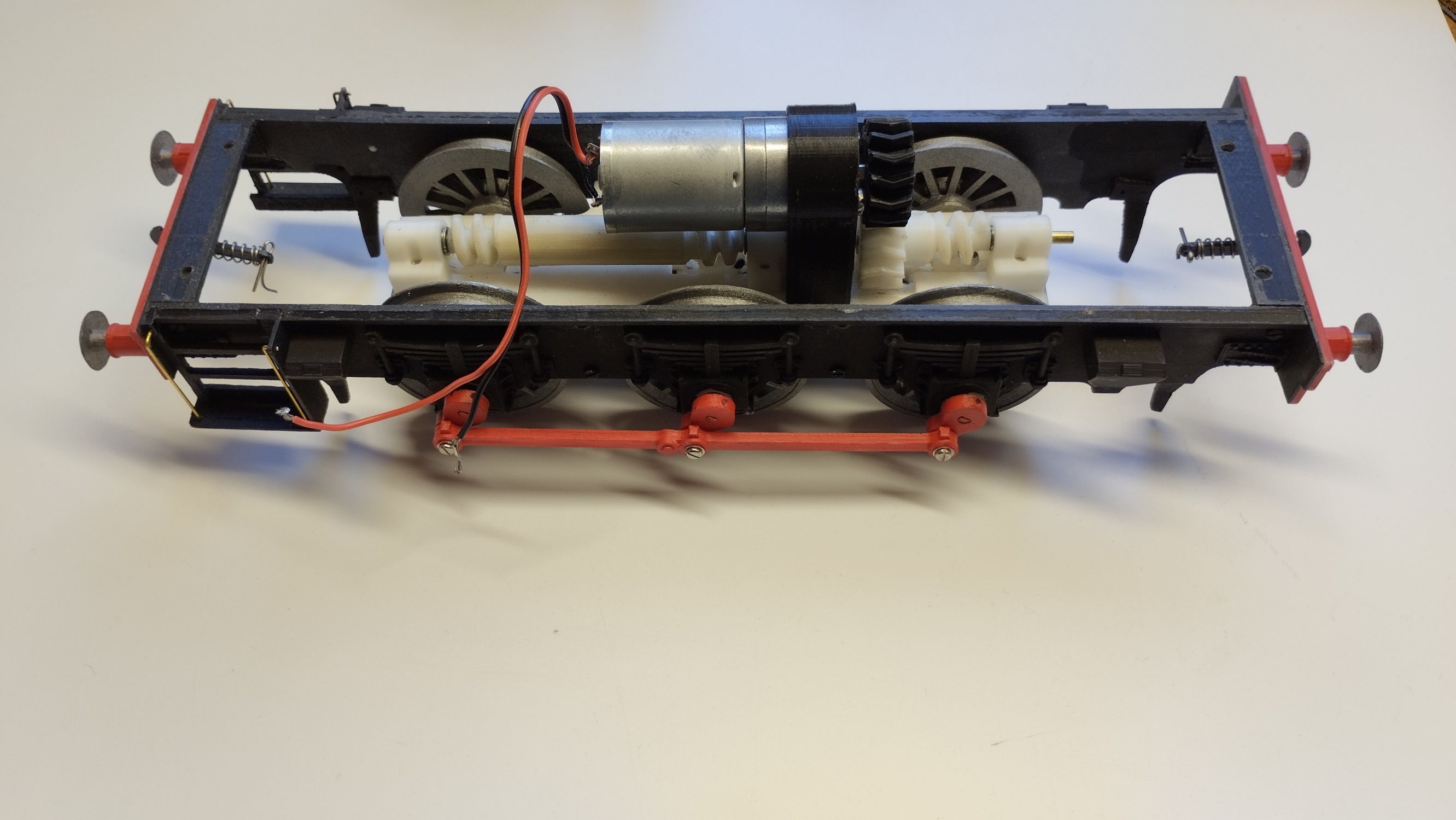
**BR 08 Shunter – revised notes**

This revised note describes the scaling of Peter Davis’s brilliant 08 shunter from its original 1/32 to 10mm and using metric screws. It also describes the installation of the motor, drive and electronics.

The biggest problems associated with the scaling were ironically due to the track gauge being the same. Parts like the buffer beam inners etc and the positioning of the fixing lugs in the floors made it necessary to remake these completely with new 3D models. Also, Peter’s original used American screws, while I wished to use the nearest metric equivalent of M2. Most parts were modified easily using the slicing software to scale the original STL files in all three dimensions which worked very well and it all went together perfectly. I used a scale factor of 1.05 for simplicity.

There was some debate in the G1MRA 3D Circle as to whether to drive one axle and use the connecting rods for the others, or try and drive all three axles simultaneously. I used Rob Huurman’s worm drive for the latter. Rob kindly provided me with a version of his chassis without the air tanks used on the Dutch version. This replaced Peter Davis’s original frame spreaders.



Using M2 grub screws also meant reworking the cranks and I took the opportunity to put in a “D” at the centre. When filing the corresponding flat on the end of the axle rod, don’t forget the connecting rods on the two sides are offset from one another by a quarter turn (90°).

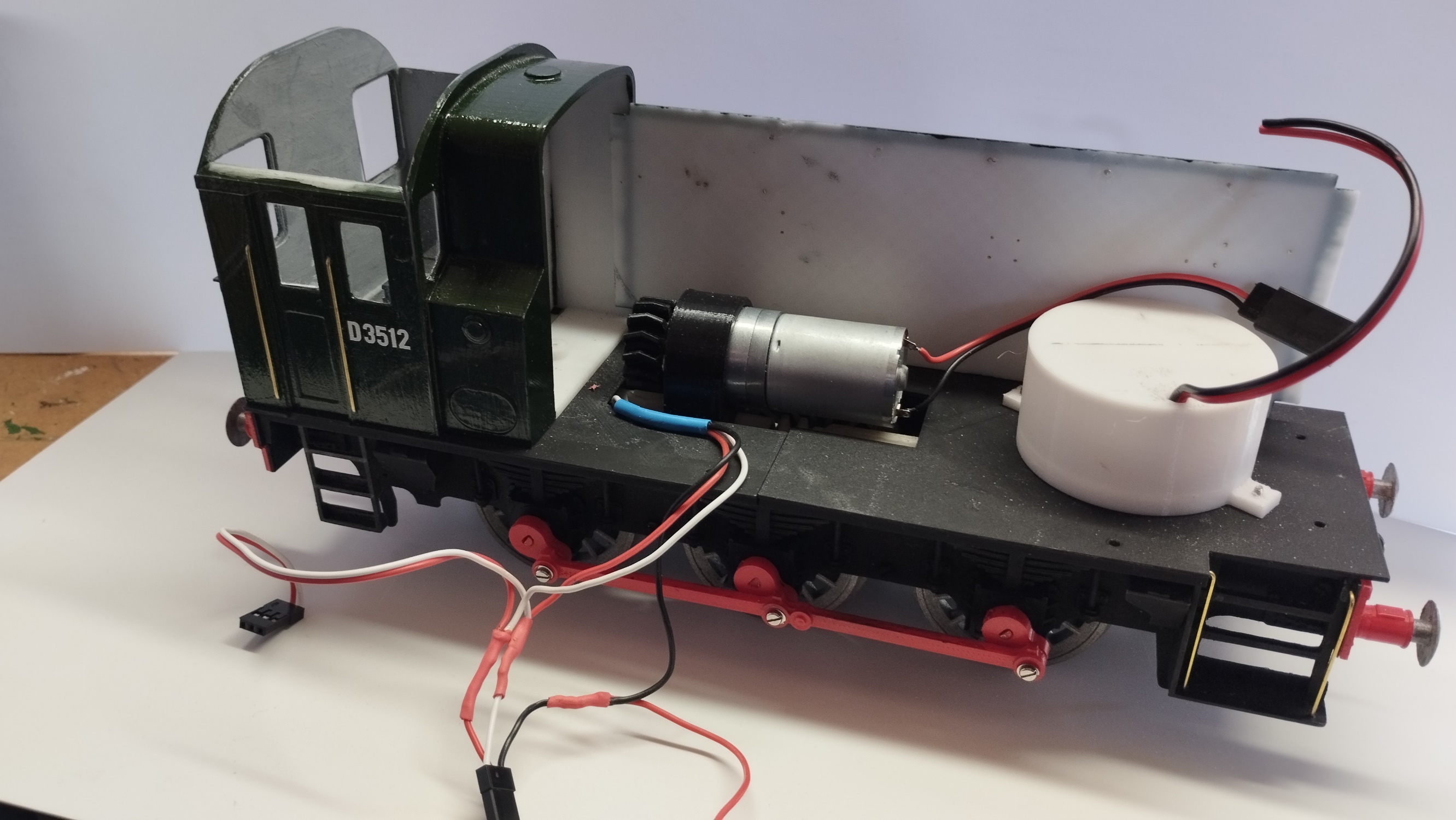
The original wheels would have needed reworking to use M2 grub screws, but I used a scaled version of Rob’s and a reworked hub. When securing the hub to the wheel, the wheel weights need to match the offset in the cranks/connecting rods noted above.

I also used the MR63ZZ ball bearings on the wheel axles and the worm axle. I used 9 bearings altogether – six in the original frames and three in the worm drive axle.

My reworked parts are threaded M2 for the grub screws. They simply need cleaning with a plug tap after printing.

I remade the floors, buffer beam inners and buffers to use M2 screws. The buffer beam inners were also reworked to keep the frame width correct.

The front floor needed a cut out for the loudspeaker and mounting holes for the baffle. Both floors needed an altered cut out to accommodate the motor. I used Rob’s recommended JGA25 motor in the 1250 rpm version, rather than the original N20, which I found underpowered and ran very hot.

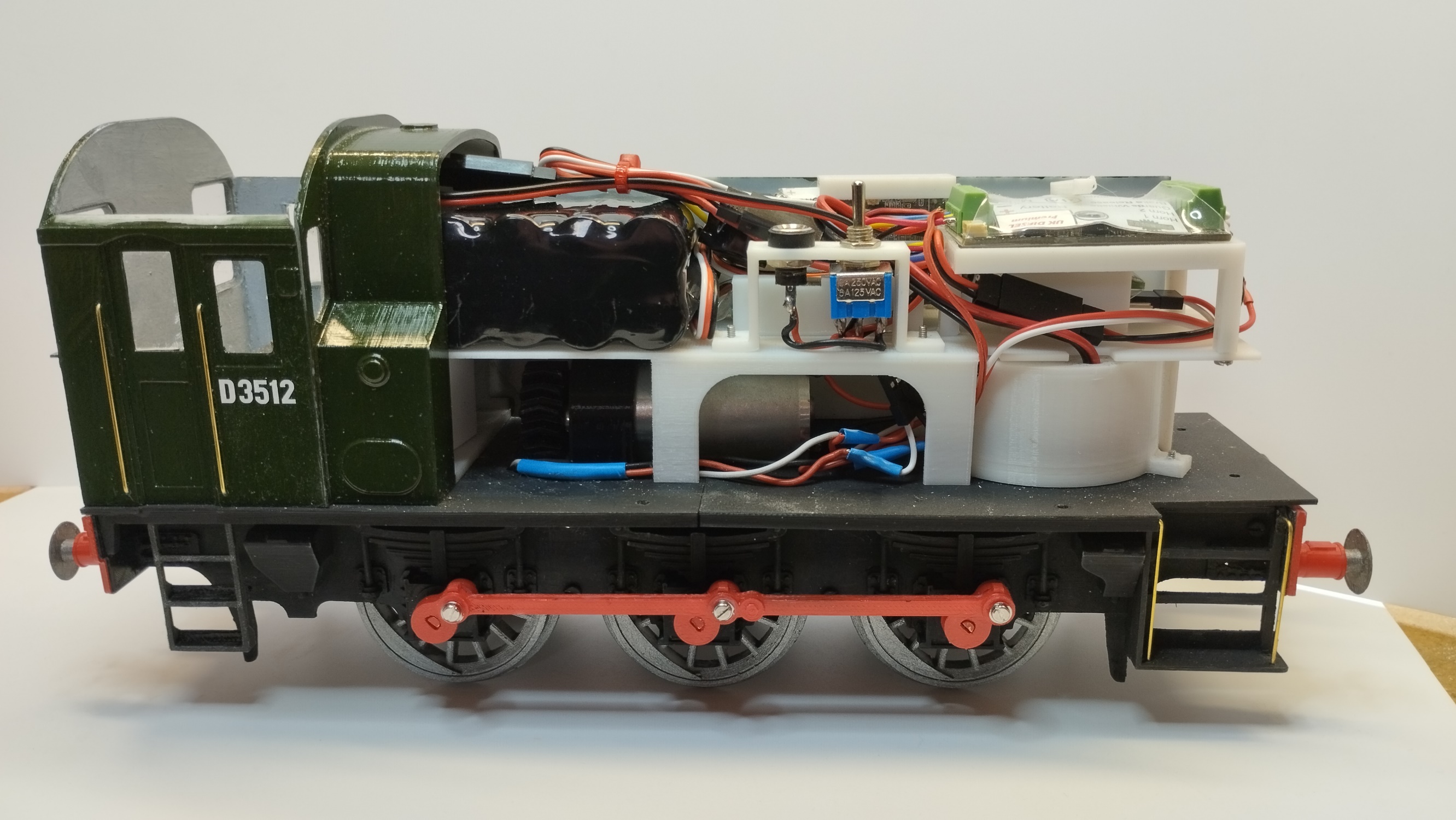


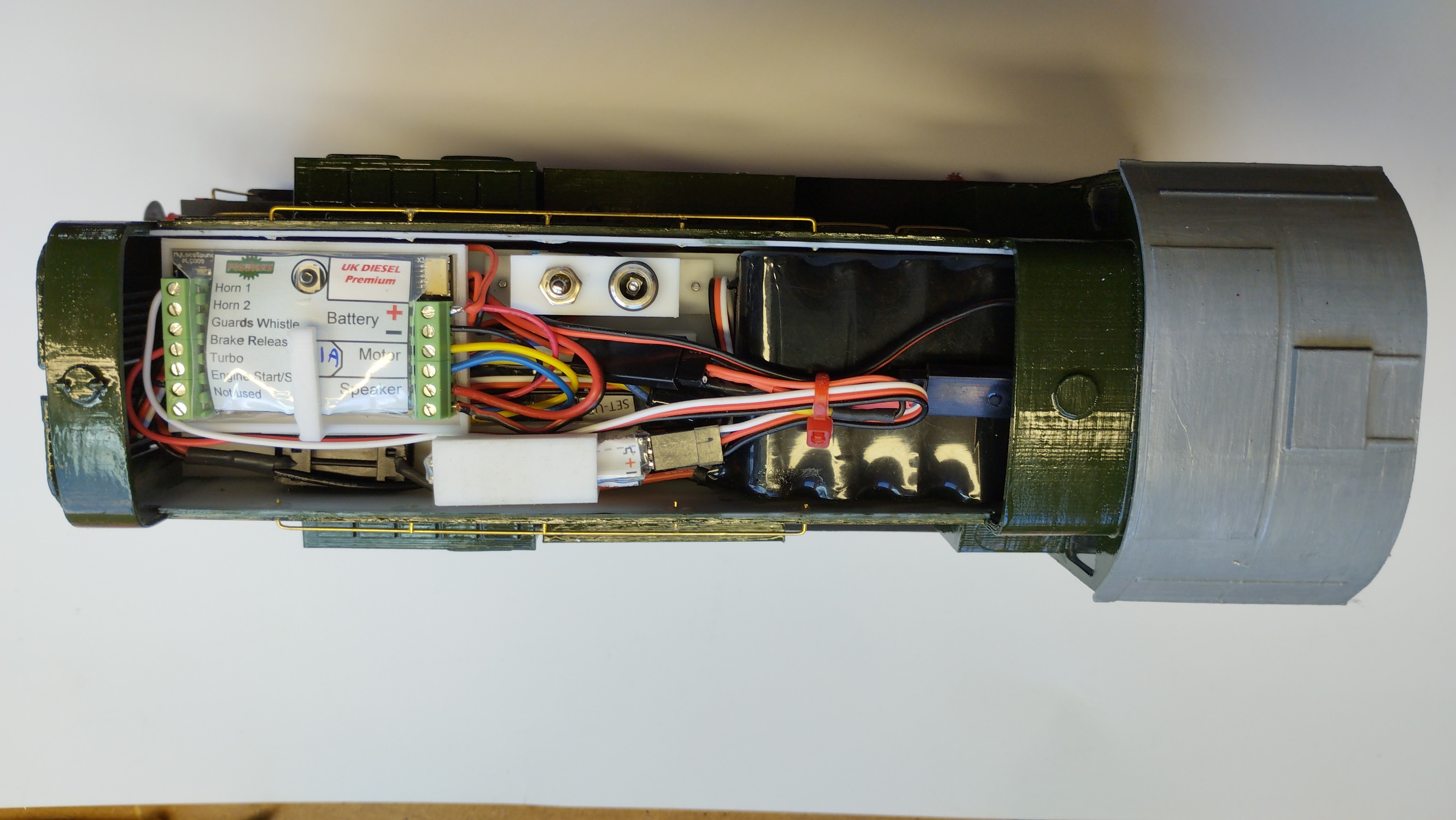
The motor and loudspeaker mounted (the additional wiring is for the directional lights at the rear).

The loudspeaker used is the 2” Visaton K50 from Fosworks (SND-575) mounted face down and fitted with an infinite baffle. I had used this in another model and it proved to have good quality sound and was more than loud enough. The other electronics items are also from Fosworks (RX22, ESC-165, MCS-1 and SND-701). The sound card usefully includes the particular horn sound for the 08 shunter.

I also created an internal mounting platform and clips to hold the battery pack, receiver, sound card, speed controller and switch card. Additionally, there is a bracket for the on/off switch and charge socket.

In the end I didn’t use the top spreaders, as the electronics and battery pack do the job. I found the electronics, and particularly the loudspeaker and battery pack, would only just fit into the available width. It would be interesting to see how this could be achieved with the smaller 1/32 version.







**Files uploaded are** –

Reworked from Peter Davis’s originals - floors, buffer beam inners, crank, top spreader, cab floor and buffer (Note these are already 10mm scale size).

My electronics mounting parts - LS baffle, electronics platform, board clips and switch bracket.

Reworked from Rob Huurman’s originals for the worm drive – wheel hub, wheel cog and motor holder. (Note these are already 10mm scale size.)

Rob Huurman’s original chassis without air tanks, single and double worms – note these are 1/32 scale (see below).

Rob Huurman’s worm holders 1 and 2 (these are already the correct size – see below).

**NB. If the filename includes “PJN” these parts are already 10mm scale size.**

**Scaling of worm drive parts –**

Double and single worms – horizontal length only (to match wheelbase).

Chassis – length and height only (width between frames needs to be retained).

Motor cog – height only, not diameter. (This keeps the mating correct with the cog section of the single worm.)

**Worm drive parts NOT scaled –**

Worm holder 1 (x1) and worm holder 2 (x2)

**Other parts scaled**

Wheels – height and width, not thickness. These are fitted with my reworked hubs.

**Other construction notes –**

The axle holes in the original frames need opening out to 6mm to accommodate the MR63ZZ ball bearings.

The double and single worms scaling necessarily created oval grub screw holes. I counterbored the holes to 4mm, drilled through the axle and fitted a 6mm M2 nut and bolt instead.

The worm holders and motor holder have moulded M3 threads and are secured from underneath.

I recommend printing the cranks, wheel cogs and wheel hubs at 100% density for strength of the grubscrew threads.

P J Newbury

31 March 2024