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3 1/2" gauge A3 Boiler Rebuild

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After the club had a stand at the Tendring Hundred show, I decided to re boiler my 3 1/2" gauge A3 that I built in 1968. The old boiler was hard work when driving the loco as all the water went into the back head, this pulled the boiler pressure down to around 50 psi, and by the time the pressure was back up to 80 psi, the boiler needed more water.

I got the old boiler drawing out to see how it could be improved. Using the old boiler measurements, I then started to re-draw the boiler. Looking at the old cladding, the back head could be made wider, so I put the old boiler back in the frames and took some measurements with the reach rod in place. It looked like the back head could be three quarters of an inch wider and three eighths wider on the throat plate. The new boiler was drawn up using these dimensions, a combustion chamber was added. When looking at the front tube plate I noticed that the bottom row of tubes had a large space either side of the existing tubes, so redrawing the front tube plate I was able to get two extra tubes in the new boiler. With the drawing finished, I checked my copper stock and found a length of 3/8" tube just long enough for the front part of the boiler and sheet copper for the tapered section and inner fire box and the back head, all I had to purchase was a piece of sheet for the outer firebox plate.

The new boiler was progressing well with all the boiler shell soldered and the inner firebox and tubes done, when along came this dam covid-19 and a lock down, which meant I could not get the boiler finished. So, my attention turned to the chassis, re bushing all the coupling rods and con rods along with all the valve gear bushes. Then I re made the steam inlet to give a curved inlet tube to the centre cylinder, instead of a straight tube as on the Clarkson's drawings. Now to alter the exhaust tubes to give a nice, curved exit from the cylinders. The next job was to remake the cab reverser to the correct profile; this is an upright reverser with the column moved over from the cab side, whereas on Clarkson's it was close to the cab side, which made it hard to operate. After this, my next job was to start on new boiler fittings, two water gauges were made, two banjo clack valves left and right hand to put the water over the inner firebox, along with a new regulator. This was a scaled down version of a slide valve regulator as fitted to Brian Upson's A4, that he emailed a drawing to me. The lockdown was lifted so I could now get the boiler completed and tested with cert for the shell test. Now I could make the new brass cladding and some more fittings for the boiler. A manifold had to be made to fit the curve of the boiler top, to clear the underside of the cab roof. We then went back in another lockdown and the A3 is ready for painting, but with the weather wet and damp it is not good for this job, so will have to wait for warmer weather

