

Overhauling a TVR Aluminium Steering Rack

The TVR Car Club would like to thank Peter Essling for allowing the publication of this document.

The rack I overhauled was a Tamora rack which I will be swapping with my Cerbera rack due to excessive play in the central position. As far as I'm aware essentially all the aluminium racks are the same which I will be able to confirm once my rack is out of my car.

I done most of the overhaul at work, but other than the 60mm socket easily done at home in a garage.

This is the rack in question.

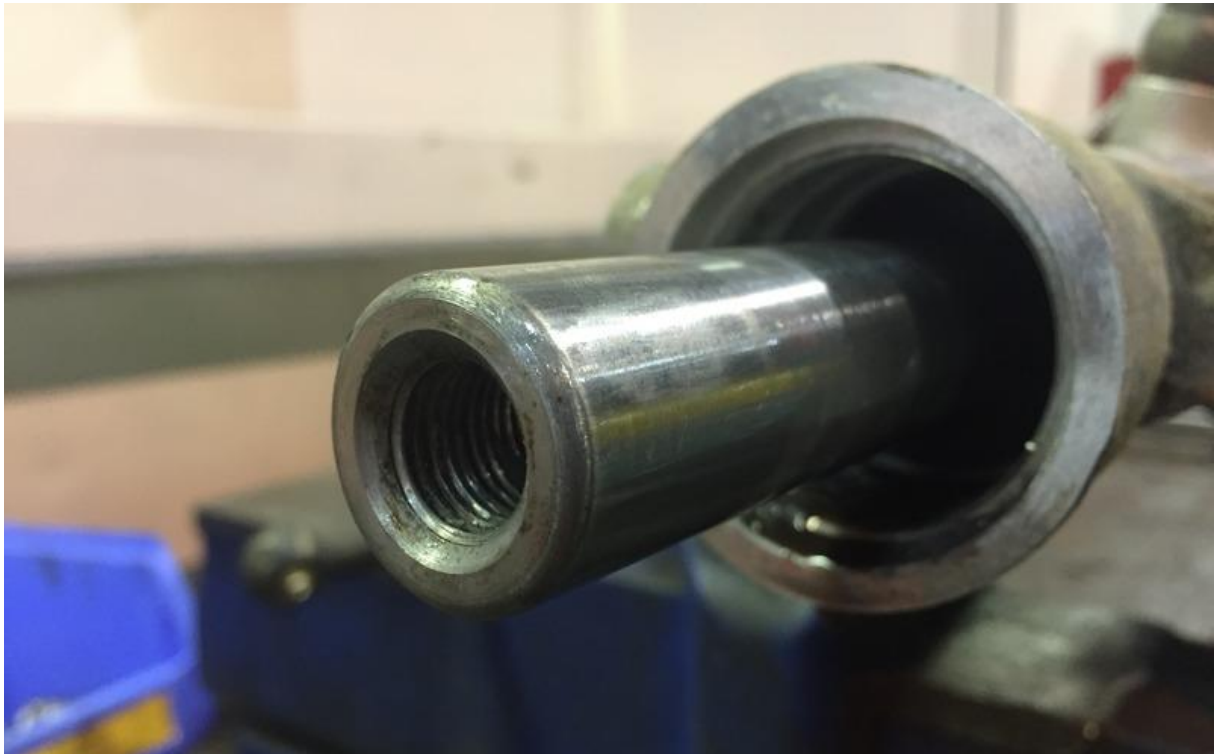


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The big end nut, which has one of the seals in, mind did bind up as you can see, even with heating the nut up to loosen the sealant. Easily removed with a 60mm socket and ratchet.



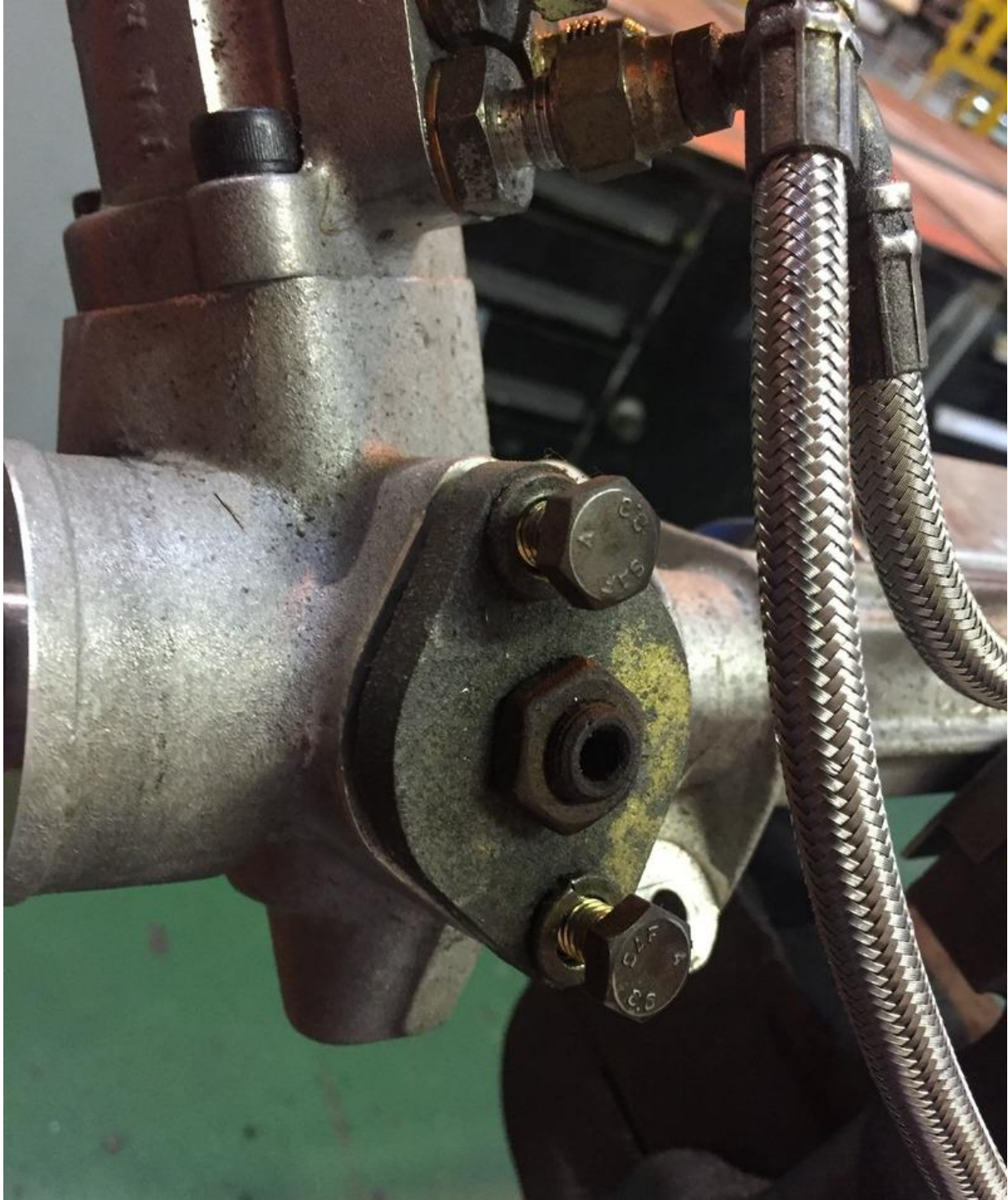
End of rack bar where the big nut is.



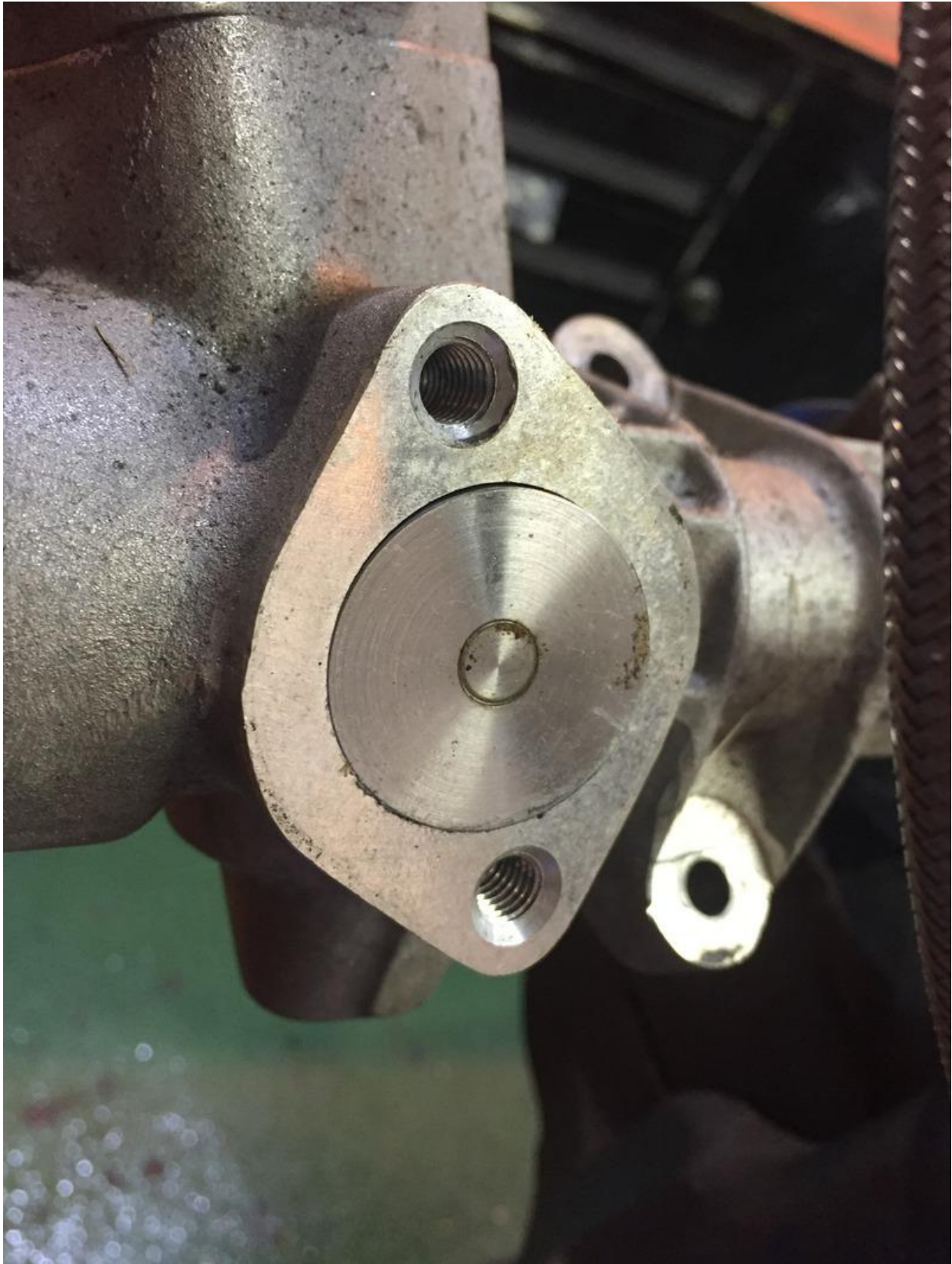
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These are mainly reference photos for when putting it back together, (I'm not that old that I forget but always handy for people).

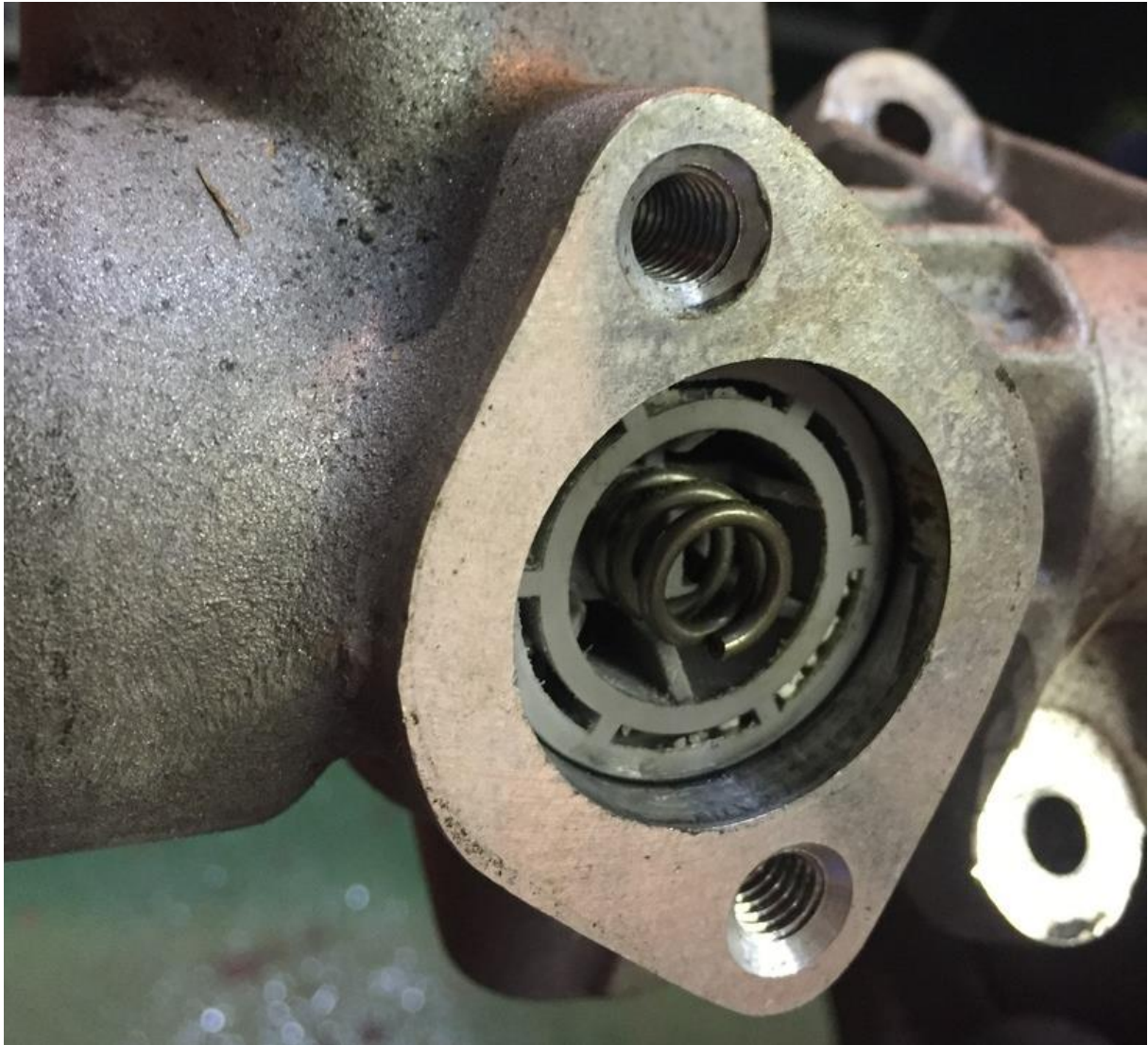
Adjuster plate for adjusting out any slop in the rack, but only works for an amount of time before parts need replacing.



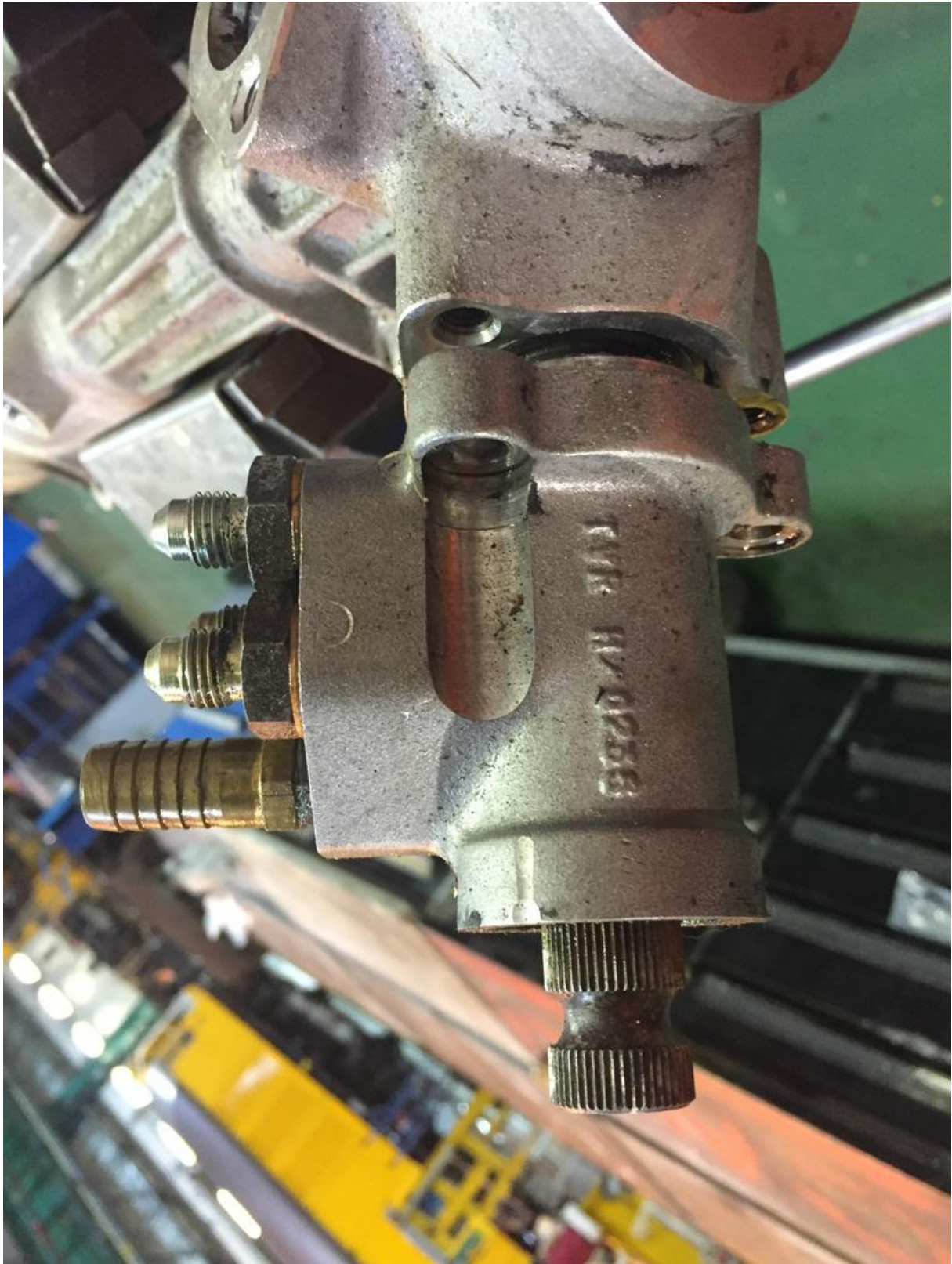
Inside of adjuster pressure plate.



Spring and nylon guide.



Valve body held on with Three M8 bolts.



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Rack bar seal, the white seal is sandwiched between the two plates with an O ring inside.



Valve body mounting to the rack body, there are shims placed between the valve body and rack, you can just about make out the needle bearing.



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Rack body showing the threaded end where the big nut goes shows some of the aluminium where it had bound up.



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Valve body, pinion, seals in order.



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Rack exploded after complete strip down.



Seals on the pinion, and bearing.



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Looking into the bore of the cylinder end of the rack with the inner seal, pain to remove, I tried an internal bearing puller with uses a slide hammer, there is nothing to grip onto even from the other end, in the end, i chiselled the sides in not very elegant I know with some marking of the bore which I cleaned up by polishing the bore

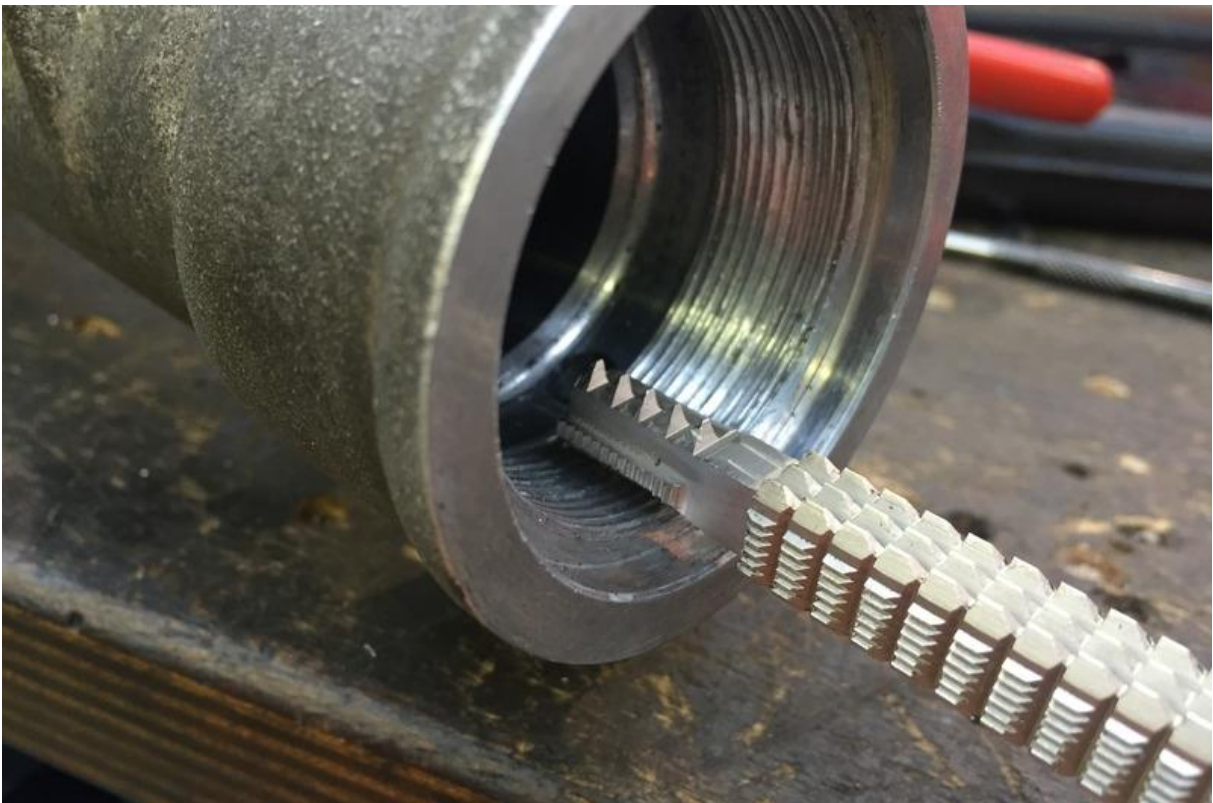


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I did try heating the cylinder to see if expanding would work, also burning it out which neither worked.



To clean out the threads i used a thread file, but in the end i had to use get a 45 x 1.5mm tap to get the threads correct as even after using the file the new big nut got tight to early.

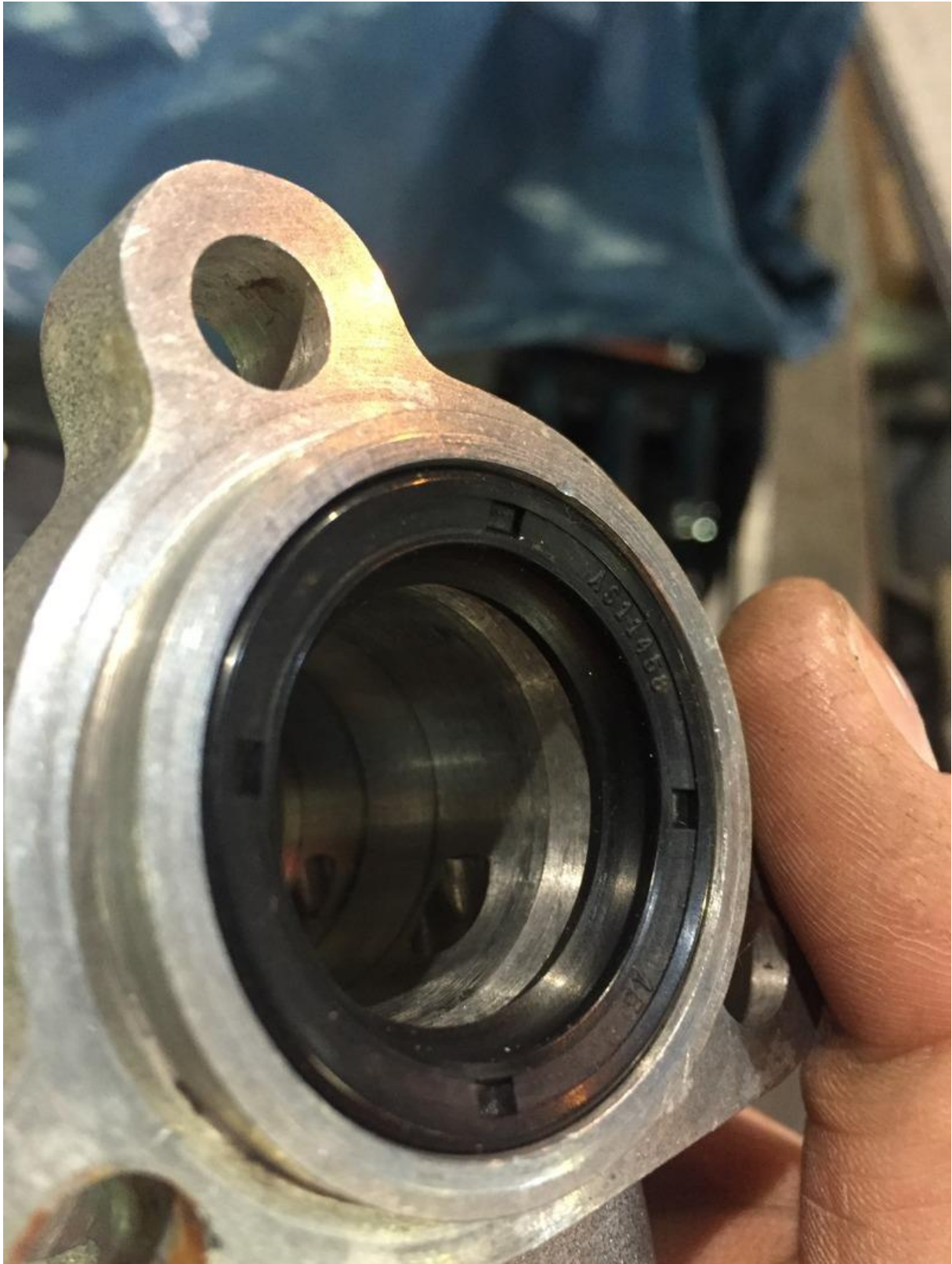


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New seal in the valve body with the shim and circlip refitted this is the spline end.



Valve body lower seal.



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M45 x 1.5mm tap, was lucky to find a used one for £50 new they are £200, I searched high and low to find one at work and nothing did the job.



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Rack bar seal minus the top plate and circlip, showing O ring and PTFE seal.



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I put the new inner cylinder seal in with a socket and extension bar, couple of taps with a copper hide mallet and seated nicely.

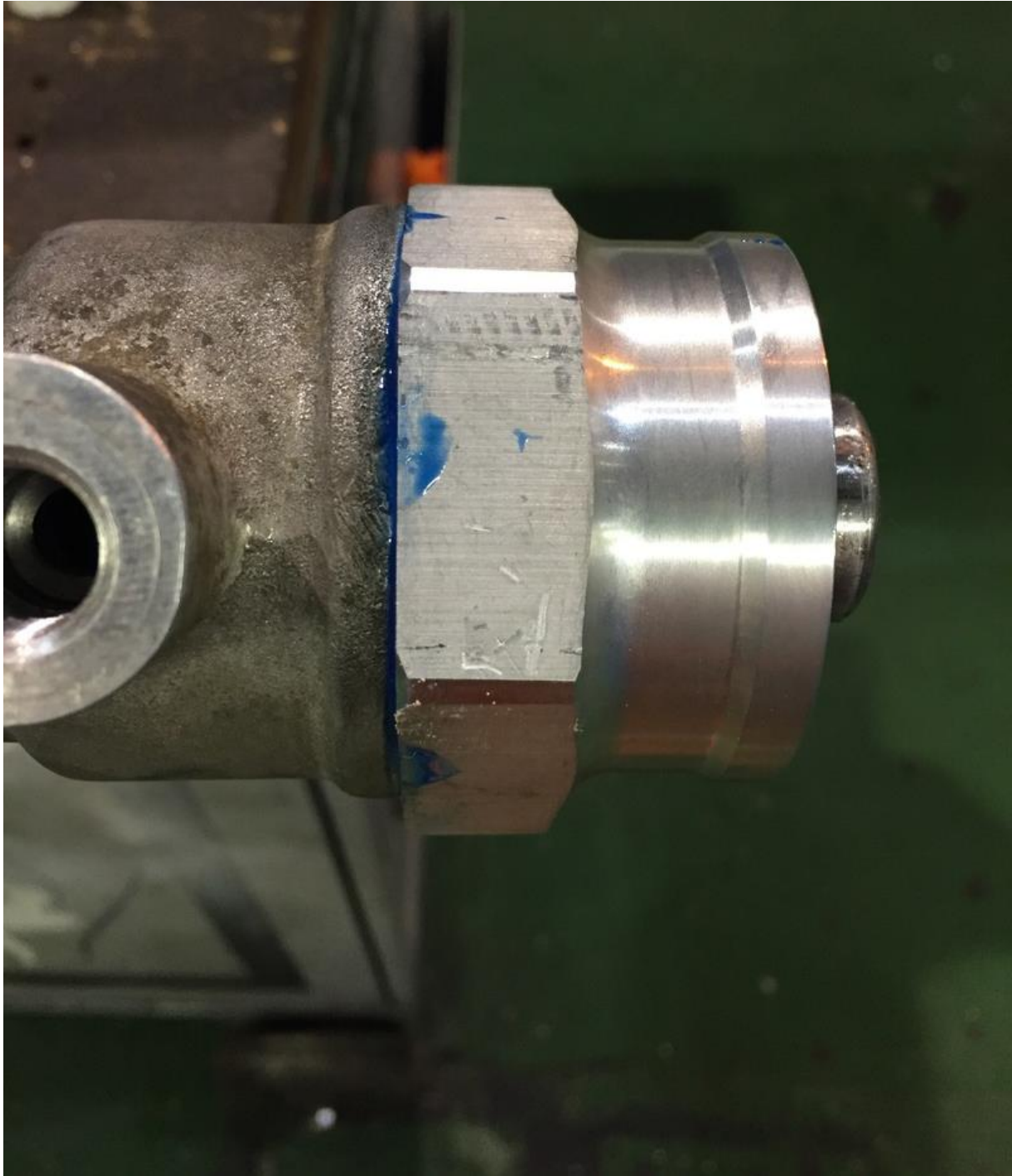
Rack bar back into the rack using some new ATF.



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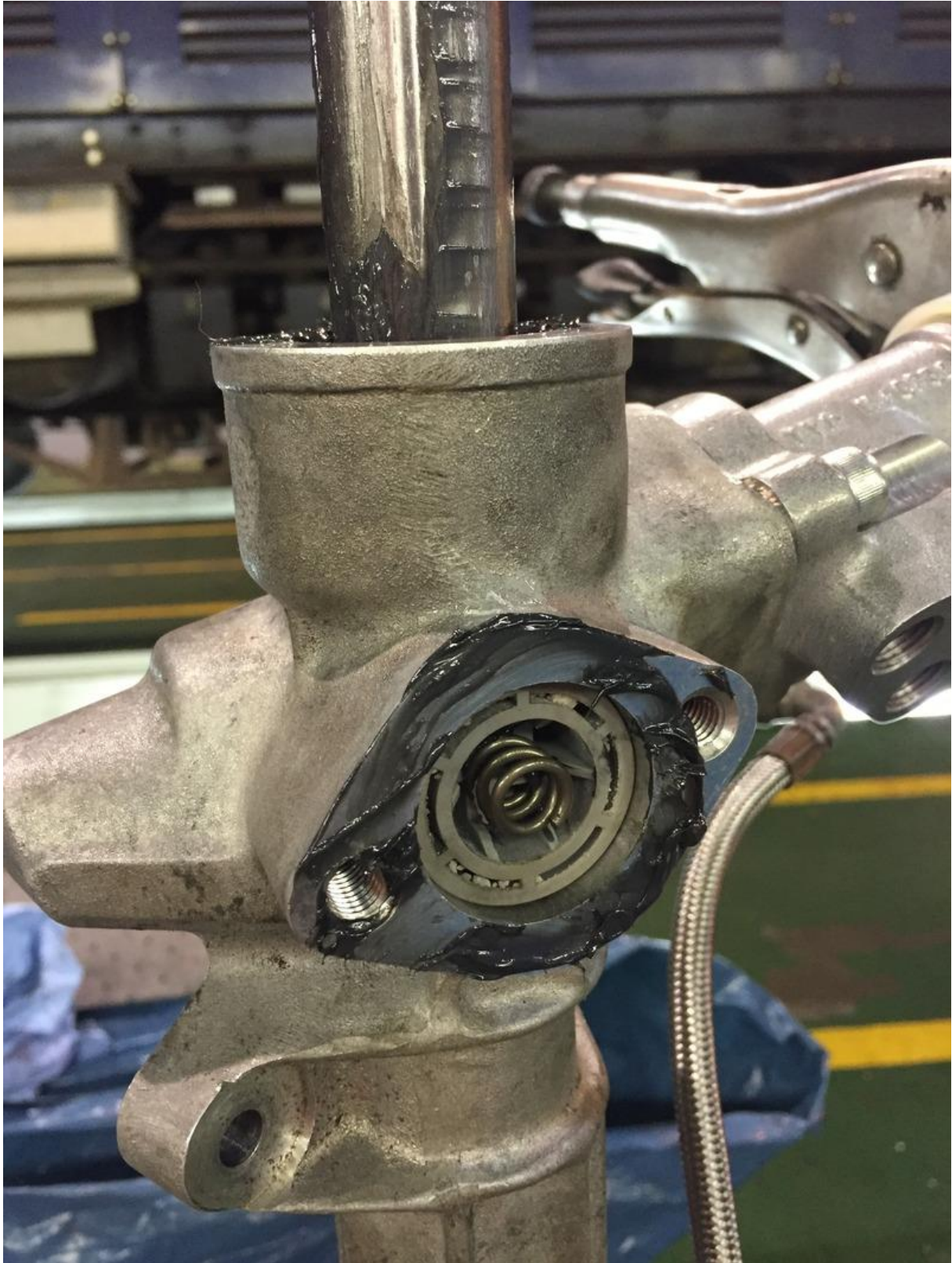
I spoke to Kiley Clinton where i was able to get a seal kit from £58 posted, they recommended Loctite 243, which luckily use at work, i did ask for a torque setting but they only told me nipped up which with a 60mm socket and foot and a bit racket nipped up is pretty tight.

I considered lots of ways to stop it binding in the future, but because of having to use a thread sealant you can't really use one, which may limit the amount of times a rack can be dismantled with it destroying threads.



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I assume part of the premature wear of the rack either the bar or pinion is part down to lubrication. I found when cleaning out the rack that they had used white lithium grease. I used cv lithium grease when rebuilding.



New Dowty washers between the banjo bolts.



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Completed rack, the Loctite lid was just to stop the ATF coming out, which didn't work, so fitted some hydraulic blanks, the fittings are AN6 fittings.



I plan on fitting a filter on the return line when I swap them out, plus new seals in the pump.

Hope this may help people in the future

Peter