

Muffin's Axle Overhaul Part 3. - Stripping the Axle:

This part covers the strip-down of the axle sufficient to change the hub oil seals and bearings and to remove the differential gear thrust washers (which are part of the anti-clonk kit); it does not cover removal of the crown wheel, differential cage or pinion as that requires the use of special tools.

I am making one good axle from two using the best parts. The good main axle assembly is one I got with the abandoned kit I bought from Mark Sadler. The splined rear hubs (and possibly some brake parts) will be from Muffin's original axle. I had already removed the brake drums and brake parts from muffin's axle so could not lock the brakes on while I undid the hub nuts; the replacement axle was complete with brakes and steel wheels. This article covers the strip down of the replacement axle.

Notes.

Before I can remove the differential gear shims to fit the anti-clonk kit I need to partly remove one halfshaft; in any event I am going to remove both halfshafts so I can clean and check the bearings more thoroughly.

If you are only renewing the hub oil seals (and not the bearings) you do not need to remove the halfshafts, they only need removal if you are fitting the anti-clonk kit, and then you only need to partially remove one halfshaft.

Removing the Halfshafts:

1. With your hands on the wheel in the 12 and 6 o'clock positions rock the wheel and check the bearing free play. The bearings are not adjustable so if the free play is excessive you will need to fit new bearings.
2. Remove the split pins that retain the hub nuts.
3. Tighten the brake adjusters to lock the wheels; if you have already removed the wheels/brakes then put a couple of wheel studs on adjacent studs and use a pry bar to stop the hub rotating. See first photo.
4. Undo the hub nut. You will need a 1-5/16" AF socket and a 'big' bar.
5. Slacken off the brake adjusters (if tightened).
6. Remove the brake drums and brake parts from the brake backplate. If you have difficulty getting the brake drums off then tap the wheel studs in 1/8". After the brake drum is removed re-seat the studs with some washers and an old wheel nut.
7. To remove the hubs you really need a decent 3-legged puller as they do tend to tighten on.** Please see the second photo, at this point don't knacker the puller by over tightening, the secret is to spray some WD40 on the thread then tighten up the puller to apply a fair amount of pressure then leave it for a minute or two and it might suddenly pop off, if it doesn't then smack the end of the puller with a big hammer, a club hammer is ideal.
8. With the hub removed you can now undo the four nuts and bolts that hold the brake backplate on; if they are really rusted then it's quicker to cut nearly all the way through the nuts with a hacksaw keeping the blade tight up against the bolts; when almost through separate the two parts of the nut with a chisel. "You are going to use new nuts and bolts on assembly aren't you?"
9. Remove the brake backplate leaving the oil seal housing in situ.

Note.

*** I have noticed that when the hub seals leak the hubs generally pull off easier. Before trying to pull the hubs off I squirt WD40 around the outer split cone (immediately below the hub nut) and then tap it all round with a brass drift at 90 degree intervals; it might be physiological but I think it aids removal.*

At this stage I used some old nuts and bolts and secured the axle halfshaft bearing housings in position, lubricated the splines and cones and replaced the hubs and wheels to make the axle dust proof and mobile. I then de-rusted both axle tubes with the knotted wire brush in the angle grinder etc. Now is a good time to change the bottom mounting pins for the axle rebound straps if they are heavily corroded; cut them off with an angle grinder and weld the new ones in place. Once de-rusted I painted the tubes with Palatine Carboxide Red Oxide. The third photo shows the pins removed, at the time I hadn't received the pins so welded them in later.

48 hours later the paint was dry and fairly hard so I mounted the axle on blocks and removed the rear differential cover.

Now things start to get a bit awkward as two of the four differential gears are located on the inner ends of the halfshafts and there isn't enough room to remove them unless you pull one halfshaft out by a 1/4".

Start by removing the hubs which should come off easily the second time. If you are not fitting an anti-clonk kit you can now remove the oil seal carriers, renew the oil seals and fit everything back together. If fitting an anti-clonk kit then follow the procedure below.

1. Throw away the instructions that came with the anti-clonk kit; if you don't you will probably take all weekend, have a nervous breakdown and spend a small fortune phoning the Samaritans.
2. Remove the oil seal carriers. **DO NOT REMOVE THE OLD SEALS UNTIL I MENTION IT IN THE TEXT DURING THE ASSEMBLY STAGE!**
3. The bearing and halfshaft is reasonably easy to remove; one way is to refit the hub and use long nuts and bolts to jack it off. Put a nut on the bolt and then with a flat washer over the end of the bolt feed the bolt through one of the holes that secure the seal carrier and backplate to the axle. Fit another nut, bolt and washer in the diagonally opposite hole, please see the fourth photo. Turn (undo) the nuts so the heads of the bolts are forced against the inner side of the wheel hubs. Continue turning/undoing the nuts evenly until the bearing pops out. If the bearings are ok and you're only changing the thrust washers then you don't need to take the halfshaft completely out, just extract the bearing a quarter of an inch.
4. You can clean and check the bearings while they are still on the halfshafts. If you want/need to remove the bearings from the halfshafts then preferably use a press. If you haven't got a press then use a bearing puller. If you haven't got a press or bearing puller and the bearings need replacing then use an angle grinder with a cutting disc to remove the outer race and release the ball bearings. The inner race can now be slit with the angle grinder until it is almost through, this will release the tension and you can knock it off with a chisel being careful not to mark the halfshafts.
5. A new bearing can be pressed or drifted into place but you will need a metal tube of a suitable diameter to fit over the splines of the halfshaft and contact the inner part of the bearing race only.
6. With one halfshaft pulled out a 1/4" you can now start to remove the differential gears.
7. Turn the differential so you can access the roll pin that holds the differential gear pin in place and tap it out with a hammer and suitable drift, please see fifth photo.
8. Turn the differential crown wheel 180 degrees so you can gain access to the other end of the pin and using a brass drift tap it out 1".
9. Turn the crown wheel again so the pin is vertical with the bit poking out at the top, insert the drift in the roll pin hole in the end of the pin and twist/pull the pin out.
10. Holding the two gears in place with one hand (to stop them falling out) lock one halfshaft and rotate the other halfshaft so the gears you are holding turn approximately 90 degrees and are clear of their bearing seats, then lift out the two pinion gears and brass thrust washers. Keep the gears separated so they go back in the same position; i.e. the pinion gear that was near the roll pin is replaced next to the roll pin on assembly.

11. Slide the remaining two differential gears off the inner ends of the halfshafts and remove the two fibre thrust washers behind them. Keep the left and right gears separated so they go back in the same place. Please see the sixth photo for the bare gear cage.

At this stage I removed both halfshafts completely so I could clean and check the bearings.

To be continued.





