

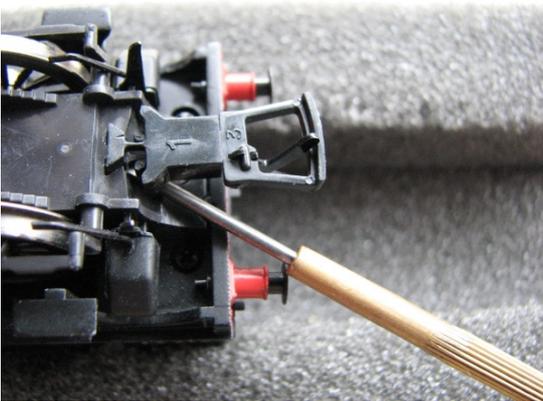
Bachmann 1F (Half Cab) EM Finescale Conversion



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. We use a foam cradle – the Peco loco service cradle being ideal.
2. Gently lever out the NEM coupling pockets, as the body retaining screws are hidden underneath these.



Removing couplings.

3. Undo the two body retaining screws that are underneath the coupling position.



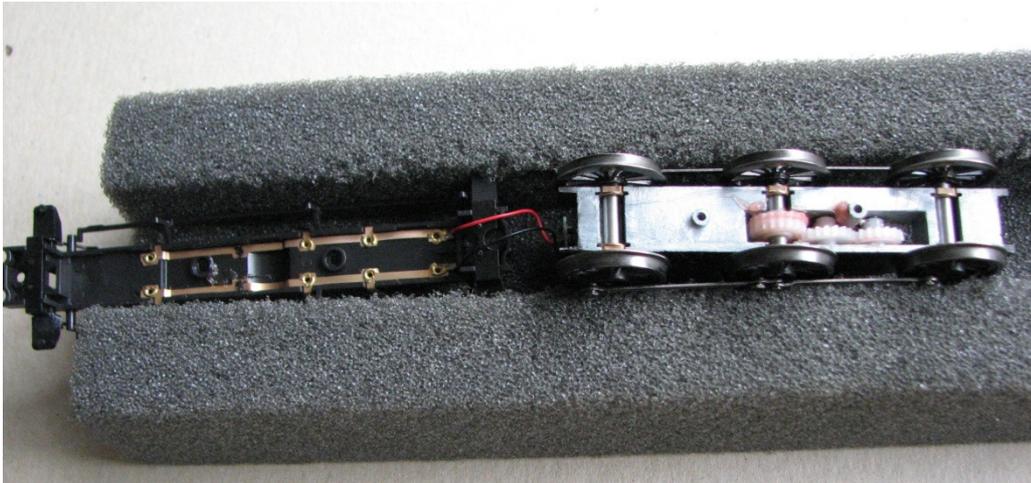
Undoing body retaining screws.

4. The chassis and body can now be separated.....they come apart easily!



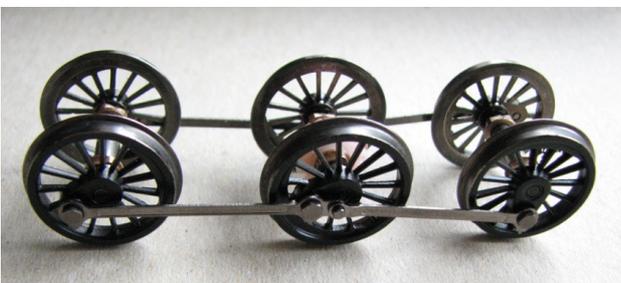
Body and chassis separated.

5. Remove the two screws retaining the keeper plate; this will then lift up from the rear of the chassis, swing over, and rest happily in front of the chassis. Just be careful not to stress the wires joining the two at the front.



Keeper plate removed exposing axles and bearings.

6. 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!

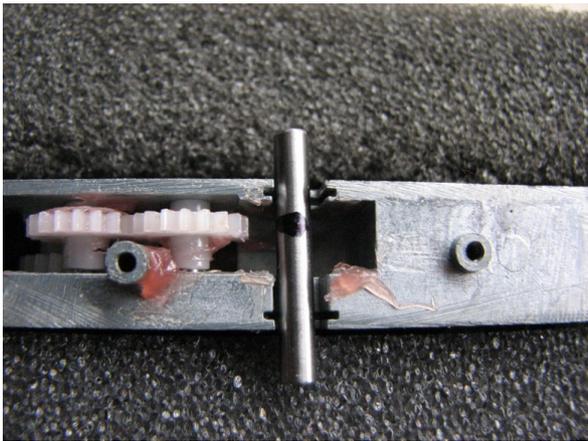


Coupled wheels removed.

7. Remove the Bachmann wheels from their 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.

8. We also need to recover the bearings the axles run in from each axle.

9. 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.



Marking gear position on the new axle.

10. 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.

11. 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 7mm from plain side of the gear to the axle end. Note that the larger boss on the gear wheel faces the centre of the chassis.



Gear on new axle – note boss faces chassis centre.

12. 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.

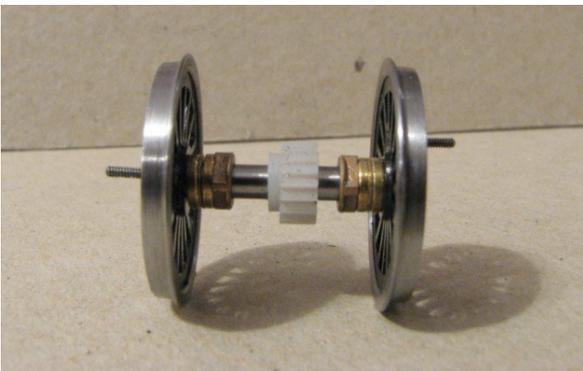


Balance weights from 10 thou plasticard.



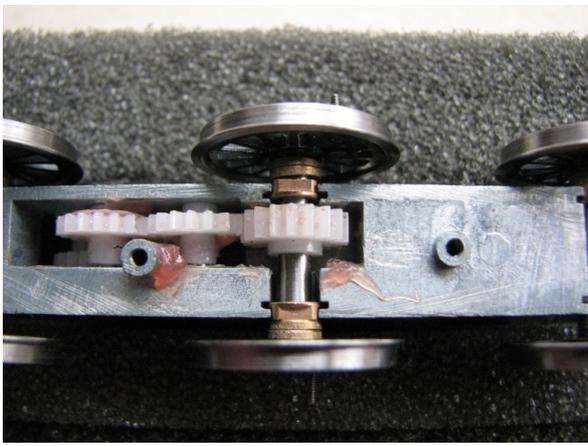
Wheel preparation.

13. Wheel set assembly can now begin. Also you will need some spacing washers to take up side play, and we found that 2x1mm + 1 x 0.5 thick each side gives a little side play on the front and rear axles. 2 x 1mm each side on the centre axle. Make sure all burrs are cleaned off these washers, especially for the front and rear axles. So push the axle just into one wheel, add one sides spacing washers, followed by the two Bachmann 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.

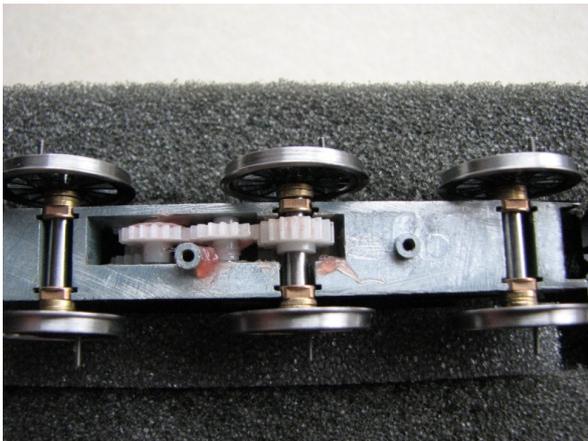
14. Repeat this for the remaining axles.



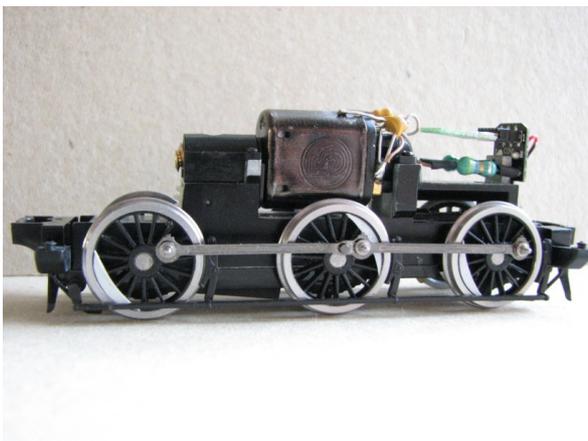
Driven axle with spacing washers in chassis.

15. Once all 3 axles are assembled and placed into the chassis, the keeper plate can be swung back and screwed down. Not forgetting to tweak the pickups out a little first, in order to accommodate the wider gauge. We found there was sufficient clearance on the brake shoes and the outside brake rodding in EM without any modification.

16. 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.



New wheels and bushes installed.



Wheels installed.

17. 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.

18. 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.

19. 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.

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



Converted loco ready for track test.

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

22. Body and chassis can now be re assembled.

23. Replace the NEM coupling pockets and couplings if desired.

24. That completes the conversion.



Don't forget to lubricate the new parts!

Pete Hill

October 2014

Parts Used

4800/17 – Driving Wheel Pack

4M42B – Crankpin Set

4800 Coupling Rod Bushes

4M67/3 Precision Washers