

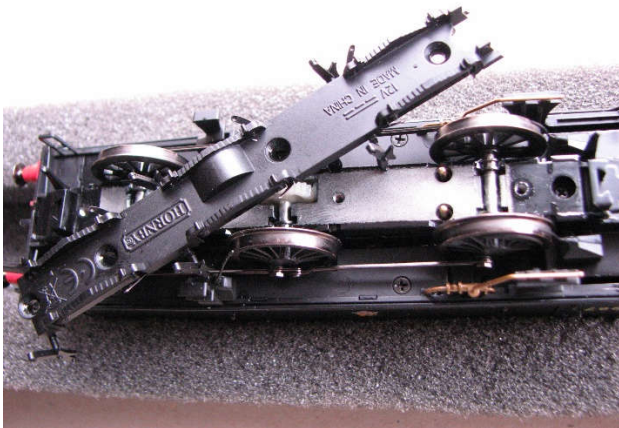
Hornby J50 EM Finescale Conversion



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!

Loco Conversion.

1. Invert the loco and support in a suitable device. We use a foam cradle – the Peco loco service cradle being ideal.
2. Undo the screws and remove the keeper plate from the chassis. This simply lifts away, there are no wires connecting it to the chassis, but take care not to damage any of the electrical contacts.



Keeper plate removed.



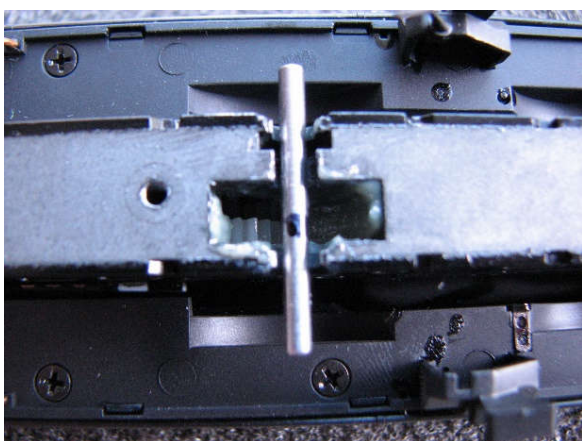
Wheels lifted out of the chassis.

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. When lifting the wheels out, you should notice what looks like small pieces of masking tape in the bottom of the leading and trailing chassis bush slots. Do not remove this, otherwise the loco may rock around the centre axle on completion. It appears to be some form of crude packing or shimming!
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 six brass bushes the axles run in.....these appear to be identical to each other, but you may wish to try and keep them in their original order. We didn't, and everything went back together ok!



Items required recovered from the driving wheels.

7. The supplied axles need shortening to 21.5mm.
8. Take one of the replacement Gibson axles, thread two Hornby axle bushes on it, and place into the inverted chassis trailing 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.



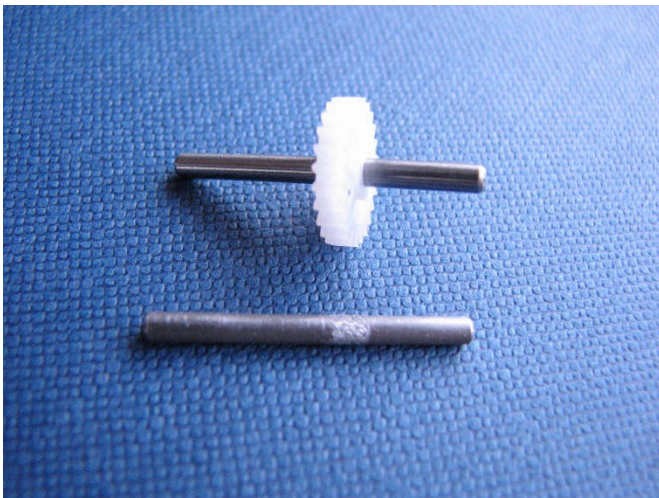
Marking gear position.

9. 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 Hornby 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.

10. 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.



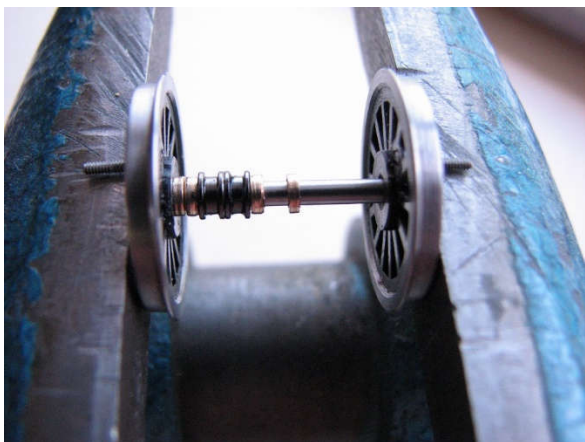
Gear on new axle, with a knurled example below.

11. 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.

12. Wheel set assembly can now begin. Because Hornby in their wisdom chose to use 2mm diameter axles, the Gibson replacement wheels are of necessity a very tight fit onto such a slim axle. The wheels in our case were pressed onto the axle using a small vice, ensuring that the axle was at right angles to the wheels from all viewing angles! You can reverse the pins in a GW press if you wish, but the pressure required to fit the wheels to axles is easier to apply in a vice.



Press fitting the wheels.

13. You will need some spacing washers to take up side play, and we found that 2x1mm thick each side gives a little side play. So push the axle just into one wheel, add one side's spacing washers, then the Hornby axle bushes followed by the opposite side set of spacing washers. Then place the second wheel on the axle, press the wheels fully on and set to the correct back to back. Quartering was by eye viewing through the spokes.

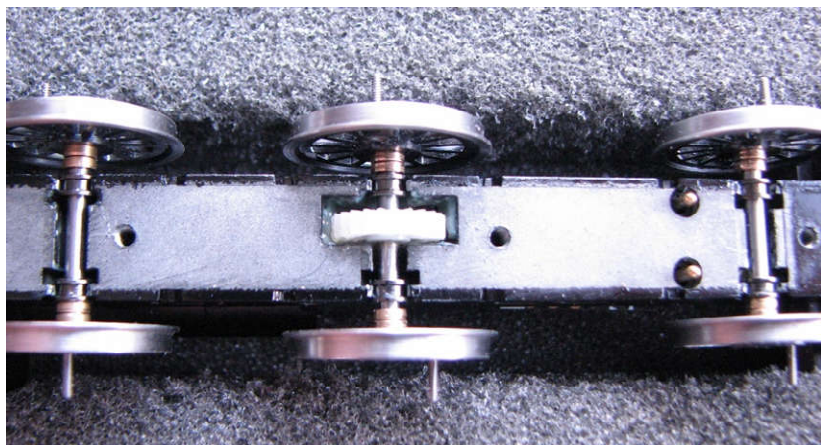


Wheels and bushes assembled on an axle.



Driven axle with spacing washers placed in chassis.

14. Once all 3 axles are assembled and placed into the chassis, the keeper plate can be replaced and screwed down. 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.

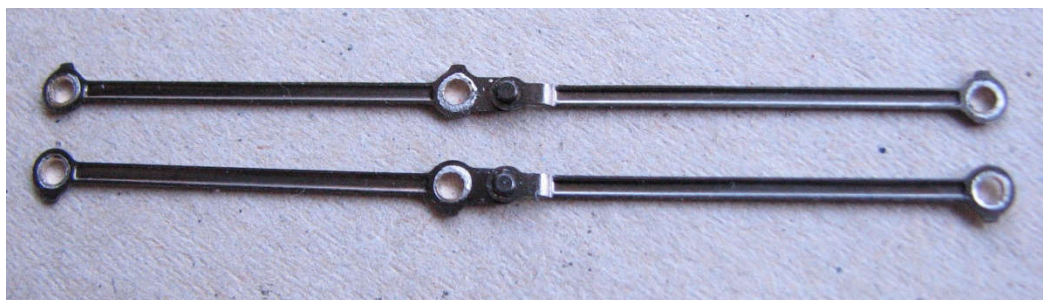


Wheels and bushes in place.

15. Next are the coupling rods. The Hornby 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. Also clean 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.



Bushed rods

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.

19. The loco should be 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 brake gear can now be finally clipped back into place.

22. Finally, do not forget to lubricate the loco.



Pete Hill

October 2016.

Parts Used

4800/60 Driving Wheel Pack

4800 Coupling Rod Bushes

4M42B Set of 6 Crankpins

4M67/2 2mm Precision Spacers