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## “LBSC Speedy construction”

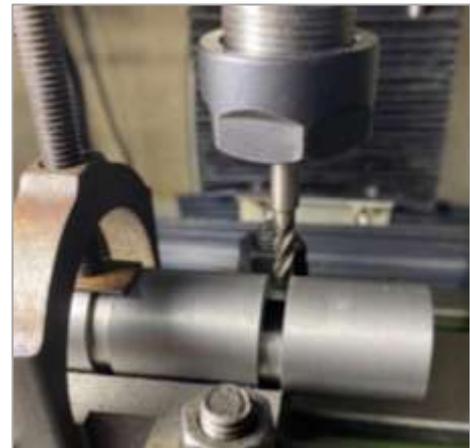
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This all came about when I placed a ‘5” Gauge Project - Wanted’ advert on the club notice board. Leigh subsequently advised that he had a friend who had an ‘LBSC Speedy’ looking for a new home. The Speedy had been started many years ago with no recent progress. Some negotiations took place and Leigh very kindly collected the loco so that I could view it and get the opinion of the club’s expertise. Sadly, the initial consensus wasn’t great, but the price reflected the condition. So, a decision needed to be made and I like a challenge.



The boiler had been progressed a long way, but the construction methods would not meet current regulations and it also had number of major issues....

A lot of work had been done to the chassis and running gear too, and the quality of the engineering seemed to be ok. In addition, there were still several castings yet to machine and a full set of drawings was included too. The price being asked seemed very fair even with the boiler being excluded from the equation. So, the deal was done.



My first job was to dismantle everything to find out exactly what I had purchased. With a bit of effort, I managed to get it all cleaned up and gave it a coat of primer to tidy things up! With this done it looked a much more viable project!

My initial aim was to try and get the chassis to a stage where I could run it on air. With the club’s guidance and support with material and loan of tools that I did not have, I made a start on trying to complete the first cylinder. Pistons were made and I tried my hand at making piston rings too. There’s a lot to learn in this hobby but I’m thoroughly enjoying the experience. I moved on to making piston glands, valves and valve liner.



It was at this stage that I learnt that Kevan had a sheet of copper for sale that would be sufficient to make a new Speedy boiler. I was a bit hesitant not having made anything like that before, but with some encouragement from the club and the realisation that this was the most cost-effective route, I decided to give it a go! Since purchasing the copper, with Kevan and Glenns help I have now

reached this stage of the boiler build. Fortunately, some of the old boiler parts can be re-used and what can't be used will be scrapped to provide funds for the project.

The image of the smokebox tubeplate shows the set of blue acorns/bullets that I designed in Fusion 360 and printed on my 3D printer! It took a few attempts at getting the sizing correct but once that was sorted it was just a case of pressing the print button! These devices fit in the end of the boiler tubes and help to align the tubes with the holes in the tube plate when You're installing the tube plate.

I'm now working on the backhead sorting out the bushes and getting it ready for soldering!



The first job was the barrel. Kevan kindly arranged for his son to draw a template in CAD, based on the plan dimensions. This was printed on paper and carefully transferred onto white card which was used to draw around on the copper sheet. (I allowed an extra 1/2" around all sides as a safety margin). I then had some fun with a jigsaw cutting out the barrel. This exercise killed my old jigsaw

Next is boiler build

With the barrel cut out, a morning was spent with Kevan and Glenn annealing and rolling the copper sheet into a barrel shape. I'm glad I had Kevan and Glenn's help here as it was quite a job. It's a tapered barrel and so rolling it into shape and ensuring that the ends aligned meant quite a few goes at it! Still after much sweat and toil we had a barrel! Glenn trimmed the edge to ensure that the smoke box tube plate (being re-used from the scrap boiler) was a good fit at the front. Kevan placed a monster jubilee clip around the barrel to hold it all in shape.

The next task required a trip to 'Horsham Forge' when they welded the seam. The guidance I had was that this would be a better solution to soldering in a butt strip. Now the next tricky job was to trim the front and back of the barrel. The barrel was currently a perfect cone shape but the requirement for the loco was that the bottom edge of the barrel lay flat with front and back cut perpendicular to this lower edge. I really struggled to mark this out but again Glenn and Kevan stepped in to help and with a bit of fiddling with multiple set squares we managed to get it marked out. Glenn then carefully trimmed the ends with a disc cutter.

Needing a set of boiler formers, I contacted Model Engineers Laser who cut me a set at what seemed a very reasonable price. With the edges all nicely rounded I tried my hand at forming the throat plate, backhead, firebox tube plate and fire hole plate. I was quite pleased with the results. I drilled and bored the firebox tube plate for the boiler tube holes on the mill. I planned to turn a step into each of the tube ends to stop them from dropping through the tube plate during soldering. I

managed to complete the 26 x 3/16" tubes but unfortunately the 5 x 3/4" tubes were too large for my lathe, so Kevin completed these for me on his Harrison!

Next job was to make the firebox wrapper. I photocopied the firebox plan multiple times and cut these out for sticking to a sheet of ply. Each was then cut out with a jigsaw, and they were all clamped and glued together to create loaf of bread shaped former. The copper sheet, annealed multiple times, was cut and formed around the former. Although the result was acceptable and would not be seen I was a little disappointed with some of the dings left in the copper even though I had used a raw hide Thor to do the shaping. Will try something different when I come to the outer wrapper as this will be visible.



Having bought a silver soldering starter kit I was keen to have a go, so decided to make the firehole ring and cut out the oval hole in the firebox plate. A step was turned in the ring and good fit in the hole was achieved once it had been squashed in the vice to the plan shape. The excess material that protruded through the hole was peened over. With everything scrupulously clean and with flux applied I had a go..... first problem was that the solder balled up and would not flow.... It wasn't going very well but when I increased the heat further all of a sudden, the solder flowed and was looking much better. With it pickled and an inspection by the boiler team executed, they confirmed that it had been successful!

With the tubes ready I was keen to get to a stage where the boiler was starting to take shape. Kevan advised me to use the front tube plate as a steady when soldering the tubes at the firebox end, I would need to make some acorns to help align the tubes when positioning the tubeplate over the tubes, as you will have read in part one of this series.

With the firebox wrapper, tubeplate and tubes all nicely assembled in a clamp that Kevan loaned me, and with a quantity of solder rings, another visit was made to the 'Ayling Boiler' shop for the next stage! With Glenn and Kevan's help we heated the assembly up and soldered it all together! The result was very pleasing, but I was glad to have the experts on hand.

That's all for now but my attention has been turned to making up the backhead, its fittings and bushes!

Hi everyone, a small update on my Speedy project! I've spent time progressing the backhead. Fortunately the regulator that came with the original project looked to be in good order so my plan was try and reuse it. Sadly the old backhead wasn't salvagable. Some of the bushes had been poorly soldered with gaps being left. Also we were unsure about the bush material that had been used so it was decided than a new backhead would be made.

Kevan kindly provided me with some 4mm sheet copper and with my former previously purchased I set about cutting and bashing the copper into shape. I was pleased with the results!



I chose to buy the water gauge, blower valve, injector steam valve, drain valves and clacks. My building time is limited and I'd like to get the loco up and running sooner rather than later, so this seemed the best way forward (I'll try my hand at making these next time round 😊, promise).

Whilst buying the fittings I found that I could also buy many of the bushes too at a very reasonable price. The blower valve and injector steam valve chosen were of flanged fixing type rather than  $\frac{1}{4}$  x 40 screw in. This required me to make some special bushes to stand these off the backhead with enough material for the 3x fixing screws to be screwed in. The bush for the regulator was a little bit of a challenge. Using the dimensions from the bush in the old backhead I made a new one in bronze. Using the regulator as a pattern I marked and drilled the 6x fixing holes. It was then that I realized that I probably should have left the holes blind so that when the bush was soldered into the backhead the threads wouldn't draw up the silver solder.

We had some discussions around this problem at the club. There were a number of ideas, make a new bush, use tipex when soldering or fit studs rather than screws. Geoff Bashall kindly provided some 5ba SS studding (which I must replace...), so my plan is to make 6x studs and screw these in before soldering and if they do end up being non-removal, no problem.



Keeping my fingers crossed that this works out!

I've been making quite a bit of progress on the cylinders too, but will save that for next time! I had planned to try and get the cylinders finished over Xmas; they progressed a fair bit but I got side tracked on a Stuart S50 that I started probably 15+ years ago.....

When I started it I had just bought my first lathe; a Myford ML7. I knew almost nothing about how to go about construction of the little engine, so it was a very steep learning curve with lots of mistakes.

I didn't fully understand the use of the dial micrometers and so almost all machining was by sight to scribed lines rather than measured distances.

Looking at some of the parts I had made over the years, with the information and knowledge I have gained through the club since my membership began made me realise that I could do a better job so I set about remaking many of the parts.

Still, its looking a lot better now and is close to being finished. I have a small Stuart boiler (minus its burner) that I plan to use to try and run it! I also have a governor kit to make! Once complete I will bring it to the club.

