88D Models – GWR 4-4-2 County Class Tank

This kit was designed to be assembled by modellers with varying skill levels. Were ever possible I've tried to provide an easy solution for the more difficult or tedious bits. The kit will produce a fine model but some of you will want to upgrade it by either substituting or even fabricating small extra details, a list of suggestions appears at the end.

A great deal of care has gone into designing this kit and I have "test" built 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 are an experienced modeller, then you won't need any help, however others might find these notes useful.

The main skill to master is soldering and the choice of soldering iron is endless, I have named some options under ***Suggested Tools*** below. Whichever make and model you choose you will need a selection of "bits". I get by with 3 - a small pointed one, a small chisel shaped one and lastly a large knife shaped one.

Soldering isn't a black art, you just need to know the rules and stick to them.

Make sure the surfaces to be soldered are clean. Use a glass fibre stick, scratch pen or very fine "wet & dry" paper to remove any oxidation, try to avoid tearing up the surface as it might show later. Preparation is very important on brass, even though it might look clean it still needs a clean, also the etching process can leave an invisible film.

Flux – avoid some of the varieties used by plumbers, they can be too powerful and more difficult to clean off, I use Duncan Models for almost everything. Keep a jar of clean water to hand and a small paint brush and when you have finished a section wash off the flux, it's far harder later. At the end of each model session thoroughly clean your model with a bit of washing up liquid and warm water. I often brush over with "ViaKal" and this both neutralises the acid flux and cleans your model.

Solder, I use 4 sorts. Rosen cored electrical solder for high temperature items i.e. fixing steps to the back plate. 190^0 for a more durable fixing, 145^0 everything else with exception of low melt for white metal items. I also have a separate iron for low melt solder as I find it can ruin the tips.

Use the solder sparingly; I can't stress enough the need to keep the model clean and tidy. If you inadvertently over apply the solder, drag the surplus out to an area where it can be removed with a craft knife and then buff up with a fibre glass pen. Always take the solder to the joint on the tip of the iron, don't feed it in.

It is important to keep the bit clean and in good condition as you work. Get a soldering iron stand containing a damp sponge as old oxidized solder is wiped off on this before picking up fresh solder for each joint. If you haven't made a joint for some time you may find that a hard black crust has formed on the bit. Remove this with a brass wire brush (suede brush) and then feed some multicore solder onto each side of the bit to restore a bright surface (referred to as wetting or tinning the bit). If you follow these rules you should achieve success. Practice on some scrap material to get your hand in first.

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.

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

Remove cusp from each part before assembly.

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**.

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.

Take the shine off the surface of plastic parts which are to be glued to give the adhesive a good grip.

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

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

Damaged Parts and Shortages.

If you damage an etching during construction it may not be possible to replace individual pieces, but at a minimum cost replacement frets (one of the sheets as originally supplied) can be supplied, unless in stock 2-3 weeks turn around.

The printed parts may be easier to replace, some parts may be stock and therefore can be supplied. If they are to be ordered then to excessive carriage costs from the printers I would need add it to another order. This will inevitably lead to a delay in providing the part, as with an etched sheet, I will do it as cheaply as possible.

Castings aren't normally a problem as again they are normally in stock.

Items required to finish Kit

ABC Mini gearbox and motor (or alternative)

2 x Slater's 7880CT– 6' 8" wheels

2 x Slater's 7837 – 3' 1" bogie wheels

1 x Slater's 7843 – 3' 7" bogie wheels (trailing)

1 x Slater's 7157 plunger pickups

Number Plates (available at — http://www.88d.uk/pups/Number_Plates.asp)

Transfers & 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.

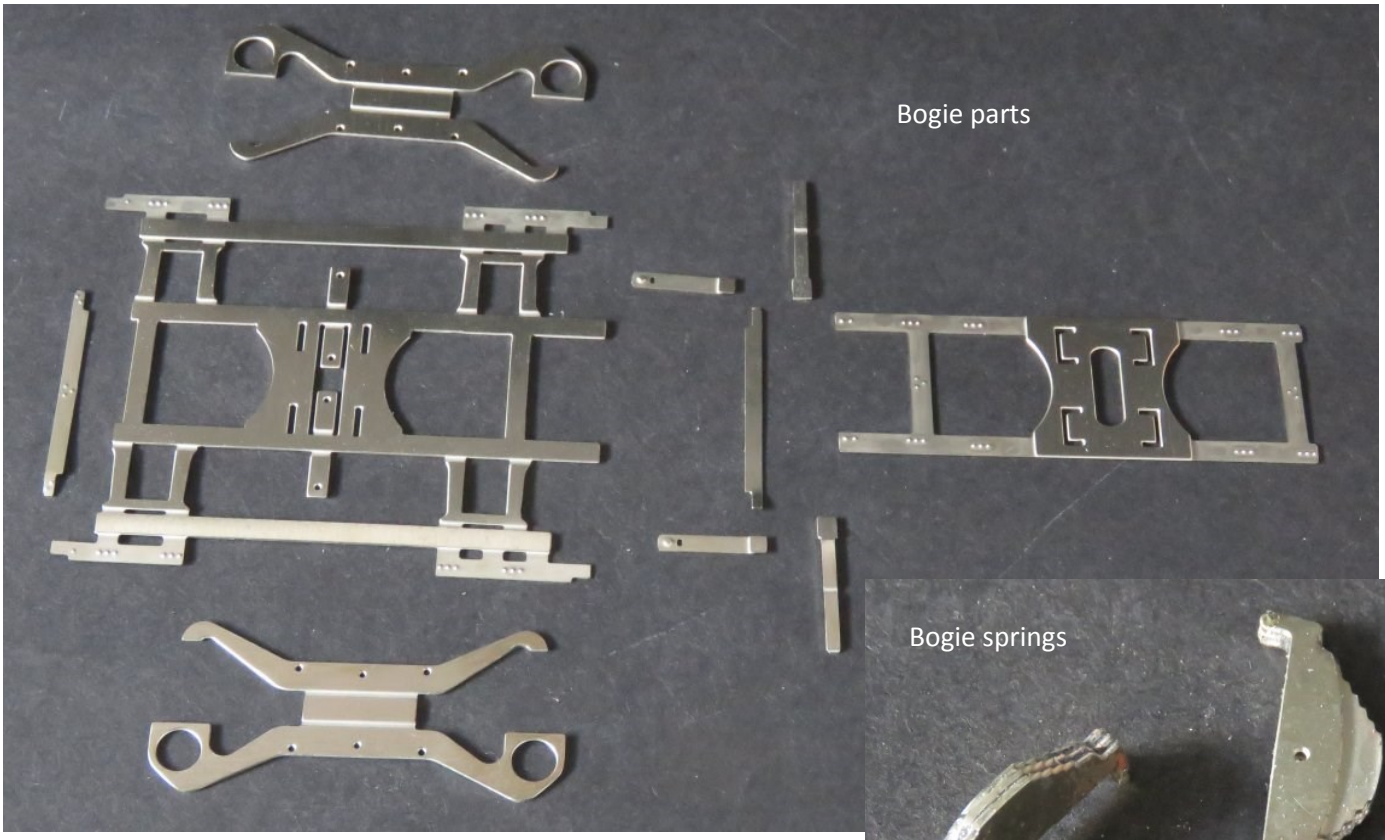
All pictures and more are available at http://www.88d.uk/pups/GWR_County_Tank_CBP.asp or GWR_County_Tank_SBP.asp

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

GWR County 4-4-2 Tank

Front Bogie Components

Locate and carefully de-cusp these 10 items, then from Sheet 10 or 11, depending on your footplate choice the 6 parts that make the springs. NOTE! Use items from supplementary etch not main sheets - NO NUMBER don't USE.

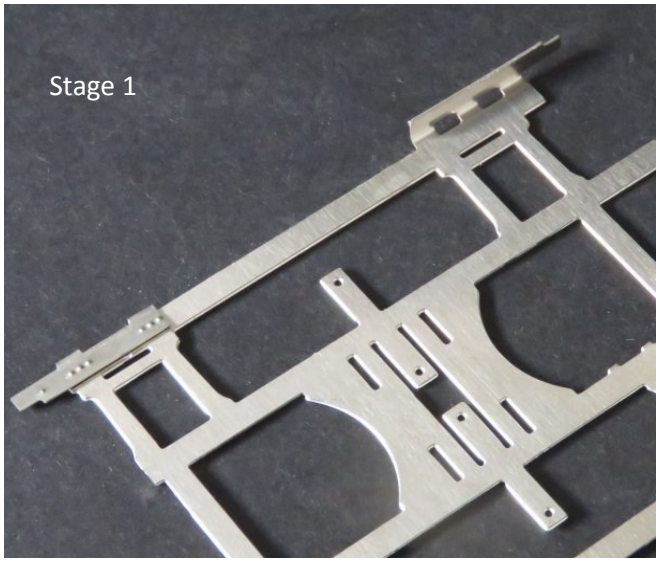


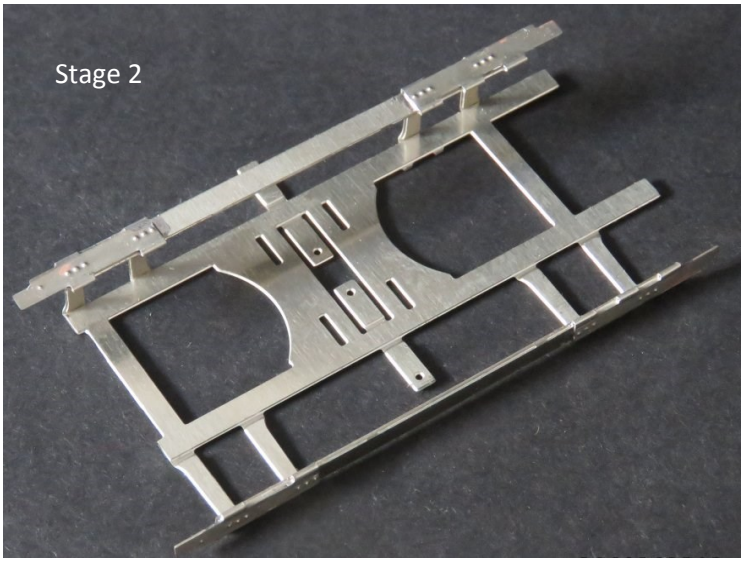
1) Start by soldering together 2 plain and 1 detailed spring parts (1). Thread onto a piece of wire at each before soldering, leave a little long as these are filed back to imitate bolts. Open the middle hole to 1mm.

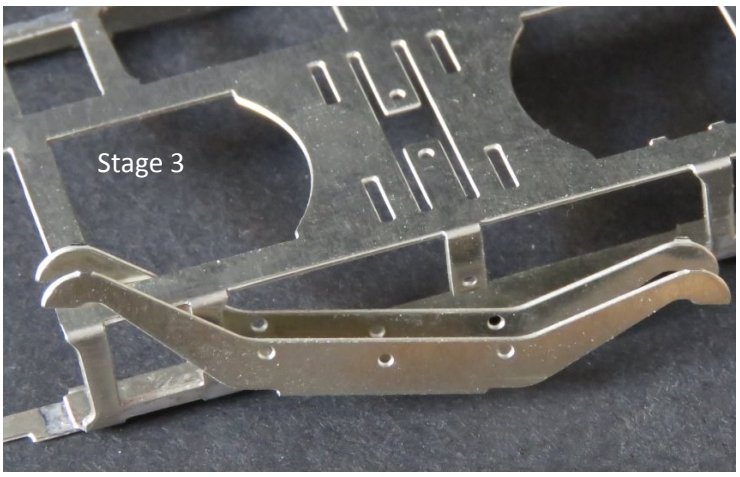
2) Next fold up the bogie chassis (2), start by folding over the rivet detail plates, it may help if you scribe the inside of the tabs first, alternatively cut off and solder back in the correct position.

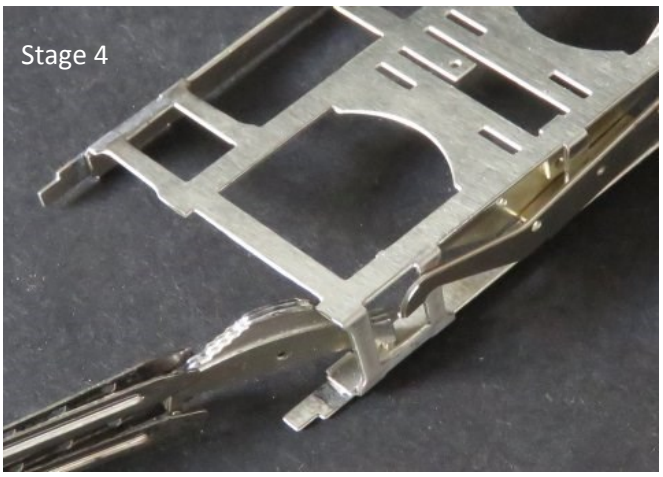
Note! Ensure that when both sides are folded the overall width is 25.2 mm maximum.

Follow the sequence of pictures to assemble the bogie, full size images available on line.





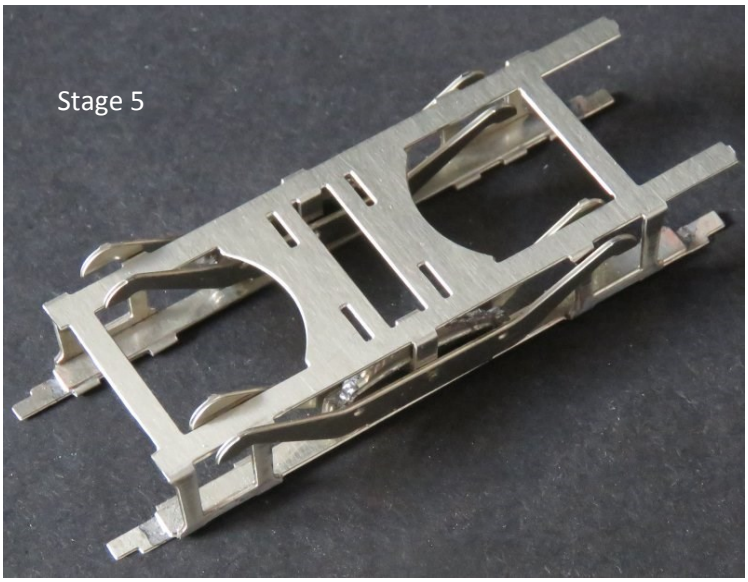


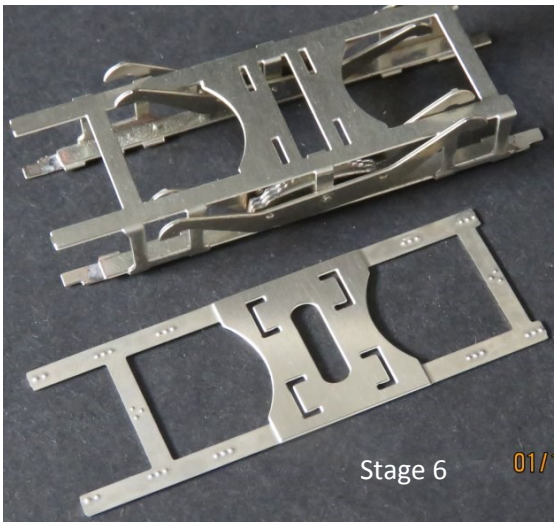


3) After folding the suspension beam (3) slide into frame, note it goes easier from one end than the other, repeat for other side.

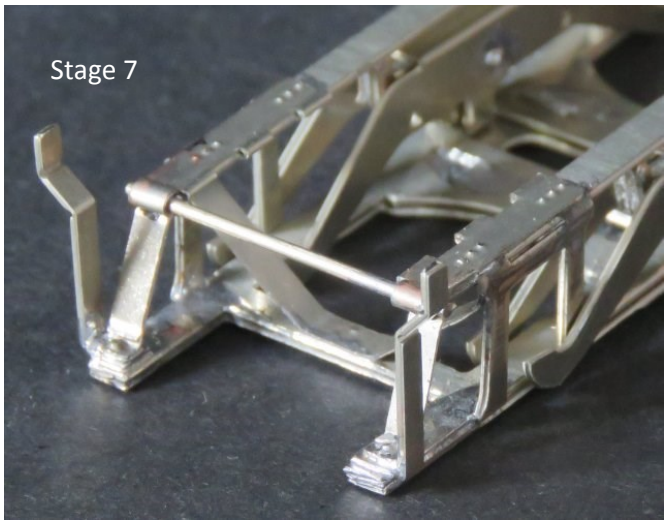
4) Then slide the spring assembly in from the end as shown. Now slide a piece of 1mm wire through beam, frame pivot, spring and out the other side. Check that the beam moves freely. Fix with a TINY spot of solder and check again.

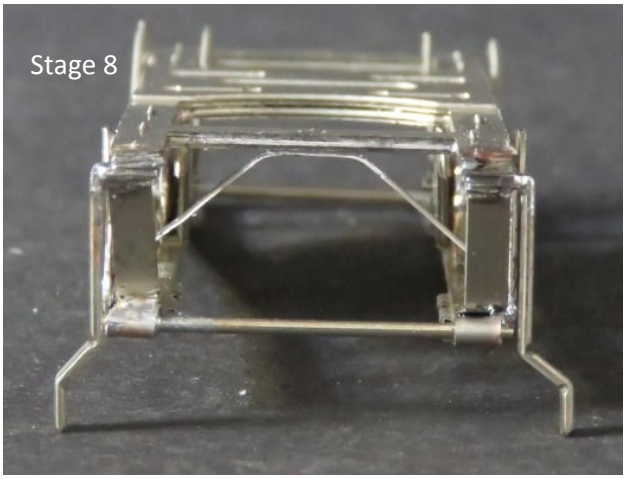
5) Fold tabs and fix top plate (4) to main assembly.

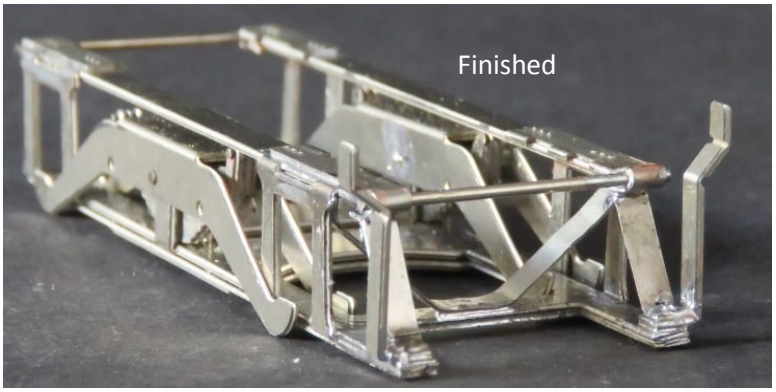




6) Roll the ends to hold the cross bars, bend and fit braces (5) and guard irons (6), solder all in place.

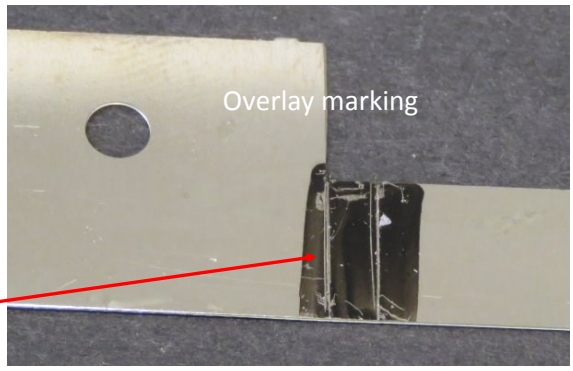




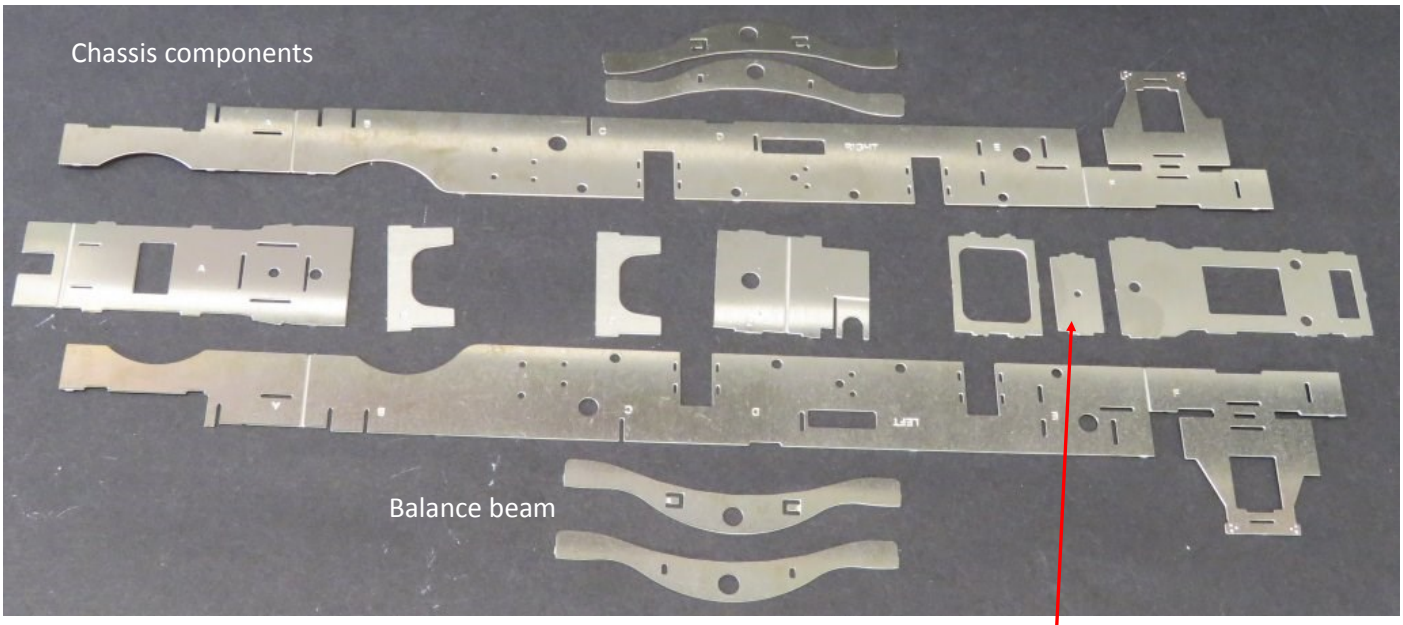


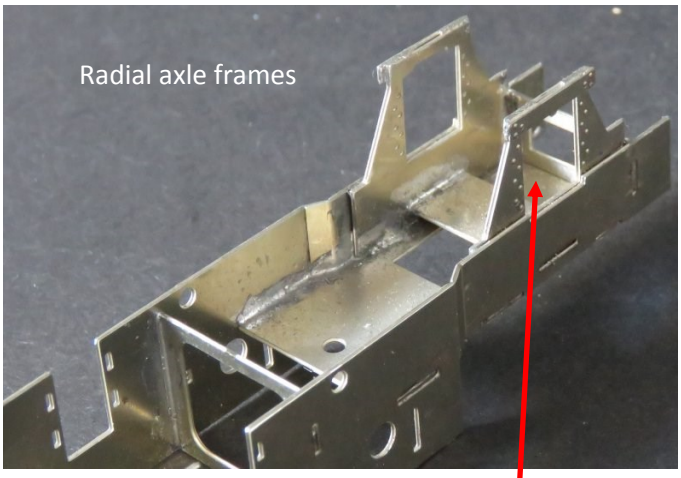
Chassis

The chassis construction follows the tried and tested method of slot and tab. The frames and spacers have letters etched on to indicate their position and all folds have etched line to the inside of the fold.



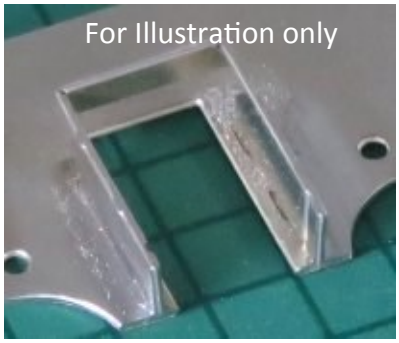
7) Before bending the frames take the frame overlays (20 & 21) and lightly scribe on the inside the positions of the bend lines on the frames, this will make it easier when you come to fit the overlays.





8) Make sure Radial axle retaining screw plate (16) is fitted as you go. Tap hole for 10BA screw.

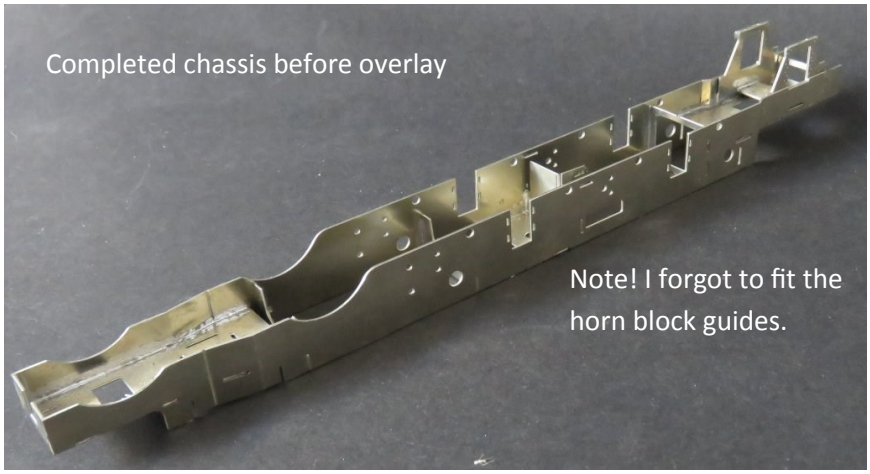
9) Locate and fold horn block guides (7) then solder through holes in the frames (8 & 9), don't get solder on the inside of guides. File off any protruding tabs to leave a clean flat surface for overlays.



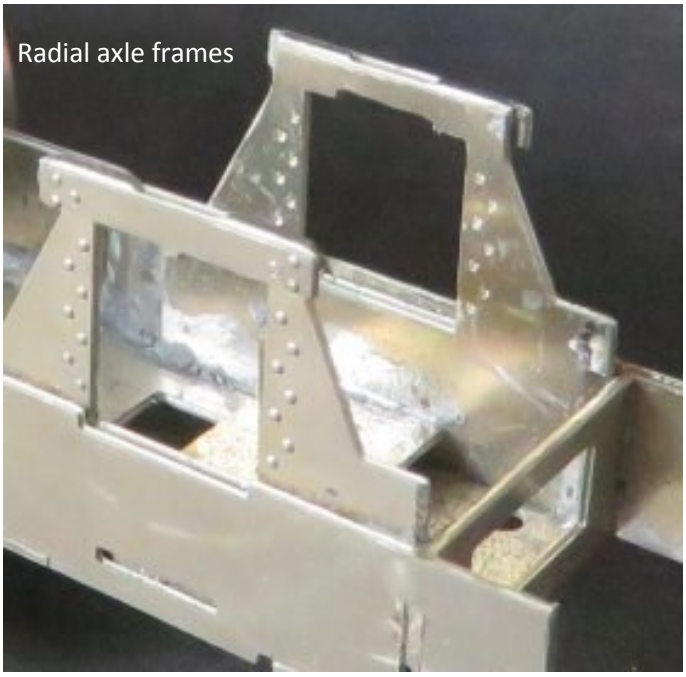
10) Punch out all half etched rivet holes.

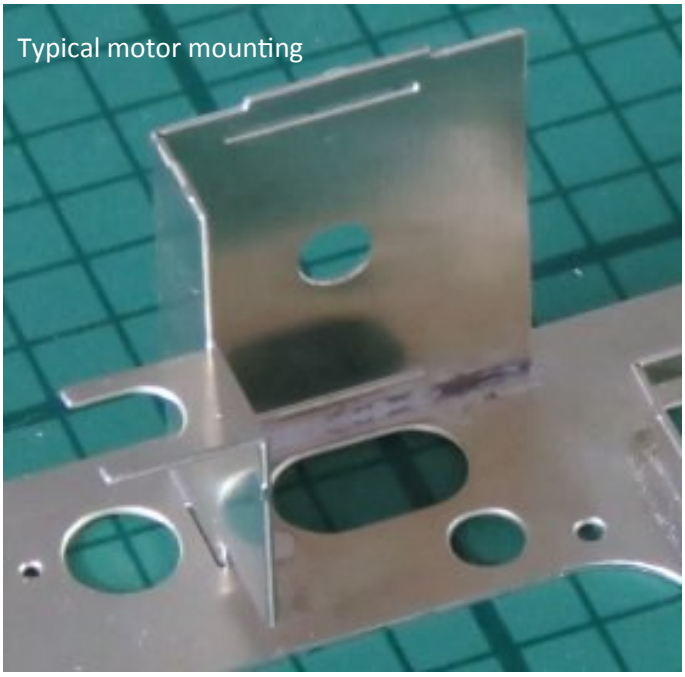
11) The Radial axle frames go inside the main frames, either fold over whilst connected to main frame or cut off and re-attach.

12) Bend tabs and solder together each pair of suspension beam arms (15). DO NOT open out centre hole as this will affect ride height of chassis.



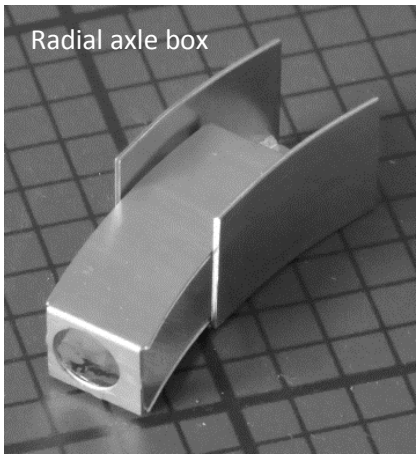
13) Bend main frames (8&9) and frame spacers (10—14) (with etched line on inside). Next tack solder each one in place on one frame, adjust the joggled bends as you go, then with whole assembly upside down on a flat surface solder on the other frame. Check for squareness and adjust if necessary, then solder fully.


Radial axle frames

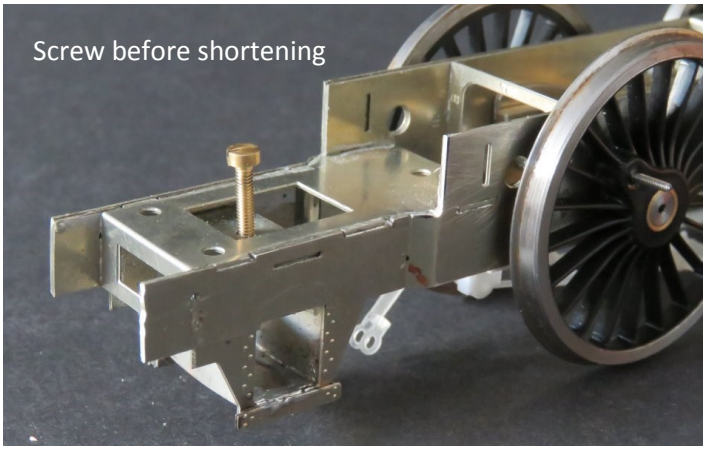

Typical motor mounting

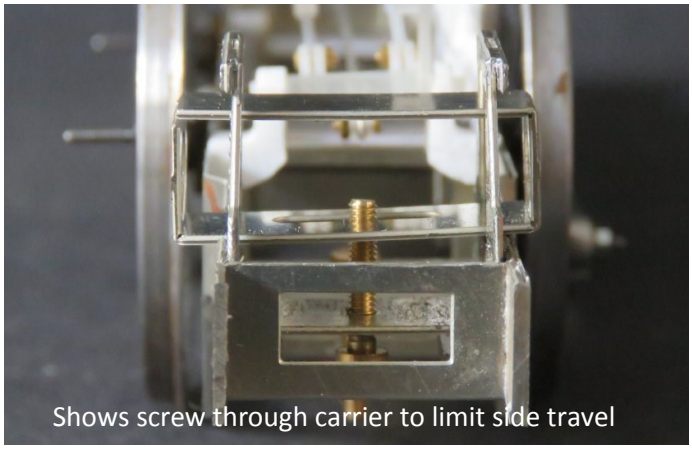
14) Bend and solder up both radial axle box (17 & 18) and radial axle carrier (19), solder box into chassis. Slide in axle carrier and check it moves freely.


Radial axle carrier


Radial axle box


Radial axle securing screw. A spring can be fitted over this to apply extra pressure if required.

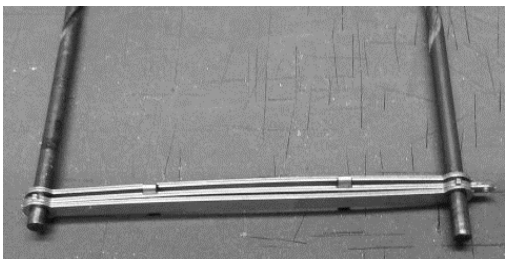

Screw before shortening


Shows screw through carrier to limit side travel

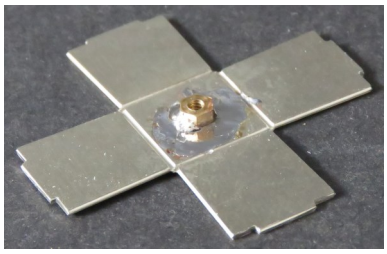
15) Fit the chassis frame overlays (20 & 21), you can solder, super glue or contact adhesive if applied thinly.

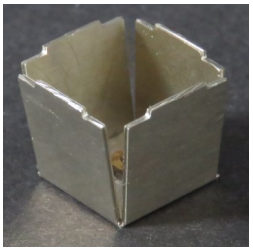
16) Fit balance beams (15) using special nuts and check all moves up and down freely, fit square bearings and slightly bend a tab on each horn block to hold in place for now, they will be bent over fully after painting.

17) Locate Coupling and connecting rods parts (22 - 26). Use “black” 2.5mm drill shanks to align the holes before laminating together (22—24) with part (22) on the outside (face) of the rod. Repeat for (25 & 26).



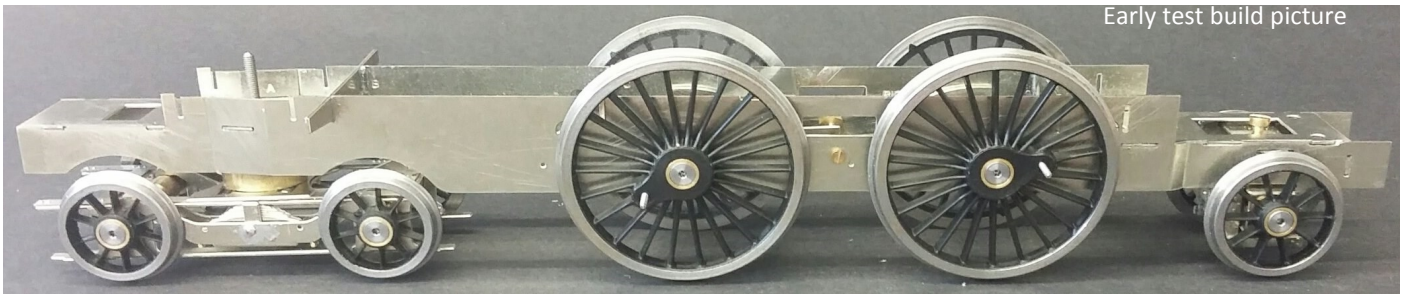
18) Take the driving wheels and fit Balance weights (27), the larger ones go on the leading axle. I have deliberately made them a little over size to allow you to “fettle” for a good fit. Fit Crankpins.



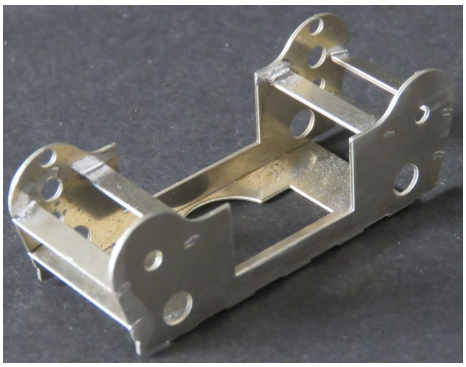


19) Take Bogie mounting bracket (28), solder a 8BA nut in place and fold up to form a box, it is best to chamfer the edges which will come together to form the corners of the box.

20) Tack solder in place on the underside of frame spacer part 10. Now is a good time to fit wheels to Bogie, Radial Axle and main Drivers plus coupling rods for trial “push” along the track. Check the sits level and it rolls freely, if satisfied solder fully and move on to the cylinders.



21) Take cylinder sub-frame (29) and check the fit over the frames—if it needs a little adjustment, its easier to hold in the vice when it is flat. Make the 2 folds then fit the 6 parts (30) and solder into the slots in (29). Check its square and clean up.



22) Take part (31) cylinder wrapper x 2, and form to shape. Parts (31a) are very slightly larger. Before fitting, establish the position of the drain cocks and drill 2 holes for the drain cocks. This is easier done when you place the wrapper on a flat surface and drill 0.7mm holes from the inside, these can be opened out later. Put to one side.

23) Take the slide bar and crosshead castings and remove sprues. Take the crosshead and drill out the hole to accept the 2mm nickel silver rod. Be careful not drill right through. (voice of experience). When happy solder a piece of rod into each crosshead and trim to length.

24) Very carefully file and polish the slide bars and the crosshead guides until they slide smoothly. Then solder the slide bar casting to the cylinder frame, note they are handed.

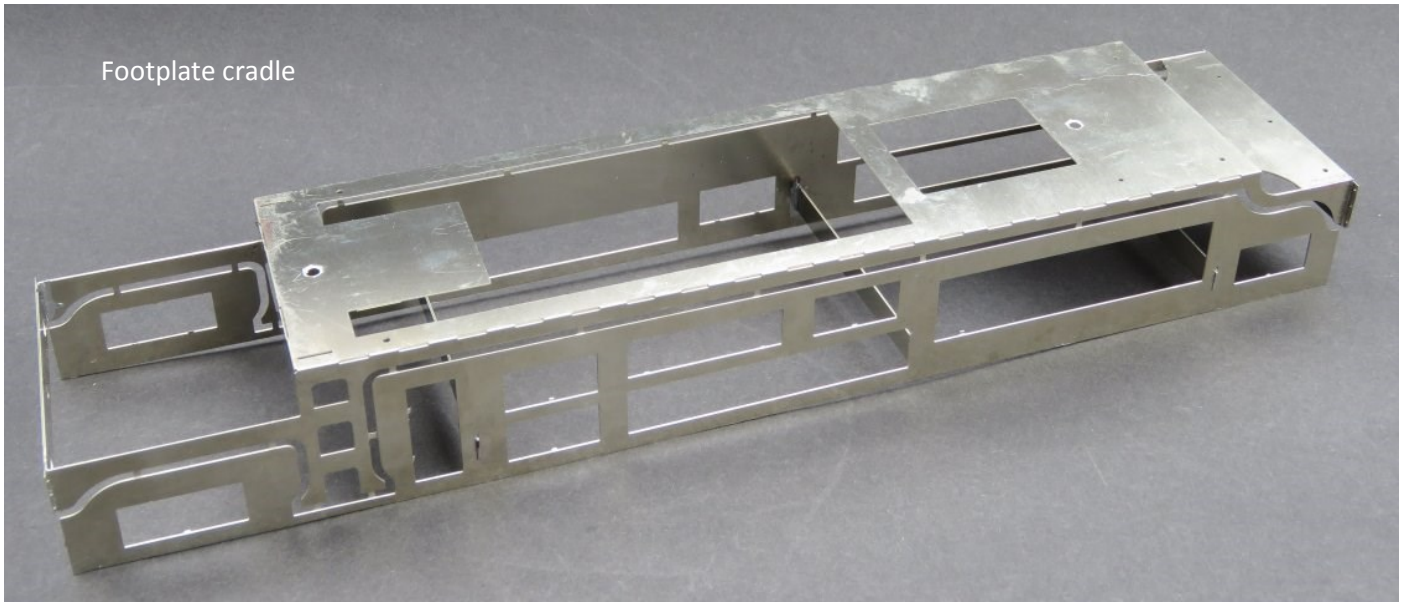
25) Fit the assembled connecting rod into the crosshead using a 12BA cheese head screw, then file down the head to remove the slot, secure at the rear, check it move freely.

26) Fit cylinders in place over frames and temporarily fit connecting rods to wheels and ensure the chassis rolls smoothly, adjust if required.

27) Fit drain cocks, safety valves, “G” brackets & Valve Ends (PP1) & Cylinder End Cover (PP2) to complete.

Footplate

The whole body structure is built off a cradle to ensure it remains flat and true. Locate the body sub frame and fold up to form a structure like that below—it may differ slightly if you a straight framed model.


Footplate cradle

28) Take the cradle (32) and remove all the various parts contained within the cradle sides and centre. Do not remove the cross braces or side supports.

29) Fold up the cradle ensuring that all bends are 90^0, note front inner buffer beam is part of this assembly.

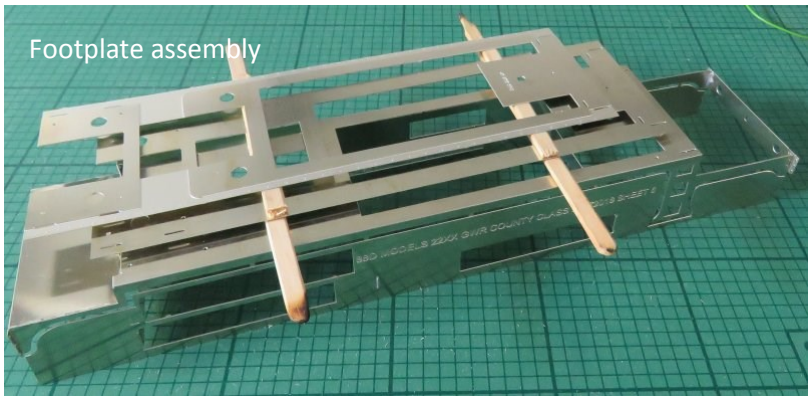
30) Locate (33) rear inner buffer beam and solder in place, the half etched rivets should be towards the main assembly as an overlay will go on the outside of this—see front beam for clarity. 2 rear buffer beams and 2 of each buffer beam overlay is supplied, one overlay is slightly larger than the other, you will need to decide which fits best later when fitting them.

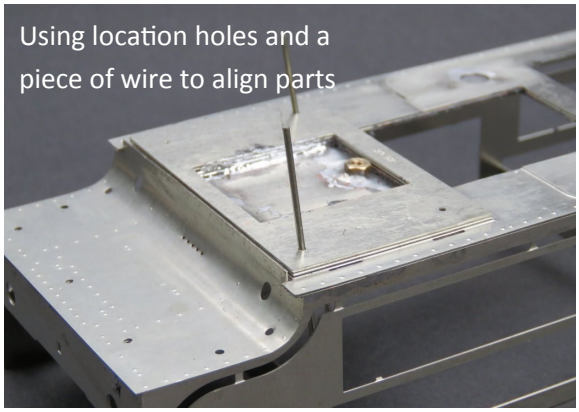
31) Solder 8BA nuts centrally into the pockets provided.

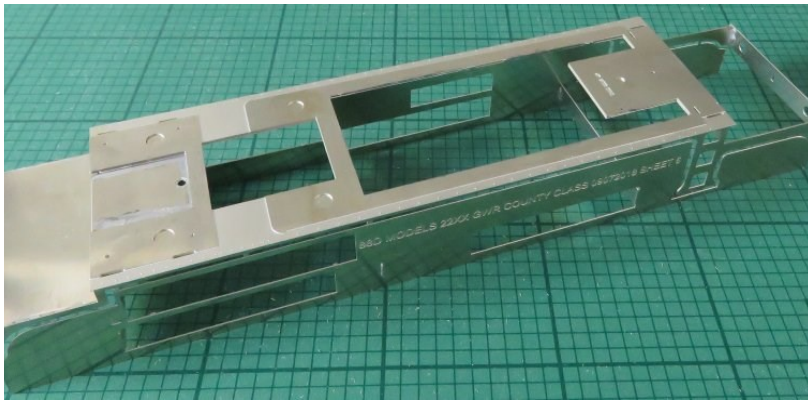
32) Locate Upper (34) & Lower (35) footplates, remove cylinder cover packers (36), clean up. Be careful not to damage the half etched edges.

33) Location holes are provided in parts (32, 34 & 35) and using a off-cut of 1mm wire, align the parts one on top of the other. Make sure the rear is square, then fix in place.

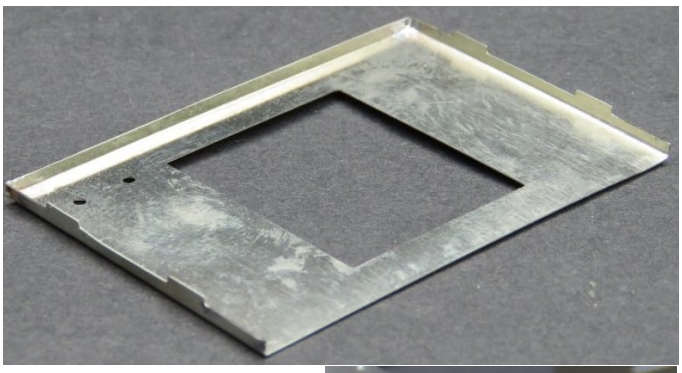
34) In the same way fix cylinder cover packers (36) on top, note orientation and keep the slots at the sides clear of solder.


Footplate assembly


Using location holes and a piece of wire to align parts



NOTE! Some pictures and instructions are slightly different for the straight framed version, an * means check.



35) Fold up Cylinder Cover Footplate* (37), then fit over the packers and fit the tabs in the slots. The holes are for Lamp brackets.

36) Carefully fold up the saddle (38) to form a box. Fix a piece of 1mm wire across each end as shown to represent bolts, clip off centre of rear one to stop fouling of bolt.


Cylinder cover in place

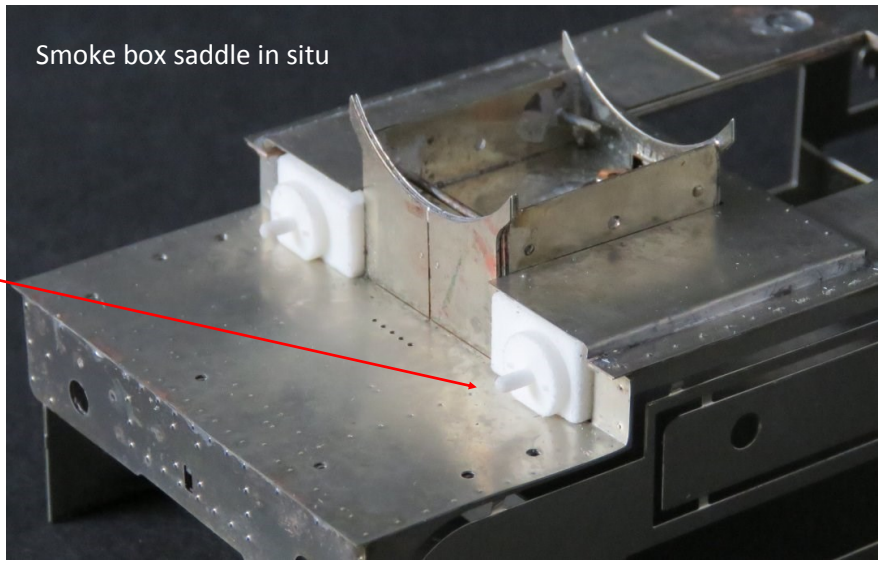
37) Fit snifter valves, clean up and fit into hole footplate.

38) Take Front Footplate (40) and fold the 2 tab pieces at 90^0. Using the lamp bracket holes position (40). It may be necessary to fettle the piece to get good fit, time spent here will be rewarded later as this is so obvious on the finished model. There are 2 overlays in case you have a problem.

39) Punch the 2 rivets in (38a) saddle front and fix as shown.

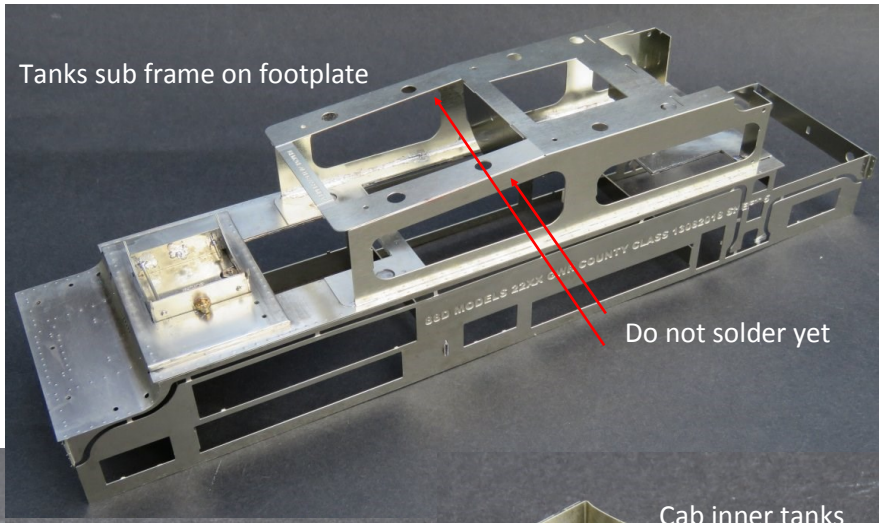
40) Fit the oil at the base of the saddle and fit thin copper wires to as pipes going through the holes.

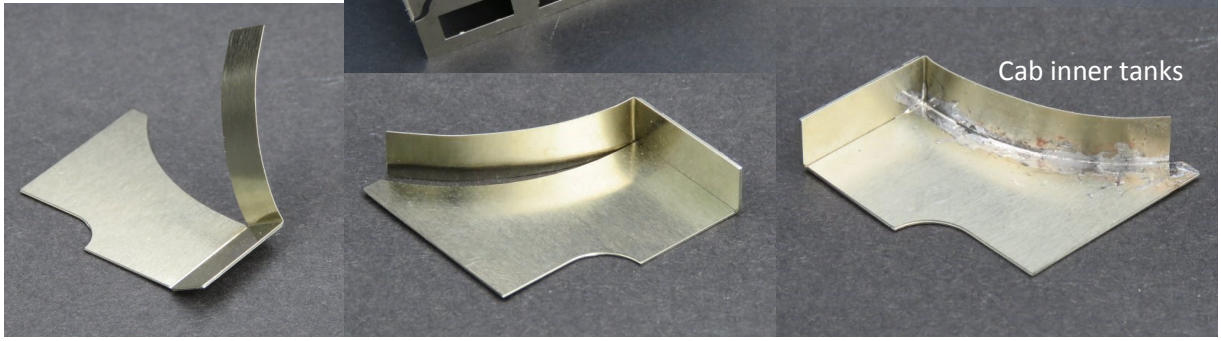
41) Fit valve inspection covers.

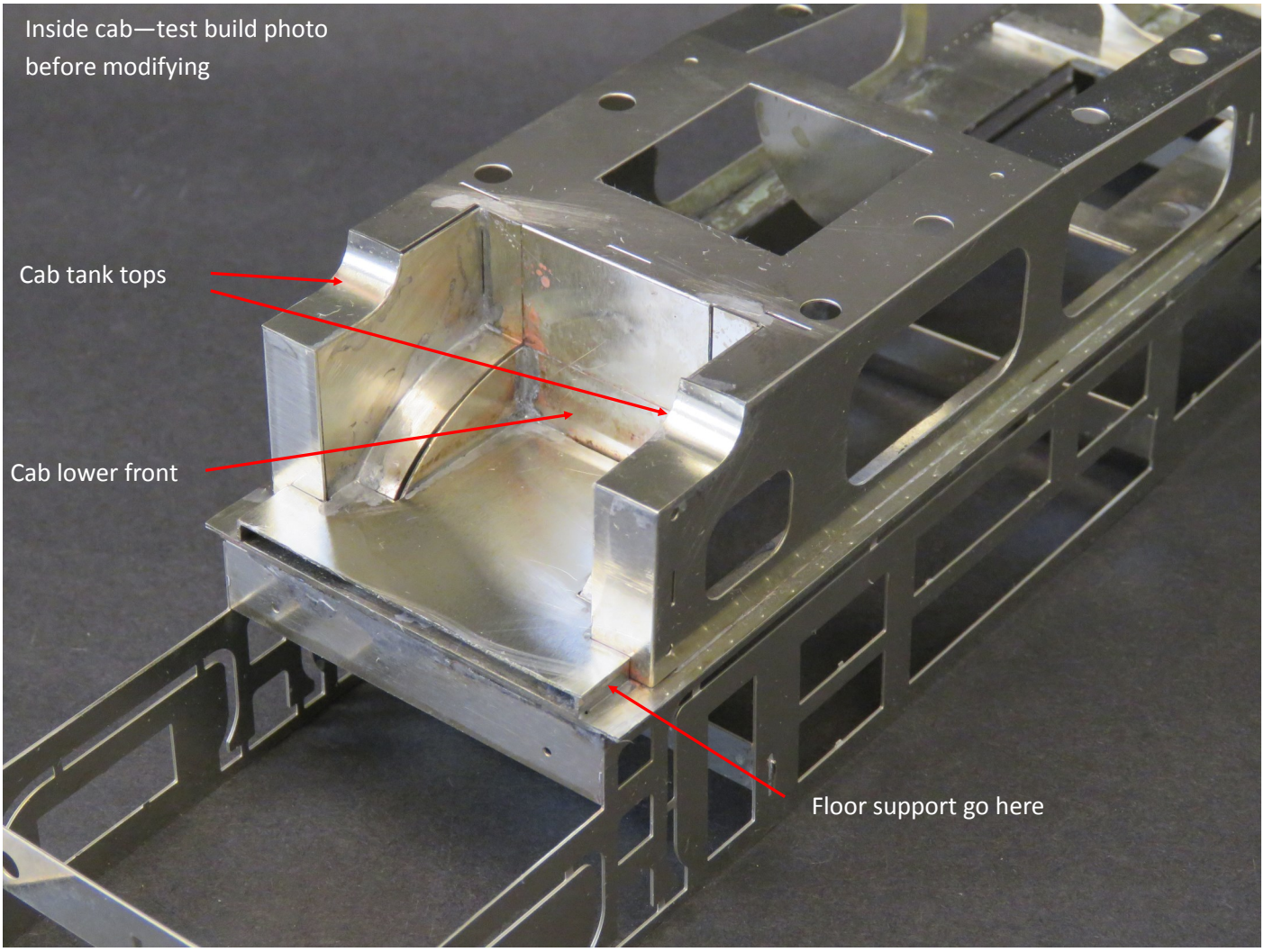

Smoke box saddle in situ

42) Fold up Tank sub-frame (42), solder temporary cross straps but don't solder the sloping pieces yet. You will find it easier to get the boiler assembly in and fix these afterwards. Fix to footplate.

43) Locate Cab Inner Tanks (43 & 44) and curve the half etched piece as shown. Next bend the reverse way to normal, grip in a vice and make sure the bend is very tight otherwise it wont touch the curve. Make the next bend to match picture below, finally solder joint whilst pressing the curved joint tightly together.


Tanks sub frame on footplate
Do not solder yet


Cab inner tanks



43) Fit cab Floor Supports (45) into slots in footplate at rear of tank frame. Make sure they don't overhang the footplate as this will impact on the bunker fitting.

44) Fix cab Floor (46) by folding down front tab & sitting on top of (45).

45) Fold cab Lower Front (47) and slide into place, it sit on floor and butts up to the tab bent down from (42).

46) Now fit (42 & 43) to complete the lower cab area, finally bend the cab Tank Tops (48) and trim to size. The bends need to be formed by eye and I left slightly oversize to allow for a good fit.

Before fitting the tank overlays, I prefer to make up the boiler, smoke box & firebox so that they are fitted thud avoiding any damage to the overlays.

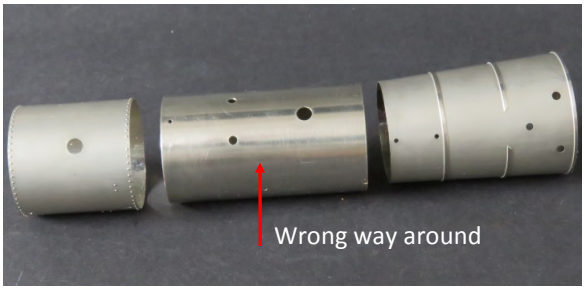
I have provided 2 different smokebox wrappers and you need to choose your preferred type now. Roll the boiler, the parallel tube and the smokebox wrapper. To help with final assembly, the hand rail holes are used for location.

NOTE—the following pictures are for illustration only, please read instructions carefully to identify differences.

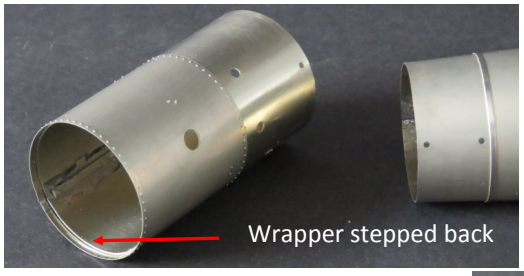
47) The boiler and smokebox comprises of parts (49 to 53). Start by rolling (49 to 51), then using elastic bands or clamps, dry fit parts (50 & 51) over (49). When they both fit snugly over (49) solder the seams of (50 & 51), BUT NOT TO EACH OTHER.

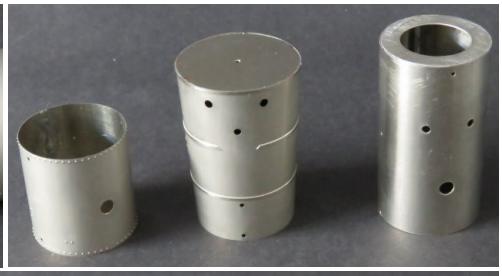
48) Part (53) goes in the chimney end of (49) opposite to the picture (From Cass 52), solder firmly in place and then gently round off the sharp corner. When you slide (50) on it will be slightly back from this. See picture next page

49) Part (52) goes in the end of (51).



50) Slide (50) onto (49) and align using the chimney and handrail knob holes (use a piece wire or handrail knob to hold in place). Next slide (51) onto (49) , there is a hole on top to align it, put a piece of 1mm wire in for now and when completed fill hole.





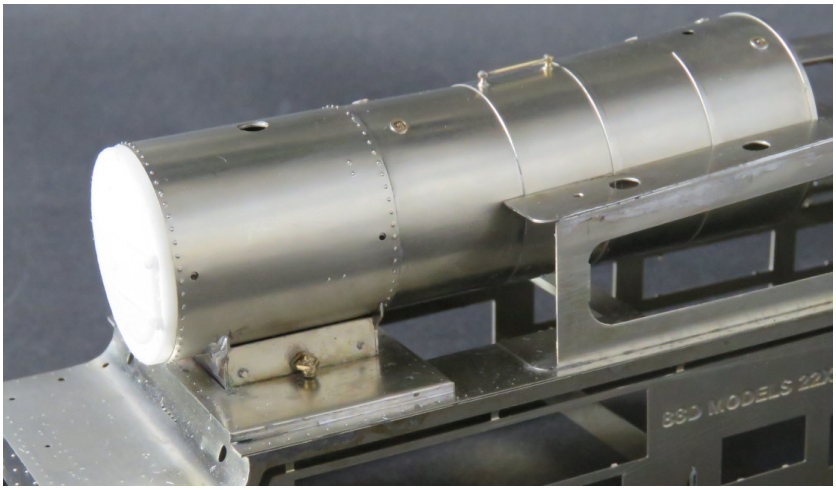
51) Place the whole unit on a flat surface with chimney etc. holes at the top and press down so that all the components touch the bench. Visually check there isn't a "dog leg" when viewed from the end.

52) When totally satisfied tack together, check again and adjust if necessary then solder up completely. The adjacent pictures will hopefully illustrate the process.

53) Form the fire box crown (54) to match the ends (55), then solder together ensuring the finished unit sits flat.

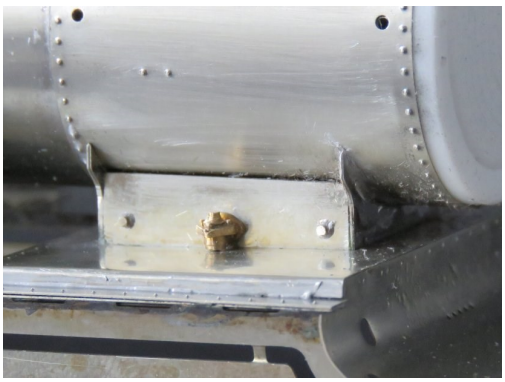
54) Fit washout plugs, mudhole covers, cladding clamps. Leave Chimney, top feed and safety valve bonnet for now.

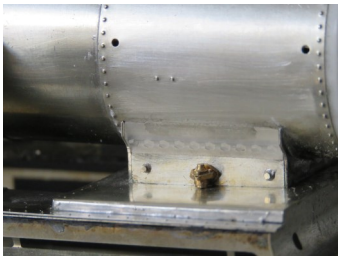
55) Glue (PP3) to front of firebox crown and smooth carefully to match profile of firebox crown.



56) Locate the cab Front (56) and tack in place.

57) Slide the boiler/smokebox into place, you will now see why we left the frame tops un-soldered. Now try the firebox crown in place, choose either (79) or (80) Cab Front overlay and fix in place, double check that everything fits. The boiler should butt up to sub frame and sit nicely on the saddle. If satisfied very lightly tack back of boiler to frame, then check that the bottom of the boiler is parallel with footplate and that top rear is about 1mm lower than the front of firebox crown. If so you can now fix the boiler and firebox crown in place and also solder the slope frame tops.

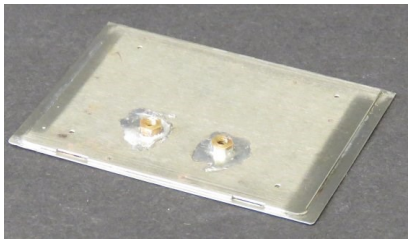


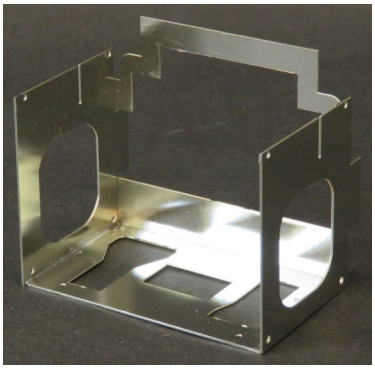


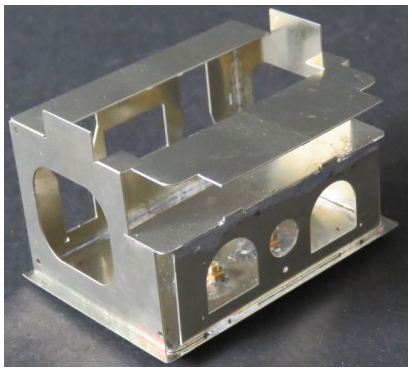
58) Fit (PP4) representing the bolts and packer along each side of the saddle above the clack valves.

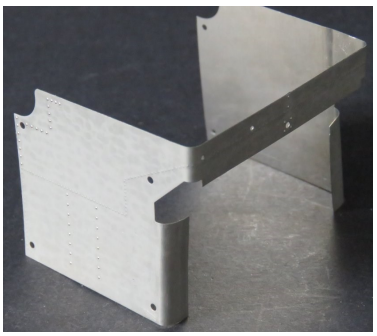
Bunker

Both types of bunker follow the same construction steps, just some parts a different shape.









59) Clean up Rear Footplate (57) & Bunker Floor (58), Solder 2 x 8BA nuts into the pockets provided. Then with the half etched rivet detail of (57) facing down align (58) on top, nuts uppermost, use holes as before.

60) Fold up Bunker sub-frame (59) after removing (70 & 73). Test fit to parts (57 & 58), use an elastic band to hold in place for now.

61) Dry fit bunker frame rear (60) & (61). When happy with the fit of these parts, solder together, square and flat.

62) Carefully remove Bunker Overlay (63) from etch, then find (PP5) the 2 plastic bunker corner infills. Looking from the side place the infill into its position in overlay, with a felt pen, mark where you need to start the bend, repeat on the other side, form the bends around a 2.5 mm drill shank. If you place the overlay around the subframe, you can find where to form the lower bends. This whole process will be easier if you anele these area first.

63) If satisfied hold one end in place using a handrail knob and tack that side to the subframe making sure it sits down onto the footplate. Repeat on the other side. You can now slide in the corner formers and tweak the fit.

64) Take Bunker Back (64) and punch the 3 rivets for the step. Then bend the top to shape to shape, I've deliberately left the 2 outer lamp bracket holes undersize to allow you use them for location purposes. Pop the corner fillers back and fettle (64) until you get a perfect fit. Remove the infills and tack in place.

65) Fit Bunker Front (66) in place taking care not to fill the door hinge slots. You can now solder/glue all the bunker sides permanently.

66) Fold up Coal Floor (67) and test fit, fettle as required, the front tongue should go through the coal hole door. Glue corner infills in place and reduce top thickness if desired and fix (67) in place.

67) Fit (65) around the bunker on top of the footplate.

68) Use (71) rivet strip to wrap around the base of the bunker sides.

69) Fit (68) Bunker Beading to the top of the bunker sides. I remove the inner cusp whilst I can hold it in a vice, then when in place remove outer cusp by filing towards the model, this avoids pulling it off.

70) The two pieces (69) needs bending and fitting to the curved portion of the sides.

71) Use the smaller step from (72), there is a spare of each and solder into the slot at the rear of the bunker.

72) Take (73) Coal Hole Door and solder in place on bunker front.

73) Solder the Lamp Shield in place on top of bunker beading.

74) Open out the lamp bracket holes and solder in 3 brackets, then fit hand rails.

75) Offer to main body and fettle until whole assembly fits tight against step at the back of the cab and is central, then fix to main body.

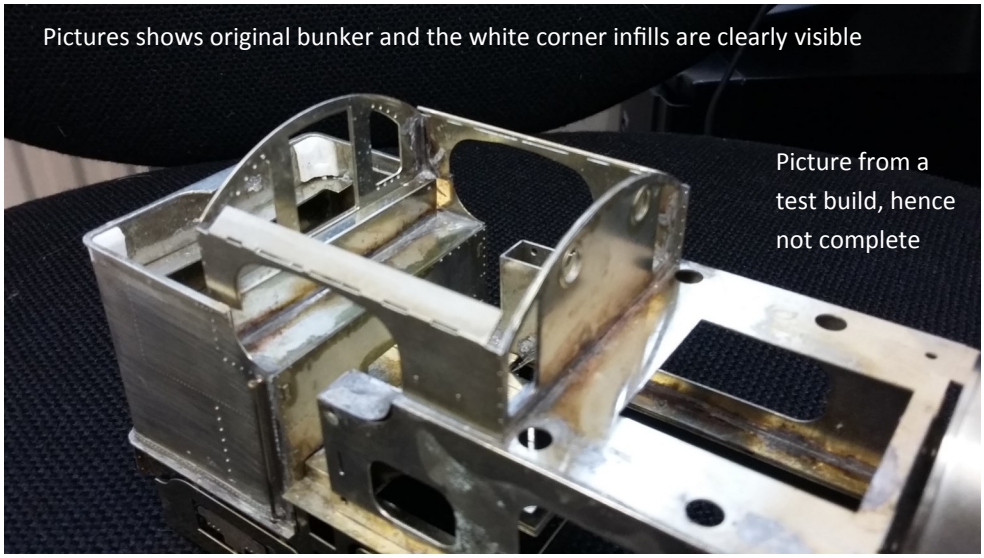
76) Take the Cab Back (73) and make the double fold, then using 0.7mm wire form the window guard bars and solder in place, trim and clean the inside until flush.

77) The Bunker Door (78) can be either be fitted, left off or cut in half and be partially open, your choice.

78) Bend the top of the cab sides (74 & 75) in at about 75^0, be careful not to distort the centre of the cab opening. Punch out the rivet holes down each end and 2 on side sheet.

79) Fit Beading (76 & 77) around cab opening, clean up ready for fitting.

80) Using a couple of elastic bands offer up cab back and sides to form an box with the cab front. The front and back are recessed by 2" on prototype, so about 1mm for the model. When everything is square and sits flat fix in place.



81) Rivet overlays (81) should now be applied.

82) Bend Cab Roof (82) and punch out the rivets.

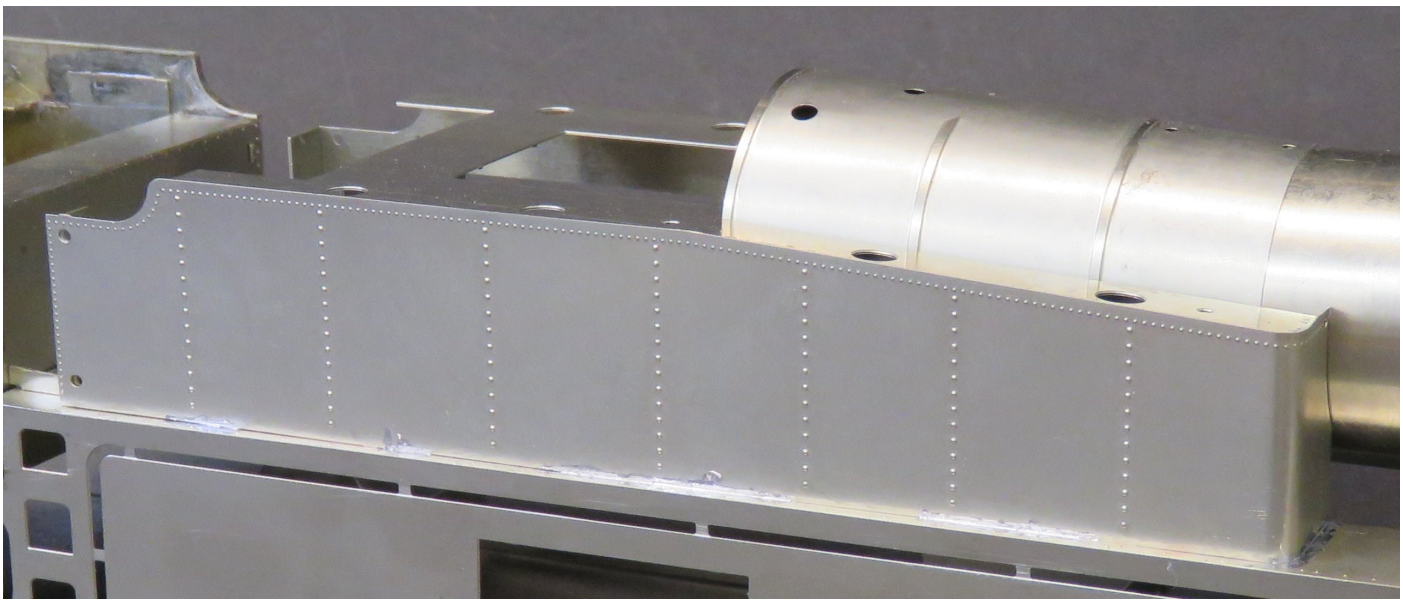
83) Take the Braces (83) and check the length so that they fit between the cab sides with a little clearance, trim from each equally if required. Next solder the braces in the grooves, there is a hole in the brace which aligns with the little line next to the grooves.

84) Punch rivets in (84) Cab Roof Shutter and carefully curve to match roof profile, then solder in place on roof, guide marks are provided.

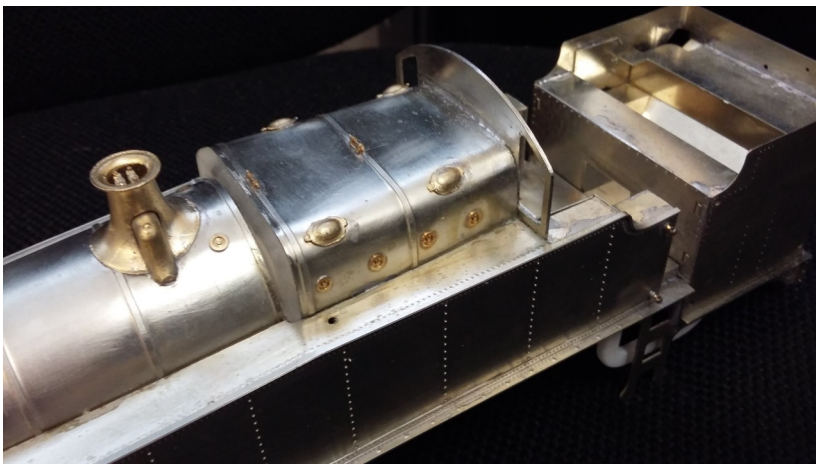
85) Form 2 pieces of 1mm brass angle and solder to front and back lip of roof. With 2 more pieces form and solder in place the V shaped "rain strips".

86) Take the Cab Doors (85) and slide hinge tabs into the slots in the front of the bunker, select what position you want them and fix—I a spot superglue is good here.

87) The hand brake lever (PP6) should be positioned just to the right of the coal hole door when looking from the front and toolboxes (PP7) on back shelf.



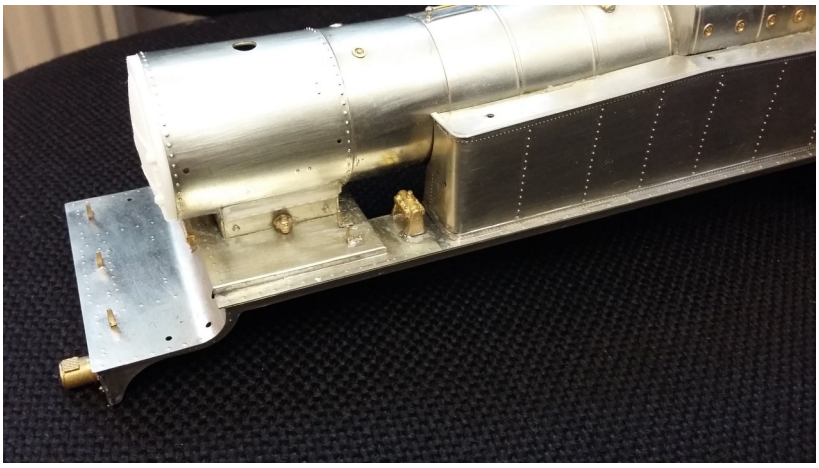
88) Take Tank Side Overlays (86 & 87), place along side body and align handrail holes at the cab end. With a felt tip pen mark where the bend is required, it should be 136mm and the bend is 4mm radius. Remove it and 1/2 bend it, check against body, either move bend centre one way or the other. It may be necessary to adjust the fit around the boiler. When you have bent both pieces tack to the subframe and check visual appearance. Having made sure everything is correct fix permanently. Parts (92) are designed to go on tank front to give a nice flush finish against the boiler.



89) Parts (88 & 89) are the Tank Top Overlays, as always dry fit to ensure it looks right and the fix in place.

90) The Rivet strips (90) go around the tank base, start by making one end square, then fix this at cab opening, fix the rest and just wrap it around the tank. it should be a little bit too long, trim off when finished.

91) The Tank Top Beading (91) is fitted in the same way as the bunker beading, dry fit before soldering and fix front corner first, then work away from here, trim surplus.



92) Curve Tank Strap (93) to match the boiler, just where levels out, i.e. very close to front of the tanks. Bend half etched ends to sit flat on the tank tops and when happy fix, don't forget to check with fit of tank fillers.

93) Fit rocker arm bearing castings to the footplate with 2.5mm gap to the front of the tanks.

94) Fit lamp brackets, tank fillers, bump stops, tank vents, top feed and safety valve cover, top grab rail, chimney any remaining washout plugs.

95) As before, there are extras of each Buffer Beam overlays (94) front, (95) rear. Fettle and fix.

96) Find the buffer bases and fit to buffer beams, make sure they are horizontal and parallel to footplate sides.

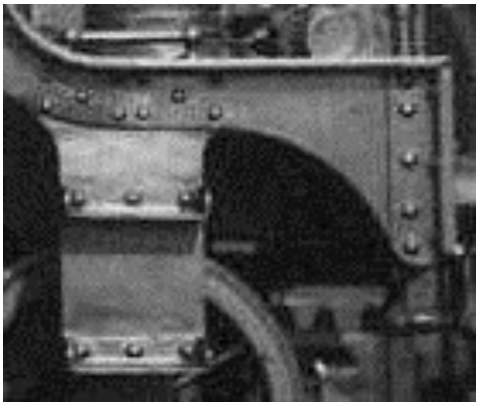
97) It is now time to remove the support cradle, clean up and cusp and tags.

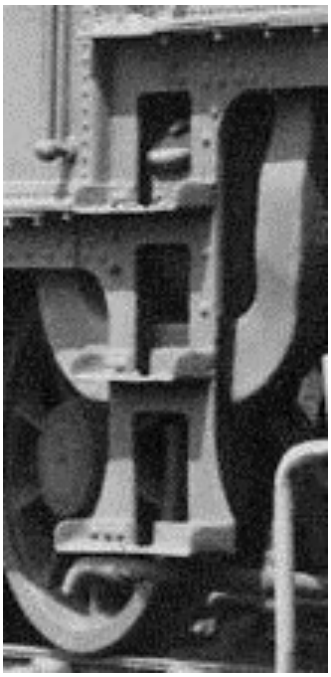
98) Taking each Valance Overlay (96 & 97), offer to main valance, fettle if required and then fix.

99) Many of the small steps etc. have been duplicated so some will be left over.

100) Parts (98 & 99) riveted strengthen plates go at each end of the valances.

101) Numbers (100 & 101) are the cab steps. These were different in as much as they went through the upright and had an upturn at the rear, presumably to stop your foot sliding through and breaking your ankle. The etched parts have been weakened on each of the folds.





102) The Front Steps (103) need rivets punching then bent at 90^0, solder steps Step Plates (102), then fix behind the valance, centrally to the grab rail on the footplate.

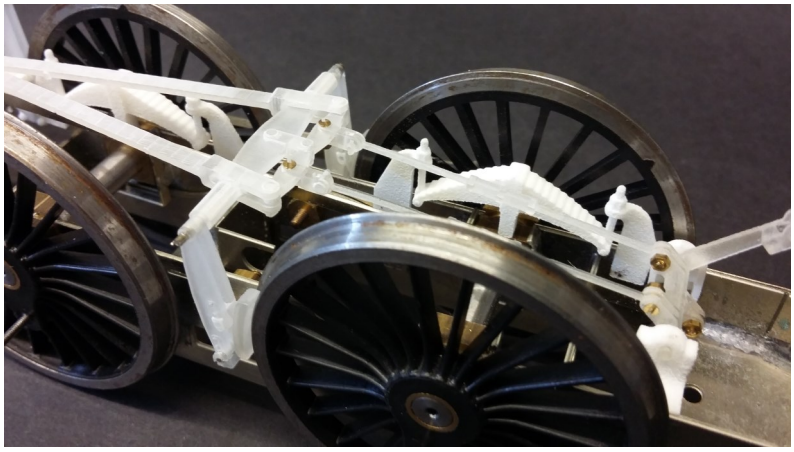
103) Rivet strips (104) go on the underside of the front running plate.

104) If your chosen model has AWS fitted then part (105) is the mounting frame for the AWS detector, this is mounted in the 2 slots in the front of the chassis and AWS casting is fixed to this.

105) Take the “breather pipe” casting and fit up the rear right hand corner of the cab and to right bunker side.

Brakes

Before separating the brake parts sprues please read the next steps first



106) Start by carefully separating all the various brake parts and Springs, then clean off any sprues.

107) Fit the 4 Springs (PP8) and glue into holes on chassis, note 2 have a slightly smaller “block” at one end, these are the rear ones and this block is towards the rear.

108) Next identify the rear cross shaft (PP9) and the brackets for this shaft (PP10). Thread the brackets on to the shaft and glue brackets to the frames but not shaft it needs to turn.

109) Glue a short length of 1mm wire into the ends of the stretcher bars of part (PP11), alternatively you wish to tap these for suitable bolts.

110) Tack the front brake shaft (PP12) and thread its Brackets (PP13) onto it, glue in place in front of the front springs, as before this needs to turn.

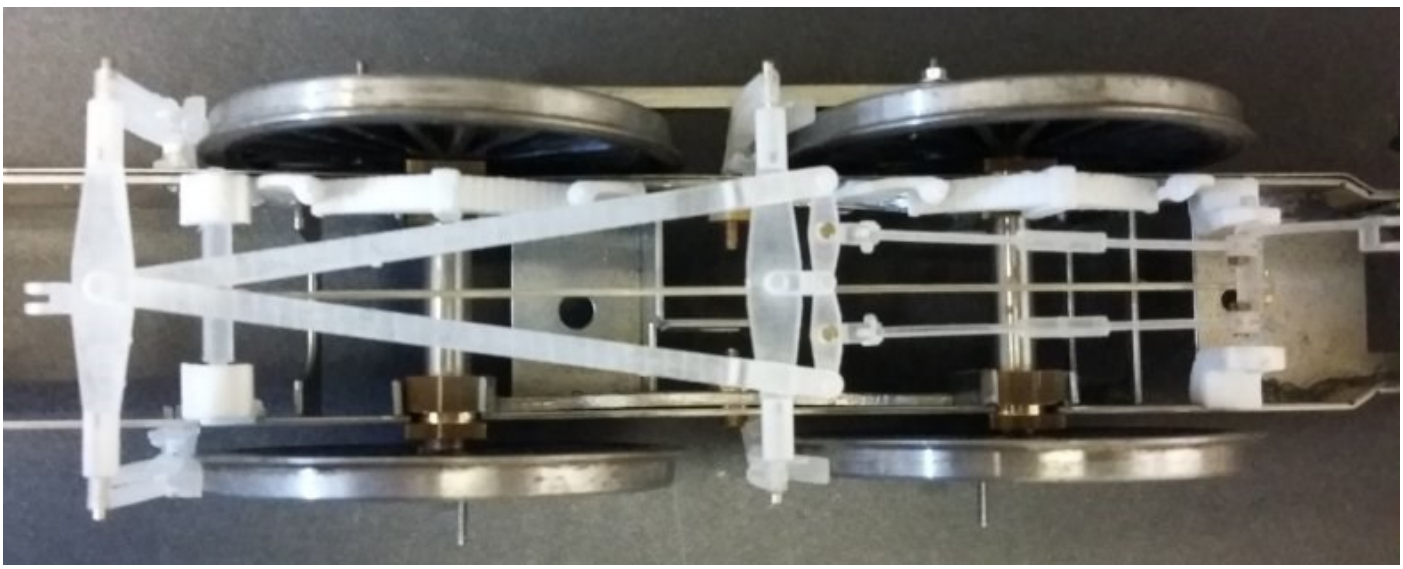
111) Locate the long pull rod (106) and fix central between the 2 shafts with the slotted end at the rear.

112) Using 12BA bolts assemble the pull rods and stretchers. The vee is towards the front.

113) Take the 4 brake hanger brackets (PP14) and glue to the chassis, there are locating lugs on the brackets and holes in the chassis.

114) Attach brake hanger and blocks (PP15) to each hanger and corresponding stretcher end. Use either a piece of wire and trim back, or it is possible to drill and tap through the frame and screw on.

115) Set the brakes in a suitable position and then trim (PP16) hand brake shaft to length, it should snap into the free lever on rear brake shaft be in line with the top of the frame, glue in vertical position.



116) Take smokebox Door and ring (PP17) dry fit into front of smokebox.

117) Decide where the steam should be on your model, there are two blind hole, one is just below centre on the right when viewed from the rear. The other a little further down on the left, locate steam lance casting and drill through the right size and fix lance from the front.

118) Again enlarge centre hole to accept the door handle casting and fix in place.

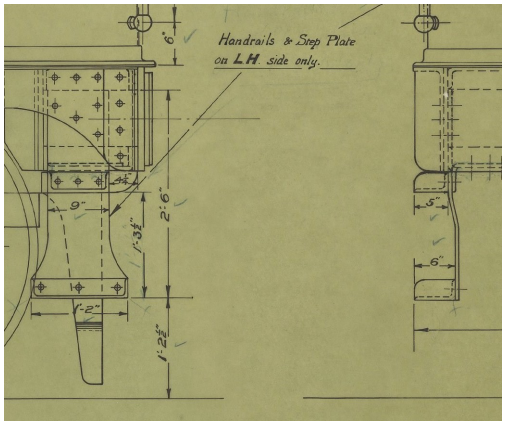
119) Now fix the Door and ring into front of smokebox, make sure hand rail is top dead centre.

120) Now form the smokebox handrail and fit in place, the ends go into holes in front of tanks.

121) Find front tank steps (PP18) and cut connecting sprues centrally, then glue in place using the 2 holes in tank front.

122) Next take the front sand boxes (PP19) and glue into holes in the chassis.

123) Separate the Balance Pipes (PP20) again leaving sprues attached to locate in the body, fix in place.



124) Repeat for the rear sand boxes (PP21) except these are fitted to underside of the footplate and the back of the cab steps. The sprues should be completely removed and you will need to ensure that you can fit and remove the chassis. Then form sand pipes to suit and fit into holes in sand boxes.

125) Some locos had a rear step on the left hand side, if you wish to fit this proceed as follows. Fold up the end of (70), punch out rivets on (70a), next bend both to shape shown in diagram. Fix to (70a) to (7) and use a small step of (72) for second step, then fix in rear left corner behind valance.

126) Locate oil pot casting and fit to of right hand tank as shown in picture below.

127) Clean up steam and vacuum pipes and fit front and rear.

128) Fit “Banjo” casting to side smokebox/boiler as shown.

129) Take whistle plate (13) and fit to front of cab, sitting on top of firebox crown, centrally. Then bend whistles to shape and fix to cab front.

130) All that remain is to paint and decal the your locomotive. Re-assemble and enjoy.