



Installing an SJ Transfer box

February 2009

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What is it?

Perhaps you have been building a Rocklobster or perhaps you just want to fit a standard SJ Transfer Box to your Jimny. My instructions on building the RockLobster are here –

http://www.bigjimny.com/index.php?view=weblink&catid=61%3Ahowto&id=40%3Ahow-to-build-a-rocklobster&option=com_weblinks&Itemid=61

The next stage is to fit the SJ Transfer Box or RockLobster to the Jimny and this is where this guide comes in. A number of mounting solutions exist.

- DG Tuning – www.DGTuning.com
- Rob Storr at RS Engineering
- The Off-Road Armory – www.offroad-armory.com

all do mounting kits at various prices. It is also not too difficult to construct your own if you have the ability to weld well.

I chose to use the kit from The Off-Road Armory (ORA), therefore the steps in this guide apply specifically to the ORA kit, but the principles can be applied to any solution including homemade.

What do I need,

The Off-road Armory kit comes with a set of mounting brackets, replacement rubber mounts and the Speedo converter. However some other parts are necessary, depending on what you are attempting to do.

In order to fit the box you will need an SJ min-prop (the small prop-shaft between the Gearbox and Transfer Box), an SJ Front Prop-shaft and a Jimny Front Prop-shaft. You will also need some SJ Flanges. The Jimny's original Flanges are similar to the very last Suzuki Samurai 4x4s. Therefore, if your really lucky, using the Flanges and Props from a late Samurai will mean you can bolt it all on. Of course, these parts are like "Hens Teeth" so in all likelihood you will have to mix and match Props and Flanges to suit. The other point to note is that an extended Flange is required for the output shaft, which you will not have if you have been working with SJ Transfer Boxes which have the Drum Brake fitted to the case. You will have to find a proper SJ Output Flange as the shorter Input or Front Flanges cannot be used on the rear. There are pictures in the text showing the issues, but make sure you have collected all the parts before you start.

Finally, you will need nuts and bolts to affix the Prop-shafts, this may seem obvious but the Flanges on the Jimny are threaded whilst the SJ Flanges are not. Therefore you will not have suitable nuts after dismantling the Jimny case and the bolts are too short as they only have to reach the threads in the Jimny Flanges but they have to go right through the SJ Flanges to bolt up.

The Work

1. First you have to get ORA kit. The picture below shows the kit as shipped. In the kit you get the Speedo adaptor, the mounts and bolts and washers to assemble it all. Not shown in this picture are the replacement mounts which are included in the kit but came separately in my early version.



Figure 1. ORA Kit

2. The picture below shows the mounts in greater detail. My mounts came in plain steel but later versions should be power coated.



Figure 2. ORA Mounts

3. The picture below shows the Speedo kit.



Figure 3 ORA Speedo Kit

4. The first stage is to assemble the Speedo kit onto the SJ Transfer Box. You will have to get a set of SJ Flanges to match the prop-shafts you have, if you cannot get the correct ones then you will have some drilling to do. The picture below shows SJ Flanges with the largest on the left (You WANT these!!) to the smallest on the right (You want to AVOID these).

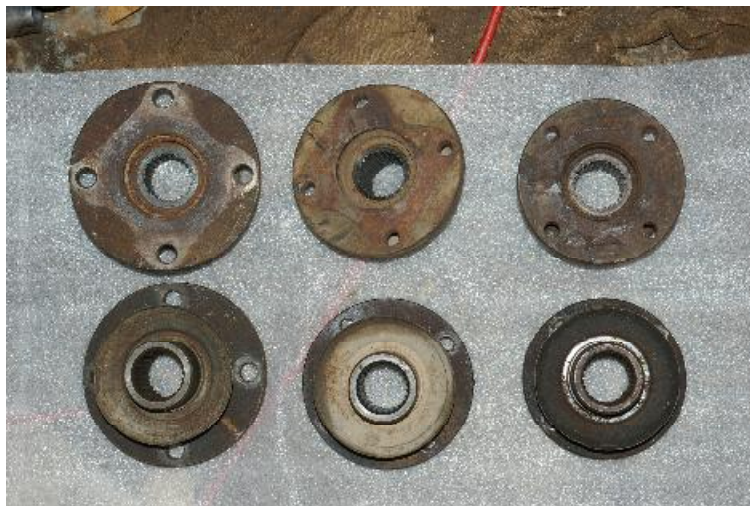


Figure 4. SJ Flanges

5. The Speedo kit fits on the output Flange, which needs to be a proper, extended output flange (which you may not have if you have used SJ Transfer Boxes fitted with the handbrake drum). The picture below shows what you need.



Figure 5. The Wrong (left) and the Correct (right) Flange

6. Now you need to remove the cup on the end of the Flange, this is a friction fit and can be tapped off with a hammer.



Figure 6. Flange with the cup removed

7. Now you need to clean up the stem of the flange. The oil seal is going to fit over this and ideally the oil seal should sit on a machined surface. The Flange is rough cast and does not make a good Oil Seal surface, you should clean it up the best you can to smooth the surface as much as possible. Then push the Oil Seal onto the Flange as shown below.



Figure 7. Oil seal fitted

8. Now the Speedo gear needs to be fitted. This friction fit over the end of the flange. ORA recommends that this is pressed on using a press, you can use a Vice as it is not too hard. I put the Flange in the freezer and the gear in the oven for a short while and then the gear just dropped into place.



Figure 8. Assembled Flange

9. The picture below shows how it fits onto the Transfer box, but this is only for demonstration purposes. In reality you need to fit the Speedo Sensor case FIRST!

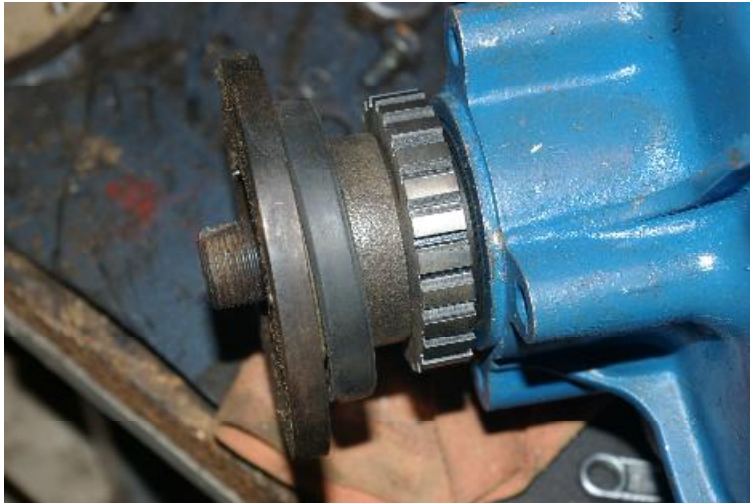


Figure 9. Example fitting

10. You need to fit the case and then fit the Flange inside. Grease the oil seal with Copper Grease and push the assembly together. You may need to use a flat piece of metal to push the Oil Seal into place.



Figure 10. The Speedo Sensor case in position

11. You should now end up with.....



Figure 11. Finished SJ case alongside the old Jimny Case

12. Now it needs to be fitted to Jimny. Attach the correct Flanges for the Prop-shaft sizes you have. Remember you need an SJ Mini-prop and SJ Front Prop (to be fitted on the Jimny rear). The original Jimny Front Prop stays in place.
13. The kit comes with replacement bushes made from Polybush material. These simply replace the existing Suzuki bushes and being slightly thinner they lower the Transfer Box slightly to help with the clearance under the transmission tunnel and to stop the Mini-prop hitting the Gearbox remote mechanism.



Figure 12. Polybush mount

14. Now before you all write in, I know the nut and bolt are better off the other way around so that the nut and end of the bolt do not protrude down below the car. I swapped it over after the picture was taken.

15. Now you need to fit the Transfer Stick. As you can see from the picture below the position of the SJ Transfer Box means that, un-modified, the stick is jammed against the transmission tunnel (and this is with the stick in the fully "back" position – it needs to shift forward from here!). I found this the hardest bit as it needs a lot of heat to bend it, its really not possible to cold bend it and no-one has gas nowadays, only MIG, so its hard to find someone with the right tools.



Figure 13. Un-modified lever

16. However I did find someone eventually. The stick needs to be rotated and bent back. Here is the finished item, in exactly the same ratio (4WD High) as in the picture above.



Figure 14. Lever bent into position

17. Here is a further picture showing an original level on the right and a modified one on the left. Both lever ends are in exactly the same, correct, position showing how much of a bend is needed.



Figure 15. Transfer Lever showing "rotation" and bend

18. So now we are on the home run. You need to replace the rubber boots on the lever and bolt up the propshafts. In my case I could only get the medium size SJ Flanges and Prop. Therefore I needed to drill the rear Diff Flange to take the prop. This involved clamping the prop to the flange and drilling through.



Figure 16. Flange clamped for drilling



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19. Remember to fill it with oil and connected up the 4WD switch and Speedo sensor. Now go and enjoy yourself!!