

## The ups and downs of buying a model steam locomotive. Part 6: The boiler repairs begin - Roger Stephen

Having devised a viable plan to repair the crown staying of my Princess Marina boiler I began to get cold feet and thought maybe I should really just replace the boiler. "View Models", a dealer in steam models, had three part built Princess Marinas for sale on their website. I thought buying one of these might be a cheap way of getting a new boiler and some other spares so I rang the proprietor, Robin West. He was very helpful and far from trying to sell me one of his models he actually encouraged me to try to repair my boiler! He said people were far too quick to scrap damaged boilers and that in many cases a bit of careful thought could lead to a perfectly safe and acceptable repair. He thought my proposal to put in some rod stays sounded OK and, as I had nothing to lose, must be worth a try. So that was it: decision made - I would try to repair my boiler. The hard part would be the silver soldering which would require an oxyacetylene torch to get enough heat inside the firebox without the risk of melting other joints on the boiler. But where could I get access to that?

Enter Ian Ferguson and his model engineering evening classes at Marlborough School, St Albans. To call them classes is a misnomer: basically the engineering facilities are there at your disposal and you can just get on with whatever you need to do, with help and advice available from Ian as necessary. Ian had the oxyacetylene torch and everything else I needed. He was keen to help with my mad-cap plans and not afraid to risk poking the nozzle of the oxy torch inside my firebox (the consequences of the gas mixture igniting inside the nozzle are rather scary!). So the repair was on. Next job was to make the bits and prepare the boiler.

Back at home I set to making my bronze rod stays and a new bronze regulator bush on my lathe, the 4BA bronze screws having been bought from a model engineering supplier. The stays had a small head on one end (so as not to pull through the firebox crown) and a 2BA thread on the other to screw into the outer wrapper. Drilling down into my boiler was straightforward and, fortunately, the drill went exactly where I wanted it to and it did not hit anything important (like cross and longitudinal stays) on the way through! I put a tap through the holes in the top of the boiler then turned it over and opened out the holes inside the firebox to clearance size and drilled and



*The view inside the firebox. The ten new rod stays are easily visible with the four 4BA screws down the middle (not in a straight line to hit the centre Tee girder stay flanges).*

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tapped the holes in the centre girder stay for the 4BA screws. I did not like the small flange on LBSC's regulator bush so I made mine with a wider flange and with nice deep blind holes to mount the regulator. Cutting away the original regulator bush on the boiler was a bit of a game: basically a manual process of filing and carving it down using my mini-drill with a dentists burr in the chuck. It was slow and fiddly but not difficult. Time to see Ian Ferguson.

Ian was very welcoming and having gone over exactly what I wanted to do we dropped the boiler in the acid pickle to clean it up (I had already gone over the areas to be soldered with abrasive paper but the acid would clean everything properly - and descale the inside at the same time!). David Saunders looked in, partly out of curiosity and partly to satisfy himself that we were doing it properly. He was happy so I screwed the new stays and the screws into place inside the firebox and we proceeded. After just two very enjoyable evenings we had ten rod stays, four bronze screws, a new regulator bush and two rear boiler support pegs securely silver soldered in place. So far so good, but I was not out of the woods yet: as it still had to pass a hydraulic test and then I had to put the loco back together and pass a steam test.

I decided to start by plugging all the boiler bushes, etc, and doing a quick hydraulic test using the tender hand pump. However, Guy Ellerby said I would learn a lot, and more easily, if I connected a bicycle pump to it, put the boiler in a big bath of water (not the domestic bath upstairs!) and gave it a few strokes to put some air in it - only a few strokes mind, we don't want any dangerous explosions! That way you can see where it leaks because bubbles of air come out. He was right, it was easy to see where the leaks were - they were absolutely everywhere! Here we go again!

The new rod stays and regulator bush were perfect: it was everywhere else that I had not touched that now leaked. Some of the firebox side stays were weeping and the blind nipples



*The top of the boiler with the new rod stays neatly soldered in and filed almost flush. The new regulator bush has a nice wide flange and a good fillet of solder all round the outside. The main repair is done but now there are lots of leaks to seal!*

of the longitudinal stays were leaking big time. I suspected this was mainly the effect of some good long soaks in the acid pickle dissolving some scale and jointing compound that had previously made a good seal. Anyway, another trip to Ian Ferguson's evening class improved most of the leaks, and I silver soldered some bronze screws in the cladding screw holes, but that still left a few leaks and the blind nipples. Now how do I deal with those?

*(to be continued)*