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REPAIR MANUAL 2005-2006

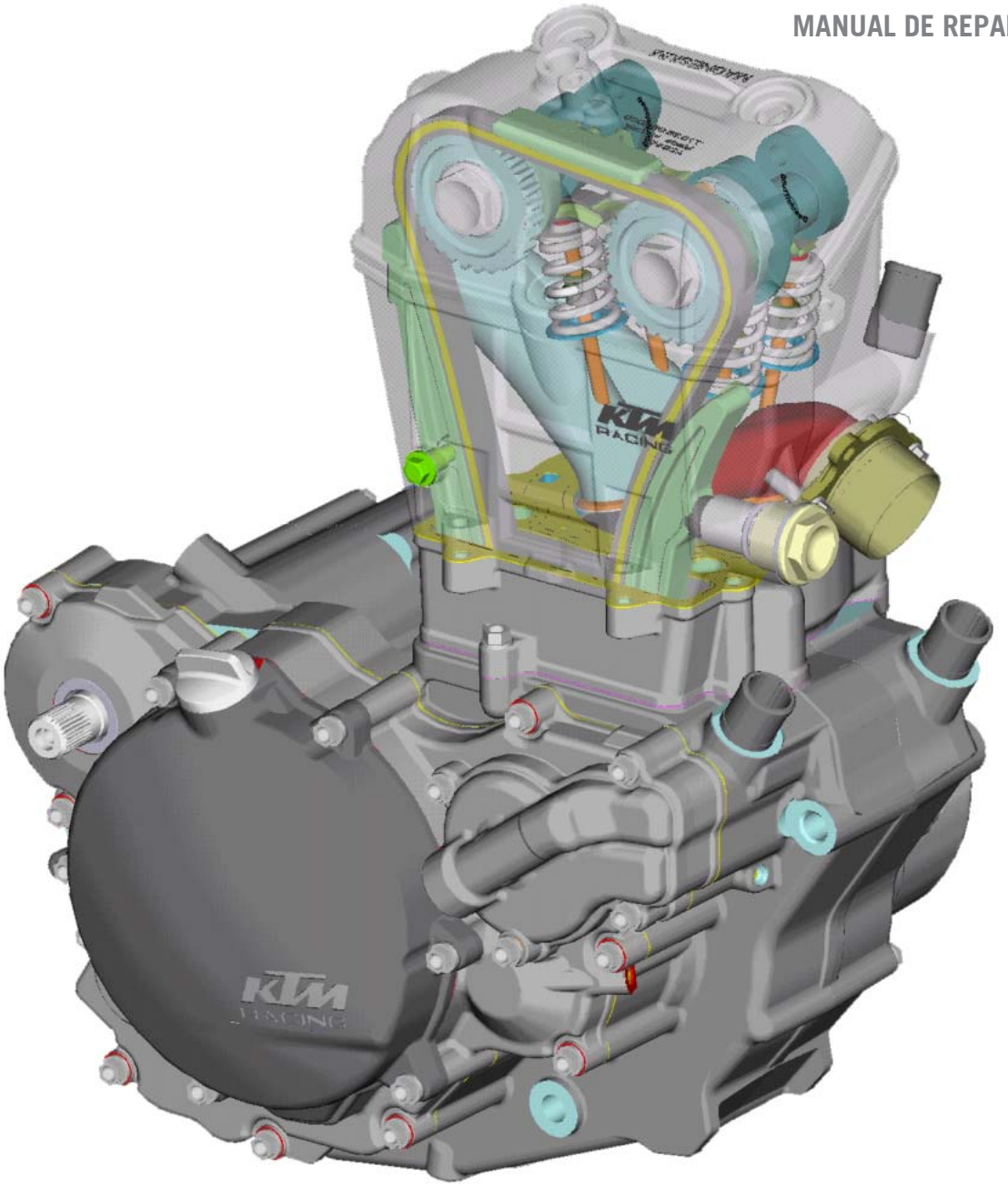
250 SX-F

REPARATURANLEITUNG

MANUALE DI RIPARAZIONE

MANUEL DE RÉPARATION

MANUAL DE REPARACIÓN



ART.NR.: 3.206.027-E

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REPAIRMANUAL2005-2006

250 SX-F

KTM Group Partner

1 SERVICE-INFORMATIONS

2 GENERAL INFORMATION

3 REMOVING AND REFITTING ENGINE

4 DISASSEMBLING ENGINE

5 SERVICING INDIVIDUAL COMPONENTS

6 ASSEMBLING ENGINE

7 ELECTRICAL

8 FUEL SYSTEM

9 TROUBLE SHOOTING

10 TECHNICAL SPECIFICATIONS

11 PERIODIC MAINTENANCE SCHEDULE

12 WIRING DIAGRAMS

13

14

15

16

EXPLANATION - UPDATING

3.206.027-E Repair Manual 250 SX-F

Basicversion Modelyear 2005

5/2005

Edition: 05/2005

INTRODUCTION

This repair manual offers extensiv 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 modes common in work shops 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 profesionally trained mechanics.

Read through the repair manual before beginning with the 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 DAMAGE OF MOTORCYCLE COMPONENTS OR RENDER MOTORCYCLES UNFIT FOR TRAFFIC !

„NOTE" POINTS OUT USEFUL TIPS.

Use only **ORIGINAL KTM SPARE PARTS** when replacing 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 reserves the right to modify any equipment, technical specifications, colors, materials, services offered and rendered, and the like so as to adapt them to local conditions without previous announcement and without giving reasons, or to cancel any of the above items without substituting them with others. It shall be acceptable to stop manufacturing a certain model without previous announcement. In the event of such modifications, please ask your local KTM dealer for information.

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 manual – 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 to table:
- Enter the complete item no. for the repair manual in column 1 (**e.g.: 3.206.027-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.: 5-7**) 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

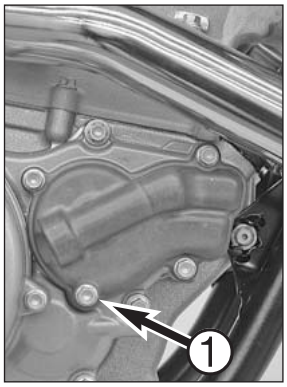
Additional suggestions, requests or comments on our Repair Manuals (in German or English):

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

GENERAL INFORMATION 2

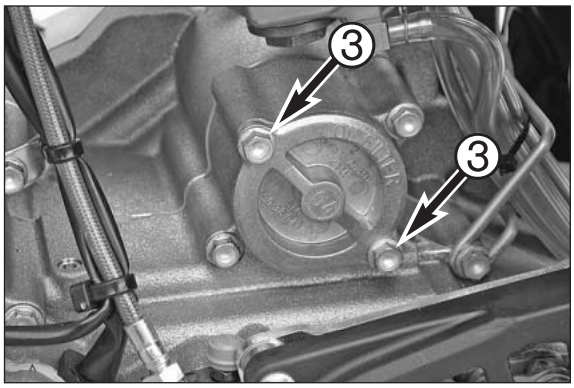
INDEX

BLEEDING THE COOLING SYSTEM 2-2
CHANGING THE OIL FILTER 2-2
OIL CIRCUIT 2-3
BLEEDING OF THE HYDRAULIC CLUTCH 2-4
ADJUSTING THE THROTTLE CABLES 2-4
SPECIAL TOOLS ENGINE 2-5



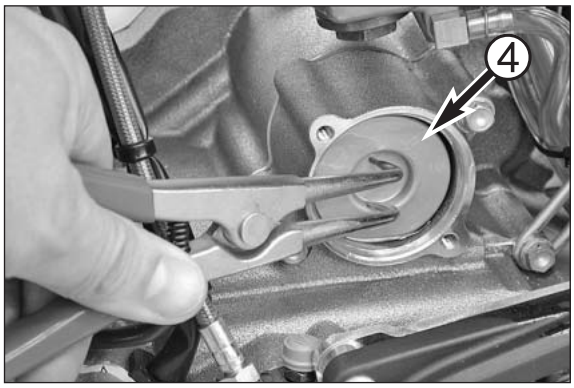
Bleeding the cooling system

The cooling liquid can be drained by removing the screw ❶ on the water pump cover.
To bleed the cooling system add approx. 1 liter of cooling liquid and remove the bleeder screw ❷. Do not replace the bleeder screw until cooling liquid starts to leak out of the hole without bubbles. Now add cooling liquid until it reaches a level of approx. 10 mm above the radiator fins. Take a short ride and check the cooling liquid level again.

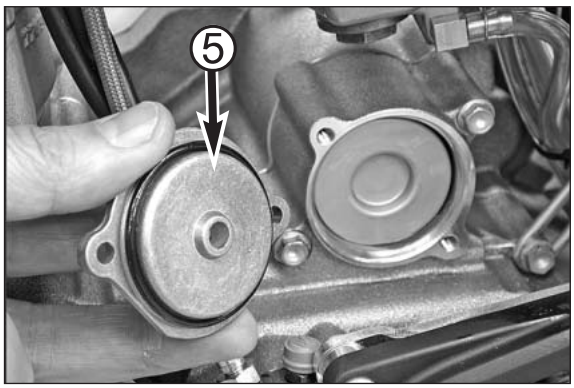


Changing the oil filter

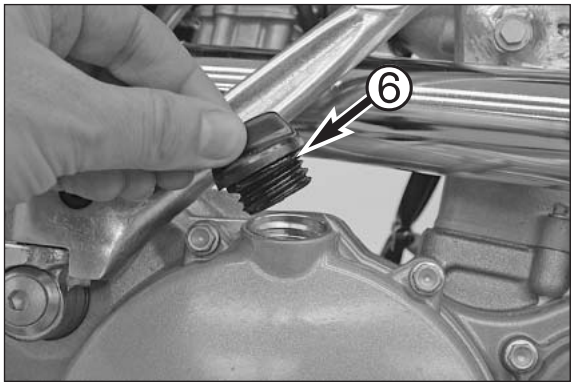
– Place a vessel under the engine to catch the used oil. Remove the 2 screws ❸ and take off the oil filter cover.



– Use circlip pliers to pull the oil filter insert ❹ out of the case.
– Clean the oil filter cover, the sealing area on the O-ring and the engine case. Check the O-ring in the oil filter cover for damage and replace if necessary.



– Lay the motorcycle down and fill the oil filter case about half full with engine oil. Fill the oil filter up with oil and insert the oil filter in the case.
– Grease the O-ring in the oil filter cover and mount the cover ❺. Mount the screws and tighten to 6 Nm.

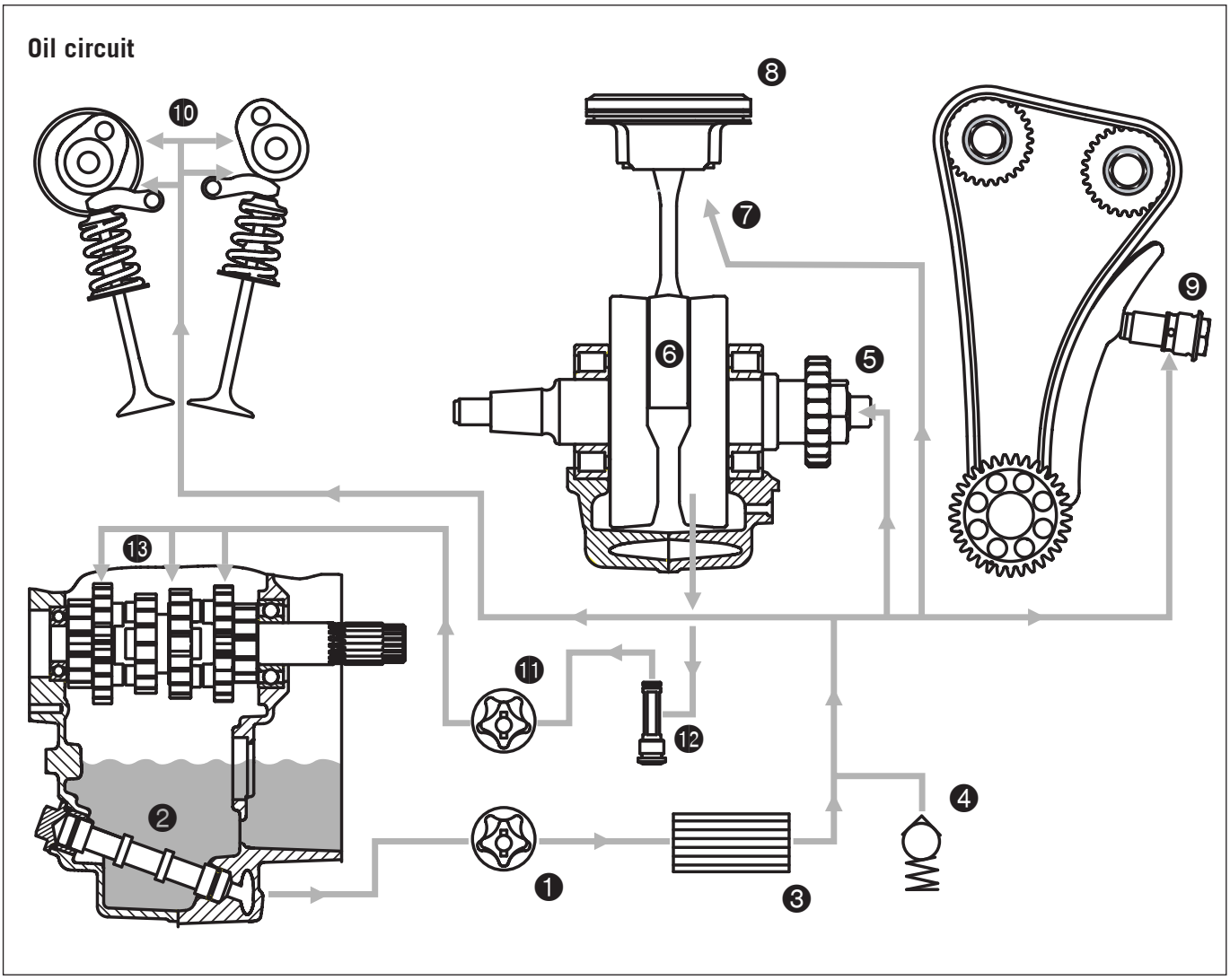


– Put the motorcycle in an upright position again.

– Remove the screw cap ❻ from the clutch cover and add 1.1 liters of fully synthetic engine oil (Motorex Power Synt 4T 10W/50).

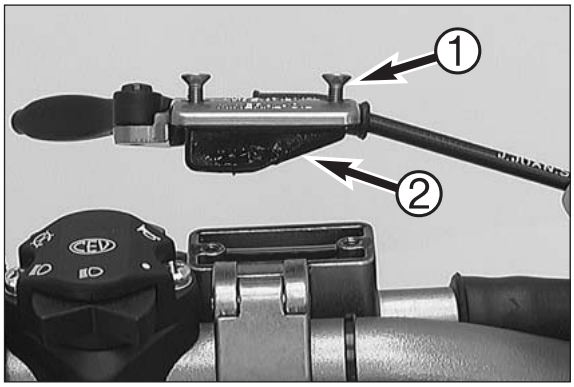
– Start the engine and check all screw connections and the oil filter cover for leaks.

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



Oil circuit

The oil pump ❶ draws the engine oil from the transmission oil sump through the long oil screen ❷ and conveys it to the oil filter ❸, where any contamination is filtered out. The cleansed engine oil is pumped past the bypass valve ❹ through the hole in the crankshaft ❺ to the conrod bearing ❻ and sprayed onto the piston ❽ from below through a jet ❼.
Two other oil ducts lead into the cylinder head. One duct supplies the hydraulic chain tensioner ❾, the other duct leads to the camshaft bearing bridge ❿, where the camshaft bearings and the cam lever are supplied with oil (via spraying nozzles).
The second oil pump ⓫ draws the engine oil out of the crankcase through the short oil screen ⓬ and uses it to grease the transmission gears ⓭.

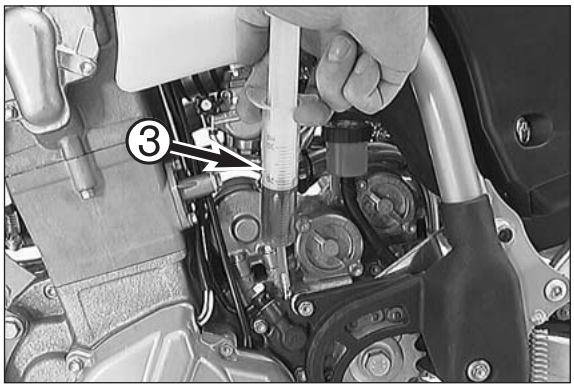


Checking the oil level of the hydraulic clutch

To check the oil level in the master cylinder of the clutch remove the cover. For this purpose, remove 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!



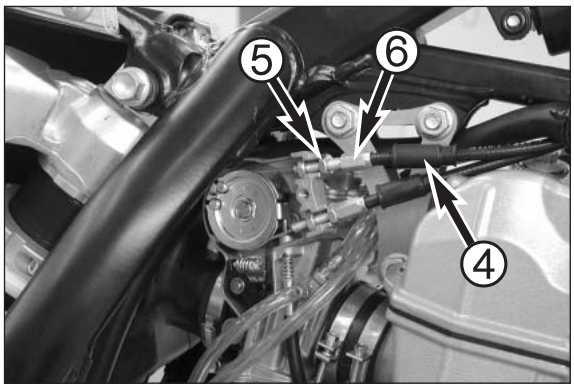
Bleeding of the hydraulic clutch

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

- Refill oil, until oil is discharged from the bore ❹ 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.

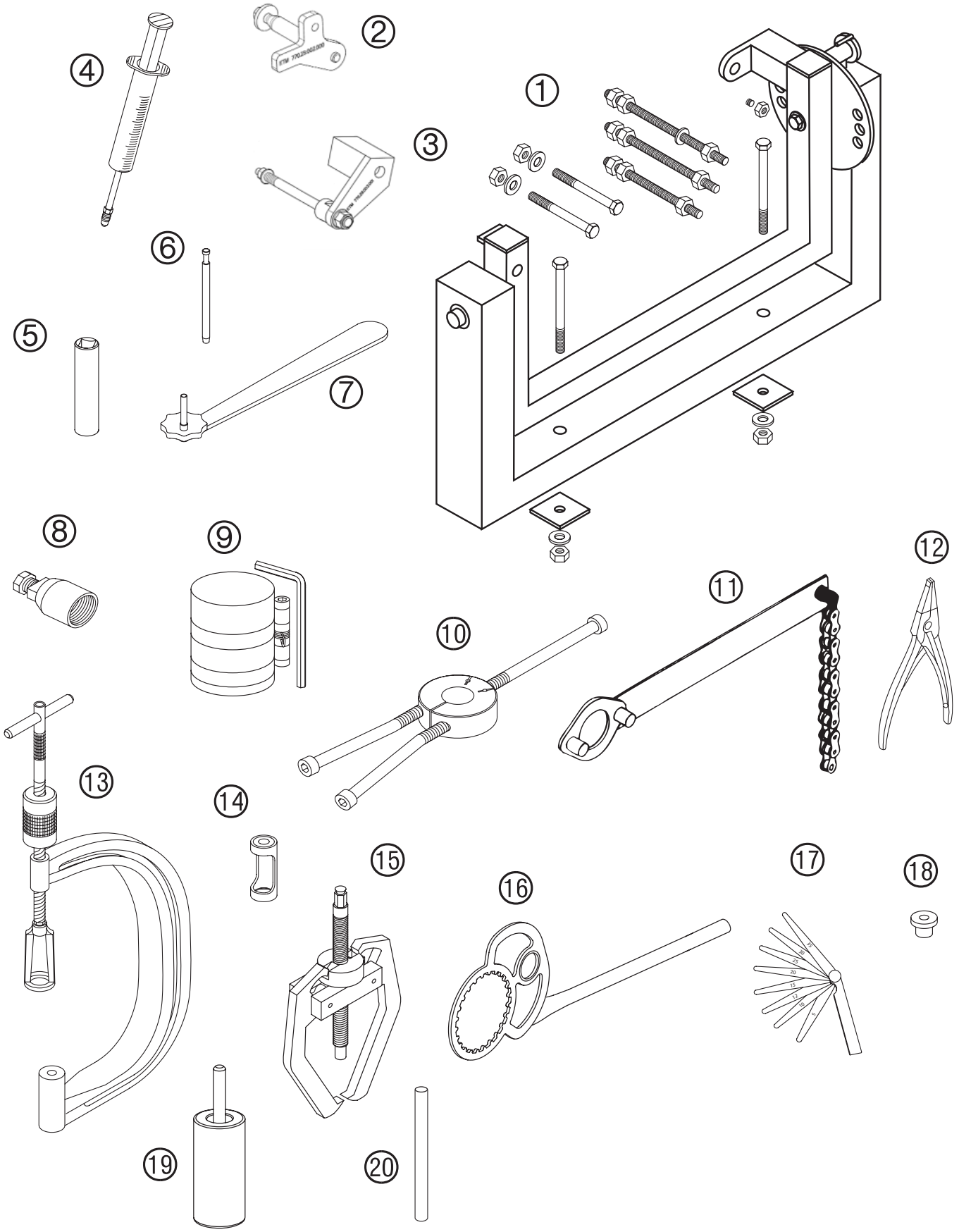


Adjusting the throttle cables

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 ❹. Loosen the counter nut ❺ and turn the adjusting screw ❻ 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.

SPECIAL TOOLS – ENGINE 250 SX-F



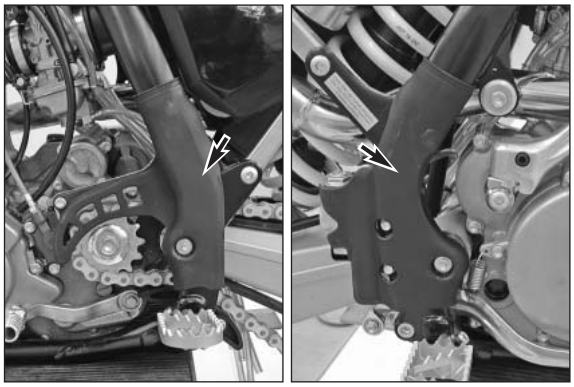
SPECIAL TOOLS – ENGINE 250 SX-F

FIG	PART NO.	DESCRIPTION
1	560.12.001.000	Universal engine work stand
2	770.29.002.000	Engine holder for engine work stand
3	770.29.003.000	Engine holder for engine work stand
4	503.29.050.000	Bleeding syringe for hydraulic clutch
5	600.29.073.000	Spark plug wrench 16 mm
6	770.29.026.000	Limit plug gauge 5 mm
7	590.29.034.000	Wrench for mixture regulating screw
8	580.12.009.000	Magneto extractor
9	600.29.015.000	Piston ring mounting tool
10	584.29.037.037	Mounting tool for inner rings of crankshaft bearings
11	510.12.012.000	Chain sprocket holder
12	510.12.011.000	Circlip pliers
13	590.29.019.000	Valve spring mounter
14	770.29.041.000	Valve spring mounter
15	590.29.033.000	Puller for camshaft bearings
16	503.29.003.000	Clutch holder
17	590.29.041.000	Feeler gauge for valve clearance
18	770.29.035.000	Protection cover for camshaft
19	770.29.018.000	Pressing tool for valve guides
20	770.29.018.050	Reamers for valve guides

REMOVING AND REFITTING ENGINE 3

INDEX

DISMOUNTING THE ENGINE 3-2
MOUNTING THE ENGINE 3-6



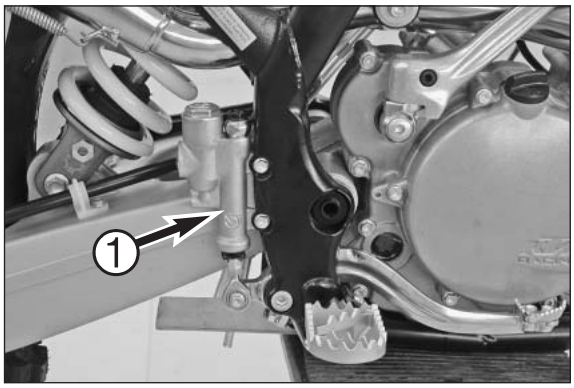
Dismounting the engine

– Thoroughly clean the motorcycle and jack up on a suitable assembly stand. Make sure it cannot tip over.
– Remove the seat and tank with the spoiler.

– Remove the frame protector on both sides.

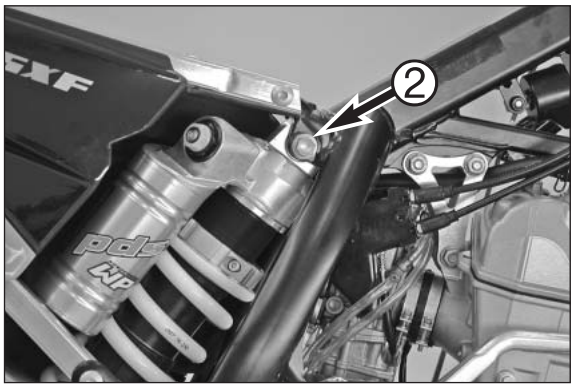
NOTE: you do not need to take the screws on the outside of the swing arm pivot all the way out. Just loosen and pull them out with the bushing.

– Open the chain and remove.

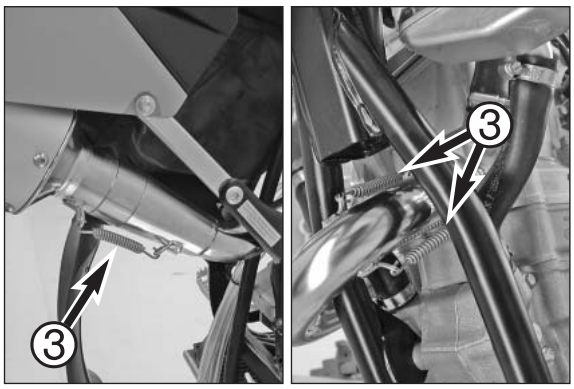


– Dismount the foot brake cylinder ❶; you do not need to loosen the line to the rear wheel brake.

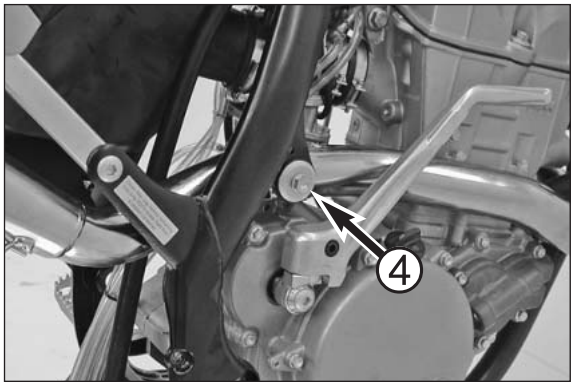
– Detach the return spring on the foot brake lever.



– Remove the upper shock absorber screw ❷.
– Loosen the nut on the swing arm pivot, knock out the swing arm pivot with a suitable driver and completely remove the swing arm, shock absorber and rear wheel from the motorcycle.

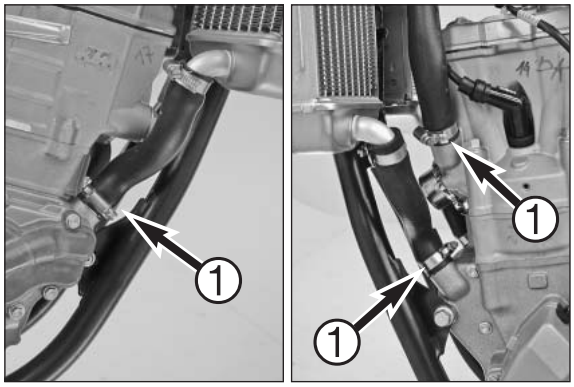


– Detach the exhaust springs ❸ on the cylinder head and between the manifold pipe and main silencer with a suitable tool.



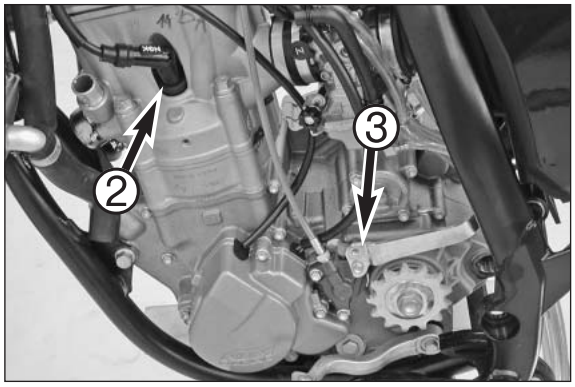
– Remove the fixing screw ❹ on the manifold pipes together with the washer and rubber sleeve.

– Pull the manifold pipe forward and remove from the motorcycle.



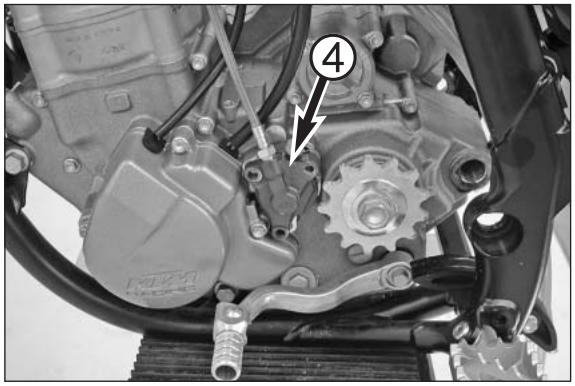
– Open the drain plug on the water pump and allow the cooling liquid to drain into a suitable vessel.

– Loosen the hose clamp ❶ and pull the radiator hoses off of the engine.



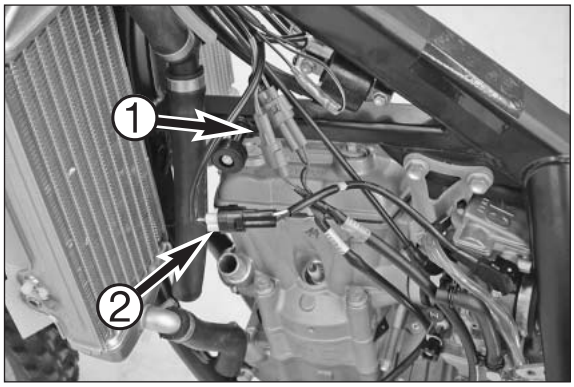
– Disconnect the spark plug connector ❷.

– Unscrew the chain securing guide ❸ on the clutch slave cylinder and tilt up.

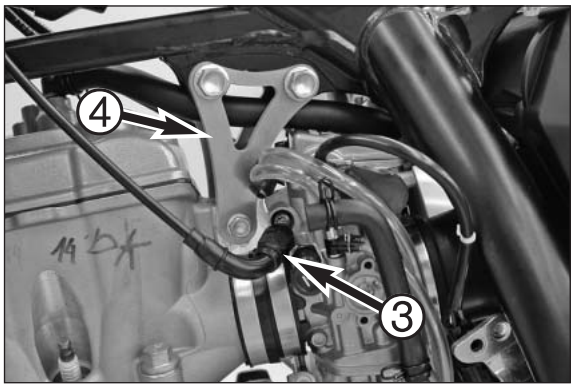


– Unscrew the clutch slave cylinder ❹ and let it hang down on the side.

NOTE: do not actuate the clutch lever as long as the clutch slave cylinder is dismounted.

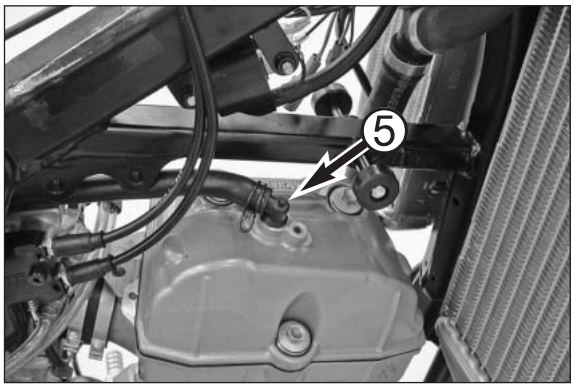


– Disconnect the generator connector ❶ and the throttle potentiometer connector ❷.



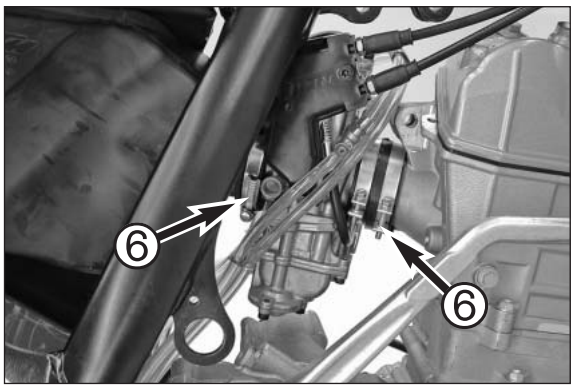
– Unscrew the hot start control ❸ from the carburetor.

– Remove both upper engine braces ❹.



– Carefully disconnect the engine vent ❺ and remove from the motorcycle together with the hose.

NOTE: only pull the connection upwards, otherwise it can easily break.

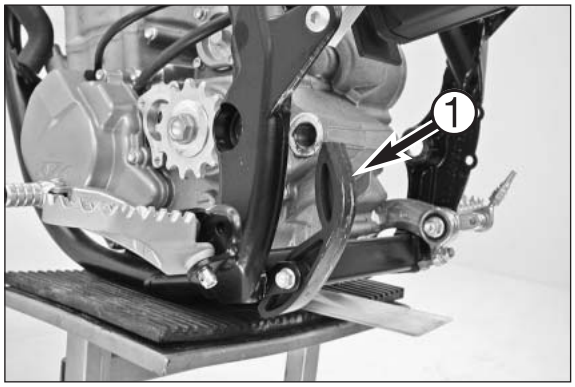


– Loosen the carburetor connection boots ❻.

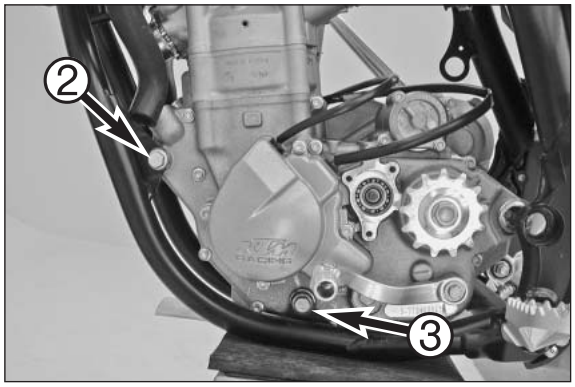
– Dismount the carburetor towards the right and let it hang down.

! **CAUTION** !

DO NOT PLACE THE CARBURETOR IN THE AIR FILTER BOX SINCE THE AIR FILTER WILL ABSORB ANY LEAKING FUEL.



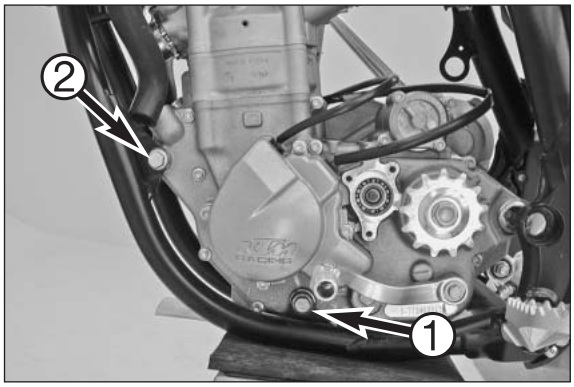
– Loosen the chain guide ❶ and tilt upwards.



– Remove the front ❷ and lower ❸ engine fixing screws and lift the engine out of the frame from the left side.

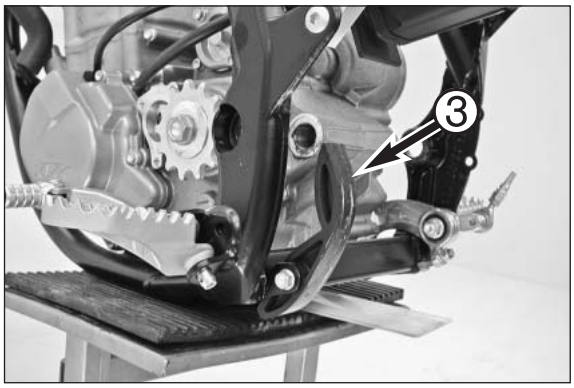
! **CAUTION** !

MAKE SURE THE MOTORCYCLE CANNOT TIP OVER.



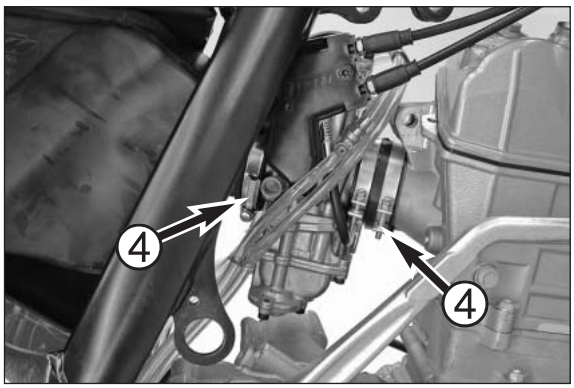
Mounting the engine

– Lift the engine into the frame from the left, position and screw in the lower ❶ and the front ❷ engine fixing screws but do not tighten them yet.

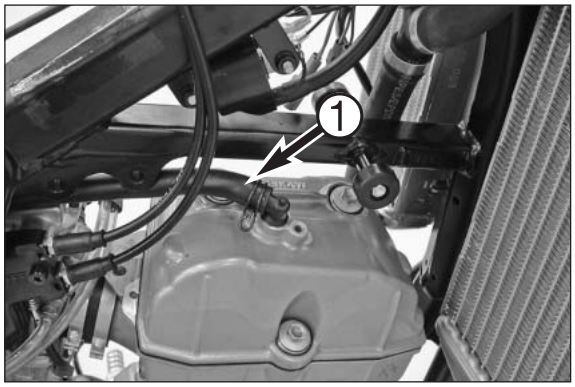


– Mount the chain guide ❸ and tighten the screw.

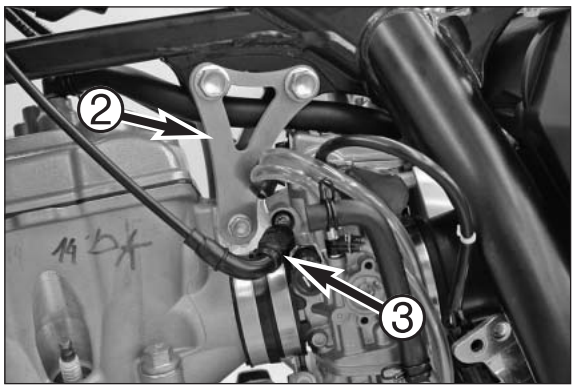
– Place the carburetor into the boots.



– Tighten the carburetor connection boots ❹.



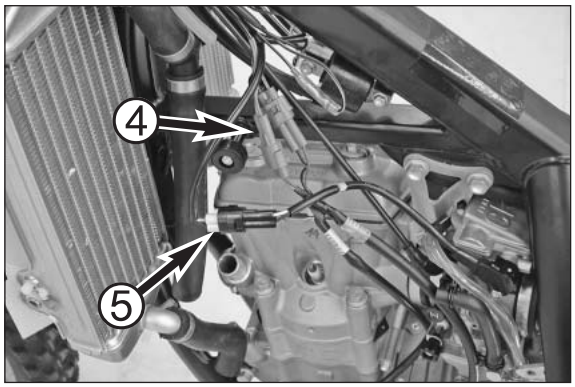
– Mount the engine vent ❶.



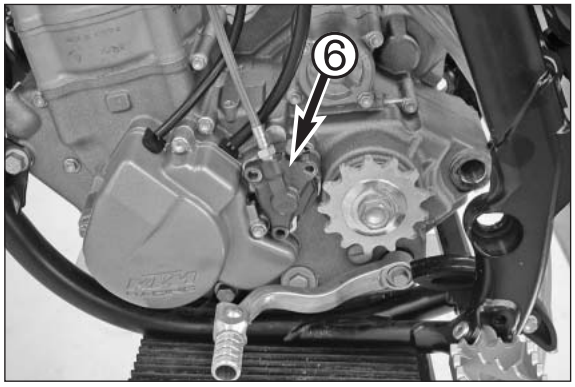
– Mount both upper engine braces ❷ but do not tighten the screws yet.

NOTE: the hose the engine vent should run between the two engine braces.

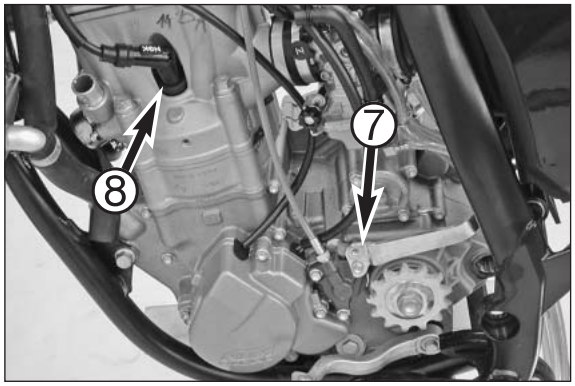
– Screw the hot start control ❸ into the carburetor.



– Connect the generator connector ❹ and throttle potentiometer connector ❺. Attach the wiring harnesses with cable clips.

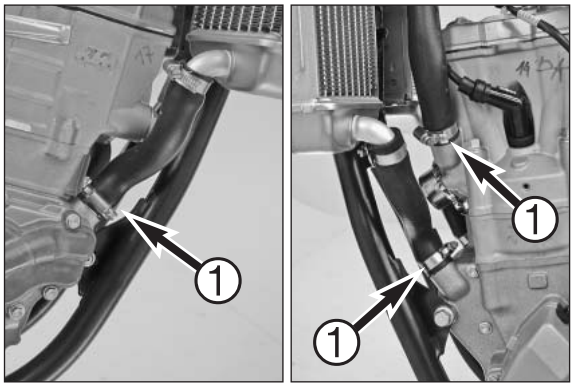


– Mount the clutch slave cylinder ❻, screw in both front screws (M6x20) and tighten to 10 Nm.



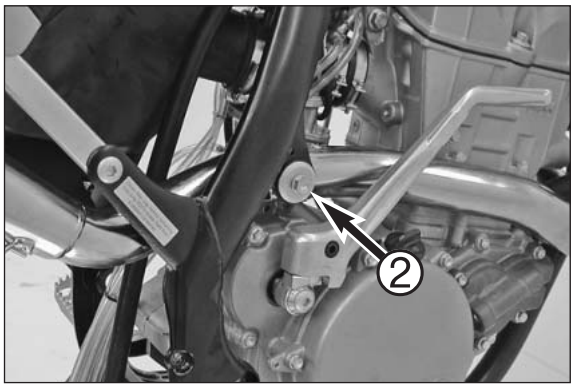
– Position the chain securing guide ❼, mount the M6x25 screw and tighten to 10 Nm. Tighten the screw on the chain roller.

– Connect the spark plug connector ❽.

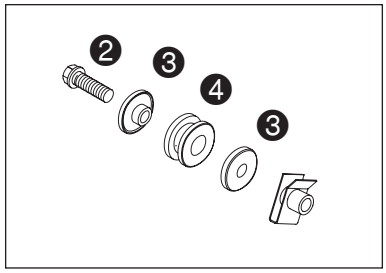


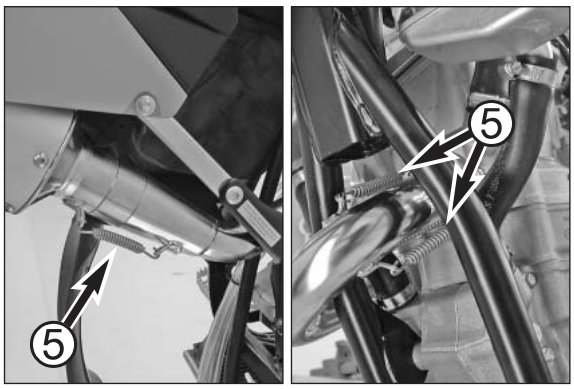
– Connect the radiator hoses to the engine and tighten the hose clamp ❶.

– Attach the manifold pipe to the front of the motorcycle and slide into the main silencer.

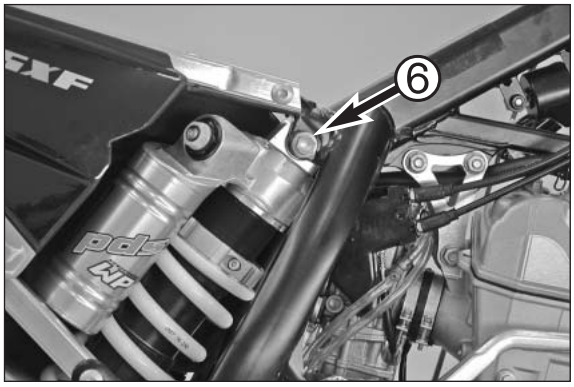


– Mount the fixing screw ❷ for the manifold pipe with washers ❸ and the rubber sleeve ❹.





– Attach the exhaust springs ❺.



– Position the rear wheel with the swing arm and shock absorber in the frame.

– Insert the swing arm pivot and tighten the nut.

– Tighten the upper shock absorber screw ❻ to 70 Nm.

– Tighten the nut on the swing arm pivot to 100 Nm.

– Tighten the nuts on the two engine braces to 33 Nm.

– Tighten the front and lower engine fixing screws to 60 Nm.

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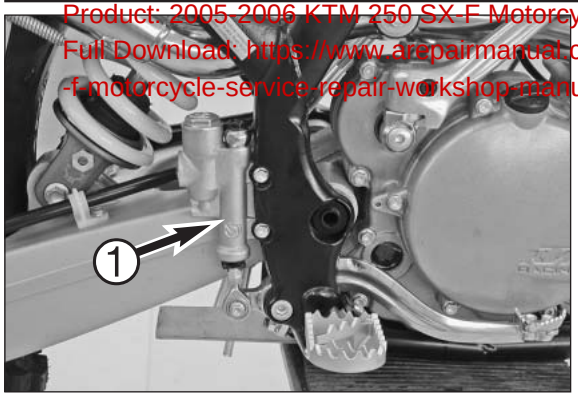


– Mount the foot brake cylinder ❶, apply Loctite 243 to the screws and tighten to 10 Nm.

– Apply Loctite 243 to the ball joint of the pushrod and tighten to 10 Nm.

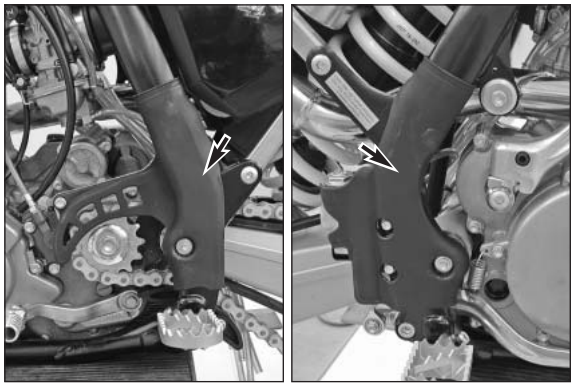
– Attach the return spring for the foot brake lever.

– Mount the chain and chain joint.

! CAUTION !

WHEN YOU MOUNT THE CHAIN JOINT, MAKE SURE THE CLOSED SIDE OF THE GUIDE POINTS IN THE RUNNING DIRECTION.

– To adjust the chain tensioning: see Owner's Manual.



– Mount both sides of the frame protector.

– To fill and bleed the cooling system: see Chapter 2

– Mount the seat and tank with the spoiler and take the motorcycle off the assembly stand.

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