The majority of these tips have appeared in club newsletters over the years. Please note that you use them at your own risk as neither the Bristol Austin 7 Club nor the authors can be responsible for the results of trying to follow the instructions given.

Engine - rear main bearing - Removal and Fitting of the Outer Race

- Ron Hayhurst

Hints and tips on removing the crankshaft from the crankcase can be found in the big red Austin Seven manual by Doug Woodrow, as advertised in your Grey A7CA Magazine, as well as using the search facility on **www.AustinSevenFriends.com** . Here you will see how to apply a long bar to drift out bearings with help from some local heating of the crankcase. Others may have made or borrowed suitable pulling gear. However, this article is concerned only with removing the outer race from the bearing housing so that it can be replaced with a new one.

Tool A (machined from bar)

Now, as the rear bearing is a standard roller bearing, the inner and outer races will have become separated during the crank removal process, with the inner race continuing to hold the caged rollers and the outer remaining inside its steel housing. Getting the outer race out of its housing is described below.

Only a small area of the bearing race can be seen from the inboard end so there is not much of it available to attack! But if you are lucky, the outer race may tap out after perhaps applying a sharp burst of heat to the periphery of the housing. For those who are not so lucky... read on!

Tool B (made from a scrap housing)

Some years ago I had a chunk of large diameter bar machined up with a spigot, as seen in the first picture; we will call it a “Tool A”. Its outer diameter is 2.81” which just clears the smallest diameter of the housing, and its other diameter is 2.60”. This allows the tool to slide inside the bearing race and land on its exposed area. I decided to make the overall thickness ⅞” with the smaller diameter having a length of ⅜”. The tool can be hit to drive out the bearing or be pulled in using an engineer’s vice. This has worked for me in the past and the bearing has come free.

If however there is a need to continue pushing out the bearing then there is a need to somehow pack out the flange face of the housing. As can be seen in the picture, a scrap housing, procured from the spares shed, was ground out on the inside to make it a loose fit with a bearing outer race. The two tapped holes in its flange were opened up with a 5/16” drill to make “Tool B”. The two housings can now be bolted together to ensure alignment when pushing the bearing race out in the vice using Tool A. Packing will be needed between Tool A and the vice jaw as it enters the housing. After unbolting, the freed bearing can be tapped out of Tool B.

When fitting a new outer race Tool A is again employed; this time placed on the inside with the assembly placed in the vice jaws. The housing is ¼” deeper than the width of the bearing so unless the housing can be tapped in, packing is needed for the final push. This could be an old outer race that has had its diameter ground down to make it a loose fit in the housing.

Tool A pushes outer race into tool B which is bolted to the good housing

Some other thoughts :

If the housing was drifted out from inside the crankcase, the inboard end of the housing may have become peened over. This will have to be ground off before starting the above.

If jacking the housing out using the two $^{5}/_{16}$" Whit tapped holes, be careful not to distort the flange.

Heating the crankcase can really help in releasing the housing. The flange can be straightened but if seriously damaged another will be needed from the spares shed. Make sure it has good tapped holes; if not, put in two more 90° further around.

The housings for engines with a $1^{5}/_{16}$" crank are found with two different thicknesses of flange. By choosing a thicker flange there is more thread for the jacking bolts. Make sure the bolts are trimmed off square to allow all of the flange thread to be used.

Finally, it is a good idea to file two deep grooves, diametrically opposite, in the lip of the housing to allow a drift to be used as and when there is next a need to change a rear bearing.