MAKING THE THERMOSTAT HOUSINGS

The original Thermostat Housings were, apparently not made of the most long lasting material and over the years there has been a tendency for the thermostat fittings to corrode in the barrel and burst through the side.

Now we have found ourselves in the situation that no more housings seem to be available and a Naylor without one would be a problem.

It was decided to see how many club members would be interested in stumping up some cash to put one into their personal stock and see if it would pay to go into limited production.

The result surprised us all because no less than fifty members responded to the request for the ninety pounds,

Now to get them made.

The originals were die cast which is fine if you want to make a lot. Whilst the tool is very expensive the unit cost is cheap and no machining is necessary, this would not work with only 50. Bob Gale kindly investigated lost wax casting which can produce a nice article but is not as cheap as sand casting. Although with sand casting machining would be necessary it seemed that sand casting was the way to go.

For sand casting we would need a set of patterns and this is a very skilled and sadly dying art as now most is done with the aid of computers. We also needed a casting company and as we have to have an accurate finish of the parts where the thermostat fits and the unit enters the cylinder head, a company to machine the castings.

Ferreting around on the web and with a few phone calls I found a really helpful Casting company in Belvedere who had a tame pattern maker in Charlton and then I discussed the machining with another company in Kemsing that had the necessary CNC machinery.

With the plan set up Dave Lewis started the fund raising and soon we were ready to light the wick.

Dave Lewis produced the original to copy (1) and it was interesting to find that this was in fact distorted and would not accept the gauge we made to check our finished units!

The patterns (2) were produced by the man in Charlton and really are a work of art. Designed in two halves with four identical units per mould they have to take into account the shrinkage that occurs in the process when the metal cools You can just see where the raised parts make the galleries for the hot metal to run to each unit. The two small patterns on the right make the cores that form the inside of the units including the restriction in the smaller water outlet. One is shown resting in position in picture (3). To produce the mould a frame is placed on the pattern and filled with sand. It is then compacted and inverted so the pattern can be removed from the top. A quantity of pairs of top and bottom moulds are made then clamped together with cores in place and filled with molten metal, as shown on the back cover of this issue. Four items are then removed from each pair of moulds when the metal cools and then separated from the feed galleries producing four items like picture (4).

In order to do the machining of the inside and the top where the cap fits it is necessary to make a fixture to hold the units in an exact position (5). This task took longer than the machining of the articles themselves because the CNC machining centre (6) has automatic tool changing and performs at lightning speed. When machined we have allowed for a thicker wall than before and with the better material it should be more robust.

Having machined the inner dimensions the next task was to machine the part that enters the cylinder head with the 'O' ring groove and at the same time put in the slot for the attachment bolt. This is set at an angle to the top and needed another fixture . Finally they were 'rumbled' to remove any sharp edges.

Boxes of the right size were then obtained, 'O' rings were purchased and Dave Lewis set about the packing and posting to the astute new owners.

David Parkin

Naylor News


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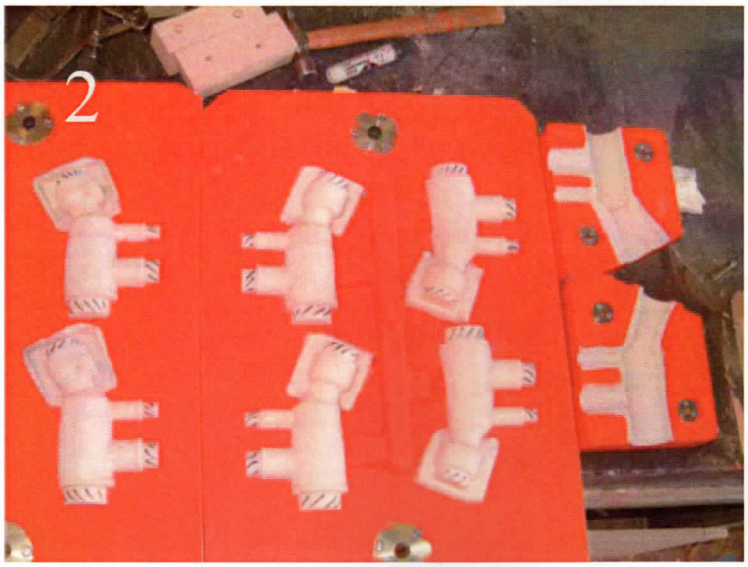
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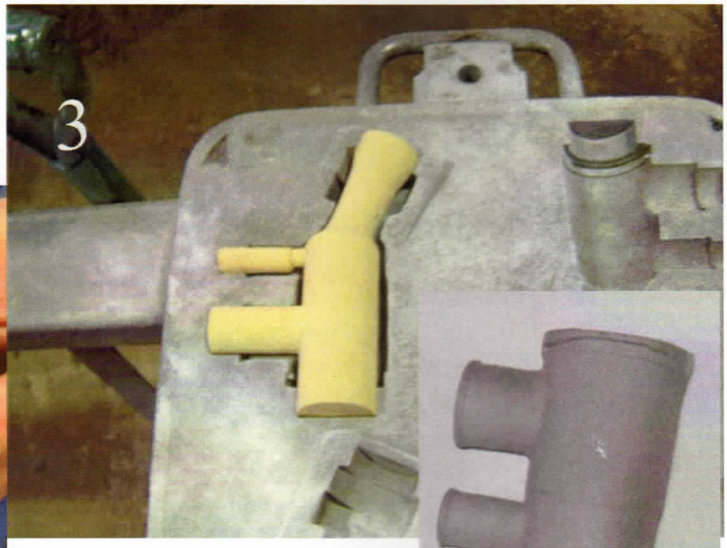
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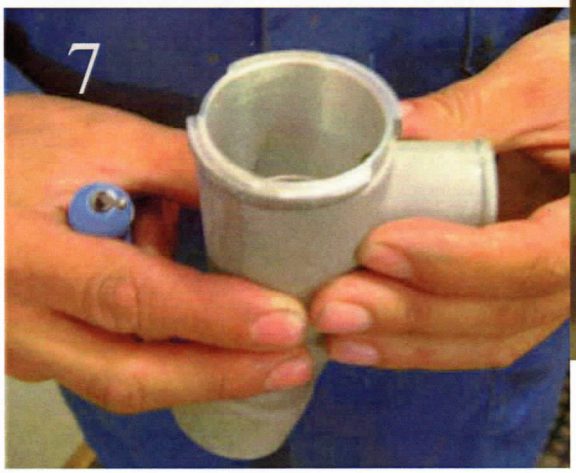
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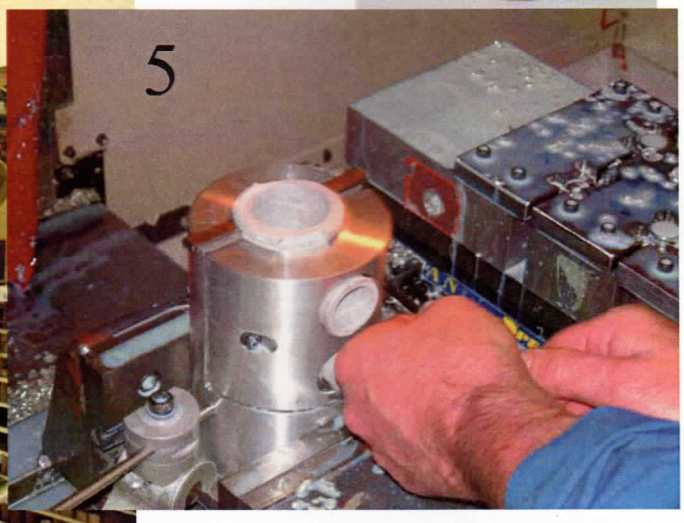
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