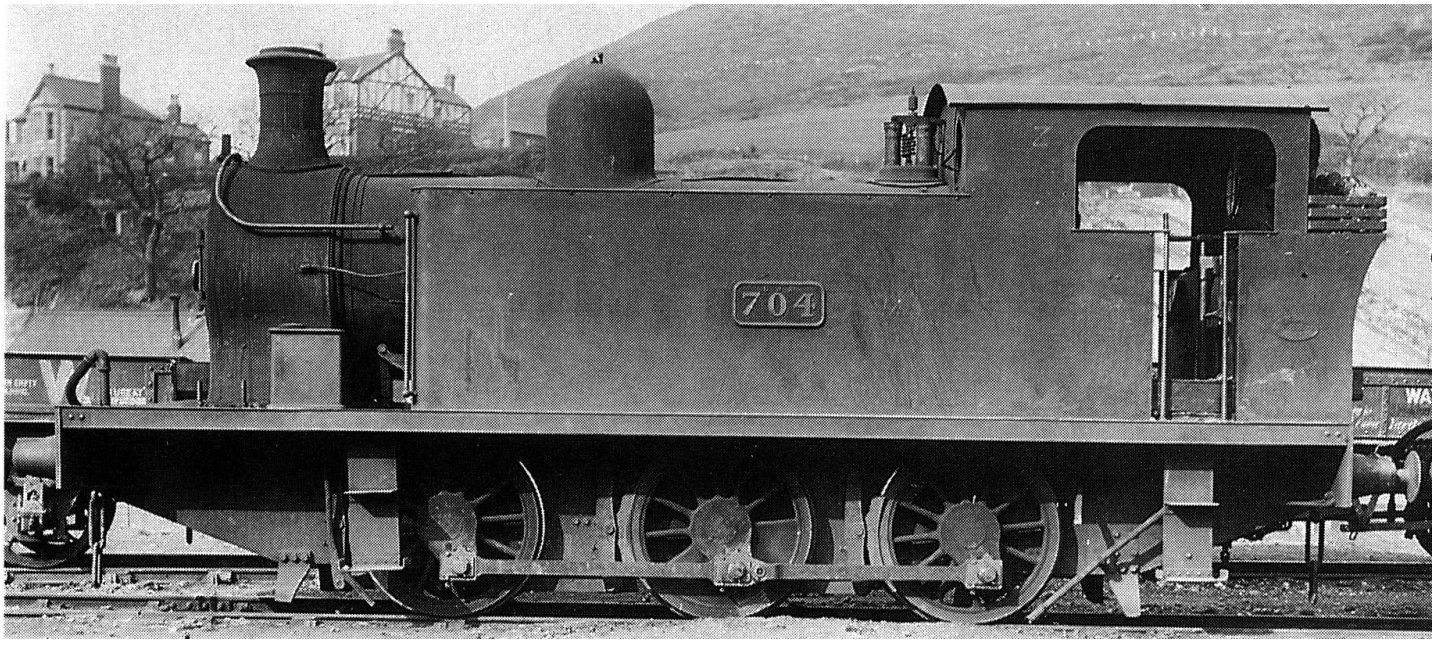
88D Model Kits

Llanelly & Mynydd Mawr Railway

Victory — GRW 704

Built by Manning Wardle 1920 - withdrawn 1943



88D Models – Llanelly & Mynydd Mawr Victory

A great deal of care has gone into designing this kit and I have "test" built at least one to ensure everything fits with the minimum of "fettling" by yourselves. Therefore when cleaning off the cusp left by etching - **remove only the cusps**, otherwise the parts will be undersize.

If you would like more details on soldering etc. go to Jim McGeown's - **Connoisseur Models site and follow the link "PDF print out sheets", he has taken a lot trouble to provide a wealth of information on how to build a kit.**

Kit guidelines

As this is a "multi-media" kit I recommend you read the instructions carefully before you begin and I list some pointers, sorry if I'm teaching you to such eggs.

Soak and then carefully wash all 3D printed parts in 50^0C hot water to remove any wax left from printing and dry.

Don't cut parts from the etched sheets until you need them. Small items get lost or are difficult to identify.

Wash off the flux residue after each operation and always clean thoroughly at the end of the session.

All etched fold lines are on the inside **unless** otherwise stated.

Some half etched holes are to be punched out as rivets, whereas other are to provide a centre hole to allow you to drill later, example: the outer tank sides need to be bent very close to the location of a handrail, if these were holes, the metal could crease at this point whilst bending.

Due the process of etching, the holes will most likely be a fraction under size. These will need to be carefully opened out and this is best done using tapered broaches or if you can afford it tapered reamers. Do it a little at a time, you can take more off but you can't put it back!

The plastic printed parts have a reasonably high melting point but is best to finally fix in place **after all the soldering is complete** if practical.

Care is required when handling the printed parts. The can be very thin and small parts will not stand up to rough handling or being dropped onto a hard floor – I've been there! However once fitted to the model it won't be a problem.

Always tack solder parts to ensure they are correctly fitted and then solder permanently.

I will point out in the instructions if an assembly step is **critical** to get right.

Items required to finish Kit

ABC Mini S or other motor/gears.
3 x Slater's 7848W – 4' 0" wheels
1 x Slater's 7157 plunger pickups
Number Plates (available at — http://www.88d.uk/pups/Number_Plates.asp)
Transfers — Caerphilly style block GWR (available at — http://www.88d.uk/pups/Transfers.asp)
Paint

Only cut parts from fret as needed and read each instruction fully before commencement.
Do not fit any printed parts until soldering is complete, they have a relatively high melting point but better safe than sorry.
All pictures and more are available to download by clicking link on webpage.
The prototype may have differed from one loco to another and I would suggest you have a picture of your chosen loco before you start, some pictures are available at http://www.gwr813.org/gallerysw9.html.

Note! *Not all of the items on the etch maybe required to complete this model.*

IMPORTANT

A number of holes may be marked but not drilled, you will need to decide which to do before assembly.

Before you start, Please Decide on the following: -

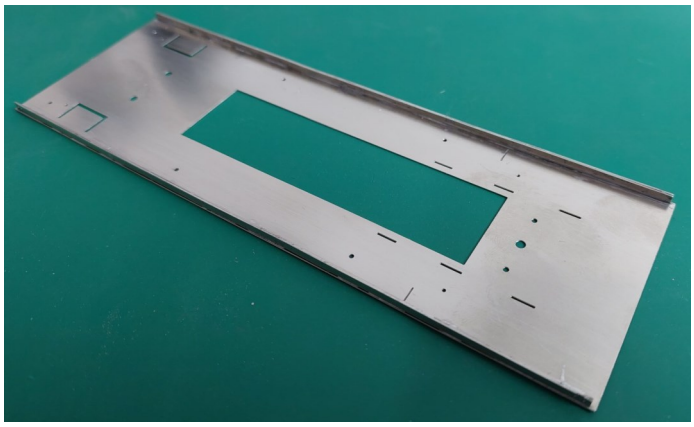
1) You can either Solder everything together as per normal or *Make it in sections and screw it together at the end, this will make painting much easier. You will find suggestions for alternative options if choose.*

2) Type of suspension, sprung horn-blocks or your own favourite.

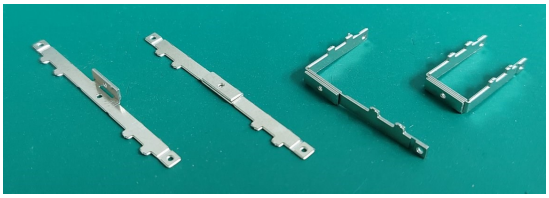
3) Please read all the instructions before starting, my way may not be your preferred method of construction. But by reading them you will be able to understand the relationship of the parts and may see a better way.

Assembly Instructions

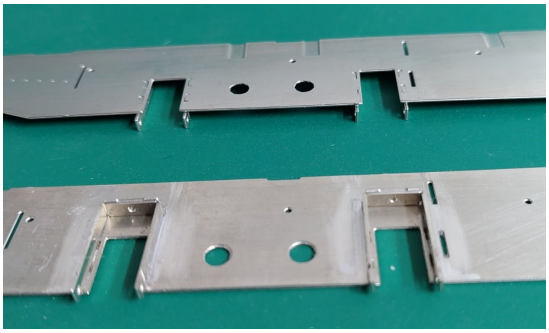
1. Carefully remove the parts from inside the Running Plate (16) and clean up.
2. Carefully cut out the 2 “skirts” “valances” (17), DO NOT separate the half etched piece from the solid piece. Then fold back on itself, Note the folds are backwards. Align the two long edges, the plain piece is slightly wider to fit into groove on running plate, then solder together, remove the tabs to give smooth edge. *Alternatively, you fit the plain piece and then the etch as an overlay*.
3. With the running plate laying underside uppermost place one of the skirts into the groove, make sure it is central. Then keeping it vertical tack solder in the middle, now check it hasn’t moved. At 50mm intervals tack outwards alternating ends, this will prevent too much heating up and expansion. Then solder fully again I prefer to do alternate ends. Repeat for the other side, make sure this is in line with the other side.



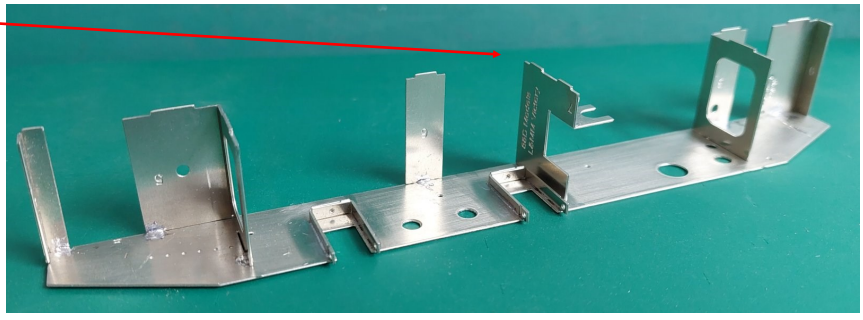
4. Prepare 2 off (18) inner Buffer Beams, they are fitted with coupling hook hole towards the bottom (the top as we are fitting them). Tack in place at the ends of the skirts and make sure they central and vertical, when happy solder fully.
5. Take 2 off (19) outer buffer beam overlays and solder in place. These may need to be filed back after fitting, I allow a tad oversize to compensate for “etching undercut”.
6. Locate (1 - 8) from chassis etch and remove cusp left by etching process.
7. There are 6 half etched holes at the front end of each frame, punch this out. *Alternately you could drill these holes out to 1mm and fit 14BA hex head bolts (not supplied) to represent those holding the cylinders in place.*
8. With the Foot plate upside down lay the two frames between the buffer beams. If they are too long remove an equal amount off each end of both. *This is best done with them clamped or tack soldered together.*
9. If you are using Slaters pickups then the half etched holes will need to opened up. *Best done now whilst you can keep them flat.*
10. Locate and fold (4, 5, 7, & 8 at 90^0 and set parts to one side. Number 7 is used to stop the motor/gearbox from rotating.



11. Remove (3), 4 off horn block guides fold into U shape, double over extra tab and solder in place, tap 12BA and dry fit into slots in frames (1 & 2). The picture on the right shows the stages of bending.
12. Ensure the horn block bearing is a tight sliding fit, adjust until satisfied. With horn guide on the underside apply flux and solder to each tab, don’t overdo it as the solder will run through and build up on the inside and foul horn block. Check that each horn block slides freely but is not sloppy, the slots in the bearings will be a little lose to accommodate tilting across the axle. File off protruding tabs. Note small tab on end of each leg can be folded inwards to retain bearings and masked later for painting.

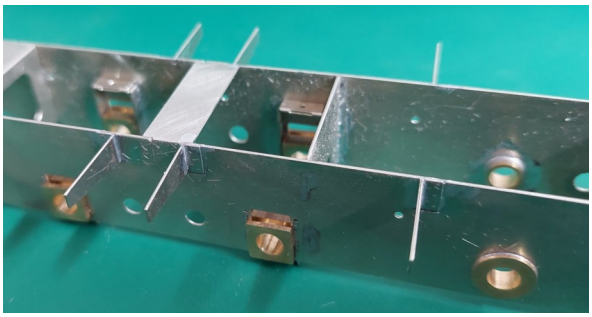


13. Dry fit the frame spacers (4 - 8) to the frames, this is best done upside down. The kit is deigned to be fitted with a ABC Mini S and a mounting bracket (7) is incorporated as part of the spacers, (4) is at front and spacer (8) at the rear of the chassis. There is a “F” for front etched on the inside front of each frame. Dry fit all the five parts to ensure they all slot together, when satisfied with the fit, with the chassis upside down on a flat surface, tack solder together.



14. Check that all is flat and square and the solder fully. Rub down the outside of the frame so that no tabs protrude.

15) Locate (10 & 11) Running plate supports and punch out the rivets, fold at 90^0 and with the chassis upside on a flat surface solder into the pocket on the frames. 2 face backwards and 1 forward, see picture.



16) Take each slater's wheel and lay face upwards on a piece of 600 grade, wet and dry and with a circular motion remove and slight pips of plastic left from moulding operation. With an emery stick or similar, "kiss" each of the 4 facets on each end of the axle and then try fitting a wheel to each end. Sometimes you might find the slightest burr in hole in the wheel, if so "kiss" with a fine square needle file. At all costs avoid a sloppy fit. Now fit the crankpins as per instructions that came with the wheels. There are some etched washers on Sheets 98 & 99 if you want to reduce the side play in the wheels.

17) Locate the Balance Weights (12 & 13) and fit to the wheels as per pictures, this is best done with epoxy.

18) Using the bearings fit wheels and axles to the chassis – Do Not fit the motor/gearbox at the moment. When all 3 wheel sets have been fitted, push along the bench or piece of spare track, the chassis should roll freely. If not determine which axle is the problem and correct it.

19) Locate parts (14) Coupling Rods, there are 6 parts to each side. Take one the square bearings lay it flat and place the "front" piece over it, repeat for "middle & rear" pieces. Clamp together and then align all 3 pieces, square up the bearing and then solder.

20) Repeat above for the 2nd section using 2 square bearings. Now using a rivet provided join the 2 together, then with the rivet face down, hammer over the rear of rivet to prevent it coming apart. Repeat for other rod.

21) Now temporarily fit the rods to the axles, and again repeat procedure in instruction #18. *There are a number of etched washer on the etches to use if you wish to reduce any side play of the wheels*.

22) Locate (15) life guards (guard irons) and punch out bolt heads and bend to shape, fit as illustrated to the chassis, the straight edge should face outwards and be vertical.

23) Remove the coupling rods and rear set of wheels and fit motor and re-fit wheels and coupling rods. If you have pair "flying leads", you could now try out the chassis on a piece of track.

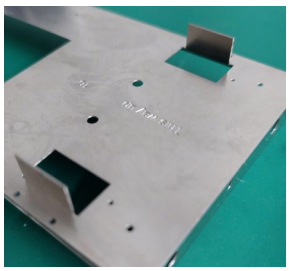
24) Tap 12BA, the six holes in the frames for the brake hangers and brackets (PP02) .

25) Remove the wheels and motor, mask the bearings and paint the chassis.

26) Re-assemble and test that your chassis runs well, then put aside.

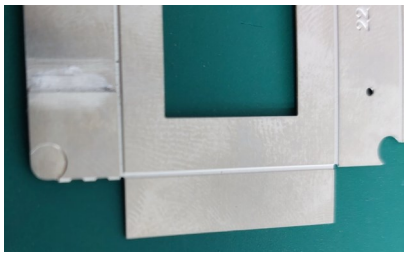
Superstructure

27) Taking the Running Plate, bend up the 2 foot well tabs, lay on flat surface and ensure you have no twist, if you do rectify now.



28) Locate (20) 2 off Frame Extensions and place into slots on the running plate with them pushed back, make sure they align at the fronts. Then solder in place.

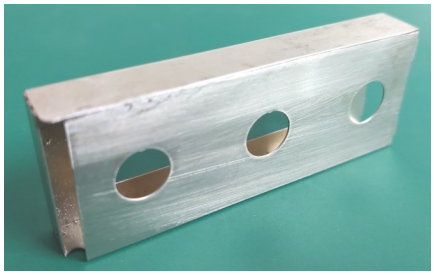
29) The inner Tank Structures (21 & 22) are "one" piece and with one exception all folds are inside. So remove the items inside the cut outs and put to one side, then clean up cusp.

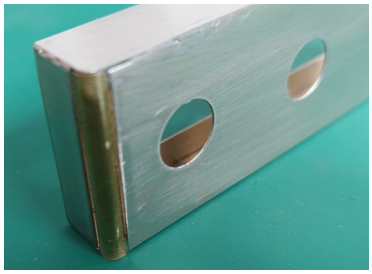


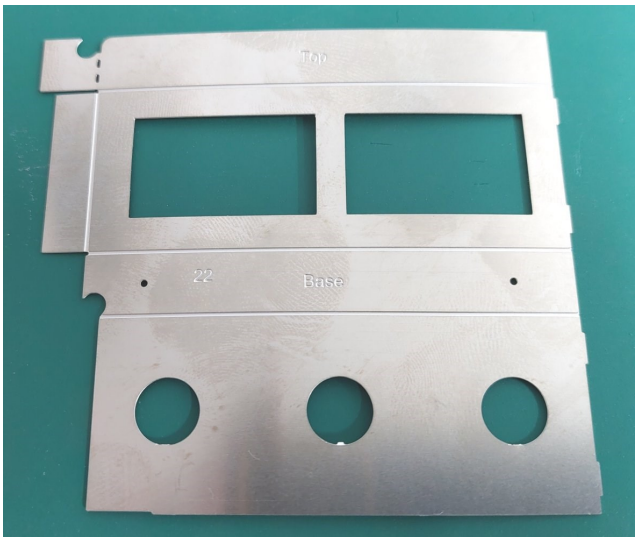
30) *If you intend to make a section model then you may wish to solder 12BA nuts over the holes in base and tap right thru*.

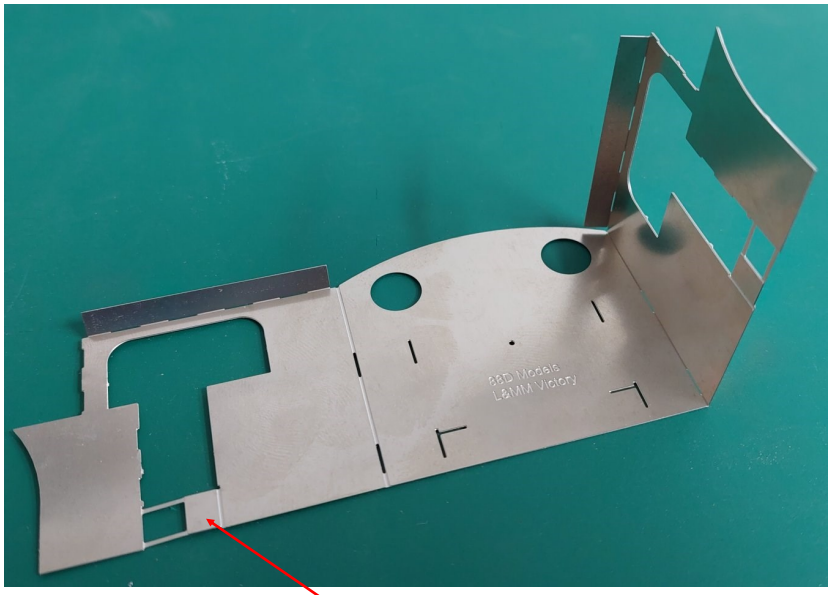
31) Carefully fold over the small piece with a bite out of it and with fold outside then align the edges. Now tack it in place, don't over do it. Then file off the tabs to leave a clean edge.

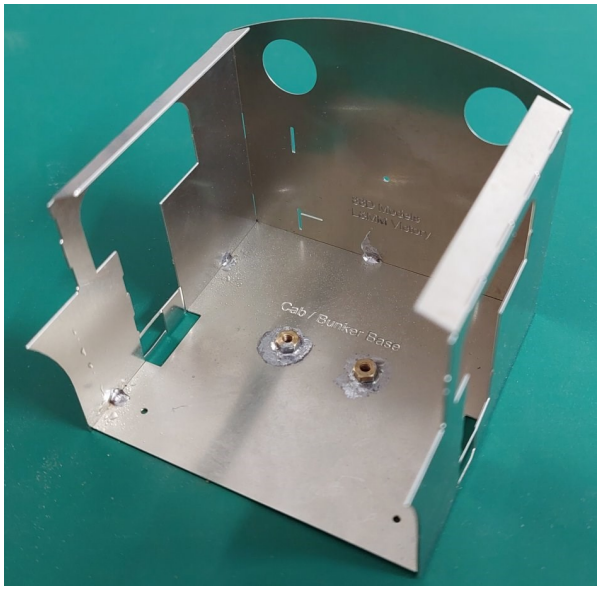
32) Now to the “origami” bit. Start by folding the “top” at 90°, next fold the outer side to 90° and then make the last long fold “base” at 90°, lastly fold in the tank front. Tweak until you have a nice square box and when satisfied solder the long and end seams. Repeat for the other tank. Finish by soldering a piece of tube into the circular pockets around which the overlay will roll.











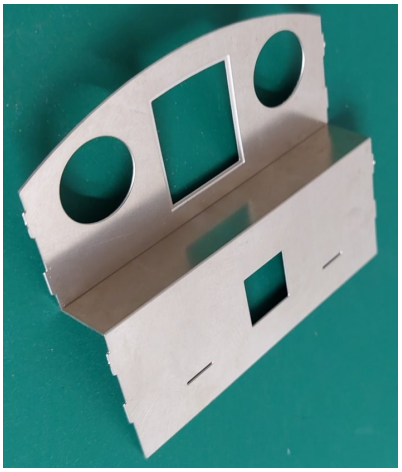
33) Remove (23) Cab Front & Sides leaving the tabs in cab doorway for now. Bend the strips above the cab openings to about 60°, be careful not to distraught the bit above cab opening. Then bend the 2 sides at 90° to the front.

34) Take (24) the Cab & Bunker Base and de-cusp, this should slide in between the 2 cab sides, fettle until it does, tack in place and set aside. Solder two 8BA nuts into the pockets of the base.

35) Clean up (25) Cab Back then place (26) the Coal Doors into the cab back and solder, then clean up. Next make the 2 folds at 90° and offer to (23), then fettle until you have a nice fit. Do not fit yet.

36) Now clean up (27) the Footplate, test fit into the cab & base unit, fettle if required then check the cab back still fits, adjust if required.

37) Now is the time to remove tabs in doorway and bend the strips inwards at 90°.



38) Then on a flat surface, fully solder the base in place to the cab sides and front. Next tack the floor to the cab front and then slide the back into place and tack that also. After checking all is square and not twisted solder all up fully, again check.

39) The two foot well tabs are slightly too wide and need to be fettled until the cab/bunker assembly slides over them, remove material evenly otherwise the alignment/secure holes will not line up.

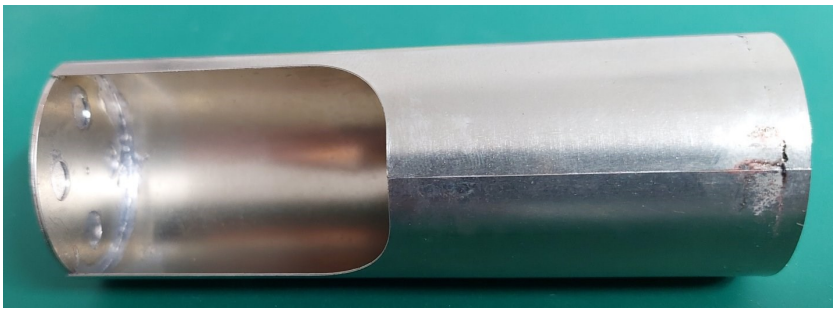
40) The Bunker Back (28) is slightly too wide and most likely too high, this is to ensure you get a good fit. With half etched portion facing inwards roll to match the profile of the bunker side. Be careful when bending, it is like a razor blade. When happy with the bend fettle to fit between the bunker sides, solder into place and then reduce to top to match the sides.

41) Take Coal Shute Door (29) and punch out the rivets then solder in place.

42) Locate (30) Roof Braces and before removing from etch scribe a line to mark the centre, then cut out and carefully de-cusp. Check they fit between the cab sides and shorten if required so they just fit.

43) Similarly mark the centre of (31) Cab Roof and then roll to match the profile of the cab. Place one brace in the groove and align your centre marks an tack at the centre, then outwards. Repeat for the other end and check fit to cab, if satisfied, solder fully.

44) Cut out (32) the Boiler and roll, find 2 off (33) & 2 off (34) boiler forming Disks. Solder a (33) to a (34) using something like a cocktail stick help align them, at 0.3mm a single disk would be a bit flimsy. Now de-cusp to give a nice edge. Use elastic bands or clamps to hold it tight solder the disks into each end. Stand the boiler on its end and keep it pushed down, then push the disk down flat as well, now solder from the inside. It is important that the end is square or else the boiler will not marry up to the adjacent parts correctly. Now do the other end which will be easier because of the cut-out. Solder the seam and you can add a narrow strip of scrap to bridge over the joint and solder that into place.

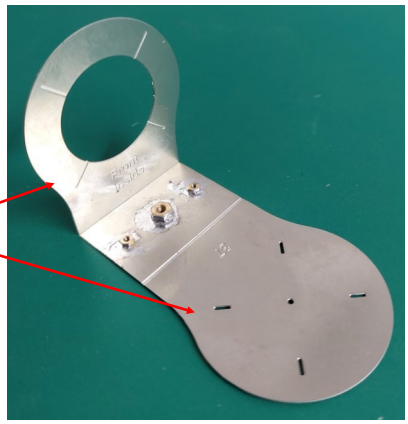


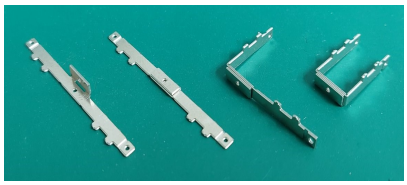
45) Locate (35) a packing Strip. Roll this and offer to the front end of the boiler, trim if it is too long. When happy hold in place around the boiler with etched portion to the rear and with it pushed down to align with the front tack in place, check it hasn't moved and solder fully. See picture. Repeat for (36) which goes over (35).

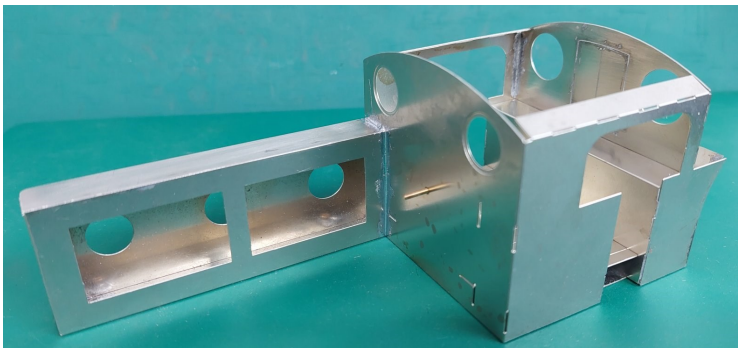
46) Take (37) Smoke Box frame and either solder a 8BA in place *or solder (38) the reinforcing plate in place and then solder the 12 BA nut on to that*. Now fold up the 2 ends to form a "U" shape, solder only one of the folds to form a 90° angle. *Tap the 2 small holes in the base to 12BA*.

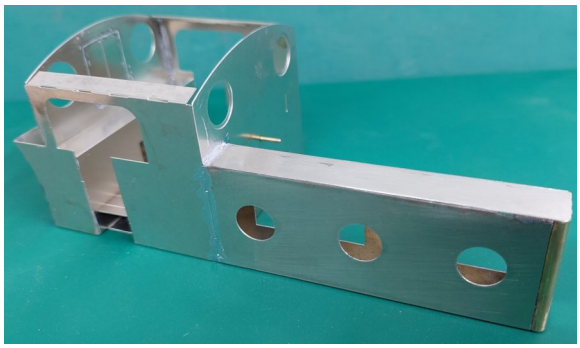
47) Find the 4off (39) Ties and pop the stepped end into the slots and tack, the other end should fit into the half etched groove. If you are happy that all is square solder fully.

48) Form (40) the Smoke Box Wrapper to shape. Then with smoke box former lying face (front) down place the wrapper around it. Holding the wrapper down tight to the flat surface tack one end, work your way around check regularly that it still aligns. When you have gone all the way around go back and finish the soldering, if there is any overhang at the back or finish end trim off.





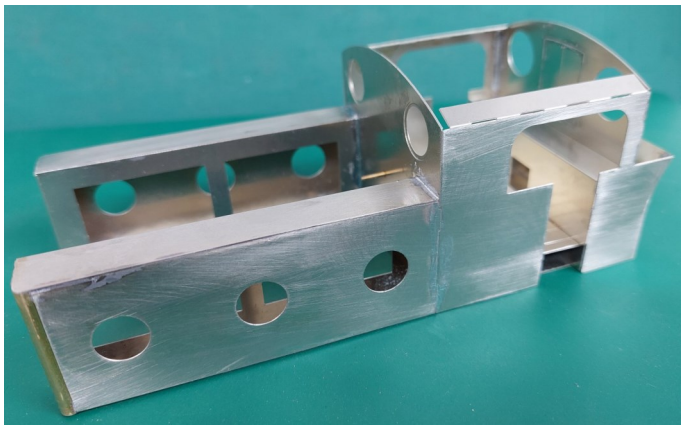




49) Place the Cab & Bunker unit on a flat surface and offer one of the Tank units to this, tack on the inside. Repeat with the other tank unit and measure across the tanks, it should be the same as the Cab width. To ensure that you don't end up with a "dog leg" clamp a large flat file to the Cab and Tank. When you are sure that all is square and flat solder both together fully.

50) Offer this cab and tank assembly to the running plate to ensure it fits and there aren't any problems, if all is well tack in place using 1mm wire through holes *or bolt using 12BA bolts*.

42) *If you doing the sectional route remove from the running plate and tack a piece of scrap etch across the holes of the inner tank sides to prevent them moving*.



43) Carefully remove (41) & (42) from the etch and carefully remove the tab residue. Measure 16mm from front end and mark a line parallel to the end, use this line as a guide as to the centre of your 4mm diameter bend in a forward direction. Repeat for the other side.

50) Place over the cab/tank side and align with the car/door opening and with the bottom level with that of the cab/tank base. Clamp and then fix the overlays in place. Now remove the tab as the base of the doorway to reveal the step.

51) *Either use 12BA blots at each end of the boiler* or solder a 1mm piece of wire into the hole in the back of the smoke box and one in the cab front.

52) *Bolt the cab/tanks back on the running plate and remove scrap tie*. Sandwich the boiler between the cab front and the smoke box and either tack *or bolt* in place. If you are not building the sectional version solder fully.

53) Clean up the 2of (43) tank cover plates, the half etched piece fits over the front of the tank, some fettling may be required to get perfect fit.

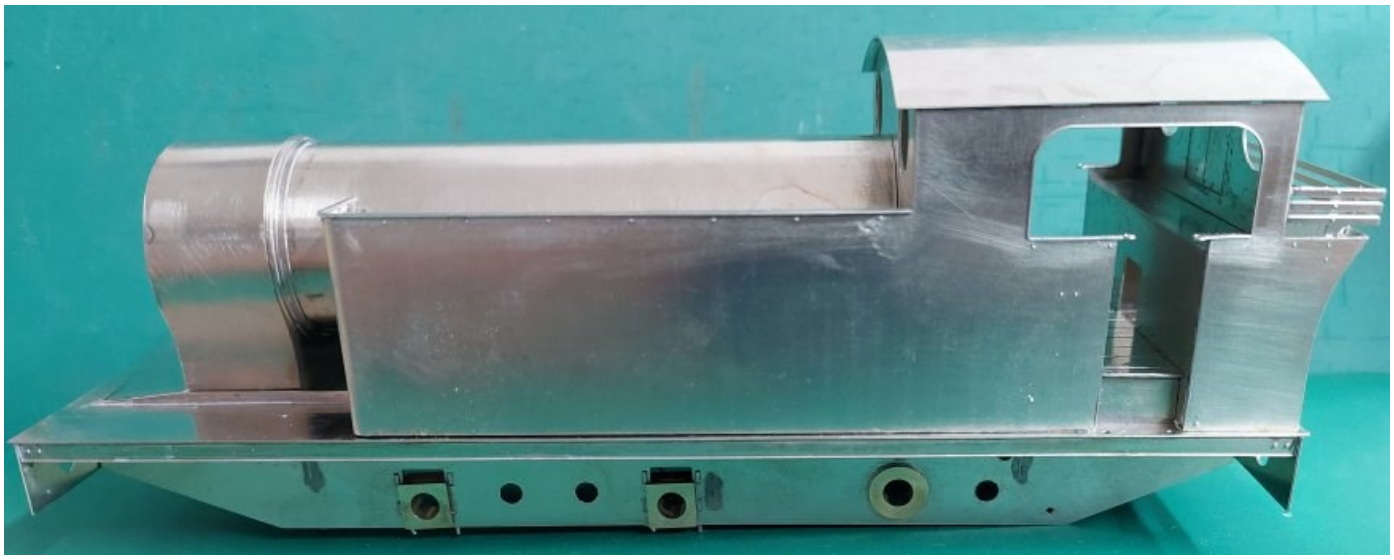
54) Fold (44) Valve cover plate at a little more than 90° solder to the running plate. *Tack and remove boiler from running plate before final fixing*.

55) There are 2off "L" shaped pieces of beading (45) & (46). Start by placing the corner over the tank corner, mark where you need to trim to where it meets the cab, approximately 3mm, then do the same with the other leg where it meets the boiler. When satisfied solder in place.

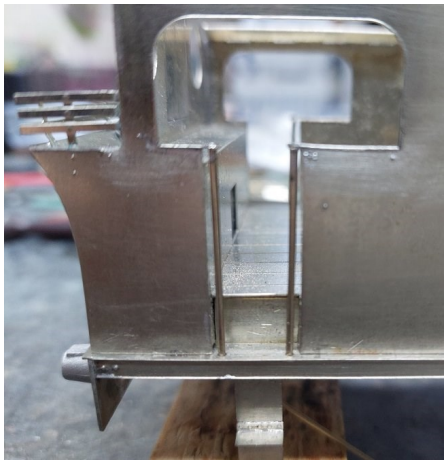
56) Locate 2off (47) Beading for the cab, again test for size, it should be correct. Solder both in place.

57) Repeat for 2off (48) Beading on rear section.

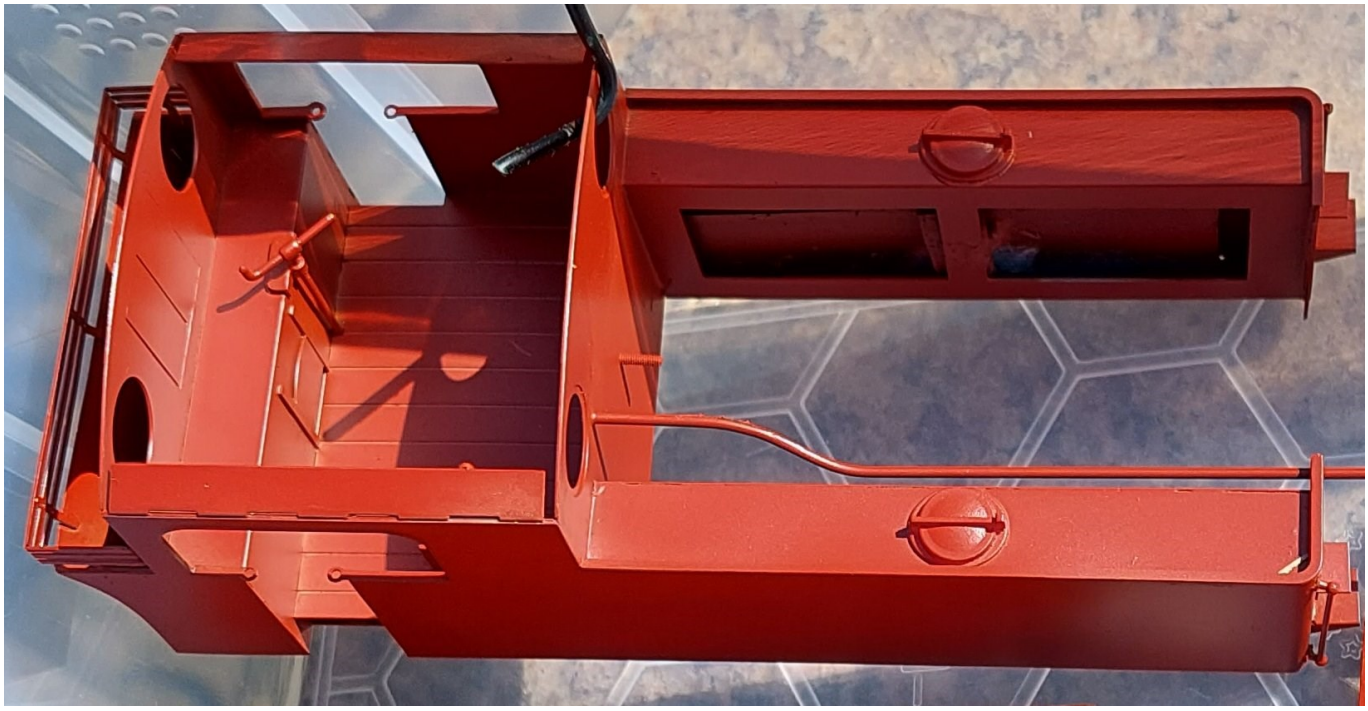
58) Fix 4 pieces of 1mm wire to form handrails.

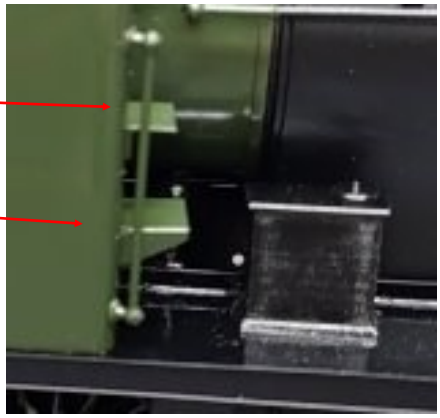


59) Careful remove (49) Bunker Coal Rails and punch rivets. Next starting at each end the rails at 90° and the bend the corners at 90°. Bend the back 3 vertical in wards slightly to match the angle of the bunker back, now offer to the bunker for fit. If happy sit in place and put a couple of strips of thin card or 0.55mm etch on top of bunker and under rails to leave a gap, tack, remove packing and finish fixing.



60) If you look vary carefully you will find 2 very small pilot holes in the corners of the tanks, these need to be drilled out to 1.2mm for hand rail knobs. Take care and remember you will be drilling into the tube behind. Fix knobs and a piece of 0.7mm wire.





61) On the tank front make a mark 16mm up from the running plate. Make another mark 8.5mm up from the running plate. Get 2off (50) UPPER step, punch rivets and fold at 90^0 and fix with the rivets visible above the step. Study pictures.

62) Take 2off (51) LOWER step and make the 3 folds and fix with the top of the step on the 8.5 line. Study picture.

63) Fix the PP07 Sandboxes to running plate as per the pictures.

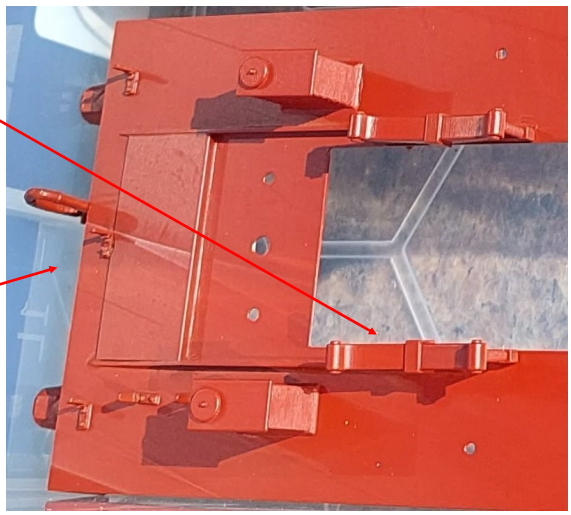
64) Carefully cut out 4off (52) Step backs, then get 4off (53) & 4off (54) Steps. Punch the rivets and fold at 90o, then solder in to the pockets on the step backs. You can reinforce the step backs with strips of scrap etch if desired.

65) Locate 4off (55) Buffer Beam reinforcing brackets. Make the 2 folds and then refer to the picture on how to fit them. Beware they are handed. These were a later addition to the etch after more information came to light after the test build.

66) Fix the PP03 Dome with the centre 53mm from the Cab front.

67) Fix the PP04 Chimney as indicated in the picture.

68) Take PP01 the Smoke Box Door and test the fit in the front of the smokebox, ease the hole if necessary. Then fix in place ensuring that hinge bars or horizontal.



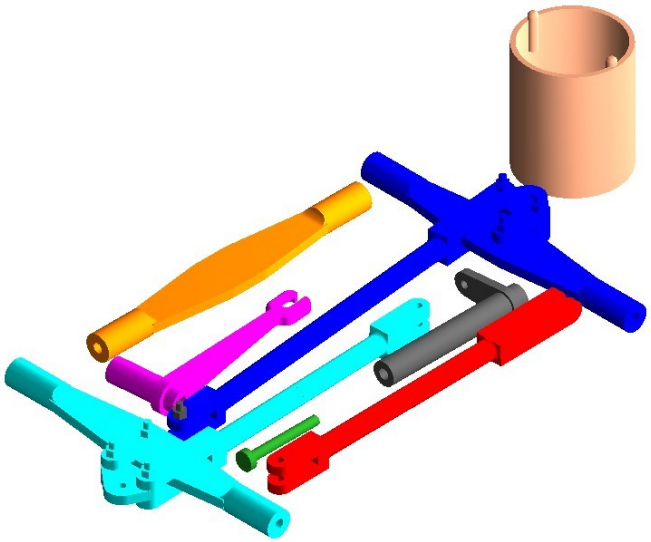
69) Fit PP08 Front Springs to the running plate, there is a hole in the frame extension and a pip on each spring to provide the location.

70) Using 0.9mm wire bend to form the sandpipes and solder into the holes in the running plate.

71) Fit 5 “L” lamp brackets to front of the running plate shown in the picture.

72) Take 3 “Z” shaped lamp brackets and fit in the holes in the bunker rear.

73) Take PP05 the Brake Rigging set and carefully separate the 7 parts - single stretcher, 2 with rods attached, 2 parts for pull rod shaft, a cylinder and cylinder rod. Clean out the holes in each end of the stretchers and glue in a 15mm length of 1mm rod. Starting at the front (single stretcher) place a PP02 Brake Hanger/shoe on each end, then using 12BA screw fit to the chassis. Repeat this with the 2nd stretcher (longer pull rod), then the 3rd. It might be necessary to very carefully widen the gap in the forks of pull rods to fit over the stretchers.



74) Starting at the front attach the brake hangers to the frames using 2off 12BA bolts. Repeat this for the 2nd stretcher and then the 3rd. Now slide each pull rod on to the adjacent stretcher and secure with brass pin. If satisfied glue the 2 pins in place.

75) The cylinder should be glued into the 2 holes in the rear frame spacer.

76) Thread the 2 pull rod parts on to a piece of 1mm wire put thru the 2 holes in the chassis. Make sure the yoke on the purple bit is up the right way. Now use a brass pin the secure the grey part to the pull rod.

77) Next fix the green pin thru the fork and into the cylinder, do not fix the pin to the yoke if you intend to be able to take the brakes off the chassis.

78) Finally glue the brake hangers to the stretchers and trim off the surplus 1mm Rod.

79) Fix the Brakes Pipes thru the holes under the buffer beams.

80) Paint and detail the PP06 Backplate and set aside until you have painted the model.

81) Paint and decal your model.