colBachmann/NRM GNR Atlantic EM Finescale Conversion

Before you start, it is a good idea to have some small containers or snap top poly bags to put screws and components in for safe keeping.....much better than crawling about on the floor trying to find lost bits!

We suggest converting the tender first, as this will be needed to test the loco chassis later because of the electrical engine/tender connection plug and socket.

Tender Conversion.

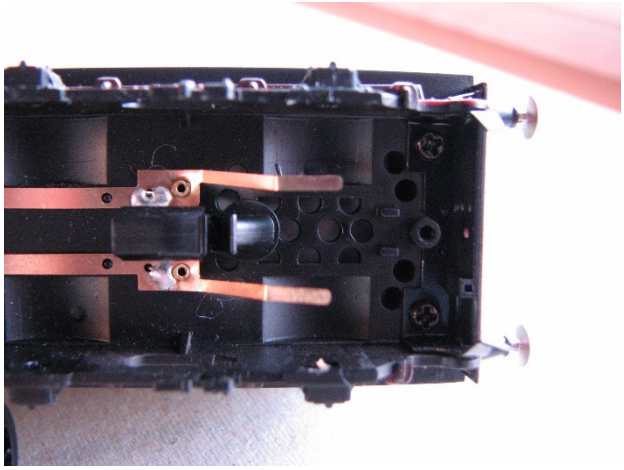
1. Invert the tender, and hold in a suitable device. We use a foam cradle – the Peco loco service cradle being ideal.
2. Spring out the Bachmann wheel sets carefully so as not to damage the pickup strips.
3. The latest Bachmann axle construction means it is not possible to simply substitute Gibson wheels onto the Bachmann axles without opening the Gibson wheels axle hole out to approx. 3mm.
4. The tender side frames are just slightly too close together to use the pin point axle and bearing method!
5. The easiest answer is to take some 2mm diameter silver steel and make 3 new axles. Cut three pieces, clean up and chamfer each end. We did this with simple hand tools, but equally a lathe could be used. The finished length of these new axles should be 25.5mm.
6. Mount the Gibson wheels onto these new axles, setting the correct back to back, ensuring they are centralised on the axle.

Wheels on new axle and a new axle.

7. Before replacing the leading and trailing wheelsets, we need to modify the pickups so they will pick up from the Gibson wheel rims, as opposed to the Bachmann split axles.

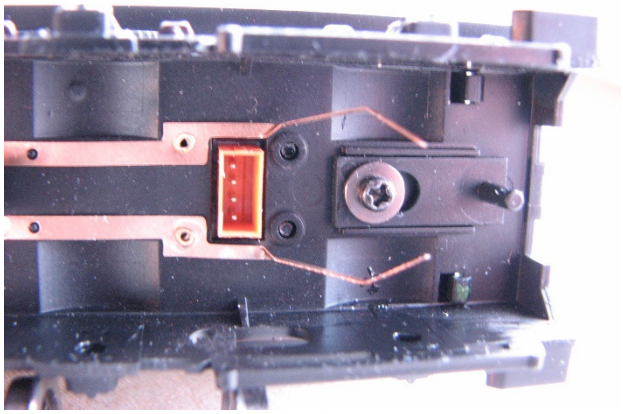
Tender Pickup Modification.

1. We need to move the pickups through 90 degrees to bear against the wheel rim rather than the axle.



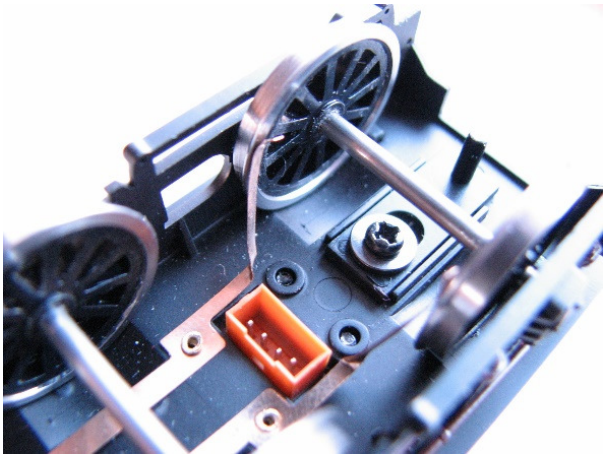
Bachmann pickups with wheels removed.

2. With a pair of fine nosed pliers, grip the pickup at the base of the thin strip near baseplate is riveted to the tender, and twist carefully through 90 degrees.

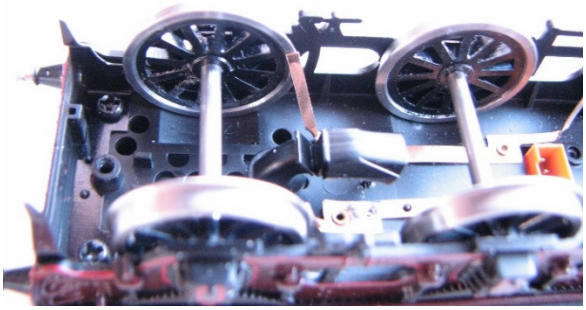


Pickups bent through 90 degrees.

3. Carefully insert the new wheels on their replacement axles. Then you can adjust the pickups by careful bending to bear on the wheel tyre backs.



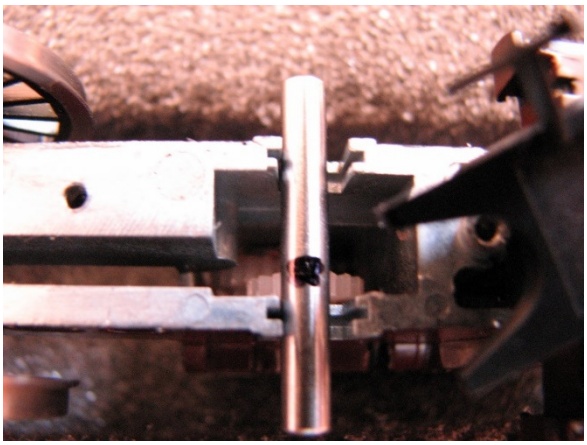
Pickup bent to touch wheel tyre, and trimmed in length slightly as there is plenty of pick up material!



Another view of modified pickups.

Loco Conversion.

1. Invert the loco having disconnected the engine/tender electrical socket and plug. We use a foam cradle – the Peco loco service cradle being ideal.
2. Undo the screws holding the keeper plate, it will lift away from the rear and unthread at the front round the sand pipes. This exposes the wheel sets and bearings.
3. Lift out the coupled wheel sets. Undo the crankpin screws, recover the coupling rods and store safely. The crankpin screws can go into the spares box; we have no further use for these!
4. The connecting rods can be removed by sliding out the cross heads from the slide bars, and placing to one side along with the coupling rods.
5. Remove the wheels from the axles by either twisting the wheels off by hand, or punching the axle through the wheels, then recover the gear by holding the axle vertically on a firm surface and pushing the gear straight down with your thumbs – DO NOT TWIST the gear as it is held on a splined surface and twisting may well damage the bore of the gear.
6. Take one of the replacement Gibson axles, which need shortening to 22mm, and place into the inverted chassis centre axle slot above the drive gears. Measure each side to ensure you have it centralised, and mark with a pen (we used a permanent marker) directly above the gear in the chassis that the axle gear meshes with.



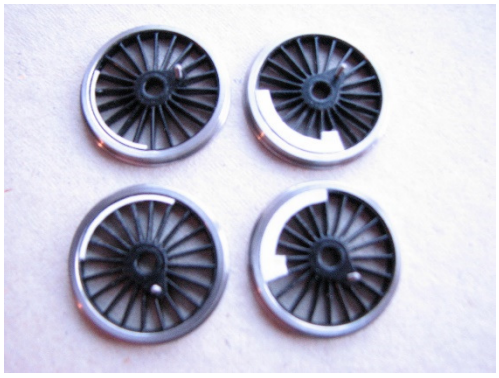
Marking gear position on the axles.

7. Place the axle onto a cutting mat or similar, take a hand file of around 6 inches in length, and using the edge of the file with teeth, roll the axle across the mat using the file and a fair degree of pressure at the point where you marked the axle. This will provide a splined effect on the axle sufficient to grip the axle gear wheel we removed from the Bachmann axle. Do not allow the file to wander as we do not want any more splines on the axle other than underneath the gear itself. The gear can be pressed onto the axle by holding in your fingers until the splined effect is reached, then hold vertically on a firm surface and push down with thumbs either side until the gear reaches the desired position. This can be simply checked by placing in the chassis and measuring if in doubt.

Axle “knurled” for gear

Gear on new axle – note boss faces chassis centre.

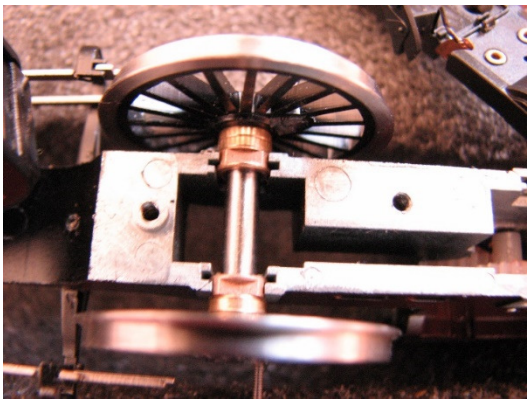
8. The new wheels can now be prepared. Insert crankpin screws and apply balance weights if desired. We use 10 thou plasticard and a compass cutter to make these.



Wheel preparation.

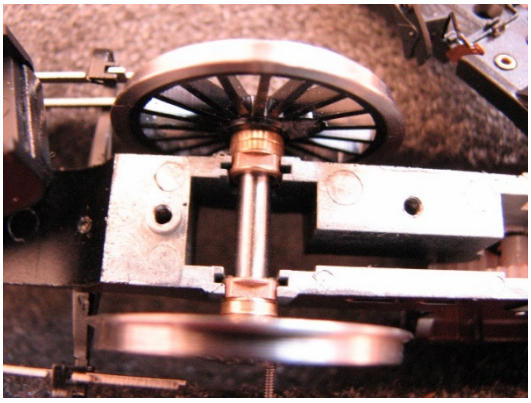
9. Wheel set assembly can now begin. Also you will need some spacing washers to take up side play, and we find that 2x1mm thick +1x0.25mm each side gives very little side play but allows free running. So push the axle just into one wheel, add one sides spacing washers, then the new axle bushes with the thicker flanges outermost (that is with the thin flanges back to back!), followed by the opposite side set of spacing washers. Press home and Quarter the wheels. We do this by using a George Watts (G W Models) wheel press and quartering jig.

10. Repeat this for the remaining axle.

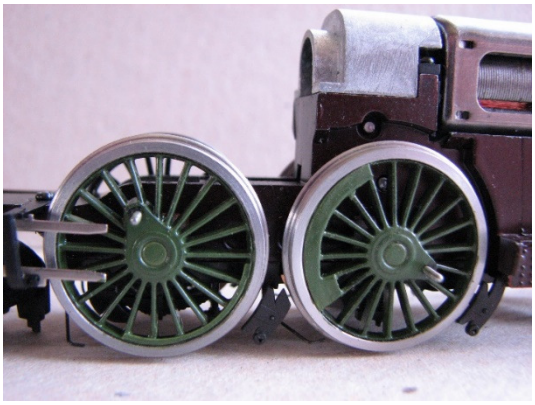


Axles with spacing washers fitted to chassis.

11. Once both axles are assembled and placed into the chassis, the keeper plate can be replaced and screwed down. Tweak the pickups out slightly to accommodate the wider gauge. It is always worth placing on the track and applying power gently at this point, just to ensure that all is well and we have free running of the driven axle. Remember with this loco, you will have to plug the loco chassis to the tender again to get it to work!

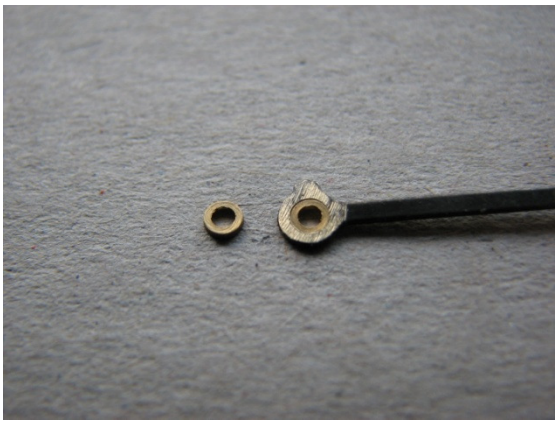


Assembled axle installed in the chassis.



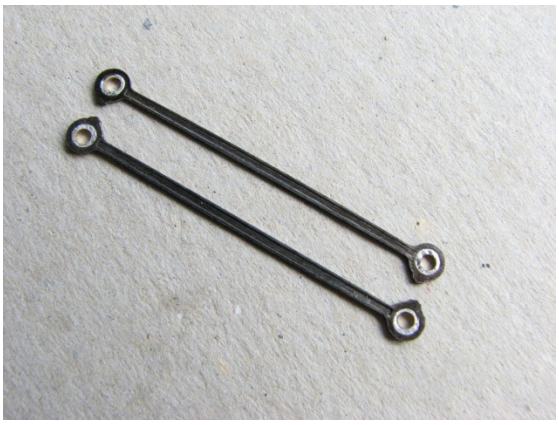
Keeper plate on and ready for the rods.

12. Next are the coupling rods. The Bachmann rods require their large holes reducing in size by bushing. First, clean the rear of the rods around each hole by filing all plating off to expose the base metal. The Gibson rod bushes may require the rod holes to be opened a bit further with a taper broach to allow the bushes to be pressed in. This also cleans the inside of the hole prior to soldering from the back of the rod. Solder each bush in turn. If you accidentally fill the bushes solid with solder, don't panic! Allow all to cool, and you should notice in the middle of your filled in hole there is a slight depression in the centre – use this as your centre mark to run a drill through – simply hold a drill in a pin vice and twiddle away with moderate pressure on a firm surface – not the polished dining table preferably!



Bush inserted into rod ready for soldering.

13. The last job on the rods is to make sure the bushed holes are a fairly slack fit over the Gibson crankpin bushes – ream out as required with a cutting broach.



Bushed rods.

14. Place a short Gibson crankpin bush over each leading crankpin, and a long bush on the rear crankpin on one side of the chassis. Place the correct coupling rod onto the bushed crankpins and retain with a crankpin nut on the leading wheels only. You may wish to tighten these finally with fine nose pliers now, or later; but ensure you have firm hold of the wheel so as any turning pressure from the pliers does not move the wheel on the axle, thereby upsetting the quartering.

15. Repeat the previous step for the opposite side of the chassis. Both these leading pins need shortening and filing back to allow the connecting rod some clearance.

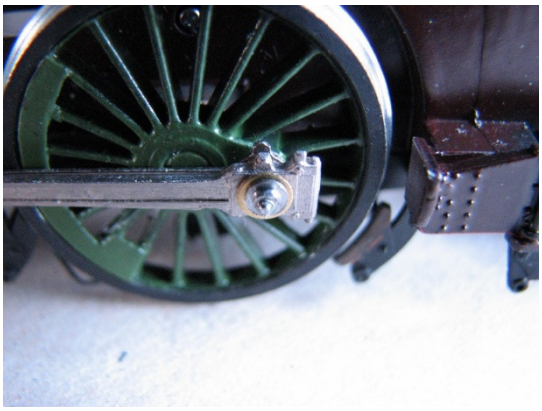
16. The connecting rod also needs bushing, as the Bachmann hole is far too large. We used a very small slice of thin brass tube.

Brass tube bushes.

17. The connecting rod can now be placed back into the slidebars and its big end plus bush placed over the trailing crankpin.

Showing bush in position.

18. Finally, a Romford large washer (Romford crankpin spacing washer) is placed over the crankpin in front of the rod and bush, then the Gibson crankpin nut is tightened up.

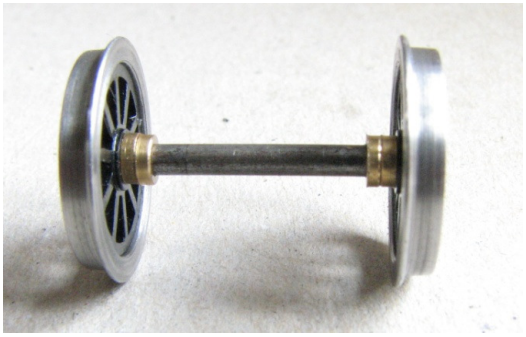


Completed rod assembly.

The Bogie.

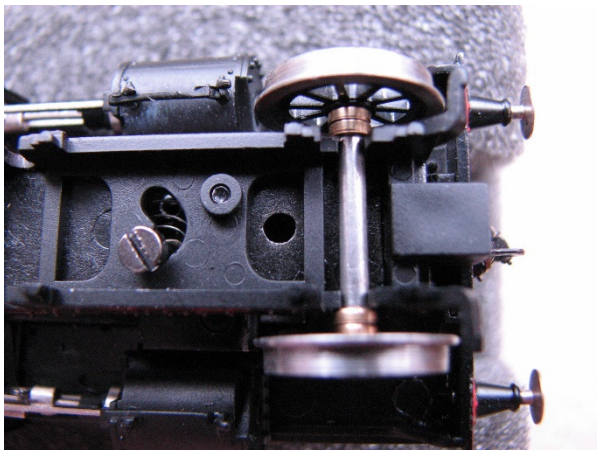
1. Remove the Bachmann wheels by pulling upwards and unclipping the axle from the bogie. You can also do this by twisting one wheel off the axle and pulling the remaining wheel and axle out.

2. Assemble the new Gibson bogie wheels, using 2 x 1mm spacing washers each side.



Bogie wheels assembled with spacing washers.

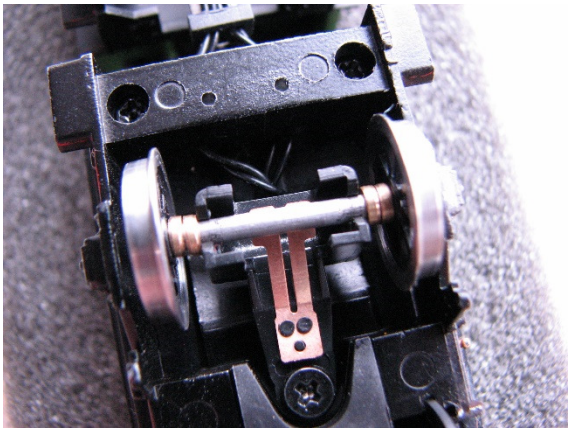
3. Install the bogie wheels.



One pair of wheels installed.

Trailing truck.

The wheels are simply removed and replaced the same as for the bogie, the same size and number of spacing washers being used.



Final Work.

1. The loco should now be plugged electrically into the tender and both placed on the track, power being applied gently to ensure all is well.
2. Once satisfied with the running, the crankpins should be re checked for security, trimmed and tidied up as required, before replacing the chassis into the loco body.
3. Lubricate all the new parts.

Wheel Sizes on this conversion.

Bachmann produced this model with under scale size driving, bogie and trailing truck wheels.
This conversion uses the Gibson equivalent sizes to the Bachmann ones:
Driving - 6'2" 20 spoke
Bogie and trailing - 3' 3" 10 spoke
The tender is fitted with the correct size wheel – 4' 1 ½" 12 spoke.

Pete Hill
May 2015

Items Used

1 x 4800/57 Driving Wheel Pack
Due to the design of this model we can only fit non scale undersize wheels
3 x 4839 Front Bogie/Rear Pony Wheels
Due to the design of this model we can only fit non scale undersize wheels
3 x 4849 Tender Wheels
1 x 4M42A Crank Pins
1 x 4M67/3 1/8" Spacing Washers
1 x 4M67/2 2mm Spacing Washers
1 x 4800 Coupling Rod Washers
2mm Silversteel
Romford Crankpin Washers