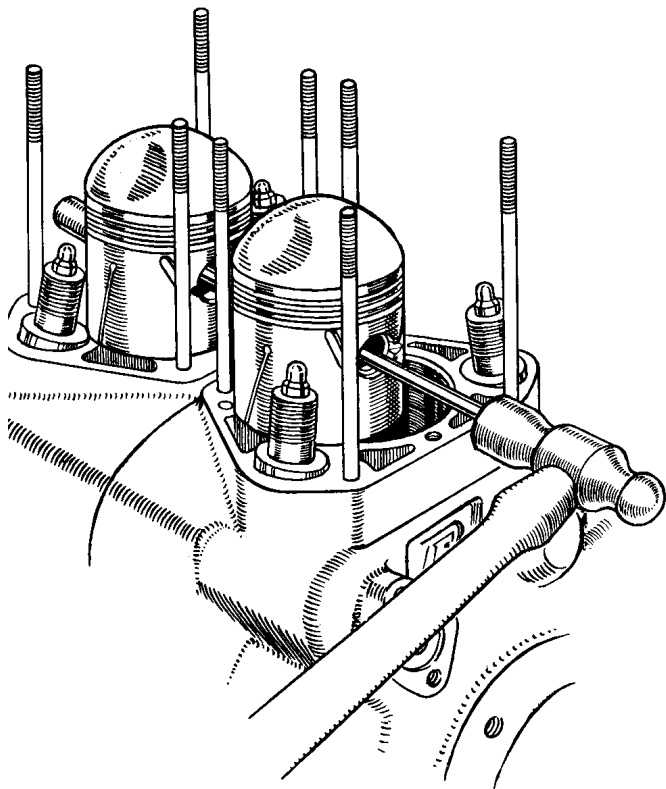


33. Removal of Pistons

Remove the cylinder heads and cylinders.

With a tang of a file remove the two outer circlips retaining the gudgeon pins. Remove the long central cylinder studs which come opposite the gudgeon pins.



REMOVAL OF PISTONS

Fig. 8

Use Special Tool No. E.5477/T to extract the gudgeon pin or using a rod about $\frac{1}{4}$ in. in diameter insert this right through one gudgeon pin and drive the other pin out of its piston, supporting the connecting rod substantially meanwhile to prevent distortion.

Having lifted the first piston away, the other one may be readily removed in the same manner. Mark the pistons and gudgeon pins so that they go back into the same pistons the same way round and so that the pistons go back into the same barrels the same way round.

Take care not to drop the gudgeon pin circlip into the crankcase. A clean cloth should be put over the mouths of the crankcase to prevent this.

34. Decarbonising

Having removed the cylinder heads as described in Subsection 27, scrape away all carbon, bearing in mind that you are dealing with aluminium which is easily damaged. Scrape gently and avoid

scoring the combustion chamber or the valve seats which are of austenitic iron shrunk into the head. Be careful while performing this work not to injure the joint faces which bed down on to the head gaskets.

Do not, in any circumstances, use caustic soda or potash for the removal of carbon from aluminium alloy.

Scrape away all carbon from the valve heads and beneath the heads, being very careful not to cause any damage to the valve faces.

If the piston rings are removed the grooves should be cleaned out and new rings fitted. For cleaning the grooves, a piece of discarded ring thrust into a wooden handle and filed to a chisel point is a useful tool.

If the piston ring gaps exceed $\frac{1}{16}$ in. when the rings are in position in the barrel, new rings should be fitted. The correct gap for new rings is .015—.020 in. The gap should be measured in the least worn part of the cylinder, which will be found to be the extreme top or bottom of the bore.

While the cylinders and pistons are not in position on the engine, cover the crankcase with a clean cloth to prevent the ingress of dust and dirt of all kinds. Do not, of course, attempt to scrape the carbon from the pistons when the mouths of the crankcase are open.

35. Grinding-in Valves

To grind a valve, smear the seating with a little grinding-in compound, place a light, short coil spring over the valve stem and beneath the head, insert the valve into its appropriate guide, press it on to the seat using a tool with a suction cup and with a backwards and forwards rotary motion, grind it on to its seat. Alternatively, a tool which pulls on the valve stem can be used. Frequently lift the valve and move it round so that an even and true seating is obtained. If no light spring is available, the lifting will have to be done by hand. Continue grinding until a bright ring is visible on both valve and seating.

The faces and seats of the exhaust valves are cut at 45 degrees but the profiles of the inlet valves are of a special streamlined design which eliminates pockets and sharp edges and allows a smooth flow of gas without eddies.

If the inlet valves or their seats are pitted and require re-cutting, care must be taken to reproduce the correct profile as shown in Fig. 9.

The cylinder heads should preferably be returned to the Works for the inlet valve seats to be re-cut but, if this is not possible, a special tool consisting of an arbor No. T.2053 and cutter No. T.2054 is available. Great care must be exercised in using this tool as it is located off the valve guides and these may be damaged if suitable apparatus is not employed.