

A7 Crankcase Refurbishment

Garrett

Bob

Brian Wooster (HA7C Member No 8) from Middlewood near Dorstone is currently having his Ruby engine re-built - but before work could start, the crankcase needed some attention. It is not uncommon for the front main bearing lip to be damaged in Austin Seven engines nearing 100 years old but in this case, all fourteen sump bolt threads were in a poor state.

The front lip was almost non-existent and the following photographs show the condition of the sump bolt threads



Typical of many sunken 'Helicoils'



One or two raised 'Helicoils'



One oversize stud

Clearly, it would be impossible to achieve an oiltight and secure sump to crankcase joint unless these problems could be resolved. So, after removing the strange oversized stud and all the Helicoils (by drilling and using a left-hand taper extractor), all fourteen sump threads were drilled 3/8" Dia x 32 tpi tapping i.e. 11/32" Dia (78% engagement). Each hole was then carefully threaded 3/8" x 32 exactly at right-angles to the joint face using a simple two inch Dia mild steel 'button' held firmly by hand against the alloy face.



Installing a brass bush prior to cutting-off flush

Each brass insert was then sawn-off close to the base of the crankcase. The protruding inserts were initially trimmed using a suitably sized pin drill with a 3/16" Dia pilot then the whole sump face filed flat and finished flush by lapping with grinding paste & diesel on a lovely flat offcut of granite kitchen work surface.

Next, a length of 3/8" AF Hexagon brass was turned down to 3/8" OD, bored a nominal 3/16" Dia and threaded externally 3/8" x 32 tpi, about one inch at a time - screwed tightly into the threaded sump bolt positions and secured with high strength Loctite 648.



Brass inserts complete and threaded 1/4" BSW

Finally, the pilot holes were opened-out to 1/4" Whitworth tapping i.e. 5.1. mm Dia (76% engagement) and threaded 1/4" BSW to correspond with Sir Herbert's original design.



New steel front lip

The remains of the front main bearing flange were machined away and a new steel flange set-screwed in position all as previously described in Section 1 of the A7 engine building article Part 1 pages 4, 5 & 6 previously published during 2018-19 in our Newsletter *Crankhandle* and available in the Technical section of the Club's Website.

With a crankcase now like new - Brian's engine rebuild can continue.