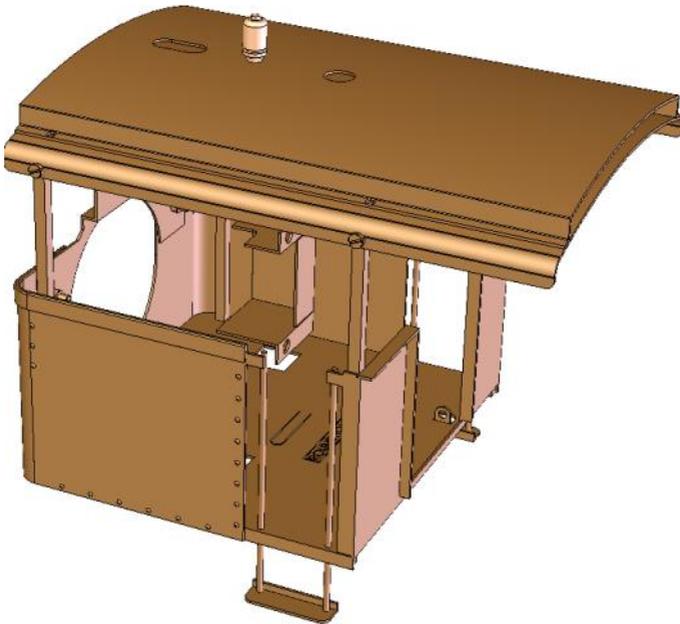




# Modular Locomotive System Instruction Manual *for* HBK22 Fowler Body Kit



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## **HBK22 FOWLER BODY KIT.**

### **INTRODUCTION**

These instructions cover the construction of the body kit intended to fit the Fowler chassis and boiler kits.

All parts are included to build the locomotive as a manual controlled 'Fowler', without a tender. The tender is available as an optional kit if required.

The brass panels are photo etched to shape and all fold lines and holes are etched into the parts where necessary.

Only a minimum of cleaning up is required and will normally simply mean running around the edges with a small file or emery cloth to remove any sharp edges or 'pips' that may be left due to the photo etching process.

As a general rule, all folds should be 90 degrees with the etched lines on the inside of the angle except if specifically stated otherwise.

The kit is designed for either manual or radio control operation and all fixing holes are provided for both versions.

The panels have been designed for assembly with soft solder, however, if preferred holes can be drilled at the joints and small rivets or screws used. If soldering, a small to medium butane blowtorch is ideal, as the large areas of brass work will dissipate the heat of a soldering iron too quickly unless a very powerful one is used. Use a suitable flux with the solder, Bakers fluid being particularly good, though extreme care must be taken during use.

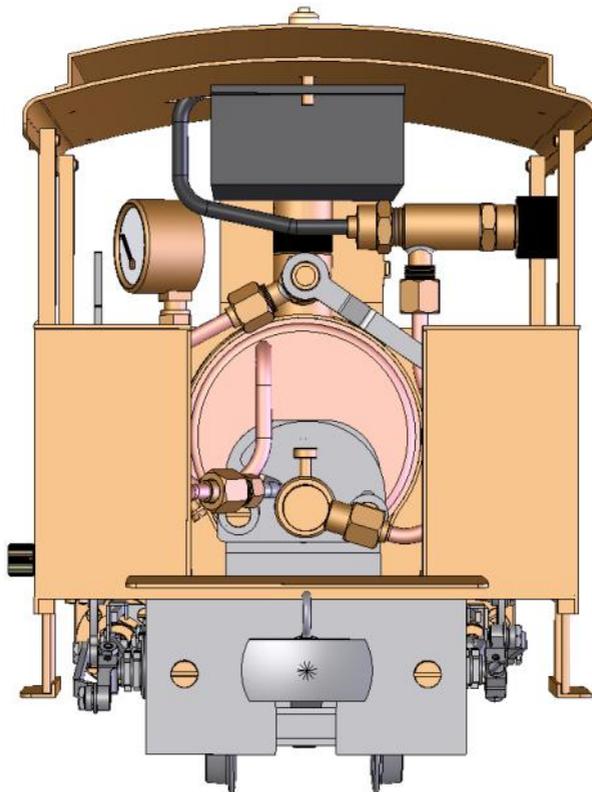
Follow the manufacturers instructions on the packaging of any solder, fluids or glues at all times. Glue of any kind is not suitable for the main structure, but is required for the headlamp lens.

Refer to diagrams where necessary and hold parts together with

small clamps such as toolmakers clamps or miniature G or C clamps, during soldering or drilling of joints. It is advisable to run through the full instructions identifying all parts and mountings and have a 'dry run' before soldering anything in place.

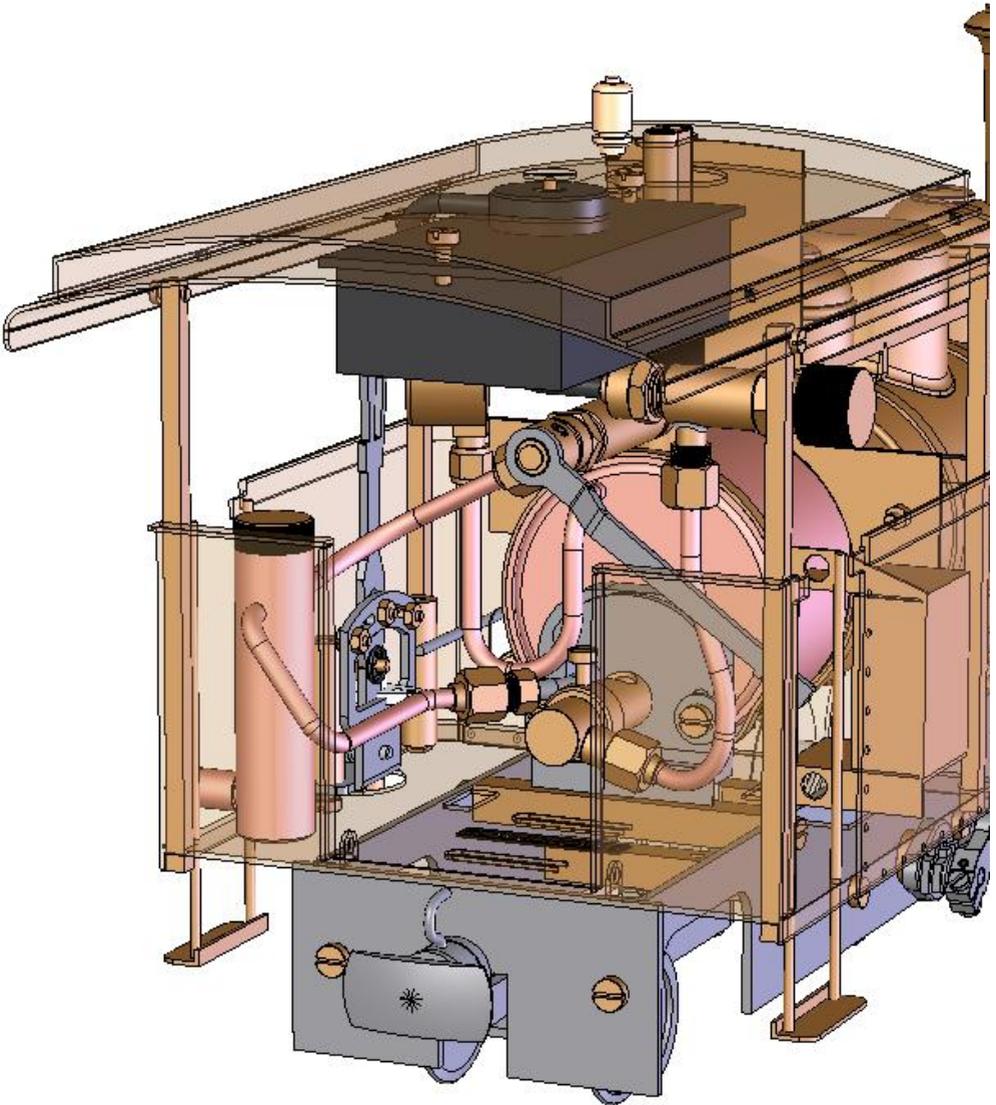
All painting is left to the builder and Acrylic paint is readily available in spray cans for a good finish. A good primer is essential and if available an etch primer should be used on brass parts. A good model shop will stock more specialised paints and should include etch primer in the range. Read carefully and follow the maker's instructions that appear on the can before using any paint. All parts must be thoroughly cleaned and rubbed down with fine wet and dry paper prior to painting.

At Roundhouse, we paint all the domes the same colour as the bodywork.



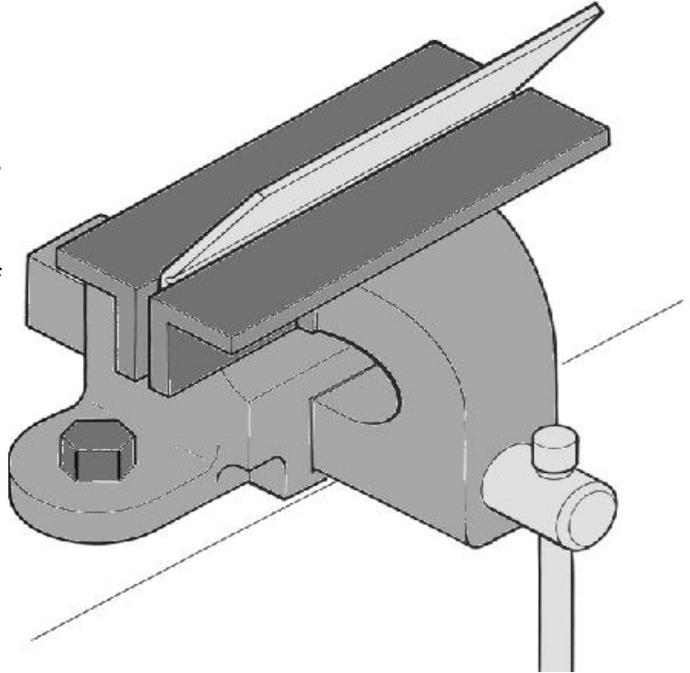
## CAB LAYOUT

This diagram below shows the layout of the cab fittings on the finished model, having previously constructed the Fowler Chassis and Boiler kits. The version shown is manual controlled.



## FOLDING LONG SECTIONS OF BRASS

When folding long brass sections such as the side flanges of the cab floor, it is better to hold the flanges between two pieces of angle iron in a vice or clamps, as illustrated below. In this way, the entire flange is bent over in one movement and results in a much neater finish.



### CONSTRUCTION.

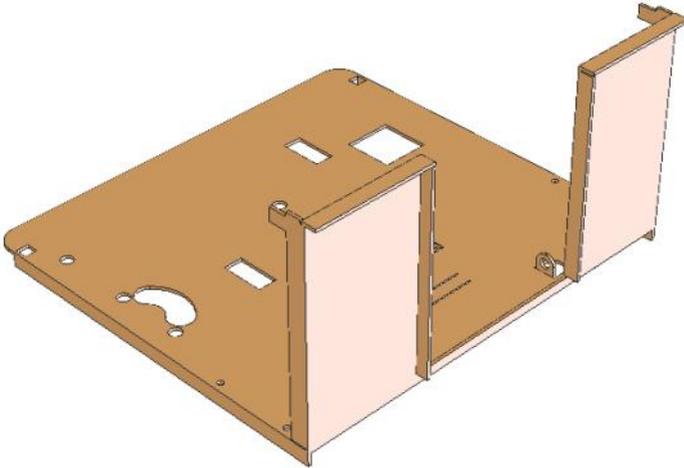
If you have already constructed the Fowler Chassis and Boiler kits, one boiler band holding the boiler mounting foot, and the boiler wrapper will already be fitted to the boiler. If the chassis/boiler is complete, it will be necessary to remove the lubricator, gas tank and gas burner.

Unscrew the two union nuts that connect the lubricator to the regulator and superheater. The lubricator can now be put to one side. Support the gas tank and then unscrew the union nut that connects the gas pipe to the gas burner. The gas tank can then be put to one side.

If the cab floor has already been fitted, unscrew the M3 fixing screw that attaches the rear of the boiler to the rear frame spacer and remove this screw and the spacer underneath. Remove the cab floor.

## CAB FLOOR

The Cab Floor needs to be folded before it is soldered to the other bodywork parts.



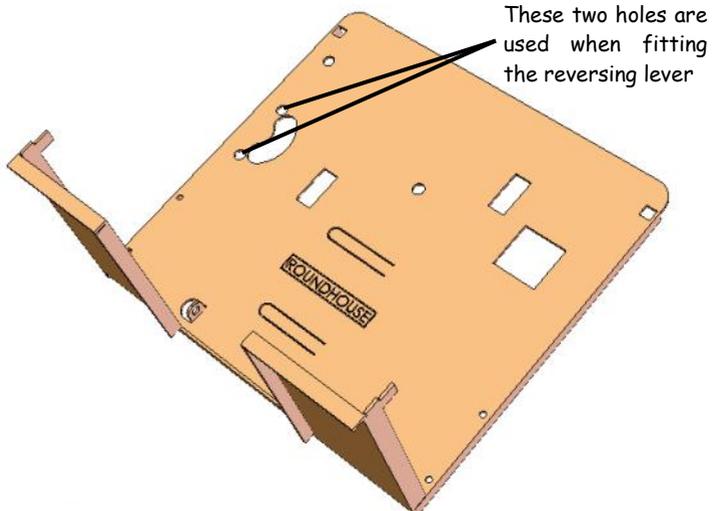
When folded into shape, the cab floor should appear as shown in these diagrams.

Ensure that the ROUNDHOUSE logo that is etched into the brass remains to the top when finished.

Fold the rear of the cab floor up 90° so the two parts of the cab back point upwards at a right angle.

The flanges running along either side of the cab floor can now be folded down at 90°.

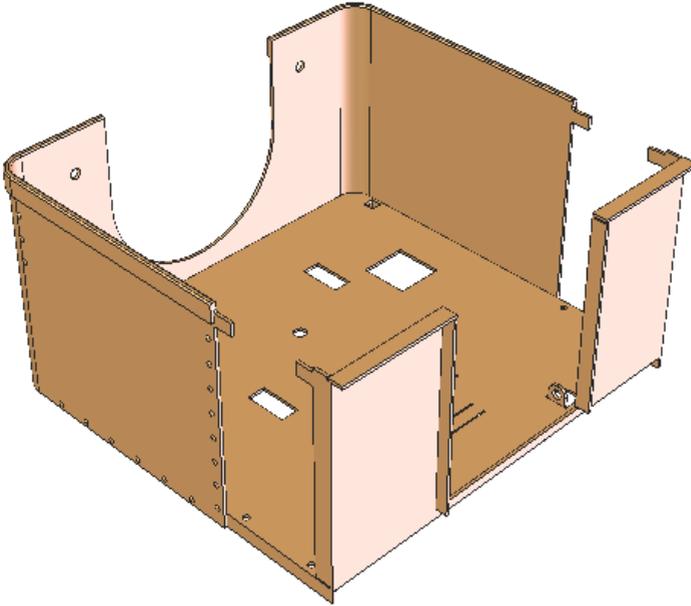
On the cab back uprights, the inner and top edges are folded backwards and the outer edges are folded towards the front



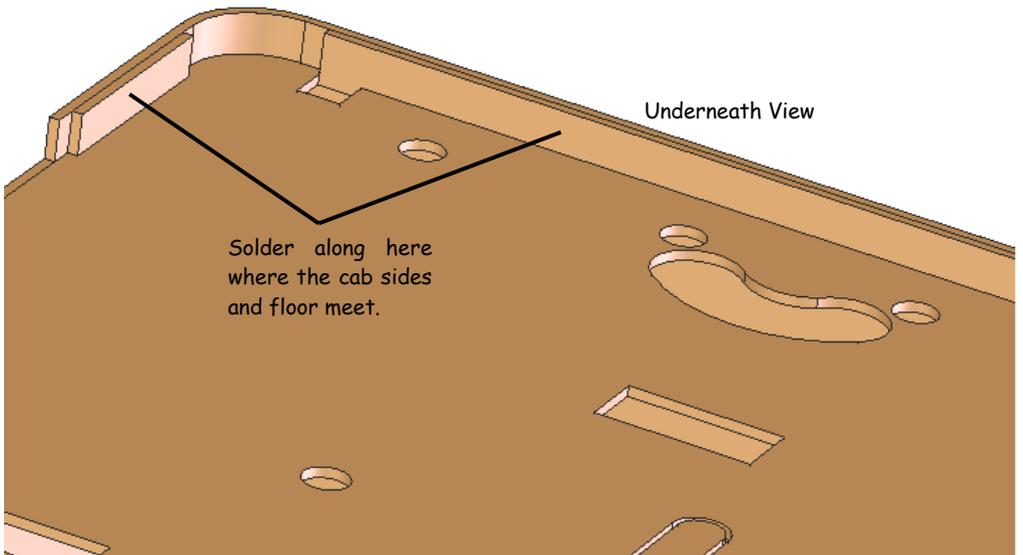
These two holes are used when fitting the reversing lever

## CAB FLOOR & SIDES

With the cab floor now folded, the cab sides need to be soft soldered to it. The cab sides are already folded into a 'U' shape. Fit the floor and the sides together as shown in the drawings below, and use some small tool makers clamps or equivalent to hold them together whilst soldering.

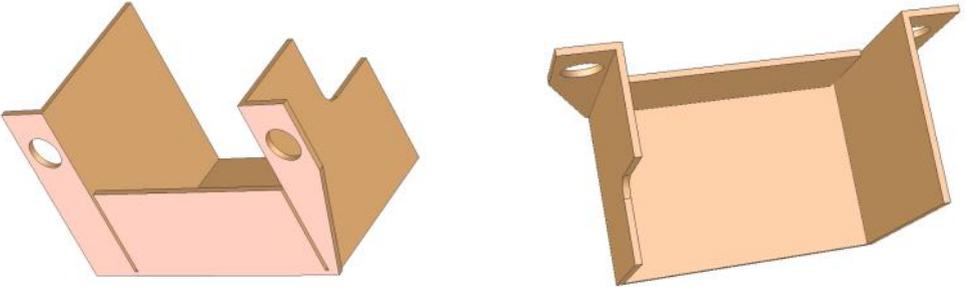


Underneath View



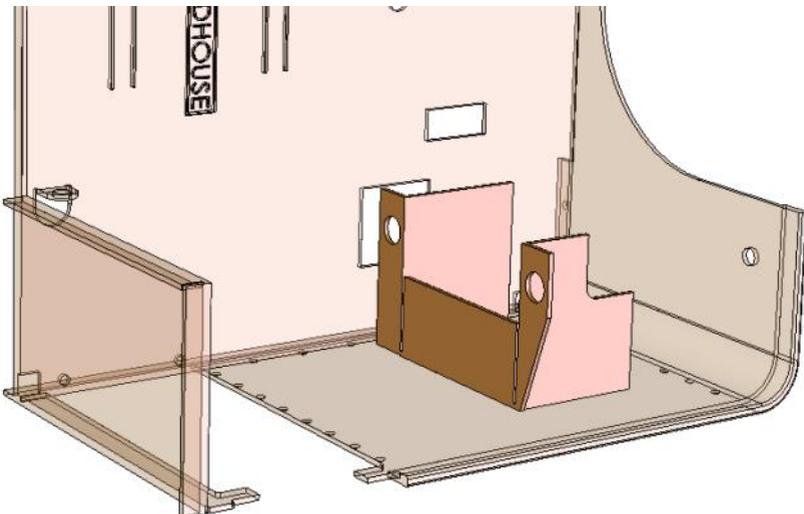
## SERVO BRACKET

Following the general rule that all folds should be 90 degrees with the etched lines on the inside of the angle, you can now fold up the Servo Bracket. The two pictures below show the folded servo bracket from different angles.



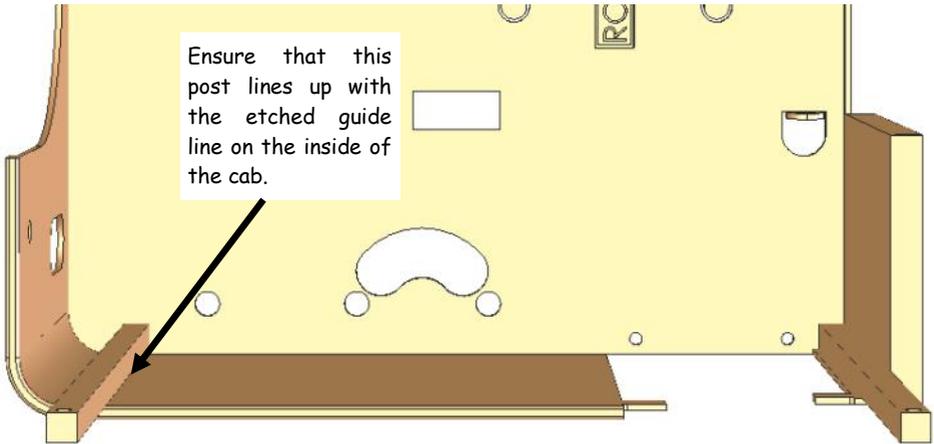
If you are intending the finished 'Fowler' kit to be Manual Controlled, then fitting of this Servo Bracket is optional. However, at Roundhouse we fit the Servo Bracket to both Manual and Radio Controlled versions of this model. This enables a Manual Controlled model to be easily fitted with R/C at a later date.

The right hand cab side has some guide lines etched on the inside face. Lay the Cab assembly down as shown below, line up the Servo Bracket in guide lines and soft solder into place. You don't need to clamp the bracket into place before soldering.

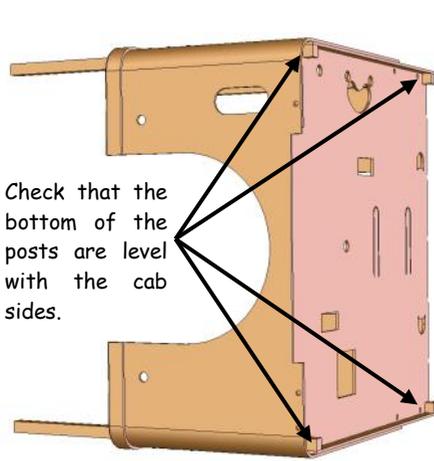


## ROOF SUPPORT POSTS

Lay the Cab Assembly so it is sitting on the left hand side. Two Roof Support Posts can then be placed into the bottom corners. The front post should line up with the etched guide line.



Make sure that underneath, where the posts push through the floor, that they are flush with the edges of the bodywork



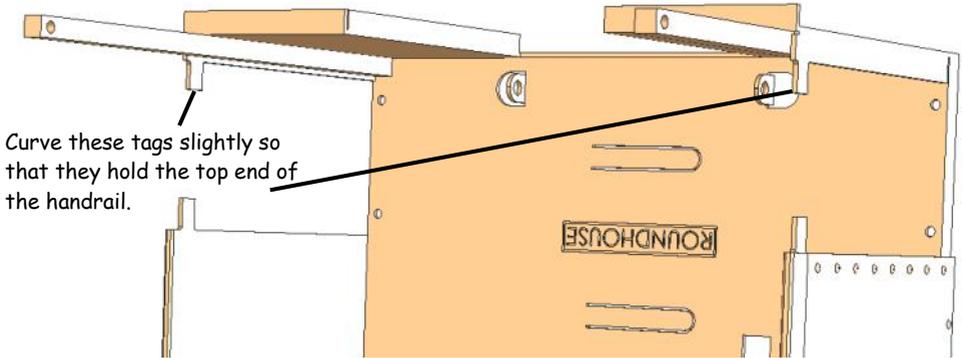
Again it is not necessary to clamp these into place. Gently soft solder the posts to the cab panels. Do not solder right to the bottom of the post - leave about  $\frac{1}{2}$ " at the bottom corner unsoldered so as not to disturb the previously soldered joints.

Rotate the assembly and solder the remaining two Roof Support Posts into place. As before don't solder right to the bottom corner.

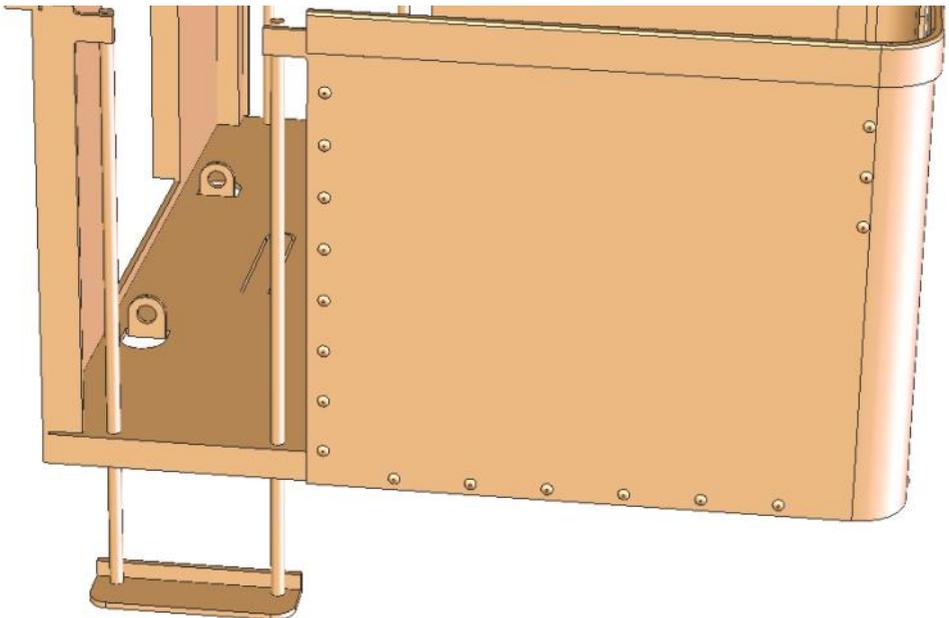
Make sure that the Roof Support Posts are positioned so that the mounting holes are facing outwards.

## HANDRAILS & CAB STEPS

A one foot length of brass rod is supplied which should be cut into four 74mm lengths. These four lengths of rod will be the handrails and cab step supports. The four tags at the top of the cab doorway should be curved in slightly - just enough to hold the handrails in place. Solder the Handrails to the tags.



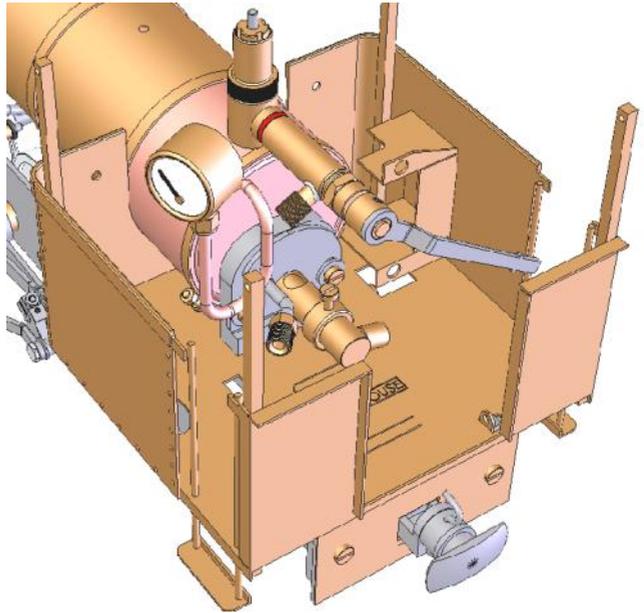
The cab steps can now be folded and soldered to the bottom of the Handrails. Make sure that the cab steps are level - any excess handrail protruding through the bottom of the cab step can be removed.



## FITTING THE CAB ASSEMBLY

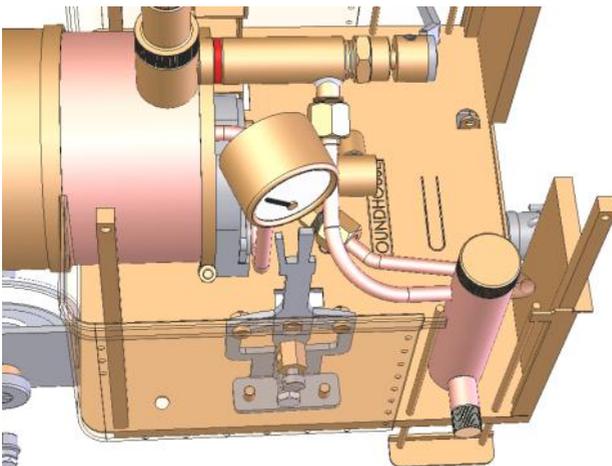
The Cab Assembly can now be fitted to the chassis. The lubricator, reversing lever and gas tank need be removed to enable the Cab Assembly to be fitted. Remove the countersunk screw that holds the boiler mounting foot to the rear frame spacer.

Slide the Cab Assembly under the boiler (it may be easier to completely remove the boiler). The hole towards the front of the cab floor should line up with the hole in the rear spacer. The countersunk screw can now be replaced through the frame spacer to hold the boiler and cab assembly in place.



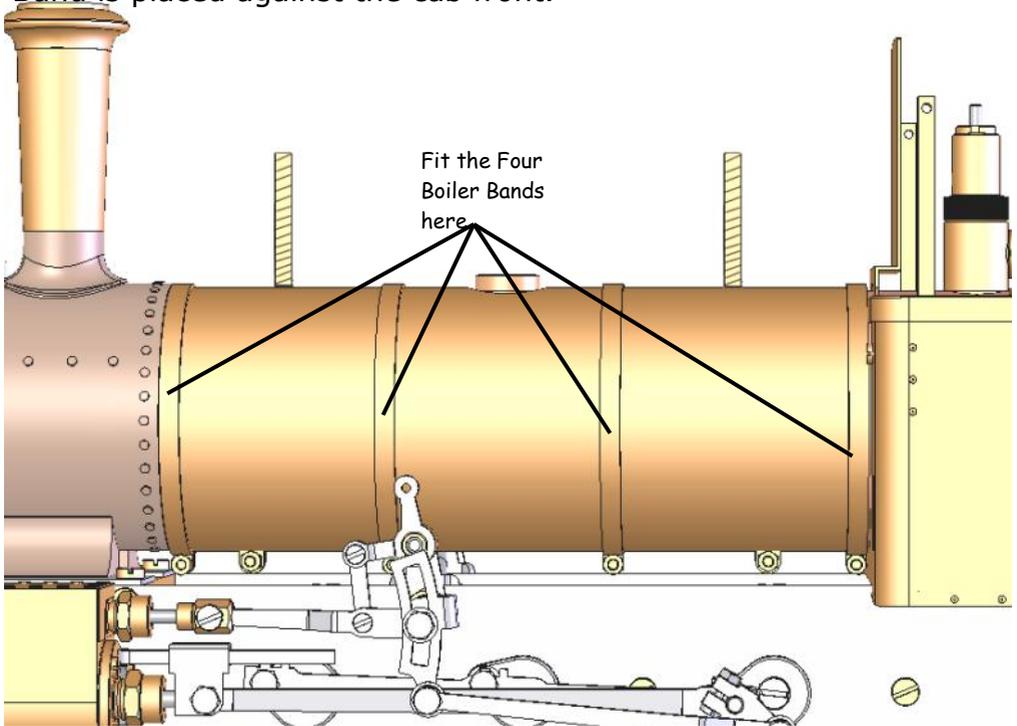
The reversing lever and lubricator now can be fitted in the cab. The lubricator connected to the steam regulator and superheater pipe as before. The pipes may need a little bending

so that the lubricator and its drain are sitting in the left hand cab doorway. The manual reversing lever is fitted as shown below, using two m3 screws from beneath the cab floor - see the drawing at the bottom of Page 6.



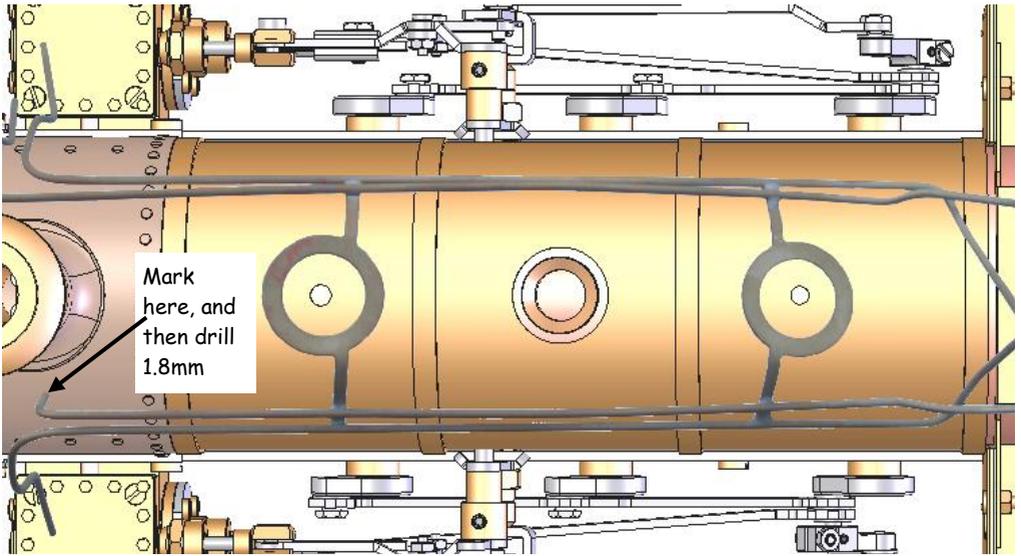
## BOILER BANDS AND PIPEWORK

The four Boiler Bands can be fitted to the boiler using the M2 Long Steel Screws & Nuts. First, make sure that the boiler wrapper is pushed forward so that it is flush with the smokebox. Check that the Boiler Wrapper is level - if not, loosen the clamp screws and adjust the position of the wrapper. The first Boiler Band should be over the boiler wrapper and touching the rear of the smokebox. The next two Boiler Bands should be equidistant between the sanding domes and the central dome. The fourth Band is placed against the cab front.



Take the pipework and place it over the top of the boiler so that the two brass support rings are central over the vertical screws. A hole needs to be drilled in the smokebox which will allow the shorter rod at the front to fit in. Carefully mark the smokebox, remove the pipework and drill a small hole in the smokebox using a 1.8mm drill.

**Please Note** - The cylinder covers shown in some drawings and photo's are available separately and are not supplied as part of the Fowler Kit.



Once the hole in the smokebox has been drilled, the pipework can be fitted. Again, place the pipework centrally over the boiler. The front most rod fits into the hole in the right hand side of the smokebox footplate whilst the two outer pipes tuck between the frames and the valve chests. Remember to fit the shortest rod into the hole that you drilled in the smokebox.



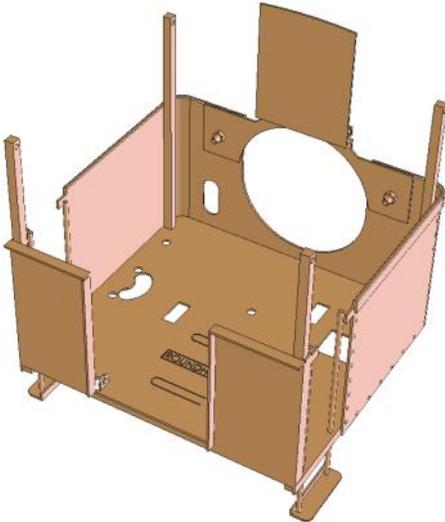
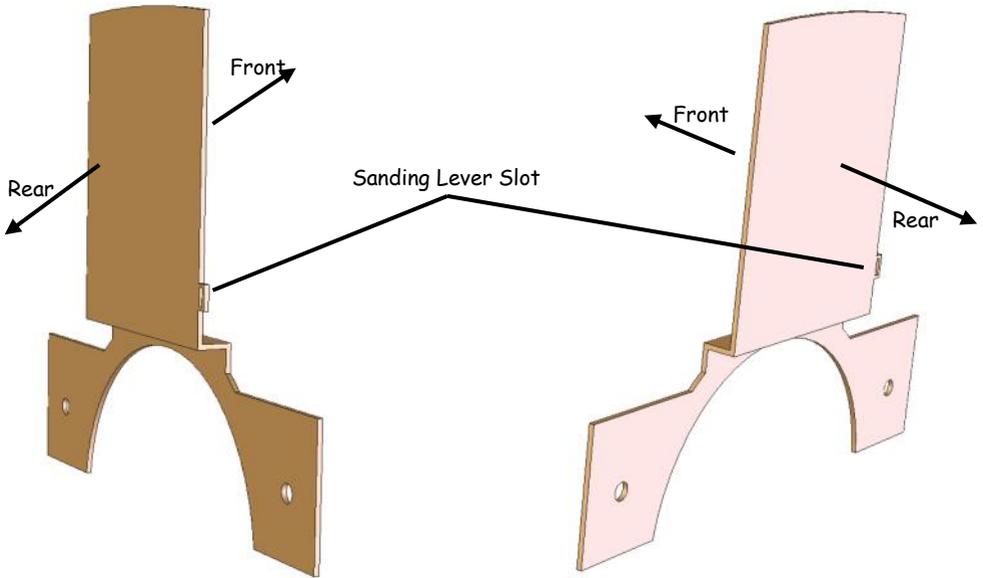
Front Left Hand side of the smokebox



Front Right Hand side of the smokebox

## CAB FRONT PANEL

Bend the Cab Front Panel as shown in these drawings. Make sure that the sanding lever slot will be on the right when fitted to the body.



The Cab Front panel can now be fixed to the body using the 2 of the M2 brass screws and nuts. Again, make sure that the Sanding Lever Slot is to the right. Leave the screws loose until we have fitted the boiler pipework.

The four rods at the cab side of the pipework fit into their respective holes in the cab front plate.

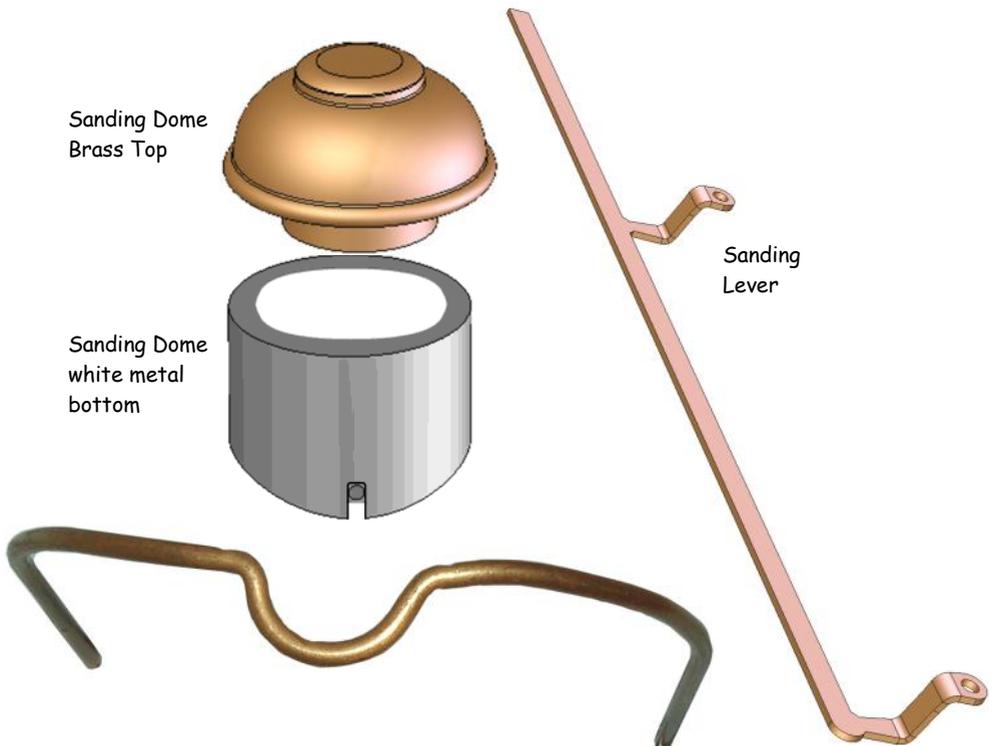


Cab front panel showing where the pipework fits.

## SANDING DOMES

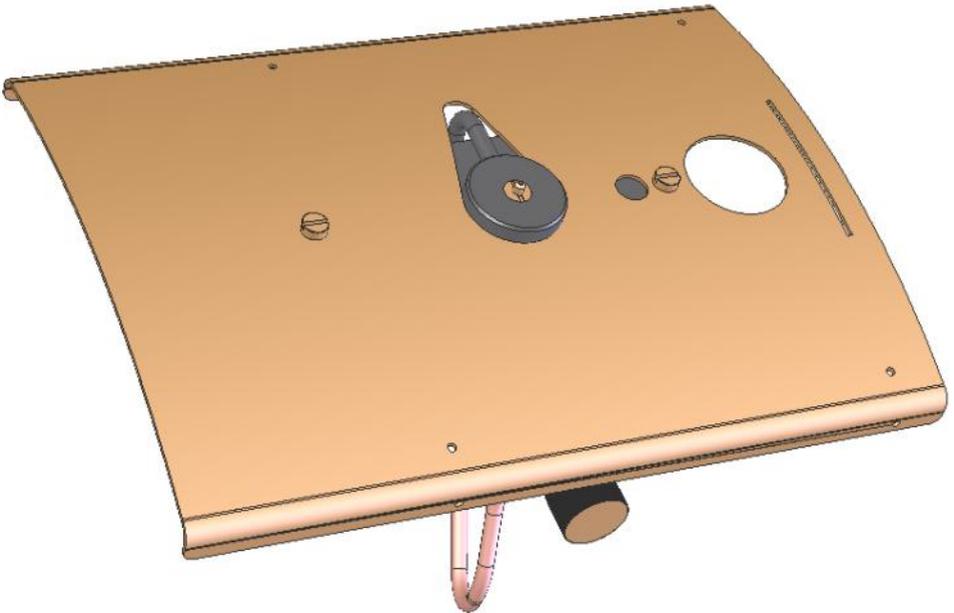
The Sanding Domes consist of three parts - a brass top, a white metal bottom and the dummy sanding pipes. First, place the dummy sanding pipes over the front screw so that the pipes are angled towards the front. The white metal part of the sand dome can now be placed over the top. Both white metal castings are identical, but they are asymmetrical - make sure that the deep cut outs sit over the sanding pipe and the shallow cut out fits over the pipework strap. The Brass top can now be screwed onto the boiler wrapper screw. It should tighten up and hold the bottom part of the dome and the sanding pipes firmly to the boiler. If it doesn't tighten up, then the screw may need a few threads removing. Repeat for the rear sanding dome.

The last part of the boiler 'decoration' to be fitted is the Sanding Lever. First, carefully bend the Sanding Lever brackets as shown below. We now need to drill a small hole in the side of the Sanding Dome. Use a 1.8mm drill and fix the lever with the steel self tapping screws.

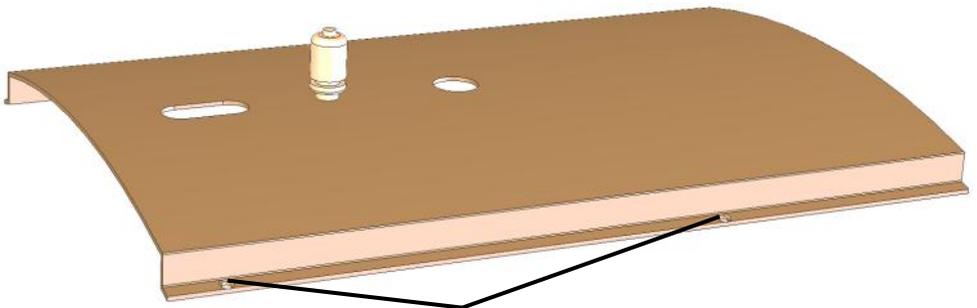


## FITTING THE GAS TANK AND ROOF

The roof is in two parts, an upper and a lower part. The gas tank is fixed to the lower part of the roof using two M3 screws.

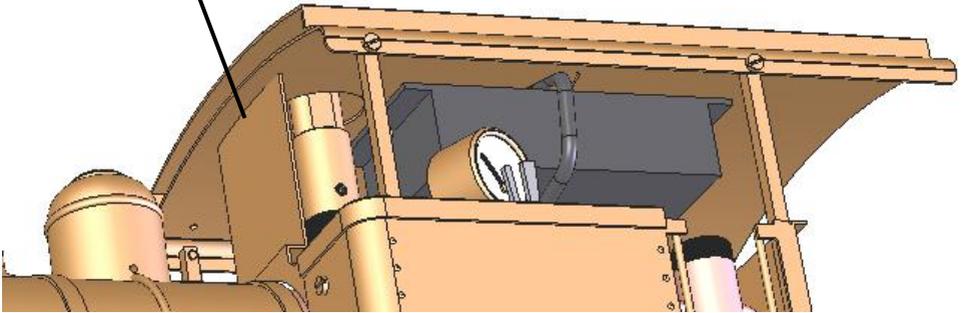


Fit the Dummy Whistle to the upper part of the roof using the screw supplied. Then fit the upper roof to the lower roof using the four 10BA screws and nuts.



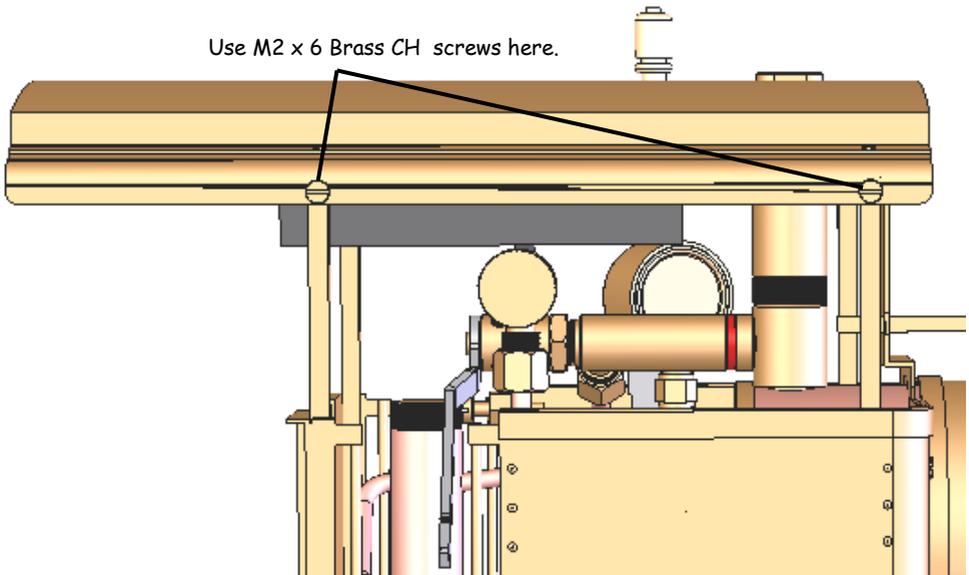
Use 10BA screws here

The complete roof with gas tank and dummy whistle can now be fitted to the cab. Make sure that the safety valve cover is fitted over the safety valve and that it is aligned correctly. When fitting the roof, guide the cab front panel into the slot in the lower roof.



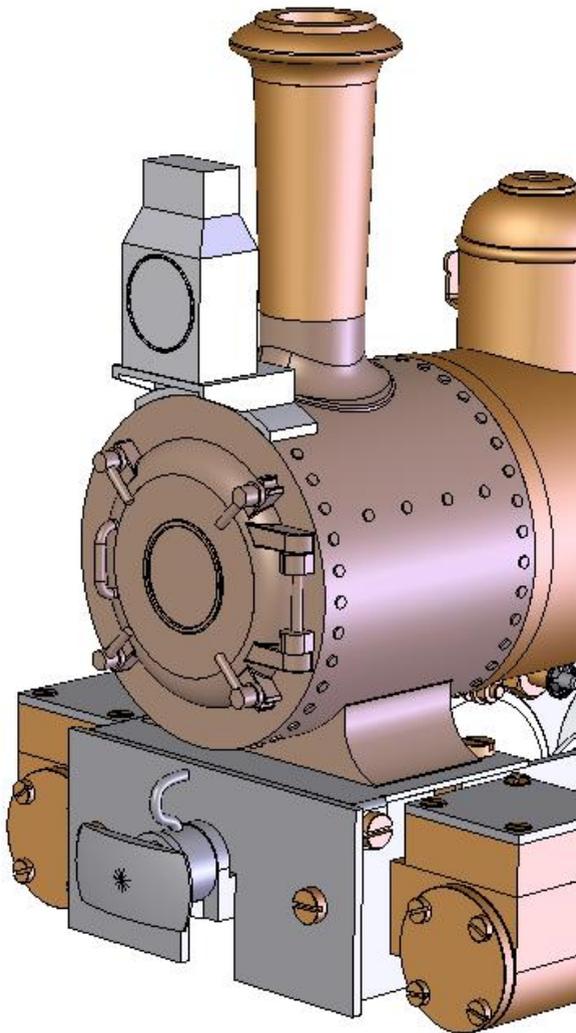
Now refit the lower part of the gas pipe to the gas jet holder. Ensure that this is fully tightened up.

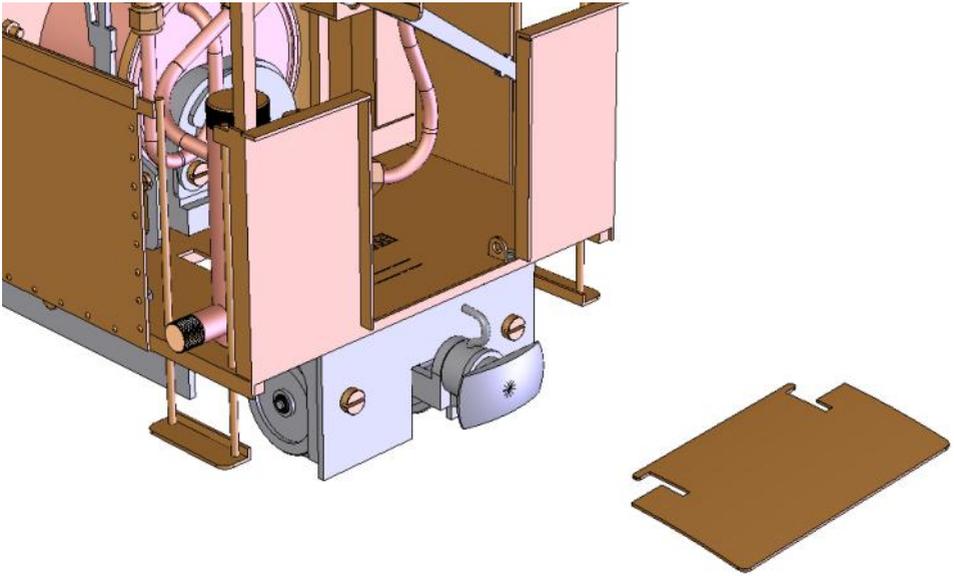
The complete roof may now be attached to the roof mounting posts using four of the M2 x 6 Brass CH screws.



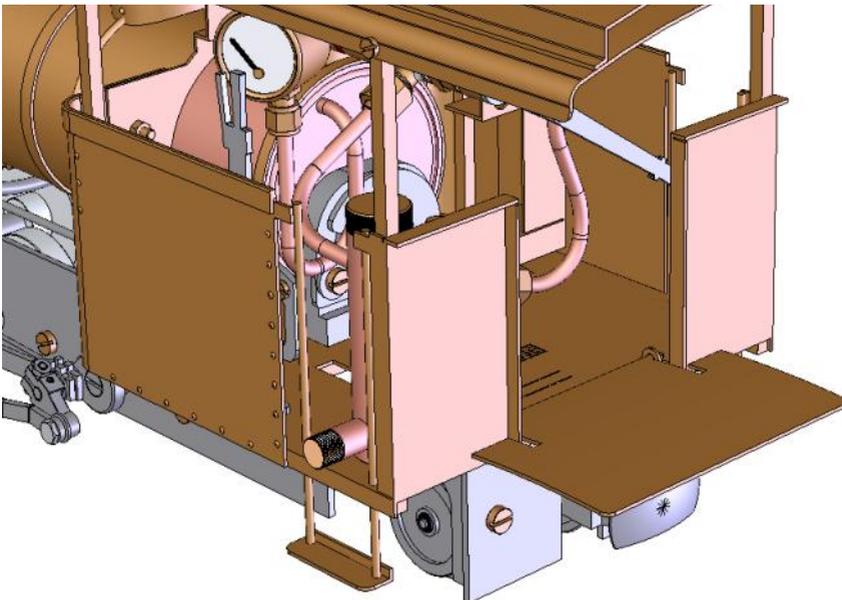
## DUMMY HEADLAMP

All that remains now is to fit the Dummy Headlamp to the front of the smokebox. The headlamp lens needs to be glued into the recess at the front of the headlamp. Check that the lens fits snugly into the recess - if not you may have to remove a little of the metal with a knife or small file. Push one of the M3 x 6 brass CH screw through the hole at the rear of the headlamp and screw into the tapped hole at the front of the smokebox.





Include with this kit is the Rear Cab Plate. If you decide to build and fit the optional tender, the rear cab plate can be fitted. At the rear of the cab floor are two tags. These can be bent upward and inwards to clasp the edges of the plate.



# Fowler Body Kit

## HBK22

### CHECKLIST

Roof - Upper  
Roof - Lower  
Cab Floor  
Cab Sides  
4 x Boiler bands with M2 Long Steel Screws & Nuts fitted.  
Cab Front Panel  
1 ft of Brass Handrail Rod  
Boiler Pipework Assembly  
2 x Brass Dummy Sanding Pipes

1 x Safety Valve Cover with grub screw fitted.  
1 x Filler Dome  
2 x Brass Sanding Dome Tops  
2 x White Metal Sanding Dome Bottoms  
1 x Headlamp Casting  
1 x Lens

1 x Sanding lever  
1 x Rear Cab Plate  
4 x Roof Support Posts  
1 x Servo Bracket  
2 x Cab Steps (etched brass)  
1 x Brass Dummy Whistle with screw

4 x 10BA Screws & Nuts  
3 x M3 x 6 Brass CH Screws  
2 x Steel Self Tapping Screws  
6 x M2 x 6 Brass CH Screws & Nuts

*Checked*