

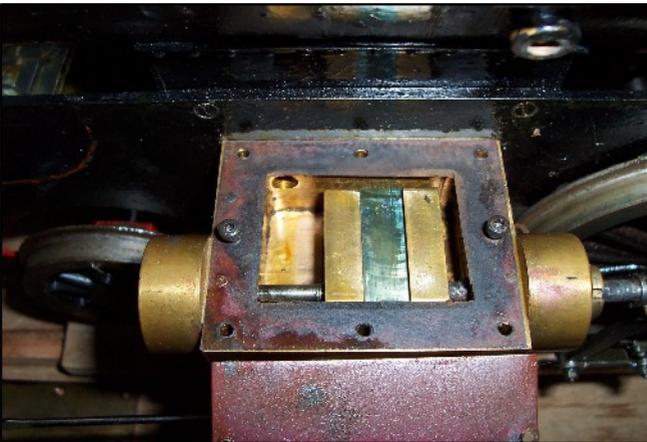
The ups and downs of buying a model steam locomotive: Part 3, More Repairs and Adjustments - Roger Stephen.

I now took off the mechanical lubricator and found that it turned perfectly freely with no oil in the reservoir but with oil it stuck at the start of each pumping stroke. I suspected it was starting the pumping stroke before the transfer port was uncovered, so the oil had nowhere to go and the piston just locked up until enough oil leaked away to allow the port to become uncovered. Using a mini-drill and dental burr I ground a tiny bit (about 0.5mm) off the side of the port so that it was uncovered sooner, and the pump then seemed to work quite smoothly and with some pressure.

I spent the rest of the day tinkering, putting LMS transfers on the tender sides and the number 2945 on the cab sides - so now she looked deceptively smart! Finally, I made a proper coupling block for the tender buffer beam and was about ready to try a proper steam-up at the track (quietly ignoring that leak from the axle pump body!).

The end of April saw both Tim Hopkins and me ready for maiden steamings of our respective locos at the Puffing Field. Both of us expected teething problems with our locomotives so rather than risk getting in other members' way at a regular session we accepted the offer of a more relaxed private steaming, with Tony Mason and David Saunders in attendance. I was the first to raise steam and it was not long before Princess Marina set off round the track and revealed the first problems: a leaking check valve and axle pumps failing to reliably feed the boiler. She also needed full throttle to keep running. However, she did at least manage some faltering circuits with much use of the tender hand pump. One of the safety valves was also sticking shut so, given the less than sparkling performance, I decided to play safe and shut down after an hour or so and before something nasty happened.

After more repairs and fettling I tried again at the next regular club puffing field day. My



repairs to the safety valve (steam tested by David Saunders), axle pumps and check valve proved successful, but she still needed plenty of throttle and kept running out of steam half way round. I decided that the problem probably lay with the valve setting because the exhaust beat in forward gear was a bit irregular and she appeared only to work on one cylinder in reverse - so there was definitely something amiss there. Besides, I couldn't think of any other logical reason!

This view shows a valve chest with the cover removed. The valve travel was insufficient to uncover the steam ports properly but at least there was plenty of steam oil in there!



The real thing. One of the same class as my 2945 'Princess Marina'. They were introduced in 1933, 40 were built and they were Stanier's first design for the LMS after he joined that company from the GWR. They were quickly superseded by the more efficient 'Black Five' 4-6-0's.

Back home I took off the front cylinder covers and opened up the valve chest covers (which required the running boards and a few other bits to be removed first). The pistons, bores and valve faces looked in good condition so I observed the valve movements as the wheels were turned. Forget what it says in books about lead and lap – in my case there was none and the left hand steam ports were barely opening in full forward gear. In reverse one port did not open at all.

Getting the valves right is going to be a bit long term because I suspect some parts need to be re-made. As a temporary measure I made one new return crank and set the valve movements so that the ports fully

opened on both sides in forward gear, but the valve lead and lap were still non-existent!

The beginning of June saw me at the track for another trial steaming. This time the Princess performed much better and completed many circuits. However, she always slowed down on the back straight and quite often stopped altogether until the boiler pressure recovered. She was also very reluctant to start moving without a push. On studying the drawings back home I have become convinced that the slide valves need to be shortened by at least $1/8^{\text{th}}$ of an inch so that the valve travel, lead and lap can all be set properly. That should give a dramatic improvement in performance but will take some time to do.

So, at the time of writing I have made good progress with the restoration of my new toy but I think I still have a long way to go before she runs properly. I will probably struggle through the rest of this season with her more or less as she is and then completely strip and re-assemble her, including a new hydraulic test of the boiler, over the winter months. That will allow me to sort out many niggling problems and get the chassis running nice and smoothly. I will also be able to get the valve gear sorted out properly.

Am I happy with my purchase? Well, to be honest, I am a bit disappointed because I had intended to buy a fully working locomotive to have fun with at the track. In spite of her having a current boiler certificate and having seen her running on compressed air before purchase, she had many faults which needed sorting out before she would run on the track. However, I have learned an enormous amount about model engineering and model steam locomotives from the exercise. I also really like the Princess Marina design and, whilst I don't think she was a bargain, I do not think I paid over the odds for her. If I can get her running properly for next year then I will be well pleased. Watch this space for the latest news of further progress towards that goal.