

Criterion Sleeve Gear - From John and Stuart @ Criterion.

These notes are about how we go about repairing a failed thread for the sleeve gear bearing retaining ring (lock ring, B39/26) in the gearbox shell. We first offered this repair many years ago - prompted to do so after we were asked to re-machine the thread after the thread diameter had been built up by welding. The welding was not something we thought a great idea, welding adjacent to an accurately machined bearing seating! Subsequently we came up with the following fix.

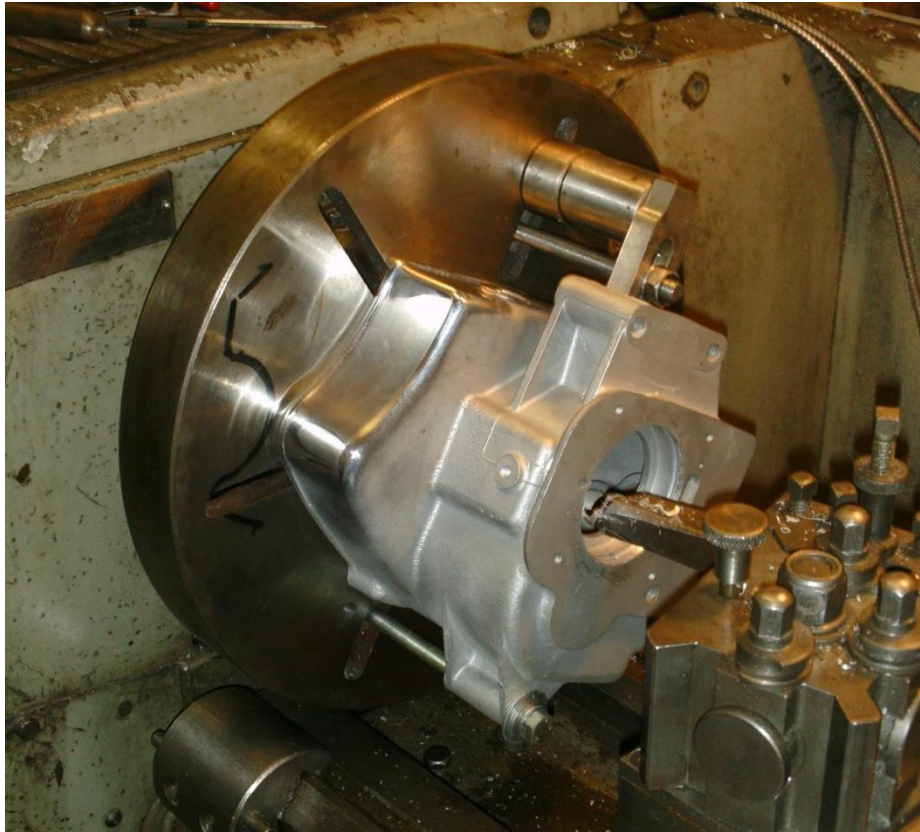


The cause of the thread failure can be due to several things:

- Not tightening properly, allowing the ring to loosen.
- Trying to remove the ring without removing the previous staking.
- Poor assembly, resulting in “cross threading”.

There was a time, more years ago than I care to remember, that the “fix” would be to buy a good second-hand case. They were cheap and plentiful!

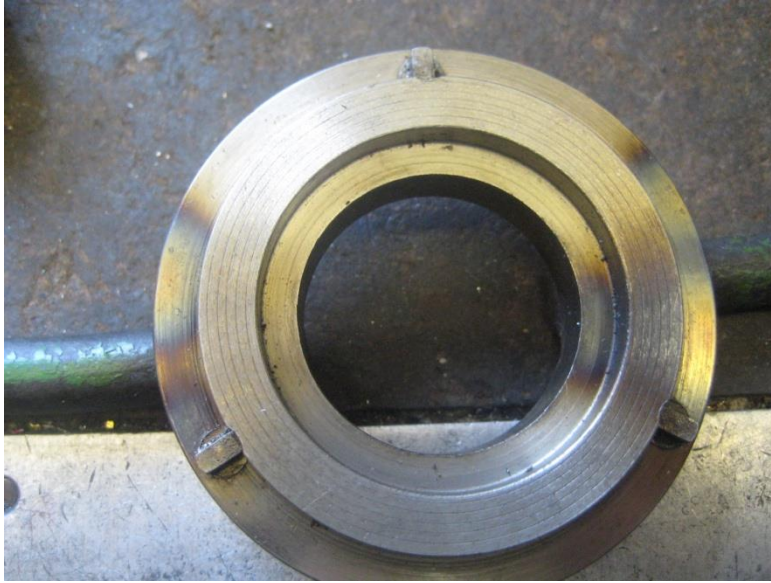
Those days have long gone, so a repair is necessary. We have found that there is enough metal to cut an oversize thread, just. It's a once only fix, no second chance because the thread would then break through into the clutch operating thrust pin hole and thrust pad pocket.



This photo shows the case set up in the lathe for screw cutting the new thread. The new thread has a bottom diameter equal to the top diameter of the original thread; TPI is the same. At one time, someone else offered this repair with a left-hand thread - without understanding the interaction of the outer element of the bearing and direction of rotation.

Consider this; the input rotation to the gearbox is anti-clockwise, looking from the drive side, this causes the balls in the bearing to rotate clockwise, this in turn, causes the outer element of the bearing to try to rotate clockwise. This will cause the lock ring to try and rotate clockwise therefore tightening (right- hand thread) itself. It follows that a left-hand thread will tend to try to undo itself!

When assembling the lock ring it is important to use the correct tool. Veloce recommended their tool X2725, the dimensions of which are given in the Red Book. Trying to tighten it up with a hammer and drift is no good whatsoever; the usual outcome with this method is a distorted lock ring that is not sufficiently tight – not to mention damage to the slots in the ring. Tightened properly and staked, the ring will not come undone.



This picture shows our version of the Veloce tool, rather than locate from the bore of the bearing as the Veloce tool does, ours locates from the bore of the lock ring. It is also advisable to use a bolt and large diameter washers to hold the tool in place while tightening the ring.