



West Wiltshire Society of Model Engineers Newsletter

Issue No. 7 June/July 2019



Calendar

June

28th & 29th – 5” Ground Level Track Working Days 12pm-4pm (28th) & 9:30am-4pm (29th).

July

6th - Saturday Steam Up. 10am-4pm
7th – Open Day at WWSME club. 1pm-4pm
13th & 14th – Portable 5” Track at Market Lavington Vintage Meet. 11am-4pm
20th - Saturday Steam Up. 10am-4pm

August

3rd - Saturday Steam Up. 10am-4pm
4th – Portable 5” Track at Wessex Country Fair. 11am-4pm
10th – Portable 5” Track at Seend Fete. 11am-4pm
17th - Saturday Steam Up. 10am-4pm
24th – Portable 5” Track at White Horse Music Festival. 11am-4pm
26th – Portable 5” Track at Corsley Show. 11am-4pm



News

Public Open Days

The Family Day on Sunday 2nd June was a success with a large number of visitors to the club despite the rain. There were visitors of all ages enjoying train rides which at times were rather wet and the clubhouse offered warmth, dry, tea, cake and even a tombola in the afternoon for those sheltering from the weather.

There was a guest appearance from Dan Jones with his recently re-built Aveling & Porter steam roller on its first outing to the club. As well as getting his steam roller finished Dan has also found the time to write the ‘Roller Rebuild’ articles which have been appearing in the newsletter for us.



The next club open day is on Sunday 7th July so please contact Michelle Richardson if you are able to volunteer on the day. The open days are a great way to promote our club, raise funds and have an enjoyable day in the process.

Summer Events & Fetes

As you can see from the calendar the club has a busy schedule over the summer months attending the various events and fetes with the 5” portable track giving train rides. These are an enjoyable way to share with people what our club does and raise funds.

Volunteers are needed so if you are able to help please add your name to the sheets for each event in the clubhouse.



5” Ground Level Track Working Days

A working day was held on Saturday 8th June organised by Jon Clarke and Bob Taylor to continue with laying the track bed for the 5” ground level track.



A team of around ten members spent the day building and creosoting the gravel boards, digging out the track bed, laying the gravel boards and infilling with wheelbarrow loads of gravel from the car park area.

The weather was kind to us with a cool breeze and no rain meaning some excellent progress was made and the track bed now extends all the way through the willow tunnel.



The 5" ground level track bed now goes over half way around the circumference of the 3 1/2" & 5" raised track. The aim is to have a section of ground level 5" track laid between the workshop and the tunnel exit with a spur into the passing loop by the September show hopefully enabling us to give rides.



Further working days are planned for Friday 28th (12-4pm) & Saturday 29th June (9:30am-4pm) so please contact Jon or Bob to volunteer if you are able to help for a couple of hours, all day or even both days!

Roller Rebuild (Part 4)

By Dan Jones

'Rebuilding an Aveling and Porter Steam Roller No. 11296 of 1925'

Now that the tubes and the firebox had been removed from the boiler, I could get full access to the internals of the boiler. To be able to make an assessment of the condition of the boiler and understand the work I would need to do I would first have to deep clean the plate work. On the face of things boilers are very simple and are just big glorified kettles and consequently scale builds up in much the same way. So like any kettle, it needs descaling to reveal the metal underneath. To do this job I used a pneumatic needle gun which chips away the scale and rust. I spent about 3 hours led down in the front of the boiler with the needle gun to remove all the scale in the bottom half of the barrel- the result can be seen in (fig 1).



Figure 1- View of the bottom of the barrel after needle gunning

A lot of pitting was found along the bottom of the barrel but nothing that couldn't be built up with weld and ground back flush. When I first pulled the tubes/tubeplate out, I did find a couple of rivet heads in the boiler which appeared to have dropped off the pad which connects the cylinder block to the barrel. The boiler inspector was due to visit some other engines in the yard and I asked him to look at my boiler now it was all opened up. He looked at the barrel and came to the conclusion that yes, I could keep the barrel, but I would have to replace ALL of the rivets in it AND build up all of the pitting. Alternatively I could just chop the

thing off and put in a brand new barrel which I would never have to worry about again in my lifetime. Both options would need the same amount of work, so I opted to have a new barrel. Before I knew it the cylinder block was removed and the barrel was separated from the outer wrapper (fig 2. & fig3.).



Figure 2 - Cylinder block has been removed

By this time, summer had rolled around, rally season was well underway and I was spending more and more time working on the engine. With the firebox and barrel resting in the scrap pile, I was left with just an outer wrapper to work on.



Figure 3 - Barrel removed

Interestingly, the outer wrapper is probably the most key part of a boiler to get right, because without it you physically can't build the rest of the boiler as this is your datum to work from. Again I would need to descale and clean up the internal plate work to see what work would need doing. It just so happened that I spent the hottest day of 2017 sat in the outer wrapper, wearing face mask,

glasses and ear defenders whilst needle gunning the plates. The sweat was dripping off my face onto the bare metal and boiling away!

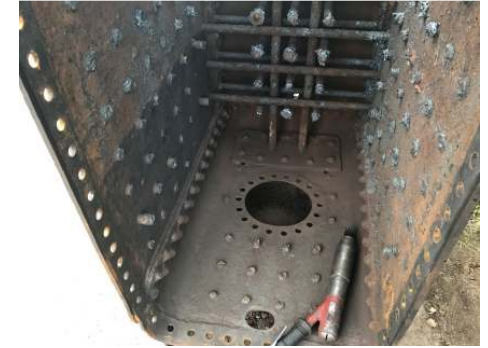


Figure 4 - Needle gunning the outer wrapper. Note the pitting at the bottom of the plate

You can see the needle gun in fig 4.- the contrast between the clean and the scaled plate can be seen clearly. As I was gunning around the old stays, some of them started to wobble out which goes to show that they were only held in with the weld on the outside of the plate (which I had spent all that time grinding off). The result of the needle gunning exposed some quite deep pitting in both hornplates, the throatplate and the backhead just above where the foundation ring sits. This is a very common place to get such deep pitting because this is where all the water/sediment build-up sits until the boiler gets washed out (which rarely happened back in the working days of the engine). After a few hours I had the throatplate, backhead and both hornplates descaled, resulting in about half a wheelbarrow of rust, scale and old stays (fig 5.).

If any of you have watched video clips of the heritage railways rebuilding their locomotive boilers, they only ever show a bit of riveting going on and dropping it back into the frames. What these videos don't seem to show is all the preparation and work that goes into the boiler before you even get to the riveting stage- the reason for this is because it takes a really really long time! So settle in because this is where the real work begins...



Figure 5 - The end product of needle gunning!

After the internals of the outer wrapper were needle gunned, I set about removing the remaining firebox stays. Normally you would see a ring on the outside of the hornplate where the old screwed stay was and you would be able to neatly centre punch the middle without being too far off, then drill the old stay out. But because my stays were all welded, you can't see a ring on the outside because the two pieces of metal (hornplate and stay) have been fused together with the weld. Without a visible ring, there's no way of finding the centre and drilling from the outside.



Figure 6 - Removing the stay tails to show the rings and enable centre punching

This meant I had to get the grinder out again and cut off all the tails of the stays on the inside of the plate where there's no weld so I can see the ring and centre punch all the stays (fig 6).

Using a magnetic base drill [mag drill], I could drill out the stays with a Ø5mm pilot-drill then

follow through with a Ø1" drill to remove the Ø1" stay material (fig 7).



Figure 7 - Stays have been pilot drilled. Note the stays which have fallen out while needle gunning

It's quite a skill trying to hold up a mag drill in the right place and activating the switch to turn on the magnetic base. It's both a feat of strength (heavy bit of kit) and flexibility (switch is on the far side of the drill- naturally!).



Figure 8 - Dave Goddard welding up the first set of holes

Originally the stays would have been 7/8" x 11tpi BSF but have since been drilled out to Ø1" and had a piece of straight bar pushed through and welded around the end. It was decided that the new threads would be 15/16" x 11tpi BSF Special, as this would open out the original screwed 7/8" stays into new material. However this did mean that the Ø1" holes were now too big and would have to be closed up. So all of the stay holes that had been drilled out to Ø1" would have to be welded up, ground back to the surface of the plate

and re-drilled to the tapping diameter for 15/16" BSF thread.

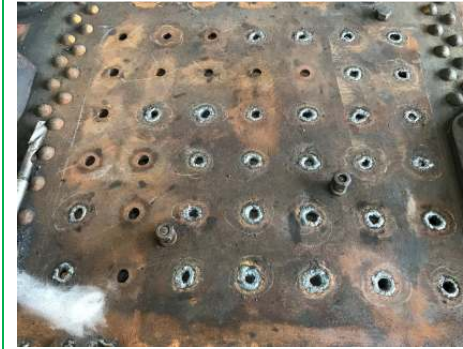


Figure 9 - Welded holes. Note the non-welded holes were still conventional 7/8" thread

The holes were welded up by Dave Goddard using an arc welder, then had the Ø13/16" drill (15/16" BSFS tapping drill) pushed through using the mag drill (fig 8. And fig 9).



Figure 10 - First practice at building up pitting using the arc welder

While the welding kit was still out I started to learn how to use it, getting some practice in by welding up the pitting inside the hornplates. The first hornplate I welded up closely resembled faecal-matter of a pigeon but by the time I had finished the second hornplate I was rather pleased with the results I was getting (fig 10. And fig 11.). There's a bit of a feel to arc welding that just takes a bit of time and practice to get used to.



Figure 11 - Much better results!

....cracks, cross stays and crown stays in Part 5!

