TRACTION TRANSPLANTS: "HOME-MADE" OUTPUT SHAFTS

Peter Hughan has performed a very satisfying transplant into his splendidly restored black 1951 11 BL (Traction Avant Legere).

Peter's transplant incorporates a number of innovations which have not been previously reported, especially with respect to transmission output shafts from the ID gearbox, and to modifications to adapt the Traction gear-shift mechanism to work the changes on the ID box.

We have changed Peter's order of presentation so as to deal with the gearbox output shafts first, since a functionally-similar but engineeringly-different version was quite recently described in Front Drive 12 (3) as developed by Roger Williams (UK). In particular, readers are directed to Roger's Fig. 11 (left-hand output shaft) in the article reproduced in the above FD number (article reproduced with thanks to Traction Owners Club (UK) from Floating Power November 1986).

Peter's information and diagrams are supplemented by comments from Jeff Harris (CCOCA, South Australia) who produced the shafts in conjunction with Jim Le Mesurier.

The starting point for the new output shafts is with rear axle half-shafts from a live axle setup (Chrysler Valiant). The adaption uses the outer end of the axle drive shaft, including outer driving flange. Most likely, the steps described below would be outside the capabilities of most CCOCA members, and are provided for general guidance and information. Normally, the specifications and raw materials would be handed over to a specialist heat-treatment and machining shop(s).*

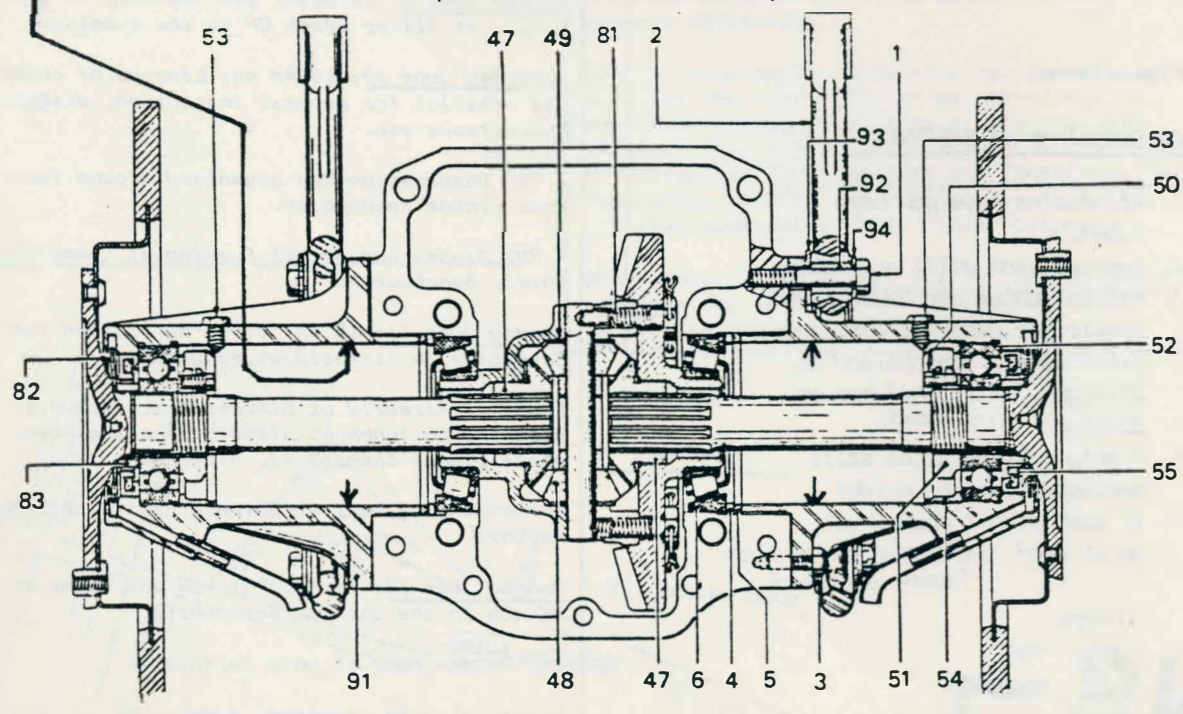
The axles as obtained have a hardness of about 60 Rockwell. These were heated for 3-4 hours to lower the hardness to the point where they are just machinable (30 Rockwell). Using a locally-made cutter, the axles were machined to the dimensions indicated in the attached diagram. The hardness at machining as reported above is a compromise between ease of machining and long-term durability of the part in service, since in the method described, the shafts were not re-tempered. Jack Weaver and Peter Boyle suggest Rockwell values of 24-27 may be necessary for machining, while Jack suggests that the shafts should be left slightly over-size and then re-hardened back to 40-45 Rockwell before precision grinding to final size. However, re-hardening would add to the final cost thereby, and therein lies the basis for the compromise mentioned earlier.

*To date, three sets of shafts have been made up. To make up further sets with the original set-up would require re-sharpening of the cutter. One set is is in Peter Hughan's Legere, one set went with Jeff Harris's 1954 Light 15 when purchased by Mark Wheatley in Western Australia, and the third set has been driven in daily use in Jim Le Mesurier's Light 15.** The latter is a measure of the shafts' durability.*

**for two years.

Cut casing (91) flush with outer face of flanges and remove bits outboard of this line.

VERTICAL SECTION THROUGH ID DIFFERENTIAL, HOUSING, AND OUTPUT SHAFTS (Before modifications).



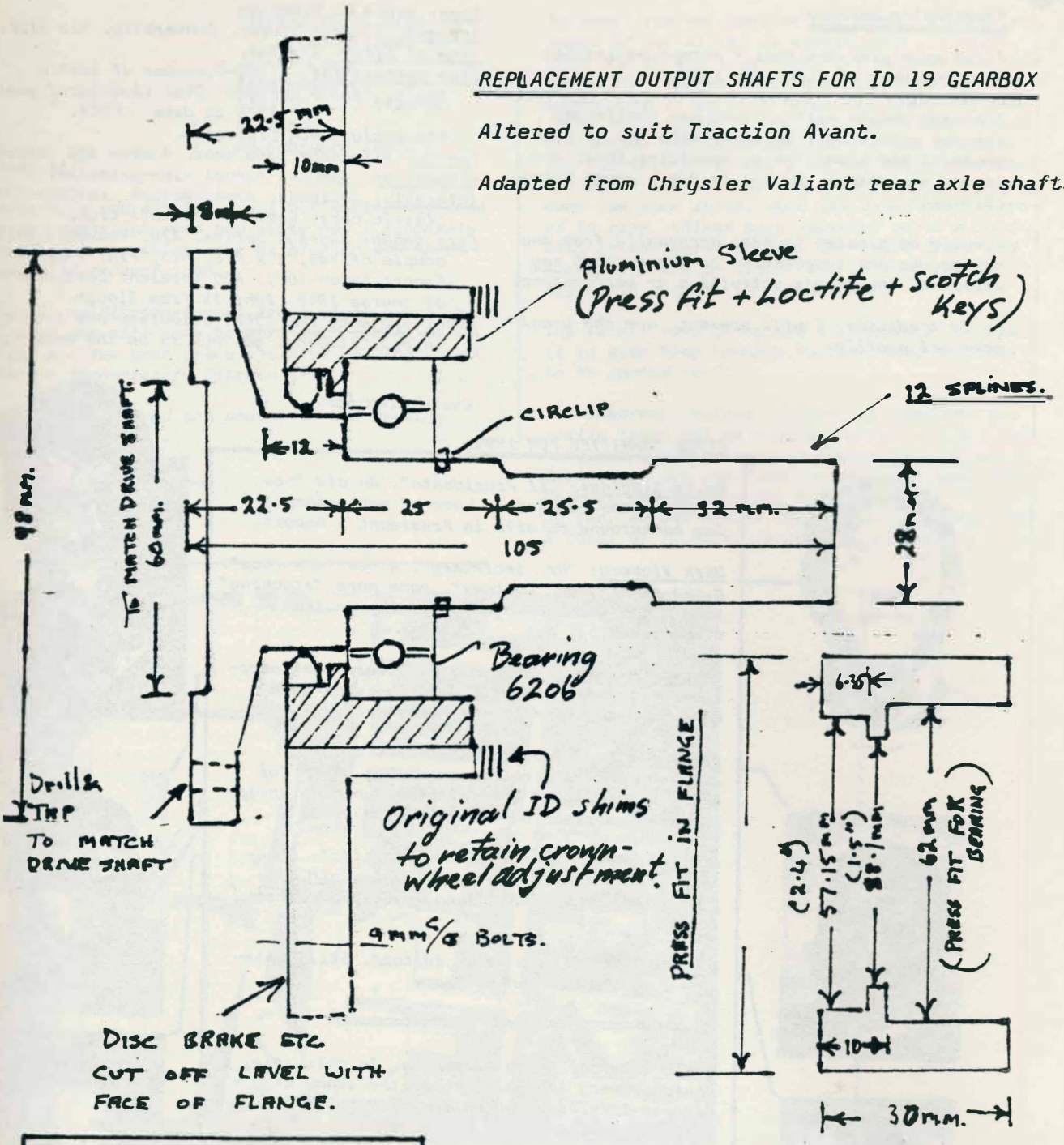
Key to Fig 1 Screws for support arm 2 Support bracket 3 Bearing fixing screws 4 Adjusting washer 5 Distance washer 6 Tapered roller bearing 47 Planet wheel 48 Satellite wheels 49 Thrust washers 50 Retaining screw for 51 51 Locknut 52 Differential bearing 53 Retaining screw for 54 54 Bearing locknut 55 Oil seal 81 Differential housing screws 82 Oil retaining washer 83 Thrust washer 91 Casing 92 Distance piece 93 Large diameter washer 94 Washer

*1972-78 axles have an adequate-sized flange (check!).

REPLACEMENT OUTPUT SHAFTS FOR ID 19 GEARBOX

Altered to suit Traction Avant.

Adapted from Chrysler Valiant rear axle shafts.



ADAPTER SLEEVE TO FIT ID 19 BOX

BEARING

6206

O.D.	62 m.m.
I.D.	30 m.m.
WIDTH	16 m.m.

SEAL

FIRN	11687 (57.15)
O.D.	2.4 inches
Shaft Diam	1.875" (47.625)
WIDTH	0.250" (6.35)

Jack Weaver suggests that special cutters would not be needed, and that the splining could be done on a milling machine with indexing head.

It seems quite likely that shafts other than Valiant could be used as a starting point, provided they were of adequate dimensions.

Peter Hughan reports that the 6206 bearing is a cheap and readily available industrial type. The FIRN 11687 seal or equivalent is readily obtained by quoting the indicated dimensions to suitable bearing/seal suppliers.