

# Bachmann J11 EM Finescale Conversion

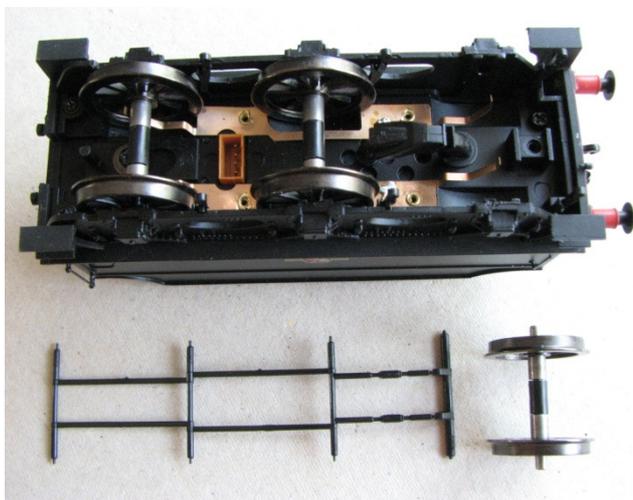


Before you start, it is a good idea to have some small containers or snap top poly bags to put screws and components in for safe keeping.....much better than crawling about on the floor trying to find lost bits!

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. Unclip the brake gear, and place to one side.
3. Spring out the Bachmann wheel sets.

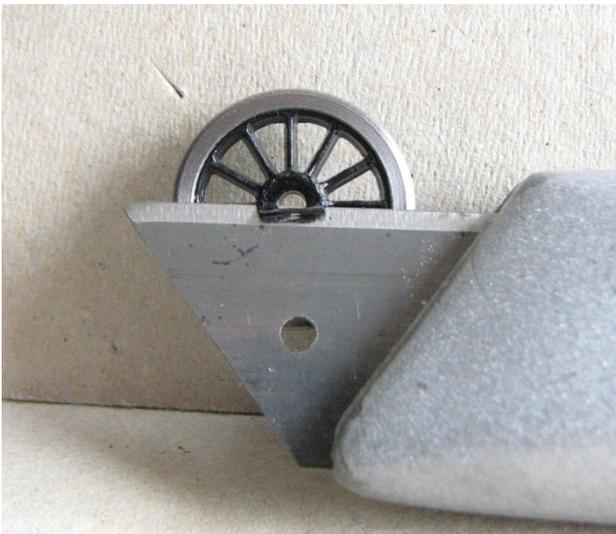


4. Bachmann have changed the construction of their split axles, meaning we cannot simply put Gibson wheels onto them, without opening the axle hole to just over 3mm diameter.
5. Bachmann have also re tooled the ex GC tender, making the sideframes too close together to take pinpoint bearings and standard 26mm pinpoint axles....
6. The simple answer would seem to take some 2mm diameter silver steel, cut three lengths, chamfering the ends similar to the Bachmann axle ends, so their finished length is 25.5mm. We did this simply using hand tools, or you could show off and use a lathe if you own one, or have access to one.



New tender axles.

7. As clearance is tight, remove the wheel bosses flush with the tyre face, then mount the wheels onto our new axles, setting the back to back.

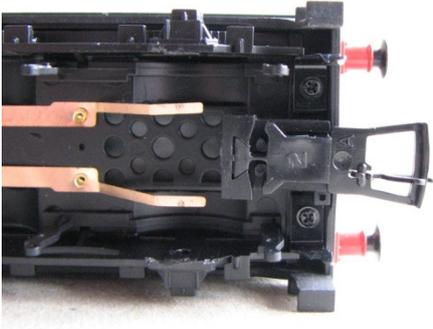


Removing wheel boss.



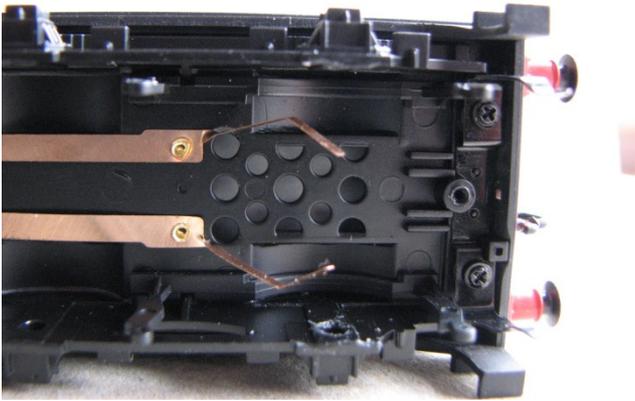
Gibson wheels mounted onto new 2mm axles.

8. Before replacing the wheels into the tender, we need to modify the Bachmann pickup arrangement so that it picks up from the wheel tyre and not the stub axle.



Pickups as supplied.

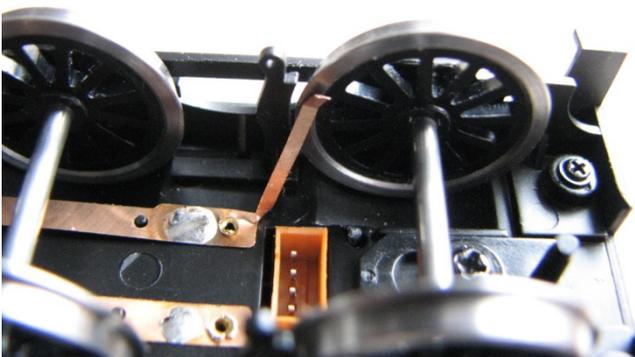
9. We need to turn the pickups through 90 degrees. Grip the base of one pickup using fine nose pliers, and simply twist through 90 degrees.



Pick ups bent through 90 degrees.

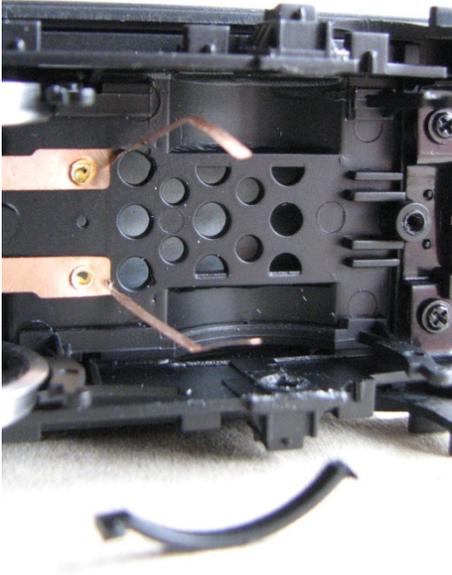
10. Do the same for the remaining pickups.

11. Once the 4 pickups have been modified, the wheels on their new axles can be sprung into the chassis, and the pickups adjusted so they just bear lightly on the wheel rim backs.



Pick up resting against tyre rim back.

12. The rear wheel splashers contain a semi circular piece of the brake moulding. This just catches the wider wheels, and can simply be cut through at each end of the splashers. Our brakes were well glued and did not fall off after this, but you may need to re glue some or all of them.

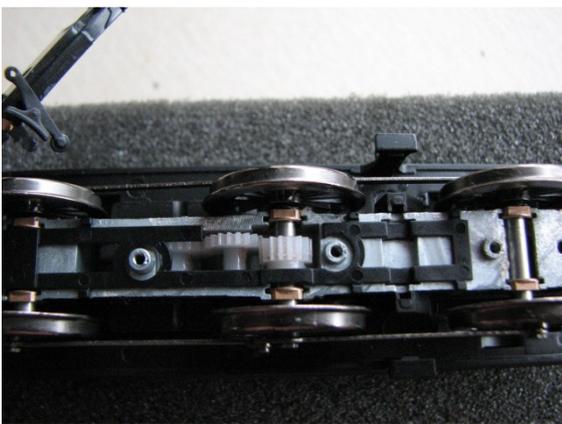


Upper piece of brake moulding cut away. Lower one still to remove.

13. The brake gear can be clipped back in place, or left until later as it makes plugging loco/tender together a bit easier.

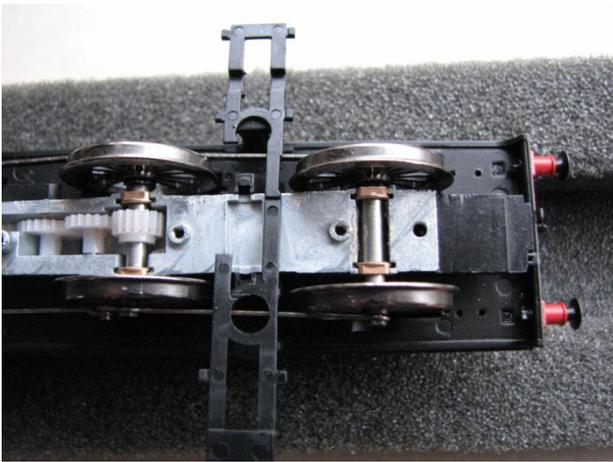
## Loco Conversion.

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. Unclip the brake pull rods, and undo the screws holding the keeper plate, it will lift away from the rear and unhook from the front of the chassis. This exposes the wheel sets and bearings.



Keeper plate removed exposing axles and bearings.

3. Remove the black plastic plate that rests on the chassis between it and the keeper plate. Presumably this new idea is to prevent shorting between chassis and pickup strips.



Plastic spacing plate lifts out.

4. 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!
5. Remove the wheels from the axle 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. We also need to recover the bearings the axles run in from each axle.
7. Take one of the replacement Gibson axles, 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.
8. 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.



Axle knurled for gear.

9. 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 we found was 8mm from plain side of the gear to the axle end.



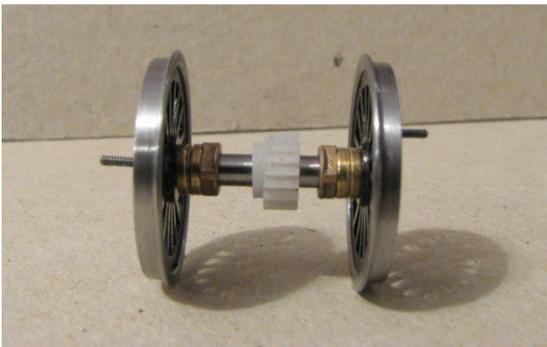
Gear on new axle – note boss faces chassis centre.

10. 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.



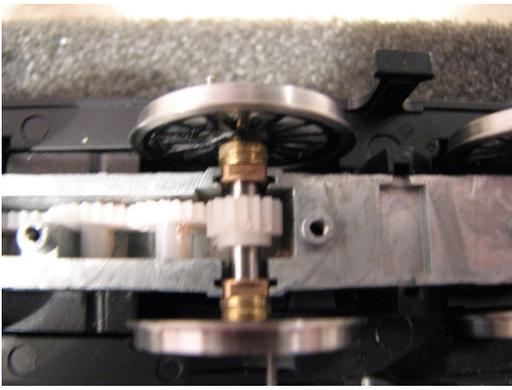
Wheel preparation.

11. Wheel set assembly can now begin. Also you will need some spacing washers to take up side play, and we found that 2 x 1mm + 1 x 0.25 thick each side gives a little side play. So push the axle just into one wheel, add one sides spacing washers, followed by the two axle bearings, with their flanges facing inwards, followed by the opposite side set of spacing washers. Then place the second wheel on the axle and press onto the axle. We use a GW Models wheel and quartering jig/press to do this operation.



Wheels and bushes assembled on an axle.

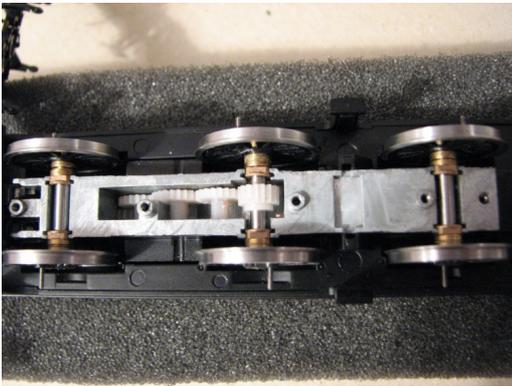
12. Repeat this for the remaining axles.



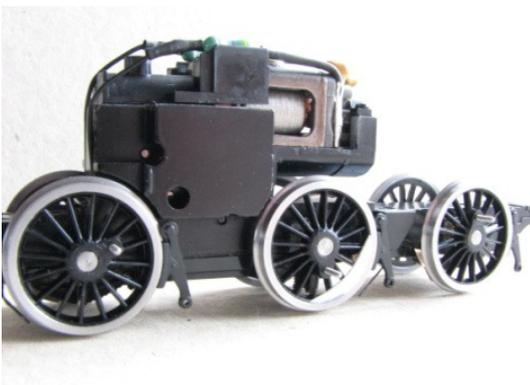
Driven axle with spacing washers placed in chassis.

13. Once all 3 axles are assembled and placed into the chassis, the little black plastic spacing strip can be placed over the axles in its correct position, followed by the keeper plate and screwed down. Not forgetting to tweak the pickups out a little to accommodate the wider gauge.

14. 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!



New wheels and bushes installed.



Wheels installed.

15. 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.

16. 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.

17. Place a short Gibson crankpin bush over each crankpin on one side of the chassis, place the correct coupling rod onto the bushed crankpins and retain with the crankpin nuts. 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.

18. Repeat the previous step for the opposite side of the chassis.



Converted loco ready for track test.

19. 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.

20. Once satisfied with the running, the crankpins should be re checked for security, trimmed and tidied up as required.

21. Engine and tender brake gear can now be finally clipped back into place.



Don't forget to lubricate the new parts!

### **Chassis Rocking Problem.**

There have been reports on forums of the loco rocking on its centre axle, and our sample displayed this slightly, suggesting the centre axle was lower than the outer two.

This trait was found on several other samples in the dealers, and was also remarked on by Tony Wright in his review in British railway Modelling.

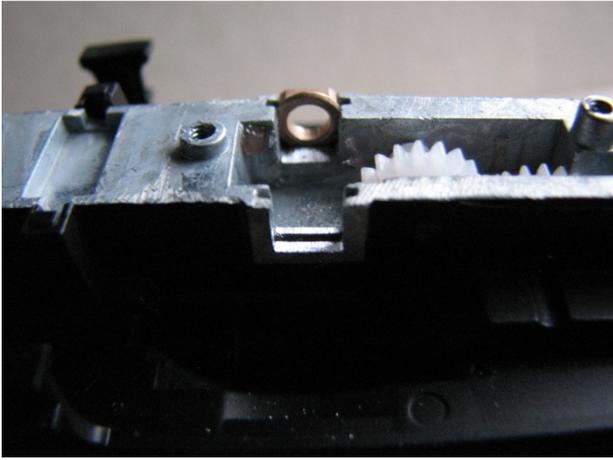
On dismantling the keeper plates, we placed a rule across the flat portion of the axle bearings, and this showed that the centre axle was slightly higher, but on one side only.



Checking axle heights.

The problem appeared to be the centre bearing would not sit down in the chassis casting far enough. The fix was to file a minute amount from the bottom of the square slot, replace the bearing and check the level.

Be careful, not much needed removing!



The offending slot minus its bush.

**Pete Hill**

**February 2014**

**Other Parts Used in this Method**

4M42B Crank pins

4M67/3 1/8" Spacing Washers