



Moving from Semi-Floating to a Fully-Floating Rear Axle

By Dixon Kenner

To set the scene, you have a Rover with a semi-floating rear end. Like all of the Series One Land-Rovers. And that semi-floating hub is held in place by a single bearing that is pressed into place with a lot of force. And, skimping on expense, you have a cheap bearing in there. And, it fails. What happens?

Well, the photo above is part of what happens. The pair of photos on the top of the next page are more of what happens. Now, had this been off tarmac, there would have been a long gouge in the ground, and not the photo above. The photo above is what happens when you are going about thirty miles an hour and the wheel decides it would rather be over

there, and you are notified that it has gone AWOL when the backing plate hits the tarmac. Oh, and when this happens, the wheel takes the brake drum with it, so you have just lost all of your brakes (single circuit, remember?) And, in this case, there was oncoming traffic, just to make things even more exciting.

So, when you have stopped, taken a breath, maybe a few sips of some good scotch, you decide that you are going to toss the semi-floating rear end for a fully floating one.

So, what are the options and considerations?

First, obviously, is fixing what you have. Now, semi floating half shafts, depending where you are, might be getting tough to find. There are lots around, but will you find one? Then there is dealing with that bearing. There was a special tool for removing it [1] (*maybe there could be an article on making one of those in the future*) Suffice it to say, changing this without the special tool is character building. But, at least the bearing is relatively cheap and common.

So, you decide on moving over to a fully floating rear axle.

There are several approaches. The first keeps the tires where they are today. The



second and third offset them out about three quarters of an inch. Noticeable? Not really. But, your call. Whether there are inset rims is a separate discussion. [2]

One idea is to look for a 1957-58 rear axle on a Series One 109. They could have a fully floating rear axle [3]

The first option is convert from the axle casing and backing plate out from the

original Series One semi-floating arrangement to the Series II/IIA/III spindle, hub and drive flange, keeping backing plate and drum. Then what?

A) Take an existing half shaft and cut it down $\frac{3}{4}$ of an inch and recreate the half shaft that was available in the optional conversion kit in 1958. Note, that means grinding in the grooves to keep the same length of groove for the uncut versions.

B) A second aspect to the shorter half shaft is to go and get a pair of these already made. The part numbers for these half shafts from the optional kit are 273385 & 273386

One option is the Land-Rover Series One Club shop. Assuming that LRSOC [4] still has them available. If not, LRSOC might be making more. Ask. The first batch was



made by a German chap for a few enthusiasts, with some extras tossed in to sell. Sadly, he had a heart attack and passed away just after they were done. LRSOC negotiated with his widow and took the stock, fulfilling the orders of the other folks and were left with a couple sets. I believe sets still available).

A second alternative to this is to call Pangolin 4x4 [5] in Oregon and see if they have a set available, as they too have made them in the past, and when they need a couple sets, make another batch.

C) The next option is to convert the ends of the axle over as in the first, but use regular ten spline half shafts from a II/IIA/III. This requires a $\frac{3}{4}$ inch thick spacer. There are two approaches to this. The first is putting a spacer between hub and drive flange. This tends to be more common. You take a later (late IIA/III), round, drive flange, that has the holes already there and just cut it down. The dimensions have been published in the past. This is what was done with the two sets in the previous photos.

A variant on this is to put the spacer in between the axle casing and the spindle. But that is getting bar stock cutting to $\frac{3}{4}$ inch, boring a great hole in the centre, then locating and drilling all the holes for the bolts. Looking at how the hub assembly fits, this could be more intricate than it looks. This approach will require longer bolts, and you have two sides to the spacer to potentially move with the six bolts if they ever loosened. The single is stronger, though if there is an appreciable difference is conjecture.

D) A final option is to toss in a complete II/IIA/III rear axle.

Now planning is combining one and two (like I have) where I have the German half shafts, mentioned above, as well as the spacers in case I break one and can't replace it with the shorter.

In conclusion this is something worth considering as that whole rear hub assembly is held in by that one pressed in bearing. If that bearing goes, the entire hub, inclusive of that half shaft slides out and rolls off into the woods or something.

And your back corner drops and hits the pavement. Oh, and when that all pulls out, it takes your brakes out at the same time. I've got photos of this too...

As background, this article was inspired by both Keith Shukait, who was asking about this, Ben Smith, who modified the backing plate shown earlier, and the author's supply of all of the parts in question to make the conversion.

Notes:

1. This special tool is a hefty piece that makes quick work of the job. There are a couple around in private hands, so worth asking about.
2. Land-Rover Rims by Bill Leacock, OVLRL magazine, Issue 391, October 2017, p8
3. Optional equipment on 1957/8 88 inch Rovers and on 109 pick-ups and fitted after serial numbers 121704770 and 131701305
4. <http://www.lrsoc.org>. At time of publication there were sets available.
5. <http://www.pangolin4x4.com>

