

Refurbishing the Spitfire and Vitesse “frictionless” propshaft sliding joint:

Before you start:

Mark the relative positions of the yoke and shaft with a scribe or centre-punch.

The factory manual sets out the procedure as follows (refer Figs. Next page.):

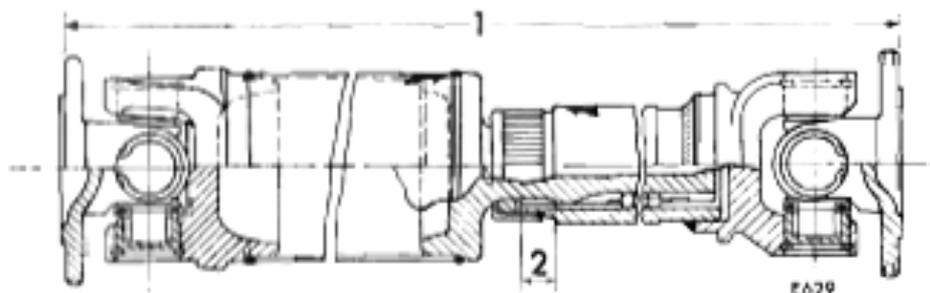


Fig. 2. Frictionless yoke sectioned

“Dismantling

Unscrew the dust cap (2), carefully slide off the yoke (6), collect 40 rollers (1) and remove the restrainers (8). Remove the split stop washer (5), felt sealing ring (4), washer (3) and dust cap (2).

Assembling

Fit the dust cap (2) and the washer (3). Before fitting the new felt sealing (4), soak it in clean engine oil. Fit the split washer (5) and use pliers to make flat again. Fill the four grooves along the shaft (7) with the grease specified on page 2.401. Fit the roller end travel restrainers (8) and through their slots stack ten rollers into each groove as shown in Fig. 4. Align the arrows on the shaft (7) and the yoke (6) so that the front and rear yokes are in the same plane. Very carefully slide on the yoke (6) ensuring that all rollers remain correctly positioned within the restrainer slots. Screw the dust cap (2) securely on to the yoke (6).

Recommended lubricants are Duckhams grease Grade No. Q5648 or Rocol Molytone 320 or equivalent.

That’s the official procedure. A couple of points;

1. I have not been able to identify any “arrows” on my shaft and
2. I have not had any luck assembling the yoke to the shaft with all rollers fitted.

It’s quite easy to fit the yoke to the shaft with one, or even two, sets of rollers in place and the remaining rollers can be fed into their slots quite easily when the yoke is withdrawn from the shaft so that three of the rollers fitted to the one, or two, slots are exposed. Plenty of grease will hold them in place. If difficulty is experienced in sliding rollers into the yoke, tilt it slightly to provide a bit more

clearance between the shaft and the yoke. I found a pair of tweezers useful for this job.

It is not possible to fit more than ten rollers to any slot.

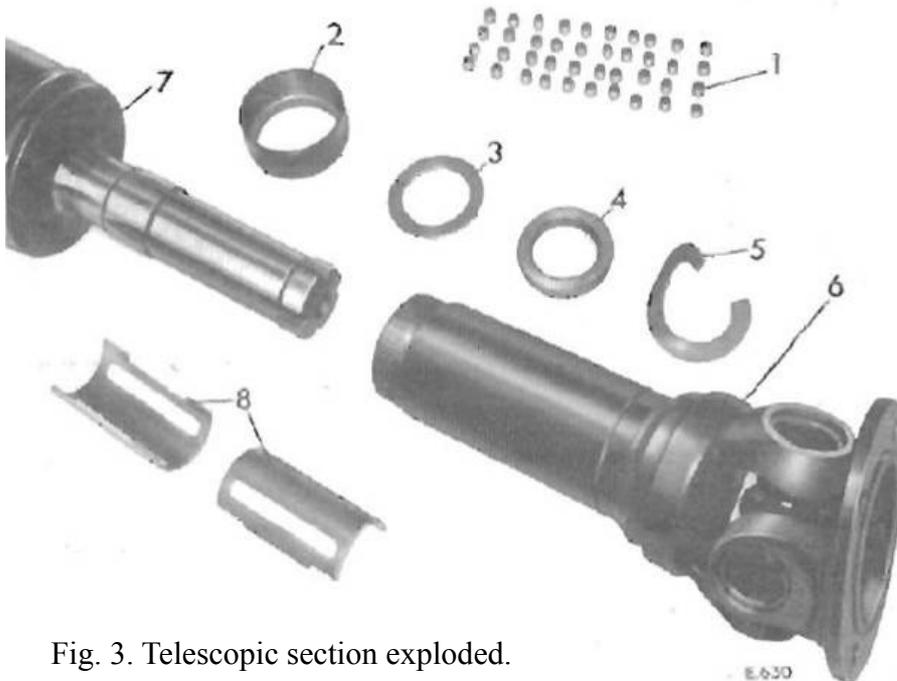


Fig. 3. Telescopic section exploded.

Illustrations from factory service manual

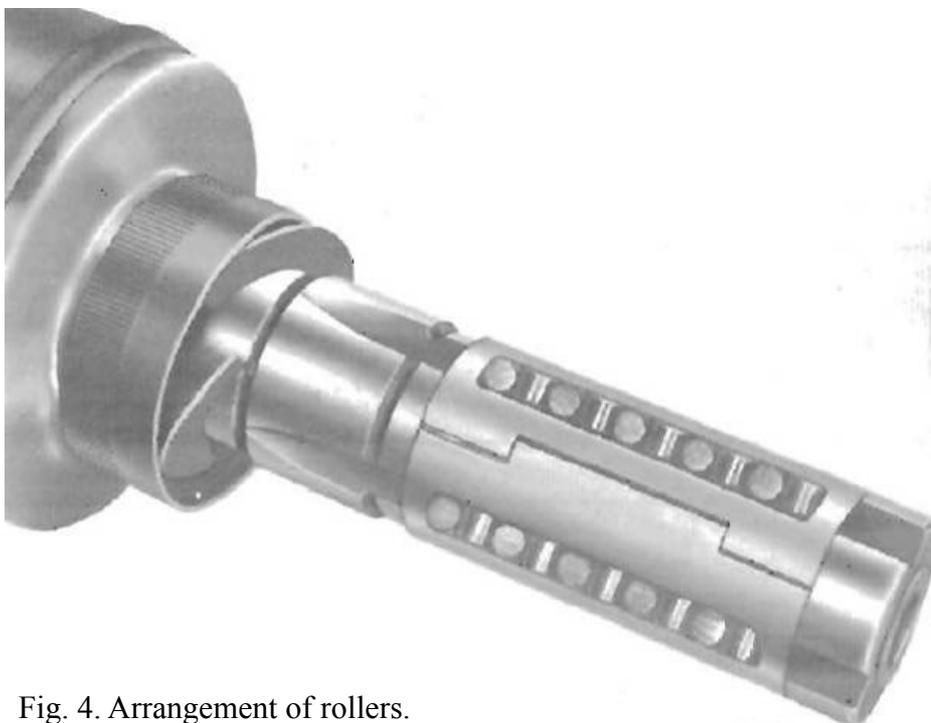
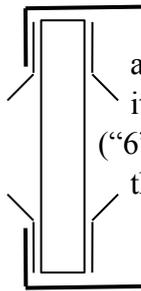
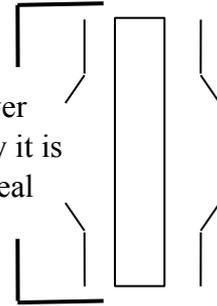


Fig. 4. Arrangement of rollers.

Fitting the dust cap and seal

Referring to the figure at right, fit the screw cap (2) over the shaft followed by seal retainer (3), felt seal (4) and split retaining ring (5). Note that the seal retainer will slide over the shaft but the split retaining ring does not and which is why it is “split” (see Fig. 4). I re-used the two retaining rings and felt seal as they were in good condition. The two retaining rings were dished but I am not sure whether they are made this way or this was a result of compressing the seal when fitted.



With a screwdriver or similar tool, ensure that the seal and retaining rings are pressed hard into the cap as in figure at left. Failing to do this will make it virtually impossible to screw the cap on to the end of the driving sleeve (“6” in figure 3 above) without cross-threading it. Very easy to do with a fine thread such as this.

Put some grease or oil on the threads for the seal cap and screw on carefully, making sure that the thread isn’t “crossed”. Tighten with slip-joint pliers – job done!

I found a source of rollers at Simply Bearings in the UK and they post to NZ. The bearings required are “3/16” x 3/16” flat-end rollers”. **NOT rounded end!!** £3.50 for a pack of 10 excluding vat – NZ\$48 for 5 packets (50) including postage.

No luck finding equivalent lubricants to those specified in the factory service manual. I’ve used an “EP” grease here. As the action of the rollers in this joint seems to be a sliding action, rather than rolling, a molybdenum type lubricant may be more appropriate. (Hint – “Rocol Molytone”.)