



P01 - Justifiably proud of his work, our Senior Machinist James Thomson has been making some great progress on cleaning and restoring the two tool stands for the wheel lathe project. The tool stand on the right is very near completion in this picture.



P02 - This is what the tool stands looked like when they were first removed from the wheel lathe house. They were rusty and worn, and their slides grooved with shavings. But thanks to their loose clearances, they hadn't seized up. They had suffered the same neglect and abuse that the lathe's gearboxes had been and they were exposed to rain.



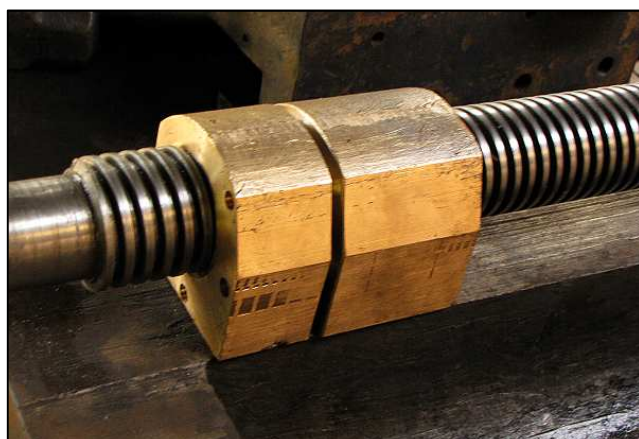
P03 - James demonstrates the one-way action of the restored chain-driven ratchet that performs the incremental traversing of the tool head while the lathe is in operation. We discovered that the pawls are engaged via weights.



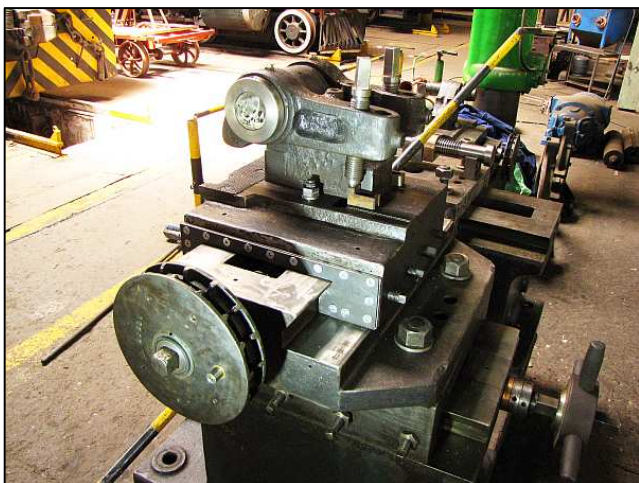
P04 - Here is the interior of one of the ratchet drives after a rough initial cleaning and you can clearly see the pawl. We could only find one of these at first, but fortunately the second one was found when cleaning out the lathe house.



P05 - These are the cleaned rocking quadrants that drive the two oscillating chains which provide an intermittent feed to the two ratchet clutches. This means the tool tower feed screws can be driven no matter how much they are moved towards the center line of the lathe. (e.g. : To turn wagon axles instead of locomotive axles.)



P06 - The worn die blocks for the traversing tables on both of the tool stands have had matching threaded extensions added to eliminate the free play. The existing blocks were kept as they have indents that engage with drive noggins for the tables.



P07 - This floodlit view shows a James modification. He has fitted close-fitting hard steel scraper plates to the tool table to help remove the shavings. On both stands, the existing slides were badly scored from unclean operation.



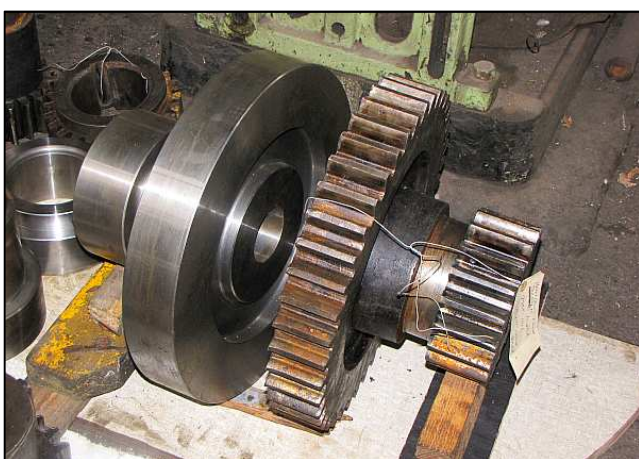
P08 - The pivoting tool heads have been refitted with brand new tangent bolts, which are used to tilt the actual cutting tools.



P09 - James has also been drilling, tapping and fitting new grease nipples in strategic locations. Although the tool stands were blatantly neglected, they weren't designed with easy lubrication in mind in the first place.



P10 - Both of the lathe's overhauled gearboxes have been test assembled and proven to be free-running in their new bearings. This, the tertiary gearbox, has had the existing worn bronze half-shell bearings all relined with Vesconite.



P11 - Each gear has been recreated from blanks (left) that were cut to the original pattern by Peter Labuscagne. Now the teeth have been cut and the gears test fitted, the individual gears need to be case hardened to 60 Rockwell to a depth of 1.5 – 2mm deep. It is estimated the job will cost about R8 000.



P12 - Lest we forget... here is a view of the wheel lathe itself. It is presently covered with a tarp and the door locked, so it is currently inaccessible. The remaining infrastructure work here will be the cleaning and safig of the motor's switch board – everything else is close on ready for installation.



P13 - By the 2nd of March the second tool tower (left) had been reassembled and the new grease nipples finished. The last fabrication work will be a pair of spoked wheels to be slipped over the square shanks of the traverser shafts.



P14 - This view shows the adjustable tapered key that is used to adjust the clearances. The slides had to be machined. You will notice an extra spacer added behind the wedge. The spoked wheel is the last one surviving.



P15 - One of the new hard steel scraper plates in the process by being fitted – using countersunk allen key machine screws. Incidentally, you can also see that the tool carriers were once painted blue over a green base.



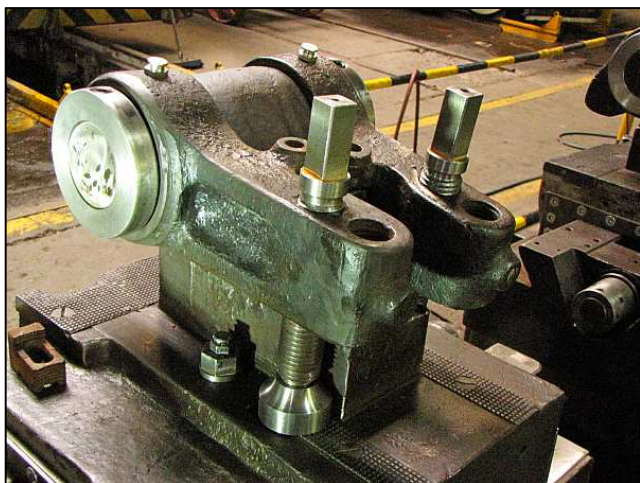
P16 - The jacking pads for the tangent bolts were originally machined double headed on circular stock. Here the two ends are being parted with a deep cut. The cut was too deep for the tool and had to be finished with a hack saw.



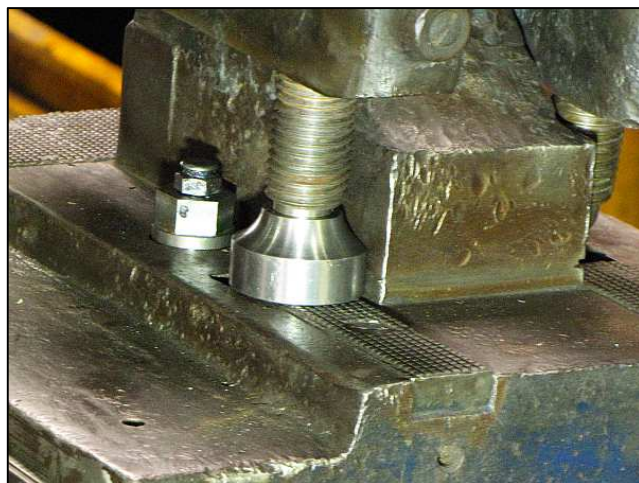
P17 - Looking like a weight lifting dumbbell, the assembly awaits final sawing to separate the two heads and then the bases to be re-machined flat again. You can see the hemispherical socket into which the tangent bolt will engage – almost like a pushrod into a tappet on an old car engine.



P18 - The leftmost pad has already had a 'flat' machined out as the diameter is too wide for installation. It was quite a sight to see that asymmetric shape whirling sideways in the lathe's chuck – but our James knows EXACTLY what he is doing!



P19 - The jacking pad is fitted into a typical position, but it is free to move along the checker bar as the slant of the tangent bolts tilts when it is adjusted. (As that forces the whole radial mounting to rotate.) The whole assembly is held together under thrust while the wheel profiles are being cut, but is still accessible for adjustment. Although it looks primitive, it is actually quite a clever design.



P20 - Here you see the improved design by James as the original bolts used to bear directly on pads laid on against the checker-bars. (We don't just fix locomotives, coaches and our machinery – we make them BETTER than new!) The cup will protect the hemispherical ends of those bolts, which provide a hinging action. The wider base will also spread the load as this assembly have to handle the thrust-reaction from the cutting operation.



P21 - This view of the closed doors emphasises the original intended purpose of the gantry crane – to transfer locomotive axles to the wheel lathe for profile correction.



P22 - The rebuilt electric motor has since been relocated and is ready for installation.



P23 - Possibly one of the oldest items we have on shed. The gantry crane's rails were rolled out in April 1894. I wonder in which main line they were originally used before they were removed and repurposed? Were they in a siding or secondary line before being used on the gantry crane?



P24 - James is finished with the wheel lathe work for a bit as the tool towers are now very nearly complete. The protective blue overalls are pigeon-poop covers rather than dust covers. James just LOVES the 15M workshop's cute pigeons and the way they roost above his workshop!