

CONNOISSEUR MODELS

Great Northern Railway & LNER Bogie Brick Wagon



Prototype. 25 of these distinctive wagons were built for the Great Northern Railway by the Leeds Forge Co in 1920. Initially to carry the products of the Peterborough area brick makers. Being fully fitted allowed these wagons to operate at passenger train speeds and could hold 20,000 bricks - effectively replacing 5 ordinary wagons.

A further 25 wagons were built by the LNER in 1930. They were extremely useful, particularly on fast unfitted goods trains to provide additional braking power when coupled behind the engine. They were long lived vehicles. Examples reached all corners of British Railways.

Kit. A sophisticated kit for this large wagon designed to capture the essence of the prototype. Although there is a lot of etched parts to this wagon, a computer drawing package was used to create them, so everything fits as intended. You should find all assembly pleasantly satisfying and a good kit for those who enjoy etched brass.

Wheels, Two sets of 3'1", Three hole disc are required to complete (Slater's Plastikard Cat No 7122, Old Road, Darley Dale, Matlock, Derbyshire, DE4 2ER, Telephone 01629 734053)

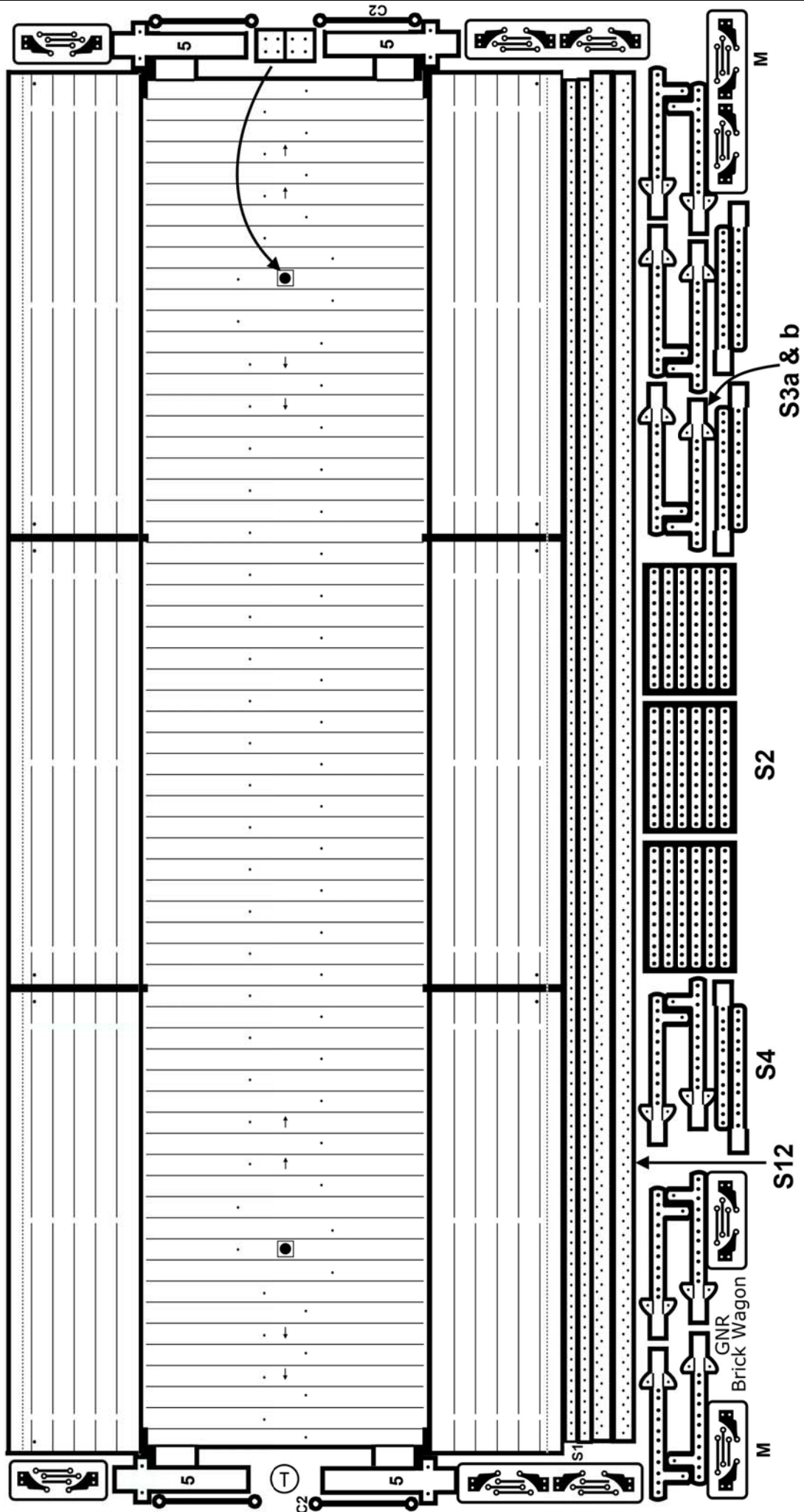
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Connoisseur Models, 1 Newton Cottages,
Nr Weobley, Herefordshire, HR4 8QX, Telephone 01544 318263**

Part Identity

CONNOISSEUR MODELS

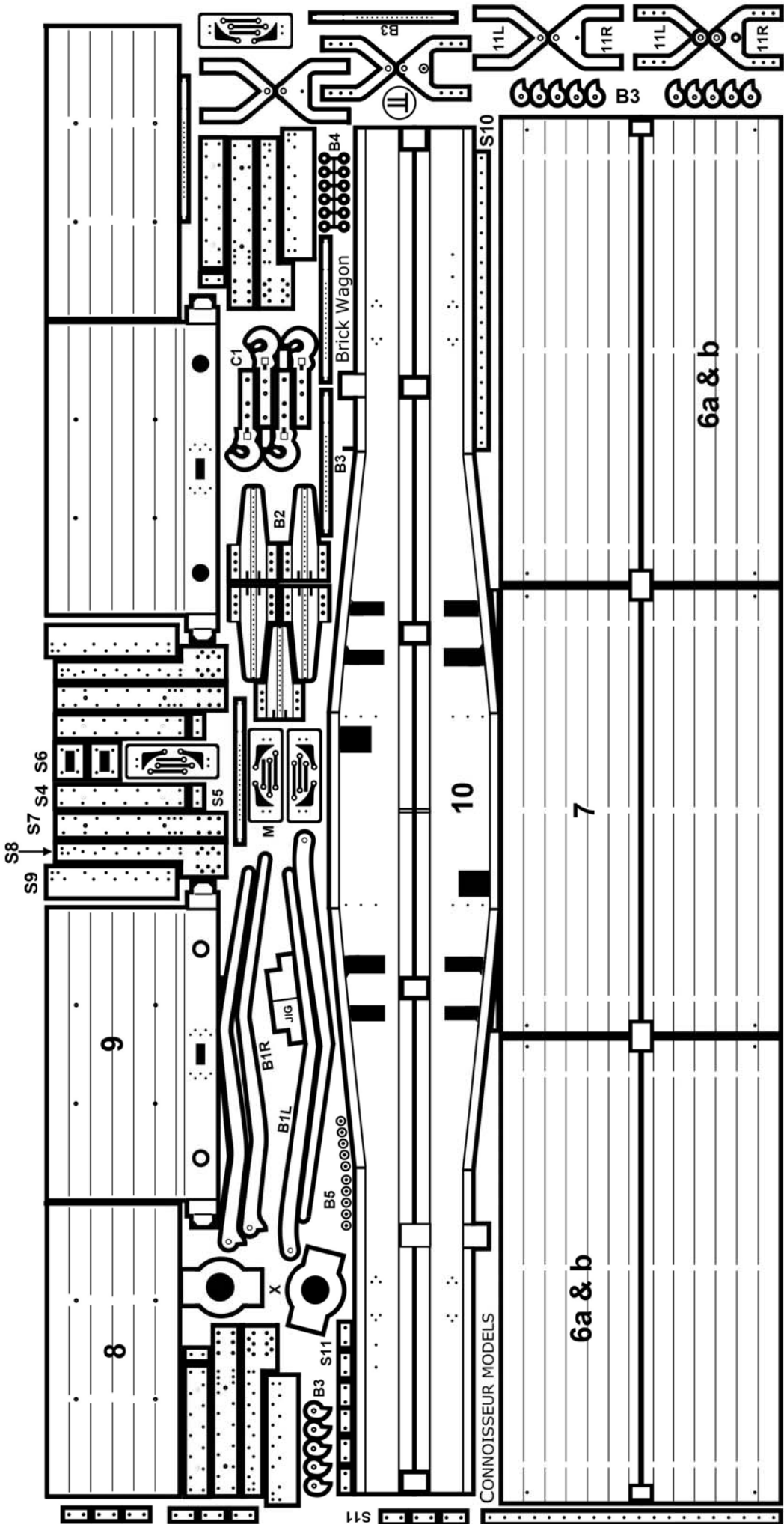
BRICK WAGON

AUGUST 2018 NEG1



Part Identity (II)

CONNOISSEUR MODELS BRICK WAGON AUGUST 2018 NEG 2



50 Ton Bogie Brick Open Wagon, LNER & Great Northern Railway.

These wagons were designed at the behest of Herbert Nigel Gresley CBE and constructed by the Leeds Forge Co in 1920.

With the metropolitan expansion taking place around London in the post Great War period, large quantities of construction materials were required. These wagons were designed, initially, for the brick trade between Peterborough and London. The first batch were used extensively delivering bricks to all parts of London and its new developing suburbs. Being fully fitted allowed these wagons to operate at passenger train speeds and could hold 20,000 bricks – effectively replacing 5 ordinary wagons

They were often used with GNR 2-6-0's on fast unfitted goods to provide additional braking power when coupled behind the engine. This was all part of the GNR's desire to improve efficiency and reduce costs in the immediate aftermath of the Great War.

25 were built for the GNR being No's 51001-25. A further 25 were built by the LNER in 1930 with detailed differences. The wagon construction is of wooden floors and doors with underframes and bracing being of pressed steel. Tare weight was 17ton 4cwt.

Livery: originally GNR Brown they were subsequently painted LNER/BR Bauxite.

Lettering changed over the years. Initially the GNR had them lettered '50 Tons Distributed' on the central door with G and N on either outer door along with the vehicle number. The term BRICK seems to have been applied after grouping in LNER ownership. Modellers are advised to use photographs of a particular wagon when painting.

They were extremely useful and long lived vehicles, examples reached all corners of British Railways. One was recorded at Euston in January 1967.

This model designed using the GA diagrams published in Railway Gazette Nov 1921.

Transfers for LNER lettering are available from the Historical Model Railway Society:-

<https://hmrs.org.uk/transfers/lner-goods-vehicle-insgnia-150393.html>

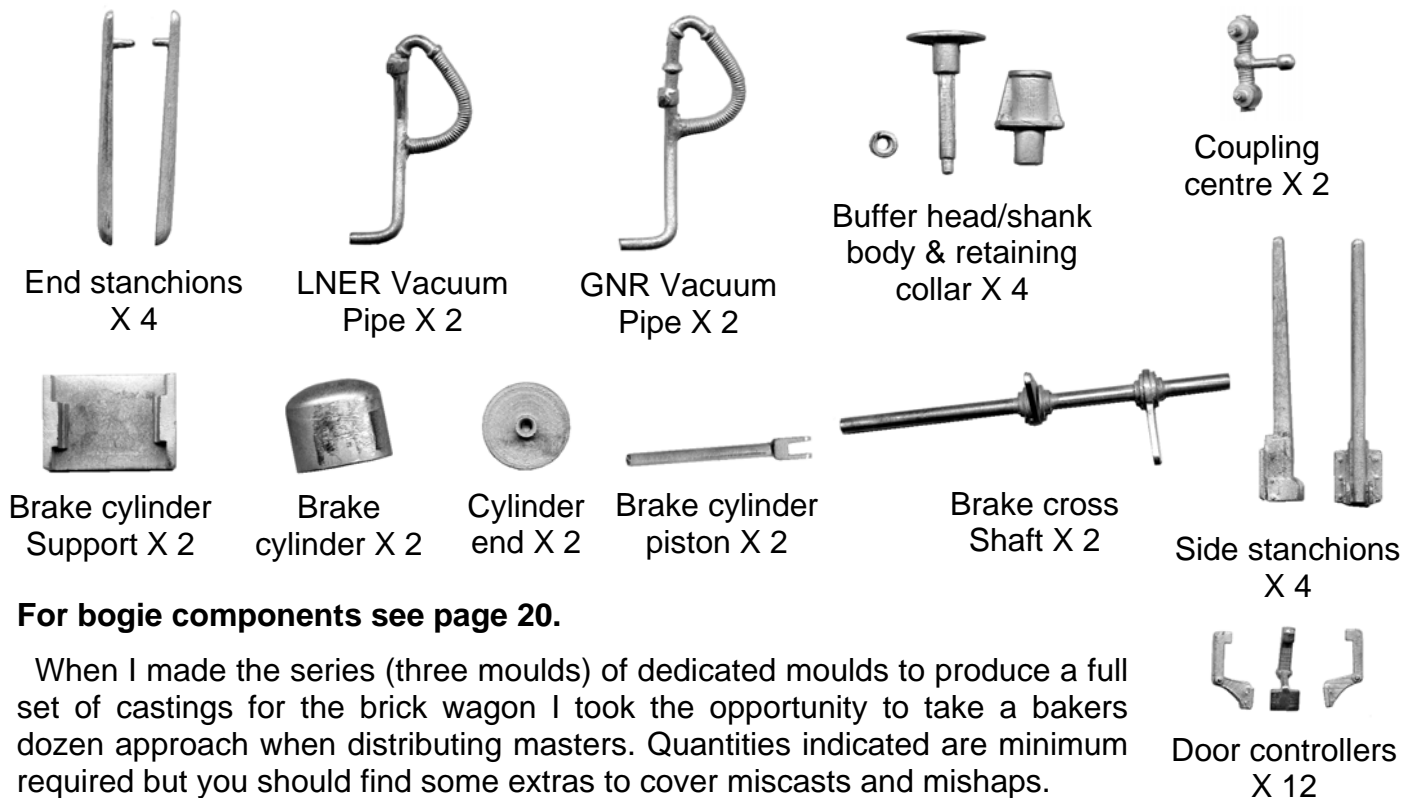


Transfers are Pressfix type & you will require sheet 12 LNER goods vehicles.



Running Numbers
GNR Built 51001 - 51025
Post 1923 451001 - 451025, post 1948 prefixed E
LNER Built 163535 - 163559, BR prefixed E (E163535)

Castings identification



For bogie components see page 20.

When I made the series (three moulds) of dedicated moulds to produce a full set of castings for the brick wagon I took the opportunity to take a baker's dozen approach when distributing masters. Quantities indicated are minimum required but you should find some extras to cover miscasts and mishaps.

Wire & Rod:- 3 X 0.7mm brass wire, 2 X 0.9mm brass wire, 2 X 0.45mm brass wire, 6" X spring steel wire, 6" X 22swg Tinned Copper Wire (tcw), 6 X turns 29swg Tinned Copper Wire (tcw). 6" X 1.25mm (18swg) Copper Rod. 5 X brass strips (cut from waste).

Sundry parts for bogies:- 2 X 6BA long screws, 2 X 6BA nuts, 4 X 6BA washers, 2 X springs, 2.5" X 1.6mm brass rod.

Brick Wagon Kit Designed by Malcolm Stelfox

The main motive force behind the production of a brick wagon kit was Malcolm Stelfox, who is a notable member of the Great Northern Railway Society, and who was bending my ear at an exhibition about the underrepresentation of GNR wagon kits in my range. My response was that the bogie brick was probably their most distinctive wagon but I had never seen decent GA drawings for it. Malcolm promptly countered that they were available through the GNR Society and that he would design a set of etchings using them if I would put a kit into production. So here is the result first produced December 2018.

Now Great Northern Railway modellers and Society members have an eye for detail and prototype fidelity and Malcolm has reflected this in the number of components and sophistication of his design. Because Malcolm used a computer drawing package to create the components everything fits as intended. So although there is a lot of parts to this wagon you should find assembly pleasantly satisfying. I am very pleased with the finished wagon and very happy producing Malcolm's design.

Jim McGeown, November 2018.

Great Northern Railway Society

The GNR Society exists to preserve records and to research the GNR, its staff, its assets and its history. It has a thriving membership with debates via its own active forum, the Great Northern News and meetings. The summer sees the Society host a number of 'Summer Days Out', all of which are available to members.

Becoming a member of the GNRS will give you access to the knowledge of our members – no query is too niche, and every enquiry drives further research and discussion.

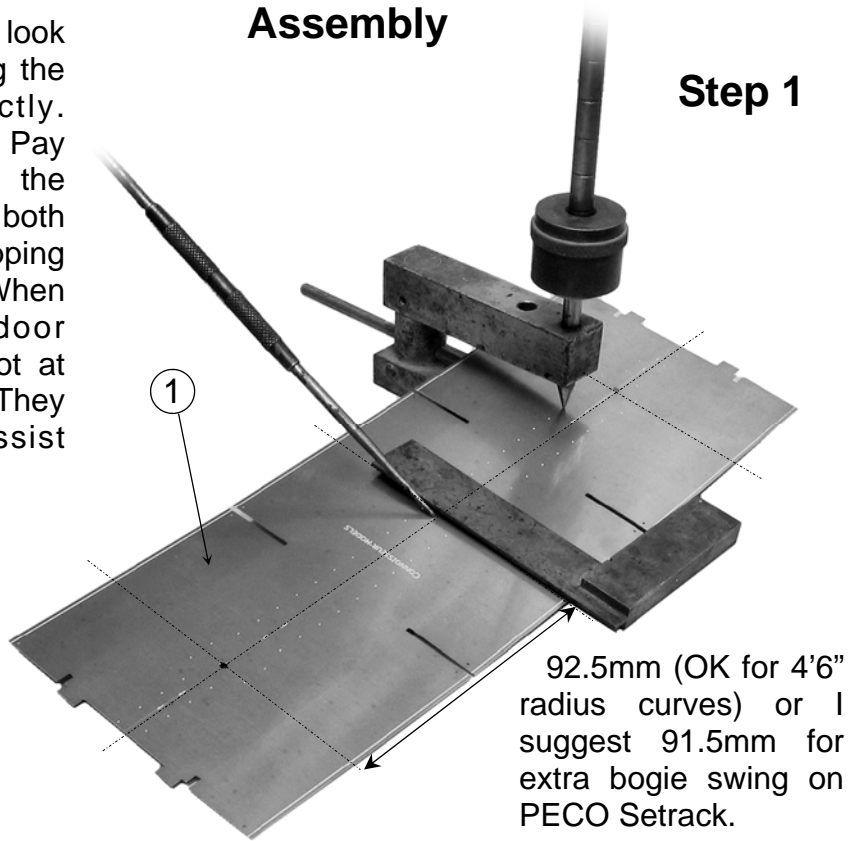
www.gnrsociety.com

General Assembly Notes. The look of this model is 'made' by getting the strapping assembled correctly. Location diagrams are provided. Pay attention to the rivet detail on the diagrams as the strapping is both handed and for the internal strapping needs to be the right way up. When removing the floor and door components from the etch do not at this stage file the tags away. They have been laid out to assist centralising strapping.

Main body. Place reverse side up on a craft mat and scribe a line across the centre of the floor underside midway between the ends. This will help align the frames when added later. Also centrelines for positioning bogies and guide for the bottom edge of the sides.

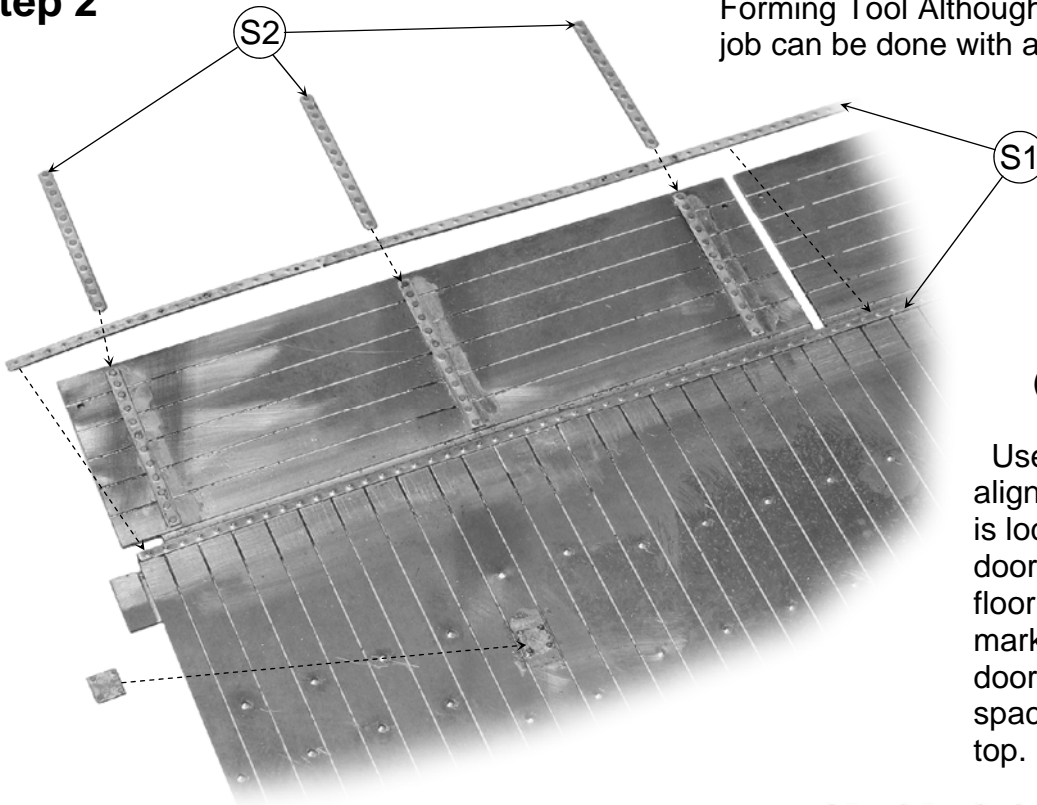
Assembly

Step 1



Emboss inside rivet detail. The photo shows my Dick Ganderton, Rivet Forming Tool Although a very reasonable job can be done with a scriber point.

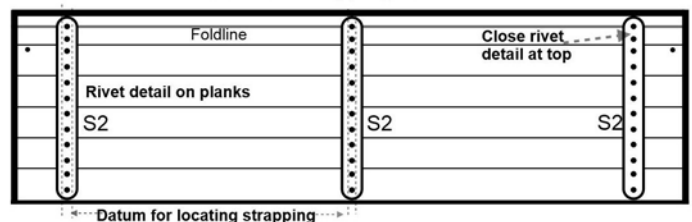
Step 2



Interior Strapping (see layout diagram below)

Use the joining tags to align the strapping. S1 is located just inside the door crease line on the floor. S2 solders into marked areas on the door interior. The close spacing rivets are to the top.

Internal strapping location



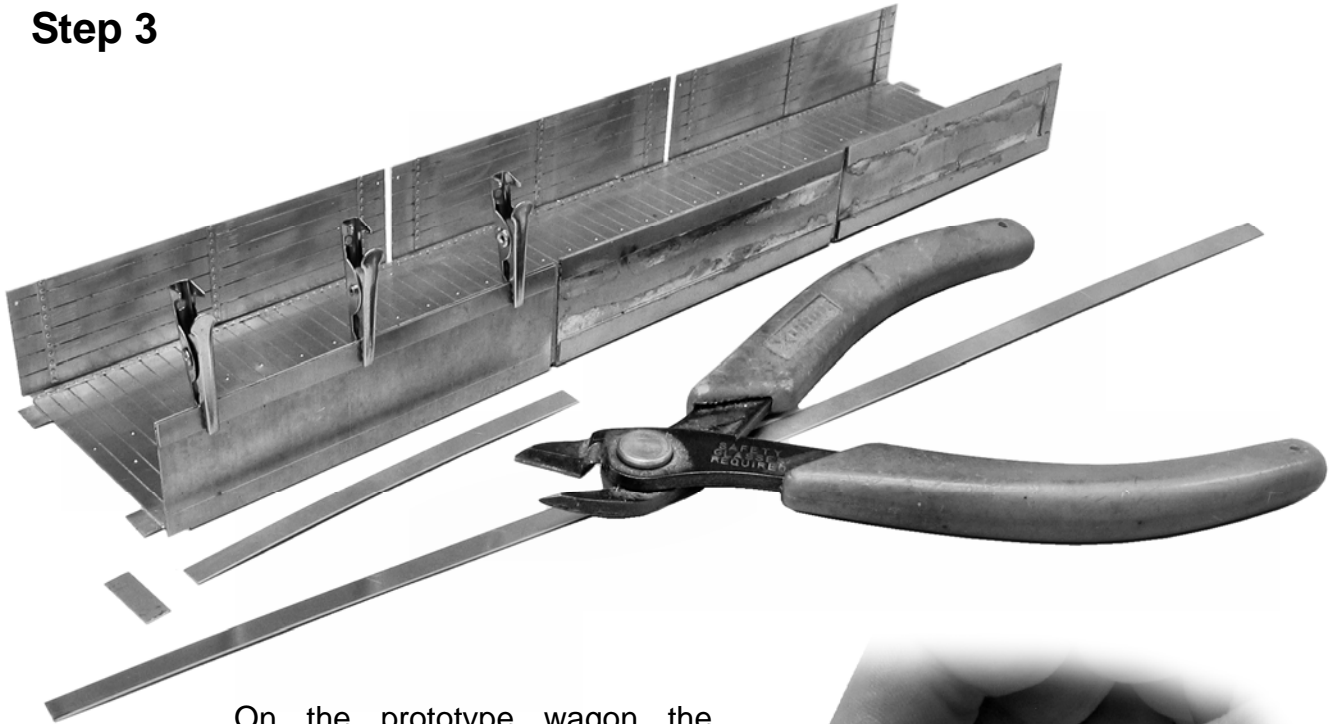
Caution Do as I Say Not as I Did

The construction photos show me folding up the body and then fitting the side thickening strips. With hindsight it would have been a lot easier to fit the strips in the flat, drill to clear holes, then fold up the body.

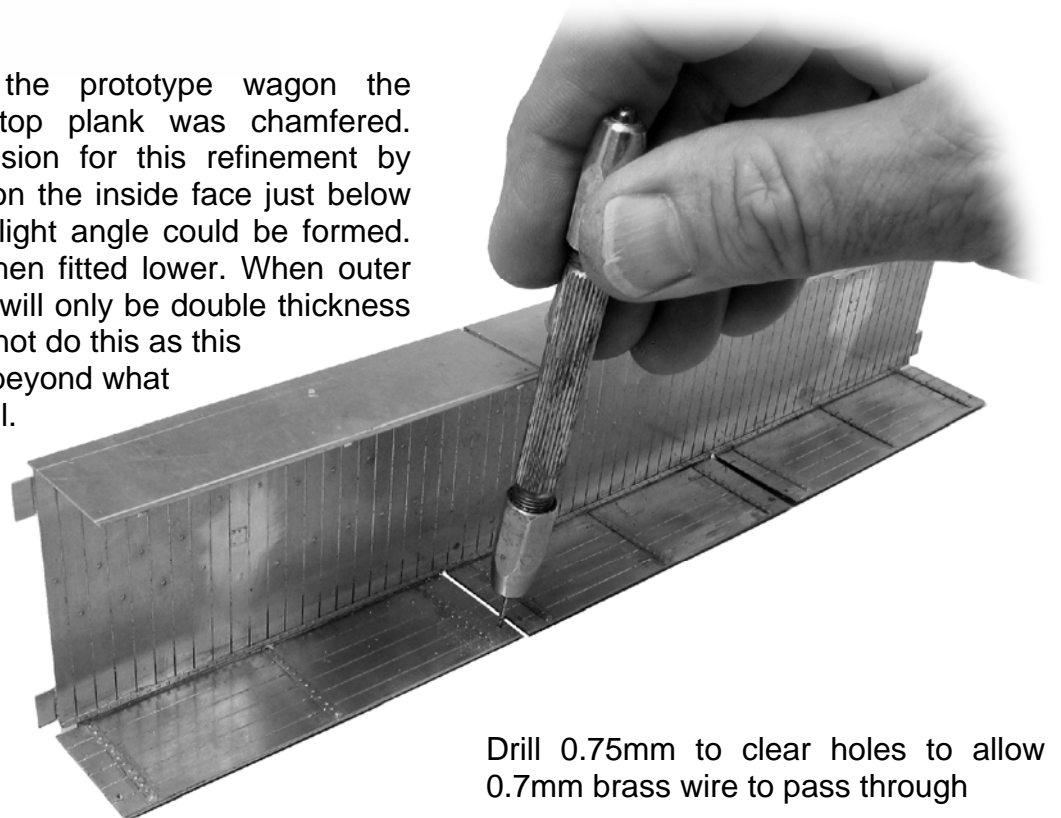
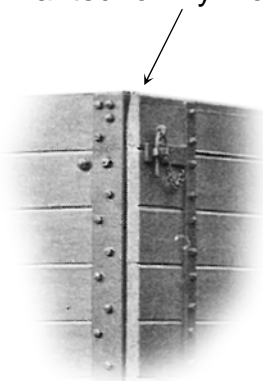
Turn floor over and using scrap etch solder strips along the bottom of each door, Add another strip below the top of the doors. These act as spacers to give correct plank thickness when outer door etches are added.

Included with this kit should be a generous bundle of strips about 5mm wide that I have cut from scrap material on my guillotine. Snip to length using flush cutting side cutters.

Step 3



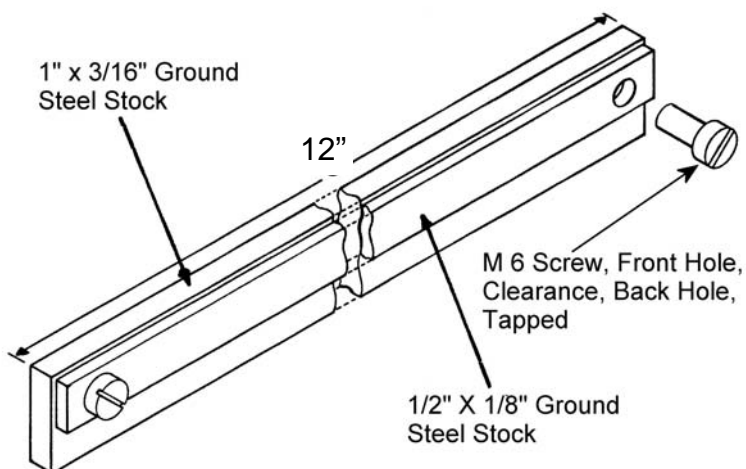
On the prototype wagon the inside half of the top plank was chamfered. Malcolm made provision for this refinement by including a fold line on the inside face just below top edge so that a slight angle could be formed. The spacer strip is then fitted lower. When outer sides are fitted there will only be double thickness along top edge. I did not do this as this was a sophistication beyond what I wanted for my model.



Drill 0.75mm to clear holes to allow 0.7mm brass wire to pass through

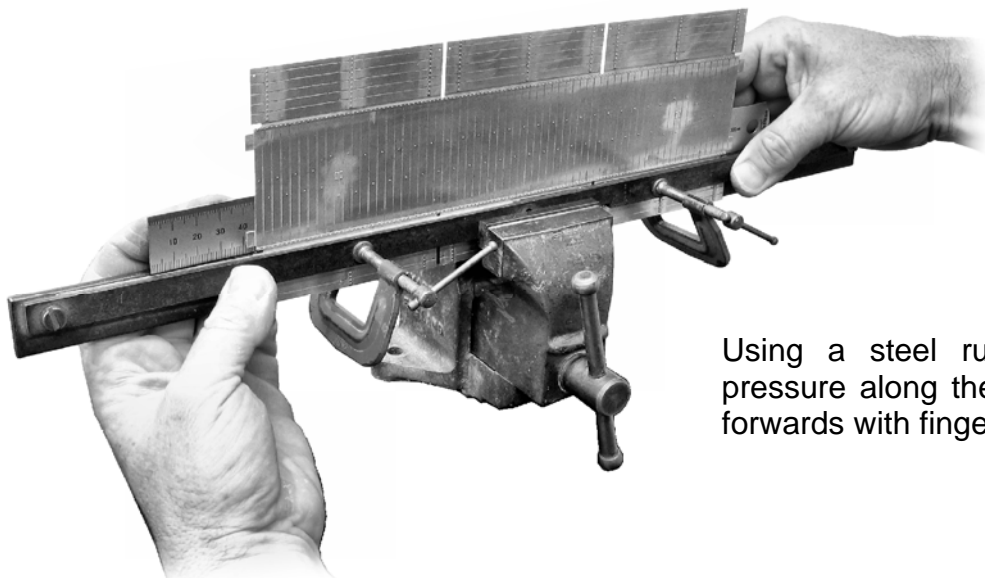
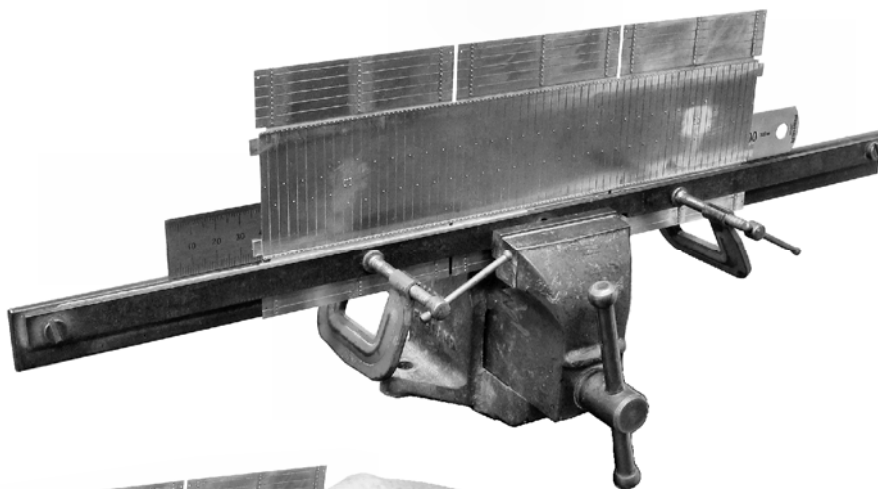
Folding Bars

You will find a set of these very useful and here are details of the set that I have made for myself, in fact I have made three sets of different sizes. The dimensions or materials are not critical so make yourself a set to suit the materials you can get hold of. The important thing is that you can clamp the part along its entire length, with the etched fold line just above the front bar. Then clamp the bars in the jaws of your vice, a couple of 1" G clamps are also useful for long folds, and laying a steel rule at the back of the part to help transfer the pressure from your fingers evenly, pull forward to make the fold. Once the fold is close to 90° you can finish by pressing down on it with a block of wood and moving the block along the fold with a stroking action or by giving gentle taps with a small hammer on the wood block. Occasionally it is necessary to emboss bolt heads onto a part before folding, by lining the face of one of the bars with two or three layers of masking tape, you can still clamp the part without crushing the bolt heads but you won't get such a tight fold, so deepen the fold line with a triangular file.



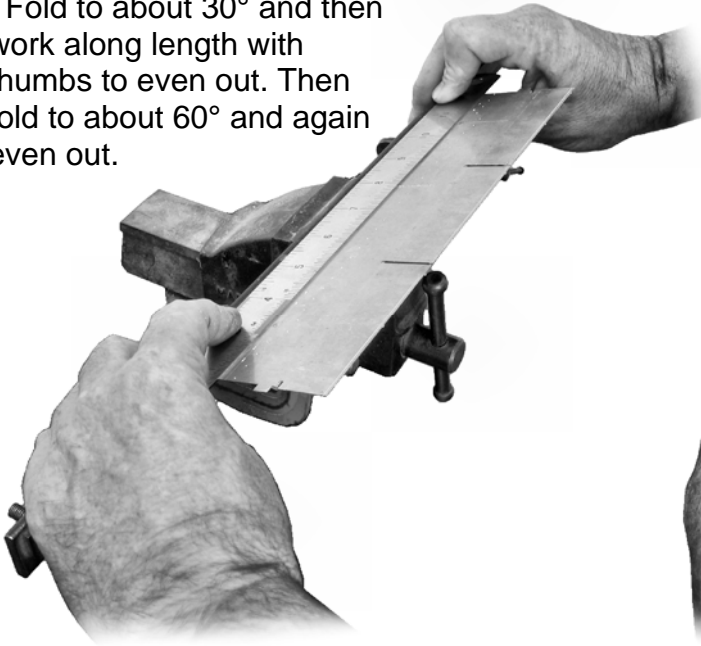
Step 4

Fold up inner doors along etched fold line.
(at right angles)

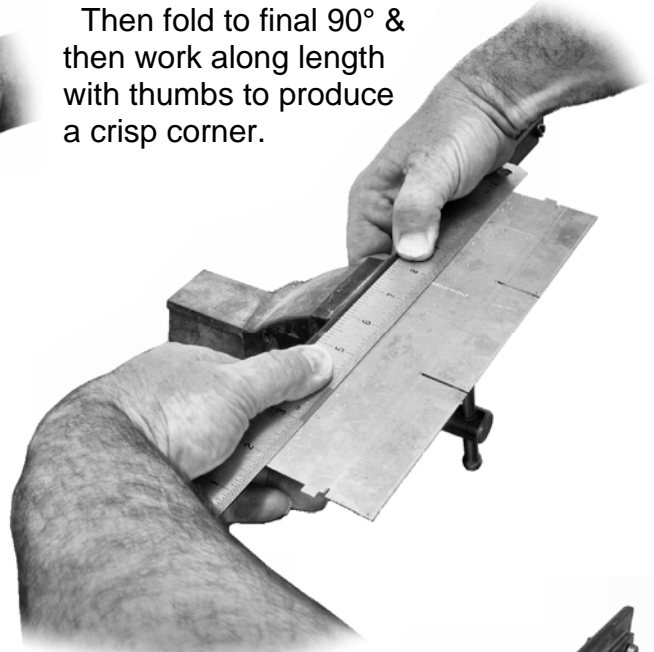


Using a steel rule to evenly spread pressure along the length of floor press forwards with finger ends.

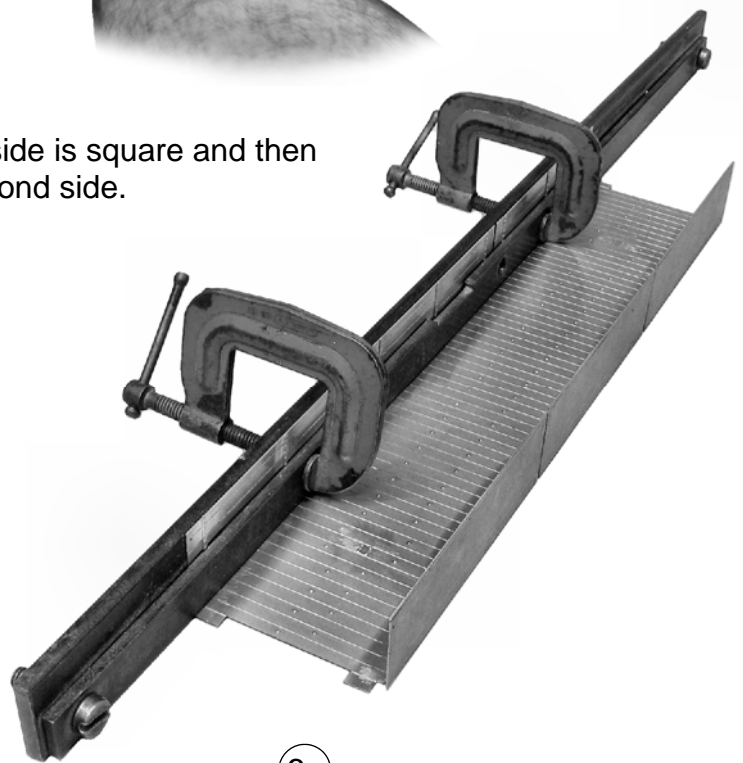
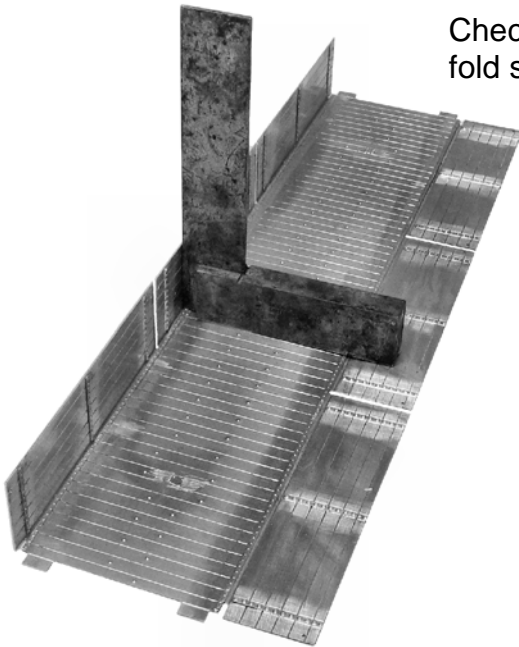
Fold to about 30° and then work along length with thumbs to even out. Then fold to about 60° and again even out.



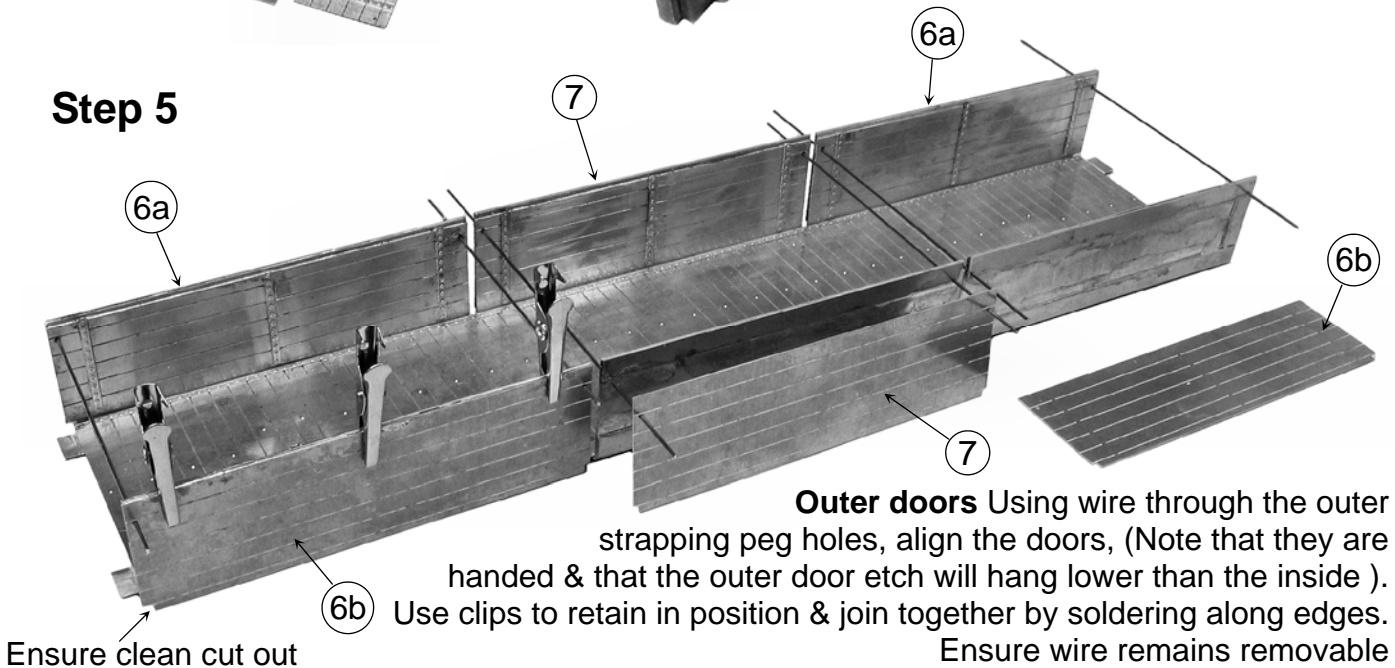
Then fold to final 90° & then work along length with thumbs to produce a crisp corner.



Check side is square and then fold second side.

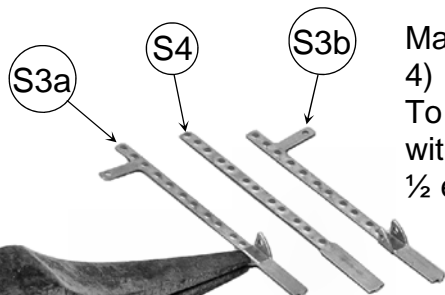
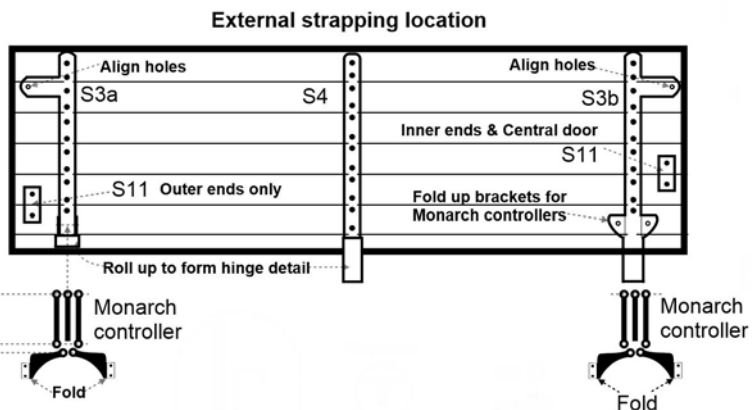


Step 5

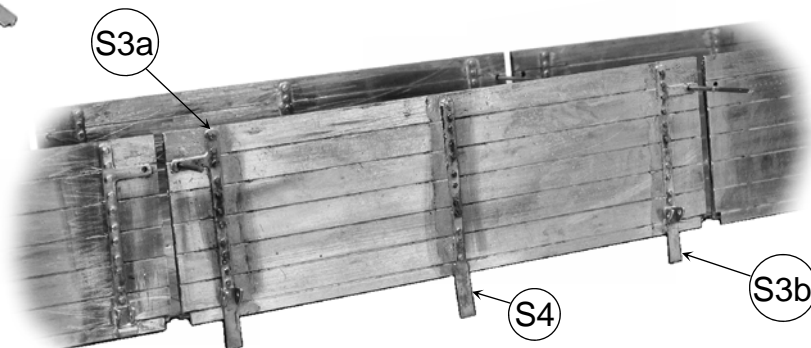


Step 6

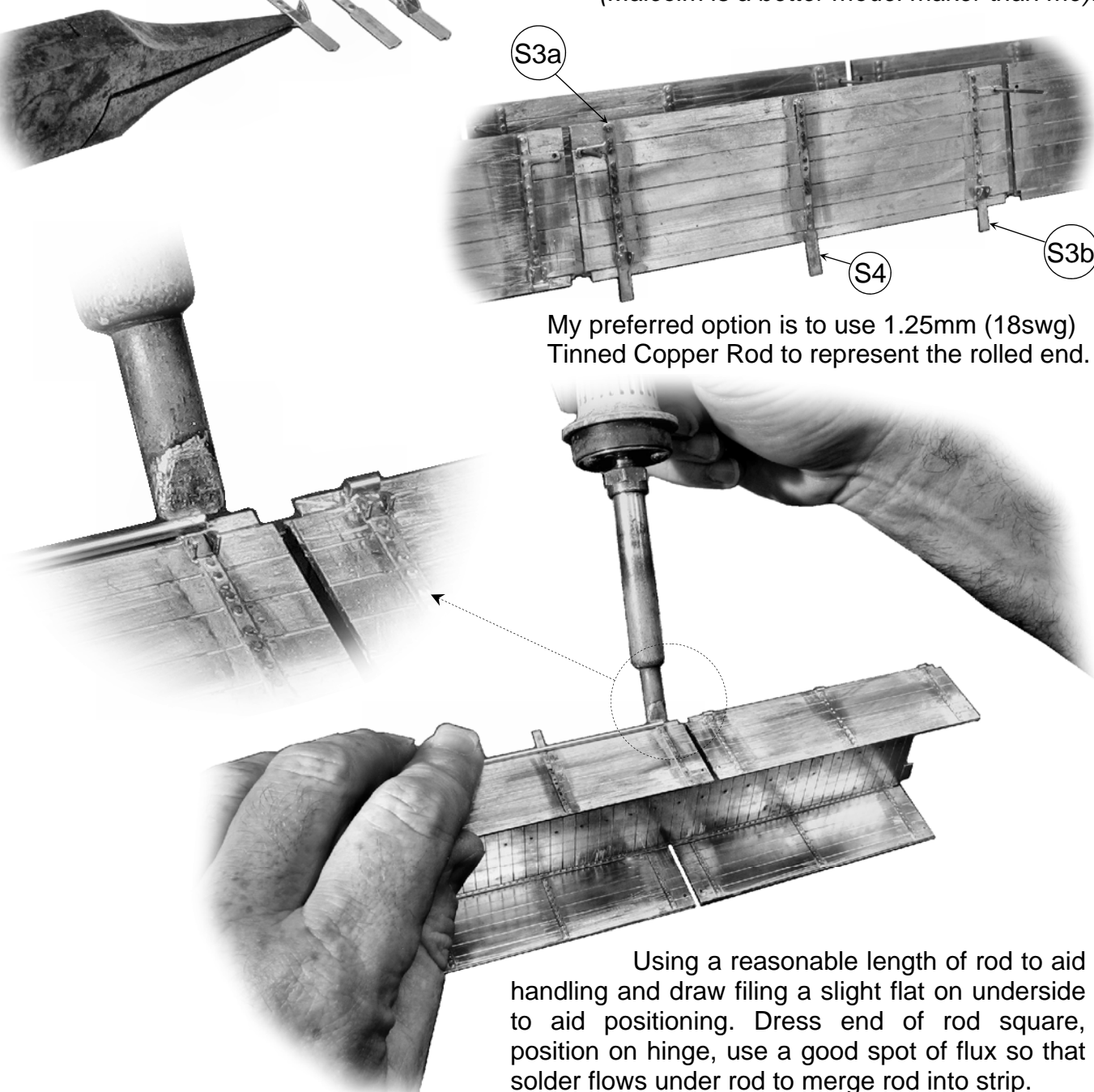
Outer Strapping (see layout diagram). Using the wire holes as guides, add the outer (handed) strapping. Then add central strapping. Do the same for each set of doors. Add S11 as shown in the diagrams. Outer visible ends of the doors can be filled with solder.



Malcolm intended that before adding outer strapping, (S3 & 4) rolling up $\frac{1}{2}$ etched strip at the bottom to form a hinge. To aid rolling, place the strapping in a smooth jawed vice with the $\frac{1}{2}$ etch protruding. Use a gas torch to anneal the $\frac{1}{2}$ etch. This he achieved perfectly but I completely failed .
(Malcolm is a better model maker than me).



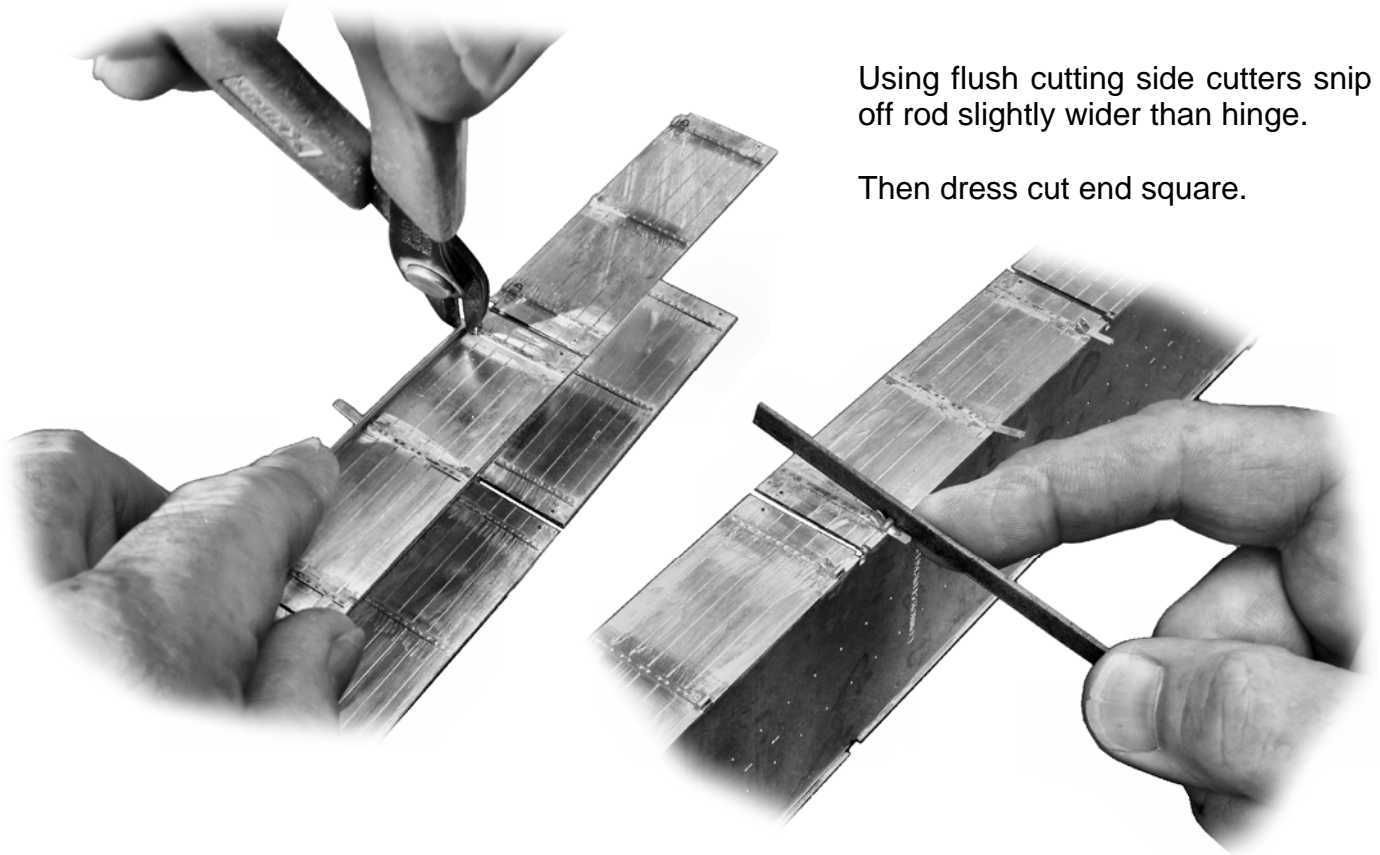
My preferred option is to use 1.25mm (18swg) Tinned Copper Rod to represent the rolled end.



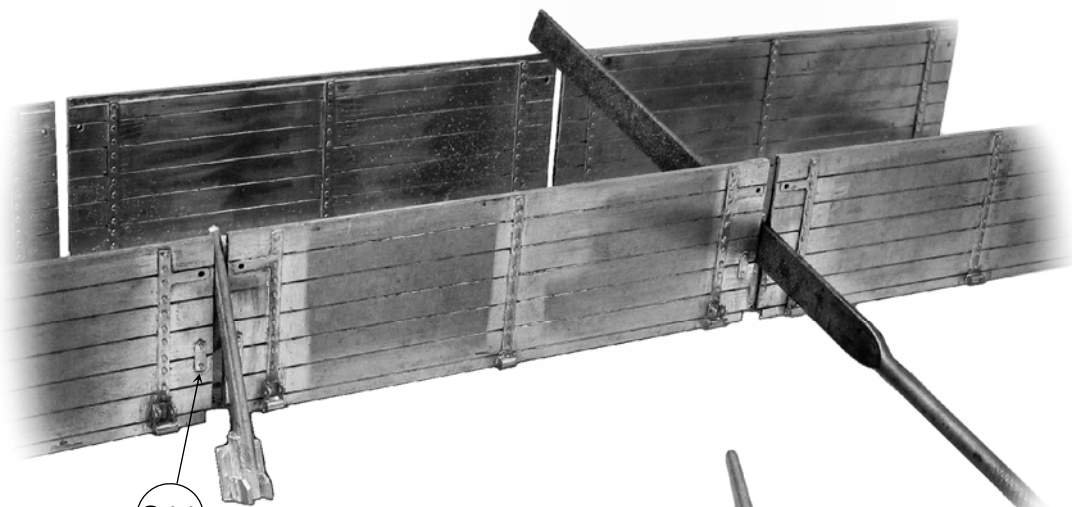
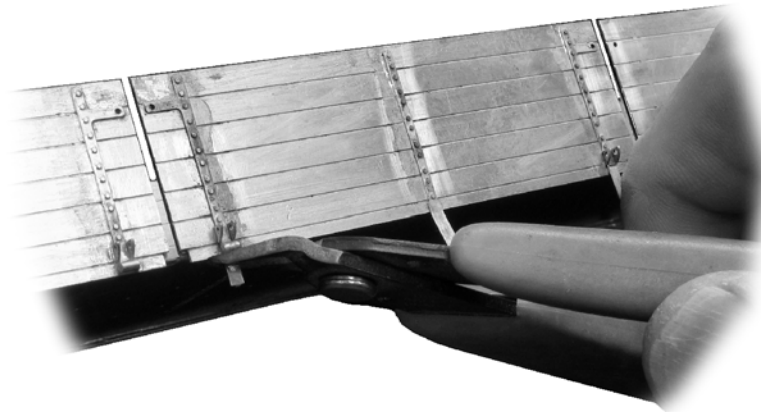
Using a reasonable length of rod to aid handling and draw filing a slight flat on underside to aid positioning. Dress end of rod square, position on hinge, use a good spot of flux so that solder flows under rod to merge rod into strip.

Using flush cutting side cutters snip off rod slightly wider than hinge.

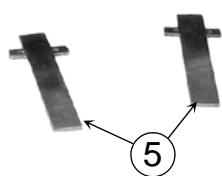
Then dress cut end square.



Snip off excess strapping



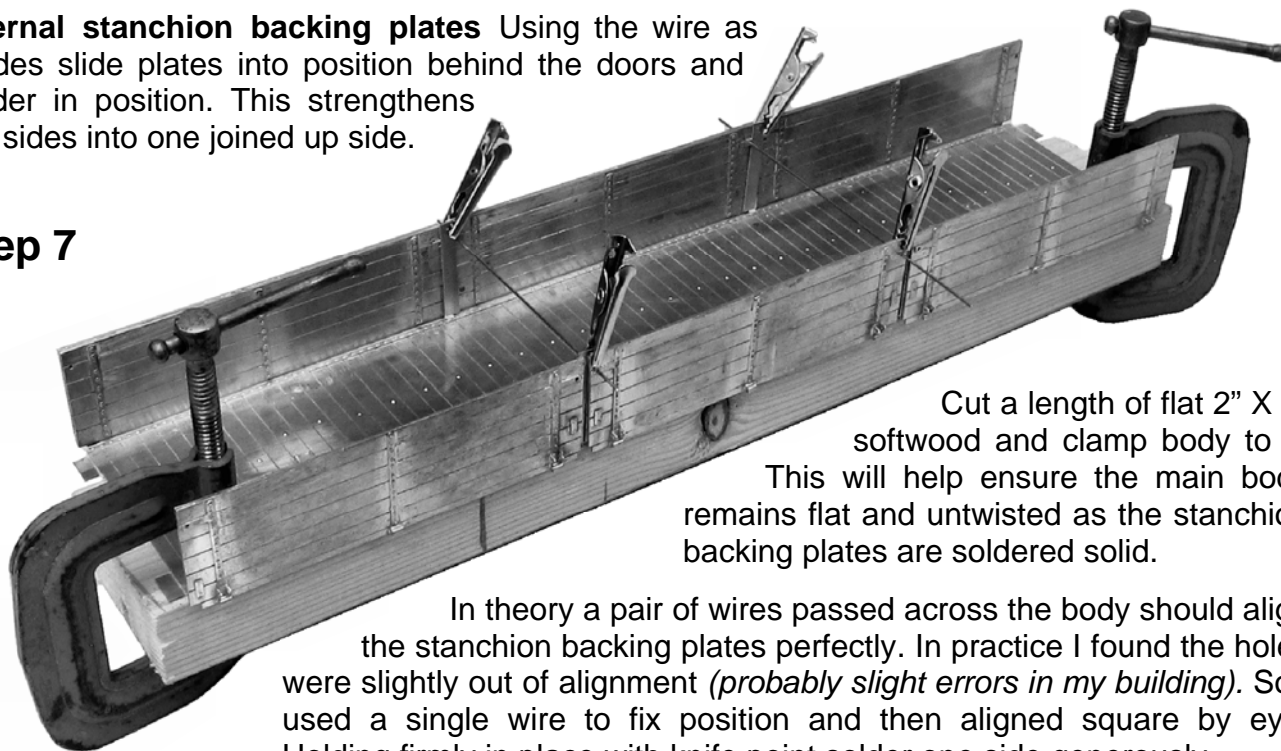
S11



Take this opportunity to dress the ends of inner and outer sides. Squaring up and widening the gap so that cast stanchions will fit snugly when fitted later.

Internal stanchion backing plates Using the wire as guides slide plates into position behind the doors and solder in position. This strengthens the sides into one joined up side.

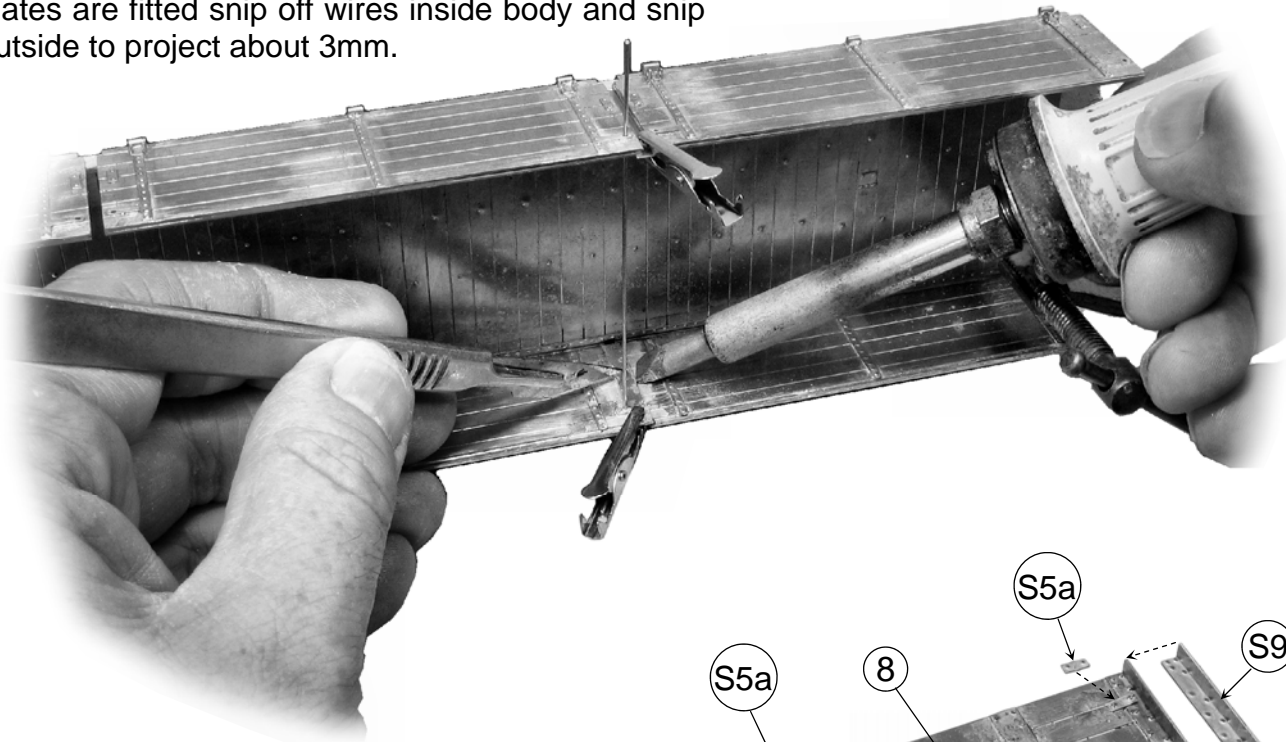
Step 7



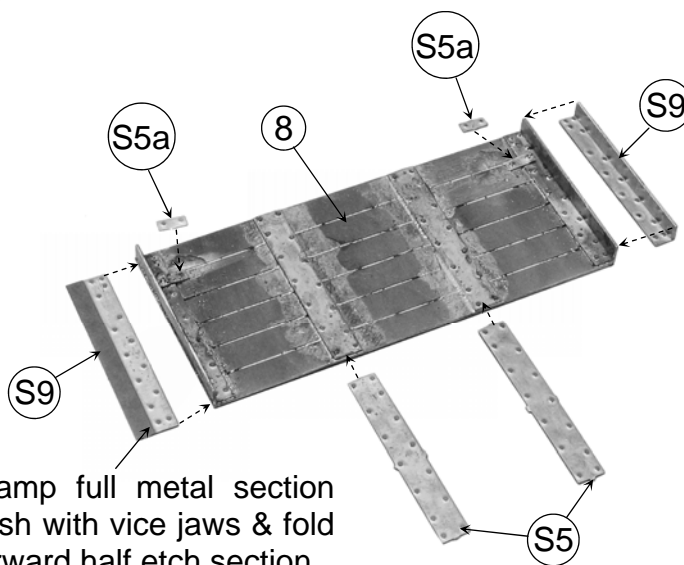
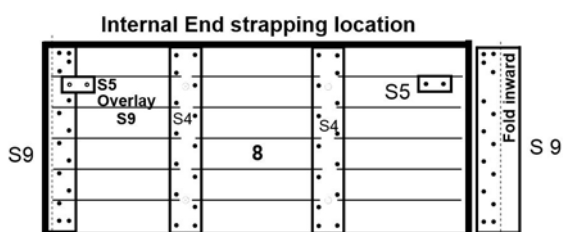
Cut a length of flat 2" X 1" softwood and clamp body to it. This will help ensure the main body remains flat and untwisted as the stanchion backing plates are soldered solid.

In theory a pair of wires passed across the body should align the stanchion backing plates perfectly. In practice I found the holes were slightly out of alignment (*probably slight errors in my building*). So I used a single wire to fix position and then aligned square by eye. Holding firmly in place with knife point solder one side generously.

Then run drill through second hole to clear and fit second wire. Solder second side of stanchion plate generously. Once all four plates are fitted snip off wires inside body and snip outside to project about 3mm.



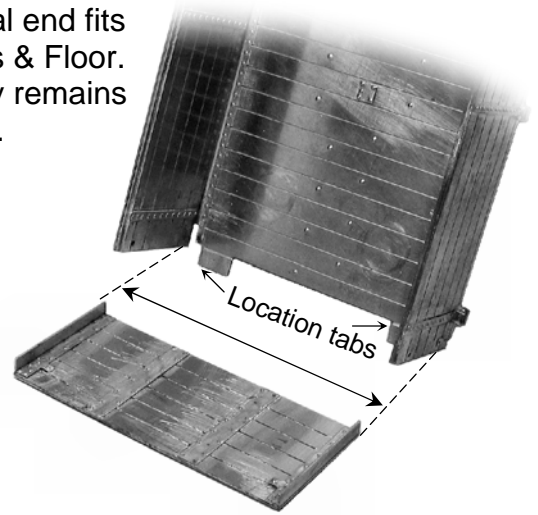
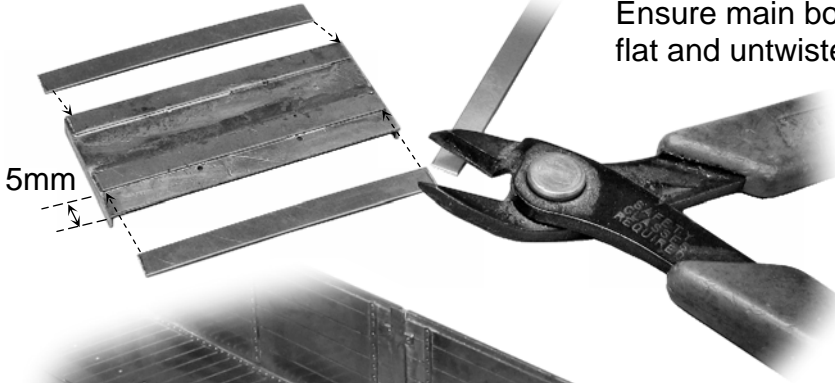
Step 8 Internal End Strapping



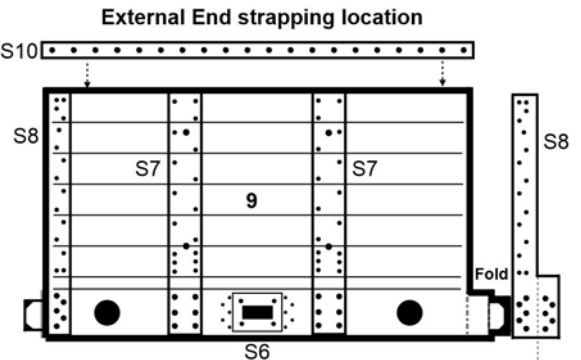
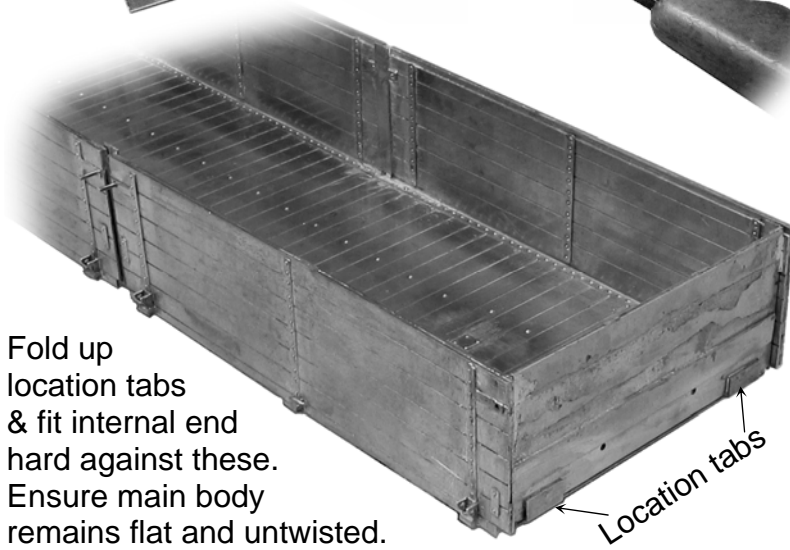
Clamp full metal section flush with vice jaws & fold forward half etch section

Fit spacer strips. Flush at top edge & about 5mm from bottom edge.

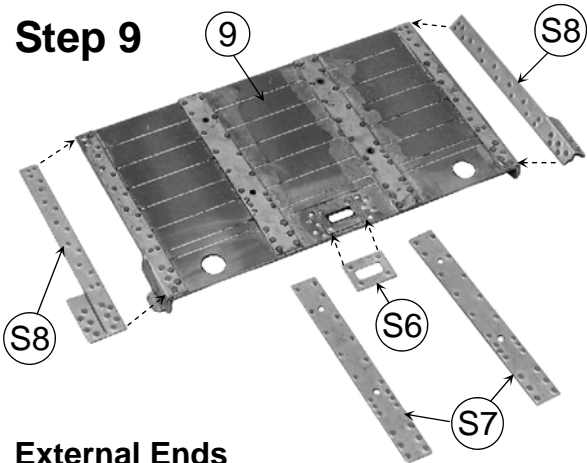
Check that internal end fits easily inside sides & Floor. Ensure main body remains flat and untwisted.



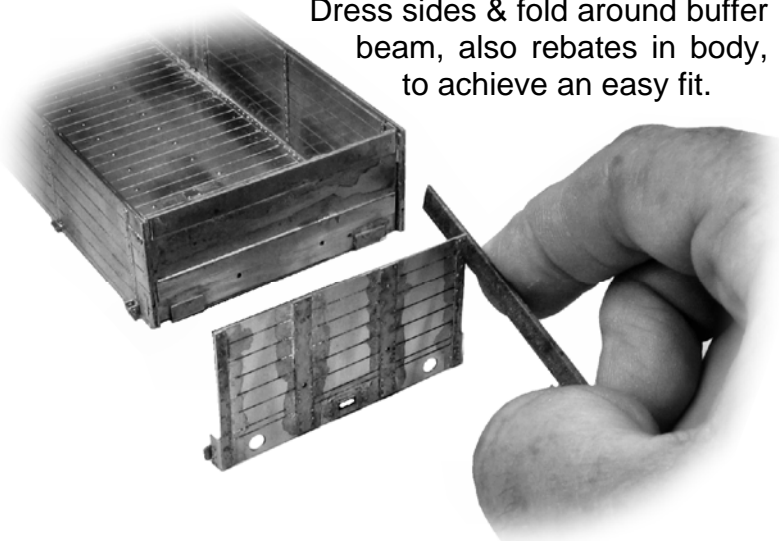
Fold up location tabs & fit internal end hard against these. Ensure main body remains flat and untwisted.



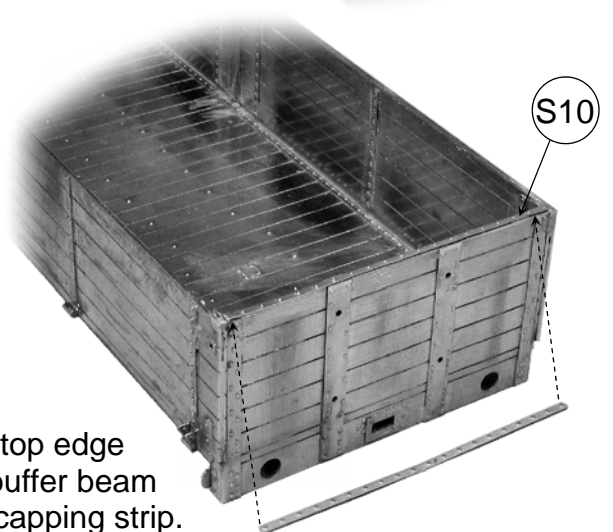
Step 9



Dress sides & fold around buffer beam, also rebates in body, to achieve an easy fit.



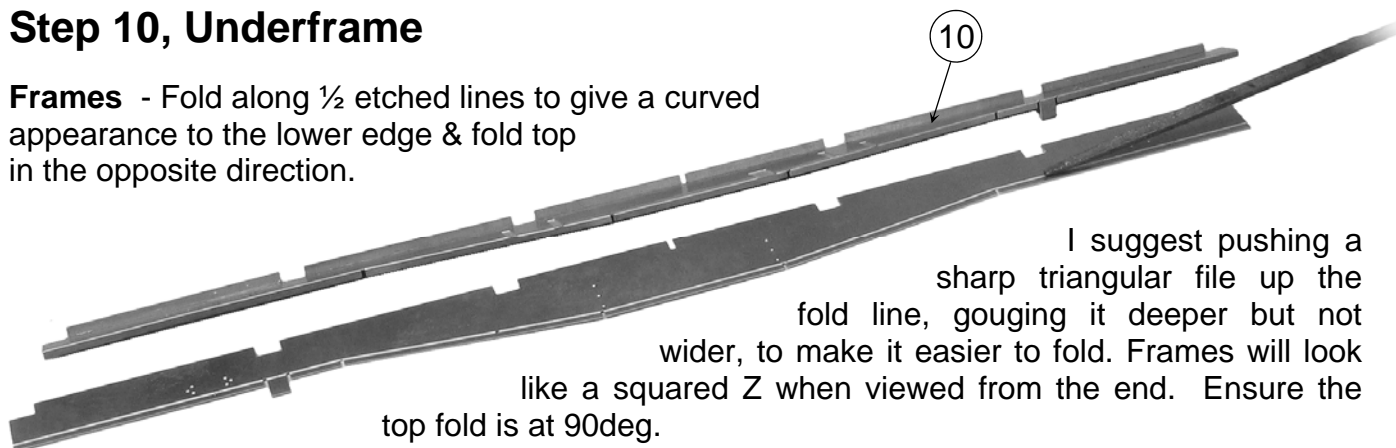
External Ends



Solder external end along top edge & then dress flat. Solder rear of buffer beam to underside of floor. Then fit top capping strip.

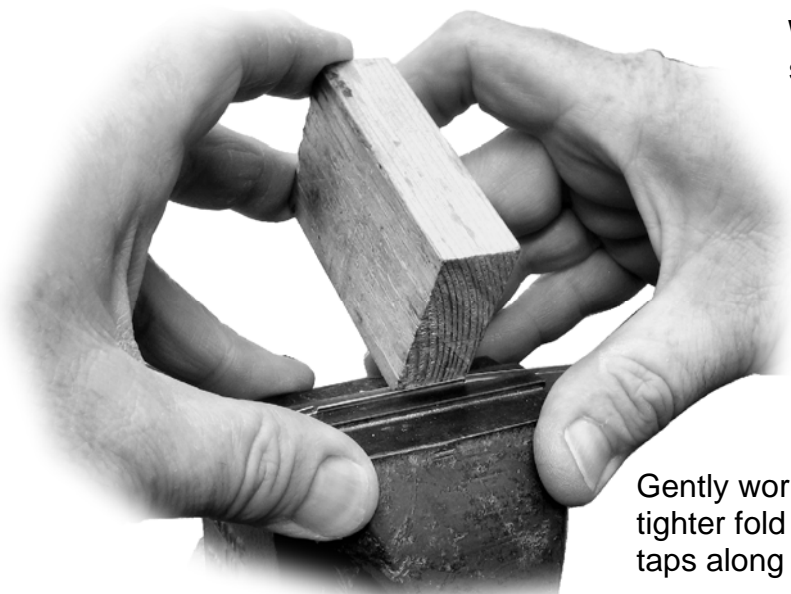
Step 10, Underframe

Frames - Fold along $\frac{1}{2}$ etched lines to give a curved appearance to the lower edge & fold top in the opposite direction.



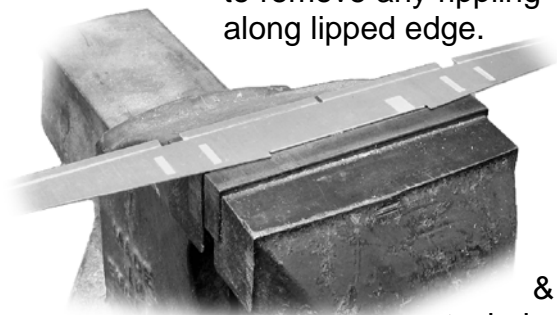
I suggest pushing a sharp triangular file up the fold line, gouging it deeper but not wider, to make it easier to fold. Frames will look like a squared Z when viewed from the end. Ensure the top fold is at 90deg.

Work a little at a time until a section achieves about 90°.

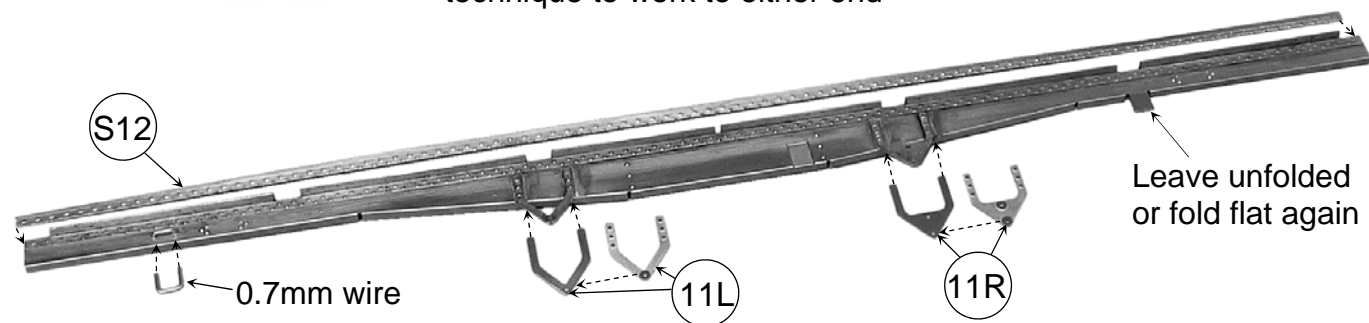
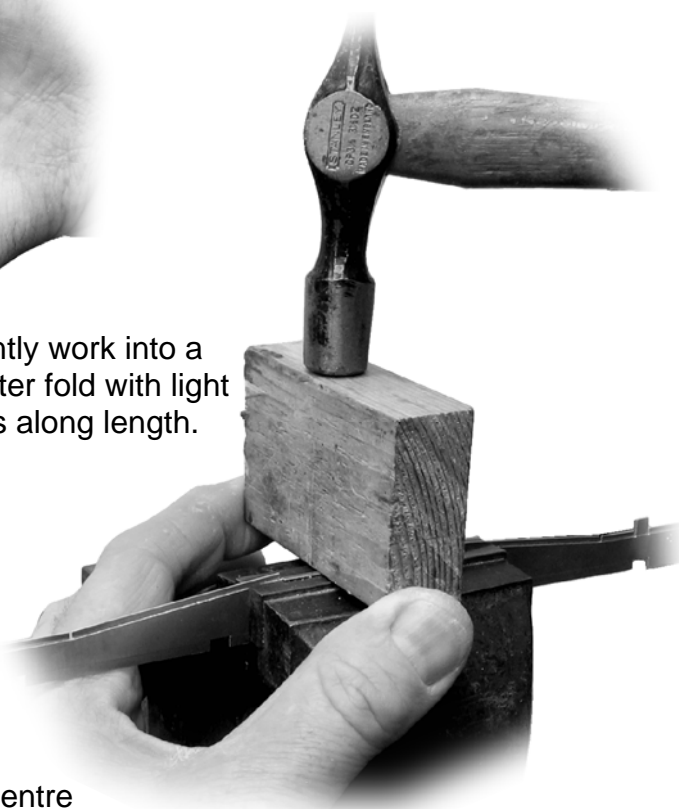


Gently work into a tighter fold with light taps along length.

Squeeze in vice jaws to remove any rippling along lipped edge.

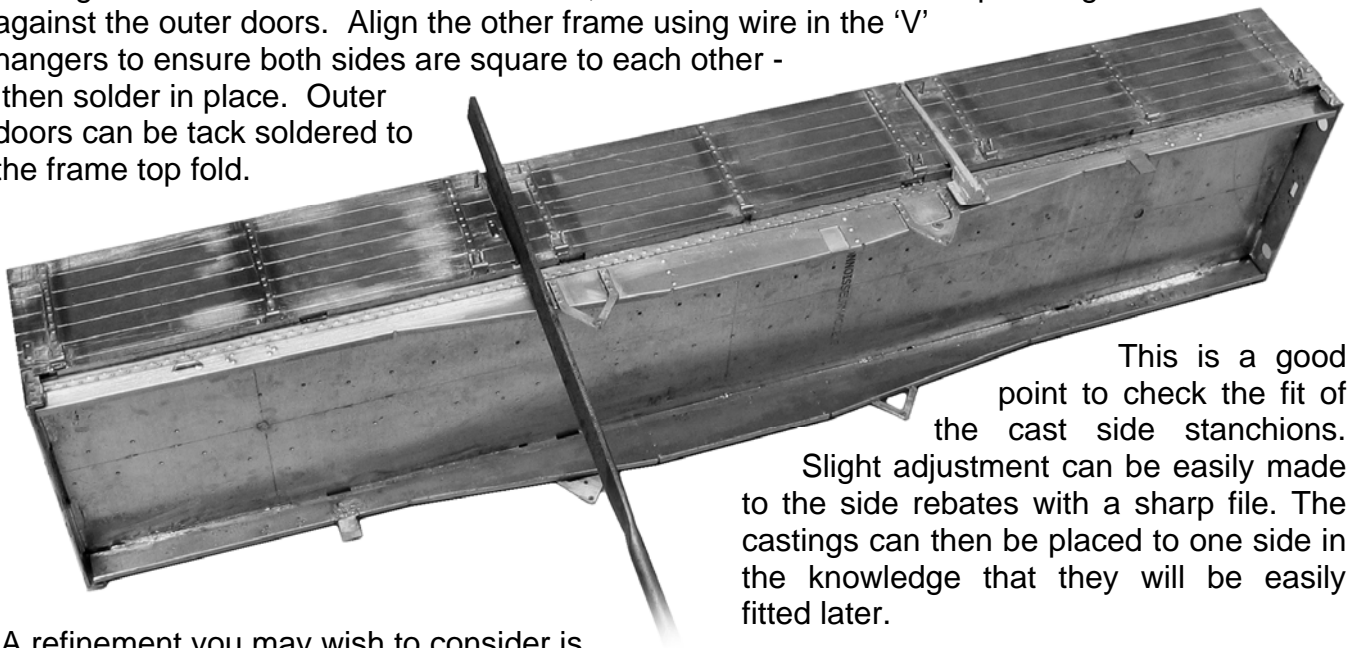


Start in centre & you can use this technique to work to either end



Add S12 along the mainframes up tight against the top fold. Note that rivet detail should be away from the fold line. Add brake 'V' hangers and overlays. Sides are not handed so both sides will look the same, with 11L on left and 11R on right. Add wire towing handles at the left hand end.

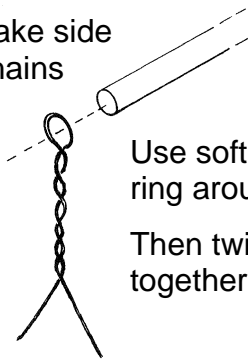
Using the scribed line to centre the sides, solder one side with the top fold tight against the outer doors. Align the other frame using wire in the 'V' hangers to ensure both sides are square to each other - then solder in place. Outer doors can be tack soldered to the frame top fold.



This is a good point to check the fit of the cast side stanchions. Slight adjustment can be easily made to the side rebates with a sharp file. The castings can then be placed to one side in the knowledge that they will be easily fitted later.

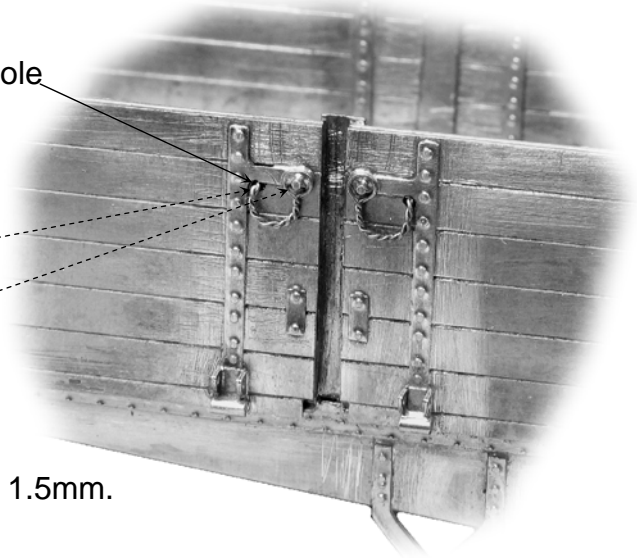
A refinement you may wish to consider is the dropsied pin retaining chains.

To make side pin chains

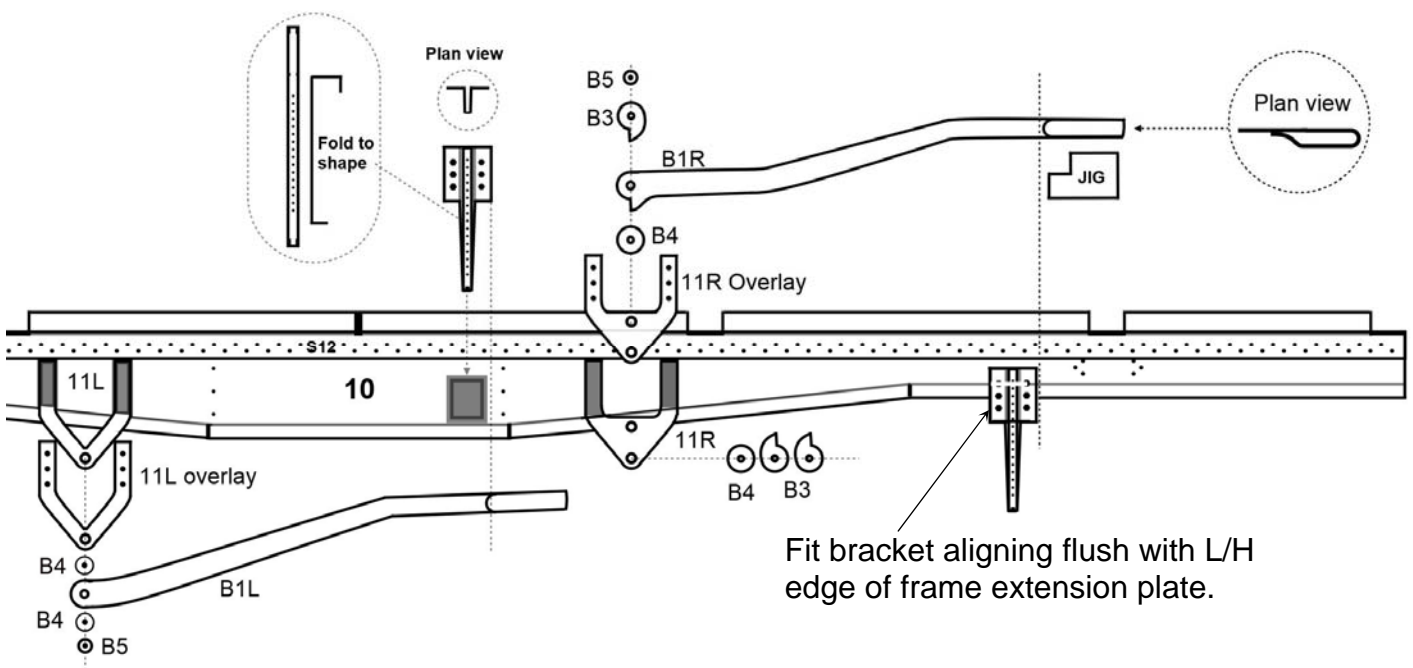


Use soft wire and form ring around drill shank. Then twist wire together.

Drill 0.9mm hole

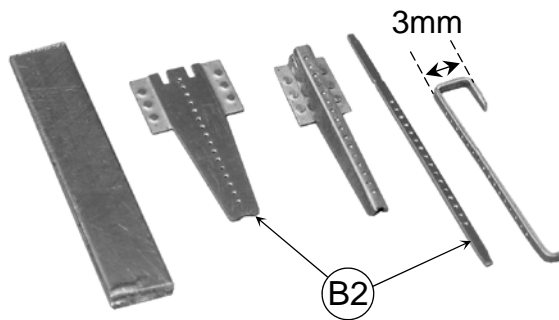


Then form to shape and fit to wagon. Then trim brass wire to project about 1.5mm.



Brake pin brackets & Levers. These are complex fold up etchings. A strip of 1mm thick brass (double thickness of scrap from edge of fret) will assist with the folding of the two sides by acting as a spacer. (see diag plan view). Also I find it useful to gouge the fold lines deeper using a triangular file.

Use a smooth jaw vice to fold one side, and start the fold on the other.

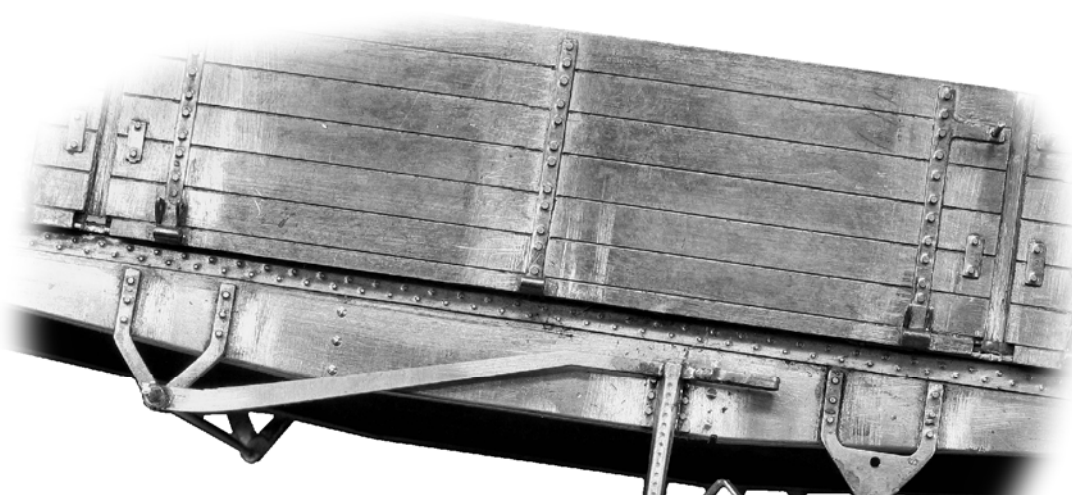


Pliers can then be used to slowly close on the body with spacer in place until the bracket is folded.



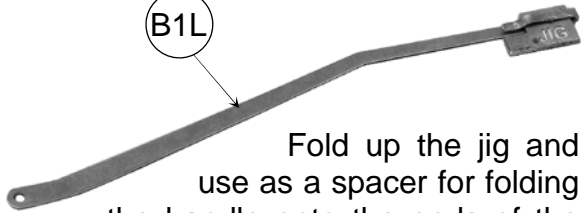
Then fold the outer brackets detail at right angles.

Fit brackets to frames, locating into etched rebate and on top of R/H frame extension plate (align flush with L/H edge of plate).



Fold up outer pin bracket for later fitting. There is a notch near the top, it should be folded here and then 3mm to form a U. The bottom is folded at right angles for later soldering into the notch at the bottom of the main bracket. A fifth set of bracket components are included to cover mishaps in the forming.

B1L



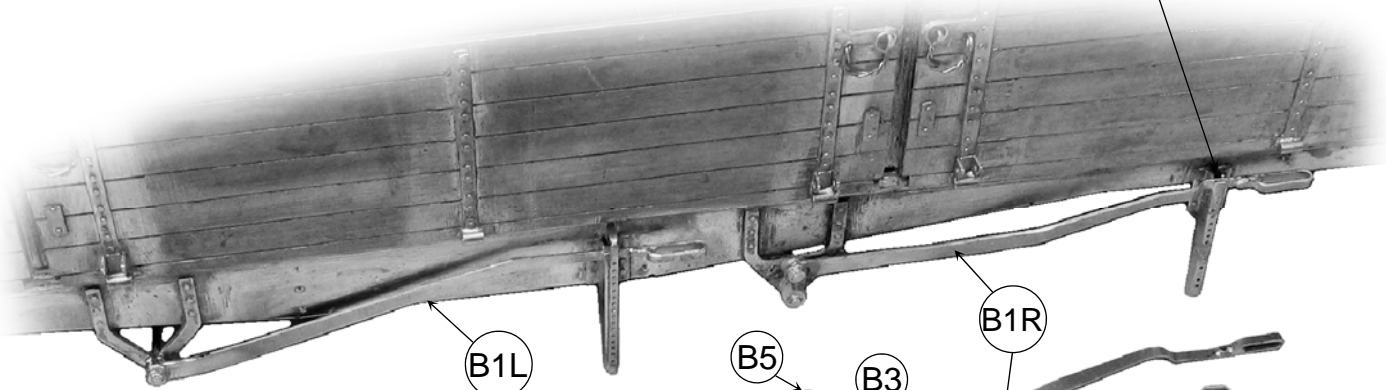
Fold up the jig and use as a spacer for folding the handle onto the ends of the levers. All levers have the handle folded outwards on the right when viewed from the front.

The R/H lever also has a joggle or set just before the pin guide (on prototype this was to clear axlebox when lever fully applied at bottom of pin guide).

Fit lengths of 0.9mm wire through V hangers. These will be trimmed to required lengths later



lever arm rests on the two notches in the top of the main bracket. Solder solid.



Clear all holes with 0.95 mm drill before removing from fret

B4

B5

Thread end of brake lever over wire. Threading on washers & cams as appropriate.

B5

B3

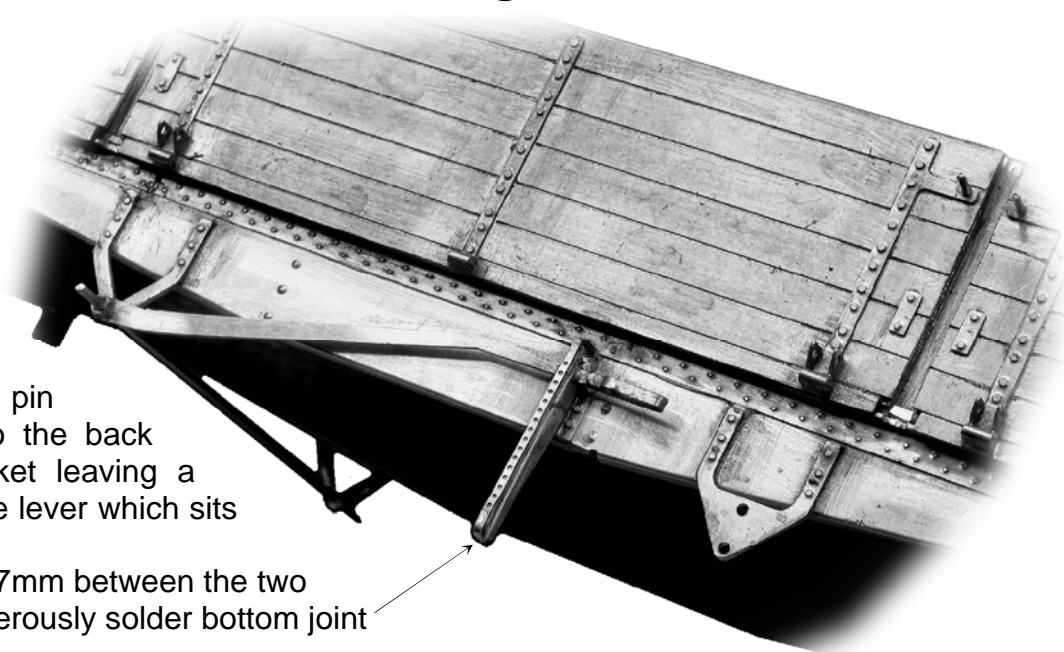
B4

B3

Solder lever at the two notches in the top of the main bracket. Then fit outer pin bracket.

Top of outer pin bracket slides into the back of the main bracket leaving a space for the brake lever which sits inside it.

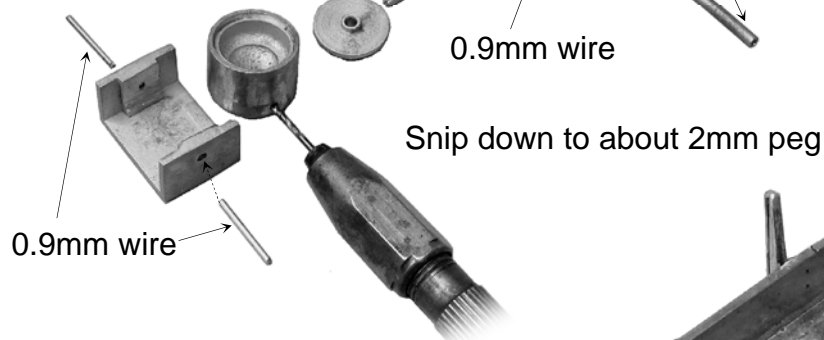
A gap of about 0.7mm between the two is about right. Generously solder bottom joint



Step 12

Clear all holes with 0.95 drill
Only drill $\frac{1}{3}$ depth hole from
each side of vacuum cylinder

Cut down as required



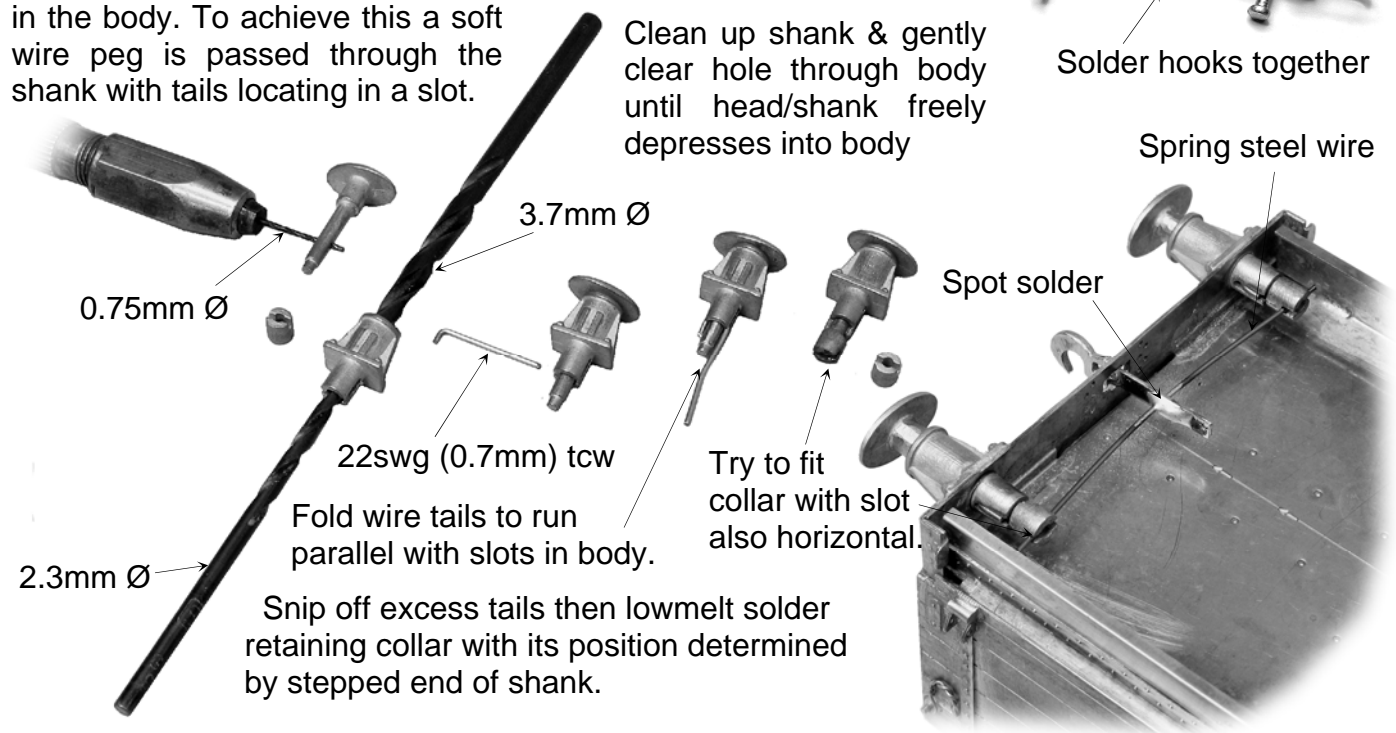
First assemble components
with wire pins only.

Then position and adjust
until linkage and swivelling
cylinder angle look correct.

Then solder to floor
first, then cross shaft
to vee hangers &
then cylinder piston.

Then trim wire pins

The challenge with oval buffers is
to maintain the ellipse of the head
horizontal by preventing it turning
in the body. To achieve this a soft
wire peg is passed through the
shank with tails locating in a slot.



Trim 0.9mm wires passing through
vee hangers to required lengths.

Then spring cast cross shaft
between vee hangers locating onto
wire pegs

When all brake linkage is soldered
solid. Trim and dress square any
outer projecting wire.

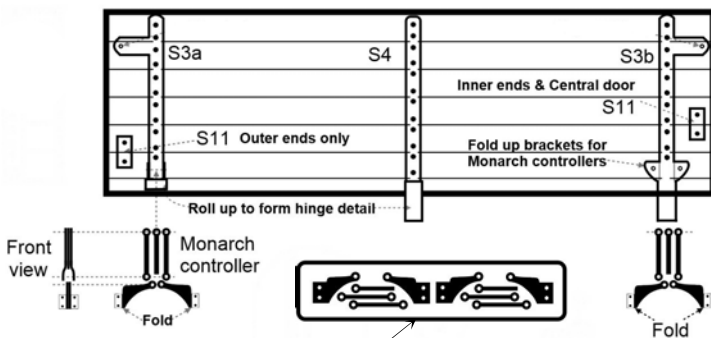
Step 13

Drill through top holes for location pegs and fit castings that represent the pressed/forged bulbous strengthening rib that runs down the centre of the end stanchion plate.

Monarch Door Controllers. Malcolm intended these to be fabricated and fit into the outer end hinges on each door strapping bracket. Start by lightly tinning all components whilst still in the etch. The two halves of the lower brackets are soldered together after bending outwards the mounting plate. Use a cocktail stick to align holes. The arm is in 3 pieces. Start by clearing all holes. It is recommended to use 0.5mm wire to assemble the controllers, but it is advisable to increase the size of the holes to aid assembly. Start by threading the 3 parts of the arm onto wire in the door bracket. **DO NOT** solder together at this stage. Then thread the lower end onto the lower bracket. Align the lower bracket on the frames and solder into position. Using a pair of tweezers, align and hold together the 3 arm components and solder together, ensuring the wire is also soldered to the brackets. Trim the wire to size.

Later LNER vacuum pipe

Original GNR vacuum pipe



Spare components provided

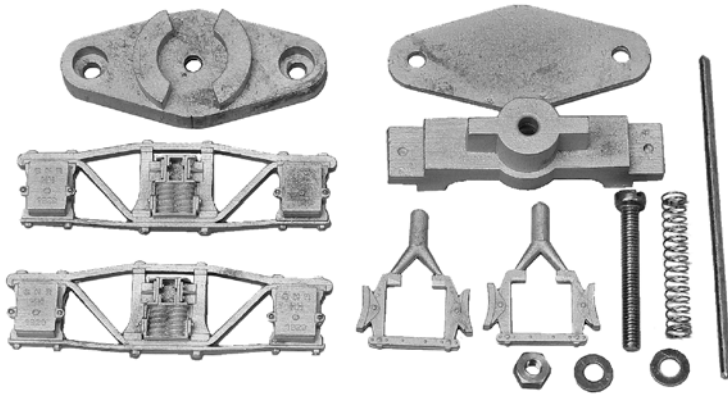
Malcolm made a lovely job of fabricating the door controllers for his models.

I found this was just beyond my modelling ability and so I have also provided cast alternatives.

Dress side stanchion castings if required to achieve good fit.

I glued these into place with Araldite as a last bodywork job.

Step 14, Assemble Bogies

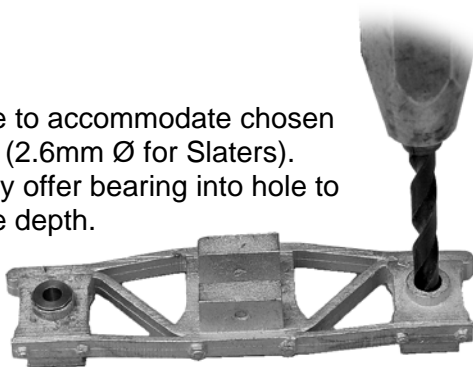


Parts Identification For Each Individual Bogie.

Bogie is designed for 3'1" wagon wheels and should accommodate those produced by a number of manufactures, Peartree, Markits, Peco, etc. My preference is for Slater's, Ref 7122.

Step 1

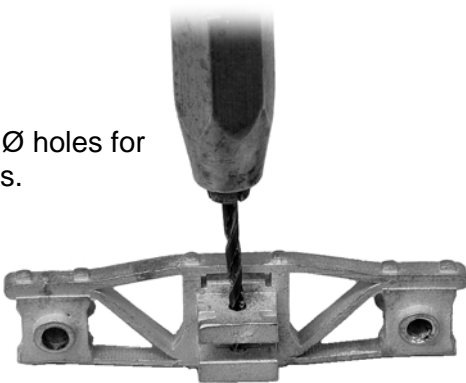
Drill hole to accommodate chosen bearings. (2.6mm Ø for Slaters). Frequently offer bearing into hole to determine depth.



Hold drill in hand pin chuck for maximum control to help prevent breaking through axlebox front.

Step 2

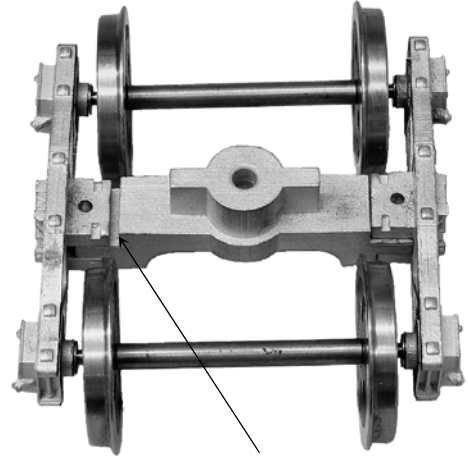
Drill 1.6mm Ø holes for assembly pins.



Drill & break through from top and then bottom. Then gently run drill right through to align both holes.

Step 3

Test assemble bogie, pressing side frames onto axle ends.



Note gap on stretcher when using Slater's wheelsets. One solution would be to file down the bearing hole boss and sink bearing further into axlebox.

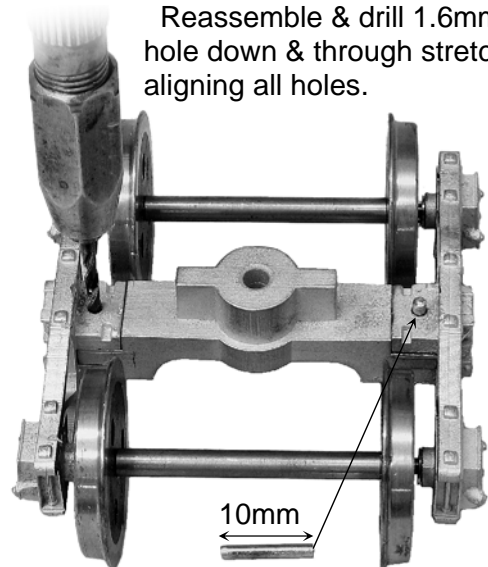
I prefer to reduce axle width by filing off the pin points (*plus a couple of strokes*) with a flat file.

Step 4



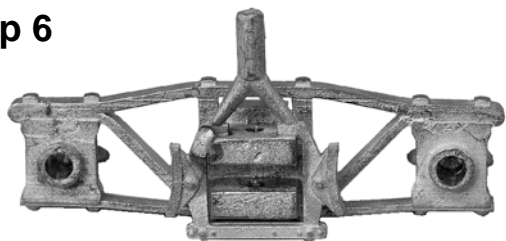
Step 5

Reassemble & drill 1.6mm Ø hole down & through stretcher, aligning all holes.



Cut from brass rod & fit assembly pins .

Step 6



When happy with basic bogie, disassemble & fit brake yoke using a single tack solder joint.

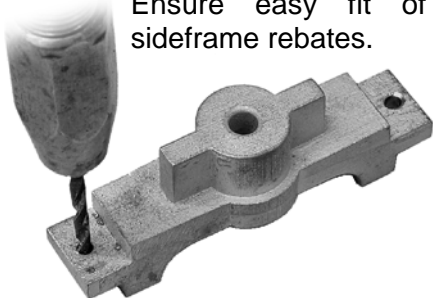
Step 7



Offer up wheelset to check clearance. Make adjustments as required (*possibly chamfer brake block rear with knife blade*). When happy solder solid & clean up. Ensure rebate for stretcher end is clean & clear.

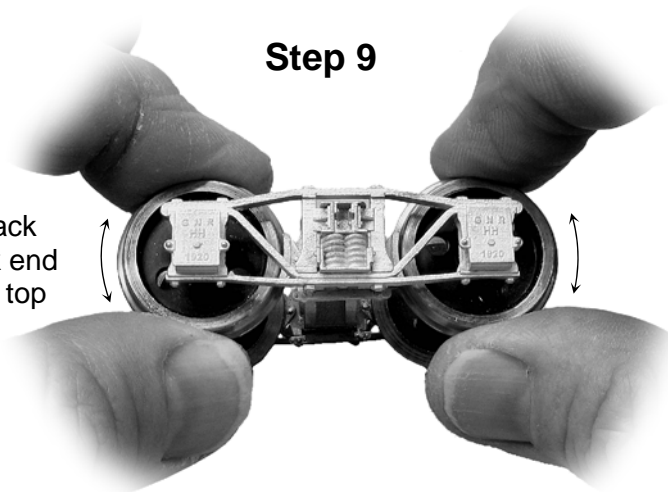
Step 8

Make pin holes in stretcher ends slightly oversize ($1.7\text{mm } \varnothing$ or wobble the drill in the hole a bit). Ensure easy fit of ends into sideframe rebates.



Reassembly with pins will allow a small amount of compensation to give excellent track holding. I secure the pins using a matchstick end to place a small blob of Araldite around their top ends.

Step 9



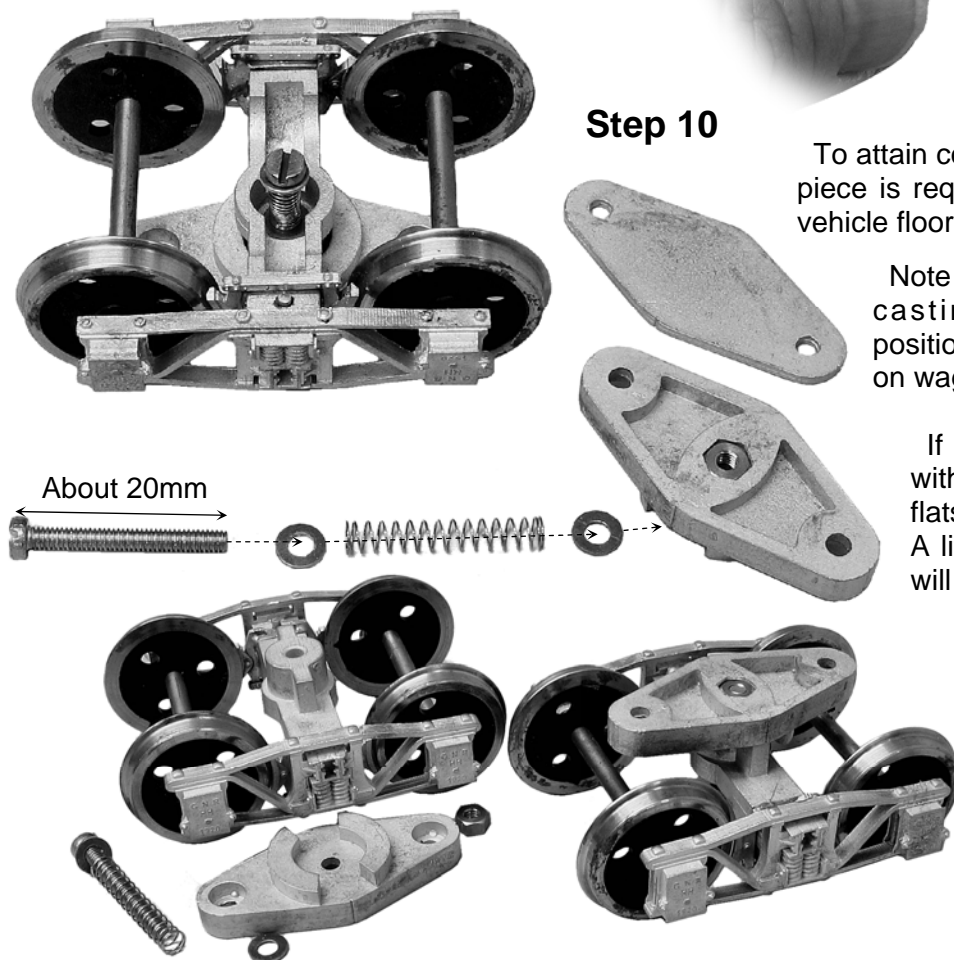
Step 10

To attain correct buffer height the packing piece is required between swivel unit and vehicle floor

Note centring marks at corners of castings to allow accurate positioning onto marked centrelines on wagon floor.

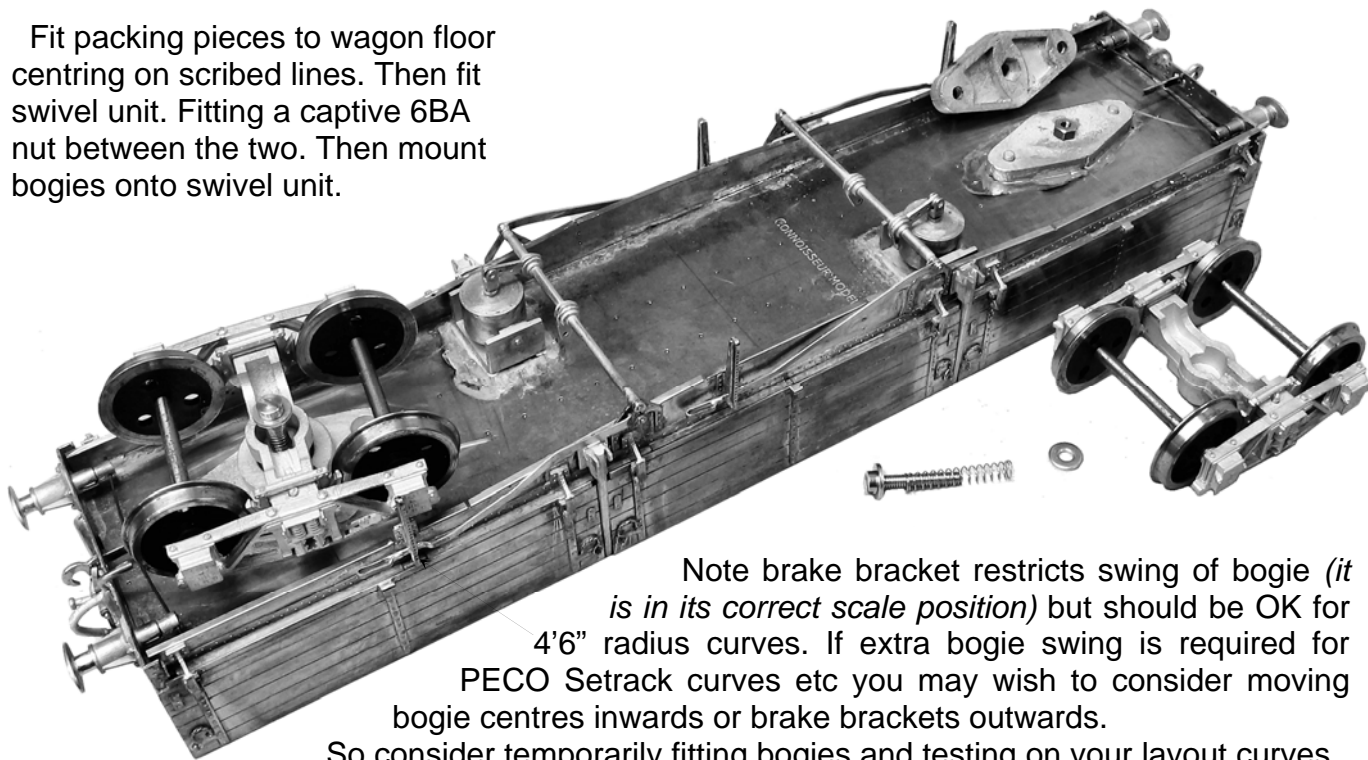
If desired secure nut into rebate with a little Araldite dabbed onto flats.

A little Evostick on the screw end will provide a threadlocker.



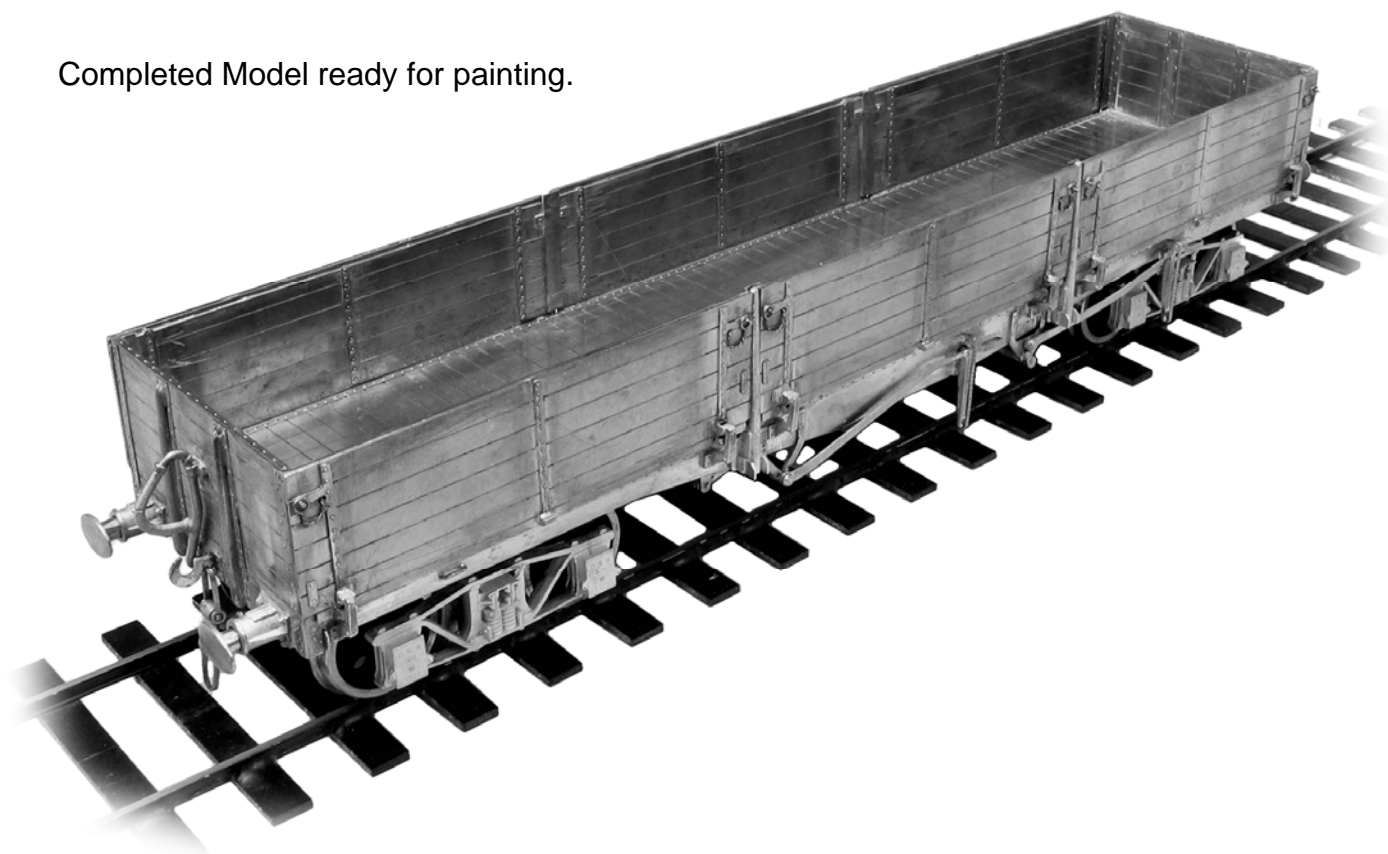
Step 15

Fit packing pieces to wagon floor centring on scribed lines. Then fit swivel unit. Fitting a captive 6BA nut between the two. Then mount bogies onto swivel unit.



Note brake bracket restricts swing of bogie (*it is in its correct scale position*) but should be OK for 4'6" radius curves. If extra bogie swing is required for PECO Setrack curves etc you may wish to consider moving bogie centres inwards or brake brackets outwards. So consider temporarily fitting bogies and testing on your layout curves.

Completed Model ready for painting.



Reference Books, LNER Wagons, Volume 1, Peter Tatlow, Wild Swan Books Ltd, ISBN 1 905184 03 4, pages 67 & 68, These cover the GNR built wagons.

LNER Wagons, Volume 4B, Peter Tatlow, Wild Swan Books Ltd, ISBN 978 0 953877 11 9, pages 260, 261 & 262, These cover the LNER built wagons.

Photos BR livery, <https://paulbartlett.zenfolio.com/lneropenwood>.