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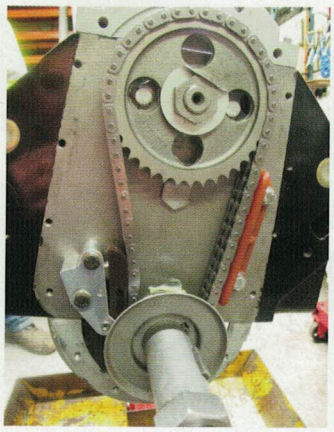
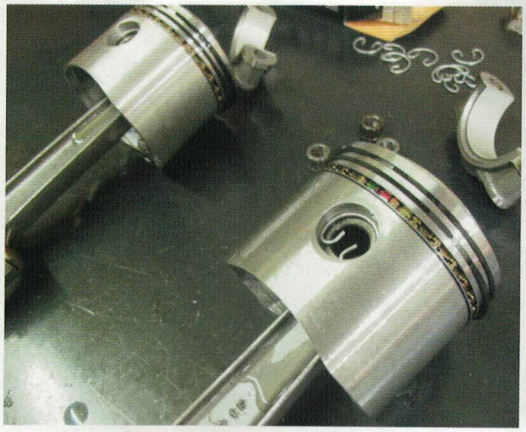
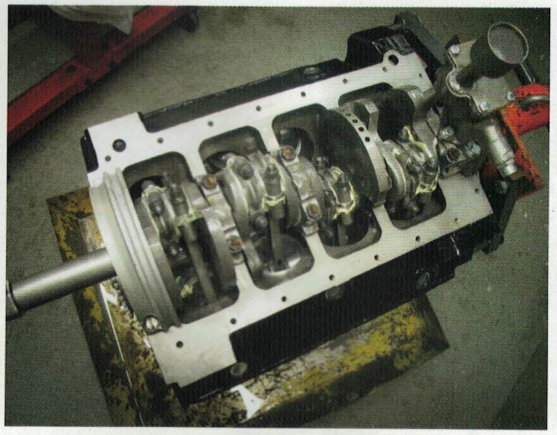
Eric Goes Toyota

(AND GETS A NEW ENGINE - PART 7)

RICHARD LONG







With all the "bottom end" machining operations and modifications now complete, the next logical stage was to commence assembly of the engine block. Before explaining that process, it is worth mentioning some technical info regarding engine assembly/start-up lube. It is used directly on the bearings and other moving parts to protect the engine during storage and also the critical initial start-up. Importantly, the lube will mix with any engine oil and be flushed out with the oil after the running in period is completed. Some engine builders use engine oil which is an acceptable practice, albeit not optimal, BUT protection is poor as the oil will disperse over a short period of time leaving vulnerable engine parts exposed to accelerated wear during start up. Conversely, this does not occur at any time when using the lube and this really is the only ideal medium to use. As mentioned in my last article, the lube is also used for priming the oil pump to ensure good suction and lubrication during start up. Some other engineering companies use assembly lubes which is dark in colour - these contain a large amount of graphite. Now this is good for lubrication, but the graphite will contaminate the inside of your freshly rebuilt engine and turn your engine oil black, resembling that of a diesel engine which cannot be rectified easily. Jonathan owner of "J&E Engineering Services" will not use a graphite lube, because of the above mentioned shortcomings. Moving on, the following provides a general overview of the building up process with some photos, rather than a detailed step-by-step insight:



The crankshaft is positioned in to the block, having first fitted the lubed main bearing shells to the top half of the mainline bore of the block. With the crank seated correctly, it was then a case of fitting the centre main bearing cap and the thrust washers. You will recall that an additional thrust washer was machined by Jonathan, as the crank will now be under greater pressure as a result of the car being converted to manual transmission. The crankshaft fitting is completed by securing the remaining main bearing caps, checking end float and ensuring the crank rotates freely.

The eight balanced pistons plus rods (Reciprocating parts – as mentioned in Part 4) are then fitted and secured via their connecting rod caps, one at a time, into their respective bores ensuring that the fitting is the correct way around.

Camshaft fitting was a straight forward procedure as the bearings had been replaced and line bored, as detailed earlier in the series of articles. As such, all trial fitting of the camshaft had been done during this earlier stage. Because the camshaft lobes are primarily lubricated by splash feed which will not be present during the start up procedure, it is absolutely vital that plenty of pre-lube is applied to ensure that sufficient lubrication is available during the initial start up phase. Following on from the camshaft fitment, the distributor driveshaft and the oil pump were fitted.

With the crankshaft, pistons, camshaft and other associated engine block parts now secure; attention focused on the timing chain and its tensioner. The new timing chain is manufactured in Germany and of heavy duty specification; coincidently "J&E Engineering Services" uses the same manufacturer for their Jaguar road and race engine builds. The timing chain tensioner is a bespoke hydraulic type, using a billet aluminium body again used in their Jaguar engine builds and is suitable for full race use – good enough for Jaguar race engines, good enough for Eric !! The tensioner needed a slight modification to be suitable for the Daimler engine and this was duly carried out; of note it uses a hard wearing nylon rubbing pad to push against the chain. The original type had a cast steel body and a rubber pad which could wear prematurely and although the original was nicely made with good quality control in manufacture, the now readily available after market type is very poor. For example, the rubber pad will wear out very quickly and it can even de-laminate from its bonded steel backing. That of course is not a good situation !! The rubbing pad in Eric's tensioner is of a single piece, thus eradicating the possibility of de-lamination and falling apart. Daimler V8 engines that Jonathan rebuilds, will have this advanced style tensioner along with the heavy duty chain fitted. Having fitted the crankshaft and camshaft chain wheels along with the chain and tensioner, the modified timing chain cover (detailed in Part 5) could be fitted in full.

After that, the sump with baffle plate removed was thoroughly cleaned by vapour blasting and then reassembled prior to fitting to the block. To complete the sump refitting task, a Triumph TR6 magnetic sump plug (5/8"UNF) was substituted for the Daimler standard non-magnetic item. The opportunity was also taken to fit the Flexolite oil filter conversion kit (Ref: FA026) to the block, which allows the use of a spin-on filter instead of the bowl type element.

Before signing off this month, I thought I'd include a photo of DLOC member David Tattersall's 1951 Daimler Consort parked outside J&E Engineering Services. The engine has done approximately 137K miles and is pencilled in for a full rebuild towards the end of this year. David will certainly be in excellent hands and when the engine has been rebuilt it will, without doubt, be a work of engineering genius..... it's not all about V8's, don't you know !! Time for a cuppa !!

To be continued.....