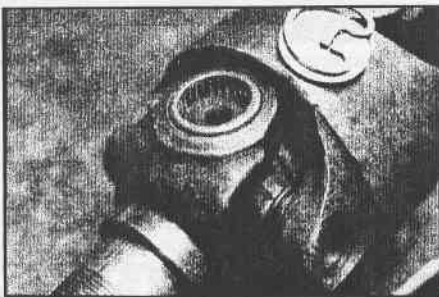


C.V. or NO C.V. That is the question!

By Bernie Hadaway

When the inevitable happens and those SPICER/TRACTION drive shafts start to contribute more noise than all the other Traction noises combined, one has to consider "what to do"?

If one is looking for the optimum long life and performance solution, a modern C.V. joint transplant by Carey Motors is the only way to go, but if like me, one tries to keep some originality, there are difficulties! Two of them to be specific, consisting of the two (2) spider (cross) components that provide the universal action of the "Double Cardan" constant velocity assembly, they always deteriorate due to the progressive brinelling of



their journals until the noises suggest that a disaster is about to take place, but rarely does!!

These spider components are special with extra material in the forging, to compensate for the hole for the clearance of central C.V. control numbers.

Replacement spiders are as scarce as hens teeth. Repco forge (Unidrive) have scrapped all the forging dies and machining and grinding processes have long since gone! I've tried to modify larger spider series as replacement, with mixed success and I've even considered machining new spiders from the solid. Possibilities – but hardly a practical solution.

A recent visit to Unidrive (ex Hardy Spicer) looking for spider component's for conversion revealed that some recent imported CARDAN type joints are using drawn thin wall Torrington type needle bearings, pressed and staked permanently into forged yoke cross holes. These take up less room than the SPICER type machined cup and needle combination, allowing larger diameter spider journals with improved load carrying capacity.

Well I got out the Torrington Catalogue and got lucky – Torrington Part No. B-138 has an outside diameter 1 1/16"

and a length of 1/2" which will press nicely into our drive shaft yoke cross holes.

But what was very convenient – the inner operational diameter of the needle race – 11/16" diameter! This compared to the spider journal dia. of 21/32" which means that substantial inner races can be fitted over worn spider journals suggesting a practical recovery method, with new bearing journals on old spiders!

The shown arrangement required some exploration with pencil and paper before the method was decided upon, and eight sets of bits were made.

The parts are simple but have to be produced with reasonable precision from good materials. The inner races were turned from 11/16" diameter ground "Silver Steel" bar, which was

from 1045 steel (because I had it in stock). The inner washer was not hardened but the outer disc, which takes end thrust from spider trunnions, was.

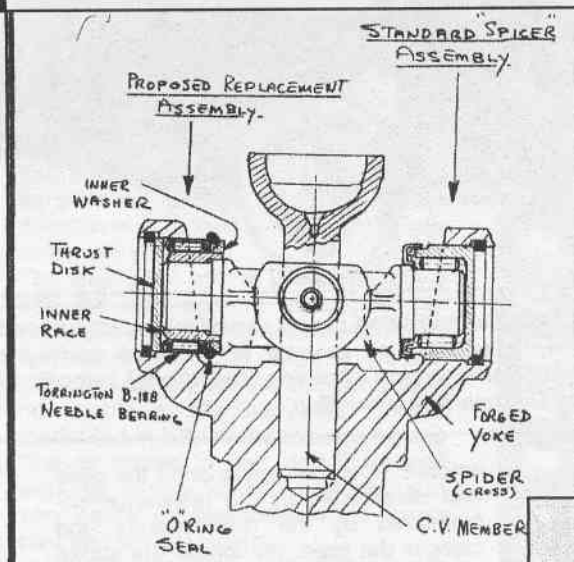
By the way, the heat treatment temperature before the water quench is judged by bringing the component to a Cherry Red before dropping into a bucket of water! Bingo 60-62 Rockwell hardness which is pretty hard!!

The "O" ring I selected is 3/32 diameter section with a 15/16" bore which provided stretch at assembly.

I made my assembly by pressing the inner races onto the spiders in a bench vice with an application of Loctite 280, to be on the safe side, but one can visualise making the assembly whilst the old spiders are still in situ with the main assembly still intact (no need to extract central C.V. members – only outer cup races).

Assembly is straight forward. All the bits go in through the yoke cross holes followed by the circlips.

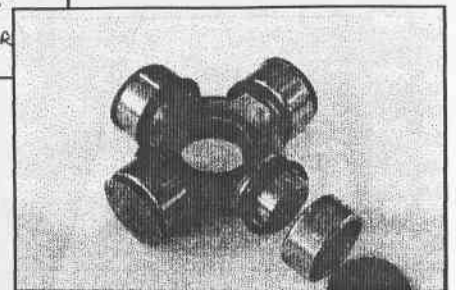
I haven't yet tested this first drive shaft but it looks good and I don't anticipate problems. It should be an improvement due to the larger journals having an increased load capacity and better resistance to brinelling because of the through hardened inner races (not case hardened). Equally the Torrington races should support a comparable load to the original with their more generous proportions. Cost wise the Torrington Races



bored to be an easy press fit (size for size) over the worn spider journals (surprisingly, in spite of fairly bad brinelling of journals, the original dia. remains)

Hardening was carried out using a propane/oxy torch followed by a water quench and a minimal temper (light straw). No distortion or damage to surfaces occurred and pre-heat treatment dimensions remained.

The other two components were turned



are \$4.00 to \$6.00 each depending upon who you know, and "O" rings about 10 cents each. Who else is game to try?

