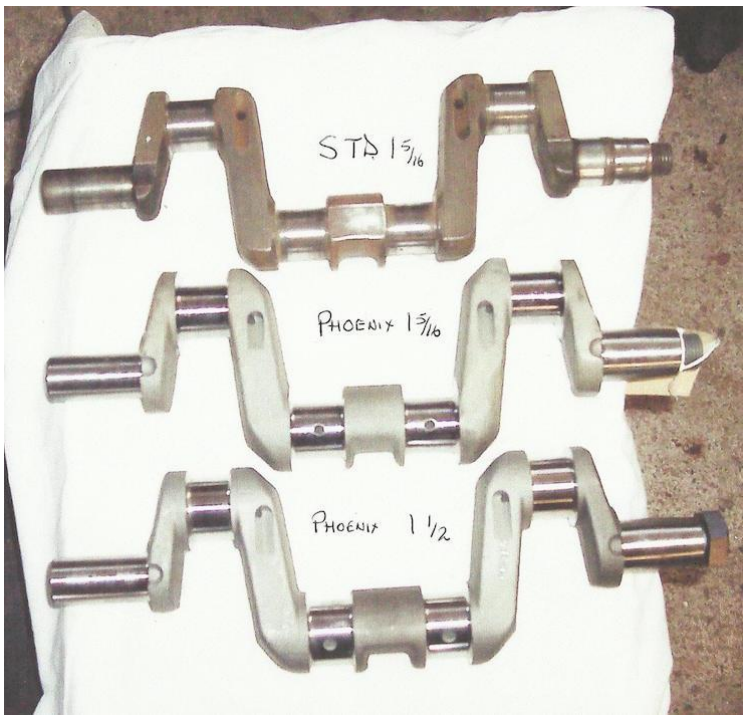
Fitting a Phoenix crankshaft

Important points to note when fitting Phoenix splash feed crankshafts …..

The oil feed holes to the big end journals are further inboard and the oil catching troughs are of a different design to a standard Austin crank. Therefore, the oil jets must be angled inwards towards the centre-line of the crankshaft by approximately 20 degrees to ensure the big end receives an adequate supply of oil, otherwise a premature failure can result.

On the standard crank, the oil troughs are semi-circular and as standard the jet of oil hits approximately 3/16" - 1/4" outboard of the oil hole in the crank and flows down the trough to the oil hole, thence to the big end journal. At higher revs however, the oil will tend to be thrown by centrifugal force away from the oil hole, thus reducing the oil flow to the big end. This was recognised years ago by 750 racers who bent their jets inwards to overcome the problem. Austin also realised this on later 3 bearing engines and angled the jets in the crankcase.

The design of the Phoenix crank oil troughs is far better with a slope to the oil hole and a vertical end to the trough to prevent oil centrifuging away from the hole. The oilway from the hole to the big end journal is also angled so centrifugal force aids the flow to the big end journal.



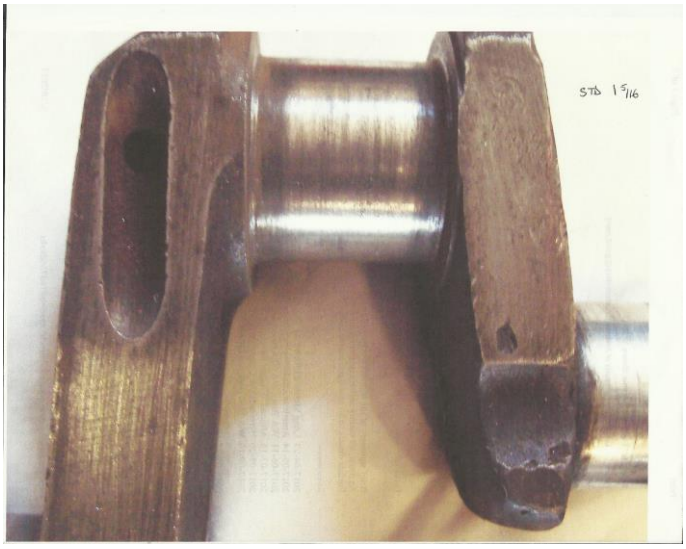
To bend the jets inwards, I use a piece of copper tube that fits over the jets and insert a Bowden cable from below that is a good fit in the jet to prevent kinking. Great care must be taken as the oil jets are brittle and could snap off,

I also overbore my oil pumps and use slightly oversize jets (Editor's note – an article on A7 oil pumps is expected in the January Crankhandle)

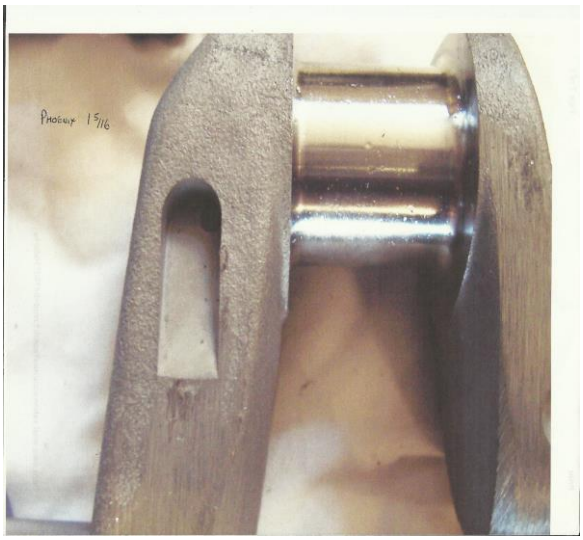
The jet modification means a flexible wire has to be used to clean the jets as a solid wire will not pass through the bent jet.

Reference to pages 252 and 253 of the Austin Seven Companion is worthwhile.

Recent conversations with a gentleman who has had big end failure with a Phoenix crank indicate there is not enough oil mist flying around the crankcase to adequately be caught by the troughs to effectively lubricate the big ends, thus aligning the jets is vital.



Standard Austin crank showing oil trough



Phoenix crank showing oil collection trough

Above are pictures of Phoenix and standard $1^{5}/_{16}$" A7 crank's showing the different oil collection trough design. As a point of interest, I believe both sizes of Phoenix crank journals are machined from the same forging, only the big end diameter and width are different.

…… Ray

Another possible cause of premature big-end bearing failure might perhaps be the tendency for white metal firms to give their bearings a very small one or two thou longitudinal clearance on the crankpin. Doug Woodrow suggests a generous sounding $^{1}/_{16}$" clearance that would surely improve big-end lubrication. I would be most interested to hear the views of our members on this subject.

Maybe the real answer is a pressure fed crank and I have heard a rumour that one of our members is currently building a pressure-fed engine. So, watch this space ……. Ed