

know from direct experience. Best of all, you won't need to disassemble the hubs and bearings just to change the UJs.

2.5) Wash your uprights thoroughly. Consider taking this opportunity to helicoil the 45 year old UNC threads. I actually converted mine to M8 x 1.25 at the same time because this is probably the worlds most common thread and the tooling I bought will be used elsewhere at some time.

2.6) Create a means of retaining grease around the bearings in the upright. A simple method would be to fill the lower cavity with expanding PU foam. Once hardened, trim back any over spill where the bearings and shaft fit. Ensure the resulting upright is clean and free from loose foam. Not a bad idea to seal the foam surface with resin or similar to prevent bits getting into the bearing grease.

2.7) Assemble the bearings, inner seal and spacer into the upright, liberally greasing. You could remove the inner seal from the outer bearing and replace the grease, most engineers seem to favour this approach given the option. Refit the upright to the trailing arm and fit the drive shaft using the hub nut and spacers to draw it into the bearings. Re-clean the shaft splines in preparation for Loctite.

2.8) Plan how you're going to react the 150 ft-lbs of torque as you tighten the hub nut. A long steel arm is probably the safest option, it can be attached using the drive hub studs. For safety, make sure it's designed to allow total freedom of access for the socket/spanner for tightening the nut, and be transferable from one side to the other.

2.9) For the type of Loctite please refer to Tim Engel's [eclat2] email of 24th April 2017, see <https://groups.yahoo.com/neo/groups/lotuseuropa/conversations/topics/147696?reverse=1>

2.10) Check the spacer, hub and nut fit properly with no hang-ups by assembling dry. Loctite setting time can be as low as 15 minutes, it's important to finish the job within this time limit. Undo the nut, remove the washer and hub, apply Loctite to the splines making sure there is a thin film over their entire area, axle and hub. Do not apply Loctite to the threads. Refit the hub and washer and torque the nut to 150 ft-lbs as an absolute minimum, bend the tabs of the washer onto the nut. Note, contrary to rumour, the axle is capable of tightening to considerably beyond 150ft-lb and it is better to *slightly* over rather than under tighten the nut, this advice is justified later in the report.

2.11) Paint a heavy line across nut and shaft end as an additional tell-tale for any movement of the nut. Before specialist wheel nut pointers were developed, truckers used to do this, and they did it for a reason!

I *wouldn't* recommend use of any wicking Loctite on the nut, but you'll have to read on to find out why.

A critical observation from looking at the design of the TC and TCS drive shafts is that Lotus not only duplicated the problem, they made it worse. This suggests they did not understand their own design and its shortcomings.

It's a shame nobody had pictures of their used TC/TCS hardware, they are truly worth a thousand words.

3) Strip condition of S2 RHS axle and spacer

Broken or worn bits are the Sherlock moment for a mechanical engineer, a challenge for the mind. Granted, not so good when you're stranded at the roadside, better by far in the comfort of the workshop.



I looked carefully at a selection of old parts that I've run in my Lotus, also some photos from the internet. The parts discussed were taken from the RHS of my S2 Europa. They had completed 42k miles in my tenure and most probably were the originals, covering a likely total of 92k miles. They have never been allowed to come loose during my ownership and by chance have always been re-assembled with the spacer the same way around.

Left, outer bearing less face seals, also showing spacer mating face