Farish N Class Mogul Conversion etch



Prototype model (missing balance weights and connecting rods with trailing knuckle) The etch has the correct leading knuckle position.

Shopping list

Farish Conversion bearings (3-221) 3 pairs

Conversion muffs (3-223) x2

Gear muff (3-222)x1

Trailing axle muff (3-100) 1 pack

Frame bush (3-133) 1 pack

6.5mm pony wheels (3-051) 1 pair

10.5mm driving wheels (3-010) 3 Pairs

(optional if using tender sub-chassis) 8mm tender wheels, bearings muffs

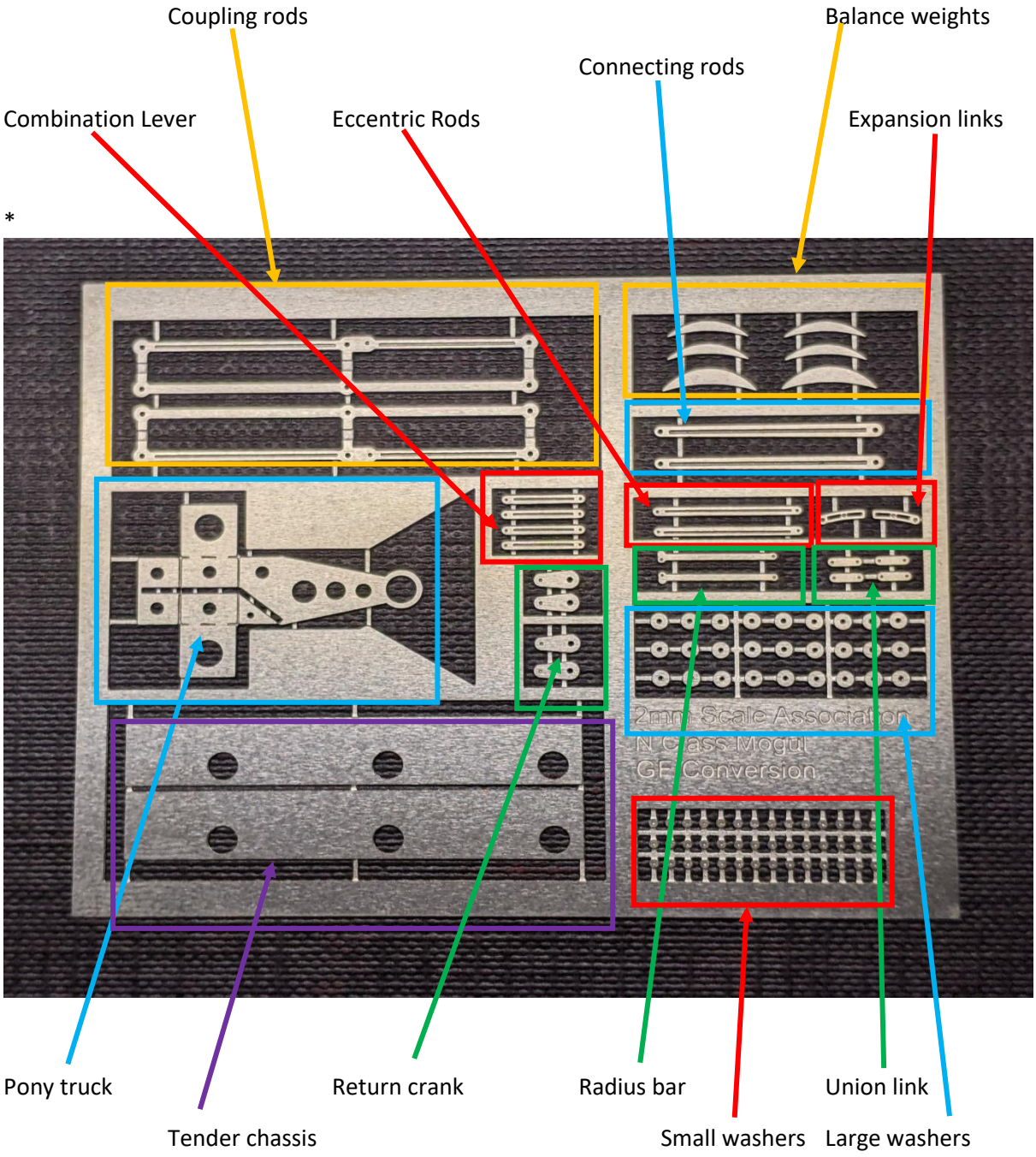
0.3mm wire

0.5mm crankpins (3-126 or 3-127 for mk 5, 3-125 for mk6 wheels)

Small piece of thin copper clad PCB

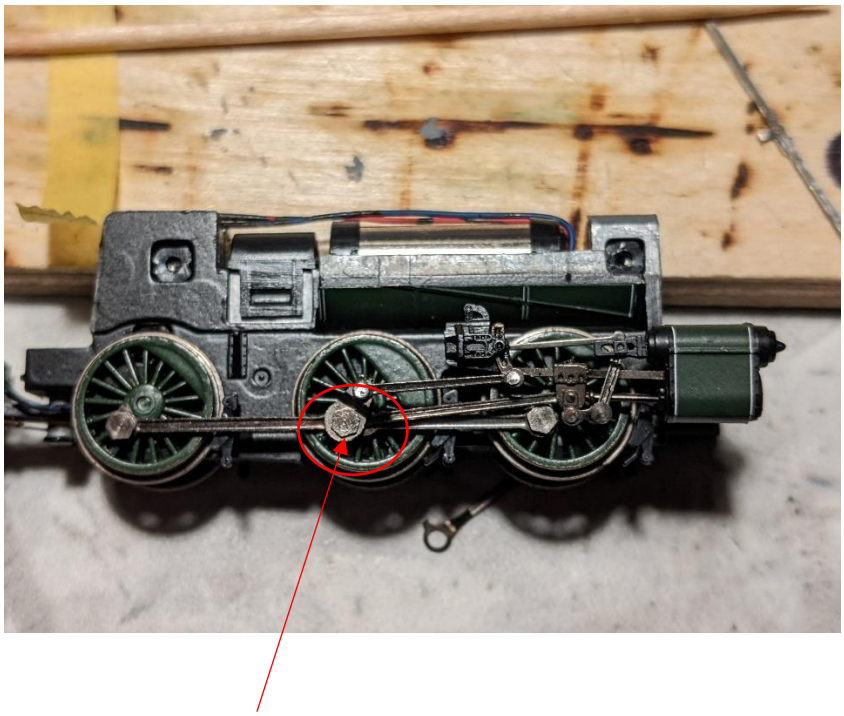
Important note – it is necessary to accurately drill the original piston slides with 0.3 and 0.5mm holes. An appropriate drill and bits is essential as this appears impossible to drill by hand.

Parts in the etch



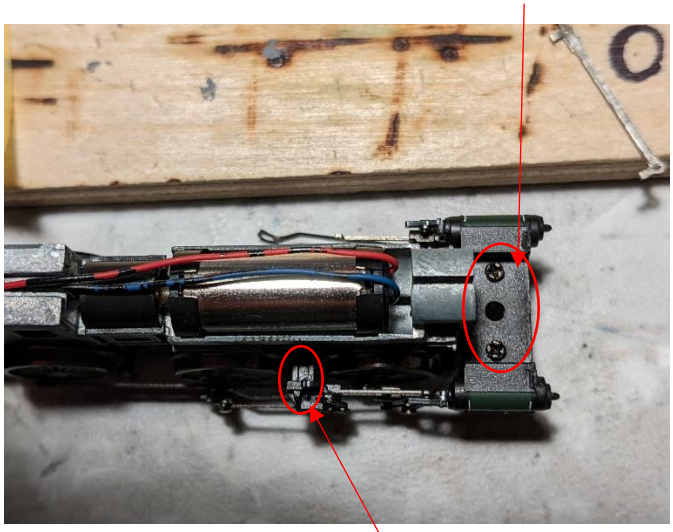
Method

Remove the screw retaining the front bogie and the screw in the centre retaining the body to chassis. At the base of the cab, gently lever the vertical strip below the footplate and this will release the body, allowing it to be pulled vertically upward, revealing the chassis.



Undo the hex head screw on the return crank so that the valve gear is disconnected from the coupled wheels.

Remove the two screws on top of the cylinder block



Lever out the plastic support blocks retaining the expansion links These are inserted into square holes in the side of the chassis block

This allows you to completely remove all the valve gear, leaving a simple 0-6-0 coupled chassis.

Prepare the main driving wheels with balance weights, crank pins and paint.

Each axle needs preparing with the bushes placed onto the wheel stub axle before adding the muff. Bring each pair together and squeeze together until gauged using the association back to back gauge. The muff needs to be central and I found that a 0.5mm gap either side between the bearing and the wheel gave a good fit. Use the crankpins to show that everything is quartered then set to gauge. Ideally, using the association quartering tool makes this job easier.

Once the three axles are prepared (Drive gear on centre axle with larger balance weights) they can be fitted to the chassis.

Remove the screws on the underside of the chassis, allowing the retaining plate to be removed. Then all the Farish wheels can be removed with bearings as a set.

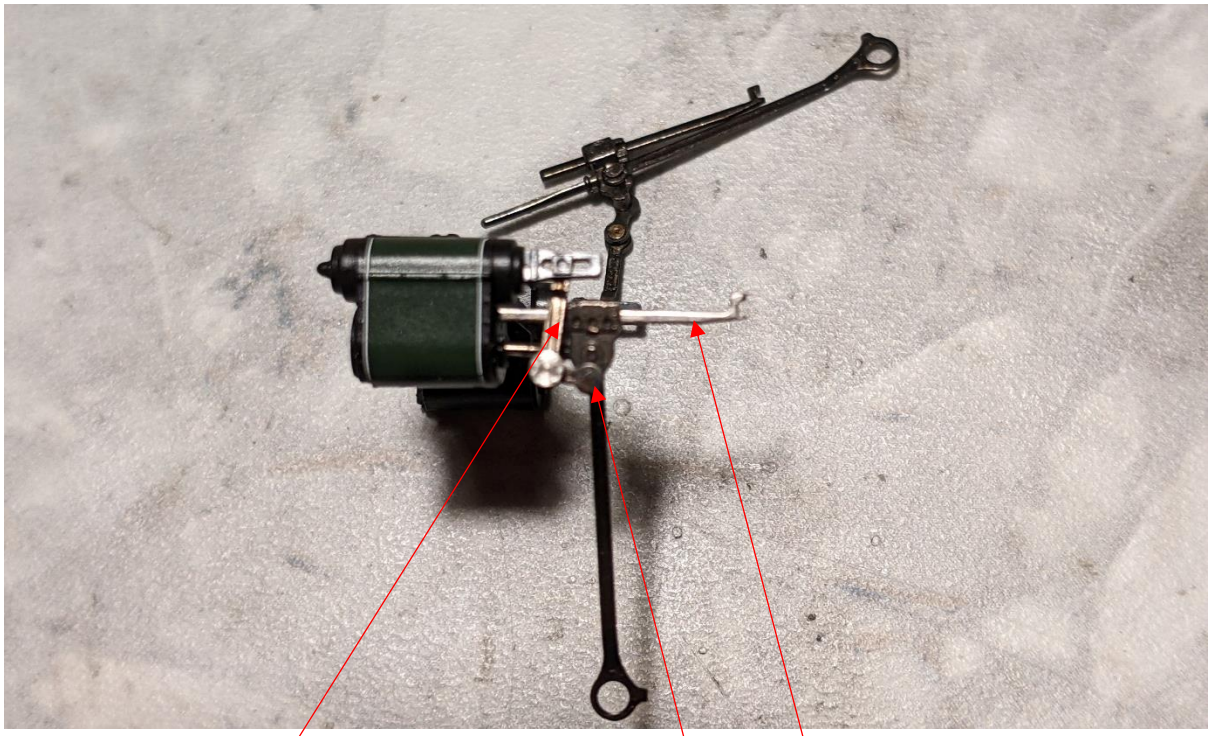
Drop in the replacement axles in their new bushes and replace the retaining plate.

Fold up the coupling rods, sweating them as pairs with solder. Ream the crank pin holes as required and fit to the wheels. Retain the rods with suitable wire insulation and test the loco and tender combination as an 0-6-0. If everything is fine and works well, replace the retainers on front and rear axles with the large crankpin washers.

Now we move to the valve gear.

The etch replaces most links with finer like for like items, but the retaining methods change and the slide bars and cross heads are retained.

The Farish radius bars are retained on the cylinders and the support brackets byplastic rivets.



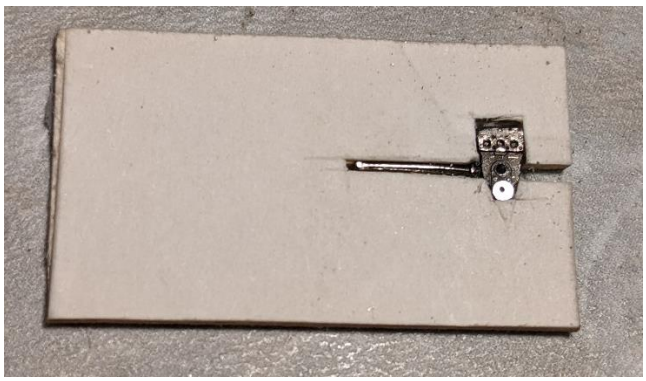
This allows the combination lever to be removed from the plastic rivet at the top. The union link can be removed from the crosshead by filing the rivet away here

The slidebar is generally a loose fit in the cylinder and can be withdrawn. Keep the crosshead and slidebar for the next operation.

The next part must be done very carefully and will need appropriate equipment. I used a Proxxon MF70 milling machine as a vertical drill, the key thing is to be able to hold the crosshead and drill very small holes precisely in the hard metal casting.

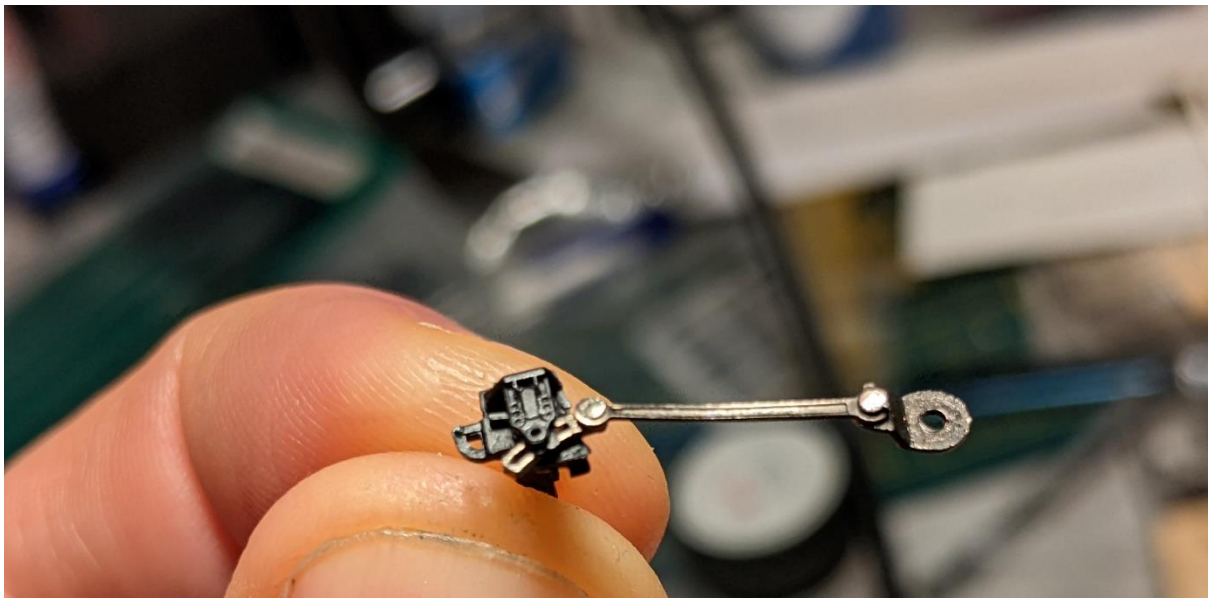
Having got the union link removed, continue filing the rivet on the front face down flush. Similarly, file back the rivet on the rear where the connecting rod was located

Holding the crosshead was found to be easiest using two layers of mounting board card, with a cut out shape in the top layer. This combination allowed retention of the crosshead pushing into the lower layer with the top layer locating the sideways

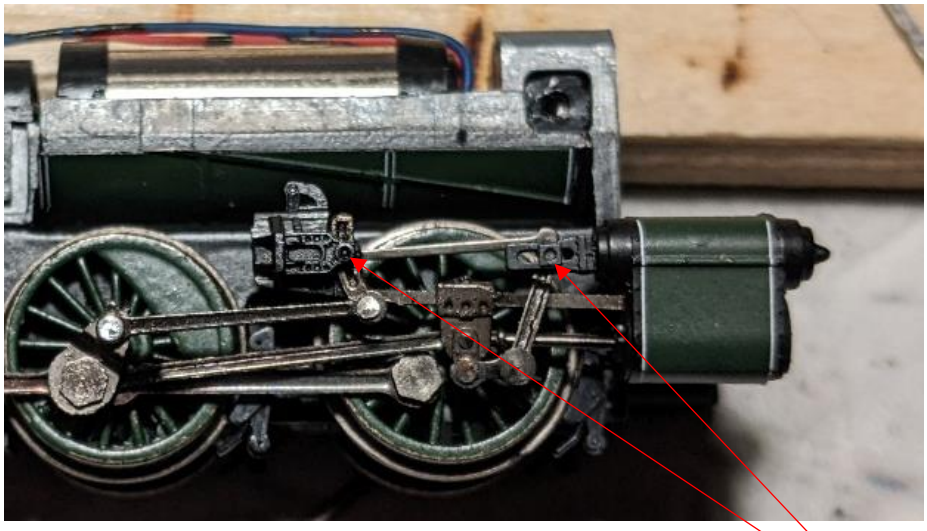




The central hole needs to be 0.5mm diameter and the lower hole is 0.3 -0.35. Specialist drill bits are much easier to use with larger shanks. Pictured is a shanked drill from Horley Drill Services.

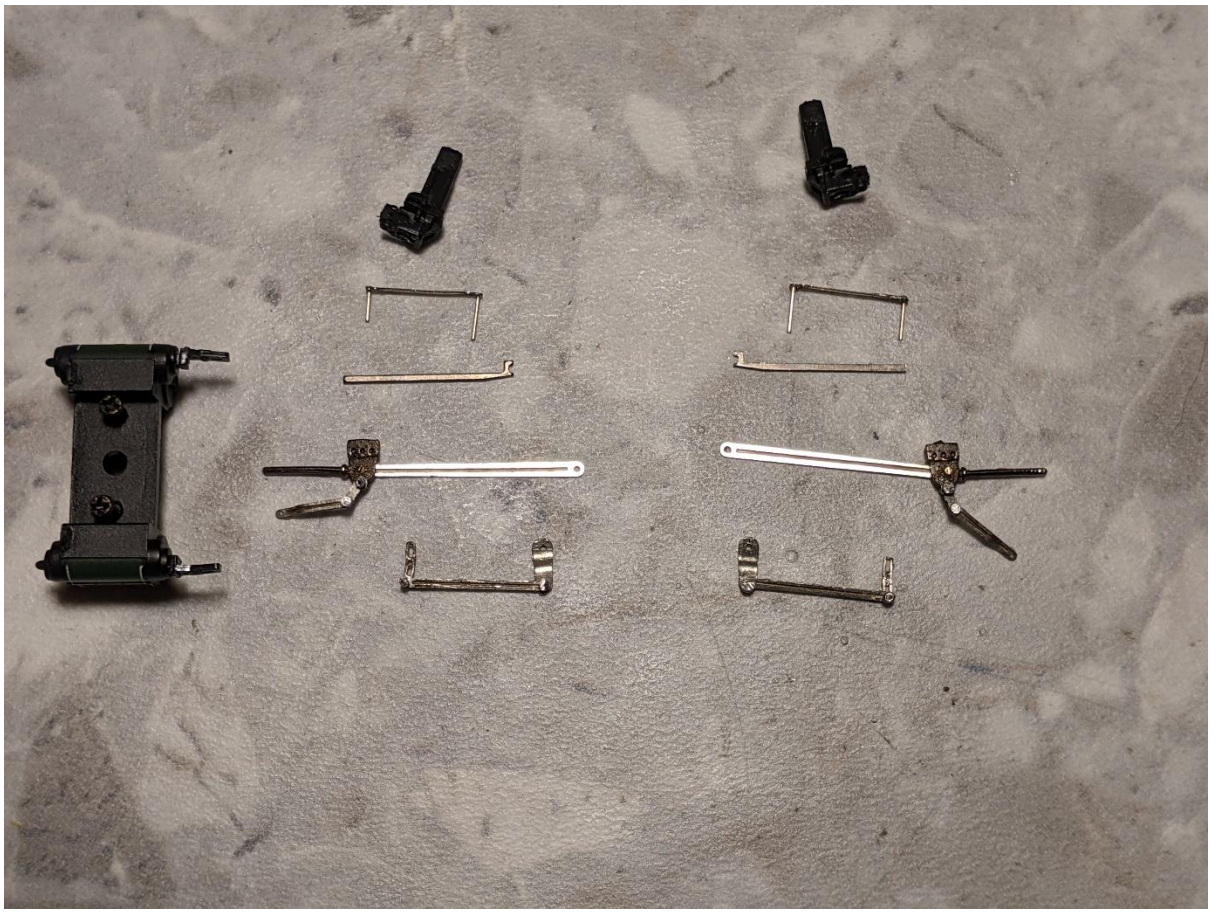


The expansion links can be gently levered out of the plastic support bracket. The original is cast and has nubs either side at the pivot point.



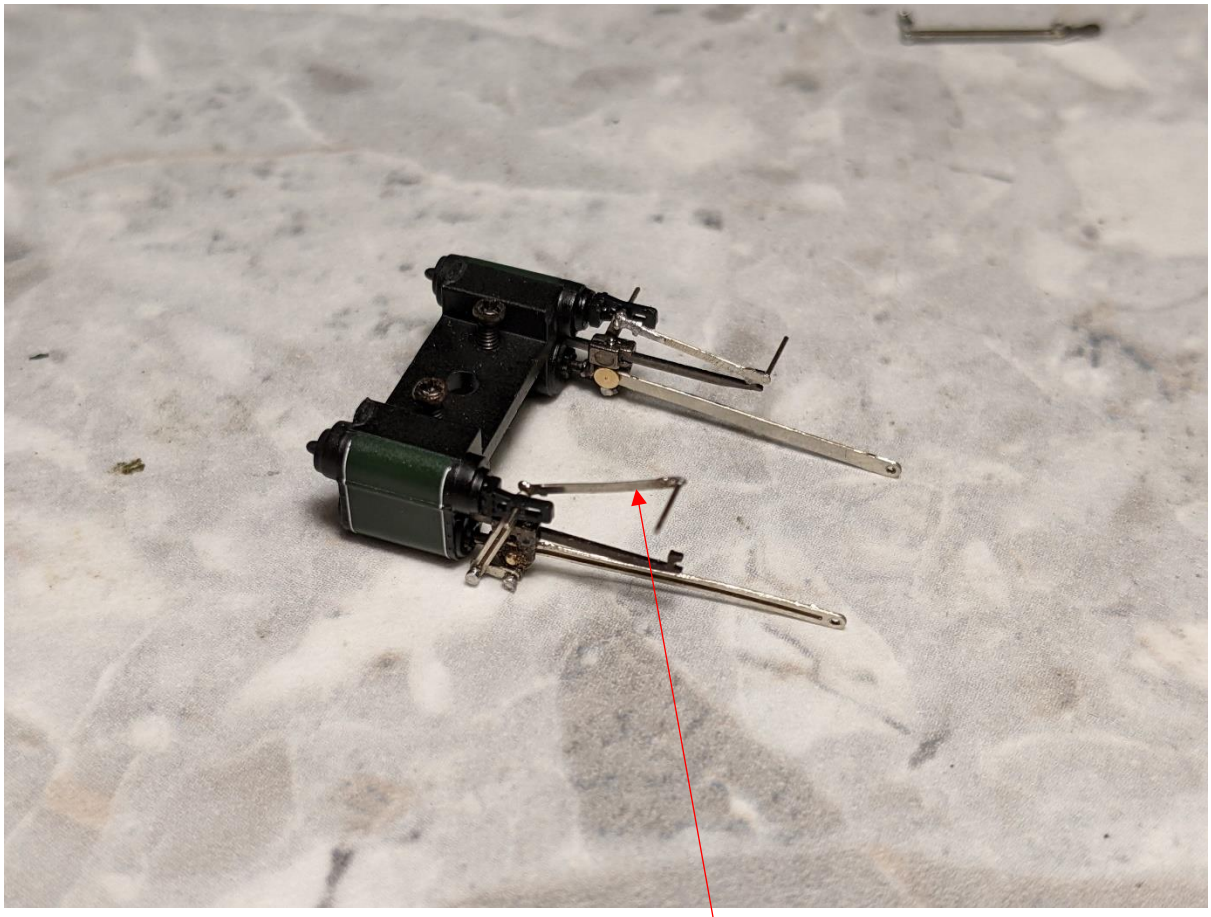
Use a small hand drill to make 0.35mm holes in the plastic parts. Use the indents as guide.

Now build up the combinations of parts to replicate the removed items. This includes bending up the combination levers to clear the crosshead (part of the reason why 2 pairs of this and the union link are included in case the first bend attempt goes wrong.



Use 0.3 – 0.35mm wire and small washers to make up the joints, with just the connecting rods using 0.5mm at the knuckle end.

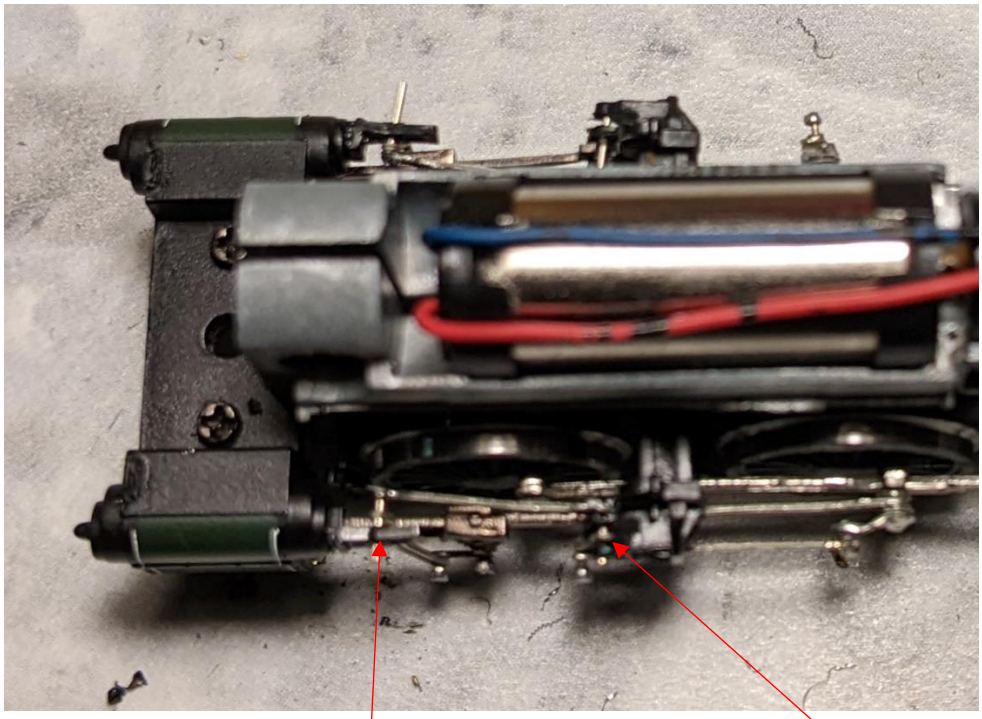
The Radius bars just have 0.3mm wire soldered on with tails of roughly 4mm. These will be pushed through the holes in the plastic indicated above.



To re-assemble push the slide bars through the crossheads and insert into the cylinders. Maybe use a dab of glue at the front on the slidebar to keep in in the cylinder block. Swing up the union link with the kink and push the wire of the front end of the radius bar (end with the lump) through it and then through the plastic hole just drilled. The radius bars deliberately have over long wire at this stage and can rotate, but the slide bars should now move correctly.

Re-fit this assembly to he chassis with the screws at the front.

Now take the plastic support bracket and insert the wire at the rear of the radius bar into the hole. Gently insert the support bracket into its mounting hole part way. Now place the expansion link into the vertical slot in the bracket and push the wire through the middle hole in the expansion link. Gently push everything home. You should be able to move the radius bar in and out as the wire tails are long, so position this at a suitable point and use a tiny dab of superglue in the front faces of the brackets, the trim the wire tails to length.



Tail of wire going through union link then into plastic cylinder bracket.

Tail going through bracket, expansion link and bracket again

The radius bar is pushed outboard to support before securing with glue on the outer faces.

Then solder the suitably bent return crank to the centre driver crank pin, ensuring that the offset from the axle centre is as small as possible while making the eccentric rod move.

Obviously repeat operations for both sides.

At this point the chassis should run with full valve gear.

It was found that turning the original Farish tender wheels worked well. As the association wheel turning service is currently unavailable, the alternatives are find a member with a lathe, most likely through the area group network, or build a sub-chassis to take association wheels and bearings.

Suitable chassis plates to build the tender chassis are included, although the draw bar means that pick-up arrangements have to be altered and PCB spacers would have to be ingeniously fitted around the existing drawbar or another method devised to link the loco and tender.

Now re-fit the body to the chassis, noting that the support brackets have to be fully hole as these protrude through a slot in the footplate.

The front pony truck needs some copperclad PCB strips soldering to the three faces of the pony truck etch.5.5mm by 3mm is a good starting size. The fold lines are on the outside of the bends and the PCB needs to be soldered inside the folded item.

It is recommended to put solder on the face of the PCB and line up under he etch. The apply the soldering iron through the small holes to speed up the heat transfer. Also fit the frame bushes to the outside faces (top face of etch) at this stage while the pony is still in the flat. After soldering, use a triangular file to go along the insulation gap so that you have a flat item with two insulated parts. Now fold up the box to produce the pony truck.



Then add wheels and a muff to complete and use the original screw to secure to the chassis.

And that should be it.