



GCR 567 Locomotive Group

Registered Charity Number 1160243

Newsletter No.32 March, 2019



No 567

From the Chairman

As we move into March and into spring it's impressive to see the progress being made on No. 567. It would have been easy to sit back after the frame construction, but no, we have a whole series and sizes of components moving through the machine shop, more close to order plus fresh sponsorship opportunities for our Supporters.

Amongst this a new image of 567 hauling vintage stock potentially in the Great War era emerges in Merseyside, reminding us of the spread of the original Great Central and the prospect of recreating such a train to run on the preserved Great Central Main Line. All your support in funding and volunteer effort to make this happen is very much appreciated. Now progress is more and more visible we hope we are repaying your trust in us that we would make this happen. The project continues to surprise us all with impressively good progress so let's continue to pull together and enjoy making this locomotive a reality!

Andrew Horrocks-Taylor

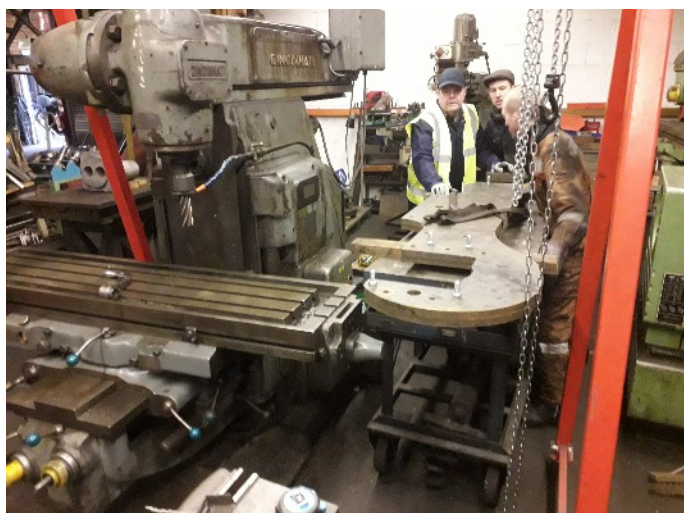
Another photograph of the original No.567 has been located. It shows the locomotive at Halewood East Junction on the Cheshire Lines heading a train from Southport Lord Street to Manchester Central. It has been fitted with a Robinson Chimney and extended cab but still retains the round topped boiler. Fitting of the extended cabs to the Class 2s commenced in 1912. No.567 was the last of the class to be fitted with a Belpaire boiler in December, 1918, which places the date of this photograph between 1912 and 1918. We are still trying to trace where No.567 was shedded during this period. If anyone has information on this it would be much appreciated. **EDDIE JOHNSON COLLECTION**



Bogie Side Plates

On the 12th January, 2019 the frame plates for No.567's bogie were set up on the Cincinnati milling machine at the Ruddington Locomotive Works. This was a very important landmark for the progress in construction of the locomotive. We have previously worked with a sub

contractor to manufacture the main locomotive frame plates for No.567 with, in that case, the twin objectives of progressing construction as quickly as practicable and to obviate the difficulty of machining and forming the plates on site at Ruddington. In the case of the bogie frame plates they are of a size that can just be accommodated on the large milling machine in the machine shop at the works and so we have taken the first steps in the manufacturing process for the bogie. The frame plates of the bogie both locate and transfer the load of the front end of the locomotive to the bogie wheels. They have accurately machined locations, the first of which were completed on



Using the lift table three volunteers at the Ruddington Locomotive Works lift the bogie side plates on to the Cincinnati milling machine on 12th January, 2019. This commenced the first stage of machining of the recesses for the hornblocks. The two plates had been bolted together to ensure they were both finished to the same size. **MIKE FAIRBURN**



On 12th January, 2019 the machining of the hornblock recesses is underway at the Ruddington Locomotive Works. **MIKE FAIRBURN**

the 12th and holes through which bolts and rivets fix the plates to the other main components of the bogie. When assembled with the centre bolster and the hornblocks and secured with rivets and bolts, the main part of the bogie will be ready for assembly with wheels. Volunteers working on the bogie will be completing the machining work, then hand finishing by grinding and finishing the profile of each plate before moving on to the removal of mill scale from the plates to prepare for primer painting.

On the same day, Ken Harrison was working on the design of the pattern equipment for the casting of the bogie hornblocks. These are the components that provide the slide location for the axleboxes. When Ken has manufactured the pattern, castings will be made by one of our sub contractors before machining in the works at Ruddington.

Mike Fairburn

A video of the machining of the bogie frame plates has been posted on the News section of the website.

Hornblocks

Following machining of the bogie frame plates, the first of the locomotive main hornblock castings was set up over the last weekend of January, 2019 and the first weekend of

At the end of January, 2019 volunteers (Left to Right) Hayden McCullagh, Adrian Howitt and Richard Meakin place the first hornblock for the main frames on the Cincinnati milling machine in preparation for proof machining. **MIKE FAIRBURN**



The first of the main frame hornblocks being proof machined at Ruddington at the beginning of February, 2019. **MIKE FAIRBURN**

February, 2019 on the Cincinnati machine and 'proof machined'. This process involved initial machining of the surfaces (but not to finished sizes), so that the quality and dimensioning of the casting supplied could be proved to be correct before finish machining to the dimensions to fit the chassis. This ensured that there were no inclusions or blow holes in the casting. The casting came through all the checks with flying colours enabling the remaining three castings to be completed by our supplier, Trefoil Steel Ltd of Tinsley, Sheffield. These three castings were delivered to Ruddington in the week beginning 18th February, 2019.

Mike Fairburn

Valve Spindle Guide

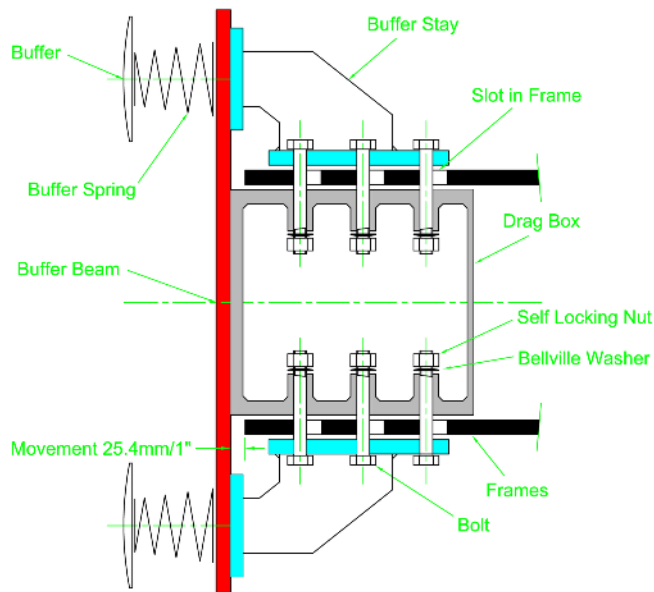
As well as the machining of the bogie side plates Ken Harrison has been busy with the first machining operations on the valve spindle guide. First to receive attention has been the oil pot lid which Ken has been able to undertake at his home facilities. Remaining procedures on the guide will require the larger machines available at the Ruddington Locomotive Works.

Vacuum Brake Cylinders

As this Newsletter was being prepared an order for the locomotive's vacuum brake cylinders was about to be placed. As there were no known suitable suppliers in the

The lid of the oil pot on the Valve Spindle Guide being machined by Ken Harrison. **KEN HARRISON**





SIMPLIFIED DIAGRAM, BUFFER BEAM AND SLIDING DRAGBOX

locomotive but the springs they used are no longer available so a “Volute” spring has had to be substituted. As part of this process an Energy Absorption Design showing how the friction between the Frames, Buffer Stays and the Dragbox is controlled by the tightness of the self locking nuts compressing the Bellville Washers. A diagram of the design by Barry is shown opposite.

At a Engineering Review Meeting in mid February, several parts were approved for manufacture mainly relating to the trailing headstock and the running plate framework. A supplier for the drawgear has been found and a letter of intent to purchase sent.

Barry Nurcombe

Machine Tools

As well as machining components and making wooden patterns for the bogie hornblocks of No.567 Ken Harrison has also been busy assessing the suitability of a Herbert capstan lathe for use by the No.567 Group. Such a lathe would be very useful for making the smaller components such as fitted bolts and pins etc. A lathe of this type is available to the group but its electric motor bearings need to be replaced. This is being undertaken by the present owner. However, in the meantime Ken has been able to ascertain that the lathe runs properly and all its functions are in working order. When the motor has been repaired final tests will take place prior to any purchase.

Sponsorship of Components

Following the delivery of the final three hornblock castings for the main frames the first round of sponsored components has now been completed. Many thanks go to the sponsors of these components and those that sponsored the frame stretcher materials. The generous support of the sponsors is very much appreciated and speeds the build of No.567.

Now attention turns to the next components to be listed for sponsorship. The items have been selected on the basis of affordability and on the basis of enhancing progress on the main frames, motion and bogie. The components are as follows:

- Rear Dragbox Fabrication 1 off @ £2,000
- Connecting Rod Big End Strap 2 off @ £1,250 each
- Bogie Hornblock Casting 8 off @ £150 each
- Bogie Frame Stretcher 2 off @ £100 each
- Bogie Hornstay 4 off @ £120 each
- Bogie Hornblock Bolts and Nuts 36 off @ £30 each

The dragbox sits just ahead of the trailing headstock at the rear of and between the main frames. It is the device that links the locomotive to the tender and through the tender to the carriages or wagons comprising the train. As such it is a crucial component as it carries the whole tractive effort of the locomotive itself. The dragbox for the new build No.567 will follow a fabricated design as opposed to the

UK the supplying company is in India so it will be some time before the cylinders arrive at Ruddington.

It is a new experience purchasing items from overseas and it is proving rather complicated. Transport has to be arranged to and from the relevant ports in India and the UK while at sea the cylinders will be a part load in a container. Then on arrival in the UK the cylinders have to pass through customs and the import duty paid. And, of course, payment to the Indian company must be made.

Design Progress

Bogie Centre Frame - Casting or Fabrication?

(A General Arrangement drawing of the bogie is shown on the News section of the website)

We now have designs for both means of manufacture so that an informed decision can be made on the best way forward. However, with the use of 'PolyPatterns' the costs of castings are now reduced. Essentially the pattern is a 3D model printed in a poly plastic material - unlike a traditional wooden pattern. This poly pattern remains in the mould and is burned out by the hot cast metal - resulting in a good quality smooth casting. For one-off complex components this looks to be the best and most cost effective method. The material of the centre frame now needs to be decided. It could be steel or Spherical Graphite (S.G.) Iron. It is an important decision as the size of the pattern varies as the contraction rate for the two materials is different.

Buffer and Drawgear Design

Investigations have been underway into the buffer and drawgear design for the front end of No.567. Originally “Turton’s Improved Side Buffers” were fitted to the

cast type of the original locomotive. This is a much more affordable means of manufacture and one that can be handled in house at the Ruddington Locomotive Works.

The connecting rod big end strap is the semi circular component that fixes the connecting rod to the crank axle and together with the connecting rod itself will house the bearing to complete the whole assembly. It is a crucial component in the motion of the locomotive.

The remaining items all contribute to the building of the bogie. Beyond these the centre frame, wheels, axles, bearings and springs will still be required to complete the bogie.

Persons interested in sponsoring should contact Mrs Dawn Bullock at Group Administration at the address below. An update on the sponsorships will be given in each edition of the Newsletter and will be periodically reported on the website.

More Supporters

We are pleased to welcome more supporters for the 567 project. To date we have issued 185 memberships. The figure is critical as only the first 200 supporters will have a seat on the first public train hauled by No.567. So encourage a member of the family, a friend or a colleague to join us as there are only 15 seats left!

As a reminder one of the easiest ways to support No.567 is to make all your Internet purchases through easyfundraising. Our first income from the scheme will be paid shortly. It will only be a small amount but if more Supporters join the scheme we could build it up into a significant amount. To join go to www.easyfundraising.org.uk/causes/gcr567loco.

Quarterly Draw

The March quarterly draw has taken place and the winner notified.

The cab layout of No.567. Another meticulously researched and detailed drawing from Barry Nurcombe. These designs are used to check the fit of all the components required by the locomotive.

Contact us

To learn more about any aspect of our project or for general enquiries you can email us at:

gcr567loco@yahoo.co.uk or via the contact form on the 567 website (www.gcr567loco.co.uk).

We have a Facebook account at:

www.facebook.com/#!/groups/GCR567Loco/

Twitter: twitter.com/GCR567Loco

For General Postal Enquiries:

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