

Rufus – Propshaft Refurbishment:

Introduction:

Two types of propshaft are available; i.e. those with spider (universal joint) grease nipples and those without. Greaseless spiders last a very long time so the lack of grease nipples doesn't worry me unduly.

To be smooth in operation a propshaft needs to be correctly aligned. An incorrectly aligned propshaft will speed up and slow down twice in every revolution; obviously this is not good news. As purchased the propshaft on Rufus was incorrectly aligned.



The yokes are incorrectly aligned.

Propshaft removal and inspection:

This is a simple enough job and just consists of undoing the four nuts and bolts** at either end.

Note.

*** On some gearboxes you cannot remove the bolts that secure the propshaft to the gearbox output coupling without removing the coupling.*

With the propshaft off the car you can move it about and check for wear and tear. Any excess play in the splines will deem the propshaft scrap. Turn the couplings about the spider and check for roughness of the needle rollers. One of the universal joint spiders on Rufus was nice and smooth, the other was not and you could feel the flat spots on the needle roller bearings. I decided to renew both spider joints.

Refurbishing the propshaft:

I decided to fit new spider joints with grease nipples** and purchased two for £15 inclusive of VAT from the MGB Hive.

Note.

*** This turned out to be a big mistake as with grease nipples fitted very little angular movement is available, certainly not enough for my installation. The only solution is to grease the propshaft and then replace the grease nipple with short screws. In hindsight I should have bought spider joints without grease nipples.*

To overhaul your spider joints proceed as follows.

1. Undo the sliding coupling and separate the two parts of the propshaft.
2. Take one part and remove the four circlips that hold the joint in place.
3. Using a vice (and an old socket etc. as a spacer) or a drift, press a spider cup to one side until a needle roller cup emerges from the coupling yoke.
4. Trap the end of the needle roller cup in the vice and twist the yoke away leaving the cup in the vice.
5. Tap the exposed end of the spider joint to displace and remove the opposite cup.
6. Repeat steps 3. to 5. until the complete joint is removed and you have two separate parts.

7. Clean, de-rust and paint the two parts.
8. Clean all traces of paint from the cup housing.



Removing paint from the cup housing.

9. If necessary place an elastic band, cable tie or tape etc. across two of the new spider joint cups to retain them.
10. Remove the other two cups from the new spider joint.
11. Tap** one cup into the yoke so it is almost flush with the end of the yoke.

Note.

*** It is tempting to try and press the cups in with a vice but in my experience this is a no-no. By the nature of its design a vice is not capable of making a straight press and the cups will most likely end up wedged in the yoke at an angle. Use a press by all means but **NOT** a vice.*

12. Fit the spider into the cup by inserting one end into the empty yoke and then engage the other end with the needle roller bearing cup.
13. Tap the other cup in and when it is just short of the spider slide the spider sideways until it is partially inserted in both cups.
14. Keeping the spider central in the two cups continue tapping the proud cup until it is also flush.
15. Now I use the press to press one cup fully in. If you haven't got a press continue tapping using a suitable drift.
16. Insert the circlip.
17. Press or tap in the opposite cup and insert that circlip.
18. Holding the yoke in one hand tap the end of the yoke next to the last cup inserted,** this will cause the cup to move tight up against the circlip. (Newton's Third Law, to every force there is an equal and opposite reaction).

Notes

*** When I was a young mechanic, when dealing with large propshafts (that would not fit in the vice) we used to remove the cups by tapping the adjacent part of the yoke. And tap new ones in during assembly.*

Sometimes you can get a spider joint that is very difficult to remove from the yoke. The easiest method of removal is to cut through the spider central to its boss and then knock out the separate parts. I can remember doing this as a young mechanic with a hacksaw and it's very hard work. Nowadays most people

have an angle grinder; fitted with a slitting disc it makes cutting through the spider relatively easy, but be careful not to cut into the yoke as it will destroy the propshaft.

19. Repeat steps 10. to 18. for the other two cups.
20. Grease the spider joint and replace the nipple with a screw.
21. Repeat all the above steps and recondition the other end of the propshaft.
22. Grease the sliding joint and fit the two parts of the propshaft together ensuring that the yokes are in line.



Completed propshaft with yokes correctly aligned.

Summary:

It is **not normally** difficult or expensive to replace the spider (U/J) joints. I changed quite a few when I was a young mechanic and unless my memory is playing tricks on me this is one of the hardest ones I have ever done. Maybe it is because they are after market spiders (with poor machining tolerances) and not original NOS.

For peace of mind I would always refurbish the propshaft when restoring a car. If nothing else it saves doing it later.

It should be noted that propshafts with little angular displacement tend to wear quicker than those with a larger angle. The reason is that on the former it only a very small area of the needle roller that is in contact to transmit the driving force. On the latter the needle rollers tend to rotate slightly, share the load and spread the wear.