

Re-building a Caliper

by **Leslie Henson**

The pistons in the calipers on the 90 are in very poor condition, and although the brakes work ok, it plays on our mind that the pistons are badly corroded, and it seems likely that someone has done a poor job in the past. You have to bear in mind that it is extremely important that this job is done correctly, as bodging it has potentially disastrous consequences. If you're not sure about your ability to work on any part of the braking system, then get someone who can. In principle, as with most other jobs on your Land Rover, care and attention doesn't put any job out of your reach providing you have the tools, ability, and confidence to do it yourself. First picture is the caliper as it is seen after the wheel has been removed. In this case turn the wheel hard left to get decent access to it.



Remove the pad retaining pins and then remove the pads. In order to assist in removing the pistons it's a good idea to get them as far out of the caliper body as possible without 'popping them'. I used the backing plate from a brake pad to get this far out before disconnecting the caliper from the rest of the braking system.



Disconnect the brake flexi-hose and then remove the short piece of brake pipe that goes down the side of the caliper. Also remove the bleed nipple and a fair amount of fluid will then drain out. Undo the two bolts that hold the caliper to the hub assembly and lift it away. A vice is handy to do this work for obvious reasons.

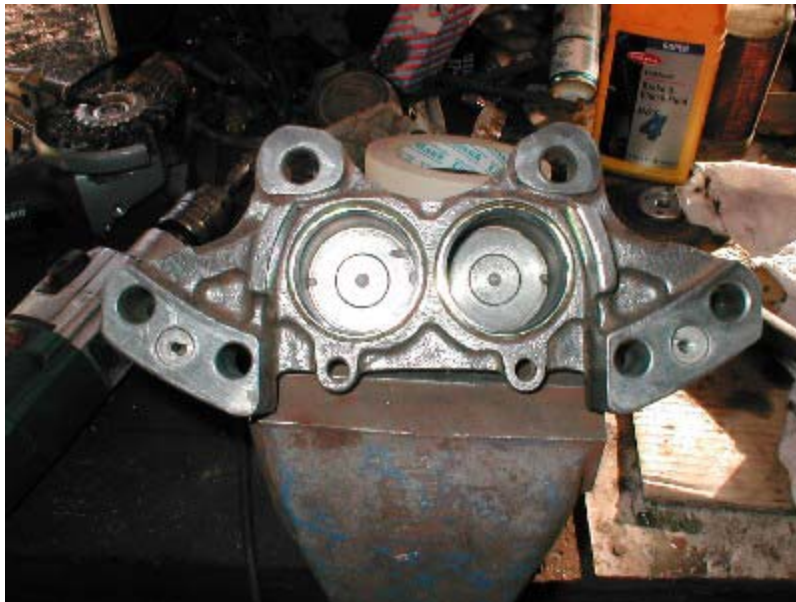


A while ago there was a comment someone made about how tight the bolts that hold the two halves of the caliper together should be. I used a torque wrench to undo the bolts, and it took 55 ft/lbs to undo them, so this is the figure I will use to re-assemble it again. I have to say that this may not be right, but I'm unable to find the correct figure, so I'm taking a bit of a risk here. Thread locking compound is also being used on re-assembly and personally I'm confident that all will be fine. Next picture is the two halves on the bench still with the old pistons in.

Land Rover manual do say you should not to split the two halves but it will be very difficult to do this job otherwise. There are two small rubber seals between the two halves that must be replaced, but apart from that I don't see why the caliper can't be stripped right down as I have done. I've done this sort of work for customers in the past and have never had a problem. The last one I did was an 'H' Disco 200TDi and there have been no problems at all in the 7-months since I did the job.



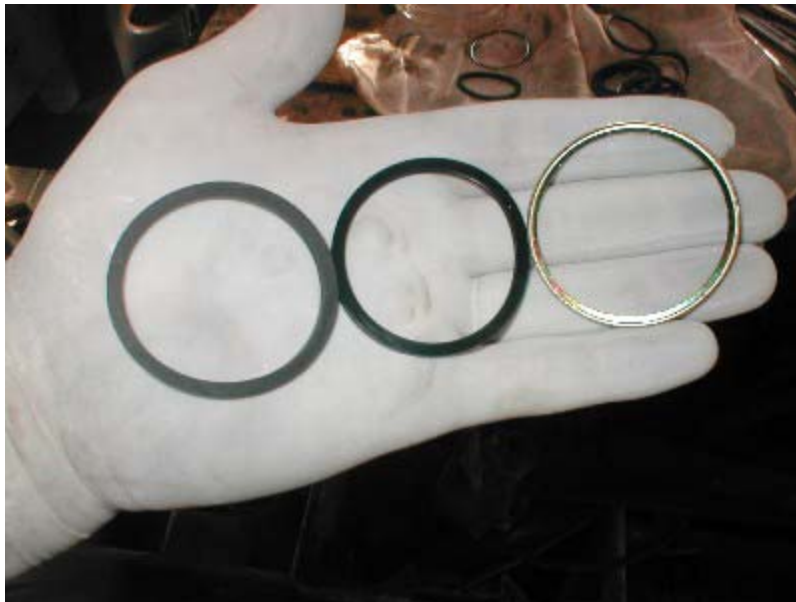
Careful cleaning is now very important, the use of wire brushes in an angle grinder and electric drill will bring the cast iron up surprisingly well. Remember NOT to use anything abrasive inside the bores of the caliper.



This a 'set' of seals and a retainer for each piston. The thin steel ring is very difficult to get in place, so I used a socket just a bit larger than the diameter of the ring to get it in place. Because it's so easy to distort the ring (and therefore ruin it), I bought a spare set of seals so I had 4-more in case I made a mistake. As it turned out, I wrecked 2!



Here's what a set looks like. The seals are different, the one that sits in the groove at the top of each bore is solid and slightly thicker. The secondary seal is thinner and has a groove around the inside edge. If you are just replacing the seals and/or pistons, then lubricate everything with either brake fluid, or brake grease. I want to paint the calipers, so I have to fit the seals 'dry' at least initially, so as not to contaminate the caliper with brake fluid (oil).



A set of 4 standard pistons from Bearmach were £35.50 inc VAT plus the seal kit, which was about £4 inc VAT, so £40 per caliper for bits. £60 for a re-con one sounds cheap though, but then there is the satisfaction of knowing you did the job yourself I suppose.

As I want to paint the caliper, There are certain areas which have to remain bare metal, so a bit of careful masking is necessary.



Both halves are cleaned, de-greased, and masked where necessary. I used '5-wheel steel' spray paint as in the past it has proved very adequate for a variety of applications apart from wheels. Here are the freshly painted bits hanging up to dry.



Now the new seals can be lubricated with brake fluid and then pressed squarely in with hand pressure. There should be quite a bit of resistance, but the piston should go in smoothly. Here are the two halves all ready to be bolted back together.



Finally the two halves are bolted back together, torque seal or thread lock has to be used on the 4-bolts.



The caliper now looks as good as new (not for long though probably). The finish reflects the amount of care that is necessary to do this job correctly. In case you need to know, the vehicle is a 1990, 2.5TD 90. The cost to each caliper is just under £40 for the parts and the time it took me to do each one was about 3-hours. Some of that was waiting for paint to dry, so expect a couple of hours if you are not going to paint.

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