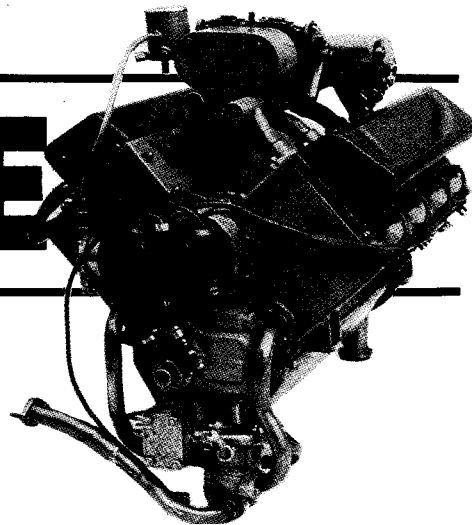


# V8 ENGINE



**Roy Amsbury describes and details the building of a 120cc V8 i.c. engine which he developed for use with his 5 in. gauge Hymek locomotive. The engine could well have other traction applications** *Part III, from page 634*

*So far in this series the Author has discussed the fabrication of various items, including the crankcase, crankshaft, cylinders and casting and machining the pistons. This time we have a fairly short instalment; dealing with the making of the piston rings, both compression and scraper, and finishing off the piston assembly with the gudgeon pins.*

*The next instalment will deal with the making of the camshaft, possibly the most complex item in the whole fabrication. The somewhat complicated operations for this item will be dealt with in one issue.*

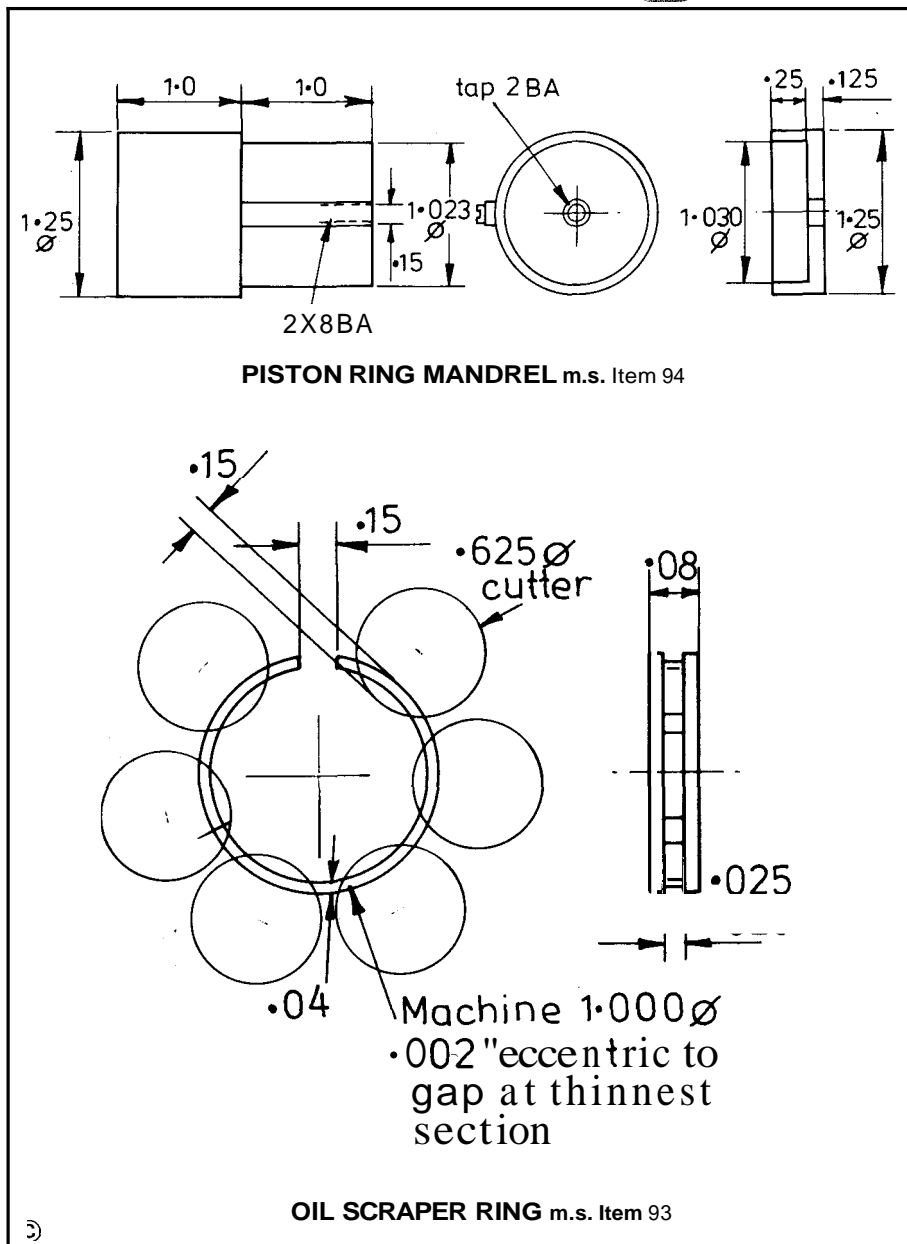
## Piston Rings - Compression

The compression rings are fairly simple to make. Turn a tube of Meehanite or similar good grade cast iron to the cylinder bore diameter, then set 0.003 in. eccentric and bore the **I.D.** to 0.08 in. less than the O.D. Part off about 12 rings 0.001 in. wider than the ring groove tool tip. These should now be gently rubbed on a true oil stone until the rings are a nice sliding fit in the grooves with no play. The rings can now be split by forcing down a tapered mandrel until they break - at one point! and the ends cleaned up.

A mandrel is now required, Item 94 and the rings can all be placed on this, the spacer holding them at the correct gap, and they are then lightly clamped by the end cap. This is now heated to a nice red heat and allowed to cool slowly. When cool the rings can be removed, when they will have set to the spacer width or nearly so. The O.D. of the rings can now be lapped to fit the bore by putting them inside an aluminium lap charged with fine grinding paste and running them round by a thin strip of steel in the gap. Lapping can be stopped when the oxide is polished off all the way round.

## The Scraper Rings

The scraper rings are a bit more difficult to make. Start manufacture as for the compression rings, but do not split them. Put a 0.025 in. wide groove in the centre of the width of each about 0.02 in. deep. Clamp the bunch up on a loosely fitting mandrel which is liberally coated with Loctite 601 and clamp up with the end cap. Give the Loctite time to go off and then mount the assembly under a slitting saw about 5/8 in.



dia. by 0.025 in. wide so that the cutter can be plunged into the centre of each ring in turn for about 0.15 in. deep. This is done 6 times around the circumference. The rings can now be slit by running the assembly axially under a 0.02 in. slitting saw. They can then be removed from the mandrel by removing the clamp screw and heating the assembly until the Loctite is destroyed. The set of rings can now be put on to the

mandrel, Item 94, clamped up and heated as for the compression rings. These rings should then be lapped to fit the bore as before.

## Gudgeon Pins

The gudgeon pins are a simple turning job, they should be made from mild steel, case hardened and fitted with aluminium end caps.

**To be continued**