

Hornby LNER/BR Q6 Class EM Finescale Conversion.

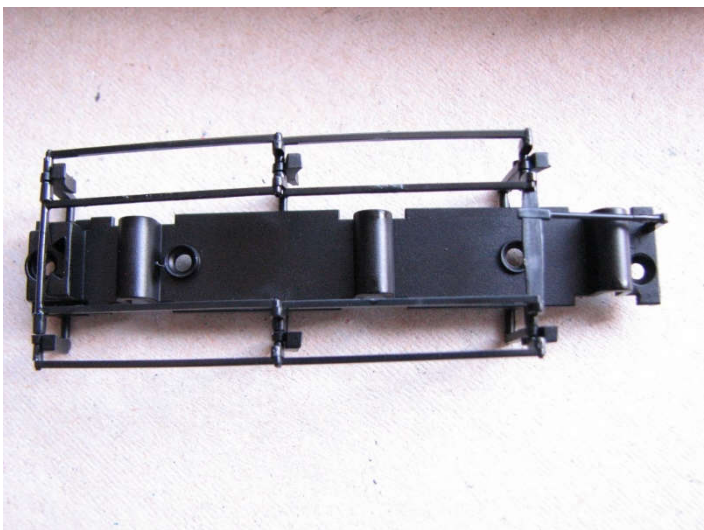


Before you start, it is a good idea to have some small containers or snap top poly bags to put screws and components in for safe keeping.....much better than crawling about on the floor trying to find lost bits!

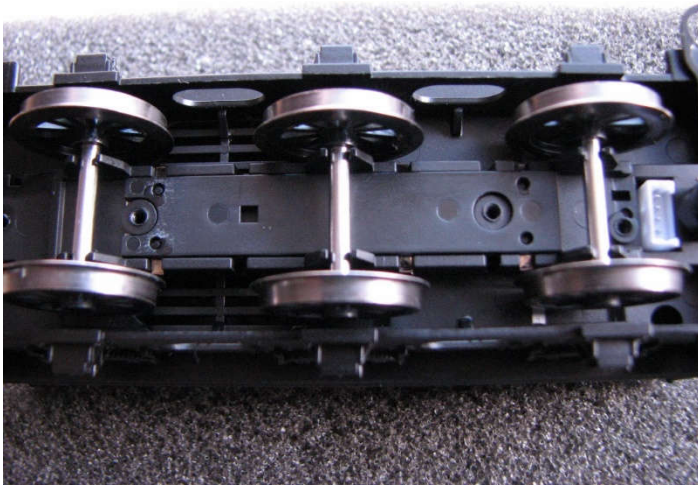
We suggest converting the tender first, as this will be needed to test the loco chassis later because of the electrical engine/tender connection plug and socket. Disconnect the two carefully before starting work.

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. Undo the screws holding the keeper plate/brake gear – three are visible. The third is much smaller right at the rear beneath the removable NEM coupling pocket.

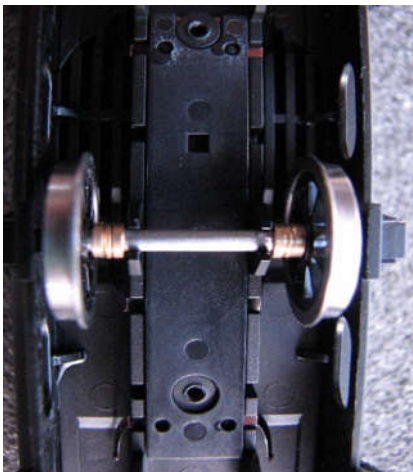


Keeper plate and brake gear combined.



Keeper plate removed.

3. Lift out the 3 wheelsets.
4. Assemble the Gibson wheelsets onto the appropriate plain axle supplied with the wheels. We used 2 x 1mm + 1 x 0.5mm 2mm bore spacing bushes each side to limit side play.



View showing spacers on Gibson wheelset.

5. Place wheelsets into the chassis, ensuring the pickup wipers bear against the back of the wheel tyre.
6. Replace the keeper plate, the brake shoes cleared the wheels on our example with no need for any modification.
7. Replace the keeper plate and screws. Push test the tender through some track work to ensure all is well.



Completed tender.

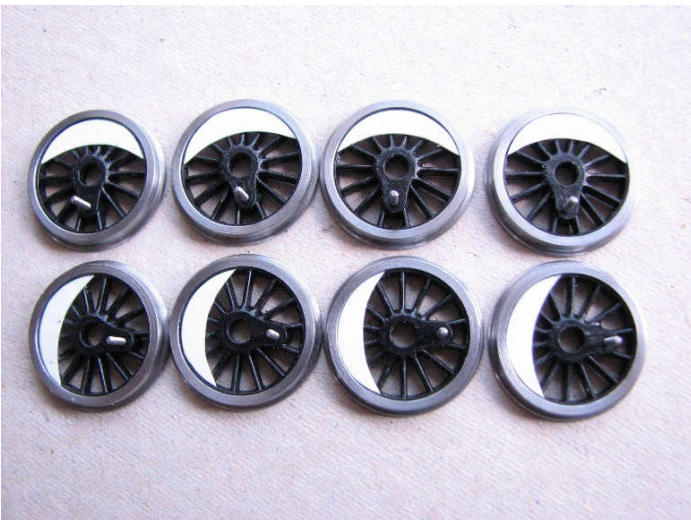
LOCO CONVERSION

1. Support the loco upside down in a suitable cradle.
2. Undo and remove the crankpin screws, remove the connecting rods and leave dangling. Recover the coupling rods and place to one side.
3. Undo the 4 cross head screws in the keeper plate - store these safely – and gently lift away the keeper plate, which simply lifts clear complete with pickups.....no wires to worry about and nothing to fall apart either.



Keeper plate removed.

4. The wheelsets should now lift out.
5. Remove the gear wheel after removing the wheels from the axle. 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 bore. Note the orientation of the Hornby brass bush next to the gear. Recover the Hornby bushes from all three axles.
6. The Gibson wheels can now be prepared. Crankpins themselves are inserted and any balance weights made up and glued on. We make these from 10 thou plasticard and use a compass cutter. The axles were shortened to



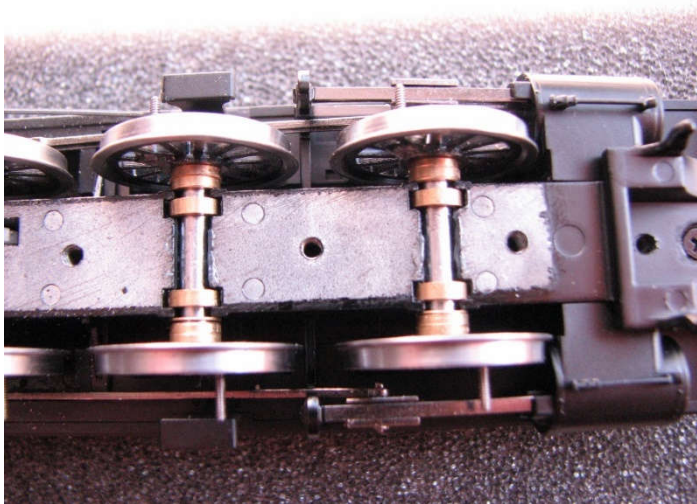
Gibson wheels fitted with crankpins.

7. Now begin to assemble the front and rear wheelsets. We will need some spacing washers to take up the side play. We used 2 x 1mm thick spacing washers each side on the two rear axles, and added a 0.25mm washer each side on the leading two axles.
8. Do not forget to assemble the Hornby brass bearing bushes on the axles at this point!
9. We use a GW Models wheel press for assembly, which will also quarter the wheels as well as press them on square.



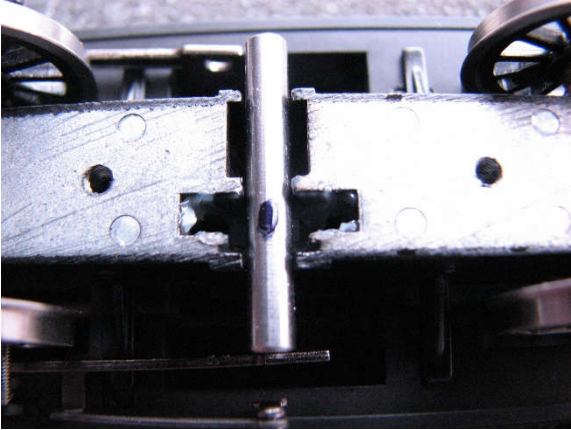
Rear wheels assembled – note spacing bushes.

10. The front two and rear wheel sets can now be installed. We must emphasize that there needs to be zero sideplay on the leading axle.



Leading wheels installed with zero side play.

11. The third 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!

12. 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!

13. The gear can now be slid onto the axle and pressed over the "knurling". Place in the chassis and check...if all is well you can slide the gear to one side, apply a little Loctite if you wish, replace and check gear is in the correct position. Leave alone to cure. In fact on this sample, no Loctite was used, the knurling being more than sufficient. After all, Hornby only rely on knurling to retain the gear on their axles. Treat yourself to a cuppa or similar if you have applied Loctite.....and let it cure.

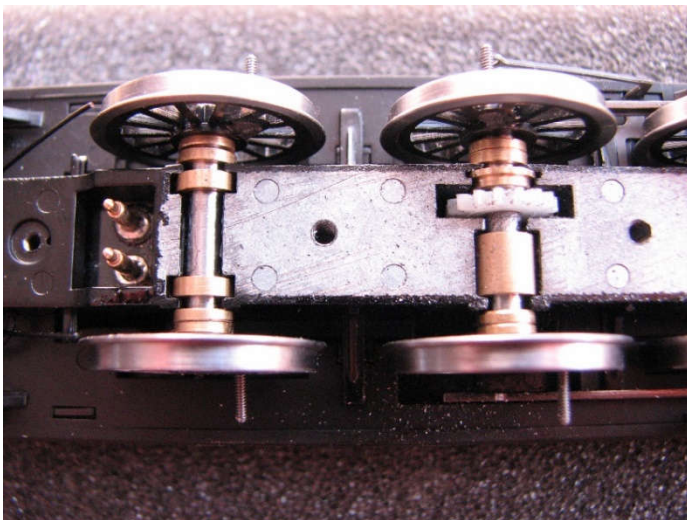


Assembled axle and Hornby gear.

14. Assemble the driven axle in the press, not forgetting the spacing bushes.



Driven wheels with gear, spacing washers and bushes.



Driven axle in chassis.

15. Lift the keeper plate back into position, having tweaked the pickups out a little for the wider back to back, and fasten down with the four screws.

16. Next we tackle the coupling rods. 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 coupling rods. Place a bush in the rod hole, and solder in position. Do this for all 8 coupling rod holes, and the two connecting rod ones. 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.

17. 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.

18. Assemble the rods onto the wheels. Use a long crankpin bush on the third axle, and a short ones on the leading two and the rear axles.

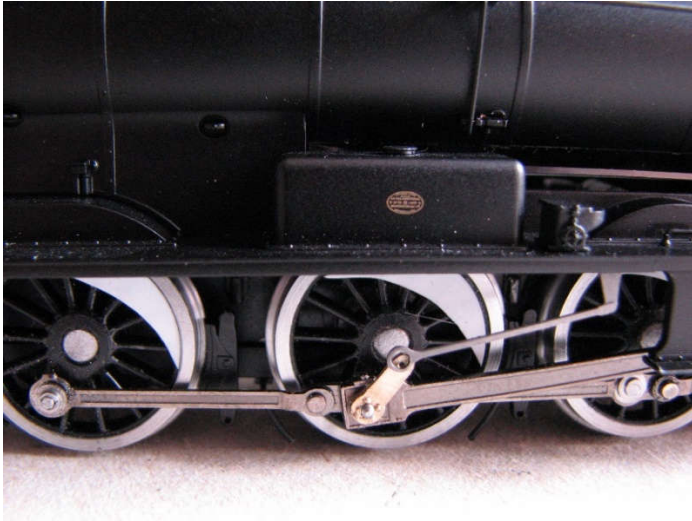
19. The front and second axle crankpin nuts will need to be trimmed back to provide clearance. The leading two axles bushes themselves should be shortened so that they just accommodate the rod.

20. The connecting rod holes need bushing in the same manner as the coupling rods by soldering in brass bushes. Make sure these are well cleaned up on the inside faces.

21. Before placing the left hand connecting rod over the driven crankpin, we need to provide a small spacing bush on the crankpin, and one of the Alan Gibson brass coupling rod bushes is ideal. You will need one for each of the crankpins, but for now just deal with the left hand one followed by the connecting rod, and finally the driven crankpin retaining nut.

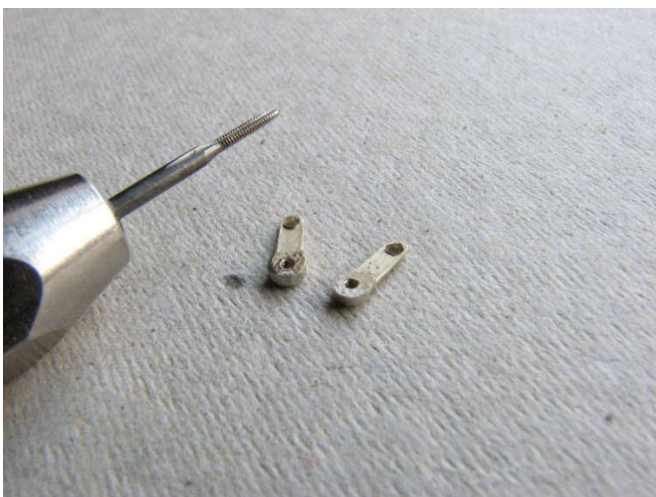
22. The right hand driven crankpin carries the drive for the lubricator, which on this model is a return crank on the wheel fixed to the operating arm which is not pivoted to the chassis, but is a fixed bracket.

23. Remove the rivet from the Hornby return crank by snipping off the head. The operating arm will remain attached to the chassis in its correct position.



24. We now need to replace the Hornby crank with a Gibson item, as the Hornby one will not fasten easily to the Gibson crankpin.

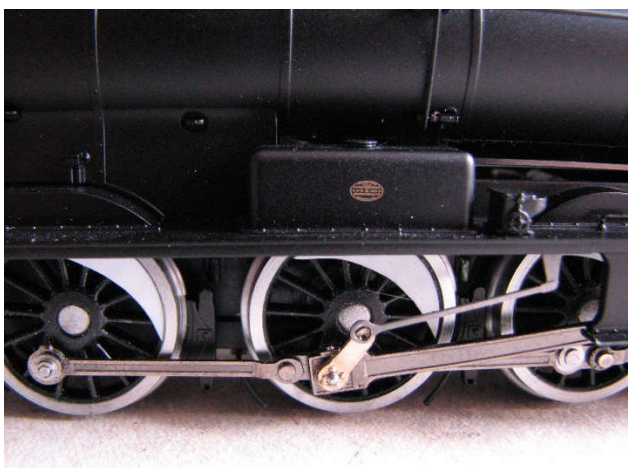
25. Next we prepare the new Gibson return crank. This needs tapping 14BA, and we do this with the crank still attached to its sprue as it makes holding easier. The tap is held in a pin vice rather than a normal tap wrench – much easier to use. Once tapped, it can be cut from the sprue and cleaned up.



Preparing the return crank – sadly they come in pairs and we only need one!

26. Wind the crank onto its crankpin, and naturally it will go tight and stop in the wrong position usually! Undo, file a small amount from the rear face of the crank boss, and try again. It will now be tight at a point further round, so by trial and error, we get it to tighten at the correct angle.

27. The return crank acts as the crankpin not for the right hand side, and should sit neatly behind, but not quite touching, the end of the lubricator drive rod. As the other end of the drive rod is fixed, there is nothing to be gained from trying to rivet the crank to the arm, indeed it would not be an easy job to screw the crank on to the crankpin if we did. It revolves nicely behind the arm, and a dummy rivet head in the arm hole would complete the illusion.



A Dummy rivet head in the drive rod end is needed

28. Then 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

FINAL ASSEMBLY

Reassemble the chassis to body, and track test.

Don't forget to lubricate it!



Pete Hill

November 2016.

Alan Gibson Parts Used

Conversion Driving Wheels 4800/61

Tender Wheels 3 x 4844

Crankpins 4M42

Coupling Rod Washers 4800

1/8" Spacing Washers 4M67/3

2mm Spacing Washers 4M67/2

Return Crank 4M822

Other Parts

0.010" Plasticard