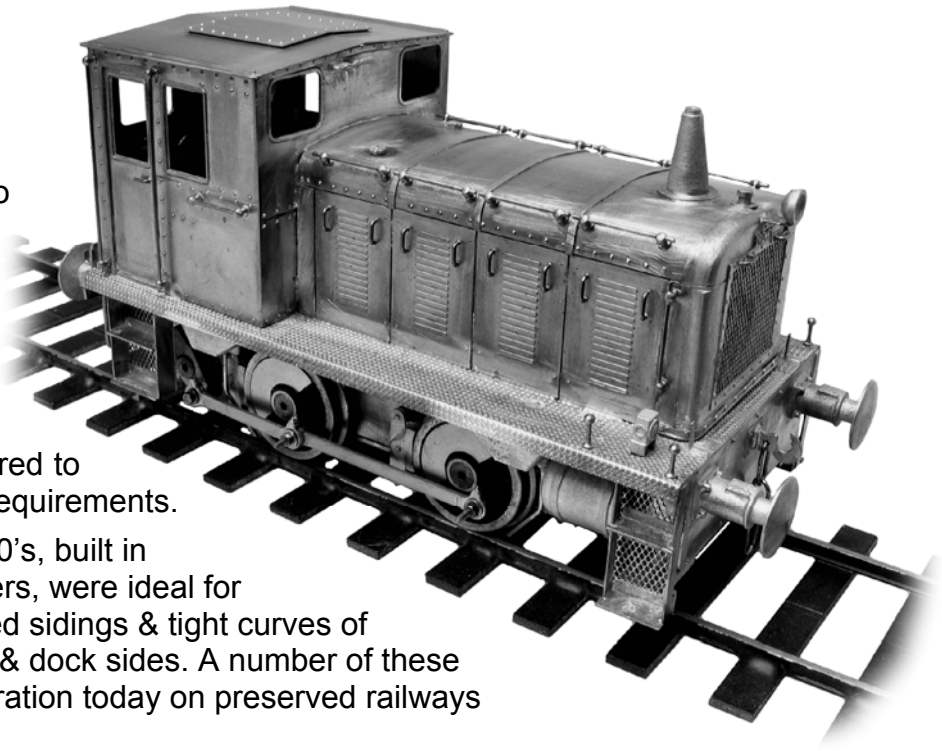
SKILL BUILDER KIT

CONNOISSEUR MODELS

- 0 Gauge -

Drewry 153hp Diesel Mechanical Shunter Body Assembly Instructions



Prototype

The Drewry Car Co supplied bespoke Diesel Mechanical Shunting Locos to operators throughout Britain & across the world.

They were configured to individual railways requirements.

These 153hp, 0-4-0's, built in considerable numbers, were ideal for working the restricted sidings & tight curves of factories, gasworks & dock sides. A number of these locos remain in operation today on preserved railways & heritage sites.

This **Skill Builder Kit** is intended to aid the newcomer to 0 gauge diesel era modelling to enjoy the construction of a sophisticated etched kit. Which once completed will have a level of finish & detail that will enable it to sit alongside their existing collection of the excellent factory produced locomotives from Heljan, Dapol & Minerva.

This is achieved through the physical parts design & photo instructions illustrating the step by step assembly of parts & the tools & techniques used. Assisting the modeller to build up their skills & confidence to tackle a wide variety of future etched metal kit building projects. **Looking for a starter diesel loco kit? Then this is it!**

Parts Required To Complete

Slater's Drewry Shunter Wheel Pack (Slater's Catalogue Number 7839id)
This pack contains 4 X wheels, 3 X axles, 6 X crankpins, all that's required.
Plunger Pickups if desired (Slater's Catalogue Number 7157)
Available From Slater's Plastikard, Old Road, Darley Dale, Matlock, Derbyshire, DE4 2ER, Telephone 01629 734053.
1833 Motor and 40/1 Gear set, *available from Connoisseur Models.*

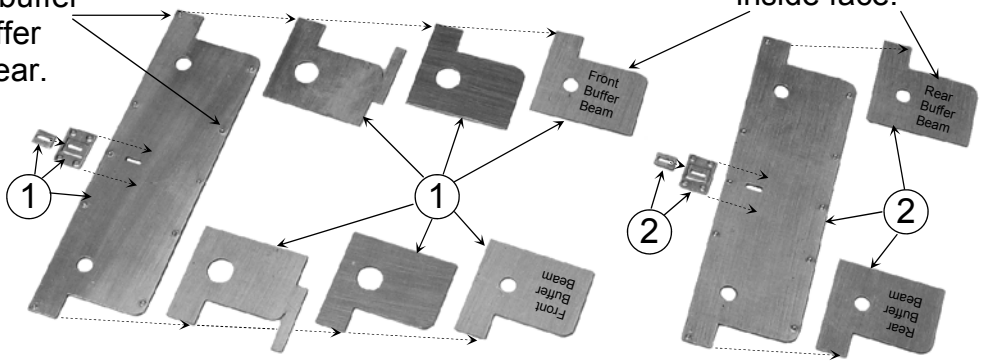
Jim McGeown, Connoisseur Models, 1 Newton Cottages, Nr Weobley, Herefordshire, HR4 8QX, Telephone 01544 318263

Stage 1, Main Footplate Assembly

Pre tin top face of each thickener to aid lamination.

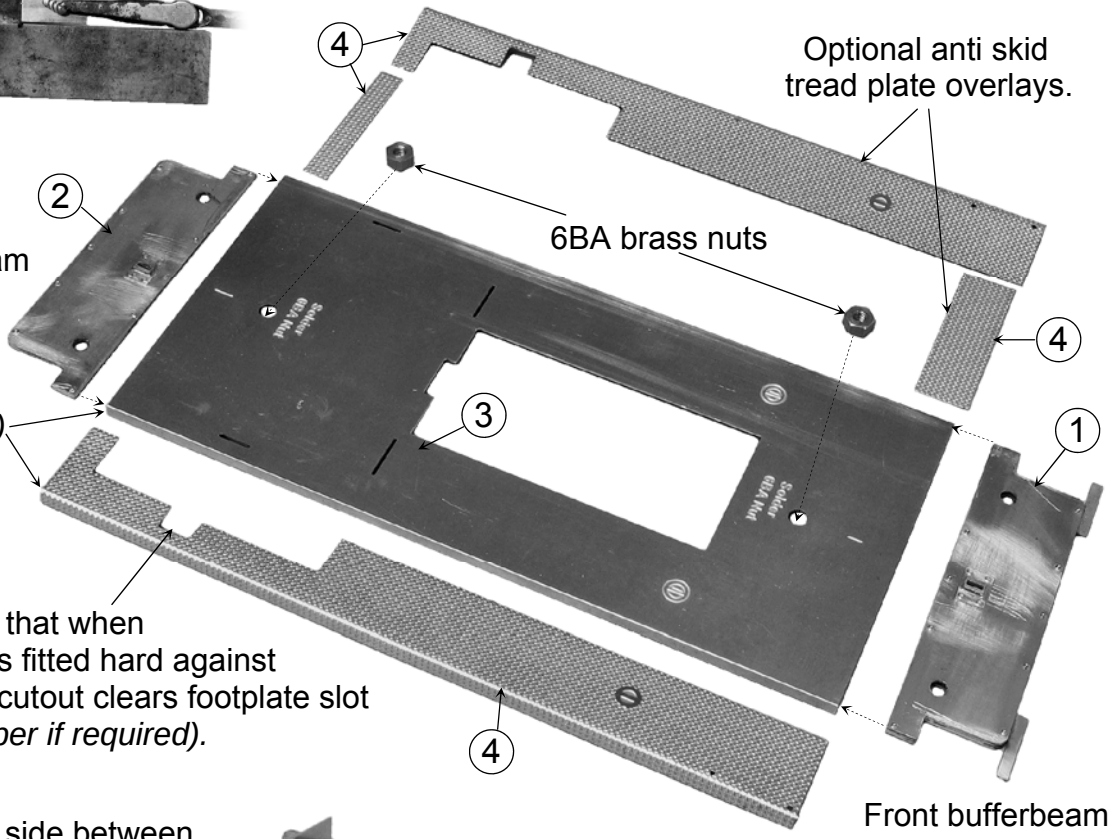
Ensure etched lettering is on inside face.

Emboss rivet heads onto buffer beam front faces. Front buffer beam is twice as thick as rear.



Component Alignment is aided by drill shank & square.
Laminate together by soldering around edges.

Optional anti skid tread plate overlays.



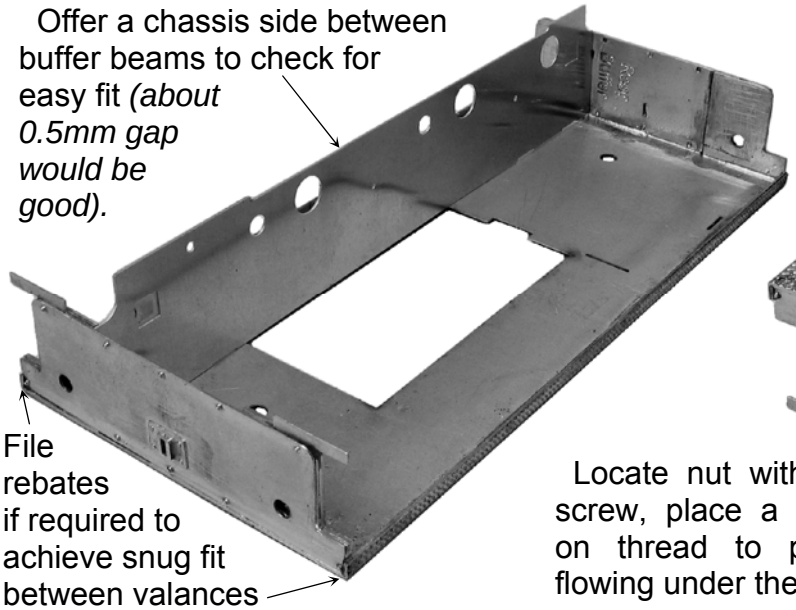
Rear bufferbeam two layers.

Fold footplate edges *(valances)* 90°. Make folds as tight as possible.

Ensure that when overlay is fitted hard against valance cutout clears footplate slot *(file deeper if required).*

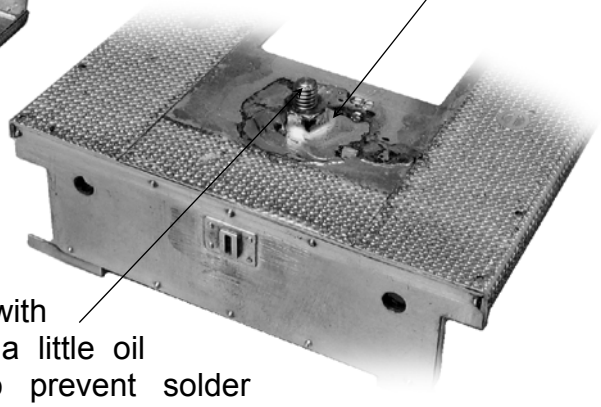
Front bufferbeam four layers.

Offer a chassis side between buffer beams to check for easy fit *(about 0.5mm gap would be good).*



File rebates if required to achieve snug fit between valances

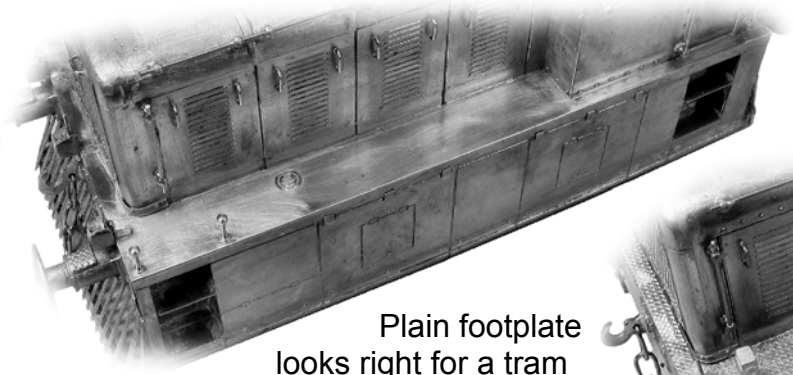
Solder nuts using 60/40 solder & Fluxite type paste flux for strength.



Locate nut with screw, place a little oil on thread to prevent solder flowing under the nut and locking everything solid.

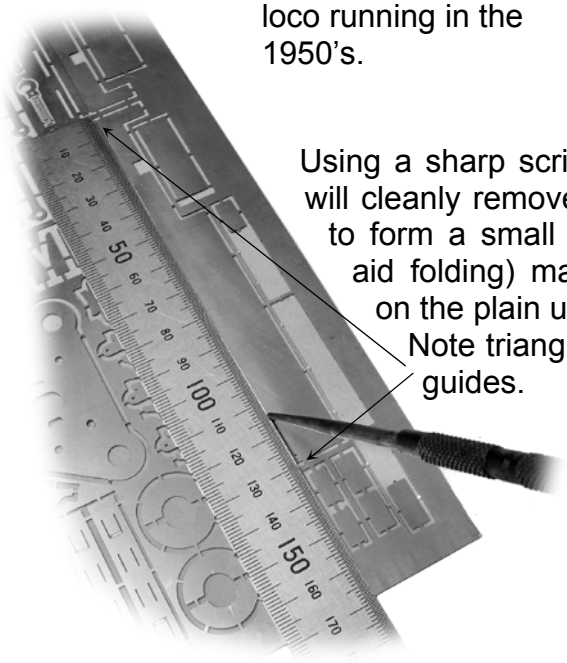
Stage 1a, Optional Tread Plate Overlays

If built without overlay I feel the plain footplate gives the loco an early steam era appearance. With the anti skid tread plate a more modern 1960/70's era appearance.

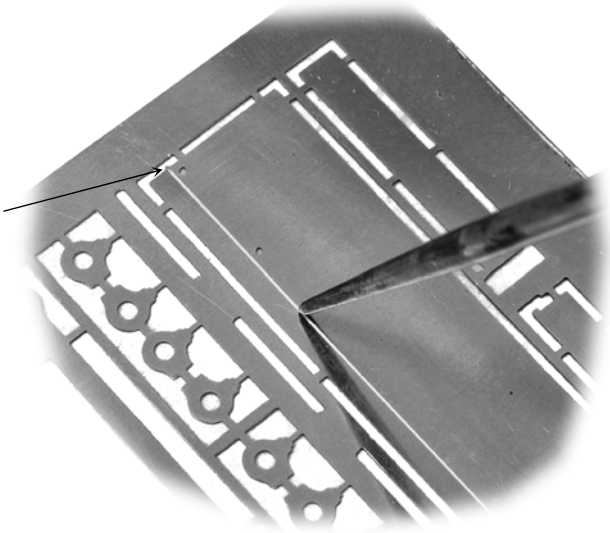


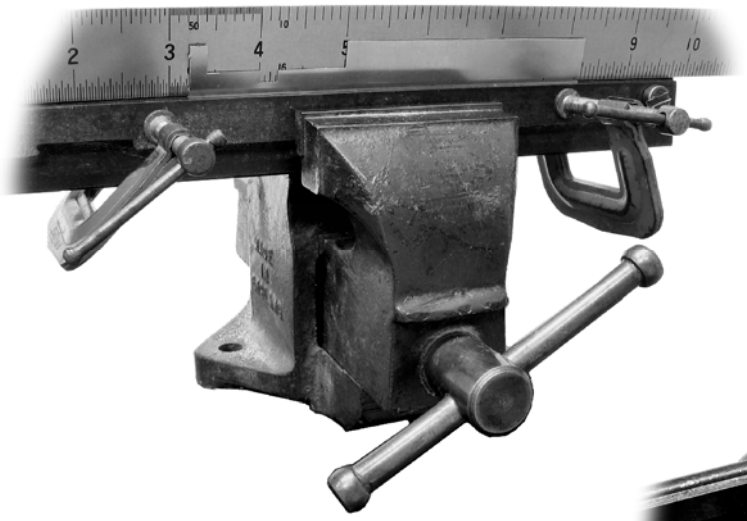
Plain footplate looks right for a tram loco running in the 1950's.

Tread plate based on design fitted to present day "Harry" at Barrow Hill Roundhouse.

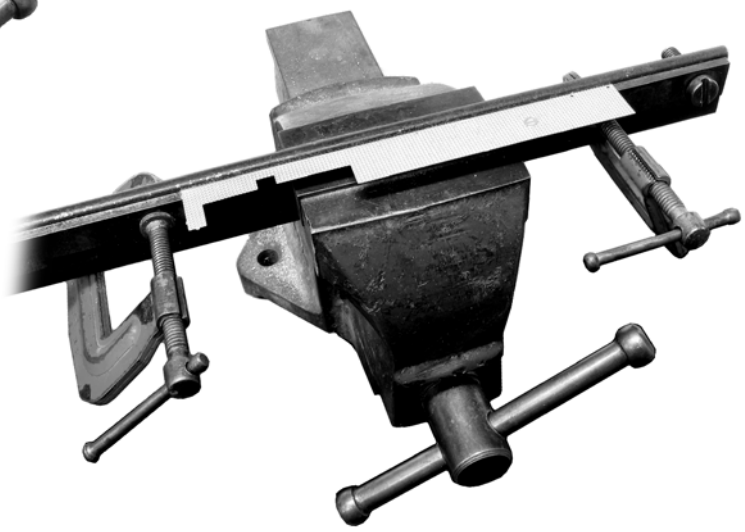


Using a sharp scriber (so that it will cleanly remove a little metal to form a small indentation to aid folding) mark a fold line on the plain underside.
Note triangular centerline guides.



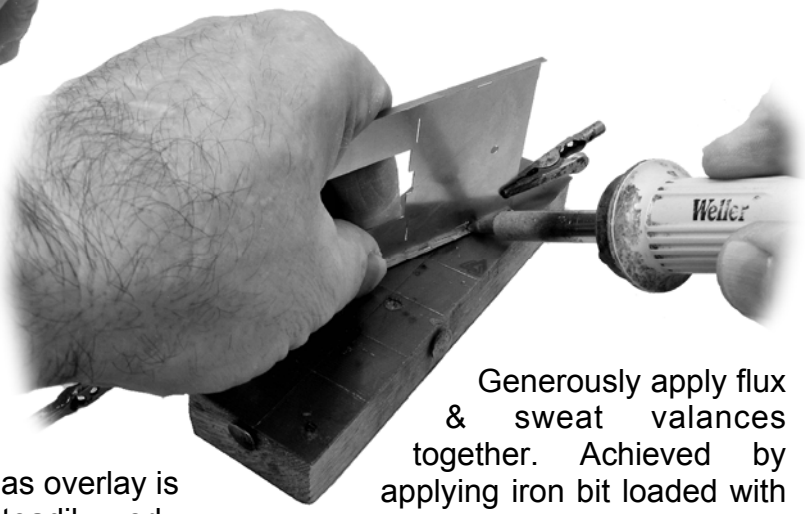


Clamp in folding bars so that scribed line is slightly above *(fully visible)* the top edge of the front bar. A steel rule is used to evenly distribute the folding force as pressure is applied to the back of the rule with finger ends positioned as low as possible *(fingertips touching back bar).*



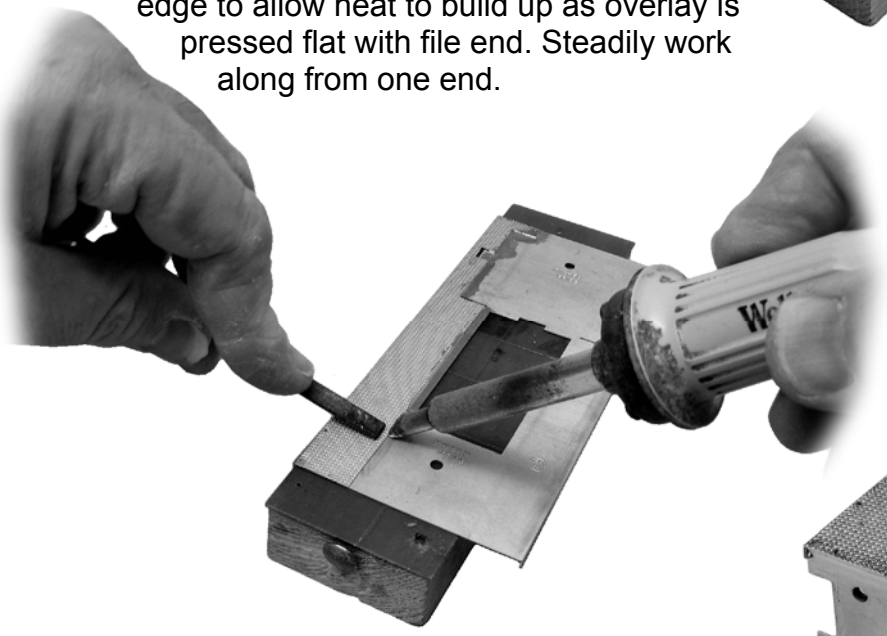
Form into a tight 90° bend. A little gentle taping with a soft wood *(offcut 2"x1")* block down onto the top edge of the front bar should even up & sharpen the bend along its full length.

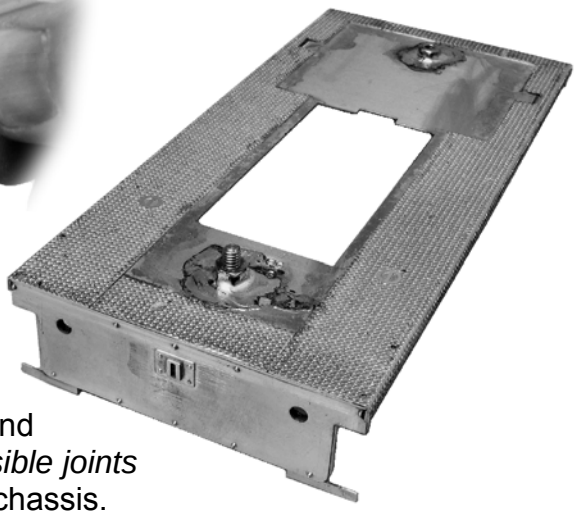
First pre tin the underside *(plain surface)* of all the overlays. Then locate overlay valance over main footplate valance as tight as possible. Note hand gently pressing the footplate edge down onto the work block as finger ends press overlay onto footplate surface using strip of wood *(protection from heat).*



When valance joint is complete fix top surface. Again this is sweated together by applying flux & iron bit at edge to allow heat to build up as overlay is pressed flat with file end. Steadily work along from one end.

Generously apply flux & sweat valances together. Achieved by applying iron bit loaded with solder to the valance back and allowing the heat to build up & activate the pre tined solder between. Work steadily along valance length.





Fit overlays along each side first then trim & file end sections to fit neatly between *(separate plates with visible joints on prototype).* Then fit 6BA nuts to provide fixings for chassis.

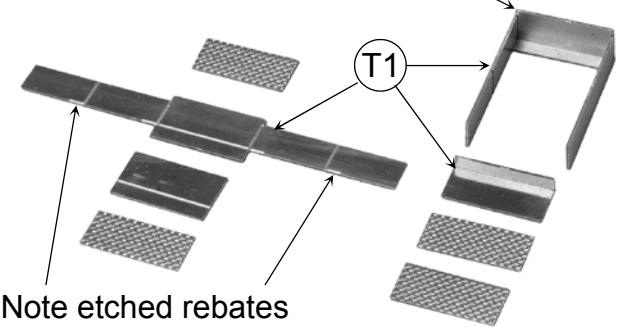
Tram Loco Option

The board of trade had rigid requirements for locomotives that operated on public roads and quayside lines. These locos had to be fitted with cowcatchers and side skirts. Bressingham Steam Museums 153hp Drewry is fitted with these and I could not resist including optional parts to represent these fitments.

Bressingham's Drewry worked in the oil industry and never carried the BR No11104 but it looks splendid.

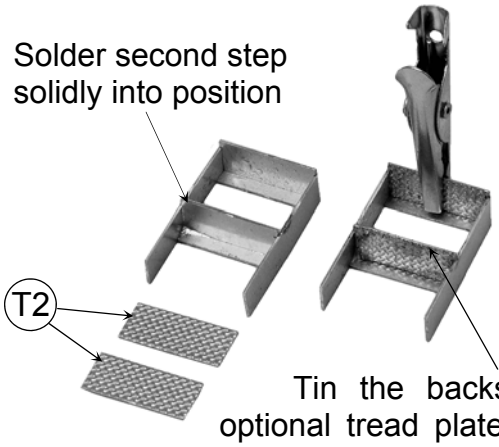
Side Skirts

Fold up bottom step and sides.
Reinforcing joints with solder



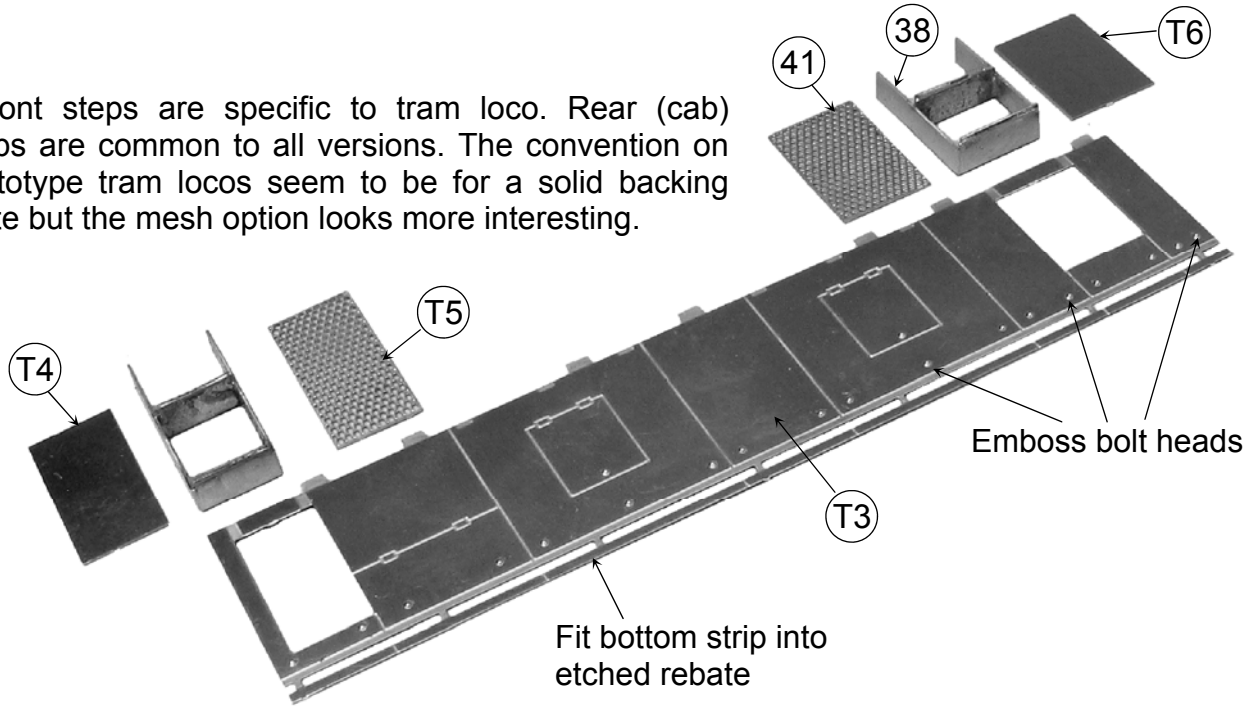
Note etched rebates
for location of second step

Solder second step
solidly into position



Tin the backs of the optional tread plates before removing from etch. Dress with file to achieve easy fit and solder in position using plenty of flux and application of iron bit to step edge.

Front steps are specific to tram loco. Rear (cab) steps are common to all versions. The convention on prototype tram locos seem to be for a solid backing plate but the mesh option looks more interesting.



When backing plates are solidly fixed snip out top strengtheners from cut outs.

Solder backing plate solid with a seam of solder along each side

Fit steps from rear. Dress edge of step tread with file if required to achieve snug fit through cut out. Step treads project about 0.5mm from side skirt. Then fit backing plate.

Optional footplate tread plate overlays have not been fitted to this build

T5

snip out strengthener

T7

After fitting skirt add etched rectangles into rebates and overlapping footplate valance to represent hinges. If optional footplate tread plate is fitted I suggest just fitting short lengths of wire into rebates.

If required dress step sides with file to achieve snug fit of side skirt behind valance and between buffer beams.

Cow Catchers Parts identification & orientation

A reinforcing L shaped angle iron is made up from two parts. Only remove strip T8 from fret and form to shape.

Do the best you can but don't worry about being absolutely precise as adjustments can be made at next stage.

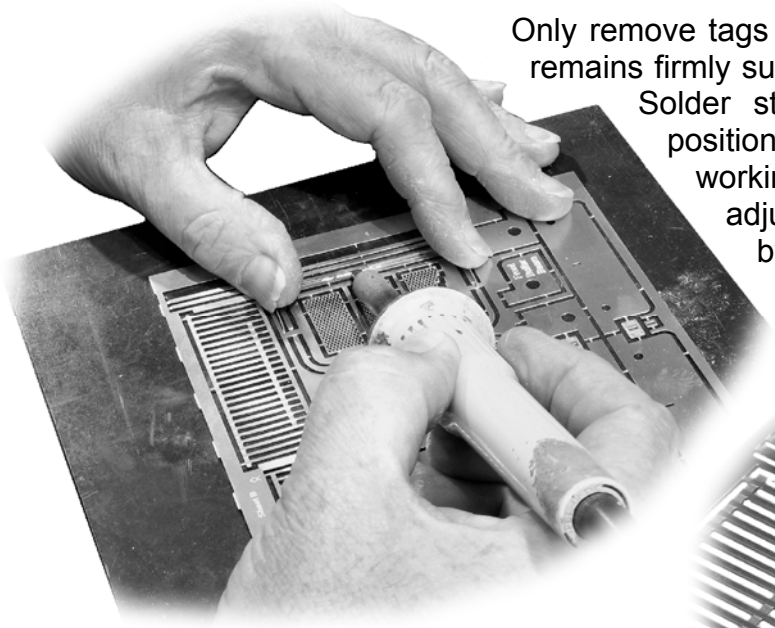
T10

T9

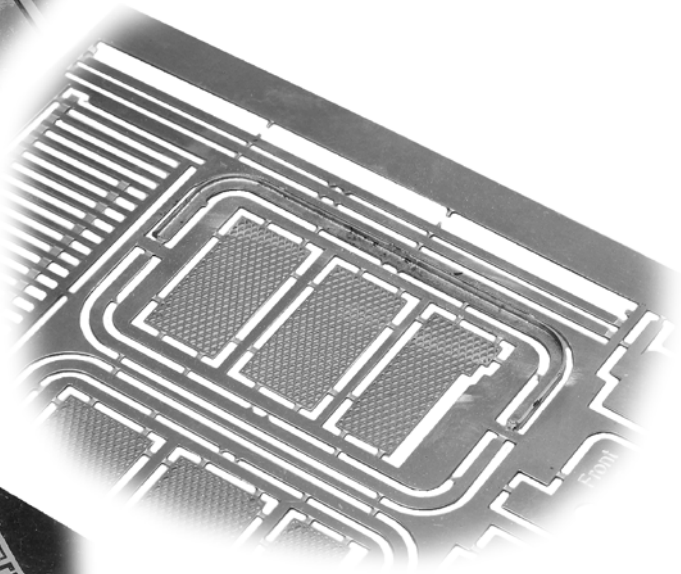
T11

T8

Note triangular positioning and centering guides.

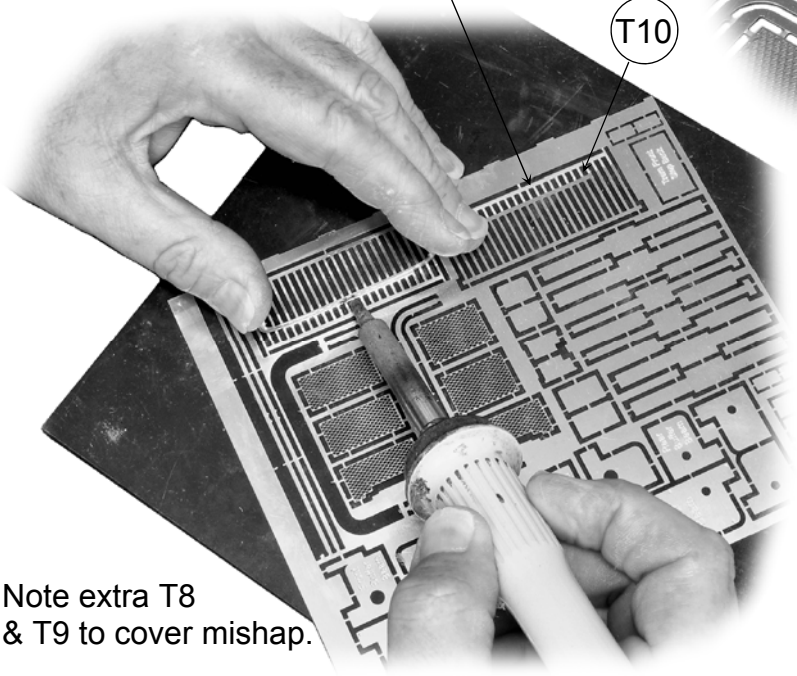


Only remove tags from front edge of strip T9 so that it still remains firmly supported within the fret to act as a former. Solder strip T8 to it to form L section. Align positioning triangles and solder from the centre working along and around each curved corner, adjusting as required. Note job made easy by heat resistant Tufnol Work Block *(code, TUF22, Eileens Emporium, Tel 01531 828009, wwweileensemporium.com, correct Oct 2019).*



Note half etch (support to be trimmed off latter) uppermost on T10.

T10

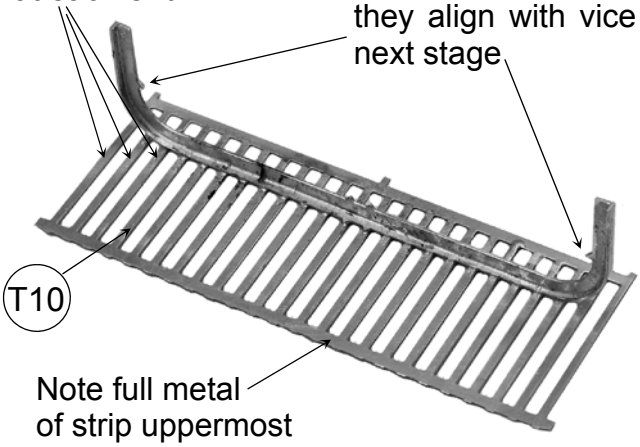


Note extra T8 & T9 to cover mishap.

Remove completed L section from fret and solder to bars T10 *(this again remains within the fret for support).* Position over solid strip and centre by eye aligning triangles over centre two bars. Do not solder L section to the outer three bars at each end.

Do not solder outer three bars at each end

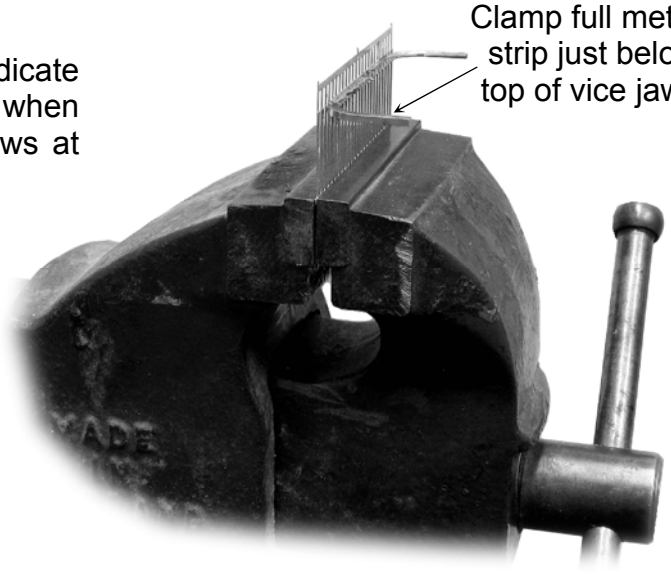
Note triangles that indicate when to stop pushing when they align with vice jaws at next stage



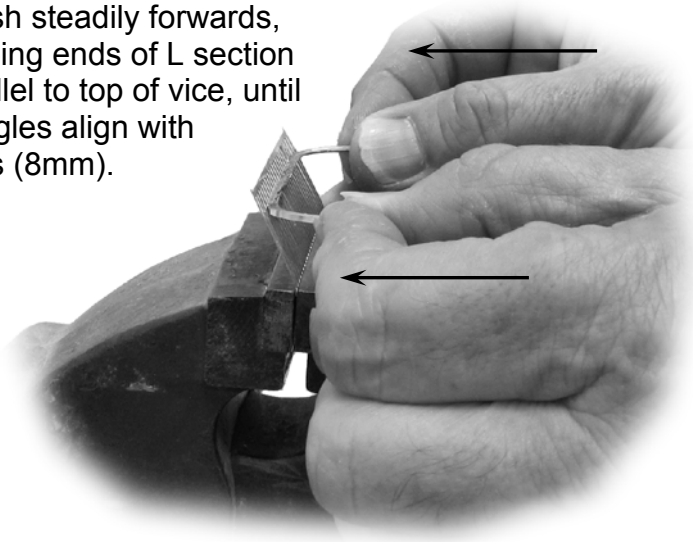
T10

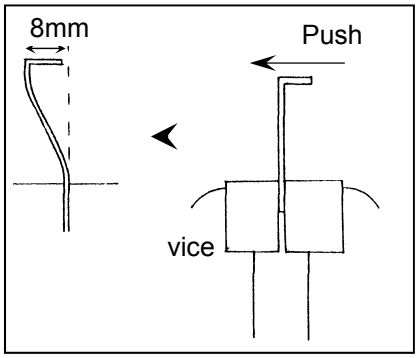
Note full metal of strip uppermost

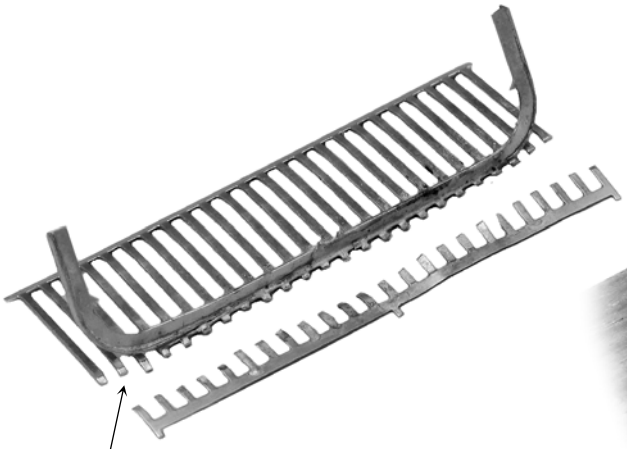
Clamp full metal strip just below top of vice jaws



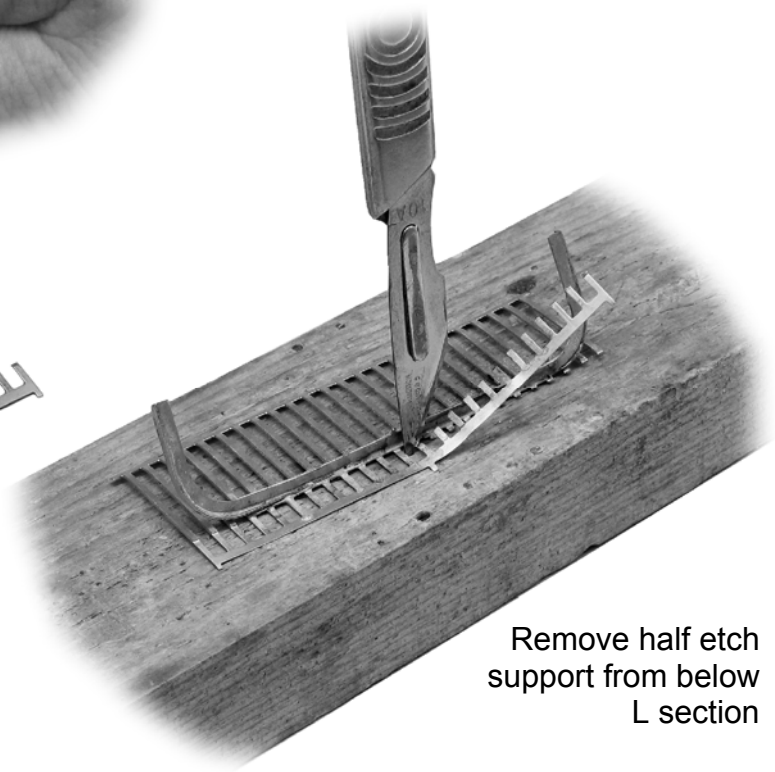
Push steadily forwards, keeping ends of L section parallel to top of vice, until triangles align with Jaws (8mm).





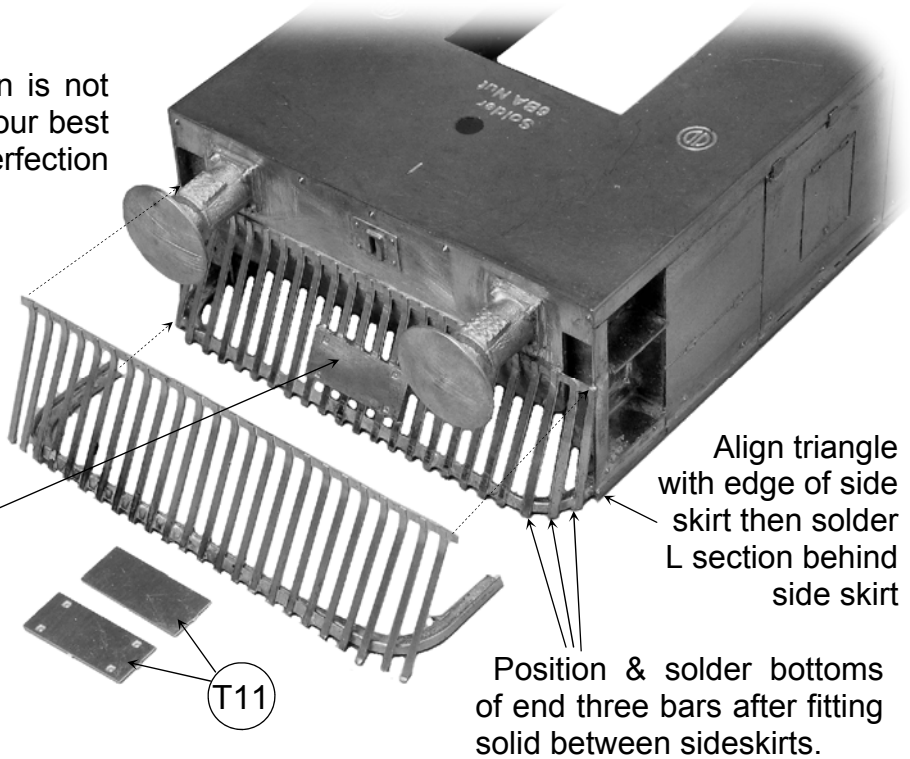


Don't worry about bars being over length and ragged. Cleaning up and levelling of the cow catcher will be done using a flat file after soldering solid between side skirts.



Remove half etch support from below L section

As you can see the L section is not that visible when fitted so try your best but you are not looking for perfection as it will all tidy up nicely.



Solder top strip to buffer beam. Positioning level by eye.

Fit coupling link protection block

Align triangle with edge of side skirt then solder L section behind side skirt

T11

Position & solder bottoms of end three bars after fitting solid between sideskirts.

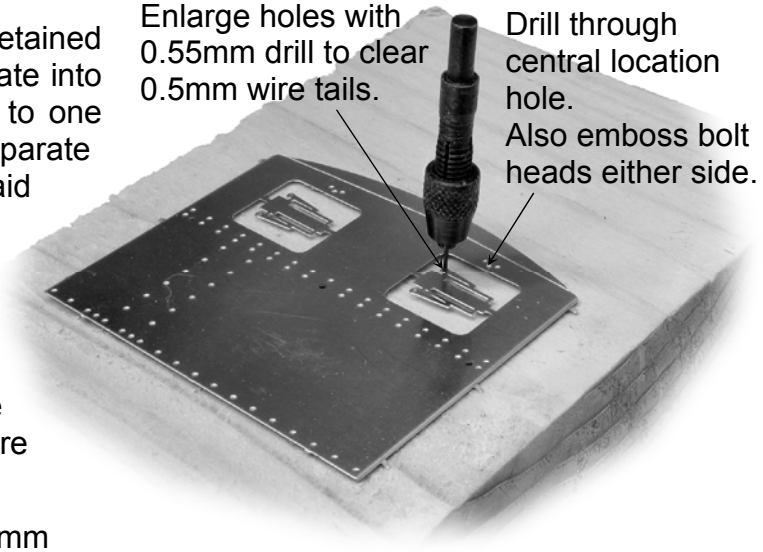
Stage 2, Cab Assembly, Window Wiper Options

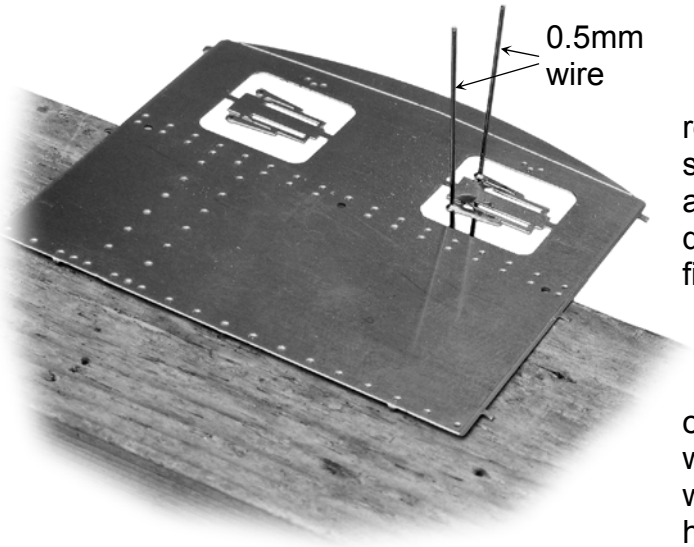
As the wipers are contained within the window openings select your preferred option before removing.

The wiper arms located in the cab back are slightly heavier than those in the cab front. Select the ones that will be the most durable to the way you work.

Option 1, photos show many locos running without wipers (particularly industrial locos that did not work into mainline exchange sidings), So remove wipers and throw away (this is the simplest option).

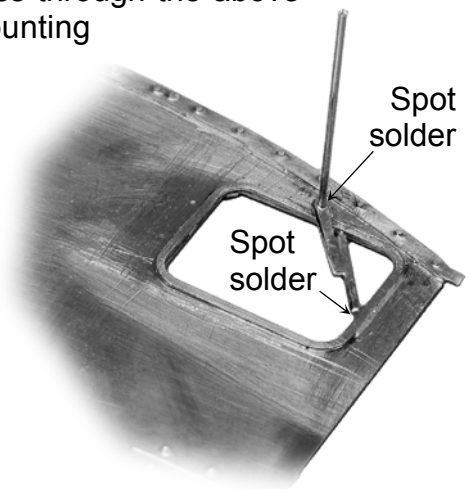
Option 2, fit wire tails with wipers retained within window. Then remove and separate into individual wiper arms and place safely to one side. After painting model, including separate wipers (the over length wire will aid handling) and glazing cab. Locate a drill into mounting hole above window to continue hole through glazing. Then fit wire tail through hole so wiper blade rests on glazing (bend a slight set into arm). Secure wire tail with a spot of glue inside cab then when set trim off wire tails.

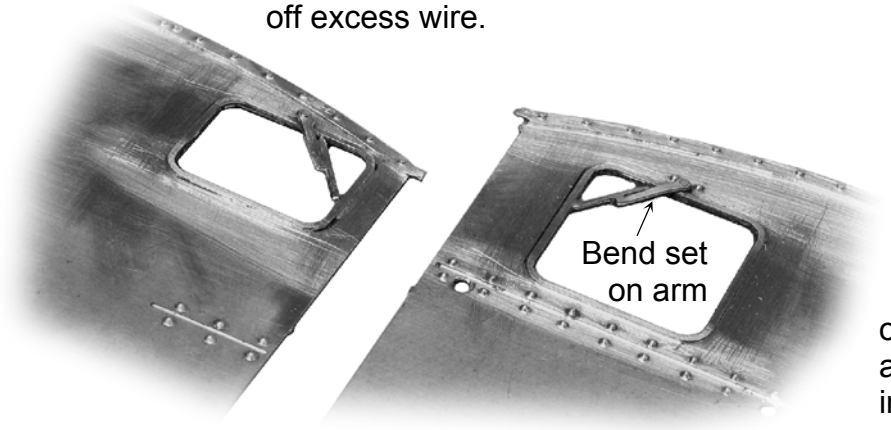




Option 3, Again fit wire tails with wipers retained within window. Then remove and separate into individual wiper arms, bending a slight set on each arm so the blades will sit down within the window opening. Then after fitting window surrounds etc to cab front/ back. Place these, inside face downwards, onto a heat proof work block. Positioned overhanging the edge so that the window opening is blocked but the wire tails of the wipers will pass through the above window mounting holes.

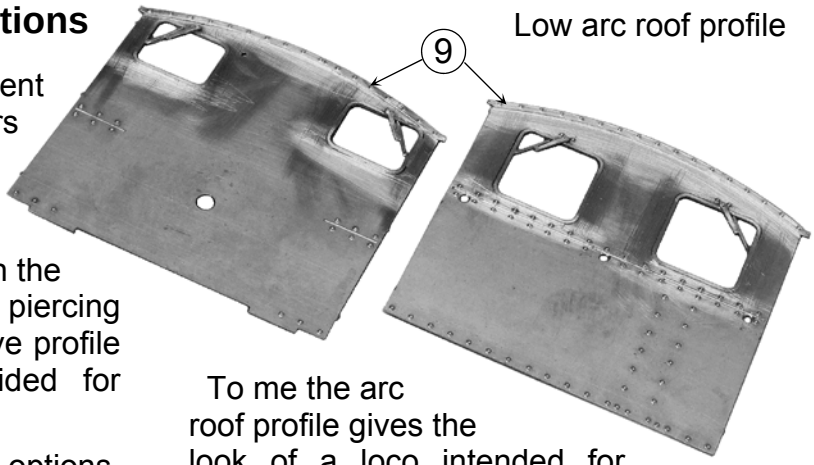
Position wiper blades into parked position touching window surround and spot solder, then spot solder wire tail at above window mounting hole, then trim off excess wire.





Clean up and dress inside face of window opening so that when, after painting, the glazing is glued into position it will lay flat.

Cab Assembly, Roof Profile Options

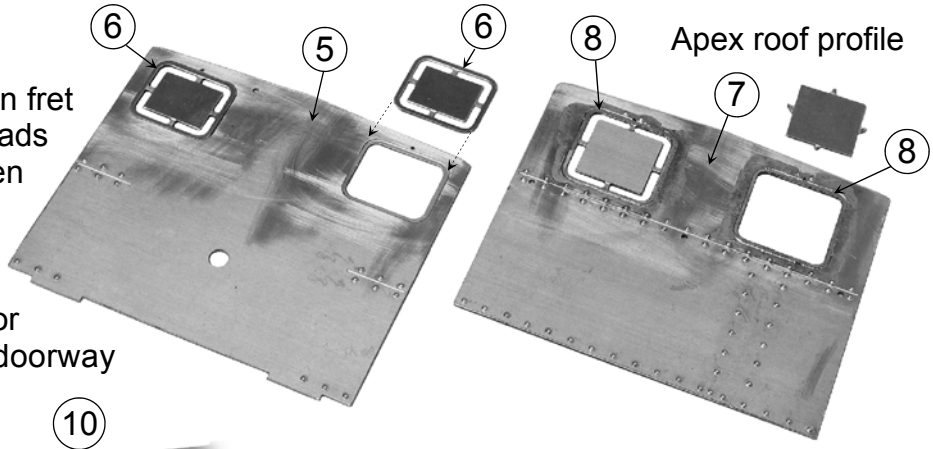


Drewry locos were offered with different roof profile options to suite customers requirements. The most common on 153hp locos appear to be low arc and apex. As provided represents low arc and there is a half etch cutting guide on the inside face (Recommendation is to use piercing saw) to convert to apex roof. Alternative profile bolt head strips, part 9, are provided for representing roofline angle iron.

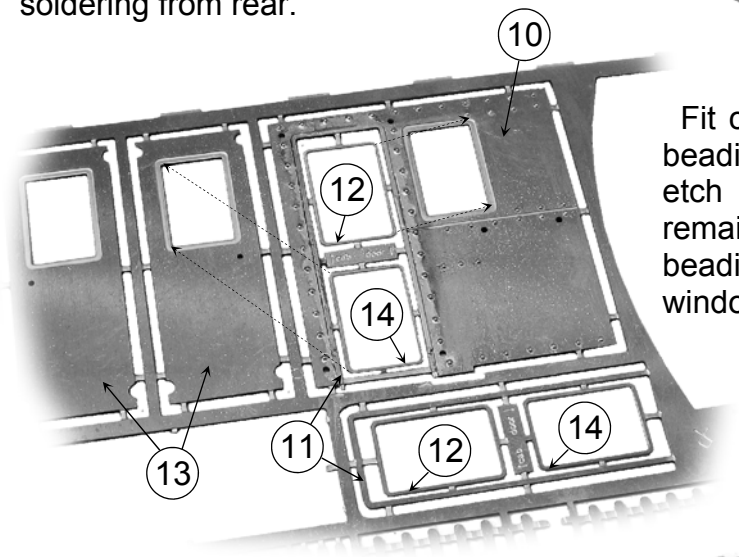
The supplied roof will cover both options. Simply form into arc for one or fold a gentle crease at etched centreline guide marks for the other.

To me the arc roof profile gives the look of a loco intended for working a rural mineral branch. The apex for a urban heavy industry site with overhead pipe runs and steelwork.

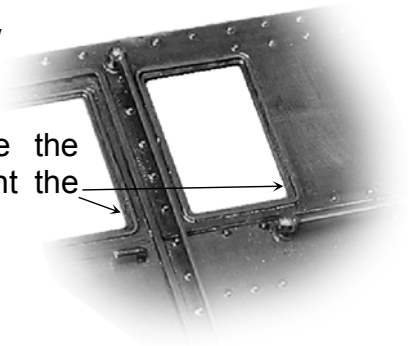
Cab Exterior Detail

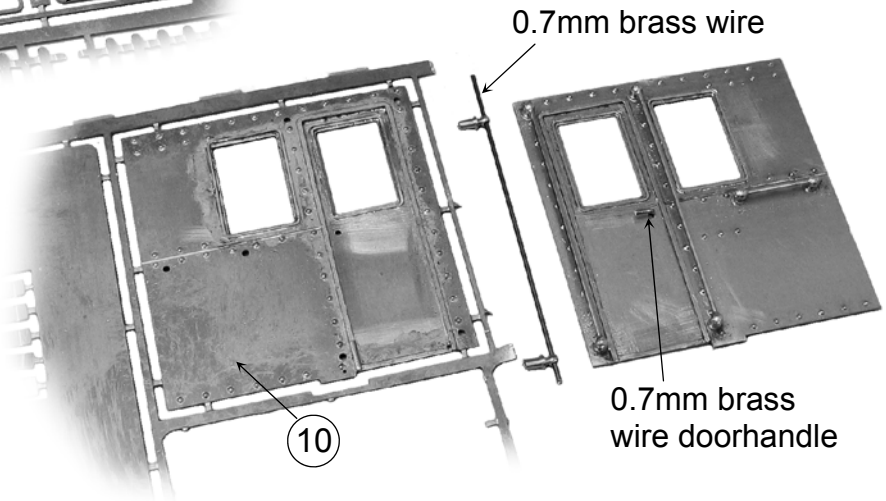


With cab sides retained within fret for strength emboss bolt heads then fit doorway beading. Then remove window beadings and clean up door opening. Fit window beading to door, clean up door, remove door from fret & fit behind doorway soldering from rear.



Fit cab side window beading. The half etch rebate should remain visible inside the beadings to represent the windowglass frames.





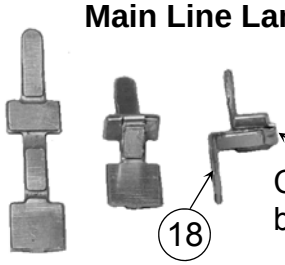
Clean off excess solder & then remove cab sides from fret.

Then fit handrails & door handle (see page 10 for achieving best results from the handrail knobs).

Cab Back Detail Options

Drewry locos intended for operation over main lines tended to have four fixed electric lamp boxes with lamp Irons incorporated. Individual electric lamps could be illuminated or traditional oil lamps or discs carried to display appropriate headcodes.

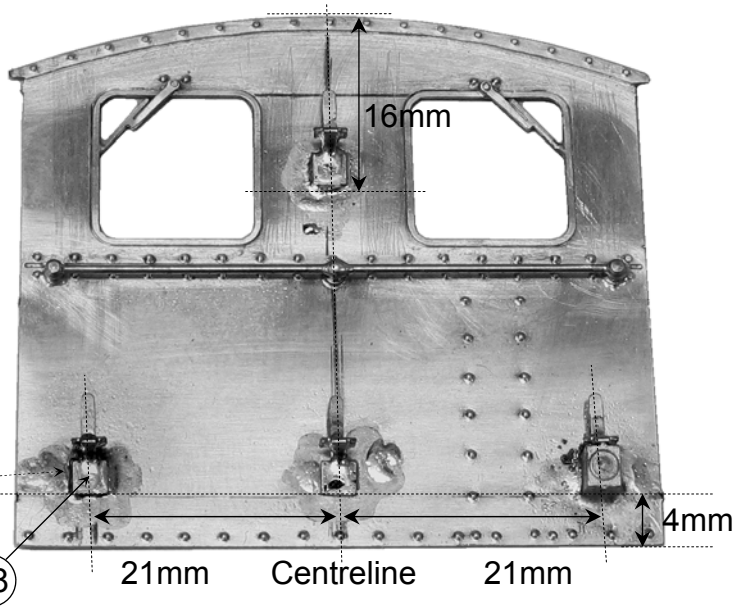
Main Line Lamp Irons



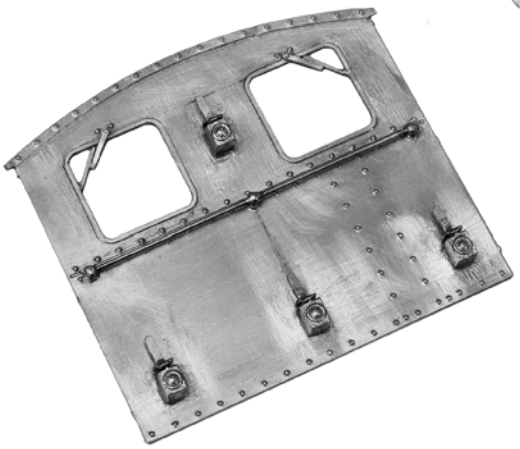
Form up lamp irons and reinforce all folds with 60/40 solder. Tin front & back of square plate with 145° solder.

Pencil in some positioning guidelines. Then solder square plate of lampiron into place allowing solder to tin cab back.

Then fit cast lamp boxes using low melt (70°) solder.

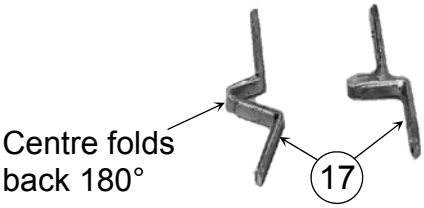


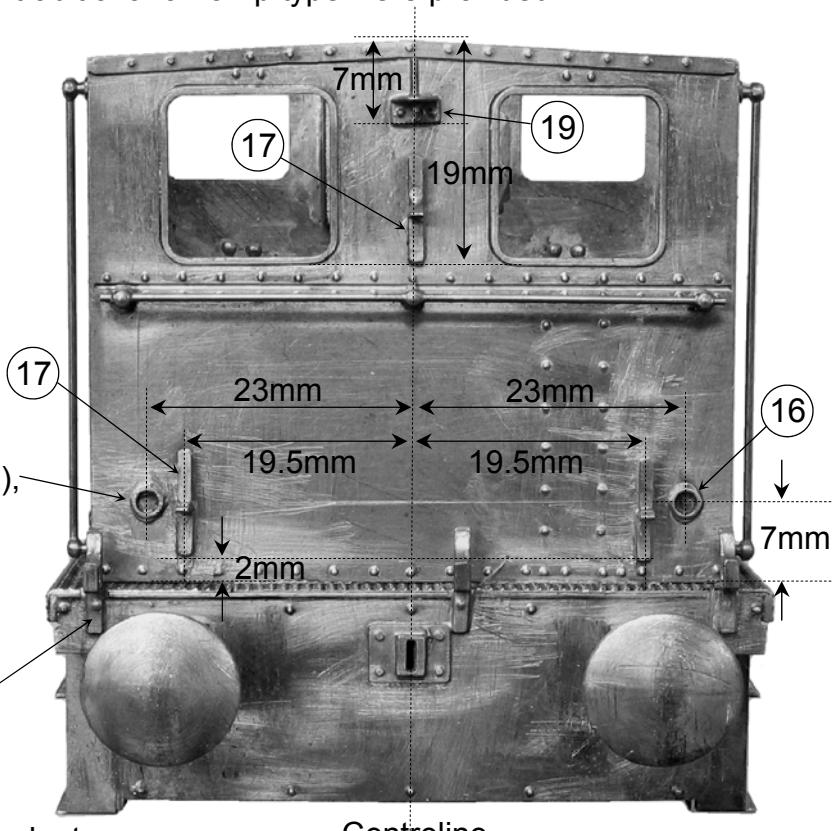
When soldering cab bottom edge to footplate be aware of excessive heat as you don't want the cast lamp boxes falling off.



locos intended for industrial operation tended to have a top electric spot lamp mounted on a projecting bracket & two electric side lights built into the cab back with external lens bezels. Three additional lamp irons of traditional oil lamp type were provided.

Industrial Lamp Irons





Side light external lens bezel.
Lenses coloured, Port-red (L/H side),
Starboard-white (R/H side)

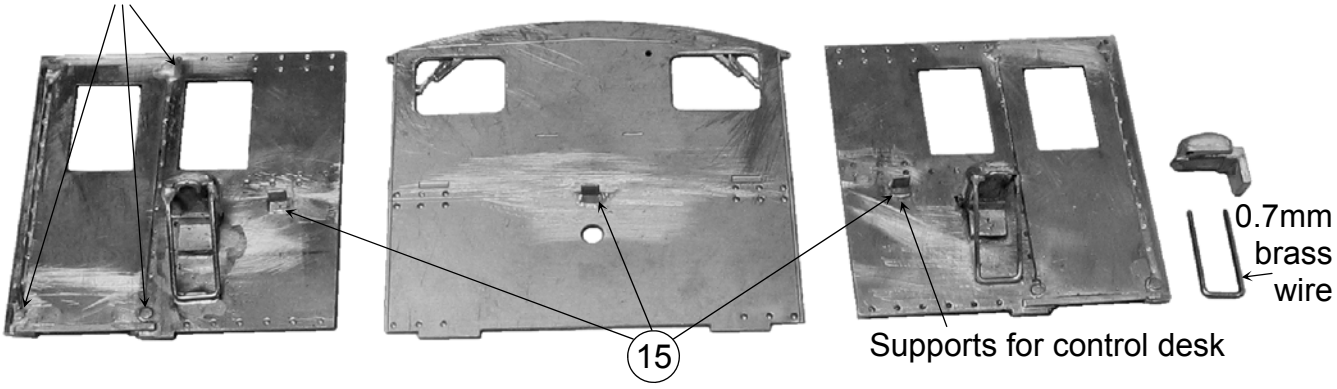
Brackets for stowing the shunters uncoupling pole as he rode along on cab steps

Stage 3, Cab Interior

Interior detail is produced mainly from castings. The recommendation is that, with the exception of the cab seats, these are sub assembled and painted separately. Then once the inside of the cab is painted and glazed. The interior can be built up by gluing (evo-stik impact adhesive) each finished element into position.

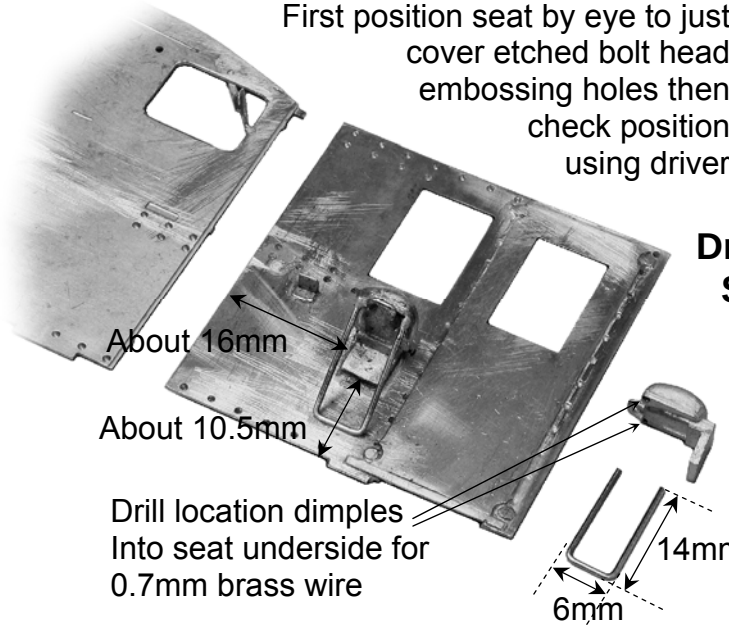
So with cab front and sides only tack soldered into position make up each interior element & test position & adjust. Then they can be pre painted with complete confidence knowing that all will fit perfectly within the more restricted space created once the cab back is fitted & interior walls painted & windows glazed.

Projecting handrail knob bases are filed down to be unobtrusive.

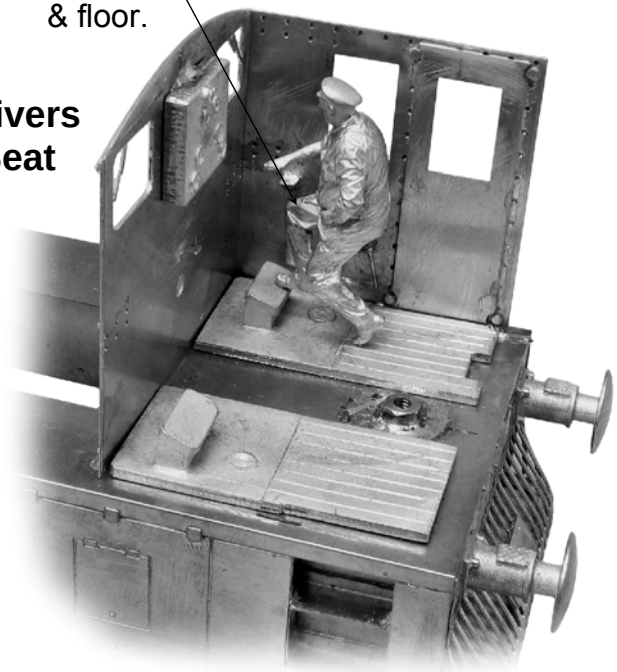


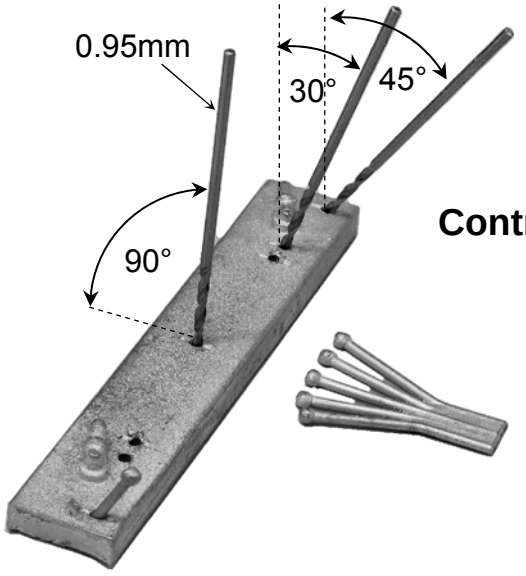
First position seat by eye to just cover etched bolt head embossing holes then check position using driver

Seat height should be such that drivers knee should just fit under control desk (if required file notch in desk not kneecap) and drivers feet rest naturally on footrest & floor.

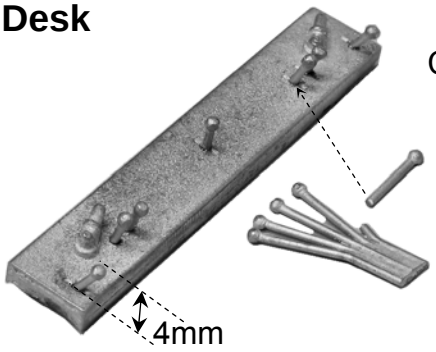


Drivers Seat



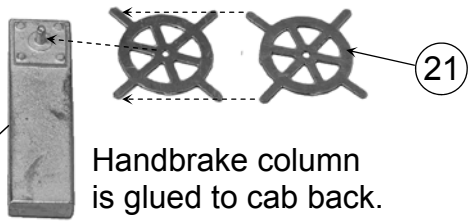


Control Desk



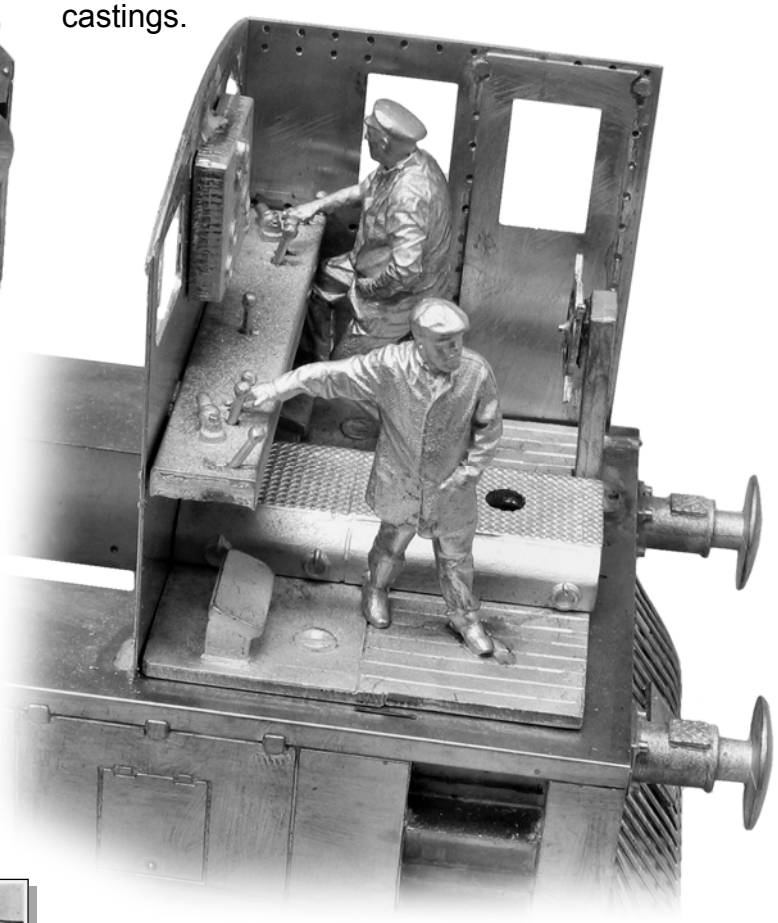
Control knobs should be a positive, but not tight fit, into holes and set (solder on underside) to project about 4mm from desk. so that drivers hand will rest against them.

Etched marks aid positioning of instrument panel.



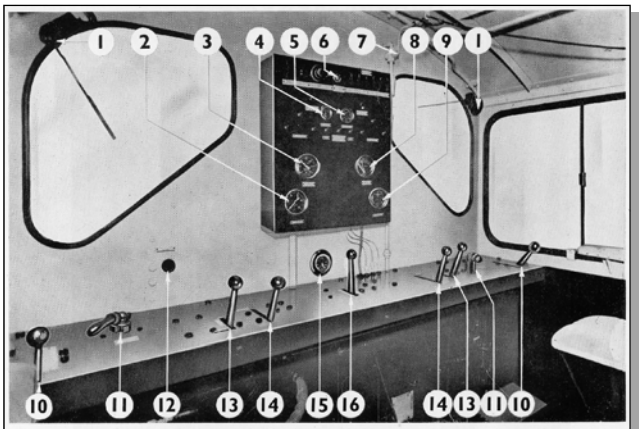
Handbrake column is glued to cab back.

To provide drivers in suitable postures Dan and myself were scanned by: www.modelu3d.co.uk. Then 3d printed casting masters were produced in brass and these could then be included in the production moulds for the kits set of white metal castings.



Jim "Steady Hand" McGeown closes the engine throttle having slowly propelled a raft of wagons into the exchange sidings. Driving the loco forwards from the sitting position.

Dan "Hell Raiser" Hains selects reverse and prepares to push the throttle fully open to return down the mineral branch at full speed. Driving from the standing position and keeping a sharp lookout through the cab rear window.



ARRANGEMENT OF CONTROLS

1. Screen Wipers
2. Engine Oil Pressure Gauge
3. Gear Box Air Pressure Gauge
4. Ammeter
5. Tachometer
6. Engine Starter Switch
7. Whistle Valve
8. Brake Air Pressure Gauge
9. Speedometer
10. Change Speed Lever
11. Straight Air Brake Lever
12. Engine Stop Control
13. Engine Speed Control Lever
14. Reverse Lever
15. Fuel Tank Gauge
16. Sanding Lever

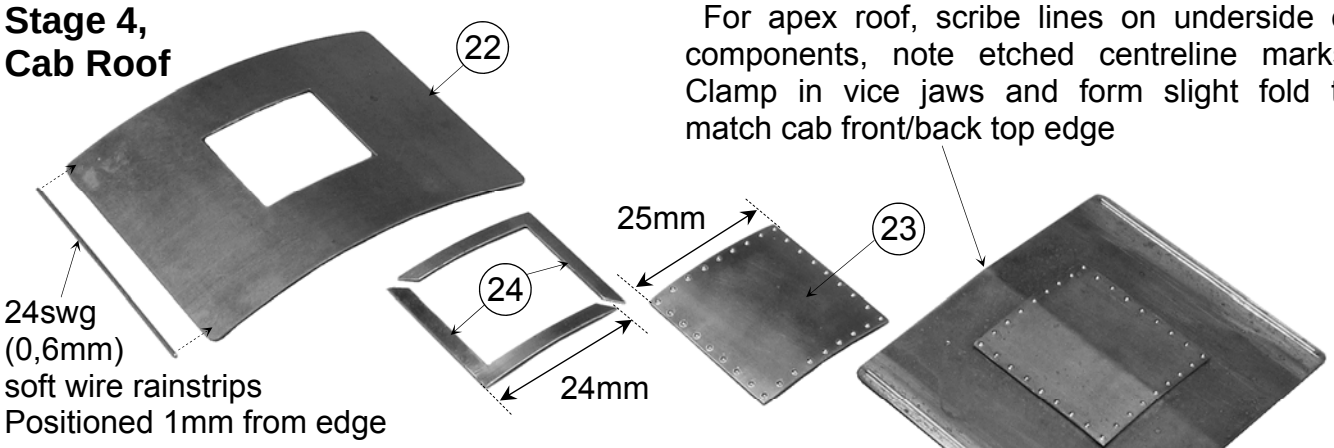
It will be noted that Items 10, 11, 13 and 14 are duplicated on each side of the Control Desk.

There was no dead mans peddle, just simple footrests, as standard on these locos. So they could be driven from any position. As a safety feature the throttle springs closed when the drivers hand is removed.

When Dan has worked through the change speed lever to top gear he may well produce from his pocket a very unofficial and prohibited metal wedge. This he will jamb down the slot in front of the throttle to enable the loco to charge along at full power as he wonders freely around the cab.

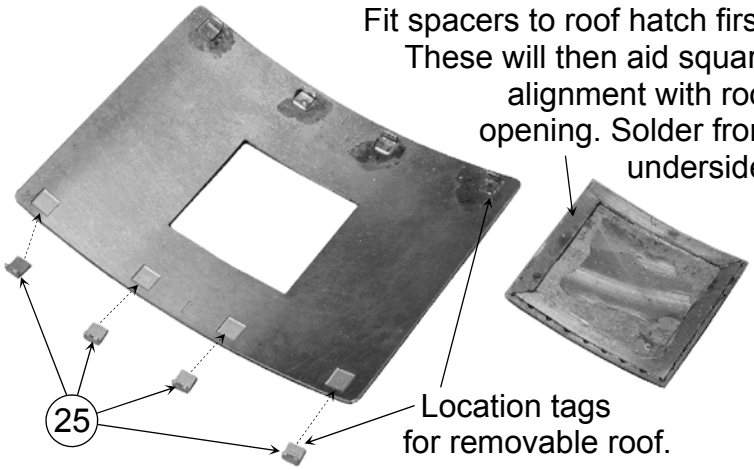
Left, Illustration of typical Drewry control layout (not 153hp loco) taken from manufactures brochure.

Stage 4, Cab Roof

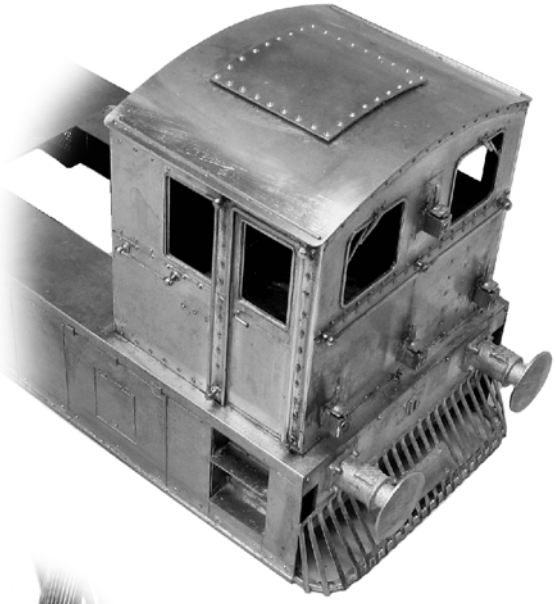


For apex roof, scribe lines on underside of components, note etched centreline marks. Clamp in vice jaws and form slight fold to match cab front/back top edge

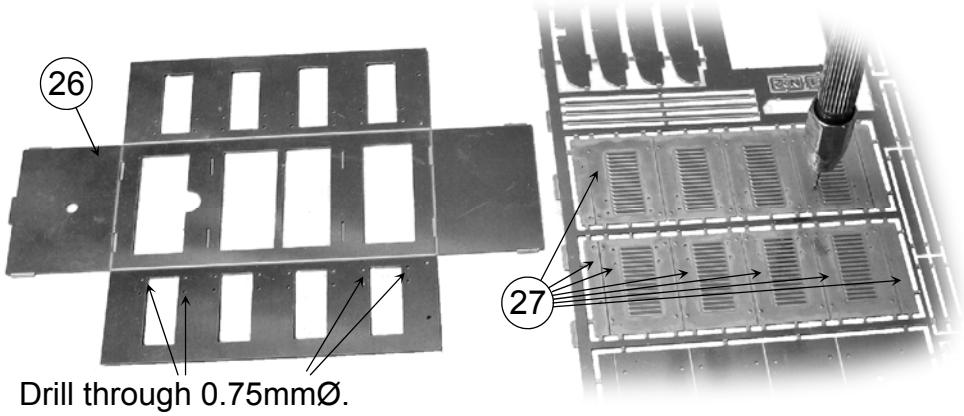
For low arc roof, precurve components to match profile of cab front/back top edge.



Fit spacers to roof hatch first. These will then aid square alignment with roof opening. Solder from underside.



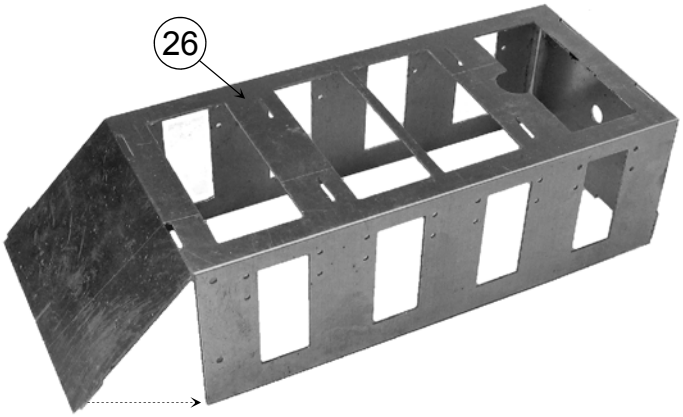
Stage 5, Bonnet Sides



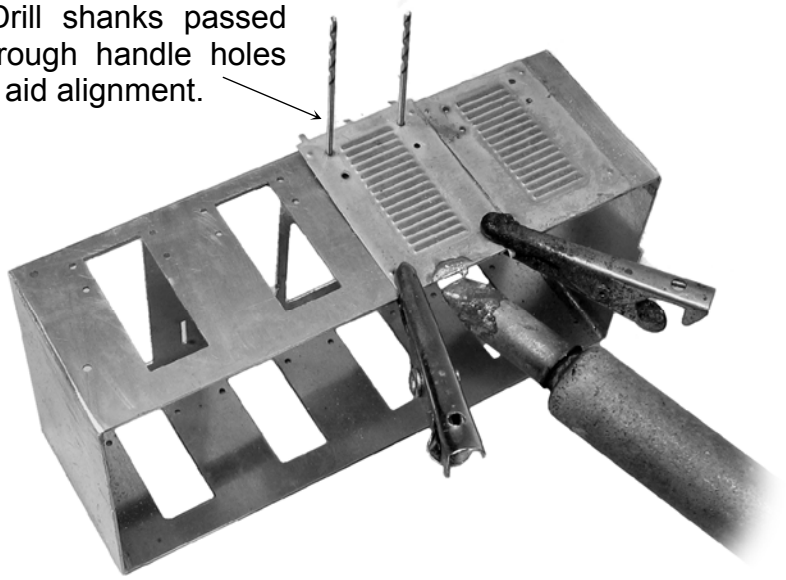
With bonnet side sheets retained within fret drill through lifting handle holes 0.75mm to ensure all have the same clearance diameter.

Then pre tin rear surface of panels.

Form up bonnet framework & solder the corners with generous fillets on the inside. Take care that fold lines are adequately supported *(block of wood/ steel rule)* to prevent distortion during folding.



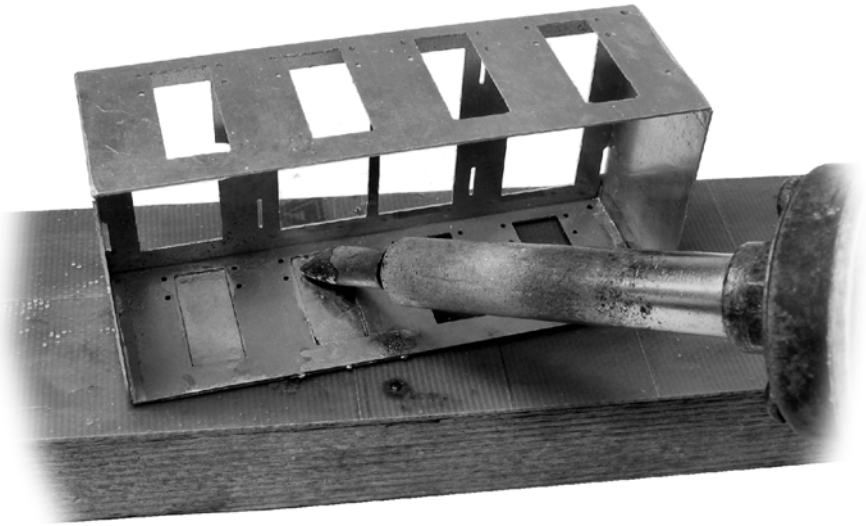
Drill shanks passed through handle holes to aid alignment.

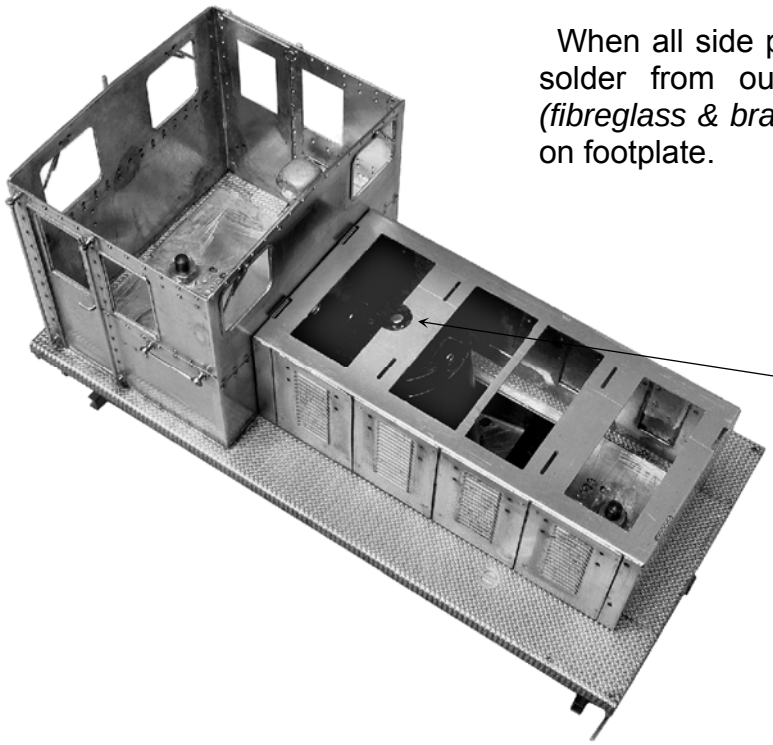


Remove panels from fret and solder into position one at a time. Fit louvered panels first then the small end panels.

Locate aided by drill shanks & then check panel side will be vertical using engineers square. When satisfactory fix bottom position with clips & then a dab of solder.

Place face downwards onto heat proof work block & sweat panel into position by running a generously loaded iron bit around the edges of the rectangular cutout.





When all side panels are fixed clean off any surface solder from outside faces and clean up louvers *(fibreglass & brass wire brushes).* Then try in position on footplate.

I now recommend switching construction to the chassis and building this to the point of trial fitting the motor.

In this way the chassis and body can be offered together and a check made on clearance between the back end of the motor and underside of the bonnet top.

All is designed to provide clearance but these are a little snug & so its good to proceed checking as you go.

Stage 5, Bonnet Top, pre forming

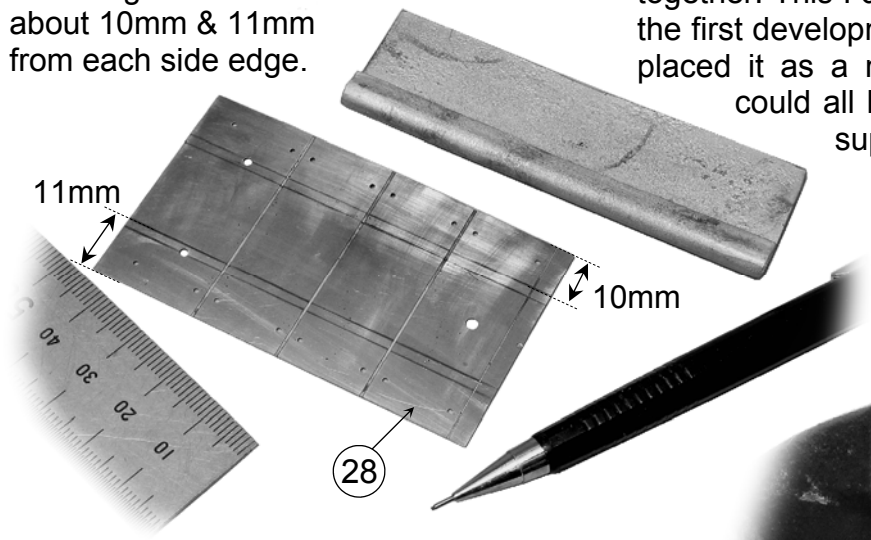
A useful, although not essential, technique to aid forming of the tight side curves is to anneal around the centreline (handrail knob holes) of the bend. This will soften and remove the spring from the metal.

A pencil torch powered by butane lighter fuel is ideal *(Squires Cat ref:185-656).*

Heat part by playing flame along bend centre until a purple band appears. Then remove heat & allow to cool naturally in the air. DO NOT overheat part as it will then become too soft & unworkable. Remember you can reheat if required to keep it workable.

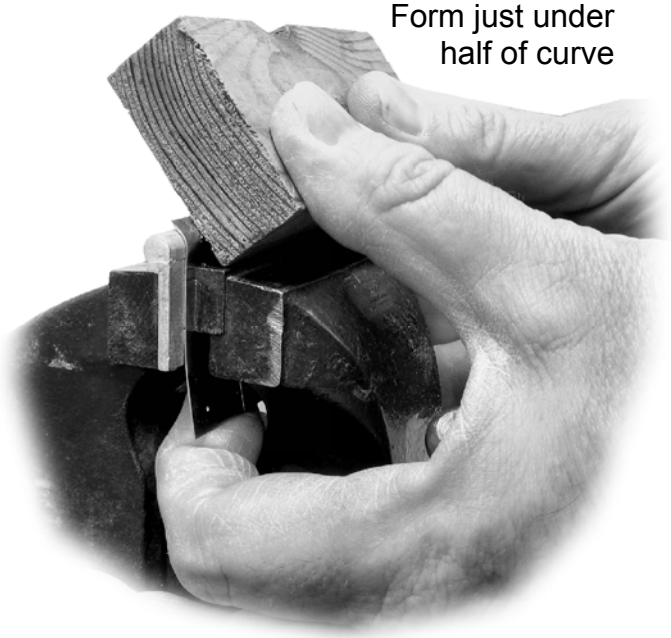
For this sort of job a simple forming bar that the part can be worked over is often fabricated by crudely soldering brass rod & flat together. This I did & used it to form the bonnet for the first development model. I then thought that if I placed it as a master in one of the moulds we could all have one. I found the white metal superior for working the brass over.

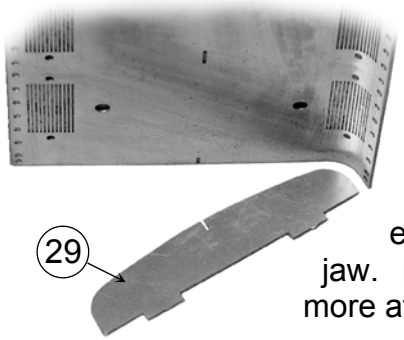
Pencil guidelines about 10mm & 11mm from each side edge.



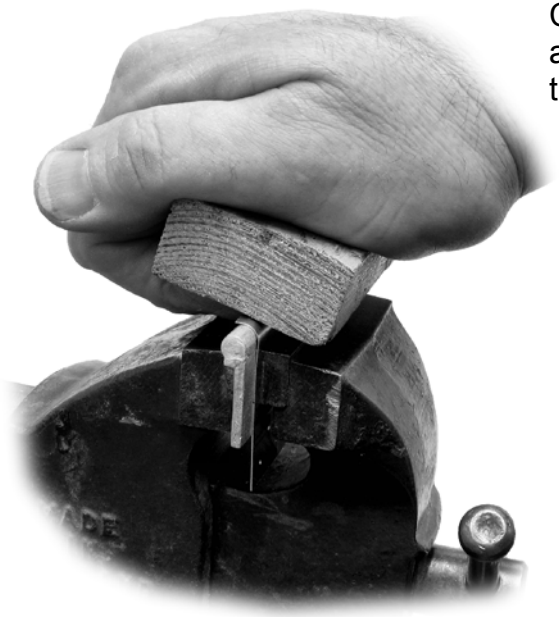
Clamp with 10mm line level with vice jaw

Form just under half of curve

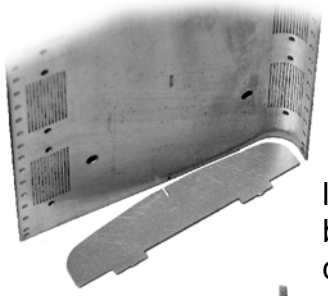




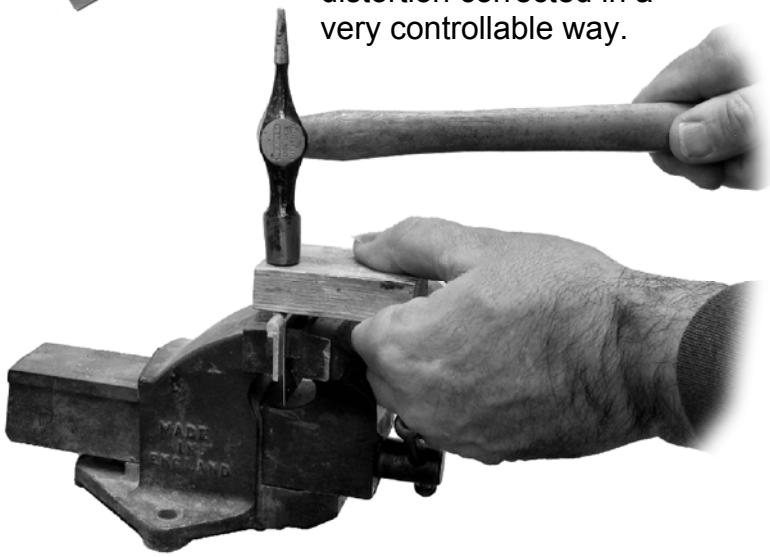
Offer up a support rib to check start of bend position. If low clamp & flatten edge slightly in vice jaw. If high form over more at edge.



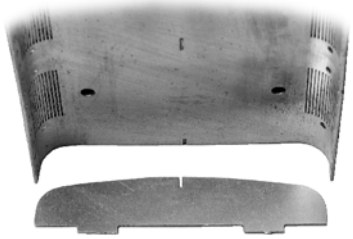
Clamp with 11mm line level with vice jaw & then form around $^{7}/_{8}$ of curve. Offer against support rib to check that you are happy the bend is still running correctly.



The bend can then be completed by gently tapping with a block of softwood. This will tighten the bend to 90° and by working along the length any unevenness can be worked out & slight distortion corrected in a very controllable way.

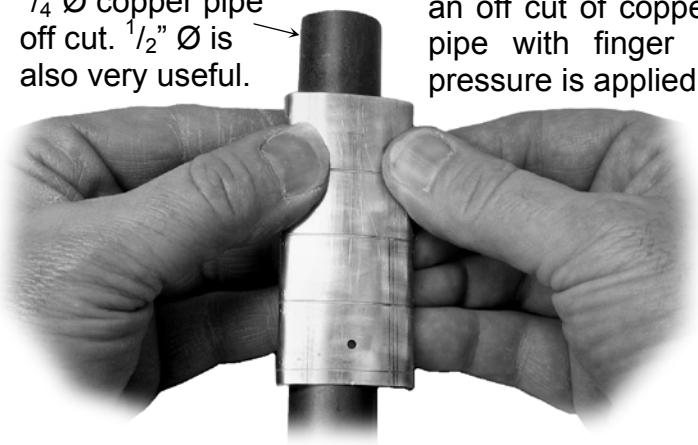


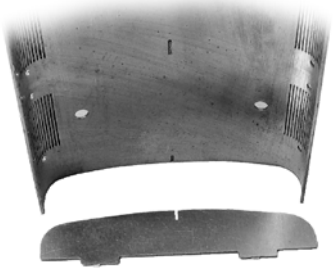
Repeat process for other side. Again regularly offering against support rib to guide progress.



Then form centre curve by gently working with fingers and thumbs over an off cut of copper water pipe. Roll pipe with finger ends as forming pressure is applied by thumbs.

$^{3}/_{4}$"Ø copper pipe off cut. $^{1}/_{2}$" Ø is also very useful.

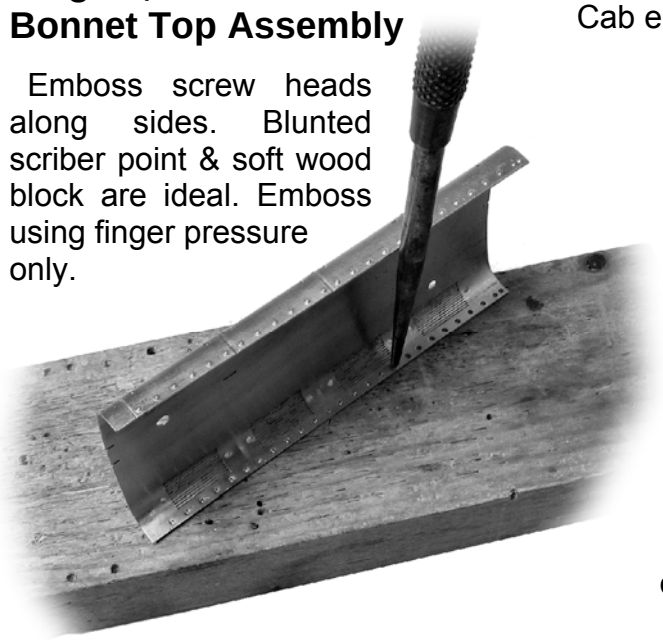


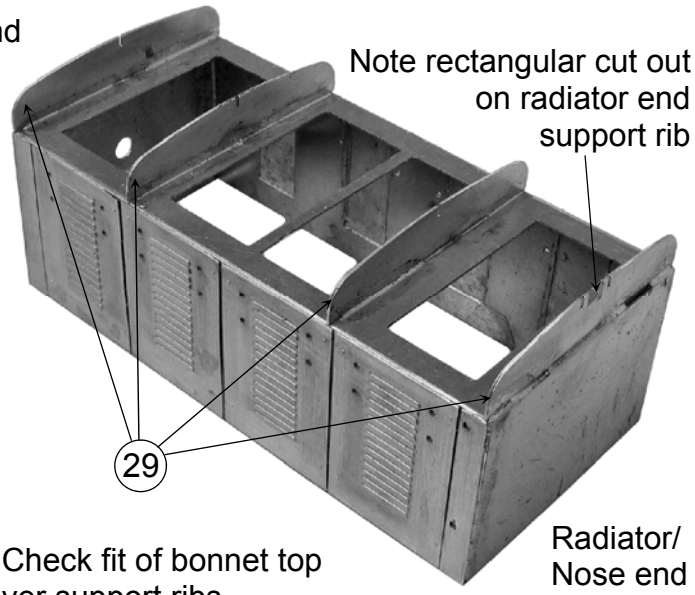


Side bends are now excessively tight so clamp sides *(bottom flat 1mm)* in vice jaws & ease up slightly to match support rib profile.

Stage 6,
Bonnet Top Assembly

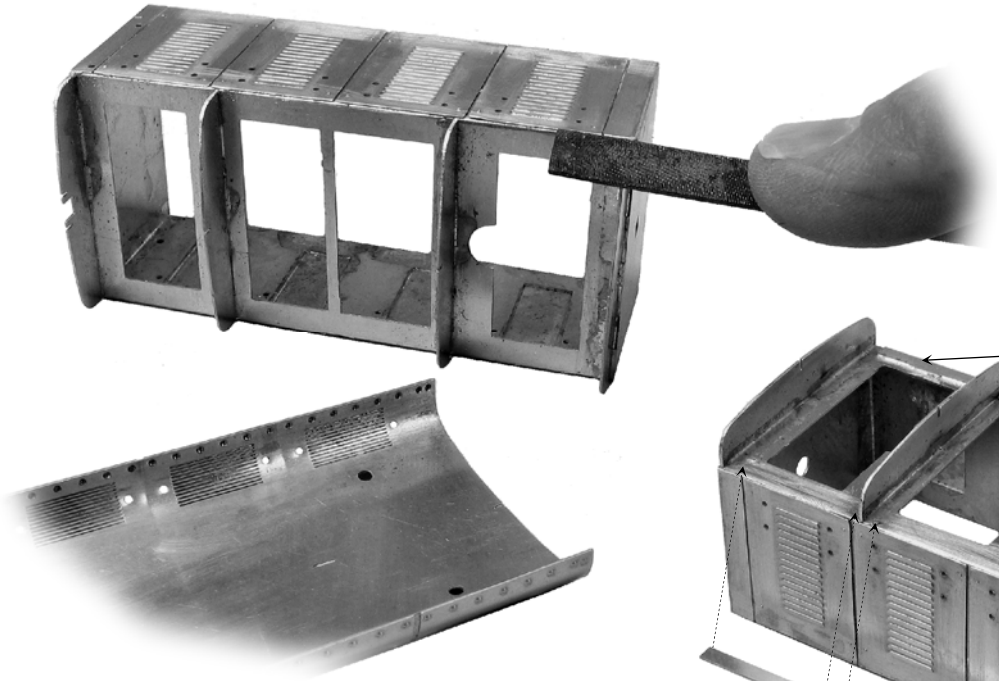
Emboss screw heads along sides. Blunted scriber point & soft wood block are ideal. Emboss using finger pressure only.

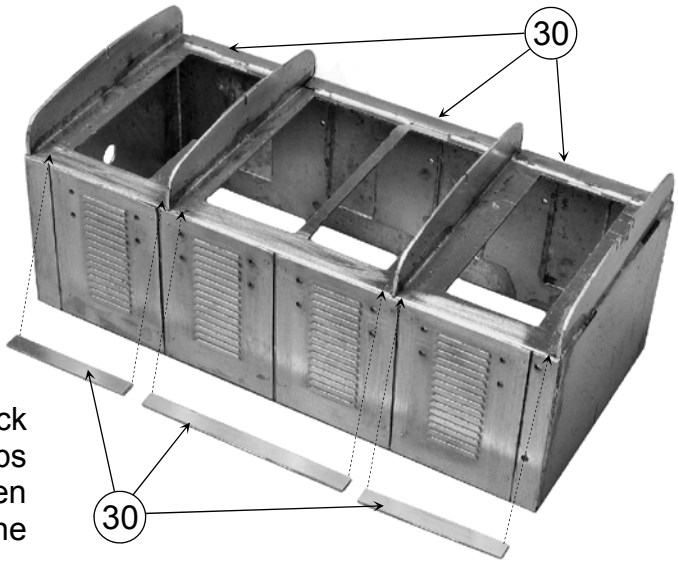




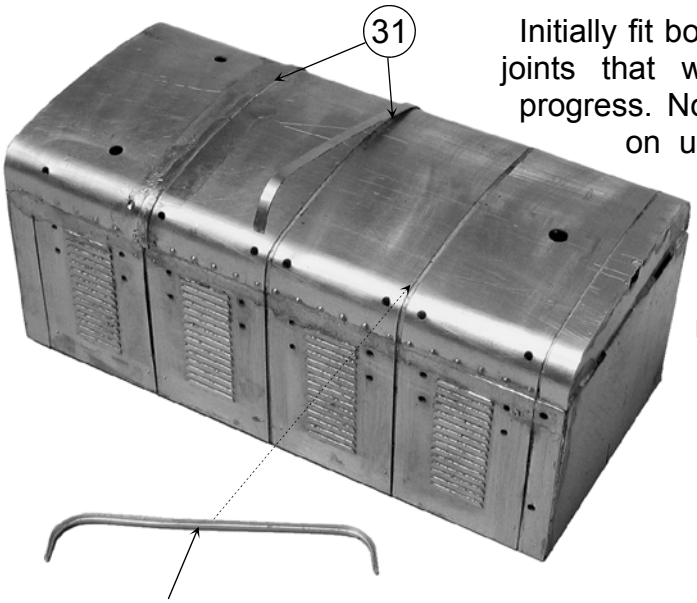
Check fit of bonnet top over support ribs

The support ribs are there to work for you by providing a framework that will achieve a level bonnet top with consistent corners & top radius. If you are having to force it down over them, then they are working against you, so don't be afraid to slightly dress and re-profile ends so that bonnet top is a snug fit. With sides sitting down just above the louvered panels with a consistent gap (about 0.5mm).





Fit strips flush with or better still just set back from ends of support ribs. These strips provide a useful backing to the gap between the side edges of the bonnet top and the louvered side panels.

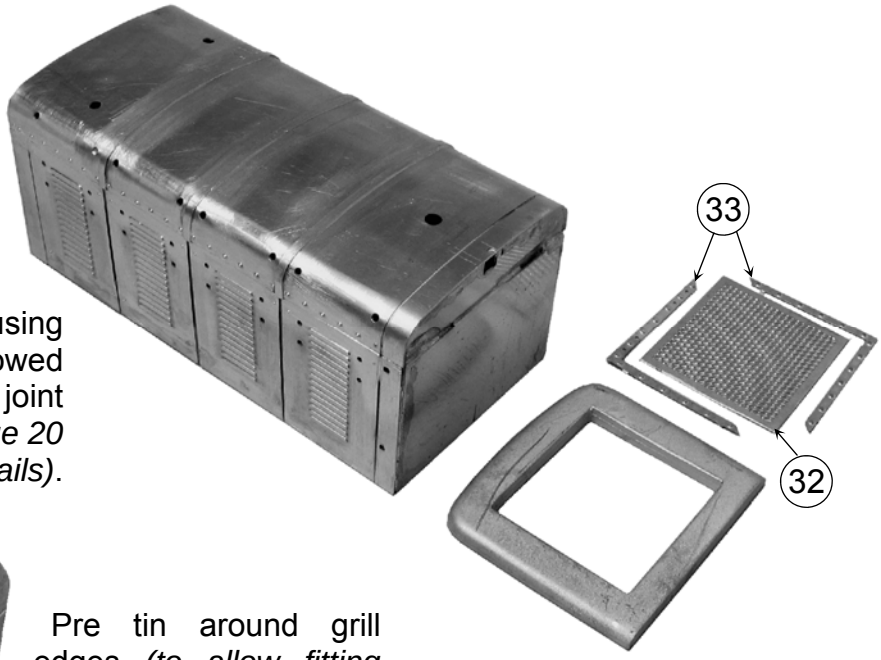


Initially fit bonnet top using a number of small tack solder joints that will allow adjustment, if required, as you progress. Note corresponding etched centre line marks on underside that correspond with support ribs. Tack joints here & about four on the outside joint between top & louvered panels along each edge should be sufficient to determine that all is positioned correctly & assembly is not twisted. When happy fully solder all joints.

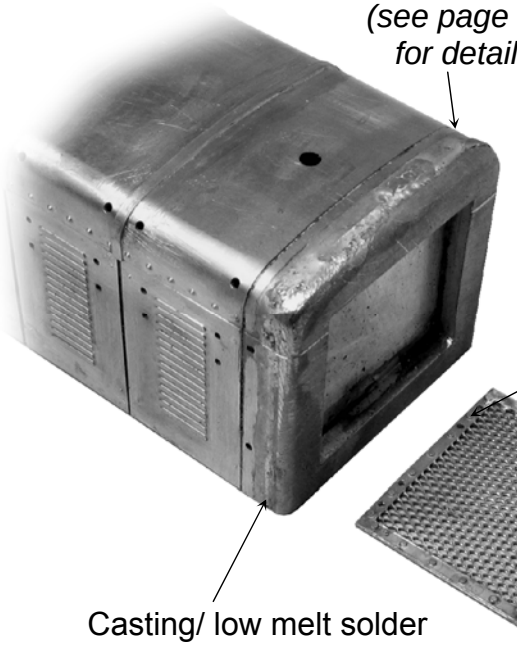
Fit top panel sections joint covering strips (*in effect the same as boiler bands on a steam loco).* These are slightly over length so that by starting flush at one edge they can be soldered over the top then the other end sniped off to end flush a other edge.

Full metal strip on underside locate into groove on bonnet top.

Stage 7, Nose/ Radiator Grill

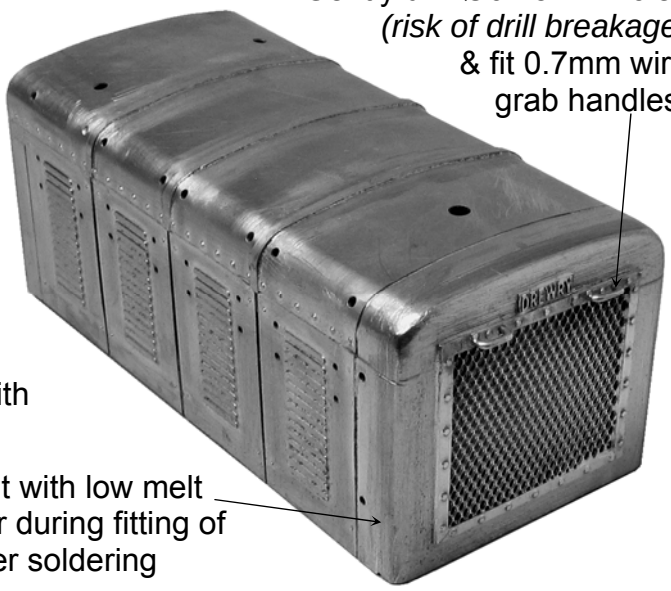


Nose casting is fitted using 70° low melt solder flowed generousley into joint *(see page 20 for details)*.



Pre tin around grill edges *(to allow fitting with low melt solder)* & clear grab handle holes.

Gently drill Ø0.75mm holes *(risk of drill breakage)* & fit 0.7mm wire grab handles.

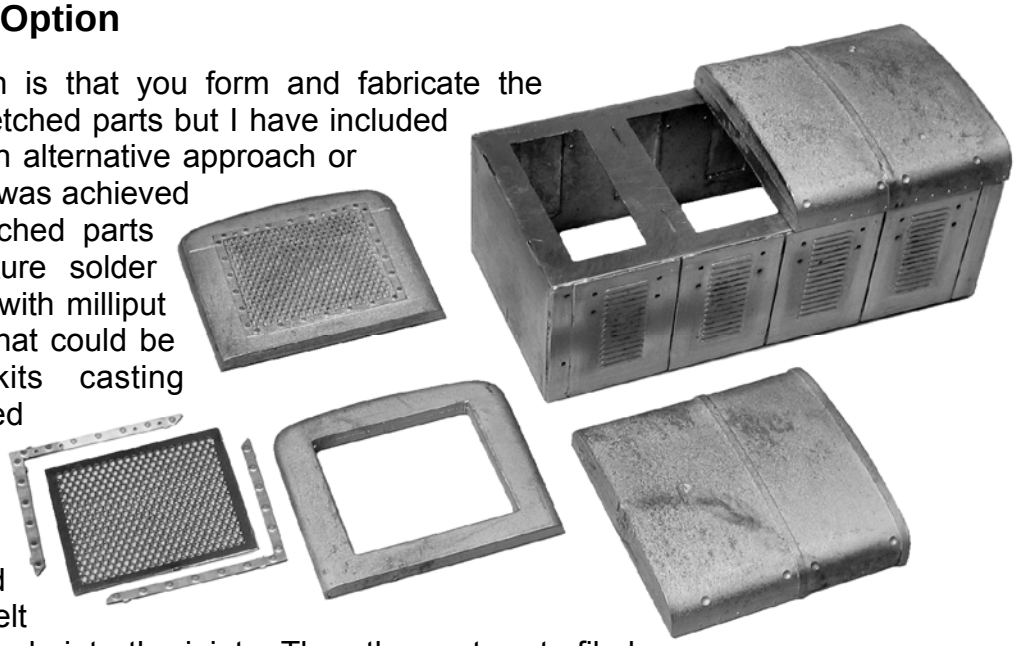


Casting/ low melt solder filed back and then blended into brass bonnet sides by scraping with curved No10 scalpel blade & burnishing with fibreglass brush.

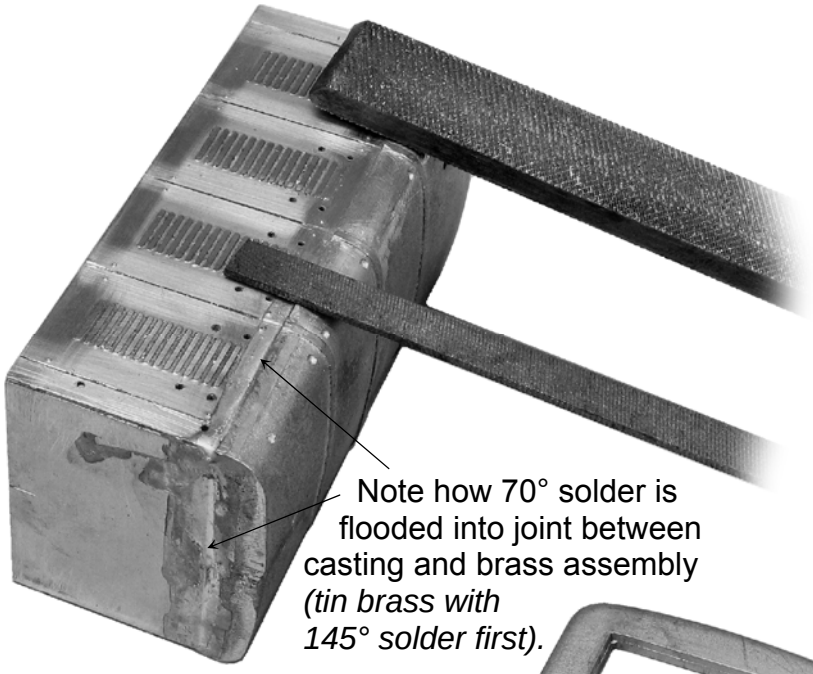
This is about as good as you need to get it with low melt solder. Any slight gaps or holes that appear during fitting of handrails etc are best filled with milliput after soldering operations.

Cast Bonnet Top Option

My recommendation is that you form and fabricate the bonnet top from the etched parts but I have included castings to provide an alternative approach or second chance. This was achieved by fabricating the etched parts using high temperature solder and then filling them with milliput to produce masters that could be included in the kits casting moulds. This produced slightly crude but very workable parts.



These castings are intended to be fitted using 70° low melt solder flowed generously into the joints. Then the cast parts filed and blended into the etched assembly. This technique is covered in my Hints & Tips booklet, download from:- http://www.jimmcgeown.com/Print%20Outs.html or contact me for printed copy.



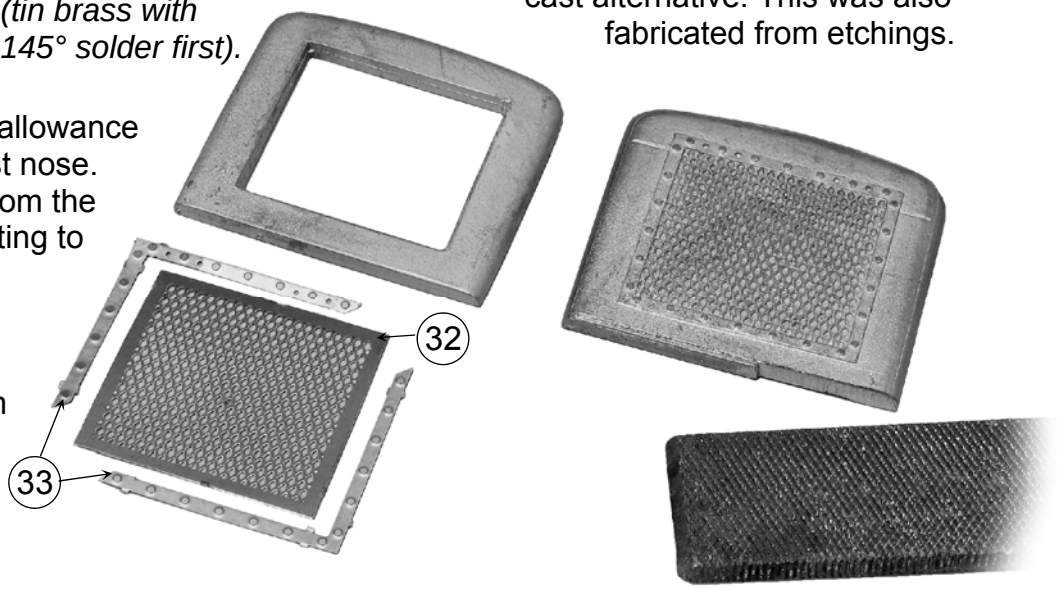
Note how 70° solder is flooded into joint between casting and brass assembly *(tin brass with 145° solder first).*

The bonnet top masters included the recommended 2% mould shrinkage allowance. Sods Law says that if you make allowance for it the castings wont shrink *(on the width dimension).* So file bonnet edges down and blend into etched sides. The screw head detail will be lost but it was probably a bit optimistic including it anyway.

My recommendation is to use the open nose casting with etched radiator grill (this is also correct size, we were beginning to ignore shrinkage) but again there is a fully cast alternative. This was also fabricated from etchings.

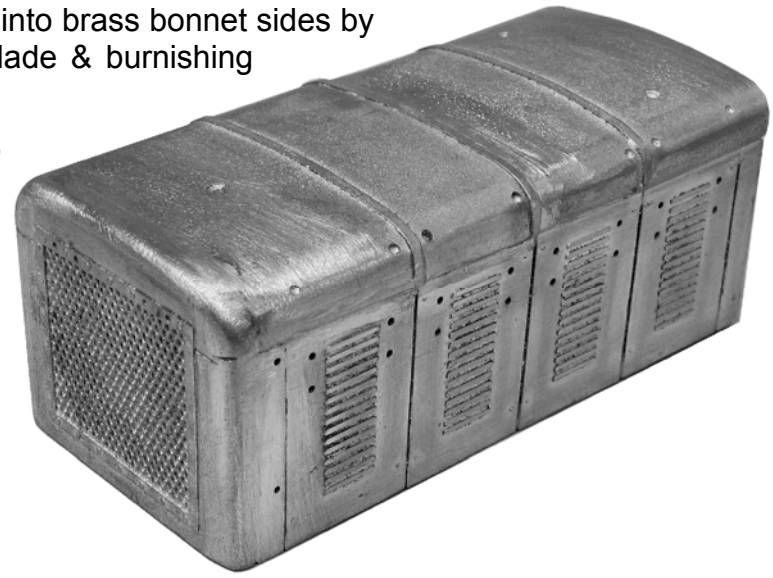
Again 2% shrinkage allowance was applied to the cast nose. So file about 0.5mm from the bottom edge before fitting to front of etched brass assembly.

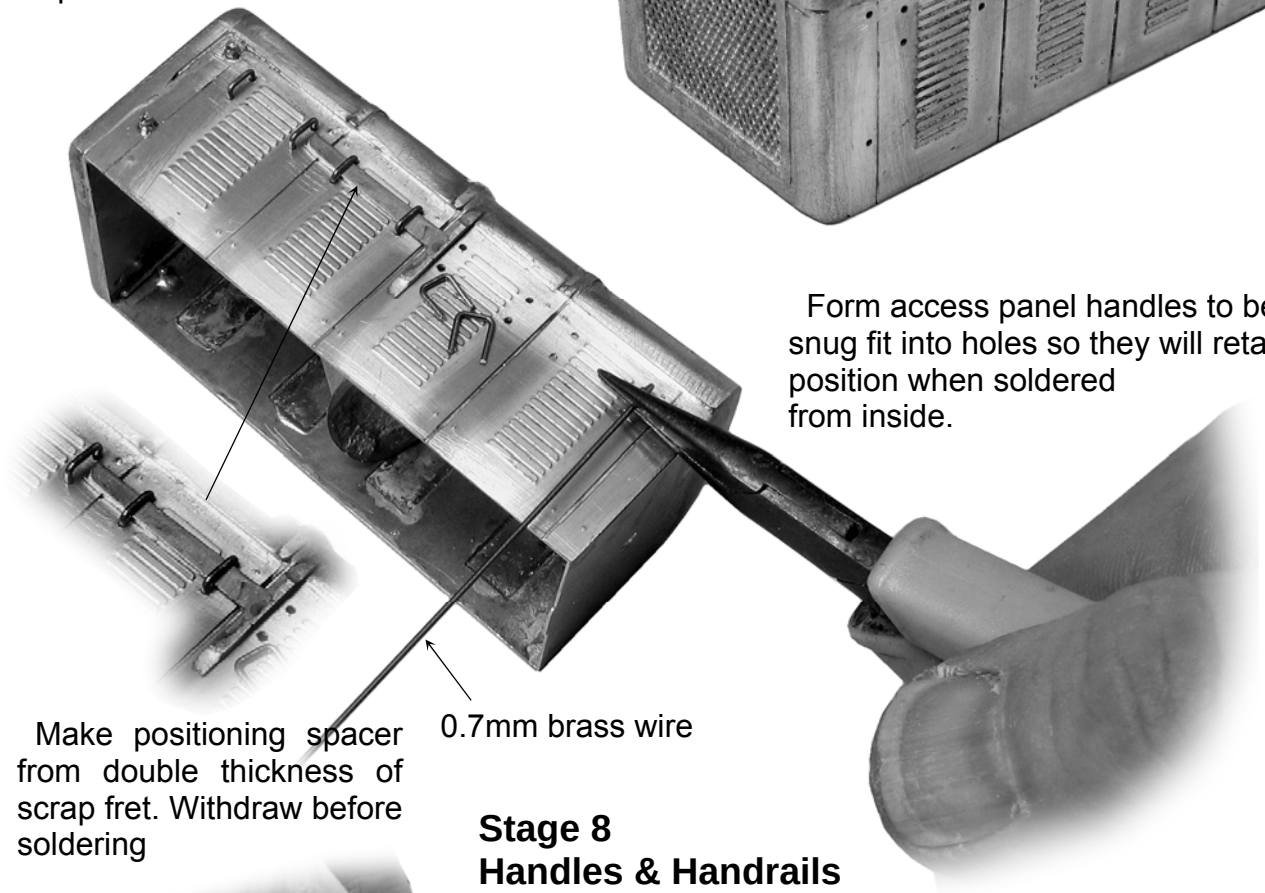
Once joined with 70° solder the excess from sides and top can be easily filed off & dressed Into Bonnet.



Castings filed back and then blended into brass bonnet sides by scraping with curved No10 scalpel blade & burnishing with fibreglass brush.

This is about as good as you need to get it with low melt solder. Any slight gaps or holes that appear during fitting of handrails etc are best filled with milliput after soldering operations.



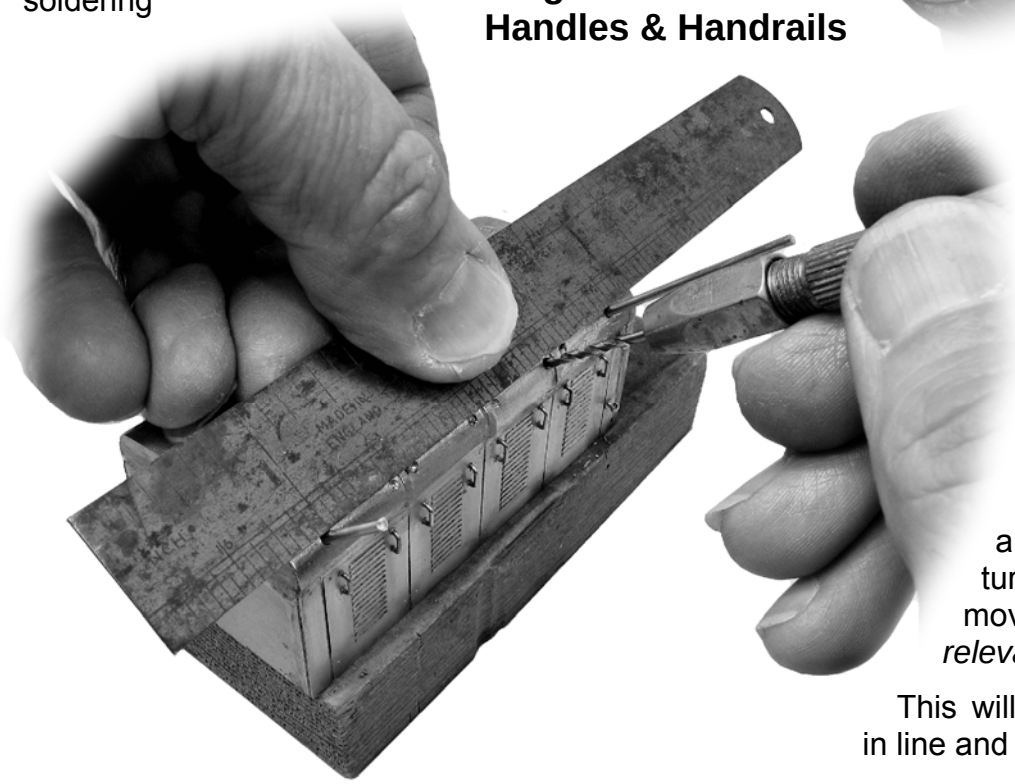


Form access panel handles to be a snug fit into holes so they will retain position when soldered from inside.

Make positioning spacer from double thickness of scrap fret. Withdraw before soldering

0.7mm brass wire

Stage 8
Handles & Handrails



Drill Ø1.5mm holes for outer handrail knobs.

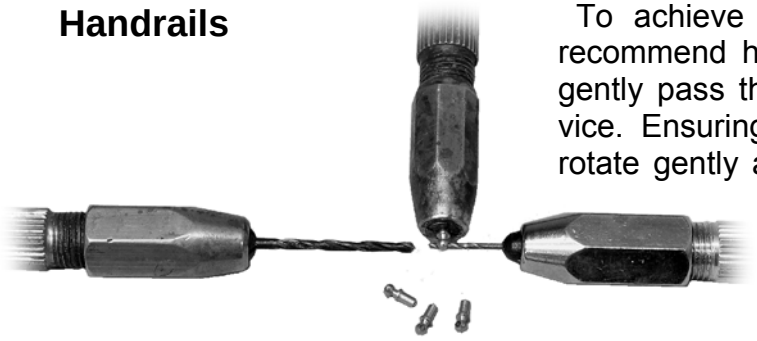
Insert lengths of 1.5mm rod and lay a rule up against them.

Use rule to guide the drilling of intermediate holes.

By changing the drilling angle for the first couple of turns the hole centre can be moved slightly *(particularly relevant for cast bonnet top*).

This will ensure all knobs will be in line and the handrail straight.

Handrails



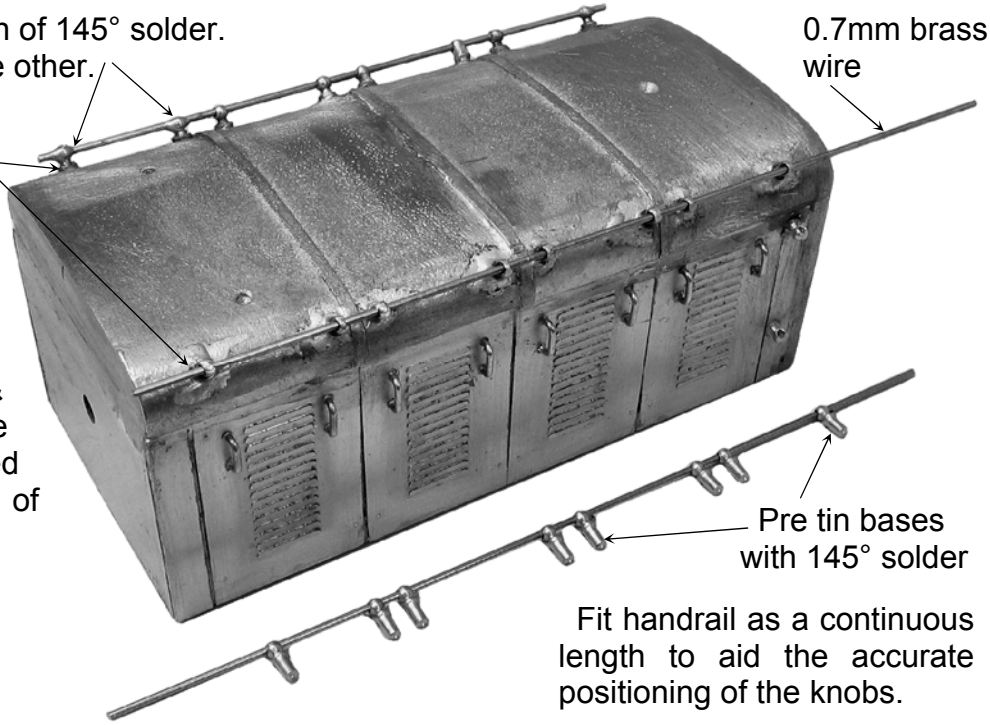
To achieve best results from the handrail knobs I recommend holding base by locking in pin vice. Then gently pass through a 0.75mm drill held in second pin vice. Ensuring that the two pin vices are at 90° and rotate gently and this will correct any misalignment of the cross drilled hole.

Then using a larger drill *(about Ø2mm)* gently twist a couple of turns to remove any swarf or raggedness around each side of the hole.

Secure wire with a touch of 145° solder. Work from one end to the other.

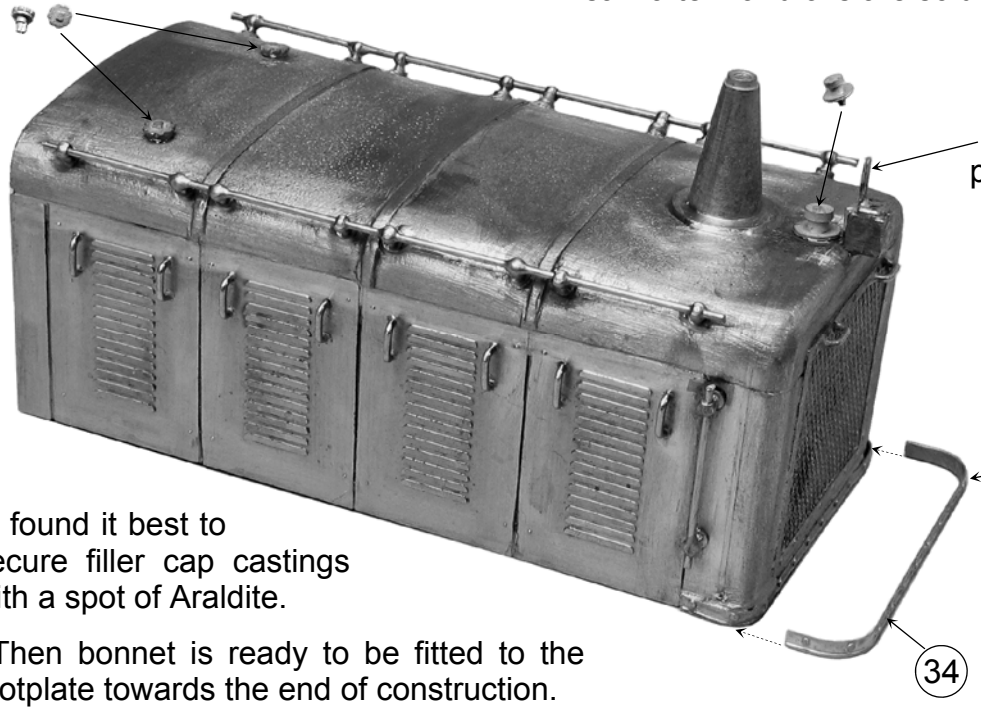
Secure knobs into holes with a touch of 70° solder.

If you then place a spot of red label flux around the base this solder should flash & flow around the base when handrail is secured at the top with a touch of 145° solder & hot iron.



Fit handrail as a continuous length to aid the accurate positioning of the knobs.

The prototype was four separate sections. If you wish to represent this make cuts with piercing saw after handrails are soldered solid.



I found it best to secure filler cap castings with a spot of Araldite.

Then bonnet is ready to be fitted to the footplate towards the end of construction.

Stage 9, Foot Steps

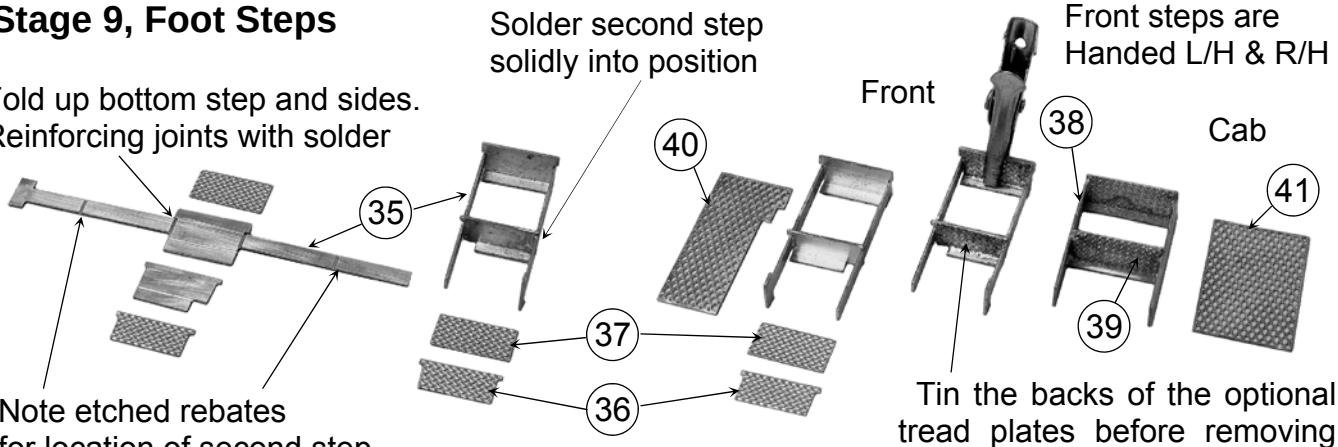
Fold up bottom step and sides. Reinforcing joints with solder

Solder second step solidly into position

Front steps are Handed L/H & R/H

Front

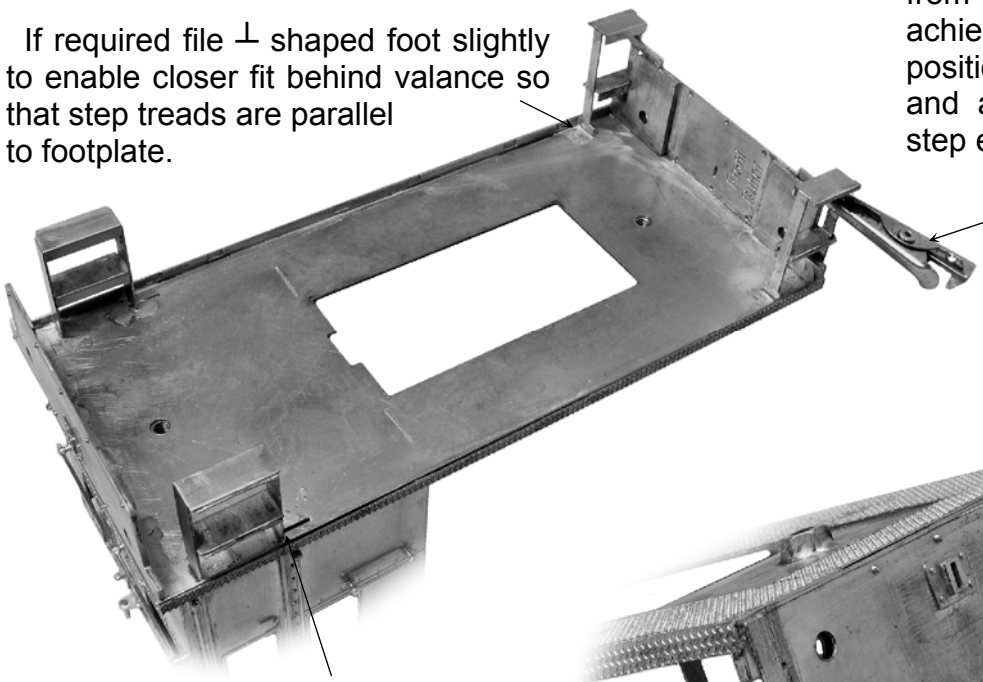
Cab



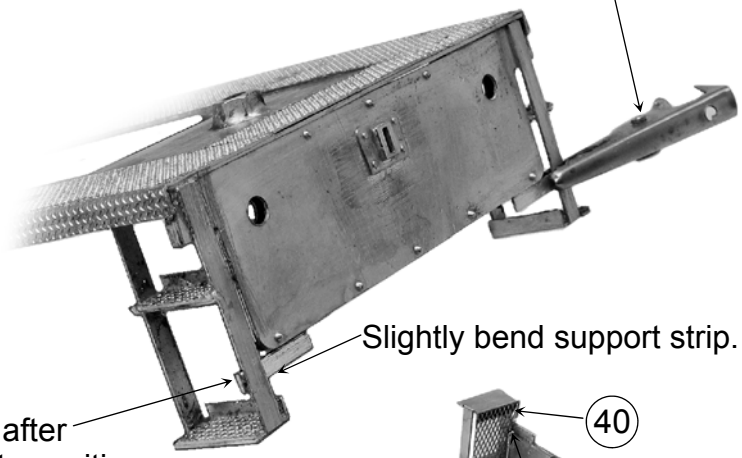
Note etched rebates for location of second step

Tin the backs of the optional tread plates before removing from etch. Dress with file to achieve easy fit and solder in position using plenty of flux and application of iron bit to step edge.

If required file ⊥ shaped foot slightly to enable closer fit behind valance so that step treads are parallel to footplate.



Clip will assist this tricky job by holding assembly in position to allow alignment to be checked Then soldered solid at ⊥ foot first.



Steps should correspond with door opening. Just inboard of end of slot is a good positioning guide.

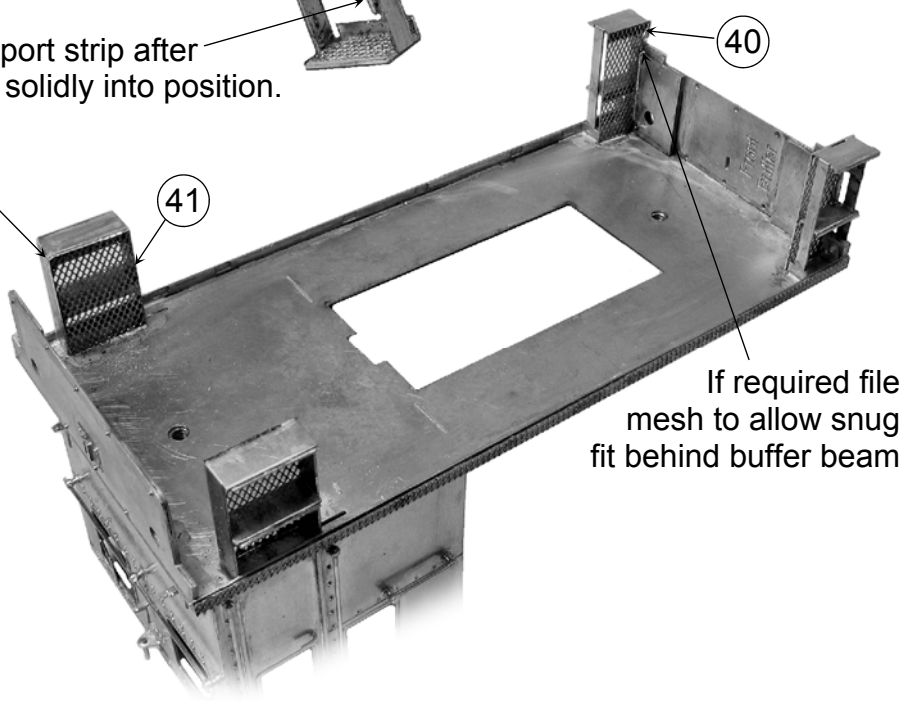
Slightly bend support strip.

Trim back support strip after soldering steps solidly into position.

40

When satisfied with step positioning fit mesh backing. Soldering at footplate & rear of bottom step

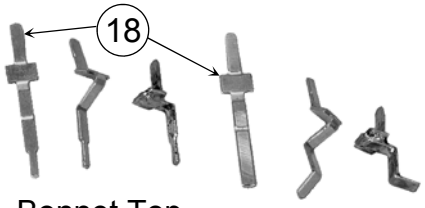
41



If required file mesh to allow snug fit behind buffer beam

Stage 10, Front Footplate & Lamps

Main Line Lamp Irons Option



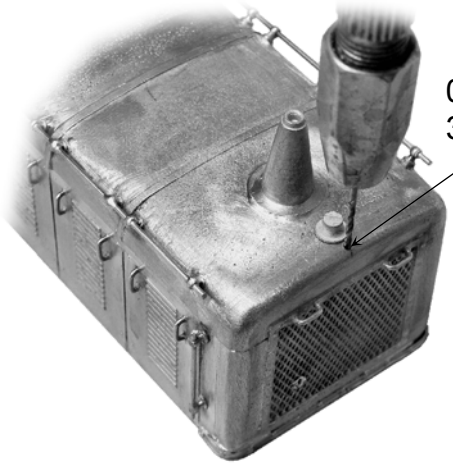
Bonnet Top

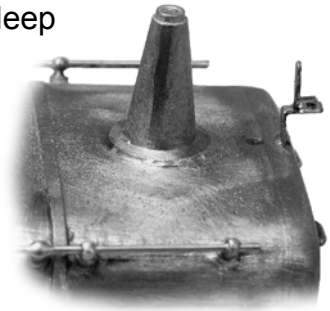
Footplate

As with the cab back *(page 11)* the front end was fitted with four fixed electric lamp boxes with lamp Irons incorporated.

Form up lamp irons and reinforce all folds with 60/40 solder. Then Tin front & back of lower part *(where cast lampbox fits)* with 145° solder.

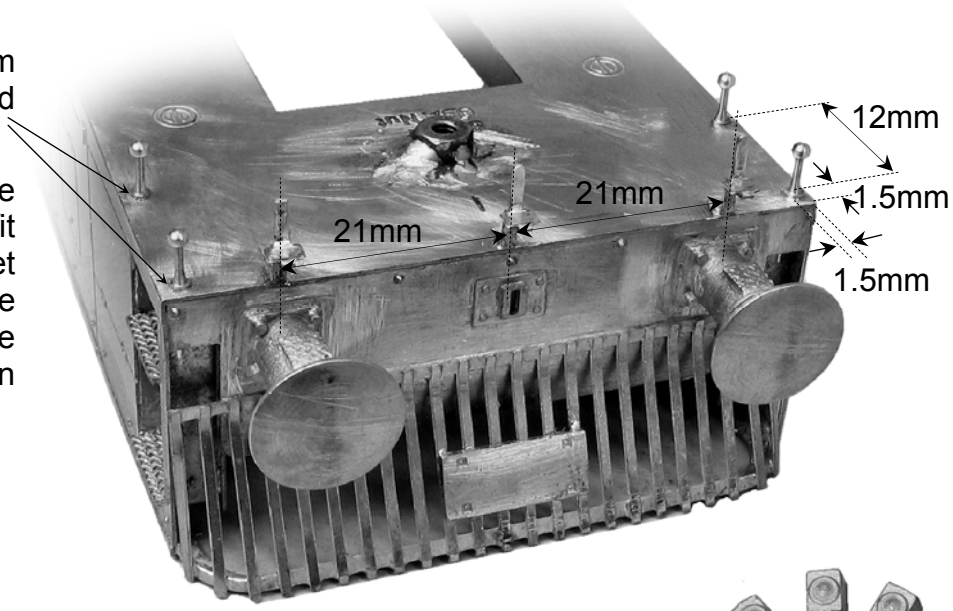
Drill location hole into bonnet top to accommodate lamp iron tail & fit with low melt (70°) solder. Then fit cast lamp box again using 70° solder.

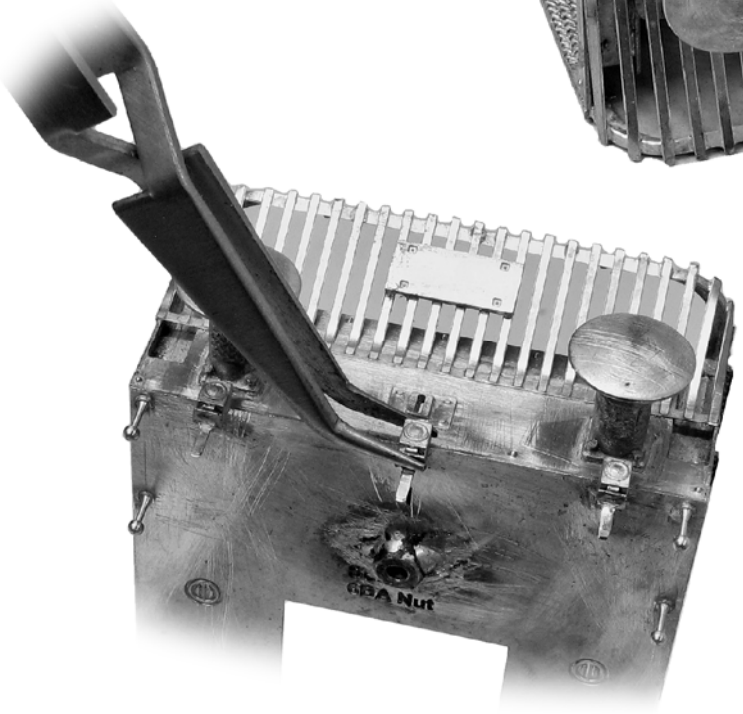




I recommend drilling Ø1.4mm holes & fitting step hand hold *(grabhandle)* pillars first.

Then Pencil in some positioning guidelines & fit lanpirons. Their base is set slightly back from footplate edge so that the rear of the cast lampbox will just rest on the footplate edge



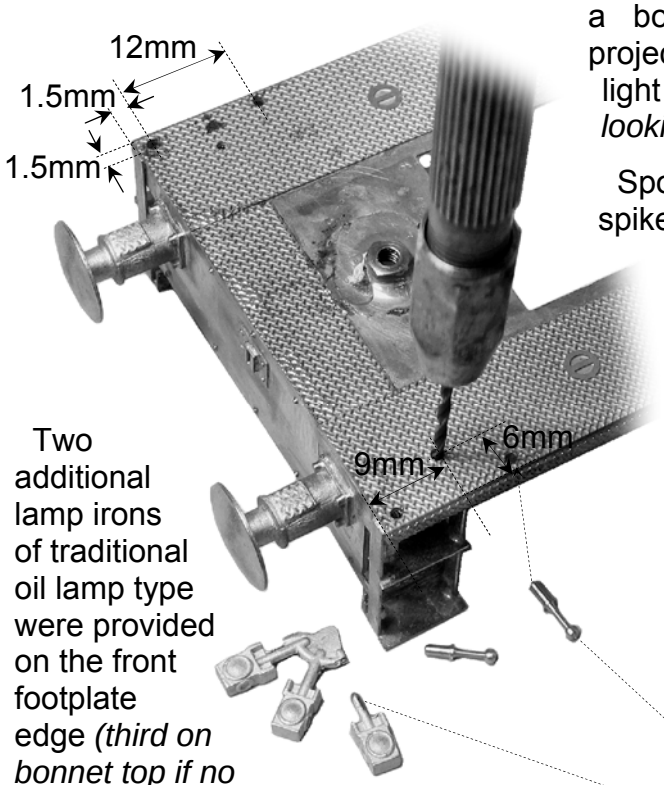


Fit cast lamp boxes using low melt (70°) solder. I was surprised to find this was a fairly easy operation.

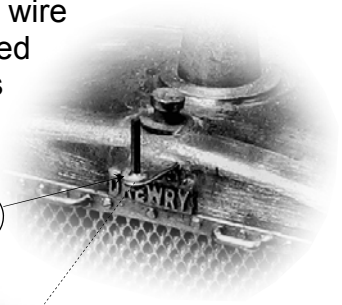
By holding cast boxes in position using self locking tweezers & generously applying red label flux. I found I could touch the rear of the etched lampiron with the soldering iron tip carrying 70° solder. The solder naturally pulled around the lampiron & cast box.

Industrial Lamp Irons Option

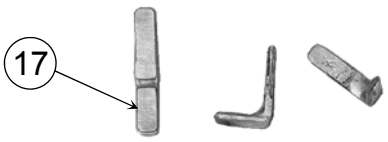
locos intended for industrial operation tended to have a bonnet top electric spot lamp mounted on a projecting bracket & two footplate mounted electric side light boxes, Lenses coloured, Port-red *(L/H side looking forward from cab),* Starboard-white *(R/H side).*

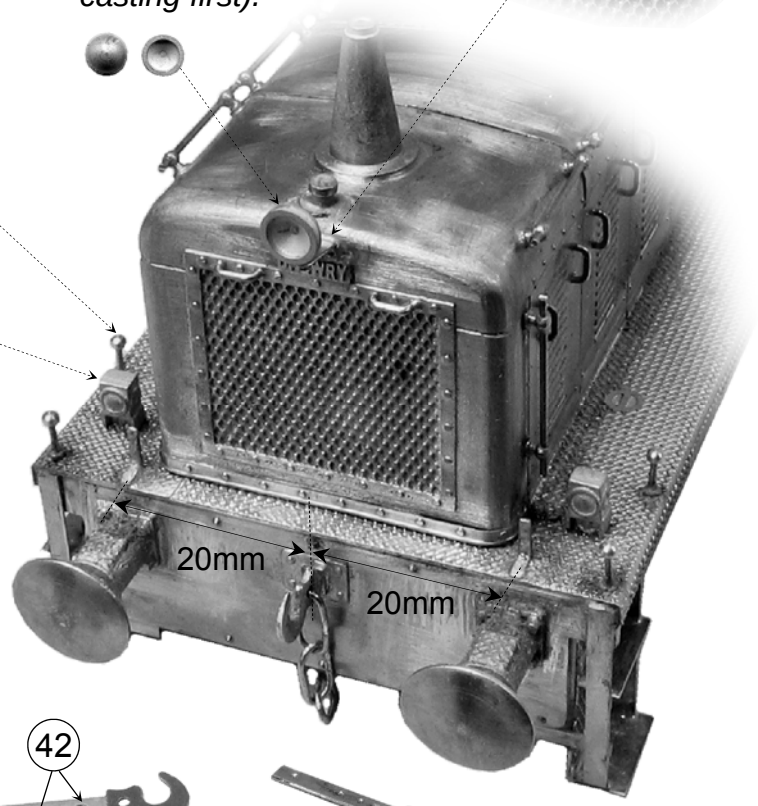


Spotlight bracket has 0.7mm wire spike. Spotlight casting has drilled hole to locate onto this after painting. Opaque lens glass is represented by a spot of Araldite *(polish bowl & rim of casting first).*



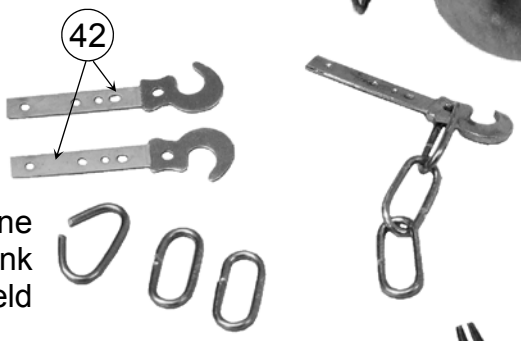
Two additional lamp irons of traditional oil lamp type were provided on the front footplate edge *(third on bonnet top if no spotlight fitted).*





Form up lamp irons and reinforce fold with 60/40 solder. Tin underside of base with 145° solder.

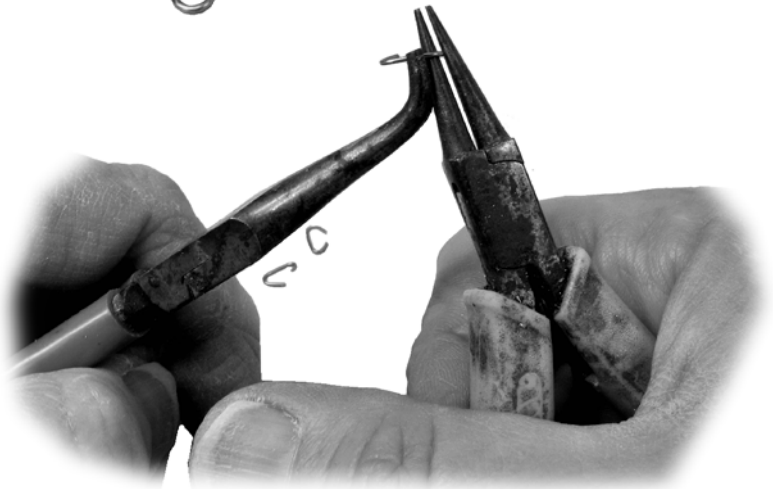
Pencil in some positioning guidelines. Then solder lampiron base to footplate.



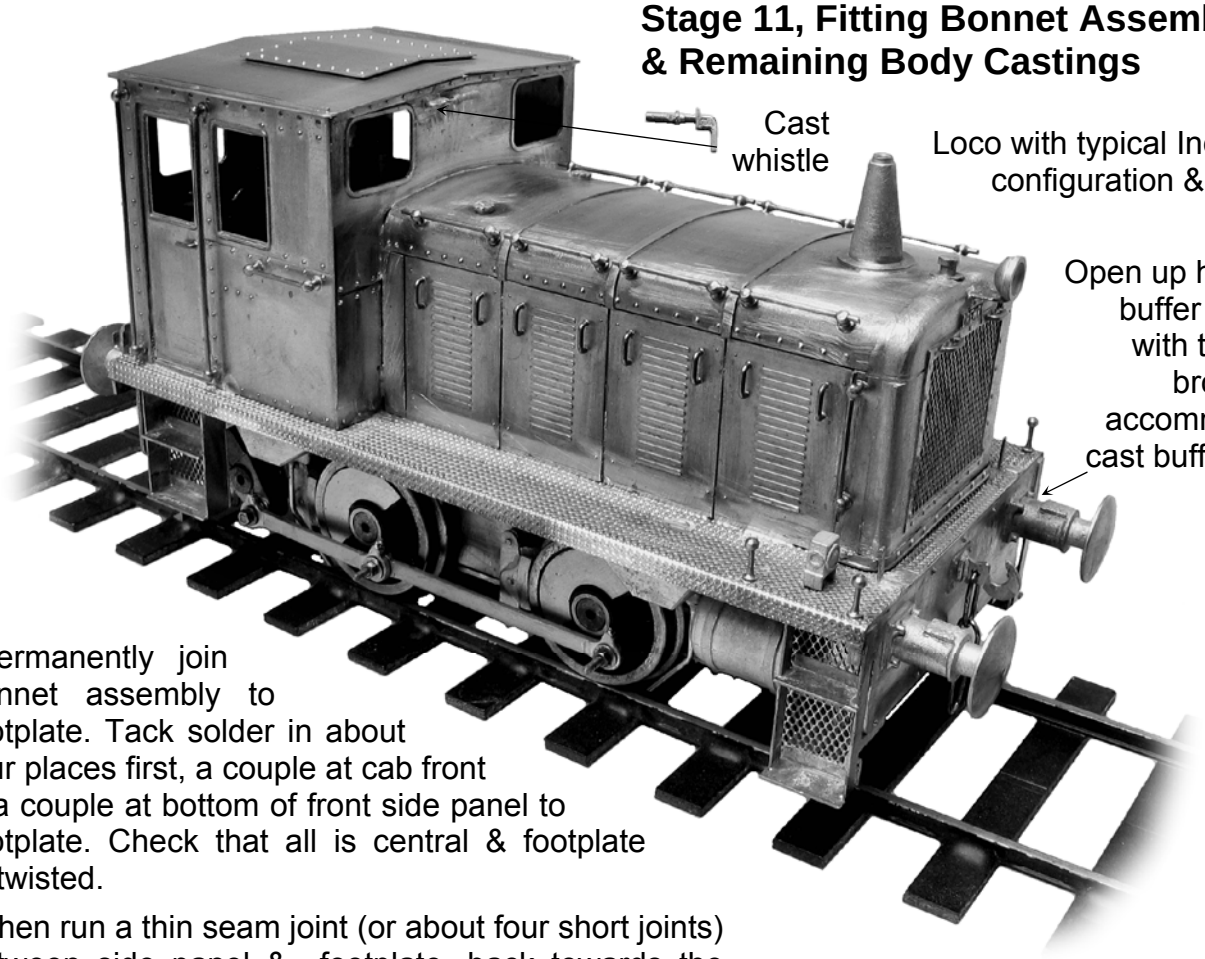
Make up the coupling links. I close up the links by holding the curved end in the jaws of round-nosed pliers in one hand and squeeze the flat parts of the link parallel with angled long-nosed pliers held in the other hand.

Once six even-shaped closed links are produced, open each one slightly & thread three together. The last link passes through the hole in the double thickness coupling hook.

I reinforce the joint of each link with a spot of 60/40 solder. Pass the tail of the hook through the buffer beam slot and then solder solid to the rear of the buffer beam. Then snip off the tail of the coupling.



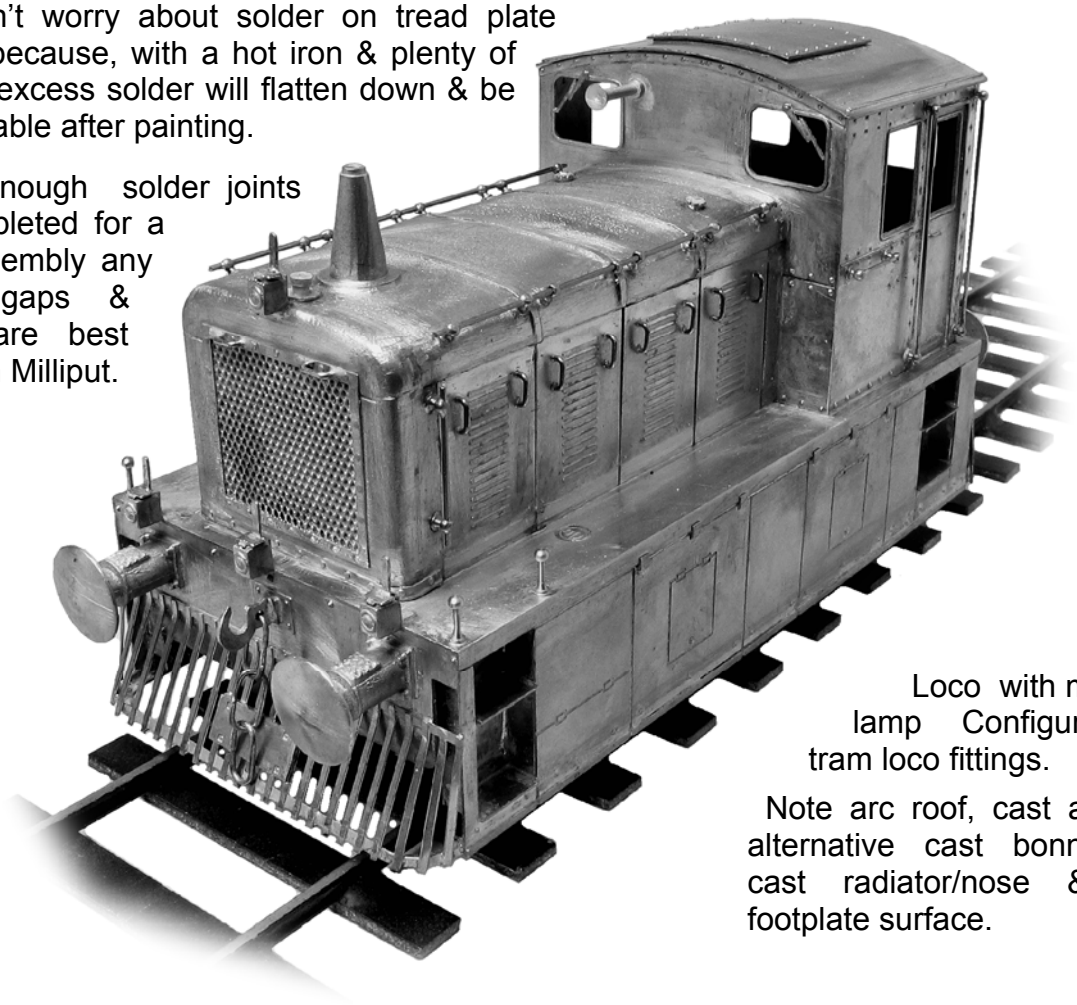
Stage 11, Fitting Bonnet Assembly & Remaining Body Castings



permanently join bonnet assembly to footplate. Tack solder in about four places first, a couple at cab front & a couple at bottom of front side panel to footplate. Check that all is central & footplate untwisted.

Then run a thin seam joint (or about four short joints) between side panel & footplate, back towards the cab. Don't worry about solder on tread plate surface because, with a hot iron & plenty of flux, the excess solder will flatten down & be unnoticeable after painting.

Once enough solder joints are completed for a solid assembly any further gaps & cracks are best filled with Milliput.



Loco with main line lamp Configuration & tram loco fittings.

Note arc roof, cast air horn, alternative cast bonnet top, cast radiator/nose & plain footplate surface.