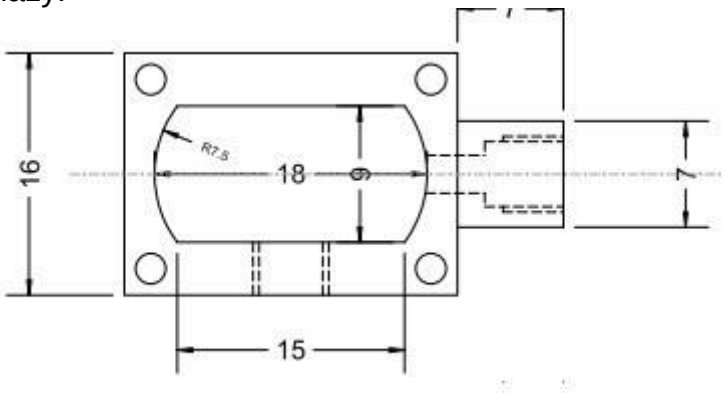
WILD ROSE 3

It's been a busy week, and the cylinder assemblies have provided some interesting machining challenges!

First was the valve chests. These went well enough, though the specified internal radius at the ends of the cavity was changed to a rectangular cut-out with rounded corners so that a 1/4" end mill could be used. I can't think of a way to machine the drawing shape.....please tell me if you can! I guess it was hand filed, but the chest is of 10mm thick brass and I'm lazy!



The valve (GM), drive clamp, gland screw (PB) and cover plate were straightforward enough and generally followed the drawings.

Fixing studs were made from long M2 stainless steel screws with the heads cut off. Why is this approach only a quarter of the price of M2 studding? Interestingly the original Wild Rose 2 drawings in the "16mm Today" magazine (1), many years ago, indicated that these studs should be made from decapitated 10BA screws for exactly the same reason!

The port blocks were next. Again, straightforward, with care to locate the ports accurately. The ports are circular in this design, so just drilled holes, located in the mill. The cylinders are soft soldered to the port blocks so I added a couple of locating pins to the cylinder side of the block to assist with alignment, not being at all confident that I could achieve a neat alignment without!

Then on to the cylinders. As expected, reaming the bore did not give me the quality of finish that I desired. That first cylinder was sawn in half and used subsequently for machining jigs. A casting would not have been as versatile as this bar stock, and would have been more expensive too!

So boring was the direction to go. With the aid of a go/no-go gauge, the first cylinder bored to a good finish and accurate size. It needed to be reasonably accurately sized and smooth finish as I want to use silicone O-rings on the pistons. However, when I removed it from the chuck, the other end was undersize!

After a brew (thinking time!) a check with a test bar and DTI showed the Myford headstock to be misaligned to the extent of 40 microns in 50mm(2). Off with the headstock, and I found a very small flake of paint at the rear of the headstock locating "V"(3) . Removing that flake and reassembling gave me a reading of 2 microns in 50mm(4). Pretty impressive! I wonder if the current Far Eastern lathes achieve that sort of alignment?

That little flake of paint must have been there since we moved here in 2006 (possibly before) and the taper had not been noticed previously, maybe because I normally align the topslide to cut parallel and seldom use the saddle travel as I had on this occasion to get the smoothest bore.

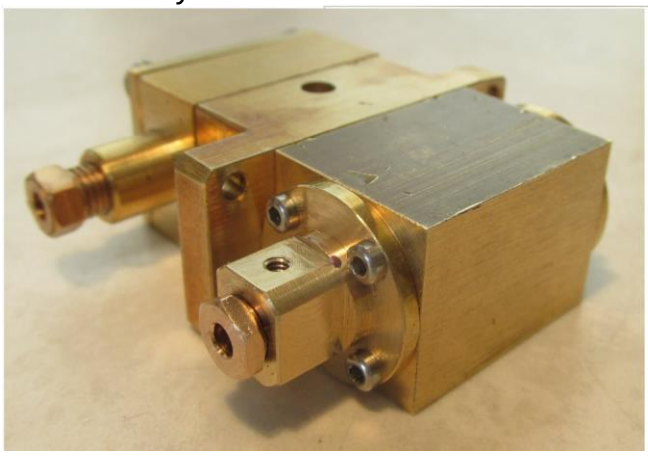
A test bore worked fine, as did the second cylinder bore. The first cylinder was lapped out successfully to fit the gauge at both ends.

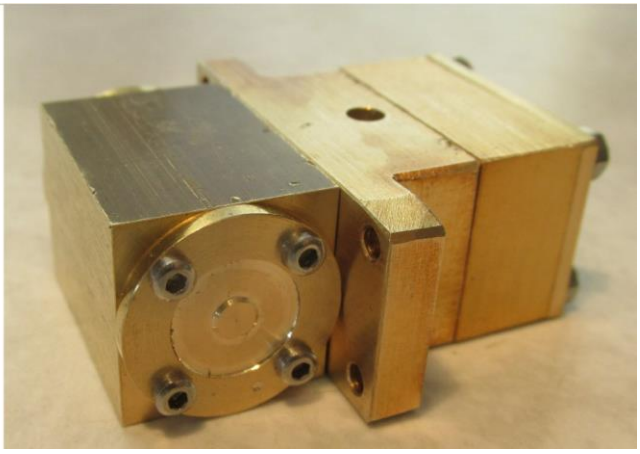
The “scrap” reamed half cylinders were machined into a hole locating jig (drilled tapping size) for the cylinder and cover holes, and a holding fixture (drilled from that jig and tapped) for machining the covers. The square bar stock made easy work of aligning the screw holes correctly, the holes being placed accurately on the diagonals by scribing equally from the edges (the drawn bar had been checked for accuracy/squareness and tweaked by a hand-operated metal-disintegrator[5] as necessary)

The covers themselves were easy machining tasks undertaken on the Unimat 3 used in lathe mode and later in mill mode just for the rear covers. All four cover registers turned to a comfortable push fit in their cylinders. Its nice to sit at the table with the Unimat after standing all day at the Myford!

For the cover fixing screws I made my “usual” change from 10BA to M2 without thinking too much about it, and here another issue arose. The threads of M2 screws are a little larger (17%) than 10BA but the heads are much larger (34%) and while the threads fitted well enough, the heads overhung the covers and looked a trifle odd. I wonder why metric screws generally seem to have considerably larger heads than their imperial equivalents?

A better choice would undoubtedly have been M1.6 in this case, but I had by now drilled the covers and drilled and tapped the cylinders! So I decided to try turning down the heads of the M2 screws. I machined several styles of screw and button heads were my final choice. When reduced to 2.9mm diameter (10BA screws are normally that size while M1.6 are nominally 3.2mm diameter) they looked like small cap-heads but I judged that they still offered an adequate securing area. Thanks to the jig, the cover holes were left at 2.0mm drill size, the screws fitting quite freely. I hope you will agree the screws look fine on the cylinders.





The cylinders are 10mm bore x 13mm stroke. The outside corners of the cylinders still need rounding off in my pictures.

At this stage I am intending to “park” the Wild Rose project as the Club that I was going to run at has revised their plan to put down the 32mm track first on their new garden railway as a result of a donation of a large amount of 45mm track. It may now be a year or two before they add the 32mm gauge. That's two clubs now where I am waiting for the “right of way” to run!

Having completed my overhaul of Conway (well, mostly!) and got it ticketed so that I can run, my attention can turn to one of my part built projects, Steve Eaton's NG 0-4-2 loco Toby in 2½” gauge. Maybe LeedsSMEE will consider adding this gauge when they rebuild their track, as Southport MEC did this year? If not, there are 2½” tracks available at York, Hull, Brighouse, Chesterfield and Tingley in the local area!

My recently refurbished Conway

Stan Holloway with his Toby

References:

(1) “16mm Today” issues 48 to 51, 53 and 54. The Association of 16mm NG Modellers.
(2) About 1.6 thou in 2 inches (1 micron ~ 0.04 thou and 1mm ~ 40 thou).
(3) My Myford is an S10 (aligned to my clock-making interests), not the ubiquitous ML7.
(4) A “tenth” in 2½ inches.
(5) A file.....LBSCs humour!