

# Installing of the Crank split lip seal

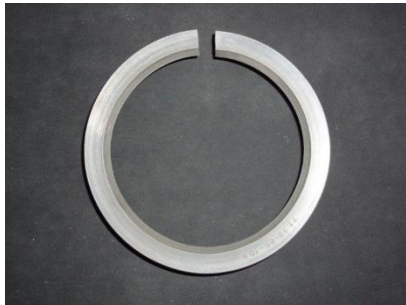
## What is this all about?

The main idea is to have the best of both – the wear free stock seal that will last ages – and the split lip seal ring that will catch oil that is leaking through the stock seal assembly. So even when the rubber seal fails the stock seal will remain intact and will continue to work.

## Design

This split lip seal is made to run besides the scroll of the stock crank so there is no need of reworking the crank to fit the lip seal. Only the aluminum stock seal has to be reworked on a lathe which is quite a low cost conversion compared with grinding the crank which is needed for other lip seal conversions.

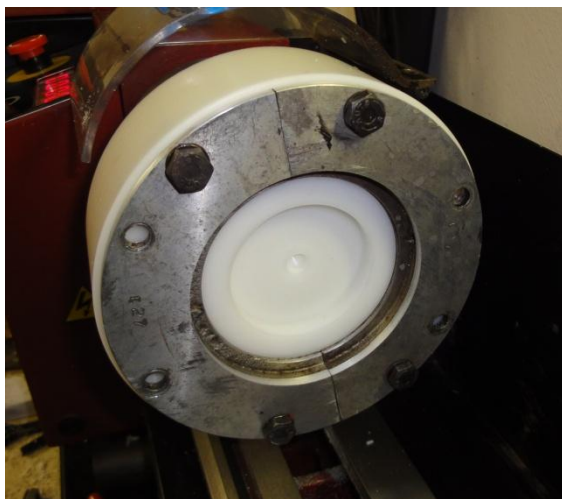
The lip seal is made out of VITON. This stuff can stand high temperatures and high surface speed that might occur on a crank at maximum revs. So this lip seal is made for racing purpose.



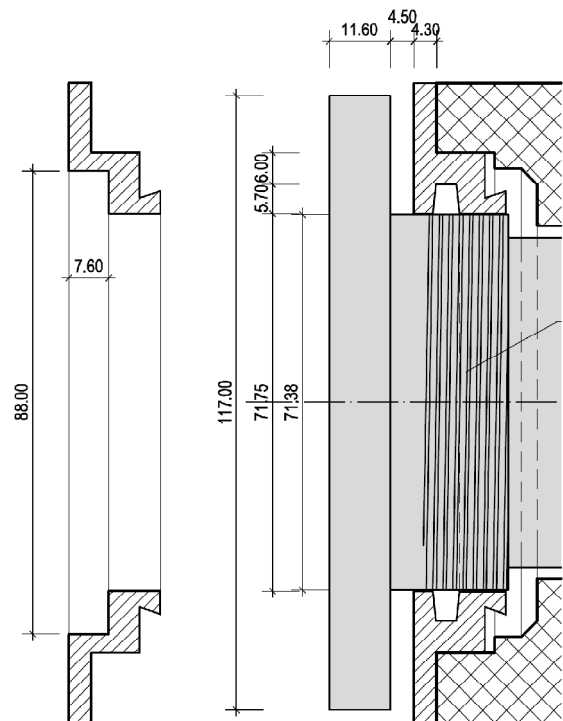
## 1. Changes to the stock aluminum seal ring

The ring has to be changed as shown.

It will be easier to use a centering tool but to clamp it to a lathe chuck is in most cases precise enough. The diameter that keeps the lip seal later has to be concentric to the scroll inside.



Chuck with a holder to center the ring



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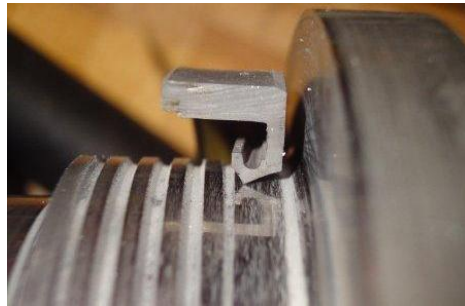
All measures are in [mm]

The draining hole of the aluminum seal will be blocked by the new lip seal so you need to enlarge the draining area as shown. Use a press drill and a high speed grinder with cutting tools to do that job. Take care not to damage scroll and don't grind through the sidewall or a bad leak might occur. Enlarge the fixing bolt holes of the aluminum ring to have chance to center it properly.



### Preparing the crank

Not much has to be done to the crank. Just remove dirt and roughness of the surface on which the lip seal will run. Slightly polishing would be the best but is not mandatory.

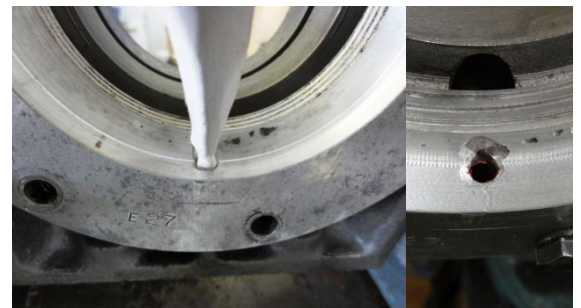
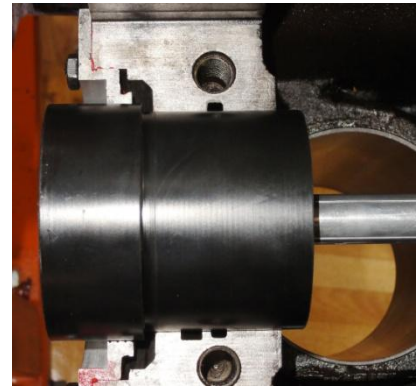


### Assembling of the crank and the lip seal to the block

1. First clean all parts with brake cleaner and dry it thoroughly.



2. Use an alignment tool to fit the stock aluminum seal properly to the engine block. The factory manuals have the same CRITICAL error. The alignment tool drawing where the tool fits inside the seal in the factory manual needs to be changed to 71.57mm [2.818"]. A mistake
3. Use silicone liquid gasket to seal the aluminum ring to the block.
4. When installing the aluminum ring to the bearing cap take care that you don't block the draining hole with silicone. Put a paper tube inside the hole while you installing the ring. It is mandatory for a proper function of the lip seal that the draining hole is open to relieve the oil into the sump.
5. Next step is to center the aluminum ring with the still flexible silicone.



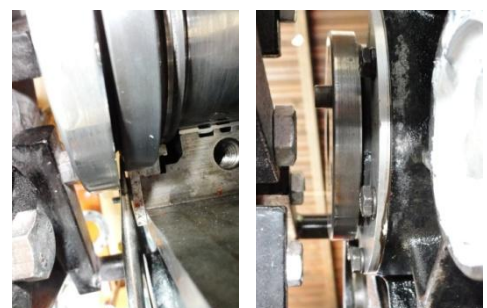
6. Put the bearing cap in place to the block with the centering tool inside and torque up the bearing cap bolts. Tighten the aluminum ring bolts slightly. Tap the aluminum ring halves gently into place. Tighten the fixing bolts of the aluminum ring more and tap again. After that torque them up.



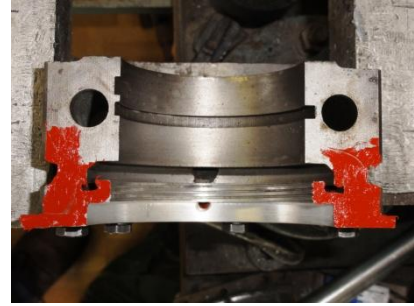
7. Install the lip seal to the crank. The spring can be openend closed to be wrapped around the crank journal. Becareful with the spring. Fit the lipseal at the journal area and put the spring into the notch of the lip. Open the ring carefully and slip it over the scroll area. Take care not to damage the lip seal with touching the sharp scroll edges. Put a little smear of silicone on the contact face where the lip seal closes to have a better seal. Use a small wood or screw driver for this job.



8. Install the bearing shells to all mains. Oil them. When putting the crank to the block take care that the split of the lip seal is showing towards the cylinder head. When the crank has its rest on the bearings push the lip seal towards the aluminum ring. Use a larger screw driver for this job. Be careful not to damage the rubber parts.



9. Put some silicone on the contact surface on the bearing cap as shown in the photo. Install the bearing cap to the engine block and torque some turns up. Again push the lip seal to the aluminum ring while you torque up the bearing cap bolt to full. Look all over that the lip seal is sitting straight in the aluminum ring. A little amount of silicone will be squeezed out of the split of the lip seal.



### **Congratulations – well done!**

Now give a little oil from outside to the lip seal before you start your engine.

