

Hercules Engine News



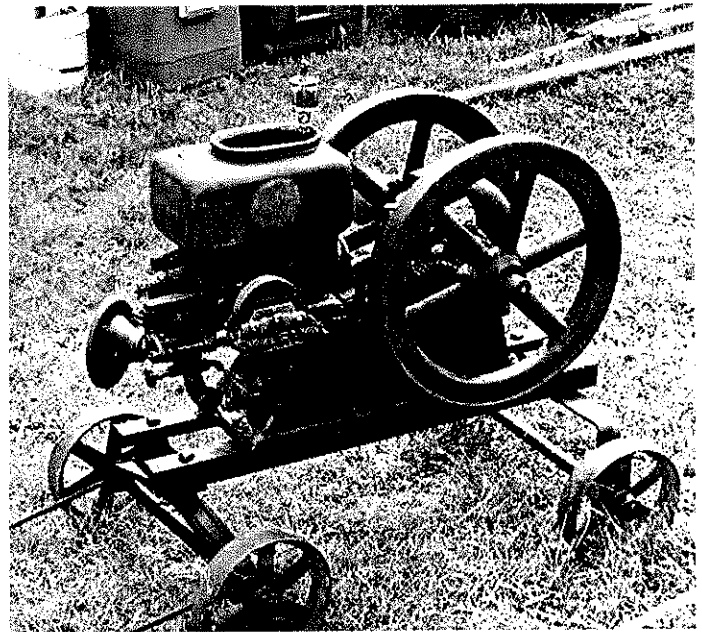
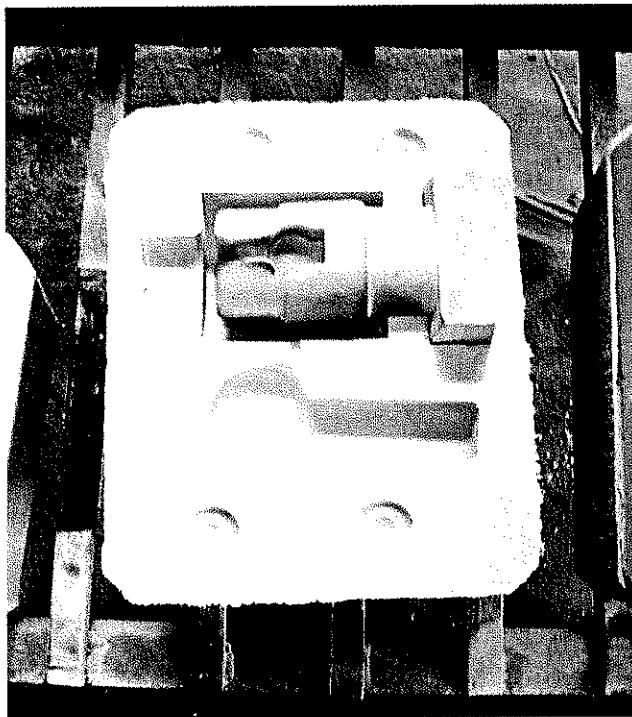
By Glenn Karch *Oversized Piston*

Editor's note: *This issue we are pleased to have guest writer Curt Holland filling in for Glenn Karch, sharing some new-found methods for making over-sized pistons. Enjoy!*

Low on compression? As an avid reader of the Stationary Engine List (www.atis.net), one of the topics that has really captured my attention through the years has been boring and sleeving engines to correct a worn or pitted bore. There are several Internet pictures of small engines that were overzealously bored and sleeved resulting in a weakened block. When returned to service, the cylinder blew off the base. Luckily there were no injuries other than hurt feelings.

A couple years ago, my wife, Missy, bought a very nice, original 1-1/2 HP Hercules Model E. Once cleaned and running again, we discovered significant blowby that would push most of the oil out of the oiler, all over the engine and into the water hopper. Learning from the lessons of others, we immediately eliminated the option of sleeving the cylinder. That left us needing an oversized piston.

Industrial experience has shown that flame spraying has some adhesion issues, so we decided the best



Above: The old Hercules in factory fresh condition.

overall plan was to make a pattern and machine a new piston to fit the slightly oversized bore.

Pattern making is beyond the scope of this article, but after making a good mechanical drawing and several weeks of woodworking, a pattern was ready for the foundry. I turned to fellow Stationary Engine List member Rick Rowlands for the castings. Rick is doing some high quality casting work for the old iron hobby, and the proceeds for his work are being used to fund the new museum that is home to the Tod Engine (www.todengine.org). Rick cast several piston blanks, and I must say, these are the best looking castings I've ever seen.

As with any part being machined, the most important step is the setup. In castings with cores, it is nearly impossible to keep the core from shifting slightly when pouring. When setting up to machine a piston, the most important step is to get the inside of the piston, specifically the area under the rings, running true with the lathe center.

The pattern was made with a chucking button on the crown end allowing the skirt end to be open to easily indicate inside. This also allowed the entire outside to be turned in one step, and at the same time allowed the skirt end to be finished.

Left: Casting the piston.

Clockwise from top: The pattern was made with a chucking button on the crown end, allowing the skirt end to be open to easily indicate the inside.

The chucking button also allows for the entire outside to be turned in one step.

The three ring grooves being turned, cut at 0.20 inches wide, the same width as the parting tool.

Wrist pin fitted to piston and rod.

Three ring grooves have been turned, and since custom rings were being made anyway, the ring grooves were cut 0.20 inches wide, the same width as the parting tool.

The last remaining step was to set it up in a Bridgeport boring mill and bore the wrist pin hole.

Now that the warm weather is here, it's time to reassemble the engine. She'll be as good as the day she rolled out of the factory.

- Contact Rick Rowlands for casting other parts: (330) 728-2799; works@todengine.org

Contact Curt for Hercules piston information: (704) 853-2992; curt@imc-group.com

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