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## “Old Rube restoration part 15”

This document was written by Paul Naylor in winter 2025/26 and is the eighth article in a restoration project. The articles were published more or less simultaneously in the Frimley and Ascot Locomotive Society newsletter.

The weather is getting colder and paint is being applied and drying on the chassis, so I have been pondering next steps and looking for smallish jobs to help progress along.

The tender is a large and necessary future step that can be done before the new boiler arrives, so although there is lots to do (when the paint eventually hardens) by way of re-assembly of the chassis, I need to think about this as a forthcoming activity. It will certainly take up some room when it is disassembled as it appears to be a large welded up steel box on a frame with bogies and other bits bolted on, mainly onto the underside. It is also rusty (but not, it seems, to have holes) and has had a load of old steam oil (yes, treacle) spilled all over the top to make a sticky pool the size of the tender top and about 3mm deep. The many bolts securing an access hatch to the water space are seized in and I dare say that the water space is rusty too. It is probably all heading for a commercial shot blasters and powder coaters when stripped of its components. When I get this activity under way, I will write it up with photos, but not yet. I will focus on removing as much off the topside (including the treacle) as I can first so it can ‘easily’ be inverted without damaging anything.

On the buffer beam at the rear is a nice mahogany lockable (no key though!) box. I thought that this would be an easy to remove piece to refurbish and looked to see how it was held on. Three bolts and nuts did the job, and one had already been removed. The other two are *really* rusty and seized and the bolts are about 30mm longer and rusty (underneath) than they needed to be. Getting something to the somewhat inaccessible nuts



is very hard, so I decided to use a small hole saw that just fitted round the bolt heads and cut



out a circle of box bottom round each to get it out. As you can see from the photo, this increased the refurbishment necessary! I will need to sand it all down, mend the holes I made and revarnish it. I probably won't make a new key (it is a standard bureau top type lock that are simple to make with

a little experimenting) as it is not really necessary and will be first to get lost again. I will cut the bolts with a cutting disc when I come to ‘do’ the tender. Sanding it got rid of many dents and other marks and a coat of standard oil-based satin varnish to seal it (that took ages to dry), followed by more rubbing down and two coats of fine gloss varnish to make it attractive.

Duly finished, with wood plugs filling up the holes in the bottom... set it aside for later fitting, using the



same holes as before: I will drill these in the new wood on reassembly, maybe only two though.

Taking advantage of some warmer (and wetter, but that is OK inside!) weather during January, I was able to think about rebuilding the chassis more or less in the reverse order I took it apart. One benefit of refurbishing parts as you remove them is that you end up with a nice pile of finished bits that I know fit – apart from new items – and assembly is very satisfying.



Starting with the rear axle and progressing to the front, it all went well. I greased all fittings as I replaced them, and used copper grease on bolts that I don't want to seize in the holes (again). Here and there I added stainless steel washers to protect paintwork, especially on some bolts that had to retain some movement, such as those securing the spring hangers in place. New split pins were used where required, and I made sure that everything moved freely as I went. After a couple of days of reassembly, I had an upside-down chassis with the springs, hangers and wheels in place, the eccentric sheaves refitted and the bogie fitted along with its new side control. On this last item, the bolt fixing the rose joint to the bogie frame was a right \*\*\*\*\* to fit as I did not have a long Allen wrench and had to fiddle the bolt home a flat at a time before the Loctite 270 I used to stop it coming



loose went off. The result can be seen in the photos, including the side control arrangement now installed. The side

control springs return the bogie to centre line if pushed over, and the resistance (ie the force



assisting the curve) seems about right by feel. I remembered to polish up the rear cylinder covers before fitting the front wheel set while I could get at them all round.

Now that the wheels are in place, I can measure up the gauge allowances for going round bends. Needless to say, the actual slack in each axle sideways movement is not as much as the addition of measurements would suggest, possibly owing to paint thicknesses etc that will wear through in use and 'bed in'. The actual situation is that the first and fourth axles have around 1mm of allowance sideways. The third does not matter as it is flangeless, leaving the driving axle. I used a straight length of square section steel (however with sharp corners) placed 'naturally' against the root of the flanges of the first and the fourth wheel sets when pushed to the right (chassis upside-down) as far as they comfortably want to go, and then pushed the driving axle over to the left. Placing the 'rail' so it sat up to the flange (actually the root of flange radius), I could then measure the allowance at the driving axle. The photo is a little hard to see owing to the camera depth of field



required but it shows the method. The second photo shows the gap between 'rail' and flange at the driving wheel: it is around 2.5mm. To complete the picture at least for the loco, the flange root to flange root on all flanged wheel sets is 182mm (7.16"), so the total allowance on a rail of 7.25" gauge is a further 2mm - since this is *all* wheelsets, I can double it for this calculation (I am using the formula I presented in article 9 for this). This means that without gauge widening on the track itself round curves, the loco will go round curves down to 20m – unfortunately not quite as low as the 18m of the track 'at base'. Given I do not want to thin the flanges more, and there is nothing I can do about the sideways movement, I need around 0.5mm gauge widening on an 18m curve to go round easily. I suspect that the track has this amount of wear at present, let



alone deliberate widening, so I live in hope. I have some 'back pocket' allowances too that I have not included:

- The track also has a flange edge radius rather than the sharp edged 'rail' I used so will sit more snugly into the wheel flanges, probably another 1mm of allowance at least.
- The wheelsets will 'bed in' with a little use when they settle in, maybe another 0.5mm.

- The driving axle is not exactly in the middle of the flanged wheel sets (it is 275mm from the front axle, not halfway – 357mm) and this makes the calculation a little conservative (but I gave up trying to calculate by how much).

The final check was the bogie side play with the new side control springs. Using the rail as before, the bogie moves 15mm either way from the centre line before the springs fitted bind. Exactly what I calculated was required for 18m curves (not including widening etc), so good enough to try it but maybe new purpose made springs with less coils will be required eventually.

I always was a 'half-full' rather than 'half empty' sort of person, so I am going to press on and hope. If this doesn't work, I will just have to restrict running to larger radius tracks....