
Building the Connoisseur Models J15 with Radio Control

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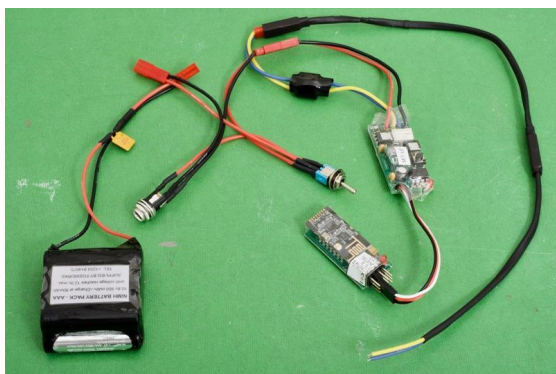
These notes describe how I fitted radio control into my model of a Great Eastern Railway class Y14. The loco and its tender are based on the Connoisseur Models kit for a LNER J15, with some alternative and extra parts.

I have modelled a loco from batch S.28 (built 1891-2) in its original GER condition. All of the radio equipment is inside the tender and so the methods described here are suitable for any prototype built from this kit.

It is useful to know that this kit goes together by design. The etched parts do not need alterations to make them fit together, and so it is straightforward to assess the requirements of the radio equipment and then modify the parts before assembly.

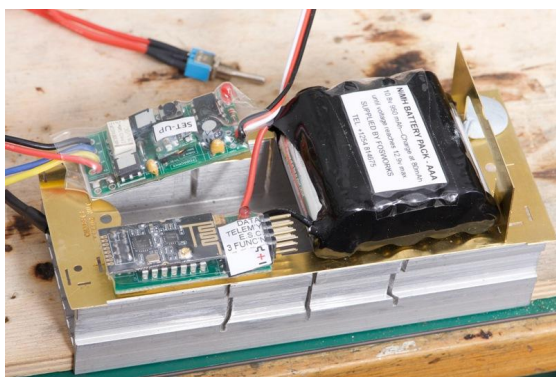
My main design decisions were the following:

- Battery pack placed across the width of the tender and supported by a false floor
- All control equipment inside the tender
- Radio reception using the aerial built into the receiver
- Charging socket and control switch accessible when the model is on the track
- A plug and socket under the loco to connect the wires from the tender
- Tender built as three subassemblies (body, footplate and chassis) instead of two as intended by the design of the kit



The radio control equipment is a Fosworks system using their FRx22H Omni receiver, ESC-161 Cobra speed controller and (not illustrated) their TX 2.0 Omni handset.

The battery pack includes a self-resetting fuse in one of its leads. This is an essential feature to protect the wiring and indeed the battery pack and model in the event of a short circuit in the rest of system.



Here is a mock-up with the radio control parts arranged on the footplate of the tender. The rear bulkhead is resting loose here and I omitted it from the build to create more space for the battery pack. The parts are sitting on the mitre block to give me some space to hide the wires from the battery pack.



The most important design decision for the radio equipment is the style of the battery pack. I have used nine AAA size NiMh (rechargeable) cells arranged across the width of the tender. An odd number of cells will pack together sufficiently tightly to fit into the vertical space inside the body of the tender.



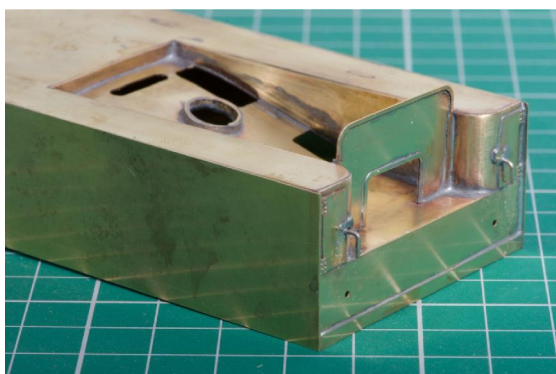
I built the tender body working from the top down, which is the opposite direction to that suggested in the instructions for the kit. I began by modifying the sides and floor of the coal space to make room for the two circuit boards to go underneath.



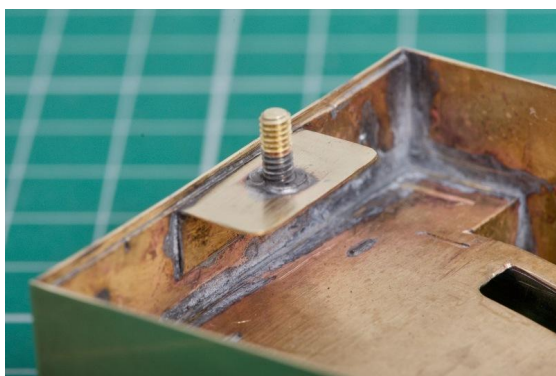
The bodies of the charging socket (rear) and the power switch (front) go between the two circuit boards.



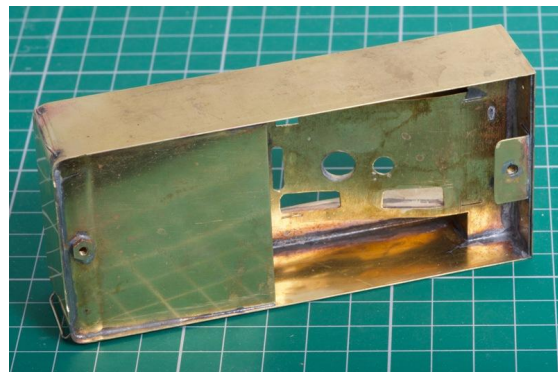
I cut three slots in the floor of the coal space to help the radio communications to work.



I also made a boss to lift the charging socket. The idea here was to let me glue some coal onto the model and keep it outside the socket. The boss also reduces the space the socket needs inside the model.



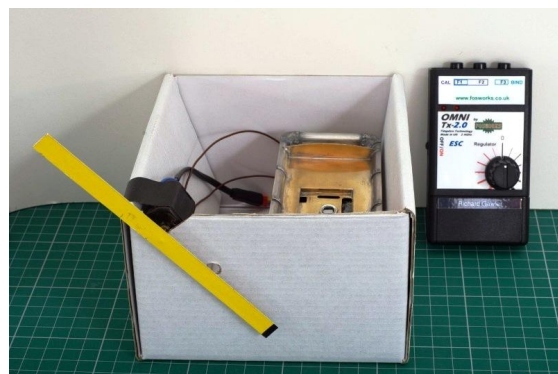
I made a new mounting to hold the front of the tender together. The machine screw passes through the footplate and the front frame spacer to be secured by a nut.



I added a false floor (not part of the kit) to hold the battery pack. The floor is 0.45 mm brass sheet, and is angled carefully to let the battery pack slide into place.

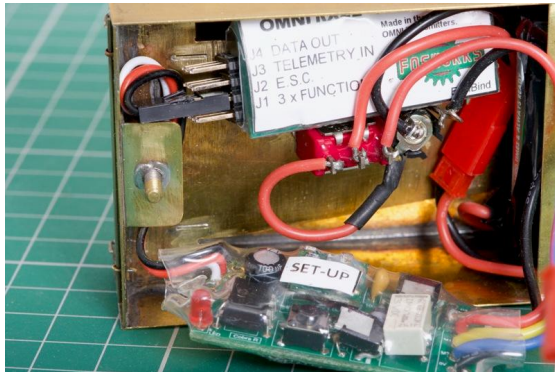


I continued to assemble the body so that most of its metal parts were in place. This seemed sensible before trying to evaluate the long-distance performance of the radio equipment.



Then I took the body outdoors to do the range trial. The receiver and control board were inside the model, and the control board was driving a 12 volt motor. The trial needed two people because the spinning propeller was invisible to the person holding the controller handset.

The reliable range was 100 metres, and blocking the slots in the floor of the coal space with kitchen foil didn't degrade the range, so I suspect I only really needed one slot. Certainly, the built-in aerial on the receiver module is perfectly adequate.

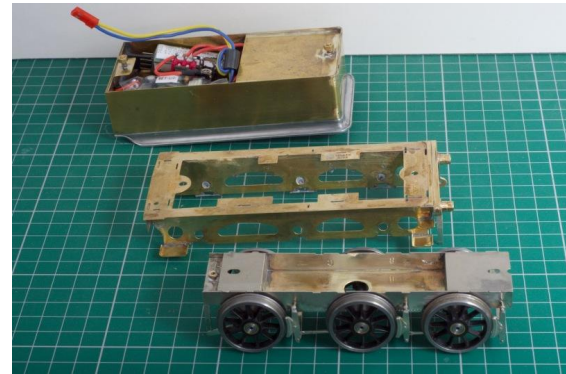


The wiring harnesses from Fosworks turned out to be too bulky to fit. I cut them down and added new wiring to get everything to fit in.

The charging socket fits inside the envelope of the tender body, but the solder tags and wiring on the toggle switch descend into the chassis assembly below.



The charging socket and the toggle switch are easy to reach without lifting the model off the track.



Construction then continued with the self-contained footplate assembly and the chassis assembly.



The tender side frames supplied in the kit are completely adequate. I used some Alan Gibson ones because I wanted to represent an earlier tender.

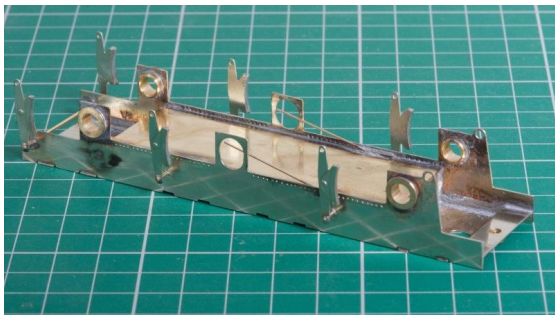
The crosspiece seen here proved unnecessary and I removed it later. I added the axleboxes and their springs after the model was painted; this let the painter do the lining around the oval cutouts.



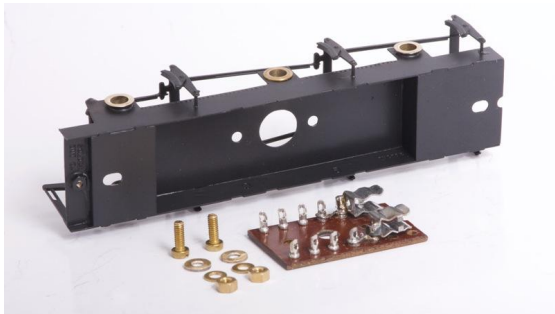
At the back of the model, I divided the rear mounting angle (parts 12 and 13) between the body and footplate assemblies to hide the join.



The completed footplate assembly is sandwiched between the tender body and the tender chassis in the finished model.



I omitted two of the frame spacers for the tender chassis and added a floor made from sheet brass.



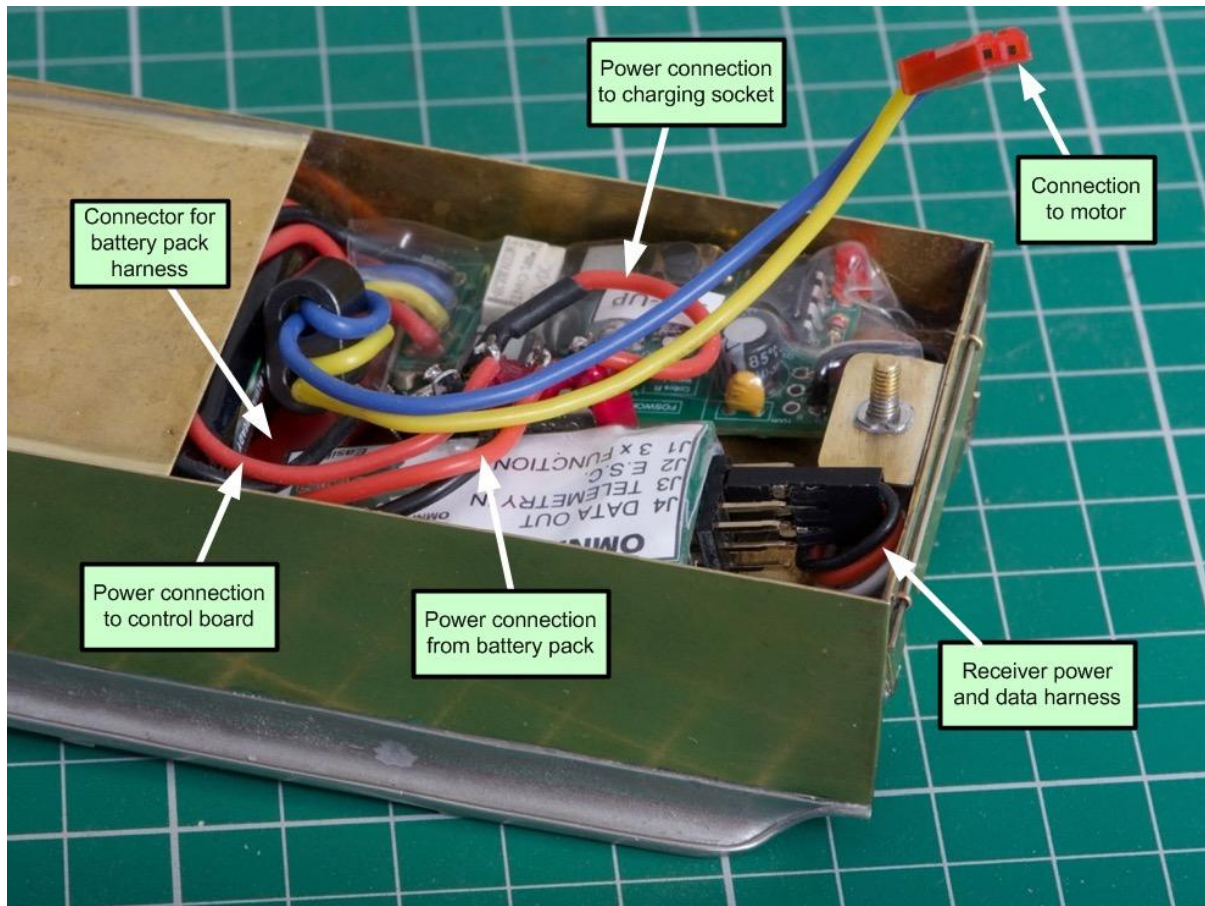
This created a tray-like space to hold a tag board with a fuse. The fuse is probably a

luxury; I know that the motor is unlikely to fail as a short circuit, but the fuse gives me a little peace of mind.

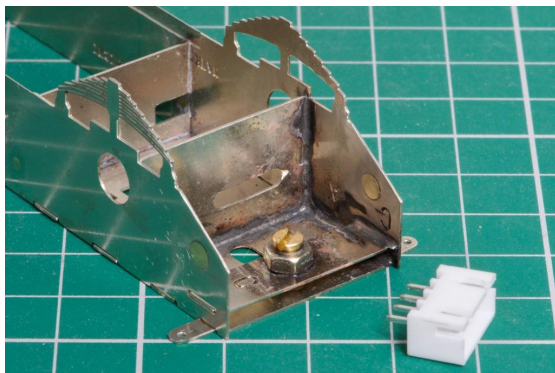
The large hole in the new floor is a provision for wiring to pick-ups on the tender wheels, in case this is useful in the future. I also cut a hole in the front-most spacer to let me take the two motor wires out horizontally to the loco.



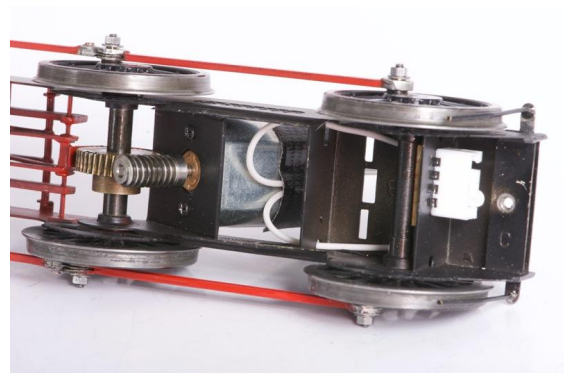
The completed radio control installation includes two wires from the tender to the loco. PVC is difficult to paint so I chose brown insulation to represent the grime found on the pipes near here on the prototype.



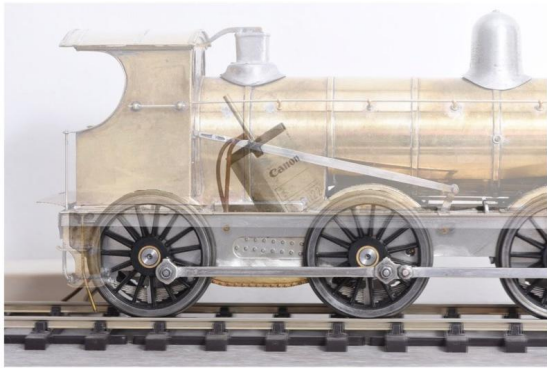
Here is an overview of the various wires fitted into the tender. Later, I cut off the two-way connector labelled “Connection to motor” and soldered these wires onto the tag board in the chassis.



With all of the radio control equipment going into the tender, the modifications to the loco were minimal. Before I built the chassis, I cut a narrow slot in the rearmost frame spacer to accept the four pins of a ‘Molex’ style power connector. I also cut slots in the adjacent spacer to accept the wiring to the motor, and I filled the mounting holes for plunger pickups.



The pins on the Molex connector pass into a piece of stripboard on the other side of the frame spacer. I turned down the middle of the rear axle to make a clearance in front of the stripboard, and this was the only unplanned structural alteration needed during the build.



The wiring here is straightforward, with just two wires from the stripboard to the motor.



My completed Y14 loco has a new smokebox door, buffers, lubricator and cab roof, and a revised reverser reach rod. The rest of the model is straight from the Connoisseur kit.



The painting and lining is by Warren Haywood. A simplified account of this build, which includes photographs of the model at work, can be found in the Gauge O Guild *Gazette* published in February 2024. Finally, a special thank you goes to Jim McGeown for his help and support during the build. RG



Preparing for a fresh outing. The control equipment supplied by Fosworks includes this charger for the battery pack and the controller handset.

Each cell in the battery pack provides about 1.2 volts, so a nominal 10.8 volts total. My completed model achieves a scale 25 mph using this supply with a Canon 12V motor and a 40:1 gear set supplied by Jim McGeown. This is fine for a Victorian freight loco but I would use a lower gear ratio for passenger work.