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## Mabel a 7 1/4inch Wren Engine

This document was written by Rob Hitchcock and was originally published by Plymouth Miniature Steam and republished by the FMES in the July 2023 Newsletter



They say that everyone succumbs to a momentary period of insanity in their life, mine occurred in 2022 when I purchased a dilapidated and elderly 7 1/4" Kerr Stuart "Wren" which obviously needed a lot of work. The engine had originally belonged to a public school and was used on their own railway within the grounds, it had some minor rust associated with the platerwork and a water tender which is sat upon to drive the locomotive, it appeared to be minus the internal tank. The tender was not the original and had ride height and suspension issues. The engine was well used although despite its age, the boiler appeared sound apart from a known water leak from the regulator outlet joint in the smokebox. There was a certificate with the boiler, but I would not like to leave myself open to legal action by discussing it. I intend to recertify the boiler before public running such that this issue becomes redundant, hopefully I will not find any other major issues. There was no superheater on this engine although there were two large flues containing restrictor spirals in the boiler to accommodate one, I think this was an option from Swann's original design as I seem to remember "Hernias" first boiler having the same arrangement.

The wheels were several millimetres under the design diameter which although shows some wear would be serviceable but need some attention in the future. It appeared as though the engine has had a mixture of inexpert maintenance together with some good work which had not been finished, for example the boiler is held up by copper brackets on the boiler and should rest on manufactured metal spacers to level the boiler rather than two pieces of firewood wedged in.



The capable looking boiler hand pump was seized up and much of the pipework needs attention, I also discovered much later that the safety valves were in danger of blowing out due to slackness in the threads, curiously the threaded holes were correct in size, but the valve body threads look as though they had been manufactured more than .020" undersize. I have a scheme to remedy this but have not yet done it, more later. I think you can now imagine the type and scope of the repairs to be done and I am aware I took a calculated risk in not tackling the boiler issues first rather than working on the tender, this was because if the boiler would not come up to scratch there was no way in which the engine would be a runner in 2023 anyway and without the tender, I could not run the engine on the track.



The tender also took quite a lot of refurbishment. When examined closely each buffer beam was only held on by four 2BA bolts in shear. I had to reinforce the suspension, buffer beams and frames, also replace and increase all the brass 2BA bolts and nuts with steel, make four new couplings and two new spring buffers, also repaint and provide a new seat. Most of this is now complete apart from the painting of the plating and the seat. One of the most interesting tasks was the couplings, I had already decided that as this engine had been commercially built there were several items that did not strictly conform to the original design intent which in this case would have required a fabricated hook and chain restraint, I decided not to be too pedantic and make a nonstandard pin type drawbar capable of adapting to varying height stock, this was made from 6mm plate and designed to be interlocking from laser cut parts, it is remarkable how well and precisely laser cut parts fit without much fettling. The parts were all tig welded and retained by six 6mm bolts providing a very strong attachment. For the buffer heads I used a similar technique and rather than turn down 3" diameter bar, used laser cut discs welded to the buffer piston. I mentioned earlier that the tender did not appear to have an internal tank, I had assumed that at some time it had one but it is possible that it held water without, indicated by an excess of rusty bits. If it was designed to have no internal tank it must have been a very leaky one. I decided to fabricate a new 1.5mm thick stainless internal tank, which will sit on a new 2mm thick laser cut deck, the tank has a bottom outlet and a filler neck under the seat. This has been completed and seems to be about 15

litres capacity. while I was making the bottom outlet, I incorporated a mesh strainer which can be pulled out through the top filler for cleaning.

Having wrestled the engine with assistance onto a trailer to bring it home I began to realise that this is not an engine one can manhandle very easily, and having had a slipped disc last year (not related) decided that I had to design and build a handling system to move "Mabel" from home to track etc. this now consists of a rail bridge from my hydraulic lift onto the trailer which will have a set of rails on a board in the trailer bottom so that the engine can be fixed down for transportation. I will also need to modify the trailer with additional lashing points and legs. I have just finished testing a new "Steaming up" blower which I made from kind donations of various bits and pieces namely a metal tumble drier fan casing and a 1960's car heater motor. I also made a coal shovel and poker to suit the firebox hole. (See photos.) I hope to let you have some more detail in part 2. in which I will start to look at the boiler, having already rebuilt the handpump and made new mounting spacers and sourced some stainless plate to make a new ashpan. On purchase I knew there was a water leak around the top steam outlet to the cylinders this may be just a gasket issue caused by a lack of clamping force as the number and size of bolts holding it down appear inadequate, or it could be something more sinister. I have yet to expose and understand the regulator design, which is vastly different to the original, consisting it would appear of a screw down conical valve and seat. I am hoping the regulator "bullet" is not seating on the outside part of the steam outlet in the smokebox as this will put the regulator screw down forces in competition with the bolts holding the outlet, it would then be fairly obvious why the leak is occurring. Anyway, more later when I can make time.

