

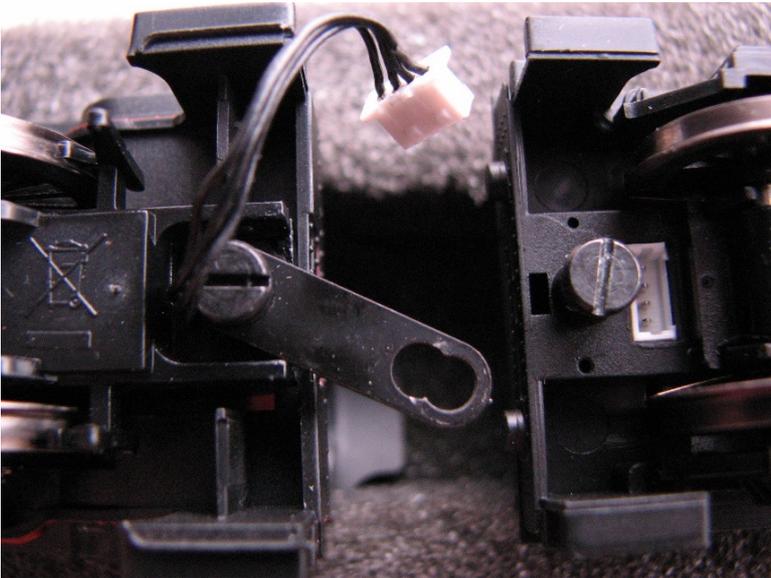
## Hornby Railroad Hall EM Finescale Conversion.



The subject of this sheet is the new (2015) Hornby Railroad Hall. There are several specification and livery variants, but all have a common chassis and as far as we know, body moulding. Our example comes without brake pull rods, whereas other variants do.

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!

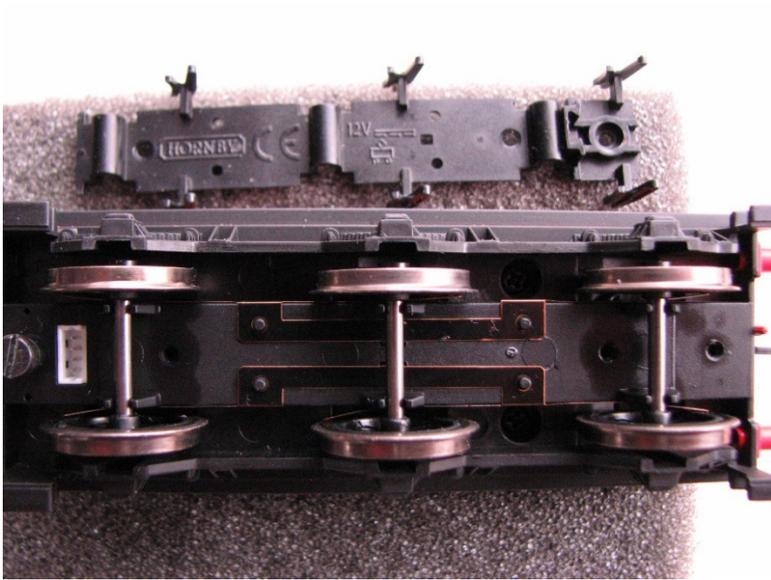
We suggest converting the tender first, as this will be needed to test the loco chassis later because of the electrical engine/tender connection plug and socket. Disconnect the two carefully before starting work.



Unscrew engine/tender coupling and unplug 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. (If applicable)
3. Undo the three screws holding the keeper plate, and lift away.



Keeper plate removed.

4. Lift out the 3 wheel sets.
5. Assemble the Gibson wheel sets onto the appropriate plain axle supplied with the wheels. We used 2x1mm thick and 2mm bore spacing bushes each side to limit side play on the centre wheels; and added a 0.5mm thick washer in addition on the leading and trailing axles.

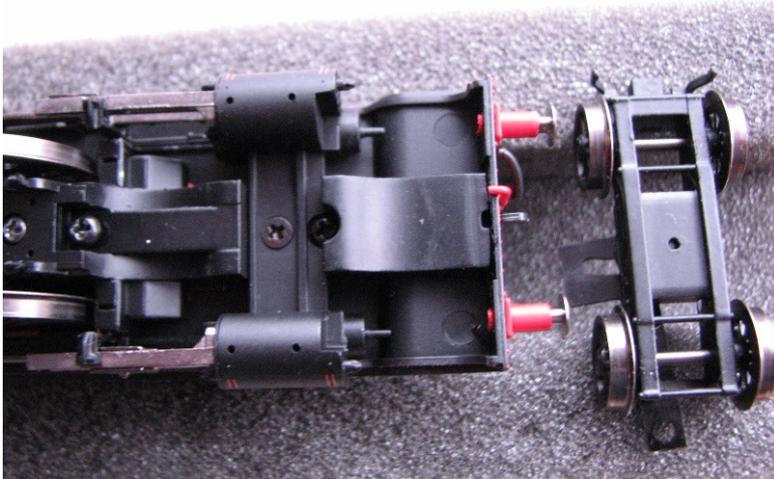


View showing spacers on Gibson wheel sets.

6. Place wheel sets into the chassis, ensuring the pickup wipers bear against the back of the wheel tyres.
7. Before replacing the keeper plate, chamfer the back of the brake shoes with a needle file to provide clearance between the wheel tyre/flange.
8. Replace the keeper plate and screws. Push test the tender through some track work to ensure all is well.
9. Clip brake rods back into position. (If applicable to your model)

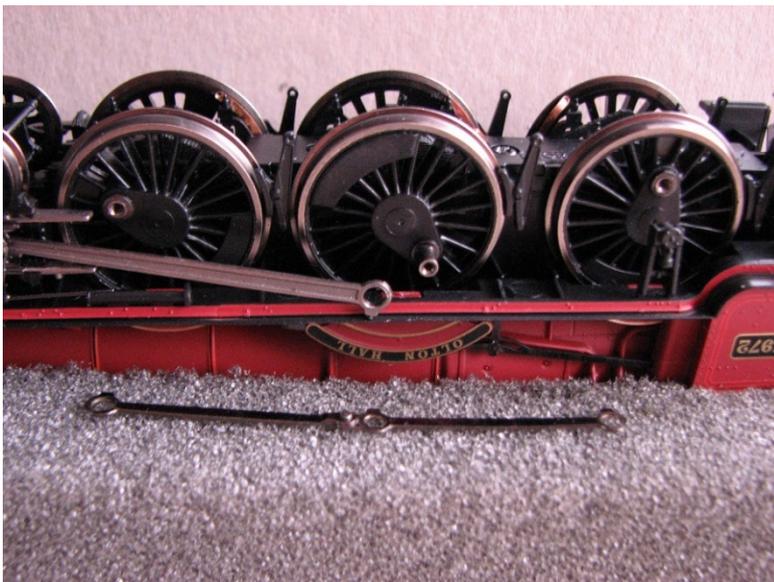
## LOCO CONVERSION

1. Remove the loco bogie by undoing the screw behind the rear of the bogie on the loco chassis, and place to one side.



Bogie removal.

2. Remove the loco body (or it can be left if you wish at this stage) by undoing the small crosshead screw in front of the cylinders. Gently pull the chassis out by gripping the cylinders – not the wheels/valve gear.
3. Support the chassis upside down in a suitable cradle – again we use the PECO one.
4. Undo and remove the crankpin screws, remove the connecting rods and leave dangling. Recover the coupling rods and place to one side.



Coupling rod removal.

5. Undo the 4 cross head screws in the keeper plate - store these safely – and gently tease the keeper plate upwards from the front end. It should lift away cleanly and there are no wires to give us grief either!
6. The wheel sets should now lift out.....but do note there are no axle bushes to worry about!
7. Remove the wheels from the centre axles– we need to recover the gear wheel. The gear needs to be pushed off. Simply support the axle end on a solid surface, pushing straight down with your thumbs. The gear should slide off. Do not TWIST the gear, as it sits on a knurled part of the axle and you may damage the inside surface of the gear.
8. The Gibson wheels can now be prepared. As the wheels come from older tooling, the crankpin holes need drilling before the crankpins can be fitted. Full instructions are provided with the crankpin packs. We use a 0.7mm drill in a pin vice by hand. Crankpins can then be fitted and any balance weights made up and glued on. We make these from 10 thou plasticard and use a compass cutter. The supplied axles were reduced to 22.2mm.



Gibson wheels fitted with crankpins and balance weights.

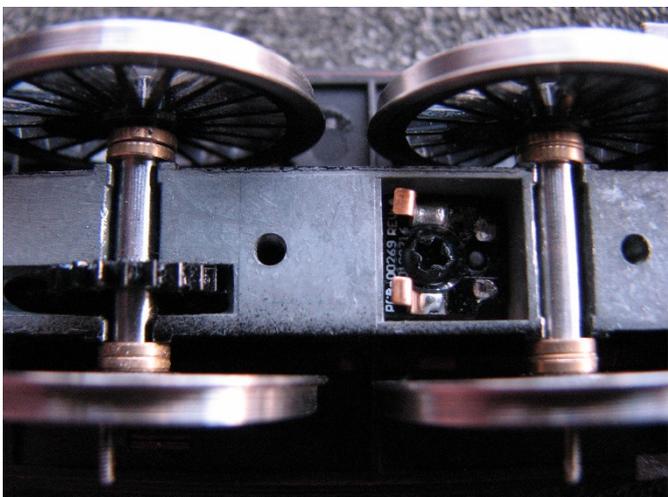
9. Now begin to assemble the front and rear wheel sets. We will need some spacing washers to take up the side play. We used 2 x 1mm thick washers each side for the centre and rear wheel sets, and added an additional 0.25mm washer each side on the front axle.

10. We use a GW Models wheel press for assembly, which will also quarter the wheels as well as press them on square.



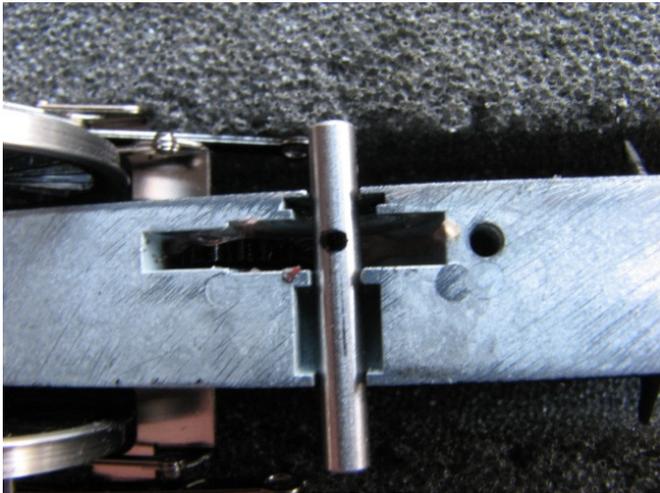
Assembled wheels for front.

11. These two wheel sets can now be placed in the chassis.



Front and centre wheel sets installed.

12. The centre axle needs to be “knurled” for the gear wheel first. We place the plain axle into the chassis, measuring the overhang each side to make sure it is central. Take a permanent marker pen, and mark the position of the gear on the axle.



The black dot marks the spot!

13. Place the axle on a cutting mat or similar. Take a small hand file, we use a 4 inch second cut file, and using the file on Edge, roll it with firm downward pressure over the axle where you marked the gear position. Do not stray away from this narrow area, as bushes run on the axle very close to the gear, and knurling in these areas won't help good running!



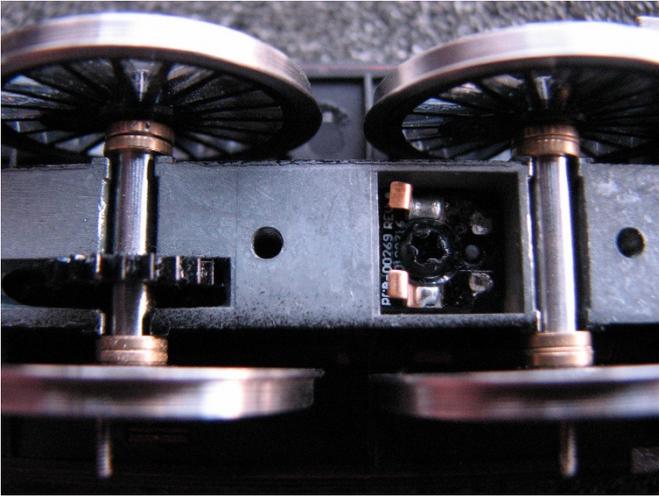
Not too neat....but it works!

14. The gear can now be slid onto the axle and pressed over the “knurling”. We found that the side of the gear was 8mm from the axle end (shorter end!) Place in the chassis and check...if all is well you can slide the gear to one side, apply a little Loctite, replace and check gear is in the correct position. Leave alone to cure. Treat yourself to a cuppa or similar.....or deal with the loco body or bogie (see later)

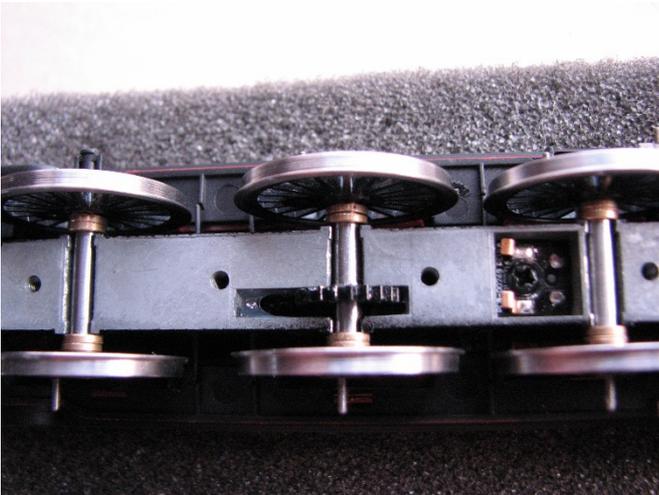


Assembled axle and Hornby gear.

15. Once the Loctite has cured, assemble the driven axle in the press with spacers.



Centre axle installed.



All three axles installed.

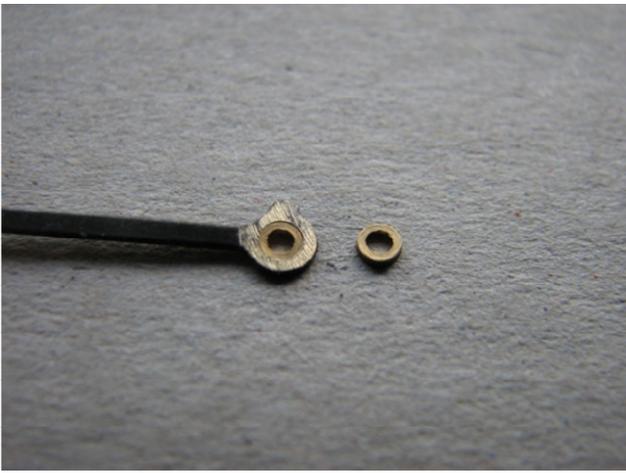
16. Before we replace the keeper plate, chamfer the rear of the brake shoes with a needle file to make sure the brakes don't foul the wheels.

17. Lift the keeper plate back into position, and fasten down with the retaining screws. You can now place on the track and apply a little power to make sure the driven axle revolves freely. Remember to connect the tender plug otherwise it won't work!

18. Next we tackle the coupling rods and the connecting rod big ends. The Hornby holes are too large for Gibson crankpins, so we need to bush them with the Gibson bushes available just for this purpose.

First, file the plating back to the brass base metal on the rear of the rods. Place a bush in the rod hole, and solder in position. Do this for all 6 coupling rod holes, and do the connecting rods by laying the chassis on its side, working on the rear of the rod which is face down on the work surface.

If you fill the bush completely with solder.....don't panic! As the solder sets, it contracts slightly, leaving a dimple in the centre – use this to as your centre for drilling out. A suitable drill twiddled with fingers in a pin vice is all that is needed.



Bush in rod ready for soldering.



The resulting central dimple after over enthusiastic soldering.

19. The bushes then need a gentle opening out to be a good running fit on the crankpin bushes....simply use a suitable cutting broach and use one of the Gibson bushes as a guide.

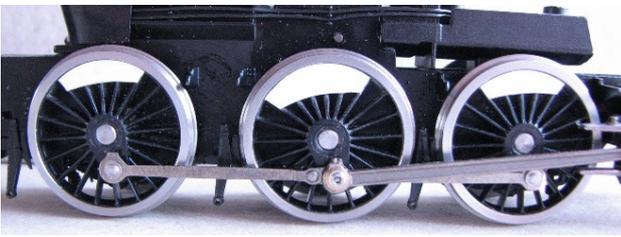
20. Assemble the rods onto the wheels. Use a long crankpin bush on the centre wheels, and short ones front and rear. Fasten with crankpin nuts front and rear only. Tighten and trim back the front crankpins, and file the nuts to about half their thickness, in order to give clearance for the connecting rod. The rear pins can be left for now if you wish.

21. The connecting rod should be lifted onto the crankpin and bush, placing a Romford crankpin spacing washer between the connecting rod and the centre crank pin nut, which can now be wound on and tightened. The Romford washer has a large diameter with a small hole, and this prevents the connecting rod slipping off over the crank pin nut!

22. Repeat for the opposite side.



Large Romford washer and crankpin nut.

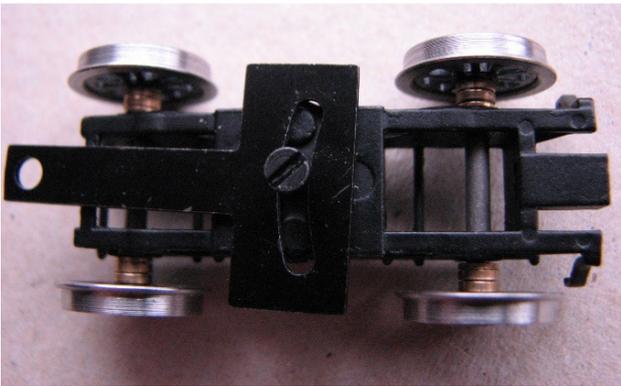


How the motion should now look!

23. At this point, you should be able to track test the completed chassis. Gently apply power, checking to ensure no parts are going to hit other parts or bind. If all is well, admire your chassis and tender moving around!

### THE BOGIE

1. Simply twist and pull one Hornby wheel from its axle, and slide the remaining wheel and axle out the other side.
2. Repeat for the other Hornby wheel set.
3. Assemble one Gibson wheel onto its axle, and then slide the appropriate spacing washers on, thread through the bogie casting hole, adding the appropriate spacing washers and remaining wheel. Repeat for the second axle. We used 2 x 1mm thick plus 1x0.5mm by 2mm bore brass spacing washers each side.



Re wheeled bogie.

### LOCO BODY

1. When we tried to refit the re wheeled chassis to the body, we found that the wider EM wheels would just fit inside the splashers, but were something of an interference fit. So a bit of careful scraping is required. The problem is with both the front splashers, the left hand centre one and both rear ones!
2. Take a new scalpel blade, we use a curved one, as it seems to give more control. Scrape carefully inside the front and middle splashers with a curving motion, following the curve of the splashers. This will produce a lot of plastic dust/shavings, but is better than trying to slice or cut the plastic body. Cutting tends to be a good way of losing bits of minor things like fingers, or important parts of the loco we wanted!
3. Aim to remove around  $\frac{1}{2}$  to 1 mm each side. It really depends on how much side play you have in the chassis. There is plenty of "meat" in the splashers vertical faces. The curved top surfaces do not need anything removing. We found that with the spacer sizes we have used above, the loco would go through a 36" radius turnout.



Splashers have been modified!

## FINAL ASSEMBLY

Reassemble the chassis to body, and track test. If all is well, fasten the bogie back to the chassis, and you should have a completed loco. Don't forget to lubricate it!



Pete Hill

February 2015.

### List of Parts Used

- 1 x 4800/31 Driving wheel Conversion Pack
- 2 x 4836 3' 10 spoke
- 3 x 4849 4'1" 12 spoke
- 4M42B Pack of 6 Crankpins
- 4800 Coupling Rod Washers
- 4M67/2 pack of 2mm Bore Spacing Washer Various Thicknesses
- 4M67/3 pack of 1/8" Bore Spacing Washer Various Thicknesses