

Servicing the left engine housing half

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

The bearings usually fall out of their seat of their own accord by knocking the housing half on a plane piece of wood when the housing has a temperature of 150° - 180° C. At this housing temperature, the new (cold) bearings can be inserted in the bearing seats without pressing.

Crankshaft roller bearing ①

Remove the old roller bearing and press in a new roller bearing up to the stop. The inner ring on the crankshaft must also be renewed (see paragraph about crankshaft).

Needle bearing of drive shaft ②

Press the old grooved ball bearing inward, press the new grooved ball bearing from the inside up to the stop.

Grooved ball bearing of countershaft ③

Press the old ball bearing inwards, press in the new ball bearing to the stop from inside.

Crankshaft seal ring ④

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

Counter shaft seal ring ⑤

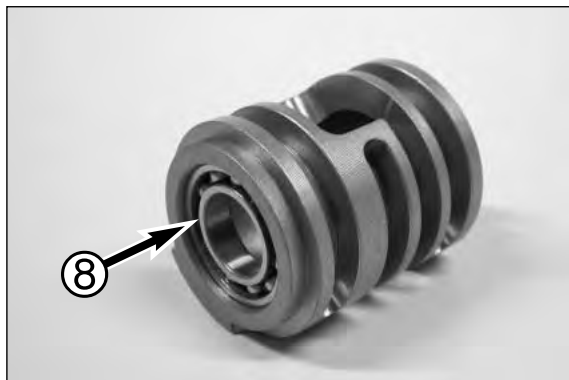
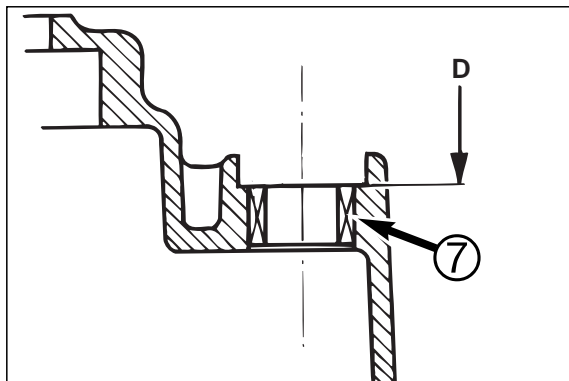
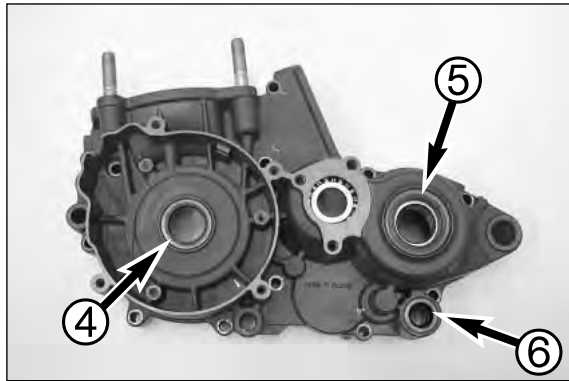
Press in the new shaft seal ring, until it is flush with machined surface.

Shift shaft seal ring ⑥

Press in the new shaft seal ring, until it is flush with machined surface.

Needle bushing of shift shaft ⑦

Remove the shaft seal ring and press the old needle bushing inwards. Press in the new needle bushing from the outside to the collar ①.



Grooved ball bearing of shift roller ⑧

Heat the shift drum to approx. 150° C.

The grooved ball bearing should fall out of the bearing seat automatically at this temperature.

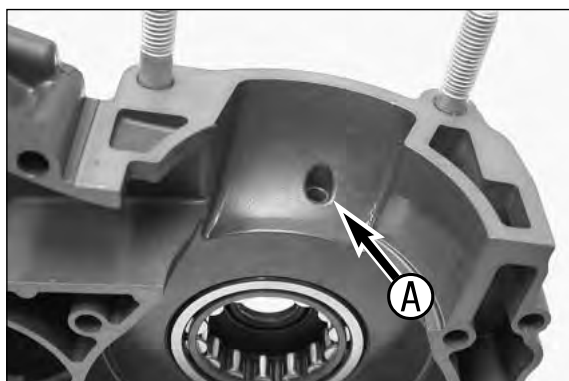
If necessary, tap the shift drum on a flat wooden surface.

NOTE: Never heat the shift roller with a welding torch or similar device as you will damage the coating.

Insert a new grooved ball bearing and press it in gently up to the stop.

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

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





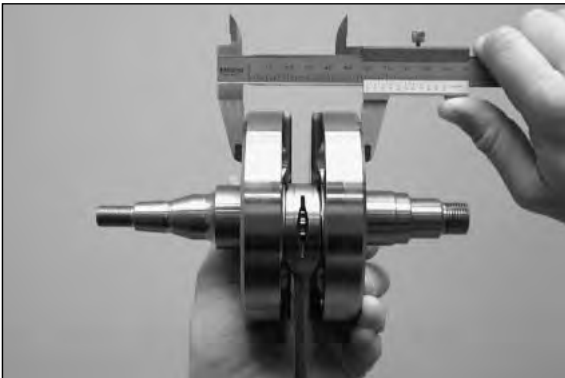
Crankshaft

- When replacing the roller bearing, the inner crankshaft ring must also be renewed.
- Heat special tool 584.29.037.043 on a heating pad up to approx. 150°C and slip it on the inner ring immediately. Press the special tool together tightly to obtain a good heat transfer and pull the inner ring off the crankshaft.
- To mount the new inner ring, heat the special tool again to approx. 150°C, engage the inner ring and slip it on the crankshaft journal immediately.

! CAUTION !

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

NOTE: Distance adjustment of the main bearings is not required.



Crankshaft webs - measure outer dimension

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

Crankshaft webs - outer dimension = 60 mm ± 0.05 mm



Check the piston

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

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

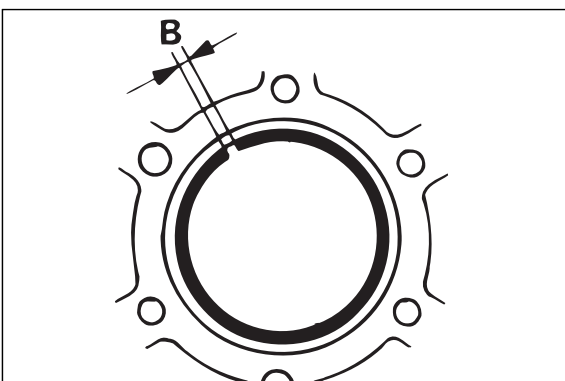
Piston ring end gap

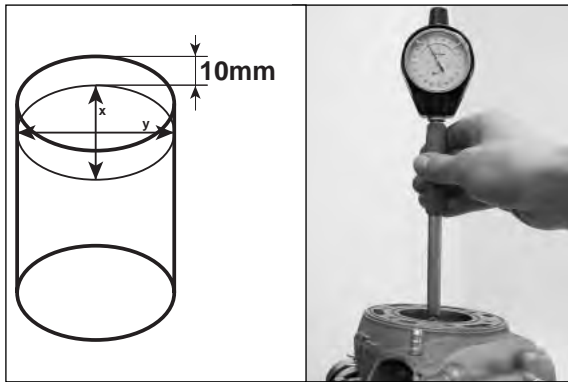
- Insert the piston ring into the cylinder and adjust it. The piston ring must be approx. 10 mm (1/2 inch) from the top of the cylinder.
- The end gap **B** can now be checked with a feeler gauge.

Piston ring end gap: max. 0.40 mm

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

2 piston rings are installed starting with the 2005 model.





Measuring pistons and cylinders, establishing the piston mounting clearance

- Measure the cylinder diameter approx. 10 mm below the top of the cylinder edge.
- Check the diameter in several corresponding places to see if the cylinder has worn oval.



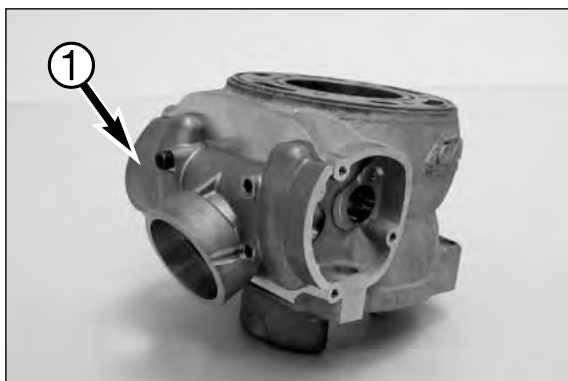
- The piston is measured at the piston skirt transverse to the piston pin approx. 50 mm under the upper edge of the piston.

Model 250: Piston size I: 66.340 mm - 66.350 mm
 Piston size II: 66.351 mm - 66.360 mm

Model 300: Piston size I: 71.940 mm - 71.950 mm
 Piston size II: 71.951 mm - 71.960 mm

- The piston mounting clearance is the difference between the smallest cylinder diameter and the piston diameter.

Piston mounting clearance: 0.06 mm - 0.1 mm



Recoated cylinder

To recondition the old cylinder all exhaust control components must be removed. The intermediate flange ❶ remains with the cylinder. The piston size is stamped into the bottom of the piston.



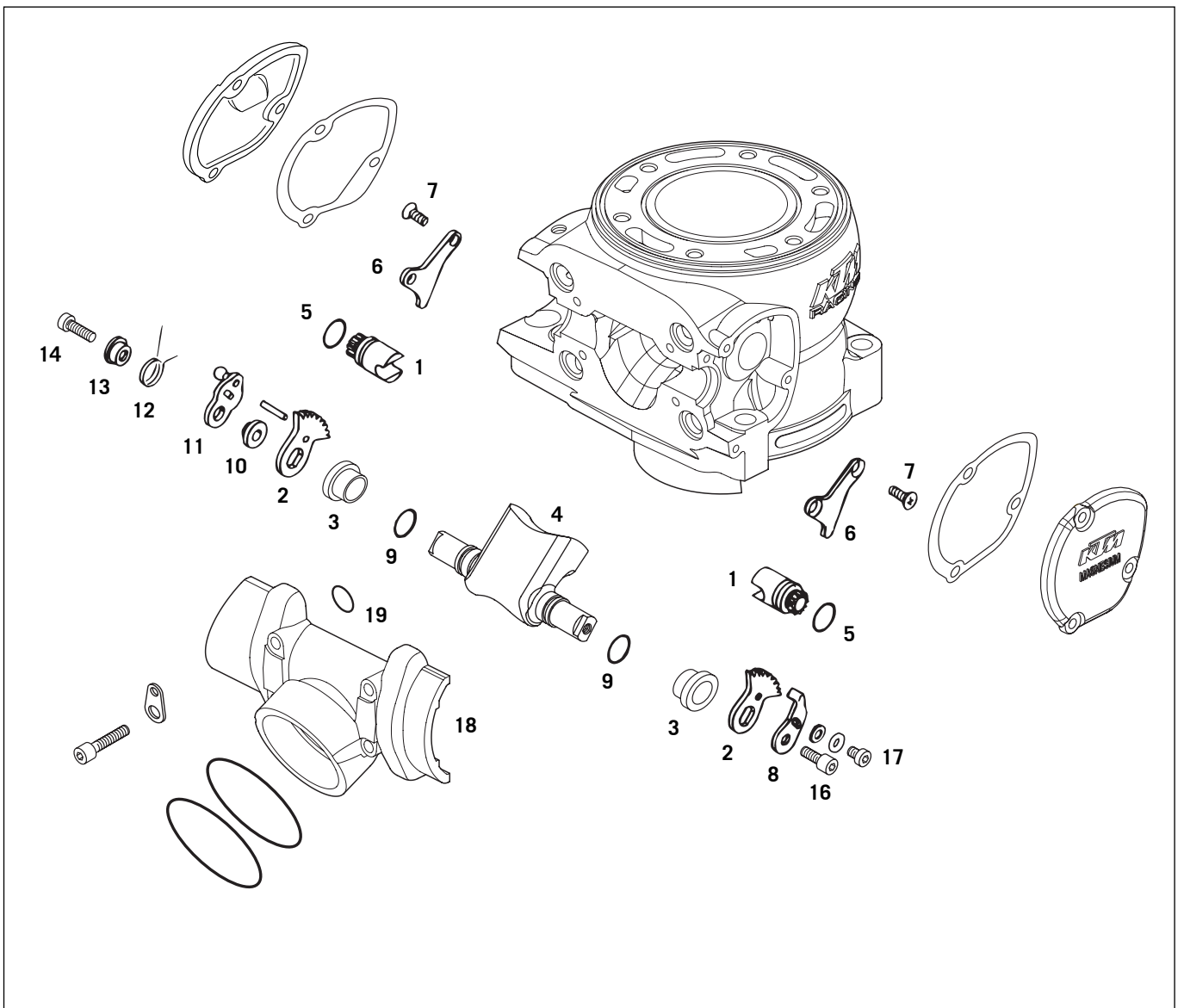
Nikasil coating of cylinder

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

The main advantages of the Nikasil coating are:

- excellent heat dissipation and thus better power output
- low wear
- low weight of the cylinder.

NOTE: The worn coating can be regenerated at low cost provided that the cylinders running surface is flawless.



Cylinder exhaust control system

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

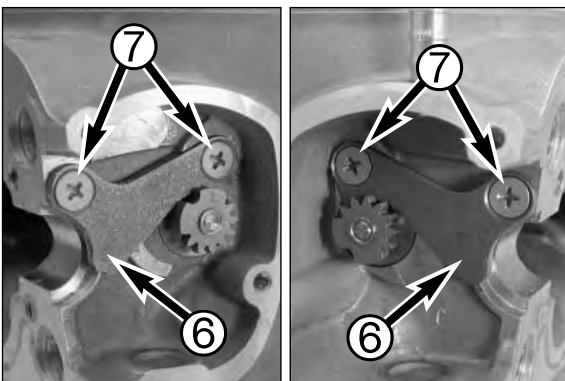
Control rollers **1** - Check the clearance of the bearings. Remove oil-derived deposits. Check the tothing of the control rollers for signs of wear.

Gear segments **2** - Check the tothing of the gear segments and control rollers for signs of wear.

Bearing sleeves **3** - Check the bearing sleeves of the control flap for play and easy operation.

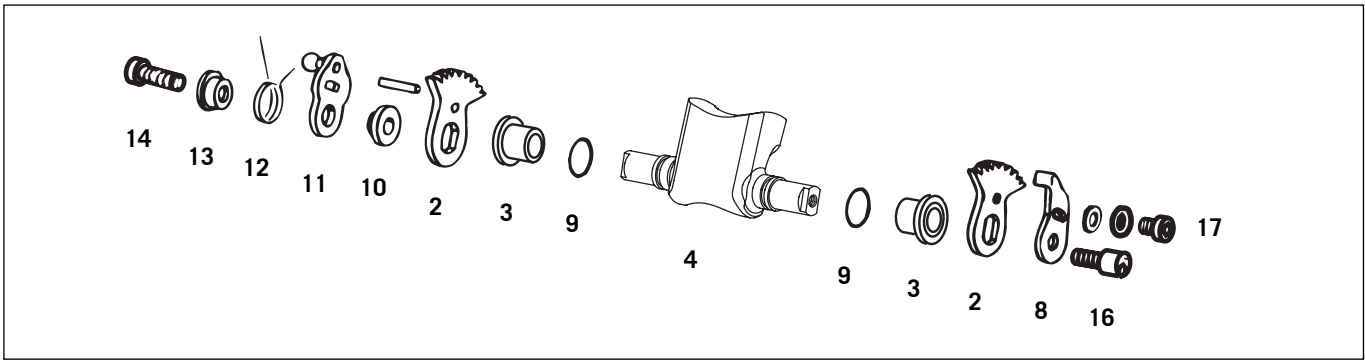
Control flap **4** - Clean the control flap. The control flap must not graze inside the exhaust port.

O-rings **5, 9** + **19** - Check the O-rings of the control flap and control rollers for signs of wear. Renew if necessary.

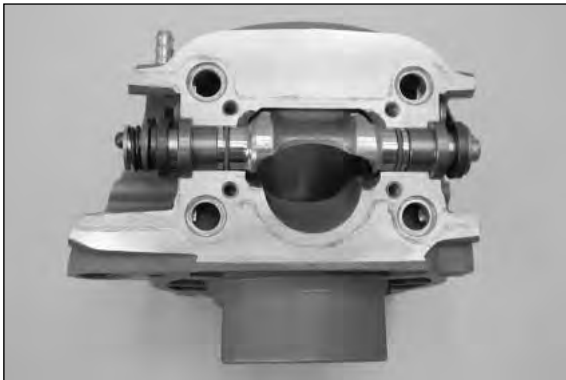


Cylinder preassembly

- Mount the O-rings (16x2 mm) **5** on the control rollers and grease.
- Place the control rollers **1** in the cylinder and mount the retaining brackets **6**; secure the flat-head screws **7** with Loctite 243.

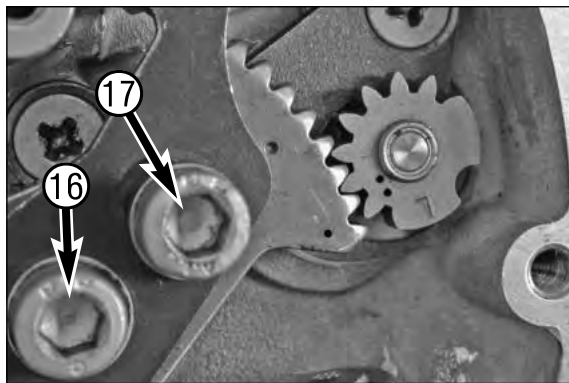


- Mount and grease the O-rings (15x1.50 mm) ⑨ on the control flap and grease.
- Slightly grease the bearing sleeves ③ and plug them on the control flap.
- Mount the toothed segments ② (the toothed segment with the cylindrical pin has to be mounted on the right side).
- On the right-hand side, mount the bearing bushing ⑩ with the collar outside, the adjusting lever ⑪ with the ball head on outside, the overload spring ⑫ with the short leg on outside and the spring sleeve ⑬ to the control flap.
- Coat allen head bolt ⑭ with Loctite 243 and bolt up about 5 revolutions, hook the short leg of the overload spring on to the cylinder pin (see illustration) and tighten the allen head bolt.
- Mount the stop plate ⑧ on the left side. Do not tighten bolts ⑯ + ⑰ yet as they will be used to adjust the exhaust control (measurement Z).
- Turn the control rollers ① in the cylinder in such a way that the ports are completely open and no edges protrude.

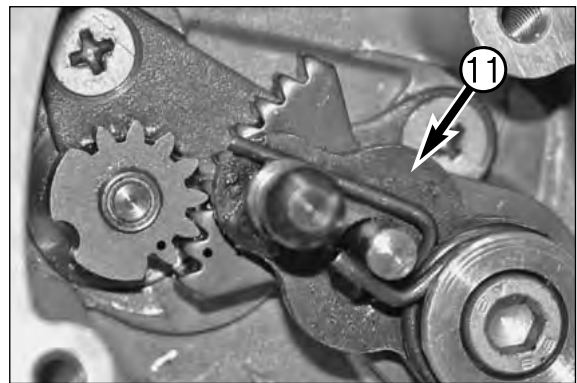


- Place preassembled control flap in the cylinder, engage the gear segments in the control rollers in such a manner that, when the control flap is open (pivoted right to the top), the markings of the gear segments and the gear rollers coincide. Please check that the two control rollers do not block the cross-section of the port when the control flap is open.
- Coat the sealing surface thinly with silicon and mount intermediate flange ⑯ with 4 silicon O-rings (11.3x2.4 mm).
- Finally check the smooth running of the exhaust control system.

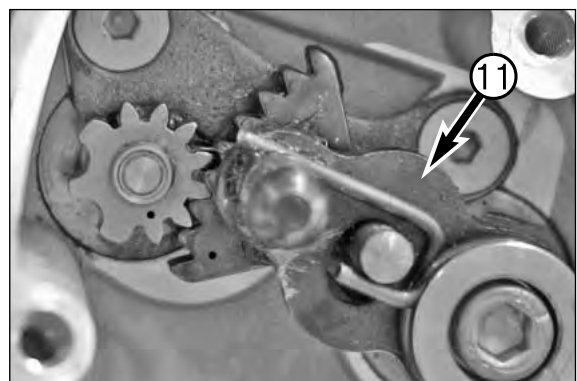
NOTE: It must be possible to push adjusting lever ⑪ further upwards against the spring force.

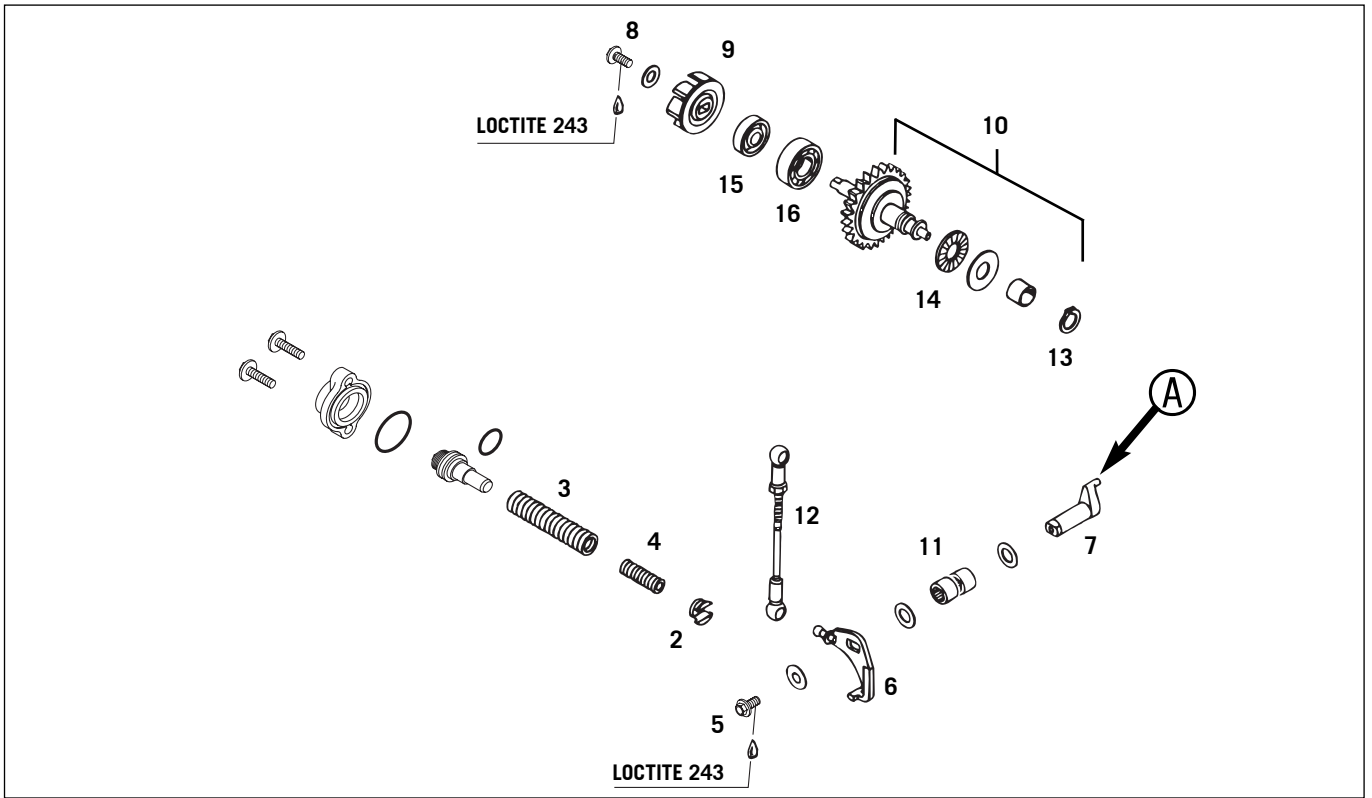


**Model
2004
2005**

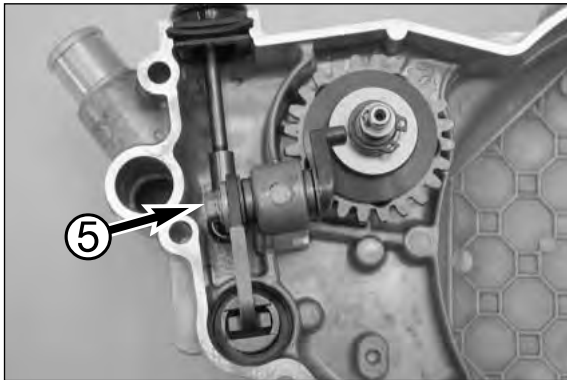


**as of Model
2006**





Art.- No. 3.206.088-E



Exhaust control, clutch cover

- Remove bolts ①, the spring insert ②, the control spring ③ and the auxiliary spring ④ from the clutch cover.
- Remove bolt ⑤ with the rocker arm ⑥ and the control lever ⑦.
- Take off the water pump cover, remove the allen head bolt ⑧ and take off the water pump wheel ⑨.
- The centrifugal timer ⑩ can be pulled out of the bearing.
- Clean all parts and check for signs of wear.

Check play and easy operability of the adjusting lever in the bearing ⑪.

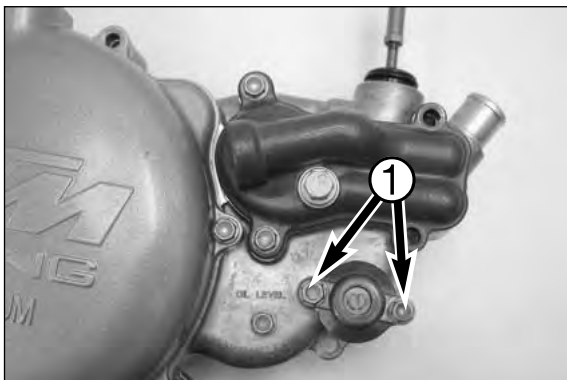
Check pin A of adjusting lever for wear.

Check linkage ball heads bm for clearance.

Remove circlip ⑬ and check the axial bearings ⑭ and washers for signs of wear.

If the water pump shaft seal ring ⑮ is replaced, it should be coated with Loctite 243 on the outside.

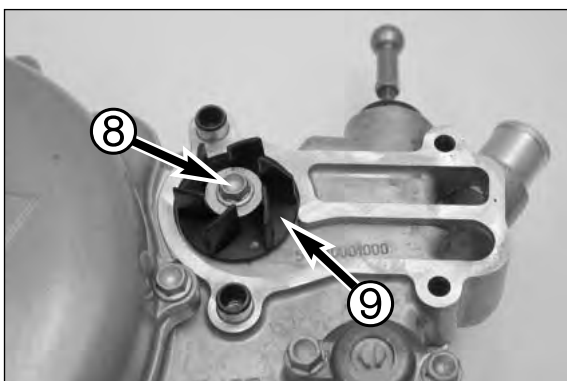
Check grooved ball bearing ⑯ for clearance



Preassembly of clutch cover

- Grease water pump shaft seal ring ⑮ and mount the centrifugal timer ⑩.
- Apply Loctite 243 to bolt ⑤ and mount together with rocker arm ⑥ and control lever ⑦.
- Mount control spring ③, auxiliary spring ④ and spring ② insert in the clutch cover and fix with bolts ①.
- Mount water pump wheel ⑨, coat bolt ⑧ with Loctite 243 and mount with washer.
- Mount dowels of the water pump cover.
- Mount a new Form-ring und fix the water pump cover with 2 bolts.

Repair manual KTM 250 / 300

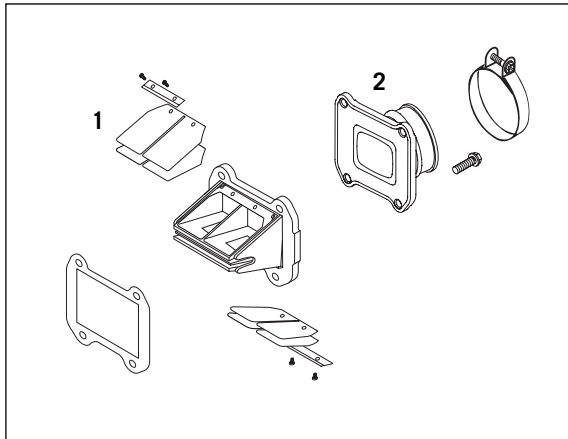


250 SX/SXS



Reed valve housing (250 SX/SXS)

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



Intake flange ❷

Check for firm mounting and for signs of damage.

EXC/EXC SIX DAYS/MXC/XC/XC-W

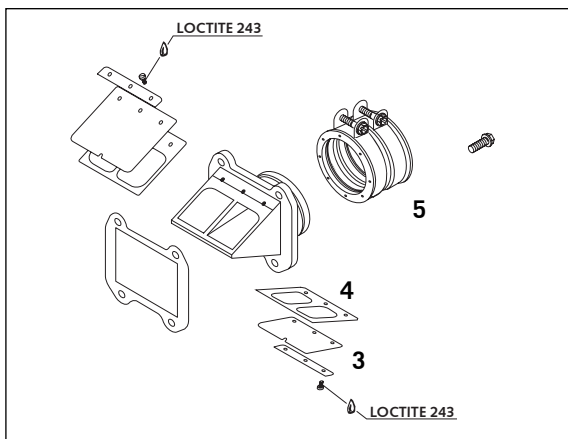


Reed valve housing (EXC/EXC SIX DAYS/MXC/XC/XC-W)

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

! CAUTION !

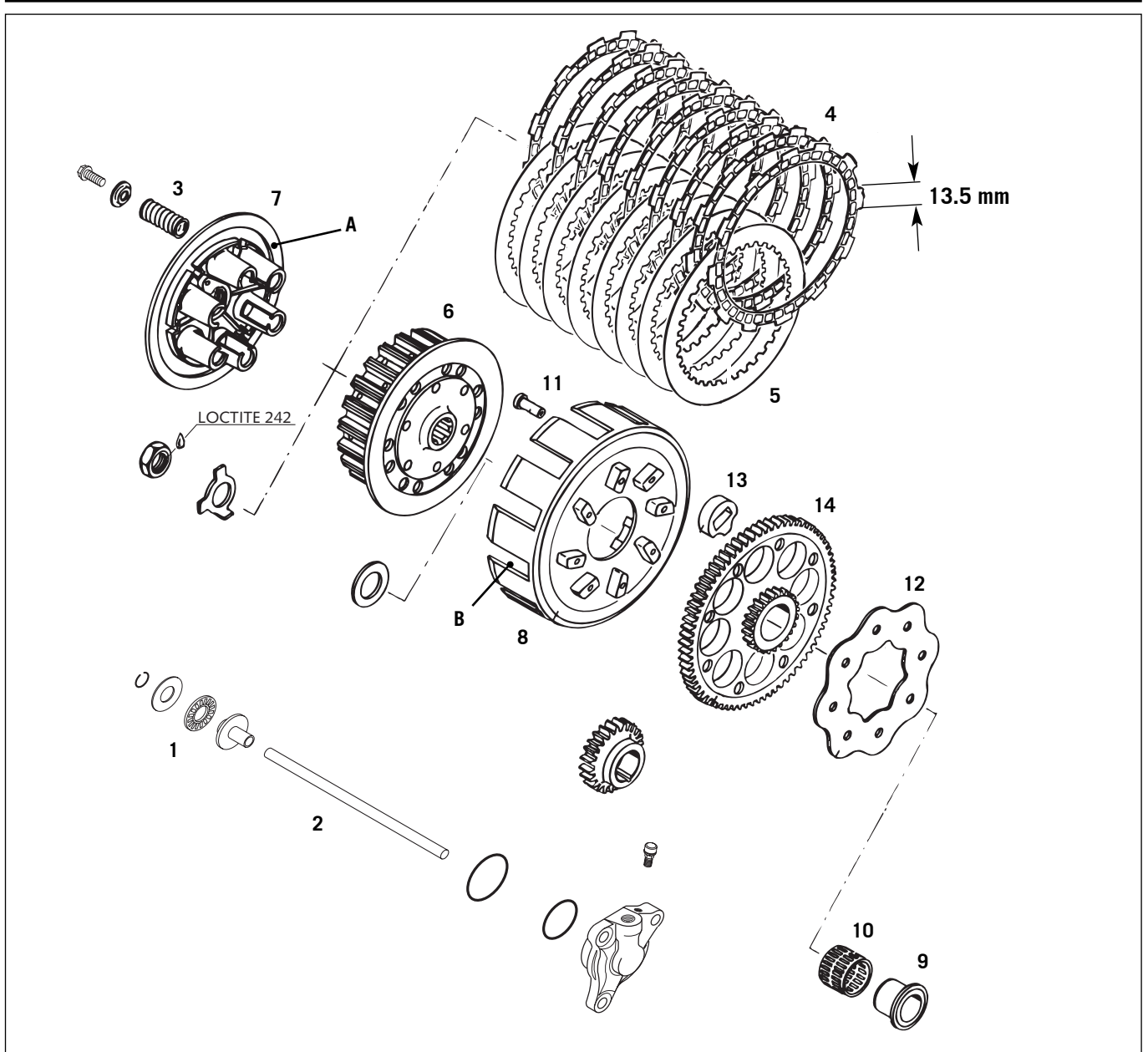
- Place the plate ❹ with the softer surface on the reed valve housing.
- Secure all of the screws on the reed valve housing with Loctite 243.



Rubber sleeve ❺

Check for firm mounting and for signs of damage.

NOTE: When mounting the rubber sleeve make sure that the arrow on the sleeve points towards the intake.



Clutch

Thrust bearing ①
check for wear

Push rod ②
Check for wear. Minimum length: 192 mm (new: 192.50 mm)

Clutch springs ③
New spring length 42 mm / 1.69 in (new 43 mm / 1.73 in). Replace all 6 springs if applicable.

9 Lining discs ④
Minimum thickness 2.60 mm (0.102 in) / new disc 2.70 mm (0.106 in). Discs must be plane; there must be minimum spacing of 13.50 mm (0.531 in) between starting surfaces.

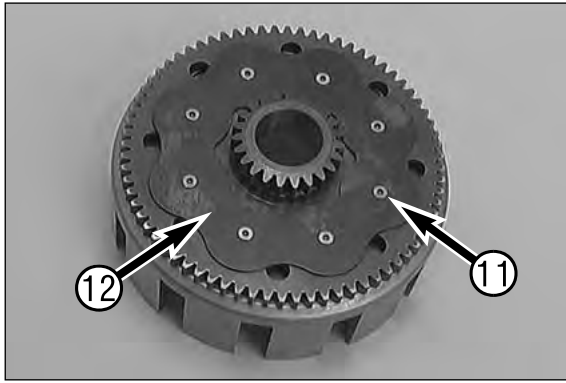
8 Steel discs ⑤
Must be plane, check for mechanical damage.

Inner clutch hub ⑥
Check the contact surfaces of steel discs on the inner clutch hub, maximum 0.50 mm (0.02 in) indentations.

Pressure cap ⑦
Check the contact surfaces ④ between lining disc and pressure cap for signs of mechanical damage and score marks.

Outer clutch hub ⑧
Check the start surfaces ⑤ of clutch discs on for wear. If indentations exceed 0.50 mm (0.02 in), replace outer clutch hub (see below).

Check the inner ring ⑨ and needle cage ⑩ for wear.



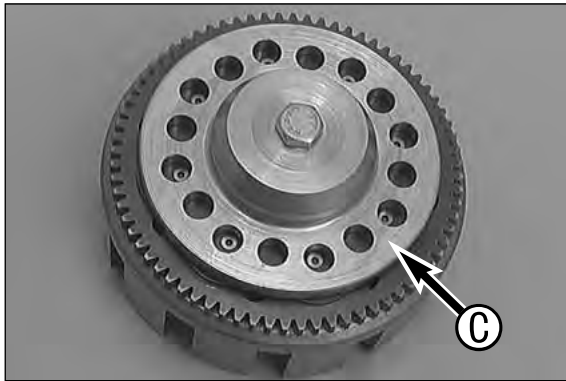
Replace outer clutch hub

- Drill open the clutch rivets 11 in area of retaining bracket 12 and remove parts.

NOTE: Check the 8 absorbing elements for signs of mechanical damage, replace all 8 where applicable.

! **CAUTION** !

THE ABSORBING ELEMENTS ARE WIDER THAN THE PRIMARY GEAR CROWN. TO ENSURE THAT THE OUTER CLUTCH HUB AND RETAINING BRACKET ARE POSITIONED DIRECTLY ON THE PRIMARY GEAR CROWN 14, THE PARTS MUST BE HELD IN POSITION UNDER TENSION WITH THE CLUTCH RIVETTING TOOL C WHILE RIVETING.



- Apply the special tool 546.29.027.000 as illustrated, screw on and lock the rivets using a pointed and round mandrel.

