



Rotary valve shaft sealing for ROTAX 532 UL and 582 UL

General: To increase the lifetime of rotary valve shaft and the corresponding oil seals, a new sealing on water pump side of rotary valve shaft was introduced. This new sealing can be fitted also afterwards in case of leaking problems.

1) This modification was made on engines type:

532 UL starting with engine serial no. 3,887.848

582 UL starting with engine serial no. 3,957.335

2) For modification or repair of engines before the above mentioned serial numbers the following parts are necessary:

- 1 x oil seal 10x30x8850 710
- 1 x insertion jig877 052
- 1 x threaded pin M5x6940 900
- 1 x MOLYKOTE 44 medium 100 gr.897 166

3) Procedure:

3.1) Removal of water pump impeller:

Mark position of water pump housing on crankcase. Remove 4 Taptite screws M6 ① from water pump housing. Remove water pump housing ② and gasket ③. Lock crankshaft at magneto side T.D.C. (top dead center) position with crankshaft fixation pin. Remove securing nut M6 ⑦, washer ⑧, impeller ⑨, friction washer ⑩ and shim ⑪, remove supporting plate, rubber washer and shim. Remove outer oil seal ⑬ 10x30x8 carefully (without damaging the rotary valve shaft) and distance ring. Clean and check rotary valve shaft surface. In case of heavy wear or scratches replace it. If it is in order, proceed as per para.3.6).

3.2) Removal of rotary valve shaft:

It is not absolutely necessary to disassemble crankcase for the removal of the rotary valve shaft. Set magneto side piston to top dead center. Remove rotary valve cover. Make sure that rotary valve ⑫ remains on the rotary valve shaft by holding it via the inlet opening in valve cover. Before removing the rotary valve disk, mark its position on the crankcase. Check for tooth wear (see para. 4), remove circlip ⑬ 40x1,75. Heat crankcase, rotary valve side, carefully to approx. 60° C. Knock out rotary valve shaft ⑭ resp. ⑮ from water pump side with extrusion jig 876 612 towards intake (see ill. 2).

**3.3) Disassembly of rotary valve shaft assy.:**

Apply pressure to the spring holding cup ⑰ and remove circlip ⑱ . Withdraw all components from the shaft. The distance sleeve ⑳ is glued in position and can be pushed off together with ball bearing ㉕ .

3.4) Checking of components:

a) Check rotary valve shaft for out-of-round, max. 0,05 mm (not measured between centers but by rolling in V-blocks), check the sealing surfaces for oil seals and splines, renew as required. Part no. 937 962 ⑭ resp. 937 968 ⑮ .

b) Check rotary valve gear ㉒ (bronze) inner and outer tooth profile.

c) Always replace oil seal ㉖ , the 2 oil seals ⑯ and ㉙ and O-ring ㉑ .

d) Check the two ball bearings ㉕ and ㉚ , renew as required. The ball bearing ㉚ can only be exchanged with crankcase dismantled.

e) Visual check of spring ⑲ , spring holding cup ⑰ and circlip ⑱ .

3.5) Re-assembly of rotary valve shaft:

Grease oil seal ㉖ and slide it on rotary valve shaft with open side towards center, followed by ball bearing and washer. Apply LOCTITE 648 to bore of distance sleeve ㉓ and slide it into position on shaft. Heat up distance sleeve to approx. 70 - 80°C until it remains tight on shaft. Position washer, O-ring, rotary valve gear, spring and spring holding cup on shaft, then apply pressure to spring holding cup and insert circlip. Rotary valve gear ㉒ must be movable in direction of spring.

3.6) Closing the leakage bore:

Remove gearbox, starter flywheel and loosen armature plate of ignition unit. It is not absolutely necessary to remove cylinders, pistons, cylinder head etc. Unscrew crankcase lower part and clean sealing surface both on crankcase lower and upper part. Screw threaded pin M5x6 ㉑ (part no. 940 900) into the leakage bore (LOCTITE 221!). For axial securing of ball bearing ㉚ an additional circlip ㉗ has been introduced which, however, cannot be fitted afterwards as the necessary groove in the crankcase has been introduced only after the engine serial numbers mentioned in para. 1).



Apply sealing compound on crankcase sealing surface, fit crankcase lower part, align upper and lower crankcase halves with an engineer's ruler.

Tightening torques, securing and sealing compounds, see spare parts list 729 for engines type 582 UL.

3.7) Installation of rotary valve shaft assy.:

Push lubricated oil seal with insertion jig 876 512 into the crankcase, with closed side showing towards outside (water side).

Screw guide sleeve 876 980 onto rotary valve shaft, grease oil seal inner diameter with MOLYKOTE 44 medium, part no. 897 166, and push shaft, using insertion jig 876 602, right to its positive stop into the preheated crankcase. Make sure that rotary valve gear engages in drive gear on crankshaft.

3.8) Fitting of new parts:

Apply MOLYKOTE 44 medium to the sealing lips of oil seal ⑩. Fill the space between the 2 oil seals ⑩ and ⑲ with MOLYKOTE 44 medium (approx. 6 c.c.) and push oil seal ⑩ with insertion jig 877 052 until level with crankcase (closed side of oil seal towards inside). Remove excessive MOLYKOTE 44 medium squeezed out.

3.9) Fitting of water pump impeller:

Place thrust washer ⑪ and friction washer ⑩ with its serration towards impeller on shaft. Check whether there is a 5 mm \varnothing bore in the impeller, then fit it onto the shaft according to its flat spot.

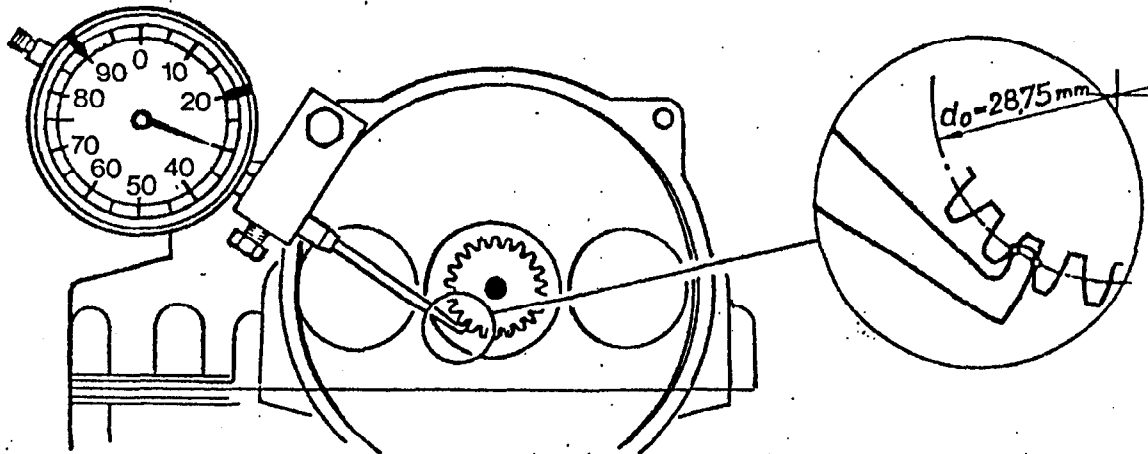
Apply LOCTITE 648 to the threads and fit impeller with shim and securing nut. Remove crankshaft locking pin. Turn crankshaft to check for easy run. Place gasket and water pump housing in position and tighten with 4 Taptite screws ①.

ATTENTION: Secure Taptite screws with LOCTITE 221.

Before starting the engine, the cooling system must be vented. This is done, in case of engine installation with spark plugs down, via a venting nipple ⑥ and gasket ① with a venting tube leading towards radiator, instead of the hex. screw ⑤ by which the water pump housing is closed in case of engine installation with spark plugs up.



4) Checking of tooth play of rotary valve drive :



Play should be between 0,3 mm and max. 0,9 mm. If play is more than 0,9 mm, replace the rotary valve gear $\text{\textcircled{20}}$ (14 teeth).

5) Rotary valve timing adjustment:

Turn crankshaft to magneto side top dead center and lock it with the fixation pin. Place rotary valve on gear on rotary valve shaft as close as possible to the marks made prior to disassembly.

NOTE: The rotary valve is asymmetrical, therefore at assembly try which position is the best to get as close as possible to the marks. If no marks were made, rotary valve timing data are shown in the Operator's Manual for the respective engine type.

Lubricate both sides of rotary valve disk. Fit rotary valve cover with O-ring.

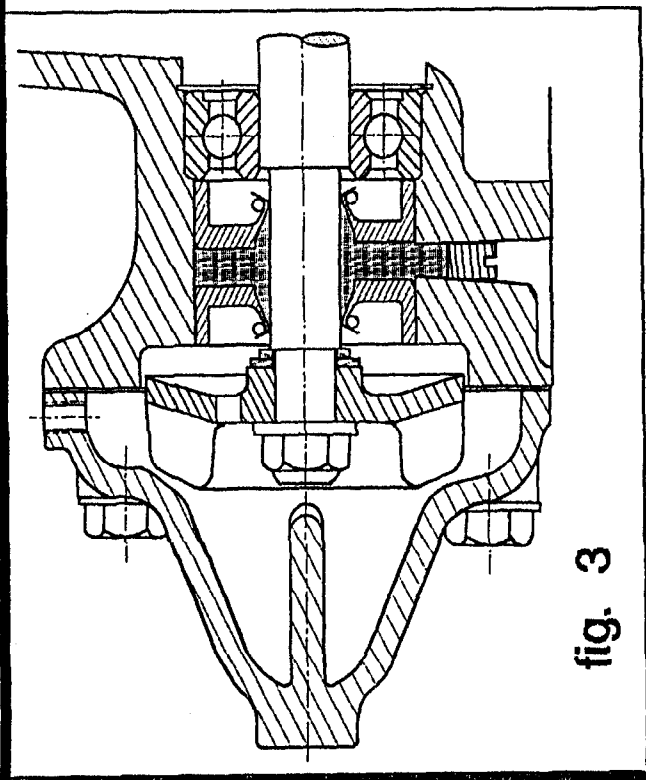
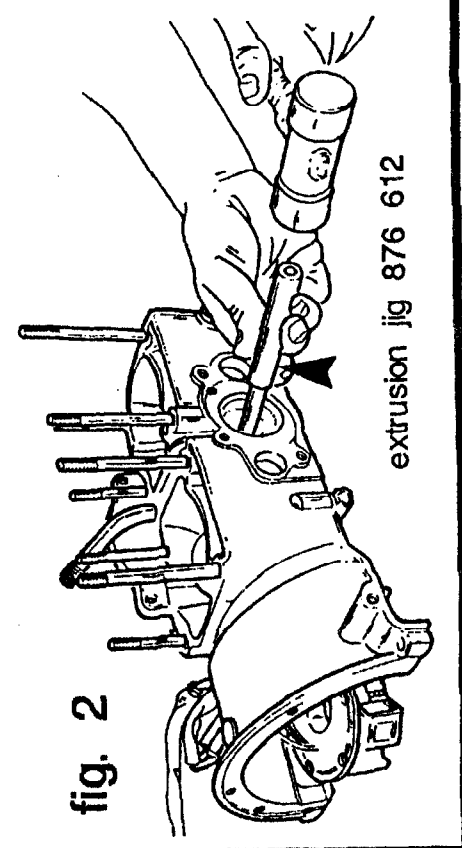
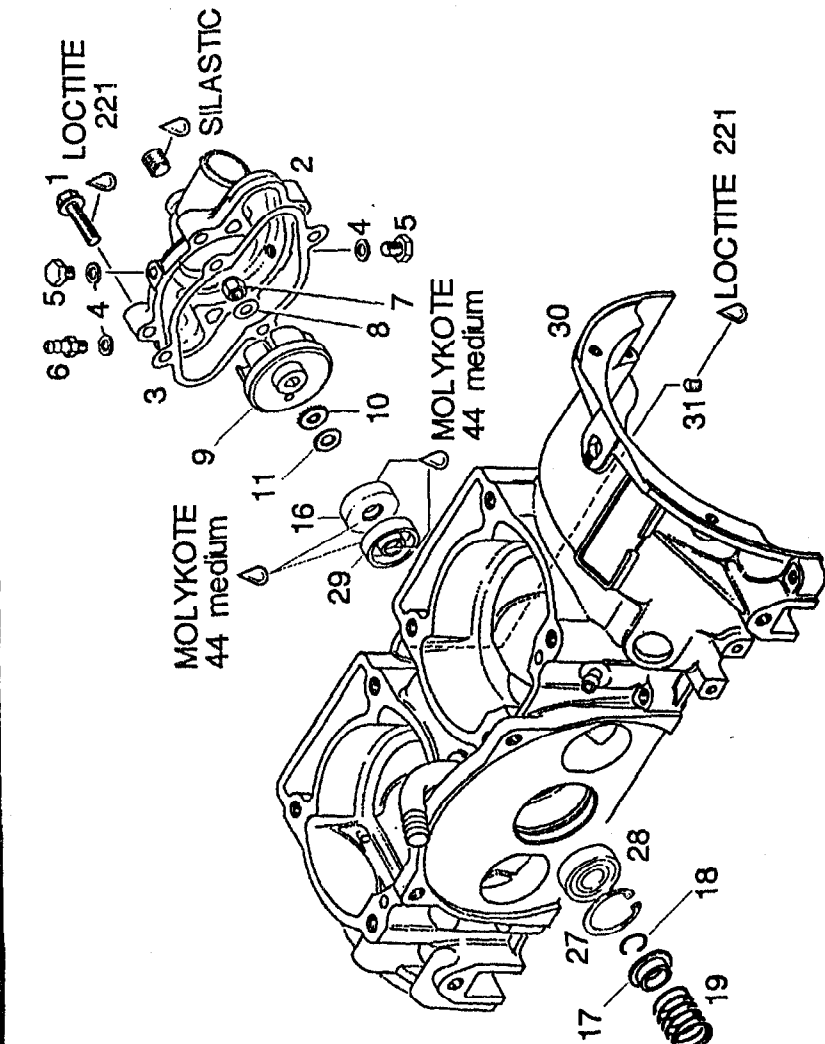


fig. 3

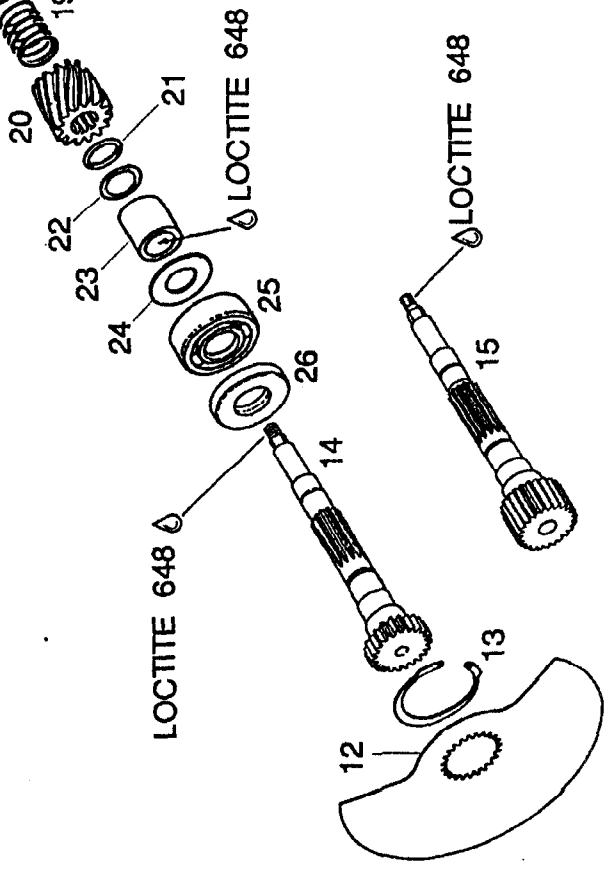


fig. 1

fig. 2