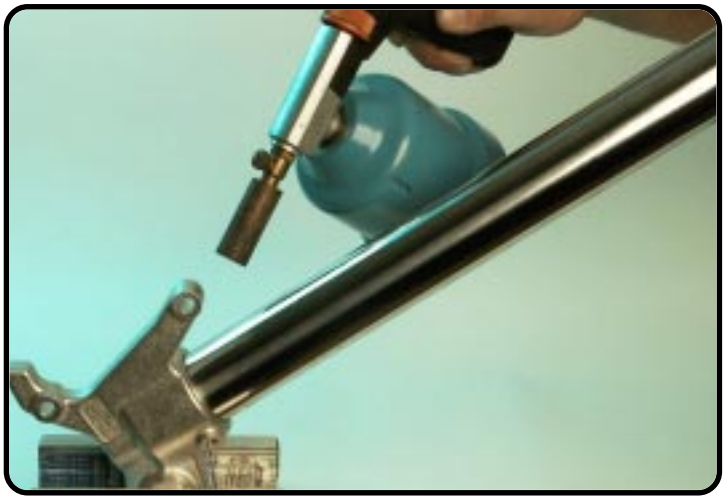
Remove support ring.

Disassemble the oilseal.
Pay attention to the assembling direction!!!

Remove the circlip.

Remove the dust wiper.

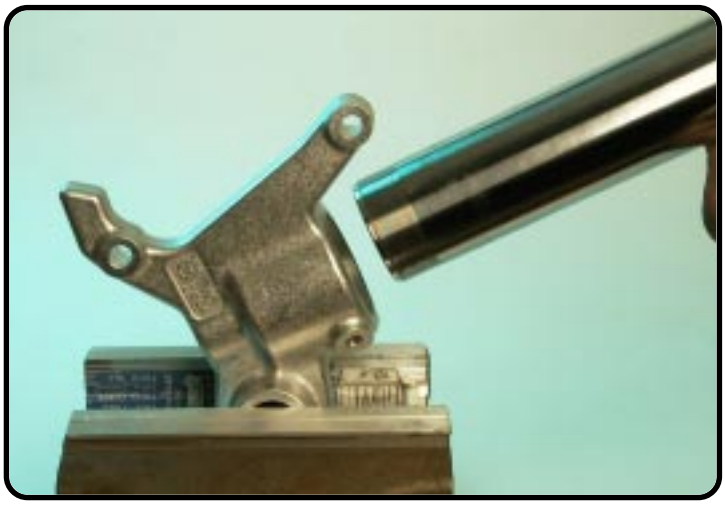
- Dust wiper
- circlip
- oilseal
- support ring
- DU-bush outer-tube
- DU-bush inner-tube



Heat the axle-clamp.

Use (4357) T503S / (4860) T1404S...

...and unscrew the inner-tube from the axle-clamp.



Remove the inner-tube.

Remove the O-ring out the groove of the axle-clamp.

Disassembly screw-cap

Disassemble the adjustment knob. Pay attention to the steel balls and spring!!!

For PA version: Manual PA Front Fork 2000

Unscrew plastic holder adjustment tube out of the screw-cap.

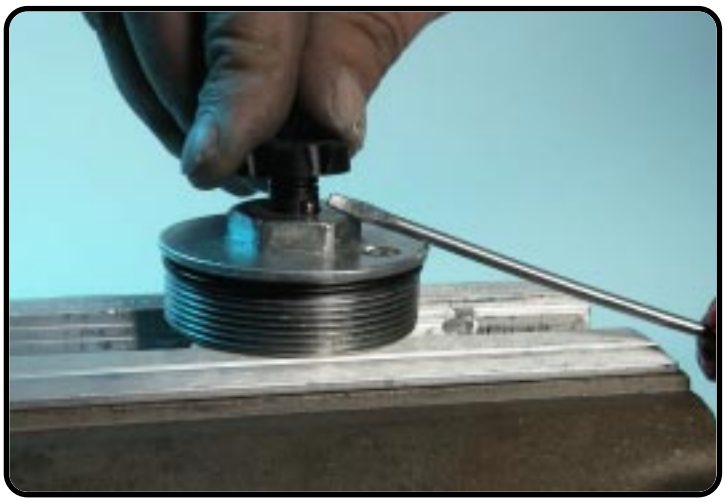
Remove air release screw with O-ring.

- Rebound adjusting knob with steel balls and spring
- holder adjustment tube
- airrelease screw with O-ring
- screw-cap with O-ring

Assembling screw-cap

Assemble the air release screw

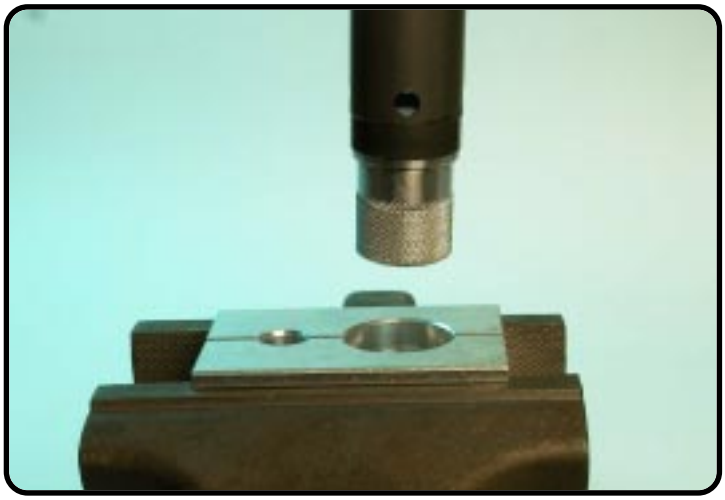
Screw the holder adjustment tube in the screw-cap.



Grease the O-ring, steel balls and spring with T158.
Assemble the knob with steel balls and spring.

Disassembly cartridge

1. Clamp the tube with plug in the clamping-block (Tool T508S + T509).



2.

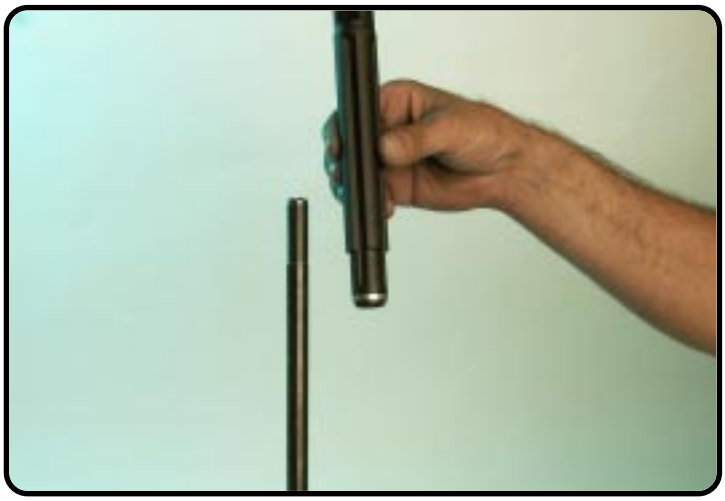
3.

Unscrew the screw sleeve (size 22).

Turn the screw sleeve out of the tube.

Disassemble the piston-rod “complete”.
Pay attention to the piston ring!!!

Clamp the piston rod in T508S **"not too tight"** and unscrew the hydraulic stop from the piston-rod.



Remove the hydraulic stop.

Remove the screw sleeve with spring retainer.

Disassemble the DU-bush with T507 and press it out the screw sleeve with support of the vice.

- Spring retainer
- screw sleeve
- DU-bush

Disassembly holder compression

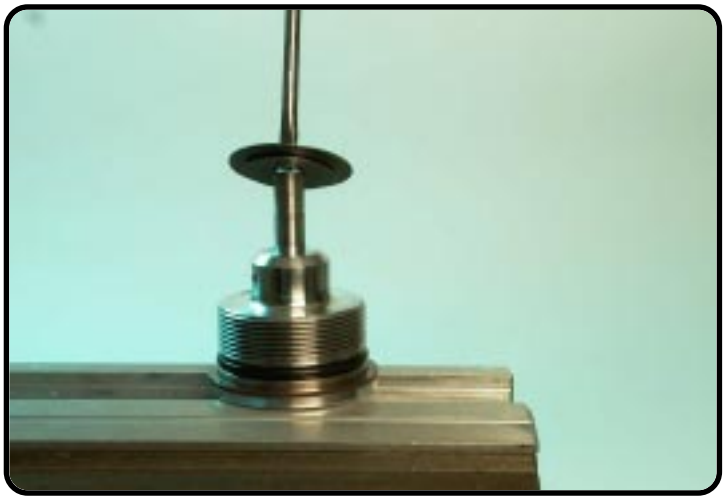
Clamp the compression holder in the vice and unscrew the check-valve nut. (size 17)
Version with a locking: remove the locking with a file.

Remove the check-valve nut.

Remove the check-valve spring.
Pay attention to the assembling direction!!!

Remove the check-valve shim.

Disassemble the compression piston with O-ring.
Pay attention to the assembling direction!!!



Place a screwdriver on top of the holder and remove the entire shim packet.

Disassemble the O-ring.

Remove the copper washer.

- Holder compression
- copper washer
- O-ring
- shims compression
- piston compression with O-ring
- shim check-valve
- spring check-valve
- nut check-valve

Assembling holder compression

Replace copper washer.

Assemble the O-ring.

Replace the entire shim packet.

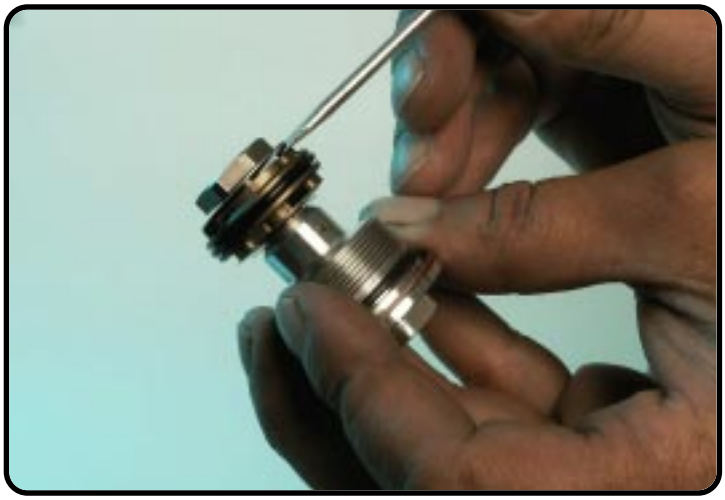
Replace piston.
Pay attention to the assembling direction!!!

Replace shim check-valve.

Replace spring check-valve.
Pay attention to the assembling direction!!!

Wetting the thread of the nut with T132 and tighten it...

...to a torque of 5Nm.



Check if the spring is correctly placed in the chamber of the nut.

Disassembly tap rebound

Clamp the piston-rod (at the level where the hydraulic stop is mounted) in T508S and unscrew the rebound tap.
(Size 17)

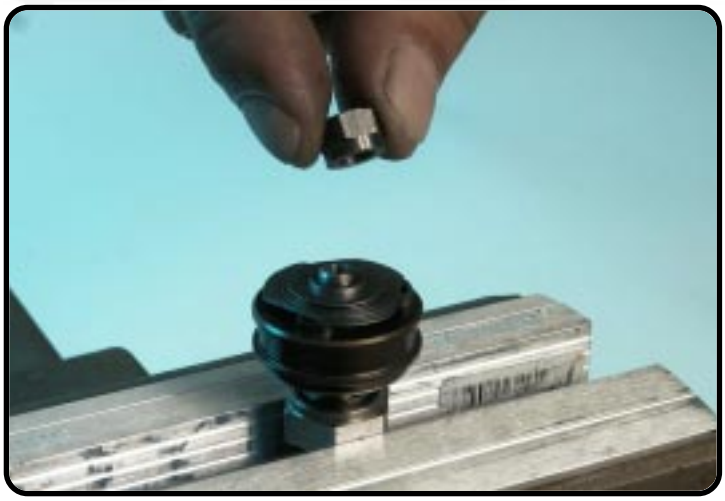
Remove the rebound tap “complete”.

Remove the rebound spring.

Pull the rebound needle with spring out of the tap rebound.

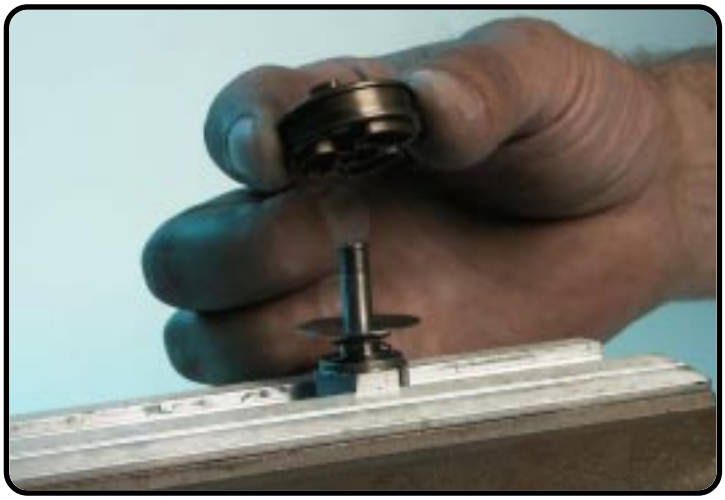
Check the O-ring.

Pay attention to the position of the triangular shims on the piston!!!
Clamp the tap in the vice and unscrew the nut. (Size 10)
Version with locking: Remove the locking with a file.

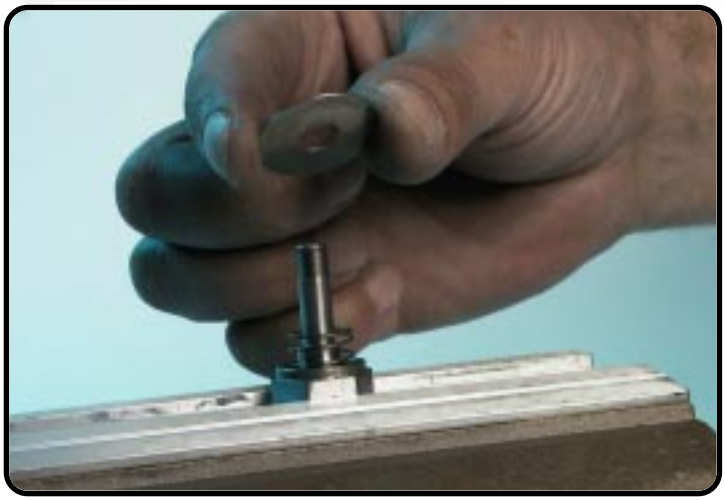


Remove the nut.
Pay attention to the assembling direction!!!

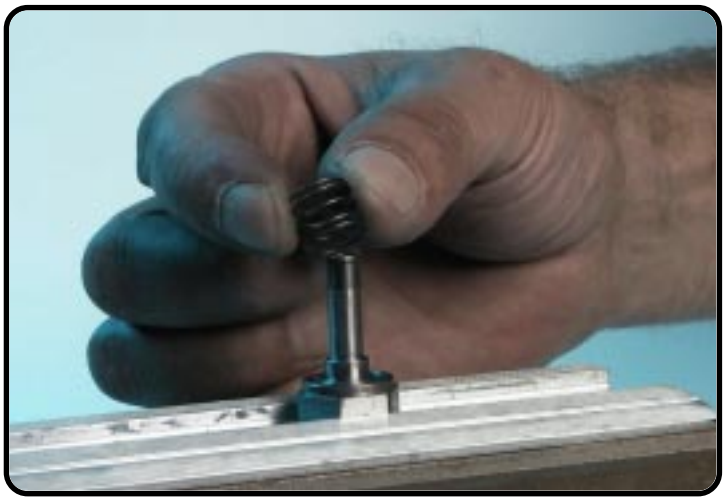
Place a screwdriver on top of the tap and remove the entire shim packet.



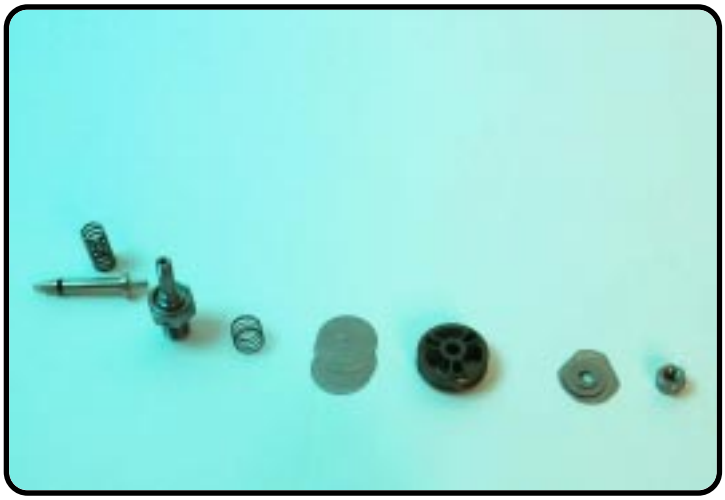
Remove piston rebound.
Pay attention to the assembling direction!!!



Remove check-valve shims.



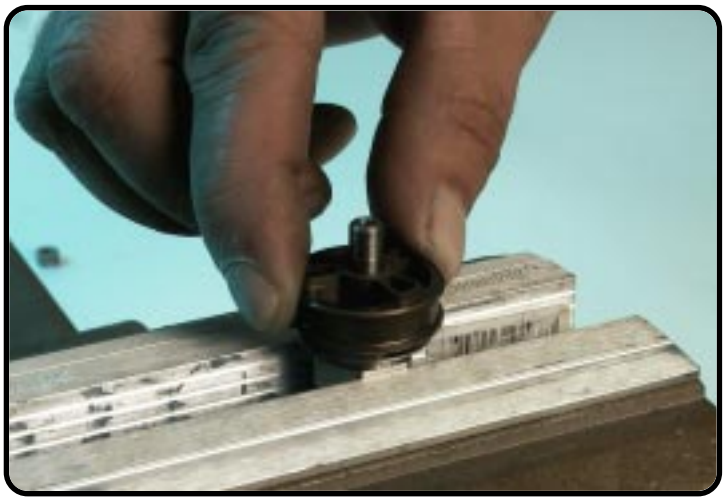
Remove spring check-valve.



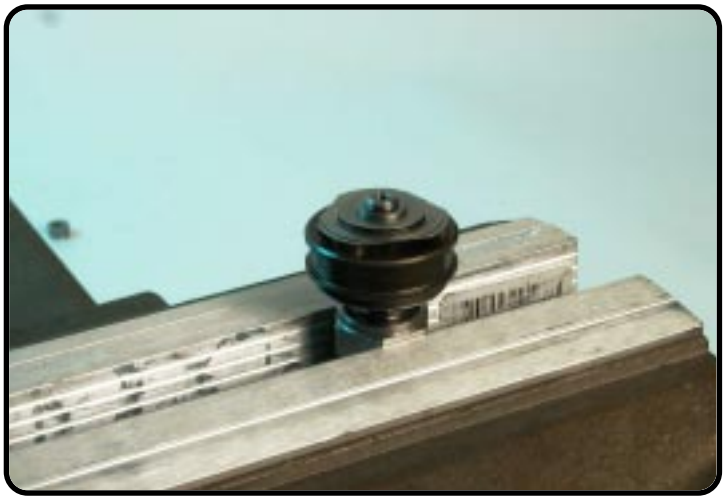
- Rebound adjustment needle with O-ring
- spring
- tap rebound
- spring check-valve
- shims check-valve
- piston rebound
- shims
- nut M6x0.5

Assembling tap rebound

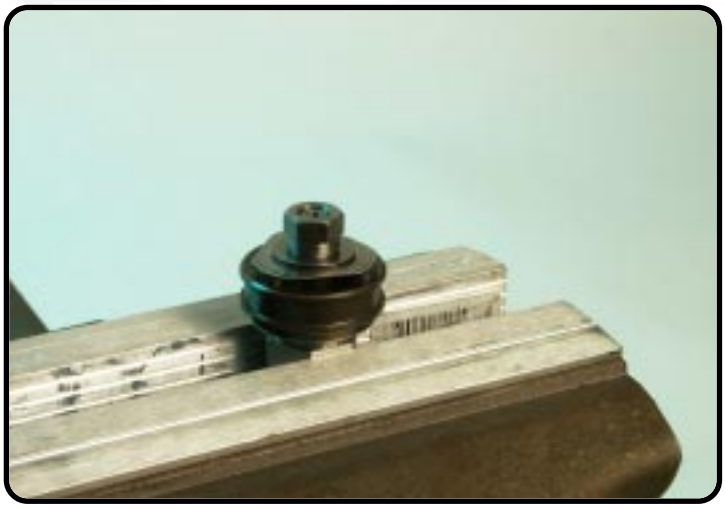
Assemble the spring and shims check-valve.



Assemble the piston rebound.
Pay attention to the assembling direction!!!



Replace the shims.
Pay attention to the position of the triangular shims on the piston!!!



Wetting the thread of the nut with T132.
Screw the nut on the tap...

...tighten the nut to a torque of 5 Nm.

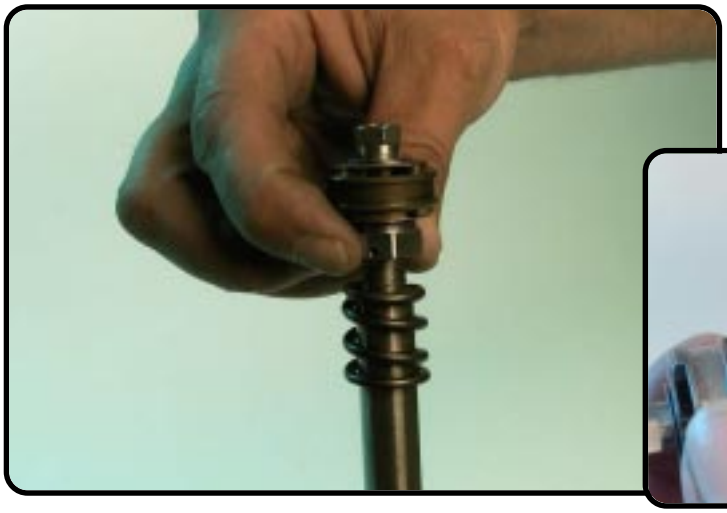
Grease the O-ring of the adjustment needle with T158.

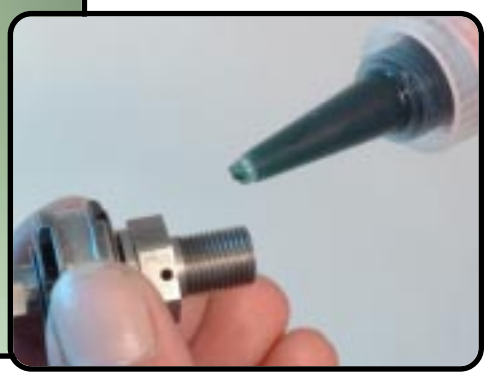
Mount the needle with spring into the tap rebound.

Assembling cartridge

Press with T507 the DU-bush into the screw sleeve.

Clamp the piston-rod in T508S.
At the level where the hydraulic stop is mounted.





Wetting the thread with T131.
And screw the tap in the piston-rod.

Tighten the tap rebound.

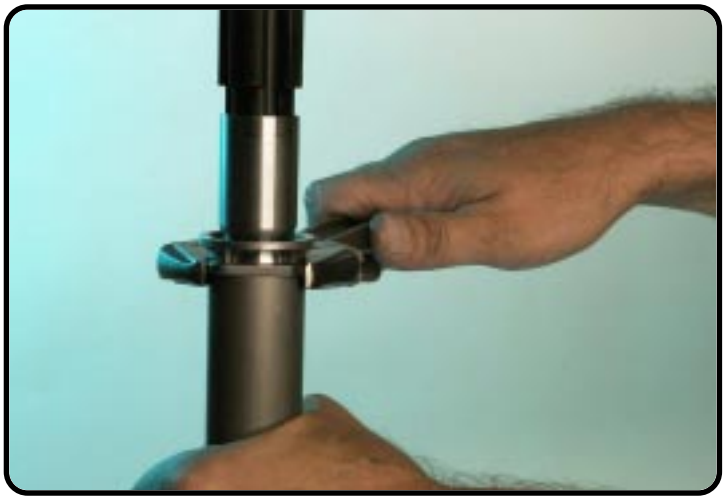
Clamp the piston-rod **“not too tight”** in at the other side and replace the screw sleeve with spring retainer.

Screw the hydraulic stop “hand tight” to the end of the thread of the piston-rod.

Clamp the tube with plug in the clamping block (T508S and T509) and assemble the piston-rod “cpl.” into the tube.
Guide the piston ring!!!

Before assembling wet the thread of the screw sleeve with T131.

Screw the screw sleeve into the tube.



Tighten the screw sleeve.

Assembling forkleg

Replace a new O-ring in the groove of the axle-clamp.

Wetting the thread of the axle-clamp with T132.

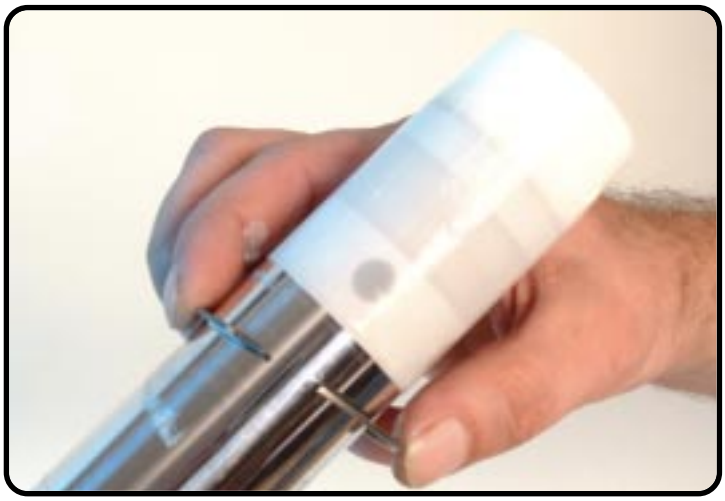
Wetting the thread of the inner-tube with T132.

Assemble the inner-tube in the axle-clamp.

Screw very tight the inner-tube with T503S / T1404S.

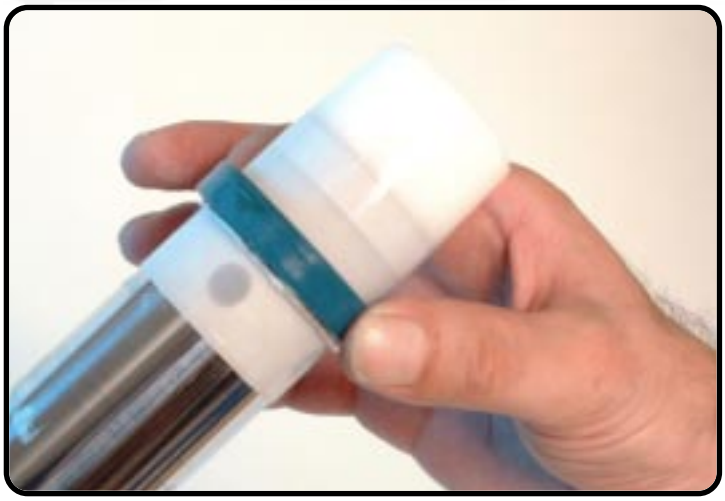
Apply the dust wiper with T511.

Place (4357) T512 / (4860) T1401 over the inner-tube and assemble the dust wiper.



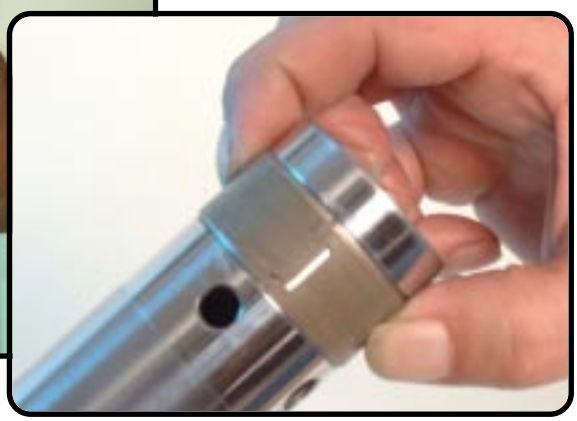
Replace the circlip.

Apply the innerside of the oilseal with T511 and the outerside with frontfork oil.



Assemble the oilseal.
Pay attention to the assembling direction!!!

Remove the tool and replace the support ring.



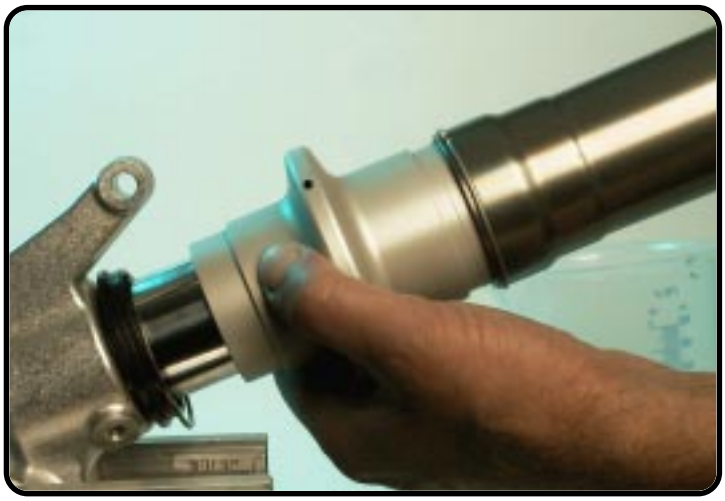
Assemble both DU-bushes.

Slide carefully the outer-tube over the inner-tube.

Assemble with (4357) T502S / (4860) T1402S the DU-bush -with the flat side- and...

...tap or push it into the outer-tube.

Use the other side of T502S / T1402S...



...and tap the oilseal into the outer-tube.

Assemble the circlip into the groove of the outer-tube.
Important: Check this very carefully!!!

Assemble the dust wiper with T502S / T1402S.

Place the cartridge into the forkleg.

Apply the O-ring of the compression piston with frontfork oil.

Assemble the cartridge in the center of the axle-clamp and tighten the holder compression to a torque of 25Nm.

Assemble the adjustment tube with the O-ring into the piston-rod.

Keep the outer-tube down and the piston- rod a little bit extended (like picture), fill the forkleg with oil till the edge of the outer-tube, wait a few moments, you will see air bubbles rising up.
The oil must stay **above** the 4 holes of the inner-tube, if necesarry fill some extra oil in the forkleg.

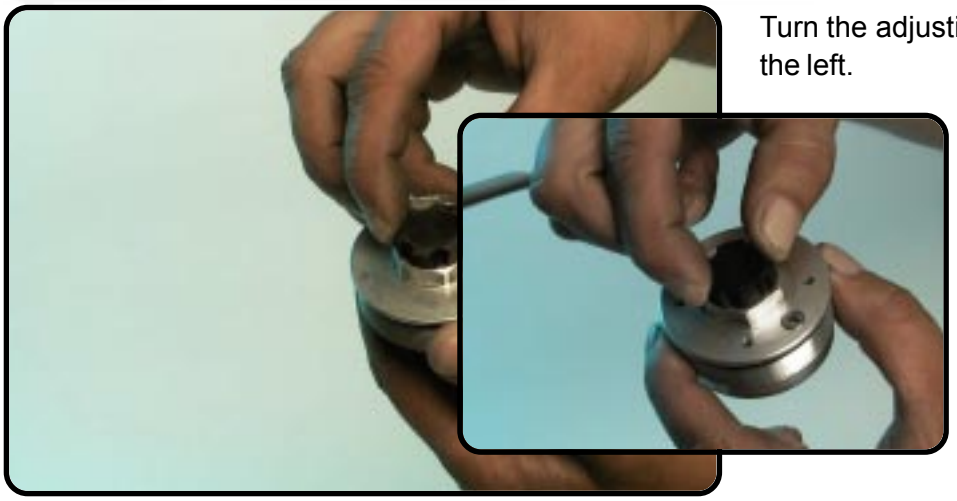
Move the piston-rod (keep the adjustment tube on his place) several times up and down till you feel that the cartridge is full with oil, (the damping is smooth over the entire stroke) mostly it is necesarry to fill some (not too much) extra oil in the forkleg.
Now compress the piston-rod and outer-tube fully down, and fill the forkleg with oil till about 25mm **under** the 4 holes of the inner-tube. Move the piston-rod and the outer-tube at the same time several times up and down over the entire stroke.

Push the piston-rod and outer-tube fully down and adjust the oil level (airchamber) with T137S.

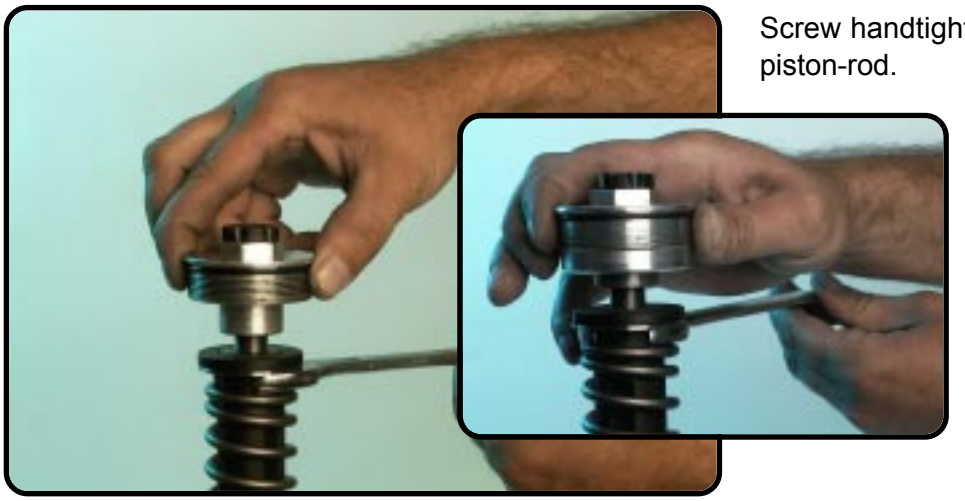
Pull the piston-rod out and assemble the spring.

Pull the spring downwards and place open-end spanner 22 on the hydraulic stop.

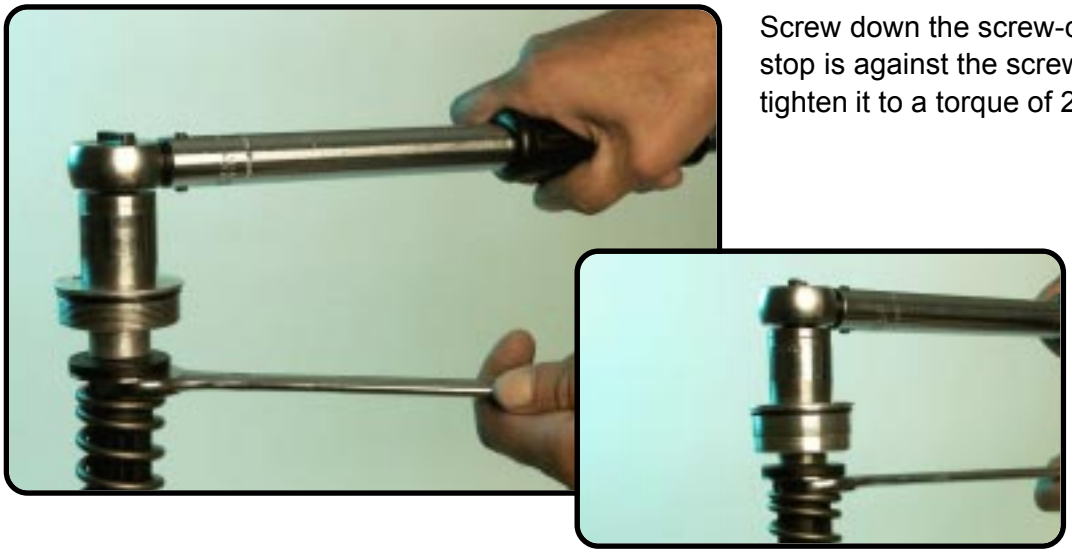
Replace first the steel washer on the spring, then the preload spacer(s).



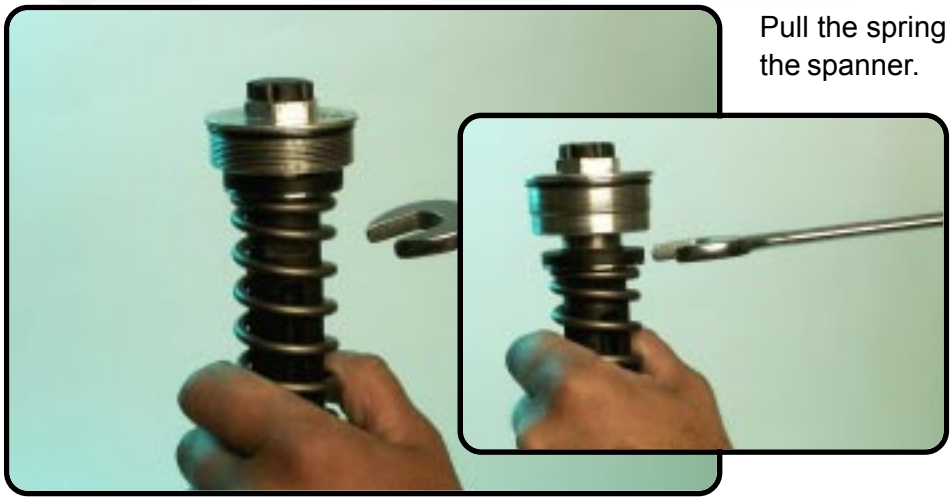
Turn the adjusting knob completely to the left.



Screw handtight the screw-cap on the piston-rod.

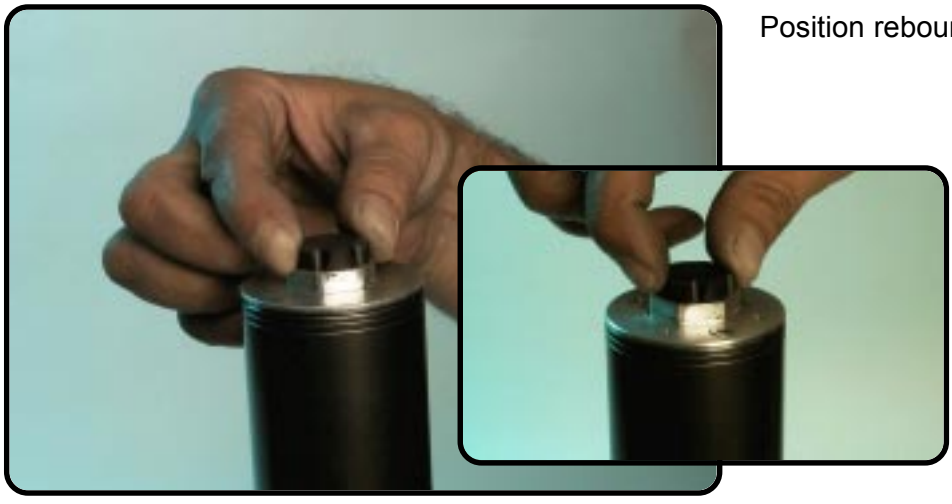


Screw down the screw-cap, till the hydr. stop is against the screw-cap and tighten it to a torque of 20Nm.

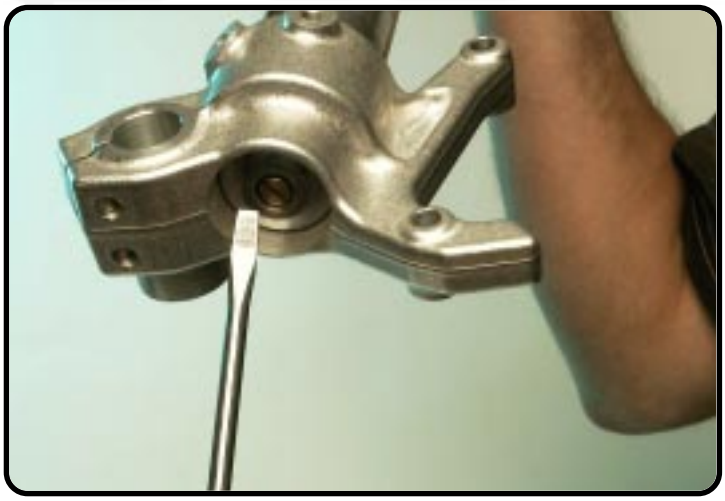


Pull the spring downwards and remove the spanner.

Tighten the screw-cap to a torque of 25Nm.
Use T103 with the PA version.



Position rebound!



Position compression!
And replace the rubber cap.

Schok absorber

4618 BAVP 85 SX

Introduction

General notice

Pay attention to the following notes, when you are working with WP suspension products as described in this workshop manual:

Always use clean and professional tools.
Regular you need next to the general equipment, the special tools of WP Suspension.
These tools with a unique “T” number (available at WP Suspension) protect you from damaging the parts.

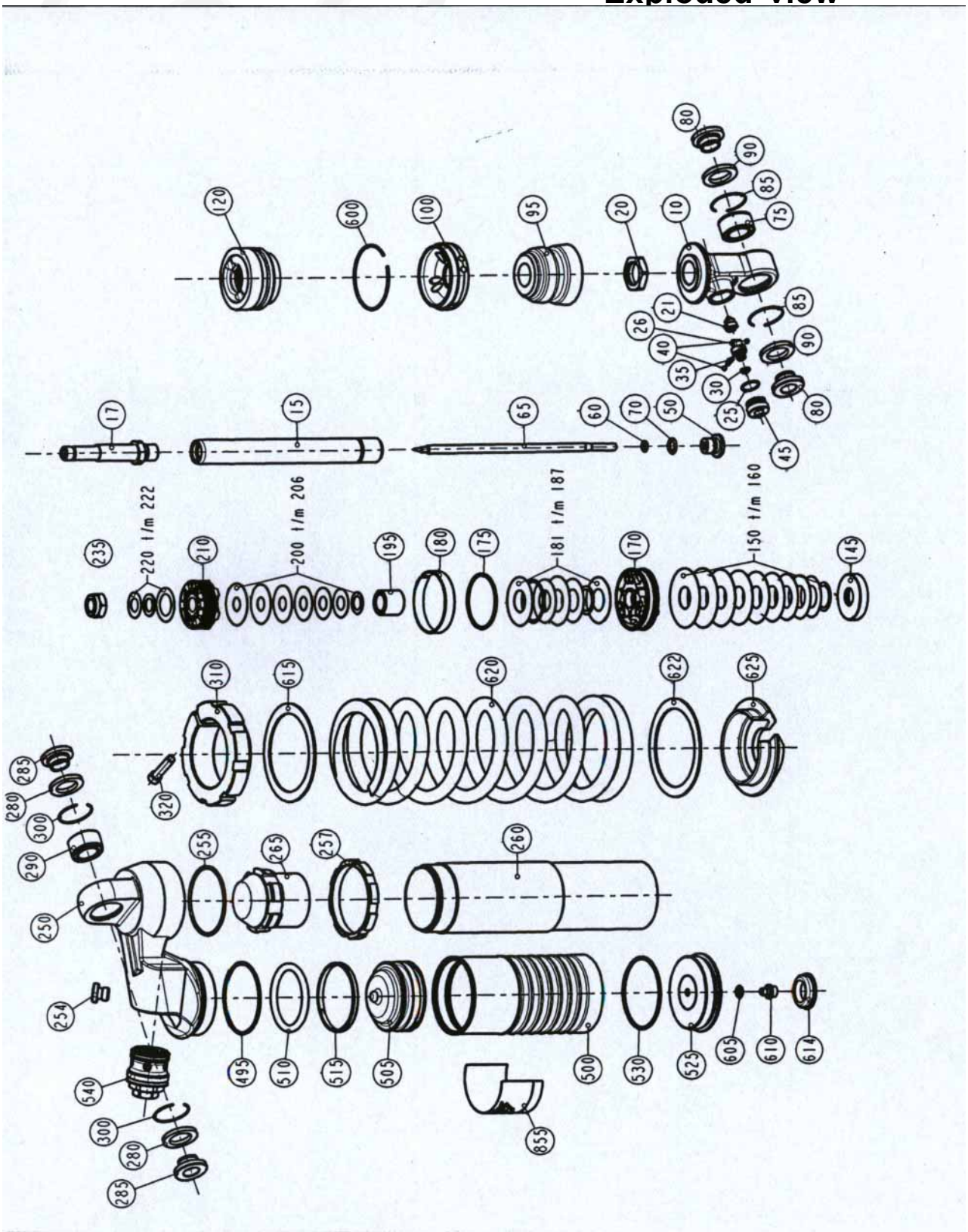
Always use aluminium protector-plates, when clamping our products or parts in the vice.

Always replace damaged or worn parts.

Clean all parts before assembling.

Caution:
Many times it is necesarry to assemble parts with T131, T132 and T163.
These parts must dry for at least four hours!!

Exploded view



Disassembly Shock absorber

Measure the spring preload between the spring retainer and lock retainer.

Take note of the angle of the position of the Allen bolt!
Unscrew the Allen bolt.

Release the spring preload with open spanner T106.

Screw the retainer into the direction of the lock retainer.

Remove the open spring retainer.

Remove the washer.

Remove the spring.

Remove the second washer.

Note the position of the compression low-speed.
Fully closed is turning the screw clockwise.

Turn the low-speed compression fully open.

Note the position of the compression high-speed.
Fully closed is turning the hexagonal (size 17) clockwise.

Turn the high-speed compression fully open!

Note the position of the rebound.
Fully closed is turning the screw clockwise.

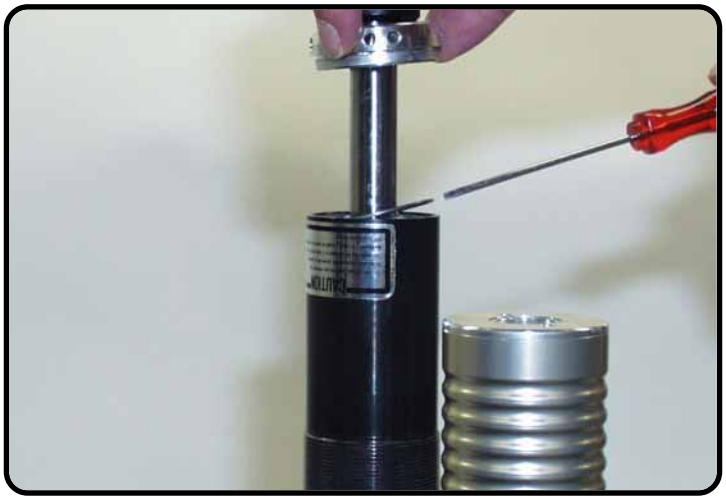
Turn the rebound fully open!

Disassemble the rubber cap.

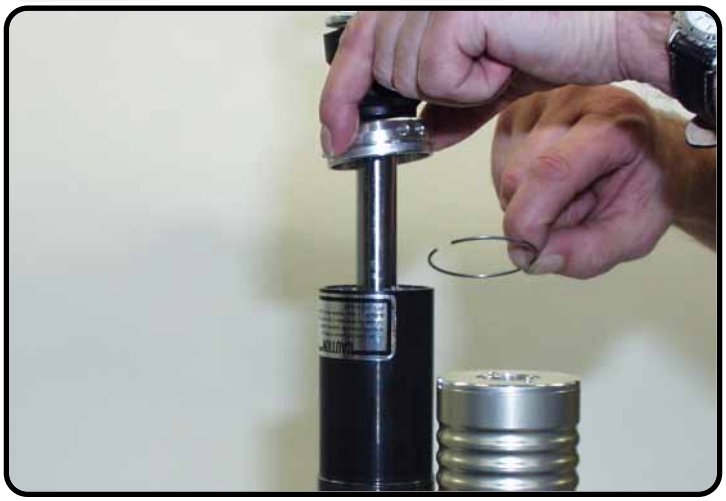
Unscrew slowly the nitrogen plug (size 4) to release the pressure.
Pay attention to the O-ring of the plug!

Tap the cap from the tube.

Push the adaptor DU-bush downwards.



Disassemble the springring out of the groove of the tube.



Remove the springring.

1. Pull carefully but firmly the piston rod “cpl” out of the tube.

2.

Drain the oil out of the tube.

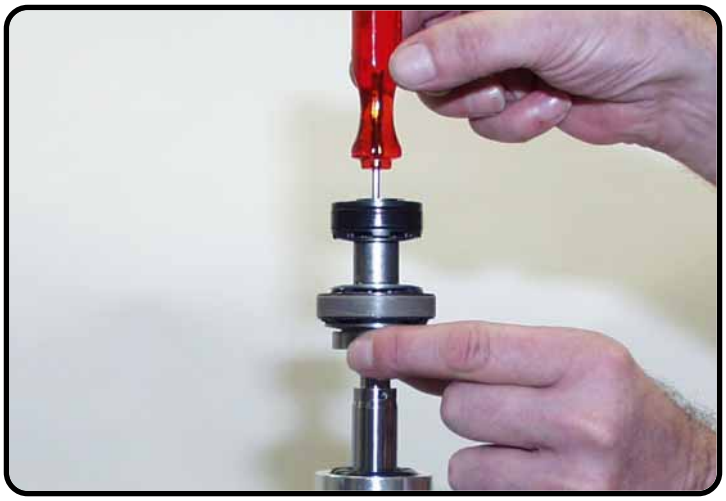
Disassembly piston rod

Place the piston rod “cpl” in the vice.

Unscrew the piston rod nut (size 17).

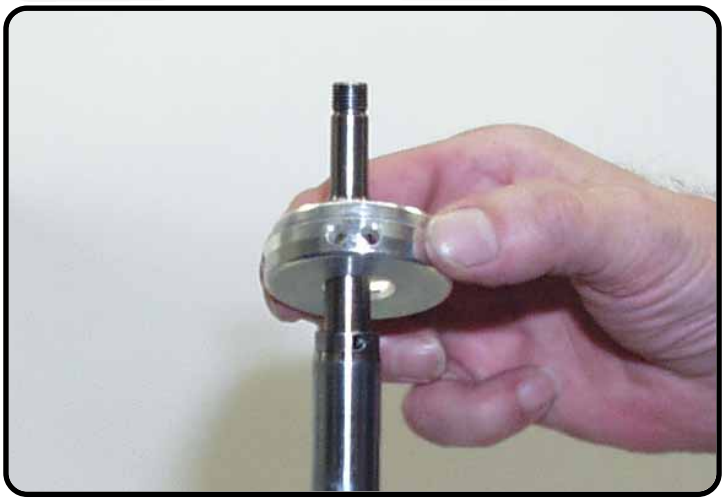
Turn off the nut.

1. Place a screwdriver on top of the piston rod and lift the entire assembly onto the screwdriver.



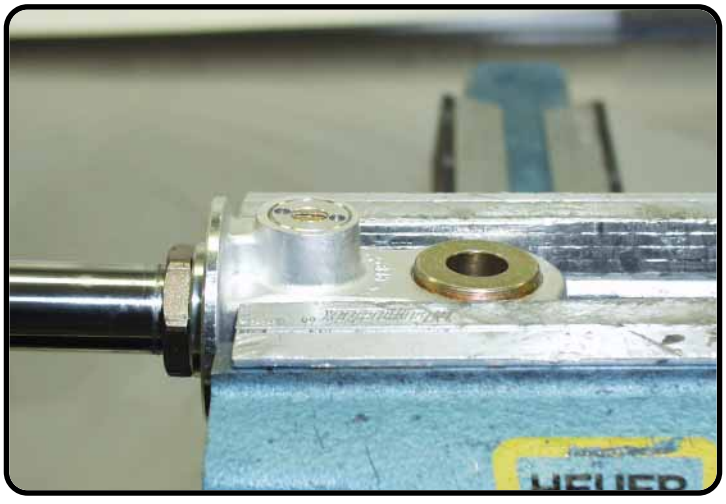
2.
Pay attention to the assembling direction of all the parts!!!

Remove the adaptor DU-bush

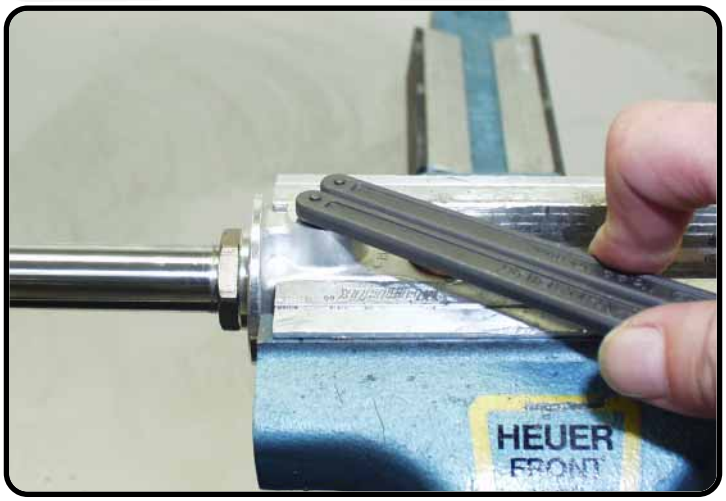


Remove the cap.

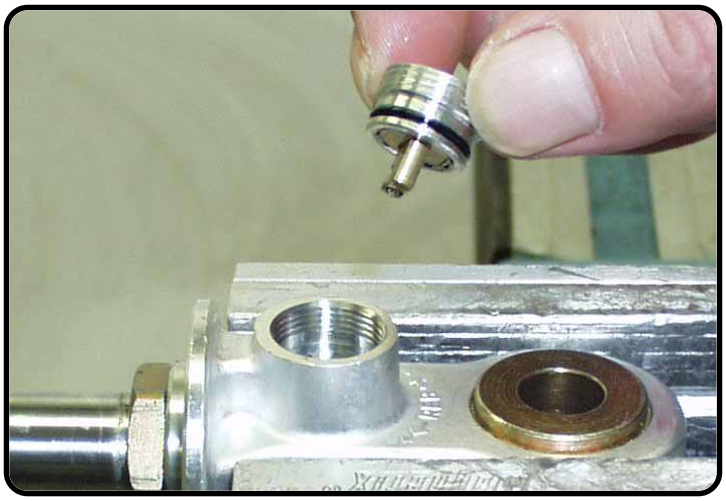
Remove the bumrubber.
Pay attention to the assembling direction!



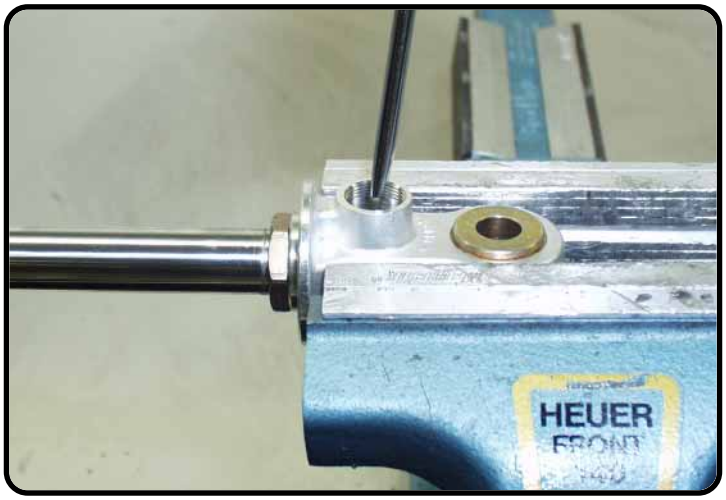
Clamp the mounting-eye in the vice.



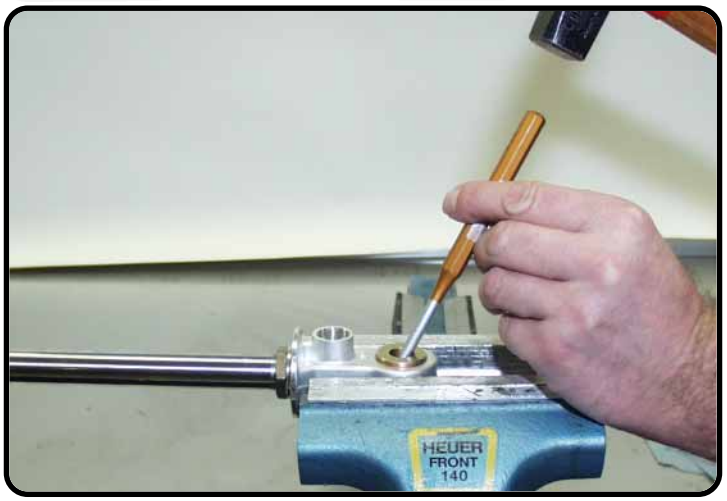
Unscrew the screw cap out of the mounting-eye with T1218.



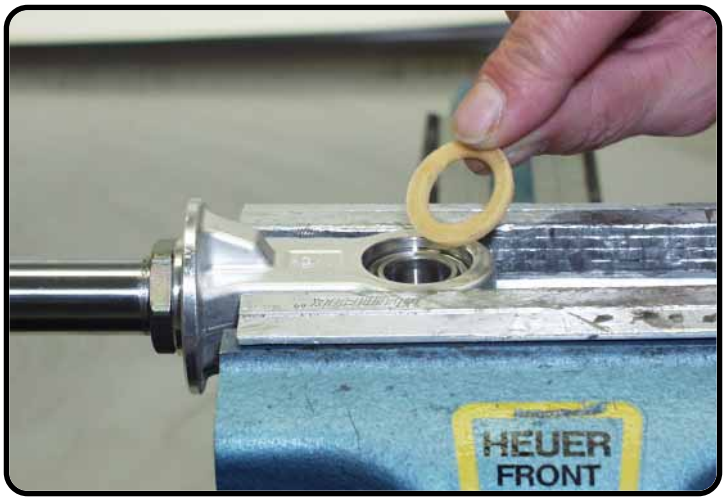
Turn the screw cap with the adjustment adaptor out of the mounting-eye.



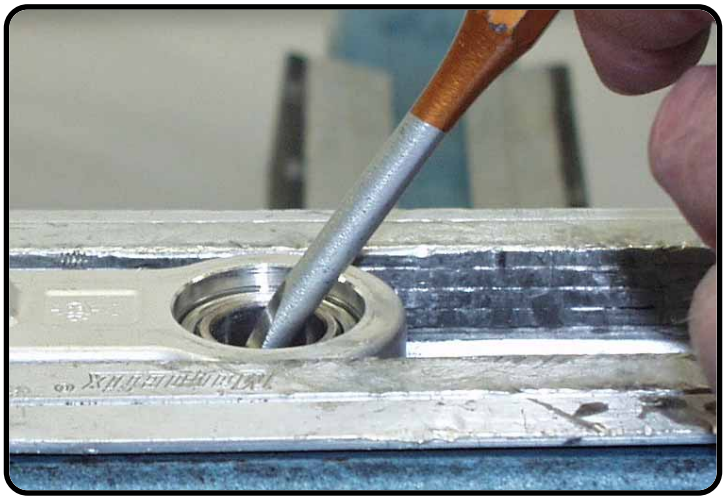
Turn the adjustment needle out of the mounting-eye.



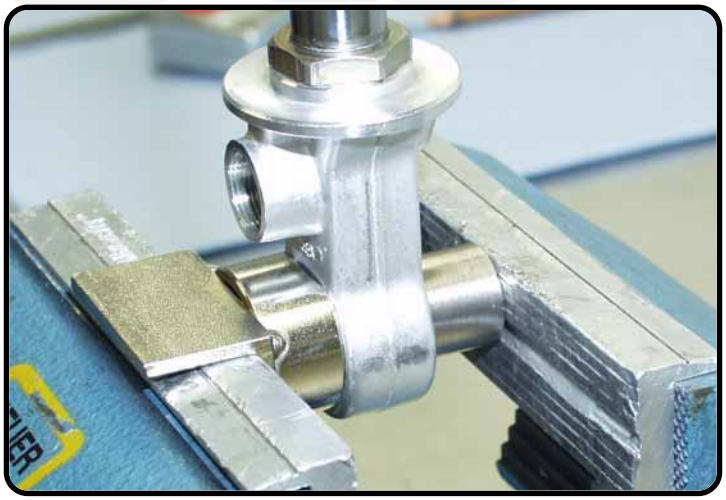
Tap with T120 the adaptor bush out of the heim joint.



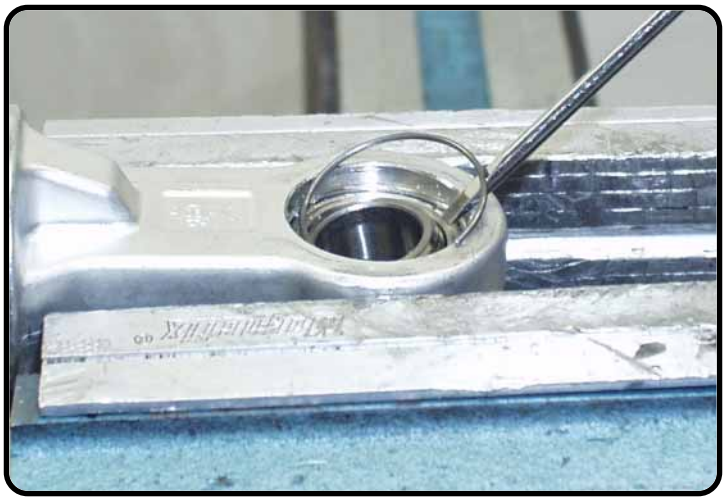
Remove the seal.



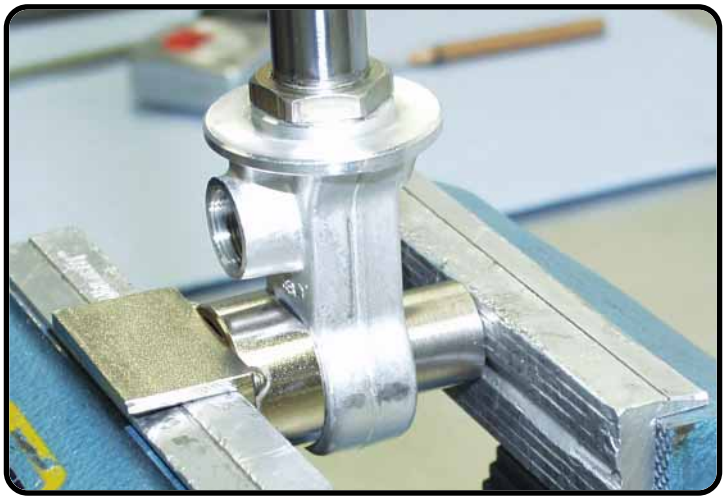
Tap the other adaptor bush out of the heim joint.



Push with T1207S the heim joint against the springring of the mounting-eye.



Disassemble the springring.

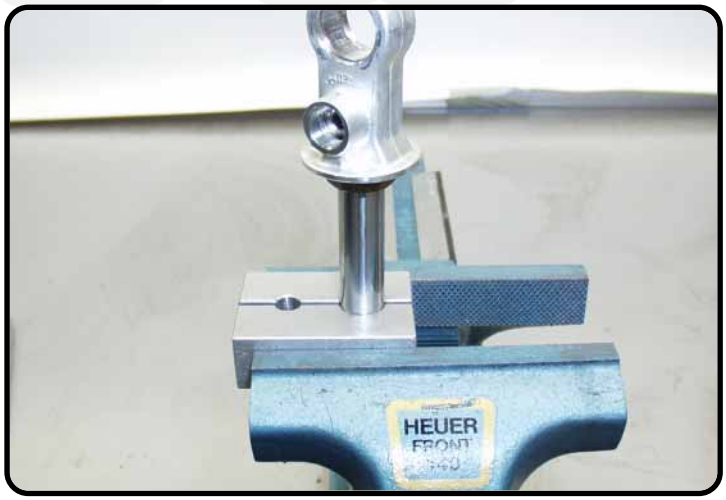


Push with T1207S the heim joint out of the mounting-eye.
Disassemble when necessary the other springring.

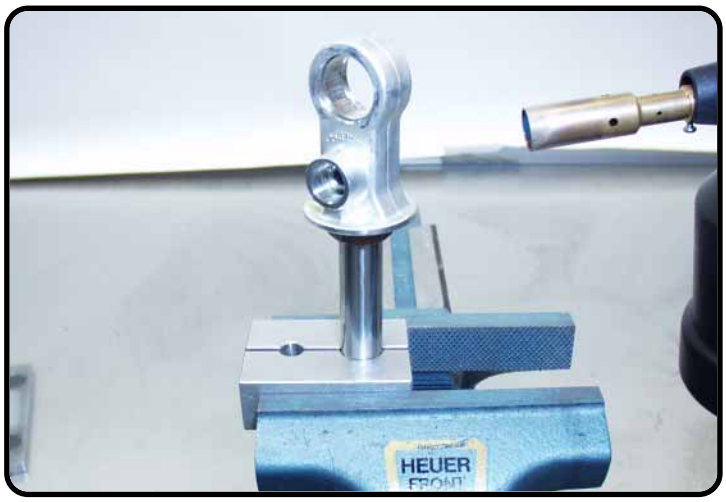
Heat the lock nut of the piston rod / mounting-eye.

1. Unscrew the locking nut (size 14).

2.



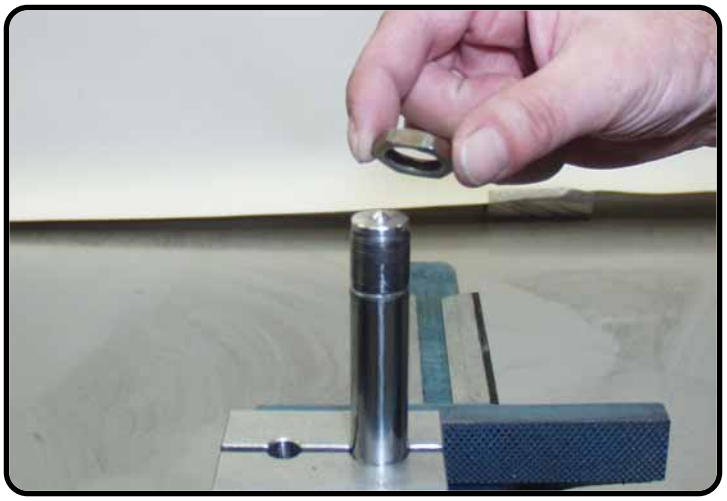
Clamp the piston rod in T1202S.



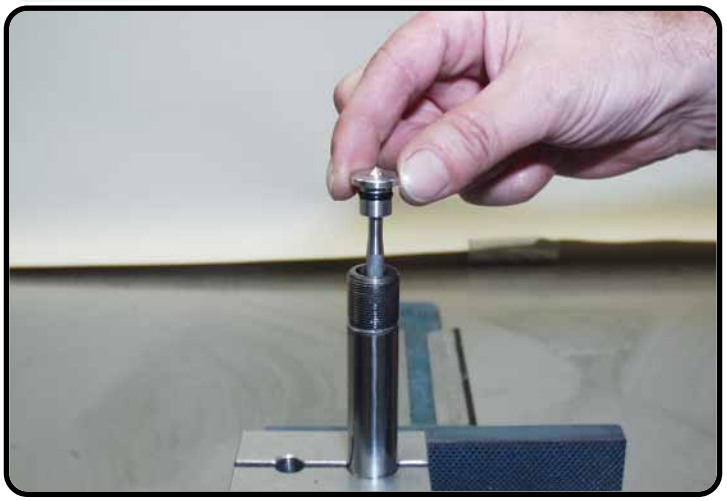
Heat the mounting-eye.

Unscrew the mounting-eye.

Turn the mounting-eye of the piston-rod.



Turn the lock nut of the piston-rod.
Pay attention to the assembling direction!

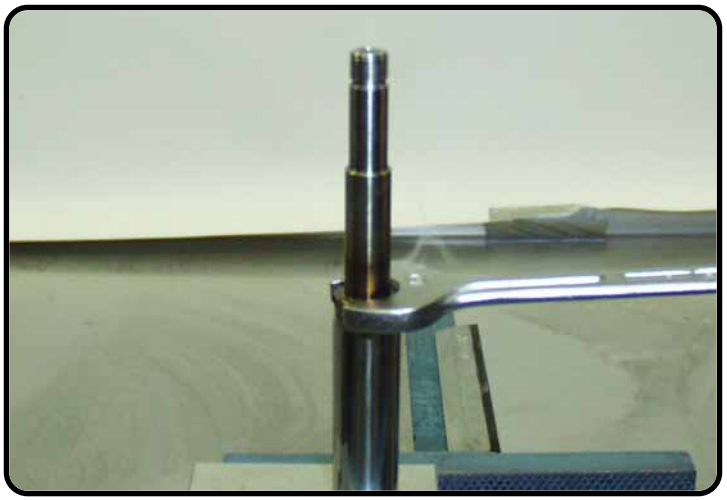


1. Take the rebound adjustment needle with guiding out of the piston-rod.

2.

Turn the piston-rod in the clamping block.

Heat the tap of the piston-rod.

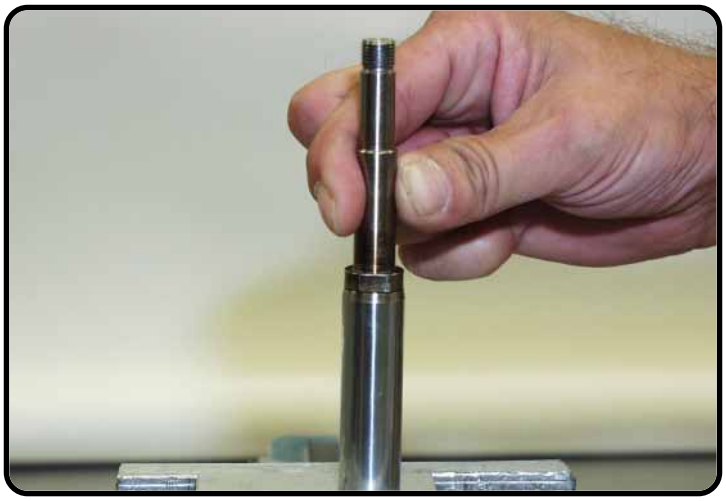


Untighten the tap (size 15).

Srew the tap of the piston-rod.

Assembling the piston-rod.

Wet the thread of the tap with T132.



Screw the tap into the piston-rod.

Tighten the tap.

Rebound adjustment needle with the needle guiding.

Grease both O-rings (in- and outside) with T158.

1. Place the needle into the piston-rod.

2.

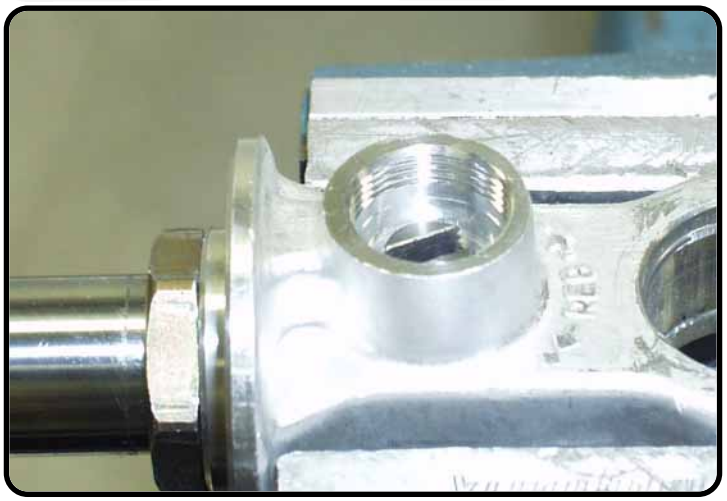
Screw the lock nut on the piston-rod.

Wet the thread of the mounting-eye with T132.

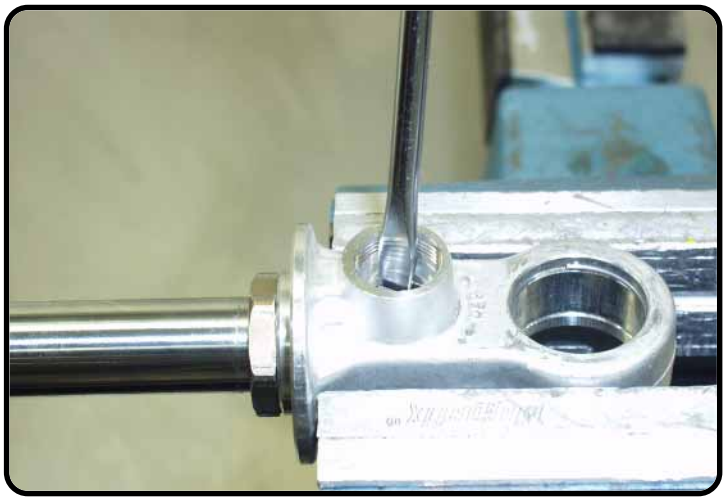
Tight the mounting-eye.

Tight the lock nut.

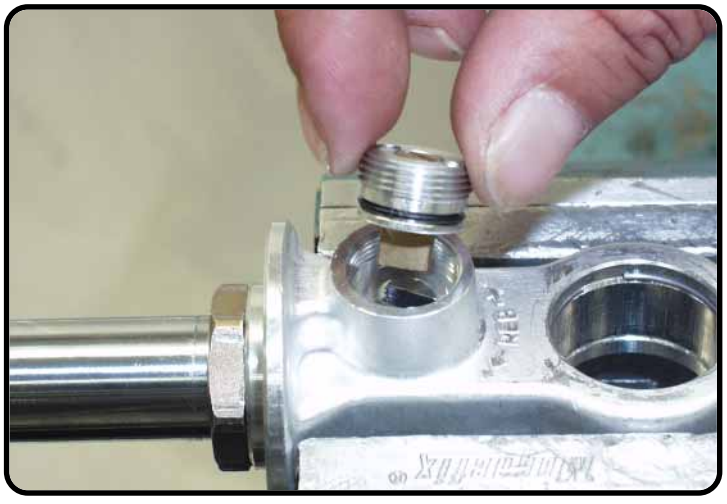
1. Replace the rebound adjustment needle.



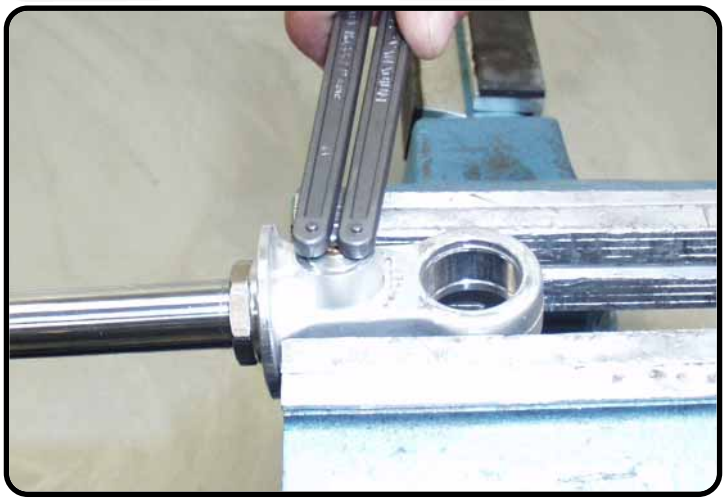
2.



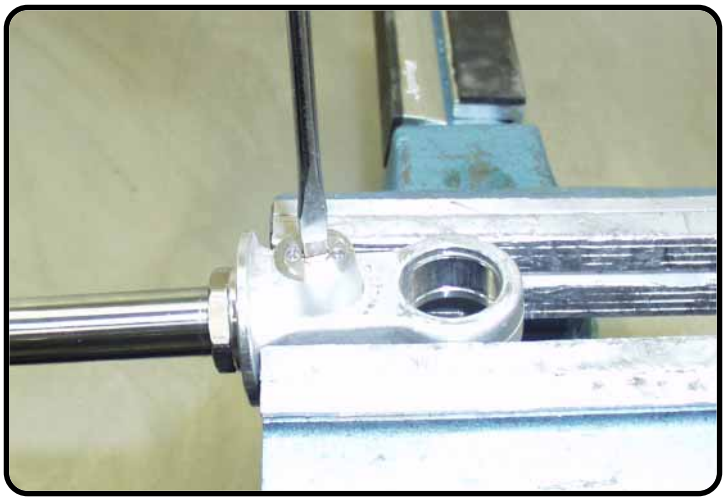
Screw the needle several turns into the mounting-eye.



Greas the adaptor with waterproof grease T159.
Replace the rebound screw cap with the adjustment adjuster.



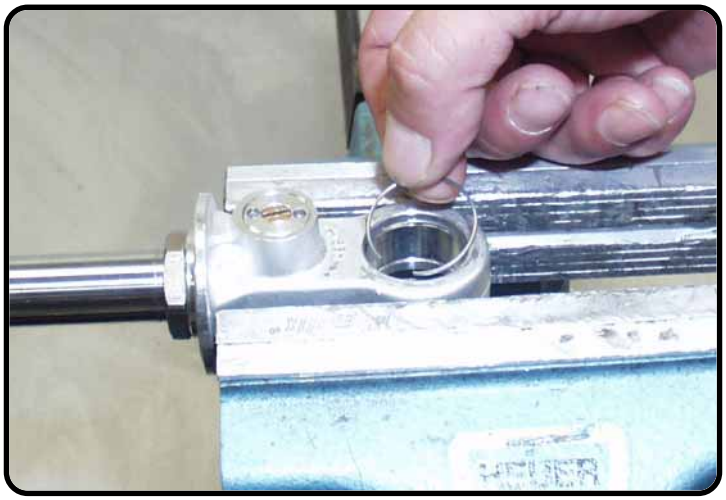
Tight the screw cap with T1218.



Turn the rebound position fully open.

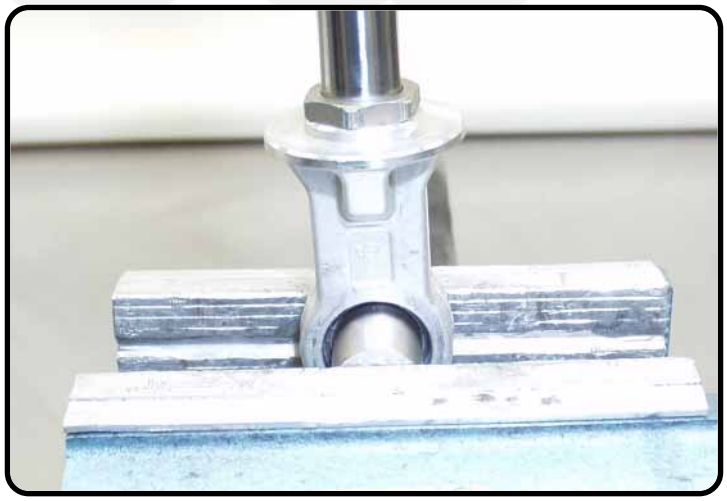
Push the rebound needle downwards.

Wet the innerside of the mounting eye a little bit with T132.



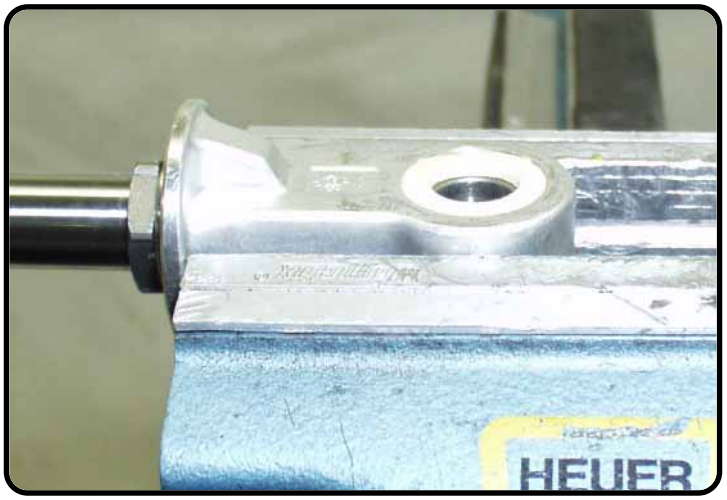
Assemble one springring into the mounting-eye.

“Heim joint KGW”
Pay attention to the bevelled edge on one side!

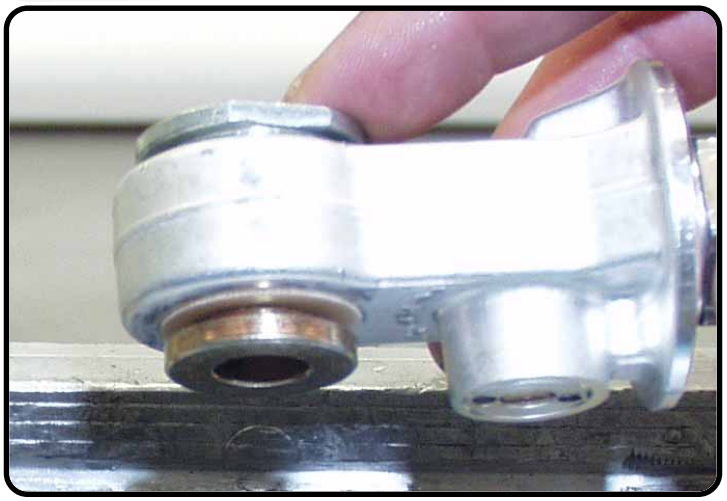


Press with T1207S the heim jont into the mounting eye, with the bevelled edge in the direction of the springring.

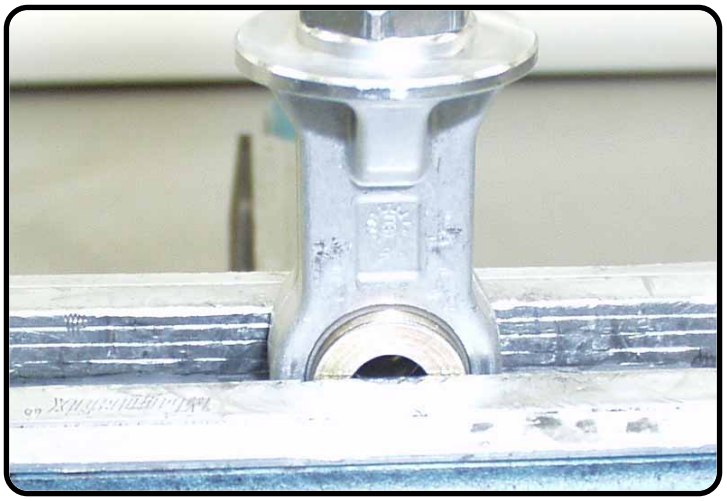
Assemble the other springring.



Replace both seals.



Assemble one adaptor bush in the heim joint wit support of T1206.



Press the adaptor bush in the heim joint. The second adaptor bush without support of T1206.

Replace the bumprubber.

Replace the cap.

Disassembly adaptor DU-bush

Lift the rebound rubber out of the adaptor.

Remove the steel plate.

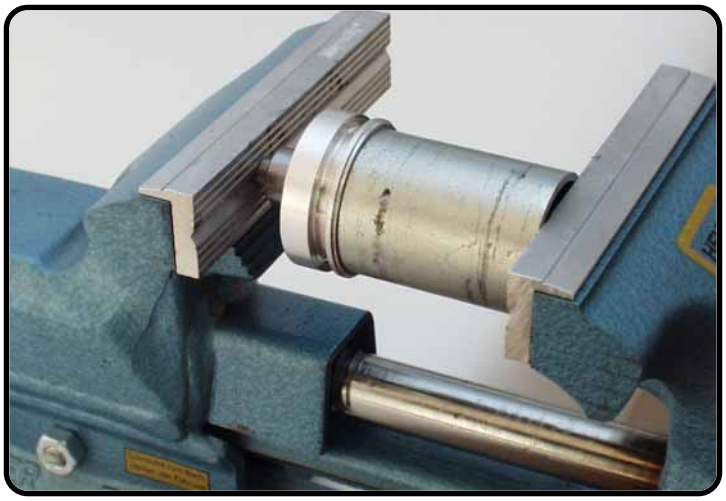
Remove the first back-up ring.

Remove the quad-ring.

Remove the second back-up ring.

Lift the dirt scraper out of the adaptor.

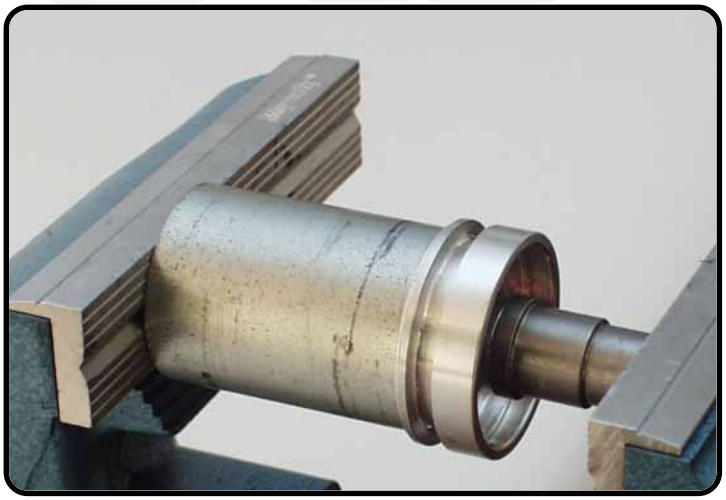
Remove the O-ring



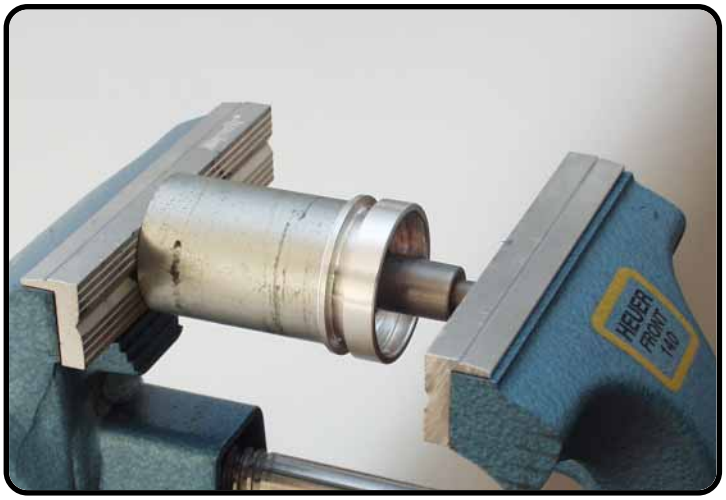
Press the DU-bush out of the adaptor with T1209 and T1504.

Adaptor DU-bush in parts.

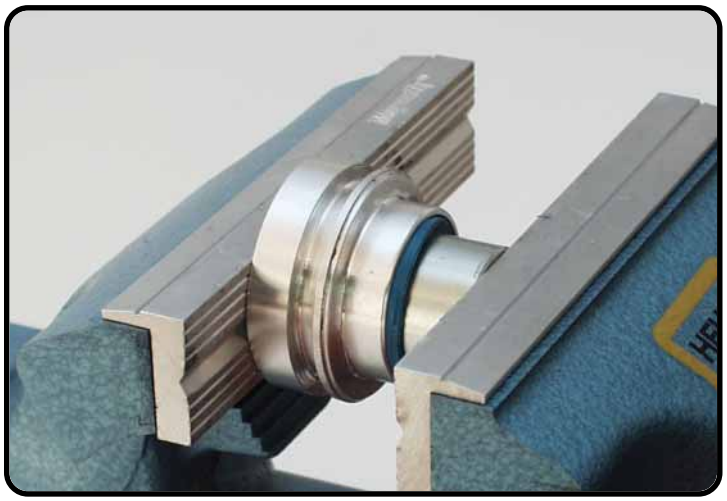
Assembling adaptor DU-bush



Press the DU-bush into the adaptor with T1209 and T1504 .



Calibrate the DU-bush with the calibration thorn T1205.
Important: wet the thorn with oil before the calibration.

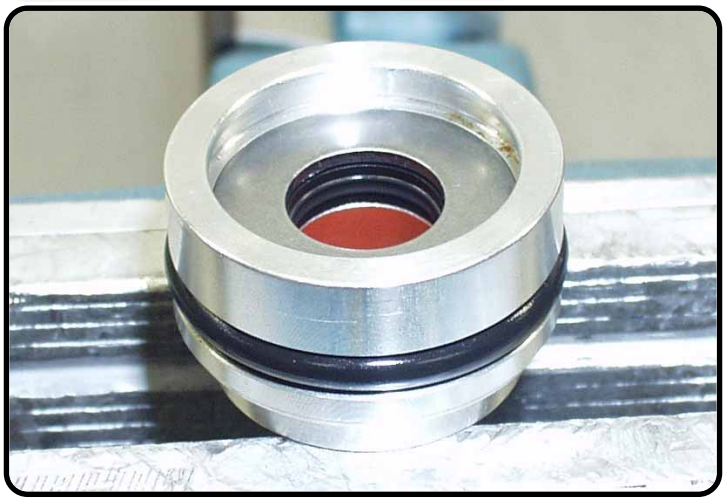


Press the dirt scraper into the adaptor with assembling bush T1204.

Grease the Groove of the adaptor with T158 and assemble the O-ring (not on picture).
Replace the second back-up ring.

Replace the quad-ring.

Replace the first back-up ring.



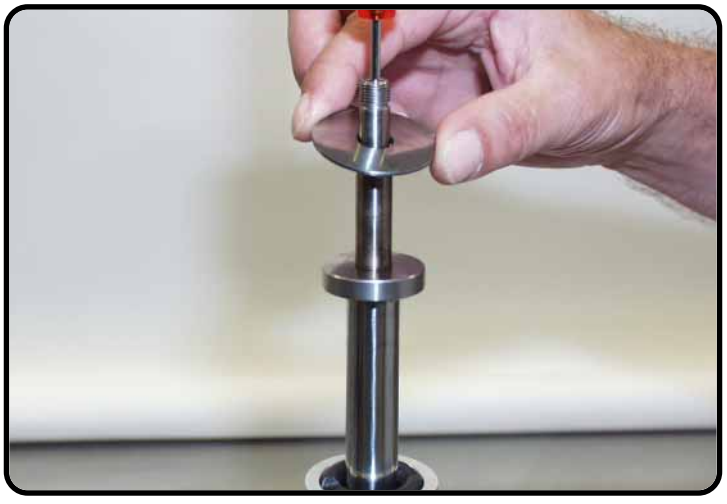
Replace the steel plate.

Assemble the rebound rubber in the adaptor DU-bush and ensure that the rubber can rotate in the adaptor.

Replace carefully the adaptor DU-bush on the piston-rod.

- Rebound bush plane
- Compression setting 1 (shims)
- Main piston 1 (with ring and O-ring)
- Rebound setting 1 (shims)
- Intermediate bush)
- Compession setting 2 (shims)
- Piston 2
- Rebound check valve setting
- Piston-rod nut

Assemble the rebound bush plane.



Assemble compression shim setting 1.

Replace piston 1.

Assemble rebound setting 1.

Replace the intermediate bush.

Assemble compression setting 2.

Replace piston 2.

Assemble the ring of check-valve setting 2.

Assemble the shim of check-valve setting over the ring 2.

Assemble the shim.

Turn the nut on the piston-rod,

Tighten the piston-rod nut to a torque of 30Nm.

Disassembly tube side

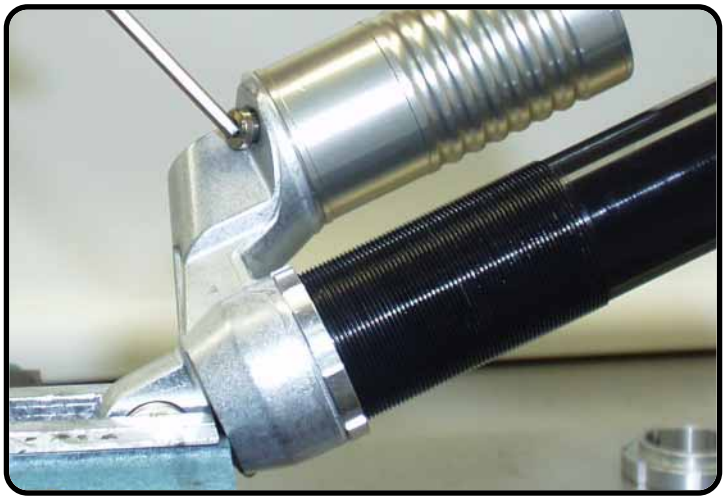
Turn the screw retainer of the tube.

Untighten the screw cap of the DCC (Duel Compression Control) of the bottom. (size 24)

Remove the screw cap.

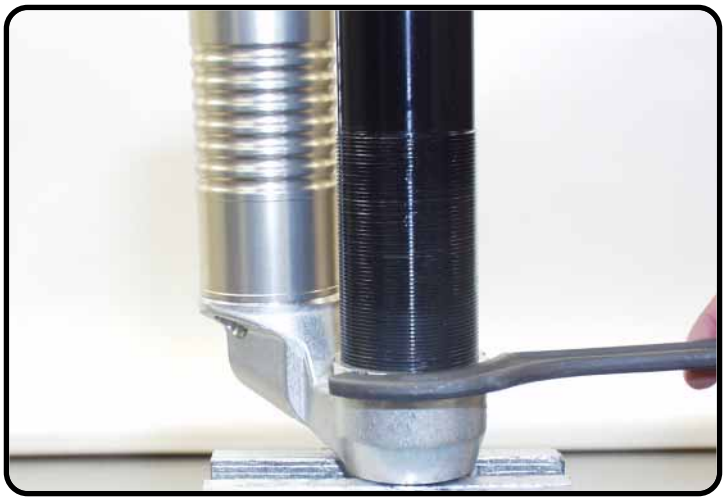
Pull the DCC out of the bottom.

"DCC"



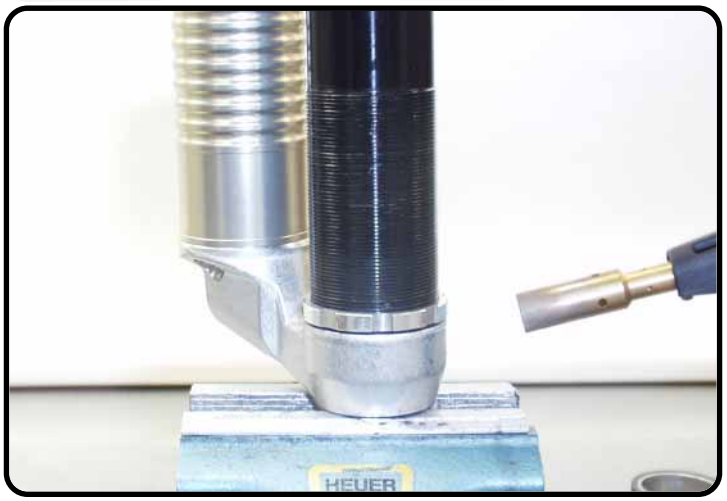
Unscrew and remove the plug R1/8.

Heat the lock ring of the tube/bottom.

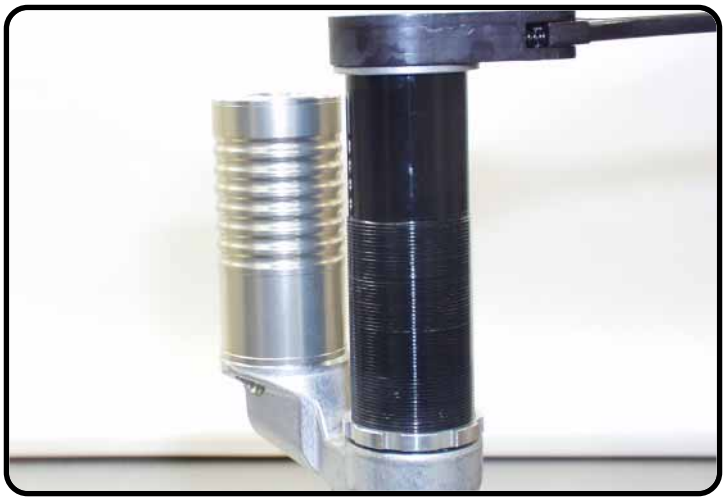


Untighten the lock ring with a open spanner.

Remove the “caution” sticker.



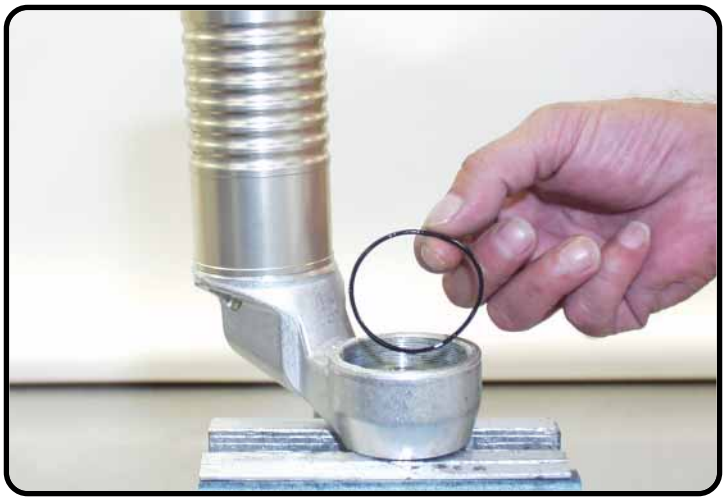
Heat the bottom near the tube.



Untighten the tube with slide spanner T146 with bush T148.

Turn the tube out of the bottom.

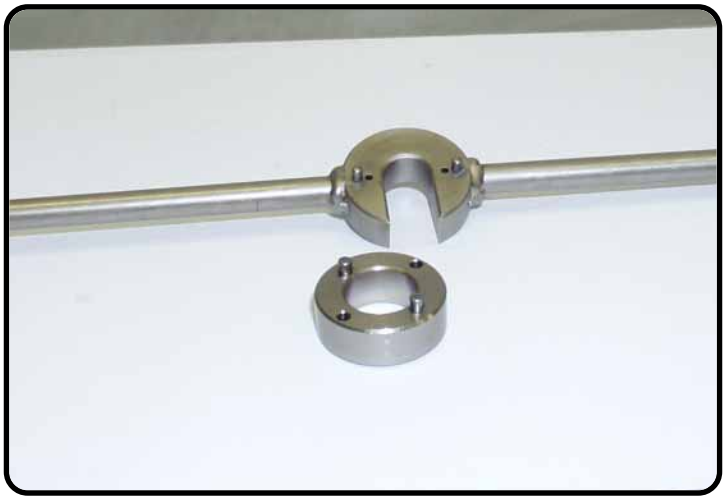
Pull the hydraulic sleeve out of the bottom.



Disassemble the O-ring.

Remove the sticker.

Heat the reservoir near the bottom.



Use T125S and T145S....

....to untighten the reservoir.

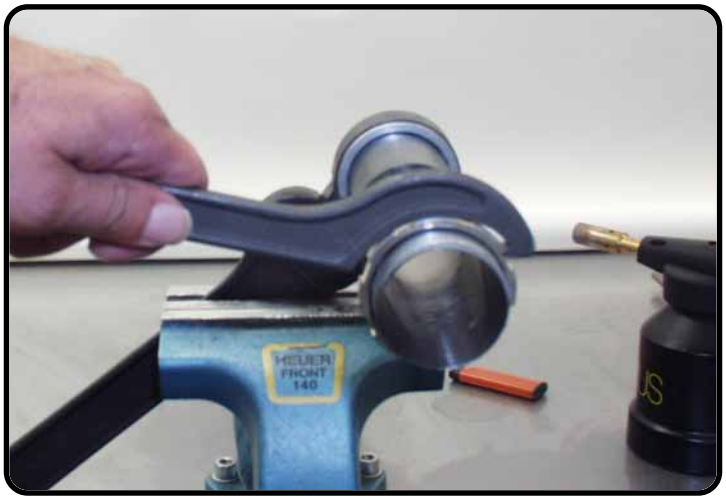
Unscrew the reservoir of the bottom.

Remove the O-ring.

- Bottom
- Both O-rings
- Hydraulic sleeve

To disassemble the adaptor bushes and heim joint see disassembly piston rod (mounting-eye)

Clamp slide spanner T146 with bush T148 in the vice, see picture.
Heat the lock ring.



Screw the lock ring of the tube.

Tube with lock ring.

Pay attention to the assembling direction!
Push with T170S the separation piston ot of the reservoir.

Remove the O-ring and piston ring.

- Reservoir
- O-ring
- Piston ring
- Separation piston

Assembling tube side

Grease the groove of the separation piston with T158.

Assemble the O-ring and grease the O-ring with T158.

Grease the surface of the inner side of the reservoir with T158.

1. Assemble the separation piston with piston ring with the hollow surface into the reservoir.

2. Push the separation piston into the reservoir.

1. Assemble both O-rings.

2.

Wet the thread of the bottom and the thread of the reservoir with T131.

Screw the reservoir on the bottom.

Tighten the reservoir with T125S and T145S.

Screw the lock ring on the tube as far as possible.

Assemble the hydraulic sleeve.

Wet the thread of the tube with T132.

Grease the edge of the tube a little bit with T158.

Screw the retainer into the bottom.

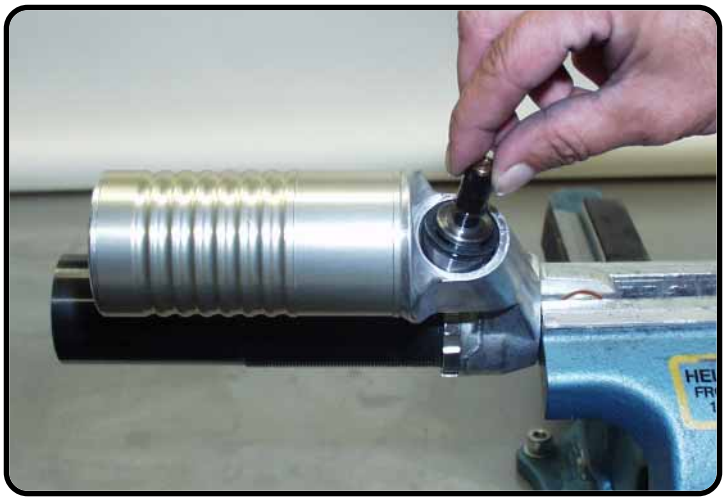
Tighten the tube.

Screw the lock ring downwards against the bottom.

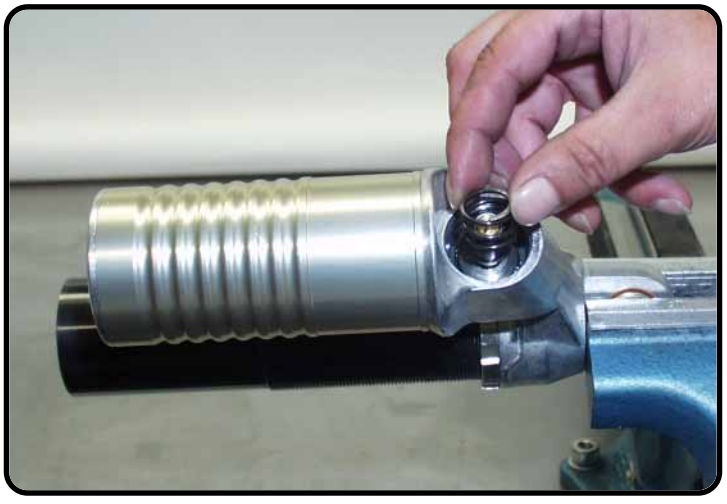
Tighten the lock ring with the hook spanner.

Place a new “caution” sticker.

Gease the O-ring of the DCC piston.

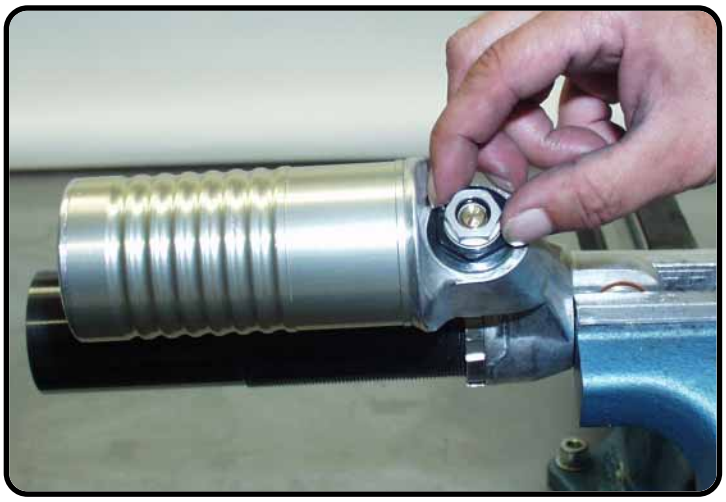


Assemble the DCC into the bottom.

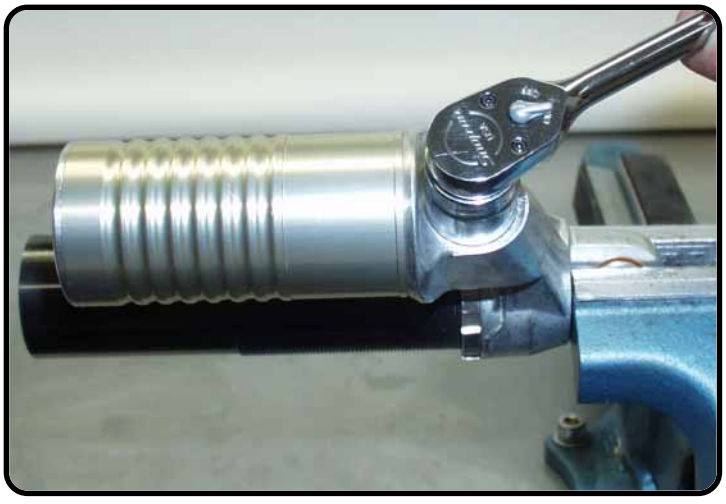


Place the spring.

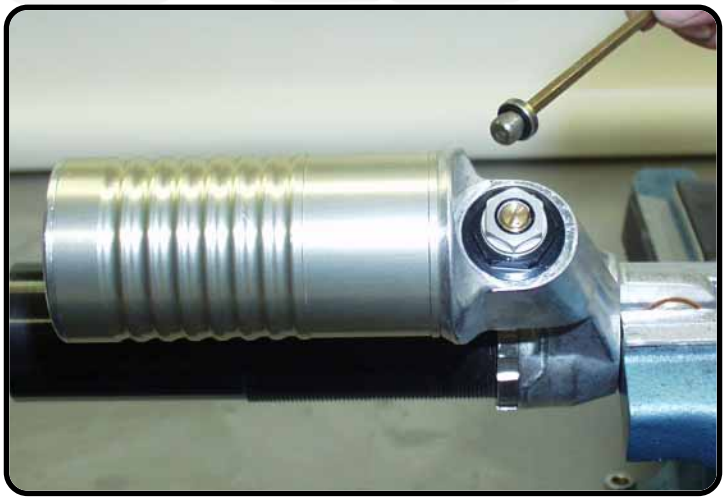
Grease the O-ring inside of the hexagonal with T158.



Srew the screw cap of the DCC into the bottom.



Tighten the screw cap to a torque of 50Nm.



Screw the filling plug R1/8 in the bottom and tighten it to a torque of 16Nm.

Fill the tube with oil till about 50mm under the spring ring groove.

Adjust the O-ring of T170S like picture (± 50mm of the top).

Push the separation piston fully downwards.

Use plunger T110S....

...to push the oil through the bottom.

Push T170S again fully downwards.

Fill the tube with oil till ± 10mm under the spring ring groove.

Slide the piston rod side “cpl” in the oil.

Assemble the adaptor DU-bush in the oil and....

....push the adaptor just under the spring ring groove.

Assemble first the closed side of the spring ring into the groove and then the open side.

Pull the piston rod “cpl” fully out.

Tap the cap into the tube.

Bleeding

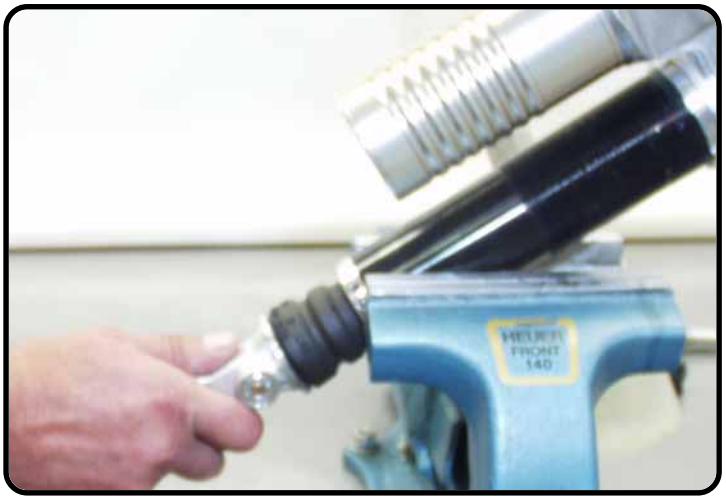
Disassemble the DCC.

Place the schock absorber in the vice like picture - not too tight.

Turn adaptor T1502S of the air release bottle T144S into the (DCC) housing of the bottom.

1.
Hold the bottle up so that the oil will flow into the shock absorber.

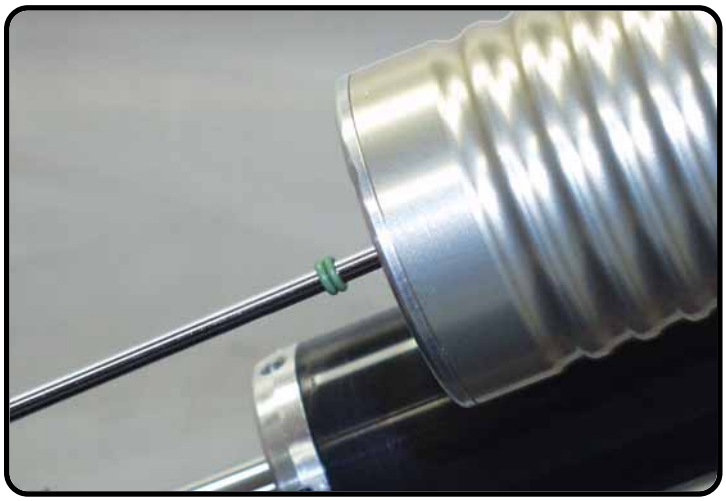
2.



3. Push slowly the pison rod inside.

4. Pull the piston rod completely out.

5. Cant the shock absorber several times.
Repeat handling 1until 5 till all air is out of the shock absorber.



Push the separation piston with T170S till the distance between the screw cap of the reservoir is 10mm.

Remove the adaptor and replace the DCC.

Place the screw retainer.

Place a new sticker.

On pressure with nitrogen

Screw the nitrogen plug with O-ring several turns into the screw cap.

Use “nitrogen charging device” T170S1 for filling the shock absorber with nitrogen (10 BAR).

Place the shock absorber in T170S1 and open the tap for about 20 seconds.
Close the nitrogen plug.
Close the tap.

Replace the rubber “do not open” cap.

Mounting spring

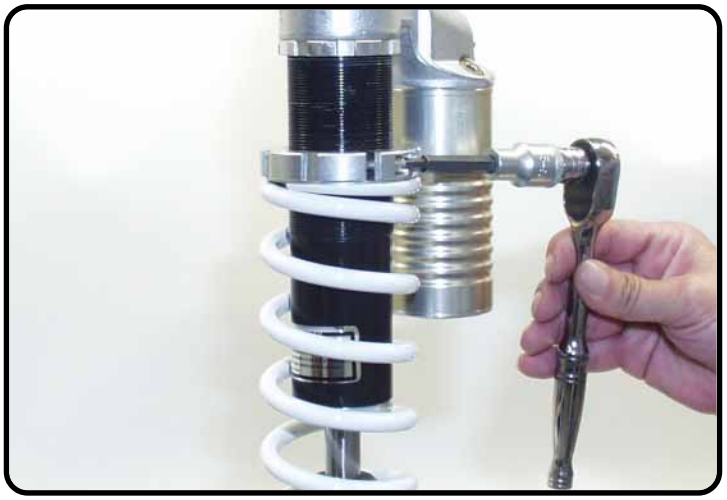
assemble the washer.

Assemble the spring.

Assemble the second washer.

Assemble the open spring retainer.

Adjust the spring to the correct preload as measured before.



Important!
Tighten the Allen bolt of the spring retainer to a torque of 5Nm.

Adjustments

Compression position low-speed!

Compression position high-speed!

Rebound position!