

BARROWMORE

MODEL RAILWAY GROUP

"Modelling to a high standard amongst friends"



More power for your Hornby 'Type 2'



by Gavin Liddiard and Richard Oldfield

It's a hard life

24 047 is the oldest locomotive in the Mostyn fleet and, according to the spidery hand-writing on the bottom of the fuel tank, first entered service in April 2000. She started life as a much butchered Hornby Class 25 with a single 3-pole motor - always relatively gutless (the 7-stone weakling of the Type 2s !) and restricted to light workings or being double-headed on heavier trains. Her principal claim to fame dates back to Halifax Show in 2004 when black smoke alerted us to the fact that 24 047 had been left running up against buffer stops for a very long time.

Periodically we go through our stock boxes to see what needs repairing and recently the spotlight fell on the venerable 24 047. The process starts by examining the innards. Whilst still a 'runner', the time had come to put some muscle power into our Type 2. The options were either to add a second 3-pole motor - as per the rest of our Class 24 and 25s - or to experiment with the newer Hornby 5-pole motors. For evaluation we had earlier bought two 5-pole motor bogies plus the appropriate Ultrascale wheelsets to convert them to P4. Please note that there are three different versions of the Ultrascale 4-axle pack 'A' wheelsets and you need to specify the motor type when ordering - they are not interchangeable (see <http://www.ultrascale.co.uk> for more details).

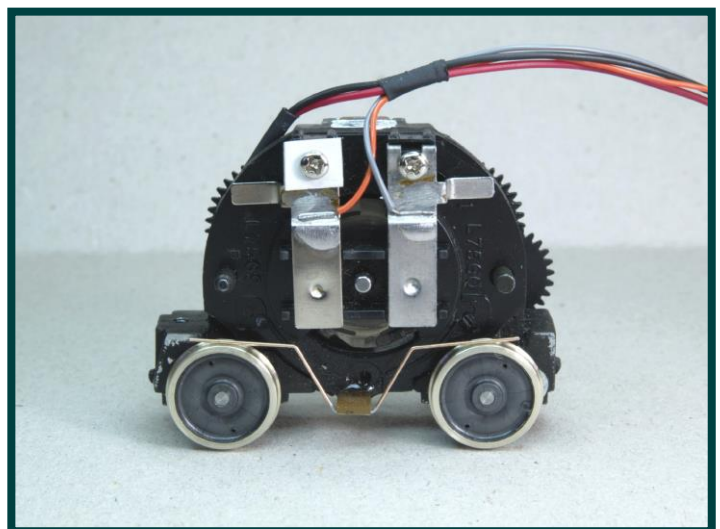
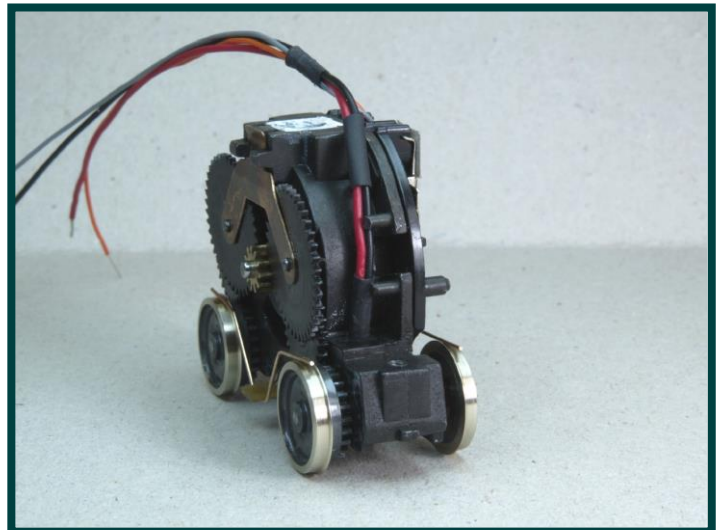
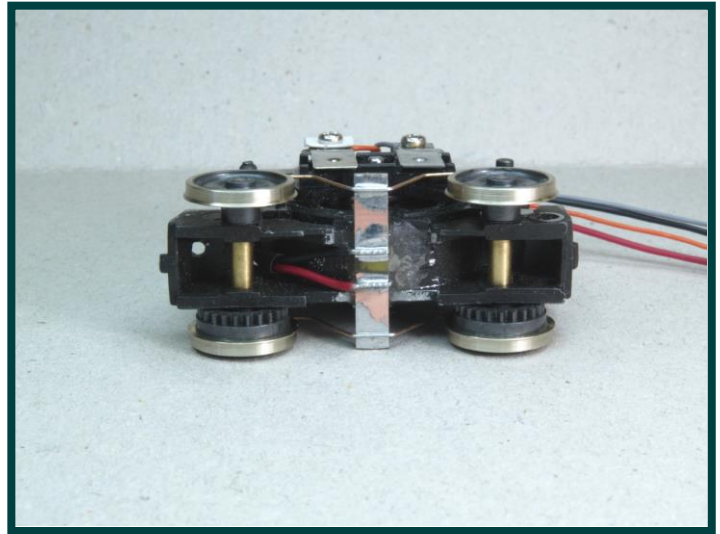
We decided to use 24 047 as a guinea pig for the 5-pole motors and to keep her 3-pole motor as a spare for the rest of the fleet. All our fleet is DCC-chipped - the work required to do this job for DC operation is very similar and we will pick out the differences as we go along. The 3-pole motorised and unpowered trailing bogies were removed from the chassis and the side frame mouldings were recovered. The first and most critical job was to check whether the 5-pole motor would fit.

Happily, apart from a different gear assembly, the 5-pole motor bogie is identical in shape to its predecessor and will drop straight into place without modification to the plastic sideframes. It just remained to modify the chassis at the unpowered end to accept a powered bogie - this is a simple matter of cutting away the cross-beam so the aperture is identical to the other end.

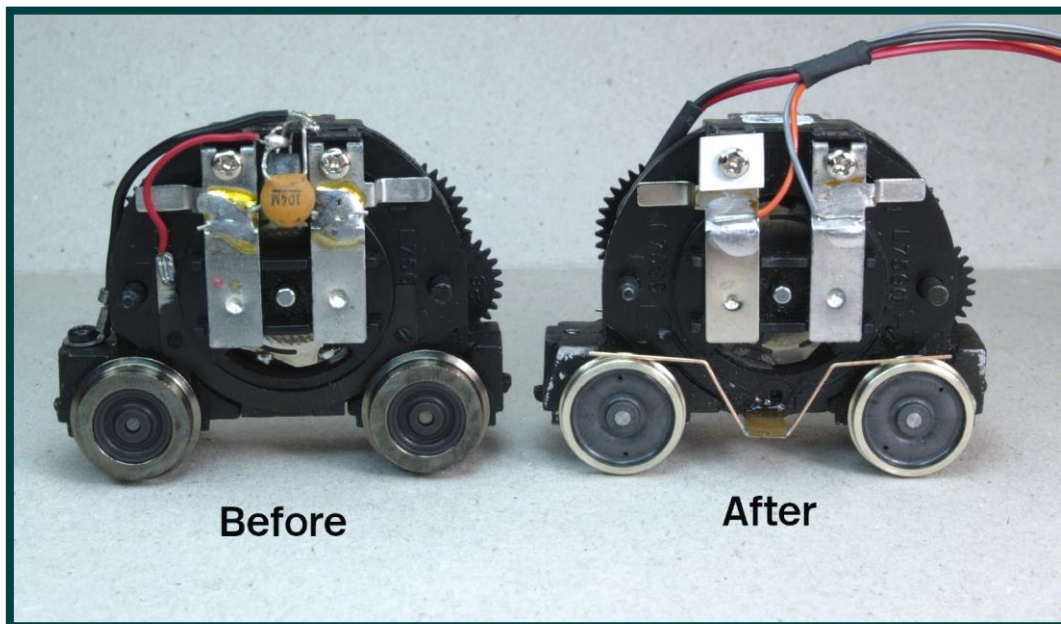
Preparing the 5-pole motor bogie

Changing from 00/DC to P4/DCC requires the following changes:

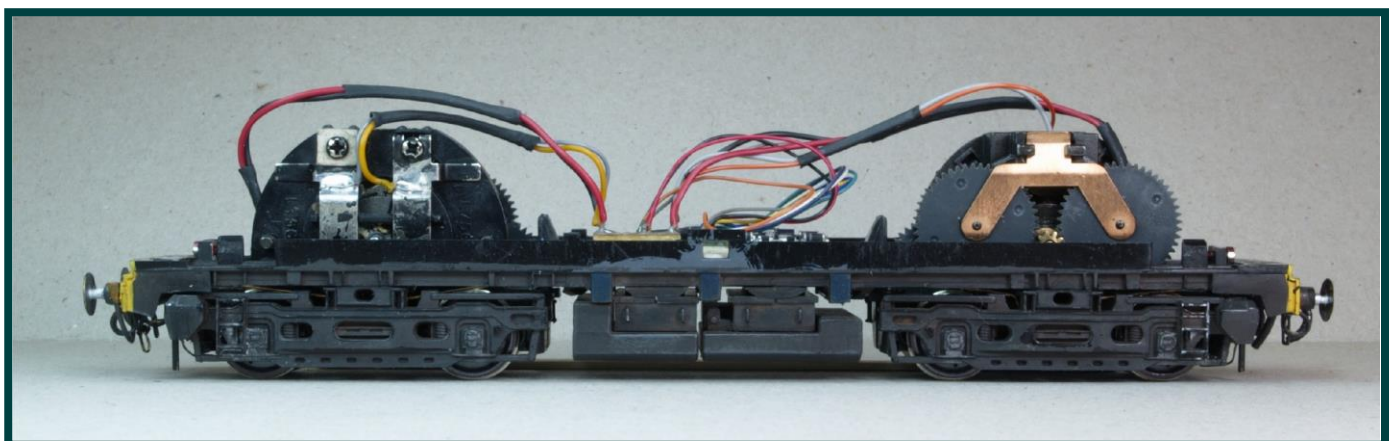
- remove 00 wheelsets.
- temporarily remove the four plastic gears and copper retaining clip (to keep them clean).
- remove pick-ups and connecting wires (the pick-ups will not stretch for the wider P4 gauge and we choose to fully insulate the bogie chassis from track power whereas the Hornby motors have a live frame on the gear side of the motor).
- Remove capacitor (some don't but we always do).
- Drill a 2mm hole through base of the bogie chassis to accept new pick-up wires.
- Fit P4 wheelsets (if you want to use the Hornby wheelsets, replace any rubber traction-tyred wheels with standard ones).
- Make a new pick-up carrier from single-sided copperclad strip and use epoxy adhesive to secure this to the bogie chassis. Remember to 'gap' this strip otherwise there will be tears.
- Fashion pick-ups from 0.5mm phosphor-bronze wire and solder these to the pick-up carrier so that the pick-ups are lightly in tension on the tyre surface.
- Feed new pick-up wires through the 2mm hole and solder to the pick-up carrier in accordance with the accompanying diagram.
- Solder orange and grey motor power wires onto the brush retainers in accordance with the accompanying diagram. All wires need to be long enough to reach the veroboard terminal located at the centre of the underframe



- Important - as supplied, the left hand screw which secures the brush holder is live to the frame and must be insulated. We have used a square of thin card to act as an insulating washer although a nylon screw would be better.
- Re-fit gears, gear carrier and lubricate moving parts. Wires can be tidied using heat-shrink sleeving (this is available from Maplins as is the veroboard).
- Fit bogie side frame moulding to motor. In order to do this you will need to cut out a rectangle from the base of the plastic moulding (to allow clearance for the pick-up carrier).

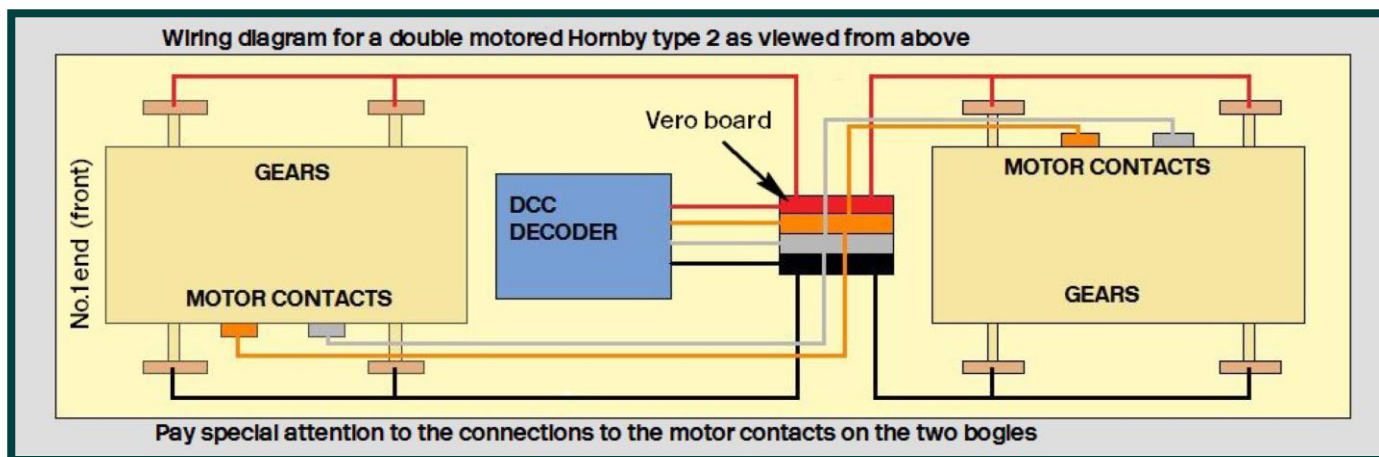


At this stage it might have been a good idea for each motor to have had a few hours of individual running-in but we forgot about it and they initially squabbled with one another before settling down amicably within 24 047.

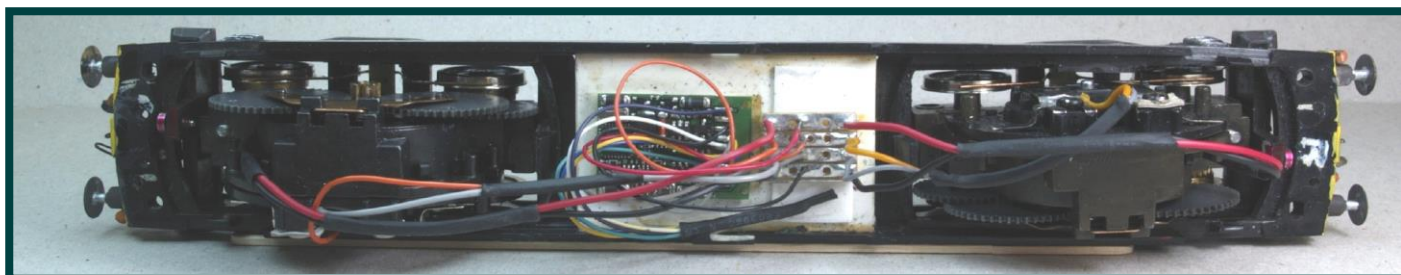


The Final Steps

Finishing 24 047's underframe was straightforward. After Clipping the bogie assemblies back into place, the wires from the two bogies and the DCC decoder were terminated at a veroboard junction block (both the decoder and the veroboard are held in place by double-sided foam sticky pads).



For DC operation all you need to do at this stage is link the red wires to orange and black to grey.



To protect your investment in the DCC decoder it is now important to check your wiring on a 'programming track'. Do not apply track power until you have confirmed that the DCC system will read the locomotive address.

Finally, after a few hours of continuous running a muscle-bound power plant was ready for reunion with the body. The improvement in performance and especially slow-speed behaviour is remarkable. The 5-pole motors also seem much quieter but this may be a reflection of the fact that the 3-poles are nearing the end of their lives. Our plan now is to standardise on the double 5-pole motor installation as each successive Type 2 hits problems.

References:

Ultrascale - <http://www.ultrascale.co.uk>

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