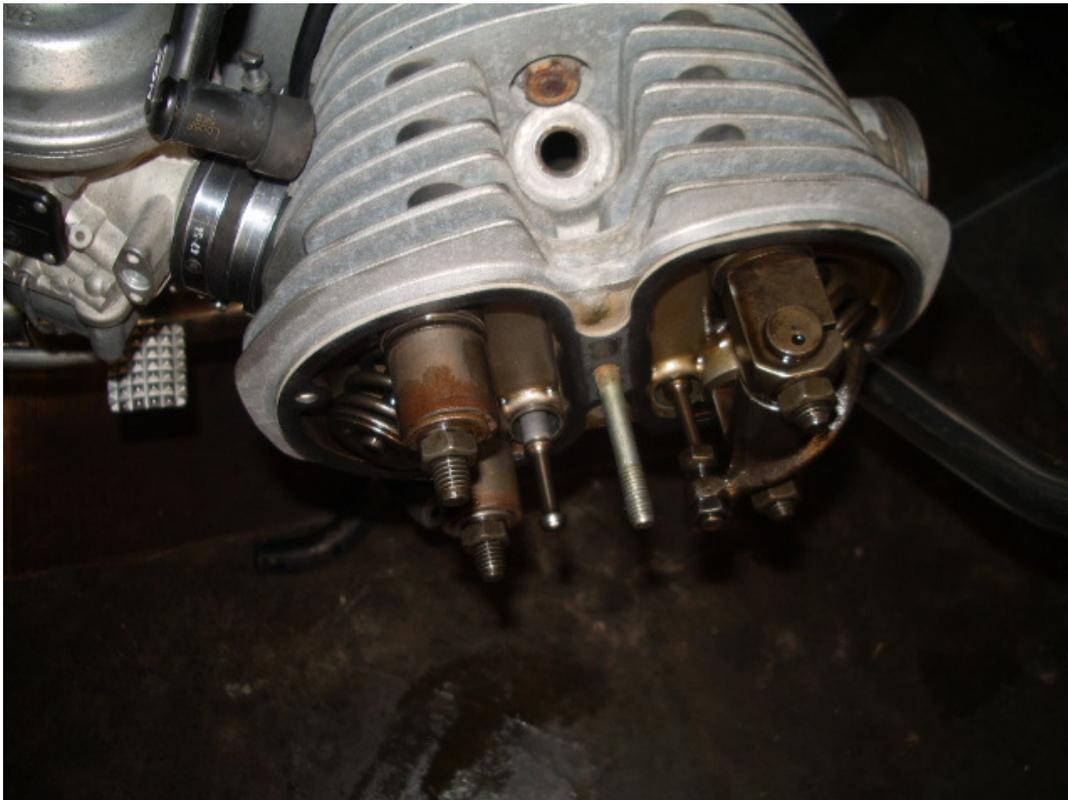


## Rocker Arm Needle Roller Bearing Replacement

While rare, our boxers have on occasion been known to experience failure of the needle roller bearings in the cylinder head rocker arms. From memory pre 1974 model airheads used bushed rockers. While the repairs for both models are similar, this example shows my repair procedure to a later needle roller model.

The diagnosis is quite simple. The offending side will rapidly become very rattly. At first you might think the rockers need adjusting, but deep down you will likely suspect that it's something more. Should you experience a rapid increase in overhead noise, don't keep riding, as you will risk doing more damage. Brace yourself when you open the rocker cover as you might be surprised to find hundreds of smashed pieces of needle roller bearing looking up at you from the bottom of the cover.

Next, Clean out the metal fragments from the head and cover, then remove the offending rocker assembly. Note the orientation of the rocker pivot rod and posts prior to removal. (oil feeds through it and their orientation is important). Then put two spacers on the head studs and apply a small amount of tension to the nuts to minimise the risk of disturbing the head and cylinder sealing. When the first side is done, then tackle the next rocker assembly. I have never experienced a gasket or sealing failure issue using this method and there should be no need to remove the head for this job.



Once both arms & posts have been removed and the head studs secured, then take out the push rods and check them for straightness / damage. Then shine a torch down into the push rod tubes to check if any schrapnel is on its way down into the sump. If so, then try to extract as much as you can

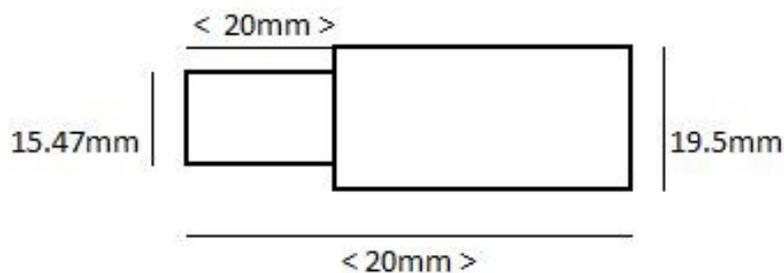
with a small telescopic magnet. Flush some kero/solvent down into the push rod tube using a spray bottle, until you can see that any rubbish has been washed down into the sump. **Yes the pan will also need to be dropped to make sure any junk has been removed.** Drain the oil and also replace the oil filter, making sure to dissect the filter to check for metal contamination.

In my past experience rocker bearing failure usually only occurs due to oil starvation, so double check the orientation of the shafts and blow some air through the oil galleries to make sure there are no blockages. Assuming all is in order and that only one set of rocker bearing have failed, there is no real need to replace bearings on the second rocker assembly. (Up to you) Needle roller bearings are tough little critters. It is important however to strip down the second rocker arm to check that it hasn't picked up any fragments, or sustained any contamination damage. While both inlet and exhaust posts are disassembled, check all components for damage.

### Replacing the needle roller bearing

To do this task you will need a pressing tool to remove and replace the bearings. The needle roller bearings are a light interference fit and the rocker arm should not require any heating to press it out. If for any reason it feels tight, then lightly warm the rocker arm with a hot air gun to allow it to expand. Place the new needle roller in your freezer while you are getting things ready so that it can shrink a little to make fitment a breeze.

Below is a diagram showing the dimensions of the tool that I have made for the task: Access to a lathe, or your local machine shop will be required for this.



Next comes the bearing fit up. Each rocker has two needle rollers. As pictures describe the process best, you can follow the images below:



Use either a press or a vice to push the bearings into place. ***(Nb: Do not use a hammer against the pressing tool, or the bearing to tap it into place. The outer cage of needle rollers are easily damaged.)***

As the fit isn't overly tight, I use a small vice for this job (see below). A pair of soft jaws can be used on the rocker arm if there are any concerns about the vice jaws marking the rocker. In reality though, the bearings go in easily and I have never found them to be that tight for it to be of concern.

Go by feel and make your own judgement call at the time. **Nb:** *The pressing tool that I have made does not have a depth 'stop' step. If you copy this same design make sure to note the original seating position of the bearings and fit accordingly. Use your experience and common sense.*



From there it's reassembly time. As that process is simply the reverse of the strip down, I won't go into that here. Remember to refit the rocker pivot rods, posts and stud nuts in their correct orientation. (Refer below)



Re-tension the head nut to the nominated specifications, set the valve clearance, replace the oil filter (*remembering to check the proverbial '\$2,000 O ring' clearance*) refill the oil, close it up and it's time to test.

**One more tip:**... For this very reason, and if your bike doesn't already have one, I recommend replacing the factory sump plug with a magnetic one. If you should be unfortunate enough to ever experience a rocker bearing failure, you'll be glad you did. While not the be all and end all, they are cheap insurance.

While this repair is relatively straight forward, there is of course enough to go wrong to cause you expensive grief if anything goes wrong. If you are not totally confident, and do not have access to the proper tools and equipment, then there are some repairs best left to your repair specialist. Either way, good luck.