88D Model Kits

GWR 155 Ex Cardiff Railway L Class

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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 such eggs.

Soak and then carefully wash all 3D printed parts in 50^{0}C 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 gearbox and motor
3 x Slater's 7854HR – 4' 6" wheels
1 x Slater's 7837 – 3' 1" bogie wheels
1 x Slater's 7157 plunger pickups (optional)
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 at http://www.88d.uk/pups/CR155_Pictures.asp or as a download from http://www.88d.uk/pups/Instruction_Downloads.asp
The prototype 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/gallerysw5.html.

Note! *Not all of the items on the etch maybe required to complete this model, those with a "X" can be discarded.*

IMPORTANT

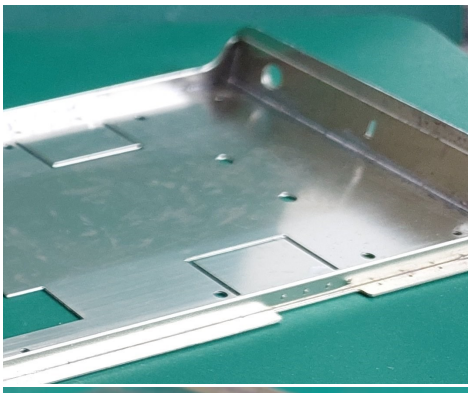
Some holes are marked but not drilled, you will need to decide which to do before assembly.

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.*

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

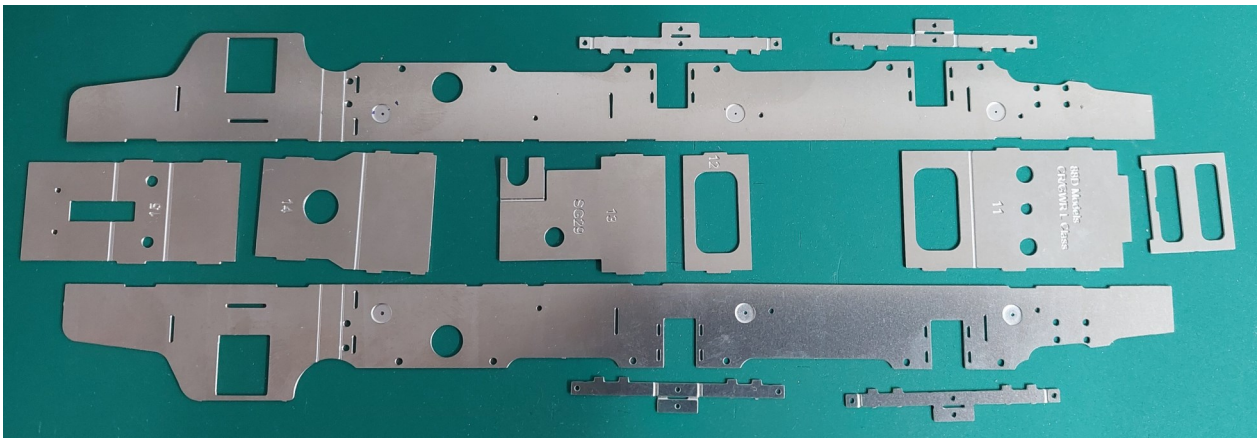
Please note! The pictures are from 2 test builds and may differ very slightly from the final product



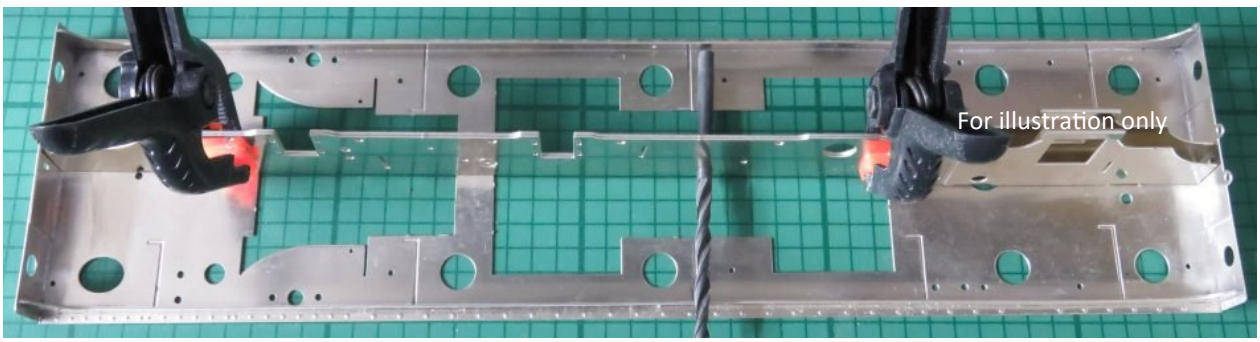
1) Remove (1) Running Plate and (2 & 3) Valances from sheet, detach the other parts and store safely. Clean off the cusp from the running plate and valances taking care not to bend or distort the valances. See picture on Page 18 for exploded view of component parts.
2) There are 8 rivets to be formed on each of the valances. Then with running plate upside down, tack solder valances into grooves, the 4 rivets nearest the end go at the rear in line with the cut outs, ensure they remain at 90^0 to the running plate. When satisfied finish soldering and check again they are still at 90^0 to running plate.
3) The Buffer Beams have an inner and outer part. Remove and clean up (4) the inners, and solder on to ends of valances and running plate, with etched detail facing towards the centre (backwards). The buffer holes should be nearest the running plate and they sit on the running plate, refer to picture. You now have box into which the chassis will fit. Now solder the outer buffer beams (5) over the inner ones.
4) Locate (6) Coupling Strengthen Plate and solder on to the front buffer beam.

Chassis Section

5) See the picture below for an exploded view of component parts. Note the picture is from the 1st test build and a couple of items have changed and will be highlighted in the following text. If you are building in S7 then choose parts 11—16 with “S7” etched along side.

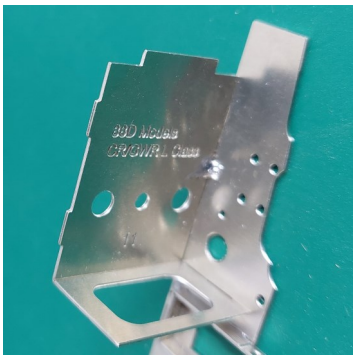
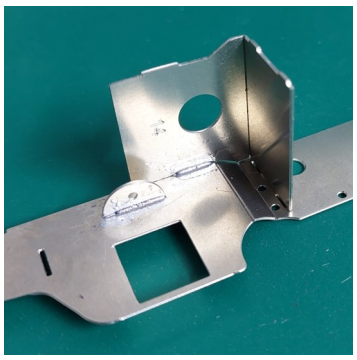
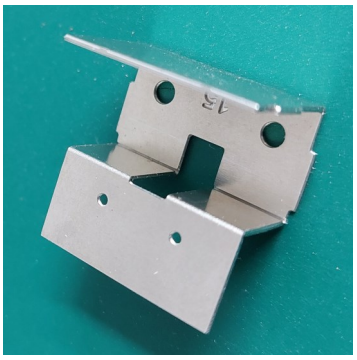
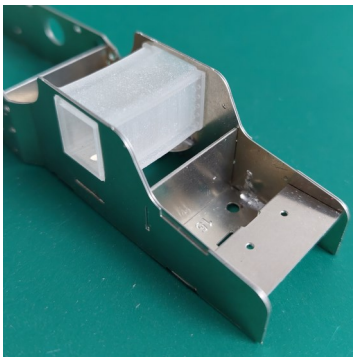


6) Locate (7 - 16) from chassis etch Sheet 75 and remove cusp left by etching process. Apply a joggle to (7 & 8), etch lines to the inside, bolt, clamp or tack solder together, with outside faces together. The gap between to rear ends should be 4mm. Now offer to the running plate assembly, if they are too long remove an equal amount off each end until they fit comfortably inside the “box” of the running plate/buffer beam. The above action is very important, both to be able to keep the chassis square and is easier done now than when the chassis is assembled. When satisfied put the running plate to one side for now and separate the frames.



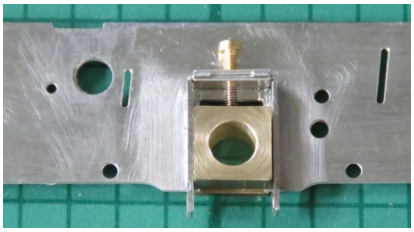
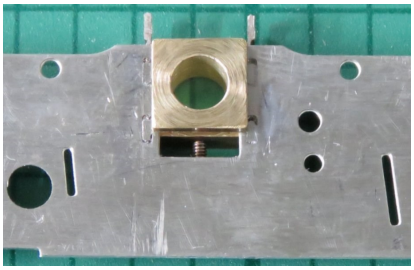
7) Fold (11, 13 & 14) at 90^0 , (15) has 3 folds to be formed at 90^0, see pictures on next page.

If you are using slaters plunger pickups now is the time to enlarge the holes marked on the frames.

8) Take (9) 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.

9) Ensure the horn block 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, then file off protruding tabs. Note small tab on the end of each leg can be folded inwards to retain bearings, the bearings masked later whilst painting.

10) There are 4 bearing retaining plates (10), if you bend the tags on the bottom of the guides outwards and tap the holes 12BA these will retain the bearings, but you will need to find a way of holding the springs (PP11) so they can be removed to release the bearings.

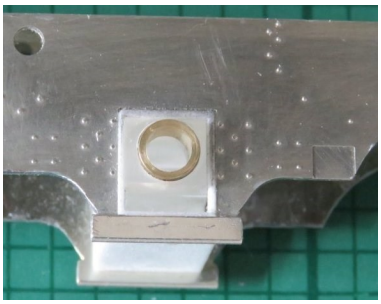
11) Dry fit the frame spacers (11 - 15) to the frames, this is best done upside down. The kit is deigned to be fitted with an ABC motor/gearbox and a mounting bracket (13) is incorporated as part of the centre spacer. Spacer (11) is at front and spacer (15) at the rear of the chassis.

12) The 2 simi-circular parts (16) fit in the slots in the frames above the radial axle box (2nd picture at top), these are best fitted first to enable you to make sure that they are square. Tap 10BA, this will form the radial axle springing.

13) Locate (PP1) Radial axle box and fit into the square hole in the chassis frames. Make sure it is the right way up (holes at the top) and the right way round.

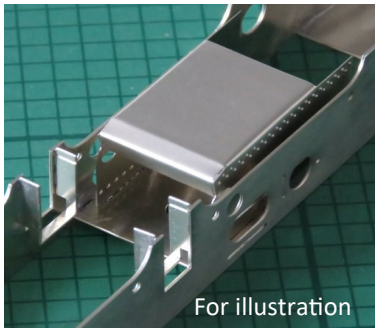
14) Dry fit all the five parts (11-15) to ensure they all slot together, when satisfied with the fit, with the chassis upside down on a flat surface, tack solder together incorporating the radial axle box at the same time. Offer to the running plate and check it still fits.

15) Parts (20) are on Sheet 78, clean up and fold at 90^0. Locate the Radial Axle Carrier (PP2), then test that the unit slide smoothly in the box. Place a part 20 on the end of the box, there is a step into which it fits, there are handed. Then using the 1 of the 2 special round bearings hold in place. Use a spot of superglue to secure part 20, then repeat for the other side. Again check it slides freely in the box. Put (PP2) aside.



16) Now carefully finish soldering parts (11-15), do not apply a lot of heat near (PP1) or it will melt. Offer to the running plate again and check it still fits.

17) Remove (18) (ash pan), handle carefully, clean up. Start by folding the 1st of the 2 parallel front folds nearest the base, then then 2nd fold. Next fold up the 2 sides to form a 2 sided box. Then make the last 2 folds at top of sides and offer up to the half etched locations on the chassis and adjust to get a good fit. Note the slot fits over motor mounting bracket. Tack in place, and check that the motor/gears doesn't foul.



18) Locate (19) life guards (guard irons) and punch out bolt heads and fit into the square pockets on the chassis, the longer ones at the front and the straight edge should face outwards and be vertical. Grip to the frame so as not to break the solder joint and bend to shape.

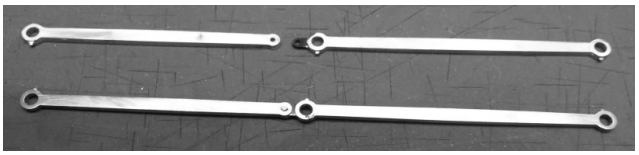
19) Take each slater's wheel and lay face upwards on a piece of 600 grade, wet and dry and with a circular motion remove and slight pips of plastic left from moulding operation. With an emery stick or similar, kiss each of the 4 facets on each end of the axle and then try fitting a wheel to each end. 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.

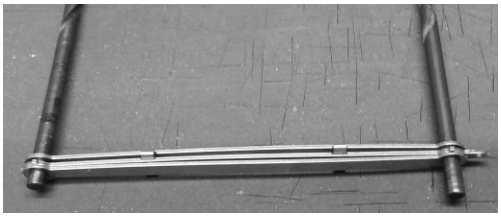
20) Fit a 12BA screw into each horn lock guide.

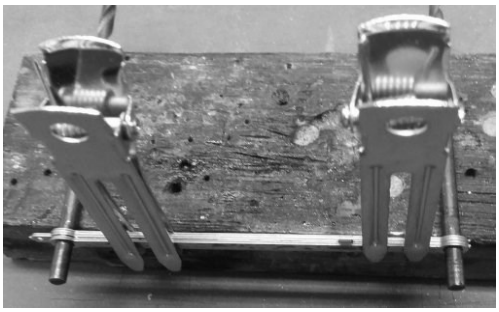
21) Using the bearings fit wheels and axles to the chassis – Do Not fit the motor/gearbox at the moment. When all 3 wheel sets have been fitted, with the chassis up the correct way adjust the front pair of screws to level the chassis. Now push along the bench or piece of spare track, the chassis should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

22) Locate parts (17) Coupling Rods, there are 6 parts to each side. Lay them out on the bench and check you have 2 "mirrored" sets, (I've managed to make both the same hand in the past). Use "black" 2.5mm drill(s) shank to align the holes before soldering. After soldering the parts together file off surplus solder, cusp etc. until you have a nice solid looking rod.

23) You can either solder a piece of wire to join the rods *or use the rivets provided*. If using wire, before joining the two halves of the rods, either coat the "tongue" with a permanent marker pen or smear with super glue and allow time to dry thoroughly. Both methods should prevent the solder from penetrating the joint, use a piece of 1mm nickel silver wire to form the pin and solder on the back only, trim off excess and clean up. If *using the rivets the holes will require opening up to fit rivet and then hammer over at the rear*.



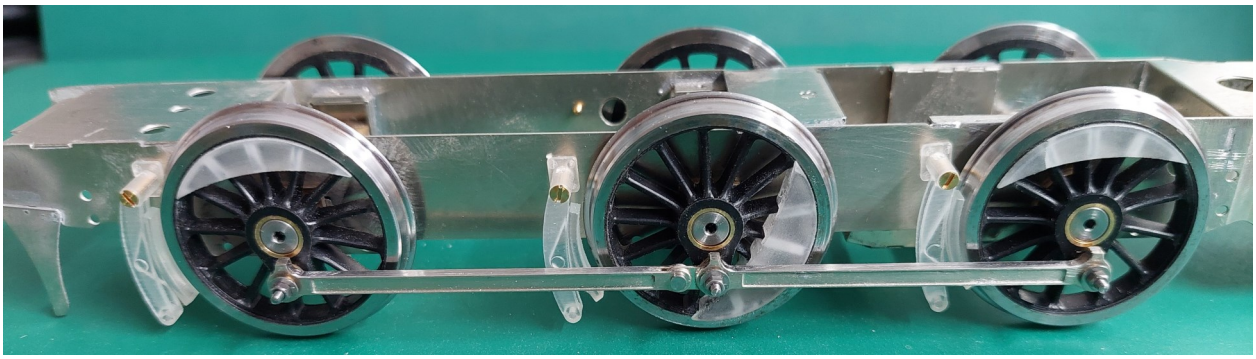




28) Fit bearings to crankpins and try coupling rods, it may be necessary to ever so slightly open holes in coupling rods, if so do it sparingly, sloppy rods = poor running. Don't worry about excess length of bearings at this stage remove excess later, fit washers, retaining nuts (prototypical type ones are supplied in the kit for final fitting) and roll along the bench. If there is any binding, identify where and ease the offending hole in rod and retry, repeat until chassis rolls freely.

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

30) Remove the coupling rods and wheels and the identify (PP3) Balance Weights. The pictures here show the position of the larger ones on the centre wheels (front & rear are same), the centre ones are not central. The weights have a step and you may need to very slightly open the grooves into which the spokes fit on all weights. Ensure the weights fit tight to the inside of the metal tyres. Refit the rods and check that nothing is snagging and that the chassis runs freely. Tap 12BA, the six holes in the frames for the brake hangers and brackets (PP4) . If you need to move the rods out a fraction, you can use the crankpin washers, as the crankpin nuts supplied have there own.



31) With the chassis upside down thread the 2 radial axle springs thru the holes in the box onto the 2 screws fitted into parts (16). Make yourself a slither of thin scrap etch and hold this over the spring, slide in the radial axle, move the tool to other side and keep sliding the radial axle in, remove the tool. Check that the radial axle slides freely from side to side. Fit axle and wheels into radial axle and test for free running and smooth side to side movement. Holding the chassis firmly down, adjust the 2 screws by first turning down until they touch the radial axle and then turn back 1 or 2 turns, this will allow vertical movement if required.

To avoid unnecessary handling of the brake gear & main springs we will move onto the "body".

Superstructure

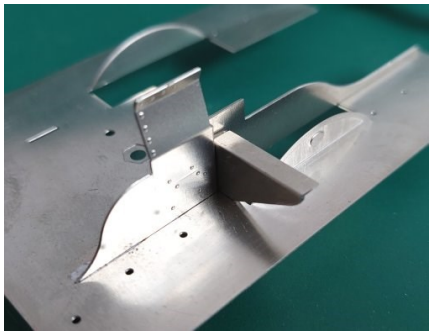
You need to CHOOSE between soldering the superstructure to the running plate (1) or *building it as a stand alone assembly which you will bolt on after painting. The main difference is part (24) is used as the base off which to build.* Because it will very difficult to carry out some of the following steps (#32 - #40) if you are soldering everything together, these steps best done now.

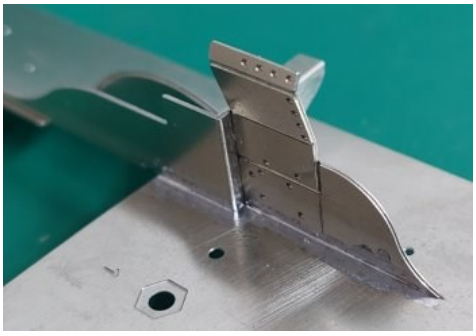
32) Take a piece of 0.7mm wire and form the grab rail on both sides between the splasher and tank.

33) Take the running plate assembly you made earlier and fold up the splasher sides (fold is opposite to normal) and the square step backs at the rear.

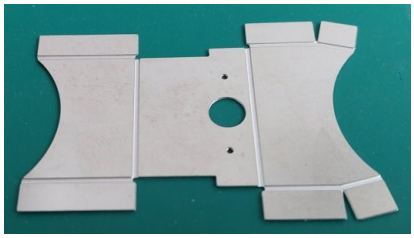
34) Get parts (77) Splasher Tops (*use the ones off small supplementary sheet*) and roll to match the splasher sides. They may be too long and you will need to trim them, there is a step on the slasher side onto which they sit.

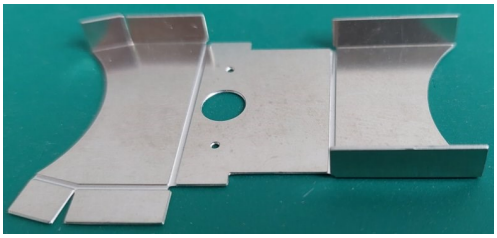
35) Find parts (78 & 79) Tank Supports. Start by forming to 2 folds at 90^0 and then solder (79) into the pocket to double the thickness of (78) web.





36) Get the 2 off (22) Frame Extensions from sheet 75, start by punching all the rivets. *Alternatively you may want to drill the lower holes and fit 14 & 16BA Hex head bolts, see prototype pictures*.





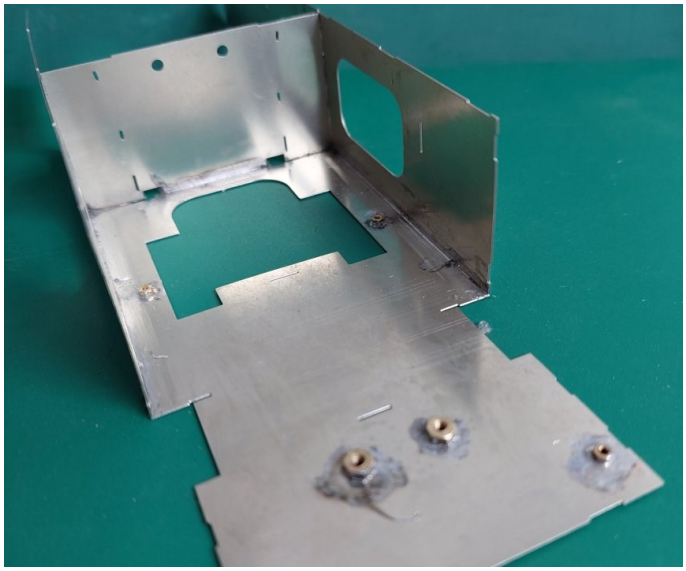
37) Now form the 2 bends to form the joggle and then form the 2 bends form saddle sides. Before fixing do step #38 below.

38) Cut parts (23) form sheet 75, *if you are building a section model solder 2 12BA nuts in place over the holes and tap right thru*. Solder a 8BA nut into the pocket on the running plate and clean off surplus solder. Take (23) Saddle and start by folding up the sides and then the ends as per the pictures to form a box. Make sure bends are 90^0 and then solder seams.

39) Place the saddle (23) on the running plate, slot facing to the rear and taking one of the frame extensions offer to the saddle, with it upright adjust the angle of the top folds to match the profile of the saddle. Repeat for the other side alignment, tack the frame extensions at the front and rear then remove the saddle before soldering them fully, check the saddle will slide back in and adjust if required. *Put (23) to one side*.

40) Remove the parts from inside (24) Tank & Bunker Base and store safely, then de-cusp.

41) Now either solder (24) to running plate using a couple of 1mm pieces of wire thru the 1mm holes to align it *or solder 6 off 12BA nuts over the small holes in (24) then open up the 6 holes in (1) to 1.3mm. Carefully run a 12BA tap thru each nut to form a thread in (24). Now try bolting (24) to (1), they should align perfectly*. Then solder 2 off 8BA nuts into the half etched pockets. You should have something similar to this, minus sides.

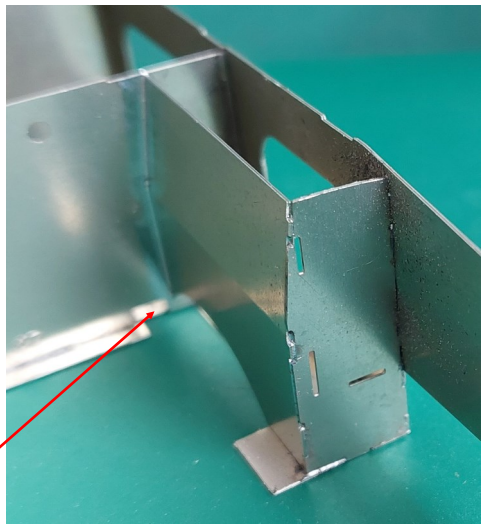


42) Cut out (25 & 26) the Outer Tank Frames, remove any items inside and store safely. Clean up the cusp and offer to (24).

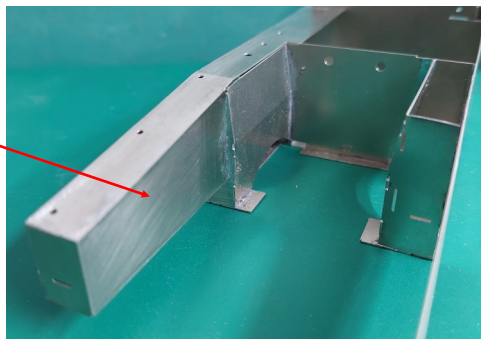
43) Take (27) Cross Member and after cleaning up place between (25 & 26) as in the picture. If for any reason it is a tad wide, carefully reduce by equal amounts from both sides. The width over the frame should be 60.2mm maximum.

45) Now take (31) Cab Front, but before moving on make sure that the slots under the windows are 0.6mm deep to allow for the tank top and overlay to fit, use a piece of scrap from sheet 75 which is 0.55mm to help you. Now offer (31) between (25 & 26), there are a slot in each and 1 in (24) where it locates, adjust to maintain width over frame. Part (31) the Cab Front must be at 90^0 to the tank base otherwise it will distort the cab. This is the datum point for whole of this assembly. If you are happy with the fit, tack all 5 parts together, keeping the whole assembly flat, square and vertical.

Parts 28, 29, 30, 34 & 35 have replaced and are to be found on Sheet 74. *Those on Sheet 76 are redundant*.

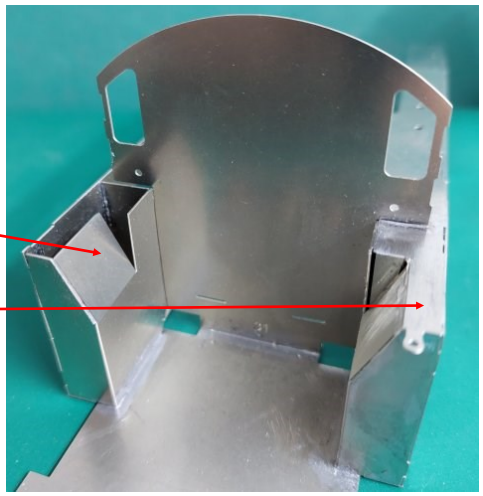


46) Take parts (28 - 30) and clean, fold (28 & 30) Inner Tank Sides by a few degrees and offer to (27) Cross Member, adjust fold until the tabs slide into the slots. Note the curve end doesn't touch (24), then offer (30) to the front end of each to form a box. When satisfied with the fit tack in place. Be sure to keep the outside flat and not to exceed 60.2mm width.



47) Now take (34 & 35) Tank Front Extensions and clean up, make both folds to 90^0 then tack the join where both base & side meet. Now over offer this to the slots (30) & (25) the outer frame. When satisfied with the fit tack in place and then check the whole assembly is flat, square and the width has been maintained. Make any adjustments and then solder all joints fully making sure not to distort along the way.

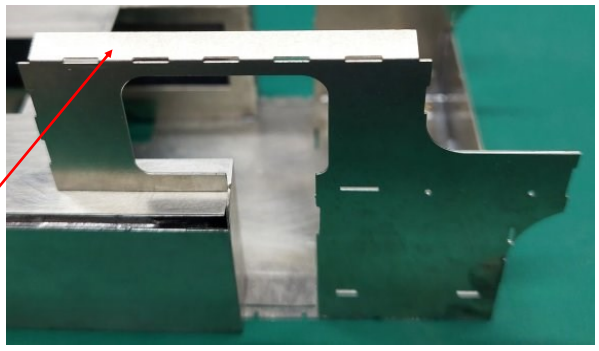
48) Check the fit of the tank supports (78 & 79) as per picture on previous page and trim if they extend beyond the tank sides, if satisfied solder in place in the joggle of the extensions.



49) Find parts (32 & 33) Inner Cab Tanks on Sheet 76, clean up and make the longest fold at 90^0 and then the other to meet the adjacent part, it should look like this. As usual tack in place for now. *If you intend to add weight to the tanks, now is the time to do it*.

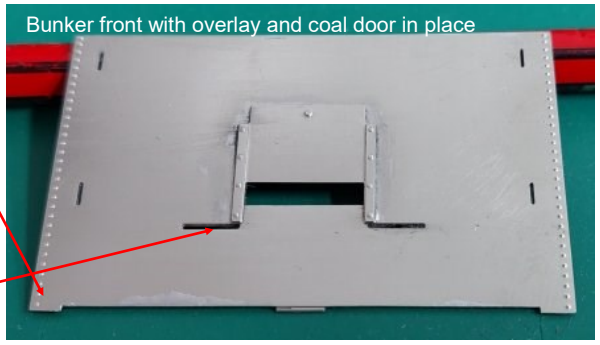
50) The next job is the Tank Tops (36 & 37), having clean of any cusp put a slight bend by 3rd hole from the front and then bend the short piece at the end at 90^0. *The art of getting this in place is to put short tab down into the cab tank and then rotate into the slot on cab front and onto the tank*. If necessary fettle until you get a good fit and then tack. Finally, when you have checked everything is as it should be solder the remaining joints fully.

51) Get (58 & 59) Tank Back Overlays from Sheet 79. There 2 rivets to be punched at the top. Align the top with the top of the tank and the inside edge with inside edge of the tank, don't worry if there is a small overhang on the outside. When satisfied solder in place.



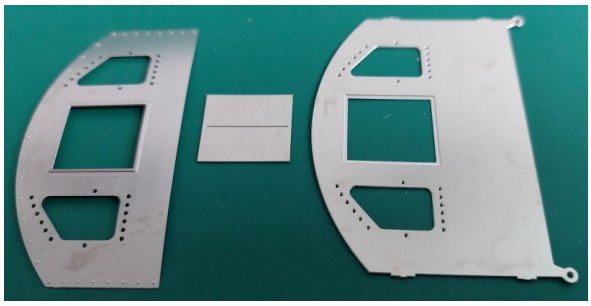
52) Remove (38 & 39) the Cab/Bunker sides from the etch and clean up. Place each side in turn into a vice with the narrow strip above the door opening in the jaws, you can then bend the top strip to about 70^0. *Set to one side for now*.

53) Cut (40, 41, 42 & 43) from Sheets 76 & 78 respectively and de-cusp. Place (42) Bunker Front overlay over (41) Bunker Front and clamp together. Note that there is a overhang at the bottom on each side and the all the slots should be aligned. Next take (40) the Cab Floor and test fit in between the cab tanks and into slot on the cab front. Now place the bunker front and overlay into position, locating the floor into the slots, it should sit upright, *now set to one side*.



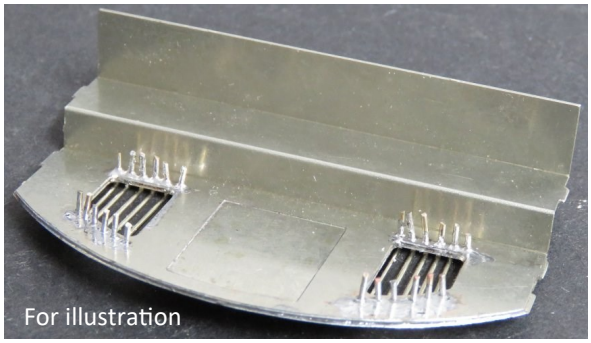
54) Clean up and punch the rivets in (43) Coal Door, then fix to (41/42) as per picture, ensuring that it doesn't interfere with the floor here.

55) If the Cab Floor (41) & Bunker Front & Overlay (41/42) fit, put 2 tacks of solder at the base of (41) to hold in place.

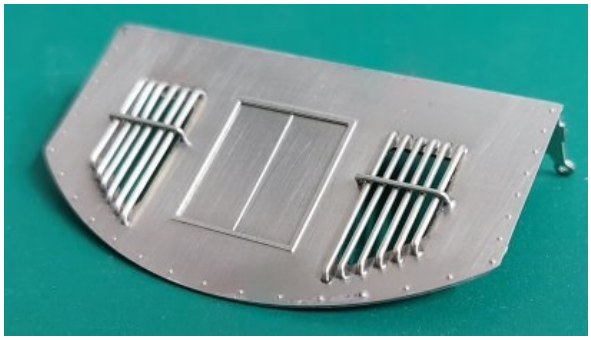


56) Get (47) Bunker Back, clean up and form the 2 folds at 90^0. *Set to one side for now*.

57) Locate parts (44, 45 & 46), Cab Back, Bunker Door & Cab Back overlay. Start by removing cusp and folding (44) at 90^0, place (45) into the opening so that it sits flush, centre and then solder. Now place the overlay over this and use a couple of scraps of wire thru the grill holes to align it and the clamp it in place, visually check it is in the centre side to side. Note it will overhang at the sides. Now solder the overlay in place, **DON'T** get solder in down the sides which would make it harder to fit cab sides. Clean any solder spills.

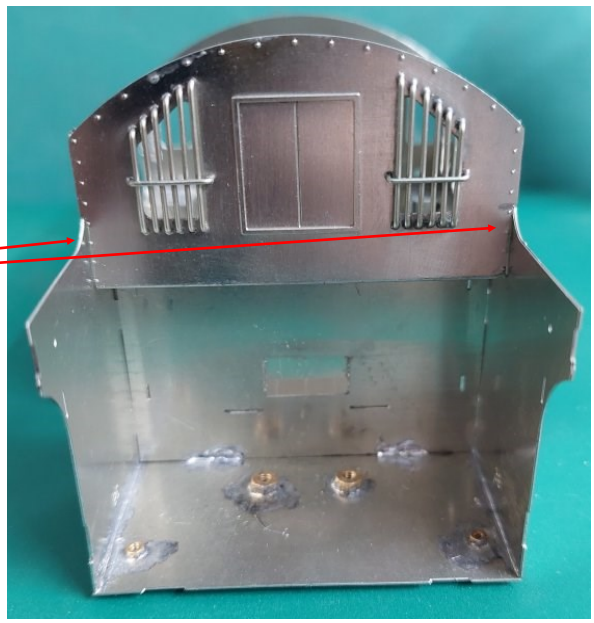


58) Next open all the holes for window grill to 0.8mm, then take a length of 0.7mm wire and using the Bending Jig make the grill bars. *I find it best to form a tight 90^0 bend first using flat nose pliers, next put this thru one of the holes in the Jig, then using the pliers hold the ang Jig close to the correct slot, bend the wire and cut it off. Make the tails about 5mm long as it will make fixing easier*. When you have made and tried all 6 for one window, slide a thin piece of card under each hoop, then turn face down and press down on the cab back, now solder all 12 ends. Turn over and check your handy work, they should all be sitting slightly proud as per picture. Repeat on the other window and then do the 2 cross bars. Next cut off all the "tails" on the inside and file flat.



59) Now to assemble the Cab & Bunker, take (38, 39 & 44) form the sides and back of the Cab, hold in place using an elastic band. *Note the cab sides do not sit directly on the tank top, but on the overlay*. Tack the base of the sides to (24) and check that the width over the Bunker base doesn't exceed 54.4mm.

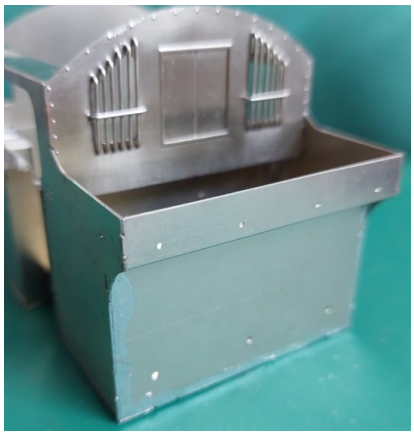
60) It is necessary to remove a small amount of back overlay to allow it too fit between the sides, do so sparingly *see also picture on page 8*. Now tack the cab sides (38 & 39) to the cab front (31) and the cab back (44). Then measure across the diagonal corner to corner, this should be about 67mm, whatever the measurement they must be equal. When sure carefully solder each joint fully and check again.



61) Find where you put (47) Bunker back and now offer to the bunker sides and then solder in place.

62) Cut out (49) Bunker Floor and clean up and fettle until it fits inside the bunker. Put a slight fold on the lip and the slide this thru the hole and drop the bunker floor in place, then fix.

63) Before cutting out (48) Bunker Back Overlay turn etch over, you will see 2 etched triangles. Squawk a line between these across the back of (48), keep squawking until a faint line appears on the front side. Next create a fold on this line and then form a bend below it as in the picture. *This is a tricky bit and is worth spending a little extra time getting right. You may find this is a tad too tall depending on how everything else has gone together, therefore I prefer to do the next stage before fixing in place*.



64) Carefully remove any overhang of the bunker front overlay so that it is flush to the bunker sides.

65) Remove (50 & 51) Bunker Side Overlays from etch clean up. Now place over bunker side and place a piece of wire thru handrail hole to align it, then clamp, it should overhang the bunker front by a tad, similarly it should overhang the at the back. When you have both sides thus clamped try the fit of the back overlay (48). Now solder the side overlays in place. If the rear overlay is slightly too wide to fit in between the side overlays, carefully reduce from both sides equally.

66) Now fit rear overlay (48) making sure the holes align with those in the bunker back.

67) Locate (52) Bunker Beading the side legs which should be too long. Curl the ends of the legs and offer to the bunker top, finish shaping and trim off surplus, then fix.

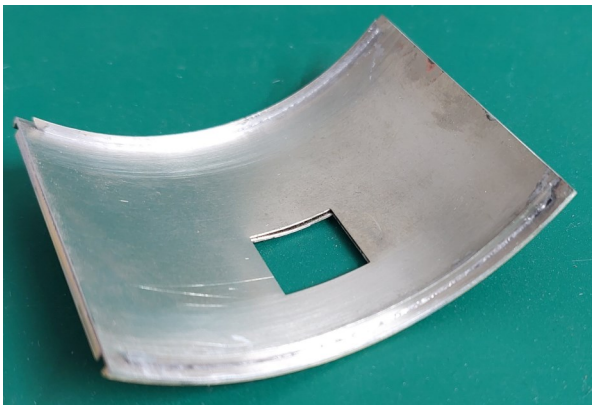
68) Identify Lamp Shield casting and clean up and fit as shown on top of beading.

69) Again I prefer to "dry fit" all the overlays before finally committing. Ignore overlays (60, 62 & 68) these are intend for the un-rebuilt L class.

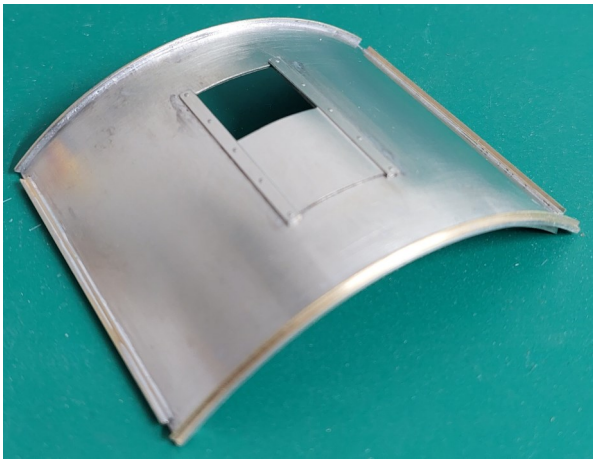
70) So cut out parts (61. 63, 65, 67 & 68) Tank Overlays and clean up, be careful not to bend the long bits. Start by putting a slight bend in (61 & 63) where the tanks start to slope. Doing one side at a time, slide (61) into the slot in cab front and under cab side. Next try Tank Side overlay (67) in place, it should come to the top of the tanks with (61) on top. You can leave (65) Tank Front Overlay off for now, but allow for its thickness. Repeat for the other side and fix all in place.

71) As with the tank overlays I suggest you cut out parts (53, 56 & 57) Cab Front and Side Overlays and see how they fit, the front overlay was designed to fit between the sides but could cover the sides if that gives a better fit for the sides. Having made your decision fix in place. Now would be a good time to tidy all these joints before moving on.

72) Cut (74) Cab Beading from Sheet 78, form roughly to shape, then starting on long edge above the tank tack the end. Now with a suitable round bar or brush handle push into the corner and tack again, repeat this all the way around and do the same on the other side. Trim the ends flush with the cab side opening. Be careful not to damage the handrail brackets.



73) Whilst here lets do the Cab Roof. Get (70) the roof and start by marking the centre of grooves, some way that it won't rub off whilst rolling. Now roll the roof to match the profile of the cab front/back. Then take (71) Roof Braces and offer inside the cab, trim so you have about 1 mm clearance either side. Again mark the centres, then one at a time place in groove align marks and tack near centre. Working outwards, tack to the ends then make sure they are upright. Try the roof on the cab, if you need make any adjustment do it and then solder fully.



74) Take a piece of the rolled 1mm brass angle and leaving 1 or 2mm overhang start soldering to the edge of the roof. Work your way across to the other side and repeat at the other end, clean up.

75) Take 2 straight pieces of 1mm brass angle and form the rain strips, there should be small gap at each end.

76) Take the Roof Vent (72) and form the rivets down each side then roll/bend to match the roof solder in place as per picture. Clean thoroughly and set to one side.

Boiler Assembly- the above picture are from the 56xx kit but principles are the same.

77) Locate parts (83 - 88) Boiler Parts on Sheet 77. Start by rolling (83 - 86) then using Boiler Clamps or some other means form 4 tubes. Parts (84) & (85) fit onto (83) and (86) onto (85) and should be a very tight fit.

Before soldering the seams of the parts check in the following order.

78) First try (84 tapered section) onto (83 main former) and note the fit, next (85 straight section) onto (83), this should give an indication if any of these 3 need adjusting. Now repeat for (86 smokebox wrapper) onto (85) and again adjust if need be.

79) When satisfied that all these parts are a snug fit solder the seams, I prefer to place a length of scrape etch shorter than the tube on the inside and solder that in position to strengthen the joint.

80) Solder 2 brass washout plugs into the holes of (84), its neater if you solder them from inside.

81) Take (88) and align the etched line with seam the of (84), then solder together, *I usually hold (84) upright with the disc (88) in place and sight it by looking down inside (84), then tack from the inside, check and then solder fully*. Now solder 2 short 8BA bolts through the holes from inside the boiler.

82) Slide (85) over (83) and line up the washout plug holes, slide these into (84) until (85) butts up to (84) then rotate until all the seams align.

83) Lie flat with the holes at the top press down onto a flat surface, check that nothing has rotated, carefully stand on end with moving the parts relative to each other, *you will need a couple of blocks because of the bolts*. At this point I would slide a square up to the seams side to check, then tack the 3 together. Lay flat and check again, rectify if there is a problem. Solder in the other 2 washout plugs.

84) Now slide (86) on to this assembly and align the large chimney hole, it can only go on one way around. Place a drill shank in the hole and lie flat as before, push down and then carefully solder in place, *neater from the inside*.

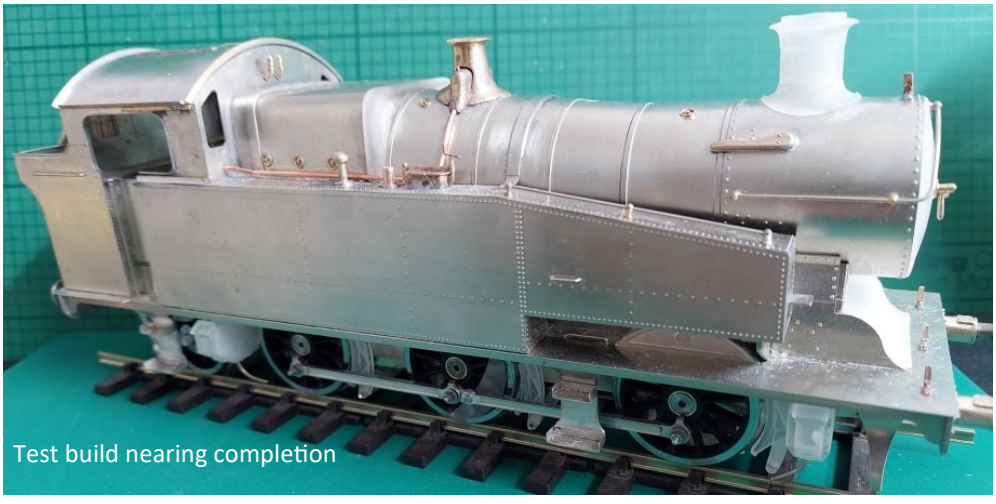
85) You can if you wish fit a second disk into the (87), but it must be back 5mm from the end.

86) Slide the saddle into place and check the fit, there should be no need for adjustment, unless you need to lower the smoke box to get it level, in which case file off a little of the top the saddle. Now tack the saddle to the smokebox. Remove by sliding forward and now solder the fully at the front and rear.

87) Take (PP5) Smokebox Door and fit into the front of the smokebox, there is a hole at the top for a handrail knob and down on the left side there is a hole for the steam lance connection. (be careful not to break the hinge pin)

88) Fold up (91) Smoke box step and solder in place under the front of smokebox.

89) Whilst it is easy to handle the boiler identify the Safety Valves Top Feed casting and Bonnet. Now fettle both until the top feed sits nicely on the boiler section and do the same to the bonnet, before putting the bonnet to one side. Cut a groove for the feed pipes with a cutting disc in both sides of the top feed, this will make it easier to fit the pipes under later. Now solder the Top-feed casting from the inside. Make sure it is the right way around. Then try the bonnet, adjust until all is sitting nicely.



90) Cut out parts (80 - 82) Fire Box Crown and formers, clean the cusp off (81 & 82). Bend (80) to the profile of (81 & 82), then with (81) lying flat put (80) around it, standing vertically. Placing something behind (80) push the former hard up against (80) and tack it in the centre. After checking it is central and hasn't moved start working away from the centre in each direction, making sure to keep pushing the former against the crown, then repeat for the other end. Check that it sits level on the bench, if not, twist until it does. If the ends or sides for some reason are not all equal file off surplus. Stand on end on a sheet of wet and dry laid on the bench and with a circular motion clean up the ends, this should keep them flat. The ends must be vertical.


Class 56xx—for illustration only

91) Take 8 washout plugs, place into the holes and solder from the inside.

92) There 2 cladding clamp castings supplied and can be fitted on the top in a similar position to above.

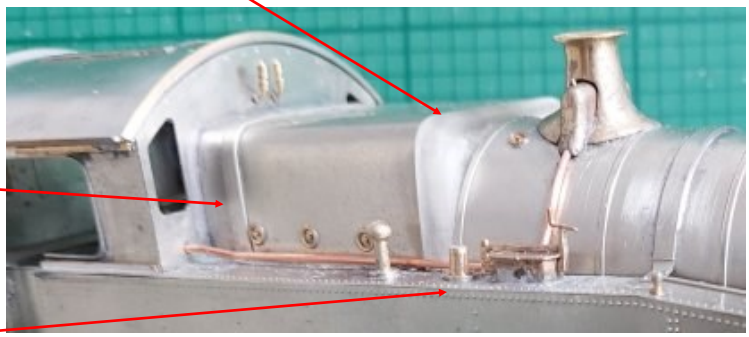
93) Identify 4 mudhole covers, using a round file thin these from the rear and fit in a similar position to above.

94) Next identify (PP6) Throat Plate. Place the fire box crown into the gap between the cab front and the boiler. Now place (PP6) into the gap, if need be, reduce the thickness of (PP6). When satisfied with the fix both to the front of the firebox crown, now remove any overhang. Finally, fix the firebox crown unit in place, *but not the boiler if you want it removable*.

95) Take 2 Tank Vent castings and solder into holes in tank tops.

96) Take (89) Tank Stay and then bend to match the profile of the front of the firebox crown. Lastly fold up the ends so that they sit flat on the tank tops. When satisfied with the fit solder in place at the front end of the tanks.

97) Identify the Bump Stops and solder in the holes on the tank tops.



98) Identify the Water Filler/Manhole castings and fix on top of the tanks.

99) Remove (90) 2nd Tank Stay and form a gentle curve to match the profile of the tapered boiler section, just where the tanks start to slope. Lastly fold up the ends so that they sit flat on the tank tops. When satisfied with the fit solder in place. To the tank tops or *to the boiler only if removable*.

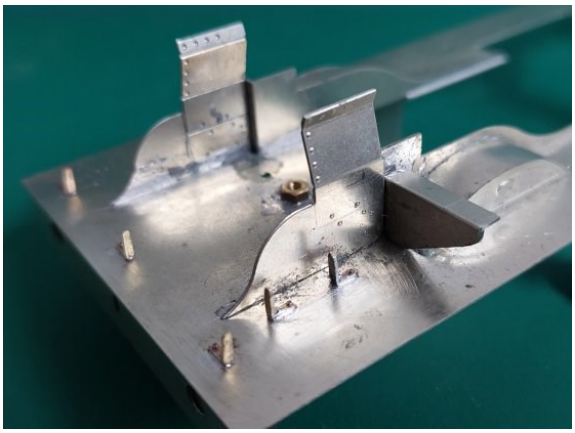
100) Now take a piece of copper wire and bend to shape and place into the groove under top-feed and down the hole in the tank top, then fix in place and repeat for the other side. If you are not having a polished bonnet then this can fixed in place also.

101) If you haven't already done so, fit reverser on the right side on the cab and hand brake column on the left.

102) The Cab Doors (69) fit into the slots in the front of the bunker.

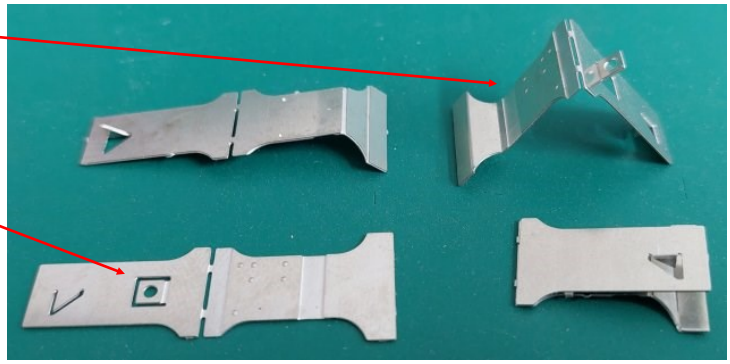
103) Bend whistles to shape and fix in holes in front of cab.

104) Fit the lamp holder brackets into the holes on the footplate by soldering from underneath.

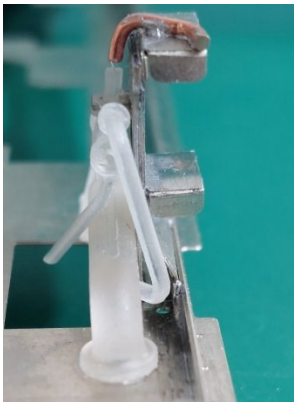


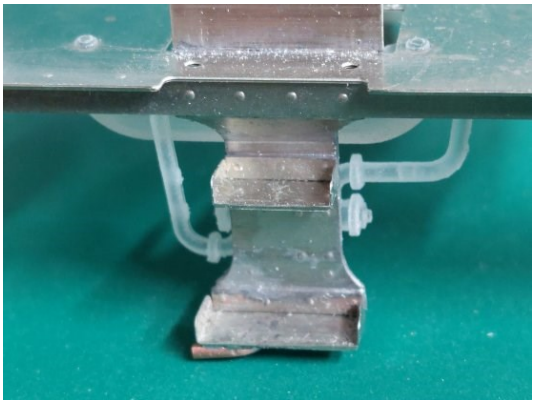
105) Get 2 off (92) Front Step Backs and 2 off (93) Rear Step Backs. Start by forming the "S" bend, be careful not to bend at step pocket. Now tease up the tringle piece at 90^0, then double over on itself, it should look like bottom right. The rear step back has a bracket for the injectors, now solder together.

106) There 4 off (94) & (95) Steps. Start by punching the rivet in all 8. Next fold at 90^0 and then fold the ends up, then solder the short ones in the upper pockets and the large the lower.



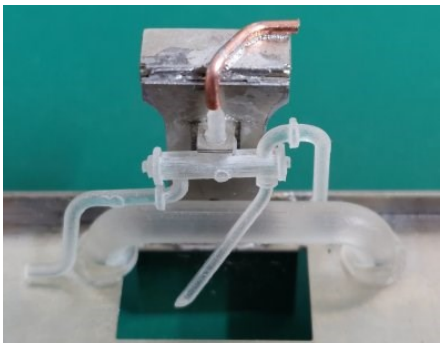
107) With the running plate upside down position the rear steps in line with 4 rivets on the valance and touching the back of the valance, tack and check the position.





108) Similarly, position the front steps in line with rivets and grab rail.

109) *There are 2 printed injectors and pipes, I had hoped that it would be possible to thread thru the hole in the back of the step, but not so*. Therefore it will be necessary to cut the equivalent of the brass piece off the Injectors (PP7) and do as I have done in the picture.

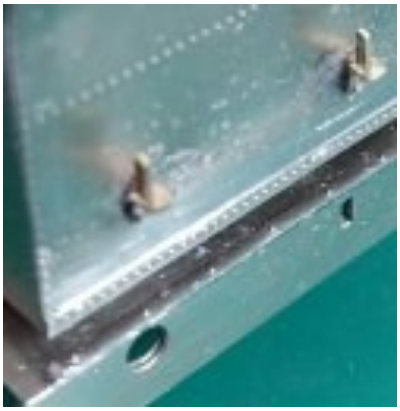


110) Find the 2 off Balance Pipes (PP8) and fix in the holes behind the injectors.

111) Now fit buffer bases to the buffer beams with foot rest uppermost, put heads etc. safely to one side for fitting after painting.

112) Fit the handrail knobs and wire to the sloping tank tops.

113) Identify the “banjo” casting and fix to the right hand side of the smokebox. *See picture page 10*

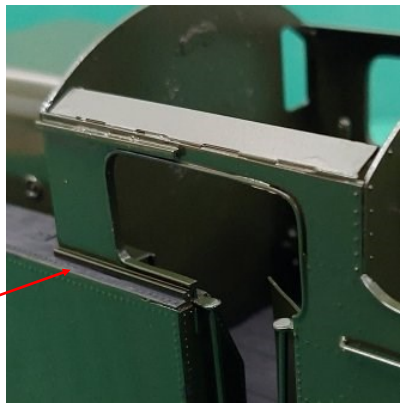


114) Now get (65) Tank Front Overlay, check the fit around the boiler and if need be fettle leaving a 0.5mm gap. Fix in place and then get (76) from small sheet, Tank Front Step, punch rivets and fold, secure in slot on tank front. *See picture page 10*

115) Punch rivets in (64) Tank Front Overlay and fix under tank overhang with rivets at the bottom.

116) Form the smokebox handrail from 0.7mm wire and using the 1 medium & 4 short handrail knobs fix in place, the top hole in the door might be tight, don’t force it. *See picture page 10*

117) Shape and fit a lamp bracket to the top of the smokebox. *See picture page 10*



118) Using the Jig bend 2 handrails “TS” 5.83mm, drill thru tank side, then solder in. Do the same for bunker side Handrails followed by the bunker rear one.

119) Fit the 3 Lamp Brackets to the bunker rear.

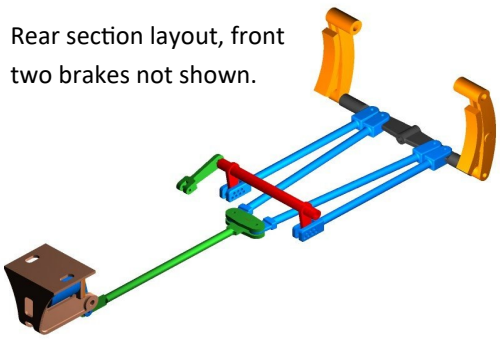
120) Get the 2 Rivet Strips (73), one goes on the bunker back and the other with less rivets goes on the footplate. *If sectional built you need to keep separate*.

121) Using 2 pieces of 1mm channel on each side fix the Cab Shutter (75) rails. Place one on the tank top and with the shutter in between position the other one. Make sure not to interfere with the fit of the roof.

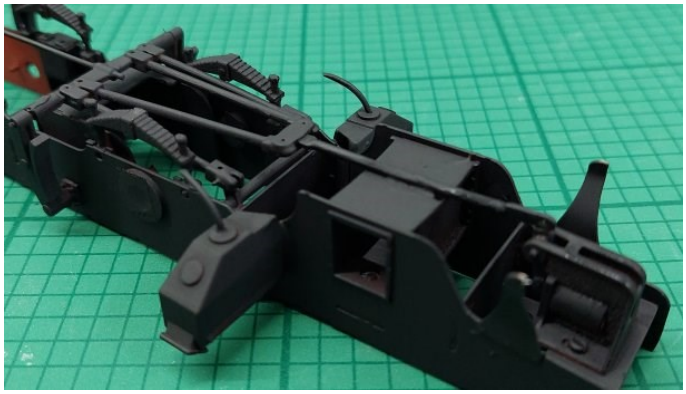
Back to the chassis

120) Take part (21) an fold to 90^0, with the body upside down and the chassis in place, position (21) behind the front buffer beam. You will see it sits over the tongue of the front spacer. Holding it in place try lifting the rear of the chassis up and out, if it is too tight, make the slot deeper. Fettle until with (21) in place you can remove the chassis, then solder permanently.

Rear section layout, front two brakes not shown.



121) There are 2 ways to fit (PP9) the brake hangers shown yellow, (a) solder a piece of 1mm wire through the holes in the chassis or (b) tap the holes 12BA and carefully drill the upper brake hanger hole 1.2mm diameter. Now fit brake hangers to chassis.



120) Take brake stretcher bars (PP10) and either drill 1.05mm glue in a short length of 1mm wire. Alternatively drill 1.3mm then cut the heads of 12BA bolts & glue in place (*cut end in hole*). Fit stretchers between brake hangers and use a piece of 1mm wire for centre rod to join all 3.

121) Fix the large cylinder casting (PP11) using 2 off 12BA nuts & bolts.

122) Fix the Brake Pull Rod Shaft with a piece of 1mm wire thru holes in frames. Then using brass pins, pin the pull rods together. There is rocking arm that joins brake cylinder to rearmost pull rod. *If you have screwed on your brake hangers, you can remove them as one assembly when you decide to paint.*

122) Taking the 6 springs (PP13) glue into place, there are pips on the springs and holes in chassis for location.

123) Identify the Front Sand Boxes (PP14) and after removing any carrier wires glue into the 4 holes in the side of the chassis. Fit the Rear Sand Boxes (PP15) , and after removing any carrier wires glue into the 2 holes in the side of the chassis.

124) Bend 0.9mm wire to shape to form the sandbox pipes and the glue in place.

125) Check that the Chimney (PP16) sits nicely and is central, then glue in place.

126) Having tested the fit with the running plate you can remove brake hangers, wheels, bearings and motor/gearbox. The chassis is now ready to paint.

127) Paint the Back head, after painting the body this can be fitted inside cab.

128) Paint Body and Chassis, reassemble, fit decals and number plates.

129) A set of cast nickel silver coupling rod nuts are supplied, tap to 12BA and use these for the final assembly.

130) After painting re-assemble and ensure everything moves freely. Fit your wiper pickups or plunger type and wire up to the motor and test your chassis runs smoothly.

131) Fit coupling hooks and buffer heads.