Changing the Clutch

A guide to changing the clutch.

It is inevitable that at some point you will have to face changing the clutch. It dips in and out of the mud on a regular basis as the bell-housing is not sealed. Eventually the clutch thrust bearing will start rattling and the action will become stiff and heavy.

Changing the clutch on a Jimny seems to be not for the faint hearted. It's a very physical task and it is not pleasant struggling with the gearbox under the car, it is a very tight fit in the transmission tunnel.

No special tools are required, but a good toolkit is needed. You will need extension bars for a socket set as some of the bolts are well hidden and difficult to access.

A breaker bar is also needed as some bolts are very tight.

If this hasn't put you off then its time to start work. It goes without saying that you should jet-wash the underside of the car if possible to remove as much of the muck before it drops on you!

There are two ways of changing the clutch, one is to take the engine and gearbox out and the other is to drop the gearbox off. The Suzuki factory manual suggests the gearbox dropping method so that is the way I have gone.

The factory manual suggests it is not necessary to remove the transfer box, but I have removed it as you will need all the space you can get, I thoroughly recommend that you also remove the transfer box.

If you have the luxury of a bit of time then spray the visible bolts with WD40 a day or so before. In particular you should try and spray the bolts holding the exhaust front section and the bolts around the gearbox housing as these are difficult.

Starting inside the car it is necessary to remove both the gear lever and the transfer box lever.

To remove the gearbox lever you have to remove the centre console. This is held on by four screws on the side at the front and back.

Figure 1. Removing the Centre Console

The console then lifts out. Mine was more of a problem as I have a switch panel fitted so I then needed to remove the gearlever before the console would come completely away, but this has to be done at some point anyway. Pull the gaiter away to reveal the three bolt heads around the base of the gearlever, undo the bolts and carefully lift out the gearstick, note that there is a small spring and a cup that should not be lost!

Figure 2. Removing the Gearlever

With the console removed you will then see a frame that holds in a second gaiter. Simply undo the bolts and lift the frame clear.

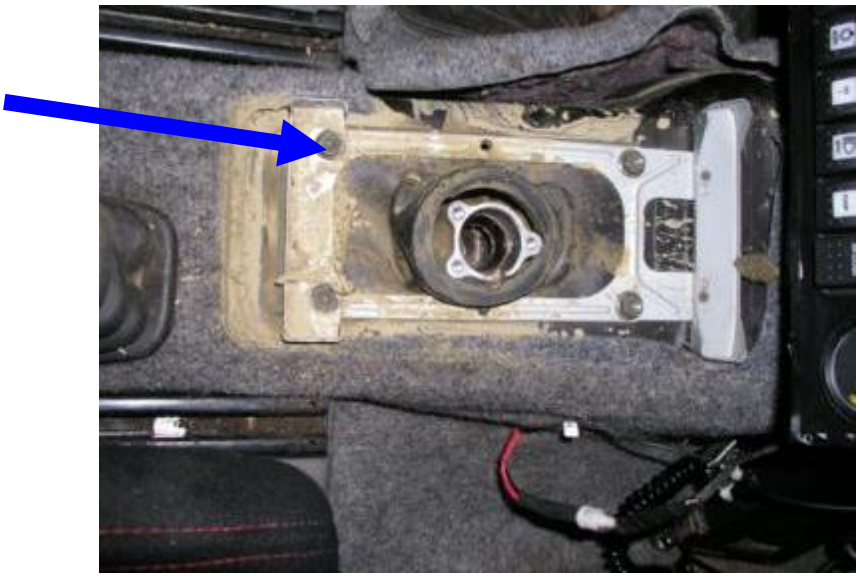

Figure 3. Removing the lower Gaiter

If you are removing the Transfer Box then you need to remove the gaiter etc. around the Transfer Box Level. First locate the small screw at the rear of the transfer knob and remove it.

Figure 4. Removing the Transfer Lever Knob

Unscrew the frame around the gaiter and pull the frame and gaiter clear.

Figure 5. Removing the Transfer Level Gaiter

Move outside the car and disconnect the negative cable at battery.

Now drain the oil from the gearbox and transfer box, if you are not doing any work on the transfer box then it is not strictly necessary to drain the oil providing you keep it upright to stop the oil coming out of the lever hole.

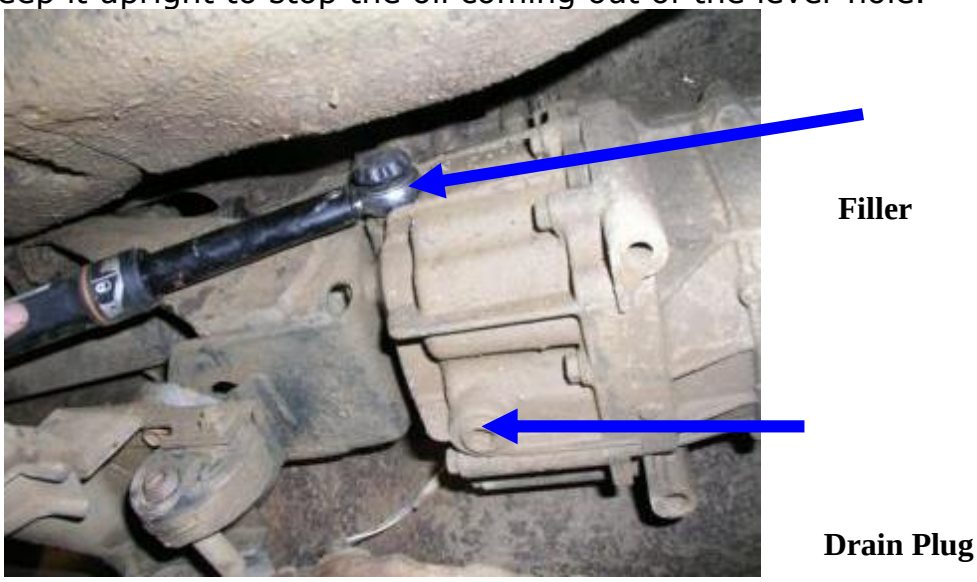

Figure 6. Gearbox Drain Plugs

On my Jimny the drain plugs are square and therefore the square end of a 3/8 socket driver fits. Always undo the filler plug first because if the filler is stuck you do not want to drain the oil and not be able to fill it again.

The gearbox filler is hidden up the side of the gearbox and lack of space is a problem

On the Transfer Box disconnect the 4WD switch wire at coupler and unclamp harness. Then disconnect the speed sensor coupler.

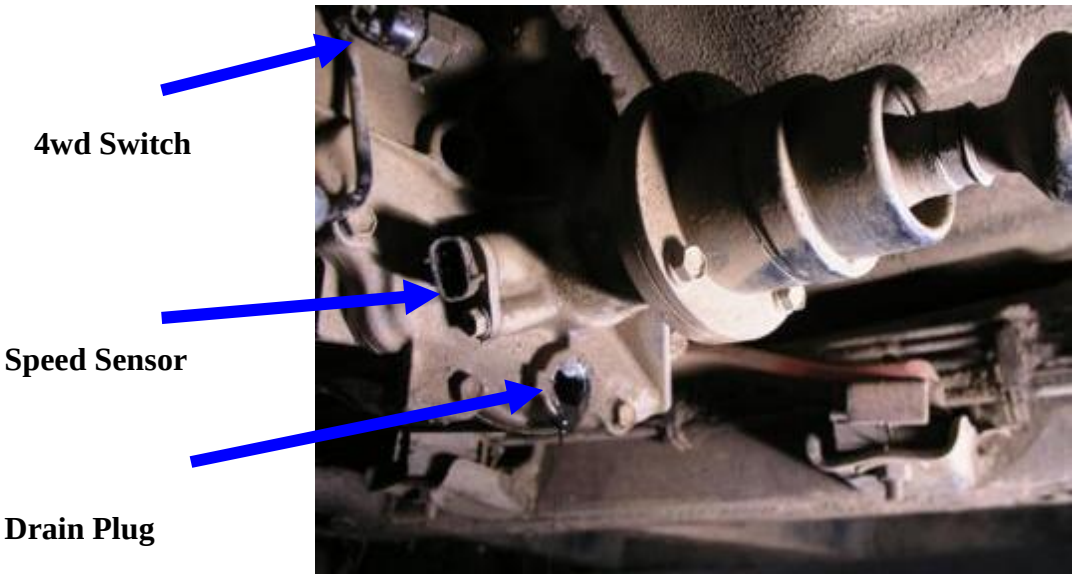

Figure 7. Transfer Box Fillers and Connectors

Now remove the front section of the exhaust pipe. This is held in place by pairs of springs with bolts inside. Due to the heat and stress the front bolts were really, really difficult to move. So much so I think there is real possibility of shearing them on some cars. There is a pair at the front and a pair at the back.

Figure 8. Exhaust Bolts

Do not lift the exhaust of the rubber hangers yet. There is a Lambda sensor connected to the top of the catalytic converter.

Figure 9. Lambda Sensor on Converter

This needs to be disconnected. The Suzuki manual shows the sensor being unscrewed from the top of the converter. However, the sensor has been subject to red hot heat, water and mud, therefore mine was firmly rusted in. Instead I followed the wiring back up to behind the engine. Just behind the head on the passenger side is a set of connectors, unbolt the connector mounting bracket and prise the Lambda connector apart (this is very stiff as well!).

With the Lambda sensor disconnected you can pull the front exhaust section off the rubber mounts.

Now remove the propshafts. On each shaft paint some marks so they can be rebolted to the flanges in the correct position when you are re-building it. Paint all the flanges and also mark the sliding joint in the front propshaft. Remove the FRONT propshaft FIRST, followed by the Gearbox/Transfer box shaft SECOND. Where possible do the REAR propshaft LAST. Why! – because all the propshaft bolts are quite tight and therefore you need to hold the

propshafts in place whilst you try to undo the bolts. As the front hubs are vacuum operated there is no easy way to lock the props if you have disconnected the rear first. With the rear prop still on the rear wheels keep the system locked. I found out this trick the hard way.

Now undo the 3 large mounting nuts on the transfer box mount and the 4 bolts on the mounting flange. Now the transfer box should lift down.

Figure 10. Transfer mounts

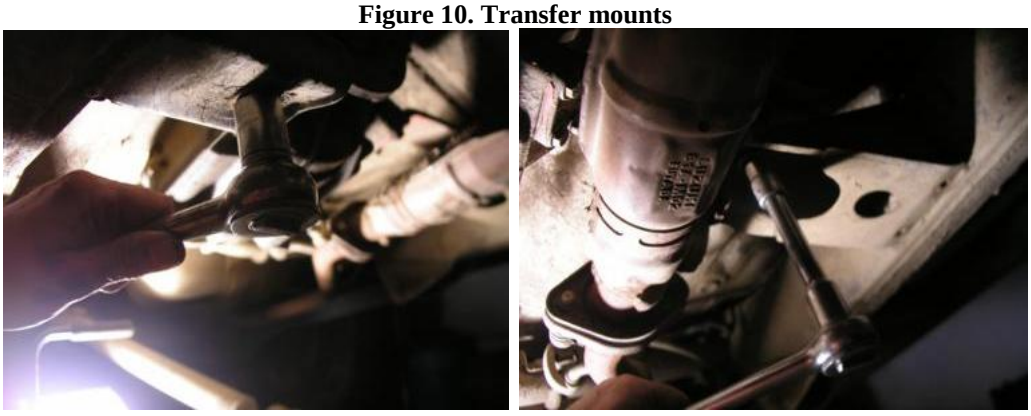

Figure 11. Transfer Mounts

Now for the complex bit. The Jimny has a remote gearbox mechanism bolted onto the rear of the gearbox and this needs to be removed. It's probably easier to see the part after it has been removed as it is clearer what you are trying to achieve. Note this is the top view, you will normally be underneath!

Figure 12. Gearbox Remote Mechanism

Remove gear shift control joint bolt and extension rod bolt.

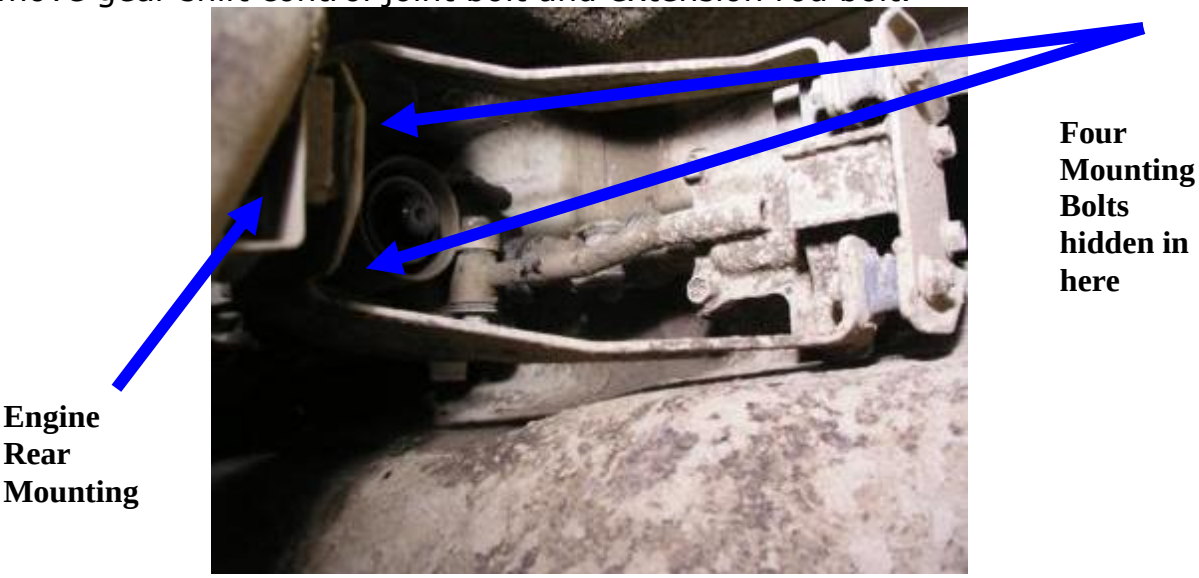

Figure 13. Remote Mechanism in place

Remove the Engine Rear Mounting bolts (Three of them, one either side and one in the rubber bit). This is the mount under the gearbox that rests on the chassis crossmember.

Using a long socket extension, reach into the remote mechanism and undo the 4 bolts that connect it to the gearbox. These are hard to reach.

The entire mechanism should then be removeable complete with the mounts. Also unbolt all the other metal bits (including the exhaust mounting rubber) from the rear cross member as you will need to squeeze the Gearbox out later on.

Now remove the reversing light switch. This is on top of the gearbox towards the front and was more accessible from under the bonnet by reaching down the back of the engine on the passenger side (UK). Tie it up out of the way.

Figure 14. Gearbox Reverse Switch

Now for the next difficult task, removing the starter motor. Clearly Suzuki never considered that a starter motor may go wrong and need replacing as it is in one of the most in-accessible places. First of all check that you have disconnected the battery. Laying under the car reach up the drivers side of the engine and unbolt the two bolts holding the motor in place and easy it back. There is no need to remove it completely and no need to undo all the cables attached to in.

Figure 15. Starter Motor (from underneath car)

We are nearly there now. Remove plastic clutch housing cap and prise the end of the clutch cable from clutch release fork. Then undo the two bolts holding the clutch cable to the transmission and withdraw the clutch cable assembly. Also remove the small tin-plate on the bottom front of the clutch housing held on by a pair of small 10mm bolts.

Figure 16. Clutch cable (unhooked)

The official workshop manual now says to undo the bellhousing bolts and lower the gearbox away from the engine. Whoever wrote this must have been smoking something very exotic. The first problem is to locate all the bolts on the bellhousing as they are well hidden. Take a close look at the picture below and locate all the bolts.

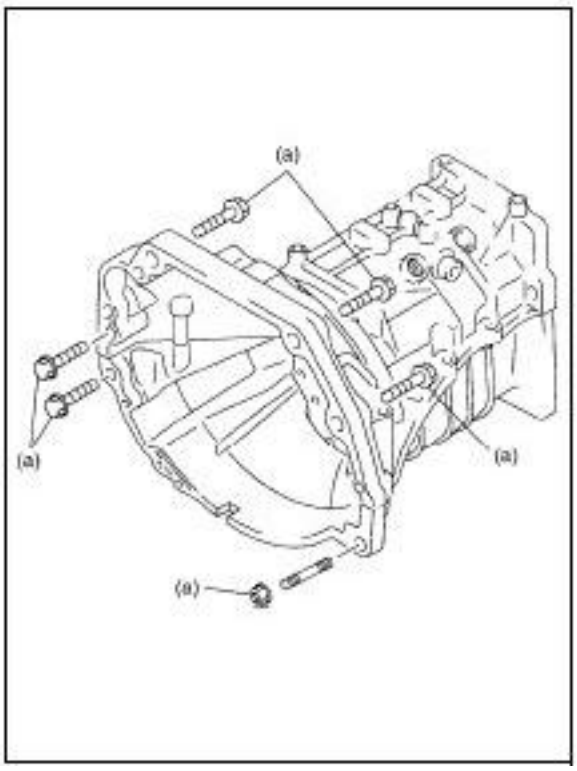

Figure 17. Gearbox bolts

The next problem is undoing them as there is no room to get a socket set in. I had to use a complex combination of extensions and flex joints from two socket sets to get to a couple of the bolts. Also note that there is very little chance of the gearbox falling off once the bolts are undone so don’t spend a lot of time supporting it.

Separating the gearbox from the engine can be a real pain (literally). The gearbox is located on studs and corrosion can hold it in place. I had to hit the bellhousing edge with a large hammer (protecting the metal with a wooden block) before it would separate.

Once it is separated you have to drop the gearbox down. The transmission tunnel is so tight that this appears to be a near impossible task. I had to jack the engine forward to gain as much room as possible. You will also find that the gearbox will move backwards a little way in the tunnel, this means you can then open a useful gap around the clutch.

Figure 18. Pulling the engine forward with strap

Figure 19. Gap between gearbox and clutch with engine pulled forward

Some people have changed the clutch using just this gap. Instead, I undid the clutch cover bolts and removed the clutch assembly with the gearbox still in place. Removing the clutch then meant there was just enough room for the gearbox to be pulled out.

Within the clutch kit should be a new cover, new plate and new release bearing.

The old release bearing is removed by prising the spring clip out of the mounting and sliding it out of the spring. Re-assembly is just as easy, make sure that the splines are lightly greased and the inside of the release bearing where it slides on the shaft is greased (not the bearing itself – this should be lubricated by the factory).

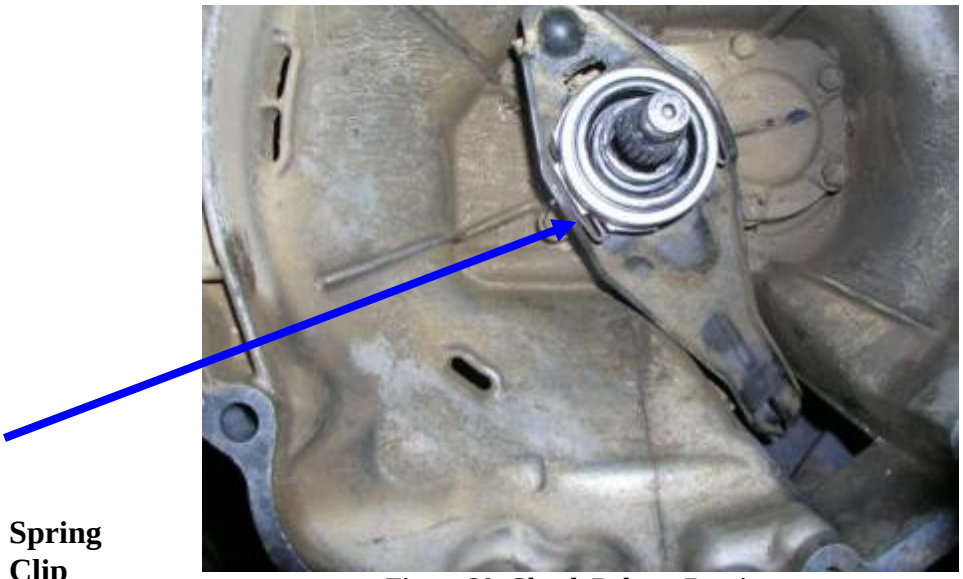

Figure 20. Clutch Release Bearing

Put grease on the moving points of the clutch release arm as well.

The pictures below shows the clutch mechanism. I purchased a cheap kit (CPK1086) from ebay. The quality seems ok (it is stamped as being made by AISIN – who supply Suzuki with parts), the only issue being that it was supplied with the incorrect release bearing. The company immediately shipped the correct bearing free of charge and assured me that the correct bearing should have been in the kit. Also note that the new plate has 4 springs whilst the old one has 3, again I have been assured that this is ok.

Figure 21. Wrong Release Bearing is on Right

Figure 22. New Clutch Plate on left

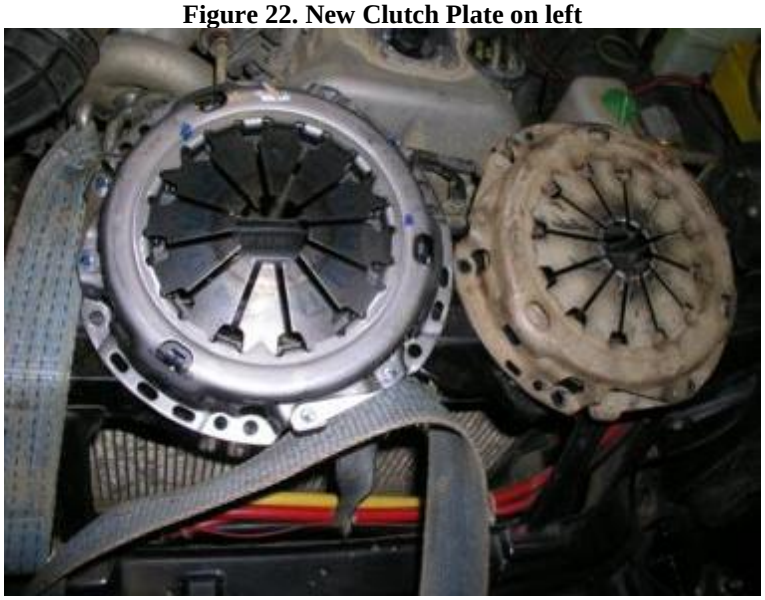

Figure 23. New clutch cover on left

Assemble the new clutch mechanism using a clutch alignment tool (I got mine cheap - £1 – as it was a girlie pink colour and had remained unsold in the shop for a long time). With this tool you assemble the clutch off the car and then lift the whole unit into place and bolt down the clutch cover to the flywheel. Remove clutch alignment tool.

Figure 24. Clutch Assembled

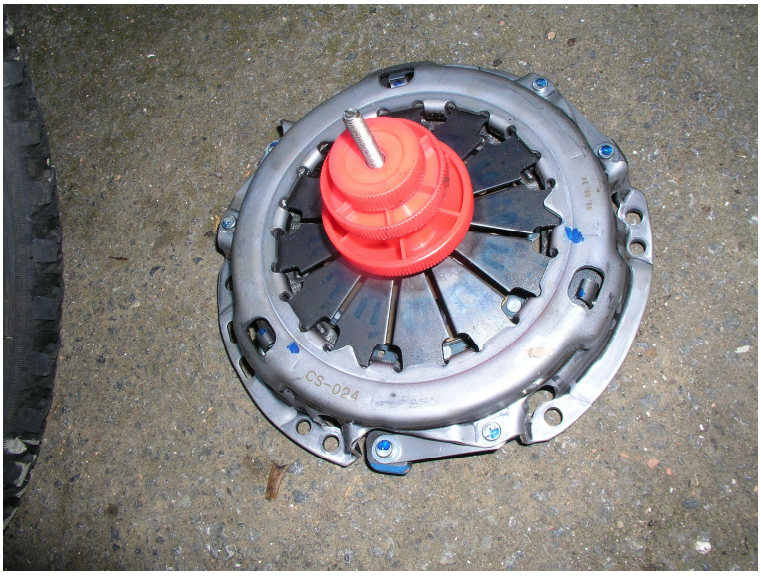

Figure 25. Clutch with alignment tool

Figure 26. Clutch back in place

Wipe a layer of grease around the mating face of the gearbox, this should mean it doesn't stick in the future and should make it easier to re-assemble.

Figure 27. Grease the mounting face of the gearbox

With the engine still jacked forward it should be possible to jack the gearbox back into place using the weight of the car to help force it into position. Before trying to mate it back with the clutch allow the engine to drop back into its proper position (not too far back) – this will make it easier to align.

It should now be possible to wiggle the gearbox forward. FIRST OF ALL CHECK NOTHING IS IN THE WAY – I failed to notice the reversing light switch had fallen down and I severed the cable which had become trapped. Fitting the gearbox is one of those tasks where you will have repeated attempts to get it to go and then it will suddenly "click" – it will need lots of tiny jiggles to creep it onto the studs.

Refit all the bolts that hold the gearbox in place (use Copper Grease on the bolts to make it easier next time!)

Now it's a matter of going back through the steps previously to refit everything.

Note that you may want to fit extended breathers to the gearbox whilst it is in bits. The picture below shows the rubber pipe that is the normal breather (minus a plastic cap which has already fallen off!)

Simply slide some pipe onto the tub and extend the breather to a higher point on the car.

Figure 28. Gearbox breather