

**I DO NOT recommend the use of a blow torch to build this model.**

**This body kit is not a hard kit to build, in some respects it is easier than most brass body kits on the market due to its extensive use of fold lines and large parts. However, it is not a kit that I would recommend to a beginner. I will offer very few tips, as most modellers have their own techniques and way of doing things.**

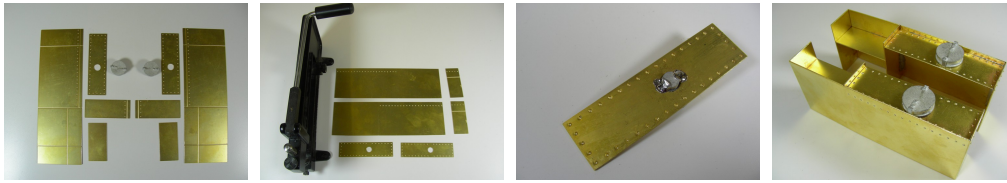
**I would offer the suggestion of using an 80 Watt soldering iron, Barrie Stevenson liquid flux 9%, (available from Eileen's Emporium). I DO NOT recommend the use of a blow torch to build this model.**

**Metalsmith make a very good rivet press for 16mm that is perfect for this kit, but please make sure that the tip supplied is 'dull'. We have had reports of tips that have a sharp point. If your tip is sharp, please dull it off with a fine grinding wheel in a Dremel and polish with fine wet and dry paper.**

**You do not need to make the body with rivet detail if you do not want to, this kit just offers the option. If you do not want the rivets, don't press them out. It will not affect the look of the model, as the rivet etch is always on the inside of the panel and will not be seen if it is not pressed.**

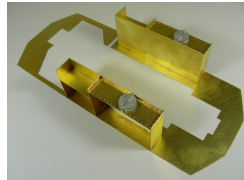
**1.**

**Select the bunker parts and clean up the 'tabs' (as for all parts). Press the rivets out. Don't bother with the four rivets directly in line with the water filler, as they are covered, (get in the way) of the filler. Solder the filler caps into place, taking note that the hinge side points into the loco and the bunker tops are positioned with the hole closest to the front of the tank, (smoke box). Study the fourth picture in step 1 closely. If you get the bunker tops the wrong way around, the water fillers will not be in the middle of the windows when the sides are on.**



**2.**

**Solder the tanks onto the chassis using the half etched lines.**

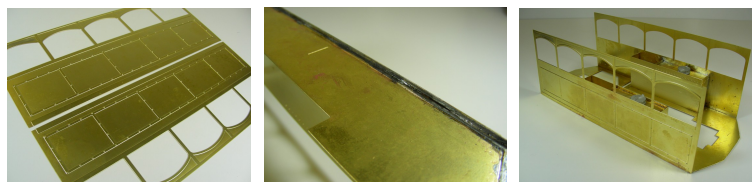


**3.**

**Press the rivets out on the body sides, making sure that you don't miss any!!**

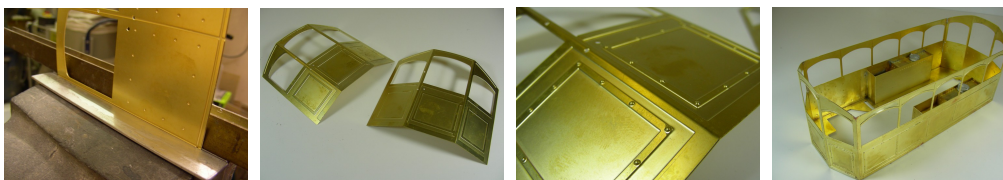
**They are a total pain, (sometimes impossible) to press once the side is soldered on. Place one side in the half etched groove along the inside bottom edge and solder the side on along the underside edge and around the tank.**

**Repeat for the second side.**



**4.**

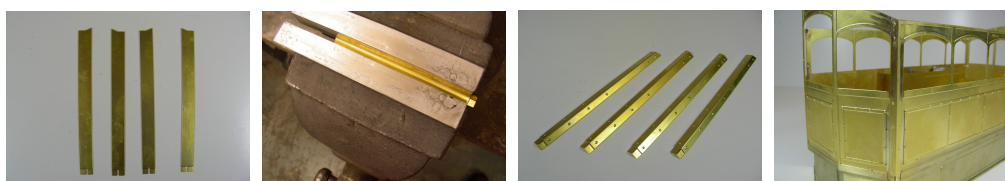
**Place two VERY sharp, square and flat lengths of angle in the vice and clamp an end between the angle, so that the fold line is exactly on the corner of the angle, see pic 1. Clamp the jaws up tight. Place a VERY square, strong and flat bar behind the fold line tight down on the angle. Holding the bar VERY firmly, start to bend the brass end over to form a shallow angle. It is very important to keep the bar you are using to form the fold tight down, with as much force as you can. By pushing HARD with the bar you are using to form the fold, the window bar will bend along with the rest of the brass. This way you will get a clean fold. Bend a little at a time and offer up the chassis plate to gauge the angle until the angle is correct. Press the rivets out on the body ends, making sure that you don't miss any!! They are a total pain, (sometimes impossible) to press once the end is soldered on. Solder on the ends in the same way as the sides, but placing some small solder 'tacks' down the inside corners. You will only need 'tacks' at this point.**



5.

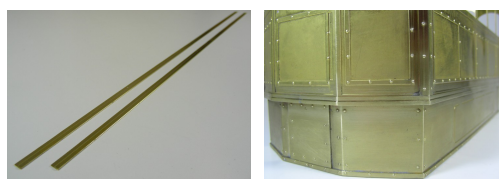
In my excitement, I rushed ahead at this point and put the skirt on. In hindsight, it would have been best to put the corners and body lower stripping on first. Don't worry when you see the skirt attached in the following pictures, you have not missed a step. The skirt steps will follow next.

Cut out the four corner strips. Place in the vice with perfectly flat soft jaws, (I used alloy angle) and apply pressure until the strip starts to bend. The strip should bend so that the half etch line is on the inside. Keep a close eye on this, and make sure the bend starts to form correctly. If it shows any sign of going the wrong way, remove it and start by hand, then back to the vice to finish. It is best to fold a little at a time until the corner strip is a perfect fit against the relevant body corner. Press the rivets after folding. Solder into place.



6.

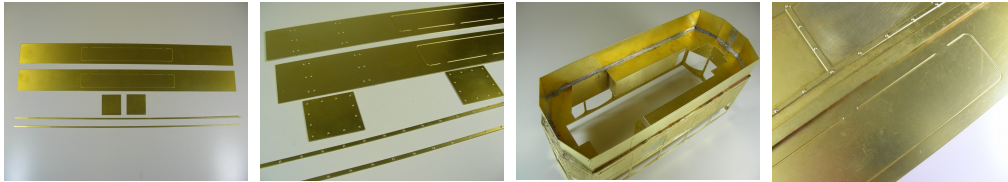
Solder the two lengths of half etched lower body trims onto the bottom edge of the body. You can simply fold and solder the first one in place. The second one will need trimming on the ends, as it has been left a fraction long to ensure a nice tight fit with no gap. Fold the second one and clamp it in place to the body and solder from the middle outwards. When you get to the last straight, it is at this point you can trim it to length with a dremel or small sharp file. Solder these trims from the bottom edge, not on the body side. This will give a much cleaner finish, needing little or no cleaning up.



7.

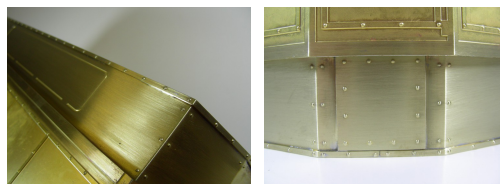
Now, it's time to fit the skirt! Find all the skirt parts, and rivet them. Fold up

the two main sides and solder one into place using the half etched groove on the under side of the chassis. Make sure the hinge gaps are at the top of the skirt. Offer up the second skirt, and trim the ends with a dremel or sharp file until it fits tightly into place, then solder.



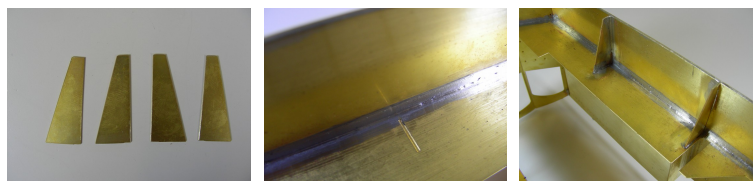
8.

From the bottom edge, solder the lower riveted strip. Place the buffer plate central on the end middle panel and solder into place.



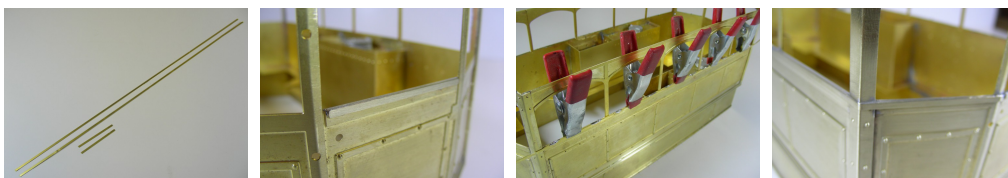
9.

Solder the four skirt pillars into place using the half etched guide lines found on the chassis.



10.

Carefully cut out the four window strips and solder the short one onto the bottom of the front window. With small cramps, cramp a long side strip in position. Spot solder all the way along. Remove the cramps and finish. Take care around the corners and the very last 1mm that wraps around the front panel.



11.

Carefully cut the six short and two long window support rails, as well as the three roof cross members. Solder the window rails into place. Solder two roof cross members against the end panels so they are in perfect alignment with the roof line of the end panels. Solder the middle cross member into

place on the second window bar back from the front above the water tank. Make sure it is in perfect alignment with the roof line of the end panels and other two roof cross members.



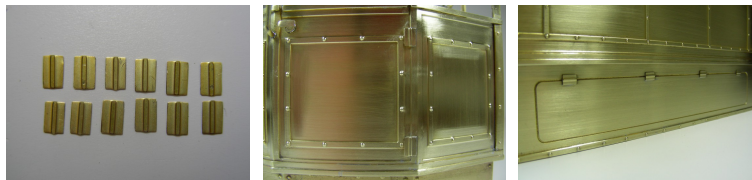
12.

Solder the door 'T' handles into place on the end panels. Cut and bend the brass wire to form a hand rail, and solder into place on the end panels.



13.

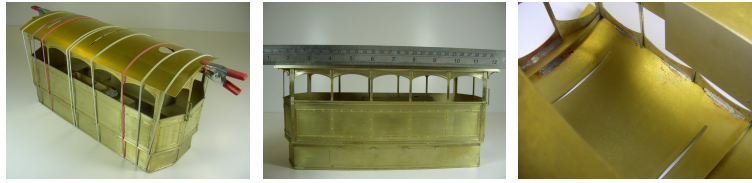
Cut the twelve hinges out using a sharp knife. It is very important to use a sharp knife, as a slitting disc in a Dremel will produce a very unwanted vanishing act on the hinge you are 'trying' to cut out! Solder the hinges onto the front doors and skirt panels.




14.

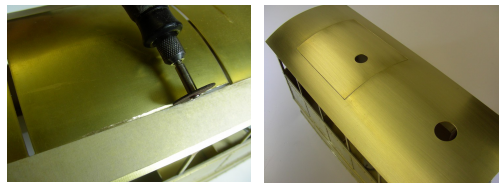
Double check that all the cross members and end panels are perfectly flat with a steel rule. The main roof, (and inner roof hatch) comes pre-rolled in this kit, but just spend a few seconds making sure it is a perfect fit. Hold the roof down with elastic bands and a small cramp on the ends. Spend some time adjusting the roof so that all the overhangs are perfectly equal. When you are happy the roof is in place, run a solder line in the middle of the end panels to 'fix' the roof. Remove all the elastic bands and solder above each window one at a time. It is hugely important that you check that the roof is soldering flat every time you put a run in. Keep offering up a steel rule about 10mm in from the edge. The trick is to keep an even roof overhang all the way along the side. The roof MUST be soldered flat, otherwise the roof fence will be impossible to fit nicely as there will be ugly gaps under the fence.





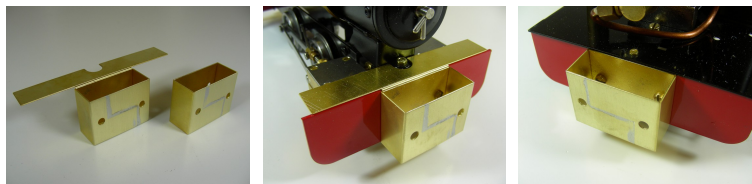
15. 

Run a piece of masking tape across the ends of the slits on the rear of the roof. With a Dremel slitting disc, carefully and slowly cut across to remove the waste panel. Clean up the edges with a sharp small file until the 'proper' inner panel fits with only the slightest sideways movement.



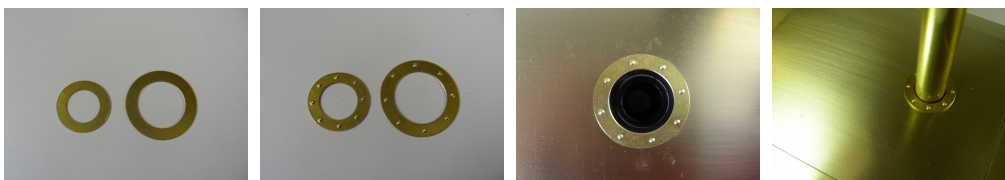
16.

Fold up, solder and fit the buffer blocks onto your Bertie. The front holes are for a screwdriver.



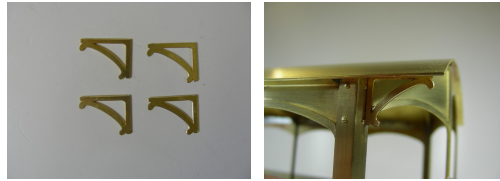
17.

Cut out and press the rivets into the roof rings. Bend into a slight curve to fit the roof. Fit the Tram body onto your Bertie. Position the front ring perfectly over the chimney and mark with tape on all four sides. Drop a length of the brass tube down onto the safety valve and then the smaller ring over that onto the roof, and mark in the same way as the chimney ring. Remove the body and solder into place.



18.

Cut out and solder the four roof supports. Take note that the long side goes on the roof.

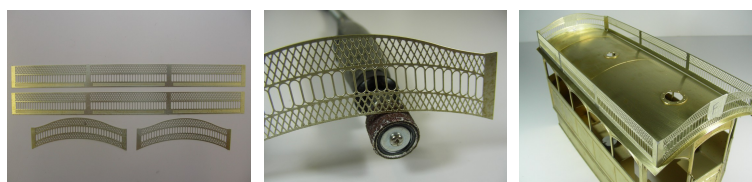


19.

Carefully nip out the nickel silver fencing. Label the two end panels with 'F' (front), 'R' (rear). These will be your reference markers. Offer 'F' (with 'F' facing out) on the roof on the front end. The front end is the end where the smoke box will be, (thinnest gap on the chassis). The two curves should be very close, but you need them perfect and they must touch 100% on the end tips. Carefully, slowly and a small bit at a time, remove excess nickel with a drum sander on a dremel set to a medium speed. When 'F' end is finished, do 'R' end. It is important that you keep your reference marks pointing out and always on the correct ends. Once you are happy, put a small touch of solder on each top corner of the fence to just hold it together. Don't go mad, you're only looking to hold it together, there is no need to 'finish' solder the joint at this point. You must make each corner touch and solder in this way, so that you create a small internal right angle. Do not simply butt solder the fence edges. When you are happy all is correct and square, spot the underside of the corners and file any excess solder off, so that the underside is lump free.

With a vernier gauge, gently scribe a line set to 3mm on the front and rear edge of the roof. These will be a guide line for the position of the end fences.

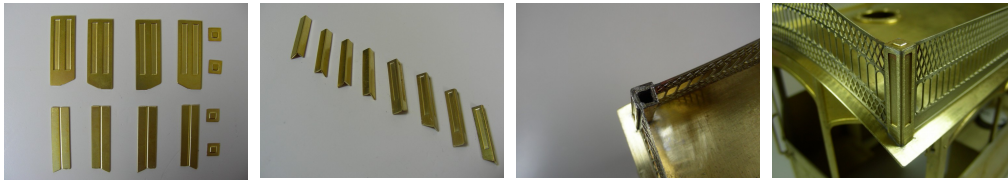
Set the fence perfectly evenly on the roof and hold on with masking tape. Spot solder just a small section of the middle of the end fences. You are only looking to hold the assembly into place.



20.

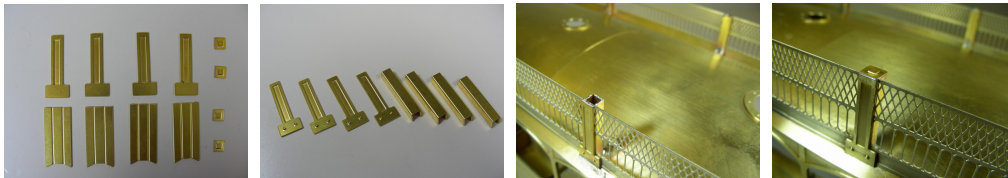
Remove all twelve corner fence post parts. Using the same technique as you used to fold the end panels, fold these parts as needed. Place an outer and inner part into place and solder. Clean up the excess solder and solder on the cap. Repeat for all four corners. Make sure that the side fence stays straight and does not bow outwards. If you do get 'bowing', pull the fence close to the corner with your fingers and apply heat with your iron to the roof corner.

This will melt the solder on the bottom of the post, and because you are pulling the side fence, the corner will move outwards a fraction. Remove the heat and keep pulling until the solder solidifies.



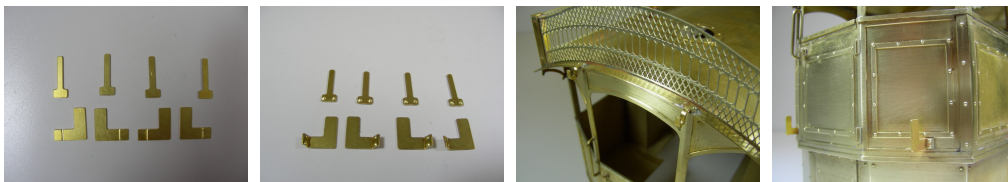
21.

The fitting of the side fence posts is very much like the corners. Just remember not to add too much heat and keep the posts vertical.



22.

Press the rivets and fold the lamp iron brackets. Solder the 'T' shaped lamp brackets onto the roof in line with the window posts. Bend them into a 'U' shape, but make sure you make the first 90 degree bend about 1.5mm off the roof edge. This is to give clearance for the lamp. Solder on the lower lamp irons if you want them and in whatever position you feel is right.



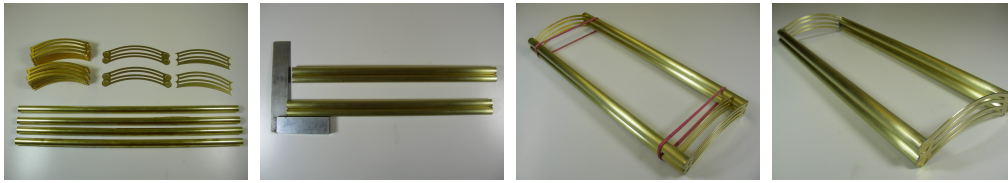
23.

Please note,

There are three types of etched cross tubes, x2 end tubes, x2 extended tubes for the roof hatch and the rest are the same standard tubes.

Solder two tubes together so that they are dead flat and square, then the other two. Don't go mad, you only need to hold them together. Tack solder one etched end tube on as accurately as you can. Insert two standard cross tubes, one at each end and hold in place with elastic bands. Readjust the end you have soldered until it's perfect. The bands will want to pull the tubes into the correct position when heat is applied to one of the tacks. Once the first end is finished and the standard cross tube is a perfect fit, solder the other end tube etch on with the standard cross tubes still in place with bands. Make SURE that the whole assembly is FLAT. You can test this by placing it on the roof of the tram. There must be NO wobbling of the assembled tubing.

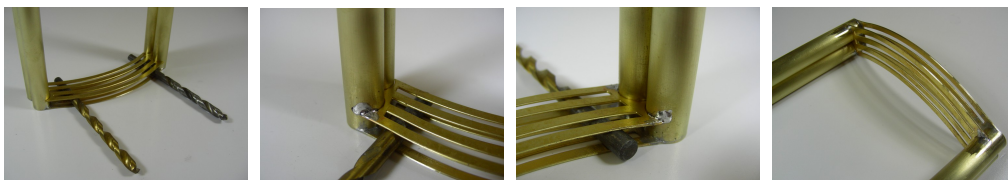




**24.**

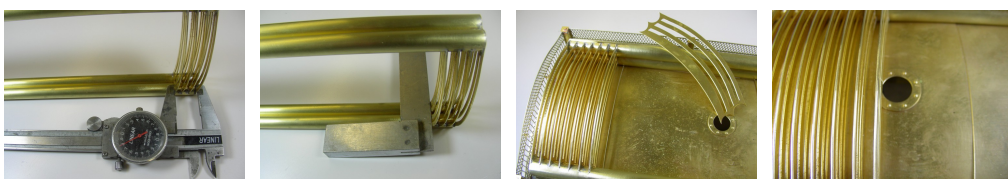
**This is the fun bit, honest, the fitting of all those cross tubes!**

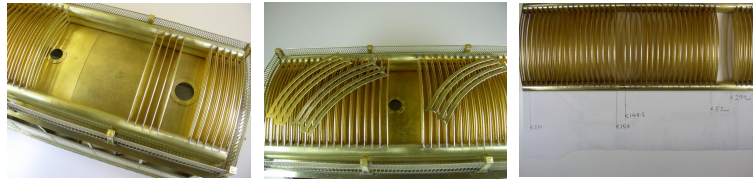
**Place two 5mm drill bits onto the end tubes spread as wide apart as they will go, then place a standard cross tube onto them. Apply a dot of flux and get a spot of solder onto the two top edges of the cross tube while pushing down with your fingers for a tight fit. Then do the same for the bottom edges. Don't go mad with the solder, as it's just more work to clean it up, and with over 40 to do, you don't want to be doing more than you need to! Once you have soldered the four points, just a few strokes with a small sharp file should be all that is needed to clean up and move onto the next cross tube.**



**25.**

**After every three or so, check the distance with a gauge and also check for square, 'tweak' as needed. You must be very accurate when checking, as a little here and there will add up to a huge amount that is hard to correct further down. Work from the rear, when the first cross tube that crosses the inner roof panel is ready to go in, fit a 'full depth' cross tube, then stop at the safety valve. Work from the front and stop at the start of the chimney ring. Start again at the same point on the other side of the chimney ring and keep going until the first cross tube is over the inner roof panel. At this point, like the last one, fit a 'full depth' cross tube. When you have only three or four cross tubes left to fit, put them all in at once, as it will be impossible to finish fitting them one at a time. If you have your measurements correct, you should be still able to have a 5mm gap and finish perfectly at the safety valve hole. If not, you can space the loose remaining cross tubes out and then solder to finish.**

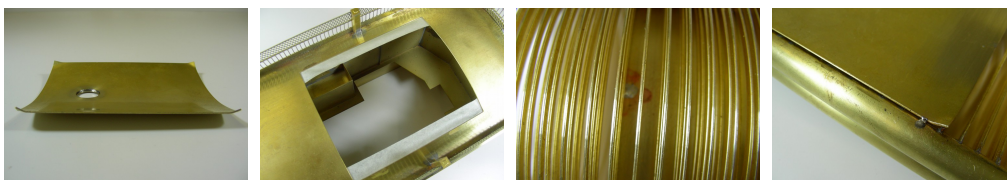




26.

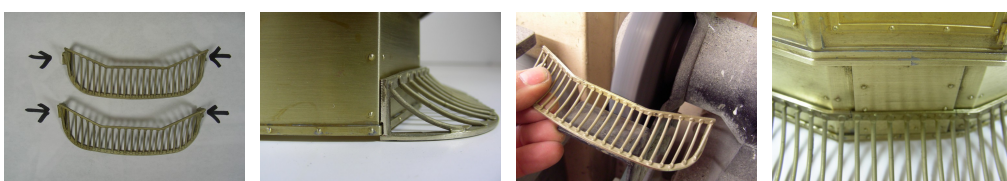
Test fit the inner roof and adjust if needed so it is a perfect fit. Turn up the four corners of the inner roof a little. Run tape along the side edges of the opening. Place the inner roof into place. Position the cooling assembly into place making sure it has an even spacing all the way around. Apply a little flux onto the inner roof and 'full depth' cross tubes in the middle. Tin your iron and place the iron in the middle of the under side, directly under the 'full depth' cross tube. Allow the heat to build up and then put a dot of solder onto the joint, so the inner roof becomes attached to the 'full depth' cross tube. Do the same for both 'full depth' cross tubes. Remove the whole assembly and tape, and test fit back onto the roof. If it is a little out, note in what direction it needs to go. Away from the model, apply heat to the underside of the inner roof, the solder will flow and move the inner roof over a little. Re-test fit the roof, keep going until it's perfect. When you are happy with it, put a spot of solder in each corner, re-test fit. If all is well, run a full seam of solder across the width of the 'full depth' cross tubes and clean up the four corner spots so they don't foul the main roof.

At this point, the main body construction is finished.



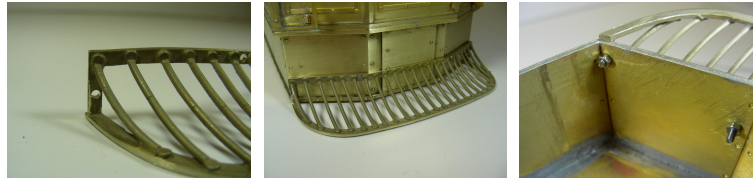
27.

Option 1, File off the waste brass left over from the casting process on the cow catcher. File a small slot into the vertical ends, starting from the top of the lower strip, just enough to allow for the skirt lower lip. On a grinding wheel or Dremel, make a slot on the top strip long enough to pass over the buffer plate. Option 2, with a Dremel slitting wheel, remove the brass on the body to allow for the flush fitting of the cow catcher.



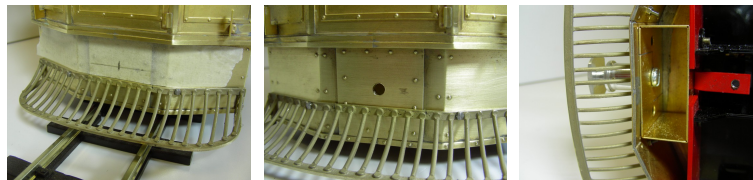
**28.**

**Drill four 1.7mm holes, one on each of the verticals and two along the top rail. Offer up the cow catcher and drill just one side hole in the correct place. Bolt this hole up only, then drill the other three holes and bolt up. Cut off the excess thread on the outer two bolts.**



**29.**

**Fit the chassis onto the body and place the whole model onto the track. Mark out your desired buffer height and centre the line. Drill a hole/s to accommodate the type of buffer you are using. Bolt on your buffers.**



**30.**

**That completes the building of the basic brass body. Clean up and finish according to your own personal method.**

