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“Old Rube restoration part 25”

This document was written by Paul Naylor in autumn 2026 and is the twenty fifth article in a restoration project. The articles were published more or less simultaneously in the Frimley and Ascot Locomotive Society newsletter.

Now that the brake air system seems to work (at least prior to linking up the cylinders), I can contemplate sending the tender off to be grit blasted and powder coated. I have promised it to a local company in a few weeks and they will blast it, advise me of any issues (such as rust holes to repair!), and then powder coat it. In the meantime, I have turned my attention to the bogies – or more specifically one to start with, hopefully simply to duplicate with the other in due course.

These run freely, the wheels and bearings have minimal wear, the brakes are free and work by hand but the paint is somewhat scabby. While sleeping on whether I strip the lot for ‘proper’ repainting, or just clean them up assembled and paint in blemishes, I have taken the brake cylinder off for inspection as this has to work properly.

As I mentioned earlier, these appear to be car drum brake cylinders but operated with air pressure. The photo shows one in situ: when pressurised, the two ends are forced out, engaging with the brake beams that then apply the brakes. These ends ‘float’ so there is no force on the cylinder itself (and small differences in brake position are taken up too). I have already unscrewed the pipe union and applied WD40 elsewhere to make it easier to disassemble. I approached this with some trepidation since my experience with car rear drum brakes include dealing with a rusted lump, unions that shear or round off when unscrewed and pitted and stuck pistons... why would this be



any different? In fact, it all came apart really easily, and reminded me how elegant and simple these are. When disassembled and cleaned up, it was obvious that there were no problems (apart from a slightly cracked rubber end cover), and even the lip seals internally were fine. The photo shows the working bits, with a 2BA stud in the cylinder to hold

it to the chassis (it only has to support its weight). It also shows cast in markings that led to an interesting 30 minutes with the web browser (and AI helped here too) to try to find the origin. Eventually, I narrowed it down to a



standard rear drum brake cylinder of around 1980 for, amongst other things, an Astra Mark 1. If I believe AI, then I can get a repair kit for these for £10 or so, and I will decide about this when I deal with the other cylinder, as all I really need so far is a single rubber end cover. The cylinders have been externally modified however: the bleed valve hole has been blocked up, some lumps and bits machined off the outside and the mounting stud added. The assembly photo shows the result of the examination (including the blocked hole etc). The pipe (a standard car brake pipe) had a simple pushed on and jubilee clipped hose for air supply, and that might have to do as the pipe threads through a small hole in the chassis that a fitting would be too large for: watch this space.

Well, I 'slept on the bogies' and decided that since the rest of the engine is nice and shiny, and the tender as a whole will be too, the bogies had better put in an improved appearance. One by one, I stripped the wheelsets off them (four bolts each through the bogie chassis, the springing is on the central bolster) and turned the (slight) wear away as for the loco wheels. Degreasing and painting these was straightforward and a repeat of the loco front bogie. I could not face however stripping the otherwise satisfactory bogie frames further, so these were degreased again, wire brushed and painted as an assembly: this was obviously done before as the joint surfaces I exposed were bare metal. One improvement I did make was to arrange a tension spring between the brake beams, so that when the air was released, the beams were pulled together. I used a relatively low spring rate here to avoid reducing the brake force too much. The pistons are 0.8" so at 100 psi the brake force is around 50 lbs (23 kgf), low compared to 400 lbs or more when in a car hydraulic application. My reason for this is that if the beams stayed right out with the brake blocks rubbing on the wheels and the cylinder retracted fully, the buttons that engaged with the cylinder ends could separate from them and maybe get out of place for the next brake application: the spring pulls the beams into the cylinder. A refinement I also then had to add was a stop to prevent the beams 'seesawing' around the brake cylinder causing the blocks to rub on the wheels at one side when off. The photo right shows the bottom view of one bogie with the brake arrangement, the 'stop' is as yet unpainted. The photo left shows one finished and reassembled bogie. Interestingly, one wheel on one axle had a taper pin through it like the front loco driver, but by the time I noticed it, I had forgotten whether it was the 'front left' wheel like the loco since the bogies are essentially reversible: the wheel was not loose though in this case.



both bogies, including the lip seals as they came with them (Pre 1967 MGBs had the same size and the MG Owners Club have a very good parts supply!). One of the wheel sets on this second bogie had a back-to-back flange measurement that was too small, so I skimmed 0.02" off each wheel back to make it fit the gauge.



For the record, the axle ends were fitted with roller bearings supplied with grease through nipples, and these were unworn and fine. One of the axlebox covers had a glued in stud/nut that, when I came to replace it, I found the hole in the axlebox had a broken tap in it, so the replacement is cosmetic (stud rivetted to the cover on the inside) and not functional.

Other parts of the tender just really needed a tidy up, including the water outlets from the tank, water valves, the buffers and the coupling block. I stripped the paint from them, etch primed and used satin black spray for these bits. More can wait until the tender is back from the powder coaters, hopefully not requiring any drilling of holes and other such work as I have also been over

the tender and made some new holes here and there for the fixing of new bits prior to coating. I have also researched whether I should add a rubber coat to the inside over the powder coat: although this is thought to be a good protective layer, getting it to stick to the powder coat might be hard and I don't want to scuff up the new surface to make a key! Maybe that is in reserve for later.

Whilst the tender is off being grit blasted and painted, I started to hunt through the box of miscellaneous boiler fittings. These are brass coloured, however they show no signs of porosity through leaching and so are possibly gunmetal or bronze. I have stripped most of them down (no seized threads!), checked them over and burnished them. Most were painted with heavy black paint that I will not replace. The only repairs/changes I had to make were to replace some of the O ring seals and to replace two 3/8" plastic – nylon probably – balls in the two clacks that mount on the boiler. I found some 316 stainless steel balls for this: I have tried plastic before and they often stuck in the seats much more tenaciously than metal ones. In fact, the clack bodies show many scars each where they have probably been tapped to free the balls! The new balls required the seats to be re-reamed and cut a little deeper, and this meant lengthening the adjustment screws that limit ball lift. The pipes to these clacks have four bolt flanges on them (for looks) but the space to fit the nuts is minute and they are not easy to remove to poke the balls free if the kettle of hot water does not work. I will keep the flanges but probably add a compression fitting on them to allow easy removal for poking. The photo shows the fittings dealt with so far, just the safety valves and whistle to go. The regulator will come (hopefully) with the boiler. Clockwise from top: the two clacks, water gauge fittings (0.29"/7.38mm diameter glass), two injectors (defurred with descalant but not dismantled), centre left is the (tested but uncalibrated/checked) pressure gauge and the rest are various valves for steam control. I imagine I will find one or two items missing when I come to reassemble it all: I am not going to tackle the spaghetti of piping with some connectors and other bits attached until I need to.



The safety valves seemed fine and I simply stripped and cleaned them. I found a 'valve spanner' in the pile of bits: another item for the box on the chassis front. The whistle is a large shiny three tone 'chime' whistle (at least, it has three chambers) with a sprung valve for the operating chain going to the cab. I had to replace the internal spring (as it was rusty) with a stainless steel one and an 'O' ring. There is one mystery object: this is a largish brass and copper closed end cylinder with a pipe thread on the end. The only thing I can think about (assuming it is part of the loco) is that it is a bung for a boiler hole, maybe to allow initial filling with water for a hose as there doesn't seem to be other arrangements for this in the pile of bits. Or it replaces something for boiler testing (like the whistle) but it doesn't have any removeable bits in spite of appearances to add a pressure connection. This is not conclusive though because initial filling could be via a blowdown valve yet to be supplied with the boiler: I expect I will find out in due course. The photo shows the remaining boiler bits.

