REPAIRMANUAL2000-2007

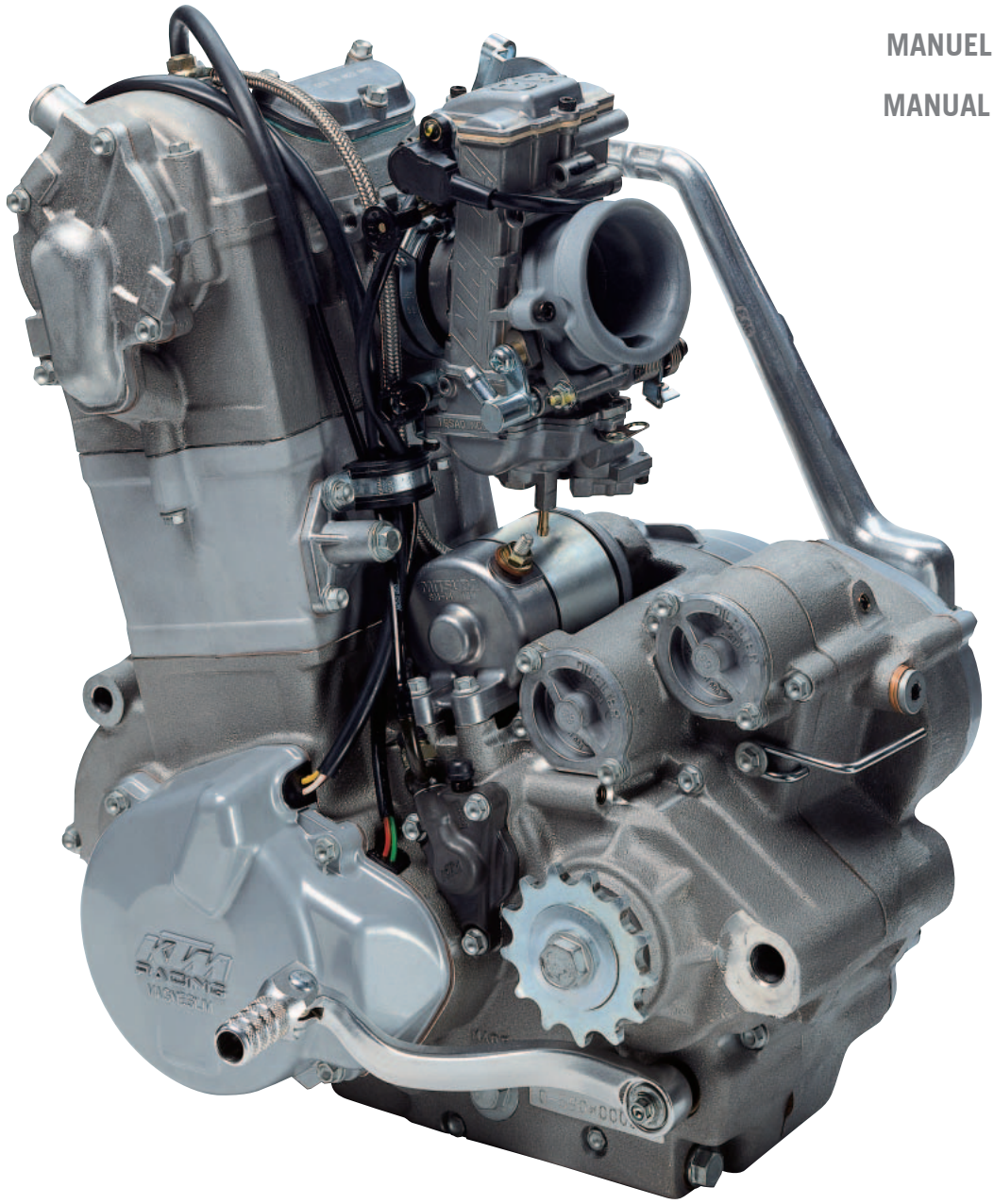
250 EXC RACING
400/450 SX,MXC,XC,XC-W,EXC,SMR,SXS RACING
520/525 SX,MXC,XC,XC-W,EXC,SMR RACING
540 SXS, 560 SMR, 610 CRATE

REPARATURANLEITUNG

MANUALE DI RIPARAZIONE

MANUEL DE RÉPARATION

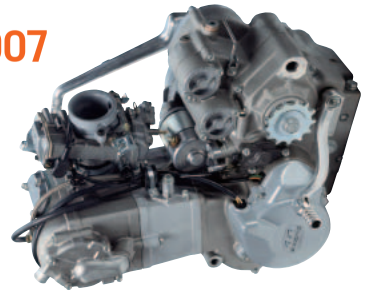
MANUAL DE REPARACIÓN



Art.NR.: 3.206.043-E

REPAIRMANUAL2000-2007

250 EXC RACING
400/450 SX,MXC,XC,XC-W,EXC,
SMR,SXS RACING
520/525 SX,MXC,XC,XC-W,EXC,
SMR RACING
540 SXS, 560 SMR, 610 CRATE



suspension WP

MOTOREX Oil of Switzerland

KTM Group Partner

KTM

IMPORTANT INFORMATION/UPDATING INSTRUCTIONS

To be able to continue using the existing loose-leaf repair instructions, simply print the following pages and insert them in the existing repair instructions:

1,3,7,9,13,17,18,48,56,57,67,83,90,95,101,107,111-135,143,144,147,150,153,156,158,163,165,170,174-183,203-207,209,227,245

Remove page (s)	Replace by page (s)	Insert page (s)	after page
2-2 to 2-3	2-2 to 2-3		
4-13	4-13		
5-7 to 5-8	5-7 to 5-8		
5-18	5-18		
6-6	6-6		
6-13	6-13		
7-1	7-1		
7-6	7-6		
8-1	8-1		
8-4 to 8-21	8-4 to 8-28		
10-2 to 10-3	10-2 to 10-3		
10-5	10-5		
10-8	10-8		
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10-14	10-14		
10-16	10-16		
10-21	10-21		
10-23	10-23		
10-28	10-28		
10-32 to 10-35	10-32 to 10-40		
11-21 to 11-22	11-21 to 11-25		
12-1	12-1		
12-18 to 12-28	12-18 to 12-36		

Art.-Nr. 3.206.043-E

KTM REPAIR MANUAL IN LOOSE-LEAF FORM

STORING THE REPAIR MANUAL IN THE BINDER

- Put the index into the binder.
- Put the front page of the repair manual (210x297 mm) into the transparent pocket provided for this purpose on the outside of the binder.
- Put the spine label (170x45 mm) into the transparent pocket provided for this purpose on the spine of the binder.
- Put the summary list of contents (150x297 mm) into the transparent pocket provided for this purpose on the inside of the binder or insert this page at the beginning of the manual.
- Then insert the individual chapters of the manual between the sheets of the index according to the page number printed in the right bottom corner of each page.
  Example: page no. 3-5 3 = chapter 3 5 = page 5
  For example: All pages with a page number that begins with the digit 3, must be put under the index heading “Chapter 3“.
- Index sheets that have not been marked with a certain chapter are for your personal convenience. The respective headings can be entered in the list of contents.

EXPLANATION - UPDATING

3.205.85-E	**Repair Manual 400/520 SX,MXC,EXC RACING** **Basic version Model year 2000** **(Engine number with first digit "0")**	**2/2000**
3.210.01-E	**Update of Rep.Manual 3.205.85-E** **Model year 2001** **(Engine number with first digit "1")**	**1/2001**
3.210.44-E	**Update of Rep.Manual 3.205.85-E** **Model year 2002** **(Engine number with first digit "2")**	**2/2002**
3.206.007-E	**Update of Rep.Manual 3.205.85-E** **Model year 2003** **(Engine number with first digit "3")**	**1/2003**
3.206.013-E	**Update of Rep.Manual 3.205.85-E** **Model year 2004** **(Engine number with first digit "4")**	**9/2003**
3.206.023-E	**Update of Rep.Manual 3.205.85-E** **Model year 2005** **(Engine number with first digit "5")**	**7/2004**
3.206.033-E	**Update of Rep.Manual 3.205.85-E** **Model year 2006** **(Engine number with first digit "6")**	**2/2006**
3.206.043-E	**Update of Rep.Manual 3.205.85-E** **Model year 2007** **(Engine number with first digit "7")**	**1/2007**

Modification / Updating:
Technical Details Model 2007,
Technical Specifications, tightening torques,
Periodic Maintenance Schedule

Art.-Nr. 3.206.043-E

Edition 01/2007

INTRODUCTION

This repair manual offers extensive repair-instructions and is an up-to-date version that describes the latest models of the series. However, the right to modifications in the interest of technical improvement is reserved without updating the current issue of this manual.

A description of general working procedures common in workshops has not been included. Safety rules common in the work shop have also not been listed. We take it for granted that the repairs are made by qualified professionally trained mechanics.

Read through the repair manual before beginning with any repair work.

⚠ WARNING ⚠

STRICT COMPLIANCE WITH THESE INSTRUCTIONS IS ESSENTIAL TO AVOID DANGER TO LIFE AND LIMB.

! CAUTION !

NON-COMPLIANCE WITH THESE INSTRUCTIONS CAN LEAD TO THE DAMAGE OF MOTORCYCLE COMPONENTS OR RENDER MOTORCYCLES UNFIT FOR RIDING!

“NOTE” POINTS OUT USEFUL TIPS.

Use only **ORIGINAL KTM SPARE PARTS**.

The KTM high performance engine is only able to meet user expectations if the maintenance work is performed regularly and professionally.

TÜV MANAGEMENT SERVICE ISO 9001
REG.NO. 12 100 6061

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

KTM Sportmotorcycle AG
5230 Mattighofen, Austria

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REPLY FAX FOR REPAIR MANUALS

We have made every effort to make our repair manuals as accurate as possible but it is always possible for a mistake or two to creep in.

To keep improving the quality of our repair manuals, we request mechanics and shop foremen to assist us as follows:

If you find any errors or inaccuracies in one of our repair manuals – whether these are technical errors, incorrect or unclear repair procedures, tool problems, missing technical data or torques, inaccurate or incorrect translations or wording, etc. – please enter the error(s) in the table below and fax the completed form to us at 0043/7742/6000/5349.

NOTE:

- Enter the complete item no. for the repair manual in column 1 (**e.g.: 3.206.043-E**).
  You will find the number on the cover page or in the left margin on each right page of the manual.

- Enter the corresponding page number in the repair manual (**e.g.: 5-7C**) in column 2.

- Enter the current text (inaccurate or incomplete) in column 3 by quoting or describing the respective passage of the text. If your text deviates from the text contained in the repair manual, please write your text in German or English if possible.

- Enter the correct text in column 4.

Your corrections will be reviewed and incorporated in the next issue of our repair manual.

Item no. of repair manual	Page	Current text	Correct text

Additional suggestions, requests or comments on our Repair Manuals (in German or English):

Name mechanic/shop foreman **Company/work shop**

GENERAL INFORMATION 2

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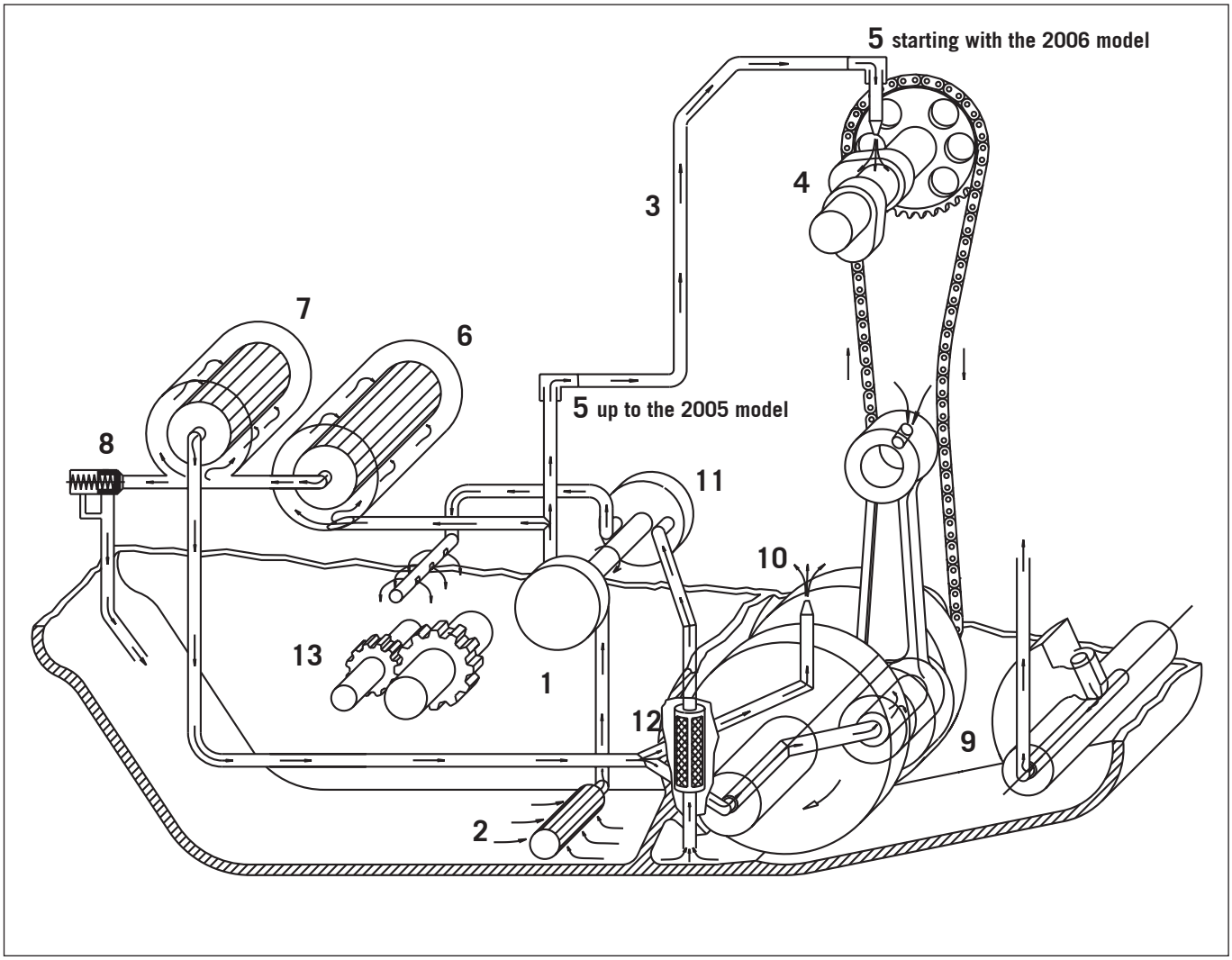

Oil circuit

Via the long oil screen ❷, the oil pump ❶ draws engine oil from the oil sump of the transmission. This engine oil flows through an oil line ❸ into the cylinder head for camshaft lubrication ❹; the oil quantity is controlled by the jet bolt ❺. An oil duct branches off to the long oil filter ❻ where the coarser particles contained in the engine oil are filtered away. Then, the engine oil arrives at the short oil filter ❼ which also filters the fine particles.
Now, the purified engine oil is pumped past the bypass valve ❽ to the conrod bearing ❾ and sprayed from below onto the piston through a nozzle ❿.
The second oil pump ⓫ draws the engine oil via the short oil screen ⓬ out of the crankcase, thereby lubricating the transmission gears ⓭.

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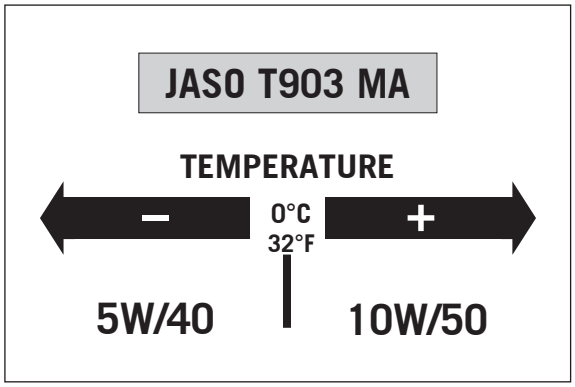
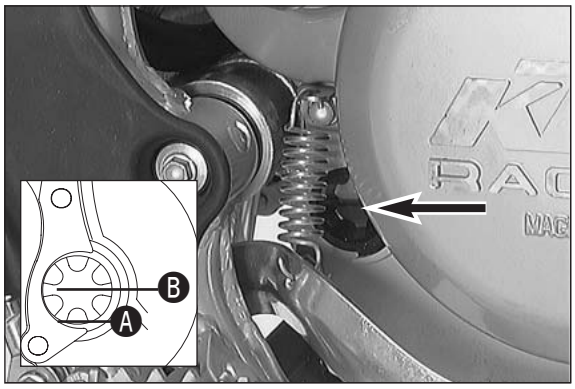


Engine oil

Automobile engine oil was used for four-stroke motorcycles before there were separate motorcycle specifications. Different technical developments made it necessary to have a separate specification for four-stroke motorcycles - the JASO T903 MA standard. Whereas car engines require long changing intervals, motorcycle engines require a higher power output at higher speeds. Most motorcycle engines also use the same oil to lubricate the transmission and the clutch. The JASO MA standard responds to these special requirements.
Only use fully synthetic engine oils that meet the JASO MA quality requirements (see information on the can).
KTM recommends Motorex Power Synt 4T in the 10W/50 viscosity (for temperatures over 0°C, 32°F) or 5W/40 (for temperatures under 0°C, 32°F).



Checking the engine oil level

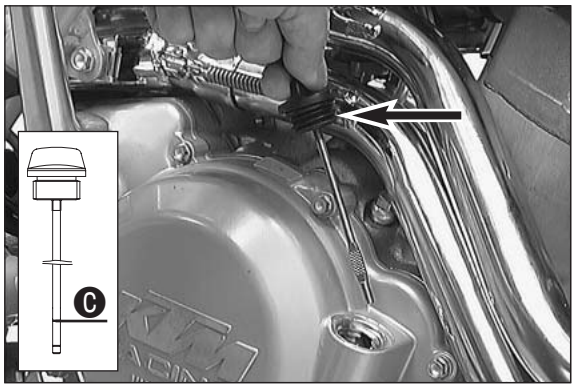
The engine oil level can be checked with the engine being either warm or cold. Place the motorcycle in an upright position and on a horizontal surface (not on the side stand).

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

The engine oil should not be higher than the middle of the inspection glass Ⓑ when the engine is warm.
Correct the engine oil level if necessary.

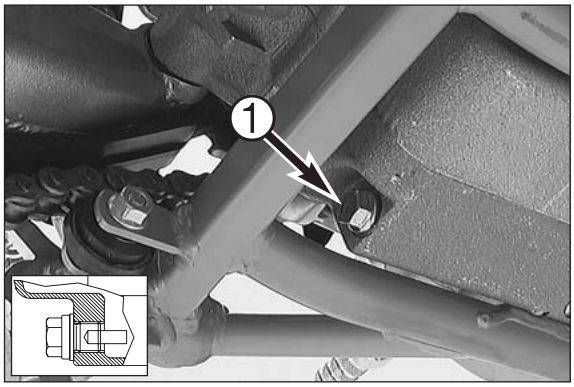
! CAUTION !

INSUFFICIENT AMOUNTS OR LOW-GRADE ENGINE OIL LEAD TO PREMATURE WEAR OF THE ENGINE.



NOTE: Engines up to the 2001 model have a sight glass and an oil dipstick. If the inspection glass is heavily soiled (e.g. after a race in muddy terrain), the engine oil level can also be measured with the oil dipstick. For this purpose, unscrew the dipstick and wipe it clean with a cloth. Screw the dipstick back in and unscrew it again. If the engine is warm, the oil level should be near the MAX mark Ⓒ.

– Check engine for leaks.



Changing the engine oil

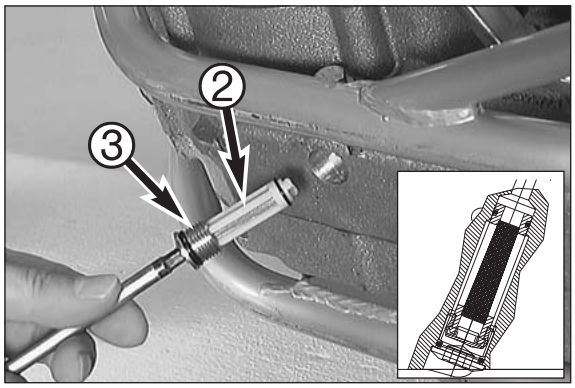
NOTE: When changing the engine oil, it is necessary to clean the short and long oil screens and to replace both oil filters.

Engine oil has be changed with the engine being at an operating temperature.

⚠ WARNING ⚠

AN ENGINE AT OPERATING TEMPERATURE AND THE ENGINE OIL IT CONTAINS ARE VERY HOT - DO NOT BURN OR SCALD YOURSELF!

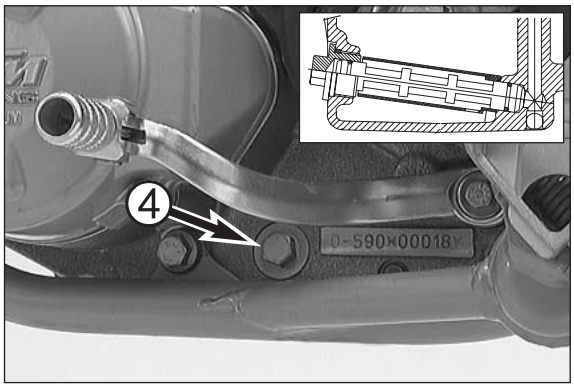
– Place the motorcycle on a horizontal surface, remove the plug ❶ and allow the oil to drain into a receptacle.
– Clean the plug (with magnet) thoroughly.
– Once the entire oil has been drained, clean the sealing surface, mount the plug together with the sealing ring and tighten it to 20 Nm.



CLEANING THE SHORT OIL SCREEN

NOTE: The short oil screen ❷ is located in the hex-socket plug ❸ on the bottom of the engine.

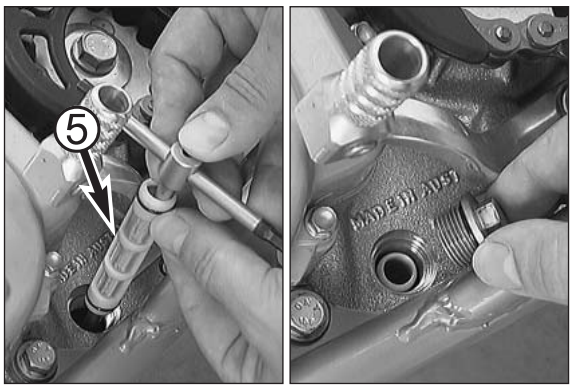
– Insert a pin-type key into the plug and tap on the key a few times with a hammer in order to relieve the stress acting on the plug.
Dismount the oil screen, clean the components thoroughly and blow compressed air through them.
Check the O-rings for damage and replace them if necessary.
Mount the oil screen together with the plug and tighten the (oiled) plug to 10 Nm.



CLEANING THE LONG OIL SCREEN

NOTE: The long oil screen is located in the hexagon plug ❹ next to the engine number.

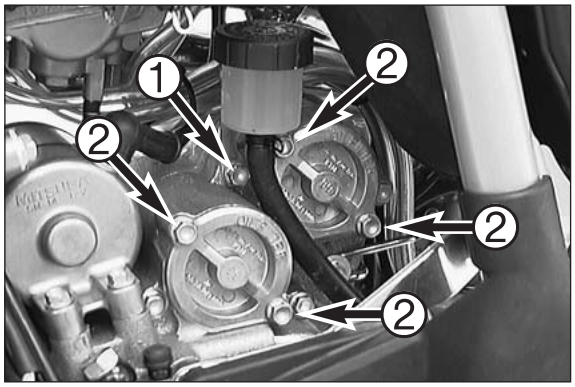
– Dismount the plug together with the oil screen, clean the components thoroughly and blow compressed air through them.
Check the O-rings for damage and replace them if necessary.



– To mount the long oil screen ❺, place it on an approx. 300 mm/ 11.8 in long pin-type key or a similar tool.
– Insert the pin-type key through the opening into the bore of the opposite engine casing wall. Then, push the oil screen into the engine casing as far as possible.
– Remove the pin-type key, mount the plug and tighten it to 15 Nm.

! CAUTION !

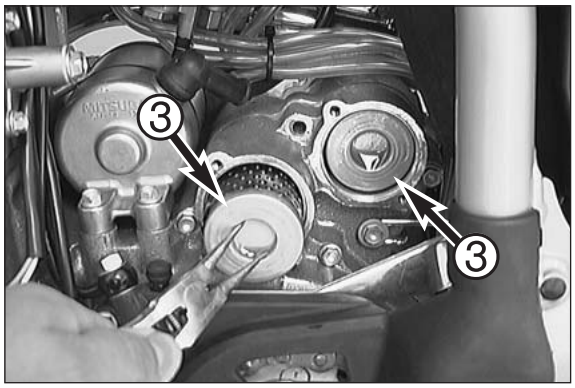
THE OIL SCREEN IS MOUNTED SLIGHTLY DOWNWARDS, IF INCORRECTLY FITTED, THE SCREEN LOSES ITS FUNCTION AND THIS CAN CAUSE INCREASED ENGINE WEAR.



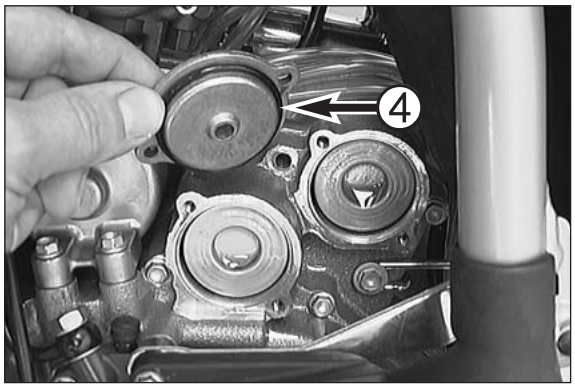
Changing the oil filters

– Remove the bolt ❶ and swing the brake fluid container to the side. Place a receptacle underneath the engine to collect the drained oil. Remove the 4 bolts ❷ and dismount the two oil filter covers.

NOTE: The brake fluid container is only mounted up to the 2003 model.

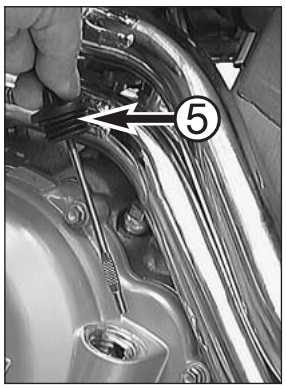


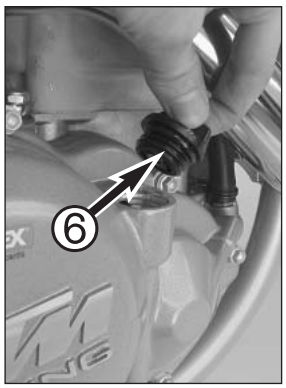
– Using circlip pliers, pull the oil-filter inserts ❸ out of the housing.
– Clean the oil filter cover, the sealing surfaces of the O-rings and the engine casing. Check the O-rings of the oil filter covers for damage and replace them if necessary.



– Put the motorcycle on its side and fill the oil filter housings about halfway with engine oil. Insert the long oil filter at the front and the short oil filter at the back of the housing.
– Grease the O-rings ❹ of the oil filter covers and mount the cover. Mount the bolts and tighten them to 6 Nm.
– Reposition the brake fluid container and tighten the bolt to 8 Nm.

NOTE: The brake fluid container is only mounted up to the 2003 model.





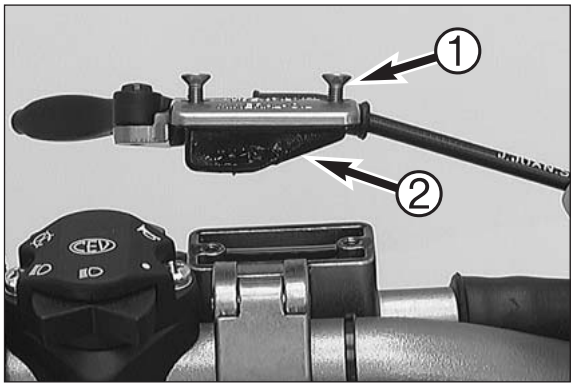
– Return the motorcycle to an upright position.

– Remove the oil dipstick ❺ or screw cap ❻ on the clutch cover and add 1.2 liters of fully synthetic engine oil (Motorex Power Synt 4T 10W/50).

– Remount the oil dipstick ❺ or screw cap ❻.

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

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

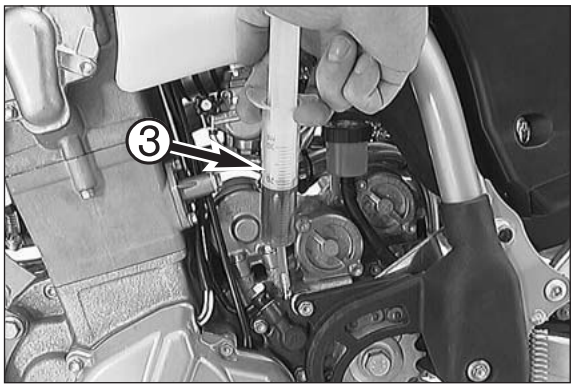


Checking the oil level of the hydraulic clutch

To check the oil level in the master cylinder of the clutch remove the cover. To do this, remove the bolts ❶ and cover together with the rubber boot ❷. The oil level in the horizontal-standing master cylinder should be 4 mm (0.157 in) below the upper edge. If necessary add SAE 10 biodegradable hydraulic oil (Motorex Kupplungs-Fluid 75).

! CAUTION !

ONLY USE SAE 10 BIODEGRADABLE HYDRAULIC OIL (MOTOREX KUPPLUNGS-FLUID 75) TO REFILL THE MASTER CYLINDER. NEVER USE BRAKE FLUID!



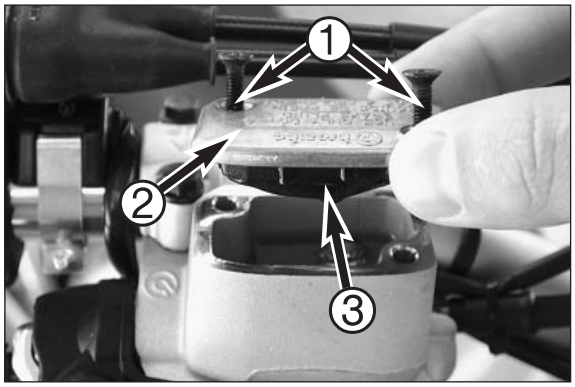
Bleeding the hydraulic clutch

– For bleeding, the cover of the master cylinder of the clutch needs to be removed. To do this, remove the screws ❶ and take off the cover together with the rubber bellows ❷.
– At the slave cylinder of the clutch, remove the bleeder nipple. In its place, mount the bleeder syringe ❸ which is filled with biodegradable hydraulic oil (Motorex Kupplungs-Fluid 75).

– Refill with oil, until it is discharged from the bore Ⓐ 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. FOR FILLING OF THE MASTER CYLINDER, USE SAE 10 BIODEGRADABLE HYDRAULIC OIL (MOTOREX KUPPLUNGS-FLUID 75) ONLY. NEVER USE BRAKE FLUID NOR MIX BIODEGRADABLE HYDRAULIC OILS WITH MINERAL OILS.

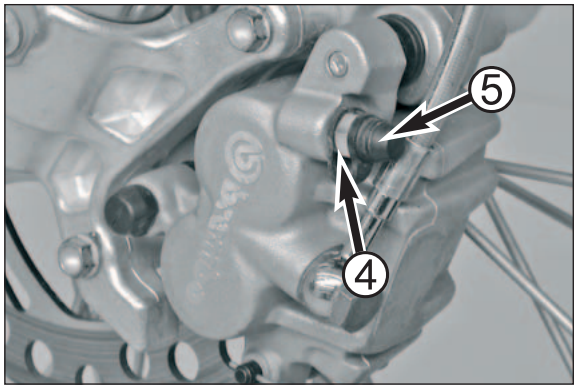


Changing the front brake fluid

– Move the hand brake cylinder into a horizontal position.

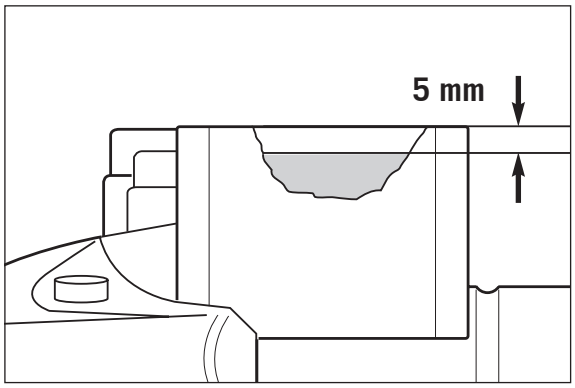
– Remove the screws ❶ and the cover ❷ together with the rubber boot ❸.

– 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 ❹ on the brake caliper. Make sure the brake fluid reservoir is always filled with enough fresh brake fluid.

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



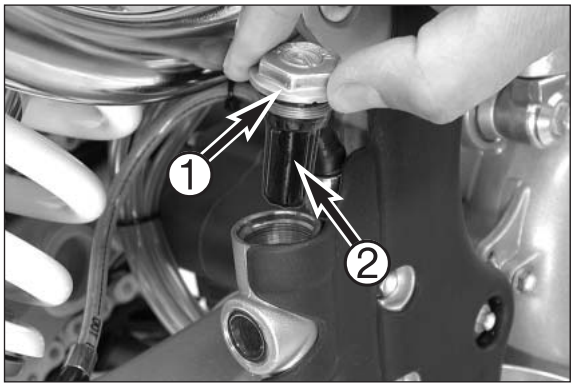
– Add DOT 5.1 brake fluid (Motorex Brake Fluid DOT 5.1) up to 5 mm under the top edge of the reservoir. Remount the rubber boot, cover and screws.

– 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 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 as brake fluid will corrode the paintwork!
– Only use clean, new brake fluid from tightly sealed containers.

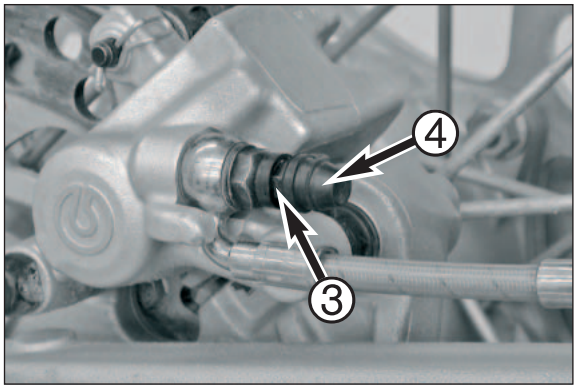


Changing the rear brake fluid

– Move the vehicle into a vertical position.

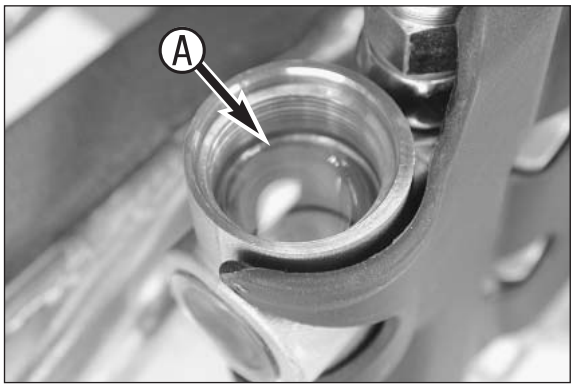
– Disassemble the screw cap ❶ together with the rubber boot ❷ from the brake fluid reservoir.

– Use a syringe to extract the used brake fluid and fill with 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.



– Fill with DOT5.1 brake fluid (Motorex Brake Fluid DOT 5.1) up to the mark Ⓐ on the inside of the reservoir.

– Check the O-ring of the screw cap for damage, exchange it if necessary and remount the screw cap again.

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

– Press the foot brake pedal until you feel the point of pressure.

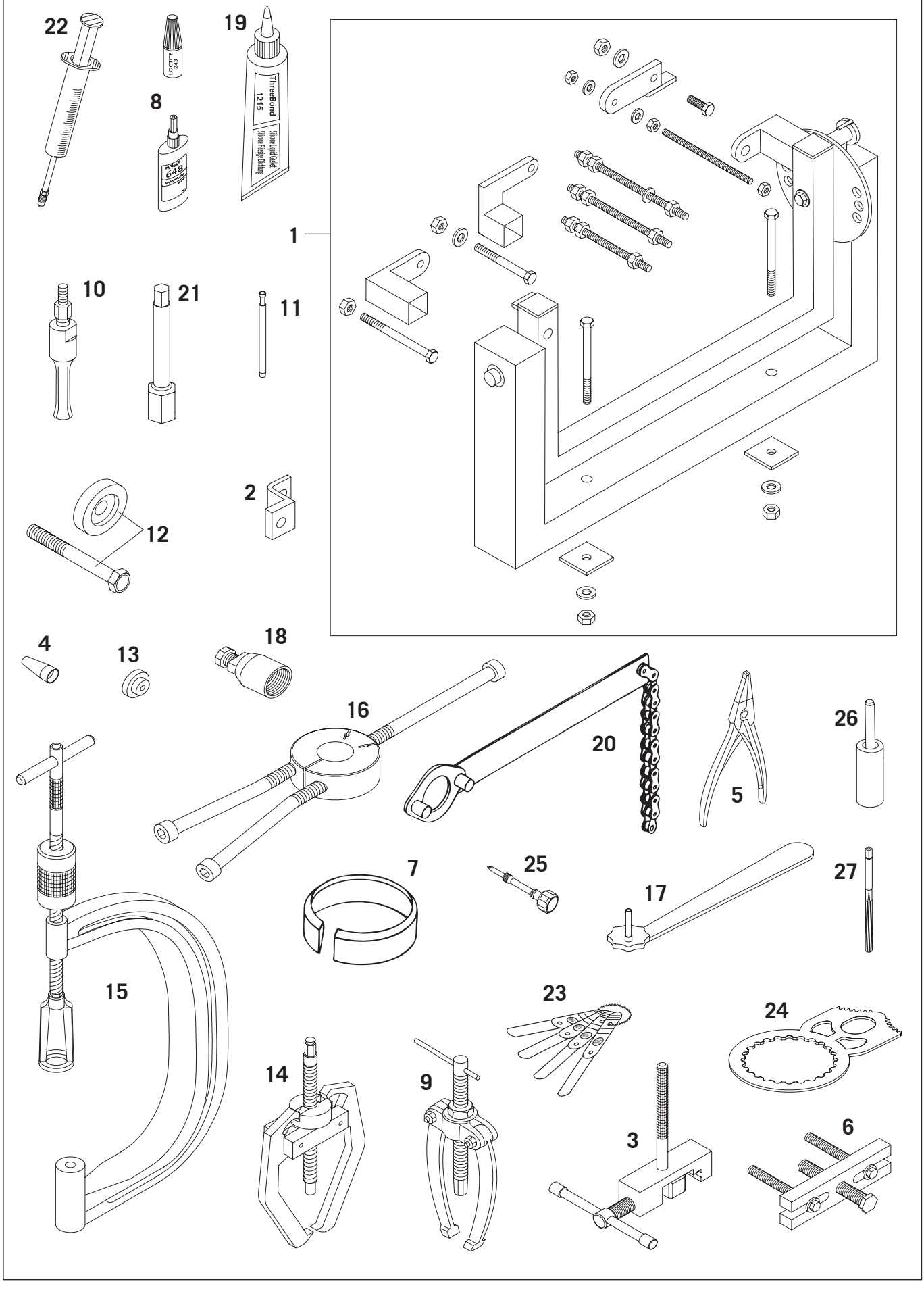
! CAUTION !

– 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 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 AS BRAKE FLUID WILL CORRODE THE PAINTWORK!
– ONLY USE CLEAN, NEW BRAKE FLUID FROM TIGHTLY SEALED CONTAINERS.

Checking brake pads and brake discs

– See Owner's Manual

SPECIAL TOOLS – RACING ENGINE



SPECIAL TOOLS – RACING ENGINE

FIG	PART NO.	DESCRIPTION
1	560.12.001.000	Universal engine work stand
1	560.12.001.044	Universal engine work stand, complete
2	590.29.002.000	Engine holder for engine work stand
3	590.29.020.000	Rivetting tool for steering chain
4	590.29.005.010	Mounting sleeve for shaft seal ring water pump
5	510.12.011.000	Circlip pliers
6	590.29.021.044	Puller for driving hub and primary gear
7	598.29.015.075	Piston ring spanner Ø 75 mm
	580.12.015.089	Piston ring spanner Ø 89 mm
	580.12.015.095	Piston ring spanner Ø 95 mm
	580.12.015.100	Piston ring spanner Ø 100 mm
8	6 899 785	Loctite 243 blue 6 cm^3
	584.29.059.000	Loctite 648 green 24 ml
9	151.12.017.000	Gear puller
10	151.12.018.000	Internal gear puller 12-16 mm
	151.12.018.100	Internal gear puller 18-23 mm
	151.12.018.200	Internal gear puller 5-7 mm
11	590.29.026.006	Limit plug gauge 6.05 mm
12	590.29.035.000	Mounting sleeve for driving pin
13	590.29.036.000	Protection sleeve for primary gear
14	590.29.033.000	Puller for camshaft bearings
15	590.29.019.000	Valve spring mounter
16	584.29.037.037	Mounting tool for inner rings of crankshaft bearings
17	590.29.034.000	Wrench for mixture regulating screw
18	580.12.009.000	Magneto extractor
19	309098	Seal (Three-Bond)
20	510.12.012.000	Chain sprocket holder
21	590.29.072.000	Spark plug wrench 16 mm
22	503.29.050.000	Bleeding syringe for hydraulic clutch
23	590.29.041.000	Feeler gauge for valve clearance
24	590.29.003.100	Clutch holder
25	590.31.017.200	Mixture control screw
26	590.29.018.000	Press-in plug for valve guide
27	590.29.018.050	Reamer for valve guide 6 mm

REMOVING AND REFITTING THE ENGINE 3

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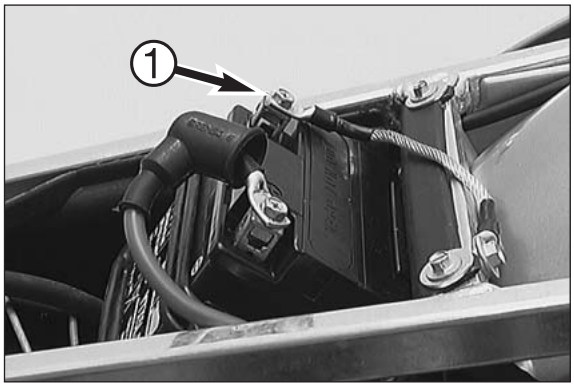
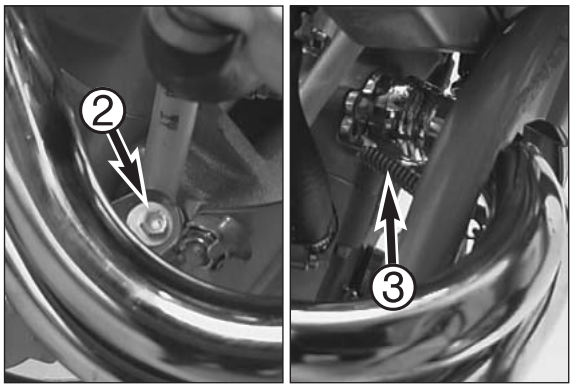


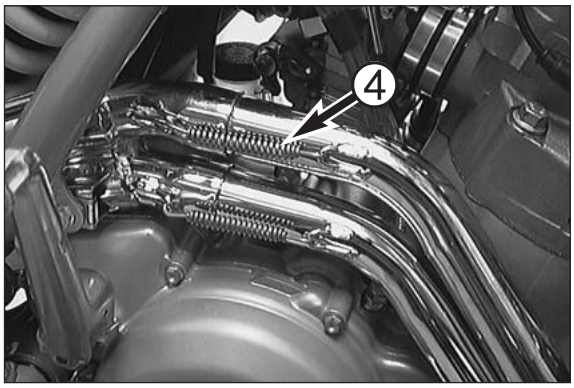
Removing the engine

– Clean the motorcycle thoroughly and prop it up on a stable stand.
– Dismount the seat and the tank with the spoilers.
– Disconnect the ground cable ❶ of the battery.

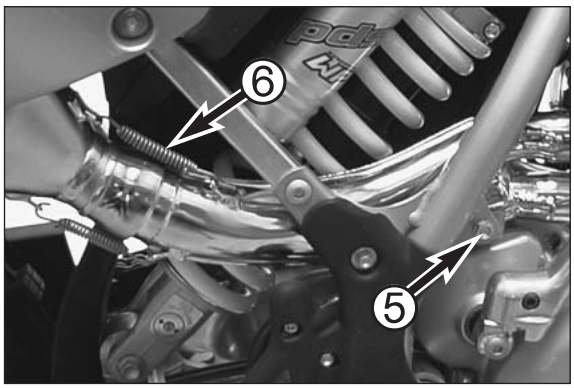


Up to the 2003 model:
– Remove the screw ❷ and detach the 2 tension springs ❸.

Starting with the 2004 model:
– Detach the 2 tension springs ❸.



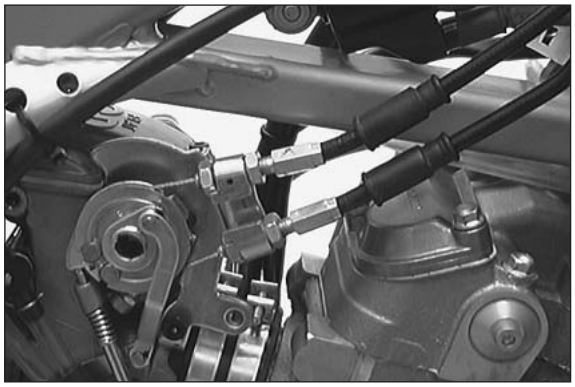
Up to the 2003 model:
– Detach the 2 tension springs ❹, pull exhaust pipes forward and take them off the vehicle.



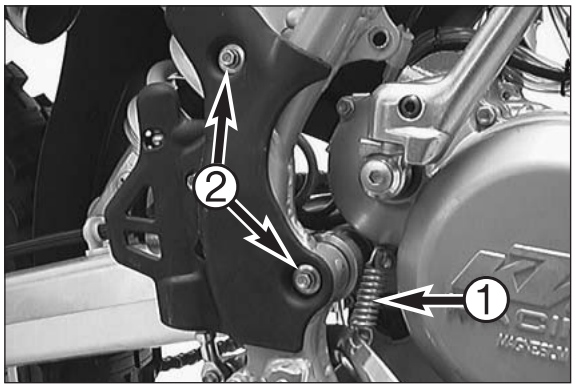
Up to the 2003 model:
– Detach the 2 tension springs ❻ and remove the screw ❺.
– Pull the intermediate pipe forward and take it off the vehicle.

Starting with the 2004 model:
– Detach the tension spring ❻ and remove the screw ❺.
– Pull the exhaust pipes out towards the front and remove them from the vehicle.

– Disconnect all plug-and-socket connections of the ignition system.
– Remove the cable of the hand decompressor (if mounted) from the engine.
– Pull out the spark plug connector.



– Remove the carburetor cover and remove both throttle cables.

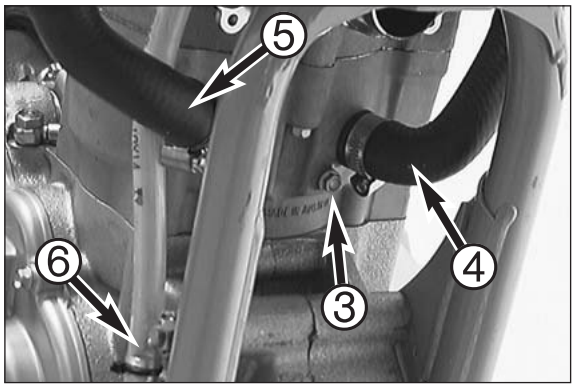


– Detach the return spring ❶ of the foot brake pedal.

Up to the 2003 model:
– Remove the 2 screws ❷ and take off the frame cover.

2004 model:
– Remove the lower screw ❷. The upper screw was replaced by a cable clip. Loosen the cable clip and remove the frame protector.

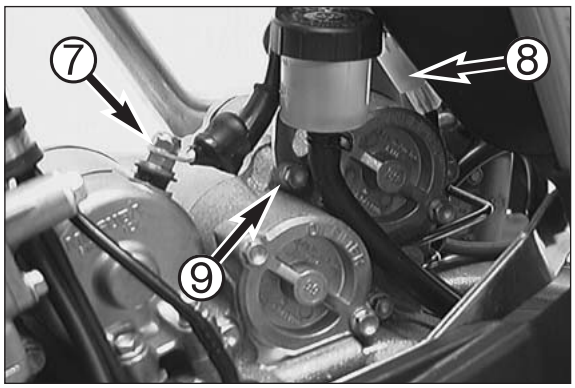
From the 2005 model:
– Remove the lower screw ❷ and the frame protector. The upper screw is no longer mounted.



– Open the radiator cap.
– Remove the screw ❸ at the cylinder together with the sealing ring and drain the coolant into a receptacle.

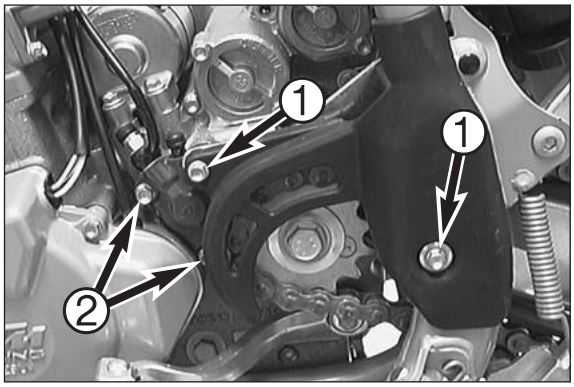
– Disconnect the water hoses ❹ and ❺.
– Disconnect the hose of the engine ventilation system ❻.

– Disconnect the plug-in connection from the throttle-valve sensor.
– Loosen the front and rear hose clamps of the carburetor, pull the carburetor backward and pivot it out of the rubber sleeve at the front.
– Take the carburetor off the vehicle.



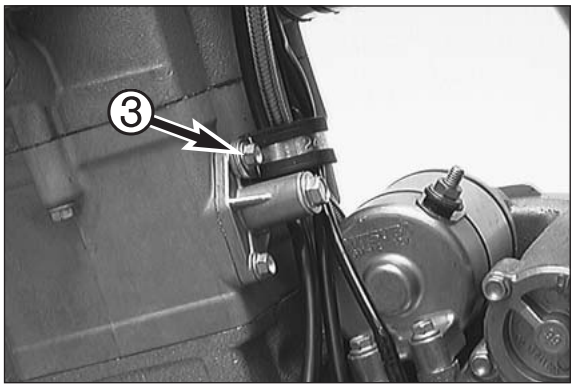
– Disconnect the cable ❼ from the E-starter motor.
– Disconnect the plug-and-socket connection ❽.

Up to the 2003 model:
– Remove the screw ❾ and swing the brake-fluid container to the side.



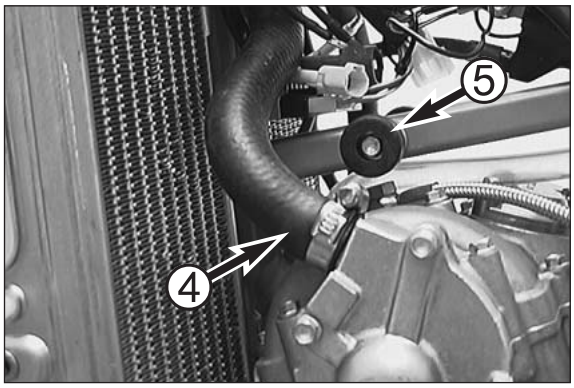
– Loosen the cable clip on the sprocket cover (2004 model only).
– Remove the bolts ❶ and take off the sprocket cover.
– Remove the 2 bolts ❷ of the clutch slave cylinder and pull the clutch slave cylinder off the casing.

– Swing the chain damper plate backwards.
– Open the chain joint and remove the chain from the vehicle.

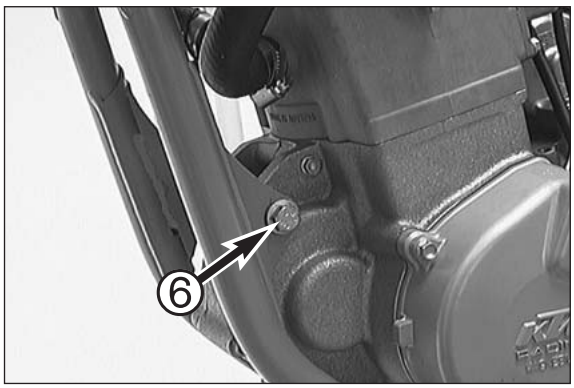


– Remove the bolt ❸ and take off the cable clip.

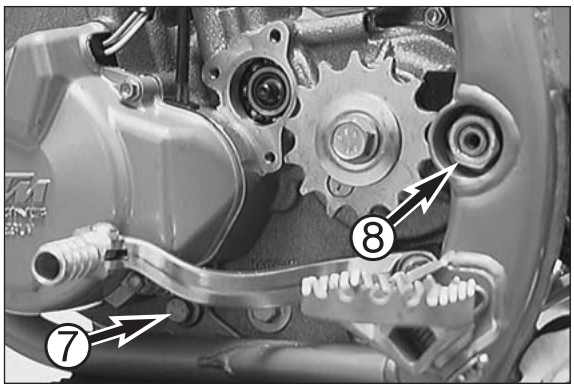
NOTE: From Model 2001 onwards a cable tie is mounted instead of the the cable clip.



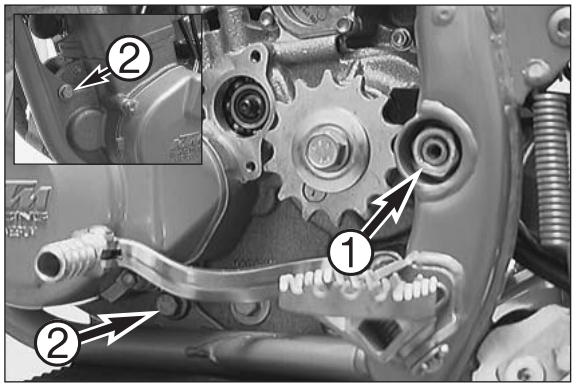
– Disconnect the radiator hose ❹ and dismount the tank roller ❺.



– Dismount the front engine mounting bolt ❻.

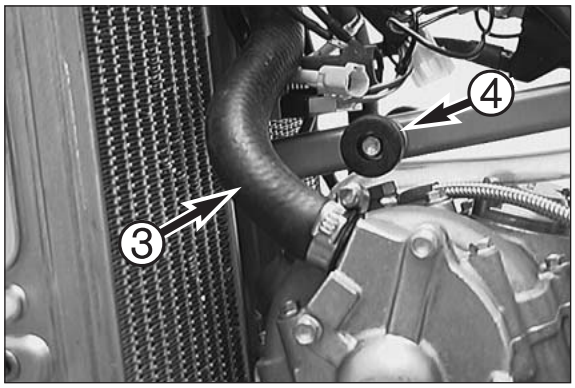


– Remove the engine mounting bolt ❼ and the hex nut ❽.
– Dismount the swing arm pivot and pull the swing arm backwards.
– Lift the engine out of the frame.

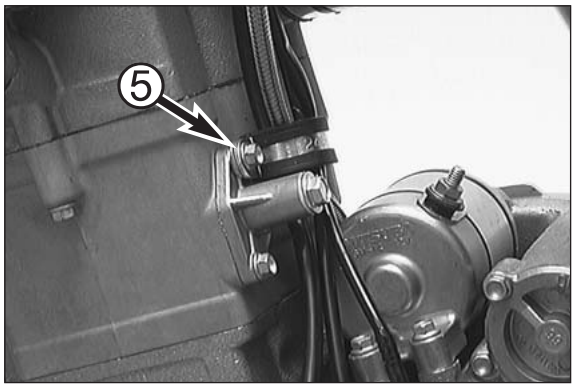


Refitting the engine

– Lift the engine into the frame and move it into the correct position.
– Slightly grease the swing arm bolt and mount the hexagon nut ❶ but do not tighten it yet.
– Slightly grease both engine fixing screws ❷ and tighten to 60 Nm.
– Tighten the hexagon nut ❶ to 100 Nm.

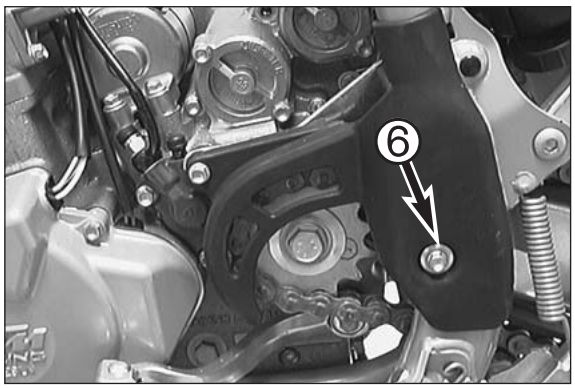


– Mount the radiator hose ❸ and the tank roller ❹.



– Fasten the cable clip ❺.

NOTE: From Model 2001 onwards a cable tie is mounted instead of the cable clip.

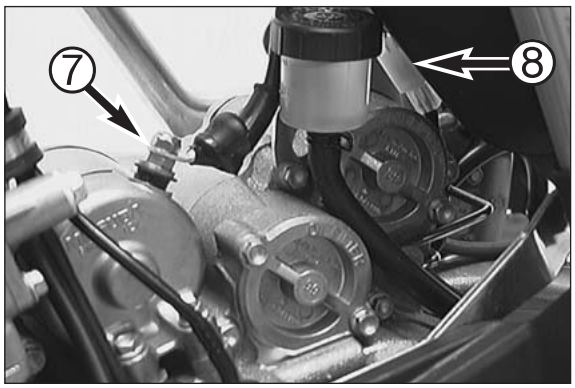


– Mount the chain.

! CAUTION !

WHEN MOUNTING THE CHAIN JOINT MAKE SURE THAT THE CLOSED SIDE OF THE RETAINER POINTS IN THE RUNNING DIRECTION.

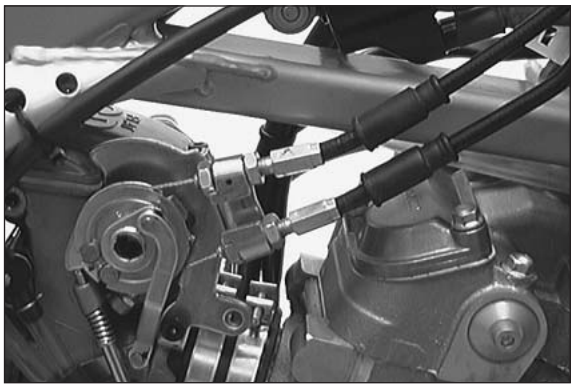
– Mount the clutch slave cylinder together with the chain damping sheet and the chainguard and tighten the three screws to 10 Nm.
– Tighten the screw ❻.
– Fasten the cable clip on the sprocket cover (2004 model only).



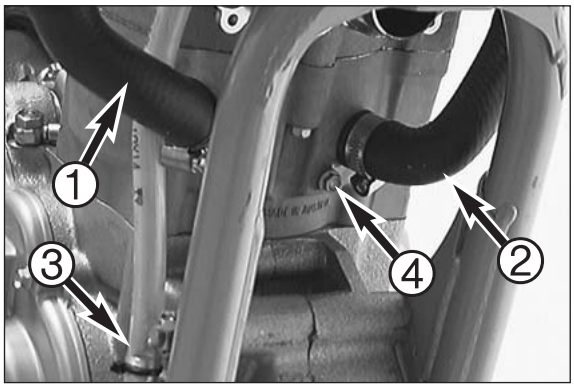
– Connect the cable ❼ to the starter.
– Connect the plug connector ❽.

Up to the 2003 model:
– Mount the brake fluid reservoir.

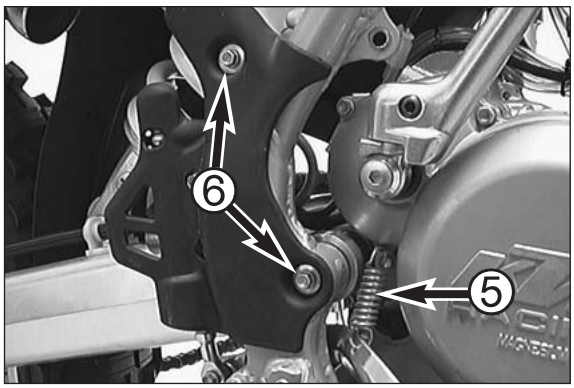
– Insert the rear end of the carburetor in the carburetor connection boot and the front end in the intake flange.
– Mount and tighten both hose clamps.



– Attach both throttle cables and mount the carburetor cover.
– Connect the plug connector on the throttle sensor.



– Connect the water hoses ❶ and ❷.
– Mount the engine bleeder hose ❸.
– Mount the screw ❹ on the cylinder together with a new seal ring.



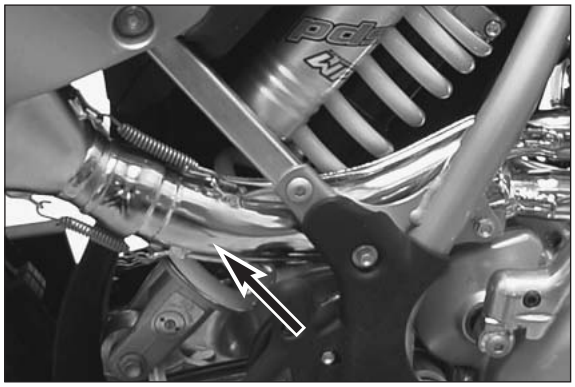
– Attach the spring ❺ on the foot brake lever to the clutch cover.
– Mount the brake cylinder cover.

Up to the 2003 model:
– Mount the frame cover with the 2 screws ❻.

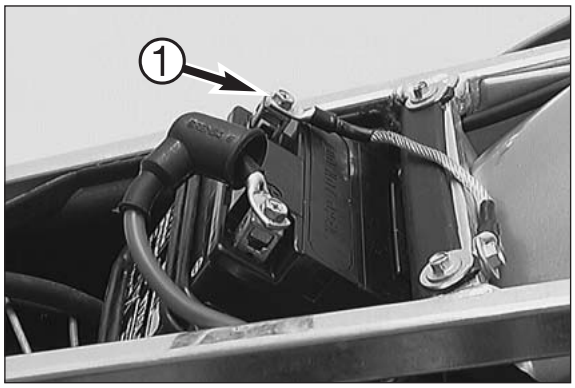
2004 model:
– Mount the frame cover with the lower screw ❻. The upper screw was replaced by a cable tie. Mount the cable tie.

Starting with the 2005 model:
– Mount the frame cover with the lower screw ❻. The upper screw is no longer mounted.

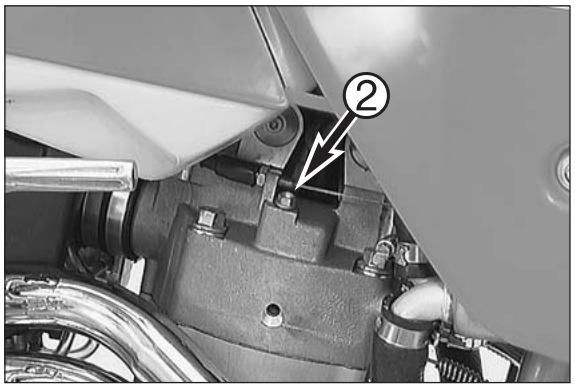
– Connect all the plug connectors in the ignition system.
– Attach the spark plug connector to the spark plug.
– Attach the cable on the hand decompression lever (if mounted) to the engine.



– Mount the exhaust system.

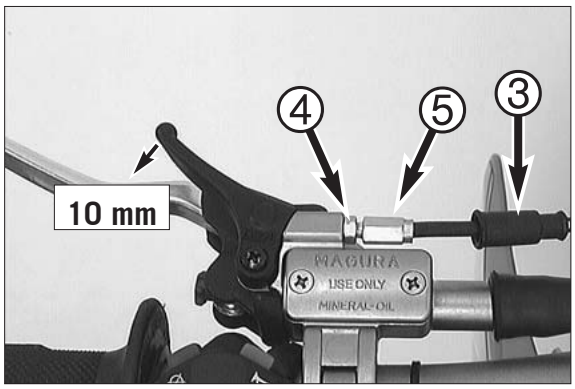


– Connect the ground wire ❶ to the battery.
– Mount the seat and tank together with the spoilers.



Bleeding the cooling system

To bleed the cooling system, pour in approx. 0.8 liters (0.2 US gallons) of coolant and remove the bleeder bolt ❷. Do not reinstall the bleeder bolt until coolant escapes at the bore without any bubbles.
Then, pour in the coolant until it reaches a level about 10 mm above the radiator fins.
After a short ride, check the coolant level once more.

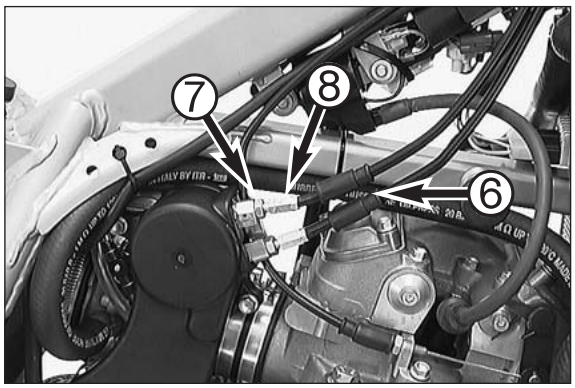


Checking the adjustment of the hand decompression release cable

Start the engine and, at idling speed, slowly pull the hand decompression lever until you can feel the thumping of the rocker arm on the lever. The backlash should be approx. 10 mm, measured at the lever's outer end. If necessary, correct this backlash.
To adjust, move back the protective cover ❸, loosen the counter nut ❹ and correct the adjustment screw ❺ accordingly. Tighten the counter nut and push back protective cover.

! CAUTION !

IF THERE IS NO PLAY IN THE DECO-LEVER, THIS CAN RESULT IN ENGINE DAMAGE.



Adjusting the throttle cables

The throttle grip should always provide for a backlash of 3-5 mm. Besides, with the engine running, the idling speed must not change if you turn the handlebar all the way to the left or right.
To adjust the throttle cables, dismount the seat and the tank together with spoilers. Slide back the protection cover ❻. Loosen the counter nut ❼ and turn the adjusting screw ❽ accordingly. Turning the adjusting screw counterclockwise will reduce the backlash, turning the adjusting screw clockwise will increase the backlash.
Tighten the counter nut and check whether the throttle grip can be actuated smoothly. Mount tank and seat.

– After a short, careful test ride, check engine oil and coolant level once more.

DISASSEMBLING THE ENGINE 4

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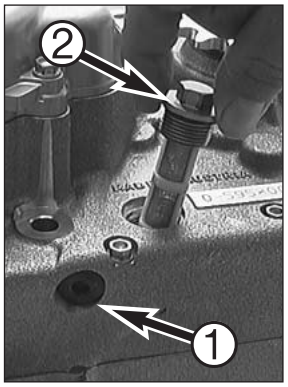
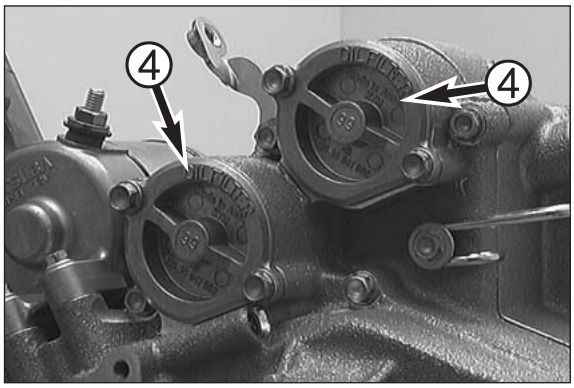
Art.-Nr. 3.206.043-E



Draining the engine oil

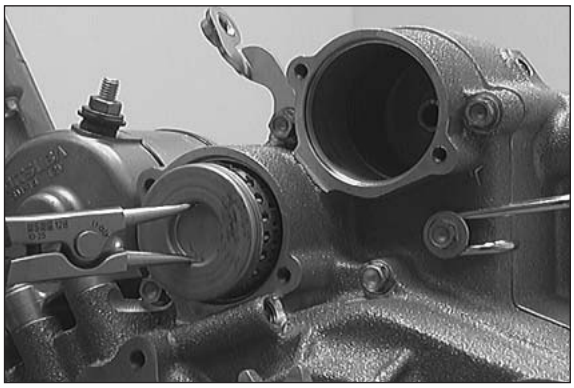
– Remove the bolts ❶, ❷, and ❸, and drain the engine oil into a receptacle.

– Remove the kickstart and the shift lever.



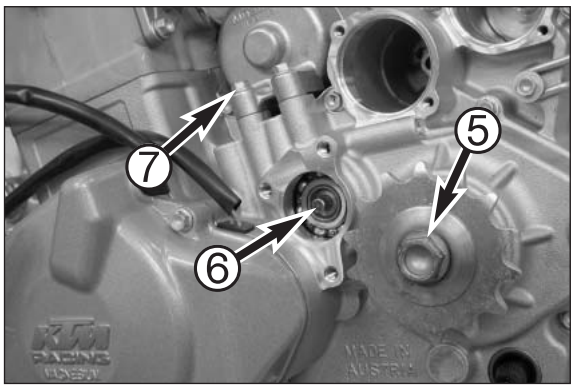
Dismounting the oil filter

– Unfasten the 4 bolts and remove both oil filter covers ❹.



– Pull the 2 oil filters out of the housing.

NOTE: To pull out the oil filters, you should use circlip pliers (see photo).



Dismounting the chain wheel

– Remove the collar bolt ❺ and the disc spring.
– Take the chain wheel off the countershaft.
– Pull the spacer bushing off the countershaft.

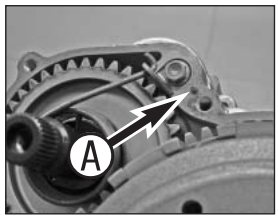
NOTE: If the transmission and clutch are okay, you can engage a gear in order to block the countershaft (force transmission to the blocked crankshaft does exist).
If the countershaft cannot be blocked as described above, you have to use a holding spanner to steady the chain-wheel in order to unfasten the collar bolt.

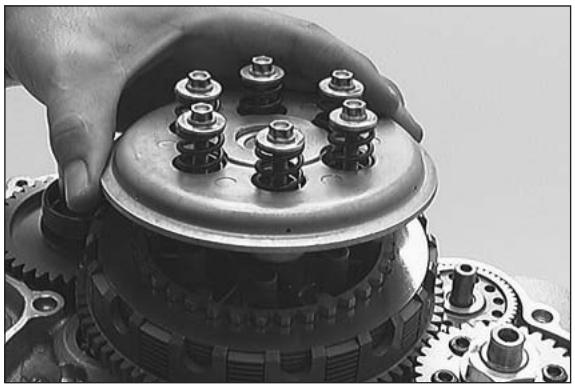
– Pull the push rod ❻ out of the main shaft.
– Loosen the 2 bolts ❼ and dismount the E-starter motor.

Disassembling the clutch

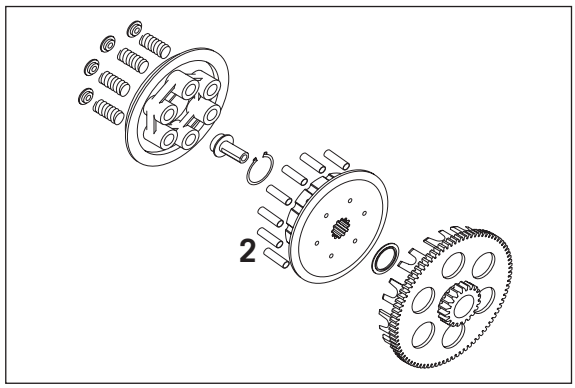
– Loosen all the bolts of the clutch cover and dismount the clutch cover together with the gasket.
– Pull the 2 dowels out of the engine casing.

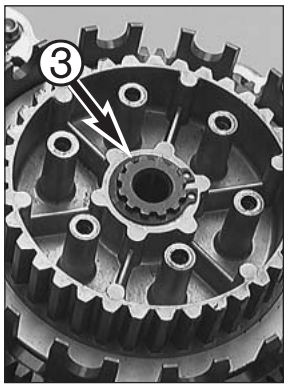
Starting with the 2004 model:
– Do not lose the needle roller ❹.

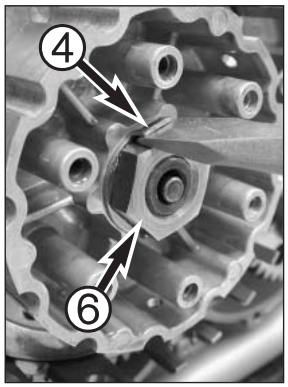




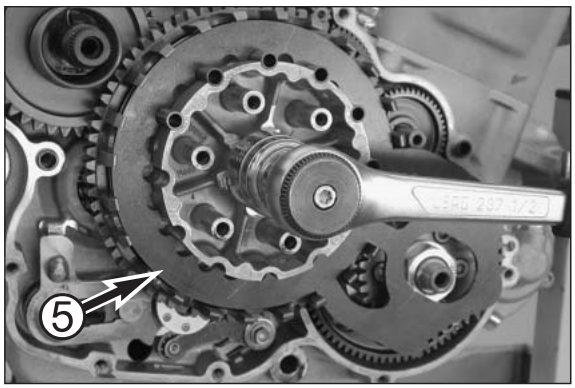
– Loosen the bolts in a crosswise order to prevent the clutch discs from getting jammed when the clutch springs are released.
– Dismount the pressure cap together with the bolts, spring retainer, and the clutch springs.
– Remove the pressure piece ❶.
– Take all the lining and steel discs out of the outer clutch hub.





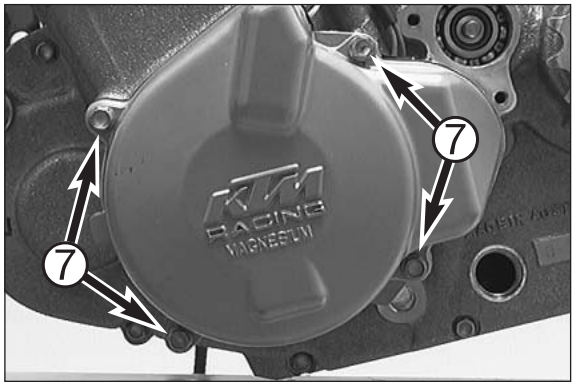


Up to the 2002 model:
– Remove the circlip ❸.



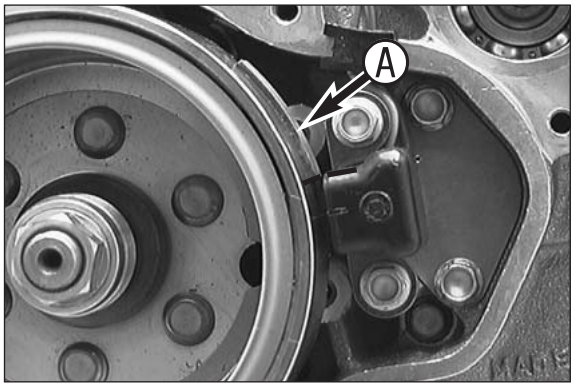
From 2003 model:
– Bend up the lock washer ❹ with a flat chisel, position the clutch holder 590.29.003.100 ❺ with 6 driving sleeves ❷ as shown and loosen the nut ❻.

NOTE: Do not remove the clutch holder to allow the flywheel nut to be removed later.



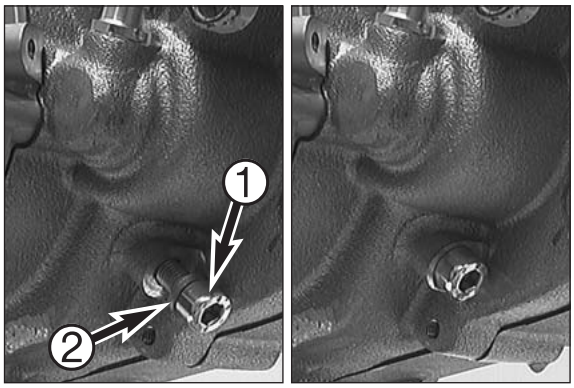
Dismounting the ignition system (400/520 models until 2002 only)

– Undo the 4 bolts ❼ and take the ignition cover together with the seal off the engine casing.

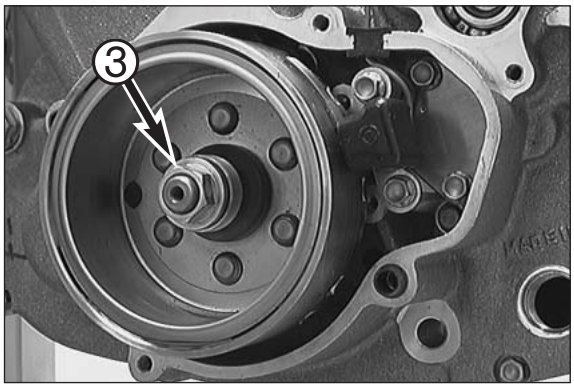


– Remove the spark plug.
– Move the crankshaft to the ignition TDC position.

NOTE: In the TDC position, the guidepiece ❹ will be above the pulser coil (see photo).

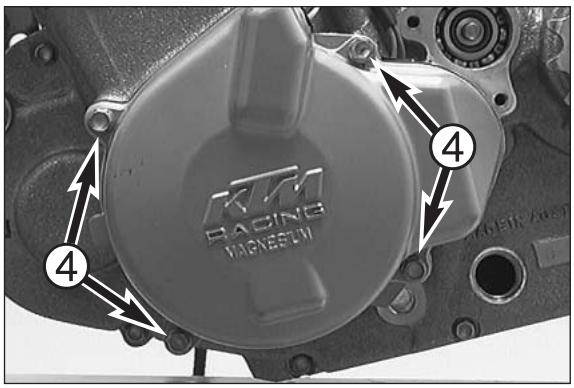


– Unscrew the crankshaft fixing bolts ❶ and remove the sealing ring ❷.
– Screw in the crankshaft fixing bolt in by hand.
– If you feel any resistance, move the flywheel slightly back and forth so that the crankshaft fixing bolt may engage the recess of the crankshaft.
– Tighten the crankshaft fixing bolt to 10 Nm.



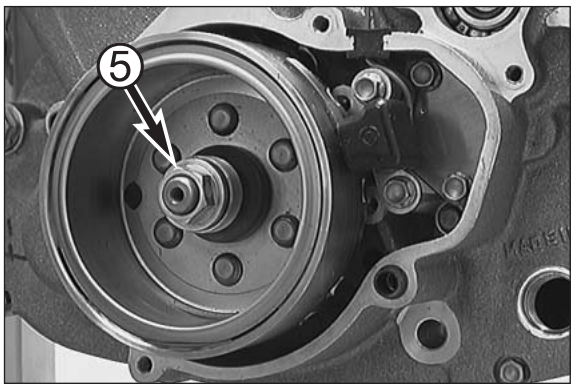
– Loosen the collar nut ❸ and remove the spring washer.

NOTE: When ordering a new part, a forged rotor will be supplied, this part is produced without rivets and is interchangeable.



Dismounting the ignition system and loosening the primary gear (250 EXC models from 2002, 450/525 models from 2003)

– Undo the 4 bolts ❹ and take the ignition cover together with the seal off the engine casing.



– Holding the clutch holder mounted earlier, unscrew the nut ❺.
– Remove the clutch holder and remaining driving sleeves.

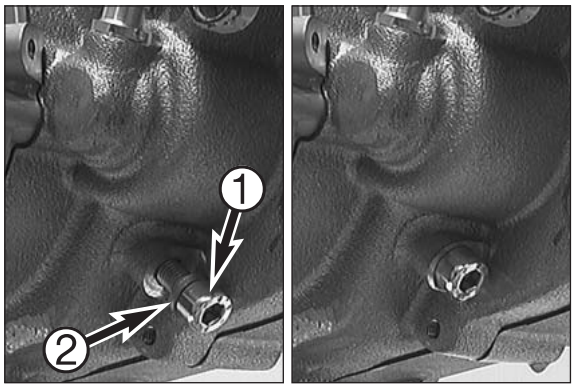
! CAUTION !

AS A LONGER CRANKSHAFT LOCATING SCREW IS MOUNTED ON THE 250 EXC MODELS, IT IS IMPERATIVE THAT YOU HOLD THE CLUTCH HOLDER WHILE UNSCREWING THE NUT ❺, OTHERWISE YOU MAY BEND THE LOCATING SCREW AND DAMAGE THE ENGINE HOUSING.

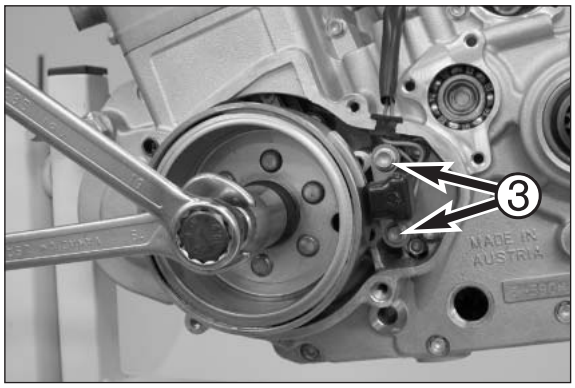
– Apply the special tool 590.29.003.100 as shown, loosen the collar nut from the primary gear and remove.
– Remove the special tool.

! CAUTION !

COLLAR NUTS WITH LEFT-HAND THREAD AND WITH RIGHT-HAND THREAD WERE USED RESPECTIVELY. COLLAR NUTS LABELED AS "LEFT" HAVE A LEFT-HAND THREAD. COLLAR NUTS WITHOUT LABELING HAVE A RIGHT-HAND THREAD.



– Remove the spark plug.
– Turn the crankshaft to the TDC position (see illustration on page 4-4).
– Unsrew the crankshaft fixing bolts ❶ and remove the sealing ring ❷.
– Screw the crankshaft fixing bolt in by hand.
– If you feel any resistance, move the flywheel slightly back and forth so that the crankshaft fixing bolt may engage the recess of the crankshaft.
– Tighten the crankshaft fixing bolt to 10 Nm.

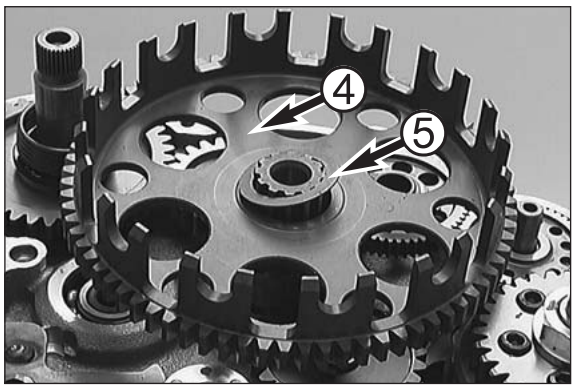


Pulling off the flywheel

– Loosen the 2 bolts ❸ and take the pulse generator out of the engine casing.
– Mount the puller tool 580.12.009.000 and pull off the flywheel. (use the protection cover).
– Remove the Woodruff key from the crankshaft.

! CAUTION !

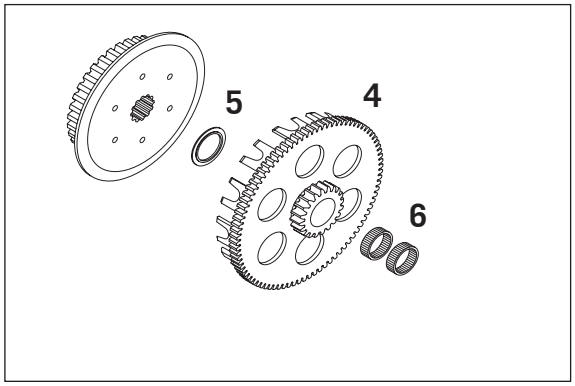
– NEVER USE A HAMMER OR OTHER TOOLS TO HIT THE FLYWHEEL. THIS MIGHT CAUSE THE MAGNETS TO COME OFF THE FLYWHEEL AND DAMAGE THE CRANKSHAFT.
– HOLD THE PULLER TOOL TO PREVENT THE LOCATING SCREW FROM BEING BENT (250 EXC MODEL).



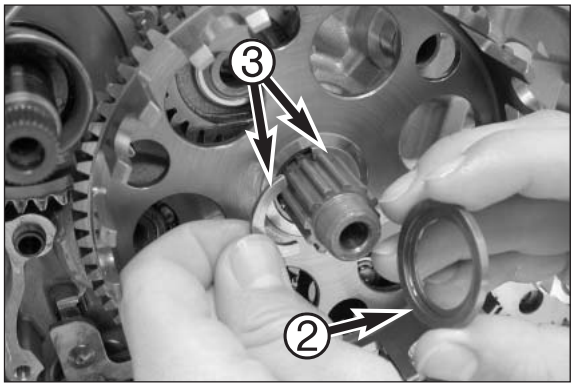
Removing the clutch drive and the outer clutch hub

– Pull the inner clutch hub off the main shaft. If necessary, insert the protection cover in the drive shaft and use the extractor.

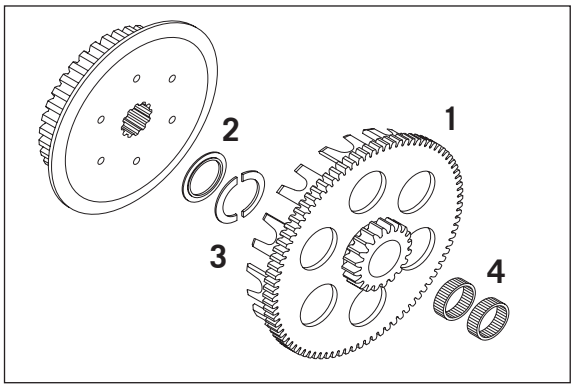
Up to the 2002 model:
– Take the outer clutch hub ❹ together with the bearing bush and the 2 stop discs off the main shaft.



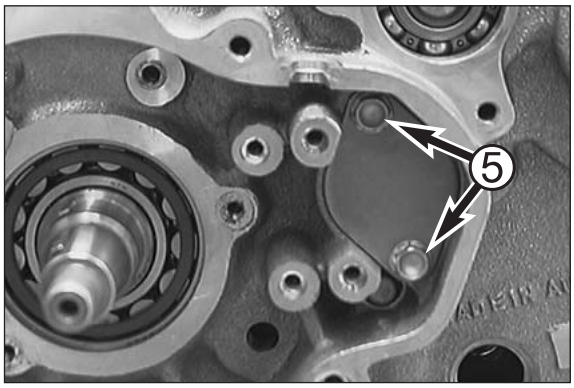
NOTE: In the 2001/2002 models, disc ❺ is replaced by a stepped disc and the bushing by 2 needle bearings ❻ (see illustration).



From the 2003 model:
– Remove the outer clutch hub ❶ together with the stepped disc ❷ and both half discs ❸ from the main shaft.

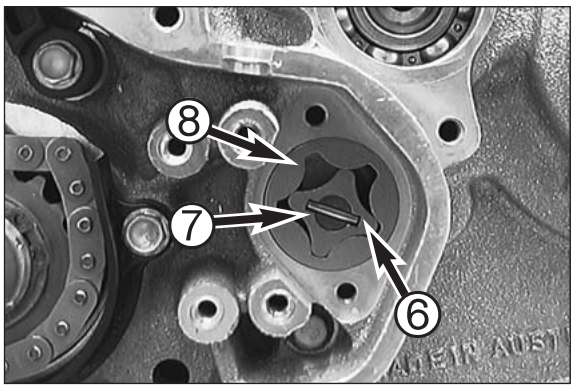


Starting with the 2003 model:
– Remove both needle bearings ❹ and the supporting plate.

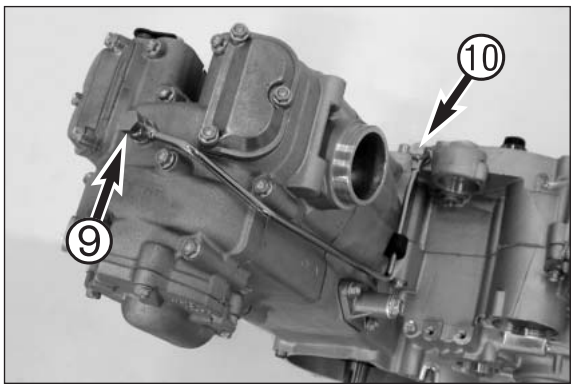


Dismounting the oil pump

– Loosen the 2 bolts ❺ and remove the oil pump cover.

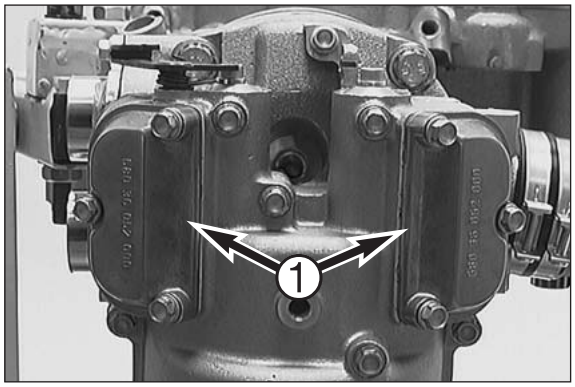


– Pull needle roller ❻, inner rotor ❼ and outer rotor ❽ out of the oil pump casing.



Up to the 2005 model:
– Remove the banjo bolt ❾ and the jet bolt ❿ together with their sealing rings and remove the oil line.

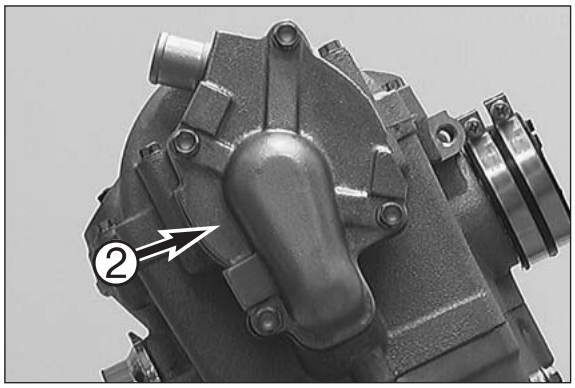
Starting with the 2006 model:
– Remove the banjo bolt ❿ and the jet bolt ❾ together with the sealing rings and remove the oil line.



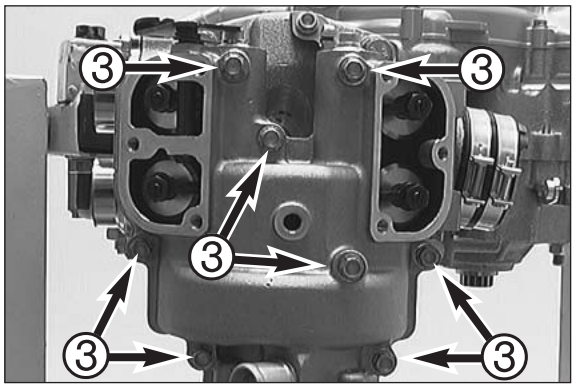
Dismounting the upper cylinder head portion

– Loosen each of the 6 bolts together with their sealing rings and dismount both valve covers ❶ together with their gaskets.

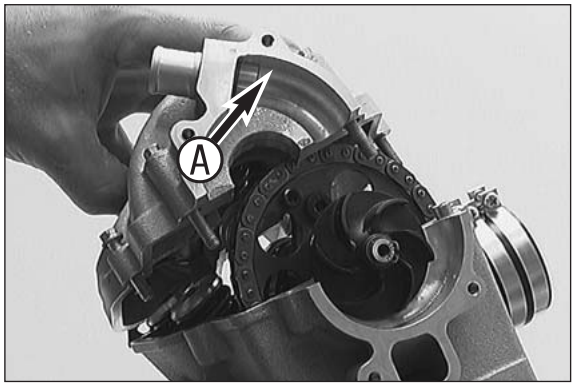
NOTE: The piston must be in the TDC position and the crankshaft locked with the crankshaft locating screw.



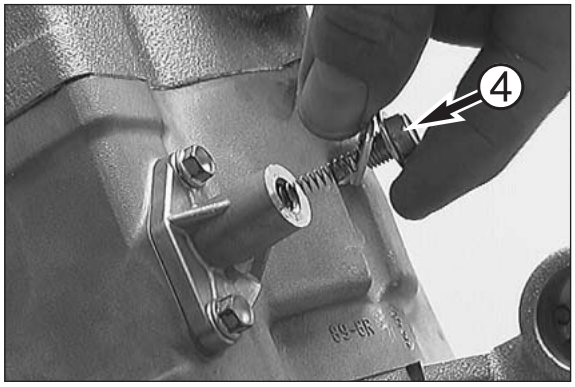
– Undo the 4 bolts and dismount the water pump cover ❷ together with its gasket.



– Loosen all the bolts ❸ of the upper cylinder head part.

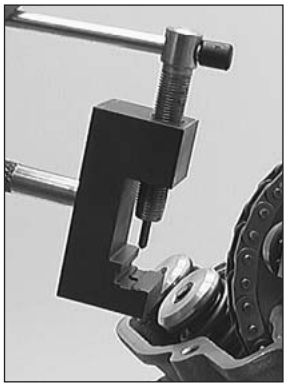


– Use a plastic hammer to carefully tap upwards in area Ⓐ and lift off the upper cylinder head part.



Dismounting cylinder head, cylinder and piston

– Dismount the bolt ❹ together with the sealing ring and the pressure spring.
– Undo the 2 bolts and pull the timing-chain tensioner out of the cylinder.

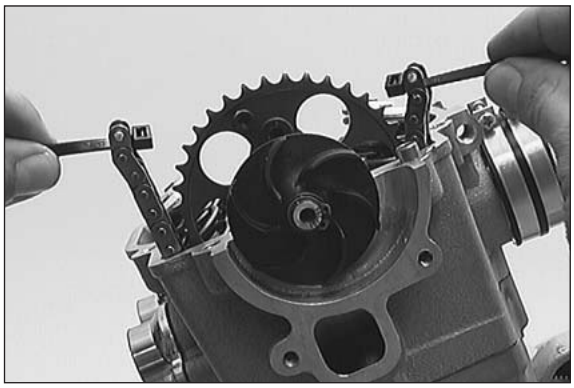



– Apply the timing chain separating tool 590.29.020.000 and open the timing chain by turning the spindle (see photo).

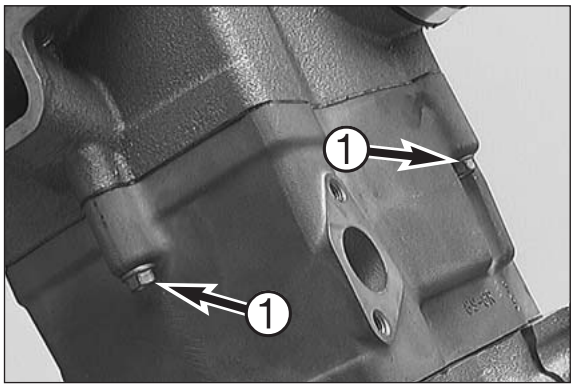
! CAUTION !

– MAKE SURE THAT THE PUSHED-OUT BOLTS DO NOT FALL INTO THE ENGINE.
– PREVENT THE TIMING CHAIN FROM FALLING INTO THE CHAIN TUNNEL.
– THE OPENED RIVET LINK IS TO BE DISCARDED.

NOTE: Every rivet link of the timing chain can be opened.

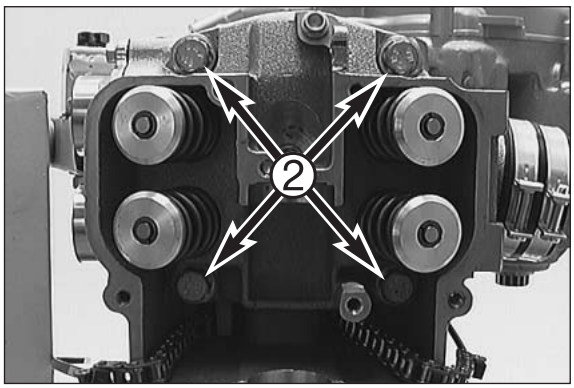


– To keep the timing chain from falling into the chain tunnel, you should insert a cable tie through the ends of the timing chain.
– Extract the camshaft from the cylinder head.

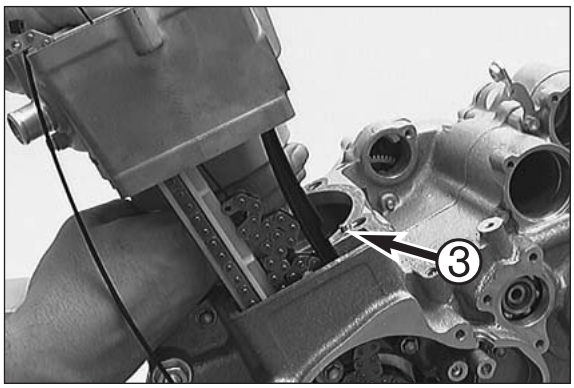


– Remove the 3 bolts ❶.

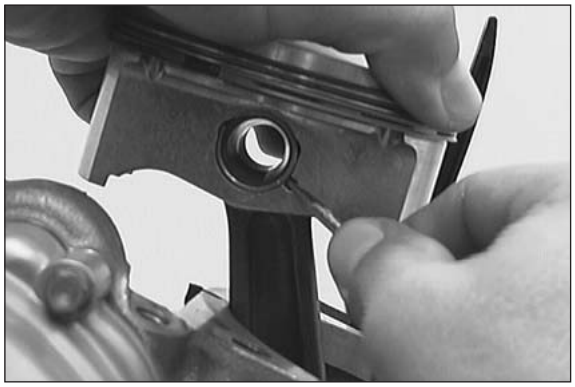
NOTE:
– If no repairs to the cylinder and cylinder head are necessary, these 3 bolts need not be removed. You can dismount the cylinder and the cylinder head as one. In this case, the cylinder head gasket need not be replaced.
– from Model 2001 onwards the bolt outside the chain tunnel is mounted with a copper seal ring (6x10x1)



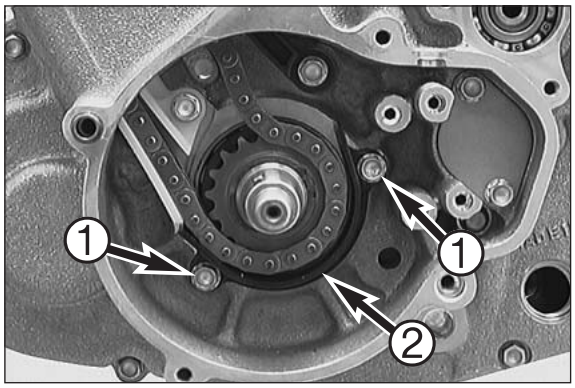
– Remove the 4 cylinder-head bolts ❷ together with the washers and dismount the cylinder head together with the cylinder head gasket.
– Do not lose the dowels.



– Pull the cylinder upward while holding the piston.
– Do not lose the two needle rollers ❸.

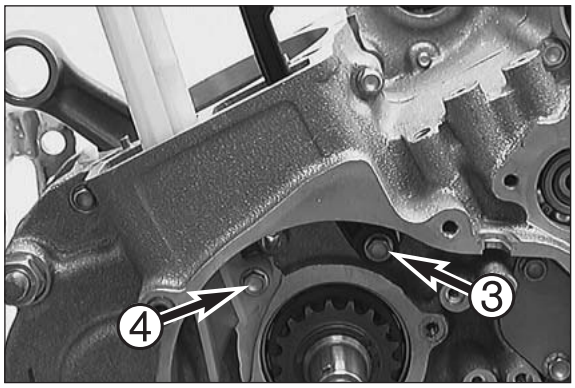


– Remove the wire circlip and the push piston bolt from the piston. Dismount the piston.

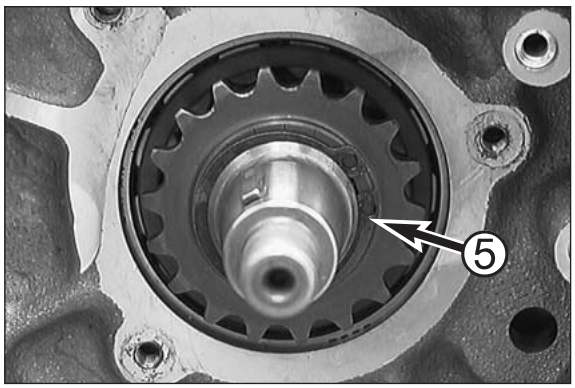


Dismounting the timing chain and the timing gear

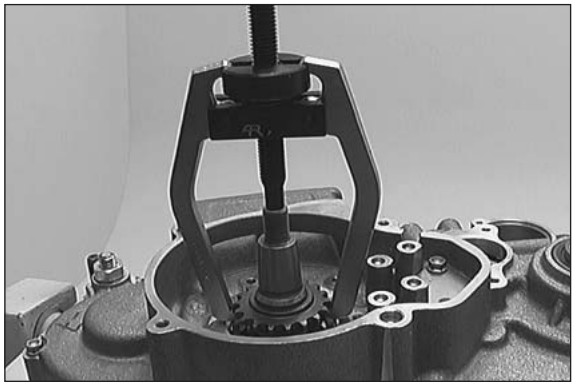
– Loosen the 2 bolts ❶ and dismount the fall-out protection element ❷.
– Remove the timing chain.



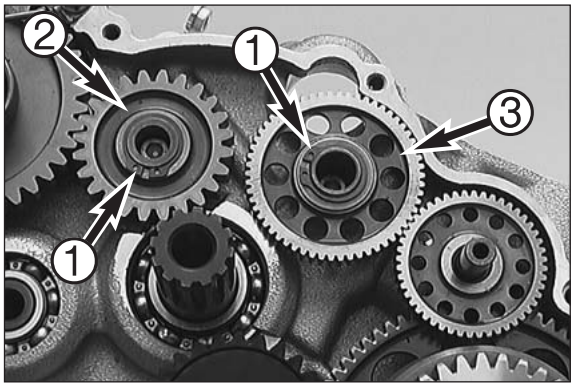
– Remove the bolts ❸ and ❹. Pull the timing chain tensioner and the timing chain guide upward out of the engine casing.



– Remove circlip ❺.
– Do not lose the Woodruff key.

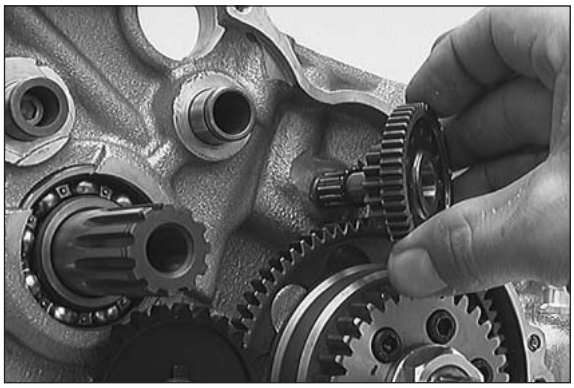


– Apply the puller tool 590.29.033.000 and pull the timing gear off the crankshaft.



Dismounting the E-starter drive gear and kickstarter

– Remove the 2 circlips ❶ and the stop discs. Pull the kickstarter idler gear ❷ and the E-starter idler gear ❸ off the bearing bolts.

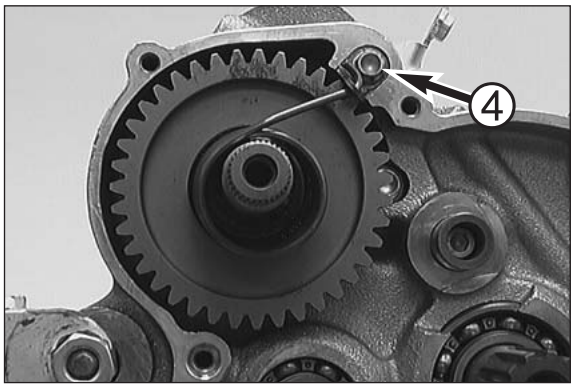


Up to the 2005 model:

– Pull the reduction gear and the needle bearing off the bearing bolt. Take the bearing bolt out of the engine casing.

Starting with the 2006 model:

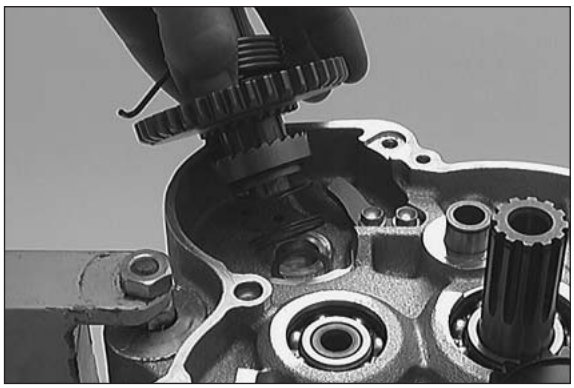
– Pull the torque limiter and both needle bearings off the bearing bolt. Remove the bearing bolt from the engine casing.



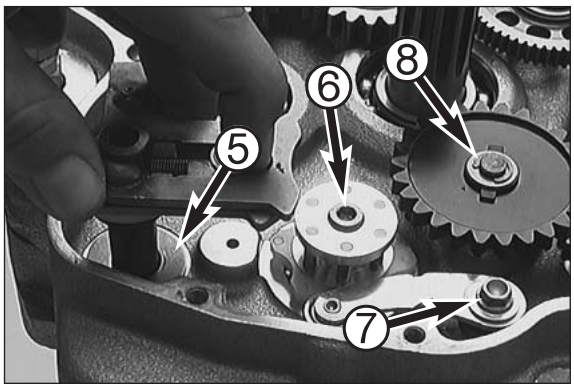
– Carefully loosen the collar bolt ❹ while holding down the kickstarter spring. Release the kickstarter spring and remove the spring shackle.

! CAUTION !

BE CAREFUL WHEN RELEASING THE KICKSTARTER SPRING, AS THE RECOILING KICKSTARTER SPRING MAY CAUSE INJURY.



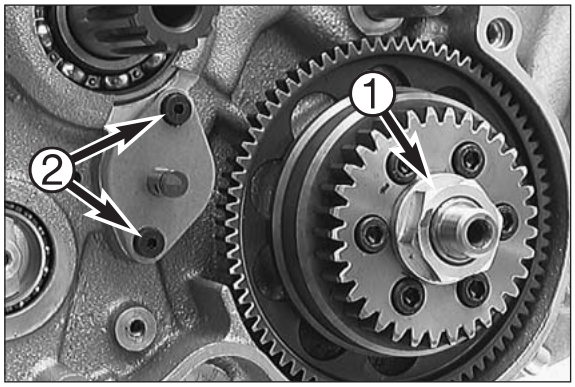
– Pull the kickstarter shaft together with the ratchet gear, spring and the disc out of the engine casing.



– Slide back the sliding plate and pull the shift shaft together with the stop disc ❺ out of the engine casing.
– Remove the bolt ❻ and dismount the shift arrester.
– Remove the bolt ❼, dismount the arrester lever together with the bushing and spring.

NOTE: The arrester lever only needs to be dismounted if the engine casing is exchanged.

– Remove the tab washer ❽. Pull the stop disc, oil pump wheel, and the needle roller off the oil pump shaft.



Dismounting the primary gear and free wheel

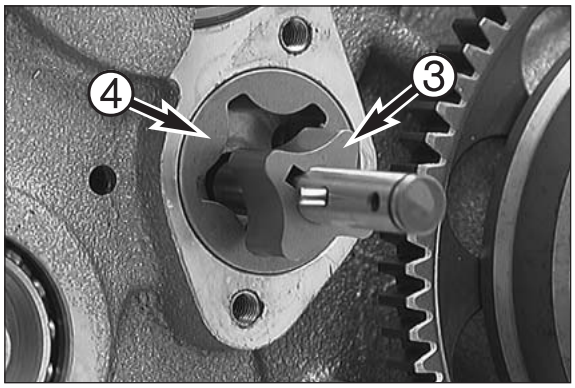
– Remove the collar nut ❶.

! CAUTION !

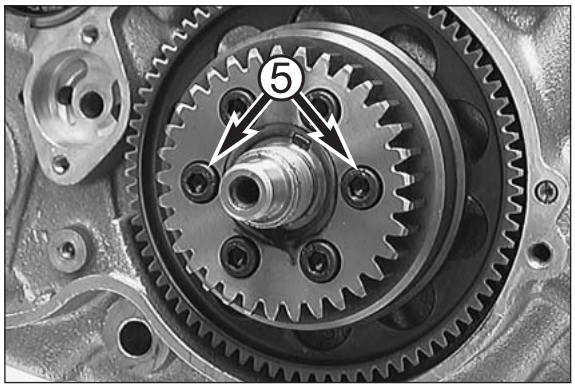
COLLAR NUTS WITH LEFT-HAND THREAD AND WITH RIGHT-HAND THREAD WERE USED RESPECTIVELY. COLLAR NUTS LABELED AS "LEFT" HAVE A LEFT-HAND THREAD. COLLAR NUTS WITHOUT LABELING HAVE A RIGHT-HAND THREAD.

NOTE: The collar nut ❶ was already removed from the 250 EXC models from 2002 and the 450/525 models from 2003 as described on page 4-5.

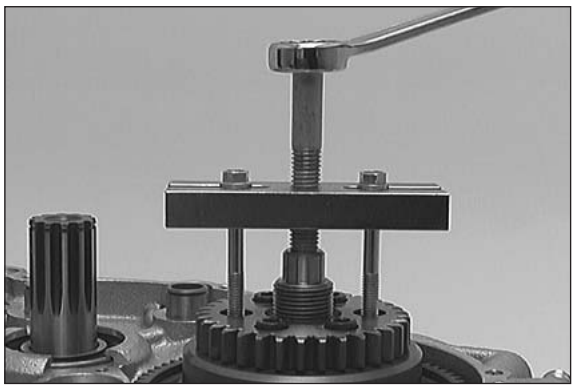
– Loosen the 2 bolts ❷ and dismount the oil pump cover.



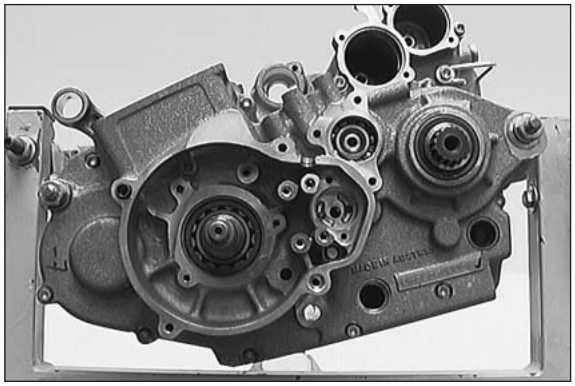
– Take the oil pump shaft together with the needle roller, inner rotor ❸ and outer rotor ❹ out of the engine casing.



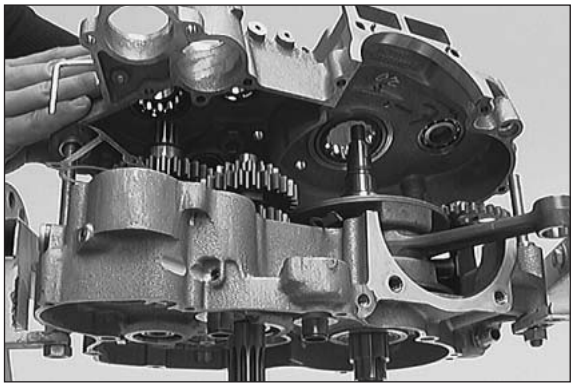
– Remove the 2 bolts ❺ located opposite.



– Mount the puller tool 590.29.021.044 and pull the primary gear off the crankshaft.
– Do not lose the Woodruff key.



– Loosen the crankshaft fixing bolt.
– Loosen each of the 13 casing bolts.



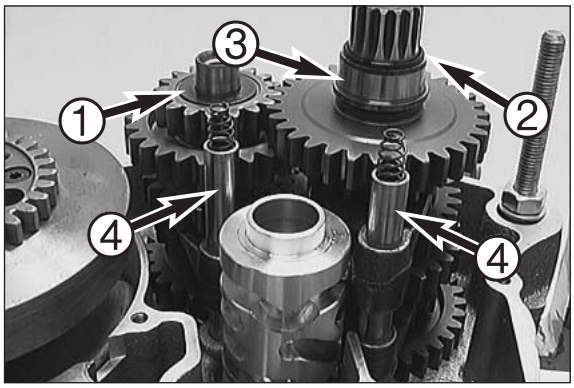
Dismounting the shift mechanism and transmission

– Turn the engine sideward.
– Undo the engine fixture at the engine work stand
– Applying a suitable tool to the cast-on members on the casing, lift off the left half of the casing, or separate it from the right half by slightly tapping on the countershaft with a plastic hammer.

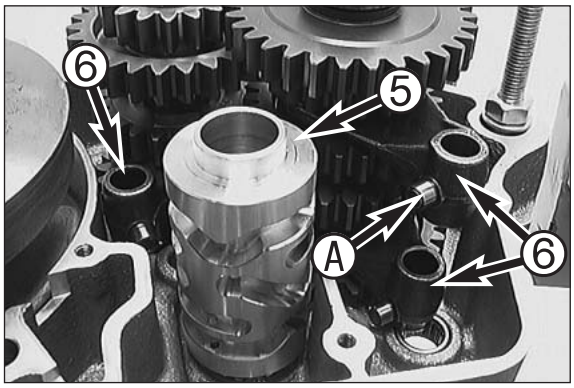
! CAUTION !

TRY TO AVOID PRYING THE HALVES APART WITH A SCREWDRIVER OR A SIMILAR TOOL AS THIS IS APT TO INFLICT DAMAGE ON THE SEALING SURFACES.

– Dismount the left casing half and the gasket.
– Pull the 2 dowels out of the engine casing and secure the right half of the casing in the work stand.

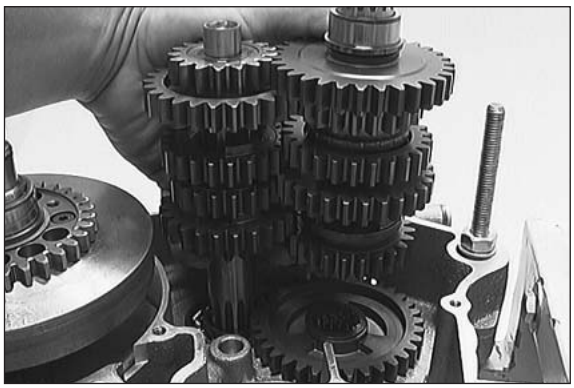


– Remove the stop disc ❶, O-ring ❷, and the inner ring ❸.
– Pull both shift rails ❹ together with the 4 springs out of the engine casing and swing the shift forks sideward.

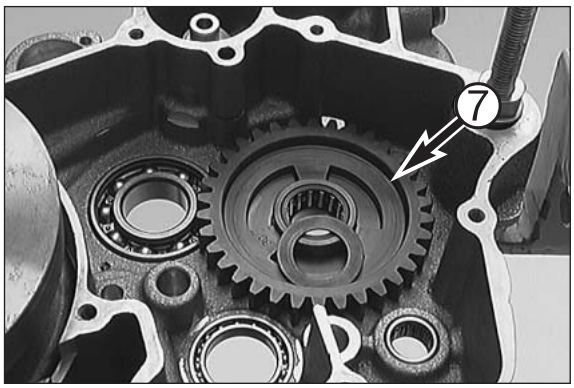


– Pull the shift roller ❺ out of the bearing seat.
– Remove the shift forks ❻.

NOTE: During disassembly, watch out for the shift rolls Ⓐ on the driving pins of the shift forks. They may remain in the shift roller.



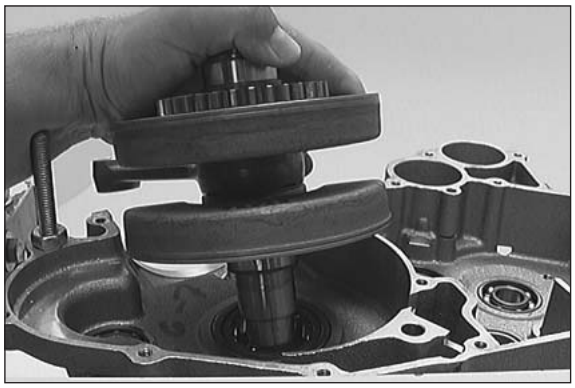
– Pull the main shaft and the countershaft out of the bearing seats simultaneously.



– Take the 1st speed idler gear ❼ together with the needle cage and the two stop discs out of the engine casing.

Dismounting the balancer shaft and crankshaft

– Turn the crankshaft until the marks on the balancer shaft and crankshaft match.
– In this position, the balancer shaft can be pulled out of the bearing seat.



– Pull the crankshaft out of the bearing seat.

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

NOTE: For a complete engine overhaul procedure, we recommend that you replace all gaskets, shaft seal rings, O-rings, and bearings.

SERVICING INDIVIDUAL COMPONENTS 5

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Art.-Nr. 3.206.043-E

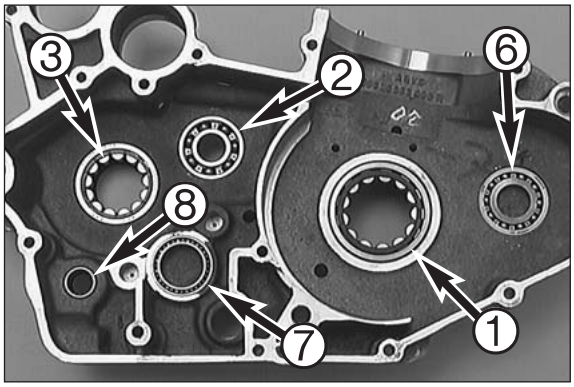
IMPORTANT NOTE REGARDS WORKING ON ENGINE HOUSING

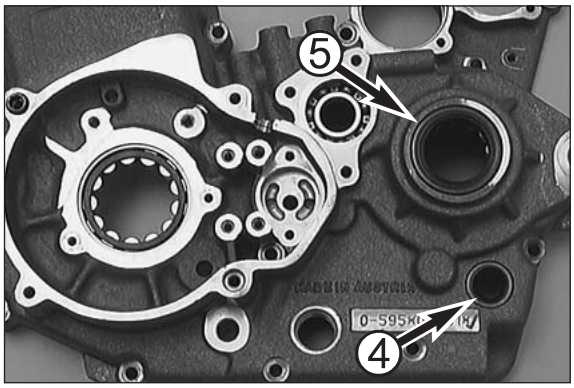
Read through the following section before commencing work. Then determine the assembly sequence so that the engine housing halves only need to be heated up once before replacing the bearings.

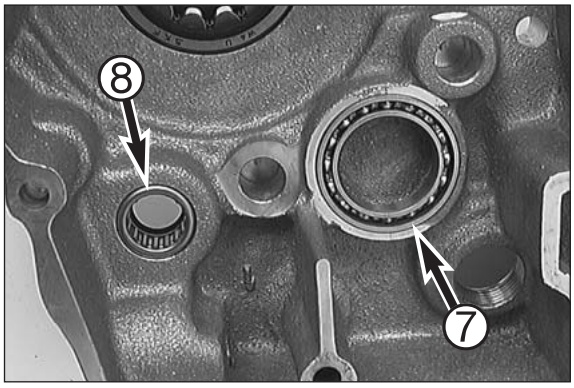
Having first removed the dowels and needle rollers, in order to expel the bearings or remove them with light mallet blows, the housing halves must be placed on a suitably large plane surface, supporting the whole of the sealing surface without damaging it. A wooden panel is best used as a base.

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 normally 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 this event the housing must be replaced.







Left casing half

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

Cylindrical roller bearing of the crankshaft ❶
Use a suitable punch to press the cylindrical roller bearing from the outside to the inside. From the inside, press in a new cylindrical roller bearing up to the stop.

Grooved ball bearing of the main shaft ❷
Use a suitable punch to press the grooved ball bearing from the outside to the inside. From the inside, press in a new grooved ball bearing up to the stop.

Cylindrical roller bearing of the countershaft ❸
Use a suitable punch to press the cylindrical roller bearing from the outside to the inside. From the inside, press in a new cylindrical roller bearing up to the stop.

Shaft seal ring of the shift shaft ❹
From the outside, press in new shaft seal ring up to a flush position, with its open side facing inward.

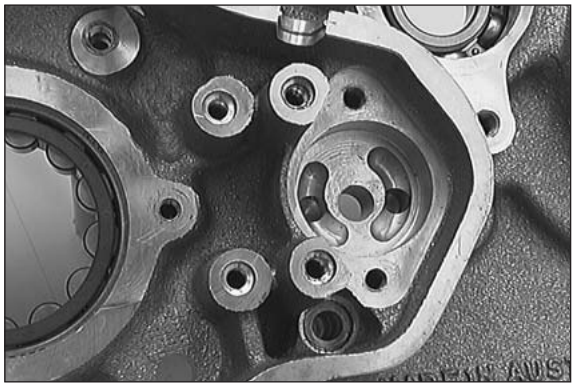
Shaft seal ring of the countershaft ❺
From the outside, press in new shaft seal ring up to a flush position, with its open side facing inward.

Grooved ball bearing of the balancer shaft ❻
Use a bearing extractor to pull the grooved ball bearing out of the casing half. Press a new grooved ball bearing in up to the stop.

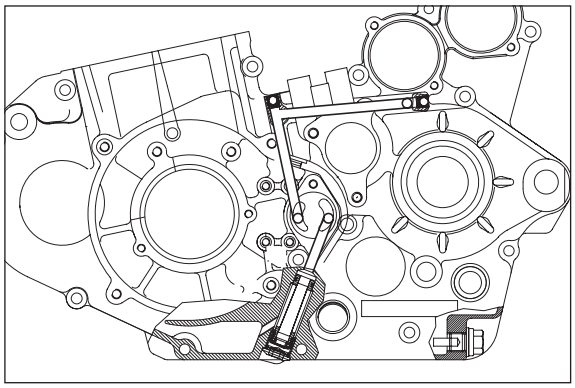
Grooved ball bearing of the shift roller ❼
At a casing temperature of approx. 150°C, the grooved ball bearing will fall out from the bearing seat almost by itself.
If necessary, knock the casing half lightly on a planar wooden board. Press a new grooved ball bearing in to a flush position.

Needle bearing of the shift shaft ❽
Press the needle bearing from the outside to the inside.
Press a new needle bearing in from the inside and up to a flush position.

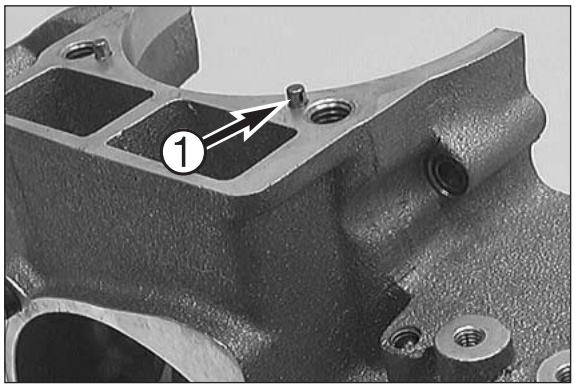
– Once the casing half has cooled down, check the bearings for tight fit.



The oil pump housing must not have any score marks or seizing marks.



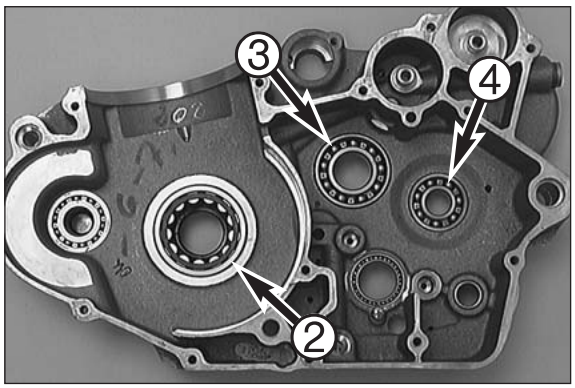
Blow compressed air through all oil ducts and check them for unobstructed passage.



Check the 2 dowels ❶ for tight fit and if necessary, adhere them using Loctite 243.

Right casing half

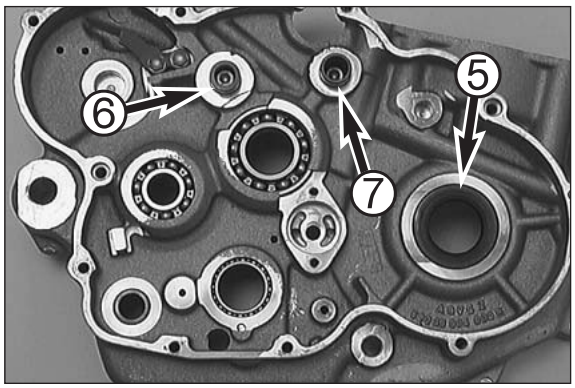
Remove all the shaft seal rings and use an oven to heat the casing half to approx. 150°C.



Cylindrical-roller bearing of the crankshaft ❷
Use a suitable punch to press the cylindrical-roller bearing from the outside to the inside. From the inside, press in a new cylindrical-roller bearing up to the stop.

Grooved ball bearing of the main shaft ❸
Use a suitable punch to press the grooved ball bearing from the outside to the inside. From the inside, press in a new grooved ball bearing up to the stop.

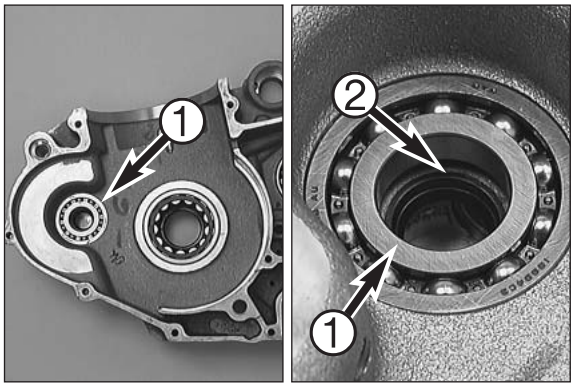
NOTE: The grooved ball bearing on the main shaft ❸ is secured with a screw from the 2003 models. Apply Loctite 243 to the thread of the screw and tighten to 5 Nm.



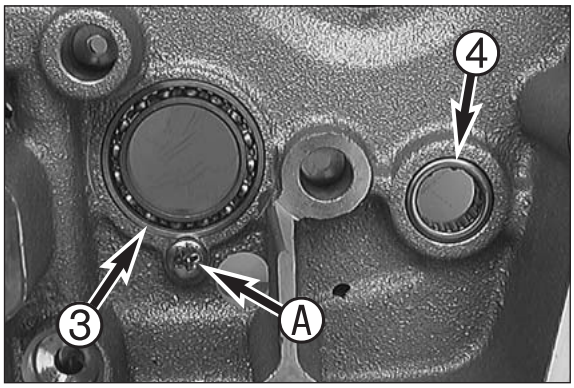
Grooved ball bearing of the countershaft ❹
Use a suitable punch to press the grooved ball bearing from the outside to the inside. From the inside, press in a new grooved ball bearing up to the stop.

Shaft seal ring of the crankshaft ❺
Press in new shaft seal ring to a flush position, its open side facing inward.

Bearing bolt of the kickstarter idler gear ❻
Bearing bolt of the E-starter idler gear ❼
From experience, no wear occurs on the bearing bolts. Exchanging the bearing bolts is possible only to a limited extent because, in most cases, this will cause damage to the casing.



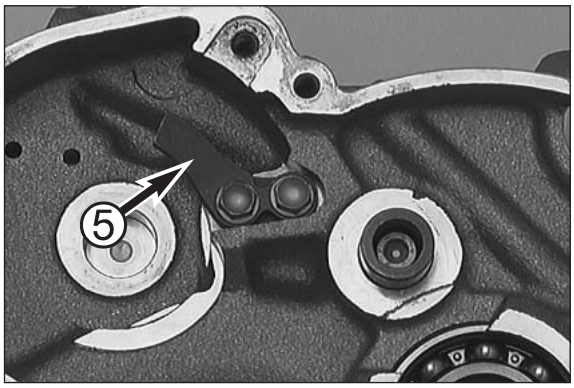
Grooved ball bearing ❶ and seal ring ❷ of balancer shaft.
Use a bearing extractor to pull the grooved ball bearing out of the casing half and remove the seal ring.
Press a new shaft seal ring in to a flush position, its open side facing downward.
Press a new grooved ball bearing in up to the stop.



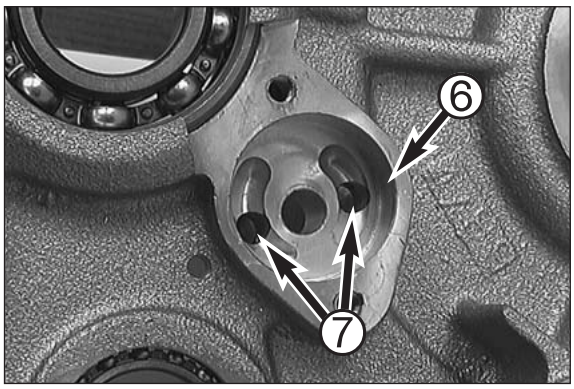
Grooved ball bearing of shift roller ❸
Remove the screw Ⓐ.
At a casing temperature of approx. 150°C, the grooved ball bearing will fall out from the bearing seat almost by itself.
If necessary, knock the casing half lightly on a planar wooden board.
Press a new grooved ball bearing in to a flush position. Coat the thread of the screw Ⓐ with Loctite 243 and tighten the screw to 6 Nm.

Needle bearing of shift shaft ❹
Press needle bearing from the outside to the inside.
Press a new needle bearing in from the outside and up to a flush position.

– Once the casing half has cooled down, check if the fit of the bearings is tight.



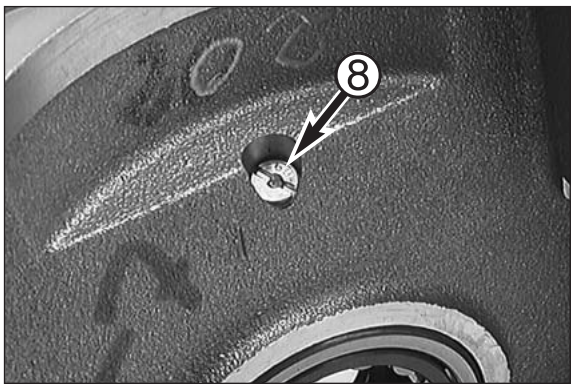
Kickstarter release plate ❺
When exchanging the release plate, secure both bolts with Loctite 243 and tighten to 10 Nm.



The oil pump casing ❻ must not have any score marks or seizing marks.

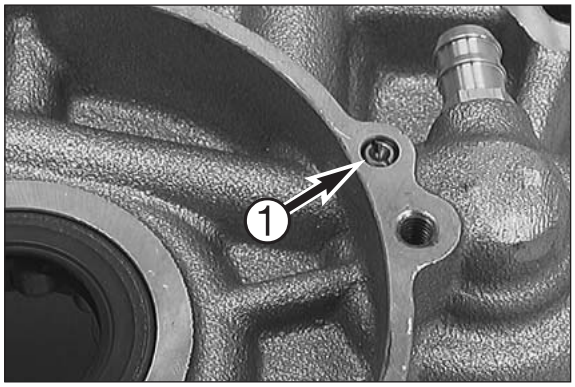
Check oil ducts ❼ for unobstructed passage.

NOTE: In order to clean all oil ducts and check them for unhindered passage you should dismantle both jets and the bypass valve (see below).



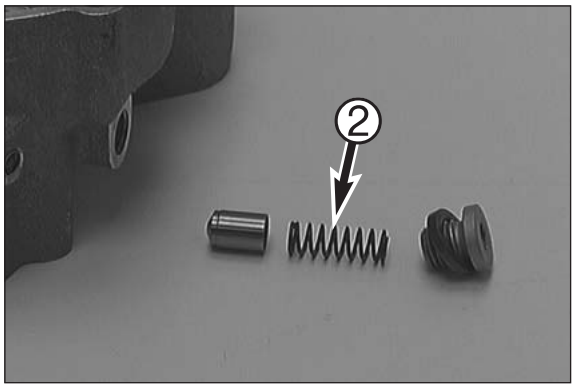
Oil jet "60" ❽
Dismount the oil jet and blow compressed air through the oil duct. Degrease the thread of the oil jet, apply Loctite 243 and mount the oil jet.

NOTE: Through this jet, engine oil is sprayed to the piston bottom in order to cool the piston.



Oil jet "100" ❶
Dismount the oil jet and clean with compressed air. Degrease the thread of the oil jet, apply Loctite 243 and mount the oil jet.

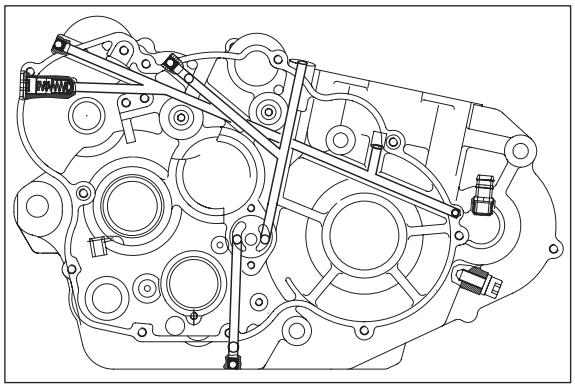
NOTE: This jet is used to dose the amount of oil for the conrod bearing.



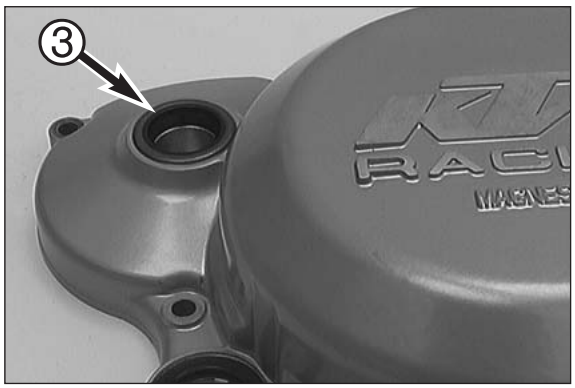
Bypass valve
Check the valve plunger, sealing seat, and pressure spring for damage.

Minimum length of the pressure spring ❷: 23.5 mm

NOTE: If the length of the pressure spring is less than 23.5 mm, the opening pressure of the bypass valve will decrease. This causes a decrease in oil pressure and subsequently increased wear.

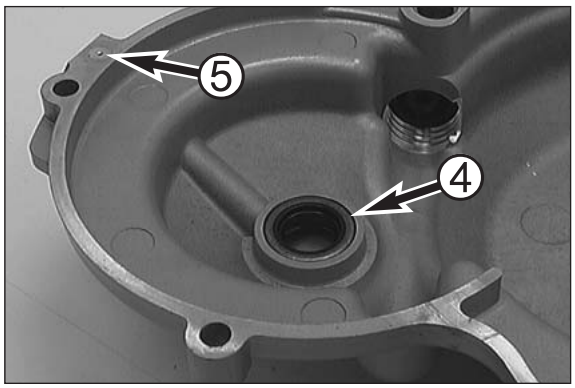


Clean all oil ducts with compressed air and check them for unobstructed passage.



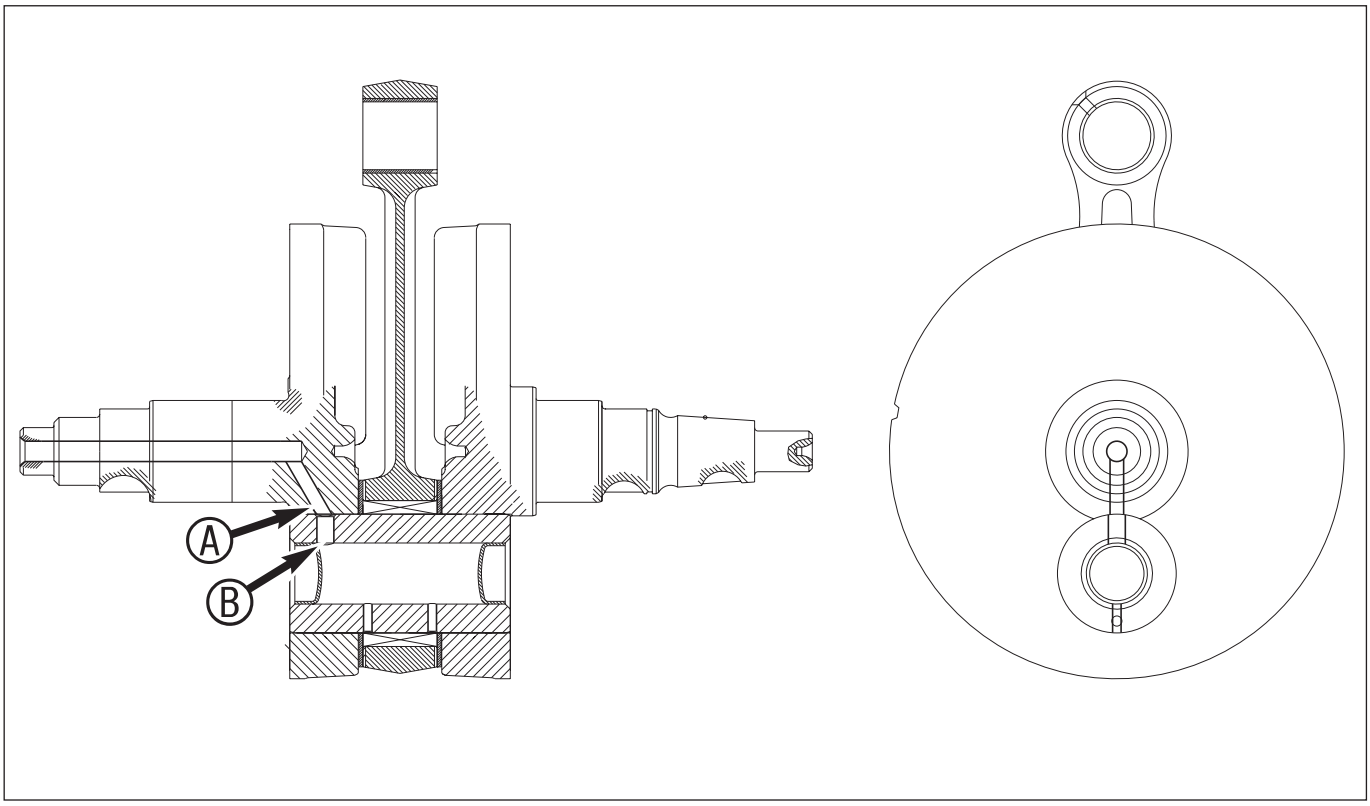
Clutch cover

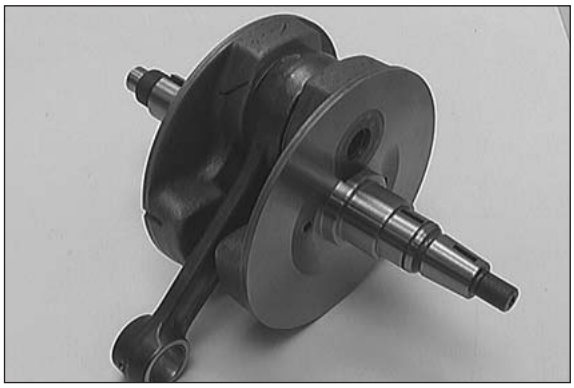
Shaft seal ring of kickstarter shaft ❸
Remove the old shaft seal ring by levering it out with a screwdriver. Press a new shaft seal ring in up to the stop.



Shaft seal ring of crankshaft ❹
Remove the old shaft seal ring by levering it out with a screwdriver. Press a new shaft seal ring in up to the stop, its open side facing downward.

Oil duct ❺
Clean with compressed air and check for unobstructed passage.



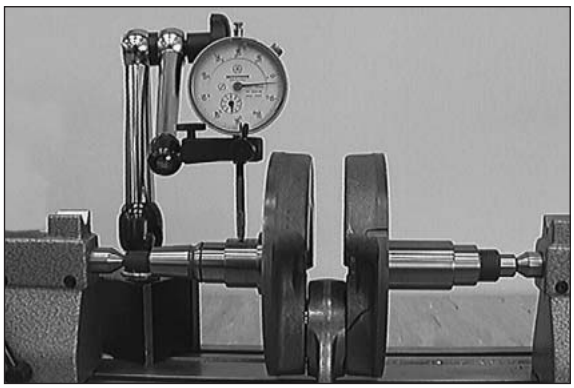


Crankshaft

If the conrod bearing is replaced, take care to properly position the crankpin. The bores of the crank web ❹ and crank pin ❺ must coincide.

! CAUTION !

IF THE CRANK PIN IS PRESSED IN THE WRONG POSITION, THE CONROD BEARING IS SUPPLIED INSUFFICIENTLY OR NOT AT ALL WITH ENGINE OIL, WHICH RESULTS IN BEARING DAMAGE.

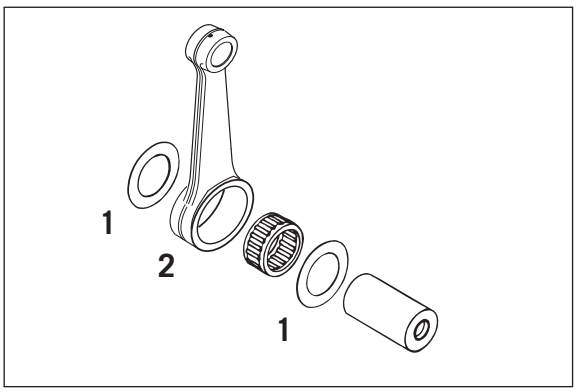


If the crankshaft will continue to be used, check the crankshaft journals for run out. Place the crankshaft on a roller block or a similar device and check the outer end of the journals for run out with a dial gauge.

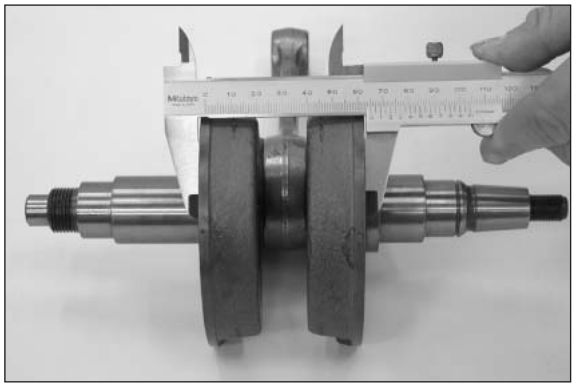
Run out of crankshaft journals: max. 0.12 mm

The radial play and axial play on the conrod bearing must be checked.

radial clearance: max. 0.05 mm
axial clearance: max. 1.10 mm



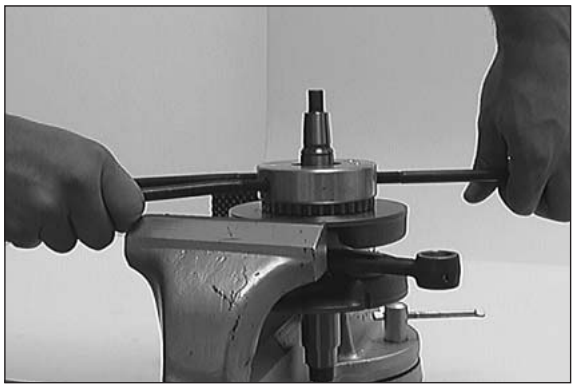
NOTE: From Model 2001 onwards the conrod ❷ is mounted without thrust washers ❶, but the conrod overhaul set (see drawing below) is the same for both Model 2000 and 2001. The trust washers included in the set are not used for Model 2001 engines.



Crankshaft webs – measure the outer dimension

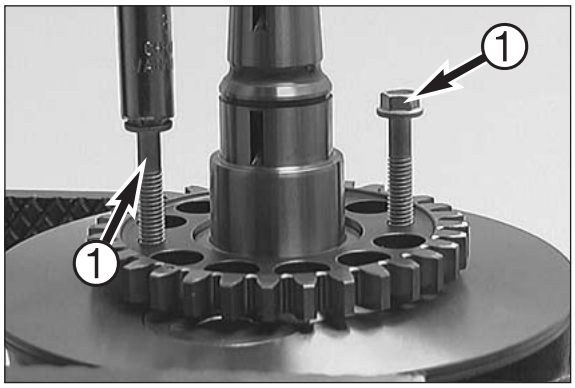
Crankshaft webs – measure the outer dimension with a sliding caliper as illustrated.

Crankshaft webs – outer dimension = 65 mm ± 0.05 mm



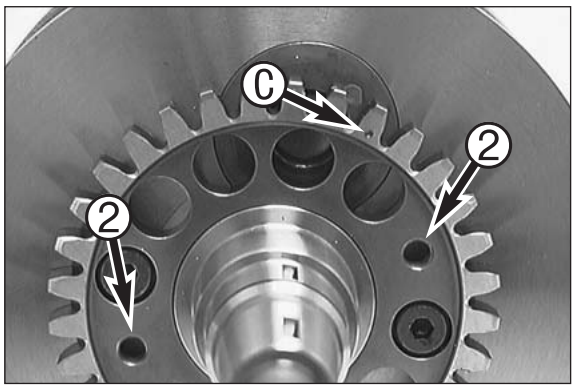
Drive wheel for balancer shaft

- Before pulling the driving gear off the balancer shaft you have to remove the inner ring of the crankshaft bearing:
- To do this, secure the crankshaft with the crankshaft web carrying the inner ring to be replaced in a vise.
- Heat the special tool 584.29.037.037 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.



- Remove both screws on the drive wheel.
- Insert the 2 screws ❶ in the M6 thread ❷.
- Pull off the driving gear by turning in the bolts equally.

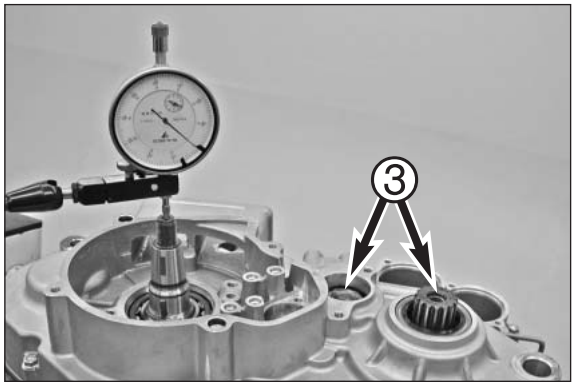
- To mount the drive gear, heat it to approx. 100°C.
- Degrease the 2 retaining bolts of the drive gear and coat the threads with Loctite 243.
- Slip the drive wheel on the crankshaft such that the mark ❸ is disposed in the region of the crank pin.
- Mount the retaining bolts and tighten them to 10 Nm.



- 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.
- Allow the inner ring to cool for about 30 seconds and hammer the inner ring in once more by means of a suitable tube so as to ensure its proper fit.
- Having exchanged the inner rings, measure the axial clearance of the crankshaft.

! CAUTION !

NEVER CLAMP THE CRANKSHAFT IN A VISE WITH A CRANKSHAFT JOURNAL AND TRY TO HAMMER THE INNER BEARING RING APART. THIS WOULD CAUSE THE CRANKSHAFT WEBS TO BE COMPRESSED, MAKING THE CRANKSHAFT UNSUITABLE FOR FURTHER USE.



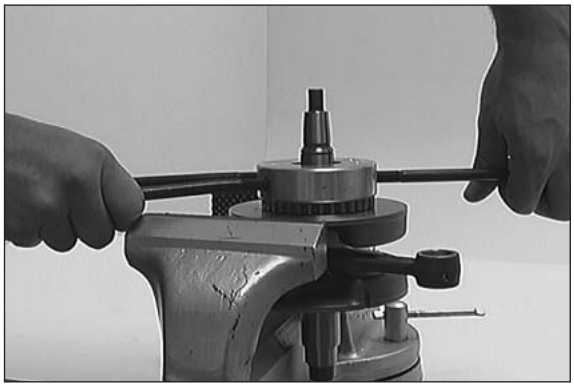
Measuring the axial clearance for the crankshaft and transmission shafts

- Insert the crankshaft and both transmission shafts in the right housing half and mount a housing gasket. Mount the left housing half.
- Mount and tighten the housing screws.
- Mount the dial gauge support on the engine housing. Measure and write down the axial clearance of the crankshaft and the transmission shafts ❸.

Axial clearance for crankshaft: 0.25 - 0.35 mm

560 SMR only (new or overhauled crankshaft)
Axial clearance for crankshaft: 0.35 - 0.45 mm

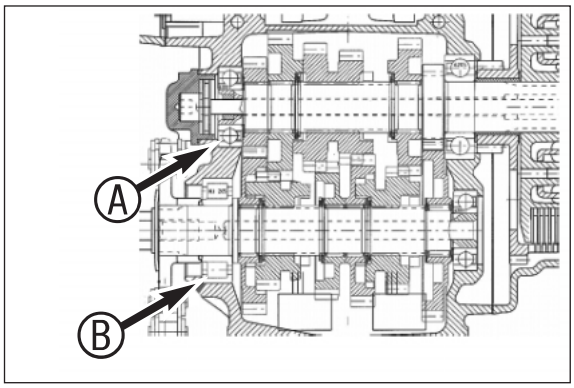
Axial clearance for transmission shafts: 0.10 - 0.40 mm



Compensating the axial clearance for the crankshaft and transmission shafts

– Correct the axial clearance if the measured value does not correspond to the setpoint value.
– Calculate the thickness of the compensating discs.
– Dismount the crankshaft and pull the inner ring off the crankshaft on the ignition side using special tool 584.29.037.037. Now you can add or remove compensating discs.

NOTE: Add compensating discs if the axial clearance is too large. Remove compensating discs if the axial clearance is too small. Only add compensating discs on the ignition side.

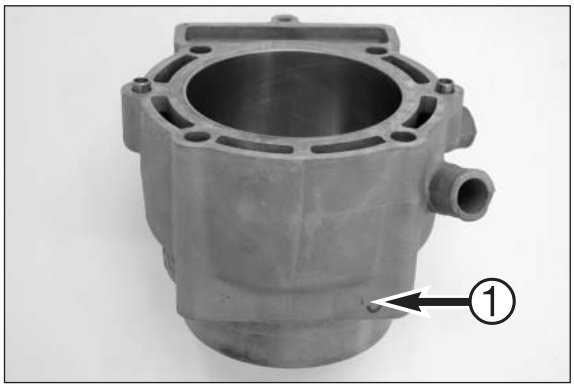


– Correct the axial clearance if the measured value does not correspond to the setpoint value.
– Calculate the thickness of the compensating discs.
– Remove bearing ❹ / ❺ from the left housing half and insert the compensating disc(s) between the housing and bearings.

Compensating discs available for position ❹:
590.33.027.000, 590.33.028.000

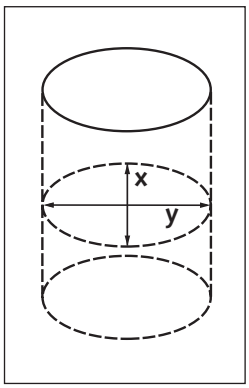
Compensating discs available for position ❺:
590.33.025.000, 590.33.026.000

– Remount bearing ❹ / ❺.



Cylinder – Nikasil coating

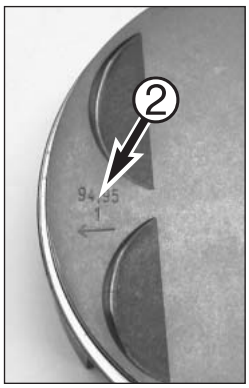
Nikasil is the brand name for a cylinder coating process, developed by the piston manufacturer Mahle. The name is derived from the two materials used in this process - a nickel layer into which the particularly hard silicon carbide is embedded. The main advantages of the Nikasil coating are excellent heat dissipation and thus better power output, low wear and low weight of the cylinder.

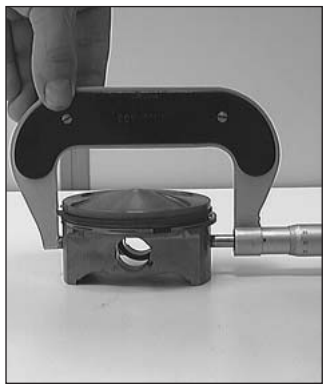


Measuring piston and cylinder, determining the piston fitting clearance

– In order to determine the wear of the cylinder, measure the cylinder center of the running area with a micrometer.
– Measure the diameter of the x-axis and the y-axis in order to check for oval wear, if any.

NOTE: The size of the cylinder ❶ is marked on the cylinder, the size of the piston is marked on the top of the piston ❷.





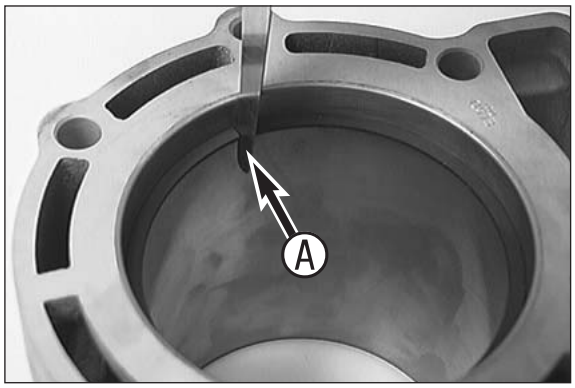
– The piston is measured on the piston skirt across to the piston pin as shown in the illustration.
– The cylinder diameter minus the piston diameter yields the piston assembly clearance.

See Technical Data for axial clearance and wear limits.

Checking the piston

– Replace the piston in the case of excessive oil consumption or grooves in the piston skirt.
– If reinstalling the old piston perform the following steps:

1. Piston bearing surface - check for damage.
2. Piston ring grooves - the piston rings must move easily in the groove. Old piston rings or sandpaper (400 grit) may be used to clean the piston ring grooves.
3. Piston rings - check for damage and end gap (see below).
   Mount the oil scraper ring with the labeling "TOP" facing upwards.
   Mount the rectangular ring with the labeling "O" facing upwards.
4. Piston pin: If the piston pin is heavily discolored or has score marks it must be replaced. Also insert the piston pin into conrod and check its bearing for play.

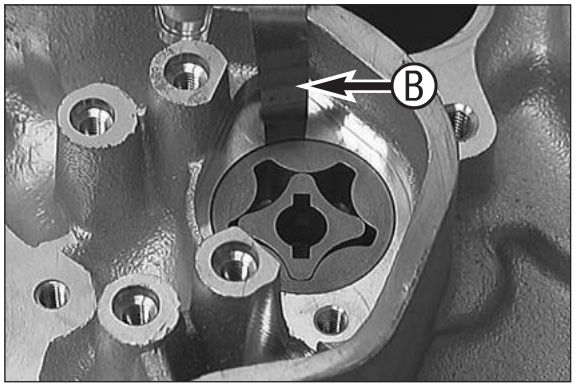


Measuring the piston ring end gap

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

Compression rings: max. 0.80 mm
Oil scraper ring: max. 1.00 mm

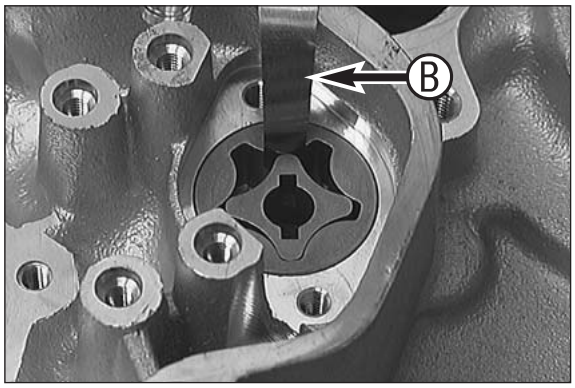
If the end gap is larger, check the piston and cylinder for wear. If piston and cylinder wear are within the permitted tolerance limits, replace the piston ring.



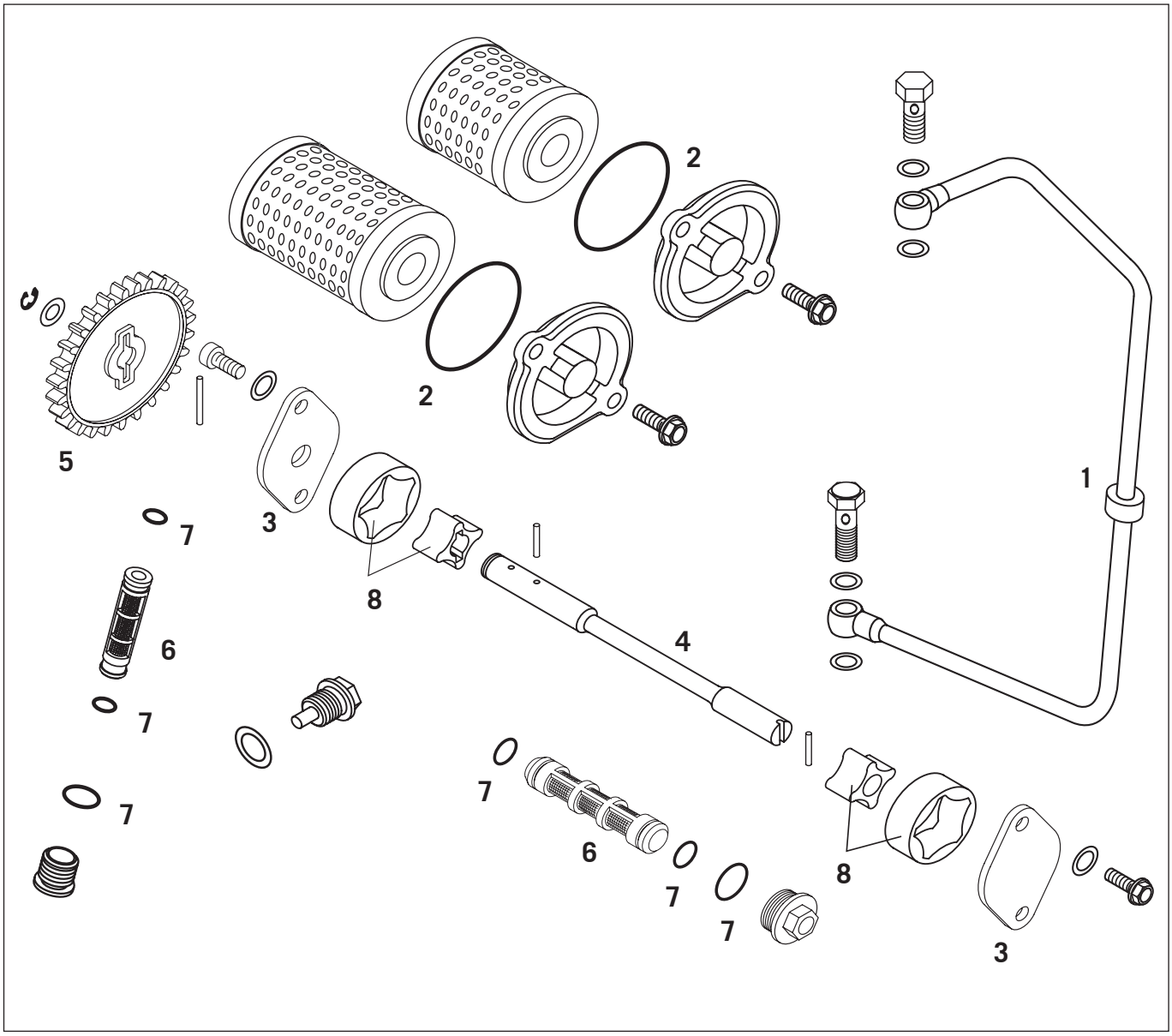
Checking the oil pumps for wear

– Place the inner and outer rotors into the engine casing such that the marks are adjacent to one another.
– Now, carry out the following wear measurements with a feeler gauge Ⓑ:

outer rotor - oil pump housing: max. 0.20 mm



outer rotor - inner rotor: max. 0.20 mm



Lubrication system

Oil line ❶
Check for hairline cracking at the soldering joints, blow compressed air through the oil line and, while doing that, check it for unobstructed passage. In addition, check the oil line for possible scuff marks and replace the copper seal rings (8x12x1).

O-rings ❷
Replace the O-rings during every oil filter change.

Oil pump cover ❸
Check for score marks caused by the oil pump rotors on its inner side and replace it if necessary.

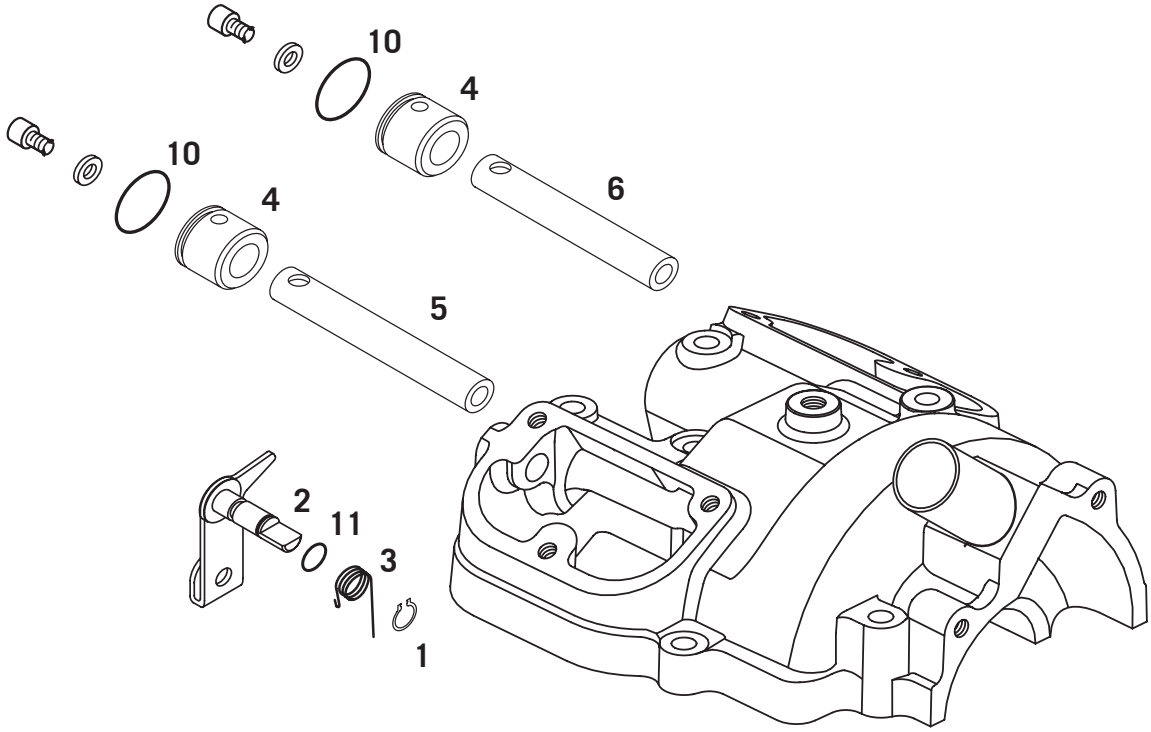
Oil pump shaft ❹
Place it on a planar surface and check it for eccentricity.

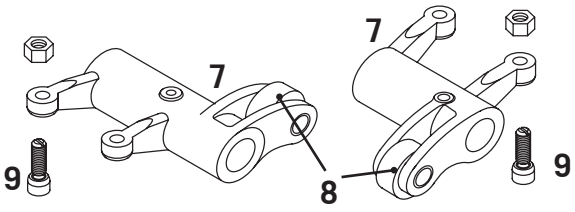
Oil pump wheel ❺
Check toothing for wear. The recess for the needle roller must not be worn out.

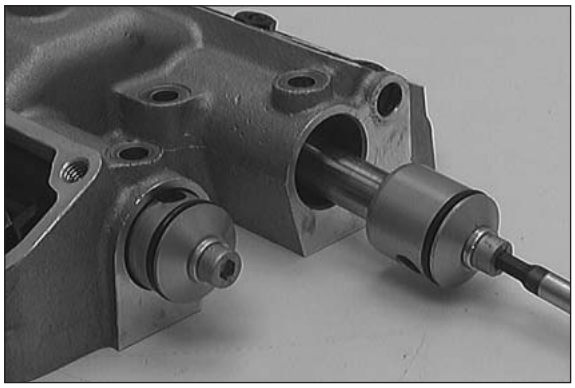
Oil screen ❻
Clean the two oil screens with compressed air and petroleum.

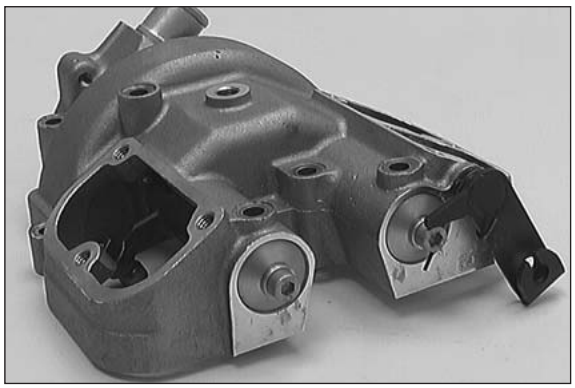
O-rings ❼
Check them for brittleness and replace them if necessary.

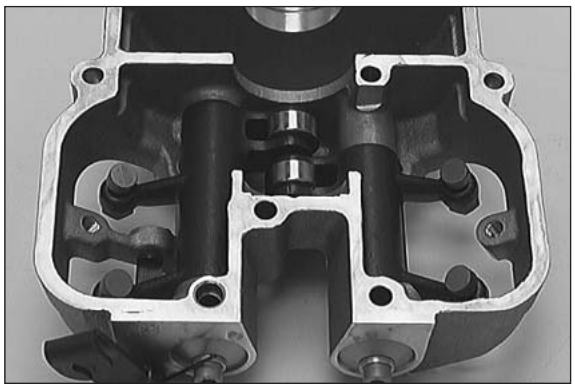
Oil pump rotors ❽
Place the oil pump rotors into the engine casing and check them as shown on page 5-9.
No particles must adhere to the oil pump rotors.











Upper portion of the cylinder head

– Remove the circlip ❶ and pull the decompressor shaft ❷ together with the spring ❸ out of the bore.
– Pull the two end pieces ❹ together with the rocker arm pins ❺ + ❻ out of the cylinder head's upper portion. Withdraw the rocker arms ❼.

– Clean all components and check them for wear.

Rocker arm pins ❺ + ❻
The rocker arm pins must not have any score marks and turning them in the rocker arms ❼ must be easy.

Rocker arm rollers ❽
Check if they move smoothly; if you detect any radial play, you have to replace the rocker arm.

Adjusting bolts ❾
The seating surfaces of the adjusting bolts must be planar.

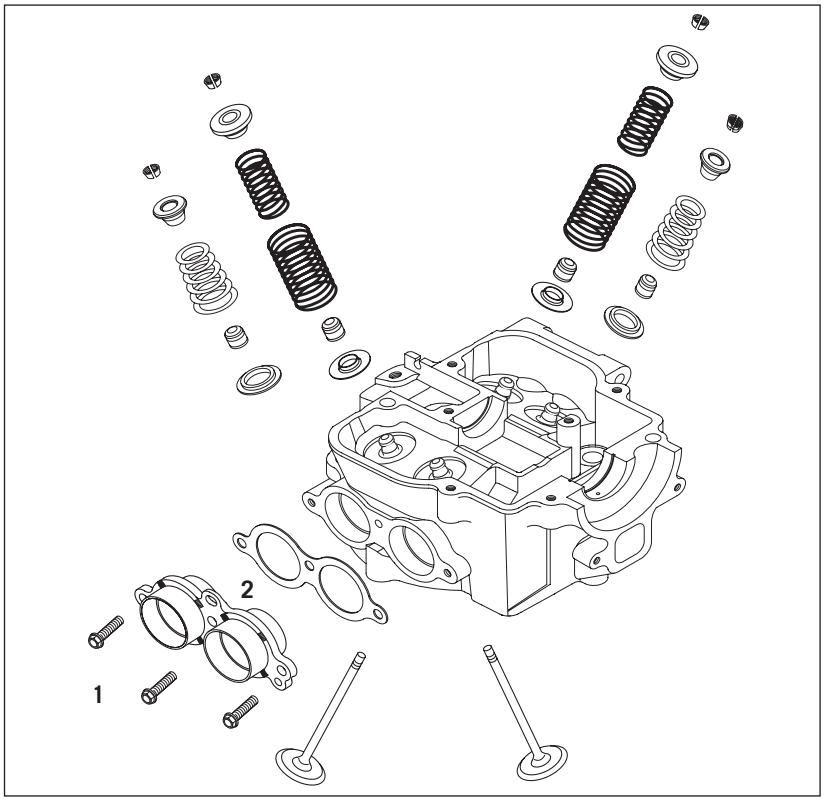
Decompressor shaft ❷
Check for smooth movability and play in the bearing bore. Replace the O-ring ⓫.

Replace the O-rings ⓾

– Prior to assembly, oil all components thoroughly.
– Position the rocker arms in the cylinder head's upper portion and mount the rocker arm pins.

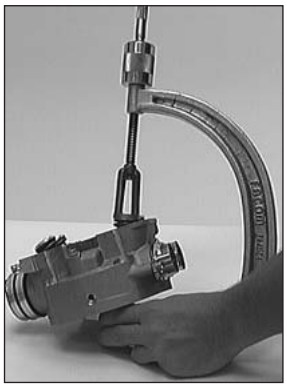
NOTE: The shorter rocker arm pin ❻ must be mounted in the back.

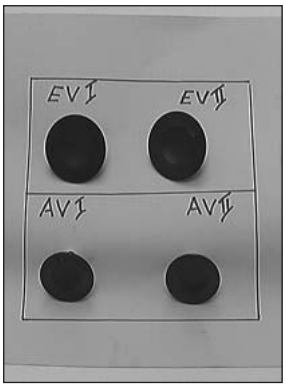
– Mount the end pieces ❹ and turn them such that later on the bolts of the cylinder head's upper portion can be mounted.
– Mount the decompressor shaft ❷ and preload the spring.



Cylinder head

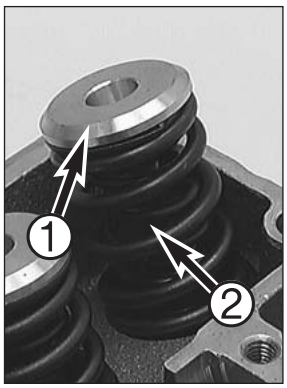
– Loosen the 3 bolts ❶ and dismount the exhaust flange ❷ together with its gasket.

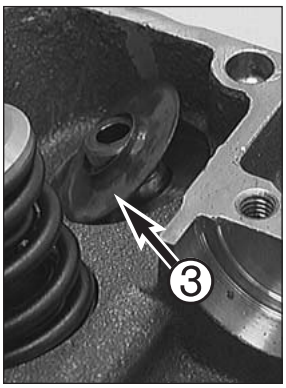




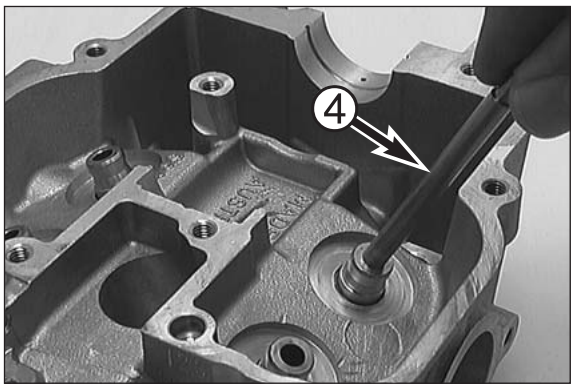
– Dismount the 4 valves with the aid of a special tool 590.29.019.000.

NOTE: When being mounted again, used valves must be mounted in the same valve guide as before. To do this, place the valves in a cardboard box in the same position they were mounted in the cylinder head (see photo).





– Take the valve spring retainer ❶ and the valve springs ❷ out of the cylinder head.
– Pull the valve stem gaskets off the valve guides and remove the spring seats ❸.

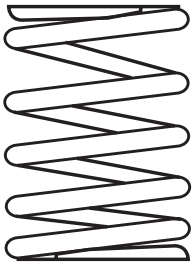


Sealing surface
Check the spark plug thread and the valve seats for damage and cracks. Use a ruler and a feeler gauge to check the sealing surface of the cylinder head for distortion. Max. distortion: 0.10 mm.

Valve guides
The valve guides are checked with a limit plug gauge 590.29.026.006 ❹ (Ø 6.05 mm). If the limit plug gauge can be easily inserted into the valve guide, the guide must be replaced in a specialized workshop.

Valve seats
The valve seats must not be "battered". Sealing seat width: inlet: 1.50 mm max.; outlet: 2.00 mm max. If necessary, the valves must be reseated.

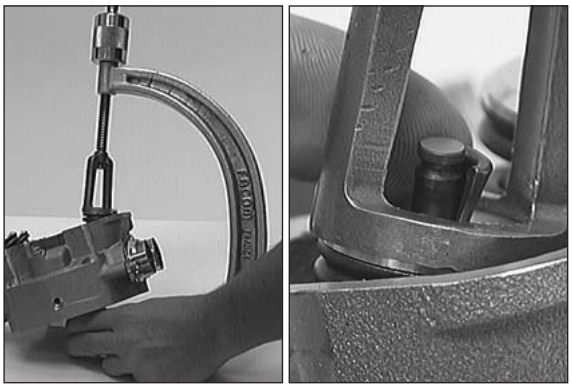
NOTE: Do not use titanium valves to reseat. Reseating will destroy the coating on the titanium valves. Use a steel valve to reseat.



Valves
Check the valve disc for wear and eccentricity. Max. eccentricity at valve disc: 0.05 mm. The valve seat must not be "battered". The sealing surface should be in the middle of the valve seat. The valve stem is chrome-hardened; by experience, wear occurs at the valve guide.

Valve springs
Check the valve springs for fractures or wear (visual check); use a sliding caliper to measure the length. Replace the spring if it is shorter see Technical Data – also see Technical Information 0003/30/02.

Valve stem gaskets
Every time the valves are dismounted you should replace the valve stem gaskets.

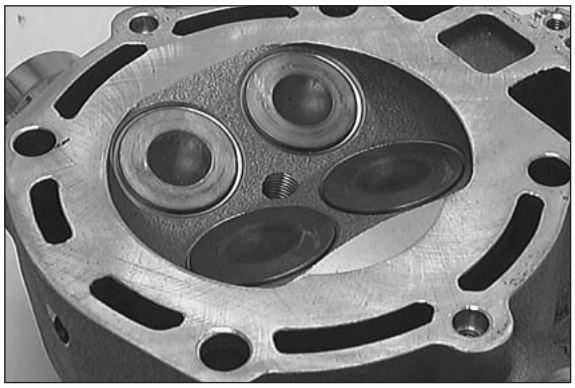


– Place the 4 spring seats into the cylinder head.
– Slip the valve stem gaskets onto the valve guides and oil them.
– Thoroughly oil the valves at the stem and insert them into the valve guides. When mounting them, watch for the correct position of the valves.

– Position the valve springs, place the valve spring retainer into the valve springs.

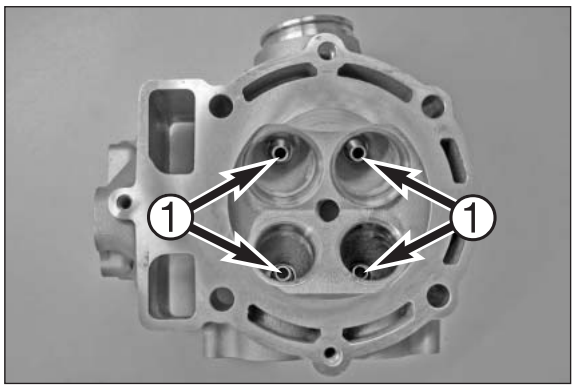
NOTE: The outer valve springs must be mounted with the more narrowly wound end facing downward (up to model 2001).

– Preload the valve springs with the special tool and mount the valve keys.



NOTE: When mounting the valve keys ensure their proper fit. It is best to secure the valve keys to the valve by means of some grease.

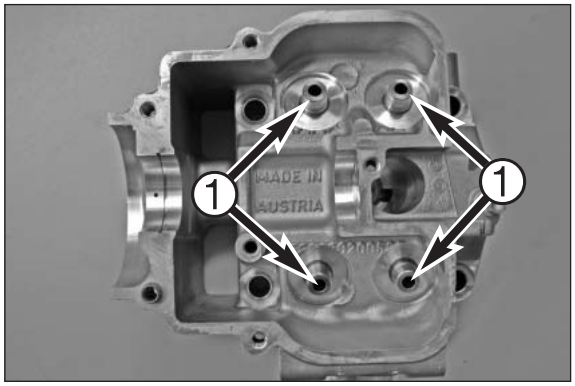
– Finally, use a plastic hammer to tap several times onto the valve spring retainers.



Replacing the valve guides (cylinder head disassembled)

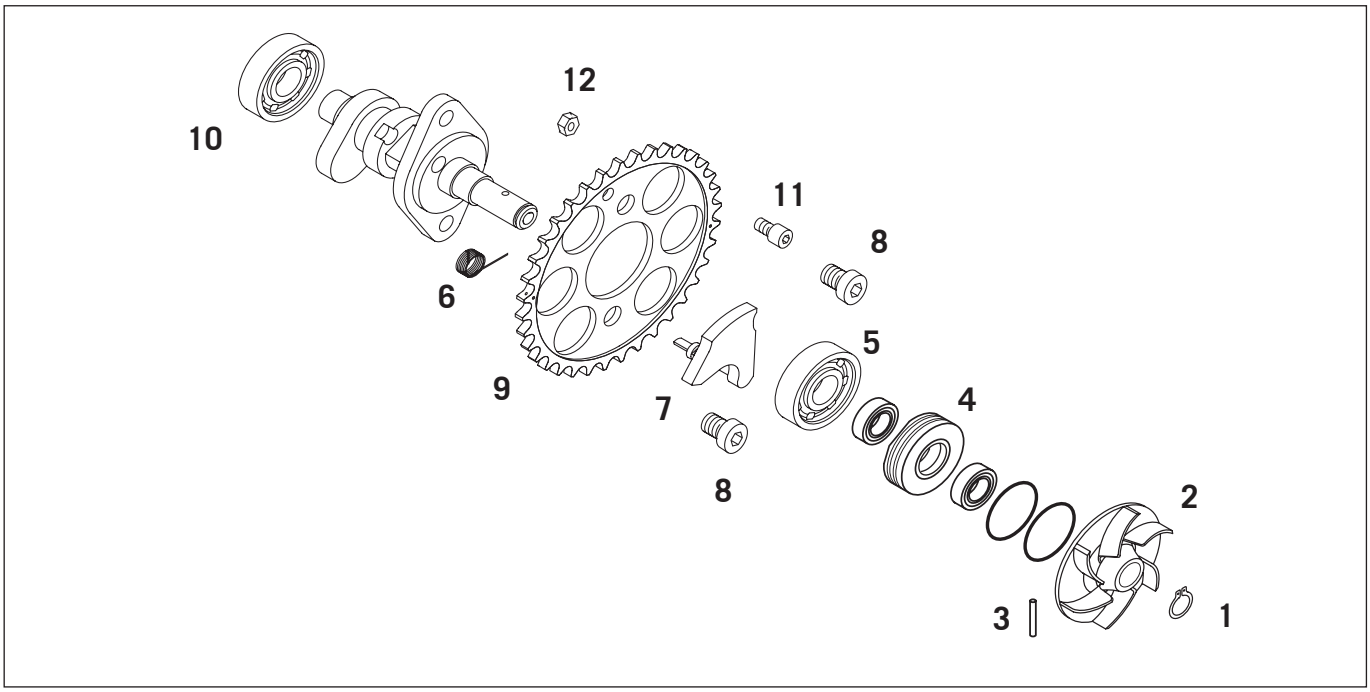
– Heat the cylinder head to 150°C.
– Drive out the valve guides ❶ with a suitable driver.
– Cool the new valve guides in the freezer compartment of the refrigerator for about 10 to 15 minutes.
– Heat the cylinder head to 150°C again.

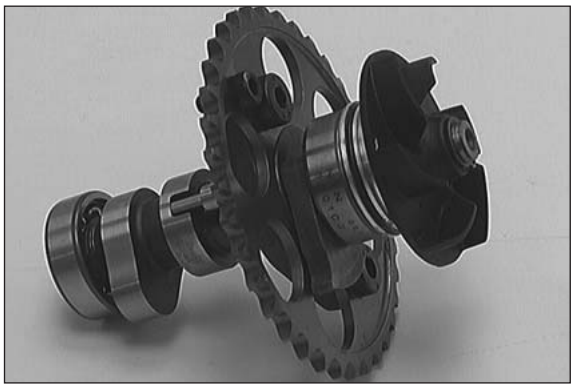
NOTE: Always use a sintered valve guide for titanium valves. Brass or sintered valve guides can be used for steel valves.



– Drive the cooled valve guides ❶ into the heated cylinder head with the press-in plug, item no. 590.29.018.000.
– Tap in gently with a hammer.
– Ream the cooled valve guides using the reamer, item no. 590.29.018.050.
– Check the valve seats with paint and the corresponding valve.
– If necessary, reseat or grind the valve seats.

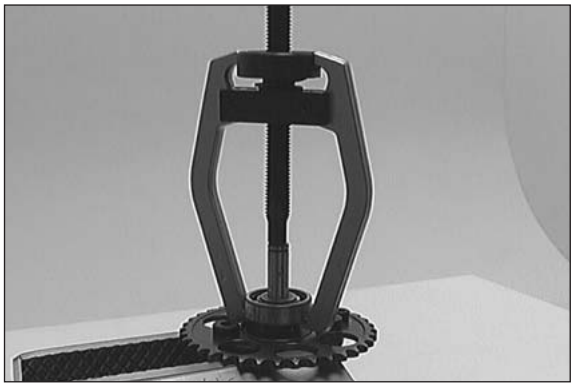
NOTE: Do not use titanium valves to reseat. Reseating will destroy the coating on the titanium valves. Use a steel valve to reseat.





Camshaft

– Dismount the circlip ❶ and the water pump wheel ❷.
– Pull the needle roller ❸ out of the hole in the camshaft and pull the gasket carrier ❹ off of the camshaft.

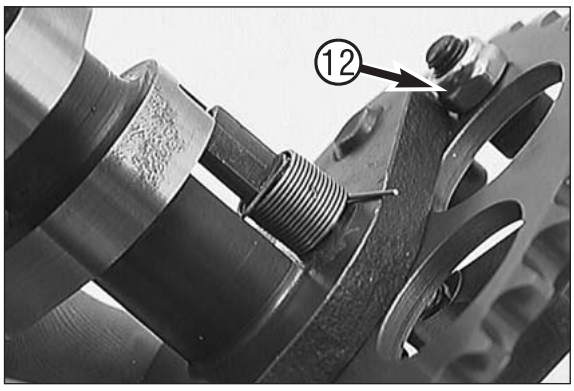


– Use the puller tool 590.29.033.000 to extract the grooved ball bearing ❺ from the camshaft (see photo).

! CAUTION !

NEVER CLAMP THE CAMS OF THE CAMSHAFT INTO A VISE.

– Remove the spring ❻ on the automatic decompressor shaft ❼ and at the same time pull the autodecompressor shaft out of the camshaft.
– Loosen the 2 bolts ❽ and take off the camshaft wheel ❾.
– Use the puller tool to pull the grooved ball bearing ❿ off the camshaft.



Clean all components, check them and replace them if necessary.

Camshaft
Check the bearing seats and cams for wear.

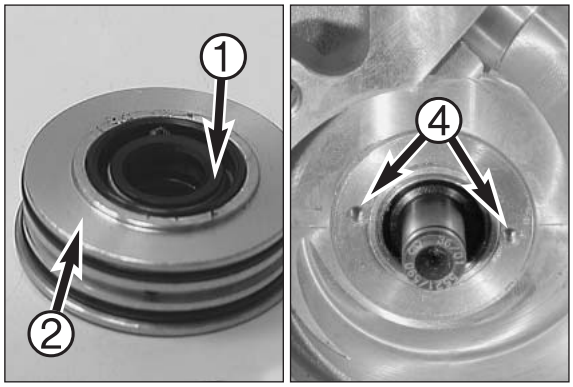
Renew the grooved ball bearings ❺ and ❿

Autodecompressor shaft ❼
Check the bearing for play and contact surface to the rocker arm for wear.

Camshaft wheel ❾
Check teeth for wear.

Check the bolt ⓫ for tight fit.

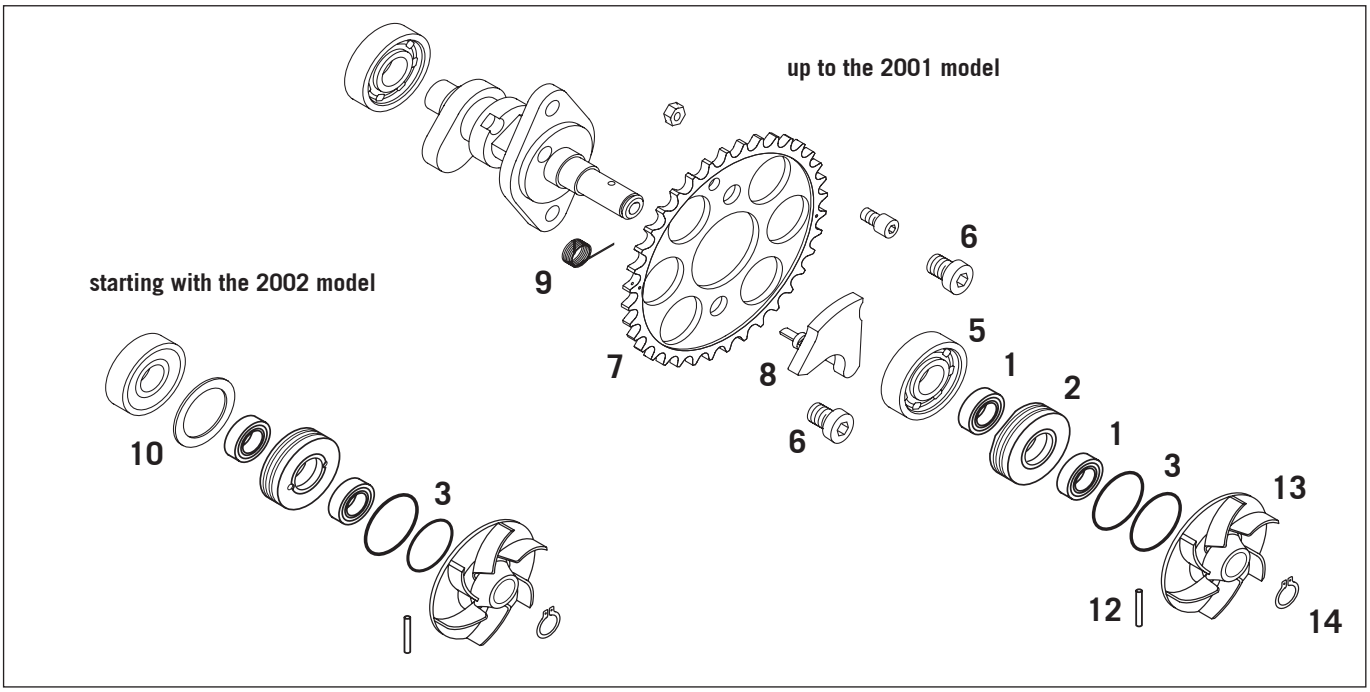
NOTE:
– The self-locking nut ⓬ was replaced by a normal nut starting with the 2002 model. Secure the nut with Loctite 222 and tighten to 8 Nm – see Technical Information 0111/36/02 for models up to 2001.
– Screw ⓫ was replaced by a bolt firmly connected to the camshaft gear starting with the 2003 model.

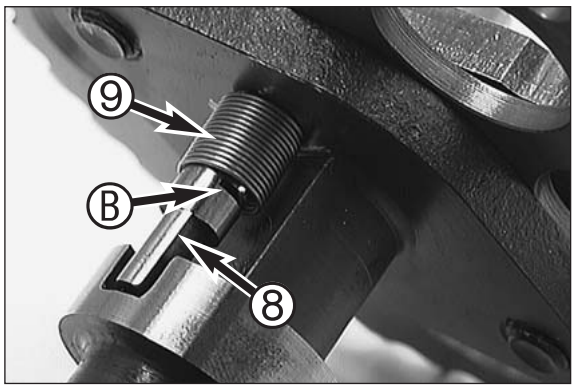


– Press the shaft seal rings ❶ out of the gasket carrier ❷.
– Press the new shaft seal rings in up to a flush position, with the open side facing outwards. Thoroughly grease the sealing lips.

– Take the 2 O-rings ❸ off the gasket carrier and remove the gasket residues with a wire brush.
– Mount 2 new O-rings.

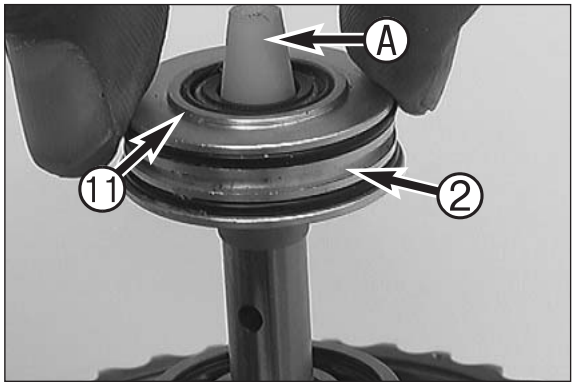
NOTE:
– The two O-rings ❸ have different sizes starting with the 2002 model. The smaller O-ring is mounted on the outside, i.e. facing the water pump wheel.
– The flat marks of the rear side of the gaskets carrier are neccesary only if the gasket carrier is to be taken out with the timing chain mounted, the flat marks make the fitment of the gasket carrier easier.
– Starting with the 2002 model, the gasket carrier can be pulled out of the cylinder head with the two M3 threads ❹ without having to remove the top part of the cylinder head.





Preassembling the camshaft

– Coat the threads of the 2 bolts ❻ with Loctite 243 and mount the camshaft wheel ❼. Tighten bolts to 28 Nm.
– For preassembly, press on the grooved ball bearing ❺ by means of a hollow punch.
– Mount the autodecompressor shaft ❽ and the spring ❾. Preload the spring by approx. 1/2 turn and insert the end of the spring into the groove Ⓑ.
  Now, check whether the autodecompressor shaft turns back into its initial position by itself. If not, increase the preloading of the spring.
– Slide on the washer ❿ (starting with the 2002 model).



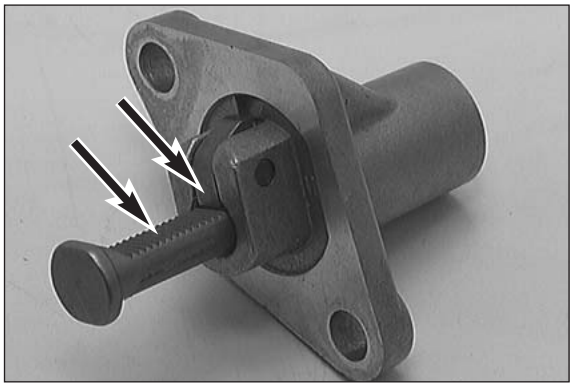
The following steps only apply to models up to 2001
(see page 6-12 for models from 2002 onwards)
– Slide on the mounting sleeve Ⓐ and mount the gasket carrier ❷ with the collar ⓫ facing the camshaft wheel.

! CAUTION !

IT IS IMPERATIVE THAT YOU USE THE MOUNTING SLEEVE. OTHERWISE YOU WILL DAMAGE THE SHAFT SEAL RING.

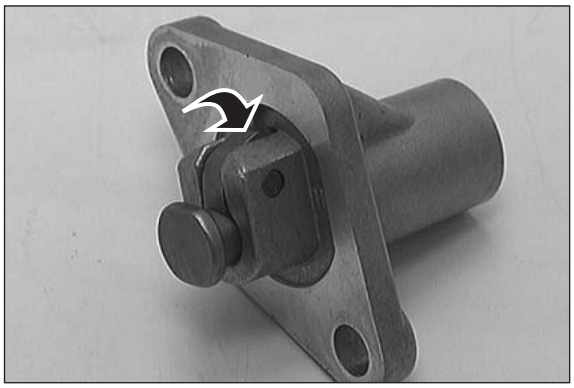
– Dismount the mounting sleeve, insert the needle roller ⓬ into the camshaft and mount the water pump wheel ⓭ with the circlip ⓮.

NOTE: From Model 2001 onwards the length of the needle roller is 17.8 mm (0.7007 in); Model 2000: 13.8 mm (0.5433 in).
The needle roller and water pump wheel are only changeable as a set.

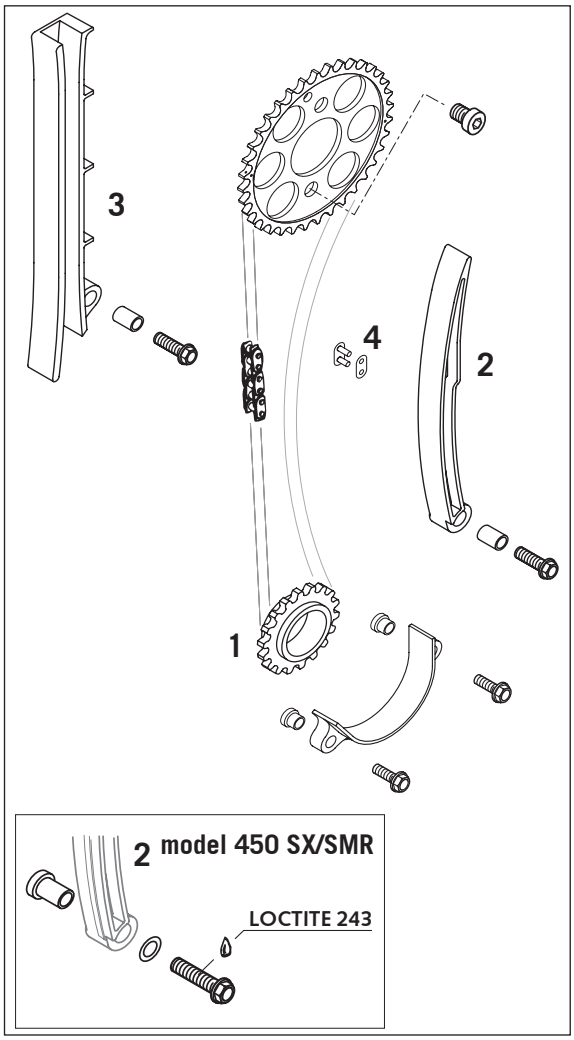


Timing chain tensioner

– Pull the pressure pin of the timing chain tensioner out all the way and check whether or not it moves smoothly.
– Check the toothing on the pressure pin and the ratcheting pawl for wear.



– For mounting, push the ratchet in the direction of the arrow so that the pressure pin will no longer be locked and push the pressure pin all the way into the tensioner housing.



Timing train

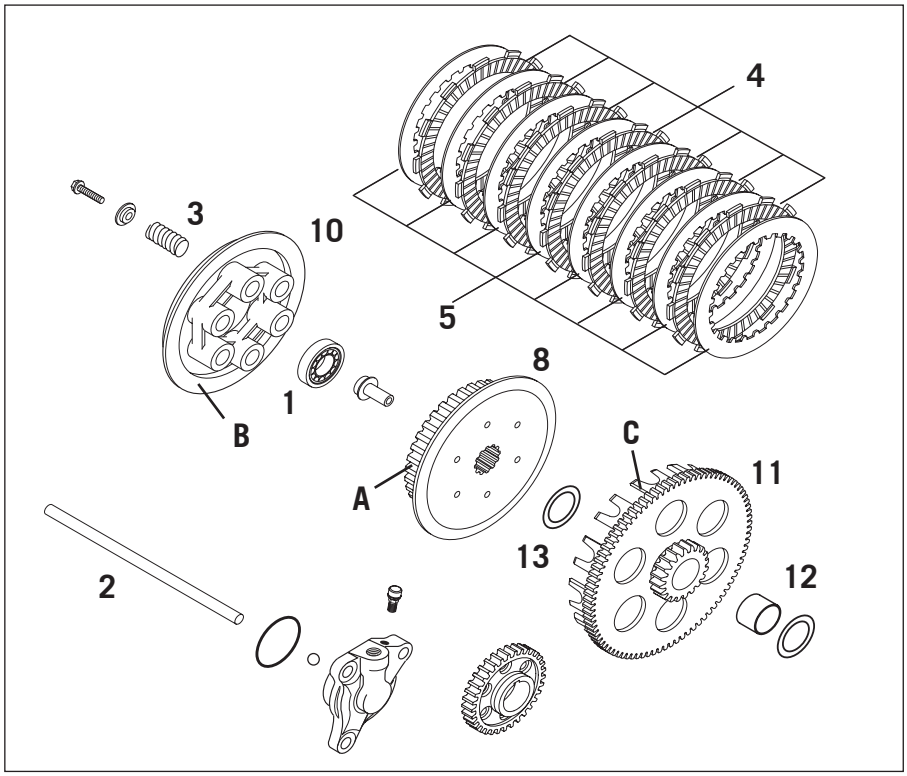
Clean all components thoroughly and check them for wear.

Timing gear ❶
Check the toothing for broken-off parts and wear.

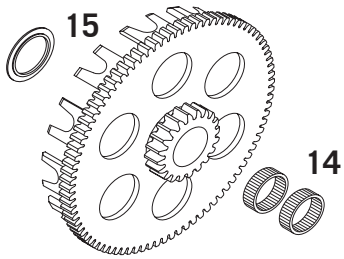
Timing chain tensioner rail ❷
Check for seizing marks at the contact surface.

Timing chain guide ❸
Check for seizing marks at the contact surface.

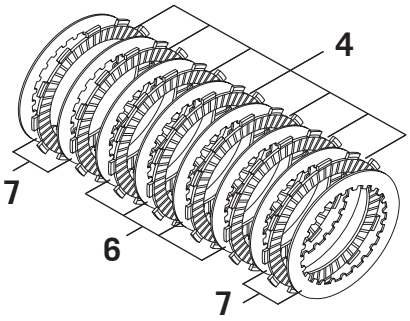
Rivet link ❹
The opened rivet link of the timing chain must be replaced.



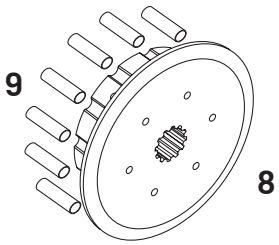
Modification - Model 2001



Modification - Model 2002



Modification - Model 2002



Checking the clutch for wear - up to the 2002 model

Thrust bearing ❶
Check it for seizing marks and unobstructed movability.

Push rod ❷
Place it on a planar surface and check it for eccentricity.

Clutch springs ❸
Minimum length: 42 mm, new: 43 mm; if necessary, replace all 6 springs.

7 lining discs ❹
Minimum thickness: 1.7 mm, new: 1.8 mm. The lining discs must be planar.

8 intermediate discs ❺ (up to model 2001)
They must be planar. Check them for mechanical damage. In the case of punctual broken-off portions, you have to replace the intermediate discs.

Four 1.4 mm ❻ clutch discs (model 2002)
Must be planar. Check for mechanical damage. Replace clutch discs if localized points are broken off.

Four 1.0 mm ❼ clutch discs (model 2002)
Must be planar. Check for mechanical damage. Replace clutch discs if localized points are broken off.

Inner clutch hub ❽
Check the outer toothing Ⓐ on the inner clutch hub. If the depressions are greater than 0.5mm, the inner clutch hub must be replaced. A modified driver with sleeves ❾ is installed starting with the 2002 model.

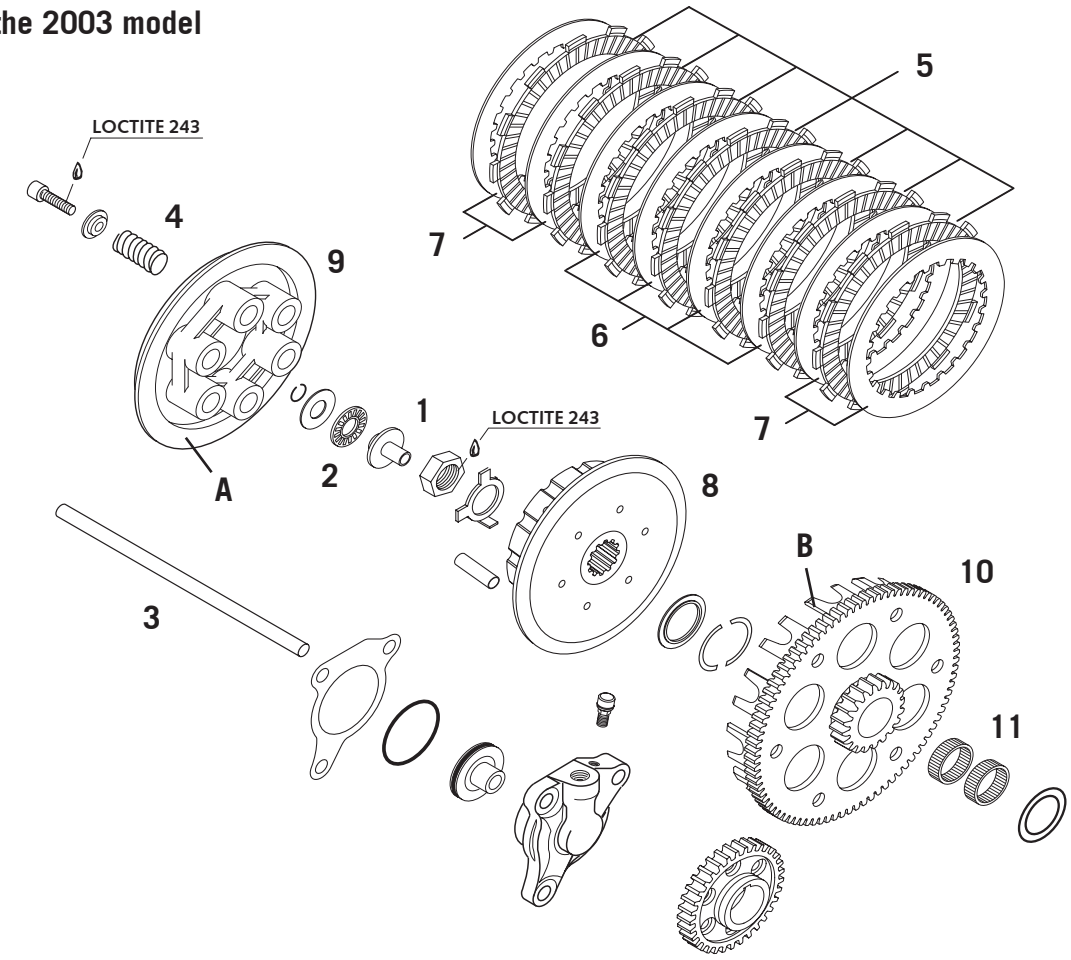
Pressure cap ❿
Check the seating surface Ⓑ of the steel disc for damage.

Outer clutch hub ⓫
Check the stop surfaces Ⓒ of the lining disc and the clutch cage for wear. If the depressions are greater than 0.5 mm the lining disc and clutch hub must be replaced.

Bearing bush ⓬
Slip the bearing bush and the outer clutch hub on the main shaft and check the bearing for clearance. If necessary, replace the bearing bush.

NOTE:
– Every time the inner clutch hub is replaced, the bearing bush should be exchanged as well (Model 2000).
– From Model 2001 onwards two needle bearings ⓬ are mounted instead of the bearing bush ⓮, the outer clutch hub is replaced with a hardened version, the support washer ⓭ is replaced with a step washer ⓯ and the mesh of the shaft is different.

From the 2003 model



Checking the clutch for wear - from the 2003 model

Pressure piece ❶
Check it for seizing marks and unobstructed movability.

Axial needle bearing ❷
Check for damage.

Push rod ❸
Place it on a planar surface and check it for eccentricity.

Clutch springs ❹
Minimum length: 42 mm, new: 43 mm; if necessary, replace all 6 springs.

7 lining discs ❺
Model 2003: Minimum thickness: 1.7 m, new: 1.8 mm.
From the 2004 model: Minimum thickness: 1.9 mm, new: 2 mm.
The lining discs must be planar.

Model 2003/2006/2007: Four 1.4 mm ❻ clutch discs
Must be planar. Check for mechanical damage. Replace clutch discs if localized points are broken off.

Model 2003/2006/2007: Four 1.0 mm ❼ clutch discs
Must be planar. Check for mechanical damage. Replace clutch discs if localized points are broken off.

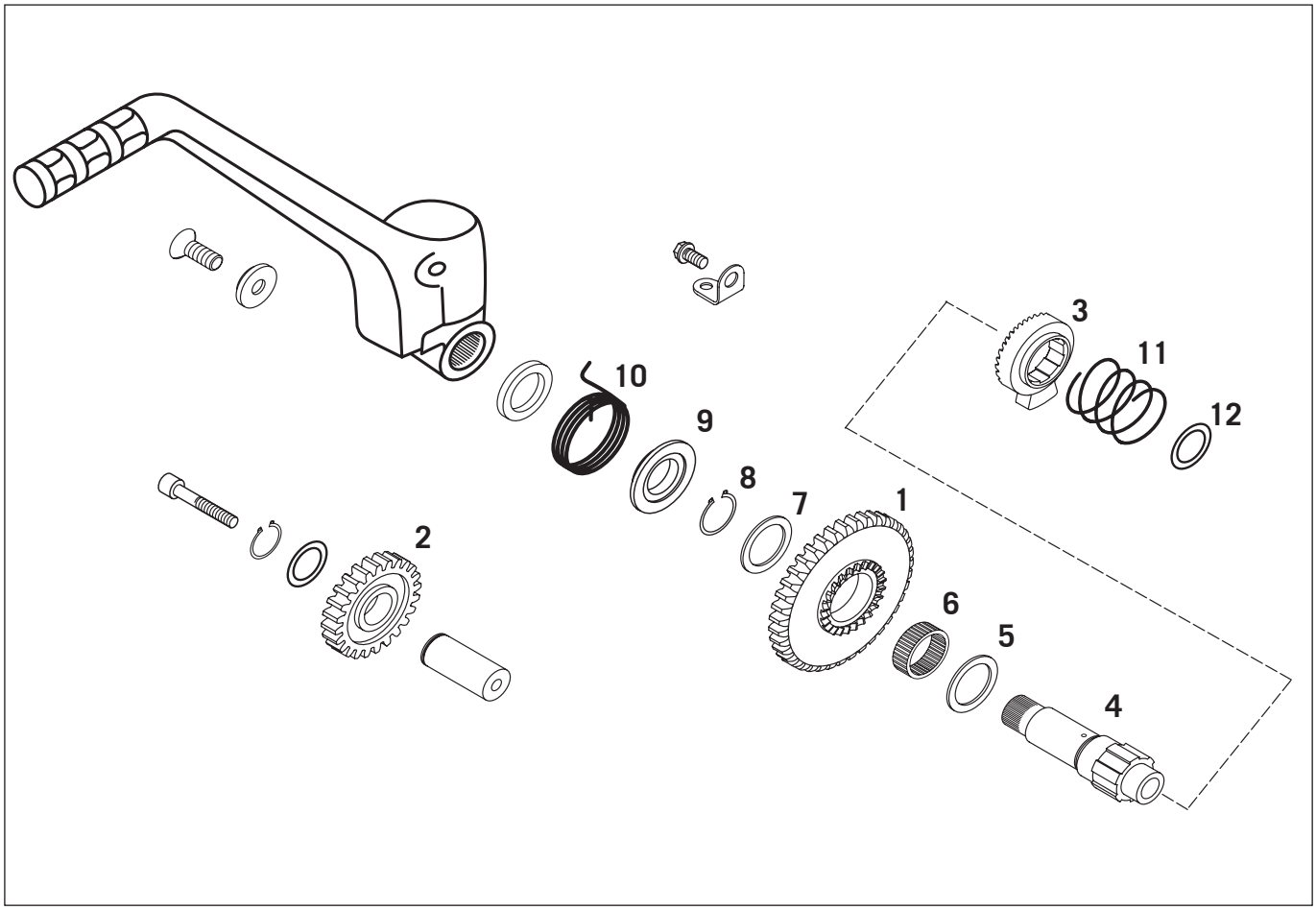
All clutch discs are 1.0 mm in the 2004/2005 models.
Must be planar. Check for mechanical damage. Replace clutch discs if localized points are broken off.

Inner clutch hub ❽
Check for seizing marks and damage.

Pressure cap ❾
Check the seating surface Ⓐ of the steel disc for damage, check the oil holes (starting with the 2005 model) for free passage.

Outer clutch hub ❿
Check the stop surfaces Ⓑ of the lining disc and the clutch cage for wear. If the depressions are greater than 0.5 mm the lining disc and clutch hub must be replaced.

Needle bearing ⓫
Check for seizing marks and damage.



Checking the kickstarter for wear

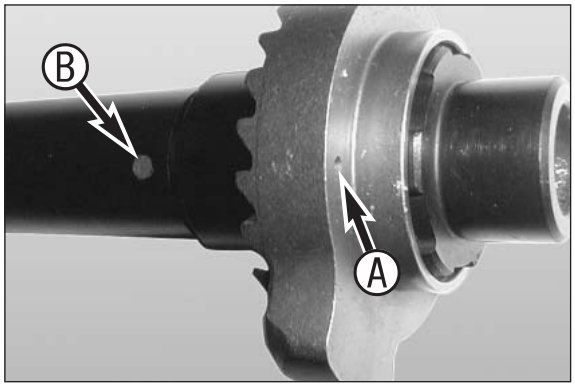
Take all components off the kickstarter shaft and clean them.

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.

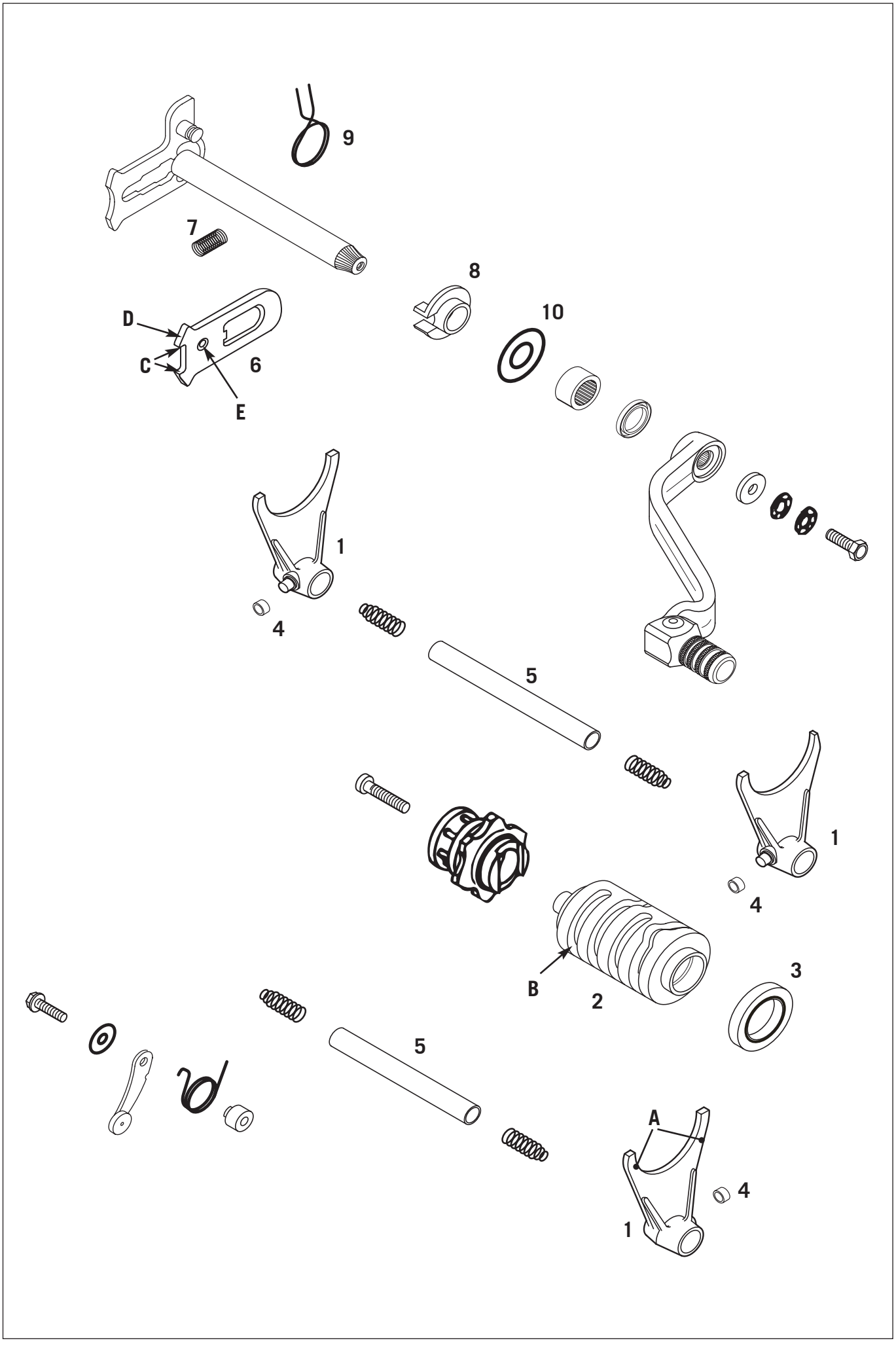
Kickstarter ratchet gear ❸
Check the inclined surface and the toothings for wear.

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



Preassembling the kickstarter shaft

- Clamp the kickstarter shaft ❹ with the toothed end facing upward into a vise (use protection jaws).
- Mount the stop disc ❺, needle bearing ❻ and the kickstarter gear ❶ with the locking teeth facing downward.
- Slip on the stop disc ❼ and mount the circlip ❽ with the sharp edge facing upward.
- Mount the driving hub ❾ such that the recess is located above the bore in the kickstarter shaft.
- Mount kickstarter spring ❿ and hook starter spring leg into kickstarter shaft bore.
- Unclamp the kickstarter shaft.
- Slip the kickstarter ratchet gear ❸ on the kickstarter shaft such that the marks Ⓐ mates with the oil duct Ⓑ in the kickstarter shaft.
- Mount the ratchet gear spring ⓫ and the stop disc ⓬ on the kickstarter shaft.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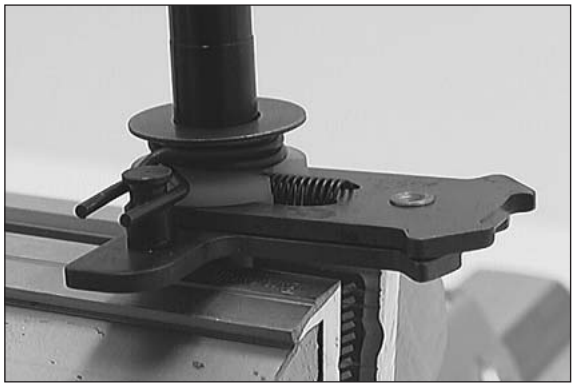


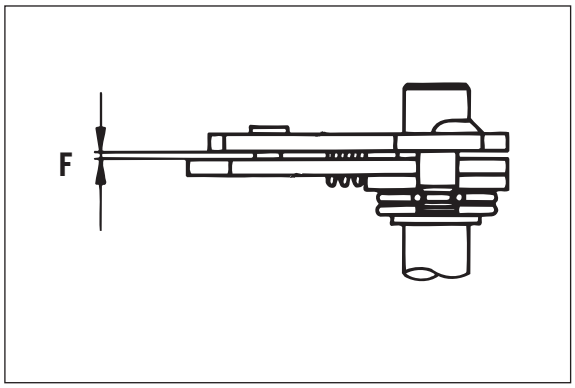
Shift mechanism

Shift forks ❶
Check plate Ⓐ for wear. The forks are 4.8mm - 4.9 mm thick in a new condition. The wear limit is at 4.6 mm.

Shift roller ❷
Check the shift grooves Ⓑ for wear.
Check the fit of the shift roller in the grooved ball bearing ❸.

Grooved ball bearing ❸
Check it for smooth movability.

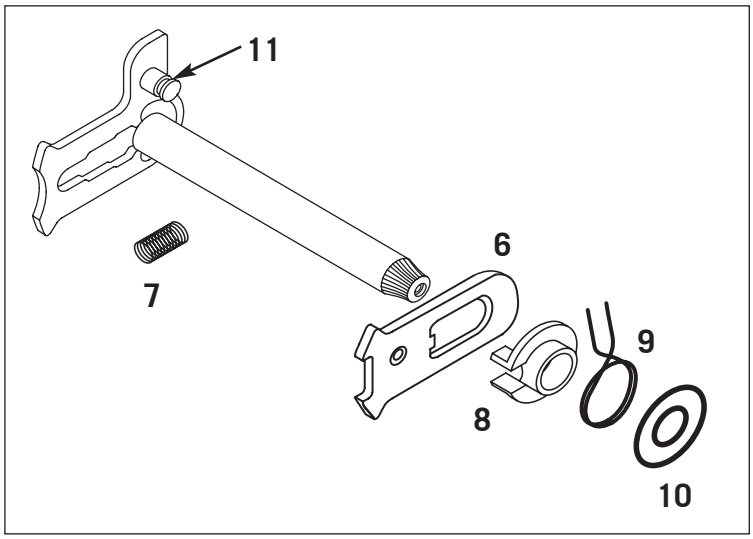
Shift rolls ❹
Check the shift rolls for pressure marks and cracks.



Shift rails ❺
Check the shift rails for eccentricity on a planar surface. Check the shift rails for score and seizing marks. The smooth movability of the shift forks on the shift rails must be ensured.

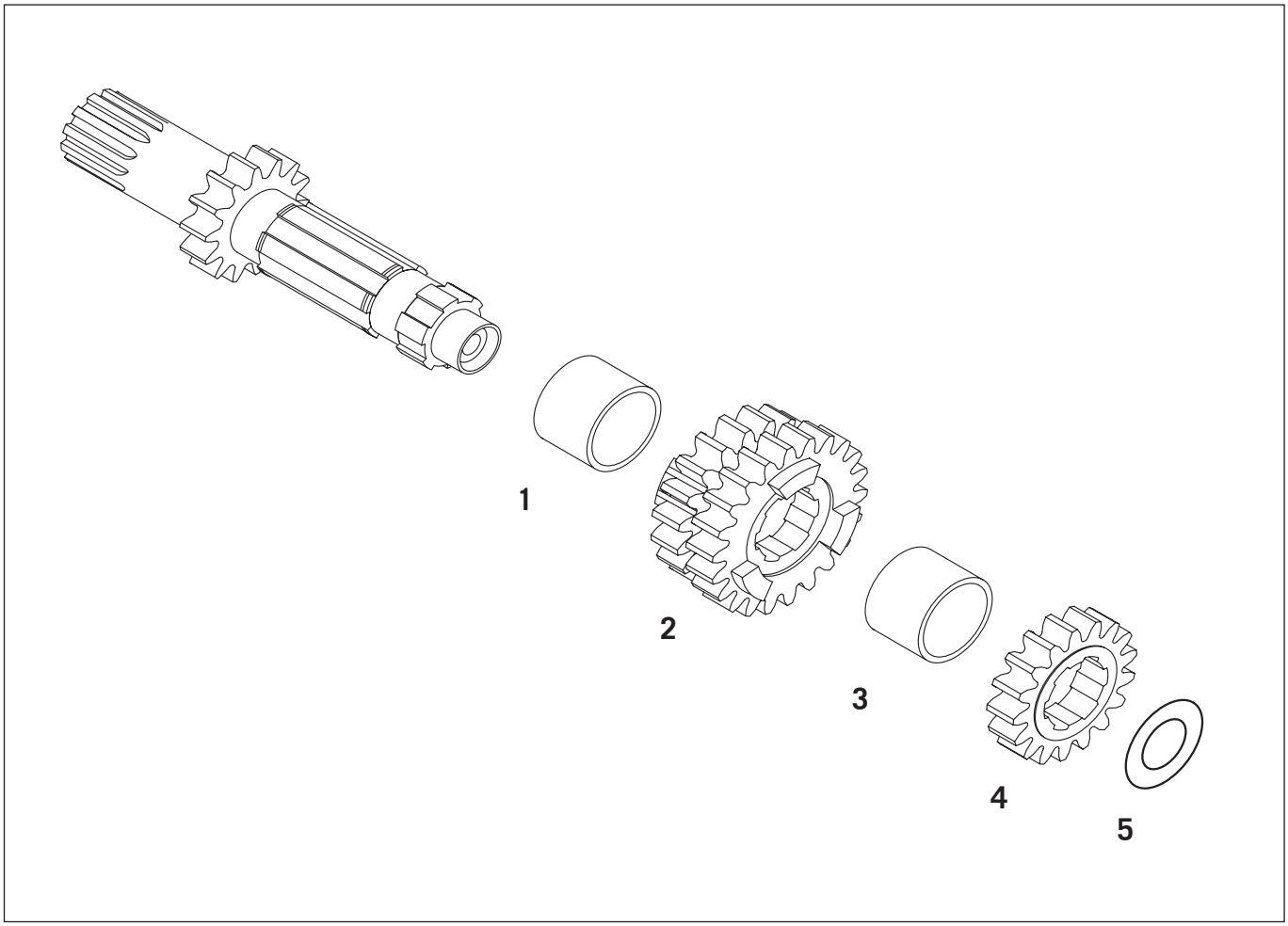
Sliding plate ❻
Check it for wear at the points of engagement Ⓒ.
Check the return surface Ⓓ on the sliding plate for wear (replace it in case of severe notching).
Check the guide bolts Ⓔ for tight fit and wear.

Shift mechanism
Preassemble the shift shaft and check the clearance Ⓕ between the sliding plate ❻ and the shift element. The clearance must be 0.40 - 0.80 mm.



Preassembling the shift shaft

- Secure the short end of the shift shaft in a vise (use protection jaws).
- Mount the sliding plate ❻ with the guide bolt facing downward and engage the guide bolt at the shift element.
- Mount the pressure spring ❼.
- Slide on the spring guide ❽, slide the return spring ❾ with its dropped end facing upward over the spring guide and lift the dropped end over the counterbearing bolt ⓫ (see photo).
- Mount the stop disc ❿.



Transmission

Clamp the main shaft or counter shaft respectively, into the vise (use protective jaws). Remove the gears and check the following parts for wear and grooves:

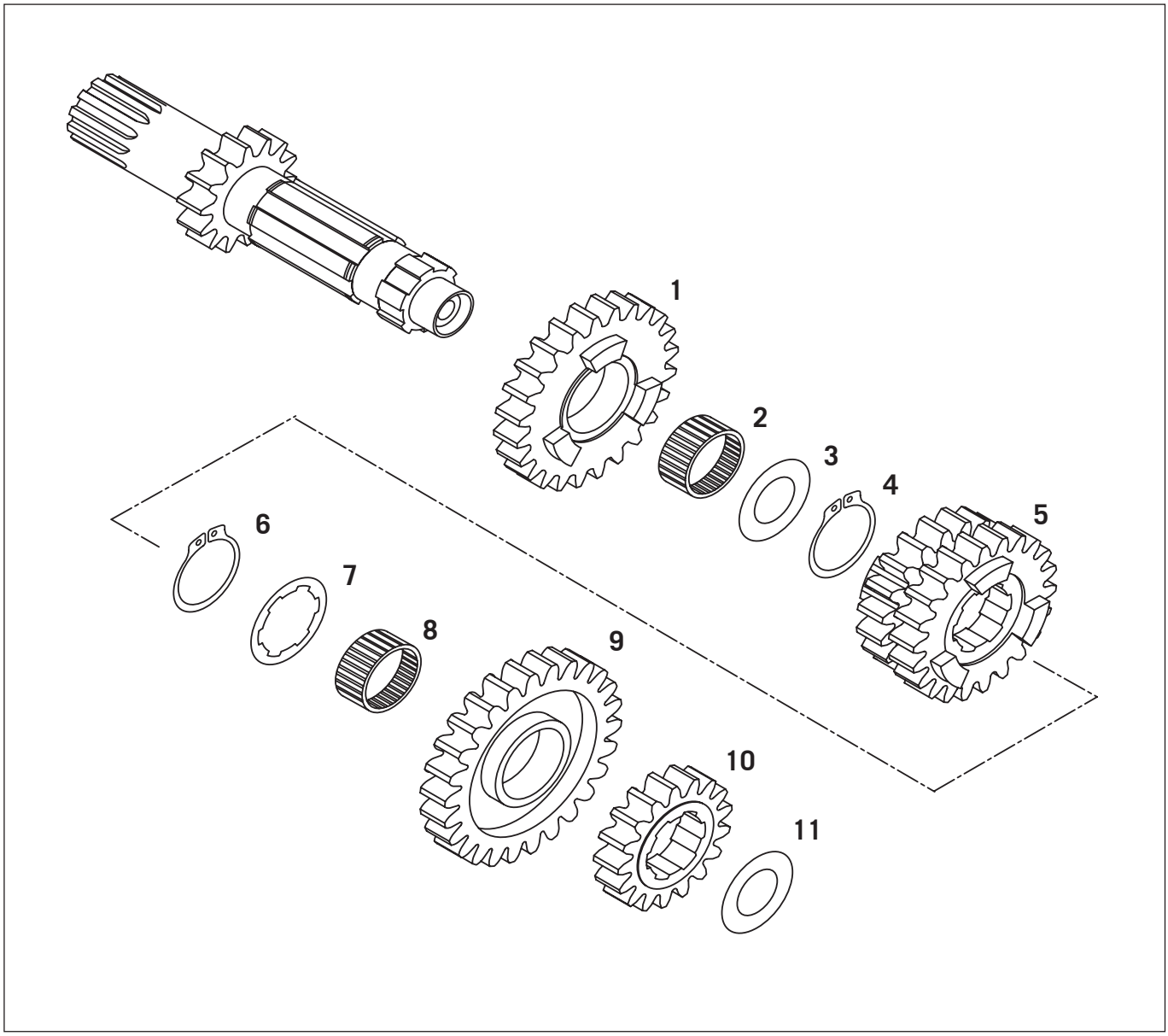
- Bearings
- Pivot points of the main shaft and countershaft and pivot points of the idler gears
- Shift dogs of the gears
- Tooth faces of all gears
- Tooth profiles of the main shaft and countershaft as well as of the corresponding gears
- Check the profiles of all control gears for smooth operation

Thoroughly clean all parts and exchange damaged components. New axial securing elements should be mounted whenever repair work is performed.

Assembling the main shaft (4-speed)

- Secure the main shaft with the toothed end facing downward in a vise (use protection jaws).
- Prior to assembly, oil all components thoroughly.
- Mount the spacer bushing ❶ and the 3rd/4th speed sliding gear ❷ with the small gear facing downward.
- Mount the spacer bushing ❸ and the 2nd speed fixed gear ❹ with the collar facing downward.
- Slip on the stop disc ❺ (17.2x30x1 mm).
- Then, check all gear wheels for smooth movability.

NOTE: From Model 2001 onwards the spacer bushings ❶ and ❸ are made of steel (before they were made of aluminium), the steel version can be used in Model 2000 gearboxes.

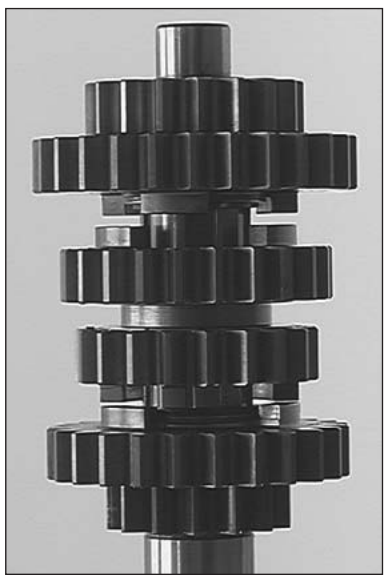


Transmission

Clamp the main shaft or counter shaft respectively, into the vise (use protective jaws). Remove the gears and check the following parts for wear and grooves:

- Bearings
- Pivot points of the main shaft and countershaft and pivot points of the idler gears
- Shift dogs of the gears
- Tooth faces of all gears
- Tooth profiles of the main shaft and countershaft as well as of the corresponding gears
- Check the profiles of all control gears for smooth operation

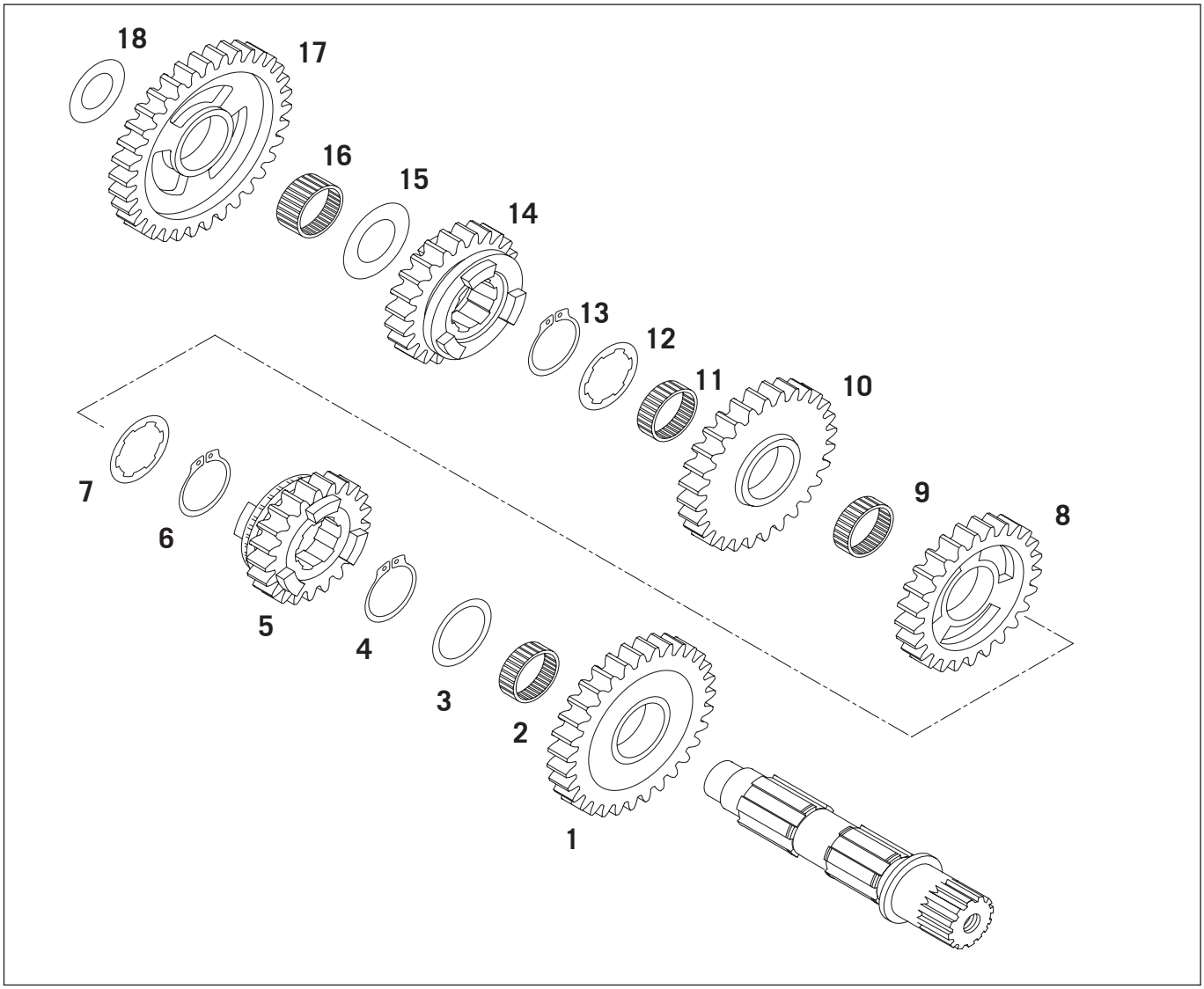
Thoroughly clean all parts and exchange damaged components. New axial securing elements should be mounted whenever repair work is performed.
Do not overstretch the circlip while mounting.



Assembling the main shaft (6-speed)

- Secure the main shaft with the toothed end facing downward in a vise (use protection jaws).
- Prior to assembly, oil all components thoroughly.
- Mount the split needle bearing ❷, slip on the 5th speed idler gear ❶ with the shift dogs facing upward.
- Mount the stop disc ❸ (25.2x32x1.5 mm) and the circlip ❹ with the sharp edge pointing upward.
- Slip on the 3rd/4th speed sliding gear ❺ with the small gear facing downward and mount the circlip ❻.
- Slip on the stop disc ❼ (25.2x32x1.5 mm) and the split needle bearing ❽.
- Slip on the 6th speed idler gear ❾ with the recess pointing upward.
- Slip on the 2nd speed fixed gear ❿ with the collar facing downward and the stop disc ⓫ (17.2x30x1 mm).

- Then, check all gear wheels for smooth movability.



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Transmission

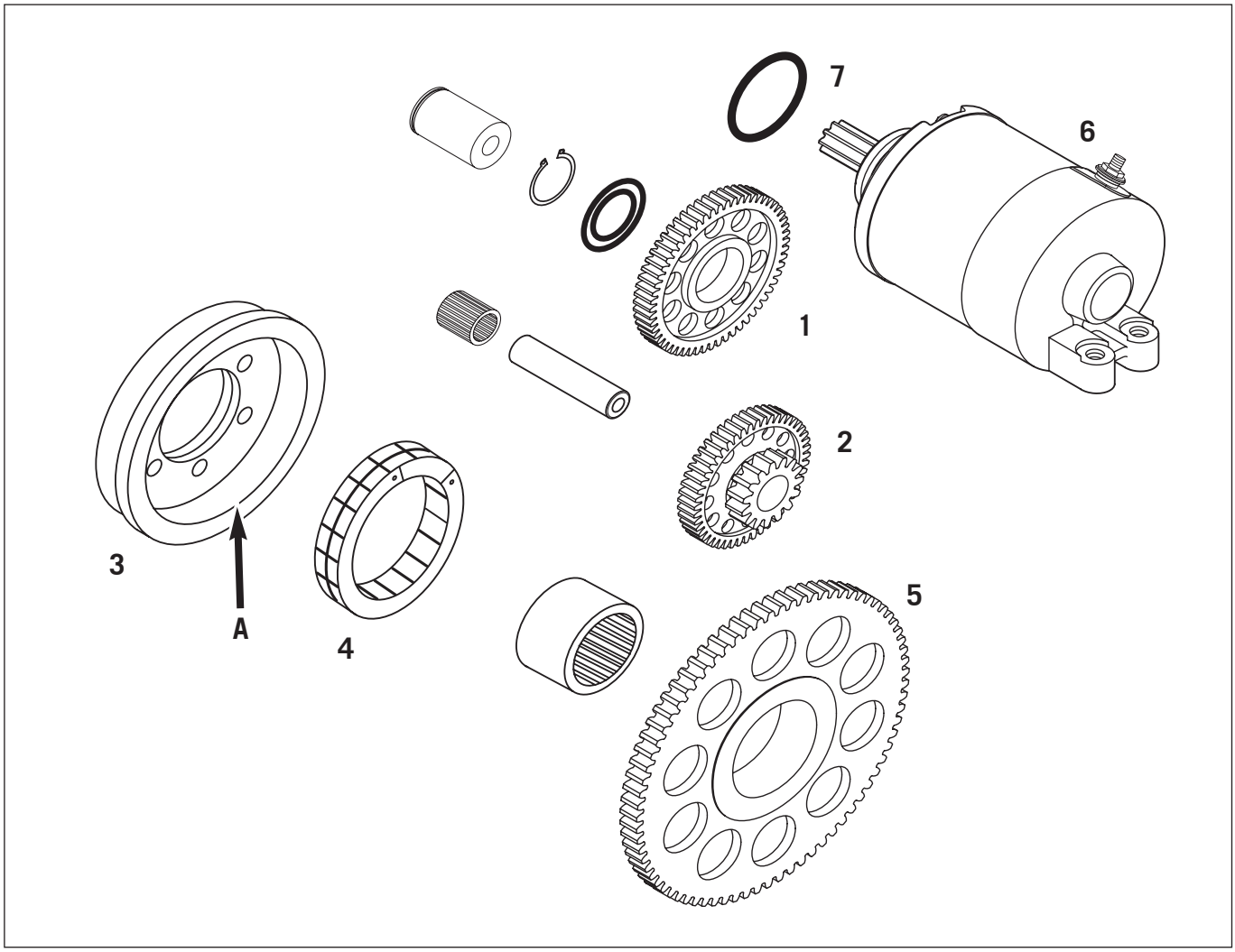
Clamp the main shaft or countershaft respectively, into the vise (use protective jaws). Remove the gears and check the following parts for wear and grooves:

- Bearings
- Pivot points of the main shaft and countershaft and pivot points of the idler gears
- Shift dogs of the gears
- Tooth faces of all gears
- Tooth profiles of the main shaft and countershaft as well as of the corresponding gears
- Check the profiles of all control gears for smooth operation

Thoroughly clean all parts and exchange damaged components. New axial securing elements should be mounted whenever repair work is performed.
Do not overstretch the circlip while mounting.

Assembling the countershaft (4 and 6-speed)

- Secure the countershaft with the toothed end facing downward in a vise (use protection jaws).
- Prior to assembly, oil all components thoroughly.
- Mount the split needle bearing ❷ and the 2nd speed idler gear ❶ - with the recess for shift dogs facing upward - on the countershaft.
- Mount the stop disc ❸ (25.2x32x1.5mm) and circlip ❹ with the sharp edge facing upward.
- Mount the 6th speed sliding gear ❺ with the shift groove facing upward.
- Mount the circlip ❻ and the stop disc ❼ (25.2x32x1.5mm).
- Mount the 2 split needle bearings ❾ + ⓫ and the 4th speed idler gear ❽ with the recess for shift dogs facing downward.
- Mount the 3rd speed idler gear ❿ with the recess for shift dogs facing upward.
- Mount the stop disc ⓬ (25.2x32x1.5mm) and the circlip ⓭.
- Slip on the 5th speed sliding gear ⓮ with the shift groove facing downward and the stop disc ⓯ (20x31.9x1mm).
- Mount the needle bearing ⓰, the 1st speed idler gear ⓱ with the recess facing downward and the stop disc ⓲ (17.2x30x1mm).



E-starter drive gear

Idler gear ❶
Check toothing and bearing position of the idler gear for wear. Check the bearing bolts of the idler gear for score marks, as well.

Reduction gear ❷ up to the 2005 model
Check toothing and bearing position of the reduction gear for wear. Check the bearing bolts of the reduction gear for score marks, as well. Slip the reduction gear together with the needle cage onto the bearing bolt and check the clearance.

Torque limiter ❷ starting with the 2006 model
Check the torque limiter's toothing and pivot points for wear. Also check the bearing bolt on the torque limiter for wear marks. Mount the torque limiter and both needle bearings on the bearing bolt and check the clearance.

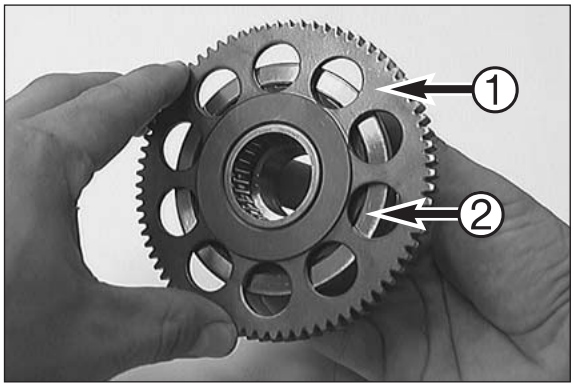
Free wheel hub ❸
Take the free wheel out of the free wheel hub and check the contact surface Ⓐ for pressure marks. Clean the free wheel hub thoroughly.

Free wheel ❹
Thoroughly clean the free wheel with petroleum and compressed air. Check the segments of the free wheel for wear. Then, oil the free wheel thoroughly.

Free wheel gear ❺
Slip the free wheel gear onto the crankshaft and check for clearance. If necessary, replace the needle bush. Check the contact surface to the free wheel for pressure marks.

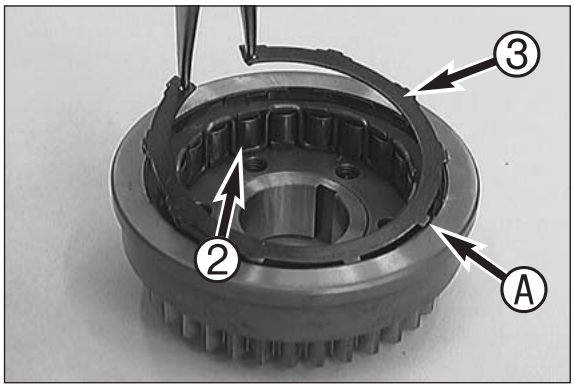
NOTE: If you detect any damage to the reduction gear, the torque limiter ❷ or the freewheel gear ❺ that makes it necessary to replace the parts, always replace both (❷ and ❺) as a set.

E-starter motor ❻
Renew the O-ring ❼ at the flange.



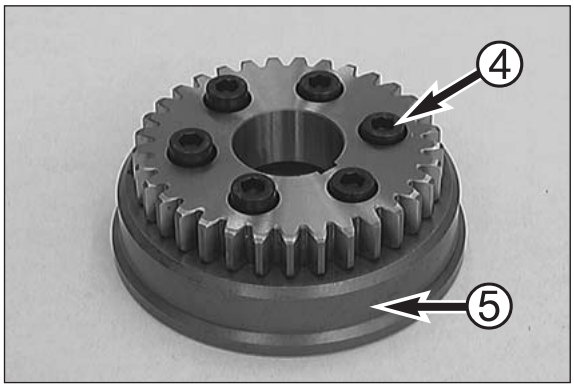
Checking the free wheel

– Insert the free wheel gear ❶ into the free wheel ❷.
– It must be possible to turn the free wheel gear clockwise.
– Counterclockwise, the free wheel gear must be blocked without backlash.

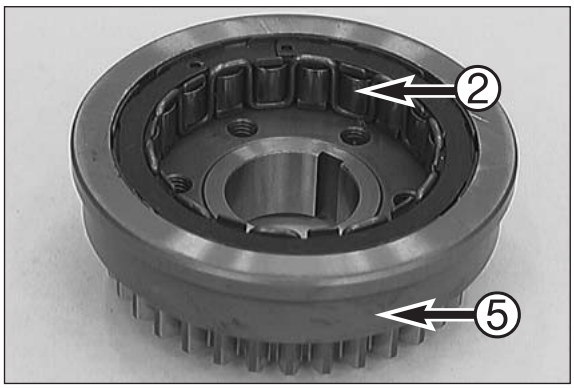


Replacing the free wheel hub

– Use the circlip pliers to compress the spreader ring ❸ and remove it together with the free wheel ❷.



– Remove the 6 bolts ❹.
– Use a plastic hammer to tap on the free wheel hub ❺ from the side and dismount the free wheel hub.
– Mount the new free wheel hub on the primary wheel.
– Degrease the threads of the bolts, apply Loctite 648 and tighten the bolts in a crosswise order to 16 Nm.



– Oil the free wheel ❷ thoroughly and insert it into the free wheel hub ❺.
– Use circlip pliers to insert the spreader ring into the groove and check its proper fit. It is best to use a punch to carefully tap on the mounted spreader ring.

NOTE: The noses Ⓐ on the spreader ring must engage the groove of the free wheel hub.

ASSEMBLING THE ENGINE 6

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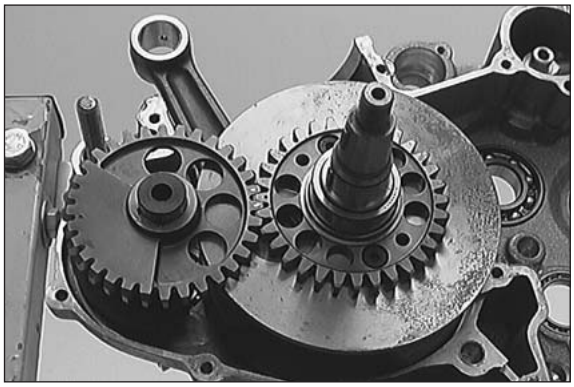
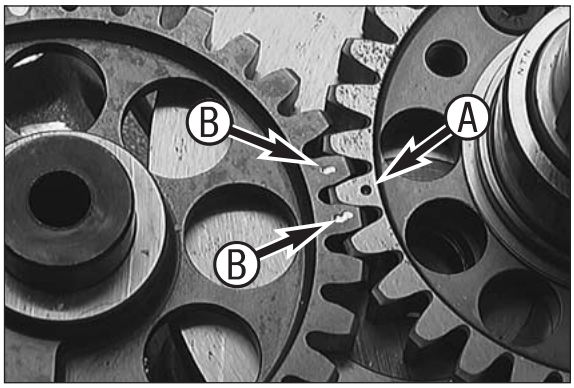
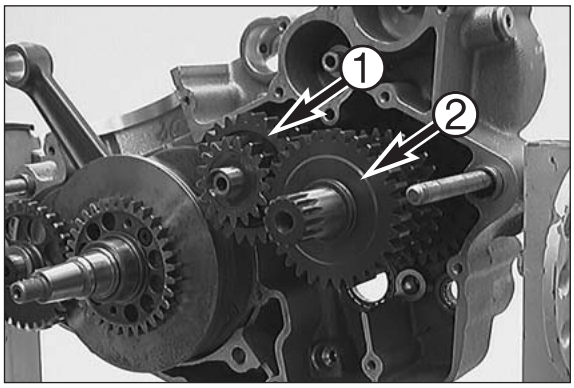


Mounting the crankshaft and balancer shaft

– Secure the right half of the casing in the work stand.
– Thoroughly oil the cylinder roller bearings of the crankshaft and grease the shaft seal ring of the crankshaft.
– Carefully, insert the crankshaft into the bearing seat.

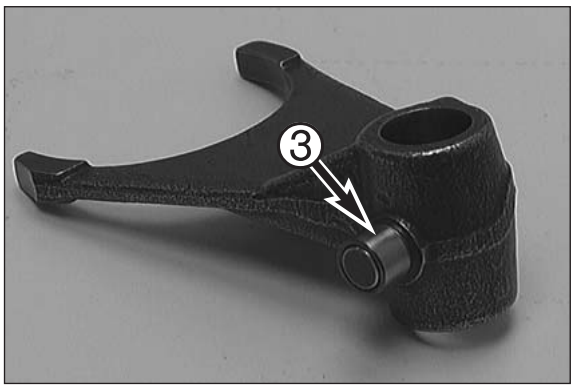


– Turn the crankshaft such that the mark ❹ is in front and insert the balancer shaft into the bearing seat. Make sure that the mark ❹ on the crankshaft is between the 2 marks ❸ on the balancer shaft.

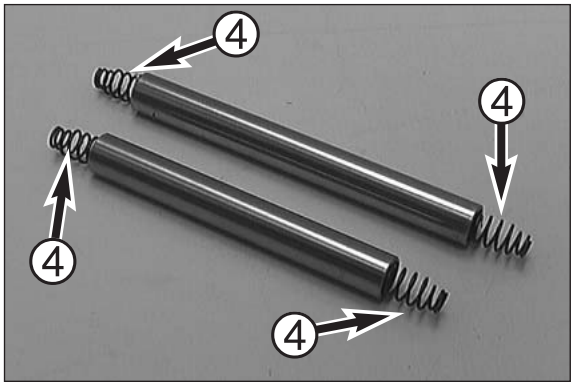


Mounting the shift mechanism and transmission

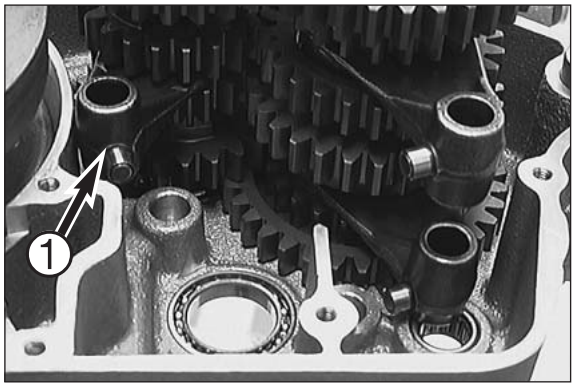
– Turn the engine sideward.
– Insert the main shaft ❶ and countershaft ❷ into the bearing seats simultaneously.



– Apply grease to secure the shift rolls ❸ to the shift forks.

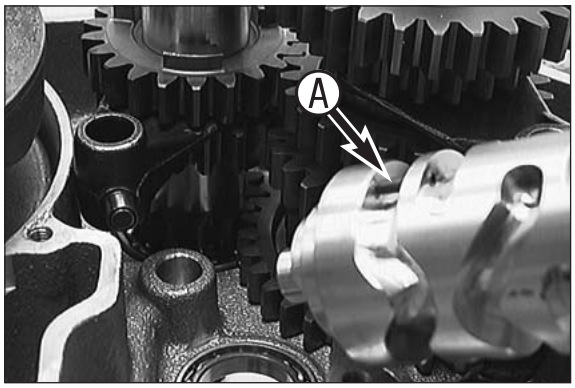


– Apply grease to secure the 4 springs ❹ in the shift rails.



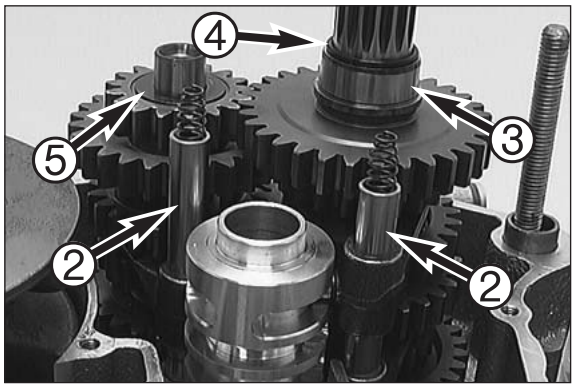
– Oil the shift forks at their flat sides and engage them in the sliding gears.

ONLY ENGINES WITH 4-SPEED-SHIFTING:
NOTE: The shift fork ❶ and the short shift rail are not mounted in these engines.



– Insert the shift roller into bearing seat.

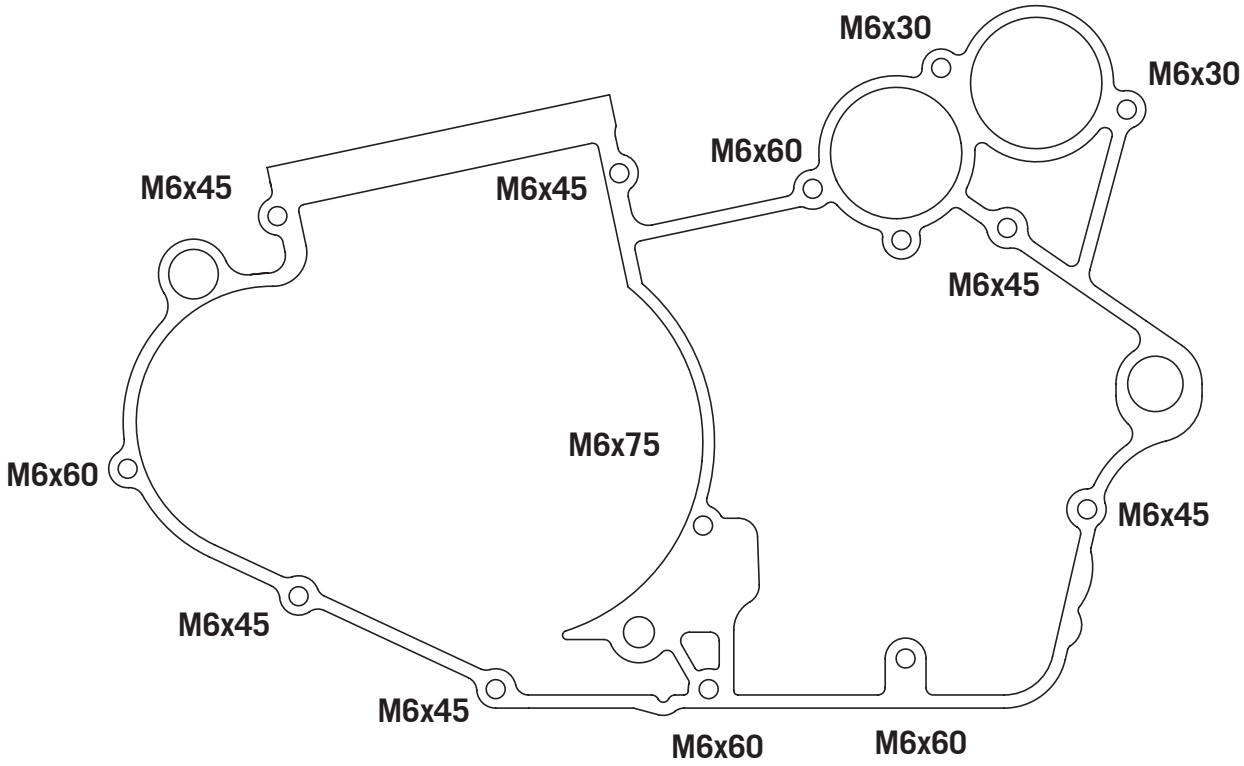
ONLY ENGINES WITH 4-SPEED-SHIFTING:
NOTE: The shift roller must be turned with the shift roller mounted such that the pin Ⓐ faces vertically downward.

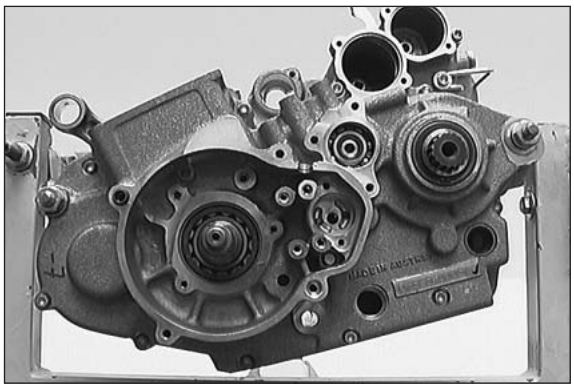


– Engage the shift forks in the shift roller and mount the two shift rails ❷ together with the springs.

– Make sure that the following parts were mounted:

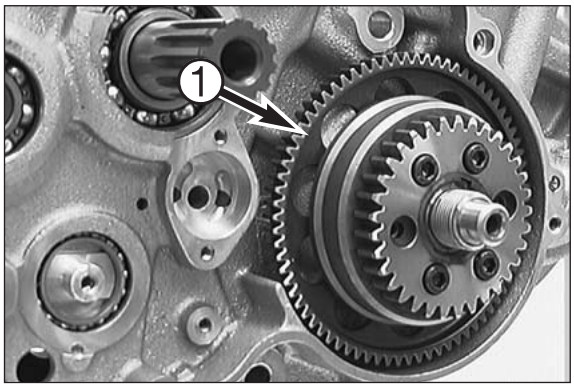
inner bearing ring ❸
O-ring ❹
stop disc ❺
2 dowels in the engine casing





Assembling the engine casing

- Remove the engine fixture at the work stand.
- Mount a new gasket on the housing sealing area.
- Put on the left half of the casing and tap on it lightly with a plastic hammer until it reaches its proper fit.
- Check the casing gasket for proper fit.
- Grease the casing bolts in the area of their threads and at the seating surfaces of their heads. Insert the bolts and tighten them (the bolt length is indicated in the drawing).
- Prior to and after tightening the casing bolts to 10 Nm, check whether all shafts move smoothly.
- Fix the engine to the work stand.
- Cut the projecting casing gasket at the cylinder base away neatly at the sealing surfaces.
- Check the crankshaft and transmission shaft clearance.



Mounting the primary gear and the free wheel

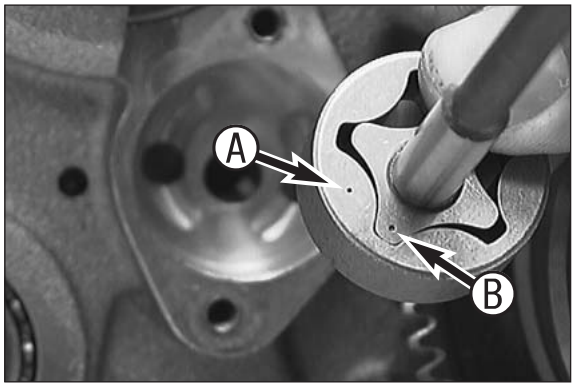
400/520 models until 2002:

- Turn the crankshaft to TDC and mount the crankshaft fixing bolt without a sealing ring.
- Check if the Woodruff key has been mounted in the crankshaft.
- Thoroughly oil the free wheel and the needle cage in the free wheel gear.
- Insert the free wheel gear ❶ into the free wheel hub and push all parts onto the crankshaft simultaneously.
- Degrease the thread of the crankshaft and coat it with Loctite 243. Mount the collar nut and tighten to 150 Nm.

250 EXC models from 2002 and all models after 2003:

- Check if the Woodruff key has been mounted in the crankshaft.
- Thoroughly oil the free wheel and the needle cage in the free wheel gear.
- Insert the free wheel gear ❶ into the free wheel hub and push all parts onto the crankshaft simultaneously.

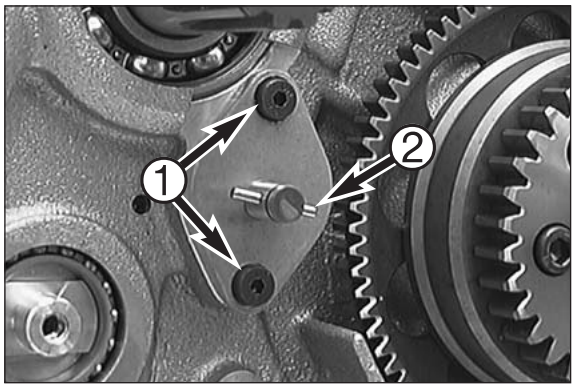
NOTE: The collar nut on the primary gear will be mounted later.



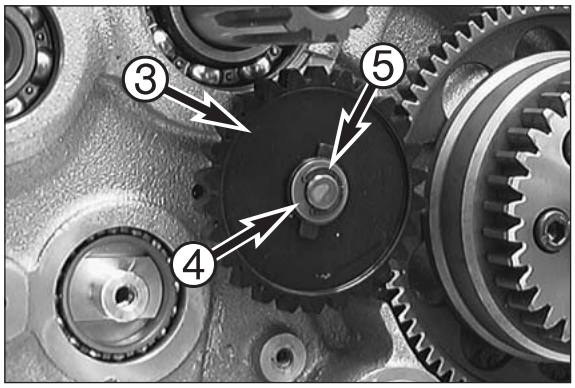
Mounting the oil pumps

– Thoroughly clean the seating surface of the oil pump cover.
– Insert the needle roller into the oil pump shaft.
– Slide inner rotor and outer rotor onto the oil pump shaft such that the 2 center points Ⓐ and Ⓑ are located next to one another and insert all components into the engine casing.

NOTE: The inner and outer rotor must be mounted with the center points facing the casing.

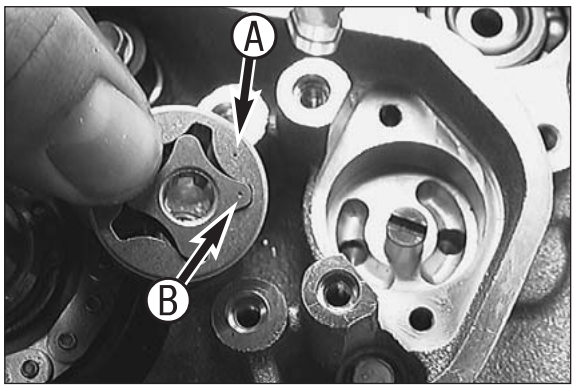


– Fill the oil pump casing with engine oil.
– Degrease the threads of the 2 bolts ❶ (M5x12), apply Loctite 222 mount the oil pump cover and tighten the bolts to 6 Nm.
– Insert the needle roller ❷ into the bore of the oil pump shaft.



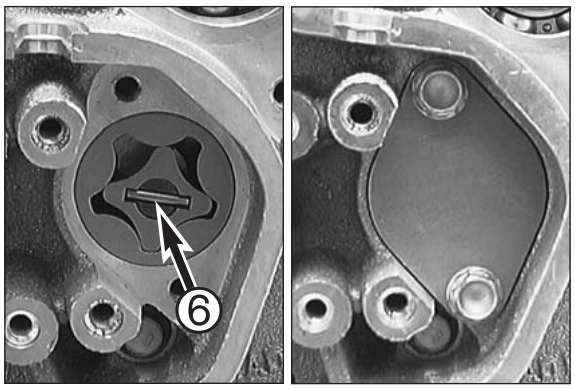
NOTE: If the shift lock has been removed, it can easily be mounted at this point (see page 6-6).

– Slide on the oil pump wheel ❸, mount the stop disc ❹ and the tab washer ❺.
– By turning the oil pump wheel, check whether the oil pump shaft moves smoothly.

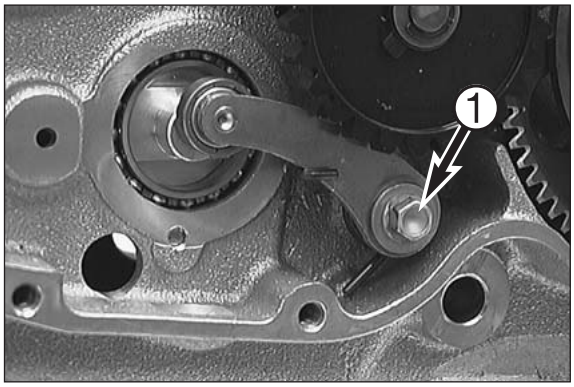


– Wipe the seating surface of the oil pump cover clean.
– Insert the outer and inner rotors into the engine casing such that the two marks Ⓐ and Ⓑ are located adjacent to one another.

NOTE: The inner and outer rotor must be mounted with the center points facing the casing.

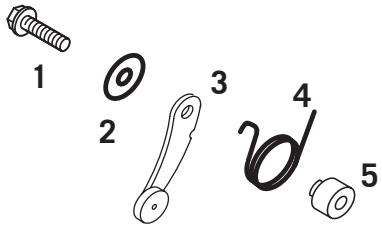


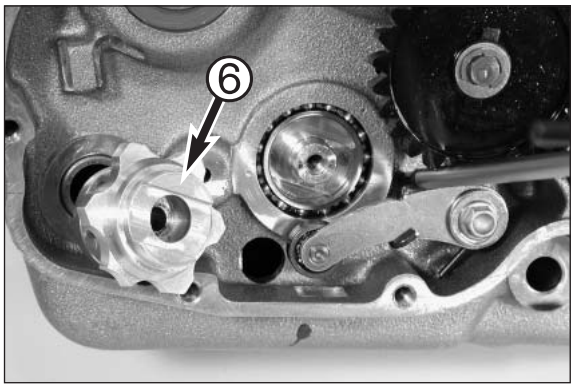
– Mount the needle roller ❻.
– Degrease the threads of the 2 bolts (M5x16) and coat them with Loctite 222.
– Fill the oil pump casing with engine oil.
– Use the 2 bolts to fix the oil pump cover and tighten to 6 Nm.
– After mounting check the oil pumps for easy operation. To do this turn the oil pump wheel.



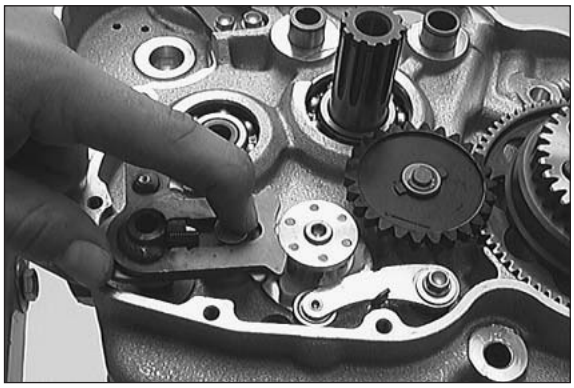
Mounting the shift arrester

– Slip the disc ❷, the locking lever ❸, the locking lever spring ❹ and the locking spring sleeve ❺ onto the bolt ❶ (M5x20).
– Apply Loctite 243 to the bolt's thread and tighten the bolt to 6 Nm.

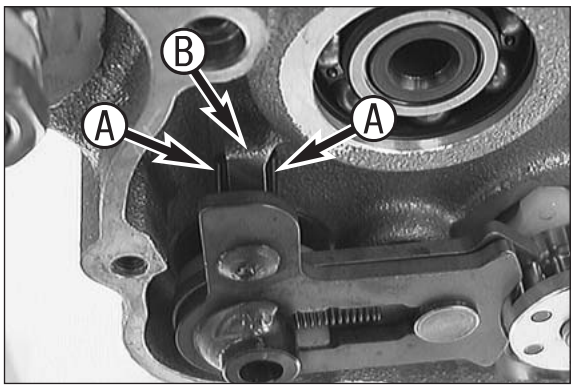




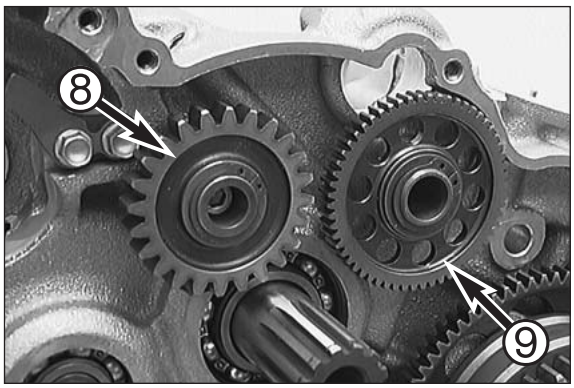
– Slide the shift locating drum ❻ onto the shift roller. Please note that the flat portions are eccentric. Here, the locking lever has be drawn away from the shift roller.
– Apply Loctite 243 to the thread of the bolt ❼ (M6x30) and tighten the bolt to 10 Nm.



– Grease the preassembled shift shaft and, together with the stop disc, slide it into the bearings until the sliding plate abuts the roller driving pin.
– Push back the sliding plate and push the shift shaft in upto the stop.

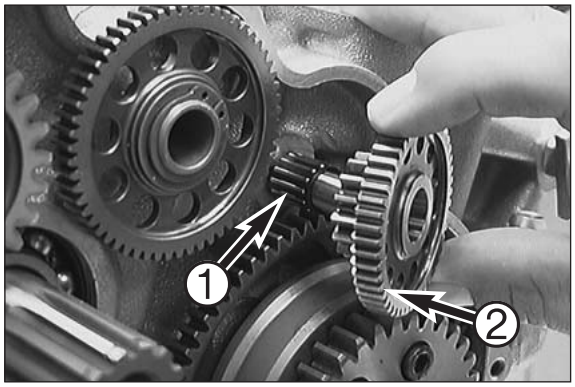


– Check whether the legs Ⓐ of the return spring abut the casing nose Ⓑ on both the left and right sides.
– Slip on the shift lever and shift through all gears. Turn the main shaft as you shift through the gears. Then, dismount the shift lever again.



Mounting the E-starter drive gear and kickstarter

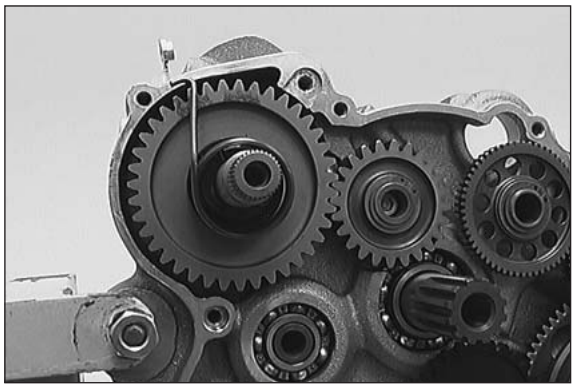
– Oil the kickstarter idler gear ❽ and the E-starter idler gear ❾ at the bearing positions and slide them onto the bearing bolts.
– Mount the stop discs and circlips with the sharp edge facing outwards.



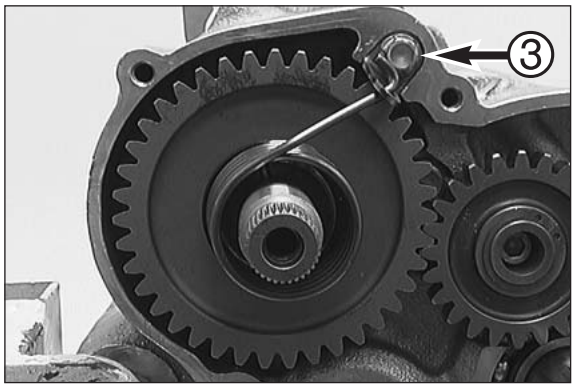
– Insert the bearing bolt into the casing bore.

Up to the 2005 model:
– Mount the needle bearing ❶ and the reduction gear ❷.

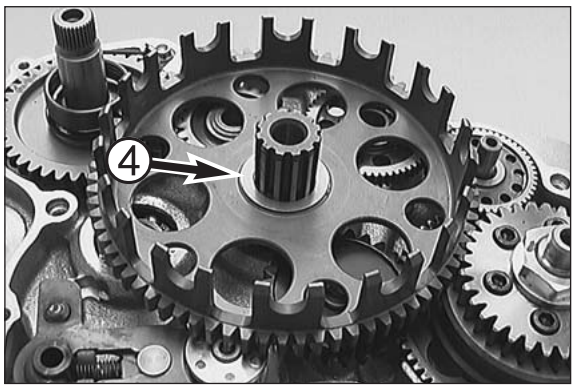
Starting with the 2006 model:
– Mount both needle bearings ❶ and the torque limiter ❷.



– Insert the preassembled kickstarter shaft into the bearing bore such that the ratchet gear is positioned behind the release plate.



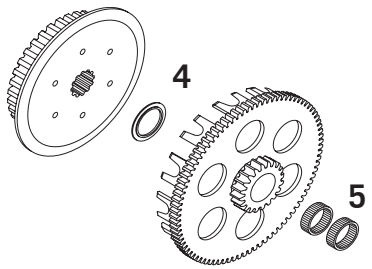
– Mount the spring shackle to the starter spring, coat the thread of the bolt ❸ (M6x12) with Loctite 243, tighten to 10 Nm, preload the starter spring around approx. 45° clockwise and fix the spring shackle by means of the bolt.
– Align the starter spring such that the distance to the kickstarter shaft is the same all around.

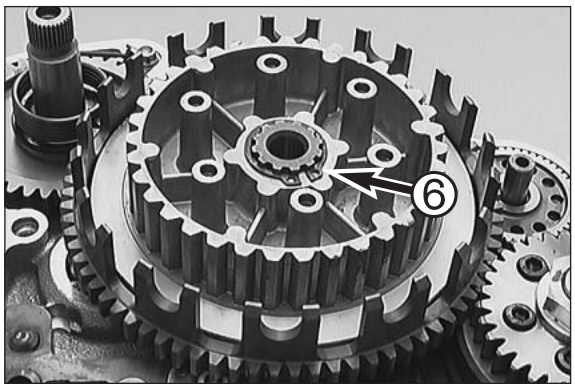


Mounting the outer clutch hub and driver up to the 2002 model

– Mount the stop disc and the bearing bush.
– Oil the bearing bush, slip the outer clutch hub and the stop disc ❹ onto the main shaft.

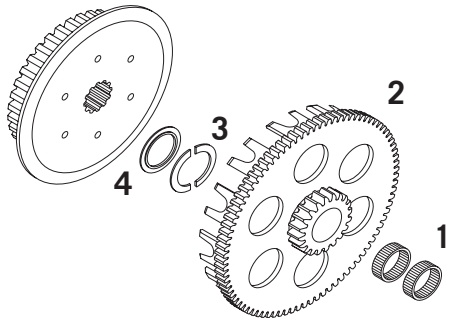
NOTE: From Model 2001 onwards the support washer ❹ is replaced by a step washer and two needle bearings ❺ are mounted instead of the bearing bush (see drawing below).
These parts cannot be used for Model 2000 engines.





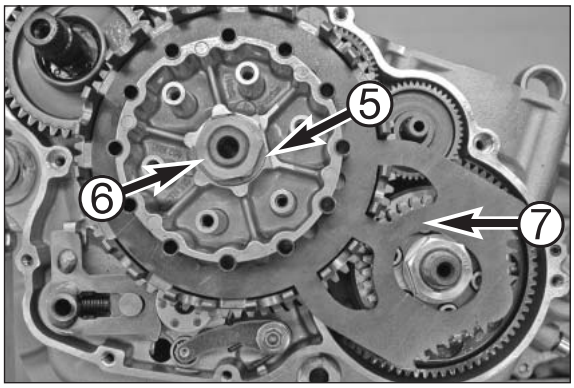
– Heat the driving pin to approx. 150°C and slide it onto the main shaft.
– Mount the circlip ❻ with its sharp edge facing upwards.

NOTE: A used driving pin can usually be mounted without being heated.



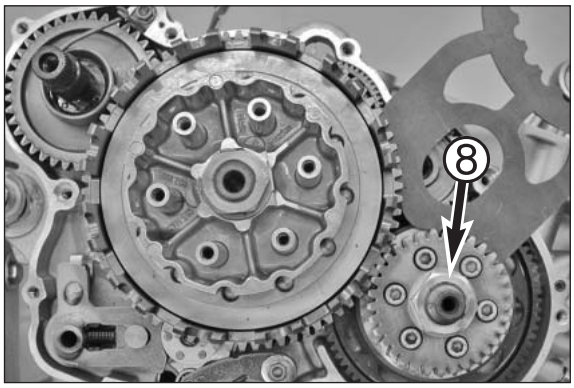
Mounting the outer clutch hub and driver from the 2003 model onwards

– Mount the supporting plate and the oiled needle bearing ❶.
– Mount the outer clutch hub ❷ together with the half discs ❸ and stepped disc ❹ on the main shaft.



– If necessary, heat the driver to approx. 150°C and mount on the drive shaft.
– Degrease the thread on the drive shaft and apply Loctite 243.
– Mount a new lock washer ❺ and nut ❻.
– Block the outer clutch hub with the special tool 590.29.003.100 ❼ (see photo) and tighten the nut to 120 Nm.
– Lock the nut with the lock washer.

NOTE: A used driver can usually be mounted without heating.

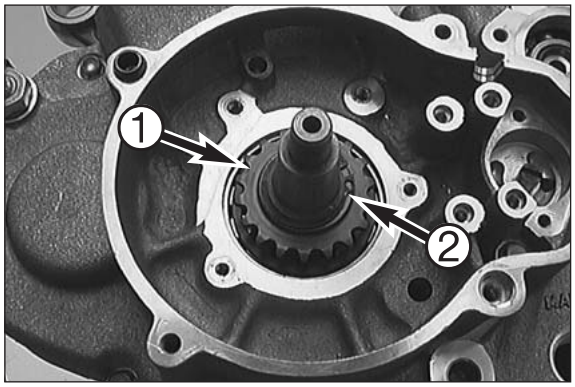


Mounting the primary gear nut (250 EXC models after 2002 and all models after 2003)

– Pull out the starter idler shaft, leaving the starter idler gear and torque limiter in the engine casing.
– Apply the special tool 590.29.003.100 ❼ as illustrated.
– Degrease the crankshaft thread and apply Loctite 243. Mount the collar nut ❽ and tighten to 150 Nm - left-hand thread!
– Remount the starter idler shaft.

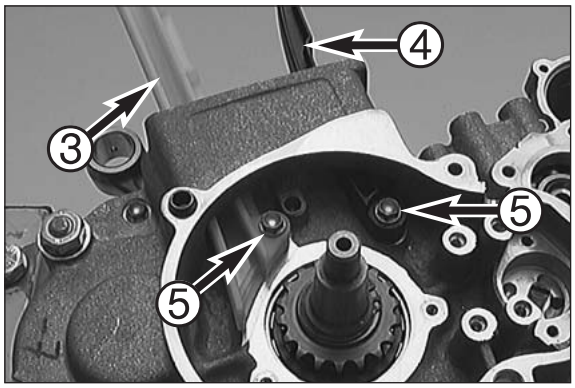
NOTE: The nut was already mounted on the models up to 2002.

– Turn the crankshaft to TDC and mount the crankshaft fixing bolt without a sealing ring.

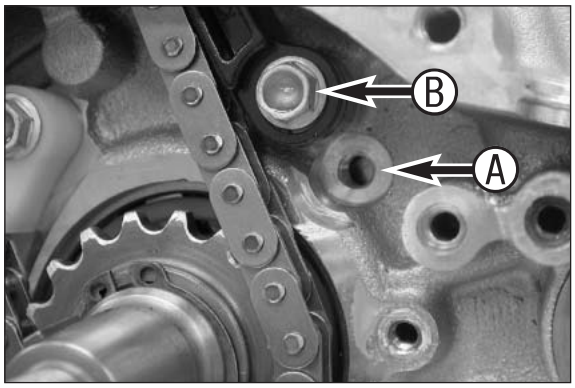


Mounting the timing gear

– Check the Woodruff key in the crankshaft for its correct fit.
– Warm the timing gear ❶ and position on the crankshaft with the high collar facing inwards. Tap carefully with a suitable pipe if necessary.
– Mount circlip ❷ with the sharp edge facing outwards.



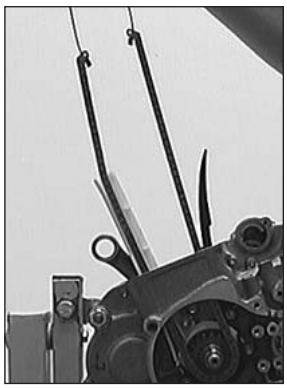
– Degrease the threads of the 2 bolts and apply Loctite 243. Use the 2 bolts ❺ (M6x25) to fix the timing chain guide ❸ and the tensioning rail ❹ , tighten the bolts to 6 Nm. Do not forget the 2 bushings.

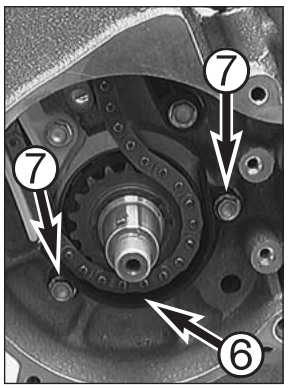


NOTE: 2 mounting points for the tensioning rail are provided for models from 2003. The tensioning rail is attached to point Ⓐ on the 450 SX model.
The tensioning rail is attached to point Ⓑ on all other models.

! CAUTION !

AFTER TIGHTENING, CHECK THE TENSIONING RAIL FOR SMOOTH OPERATION.

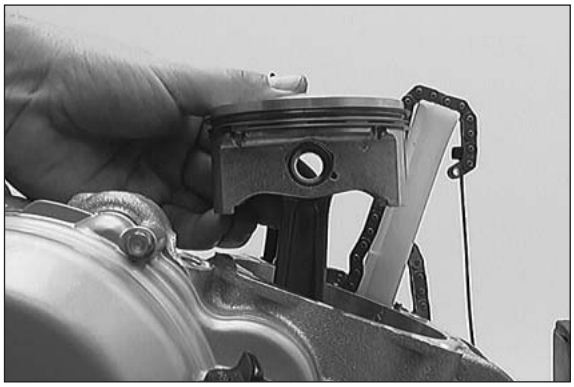




– Place the timing chain such that both ends are of equal length.

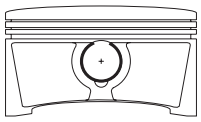
NOTE: The timing chain can also be pulled in after the cylinder and cylinder head are mounted.

– Degrease the threads of the 2 bolts (M5x16) and coat them with Loctite 243. Mount the fall-out protection element ❻ and tighten the bolts ❼ to 6 Nm.
– Stick one cable strap each through the 2 ends of the timing chain (see photo).

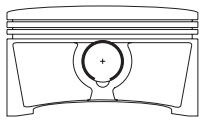


Mounting the piston and cylinder

– Apply a new cylinder-base gasket.
– Oil the piston pin boss in the conrod and the piston pin.
– Mount the piston and secure the piston pin with 2 new wire circlips.



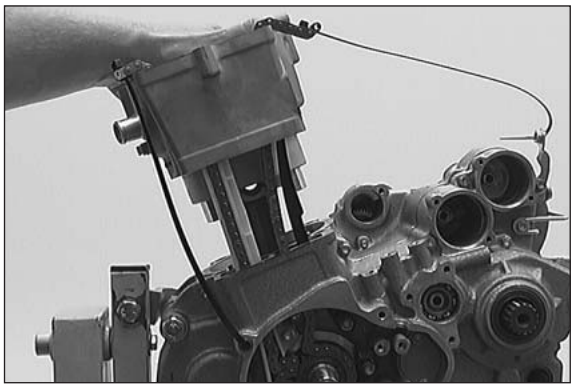
12 o'clock position



6 o'clock position

! CAUTION !

THE ARROW AT THE PISTON HEAD MUST POINT IN THE TRAVEL DIRECTION.
MOUNT THE WIRE CIRCLIP IN THE "12 O'CLOCK" OR "6 O'CLOCK" POSITION.



– Oil the piston and align the piston rings.

NOTE: The open end of the oil scraper ring must be in the back. The open end of the compression ring must be offset from it around 90°.

– Pull the timing chain upward through the chain tunnel.
– Slide the cylinder over the piston and remove the piston mounting ring.

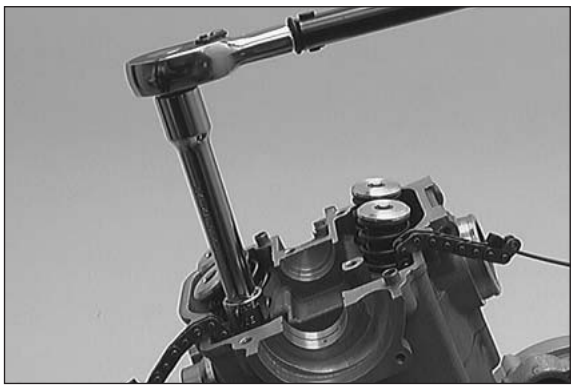
! CAUTION !

EXERCISE EXTREME CAUTION WHEN MOUNTING THE CYLINDER! THE OIL SCRAPER RING CAN BREAK EASILY.

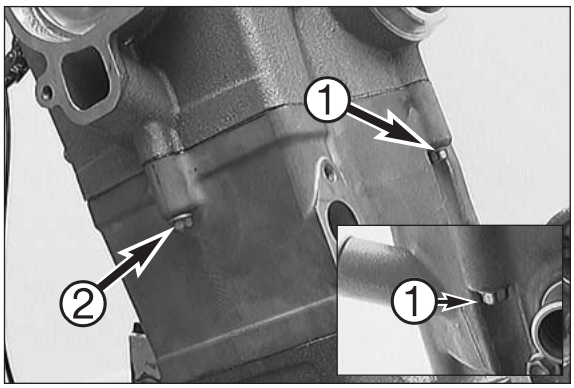
Mounting the cylinder head

– Check the two dowels in the cylinder for perfect fit.
– Apply a new cylinder-head gasket (the labeling "ALTO" facing upward) and mount the cylinder head. At the same time, insert the timing chain.

NOTE: See Technical Information

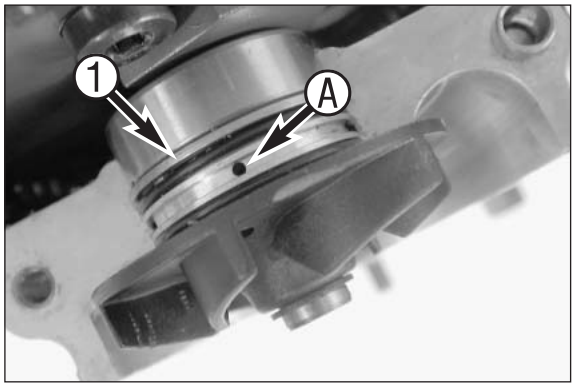


– Oil the 4 collar bolts at their threads and their seating surfaces and mount them together with the washers.
– Tighten the collar bolts in a crosswise order as follows.
– At first, tighten them only until you feel a light resistance.
– The second time around, tighten the bolts to 40 Nm.
– The third time, tighten them to 50 Nm.



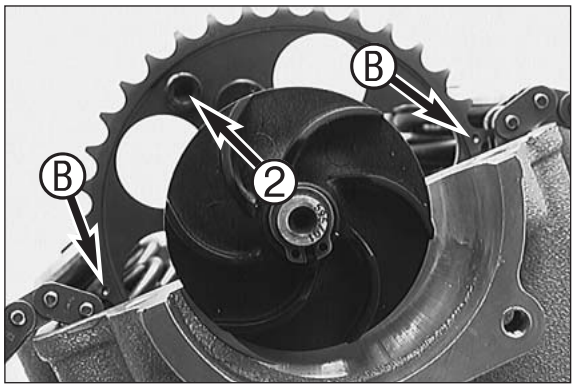
– Mount and tighten bolts ❶ (M6x45) and ❷ (M6x40) and tighten to 10 Nm.

NOTE: The shorter bolt ❷ (M6x40) must be mounted on the left, in the region of the water pump with a new copper seal ring(6x10x1).



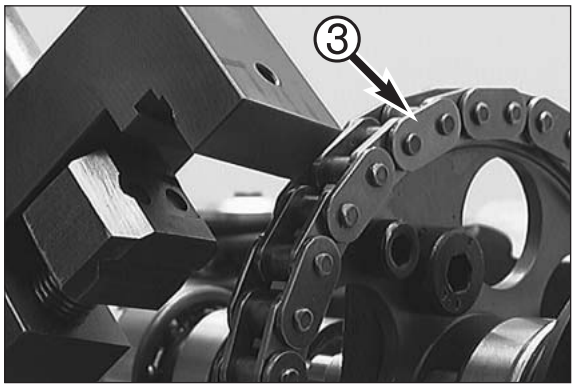
– Position the camshaft in the cylinder head.
– Make sure disc ❶ (starting with the 2002 model) is correctly seated.
– The drain hole Ⓐ (starting with the 2003 model) in the seal carrier must point upwards.

NOTE: If the seal carrier and water pump wheel were dismounted from the camshaft, these two parts should be mounted later.

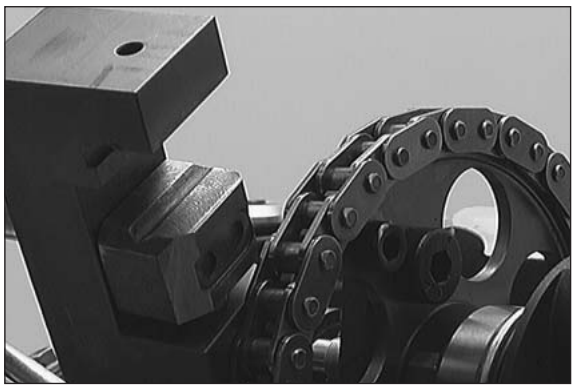


– Marks Ⓑ on the camshaft wheel must align with the upper edge of the cylinder head (see illustration). The stop screw ❷ or bolt firmly connected to the camshaft wheel (starting with the 2003 model) on the automatic decompression must face up.

NOTE: When mounting the camshaft, you have to use the crankshaft fixing bolt to block the crankshaft in the TDC position.

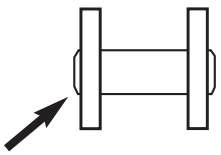


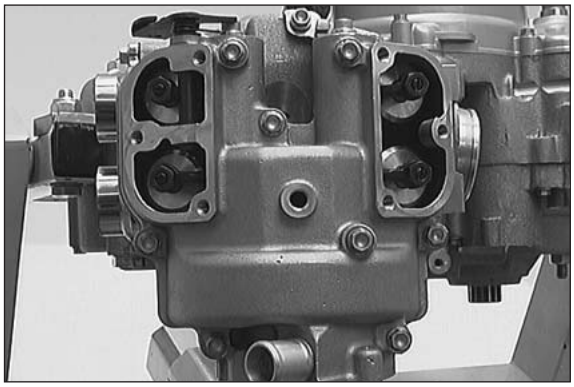
– Place the timing chain onto the camshaft gear and mount a new rivet link ❸.
– At first, mount the socket of the special tool 590.29.020.000 as shown and then compress the rivet link.



– Mount the socket of the special tool as shown and rivet on the rivet link.

NOTE: The rivet member must be riveted on so tightly that the ends of the inserting member have a trapezoid-shaped cross-section (see drawing).

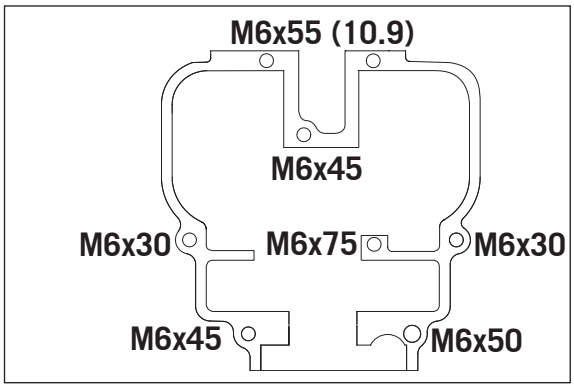


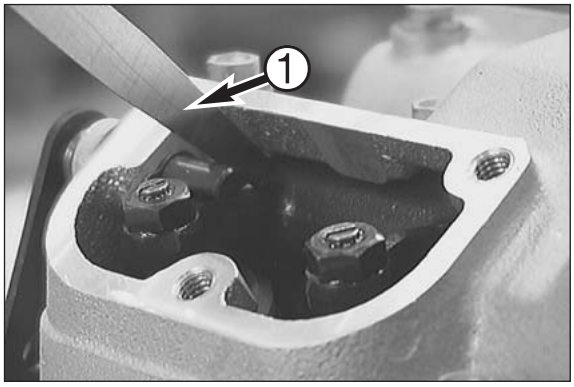


Mounting the cylinder head top portion

– Clean and degrease the sealing surface.
– Fit dowels.
– Apply a thin layer of sealing compound (Three Bond).
– Carefully mount the cylinder head top section and the screws but do not tighten yet. See drawing for screw lengths.

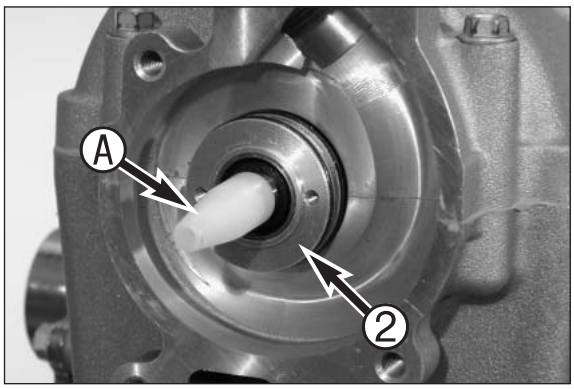
NOTE: The M6x55 and M6x75 screws must be mounted with a new 6x10x1 copper sealing ring.





– Prior to fastening the bolts, check and if necessary, adjust the clearance play of the rocker arms.
– To do this, insert a feeler gauge ❶ (0.05 mm) between the end piece and rocker arm. Press the end piece inwards and tighten the bolt in the area of the end piece.
– Tighten the remaining bolts in a crosswise order to 10 Nm.

Axial clearance rocker arms 0.02 - 0.10 mm



The following steps are for models from 2002 onwards where the seal carrier ❷ was dismounted from the camshaft

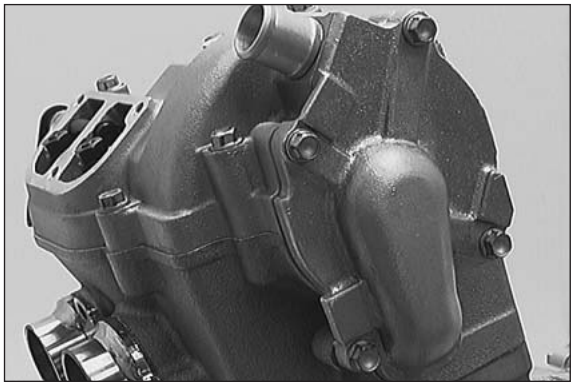
– Slip on the assembling sleeve 590.29.005.010 Ⓐ. Grease the O-rings and mount the gasket carrier ❷ without canting, the collar facing the camshaft gear.

! CAUTION !

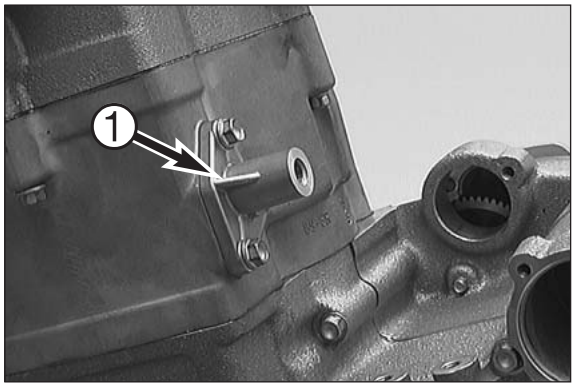
ALWAYS USE THE ASSEMBLING SLEEVE TO PREVENT THE SHAFT SEALING RINGS FROM BEING DAMAGED.

NOTE: The gasket carrier has a drain bore from the 2003 model (see page 6-11). Make sure the bore faces up when mounting.

– Remove the assembling sleeve, insert the needle roller in the camshaft and mount the water pump wheel with the Seeger circlip ring.

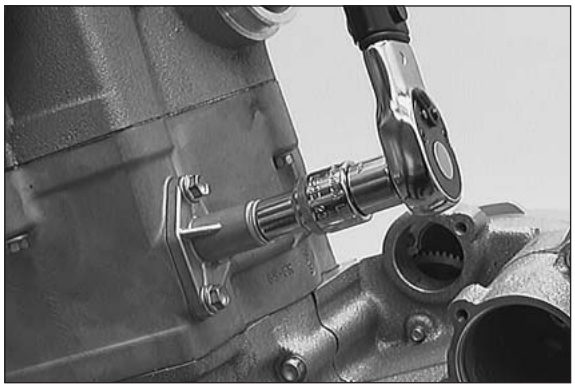


– Mount the water pump cover with a new gasket. Tighten the bolts (M6x20) crosswise to 10 Nm.

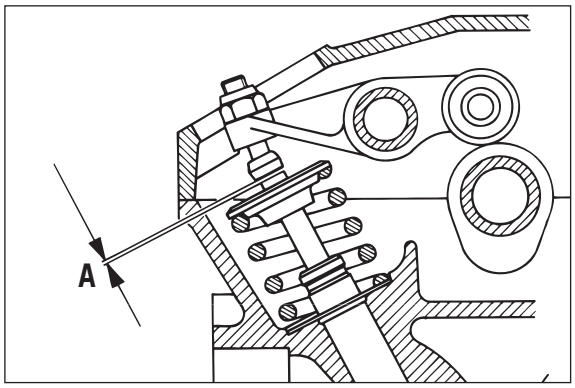


Mounting the timing chain tensioner

– Mount the preassembled timing chain tensioner ❶ with a new gasket.
– Mount the 2 bolts (M6x20) with copper seal rings 6x10x1 and tighten to 10 Nm.



– Use a screwdriver to push the pressure pin in until you feel a slight resistance. Then, push it in one notch further.
– Mount the pressure spring and the plug with a new sealing ring and tighten to 10 Nm.
– Unscrew the crankshaft locating screw and crank the engine a few times. Position the engine in the ignition TDC again and fix with the crankshaft locating screw.



Adjusting the valve clearance

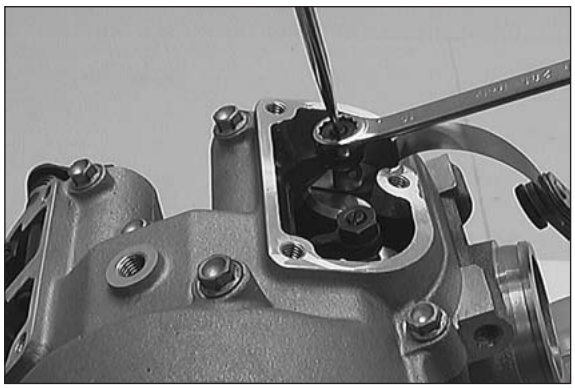
– The valve clearance Ⓐ is measured on a cold engine between the valve stem and the adjusting screw.

Valve clearance: 0.12 mm

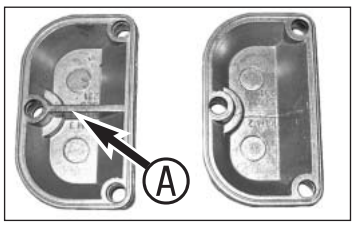
! CAUTION !

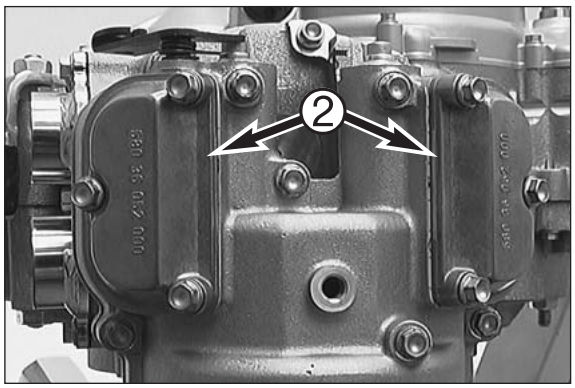
IF THE PISTON IS NOT IN THE IGNITION TDC POSITION THE VALVES WILL BE ACTUATED BY THE ROCKER ARMS AND IT WILL NOT BE POSSIBLE TO ADJUST THE VALVE CLEARANCE CORRECTLY. IN THIS CASE THE ENGINE MUST BE TURNED ONE REVOLUTION FURTHER AND BLOCKED AGAIN.

NOTE: The feeler gauge must be pointed and bent slightly to adjust the valve clearance for the 450/525 SX 2003 models.



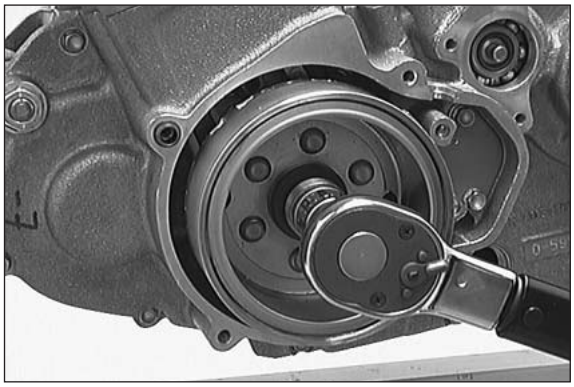
– Having set the clearance, tighten the counter nuts to 11 Nm and check valve clearance once again.





– Mount the 2 valve covers ❷ with new gaskets and bolts (M6x20) together with new copper seal rings (6x10x1). Tighten the bolts to 10 Nm.
– Screw in the spark plug and tighten to 12 Nm (M10) or 17 Nm (M12x1.25).

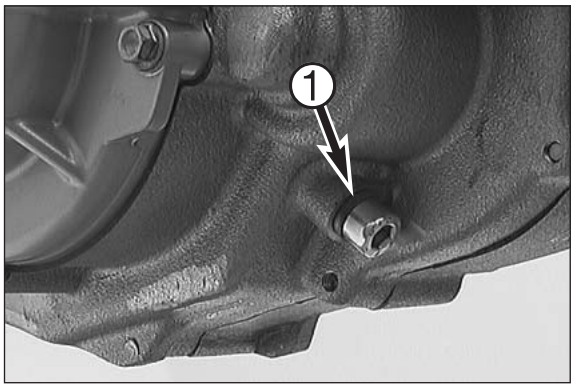
NOTE: New valve covers are installed from the 2006 model. The strip Ⓐ was removed from these valve covers. The strip Ⓐ should also be removed retroactively or the new valve cover installed.



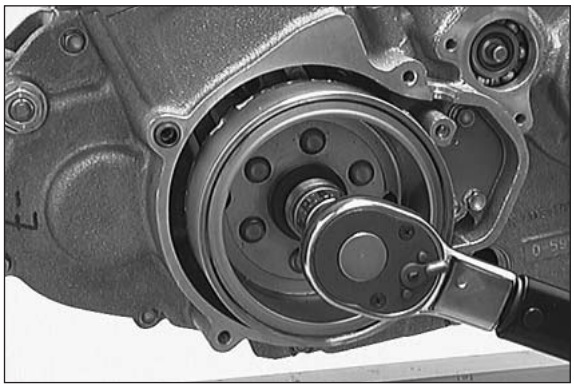
Mounting the flywheel (400/520 models up to 2002)

– Check the Woodruff key in the crankshaft for proper fit and slip the flywheel onto the crankshaft.
– Mount the wave washer and collar nut, tighten to 60 Nm.

NOTE: When ordering a new part, a forged rotor will be supplied, this part is produced without rivets and is interchangeable.

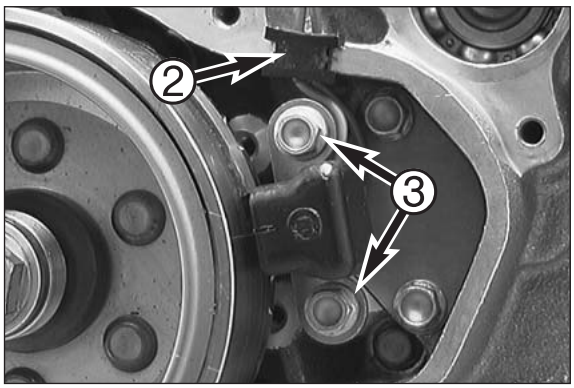


– Unscrew the crankshaft fixing bolt, mount the sealing ring ❶ and tighten the crankshaft fixing bolt again to 25 Nm.



Mounting the flywheel (250 EXC models after 2002, all models after 2003)

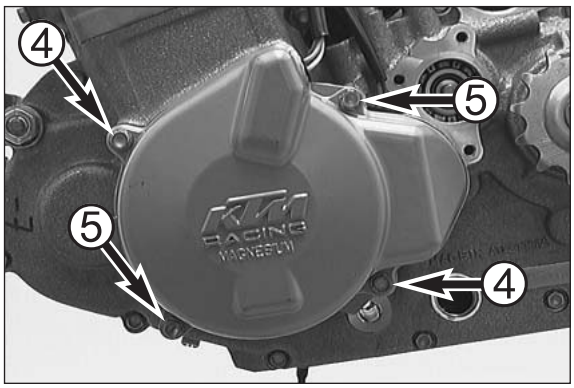
– Unscrew the crankshaft fixing screw, mount the seal ring ❶ and tighten the crankshaft fixing screw to 25 Nm (see above).
– Check the Woodruff key in the crankshaft for proper fit and slip the flywheel onto the crankshaft.
– Mount the shaft disc and collar nut. Counteracting with the clutch holder, tighten the and collar nut to 60 Nm.



Mounting the pulse generator and the ignition cover

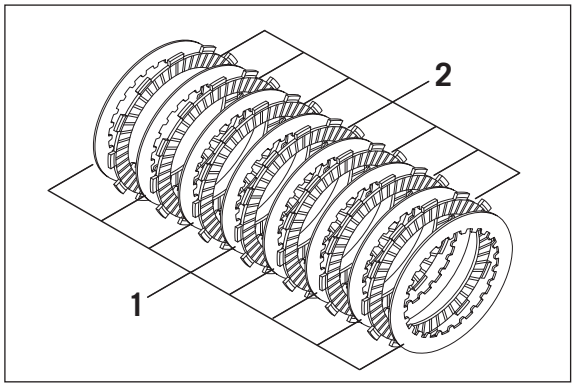
– Position the pulse generator in the engine casing and insert the cable grommet ❷ into the aperture of the casing.
– Degrease the threads of the 2 bolts ❸ (M5x16), coat them with Loctite 243 and tighten to 6 Nm.

NOTE:
– For the 400 SX engines equipped with the 4K-3A ignition, 2 spacer bushings must be added behind the pulse generator.
– The gap between rotor and pulse generator must be 0.55 - 0.85 mm, but is only adjustable on 400 SX engines (measurement 0.7 mm).



– Apply a new gasket and fix the ignition cover with the 4 bolts (❹ and ❺), tightening torque 10 Nm.

NOTE: The 2 longer bolts ❹ (M6x35) are mounted at the dowels.

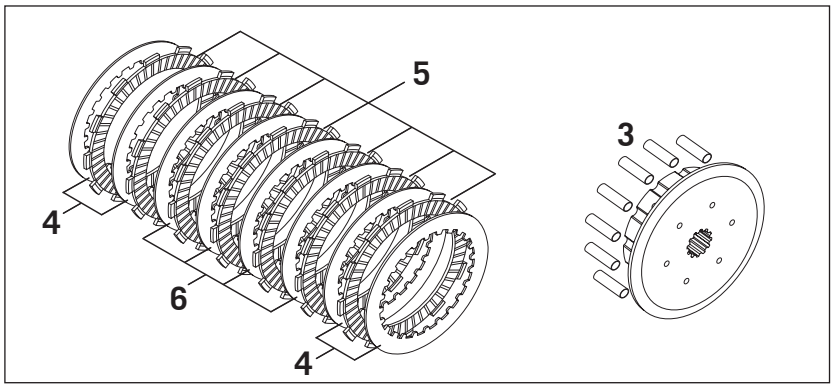


Mounting the clutch

– Prior to assembly, thoroughly oil all lining discs.

Clutch discs up to the 2001 model:

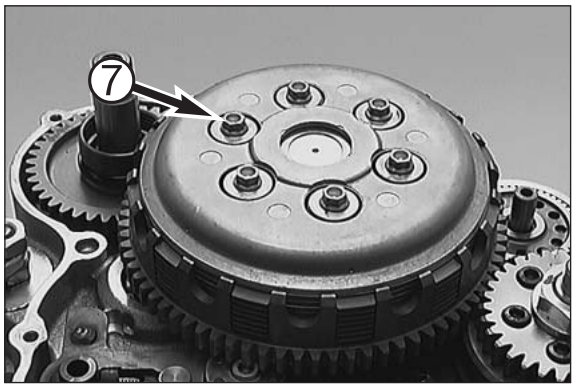
– Starting with an intermediate disc ❶, alternately insert a total of 8 intermediate discs and 7 lining discs ❷. An intermediate disc must be on top.



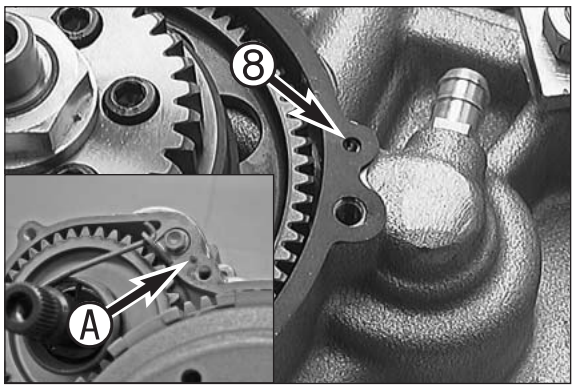
Clutch discs from the 2002 model onwards:

– Position the 12 driving pin sleeves ❸ on the driver; fix with grease if necessary.
– Starting with a thin clutch disc ❹, alternately insert 8 clutch discs and 6 lining discs ❺, finishing with a thin clutch disc ❹ on top.

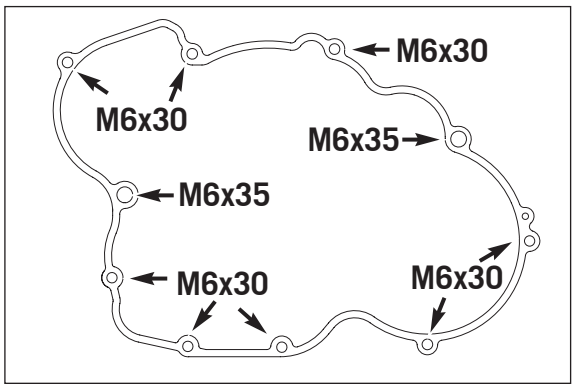
NOTE: The two outer clutch discs ❹ are 1 mm thick, the thicker clutch discs ❻ 1.4 mm are positioned on the inside (see drawing). All clutch discs are 1.0 mm in the 2004/2005 models.



– Mounting the pressure piece.
– Apply the pressure cap and mount the clutch springs, the spring retainers, and the collar bolts.
– Apply Loctite 243 to the collar bolts ❼ and tighten crosswise to 8 Nm.

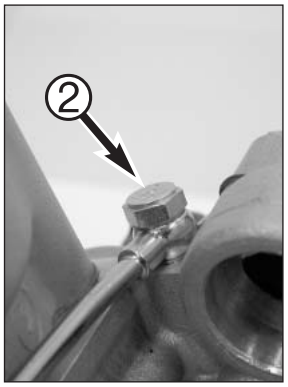


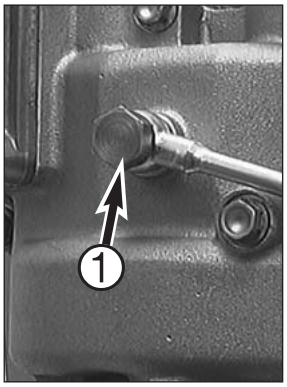
– Make sure the two dowels and the needle roller Ⓐ (starting with the 2004 model) are mounted in the engine case.
– Grease all shaft seal rings in the clutch cover and fix the clutch cover gasket with some grease.
– Pay special attention to ensuring that the gasket does not close off the oil jet ❽ in the engine casing.
– Fill in approx. 30 ml of engine oil into the bore of the crankshaft.



– Carefully mount the preassembled clutch cover and press it on.
– Mount the bolts (bolt lengths M6x30 and M6x35 – see drawing) and tighten them to 10 Nm.

NOTE: If the clutch cover cannot be mounted, check whether the kickstarter spring has been positioned correctly.

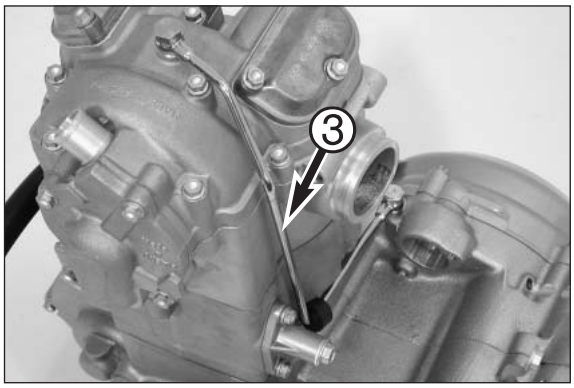




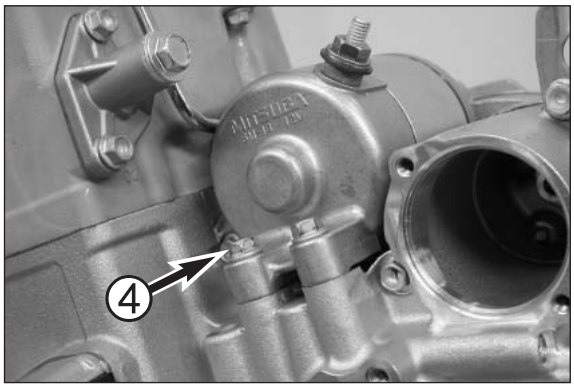
Mounting the oil line

– Position the oil line ❸ and secure it with the jet screw ❶ and the hollow screw ❷. Use new sealing rings, tighten the screws to 10 Nm.

NOTE: Mount the jet screw ❶ in the cylinder head top section.

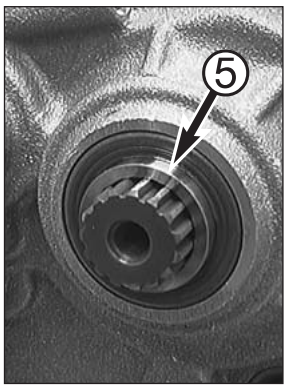


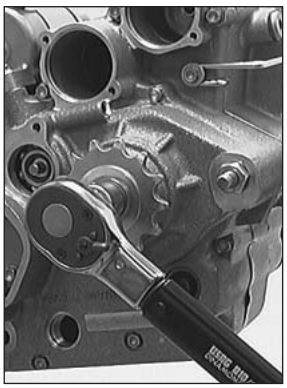
NOTE: Place the oil line such that it does not touch the engine. The oil line must not be twisted during tightening.



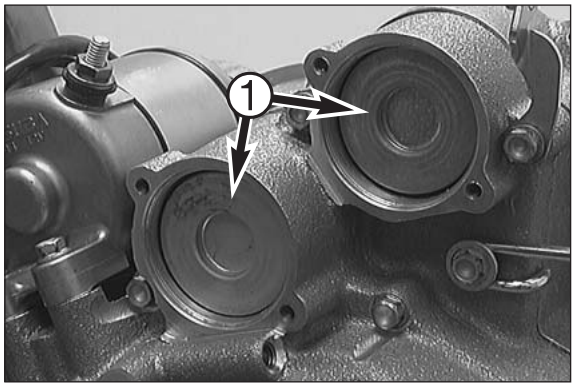
Mounting the electric starter

– Oil the O-ring of the E-starter motor and insert the E-starter motor into the engine casing. Mount the 2 screws ❹ (M6x20) and tighten to 8 Nm.



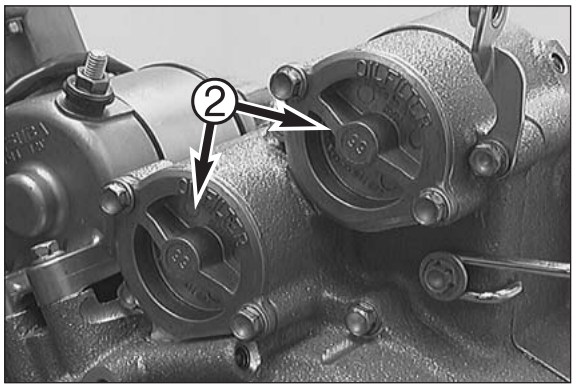


– Oil the spacer bushing ❺ and slip it onto the countershaft with the recess for the O-ring facing inward.
– Slide the sprocket on with the high collar facing inward.
– Degrease the thread of the collar screw, coat it with Loctite 243 and mount it together with the spring retainer, tighten to 60 Nm. (hold with the engine sprocket holding spanner).
– Mount the clutch pushrod.



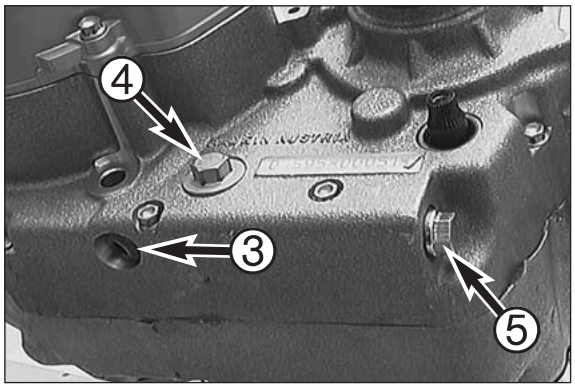
Mounting the oil filters

– Fill the oil filter housing with engine oil to approx. 1/4 of its capacity.
– Insert both oil filters ❶ into the engine casing.



– Oil the O-rings at the oil filter cover and secure the oil filter cover ❷ by means of the 4 bolts (M5x16), tighten to 6 Nm.

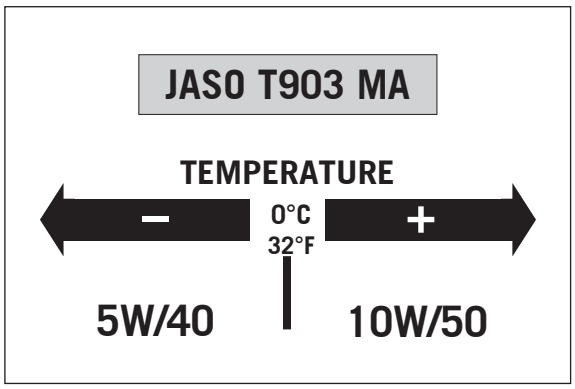
– Mount kickstart and shift lever.



Filling up the engine oil

– Mount the plugs ❸ and ❹, the oil drain plug ❺ and tighten them.

NOTE: Tightening torque ❸ 10 Nm (oiled), ❹ 15 Nm and ❺ 20 Nm.



– Remove the oil dipstick or screw cap on the clutch cover and add 1.2 liters of fully synthetic engine oil (Motorex Power Synt 4T 10W/50).
– Remount the oil dipstick or screw cap.

NOTE: After mounting, check the oil level and check for leaks again.

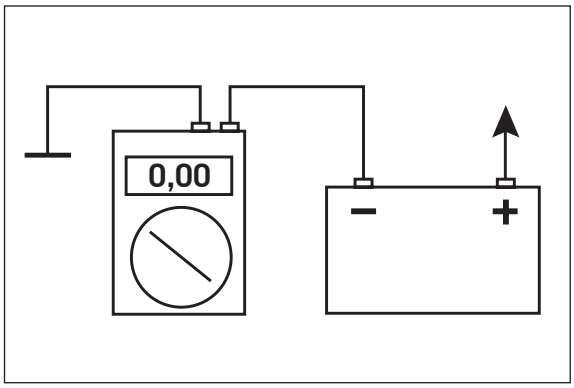
! CAUTION !

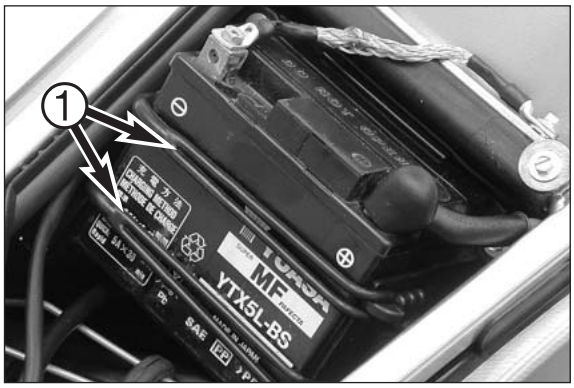
INSUFFICIENT AMOUNTS OR LOW-GRADE ENGINE OIL WILL LEAD TO PREMATURE WEAR IN THE ENGINE.

ELECTRICAL 7

INDEX

Art.-Nr. 3.206.043-E





Leakage inspection

The drop test must be performed before checking the voltage regulator/rectifier

– Turn off the ignition and disconnect the ground wire from the battery.
– Insert an amperemeter between the ground wire and the negative pole of the battery.

Setpoint value: max. 1 mA

– Check for power consumers, should the measured value exceed the indicated maximum value.
  Example:
– defective voltage regulator-rectifier
– defective capacitor
– leak currents in the socket connectors, in the ignition lock or in the starter relay.

Removing the battery

– Remove the seat.
– Disconnect first the negative and then the positive pole of the battery.
– Remove the two rubber fixtures ❶ and lift the battery out of the battery holder.
– When reinstalling the battery, connect the negative pole last.

! CAUTION !

THE BATTERY POLES MUST FACE THE FRONT, OTHERWISE ACID MAY ESCAPE.

Charging the battery

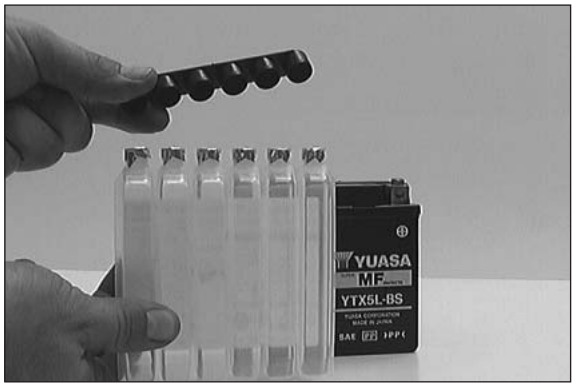
NOTE: A battery charger, item no. 584.29.074.000 is available from KTM.
You can also use the battery charger to test the battery's off load voltage, startability and the generator capacity.

– Remove the battery and check the charging level. Use a voltmeter to measure the voltage between the battery poles (off-load voltage).
– Accurate results can only be obtained if the battery has neither been charged nor discharged during a period of 30 minutes preceding the measuring.
– If the battery is empty, it can be recharged for a maximum period of 10 hours at 0.5 A and a maximum of 14.4 V.

! CAUTION !

– TO AVOID DAMAGE, DO NOT REMOVE THE LOCKING BAR
– ALWAYS CONNECT THE BATTERY TO THE CHARGING UNIT BEFORE TURNING THE CHARGING UNIT ON.
– WHEN RECHARGING THE BATTERY IN CLOSED ROOMS PROVIDE SUFFICIENT VENTILATION. EXPLOSIVE GASES ARE RELEASED DURING THE BATTERY CHARGING PROCESS.
– CHARGING TIME AND CHARGING VOLTAGE SHOULD NOT EXCEED THE STATED VALUES. OTHERWISE ELECTROLYTE WILL BE RELEASED THROUGH THE SAFETY VALVES.
– AVOID QUICK CHARGING IF POSSIBLE.

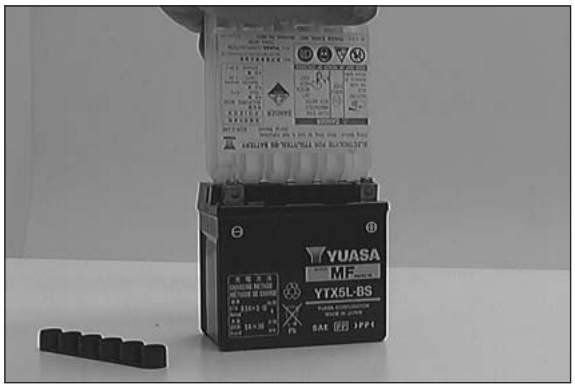
off-load voltage Volt	charging level %	charging time 0.5 A	charging voltage
>12.7	100	—	max. 14.4 V
~12.5	75	4 h	
~12.2	50	7 h	
~12.0	25	11 h	
~11.8	0	14 h	



Filling the battery

– Take the battery and the electrolyte container out of the packaging. Before you start filling the battery, please read the enclosed instructions carefully.

– Take the cover off the electrolyte container.
– Apply the electrolyte container to the filling apertures of the battery and push it down tight.



– Once all chambers of the electrolyte container are empty, withdraw it from the battery.

– Close the filling apertures tightly by means of the cover.

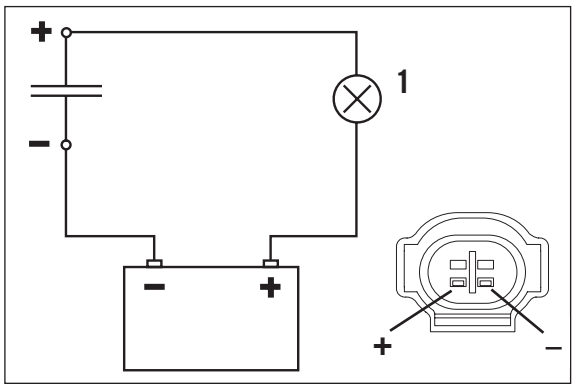
NOTE: After filling, let the battery sit for at least another 30 minutes without charging or loading it.

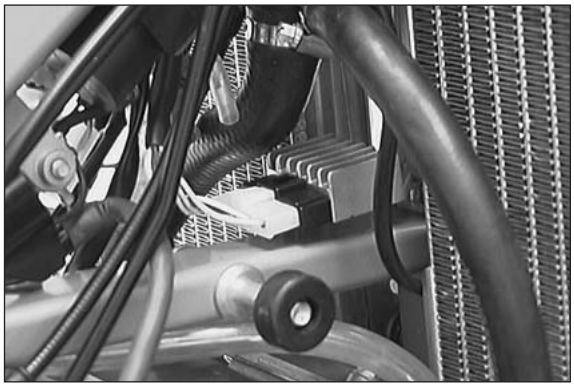
! CAUTION !

FOLLOW THE INSTRUCTIONS OF THE MANUFACTURER WHEN FILLING A NEW BATTERY.
THE RELEVANT SAFETY INSTRUCTIONS ARE ALSO CONTAINED IN THE USER MANUAL SUPPLIED WITH THE BATTERY. FAILURE TO OBSERVE THESE INSTRUCTIONS CAN RESULT IN SEVERE INJURIES.

Checking the capacitor

– Discharge the capacitor by bridging the two connections with a cable bridge and dismount it.
– Connect the negative pole of a 12V battery with the negative terminal of the capacitor. The connection between the positive pole of the battery and the positive terminal of the capacitor is made with a test lamp ❶.
– When the power circuit is closed, the test lamp must light up briefly and turn off after 1 second at the latest.
– If the test lamp does not go out or does not light up at all, the capacitor is faulty.





Checking the voltage regulator-rectifier

A defect voltage regulator can cause different kinds of trouble:

– No voltage in the circuit
  In this case, the voltage regulator must be disconnected at idle speed. The voltage regulator is defect if the power consumers now work properly.
  If the power consumers are still not supplied with power, the switch, the wiring harness or the ignition system must be checked for defects.
– Excessive voltage in the circuit
  The bulbs burn out. In this case the voltage regulator must be replaced.

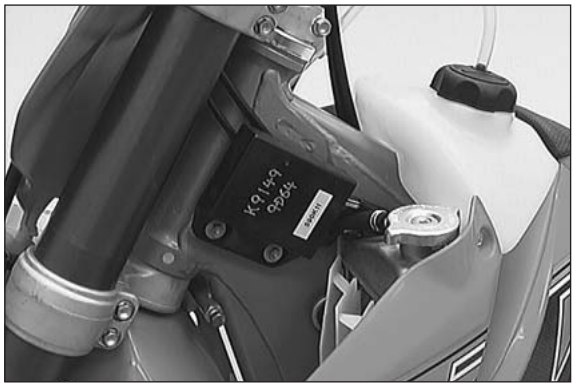
Checking the charging voltage

NOTE: The values stated below only apply to fully charged batteries (minimum charging level 90%).

– Start the engine and switch on the low beam.
– Connect a voltmeter to both battery connections.
– Accelerate the engine to a speed of 5000 rpm and read the voltage.

Nominal value: 14.0 - 15.0 V

In the case of a significant deviation from the nominal value:
– Check the connector between the stator and the voltage regulator-rectifier and the connector between the voltage regulator-rectifier and the cable tree.
– Check the stator.
– Replace the voltage regulator-rectifier.



CDI unit

Check the cables and plug and socket connections of the CDI unit.
The CDI unit function can only be checked on an ignition test bench.

! CAUTION !

NEVER USE A COMMERCIAL MEASURING DEVICE TO CHECK THE CDI UNIT. COMMERCIAL MEASURING DEVICES CAN DESTROY HIGHLY SENSITIVE ELECTRONIC COMPONENTS.

Checking the Ignition coil

– Disconnect all cables and remove the spark plug connector.
– Use an ohmmeter to measure the following values.

NOTE: The indicated setpoint values correspond to a temperature of 20° C.

Replace the ignition coil if the measured values deviate significantly from the setpoint values.

Measure	Cable colours	Resistance
primary coil	blue/white – ground	0.30 Ω ± 0.05 Ω
secondary coil	blue/white – ignition wire	6.30 kΩ ± 1.25 kΩ

Troubleshooting in the ignition system

Before checking the ignition system check:

– if the emergency off switch is switched on
– if the battery is charged
– the main fuse

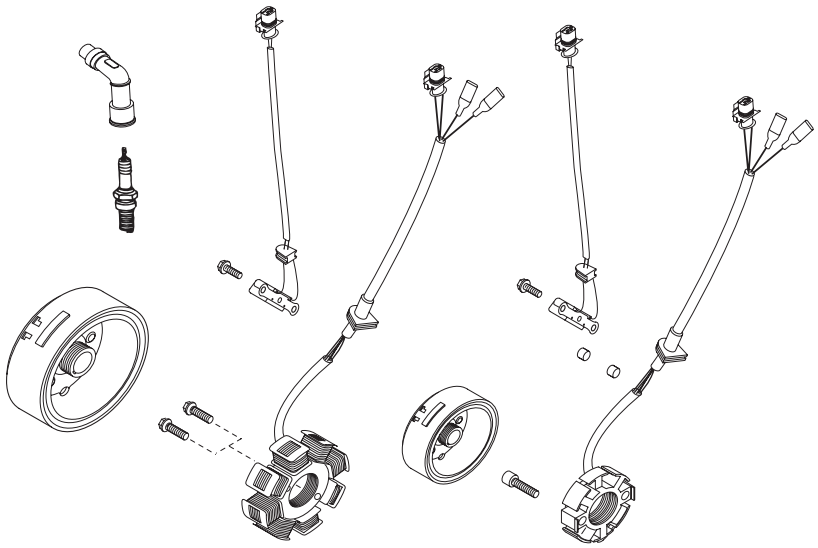
Check if an ignition spark is produced when the starter is operated. Proceed as follows:
– Pull off the spark plug connector.
– Disconnect the spark plug connector from the ignition cable.
– Hold the free end of the ignition cable approximately 5 mm (0.1968 in) from the ground.
– A strong spark should be visible when the electric starter is operated. If the battery level is low, turn off the light, and use the kick starter.

– If a spark is visible, replace the spark plug connector.
– Unscrew the spark plug and insert it into the spark plug connector.
– Connect the spark plug to the ground. A strong spark should be visible at the electrode when the electric starter is operated. If this is not the case, the spark plug connector or the spark plug is defective.

– If no spark is produced during the first test, perform the following checks:
– emergency off switch and
– corresponding parts of the cable tree

– If the ignition is sufficiently supplied with power and no spark is produced, check:
– the ground connection of CDI unit and ignition coil
– the cable between the CDI unit and the ignition coil
– the pulse generator
– the stator
– the ignition coil
– the short circuit button

NOTE: The CDI unit cannot be tested with simple devices. It can only be replaced. It can only be tested on an ignition test bench.



Ignition

General information

The measurements described below will only reveal severe problems. Coil short circuits leading to weak ignition sparks or low generator output respectively, can only be detected with the help of an ignition test bench. In the case of malfunction always check the cables and the plug and socket connections of the ignition system first.

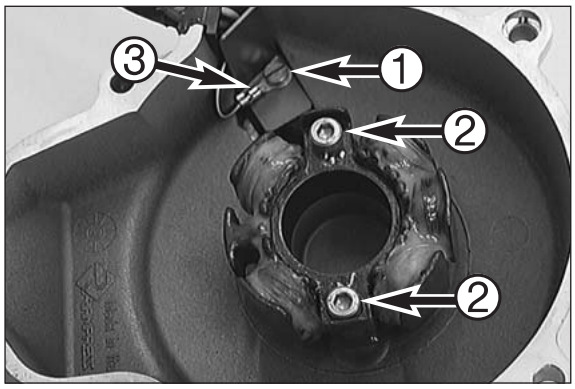
Ensure the correct measuring range is selected when performing measurements.

IGNITION	MEASURE	CABLE COLOURS	RESISTANCE
4K-3A	pulse generator	red – green	100 Ω ± 20 Ω
		ground – red	∞ Ω
	charging coil	ground – yellow	0,74 Ω ± 0,15 Ω
	stator	black/red– red/white	26 Ω ± 5,2 Ω
		ground – black/red	∞ Ω
	Stator (SMR starting with the 2006 model)	black/red– red/white	32 Ω ± 4,8 Ω
		black/red – ground	∞ Ω
4K-3B	pulse generator	red – green	100 Ω ± 20 Ω
		ground – red	∞ Ω
	charging coil	ground – yellow	0,65 Ω ± 0,15 Ω
		white – yellow	0,16 Ω ± 0,03 Ω
	stator	black/red– red/white	15 Ω ± 3 Ω
		ground – black/red	∞ Ω

Check stator and pulse generator

Use an ohmmeter to perform the following measurements:

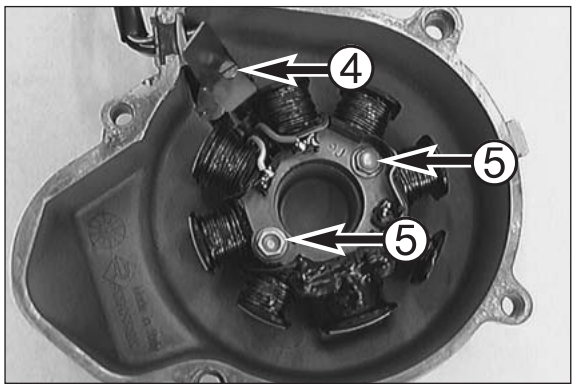
NOTE:
- The measuring must be performed at a temperature of 20° C. Otherwise significant deviations must be expected. Replace the stator and/or the pulse generator if the measured values deviate significantly from the setpoint values.
- The 4K3A ignition system no longer has a charging coil from the 2004 model.



Replacing the stator 4K-3A

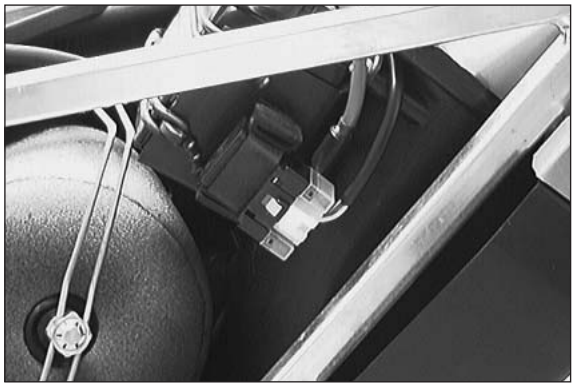
- Remove the bolt ❶ and dismount the retaining plate.
- Remove the 2 bolts ❷ and take the stator out from the ignition cover.
- Place a new stator in the ignition cover. Degrease the threads of all 3 bolts and apply Loctite 243.
- Mount the bolts and tighten them to 6 Nm.
- Place the wire harness in a non-energized condition and secure it with the retaining plate. Do not forget the cable socket ❸.

NOTE: in case of damage, convert to the newer 4K-3A version (see SMR from the 2006 model). When converting, always replace both the stator and the rotor.



Replacing the stator 4K-3B

- Remove the bolt ❹ and dismount the retaining plate.
- Remove the 2 bolts ❺ and take the stator out from the ignition cover.
- Place a new stator in the ignition cover. Degrease the threads of all 3 bolts and apply Loctite 243.
- Mount the bolts and tighten them to 10 Nm.
- Place the wire harness in a non-energized condition and secure it with the retaining plate.



Main fuse

NOTE: The fuse ❶ (10A) is positioned in the starter relay of the E-starter underneath the left side paneling.

The following loads are connected to it:
– E-starter system
– Horn
– Flasher lights

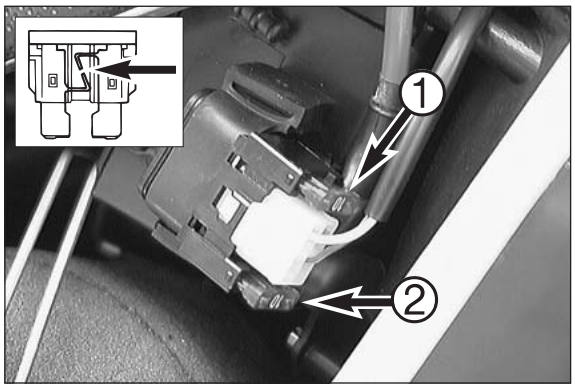
The fuse ❷ serves as a spare fuse.

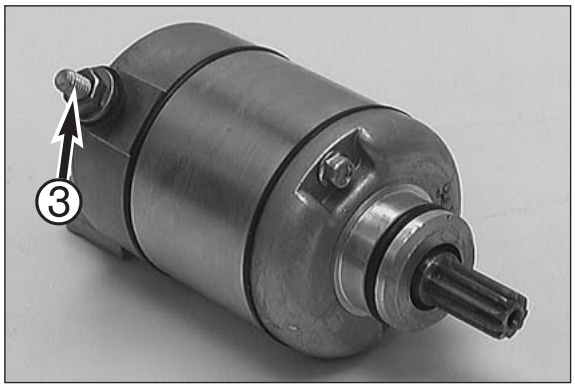
– To replace it, remove the left trim panel and pull the cover off the start relay.
– Pull out the fuse and replace it with a new one.

! CAUTION !

NEVER INSERT A STRONGER FUSE OR "MEND" THE FUSE. IMPROPER HANDLING MAY DESTROY THE ENTIRE ELECTRIC SYSTEM!

NOTE: In case you use the spare fuse to replace the installed one while using your motorcycle, you should remember to replace it as soon as possible.





Checking the electric starter motor

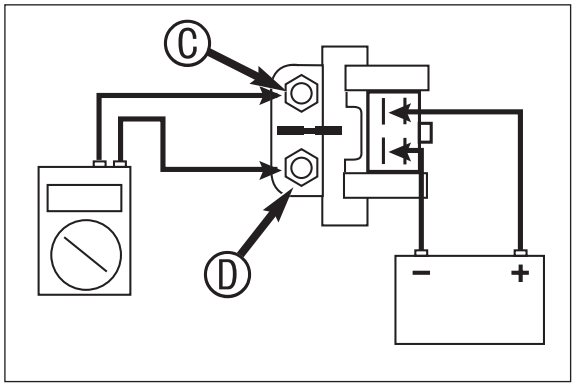
– Disconnect the negative pole of the battery and remove the electric starter motor.
– Connect the negative pole of a 12 V battery to the housing of the E-starter motor and briefly connect the positive pole of the battery to connection ❸ of the electric starter motor (use thick cables).
– The starter must turn as soon as the circuit is closed.
– If this is not the case, replace the starter motor.

Checking the starter relay

– Remove the seat and the left side cover and disconnect the combination connector of the starter relay.
– Disconnect the negative terminal at the battery and the two cables at the starter relay.

– Connect the starter relay to a 12 V battery as indicated in the diagram.
– Check continuity between terminals Ⓒ and Ⓓ using an ohmmeter.

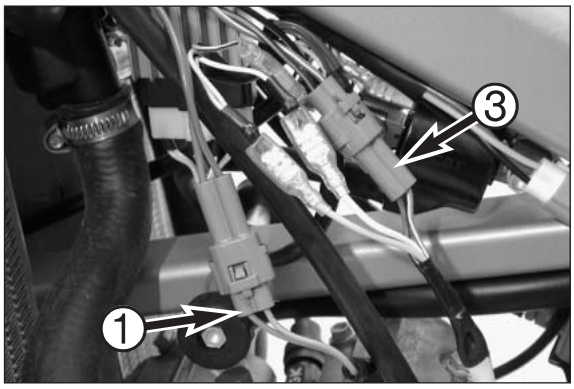
Reading: 0 Ω OK
Reading: ∞ Ω defective



NOTE: The response of the starter relay is accompanied by a faint clicking sound.

STATIC IGNITION VALUES KOKUSAN 4K-3A, 4K-3B

Measuring conditions:
- **cold engine**
- **seat and tank removed**
- **all connectors and the ground connection in a non-corroding condition, connectors tightly connected**
- **battery loaded (if installed) and light switch turned off**
- **the gap between the rotor and pulse generator must be set to 0.75 mm**
- **compression release lever pulled**
- **kick the kick starter forcefully at least 5 times for each measurement**



Check the **pulse generator** for an output signal – two-pin connector ❶ with green and red cable colors (also see circuit diagram on next page):

– Apply the red measuring lead of the peak voltage adapter 584.29.042.000 to the green cable and the black measuring lead to the red cable, disconnect connector ❶ to disconnect the CDI unit ❷

Multimeter display: 4.5 volts +/- 0.5 volt

– take the same measurement with CDI unit connected

Multimeter display: 3 volts +/- 0.5 volt

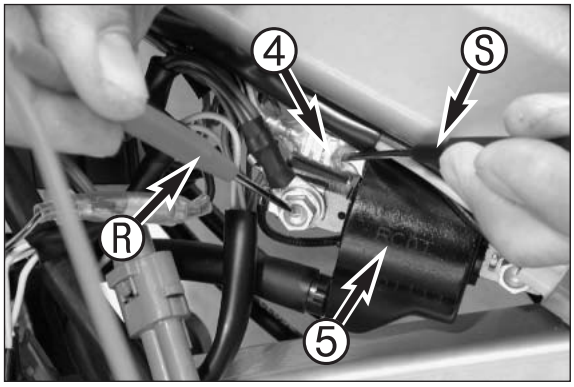
Check the **generator charging coil** for ignition capacitor charge – two-pin connector ❸ with black/red and red/white cable colors (also see circuit diagram on next page):

– Apply the red measuring lead of the peak voltage adapter to the black/red cable and the black measuring lead to the red/white cable, disconnect connector ❸ to disconnect the CDI unit ❷

Multimeter display: 30 volts (35 volts for 400 SX) +/- 5 volts

– take the same measurement with connectors CDI unit connected

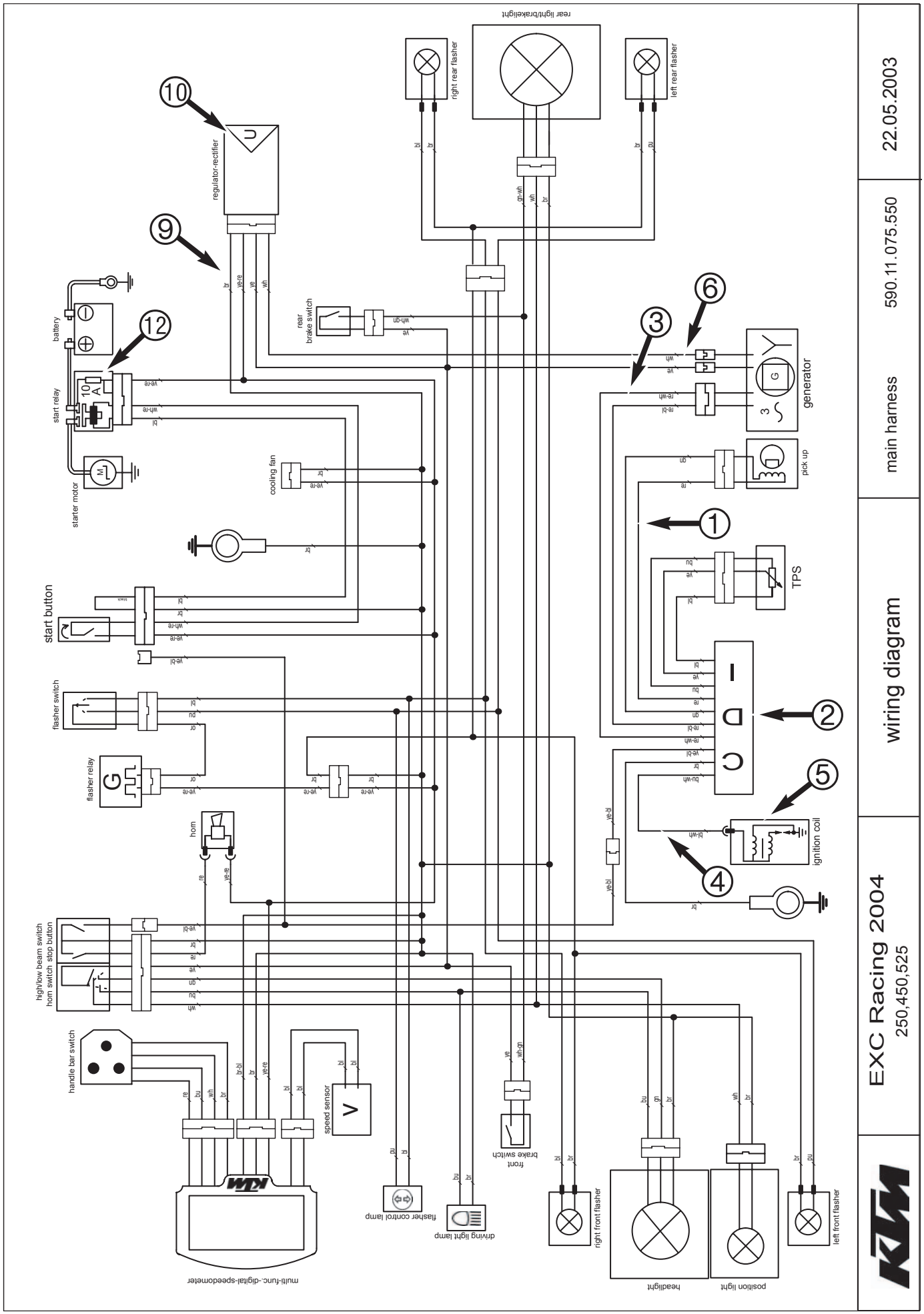
Multimeter display: 200 volts +/- 10 volts



Check the **primary voltage output** ❹ for ignition coil control (also see circuit diagram on opposite page) for output voltage (blue/white cable color):

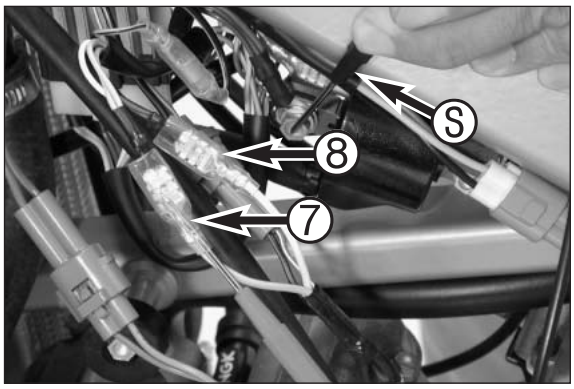
– Apply the red measuring lead Ⓡ of the peak voltage adapter to the black/white cable (ground) and the black measuring lead Ⓢ to the blue/white cable, CDI unit ❷ and ignition coil ❺ connected

Multimeter display: 200 volts +/- 10 volts


rear light/brakelight
right rear flasher
left rear flasher
regulator-rectifier
battery
start relay
starter motor
rear brake switch
generator
pick up
cooling fan
TPS
start button
flasher switch
flasher relay
horn
ignition coil
high/low beam switch
horn switch
stop button
handle bar switch
speed sensor
front brake switch
flasher control lamp
driving light lamp
multi-func.-digital-speedometer
right front flasher
left front flasher
headlight
position light
EXC Racing 2004
250,450,525
wiring diagram
main harness
590.11.075.550
22.05.2003

STATIC GENERATOR VALUES KOKUSAN 4K-3B

Measuring conditions:
- **cold engine**
- **seat and tank removed**
- **all connectors and the ground connection in a non-corroding condition, connectors tightly connected**
- **battery loaded (if installed) and light switch turned off**
- **compression release lever pulled**
- **kick the kick starter forcefully at least 5 times for each measurement**



Check the **generator output** ❻ (also see circuit diagram on opposite page) for voltage between the following cable colors:

– between yellow and brown (ground), connector ❼ disconnected
Multimeter display: 15 volts +/- 1 volt

– take the same measurement with connector ❼ connected

Multimeter display: 12 volts +/- 1 volt

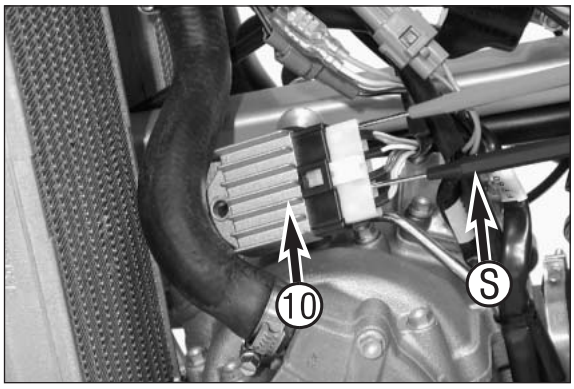
– between white and brown (ground), connector ❽ disconnected

Multimeter display: 19 volts +/- 1 volt

– take the same measurement with connector ❽ connected

Multimeter display: 14 volts +/- 1 volt

NOTE: The black measuring lead ❽ of the peak voltage adapter must be applied to the ground.



Check **regulator rectifier output voltage** ❾ (also see circuit diagram on opposite page) cable colors yellow/red, regulator rectifier ❿ connected, capacitor disconnected (if installed) and fuse ⓬ removed:

– between yellow/red and brown (ground)

Multimeter display: 14 volts +/- 1 volt

NOTE:
– The black measuring lead ❽ of the peak voltage adapter must be applied to the ground.
– For facilitation of work, the regulator rectifier ❿ can be detached from the frame.

DYNAMIC GENERATOR VALUES KOKUSAN 4K-3B

Measuring conditions:
- **remove the seat, side trim and the left side cover**
- **all connectors and the ground connection in a non-corroding condition, connectors tightly connected**
- **battery in a startable condition, not fully loaded (start several times for fully loaded battery)**
- **start engine, the measurement must be taken right after starting**

Regulator rectifier output – measure the voltage with the measuring leads of the peak voltage adapter 584.29.042.000 directly on the poles of the vehicle battery:

- Unstressed (no electric consumer switched on), engine running at idle speed (1400 +/- 50 rpm)

  Multimeter display: 14 volts +/- 1 volt

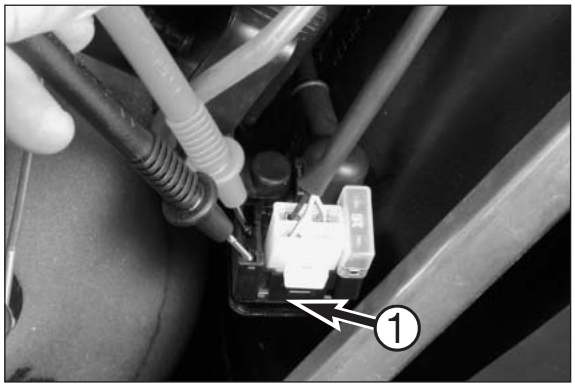
- Stressed (light switched on, horn and brake actuated), engine running at idle speed

  Multimeter display: 12 volts +/- 1 volt

- Stressed (light switched on, horn and brake actuated), engine running at increasing speed (up to 8000 rpm)

  Multimeter display: 13 volts +/- 1 volt

NOTE: The black measuring lead on the peak voltage adapter should be applied to the ground (negative terminal).



Check the **charge current** – remove the main fuse, apply the multimeter measuring leads (without the peak voltage adapter) to both connectors on the fuse carrier ❶ and measure the current (set the multimeter DCA to 10 amperes):

- Unstressed (no electric consumer switched on), engine running at idle speed

  Multimeter display: 1.3 amperes +/- 0.1 ampere

- Stressed (light switched on, horn and brake actuated), engine running at idle speed

  Multimeter display: -0.6 amperes +/- 0.1 ampere

- Stressed (light switched on, horn and brake actuated), engine running at increasing speed

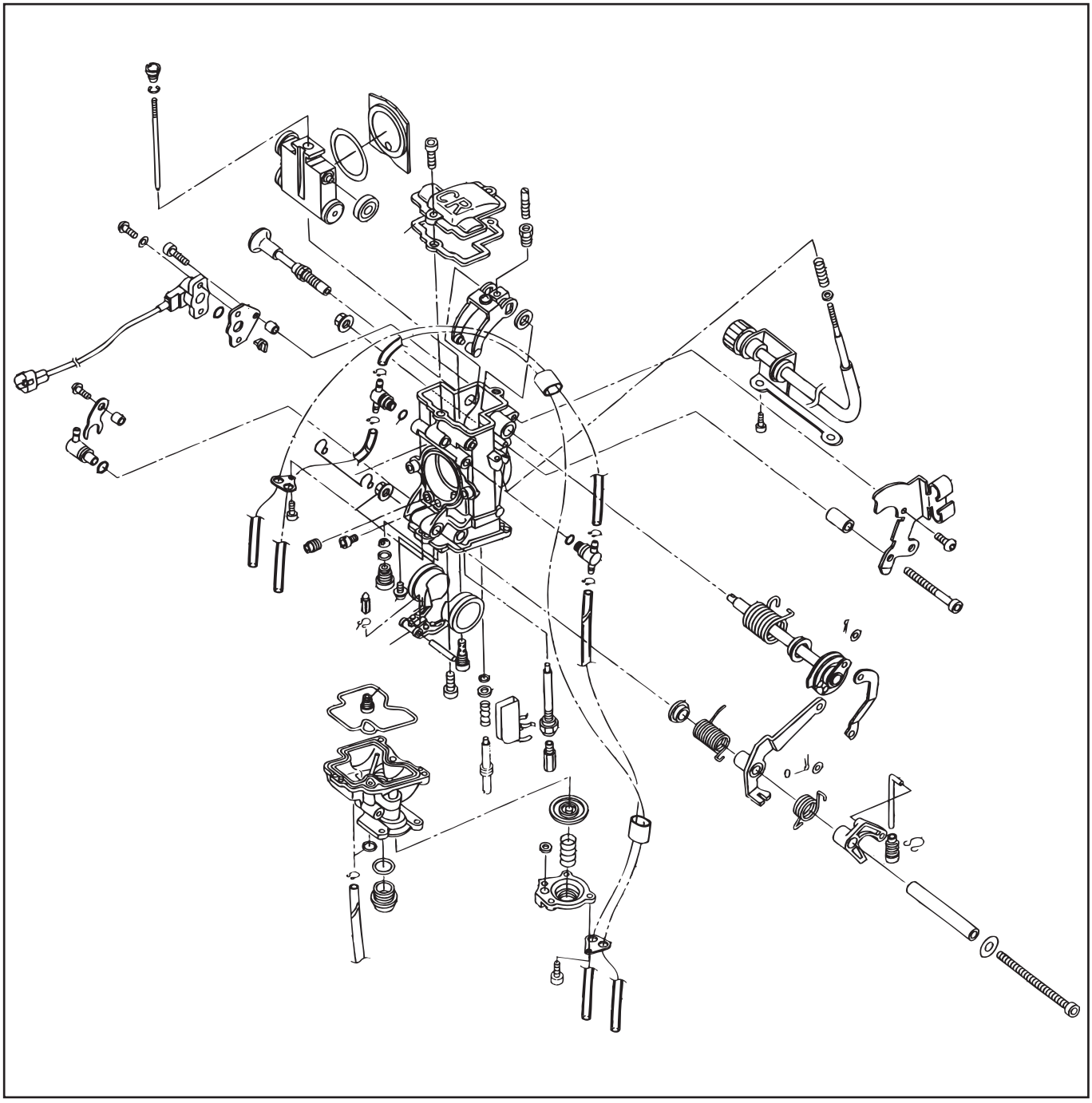
  Multimeter display: 0.0 amperes +/- 0.1 ampere

FUEL SYSTEM 8

INDEX

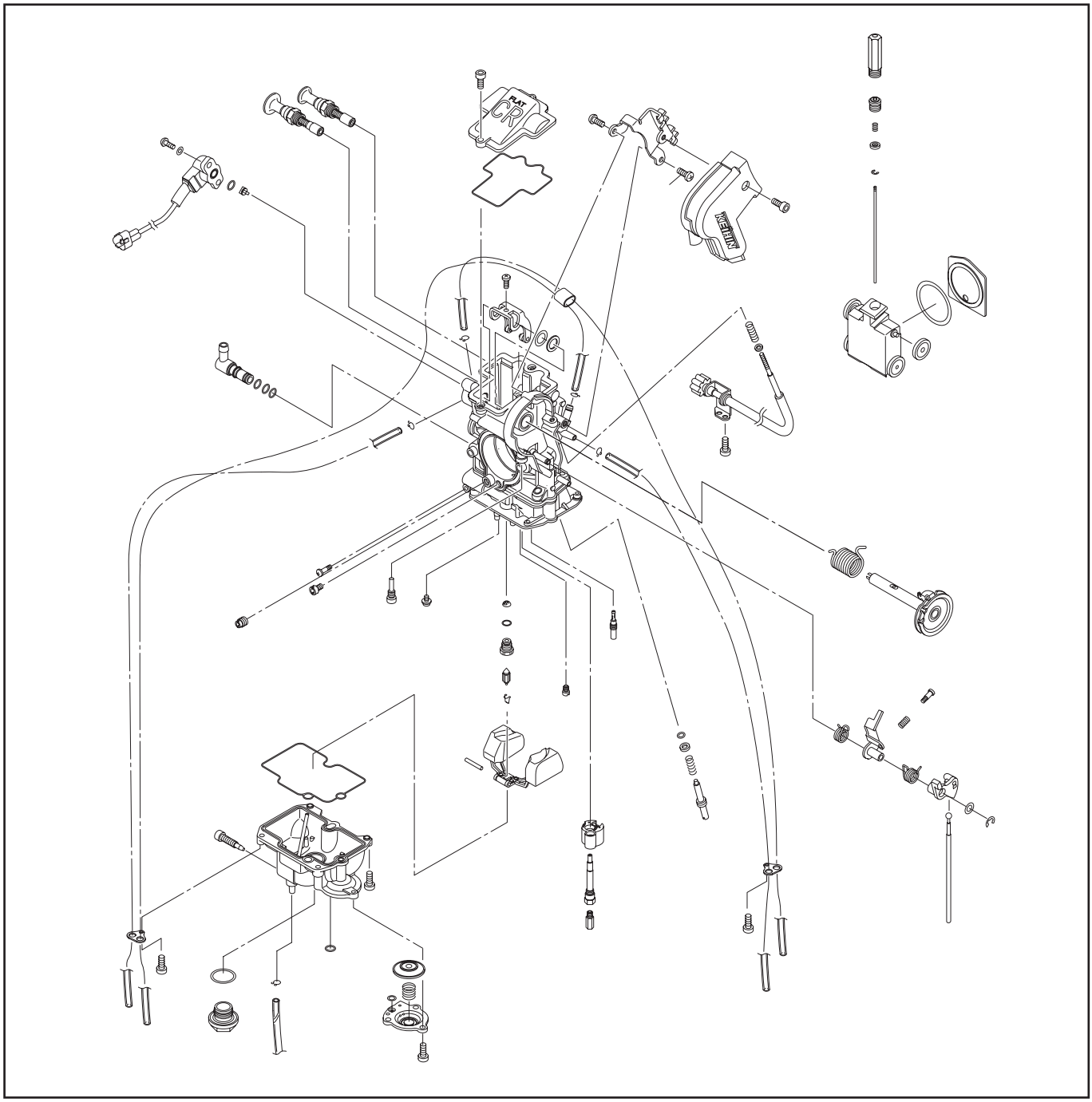
Art.-Nr. 3.206.043-E

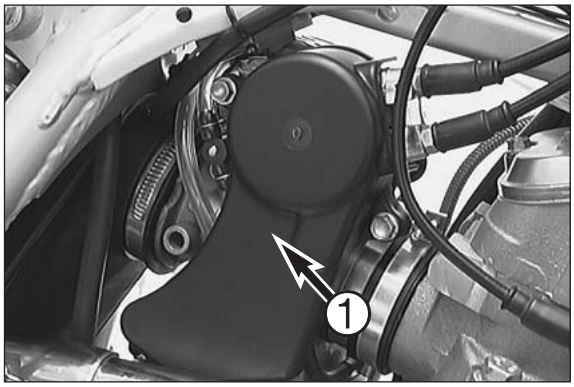
CARBURETOR - KEIHIN FCR 35 / 39



NOTE: The Keihin FCR 39 carburetor (400/520 Racing) has a larger air trumpet and different carburetor jets to the Keihin 35 carburetor (250 Racing). The FCR 39 carburetor is also equipped with a throttle sensor.

CARBURETOR - KEIHIN FCR-MX 37 / 39 / 41

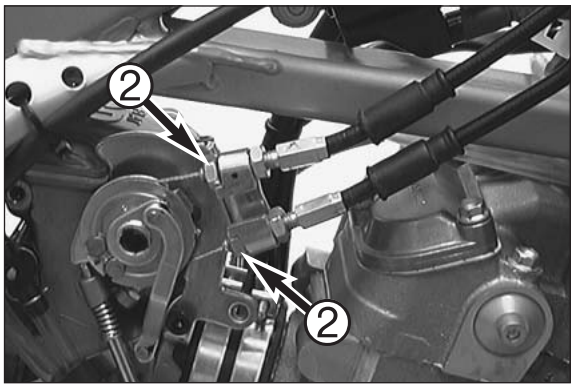




Dismounting and installing the carburetor

NOTE: Before you start working on the carburetor, you should clean the motorcycle thoroughly.

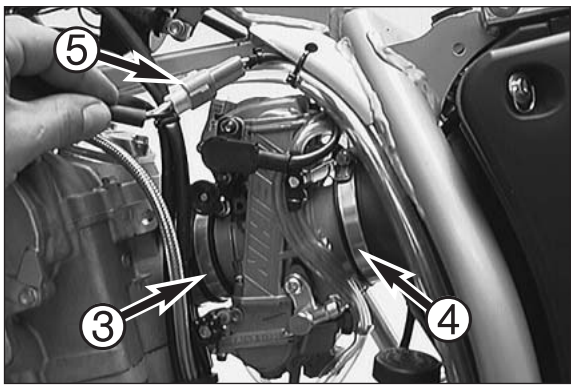
– Dismount the seat and the tank with the spoilers.
– Remove the screw(s) and the cover ❶.



– Undo the 2 nuts ❷ and remove both throttle cables on the carburetor.

– Loosen the plug at the float chamber and drain the fuel into a suitable receptacle. Then, retighten the plug.
– Disconnect the plug-and-socket connection of the throttle valve sensor.

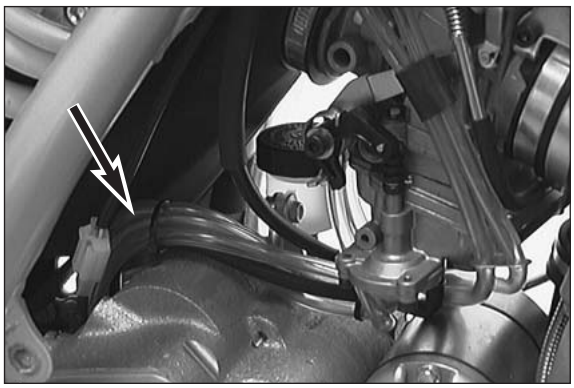
– Loosen the 2 hose clamps ❸ + ❹ and pull the carburetor out of the connection boot.



– To install the carburetor, insert it into the connection boot and secure it with the 2 hose clamps. Make sure that the carburetor is installed vertically in relation to the vehicle.

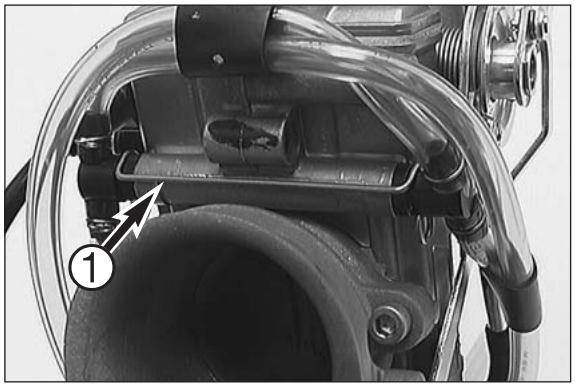
– Mount and adjust both throttle cables and check whether the throttle grip moves smoothly.

– Connect the plug ❺ of the throttle-valve sensor.
– Mount the tank and the seat.



– Place the carburetor ventilation hoses correctly.

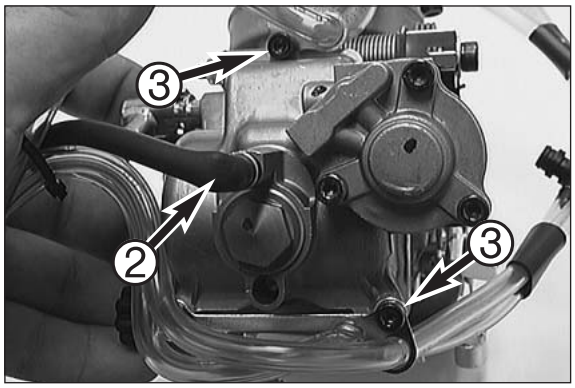
– Start the engine and check the carburetor for proper functioning. Turn the handlebars all the way to the left and right. While doing so, the engine speed must not change. Otherwise, check if the throttle cables were placed correctly.



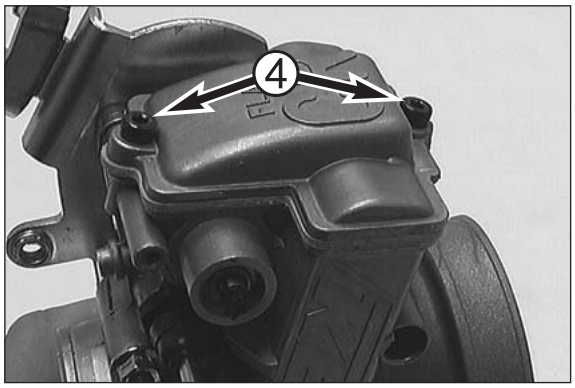
Disassembling the carburetor FCR 35/39

NOTE: Before you start disassembling the carburetor, you should look for a clean workplace. It should offer you enough space to lay out all individual components of the carburetor in perfect order.

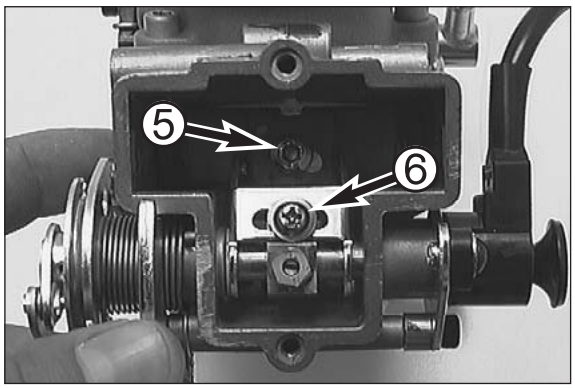
– Dismount the carburetor and remove any coarse dirt.



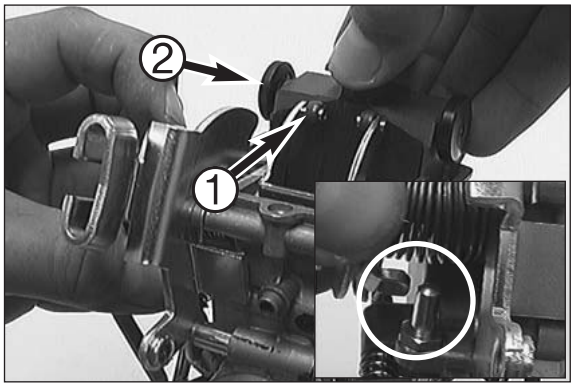
– Remove the wire clip ❶ and pull the ventilation hoses out of the carburetor.
– Disconnect the hose ❷.
– Loosen the 2 bolts ❸ and dismount all ventilation hoses from the carburetor.



– Remove the 2 bolts ❹ and dismount the slide cover together with its gasket.

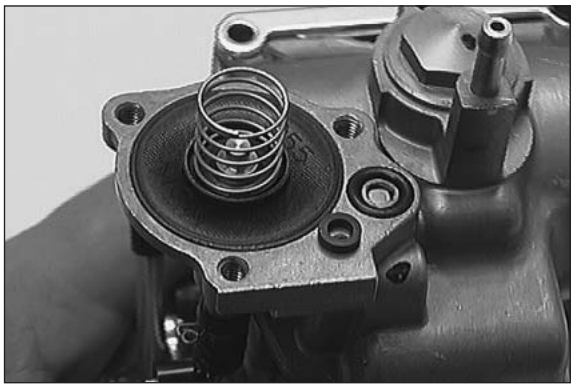


– Remove the bolt ❺ and take the jet needle out of the throttle valve.
– Remove the bolt ❻.



– Now, pull the cable disc approx. 5 mm outward and turn it until the throttle valve can be lifted out of the carburetor and detach the rollers ❶ at the throttle valve.
– Take the throttle valve together with the 4 rollers ❷ and the valve paddle out of the carburetor.

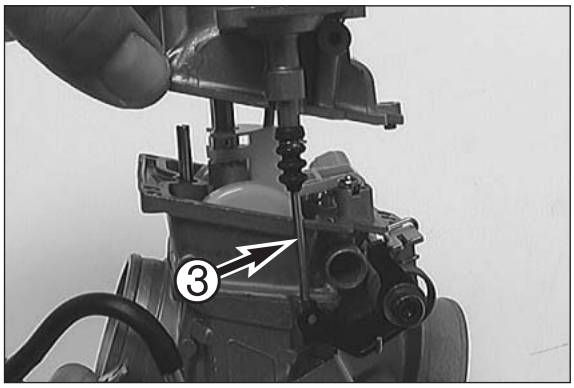
NOTE: When you turn the cable disc, it must not be blocked by the stop screw (see photo). Otherwise, pull the shaft further outward.



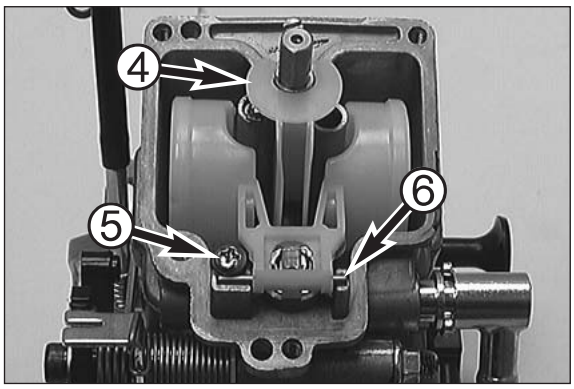
– Turn the carburetor around, remove the 3 screws and remove the cover of the accelerator pump.

NOTE: When dismounting the cover, watch out for the spring and the sealing rings as they may get lost easily.

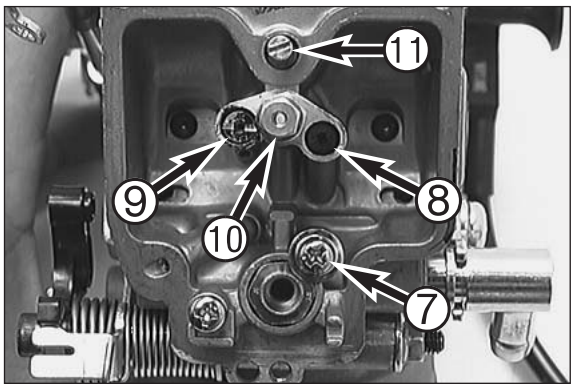
– Remove the 2 sealing rings, the spring and the diaphragm from the pump housing.



– Remove the screw and dismount the float chamber.
– Remove the push rod ❸ of the accelerator pump and dismount it.



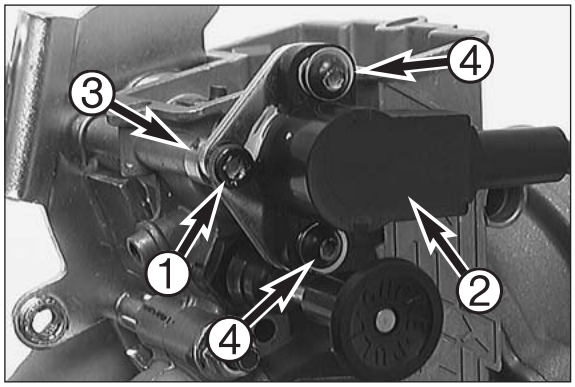
– Take the plastic part ❹ off the needle jet.
– Loosen the screw ❺, pull out the float hinge pin ❻ and dismount the float together with the float needle valve.



– Remove the screw ❼ and use pliers to carefully extract the seat of the float needle valve from the carburetor.
– Unscrew the idling jet ❽, the starting jet ❾ and the needle jet together with the main jet ❿.

– Screw in the mixture control screw ⓫ down to the stop, count the number of turns and write it down.
– Unscrew the mixture control screw and dismount it together with the spring, the washer, and the O-ring.

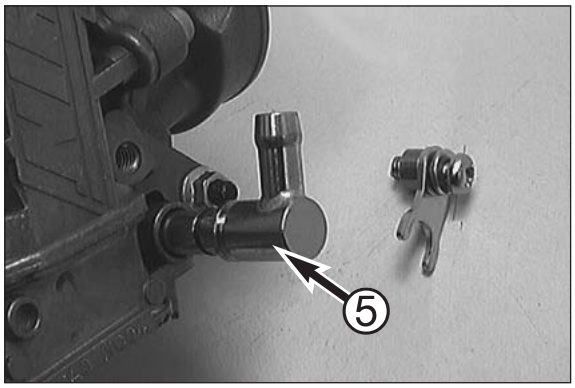
NOTE: The spring, the washer, and the O-ring will usually remain in the bore. These parts can be removed with the help of compressed air.



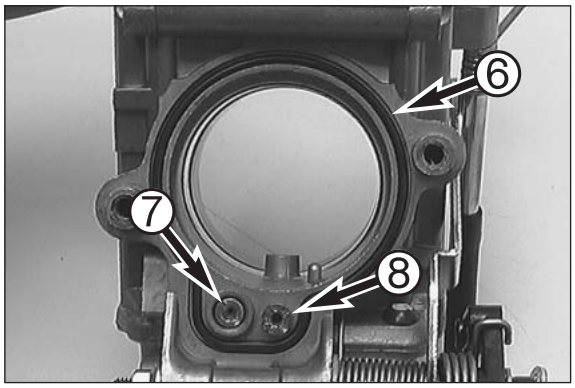
– Remove the screw ❶ and dismount the throttle-valve sensor ❷. When removing the screw, be sure to watch out for the bushing ❸.

NOTE: only dismount the throttle-valve sensor if defective. If screws ❶ / ❹ are loosened, the throttle-valve sensor must be adjusted again.

– Unscrew the choke slide.



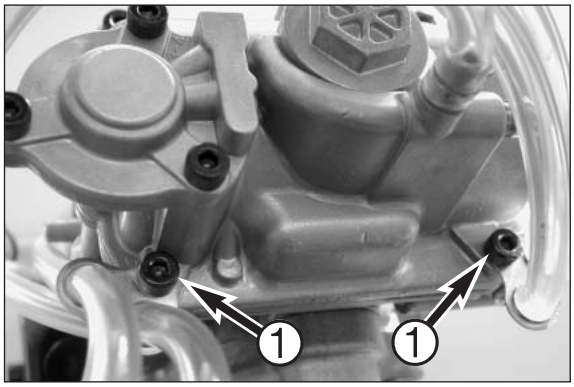
– Remove the screw and the clip together with the bushing and pull the connection piece ❺ out of the carburetor.



– Remove the 2 screws and take the intake trumpet together with the O-ring ❻ off the carburetor.
– Unscrew the idle-air jet ❼ and the main air jet ❽.

– Thoroughly clean all jets and other parts and blow compressed air through them.
– Clean the carburetor housing and blow compressed air through all the ducts in the carburetor.

– Check all gaskets for damage and replace them if necessary.

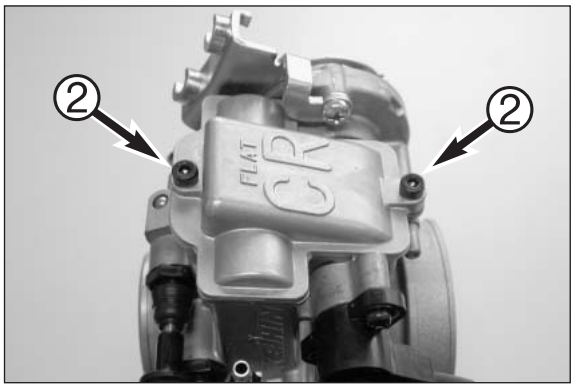


Disassembling the carburetor Keihin FCR-MX 37/39/41 up to the 2005 model

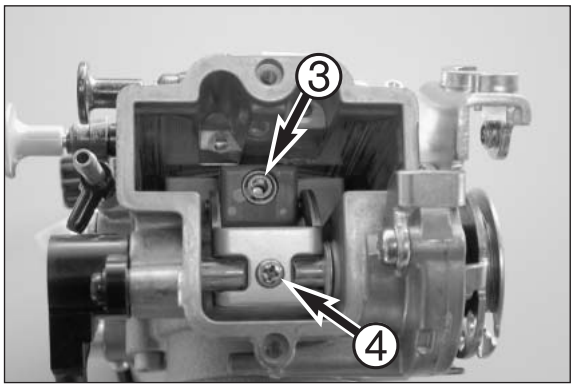
NOTE: Before you start disassembling the carburetor, you should look for a clean workplace. It should offer you enough space to lay out all individual components of the carburetor in perfect order.

– Dismount the carburetor and remove any coarse dirt.

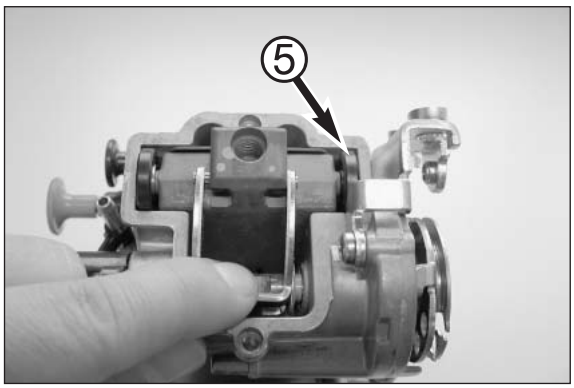
– Loosen both screws ❶ and remove all of the vent hoses from the carburetor.



– Remove both screws ❷ and remove the slide cover and gasket from the carburetor.



– Remove screw ❸ and pull the jet needle out of the throttle slide.
– Remove screw ❹.

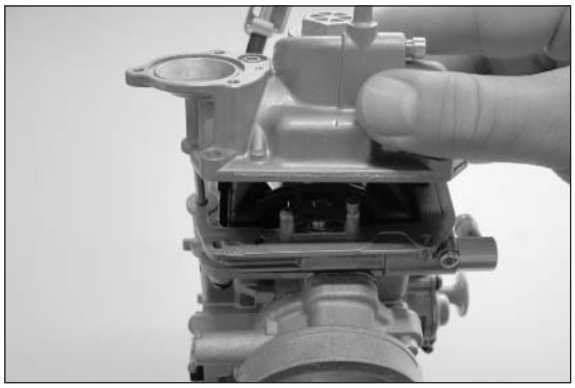


– Pull the throttle slide arm up and take the throttle slide roller ❺ and the slide shim out of the carburetor.

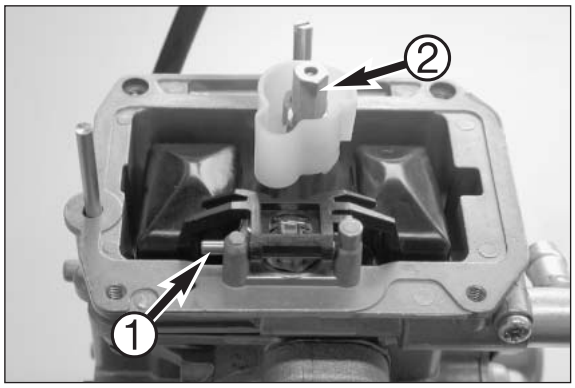
– Turn the carburetor around, remove the 3 screws and remove the cover of the accelerator pump.

NOTE: When dismounting the cover, watch out for the spring and the sealing rings as they may get lost easily.

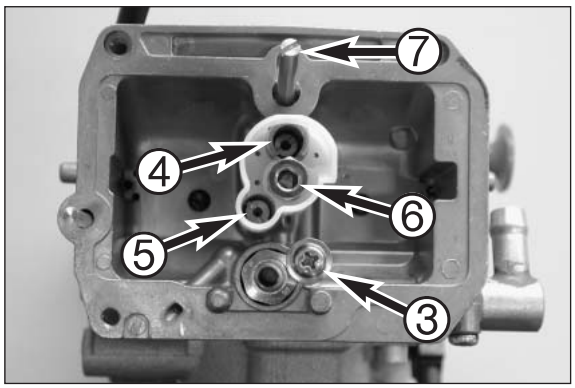
– Remove the 2 sealing rings, the spring and the diaphragm from the pump housing.



– Remove the screws on the float chamber and remove the housing.



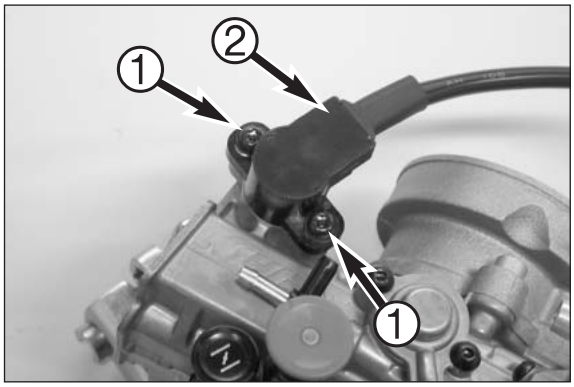
– Pull out the float hinge pin ❶ and remove the float together with the float needle valve.
– Remove the main jet ❷.



– Remove the screw ❸ and use pliers to carefully extract the seat of the float needle valve from the carburetor.
– Remove the idling jet ❹, the starting jet ❺ the needle jet ❻ and damper body.

– Screw in the mixture control screw ❼ down to the stop, count the number of turns and write it down.
– Unscrew the mixture control screw and dismount it together with the spring, the washer, and the O-ring.

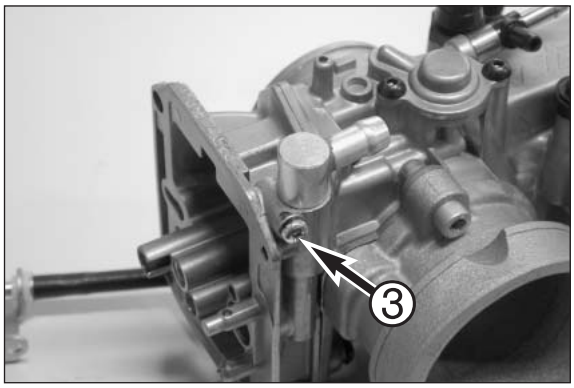
NOTE: The spring, the washer, and the O-ring will usually remain in the bore. These parts can be removed with the help of compressed air. The mixture control screw should not be open more than 2 turns. If more than two turns are required (richer mixture), use a larger idling jet.



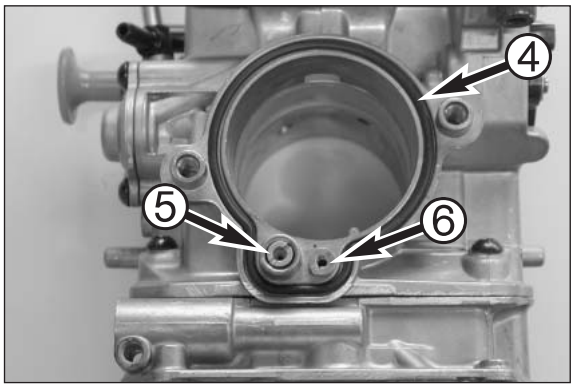
– Remove screws ❶ and the throttle sensor ❷.

NOTE: The throttle sensor should only be dismounted if defective. If the screws ❶ are loosened, the throttle sensor must be adjusted again.

– Unscrew the choke slide and hot start knob.



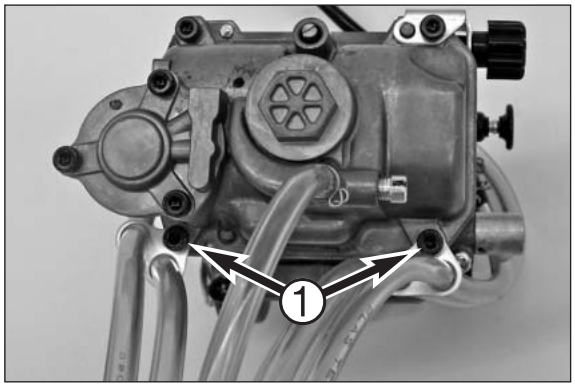
– Remove screw ❸ and pull the connecting piece out of the carburetor.



– Remove the 2 screws and take the intake trumpet together with the O-ring ❹ off the carburetor.
– Unscrew the idle-air jet ❺ and the main air jet ❻.

– Thoroughly clean all jets and other parts and blow compressed air through them.
– Clean the carburetor housing and blow compressed air through all the ducts in the carburetor.

– Check all gaskets for damage and replace them if necessary.

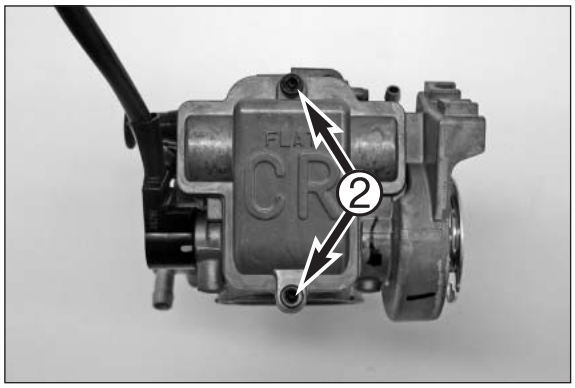


Disassembling the carburetor Keihin FCR-MX 37/39/41 starting with the 2006 model

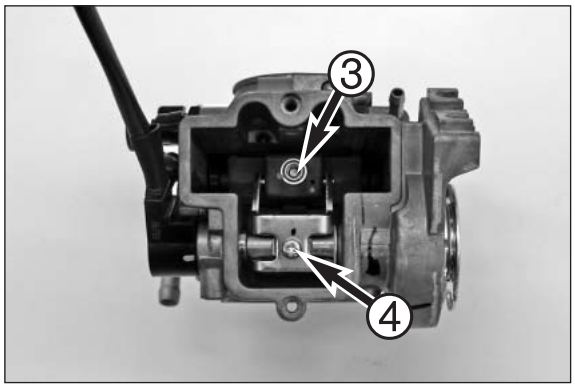
NOTE: Before you start to disassemble the carburetor, make sure your workplace is clean and offers enough room to spread out the individual carburetor parts.

– Dismount the carburetor and remove any coarse dirt.

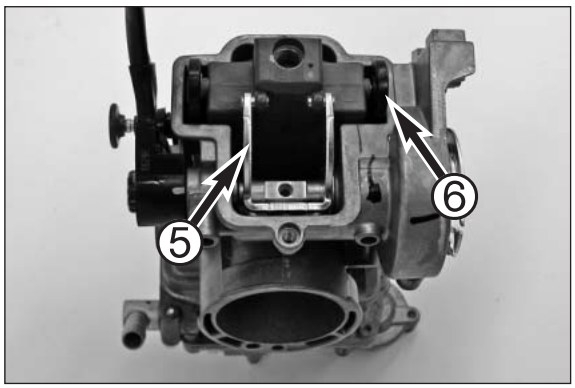
– Remove the 2 screws ❶ and disconnect all vent hoses from the carburetor.



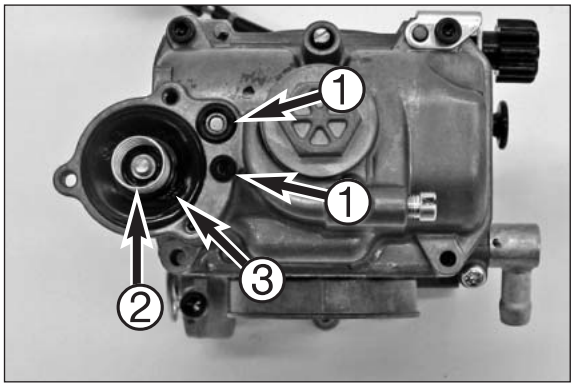
– Remove the 2 screws ❷ and take the throttle slide cover and gasket off the carburetor.



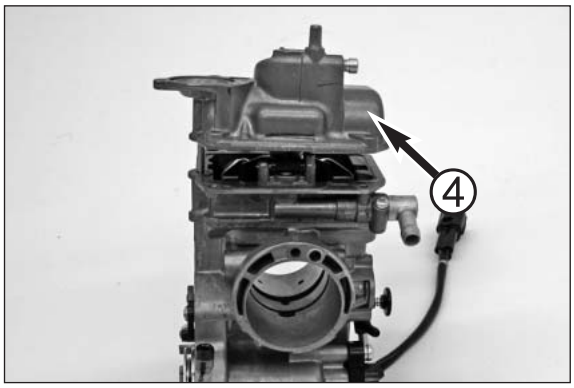
– Remove the screw ❸ with spring and washer and pull the jet needle out of the throttle slide.
– Remove the screw ❹.



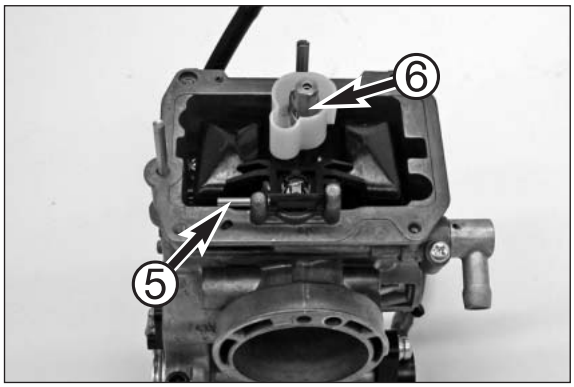
– Lift the throttle slide arm ❺, remove the throttle slide including the roller ❻ and the throttle slide plate from the carburetor.



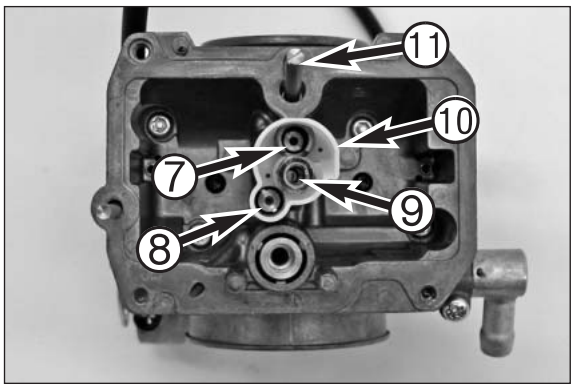
– Remove the 3 screws from the accelerator pump cover and remove the accelerator pump cover.
– Take the 2 seal rings ❶, spring ❷ and diaphragm ❸ out of the accelerator pump housing.



– Remove the remaining screws on the float chamber and take off the float chamber housing ❹.



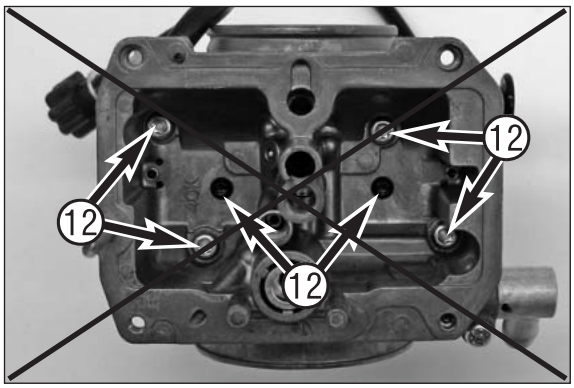
– Pull out the float hinge pin ❺ and remove the float together with the float needle valve.
– Remove the main jet ❻.



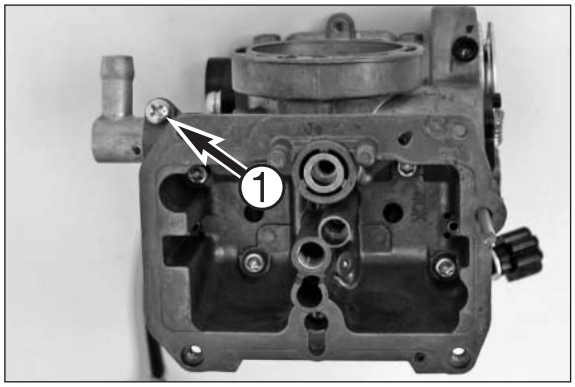
– Remove the idling jet ❼, starting jet ❽, needle jet ❾ and damper body ❿.

– Turn the mixture control screw ⓫ all the way in (count and write down the number of turns).
– Unscrew the mixture control screw and remove together with the spring, washer and O-ring.

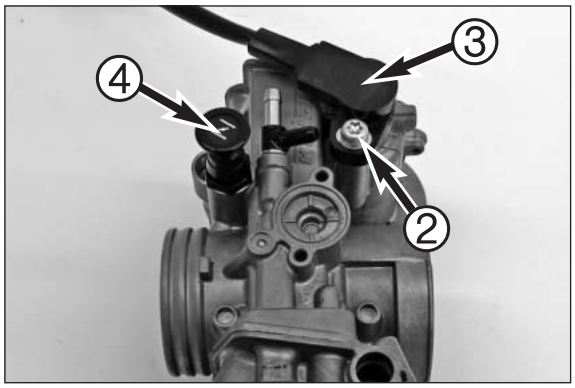
NOTE: The spring, washer and O-ring usually stay in the bore. These parts can be removed with compressed air. The mixture control screw ⓫ should not be open more than 2 turns. If more than two turns are required (richer mixture), use a larger idling jet.



– Do **not** remove the screws ⓬.



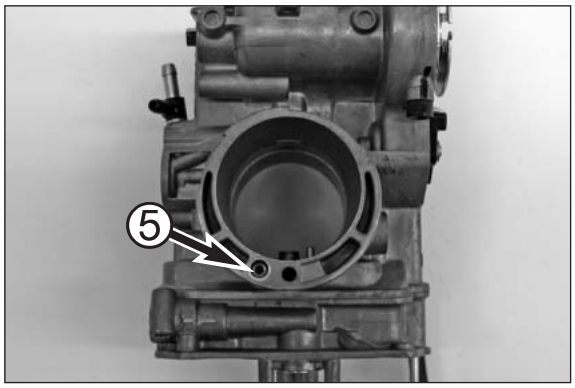
– Remove the screw ❶ and pull the hose connection out of the carburetor.



NOTE: only remove the throttle sensor if it is defective. If you loosen the screw ❷, you will need to readjust the throttle sensor.

– Remove the screw ❷ and take off the throttle sensor ❸.

– Unscrew the choke slide ❹ and hot start knob.

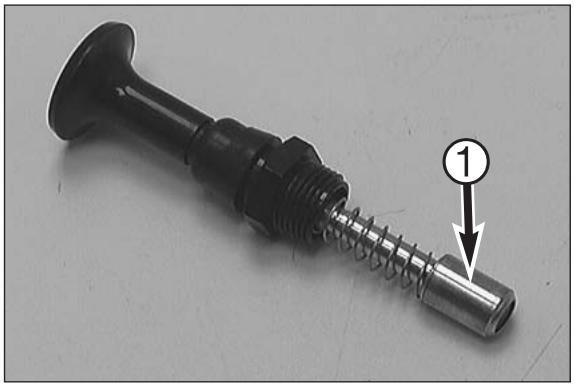


– Unscrew the idle-air jet ❺.

– Thoroughly clean all jets and the other parts and blow dry with compressed air.
– Clean the carburetor housing and blow compressed air through all the carburetor ducts.

– Check all gaskets for damage and replace if necessary.

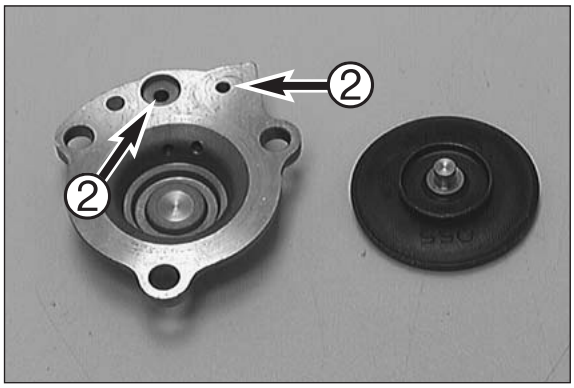
NOTE: do not use thinner to clean the carburetor.



Checking the choke slide and hot start knob

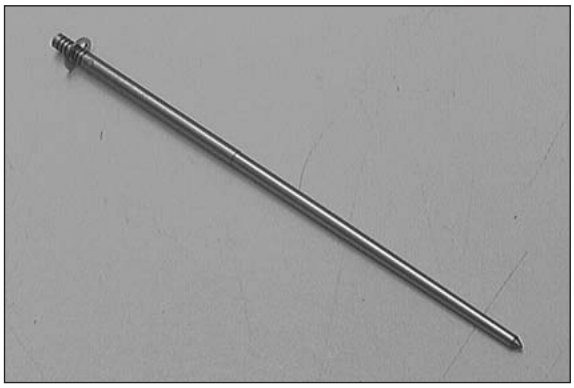
Choke slide:
The choke slide must be easy to actuate .
The piston ❶ of the choke slide must not have any pronounced score marks or deposits.
Check the rubber boot and the lock.

Hot start knob:
The hot start knob must be easily actuated.
The piston on the hot start knob may not have any scores or deposits.
Check the rubber boot and the lock.



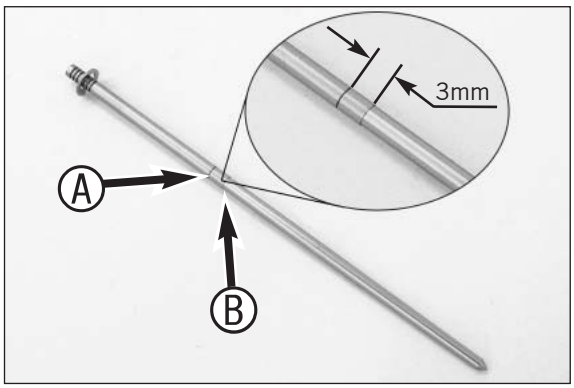
Checking the accelerator pump

Check the membranes for cracking or brittleness.
Check gaskets for damage.
Check if the bores ❷ are unobstructed.



Checking the jet needle

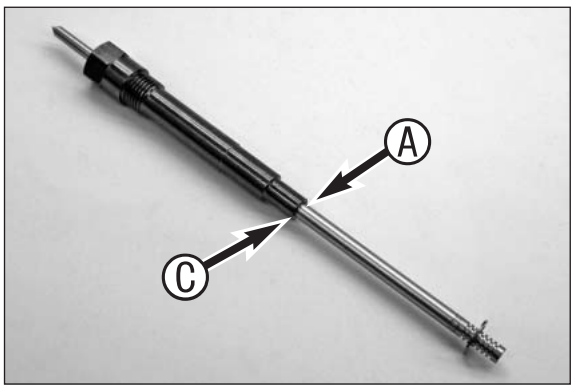
Check whether the jet needle is bent or the coating worn.
Check the needle clip for a tight fit.



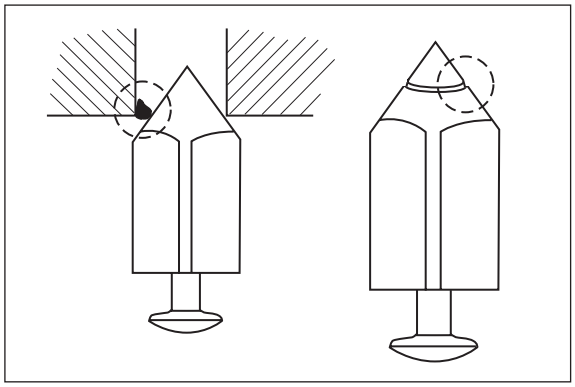
Checking the needle jet (after 30 hours of operation)

Use a flawless jet needle as a gauge.
Make a mark ❹ 3 mm above level ❸ on the jet needle.

NOTE: make sure the mark can be completely removed afterwards.

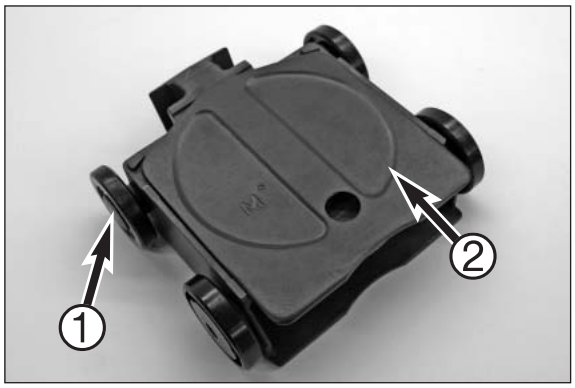


Insert the market jet needle in the needle jet to be tested. **Carefully** push the two parts together. If the mark ❹ on the jet needle can still be seen on the upper edge ❺ of the needle jet, the needle jet can still be used.
If the mark on the jet needle is no longer visible, replace the needle jet.



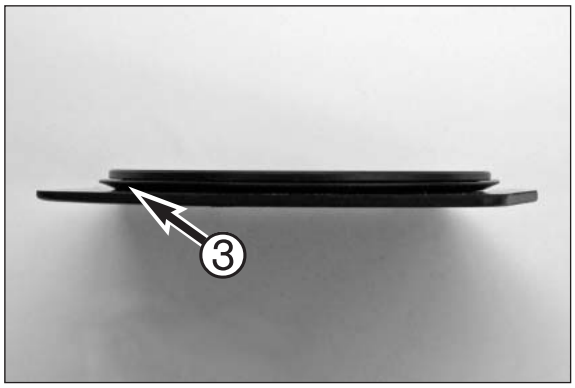
Checking the float needle valve

Check the needle valve at the sealing area for indentations. Make sure no dirt has accumulated between the valve seat and float needle.

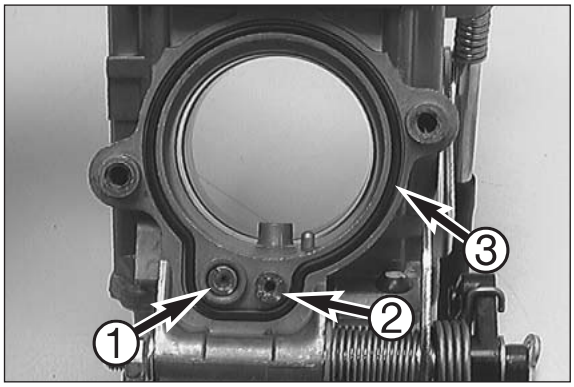


Checking the throttle slide

The rollers on the throttle slide must turn easily and should not have any flat areas. They should be seated firmly on the throttle slide (except roller ❶, which is removable).
Check the condition of the coating on the throttle slide and throttle slide plate ❷. Replace if the coating is worn (if the bare aluminum is visible) or damaged.

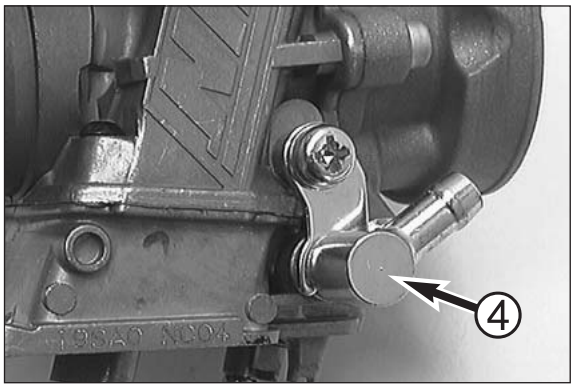


Check the membrane ❸ on the throttle slide plate for cracks or brittleness and make sure it is correctly seated.



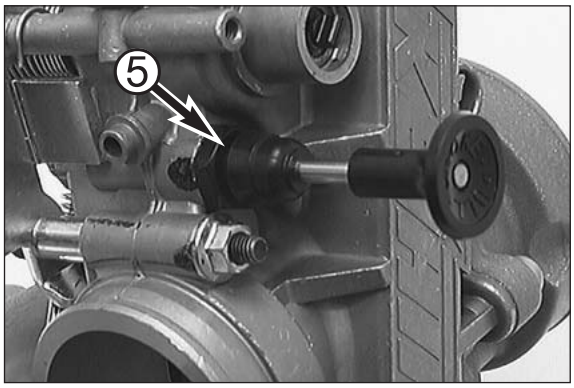
Assembling the carburetor FCR 35/39

– Mount the idle-air jet ❶ and the main air jet ❷.
– Place the O-ring ❸ in the groove and secure the intake trumpet to the carburetor by means of the 2 screws.

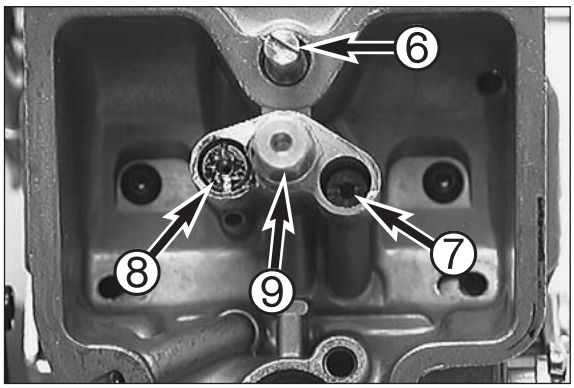


– Insert the fuel connection ❹ into the carburetor and secure it with the clip.

NOTE: In the mounted state, the connection piece must be easy to turn.



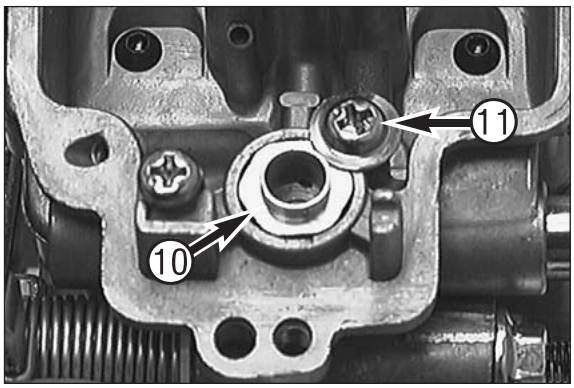
– Mount the choke slide ❺ and actuate it several times, checking whether it can be moved smoothly. In addition, check whether the choke locks properly.



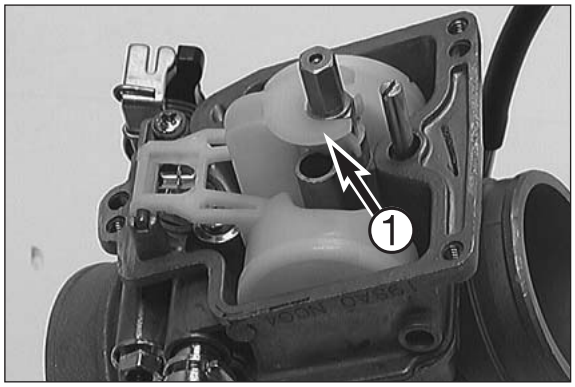
– Thread the spring, the washer and the O-ring onto the mixture control screw ❻ and screw the mixture control screw in as far as it will go.
– Now, unscrew the mixture control screw the number of turns written down during disassembly.

BASIC SETTING: See technical specification

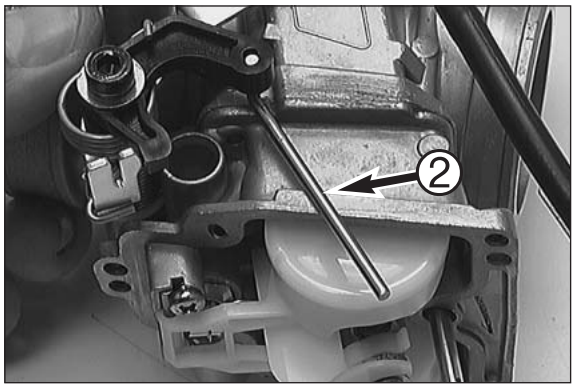
– Mount the idling jet ❼, starting jet ❽ and the needle jet together with the main jet ❾.



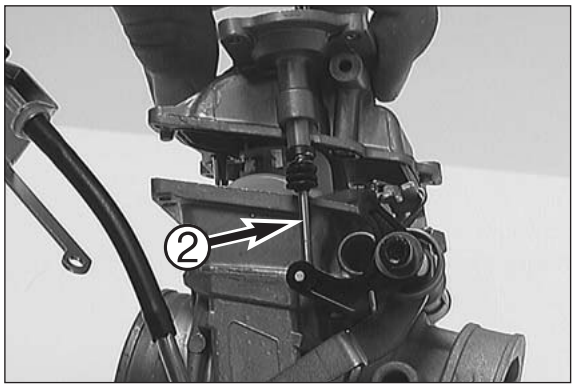
– Insert the needle jet ❿ into the bore and secure it by means of the screw ⓫.



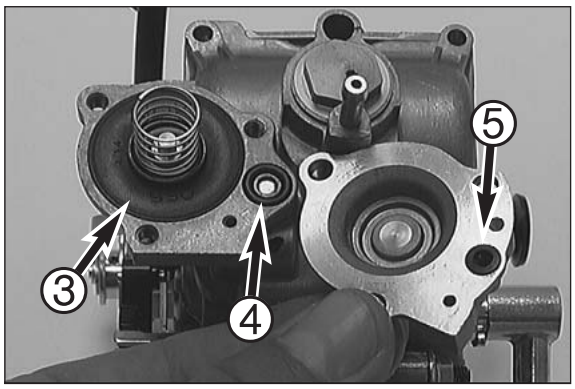
– Position the float, mount the float hinge pin and secure it by means of the screw.
– Check the float level (see page 8-27).
– Stick the plastic component ❶ on the needle jet.



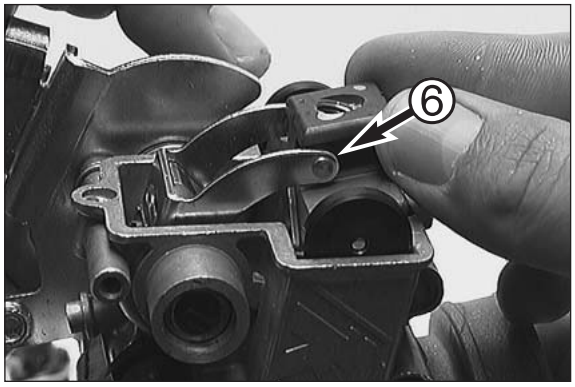
– Engage the push rod ❷ of the accelerator pump at the lever.



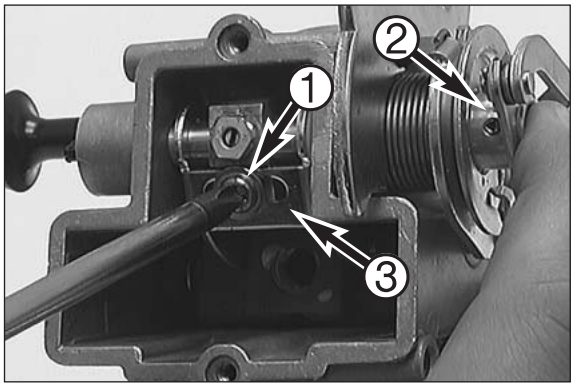
– Mount the float chamber and at first secure it with only 1 screw. When positioning the float chamber, make sure that the push rod ❷ of the accelerator pump slides into the bore.



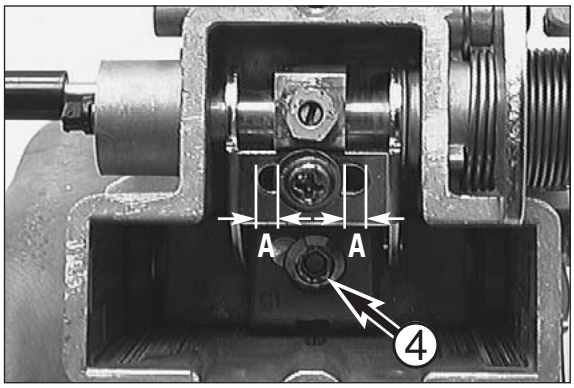
– Place the membrane ❸ with the labeling facing upwards and the spring into the pump housing.
– Place the O-ring ❹ into the groove. Secure the sealing ring ❺ with some grease in the cover and fasten the cover by means of 3 screws.



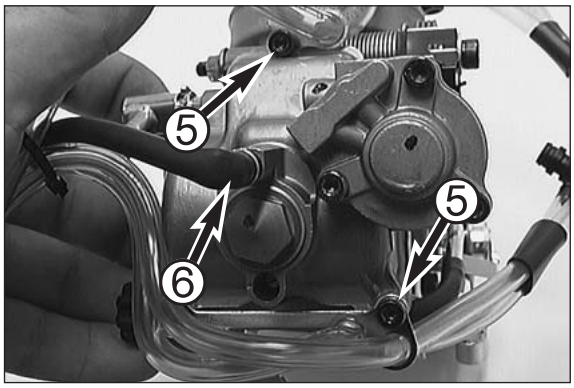
– Turn the cable disc and push the throttle valve into the carburetor such that the rollers ❻ engage the throttle valve (see photo). Push the throttle valve all the way into the carburetor.
– Turn the cable disc several times and while doing so check whether the throttle valve moves smoothly.



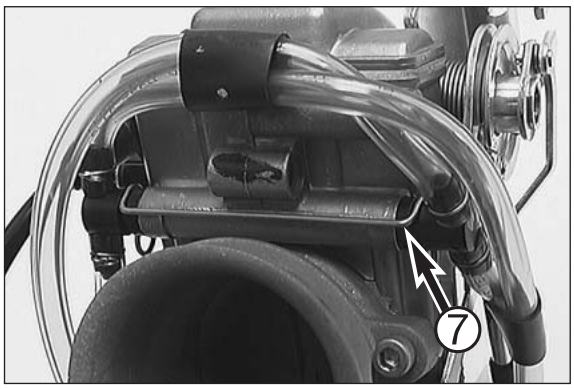
– Coat the thread of the screw ❶ with Loctite 243 and mount the screw, do not tighten it yet.
– Push the slide pin ❷ inward. At the same time, push the slide lever ❸ to the extreme right and tighten the screw ❶.



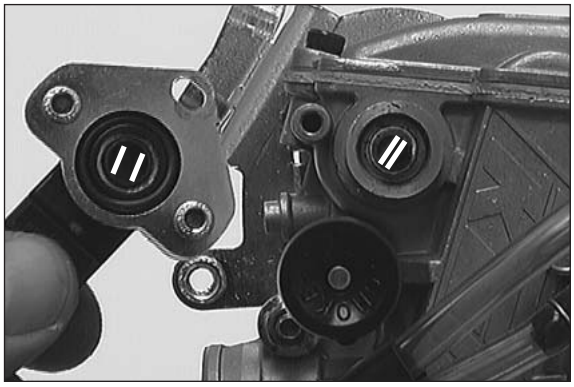
– Now, the distances Ⓐ on the left and on the right should be identical. Then, turn the cable disc and check if the throttle valve moves smoothly.
– Mount the jet needle and secure it with the screw ❹.
– Position the slide cover and gasket and fasten with 2 screws.



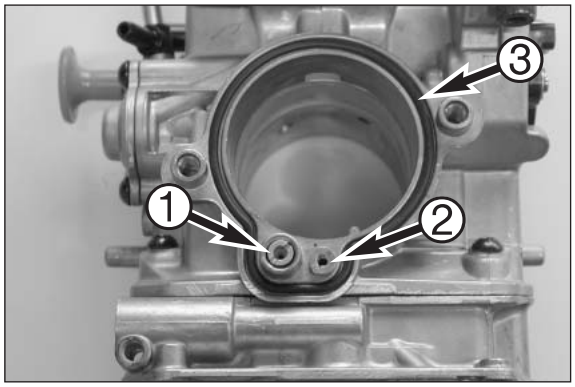
– Secure the ventilation hoses with the 2 screws ❺ of the float chamber and connect the hose ❻.



– Insert the 2 hose connections into the bores and fasten them with the retaining clip ❼.

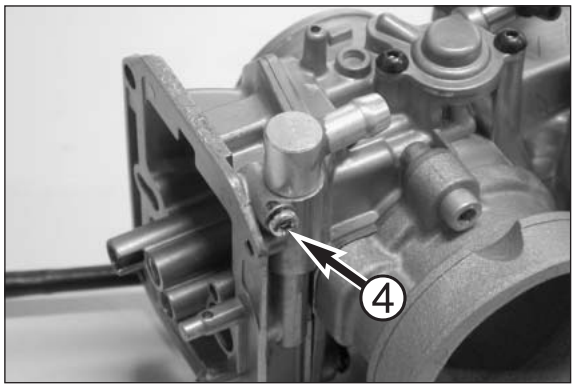


– Check and/or adjust the throttle slide opening.
– Check and/or adjust the operation of the accelerator pump.
– Mount the throttle valve sensor such that the flat spot at the carburetor engages the groove of the throttle valve sensor and secure it by means of the screw.
– Check and/or adjust the position of the throttle sensor.
– Check and/or adjust the idling speed.



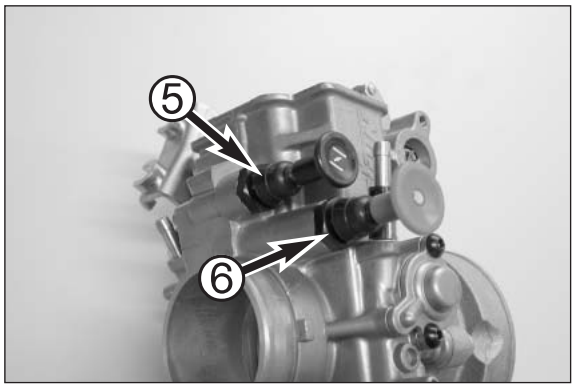
Assembling the carburetor Keihin FCR-MX 37/39/41 up to the 2005 model

– Mount the idle-air jet ❶ and the main air jet ❷.
– Place the O-ring ❸ in the groove and secure the intake trumpet to the carburetor by means of the 2 screws.

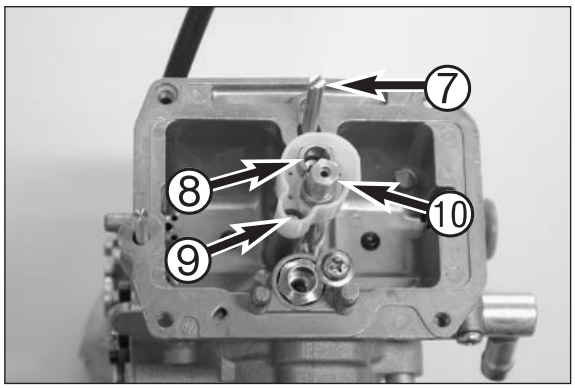


– Insert the fuel port in the carburetor and fix it with screw ❹.

NOTE: In the mounted state, the connection piece must be easy to turn.



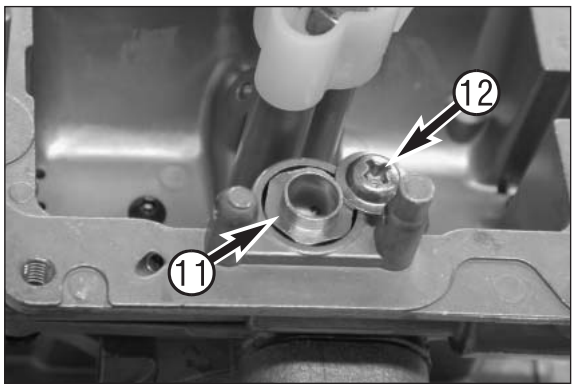
– Mount the choke slide ❺, the hot start knob ❻ and actuate several times, checking for smooth operation. Also make sure the choke and the hot start knob lock into place.



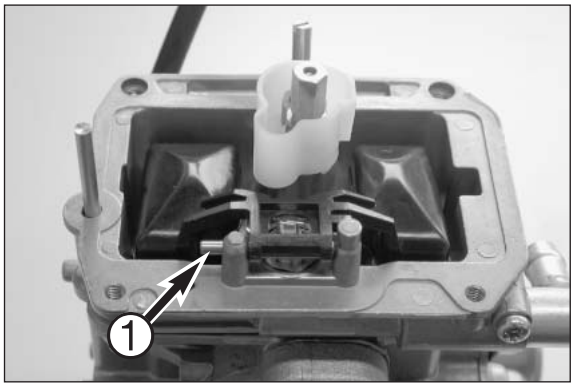
– Thread the spring, the washer and the O-ring onto the mixture control screw ❼ and screw the mixture control screw in as far as it will go.
– Now, unscrew the mixture control screw the number of turns written down during disassembly.

NOTE: See the Technical Specifications for the basic carburetor setting.The mixture control screw should not be open more than 2 turns. If more than two turns are required (richer mixture), use a larger idling jet.

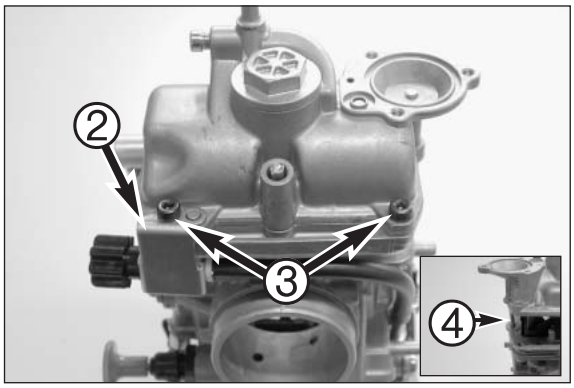
– Mount the damper body, the idling jet ❽, starting jet ❾ and the needle jet together with the main jet ❿.



– Insert the needle valve seat ⓫ in the bore and fix it with screw ⓬.

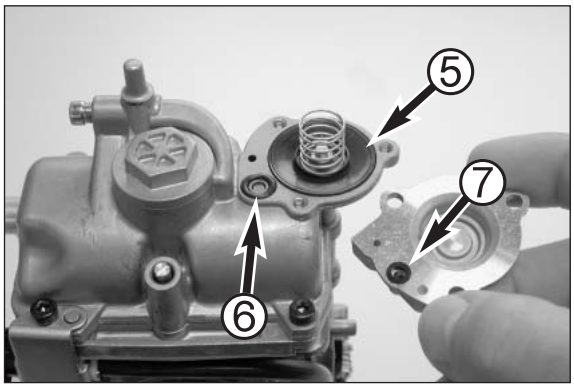


– Position the float and the float needle valve and mount the float hinge pin ❶.
– Check the float level (see page 8-23).

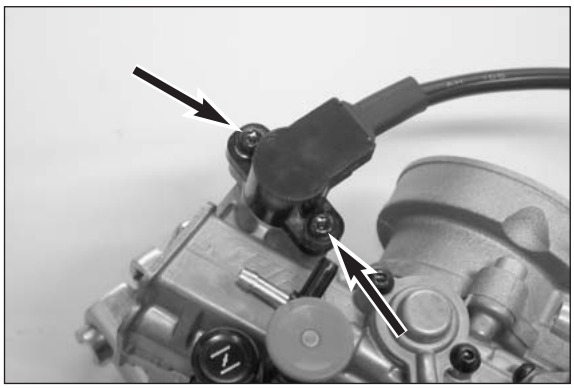


– Mount the float chamber and the gasket, position the bracket for the adjustment screw ❷ and fix the float chamber with the screws ❸.

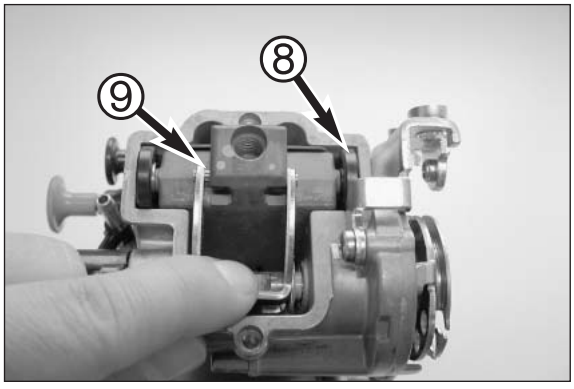
NOTE: When positioning the float chamber, make sure that the push rod ❹ of the accelerator pump slides into the bore.



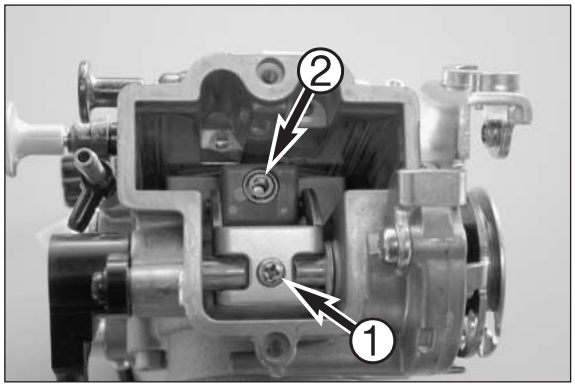
– Place the membrane ❺ with the labeling facing upwards and the spring into the pump housing.
– Place the O-ring ❻ into the groove. Secure the sealing ring ❼ with some grease in the cover and fasten the cover by means of 3 screws.



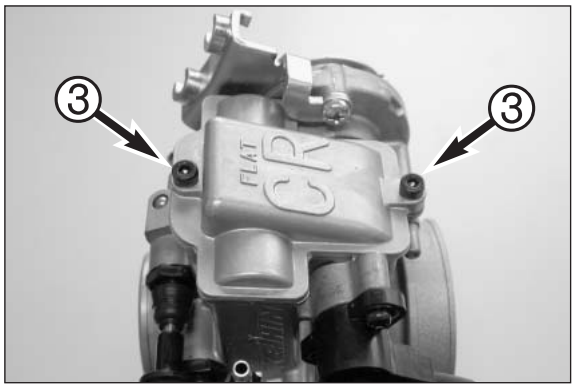
– Mount the throttle valve sensor such that the flat spot at the carburetor engages the groove of the throttle valve sensor and secure it by means of the screw.



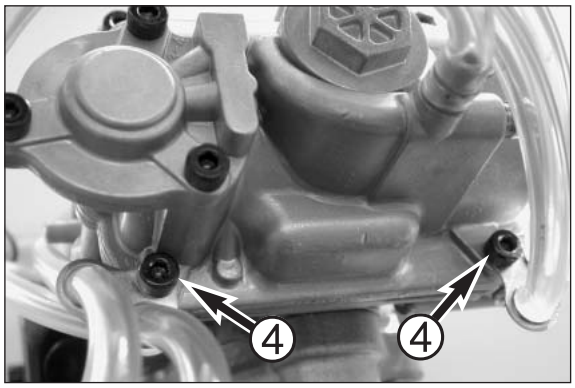
– Pull up the throttle slide arm, push the throttle slide together with roll ❽ and the slide shim into the carburetor so that the rolls ❾ engage in the throttle slide (see illustration).
– Check the throttle slide for smooth operation.



– Apply Loctite 243 to the screw ❶ and tighten.
– Mount the jet needle and fix with the screw ❷.

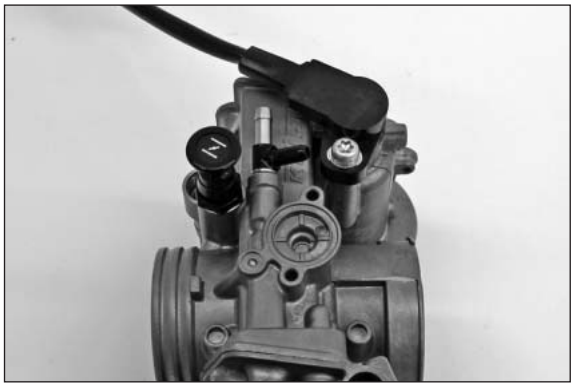


– Position the slide cover with the gasket and fasten with the 2 screws ❸.



– Fix the vent hoses on the float chamber with the 2 screws ❹.

– Check and/or adjust the throttle slide opening.
– Check and/or adjust the operation of the accelerator pump.
– Check and/or adjust the position of the throttle sensor.
– Check and/or adjust the idling speed.



Assembling the carburetor Keihin FCR-MX 37/39/41 starting with the 2006 model

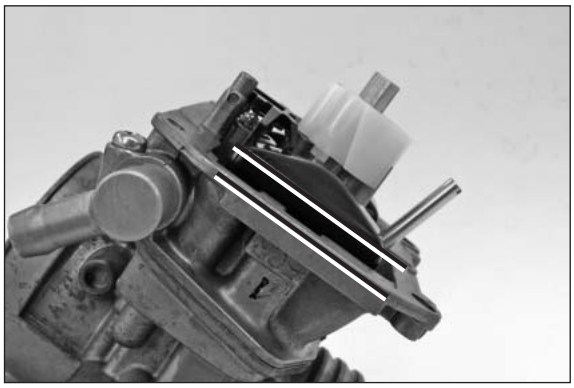
Assemble the carburetor in the reverse order, paying attention to the following points:

– Lock the screw on the throttle sensor with Loctite 243 but do not tighten yet.
– Lock the screws for the hose connection and the attachment of the throttle slide arm with Loctite 243.

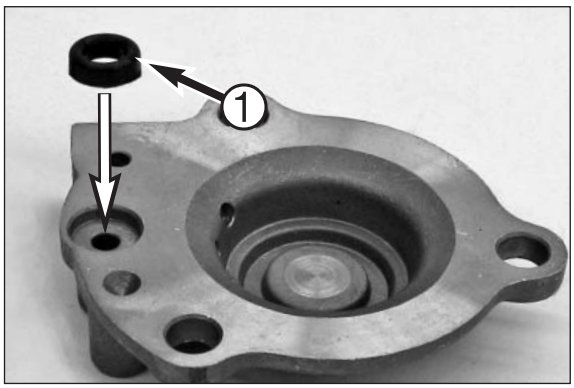
NOTE: it should be possible to turn the hose connection freely when mounted.

– Unscrew the mixture control screw the number of turns written down during disassembly. See "Technical Specifications" for the basic carburetor setting.

NOTE: the mixture control screw should not be open more than 2 turns. Use a bigger idling jet if more than two turns are necessary (richer mixture).



– Check and/or adjust the float height.

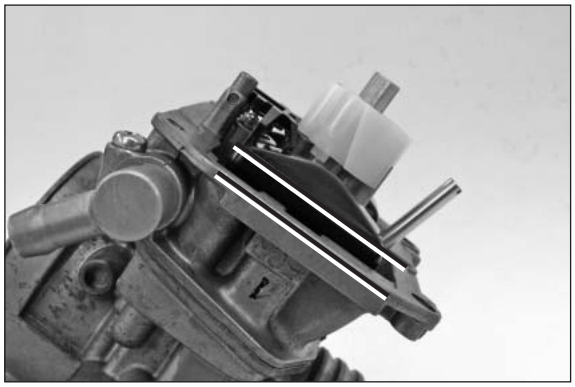


– Check and/or adjust the throttle slide opening.
– Check and/or adjust the operation of the accelerator pump.
– Fasten the seal ring ❶ with the rounded side facing up in the accelerator pump cover.

NOTE: mount the accelerator pump membrane with the writing facing the accelerator pump cover.

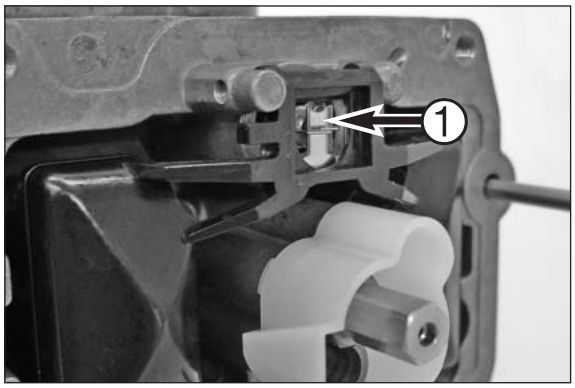
– Check and/or adjust the position of the throttle sensor.

– Check and/or adjust the idling speed.

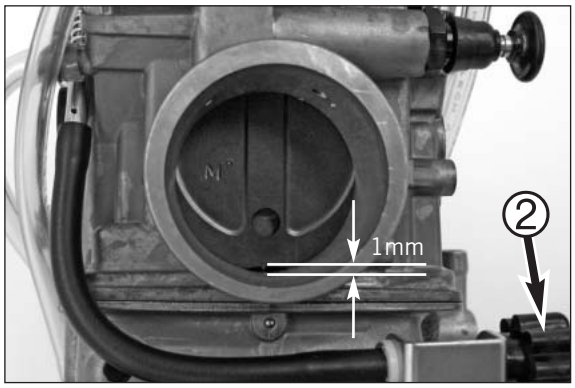


Checking/adjusting the float height Keihin FCR-MX 37/39/41

– Tilt the carburetor until the float rests against the float needle valve without compressing it.
– The edge of the float should be parallel to the sealing area of the float chamber in this position (see photo).
– If the float height does not correspond to the setpoint value, check the float needle valve and replace if necessary.



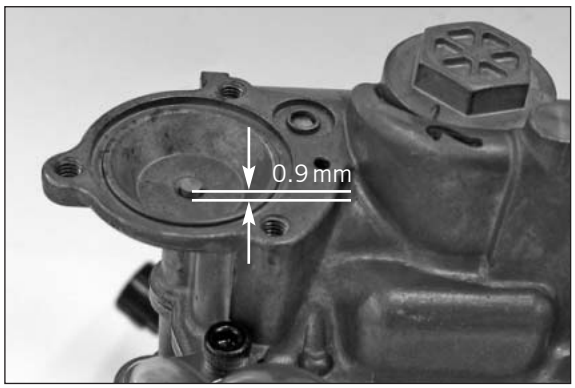
– If the float needle valve is good you can adjust the float height by bending the float tab ❶.



Checking/adjusting the throttle slide opening

NOTE: the basic 1 mm throttle slide setting only helps to control the beginning of injection by the accelerator pump and the basic setting of the throttle sensor.

– Use the adjusting screw ❷ to set the opening of the throttle slide to 1 mm. This test is easily performed with a 1 mm drill bit shaft or wire.

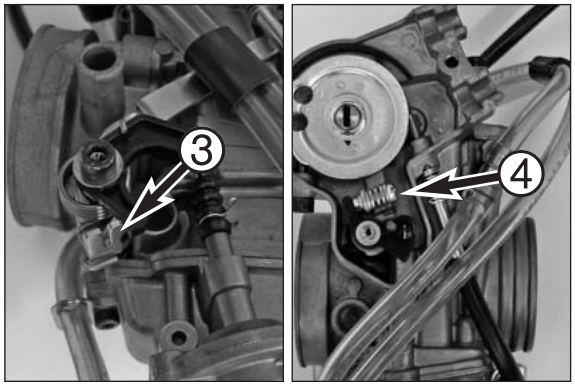


Checking/adjusting the operation of the accelerator pump

NOTE: adjusting the accelerator pump clearance will change the beginning of injection and will not affect the quantity injected or intensity of the accelerator pump.

– A 1mm opening of the throttle slide is a prerequisite for the correct adjustment of the accelerator pump operation.

– The basic setting for the accelerator pump piston rod projection is 0.9 mm.



FCR 35/39

– The piston rod projection can be corrected by bending the lever ❸.

FCR-MX 37/39/41

– The piston rod projection can be corrected by turning the adjusting screw ❹.

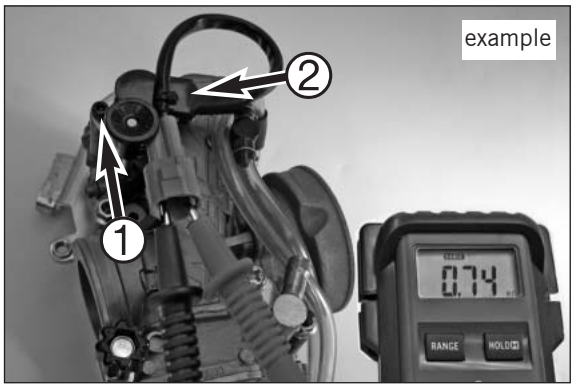
NOTE: check and/or adjust the idling speed.

Adjusting the position of the throttle sensor

Keihin FCR 35/39

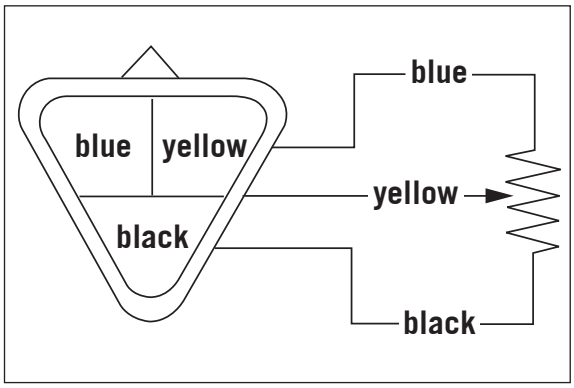
NOTE: the following measurement must be made at a component temperature of approx. 20°C. The carburetor must be dismounted to take this measurement. The throttle slide must be in the starting position (1mm open).

– Connect a multimeter (measuring range kΩ) to the blue (+) and black (-) cables on the throttle sensor and measure the total resistance of the throttle sensor (R_{ges}).
– Multiply the throttle sensor total resistance (R_{ges}) by 0.17 to obtain the variable throttle sensor resistance (R_{var}) for the throttle sensor setting.



R_{ges} (bu/bl) = 4 - 6 kΩ (setpoint value)

R_{var} (ye/bl) (tolerance ± 0.05 kΩ) = R_{ges} x 0.17

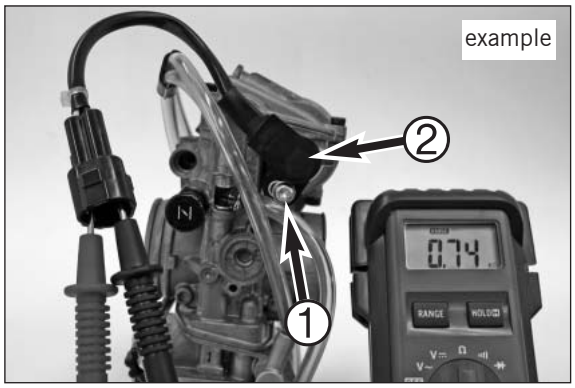


– Connect the multimeter (measuring range kΩ) to the yellow (+) and black (-) cables on the throttle sensor and measure the variable throttle sensor resistance (R_{var}).
– If the measured value does not correspond to the calculated setpoint value, loosen the screw ❶ and adjust the setpoint value by turning the throttle sensor ❷.
– Tighten the screw to set the throttle sensor in this position and check by measuring again.

Adjusting the position of the throttle sensor
Keihin FCR-MX 37/39/41

NOTE: the following measurement must be made at a component temperature of approx. 20°C. The carburetor must be dismounted to take this measurement. The throttle slide must be in the starting position (1mm open).

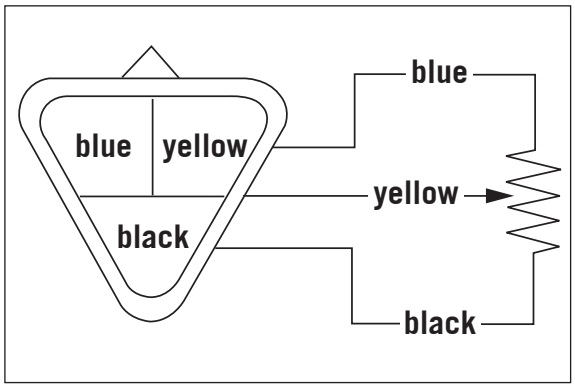
– Connect a multimeter (measuring range kΩ) to the blue (+) and black (-) cables on the throttle sensor and measure the total resistance of the throttle sensor (R_{ges}).
– Multiply the throttle sensor total resistance (R_{ges}) by 0.17 to obtain the variable throttle sensor resistance (R_{var}) for the throttle sensor setting.



R_{ges} (bu/bl) = 4 - 6 kΩ (setpoint value)

R_{var} (ye/bl) (tolerance ± 0.05 kΩ) = R_{ges} x 0.17

NOTE: the throttle-valve sensor is held in place by 2 screws up to the 2005 model. Loosen both screws to adjust.



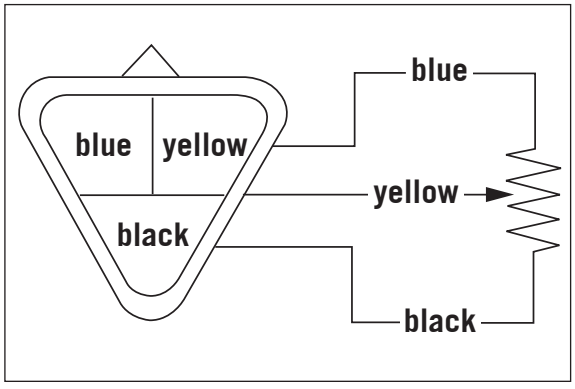
– Connect the multimeter (measuring range kΩ) to the yellow (+) and black (-) cables on the throttle sensor and measure the variable throttle sensor resistance (R_{var}).
– If the measured value does not correspond to the calculated setpoint value, loosen the screw ❶ and adjust the setpoint value by turning the throttle sensor ❷.
– Tighten the screw to set the throttle sensor in this position and check by measuring again.

Checking the throttle sensor

NOTE: the following measurement must be made at a component temperature of approx. 20°C. The carburetor must be dismounted to take this measurement. The throttle slide must be in the starting position (1mm open).

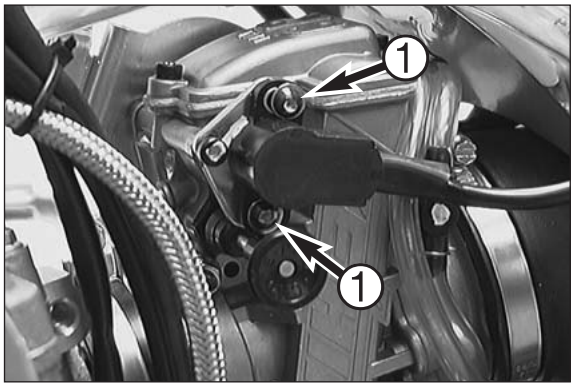
– Connect a multimeter (measuring range kΩ) to the blue (+) and black (-) cables on the throttle sensor and measure the total resistance of the throttle sensor (R_{ges}).

Throttle sensor total resistance (R_{ges}): 4 - 6 kΩ



– Connect the multimeter (measuring range kΩ) to the yellow (+) and black (-) cables on the throttle sensor and measure the variable throttle sensor resistance (R_{var}).
– When the throttle slide is opened slowly, the resistance should steadily increase to:

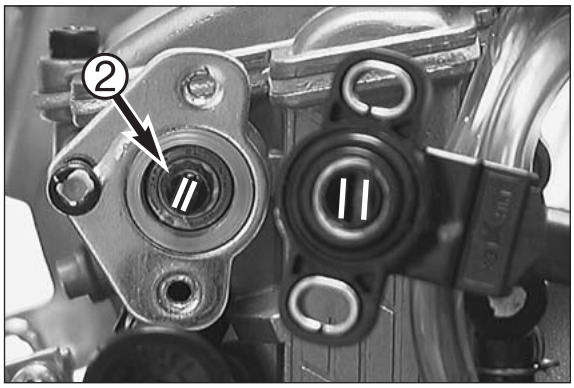
Variable throttle sensor resistance (R_{var}): 3 - 4.5 kΩ
(throttle slide fully open)



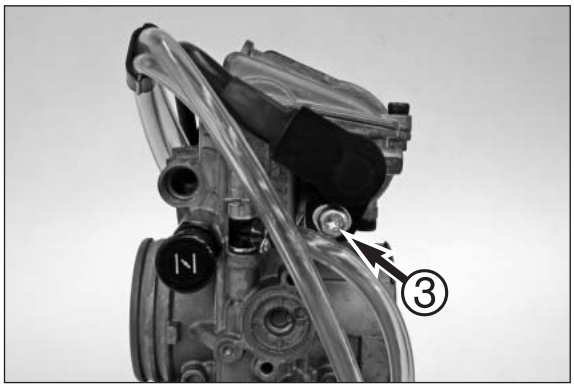
Removing and mounting the throttle sensor

Keihin FCR 35/39

– Disconnect the plug connector from the throttle sensor and remove the screws ❶.
– Remove the throttle sensor from the carburetor.



– When you mount the throttle sensor make sure the flat part of the driver ❷ engages in the recess in the throttle sensor.
– Degrease the screws thread and apply Loctite 243.
– Mount the 2 screws but do not tighten yet. Adjust the position of the throttle sensor.



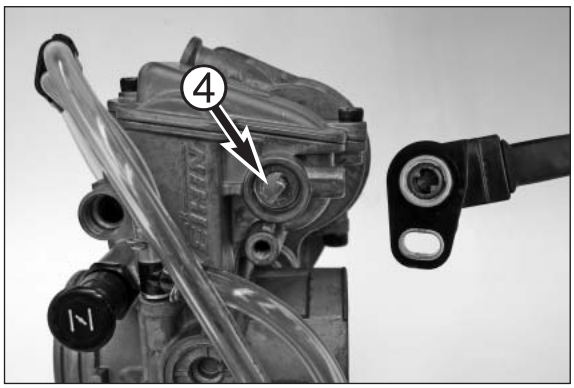
Removing and mounting the throttle sensor

Keihin FCR-MX 37/39/41

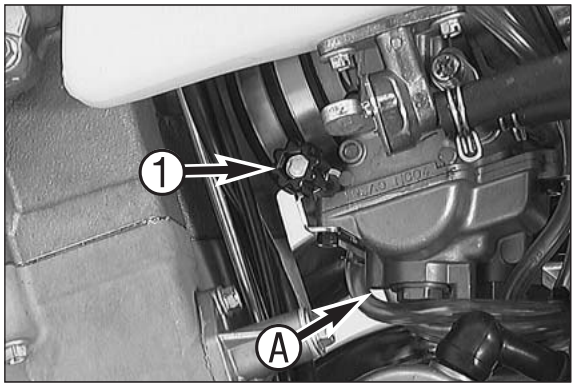
– Disconnect the plug connector from the throttle sensor and remove the screw ❸.

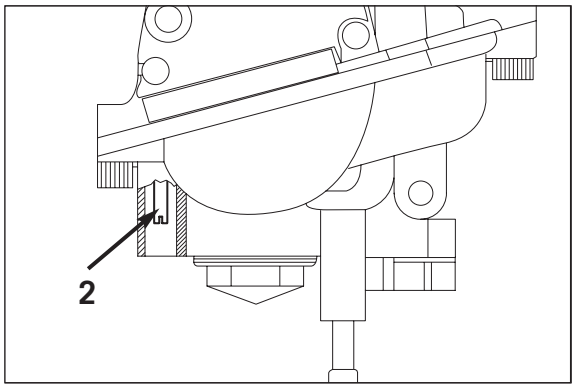
NOTE: the throttle-valve sensor is held in place by 2 screws up to the 2005 model.

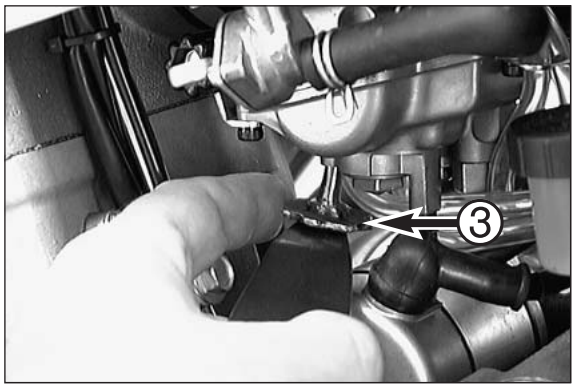
– Remove the throttle sensor from the carburetor.

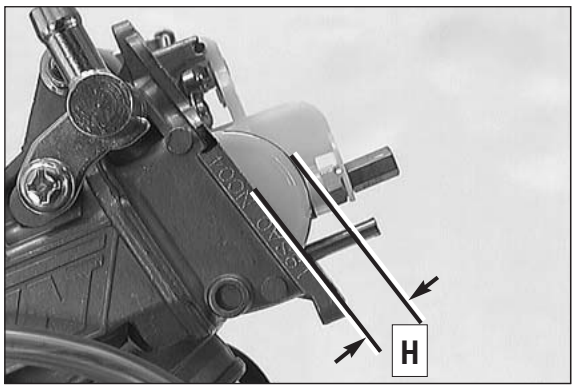


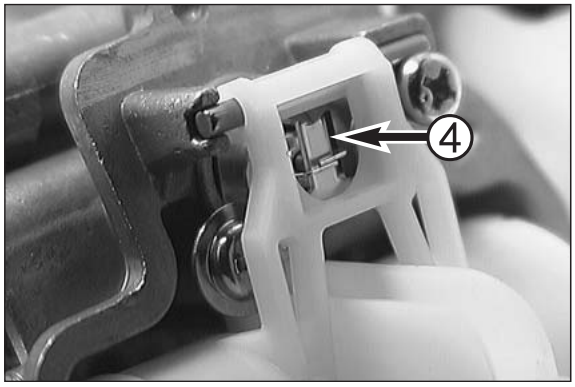
– When you mount the throttle sensor make sure the flat part of the driver ❹ engages in the recess in the throttle sensor.
– Degrease the screw(s) thread and apply Loctite 243.
– Mount the screw(s) but do not tighten yet. Adjust the position of the throttle sensor.











Adjust idling Keihin FCR 35/39

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

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

TO ADJUST IDLING CORRECTLY, PROCEED AS FOLLOWS:

1. Turn in the mixture control screw ❷ up to the stop, and turn it back out to the basic position (see technical data for engine)
2. Warm up the engine
3. Use the adjusting wheel ❶ to set the normal idle speed (1400 - 1500 rpm).
4. Turn mixture control screw ❷ slowly clockwise until the idling speed starts to decrease. Memorize this position, and turn mixture control screw slowly counterclockwise until the idling speed decreases again. Adjust the point of the highest idling speed between these two positions. If, in the course of this procedure, the speed undergoes a relatively high increase, reduce the idle speed to a normal level and repeat the procedure specified in 4. Serious competitive racers will choose a setting approx. 1/4 turn (clockwise) leaner than this ideal value because their engine will heat up more when used in competitions.

NOTE: If you fail to obtain a satisfying result by following the procedure described above, an incorrectly dimensioned idling nozzle may be the cause. In this case:

a) the mixture control screw has been screwed in up to the stop without causing any change in rotational speed, a smaller idling jet has to be installed;

b) the engine dies when the mixture control screw is still open by 2 turns, a larger idling jet needs to be selected;
Naturally, in cases of jet changes, you have to start adjusting from the beginning.

5. Then, use the adjusting wheel to set the desired idle speed.
6. In cases of greater changes in outside temperature and extremely different altitudes, the idling speed should be readjusted.

Adjusting the mixture control screw

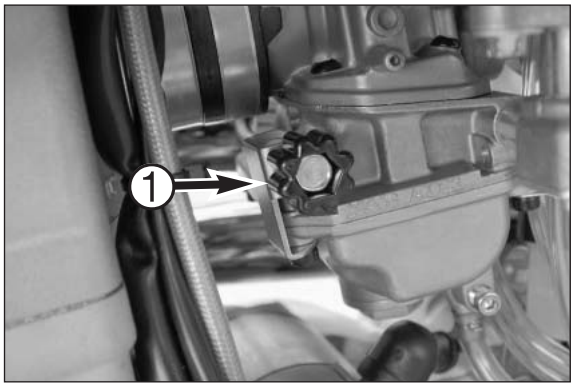
Especially on the EXC models, accessing the mixture control screw is difficult. For this reason, we have created an appropriate special tool.
Introduce the special tool into the bore Ⓐ at the carburetor bottom. Press the tool slightly upward and turn the adjusting wheel ❸ until the tool engages the slot of the mixture control screw ❷.
Now, you can go about adjusting the screw. Marks were provided on the adjusting wheel, making it easier to keep track of the turns.

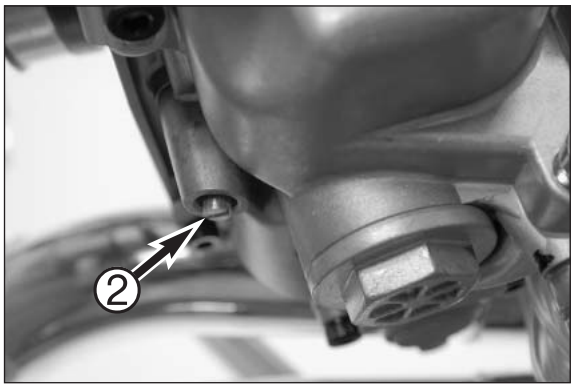
Checking/adjusting the float height Keihin FCR 35/39

To do this, dismount the carburetor and remove the float chamber. Hold the carburetor in a slanted position such that the float will abut the float needle valve but not compress it (see photo).
Now, use a sliding caliper to measure the distance Ⓗ between the casing edge and the float's upper edge.
The float height Ⓗ should be **9 mm** (0.3543 in).
If the float height does not correspond to the desired value, check the float needle valve and, if necessary, replace it.

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

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





Adjusting the idle speed Keihin FCR-MX 37/39/41

The carburetor idle speed strongly influences the starting performance, a stable idle and engine responsiveness when accelerating. An engine with a correct idle speed will be easier to start than one with an incorrect idle adjustment.

The idle speed is adjusted with the adjusting screw ❶ and the idle mixture with the mixture control screw ❷. The adjusting screw sets the basic position of the throttle slide. Turning in a clockwise direction will decrease the amount of fuel (lean mixture), turning in a counterclockwise direction will increase the amount of fuel (rich mixture).

TO SET THE CORRECT IDLE SPEED, PROCEED AS FOLLOWS:

1. Turn the mixture control screw ❷ all the way in and adjust to the specified basic setting (see Technical Specifications - Engine).

NOTE: use special tool 590.29.034.000 or 773.29.034.000 to adjust the mixture control screw on the vehicle.

2. Warm up the engine (approx. 5 minutes).
3. Adjust the idle speed (1600/min + 50/min) with the adjusting screw ❶.
4. Slowly turn the mixture control screw ❷ in a clockwise direction until the idle speed starts to drop. Mark this position and slowly turn the mixture control screw in a counterclockwise direction until the idle speed starts to drop again. Set the position with the highest idle speed between these two positions. If this results in an increased speed, reduce the idling speed to a normal level and repeat step 4. Extreme sport racers will set this ideal setting approx. 1/4 turn leaner (in a clockwise direction), since the engine will become hotter during competitions.

NOTE: if satisfactory results are not achieved with the above mode of procedure, an incorrectly dimensioned idling jet could be the cause. If:

a) the mixture control screw is turned all the way in without changing the speed, use a smaller idling jet.

b) the engine is still too lean when the mixture control screw 2 is open two turns, use a larger idling jet.

Readjust every time you replace the jets.

5. Set the desired idling speed with the adjusting screw.
6. The idling speed must be readjusted for larger fluctuations in the outside temperature and at extreme altitudes.

Basic information on carburetor wear

The throttle slide, jet needle and needle are subjected to increased wear due to engine vibrations. This wear will cause the carburetor to malfunction (e.g. to over-enrich). These components should be checked for wear every 50 operating hours.

TROUBLE SHOOTING 9

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TROUBLE SHOOTING

If you had the specified maintenance work on your motorcycle carried out, you should experience no problems. Should an error occur, we advise you to use the following troubleshooting chart in order to find the cause of error.

TROUBLE	CAUSE	REMEDY
Engine doesn't crank (E-starter)	Operating errror	Turn on the emergency-OFF switch (Australia only)
	Blown fuse	Dismount the left paneling and the filter box cover and replace the fuse in the starter relay
	Discharged battery.	Recharge the battery and investigate the causes for discharging
	Low outside temperature	Start the engine with the kickstarter
Engine cranks but doesn't start (E-starter)	Operating error	Open the fuel tap, tank fuel, actuate choke. Pay attention to the starting information (see driving instructions)
Engine will not start (Kickstarter)	The motorcycle has been out of operation for a longer period of time. Therefore old fuel has accumulated in the float chamber	The easily inflammable components of the new fuels evaporate during longer periods of standing still. When the motorcycle has been out of operation for more than a week, it is recommended to drain the old fuel from the float chamber. The engine will immediately start when the float chamber is filled with new fuel.
	Fuel supply interrupted	Close the fuel tap, loosen the fuel hose at the carburetor, lead it into a basin and open the fuel tap – if fuel leaks out, the carburetor may need cleaning – if no fuel leaks out, check the tank ventilation, i.e. clean fuel tap
	Flooded engine	In order to "pump the engine free", pull the hand decompression lever, fully rev up the engine, actuate the kickstarter 5 to 10 times or actuate the E-starter 2 times for 5 seconds each. Then, start the engine as described above. If the engine fails to start, unscrew the spark plug and dry it.
	Sooty or wet spark plug	Clean and dry the spark plug or exchange it
	Electrode gap too large	Adjust the spark plug electrode gap to 0.6 mm
	Spark plug connector or spark plug faulty	Dismount the spark plug, connect the ignition cable, hold it to a ground (blank place on engine) and actuate the starter, a strong spark must be produced at the spark plug – If no spark is created replace the spark plug. – If the new spark plug doesn't produce a spark either, disconnect the spark plug connector from the ignition cable, hold it a distance of approx. 5 mm from ground and start. – If a spark now occurs, replace spark plug cap – If no spark is produced, control ignition system
	Short circuit cable scored in wiring harness, emergency OFF switch or short circuit button faulty	Dismount the fuel tank, disconnect the black/yellow cable from the cable of the emergency-OFF switch and the short-circuit button and check the ignition spark. If a spark is generated, look for the problem in the short-circuit circuit.
	The plug connection of the CDI-unit, the pulse generator or the ignition coil has oxydized	Remove the seat and the fuel tank. Clean the plug connection and treat it with contact spray
	Water in the carburetor or jets blocked	Dismount and clean the carburetor
Engine fails to idle	Glogged idling jet	Disassemble the carburetor and clean the jets
	Incorrect adjustment of adjusting screws on carburetor	Have the carburetor adjusted
	Defective spark plug	Replace the spark plug
	Defective ignition system	Have the ignition system checked

TROUBLE	CAUSE	REMEDY
Engine does not rev high	Carburetor fuel level too high because float needle valve is dirty or worn out	Dismount carburetor and check if it is worn out
	Loose carburetor jets	Tighten jets
	Electronic ignition timing faulty	Have the ignition system checked
Engine will not reach full power	Fuel supply partially interrupted or carburetor dirty	Clean and check the fuel system as well as the carburetor
	Float leaks	Replace the float
	Air filter very dirty	Clean or replace the air filter
	Exhaust system is not tight, deformed, or the silencer does not contain enough glassfiber yarn	Check if the exhaust is damaged, replace the glass fiber yarn in exhaust silencer
	Valve gap too small	Adjust the valve gap
	Loss of compression because the hand decompressor has no play	Check the setting of the hand decompression cable
	Electronic ignition timing faulty	Have the ignition system checked
Engine stops or splutters in carburetor	Insufficient fuel	Clean and check the fuel system and the carburetor
	Engine takes air out of control	Check the rubber sleeve and the carburetor for tight fit
Engine gets too hot	Insufficient cooling liquid	Refill the cooling liquid (see maintenance work), check the cooling system for leaks
	Not enough air stream	Drive on briskly (electric fan can be retrofitted)
	Cooling system has not been bled	Bleed the cooling system
	Radiators are very dirty	Clean the radiators with a water jet
	Foam formation in the cooling system	Replace the cooling liquid, use an antifreeze liquid with a brand name
	Bent cooling hose	Shorten or replace the cooling hose
	Thermostat defective	Dismount and check the thermostat (opening temperature 70°C, 158°F) or replace it
	Blown fan fuse (XC Desert)	Replace the fuse and check if the fan operates properly (see below)
	Defect thermoswitch (XC Desert)	Check the thermoswitch for proper functioning
	Fan defective (XC Desert)	Check if the fan operates properly. To do this, start the engine, then bypass the connections to the thermoswitch (bottom right radiator)
High oil consumption	The engine ventilation hose is bent	Dislocate i.e. replace non-buckling ventilation hose
	Engine oil level is too high	Check the engine oil level and correct it if necessary
	Motor oil too thin (viscosity)	Use a thicker engine oil; see chapter “Engine oil“
All switched on lamps blown out	Capacitor or voltage regulator faulty	Dismount the seat and fuel tank and check the connections, have the capacitor and voltage regulator checked
Horn, flasher lights and E-starter do not work	starter relay fuse blown	Dismount the left side paneling and the filter box cover, replace the fuse
The battery is discharged	The battery isn’t charged by the generator	Remove the seat and the fuel tank and check the voltage regulator connections; the voltage regulator and generator should be checked

TECHNICAL SPECIFICATIONS 10

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TECHNICAL SPECIFICATIONS 10

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TECHNICAL DATA – ENGINE 400/520 SX, EXC RACING 2000

Type	400 SX RACING	400 EXC RACING	520 SX RACING	520 EXC RACING
Design	Liquid-cooled single cylinder 4-stroke engine with balancer shaft			
Displacement	398 cm^3		510 cm^3	
Bore/Stroke	89 / 64 mm		95 / 72 mm	
Ratio	11 : 1			
Fuel	unleaded premium gasoline with at least RON 95			
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain			
Camshaft	01		55	
Valve diameter	Intake: 35 mm Exhaust: 30 mm			
Valve clearance cold	0.12 mm (feeler gage 0.10 mm light, feeler gage 0.15 mm should not be inserted)			
Crankshaft bearing	2 cylinder roller bearing			
Conrod bearing	needle bearing			
Top end bearing	bronce bushing			
Piston	alluminium alloy cast		alluminium alloy forged	
Piston rings	1 compression ring, 1 oil scraper ring			
Engine lubrication	pressure circulation lubrication with 2 rotorpumps			
Engine oil	fullsynthetic oil (Shell Advance Ultra4 SAE 10W40)			
Quantity of engine oil	1.25 liters			
Primary ratio	straight geared spur wheels 33:76 Z			
Clutch	multi disc clutch in oil bath			
Transmission	4-speed claw shafted	6-speed claw shafted	4-speed claw shafted	6-speed claw shafted
Gear ratio				
1st Gear	14:34	14:34	14:34	14:34
2nd Gear	18:30	17:31	18:30	17:31
3rd Gear	20:28	19:28	20:28	19:28
4th Gear	22:26	22:26	22:26	22:26
5th Gear	–	24:23	–	24:23
6th Gear	–	26:21	–	26:21
Iginition system	contactless DC-CDI ignition with digital advanced system by KOKUSAN			
Generator	12V 40W	12V 110W		
Spark plug	NGK CR8 EK			
Spark plug gap	0.60 mm			
Cooling system	liquid cooled, permanent rotation of cooling liquid through mechanic driven water pump			
Cooling liquid	1 liter, 40% antifreeze, 60% water, at least -25° C (-13° F)			
Starting equipment	kickstarter	kick - electric starter	kickstarter	kick - electric starter

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BASIC CARBURETOR SETTING

	520 SX RACING 400 EXC RACING	400 EXC RACING (12kW) 520 EXC RACING (12,5kW)	520 EXC RACING	400 SX RACING
Type Keihin	FCR 39	FCR 39	FCR 39	FCR 39
Main jet	175	175	175	175
Jet needle	OBDTM	OBDVR (OBDTM)	OBDTM	OBDTM
Idling jet	52	48	48	48
Main air jet	200	200	200	200
Idling air jet	100	100	100	100
Needle clip position	2. from top	3. from top	2. from top	4. from top
Starting jet	85	85	85	85
Mixture control screw open	2	1,25	2,5	2,25
Throttle valve	15	15	15	15
Performance restrictor	–	slide stop 24,5 mm	–	–
Stop pump membrane	3.2 mm	3.2 mm	3.2 mm	3.2 mm

TECHNICAL DATA – CHASSIS 400/520 SX, EXC RACING 2000

	400 SX RACING	520 SX RACING	400/520 EXC RACING	400/520 EXC RACING USA
Frame	Central chrom-moly-steel frame			
Fork	**W**hite **P**ower – **U**p **S**ide **D**own 43 MA			
Wheel travel front/rear	295/320 mm			
Rear suspension	WP **P**rogressive **D**amping **S**ystem shock absorber, aluminium swingarm			
Front brake	Disc brake with carbon-steel brake disc Ø 260 mm (10.2 in), brake caliper floated			
Rear brake	Disc brake with carbon-steel brake disc Ø 220 mm (8.7 in), brake caliper floated			
Brake disc	Wear limit max. 0,40 mm (0,016 in)			
Front tires Air pressure offroad Air pressure road driver only	80/100 - 21“ 1,0 bar (14 psi) –		90/90 - 21“ 1,0 bar (14 psi) 1,5 bar (21 psi)	80/100 - 21“ 1,0 bar (14 psi) 1,5 bar (21 psi)
Rear tires Air pressure offroad Air pressure road driver only	110/90 - 19“ 1,0 bar (14 psi) –		140/80 - 18“ 1,0 bar (14 psi) 2,0 bar (28 psi)	110/100 - 18“ 1,0 bar (14 psi) 2,0 bar (28 psi)
Fuel tank capacity	7,5 Liter (2 US Gallons)		9 Liter (2,3 US gallons)	
Final drive ratio	14:50	14:48	400-15:45 / 520-15:40	400-14:50 / 520-14:48
Chain	O-ring 5/8 x 1/4 "			
Available final sprockets	38, 40, 42, 45t 48, 50, 52			
Steering head angle	63,5°			
Wheel base	1481 ± 10 mm (58,3 ± 0,4 in)			
Seat height, unloaded	925 mm (36,5 in)			
Ground clearance, unloaded	380 mm (15,1 in)			
Dead-weight *	107 kg (236 lbs)		112 kg (247 lbs)	

* Dead-weight without fuel

STANDARD ADJUSTMENT-FORK		
	WP 0518U782	**WP 0518U791**
Compression adjuster	14	14
Rebound adjuster	14	14
Spring	4,2 N/mm	4,2 N/mm
Spring preload	7 mm (0.27in)	6,5 mm (0.26in)
Air chamber length	120 mm (5.2in)	140 mm (5.5in)
Capacity per fork leg	approx. 450 ccm	approx. 450 ccm
Fork oil	SAE 5	SAE 5

STANDARD ADJUSTMENT - SHOCK ABSORBER		
	WP 1218U721	**WP 1218U716**
Compression adjuster	5	5
Rebound adjuster	20	18
Spring	PDS2–250	PDS3-250
Spring preload	6 mm (0.24 in)	6 mm (0.24 in)

TECHNICAL DATA – ENGINE 400/520 SX, MXC, EXC RACING 2001

Type	400 SX	400 MXC	400 EXC	520 SX	520 MXC	520 EXC
Design	Liquid-cooled single cylinder 4-stroke engine with balancer shaft					
Displacement	398 cc			510 cc		
Bore/Stroke	89 / 64 mm			95 / 72 mm		
Ratio	11 : 1					
Fuel	unleaded premium gasoline with at least RON 95					
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain					
Camshaft	0121			5521		
Valve diameter	Intake: 35 mm Exhaust: 30 mm					
Valve clearance cold	0,12 mm (0.0047 in)					
Crank shaft bearing	2 cylinder roller bearing					
Connecting rod bearing	needle bearing					
Top end bearing	bronze bushing					
Piston	aluminium alloy cast			aluminium alloy forged		
Piston rings	1 compression ring, 1 oil scraper ring					
Engine lubrication	pressure circulation lubrication with two rotor pumps					
Engine oil	full synthetic oil (Shell Advance Ultra 4 SAE 10W40)					
Quantity of engine oil	1.25 liters					
Primary ratio	straight geared spur wheels 33:76 Z					
Clutch	multidisc clutch in oil bath					
Transmission claw shifted	6-speed	6-speed	6-speed	4-speed	6-speed	6-speed
Gear ratio						
1st Gear	16:32	16:32	14:34	16:32	16:32	14:34
2nd Gear	18:30	18:30	17:31	18:30	18:30	17:31
3rd Gear	20:28	20:28	19:28	20:28	20:28	19:28
4th Gear	22:26	22:26	22:26	22:26	22:26	22:26
5th Gear	24:24	24:24	24:23	-	24:24	24:23
6th Gear	21:18	21:18	26:21	-	21:18	26:21
Ignition system	contactless DC-CDI ignition with digital advanced system by KOKUSAN					
Generator	12V 40W	12V 150W				
Spark plug	NGK CR8 EK					
Spark plug gap	0.6 mm (0.0236 in)					
Cooling system	liquid cooled, permanent rotation of cooling liquid through mechanically driven water pump					
Cooling liquid	1 liter, 40% antifreeze, 60% water, at least -25° (-13° F)					
Starting equipment	kickstarter	kick - electric starter		kickstarter	kick - electric starter	

BASIC CARBURETOR SETTING

	400 SX RACING 400 MXC/EXC RACING	400 EXC RACING (12kW) 520 EXC RACING (12,5kW)	520 MXC/EXC RACING	520 SX RACING
Type Keihin	FCR 39	FCR 39	FCR 39	FCR 39
-				
Main jet	175	175	175	175
Jet needle	OBDTM	OBDVR (OBDTM)	OBDTM	OBDTM
Idling jet	48	48	48	48
Main air jet	200	200	200	200
Idling air jet	100	100	100	100
Needle clip position	4th from top	3rd from top	2nd from top	3rd from top
Starting jet	85	85	85	85
Mixture control screw open	1	1,25	2,5	1
Slide	15	15	15	15
Performance restrictor	–	slide stop 24,5 mm	–	-
Stop pump membrane	3.2 mm	3.2 mm	3.2 mm	3.2 mm

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TECHNICAL DATA – CHASSIS 400/520 SX, MXC, EXC RACING 2001

	400 SX RACING	520 SX RACING	400/520 EXC RACING	400/520 EXC USA, MXC
Frame	Central tube chrome-moly-steel frame			
Fork	**W**hite **P**ower – **U**p **S**ide **D**own 43 MA			
Wheel travel front/rear	295/320 mm			
Rear suspension	WP **P**rogressive **D**amping **S**ystem shock absorber, aluminium swing arm			
Front brake	Disk brake with carbon-steel brake disc Ø 260 mm (10.2 in), brake caliper floated			
Rear brake	Disk brake with carbon-steel brake disc Ø 220 mm (8.7 in), brake caliper floated			
Brake disc	Wear limit max. 0,4 mm (0,016 in)			
Front tires	80/100 - 21“		90/90 - 21“	80/100 - 21“
Air pressure offroad	1.0 bar (14 psi)		1.0 bar (14 psi)	1.0 bar (14 psi)
Air pressure road driver only	–		1.5 bar (21 psi)	1.5 bar (21 psi)
Rear tires	110/90 - 19“		140/80 - 18“	110/100 - 18“
Air pressure offroad	1.0 bar (14 psi)		1.0 bar (14 psi)	1.0 bar (14 psi)
Air pressure road driver only	–		2.0 bar (28 psi)	2.0 bar (28 psi)
Fuel tank capacity	7.5 liters (2 US gallons)		EXC 8.5 liters (2.1 US gallons)	MXC13 liters (3.25 US gallons)
Final drive ratio	14:50t	14:48t	400-15:45t / 520-15:40t	400-14:50t / 520-14:48t
Chain	O-ring 5/8 x 1/4 "			
Available final sprockets	38t, 40t, 42t, 45t, 48t, 50t, 52t			
Steering head angle	63.5°			
Wheel base	1481 ± 10 mm (58.3 ± 0.4 in)			
Seat height, unloaded	925 mm (36.5 in)			
Ground clearance, unloaded	380 mm (15.1 in)			
Dead-weight *	107 kg (236 lbs)		112 kg (247 lbs)	

* Dead-weight without fuel

STANDARD ADJUSTMENT-FORK		
	WP 0518V705	**WP 0518V706**
Compression adjuster	14	14
Rebound adjuster	12	12
Spring	4,2 N/mm	4,2 N/mm
Spring preload	6 mm	6 mm
Air chamber length	130 mm	150 mm
Fork oil	SAE 5	SAE 5

STANDARD ADJUSTMENT - SHOCK ABSORBER		
	WP 1218V732	**WP 1218V733**
Compression adjuster	5	5
Rebound adjuster	25	25
Spring	PDS6–250	PDS2-250
Spring preload	6 mm	6 mm

TECHNICAL DATA – ENGINE 250/400/520 SX, MXC, EXC RACING 2002

Type	250 EXC	400 SX	400 MXC	400 EXC	520 SX	520 MXC	520 EXC
Design	Liquid-cooled single cylinder 4-stroke engine with balancer shaft						
Displacement	249.6 cc	398 cc			510 cc		
Bore/Stroke	75 / 56.5 mm	89 / 64 mm			95 / 72 mm		
Ratio	12 : 1	11 : 1					
Fuel	unleaded premium gasoline with at least RON 95						
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain						
Camshaft	5532	0121			5521		
Valve diameter Intake	28 mm	35 mm					
Valve diameter Exhaust	24 mm	30 mm					
Valve clearence cold Intake	0.12 mm (0.0047 in)						
Valve clearence cold Exhaust	0.12 mm (0.0047 in)						
Crank shaft bearing	2 cylinder roller bearing						
Connecting rod bearing	needle bearing						
Top end bearing	bronze bushing						
Piston	alluminium alloy cast				alluminium alloy forged		
Piston rings	1 compression ring, 1 oil scraper ring						
Engine lubrication	pressure circulation lubrication with two rotor pumps						
Engine oil	full synthetic oil (Shell Advance Ultra 4 SAE 10W40)						
Quantity of engine oil	1.25 liters						
Primary ratio	straight geared spur wheels 33:76 Z						
Clutch	multi disc clutch in oil bath						
Transmission claw shifted	6-speed	6-speed	6-speed	6-speed	4-speed	6-speed	6-speed
Gear ratio							
1st Gear	14:38	16:32	16:32	14:34	16:32	16:32	14:34
2nd Gear	16;36	18:30	18:30	17:31	18:30	18:30	17:31
3rd Gear	19:34	20:28	20:28	19:28	20:28	20:28	19:28
4th Gear	21:32	22:26	22:26	22:26	22:26	22:26	22:26
5th Gear	23:30	24:24	24:24	24:23	-	24:24	24:23
6th Gear	22:25	21:18	21:18	26:21	-	21:18	26:21
Ignition system	contactless DC-CDI ignition with digital advanced system by KOKUSAN						
Generator	12V 150W	12V 40W	12V 150W				
Spark plug	NGK CR8 EK						
Spark plug gap	0.6 mm (0.02367 in)						
Cooling system	liquid cooled, permanent rotation of cooling liquid through mechanically driven water pump						
Cooling liquid	1 liter, 40% antifreeze, 60% water, at least -25° (-13° F)						
Starting equipment	kick-electric starter	kickstarter	kick - electric starter		kickstarter	kick - electric starter	

BASIC CARBURATOR SETTING				
	250 EXC RACING	250 EXC RACING 8,3 kW	400 SX RACING 400 MXC/EXC RACING	400 EXC RACING 12 kW 520 EXC RACING 12,5 kW
Type Keihin	FCR 39	FCR 39	FCR 39	FCR 39
Main jet	160	160	175	175
Jet needle	OBEVP	OBEVR	OBDTM	OBDVR
Idling jet	48	45	48	48
Main air jet	200	200	200	200
Idling air jet	100	100	100	100
Needle position	6. th from top	6. th from top	4. th from top	3. rd from top
Starting jet	85	85	85	85
Mixture control screw open	1,25	1,0	1	1,25
Slide	15	15	15	15
Performance restrictor	–	Slide stop 24,5 mm	–	Slide stop 24,5 mm
Stop pump membrane	0	0	3,2 mm	3,2 mm

BASIC CARBURATOR SETTING				
	520 SX RACING	520 MXC/EXC RACING	400 EXC-Green	520 EXC-Green
Type Keihin	FCR 39	FCR 39	FCR 39	FCR 39
Main jet	175	175	175	175
Jet needle	OBDTM	OBDTM	OBDVR	OBDVR
Idling jet	48	48	48	45
Main air jet	200	200	200	200
Idling air jet	100	100	100	100
Needle position	3. rd from top	2. nd from top	6. th from top	3. rd from top
Starting jet	85	85	85	85
Mixture control screw open	1	2,5	1,25	1
Slide	15	15	15	15
Performance restrictor	–	–	–	–
Stop pump membrane	3,2 mm	3,2 mm	3,2 mm	3,2 mm

TECHNICAL DATA – CHASSIS 250/400/520 SX, MXC, EXC RACING 2002

	400/520 SX RACING	250/400/520 EXC RACING	400/520 MXC, EXC USA
Frame	Central tube chrome-moly-steel frame		
Fork	WP **USD** 4860 MXMA	WP **U**p **S**ide **D**own 4357 MXMA	
Wheel travel front/rear	295/320 mm		
Rear suspension	WP **P**rogressive **D**amping **S**ystem shock absorber, aluminium swing arm		
Front brake	Disk brake with carbon-steel brake disc Ø 260 mm (10.2 in), brake caliper floated		
Rear brake	Disk brake with carbon-steel brake disc Ø 220 mm (8.7 in), brake caliper floated		
Brake disc	Wear limit max. 0,4 mm (0,016 in)		
Front tires	80/100 - 21“	90/90 - 21“	80/100 - 21“
Air pressure offroad	1.0 bar (14 psi)	1.0 bar (14 psi)	1.0 bar (14 psi)
Air pressure road driver only	–	1.5 bar	1.5 bar (21 psi)
Rear tires	110/90 - 19“	140/80 - 18“	110/100 - 18“
Air pressure offroad	1.0 bar (14 psi)	1.0 bar (14 psi)	1.0 bar (14 psi)
Air pressure road driver only	–	2.0 bar (28 psi)	2.0 bar (28 psi)
Fuel tank capacity	7.5 liters (2 US gallons)	EXC 8.5 liters (2.1 US gallons)	MXC 13 Liter (3.5 gallons)
Final drive ratio	400-14:50t / 520-14:48t	250-12:52t / 400-15:45t / 520-15:40t	400-14:50t / 520-14:48t
Chain	O-Ring 5/8 x 1/4 "		
Available final sprockets	38t, 40t, 42t, 45t, 48t, 50t, 52t		
Bulbs	headlight	HS1 12V 35/35W	
	parking light	12V 5W (Sockel W2, 1x9,5d)	
	instrument lights	12V 1,2W (Sockel W2, 1x4,6d)	
	brake - rear light	12V 21/5W (Sockel BaY15d)	
	flasher light	12V 10W (Sockel Ba15s)	
	license plate illmination	12V 1,2W (Sockel 1x4,6d)	
Battery	maintenance-free battery 12V 4Ah		
Steering head angle	63.5°		
Wheel base	1481 ± 10 mm (58.3 ± 0.4 in)		
Seat height, unloaded	925 mm (36.5 in)		
Ground clearance, unloaded	380 mm (15.1 in)		
Dead-weight *	107 kg (236 lbs)	112 kg (247 lbs)	

* Dead-weight without fuel

STANDARD ADJUSTMENT-FORK		
	WP 1418W710	**WP 0518W712**
Compression adjuster	20	20
Rebound adjuster	16	12
Spring	4.4 N/mm	4.2 N/mm
Spring preload	5 mm	5 mm
Air chamber length	100 mm	130 mm
Fork oil	SAE 5	SAE 5

STANDARD ADJUSTMENT - SHOCK ABSORBER		
	WP 5018 PDS DCC 1218W738	**WP 5018 PDS MCC 1218W739**
Compression adjuster	15 LS (Low speed) 2 HS (high speed)	15
Rebound adjuster	25	25
Spring	PDS7–260	PDS6-260
Spring preload	4 mm	5 mm

Art.-Nr. 3.206.043-E

TECHNICAL DATA – ENGINE 250/450/525 SX, MXC, EXC RACING 2003

Type	**250 EXC**	**450 SX**	**450 MXC**	**450 EXC**	**525 SX**	**525 MXC**	**525 EXC**
Design	Liquid-cooled single cylinder 4-stroke engine with balancer shaft						
Displacement	250 cc	449 cc	448 cc		510 cc		
Bore/Stroke	75 / 56.5 mm	95 / 63.4 mm	89 / 72 mm		95 / 72 mm		
Ratio	12 : 1		11 : 1				
Fuel	unleaded premium gasoline with at least RON 95						
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain						
Camshaft	5532	594/55	590/5521		8/06	590/5521	
Valve diameter Intake	28 mm	35 mm (Titan)	35 mm				
Valve diameter Exhaust	24 mm	30 mm (Titan)	30 mm				
Valve clearence cold Intake	0.12 mm (0.0047 in)						
Valve clearence cold Exhaust	0.12 mm (0.0047 in)						
Crank shaft bearing	2 cylinder roller bearing						
Connecting rod bearing	needle bearing						
Top end bearing	bronze bushing						
Piston	alluminium alloy cast				alluminium alloy forged		
Piston rings	1 compression ring, 1 oil scraper ring						
Engine lubrication	pressure circulation lubrication with two rotor pumps						
Engine oil	full synthetic oil (Shell Advance Ultra 4 SAE 10W40)						
Quantity of engine oil	1.25 liters						
Primary ratio	straight geared spur wheels 33:76 Z						
Clutch	multi disc clutch in oil bath						
Transmission claw shifted	6-speed	4-speed	6-speed	6-speed	4-speed	6-speed	6-speed
Gear ratio							
1st Gear	14:38	16:32	16:32	14:34	16:32	16:32	14:34
2nd Gear	16:36	18:30	18:30	17:31	18:30	18:30	17:31
3rd Gear	19:34	20:28	20:28	19:28	20:28	20:28	19:28
4th Gear	21:32	22:26	22:26	22:26	22:26	22:26	22:26
5th Gear	23:30	-	24:24	24:23	-	24:24	24:23
6th Gear	22:25	-	21:18	26:21	-	21:18	26:21
Ignition system	contactless DC-CDI ignition with digital advanced system by KOKUSAN						
Generator	12V 150W	12V 40W	12V 150W		12V 40W	12V 150W	
Spark plug	NGK DCPR 8 E						
Spark plug gap	0.6 mm (0.02367 in)						
Cooling system	liquid cooled, permanent rotation of cooling liquid through mechanically driven water pump						
Cooling liquid	1 liter, 40% antifreeze, 60% water, at least -25° (-13° F)						
Starting equipment	kick-electric starter	kickstarter	kick - electric starter		kickstarter	kick - electric starter	

BASIC CARBURATOR SETTING				
	250 EXC RACING Six Days	**250 EXC RACING 11 kW**	**450 EXC RACING 12 kW**	**450 SX RACING**
Type	Keihin FCR-MX 37	Keihin FCR-MX 37	Keihin FCR-MX 39	Keihin FCR-MX 41
Carburator-setting number	3700A	3700A	3900A	4122A
Main jet	160	160	178	185
Jet needle	OBETP	OBEKT	OBDVR	OBDTP
Idling jet	42	42	42	40
Main air jet	200	200	200	200
Idling air jet	100	100	100	100
Needle position	3. rd from top	3. rd from top	3. rd from top	4. rd from top
Starting jet	85	85	85	85
Mixture control screw open	1,25	0,75	1,25	1
Slide	15	15	15	15
Performance restrictor	–	Slide stop	Slide stop	–
Stop pump membrane	2.15 mm	2.15 mm	2.15 mm	2.15 mm
Hot start device (bore)	–	–	–	ø 2,2 mm

BASIC CARBURATOR SETTING			
	525 EXC RACING Six Days	**525 EXC RACING 525 MXC RACING 12 kW**	**525 SX RACING**
Type	Keihin FCR-MX 39	Keihin FCR-MX 39	Keihin FCR-MX 41
Carburator-setting number	3900A	3900B	4125A
Main jet	178	178	185
Jet needle	OBDTN	OBDVT	OBDTP
Idling jet	42	42	42
Main air jet	200	200	200
Idling air jet	100	100	100
Needle position	2. rd from top	3. rd from top	4. rd from top
Starting jet	85	85	85
Mixture control screw open	1,5	1,25	1,5
Slide	15	15	15
Performance restrictor	–	Slide stop	–
Stop pump membrane	2.15 mm	2.15 mm	2.15 mm
Hot start device (bore)	–	–	ø 2,5 mm

TECHNICAL DATA – CHASSIS 250/450/525 SX, MXC, EXC RACING 2003

	450/525 SX RACING	250/450/525 EXC RACING	450/525 MXC, EXC USA
Frame	Central tube chrome-moly-steel frame		
Fork	WP **U**p **S**ide **D**own 4860 MXMA		
Wheel travel front/rear	300/335 mm		
Rear suspension	WP **P**rogressive **D**amping **S**ystem shock absorber, aluminium swing arm		
Front brake	Disk brake with carbon-steel brake disc Ø 260 mm (10.2 in), brake caliper floated		
Rear brake	Disk brake with carbon-steel brake disc Ø 220 mm (8.7 in), brake caliper floated		
Brake disc	Wear limit max. 0,4 mm (0,016 in)		
Front tires	80/100 - 21“	90/90 - 21“	80/100 - 21“
Air pressure offroad	1.0 bar (14 psi)	1.0 bar (14 psi)	1.0 bar (14 psi)
Air pressure road driver only	–	1.5 bar	1.5 bar (21 psi)
Rear tires	110/90 - 19“	140/80 - 18“	110/100 - 18“
Air pressure offroad	1.0 bar (14 psi)	1.0 bar (14 psi)	1.0 bar (14 psi)
Air pressure road driver only	–	2.0 bar (28 psi)	2.0 bar (28 psi)
Fuel tank capacity	7 liters (2 US gallons)	EXC 8 liters (2.1 US gallons)	MXC 13 Liter (3.5 gallons)
Final drive ratio	450-14:50t / 525-14:48t	250-12:52t / 450-15:45t / 525-15:40t	450-14:50t / 525-14:48t
Chain	X-Ring 5/8 x 1/4 "		
Available final sprockets	38t, 40t, 42t, 45t, 48t, 50t, 52t		
Bulbs	headlight	HS1 12V 35/35W	
	parking light	12V 5W (Sockel W2, 1x9,5d)	
	brake - rear light	12V 21/5W (Sockel BaY15d)	
	flasher light	12V 10W (Sockel Ba15s)	
	license plate illmination	12V 1,2W (Sockel 1x4,6d)	
Battery	maintenance-free battery 12V 4Ah		
Steering head angle	63.5°		
Wheel base	1481 ± 10 mm (58.3 ± 0.4 in)		
Seat height, unloaded	925 mm (36.5 in)		
Ground clearance, unloaded	380 mm (15.1 in)		

STANDARD ADJUSTMENT - FORK		
	WP4860MXMA 1418X727	**WP4860MXMA 1418X737**
Compression adjuster	18	21
Rebound adjuster	19	20
Spring	4.4 N/mm	4.2 N/mm
Spring preload	5 mm (0.20 in)	5 mm (0.20 in)
Air chamber length	90 mm (3.6 in)	110 mm (4.4 in)
Fork oil	SAE 5	SAE 5

STANDARD ADJUSTMENT-SHOCK ABSORBER		
	WP 5018 PDS DCC 1218X760	**WP 5018 PDS MCC 1218X761**
Compression adjuster	15 LS (low speed) 2 HS (high speed)	17
Rebound adjuster	26	26
Spring	76-95/260	71-90/260
Spring preload	6 mm (0.24 in)	8 mm (0.32 in)

TECHNICAL DATA – ENGINE 250/450/525 SX, MXC, EXC RACING 2004

Type	250 EXC	450 SX	450 MXC	450 EXC	525 SX	525 MXC-G USA	525 EXC 525 MXC Desert
Design	Liquid-cooled single cylinder 4-stroke engine with balancer shaft						
Displacement	250 cc	449 cc	448 cc		510 cc		
Bore/Stroke	75 / 56.5 mm	95 / 63.4 mm	89 / 72 mm		95 / 72 mm		
Ratio	12:1		11:1				
Fuel	unleaded fuel with at least RON 95 (USA = Premium RON 91)						
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain						
Camshaft	5532	590/5521	590/5521		55/21	590/5521	
Valve diameter Intake	28 mm	35 mm (Titan)	35 mm				
Valve diameter Exhaust	24 mm	30 mm (Titan)	30 mm				
Valve clearence cold Intake	0.12 mm (0.0047 in)						
Valve clearence cold Exhaust	0.12 mm (0.0047 in)						
Crank shaft bearing	2 cylinder roller bearing						
Connecting rod bearing	needle bearing						
Top end bearing	bronze bushing						
Piston alluminium alloy -	cast	forged	cast		forged		
Piston rings	1 compression ring, 1 oil scraper ring						
Engine lubrication	pressure circulation lubrication with two rotor pumps						
Engine oil	full synthetic oil (Motorex Power Synt 4T 10W/50)						
Quantity of engine oil	1.25 liters						
Primary ratio	straight geared spur wheels 33:76 Z						
Clutch	multi disc clutch in oil bath						
Transmission claw shifted	6-speed	4-speed	6-speed	6-speed	4-speed	6-speed	6-speed
Gear ratio							
1st Gear	14:38	16:32	16:32	14:34	16:32	16:32	14:34
2nd Gear	16:36	18:30	18:30	17:31	18:30	18:30	17:31
3rd Gear	19:34	20:28	20:28	19:28	20:28	20:28	19:28
4th Gear	21:32	22:26	22:26	22:26	22:26	22:26	22:26
5th Gear	23:30	-	24:24	24:23	-	24:24	24:23
6th Gear	22:25	-	21:18	26:21	-	21:18	26:21
Ignition system	contactless DC-CDI ignition with digital advanced system by KOKUSAN						
Generator	12V 150W	-	12V 150W		-	12V 150W	
Spark plug	NGK DCPR 8 E						
Spark plug gap	0.6 mm (0.02367 in)						
Cooling system	liquid cooled, permanent rotation of cooling liquid through mechanically driven water pump						
Cooling liquid	1 liter, 40% antifreeze, 60% water, at least -25° (-13° F)						
Starting equipment	kick-electric starter	kickstarter	kick - electric starter		kickstarter	kick - electric starter	

BASIC CARBURATOR SETTING				
	250 EXC RACING Six Days	**250 EXC RACING 11 kW**	**250 EXC-G USA**	**450 EXC RACING Six Days**
Type	Keihin FCR-MX 37	Keihin FCR-MX 37	Keihin FCR-MX 37	Keihin FCR-MX 39
Carburator-setting number	3700A	3700A	3700A	3900A
Main jet	160	160	160	178
Jet needle	OBETP	OBEKT	OBEKT	OBDTN
Idling jet	42	42	42	42
Main air jet	200	200	200	200
Idling air jet	100	100	100	100
Needle position	3. rd from top	3. rd from top	3. rd from top	2. rd from top
Starting jet	85	85	85	85
Mixture control screw open	1.25	0.75	0.75	1.5
Slide	15	15	15	15
Performance restrictor	–	Slide stop	–	–
Stop pump membrane	2.15 mm	2.15 mm	2.15 mm	2.15 mm
Hot start device (bore)	–	–	–	–

BASIC CARBURATOR SETTING				
	450 EXC RACING 12 KW	**450 EXC-G 450 MXC-G USA**	**450 SX RACING**	**525 EXC RACING Six Days**
Type	Keihin FCR-MX 39	Keihin FCR-MX 39	Keihin FCR-MX 41	Keihin FCR-MX 39
Carburator-setting number	3900A	3900A	4122A	3900B
Main jet	178	178	185	178
Jet needle	OBDVR	OBDVR	OBDTP	OBDTN
Idling jet	42	42	40	42
Main air jet	200	200	200	200
Idling air jet	100	100	100	100
Needle position	3. rd from top	3. rd from top	4. rd from top	2. rd from top
Starting jet	85	85	85	85
Mixture control screw open	1.25	1.25	1.0	1.5
Slide	15	15	15	15
Performance restrictor	Slide stop	–	–	–
Stop pump membrane	2.15 mm	2.15 mm	2.15 mm	2.15 mm
Hot start device (bore)	–	–	ø 2.2 mm	–

BASIC CARBURATOR SETTING			
	525 EXC RACING 525 MXC Desert 12 kW	**525 EXC-G 525 MXC-G USA**	**525 SX RACING**
Type	Keihin FCR-MX 39	Keihin FCR-MX 39	Keihin FCR-MX 41
Carburator-setting number	3900B	3900B	4125A
Main jet	178	178	185
Jet needle	OBDVT	OBDVT	OBDTP
Idling jet	42	42	42
Main air jet	200	200	200
Idling air jet	100	100	100
Needle position	3. rd from top	3. rd from top	4. rd from top
Starting jet	85	85	85
Mixture control screw open	1.25	1.25	1.5
Slide	15	15	15
Performance restrictor	Slide stop	–	–
Stop pump membrane	2.15 mm	2.15 mm	2.15 mm
Hot start device (bore)	–	–	ø 2.5 mm

TECHNICAL DATA - ENGINE 400 EXC,450/525 SMR, 450/540 SXS RACING 2004

TYPE	400 EXC	450 SMR	525 SMR	450 SXS	540 SXS
Design	Liquid-cooled single cylinder 4-stroke engine with balancer shaft				
Displacement	398 cm^3	450 cm^3	510 cm^3	449 cm^3	534 cm^3
Bore/Stroke	89/64 mm	95/63.4 mm	95/72 mm	95/63.4 mm	100/68 mm
Ratio	12 : 1		11:1	12:1	
Fuel	unleaded fuel with at least RON 95 (USA = Premium RON 91)				
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain				
Camshaft	595/0121	590/5521	590/5521	55/21	8/06
Valve diameter intake	35 mm	35 mm (Titan)			
Valve diameter exhaust	30 mm	30 mm (Titan)			
Valve clearence cold intake	0.12 mm				
Valve clearence cold exhaust	0.12 mm				
Crank shaft bearing	2 cylinder roller bearing				
Connecting rod bearing	needle bearing				
Top end bearing	bronze bushing				
Piston alluminium alloy -	bronze bushing	forged			
Piston rings	1 compression ring, 1 oil scraper ring				
Engine lubrication	pressure circulation lubrication with two rotor pumps				
Engine oil	full synthetic oil (Motorex Power Synt 4T 10W/50)				
Quantity of engine oil	1.25 liters				
Primary ratio	straight geared spur wheels 33:76				
Clutch	multi disc clutch in oil bath				
Transmission claw shifted	6-speed	6-speed		6-speed	4-speed
Gear ratio 1st Gear	14:34	16:32		16:32	16:32
2nd Gear	17:31	18:30		16:28	18:30
3rd Gear	19:28	20:28		21:32	20:28
4th Gear	22:26	22:26		22:29	22:26
5th Gear	24:23	24:24		23:26	--
6th Gear	26:21	21:18		21:18	--
Ignition system	contactless DC-CDI ignition with digital advanced system by KOKUSAN				
Generator	12V 150W	12V 40W			
Spark plug	NGK DCPR 8 E				
Spark plug gap	0.6 mm				
Cooling system	liquid cooled, permanent rotation of cooling liquid through mechanically driven water pump				
Cooling liquid	1 liter, 50% antifreeze, 50% water, at least -25°				
Starting equipment	kick - electric starter	kickstarter			

BASIC CARBURATOR SETTING					
	400 EXC RACING 12 kW	**450 SMR**	**525 SMR**	**450 SXS**	**540 SXS**
Type – Keihin	FCR-MX 39	FCR-MX 41	FCR-MX 41	FCR-MX 41	FCR-MX 41
Carburator-setting number	3900 C	4122 A	4125 A	4125 A	4125 A
Main jet	178	185	185	185	190
Jet needle	OBDVR	OBDTP	OBDTP	OBDTP	OBDTP
Idling jet	42	40	42	40	42
Main air jet	200	200	200	200	200
Idling air jet	100	100	100	100	100
Needle position	1st from top	4th from top	4th from top	4th from top	4th from top
Starting jet	85	85	85	85	85
Mixture control screw open	1.25	1	1.5	1	1.5
Slide	15	15	15	15	15
Performance restrictor	slide stop	--	–	--	--
Stop pump membrane	2.15 mm	2.15 mm	2.15 mm	2.15 mm	2.15 mm
Hot start device (bore)	–	Ø 2.2 mm	Ø 2.5 mm	Ø 2.2 mm	Ø 2.5 mm

TECHNICAL DATA – CHASSIS 250/450/525 SX, MXC, EXC RACING 2004

	450/525 SX	250/450/525 EXC, MXC Desert EU	450/525 MXC-G, EXC-G USA
Frame	Central tube chrome-moly-steel frame		
Fork	WP **U**p **S**ide **D**own 4860 MXMA		
Wheel travel front/rear	300/335 mm		
Rear suspension	WP **P**rogressive **D**amping **S**ystem shock absorber, aluminium swing arm		
Front brake	Disk brake with carbon-steel brake disc Ø 260 mm (10.2 in), brake caliper floated		
Rear brake	Disk brake with carbon-steel brake disc Ø 220 mm (8.7 in), brake caliper floated		
Brake disc	Wear limit max. 0,4 mm (0,016 in)		
Front tires	80/100 - 21“	90/90 - 21“	80/100 - 21“
Air pressure offroad	1.0 bar (14 psi)	1.0 bar (14 psi)	1.0 bar (14 psi)
Air pressure road driver only	–	1.5 bar	1.5 bar (21 psi)
Rear tires	110/90 - 19“	140/80 - 18“	110/100 - 18“
Air pressure offroad	1.0 bar (14 psi)	1.0 bar (14 psi)	1.0 bar (14 psi)
Air pressure road driver only	–	2.0 bar (28 psi)	2.0 bar (28 psi)
Fuel tank capacity	7 liters (2 US gallons)	EXC 8,5 liters (2.1 US gallons)	MXC 13 Liter (3.5 gallons)
Final drive ratio	450-14:52t / 525-14:48t	250-15:45t / 450-15:45t / 525-15:45t	450-14:50t / 525-14:48t
Chain	X-Ring 5/8 x 1/4 "		
Available final sprockets	38t, 40t, 42t, 45t, 48t, 50t, 52t		
Bulbs	headlight	HS1 12V 35/35W	
	parking light	12V 5W (Sockel W2, 1x9,5d)	
	brake - rear light	12V 21/5W (Sockel BaY15d)	
	flasher light	12V 10W (Sockel Ba15s)	
	license plate illmination	12V 1,2W (Sockel 1x4,6d)	
Battery	maintenance-free battery 12V 4Ah		
Steering head angle	63.5°		
Wheel base	1481 ± 10 mm (58.3 ± 0.4 in)		
Seat height, unloaded	925 mm (36.5 in)		
Ground clearance, unloaded	380 mm (15.1 in)		

STANDARD ADJUSTMENT - FORK	WP4860MXMA 1418Y747	WP4860MXMA 1418Y748
Compression adjuster	18	20
Rebound adjuster	19	20
Spring	4.6N/mm	4.2 N/mm
Spring preload	5 mm (0.20 in)	5 mm (0.20 in)
Air chamber length	100 mm (3.9 in)	120 mm (4.7 in)
Fork oil	SAE 5	SAE 5

STANDARD ADJUSTMENT-SHOCK ABSORBER	WP 5018 PDS DCC 1218Y771	WP 5018 PDS MCC 1218Y772
Compression adjuster	12 LS (low speed) 2 HS (high speed)	19
Rebound adjuster	22	24
Spring	88/250	88/250
Spring preload	5 mm (0.2 in)	6 mm (0.24 in)

TECHNICAL DATA - CHASIS 400 EXC, 450/525 SMR, 450/540 SXS RACING 2004

CHASIS	400 EXC	450/525 SMR	450/540 SXS
Frame	Central tube chrome-moly-steel frame		
Fork	4860 PA/MA	WP Up Side Down 4860 MA	
Wheel travel front/rear	300/335 mm	285/300 mm	300/335 mm
Rear suspension	WP Progressive Damping System shock absorber, aluminum swing arm		
Front brake	Disc brake with carbon-steel brake disc, brake caliper floated		
	Ø 260 mm	Ø 310 mm	Ø 260 mm
Rear brake	Disc brake with carbon-steel brake disc, brake caliper floated		
	Ø 220 mm		
Brake disc	Wear limit max. 2.5 mm front and 3.5 mm rear		
Front tires Air pressure offroad Air pressure road driver only	90/90 - 21“ 1.0 bar 1.5 bar	120/75 R 17 KR 106 -- 1.5 bar	80/100 - 21“ 1.0 bar --
Rear tires Air pressure offroad Air pressure road driver only	140/80 - 18“ 1.0 bar 2.0 bar	165/55 R 17 KR 108 -- 1.6 bar	110/90 - 19“ 1.0 bar --
Fuel tank capacity	8.5 liters	7.0 liters	
Final drive ratio	15:45	14:45	450-14:52 / 525-14:48
Chain	X-Ring 5/8 x 1/4 "		
Available final sprockets	38Z, 40Z, 42Z, 45Z, 48Z, 50Z, 52Z		
Bulbs	headlight HS1 12V 35/35W parking light 12V 5W (base W2. 1x9.5d) brake - rear light 12V 21/5W (base BaY15d) flasher light 12V 10W (base Ba15s) license plate illmination 12V 1.2W (base 1x4.6d)	--	--
Battery	maintenance-free battery 12V 4Ah	--	--
Steering head angle	63.5°		
Wheel base	1481 ± 10 mm		
Seat height, unloaded	925 mm	855 mm	925 mm

STANDARD ADJUSTMENT - FORK			
	400 EXC	**450/525 SMR**	**450/540 SXS**
	WP4860MA 1418Y748	WP4860MXMA 1418Y767	WP4860MXMA 1418Y762
Compression adjuster	20	19	18
Rebound adjuster	20	12	20
Spring	4.2 N/mm	4.6 N/mm	4.4 N/mm
Spring preload	5 mm	5 mm	513* mm
Air chamber length	120 mm	100 mm	110 mm
Fork oil	SAE 5	SAE 5	SAE 5

*Total length including pretension spacer

STANADARD ADJUSTMENT-SHOCK ABSORBER			
	400 EXC	**450/525 SMR**	**450/540 SXS**
	WP 5018 PDS MCC 1218Y772	WP 5018 PDS DCC 1218Y787	WP 5018 PDS DCC 1218Y780
Compression adjuster	19	13 LS (low speed) 2 HS (high speed)	15 LS (low speed) 2 HS (high speed)
Rebound adjuster	24	19	24
Spring	88/250	92/250	87.5/240
Spring preload	6 mm	8 mm	7 mm

TECHNICAL DATA - ENGINE 250/400/450/525 SX,MXC,EXC RACING 2005

ENGINE	250 EXC	400 EXC	450 SX	450 MXC	450 EXC	525 SX	525 MXC-G	525 EXC 525 MXC DESERT
Design	Liquid-cooled single cylinder 4-stroke engine with balancer shaft							
Displacement	250 cm^3	398 cm^3	449 cm^3	448 cm^3		510 cm^3		
Bore/Stroke	75 / 56.5 mm	89 / 64 mm	95 / 63.4 mm	89 / 72 mm		95 / 72 mm		
Ratio	12 : 1			11 : 1				
Fuel	unleaded fuel with at least RON 95 (USA = Premium RON 91)							
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain							
Camshaft	5532	595/0121	590/5521	590/5521		55/21	590/5521	
Valve diameter intake	28 mm	35 mm	35 mm (Titan)	35 mm				
Valve diameter exhaust	24 mm	30 mm	30 mm (Titan)	30 mm				
Valve clearence cold intake	0.12 mm (0.0047 in)							
Valve clearence cold exhaust	0.12 mm (0.0047 in)							
Crank shaft bearing	2 cylinder roller bearing							
Connecting rod bearing	needle bearing							
Top end bearing	bronze bushing							
Piston alluminium alloy -	cast		forged	cast		forged		
Piston rings	1 compression ring, 1 oil scraper ring							
Engine lubrication	pressure circulation lubrication with two rotor pumps							
Engine oil	full synthetic oil (Motorex Power Synt 4T 10W/50)							
Quantity of engine oil	1.25 liters							
Primary ratio	straight geared spur wheels 33:76 Z							
Clutch	multi disc clutch in oil bath							
Transmission claw shifted	6-speed	6-speed	4-speed	6-speed	6-speed	4-speed	6-speed	6-speed
Gear ratio 1st Gear	14:38	14:34	16:32	16:32	14:34	16:32	16:32	14:34
2nd Gear	16:36	17:31	18:30	18:30	17:31	18:30	18:30	17:31
3rd Gear	19:34	19:28	20:28	20:28	19:28	20:28	20:28	19:28
4th Gear	21:32	22:26	22:26	22:26	22:26	22:26	22:26	22:26
5th Gear	23:30	24:23	-	24:24	24:23	-	24:24	24:23
6th Gear	22:25	26:21	-	21:18	26:21	-	21:18	26:21
Ignition system	contactless DC-CDI ignition with digital advanced system by KOKUSAN							
Generator	12V 150W		-	12V 150W		-	12V 150W	
Spark plug	NGK DCPR 8 E							
Spark plug gap	0.6 mm (0.02367 in)							
Cooling system	liquid cooled, permanent rotation of cooling liquid through mechanically driven water pump							
Cooling liquid	1 liter, 40% antifreeze, 60% water, at least -25° (-13° F)							
Starting equipment	kick - electric starter		kickstarter	kick - electric starter		kickstarter	kick - electric starter	

BASIC CARBURATOR SETTING				
	250 EXC RACING EU / AUS 11 kW	**400 EXC RACING EU / AUS 12 kW**	**400 EXC-G RACING USA**	**450 EXC RACING EU / AUS 12 kW**
Type – Keihin	FCR-MX 37	FCR-MX 39	FCR-MX 39	FCR-MX 39
Carburator-setting number	3700A	3900C	3900C	3900A
Main jet	160	178	178	178
Jet needle	OBEKT	OBDVR	OBDVR	OBDVR
Idling jet	42	42	42	42
Main air jet	200	200	200	200
Idling air jet	100	100	100	100
Needle position	3rd from top	1st from top	1st from top	3rd from top
Starting jet	85	85	85	85
Mixture control screw open	0.75	1.25	1.25	1.25
Slide	15	15	15	15
Performance restrictor	Slide stop	Slide stop	–	Slide stop
Stop pump membrane	2.15 mm	2.15 mm	2.15 mm	2.15 mm
Hot start device (bore)	–	–	–	–

BASIC CARBURATOR SETTING				
	450 EXC-G / MXC-G RACING USA	**450 EXC RACING SIXDAYS**	**450 SX/SXS RACING**	**525 EXC / MXC RACING / DESERT RACING EU / AUS 12 kW**
Type – Keihin	FCR-MX 39	FCR-MX 39	FCR-MX 41	FCR-MX 39
Carburator-setting number	3900A	3900A	4122A	3900B
Main jet	178	178	185	178
Jet needle	OBDVR	OBDTR	OBDTP	OBDVT
Idling jet	42	42	40	42
Main air jet	200	200	200	200
Idling air jet	100	100	100	100
Needle position	3rd from top	4th from top	4th from top	3rd from top
Starting jet	85	85	85	85
Mixture control screw open	1.25	2.0	1.0	1.25
Slide	15	15	15	15
Performance restrictor	–	–	–	Slide stop
Stop pump membrane	2.15 mm	2.15 mm	2.15 mm	2.15 mm
Hot start device (bore)	–	–	Ø 2.2 mm	–

BASIC CARBURATOR SETTING			
	525 MXC-G / EXC-G RACING USA	**525 EXC RACING SIXDAYS**	**525 SX RACING**
Type – Keihin	FCR-MX 39	FCR-MX 39	FCR-MX 41
Carburator-setting number	3900B	3900B	4125A
Main jet	178	178	185
Jet needle	OBDVT	OBDTR	OBDTP
Idling jet	42	42	42
Main air jet	200	200	200
Idling air jet	100	100	100
Needle position	3rd from top	5th from top	4th from top
Starting jet	85	85	85
Mixture control screw open	1.25	2.0	1.5
Slide	15	15	15
Performance restrictor	–	–	–
Stop pump membrane	2.15 mm	2.15 mm	2.15 mm
Hot start device (bore)	–	–	Ø 2.5 mm

TECHNICAL DATA - ENGINE 450/525 SMR, 540 SXS, 610 CRATE RACING 2005

TYPE	450 SMR	525 SMR	450 SXS	540 SXS	610 CRATE
Design	Liquid-cooled single cylinder 4-stroke engine with balancer shaft				
Displacement	449.4 cm^3	449.4 cm^3	449.4 cm^3	533.8 cm^3	612.3 cm^3
Bore/Stroke	95/63.4 mm	95/72 mm	95/63.4 mm	100/68 mm	100/78 mm
Ratio	12 : 1	11:1	12 : 1	11.5:1	11.85:1
Fuel	unleaded fuel with at least RON 95 (USA = Premium RON 91)		unleaded fuel with at least RON 98		
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain				
Camshaft	590/5521		55/21	8/06	8/07
Valve diameter intake	35 mm (Titan)				
Valve diameter exhaust	30 mm (Titan)				
Valve clearence cold intake	0.12 mm				
Valve clearence cold exhaust	0.12 mm				
Crank shaft bearing	2 cylinder roller bearing				cylinder roller-/ball bearing
Connecting rod bearing	needle bearing				
Top end bearing	bronze bushing				
Piston alluminium alloy -	forged				
Piston rings	1 compression ring, 1 oil scraper ring				
Engine lubrication	pressure circulation lubrication with two rotor pumps				
Engine oil	full synthetic oil (Motorex Power Synt 4T 10W/50)				
Quantity of engine oil	1.25 liters				
Primary ratio	straight geared spur wheels 33:76				
Clutch	multi disc clutch in oil bath				
Transmission claw shifted	6-speed		6-speed	4-speed	6-speed
Gear ratio 1st Gear	16:32		16:32	16:32	16:32
2nd Gear	18:30		16:28	18:30	18:30
3rd Gear	20:28		21:32	20:28	20:28
4th Gear	22:26		22:29	22:26	22:26
5th Gear	24:24		23:26	--	24:24
6th Gear	21:18		21:18	--	21:18
Ignition system	contactless DC-CDI ignition with digital advanced system by KOKUSAN				
Generator	12 V 40 W				
Spark plug	NGK DCPR 8 E				
Spark plug gap	0.6 mm				
Cooling system	liquid cooled, permanent rotation of cooling liquid through mechanically driven water pump				
Cooling liquid	1 liter, 50% antifreeze, 50% water, at least -25°				
Starting equipment	kickstarter				

BASIC CARBURATOR SETTING				
	450 SMR	**525 SMR**	**540 SXS**	**610 CRATE**
Type – Keihin	FCR-MX 41	FCR-MX 41	FCR-MX 41	FCR-MX 41
Carburator-setting number	4122A	4125A	4122A	4122A
Main jet	185	185	185	190
Jet needle	OBDTP	OBDTP	OBDTP	OBDTP
Idling jet	40	42	42	45
Main air jet	200	200	200	200
Idling air jet	100	100	100	100
Needle position	4th from top	4th from top	4th from top	4th from top
Starting jet	85	85	85	85
Mixture control screw open	1.0	1.5	1.0	1.5
Slide	15	15	15	15
Performance restrictor	–	–	–	–
Stop pump membrane	858 / 2.15 mm	858 / 2.15 mm	858 / 2.15 mm	858 / 2.15 mm
Hot start device (bore)	Ø 2.2 mm	Ø 2.5 mm	Ø 2.2 mm	Ø 2.2 mm

TECHNICAL DATA - CHASIS 250/400/450/525 SX,MXC, EXC RACING 2005

CHASSIS	450/525 SX	250/400/450/525 EXC/MXC DESERT	450/525 MXC-G, EXC-G USA
Frame	Central tube chrome-moly-steel frame		
Fork	4860 PA/MA	WP Up Side Down 4860 MA	
Wheel travel front/rear	300/335 mm		
Rear suspension	WP Progressive Damping System shock absorber, aluminum swing arm		
Front brake	Disc brake with carbon-steel brake disc Ø 260 mm (10.2 in), brake caliper floated		
Rear brake	Disc brake with carbon-steel brake disc Ø 220 mm (8.7 in), brake caliper floated		
Brake disc	Wear limit max. 2.5 mm front and 3.5 mm rear		
Front tires Air pressure offroad Air pressure road driver only	80/100 - 21“ 1.0 bar (14 psi) –	90/90 - 21“ 1.0 bar (14 psi) 1.5 bar	80/100 - 21“ 1.0 bar (14 psi) 1.5 bar (21 psi)
Rear tires Air pressure offroad Air pressure road driver only	110/90 - 19“ 1.0 bar (14 psi) –	140/80 - 18“ 1.0 bar (14 psi) 2.0 bar (28 psi)	110/100 - 18“ 1.0 bar (14 psi) 2.0 bar (28 psi)
Fuel tank capacity	7 liters (2 US gallons)	EXC 8.5 liters (2.1 US gallons) MXC 13 liters (3.5 gallons)	
Final drive ratio	450-14:52Z / 525-14:48Z	250-15:45Z / 450-15:45Z / 525-15:45Z	450-14:50Z / 525-14:48Z
Chain	X-Ring 5/8 x 1/4 "		
Available final sprockets	38Z, 40Z, 42Z, 45Z, 48Z, 50Z, 52Z		
Bulbs	headlight 12V 35/35W (base BA20D) parking light 12V 5W (base W2. 1x9.5d) brake - rear light 12V 21/5W (base BaY15d) flasher light 12V 10W (base Ba15s) license plate illmination 12V 1.2W (base 1x4.6d)		
Battery	maintenance-free battery 12V 4Ah		
Steering head angle	63.5°		
Wheel base	1481 ± 10 mm (58.3 ± 0.4 in)		
Seat height, unloaded	925 mm (36.5 in)		
Ground clearance, unloaded	380 mm (15.1 in)		

STANDARD ADJUSTMENT - FORK		
	SX	**MXC, MXC Desert, EXC, EXC-G**
	WP4860PA/MA 14187A05	WP4860MA 14187A06
Compression adjuster	22	20
Rebound adjuster	20	20
Spring	4.6 N/mm	4.2 N/mm
Spring preload	5 mm	5 mm
Air chamber length	100 mm	110 mm
Fork oil	SAE 5	SAE 5

STANADARD ADJUSTMENT-SHOCK ABSORBER		
	SX	**MXC, MXC Desert, EXC, EXC-G**
	WP 5018 PDS DCC 12187A05	WP 5018 PDS MCC 12187A06
Compression adjuster	15 LS (low speed) 2 HS (high speed)	15
Rebound adjuster	22	22
Spring	88/250	88/250
Spring preload	7 mm	7 mm

TECHNICAL DATA - CHASIS 450/525 SMR, 450/540 SXS RACING 2005

CHASSIS	450/525 SMR	450/540 SXS
Frame	Central tube chrome-moly-steel frame	
Fork	WP Up Side Down 4860 MA	
Wheel travel front/rear	285/300 mm	300/335 mm
Rear suspension	WP Progressive Damping System shock absorber, aluminum swing arm	
Front brake	Disc brake with carbon-steel brake disc, brake caliper floated	
	Ø 310 mm	Ø 260 mm
Rear brake	Disc brake with carbon-steel brake disc, brake caliper floated	
	Ø 220 mm	
Brake disc	Wear limit max. 2.5 mm front and 3.5 mm rear	
Front tires Air pressure offroad Air pressure road driver only	120/75 R 17 KR 106 -- 1.5 bar	80/100 - 21“ 1.0 bar --
Rear tires Air pressure offroad Air pressure road driver only	165/55 R 17 KR 108 -- 1.6 bar	110/90 - 19“ 1.0 bar --
Fuel tank capacity	7.0 liters	
Final drive ratio	14:45	450-14:52 / 525-14:48
Chain	X-Ring 5/8 x 1/4 "	
Available final sprockets	38Z, 40Z, 42Z, 45Z, 48Z, 50Z, 52Z	
Steering head angle	63.5°	
Wheel base	1481 ± 10 mm	
Seat height, unloaded	855 mm	925 mm

STANDARD ADJUSTMENT - FORK		
	450/525 SMR	**450/540 SXS**
	WP4860PAMA 14.18.7A.18	WP 4860 MXMA PA CC 14.18.7A.16
Compression adjuster	19	24
Rebound adjuster	12	25
Spring	4.6 N/mm	4.6 N/mm
Spring preload	20 mm	5.5 mm
Air chamber length	100 mm	-
Fork oil	SAE 5	SAE 5

STANADARD ADJUSTMENT-SHOCK ABSORBER		
	450/525 SMR	**450/540 SXS**
	WP 5018 PDS DCC 12.18.7A.15	WP 5018 PDS II DCC 12.18.7A.12
Compression adjuster	13 LS (low speed) 2 HS (high speed)	12 LS (low speed) 2 HS (high speed)
Rebound adjuster	19	25
Spring	88/250	88/250
Spring preload	8 mm	5 mm

TECHNICAL DATA - ENGINE SX / XC / EXC RACING 2006

ENGINE	250 EXC	400 EXC	450 SX	450 XC	450 EXC	525 SX	525 XC	525 EXC
Design	Liquid-cooled single cylinder 4-stroke engine with balancer shaft							
Displacement	250 ccm	398 ccm	449 ccm	449 ccm	448 ccm	510 ccm		
Bore/Stroke	75 / 56.5 mm	89 / 64 mm	95 / 63.4 mm	95 / 63.4 mm	89 / 72 mm	95 / 72 mm		
Ratio	12 : 1	11 : 1	12 : 1	12 : 1	11 : 1	11 : 1		
Fuel	unleaded fuel with at least RON 95 (USA = Premium PON 91)							
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain							
Camshaft	5532	595/0121	590/5521	590/5521	590/5521	590/5521		
Valve diameter intake	28 mm	35 mm	35 mm (Titan)	35 mm	35 mm	35 mm		
Valve diameter exhaust	24 mm	30 mm	30 mm (Titan)	30 mm	30 mm	30 mm		
Valve clearence cold intake	0.10 - 0.15 mm							
Valve clearence cold exhaust	0.10 - 0.15 mm							
Crank shaft bearing	2 cylinder roller bearing							
Connecting rod bearing	needle bearing							
Top end bearing	bronze bushing							
Piston alluminium alloy	cast	cast	forged	forged	cast	forged		
Piston rings	1 compression ring, 1 oil scraper ring							
Engine lubrication	pressure circulation lubrication with two rotor pumps							
Engine oil	full synthetic oil (Motorex Power Synt 4T 10W/50)							
Quantity of engine oil	1.25 liters							
Primary ratio	straight geared spur wheels 33:76							
Clutch	multi disc clutch in oil bath							
Transmission claw shifted	6-speed	6-speed	4-speed	6-speed	6-speed	4-speed	6-speed	6-speed
Gear ratio 1st Gear	14:38	14:34	16:32	14:34	14:34	16:32	16:32	14:34
2nd Gear	16:36	17:31	18:30	17:31	17:31	18:30	18:30	17:31
3rd Gear	19:34	19:28	20:28	20:28	19:28	20:28	20:28	19:28
4th Gear	21:32	22:26	22:26	22:26	22:26	22:26	22:26	22:26
5th Gear	23:30	24:23	–	24:24	24:23	–	24:24	24:23
6th Gear	22:25	26:21	–	21:18	26:21	–	21:18	26:21
Ignition system	contactless DC-CDI ignition with digital advanced system by KOKUSAN							
Generator	12V 150W	12V 150W	12 V 40 W	12V 150W		12 V 40 W	12V 150W	
Spark plug	NGK DCPR 8 E							
Spark plug gap	0.6 mm							
Cooling system	liquid cooled, permanent rotation of cooling liquid through mechanically driven water pump							
Cooling liquid	1.0 liters, 50% anti freeze, 50% pure water, at least -25 °C							
Starting equipment	kick - electric starter		kickstarter	kick - electric starter		kickstarter	kick - electric starter	

TECHNICAL DATA - ENGINE SMR / SXS 2006

ENGINE	450 SMR	560 SMR	450 SXS	540 SXS
Design	Liquid-cooled single cylinder 4-stroke engine with balancer shaft			
Displacement	449 ccm	566 ccm	449 ccm	534 ccm
Displacement	95 / 63.4 mm	100 / 72 mm	95 / 63.4 mm	100 / 68 mm
Ratio	12 : 1	11 : 1	12.5 : 1	12 : 1
Fuel	unleaded fuel with at least RON 95 (USA = Premium PON 91)			
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain			
Camshaft	590/5521	8/06	5532	8/06
Valve diameter intake	35 mm (Titan)			
Valve diameter exhaust	30 mm (Titan)			
Valve clearence cold intake	0.10 - 0.15 mm			
Valve clearence cold exhaust	0.10 - 0.15 mm			
Crank shaft bearing	2 cylinder roller bearing			
Connecting rod bearing	needle bearing			
Top end bearing	bronze bushing			
Piston alluminium alloy	forged			
Piston rings	1 compression ring, 1 oil scraper ring			
Engine lubrication	pressure circulation lubrication with two rotor pumps			
Engine oil	full synthetic oil (Motorex Power Synt 4T 10W/50)			
Quantity of engine oil	1.25 liters			
Primary ratio	straight geared spur wheels 33:76			
Clutch	multi disc clutch in oil bath			
Transmission claw shifted	6-speed		5-speed	4-speed
Gear ratio 1st Gear	16:32		16:32	16:32
2nd Gear	18:30		18:30	18:30
3rd Gear	20:28		20:28	20:28
4th Gear	22:26		22:26	22:26
5th Gear	24:24		24:24	–
6th Gear	21:18		–	–
Ignition system	contactless DC-CDI ignition with digital advanced system by KOKUSAN			
Generator	12 V 40 W			
Spark plug	NGK DCPR 8 E			
Spark plug gap	0.6 mm			
Cooling system	liquid cooled, permanent rotation of cooling liquid through mechanically driven water pump			
Cooling liquid	1.0 liter, 50% anti freeze, 50% pure water, at least -25 °C			
Starting equipment	kickstarter			

BASIC CARBURATOR SETTING				
	250 EXC RACING EU	**400 EXC RACING EU**	**400 EXC-G RACING USA**	**450 EXC RACING EU / AUS**
Type – Keihin	FCR-MX 37	FCR-MX 39	FCR-MX 39	FCR-MX 39
Carburator-setting number	3700B	3900D	3900D	3900E
Main jet	160	178	178	178
Jet needle	OBEKT	OBDVR	OBDVR	OBDVR
Idling jet	42	42	42	42
Main air jet	200	200	200	200
Idling air jet	100	100	100	100
Needle position	3rd from top	1st from top	1st from top	3rd from top
Starting jet	85	85	85	85
Mixture control screw open	0.75	1.25	1.25	1.25
Slide	15	15	15	15
Performance restrictor	Slide stop	Slide stop	–	Slide stop
Stop pump membrane	2.15 mm	2.15 mm	2.15 mm	2.15 mm
Hot start device (bore)	–	–	–	–

BASIC CARBURATOR SETTING					
	450 EXC-G / XC-G RACING USA	**450 EXC RACING SIX DAYS EU**	**450 SX / SMR**	**450 SXS**	**525 EXC / XC DESERT RACING EU / AUS**
Type – Keihin	FCR-MX 39	FCR-MX 39	FCR-MX 41	FCR-MX 41	FCR-MX 39
Carburator-setting number	3900E	3900E	4122B	4122B	3900F
Main jet	178	182	185	190	178
Jet needle	OBDVR	OBDTR	OBDTP	OBDTP	OBDVT
Idling jet	42	42	40	40	42
Main air jet	200	200	200	200	200
Idling air jet	100	100	100	100	100
Needle position	3rd from top	4th from top	4th from top	4th from top	3rd from top
Starting jet	85	85	85	85	85
Mixture control screw open	1.25	2.0	1.5	1.5	1.25
Slide	15	15	15	15	15
Performance restrictor	–	–	–	–	Slide stop
Stop pump membrane	2.15 mm	2.15 mm	2.15 mm	2.15 mm	2.15 mm
Hot start device (bore)	–	–	Ø 2.2 mm	Ø 2.2 mm	–

BASIC CARBURATOR SETTING					
	525 XC-G / EXC-G RACING USA	**525 EXC RACING SIX DAYS EU**	**525 SX**	**540 SXS**	**560 SMR**
Type – Keihin	FCR-MX 39	FCR-MX 39	FCR-MX 41	FCR-MX 41	FCR-MX 41
Carburator-setting number	3900F	3900F	4125C	4125F	4125E
Main jet	178	182	185	190	190
Jet needle	OBDVT	OBDTR	OBDTP	OBDTP	OBDTP
Idling jet	42	42	42	42	42
Main air jet	200	200	200	200	200
Idling air jet	100	100	100	100	100
Needle position	3rd from top	5th from top	4th from top	5th from top	5th from top
Starting jet	85	85	85	85	85
Mixture control screw open	1.25	2.0	1.5	1.5	1.5
Slide	15	15	15	15	15
Performance restrictor	–	–	–	–	–
Stop pump membrane	2.15 mm	2.15 mm	2.15 mm	2.15 mm	2.15 mm
Hot start device (bore)	–	–	Ø 2.5 mm	Ø 2.5 mm	Ø 2.5 mm

TECHNICAL DATA - CHASIS SX / XC / EXC RACING 2006

CHASSIS	SX	EXC RACING XC DESERT RACING	EXC-G RACING / XC-G RACING EXC RACING SIX DAYS
Frame	Central tube chrome-moly-steel frame		
Fork	WP – Up Side Down 4860		
Fork offset (caster)	adjustable 18mm/20mm	20mm	EXC-G / 525 XC-G - 20mm EXC SIX DAYS / 450 XC-G - adjustable 18mm/20mm
Wheel travel front/rear	300/335 mm		
Rear suspension	WP PDS 5018 (Progressive Damping System) shock absorber, aluminum swing arm		
Front brake	Disc brake with perforated brake disc Ø 260 mm, brake caliper floated		
Rear brake	Disc brake with perforated brake disc Ø 220 mm, brake caliper floated		
Brake discs	Wear limit max. 2.5 mm front and 3.5 mm rear		
Front tires Air pressure offroad Air pressure road driver only	80/100-21“ 1.0 bar –	90/90-21“ 1.0 bar 1.5 bar	80/100-21“ 1.0 bar 1.5 bar
Rear tires Air pressure offroad Air pressure road driver only	110/90-19“ 1.0 bar –	140/80-18“ 250 EXC - 120/90-18“ 1.0 bar 2.0 bar	110/100-18“ 1.0 bar 2.0 bar
Fuel tank capacity	approx. 7 liters	EXC - approx. 8 liters 450 XC-G, EXC-G - approx. 9.5 liters 525 XC-G, XC DESERT RACING - approx. 13 liters	
Final drive ratio	450 - 14:52 525 - 14:48	15:45 (14:50) 250 EXC - 15:45 (13:52)	14:50
Chain	X-Ring 5/8 x 1/4“		
Available final sprockets	38, 40, 42, 45, 48, 49, 50, 51, 52		
Bulbs headlight parking light brake-rear light flasher light instrument light	 – – – – –	 12V 35/35W (base BA20D) 12V 5W (base W2.1x9.5d) 12V 21/5W (base BaY15d) 12V 10W (base Ba15s) 12V 1.2W (base W2.1x4.6d)	not for XC-G Racing 12V 35/35W (base BA20D) 12V 5W (base W2.1x9.5d) 12V 21/5W (base BaY15d) – 12V 1.2W (base W2.1x4.6d)
Battery	–	maintenance-free battery 12V 4Ah	
Steering head angle	63.5°		
Wheel base	1481 ± 10 mm		
Seat height, unloaded	925 mm		
Ground clearance, unloaded	380 mm		
Weight (without fuel)	approx. 106 kg	approx. 113 kg XC DESERT RACING - approx. 115 kg	

TECHNICAL DATA - CHASIS SMR / SXS RACING 2006

CHASSIS	SMR	SXS
Frame	Central tube chrome-moly-steel frame	
Fork	WP – Up Side Down 4860	
Fork offset (caster)	adjustable 18mm/20mm	adjustable 17.5mm/20.5mm
Wheel travel front/rear	285/310 mm	300/335 mm
Rear suspension	WP PDS 5018 (Progressive Damping System) shock absorber, aluminum swing arm	
Front brake	Disc brake with perforated brake disc Ø 310 mm, fixed radial brake caliper	Disc brake with perforated brake disc Ø 260 mm, brake caliper floated
Rear brake	Disc brake with perforated brake disc Ø 220 mm, brake caliper floated	
Brake discs	Wear limit max. 4.6 mm front and 3.5 mm rear	Wear limit max. 2.5 mm front and 3.5 mm rear
Front tires Air pressure	120/75-17“ 1.5 bar	80/100-21“ 1.0 bar
Rear tires Air pressure	165/55-17“ 1.6 bar	110/90-19“ 1.0 bar
Fuel tank capacity	approx. 7 liters	
Final drive ratio	14:45	450 - 14:51 540 - 14:48
Chain	X-Ring 5/8 x 1/4“	
Available final sprockets	38, 40, 42, 45, 48, 49, 50, 51, 52	
Bulbs	–	
Battery	–	
Steering head angle	63.5°	
Wheel base	1481 ± 10 mm	
Seat height, unloaded	855 mm	925 mm
Ground clearance, unloaded	310 mm	380 mm
Weight (without fuel)	450 - approx. 108.5 kg 525 - approx. 109.5 kg	approx. 105.2 kg

STANDARD ADJUSTMENT - FORK			
	SX	**EXC / EXC-G XC DESERT RACING**	**SXS**
	WP 4860 MXMA PA 14.18.7B.05	WP 4860 MXMA 14.18.7B.06	WP 4860 MXMA PA CC 14.18.7B.16
Compression adjuster	20	20	22
Rebound adjuster	20	21	24
Spring	4.6 N/mm	4.2 N/mm	4.6 N/mm
Spring preload	5 mm	5 mm	5.5 mm
Air chamber length	100 mm	110 mm	–
Fork oil	SAE 5	SAE 5	SAE 5

STANDARD ADJUSTMENT - FORK		
	SMR	**EXC SIX DAYS XC-G**
	WP 4860 MXMA PA 14.18.7B.18	WP 4860 MXMA PA 14.18.7B.29
Compression adjuster	19	20
Rebound adjuster	17	20
Spring	4.6 N/mm	4.4 N/mm
Spring preload	20 mm	3 mm
Air chamber length	100 mm	110 mm
Fork oil	SAE 5	SAE 5

STANADARD ADJUSTMENT-SHOCK ABSORBER			
	SX	**EXC / EXC-G XC DESERT RACING**	**SXS**
	WP 5018 PDS DCC 12.18.7B.05	WP 5018 PDS MCC 12.18.7B.06	WP 5018 PDS II DCC 12.18.7B.12
Compression adjuster	15 LS (low speed) 2.5 HS (high speed)	15 –	12 LS (low speed) 2 HS (high speed)
Rebound adjuster	22	22	25
Spring	80/250	80/250	88/250
Spring preload	5 mm	6 mm	5 mm

STANADARD ADJUSTMENT-SHOCK ABSORBER		
	SMR	**EXC SIX DAYS XC-G**
	WP 5018 PDS DCC 12.18.7B.15	WP 5018 PDS DCC 12.18.7B.26
Compression adjuster	13 LS (low speed) 2 HS (high speed)	15 LS (low speed) 1.5 HS (high speed)
Rebound adjuster	19	22
Spring	88/250	80/250
Spring preload	8 mm	5 mm

TECHNICAL DATA - ENGINE XC / EXC RACING 2007

ENGINE	400 XC-W, EXC	450 XC	450 XC-W, EXC	525 XC	525 XC-W, EXC
Design	Liquid-cooled single cylinder 4-stroke engine with balancer shaft				
Displacement	398 ccm	449 ccm	448 ccm	510 ccm	
Bore/Stroke	89 / 64 mm	95 / 63,4 mm	89 / 72 mm	95 / 72 mm	
Ratio	11 : 1	12 : 1	11 : 1	11 : 1	
Fuel	unleaded fuel with at least RON 95 (USA = Premium PON 91)				
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain				
Camshaft	595/0121	590/5521	590/5521	590/5521	
Valve diameter intake	35 mm				
Valve diameter exhaust	30 mm				
Valve clearence cold intake	0.10 - 0.15 mm				
Valve clearence cold exhaust	0.10 - 0.15 mm				
Crank shaft bearing	2 cylinder roller bearing				
Connecting rod bearing	needle bearing				
Top end bearing	bronze bushing				
Piston alluminium alloy	cast	forged	cast	forged	
Piston rings	1 compression ring, 1 oil scraper ring				
Engine lubrication	pressure circulation lubrication with two rotor pumps				
Engine oil	full synthetic oil (Motorex Power Synt 4T 10W/50)				
Quantity of engine oil	1.25 liters				
Primary ratio	straight geared spur wheels 33:76				
Clutch	multi disc clutch in oil bath				
Transmission claw shifted	6-speed	6-speed	6-speed	6-speed	6-speed
Gear ratio 1st Gear	14:34	14:34	14:34	16:32	14:34
2nd Gear	17:31	17:31	17:31	18:30	17:31
3rd Gear	19:28	20:28	19:28	20:28	19:28
4th Gear	22:26	22:26	22:26	22:26	22:26
5th Gear	24:23	24:24	24:23	24:24	24:23
6th Gear	26:21	21:18	26:21	21:18	26:21
Ignition system	contactless DC-CDI ignition with digital advanced system by KOKUSAN				
Generator	12V 150W				
Spark plug	NGK DCPR 8 E				
Spark plug gap	0.6 mm				
Cooling system	liquid cooled, permanent rotation of cooling liquid through mechanically driven water pump				
Cooling liquid	1.0 liters, 50% anti freeze, 50% pure water, at least -25 °C				
Starting equipment	kick - electric starter				

TECHNICAL DATA - ENGINE SMR 2007

ENGINE	450 SMR	560 SMR
Design	Liquid-cooled single cylinder 4-stroke engine with balancer shaft	
Displacement	449 ccm	566 ccm
Bore/Stroke	95 / 63,4 mm	100 / 72 mm
Ratio	12 : 1	11 : 1
Fuel	unleaded fuel with at least RON 95 (USA = Premium PON 91)	
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain	
Camshaft	590/5521	8/06
Valve diameter intake	35 mm (Titan)	
Valve diameter exhaust	30 mm (Titan)	
Valve clearence cold intake	0.10 - 0.15 mm	
Valve clearence cold exhaust	0.10 - 0.15 mm	
Crank shaft bearing	2 cylinder roller bearing	
Connecting rod bearing	needle bearing	
Top end bearing	bronze bushing	
Piston alluminium alloy	forged	
Piston rings	1 compression ring, 1 oil scraper ring	
Engine lubrication	pressure circulation lubrication with two rotor pumps	
Engine oil	full synthetic oil (Motorex Power Synt 4T 10W/50)	
Quantity of engine oil	1.25 liters	
Primary ratio	straight geared spur wheels 33:76	
Clutch	multi disc clutch in oil bath	
Transmission claw shifted	6-speed	
Gear ratio 1st Gear	 16:32	
2nd Gear	18:30	
3rd Gear	20:28	
4th Gear	22:26	
5th Gear	24:24	
6th Gear	21:18	
Ignition system	contactless DC-CDI ignition with digital advanced system by KOKUSAN	
Generator	12 V 40 W	
Spark plug	NGK DCPR 8 E	
Spark plug gap	0,6 mm	
Cooling system	liquid cooled, permanent rotation of cooling liquid through mechanically driven water pump	
Cooling liquid	1.0 liters, 50% anti freeze, 50% pure water, at least -25 °C	
Starting equipment	kick - electric starter	

BASIC CARBURATOR SETTING		
	400 XC-W USA	**400 EXC RACING EU**
Type – Keihin	FCR-MX 39	FCR-MX 39
Carburator-setting number	3900D	3900D
Main jet	178	178
Jet needle	OBDVR	OBDVR
Idling jet	42	42
Main air jet	200	200
Idling air jet	100	100
Needle position	1st from top	1st from top
Starting jet	85	85
Mixture control screw open	1.25	1.25
Slide	15	15
Performance restrictor	–	Slide stop
Stop pump membrane	2.15 mm	2.15 mm

BASIC CARBURATOR SETTING					
	450 XC, XC-W, EXC USA	**450 XC-W ZA**	**450 SMR**	**450 EXC RACING EU / AUS**	**450 EXC RACING SIX DAYS EU**
Type – Keihin	FCR-MX 39	FCR-MX 39	FCR - MX 41	FCR-MX 39	FCR-MX 39
Carburator-setting number	3900E	3900E	4122B	3900E	3900E
Main jet	178	178	185	178	182
Jet needle	OBDVR	OBDTR	OBDTP	OBDVR	OBDTR
Idling jet	42	42	40	42	42
Main air jet	200	200	200	200	200
Idling air jet	100	100	100	100	100
Needle position	3rd from top	4th from top	4th from top	3rd from top	4th from top
Starting jet	85	85	85	85	85
Mixture control screw open	1.25	2.0	1.5	1.25	2.0
Slide	15	15	15	15	15
Performance restrictor	–	–	–	Slide stop	–
Stop pump membrane	2.15 mm	2.15 mm	2.15 mm	2.15 mm	2.15 mm
Hot start device (bore)	–	–	Ø 2.2 mm	–	–

BASIC CARBURATOR SETTING					
	525 XC, XC-W, EXC USA	**525 XC-W ZA**	**525 EXC RACING EU / AUS 525 XC DESERT RACING**	**525 EXC RACING SIX DAYS EU**	**560 SMR**
Type – Keihin	FCR-MX 39	FCR-MX 39	FCR-MX 39	FCR-MX 39	FCR - MX 41
Carburator-setting number	3900F	3900F	3900F	3900F	4125E
Main jet	178	178	178	182	190
Jet needle	OBDVT	OBDTR	OBDVT	OBDTR	OBDTP
Idling jet	42	42	42	42	42
Main air jet	200	200	200	200	200
Idling air jet	100	100	100	100	100
Needle position	3rd from top	5th from top	3rd from top	5th from top	5th from top
Starting jet	85	85	85	85	85
Mixture control screw open	1.25	2.0	1.25	2.0	1.5
Slide	15	15	15	15	15
Performance restrictor	–	–	Slide stop	–	–
Stop pump membrane	2.15 mm	2.15 mm	2.15 mm	2.15 mm	2.15 mm
Hot start device (bore)	–	–	–	–	Ø 2.5 mm

TECHNICAL DATA - CHASIS 2007

CHASSIS	SMR	EXC RACING EXC FACTORY RACING EXC RACING SIX DAYS EXC USA XC DESERT RACING	XC XC-W
Frame	Central tube chrome-moly-steel frame		
Fork	WP – Up Side Down 4860		
Fork offset (caster)	adjustable 14mm/16mm	EXC RACING EXC USA 20mm XC DESERT RACING	XC - adjustable 18mm/20mm
		EXC FACTORY RACING EXC RACING SIX DAYS adjustable 18mm/20mm	XC-W - 20mm
Wheel travel front/rear	275/310 mm	300/335 mm	
Rear suspension	WP PDS 5018 (Progressive Damping System) shock absorber, aluminum swing arm		
Front brake	Disc brake with perforated brake disc Ø 310 mm, fixed radial brake caliper	Disc brake with perforated brake disc Ø 260 mm, brake caliper floated	
Rear brake	Disc brake with perforated brake disc Ø 220 mm, brake caliper floated		
Brake discs Wear limit	4.5 mm front 3.5 mm rear	2.5 mm front 3.5 mm rear	
Front tires Air pressure offroad Air pressure road driver only	120/75-17“ 1.5 bar	90/90-21“ 1.0 bar 1.5 bar	80/100-21“ 1.0 bar
Rear tires Air pressure offroad Air pressure road driver only	170/55-17“ 1.6 bar	140/80-18“ 1.0 bar 2.0 bar	110/100-18“ 1.0 bar
Fuel tank capacity	approx. 7 liters	EXC - approx. 8 liters EXC RACING AUS - approx. 9.5 liters XC DESERT RACING - approx. 13 liters	approx. 9.5 liters 525 XC - approx. 13 liters
Final drive ratio	14:45	15:45 (14:50)	14:50
Chain	5/8 x 1/4“		
Available final sprockets	38, 40, 42, 45, 48, 49, 50, 51, 52		
Bulbs headlight parking light brake-rear light flasher light - optional instrument light	 – – – – –	 12V 35/35W (base BA20D) EXC USA 12V H4 60/55W (base P43T) 12V 5W (base W2.1x9.5d) 12V 21/5W (base BaY15d) 12V 10W (base Ba15s) 12V 1,2W (base W2.1x4.6d)	only XC-W ZA 12V 35/35W (base BA20D) 12V 5W (base W2.1x9.5d) 12V 21/5W (base BaY15d) – –
Battery	–	maintenance-free battery12V 4Ah	
Steering head angle	63,5°		
Wheel base	1471 ± 10 mm	1481 ± 10 mm	
Seat height, unloaded	855 mm	925 mm	
Ground clearance, unloaded	310 mm	380 mm	
Weight (without fuel)	approx . 108 kg	approx . 113 kg XC DESERT RACING, EXC USA - approx. 115 kg	

STANDARD ADJUSTMENT - FORK			
	SMR	**EXC RACING EXC USA XC DESERT RACING XC-W**	**EXC FACTORY RACING EXC RACING SIX DAYS XC**
	WP 4860 MXMA PA 14.18.7C.18	WP 4860 MXMA 14.18.7C.06	WP 4860 MXMA PA 14.18.7C.29
Compression adjuster	20	20	18
Rebound adjuster	10	15	20
Spring	4.6 N/mm	4.4 N/mm	4.6 N/mm
Preload Adjuster (turns open)	5	-	2
Air chamber length	100 mm	110 mm	110 mm
Fork oil	SAE 5	SAE 5	SAE 5

STANADARD ADJUSTMENT-SHOCK ABSORBER			
	SMR	**EXC RACING EXC USA XC DESERT RACING XC-W**	**EXC FACTORY RACING EXC RACING SIX DAYS XC**
	WP 5018 PDS DCC 12.18.7C.15	WP 5018 PDS MCC 12.18.7C.06	WP 5018 PDS DCC 12.18.7C.29
Compression adjuster	13 LS (low speed) 2 HS (high speed)	15 –	15 LS (low speed) 1 HS (high speed)
Rebound adjuster	19	25	24
Spring	88/250	80/250	80/250
Spring preload	9 mm	5 mm	5 mm

ASSEMBLY CLEARANCE, WEAR LIMIT		
Crankshaft	axial clearance	0.25 - 0.35 mm
560 SMR	axial clearance (new or overhauled crankshaft)	0.35 - 0.45 mm
	run out of crank stud	max. 0.12 mm
	crankshaft webs - measure outer dimension	65 mm ± 0.05 mm
Conrod bearing	radial clearance	max. 0.05 mm
	axial clearance	max. 1.10 mm
Cylinder (bore 75 mm)	diameter size I	75.000 - 75.012 mm
	diameter size II	75.013 - 75.025 mm
Cylinder (bore 89 mm)	diameter size I	89.000 - 89.012 mm
	diameter size II	89.013 - 89.025 mm
Cylinder (bore 95 mm)	diameter size I	95.000 - 95.012 mm
	diameter size II	95.013 - 95.025 mm
Cylinder (bore 100 mm)	diameter size I	100.000 - 100.012 mm
	diameter size II	100.013 - 100.025 mm
Piston (for 75 mm cylinder bore)	diameter size I	74.950 - 74.980 mm
	diameter size II	74.960 - 74.990 mm
	assembly clearance size I	0.020 - 0.062 mm
	assembly clearance size II	0.022 - 0.065 mm
	wear limit	0.12 mm
Piston (for 89 mm cylinder bore / model 400)	diameter size I	88.920 - 88.950 mm
	diameter size II	88.930 - 88.960 mm
	assembly clearance size I	0.050 - 0.092 mm
	assembly clearance size II	0.052 - 0.095 mm
	wear limit	0.12 mm
Piston (for 89 mm cylinder bore / model 450)	diameter size I	88.916 - 88.946 mm
	diameter size II	88.926 - 88.958 mm
	assembly clearance size I	0.054 - 0.096 mm
	assembly clearance size II	0.056 - 0.099 mm
	wear limit	0.12 mm
Piston (for 95 mm cylinder bore)	diameter size I	94.932 - 94.960 mm
	diameter size II	94.940 - 94.968 mm
	assembly clearance size I	0.040 - 0.080 mm
	assembly clearance size II	0.044 - 0.085 mm
	wear limit	0.12 mm
Piston (for 100 mm cylinder bore)	diameter size I	99.940 - 99.948 mm
	diameter size II	99.949 - 99.956 mm
	assembly clearance size I	0.052 - 0.072 mm
	assembly clearance size II	0.057 - 0.076 mm
	wear limit	0.10 mm
Piston ring end gap	compression ring	max. 0.80 mm
	oil scraper ring	max. 1.00 mm

ASSEMBLY CLEARANCE, WEAR LIMIT		
Valves	seat sealing intake	max. 1.50 mm
	seat sealing exhaust	max. 2.00 mm
	spring washer	min. 0.4 mm (new 0.5 mm)
Valve springs 400/520,450/525 EXC/MXC/XC	minimum length of the outer spring	39.20 mm
	minimum length of the inner spring	36.45 mm
Valve springs conical 250 EXC	minimum length	37.70 mm
Valve springs conical 450/525/560 SX/SMR	minimum length	38.30 mm
Valve springs 450/525 SX/SXS/SMR	minimum length of the outer spring	32.40 mm
540 SXS 2004/2006	minimum length of the inner spring	30.20 mm
Valve springs 540 SXS, 610 CRATE	minimum length of the outer spring	32.90 mm
	minimum length of the inner spring	30.70 mm
Oil pumps	clearance outer rotor - housing	max. 0.20 mm
	clearance outer rotor - inner rotor	max. 0.20 mm
	axial clearance	0.15 mm
Bypass valve	minimum spring length	23.5 mm
Clutch	length of springs	min. 41.5 mm (new 43 mm)
	wear limit organic up to model 2003	min. 1.70 mm
	wear limit organic from model 2004	min. 1.90 mm
Transmission shafts	axial clearance	0.1 - 0.4 mm
	eccentricity	0.06 mm
Rocker arms	axial clearance	0.02 - 0.10 mm
Balancer shaft	journal eccentricity	0.06 mm

TIGHTENING TORQUES - ENGINE		
Hexagon collar screw clutch cover, ignition cover	M6	10 Nm
Hexagon collar screw engine case	M6	greased + 10 Nm
Oil drain plug	M12x1.5	20 Nm
Allan head plug oil, screen short	M16x1.5	oiled + 10 Nm
Hexagon plug, oil screen long	M20x1.5	15 Nm
Collar screw for the oil filter cover	M5	6 Nm
Plug pressure valve	M12x1.5	20 Nm
Jet screw and hollow screw, oil line	M8	10 Nm
Oil spraying nozzle	M6x0.75	Loctite 243
Screws, oil pump cover	M5	Loctite 222 + 6 Nm
Hexagon collar screw, cylinder head top section	M6	10 Nm
Hex.collar screw, cylinder head top section, water pump cover	M6	10 Nm
Hexagon collar screw, exhaust flange	M6	Loctite 243 + 10 Nm
Cylinder head screw	M10	oiled + 40/50 Nm
Hexagon collar screws for cylinder/cylinder head	M6	10 Nm
Allan head screw, camshaft gear	M8	Loctite 243 + 28 Nm
Stop screw, auto-decompression (up to model 2003)	M5	Loctite 222 + 8 Nm
Allan head screw, cap rocker arm	M5	6 Nm
Counter nuts, valve adjustment screw	M6x0.75	11 Nm
Allan head screw, primary gear, free wheel	M6	Loctite 648 + 16 Nm
Hexagon nut, primary gear	M20x1.5	Loctite 243 + 150 Nm
Allan head screw, balancer shaft gear	M6	Loctite 243 + 10 Nm
Nut for the inner clutch hub	M18x1.5	Loctite 243 + 120 Nm
Hexagon collar screw, clutch spring	M6	Loctite 243 + 8 Nm
Allan head screw, shift roller locking piece	M6	Loctite 243 + 10 Nm
Hexagon collar screw, locking lever	M5	Loctite 243 + 6 Nm
Hexagon collar screw, shift roller	M5	Loctite 243 + 6 Nm
Hexagon collar screw securing guide, chain guide, chain tensioner	M6	Loctite 243 + 6 Nm
Hexagon collar screw, clip	M5	Loctite 243 + 6 Nm
Hexagon collar screw, chain adjuster	M6	10 Nm
Hexagon collar screw, stator (4K3B) MXC/XC/EXC	M6	Loctite 243 + 10 Nm
Hexagon collar screw, stator (4K3A) SX/SXS/SMR	M5	Loctite 243 + 6 Nm
Hexagon collar screw, pulser coil	M5	Loctite 243 + 6 Nm
Hexagon collar nut, flywheel	M12x1	60 Nm
Hexagon collar screw, bump part kickstarter	M6	Loctite 243 + 10 Nm
Hexagon collar screw, spring hanger kickstarter	M6	Loctite 243 + 10 Nm
Hexagon collar screw, cover E-starter, only SX/SXS/SMR	M6	Loctite 243 + 10 Nm
Hexagon collar screw, hanger vent hose	M6	Loctite 243 + 10 Nm
Allan head screw, kickstarter	M8	Loctite 243 + 25 Nm
Hexagon collar screw, shift lever	M6	Loctite 243 + 10 Nm
Hexagon screw, engine sprocket	M10	Loctite 243 + 60 Nm
Spark plug	M10	10-12 Nm
Spark plug	M12x1.25	17 Nm
AH bearing bolt for the electric starter, kickstarter	M6	Loctite 243 + 10 Nm
Threaded sleeve for the cylinder head top section	M20x1.5	Loctite 577
Bleeder flange for the housing	M12x1.5	Loctite 243

TIGHTENING TORQUES - CHASSIS		
Collar screw, front wheel spindle	M24x1.5	40 Nm
Brake caliper, front	M8	Loctite 243 + 25 Nm
Brake caliper, front radial	M10x1.25	Loctite 243 + 40 Nm
Brake disc, front/rear up to the 2005 model	M6	Loctite 243 + 10 Nm
Brake disc, front/rear as of model 2006	M6	Loctite 243 + 14 Nm
Clamping screws, top triple clamp model 2004	M8	Loctite 243 + 20 Nm
Clamping screws, bottom triple clamp model 2004	M8	Loctite 243 + 15 Nm
Clamping screws, top triple clamp (Fork offset not adjustable) as of model 2005	M8	Loctite 243 + 20 Nm
Clamping screws, bottom triple clamp (Fork offset not adjustable) as of model 2005	M8	Loctite 243 + 15 Nm
Clamping screws, top triple clamp (SX) model 2005	M8	Loctite 243 + 15 Nm
Clamping screws, bottom triple clamp (SX) model 2005	M8	Loctite 243 + 10 Nm
Clamping screws, top triple clamp (Fork offset adjustable) as of model 2006	M8	Loctite 243 + 17 Nm
Clamping screws, bottom triple clamp (Fork offset adjustable) as of model 2006	M8	Loctite 243 + 12 Nm
Steering head screw, top	M20x1.5	10 Nm
Steering head screw, bottom as of model 2006	M20x1.5	Loctite 243 + 60 Nm
Clamping screws, fork stubs model 2004	M8	Loctite 243 + 10 Nm
Clamping screws, fork stubs as of model 2005	M8	Loctite 243 + 15 Nm
Collar nut, rear wheel spindle	M20x1.5	80 Nm
Hexagon nut, swing arm bolt	M14x1.5/M16x1.5	100 Nm
Hexagon collar screw, handlebar clamp	M8	Loctite 243 + 20 Nm
Allan head screw, handlebar support	M10	Loctite 243 + 40 Nm
Shock absorber, top/bottom model 2004	M12	Loctite 243 + 60 Nm
Shock absorber, top/bottom as of model 2005	M12	Loctite 243 + 70 Nm
Sprocket nuts	M8	Loctite 243 + 35 Nm
Ball joint for push rod	M6	Loctite 243 + 10 Nm
Engine mounting bolt model 2004	M10	45 Nm
Engine mounting bolt as of model 2005	M10	60 Nm
Engine brace	M8	33 Nm
Screw adjusting ring spring preload shock abs	M6	5 Nm
Spoke nipple	M4.5 / M5	4.5 - 6 Nm
AH screw for the subframe	M8	Loctite 243 + 35 Nm
Rim lock	M8	10 Nm
Collar nut to fasten the seat	M12x1	20 Nm
Other screws on the chassis	M6 M8 M10	10 Nm 25 Nm 45 Nm
Other collar nuts on the chassis	M6 M8 M10	15 Nm 30 Nm 50 Nm

PERIODIC MAINTENANCE SCHEDULE 11

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PERIODIC MAINTENANCE SCHEDULE

11.99
400/520 SX RACING
400/520 EXC RACING

IF THE MOTORCYCLE IS USED PRIMARILY FOR OFF-ROAD RIDING OR COMPETITIVE RACING, THE 15 HOUR SERVICE NEEDS TO BE CARRIED OUT AFTER EACH RACE

	KTM rider		KTM dealer			
	before each start	after washing	1st service, after 3 hours or 20 l fuel consumption	after 15 hours or 100 l fuel consumption	after 30 hours or 200 l fuel consumption	at least once a year
Check engine oil level	●					
Change engine oil			●	●		●
Clean short and long oil screen and magnet of the drain plug whenever you exchange the engine oil			●	●		
Change short and long oil filter unit			●	●		●
Check oil line for leakage and proper installation			●	●		
Check valve clearance and adjust if necessary			●	●		
Change spark plug					●	
Drain and clean carburetor float bowl		●			●	●
Adjust idling						●
Check breather hoses of engine case, gas tank and carburetor for correct position without buckles			●	●		
Clean air filter and air filter box		●		●		●
Check sprockets, chain guides and chain for wear	●		●	●		
Clean and lube chain	●	●		●		
Check chain tension	●		●	●		
Check cooling liquid level	●		●	●		
Check quality of antifreeze						●
Check cooling system for leaks	●		●	●		
Check exhaust system for leakage						●
Change exhaust muffler packing					●	
Clean spark arrestor (EXC USA)					●	●
Check exhaust brackets				●		●
Check brake fluid level front and rear	●		●	●		
Change brake fluid						●
Check brake pad thickness	●			●		
Check brake discs for wear and damage				●		
Check condition and correct installation of brake hoses	●		●	●		
Check free play and easy operation of hand brake lever and foot brake lever	●		●	●		
Check oil level of the master cylinder of the hydraulic clutch				●		
Change the oil of the hydraulic clutch						●
Check adjustment and function of telescopic fork	●			●		
Check telescopic fork for leaks				●		
Loosen breather bolts at fork legs (overpressure)		●		●		
Change fork oil						●
Perform a full maintenance job for the telescopic fork						●
Clean dust bellows on telescopic fork		●		●		●
Check steering head bearing clearance and adjust if necessary			●	●		
Clean and grease steering head bearings and its seals						●
Check adjustment and function of shock absorber	●			●		
Perform a full maintenance job for the shock absorber						●
Servicing swing arm pivots						●
Check tightness of spokes and rim joint	●		●	●		
Check wheel bearings for clearance	●			●		
Check tire condition and air pressure	●			●		●
Check cables for damage and easy working	●			●		●
Lube and adjust cables		●	●	●		●
Check the electrical system	●		●	●		
Check adjustment of headlight				●		
Spray emergency OFF switch, short circuit button and light switch with contact spray		●		●		
Check all bolts, nuts and hose clamps for proper tightness	●		●	●		
Grease or lube all pivot points and sliding components		●	●	●		

SUPPLEMENTARY MAINTENANCE INSTRUCTIONS FOR THE 400/520 RACING ENGINE MODEL 2000 (ADDITIONAL ORDER FOR KTM WORKSHOP)				
Hours	400 SX	400 MXC/EXC	520 SX	520 MXC/EXC
15	Small Maintenance Kit	–	Small Maintenance Kit	–
30	Small Maintenance Kit	Small Maintenance Kit	Small Maintenance Kit	Small Maintenance Kit
45	Large Maintenance Kit	–	Large Maintenance Kit	–
60	Small Maintenance Kit	Large Maintenance Kit	Small Maintenance Kit	Large Maintenance Kit
75	Small Maintenance Kit	–	Small Maintenance Kit	–
90	Large Maintenance Kit	Small Maintenance Kit	Large Maintenance Kit	Small Maintenance Kit
105	Small Maintenance Kit	–	Small Maintenance Kit	–
120	Small Maintenance Kit	Large Maintenance Kit	Small Maintenance Kit	Large Maintenance Kit

Spare Part Numbers of the Maintenance Kits - Model 2000

Maintenance Kit Small 400/520: 590.12.099.044
Maintenance Kit Large 400: 595.12.099.144
Maintenance Kit Large 520: 590.12.099.144

Please observe KTM TECHNICAL INFORMATION No: 0003/30/02-E !!!

Art.-Nr. 3.206.043-E

PERIODIC MAINTENANCE SCHEDULE 2001

400/520 SX/MXC/EXC RACING

	A washed motorcycle can be checked more quickly which saves money!	1st service after 3 hours or 20 l fuel	after/every 15 hours or 100 l fuel
ENGINE	Change engine oil, short and long oil filters	●	●
	Clean oil screen and drain plug magnet	●	●
	Check oil lines for damage or bends	●	●
	Replace spark plug (after 30 hours)		
	Check and adjust valve clearance	●	●
	Check engine mounting bolts for tightness	●	●
CARBURETOR	Check carburetor connection boot for cracks and leaks		●
	Check idle speed setting	●	●
	Check vent hoses for damage or bends	●	●
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 and bends adjust and lubricate	●	●
	Check fluid level of the clutch master cylinder	●	●
	Clean air filter and filter box		●
	Check electric wires for damage and bends		●
	Check headlamp setting		●
	Check function of electric systems (low/high beams, brake light, indicator indicator lamps, speedometer illumination, horn, emergency OFF switch or button	●	●
BRAKES	Check brake fluid level, lining thickness, brake discs	●	●
	Check brake lines for damage and leaks	●	●
	Check smooth operation and adjust free travel of handbrake/foot brake lever	●	●
	Check tightness of brake system bolts	●	●
CHASSIS	Check shock absorber and fork for leaks and function	●	●
	Clean fork dust bellows		●
	Bleed fork legs		●
	Check swing arm bearings		●
	Check/adjust steering head bearings	●	●
	Check tightness of chassis bolts (triple clamps, fork leg axle passage)	●	●
WHEELS	Check spoke tension and rim joint		●
	Check tires and air pressure	●	●
	Check chain, rear sprockets and chain guides for wear, fit and tension	●	●
	Lubricate chain	●	●
	Check clearance of wheel bearings	●	●

IMPORTANT RECOMMENDED MAINTENANCE WORK THAT CAN BE CARRIED OUT BY SPECIAL REQUEST

	at least once a year
Complete maintenance of fork	●
Complete maintenance of shock absorber	●
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 spray	●
Treat battery connections with contact grease	●
Change hydraulic clutch fluid	●
Change brake fluid	●

IF MOTORCYCLE IS USED FOR COMPETITION A 15 HOUR SERVICE SHOULD BE CARRIED OUT AFTER EVERY RACE!
SERVICE INTERVALS SHOULD NEVER BE EXCEEDED BY MORE THAN 2 HOURS OR 15 LITERS OF FUEL.
MAINTENANCE WORK DONE BY KTM AUTHORISED WORKSHOPS IS NOT A SUBSTITUTE FOR THE CARE AND CHECKS BY THE RIDER!

Important Checks and Maintenance to be Carried out by the Rider

	Before each start	After every cleaning	For cross-country use
Check oil level	●		
Check brake fluid level	●		
Check brake pads for wear	●		
Check lights for function	●		
Check horn for function	●		
Lubricate and adjust cables and nipples		●	
Bleed fork legs regularly			●
Remove and clean fork dust bellows regularly			●
Clean and lubricate chain, check tension and adjust if necessary		●	●
Clean air filter and filter box			●
Check tires for pressure and wear	●		
Check cooling fluid level	●		
Check fuel lines for leaks	●		
Drain and clean float chamber		●	
Check all control elements for smooth operation	●		
Check brake performance	●	●	
Treat blank metal parts (with the exception of brake and exhaust system) with wax-based anticorrosion agent		●	
Treat ignition and steering locks and light switches with contact spray		●	
Check tightness of bolts, nuts and hose clamps regularly			●

Supplementary Maintenance Instructions for the 400/520 Racing Engine Model 2001 (Additional Order for KTM Workshop)

Hours	400 SX	400 MXC/EXC	520 SX	520 MXC/EXC
15	Small Maintenance Kit	–	Small Maintenance Kit	–
30	Small Maintenance Kit	Small Maintenance Kit	Small Maintenance Kit	Small Maintenance Kit
45	Small Maintenance Kit	–	Small Maintenance Kit	–
60	Large Maintenance Kit	Small Maintenance Kit	Large Maintenance Kit	Small Maintenance Kit
75	Small Maintenance Kit	–	Small Maintenance Kit	–
90	Small Maintenance Kit	Large Maintenance Kit	Small Maintenance Kit	Large Maintenance Kit
105	Small Maintenance Kit	–	Small Maintenance Kit	–
120	Large Maintenance Kit	Small Maintenance Kit	Large Maintenance Kit	Small Maintenance Kit

Spare Part Numbers of the Maintenance Kits - Model 2001

Maintenance Kit Small 400/520: 590.12.199.044
Maintenance Kit Large 400/520: 590.12.199.144

Please observe KTM TECHNICAL INFORMATION No: 0011/30/05-E !!!

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PERIODIC MAINTENANCE SCHEDULE 2002

250/400/520 SX/MXC/EXC RACING

	A washed motorcycle can be checked more quickly which saves money!	1st service after 3 hours or 20 l fuel	after/every 15 hours or 100 l fuel
ENGINE	Change engine oil, short and long oil filters	●	●
	Clean oil screen and drain plug magnet	●	●
	Check oil lines for damage or bends	●	●
	Replace spark plug (after 30 hours)		
	Check and adjust valve clearance	●	●
	Check engine mounting bolts for tightness	●	●
CARBURETOR	Check carburetor connection boot for cracks and leaks		●
	Check idle speed setting	●	●
	Check vent hoses for damage or bends	●	●
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 and bends adjust and lubricate	●	●
	Check fluid level of the clutch master cylinder	●	●
	Clean air filter and filter box		●
	Check electric wires for damage and bends		●
	Check headlamp setting		●
	Check function of electric systems (low/ high beams, brake light, indicator indicator lamps, speedometer illumination, horn, emergency OFF switch or button	●	●
BRAKES	Check brake fluid level, lining thickness, brake discs	●	●
	Check brake lines for damage and leaks	●	●
	Check smooth operation and adjust free travel of handbrake/foot brake lever	●	●
	Check tightness of brake system screws	●	●
CHASSIS	Check shock absorber and fork for leaks and function	●	●
	Clean fork dust bellows		●
	Bleed fork legs		●
	Check swing arm bearings		●
	Check/adjust steering head bearings	●	●
	Check tightness of chassis screws (triple clamps, fork leg axle passage)	●	●
WHEELS	Check spoke tension and rim joint		●
	Check tires and air pressure	●	●
	Check chain, rear sprockets and chain guides for wear, fit and tension	●	●
	Lubricate chain	●	●
	Check clearance of wheel bearings	●	●

IMPORTANT RECOMMENDED MAINTENANCE WORK THAT CAN BE CARRIED OUT BY SPECIAL REQUEST

	at least once a year
Complete maintenance of fork	●
Complete maintenance of shock absorber	●
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 spray	●
Treat battery connections with contact grease	●
Change hydraulic clutch fluid	●
Change brake fluid	●

IF MOTORCYCLE IS USED FOR COMPETITION,A 15-HOURS SERVICE SHOULD BE CARRIED OUT AFTER EVERY RACE!
SERVICE INTERVALS SHOULD NEVER BE EXCEEDED BY MORE THAN 2 HOURS OR 15 LITERS OF FUEL.
MAINTENANCE WORK DONE BY KTM AUTHORISED WORKSHOPS IS NOT A SUBSTITUTE FOR THE CARE AND CHECKS BY THE RIDER!

Important Checks and Maintenance to be Carried out by the Rider

	Before each start	After every cleaning	For cross-country use
Check oil level	●		
Check brake fluid level	●		
Check brake pads for wear	●		
Check lights for function	●		
Check horn for function	●		
Lubricate and adjust cables and nipples		●	
Bleed fork legs regularly			●
Remove and clean fork dust bellows regulary			●
Clean and lubricate chain, check tension and adjust if necessary		●	●
Clean air filter and filter box			●
Check tires for pressure and wear	●		
Check cooling fluid level	●		
Check fuel lines for leaks	●		
Drain and clean float chamber		●	
Check all control elements for smooth operation	●		
Check brake performance	●	●	
Treat blank metal parts (with the exception of brake and exhaust system) with wax-based anti corrosion agent		●	
Treat ignition and steering locks and light switches with contact spray		●	
Check tightness of screws, nuts and hose clamps regularly			●

Continued tests of the 250/400/520 racing motor for KTM's specialized workshop (additional order for KTM's specialized workshop)

a 100 l fuel consumption is equivalent to approx. 15 operating hours	30 hours 200 l	45 hours 300 l	60 hours 400 l	90 hours 600 l	120 hours 800 l	135 hours 900 l
Force fit of clutch drive shaft		●		●		●
Clutch disk wear	●	●	●	●	●	●
Cylinder and piston wear		●		●		●
Groove piston-pin retainer wear		●		●		●
Camshaft wear		●		●		●
Radial clearance of camshaft bearing		●		●		●
Valve spring length		●		●		●
Spring washer wear		●		●		●
Valve disk slack		●		●		●
Valve guide wear		●		●		●
Radial clearance of rocker-arm roller		●		●		●
Elongation of timing chain		●		●		●
Wear of toothing on chain tensioner	●	●	●	●	●	●
Crankshaft journal/crankshaft wear		●		●		●
Radial clearance of conrod bearing		●		●		●
Radial clearance of piston pin bearing		●		●		
Wear of balancing shaft bearing		●		●		●
Wear of crankshaft bearing		●		●		●
Transmission wear		●		●		●
Flection of transmission shafts		●		●		●
Length of bypass valve spring		●		●		●

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PERIODIC MAINTENANCE SCHEDULE 2003

250/450/525 SX/MXC/EXC RACING

	A clean motorcycle can be checked more quickly which saves money!	1. service after 3 hours or 20 l fuel	after/every 15 hours or 100 l fuel
ENGINE	Change engine oil, short and long oil filters	●	●
	Clean oil screen and drain plug magnet	●	●
	Check oil lines for damage or bends	●	●
	Replace spark plug (after 30 hours)		
	Check and adjust valve clearance	●	●
	Check engine mounting bolts for tightness	●	●
CARBURETOR	Check carburetor connection boot for cracks and leaks		●
	Check idle speed setting	●	●
	Check vent hoses for damage or bends	●	●
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 and bends adjust and lubricate	●	●
	Check fluid level of the clutch master cylinder	●	●
	Clean air filter and filter box		●
	Check electric wires for damage and bends		●
	Check headlamp setting		●
	Check function of electric systems (low high beam, brake light, indicator lamps, speedometer illumination, horn, emergency OFF switch or button	●	●
BRAKES	Check brake fluid level, lining thickness, brake discs	●	●
	Check brake lines for damage and leaks	●	●
	Check/function smooth operation and adjust free travel of handbrake/foot brake lever	●	●
	Check tightness of brake system screws	●	●
CHASSIS	Check shock absorber and fork for leaks and function	●	●
	Clean fork dust bellows		●
	Bleed fork legs		●
	Check swing arm bearings		●
	Check/adjust steering head bearings	●	●
	Check tightness of chassis screws (triple clamps, fork leg axle passage)	●	●
WHEELS	Check spoke tension and rim joint		●
	Check tires and air pressure	●	●
	Check chain, chain joint, rear sprockets and chain guides for wear, fit 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
Complete maintenance of fork	●
Complete maintenance of shock absorber	●
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 spray	●
Treat battery connections with contact grease	●
Change hydraulic clutch fluid	●
Change brake fluid	●

IF MOTORCYCLE IS USED FOR COMPETITION 15 HOURS SERVICE SHOULD BE CARRIED OUT AFTER EVERY RACE.
SERVICE INTERVALLS SHOULD NEVER BE EXCEEDED BY MORE THAN 2 HOURS OR 15 LITERS OF FUEL.
MAINTENANCE WORK DONE BY KTM AUTHORISED WORKSHOPS IS NOT A SUBSTITUTE FOR CARE AND CHECKS DONE BY THE RIDER.

IMPORTANT CHECKS AND MAINTENANCE TO BE CARRIED OUT BY THE RIDER			
	Before each start	After every cleaning	For cross-country use
Check oil level	●		
Check brake fluid level	●		
Check brake pads for wear	●		
Check lights for function	●		
Check horn for function	●		
Lubricate and adjust cables and nipples		●	
Bleed fork legs regularly			●
Remove and clean fork dust bellows regularly			●
Clean and lubricate chain, check tension and adjust if necessary		●	●
Clean air filter and filter box			●
Check tires for pressure and wear	●		
Check cooling fluid level	●		
Check fuel lines for leaks	●		
Drain and clean float chamber		●	
Check all control elements for smooth operation	●		
Check brake performance	●	●	
Treat blank metal parts (with the exception of brake and exhaust system) with wax-based anti corrosion agent		●	
Treat ignition and steering locks and light switches with contact spray		●	
Check tightness of screws, nuts and hose clamps regularly			●

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RECOMMENDED INSPECTION OF THE 250/450/525 SX AND EXC ENGINE USED FOR ENDURO COMPETITIONS BY YOUR KTM WORKSHOP (ADDITIONAL ORDER FOR THE KTM WORKSHOP)						
a 100 liter fuel consumption is equivalent to approx. 15 operating hours	30 hours 200 liter	45 hours 300 liter	60 hours 400 liter	90 hours 600 liter	120 hours 800 liter	135 hours 900 liter
Check the clutch disks for wear	●	●	●	●	●	●
Check the length of the clutch springs	●	●	●	●	●	●
Check the cylinder and piston for wear		●		●		●
Check the groove on the piston pin retainer for wear (visual check)		●		●		●
Check the camshaft for wear (visual check)		●		●		●
Replace the camshaft bearings		●		●		●
Check the length of the valve springs		●		●		●
Check the spring cap for wear		●		●		●
Check the eccentricity of the valve disk		●		●		●
Check the valve guides for wear		●		●		●
Check the radial clearance of the rocker arm rollers		●		●		●
Check the elongation of the timing chain		●		●		●
Check the chain tensioner tooting for damage (visual check)	●	●	●	●	●	●
Check the eccentricity of the crankshaft journal		●		●		●
Replace the conrod bearings		●		●		●
Check piston pin bearing		●		●		●
Replace the balancer shaft bearings		●		●		●
Replace the crankshaft main bearings		●		●		●
Check the entire transmission including the roller and bearings for wear		●		●		●
Check the length of the bypass valve spring		●		●		●

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

RECOMMENDED INSPECTION OF THE 250/450/525 EXC ENGINE USED FOR HOBBY - ENDURO COMPETITIONS BY YOUR KTM WORKSHOP (ADDITIONAL ORDER FOR THE KTM WORKSHOP)						
a 100 liter fuel consumption is equivalent to approx. 15 operating hours	60 hours 400 liter	90 hours 600 liter	120 hours 800 liter	180 hours 1200 liter	240 hours 1600 liter	270 hours 1800 liter
Check the clutch disks for wear	●	●	●	●	●	●
Check the length of the clutch springs	●	●	●	●	●	●
Check the cylinder and piston for wear		●		●		●
Check the groove on the piston pin retainer for wear (visual check)		●		●		●
Check the camshaft for wear (visual check)		●		●		●
Replace the camshaft bearings		●		●		●
Check the length of the valve springs		●		●		●
Check the spring cap for wear		●		●		●
Check the eccentricity of the valve disk		●		●		●
Check the valve guides for wear		●		●		●
Check the radial clearance of the rocker arm rollers		●		●		●
Check the elongation of the timing chain		●		●		●
Check the chain tensioner tooting for damage (visual check)	●	●	●	●	●	●
Check the eccentricity of the crankshaft journal		●		●		●
Replace the conrod bearings		●		●		●
Check piston pin bearing		●		●		●
Replace the balancer shaft bearings		●		●		●
Replace the crankshaft main bearings		●		●		●
Check the entire transmission including the roller and bearings for wear		●		●		●
Check the length of the bypass valve spring		●		●		●

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

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PERIODIC MAINTENANCE SCHEDULE 2004

250/450/525 SX/MXC/EXC RACING

	A clean motorcycle can be checked more quickly which saves money!	1. service after 3 hours or 20 l fuel	after/every 15 hours or 100 l fuel
ENGINE	Change engine oil, short and long oil filters	●	●
	Clean oil screen and drain plug magnet	●	●
	Check oil lines for damage or bends	●	●
	Replace spark plug (after 30 hours)		
	Check and adjust valve clearance	●	●
	Check engine mounting bolts for tightness	●	●
CARBURETOR	Check carburetor connection boot for cracks and leaks		●
	Check idle speed setting	●	●
	Check vent hoses for damage or bends	●	●
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 and bends adjust and lubricate	●	●
	Check fluid level of the clutch master cylinder	●	●
	Clean air filter and filter box		●
	Check electric wires for damage and bends		●
	Check headlamp setting		●
	Check function of electric systems (low high beam, brake light, indicator lamps, speedometer illumination, horn, emergency OFF switch or button	●	●
BRAKES	Check brake fluid level, lining thickness, brake discs	●	●
	Check brake lines for damage and leaks	●	●
	Check/function smooth operation and adjust free travel of handbrake/foot brake lever	●	●
	Check tightness of brake system screws	●	●
CHASSIS	Check shock absorber and fork for leaks and function	●	●
	Clean fork dust bellows		●
	Bleed fork legs		●
	Check swing arm bearings		●
	Check/adjust steering head bearings	●	●
	Check tightness of chassis screws (triple clamps, fork leg axle passage)	●	●
WHEELS	Check spoke tension and rim joint	●	●
	Check tires and air pressure	●	●
	Check chain, chain joint, rear sprockets and chain guides for wear, fit 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
Complete maintenance of fork	●
Complete maintenance of shock absorber	●
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 spray	●
Treat battery connections with contact grease	●
Change hydraulic clutch fluid	●
Change brake fluid	●

IF MOTORCYCLE IS USED FOR COMPETITION 15 HOURS SERVICE SHOULD BE CARRIED OUT AFTER EVERY RACE.
SERVICE INTERVALLS SHOULD NEVER BE EXCEEDED BY MORE THAN 2 HOURS OR 15 LITERS OF FUEL.
MAINTENANCE WORK DONE BY KTM AUTHORISED WORKSHOPS IS NOT A SUBSTITUTE FOR CARE AND CHECKS DONE BY THE RIDER.

IMPORTANT CHECKS AND MAINTENANCE TO BE CARRIED OUT BY THE RIDER			
	Before each start	After every cleaning	For cross-country use
Check oil level	●		
Check brake fluid level	●		
Check brake pads for wear	●		
Check lights for function	●		
Check horn for function	●		
Lubricate and adjust cables and nipples		●	
Bleed fork legs regularly			●
Remove and clean fork dust bellows regularly			●
Clean and lubricate chain, check tension and adjust if necessary		●	●
Clean air filter and filter box			●
Check tires for pressure and wear	●		
Check cooling fluid level	●		
Check fuel lines for leaks	●		
Drain and clean float chamber		●	
Check all control elements for smooth operation	●		
Check brake performance	●	●	
Treat blank metal parts (with the exception of brake and exhaust system) with wax-based anti corrosion agent		●	
Treat ignition and steering locks and light switches with contact spray		●	
Check tightness of screws, nuts and hose clamps regularly			●

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RECOMMENDED INSPECTION OF THE 250/450/525 SX AND EXC ENGINE USED FOR ENDURO COMPETITIONS BY YOUR KTM WORKSHOP (ADDITIONAL ORDER FOR THE KTM WORKSHOP)							
a 100 liter fuel consumption is equivalent to approx. 15 operating hours	15 hours 100 liter	30 hours 200 liter	45 hours 300 liter	60 hours 400 liter	90 hours 600 liter	120 hours 800 liter	135 hours 900 liter
Check the clutch disks for wear	●	●	●	●	●	●	●
Check the length of the clutch springs		●	●	●	●	●	●
Check the cylinder and piston for wear			●		●		●
Check the groove on the piston pin retainer for wear (visual check)			●		●		●
Check the camshaft for wear (visual check)			●		●		●
Replace the camshaft bearings			●		●		●
Check the length of the valve springs			●		●		●
Check the spring cap for wear			●		●		●
Check the eccentricity of the valve disk			●		●		●
Check the valve guides for wear			●		●		●
Check the radial clearance of the rocker arm rollers			●		●		●
Check the elongation of the timing chain			●		●		●
Check the chain tensioner tooting for damage (visual check)		●	●	●	●	●	●
Check the eccentricity of the crankshaft journal			●		●		●
Replace the conrod bearings			●		●		●
Check piston pin bearing			●		●		●
Replace the balancer shaft bearings			●		●		●
Replace the crankshaft main bearings			●		●		●
Check the entire transmission including the roller and bearings for wear			●		●		●
Check the length of the bypass valve spring			●		●		●

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

RECOMMENDED INSPECTION OF THE 250/450/525 EXC ENGINE USED FOR HOBBY - ENDURO COMPETITIONS BY YOUR KTM WORKSHOP (ADDITIONAL ORDER FOR THE KTM WORKSHOP)							
a 100 liter fuel consumption is equivalent to approx. 15 operating hours	30 hours 200 liter	60 hours 400 liter	90 hours 600 liter	120 hours 800 liter	180 hours 1200 liter	240 hours 1600 liter	270 hours 1800 liter
Check the clutch disks for wear	●	●	●	●	●	●	●
Check the length of the clutch springs		●	●	●	●	●	●
Check the cylinder and piston for wear			●		●		●
Check the groove on the piston pin retainer for wear (visual check)			●		●		●
Check the camshaft for wear (visual check)			●		●		●
Replace the camshaft bearings			●		●		●
Check the length of the valve springs			●		●		●
Check the spring cap for wear			●		●		●
Check the eccentricity of the valve disk			●		●		●
Check the valve guides for wear			●		●		●
Check the radial clearance of the rocker arm rollers			●		●		●
Check the elongation of the timing chain			●		●		●
Check the chain tensioner tooting for damage (visual check)		●	●	●	●	●	●
Check the eccentricity of the crankshaft journal			●		●		●
Replace the conrod bearings			●		●		●
Check piston pin bearing			●		●		●
Replace the balancer shaft bearings			●		●		●
Replace the crankshaft main bearings			●		●		●
Check the entire transmission including the roller and bearings for wear			●		●		●
Check the length of the bypass valve spring			●		●		●

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

PERIODIC MAINTENANCE SCHEDULE 2005

	A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY WHICH SAVES MONEY!	1. service after 3 hours or 20 l fuel	after/every 15 hours or 100 l fuel
ENGINE	Change engine oil, short and long oil filters	●	●
	Clean oil screen and drain plug magnet	●	●
	Check oil lines for damage or bends	●	●
	Replace spark plug (after 30 hours)		
	Check and adjust valve clearance	●	●
	Check engine mounting bolts for tightness	●	●
CARBURETOR	Check carburetor connection boot for cracks and leaks		●
	Check idle speed setting	●	●
	Check vent hoses for damage or bends	●	●
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 and bends adjust and lubricate	●	●
	Check fluid level of the clutch master cylinder	●	●
	Clean air filter and filter box		●
	Check electric wires for damage and bends		●
	Check headlamp setting		●
	Check function of electric systems (low high beam, brake light, indicator lamps, speedometer illumination, horn, emergency OFF switch or button	●	●
BRAKES	Check brake fluid level, lining thickness, brake discs	●	●
	Check brake lines for damage and leaks	●	●
	Check/function smooth operation and adjust free travel of handbrake/foot brake lever	●	●
	Check tightness of brake system screws	●	●
CHASSIS	Check shock absorber and fork for leaks and function	●	●
	Clean fork dust bellows		●
	Bleed fork legs		●
	Check swing arm bearings		●
	Check/adjust steering head bearings	●	●
	Check tightness of chassis screws (triple clamps, fork leg axle passage)	●	●
WHEELS	Check spoke tension and rim joint	●	●
	Check tires and air pressure	●	●
	Check chain, chain joint, rear sprockets and chain guides for wear, fit 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
Complete maintenance of fork	●
Complete maintenance of shock absorber	●
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 spray	●
Treat battery connections with contact grease	●
Change hydraulic clutch fluid	●
Change brake fluid	●

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

IMPORTANT CHECKS AND MAINTENANCE TO BE CARRIED OUT BY THE RIDER			
	Before each start	**After every cleaning**	**For cross-country use**
Check oil level	●		
Check brake fluid level	●		
Check brake pads for wear	●		
Check lights for function	●		
Check horn for function	●		
Lubricate and adjust cables and nipples		●	
Bleed fork legs regularly			●
Remove and clean fork dust bellows regularly			●
Clean and lubricate chain, check tension and adjust if necessary		●	●
Clean air filter and filter box			●
Check tires for pressure and wear	●		
Check cooling fluid level	●		
Check fuel lines for leaks	●		
Drain and clean float chamber		●	
Check all control elements for smooth operation	●		
Check brake performance	●	●	
Treat blank metal parts (with the exception of brake and exhaust system) with wax-based anti corrosion agent		●	
Treat ignition and steering locks and light switches with contact spray		●	
Check tightness of screws, nuts and hose clamps regularly			●

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RECOMMENDED INSPECTION OF THE 250-610 RACING ENGINE USED FOR ENDURO COMPETITIONS BY THE KTM WORKSHOP (ADDITIONAL ORDER FOR THE KTM WORKSHOP)							
a 100 liter fuel consumption is equivalent to approx. 15 operating hours	15 hours 100 liter	30 hours 200 liter	45 hours 300 liter	60 hours 400 liter	90 hours 600 liter	120 hours 800 liter	135 hours 900 liter
Check the clutch discs for wear	●	●	●	●	●	●	●
Check the length of the clutch springs		●	●	●	●	●	●
Check the cylinder and piston for wear			●		●		●
Check the groove on the piston pin retainer for wear (visual check)			●		●		●
Check the camshaft for wear (visual check)			●		●		●
Replace the camshaft bearings			●		●		●
Check the length of the valve springs			●		●		●
Check the spring cap for wear			●		●		●
Check the eccentricity of the valve disc			●		●		●
Check the valve guides for wear			●		●		●
Check the radial clearance of the rocker arm rollers			●		●		●
Check the elongation of the timing chain			●		●		●
Check the chain tensioner tooting for damage (visual check)		●	●	●	●	●	●
Check the eccentricity of the crankshaft journal			●		●		●
Replace the conrod bearings			●		●		●
Check piston pin bearing			●		●		●
Replace the balancer shaft bearings			●		●		●
Replace the crankshaft main bearings			●		●		●
Check the entire transmission including the roller and bearings for wear			●		●		●
Check the length of the bypass valve spring			●		●		●

RECOMMENDED INSPECTION OF THE 250-610 RACING ENGINE USED FOR HOBBY - ENDURO COMPETITIONS BY THE KTM WORKSHOP (ADDITIONAL ORDER FOR THE KTM WORKSHOP)							
a 100 liter fuel consumption is equivalent to approx. 15 operating hours	30 hours 200 liter	60 hours 400 liter	90 hours 600 liter	120 hours 800 liter	180 hours 1200 liter	240 hours 1600 liter	270 hours 1800 liter
Check the clutch discs for wear	●	●	●	●	●	●	●
Check the length of the clutch springs		●	●	●	●	●	●
Check the cylinder and piston for wear			●		●		●
Check the groove on the piston pin retainer for wear (visual check)			●		●		●
Check the camshaft for wear (visual check)			●		●		●
Replace the camshaft bearings			●		●		●
Check the length of the valve springs			●		●		●
Check the spring cap for wear			●		●		●
Check the eccentricity of the valve disc			●		●		●
Check the valve guides for wear			●		●		●
Check the radial clearance of the rocker arm rollers			●		●		●
Check the elongation of the timing chain			●		●		●
Check the chain tensioner tooting for damage (visual check)		●	●	●	●	●	●
Check the eccentricity of the crankshaft journal			●		●		●
Replace the conrod bearings			●		●		●
Check piston pin bearing			●		●		●
Replace the balancer shaft bearings			●		●		●
Replace the crankshaft main bearings			●		●		●
Check the entire transmission including the roller and bearings for wear			●		●		●
Check the length of the bypass valve spring			●		●		●

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

PERIODIC MAINTENANCE SCHEDULE 2006

250-560 RACING

	A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY WHICH SAVES MONEY!	1st service after 3 hours or 20 l fuel	every 15 hours or 100 l fuel
ENGINE	Change engine oil, short and long oil filters	●	●
	Clean oil screen and drain plug magnet	●	●
	Check oil lines for damage or bends	●	●
	Replace spark plug (after 30 hours)		
	Check and adjust valve clearance	●	●
	Check engine mounting bolts for tightness	●	●
	Clean the spark-plug connector and check for a tight fit	●	●
	Check the screws on the kick starter and shift lever for a tight fit	●	●
CARBURETOR	Check carburetor connection boot for cracks and leaks		●
	Check idle speed setting	●	●
	Check the carburetor connection boots for cracks and leaks	●	●
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 and bends adjust and lubricate	●	●
	Check fluid level of the clutch master cylinder	●	●
	Clean air filter and filter box		●
	Check electric wires for damage and bends		●
	Check headlamp setting		●
	Check function of electric systems (low high beam, brake light, indicator lamps, speedometer illumination, horn, emergency OFF switch or button	●	●
BRAKES	Check brake fluid level, lining thickness, brake discs	●	●
	Check brake lines for damage and leaks	●	●
	Check/function smooth operation and adjust free travel of handbrake lever / foot brake pedal	●	●
	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 fork dust bellows		●
	Bleed fork legs		●
	Check swing arm bearings		●
	Check/adjust steering head bearings	●	●
	Check tightness of chassis screws (triple clamps, fork leg axle passage, swing arm, shock aborber)	●	●
WHEELS	Check spoke tension and rim joint	●	●
	Check tires and air pressure	●	●
	Check chain, chain joint, rear sprockets and chain guides for wear, fit and tension	●	●
	Lubricate chain, clean and grease the adjusting screws on the chain tensioner	●	●
	Check clearance of wheel bearings	●	●

ADDITIONAL SERVICE WORK THAT MUST BE PERFORMED UNDER A SEPARATE ORDER	at least once a year	every 2 years
Complete maintenance of fork	●	
Complete maintenance of shock absorber		●
Clean and grease steering head bearings and gasket elements	●	
Clean and adjust carburetor	●	
Treat electric contacts and switches with contact spray	●	
Treat battery connections with contact grease	●	
Change hydraulic clutch fluid	●	
Change brake fluid	●	
Clean spark arrestor (XC/EXC USA)	●	

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

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

IMPORTANT INSPECTIONS OR MAINTENANCE WORK THAT MUST BE PERFORMED BY THE SPECIALIZED KTM WORKSHOP IF MOTORCYCLE IS USED FOR COMPETITIVE RACING (SEPARATE ORDER FOR SPECIALIZED KTM WORKSHOP)			
A 100 liter fuel consumption is equivalent to approx. 15 operating hours	**every 15 hours 100 liters**	**every 30 hours 200 liters**	**every 45 hours 300 liters**
Check the clutch discs for wear	●	●	●
Check the length of the clutch springs		●	●
Check the cylinder and piston for wear			●
Check the groove on the piston pin retainer for wear (visual check)			●
Check the camshaft for wear (visual check)			●
Replace the camshaft bearings			●
Check the length of the valve springs			●
Check the spring cap for wear			●
Check the eccentricity of the valve disc			●
Check the valve guides for wear			●
Check the radial clearance of the rocker arm rollers			●
Check the elongation of the timing chain			●
Check the chain tensioner tooting for damage (visual check)		●	●
Check the eccentricity of the crankshaft journal			●
Replace the conrod bearings			●
Check the piston pin bearing			●
Replace the balancer shaft bearings			●
Replace the crankshaft main bearings			●
Check the entire transmission including the roller and bearings for wear			●
Check the length of the bypass valve spring			●
Replace the glass-fiber yarn filling in the silencer (SX)	●	●	●
Replace the glass-fiber yarn filling in the silencer (Enduro)		●	
Replace the sealing cup for the foot brake cylinder (SX)	●	●	●
Replace the sealing cup for the foot brake cylinder (Enduro)		●	
Check the throttle slide, jet needle and needle jet (every 50 hours)			

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

IMPORTANT INSPECTIONS OR MAINTENANCE WORK THAT MUST BE PERFORMED BY THE SPECIALIZED KTM WORKSHOP IF MOTORCYCLE IS USED FOR PRIVATE PURPOSES (SEPARATE ORDER FOR SPECIALIZED KTM WORKSHOP)			
A 100 liter fuel consumption is equivalent to approx. 15 operating hours	**every 30 hours 200 liters**	**every 60 hours 400 liters**	**every 90 hours 600 liters**
Check the clutch discs for wear	●	●	●
Check the length of the clutch springs		●	●
Check the cylinder and piston for wear			●
Check the groove on the piston pin retainer for wear (visual check)			●
Check the camshaft for wear (visual check)			●
Replace the camshaft bearings			●
Check the length of the valve springs			●
Check the spring cap for wear			●
Check the eccentricity of the valve disc			●
Check the valve guides for wear			●
Check the radial clearance of the rocker arm rollers			●
Check the elongation of the timing chain			●
Check the chain tensioner tooting for damage (visual check)		●	●
Check the eccentricity of the crankshaft journal			●
Replace the conrod bearings			●
Check the piston pin bearing			●
Replace the balancer shaft bearings			●
Replace the crankshaft main bearings			●
Check the entire transmission including the roller and bearings for wear			●
Check the length of the bypass valve spring			●
Replace the glass-fiber yarn filling in the silencer (SX)	●	●	●
Replace the glass-fiber yarn filling in the silencer (Enduro)		●	
Replace the sealing cup for the foot brake cylinder (SX)	●	●	●
Replace the sealing cup for the foot brake cylinder (Enduro)		●	
Check the throttle slide, jet needle and needle jet (every 50 hours)			

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

PERIODIC MAINTENANCE SCHEDULE 2007

400-560 RACING

	A CLEAN MOTORCYCLE CAN BE CHECKED MORE QUICKLY WHICH SAVES MONEY!	1st service after 3 hours or 20 l fuel	every 15 hours or 100 l fuel
ENGINE	Change engine oil, short and long oil filters	●	●
	Clean oil screen and drain plug magnet	●	●
	Check oil lines for damage or bends	●	●
	Replace spark plug (after 30 hours)		
	Check and adjust valve clearance	●	●
	Check engine mounting bolts for tightness	●	●
	Clean the spark-plug connector and check for a tight fit	●	●
	Check the screws on the kick starter and shift lever for a tight fit	●	●
CARBURETOR	Check carburetor connection boot for cracks and leaks		●
	Check idle speed setting	●	●
	Check the carburetor connection boots for cracks and leaks	●	●
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 and bends adjust and lubricate	●	●
	Check fluid level of the clutch master cylinder	●	●
	Clean air filter and filter box		●
	Check electric wires for damage and bends		●
	Check headlamp setting		●
	Check function of electric systems (low high beam, brake light, indicator lamps, speedometer illumination, horn, emergency OFF switch or button	●	●
BRAKES	Check brake fluid level, lining thickness, brake discs	●	●
	Check brake lines for damage and leaks	●	●
	Check/function smooth operation and adjust free travel of handbrake lever / foot brake pedal	●	●
	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 fork dust bellows		●
	Bleed fork legs		●
	Check swing arm bearings		●
	Check/adjust steering head bearings	●	●
	Check tightness of chassis screws (triple clamps, fork leg axle passage, swing arm, shock aborber)	●	●
WHEELS	Check spoke tension and rim joint	●	●
	Check tires and air pressure	●	●
	Check chain, chain joint, rear sprockets and chain guides for wear, fit and tension	●	●
	Lubricate chain, clean and grease the adjusting screws on the chain tensioner	●	●
	Check clearance of wheel bearings	●	●

ADDITIONAL SERVICE WORK THAT MUST BE PERFORMED UNDER A SEPARATE ORDER	at least once a year	every 2 years
Complete maintenance of fork	●	
Complete maintenance of shock absorber		●
Clean and grease steering head bearings and gasket elements	●	
Clean and adjust carburetor	●	
Treat electric contacts and switches with contact spray	●	
Treat battery connections with contact grease	●	
Change hydraulic clutch fluid	●	
Change brake fluid	●	
Clean spark arrestor (XC-W USA / EXC USA)	●	

IF MOTORCYCLE IS USED FOR COMPETITION 15 HOURS SERVICE SHOULD BE CARRIED OUT AFTER EVERY RACE.
Service intervals should never be exceeded by more than 2 hours or 15 liters of fuel.
Maintenance work done by authorized KTM 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**	**At least once a year**
Check oil level	●			
Check brake fluid level	●			
Check brake pads for wear	●			
Check lights for function	●			
Check horn for function	●			
Lubricate and adjust cables and nipples		●		
Bleed fork legs regularly			●	
Remove and clean fork dust bellows regularly			●	
Clean and lubricate chain, check tension and adjust if necessary		●	●	
Clean air filter and filter box			●	
Check tires for pressure and wear	●			
Check cooling fluid level	●			
Check fuel lines for leaks	●			
Drain and clean float chamber		●		●
Check all control elements for smooth operation	●			
Check brake performance	●	●		
Treat blank metal parts (with the exception of brake and exhaust system) with a wax-based anti corrosion agent		●		
Treat ignition, steering lock and light switches with contact spray		●		
Check tightness of screws, nuts and hose clamps regularly				●

IMPORTANT INSPECTIONS OR MAINTENANCE WORK THAT MUST BE PERFORMED BY THE SPECIALIZED KTM WORKSHOP FOR COMPETITIVE RACING / FOR HOBBY-USE (SEPARATE ORDER FOR SPECIALIZED KTM WORKSHOP)				
A 100 liter fuel consumption is equivalent to approx. 15 operating hours	**COMPETITIVE RACING** **HOBBY-USE**	**every 15 hours 100 liter** **every 30 hours 200 liter**	**every 30 hours 200 liter** **every 60 hours 400 liter**	**every 45 hours 300 liter** **every 90 hours 600 liter**
Check the clutch disks for wear		●	●	●
Check the length of the clutch springs			●	●
Check the cylinder and piston for wear				●
Check the groove on the piston pin retainer for wear (visual check)				●
Check the camshaft for wear (visual check)				●
Replace the camshaft bearings				●
Check the length of the valve springs				●
Check the spring cap for wear				●
Check the eccentricity of the valve disk				●
Check the valve guides for wear				●
Check the radial clearance of the rocker arm rollers				●
Check the elongation of the timing chain				●
Check the chain tensioner tooting for damage (visual check)			●	●
Check the eccentricity of the crankshaft journal				●
Replace the conrod bearings				●
Check piston pin bearing				●
Replace the balancer shaft bearings				●
Replace the crankshaft main bearings				●
Check the entire transmission including the roller and bearings for wear				●
Check the length of the bypass valve spring				●
Replace the glass-fiber yarn filling in the silencer			●	
Replace the sealing cup for the foot brake cylinder			●	
Check the throttle slide, jet needle and needle jet (every 50 hours)				

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

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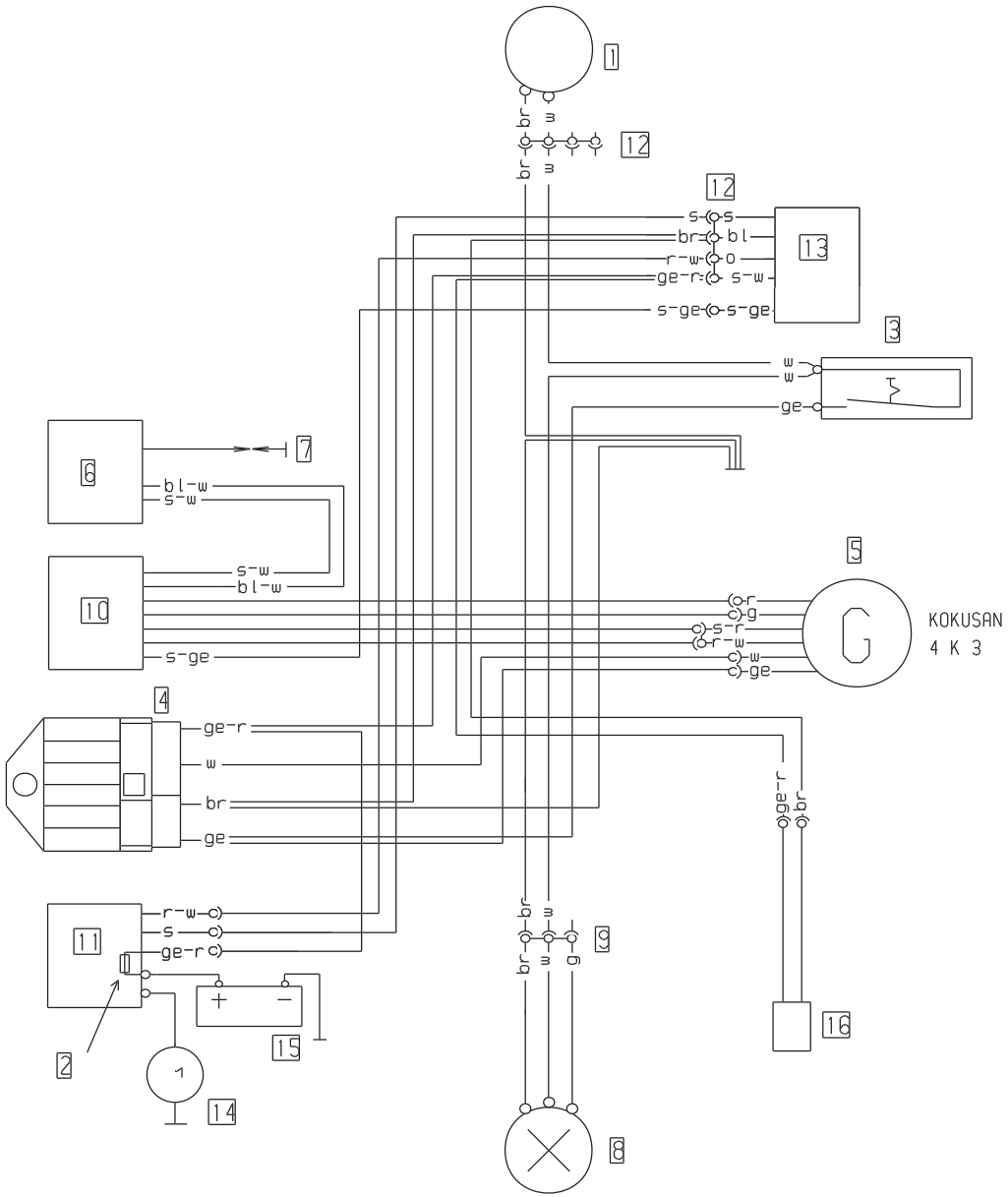
SERVICE	Modell: 400/520 EXC RACING 2000	Kabelstrangnummer: vorne 590 11 075 100, hinten 503 11 076 000	Land: USA	Datum, Name: 13 10 99 TH	Zeichnungsnr: RACOOUSA	Änderungsstand	Kabelstrangbez: vo 4T-Racing 2000, hi 125-380 EXC '98



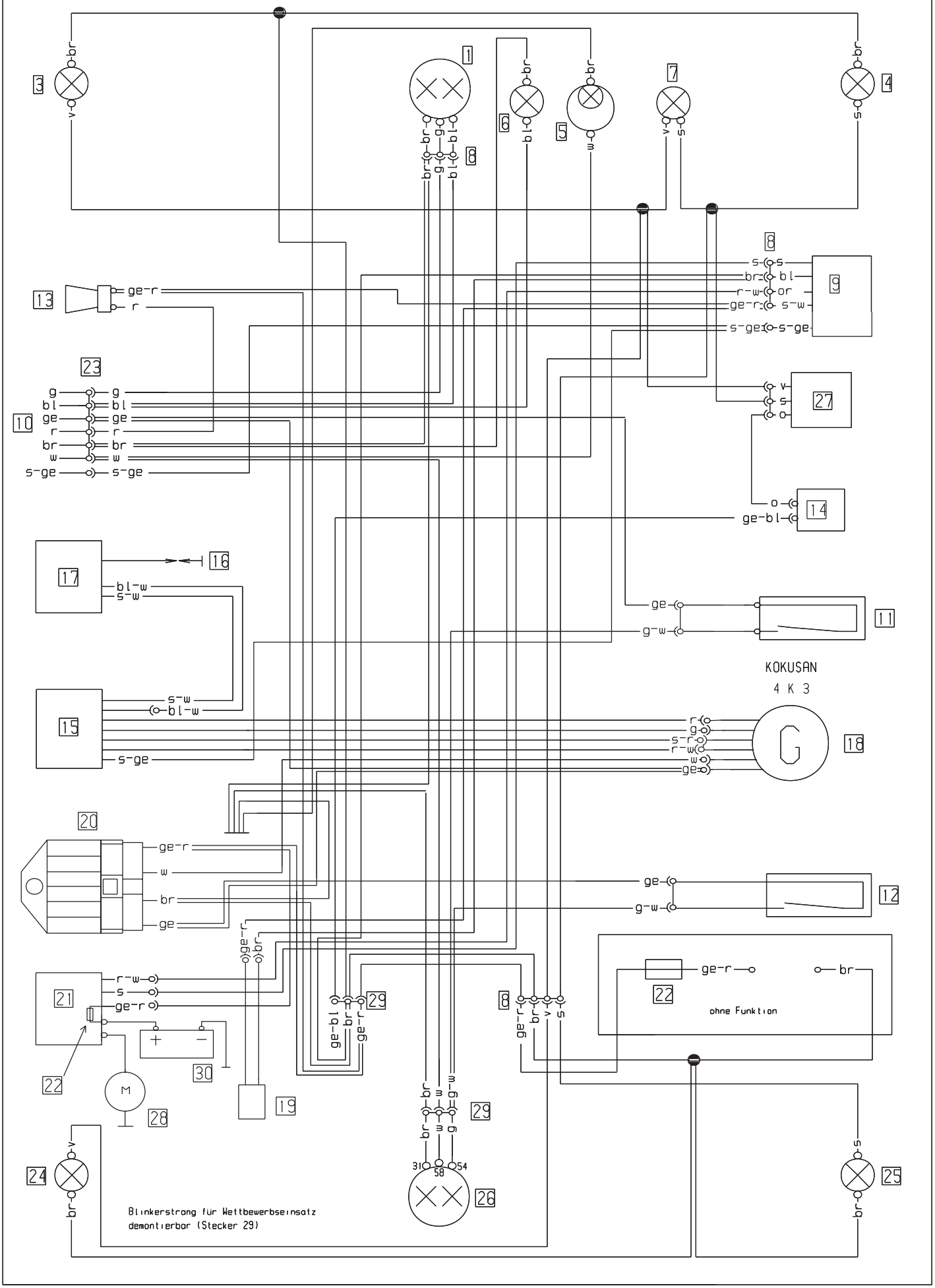
Deutsch	Englisch	Italienisch	Französisch
1 Scheinwerfer	1 headlight	1 faro	1 phare
2 Stecksicherung 10A	2 fuse 10 A	2 fusibile 10A	2 fusible 10A
3 Lichtschalter	3 light switch	3 interr della luce	3 interr d' eclairage
4 Spannungsbegrenzer	4 voltage limiter	4 regol di tens	4 regulateur
5 Generator	5 generator	5 dinamo	5 generateur
6 Zündspule	6 ignition coil	6 bobina d'accens	6 bobine d'allumage
7 Zündkerze	7 spark plug	7 candela	7 bougie
8 Schlußlicht	8 rearlight	8 fanale posteriore	8 feu arriere
9 3-pol Stecker	9 multip cont plug (3)	9 connettore a 3 poli	9 connect multiple (3)
10 CDI-Einheit	10 CDI-unit	10 CDI-scatola	10 CDI-unite
11 Startrelais	11 starter relay	11 rele d'avviamento	11 relais de demarreur
12 4-pol Stecker	12 multip cont plug (4)	12 connettore a 4 poli	12 connect multiple (4)
13 Start/Not Aus	13 startsw /run off	13 disinteritor/partire	13 ba de dem/arr d'urg
14 Startermotor	14 starter engine	14 mot d'avviamento	14 demarreur electrique
15 Batterie 12V 4Ah	15 battery 12V 4Ah	15 batteria 12V 4Ah	15 batterie 12V 4Ah
16 Kondensator	16 capacitor	16 condensatore	16 condensateur
bl blau	bl blue	bl blu	bl bleu
br braun	br brown	br marrone	br brun
ge gelb	ge yellow	ge giallo	ge jaune
gr grau	gr grey	gr grigio	gr gris
g grün	g green	g verde	g vert
o orange	o orange	o arancione	o orange
r rot	r red	r rosso	r rouge
s schwarz	s black	s nero	s noir
v violett	v violet	v violetto	v violet
w weiß	w white	w bianco	w blanc

Start- Notaus- Schalter

Domino	o	s-ge	bl	s	s-w

Spanisch
1 faro
2 fusible prin 10A
3 interruptor d'luz
4 regulador de tension
5 generador
6 bobina de encendido
7 bujia
8 luz de trasera
9 conect multiple (3)
10 unidad cdi
11 rele de arranque
12 conect multiple (4)
13 bott de arr por de u
14 motor de arranque
15 batteria 12V 4Ah
16 condensador
bl azul
br marron
ge amarillo
gr gris
g verde
o naranja
r rojo
s negro
v violeta
w blanco

KTM SPORTMOTORCYCLES SERVICE	Modell	Kabelstrangnummer	Land	Datum, Name
	400/520 EXC RACING	vorne 590 11 075 200 hinten 503 14 040 100 Blinker vorne 503 11 080 100 Blinker hinten 503 11 081 000	Europa	11 10 1999 Hasl



400/520 EXC RACING 2000

Deutsch	Englisch	Italienisch	Französisch
1 Scheinwerfer	1 headlight	1 faro	1 phare
3 Blinker li vo	3 turn indic left fr	3 lampegg ant sn	3 clignoteur av gauche
4 Blinker re vo	4 turn indic right fr	4 lampegg ant dx	4 clignoteur av droit
5 Tachobeleuchtung	5 speedometer light	5 luce di tachimetro	5 eclair comp vitesse
6 Fernlichtkontrolle	6 high beam indicator	6 spia abbagliante	6 temoin feu route
7 Blinkerkontrolle	7 turn indicator	7 spia lampeggiatori	7 temoin de clignoteur
8 4-pol Stecker	8 multip cont plug (4)	8 connettore a 4 poli	8 connect multiple (4)
9 Start / Not Aus	9 startsw /run-off	9 disinteritor/partire	9 ba de dem /arr d'urg
10 zum Kombischalter	10 to combinat switch	10 multicomando	10 commodo
11 Bremslichtsch vo	11 stoplight switch f	11 int luce arresto ant	11 contact de stop av
12 Bremslichtsch hi	12 stoplight switch r	12 int luce arresto post	12 contact Harr de stop
13 Horn	13 horn	13 clacson	13 klaxon
14 Blinkgeber	14 turn indicator	14 trasmett di lampeg	14 centrale clignot
15 CDI-Einheit	15 CDI-unit	15 CDI-seatola	15 boitier CDI
16 Zündkerze	16 spark plug	16 candela	16 bougie
17 Zündspule	17 ignition coil	17 bobina d'accens	17 bobine d'allumage
18 Generator	18 generator	18 dinamo	18 generateur
19 Kondensator	19 capacitor	19 condensatore	19 condensateur
20 Spannungsregler	20 voltage regulator	20 regol di tens	20 regulateur
21 Startrelais	21 starter relay	21 rele d'avviamento	21 relais de demarreur
22 Stecksicherung 10A	22 fuse 10A	22 fusibile 10A	22 fusible 10A
23 6-pol Stecker	23 multip cont plug (6)	23 connettore a 6 poli	23 connect multiple (6)
24 Blinker li hi	24 blinker left rear	24 lampegg post sn	24 clign arr gauche
25 Blinker re hi	25 blinker right rear	25 lampegg post dx	25 clign arr droite
26 Brems-Schlußlicht	26 rear-stoplight	26 fanal post di freno	26 feu arr et de stop
27 Blinkerschalter	27 blink switch	27 int lampeggiatori	27 contact d clignoteur
28 Startermotor	28 starter engine	28 mot d'avviamento	28 demrreur electrique
29 3-pol Stecker	29 multip cont plug (3)	29 connettore a 3 poli	29 connect multiple (3)
30 Batterie 12V 4Ah	30 battery 12V 4Ah	30 batteria 12V 4Ah	30 batterie 12V 4Ah

Deutsch	Englisch	Italienisch	Französisch	Spanisch
bl blau	bl blue	bl blu	bl bleu	bl azul
br braun	br brown	br marrone	br brun	br marron
ge gelb	ge yellow	ge giallo	ge jaune	ge amarillo
gr grau	gr grey	gr grigio	gr gris	gr gris
g grün	g green	g verde	g vert	g verde
o orange	o orange	o arancione	o orange	o naranja
r rot	r red	r rosso	r rouge	r rojo
s schwarz	s black	s nero	s noir	s negro
v violett	v violet	v violetto	v violet	v violeta
w weiß	w white	w bianco	w blanc	w blanco

Spanisch
1 faro
3 interm izquierdo delantero
4 intermitente derecho delantero
5 luz tacometro
6 lampara aviso luces largas
7 lampara aviso intermitentes
8 conector multiple (4)
9 boton de arr par de urg
10 interruptor combinado
11 interr luz de freno del
12 interr luz de fren tras
13 claxon
14 conjunto del intermintente
15 unidad cdi
16 bujia
17 bobina de encendido
18 generador
19 condensador
20 regulador de tension
21 rele de arranque
22 fusible principal 10A
23 conector multiple (6)
24 intermitente izquierdo trasero
25 intermitente derecho trasero
26 luz de freno trasero
27 interuptor clignoteur
28 motor de arrranque
29 conector multiple (3)
30 batteria 12V 4Ah

Start- Notaus- Schalter

Domino	o	s-ge	bl	s	s-w
			○—○		
		○—○			
○					○

Blinkerschalter

	s	o	v
⇦⇨			
⇦		○—○	
⇨	○—○		

Kontaktbelegung -
Lichtschalter (Typ CEV 9610)

	g	bl	ge	w	s/ge	r	br
LICHT =							
Abblendl	○		○	○			
Fernlicht		○	○	○			
HUPE						○	○
ZÜNDUNG AUS					○		○
	5	2	1	3	6	4	

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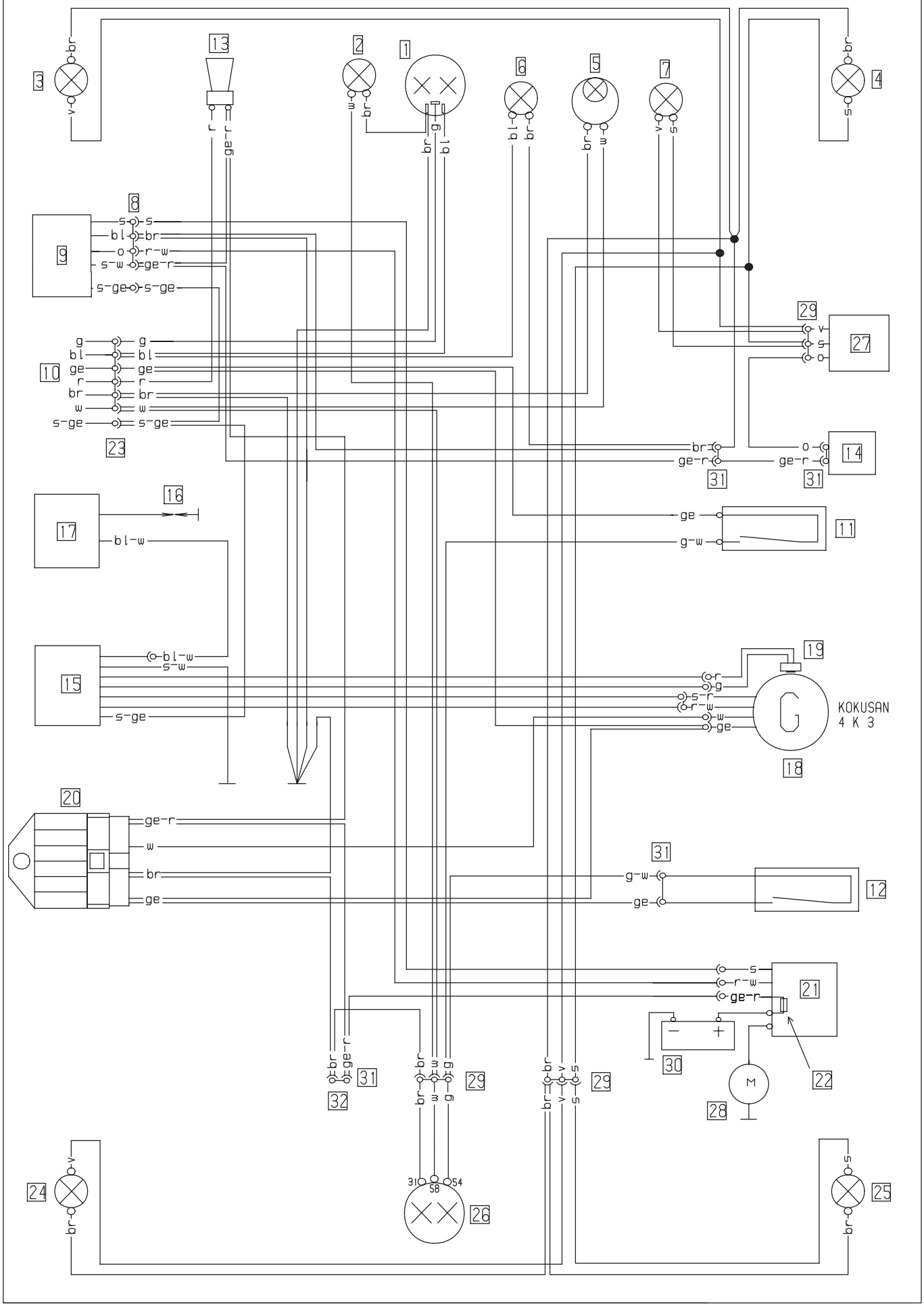
SERVICE	Modell	Kabelstrangnummer	Land	Datum, Name	Dateiname
	2001 400/520 EXC Racing	vorne 590 11 075 400 hinten 503 14 040 100 Blinkerstrang vorne 590 11 080 000 Blinkerstrang hinten 590 11 081 000	EU, AUS	04 05 00 KE	RAC01AUS



400/520 EXC RACING 2001 EU, AUS

Deutsch	Englisch	Italienisch	Französisch
1 Scheinwerfer	1 headlight	1 faro	1 phare
2 Standlicht	2 position light	2 luce di posizione	2 feu de position
3 Blinker li vo	3 turn indic left fr	3 lampegg ant sn	3 clignoteur av gauche
4 Blinker re vo	4 turn indic right fr	4 lampegg ant dx	4 clignoteur av droit
5 Tachobeleuchtung	5 speedometer light	5 luce di tachimetro	5 eclair comp vitesse
6 Fernlichtkontrolle	6 high beam indicator	6 spia abbagliante	6 temoin feu route
7 Blinkerkontrolle	7 turn indicator	7 spia lampeggiatori	7 temoin de clignoteur
8 4-pol Stecker	8 multip cont plug (4)	8 connettore a 4 poli	8 connect multiple (4)
9 Start / Not Aus	9 startsw /run-off	9 disinteritor/partire	9 ba de dem /arr d'urg
10 zum Kombischalter	10 to combinat switch	10 multicomando	10 commodo
11 Bremslichtsch vo	11 stoplight switch f	11 int luce arresto ant	11 contact de stop av
12 Bremslichtsch hi	12 stoplight switch r	12 int luce arresto post	12 contact Harr de stop
13 Horn	13 horn	13 clacson	13 klaxon
14 Blinkgeber	14 turn indicator	14 trasmett di lampeg	14 centrale clignot
15 CDI-Einheit	15 CDI-unit	15 CDI-seatola	15 boitier CDI
16 Zündkerze	16 spark plug	16 candela	16 bougie
17 Zündspule	17 ignition coil	17 bobina d'accens	17 bobine d'allumage
18 Generator	18 generator	18 dinamo	18 generateur
19 Impulsgeber	19 pulser coil	19 trasmett d'impulsi	19 generateur d'impuls
20 Spannungsregler	20 voltage regulator	20 regol di tens	20 regulateur
21 Startrelais	21 starter relay	21 rele d'avviamento	21 relais de demarreur
22 Stecksicherung 10A	22 fuse 10A	22 fusibile 10A	22 fusible 10A
23 6-pol Stecker	23 multip cont plug (6)	23 connettore a 6 poli	23 connect multiple (6)
24 Blinker li hi	24 blinker left rear	24 lampegg post sn	24 clign arr gauche
25 Blinker re hi	25 blinker right rear	25 lampegg post dx	25 clign arr droite
26 Brems-Schlußlicht	26 rear-stoplight	26 fanal post di freno	26 feu arr et de stop
27 Blinkerschalter	27 blink switch	27 int lampeggiatori	27 contact d clignoteur
28 Startermotor	28 starter engine	28 mot d'avviamento	28 demrreur electrique
29 3-pol Stecker	29 multip cont plug (3)	29 connettore a 3 poli	29 connect multiple (3)
30 Batterie 12V 4Ah	30 battery 12V 4Ah	30 batteria 12V 4Ah	30 batterie 12V 4Ah
31 2-pol Stecker	31 multip cont plug (2)	31 connettore a 2 poli	31 connect multiple (2)
32 Lüfteranschluss	32 fan connection	32 connett ventilatore	32 connect ventilateur

Deutsch	Englisch	Italienisch	Französisch	Spanisch
bl blau	bl blue	bl blu	bl bleu	bl azul
br braun	br brown	br marrone	br brun	br marron
ge gelb	ge yellow	ge giallo	ge jaune	ge amarillo
gr grau	gr grey	gr grigio	gr gris	gr gris
g grün	g green	g verde	g vert	g verde
o orange	o orange	o arancione	o orange	o naranja
r rot	r red	r rosso	r rouge	r rojo
s schwarz	s black	s nero	s noir	s negro
v violett	v violet	v violetto	v violet	v violeta
w weiß	w white	w bianco	w blanc	w blanco

Spanisch
1 faro
2 luz de posicion
3 interm izquierdo delantero
4 intermitente derecho delantero
5 luz tacometro
6 lampara aviso luces largas
7 lampara aviso intermitentes
8 conector multiple (4)
9 boton de arr par de urg
10 interruptor combinado
11 interr luz de freno del
12 interr luz de fren tras
13 claxon
14 conjunto del intermintente
15 unidad cdi
16 bujia
17 bobina de encendido
18 generador
19 generado de impulsos
20 regulador de tension
21 rele de arranque
22 fusible principal 10A
23 conector multiple (6)
24 intermitente izquierdo trasero
25 intermitente derecho trasero
26 luz de freno trasero
27 interuptor clignoteur
28 motor de arrranque
29 conector multiple (3)
30 batteria 12V 4Ah
31 conector multiple (2)
32 conector ventilador

Start- Notaus- Schalter

Domino	o	s-ge	bl	s	s-w
			●	●	
		●			
●					●

Blinkerschalter

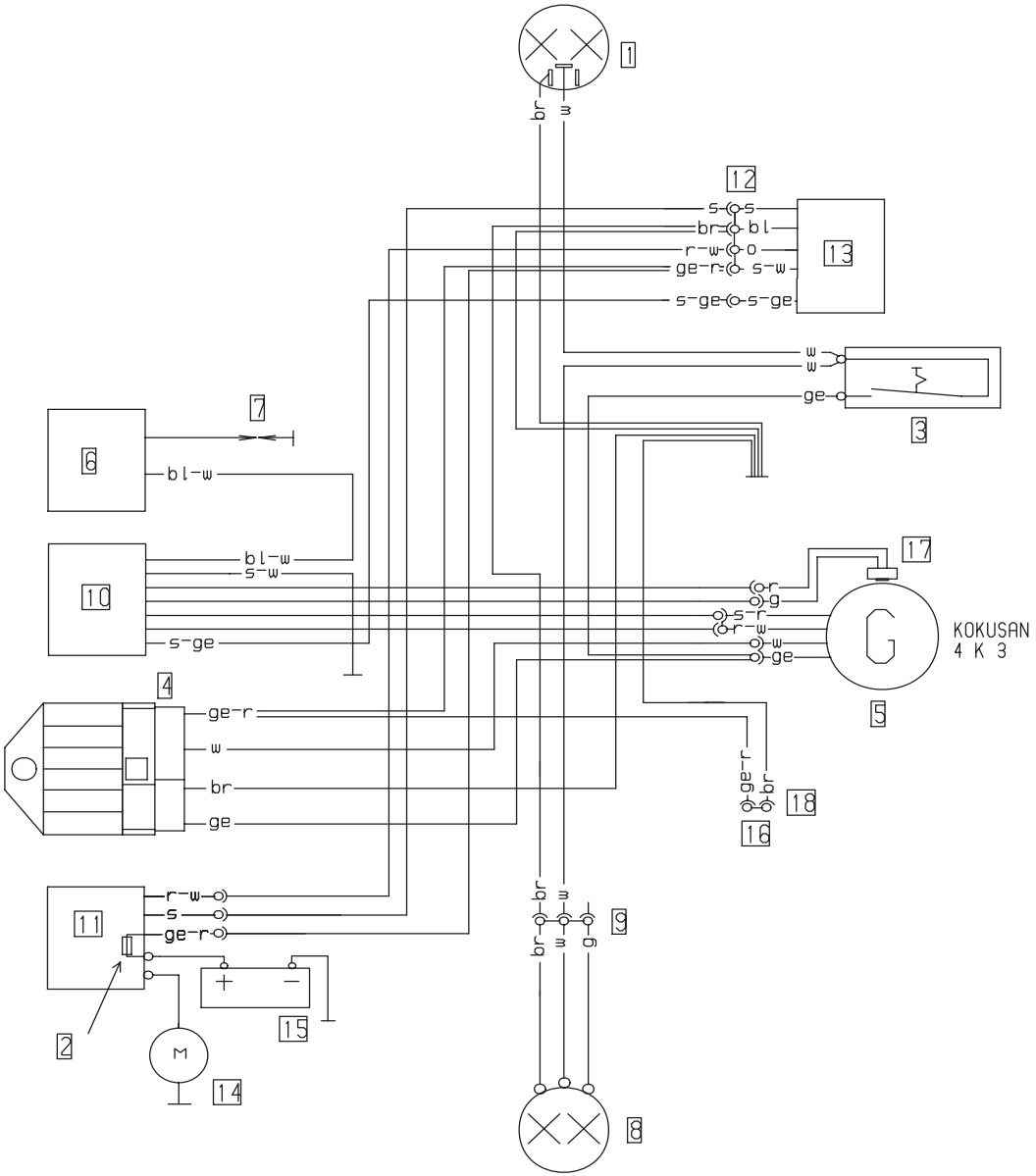
	s	o	v
		●	●
	●		

Kontaktbelegung – Lichtschalter (Typ CEV 9610)

	g	bl	ge	w	s/ge	r	br
Lights ○							
LO beam	●		●	●			
Hi beam		●	●	●			
Horn						●	●
Engine off					●		●
	5	2	1	3	6	4	

Art.-Nr. 3.206.043-E

SERVICE	Modell	Kabelstrangnummer	Land	Datum, Name	Zeichnungsnr	Änderungsstand	Kabelstrangbez
	400/520 MXC/EXC RACING 2001	vorne 590 11 075 300 hinten 503 11 076 000	USA	08 05 00 KE	RAC01USA		vo 4T-Racing 2001 hi 125-380 EXC '98



Deutsch	Englisch	Italienisch	Französisch
1 Scheinwerfer	1 headlight	1 faro	1 phare
2 Stecksicherung 10A	2 fuse 10 A	2 fusibile 10A	2 fusible 10A
3 Lichtschalter	3 light switch	3 interr della luce	3 interr d' eclairage
4 Spannungsbegrenzer	4 voltage limiter	4 regol di tens	4 regulateur
5 Generator	5 generator	5 dinamo	5 generateur
6 Zündspule	6 ignition coil	6 bobina d'accens	6 bobine d'allumage
7 Zündkerze	7 spark plug	7 candela	7 bougie
8 Schlußlicht	8 rearlight	8 fanale posteriore	8 feu arriere
9 3-pol Stecker	9 multip cont plug (3)	9 connettore a 3 poli	9 connect multiple (3)
10 CDI-Einheit	10 CDI-unit	10 CDI-seatola	10 CDI-unite
11 Startrelais	11 starter relay	11 rele d'avviamento	11 relais de demarreur
12 4-pol Stecker	12 multip cont plug (4)	12 connettore a 4 poli	12 connect multiple (4)
13 Start/Not Aus	13 startsw /run off	13 disinteritor/partire	13 ba de dem/arr d'urg
14 Startermotor	14 starter engine	14 mot d'avviamento	14 demarreur electrique
15 Batterie 12V 4Ah	15 battery 12V 4Ah	15 batteria 12V 4Ah	15 batterie 12V 4Ah
16 Lüfteranschluss	16 fan connection	16 connett ventilatore	16 connect ventilateur
17 Impulsgeber	17 pulser coil	17 trasmett d'impulsi	17 generateur d'impuls
18 2-pol Stecker	18 multip cont plug (2)	18 connettore a 2 poli	18 connect multiple (2)
bl blau	bl blue	bl blu	bl bleu
br braun	br brown	br marrone	br brun
ge gelb	ge yellow	ge giallo	ge jaune
gr grau	gr grey	gr grigio	gr gris
g grün	g green	g verde	g vert
o orange	o orange	o arancione	o orange
r rot	r red	r rosso	r rouge
s schwarz	s black	s nero	s noir
v violett	v violet	v violetto	v violet
w weiß	w white	w bianco	w blanc

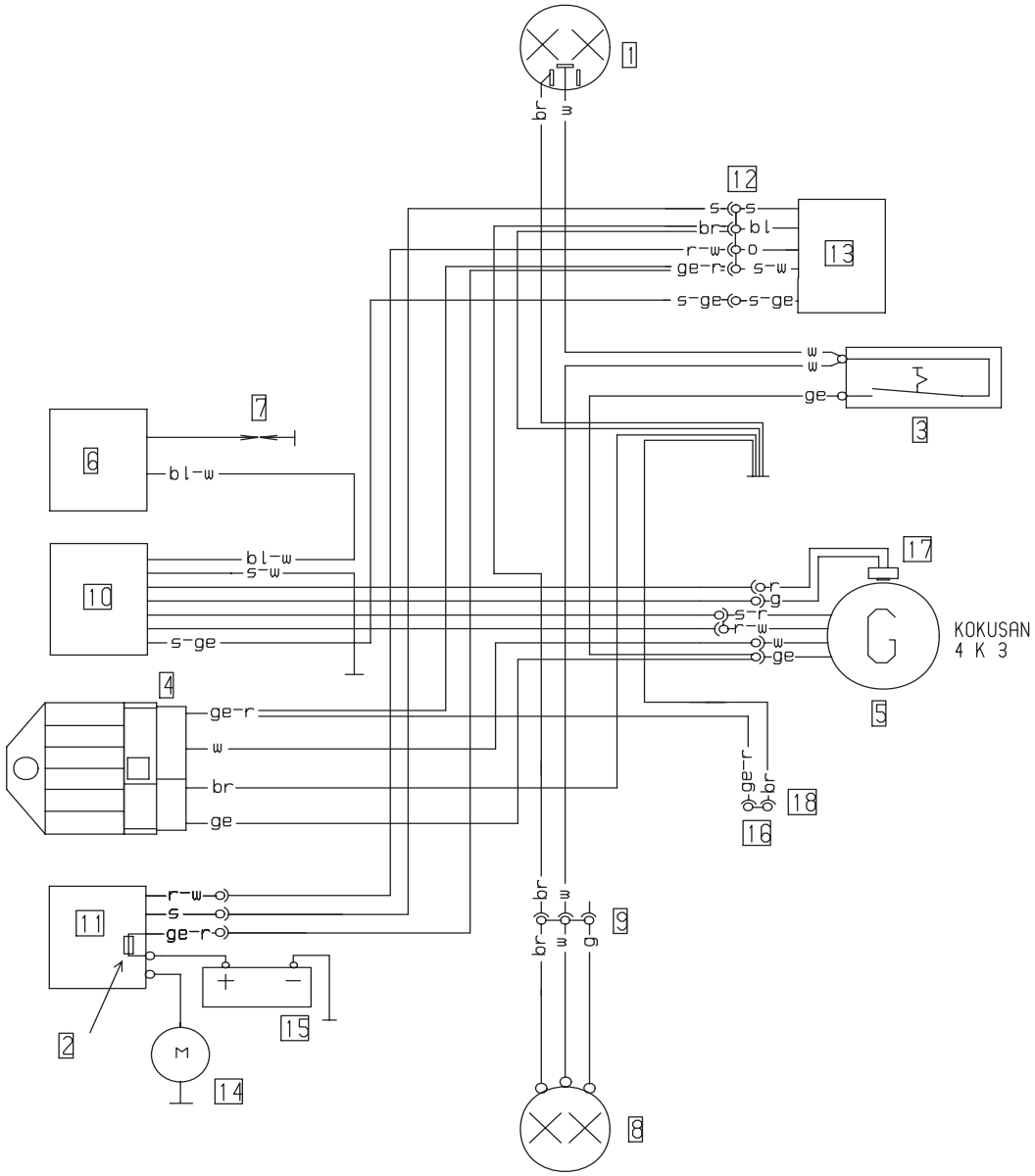
Start- Notaus- Schalter

Domino	o	s-ge	bl	s	s-w
			•	•	
		•			
•					•

Spanisch
1 faro
2 fusible prin 10A
3 interruptor d'luz
4 regulador de tension
5 generador
6 bobina de encendido
7 bujia
8 luz de trasera
9 conect multiple (3)
10 unidad cdi
11 rele de arranque
12 conect multiple (4)
13 batt de arr par de u
14 motor de arranque
15 batteria 12V 4Ah
16 conector ventilador
17 generado de tension
18 conector multiple(2)
bl azul
br marron
ge amarillo
gr gris
g verde
o naranja
r rojo
s negro
v violeta
w blanco

MXC without lights

SERVICE	Modell	Kabelstrangnummer	Land	Datum, Name	Zeichnungsnr	Änderungsstand	Kabelstrangbez
	250/400/520 MXC, EXC RACING 2002	vorne 590 11 075 300 hinten 503 11 076 000	USA	08 05 00 KE	RACO1USA		vo 4T-Racing 2001 hi 125-380 EXC '98



Deutsch	Englisch	Italienisch	Französisch
1 Scheinwerfer	1 headlight	1 faro	1 phare
2 Stecksicherung 10A	2 fuse 10 A	2 fusibile 10A	2 fusible 10A
3 Lichtschalter	3 light switch	3 interr della luce	3 interr d' eclairage
4 Spannungsbegrenzer	4 voltage limiter	4 regol di tens	4 regulateur
5 Generator	5 generator	5 dinamo	5 generateur
6 Zündspule	6 ignition coil	6 bobina d'accens	6 bobine d'allumage
7 Zündkerze	7 spark plug	7 candela	7 bougie
8 Schlußlicht	8 rearlight	8 fanale posteriore	8 feu arriere
9 3-pol Stecker	9 multip cont plug (3)	9 connettore a 3 poli	9 connect multiple (3)
10 CDI-Einheit	10 CDI-unit	10 CDI-seatola	10 CDI-unite
11 Startrelais	11 starter relay	11 rele d'avviamento	11 relais de demarreur
12 4-pol Stecker	12 multip cont plug (4)	12 connettore a 4 poli	12 connect multiple (4)
13 Start/Not Aus	13 startsw /run off	13 disinteritor/partire	13 ba de dem/arr d'urg
14 Startermotor	14 starter engine	14 mot d'avviamento	14 demarreur electrique
15 Batterie 12V 4Ah	15 battery 12V 4Ah	15 batteria 12V 4Ah	15 batterie 12V 4Ah
16 Lüfteranschluss	16 fan connection	16 connett ventilatore	16 connect ventilateur
17 Impulsgeber	17 pulser coil	17 trasmett d'impulsi	17 generateur d'impuls
18 2-pol Stecker	18 multip cont plug (2)	18 connettore a 2 poli	18 connect multiple (2)
bl blau	bl blue	bl blu	bl bleu
br braun	br brown	br marrone	br brun
ge gelb	ge yellow	ge giallo	ge jaune
gr grau	gr grey	gr grigio	gr gris
g grün	g green	g verde	g vert
o orange	o orange	o arancione	o orange
r rot	r red	r rosso	r rouge
s schwarz	s black	s nero	s noir
v violett	v violet	v violetto	v violet
w weiß	w white	w bianco	w blanc

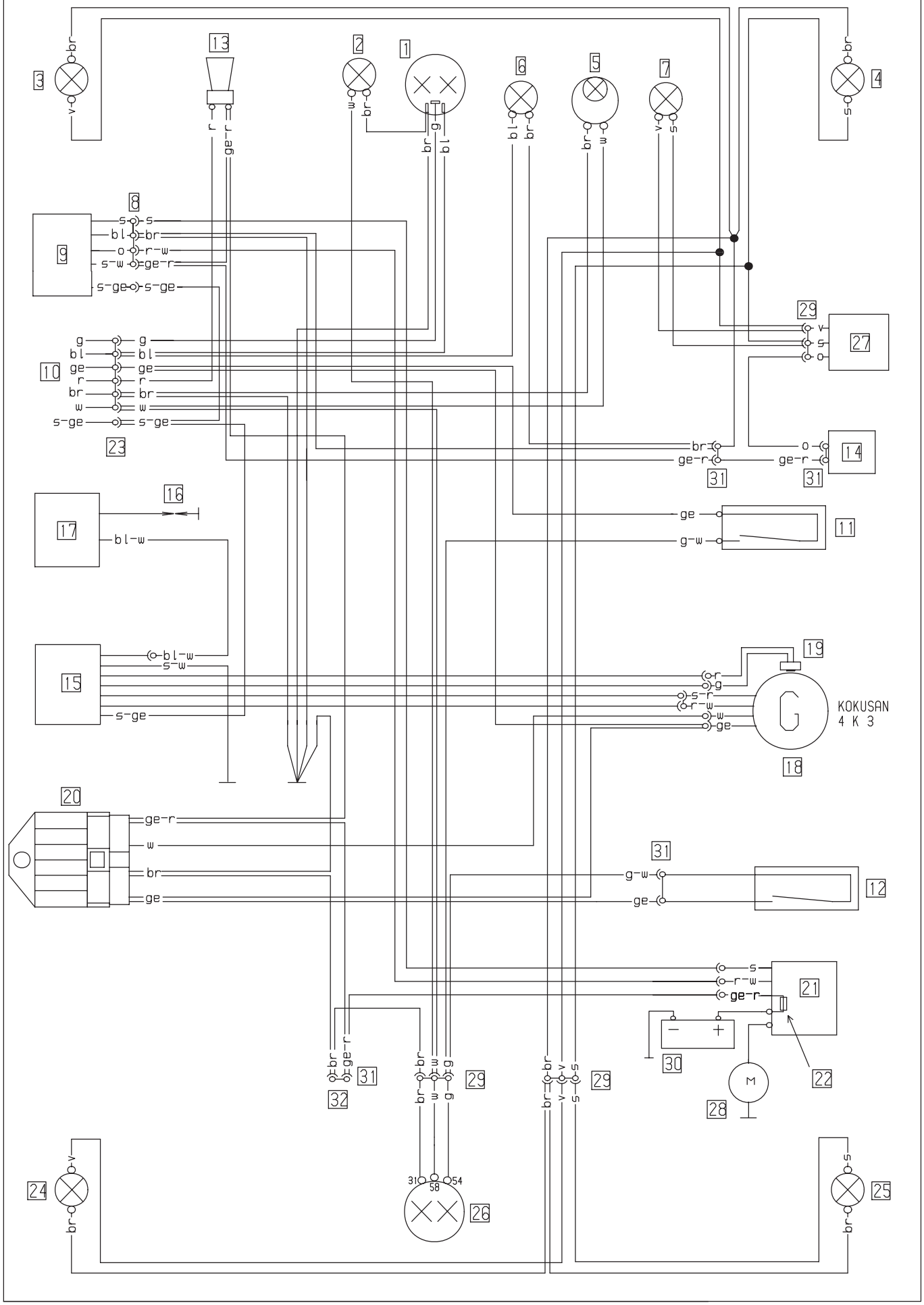
Start- Notaus- Schalter

Domino	o	s-ge	bl	s	s-w
			•		
		•			
	•				•

Spanisch
1 faro
2 fusible prin 10A
3 interruptor d'luz
4 regulador de tension
5 generador
6 bobina de encendido
7 bujia
8 luz de trasera
9 conect multiple (3)
10 unidad cdi
11 rele de arranque
12 conect multiple (4)
13 bott de arr par de u
14 motor de arranque
15 batteria 12V 4Ah
16 conector ventilador
17 generado de tension
18 conector multiple(2)
bl azul
br marron
ge amarillo
gr gris
g verde
o naranja
r rojo
s negro
v violeta
w blanco

MXC without lights

SERVICE	Modell: 250/400/520 EXC RACING	Kabelstrangnummer vorne 590 11 075 400 hinten 503 14 040 100 Blinkerstrang vorne 590 11 080 000 Blinkerstrang hinten 590 11 081 000	Land EU, AUS	Datum, Name 04 05 00 KE	Dateiname RAC01AUS



250/400/520 EXC RACING 2002

Deutsch	Englisch	Italienisch	Französisch
1 Scheinwerfer	1 headlight	1 faro	1 phare
2 Standlicht	2 position light	2 luce di posizione	2 feu de position
3 Blinker li vo	3 turn indic left fr	3 lampegg ant sn	3 clignoteur av gauche
4 Blinker re vo	4 turn indic right fr	4 lampegg ant dx	4 clignoteur av droit
5 Tachobeleuchtung	5 speedometer light	5 luce di tachimetro	5 eclair comp vitesse
6 Fernlichtkontrolle	6 high beam indicator	6 spia abbagliante	6 temoin feu route
7 Blinkerkontrolle	7 turn indicator	7 spia lampeggiatori	7 temoin de clignoteur
8 4-pol Stecker	8 multip cont plug (4)	8 connettore a 4 poli	8 connect multiple (4)
9 Start / Not Aus	9 startsw /run-off	9 disinteritor/partire	9 ba de dem /arr d'urg
10 zum Kombischalter	10 to combinat switch	10 multicomando	10 commodo
11 Bremslichtsch vo	11 stoplight switch f	11 int luce arresto ant	11 contact de stop av
12 Bremslichtsch hi	12 stoplight switch r	12 int luce arresto post	12 contact Harr de stop
13 Horn	13 horn	13 clacson	13 klaxon
14 Blinkgeber	14 turn indicator	14 trasmett di lampeg	14 centrale clignot
15 CDI-Einheit	15 CDI-unit	15 CDI-seatola	15 boitier CDI
16 Zündkerze	16 spark plug	16 candela	16 bougie
17 Zündspule	17 ignition coil	17 bobina d'accens	17 bobine d'allumage
18 Generator	18 generator	18 dinamo	18 generateur
19 Impulsgeber	19 pulser coil	19 trasmett d'impulsi	19 generateur d'impuls
20 Spannungsregler	20 voltage regulator	20 regol di tens	20 regulateur
21 Startrelais	21 starter relay	21 rele d'avviamento	21 relais de demarreur
22 Stecksicherung 10A	22 fuse 10A	22 fusibile 10A	22 fusible 10A
23 6-pol Stecker	23 multip cont plug (6)	23 connettore a 6 poli	23 connect multiple (6)
24 Blinker li hi	24 blinker left rear	24 lampegg post sn	24 clign arr gauche
25 Blinker re hi	25 blinker right rear	25 lampegg post dx	25 clign arr droite
26 Brems-Schlußlicht	26 rear-stoplight	26 fanal post di freno	26 feu arr et de stop
27 Blinkerschalter	27 blink switch	27 int lampeggiatori	27 contact d clignoteur
28 Startermotor	28 starter engine	28 mot d'avviamento	28 demrreur electrique
29 3-pol Stecker	29 multip cont plug (3)	29 connettore a 3 poli	29 connect multiple (3)
30 Batterie 12V 4Ah	30 battery 12V 4Ah	30 batteria 12V 4Ah	30 batterie 12V 4Ah
31 2-pol Stecker	31 multip cont plug (2)	31 connettore a 2 poli	31 connect multiple (2)
32 Lüfteranschluss	32 fan connection	32 connett ventilatore	32 connect ventilateur

Deutsch	Englisch	Italienisch	Französisch	Spanisch
bl blau	bl blue	bl blu	bl bleu	bl azul
br braun	br brown	br marrone	br brun	br marron
ge gelb	ge yellow	ge giallo	ge jaune	ge amarillo
gr grau	gr grey	gr grigio	gr gris	gr gris
g grün	g green	g verde	g vert	g verde
o orange	o orange	o arancione	o orange	o naranja
r rot	r red	r rosso	r rouge	r rojo
s schwarz	s black	s nero	s noir	s negro
v violett	v violet	v violetto	v violet	v violeta
w weiß	w white	w bianco	w blanc	w blanco

Spanisch
1 faro
2 luz de posicion
3 interm izquierdo delantero
4 intermitente derecho delantero
5 luz tacometro
6 lampara aviso luces largas
7 lampara aviso intermitentes
8 conector multiple (4)
9 boton de arr par de urg
10 interruptor combinado
11 interr luz de freno del
12 interr luz de fren tras
13 claxon
14 conjunto del intermintente
15 unidad cdi
16 bujia
17 bobina de encendido
18 generador
19 generado de impulsos
20 regulador de tension
21 rele de arranque
22 fusible principal 10A
23 conector multiple (6)
24 intermitente izquierdo trasero
25 intermitente derecho trasero
26 luz de freno trasero
27 interuptor clignoteur
28 motor de arrranque
29 conector multiple (3)
30 batteria 12V 4Ah
31 conector multiple (2)
32 conector ventilador

Start- Notaus- Schalter

Domino	o	s-ge	bl	s	s-w
			●	●	
		●			
	●				●

Kontaktbelegung – Lichtschalter (Typ CEV 9610)

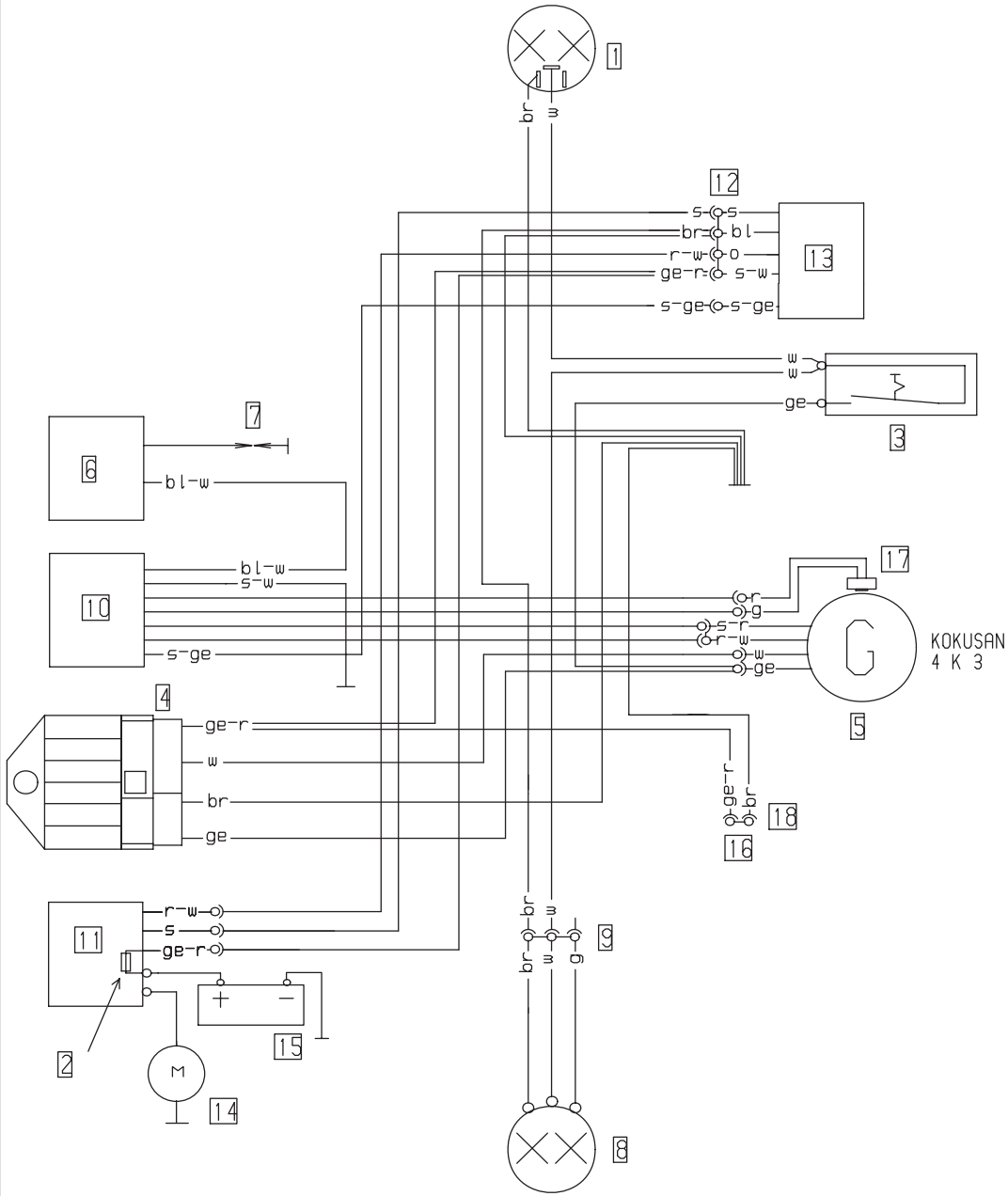
	g	bl	ge	w	s/ge	r	br
Lights ○							
LO beam	●		●	●			
Hi beam		●	●	●			
Horn						●	●
Engine off					●		●
	5	2	1	3	6	4	

Blinkerschalter

	s	o	v
⇦⇨			
⇦		●	●
⇨	●		

Art.-Nr. 3.206.043-E

KTM SPORTMOTORCYCLES SERVICE	Modell	Kabelstrangnummer	Land	Datum, Name	Zeichnungsnr	Änderungsstand	Kabelstrangbez
	250/450/525 MXC / EXC 01/02/03	vorne 590 11 075 300 hinten 503 11 076 000	USA	08 05 00 KE	RAC01USA		vo 4T-Racing 2001 hi 125-380 EXC '98



Deutsch	Englisch	Italienisch	Französisch
1 Scheinwerfer	1 headlight	1 faro	1 phare
2 Stecksicherung 10A	2 fuse 10 A	2 fusibile 10A	2 fusible 10A
3 Lichtschalter	3 light switch	3 interr della luce	3 interr d' eclairage
4 Spannungsbegrenzer	4 voltage limiter	4 regol di tens	4 regulateur
5 Generator	5 generator	5 dinamo	5 generateur
6 Zündspule	6 ignition coil	6 bobina d'accens	6 bobine d'allumage
7 Zündkerze	7 spark plug	7 candela	7 bougie
8 Schlußlicht	8 rearlight	8 fanale posteriore	8 feu arriere
9 3-pol Stecker	9 multip cont plug (3)	9 connettore a 3 poli	9 connect multiple (3)
10 CDI-Einheit	10 CDI-unit	10 CDI-seatola	10 CDI-unite
11 Startrelais	11 starter relay	11 rele d'avviamento	11 relais de demarreur
12 4-pol Stecker	12 multip cont plug (4)	12 connettore a 4 poli	12 connect multiple (4)
13 Start/Not Aus	13 startsw /run off	13 disinteritor/partire	13 ba de dem/arr d'urg
14 Startermotor	14 starter engine	14 mot d'avviamento	14 demarreur electrique
15 Batterie 12V 4Ah	15 battery 12V 4Ah	15 batteria 12V 4Ah	15 batterie 12V 4Ah
16 Lüfteranschluss	16 fan connection	16 connett ventilatore	16 connect ventilateur
17 Impulsgeber	17 pulser coil	17 trasmett d'impulsi	17 generateur d'impuls
18 2-pol Stecker	18 multip cont plug (2)	18 connettore a 2 poli	18 connect multiple (2)
bl blau	bl blue	bl blu	bl bleu
br braun	br brown	br marrone	br brun
ge gelb	ge yellow	ge giallo	ge jaune
gr grau	gr grey	gr grigio	gr gris
g grün	g green	g verde	g vert
o orange	o orange	o arancione	o orange
r rot	r red	r rosso	r rouge
s schwarz	s black	s nero	s noir
v violett	v violet	v violetto	v violet
w weiß	w white	w bianco	w blanc

Start- Notaus- Schalter

Domino	o	s-ge	bl	s	s-w
			•		
		•			
•					•

Spanisch
1 faro
2 fusible prin 10A
3 interruptor d'luz
4 regulador de tension
5 generador
6 bobina de encendido
7 bujia
8 luz de trasera
9 conect multiple (3)
10 unidad cdi
11 rele de arranque
12 conect multiple (4)
13 bott de arr par de u
14 motor de arranque
15 batteria 12V 4Ah
16 conector ventilador
17 generado de tension
18 conector multiple(2)
bl azul
br marron
ge amarillo
gr gris
g verde
o naranja
r rojo
s negro
v violeta
w blanco

MXC without lights

250/450/525 EXC RACING 2003 EU, AUS

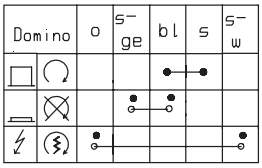
Deutsch	Englisch	Italienisch	Französisch
1 Scheinwerfer	1 headlight	1 faro	1 phare
2 Standlicht	2 position light	2 luce di posizione	2 feu de position
3 Blinker li vo	3 turn indic.left fr.	3 lampegg.ant.sn.	3 clignoteur av gauche
4 Blinker re vo	4 turn indic.right fr.	4 lampegg.ant.dx.	4 clignoteur av.droit
5 Tacho	5 speedometer	5 tachimetro	5 compteur vitesse
6 Fernlichtkontrolle	6 high beam indicator	6 spia abbagliante	6 temoin feu route
7 Blinkerkontrolle	7 turn indicator	7 spia lampeggiatori	7 temoin de clignoteur
8 4-pol.Stecker	8 multip.cont.plug (4)	8 connettore a 4 poli	8 connect.multiple (4)
9 Start / Not Aus	9 startsw./run-off	9 disinteritor/partire	9 ba.de.dem./arr.d'urg
10 zum Kombischalter	10 to combinat. switch	10 multicomando	10 commodo
11 Bremslichtsch. vo	11 stoplight switch f.	11 int.luce arresto ant	11 contact de stop av.
12 Bremslichtsch. hi	12 stoplight switch r.	12 int.luce arresto post	12 contact Harr.de stop
13 Horn	13 horn	13 clacson	13 klaxon
14 Blinkgeber	14 turn indicator	14 trasmett. di lampeg.	14 centrale clignot.
15 CDI-Einheit	15 CDI-unit	15 CDI-seatola	15 boitier CDI
16 Zündkerze	16 spark plug	16 candela	16 bougie
17 Zündspule	17 ignition coil	17 bobina d'accens.	17 bobine d'allumage
18 Generator	18 generator	18 dinamo	18 generateur
19 Impulsgeber	19 pulser coil	19 trasmett d'impulsi	19 generateur d'impuls
20 Spannungsregler	20 voltage regulator	20 regol. di tens.	20 regulateur
21 Startrelais	21 starter relay	21 rele d'avviamento	21 relais de demarreur
22 Stecksicherung 10A	22 fuse 10A	22 fusibile 10A	22 fusible 10A
23 6-pol.Stecker	23 multip.cont.plug (6)	23 connettore a 6 poli	23 connect.multiple (6)
24 Blinker li hi	24 blinker left rear	24 lampegg.post.sn	24 clign.arr.gauche
25 Blinker re hi	25 blinker right rear	25 lampegg.post.dx.	25 clign.arr.droite
26 Brems-Schlußlicht	26 rear-stoplight	26 fanal.post.di freno	26 feu arr.et de stop
27 Blinkerschalter	27 blink switch	27 int. lampeggiatori	27 contact.d.clignoteur
28 Startermotor	28 starter engine	28 mot.d'avviamento	28 demrreur electrique
29 3-pol. Stecker	29 multip.cont.plug (3)	29 connettore a 3 poli	29 connect.multiple (3)
30 Batterie 12V 4Ah	30 battery 12V 4Ah	30 batteria 12V 4Ah	30 batterie 12V 4Ah
31 2-pol.Stecker	31 multip.cont.plug (2)	31 connettore a 2 poli	31 connect.multiple (2)
32 Lüfteranschluss	32 fan connection	32 connett.ventilatore	32 connect.ventilateur

Deutsch	Englisch	Italienisch	Französisch	Spanisch
bl blau	bl blue	bl blu	bl bleu	bl azul
br braun	br brown	br marrone	br brun	br marron
ge gelb	ge yellow	ge giallo	ge jaune	ge amarillo
gr grau	gr grey	gr grigio	gr gris	gr gris
g grün	g green	g verde	g vert	g verde
o orange	o orange	o arancione	o orange	o naranja
r rot	r red	r rosso	r rouge	r rojo
s schwarz	s black	s nero	s noir	s negro
v violett	v violet	v violetto	v violet	v violeta
w weiß	w white	w bianco	w blanc	w blanco

Spanisch
1 faro
2 luz de posicion
3 interm. izquierdo delantero
4 intermitente derecho delantero
5 tacometro
6 lampara aviso luces largas
7 lampara aviso intermitentes
8 conector multiple (4)
9 boton de arr.par.de.urg.
10 interruptor combinado
11 interr. luz de freno del.
12 interr. luz. de fren tras.
13 claxon
14 conjunto del intermintente
15 unidad cdi
16 bujia
17 bobina de encendido
18 generador
19 generado de impulsos
20 regulador de tension
21 rele de arranque
22 fusible principal 10A
23 conector multiple (6)
24 intermitente izquierdo trasero
25 intermitente derecho trasero
26 luz de freno trasero
27 interuptor clignoteur
28 motor de arrranque
29 conector multiple (3)
30 batteria 12V 4Ah
31 conector multiple (2)
32 conector ventilador

19.03.2002

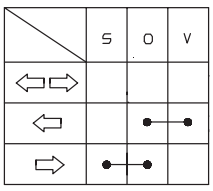
Start- Notaus- Schalter



Kontaktbelegung – Lichtschalter (Typ CEV 9610)

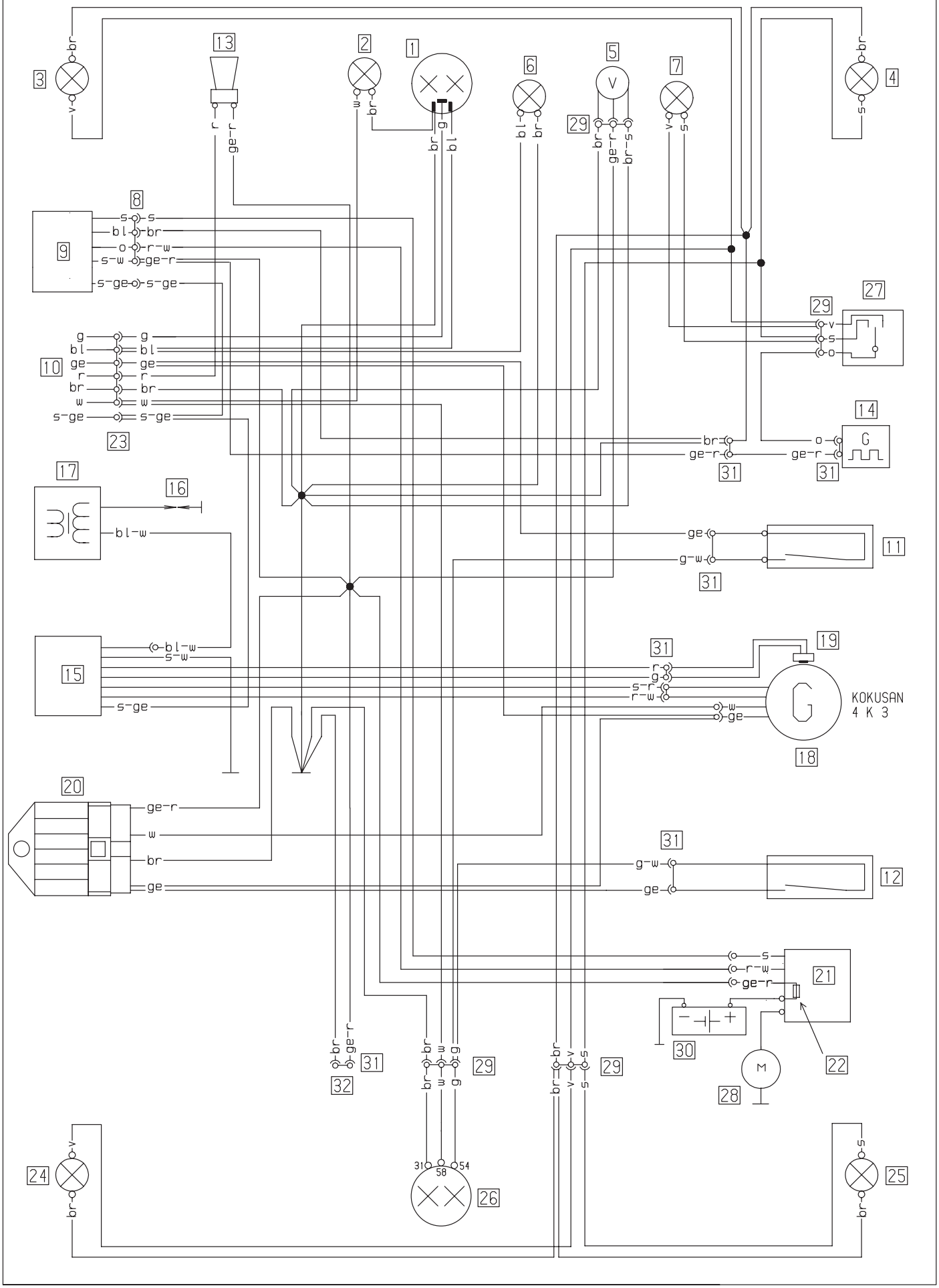
	g	bl	ge	w	s/ge	r	br
Lights							
LO beam	●		●	●			
Hi beam		●	●	●			
Horn						●	●
Engine off					●		●
	5	2	1	3	6	4	

Blinkerschalter



Art.-Nr. 3.206.043-E

SERVICE	Modell 2003 250/450/525 EXC Racing	Kabelstrangnummer: vorne:590.11.075.500 hinten:503.14.040.100 Blinkerstrang vorne:590.11.080.000 Blinkerstrang hinten:590.11.081.000	Land: EU, AUS	Datum, Name: 19.03.02 KE	Dateiname: RAC03AUS



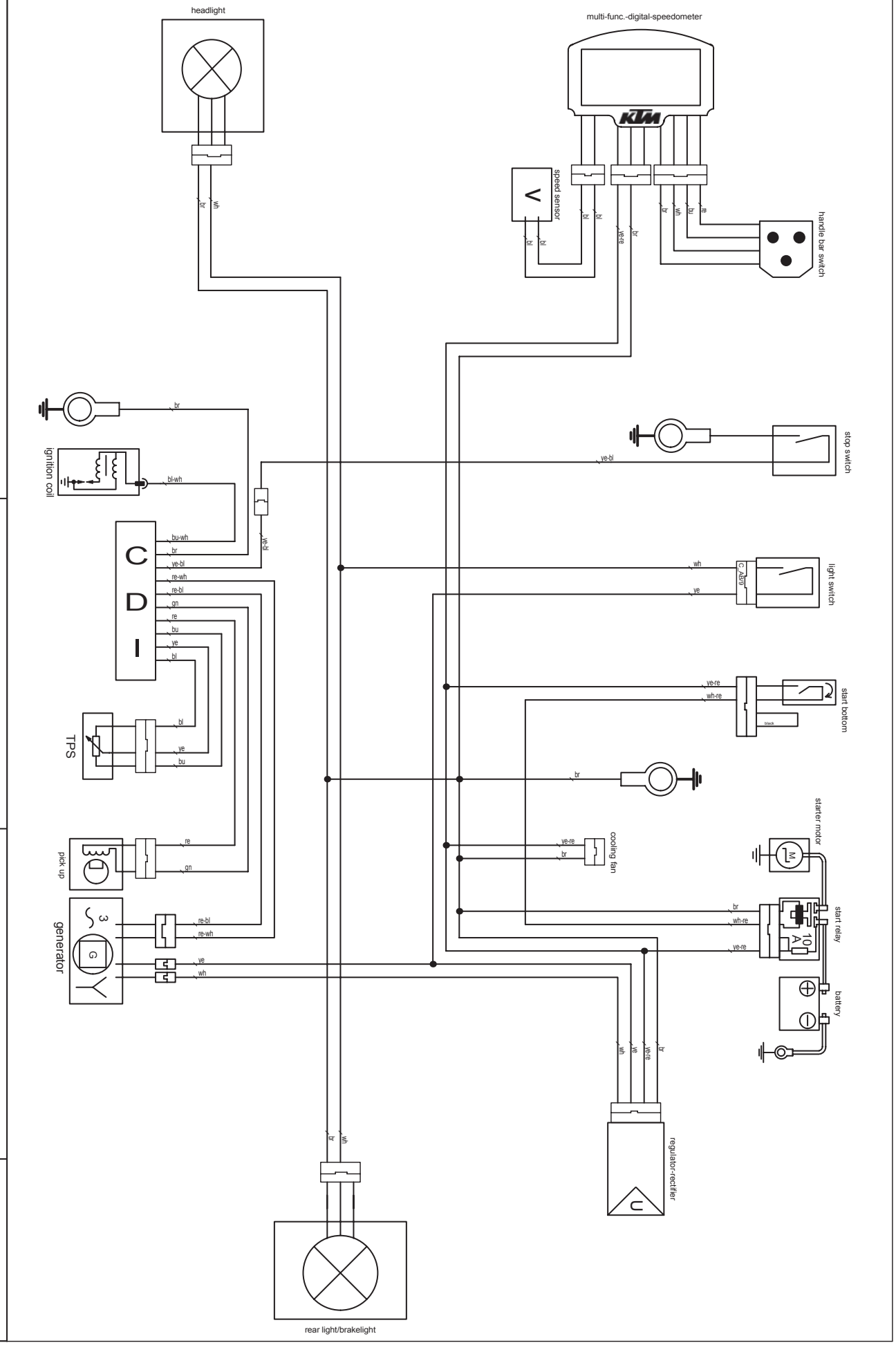
EXC Racing USA 2004
250,450,525

wiring diagram

main harness

590.11.075.600

22.05.2003



Art.-Nr. 3.206.043-E

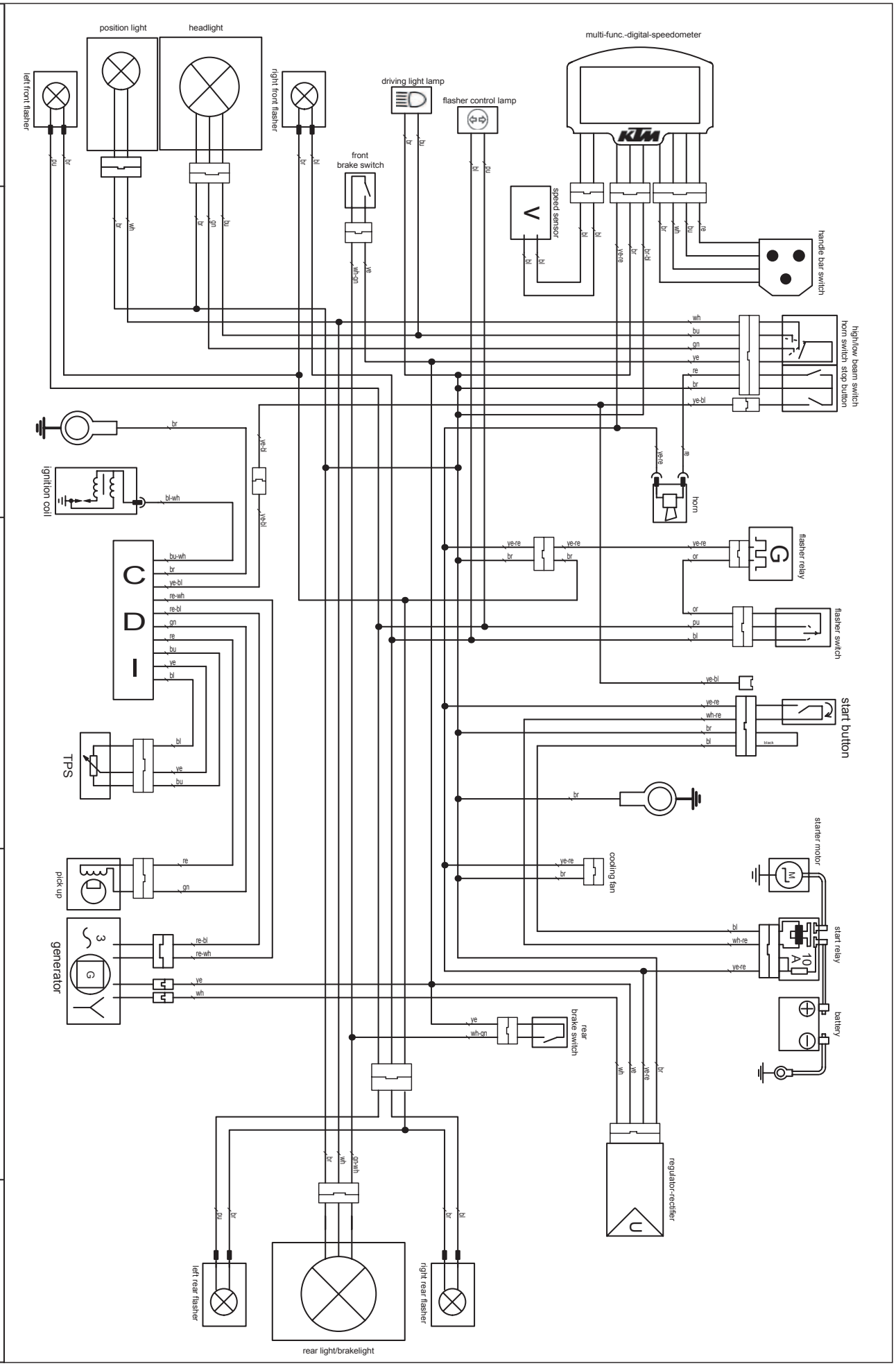
EXC Racing 2004
250,450,525

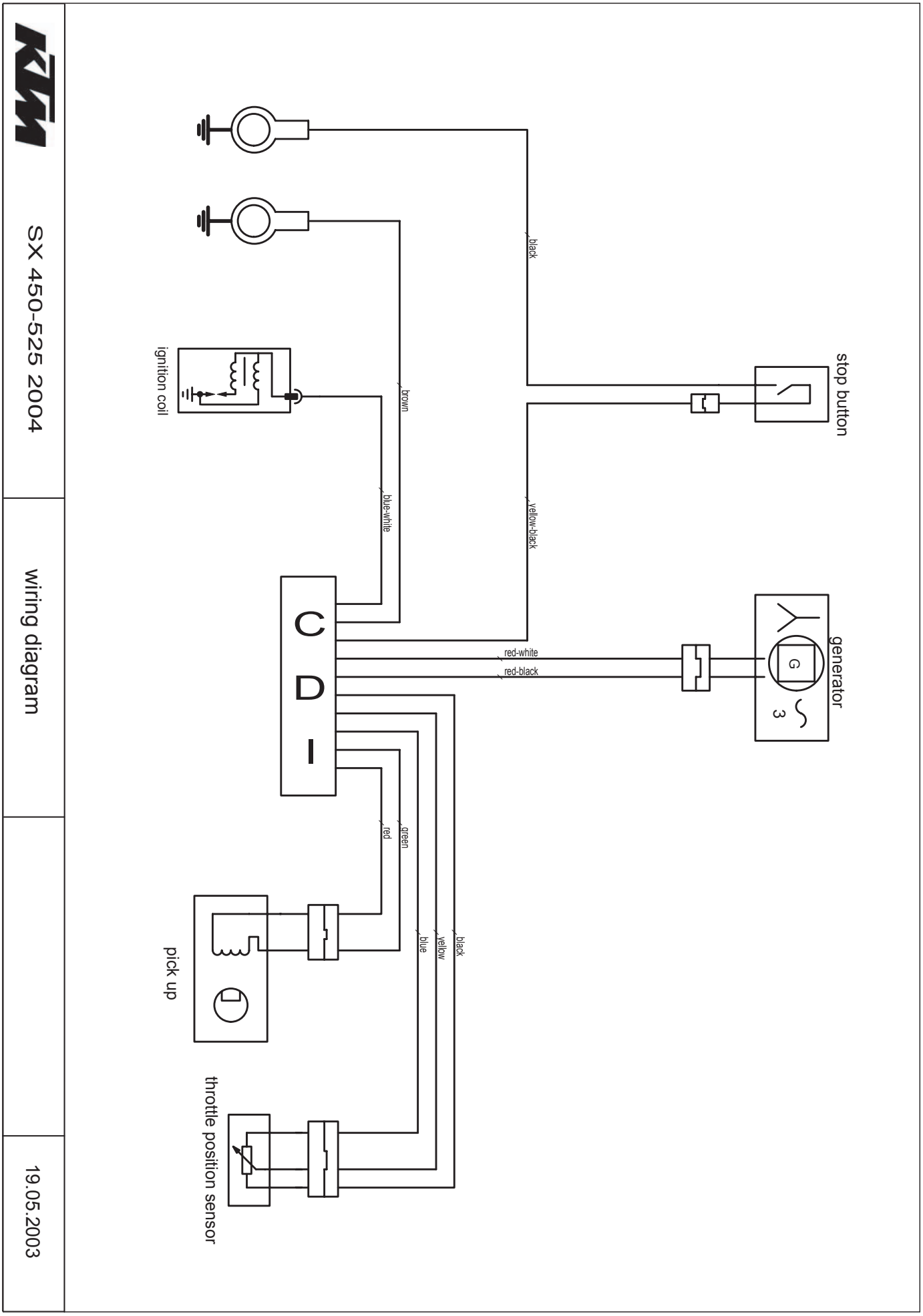
wiring diagram

main harness

590.11.075.550

22.05.2003




SX 450-525 2004
wiring diagram
19.05.2003
stop button
generator
G
3
ignition coil
C
D
I
black
brown
blue-white
yellow-black
red-white
red-black
red
green
blue
yellow
black
pick up
throttle position sensor

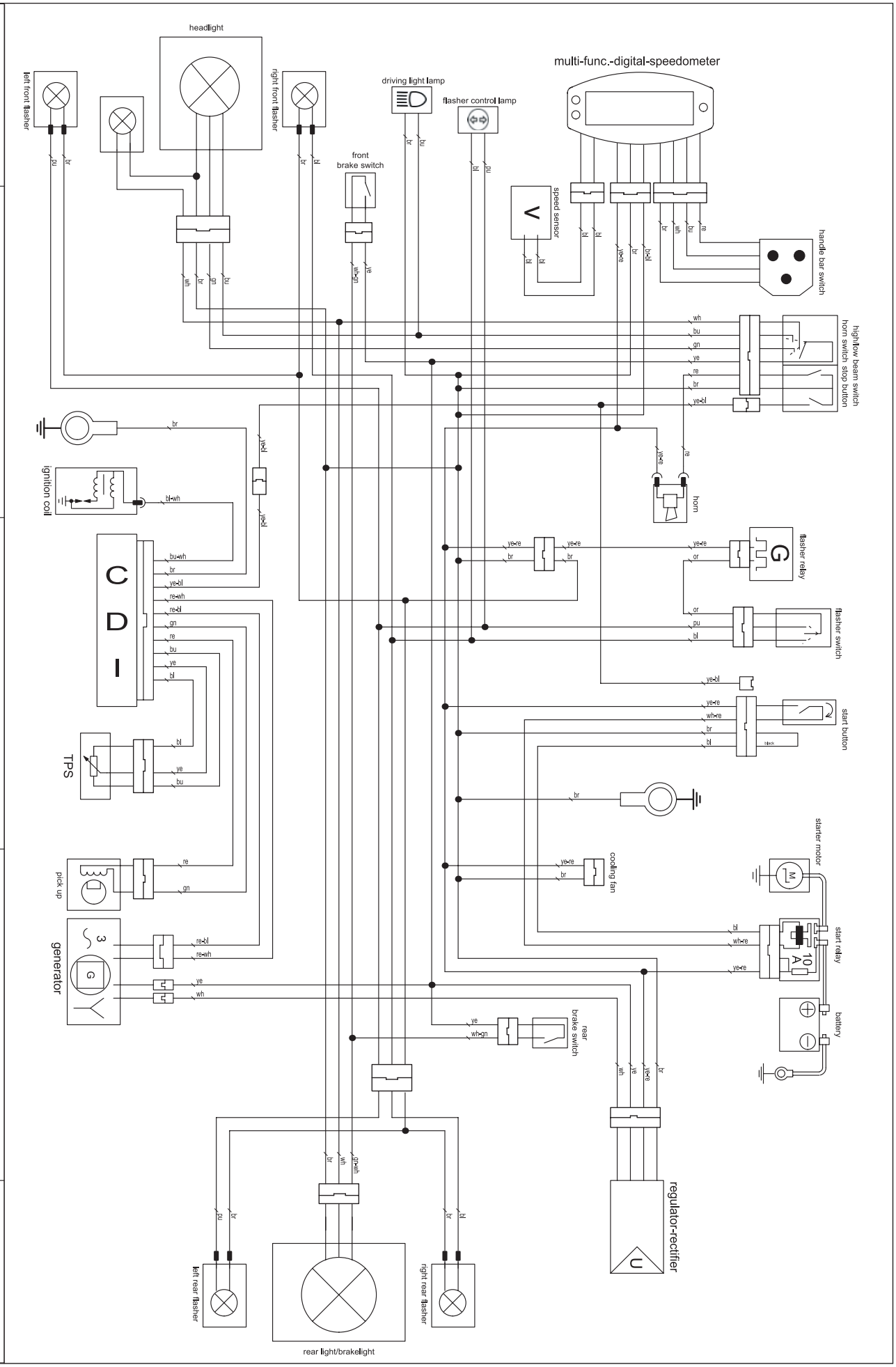
MXC DESERT RACING
EXC RACING EU/AUS 2005

wiring diagram

main harness

594.11.075.050

05.03.2004



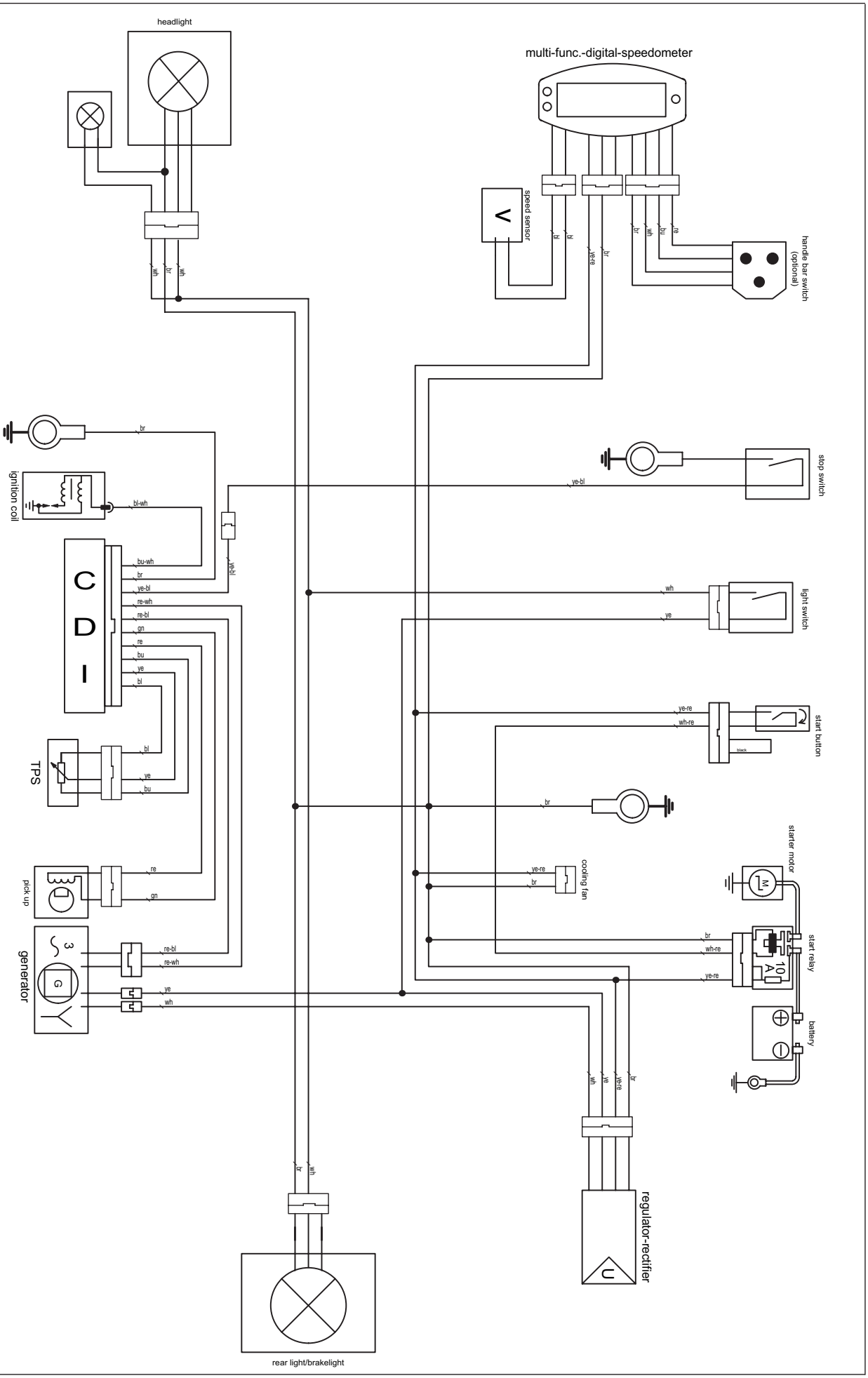
MXC-G, EXC Racing USA 2005
XC-G, EXC Racing USA 2006
XC, XC-W 2007

wiring diagram

main harness

594.11.075.100

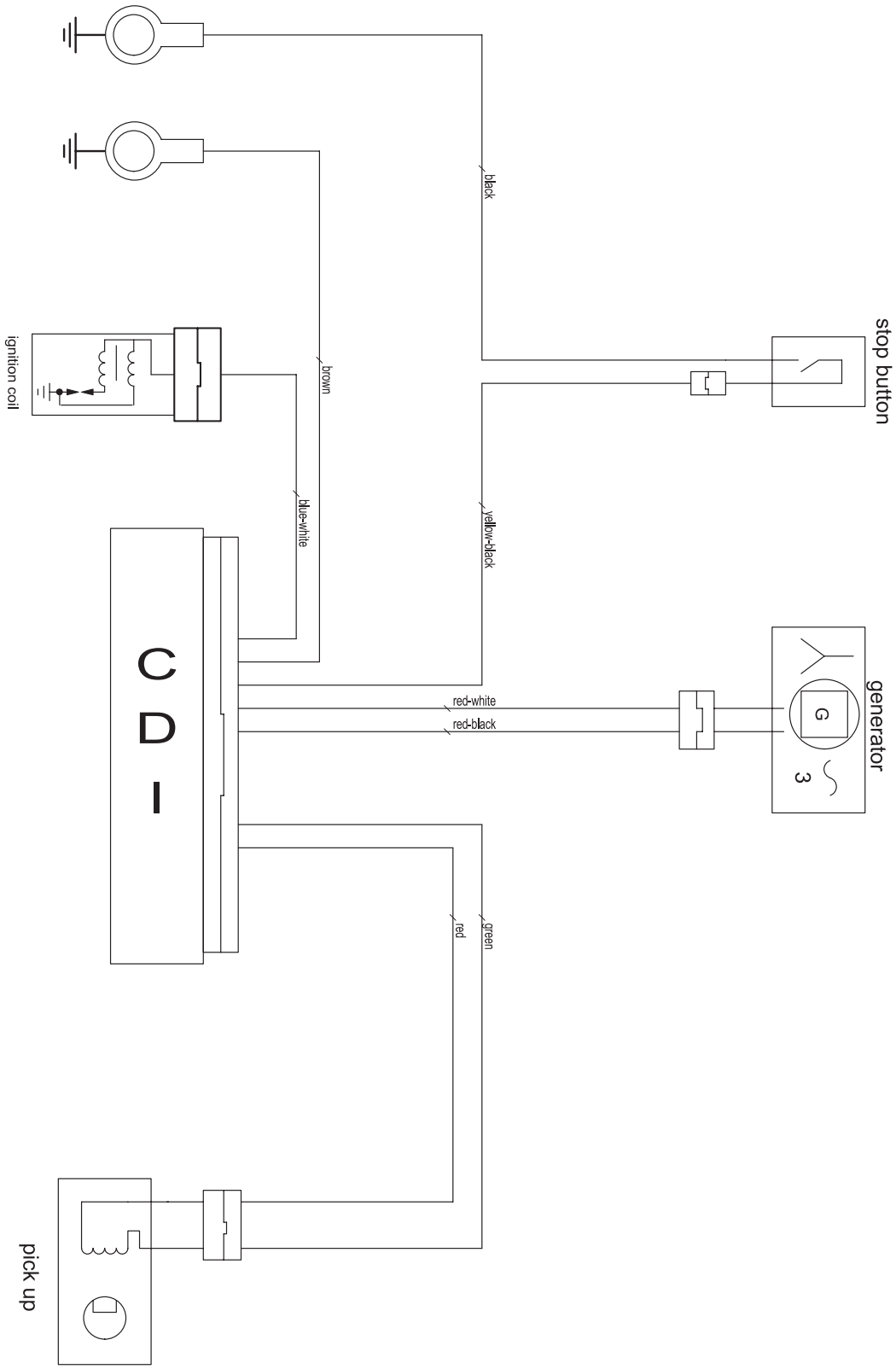
25.02.2005



Art.-Nr. 3.206.043-E

SX / SXS / SMR 450-560 2005 / 2006
SMR 450 / 560 2007

CDI harness - 594.39.032.000

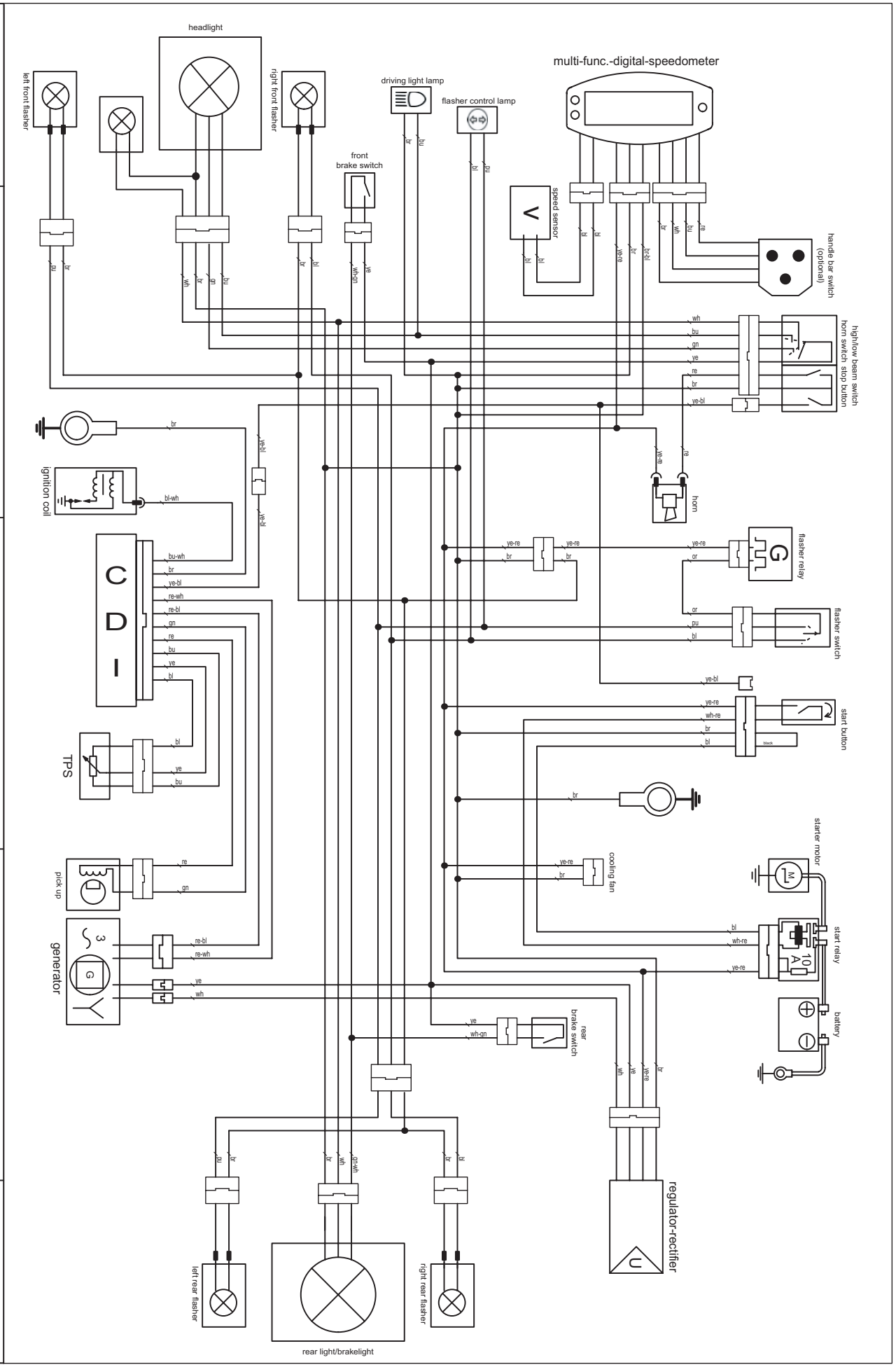


XC DESERT RACING
EXC RACING EU/AUS 2006/2007

wiring diagram

main harness

05.03.2005



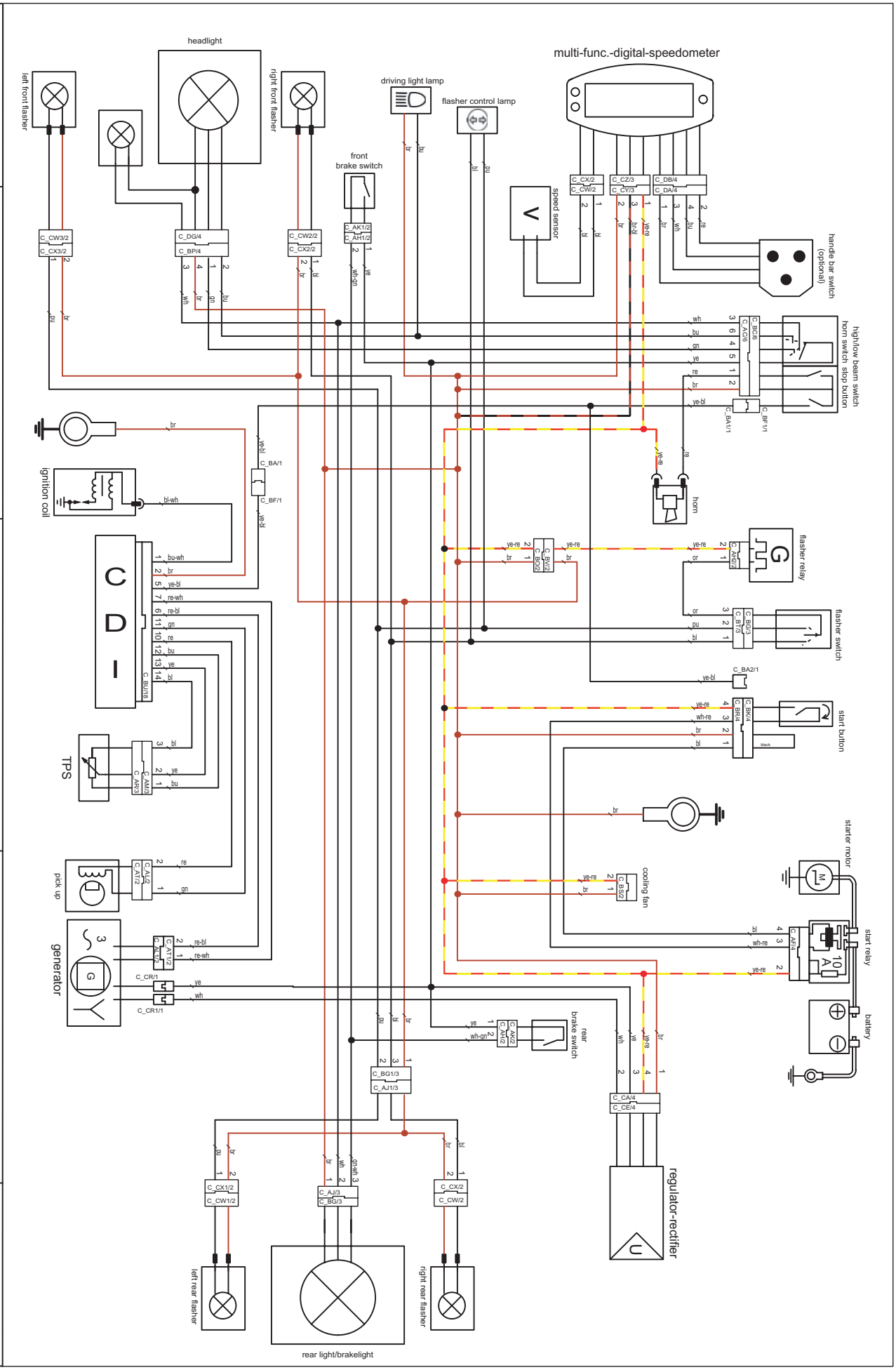
Art.-Nr. 3.206.043-E

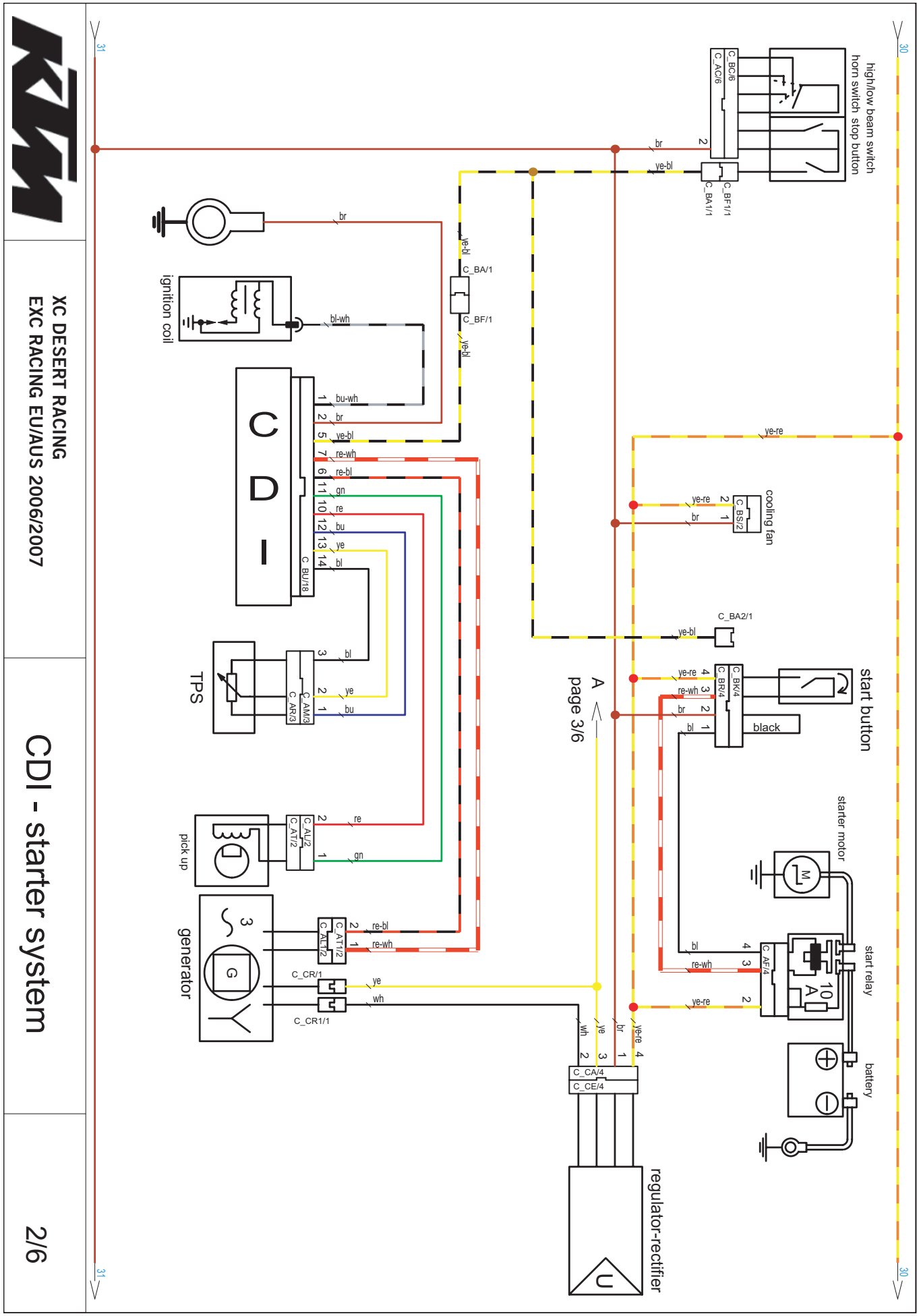
XC DESERT RACING
EXC RACING EU/AUS 2006/2007

wiring diagram

main harness

1/6

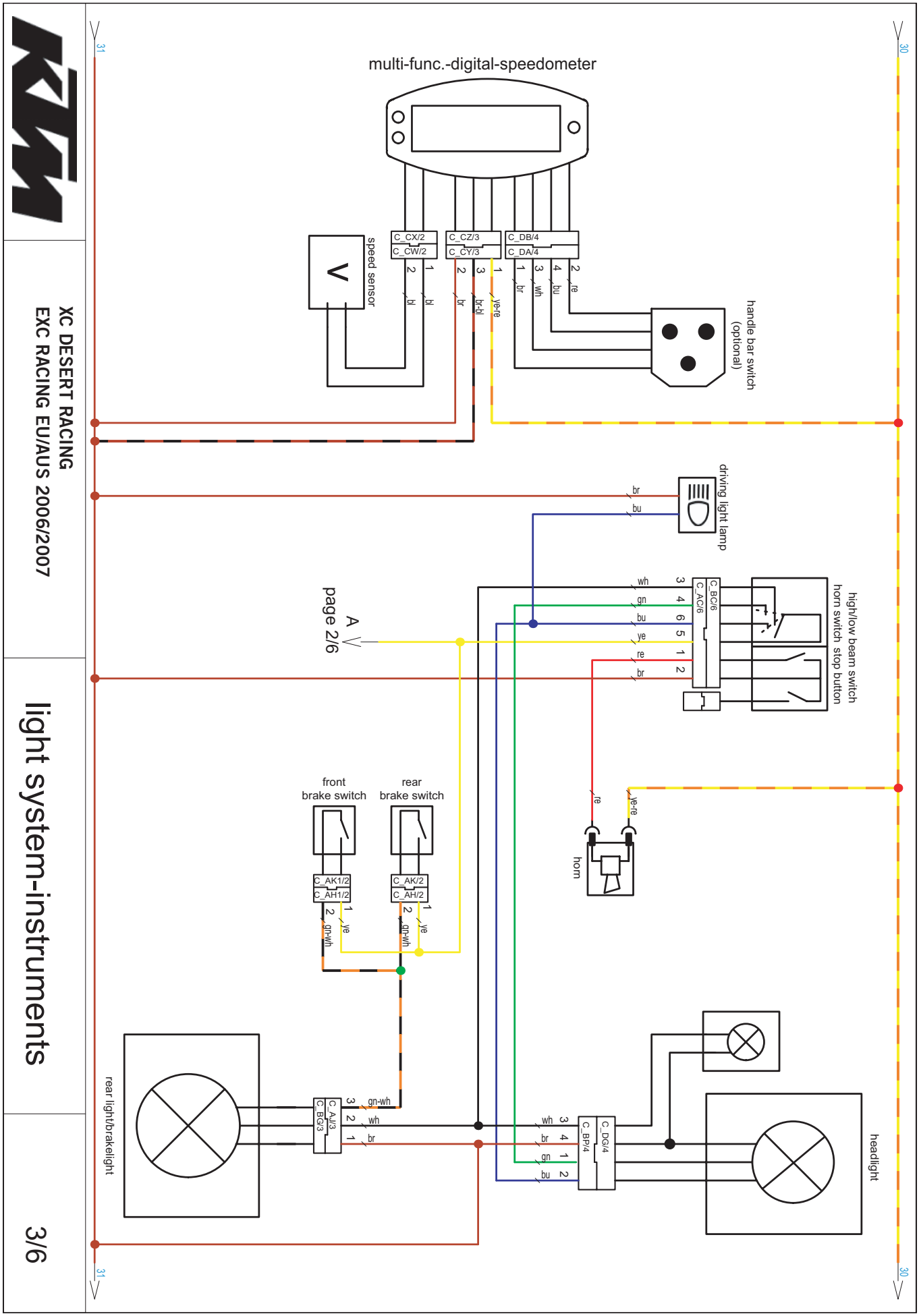


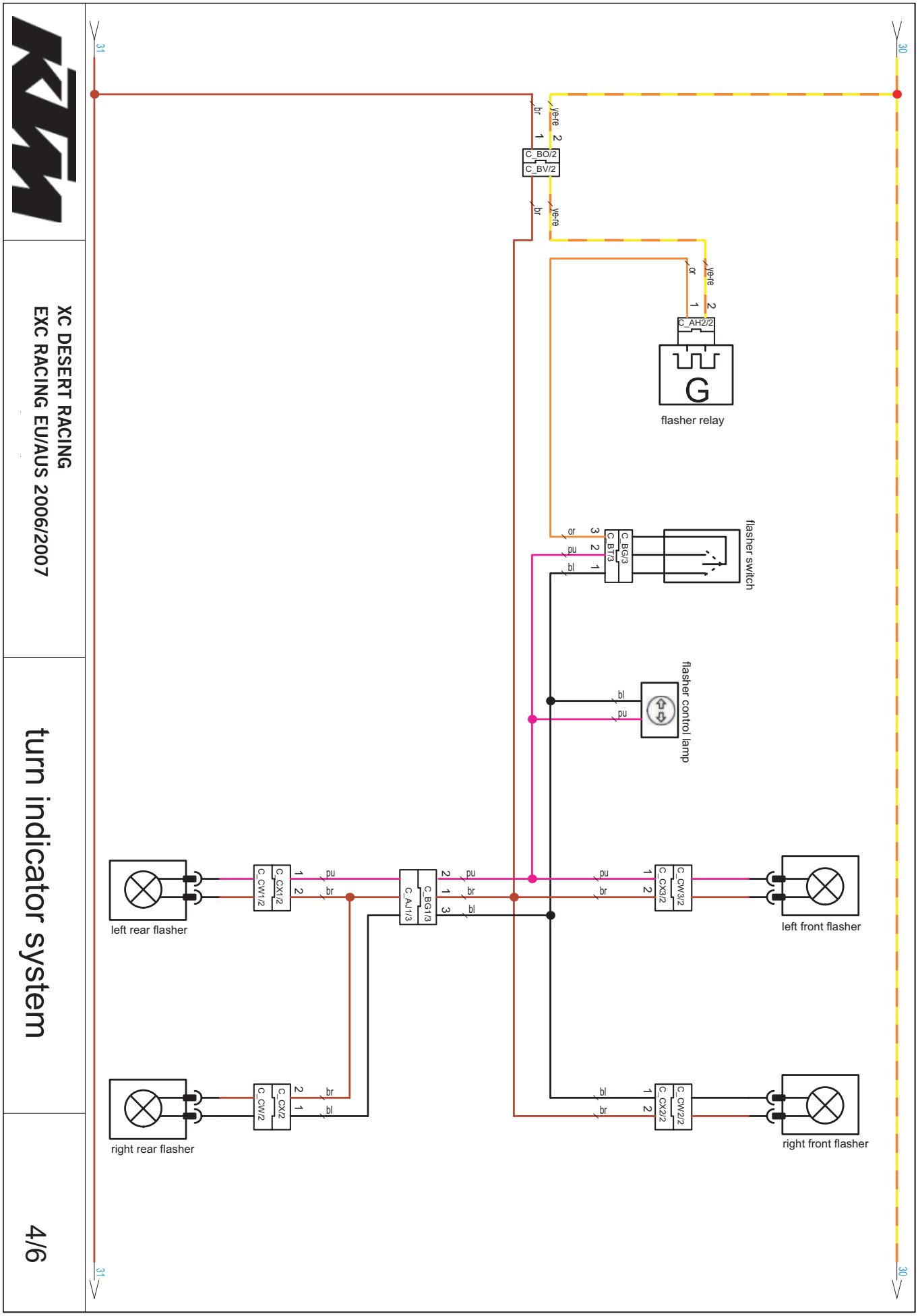

XC DESERT RACING
EXC RACING EU/AUS 2006/2007
CDI - starter system
2/6
high/low beam switch
horn switch stop button
C_BC/6
C_AC/6
C_BF1/1
C_BA1/1
ignition coil
C_BA/1
C_BF/1
C D I
C_BU/18
TPS
C_AM/3
C_AR/3
pick up
C_AL/2
C_AT/2
generator
C_AT1/2
C_AL1/2
C_CR/1
C_CR1/1
cooling fan
C_BS/2
C_BA2/1
start button
C_BK/4
C_BR/4
black
starter motor
start relay
C_AF/4
10 A
battery
regulator-rectifier
C_CA/4
C_CE/4
A
page 3/6
30
31

XC DESERT RACING
EXC RACING EU/AUS 2006/2007

light system-instruments

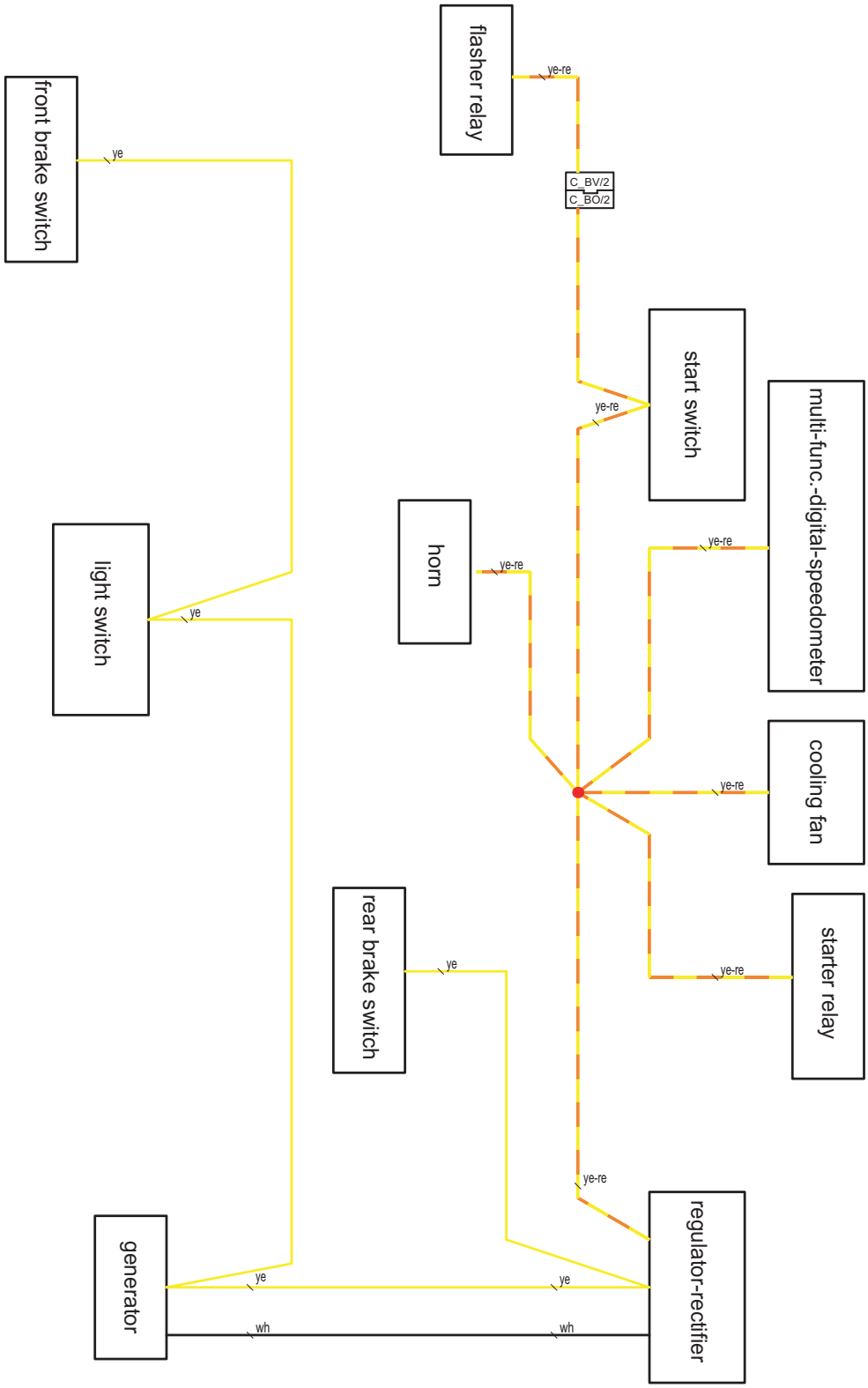
3/6

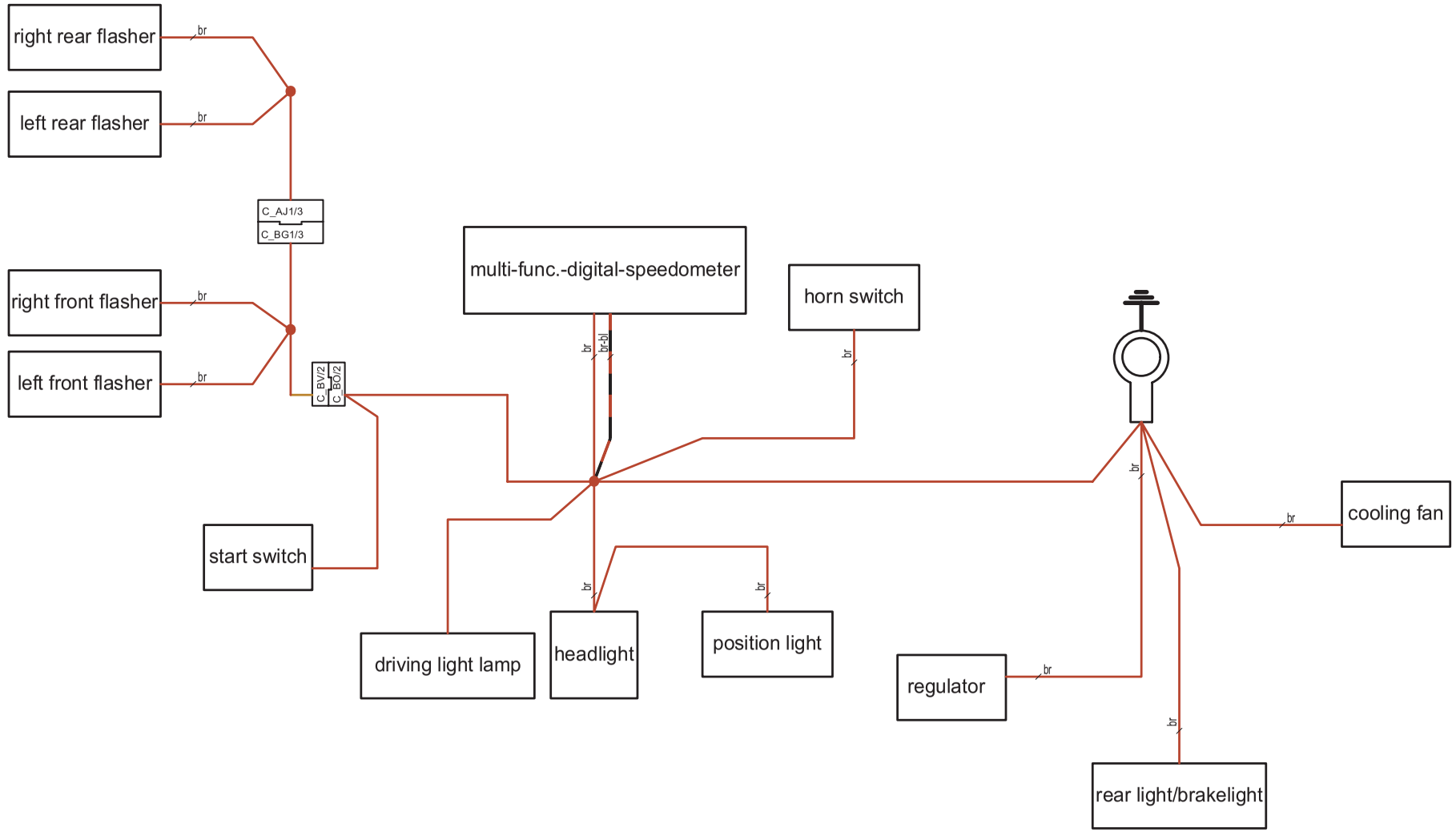



XC DESERT RACING
EXC RACING EU/AUS 2006/2007
turn indicator system
4/6
31
30
C_BO/2
C_BV/2
C_AH2/2
flasher relay
flasher switch
C_BG/3
C_BT/3
flasher control lamp
left rear flasher
left front flasher
right rear flasher
right front flasher
C_CW1/2
C_CX1/2
C_BG1/3
C_AJ1/3
C_CW3/2
C_CX3/2
C_CW/2
C_CX/2
C_CW2/2
C_CX2/2

XC DESERT RACING
EXC RACING EU/AUS 2006/2007

positive connection





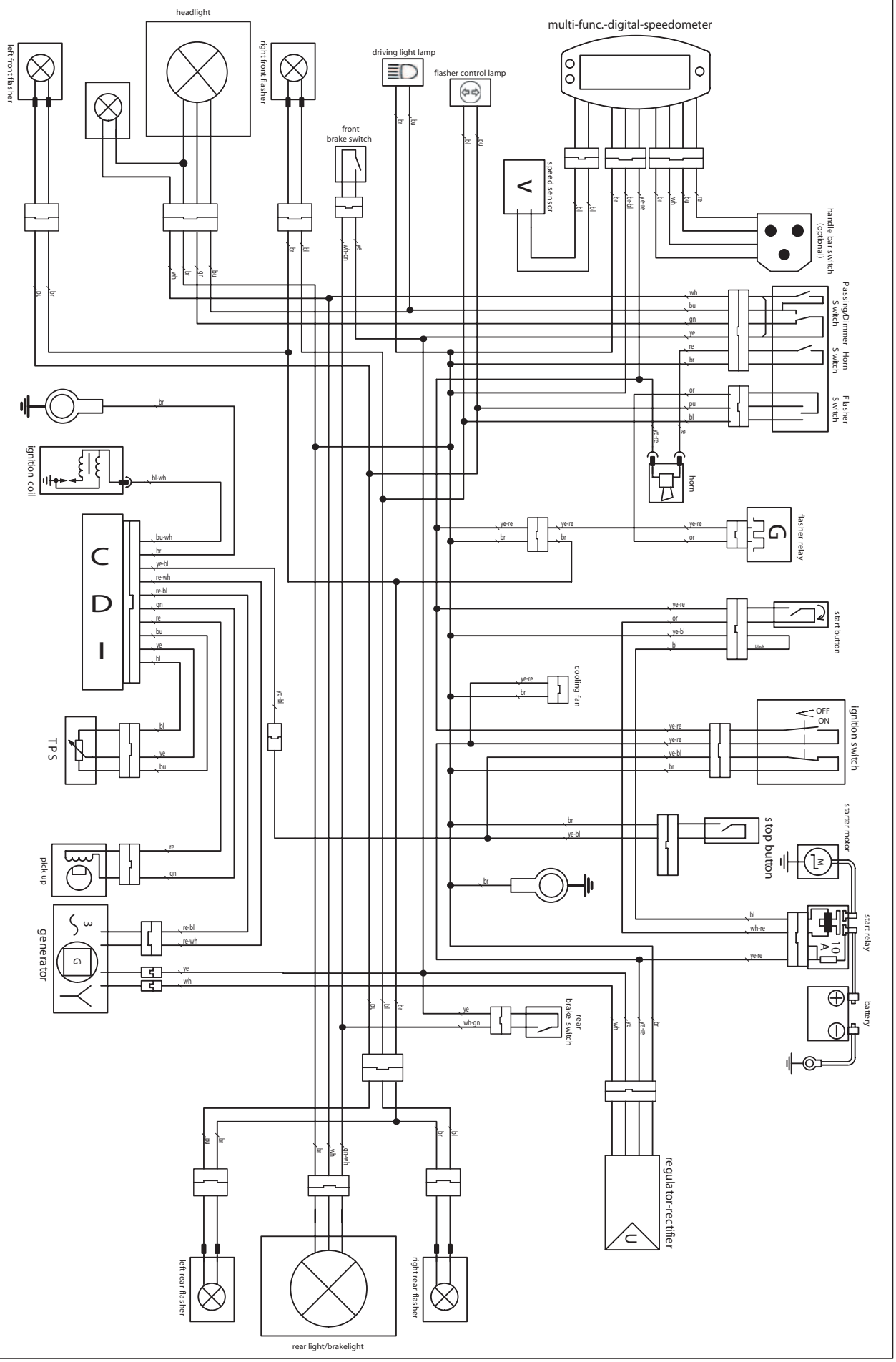
KTM	XC DESERT RACING EXC RACING EU/AUS 2006/2007	ground connection	6/6

EXC USA 2007

wiring diagramm

main harness 594.11.075.244

20.07.2006

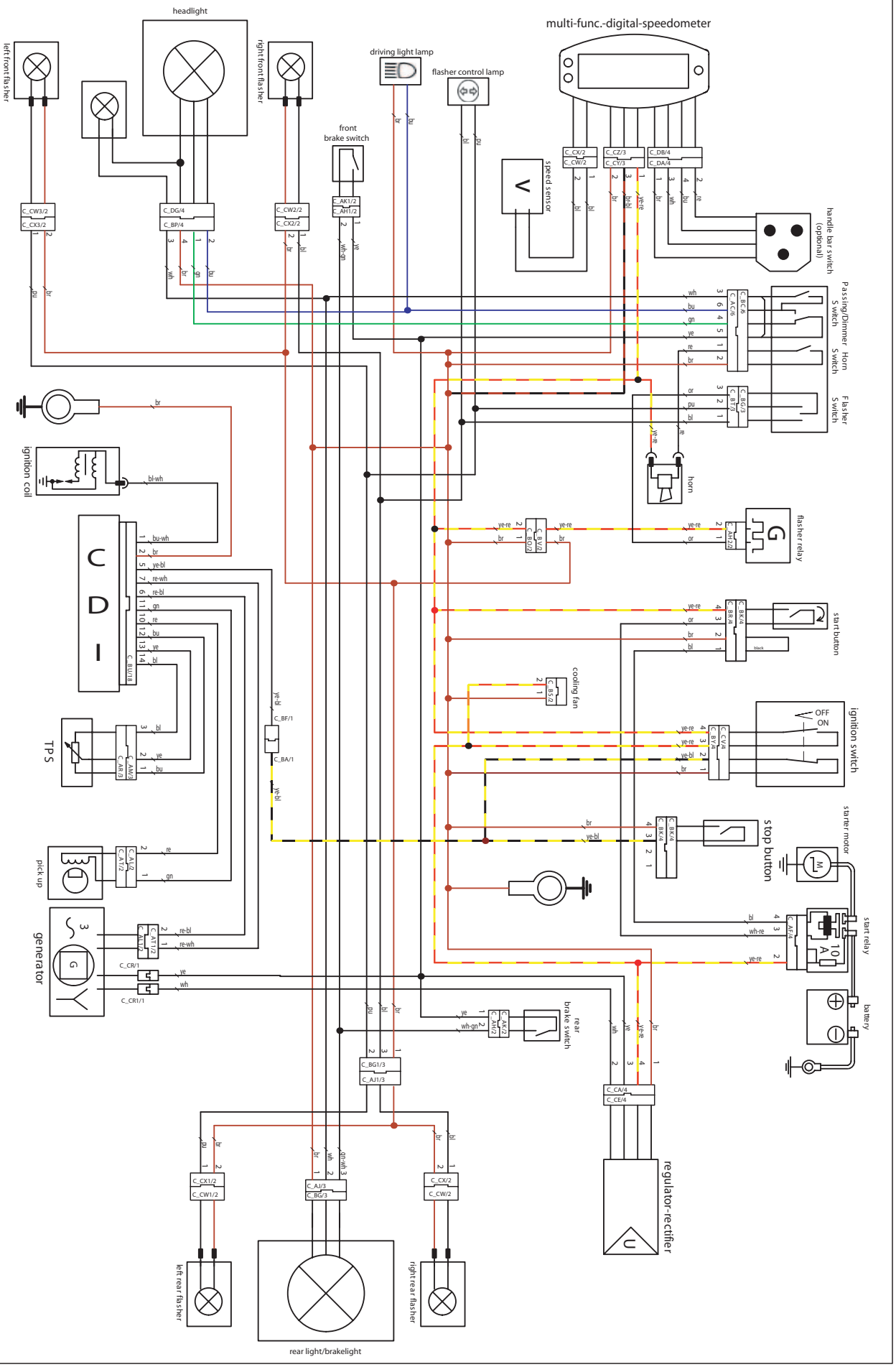


EXC USA 2007

wiring diagram

main harness 594.11.075.244

1/6

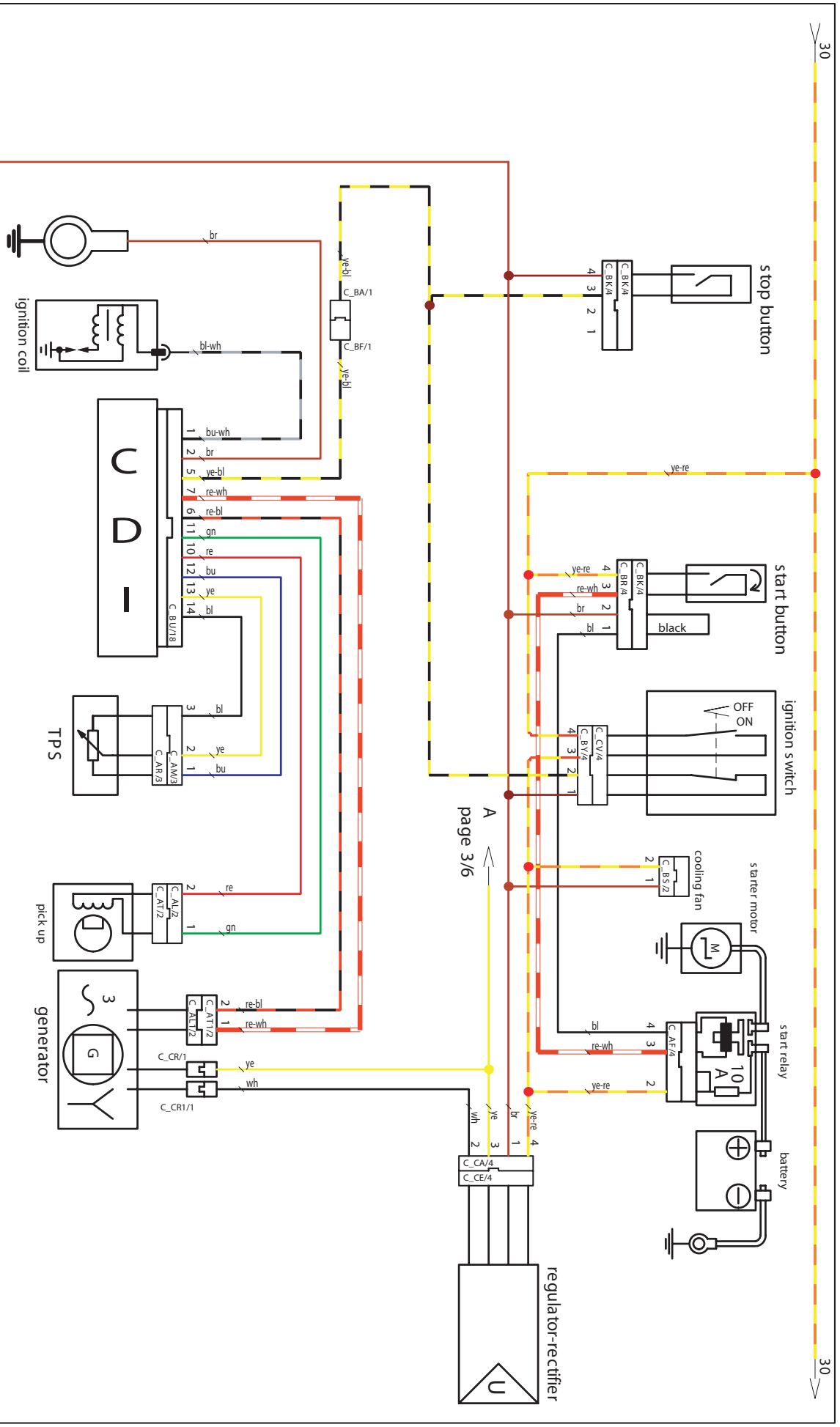


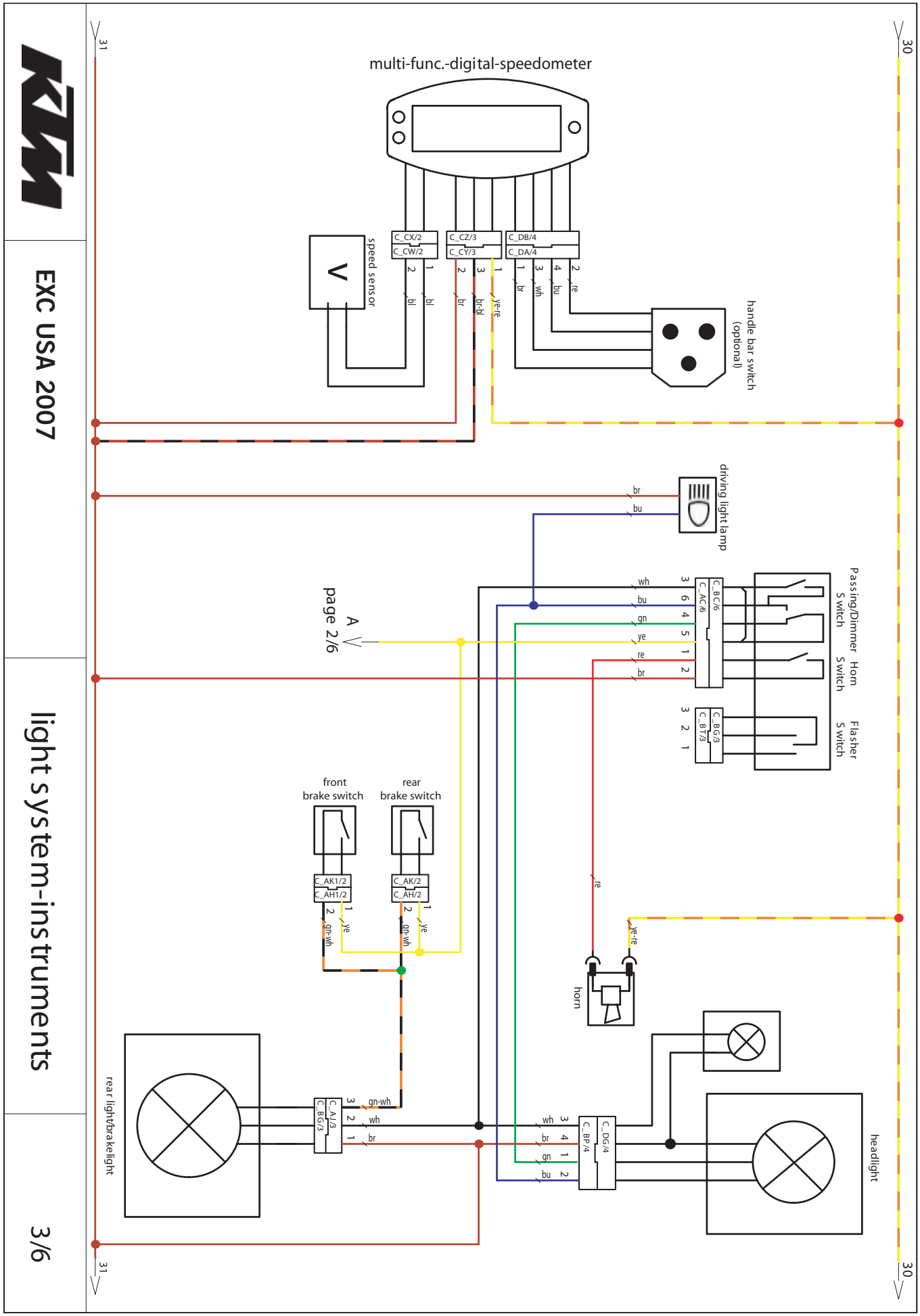
Art.-Nr. 3.206.043-E

EXC USA 2007

CDI - starter system

2/6

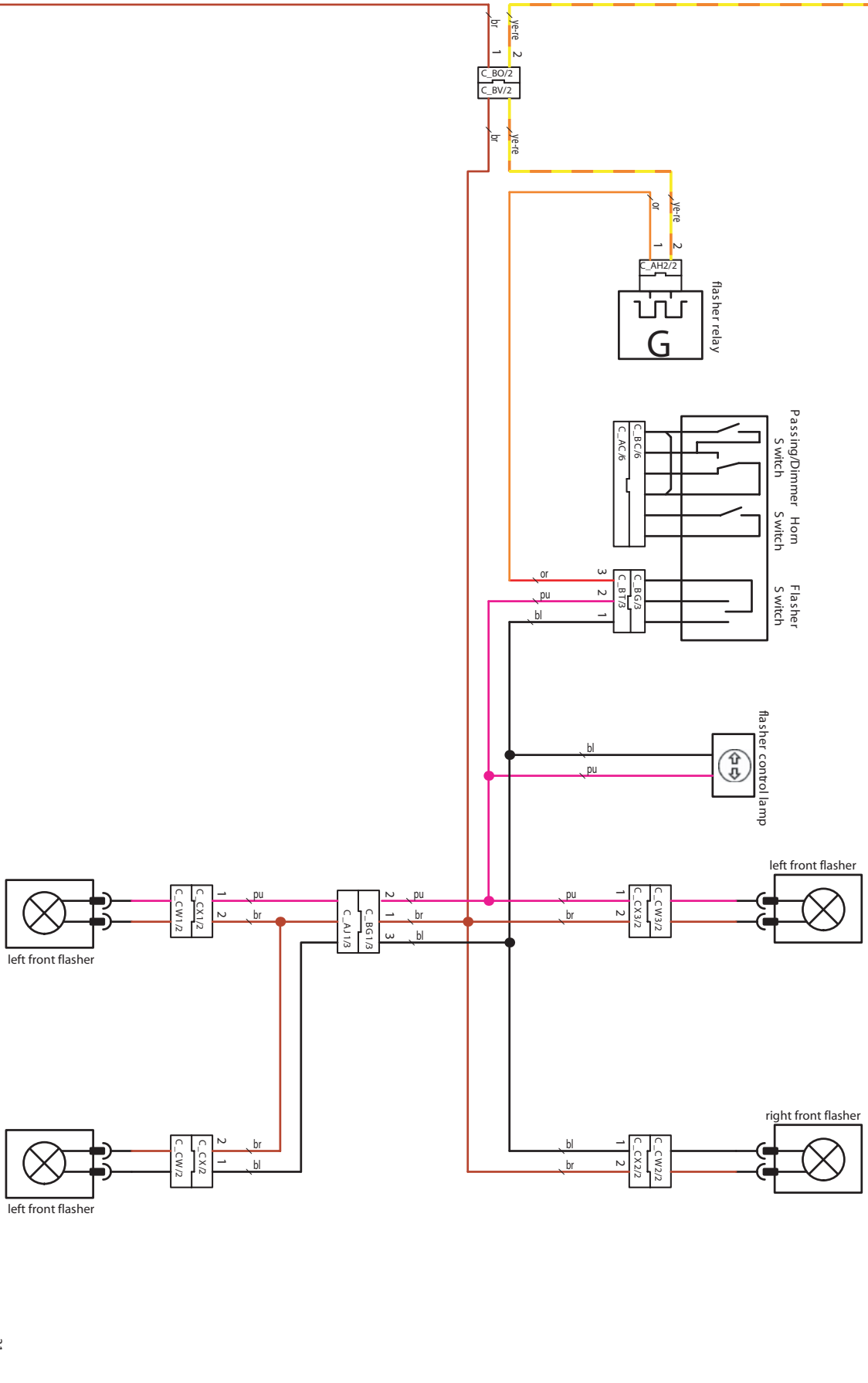


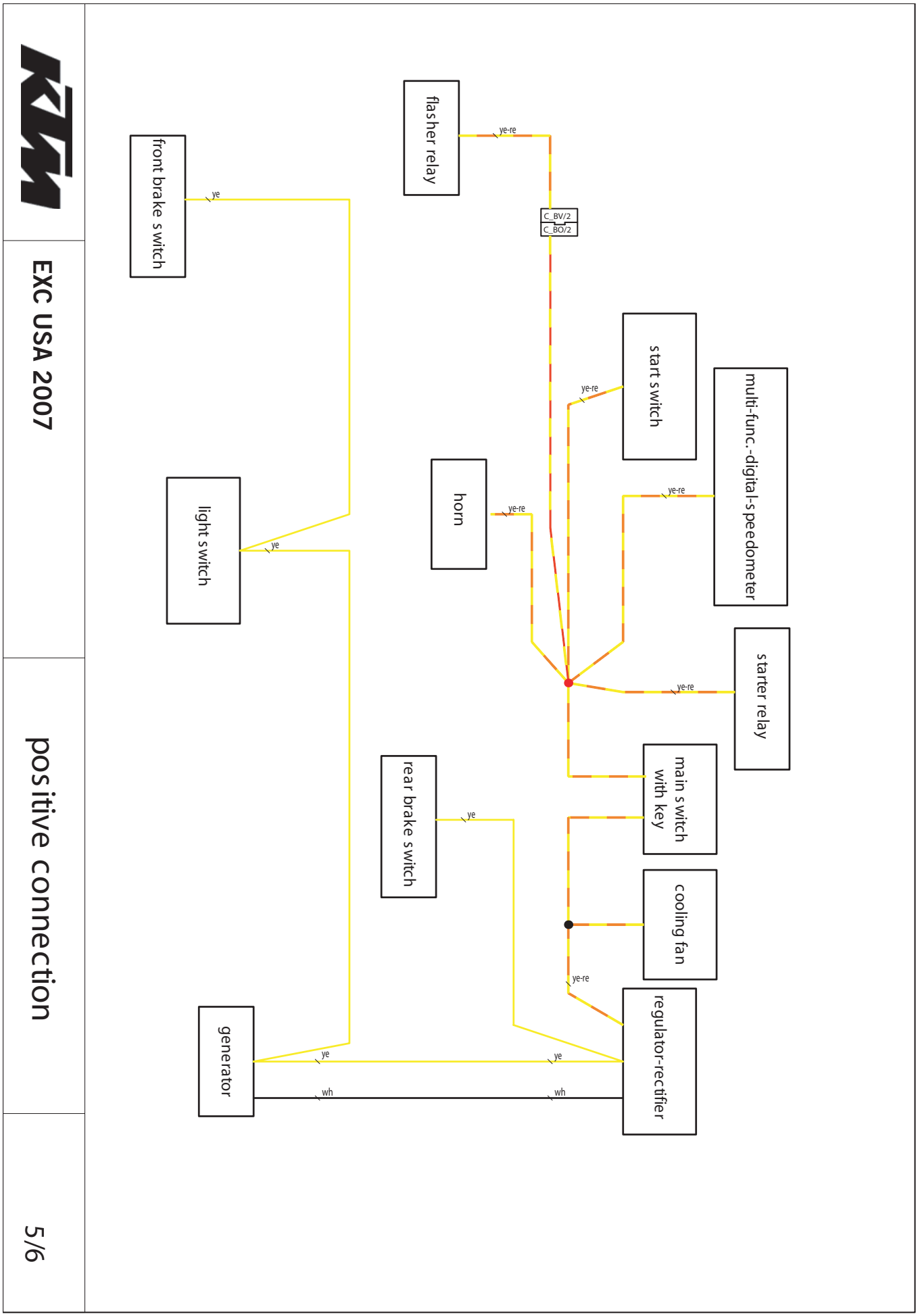

EXC USA 2007
light system-instruments
3/6
multi-func.-digital-speedometer
speed sensor
handle bar switch (optional)
driving light lamp
Passing/Dimmer Switch
Horn Switch
Flasher Switch
front brake switch
rear brake switch
horn
headlight
rear light/brakelight
A page 2/6
30
31

EXC USA 2007

turn indicator system

4/6

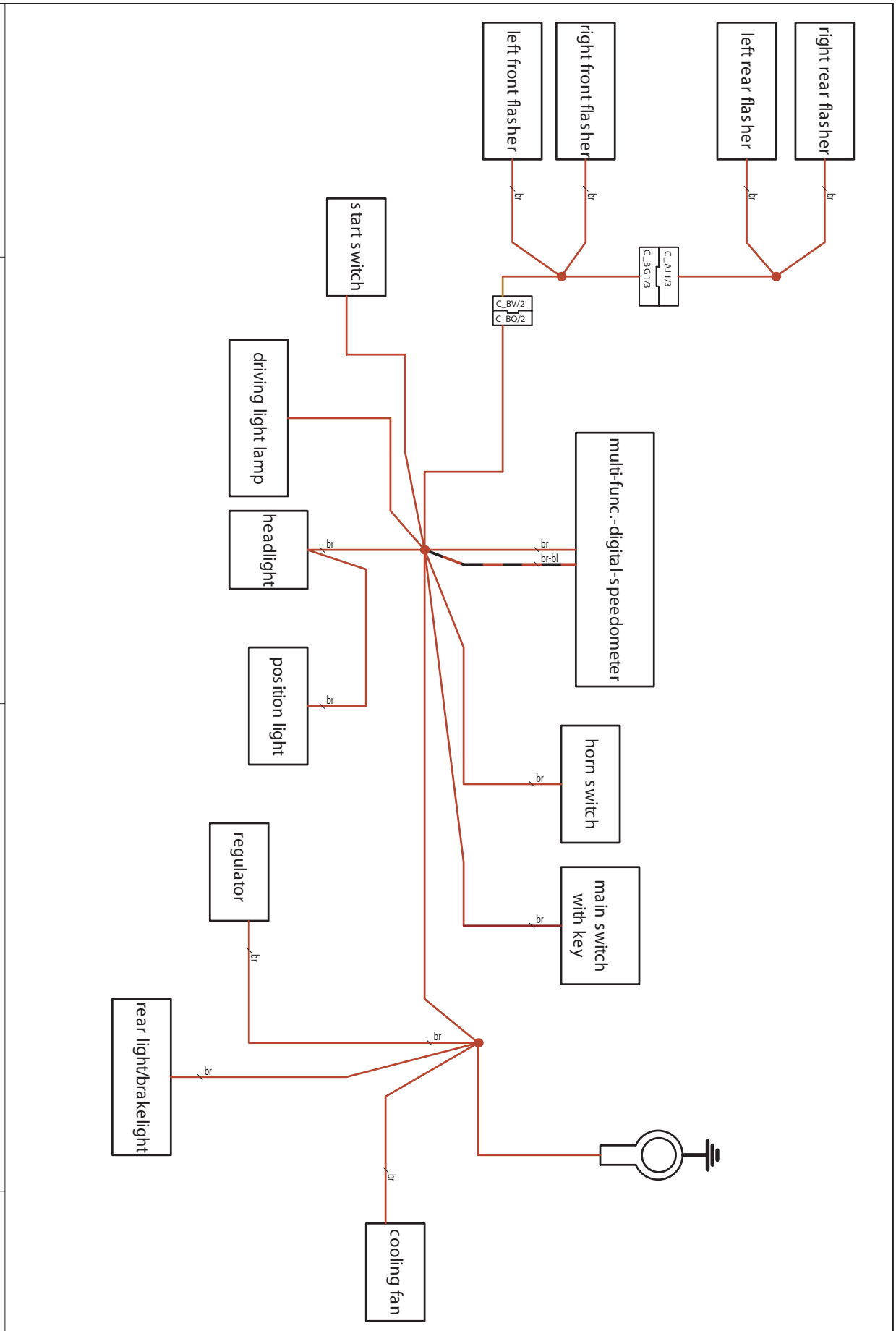



flasher relay
front brake switch
start switch
multi-func.-digital-speedometer
horn
light switch
starter relay
main switch with key
rear brake switch
cooling fan
regulator-rectifier
generator
C_BV/2
C_BO/2
ye-re
ye
wh
EXC USA 2007
positive connection
5/6

EXC USA 2007

ground connection

6/6



horn switch

cable color	re	br
HORN	●	●
OFF		

light switch
high/low beam switch

cable color	bu	ye	gn	wh
LIGHT OFF				
P.LIGHT		●		●
LO		●		●
HI	●			
P.LIGHT		●		●

brake switch

cable harness	gn-wh	ye
cable switch	bl	bl
pushed	●	●
unpushed		

flasher switch

cable harness	or	pu	bl
TURN L	●	●	
TURN R	●		●
OFF			

stop switch

cable harness	ye-bl	br
cable switch	ye-bl	br
pushed	●	●
unpushed		

start switch

cable switch	re-wh	ye-re
START	●	●
unpushed		

ENGLISH	DEUTSCH	ITALIANO
Battery	Batterie	Batteria
Cooling fan	Lüftermotor	Motorino ventola
Driving light lamp	Fernlichtkontrolle	spia abbagliante
Flasher control lamp	Blinkerkontrolle	spia lampeggiatori
Flasher relay	Blinkerrelais	Relè indicatori
Front brake switch	vorderer Bremslichtschalter	Interruttore luce ant. di stop
Generator	Generator	Generatore
Handle bar switch for multi-func.-digital-speedometer	Lenkerschalter für Kombiinstrument	Interruttore sul manubrio per tachimetro multifunzione
Headlight	Scheinwerfer	Faro anteriore
High / low beam switch	Auf-Abblendschalter	Commutatore abbagliante/anabbagliante
Horn	Hupe	Avvisatore acustico
Ignition coil	Zündspule	Bobina d'accensione
Ignition switch	Zündschloss	Interruttore d'accensione
Left front flasher	linker vorderer Blinker	Indicatore ant. sx
Left rear flasher	linker hinterer Blinker	Indicatore post. sx
Multi-func.-digital-speedometer	Multifunktionsdigitaltacho	Tachimetro digitale multifunzione
Pick up	Impulsgeber	Pick up
Position light	Standlicht	Luce di posizione
Rear brake switch	hinterer Bremslichtschalter	Interruttore luce post. di stop
Rear light / brakelight	hinteres Begrenzungslicht / Bremslicht	Luce post. di posizione/stop
Regulator-rectifier	Regelgleichrichter	Regolatore-raddrizzatore
Right front flasher	rechter vorderer Blinker	Indicatore ant. dx
Right rear flasher	Rechter hinterer Blinker	Indicatore post. dx
Speed sensor	Geschwindigkeitssensor	Sensore velocità
Start button	Starttaster	Pulsante d´avviamento
Start relay	Startrelais	Relè d'avviamento
Starter motor	Startermotor	Motorino d'avviamento
Stop button	Not-Aus-Schalter	Interrutore di aresto dèmergenza
Throttle position sensor (TPS)	Vergaserpotentiometer	Potenziometro carburatore (sensore TPS)

CABLE COLORS	KABELFARBEN	CAVO COLORATO
bl: black	bl: schwarz	bl: nero
ye: yellow	ye: gelb	ye: giallo
bu: blue	bu: blau	bu: blu
gn: green	gn: grün	gn: verde
re: red	re: rot	re: rosso
wh: white	wh: weiß	wh: bianco
br: brown	br: braun	br: marrone
or: orange	or: orange	or: arancione
pi: pink	pi: rosa	pi: rosa
gr: grey	gr: grau	gr: grigio
pu: purple	pu: violett	pu: violetto

ENGLISH	FRANCAIS	ESPANOL
Battery	Batterie	Batería
Cooling fan	Ventilateur	Motor del ventilador
Driving light lamp	temoin feu route	lampara aviso luces largas
Flasher relay	Relais de clignotants	Relé de la luz intermitente
Flasher control lamp	temoin de clignoteur	lampara aviso intermitentes
Front brake switch	Contacteur de frein avant	Interruptor de luz del freno delantero
Generator	Alternateur	Generador
Handle bar switch for multi-func.-digital-speedometer	Contacteur au guidon pour ordinateur de bord	Interruptor de manillar para instrumento combinado
Headlight	Phare	Faro
High / low beam switch	Contacteur code/phare	Interruptor de encender/apagar la luz larga
Horn	Avertisseur sonore	Cláxon
Ignition coil	Bobine d'allumage	Bobina de encendido
Ignition switch	Contacteur d'allumage	Cerradura de encendido
Left front flasher	Clignotant avant gauche	Luz intermitente izquierda delantera
Left rear flasher	Clignotant arrière gauche	Luz intermitente izquierda trasera
Multi-func.-digital-speedometer	Ordinateur de bord	Velocímetro digital multifuncional
Pick up	Capteur d'allumage	Generador de impulsos
Position light	feu de position	luz de posicion
Rear brake switch	Contacteur de frein arrière	Interruptor de luz del freno trasero
Rear light / brakelight	Feu rouge/stop	Luces de parqueo traseras /luces de freno
Regulator-rectifier	Régulateur/redresseur	Regulador rectificador
Right front flasher	Clignotant avant droit	Luz intermitente derecha delantera
Right rear flasher	Clignotant arrière droit	Luz intermitente derecha trasera
Speed sensor	Capteur de vitesse	Sensor de velocidad
Start button	bouton de démarrage	botón de arranque
Start relay	Relais de démarreur	Relé del arranque
Starter motor	Démarreur	Motor de arranque eléctrico
Stop button	bouton d´arrêt d`urgence	interruptor de parada de emergencia
Throttle position sensor (TPS)	Capteur d'ouverture de carburateur	Potenciómetro del carburador

CABLE COLORS	COULEUR DE CABLE	COLOR DE CABLE
bl: black	bl: noir	bl: negro
ye: yellow	ye: jaune	ye: amarillo
bu: blue	bu: bleu	bu: azul
gn : green	gn: vert	gn: verde
re: red	re: rouge	re: rojo
wh: white	wh: blanc	wh: blanco
br: brown	br: brun	br: marron
or: orange	or: orange	or: naranja
pi: pink	pi: rose	pi: rosado
gr: grey	gr: gris	gr: gris
pu: purple	pu: violet	pu: violeta